VISHAY PRECISION GROUP

# Load Cells and Indicators

## Celtron • Sensortronics • Revere • Tedea-Huntleigh

Brands of VPG Transducers

INTERACTIVE Data Book
VMM-DB0102-1008

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- Single-Point
- Platform
- Weighbridge
- Special-Application

Indicators and Amplifiers

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Click on the VPG logo on any contents page to go to the main table of contents page.

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Revere Transducers

TEDEA HUNTLEIGH
EXCELLENCE IN LOAD CELLS

SENSORTRONICS
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# Worldwide Contacts

www.vishaypgloadcells.com

VISHAY PRECISION GROUP

## The Americas

**United States**

Vishay Precision Group – VPG Transducers
801 Sentous Avenue • City of Industry, CA 91748
Ph: +1-800-872-4784 (Toll Free, USA only, outside of California)
+1-626-363-7500 • Fax: +1-626-332-3418
E-mail: lc.usa@vishaypg.com

## Asia

**Taiwan, R.O.C.**

Vishay Precision Group – VPG Transducers
8F-1, 171, Section 2, Datong Road • Sijhih City, Taipei 22183
Ph: +886-2-8692-6888 • Fax: +886-2-8692-6818
E-mail: lc.roc@vishaypg.com

**P.R. China**

Vishay Precision Group – VPG Transducers
No. 5 Binguan Nan Dao Youyi Rd • Hexi District • Code 300061, Tianjin
Ph: +86-22-2835-3503 • Fax: +86-22-2835-7261
E-mail: lc.china@vishaypg.com

**India**

Vishay Precision Group – VPG Transducers
#117, Old Mahabalipuram Road • Karapakkam Chennai - 600 097
Ph: +91-44-3917-4000 • Fax: +91-44-3917-4002
E-mail: lc.india@vishaypg.com

**Israel**

Vishay Precision Group – VPG Transducers
8a Hazoran Street • P.O. Box 8381 • Netanya 42506
Ph: +972-9-863-8888 • Fax: +972-9-863-8800
E-mail: lc.il@vishaypg.com

## Europe

**United Kingdom**

Vishay Precision Group – VPG Transducers
Stroudley Road, Basingstoke • Hampshire RG24 8FW
Ph: +44-(0)125-646-2131 • Fax: +44-(0)125-647-1441
E-mail: lc.uk@vishaypg.com

**Germany**

Vishay Precision Group – VPG Transducers
Tatschenweg 1 • 74078 Heilbronn
Ph: +49-7131-39099-0 • Fax +49-7131-39099-229
E-mail: lc.de@vishaypg.com

**France**

Vishay Precision Group – VPG Transducers
16 Rue Francis Vovelle • 28000 Chartres
Ph: +33-2-37-33-31-20 • Fax: +33-2-37-33-31-29
E-mail: lc.fr@vishaypg.com

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# Load Cells and Indicators

# Table of Contents

# Table of Contents



## LOAD CELL MOUNTS



## WEIGHING INDICATORS AND ACCESSORIES

# Alphabetical Index

## VPG Transducers

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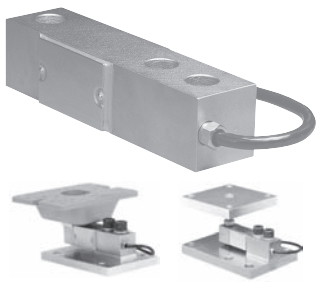
# Single-Ended Shear Beams

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Shear Beam Load Cell




- Rated capacities of 250 to 20,000 pounds, 125 to 10,000kg
- "Thru" or "threaded" load hole configurations
- Low sensitivity to axial loads
- Low profile (ultra low available in 1000 to 2500 pound ranges)
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).
- Trade certified for NTEP Class III: 5000d, IIIL: 10000d and OIML R-60 3000d available

## DESCRIPTION

Model 65023 is a low profile shear beam load cell designed for high accuracy platform scales, pallet scales and process weighing applications.

It has high immunity to shock or side loading and is available in 2 or 3mV/V sensitivity. Approved to OIML, NTEP standards. For hazardous environments this load cell is available with EEx ia IIC T6 level of European approval.

Nickel plating and full environmental sealing assures long term reliability. A stainless steel option is available for the lb versions for use in harsh or corrosive environments.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension is achieved by feeding this voltage into the appropriate electronics.

## FEATURES

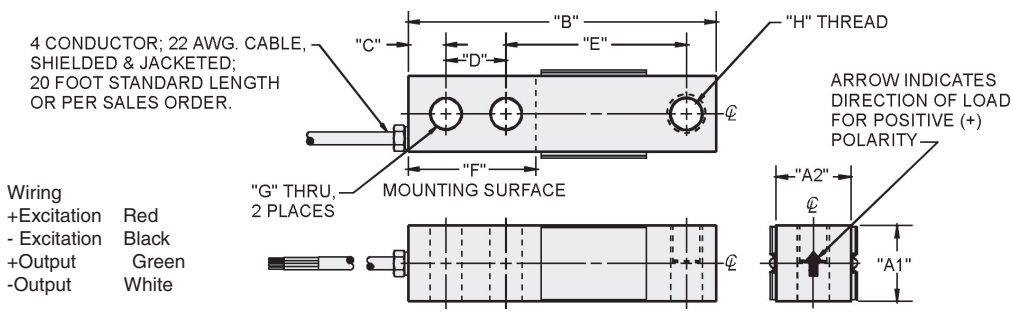
## OPTIONAL FEATURES

- Stainless steel versions available
- 65059 TWA companion weighing assemblies available
- 65082 Tantamount companion weigh modules available

## APPLICATIONS

- Floor scales
- Tank weighing
- Bin and hopper weighing

## OUTLINE DIMENSIONS in inches [millimeters]




| CAPACITY | A1 | A2 | B | C | D | E | F | G | H | DEFLECTION | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 250 - 500lbs | 1.00 | 1.25 | 5.12 | 0.62 | 1.00 | 3.00 | 2.25 | 0.53 | 1/2-20 UNF-2B, Ø0.53 x 0.50 DP C'BORE | 0.013 | 1.7 |
| 1K - 4K | 1.25 | 1.25 | 5.12 | 0.62 | 1.00 | 3.00 | 2.25 | 0.53 | 1/2-20 UNF-2B, Ø0.53 x 0.62 DP C'BORE | 0.017 - 0.025 | 4.0 |
| 5K - 10K | 1.50 | 1.50 | 6.75 | 0.75 | 1.50 | 3.75 | 3.00 | 0.78 | 3/4-16 UNF-2B, Ø0.78 x 0.75 DP C'BORE | 0.025 - 0.035 | 6.5 |
| 15K - 20K | 2.00 | 2.00 | 8.88 | 1.00 | 2.00 | 4.88 | 4.00 | 1.03 | 1"-14 UNF-2B, Ø1.03 x 1.00 DP C'BORE | 0.048 - 0.063 | 9.0 |
| [125 - 250kg] | [25.0] | [31.0] | [130.0] | [16.0] | [25.0] | [76.0] | [57.0] | [13.0] | M12 x 1.75-6H, Ø13 x 15 DP C'BORE | [0.33] | [0.8] |
| [500 - 2t] | [32.0] | [32.0] | [130.0] | [16.0] | [25.0] | [76.0] | [57.0] | [13.0] | M12 x 1.75-6H, Ø13 x 15 DP C'BORE | [0.432 - 0.635] | [1.8] |
| [3t - 5t] | [38.0] | [38.0] | [171.0] | [19.0] | [38.0] | [95.0] | [76.0] | [20.7] | M20 x 2.5-6H, Ø20.5 x 19 DP C'BORE | [0.635 - 0.889] | [2.9] |
| [10t] | [51.0] | [51.0] | [226.0] | [25.0] | [51.0] | [124.0] | [102.0] | [25.0] | M24 x 2-6H, Ø25.4 x 25 DP C'BORE | [1.219 - 1.600] | [4.1] |

Capacities are in pounds [kg/t]. Deflection is ±10%. Certified drawings are available.

| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 250, 500, 1K, 1.5K, 2K, 2.5K, 4K, 5K, 10K, 15K, 20K<br>125, 250, 500, 750, 1000, 2000, 5000, 10,000 (1) | | | | lbs<br>kg |
| NTEP/OIML Accuracy class | NTEP III | NTEP IIIL | Standard | OIML R60 | |
| Maximum no. of intervals (n) | 3000 single | 10000 multiple | | 3000 (1) | |
| $Y = E_{max}/V_{min}$ | NTEP Cert. No. 86-044A2 | | | 6250 | Maximum available |
| Rated output-R.O. | 3.0 | | | | mV/V |
| Rated output tolerance | 0.25 | | | | ±% mV/V |
| Zero balance | 1.0 | | | | ±% FSO |
| Combined error | 0.02 | 0.02 | 0.03 | 0.02 | ±% FSO |
| Non-repeatability | 0.01 | | | | ±% FSO |
| Creep error (30 minutes) | 0.025 | 0.03 | 0.03 | 0.017 | ±% FSO |
| Temperature effect on zero | 0.0010 | 0.0010 | 0.0015 | 0.0010 | ±% FSO/°F |
| Temperature effect on output | 0.0008 | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| Compensated temperature range | 14 to 104 (-10 to 40) | | | | °F (°C) |
| Operating temperature range | 0 to 150 (-18 to 65) | | | | °F (°C) |
| Storage temperature range | -60 to 185 (-50 to 85) | | | | °F (°C) |
| Sideload rejection ratio | 500:1 | | | | |
| Safe sideload | 100 | | | | % of R.C. |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 343 - 357 | | | | Ω |
| Output impedance | 349 - 355 | | | | Ω |
| Insulation resistance at 50VDC | >1000 | | | | MΩ |
| Material | Nickel plated alloy tool steel (2) | | | | |
| Environmental protection | IP67 | | | | |
| Recommended torque | All capacities up to 5000kg - 136.0<br>5000kg - 205.0 | | | | N*m |

**Notes**

(1) OIML approval 1-10K & 500-5000kg only

(2) Stainless steel available

FSO - Full Scale Output

All Specifications subject to change without notice.

# Shear Beam Load Cell

OIML NTEP ATEX FM

## FEATURES

- Capacities 250 - 2000kg and 1000 - 4000lbs
- Steel and stainless steel construction
- OIML R60 and NTEP approved
- IP67 protection

## OPTIONAL FEATURES

- EEx ia IIC T6 hazardous area approval
- FM approval available

## APPLICATIONS

- Low profile platforms
- Pallet truck weighing
- Tank and silo weighing

## DESCRIPTION

Model 3410 is a low profile shear beam load cell designed for high accuracy platform scales, pallet scales and process weighing applications.

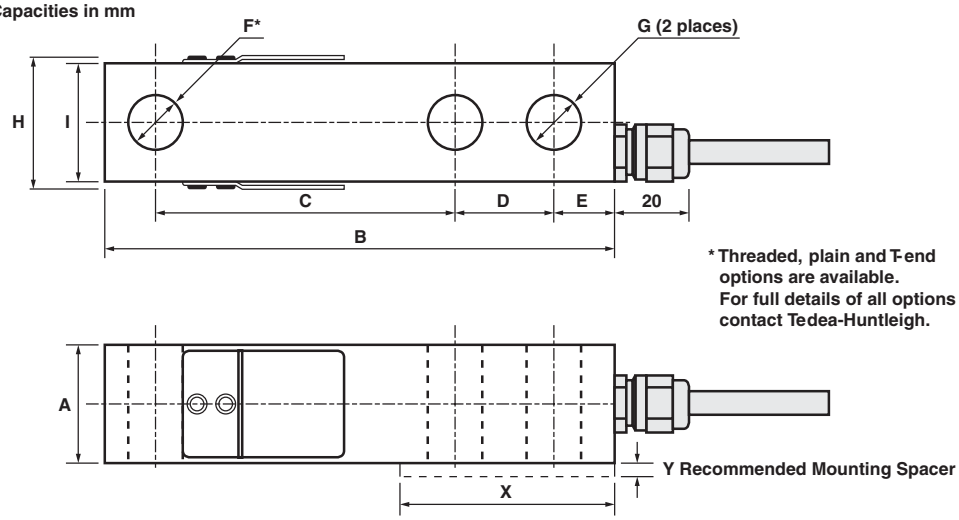
It has high immunity to shock or side loading and is available in 2 or 3mV/V sensitivity. Approved to OIML, NTEP standards. For hazardous environments this load cell is available with EEx ia IIC T6 level of European approval.

Nickel plating and full environmental sealing assures long term reliability. A stainless steel option is available for the lb versions for use in harsh or corrosive environments.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension is achieved by feeding this voltage into the appropriate electronics.

## **OUTLINE DIMENSIONS** in millimeters

**Outline Dimensions All Capacities in mm**




*** Threaded, plain and T-end options are available. For full details of all options contact Tedea-Huntleigh.**

| CAPACITY | A | B | C | D | E | ØF | ØG | H | I | X | Y |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000, 1500, 2500, 4000lb | 30.5 | 130 | 76.2 | 25.4 | 16 | Ø13.5 | Ø13.5 | 34.0 | 30.5 | 57 | 4 |
| 250, 500, 1000kg | 30.5 | 130 | 76.2 | 25.4 | 16 | M12* | Ø13.5 | 34.0 | 30.5 | 57 | 4 |
| 2000kg | 36 | 130 | 76.2 | 25.4 | 16 | M12* | Ø13.5 | 34.0 | 30.5 | 57 | 4 |

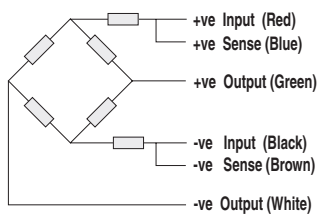
* Tapped M12 X 1.75 & counterbored Ø13.5 X 14.5 Deep

| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 250, 500, 1000, 2000 | | | kg |
| Rated capacity-R.C. ($E_{max}$) | 1000, 1500, 2500, 4000 | | | lbs |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3 | |
| Maximum no. of intervals (n) | 3000 single<br>5000 multiple | 1000 | 3000 (1) | |
| $Y = E_{max}/V_{min}$ | 6666 | 1400 | 10000 | Max. available |
| Rated output-R.O. | 2.0 for kg and 3.0 for lbs | | | mV/V |
| Rated output tolerance | 0.1 | | | ±% of rated output |
| Zero balance | 2 | | | ±% of rated output |
| Zero Return, 30 min. | 0.0250 | 0.0300 | 0.0170 | ±% of applied load |
| Total Error (per OIML R60) | 0.0200 | 0.0500 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.0100 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0010 | 0.0030 | 0.0010 | ±% of applied load/°C |
| Temperature range, | -10 to +40 | | | °C |
| Temperature range, safe | -20 to +70 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 385±10 | | | Ohms |
| Output impedance | 351±5 | | | Ohms |
| Insulation resistance | >2000 | | | Mega-Ohms |
| Cable length | 3.0 - 3410, 6.0 - 3411 | | | m |
| Cable type | 6 wire, braided, Polyurethane, floating screen | | | Standard |
| Construction | Nickel plated alloy steel and stainless steel | | | |
| Environmental protection | IP67 | | | |
| Recommended torque | 136 | | | N*m |

**Note**

(1) 50% utilization

**Wiring Schematic Diagram**



# Single-Ended Beam

### FEATURES

- Capacities: 500 to 20Klb, 250 to 5000kg
- High side-load tolerance
- Electroless nickel-plated-alloy tool steel
- NTEP Class III 5000M for SQB, SQB-F and SQB-SS available from 1K to 10Klb
- SQB-SS stainless steel construction

### OPTIONAL FEATURE

- FM approval available

### DESCRIPTION

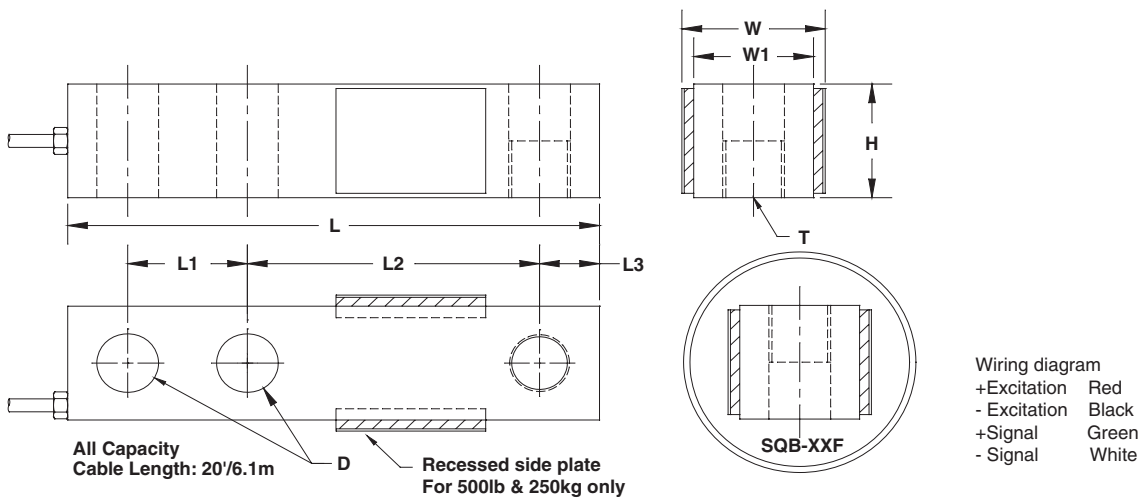
SQB is a single-ended shear beam load cell designed for multiple cell applications such as low profile platform or small tank scales when used with proper mounting accessories. It is insensitive to side loading and capable of reversed loading.

SQB and SQB-F are constructed of alloy steel and fully potted with special chemical compounds to IP67 to protect the cell from water and moisture damage.

### APPLICATIONS

- Truck/rail scales
- Silo/hopper/tank weighing
- Platform scales (multiple load cells)
- Pallet truck scales
- Packaging machines

### OUTLINE DIMENSIONS




| CAPACITY | | L | L1 | L2 | L3 | W | W1 | H | D | T |
|---|---|---|---|---|---|---|---|---|---|---|
| 250kg | mm | 130.0 | 25.4 | 76.2 | 12.7 | 31.7 | 31.7 | 25.4 | 13.5 | M12 x 1.75 |
| 500lb | (inch) | 5.12 | 1.00 | 3.00 | 0.50 | 1.25 | 1.25 | 1.00 | 0.53 | 1/2-20UNF |
| 500/1000/1500/2000kg | mm | 130.0 | 25.4 | 76.2 | 12.7 | 38.1 | 31.7 | 31.7 | 13.5 | M12 x 1.75 |
| 1K/2K/2.5K/3K/4K/5KSElb | (inch) | 5.12 | 1.00 | 3.00 | 0.50 | 1.50 | 1.25 | 1.25 | 0.53 | 1/2-20UNF |
| 2500/5000kg | mm | 171.5 | 38.1 | 95.3 | 19.0 | 44.2 | 38.1 | 38.1 | 19.8 | M20 x 1.5 |
| 5K/10Klb | (inch) | 6.75 | 1.50 | 3.75 | 0.75 | 1.74 | 1.50 | 1.50 | 0.78 | 3/4-16UNF |
| 15K/20Klb | mm | 225.6 | 50.8 | 123.9 | 25.4 | 56.9 | 50.8 | 50.8 | 26.2 | ----- |
| | (inch) | 8.88 | 2.00 | 4.88 | 1.00 | 2.24 | 2.00 | 2.00 | 1.03 | 1-14UNS |

| SPECIFICATIONS | | | |
|---|---|---|---|
| **PARAMETER** | **VALUE** | | **UNIT** |
| NTEP/OIML Accuracy class | NTEP III | Non-Approved | |
| Maximum no. of intervals (n) | 3000 single (1)<br>5000 multiple (1) | 1000 | |
| $Y = E_{max}/V_{min}$ | 10000 | 5000 | Maximum available |
| Standard capacities ($E_{max}$) | 250, 500, 1000, 1500, 2000, 2500, 5000 | | kg |
| Standard capacities ($E_{max}$) | 500, 1K, 2K, 2.5K, 3K, 4K, 5KSE, 5K, 10K, 15K, 20K | | lbs |
| Rated output-R.O. | 3.0 | | mV/V |
| Rated output tolerance | 0.25 | | ±% of rated output |
| Zero balance | 1 | | ±% of rated output |
| Non linearity | 0.025 | 0.030 (SS: 0.05) | ±% of rated output |
| Hysteresis | 0.025 | 0.030 (SS: 0.05) | ±% of rated output |
| Non-repeatability | 0.020 | 0.020 | ±% of rated output |
| Creep error (20 minutes) | 0.025 | 0.030 | ±% of rated output |
| Zero return (20 minutes) | 0.025 | 0.030 | ±% of rated output |
| Temperature effect on min. dead load | 0.0017 | 0.0026 | ±% of rated output/°C |
| Temperature effect on sensitivity | 0.0010 | 0.0015 | ±% of applied load/°C |
| Compensated temperature range | -10 to +40 | | °C |
| Operating temperature range | -20 to +60 | | °C |
| Safe overload | 150 | | % of R.C. |
| Ultimate overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 385±5 | | Ohms |
| Output impedance | 350±3 | | Ohms |
| Insulation resistance | >5000 | | Mega-Ohms |
| Construction | Nickel plated alloy steel (2) | | |
| Environmental protection | IP67 | | |

**Notes**

(1) Capacities 1K-10Klbs

(2) Stainless steel available

All Specifications subject to change without notice.

FM Approval

Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G

Non-Incendive: Class I; Div. 2 Groups A-D

## Single-Ended Beam

### FEATURES

- Capacities: 500kg, 1t, 1.5t, 2t, and 2.5t
- High side-load tolerance
- Electroless nickel-plated-alloy tool steel
- OIML C3 approval from 500kg to 2.5t

### OPTIONAL FEATURE

- FM approval available

### APPLICATIONS

- Truck/rail scales
- Silo/hopper/tank weighing
- Platform scales (multiple load cells)
- Pallet truck scales
- Packaging machines

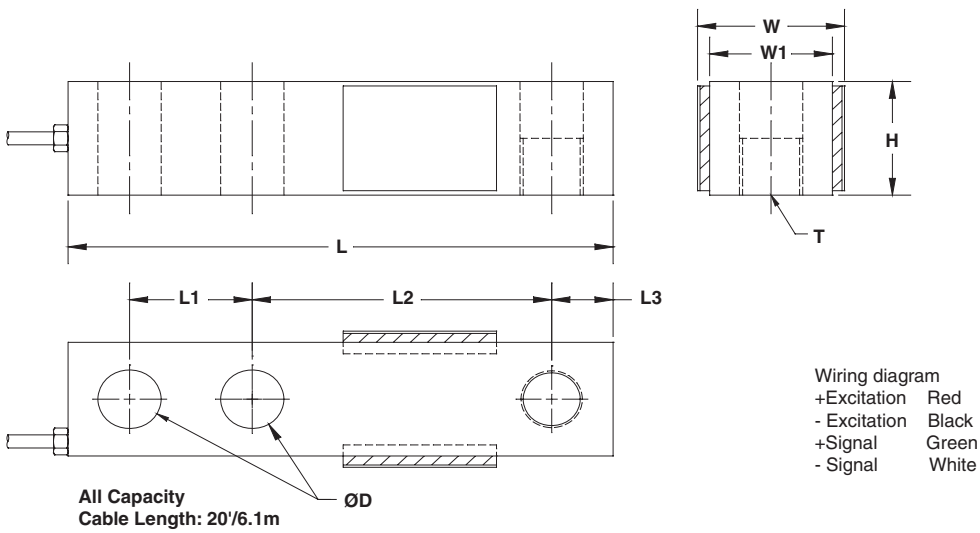
### DESCRIPTION

SEB is a single-ended shear beam load cell designed for multiple cell applications such as low profile platform or small tank scales when used with proper mounting accessories.

It is insensitive to side loading and capable of reversed loading.

SEB is constructed of alloy steel and fully potted with special chemical compounds to IP67 to protect the cell from water and moisture damage.

### OUTLINE DIMENSIONS




| CAPACITY | | L | L1 | L2 | L3 | W | W1 | H | D | T |
|---|---|---|---|---|---|---|---|---|---|---|
| 500kg/1t/1.5t/2t | mm | 130.0 | 25.4 | 76.2 | 12.7 | 38.1 | 31.2 | 31.2 | 13.5 | M12 x 1.75 |
| | (inch) | 5.12 | 1.00 | 3.00 | 0.50 | 1.50 | 1.25 | 1.25 | 0.53 | |
| 2.5t | mm | 171.5 | 38.1 | 95.3 | 19.0 | 44.2 | 38.1 | 38.1 | 19.8 | M20 x 1.5 |
| | (inch) | 6.75 | 1.50 | 3.75 | 0.75 | 1.74 | 1.50 | 1.50 | 0.78 | |

| SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| NTEP/OIML Accuracy class | C3 | |
| Maximum no. of intervals (n) | 3000 | |
| $Y = E_{max}/V_{min}$ | 10000 | Maximum available |
| Standard capacities ($E_{max}$) | 500, 1000, 1500, 2000, 2500 | kg |
| Rated output-R.O. | 3.0 | mV/V |
| Rated output tolerance | 0.25 | ±% of rated output |
| Zero balance | 1 | ±% of rated output |
| Non linearity | 0.025 | ±% of rated output |
| Hysteresis | 0.025 | ±% of rated output |
| Non-repeatability | 0.020 | ±% of rated output |
| Creep error (20 minutes) | 0.030 | ±% of rated output |
| Zero return (20 minutes) | 0.030 | ±% of rated output |
| Temperature effect on min. dead load output | 0.0014 | ±% of rated output/°C |
| Temperature effect on sensitivity | 0.0008 | ±% of applied load/°C |
| Compensated temperature range | -10 to +40 | °C |
| Operating temperature range | -20 to +60 | °C |
| Safe overload | 150 | % of R.C. |
| Ultimate overload | 300 | % of R.C. |
| Excitation, recommended | 10 | Vdc or Vac rms |
| Excitation, maximum | 15 | Vdc or Vac rms |
| Input impedance | 385±5 | Ohms |
| Output impedance | 350±3 | Ohms |
| Insulation resistance | >5000 | Mega-Ohms |
| Construction | Nickel plated alloy steel | |
| Environmental protection | IP67 | |

All Specifications subject to change without notice.

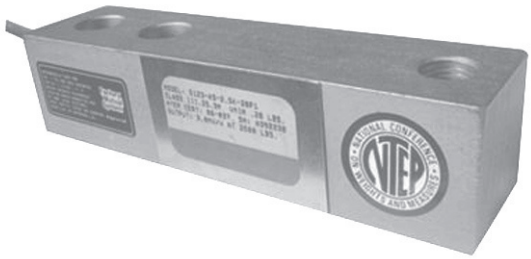
FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

# Model 5123

Revere

VISHAY PRECISION GROUP

## Single Ended Beam Load Cell



### FEATURES

- Capacities: 500 - 5000kg, 1K -10Klbs
- Low profile construction
- Certified to OIML R-60, 3000d and NTEP class III, 3000 divisions
- Sealing: IP67 (DIN 40.050)
- Nickel plated alloy steel construction
- Threaded load hole

### OPTIONAL FEATURES

- FM certified for use in potentially explosion atmosphere

### DESCRIPTION

The 5123 is a low profile single ended shear beam type load cell. The 5123 is nickel plated tool steel.

These products are suitable for small and medium platform scales, overhead track scales, hopper scales and process weighing applications.

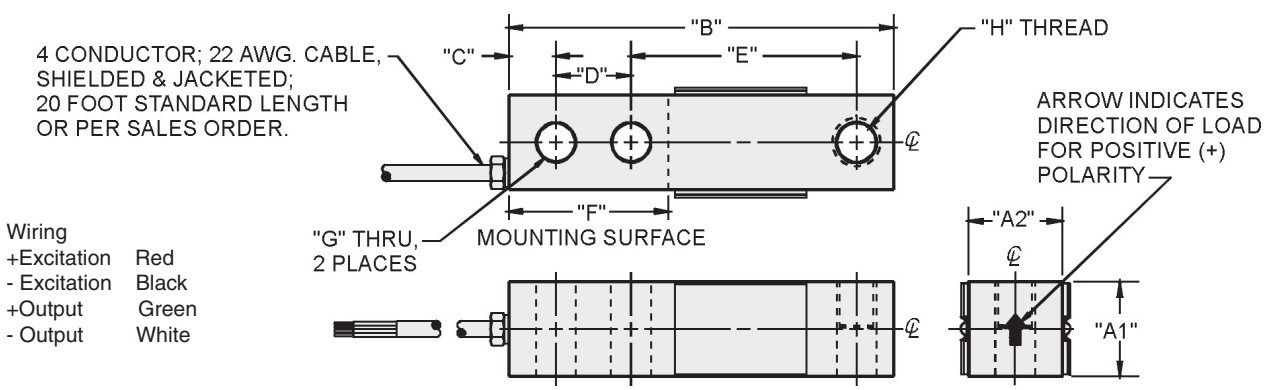
Reliable sealing is ensured by the proprietary TRANSEAL potting compound and additional mechanical protection of the strain gage area.

Ease of installation is made possible through the use of a partially threaded hole to accept levelling feet, load buttons or loading cables.

### APPLICATIONS

- Floor scales
- Tank weighing
- Bin and hopper weighing

### OUTLINE DIMENSIONS in inches [millimeters]




| CAPACITY | A1 | A2 | B | C | D | E | F | G | H | DEFLECTION | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1K - 4Klbs | 1.25 | 1.25 | 5.12 | 0.62 | 1.00 | 3.00 | 2.25 | 0.53 | 1/2-20 UNF-2B, Ø0.53 x 0.62 DP C'BORE | 0.017 - 0.025 | 4.0 |
| 5K - 10Klbs | 1.50 | 1.50 | 6.75 | 0.75 | 1.50 | 3.75 | 3.00 | 0.78 | 3/4-16 UNF-2B, Ø0.78 x 0.75 DP C'BORE | 0.025 - 0.035 | 6.5 |
| [500kg - 2t] | [32.0] | [32.0] | [130.0] | [16.0] | [25.0] | [76.0] | [57.0] | [13.0] | M12 x 1.75-6H, Ø13 x 15 DP C'BORE | [0.432 - 0.635] | [1.8] |
| [3t - 5t] | [38.0] | [38.0] | [171.0] | [19.0] | [38.0] | [95.0] | [76.0] | [20.7] | M20 x 2.5-6H, Ø20.5 x 19 DP C'BORE | [0.635 - 0.889] | [2.9] |

Capacities are in pounds [kg/t]. Deflection is ±10%. Certified drawings are available.

| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | **UNIT** |
| Standard capacities ($E_{max}$) | 500, 1000, 2000, 5000 (1) | | | kg |
| Standard capacities ($E_{max}$) | 1K, 2.5K, 4K, 5K, 10K (1) | | | lbs |
| Accuracy class according to OIML R-60 /NTEP | NTEP III | Non-Approved | C3 | |
| Max. no. of verfication intervals | 3000 | | 3000 | |
| Min. verification interval ($V_{min}=E_{max}/Y$) | | | $E_{max}$/6000 | |
| Min. verification interval, type MR | | | $E_{max}$/10000 | |
| Rated output (=S) | 3 | | | mV/V |
| Rated output tolerance | 0.0075 | | | ±mV/V |
| Zero balance | 1.0 | | | ±% FSO |
| Combined error | 0.0200 | 0.050 | 0.023 | ±% FSO |
| Minimum dead load output return | 0.0250 | 0.050 | 0.017 | ±% FSO |
| Minimum dead load output return, type MI8 | | | 0.0063 | ±% FSO |
| Non-repeatability | 0.0100 | 0.01 | 0.01 | ±% FSO |
| Creep error (30 minutes) | | 0.060 | 0.025 | ±% FSO |
| Temp. effect on min. dead load output | (0.0008) | 0.0250 | 0.0120 | ±% FSO/5°C (/°F) |
| Temp. effect on min. dead load output, type MR | | | 0.0070 | ±% FSO/5°C |
| Temperature effect on sensitivity | (0.0010) | 0.0250 | 0.0088 | ±% FSO/5°C (/°F) |
| Minimum dead load | 0 | | | %$E_{max}$ |
| Maximum safe over load | 150 | | | %$E_{max}$ |
| Ultimate over load | 300 | | | %$E_{max}$ |
| Maximum safe side load | 100 | | | %$E_{max}$ |
| Deflection at $E_{max}$ | 0.4/ 0.8/ 1.0/ 1.1 - kg 0.4/ 0.8/ 1.0/ 0.9/ 1.1 - lbs | | | mm |
| Excitation voltage | 5 to 12 | | | V |
| Maximum excitation voltage | 15 | | | V |
| Input resistance | 350±7 | | | Ω |
| Output resistance | 352±3 | | | Ω |
| Insulation resistance | ≥1000 | | | MΩ |
| Compensated temperature range | -10 to +40 | | | °C |
| Operating temperature range | -18 to +65 | | | °C |
| Storage temperature range | -50 to +85 | | | °C |
| Element material | Nickel plated alloy steel | | | |
| Sealing (DIN 40.050 / EN60.529) | IP67 | | | |
| Recommended torque on fixation bolts | 0.5 - 2t & 1K - 4K: 136 5K & 5t and over: 205 | | | N*m |

**Notes**

(1) 5t and 10K are not approved by OIML

FSO - Full Scale Output

Correct mounting of the load cell is essential to ensure optimum performance. Further information is available on request.

# Alloy Steel Shear Beam Load Cell

## FEATURES

- Capacity range: 5,000 - 10,000lbs
- Steel and stainless steel construction
- NTEP approved
- IP67 protection

## OPTIONAL FEATURE

- FM approval available

## APPLICATIONS

- Low profile platforms
- Pallet truck weighing
- Tank and silo weighing

## DESCRIPTION

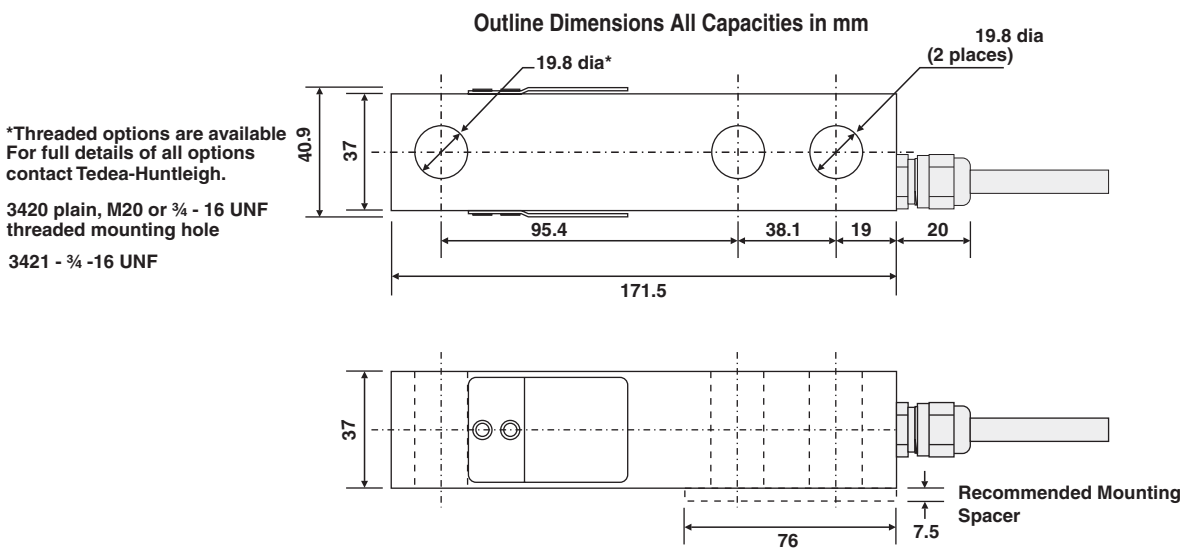
Model 3420 is a low profile shear beam load cell designed for high accuracy platform scales, pallet scales and process weighing applications.

It has a high immunity to shock or side loading, and is approved to NTEP standards. For hazardous environments this load cell is available with Factory Mutual approval.

Nickel plating and full environmental sealing assure long term reliability. A stainless steel option is available for use in harsh or corrosive environments.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension can be achieved by feeding this voltage into the appropriate electronics.

## OUTLINE DIMENSIONS in millimeters

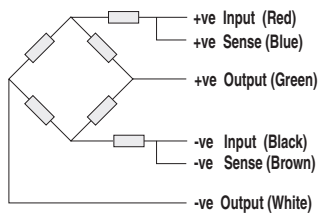




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12033
Revision: 23-Feb-10

| SPECIFICATIONS | | | |
|---|---|---|---|
| **PARAMETETR** | **VALUE** | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 5000, 7500, 10000 | | lbs |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | |
| Maximum no. of intervals (n) | 3000 single<br>5000 multiple | 3000 | |
| $Y = E_{max}/V_{min}$ | 6666 | 10000 | |
| Rated output-R.O. | 3.0 | | mV/V |
| Rated output tolerance | 0.1 | | ±% of rated output |
| Zero balance | 2 | | ±% of rated output |
| Zero Return, 30 min. | 0.0250 | 0.0170 | ±% of applied load |
| Total error (per OIML R60) | 0.0200 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0010 | 0.0010 | ±% of applied load/°C |
| Temperature range, compensated | -10 to +40 | | °C |
| Temperature range, safe | -20 to +70 | | °C |
| Maximum safe central overload | 150 | | % of R.C. |
| Ultimate central overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 385±10 | | Ohms |
| Output impedance | 351±5 | | Ohms |
| Insulation resistance | >2000 | | Mega-Ohms |
| Cable length | 3.0 mt. - 3420, 20 ft. - 3421 | | |
| Cable type | 6 wire, braided, Polyurethane, floating screen | | Standard |
| Construction | Nickel plated alloy steel | | |
| Environmental protection | IP67 | | |
| Recommended torque | 205 | | N*m |

**Wiring Schematic Diagram**
**(Balanced temperature compensation)**



# Miniature Bending Beam

FM

## DESCRIPTION

MBB is designed for low profile platform scales and tank scales in low capacities. It is constructed of high alloy tool steel which offers superior performance in creep characteristics and shock load capabilities over standard aluminum units.

MBB is fully potted and sealed with special chemical compounds to IP66 providing excellent protection against moisture and humidity.

## FEATURES

- Capacities: 50, 100, 150, and 250lb
- Low profile for low capacity scales
- Electroless nickel plated alloy tool steel

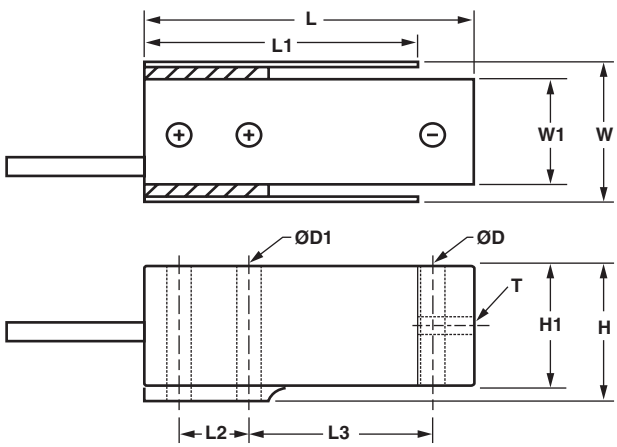
## OPTIONAL FEATURE

- FM approval available

## APPLICATIONS

- Silo/hopper/tank weighing
- Packaging machines
- Dosing/filling
- Belt scales/conveyor scales

## OUTLINE DIMENSIONS




Wiring diagram

| | |
|---|---|
| +Excitation | Red |
| - Excitation | Black |
| +Signal | Green |
| - Signal | White |

**All Capacity**
**Cable Length: 5' / 1.5m**

| CAPACITY | | L | L1 | L2 | L3 | W | W1 | H | H1 | D1 | D | T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50/100/150lb | mm | 60.33 | 50 | 12.7 | 33.66 | 19.5 | 12.7 | 24.8 | 22.2 | 4.5 | 4.5 | ---- |
| | (inch) | 2.38 | 1.97 | 0.50 | 1.33 | 0.77 | 0.5 | 0.98 | 0.87 | 0.18 | 0.18 | |
| 250lb | mm | 60.33 | 50 | 12.7 | 33.66 | 25.4 | 19.05 | 24.8 | 22.2 | 4.5 | 4.5 | ---- |
| | (inch) | 2.38 | 1.97 | 0.50 | 1.33 | 1.00 | 0.75 | 0.98 | 0.87 | 0.18 | 0.18 | |
| 50/100/150lb OL | mm | 60.33 | 50 | 12.7 | 33.66 | 21 | 12.7 | 24.8 | 22.2 | 4.4 | 4.4 | ---- |
| | (inch) | 2.38 | 1.97 | 0.50 | 1.33 | 0.83 | 0.5 | 0.98 | 0.87 | 0.17 | 0.17 | |
| 100/250lb VT | mm | 60.33 | 50 | 12.7 | 33.66 | 25.4 | 19.05 | 24.8 | 22.2 | 6.8 | | ---- |
| | (inch) | 2.38 | 1.97 | 0.50 | 1.33 | 1.00 | 0.75 | 0.98 | 0.87 | 0.26 | 1/4-20UNF | |
| 100lb BCI | mm | 60.33 | 50 | 12.7 | 33.66 | 25.4 | 19.05 | 24.8 | 22.2 | 6.4 | 6.4 | ---- |
| | (inch) | 2.38 | 1.97 | 0.50 | 1.33 | 1.00 | 0.75 | 0.98 | 0.87 | 0.25 | 0.25 | |
| 250lb BCI | mm | 60.33 | 50 | 12.7 | 33.66 | 25.4 | 19.05 | 24.8 | 22.2 | 6.4 | 4.5 | ---- |
| | (inch) | 2.38 | 1.97 | 0.50 | 1.33 | 1.00 | 0.75 | 0.98 | 0.87 | 0.25 | 0.18 | |
| 250lb LT | mm | 60.33 | 50 | 12.7 | ---- | 25.4 | 19.05 | 24.8 | 22.2 | 4.4 | ---- | 1/4-28UNF |
| | (inch) | 2.38 | 1.97 | 0.50 | | 1.00 | 0.75 | 0.98 | 0.87 | 0.17 | | |

| SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| NTEP/OIML Accuracy class | Non-Approved | |
| Maximum no. of intervals (n) | 3000 | |
| $Y = E_{max}/V_{min}$ | 5000 | Maximum available |
| Standard capacities ($E_{max}$) | 50, 100, 150, 250 | lbs |
| Rated output-R.O. | 3.0 | mV/V |
| Rated output tolerance | 10 | ±% of rated output |
| Zero balance | 1 | ±% of rated output |
| Non linearity | 0.030 | ±% of rated output |
| Hysteresis | 0.030 | ±% of rated output |
| Non-repeatability | 0.020 | ±% of rated output |
| Creep error (20 minutes) | 0.030 | ±% of rated output |
| Zero return (20 minutes) | 0.030 | ±% of rated output |
| Temperature effect on min. dead load output | 0.0026 | ±% of rated output/°C |
| Temperature effect on sensitivity | 0.0015 | ±% of applied load/°C |
| Compensated temperature range | -10 to +40 | °C |
| Operating temperature range | -20 to +60 | °C |
| Safe overload | 150 | % of R.C. |
| Ultimate overload | 300 | % of R.C. |
| Excitation, recommended | 10 | Vdc or Vac rms |
| Excitation, maximum | 15 | Vdc or Vac rms |
| Input impedance | 385±5 | Ohms |
| Output impedance | 350±3 | Ohms |
| Insulation resistance | >5000 | Mega-Ohms |
| Construction | Nickel plated alloy steel | |
| Environmental protection | IP66 | |

All Specifications subject to change without notice.

FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

# Stainless Steel Shear Beam Load Cell

## FEATURES

- Capacities 500 - 2000kg
- Stainless steel construction
- OIML R60 approved
- Sealed to IP67

## OPTIONAL FEATURE

- EEx ia IIC T6 hazardous area approval

## APPLICATIONS

- Low profile platforms
- Pallet truck weighing
- Tank and silo weighing
- Food industry platforms

## DESCRIPTION

Model 3520 is a low profile shear beam load cell designed for high accuracy platform scales, pallet scales and process weighing applications.

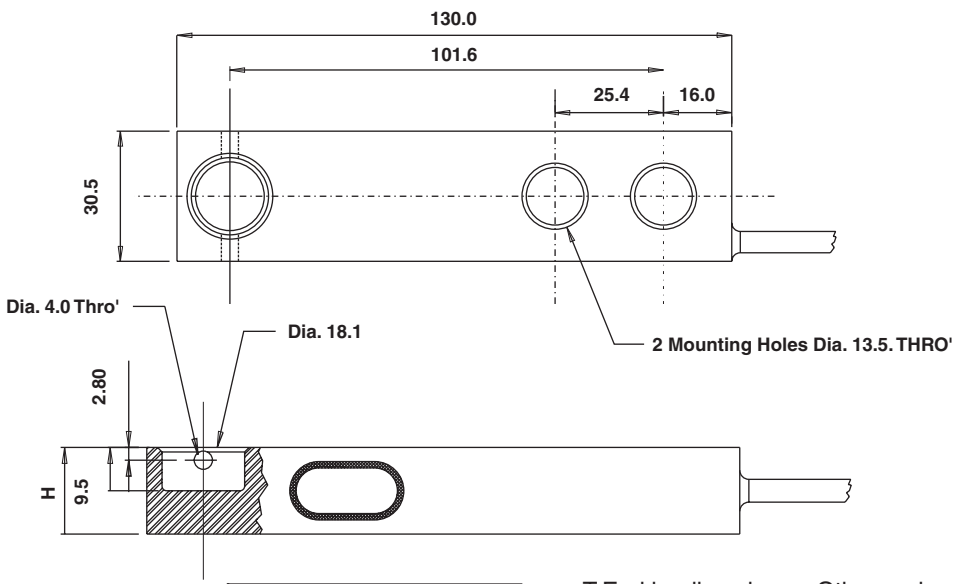
It has high immunity to shock or side loading, and is available in 2mV/V sensitivity and is approved to OIML 6000 divisions.

Sealed to IP67 as standard the 3520 is ideally suited for harsh industrial applications where performance and durability are paramount.

The extremely low profile makes this load cell ideal for today's modern low profile industrial platforms.

## OUTLINE DIMENSIONS in millimeters

Outline Dimensions All Capacities in mm




| Capacity (kg) | H |
|---|---|
| 500 | 19.0 (0.748") |
| 1000 | 19.0 (0.748") |
| 2000 | 28.0 (1.102") |

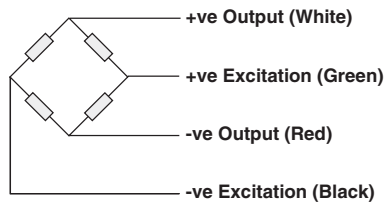
T-End loading shown. Other end options include M12 threaded.

| SPECIFICATIONS | | | |
|---|---|---|---|
| **PARAMETER** | **VALUE** | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 500, 1000, 2000 | | kg |
| OIML Accuracy class | Non-Approved | C3 (1) | |
| Maximum no. of intervals (n) | 1000 | 3000 | |
| $Y = E_{max}/V_{min}$ | 2000 | 6000 | Maximum available 15000 |
| Rated output-R.O. | 2.0 | | mV/V |
| Rated output tolerance | 0.1 | | ±% of rated output |
| Zero balance | 2 | | ±% of rated output |
| Zero Return, 30 min. | 0.050 | 0.017 | ±% of applied load |
| Total Error | 0.0500 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.007 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0030 | 0.0010 | ±% of applied load/°C |
| Temperature range, compensated | -10 to +40 | | °C |
| Temperature range, safe | -30 to +90 | | °C |
| Maximum safe central overload | 150 | | % of R.C. |
| Ultimate central overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 380±15 | | Ohms |
| Output impedance | 350±3 | | Ohms |
| Insulation resistance | >2000 | | Mega-Ohms |
| Cable length | 3 | | m |
| Cable type | 4 wire, braided, Polyurethane, floating screen | | Standard |
| Construction | Stainless steel | | |
| Environmental protection | IP67 | | |
| Recommended torque | 136.0 | | N*m |

**Note**

(1) 50% utilization

**Wiring Schematic Diagram**



# Model 9123

Revere

VISHAY PRECISION GROUP

## Single Ended Beam Load Cell


### FEATURES

- Capacities: 500 - 5000kg, 1K - 20K lbs
- Low profile construction
- Certified to OIML R-60, 4000d and NTEP III, 5000 divisions
- Sealing: IP67 (DIN 40.050)
- Stainless steel construction
- Threaded load hole

### OPTIONAL FEATURE

- FM certified for use in potentially explosion atmosphere

### DESCRIPTION

The 9123 is a low profile single ended shear beam type load cell. The 9123 is stainless steel.

These products are suitable for small and medium platform scales, overhead track scales, hopper scales and process weighing applications.

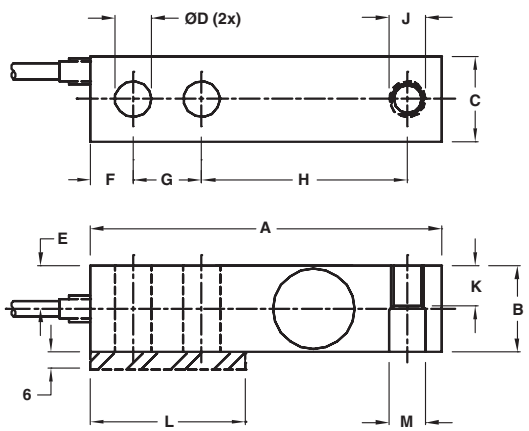
Reliable sealing is ensured by the proprietary TRANSEAL potting compound and additional mechanical protection of the strain gage area.

Ease of installation is made possible through the use of a partially threaded hole to accept levelling feet, load buttons or loading cables.

### APPLICATIONS

- Low profile platforms
- Pallet truck weighing
- Tank and silo weighing

### OUTLINE DIMENSIONS in millimeters




| | Dimensions in mm | | Dimensions in inches | | |
|---|---|---|---|---|---|
| CAPACITY | 0.5t - 2t | 5t | 1K - 4K | 5K - 15K | 20K |
| A | 130.0 | 171.5 | 5.12 | 6.75 | 8.75 |
| B | 31.5 | 37.8 | 1.23 | 1.45 | 1.95 |
| C | 31.8 | 38.1 | 1.23 | 1.45 | 1.95 |
| ØD | 13.5 | 20.7 | 0.53 | 0.78 | 1.06 |
| E | 15.7 | 19.1 | 0.62 | 0.72 | 0.98 |
| F | 15.7 | 19.1 | 0.62 | 0.75 | 1.00 |
| G | 25.4 | 38.1 | 1.00 | 1.50 | 2.00 |
| H | 76.2 | 95.3 | 3.00 | 3.75 | 4.75 |
| J | M12x1.75-6H | M20x2.5-6H | ½-20UNF-2B | ¾-16UNF-2B | 1-12UNF-2B |
| K | 15.7 | 19.1 | 0.62 | 0.75 | 0.98 |
| L | 57.2 | 76.2 | 2.25 | 3.12 | 4.00 |
| ØM | 13.5 | 20.7 | 0.53 | 0.78 | 1.030 |

Cable specifications:

Cable length: 6m

| | |
|---|---|
| +Excitation | Red |
| - Excitation | Black |
| +Output | Green |
| - Output | White |
| Shield | Transparent |

Cable screen is not connected to load cell body. Performance may be affected if load cell cables are shortened.

| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | **UNIT** |
| Standard capacities ($E_{max}$) | 500, 1000, 2000, 5000 (1) | | | | kg |
| Standard capacities ($E_{max}$) | 1K, 2.5K, 4K, 5K, 10K, 15K, 20K (1) | | | | lbs |
| Accuracy class according to OIML R-60 /NTEP | NTEP III | Non-Approved | C3 | C4 | |
| Max. no. of verfication intervals | 5000 | | 3000 | 4000 | |
| Min. verification interval ($V_{min}=E_{max}/Y$) | | | $E_{max}$/6000 | $E_{max}$/8000 | |
| Min. verification interval, type MR | | | $E_{max}$/10000 | $E_{max}$/18000 | |
| Rated output (=S) | 3 | | | | mV/V |
| Rated output tolerance | 0.003 | | | | ±mV/V |
| Zero balance | 1.0 | | | | ±% FSO |
| Combined error | 0.0200 | 0.050 | 0.023 | 0.018 | ±% FSO |
| Minimum dead load output return | 0.0250 | 0.050 | 0.017 | 0.013 | ±% applied load |
| Non-repeatability | 0.0100 | 0.070 | 0.035 | 0.026 | ±% FSO |
| Creep error (30 minutes) | | 0.060 | 0.025 | 0.018 | ±% applied load |
| Temp. effect on min. dead load output | (0.0008) | 0.0250 | 0.0120 | 0.0088 | ±% FSO/5°C (/°F) |
| Temp. effect on min. dead load output, type MR | | | 0.0070 | 0.0039 | ±% FSO/5°C |
| Temperature effect on sensitivity | (0.0010) | 0.0250 | 0.0088 | 0.0065 | % applied load/5° |
| Minimum dead load | 0 | | | | %$E_{max}$ |
| Maximum safe over load | 150 | | | | %$E_{max}$ |
| Ultimate over load | 300 | | | | %$E_{max}$ |
| Maximum safe side load | 100 | | | | %$E_{max}$ |
| Deflection at $E_{max}$ | 0.4/ 0.8/ 1.0/ 1.1 - kg 0.4/ 0.8/ 1.0/ 0.9/ 1.1 - lbs | | | | mm |
| Excitation voltage | 5 to 12 | | | | V |
| Maximum excitation voltage | 15 | | | | V |
| Input resistance | 350±3.5 | | | | Ω |
| Output resistance | 350±3.5 | | | | Ω |
| Insulation resistance | ≥5000 | | | | MΩ |
| Compensated temperature range | -10 to +40 | | | | °C |
| Operating temperature range | -40 to +80 | | | | °C |
| Storage temperature range | -50 to +90 | | | | °C |
| Element material | Stainless steel | | | | |
| Sealing (DIN 40.050 / EN60.529) | IP67 | | | | |
| Recommended torque on fixation bolts | 0.5 - 2t & 1K - 4K: 149 5K & 5t and over: 271 | | | | N*m |

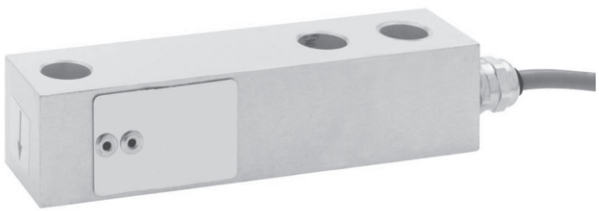
**Notes**

(1) 5t and 10K are not approved by OIML

FSO - Full Scale Output

Correct mounting of the load cell is essential to ensure optimum performance. Further information is available on request.

# Aluminum Shear Beam Load Cell



## FEATURES

- Capacities 250 - 1000kg
- Low profile for industrial platforms
- Anodized aluminum construction
- 6-Wire (sense) circuit
- IP67 protection
- Low cost

## APPLICATIONS

- Low profile platform
- Medical bed weighing
- Tank and silo weighing

## DESCRIPTION

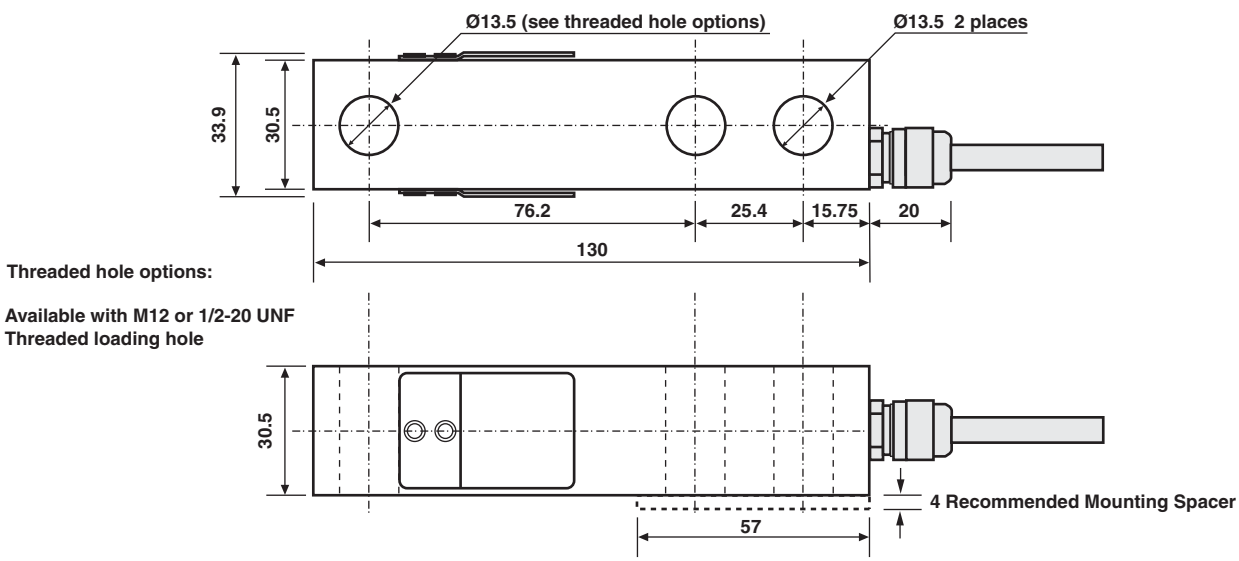
Model 3310 is a low profile shear beam load cell designed for high accuracy platform scales, pallet scales and process weighing applications.

It has high immunity to shock or side loading and is available in 2mV/V sensitivity.

A special humidity resistant protective coating assures long term stability over the entire compensated temperature range.

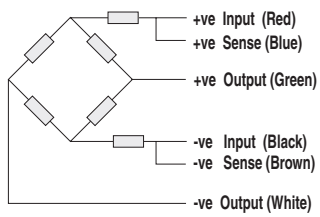
The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension is achieved by feeding this voltage into the appropriate electronics.

## **OUTLINE DIMENSIONS** in millimeters



| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | **UNIT** |
| GRADE | E | F | G | UNITS |
| Rated capacity: metric | 250, 500, 750, 1000 | | | kg |
| Rated output | 2.0±0.10% | | | mV/V |
| Zero return, 30 min. | 0.050 | 0.025 | 0.0170 | ±% of applied load |
| Total error | 0.050 | 0.030 | 0.0200 | ±% of applied load |
| Temperature effect on zero | 0.007 | 0.0035 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.004 | 0.0014 | 0.0012 | ±% of applied load/°C |
| Zero balance | 3.0 | 2.0 | 2.0 | ±% of rated output |
| Temperature range: operating | -10 to +70 | | | °C |
| Temperature range: compensated | - 10 to +40 | | | °C |
| Safe overload | 150 | | | ±% of rated capacity |
| Ultimate overload | 300 | | | ±% of rated capacity |
| Excitation, recommended | 10 | | | Vdc or Vac |
| Excitation, maximum | 15 | | | Vdc or Vac |
| Input impedance | 415±15 | | | Ohms |
| Output impedance | 350±3 | | | Ohms |
| Insulation impedance | >2000 | | | MegaOhms |
| Deflection at rated capacity | <0.4 | | | mm |
| Weight | 0.5 | | | kg |
| Construction | Anodized aluminum | | | |
| Environmental protection | IP67 | | | |
| Cable | 3 meters (standard), 6 wire, Polyurethane jacket, Dual floating screen | | | |
| Recommended torque | 100<br>136 | | | lb-ft<br>N*m |

**Wiring Schematic Diagram**



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Single-Ended, Hermetically Sealed Shear Beams

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Stainless Steel, Welded Seal Shear Beam Load Cell

65080-TWA

- Rated capacities of 1000 to 20,000 pounds
- Stainless steel, welded seal construction
- Trade certified for NTEP Class IIIL 10000 and III 5000 divisions and OIML R-60 3000 divisions
- Hostile or clean environment
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

## DESCRIPTION

Model 65083 provides the weighing industry with excellent protection necessary for today's hostile environments in an economical low profile range suitable for platform scale manufacture.

Its low profile and all welded sealing combined with high accuracy makes this load cell ideally suited for low profile platforms, pallet truck weighers, tanks and silos. The guide slots incorporated into the upper and lower mounting faces enable manufacturers to easily position the load cell.

Hermetically sealed against moisture, the construction of the model 65083 in combination with a polyurethane dual shielded cable, enables continuous operation in harsh environments while maintaining a high operating specification.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## FEATURES

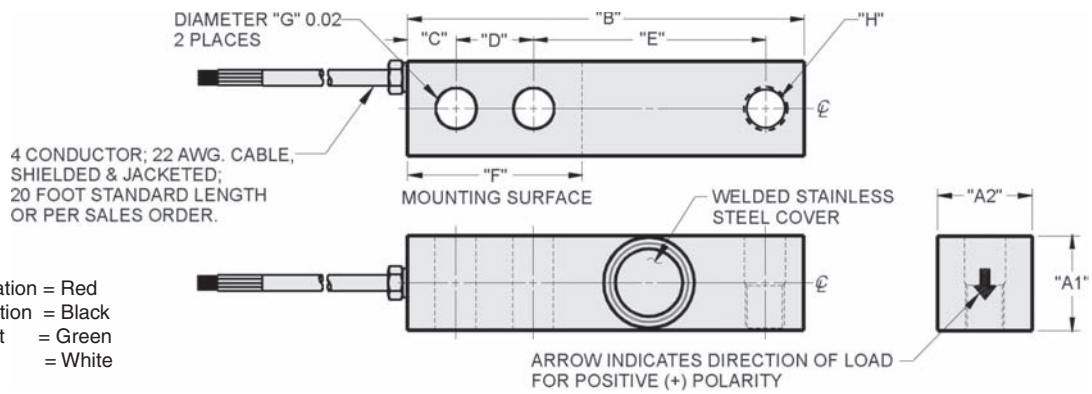
## OPTIONAL FEATURES

- Companion weigh module available 65080 Stainless Steel *TantaMount*
- Integral conduit adaptor with teflon jacketed cable available

## APPLICATIONS

- Hostile environments: Food & beverage processing Chemical and plastics processing Pharmaceutical and biomedical processing
- Tank, bin and hopper weighing
- Batching, blending and mixing systems

## OUTLINE DIMENSIONS in inches




| CAPACITY | A1 | A2 | B | C | D | E | F | G | H | DEFLECTION | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1K - 4K | 1.22 | 1.22 | 5.12 | 0.62 | 1.00 | 3.00 | 2.25 | 0.53 | 1/2-20 UNF-2B, Ø 0.53 x 0.61 DEEP C'BORE | 0.008 - 0.026 | 4.0 |
| 5K - SE* | 1.22 | 1.22 | 5.12 | 0.62 | 1.00 | 3.00 | 2.25 | 0.53 | 1/2-20 UNF-2B, Ø 0.53 x 0.61 DEEP C'BORE | 0.008 - 0.026 | 4.0 |
| 5K - 10K | 1.50 | 1.50 | 6.75 | 0.75 | 1.50 | 3.75 | 3.00 | 0.78 | 3/4-16 UNF-2B, Ø 0.78 x 0.75 DEEP C'BORE | 0.030 - 0.055 | 6.5 |
| 15K - 20K | 2.00 | 2.00 | 8.75 | 1.00 | 2.00 | 4.88 | 4.00 | 1.06 | 1-14 UNS-2B, Ø 1.06 x 1.00 DEEP C'BORE | 0.025 - 0.032 | 9.0 |

Capacities are in pounds. Deflection is ±10%. Certified drawings are available.
* SE denotes "Small Envelope". A 5K capacity is available in the 1K/4K dimensional envelope.

| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 500, 1K, 1.5K, 2K, 2.5K, 4K, 5K, 10K, 15K, 20K (1)<br>250kg, 500kg, 750kg, 1t, 2t, 5t, 10t (1) | | | | lbs<br>kg/metric tons |
| NTEP/OIML Accuracy class | NTEP III | NTEP IIIL | Standard | OIML R60 | |
| Maximum no. of intervals (n) | 5000 single | 10000 multiple | | 3000 (1) | |
| $Y = E_{max}/V_{min}$ | NTEP Cert. No. 98-175 | | | 8333 | Maximum available |
| Rated output-R.O. | 2.0 | 2.0 | 3.0 | 2.0 | mV/V |
| Rated output tolerance | 0.25 | | | | ±% mV/V |
| Zero balance | 1.0 | | | | ±% FSO |
| Combined error | 0.02 | 0.02 | 0.03 | 0.02 | ±% FSO |
| Non-repeatability | 0.1 | | | | ±% FSO |
| Creep error (30 minutes) | 0.025 | 0.03 | 0.03 | 0.017 | ±% FSO |
| Temperature effect on zero | 0.0010 | 0.0010 | 0.0015 | 0.0010 | ±% FSO/°F |
| Temperature effect on output | 0.0008 | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| Compensated temperature range | 14 to 104 (-10 to 40) | | | | °F (°C) |
| Operating temperature range | 0 to 150 (-18 to 65) | | | | °F (°C) |
| Storage temperature range | -60 to 185 (-50 to 85) | | | | °F (°C) |
| Sideload rejection ratio | 500:1 | | | | |
| Safe sideload | 100 | | | | % of R.C. |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 343 - 357 | | | | Ω |
| Output impedance | 349 - 355 | | | | Ω |
| Insulation resistance at 50VDC | >1000 | | | | MΩ |
| Material | Stainless steel | | | | |
| Environmental protection | IP68 | | | | |
| Recommended torque | All capacities up to 5000kg - 136.0<br>5000kg - 205.0 | | | | N*m |

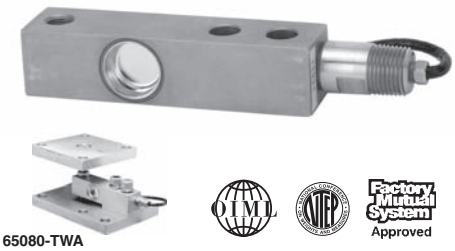
**Notes**

(1) OIML approval 1-10K & 500-5000kg only
NTEP approval 1-10Klbs only (kg/metric capacities are not approved)

FSO - Full Scale Output

All Specifications subject to change without notice.

# Hermetically Sealed Stainless Steel Shear Beam Load Cell



65080-TWA

## DESCRIPTION

Model 65083H provides the weighing industry with the **ultimate** protection necessary for today's hostile environments in an economical low profile range suitable for platform scale manufacture.

Its low profile and all welded sealing combined with high accuracy makes this load cell ideally suited for low profile platforms, pallet truck weighers, tanks and silos. The guide slots incorporated into the upper and lower mounting faces enable manufacturers to easily position the load cell.

Hermetically sealed against moisture, the construction of the model 65083H in combination with a polyurethane dual shielded cable, enables continuous operation in harsh environments while maintaining a high operating specification.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## FEATURES

- Rated capacities of 1000 to 10,000 pounds 500kg to 5 metric tons
- Stainless steel, welded seal construction
- Interchangeable with Sensortronics model 65023 shear beam
- Trade certified for NTEP Class III: 5000 Divisions and Class IIIL: 10000 Divisions; OIML R60: 3000 Divisions
- Hermetically *Sensorgage*™ sealed to IP68 standards
- *Cell Guard*™ two year warranty
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

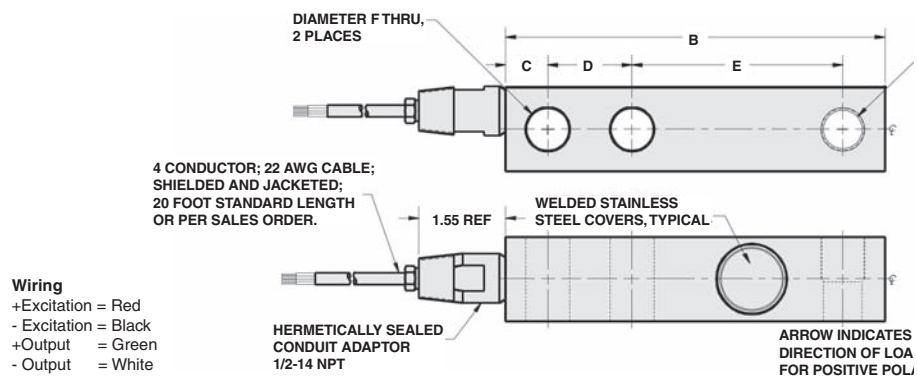
## OPTIONAL FEATURES

- Companion weigh module is Model 65080 Stainless Steel *TantaMount*

## APPLICATIONS

- Hostile environments: Food & beverage processing Chemical and plastics processing Pharmaceutical and biomedical processing
- Washdown and Clean-In-Place environments
- High performance weighing modules and assemblies

## OUTLINE DIMENSIONS in inches [millimeters]




| CAPACITY | A1 | A2 | B | C | D | E | F | G-THREAD | DEFLECTION | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|
| 1K - 4K | 1.22 | 1.22 | 5.12 | 0.62 | 1.00 | 3.00 | 0.53 | 1/2-20 UNF-2B, Ø0.53 x 0.61 DP C'BORE | 0.012 | 2.4 |
| 5K - SE* | 1.22 | 1.22 | 5.12 | 0.62 | 1.00 | 3.00 | 0.53 | 1/2-20 UNF-2B, Ø0.53 x 0.61 DP C'BORE | 0.012 | 2.4 |
| 5K - 10K | 1.50 | 1.50 | 6.75 | 0.75 | 1.50 | 3.75 | 0.78 | 3/4-16 UNF-2B, Ø0.78 x 0.75 DP C'BORE | 0.030 | 3.9 |
| [500kg - 2t] | [31.0] | [31.0] | [130.0 | [16.0] | [25.0] | [76.0] | [13.0] | M12 x 1.75-6H | [0.305] | [1.1] |
| [500kg - 2t] | [31.0] | [31.0] | [130.0 | [16.0] | [25.0] | [76.0] | [13.0] | M12 x 1.75-6H | [0.305] | [1.1] |
| [3t - 5t] | [38.0] | [38.0] | [171.0 | [19.0] | [38.0] | [95.0] | [20.0] | M20 x 2.5-6H | [0.762] | [1.8] |

Capacities are in pounds. Deflection is ±10%. Certified drawings are available.
* SE denotes "Small Envelope". A 5K capacity is available in the 1K/4K dimensional envelope.

| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 1K, 1.5K, 2.5K, 4K, 5K, 10K<br>500kg, 750kg, 1t, 2t, 5t | | | | lbs<br>kg/metric tons |
| NTEP/OIML Accuracy class | NTEP III | NTEP IIIL | Standard | OIML R60 | |
| Maximum no. of intervals (n) | 5000 multiple | 10000 multiple | | 3000 | |
| $Y = E_{max}/V_{min}$ | NTEP Cert. No. 98-175 | | | 8333 | Maximum available |
| Rated output-R.O. | 2.0 | 2.0 | 3.0 | 2.0 | mV/V |
| Rated output tolerance | 0.25 | | | | ±% mV/V |
| Zero balance | 1.0 | | | | ±% FSO |
| Combined error | 0.02 | 0.02 | 0.03 | 0.02 | ±% FSO |
| Non-repeatability | 0.01 | | | | ±% FSO |
| Creep error (30 minutes) | 0.03 | 0.03 | 0.03 | 0.017 | ±% FSO |
| Temperature effect on zero | 0.0010 | 0.0010 | 0.0015 | 0.0010 | ±% FSO/°F |
| Temperature effect on output | 0.0008 | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| Compensated temperature range | 14 to 104 (-10 to 40) | | | | °F (°C) |
| Operating temperature range | 0 to 150 (-18 to 65) | | | | °F (°C) |
| Storage temperature range | -60 to 185 (-50 to 85) | | | | °F (°C) |
| Sideload rejection ratio | 500:1 | | | | |
| Safe sideload | 100 | | | | % of R.C. |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 343 - 357 | | | | Ω |
| Output impedance | 349 - 355 | | | | Ω |
| Insulation resistance at 50VDC | >1000 | | | | MΩ |
| Material | Stainless steel | | | | |
| Environmental protection | IP68 welded seals, glass to metal cable!! | | | | Special |
| Recommended torque | All capacities up to 5000kg - 136.0<br>5000kg - 205.0 | | | | N*m |

FSO - Full Scale Output

All Specifications subject to change without notice.

# Model SQB-H

Celtron

VISHAY PRECISION GROUP

## Hermetically Sealed Single-Ended Beam

### FEATURES

- Capacities: 1K to 10Klb and 500 to 5000kg
- High side-load tolerance
- Easy installation
- Electroless nickel-plated-alloy tool steel or stainless steel
- NTEP III 5000M approval 1K to 10Klb

### OPTIONAL FEATURES

- FM approval available
- SQB-H(HSS) hermetically sealed stainless steel

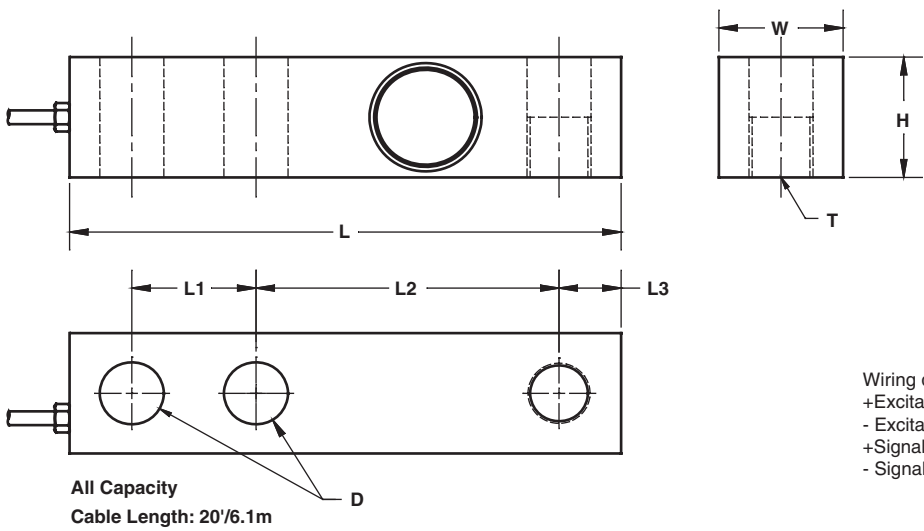
### APPLICATIONS

- Truck/rail scales
- Silo/hopper/tank weighing
- Platform scales (multiple load cells)
- Pallet truck scales
- Packaging machines

### DESCRIPTION

SQB-H(HSS) is a single-ended shear beam load cell designed for multiple cell applications such as low profile platform or small tank scales when used with proper mounting accessories. It is insensitive to side loading and capable of reversed loading. SQB-H(HSS) is constructed of stainless steel and is hermetically sealed to IP68 providing excellent protection against corrosive and washdown environments.

### OUTLINE DIMENSIONS




Wiring diagram

| | |
|---|---|
| +Excitation | Red |
| - Excitation | Black |
| +Signal | Green |
| - Signal | White |

| CAPACITY | | L | L1 | L2 | L3 | W | H | D | T |
|---|---|---|---|---|---|---|---|---|---|
| 500, 1000, 2000kg | mm | 130.2 | 25.4 | 76.2 | 12.7 | 31.2 | 31.2 | 13.5 | M12 x 1.75 |
| 1K/2K/2.5K/3K/4Klb | (inch) | 5.12 | 1.00 | 3.00 | 0.50 | 1.22 | 1.22 | 0.53 | 1/2-20UNF |
| 1500kg | mm | 130.2 | 25.4 | 88.9 | 12.7 | 31.2 | 31.2 | 13.5 | M12 x 1.75 |
| 5000kg | mm | 171.5 | 38.1 | 95.3 | 19.0 | 38.1 | 38.1 | 19.8 | M20 x 1.5 |
| 5K/10Klb | (inch) | 6.75 | 1.50 | 3.75 | 0.75 | 1.50 | 1.50 | 0.78 | 3/4-16UNF |



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11703
Revision: 05-Feb-10

| SPECIFICATIONS | | | |
|---|---|---|---|
| **PARAMETER** | **VALUE** | | **UNIT** |
| NTEP/OIML Accuracy class | NTEP III | Non-Approved | |
| Maximum no. of intervals (n) | 3000 single<br>5000 multiple | 1000 | |
| $Y = E_{max}/V_{min}$ | 10000 | 5000 | Maximum available |
| Standard capacities ($E_{max}$) | 1K, 2K, 2.5K, 3K, 4K, 5KSE, 5K, 10K | | lbs |
| Standard capacities ($E_{max}$) | 500, 1000, 1500, 2000, 5000 | | kg |
| Rated output-R.O. | 3.0 | | mV/V |
| Rated output tolerance | 0.25 | | ±% of rated output |
| Zero balance | 1 | | ±% of rated output |
| Non linearity | 0.025 | 0.030 (SS: 0.05) | ±% of rated output |
| Hysteresis | 0.025 | 0.030 (SS: 0.05) | ±% of rated output |
| Non-repeatability | 0.020 | 0.020 | ±% of rated output |
| Creep error (20 minutes) | 0.025 | 0.030 | ±% of rated output |
| Zero return (20 minutes) | 0.025 | 0.030 | ±% of rated output |
| Temperature effect on min. dead load | 0.0017 | 0.0026 | ±% of rated output/°C |
| Temperature effect on sensitivity | 0.0010 | 0.0015 | ±% of applied load/°C |
| Compensated temperature range | -10 to +40 | | °C |
| Operating temperature range | -20 to +60 | | °C |
| Safe overload | 150 | | % of R.C. |
| Ultimate overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 385±5 | | Ohms |
| Output impedance | 350±3 | | Ohms |
| Insulation resistance | >5000 | | Mega-Ohms |
| Construction | Nickel plated alloy steel (1) | | |
| Environmental protection | IP68 | | |

**Notes**

(1) Stainless steel available

All Specifications subject to change without notice.

FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

# Single Ended Beam Load Cell

OIML ATEX

## DESCRIPTION

The ACB is a high performance stainless steel beam type load cell. An integral mounting step removes the need for spacer plates and ensures optimum “bolt down” conditions.

This product is suitable for small and medium platform scales, hybrid scales, pallet weighers and process weighing.

The fully welded construction and the cable entry ensure that this product can be used successfully in harsh environments found in the food, chemical and allied process industries.

## FEATURES

- Capacities: 500kg, 1t, 2t, and 5t
- Low profile, stainless steel construction
- Hermetically sealed, IP66 and IP68
- Certified to OIML R60, 6000d
- 1000 Ohm bridge impedance
- Current calibration output (SC) ensures easy and accurate connection of multiple load cells
- Integral mounting step

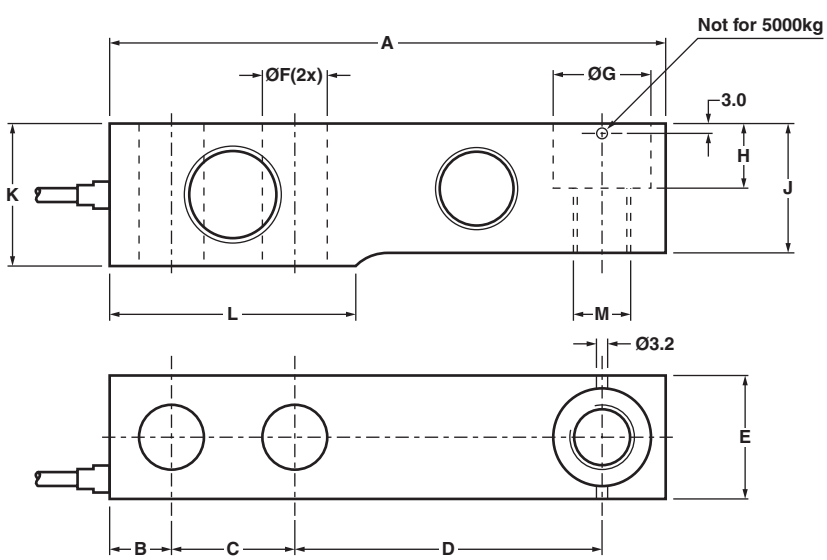
## OPTIONAL FEATURE

- ATEX versions are available for use in potentially explosive atmospheres, caused by gas or dust

## APPLICATIONS

- Platform scales
- Belt scales
- Overhead track scales
- Silo hopper weighing

## OUTLINE DIMENSIONS in millimeters




| CAPACITY | 500kg | 1000kg | 2000kg | 5000kg |
|---|---|---|---|---|
| A | 130.0 | 130.0 | 130.0 | 172.0 |
| B | 15.5 | 15.5 | 15.5 | 19.1 |
| C | 25.4 | 25.4 | 25.4 | 38.1 |
| D | 76.2 | 76.2 | 76.2 | 95.3 |
| E | 31.8 | 31.8 | 31.8 | 38.0 |
| ØF | 13.0 | 13.0 | 13.0 | 20.5 |
| ØG | 20.5 | 20.5 | 20.5 | 30.2 |
| H | 14.2 | 14.2 | 14.2 | 20.0 |
| J | 26.0 | 27.95 | 31.95 | 40.0 |
| K | 31.8 | 31.8 | 35.8 | 44.0 |
| L | 57.1 | 57.1 | 57.1 | 76.2 |
| M | M12 | M12 | M12 | M20 |

Cable specifications:

Cable length: 3m for 500kg, 1t
6m for 2t, 5t

| | |
|---|---|
| Excitation + | Green |
| Excitation - | Black |
| Sense + | Yellow |
| Sense - | Blue |
| Output + | White |
| Output - | Red |
| Shield | Transparent |


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11804
Revision: 11-Mar-10

| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | **UNIT** |
| **Standard capacities ($E_{max}$)** | 500, 1000, 2000, 5000 | | | kg |
| **Accuracy class according to OIML R-60** | **Non-Approved** | **C3** | **C6 (1)** | |
| **Maximum no. of verfication intervals (n)** | | 3000 | 6000 | |
| **Minimum verification interval, ($V_{min}$ $E_{max}$/Y)** | | $E_{max}$/6000 | $E_{max}$/12,000 | |
| **Minimum verification interval, Type MR** | | $E_{max}$/15,000 | $E_{max}$/20,000 | |
| **Rated output (=S)** | 2 | | | mV/V |
| **Tolerance on rated output** | 0.02 | | | ±mV/V |
| **Zero balance** | 1.0 | | | ±% FSO |
| **Combined error** | 0.0500 | 0.0230 | 0.0120 | ±% FSO |
| **Non-repeatability** | 0.070 | 0.035 | 0.018 | ±% FSO |
| **Minimum dead load output return** | 0.0500 | 0.017 | 0.008 | ±% applied load |
| **Creep error (30 minutes)** | 0.0600 | 0.0245 | 0.012 | ±% applied load |
| **Temperature effect on minimum dead load** | 0.0250 | 0.0117 | 0.0058 | ±%FSO/5°C |
| **Temperature effect on sensitivity** | 0.0250 | 0.0088 | 0.0045 | ±% applied load/5° |
| **Maximum safe over load** | 150 | | | %$E_{max}$ |
| **Ultimate over load** | 300 | | | %$E_{max}$ |
| **Maximum safe side load** | 100 | | | %$E_{max}$ |
| **Deflection at $E_{max}$** | 0.20, 0.20, 0.22, 0.31 | | | mm |
| **Excitation voltage** | 5 to 12 | | | V |
| **Maximum excitation voltage** | 15 | | | V |
| **Input resistance** | 1000±50 | | | Ω |
| **Output resistance** | 1000±10 | | | Ω |
| **Insulation resistance** | Š5000 | | | MΩ |
| **Compensated temperature range** | -10 to +40 | | | °C |
| **Operating temperature range** | -40 to +80 | | | °C |
| **Storage temperature range** | -40 to +90 | | | °C |
| **Element material (DIN)** | Stainless steel 1.4542 | | | |
| **Sealing (DIN 40.050 / EN60.529)** | IP66 and IP68 | | | |
| **SC-Version (current calibration)** | Standard | | | |
| **Recommended torque on fixation bolts** | 150 | | | N*m |

**Notes**

(1) 500kg is approved to C3 only

FSO - Full Scale Output

SC-version: The rated output and the output resistance are balanced in such a way, that the output current is calibrated to within 0.05% of a reference value. This allows easy parallel connection of the load cells.

# Single Ended Load Beam

## FEATURES

- Capacities: 0.5, 1, 2, and 5 tons
- Fully welded, stainless steel construction
- Hermetically sealed, IP66 and IP68
- Certified to OIML R-60, 4000d and NTEP 10000d
- Current calibration output (SC version) ensures easy and accurate parallel connection of multiple load cells
- Digital version available (model SBC)

## OPTIONAL FEATURES

- ATEX- EEx ib IIC T6 hazardous area approval
- FM approval available

## DESCRIPTION

The SSB is a stainless steel single ended shear beam type load cell.

This robust product is suitable for a wide range of platform scales, pallet scales, overhead track scales and process weighing applications.

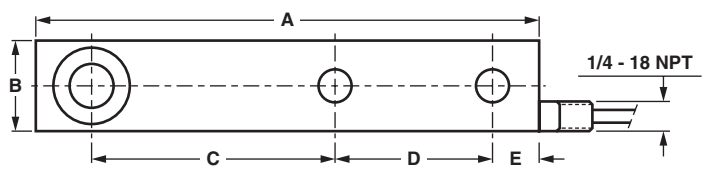
The fully welded construction and water block cable entry ensure that this product can be used successfully in harsh environments found in the food, chemical and allied process industries.

This product meets the stringent Weights and Measures requirements throughout Europe and the USA.

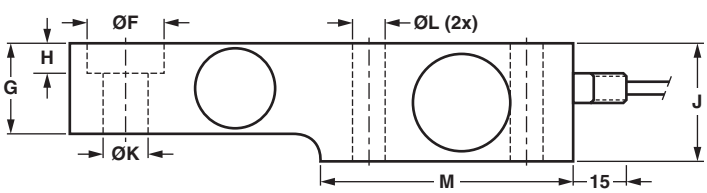
## APPLICATIONS

- Platform scales
- Belt scales
- Pallet scales
- Overhead track scales
- On-board weighing
- Silo hopper weighing

## OUTLINE DIMENSIONS in millimeters




**Note: Dimensions in millimeters**




Cable specifications:

Cable length: 5m

| | |
|---|---|
| Excitation + | Green |
| Excitation - | Black |
| Output + | White |
| Output - | Red |
| Shield | Transparent |

| Capacity (kg) | 500 - 2000 | 5000 |
|---|---|---|
| A | 203.2 | 235.0 |
| B | 36.5 | 47.5 |
| C | 98.4 | 123.8 |
| D | 63.5 | 66.7 |
| E | 19.1 | 20.6 |
| F | 30.2 $^{+0.2/-0}$ | 41.3$^{+0.2/-0}$ |
| G | 36.5 | 47.6 |
| H | 11.9 | 15.8 |
| J | 47.6 | 69.9 |
| K | 17.5 H11 | 25.5 H11 |
| L | 14.0 | 22.0 |
| M | 101.6 | 111.2 |

| SPECIFICATIONS | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | | **UNIT** |
| Standard capacities ($E_{max}$) | 0.5, 1, 2, 5 (1) | | | 2, 5 (1) | | t |
| Accuracy class according to OIML R-60 | NTEP IIIL | Non-Approved | C3 | C3MI8 | C4 | |
| Max. no. of verfication intervals | 10000 | | 3000 | 3000 | 4000 | |
| Min. verification interval ($V_{min}=E_{max}/Y$) | | | $E_{max}$/10,000 | $E_{max}$/15,000 | $E_{max}$/10,000 | |
| MDLOR ($Z=E_{max}/2*DR$) | | | -- | 8000 | -- | |
| Min. verification interval, type MR | | | $E_{max}$/20,000 | | $E_{max}$/20,000 | |
| Rated output (=S) | 2 | | | | | mV/V |
| Rated output tolerance | 0.02 | | | | | ±mV/V |
| Zero balance | 1.0 | | | | | ±% FSO |
| Combined error | 0.0200 | 0.0500 | 0.0200 | 0.0200 | 0.0170 | ±% FSO |
| Non-repeatability | 0.0100 | 0.0200 | 0.0100 | 0.0100 | 0.0090 | ±% FSO |
| Minimum dead load output return | 0.0250 | 0.0500 | 0.0167 | 0.0063 | 0.0125 | ±% applied load |
| Creep error (30 minutes) | | 0.0600 | 0.0245 | 0.0245 | 0.0184 | ±% applied load |
| Creep error (20 minutes) | 0.030 | 0.0200 | 0.0053 | 0.0053 | 0.0039 | ±% applied load |
| Temp. effect on min. dead load output | (0.001) | 0.0250 | 0.0070 | 0.0050 | 0.0070 | ±% FSO/5°C (/°F) |
| Temp. effect on min. dead load output, type MR | | | 0.0035 | | 0.0035 | ±% FSO/5°C |
| Temperature effect on sensitivity | (0.0008) | 0.0250 | 0.0050 | 0.0050 | 0.0045 | ±% applied load/5°C (/°F) |
| Minimum dead load | 0 | | | | | $\%E_{max}$ |
| Maximum safe over load | 150 | | | | | $\%E_{max}$ |
| Ultimate over load | 300 | | | | | $\%E_{max}$ |
| Maximum safe side load | 100 | | | | | $\%E_{max}$ |
| Deflection at $E_{max}$ | 0.5 max. | | | | | mm |
| Excitation voltage | 5 to 15 | | | | | V |
| Maximum excitation voltage | 18 | | | | | V |
| Input resistance | 350±3.5 | | | | | Ω |
| Output resistance | 350±3.5 | | | | | Ω |
| Insulation resistance | ≥5000 | | | | | MΩ |
| Compensated temperature range | -10 to +40 | | | | | °C |
| Operating temperature range | -40 to +80 | | | | | °C |
| Storage temperature range | -40 to +90 | | | | | °C |
| Element material | Stainless steel 1.4542 | | | | | |
| Sealing (DIN 40.050 / EN60.529) | IP66 & IP68 | | | | | |
| SC-Version (current calibration) | Standard | | | | | |
| Recommended torque on fixation bolts | 0.5-2t: 110 / 5t: 540 | | | | | N*m |

**Notes**

(1) for 10 ton capacity please consult factory

FSO - Full Scale Output

SC-version: The rated output and the output resistance are balanced in such a way, that the output current is calibrated to within 0.05% of a reference value. This allows easy parallel connection of the load cells.

# Stainless Steel Shear Beam Load Cell

OIML NTEP ATEX FM

## DESCRIPTION

Model 3510 provides the weighing industry with the ultimate protection necessary for today's hostile environments in an economical low profile range suitable for platform scale manufacture.

Its low profile and all welded sealing combined with high accuracy makes this load cell ideally suited for low profile platforms, pallet truck weighers, tanks and silos. The guide slots incorporated into the upper and lower mounting faces enable manufacturers to easily position the load cell.

Hermetically sealed against moisture, the construction of the model 3510 in combination with a polyurethane dual shielded cable, enables continuous operation in harsh environments while maintaining a high operating specification.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## FEATURES

- Capacities 300 - 5000kg, 1000 - 5000lbs
- Stainless steel construction
- OIML R60 and NTEP approved
- Hermetically sealed to IP68
- Specially designed for harsh environment

## OPTIONAL FEATURES

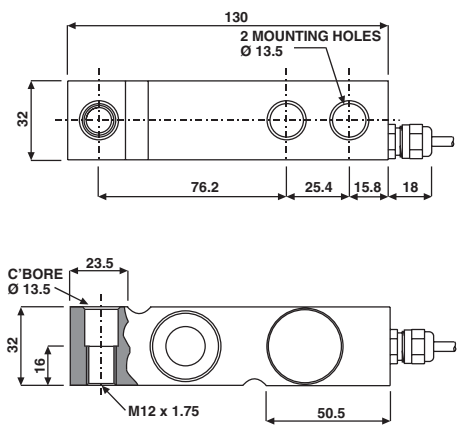
- EEx ia IIC T6 hazardous area approval
- FM approval available
- 1100Ω impedance available

## APPLICATIONS

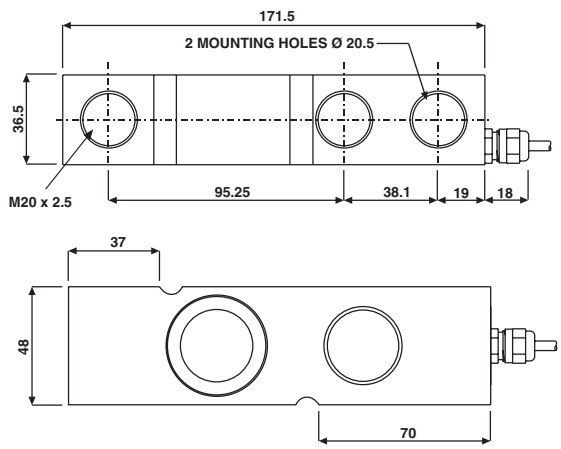
- Low profile platforms
- Pallet truck weighing
- Tank and silo weighing
- Harsh environment weighing
- Food industry weighing

## OUTLINE DIMENSIONS in millimeters

**DIMENSIONS FOR CAPACITIES 300, 500, 1000 & 2000kg**




**DIMENSIONS FOR CAPACITY 3000kg**




**Standard end loading shown.**

**Options include:**

**'Through-hole' - plain or threaded.**
**'T-End' - supplied current and voltage matched for platforms.**
**Imperial capacities can be manufactured with M12 or 1/2"-20 UNC threading**

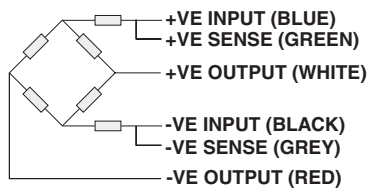
| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 300, 500, 750, 1000, 1200, 2000, 3000, 5000 | | | | kg |
| Rated capacity-R.C. ($E_{max}$) | 1000, 1500, 2500, 4000 | | | | lbs |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3 | C6 | |
| Maximum no. of intervals (n) | 3000 single<br>5000 multiple | 1000 | 3000 (1) | 6000 (2) | |
| $Y = E_{max}/V_{min}$ | 12500 | 1400 | 12000 | 20000 | Maximum available 20000 |
| Rated output-R.O. | 2.0 for kg and 3.0 for lbs | | | | mV/V |
| Rated output tolerance | 0.1 | | | | ±% of rated output |
| Zero balance | 2 | | | | ±% of rated output |
| Zero Return, 30 min. | 0.0250 | 0.0300 | 0.0170 | 0.0083 | ±% of applied load |
| Total Error | 0.0200 | 0.0500 | 0.0200 | 0.0100 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.0100 | 0.0023 | 0.0009 | ±% of rated output/°C |
| Temperature effect on output | 0.0010 | 0.0030 | 0.0010 | 0.00058 | ±% of applied load/°C |
| Temperature range, compensated | -10 to +40 | | | | °C |
| Temperature range, safe | -20 to +70 | | | | °C |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 380±10 | | | | Ohm |
| Output impedance | 350±3 | | | | Ohm |
| Insulation resistance | >2000 | | | | Mega-Ohm |
| Cable length | 5 | | | | m |
| Cable type | 6 wire, braided, Polyurethane, dual floating screen | | | | Standard |
| Construction | Stainless steel | | | | |
| Environmental protection | IP68 | | | | |
| Recommended torque | 136.0 (3000 & 5000kg - 205.0) | | | | N*m |

**Notes**

(1) 50% utilization

(2) Capacities 300-1200kg, and 1000-2500lbs only

**Wiring schematic diagram**



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

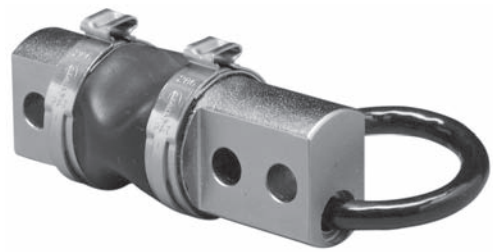
# Single-Ended Bending Beams

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Low Profile Bending Beam



Factory Mutual System Approved

## FEATURES

- Rated capacities of 25 to 500 pounds
- Tension or compression loading capabilities
- Compact, low profile design
- *Sensorgage*™ sealed to IP65 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G.
  Also, non-incendive ratings (No barriers!).

## OPTIONAL FEATURES

- Companion tank weighing assemblies available (65059 TWA)

## APPLICATIONS

- Bin and hopper weighing
- Belt conveyor scales
- Netweighing

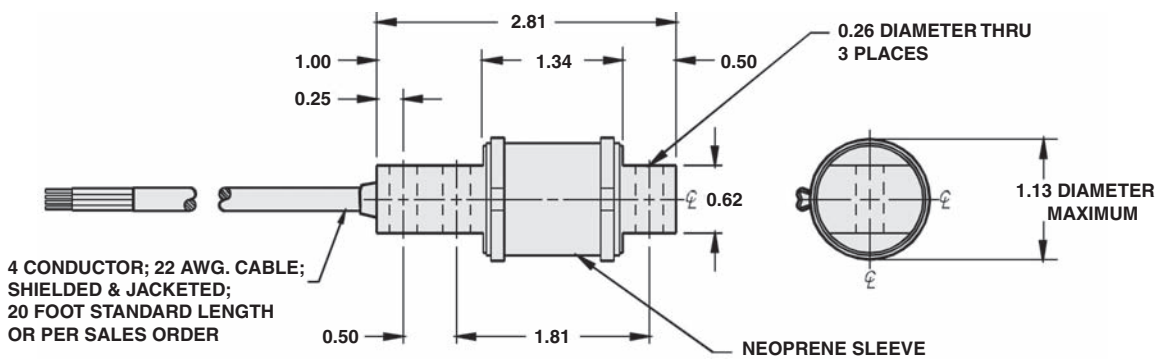
## DESCRIPTION

The 60040 is a compact, low capacity, alloy-steel, high-precision bending-beam load cell.

This product's small size and accuracy makes it ideal for applications that demand high performance from a small package. This load cell is commonly used in platform scales, conveyer scales, and varied process weighing applications.

This product is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments. It is also available with mounting accessories under Weighing Assembly Model 65059.

## OUTLINE DIMENSIONS in inches




**Wiring**

| | |
|---|---|
| +Excitation | Red |
| -Excitation | Black |
| +Output | Green |
| -Output | White |


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
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Revision: 16-Feb-10

| **SPECIFICATIONS** | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 25, 50, 100, 150, 250, 500 | lbs |
| NTEP/OIML Accuracy class | Standard | |
| Maximum no. of intervals (n) | -- | |
| Rated output-R.O. | 2.0 | mV/V |
| Rated output tolerance | +0.25 to -10 | ±% mV/V |
| Zero balance | 1.0 | ±% FSO |
| Combined error | 0.03 | ±% FSO |
| Non-repeatability | 0.01 | ±% FSO |
| Creep error (20 minutes) | 0.03 | ±% FSO |
| Temperature effect on zero | 0.0015 | ±% FSO/°F |
| Temperature effect on output | 0.0008 | ±% of load/°F |
| Compensated temperature range | 14 to 104 (-10 to 40) | °F (°C) |
| Operating temperature range | 0 to 150 (-18 to 65) | °F (°C) |
| Storage temperature range | -60 to 185 (-50 to 85) | °F (°C) |
| Maximum safe central overload | 150 | % of R.C. |
| Ultimate central overload | 300 | % of R.C. |
| Excitation, recommended | 10 | Vdc or Vac rms |
| Excitation, maximum | 15 | Vdc or Vac rms |
| Input impedance | 380 - 450 | Ω |
| Output impedance | 349 - 355 | Ω |
| Insulation resistance at 50VDC | >1000 | MΩ |
| Material | Nickel plated alloy steel | |
| Environmental protection | IP65 | |

FSO - Full Scale Output

All Specifications subject to change without notice.

# Welded, Hermetically Sealed Load Cell

## FEATURES

- Capacities 5 - 500kg
- Stainless steel construction
- OIML R60 and NTEP approved
- IP68 protection

## OPTIONAL FEATURES

- EEx ia IIC T6 hazardous area approval
- FM approval available

## DESCRIPTION

Model 355 is a welded bending load cell manufactured in stainless steel. Hermetically sealed against moisture the Model 355 construction and polyurethane shielded cable enables the load cell to function in harsh environments while maintaining its operating specifications.

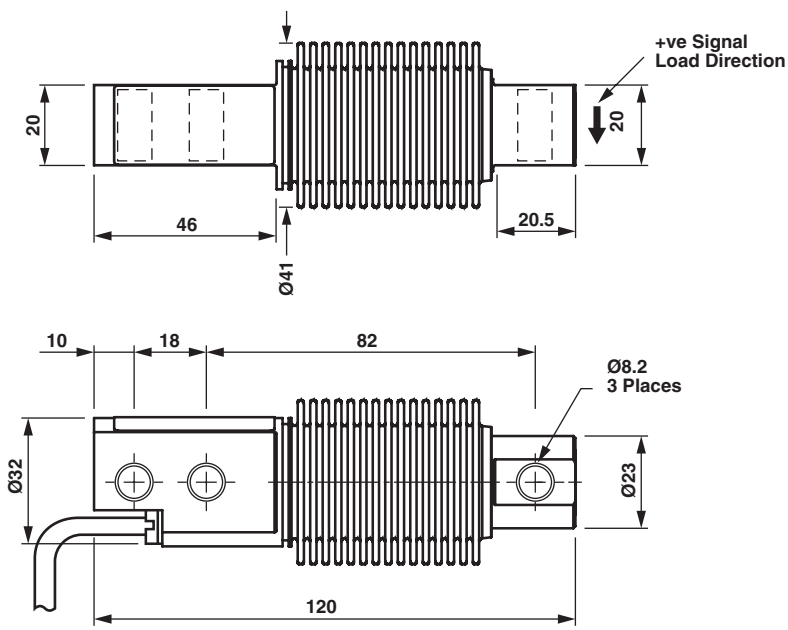
The low profile, high accuracy and sealing makes this load cell highly suitable for applications such as low profile platforms, weighing and packing machines, conversion of mechanical scales and variety of other applications where sealed cells are required. For hazardous environments this load cell is available with EEx ia IIC T6 level of approval as an option.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of change in the lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## APPLICATIONS

- Low profile platforms
- Loss-in-weight feeders
- Marine and hybrid scales
- Belt weighers
- Food industry harsh environment

## OUTLINE DIMENSIONS in millimeters





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12055
Revision: 23-Feb-10

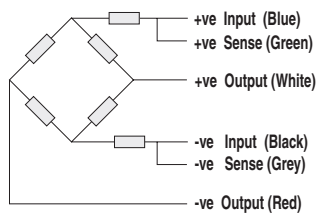
| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 5, 10, 20, 30, 50, 100, 200, 250, 500 | | | | kg |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3 (1) | C4 (2) | |
| Maximum no. of intervals (n) | 4000 single | 1000 | 3000 | 4000 | |
| $Y = E_{max}/V_{min}$ | 5800 | 2000 | 15000 | 13333 | Maximum available 15000 |
| Rated output-R.O. | 2.00 (UR matched 2.02) | | | | mV/V |
| Rated output tolerance | 0.002 | | | | ±mV/V |
| Zero balance | 0.2 | | | | ±mV/V |
| Zero Return, 30 min. | 0.0250 | 0.0500 | 0.0170 | 0.0130 | ±% of applied load |
| Total Error | 0.0200 | 0.0300 | 0.0200 | 0.0150 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.007 | 0.0009 | 0.0011 | ±% of rated output/°C |
| Temperature effect on output | 0.001 | 0.0040 | 0.0010 | 0.0008 | ±% of applied load/°C |
| Temperature range, compensated | -10 to +40 | | | | °C |
| Temperature range, safe | -20 to +70 | | | | °C |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 380±10 | | | | Ohms |
| Output impedance | 350±3 | | | | Ohms |
| Insulation resistance | >2000 | | | | Mega-Ohms |
| Cable length | 3 | | | | m |
| Cable type | 6 wire, braided, Polyurethane, dual floating screen | | | | Standard |
| Construction | Stainless steel | | | | |
| Environmental protection | IP68 | | | | |
| Recommended torque | 22.0 | | | | N*m |

**Notes**

(1) 20% utilization

(2) 30% utilizatio

**Wiring Schematic Diagram**



## Single Ended Load Beam

### FEATURES

- Capacities: 5 - 500kg
- Fully welded, stainless steel construction
- Hermetically sealed, IP66 and IP68
- Certified to OIML R-60, 4000d and NTEP class IIIL, 10000 divisions
- Current calibration output (SC version) ensures easy and accurate parallel connection of multiple load cells

### OPTIONAL FEATURES

- ATEX and FM certified versions are available for use in potentially explosive atmospheres

### APPLICATIONS

- Platform scales
- Belt scales
- Packaging machines
- Silo/hopper weighing

### DESCRIPTION

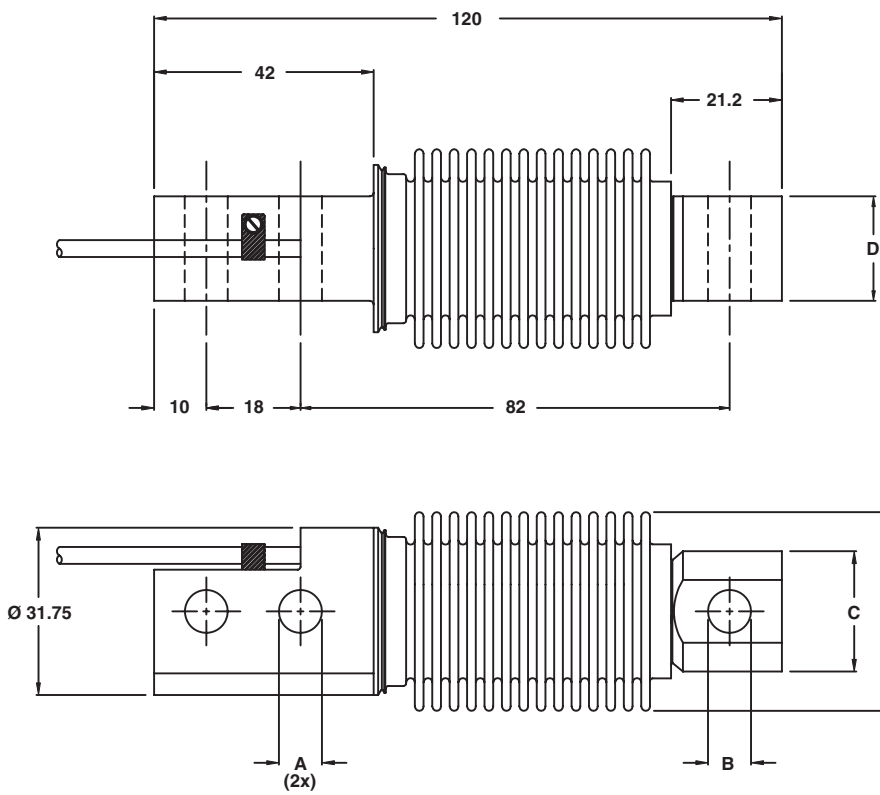
The SHBxR is a fully weld-sealed stainless steel bending beam type load cell.

This product is suitable for low capacity platform scales, packaging machines, hybrid scales and process weighing.

Fully welded construction and water block cable-entry ensure that this product can be used successfully in harsh environments found in the food, chemical and allied industries.

This product meets the stringent Weights and Measures requirements throughout Europe.

### OUTLINE DIMENSIONS in millimeters




| Capacity (kg) | 5 - 200 | 350 / 500 |
|---|---|---|
| A | 8.2 | 10.3 |
| B | $8.2^{+0.1}_{0}$ | $10.3^{+0.1}_{0}$ |
| C | 23.0 | 24.0 |
| D | 20.0 | 19.0 |

**Note: Dimensions in millimeters**

**Cable specifications:**

| | |
|---|---|
| Cable length | 3m |
| Excitation + | Green |
| Excitation - | Black |
| Output + | White |
| Output - | Red |
| (*Sense+* | *Yellow*) |
| (*Sense-* | *Blue*) |
| Shield | Transparent |

**4-wire cable standard, 6-wire cable optional**

| SPECIFICATIONS | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | | **UNIT** |
| Standard capacities ($E_{max}$) | 5, 10, 20, 30, 50, 100, 200, 350, 500 (1) | | | | 100, 200, 350, 500 (2) | kg |
| Accuracy class according to OIML R-60 /NTEP | NTEP IIIL | Non-Approved | C3 | C4 | C3MI7.5 | |
| Max. no. of verfication intervals | 10000 | | 3000 | 4000 | 3000 | |
| Min. verification interval ($V_{min}=E_{max}/Y$) | | | $E_{max}$/15,000 | $E_{max}$/15,000 | $E_{max}$/15,000 | |
| MDLOR ($Z=E_{max}/2*DR$) | | | | | 7500 | |
| Rated output (=S) | 2 | | | | | mV/V |
| Rated output tolerance | 0.02 | | | | | ±mV/V |
| Zero balance | 1.0 | | | | | ±% FSO |
| Combined error | 0.0200 | 0.05000 | 0.0200 | 0.0170 | 0.0200 | ±% FSO |
| Non-repeatability | 0.0100 | 0.0200 | 0.0100 | 0.0090 | 0.0100 | ±% FSO |
| Minimum dead load output return | 0.0250 | 0.0500 | 0.0167 | 0.0125 | 0.0067 | ±% applied load |
| Creep error (30 minutes) | | 0.0600 | 0.0245 | 0.0184 | 0.0245 | ±% applied load |
| Creep error (20 - 30 minutes) | 0.0300 | 0.0500 | | | | ±% applied load |
| Temp. effect on min. dead load output | (0.0008) | 0.0250 | 0.0047 | 0.0047 | 0.0047 | ±% FSO/5°C (/°F) |
| Temperature effect on sensitivity | (0.0010) | 0.0250 | 0.0050 | 0.0045 | 0.0050 | ±% applied load/5°C (/°F |
| Minimum dead load | 0 | | | | | $\%E_{max}$ |
| Maximum safe over load | 150 | | | | | $\%E_{max}$ |
| Ultimate over load | 300 | | | | | $\%E_{max}$ |
| Maximum safe side load | 100 | | | | | $\%E_{max}$ |
| Deflection at $E_{max}$ | 0.30±0.03 | | | | | mm |
| Excitation voltage | 5 to 12 | | | | | V |
| Maximum excitation voltage | 15 | | | | | V |
| Input resistance | 460±50 | | | | | Ω |
| Output resistance | 350±3.5 | | | | | Ω |
| Insulation resistance | ≥5000 | | | | | MΩ |
| Compensated temperature range | -10 to +40 | | | | | °C |
| Operating temperature range | -40 to +80 | | | | | °C |
| Storage temperature range | -40 to +90 | | | | | °C |
| Element material (DIN) | Stainless steel 1.4542 | | | | | |
| Sealing (DIN 40.050 / EN60.529) | IP66 and IP68 | | | | | |
| SC-Version (current calibration) | Standard | | | | | |
| Recommended torque on fixation bolts | 23 (70 for 350/500kg) | | | | | N*m |

**Notes**

(1) 5 & 10kg capacities are not approved by NTEP.
5 kg is not approved by OIML.

(2) $D_{max} = 0.75 * E_{max}$

FSO - Full Scale Output

SC-version: The rated output and the output resistance are balanced in such a way, that the output current is calibrated to within 0.05% of a reference value. This allows easy parallel connection of the load cells.

# Model 9102

Revere

VISHAY PRECISION GROUP

# Single Ended Beam Load Cell

## FEATURES

- Capacities: 200 - 2500lbs
- Low profile, stainless steel construction
- Hermetically sealed, IP66 and IP68
- Certified to OIML R-60, 5000d and NTEP class III, 5000 divisions
- Current calibration output (SC version) ensures easy and accurate parallel connection of multiple load cells
- Interchangeable with existing model 5102

## OPTIONAL FEATURES

- ATEX and FM certified versions are available for use in potentially explosive atmospheres

## DESCRIPTION

The 9102 is a stainless steel single ended beam type load cell.

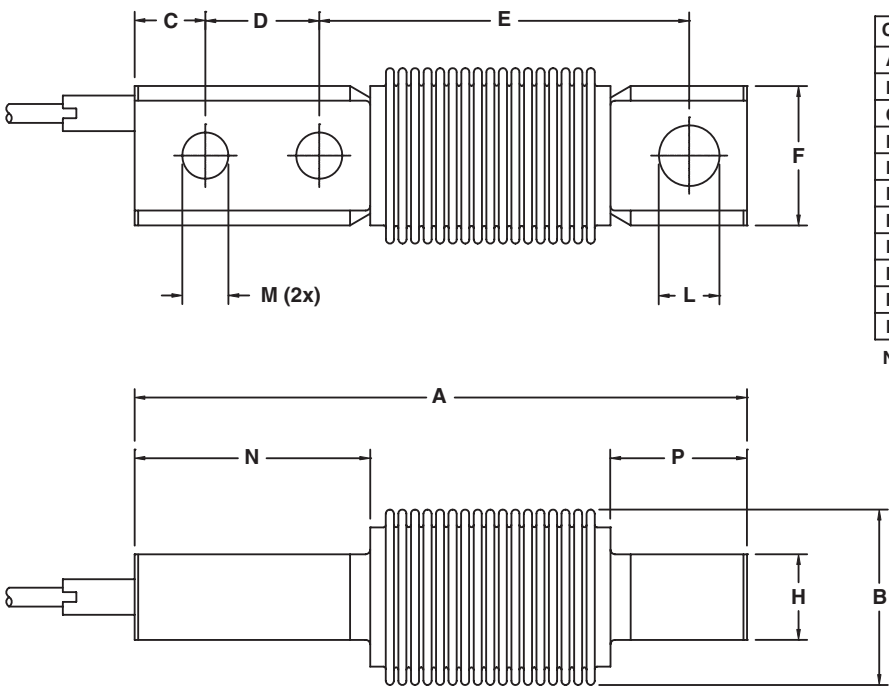
This product is suitable for small and medium platform scales, overhead track scales and process weighing.

The fully welded construction and water block cable entry ensure that this product can be used successfully in harsh environments found in the food, chemical and allied process industries.

## APPLICATIONS

- Platform scales
- Belt scales
- Silo/hopper weighing
- Overhead track scales

## OUTLINE DIMENSIONS in millimeters




| Capacity (lbs) | 200 | 500-1000 | 2500 |
|---|---|---|---|
| A | 127.0 | 136.7 | 136.7 |
| B | 39.6 | 39.6 | 39.6 |
| C | 9.7 | 15.8 | 15.8 |
| D | 15.9 | 25.4 | 25.4 |
| E | 88.9 | 82.6 | 82.6 |
| F | 31.2 | 31.2 | 31.2 |
| H | 19.0 | 19.0 | 19.0 |
| $L_{THRU}$ | 9.9 | 10.3 | 13.5 |
| $M_{THRU}$ | 6.8 | 10.3 | 10.3 |
| N | 38.1 | 52.6 | 52.6 |
| P | 31.8 | 30.5 | 30.5 |

**Note: Dimensions in millimeter**

**Cable specifications:**

| | |
|---|---|
| Cable length | 3m |
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Transparent |

**Cable screen is not conneted to load cell body. Performance may be affected if load cell cables are shortened.**



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11801
Revision: 10-Feb-10

| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | **UNIT** |
| Standard capacities (=$E_{max}$) | 200, 500, 1000, 2500 | | | | lbs |
| Accuracy class according to OIML R-60 / | NTEP III | Non-Approve | C3 | C5 | |
| Max. no. of verification intervals (n) | 5000 | | 3000 | 5000 | |
| Minimum verification interval ($V_{min}$) | | | Emax/15000 | Emax/15000 | |
| Rated output (=S) | 2 | | | | mV/V |
| Rated output tolerance | 0.02 | | | | ±mV/V |
| Zero balance | 1.0 | | | | ±% FSO |
| Combined error | 0.0200 | 0.0500 | 0.0200 | 0.0100 | ±% FSO |
| Non-repeatability | 0.0100 | 0.0200 | 0.0100 | 0.0070 | ±% FSO |
| Minimum dead load output return | 0.0250 | 0.0500 | 0.0167 | 0.0100 | ±% applied load |
| Creep error (30 minutes) | | 0.0600 | 0.0245 | 0.0147 | ±% applied load |
| Creep error (20-30 minutes) | | 0.0200 | 0.0053 | 0.0032 | ±% applied load |
| Temp. effect on min. dead load output | (0.0008) | 0.0250 | 0.0047 | 0.0047 | ±% FSO/5°C (/°F) |
| Temp. effect on sensitivity | (0.0010) | 0.0250 | 0.0055 | 0.0035 | ±% applied load/5°C (/°F) |
| Minimum dead load | 0 | | | | %$E_{max}$ |
| Maximum safe overload | 150 | | | | %$E_{max}$ |
| Ultimate overload | 300 | | | | %$E_{max}$ |
| Maximum safe side load | 100 (50 for 200lbs) | | | | %$E_{max}$ |
| Deflection at $E_{max}$ | 0.2/ 0.2/ 0.8/ 0.8 | | | | mm |
| Excitation voltage | 5 to 12 | | | | V |
| Maximum excitation voltage | 15 | | | | V |
| Input resistance | 350±3.5 | | | | Ω |
| Output resistance | 350±3.5 | | | | Ω |
| Insulation resistance | >5000 | | | | MΩ |
| Compensated temperature range | -10 to +40 | | | | °C |
| Operating temperature range | -40 to +80 | | | | °C |
| Storage temperature range | -40 to +90 | | | | °C |
| Element material | Stainless steel 1.4542 | | | | |
| Sealing (DIN 40.050 / EN 60.529) | IP66 and IP68 | | | | |
| SC-Version | Standard | | | | |
| Recommended torque on fixation bolts | 80 (70 for 200lbs) | | | | N*m |

FSO - Full Scale Output

SC-version: The rated output and the output resistance are balanced in such a way, that the output current is calibrated to within 0.05% of a reference value. This allows easy parallel connection of the load cells.

Correct mounting of the load cells is essential to ensure optimum performance. Further information is available on request.

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Double-Ended Shear Beams

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Double-Ended Shear Beam Load Cell

65058-TSA

65069-TWA

Approved

## DESCRIPTION

The 65058 is a mid to high capacity, nickel plated alloy steel, double ended Shear beam load cell.

This product is designed for use in certified truck and rail scales and is available in capacities ranging from 10K to 200Klbs.

This load cell is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environment.

This load cell is certified for legal for trade applications by both American NTEP and International OIML standards.

## FEATURES

- Rated capacities of 10,000 to 100,000 pounds
- Center-link loaded
- Integral conduit adaptor
- Trade certified for NTEP Class IIIL: 10000 divisions; Class III: 5000 divisions and OIML R60 3000 divisions in 20,000 to 200,000 pounds range
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

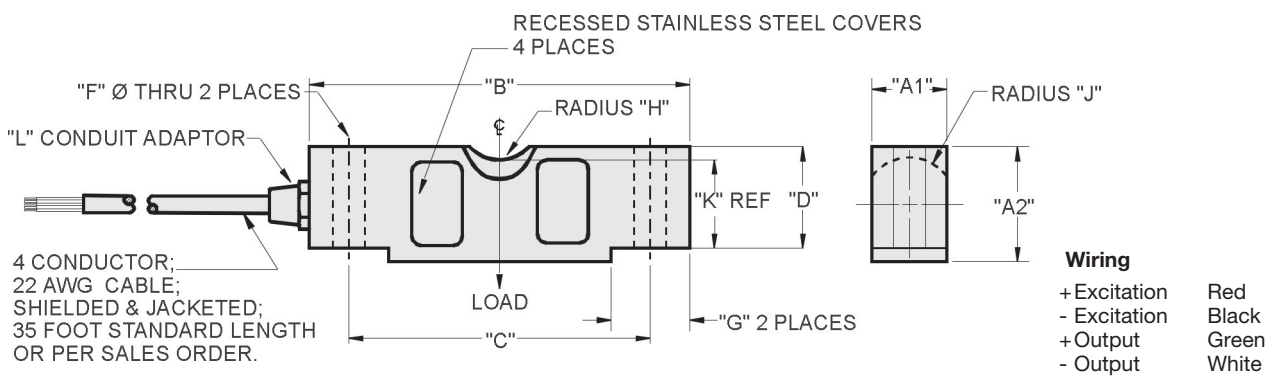
## OPTIONAL FEATURES

- 65058S stainless steel, welded seal version available
- 65058-TSA companion assemblies for vehicle scales
- 65069-TWA companion assemblies for vessel weighing
- Capacities up to 500,000 consult factory

## APPLICATIONS

- Truck scales
- Railroad track scales
- Precision tank, bin and silo weighing
- Level and inventory monitoring

## OUTLINE DIMENSIONS in inches




| CAPACITY | A1 | A2 | B | C | D | F | G | H | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10K - 25K | 1.69 | 1.94 | 7.75 | 6.50 | 1.70 | 0.68 | 1.38 | 0.75 | 0.90 | 1.63 | 1/4 - 18 NPT |
| 40K | 1.94 | 2.44 | 10.25 | 8.50 | 2.10 | 0.81 | 1.93 | 1.00 | 1.12 | 2.00 | 1/4 - 18 NPT |
| 50K - 75K | 2.44 | 2.94 | 10.25 | 8.50 | 2.65 | 1.06 | 1.93 | 1.00 | 1.37 | 2.54 | 1/2 - 14 NPT |
| 100K - 125K | 2.90 | 3.86 | 15.25 | 12.75 | 3.43 | 1.62 | 3.13 | 1.50 | 1.80 | 3.30 | 1/2 - 14 NPT |
| 150K - 200K | 3.80 | 5.80 | 19.25 | 15.25 | 5.12 | 1.62 | 4.00 | 2.00 | 2.37 | 4.44 | 1/2 - 14 NPT |

Capacities are in pounds.


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11602
Revision: 16-Feb-10

| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 10K, 25K, 40K, 50K, 60K, 75K, 100K [1] | | | | lbs |
| NTEP/OIML Accuracy class | NTEP III | NTEP IIIL | Standard | OIML R60 | |
| Maximum no. of intervals (n) | 5000 multiple | 10000 multiple | | 3000 | |
| $Y = E_{max}/V_{min}$ | See NTEP cert. 86-046A3 | | | 6667 | Maximum available |
| Rated output-R.O. | 3.0 | | | | mV/V |
| Rated output tolerance | 0.25 | | | | ±% mV/V |
| Zero balance | 1.0 | | | | ±% FSO |
| Combined error | 0.02 | 0.02 | 0.03 | 0.02 | ±% FSO |
| Non-repeatability | 0.01 | 0.01 | 0.015 | 0.01 | ±% FSO |
| Creep error (30 minutes) | 0.025 | 0.030 | 0.03 | 0.017 | ±% FSO |
| Temperature effect on zero | 0.0010 | 0.0010 | 0.0015 | 0.0010 | ±% FSO/°F |
| Temperature effect on output | 0.0008 | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| Compensated temperature range | 14 to 104 (-10 to 40) | | | | °F (°C) |
| Operating temperature range | 0 to 150 (-18 to 65) | | | | °F (°C) |
| Storage temperature range | -60 to 185 (-50 to 85) | | | | °F (°C) |
| Sideload rejection ratio | 500:1 | | | | |
| Safe sideload | 100 | | | | % of R.C. |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 25 | | | | Vdc or Vac rms |
| Input impedance | 686 - 714 | | | | Ω |
| Output impedance | 699 - 707 | | | | Ω |
| Insulation resistance at 50VDC | >1000 | | | | MΩ |
| Material | Nickel plated alloy tool steel [2] | | | | |
| Environmental protection | IP67 | | | | |

**Notes**

[1] Consult factory for capacities over 100K
NTEP approval 20-200Klbs only

[2] Stainless steel available - model name is 65058S

FSO - Full Scale Output

All Specifications subject to change without notice.

# Stainless Steel, Welded Seal Double-Ended Shear Beam Load Cell

65069-TWA 65058-TSA

Factory Mutual System Approved

## DESCRIPTION

Model 65058S is specifically designed to be installed in extremely harsh environments. It is specially suitable for the process industry of food, chemical and pharmaceutical industries.

Protected to meet IP68 requirements, the construction of the 65058S load cell uses double - redundant sealing methods, to ensure long and reliable service and constant calibration.

The additional sense wires compensate for changes in lead resistance due to temperature change and/or cable extension. Complete compensation of changes in lead resistance is achieved by feeding this voltage into the appropriate electronics.

## FEATURES

- Rated capacities of 10,000 to 100,000 pounds
- Stainless steel, welded seal construction
- Center-link recessed pivot load
- Insensitive to side loads and bending moments
- Load cells have matched outputs for multi-cell systems
- Integral conduit adaptor
- Trade certified for NTEP Class III: 5000 divisions and Class IIIL: 10000 divisions
- *Sensorgage*™ sealed to IP68 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

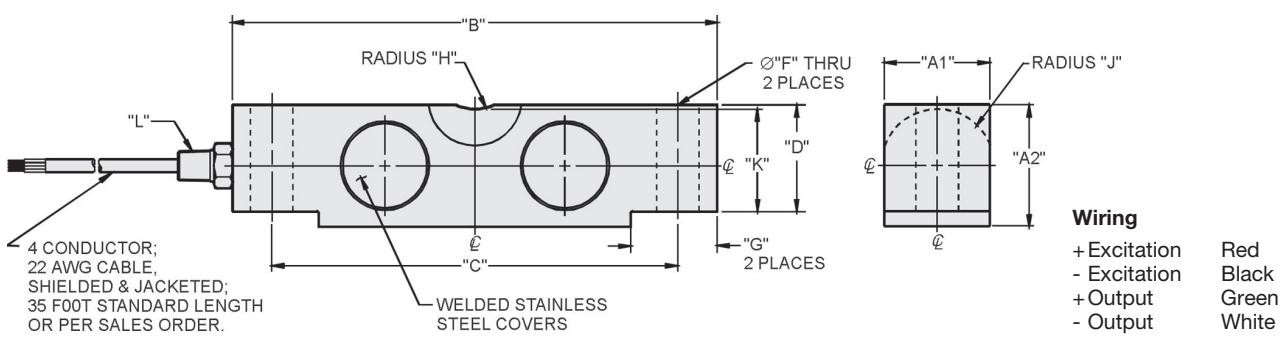
## OPTIONAL FEATURES

- 65058-TSA companion assemblies for vehicle scales
- 65069-TWA companion assemblies for vessel weighing

## APPLICATIONS

- Hostile environments:
  Food and beverage processing
  Chemical processing
  Pharmaceutical and biomedical processing
- High performance weighing modules and assemblies
- Tank and reactor weighing
- Batching, blending and mixing systems

## OUTLINE DIMENSIONS in inches




| CAPACITY | A1 | A2 | B | C | D | F | G | H | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10K - 25K | 1.69 | 1.94 | 7.75 | 6.50 | 1.70 | 0.68 | 1.38 | 0.75 | 0.90 | 1.63 | 1/4-18 NPT |
| 40K | 1.94 | 2.44 | 10.25 | 8.50 | 2.10 | 0.81 | 1.93 | 1.00 | 1.12 | 2.00 | 1/4-18 NPT |
| 50K - 75K | 2.44 | 2.94 | 10.25 | 8.50 | 2.65 | 1.06 | 1.93 | 1.00 | 1.37 | 2.54 | 1/2-14 NPT |
| 100K | 2.44 | 3.44 | 10.25 | 8.50 | 2.65 | 1.06 | 1.93 | 1.00 | 1.37 | 2.54 | 1/2-14 NPT |

Capacities are in pounds.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China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 10K, 25K, 40K, 50K, 60K, 75K, 100K [1] | | | lbs |
| NTEP/OIML Accuracy class | NTEP III | NTEP IIIL | Standard | |
| Maximum no. of intervals (n) | 5000 multiple | 10000 multiple | | |
| $Y = E_{max}/V_{min}$ | See NTEP cert. 86-046A3 | | | Maximum available |
| Rated output-R.O. | 3.0 | | | mV/V |
| Rated output tolerance | ±0.25 | | | ±% mV/V |
| Zero balance | 1.0 | | | ±% FSO |
| Combined error | 0.02 | 0.02 | 0.03 | ±% FSO |
| Non-repeatability | 0.01 | | | ±% FSO |
| Creep error (20 minutes) | 0.030 | 0.030 | 0.03 | ±% FSO |
| Temperature effect on zero | 0.0015 | 0.0010 | 0.0015 | ±% FSO/°F |
| Temperature effect on output | 0.0008 | 0.0008 | 0.0008 | ±% of load/°F |
| Compensated temperature range | 14 to 104 (-10 to 40) | | | °F (°C) |
| Operating temperature range | 0 to 150 (-18 to 65) | | | °F (°C) |
| Storage temperature range | -60 to 185 (-50 to 85) | | | °F (°C) |
| Sideload rejection ratio | 500:1 | | | |
| Safe sideload | 100 | | | % of R.C. |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 25 | | | Vdc or Vac rms |
| Input impedance | 686 - 714 | | | Ω |
| Output impedance | 699 - 707 | | | Ω |
| Insulation resistance at 50VDC | >1000 | | | MΩ |
| Material | Stainless steel | | | |
| Environmental protection | IP68 | | | |

**Notes**

[1] NTEP approval 20-200Klbs only

FSO - Full Scale Output

All Specifications subject to change without notice.

# Double Ended Beam Load Cell

## FEATURES

- Capacities: 25 to 125Klbs
- Environmental protection: IP67 (DIN 40.050)
- Material: Nickel plated steel
- Certified to NTEP class IIIL, 10000 divisions

## OPTIONAL FEATURES

- FM approved for use in potentially explosive atmosphere

## APPLICATIONS

- Weighbridges
- Silos, tanks and hoppers

## DESCRIPTION

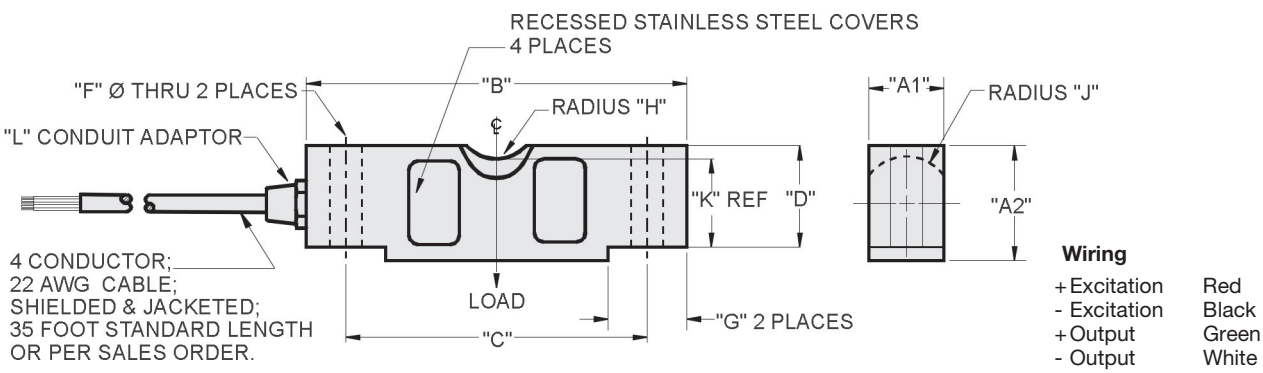
The 5303 is a link loaded mid to high capacity, Nickel plated alloy steel Double Ended Shear Beam type load cell.

This product is designed for use in certified truck and rail scales and is available in capacities from 25K to 125Klbs.

This load cell is rated intrinsically safe by the FM system, making it suitable for use in potentially explosive atmosphere.

This load cell is certified for trade applications by American NTEP standards.

## OUTLINE DIMENSIONS in inches




| CAPACITY | A1 | A2 | B | C | D | F | G | H | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25K | 1.69 | 1.94 | 7.75 | 6.50 | 1.70 | 0.68 | 1.38 | 0.75 | 0.90 | 1.63 | 1/4 - 18 NPT |
| 40K | 1.94 | 2.44 | 10.25 | 8.50 | 2.10 | 0.81 | 1.93 | 1.00 | 1.12 | 2.00 | 1/4 - 18 NPT |
| 50K - 75K | 2.44 | 2.94 | 10.25 | 8.50 | 2.65 | 1.06 | 1.93 | 1.00 | 1.37 | 2.54 | 1/2 - 14 NPT |

Capacities are in pounds.

| SPECIFICATIONS | | | |
|---|---|---|---|
| **PARAMETER** | **VALUE** | | **UNIT** |
| Capacities | 25K, 40K, 50K, 60K, 75K, 100K, 125K | | lbs |
| Accuracy class according to NTEP | NTEP IIIL | Non-Approved | |
| Max. no. of verfication intervals | 10000d | | |
| Rated output (=S) | 3.0 | | mV/V |
| Rated output tolerance | 0.0075 | | ±mV/V |
| Zero balance | 1.0 | | ±% FSO |
| Combined error | 0.0200 | 0.0500 | ±% FSO |
| Temperature effect on min. dead load output | 0.0010 | 0.0250 | ±% FSO/5°C (/°F) |
| Temperature effect on sensitivity | 0.0008 | 0.0250 | ±% FSO/5°C (/°F) |
| Compensated temperature range | -10 to +40 (+14 to 104) | | °C (°F) |
| Operating temperature range | -18 to +65 (0 to +150) | | °C (°F) |
| Safe load limit | 150 | | $\%E_{max}$ |
| Ultimate load | 300 | | $\%E_{max}$ |
| Safe side load limit | 100 | | $\%E_{max}$ |
| Excitation voltage recommended | 10 | | V |
| Excitation voltage maximum | 15 | | V |
| Input resistance | 700±14 | | Ω |
| Output resistance | 703±4 | | Ω |
| Insulation resistance | Š1000 | | MΩ |
| Environmental protection | IP67 | | |
| Element material | Nickel plated steel | | ASTM |

FSO - Full Scale Output

**Mounting:**

Correct mounting of the load cells is essential to ensure optimum accuracy and performance. Further information is available upon request.

# Model 9303

Revere

VISHAY PRECISION GROUP

## Double Ended Beam Load Cell

### FEATURES

- Capacities: 10K to 125Klb
- Environmental protection: IP67 (DIN 40.050)
- Material: stainless steel
- Certified by NTEP class IIIL, 10000 divisions

### OPTIONAL FEATURES

- FM certified for use in potentially explosive atmosphere

### APPLICATIONS

- Silos, tanks and hoppers
- Weighbridges

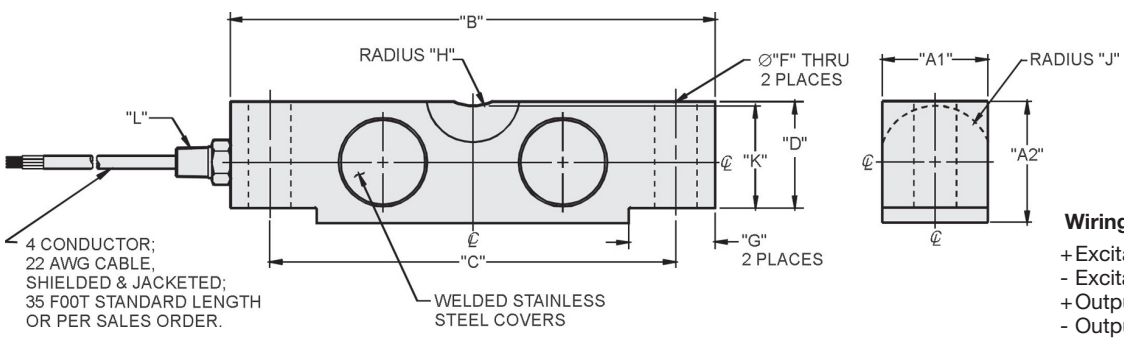
### DESCRIPTION

The 9303 is a link loaded stainless steel Double Ended Shear Beam type load cell, specifically designed for truck scales, track scales and high capacity weighing applications.

A reliable sealing and mechanical protection of the strain gage area is ensured by the use of potting compound with a metal cover.

This load cell is rated intrinsically safe by the FM system, making it suitable for use in potentially explosive atmosphere.

### OUTLINE DIMENSIONS in inches




| CAPACITY | A1 | A2 | B | C | D | F | G | H | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10K - 25K | 1.69 | 1.94 | 7.75 | 6.50 | 1.70 | 0.68 | 1.38 | 0.75 | 0.90 | 1.63 | 1/4-18 NPT |
| 40K | 1.94 | 2.44 | 10.25 | 8.50 | 2.10 | 0.81 | 1.93 | 1.00 | 1.12 | 2.00 | 1/4-18 NPT |
| 50K - 125K | 2.44 | 2.94 | 10.25 | 8.50 | 2.65 | 1.06 | 1.93 | 1.00 | 1.37 | 2.54 | 1/2-14 NPT |

Capacities are in pounds.

| SPECIFICATIONS | | | |
|---|---|---|---|
| **PARAMETER** | **VALUE** | | **UNIT** |
| Standard capacities ($E_{max}$) | 10K, 15K, 20K, 25K, 30K, 40K, 50K, 60K, 75K, 125K (1) | | lbs |
| Accuracy class according to NTEP | NTEP IIIL | Non-Approved | |
| Maximum no. of verfication intervals (nlc) | 10000 | | |
| Rated output (=S) | 3 | | mV/V |
| Rated output tolerance | 0.0075 | | ±mV/V |
| Zero balance | 1.0 | | ±% FSO |
| Combined error | 0.0200 | 0.0300 | ±% FSO |
| Temperature effect on zero | 0.0010 | 0.0015 | ±% FSO/5°C (/°F) |
| Temperature effect on output | 0.0008 | 0.0008 | ±% FSO/5°F (/°C) |
| Compensated temperature range | -10 to +40 (+14 to +104) | | °C (°F) |
| Operating temperature range | -18 to +65 (0 to +150) | | °C (°F) |
| Safe load limit | 150 | | %$E_{max}$ |
| Ultimate load | 300 | | %$E_{max}$ |
| Safe side load limit | 100 | | %$E_{max}$ |
| Excitation voltage recommended | 10 | | V |
| Excitation voltage maximum | 15 | | V |
| Input resistance | 700±14 | | Ω |
| Output resistance | 697±4 | | Ω |
| Insulation resistance | Š1000 | | MΩ |
| Environmental protection | IP67 | | |
| Element material | Stainless steel | | |

**Notes**

(1) 10K is not approved by NTEP

FSO - Full Scale Output

**Mounting:**

Correct mounting of the load cells is essential to ensure optimum accuracy and performance. Further information is available upon request.

No mounts available for 9303.

# Double Ended Shear Beam

### FEATURES

- Capacities 20K-125Klb
- Free of horizontal movement
- Insensitive to side load
- Electroless nickel plated alloy tool steel
- NTEP Class IIIL 10000 approval from 20Klb to 125Klb

### OPTIONAL FEATURE

- FM approval available

### APPLICATIONS

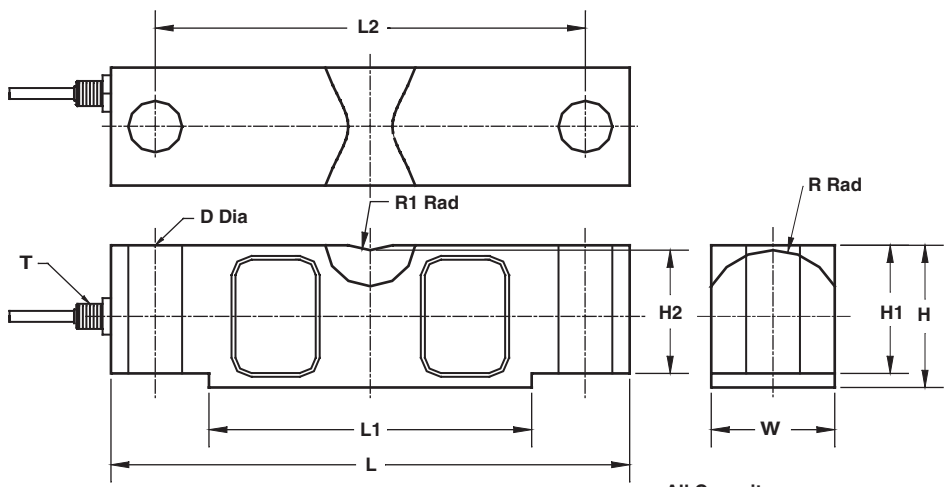
- Truck/rail scales
- Silo/hopper/tank weighing
- Fork-lift scales

### DESCRIPTION

The double-ended mounting provides good restraint for possible movement of the tanks and, in many cases, eliminates the need for check rods. The Shear Beam design gives excellent performance for high capacity loading.

CLB is constructed of alloy steel and is fully potted with special chemical compounds to IP67 providing excellent protection against moisture and humidity.

### OUTLINE DIMENSIONS




Wiring diagram

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Signal | Green |
| - Signal | White |

**All Capacity**
**Cable Length: 25'/7.6m**

| CAPACITY | | L | L1 | L2 | W | H | H1 | H2 | D | R | R1 | T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20K/25Klb | mm | 196.9 | 126.7 | 165.1 | 42.9 | 49.3 | 43.2 | 41.4 | 17.3 | 22.9 | 19.1 | |
| | (inch) | 7.75 | 4.99 | 6.50 | 1.69 | 1.94 | 1.70 | 1.63 | 0.68 | 0.90 | 0.75 | 1/4-18NPT |
| 40Klb | mm | 260.4 | 162.3 | 215.9 | 49.3 | 62.0 | 53.3 | 50.8 | 20.6 | 28.5 | 25.4 | |
| | (inch) | 10.25 | 6.39 | 8.50 | 1.94 | 2.44 | 2.10 | 2.00 | 0.81 | 1.12 | 1.00 | 1/4-18NPT |
| 50K/60K/75Klb | mm | 260.4 | 162.3 | 215.9 | 62.0 | 74.7 | 67.3 | 64.5 | 26.9 | 34.8 | 25.4 | |
| | (inch) | 10.25 | 6.39 | 8.50 | 2.44 | 2.94 | 2.65 | 2.54 | 1.06 | 1.37 | 1.00 | 1/2-14NPT |
| 100K/125Klb | mm | 387.4 | 228.4 | 323.9 | 73.7 | 98.0 | 87.1 | 83.8 | 41.2 | 45.7 | 38.1 | |
| | (inch) | 15.25 | 8.99 | 12.75 | 2.90 | 3.86 | 2.43 | 3.30 | 1.62 | 1.80 | 1.50 | 1/2-14NPT |

| SPECIFICATIONS | | | |
|---|---|---|---|
| **PARAMETER** | **VALUE** | | **UNIT** |
| NTEP/OIML Accuracy class | NTEP IIIL | Non-Approved | |
| Maximum no. of intervals (n) | 10000 multiple | 1000 | |
| $Y = E_{max}/V_{min}$ | 14000 | 5000 | Maximum available |
| Standard capacities ($E_{max}$) | 20K, 25K, 40K, 50K, 60K, 75K, 100K, 125K | | lbs |
| Rated output-R.O. | 3.0 | | mV/V |
| Rated output tolerance | 0.25 | | ±% of rated output |
| Zero balance | 1 | | ±% of rated output |
| Non linearity | 0.025 | | ±% of rated output |
| Hysteresis | 0.025 | | ±% of rated output |
| Non-repeatability | 0.02 | | ±% of rated output |
| Creep error (20 minutes) | 0.030 | | ±% of rated output |
| Zero return (20 minutes) | 0.030 | | ±% of rated output |
| Temperature effect on min. dead load output | 0.0010 | 0.0026 | ±% of rated output/°C |
| Temperature effect on sensitivity | 0.0010 | 0.0015 | ±% of applied load/°C |
| Compensated temperature range | -10 to +40 | | °C |
| Operating temperature range | -20 to +60 | | °C |
| Safe overload | 150 | | % of R.C. |
| Ultimate overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 770±10 | | Ohms |
| Output impedance | 700±5 | | Ohms |
| Insulation resistance | >5000 | | Mega-Ohms |
| Construction | Nickel plated alloy steel | | |
| Environmental protection | IP67 | | |

All specifications subject to change without notice.

FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

# Alloy Steel Double Ended Shear Beam

NTEP ATEX FM

## DESCRIPTION

Model 4158 is a double ended shear beam load cell designed for high capacity silo weighing applications.

This high accuracy load cell is designed to meet NTEP standards. When combined with suitable mounting arrangements, this load cell will provide a simple, accurate and reliable weighing system.

Nickel plated and full environmental sealing assure long term reliability. For hazardous environments, this load cell has a EEX ia IIC T6 approved option.

When used in conjunction with Tedea-Huntleigh's custom designed mount, the unit combines ease of installation with both side load and lift-off protection.

## FEATURES

- Capacities 10K-75Klbs
- Low profile design for weigh bridge and silo applications
- Nickel plated alloy steel construction
- NTEP approved
- IP67 protection

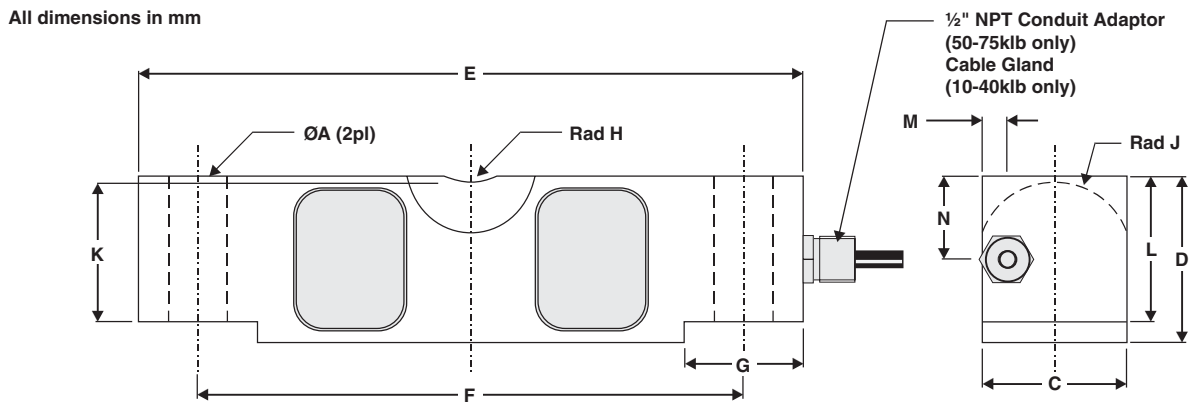
## OPTIONAL FEATURES

- EEx ia IIC T6 hazardous area approval
- FM approval available

## APPLICATIONS

- Weigh bridges
- Tank and silo weighing

## OUTLINE DIMENSIONS in millimeters



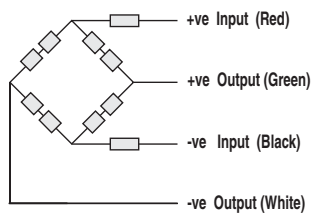

| CAPACITY | ØA | C | D | E | F | G | Rad H | Rad J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 - 25Klb | 17.3 | 42.9 | 49.3 | 196.9 | 165.1 | 35.9 | 19.1 | 22.9 | 41.4 | 43.2 | 8.8 | 13.6 |
| 40Klb | 20.6 | 49.3 | 62.0 | 260.4 | 215.9 | 49.0 | 25.4 | 28.5 | 50.8 | 53.3 | 9.0 | 31.0 |
| 50 - 75Klb | 26.9 | 62.0 | 74.7 | 260.4 | 215.9 | 49.0 | 25.4 | 34.8 | 64.5 | 67.3 | 10.4 | 37.4 |

| SPECIFICATIONS | | | |
|---|---|---|---|
| **PARAMETER** | **VALUE** | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 10, 20, 25, 40, 50, 60, 75 (1) | | Klbs |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | |
| Maximum no. of intervals (n) | 10000 IIIL | 1000 | |
| $Y = E_{max}/V_{min}$ | 12000 | 4000 | Maximum available |
| Rated output-R.O. | 3.0 | | mV/V |
| Rated output tolerance | 0.075 | | ±mV/V |
| Zero balance | 0.09 | | ±mV/V |
| Zero Return, 30 min. | 0.030 | 0.050 | ±% of applied load |
| Total Error | 0.030 | 0.050 | ±% of rated output |
| Temperature effect on zero | 0.0013 | 0.0067 | ±% of rated output/°C |
| Temperature effect on output | 0.0025 | 0.0040 | ±% of applied load/°C |
| Temperature range, | -10 to +40 | | °C |
| Temperature range, safe | -30 to +70 | | °C |
| Maximum safe central overload | 150 | | % of R.C. |
| Ultimate central overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 780±20 | | Ohms |
| Output impedance | 705±5 | | Ohms |
| Insulation resistance | >1000 | | Mega-Ohms |
| Cable length | 7.5 | | m |
| Cable type | 6 wire, braided, PVC, dual floating screen | | Standard |
| Construction | Nickel plated alloy steel | | |
| Environmental protection | IP67 | | |

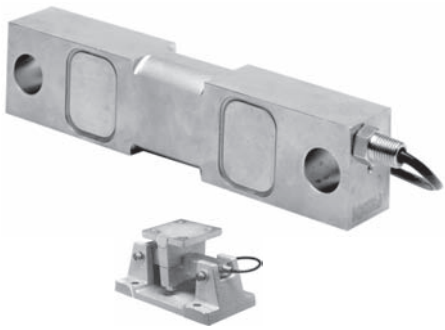
**Note**

(1) 10Klbs is not approved by NTEP

**Wiring Schematic Diagram**



# Double-Ended Shear Beam Load Cell



65016-TWA

Factory Mutual System Approved

## DESCRIPTION

The double-ended mounting provides good restraint to possible movement of the tanks and, in many cases, eliminates the need for check rods. The double Shear Beam design gives excellent performance for high capacity loading.

The output is rationalized to facilitate multiple-cell application.

This load cell is constructed of alloy tool steel and is potted to IP67 providing excellent protection against moisture and humidity.

## FEATURES

- Rated capacities of 1000 to 125,000 pounds
- Insensitive to side loads and bending moments
- High output - well suited to high deadload/low liveload applications
- Load cells have matched outputs for multi-cell systems
- Excellent combined error and repeatability
- Integral conduit adaptor
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

## OPTIONAL FEATURE

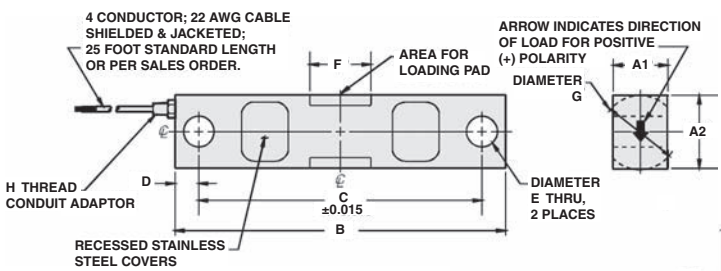
- Weighing assemblies available - 65016 TWA

## APPLICATIONS

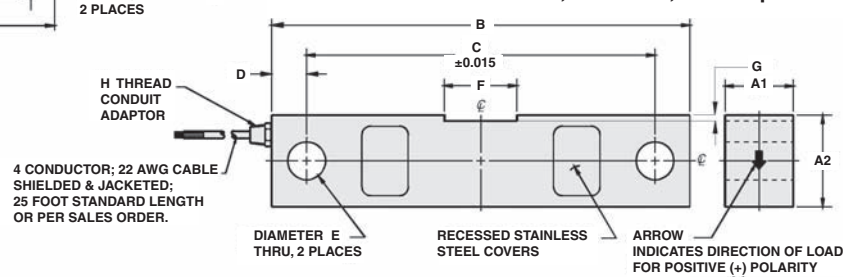
- Tank, bin and silo weighing
- Batching, blending and mixing systems
- Level and inventory monitoring

## OUTLINE DIMENSIONS in millimeters

**1000 to 50,000lb capacities**




**75,000 to 125,000lb capacities**




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

| CAPACITY | A1 | A2 | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|
| 1K - 5K | 1.25 | 1.25 | 7.50 | 6.25 | 0.62 | 0.50 | 1.22 | 1.25 | 1/4-18NPT |
| 10K - 25K | 1.44 | 1.94 | 8.75 | 7.50 | 0.62 | 0.81 | 1.62 | 1.99 | 1/4-18NPT |
| 35K | 1.50 | 2.50 | 8.75 | 7.50 | 0.62 | 0.81 | 1.62 | 2.50 | 1/4-18NPT |
| 50K | 2.44 | 2.94 | 13.50 | 11.50 | 1.00 | 1.31 | 3.25 | 2.99 | 1/2-14NPT |
| 75K | 2.44 | 2.94 | 13.50 | 11.50 | 1.00 | 1.31 | 3.12 | 0.18 | 1/2-14NPT |
| 100K - 125K | 2.94 | 3.94 | 18.50 | 15.00 | 1.75 | 1.63 | 3.25 | 0.25 | 1/2-14NPT |

| SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 1K, 1.5K, 2.5K, 5K, 10K, 15K, 25K, 35K, 50K, 75K, 100K, 125K | lbs |
| NTEP/OIML Accuracy class | Standard | |
| Maximum no. of intervals (n) | -- | |
| Rated output-R.O. | 3.0 | mV/V |
| Rated output tolerance | 0.25 | ±% mV/V |
| Zero balance | 1.0 | ±% FSO |
| Combined error | 0.03 | ±% FSO |
| Non-repeatability | 0.01 | ±% FSO |
| Creep error (20 minutes) | 0.03 | ±% FSO |
| Temperature effect on zero | 0.0015 | ±% FSO/°F |
| Temperature effect on output | 0.0008 | ±% of load/°F |
| Compensated temperature range | 14 to 104 (-10 to 40) | °F (°C) |
| Operating temperature range | 0 to 150 (-18 to 65) | °F (°C) |
| Storage temperature range | -60 to 185 (-50 to 85) | °F (°C) |
| Sideload rejection ratio | 500:1 | |
| Safe sideload | 100 | % of R.C. |
| Maximum safe central overload | 150 | % of R.C. |
| Ultimate central overload | 300 | % of R.C. |
| Excitation, recommended | 15 | Vdc or Vac rms |
| Excitation, maximum | 25 | Vdc or Vac rms |
| Input impedance | 700±14 | Ω |
| Output impedance | 703±4 | Ω |
| Insulation resistance at 50VDC | >1000 | MΩ |
| Material | Nickel plated alloy tool steel | |
| Environmental protection | IP67 | |

**Note**
FSO - Full Scale Output

All Specifications subject to change without notice.

# Model 65016-0104W

Sensortronics

VISHAY PRECISION GROUP

## Welded, Stainless Steel Double-Ended Shear Beam Load Cell

65016-TWA

65086

Factory Mutual System Approved

### DESCRIPTION

65016-0104W is designed to be center-mounted with double-linked loading. This design provides free movement in all horizontal directions virtually eliminating binding or friction points. The double Shear Beam design gives excellent performance for high capacity loading.

65016-0104W is constructed of stainless steel and is designed to work in extremely harsh environment such as chemical and food industry.

### FEATURES

- Rated capacities of 1000 to 75,000 pounds
- Stainless steel, welded seal construction
- Insensitive to side loads and bending moments
- High output - well suited to high deadload/low liveload applications
- Load cells have matched outputs for multi-cell systems
- Integral conduit adaptor
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G.
  Also, non-incendive ratings (No barriers!).

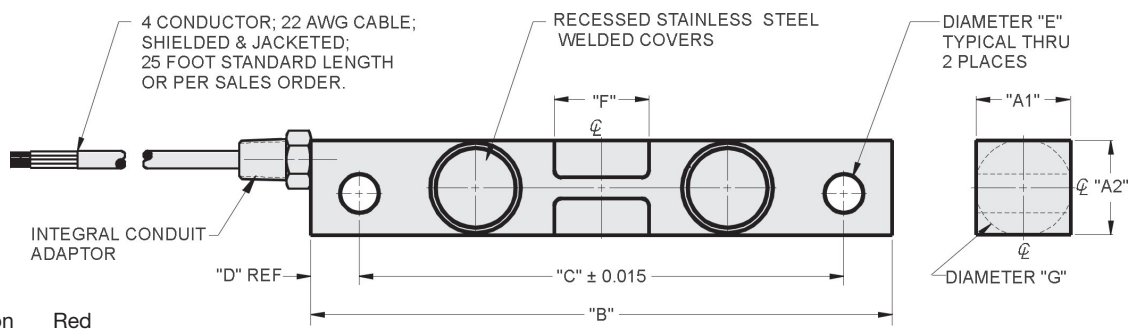
### OPTIONAL FEATURE

- Fully hermetically sealed available

### APPLICATIONS

- Hostile environments:
  Food and beverage processing
  Chemical and plastics processing
  Pharmaceutical and biomedical processing
- Tank, bin and silo weighing
- Batching, blending and mixing systems
- Level and inventory monitoring

### OUTLINE DIMENSIONS in inches




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

| CAPACITY | A1 | A2 | B | C | D | E | F | G | THREAD |
|---|---|---|---|---|---|---|---|---|---|
| 1K - 5K | 1.22 | 1.22 | 7.50 | 6.25 | 0.62 | 0.50 | 1.12 | 1.25 | 1/4-18NPT |
| 10K - 25K | 1.44 | 1.94 | 8.75 | 7.50 | 0.62 | 0.81 | 1.62 | 1.99 | 1/4-18NPT |
| 35K | 1.44 | 2.44 | 8.75 | 7.50 | 0.62 | 0.81 | 1.62 | 2.50 | 1/4-18NPT |
| 50K - 75K | 2.44 | 2.94 | 13.50 | 11.50 | 1.00 | 1.31 | 3.25 | 2.99 | 1/2-14NPT |

Capacities are in pounds.



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11598
Revision: 16-Feb-10

| SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 1K, 1.5K, 2.5K, 5K, 10K, 15K, 25K, 35K, 50K, 75K | lbs |
| NTEP/OIML Accuracy class | Standard | |
| Maximum no. of intervals (n) | -- | |
| Rated output-R.O. | 3.0 | mV/V |
| Rated output tolerance | 0.25 | ±% mV/V |
| Zero balance | 1.0 | ±% FSO |
| Non-linearity | 0.07% | ±% FSO |
| Hysteresis | 0.07% | ±% FSO |
| Non-repeatability | 0.01 | ±% FSO |
| Creep error (20 minutes) | 0.03 | ±% FSO |
| Temperature effect on zero | 0.0015 | ±% FSO/°F |
| Temperature effect on output | 0.0008 | ±% of load/°F |
| Compensated temperature range | 14 to 104 (-10 to 40) | °F (°C) |
| Operating temperature range | 0 to 150 (-18 to 65) | °F (°C) |
| Storage temperature range | -60 to 185 (-50 to 85) | °F (°C) |
| Sideload rejection ratio | 500:1 | |
| Safe sideload | 100 | % of R.C. |
| Maximum safe central overload | 150 | % of R.C. |
| Ultimate central overload | 300 | % of R.C. |
| Excitation, recommended | 15 | Vdc or Vac rms |
| Excitation, maximum | 25 | Vdc or Vac rms |
| Input impedance | 686 - 714 | Ω |
| Output impedance | 699 - 707 | Ω |
| Insulation resistance at 50VDC | >1000 | MΩ |
| Material | Stainless steel | |
| Environmental protection | IP67<br>IP68 welded seals, glass to metal seal | Standard<br>Special |

**Note**
FSO - Full Scale Output

All specifications subject to change without notice.

# Double Ended Beam Load Cell

FM

## FEATURES

- Capacities: 1K to 75Klbs
- Environmental protection: IP67 (DIN 40.050)
- Material: nickel plated steel
- Center loaded design

## OPTIONAL FEATURE

- FM certified versions are available for use in potentially explosive atmospheres

## APPLICATIONS

- Silo, tank, hopper weighing
- Custom system designs
- Low capacity vehicle scales

## DESCRIPTION

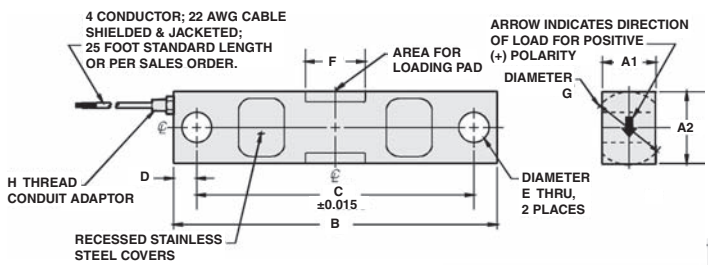
The 5203 is a Double Ended Shear Beam type load cell.

A reliable sealing and mechanical protection of the skin gage area is ensured by the use of potting compound with a metal cover.

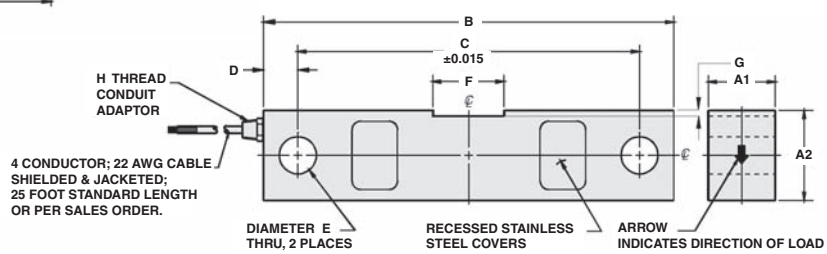
The center loaded design results in minimal sensitivity to off-center forces.

## OUTLINE DIMENSIONS in inches

**1000 to 50000lb capacities**




**75000lb capacity**




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

| CAPACITY | A1 | A2 | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|
| 1K - 5K | 1.25 | 1.25 | 7.50 | 6.25 | 0.62 | 0.50 | 1.22 | 1.25 | 1/4-18NPT |
| 10K - 25K | 1.44 | 1.94 | 8.75 | 7.50 | 0.62 | 0.81 | 1.62 | 1.99 | 1/4-18NPT |
| 35K | 1.50 | 2.50 | 8.75 | 7.50 | 0.62 | 0.81 | 1.62 | 2.50 | 1/4-18NPT |
| 50K | 2.44 | 2.94 | 13.50 | 11.50 | 1.00 | 1.31 | 3.25 | 2.99 | 1/2-14NPT |
| 75K | 2.44 | 2.94 | 13.50 | 11.50 | 1.00 | 1.31 | 3.12 | 0.18 | 1/2-14NPT |

Capacities are in pounds.

| SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| Standard capacities ($E_{max}$) | 1, 1.5, 2, 2.5, 5, 10, 15, 20, 25, 35, 50, 75 | Klbs |
| Accuracy class | Non Approved - D3 | |
| Rated output (=S) | 3 | mV/V |
| Rated output tolerance | 0.008 | ±mV/V |
| Zero balance | 1.0 | ±% FSO |
| Combined error | 0.03 | ±% FSO |
| Creep error (20 minutes) | 0.03 | ±% FSO |
| Temp. effect on min. dead load output | 0.0015 | ±% FSO/5°C (/°F) |
| Temperature effect on sensitivity | 0.0008 | ±% FSO/5°C (/°F) |
| Maximum safe over load | 150 | $\%E_{max}$ |
| Ultimate over load | 300 | $\%E_{max}$ |
| Maximum safe side load | 100 | $\%E_{max}$ |
| Excitation voltage | 10 | V |
| Maximum excitation voltage | 15 | V |
| Input resistance | 700±14 | Ω |
| Output resistance | 697±4 | Ω |
| Insulation resistance | ≥1000 | MΩ |
| Compensated temperature range | -10 to +40 (+14 to +104) | °C (°F) |
| Operating temperature range | -18 to +65 (0 to +150) | °C (°F) |
| Element material (DIN) | Nickel plated alloy steel | |
| Sealing (DIN 40.050 / EN60.529) | IP67 | |

FSO - Full Scale Output

# Double Ended Beam Load Cell

FM

## FEATURES

- Capacities: 1K to 75Klbs
- Environmental protection: IP67 (DIN 40.050)
- Material: stainless steel
- Center loaded design
- Welded covers for all capacities

## OPTIONAL FEATURE

- FM certified versions are available for use in potentially explosive atmospheres

## DESCRIPTION

The 9203 is a stainless steel Double Ended Shear Beam type load cell.

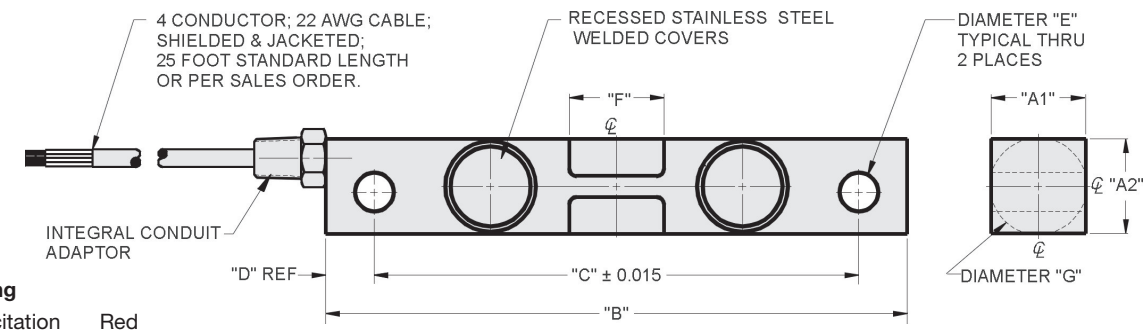
A reliable sealing and mechanical protection of the skin gage area is ensured by the use of potting compound with a metal cover.

The center loaded design results in minimal sensitivity to off-center forces.

## APPLICATIONS

- Silo, tank, hopper weighing
- Custom system designs
- Low capacity vehicle scales

## OUTLINE DIMENSIONS in inches




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

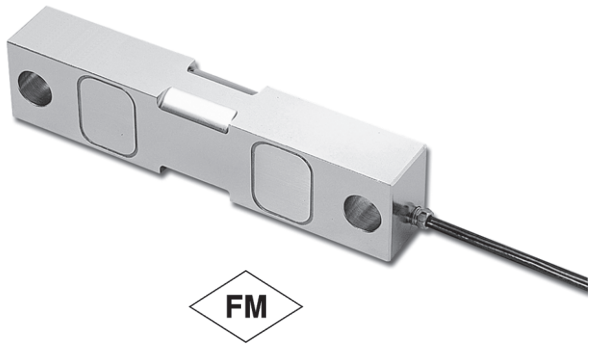
| CAPACITY | A1 | A2 | B | C | D | E | F | G | THREAD |
|---|---|---|---|---|---|---|---|---|---|
| 1K - 5K | 1.22 | 1.22 | 7.50 | 6.25 | 0.62 | 0.50 | 1.12 | 1.25 | 1/4-18NPT |
| 10K - 25K | 1.44 | 1.94 | 8.75 | 7.50 | 0.62 | 0.81 | 1.62 | 1.99 | 1/4-18NPT |
| 35K | 1.44 | 2.44 | 8.75 | 7.50 | 0.62 | 0.81 | 1.62 | 2.50 | 1/4-18NPT |
| 50K - 75K | 2.44 | 2.94 | 13.50 | 11.50 | 1.00 | 1.31 | 3.25 | 2.99 | 1/2-14NPT |

Capacities are in pounds.

| SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| Standard capacities ($E_{max}$) | 1, 1.5, 2, 2.5, 5, 10, 15, 20, 25, 35, 50, 75 | Klbs |
| Accuracy class | Non Approved - D3 | |
| Rated output (=S) | 3.0 | mV/V |
| Rated output tolerance | 0.008 | ±mV/V |
| Zero balance | 1.0 | ±% FSO |
| Combined error | 0.03 | ±% FSO |
| Creep error (20 minutes) | 0.03 | ±% FSO |
| Temp. effect on min. dead load output | 0.0015 | ±% FSO/5°C (/°F) |
| Temperature effect on sensitivity | 0.0008 | ±% FSO/5°C (/°F) |
| Maximum safe over load | 150 | $\%E_{max}$ |
| Ultimate over load | 300 | $\%E_{max}$ |
| Maximum safe side load | 100 | $\%E_{max}$ |
| Excitation voltage | 10 | V |
| Maximum excitation voltage | 15 | V |
| Input resistance | 700±14 | Ω |
| Output resistance | 703±4 | Ω |
| Insulation resistance | Š1000 | MΩ |
| Compensated temperature range | -10 to +40 (+14 to +104) | °C (°F) |
| Operating temperature range | -18 to +65 (0 to +150) | °C (°F) |
| Element material (DIN) | Stainless steel | |
| Sealing | IP67 | |

FSO - Full Scale Output

# Double Ended Shear Beam




## FEATURES

- Capacities 1K-75Klb
- Double-ended center-load shear beam design
- Rationalized outputs
- Free of horizontal movement
- Insensitive to side load
- Electroless nickel plated alloy tool steel

## OPTIONAL FEATURES

- Hermetically sealed available
- Stainless steel available
- FM approval available

## DESCRIPTION

The double-ended mounting provides good restraint to possible movement of the tanks and, in many cases, eliminates the need for check rods. The Shear Beam design gives excellent performance for high capacity loading.

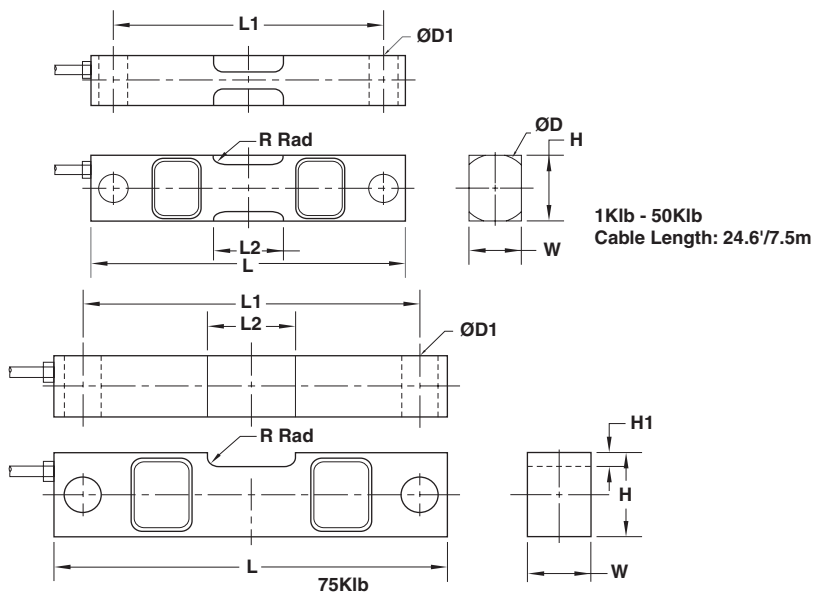
The output is rationalized to facilitate multiple-cell application.

DSR is constructed of alloy tool steel and is potted to IP67 providing excellent protection against moisture and humidity.

## APPLICATIONS

- Silo/hopper/tank weighing

## OUTLINE DIMENSIONS




Wiring diagram

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Signal | Green |
| - Signal | White |

| CAPACITY | | L | L1 | L2 | W | H | H1 | D | D1 | R |
|---|---|---|---|---|---|---|---|---|---|---|
| 1K/1.5K/2K/2.5K/3K/5Klb | mm | 190.5 | 158.8 | 35.4 | 31.7 | 31.7 | - | 31.7 | 12.7 | 5.0 |
| | (inch) | 7.50 | 6.25 | 1.39 | 1.25 | 1.25 | - | 1.25 | 0.50 | 0.20 |
| 10K/15K/20K/25Klb | mm | 222.3 | 190.5 | 50.0 | 36.6 | 49.3 | - | 50.8 | 20.6 | 5.0 |
| | (inch) | 8.75 | 7.50 | 1.97 | 1.44 | 1.94 | - | 2.00 | 0.81 | 0.20 |
| 50K/75Klb | mm | 342.9 | 292.1 | 82.6 | 62.0 | 74.7 | 4.6 | 76.2 | 33.3 | 5.0 |
| | (inch) | 13.50 | 11.50 | 3.25 | 2.44 | 2.94 | 0.18 | 3.00 | 1.31 | 0.20 |

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **NTEP/OIML Accuracy class** | **Non-Approved** | |
| **Y = $E_{max}/V_{min}$** | 5000 | Maximum available |
| **Standard capacities ($E_{max}$)** | 1K, 1.5K, 2K, 3K, 5K, 10K, 15K, 20K, 25K, 50K, 75K | lbs |
| **Rated output-R.O.** | 3.0 | mV/V |
| **Rated output tolerance** | 0.25 | ±% of rated output |
| **Zero balance** | 1 | ±% of rated output |
| **Non linearity** | 0.030 (SS: 0.07%) | ±% of rated output |
| **Hysteresis** | 0.030 (SS: 0.07%) | ±% of rated output |
| **Non-repeatability** | 0.02 | ±% of rated output |
| **Creep error (20 minutes)** | 0.030 | ±% of rated output |
| **Zero return (20 minutes)** | 0.030 | ±% of rated output |
| **Temperature effect on min. dead load output** | 0.0026 | ±% of rated output/°C |
| **Temperature effect on sensitivity** | 0.0015 | ±% of applied load/°C |
| **Compensated temperature range** | -10 to +40 | °C |
| **Operating temperature range** | -20 to +60 | °C |
| **Safe overload** | 150 | % of R.C. |
| **Ultimate overload** | 300 | % of R.C. |
| **Excitation, recommended** | 10 | Vdc or Vac rms |
| **Excitation, maximum** | 15 | Vdc or Vac rms |
| **Input impedance** | 770±10 | Ohms |
| **Output impedance** | 700±5 | Ohms |
| **Insulation resistance** | >5000 | Mega-Ohms |
| **Construction** | Nickel plated alloy steel | |
| **Environmental protection** | IP67 | |

All specifications listed subject to change without notice.

FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

# Double-Ended Shear Beam Load Cell

65040-1122

OIML NTEP Factory Mutual System Approved

## FEATURES

- Rated capacities of 25,000 to 125,000 pounds, 10 to 45 metric tons
- Center supported, external pivot loading
- Integral conduit adaptor
- Trade certified for NTEP Class IIIL:10000 divisions and OIML R60 3000 divisions
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

## OPTIONAL FEATURES

- Stainless steel available as 65040W
- Internal pivot loading available as 65040-1122

## DESCRIPTION

The 65040 is a mid to high capacity nickel plated alloy steel, double ended shear beam load cell.

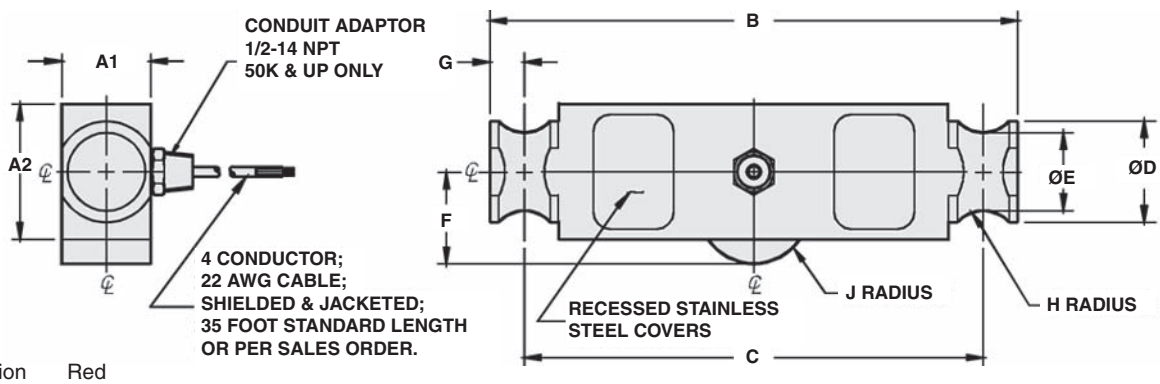
This product is designed for use in certified truck and rail scales and is available in capacities ranging from 25K to 125Klbs.

This load cell is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments. This load cell is certified for Legal For Trade applications by both American NTEP and International OIML standards.

## APPLICATIONS

- Truck scales
- Railroad track scales
- "Legal for Trade" tank, bin and hopper weighing

## OUTLINE DIMENSIONS in inches [mm]




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

| CAPACITY | A1 | A2 | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 25K - 40K | 1.94 | 2.44 | 8.25 | 7.25 | 2.0 | 1.63 | 1.75 | 0.50 | 0.50 | 0.50 |
| 50K - 75K | 1.94 | 2.94 | 11.50 | 10.00 | 2.2 | 1.70 | 2.00 | 0.75 | 0.75 | 1.00 |
| 100K - 125K | 2.90 | 3.86 | 14.50 | 12.50 | 3.2 | 2.44 | 2.75 | 1.00 | 1.00 | 1.50 |
| [10t] | [49.3] | [61.9] | [209.6] | [184.2] | [50.8] | [41.4] | [44.5] | [12.7] | [12.7] | [12.7] |
| [25 - 35t] | [49.3] | [74.7] | [292.1] | [254.0] | [55.9] | [43.2] | [50.8] | [19.1] | [19.1] | [25.4] |
| [45t] | [73.7] | [98.0] | [368.3] | [317.5] | [81.3] | [62.0] | [69.9] | [25.4] | [25.4] | [38.1] |

Capacities are in pounds [kg/t].


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11599
Revision: 12-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 25K, 40K, 50K, 60K, 75K, 100K, 125K<br>10t, 25t, 35t, 45t | | | lbs<br>kg/metric tons |
| **NTEP/OIML Accuracy class** | **NTEP IIIL** | **Standard** | **OIML R60** | |
| **Maximum no. of intervals (n)** | 10000 multiple | | 3000 | |
| **$Y = E_{max}/V_{min}$** | See NTEP cert.<br>86-045A1 | | 6250 | Maximum available |
| **Rated output-R.O.** | 3.0 | | | mV/V |
| **Rated output tolerance** | 0.25 | | | ±% mV/V |
| **Zero balance** | 1.0 | | | ±% FSO |
| **Combined error** | 0.02 | 0.03 | 0.02 | ±% FSO |
| **Non-repeatability** | 0.01 | | | ±% FSO |
| **Creep error (30 minutes)** | 0.025 | 0.03 | 0.017 | ±% FSO |
| **Temperature effect on zero** | 0.0009 | 0.0015 | 0.0010 | ±% FSO/°F |
| **Temperature effect on output** | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | | | °F (°C) |
| **Sideload rejection ratio** | 500:1 | | | |
| **Safe sideload** | 100 | | | % of R.C. |
| **Maximum safe central overload** | 150 | | | % of R.C. |
| **Ultimate central overload** | 300 | | | % of R.C. |
| **Excitation, recommended** | 10 | | | Vdc or Vac rms |
| **Excitation, maximum** | 25 | | | Vdc or Vac rms |
| **Input impedance** | 686 - 714 | | | Ω |
| **Output impedance** | 699 - 707 | | | Ω |
| **Insulation resistance at 50VDC** | >1000 | | | MΩ |
| **Material** | Nickel plated alloy tool steel* | | | |
| **Environmental protection** | IP67 | | | |

Note: * Stainless steel available as 65040W
FSO - Full Scale Output

All specifications subject to change without notice.

# Alloy Tool Steel, Welded Sealed, Double-Ended Shear Beam Load Cell

## FEATURES

- Rated capacities of 50,000 to 100,000 pounds, 20 to 50 metric tons
- Center supported, internal pivot loading
- Replacement for Revere model 5223 and compatible load cells
- Trade certified for NTEP Class IIIL: 10000 divisions and OIML R60: 3000 divisions
- *Sensorgage*™ sealed to IP68 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

## DESCRIPTION

The 65040-1127W is a mid to high capacity, welded nickel plated alloy steel. Its sealing is creating a very good load cell with extremely high protection for harsh environmental conditions.

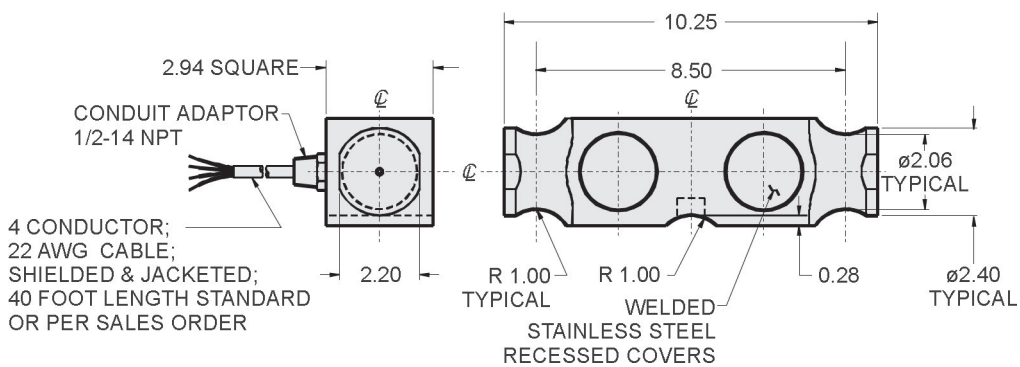
This double ended shear beam is designed for use in certified truck and rail scales and is available in capacities ranging from 50K through 100Klbs, and 20 to 50 tons.

This load cell is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments. This load cell is certified for Legal For Trade applications by both American NTEP and International OIML standards.

## APPLICATIONS

- Truck scales
- Railroad track scales

## OUTLINE DIMENSIONS in inches




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 50K, 65K, 100K<br>20t, 30t, 50t | | | lbs<br>metric tons |
| **NTEP/OIML Accuracy class** | **NTEP IIIL**** | **Standard** | **OIML R60** | |
| **Maximum no. of intervals (n)** | 10000 multiple | | 3000 | |
| **$Y = E_{max}/V_{min}$** | NTEP Cert. No 86-045A1 | | 6250 | Maximum available |
| **Rated output-R.O.** | 3.0 | | | mV/V |
| **Rated output tolerance** | 0.25 | | | ±% mV/V |
| **Zero balance** | 1.0 | | | ±% FSO |
| **Combined error** | 0.02 | 0.03 | 0.02 | ±% FSO |
| **Non-repeatability** | 0.01 | | | ±% FSO |
| **Creep error (30 minutes)** | 0.025 | 0.03 | 0.017 | ±% FSO |
| **Temperature effect on zero** | 0.0009 | 0.0015 | 0.0010 | ±% FSO/°F |
| **Temperature effect on output** | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | | | °F (°C) |
| **Sideload rejection ratio** | 500:1 | | | |
| **Safe sideload** | 100 | | | % of R.C. |
| **Maximum safe central overload** | 150 | | | % of R.C. |
| **Ultimate central overload** | 300 | | | % of R.C. |
| **Excitation, recommended** | 10 | | | Vdc or Vac rms |
| **Excitation, maximum** | 25 | | | Vdc or Vac rms |
| **Input impedance** | 686 - 714 | | | Ω |
| **Output impedance** | 699 - 707 | | | Ω |
| **Insulation resistance at 50VDC** | >1000 | | | MΩ |
| **Material** | Nickel plated alloy steel* | | | |
| **Environmental protection** | IP68 | | | |

* Stainless steel available as 65040W
** Only imperial capacities are NTEP approved

FSO -Full Scale Output

All specifications subject to change without notice.

# Stainless Steel, Welded Seal Double-Ended Shear Beam Load Cell

65040 Steel

Factory Mutual System Approved

## FEATURES

- Rated capacities of 25,000 to 75,000lbs (higher capacities also available)
- Welded seal, stainless steel construction
- Center supported, external pivot loading
- Integral conduit adaptor
- Trade certified for NTEP Class IIIL:10000 divisions
- *Sensorgage*™ sealed to IP68 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

## DESCRIPTION

The 65040W is a mid to high capacity welded stainless steel, double ended shear beam load cell.

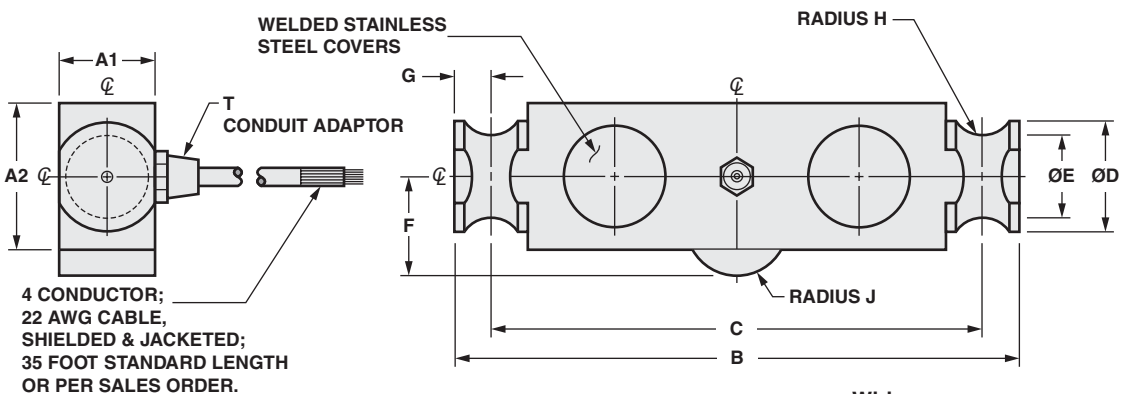
This product is designed for use in certified truck and rail scales and is available in capacities ranging from 25k through 75klbs. (for higher capacities, please consult factory)

This load cell is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments. This load cell is certified for Legal For Trade applications by American NTEP standards.

## APPLICATIONS

- Hostile environments:
  Food and beverage processing
  Chemical and plastics processing
  Pharmaceutical and biomedical processing
- Truck scales
- Railroad track scales

## OUTLINE DIMENSIONS in inches




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

| CAPACITY | A1 | A2 | B | C | D | E | F | G | H | J | T-THREAD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25K - 40K | 1.94 | 2.44 | 8.25 | 7.25 | 2.0 | 1.63 | 1.75 | 0.50 | 0.50 | 0.50 | 1/4-18NPT |
| 50K - 75K | 1.94 | 2.94 | 11.50 | 10.00 | 2.2 | 1.70 | 2.00 | 0.75 | 0.75 | 1.00 | 1/2-14NPT |

Capacities are in pounds.

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Rated capacities-R.C. ($E_{max}$)** | 25K, 40K, 50K, 75K* | | lbs |
| **NTEP/OIML Accuracy class** | **NTEP IIIL** | **Standard** | |
| **Maximum no. of intervals (n)** | 10000 multiple | | |
| **Y = $E_{max}/V_{min}$** | See NTEP cert. 86-045A1 | | Maximum available |
| **Rated output-R.O.** | 3.0 | | mV/V |
| **Rated output tolerance** | 0.25 | | ±% mV/V |
| **Zero balance** | 1.0 | | ±% FSO |
| **Combined error** | 0.02 | 0.03 | ±% FSO |
| **Non-repeatability** | 0.01 | 0.015 | ±% FSO |
| **Creep error (30 minutes)** | 0.025 | 0.03 | ±% FSO |
| **Temperature effect on zero** | 0.0009 | 0.0015 | ±% FSO/°F |
| **Temperature effect on output** | 0.0008 | 0.0008 | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to +65) | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to +85) | | °F (°C) |
| **Sideload rejection ratio** | 500:1 | | |
| **Safe sideload** | 100 | | % of R.C. |
| **Maximum safe central overload** | 150 | | % of R.C. |
| **Ultimate central overload** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 - 15 | | Vdc or Vac rms |
| **Excitation, maximum** | 25 | | Vdc or Vac rms |
| **Input impedance** | 686 - 714 | | Ω |
| **Output impedance** | 699 - 707 | | Ω |
| **Insulation resistance at 50VDC** | >1000 | | MΩ |
| **Material** | 17-4 Ph stainless steel** | | |
| **Environmental protection** | IP68 | | |

* Consult factory for higher capacities
** Alloy steel available as 65040

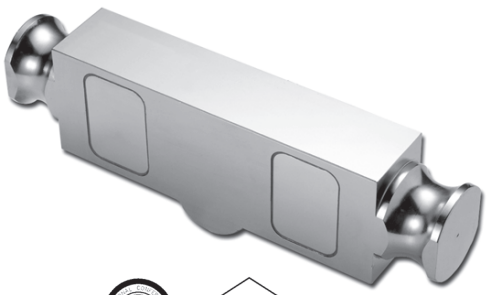
FSO -Full Scale Output

# Model DLB

Celtron

VISHAY PRECISION GROUP

## Double Ended Shear Beam



### FEATURES

- Capacities 25K-125Klb
- Center-mounted with double-linked shear beam design
- Free of horizontal movement
- Insensitive to side load
- Electroless nickel plated alloy tool steel
- NTEP Class IIIL 10000 for whole series
- Surge protection optional for 60Klb

### OPTIONAL FEATURE

- FM approval available

### DESCRIPTION

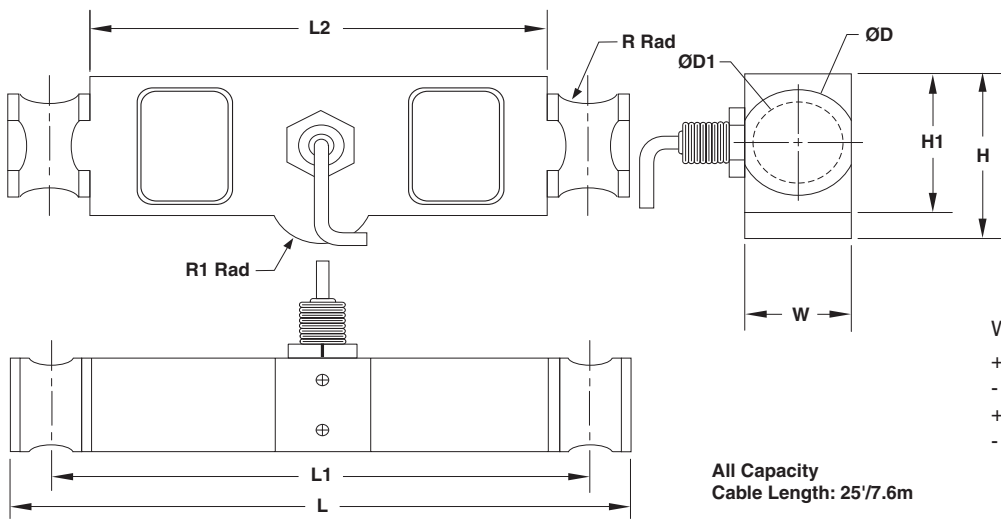
DLB is designed to be center-mounted with double-linked loading. This design provides free movement in all horizontal directions virtually eliminating binding or friction points. The Shear Beam design gives excellent performance for high capacity loading

DLB is constructed of alloy steel and fully potted sealed with special chemical compounds to IP67 providing excellent protection against moisture and humidity.

### APPLICATIONS

- Truck/rail scales
- Silo/hopper/tank weighing
- Fork-lift scales

### OUTLINE DIMENSIONS




Wiring diagram

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Signal | Green |
| - Signal | White |

**All Capacity**
**Cable Length: 25'/7.6m**

| CAPACITY | | L | L1 | L2 | W | H | H1 | D | D1 | R | R1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 25K/40Klb | mm | 209.6 | 184.2 | 158.8 | 49.3 | 75.5 | 62.0 | 50.8 | 41.4 | 12.7 | 12.7 |
| | (inch) | 8.25 | 7.25 | 6.25 | 1.94 | 2.97 | 2.44 | 2.00 | 1.63 | 0.50 | 0.50 |
| 50K/60K/75Klb | mm | 292.1 | 254.0 | 215.9 | 49.3 | 88.2 | 74.7 | 55.9 | 43.2 | 19.1 | 25.4 |
| | (inch) | 11.50 | 10.00 | 8.50 | 1.94 | 3.47 | 2.94 | 2.20 | 1.70 | 0.75 | 1.00 |
| 100K/125Klb | mm | 368.3 | 317.5 | 266.7 | 73.7 | 118.9 | 98.0 | 81.3 | 62.0 | 25.4 | 38.1 |
| | (inch) | 14.50 | 12.50 | 10.5 | 2.90 | 4.68 | 3.86 | 3.20 | 2.44 | 1.00 | 1.50 |

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **NTEP/OIML Accuracy class** | **NTEP IIIL** | **Non-Approved** | |
| **Maximum no. of intervals (n)** | 10000 multiple | | |
| **Y = $E_{max}/V_{min}$** | 14000 | 5000 | Maximum available |
| **Standard capacities ($E_{max}$)** | 25K, 40K, 50K, 60K, 75K, 100K, 125K | | lbs |
| **Rated output-R.O.** | 3.0 | | mV/V |
| **Rated output tolerance** | 0.25 | | ±% of rated output |
| **Zero balance** | 1 | | ±% of rated output |
| **Non linearity** | 0.025 | | ±% of rated output |
| **Hysteresis** | 0.025 | | ±% of rated output |
| **Non-repeatability** | 0.02 | | ±% of rated output |
| **Creep error (20 minutes)** | 0.030 | | ±% of rated output |
| **Zero return (20 minutes)** | 0.030 | | ±% of rated output |
| **Temperature effect on min. dead load output** | 0.0010 | 0.0026 | ±% of rated output/°C |
| **Temperature effect on sensitivity** | 0.0010 | 0.0015 | ±% of applied load/°C |
| **Compensated temperature range** | -10 to +40 | | °C |
| **Operating temperature range** | -20 to +60 | | °C |
| **Safe overload** | 150 | | % of R.C. |
| **Ultimate overload** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 770±10 | | Ohms |
| **Output impedance** | 700±5 | | Ohms |
| **Insulation resistance** | >5000 | | Mega-Ohms |
| **Construction** | Nickel plated alloy steel | | |
| **Environmental protection** | IP67 | | |

All specifications listed subject to change without notice.

FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

# Model 5223

Revere

VISHAY PRECISION GROUP

# Double-Link Beam Load Cell

## FEATURES

- Capacities: 50K to 100Klbs
- Nickel plated element
- Certified to OIML R60 3000d and NTEP class IIIL 10000 divisions
- Sealing: IP67 (DIN 40.050)
- Low profile, self-checking and self-centering
- Optimised design specially for weigh-bridge use
- Optional conduit adapter

## OPTIONAL FEATURE

- FM approved for use in potentially explosive atmosphere

## DESCRIPTION

The 5223 is a hermetically sealed, end loaded, centre supported double ended shear beam.

This product is suitable for a wide range of truck and rail scales. It is designed to use parallel link loading, considered by many weighing experts to be advantageous when compared to other loading techniques.

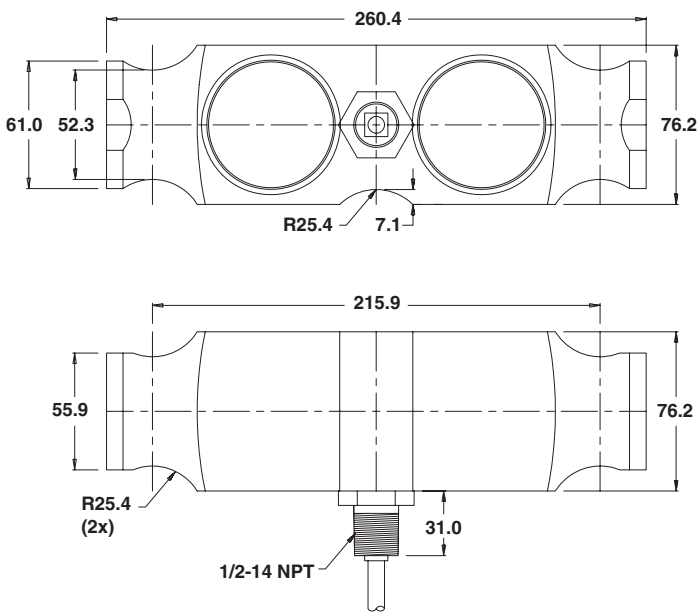
Fully welded stainless steel seals ensure high environmental integrity and provided that additional cable sealing is used, occasional submersion can occur without damage.

These products meet the stringent Weights and Measures requirements throughout Europe.

## APPLICATIONS

- Truck scales
- Railroad track scales
- "Legal for Trade" tank, bin and hopper weighing

## OUTLINE DIMENSIONS in mm




*Cable specifications:*

Cable length: 12 m

| | |
|---|---|
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Transparent |

Cable screen is not connected to load cell body. Performance may be affected if load cell cables are shortened.


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11811
Revision: 09-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| **Standard capacities ($E_{max}$)** | 50, 65, 100 | | | Klbs |
| **Accuracy class according to OIML R-60 / NTEP** | **NTEP IIIL** | **Non-Approved** | **C3** | |
| **Maximum no. of verfication intervals ($n_{lc}$)** | 10000 | | 3000 | |
| **Minimum verification interval ($V_{min}$)** | | | $E_{max}$/10000 | |
| **Rated output (=S)** | 3 | | | mV/V |
| **Rated output tolerance** | 0.003 | | | ±mV/V |
| **Zero balance** | 1.0 | | | ±% FSO |
| **Combined error** | 0.0200 | 0.0300 | 0.0200 | ±% FSO |
| **Non-repeatability** | 0.0100 | 0.0100 | 0.0100 | ±% FSO |
| **Minimum dead load output return** | 0.0250 | 0.0300 | 0.0167 | ±% applied load |
| **Creep error (30 minutes)** | | 0.0300 | 0.0245 | ±% applied load |
| **Creep error (20 minutes)** | 0.0027 | 0.0045 | | ±% applied load |
| **Temperature effect on minimum dead load output** | (0.0008) | 0.0140 | 0.0070 | ±% FSO/5°C (/°F) |
| **Temperature effect on sensitivity** | (0.0010) | 0.0070 | 0.0045 | ±% applied load/5°C (/°F) |
| **Minimum dead load** | 0 | | | $\%E_{max}$ |
| **Maximum safe over load** | 150 | | | $\%E_{max}$ |
| **Ultimate over load** | 300 | | | $\%E_{max}$ |
| **Maximum safe side load** | 100 | | | $\%E_{max}$ |
| **Deflection at $E_{max}$** | 0.5/ 0.6/ 0.9 | | | mm |
| **Excitation voltage** | 5 to 18 | | | V |
| **Maximum excitation voltage** | 20 | | | V |
| **Input resistance** | 700±7 | | | Ω |
| **Output resistance** | 700±7 | | | Ω |
| **Insulation resistance** | ≥5000 | | | MΩ |
| **Compensated temperature range** | -10 to +40 | | | °C |
| **Operating temperature range** | -40 to +80 | | | °C |
| **Storage temperature range** | -40 to +90 | | | °C |
| **Element material (DIN)** | Nickel plated alloy steel | | | |
| **Sealing (DIN 40.050 / EN60.529)** | IP67 | | | |

FSO-Full Scale Output

# Double-Link Beam Load Cell

## FEATURES

- Capacities: 50K to 125Klbs
- Stainless steel construction
- Certified to NTEP class IIIL 10000 divisions
- Sealing: IP68
- Low profile, self-checking and self-centering
- Optimised design specially for weigh-bridge use
- Optional conduit adapter

## OPTIONAL FEATURE

- FM approved for use in potentially explosive atmosphere

## DESCRIPTION

The 9223 is a hermetically sealed, end loaded, centre supported double ended shear beam.

This product is suitable for a wide range of truck and rail scales. It is designed to use parallel link loading, considered by many weighing experts to be advantageous when compared to other loading techniques.

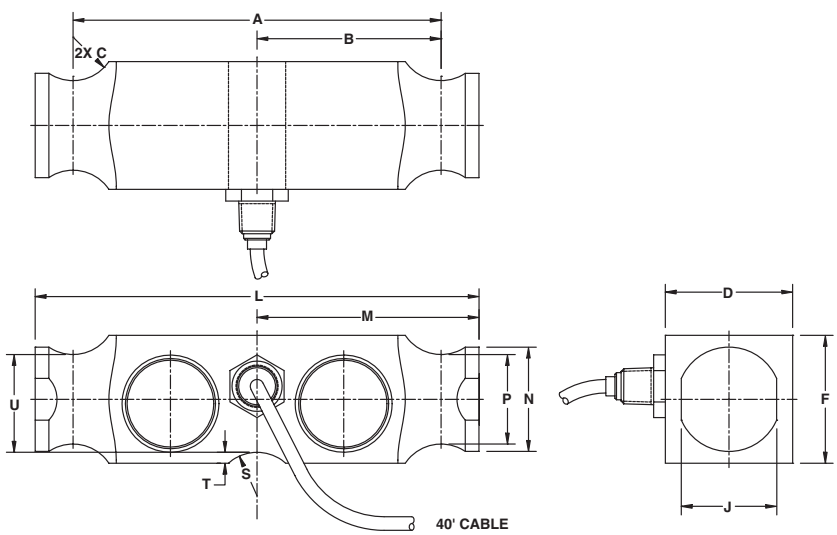
Fully welded stainless steel seals ensure high environmental integrity and provided that additional cable sealing is used, occasional submersion can occur without damage.

These products meet the stringent Weights and Measures requirements throughout USA.

## APPLICATIONS

- Truck scales
- Railroad track scales
- "Legal for Trade" tank, bin and hopper weighing

## OUTLINE DIMENSIONS in inches




*Cable specifications:*

Cable length: 40 feet

| | |
|---|---|
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Bare |

Cable screen is not connected to load cell body. Performance may be affected if load cell cables are shortened.

| Capacity (lb) | 50K, 65K, 100K, 125K |
|---|---|
| A | 8.50 |
| B | 4.25 |
| C RAD | 1.00 |
| D | 2.94 |
| F | 2.94 |
| J | 2.20 |
| L | 10.25 |
| M | 5.13 |
| N | 2.40 |
| P | 2.06 |
| S RAD | 1.00 |
| T | 0.25 |
| U | 2.25 |

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Standard capacities ($E_{max}$)** | 50, 65, 100, 125 | | Klbs |
| **Accuracy class according to NTEP** | **NTEP IIIL** | **Non-Approved** | |
| **Maximum no. of verfication intervals ($n_{lc}$)** | 10000 | | |
| **Rated output (=S)** | 3 | | mV/V |
| **Rated output tolerance** | 0.003 | | ±mV/V |
| **Zero balance** | 1.0 | | ±% FSO |
| **Combined error** | 0.0200 | 0.0500 | ±% FSO |
| **Non-repeatability** | 0.0100 | 0.0200 | ±% FSO |
| **Creep error (20 - 30 minutes)** | 0.0300 | 0.0300 | ±% applied load |
| **Temperature effect on minimum dead load output** | 0.0008 | (0.0140) | ±% FSO/°F (/5°C) |
| **Temperature effect on sensitivity** | 0.0010 | (0.0070) | ±% applied load/°F (/5°C) |
| **Compensated temperature range** | -10 to +40 (+14 to 104) | | °C (°F) |
| **Operating temperature range** | -53 to +93 (-65 to +200) | | °C (°F) |
| **Safe load limit** | 150 | | $\%E_{max}$ |
| **Ultimate load** | 300 | | $\%E_{max}$ |
| **Safe side load limit** | 100 | | $\%E_{max}$ |
| **Excitation voltage recommended** | 10 | | V |
| **Excitation voltage maximum** | 15 | | V |
| **Input resistance** | 700±7 | | Ω |
| **Output resistance** | 700±7 | | Ω |
| **Insulation resistance** | ≥5000 | | MΩ |
| **Environmental protection** | IP68 | | |
| **Element material** | Stainless steel | | ASTM |

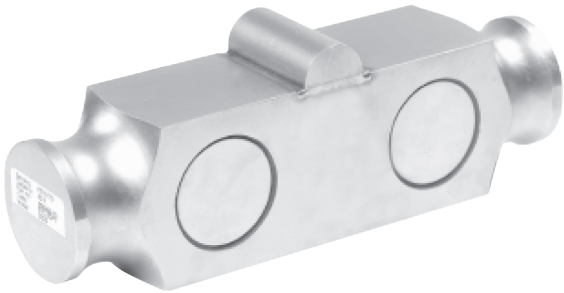
FSO-Full Scale Output

# Model 9323

Revere

VISHAY PRECISION GROUP

# Double Ended Beam Load Cell



## FEATURES

- Capacities: 20 to 75Klbs
- Environmental protection: IP67 (DIN 40.050)
- Material: Stainless steel
- Certified by NTEP class IIIL 10000 dvisions

## OPTIONAL FEATURE

- FM approved for use in potentially explosive atmosphere

## DESCRIPTION

The 9323 is a Double Ended Beam type load cell.

This product is designed for use in certified truck and rail scales and is available in capacities from 20K to 75Klbs.

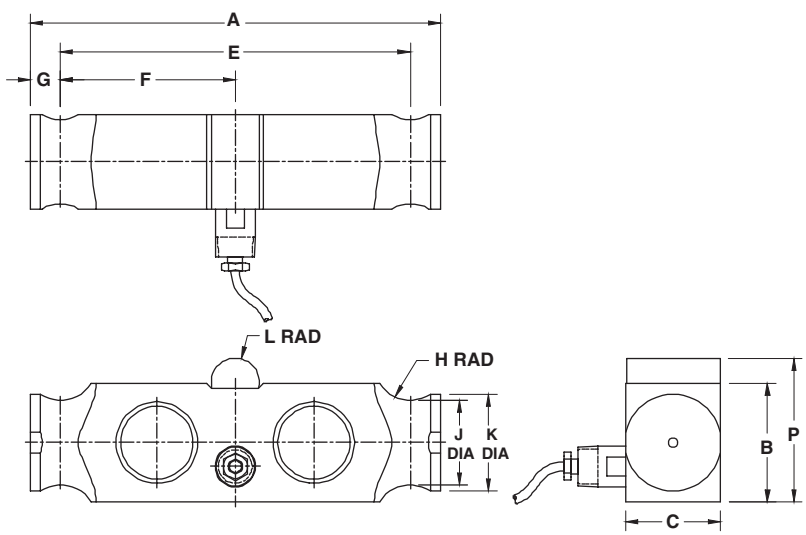
A reliable sealing and mechanical protection of the strain gage area is ensured by the use of potting compound with a metal cover.

This load cell is rated intrinsically safe by the FM system, making it suitable for use in potentially explosive atmosphere.

## APPLICATIONS

- Weighbridges
- Silos, tanks and hoppers

## OUTLINE DIMENSIONS in inches




*Cable specifications:*

| | |
|---|---|
| Cable length: | 9 m (30ft) |
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Transparent |

Cable screen is not connected to load cell body.

| Capacity | 20 - 25K | 30 - 75K |
|---|---|---|
| A | 8.00 | 8.50 |
| B | 1.94 | 2.45 |
| C | 1.44 | 1.95 |
| E | 7.12 | 7.25 |
| F | 3.56 | 3.63 |
| G | 0.44 | 0.63 |
| H | 0.38 | 0.75 |
| J RAD | 0.80 | 1.75 |
| ØK | 1.00 | 2.00 |
| L RAD | 0.38 | 0.50 |
| P | 2.31 | 3.00 |

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Capacities** | 20K, 25K, 30K, 40K, 50K, 60K, 75K | | lbs |
| **Accuracy class according to NTEP** | **NTEP IIIL** | **Non-Approved** | |
| **Max. no. of verfication intervals** | 10000d | | |
| **Rated output (=S)** | 3 | | mV/V |
| **Rated output tolerance** | 0.003 | | ±mV/V |
| **Zero balance** | 1.0 | | ±% FSO |
| **Combined error** | 0.0200 | 0.0500 | ±% FSO |
| **Creep error (20 - 30 minutes)** | 0.0300 | 0.0200 | ±% applied load |
| **Temperature effect on zero** | 0.0090 (0.0010) | 0.0250 | ±% FSO/5°C (/°F) |
| **Temperature effect on output** | 0.0072 (0.0008) | 0.0250 | ±% applied load/5°C (/°F) |
| **Compensated temperature range** | -10 to +40 (+14 to 104) | | °C (°F) |
| **Operating temperature range** | -53 to +93 (-65 to +200) | | °C (°F) |
| **Safe load limit** | 150 | | $\%E_{max}$ |
| **Ultimate load** | 300 | | $\%E_{max}$ |
| **Safe side load limit** | 100 | | $\%E_{max}$ |
| **Excitation voltage recommended** | 10 | | V |
| **Excitation voltage maximum** | 15 | | V |
| **Input resistance** | 700±7 | | Ω |
| **Output resistance** | 700±7 | | Ω |
| **Insulation resistance** | ≥5000 | | MΩ |
| **Environmental protection** | IP67 | | |
| **Element material** | Stainless steel | | ASTM |

FSO-Full Scale Output

Correct mounting of the load cells is essential to ensure optimum accuracy and performance. Further information is available upon request.

# Model 9423

Revere

VISHAY PRECISION GROUP

# Double Ended Beam Load Cell

## FEATURES

- Capacities: 10 to 75Klbs
- Environmental protection: IP67 (DIN 40.050)
- Material: Stainless steel
- Certified to NTEP class IIIL, 10000 divisions

## OPTIONAL FEATURE

- FM approved for use in potentially explosive atmosphere

## DESCRIPTION

The 9423 is a medium capacity Double Ended Beam type load cell made of stainless steel.

This product is designed for use in certified truck and rail scales and is available in capacities from 10K to 75Klbs.

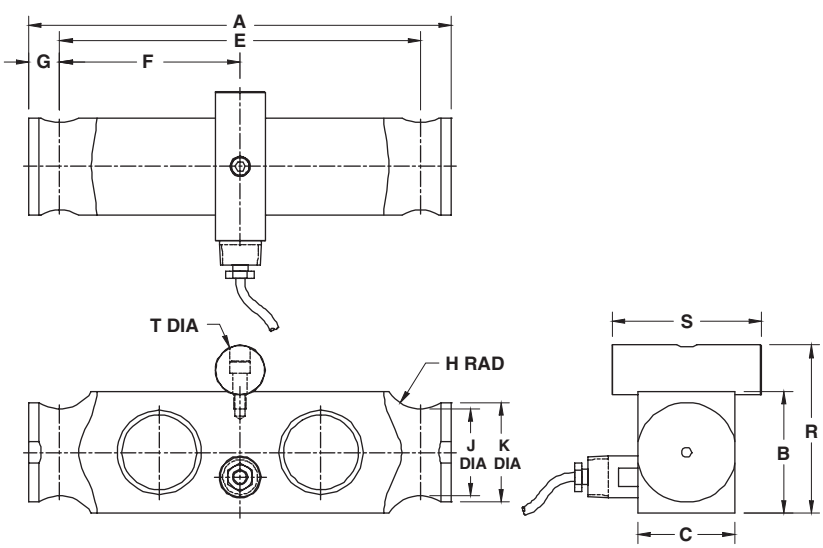
A reliable sealing and mechanical protection of the strain gage area is ensured by the use of potting compound with a metal cover.

This load cell is rated intrinsically safe by the FM system, making it suitable for use in potentially explosive atmosphere.

## APPLICATIONS

- Weighbridges
- Silos, tanks and hoppers

## OUTLINE DIMENSIONS in inches




*Cable specifications:*

| | |
|---|---|
| Cable length: | 9 m (30ft) |
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Transparent |

Cable screen is not connected to load cell body.

| Capacity | 10, 15, 20, 25K | 30, 40, 50, 60, 75K |
|---|---|---|
| A | 8.00 | 8.50 |
| B | 1.94 | 2.45 |
| C | 1.44 | 1.95 |
| E | 7.12 | 7.25 |
| F | 3.56 | 3.62 |
| G | 0.44 | 0.63 |
| H Rad | 0.38 | 0.75 |
| J | 0.80 | 1.75 |
| K | 1.00 | 2.00 |
| R | 2.57 | 3.38 |
| S | 1.94 | 3.00 |
| T | 0.75 | 1.00 |

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Capacities** | 10K*, 15K*, 20K, 25K, 30K, 40K, 50K, 60K, 75K | | lbs |
| **Accuracy class according to NTEP** | **NTEP IIIL** | **Non-Approved** | |
| **Max. no. of verfication intervals** | 10000d | | |
| **Rated output (=S)** | 3.0 | | mV/V |
| **Rated output tolerance** | 0.003 | | ±mV/V |
| **Zero balance** | 1.0 | | ±% FSO |
| **Combined error** | 0.0200 | 0.0300 | ±% FSO |
| **Creep error (20 - 30 minutes)** | 0.0300 | 0.0300 | ±% applied load |
| **Temperature effect on min. dead load output** | 0.0090 (0.0010) | 0.0135 (0.0015) | ±% FSO/5°C (/°F) |
| **Temperature effect on sensitivity** | 0.0072 (0.0008) | | ±% applied load/5°C (/°F) |
| **Compensated temperature range** | -10 to +40 (+14 to 104) | | °C (°F) |
| **Operating temperature range** | -53 to +93 (-65 to +200) | | °C (°F) |
| **Safe load limit** | 150 | | $\%E_{max}$ |
| **Ultimate load** | 300 | | $\%E_{max}$ |
| **Safe side load limit** | 100 | | $\%E_{max}$ |
| **Excitation voltage recommended** | 10 | | V |
| **Excitation voltage maximum** | 15 | | V |
| **Input resistance** | 700±7 | | Ω |
| **Output resistance** | 700±7 | | Ω |
| **Insulation resistance** | ≥5000 | | MΩ |
| **Environmental protection** | IP67 | | |
| **Element material** | Stainless steel | | ASTM |

* Capacities 10K & 15K are not NTEP approved.

FSO-Full Scale Output

Correct mounting of the load cells is essential to ensure optimum accuracy and performance. Further information is available upon request.

# Model 9803

Revere

VISHAY PRECISION GROUP

# Double Ended Beam Load Cell

## FEATURES

- Capacities: 25K to 100Klbs
- Environmental protection: IP67 (DIN 40.050)
- Material: stainless steel
- Certified by NTEP class IIIL, 10000 divisions

## OPTIONAL FEATURE

- FM approved for use in potentially explosive atmosphere

## DESCRIPTION

The 9803 is a medium to high capacity Double Ended Beam type load cell, made of stainless steel.

This product is designed for use in certified truck and rail scales and is available in capacities from 25K to 100Klbs.

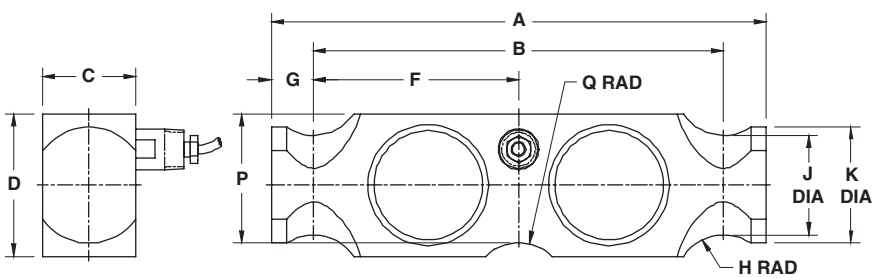
A reliable sealing and mechanical protection of the strain gage area is ensured by the use of potting compound with a metal cover.

This load cell is rated intrinsically safe by the FM system, making it suitable for use in potentially explosive atmosphere.

## APPLICATIONS

- Weighbridges
- Silos, tanks and hoppers

## OUTLINE DIMENSIONS in inches




| Capacity | 25, 50, 65, 75K |
|---|---|
| A | 10.25 |
| B | 8.50 |
| C | 1.94 |
| D | 2.94 |
| F | 4.25 |
| G | 0.88 |
| H Rad | 1.00 |
| ØK | 2.40 |
| ØJ | 2.06 |
| P | 2.66 |
| Q Rad | 1.00 |

*Cable specifications:*

| | |
|---|---|
| Cable length: | 6m |
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Transparent |

Cable screen is not connected to the load cell body



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11822
Revision: 09-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Standard capacities ($E_{max}$)** | 25K, 50K, 65K, 100K | | lbs |
| **Accuracy class according to NTEP** | **NTEP IIIL** | **Non-Approved** | |
| **Maximum no. of verfication intervals (n)** | 10000d | | |
| **Rated output (=S)** | 3 | | mV/V |
| **Rated output tolerance** | 0.003 | | ±mV/V |
| **Zero balance** | 1.0 | | ±% FSO |
| **Combined error** | 0.0200 | 0.0500 | ±% FSO |
| **Creep error (20 - 30 minutes)** | 0.0300 | 0.0300 | ±% applied load |
| **Temperature effect on zero** | 0.0090 (0.0010) | 0.025 | ±% FSO/5°C (/°F) |
| **Temperature effect on output** | 0.0072 (0.0008) | 0.025 | ±% applied load/5°C (/°F) |
| **Compensated temperature range** | -10 to +40 (+14 to +104) | | °C (°F) |
| **Operating temperature range** | -53 to +93 (-65 to +200) | | °C (°F) |
| **Safe load limit** | 150 | | $\%E_{max}$ |
| **Ultimate load** | 300 | | $\%E_{max}$ |
| **Safe side load limit** | 100 | | $\%E_{max}$ |
| **Excitation voltage recommended** | 10 | | V |
| **Excitation voltage maximum** | 15 | | V |
| **Input resistance** | 700±7 | | Ω |
| **Output resistance** | 700±7 | | Ω |
| **Insulation resistance** | ≥5000 | | MΩ |
| **Environmental protection** | IP67 | | |
| **Element material** | Stainless steel | | ASTM |

FSO-Full Scale Output

**Mounting:**
Correct mounting of the load cells is essential to ensure optimum accuracy and performance. Further information is available upon request.

# Model 5103

Revere

VISHAY PRECISION GROUP

# Double Ended Beam Load Cell

## FEATURES

- Capacities: 5K to 250Klb
- Low profile construction
- Nickel plated alloy steel construction
- Certified to OIML R60 3000d, NTEP CoC - 10000d
- Sealing: IP67 (DIN 40.050)

## OPTIONAL FEATURE

- FM approved for use in hazardous locations
- Atex versions are available for use in potentially explosive atmospheres

## DESCRIPTION

5103 transducers are double ended, center loaded shear beam load cells. The 5103 is constructed of nickel plated alloy steel.

These products are suitable for tank weighing systems, low cost weighbridges and axle weighers.

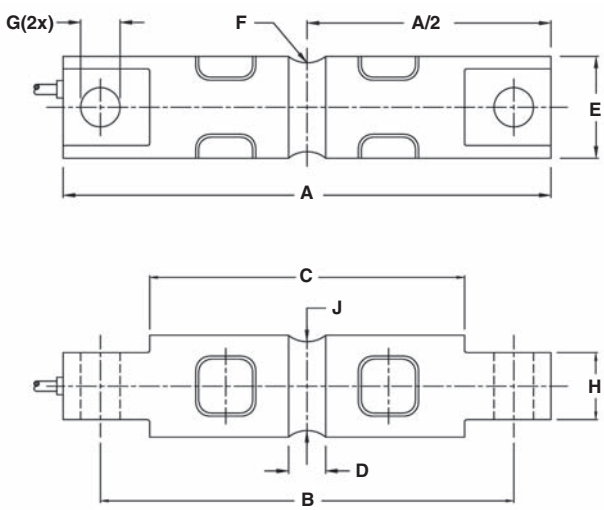
A reliable sealing is ensured by the proprietary TRANSEAL potting compound and additional mechanical protection of the strain gage area.

A specially designed mounting arrangement is available, providing the ideal solution for vessel / tank weighing.

## APPLICATIONS

- Platform scales
- On-board weighing
- Weighbridges
- Silo hopper weighing

## OUTLINE DIMENSIONS in mm




| Capacity (lbs) | 5K, 10K | 20K | 30 - 60K | 100K | 150K | 200K, 250K |
|---|---|---|---|---|---|---|
| A | 206.2 | 206.2 | 260.4 | 285.8 | 285.8 | 408.9 |
| B | 174.6 | 174.6 | 215.9 | 241.3 | 241.3 | 330.2 |
| C | 133.1 | 133.1 | 165.1 | 190.5 | 190.5 | 254.0 |
| D | 15.7 | 21.3 | 25.4 | 31.8 | 31.8 | 33.0 |
| E | 43.2 | 49.5 | 76.2 | 88.9 | 99.1 | 136.5 |
| F | 12.7 | 12.7 | 25.4 | 38.1 | 38.1 | 50.8 |
| G | 16.7 | 16.7 | 26.9 | 26.9 | 26.9 | 39.6 |
| H | 28.4 | 28.4 | 60.2 | 63.5 | 71.1 | 116.8 |
| J | 37.6 | 37.6 | 69.3 | 82.3 | 92.5 | 131.4 |

Note: Dimensions in millimeters

*Cable specifications:*

Cable length: 10 meters (6 meters for 5 - 20K

| | |
|---|---|
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Transparent |


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11813
Revision: 09-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| Standard capacities ($E_{max}$) | 2.3, 4.5, 9.1, 13.6, 18.2, 22.7, 27.2, 45.4, 68, 91, 113 | | | ton |
| Standard capacities ($E_{max}$) | 5, 10, 20, 30, 40, 50, 60, 100, 150, 200, 250 | | | Klbs |
| Accuracy class according to OIML / NTEP | NTEP | Non-Approved | C3 | |
| Maximum no. of verfication intervals ($n_{lc}$) | IIIL 10000 | D3 | 3000 | |
| Minimum verification interval ($V_{min}$) | | | $E_{max}$/10,000 | |
| Rated output (=S) | 3.0 | | | mV/V |
| Rated output tolerance | 0.003 | | | ±mV/V |
| Zero balance | 1.0 | | | ±% FSO |
| Combined error | 0.0200 | 0.0300 | 0.0200 | ±% FSO |
| Non-repeatability | 0.0100 | 0.0100 | 0.0100 | ±% FSO |
| Minimum dead load output return | 0.0250 | 0.0300 | 0.0167 | ±% applied load |
| Creep error (30 minutes) | | 0.0300 | 0.0245 | ±% applied load |
| Creep error (20 minutes) | 0.030 | 0.0450 | 0.0053 | ±% applied load |
| Temperature effect on minimum dead load output | (0.001) | 0.0140 | 0.0070 | ±% FSO/5°C (/°F) |
| Temperature effect on sensitivity | (0.0008) | 0.0070 | 0.0050 | ±% applied load/5°C (/°F) |
| Minimum dead load | 0 | | | %$E_{max}$ |
| Maximum safe over load | 150 | | | %$E_{max}$ |
| Ultimate over load | 300 | | | %$E_{max}$ |
| Maximum safe side load | 100 | | | %$E_{max}$ |
| Deflection at $E_{max}$ | 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.5/0.9/0.9 | | | mm |
| Excitation voltage | 5 to 12 | | | V |
| Maximum excitation voltage | 15 | | | V |
| Input resistance | 700±7 | | | Ω |
| Output resistance | 700±7 | | | Ω |
| Insulation resistance | ≥5000 | | | MΩ |
| Compensated temperature range | -10 to +40 | | | °C |
| Operating temperature range | -40 to +80 | | | °C |
| Storage temperature range | -40 to +90 | | | °C |
| Element material (DIN) | Nickel plated alloy steel | | | |
| Sealing (DIN 40.050 / EN60.529) | IP67 | | | |
| Recommended torque on fixation bolts | 12 to 14 | | | N*m |

FSO-Full Scale Output

# Model 9103

Revere

VISHAY PRECISION GROUP

# Double Ended Beam Load Cell

## FEATURES

- Capacities: 5K to 250Klb
- Low profile construction
- Stainless steel construction
- Certified to NTEP class IIIL, 10000 divisions
- Sealing: IP67 (DIN 40.050)

## OPTIONAL FEATURE

- FM and ATEX certified versions are available for use in potentially explosive atmospheres

## DESCRIPTION

The 9103 is a double ended, center loaded shear beam type load cell constructed of stainless steel.

This product is suitable for tank weighing systems, low cost weighbridges and axle weighers.

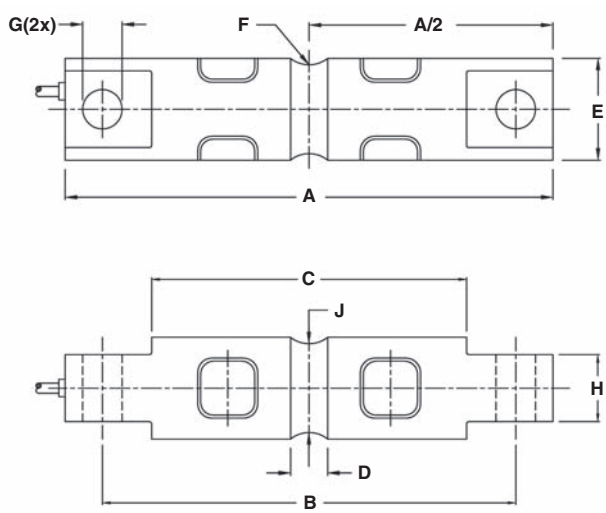
A reliable sealing is ensured by the proprietary TRANSEAL potting compound and additional mechanical protection of the strain gage area.

A specially designed mounting arrangement is available, providing the ideal solution for vessel/tank weighing.

## APPLICATIONS

- Platform scales
- On-board weighing
- Weighbridges
- Silo hopper weighing

## OUTLINE DIMENSIONS in mm




*Cable specifications:*

Cable length: 10 meters (6 meters for 5 - 20K)

| | |
|---|---|
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Transparent |

Cable screen is not connected to the load cell body

| Capacity (lbs) | 5K, 10K | 20K | 30 - 60K | 100K | 150K | 200K, 250K |
|---|---|---|---|---|---|---|
| A | 206.2 | 206.2 | 260.4 | 285.8 | 285.8 | 408.9 |
| B | 174.6 | 174.6 | 215.9 | 241.3 | 241.3 | 330.2 |
| C | 133.1 | 133.1 | 165.1 | 190.5 | 190.5 | 254.0 |
| D | 15.7 | 21.3 | 25.4 | 31.8 | 31.8 | 33.0 |
| E | 43.2 | 49.5 | 76.2 | 88.9 | 99.1 | 136.5 |
| F | 12.7 | 12.7 | 25.4 | 38.1 | 38.1 | 50.8 |
| G | 16.7 | 16.7 | 26.9 | 26.9 | 26.9 | 39.6 |
| H | 28.4 | 28.4 | 60.2 | 63.5 | 71.1 | 116.8 |
| J | 37.6 | 37.6 | 69.3 | 82.3 | 92.5 | 131.4 |

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Standard capacities ($E_{max}$)** | 5*, 10, 20, 30, 40, 50, 60, 100, 150*, 200*, 250* | | Klbs |
| **Metric equivalents** | 2.3*, 4.5, 9.1, 13.6, 18.2, 22.7, 27.2, 45.4, 68*, 91*,113* | | ton |
| **Accuracy class according to NTEP** | **NTEP IIIL** | **Non-Approved** | |
| **Maximum no. of verfication intervals ($n_{lc}$)** | 10000 | | |
| **Rated output (=S)** | 3.0 | | mV/V |
| **Rated output tolerance** | 0.03 | | ±mV/V |
| **Zero balance** | 2.0 | | ±% FSO |
| **Combined error** | 0.0200 | 0.1000 | ±% FSO |
| **Non-repeatability** | 0.0100 | 0.0200 | ±% FSO |
| **Minimum dead load output return** | 0.0300 | 0.0500 | ±% applied load |
| **Creep error (30 minutes)** | | 0.0600 | ±% applied load |
| **Creep error (20 - 30 minutes)** | 0.0300 | 0.0200 | ±% applied load |
| **Temperature effect on minimum dead load output** | 0.0008) | (0.0140) | ±% FSO/°F (/5°C) |
| **Temperature effect on sensitivity** | 0.0010 | (0.0070) | ±% applied load/°F (/5°C) |
| **Minimum dead load** | 0 | | $\%E_{max}$ |
| **Maximum safe over load** | 150 | | $\%E_{max}$ |
| **Ultimate over load** | 300 | | $\%E_{max}$ |
| **Maximum safe side load** | 100 | | $\%E_{max}$ |
| **Deflection at $E_{max}$** | 0.5/0.6/1.1/0.5/0.5/0.5/0.6/0.5/0.5/0.9/0.9 | | mm |
| **Excitation voltage** | 5 to 12 | | V |
| **Maximum excitation voltage** | 15 | | V |
| **Input resistance** | 880±80 | | Ω |
| **Output resistance** | 700±7 | | Ω |
| **Insulation resistance** | ≥5000 | | MΩ |
| **Compensated temperature range** | -10 to +40 | | °C |
| **Operating temperature range** | -40 to +80 | | °C |
| **Storage temperature range** | -40 to +90 | | °C |
| **Element material (DIN)** | Stainless steel | | |
| **Sealing (DIN 40.050 / EN60.529)** | IP67 | | |
| **Recommended torque on fixation bolts** | 12 to 14 | | N*m |

* Capacities 5, 150, 200 and 250 Klbs are not approved by NTEP

FSO-Full Scale OutputP

# Model 60058

Sensortronics

VISHAY PRECISION GROUP

# Double-Ended Shear Beam Load Cell

Approved

## FEATURES

- Rated capacities of 5,000 to 100,000 pounds, 2.3 to 45 metric tons
- High quality alloy tool steel construction
- Nickel plated for outstanding corrosion resistance
- Replacement for RTI model 5103 (EZM1)
- Integral conduit adaptor
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

## DESCRIPTION

The 60058 is a mid to high capacity nickel plated alloy steel, double ended shear beam load cell.

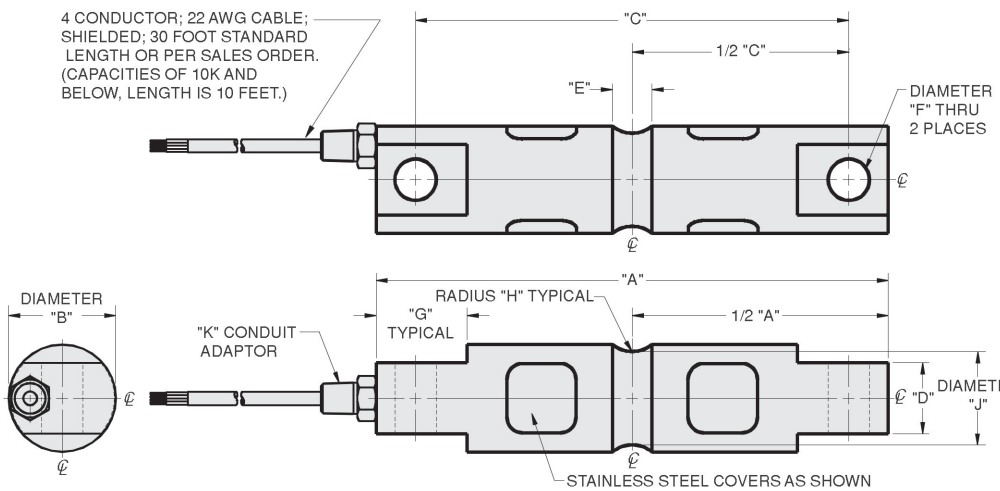
This product is designed for use in industrial and out door environments. Nickel plated steel construction limits corrosion from outdoor use. The IP67 sealing makes it suitable for applications that are subject to high-pressure wash down. Tank weighing is made simple when this load cell is combined with the EZ mount mounting hardware it was designed for. Its high accuracy and availability in high capacities make it ideal for certified truck and rail scales.

This load cell is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments. This load cell is certified for Legal For Trade applications by the American NTEP standards.

## APPLICATIONS

- Tank, bin and silo weighing
- Railroad track scales
- Truck scales

## OUTLINE DIMENSIONS in inches [mm]




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

| CAPACITY | A | B | C | D | E | F | G | H | J | K-THREAD |
|---|---|---|---|---|---|---|---|---|---|---|
| 5K - 20K | 8.12 | 1.70 | 6.88 | 1.13 | 0.63 | 0.65 | 1.44 | 0.50 | 1.48 | 1/4-18 NPT |
| 30K - 60K | 10.25 | 2.97 | 8.50 | 2.38 | 0.95 | 1.06 | 1.94 | 1.00 | 2.73 | 1/2-14 NPT |
| 100K | 11.25 | 3.50 | 9.50 | 2.50 | 1.25 | 1.06 | 1.88 | 1.50 | 3.24 | 1/2-14 NPT |
| [2.3 - 9t] | [206.2] | [43.2] | [174.8] | [28.7] | [16.0] | [16.5] | [36.6] | [12.7] | [37.6] | 1/4-18 NPT |
| [13.6 - 27t] | [260.4] | [75.4] | [215.9] | [60.5] | [24.1] | [26.9] | [49.3] | [25.4] | [69.3] | 1/2-14 NPT |
| [45t] | [285.8] | [88.9] | [241.3] | [63.5] | [31.8] | [26.9] | [47.8] | [38.1] | [82.3] | 1/2-14 NPT |

Capacities are in pounds [kg/t].



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11596
Revision: 12-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 5K, 10K, 20K, 30K, 40K, 50K, 60K, 100K<br>2.3, 4.5, 9.0, 13.6, 18.0, 23.0, 27.0, 45.0 | | | lbs<br>tons |
| **NTEP/OIML Accuracy class** | **NTEP III** | **NTEP IIIL** | **Standard** | |
| **Maximum no. of intervals (n)** | 5000 multiple | 10000 multiple | | |
| **Y = $E_{max}/V_{min}$** | See NTEP cert. 97-042A1 | | | Maximum available |
| **Rated output-R.O.** | 3.0 | | | mV/V |
| **Rated output tolerance** | 0.25 | | | ±% mV/V |
| **Zero balance** | 1.0 | | | ±% FSO |
| **Combined error** | 0.02 | 0.02 | 0.03 | ±% FSO |
| **Non-repeatability** | 0.01 | 0.01 | 0.01 | ±% FSO |
| **Creep error (20 minutes)** | 0.030 | 0.030 | 0.03 | ±% FSO |
| **Temperature effect on zero** | 0.0015 | 0.0010 | 0.0015 | ±% FSO/°F |
| **Temperature effect on output** | 0.0008 | 0.0008 | 0.0008 | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | | | °F (°C) |
| **Safe sideload** | 100 | | | % of R.C. |
| **Maximum safe central overload** | 150 | | | % of R.C. |
| **Ultimate central overload** | 300 | | | % of R.C. |
| **Excitation, recommended** | 10 | | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | | Vdc or Vac rms |
| **Input impedance** | 686 - 714 | | | Ω |
| **Output impedance** | 699 - 707 | | | Ω |
| **Insulation resistance at 50VDC** | >1000 | | | MΩ |
| **Material** | Nickel plated alloy tool steel | | | |
| **Environmental protection** | IP67 | | | |

FSO - Full Scale Output
R.C. - Rated Capacity

All specifications subject to change without notice.

# Model CSB

Celtron

VISHAY PRECISION GROUP

## Cylindrical Double Ended Shear Beam

### FEATURES

- Capacities 5K-150Klb
- Center-loaded double-ended shear beam design
- Free of horizontal movement
- Insensitive to side load
- Electroless nickel plated alloy tool steel
- NTEP Class IIIL 10000 approval from 20Klb to 200Klb

### OPTIONAL FEATURE

- FM approval available

### DESCRIPTION

The double-ended mounting provides good restraint for possible movement of tanks and, in many cases, eliminates the need for check rods. The Shear Beam design gives excellent performance for high capacity loading

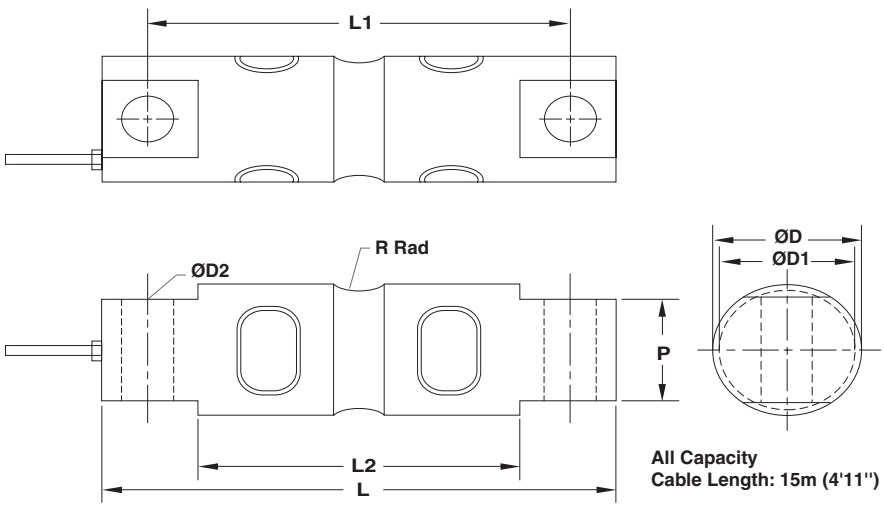
The cylindrical construction provides easy installation with simple loading features.

CSB is constructed of alloy steel and is fully potted with special chemical compounds to IP67 providing excellent protection against moisture and humidity.

### APPLICATIONS

- Truck/rail scales
- Silo/hopper/tank weighing
- Fork-lift scales

### OUTLINE DIMENSIONS




All Capacity
Cable Length: 15m (4'11'')

Wiring diagram

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Signal | Green |
| - Signal | White |

| CAPACITY | | L | L1 | L2 | D | D1 | D2 | P | R |
|---|---|---|---|---|---|---|---|---|---|
| 5K/10Klb | mm | 206.3 | 174.8 | 133.1 | 43.2 | 37.7 | 16.8 | 28.5 | 12.7 |
| | (inch) | 8.12 | 6.88 | 5.24 | 1.70 | 1.48 | 0.66 | 1.12 | 0.50 |
| 20Klb | mm | 206.3 | 174.8 | 133.1 | 49.5 | 37.9 | 16.8 | 28.5 | 12.7 |
| | (inch) | 8.12 | 6.88 | 5.24 | 1.95 | 1.49 | 0.66 | 1.12 | 0.50 |
| 30K/40K/50K/60Klb | mm | 260.4 | 215.9 | 164.8 | 76.2 | 69.4 | 26.9 | 60.2 | 25.4 |
| | (inch) | 10.25 | 8.50 | 6.49 | 3.20 | 2.73 | 1.06 | 2.37 | 1.00 |
| 100Klb | mm | 285.8 | 241.3 | 190.2 | 88.9 | 82.3 | 26.9 | 63.5 | 25.4 |
| | (inch) | 11.25 | 9.50 | 7.49 | 3.5 | 3.24 | 1.06 | 2.50 | 1.00 |
| 150Klb | mm | 285.8 | 241.3 | 190.2 | 99.1 | 92.5 | 26.9 | 71.1 | 38.1 |
| | (inch) | 11.25 | 9.50 | 7.49 | 3.90 | 3.64 | 1.06 | 2.80 | 1.50 |



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11717
Revision: 05-Feb-10

## SPECIFICATIONS

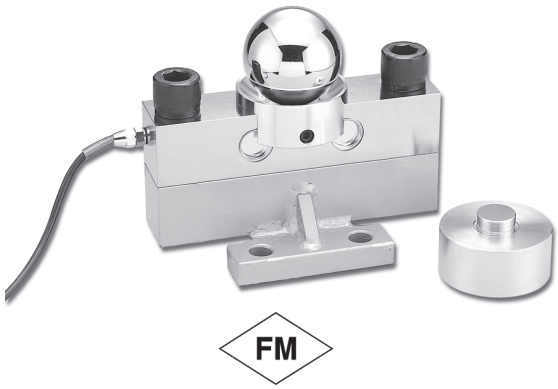
| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **NTEP/OIML Accuracy class** | **NTEP IIIL** | **Non-Approved** | |
| **Maximum no. of intervals (n)** | 10000 multiple* | | |
| **Y = $E_{max}/V_{min}$** | 14000 | 5000 | Maximum available |
| **Standard capacities ($E_{max}$)** | 5K, 10K, 20K, 30K, 40K, 50K, 60K, 100K, 150K | | lbs |
| **Rated output-R.O.** | 3.0 | | mV/V |
| **Rated output tolerance** | 0.25 | | ±% of rated output |
| **Zero balance** | 1 | | ±% of rated output |
| **Non linearity** | 0.025 | | ±% of rated output |
| **Hysteresis** | 0.025 | | ±% of rated output |
| **Non-repeatability** | 0.02 | | ±% of rated output |
| **Creep error (20 minutes)** | 0.030 | | ±% of rated output |
| **Zero return (20 minutes)** | 0.030 | | ±% of rated output |
| **Temperature effect on min. dead load output** | 0.0010 | 0.0026 | ±% of rated output/°C |
| **Temperature effect on sensitivity** | 0.0010 | 0.0015 | ±% of applied load/°C |
| **Compensated temperature range** | -10 to +40 | | °C |
| **Operating temperature range** | -20 to +60 | | °C |
| **Safe overload** | 150 | | % of R.C. |
| **Ultimate overload** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 770±10 | | Ohms |
| **Output impedance** | 700±5 | | Ohms |
| **Insulation resistance** | >5000 | | Mega-Ohms |
| **Construction** | Nickel plated alloy steel | | |
| **Environmental protection** | IP67 | | |

* Capacities 20K-150Klb only

All specifications listed subject to change without notice.

FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

# Miniature Double Ended Beam



FM

## FEATURES

- Capacities: 10 - 50t
- High side load tolerance
- Electroless nickel plated alloy tool steel
- Surge protection optional for 10t to 50t

## OPTIONAL FEATURES

- Hermetically sealed available
- FM approval available

## DESCRIPTION

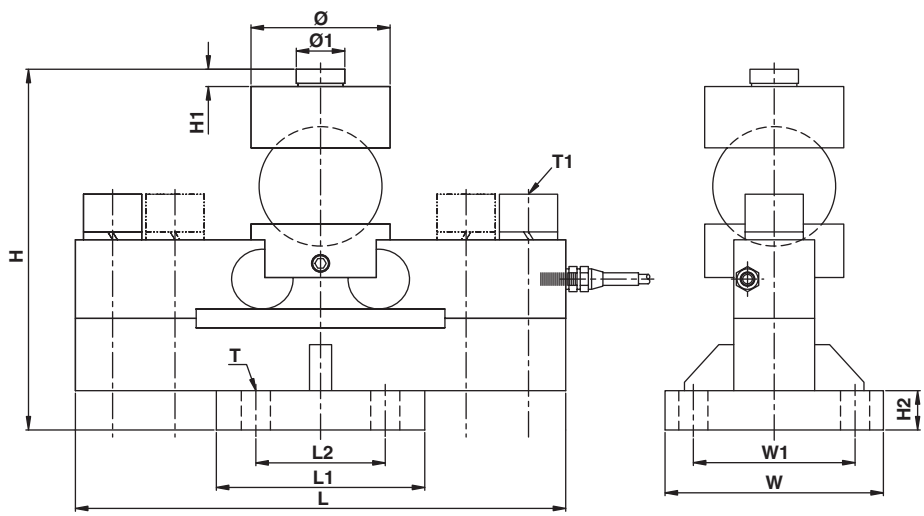
MDB is designed for truck and rail scales in high capacities with low profile. The design of loading through a ball is insensitive to side load.

MDB is constructed of alloy steel and is fully potted and sealed with special chemical compounds to IP67 providing excellent protection against water and moisture attack. MDB Hermetically-Sealed is constructed to IP68 providing excellent protection against corrosive and wash-down evnironments.

## APPLICATIONS

- Truck/rail scales
- Silo/hopper/tank weighing

## OUTLINE DIMENSIONS




Wiring diagram

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Signal | Green |
| - Signal | White |

| CAPACITY | | L | L1 | L2 | H | H1 | H2 | Ø | Ø1 | W | W1 | T | T1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/ 20/ 25/ 30t | mm | 240 | 125 | 80 | 230 | 11 | 20 | 88 | 30 | 135 | 100 | 4-Ø18 | 2-M24 |
| | (inch) | 9.45 | 4.92 | 3.15 | 8.85 | 0.43 | 0.79 | 3.46 | 1.18 | 5.31 | 3.94 | | |
| 40 - 50t | mm | 340 | 160 | 124 | 261 | 11 | 20 | 98 | 40 | 160 | 124 | 4-Ø21 | 4-M24 |
| | (inch) | 13.38 | 6.30 | 4.88 | 10.28 | 0.43 | 0.79 | 3.86 | 1.57 | 6.30 | 4.88 | | |

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **NTEP/OIML Accuracy class** | **Non-Approved** | |
| **Maximum no. of intervals (n)** | 3000 | |
| **$Y = E_{max}/V_{min}$** | 5000 | Maximum available |
| **Standard capacities ($E_{max}$)** | 10000, 20000, 25000, 30000, 40000, 50000 | kg |
| **Rated output-R.O.** | 2.0 | mV/V |
| **Rated output tolerance** | 0.2 | ±% of rated output |
| **Zero balance** | 1 | ±% of rated output |
| **Non linearity** | 0.030 | ±% of rated output |
| **Hysteresis** | 0.030 | ±% of rated output |
| **Non-repeatability** | 0.020 | ±% of rated output |
| **Creep error (20 minutes)** | 0.030 | ±% of rated output |
| **Zero return (20 minutes)** | 0.030 | ±% of rated output |
| **Temperature effect on min. dead load output** | 0.0026 | ±% of rated output/°C |
| **Temperature effect on sensitivity** | 0.0015 | ±% of applied load/°C |
| **Compensated temperature range** | -10 to +40 | °C |
| **Operating temperature range** | -20 to +60 | °C |
| **Safe overload** | 150 | % of R.C. |
| **Ultimate overload** | 300 | % of R.C. |
| **Excitation, recommended** | 10 | Vdc or Vac rms |
| **Excitation, maximum** | 15 | Vdc or Vac rms |
| **Input impedance** | 770±10 | Ohms |
| **Output impedance** | 700±5 | Ohms |
| **Insulation resistance** | >5000 | Mega-Ohms |
| **Cable length** | 13.5 | m |
| **Construction** | Nickel plated alloy steel | |
| **Environmental protection** | IP67 | |

All specifications listed subject to change without notice.

FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# S-Type Load Cells

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Model 363

Revere

VISHAY PRECISION GROUP

# Universal Load Cell

## FEATURES

- Capacities 50 to 10000kg (50 to 20Klb)
- Nickel plated steel construction
- Certified to NTEP class III 3000d and class IIIL 10000d
- Suitable for compression and tension applications
- Trimmed output versions available
- Sealing: IP65

## OPTIONAL FEATURE

- FM approved for use in potentially explosive atmosphere

## DESCRIPTION

The 363 is a multipurpose nickel plated S-Type load cell which can be used in tension or compression.

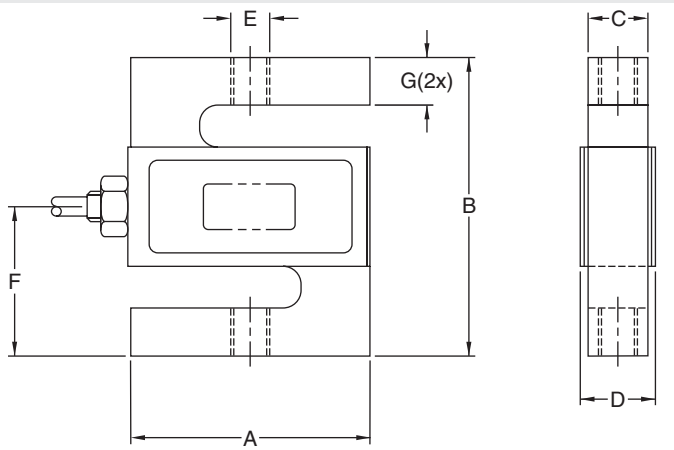
This product is suitable for a wide range of hybrid scales, overhead track scales, belt scales and process weighing applications.

Reliable sealing is ensured by the proprietary TRANSEAL potting compound and additional mechanical protection of the strain gauge area.

## APPLICATIONS

- Suspended hoppers
- Overhead track scales
- Force measurement

## OUTLINE DIMENSIONS in mm




*Cable specifications:*

Cable length: 6m

| | |
|---|---|
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Transparent |

Cable screen is not connected to load cell body

| Cap (kg) | 50, 100 | 250, 500 | 1000 | 2500 | 5000 | 7500 | 10000 |
|---|---|---|---|---|---|---|---|
| Cap (lbs) | 100, 200, 300 | 500 - 1.5K | 2K, 2.5K | 3K*, 5K | 10K | 15000 | 20000 |
| A | 50.8 | 50.8 | 50.8 | 76.2 | 74.7 | 87.4 | 112.8 |
| B | 61.0 | 61.0 | 61.0 | 99.1 | 99.1 | 139.7 | 177.8 |
| C | 11.7 | 18.0 | 24.4 | 24.4 | 30.7 | 37.1 | 42.9 |
| $D_{max}$ | 16.5 | 22.9 | 29.2 | 29.2 | 35.6 | 41.4 | 47.8 |
| E (kg) | M8x1.25 - 6H | M12x1.75 - 6H | | M20x1.5 - 6H | | M24x2 - 6H | M30x2 - 6H |
| E (lbs) | ¼ - 28UNF - 2B | ½ - 20UNF - 2B | | ¾ - 16UNF - 2B | | 1¼ - 12UNF - 2B | 1¼ - 12UNF - 2B |
| F | 30.5 | 30.5 | 30.5 | 49.5 | 49.3 | 69.9 | 88.9 |
| G | 8.9 | 8.9 | 8.9 | 14.0 | 15.7 | 22.4 | 31.8 |

* 3Klb version has 1/2 - 20UNF - 2B tapped holes

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Standard capacities ($E_{max}$)** | 50, 100, 250, 500, 1000, 2500, 5000, 7500, 10000 | | kg |
| **Standard capacities ($E_{max}$)** | 50, 75, 100, 150, 200, 250, 300, 500, 750, 1K, 1.5K, 2K, 2.5K, 3K, 5K, 10K, 15K, 20K | | lbs |
| **Accuracy class per NTEP** | **NTEP IIIL** | **Non-Approved** | |
| **Maximum no. of verification intervals (n)** | 10000 | | mV/V |
| **Rated output (=S)** | 3.0 | | mV/V |
| **Rated output tolerance** | 0.0075 | | ±mV/V |
| **Zero balance** | 1.0 | | ±% FSO |
| **Combined error** | 0.0200 | 0.05 | ±% FSO |
| **Non-repeatability** | 0.0100 | 0.0200 | ±% FSO |
| **Minimum dead load output return** | 0.0500 | | ±% applied load |
| **Creep error (30 minutes)** | - | 0.0600 | ±% applied load |
| **Creep error (20 minutes)** | 0.0030 | 0.0200 | ±% applied load |
| **Temperature effect on min. dead load output** | 0.0090 | 0.0250 | ±% FSO/5°C |
| **Temperature effect on sensitivity** | 0.0072 | 0.0250 | ±% applied load/5°C |
| **Minimum dead load** | 0 | | $\%E_{max}$ |
| **Maximum safe over load** | 150 | | $\%E_{max}$ |
| **Ultimate over load** | 300 | | $\%E_{max}$ |
| **Maximum safe side load** | 100 | | $\%E_{max}$ |
| **Excitation voltage** | 5 to 12 | | V |
| **Maximum excitation voltage** | 15 | | V |
| **Input resistance** | 430±60 | | Ω |
| **Output resistance** | 350±3.5 | | Ω |
| **Insulation resistance** | ≥5000 | | MΩ |
| **Compensated temperature range** | -10 to +40 | | °C |
| **Operating temperature range** | -40 to +80 | | °C |
| **Storage temperature range** | -40 to +90 | | °C |
| **Element material (DIN)** | Nickel plated alloy steel | | |
| **Sealing (DIN 40.050 / EN60.529)** | IP65 | | |

FSO-Full Scale Output

# Model 9363

Revere

VISHAY PRECISION GROUP

# Universal Load Cell

## FEATURES

- Capacities: 50 to 10,000kg (50 to 20,000lbs)
- Stainless steel construction
- Suitable for compression and tension applications
- Trimmed output versions standard
- Sealing: IP67
- Certified to OIML R-60, 3000d, NTEP class IIIL, 10000 divisions

## OPTIONAL FEATURE

- FM approved for use in potentially explosive atmosphere

## DESCRIPTION

The 9363 is a multipurpose stainless steel S-type load cell which can be used in tension or compression.

This product is suitable for a wide range of hybrid scales, overhead track scales, belt scales and process weighing applications.

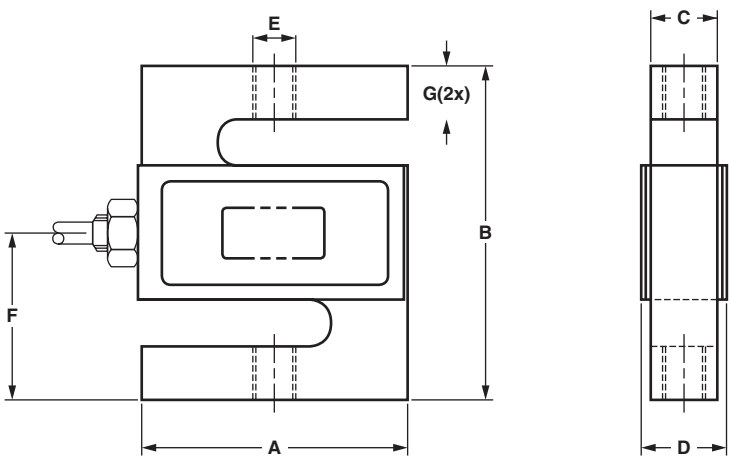
Reliable sealing is ensured by the proprietary TRANSEAL potting compound and additional mechanical protection of the strain gage area.

This product meets the stringent Weights and Measures requirements throughout Europe and the USA.

## APPLICATIONS

- Suspended hoppers
- Overhead track scales
- Force measurement

## OUTLINE DIMENSIONS in mm




*Cable specifications:*

| | |
|---|---|
| Cable length: | 6m |
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Transparent |

Cable screen is not connected to the load cell body

| Cap (kg) | 50, 100 | 250, 500 | 1000 | 2500 | 5000 | 7500 | 10000 |
|---|---|---|---|---|---|---|---|
| **Cap (lbs)** | **100, 200, 300** | **500 - 1.5K** | **2K, 2.5K** | **3K*, 5K** | **10K** | **15000** | **20000** |
| A | 50.8 | 50.8 | 50.8 | 76.2 | 74.7 | 87.4 | 112.8 |
| B | 61.0 | 61.0 | 61.0 | 99.1 | 99.1 | 139.7 | 177.8 |
| C | 11.7 | 18.0 | 24.4 | 24.4 | 30.7 | 37.1 | 42.9 |
| D max | 16.5 | 22.9 | 29.2 | 29.2 | 35.6 | 41.4 | 47.8 |
| E (kg) | M8 x 1.25-6H | M12 x 1.75-6H | | M20 x 1.5-6H8 | | M24 x 2-6H | M30 x 2-6H |
| E (lbs) | 1/4-28UNF-2B | 1/2-20UNF-2B | | 3/4-16UNF-2B | | 1 1/4-12UNF-2B | 1 1/4-12UNF-2B |
| F | 30.5 | 30.5 | 30.5 | 49.5 | 49.3 | 69.9 | 88.9 |
| G | 8.9 | 8.9 | 8.9 | 14.0 | 15.7 | 22.4 | 31.8 |

*3Klb version has 1/2-20UNF-2B holes.


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11875 Revision: 01-Jun-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| **Standard capacities ($E_{max}$)** | 50, 100, 250, 500, 1000, 2500, 5000, 7500, 10000* | | | kg |
| **Standard capacities ($E_{max}$)** | 50, 75, 100, 150, 200, 250, 300, 500, 750, 1K, 1.5K, 2K, 3K, 5K, 10K, 15K, 20K | | | lbs |
| **Accuracy class per OIML R-60 / NTEP** | **NTEP IIIL** | **Non-Approved** | **OIML C3** | |
| **Maximum no. of verification intervals (n)** | 10000 | D3 | 3000 | |
| **Minimum verification intervals ($V_{min}$)** | | | $E_{max}$/9000 | |
| **Rated output (=FS)** | 3.0 | | | mV/V |
| **Rated output tolerance** | 0.0075 | | | ±mV/V |
| **Zero balance** | 1.0 | | | ±% FSO |
| **Combined error** | 0.0200 | 0.0300 | 0.0200 | ±% FSO |
| **Non-repeatability** | 0.0100 | 0.0100 | 0.0100 | ±% FSO |
| **Minimum dead load output return** | | 0.0300 | 0.0165 | ±% applied load |
| **Temp. effect on min. dead load output** | (0.001) | (0.0015) | 0.0140 | ±% FSO/5°C (/°F) |
| **Temperature effect on sensitivity** | (0.0008) | (0.0008) | 0.0055 | ±% applied load/5°C (/°F) |
| **Maximum safe over load** | 150 | | | %$E_{max}$ |
| **Ultimate over load** | 250 | | | %$E_{max}$ |
| **Excitation voltage** | 5 to 12 | | | V |
| **Maximum excitation voltage** | 15 | | | V |
| **Input resistance** | 390±15 | | | Ω |
| **Output resistance** | 350±3.5 | | | Ω |
| **Insulation resistance** | ≥5000 | | | MΩ |
| **Compensated temperature range** | 14 to +104°F | -10 to +40 | | °C |
| **Operating temperature range** | -65 to +200°F | -40 to +80 | | °C |
| **Element material (DIN)** | Stainless steel | | | |
| **Sealing (DIN 40.050** | IP67 | | | |

* 10000kg is not OIML approved

FSO-Full Scale Output

# Model 60001

Sensortronics

VISHAY PRECISION GROUP

## S-Beam Load Cell

### FEATURES

- Rated capacities of 25 to 20,000 pounds 50 kilograms to 10 metric tons
- Designed for single or multiple load cell applications
- Constructed of high quality alloy tool steel
- Nickel plated for outstanding corrosion resistance
- *Sensorgage*™ sealed to IP67 standards
- Trade certified for NTEP Class III: 5000d, IIIL: 10000d and OIML R-60 3000d available
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

### OPTIONAL FEATURE

- Stainless steel version is Model 60050

### DESCRIPTION

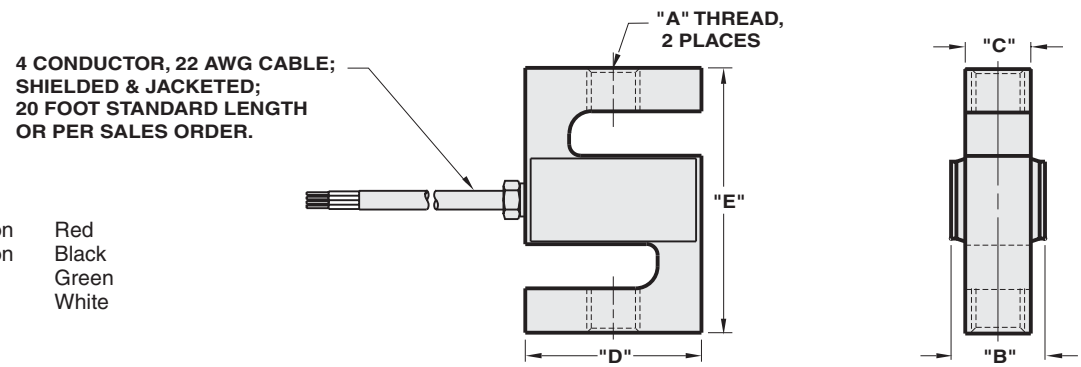
Model 60001 is a tension-compression load cell with a humidity-resistant coating and shielded cables, which enable use in harsh environments while maintaining operating specifications. Additional sense wires compensate for changes in lead resistance due to temperature change and/or cable extension.

Ideally suited for lever conversions, hanging scales, force measurement and a wide range of other industrial applications. Nickel-plated for outstanding corrosion resistance.

### APPLICATIONS

- Tank, bin and hopper weighing
- Level and inventory monitoring
- Truck scale conversions
- Tension and compression measurements

### OUTLINE DIMENSIONS in inches [mm]




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

| CAPACITY | A | B | C | D | E | DEFLECTION | WEIGHT |
|---|---|---|---|---|---|---|---|
| 25 - 200 | 1/4-28 UNF-2B | 0.65 | 0.50 | 2.00 | 2.50 | 0.015 - 0.010 | 4.0 |
| 250 - 300 | 3/8-24 UNF-2B | 0.75 | 0.50 | 2.00 | 3.00 | 0.010 | 4.0 |
| 500 - 2K | 1/2-20 UNF-2B | 1.00 | 0.75 | 2.00 | 3.00 | 0.010 - 0.012 | 6.5 |
| 2.5K - 4K | 1/2-20 UNF-2B | 1.25 | 1.00 | 2.00 | 3.00 | 0.012 | 6.5 |
| 5K | 3/4-16 UNF-2B | 1.25 | 1.00 | 3.00 | 4.25 | 0.017 | 6.5 |
| 10K | 3/4-16 UNF-2B | 1.25 | 1.00 | 3.50 | 4.75 | 0.025 | 6.5 |
| 15K | 1-14 UNF-2-B | 1.50 | 1.25 | 4.00 | 5.50 | 0.025 | 9.0 |
| 20K | 1-1/4-12 UNF-2-B | 2.25 | 2.00 | 5.00 | 7.00 | 0.025 | 9.0 |
| [50 - 100kg] | M8.0 x 1.25-6H | [16.5] | [12.7] | [50.8] | [63.5] | [0.03 - 0.004] | [0.8] |
| [250kg - 1t] | M12 x 1.75-6H | [25.4] | [19.1] | [50.8] | [76.0] | [0.004] | [1.8] |
| [2.5t] | M20 x 1.5-6H | [31.8] | [25.4] | [76.2] | [108.0] | [0.008] | [2.9] |
| [5t] | M20 x 1.5-6H | [31.8] | [25.4] | [88.9] | [120.7] | [0.011] | [2.9] |
| [10t] | M30 x 2.0-6H | [57.2] | [50.8] | [127.0] | [177.8] | [0.011] | [4.0] |

Capacities are in pounds [kg/t]. Deflection is ±10%. Certified drawings are available.

## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 25, 50, 75, 100, 150, 200, 250, 300, 500, 750, 1K, 1.5K, 2K, 2.5K, 3K, 5K, 10K, 15K, 20K<br>50kg, 100kg, 250kg, 500kg, 1t, 2.5t, 5t, 10t* | | | | lbs<br><br>kg/metric tons |
| NTEP/OIML Accuracy class | NTEP III | NTEP IIIL | Standard | OIML R60 | |
| Maximum no. of intervals (n) | 5000 single | 10000 single | | 3000* | |
| $Y = E_{max}/V_{min}$ | NTEP Cert. No 86-043A1 | | | 6667 | Maximum available |
| Rated output-R.O. lbs | 3.0 | | | | mV/V |
| Rated output tolerance lbs | 25 - 3K: +25 / -10 5K - 20K: ±0.25 | | | | % |
| Rated output-R.O. kg | 3.0 | | | | mV/V |
| Rated output tolerance kg | 50kg -1t: +25 / -10 2.5t - 3t: ±0.25 | | | | % |
| Zero balance | 1.0 | | | | ±% FSO |
| Combined error | 0.02 | 0.02 | 0.03 | 0.02 | ±% FSO |
| Non-repeatability | 0.01 | | | | ±% FSO |
| Creep error (30 minutes) | 0.03 | 0.025 | 0.03 | 0.017 | ±% FSO |
| Temperature effect on zero | 0.0010 | 0.0010 | 0.0015 | 0.0010 | ±% FSO/°F |
| Temperature effect on output | 0.0008 | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| Compensated temperature range | 14 to 104 (-10 to 40) | | | | °F (°C) |
| Operating temperature range | 0 to 150 (-18 to 65) | | | | °F (°C) |
| Storage temperature range | -60 to 185 (-50 to 85) | | | | °F (°C) |
| Safe sideload | 30 | | | | % of R.C. |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 343 - 450 | | | | Ω |
| Output impedance | 349 - 355 | | | | Ω |
| Insulation resistance at 50VDC | >1000 | | | | MΩ |
| Material | Nickel plated alloy tool steel** | | | | |
| Environmental protection | IP67 | | | | |

Note: * OIML approval 100-5Klbs & 50-2500kg only
NTEP approval from 25-20Klbs only
** Stainless steel available - model number 60050
FSO - Full Scale Output

All specifications subject to change without notice.

# Stainless Steel, Welded Seal S-Beam Load Cell

Approved

## FEATURES

- Rated capacities of 500 to 10,000 pounds
- Stainless steel, welded seal construction
- Integral loading brackets
- Compatible with TCM tension mounting hardware
- Designed for single or multiple load cell applications
- Trade certified for NTEP Class IIIL: 10000d and III: 5000d
- *Sensorgage*™ sealed to IP68 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!).

## OPTIONAL FEATURE

- Mounting and loading accessory hardware available

## DESCRIPTION

Model 60063 is a stainless steel S-Type load cell. Its welded sealing combined with high accuracy, make this load cell ideally suited for a wide range of applications of process weighing and force measurement.

Approvals included NTEP III 5000d single and NTEP IIIL10000d multiple.
Also available are versions approved for hazardous areas - FM I, II, III Division 1.

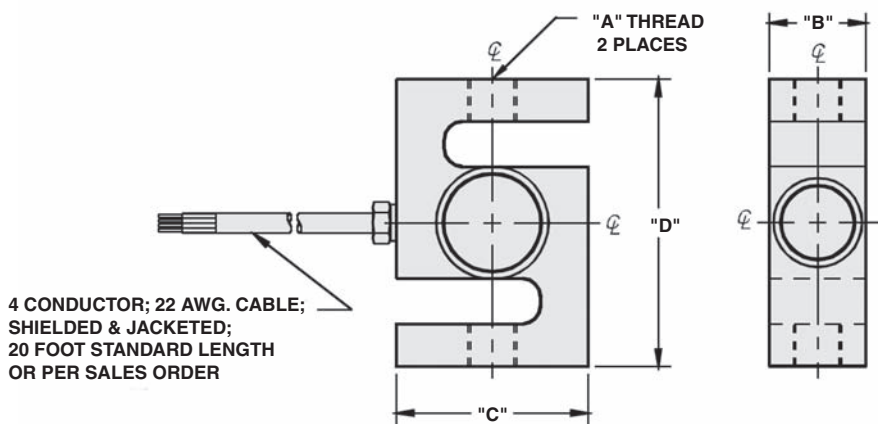
## APPLICATIONS

- Hostile environments: Food and beverage processing Chemical and plastics processing Pharmaceutical and biomedical
- Bin, hopper and belt conveyor scales
- Level and inventory monitoring
- Tension and compression measurements

## OUTLINE DIMENSIONS in inches

**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |




| CAPACITY | A | B | C | D | DEFLECTION | WEIGHT |
|---|---|---|---|---|---|---|
| 500 - 3K | 1/2-20 | 1.00 | 2.00 | 3.00 | 0.010 | 3.0 |
| 5K - 10K | 3/4-16 | 1.00 | 3.50 | 4.75 | 0.010 | 5.00 |

Capacities are in pounds. Deflection is ± 10%. Certified drawings are available.

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 500, 750, 1K, 1.5K, 2K, 2.5K, 3K, 5K, 10K* | | | lbs |
| **NTEP/OIML Accuracy class** | **NTEP III** | **NTEP IIIL** | **Standard** | |
| **Maximum no. of intervals (n)** | 5000 multiple | 10000 multiple | | |
| **$Y = E_{max}/V_{min}$** | See NTEP cert. 98-019 | | | Maximum available |
| **Rated output-R.O.** | 2.0 | | | mV/V |
| **Rated output tolerance** | +25%...-10% | | | % mV/V |
| **Zero balance** | 1.0 | | | ±% FSO |
| **Combined error** | 0.02 | 0.02 | 0.03 | ±% FSO |
| **Non-repeatability** | 0.01 | 0.01 | 0.015 | ±% FSO |
| **Creep error (30 minutes)** | 0.025 | 0.03 | 0.03 | ±% FSO |
| **Temperature effect on zero** | 0.0010 | 0.0010 | 0.0015 | ±% FSO/°F |
| **Temperature effect on output** | 0.0008 | 0.0008 | 0.0008 | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | | | °F (°C) |
| **Maximum safe central overload** | 150 | | | % of R.C. |
| **Ultimate central overload** | 300 | | | % of R.C. |
| **Excitation, recommended** | 10 | | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | | Vdc or Vac rms |
| **Input impedance** | 349 - 450 | | | Ω |
| **Output impedance** | 349 - 355 | | | Ω |
| **Insulation resistance at 50VDC** | >1000 | | | MΩ |
| **Material** | Stainless steel | | | |
| **Environmental protection** | IP68 | | | |

Note: * NTEP approval 500-5Klbs only.
FSO - Full Scale Output

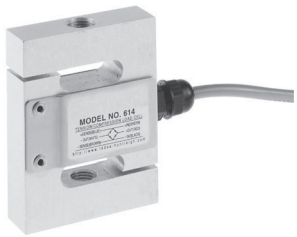
All specifications subject to change without notice.

# Model 614

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Tension Compression Load Cell




OIML ATEX

## FEATURES

- Capacities 50 - 500kg
- Anodized aluminum construction
- OIML R60 approved
- IP67 protection
- For use in tension or compression
- 6 wire (sense) circuit

## OPTIONAL FEATURE

- EEx ia IIC T4 hazardous area approval

## DESCRIPTION

Model 614 is a tension-compression load cell. Humidity resistant coating and shielded cables enable this load cell to be used in harsh environments while maintaining its operating specifications.

The additional sense wires compensate for changes in lead resistance due to temperature change and/or cable extension.

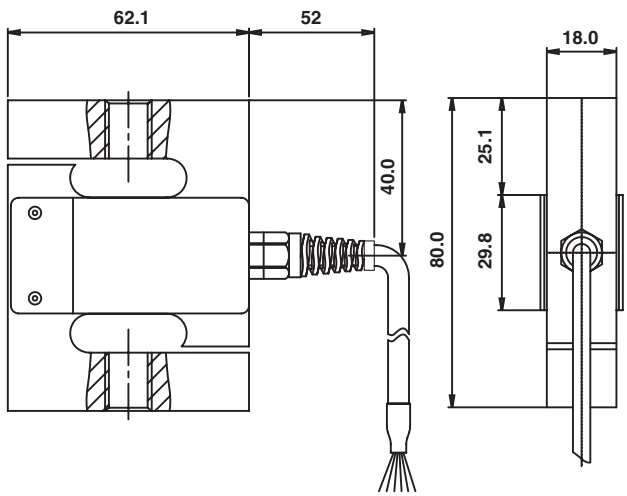
Ideally suited for lever conversions, hanging scales, force measurement and a wide range of other industrial applications.

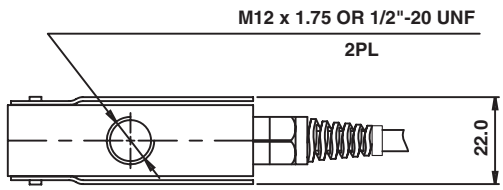
Model 614 is made from aluminum.

## APPLICATIONS

- Hopper (Tank weighing)
- Hybrid scales
- Belt weighing
- Lever arm conversions
- Material testing machines
- Vibrations filling equipment
- Dynamometers

## OUTLINE DIMENSIONS in mm




**All dimensions in mm**


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12040
Revision: 18-Feb-10

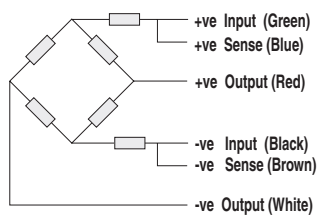
## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 50, 100, 150, 200, 300, 500 | | | kg |
| Accuracy class | Non-Approved | C3* | | |
| Maximum no. of intervals (n) | 1000 | 3000 | | |
| $Y = E_{max}/V_{min}$ | 2500 | 8000 | 12000** | |
| Rated output-R.O. | 2.0 | | | mV/V |
| Rated output tolerance | 0.2 | | | ±mV/V |
| Zero balance | 0.02 | | | ±mV/V |
| Zero Return, 30 min. | 0.05 | 0.017 | | ±% of applied load |
| Total Error (per OIML R60) | 0.05 | 0.020 | | ±% of rated output |
| Temperature effect on zero | 0.01 | 0.0023 | | ±% of rated output/°C |
| Temperature effect on output | 0.003 | 0.0012 | | ±% of load/°C |
| Temperature range, compensated | -10 to +40 | | | °C |
| Temperature range, safe | -30 to +70 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 415±15 | | | Ohms |
| Output impedance | 350±3 | | | Ohms |
| Insulation resistance | >2000 | | | Mega-Ohms |
| Cable length | 3.0 | | | m |
| Cable type | 6 wire, braided PVC, dual floating screen | | | Standard |
| Construction | Plated (Anodize) aluminum | | | |
| Environmental protection | IP67 | | | |

* 50% utilization

** Y=8000 for capacities 50-200kg. Y=12000 for capacities 300-500kg

**Wiring Schematic Diagram**
**(Balanced bridge configuration)**

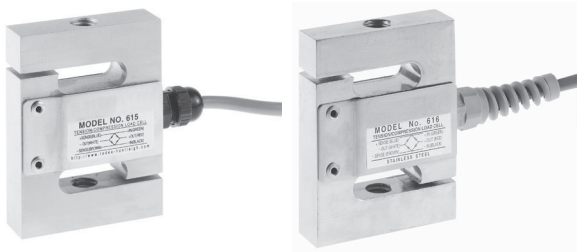


# Model 615/616

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Tension Compression Load Cells




ATEX

## FEATURES

- Capacities 50 - 1000kg
- Nickel plated alloy steel (615) or stainless steel (616) construction
- IP67 protection
- For use in tension or compression
- 6 wire (sense) circuit
- Model 615 output standardised to ±0.1%

## OPTIONAL FEATURE

- EEx ia IIC T4 hazardous area approval

## DESCRIPTION

Models 615 and 616 are tension-compression load cells which share the same dimensions. Humidity resistant coating and shielded cables enable these load cells to be used in harsh environments while maintaining their operating specifications.

The additional sense wires compensate for changes in lead resistance due to temperature change and/or cable extension.

Ideally suited for lever conversions, hanging scales, force measurement and a wide range of other industrial applications.

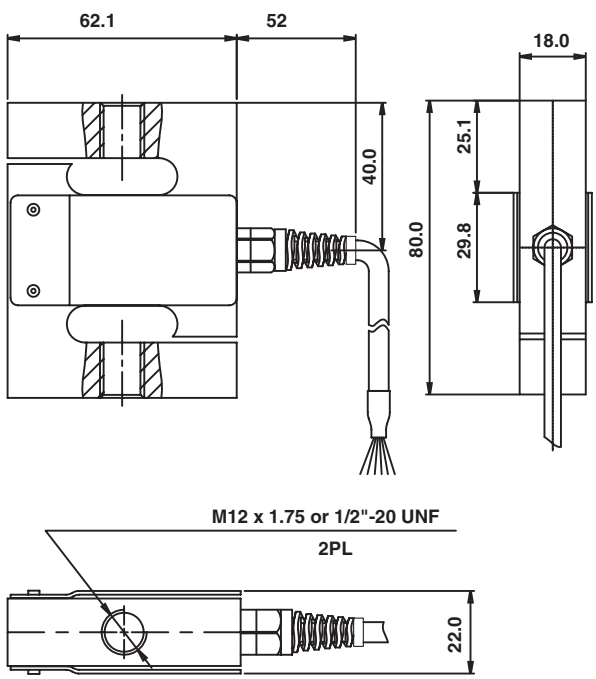
Model 616 is made from stainless steel and has bonded covers for additional protection (except 50kg). An alternative lower cost version is made from alloy steel (model 615), with rivetted covers.

## APPLICATIONS

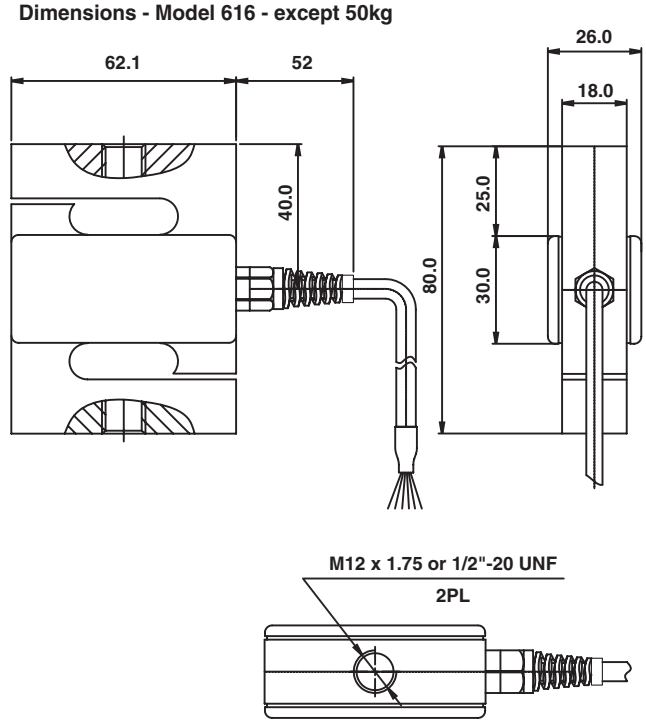
- Hopper (Tank weighing)
- Hybrid scales
- Belt weighing
- Lever arm conversions
- Material testing machines
- Vibrations filling equipment
- Dynamometers

## OUTLINE DIMENSIONS in mm

**Dimensions - Models 615 and 616 - 50kg only**




**Dimensions - Model 616 - except 50kg**




**All dimensions in mm**


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12066
Revision: 23-Feb-10

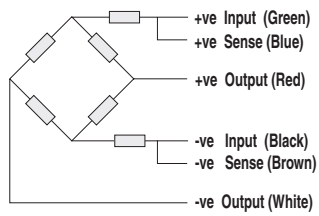
## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Accuracy class** | **Non-Approved** | **G** | |
| **Maximum no. of intervals (n)** | 1000 | 3000 | |
| **Rated capacity-R.C. ($E_{max}$)** | 50, 100, 150, 200, 300, 500, 750, 1000* | | kg |
| **Rated output-R.O.** | 2.0 | | mV/V |
| **Rated output tolerance** | 0.002 | | ±mV/V |
| **Zero balance** | 0.2 | | ±mV/V |
| **Zero Return, 30 min.** | 0.05 | 0.017 | ±% of applied load |
| **Total Error (per OIML R60)** | 0.05 | 0.02 | ±% of rated output |
| **Temperature effect on zero** | 0.01 | 0.004 | ±% of rated output/°C |
| **Temperature effect on output** | 0.003 | 0.0012 | ±% of load/°C |
| **Temperature range, compensated** | -10 to +40 | | °C |
| **Temperature range, safe** | -30 to +70 | | °C |
| **Maximum safe central overload** | 150 | | % of R.C. |
| **Ultimate central overload** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 400±20 | | Ohms |
| **Output impedance** | 350±3 | | Ohms |
| **Insulation resistance** | >2000 | | Mega-Ohms |
| **Cable length** | 3.0 | | m |
| **Cable type** | 6 wire, PVC, single floating screen** | | Standard |
| **Construction** | 615 - alloy steel, 616 - stainless steel | | |
| **Environmental protection** | IP67 | | |

* 616 does not include 50kg

** 616 has polyurethane jacket braided cable with dual floating screen

**Wiring Schematic Diagram**
**(Balanced bridge configuration)**



# Model 619

Tedea-Huntleigh

VISHAY PRECISION GROUP

## S-Type Alloy Steel Load Cell

ATEX

### FEATURES

- Capacities 1500 to 6000kg
- Alloy steel construction
- Sealing: welded to IP67
- S-Type design for use in tension and compression
- Choice of mounting threads Metric or Unified systems
- Six wire cable (sense circuit)

### OPTIONAL FEATURE

- EEx ia IIC T6-ATEX hazardous area approval

### DESCRIPTION

Model 619 is a low cost tension-compression load cell made from nickel plated alloy steel and has bonded covers for additional protection. It is suitable for use in a wide range of weighing, process weighing, force measurement and industrial process control applications.

Protected to meet IP67 requirements, the construction of the 619 load cell allows its use in most industrial process applications.

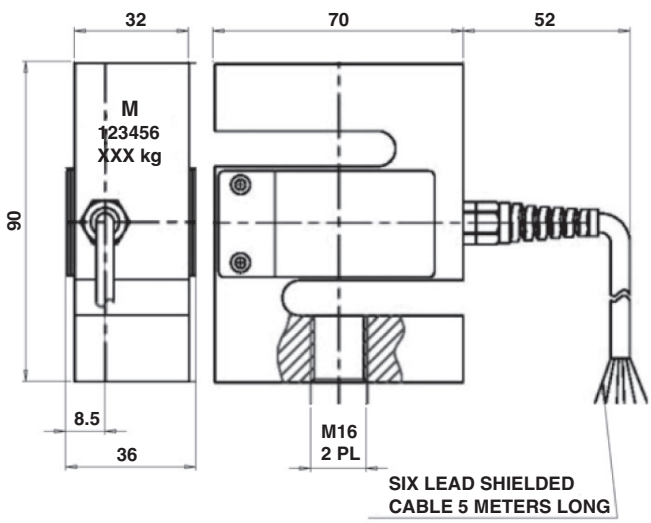
For IP68 requirements, select the fully-welded stainless steel model 620, which shares the same dimensions as model 619.

The additional sense wires compensate for changes in lead resistance due to temperature change and/or cable extension. Complete compensation of changes in lead resistance is achieved by feeding this voltage into appropriate electronics.

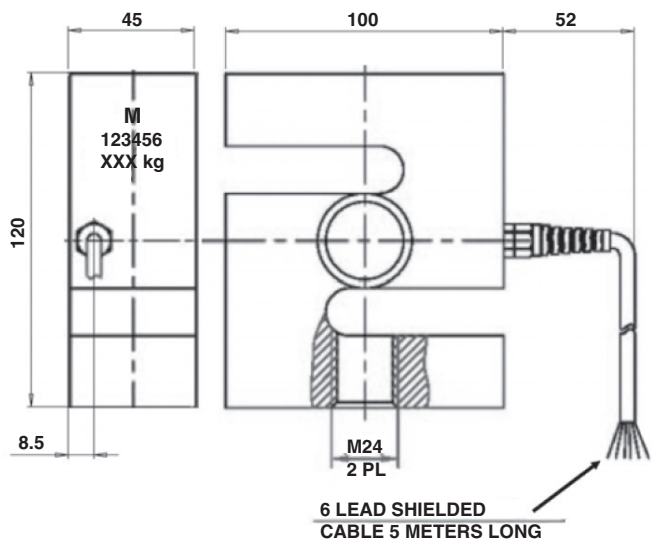
### APPLICATIONS

- Hopper (tank weighing)
- Hybrid scales
- Belt weighing
- Lever arm conversions
- Material testing machines
- Vibrations filling equipment
- Dynamometers

### OUTLINE DIMENSIONS in mm




1500, 2000kg cell outline



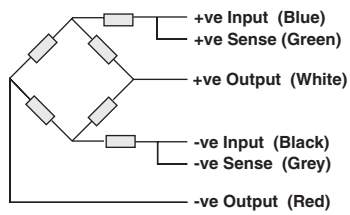

3000, 5000, 6000kg cell outline


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12056
Revision: 01-Jun-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 1500, 2000, 3000, 5000, 6000 | | kg |
| **Accuracy class** | **E** | **G** | |
| **Maximum no. of intervals (n)** | 1000 | 3000 | |
| **Rated output-R.O.** | 2.0 | | mV/V |
| **Rated output tolerance** | 0.002 | | ±mV/V |
| **Zero balance** | 0.2 | | ±mV/V |
| **Zero Return, 30 min.** | 0.050 | 0.0170 | ±% of applied load |
| **Total Error** | 0.050 | 0.020 | ±% of rated output |
| **Temperature effect on zero** | 0.030 | 0.0040 | ±% of rated output/°C |
| **Temperature effect on output** | 0.0030 | 0.0012 | ±% of applied load/°C |
| **Temperature range, compensated** | -10 to +40 | | °C |
| **Temperature range, safe** | -20 to +70 | | °C |
| **Maximum safe central overload** | 150 | | % of R.C. |
| **Ultimate central overload** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 385±15 | | Ohms |
| **Output impedance** | 350±3 | | Ohms |
| **Insulation resistance** | >2000 | | Mega-Ohms |
| **Cable length** | 5.0 | | m |
| **Cable type** | 6 wire, braided, PVC, dual floating screen | | Standard |
| **Construction** | Nickel plated alloy tool steel | | |
| **Environmental protection** | IP67 | | |

**Wiring Schematic Diagram**

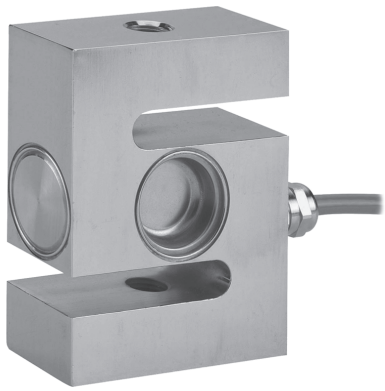


# Model 620

Tedea-Huntleigh

VISHAY PRECISION GROUP

## S-Type Stainless Steel Load Cell



### FEATURES

- Capacity range: 500 to 5000kg
- Stainless Steel construction
- sealed by welding to IP68
- S-Type design for use in tension and compression
- OIML approved to 3000d (500-5000kg)
- NTEP approved to 5000d (500-2000kg)
- Choice of mounting threads Metric or Unified systems
- Six Wire Cable (sense circuit)

### OPTIONAL FEATURES

- EEx ia IIC T6-ATEX hazardous area approval
- Class I, II, III Division 1 – FM hazardous area approval

### DESCRIPTION

Model 620 is a Stainless Steel S-Type Load Cell. Its Welded Sealing combined with high accuracy, make this Load Cell ideally suited for a wide range of applications of Process Weighing and Force Measurements.

Approvals include OIML C3 (3000d); NTEP 3000d single and NTEP 5000d Multiple.

Also available are versions approved for hazardous areas – ATEX II 1 GD EEx ia T6 for Europe and FM I, II, III Division 1 for the USA.

The six-wire cable includes two sense wires that compensate for changes in lead resistance due to temperature changes and cable extension.

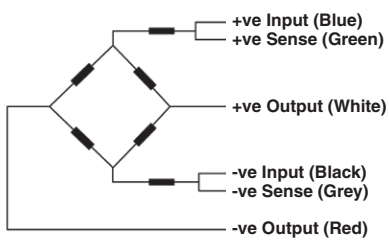
Model 620 offers a choice of bolt threads in Metric or Unified systems – see table below.

### APPLICATIONS

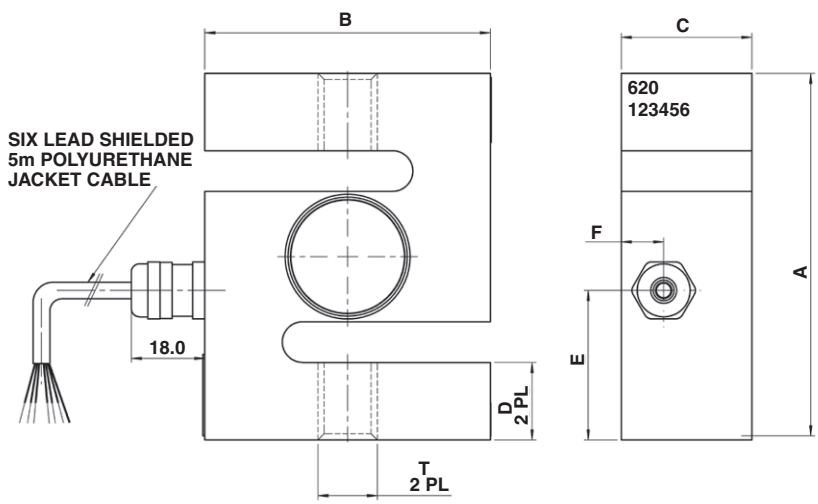
- Hopper (Tank Weighing)
- Hybrid Scales
- Belt Weighing
- Lever arm conversions
- Material testing machines
- Vibrations filling equipment
- Dynamometers

### OUTLINE DIMENSIONS in mm

**Wiring Schematic Diagram**




| Thread Type "T" By Capacity | | |
|---|---|---|
| Capacity | Metric | Unified |
| 500 kg | M12x1.75 | 1/2-20 UNF |
| 1000 kg | M16 x 2.0 | 1/2-20 UNF |
| 2000 kg | M16 x 2.0 | 3/4-16 UNF |
| 5000 kg | M24 x 2.0 | 1 - 12 UNF |




Optional Rod End Bearings for use with all Vishay Transducers S-Type load cells are available - consult VT Sales office

| Capacity | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 500, 1000, 2000 kg | 90 | 70 | 32 | 19 | 36.6 | 10.4 |
| 5000 kg | 120 | 100 | 45 | 26 | 60 | 13.8 |

## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 500, 1000, 2000, 5000* | | | | kg |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C2/50 | C3/50 | |
| Maximum no. of intervals (n) | class IIIL | 1000 | 2000* | OIML 3000 | |
| $Y = E_{max}/V_{min}$ | 5000 | 2000 | 4000 | 6000 | |
| Rated output-R.O. | 2.0 | | | | mV/V |
| Rated output tolerance | 0.0035 | | | | ±mV/V |
| Zero balance | 0.04 | | | | ±mV/V |
| Total Error (per OIML R60) | 0.0200 | 0.0500 | 0.0300 | 0.0200 | ±% of R.O. |
| Zero Return, 30 min. | 0.0250 | 0.0500 | 0.0250 | 0.0170 | ±% of applied load |
| Temperature effect on zero | (0.0010) | 0.0070 | 0.0020 | 0.0023 | ±% of R.O./°C (/°F) |
| Temperature effect on output | (0.0008) | 0.0400 | 0.0014 | 0.0012 | ±% of applied load/°C (/°F) |
| Temperature range, compensated | -10 to +40 | | | | °C |
| Temperature range, safe | -30 to +90 | | | | °C |
| Maximum safe static overload | 150 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 400±20 | | | | Ohms |
| Output impedance | 350±3 | | | | Ohms |
| Insulation resistance | >5000 | | | | Mega-Ohms |
| Construction | Stainless steel | | | | |
| Environmental protection | IP68 | | | | |

* 5000kg capacity is not approved by NTEP

VISHAY PRECISION GROUP

# Universal Load Cell

OIML NTEP ATEX FM

## FEATURES

- Capacities: 50 - 5000kg, 100 - 10Klbs
- Fully welded, stainless steel construction
- Hermetically sealed, IP66 and IP68
- Certified to OIML R-60, 3000d
- Integrated overload stop (50 - 500kg)
- Current calibration output (SC version) ensures easy and accurate parallel connection of multiple load cells

## OPTIONAL FEATURE

- ATEX and FM certified versions are available for use in potentially explosive atmospheres

## DESCRIPTION

The BSP is a stainless steel S-type load cell that can be used in either tension or compression.

This product is suitable for a wide range of hybrid scales, overhead track scales, belt scales and process weighing applications.

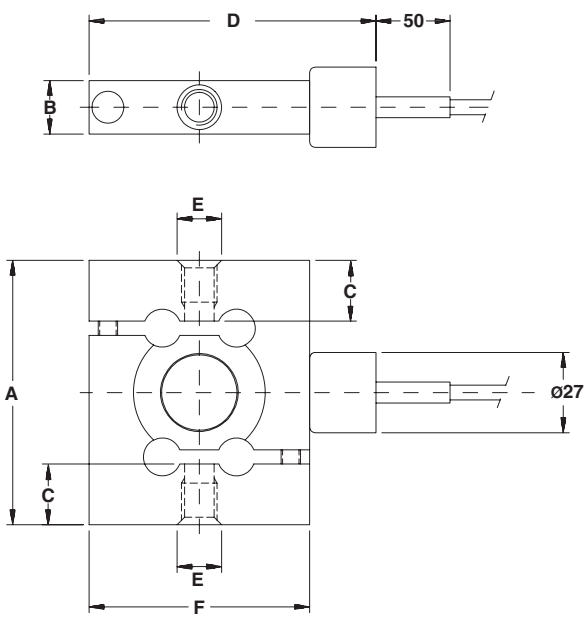
The fully welded construction and water block cable entry ensure that this product can be used successfully in the harsh environments found in the food, chemical and allied process industries.

This product fully meets the stringent European Weights and Measures requirements through Europe.

## APPLICATIONS

- Hybrid scales
- Process weighing
- Belt checkweighers
- Dynamometers
- Material testing machines

## OUTLINE DIMENSIONS in mm




*Cable specifications:*

| | |
|---|---|
| Cable length: | 10m |
| Excitation + | Green |
| Excitation - | Black |
| Output + | White |
| Output - | Red |
| Shield | Transparent |

Cable screen is not connected to load cell body. Performance may be affected if load cell cables are shortened.
Tension applications result in a negative output signal.

| Capacity (kg) | 50, 125 | 250 | 500 | 1250 | 2500, 5000 |
|---|---|---|---|---|---|
| A | 84.3 | 88.9 | 88.9 | 95.2 | 120.6 |
| B | 23.9 | 18.0 | 18.0 | 24.1 | 36.6 |
| C thread | 12.7 | 14.0 | 14.0 | 14.0 | 29.2 |
| D | 85.7 | 84.1 | 96.8 | 84.1 | 84.1 |
| E | M8x1.25 | | M12x1 | | M24x2 |
| F | 63.5 | 61.9 | 74.6 | 61.9 | 61.9 |

| Capacity (lb) | 100, 250 | 500 | 1K | 2.5K | 5K, 10K |
|---|---|---|---|---|---|
| A | 3.32 | 3.50 | 3.50 | 3.75 | 4.75 |
| F | 2.48 | 2.44 | 2.94 | 2.44 | 2.44 |
| B | 0.94 | 0.71 | 0.71 | 0.95 | 1.44 |
| D | 3.36 | 3.32 | 3.81 | 3.31 | 3.31 |
| E threads | 3/8-24 UNF-3B | 1/2-20 UNF-3B | | | 1-14 UNS-3B |

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| **Standard capacities ($E_{max}$)** | 50, 125, 250, 500, 1250, 2500, 5000 | | | kg |
| **Standard capacities ($E_{max}$)** | 100, 250, 500, 1000, 2500, 5000, 10000 | | | lbs |
| **Accuracy class according to OIML R-60 /NTEP** | **NTEP IIIL** | **Non-Approved** | **C3** | |
| **Max. no. of verfication intervals** | 10000 | | 3000 | |
| **Min. verification interval ($V_{min}=E_{max}/Y$)** | | | $E_{max}$/10000 | |
| **Rated output (=S)** | 3 (2 for 2500 and 5000kg) | | | mV/V |
| **Rated output tolerance** | 0.03 (0.02 for 2500 and 5000kg) | | | ±mV/V |
| **Zero balance** | 1.0 | | | ±% FSO |
| **Combined error** | 0.0200 | 0.0500 | 0.0200 | ±% FSO |
| **Non-repeatability** | 0.0100 | 0.0200 | 0.0100 | ±% FSO |
| **Minimum dead load output return** | | 0.0500 | 0.0167 | ±% FSO |
| **Creep error (30 minutes)** | | 0.0600 | 0.0245 | ±% FSO |
| **Creep error (20 - 30 minutes)** | 0.0300 | 0.0200 | | ±% FSO |
| **Temp. effect on min. dead load output** | (0.0008) | 0.0250 | 0.0070 | ±% FSO/5°C (/°F) |
| **Temperature effect on sensitivity** | (0.0010) | 0.0250 | 0.0050 | ±% FSO/5°C (/°F) |
| **Minimum dead load** | 0 | | | %$E_{max}$ |
| **Maximum safe over load** | 150 | | | %$E_{max}$ |
| **Ultimate over load** | 300 | | | %$E_{max}$ |
| **Maximum safe side load** | 100 | | | %$E_{max}$ |
| **Deflection at $E_{max}$** | 0.28 max. | | | mm |
| **Excitation voltage** | 5 to 15 | | | V |
| **Maximum excitation voltage** | 18 | | | V |
| **Input resistance** | 350±3.5 | | | Ω |
| **Output resistance** | 350±3.5 | | | Ω |
| **Insulation resistance** | ≥5000 | | | MΩ |
| **Compensated temperature range** | -10 to +40 | | | °C |
| **Operating temperature range** | -40 to +80 | | | °C |
| **Storage temperature range** | -40 to +90 | | | °C |
| **Element material (DIN)** | Stainless steel 1.4542 | | | |
| **Sealing (DIN 40.050 / EN60.529)** | IP66 and IP68 | | | |
| **SC-Version (current calibration)** | Standard | | | |

FSO-Full Scale Output

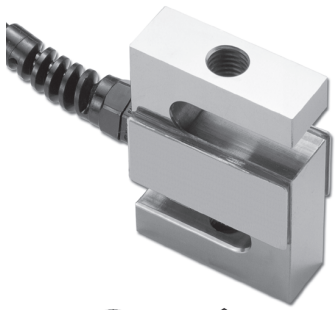
SC-version: The rated output and the output resistance are balanced in such a way, that the output current is calibrated to within 0.05% of a reference value. This allows easy parallel connection of the load cells.

# Model STC

Celtron

VISHAY PRECISION GROUP

## S-Type Load Cell



### FEATURES

- Capacities: 25 to 5000kg, 250 to 40Klb
- Alloy steel construction
- Stainless steel available
- Bi-direction(tension/compression)
- Rationalized output
- NTEP Class III 5000S, IIIL10000 approval from 250lb to 20Klb

### OPTIONAL FEATURE

- FM approval available

### DESCRIPTION

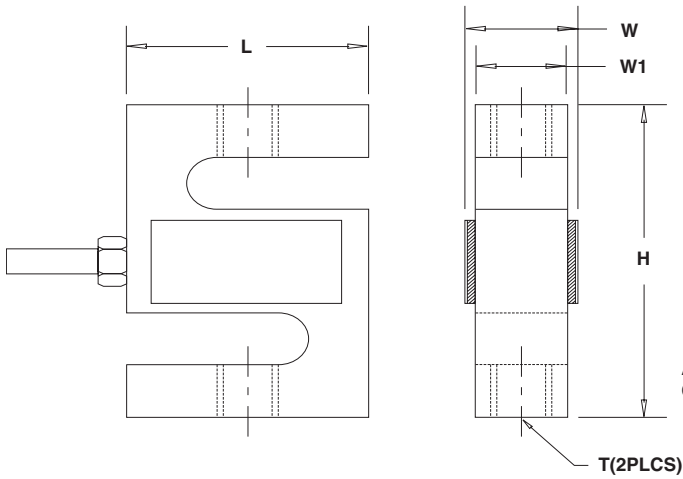
S Type load cell as the name indicated can be easily identified by S-shaped body. They can be loaded either in tension or compression, and used for single or multiple-cell application if the output is rationalized.

STC is made of alloy or stainless steel, sealed to IP67 providing excellent protection against moisture and humidity.

### APPLICATIONS

- Electro-mechanical conversion scales
- Silo/hopper/tank weighing
- Crane scales
- Fork-lift scales
- Dosing/filling
- Universal material tester
- Tensile/pulling force measurement

## OUTLINE DIMENSIONS




**All Capacity**
**Cable Length: 20'/6.1m**

Wiring diagram

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Signal | Green |
| - Signal | White |

| CAPACITY | | L | W | W1 | H | T |
|---|---|---|---|---|---|---|
| 25/50/75kg | mm | 50.8 | 26.7 | 12.7 | 63.5 | M6 x 1.0 |
| | (inch) | 2.00 | 1.05 | 0.50 | 2.50 | |
| 100/150kg | mm | 50.8 | 22.92 | 19.1 | 76.2 | M10 x 1.5 |
| | (inch) | 2.00 | 0.9 | 0.75 | 3.00 | |
| 250/300lb | mm | 50.8 | 26.7 | 12.7 | 76.2 | |
| | (inch) | 2.00 | 1.05 | 0.50 | 3.00 | 3/8-24UNF |
| 250kg 500/750lb | mm | 50.8 | 30.4 | 19.1 | 76.2 | M12 x 1.75 |
| | (inch) | 2.00 | 1.2 | 0.75 | 3.00 | 1/2-20UNF |
| 500/750kg | mm | 50.8 | 25.4 | 19.1 | 76.2 | M12 x 1.75 |
| | (inch) | 2.00 | 1.00 | 0.75 | 3.00 | |
| 1K/1.5Klb | mm | 50.8 | 26.1 | 19.1 | 76.2 | |
| | (inch) | 2.00 | 1.03 | 0.75 | 3.00 | 1/2-20UNF |
| 1000/1500kg 2K/2.5K/3Klb | mm | 50.8 | 31.8 | 25.4 | 76.2 | M12 x 1.75 |
| | (inch) | 2.00 | 1.25 | 1.00 | 3.00 | 1/2-20UNF |
| 5K/7.5Klb | mm | 76.2 | 31.8 | 25.4 | 107.9 | |
| | (inch) | 3.00 | 1.25 | 1.00 | 4.25 | 3/4-16UNF |
| 2000/2500/5000kg | mm | 76.2 | 38.1 | 31.8 | 100.4 | M20 x 1.5 |
| | (inch) | 3.00 | 1.50 | 1.25 | 3.95 | |
| 10Klb | mm | 88.9 | 31.8 | 25.4 | 120.7 | |
| | (inch) | 3.50 | 1.25 | 1.00 | 4.75 | 3/4-16UNF |
| 15Klb | mm | 101.6 | 38.1 | 31.8 | 139.7 | |
| | (inch) | 4 | 1.50 | 1.25 | 5.50 | 1-14UNS |
| 20Klb | mm | 127 | 55.7 | 50.8 | 177.8 | |
| | (inch) | 5 | 2.19 | 2 | 7.00 | 11/4-12UNF |
| 40Klb | mm | 152.4 | 69.9 | 63.5 | 254.0 | |
| | (inch) | 6.00 | 2.75 | 2.50 | 10.00 | 11/2-12UNF |

## SPECIFICATIONS

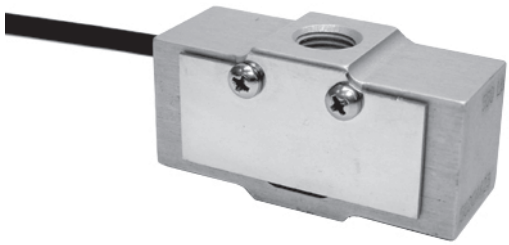
| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **NTEP/OIML Accuracy class** | **NTEP III & IIIL** | **Non-Approved** | |
| **Maximum no. of intervals (n)** | III 5000 single*<br>IIIL 10000 single* | 2000 | |
| **Y = $E_{max}/V_{min}$** | 10000 | 5000 | Maximum available |
| **Standard capacities ($E_{max}$)** | 25, 50, 75, 100, 250, 500, 750, 1000, 1500, 2000, 2500, 5000 | | kg |
| **Standard capacities ($E_{max}$)** | 250, 300, 500, 750, 1K, 1.5K, 2K, 2.5K, 3K, 5K, 7.5K, 10K, 15K, 20K, 40K | | lbs |
| **Rated output-R.O.** | 3.0 | | mV/V |
| **Rated output tolerance** | 0.25 | | ±% of rated output |
| **Zero balance** | 1 | | ±% of rated output |
| **Non linearity** | 0.020 | 0.020 (SS: 0.05) | ±% of rated output |
| **Hysteresis** | 0.020 | 0.020 (SS: 0.05) | ±% of rated output |
| **Non-repeatability** | 0.020 | | ±% of rated output |
| **Creep error (20 minutes)** | 0.030 | | ±% of rated output |
| **Zero return (20 minutes)** | 0.030 | | ±% of rated output |
| **Temperature effect on min. dead load output** | 0.0015 | 0.0026 | ±% of rated output/°C |
| **Temperature effect on sensitivity** | 0.0010 | 0.0015 | ±% of applied load/°C |
| **Compensated temperature range** | -10 to +40 | | °C |
| **Operating temperature range** | -20 to +60 | | °C |
| **Safe overload** | 150 | | % of R.C. |
| **Ultimate overload** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 385±5 | | Ohms |
| **Output impedance** | 350±3 | | Ohms |
| **Insulation resistance** | >5000 | | Mega-Ohms |
| **Construction** | Nickel plated alloy steel** | | |
| **Environmental protection** | IP67 | | |

* Capacities 250-20Klbs
** Stainless steel available

All specifications listed subject to change without notice.

FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

# Compact Tension/Compression Load Cell



## FEATURES

- Capacities 50 - 500lb
- Anodized aluminum construction
- IP65 protection
- For use in tension or compression

## DESCRIPTION

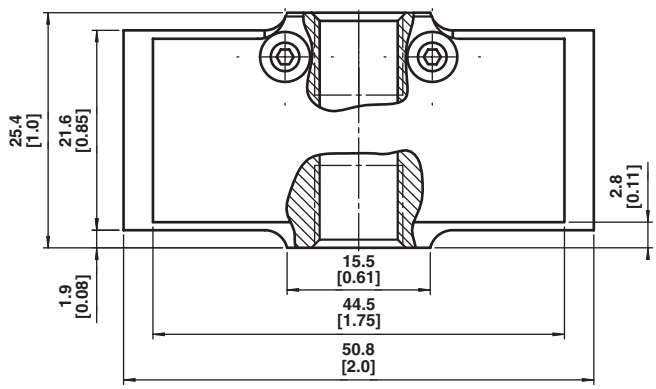
Model 327 is a universal tension-compression load cell. Its compact envelope makes the 327 suitable for small size applications.

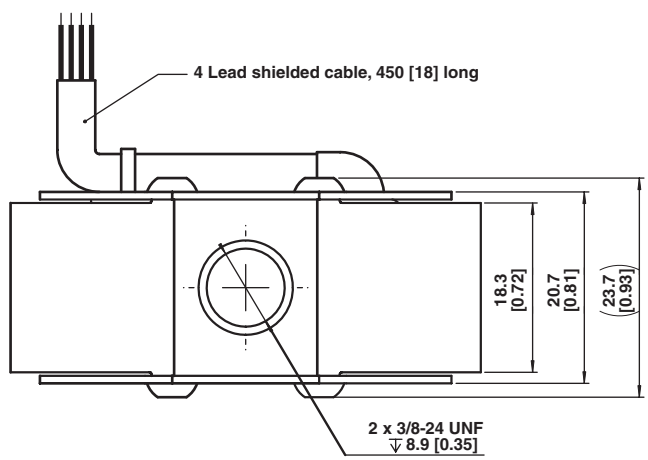
Its low profile makes the 327 ideal for applications requiring minimal installation hight.

## APPLICATIONS

- Hanging scales
- General force measurement

## OUTLINE DIMENSIONS in mm [inch]

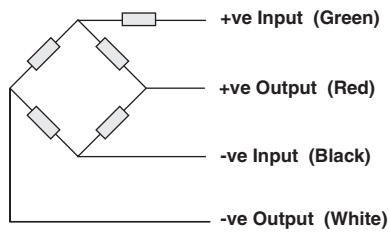


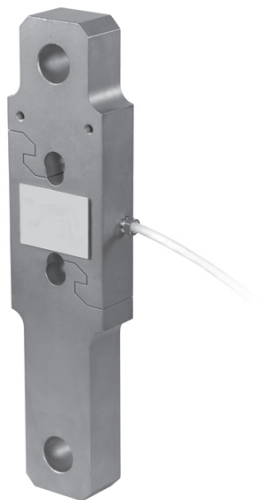
## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Rated capacity-R.C.** | 50, 100, 150, 200, 250, 300, 500 | lb |
| **Accuracy class** | **Non-Approved** | |
| **Rated output-R.O.** | 2.0 | mV/V |
| **Rated output tolerance** | 0.2 | ±mV/V |
| **Zero balance** | 0.2 | ±mV/V |
| **Total Error** | 0.25 | ±% of R.O. |
| **Creep & Zero Return** | 0.10 | ±% of load |
| **Temperature effect on zero** | 0.025 | ±% of R.O./°C |
| **Temperature effect on output** | 0.010 | ±% of load/°C |
| **Operating temperature range** | -10 to +40 | °C |
| **Safe temperature range** | -30 to +70 | °C |
| **Maximum safe static overload** | 150 | % of R.C. |
| **Ultimate static overload** | 200 | % of R.C. |
| **Recommended excitation** | 10 | Vdc or Vac |
| **Maximum excitation** | 15 | Vdc or Vac |
| **Input impedance** | 450±40 | Ω |
| **Output impedance** | 350±5 | Ω |
| **Insulation resistance** | >2000 | MΩ |
| **Cable length** | 45 | cm |
| **Construction** | Anodized aluminum | |

**Wiring Schematic Diagram**
**(For positive signal under tension load)**



# Crane Scale Load Cell



## FEATURES

- Capacity: 1.5t to 30t
- Alloy steel construction
- Integrated overload protection for both tension and compression loading
- Direct mounting of weight indicator
- IP67 protection

## DESCRIPTION

Model 91002 is an alloy steel shear beam load cell designed for crane scale and hanging scale applications. The load cell design features integrated overload protection for both tension and compression loading with a rated output of 1.5mV/V.

Model 91002 is supplied with a Teflon cable which makes the load cell ideal for harsh environments. The design also allows for direct mounting of the weight indicator which is typical for crane scale applications.

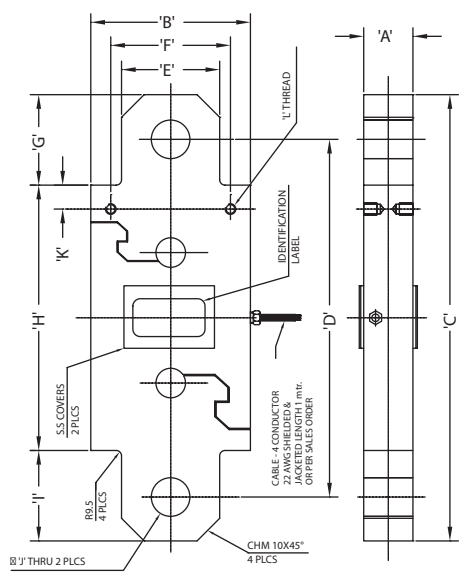
## APPLICATIONS

- Crane scales
- Hanging scales

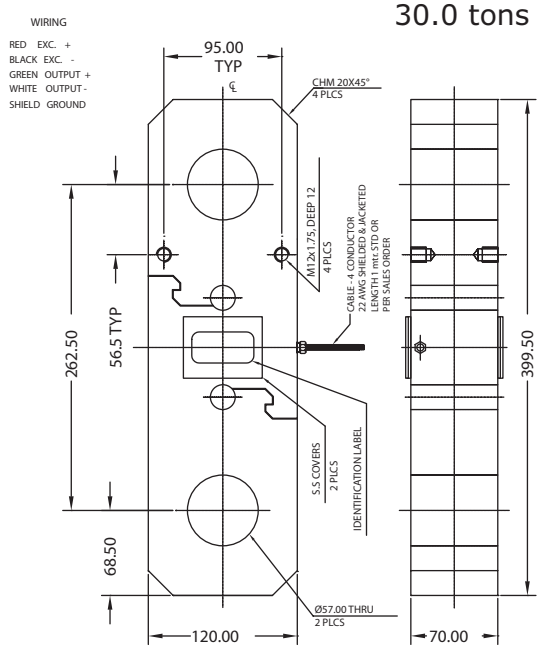
## OUTLINE DIMENSIONS in millimeters

| CAPACITY | A | B | C | D | E | F | G | H | I | J | K | L THREAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.5, 3.0, 5.0 tons | 29.7 | 69.5 | 289.0 | 238.6 | 50.0 | 50.0 | 49.0 | 130.0 | 110.0 | 19.0 | 10.0 | M6 x 1.0, DEEP 12.0, 4 PLCS |
| 7.5, 15.0 tons | 37.0 | 120.0 | 399.5 | 295.5 | 73.8 | 90.0 | 100.0 | 199.5 | 100.0 | 36.0 | 18.0 | M12 x 1.75 DEEP 12.0, 4 PLCS |

1.5-15.0 tons




30.0 tons



## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Rated output-R.O.** | 1.5 | mV/V |
| **Rated output tolerance** | 5 | ± %FSO |
| **Zero balance** | 1 | ± %FSO |
| **Combined error** | < 0.050 | ± %FSO |
| **Non-linearity** | < 0.030 | ± %FSO |
| **Hysteresis** | < 0.020 | ± %FSO |
| **Non-repeatability** | < 0.020 | ± %FSO |
| **Creep error (30 minutes)** | < 0.020 | ± %FSO |
| **Temperature effect on zero** | < 0.002 | ± %/°C |
| **Temperature effect on output** | 0.001 | ± %/°C |
| **Operating temperature range** | -20 TO +70 | °C |
| **Maximum safe central overload** | 150 | %FSO |
| **Ultimate central overload** | 300 | %FSO |
| **Excitation, recommended** | 10 | Vdc |
| **Excitation, maximum** | 15 | Vdc |
| **Input impedance** | 360-450 | Ω |
| **Output impedance** | 349-355 | Ω |
| **Insulation resistance at 50 VDC** | >1000 | MΩ |
| **Material** | Alloy steel with electroless nickel plated | |
| **Environmental protection** | IP67 | |

VISHAY PRECISION GROUP

# Single-Point Bending Beams Aluminum

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Model 1022

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Single Point Aluminum Load Cell

### FEATURES

- Capacity range: 3 - 200kg
- Only 22 mm high
- Aluminum construction
- Single point 350 x 350mm platform
- IP66 protection
- OIML R60 and NTEP approved

### OPTIONAL FEATURES

- EEx ia IIC T4 - ATEX hazardous area approval
- FM approval
- Symmetric configuration available

### DESCRIPTION

Model 1022 is a low profile single point load cell designed for direct mounting in low cost weighing platforms.

Its small physical size, combined with high accuracy and aluminum construction, makes this low cost load cell ideally suited for retail, bench and counting scales.

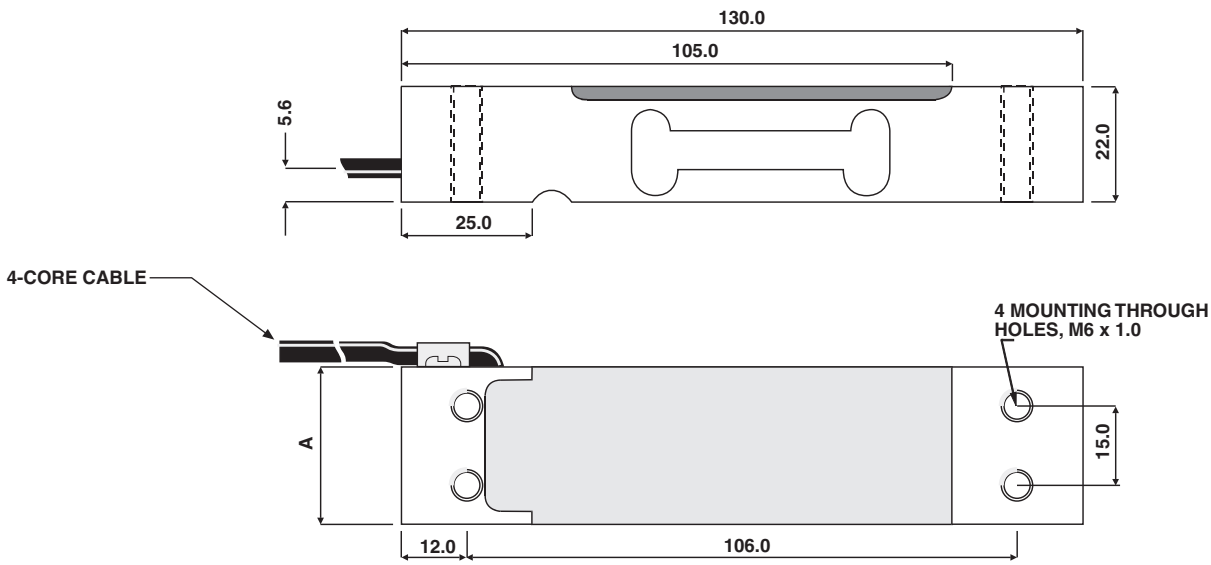
Using 1022 load cells simplifies scale construction, which results in significant parts and labor savings.

Available in a range of capacities, from 3 to 200kg and approved to OIML R60 (4000d) or NTEP (5000d, single). Environmental protection to IP66 is provided as standard. For hazardous environments, ATEX EEx ia IIC T4 approved versions are available.

### APPLICATIONS

- Bench scales
- Counting scales
- Grocery scales

### OUTLINE DIMENSIONS in mm




| CAPACITY | A |
|---|---|
| 3, 5, 7kg | 25.4 |
| 10, 15, 20, 30kg | 30.0 |
| 35 - 200kg | 40.0 |



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 12007
Revision: 17-Feb-10

## SPECIFICATIONS

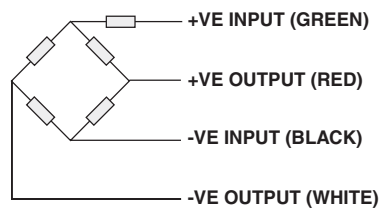
| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 3, 5, 7, 10, 15, 20, 30, 35, 50, 100, 150, 200*** | | | | kg |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3* | C4 | |
| Maximum no. of intervals (n) | 5000 single** | 1000 | 3000 | 4000 | |
| $Y = E_{max}/V_{min}$ | 10000 | 1400 | 6000 | 10000 | Maximum available 12000 |
| Rated output-R.O. | 2.0 | | | | mV/V |
| Rated output tolerance | 0.2 | | | | ±mV/V |
| Zero balance | 0.2 | | | | ±mV/V |
| Zero Return, 30 min. | 0.0330 | 0.0300 | 0.0170 | 0.0125 | ±% of applied load |
| Total Error (per OIML R60) | 0.0200 | 0.0500 | 0.0200 | 0.0150 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.0100 | 0.0023 | 0.0014 | ±% of rated output/°C |
| Temperature effect on output | 0.0010 | 0.0030 | 0.0010 | 0.00075 | ±% of applied load/°C |
| Eccentric loading error | 0.0057 | 0.0085 | 0.0057 | 0.0042 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | | | °C |
| Temperature range, safe | -20 to +70 | | | | °C |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 415±15 | | | | Ohms |
| Output impedance | 350±3 | | | | Ohms |
| Insulation resistance | >2000 | | | | Mega-Ohms |
| Cable length | 0.5 | | | | m |
| Cable type | 4 wire, PVC, single floating screen | | | | Standard |
| Construction | Aluminum | | | | |
| Environmental protection | IP66 | | | | |
| Platform size (max) | 350 x 350 | | | | mm |
| Recommended torque | Up to 30kg: 7.0<br>35kg & up: 10.0 | | | | N*m |

* 50% utilization

** Also available at 50% utilization

*** 150-200kg are not approved by NTEP, 200kg is not approved by OIML

**WIRING SCHEMATIC DIAGRAM**
**(UNBALANCED BRIDGE CONFIGURATION)**



## Low-Profile Single Point

### FEATURES

- Capacities: 0.6 to 200kg
- Small size with low profile
- Anodized aluminum
- NTEP Class III 5000S approval from 3kg to 30kg
- OIML C3 approval
- Platform size: 16"x16"/ 40cm x 40cm

### OPTIONAL FEATURE

- FM approval available

### DESCRIPTION

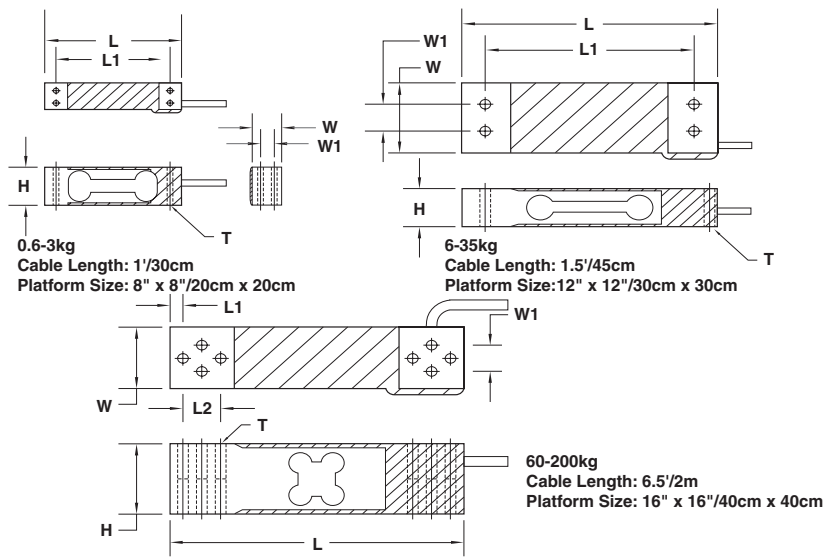
LPS is designed for electronic scales and platform scales where only one load cell can be used and low profile is required. It is the lightest model of Celtron single point load cell family. The design is most suitable for mass production operations.

LPS is constructed of anodized aluminum and is fully potted IP66 levels, providing excellent protection against moisture ingression.

### APPLICATIONS

- Packaging machines
- Dosing/filling
- Belt scales/conveyor scales
- In-motion check weigher
- Retail scales/counting scales

### OUTLINE DIMENSIONS




**Wiring diagram**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Signal | Green |
| - Signal | White |

| CAPACITY (kg) | | L | L1 | L2 | W | W1 | H | T |
|---|---|---|---|---|---|---|---|---|
| 0.6/1/2/3 | mm | 70.0 | 58.0 | --- | 15.0 | 7.0 | 22.0 | M3 x 0.5 |
| | (inch) | 2.76 | 2.28 | --- | 0.59 | 0.28 | 0.87 | |
| 6/10/15/20 | mm | 130.0 | 106.0 | --- | 30.0 | 15.0 | 22.0 | M6 x 1.0 |
| | (inch) | 5.12 | 4.17 | --- | 1.18 | 0.59 | 0.87 | |
| 30/35 | mm | 130.0 | 106.0 | --- | 40.0 | 15.0 | 22.0 | M6 x 1.0 |
| | (inch) | 5.12 | 4.17 | --- | 1.57 | 0.59 | 0.87 | |
| 60/100/200 | mm | 150.0 | 7.0 | 19.0 | 35.0 | 15.0 | 40.0 | M6 x 1.0 |
| | (inch) | 5.91 | 0.28 | 0.75 | 1.38 | 0.59 | 1.57 | |



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11707
Revision: 05-Feb-10

| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | **UNIT** |
| NTEP/OIML Accuracy class | NTEP III | Non-Approved | C3 | |
| Maximum no. of intervals (n) | 5000 single (1) | 1000 | 3000 (2) | |
| $Y = E_{ma}x/V_{min}$ | 8000 | 1400 | 6000 | Maximum available 12000 |
| Standard capacities ($E_{max}$) | 0.6, 1, 2, 3, 6, 10, 15, 20, 30, 35, 60, 100, 200 | | | kg |
| Rated output-R.O. | 2.0 (3) | | | mV/V |
| Rated output tolerance | 10 | | | ±% of rated output |
| Zero balance | 3 | | | ±% of rated output |
| Non linearity | 0.025 | 0.030 | 0.020 | ±% of rated output |
| Hysteresis | 0.025 | 0.030 | 0.020 | ±% of rated output |
| Non-repeatability | 0.020 | | | ±% of rated output |
| Creep error (20 minutes) | 0.030 | 0.030 | 0.017 | ±% of rated output |
| Zero return (20 minutes) | 0.030 | 0.030 | 0.017 | ±% of rated output |
| Temperature effect on min. dead load output | 0.0026 | 0.0026 | 0.014 | ±% of rated output/°C |
| Temperature effect on sensitivity | 0.0015 | 0.0015 | 0.008 | ±% of applied load/°C |
| Compensated temperature range | -10 to +40 | | | °C |
| Operating temperature range | -20 to +60 | | | °C |
| Safe overload | 150 | | | % of R.C. |
| Ultimate overload | 200 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 410±10 | | | Ohms |
| Output impedance | 350±3 | | | Ohms |
| Insulation resistance | >5000 | | | Mega-Ohms |
| Construction | Anodized aluminum | | | |
| Environmental protection | IP66 | | | |

**Notes**

(1) Capacities 3-30kg

(2) Capacities 6-35kg

(3) 1mV/V for 1kg and below

All Specifications subject to change without notice.

FM Approval

Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G

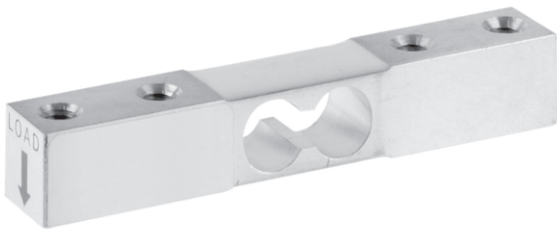
Non-Incendive: Class I; Div. 2 Groups A-D

# Model 1002

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Aluminum Single Point Load Cell




### FEATURES

- Capacities 0.5 - 5kg for 350 ohm
- Capacities 5 - 20kg for 1000 ohm
- Aluminum construction
- Single point 200 x 200mm platform
- IP66 protection

### DESCRIPTION

Model 1002 is a very small, low capacity, aluminum single point load cell, equally suitable for simple weighing scales or for industrial measurement and medical applications.

The Model 1002 has the advantage of very small size. It is therefore both versatile and easy to use in a wide variety of industrial measurement applications.

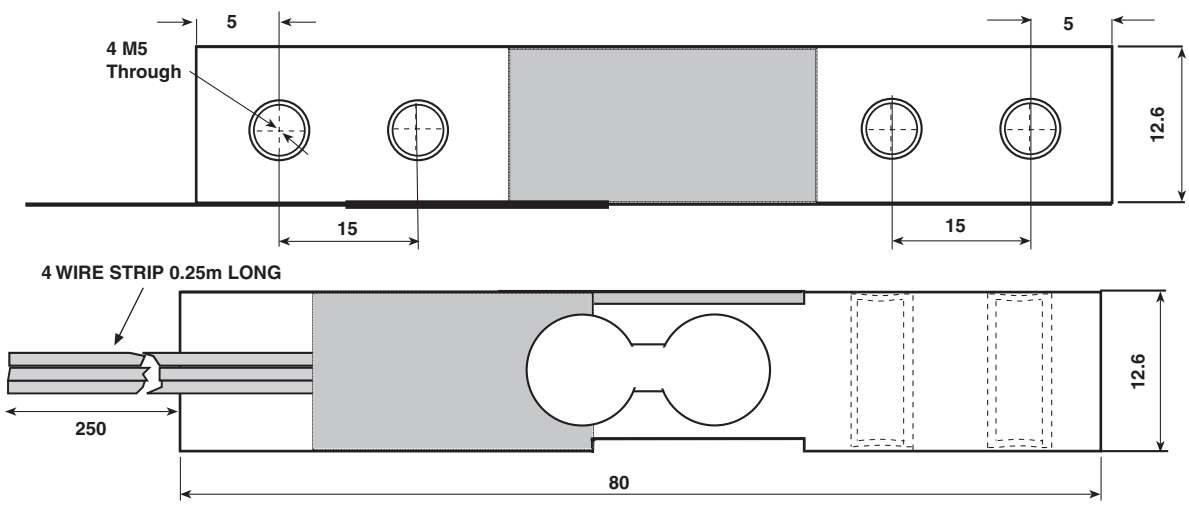
Optional 1000 ohm strain gages are particularly suitable for connection to battery-powered equipment (designated Model 1002-K).

Typical applications include packing machines, filling machines, weaving machines, industrial process control, and low-force medical applications, as well as small-platform weighing.

### APPLICATIONS

- Small scales
- Grocery scales

### OUTLINE DIMENSIONS in mm



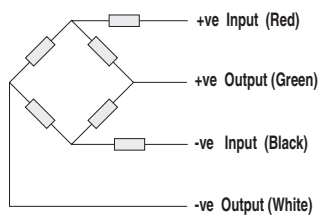


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12001
Revision: 16-Feb-10

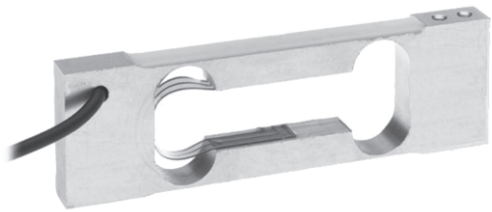
## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| Model | 1002 | 1002-K | |
| Accuracy class | Non-Approved | | |
| Maximum no. of intervals (n) | 1000 | | |
| Rated capacity-R.C. ($E_{max}$) | 0.5, 1, 2, 3, 5 | 5, 8, 15, 20 | kg |
| Rated output-R.O. | 0.5 | 1.5 | mV/V |
| Rated output tolerance | 10 | | ±% mV/V |
| Zero balance | 0.4 | 0.2 | ±mV/V |
| Zero Return, 30 min. | 0.050 | | ±% of applied load |
| Total Error | 0.1 | | ±% of rated output |
| Temperature effect on zero | N/A | | ±% of rated output/°C |
| Temperature effect on output | N/A | | ±% of load/°C |
| Eccentric loading error | 0.16 | | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | °C |
| Temperature range, safe | -20 to +70 | | °C |
| Maximum safe central overload | 150 | | % of R.C. |
| Ultimate central overload | 300 | | % of R.C. |
| Excitation, recommended | 5 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 350±50 | 1000±50 | Ohms |
| Output impedance | 350±50 | 1000±50 | Ohms |
| Insulation resistance | >2000 | | Mega-Ohms |
| Cable length | 0.25 | | m |
| Cable type | 4 wire, PVC | | Standard |
| Construction | Aluminum | | |
| Environmental protection | IP66 | | |
| Platform size (max) | 200 x 200 | | mm |
| Recommended torque | 2 | | N*m |

**Wiring Schematic Diagram**
**(Balanced bridge configuration)**



# Aluminum Single Point Load Cell



### FEATURES

- Capacities 0.3 - 3kg
- Aluminum construction
- Single point 200 x 200mm platform
- IP66 protection
- Total error better than 0.0067% of R.O.
- OIML approved

### OPTIONAL FEATURE

- Capacity 200g at 0.8mV/V

## DESCRIPTION

Model 1004 is a very low capacity, very high precision single point load cell designed for direct mounting in low capacity scales and precision balances.

This load cell is suitable for applications including jewellery scales, analytical balances, medical equipment, medical and pharmaceutical research and low level force measurement.

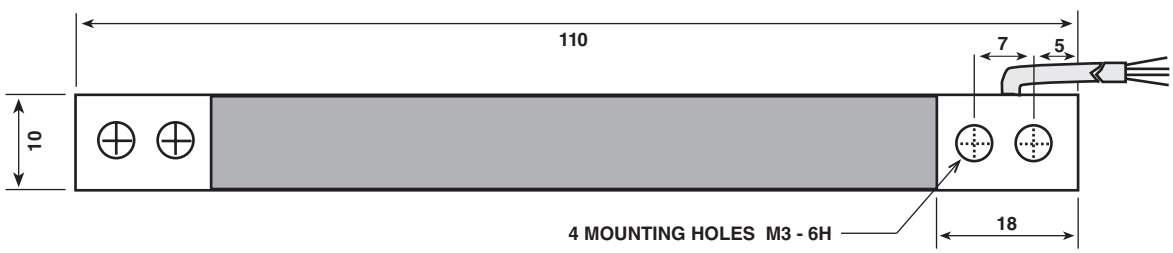
The model 1004 offers up to 30000 divisions short term precision at stable room temperature. A special two-stage humidity resistant protective coating assures long term reliability.

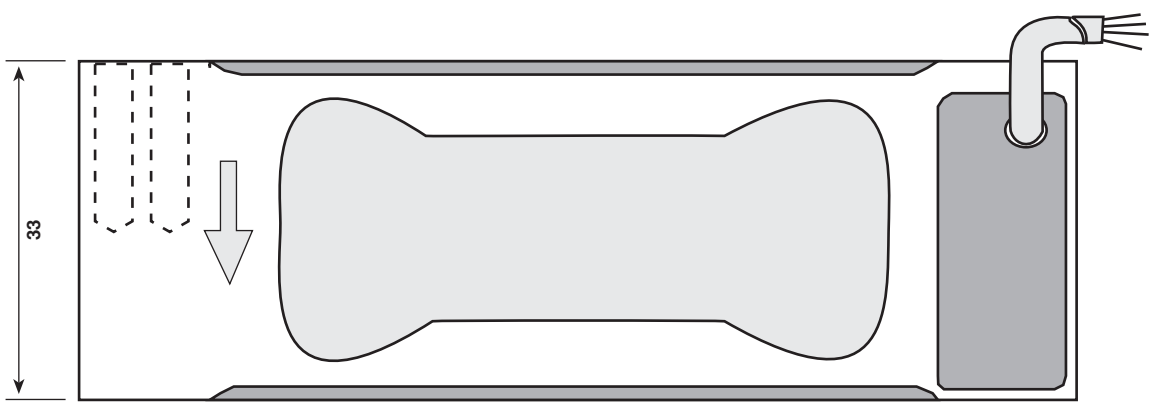
An overload protection device can be easily included in the application design. A threaded hole is provided in the loading end of the load cell for this purpose.

## APPLICATIONS

- Low capacity scales
- Precision scales
- Jewelry scales
- Pharmaceutical scales

## OUTLINE DIMENSIONS in mm



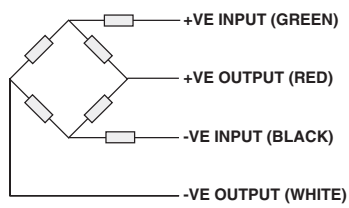


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12002
Revision: 16-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| **Accuracy class** | **GW** | **JW** | **C3** | |
| **Rated capacity-R.C. ($E_{max}$)** | 0.3, 0.6, 1.5, 3 | | | kg |
| **Rated output-R.O.** | 0.9 | | | mV/V |
| **Rated output tolerance** | 0.1 | | | ±mV/V |
| **Zero balance** | 0.045 | | | ±mV/V |
| **Zero Return, 2 minutes** | 0.0100 | 0.0033 | | ±% of applied load |
| **Zero Return, 30 minutes** | | | 0.017 | ±% of applied load |
| **Total Error (per OIML R60)** | 0.0100 | 0.0067 | 0.02 | ±% of rated output |
| **Temperature effect on zero** | 0.0040 | | 0.004 | ±% of rated output/°C |
| **Temperature effect on output** | 0.0020 | | 0.001 | ±% of load/°C |
| **Eccentric loading error** | 0.0033 | | | ±% of rated load/cm |
| **Temp. range, compensated** | +5 to +40 | | | °C |
| **Temp. range, safe** | -3 to +70 | | | °C |
| **Maximum safe central overload** | 150 | | | % of R.C. |
| **Ultimate central overload** | 250 | | | % of R.C. |
| **Excitation, recommended** | 10 | | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | | Vdc or Vac rms |
| **Input impedance** | 415±20 | | | Ohms |
| **Output impedance** | 350±3 | | | Ohms |
| **Insulation resistance** | >2000 | | | Mega-Ohms |
| **Cable length** | 0.4 | | | m |
| **Cable type** | 4 wire, PVC, spiral shield | | | |
| **Construction** | Aluminum | | | |
| **Environmental protection** | IP66 | | | |
| **Platform size (max)** | 200 x 200 | | | mm |
| **Recommended torque** | 2.0 | | | N*m |

**WIRING SCHEMATIC DIAGRAM**
**(Balanced bridge configuration)**

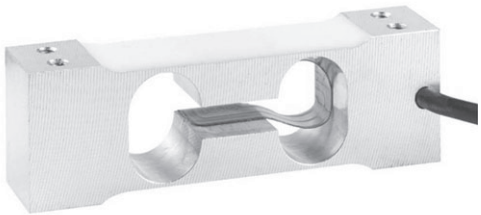


# Model 1006

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Aluminum Single Point Load Cell



## FEATURES

- Capacities 2 - 5kg
- Aluminum construction
- Single point 200 x 200mm platform
- IP66 protection
- Total error better than 0.0067% of R.O.

## DESCRIPTION

Model 1006 is a very low capacity, high precision single point load cell designed for direct mounting in low capacity scales.

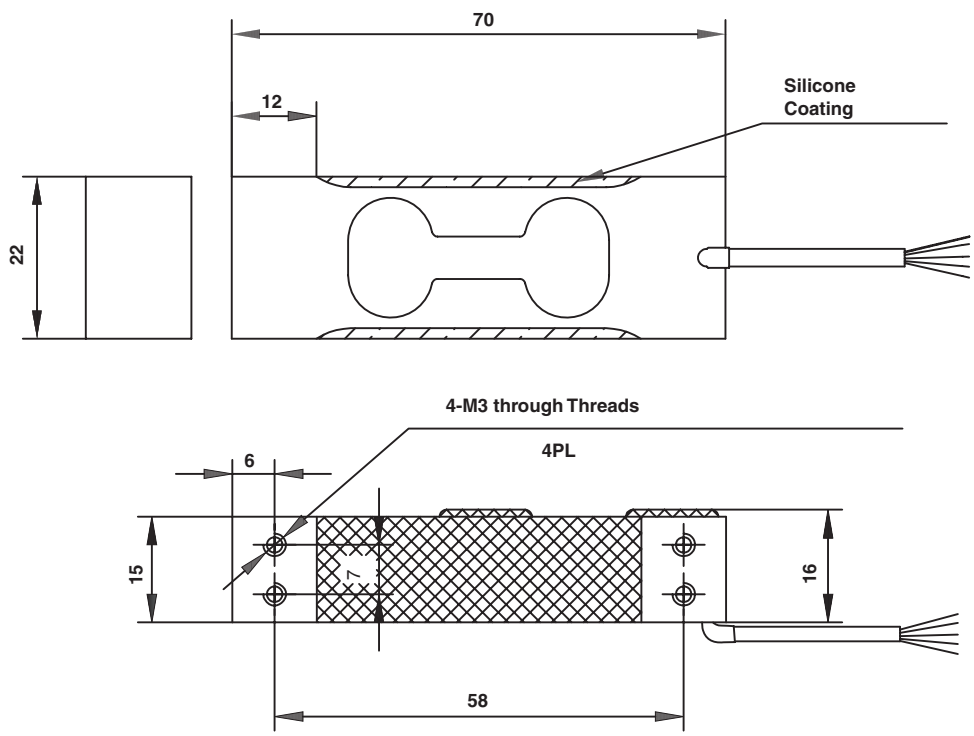
This load cell is suitable for applications including postal scales, counting scales, general purpose weighing scales and is also suitable for a wide variety of force measurement applications, such as industrial process control or specialist medical devices.

Model 1006 offers very high performance from a very small size. It is very easy to use, and easy to apply in a wide variety of applications, where the acting center of force application is within 100mm of the load cell vertical axis.

## APPLICATIONS

- Bench scales
- Counting scales
- Grocery scales

## OUTLINE DIMENSIONS in mm



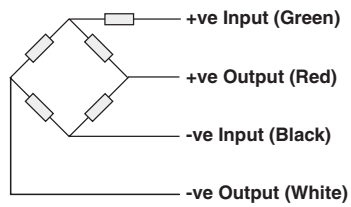


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12003
Revision: 16-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Accuracy class** | **Non-Approved** | **G** | |
| **Maximum no. of intervals (n)** | 1000 | 3000 | |
| **Rated capacity-R.C. ($E_{max}$)** | 2, 3, 5 | | kg |
| **Rated output-R.O.** | 2.0 | | mV/V |
| **Rated output tolerance** | 0.2 | | ±mV/V |
| **Zero balance** | 0.2 | | ±mV/V |
| **Zero Return, 30 min.** | 0.050 | 0.0170 | ±% of applied load |
| **Total Error** | 0.0300 | 0.0200 | ±% of rated output |
| **Temperature effect on zero** | 0.0100 | 0.0040 | ±% of rated output/°C |
| **Temperature effect on output** | 0.0030 | 0.0010 | ±% of load/°C |
| **Eccentric loading error** | 0.0074 | 0.0057 | ±% of rated load/cm |
| **Temp. range, compensated** | -10 to +40 | | °C |
| **Temp. range, safe** | -20 to +70 | | °C |
| **Maximum safe central overload** | 150 | | % of R.C. |
| **Ultimate central overload** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 415±20 | | Ohms |
| **Output impedance** | 350±3 | | Ohms |
| **Insulation resistance** | >2000 | | Mega-Ohms |
| **Cable length** | 0.4 | | m |
| **Cable type** | 4 wire, PVC, single floating screen | | Standard |
| **Construction** | Aluminum | | |
| **Environmental protection** | IP66 | | |
| **Platform size (max)** | 200 x 200 | | mm |
| **Recommended torque** | 2 & 3kg - 4.0 5kg - 6.0 | | N*m |

**Wiring Schematic Diagram**
**(Unbalanced bridge configuration)**



# Aluminum Single Point Load Cell

## FEATURES

- Capacities 3 - 90kg
- Aluminum construction
- Single point 400 x 400mm platform
- NTEP approved
- IP65 protection
- Available with metric and UNC threads

## OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval
- FM approval available
- IP67 available

## DESCRIPTION

Model 1010 is a single point load cell designed for direct mounting of low cost, low capacity weighing platforms.

Its use in large platforms, combined with its high accuracy and low cost, makes this load cell ideally suited for a large range of weighing applications, including bench scales and counting scales.

A special humidity resistant protective coating is available which ensures long-term reliability. For hazardous environments this load cell has EEx ia IIC T4 level approved option.

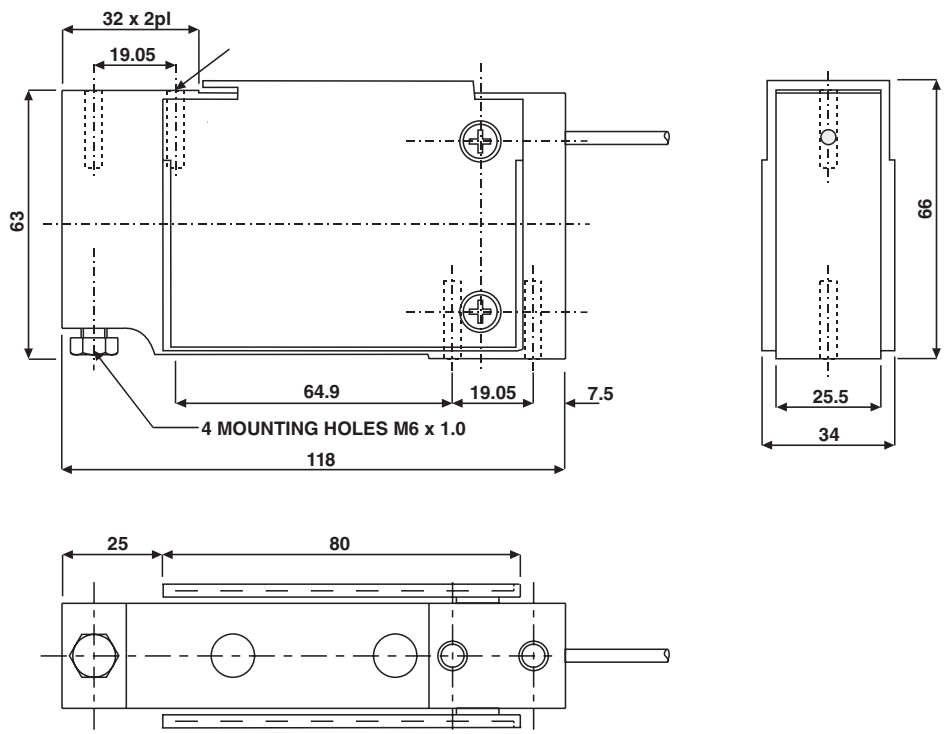
Model 1010's built-in overload stop can provide mechanical protection against overloading.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension is achieved by feeding this voltage into the appropriate electronics.

## APPLICATIONS

- Bench scales
- Counting scales
- Grocery scales

## OUTLINE DIMENSIONS in mm






Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 12005
Revision: 16-Feb-10

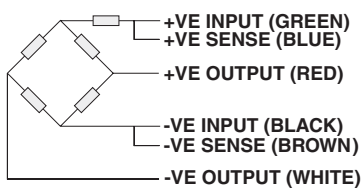
## SPECIFICATIONS

| PARAMETER | VALUE* | | UNIT |
|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 3, 5, 7, 10, 15, 20, 30, 50, 90 | | kg |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | |
| Maximum no. of intervals (n) | 5000 single | 3000 | |
| $Y = E_{max}/V_{min}$ | 10000 | 10000 | Maximum available |
| Rated output-R.O. | 2.0 | | mV/V |
| Rated output tolerance | 0.2 | | ±mV/V |
| Zero balance | 0.2 | | ±mV/V |
| Zero Return, 30 min. | 0.0330 | 0.0170 | ±% of applied load |
| Total Error (per OIML R60) | 0.0200 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.004 | ±% of rated output/°C |
| Temperature effect on output | 0.001 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0057 | 0.0074 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | °C |
| Temperature range, safe | -20 to +70 | | °C |
| Maximum safe central overload | 150 | | % of R.C. |
| Ultimate central overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 415±15 | | Ohms |
| Output impedance | 350±3 | | Ohms |
| Insulation resistance | >2000 | | Mega-Ohms |
| Cable length | 1.0 | | m |
| Cable type | 6 wire, PVC, single floating screen | | Standard |
| Construction | Plated (Anodize) aluminum | | |
| Environmental protection | IP65** | | |
| Platform size (max) | 400 x 400 | | mm |
| Recommended torque | Up to 30kg: 7.0<br>50kg & up: 10.0 | | N·m |

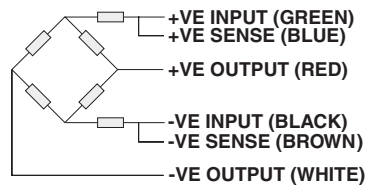
* 1010 is non-balanced load cell (Non-balanced Bridge), 1015 is balanced

** IP67 available upon request

**WIRING SCHEMATIC DIAGRAM (1010)**
**(unbalanced bridge configuration)**




**WIRING SCHEMATIC DIAGRAM (1015)**




**BALANCED TEMPERATURE COMPENSATION**

# Low Profile Single Point Load Cell

## FEATURES

- Capacity range: 2 - 15kg
- Aluminum construction
- Single point 350 x 350mm platform
- OIML R60
- IP65 protection
- Available with metric and UNC threads

## OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval
- FM approval available
- IP67 protection available

## APPLICATIONS

- Bench scales
- Counting scales
- Grocery scales

## DESCRIPTION

Model 1030 is a single point load cell designed for direct mounting of low cost, low capacity weighing platforms.

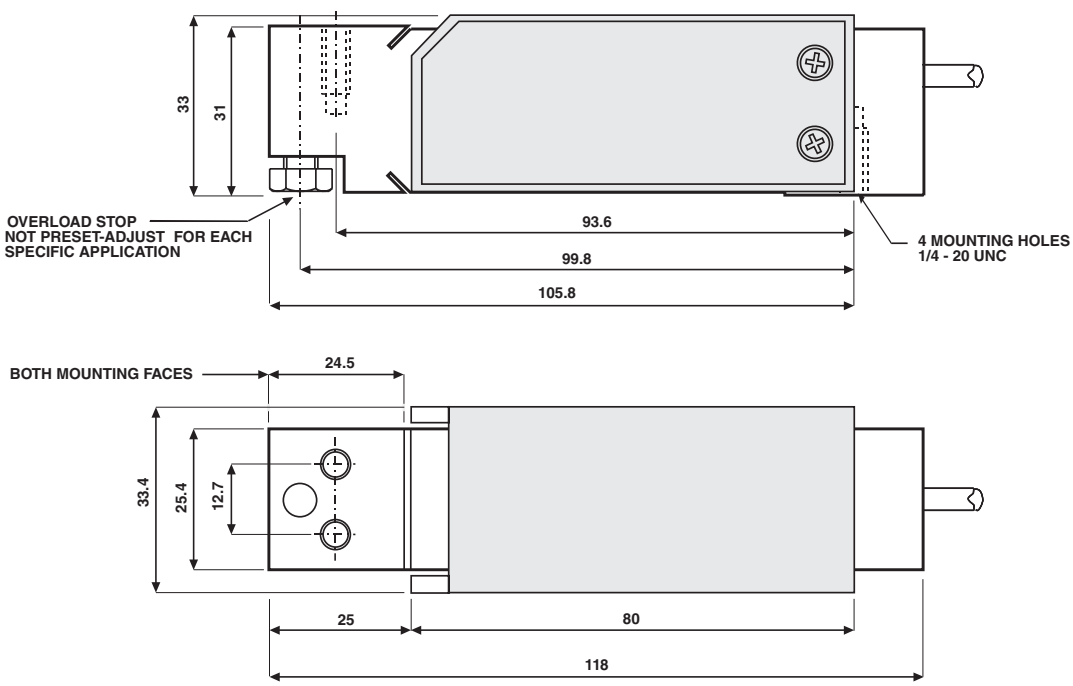
Its use in relatively large platforms, combined with high accuracy and low cost, makes this load cell ideally suited for a wide range of weighing applications, including bench scales, laboratory, money counting and process weighing.

A special humidity resistant protective coating is available as an option which assures long term reliability.

Model 1030's built in overload stop can provide mechanical protection against overloading.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## **OUTLINE DIMENSIONS** in millimeters





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12008
Revision: 23-Feb-10

| SPECIFICATIONS | | | |
|---|---|---|---|
| **PARAMETER** | **VALUE (1)** | | **UNIT** |
| OIML Accuracy class | Non-Approved | C2.5 | |
| Maximum no. of intervals (n) | 1000 | 2500 | |
| $Y = E_{max}/V_{min}$ | 3333 | 7000 | |
| Rated capacity-R.C. ($E_{max}$) | 2 (2), 3, 5, 7, 10, 15 | | kg |
| Rated output-R.O. | 2.0 | | mV/V |
| Rated output tolerance | 0.2 | | ±mV/V |
| Zero balance | 0.2 | | ±mV/V |
| Zero Return, 30 min. | 0.0300 | 0.0170 | ±% of applied load |
| Total Error | 0.0500 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0100 | 0.0040 | ±% of rated output/°C |
| Temperature effect on output | 0.0030 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0085 | 0.0057 | ±% of rated load/cm |
| Temp. range, compensated | -10 to +40 | | °C |
| Temp. range, safe | -20 to +70 | | °C |
| Maximum safe central overload | 150 | | % of R.C. |
| Ultimate central overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 415±15 | | Ohms |
| Output impedance | 350±3 | | Ohms |
| Insulation resistance | >5000 | | Mega-Ohms |
| Cable length | 1.0 | | m |
| Cable type | 4 wire, PVC, single floating screen | | Standard |
| Construction | Plated (Anodized) aluminum | | |
| Environmental protection | IP65 (3) | | |
| Platform size (max) | 350 x 350 | | mm |
| Recommended torque | 7.0 | | N*m |

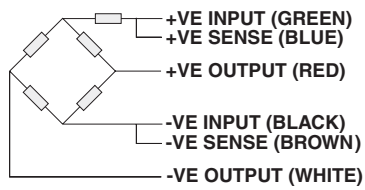
**Notes**

(1) 1030 is a non-balanced bridge load cell

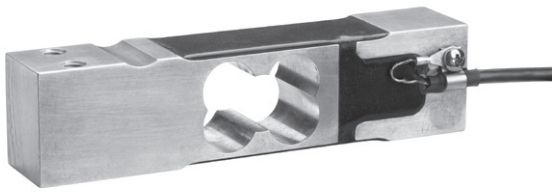
(2) 2kg is not OIML approved

(3) IP67 available upon request

**WIRING SCHEMATIC DIAGRAM**
**(unbalanced bridge configuration)**



# Low Profile Single Point Load Cell



OIML ATEX

## DESCRIPTION

Model 1033 is a low profile single point load cell designed for direct mounting of low cost weighing platforms.

Its small physical size, combined with high accuracy and low cost, makes this load cell ideally suited for retail, bench and counting scales.

A humidity resistant protective coating assures long term stability over the entire compensated temperature range.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extenstion, is achieved by feeding this voltage into the appropriate electronics.

## FEATURES

- Capacities 10 - 30kg
- Aluminum construction
- Single point 400 x 400mm platform
- OIML R60 approved
- IP66 protection
- Available with metric and UNC threads

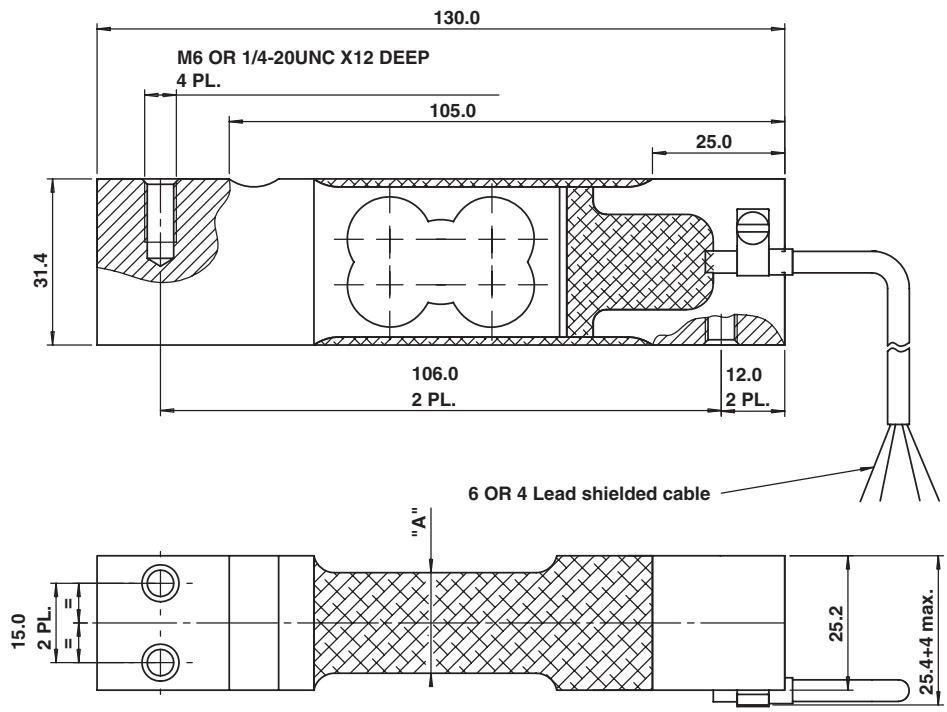
## OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval
- High stiffness version available for dynamic weighing applications

## APPLICATIONS

- Bench scales
- Counting scales
- Grocery scales

## OUTLINE DIMENSIONS in millimeters




| CAPACITY Kg. | "A" |
|---|---|
| 10 | 19 |
| 20 - 30 | 25.2 |


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12067
Revision: 23-Feb-10

| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 10, 15, 30 | | | kg |
| OIML Accuracy class | Non-Approved | C3 (1) | C6 (2) | |
| Maximum no. of intervals (n) | 1000 | 3000 | 6000 | |
| $Y = E_{max}/V_{min}$ | 2000 | 10000 | 15000 | Maximum available |
| Rated output-R.O. | 2.0 | | | mV/V |
| Rated output tolerance | 0.2 | | | ±mV/V |
| Zero balance | 0.2 | | | ±mV/V |
| Zero Return, 30 min. | 0.0300 | 0.0170 | 0.0083 | ±% of applied load |
| Total Error | 0.0500 | 0.0200 | 0.0100 | ±% of rated output |
| Temperature effect on zero | 0.0100 | 0.0023 | 0.0014 | ±% of rated output/°C |
| Temperature effect on output | 0.0030 | 0.0010 | 0.00058 | ±% of applied load/°C |
| Eccentric loading error | 0.0057 | 0.0057 | 0.0024 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | | °C |
| Temperature range, safe | -20 to +70 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 415±15 | | | Ohms |
| Output impedance | 350±3 | | | Ohms |
| Insulation resistance | >2000 | | | Mega-Ohms |
| Cable length | 0.5 | | | m |
| Cable type | 4 wire, PVC, single floating screen | | | Standard |
| Construction | Aluminum | | | |
| Environmental protection | IP66 | | | |
| Platform size (max) | 400 x 400 | | | mm |
| Recommended torque | 7.0 | | | N*m |

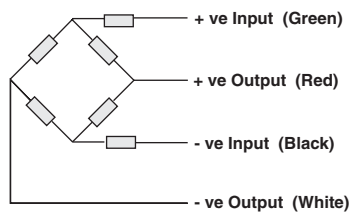
**Notes**

(1) 50% utilization

(2) 60% utilization

**Wiring Schematic Diagram**

**(Balanced temperature compensation)**



# Model 1040/1041

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Low Capacity Single Point Aluminum Load Cells

## FEATURES

- Capacities 5-100kg
- Aluminum construction
- Single point 400 x 400mm platform
- OIML R60 and NTEP approved
- IP65 protection
- Available with metric and UNC threads

## OPTIONAL FEATURES

- EEx ia IIC T4 - hazardous area approval
- FM approval available
- IP67available

## DESCRIPTION

Models 1040 and 1041 are low profile single point load cells designed for direct mounting of low cost weighing platforms.

Their small physical size, combined with high accuracy and low cost, makes these load cells ideally suited for retail, bench and counting scales.

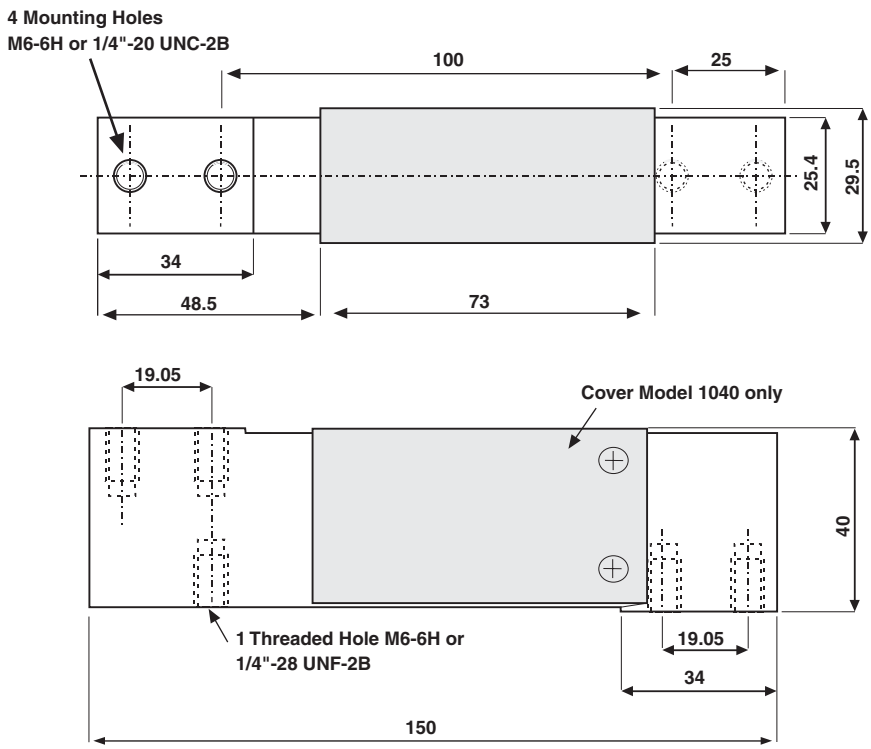
Available in anodized aluminum these high accuracy load cells are approved to NTEP and other stringent approval standards, including OIML R60. For hazardous environments this load cell has EEx ia IIC T4 level of approved option.An optional special humidity resistant protective coating assures long term stability over the entire compensated temperature range.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## APPLICATIONS

- Bench scales
- Counting scales
- Grocery scales

## OUTLINE DIMENSIONS in millimeters





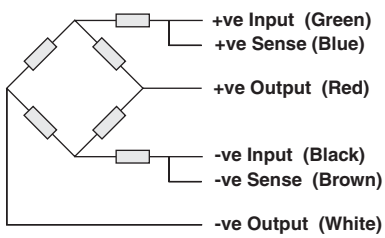
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12009
Revision: 17-Feb-10

## SPECIFICATIONS

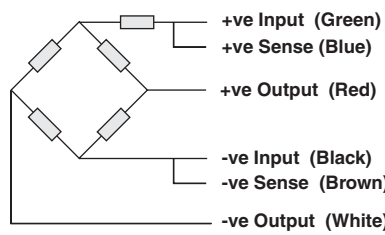
| PARAMETER | VALUE | | | UNITS |
|---|---|---|---|---|
| NTEP/OIML Accuracy class | NTEP | Non Approved | C3* | |
| Maximum no. of intervals (n) | 5000 single | 1000 | 3000 | |
| Rated capacity-R.C. ($E_{max}$) | 5, 7, 10, 15, 20, 30, 50, 75, 100 | | | kg |
| Rated output-R.O. | 2.0 | | | mV/V |
| Rated output tolerance | 0.2 | | | ±mV/V |
| Zero balance | 0.2 | | | ±mV/V |
| Zero Return, 30 min. | 0.0330 | 0.0300 | 0.0170 | ±% of applied load |
| Total Error | 0.0200 | 0.0500 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.0100 | 0.0023 | ±% of rated output/°C |
| $Y = E_{max}/V_{min}$ | 6000 | 1400 | 6000 | Maximum available 10000 |
| Temperature effect on output | 0.0010 | 0.0030 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0049 | 0.0074 | 0.0049 | ±% of rated load/cm |
| Temp. range, compensated | -10 to +40 | | | °C |
| Temp. range, safe | -20 to +70 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 415±15 | | | Ohms |
| Output impedance | 350±3 | | | Ohms |
| Insulation resistance | >2000 | | | Mega-Ohms |
| Cable length | 1040 - 1.0 1041 - 0.5 | | | m |
| Cable type | 6wire, PVC, single floating screen | | | Standard |
| Construction | Plated (Anodized) aluminum 1040 Aluminum - 1041 | | | |
| Environmental protection | IP65 | | | |
| Platform size (max) | 400 x 400 | | | mm |
| Recommended torque | Up to 30kg: 7.0<br>50kg & up: 10.0 | | | N*m |

* 50% utilization. Other utilization factors available upon request.

**Wiring Schematic Diagram**
**(1040 balanced bridge configuration)**




**Wiring Schematic Diagram**
**(1041 unbalanced bridge configuration)**

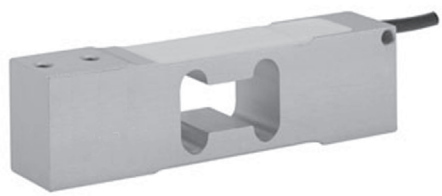


# Model 1042

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Low Profile Aluminum Load Cell



## FEATURES

- Capacities 1- 250kg
- Aluminum construction
- Single point 400 x 400mm platform
- OIML R60 and NTEP approved
- IP66 protection
- Available with metric and UNC threads

## OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval
- FM approval available
- High stiffness version available for dynamic weighing applications

## DESCRIPTION

Model 1042 is a low profile single point load cell designed for direct mounting in weighing platforms.

Its small physical size, combined with high accuracy and low cost, makes this load cell ideally suited for retail, bench and counting scales.

Capacities of 5kg and above are supplied as standard in anodized aluminum. This high accuracy load cell is approved to NTEP and other stringent approval standards, including OIML R60.

A humidity resistant protective coating assures long term stability over the entire compensated temperature range.

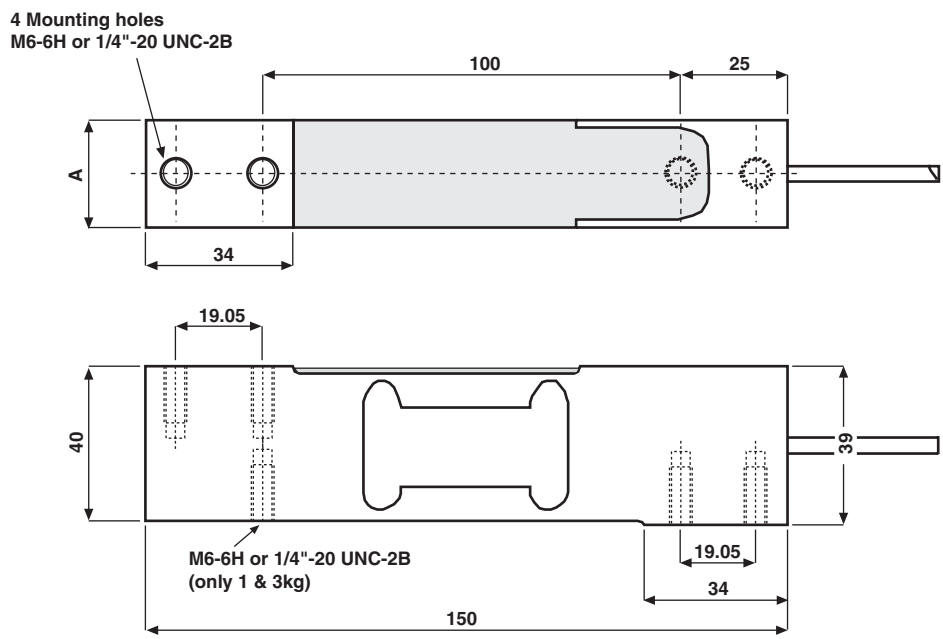
The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extenstion, is achieved by feeding this voltage into the appropriate electronics.

## APPLICATIONS

- Bench scales
- Counting scales
- Grocery scales

## OUTLINE DIMENSIONS in mm

| Capacity, kg | A |
|---|---|
| 1 - 30 | 20 |
| 50 - 250 | 25.4 |





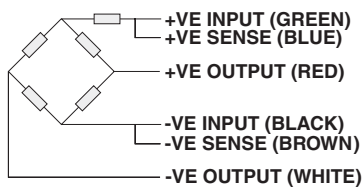
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12010
Revision: 17-Feb-10

## SPECIFICATIONS

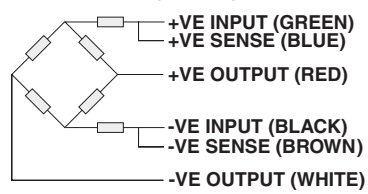
| PARAMETER | VALUE | | | | UNITS |
|---|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 1, 3, 5, 7, 10, 15, 20, 30, 50, 75, 100, 150, 250*** | | | | kg |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3* | C6** | |
| Maximum no. of intervals (n) | 5000 single | 1000 | 3000 | 6000***** | |
| $Y = E_{max}/V_{min}$ | 10000 | 1400 | 6000 | 10000 | Maximum available 20000 |
| Rated output-R.O. | 2.0 | | | | mV/V |
| Rated output tolerance | 0.2 | | | | ±mV/V |
| Zero balance | 0.2 | | | | ±mV/V |
| Zero Return, 30 min. | 0.0330 | 0.0300 | 0.0170 | 0.0083 | ±% of applied load |
| Total Error (per OIML R60) | 0.0200 | 0.0500 | 0.0200 | 0.0100 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.0100 | 0.0023 | 0.0014 | ±% of rated output/°C |
| Temperature effect on output | 0.001 | 0.0030 | 0.0010 | 0.00058 | ±% of applied load/°C |
| Eccentric loading error | 0.0049 | 0.0074 | 0.0049 | 0.0024 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | | | °C |
| Temperature range, safe | -20 to +70 | | | | °C |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 415±20 | | | | Ohms |
| Output impedance | 350±3 | | | | Ohms |
| Insulation resistance | >2000 | | | | Mega-Ohms |
| Cable length | 1**** | | | | m |
| Cable type | 6wire, PVC, single floating screen | | | | Standard |
| Construction | Plated (anodize) aluminum | | | | |
| Environmental protection | IP66 | | | | |
| Platform size (max) | 400 x 400 | | | | mm |
| Recommended torque | Up to 30kg: 7.0 35kg & above: 10.0 | | | | N*m |

* 50% utilization
** 60% utilization
*** 1kg is not approved by OIML, 150 and 250kg are not approved by NTEP
**** 20 - 250kg are of balanced bridge configuration, and have side cable entry
***** 6000 divisions from 20kg to 100kg

**WIRING SCHEMATIC DIAGRAM**
**(unbalanced bridge configuration)**




**WIRING SCHEMATIC DIAGRAM**
**(balanced bridge configuration)**



# Model LOC

Celtron

VISHAY PRECISION GROUP

## Low-Profile Off Center Single Point

### FEATURES

- Capacities: 5 to 1000kg
- Cost-effective load cell for scales of simple construction
- Anodized aluminum alloy
- NTEP Class III 5000S approval from 5kg to 500kg
- OIML C3 approval from 5kg to 500kg
- OIML C6 approval from 500kg to 1000kg
- Platform size:16" x 24"/40cm x 60cm

### OPTIONAL FEATURE

- FM approval available

### DESCRIPTION

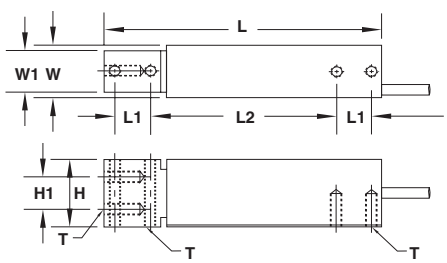
LOC is a single-point low profile load cell designed for platform scales and hanging scales. It is a cost-effective load cell for scales of simple construction.

LOC is constructed of anodized aluminum, and is environmentally sealed up to IP66 levels providing excellent protection against moisture and humidity.

### APPLICATIONS

- Platform scales (single load cell)
- Packaging machines
- Dosing/filling
- Belt scales/conveyor scales
- In-motion check weigher

### OUTLINE DIMENSIONS

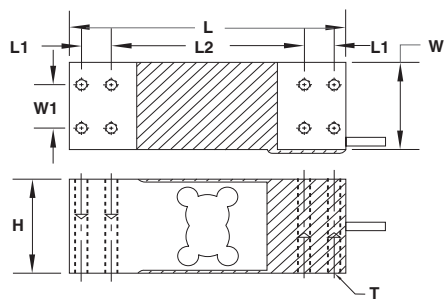


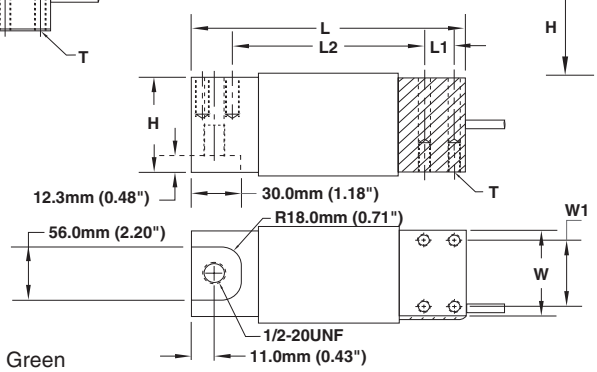

**SE**

**5 - 150kg**
**Cable Length: 3.3'/1m**
**Platform Size:**
**16"x16"/ 40cmx40cm**

**ME**

**50 - 800kg**
**Cable Length: 6.7'/2m**
**Platform Size:**
**16" x 24"/ 40cm x 60cm**




**LE**

**100 - 1000kg**
**Cable Length: 10'/3m**
**Platform Size:**
**16" x 24"/ 40cm x 60cm**

Wiring diagram

| | | | |
|---|---|---|---|
| + Excitation | Red | + Signal | Green |
| - Excitation | Black | - Signal | White |

| | CAPACITY (kg) | | L | L1 | L2 | W | W1 | H | H1 | T |
|---|---|---|---|---|---|---|---|---|---|---|
| SE | 5/7/10/15/20/30/50/60/75/100/150 | mm | 150.0 | 19.0 | 100.0 | 30.0 | 24.0 | 39.5 | 19.0 | M6x1.0 |
| | | (inch) | 5.91 | 0.75 | 3.94 | 1.18 | 0.94 | 1.56 | 0.75 | 1/4-20UNF |
| ME | 50/100/150/250/300/500/635/800 | mm | 174.0 | 19.0 | 122.0 | 60.0 | 30.0 | 65.0 | - | M8 x 1.25 |
| | 45A/100A/150A/250A/300A/500A/635A | (inch) | 6.85 | 0.75 | 4.80 | 2.36 | 1.18 | 2.56 | - | 5/16-18UNC |
| LE | 100/250/100A/150A/250A/300A/500A/ | mm | 191.0 | 25.0 | 125.0 | 76.2 | 60.0 | 75.0 | - | |
| | 635A/800A/1000A | (inch) | 7.52 | 0.98 | 4.92 | 3.00 | 2.36 | 2.95 | - | 5/16-18UNC |
| *A: American Standard Thread | | | | | | | | | | |



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11706
Revision: 05-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| **NTEP/OIML Accuracy class** | **NTEP III** | **Non-Approved** | **C3** | **C6** | |
| **Maximum no. of intervals (n)** | 5000 single* | 1000 | 3000** | 6000*** | |
| **$Y = E_{max}/V_{min}$** | 8000 | 1400 | 10000 | 12000 | Maximum available |
| **Standard capacities ($E_{max}$)** | 5, 7, 10, 15, 20, 30, 50, 60, 75, 100, 150, 250, 300, 500, 635, 800, 1000 | | | | kg |
| **Rated output-R.O.** | 2.0 | | | | mV/V |
| **Rated output tolerance** | 10 | | | | ±% of rated output |
| **Zero balance** | 1 | | | | ±% of rated output |
| **Non linearity** | 0.020 | 0.025 | 0.020 | 0.015 | ±% of rated output |
| **Hysteresis** | 0.020 | 0.025 | 0.020 | 0.015 | ±% of rated output |
| **Non-repeatability** | 0.020 | | | | ±% of rated output |
| **Creep error (20 minutes)** | 0.025 | 0.030 | 0.020 | 0.015 | ±% of rated output |
| **Zero return (20 minutes)** | 0.025 | 0.030 | 0.020 | 0.015 | ±% of rated output |
| **Temperature effect on min. dead load output** | 0.0022 | 0.0026 | 0.0014 | 0.0012 | ±% of rated output/°C |
| **Temperature effect on sensitivity** | 0.0010 | 0.0015 | 0.008 | 0.008 | ±% of applied load/°C |
| **Compensated temperature range** | -10 to +40 | | | | °C |
| **Operating temperature range** | -20 to +60 | | | | °C |
| **Safe overload** | 150 | | | | % of R.C. |
| **Ultimate overload** | 200 | | | | % of R.C. |
| **Excitation, recommended** | 10 | | | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | | | Vdc or Vac rms |
| **Input impedance** | 410±10 | | | | Ohms |
| **Output impedance** | 350±3 | | | | Ohms |
| **Insulation resistance** | >5000 | | | | Mega-Ohms |
| **Construction** | Anodized aluminum | | | | |
| **Environmental protection** | IP66 | | | | |

* Capacities 5 - 500kg
** Capacities 5 - 500kg
*** Capacities 500 - 1000kg

All specifications listed subject to change without notice.

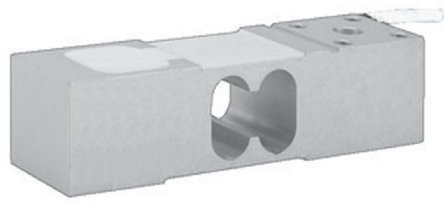
FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

# Model 1242

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Aluminum Medium Capacity Single Point Load Cell



### FEATURES

- Capacities 50 - 250kg
- Aluminum construction
- Single point 400 x 400mm platform
- OIML R60 and NTEP approved
- IP66 protection
- Available with metric and UNC threads

### OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval
- FM approval available

### DESCRIPTION

Model 1242 is a high accuracy, low profile, low cost, two beam, single point load cell ideally suited for industrial application where space is limited. Typical applications include platforms, hanging scales and personal weighers.

This high accuracy load cell is OIML R60 class C6 approved. For hazardous environments this load cell has EEx ia IIC T4 level of approval, as well as Factory Mutual approval.

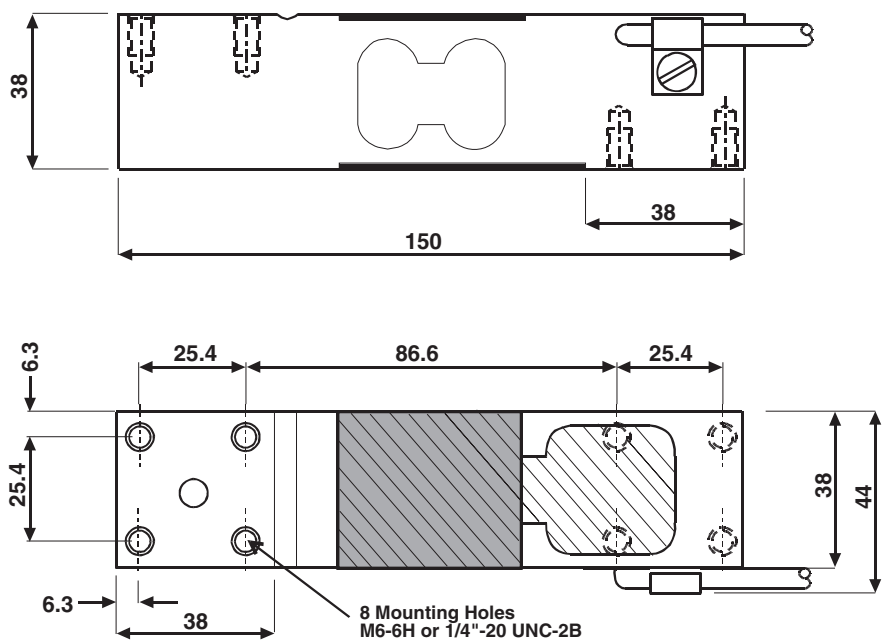
A special humidity resistant protective coating assures long term stability over the entire compensated temperature range.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension can be achieved by feeding this voltage into the appropriate electronics.

### APPLICATIONS

- Small platforms
- Hanging scales
- Personal scales

### OUTLINE DIMENSIONS in mm



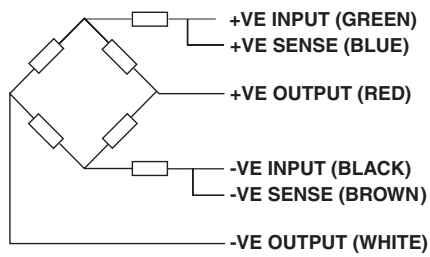
## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 50, 100, 150, 200, 250 | | | | kg |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3* | C6** | |
| Maximum no. of intervals (n) | 5000 single | 1000 | 3000 | 6000 | |
| $Y = E_{max}/V_{min}$ | 10000 | 1400 | 6000 | 10000 | Max. available |
| Rated output-R.O. | 2.0 | | | | mV/V |
| Rated output tolerance | 0.2 | | | | ±mV/V |
| Zero balance | 0.2 | | | | ±mV/V |
| Zero Return, 30 min. | 0.0330 | 0.0300 | 0.0170 | 0.0083 | ±% of applied load |
| Total Error | 0.0200 | 0.0500 | 0.0200 | 0.0100 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.0100 | 0.0023 | 0.0014 | ±% of rated output/°C |
| Temperature effect on output | 0.0010 | 0.0030 | 0.0010 | 0.00058 | ±% of applied load/°C |
| Eccentric loading error | 0.0049 | 0.0085 | 0.0049 | 0.0024 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | | | °C |
| Temperature range, safe | -20 to +70 | | | | °C |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 415±20 | | | | Ohms |
| Output impedance | 351±5 | | | | Ohms |
| Insulation resistance | >2000 | | | | Mega-Ohms |
| Cable length | 1.5 | | | | m |
| Cable type | 6 wire, PVC, single floating screen | | | | Standard |
| Construction | Plated (Anodize) aluminum | | | | |
| Environmental protection | IP66 | | | | |
| Platform size (max) | 400 x 400 | | | | mm |
| Recommended torque | 10.0 | | | | N*m |

* 50% utilization

** 60% utilization

**WIRING SCHEMATIC DIAGRAM**
**(BALANCED TEMPERATURE COMPENSATION)**

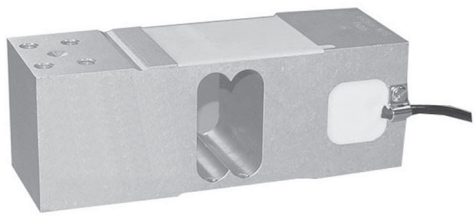


# Model 1263

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Aluminum High Capacity Single Point Load Cell



OIML ATEX

## FEATURES

- Capacities 50 - 635kg
- Aluminum construction
- Single point 600 x 600mm platform
- OIML R60 approved
- IP66 protection
- Available with metric threads

## OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval

## DESCRIPTION

Model 1263 is a high performance, high capacity single point load cell designed for direct mounting of large weighing platforms.

The rugged construction offers high immunity to side forces making it suitable for a wide range of weighing applications, including bench scales, check weighing and process weighing.

A special humidity resistant protective coating assures long term stability over the entire compensated temperature range.

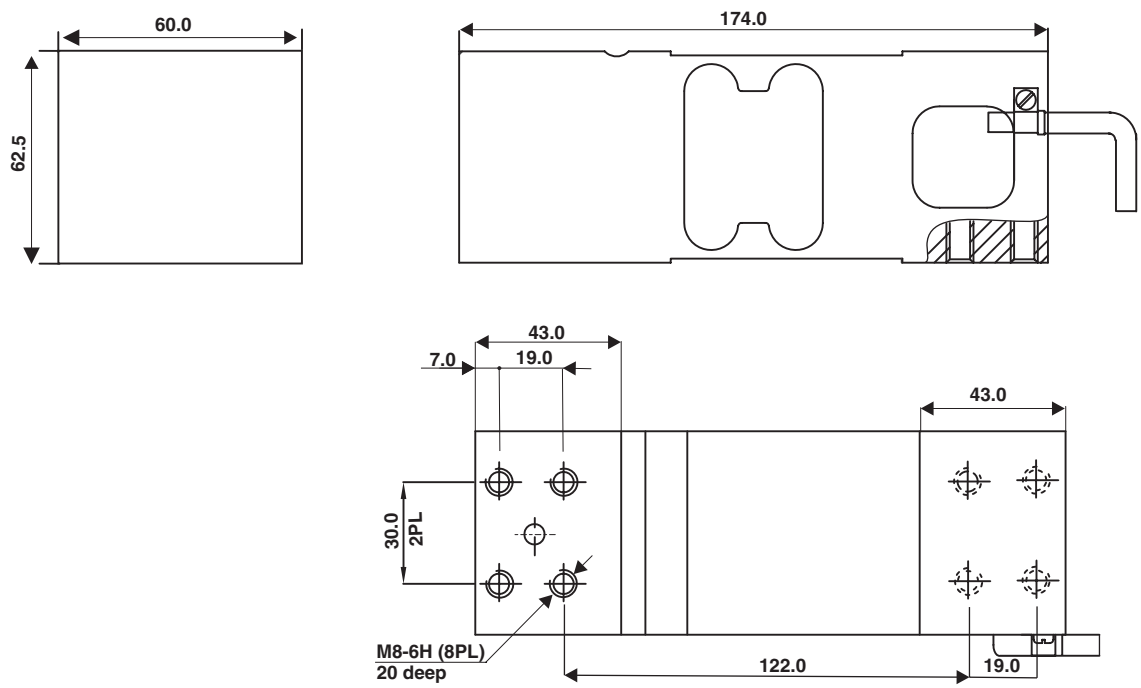
The 1263 provides scale manufacturers with a high accuracy low cost sensor to meet today's needs.

## APPLICATIONS

- Large platform scales
- Hanging scales
- Check weighing

## OUTLINE DIMENSIONS in mm

All dimensions in mm





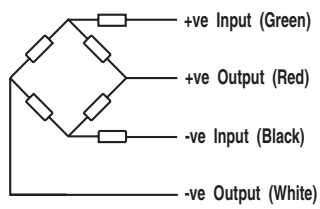
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12020
Revision: 17-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 50, 100, 150, 200, 250, 300, 500, 635 | | kg |
| NTEP/OIML Accuracy class | Non-Approved | C3* | |
| Maximum no. of intervals (n) | 1000 | 3000 | |
| $Y = E_{max}/V_{min}$ | 2000 | 15000 | Maximum available |
| Rated output-R.O. | 2.0 | | mV/V |
| Rated output tolerance | 0.2 | | ±mV/V |
| Zero balance | 0.2 | | ±mV/V |
| Zero Return, 30 min. | 0.050 | 0.0170 | ±% of applied load |
| Total Error | 0.0300 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0100 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0030 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0050 | 0.0033 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | °C |
| Temperature range, safe | -20 to +70 | | °C |
| Maximum safe central overload | 150 | | % of R.C. |
| Ultimate central overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 415±15 | | Ohms |
| Output impedance | 350±3 | | Ohms |
| Insulation resistance | >2000 | | Mega-Ohms |
| Cable length | 1.5 | | m |
| Cable type | 4 wire, PVC, single floating screen | | Standard |
| Construction | aluminum | | |
| Environmental protection | IP66 | | |
| Platform size (max) | 600 x 600 | | mm |
| Recommended torque | Up to 300kg: 25.0<br>Above 300kg: 30.0 | | N*m |

* 50% utilization

**Wiring Schematic Diagram**

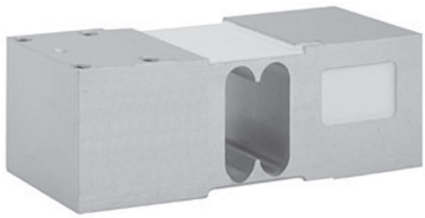


# Model 1260

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Aluminum High Capacity Single Point Load Cell



## FEATURES

- Capacities 50 - 660kg
- Aluminum construction
- Single point 600 x 600mm platform
- OIML R60 and NTEP approved
- IP66 protection
- Available with metric and UNC threads

## OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval
- FM approval available

## DESCRIPTION

Model 1260 is a high performance, high capacity single point load cell designed for direct mounting of large platforms.

The rugged construction offers high immunity to side forces making it suitable for a wide range of weighing applications, including bench scales and check weighing.

A special humidity resistant protective coating assures long term stability over the entire compensated temperature range.

For hazardous environments this load cell has an EEx ia IIC T4 level of approval.

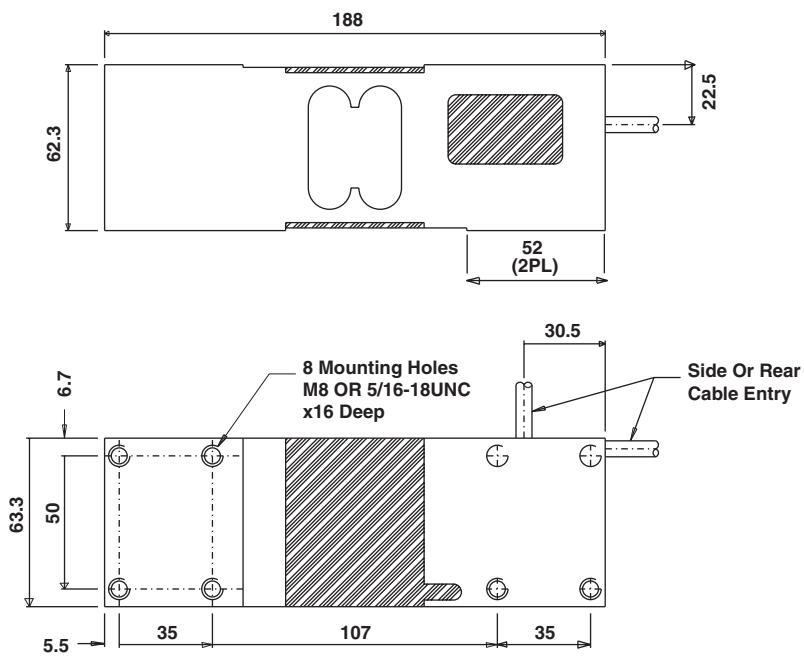
The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into appropriate electronics.

## APPLICATIONS

- Large platform scales
- Hanging scales
- Check weighing

## OUTLINE DIMENSIONS in mm

**Outline Dimensions All Capacities in mm.**





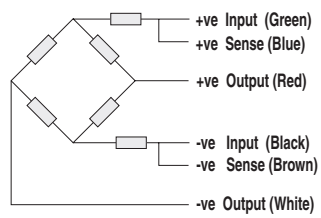
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12019
Revision: 17-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 50, 75, 100, 150, 250, 300, 500, 635, 660 | | | kg |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3* | |
| Maximum no. of intervals (n) | 5000 single | 1000 | 3000 | |
| $Y = E_{max}/V_{min}$ | 1000 | 3333 | 15000 | Maximum available |
| Rated output-R.O. | 2.0 | | | mV/V |
| Rated output tolerance | 0.2 | | | ±mV/V |
| Zero balance | 0.2 | | | ±mV/V |
| Zero Return, 30 min. | 0.0330 | 0.0300 | 0.0170 | ±% of applied load |
| Total Error | 0.0350 | 0.0500 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0028 | 0.0100 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0011 | 0.0030 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0020 | 0.0050 | 0.0033 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | | °C |
| Temperature range, safe | -20 to +70 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 415±15 | | | Ohms |
| Output impedance | 350±3 | | | Ohms |
| Insulation resistance | >2000 | | | Mega-Ohms |
| Cable length | 3 | | | m |
| Cable type | 6 wire, braided, Polyurethane, dual floating screen | | | Standard |
| Construction | Plated (Anodized) aluminum | | | |
| Environmental protection | IP66 | | | |
| Platform size (max) | 600 x 600 | | | mm |
| Recommended torque | 16.0 | | | N*m |

* 50% utilization

**Wiring Schematic Diagram**
**(Balanced temperature compensation)**

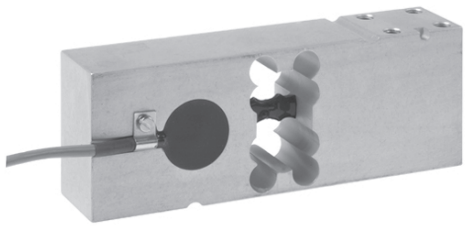


# Model 1265

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Single Point Load Cell



### FEATURES

- Capacity range: 100 to 660kg
- Rigid, anodized aluminum construction
- OIML approved to C6 (150 - 660kg)
- Single point 800 x 800mm platform
- Minimal deflection and high natural frequency
- Sealed to IP66

### OPTIONAL FEATURES

- 2G EEx ia IIC T4 - ATEX hazardous area approval
- UNC threads

### DESCRIPTION

Model 1265 is an anodized aluminum single point load cell suitable for direct mounting with large platforms, check weighers, and a wide range of other applications.

A unique rigid design allows for low deflection and high natural frequency, making the 1265 suitable for dynamic applications such as Check Weighers.

This load cell supports large platforms up to 800 x 800mm. High accuracy (6000d) is maintained for overall characteristics (OIML R60) and for eccentric loading (OIML R76).

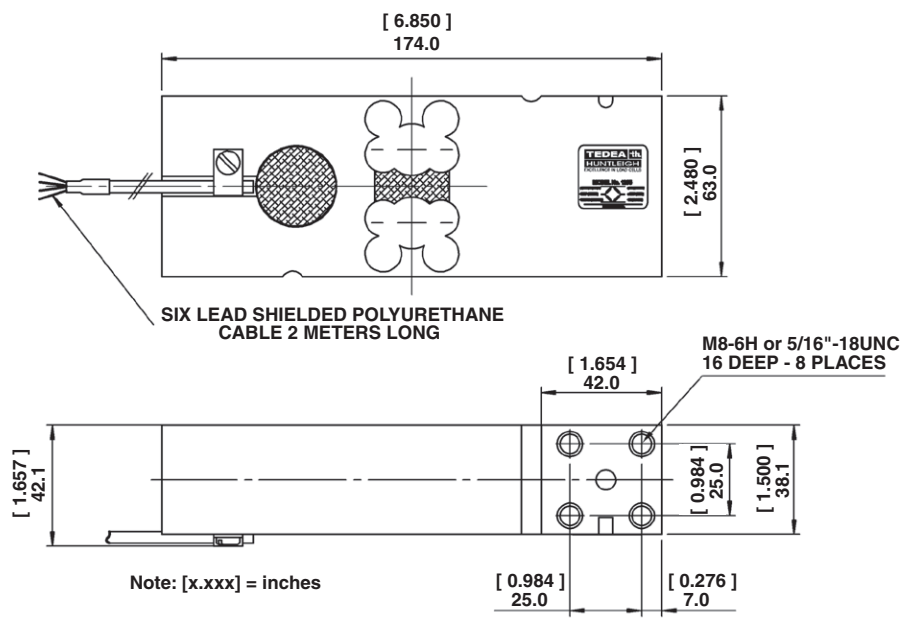
A humidity-resistant protective coating assures stable operation in damp environments over the entire compensated range and conforms to IP66 (IEC 60529).

The six-wire cable includes two sense wires that compensate for changes in lead resistance due to temperature changes and cable extension.

### APPLICATIONS

- Platform scales
- Bag fillers
- Check weighers
- Overhead track scales
- Process weighing

### OUTLINE DIMENSIONS in mm



## SPECIFICATIONS

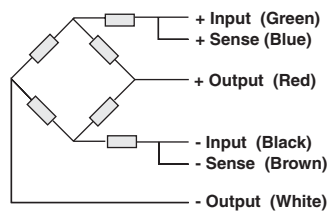
| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 100, 150, 200, 250, 300, 500, 600, 635, 660 | | | kg |
| NTEP/OIML Accuracy class | Non-Approved | C3* | C6** | |
| Maximum no. of intervals (n) | 1000 | 3000 | 6000 | |
| $Y = E_{max}/V_{min}$ | 2000 | 15000 | 15000 | Maximum available |
| Rated output-R.O. | 2.0 | | | mV/V |
| Rated output tolerance | 0.2 | | | ±mV/V |
| Zero balance | 0.2 | | | ±mV/V |
| Zero Return, 30 min. | 0.0300 | 0.0170 | 0.0083 | ±% of applied load |
| Total Error | 0.0500 | 0.0200 | 0.0100 | ±% of rated output |
| Temperature effect on zero | 0.0100 | 0.0023 | 0.0024 | ±% of rated output/°C |
| Temperature effect on output | 0.0030 | 0.0010 | 0.00058 | ±% of applied load/°C |
| Eccentric loading error | 0.0070 | 0.0025 | 0.0012 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | | °C |
| Temperature range, safe | -30 to +70 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 415±15 | | | Ohms |
| Output impedance | 350±5 | | | Ohms |
| Insulation resistance | >2000 | | | Mega-Ohms |
| Cable length | 2 | | | m |
| Cable type | 6 wire, PVC, single floating screen | | | Standard |
| Construction | Plated (anodized) aluminum | | | |
| Environmental protection | IP66 | | | |
| Platform size (max) | 800 x 800 | | | mm |
| Recommended torque | Up to 300kg - 25.0<br>Above 300kg - 30.0 | | | N*m |

* 50% utilization

** 60% utilization, and for capacities 150kg and up

**Wiring Schematic Diagram**

**(Balanced bridge temperature compensation)**



# Model 1250

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Aluminum High Capacity Single Point Load Cell

OIML NTEP ATEX FM

## FEATURES

- Capacities 50 - 1500kg
- Aluminum construction
- Single point 800 x 800mm platform
- OIML R60 and NTEP approved
- IP65 protection
- Available with metric and UNC threads

## OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval
- FM approval available
- IP67 option available

## DESCRIPTION

Model 1250 is a single point load cell designed for direct mounting of large platforms.

The product is a cost-effective load cell for use on counting, weighing, bench or floor scale products.

This high accuracy load cell is approved to OIML R60, NTEP and other stringent approval standards. Suitable for use in hazardous environments, these load cells can be provided with European approval to EEx ia IIC T4 and are FM approved to class I, II, III, Division I.

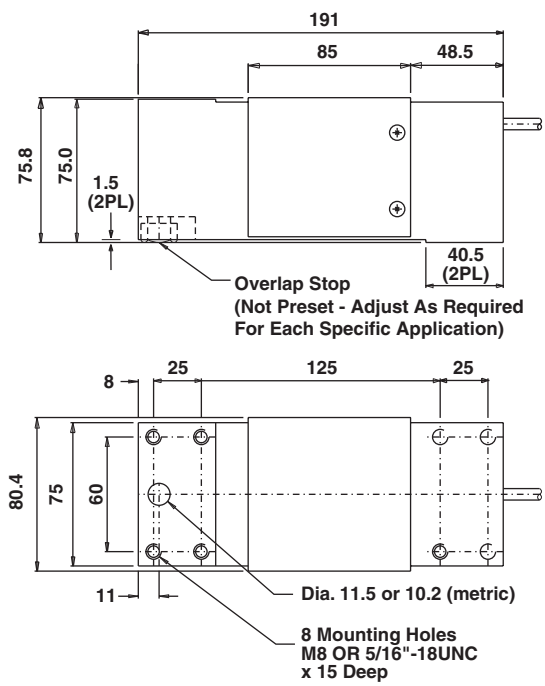
A special humidity-resistant protective coating assures longterm stability over the entire compensated temperature range.

The two additional sense wires, sample the bridge supply voltage at the load cell. Complete compensation of change on the in the lead wires resistance, due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## APPLICATIONS

- Large platform scales
- Hanging scales
- Check weighing

## OUTLINE DIMENSIONS in mm





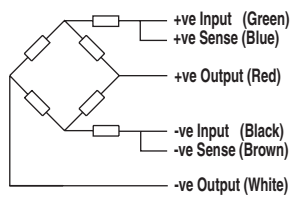
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12017
Revision: 17-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 50, 75, 100 , 150, 200, 250, 300, 500, 635, 750, 1000, 1500 | | | kg |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3* | |
| Maximum no. of intervals (n) | 5000 single | 1000 | 3000 | |
| $Y = E_{max}/V_{min}$ | 10000 | 1400 | 10000 | Max. available 10000 |
| Rated output-R.O. | 2.0 | | | mV/V |
| Rated output tolerance | 0.2 | | | ±mV/V |
| Zero balance | 0.2 | | | ±mV/V |
| Zero Return, 30 min. | 0.0250 | 0.0300 | 0.0170 | ±% of applied load |
| Total Error (per OIML R60) | 0.0200 | 0.0500 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.0100 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0010 | 0.0030 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0033 | 0.0050 | 0.0033 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | | °C |
| Temperature range, safe | -20 to +70 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 415±15 | | | Ohms |
| Output impedance | 350±3 | | | Ohms |
| Insulation resistance | >2000 | | | Mega-Ohms |
| Cable length | 3.0 | | | m |
| Cable type | 6 wire, braided, Polyurethane, floating screen | | | Standard |
| Construction | Plated (anodized) Aluminum | | | |
| Environmental protection | IP65** | | | |
| Platform size (max) | 800 x 800*** | | | mm |
| Recommended torque | Up to 1000kg: 16.0 1500kg 32.0 | | | N*m |

* 50% utilization
3500 divisions also available
** Available also in IP67
*** 635 to 1500kg capacities: platform size 600 x 600mm

**Wiring Schematic Diagram**



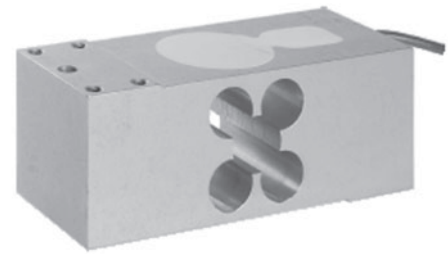

**BALANCED TEMPERATURE COMPENSATION**

# Model 1252

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Aluminum Single Point Load Cell



### FEATURES

- Capacity range: 75 - 635kg
- Aluminum construction
- Single point 600 x 600mm platform
- OIML R60
- IP66 protection
- Available with metric and UNC threads

### OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval
- FM approval available

## DESCRIPTION

Model 1252 is a high capacity single point load cell fully interchangeable with model 1250, designed for direct mounting of the weighing platform or side cell applications.

Resulting from simpler scale construction Model 1252 is a cost-effective load cell for use in counting, weighing, bench or floor scale productions.

A special humidity-resistant protective coating assures long-term stability over the entire compensated temperature range.

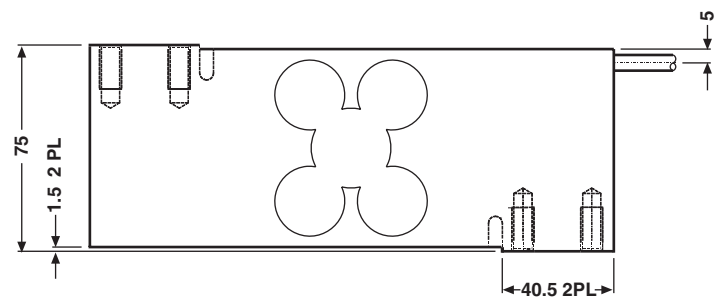
This load cell has Factory Mutual approval and IP66 protection.

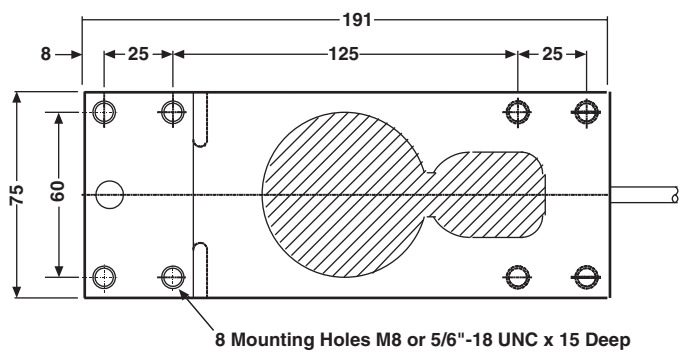
The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of change in the lead wires resistance, due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## APPLICATIONS

- Large platform scales
- Hanging scales
- Check weighing

## OUTLINE DIMENSIONS in mm





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12018
Revision: 17-Feb-10

## SPECIFICATIONS

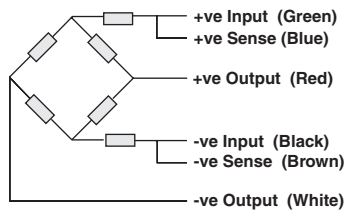
| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 75, 100,150, 200, 250, 300, 500, 635** | | kg |
| NTEP/OIML Accuracy class | Non-Approved | C3* | |
| Maximum no. of intervals (n) | 1000 | 3000 | |
| $Y = E_{max}/V_{min}$ | 2000 | 10000 | Max. available |
| Rated output-R.O. | 2.0 | | mV/V |
| Rated output tolerance | 0.2 | | ±mV/V |
| Zero balance | 0.2 | | ±mV/V |
| Zero Return, 30 min. | 0.0300 | 0.0170 | ±% of applied load |
| Total Error (per OIML R60) | 0.0500 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0100 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0030 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0050 | 0.0033 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | °C |
| Temperature range, safe | -30 to +70 | | °C |
| Maximum safe central overload | 150 | | % of R.C. |
| Ultimate central overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 415±15 | | Ohms |
| Output impedance | 350±3 | | Ohms |
| Insulation resistance | >2000 | | Mega-Ohms |
| Cable length | 3.0 | | m |
| Cable type | 6 wire, braided, Polyurethane, floating screen | | Standard |
| Construction | Plated (anodized) aluminum | | |
| Environmental protection | IP66 | | |
| Platform size (max) | 600 x 600 | | mm |
| Recommended torque | 16.0 | | N*m |

* 50% utilization

** Capacities 500 & 635 are not approved

**Wiring Schematic Diagram**

**(Balanced bridge temperature compensation)**

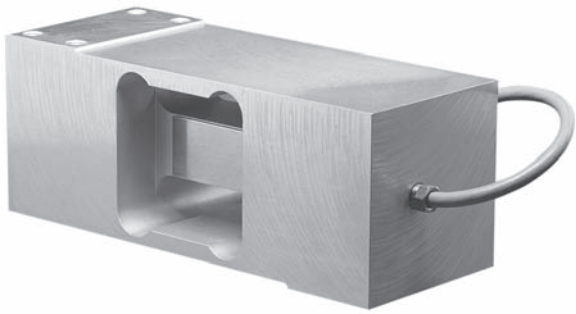


# Model 60060

Sensortronics

VISHAY PRECISION GROUP

# Low Profile Platform Load Cell



Approved

## FEATURES

- Rated capacities of 100 to 2000 pounds
- Unique shear beam design - aluminum construction
- Moment-compensated design for minimal sensitivity to moments induced by off-center loading
- Ideal for situations exceeding the capabilities of similar "brick" design load cells
- Trade certified for NTEP Class III:5000 divisions; Class IIIL:10000 divisions and OIML R60 3000 divisions
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!)
- Also available in stainless steel

## DESCRIPTION

Model 60060 is a single point load cell designed for direct mounting of large platforms.

The product is a cost-effective load cell for use on counting, weighing, bench or floor scale products.

This high accuracy load cell is approved to OIML R60, NTEP and other stringent approval standards. Suitable for use in hazardous environments, these load cells can be provided with European approval to EEx ia IIC T4 and are FM approved to class I, II, III, Division I.

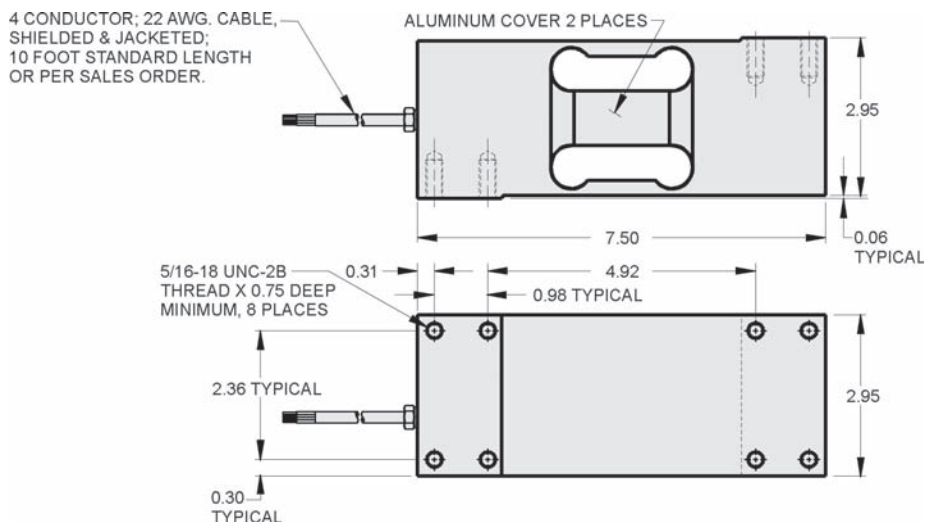
A special humidity-resistant protective coating assures longterm stability over the entire compensated temperature range.

The two additional sense wires, sample the bridge supply voltage at the load cell. Complete compensation of change on the in the lead wires resistance, due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## APPLICATIONS

- Single-point platform scales
- Belt conveyor scales
- Bench and counting scales
- Checkweighing scales
- Hopper scales and netweighing

## OUTLINE DIMENSIONS in inches




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

| CAPACITY | DEFLECTION | WEIGHT |
|---|---|---|
| 100 - 250 | 0.010 | 6.0 |
| 500 - 2K | 0.006 | 6.0 |

Capacities are in pounds. Deflection is ±10%. Certified drawings are available.

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 100, 250, 500, 750, 1K, 2K | | | lbs |
| **NTEP/OIML Accuracy class** | **NTEP IIIL** | **Standard** | **OIML R60*** | |
| **Maximum no. of intervals (n)** | 10,000 multiple | -- | 3000 | |
| **$Y = E_{max}/V_{min}$** | See NTEP Cert. No. 98-038 | | | Maximum available |
| **Rated output-R.O.** | 2.0 | | | mV/V |
| **Rated output tolerance** | ±10 | | | ±% mV/V |
| **Zero balance** | 1.0 | | | ±% FSO |
| **Combined error** | 0.02 | 0.03 | 0.02 | ±% FSO |
| **Non-repeatability** | 0.010 | 0.015 | 0.010 | ±% FSO |
| **Creep error (30 minutes)** | 0.03 | 0.05 | 0.017 | ±% of applied load |
| **Temperature effect on zero** | 0.0010 | 0.0015 | 0.0010 | ±% FSO/°F |
| **Temperature effect on output** | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | | | °F (°C) |
| **Safe sideload** | 100 | | | % of R.C. |
| **Safe overload** | 300 | | | % of R.C. |
| **Sideload rejection ratio** | 500:1 | | | |
| **Excitation, recommended** | 10 | | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | | Vdc or Vac rms |
| **Input impedance** | 400 nominal | | | Ω |
| **Output impedance** | 349 - 355 | | | Ω |
| **Sealing** | IP67 | | | |
| **Material** | Aluminum** | | | |
| **Moment compensation** | **250 - 1Klbs** | **2Klbs** | | |
| **Moment sensitivity** | ≤ 0.005 | ≤ 0.005 | | % of applied load/inch |
| **Maximum moment** | 10 x capacity | 10000 | | lbs-inches |
| **Platform size** | 30 x 30 | 30 x 30 | | inches |

* 100 lbs is not approved by OIML

** Stainless steel also available

FSO - Full Scale Output

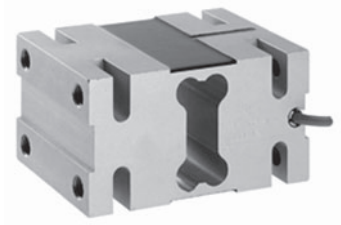
All specifications subject to change without notice.

# Model 1330

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Aluminum Single Point Load Cell



OIML ATEX

### FEATURES

- Capacities 500 - 1000kg
- Aluminum construction
- Single point 800 x 800mm platform
- Certified to OIML R60 3000d
- IP66 protection
- Available with metric threads

### OPTIONAL FEATURE

- EEx ia IIC T4 hazardous area approval

### DESCRIPTION

Model 1330 is a high capacity single point load cell designed for direct mounting of low profile high capacity weighing platforms up to 800 x 800mm.

The large platform size simplifies the construction of floor scales, baggage scales, hanging scales and other types of weighing machines.

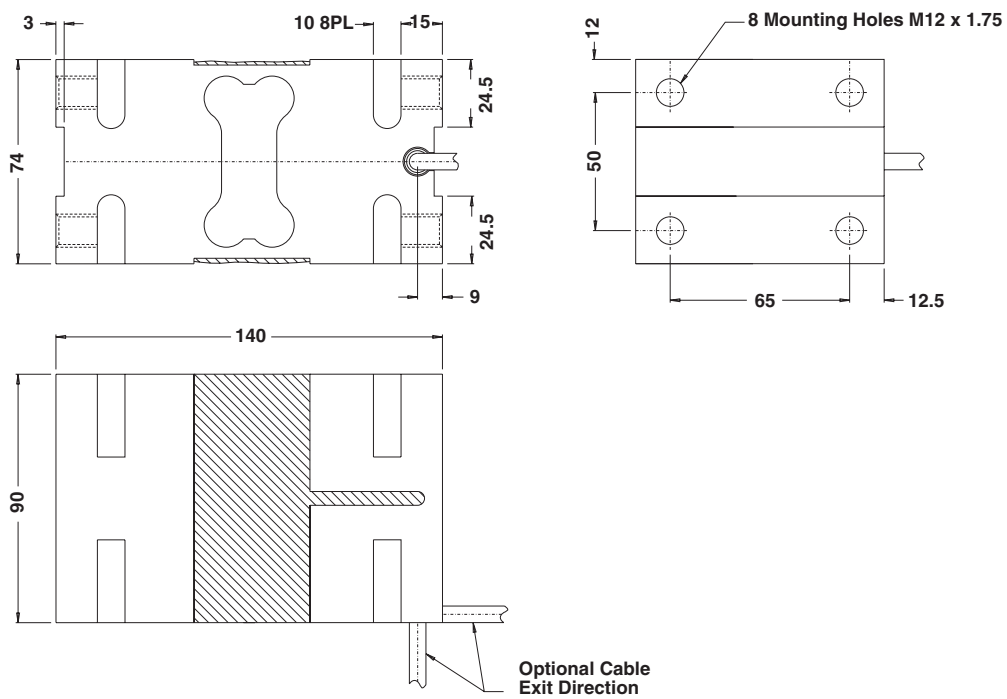
A special humidity resistant protective coating assures long term reliability.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

### APPLICATIONS

- Large platform scales
- Hanging scales
- Check weighing

### OUTLINE DIMENSIONS in mm

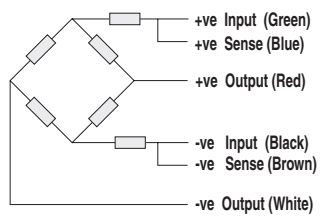


## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 500, 750, 1000 | | kg |
| NTEP/OIML Accuracy class | Non-Approved | C3* | |
| Maximum no. of intervals (n) | 1000 | 3000 | |
| $Y = E_{max}/V_{min}$ | 2000 | 15000 | Maximum available |
| Rated output-R.O. | 2.0 | | mV/V |
| Rated output tolerance | 0.2 | | ±mV/V |
| Zero balance | 0.2 | | ±mV/V |
| Zero Return, 30 min. | 0.050 | 0.0170 | ±% of applied load |
| Total Error | 0.0300 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0100 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0030 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0037 | 0.0025 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | °C |
| Temperature range, safe | -20 to +70 | | °C |
| Maximum safe central overload | 150 | | % of R.C. |
| Ultimate central overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 415±15 | | Ohms |
| Output impedance | 350±3 | | Ohms |
| Insulation resistance | >2000 | | Mega-Ohms |
| Cable length | 3 | | m |
| Cable type | 6 wire, braided, Polyurethane, floating screen | | Standard |
| Construction | Plated (Anodized) aluminum | | |
| Environmental protection | IP66 | | |
| Platform size (max) | 800 x 800 | | mm |
| Recommended torque | 130 | | N*m |

* 50% utilization

**Wiring Schematic Diagram**



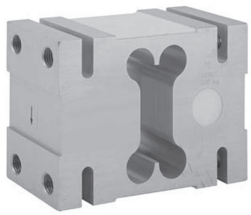

**BALANCED TEMPERATURE COMPENSATION**

# Model 1320

Tedea-Huntleigh

VISHAY PRECISION GROUP

# High Capacity Single Point Load Cell



### FEATURES

- Capacities 1000 - 2000kg
- Aluminum construction
- Single point 1200 x 1200mm platform
- OIML R60 and NTEP approved
- IP66 protection
- Available with metric threads

### OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval
- FM approval available

## DESCRIPTION

Model 1320 is a high capacity single point load cell designed for direct mounting of low profile, high capacity weighing platforms up to 1200 x 1200mm.

Its large platform size simplifies the construction of floor scales, weigh bars, hanging scales and other types of weighing machines with a capacity up to 2000kg.

All load cells are individually adjusted to eliminate corner errors, tested and calibrated to meet OIML specifications.

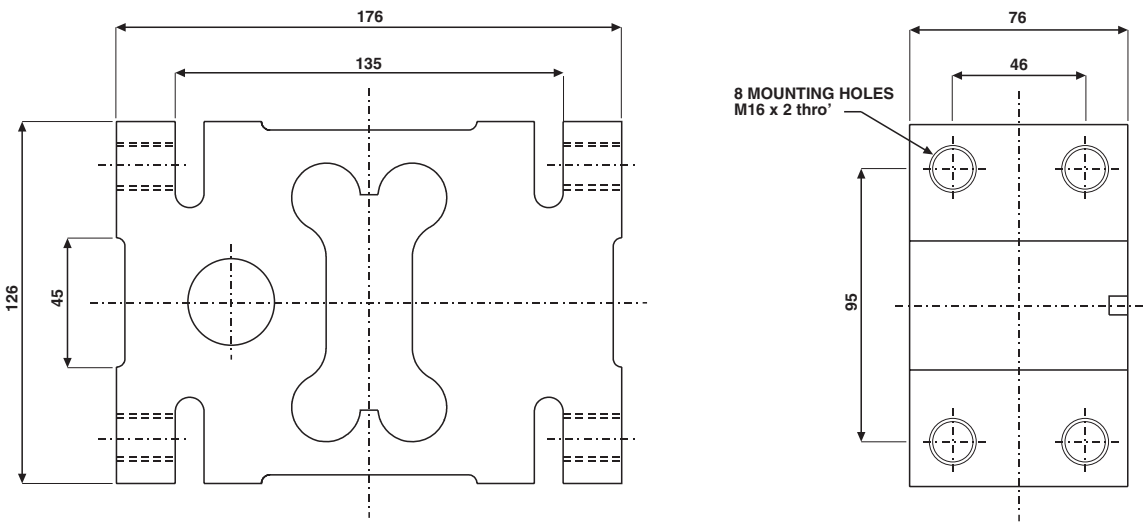
A special humidity resistant coating assures long term reliability.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## APPLICATIONS

- Very large platform scales
- Hanging scales
- Check weighing

## OUTLINE DIMENSIONS in mm





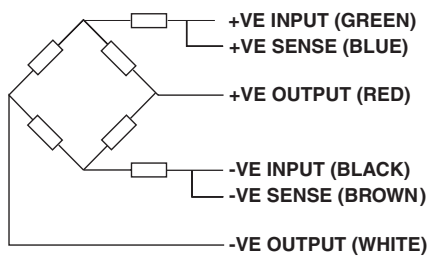
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12021
Revision: 17-Feb-10

## SPECIFICATIONS

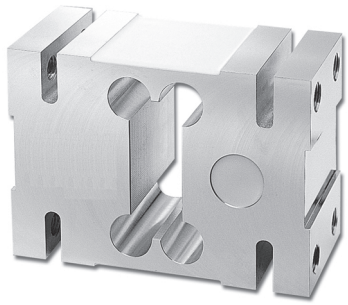
| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 1000, 1500, 2000 | | | kg |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3 | |
| Maximum no. of intervals (n) | 3000 single | 1000 | 3000* | |
| $Y = E_{max}/V_{min}$ | 1000 | 3333 | 10000 | Maximum available |
| Rated output-R.O. | 2.0 | | | mV/V |
| Rated output tolerance | 0.2 | | | ±mV/V |
| Zero balance | 0.2 | | | ±mV/V |
| Zero Return, 30 min. | 0.0330 | 0.0300 | 0.0170 | ±% of applied load |
| Total Error | 0.0200 | 0.0500 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0040 | 0.0100 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0010 | 0.0030 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0033 | 0.0025 | 0.0017 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | | °C |
| Temperature range, safe | -30 to +70 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 415±15 | | | Ohms |
| Output impedance | 350±3 | | | Ohms |
| Insulation resistance | >2000 | | | Mega-Ohms |
| Cable length | 5 | | | m |
| Cable type | 6wire, braided, Polyurethane, dual floating screen | | | Standard |
| Construction | Plated (Anodized) aluminum | | | |
| Environmental protection | IP66 | | | |
| Recommended torque | 165.0 | | | N*m |

* 50% utilization

**Wiring schematic diagram**



# High Capacity Off Center Single Point Load Cell



### FEATURES

- Capacities: 750, 1000, and 2000kg
- Fully sealed for water resistance
- Side mount construction
- Anodized aluminum alloy
- OIML C3 approval
- Platform size: 48" x 48"/120cm x 120cm

### OPTIONAL FEATURE

- FM approval available

## DESCRIPTION

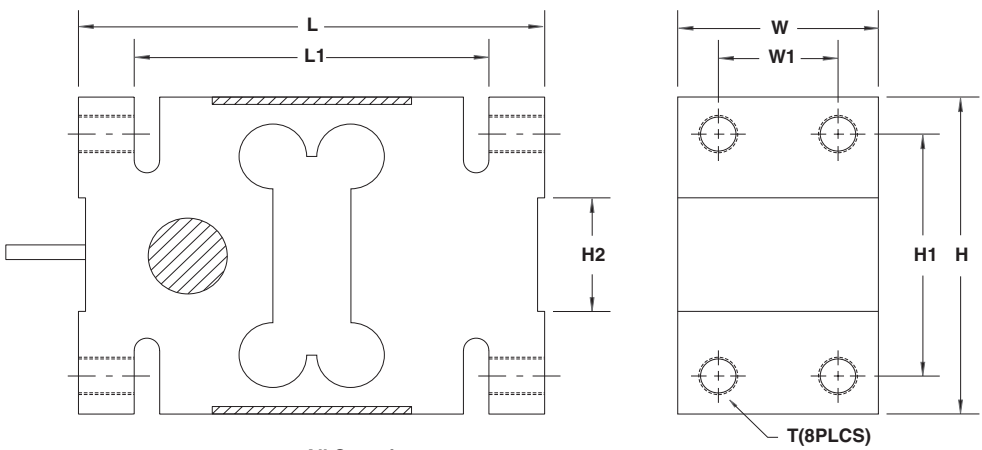
HOC is a single-point load cell of side mount construction designed for platform scales, and hanging scales. It is a cost-effective load cell for scales of simple construction.

HOC is constructed of anodized aluminum, and is environmentally sealed up to IP66 providing excellent protection against moisture and humidity.

## APPLICATIONS

- Platform scales (single load cell)
- Packaging machines
- Dosing/filling
- Belt scales/conveyor scales

## OUTLINE DIMENSIONS




**All Capacity**
**Cable Length: 10'/3.1m**
**Platform Size: 48" x 48"/120cm x 120cm**

Wiring diagram

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Signal | Green |
| - Signal | White |

| CAPACITY (kg) | | L | L1 | W | W1 | H | H1 | H2 | T |
|---|---|---|---|---|---|---|---|---|---|
| 750/1000/2000 | mm | 176.0 | 134.5 | 76.0 | 46.0 | 125.0 | 95.0 | 45.0 | M16 x 2.0 |
| | (inch) | 6.93 | 5.30 | 2.99 | 1.81 | 4.92 | 3.74 | 1.77 | |


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11708
Revision: 05-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **NTEP/OIML Accuracy class** | **Non-Approved** | **C3** | |
| **Maximum no. of intervals (n)** | 1000 | 3000 | |
| **Y = $E_{max}/V_{min}$** | 5000 | 10000 | Maximum available |
| **Standard capacities ($E_{max}$)** | 750, 1000, 2000 | | kg |
| **Rated output-R.O.** | 2.0 | | mV/V |
| **Rated output tolerance** | 10 | | ±% of rated output |
| **Zero balance** | 1 | | ±% of rated output |
| **Non linearity** | 0.020 | 0.015 | ±% of rated output |
| **Hysteresis** | 0.020 | 0.015 | ±% of rated output |
| **Non-repeatability** | 0.020 | | ±% of rated output |
| **Creep error (20 minutes)** | 0.030 | 0.020 | ±% of rated output |
| **Zero return (20 minutes)** | 0.030 | 0.020 | ±% of rated output |
| **Temperature effect on min. dead load output** | 0.0026 | 0.014 | ±% of rated output/°C |
| **Temperature effect on sensitivity** | 0.0015 | 0.008 | ±% of applied load/°C |
| **Compensated temperature range** | -10 to +40 | | °C |
| **Operating temperature range** | -20 to +60 | | °C |
| **Safe overload** | 150 | | % of R.C. |
| **Ultimate overload** | 200 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 410±10 | | Ohms |
| **Output impedance** | 350±3 | | Ohms |
| **Insulation resistance** | >5000 | | Mega-Ohms |
| **Construction** | Anodized aluminum | | |
| **Environmental protection** | IP66 | | |

All specifications listed subject to change without notice.

FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Single-Point Bending Beams Alloy Steel

## Contents



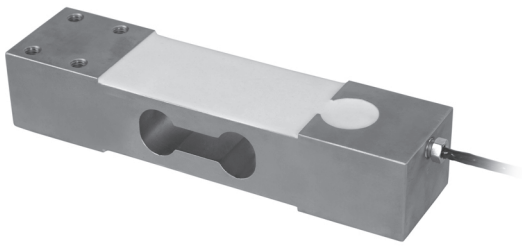
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Model 92006

Sensortronics

VISHAY PRECISION GROUP

# Single Point Alloy Steel Load Cell



## FEATURES

- Capacity: 100 to 1500kg
- Alloy steel construction
- Single point 900 X 900mm platform
- IP66 protection

## OPTIONAL FEATURES

- Stainless steel construction

## DESCRIPTION

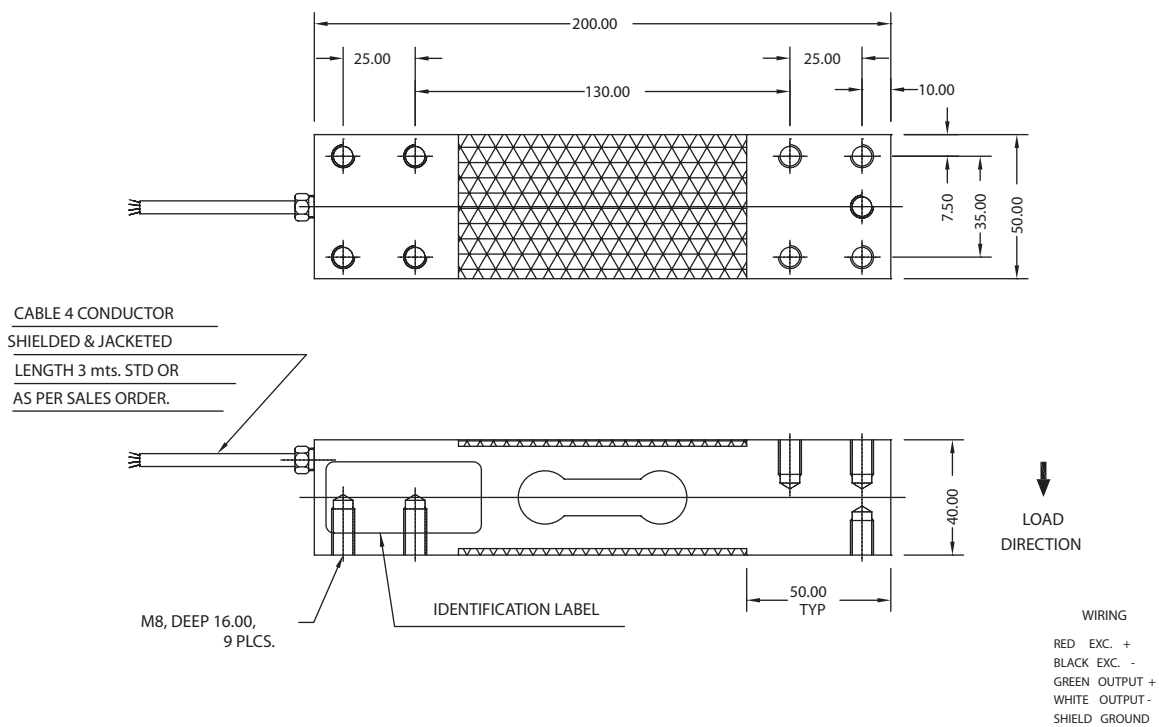
Model 92001 is an alloy steel single point load cell designed for direct mounting in large platform scale applications. The cost effective load cell is ideal for use in counting, bench and floor scales.

This model provides scale manufacturers with a high accuracy low cost sensor for their most demanding technical requirements.

## APPLICATIONS

- Large platform scales
- Bench scales
- Counting scales
- Check weighing scales

## OUTLINE DIMENSIONS in millimeters





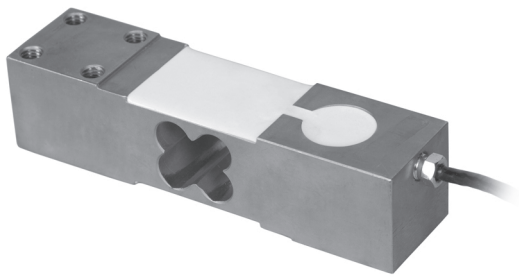

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

Document Number: 11655
Revision: 09-Jun-10

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Rated output-R.O.** | 2.0 | mV/V |
| **Rated output tolerance** | 10 | ± %FSO |
| **Zero balance** | 1 | ± %FSO |
| **Combined error** | < 0.030 | ± %FSO |
| **Non-Linearity** | < 0.025 | ± %FSO |
| **Hysteresis** | < 0.020 | ± %FSO |
| **Non-repeatability** | < 0.010 | ± %FSO |
| **Creep error (30 minutes)** | < 0.025 | ± %FSO |
| **Temperature effect on zero** | < 0.002 | ± %/°C |
| **Temperature effect on output** | 0.001 | ± %/°C |
| **Operating temperature range** | -20 TO +70 | °C |
| **Maximum safe central overload** | 150 | %FSO |
| **Ultimate central overload** | 300 | %FSO |
| **Excitation, recommended** | 10 | Vdc |
| **Excitation, maximum** | 15 | Vdc |
| **Input impedance** | 360-450 | Ω |
| **Output impedance** | 349-355 | Ω |
| **Insulation resistance at 50 VDC** | >1000 | MΩ |
| **Material** | Alloy steel with electroless nickel plated | |
| **Environmental protection** | IP66 | |
| **Platform size** | Up to 900 X 900 | mm |

# Single Point Alloy Steel Load Cell



## FEATURES

- Capacity range: 50 - 1500kg
- Alloy steel construction
- Single point for the following platform sizes:
  - 50 - 750kg – 600 X 600mm platform
  - 1000 - 1250kg – 750 X 750mm platform
  - 1500kg – 900 X 900mm platform

## OPTIONAL FEATURE

- Stainless steel construction

## DESCRIPTION

Model 92001 is an alloy steel single point load cell designed for direct mounting in large platform scale applications. The cost effective load cell is ideal for use in counting, bench and floor scales.

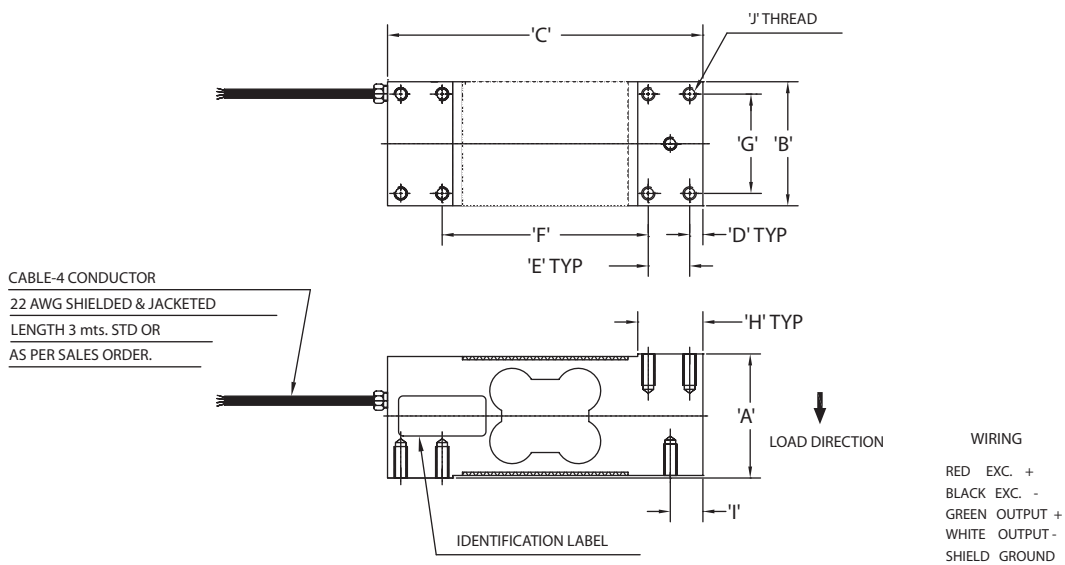
This model provides scale manufacturers with a high-accuracy low-cost sensor for their most demanding technical requirements.

## APPLICATIONS

- Large platform scales
- Bench and counting scales
- Check weighing scales

## OUTLINE DIMENSIONS in millimeters

| CAPACITY | A | B | C | D | E | F | G | H | I | J THREAD |
|---|---|---|---|---|---|---|---|---|---|---|
| 50,100,150,200,250,300,350,500,600,750 kg | 38.0 | 38.0 | 150.0 | 6.3 | 25.4 | 86.6 | 25.4 | 38.0 | 18.0 | M8 x 1.25 DEEP 15.0, 9 PLCS |
| 1000, 1250, kg | 74.9 | 74.9 | 190.5 | 10.4 | 18.5 | 132.6 | 56.0 | 39.3 | 19.7 | M8 x 1.25-6H x 19.0 DEEP 9 PLCS |
| 1500 kg | 74.9 | 74.9 | 190.5 | 10.4 | 18.5 | 132.6 | 56.0 | 39.3 | 19.7 | M10 x 1.5-6H x 26.0 DEEP 9 PLCS |






Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

Document Number: 11654
Revision: 09-Jun-10

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Rated output-R.O.** | 2.0 | mV/V |
| **Rated output tolerance** | 10 | ± %FSO |
| **Zero balance** | 1 | ± %FSO |
| **Combined error** | < 0.045 | ± %FSO |
| **Non-Linearity** | < 0.025 | ± %FSO |
| **Hysteresis** | < 0.020 | ± %FSO |
| **Non-repeatability** | < 0.010 | ± %FSO |
| **Creep error (30 minutes)** | < 0.025 | ± %FSO |
| **Temperature effect on zero** | < 0.002 | ± %/°C |
| **Temperature effect on output** | 0.001 | ± %/°C |
| **Operating temperature range** | -20 TO +70 | °C |
| **Maximum safe central overload** | 150 | %FSO |
| **Ultimate central overload** | 300 | %FSO |
| **Excitation, recommended** | 10 | Vdc |
| **Excitation, maximum** | 15 | Vdc |
| **Input impedance** | 380-400 | Ω |
| **Output impedance** | 349-355 | Ω |
| **Insulation resistance at 50 VDC** | >1000 | MΩ |
| **Material** | Alloy steel with electroless nickel plated | |
| **Environmental protection** | IP66 | |
| **Platform size** | 50 - 750kg : 600*600, 1000 - 1250kg : 750*750, 1500kg : 900*900 | |

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

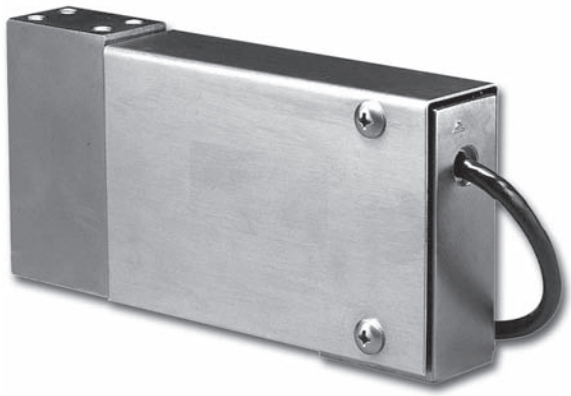
# Single-Point Bending Beams Stainless Steel

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Low Profile Platform Cell



Factory Mutual System Approved

## FEATURES

- Rated capacities of 25 to 1000 pounds
- Constructed of stainless steel
- Moment-compensated design for minimal sensitivity to moments induced by off-center loading
- Exceeds NIST H-44 requirements
- Provides optimum protection under adverse loading conditions
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!)

## DESCRIPTION

The 60048 is a high precision, stainless steel, single point platform load cell.

This product's availability in capacities ranging from 25 to 1000 lbs. makes it ideal for many low to mid range capacity weighing applications. This load cell is most commonly used in platform scales, but can be adapted for use in many process weighing applications.

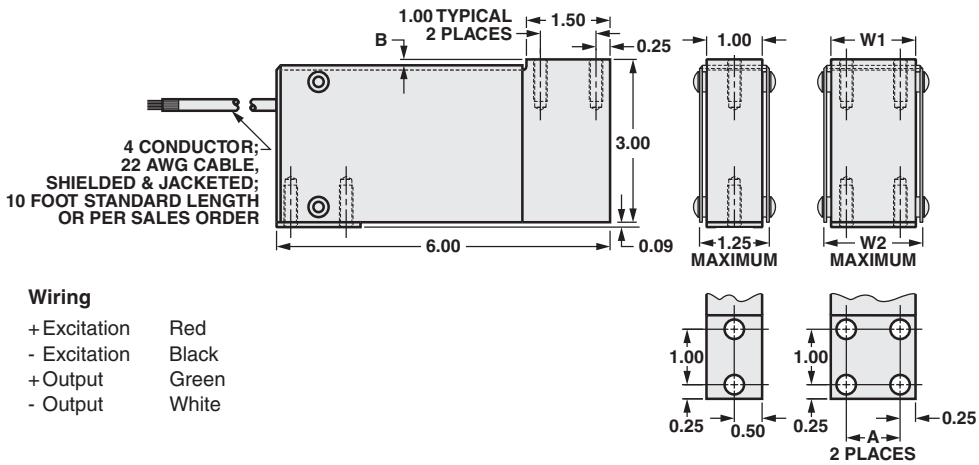
The stainless steel construction and IP67 sealing make this load cell ideal for harsh environment applications.

This product is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments.

## APPLICATIONS

- Single-point platform scales
- Belt conveyor scales
- Bench and counting scales
- Checkweighing scales
- Hopper scales and netweighing

## OUTLINE DIMENSIONS in inches




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

| CAPACITY | W1 | W2 | A | B | THREAD |
|---|---|---|---|---|---|
| 25 | -- | -- | -- | 0.04 | 1/4-28 UNF-2B THREAD X 0.75 MIN., 4 PLACES |
| 50 - 100 | -- | -- | -- | 0.04 | 1/4-28 UNF-2B THREAD X 0.75 MIN., 4 PLACES |
| 200 | -- | -- | -- | 0.04 | 1/4-28 UNF-2B THREAD X 0.75 MIN., 4 PLACES |
| 400 - 500 | 1.00 | 1.25 | 0.50 | 0.04 | 1/4-28 UNF-2B THREAD X 0.75 MIN., 4 PLACES |
| 1K | 1.50 | 1.75 | 1.00 | 0.18 | 5/16-24 UNF-2B THREADX 0.75 MIN., 8 PLACES |

Capacities are in pounds.


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11582
Revision: 11-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 25, 50, 100, 200, 400, 500, 1000 | | lbs |
| **NTEP/OIML Accuracy class** | **Non-Approved** | | |
| **Rated output-R.O.** | 2.0 | | mV/V |
| **Rated output tolerance** | +0.25 ... -10% | | ±% mV/V |
| **Zero balance** | 1.0 | | ±% FSO |
| **Combined error** | 0.03 | | ±% FSO |
| **Non-repeatability** | 0.01 | | ±% FSO |
| **Creep error (20 minutes)** | 0.03 | | ±% FSO |
| **Temperature effect on zero** | 0.0015 | | ±% FSO/°F |
| **Temperature effect on output** | 0.0008 | | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | | °F (°C) |
| **Sideload rejection ratio** | 500:1 | | |
| **Safe sideload** | 30 | | % of R.C. |
| **Maximum safe central overload** | 150 | | % of R.C. |
| **Ultimate central overload** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 350 - 450 | | Ω |
| **Output impedance** | 349 - 355 | | Ω |
| **Insulation resistance at 50 VDC** | >1000 | | MΩ |
| **Material** | Stainless steel | | |
| **Environmental protection** | IP67 | | |
| **Moment compensation** | **25-500 lbs** | **1000 lbs** | |
| **Moment sensitivity** | 0.005 | 0.007 | ±% of load/inch |
| **Maximum moment** | 10 x capacity | 15000 | lbs-inches |
| **Platform size** | 20 x 20 | 30 x 30 | inches |

FSO - Full Scale Output

# Low Profile Platform Cell

Factory Mutual System Approved

## FEATURES

- Rated capacities of 10 to 200 pounds
- Stainless steel construction
- Moment-compensated design for minimal sensitivity to moments induced by off-center loading
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!)

## DESCRIPTION

The 60051 is a low profile high precision, stainless steel, single point platform load cell.

This product's low profile makes it ideal for many low to mid range capacity weighing applications where space is at a premium. This load cell is most commonly used in platform scales, but can be adapted for use in many process weighing applications.

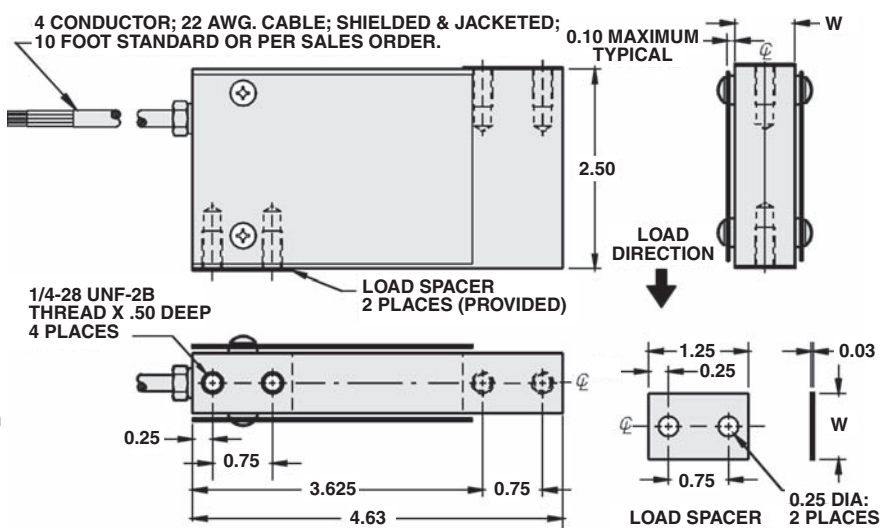
The stainless steel construction and IP67 sealing make this load cell ideal for very harsh environment applications. This load cell is specifically designed for use in corrosive and wet environments that are not appropriate for common aluminum load cells.

This product is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments.

## APPLICATIONS

- Single-point platform scales
- Bench, counting and deli scales
- Checkweighing scales
- Hopper scales and netweighing

## OUTLINE DIMENSIONS in inches




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

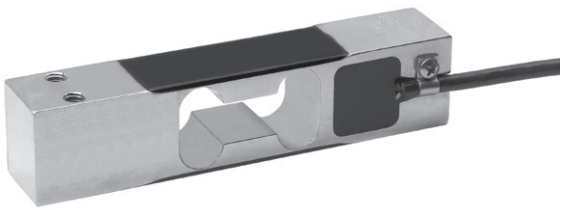
## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 10, 15, 25, 50, 100, 200 | | lbs |
| **NTEP/OIML Accuracy class** | **Standard** | | |
| **Maximum no. of intervals (n)** | -- | | |
| **Rated output-R.O.** | 2.0 | | mV/V |
| **Rated output tolerance** | +0.25...-10 | | ±% mV/V |
| **Zero balance** | 1.0 | | ±% FSO |
| **Combined error** | 0.03 | | ±% FSO |
| **Non-repeatability** | 0.01 | | ±% FSO |
| **Creep error (20 minutes)** | 0.03 | | ±% FSO |
| **Temperature effect on zero** | 0.0015 | | ±% FSO/°F |
| **Temperature effect on output** | 0.0008 | | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | | °F (°C) |
| **Maximum safe central overload** | 150 | | % of R.C. |
| **Ultimate central overload** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 380 - 450 | | Ω |
| **Output impedance** | 349 - 355 | | Ω |
| **Insulation resistance at 50VDC** | >1000 | | MΩ |
| **Material** | Stainless steel | | |
| **Environmental protection** | IP67 | | |
| **Moment compensation** | **10 - 25lbs** | **50 - 200lbs** | |
| **Moment sensitivity** | 0.015 | 0.100 | ±% of load/inch |
| **Maximum moment** | 5 x capacity | 6 x capacity | lbs-inches |
| **Platform size** | 8 x 10 | 12 x 12 | inches |

FSO - Full Scale Output

All specifications subject to change without notice.

# Stainless Steel Single Point Load Cell



OIML NTEP ATEX FM

## DESCRIPTION

Model 1130 is a low profile stainless steel single point load cell ideally designed for direct mounting in bench and platform scales, packaging and process weighing equipment, and is built to perform in harsh environments.

The small physical size, combined with high accuracy and low cost, makes this load cell ideally suited for low profile bench and counting scales. A special humidity resistant protective coating assures long term stability over the entire compensated temperature range.

Constructed in stainless steel this high accuracy load cell is approved to stringent approval standards e.g OIML and NTEP.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is acheived by feeding this voltage into the appropriate electronics.

## FEATURES

- Capacities 7 - 100kg
- Stainless steel construction
- Single point 400 x 400mm platform
- OIML R60 and NTEP approved
- IP66 protection
- Available with metric and UNC threads

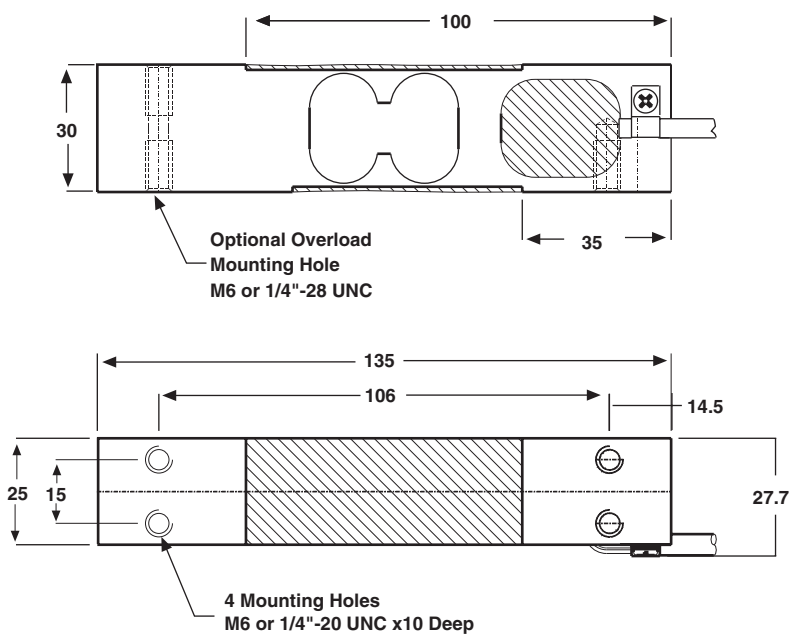
## OPTIONAL FEATURES

- EEx ia IIC T4 - hazardous area approval
- FM approval available

## APPLICATIONS

- Harsh environment small platforms
- Harsh environment check weighing

## OUTLINE DIMENSIONS in millimeters



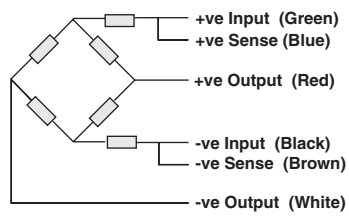
| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | **UNIT** |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3 (1) | |
| Maximum no. of intervals (n) | 4000 single | 1000 | 3000 (2) | |
| $Y = E_{max}/V_{min}$ | 15000 | 2000 | 15000 | |
| Rated capacity-R.C. ($E_{max}$) | 7, 10, 15, 20, 30, 50, 75, 100 | | | kg |
| Rated output-R.O. | 2.0 | | | mV/V |
| Rated output tolerance | 0.2 | | | ±mV/V |
| Zero balance | 0.2 | | | ±mV/V |
| Zero Return, 30 min. | 0.0250 | 0.0300 | 0.0170 | ±% of applied load |
| Total Error (per OIML R60) | 0.0015 | 0.0500 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0030 | 0.0100 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0008 | 0.0030 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0035 | 0.0074 | 0.0049 | ±% of rated load/cm |
| Temp. range, compensated | -10 to +40 | | | °C |
| Temp. range, safe | -20 to +70 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 385±15 | | | Ohms |
| Output impedance | 350±3 | | | Ohms |
| Insulation resistance | >2000 | | | Mega-Ohms |
| Cable length | 1.5 | | | m |
| Cable type | 6wire, PVC, single floating screen | | | Standard |
| Construction | Stainless steel | | | |
| Environmental protection | IP66 | | | |
| Platform size (max) | 400 x 400 | | | mm |
| Recommended torque | 13.0 | | | N*m |

**Notes**

(1) 50% utilization

(2) Capacities 50-75kg

**Wiring Schematic Diagram**



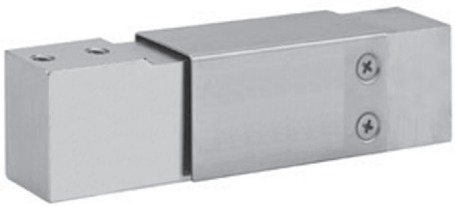

**Balanced Temperature Compensation**

# Model 1140

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Stainless Steel Single Point Load Cell



ATEX FM

### FEATURES

- Capacities 15 - 150kg
- Stainless steel construction
- Single point 400 x 400mm platform
- IP65 protection
- Available with UNC threads only

### OPTIONAL FEATURES

- EEx ia IIC T4 hazardous area approval
- FM approval available

### DESCRIPTION

Model 1140 is a low profile single point load cell designed for direct mounting of low cost weighing platforms.

The small physical size, combined with high accuracy and low cost, makes this load cell ideally suited for low profile bench and counting scales. For wash-down protection an optional IP65 encapsulation protection is available.

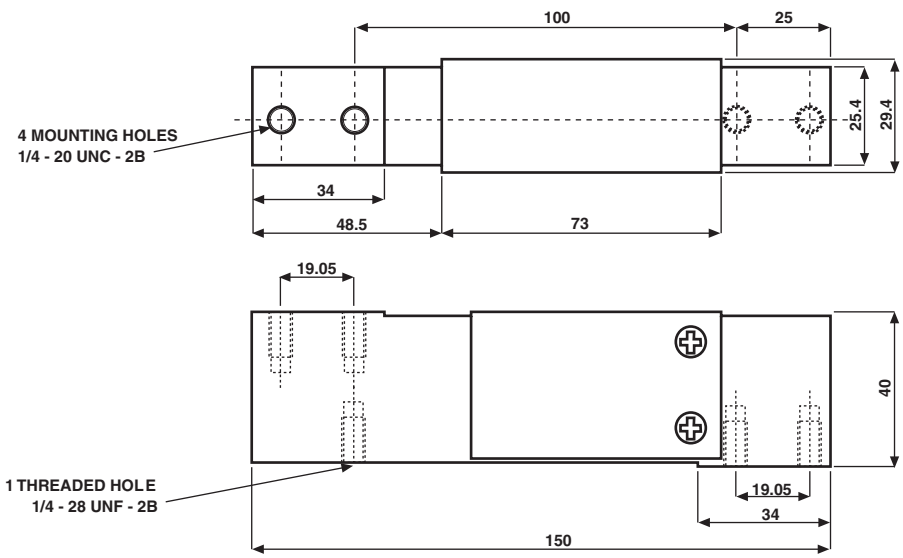
Constructed from stainless steel this high accuracy load cell is approved to Factory Mutual and other stringent approval standards.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

### APPLICATIONS

- Harsh environment small platforms
- Harsh environment check weighing

### OUTLINE DIMENSIONS in mm





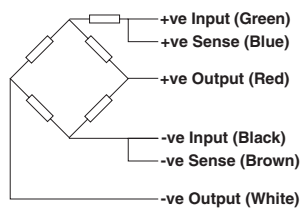
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12012
Revision: 17-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 15, 20, 30, 50, 75, 100, 150 | kg |
| **NTEP/OIML Accuracy class** | **Non-Approved** | |
| **Maximum no. of intervals (n)** | 3000 | |
| **Rated output-R.O.** | 2.0 | mV/V |
| **Rated output tolerance** | 0.2 | ±mV/V |
| **Zero balance** | 0.2 | ±mV/V |
| **Zero Return, 30 min.** | 0.0170 | ±% of applied load |
| **Total Error (per OIML R60)** | 0.0200 | ±% of rated output |
| **Temperature effect on zero** | 0.004 | ±% of rated output/°C |
| **Temperature effect on output** | 0.0010 | ±% of load/°C |
| **Eccentric loading error** | 0.0074 | ±% of rated load/cm |
| **Temperature range, compensated** | -10 to +40 | °C |
| **Temperature range, safe** | -20 to +70 | °C |
| **Maximum safe central overload** | 150 | % of R.C. |
| **Ultimate central overload** | 300 | % of R.C. |
| **Excitation, recommended** | 10 | Vdc or Vac rms |
| **Excitation, maximum** | 15 | Vdc or Vac rms |
| **Input impedance** | 385±15 | Ohms |
| **Output impedance** | 350±3 | Ohms |
| **Insulation resistance** | >2000 | Mega-Ohms |
| **Cable length** | 1.0 | m |
| **Cable type** | 6 wire, PVC, single floating screen | Standard |
| **Construction** | Stainless steel | |
| **Environmental protection** | IP65* | |
| **Platform size (max)** | 400 x 400 | mm |
| **Recommended torque** | Up to 30kg: 7.0<br>50kg & up: 10.0 | N*m |

* IP67 available on request

**WIRING SCHEMATIC DIAGRAM**

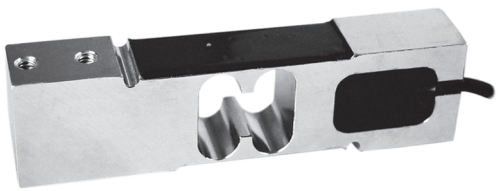


# Model 1142

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Single Point Stainless Steel Load Cell



OIML ATEX

## FEATURES

- Capacity range: 10 to 150kg
- Stainless steel construction
- Single point 400 x 400mm platform
- Sealed to IP66
- Compact size: only 40mm high
- OIML approved to C3 (20 - 100kg)
- Choice of mounting threads: ¼-20 UNC or M6 x 12

## OPTIONAL FEATURES

- EEx ia IIC T4 - ATEX hazardous area approval
- Grounded version includes shield wire in load cell cable

## DESCRIPTION

Model 1142 is a stainless steel single point load cell suitable for direct mounting with platform, bench, counting, and a wide range of other scale applications. Small physical size, combined with high accuracy and low cost, makes 1142 load cells the perfect choice for new or retrofit scale construction.

A humidity-resistant protective coating assures stable operation in damp environments over the entire compensated range and conforms to IP66 (IEC 60529).

Also available is an ATEX 2G EEx ia IIC T4 approved version for hazardous areas.

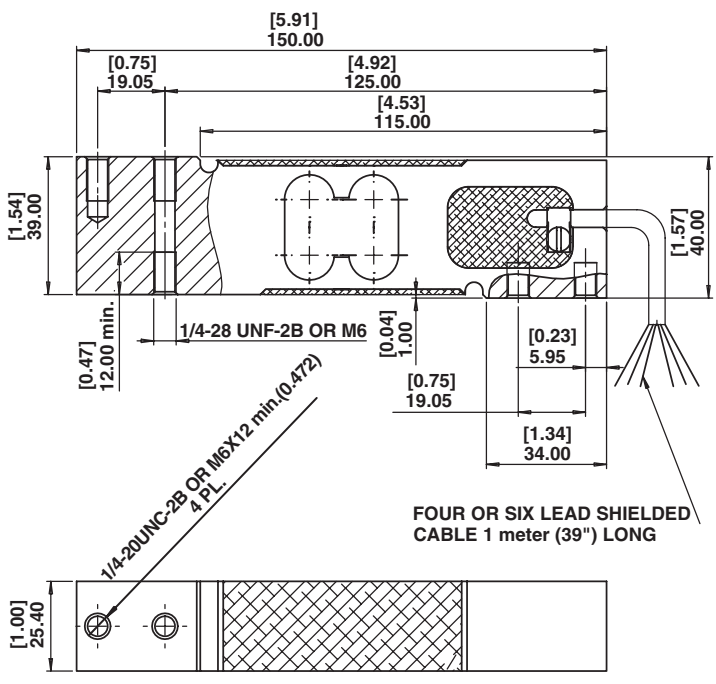
The six-wire cable includes two sense wires that compensate for changes in lead resistance due to temperature changes and cable extension.

Model 1142 options offer a choice of boltthreads, ¼-20 UNC or M6 x 12, and a grounded version that includes a “shield” wire in the load cell cable.

## APPLICATIONS

- Platform scales
- Bench scales
- Counting scales
- Grocery scales

## OUTLINE DIMENSIONS in mm




All DIMENSIONS IN mm [inches].



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 12064
Revision: 19-Feb-10

## SPECIFICATIONS

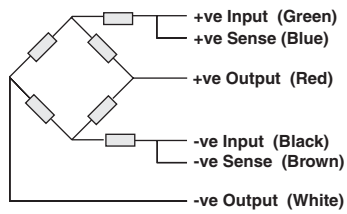
| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 10, 15, 20, 30, 50, 75, 100, 150** | | kg |
| OIML Accuracy class | Non-Approved | C3* | |
| Maximum no. of intervals (n) | 1000 | 3000 | |
| $Y = E_{max}/V_{min}$ | 4000 | 15000 | Maximum available |
| Rated output-R.O. | 2.0 | | mV/V |
| Rated output tolerance | 0.2 | | ±mV/V |
| Zero balance | 0.2 | | ±mV/V |
| Zero Return, 30 min. | 0.0500 | 0.0167 | ±% of applied load |
| Total Error | 0.0300 | 0.0200 | ±% of rated output |
| Temperature effect on zero | 0.0070 | 0.0023 | ±% of rated output/°C |
| Temperature effect on output | 0.0030 | 0.0010 | ±% of applied load/°C |
| Eccentric loading error | 0.0074 | 0.0049 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | °C |
| Temperature range, safe | -20 to +70 | | °C |
| Maximum safe central overload | 150 | | % of R.C. |
| Ultimate central overload | 300 | | % of R.C. |
| Excitation, recommended | 10 | | Vdc or Vac rms |
| Excitation, maximum | 15 | | Vdc or Vac rms |
| Input impedance | 385±10 | | Ohms |
| Output impedance | 351±5 | | Ohms |
| Insulation resistance | >2000 | | Mega-Ohms |
| Cable length | 1 | | m |
| Cable type | 6 wire, PVC, single floating screen | | Standard |
| Construction | Stainless steel | | |
| Environmental protection | IP66 | | |
| Platform size (max) | 400 x 400 | | mm |
| Recommended torque | Up to 30kg: 7.0<br>50kg & up: 10.0 | | N*m |

* 50% utilization

** 10, 15 & 150 are not approved

**Wiring Schematic Diagram**

**(Balanced bridge temperature compensation)**

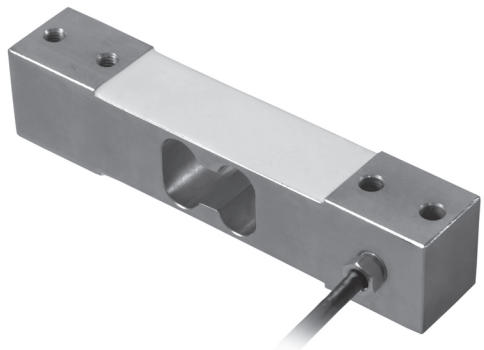


# Model 93006

Sensortronics

VISHAY PRECISION GROUP

# Single Point Stainless Steel Load Cell



## FEATURES

- Capacity range: 10- 60kg
- Stainless steel construction
- Single point 350 X 350mm platform
- IP66 protection

## DESCRIPTION

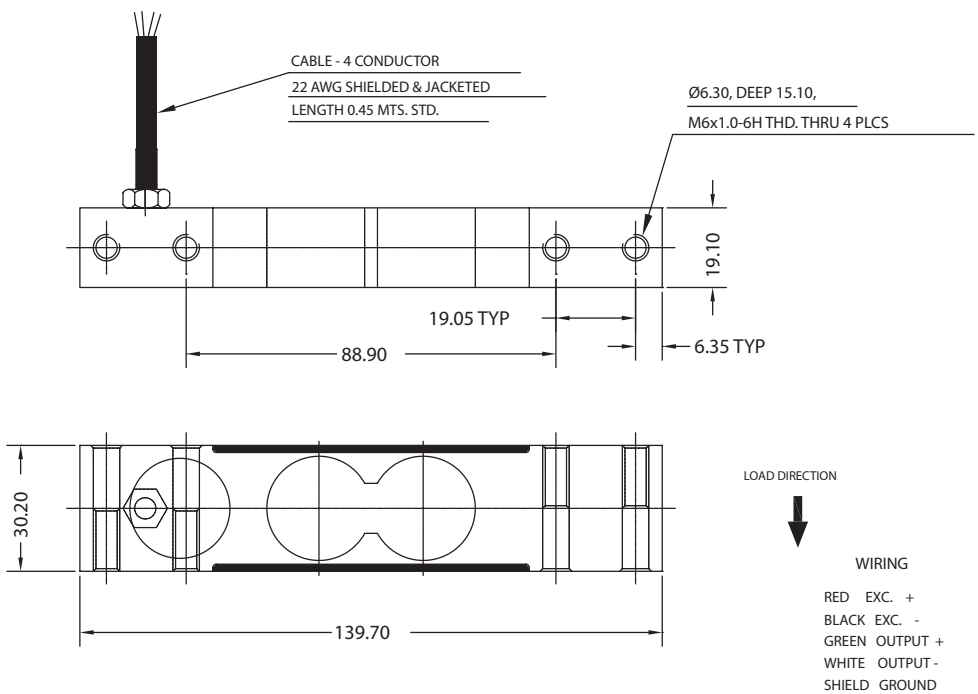
Model 93006 is a low profile single point load cell designed for direct mounting in retail, bench, and counting scales and a wide range of other scale applications. Small physical size combined with high accuracy and low cost makes this load cell ideally suited for new scale construction.

This load cell's stainless steel construction makes it ideal for use in corrosive and wet environments that are not appropriate for common aluminum load cells.

## APPLICATIONS

- Retail scales
- Counting scales
- Bench scales
- Harsh environments

## OUTLINE DIMENSIONS in millimeters






Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11656
Revision: 09-Jun-10

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Rated output-R.O.** | 2.0 | MV/V |
| **Rated output tolerance** | 10 | ± %FSO |
| **Zero balance** | 1 | ± %FSO |
| **Combined error** | < 0.025 | ± %FSO |
| **Non-repeatability** | < 0.010 | ± %FSO |
| **Creep error (30 minutes)** | < 0.025 | ± %FSO |
| **Temperature effect on zero** | < 0.002 | ± %/°C |
| **Temperature effect on output** | 0.001 | ± %/°C |
| **Operating temperature range** | -20 to +70 | °C |
| **Maximum safe central overload** | 150 | %FSO |
| **Ultimate central overload** | 300 | %FSO |
| **Excitation, recommended** | 10 | Vdc |
| **Excitation, maximum** | 15 | Vdc |
| **Input impedance** | 430-525 | Ω |
| **Output impedance** | 349-355 | Ω |
| **Insulation resistance at 50 VDC** | >1000 | MΩ |
| **Material** | Stainless steel with electropolish | |
| **Environmental protection** | IP66 | |
| **Platform size** | 350*350 | mm |

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Single-Point, Hermetically Sealed Beams

## Contents



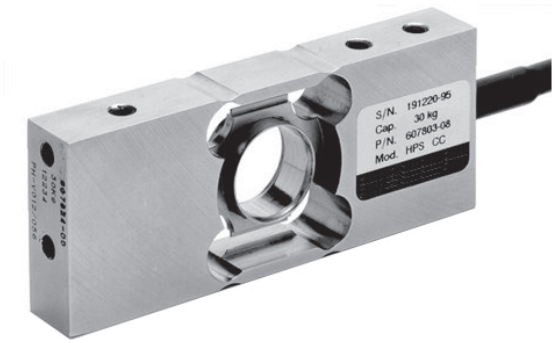
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Model HPS

Revere

VISHAY PRECISION GROUP

## Single Point Load Cell




### FEATURES

- Capacities: 6 - 60kg
- Fully welded, stainless steel construction
- Hermetically sealed, IP66 and IP68
- Certified to OIML R-60, 3000d
- Comprehensive mounting hole facility
- Moment insensitive, platform size to 350 x 350mm

### OPTIONAL FEATURE

- ATEX and FM certified versions are available for use in potentially explosive atmospheres

### DESCRIPTION

The HPS is a unique fully welded all stainless steel single point (moment insensitive) load cell.

This product is suitable for low capacity platform scales, multi-head packaging machines, check weighers, loss-in-weight feeders, belt scales and general process weighing applications.

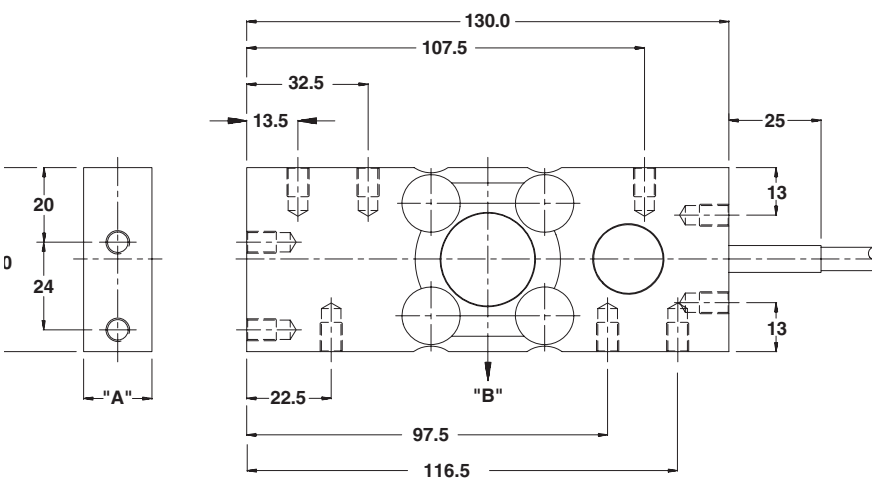
The unique construction ensures that this product can be used successfully in harsh environments found in the food, chemical and allied industries.

This product meets the stringent Weights and Measures requirements throughout Europe.

### APPLICATIONS

- Food platforms
- Process weighing
- Multi-head packaging machines
- Marine hybrid scales

### OUTLINE DIMENSIONS in mm




*Cable specifications:*

| | |
|---|---|
| Cable length: | 7m |
| Excitation + | Green |
| Excitation - | Black |
| Output + | White |
| Output - | Red |
| Sense + | Yellow |
| Sense - | Blue |
| Shield | Transparent |

Cable screen is not connected to load cell body.

| Capacity (kg) | 6, 12, 30 | 60 |
|---|---|---|
| A | 18.5 | 23.5 |
| B | Central load axis | |
| Max. recommended platform size 350mm | | |
| All threads M6x1 (8 Deep) | | |


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11824
Revision: 09-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Standard capacities ($E_{max}$)** | 6, 12, 30, 60 | | kg |
| **Accuracy class according to OIML R-60** | **Non-Approved** | **C3** | |
| **Max. no. of verfication intervals** | | 3000 | |
| **Min. verification interval ($V_{min}$)** | | $E_{max}$/12000 | |
| **Rated output (=S)** | 2 | | mV/V |
| **Rated output tolerance** | 0.2 | | ±mV/V |
| **Zero balance** | 1.0 | | ±% FSO |
| **Combined error** | 0.0500 | 0.0200 | ±% FSO |
| **Non-repeatability** | 0.0200 | 0.0100 | ±% FSO |
| **Minimum dead load output return** | 0.0500 | 0.0167 | ±% applied load |
| **Creep error (30 minutes)** | 0.0600 | 0.0245 | ±% applied load |
| **Temperature effect on min. dead load output** | 0.0250 | 0.0058 | ±% FSO/5°C (/°F) |
| **Temperature effect on sensitivity** | 0.0250 | 0.0045 | ±% applied load/5°C (/°F) |
| **Eccentric load effect*** | 0.03 | | ±% FSO |
| **Minimum dead load** | 0 | | %$E_{max}$ |
| **Maximum safe over load** | 150 | | %$E_{max}$ |
| **Ultimate over load** | 300 | | %$E_{max}$ |
| **Maximum safe side load** | 100 | | %$E_{max}$ |
| **Deflection at $E_{max}$** | 0.24±0.02/ 0.19±0.01/ 0.15±0.01/ 0.22±0.03 | | mm |
| **Excitation voltage** | 5 to 12 | | V |
| **Maximum excitation voltage** | 15 | | V |
| **Input resistance** | 400±6 | 410±6 | Ω |
| **Output resistance** | 350±7 | | Ω |
| **Insulation resistance** | ≥5000 | | MΩ |
| **Compensated temperature range** | -10 to +40 | | °C |
| **Operating temperature range** | -40 to +80 | | °C |
| **Storage temperature range** | -40 to +90 | | °C |
| **Element material (DIN)** | Stainless steel 1.4542 | | |
| **Sealing (DIN 40.050 / EN60.529)** | IP66 and IP68 | | |
| **Recommended torque on fixation bolts** | 6 | | N*m |

* Applies at 50% x Rated Load at 150mm radius

# Model 1510

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Hermetically Sealed Single Point Load Cell

## FEATURES

- Capacity range: 100 - 500kg
- Stainless steel construction
- Single point 600 x 600mm platform
- OIML R60 and NTEP approved
- IP68 protection

## OPTIONAL FEATURES

- EEx ia IIC T6 hazardous area approval
- FM approval available
- Platform size 600 x 800mm available

## DESCRIPTION

Model 1510 is a high accuracy single point load cell ideally suited to industrial applications which undergo regular washdown, typically platforms, wall scales and other process weighing applications in the food industry.

Hermetically sealed against moisture, the all welded construction of the 1510 in combination with a polyurethane dual shielded cable, enables continuous operation in harsh environments whilst maintaining a high operating specification.

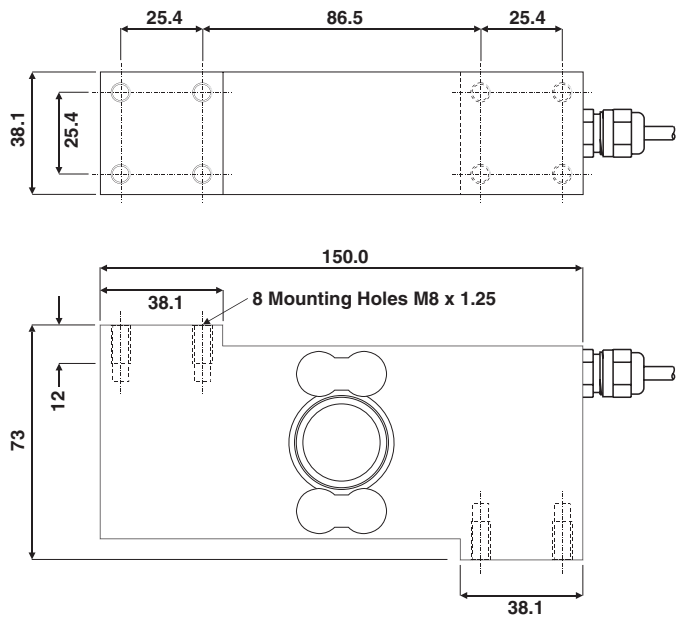
The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## APPLICATIONS

- Food industry platforms
- Marine and hybrid scales
- Process weighing hoppers
- Harsh environment

## OUTLINE DIMENSIONS in mm

**Outline Dimensions All Capacities in mm.**





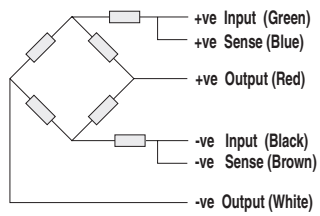
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12024
Revision: 17-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 100, 250, 500 | | | | kg |
| NTEP/OIML Accuracy class | NTEP | Non-Approved | C3* | C4* | |
| Maximum no. of intervals (n) | 5000 single | 1000 | 3000 | 4000 | |
| $Y = E_{max}/V_{min}$ | 11425 | 1400 | 10000 | 12000 | Maximum available 12500 |
| Rated output-R.O. | 2.0 | | | | mV/V |
| Rated output tolerance | 0.2 | | | | ±mV/V |
| Zero balance | 0.2 | | | | ±mV/V |
| Zero Return, 30 min. | 0.0170 | 0.0060 | 0.0170 | 0.0130 | ±% of applied load |
| Total Error | 0.0200 | 0.0300 | 0.0200 | 0.0150 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.010 | 0.0014 | 0.0011 | ±% of rated output/°C |
| Temperature effect on output | 0.001 | 0.0040 | 0.0010 | 0.0008 | ±% of applied load/°C |
| Eccentric loading error | 0.0016 | 0.0035 | 0.0011 | 0.0008 | ±% of rated load/cm |
| Temperature range, compensated | -10 to +40 | | | | °C |
| Temperature range, safe | -20 to +70 | | | | °C |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | | Vdc or Vac rms |
| Input impedance | 380±10 | | | | Ohms |
| Output impedance | 350±3 | | | | Ohms |
| Insulation resistance | >2000 | | | | Mega-Ohms |
| Cable length | 3 | | | | m |
| Cable type | 6 wire, braided, Polyurethane, dual floating screen | | | | Standard |
| Construction | Stainless steel | | | | |
| Environmental protection | IP68 | | | | |
| Recommended torque | 22.0 | | | | N*m |

* 35% utilization

**Wiring Schematic Diagram**



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

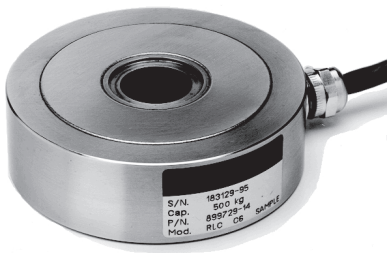
# Tension/ Compression Disks

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Ring Torsion Load Cell




OIML ATEX FM

## DESCRIPTION

The RLC is a low profile, high performance stainless steel ring torsion type load cell.

The fully welded constuction and glass-to- metal cable-entry ensure that this product can be used successfully in harsh environments found in the food, chemical and allied process industries.

This product is suitable for small and medium platform scales, hoppers and process weighing.

This product meets the stringent Weights and Measures requirements throughout Europe and USA.

## FEATURES

- Capacity range: 250kg to 60 ton
- Low profile, stainless steel construction
- Hermetically sealed, IP66/68
- Meets OIML R-60, 6000d
- Outputs are matched to ensure easy and accurate parallel connection of multiple load cells

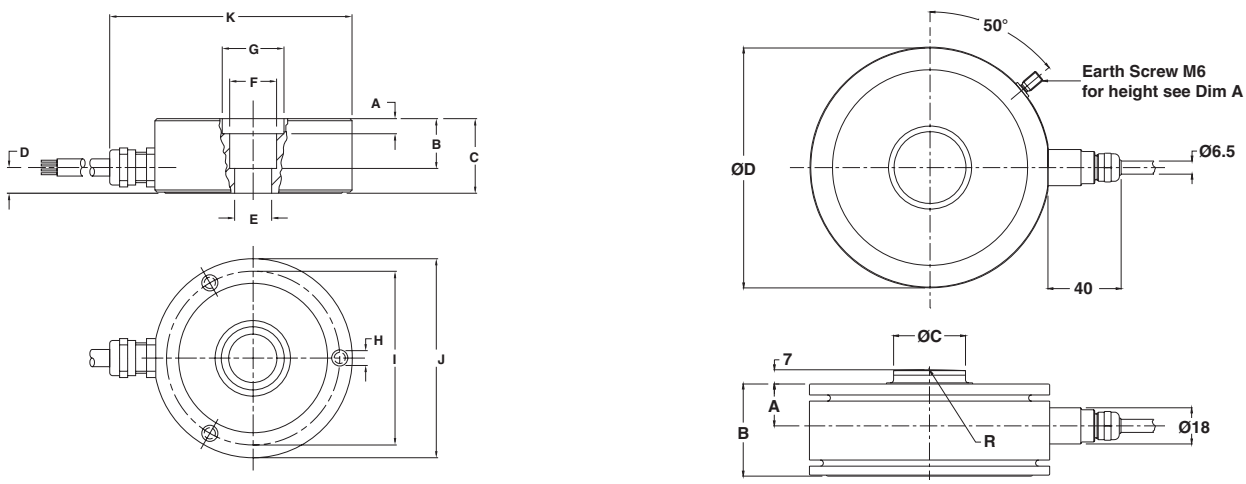
## OPTIONAL FEATURES

- ATEX certified versions are available for use in potentially explosive atmospheres
- Multi-interval and multiple-range versions are available

## APPLICATIONS

- Platform scales
- Belt scales
- Silo hopper weighing

## OUTLINE DIMENSIONS in millimeters




| CAPACITY (t) | 0.25, 0.5, 1 | 2, 3.5, 5 | 10 |
|---|---|---|---|
| A | 1.0 | 6.0 | - |
| B | 15.0 | 20.0 | 14.8 |
| C | 25.0 | 30.0 | 35.0 |
| D | 9.5 | 8.5 | 10.0 |
| E | M10 | 15 H7 | Ø24.9 |
| F | Ø19 | Ø19 | Ø29.1 |
| G | Ø25 | Ø25 | - |
| H | M6 (3X120°) 8 Deep | | |
| I | Ø70 | Ø70 | Ø83 |
| J | Ø80 | Ø80 | Ø95 |
| K | 97.5 | 97.5 | 112.5 |

*Cable specifications:*

Cable length: 3m for 0.25 - 1t, 5m for 3 - 10t, 10m for 28t, 15m for 60t

Excitation + Pink
Excitation - Grey
Output + Brown
Output - White

Cable screen is connected to load cell body. For capacities 28 & 60 ton cable screen is not connected to body.

| CAPACITY (t) | 28 | 60 |
|---|---|---|
| A | 21 | 28 |
| B | 46 | 62 |
| C | 35.9 | 47.9 |
| D | 120 | 140 |
| R | 400 | 600 |

| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | **UNIT** |
| Standard capacities ($E_{max}$) | 0.25, 0.5, 1, 2, 3.5, 5, 10, 28, 60 | | | | ton |
| Accuracy class according to OIML / | NTEP IIIL | D3 | C3 (3) | C6 (2) | |
| Maximum no. of verfication intervals (nlc) | 10000 | | 3000 | 6000 | |
| Minimum verification interval | | | Emax/10000 | Emax/15000 | |
| Minimum verification interval type MR | | | Emax/20000 (1) | Emax/28000 | |
| Rated output (=S) | 2 (1.75 for 0.25t, 2.05 for 10t) | | | | mV/V |
| Output accuracy for multiple LC systems | 0.01 | | | | ±mV/V |
| Zero balance | 1.0 | | | | ±% FSO |
| Combined error | 0.0200 | 0.0300 | 0.0230 | 0.0115 | ±% FSO |
| Creep error (30 minutes) | | | 0.0245 | 0.0123 | ±% FSO |
| Temperature effect on zero | (0.0010) | (0.0010) | 0.0070 | 0.0045 | ±% FSO/5°C (/°F) |
| Temperature effect on sensitivity (output) | (0.0008) | (0.0008) | 0.0050 | 0.0025 | ±% FSO/5°C (/°F) |
| Minimum dead load | 0 | | | | %Emax |
| Maximum safe over load | 150 | | | | %Emax |
| Ultimate over load | 300 | | | | %Emax |
| Maximum safe side load | 100% up to 10 ton 50% for 28 & 60 ton | | | | %Emax |
| Deflection at Emax | 0.12 - 0.20 | | | | mm |
| Excitation voltage | 5 to 15 | | | | V |
| Maximum excitation voltage | 30 | | | | V |
| Input resistance | 1110±50 (1100±50 for 0.25t & 10t)<br>1075±100 for 28t 1350±100 for 60t | | | | Ω |
| Output resistance | 1025±25 (1025±50 for 0.25t & 10t)<br>930±0.5 for 28t 1175±0.5 for 60t | | | | Ω |
| Insulation resistance | ≥5000 (20 for 28 & 60 ton) | | | | MΩ |
| Compensated temperature range | -10 to +40 | | | | °C |
| Operating temperature range | -30 to +70 | | | | °C |
| Storage temperature range | -50 to +80 | | | | °C |
| Element material (DIN) | Stainless steel 1.4542 | | | | |
| Sealing (DIN 40.050 / EN60.529) | IP66 and IP68 | | | | |
| Recommended torque on fixation bolts | 12 to 14 | | | | N*m |
| ATEX opt. for potent. explosive atmospheres | II2G EEx ib IIC T4/T6, II2D, IIID T70<br>II3G nA II T4/T6 | | | | |

**Notes**

(1) Capacities of 28 & 60 ton $E_{max}$/15,000

(2) 250kg and 10 ton capacities are approved to OIML C3 only
Maximum application range for 0.5t is 0.75*$E_{max}$

(3) The following accuracy classes are available (from 0.5t to 10t): C3MI6 and C3MI7.5
Minimum dead load output return is ½ $E_{max}$/6000 & ½ $E_{max}$ /7500 respectively

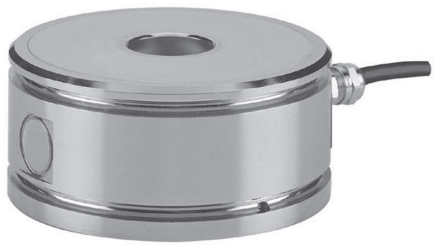
FSO - Full Scale Output

# Model 220

Tedea-Huntleigh

VISHAY PRECISION GROUP

# High Accuracy Compression Load Cell



OIML NTEP ATEX FM

## FEATURES

- Capacities 5 - 50 Ton
- Stainless steel construction
- OIML R60 and NTEP approved
- IP68 protection

## OPTIONAL FEATURES

- EEx ia IIC T6 hazardous area approval
- FM approval available

## DESCRIPTION

Model 220 is a low profile bending ring load cell designed for high capacity weighing applications, including weighbridges, tanks, silos and high capacity platform scales as well as force measurement.

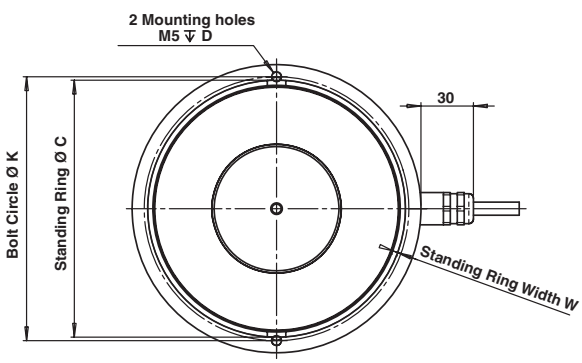
It's small physical size, combined with high accuracy and low cost, makes this load cell ideally suited for modern low profile designs in both approved applications and process weighing.

This high accuracy load cell has factory Mutual approval and is OIML R60 approved to 6000 divisions. For hazardous environments, this load cell has an EEx ia IIC T6 approved option. When combined with Tedea-Huntleigh mounting accessories, this load cell will provide a simple, accurate and reliable weighing system.

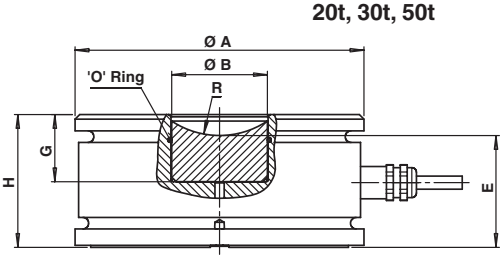
## APPLICATIONS

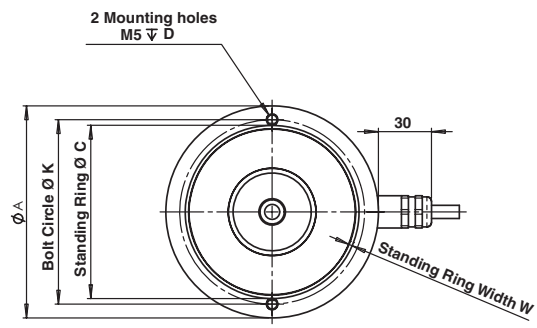
- Truck scales
- Hopper for process weighing
- Tank & silo weighing
- Harsh environment

## OUTLINE DIMENSIONS in mm

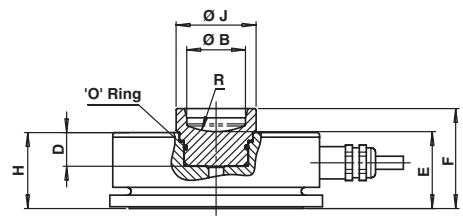



20t, 30t, 50t




5t, 10t




| | A | B | C | D | E | F | G | H | J | K | W | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5t | 80.0 | 25.4 | 71.0 | 7.0 | 33.4 | 43.4 | 20.0 | 30.0 | 34.6 | 70.0 | 1.0 | 31.0 |
| 10t | 92.0 | 25.4 | 75.2 | 6.0 | 33.4 | 43.4 | 14.6 | 33.0 | 34.6 | 80.0 | 1.5 | 31.0 |
| 20t &30t | 110.0 | 28.4 | 101.0 | 7.5 | 39.1 | | 26.3 | 50.1 | | 102.0 | 1.5 | 31.0 |
| 50t | 125.0 | 41.4 | 111.5 | 8.0 | 48.5 | | 29.2 | 57.7 | | 114.5 | 2.3 | 37.3 |



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

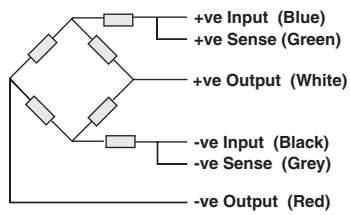

Document Number: 12063
Revision: 19-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 5000, 10000, 20000, 30000, 50000*** | | | | kg |
| NTEP/OIML Accuracy class | NTEP | C1 | C3* | C4** | |
| Maximum no. of intervals (n) | 10000 IIIL multiple | 1000 | 3000 | 4000 | |
| $Y = E_{max}/V_{min}$ | 11000 | 5000 | 14000 | 14000 | |
| Rated output-R.O. | 2.0 | | | | mV/V |
| Rated output tolerance | 0.1 | | | | ±% of rated output |
| Zero balance | 2 | | | | ±% of rated output |
| Zero Return, 30 min. | 0.0330 | 0.0500 | 0.0170 | 0.0125 | ±% of applied load |
| Total Error (per OIMP R60) | 0.0200 | 0.0500 | 0.0200 | 0.0150 | ±% of rated output |
| Temperature effect on zero | 0.0023 | 0.0028 | 0.0010 | 0.0010 | ±% of rated output/°C |
| Temperature effect on output | 0.001 | 0.0020 | 0.0010 | 0.0008 | ±% of applied load/°C |
| Temperature range, compensated | -10 to +40 | | | | °C |
| Temperature range, safe | -30 to +70 | | | | °C |
| Maximum safe central overload | 150 | | | | % of R.C. |
| Ultimate central overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, maximum | 20 | | | | Vdc or Vac rms |
| Input impedance | 1065±60 | | | | Ohms |
| Output impedance | 1025±20 | | | | Ohms |
| Insulation resistance | >2000 | | | | Mega-Ohms |
| Cable length | 5m (5T), 10m (10 & 20T), 20m (30 & 50T) | | | | m |
| Cable type | 6 wire, braided, Polyurethane, double floating screen | | | | Standard |
| Construction | Stainless steel | | | | |
| Environmental protection | IP68 | | | | |

* 20% utilization
** 40% utilization
*** Capacities 5-20 ton available in C6 45% utilization

**Wiring Schematic Diagram**



# PSD

Celtron

VISHAY PRECISION GROUP

# Precision Shear Web Disk

## FEATURES

- Capacities: 0.2, 0.5, 1, 1.5, 2.5, 5, 10, and 25 tons
- Compact size with low profile
- Low deflection for high output
- Electroless nickel plated alloy tool steel construction
- Off center load compensated
- OIML C3 available for whole series

## OPTIONAL FEATURES

- PSD-SJTT and PSD-SJTH with different loading holes

## DESCRIPTION

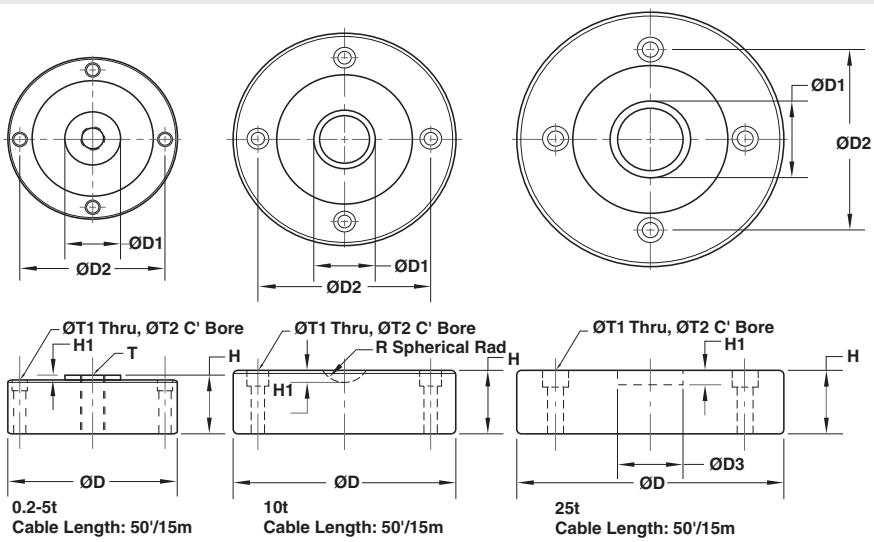
A low profile design that makes PSD the most suitable application concerning critical height for safety reasons. The shear web design provides excellent performance even when side forces are inevitable in normal operations. The typical example for side force resistance is the application in motor truck scales.

PSD is constructed of alloy steel and is fully potted with special chemical compounds to IP67 to protect the cell from water and moisture attack.

## APPLICATIONS

- Testing machines
- Platform scales
- Hopper and vessel weighing
- Truck scales

## OUTLINE DIMENSIONS




Wiring diagram

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Signal | Green |
| - Signal | White |

| CAPACITY | | D | D1 | D2 | D3 | H | H1 | R | T | T1 | T2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 200kg | mm | 75 | ---- | 65.5 | ---- | 26 | ---- | ---- | M12 x 6H | 6.5 | ---- |
| | (inch) | 2.95 | ---- | 2.58 | ---- | 1.02 | ---- | ---- | | 0.25 | ---- |
| 500kg/1t | mm | 90 | 2.2 | 78 | ---- | 43 | 3.05 | ---- | M12 x 1.75 | 6.6 | 10.5 x 6.0DP |
| | (inch) | 3.54 | 0.87 | 3.07 | ---- | 1.69 | 0.12 | ---- | | 0.26 | 0.41 x 0.24DP |
| 1.5/2.5t/5t | mm | 104.7 | 32.0 | 88.9 | ---- | 34.8 | 3.05 | ---- | M16 x 1.5 | 7.2 | 10.5 x 7.2DP |
| | (inch) | 4.12 | 1.26 | 3.50 | ---- | 1.37 | 0.12 | ---- | | 0.28 | 0.41 x 0.28DP |
| 10t | mm | 138.0 | 38.9 | 106.4 | ---- | 41.1 | 7.62 | 22.2 | ---- | 8.7 | 13.5 x 9.7DP |
| | (inch) | 5.43 | 1.53 | 4.19 | ---- | 1.62 | 0.30 | 0.87 | ---- | 0.34 | 10.5 x 7.2DP |
| 25t | mm | 165.0 | 50.4 | 116.8 | 42.0 | 41.1 | 8.0 | ---- | ---- | 10.3 | 15.9 x 10.2DP |
| | (inch) | 6.50 | 1.98 | 4.60 | 1.65 | 1.62 | 0.31 | ---- | ---- | 0.41 | 0.63 x 0.40DP |

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **NTEP/OIML Accuracy class** | **C3** | **Non-Approved** | |
| **Maximum no. of intervals (n)** | 3000 | 1000 | |
| **Y = $E_{max}/V_{min}$** | 8000 | 5000 | Maximum available |
| **Standard capacities ($E_{max}$)** | 200, 500, 1000, 1500, 2500, 5000, 10000, 25000 | | kg |
| **Rated output-R.O.** | 3.0** | | mV/V |
| **Rated output tolerance** | 0.25 | | ±% of rated output |
| **Zero balance** | 1 | | ±% of rated output |
| **Non linearity** | 0.025 | | ±% of rated output |
| **Hysteresis** | 0.025 | | ±% of rated output |
| **Non-repeatability** | 0.020 | | ±% of rated output |
| **Creep error (20 minutes)** | 0.030 | | ±% of rated output |
| **Zero return (20 minutes)** | 0.030 | | ±% of rated output |
| **Temperature effect on min. dead load output** | 0.0017 | 0.0026 | ±% of rated output/°C |
| **Temperature effect on sensitivity** | 0.0010 | 0.0015 | ±% of applied load/°C |
| **Compensated temperature range** | -10 to +40 | | °C |
| **Operating temperature range** | -20 to +60 | | °C |
| **Safe overload** | 150 | | % of R.C. |
| **Ultimate overload** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 385±5 | | Ω |
| **Output impedance** | 350±3 | | Ω |
| **Insulation resistance** | >5000 | | MΩ |
| **Construction** | Nickel plated alloy steel* | | |
| **Environmental protection** | IP67 | | |

* 200kg is made of aluminum.
** 200kg is 2mV/V.

All specifications listed subject to change without notice.

# Model LCD

Celtron

VISHAY PRECISION GROUP

## Low Profile Compression Disk

FM

### FEATURES

- Capacities: 5K, 10K, 25K, 50K, 100Klb
- Electroless nickel plated alloy tool steel
- Compact size with low profile
- Stainless Steel available
- [2] Surge protection optional for 5K-100Klb

### OPTIONAL FEATURES

- FM approval available
- LCD-TT/M/MH with different loading holes

### DESCRIPTION

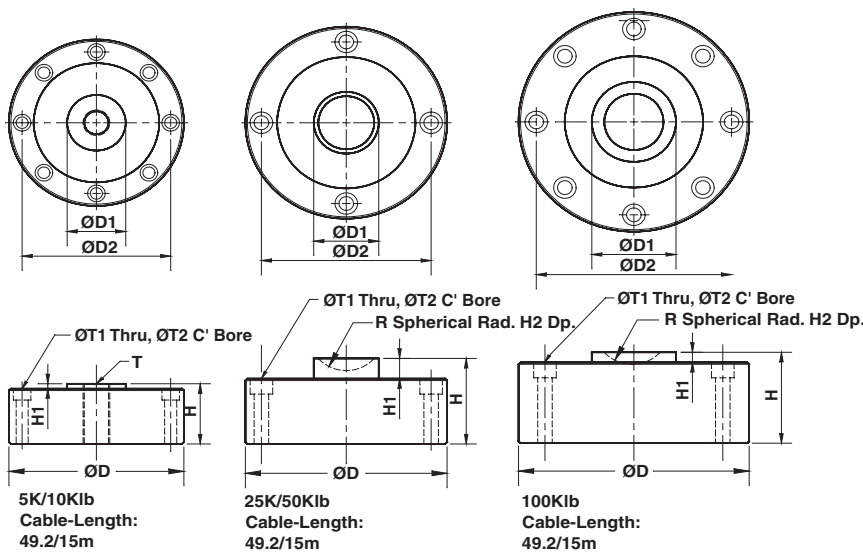
The low profile compression disk is designed as the ultimate solution for some difficult applications with critical height for safety reasons. The shear web design provides excellent performance even when the side force inevitably exists in normal operations. The typical example for side force resistance is the applications in motor truck scales.

LCD is constructed of alloy steel and fully potted with special chemical compounds to IP67 providing excellent protection against moisture and humidity.

### APPLICATIONS

- Truck/Rail scales
- Silo/Hopper/Tank weighing
- Universal Material Tester
- Tensile/Pulling Force Measurement

### OUTLINE DIMENSIONS




Wiring diagram

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Signal | Green |
| - Signal | White |

| CAPACITY | | D | D1 | D2 | H | H1 | H2 | R | T | T1 | T2 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5K/10Klb | mm | 104.7 | 32.0 | 88.9 | 34.8 | 3.05 | ---- | ---- | 5/8-18UNF | 7.2 | 10.5 x 7.2DP |
| | (inch) | 4.12 | 1.26 | 3.50 | 1.37 | 0.12 | ---- | ---- | **----** | 0.28 | 0.41 x 0.28DP |
| 25K/50Klb | mm | 120.7 | 38.9 | 101.6 | 53.8 | 12.7 | 7.6 | 22.2 | ---- | 8.7 | 13.5 x 9.7DP |
| | (inch) | 4.75 | 1.53 | 4.00 | 2.12 | 0.50 | 0.30 | 0.87 | ---- | 0.34 | 0.53 x 0.38DP |
| 100Klb | mm | 138 | 50.4 | 116.8 | 57.2 | 6.4 | 7.6 | 22.2 | ---- | 10.13 | 16.5 x 11.0DP |
| | (inch) | 5.43 | 1.98 | 4.60 | 2.25 | 0.25 | 0.30 | 0.87 | ---- | 0.41 | 0.65 x 0.43DP |



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11701
Revision: 04-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **NTEP/OIML Accuracy class** | **Non-Approved** | |
| **Maximum no. of intervals (n)** | 2000 | |
| **Y = $E_{max}/V_{min}$** | 5000 | Maximum available |
| **Standard capacities ($E_{max}$)** | 5K, 10K, 25K, 50K, 100K | lbs |
| **Rated output-R.O.** | 4.0 | mV/V |
| **Rated output tolerance** | 0.25 | ±% of rated output |
| **Zero balance** | 1 | ±% of rated output |
| **Non linearity** | 0.050 | ±% of rated output |
| **Hysteresis** | 0.050 | ±% of rated output |
| **Non-repeatability** | 0.020 | ±% of rated output |
| **Creep error (20 minutes)** | 0.030 | ±% of rated output |
| **Zero return (20 minutes)** | 0.030 | ±% of rated output |
| **Temperature effect on min. dead load output** | 0.0026 | ±% of rated output/°C |
| **Temperature effect on sensitivity** | 0.0015 | ±% of applied load/°C |
| **Compensated temperature range** | -10 to +40 | °C |
| **Operating temperature range** | -20 to +60 | °C |
| **Safe overload** | 150 | % of R.C. |
| **Ultimate overload** | 300 | % of R.C. |
| **Excitation, recommended** | 10 | Vdc or Vac rms |
| **Excitation, maximum** | 15 | Vdc or Vac rms |
| **Input impedance** | 385±5* | Ohms |
| **Output impedance** | 350±3** | Ohms |
| **Insulation resistance** | >5000 | Mega-Ohms |
| **Construction** | Nickel plated alloy steel | |
| **Environmental protection** | IP67 | |

* 770±10 Ohms for 100Klbs.
** 700±5 Ohms for 100Klbs.

All specifications listed subject to change without notice.

FM Approval
Intrinsically Safe: Class I, II, III; Div. 1 Groups A-G
Non-Incendive: Class I; Div. 2 Groups A-D

# Model 250

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Load Cell for Elevators


## FEATURES

- Used in elevators for safety, traffic control and energy control
- Low profile
- Amplified output (0.4 - 12.4Vdc)
- Located under the inner cage

## DESCRIPTION

The Model 250 is a low-profile, pancake-type load cell, especially designed for use in elevators. Model 250 is equipped with a built-in amplifier and is commonly placed between the inner and outer cages of the elevators cabin. The number of load cells required depends upon the cabin size and ranges from two to eight load cells (some may be dummies).

Model 250 is used for 3 reasons:

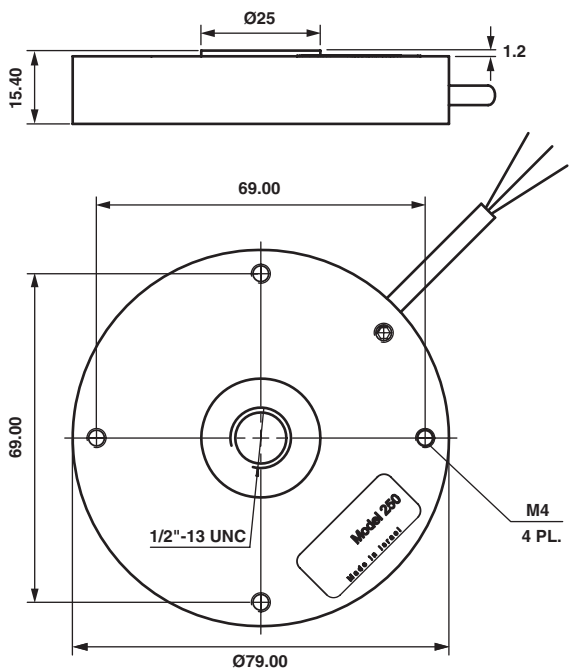
1. Safety - The load cell is an over load sensor, that indicates if the weight in the elevator passes a certain value that was allowed by the elevator designers. It also can be used prevent a child using the elevator, if the elevator control system does not allow it to drive if a demand from a low weight user (a child) is made.

2. Traffic Control - The load cell is a sensor that transmits load information to the elevator control system, used in buildings with more than one elevator. This information can be used to decide which elevator to send to a user, taking into account the load in the elevator, in order to shorten waiting time or prevent full/semi full elevators from stopping.

3. Energy Saving - The load cell is a sensor that transmits load information to the elevator control system, used in buildings with more than one elevator. This information is used in energy saving algorithms of the control system.

A common elevator is constructed from an external cage with an internal cabin. The cabin is positioned on several rubber dampers, according to its size. Load cells (or dummies) are located between these dampers and the cabin (under the cabin). The number of load cells depends on the design.

## OUTLINE DIMENSIONS in mm





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12071
Revision: 23-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Rated capacity-R.C.** | 500 | kg |
| **Rated output-R.O.** | 24 | mV/kg |
| **Rated output tolerance** | 0.24 | ±mV/kg |
| **Zero balance** | 0 - 0.5 | V |
| **Total error** | 5 | ±% of R.O. |
| **Temperature range, safe** | -30 to +70 | °C |
| **Maximum safe static overload** | 200* | % of R.C. |
| **Ultimate static overload** | 300 | % of R.C. |
| **Excitation, recommended** | 24 | Vdc regulated |
| **Excitation, minimum** | 8 | Vdc |
| **Excitation, maximum** | 28 | Vdc |
| **Current consumption** | 30 | mA |
| **Insulation resistance** | >2000 | MΩ |
| **Construction** | Alloy steel yellow zinc plated | |
| **Environmental protection** | IP65 | |
| **Color code** | Red: +Exc, Black: Com, White: Out | |
| **Cable length** | 5 | m |

* Amplifier is saturated at 500kg

# Low Profile Universal Load Cell

## FEATURES

- Capacity: 0.5 - 100t
- Alloy steel construction
- Universal load cell
- Integrated overload protection (in compression)
- Tension and compression loading

## OPTIONAL FEATURES

- Load cell without base mounting plate (for compression applications)
- Metric and imperial threads

## DESCRIPTION

Model 98001 is a universal alloy steel shear beam load cell ideal for testing machine applications employing both tension and compression loading.This shear beam design load cell provides excellent immunity to impact and side forces. This load cell includes integrated overload protection for compression loading applications.

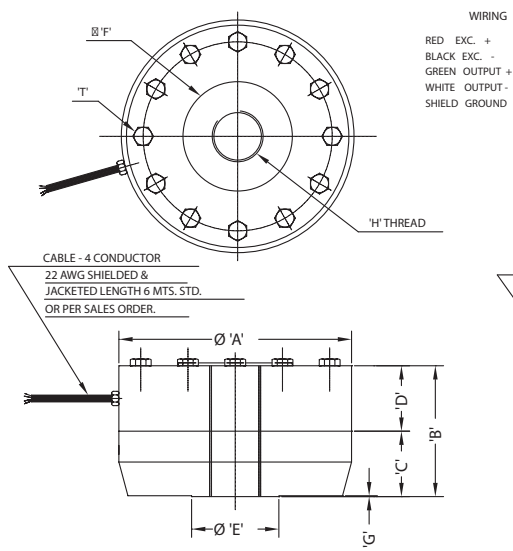
## APPLICATIONS

- Universal testing machines

## OUTLINE DIMENSIONS in millimeters

| CAPACITY | Ø A | B | C | D | Ø E | Ø F | G | H THREAD | T |
|---|---|---|---|---|---|---|---|---|---|
| 500kg, 1.0, 2.0, 3.0, 5.0 tons | 105.0 | 66.40 | 35.00 | 31.4 | 34.0 | 34.0 | 7.80 | M16 x 1.5 | M8, 12 PLCS ON PCD 90.0 |
| 10, 15, 20, 25, 30 tons | 154.0 | 89.00 | 44.50 | 44.5 | 57.0 | 63.0 | 0.76 | M30 x 2.0 | M10, 12 PLCS ON PCD 130.0 |
| 40, 50, 60 tons | 203.0 | 115.06 | 51.56 | 63.5 | 76.0 | 95.5 | 0.76 | 1 3/4"-12 UNF-2B | M12, 16 PLCS ON PCD 165.0 |
| 100 tons | 279.0 | 166.10 | 77.20 | 88.9 | 114.0 | 122.0 | 0.80 | M72 x 2.0 | M16, 16 PLCS ON PCD 221.4 |

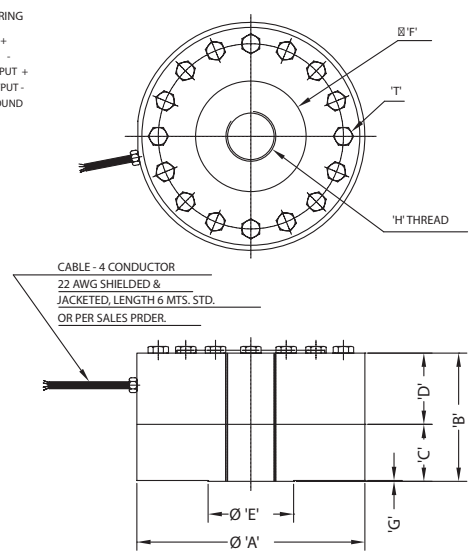
500 Kg-30.0 tons




WIRING

RED EXC. +
BLACK EXC. -
GREEN OUTPUT +
WHITE OUTPUT -
SHIELD GROUND

40.0-100.0 tons



## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Rated output-R.O.** | 2.0 | mV/V |
| **Rated output tolerance** | 10 | ± %FSO |
| **Zero balance** | 1 | ± %FSO |
| **Combined error** | < 0.10 | ± %FSO |
| **Non-linearity** | < 0.050 | ± %FSO |
| **Hysteresis** | < 0.050 | ± %FSO |
| **Non-repeatability** | < 0.020 | ± %FSO |
| **Creep error (30 minutes)** | < 0.002 | ± %FSO |
| **Temperature effect on zero** | < 0.001 | ± %/°C |
| **Temperature effect on output** | 0.001 | ± %/°C |
| **Operating temperature range** | -20 TO +70 | °C |
| **Maximum safe central overload** | 150 | %FSO |
| **Ultimate central overload** | 300 | %FSO |
| **Excitation, recommended** | 10 | Vdc |
| **Excitation, maximum** | 15 | Vdc |
| **Input impedance** | 699-750 | Ω |
| **Output impedance** | 699-750 | Ω |
| **Insulation resistance at 50 VDC** | >1000 | MΩ |
| **Material** | Alloy steel with electroless nickel plated | |
| **Environmental protection** | IP67 | |

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Canister Load Cells

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Compression Load Cell


## FEATURES

- Capacities: 30, 40, and 50t
- Self-aligning, stainless steel single column
- Hermetically sealed, IP66 and IP68
- Certified to OIML R60, 6000d and NTEP class IIIL, 10000 divisions
- Built-in surge protection tubes (GDTs)
- Current calibration output (SC) ensures easy and accurate parallel connection of multiple load cells

## OPTIONAL FEATURE

- Digital version available (model DSC)

## DESCRIPTION

The ASC is a single column, stainless steel compression load cell.

This product is suitable for use in road and rail weighbridges and process weighing applications.

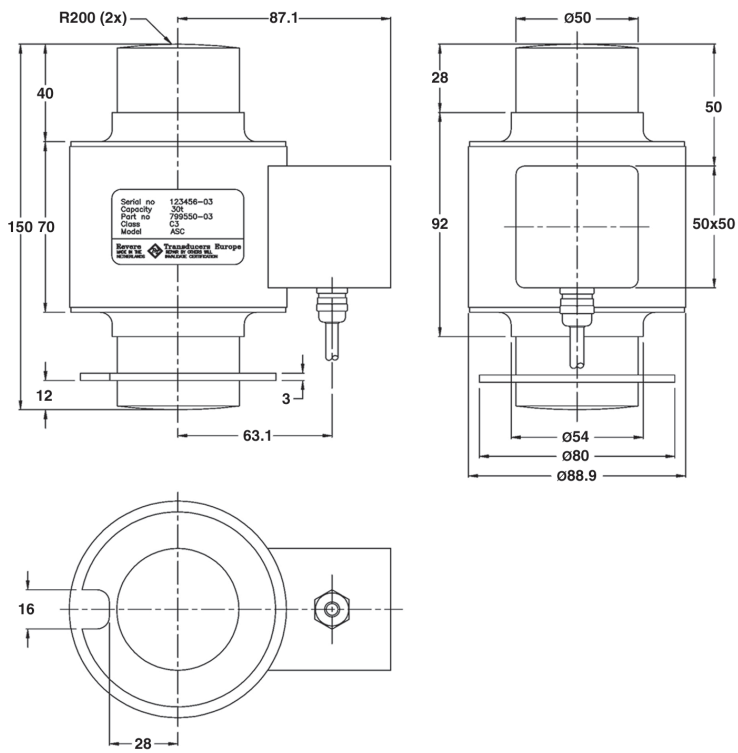
The welded construction and built-in surge protection ensure that this product can be used successfully in harsh environments.

This load cell meets the stringent Weights and Measures requirements both in Europe (OIML) and in America (NTEP).

## APPLICATIONS

- Weighbridges
- Silo hopper weighing

## OUTLINE DIMENSIONS




***Cable specifications:***

Cable length: 15 m

| | |
|---|---|
| Excitation + | Green |
| Excitation - | Black |
| Output + | White |
| Output - | Red |
| Shield | Transparent |

Shield is not connected to the load cell body.

## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| Standard capacities ($E_{max}$) | 30, 40, 50 | | | | t |
| Accuracy class according to OIML R-60 | NTEP IIIL | Non-Approved | C3 | C6 | |
| Max. no. of verfication intervals | 10000 | | 3000 | 6000 | |
| Min. verification interval ($V_{min}=E_{max}/Y$) | | | $E_{max}$/6,000 | $E_{max}$/12,000 | |
| Min. verification interval, type MR | | | $E_{max}$/15,000 | $E_{max}$/30,000 | |
| Rated output (=S) | 2 | | | | mV/V |
| Rated output tolerance | 0.02 | | | | ±mV/V |
| Zero balance | 1.0 | | | | ±% FSO |
| Combined error | 0.0200 | 0.05000 | 0.0230 | 0.0120 | ±% FSO |
| Non-repeatability | 0.0100 | 0.0200 | 0.0100 | 0.018 | ±% FSO |
| Minimum dead load output return | 0.0250 | 0.0500 | 0.0167 | 0.008 | ±% FSO |
| Creep error (30 minutes) | | 0.0600 | 0.0245 | 0.0120 | ±% FSO |
| Creep error (20 - 30 minutes) | 0.030 | 0.0200 | 0.0053 | 0.0026 | ±% FSO |
| Temp. effect on min. dead load output | (0.001) | 0.0250 | 0.0117 | 0.0058 | ±% FSO/5°C (/°F) |
| Temp. effect on min. dead load output, type MR | | | 0.0047 | 0.0023 | ±% FSO/5°C |
| Temperature effect on sensitivity | (0.0008) | 0.0250 | 0.0088 | 0.0045 | ±% FSO/5°C (/°F) |
| Minimum dead load | 0 | | | | $\%E_{max}$ |
| Maximum safe over load | 150 | | | | $\%E_{max}$ |
| Ultimate over load | 300 | | | | $\%E_{max}$ |
| Deflection at $E_{max}$ | 0.5 max. | | | | mm |
| Excitation voltage | 5 to 20 | | | | V |
| Maximum excitation voltage | 25 | | | | V |
| Input resistance | 700±35 | | | | Ω |
| Output resistance | 700±35 | | | | Ω |
| Insulation resistance | ≥5000 | | | | MΩ |
| Compensated temperature range | -10 to +40 | | | | °C |
| Operating temperature range | -40 to +80 | | | | °C |
| Storage temperature range | -40 to +90 | | | | °C |
| Element material | Stainless steel 1.4542 | | | | |
| Sealing (DIN 40.050 / EN60.529) | IP66 & IP68 | | | | |
| SC-Version (current calibration) | Standard | | | | |

FSO-Full Scale Output

SC-version: The rated output and the output resistance are balanced in such a way, that the output current is calibrated to within 0.05% of a reference value. This allows easy parallel connection of the load cells.

# Stainless Steel, Single Column Compression Load Cell

Approved

## FEATURES

- Rated capacities of 50,000 to 100,000 pounds; 25 to 50 metric tons
- Stainless steel, welded seal construction
- 30 feet standard cable length
- Trade certified for NTEP Class IIIL: 10000 divisions and OIML R60 3000 divisions
- Welded *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!)

## OPTIONAL FEATURE

- Fully hermetically sealed available to IP66/68 standards

## DESCRIPTION

The 65114 is a high capacity, stainless steel single column compression load cell.

This product is specifically designed for use in rugged outdoor environments. Stainless steel construction with IP67 welded seal comes standard with optional true hermetic IP68 sealing available upon request. This load cell is used primarily in truck and train scales, but can just as easily be used to weigh tanks and silos.

This load cell is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments. This load cell is certified for Legal For Trade applications by both American NTEP and International OIML standards.

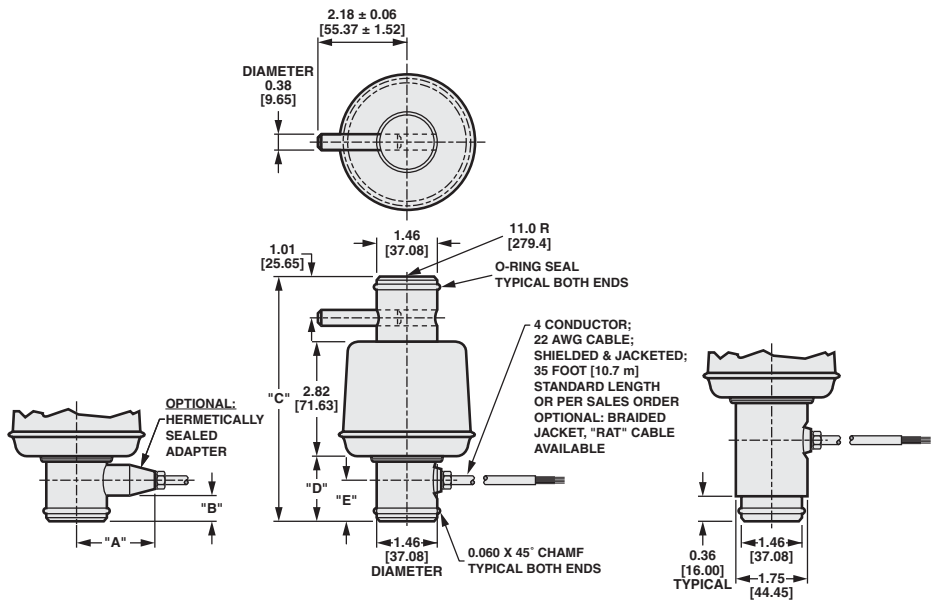
## APPLICATIONS

- Truck scales
- Tank, bin and hopper weighing

## OUTLINE DIMENSIONS in inches [mm]

**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |




| CAPACITY | A | B | C | D | E |
|---|---|---|---|---|---|
| 50K | 1.91 | 0.62 | 6.00 | 1.59 | 1.00 |
| 100K | 2.08 | 2.01 | 8.86 | 3.04 | 2.01 |
| 25t | [48.51] | [15.75] | [152.40 | [40.39] | [25.40] |
| 35t - 50t | [52.83] | [51.05] | [225.04] | [77.22] | [51.05] |

Capacities are in pounds [kg/t].


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11595
Revision: 12-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 50K, 100K<br>25, 35, 50 | | | lbs<br>tons |
| NTEP/OIML Accuracy class | NTEP IIIL | Standard | OIML R60 | |
| Maximum no. of intervals (n) | 10000 multiple | | 3000 | |
| $Y = E_{max}/V_{min}$ | NTEP cert. 97-081 | | 8333 | Maximum available |
| Rated output-R.O. | 2.0 | | | mV/V |
| Rated output tolerance | 0.25 | | | ±% mV/V |
| Zero balance | 1.0 | | | ±% FSO |
| Combined error | 0.02 | 0.03 | 0.02 | ±% FSO |
| Non-repeatability | 0.010 | 0.015 | 0.010 | ±% FSO |
| Creep error (30 minutes) | 0.03 | 0.05 | 0.017 | ±% FSO |
| Temperature effect on zero | 0.0010 | 0.0015 | 0.0010 | ±% FSO/°F |
| Temperature effect on output | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| Compensated temperature range | 14 to 104 (-10 to 40) | | | °F (°C) |
| Operating temperature range | 0 to 150 (-18 to 65) | | | °F (°C) |
| Storage temperature range | -60 to 185 (-50 to 85) | | | °F (°C) |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 5 - 20 | | | Vdc or Vac rms |
| Excitation, maximum | 25 | | | Vdc or Vac rms |
| Input impedance | 1000 nominal | | | Ω |
| Output impedance | 990 - 1010 | | | Ω |
| Insulation resistance at 50VDC | >1000 | | | MΩ |
| Material | Stainless steel | | | |
| Environmental protection | IP67* | | | |

* Hermetically sealed to IP68 upon request

FSO -Full Scale Output

All specifications subject to change without notice.

VISHAY PRECISION GROUP

# Rocker Column Load Cell

## FEATURES

- Capacities: 30, 35 and 40t
- Self restoring rocker column
- High performance compact design
- Environmentally sealed, IP66/IP68 - 5bar
- Certificate - OIML R60 (NTEP Class IIIL: 10,000d Pending)
- Current calibration output ensures easy and accurate parallel connection of multiple load cells
- Anti-rotation pin

## DESCRIPTION

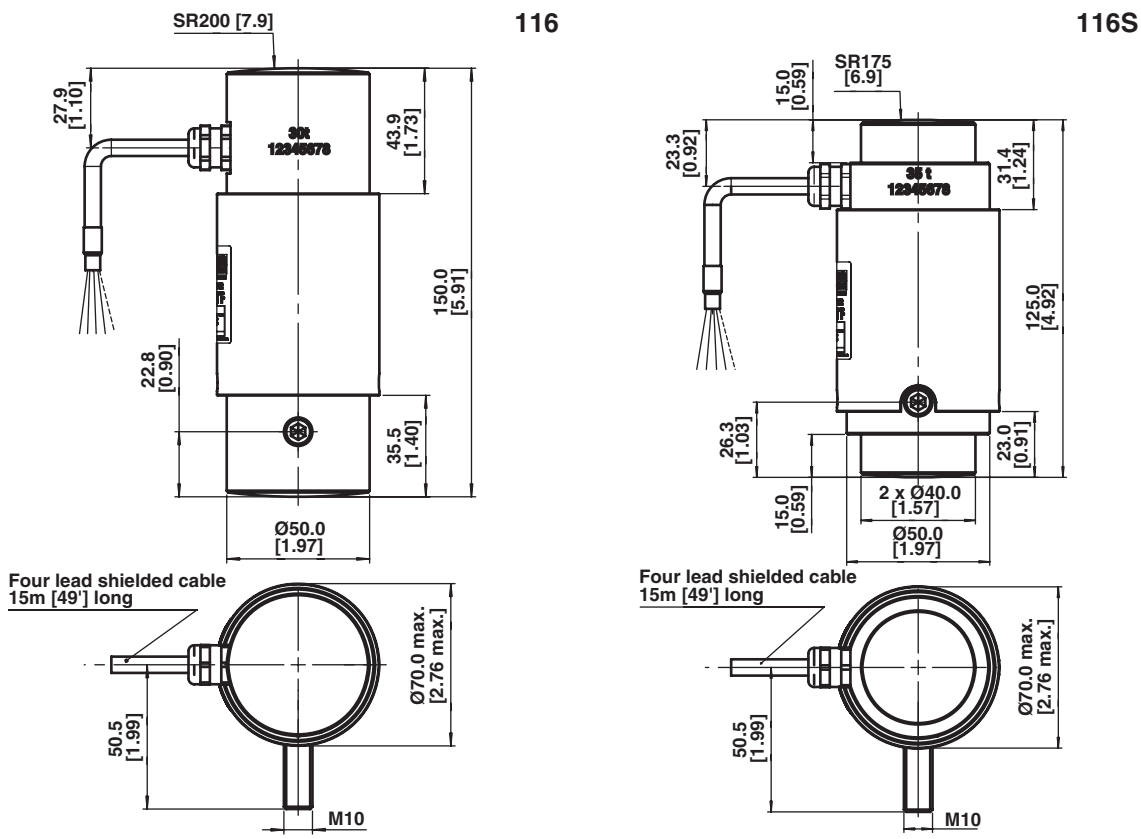
The 116 is a high capacity single column load cell, designed around a nickel plated, alloy steel element. It is environmentally sealed and the use of redundant o-rings and high grade potting material provide excellent ingress protection.

The 116 is suitable for all heavy weighing applications and provides the user an excellent overall value.

## APPLICATIONS

- Weighbridges
- Silo and hopper weighing
- Process weighing

## OUTLINE DIMENSIONS in millimeters [inches]



## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| Accuracy class designation | Non Approved | NTEP IIIL | OIML C3 | OIML C3MR | |
| VTH Accuracy class | E | I3 | G5 | G3 | |
| Minimum utilization | NA | 33 | 50 | 30 | % of R.C. |
| Maximum no. of intervals (n) | NA | 10000 Mult | 3000 | | |
| Rated capacity-R.C. ($E_{max}$) Standard: | 30, 40 | | | | t |
| Short: | 35 | | | | |
| Rated output-R.O. | 2.0 | | | | mV/V |
| Rated output tolerance | 0.02 | | | | ±mV/V |
| Zero balance | 0.02 | | | | ±mV/V |
| Creep, 30 min. | 0.074 | 0.050 | 0.025 | | ±% of load |
| Zero return, 30 min. | 0.050 | 0.015 | 0.017 | | ±% of load |
| Total error | 0.060 | 0.03 | 0.020 | | ±% of R.O. |
| Temperature effect on output | 0.0023 | 0.0012 | 0.0012 | | ±% of load/°C |
| Temperature effect on zero | 0.0046 | 0.0014 | 0.0023 | 0.0014 | ±% of R.O./°C |
| $Y = E_{max}/V_{min}$ | NA | 30000 | 6000 | 10000 | |
| Temperature range, compensated | -10 to +40 | | | | °C |
| Temperature range, safe | -30 to +70 | | | | °C |
| Temperature range, storage | -40 to +90 | | | | °C |
| Maximum safe static overload | 150 | | | | % of R.C. |
| Ultimate static overload | 300 | | | | % of R.C. |
| Excitation, recommended | 10 | | | | Vdc or Vac rms |
| Excitation, range | 5 to 20 | | | | Vdc or Vac rms |
| Input impedance | 1160±60 | | | | Ω |
| Output impedance | 1000±10 | | | | Ω |
| Insulation resistance | >2000 | | | | MΩ |
| Cable length | 15 | | | | m |
| Cable type | 4 conductors, AWG 24, PU jacket | | | | |
| Color code | +Exc: Green, +Sig: White<br>-Exc: Black, -Sig: Red<br>Shield: Bare, twisted braid | | | | |
| Construction | Coated alloy steel, coated aluminum housing, environmental potting, quadruple o-ring seal | | | | |
| Environmental protection | IP66/IP68 - 5bar | | | | |

# Model 120

Tedea-Huntleigh

VISHAY PRECISION GROUP

# High Capacity Compression Load Cell

## FEATURES

- Capacities 3 - 50 ton
- Stainless steel housing
- Surge arrestors fitted
- Simple to install
- 0.02% total error
- 6 wire sense circuit
- Output tolerance 0.1%

## OPTIONAL FEATURE

- EEx ia IIC T4 - hazardous area approval

## DESCRIPTION

Model 120 is a high capacity truck scale and silo load cell which is supplied complete with its own unique rocker mounting components.

Suitable for all heavy duty weighing applications the 120 gives the user high accuracy and low installation cost.

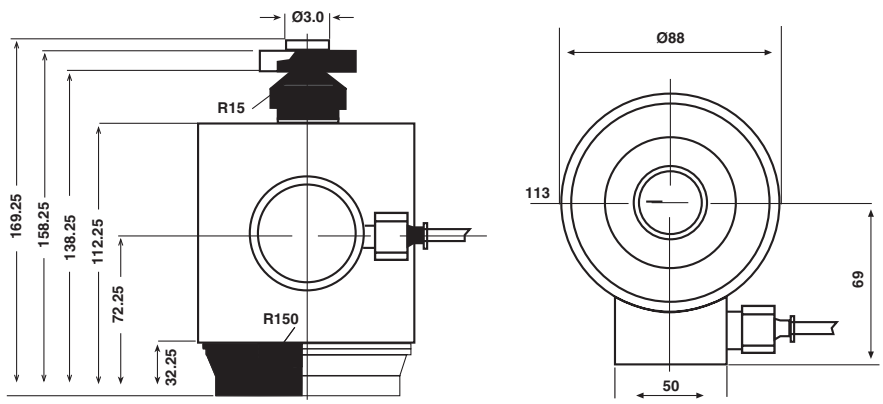
The 120 has a stainless steel housing to protect against corrosion. The alloy steel compression element is nickel plated, and the rocker mounting accessories are zinc plated alloy steel.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of change in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

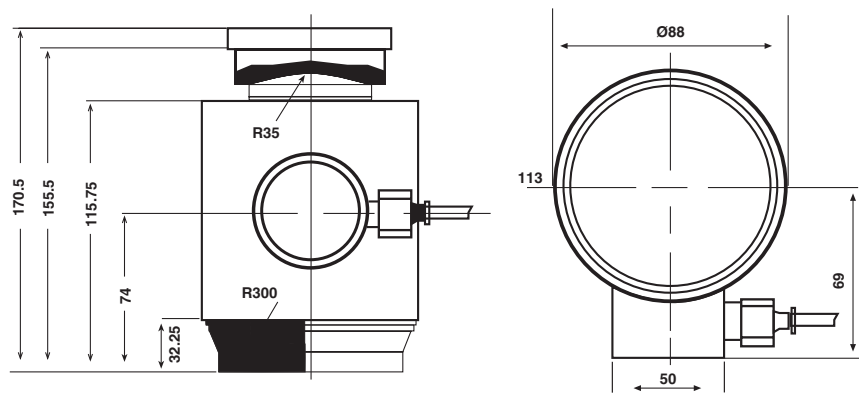
## APPLICATIONS

- Truck weighbridges
- Silo and hopper weighing
- Train “rail” scales
- Process weighing

## OUTLINE DIMENSIONS in mm




**3 - 30 ton**




**50 ton**

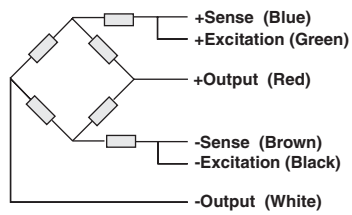

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12013
Revision: 05-Mar-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 3, 5, 10, 20, 30, 50 | | ton |
| **NTEP/OIML Accuracy class** | **Non-Approved*** | | |
| **Maximum no. of intervals (n)** | 1000 | 3000 | |
| **$Y = E_{max}/V_{min}$** | 2000 | 6000 | |
| **Rated output-R.O.** | 1.5 | | mV/V |
| **Rated output tolerance** | 0.0015 | | ±mV/V |
| **Zero balance** | 0.15 | | ±mV/V |
| **Zero Return, 30 min.** | 0.0500 | 0.0200 | ±% of applied load |
| **Total Error (per OIML R60)** | 0.0500 | 0.0200 | ±% of rated output |
| **Temperature effect on zero** | 0.0100 | 0.0040 | ±% of rated output/°C |
| **Temperature range, compensated** | -10 to +40 | | °C |
| **Temperature range, safe** | -30 to +70 | | °C |
| **Maximum safe central overload** | 150 | | % of R.C. |
| **Ultimate central overload** | 200 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 24 | | Vdc or Vac rms |
| **Input impedance** | 670±15 | | Ω |
| **Output impedance** | 605±5 | | Ω |
| **Insulation resistance** | >2000 | | MΩ |
| **Cable length** | 15 | | m |
| **Cable type** | 6 wire, braided, Polyurethane, dual floating screen | | Standard |
| **Construction** | Stainless steel housing, plated alloy steel element | | |
| **Environmental protection** | IP68 | | |

* Typical 80% utilization

**Wiring Schematic Diagram**



# Model 122

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Heavy Duty Compression Load Cell

ATEX

### DESCRIPTION

Model 122 is a heavy duty general purpose compression load cell particularly well suited for hopper and tank weighing and many other large scale industrial applications, including weighbridges for truck weighing.

The simple, compact column design and rugged hermetically sealed construction of the model 122 load cell assures its long term life in all types of field installations.

The model 122 load cell is often used in multi-cell installations, therefore its standard output tolerance is within 0.1%.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

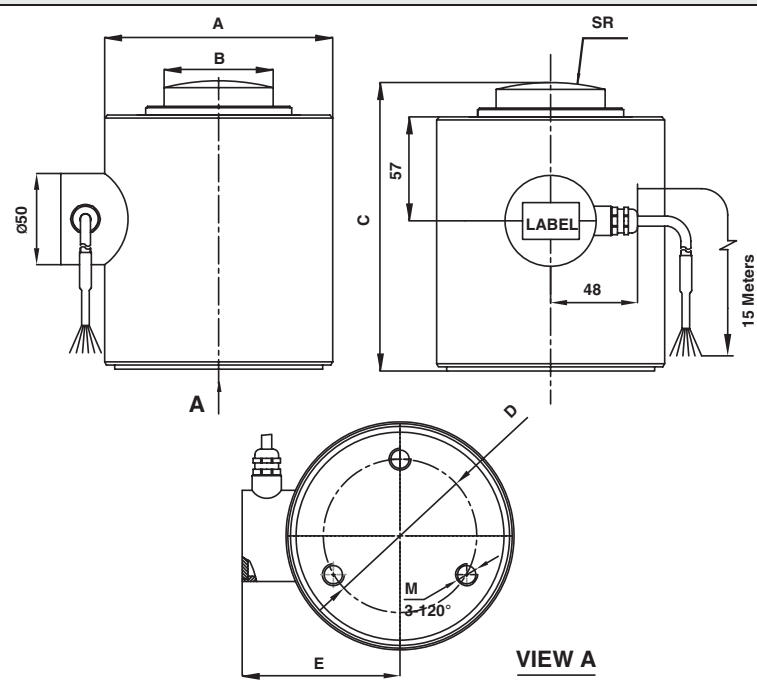
### FEATURES

- Capacities 50 - 150 ton
- Ideal for multi-cell applications
- Compact, economical, column design
- Hermetically sealed to IP68
- 6 Wire (sense) circuit
- Stainless steel housing as standard

### APPLICATIONS

- Hopper and tank weighing
- Truck weighbridges

### OUTLINE DIMENSIONS in millimeters




| CAPACITY | A | B | C | D | E | M | SR |
|---|---|---|---|---|---|---|---|
| 50T | Ø88 | Ø45 | 122 | Ø50 | 69 | M10 | SR35 |
| 100T, 150T | Ø125 | Ø59.8 | 158 | Ø84 | 86.5 | M12 | SR120 |

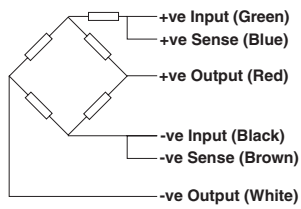
| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 50 | 100 | 150 | ton |
| NTEP/OIML Accuracy class | Non-Approved (1) | | | |
| Maximum no. of intervals (n) | 2000 | | | |
| $Y = E_{max}/V_{min}$ | 2000 | | | |
| Rated output-R.O. | 1.5 | | 2 | mV/V |
| Rated output tolerance | 0.0015 | | | ±mV/V |
| Zero balance | 0.015 | | 0.02 | ±mV/V |
| Zero Return, 30 min. | 0.030 | | | ±% of applied load |
| Total Error (per OIML R60) | 0.030 | | | ±% of rated output |
| Temperature effect on zero | 0.03 | | | ±% of rated output/°C |
| Temperature effect on output, unbalanced | 0.0080 (2) | | | ±% of load/°C |
| Temperature range, compensated | 5 to +45 | | | °C |
| Temperature range, safe | -20 to +60 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 200 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 670±15 | 1270±20 | 1350±30 | Ohm |
| Output impedance | 600±5 | 1205±5 | 1205±5 | Ohm |
| Insulation resistance | >2000 | | | Mega-Ohm |
| Cable length | 15 | | | m |
| Cable type | 6 wire, braided, PVC, single floating screen | | | Standard |
| Construction | Stainless steel housing, plated alloy steel sensor | | | |
| Environmental protection | IP68 | | | |

**Notes**

(1) Typical 80% utilization

(2) Balanced span compensation is available upon request

**WIRING SCHEMATIC DIAGRAM**
**(unbalanced bridge configuration)**



# Model CSP-M

Revere

VISHAY PRECISION GROUP

## Compression Load Cell

### FEATURES

- Capacities: 10 - 100t
- Low profile, multi column stainless steel construction
- Hermetically sealed, IP66 and IP68
- Certified to OIML R-60, 4000d and NTEP class IIIL 10000 divisions
- Built-in surge protection tubes (GDTs)
- Current calibration output (SC version) ensures easy and accurate parallel connection of multiple load cells

### OPTIONAL FEATURE

- ATEX and FM certified versions are available for use in potentially explosive atmospheres
- Digital version available (model SCC)
- Multi-interval and multiple range versions available
- Imperial capacities (25K, 50K, 100K, 200Klbs) not OIML approved

### APPLICATIONS

- Truck and rail weighbridges
- Silo and hopper weighing
- Process weighing

### DESCRIPTION

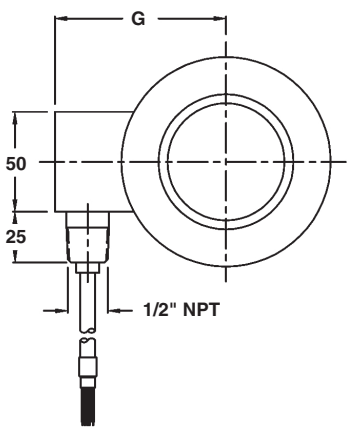
The CSP-M is a multi-column, low profile, stainless steel compression load cell. The unique four column design offers excellent insensitivity to eccentric loads whilst maintaining accuracy.

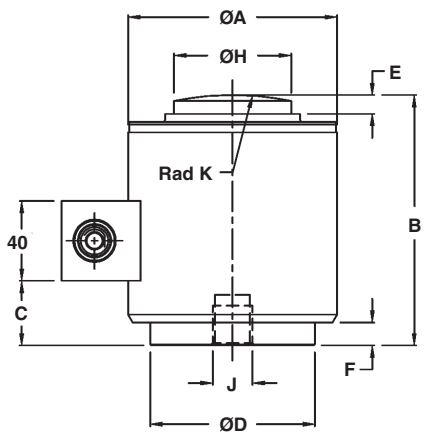
This product is, without doubt, one of the most successful compression cells ever produced and is suitable for use in road and rail weighbridges and process weighing applications..

The fully leak-tested welded construction, advanced cable entry and built-in surge protection tubes ensure that this product can be used successfully in harsh environments.

This product meets the stringent Weights and Measures requirements throughout Europe.

### OUTLINE DIMENSIONS in millimeters




| Capacity | 10, 25 | 40, 60 | 100 |
|---|---|---|---|
| A | 72.0 | 105.0 | 150.0 |
| B | 83.0 | 127.0 | 185.0 |
| C | 13.0 | 35.0 | 70.0 |
| D | 58.0 | 82.5 | 123.8 |
| E | 6.5 | 8.0 | 23.6 |
| F | 1.8 | 11.0 | 21.8 |
| G | 63.0 | 83.0 | 107.0 |
| H | 32.0 | 59.0 | 80.0 |
| J | M12x1.75 (8 Deep) | M20x2.5 (15 Deep) | |
| K Rad | 150.0 | 150.0 | 430.0 |

**Cable specifications:**

**Cable length: 20m (10m for 10t version)**

| | |
|---|---|
| **Excitation+** | **Green** |
| **Excitation-** | **Black** |
| **Output+** | **White** |
| **Output-** | **Red** |
| **Shield** | **Transparent** |

**Cable screen is not connected to load cell body. Performance may be affected if load cell cables are shortened.**



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11876
Revision: 11-Feb-10

| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **VALUE** | | | | **UNIT** |
| Standard capacities ($E_{max}$) | 10, 25, 40, 60, 100 (1) | | | | ton |
| Accuracy class according to OIML R-60 /NTEP | NTEP IIIL | Non-Approved | C3 | C4 | |
| Max. no. of verfication intervals | 10000 | | 3000 | 4000 | |
| Min. verification interval ($V_{min}=E_{max}/Y$) | | | $E_{max}$/12,500 | $E_{max}$/12,500 | |
| Min. verification interval, type MR | | | $E_{max}$/17,500 | $E_{max}$/17,500 | |
| Rated output (=S) | 2 | | | | mV/V |
| Rated output tolerance | 0.02 | | | | ±mV/V |
| Zero balance | 1.0 | | | | ±% FSO |
| Combined error | 0.0200 | 0.050 | 0.0200 | 0.0170 | ±% FSO |
| Non-repeatability | 0.0100 | 0.020 | 0.0100 | 0.0090 | ±% FSO |
| Minimum dead load output return | 0.0250 | 0.050 | 0.0167 | 0.0125 | ±% applied load |
| Creep error (30 minutes) | | 0.060 | 0.0245 | 0.0184 | ±% applied load |
| Creep error (20 - 30 minutes) | 0.0300 | 0.0200 | 0.0053 | 0.0039 | ±% applied load |
| Temp. effect on min. dead load output | (0.0008) | 0.0250 | 0.0056 | 0.0056 | ±% FSO/5°C (/°F) |
| Temp. effect on min. dead load output, type MR | | | 0.0040 | 0.0040 | ±% FSO/5°C |
| Temperature effect on sensitivity | (0.0010) | 0.0250 | 0.0050 | 0.0035 | ±% applied load/5 |
| Minimum dead load | 0 | | | | %Emax |
| Maximum safe over load | 150 | | | | %Emax |
| Ultimate over load | 400 | | | | %Emax |
| Maximum safe side load | 10 | | | | %Emax |
| Deflection at Emax | 0.36 max. | | | | mm |
| Excitation voltage | 5 to 20 | | | | V |
| Maximum excitation voltage | 25 | | | | V |
| Input resistance | 450±4.5 | | | | W |
| Output resistance | 480±4.8 | | | | W |
| Insulation resistance | Š5000 | | | | MW |
| Compensated temperature range | -10 to +40 | | | | °C |
| Operating temperature range | -40 to +80 | | | | °C |
| Storage temperature range | -50 to +90 | | | | °C |
| Element material | Stainless steel 1.4542 | | | | |
| Sealing (DIN 40.050 / EN60.529) | IP66 & IP68 | | | | |

**Notes**

(1) 100t only has C1 grade of OIML

FSO - Full Scale Output

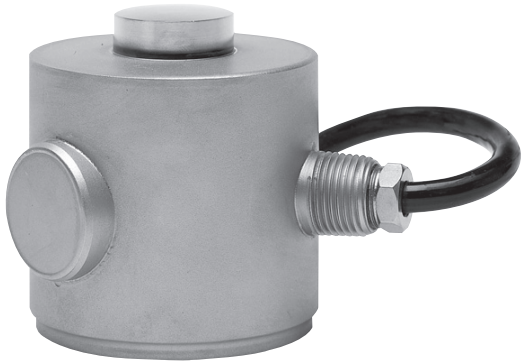
SC-version: The rated output and the output resistance are balanced in such a way, that the output current is calibrated to within 0.05% of a reference value. This allows easy parallel connection of the load cells.

# Model 65088

Sensortronics

VISHAY PRECISION GROUP

# Stainless Steel, Multi-Column Compression Load Cell



Factory Mutual System Approved

## FEATURES

- Capacity ranges of 25,000 to 200,000 pounds, 10 to 100 metric tons
- Stainless steel, welded seal construction
- Single piece multi-column design
- 3 times more side load capacity than other designs
- Integral conduit adaptor
- 35 feet [10.7m] standard cable length
- Trade certified for NTEP Class III: 5000d, IIIL: 10000d and OIML R-60 3000d
- Welded *Sensorgage*™ sealed to IP67 standards

## DESCRIPTION

The 65088 is a high capacity, low profile, stainless steel compression load cell.

The unique four column design offers excellent insensitivity to eccentric loads. This design is one of the most successful compression cells ever produced and is suitable for use in truck scales, rail scales and high capacity silo weighing applications.

This product's stainless steel construction, welded seals and IP67 rating ensures ultimate survivability under harsh conditions.

This load cell is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments. This load cell is certified for Legal For Trade applications by both American NTEP and International OIML standards.

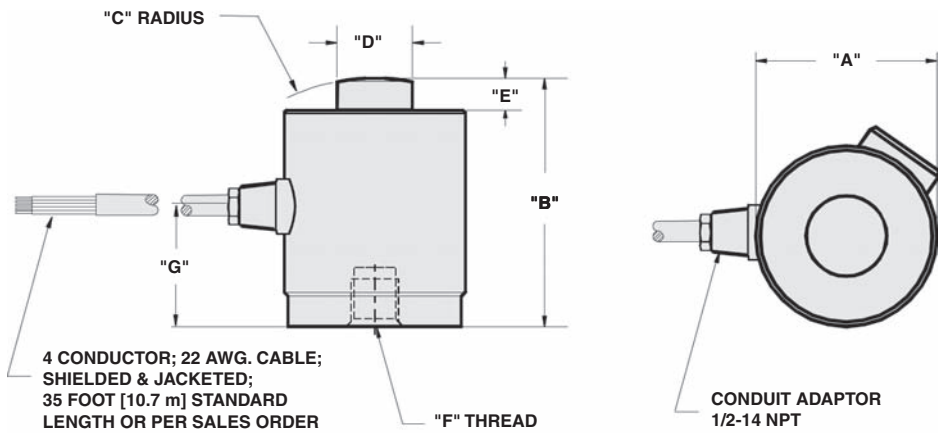
## APPLICATIONS

- Truck scales
- Railroad track scales
- Tank, bin and hopper weighing

## OUTLINE DIMENSIONS in inches [mm]

**Wiring**

| | |
|---|---|
| + Excitation | Green |
| - Excitation | Black |
| + Output | White |
| - Output | Red |




| CAPACITY | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 25K, 50K | 3.00 | 3.25 | 6.00 | 1.25 | 0.40 | 1/2-20 UNF - 2B x .31 Deep | 1.68 |
| 100K | 4.00 | 5.00 | 6.00 | 2.31 | 0.51 | 3/4-16 UNF - 2B x .56 Deep | 2.49 |
| 200K | 6.00 | 7.25 | 17.00 | 3.13 | 1.04 | 3/4-16 UNF - 2B x .75 Deep | 3.28 |
| [10t, 25t] | [76.2] | [82.6] | [152.4] | [31.7] | [10.2] | [M12 x 1.75 - 6H x 8 Deep] | [42.7] |
| [40t, 50t] | [101.6] | [127.0] | [152.4] | [58.7] | [13.0] | [M20 x 2.5 - 6H x 14 Deep] | [63.2] |
| [100t] | [152.4] | [184.2] | [431.8] | [79.5] | [26.4] | [M20 x 2.5 - 6H x 19 Deep] | [83.3] |

Capacities are in pounds [kg/t].

## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 25K, 50K, 100K, 200K<br>10t, 25t, 40t, 50t, 100t | | | | lbs<br>metric tons |
| **NTEP/OIML Accuracy class** | **NTEP III** | **NTEP IIIL** | **Standard** | **OIML R60** | |
| **Maximum no. of intervals (n)** | 5000 multiple | 10000 multiple | | 3000 | |
| **$Y = E_{max}/V_{min}$** | NTEP Cert. No. 95-134 | | | 8333 | Maximum available |
| **Rated output-R.O.** | 2 | | | | mV/V |
| **Rated output tolerance** | 0.25 | | | | ±% mV/V |
| **Zero balance** | ≤1.0 | | | | ±% FSO |
| **Combined error** | 0.02 | 0.02 | 0.03 | 0.02 | ±% FSO |
| **Non-repeatability** | 0.01 | | | | ±% FSO |
| **Creep error (20 minutes)** | 0.025 | 0.03 | 0.03 | 0.017 | ±% FSO |
| **Temperature effect on zero** | 0.0010 | 0.0010 | 0.0015 | 0.0010 | ±% FSO |
| **Temperature effect on output** | 0.0008 | 0.0008 | 0.0008 | 0.0007 | ±% FSO/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | | | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | | | | °F (°C) |
| **Safe sideload** | 30 | | | | % of R.C. |
| **Maximum safe central overload** | 150 | | | | % of R.C. |
| **Ultimate central overload** | 400 | | | | % of R.C. |
| **Excitation, recommended** | 5 - 20 | | | | Vdc or Vac rms |
| **Excitation, maximum** | 25 | | | | Vdc or Vac rms |
| **Input impedance** | 445.5 - 454.5 | | | | Ω |
| **Output impedance** | 475.2 - 484.8 | | | | Ω |
| **Insulation resistance at 50VDC** | >1000 | | | | MΩ |
| **Material** | Stainless steel | | | | |
| **Environmental protection** | IP67 | | | | |

FSO - Full Scale Output
R.C. - Rated Capacity

All specifications subject to change without notice.

# Model 92/93

Revere

VISHAY PRECISION GROUP

# Compression Load Cell

FM

## FEATURES

- Capacities: 50Klbs and 100Klbs
- Environmental protection: IP68 (DIN 40.050)
- Material: Stainless Steel
- Hermetically sealed

## OPTIONAL FEATURE

- FM approved for use in potentially explosive atmosphere

## DESCRIPTION

The 92 canister is designed for compression applications. Its stainless steel construction combined with hermetically sealing allows the 92 to be used in harsh environments.

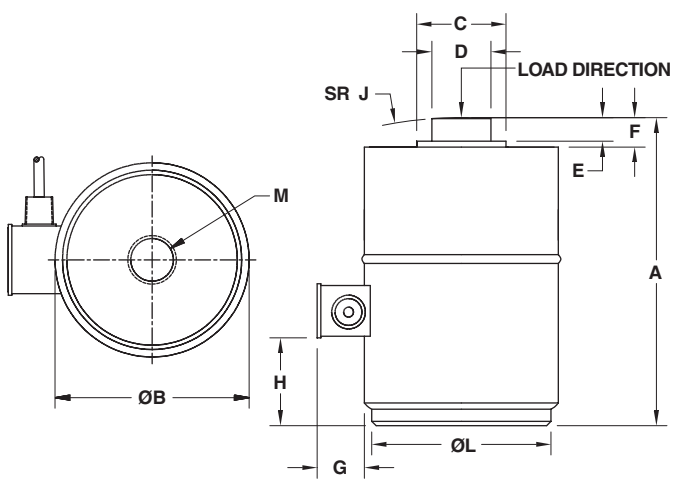
A large range of capacities is available.

Hermetic sealing offers excellent protection from moisture and provides longterm stability and reliability.

## APPLICATIONS

- Silo, tanks and hoppers
- Suspended silos, tanks and hoppers
- Railroad scales
- Weighbridges

## OUTLINE DIMENSIONS in inches




*Cable specifications:*

| | |
|---|---|
| Cable length: | 12.2m (40ft) |
| Excitation + | Red |
| Excitation - | Black |
| Output + | Green |
| Output - | White |
| Shield | Transparent |

Cable screen is not connected to load cell body

| Capacity | 50K | 100K |
|---|---|---|
| A | 6.00 | 8.50 |
| B | 4.25 | 5.03 |
| C | 1.63 | 2.45 |
| D | 1.50 | 1.75 |
| E | 0.10 | 0.10 |
| F | 0.50 | 0.63 |
| G | 1.18 | 1.25 |
| H | 1.49 | 2.90 |
| M UNF deep | 3/4-16 0.56 | 3/4-16 0.56 |
| J | 6.00 | 12.00 |


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11844 Revision: 09-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| | Imperial | | |
| **Capacities** | 50K, 100K | | lbs |
| **Accuracy class** | **Non-Approved** | | |
| **Rated output (=S)** | Model 92: 2±0.002 | Model 93: 3±0.003 | mV/V |
| **Zero balance** | 1.0 | | ±% FSO |
| **Combined error** | 0.0500 | | ±% FSO |
| **Creep error (20 minutes)** | 0.0300 | | ±% applied load |
| **Temperature effect on zero** | 0.0090 (0.0010) | | ±% FSO/5°C (/°F) |
| **Temperature effect on output** | 0.0135 (0.0015) | | ±% applied load/5°C (/°F) |
| **Compensated temperature range** | -10 to +40 (+14 to +104) | | °C (°F) |
| **Operating temperature range** | -53 to +93 (-65 to +200) | | °C (°F) |
| **Safe load limit** | 150 | | $\%E_{max}$ |
| **Ultimate load** | 200 | | $\%E_{max}$ |
| **Safe side load limit** | 10 | | $\%E_{max}$ |
| **Excitation voltage recommended** | 10 | | V |
| **Excitation voltage maximum** | 15 | | V |
| **Input resistance** | 350±3.5 | | Ω |
| **Output resistance** | 350±3.5 | | Ω |
| **Insulation resistance at 50VDC** | ≥5000 | | MΩ |
| **Environmental protection** | IP68 | | |
| **Element material** | Stainless steel | | |

FSO-Full Scale Output

**Mounting:**
Correct mounting of the load cells is essential to ensure optimum accuracy and performance. Further information is available upon request.

# Model 792

Revere

VISHAY PRECISION GROUP

## Compression Load Cell

### FEATURES

- Capacities: 50 to 200Klbs
- Certified to NTEP class IIIL, 10000 divisions
- Environmental protection: IP68 (DIN 40.050)
- Material: Stainless Steel
- Hermetically sealed - IP68

### OPTIONAL FEATURE

- FM approved for use in potentially explosive atmosphere

### DESCRIPTION

The 792 canister is designed for compression applications. Its stainless steel construction combined with hermetically sealing allows the 792 to be used in harsh environments.

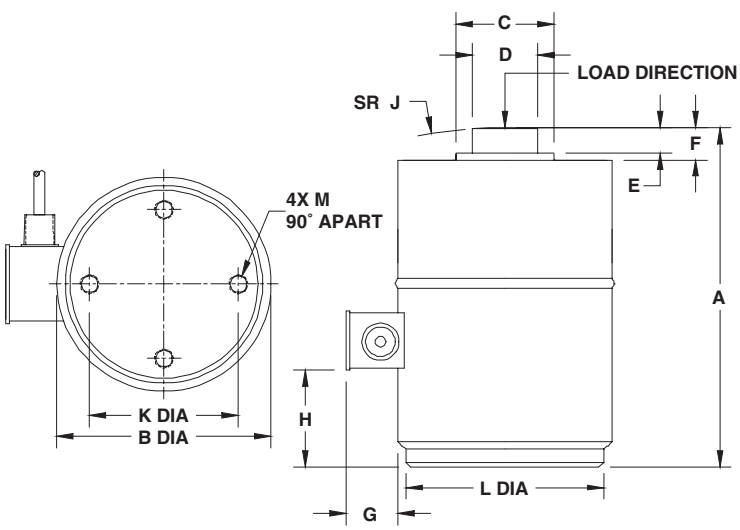
Built for heavy capacity weighing applications where accuracy and reliability are required over long periods of time.

Hermetic sealing offers excellent protection from moisture and provides longterm stability and reliability.

### APPLICATIONS

- Silo, tanks and hoppers
- Suspended silos, tanks and hoppers
- Railroad scales
- Weighbridges

### OUTLINE DIMENSIONS in inches




*Cable specifications:*

Cable length: 10.7m (35ft)

| | |
|---|---|
| Excitation + | Green |
| Excitation - | Black |
| Output + | White |
| Output - | Red |
| Shield | Transparent |

Cable screen is not connected to load cell body

| Capacity | 50 | 100 | 200 |
|---|---|---|---|
| A | 7.50 | 9.13 | 11.63 |
| B | 4.50 | 5.75 | 7.50 |
| C | 1.77 | 2.65 | 3.15 |
| D | 1.25 | 1.75 | 2.50 |
| E | 0.58 | 0.88 | 0.80 |
| F | 0.75 | 1.05 | 0.97 |
| G | 1.25 | 1.40 | 1.34 |
| H | 1.12 | 1.33 | 2.53 |
| J | 6.00 | 12.00 | 12.00 |
| ØK | 2.38 | 4.00 | 5.50 |
| L | 4.18 | 5.31 | 6.81 |
| ØM | 3/8-24 UNF-2B | 1/2-20 UNF-2B | 5/8-18 UNF-2B |

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Standard capacities ($E_{max}$)** | 50, 100, 200 | | Klbs |
| **Metric equivalents** | 22.7, 45.4, 91 | | t |
| **Accuracy class according to NTEP** | **NTEP IIIL** | **Non-Approved** | |
| **Maximum no. of verfication intervals (n)** | 10000 | | |
| **Rated output (=S)** | 2 | | mV/V |
| **Rated output tolerance** | 0.002 | | ±mV/V |
| **Zero balance** | 10.0 | | ±% FSO |
| **Combined error** | 0.0200 | 0.1000 | ±% FSO |
| **Non-repeatability** | 0.0100 | 0.0200 | ±% FSO |
| **Creep error (20 minutes)** | 0.0300 | 0.0500 | ±% applied load |
| **Temperature effect on minimum dead load output** | 0.0009 (0.0010) | 0.0140 | ±% FSO/5°C (/°F) |
| **Temperature effect on sensitivity** | 0.0072 (0.008) | 0.0070 | ±% applied load/5°C (/°F) |
| **Maximum safe over load** | 150 | | $\%E_{max}$ |
| **Ultimate over load** | 300 | | $\%E_{max}$ |
| **Maximum safe side load** | 10 | | $\%E_{max}$ |
| **Minimum dead load** | 1000 | | lbs |
| **Excitation voltage** | 10 | | V |
| **Maximum excitation voltage** | 15 | | V |
| **Input resistance** | 350±3.5 | | Ω |
| **Output resistance** | 350±3.5 | | Ω |
| **Insulation resistance** | ≥5000 | | MΩ |
| **Compensated temperature range** | -10 to +40 (+14 to +104) | | °C (°F) |
| **Operating temperature range** | -40 to +80 (-65 to +200) | | °C (°F) |
| **Element material (DIN)** | Stainless steel | | |
| **Sealing (DIN 40.050 / EN60.529)** | IP68 | | |

FSO-Full Scale Output

Note: Correct mounting of the load cells is essential to ensure optimum accuracy and performance. Further information is available upon request.

# Single Column Compression Cell


## FEATURES

- Capacities: 6 to 280t
- Low profile design
- Sealing: IP66 (EN 60.529)
- Trimmed output ensures easy and accurate parallel connection of multiple load cells
- Specially designed mounting arrangements are available for vessel weighing

## DESCRIPTION

The KSR is a sealed, single column, compression load cell.

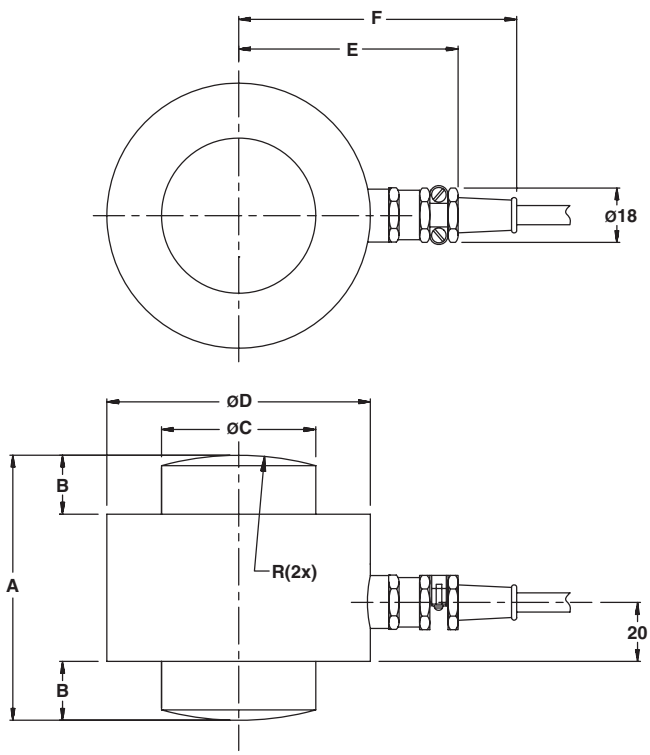
This product is suitable for high capacity platform scales and level control or process weighing in general.

A reliable sealing and mechanical protection of the strain gage area is ensured by the use of stainless steel diaphragms and a housing which are cemented to the measuring element.

## APPLICATIONS

- Vessels weighing
- High capacity platforms
- Tank and silo
- Process weighing

## OUTLINE DIMENSIONS in mm




| $E_{max}$ | 6 | 13 | 28 | 60 | 130 | 280 |
|---|---|---|---|---|---|---|
| A | 56 | 68 | 74 | 90 | 116 | 170 |
| B | 8 | 12 | 14 | 20 | 26 | 45 |
| C | 16.7 | 24.5 | 36.0 | 52.7 | 77.5 | 114 |
| D | 45 | 55 | 64 | 90 | 121 | 165 |
| E | 52.5 | 57.5 | 62.0 | 75.0 | 90.5 | 112.5 |
| F | 71.5 | 76.5 | 81 | 94 | 109.5 | 131.5 |
| R | 50 | 66 | 72 | 100 | 125 | 183 |

*Cable specifications:*

| | |
|---|---|
| Cable length: | 10m (6t version: 5m) |
| Excitation + | Red |
| Excitation - | White |
| Output + | Black |
| Output - | Blue |
| Shield | Transparent / Yellow |

Cable screen is not connected to load cell body.


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11840
Revision: 09-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Standard capacities ($E_{max}$)** | 6, 13, 28, 60, 130, 280 | | ton |
| **Accuracy class according to type designation** | **Non-Approved - R2** | **Non-Approved - R1** | |
| **Rated output (FSO)** | 1.5 | | mV/V |
| **Rated output tolerance** | 0.008 | | ±mV/V |
| **Zero balance** | 1.5 | | ±% FSO |
| **Combined error** | 0.200 | 0.1000 | ±% FSO |
| **Minimum dead load output return** | 0.0700 | 0.0500 | ±% FSO |
| **Creep error (30 minutes)** | 0.0800 | 0.0600 | ±% FSO |
| **Creep error (20 - 30 minutes)** | 0.0200 | 0.0150 | ±% FSO |
| **Temperature effect on minimum dead load output** | 0.025 | 0.025 | ±% FSO/5°C |
| **Temperature effect on sensitivity** | 0.2500 | 0.2500 | ±% FSO/5°C |
| **Minimum dead load** | 0 | | $\%E_{max}$ |
| **Maximum safe over load** | 120 | | $\%E_{max}$ |
| **Ultimate over load** | 300 | | $\%E_{max}$ |
| **Maximum safe side load** | 10 | | $\%E_{max}$ |
| **Deflection at $E_{max}$** | 0.35/ 0.53/ 0.80/ 1.22/ 1.85/ 2.67 | | mm |
| **Excitation voltage** | 5 to 12 | | V |
| **Maximum excitation voltage** | 15 | | V |
| **Input resistance** | 275±30 | | Ω |
| **Output resistance** | 245±0.2 | | Ω |
| **Insulation resistance** | ≥50 | | MΩ |
| **Compensated temperature range** | -10 to +40 | | °C |
| **Operating temperature range** | -20 to +70 | | °C |
| **Storage temperature range** | -30 to +80 | | °C |
| **Element material (DIN)** | Tool steel | | |
| **Finish** | Epoxy painting | | |
| **Sealing (DIN 40.050 / EN60.529)** | IP66 | | |

FSO-Full Scale Output

**Mounting:**
Correct mounting of the load cells is essential to ensure optimum accuracy and performance. Further information is available upon request.

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Tank Weighing Sensors

## Contents



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Gozinta Force Transducer


## FEATURES

- Simple press fit mounting
- Stainless steel construction
- Hermetically sealed
- Corrosion resistant
- Low temperature sensitivity
- Field installable into existing structures
- Measures tension, compression, shear, bending, torsion
- Full double bridge configuration
- Single capacity for all applications

## DESCRIPTION

An innovative approach to sensor design combined with proven strain gage technology has resulted in a small, accurate stainless steel sensor with wide-ranging application possibilities. The Gozinta® overcomes a number of current sensor problems and limitations such as installation ease, size, load limit, location and operating temperature conditions. In addition, the Gozinta has unchallenged application versatility and a wide range of machines, devices or structures can use Gozinta sensors as a cost-effective, accurate solution to sensing needs.

The Gozinta sensor is mounted into the machine or structure and the sensor's output can be calibrated to meet the system needs.

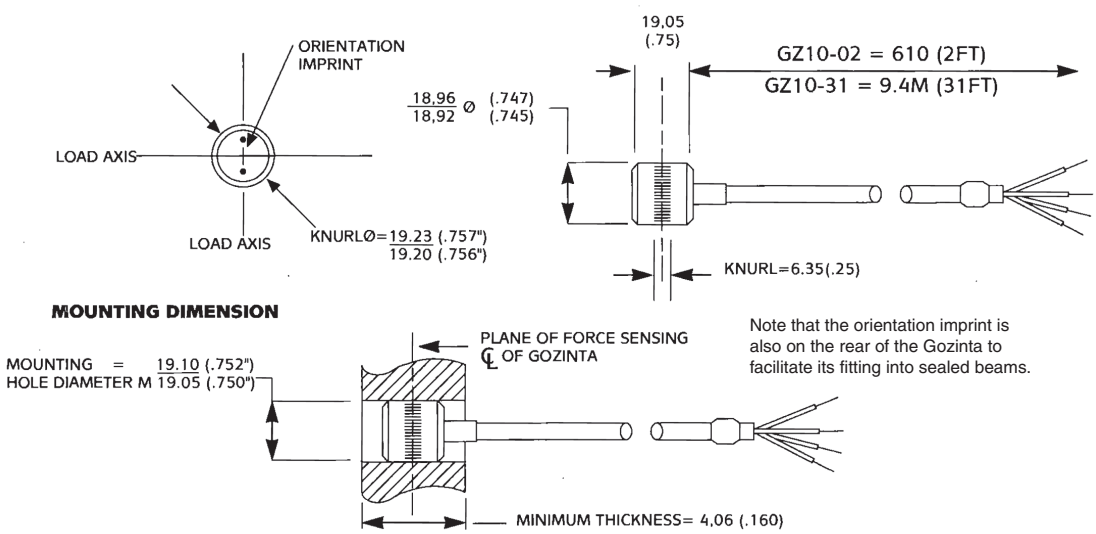
As a result, the maximum load of the system is determined by the structure, rather than by the sensor. Sensitivity to thermal effects is minimal due to the Gozinta's unique patented design.

The Gozinta is configured with a full bridge circuit for low non-linearity, hysteresis and non-repeatability. A certain degree of care should be taken when positioning or locating the sensor in a structure. In addition, the number of sensors used in a structure, the amount of strain an individual Gozinta senses, and the material of the structure will affect the overall accuracy. Installation is optimized through the use of specific installation tools, supported by extensive application notes.

## APPLICATIONS

- Agricultural equipment
- Rolling mill sensing
- Stamping press control
- Lift trucks
- Machine tool wear sensing
- Intrusion alarms
- Structural load measuring
- Moment sensing
- Tank weighing systems
- In-rail weighing systems

## OUTLINE DIMENSIONS in mm (inches)





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11887
Revision: 10-Feb-10

## SPECIFICATIONS

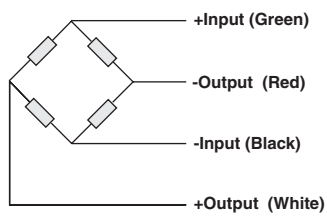
| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Excitation voltage** | up to 15 | Vac/Vdc |
| **Zero balance** | 0.00±0.05 (Prior to installation) | mV/V |
| **Bridge configuration** | Full/Double bridge | |
| **Input resistance** | 700±20 | Ω |
| **Output resistance** | 700±20 | Ω |
| **Insulation resistance** | ≥5000 | MΩ |
| **Nonlinearity** | ±1.0 | % FS[1] |
| **Hysteresis** | ±0.05 | % FS[1] |
| **Non-repeatability** | ±0.1 | % FS[1] |
| **Temperature coefficient: Output** | 0.036 | % of reading/°C |
| **Zero** | 0.35 (-10 to +45°C) | % FS/°C |
| **Temperature range: Storage** | -50 to +90 | °C |
| **Temperature range: Operating** | -40 to +80 | °C |
| **Maximum safe output[2]** | | |
| **Tension** | 2.5 | mV/V |
| **Compression** | 2.5 | mV/V |
| **Shear** | 4.0 | mV/V |

1 Specifications for the Gozinta® GZ-10 installed into a mild steel test block (90 x 38 x 305) and subjected to a tensile force of 24000N. Nominal output is 1mV/V. Other specifications are given for uninstalled GZ-10.

2 The maximum safe output for the Gozinta® based on $10^4$ full negative to full positive operating cycles (zero to minus to plus to zero).

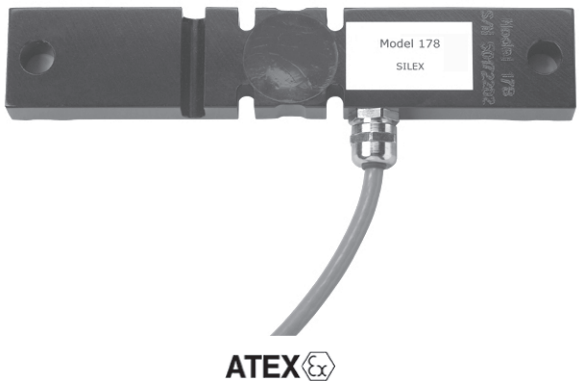
**Caution:** The endurance limits of the beam must be determined separately.

**Wiring Schematic Diagram**



VISHAY PRECISION GROUP

# Extensometer




ATEX

## FEATURES

- Strain gage based sensor
- Alloy steel construction
- 2 bolt holes
- IP66 Hermetically sealed protection

## OPTIONAL FEATURE

- EEx ia IIC T4 hazardous area approval

## DESCRIPTION

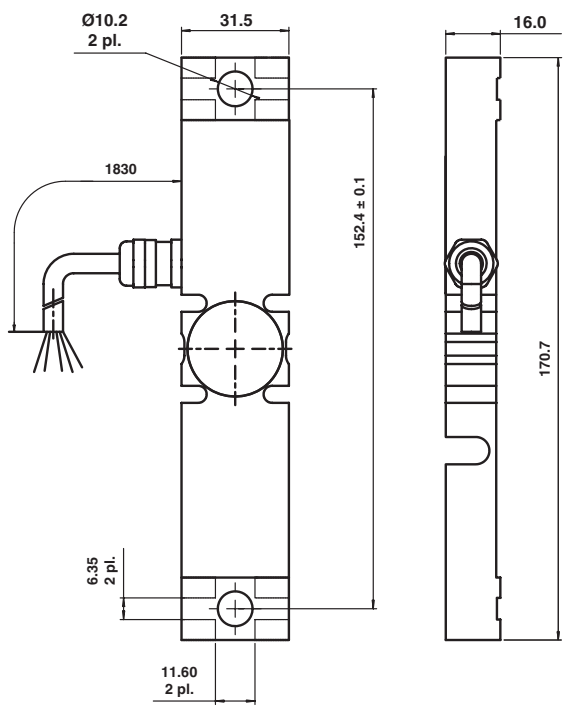
The Model 178 extensometer is a load sensor designed for force measurement on any load-bearing structure. This extensometer provides the total solution for weighing, level control, stress and fatigue monitoring. The design also allows multiple sensors to be permanently mounted for more complex stress profiling and analysis.

The Model 178 extensometer provides an ideal solution for non-intrusive level measurements for materials that are subject to uneven buildup, bridging, or sidewall collection. Also, liquids or wetted materials that are not suited for direct contact level measurement are an ideal application for the Model 178 extensometer. The design of the Model 178 makes it an excellent solution for retrofitting existing structures without compromise of the integrity of the vessel or structure.

## APPLICATIONS

- Tank weighing or level systems
- Agricultural equipment
- Rolling mill sensing
- Moment sensing
- Structural loading measurements
- Bridge structures

## OUTLINE DIMENSIONS in mm





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11650
Revision: 26-May-09

Extensometer

| SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| **Calibrated output** | 1.7 | mV/V at 500με |
| **Overload capability (zero)** | 300 | % of rated output |
| **Overload capability (max)** | 500 | % of rated output |
| **Input resistance** | 350±10 | Ω |
| **Output resistance** | 350±10 | Ω |
| **Insulation resistance** | >2000 | MΩ |
| **Excitation, recommended** | 10 | Vdc |
| **Excitations, range** | 5-20 | Vdc |
| **Thermal effect on zero** | 0.025 | ±% of FSO/°C |
| **Compensated temperature range** | -30 to +80 | °C |
| **Construction** | Painted steel | |
| **Environmental protection** | IP66 | |

VISHAY PRECISION GROUP

# Force Sensors

## Contents



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Extensometer


## FEATURES

- Strain gage based sensor
- Alloy steel construction
- 2 bolt holes
- IP67 Hermetically sealed protection

## OPTIONAL FEATURE

- Redundant sensor (model 176)
- Digital output (LIN-Bus)

## DESCRIPTION

The 174 extensometer is a sensor used for safety applications in lifting devices.

This product is used widely in many lifting machines, telescopic loaders and any other moment sensitive lifting device.

The 174 extensometer is a strain gage based sensor. It can be supplied with analog or digital output.

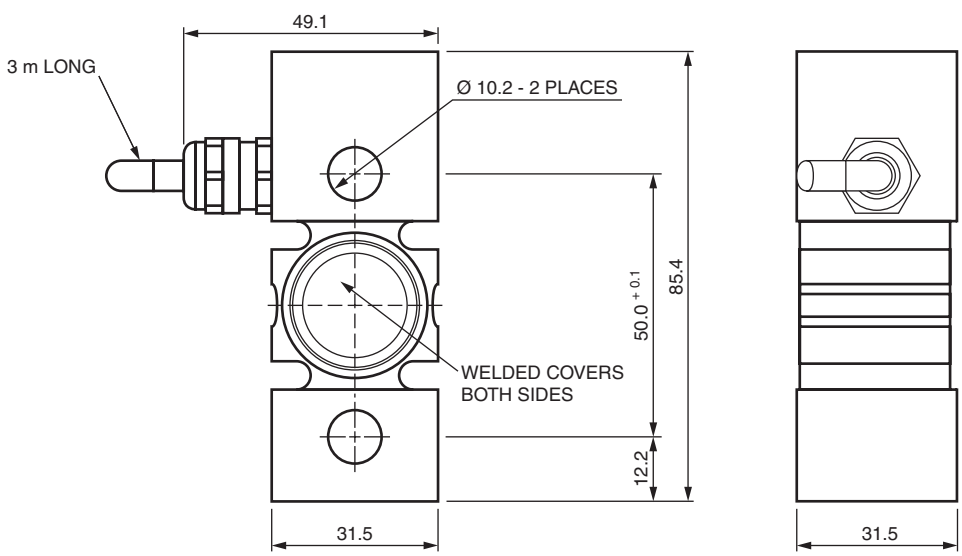
The digital version is supplied widely as set together with the model LMI521 display.

The 174 extensometer is usually installed on the rear side of the device and it measures the load decrease on the rear shaft.

## APPLICATIONS

- Lifting machines
- Telescopic loaders

## OUTLINE DIMENSIONS in millimeters





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11649
Revision: 29-Mar-10

Extensometer

| SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| **Calibrated output** | 1.0 | mV/V at 500με |
| **Overload capability (zero)** | 300 | % of rated output |
| **Overload capability (max)** | 500 | % of rated output |
| **Input resistance** | 385±10 | Ω |
| **Output resistance** | 350±10 | Ω |
| **Insulation resistance** | >2000 | MΩ |
| **Excitation, recommended** | 10 | Vdc |
| **Excitations, range** | 5-20 | Vdc |
| **Thermal effect on zero** | 0.025 | ±% of FSO/°C |
| **Compensated temperature range** | -30 to +80 | °C |
| **Construction** | Painted steel | |
| **Environmental protection** | IP67 | |

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Special Sensors

## Contents



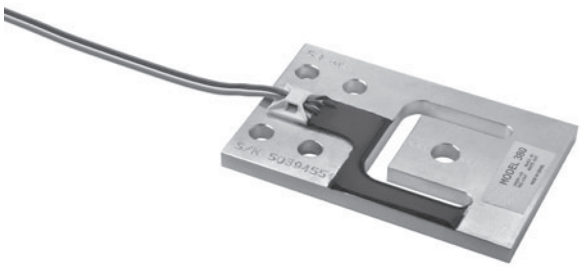
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Model 380

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Co-Planar Beam Load Cell



### FEATURES

- Capacity range: 7.5 to 150kg
- Only 2.5 to 8mm high
- Very low profile
- Aluminum construction
- IP65 protection
- 1000Ω input impedance
- Provides freedom in rectangular scale size design
- Matched output and current calibration circuitry
- Eliminates need for spyder in typical bench top scales

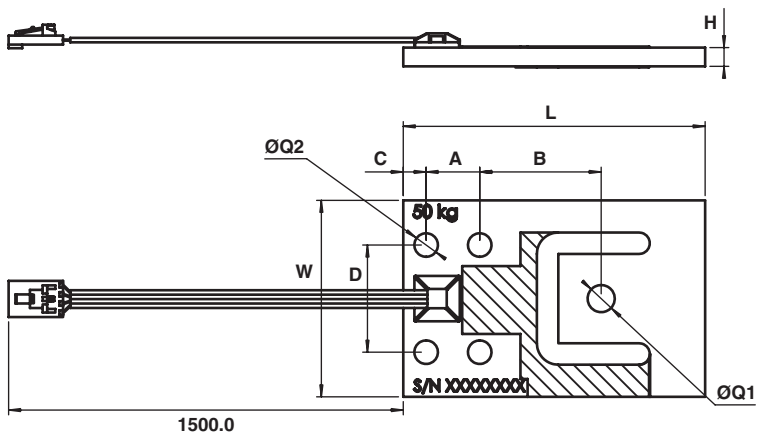
### DESCRIPTION

Model 380 is a very low profile planar beam design, allowing direct mounting in low profile platform scales. The range of capacities and low profile make model 380 most suitable for use in a wide range of applications.

### APPLICATIONS

- Personal scales
- Commonly used in low profile infant and adult medical scales
- Large and medium low profile platform scales
- Airport baggage scales
- Postal scales

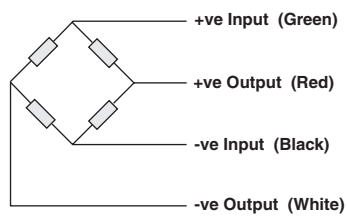
### OUTLINE DIMENSIONS in millimeters




| Type | L | A | B | C | D | W | H | Q1 | Q2 |
|---|---|---|---|---|---|---|---|---|---|
| PB-7.5kg | 70 | 14 | 28 | 4.9 | 27.8 | 39 | 2.5 | 5.1 | 5.1 |
| PB-37.5kg | 76.2 | 15 | 29.3 | 6 | 30 | 44.5 | 4.8 | 6.2 | 6.6 |
| PB-50kg | 84.5 | 15 | 34 | 6.4 | 30 | 55 | 5.3 | 7.6 | 6.6 |
| PB-75kg | 84.5 | 15 | 34 | 6.4 | 30 | 55 | 6.4 | 7.6 | 6.6 |
| PB-150kg | 107.5 | 22.8 | 45.9 | 7.8 | 44.5 | 70 | 8 | 8.2 OR 5/16UNC | 8.1 |

| SPECIFICATIONS | | | |
|---|---|---|---|
| **PARAMETER** | **VALUE** | | **UNIT** |
| Rated capacity-R.C. ($E_{max}$) | 7.5, 37.5, 50, 75, 150 | | kg |
| VTH Accuracy class | E | G4 | |
| OIML Accuracy class | NA | C3 | |
| Maximum no. of intervals (n) | NA | 3000 | |
| $Y = E_{max}/V_{min}$ | NA | 7500 | |
| Rated output-R.O. | 1.0 | | mV/V |
| Rated output tolerance | 0.10 | 0.001 | ±mV/V |
| Zero balance | 0.10 | | ±mV/V |
| Creep, 30 min. | 0.074 | 0.024 | ±% of load |
| Zero return, 30 min. | 0.05 | 0.0167 | ±% of load |
| Temperature effect on output | 0.002 | 0.001 | ±% of load/°C |
| Temperature effect on zero | 0.007 | 0.00186 | ±% of R.O./°C |
| Input impedance | 1160±10 | | Ω |
| Output impedance | 1000±10 | | Ω |
| Insulation resistance | 5000 | | MΩ |
| Temperature range, compensated | -10 to +40 | | °C |
| Temperature range, safe | -30 to +70 | | °C |
| Maximum safe central overload | 300 | | % of R.C. |
| Ultimate static overload | 400 | | % of R.C. |
| Safe side load | 200 | | % of R.C. |
| Cable type | 4 conductors, 26AWG, flat, PVC | | |
| Cable length | 1.5 | | m |
| Color code | +Exc: Green, +Sig: Red, -Exc: blk, -Sig: wht | | |
| Construction | Aluminum, RTV potting | | |
| Environmental protection | IP65 | | |
| Outline dimensions drawing | TBD | | |

**Wiring Schematic Diagram**




**The load cell is provided with a 4 conductor ribbon cable and with AMP#103957-4 connector**

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

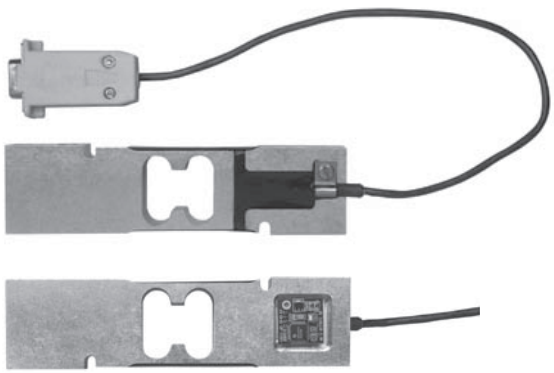
# Digital Load Cells

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# High-Performance Digital Load Cell Interface



## FEATURES

- Serial interface (RS-485)
- All settings made through the serial interface
- Simple calibration, test and setting via HyperTerminal programming, or via Revere's software
- Automatic unit conversion, zero tracking
- Gravity factor compensation
- Tare function
- Suitable for PC-base, µC, PLC application
- Weight result format: six digits, eight announciators
- Up to 64 nodes
- ESD protection up to 15kV

## DESCRIPTION

The Model DLC08 is a high-performance, digital load cell interface for precision measurement of strain gage transducers. With DLC08 technology, any analog load cell can be converted to a full-function digital load cell. The interface circuit board can either be embedded in the load cell (space permitting), or installed in a 9 pin "D" type connector at the load cell cable end.

Simple RS-485 wiring connects the DLC08 to any PC, PLC, or DCS device. All calibration and operating procedures are fully documented on the accompanying installation CD ROM. Open architecture DLC08 software provides instant access to all configuration and calibration parameters.

DLC08-enabled summing junction boxes offer digital interfacing for multiple load cell scales via an RS-485 bus.

## APPLICATIONS

- OEM machinery
- Load cell digitizers
- Inventory and level control

## OPTIONALS

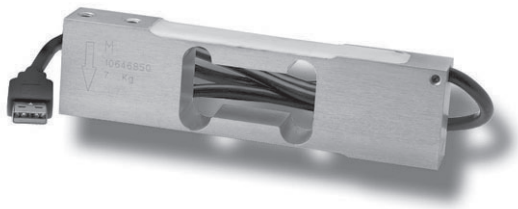
- USB interface
- Tilt sensor

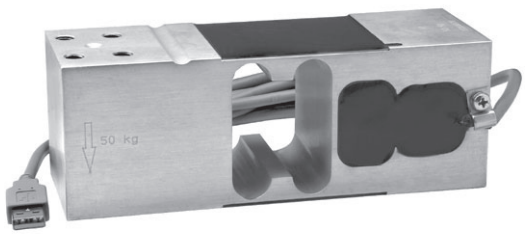

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11614
Revision: 29-Mar-10

High-Performance Digital Load Cell Interface

| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **MIN** | **TYP** | **MAX** | **UNIT** |
| Bridge input | | | | | |
| Bridge excitation | $V_{exc}$ | 4.8 | 5.0 | 5.2 | V |
| Bridge resistance | $R_{LC}$ | 315 | 350 | | W |
| Full scale input sensitive | $F_S$ | | | | |
| PGA = 1 | | | | 3.50 | mV/V |
| PGA = 2 | | | | 1.85 | mV/V |
| PGA = 4 | | | | 0.90 | mV/V |
| PGA = 8 | | | | 0.45 | mV/V |
| Common mode voltage | | 1.50 | 2.50 | 3.50 | V |
| Input impedance | | 109 | | | W |
| Digital Bus - RS-485 protocol defined by Vishay | | | | | |
| Baud rate | | | 19,200 | | Bit/sec |
| Communication mode | | Point-to-point or RS-485 multi-drop communication | | | |
| Built-in termination resistor | | | 8,870 | | W |
| Cable length (with suitable Rt) | | | | 1,000 | m |
| Performance | | | | | |
| Internal resolution | | | 24 | | Bits |
| Noise (Ref to input, filter 4/4/4) | | | | 0.30 | ±µV rms |
| Digital filters | | 3 filters, software selectable | | | |
| Nonlinearity (in $T_s$) | | | 0.008 | 0.011 | %Fs |
| Sample rate | $C_S$ | | 15 | | Hz |
| Zero stability (in $T_s$) | | | 10 | 15 | ±ppmFS/°C |
| Span stability (in $T_s$) | | | 1.6 | 2.3 | ±ppmFS/°C |
| Environmental conditions | | | | | |
| Specification temperature (Full | $T_S$ | -10 | +20 | +40 | °C |
| Operating temperature | | -40 | | +85 | °C |
| Storage temperature | | -40 | | +85 | °C |
| Power supply - DC only | | | | | |
| Supply voltage | $V_p$ | 7.5 | 12 | 15 | V |
| Supply current | | | 32 | 45 | mA |
| Maximum rating power supply (T ≤ 500 | | | | 30 | V |
| Reverse power protection | | | | -60 | V |

# High-Performance Digital Load Cell Interface






## FEATURES

- USB (Universal Serial Bus) 2.0 interface
- Weighing functionality: zero, tare, initial zero setting, automatic zero tracking, unit conversion, and more
- Full setup and calibration through the USB interface
- Simple calibration, test and setting via Vishay's software, or HyperTerminal program
- Suitable for PC-based, or PLC-based applications
- Gravity factor compensation
- CE Compliance

## DESCRIPTION

The Model DLC09 is a high performance digital load cell with USB interface to a PC. Just connect and start measuring, no need for power supply, or special software.

With DLC09 technology, most Transducers analog load cell can be converted to a full-function digital load cell. The interface circuit board can be embedded in the load cell (space permitting), or installed in a sealed connector housing attached to the USB cable.

Calibration, setup and operating functions are available through the USB port. DLC09 Open Protocol allows easy access to all configuration and calibration parameters.

DLC09-enabled summing junction boxes offer digital interface for multiple load cell scales.

## APPLICATIONS

- PC-based systems
- Inventory control
- Load/force monitoring
- Load cell digitizers
- OEM machinery

# High-Performance Digital Load Cell Interface

| SPECIFICATIONS | | | | | |
|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **MIN** | **TYP** | **MAX** | **UNIT** |
| Bridge input | | | | | |
| Bridge excitation | $V_{exc}$ | 4.8 | 5.0 | 5.2 | V |
| Bridge resistance | $R_{LC}$ | 79 | 350 | 10k | Ω |
| Full scale input signal | $F_S$ | 2.50 | 10.00 | 19.50 | ±mV |
| Common mode voltage | | 1.50 | 2.50 | 3.50 | V |
| USB Bus - 2.0 Full speed compatible | | | | | |
| Supply voltage | $V_p$ | 4.75 | 5.00 | 5.25 | V |
| Max. supply current (with four 350Ω load cells) | | | 41 | 62 | mA |
| Over voltage protect | | | | 6 | V |
| ESD capability (D+, D-) | | | | 2000 | V |
| Reverse power protection | | yes | | | |
| Output type | | USB with virtual com port, protocol defined by Revere | | | |
| Virtual com port | | | | | |
| Baud rate | | 115200 | | | Bit/sec |
| Data bits | | 8 | | | Bits |
| Start bits | | 1 | | | Bits |
| Stop bits | | 1 | | | Bits |
| Max. cable length | | 5 | | | m |
| Performance | | | | | |
| Input impedance | | $10^7$ | | | Ω |
| Internal resolution | | 24 | | | Bits |
| Noise (Ref to input, filter 1/1/2, warm up 2 hours, catch 2 minutes) | | | 0.2 | 0.3 | µV p-p |
| Digital filters | | 3 stage filters, software selectable | | | |
| Measurement rate | | 10 or 80 | | | Hz |
| Zero stability (-10 ~40°C) | | | 3.2 | 6.5 | ±ppm$F_S$/°C |
| Gain stability (-10 ~40°C) | | | 2.3 | 3.7 | ±ppm$F_S$/°C |
| Typical OIML $V_{min}$ value (2mV/V) | | | 10000 | | |
| Software upgrade | Download new software via USB without hardware setting | | | | |
| Environmental Conditions | | | | | |
| Specification temperature (Full performance) | $T_S$ | -10 | +20 | +40 | °C |
| Operating temperature | | -40 | | +85 | °C |
| Storage temperature | | -40 | | +85 | °C |
| Drop test (Concrete surface) | | | | 1.5 | m |
| Power supply | Power from USB | | | | |

# Model SBC

Revere

VISHAY PRECISION GROUP

# Digital Shear Beam Load Cell

### FEATURES

- Capacities: 0.5, 1, 2, and 5t
- Digital output via RS-485 or RS-422 interface
- Stainless steel construction with water block cable-entry
- Hermetically sealed, IP66 and IP68
- Certified to OIML R-60, 6000d
- Internal diagnostics
- 240000 counts resolution
- Maximum transmission distance 1200m

### OPTIONAL FEATURE

- Multi-interval and multiple-range versions available

## DESCRIPTION

The SBC is a stainless steel, single ended, shear beam load cell with a digital output signal.

This digital output enables the user to communicate with each SBC independently of the others in the system, thus offering advantages in system setup, system control, corner correction, fault finding and load cell replacement.

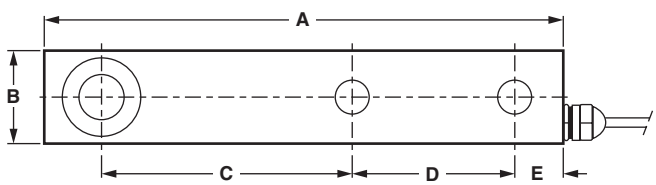
The fully welded construction and water block cable-entry ensure successful use in harsh environments. Applications of the SBC include medium capacity platform scales, pallet scales, overhead track scales and process weighing applications.

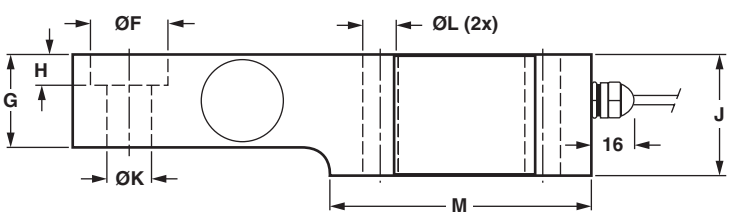
This product meets the stringent Weights and Measures requirements throughout Europe.

## APPLICATIONS

- Platform scales
- Belt scales
- Overhead track scales
- Silo hopper weighing

## OUTLINE DIMENSIONS in mm




*Cable specifications:*

Cable length: 5 meters

| | |
|---|---|
| Excitation + | Green |
| Excitation - | Black |
| Rx + | Yellow |
| Rx - | Blue |
| Tx - | White |
| Tx + | Red |
| Shield | Transparent |

Note: Dimensions are in millimeters

| Capacity (t) | 0.5 - 2 | 5 | 10 |
|---|---|---|---|
| A | 203.2 | 235.0 | 235.0 |
| B | 36.5 | 47.5 | 55.0 |
| C | 98.4 | 123.8 | 123.8 |
| D | 63.5 | 66.7 | 66.7 |
| E | 19.1 | 20.6 | 20.6 |
| ØF | $30.2\ ^{+0.2}_{0}$ | $41.3\ ^{+0.2}_{0}$ | $41.3\ ^{+0.2}_{0}$ |
| G | 36.5 | 47.6 | 56.0 |
| H | 11.9 | 15.8 | 15.8 |
| J | 47.6 | 69.9 | 69.9 |
| ØK | 17.5 H11 | 25.5 H11 | 25.5 H11 |
| ØL | 14.0 | 22.0 | 25.0 |
| M | 101.6 | 111.2 | 111.2 |

## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| Standard capacities ($E_{max}$) | 0.5, 1, 2, 5 | | | | ton |
| Accuracy class according to OIML R-60 | C1 | C3 | C5 | C6 | |
| Maximum no. of verfication intervals (n) | 1000 | 3000 | 5000 | 6000 | |
| Minimum verification interval ($V_{min}=E_{max}/Y$) | $E_{max}$/7000 | $E_{max}$/15000 | $E_{max}$/15000 | $E_{max}$/15000 | |
| Minimum utilisation | 14.3 | 30 | 33.3 | 40 | % |
| Minimum verification interval, type MR | | $E_{max}$/25000 | $E_{max}$/25000 | $E_{max}$/25000 | |
| Rated output (=S) | 240000 | | | | counts |
| Tolerance on rated output | 200 | | | | ±counts |
| Zero balance | 200 | | | | ±counts |
| Combined error | 0.0300 | 0.0200 | 0.0140 | 0.0115 | ±% FSO |
| Non-repeatability | 0.0200 | 0.0100 | 0.0080 | 0.0060 | ±% FSO |
| Minimum dead load output return | 0.0500 | 0.0167 | 0.0100 | 0.0083 | ±% applied load |
| Creep error (30 minutes) | 0.0490 | 0.0245 | 0.0147 | 0.0123 | ±% applied load |
| Temp. effect on min. dead load output | 0.0100 | 0.0070 | 0.0045 | 0.0045 | ±% FSO/5°C |
| Temperature effect on sensitivity | 0.0085 | 0.0050 | 0.0030 | 0.0025 | ±% applied load/5°C |
| Compensated temperature range | -10 to +40 | | | | °C |
| Operating temperature range | -40 to +80 | | | | °C |
| Storage temperature range | -40 to +90 | | | | °C |
| Maximum safe over load | 150 | | | | %$E_{max}$ |
| Ultimate over load | 300 | | | | %$E_{max}$ |
| Maximum safe side load | 100 | | | | %$E_{max}$ |
| Deflection at $E_{max}$ | 0.5 max | | | | mm |
| Excitation voltage | 12.5 to 18 | | | | Vdc |
| Maximum excitation voltage | 15 | | | | V |
| Maximum current consumption | 80 | | | | mA |
| Maximum current (internal short circuit) | 150 | | | | mA |
| Insulation resistance | >5000 | | | | MΩ |
| Element material (DIN) | Stainless steel 1.4542 | | | | |
| Sealing (DIN 40.050 / EN60.529) | IP66 and IP68 | | | | |
| Signal update per second | 25 | | | | |
| Baudrate | 9600 | | | | Bits/s |
| Start bits | 1 | | | | |
| Data bits | 7 | | | | |
| Stop bits | 1 | | | | |
| Parity | Odd | | | | |
| Maximum transmission cable length | 1200 | | | | m |
| Data transmission interface | RS485/422-full duplex | | | | |
| Standard capacities ($E_{max}$) | 0.5, 1, 2, 5 | | | | ton |

| Accuracy class according to OIML R-60 | C3MI10 | C4MI10 | C5MI10 | |
|---|---|---|---|---|
| Maximum no. of verfication intervals (n) | 3000 | 4000 | 5000 | |
| Minimum verification interval ($V_{min}=E_{max}/Y$) | $E_{max}$/15000 | $E_{max}$/15000 | $E_{max}$/25000 | |
| Minimum utilisation | 20 | 26.7 | 20 | % |
| Minimum dead load output return ΔR | 0.0050 | 0.0050 | 0.0050 | ±% applied load |
| Temp. effect on min. dead load output | 0.0045 | 0.0045 | 0.0032 | ±% FSO/5°C |

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Digital Canister Load Cells

## Contents



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Model SCC

Revere

VISHAY PRECISION GROUP

# Digital Compression Load Cell

## FEATURES

- Capacities: 10 - 100 ton
- Digital output via RS-485 or RS-422 interface
- Low profile, multi-column, stainless steel construction
- Hermetically sealed, IP66 and IP68
- Certified to OIML R-60, 4000d
- Multiple-range versions available
- Internal diagnostics and lightning protection
- 240,000 counts resolution
- Maximum transmission distance 1200m

## DESCRIPTION

The SCC is a multi-column, low profile, stainless steel, compression load cell with a digital output signal.

This digital output enables the user to communicate with each SCC independently of the others in the system, thus offering advantages in system setup, system control, corner correction, fault finding and load cell replacement.

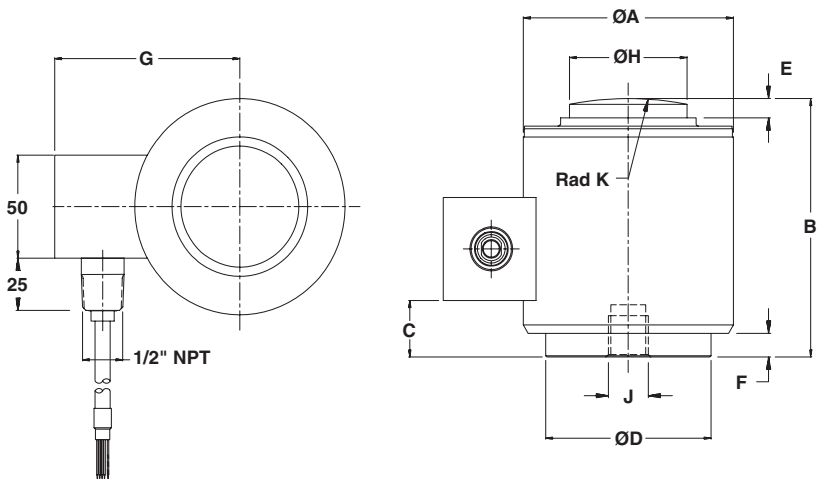
Suitable applications for this product include various types of road and rail weighbridges, and process weighing.

This product meets the stringent Weights and Measures requirements throughout Europe.

## APPLICATIONS

- Weighbridges
- Silo hopper weighing

## OUTLINE DIMENSIONS in mm




*Cable specifications:*

Cable length: 10 meters for 10t
20 meters all others

| | |
|---|---|
| Excitation + | Green |
| Excitation - | Black |
| Rx + | Yellow |
| Rx - | Blue |
| Tx + | Red |
| Tx - | White |
| Shield | Clear |

Note: Dimensions are in millimeters

| Capacity (t) | 10, 25 | 40, 60 | 100 |
|---|---|---|---|
| A | 73.0 | 105.0 | 152.4 |
| B | 82.5 | 127.0 | 184.2 |
| C | 7.0 | 29.0 | 67.5 |
| D | 58.0 | 82.5 | 123.8 |
| E | 6.5 | 8.0 | 23.6 |
| F | 1.8 | 11.0 | 21.8 |
| G | 79.5 | 99.0 | 124.8 |
| H | 31.8 | 58.7 | 79.2 |
| J | M12x1.75 (11 Deep) | M20x2.5 (20 Deep) | |
| K Rad | 152.0 | 152.0 | 432.0 |

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| Standard capacities ($E_{max}$) | 10, 25, 40, 60, 100 | | | ton |
| Accuracy class according to OIML R-60 | CC | C3 | C4 | |
| Maximum no. of verfication intervals (n) | | 3000 | 4000 | |
| Minimum verification interval ($V_{min}=E_{max}/Y$) | | $E_{max}$/10000 | $E_{max}$/10000 | |
| Minimum verification interval, type MR | | $E_{max}$/20000 | $E_{max}$/20000 | |
| Rated output (FSO) | 240,000 | | | counts |
| Tolerance on rated output | 200 | | | ±counts |
| Zero balance | 200 | | | ±counts |
| Combined error | 0.0500 | 0.0200 | 0.0173 | ±% FSO |
| Non-repeatability | 0.0200 | 0.0100 | 0.0090 | ±% FSO |
| Minimum dead load output return | 0.0500 | 0.0167 | 0.0125 | ±% FSO |
| Creep error (30 minutes) | 0.0600 | 0.0245 | 0.0184 | ±% FSO |
| Temp. effect on min. dead load output | 0.0250 | 0.0070 | 0.0070 | ±% FSO/5°C |
| Temp. effect on min. dead load output MR | | 0.0035 | 0.0035 | ±% FSO/5°C |
| Temperature effect on sensitivity | 0.0250 | 0.0050 | 0.0040 | ±% FSO/5°C |
| Compensated temperature range | -10 to +40 | | | °C |
| Operating temperature range | -40 to +80 | | | °C |
| Storage temperature range | -40 to +90 | | | °C |
| Maximum safe over load | 150 | | | %$E_{max}$ |
| Ultimate over load | 400 | | | %$E_{max}$ |
| Maximum safe side load | 10 | | | %$E_{max}$ |
| Deflection at $E_{max}$ | 0.36 max | | | mm |
| Excitation voltage | 12.5 to 18.0 | | | Vdc |
| Maximum excitation voltage | 15 | | | Vdc |
| Maximum current consumption | 80 | | | mA |
| Start up current | 150 | | | mA |
| Insulation resistance | >5000 | | | MΩ |
| Element material (DIN) | Stainless steel 1.4542 | | | |
| Sealing (DIN 40.050 / EN60.529 / IEC 529) | IP66 and IP68 | | | |
| Signal update per second | 25 | | | |
| Baudrate | 9600 | | | Bits/s |
| Transmission type | Asynchronous serial transmission | | | |
| Start bits | 1 | | | |
| Data bits | 7 | | | |
| Stop bits | 1 | | | |
| Parity | Odd | | | |
| Maximum transmission cable length | 1200 | | | m |
| Data transmission interface | RS422 (4 communication wires)/RS485 (2 communication wires) | | | |

FSO - Full Scale Output

# Model DSC

Revere

VISHAY PRECISION GROUP

# Digital Compression Load Cell

## FEATURES

- Capacities: 30, 40 and 50t
- Digital output via RS-485 or RS-422 interface
- Self-aligning, stainless steel single column
- Hermetically sealed, IP66 and IP68
- Certified to OIML R-60, 4000d
- Internal diagnostics
- Internal lightning protection
- Maximum transmission distance 1200m

## OPTIONAL FEATURES

- Self-aligning mount available
- Operation manual - SLC

## DESCRIPTION

The DSC, Digital Single Column, is a stainless steel compression load cell with a digital output.

This digital output enables the user to communicate with each DSC independently of the others in the system, thus offering advantages in system setup, system control, corner correction, fault finding and load cell replacement.

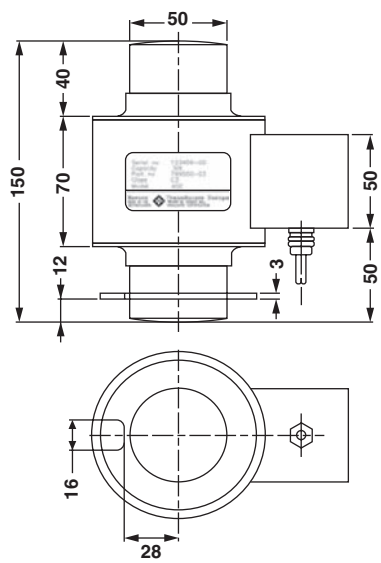
This product is suitable for use in road and rail weighbridges and process weighing applications.

The welded construction and built-in surge protection ensure that this product can be used successfully in harsh environments.

## APPLICATIONS

- Weighbridges
- Silo hopper weighing

## OUTLINE DIMENSIONS in mm




*Cable specifications:*

Cable length: 15m

| | |
|---|---|
| Excitation + | Green |
| Excitation - | Black |
| Rx + | Yellow |
| Rx - | Blue |
| Tx + | Red |
| Tx - | White |
| Shield | Transparent |

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| Standard capacities ($E_{max}$) | 30, 40, 50 | | | ton |
| Accuracy class according to OIML R-60 | Non-approved | C3 | C4 | |
| Maximum no. of verfication intervals (n) | | 3000 | 4000 | |
| Minimum verification interval ($V_{min}=E_{max}/Y$) | | $E_{max}$/6,000 | $E_{max}$/8,000 | |
| Minimum verification interval, type MR | | $E_{max}$/15,000 | $E_{max}$/20,000 | |
| Rated output (FSO) | 240,000 | | | counts |
| Tolerance on rated output | 200 | | | ±counts |
| Zero balance | 200 | | | ±counts |
| Combined error | 0.0500 | 0.023 | 0.018 | ±% FSO |
| Non-repeatability | 0.070 | 0.035 | 0.026 | ±% FSO |
| Minimum dead load output return | 0.0500 | 0.017 | 0.013 | ±% FSO |
| Minimum dead load output return, type MI7.5 | - | 0.0067 | 0.0067 | ±% FSO |
| Creep error (30 minutes) | 0.0600 | 0.025 | 0.0184 | ±% FSO |
| Creep error (20 - 30 minutes) | 0.0200 | 0.0053 | 0.0039 | ±% FSO |
| Temp. effect on min. dead load output | 0.0250 | 0.0117 | 0.0088 | ±% FSO/5°C |
| Temp. effect on min. dead load output MR | | 0.0047 | 0.0035 | ±% FSO/5°C |
| Temperature effect on sensitivity | 0.0250 | 0.0088 | 0.0065 | ±% FSO/5°C |
| Compensated temperature range | -10 to +40 | | | °C |
| Operating temperature range | -40 to +80 | | | °C |
| Storage temperature range | -40 to +90 | | | °C |
| Minimum dead load | 0 | | | %$E_{max}$ |
| Safe dead load | 150 | | | %$E_{max}$ |
| Ultimate load | 300 | | | %$E_{max}$ |
| Deflection at $E_{max}$ | 0.50 | | | mm |
| Excitation voltage | 12.5 to 18.0 | | | Vdc |
| Recommended excitation voltage | 15 | | | Vdc |
| Maximum current consumption | 80 | | | mA |
| Start up current | 150 | | | mA |
| Insulation resistance | >5000 | | | MΩ |
| Element material (DIN) | Stainless steel 1.4542 | | | |
| Sealing (DIN 40.050 / EN60.529 / IEC 529) | IP66 and IP68 | | | |
| Signal update per second | 25 | | | |
| Baudrate | 9600 | | | Bits/s |
| Transmission type | Asynchronous serial transmission | | | |
| Start bits | 1 | | | |
| Data bits | 7 | | | |
| Stop bits | 1 | | | |
| Parity | Odd | | | |
| Maximum transmission cable length | 1200 | | | m |
| Data transmission interface | RS422 (4 communication wires) / RS485 (2 communication wires) | | | |

Correct mounting of the load cells is essential to ensure optimum accuracy and performance. Further information is available upon request.

FSO - Full Scale Output

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Digital Double-Ended Shear Beams

## Contents



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Digital Miniature Double Ended Beam


## FEATURES

- Easy corner compensation of the weighbridge
- Capacities: 10 - 30t
- Digital output via RS485 or RS422 interface
- High side load tolerance
- Electroless nickel plated alloy tool steel
- Surge protection optional
- Extensive internal diagnostics
- External resolution 240,000 counts
- Internal resolution 1,000,000 counts
- Maximum transmission distance 1200m

## APPLICATIONS

- Truck/rail scales
- Silo/hopper/tank weighing

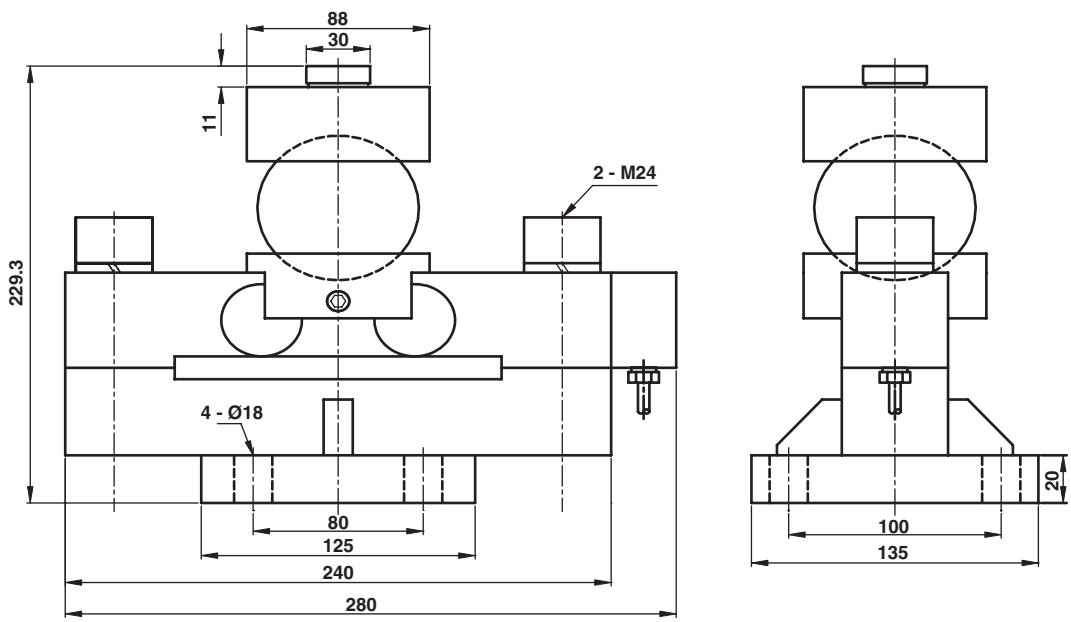
## DESCRIPTION

The MDBD is designed for truck and rail scales in high capacities with low profile. The design of loading through a ball is insensitive to side load.

The MDBD is constructed of alloy steel and is fully potted and sealed with special chemical compounds to IP67 providing excellent protection against water and moisture attack.

The digital output enables the user to communicate with each MDBD independently of the others in the system, thus offering advantages in system setup, system control, corner correction, fault finding and load cell replacement.

## OUTLINE DIMENSIONS




*Cable specifications:*

Cable length: 13.5m

| | |
|---|---|
| Excitation + | Green |
| Excitation - | Black |
| Rx + | Yellow |
| Rx - | Blue |
| Tx + | Red |
| Tx - | White |
| Shield | Transparent |


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11724
Revision: 09-Feb-10

| SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| Standard capacities ($E_{max}$) | 10, 20, 25, 30 | ton |
| Rated output-R.O. | 240,000 | counts |
| Rated output tolerance | 200 | ±counts |
| Zero balance | 200 | ±counts |
| Combined error | 0.0200 | ±% of rated output |
| Non-repeatability | 0.0200 | ±% of rated output |
| Creep error (30 minutes) | 0.03 | ±% of rated output |
| Creep error (20 - 30 minutes) | 0.01 | ±% of rated output |
| Zero return (30 minutes) | 0.03 | ±% of rated output |
| Temperature effect on span | 0.015 | ±% of rated output/10°C |
| Temperature effect on zero | 0.026 | ±% of rated output/10°C |
| Compensated temperature range | -10 to +40 | °C |
| Operating temperature range | -40 to +80 | °C |
| Storage temperature range | -40 to +90 | °C |
| Minimum dead load | 0 | % of Emax |
| Safe dead load | 150 | % of Emax |
| Ultimate load | 300 | % of Emax |
| Excitation voltage | 12.5 to 18 | Vdc |
| Recommended excitation voltage | 15 | Vdc |
| Maximum current consumption | 80 | mA |
| Start up current | 150 | mA |
| Insulation resistance | >5000 | MW |
| Element material | Alloy steel | |
| Sealing (DIN 40.050/EN60.529/IEC 529) | IP67 | |
| Signal update per second | 25 | |
| Baudrate | 9600 | Bits/s |
| Transmission type | Asynchronous serial transmission | |
| Start bits | 1 | |
| Data bits | 7 | |
| Stop bits | 1 | |
| Parity | Odd | |
| Maximum transmission cable length | 1200 | m |
| Data transmission interface | RS422(4 communication wires)/RS485(2 communication | |

All Specifications subject to change without notice.

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Damped Load Cells

## Contents



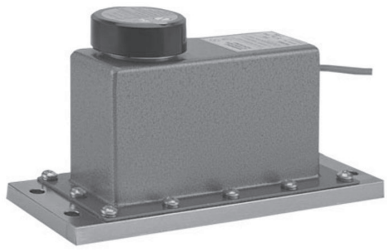

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Model 240

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Fluid Damped Single Point Load Cell



## FEATURES

- Capacities 2 - 50kg
- Painted steel construction
- OIML R60 and NTEP approved
- IP66 protection
- Available with metric and UNC threads

## OPTIONAL FEATURES

- Stainless steel construction
- Digital version available

## DESCRIPTION

Model 240 is specifically designed to be used where fast acquisition of a stable load signal is paramount. The model 240's unique fluid damping system allows the load cell to be used in applications that previously required the use of LVDT's or similar types of measuring devices.

The model 240 brings load cell adaptability into check weighing and grading applications.

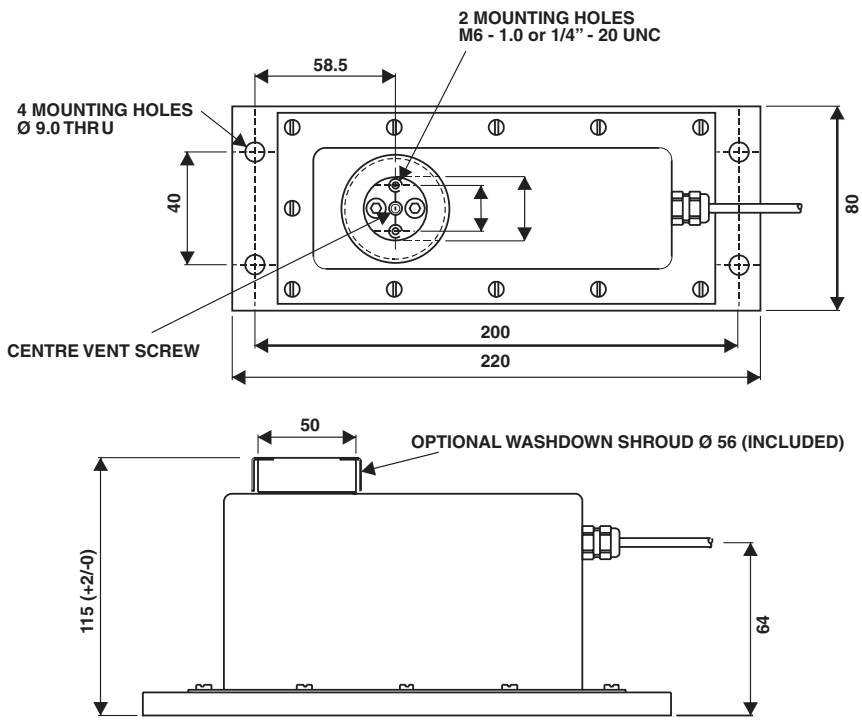
Approved to OIML R60 and NTEP standards, sealed to IP66 level and available in coated steel or stainless steel, the model 240 is suitable for most wash-down applications.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

## APPLICATIONS

- Multi-head filling machines
- Check weighing
- Grading machines
- Liquid filling
- Dynamic weighing

## OUTLINE DIMENSIONS in mm





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12030
Revision: 17-Feb-10

## SPECIFICATIONS

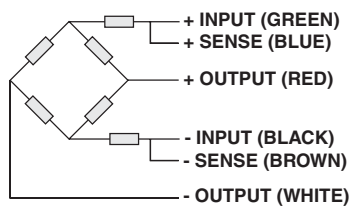
| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| Rated capacity-R.C. ($E_{max}$) | 2, 3, 5, 7, 10, 15, 20, 30, 50** | | | kg |
| OIML Accuracy class | NTEP | Non-Approved | C3* | |
| Maximum no. of intervals (n) | 5000 | 1000 | 3000 | |
| $Y = E_{max}/V_{min}$ | 12000 | 1750 | 9000 | Maximum available |
| Rated output-R.O. | 2.0 | | | mV/V |
| Rated output tolerance | 0.2 | | | ±mV/V |
| Zero balance | 0.1 | | | ±mV/V |
| Zero Return, 30 min. | 0.033 | 0.050 | 0.015 | ±% of applied load |
| Total Error | 0.050 | 0.025 | 0.015 | ±% of rated output |
| Temperature effect on zero | 0.0026 | NA | 0.0026 | ±% of rated output/°C |
| Temperature effect on output | 0.0010 | NA | 0.0010 | ±% of applied load/°C |
| Temperature range, compensated | -10 to +40 | | | °C |
| Temperature range, safe | -30 to +70 | | | °C |
| Maximum safe central overload | 150 | | | % of R.C. |
| Ultimate central overload | 300 | | | % of R.C. |
| Excitation, recommended | 10 | | | Vdc or Vac rms |
| Excitation, maximum | 15 | | | Vdc or Vac rms |
| Input impedance | 415±15 | | | Ohms |
| Output impedance | 350±3 | | | Ohms |
| Insulation resistance | >1000 | | | Mega-Ohms |
| Cable length | To suit | | | m |
| Cable type | 6 wire, braided, polyurethane, silicone gel impregnation | | | Standard |
| Construction | Painted mild steel*** | | | |
| Environmental protection | IP66 | | | |

* 50% utilization

** 2 & 3kg are not approved by NTEP or OIML

*** Stainless steel available

**Wiring schematic diagram**

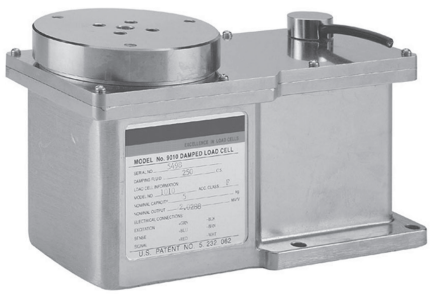


# Model 9010

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Self Contained Weighing Module



### FEATURES

- Capacities 3-90kg
- **Unique adjustable tare load cancelling mechanism**
- Highly effective viscous damping
- 6 Built-in overload limit stops in three directions
- Weighing speed is much faster than standard load cell
- IP65 protection

### OPTIONAL FEATURES

- Stainless steel version
- IP66 with additional breather tube
- Digital version available

### DESCRIPTION

Model 9010 is a self contained weighing module for use in repeated shock-loading applications or where fast weighing and settling times are required such as multihead weighers, check weighers and other static and dynamic weighing applications characterized by sudden or impact loading.

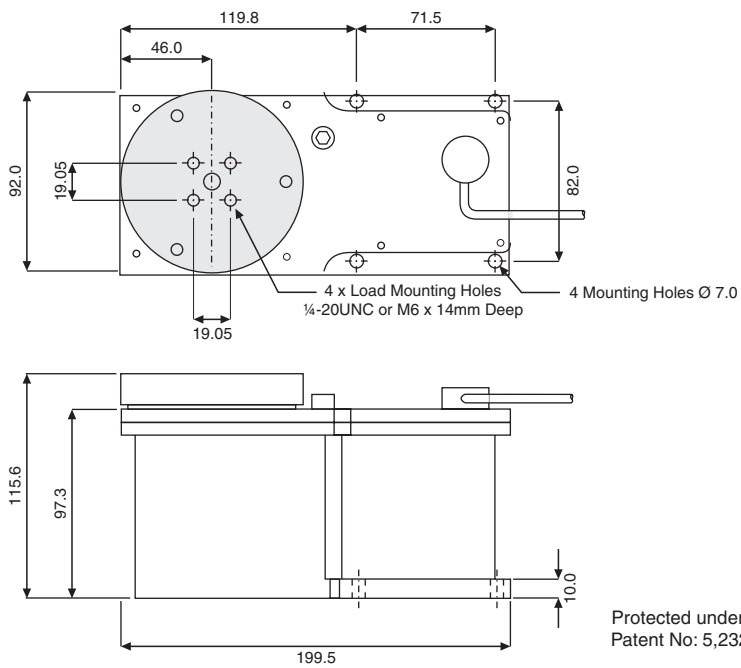
Model 9010's unique fluid damping system allows the load cell to be used in applications that previously required the use of LVDT's or similar types of measuring devices.

The model 9010 has a unique adjustable tare load cancellation feature which brings load cell adaptability into checkweighing and grading applications.

The two additional sense wires feed back the voltage reaching the load cell. Complete compensation of changes in lead resistance due to temperature change and/or cable extension, is achieved by feeding this voltage into the appropriate electronics.

### OUTLINE DIMENSIONS in mm

Outline Dimensions All Capacities




Protected under U.S. Patent No: 5,232,062

## HIGH PERFORMANCE DYNAMIC WEIGHING

Weigh Module 9010 consists of a Tedea-Huntleigh single point load cell enclosed in an environmentally protected, electroless nickel plated aluminium housing. The Module integrates load cell performance, viscous damping, adjustable tare offset mechanism and overload protection.

## LOAD CELL

Tedea-Huntleigh's Model 1010, 1040 or 1140 single point load cells can be used in the Model 9010. Standard capacities 3kg to 90kg; for higher capacities, consult Tedea-Huntleigh.

## OVERLOAD PROTECTION

Model 9010 is equipped with built-in overload stops for positive (push), negative (pull) and twisting loads. These stops are factory adjusted for each specific application.

## DAMPING

Model 9010 features a unique viscous damping technique developed and patented by Tedea-Huntleigh, which provides
- Faster settling time
- Higher weighing speeds
- Load cell protection (extended working life)

Damping parameters are factory set for each specific application. The benefits of damping are illustrated by the test results shown below, which show actual oscilloscope traces for damped and undamped load cells under identical tests.

## TARE LOAD CANCELLING

Model 9010 features an adjustable tare load cancelling mechanism which provides a tare offset of up to 35kg (in several ranges). The tare offset is factory set but may be adjusted by the user. This feature enables the use of a lower capacity load cell, resulting in electronic circuits with lower gains, lower noise, higher stability and lower temperature drifts.

An example for the power of tare cancelling:
Assume an application with 5kg dead load and 2kg (useful) load.

1. Without tare cancelling:
   Total load of 5+2 is 7kg, therefore, a load cell with capacity of at least 10kg has to be selected.
2. With tare cancelling:
   The 5kg dead load can be opposed and effectively cancelled by the Tare Cancellation Mechanism, leaving a load of 2kg only, hence a capacity of 3kg can be selected.
3. Results:
   A capacity of 3kg rather than of 10kg is enabled by the Tare Cancellation feature for a gain of over 3 times in resolution and noise.

## LOAD CELL LIFE

Because of the design and unique features of Model 9010, the life of the load cell is increased substantially. For example, in one typical set of life tests, the undamped load cell failed after approximately 300,000 cycles. The damped load cell held without any significant deterioration for more than 300 million cycles. In this test a model 1010-10kg load cell was used. A dead load of 2.5kg was mounted 150mm from the mounting centre. A 4.5kg impact was applied at that point at a rate of 8 times/sec.

## ENVIRONMENTAL PROTECTION

The load cell in the model 9010 is completely enclosed in a rugged, electroless nickel plated aluminium or stainless steel housing to withstand splashing. It is environmentally protected to IP65, a special "breather valve" allows atmospheric pressure equalization while excluding splashing liquids.
With an optional addition of a breather tube the protection is rendered IP66. A built-in shut-off valve is used for shipping.

## SETTLING TIME

Settling time is the elapsed time from the instant of loading to the time the load cell's signal remains within the user specified accuracy.

Settling time is affected by the following parameters.

1. Total mass on the module and it's distance from the mounting centre.
2. Impact loading characteristics.
3. Environmental temperature change.

For optimum performance, the above parameters must be specified by the user for each order.

## APPLICATION AND ORDER DATA

**TO BE COMPLETED BY THE CUSTOMER**

CUSTOMER'S NAME ..... ORDER No. .....

CONTACT PERSON ..... DATE .....

APPLICATION ..... No. of UNITS .....

TOTAL TARE WEIGHT (DEAD LOAD).....kg; FOR EACH UNIT.....kg

TOTAL USEFUL WEIGHT (LIVE LOAD) .....kg; FOR EACH UNIT.....kg

DESCRIBE LIVE LOAD (POWDER, FRUIT, SCREWS ETC) .....

REQUIRED SETTLING TIME .....msec; ACCURACY.....

OPERATING TEMPERATURE RANGE °C: .....

MOUANTING THREADS .....mm (6x1) .....inch (1/4 UNC)

PREFERRED LOAD CELL, IF ANY.....

1. CHECKWEIGHER (SEE SKETCH BELOW): .....

SIZE OF CONVEYOR PLATFORM: .....

WIDTH..... cm; A ..... cm; B .....cm; C.....cm

SPEED OF BELT ..... cm/sec; SIZE OF WEIGHED PRODUCT IN MOVEMENT DIRECTION.....cm

TARE WEIGHT DISTRIBUTION: CONVEYOR: ..... kg; MOTOR:.....kg

2. HOPPER OR OTHER APPLICATION (SEE SKETCH BELOW): .....

CENTER OF GRAVITIY (CofG) OF DEAD LOAD, (ESTIMATE IF NECESSARY): D.....cm; F .....cm

LOADING POSITION: D .....cm; F ..... cm; DROP HEIGHT:.....cm

IF LOAD CofG VAIRIES, MAX DIST. BETWEEN EXTREMES .....cm

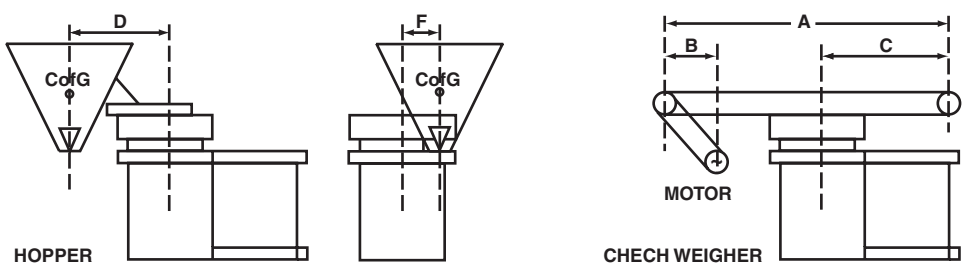
SPECIAL REQUIREMENTS

CABLE LENGTH IF NOT STANDARD (1 m) ..... ; DELIVERY REQUESTED .....

CORNERS ACCURACY: TEST WIGHT (MAX. ALLOWED 1/3 OF LOAD CELL CAPACITY) .....kg

DISTANCE FROM CENTER .....cm VARIATION ALLOWED .....

DEFINITION OF LOADING POSITION RELATIVE TO 9010



## SPECIFICATIONS

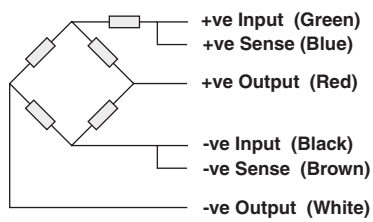
| PARAMETER | VALUE | UNIT |
|---|---|---|
| Rated capacity-R.C. | 3, 5, 7, 10, 15, 20, 30, 50, 90 | kg |
| VT Accuracy class | G | |
| Maximum no. of intervals (n) | 3000 | |
| Rated output-R.O. | 2.0 | mV/V |
| Rated output tolerance | 0.2 | ±mV/V |
| Total error* | 0.030 | ±% of R.O. |
| Temperature effect on span* | 0.002 | ±% of R.O./°C |
| Temperature effect on zero: load cell | 0.004 | ±% of load/°C |
| buoyancy | 0.15 | +gr/°C rise |
| tare offset | 0.25 x tare offset (kg) | +gr/°C rise |
| Temperature range - standard* | 10 to 30 | °C |
| Tare offset ranges | 0 to 35 | kg |
| Safe static overload<br>downward at mounting centre<br>upward at mounting centre<br>200mm in front or side of mounting centre | <br>800<br>400<br>200 | <br>% of R.C.<br>% of R.C.<br>% of R.C. |
| Settling time - typical | 40 - 300 | millisecond |
| Temperature effect on settling time | 2 | %/°C |
| Excitation, recommended | 10 | Vdc or Vac rms |
| Excitation, maximum | 15 | Vdc or Vac rms |
| Input impedance | 415±15 | Ohms |
| Output impendance | 350±5 | Ohms |
| Insulation resistance | >5000 | MegaOhms |
| Weight | 3 | kg |
| Construction | Anodized body, electroless nickel plating** | |
| Environmental protection | IP65*** | |

* Extended temperature ranges and smaller temperature effects are available upon request.

** Optional stainless steel coating available upon request.

*** IP66 available with additional breather tube.

**Wiring Schematic Diagram**



# Model 1410

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Load Cell for Rotary Filling Machines

## FEATURES

- The first and only load cell specifically designed for use in rotary filling machines
- Short settling times
- High resistance to side loads
- Effective isolation of base vibrations
- Centrifugal forces do not affect accuracy
- Two mounting options

## DESCRIPTION

Model 1410 represents a radical new concept in load cell design, which alleviates many of the problems encountered when conventional load cells are used in rotary weighing machines.

Due to a patented damping system, typical settling times of 700ms are dramatically reduced to less than 300ms (depending upon conditions), significantly reducing cycle times and increasing throughput capabilities.

Centrifugal forces are handled in such a way that their effect on output is very small.

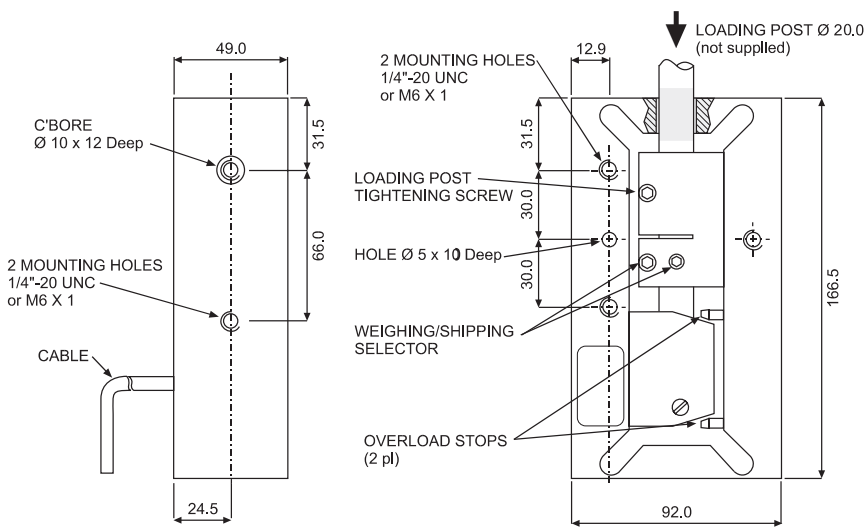
For example, tested up to 20 RPM, total dynamic error amounted to less than 0.2 gram per kg. Also the model 1410 provides excellent isolation of base vibrations. Both features enable use of higher machine speeds without loss of accuracy.

The uniquely rugged construction of the model 1410 is very resistant to side loads and can therefore withstand bottle jams and other mishaps.

## APPLICATIONS

- Rotary filling machines

## OUTLINE DIMENSIONS in mm




For different mounting configuration consult factory.



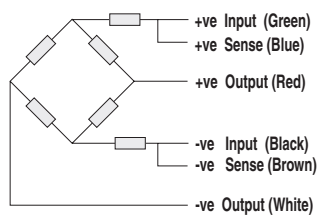
Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 12023
Revision: 17-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | | UNIT |
|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 10, 20, 30 | | kg |
| **T-H Accuracy class** | **E** | **G** | |
| **Rated output-R.O.** | 2 | | mV/V |
| **Rated output tolerance** | 0.3 | | ±mV/V |
| **Zero balance** | -0.0 / +0.2 | | ±mV/V |
| **Total static error at room temperature per OIML** | 0.05 | 0.02 | ±% of R.O. |
| **Dynamic error: speed range of 0 to 15rpm, rotational radius of 1m, load placed on platform located 14cm above top surface of load-cell & connected by 3/4" or 20mm dia. steel shaft** | 0.04 | | ±% of the static reading at same load |
| **Creep & Zero return (30 min.)** | 0.05 | 0.025 | ±% of load |
| **Temperature effect on zero** | 0.010 | 0.004 | ±% of R.O./°C |
| **Temperature effect on output** | 0.003 | 0.001 | ±% of load/°C |
| **Temperature range, compensated** | +5 to +40 | | °C |
| **Temperature range, safe** | -30 to +70 | | °C |
| **Maximum safe static overload, positive** | 160<br>Factory adjusted to 120 ... 160% of R.C. | | % of R.C. |
| **Maximum safe static overload, negative** | -120<br>Factory adjusted to -30 ... -120% of R.C. | | % of R.C. |
| **Ultimate static overload (central loading)** | 300 | | % of R.C. |
| **Excitation, recommended** | 10 | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | Vdc or Vac rms |
| **Input impedance** | 415±15 | | Ohms |
| **Output impedance** | 350±3 | | Ohms |
| **Insulation resistance** | >2000 | | Mega-Ohms |
| **Cable length** | 0.6 | | m |
| **Construction** | Anodized aluminum | | |
| **Damping** | Internal silicone fluid damping. Piston has two positions: Working and shipping. In shipping position the cylinder is sealed | | |

**Wiring Schematic Diagram**
**(unbalanced bridge configuration)**



# Model 1430

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Damped Load Cells for Rotary Filling Machines

## FEATURES

- Capacities: 3kg, 17lbs, 23lbs
- Stainless Steel Construction
- Insensitive to rotary dynamic forces
- Single Point Performance
- Rotary speed to 13rpm at 1m radius
- Sealed wash down configuration

## DESCRIPTION

The 1430 is uniquely designed to reduce weighing errors resulting from dynamic forces occurring on rotary liquid filling machines. The 1430 will provide high weighing accuracies when operated over a range of 0 to 13 rpm at a mounting location up to 1 meter radius.

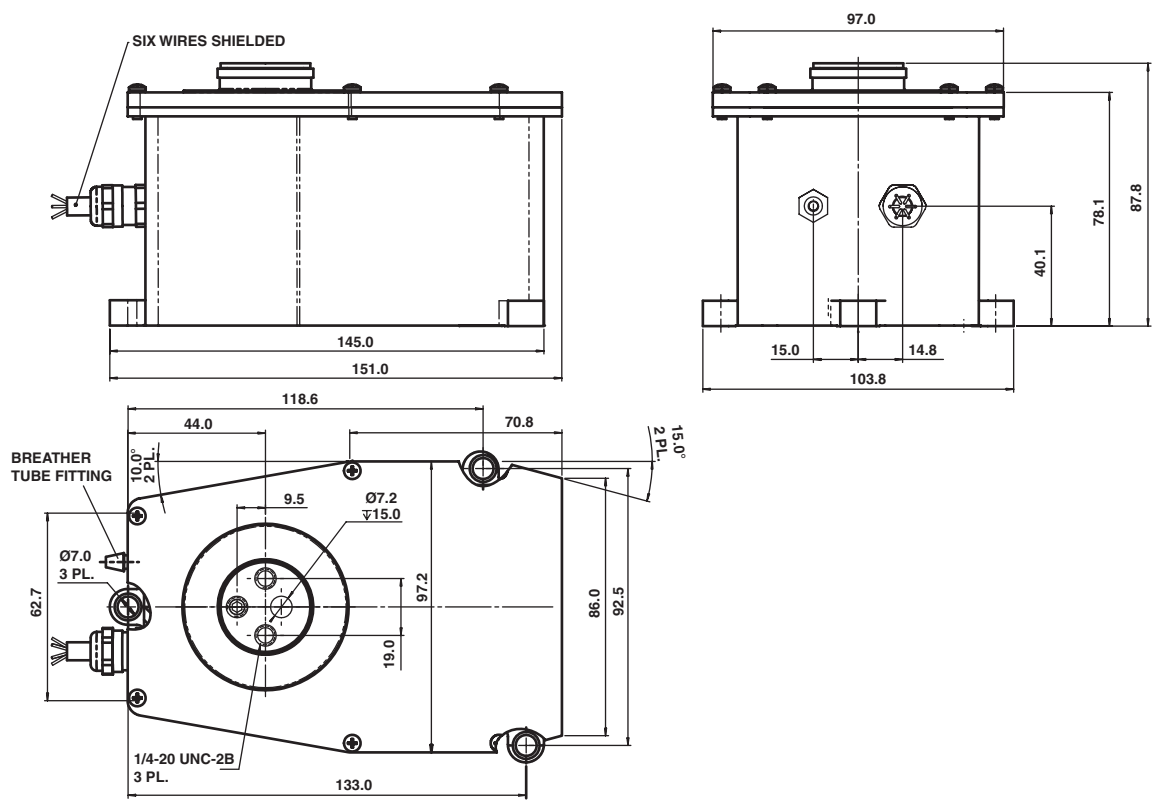
The sealed stainless steel construction of the model 1430 provides safe operation in applications subjected to caustic or heavy wash down environments. The rugged construction provides significant overload protection both in the weighing axis as well as against side loading. Side loads, such as occurring in bottle jams of up to 300 kg, have been applied to units with no significant zero change.

The 1430 features adjustable viscous damping for shorter settling times and for faster machine cycles.

## APPLICATIONS

- Rotary filling machines

## OUTLINE DIMENSIONS in millimeters



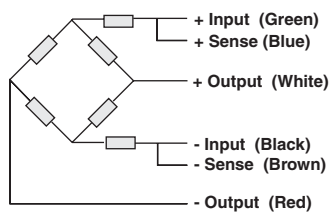
| SPECIFICATIONS | | |
|---|---|---|
| **PARAMETER** | **VALUE** | **UNIT** |
| Rated capacity-R.C. | 3 | kg |
| Rated capacity-R.C. | 17, 23 | lb |
| VT Accuracy class | C1 | |
| Maximum no. of intervals (n) | 1000 | |
| Rated output-R.O. | 2 | mV/V |
| Rated output tolerance | 0.3 | ±mV/V |
| Zero balance 3kg:<br>(3kg std.), 17lb, 23lb: | -0.6000±0.0500<br>±0.2000 | mV/V |
| Total static error at room temperature per OIML | 0.03 | ±% of R.O. |
| Dynamic error: speed range of 0 to 15rpm, rotational radius of 1m, load placed on platform located 14cm above top surface of load-cell & connected by 3/4" or 20mm dia. steel shaft | 0.04 | ±% of the static reading at same load |
| Creep & Zero return (30 min.) | 0.05 | ±% of load |
| Temperature effect on zero | 0.010 | ±% of R.O./°C |
| Temperature effect on output | 0.003 | ±% of load/°C |
| Temperature range, compensated | +5 to +40 | °C |
| Temperature range, safe | -30 to +70 | °C |
| Maximum safe static overload, positive | 160 (2) | % of R.C. |
| Maximum safe static overload, negative | -120 | % of R.C. |
| Ultimate static overload (central loading) | 300 | % of R.C. |
| Excitation, recommended | 10 | Vdc or Vac rms |
| Excitation, maximum | 15 | Vdc or Vac rms |
| Input impedance | 415±15 | Ohms |
| Output impedance | 350±3 | Ohms |
| Insulation resistance | >2000 | Mega-Ohms |
| Cable type | 6 wire, 26 AWG, shielded, PVC jacket | |
| Cable length | 6 | m |
| Construction | Aluminum sensor enclozed in, stainless steel, box | |
| Damping | Internal silicone fluid damping (1) | |

**Notes**

(1) Silicone fluid is shipped separately from load cell, dozed in syringe. Silicone fluid is filled in cylinder before installation of load cell.

(2) Factory adjusted to 170% of R.C.

**Wiring Schematic Diagram**



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Digital Damped Load Cells

## Contents



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Model 240D

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Digital Fluid Damped Single Point Load Cell

## FEATURES

- Fully calibrated and filtered digital output
- High update rate, up to 1200 updates per second
- Checkweigher function - reading acquired over period set by remote sensor trigger
- 4 opto-isolated digital inputs
- 4 opto-isolated digital outputs
- Advanced configurable digital filtering
- Safeguard access to calibration data for approved applications
- Reading on request or continuous output
- Visual indication of operating mode and errors
- Extensive diagnostics
- Fluid damped and overload protected
- Graphic User Interface(GUI) PC application enables easy setup, calibration and monitoring

## DESCRIPTION

Model 240D is specifically designed for high speed/dynamic weighing. Fluid damping vastly improves the response time and fatigue life over undamped load cells.

On board electronics make it easily configurable and simple to employ in approved weighing applications. A wealth of application experience has gone into this load cell to allow weighing system designers to expedite development of their own designs - a great proportion of the functionality required to create a fully featured weighing system is already implemented in the 240D.

Communication is straight forward using an ASCII or MODBUS command structure where high update speeds are possible, making the 240D particularly suitable for check weighing. RS232 interface is available for single load cell applications and simple load cell setup.

In multi-head weighing machines, up to 128 units can be networked together over an RS485 link. 4 digital inputs allow the synchronization of the weighing with external triggers and remote operations (zero, tare). 4 digital outputs enable control functions like coarse and fine rate filling, and relieve the real-time load of the system controller.

Factory calibration ensures that each unit will be virtually identical in performance.

Graphic User Interface (GUI) PC application enables easy monitoring, setup and calibration of all load cells connected on the RS485 network. Load cell parameters can be retrieved and store for backup, and downloaded into the load cell for easy recovery from failures or changing operating modes.

## APPLICATIONS

- High speed/ dynamic weighing

## SPECIFICATIONS

| GENERAL SPECIFICATIONS | VALUE | UNIT |
|---|---|---|
| **Capacities** | 1, 2, 3, 5, 7, 10, 15, 20, 30, 50, 90 | kg |
| **Approval*** | 3000d | OIML (R60) |
| **Mechanical protection** | Fluid damped & overload/underload protected | |
| **Maximum load** | 150 | % of $E_{max}$ |
| **Maximum dynamic load** | 80 | % of $E_{max}$ |
| **Operating temperature range** | -10 to +40 (compensated)<br>-20 to +70 (operating) | °C |
| **Protection Class (EN6059)** | IP66 | |
| **Weight** | 3.4 | kg |
| **Enclosure** | Stainless steel or coated steel | |
| **ELECTRICAL SPECIFICATIONS** | | |
| **Input voltage.** | 6 to 30 | Vdc |
| **Current consumption** | <100 | mA |
| **External resolution** | 1,000,000 | Counts |
| **Update rate** | 18.75, 37.5, 75, 150, 300, 600 and 1200 | Readings/sec |
| **Digital filtering** | FIR, recursive or user defined | |
| **Digital filter cut-off frequencies** | FIR: 2.5, 5, 10, 20, 40, 80, and 150<br>Recursive: 0.25, 0.5, 1, 2, 5, 10, 20, and 38 | Hz<br>Hz |
| **Calibration method** | Dead load, mV/V or table | |
| **Digital inputs** | 4, with common return | |
| **Type** | TTL or dry contact | |
| **Settling time** | <20 | ms |
| **Digital outputs** | 4 | |
| **Type** | Open collector with common emitter | |
| **Settling time** | <20 | ms |
| **COMMUNICATION SPECIFICATIONS** | | |
| **Interface** | RS232, RS485 | |
| **Protocol** | ASCII, Modbus | |
| **Communication Speed** | 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400 | Baud |
| **Data Bits** | 7 or 8 | Bits |
| **Stop Bits** | 1 or 2 | Bits |
| **Parity** | Odd/even/none | |
| **Termination** | Internal, activated by software command | |
| **Maximum number of networked devics** | 128 | |

* 1, 2, 3 & 90kg are not OIML approved

## DIAGNOSTICS

A significant advantage of the digital load cell is in terms of cost of ownership. The analogue load cell, especially in multi-cell applications can be awkward to set up and fault find. In a production line environment, the real cost of determining and resolving equipment problems is high. Reliable and meaningful feedback about load cell operation and fault conditions are essential for fast recovery and this is where the 240D pays for itself. The 240D has a number of key features in terms of diagnostics foe cell operation:

1. External indication of errors - a bi-color led is used to show status and fault conditions. Even in the worst case, if communication with the load cell is not possible, the 240D can still give an indication of its health and set up.
2. Validity of readings - with each reading, status characters are transmitted (good/bad/warning). Fatal errors cause readings to cease and error codes are transmitted.
3. Integrity of calibration - at power up the cell(s) self check to assure:
   (a) Calibration
   (b) Consistency between units used in combination
   (c) The network has been changed- units added/removed

## CHECK WEIGHING

The model 240 has proved itself a consistent performer in check weighing and the 240D extends its capability with features specific to this application:

1. Three types of filtering with selectable cutoff frequencies.
   - Digital FIR filter
   - Digital recursive filter
   - Digital user defined FIR filter
2. Externally triggered acquisition of weight (e.g. trigger input from PECs), with programmable delay between trigger and weight acquisition.

## GRAPHIC USER INTERFACE (GUI) APPLICATION

The 240D is supplemented with a GUI PC application. The GUI application enables easy monitoring of all load cells through the RS485 network, and setup and calibration of each load cell. The user can retrieve the load cell(s) parameters, store them as a backup file and download them again into the load cell. This enable the user to define and store several operating configurations and setup of the machine and easily change from one mode to another just by downloading the desired parameters set into the load cells. The same feature can be used for easy recovery from system failures.

## INSTALLATION CHECK LIST

The 240D is an accurate, repeatable instrument and to realize its full performance, a number of points should be considered.

### INSTALLATION

- Mount on flat, level (ideally ground) surface, rigid enough to remain
- Level under load
- Isolate where possible, from sources of vibration (Motors, random external etc)
- Use 4 off base plate bolts, using torque of 35-40Nm (25-30lb ft)

### LIVE END MOUNTING

- The weighing platform assembly should be rigid enough to avoid low frequency oscillation
- Note: settling times increase with tare load
- Use both load cap mounting bolts torqued to 16Nm (12lb ft)

### INFEED OF WEIGHED ITEMS

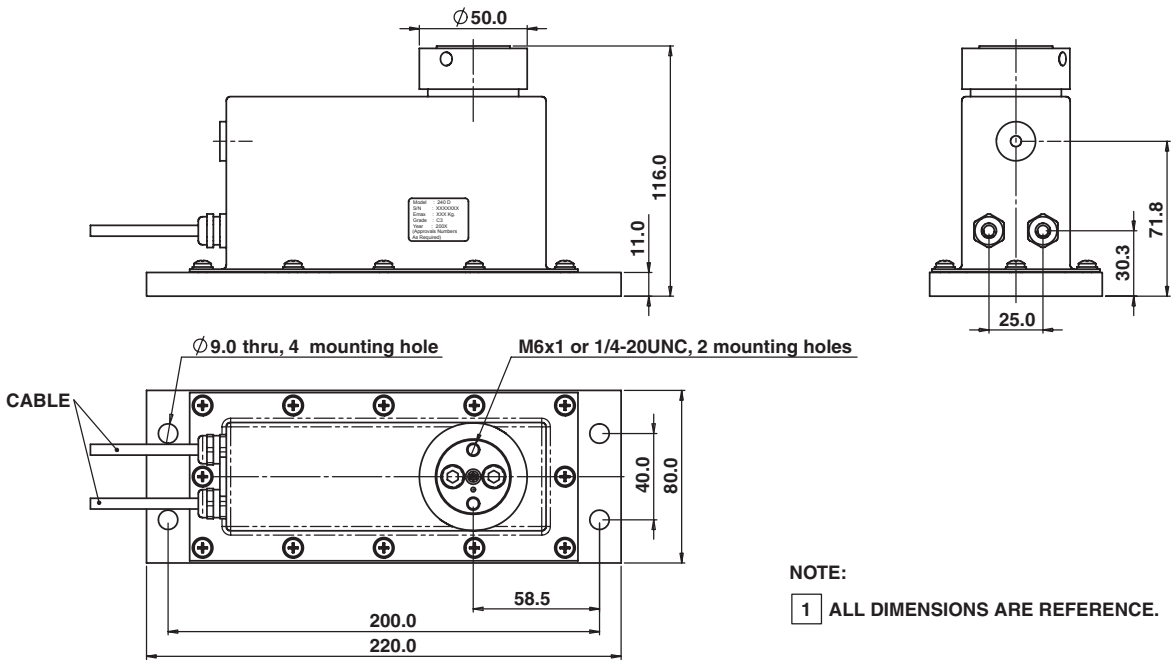
- Avoid shock application of load from:
  (a) Edge impact due to a step between in-feed and weighing platform
  (b) Live weight dropped directly onto platform
- The path of the live weight over platform should be through the centre line of the load cell (length-wise)
- The weighing platform belt feed should be appropriate to the maximum live weight (live weight can cause stretching oscillation of belt)

### TROUBLE SHOOTING

Anything that prevents free movement of the cell under load will cause a problem. Check:

- The transportation grub screw (centre load cap vent screw) is released
- The under side of the load cap is free of debris etc
- The filters fitted to the load cap are not blocked (special filters/ options can be provided for corrosive atmospheres, low temperatures, high humidity/very aggressive wash down

## OUTLINE DIMENSIONS in mm




**NOTE:**

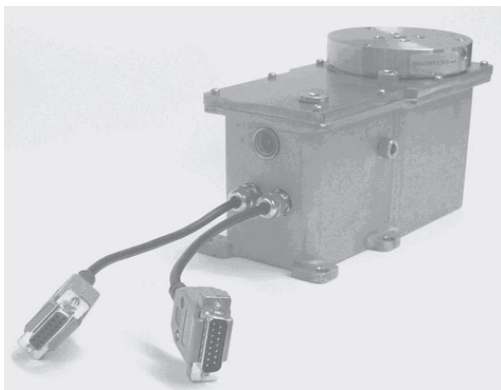
1 **ALL DIMENSIONS ARE REFERENCE.**

# Model 9010D

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Digital Self Contained Weighing Module



## FEATURES

- Capacities 3-90kg
- Unique adjustable tare load cancelling mechanism
- Highly effective viscous damping
- 6 Built-in overload limit stops in three directions
- IP65 protection
- Fully calibrated filtered digital output
- High update rate, up to 1200 updates per second
- 4 opto-isolated digital inputs
- 4 opto-isolated digital outputs
- Advance configurable digital filtering
- Safeguard access to calibration data for approved applications
- Reading on request or continuous output
- Extensive diagnostics

## OPTIONAL FEATURES

- Stainless steel
- IP66 with additional breather tube

## DESCRIPTION

Model 9010 is a self contained weighing module for use in repeated shock-loading applications or where fast weighing and settling times are required such as multihead weighers, check weighers and other static and dynamic weighing applications characterized by sudden or impact loading.

Model 9010D's unique fluid damping system allows the load cell to be used in applications that previously required the use of LVDT's or similar types of measuring devices.

The model 9010D has a unique adjustable tare load cancellation feature which brings load cell adaptability into checkweighing and grading applications.

On board electronics make it highly configurable and simple to employ in dynamic weighing applications. A great proportion of the functionality required to create a fully featured weighing system is already implemented in the 9010D.

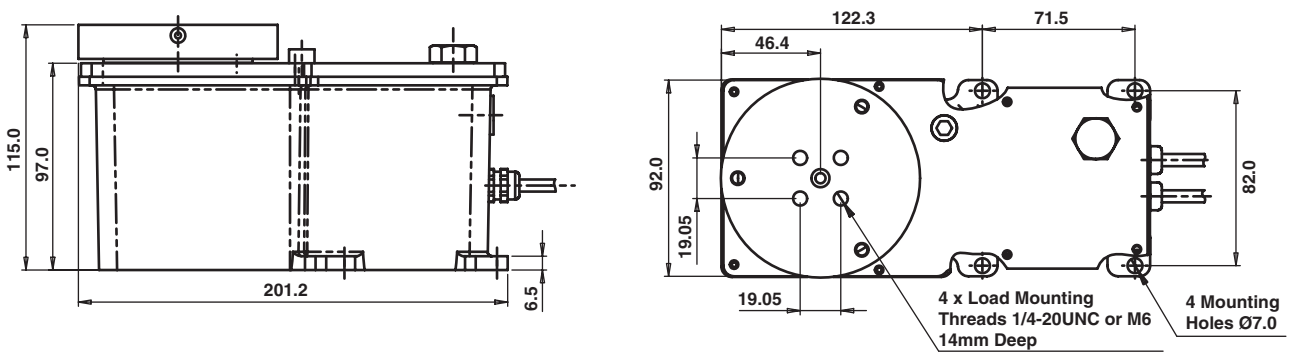
Communication is straightforward using an ASCII or MODBUS command structure and high update speeds are possible, making it particularly suitable for check weighing. Up to 128 units can be networked together over an RS485 link.

4 digital inputs allow the synchronization of the weighing with external triggers and remote operations (zero, tare). 4 digital outputs enable control functions like coarse and fine rate filling, and relieve the real-time load of the system controller.

Factory calibration ensures that each unit will be virtually identical in performance.

Graphic User Interface (GUI) PC application enables easy monitoring, setup and calibration of all load cells connected on the RS485 network. Load cell parameters can be retrieved and stored for backup, and downloaded into the load cell for easy recovery from failures or changing operating modes.

## OUTLINE DIMENSIONS in mm





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 12069
Revision: 23-Feb-10

## COMMUNICATING WITH THE 9010D

A typical digital weighing installation will consist of a host device (e.g. PC, digital indicator, PLC) and between 1 to 128 load cells connected over a single RS485 bus via a single cable. Over this connection commands are issued by the host and the load cells respond with readings and status information. Both RS232 and RS485 interfaces are available in parallel and the user can select either ASCII or MODBUS protocol.

## DIAGNOSTICS

A significant advantage of the digital load cell is in terms of cost of ownership. The analogue load cell, especially in multi-cell applications can be awkward to set up and to isolate faults. In a production line environment, the real cost of determining and resolving equipment problems is high. Reliable and meaningful feedback about load cell operation and fault conditions are essential for fast recovery and this is where the Digital 9010 pays for itself.

The 9010D has a number of key features in terms of diagnostics of the cell operation:.

1. External indication of errors - a bi-color LED is used to show status and fault conditions. Even in the worst case, if communication with the load cell is not possible, the 9010D can still give an indication of its conditions and set up.
2. Internal error log - a time referenced log of errors is maintained which allows tracing of repeating fault conditions, and identification of time of serious fault (e.g. overload / underload).
3. Validity of readings - with each reading, status characters are transmitted. Fatal errors cause readings to cease and error codes are transmitted.
4. Integrity of calibration - at power up the cell(s) self check to assure:
   (a) Calibration
   (b) Hardware, software and system integrity

## HIGH PERFORMANCE DYNAMIC WEIGHING

Weigh Module 9010 consists of a Tedea-Huntleigh single point load cell enclosed in an environmentally protected, electroless nickel plated aluminium housing. The Module integrates load cell performance, viscous damping, adjustable tare offset mechanism and overload protection.

## LOAD CELL

Tedea-Huntleigh's Model 1010, 1040 or 1140 single point load cells can be used in the Model 9010. Standard capacities 3kg to 90kg; for higher capacities, consult Tedea-Huntleigh.

## OVERLOAD PROTECTION

Model 9010 is equipped with built-in overload stops for positive (push), negative (pull) and twisting loads. These stops are factory adjusted for each specific application according to customer definitions.

## DAMPING

Model 9010 features a unique viscous damping technique developed and patented by Tedea-Huntleigh, which provides

- Faster settling time
- Higher weighing speeds
- Load cell protection (extended working life)

Damping parameters are factory set for each specific application.

## TARE LOAD CANCELLING

Model 9010 features an adjustable tare load cancelling mechanism which provides a tare offset of up to 35kg (in several ranges). The tare offset is factory set but may be adjusted by the user. This feature enables the use of a lower capacity load cell, resulting in electronic circuits with lower gains, lower noise, higher stability and lower temperature drifts.

An example for the power of tare cancelling:
Assume an application with 5kg dead load and 2kg (useful) load.

1. Without tare cancelling:
   Total load of 5+2 is 7kg, therefore, a load cell with capacity of at least 10kg has to be selected.
2. With tare cancelling:
   The 5kg dead load can be opposed and effectively cancelled by the Tare Cancellation Mechanism, leaving a load of 2kg only, hence a capacity of 3kg can be selected.
3. Results:
   A capacity of 3kg rather than of 10kg is enabled by the Tare Cancellation feature for a gain of over 3 times in resolution and noise.

## LOAD CELL DURABILITY

Because of the design and unique features of Model 9010, the durability of the load cell is increased substantially. For example, in one typical set of durability tests, the undamped load cell failed after approximately 300,000 cycles. The damped load cell held without any significant deterioration for more than 300 million cycles. In this test a model 1010-10kg load cell was used. A dead load of 2.5kg was mounted 150mm from the mounting centre. A 4.5kg impact was applied at that point at a rate of 8 times/sec.

## ENVIRONMENTAL PROTECTION

The load cell in the model 9010 is completely enclosed in a rugged, electroless nickel plated aluminium or stainless steel housing to withstand splashing. It is environmentally protected to IP65, a special "breather valve" allows atmospheric pressure equalization while excluding splashing liquids.
With an optional addition of a breather tube the protection is rendered IP66. A built-in shut-off valve is used for shipping.

## SETTLING TIME

Settling time is the elapsed time from the instant of loading to the time the load cell's signal remains within the user specified accuracy.

Settling time is affected by the following parameters.

1. Total mass on the module and it's distance from the mounting centre.
2. Impact loading characteristics.
3. Environmental temperature change.

For optimum performance, the above parameters must be specified by the user for each order.

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Rated capacity (R.C.)** | 3, 5, 7, 10, 15, 20, 30, 50, 90 | kg |
| **VT Accuracy class** | G | |
| **Maximum no. of intervals (n)** | 3000 | |
| **Total error*** | 0.030 | ±% of R.O. |
| **Temperature effect on span*** | 0.002 | ±% of R.O./°C |
| **Temperature effect on zero: load cell** | 0.004 | ±% of load/°C |
| **buoyancy** | 0.15 | +g/°C rise |
| **tare offset** | 0.25 X tare offset (kg) | +g/°C rise |
| **Temperature range - standard*** | 10 to 30 | °C |
| **Tare offset ranges** | 0 to 35 | kg |
| **Safe static overload**<br>**downward at mouting centre**<br>**upward at mounting center**<br>**200mm in front or side of mounting center** | <br>800<br>400<br>200 | <br>% of R.C.<br>% of R.C.<br>% of R.C. |
| **Setting time - typical** | 40 - 300 | ms |
| **Temperature effect on setting time** | 2 | %/°C |
| **Power supply** | 6 - 30 | VDC |
| **Weight** | 3 | kg |
| **Construction** | Anodized body, electroless plating** | |
| **Environmental protection** | IP65 | |
| **ELECTRICAL SPECIFICATIONS** | | |
| **Input voltage.** | 6 to 30 | VDC |
| **Current consumption** | <100 | mA |
| **External resolution** | 1,000,000 | Counts |
| **Update rate** | 18.75, 37.5, 75, 150, 300, 600 and 1200 | Readings/sec |
| **Digital filtering** | FIR, recursive or user defined | |
| **Digital filter cut-off frequencies** | FIR: 2.5, 5, 10, 20, 40, 80, and 150<br>Recursive: 0.25, 0.5, 1, 2, 5, 10, 20, and 38 | Hz<br>Hz |
| **Calibration method** | Dead load, mV/V or table | |
| **Digital inputs** | 4, with common return | |
| **Type** | TTL or dry contact | |
| **Settling time** | <20 | ms |
| **Digital outputs** | 4 | |
| **Type** | Open collector with common emitter | |
| **Settling time** | <20 | ms |
| **COMMUNICATION SPECIFICATIONS** | | |
| **Interface** | RS232, RS485 | |
| **Protocol** | ASCII, Modbus | |
| **Communication Speed** | 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400 | Baud |
| **Data Bits** | 7 or 8 | Bits |
| **Stop Bits** | 1 or 2 | Bits |
| **Parity** | Odd/even/none | |
| **RS485 bus termination** | Internal, activated by software command | |

* Extended temperature ranges and smaller temperature effects are available upon request.

** Optional stainless steel coating available upon request.

*** IP66 available with additional breather tube.

## APPLICATION AND ORDER DATA

**TO BE COMPLETED BY THE CUSTOMER**

CUSTOMER'S NAME .....ORDER No.....

CONTACT PERSON .....DATE.....

APPLICATION .....No. of UNITS.....

TOTAL TARE WEIGHT (DEAD LOAD) ..... kg; FOR EACH UNIT ..... kg

TOTAL USEFUL WEIGHT (LIVE LOAD)..... kg; FOR EACH UNIT ..... kg

DESCRIBE LIVE LOAD (POWDER, FRUIT, SCREWS ETC).....

REQUIRED SETTLING TIME.....msec; ACCURACY .....

OPERATING TEMPERATURE RANGE °C: .....

MOUANTING THREADS .....mm (6x1)..... inch (1/4 UNC)

PREFERRED LOAD CELL, IF ANY .....

1. CHECKWEIGHER (SEE SKETCH BELOW):.....

SIZE OF CONVEYOR PLATFORM:.....

WIDTH .....cm; A.....cm; B ..... cm; C..... cm

SPEED OF BELT.....cm/sec; SIZE OF WEIGHED PRODUCT IN MOVEMENT DIRECTION..... cm

TARE WEIGHT DISTRIBUTION: CONVEYOR:.....kg; MOTOR: ..... kg

2. HOPPER OR OTHER APPLICATION (SEE SKETCH BELOW):.....

CENTER OF GRAVITIY (CofG) OF DEAD LOAD, (ESTIMATE IF NECESSARY): D ..... cm; F..... cm

LOADING POSITION: D ..... cm; F.....cm; DROP HEIGHT:..... cm

IF LOAD CofG VAIRIES, MAX DIST. BETWEEN EXTREMES..... cm

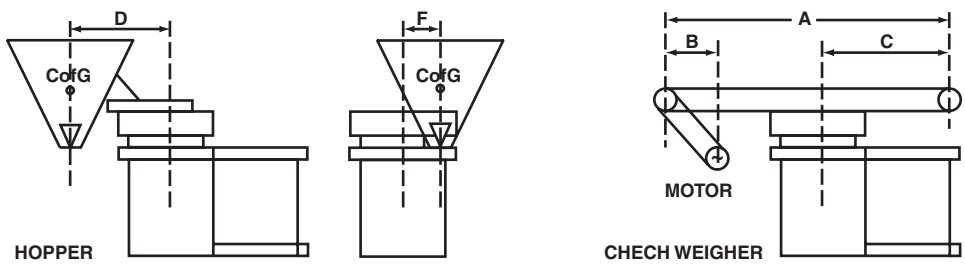
SPECIAL REQUIREMENTS

CABLE LENGTH IF NOT STANDARD (1 m) .....; DELIVERY REQUESTED .....

CORNERS ACCURACY: TEST WEIGHT (MAX. ALLOWED 1/3 OF LOAD CELL CAPACITY)..... kg

DISTANCE FROM CENTER .....cm VARIATION ALLOWED .....

DEFINITION OF LOADING POSITION RELATIVE TO 9010



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

VISHAY PRECISION GROUP

# Load Cell Mounts

## Contents



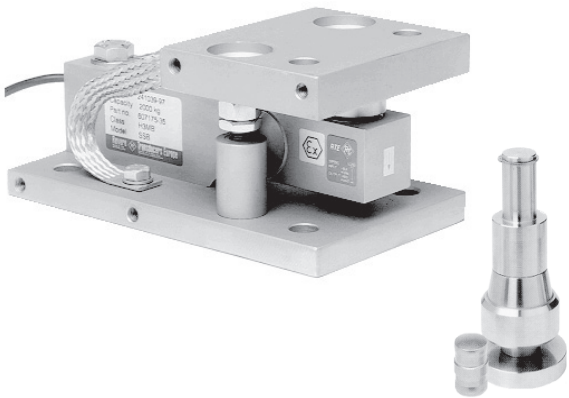

Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Model SSB Mount

Revere

VISHAY PRECISION GROUP

## SSB Self Aligning Accessories



### FEATURES

- Capacities: 500 - 5000kg
- Hardened components at all bearing surfaces
- Rocker pin load introduction
- Stainless steel or nickel plated steel versions available
- Built-in horizontal movement control and lift-off protection
- Load cell (re)placement after installation of the mount

### OPTIONAL FEATURES

- Optional stay rod assembly
- Suitable also for SBC load cells

### DESCRIPTION

The SSB self aligning silo mount, combined with the SSB load cell family, provides weighing assemblies suitable for process control, batch weighing, silo/hopper and belt scale applications.

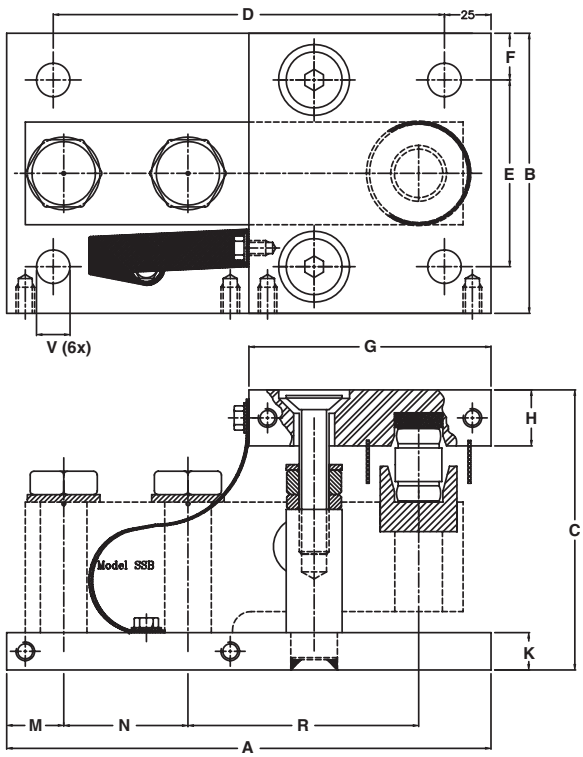
The SSB foot assembly is an ideal solution for medium capacity belt, pallet and platform scales.

The SSB mount and foot are based on a rocker pin design, combining excellent load introduction to the transducer with an overall low profile. Hardened components are used at all load bearing surfaces. The stainless steel construction guarantees long term reliability, even in the most harsh of environments.

### APPLICATIONS

- Process control
- Batch weighing
- Silo/hopper weighing
- Belt scale weighing

### OUTLINE DIMENSIONS in mm

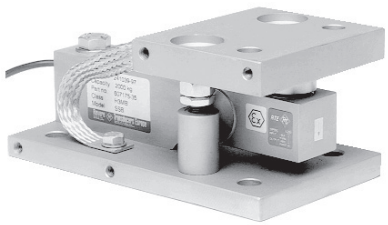



| Capacity | 0.5 - 2t | 5t | 10t |
|---|---|---|---|
| A | 210 | 250 | 260 |
| B | 120 | 150 | 150 |
| C | 120 | 135 | 150 |
| D | 160 | 200 | 210 |
| E | 80 | 100 | 100 |
| F | 20 | 25 | 25 |
| G | 100 | 120 | 130 |
| H | 20 | 20 | 30 |
| K | 15 | 20 | 20 |
| M | 21.9 | 30.6 | 30.6 |
| N | 63.5 | 66.7 | 66.7 |
| R | 98.4 | 123.8 | 123.8 |
| V | Ø14 | Ø18 | Ø18 |

## ACCESSORIES

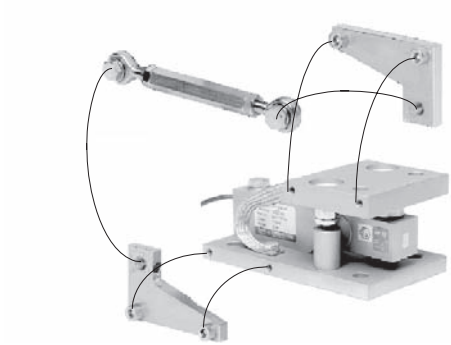
### Self Aligning Mount

The SSB mount permits controlled horizontal movement in all directions. The design allows the load cell to be (re)placed after installation of the mount. The critical load introduction area is mechanically protected.



### Stay Rod Assembly

If major load movement is anticipated stay rods should be used to restrain a platform or vessel. The SSB stay rod assembly can be bolted to the mount prior to, or after its installation.



### Non Adjustable Foot

The non-adjustable foot carries the same specification and features as the height adjustable version, while providing an even lower overall profile.

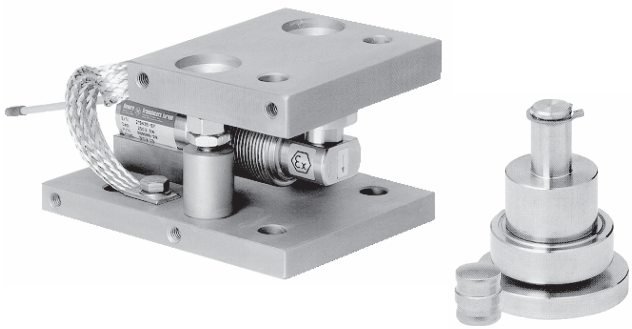
### Height Adjustable Foot

The stainless steel foot, which has 5mm of height adjustment, provides excellent load introduction to the load cell. The foot allows flexibility in platform design without compromising overall system performance.

| FURTHER INFORMATION | | Height, assembly + SSB (0.5 2t) | | Height, assembly + SSB (5t) | |
|---|---|---|---|---|---|
| **Self Aligning Mount** | mm | 95 | | 135 | |
| **Height Adj. Foot** | mm | 80+5 | | 141+7 | |
| **Non Adj. Foot** | mm | 75 | | 117 | |
| **Mount / Foot** | **Assembly Guidelines** | **Outline drawing (0.5-2t)** | | **Outline drawing (5t)** | |
| | | **Stainless steel** | **Nickel plated** | **Stainless steel** | **Nickel plated** |
| **Self Aligning Mount** | AG 10/06-108/2 | 499046-10 | 499046-00 | 499047-10 | 499047-00 |
| **Stay Rod Assembly** | AG 09/06-201/02 | 499063-10 | 499063-00 | 499064-10 | 499064-00 |
| **Height Adj. Foot** | | 499079 | | 499080 | |
| **Non Adj. Foot** | | 499077 | | 499078 | |

VISHAY PRECISION GROUP

# 9102 Self Aligning Mounts



## FEATURES

- Capacities: 200 - 2500lbs
- Hardened components at all bearing surfaces
- Rocker pin load introduction
- Built in horizontal movement control and lift-off protection
- Load cell (re)placement after installation of the mount

## OPTIONAL FEATURES

- Stainless steel or Nickel plated steel versions available
- Optional stay rod assembly

## DESCRIPTION

The 9102 self aligning silo mount, combined with the 9102 load cell family, provides high accuracy weighing assemblies suitable for process control, batch weighing, silo/hopper and belt scale applications.

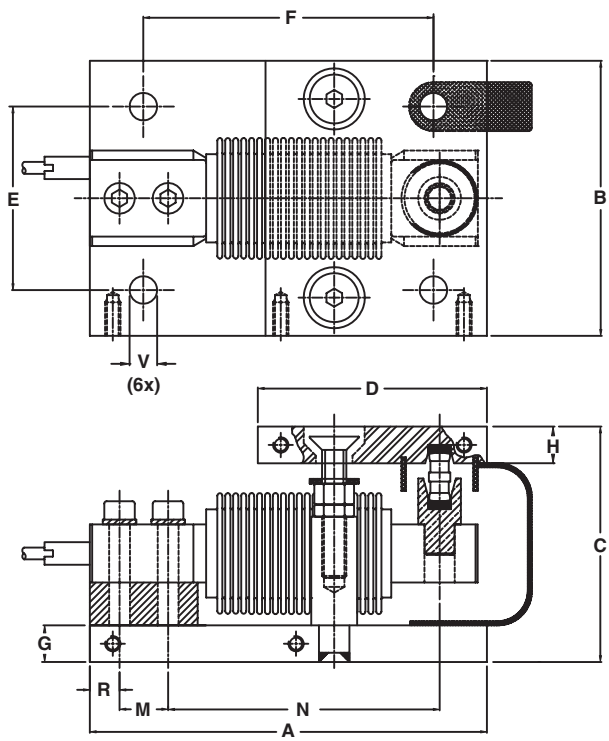
The 9102 foot assembly is an ideal solution for medium capacity belt, pallet and platform scales.

The 9102 mount and foot are based on a rocker pin design, combining excellent load introduction to the transducer with an overall low profile. Hardened components are used at all load bearing surfaces. The stainless steel construction guarantees long term reliability, even in the most harsh of environments.

## APPLICATIONS

- Process control
- Batch weighing
- Silo/hopper weighing
- Belt scale weighing

## OUTLINE DIMENSIONS in mm

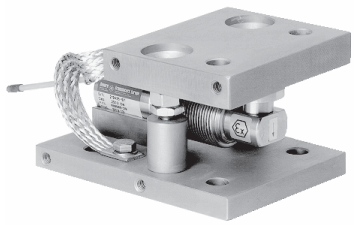



| Capacity | 50 - 200lbs | 500 - 2500lbs |
|---|---|---|
| A | 130 | 160 |
| B | 90 | 120 |
| C | 77 | 90 |
| D | 75 | 100 |
| E | 60 | 80 |
| F | 95 | 100 |
| G | 12 | 15 |
| H | 12 | 20 |
| R | 9.7 | 25.8 |
| M | 15.9 | 25.4 |
| N | 88.9 | 82.6 |
| V | Ø9 | Ø14 |

## ACCESSORIES

### Self Aligning Mount

The 9102 mount permits controlled horizontal movement in all directions. The design allows the load cell to be (re)placed after installation of the mount. The critical load introduction area is mechanically protected.

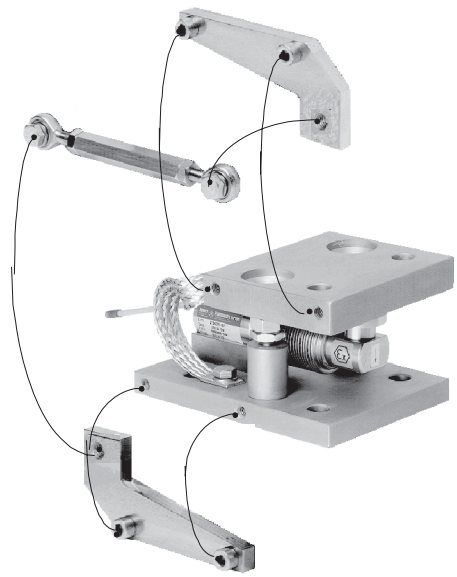


### Height Adjustable Foot

The stainless steel foot, which has 5mm of height adjustment, provides excellent load introduction to the load cell. The foot allows flexibility in platform design without compromising overall system performance.

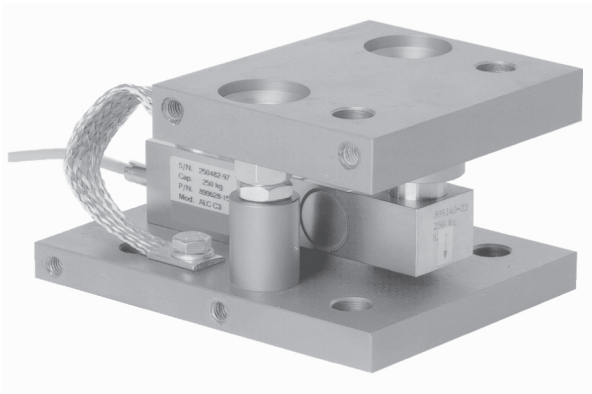
### Stay Rod Assembly

If major load movement is anticipated stay rods should be used to restrain a platform or vessel. The 9102 stay rod assembly can be bolted to the mount prior to, or after its installation.



| FURTHER INFORMATION | | Height, LC + assembly (50 200) | | Height, LC + assembly (500/1000) | | Height, LC + assembly (2500) | |
|---|---|---|---|---|---|---|---|
| **Self Aligning Mount** | mm | 77 | | 90 | | 90 | |
| **Height Adj. Foot** | mm | 64+5 | | 74+5 | | 74+5 | |
| **Mount / Foot** | | **Outline drawing (50 200)** | | **Outline drawing (500/1000)** | | **Outline drawing (2500)** | |
| | | **Stainless steel** | **Nickel plated** | **Stainless steel** | **Nickel plated** | **Stainless steel** | **Nickel plated** |
| **Self Aligning Mount** | | 499049-10 | 499049-00 | 499052-10 | 499052-00 | 499053-10 | 499053-00 |
| **Stay Rod Assembly** | | 499061-10 | 499061-00 | 499068-10 | 499068-00 | 499068-10 | 499068-00 |
| **Height Adj. Foot** | | 499071 | | 499072 | | 499073 | |
| **Mount Assembly guidlines** | | AG 10/06-106/02 | | AG 10/06-107/02 | | | |
| **Stay Rod Assembly guidlines** | | AG 09/06-202/02 | | AG 10/06-200/02 | | | |

# ACB Self Aligning Mount



## DESCRIPTION

The ACB self aligning silo mount, combined with the ACB load cell family, provides an ideal solution for process control, batch weighing, silo/hoppers and belt scale applications.

The ACB mount permits controlled movement in all directions. The design allows the cell to be fitted after installation of the mount.

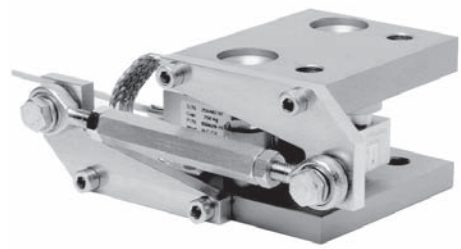
Unless major load movement is anticipated, the ACB mount eliminates the need for stay rods. An optional stay rod assembly, which can be bolted to the mount when required, is available.

## FEATURES

- Capacities: 250 - 2000kg
- Hardened components at all bearing surfaces
- Rocker pin load introduction
- Mechanical protection of the critical load introduction area
- Built in horizontal movement control and lift-off protection
- Load cell (re)placement after installation of the mount

## OPTIONAL FEATURES

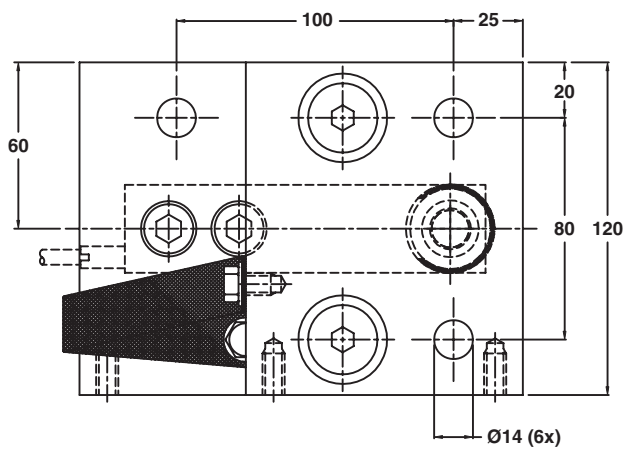
- Stainless steel or Nickel plated steel versions available
- Optional stay rod assembly
- Can be used also for ACB 0.5 - 2ton

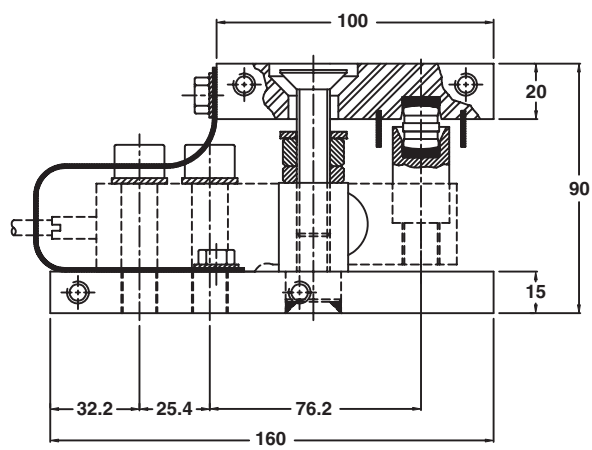


## APPLICATIONS

- Process control
- Batch weighing
- Silo/hopper weighing
- Belt scale weighing

## OUTLINE DIMENSIONS in millimeters



## ACB FOOT ASSEMBLIES

The ACB foot assemblies, together with the ACB load cell family, are an ideal solution for medium capacity belt, pallet and platform scales.

The stainless steel height adjustable and non-adjustable foot assemblies provide excellent load introduction to the load cell while maintaining an overall low profile. The rocker pin based design allows flexibility in platform design without compromising overall system performance.

The rubber foot assembly provides a high performance, shock absorbing, load introduction. The foot is made of yellow passivated st37 and uses hardened components at all bearing surfaces.

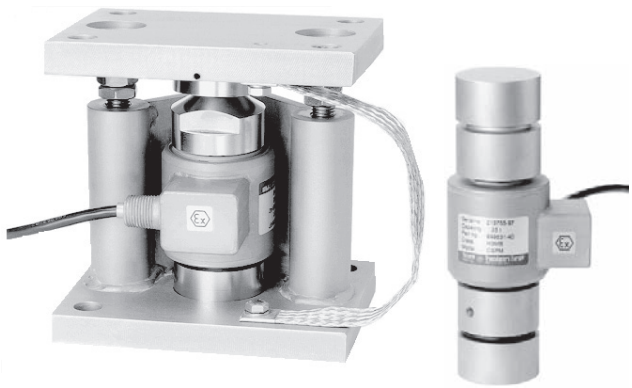
## FEATURES

- Capacities: 250 - 2000kg
- Hardened components at all bearing surfaces
- Self aligning, rocker pin load introduction
- Stainless steel construction, suitable for harsh environments

## FURTHER INFORMATIONS

| Mount / Foot | Height, ACB + assembly (mm) | Outline drawing | |
|---|---|---|---|
| | | Stainless steel | Nickel plated |
| Height Adj. Foot | 63+3/67+3 (2t) | 499134 | |
| Rubber Foot | 60/64 (2t) | | 499133-00 |
| Self Aligning Mount | 90 | 499085-10 | 499085-00 |
| Stay Rod Assembly | 90 | 499068-10 | 499068-00 |
| **Mount / Foot** | **Assembly guidelines** | | |
| Self Aligning Mount | AG 10/06-109/02 | | |
| Stay Rod Assembly | AG 10/06-200/02 | | |

# CSP-M Self Aligning Accessories



## FEATURES

- Capacities: 10 - 60t
- Hardened components at all bearing surfaces
- Self aligning construction
- Built in horizontal movement control and lift-off protection
- Load cell (re)placement after installation of the mount

## OPTIONAL FEATURES

- Stainless steel or Nickel plated steel versions available
- Versions with stay rod assemblies available
- Suitable also for SCC load cells

## DESCRIPTION

The CSP-M self aligning mounts, combined with the CSP-M load cell family, provides weighing assemblies suitable for process control, silo and weighbridge applications.

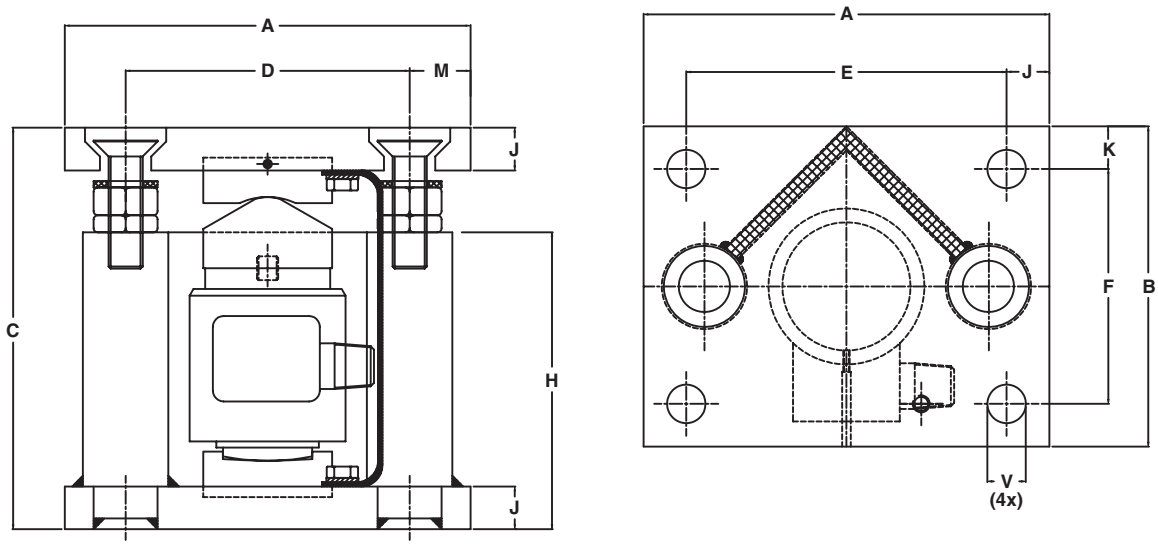
The CSP-M weighbridge mount is designed to be used in truck scale and rail scale applications. The mount ensures excellent signal stability and optimum performance. It can be used without stay or check rods.

The self aligning silo mount provides excellent load introduction to the transducer while maintaining an overall low profile. Hardened components are used at all load bearing surfaces.

## APPLICATIONS

- Process control
- Silo and weighbridge applications
- Truck and rail scale applications

## OUTLINE DIMENSIONS in mm




| Capacity | A | B | C | D | E | F | H | J | K | M | V |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10/ 25 ton | 190 | 150 | 188 | 133 | 150 | 110 | 139 | 20 | 20 | 28.5 | Ø18 |
| 40/ 60 ton | 250 | 200 | 273 | 182 | 190 | 150 | 209 | 30 | 25 | 35 | Ø22 |

## ACCESSORIES

### Self Aligning Weighbridge Mount

The CSP-M SA weighbridge mount allows a safe horizontal movement of 8 mm, while ultimate movement of up to 16 mm is accepted. Special care has been given to load safety margins and ease of installation.
Combined with the CSP-M load cell family, the assembly provides excellent signal stability and measurement performance under off-centre loading conditions. The mount is made of corrosion resistive steel (DIN 1.2083) to guarantee long term reliability.

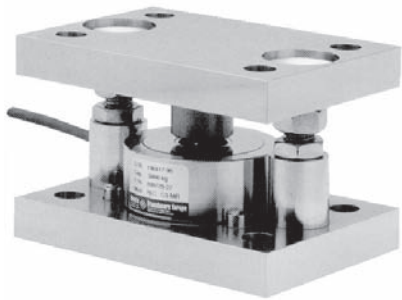
### Self Aligning Silo Mount

The CSP-M self aligning silo mount is suitable for batch weighing, process control and silo/hopper applications. The mount tolerates controlled movement in all directions. The top plate is held captive eliminating, in most cases, the need for additional stay or check rods. Where major load movement is anticipated, a version with a built-in stay rod is available.
The silo mount allows the load cell to be fitted or removed after installation of the mount. All load bearing surfaces are made of hardened corrosion resistive steel (DIN 1.2083).

| FURTHER INFORMATION | | Height, assembly + CSP-M (10/25t) | | Height, assembly + CSP-M (40/60t) | |
|---|---|---|---|---|---|
| **Weighbridge Mount** | mm | 216 | | 260 | |
| **Silo Mount** | mm | 188 | | 273 | |
| **Silo Mount with Stay Rod** | mm | 190 | | 274 | |
| **Mount** | **Assembly guidelines** | **Outline drawing (10/25t)** | | **Outline drawing (40/60t)** | |
| | | **Stainless steel*** | **Nickel plated** | **Stainless steel*** | **Nickel plated** |
| **Weighbridge Mount** | AG 09/06-101/02 | 899953-41 | - | 899953-40 | - |
| **Silo Mount** | AG 12/06-102/02 | 499050-10 | 499050-00 | 499051-10 | 499051-00 |
| **Silo Mount with Stay Rod** | - | 499059-10 | 499059-00 | 499060-10 | 499060-00 |

* Load bearings are made of hardened steel, material DIN number: 1.2083

# RLC Self Aligning Accessories



## FEATURES

- Capacities: 0.25 - 10t
- Hardened components at all load bearing surfaces
- Rocker pin load introduction
- Stainless steel construction
- Built-in horizontal movement control and lift-off protection
- Load cell (re)placement after installation of the mount

## DESCRIPTION

The RLC self aligning silo mount, combined with the RLC load cell family, provides weighing assemblies suitable for process control, batch weighing, silo/hoppers and belt scale applications.

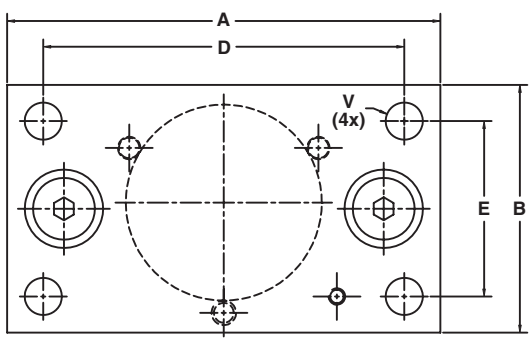
The RLC self aligning foot assembly is an ideal solution for medium capacity platform scales and belt scale applications.

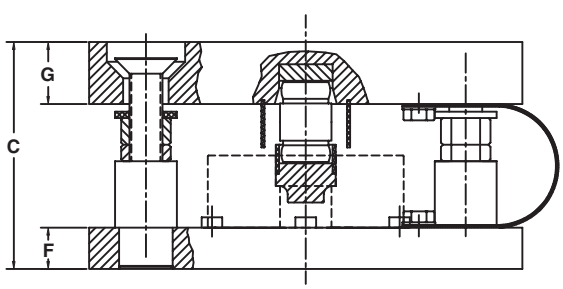
The RLC mount and foot are based on a rocker pin design, combining excellent load introduction to the transducer with an overall low profile. Hardened stainless steel components are used at all bearing surfaces. The fully stainless steel construction guarantees long term reliability, even in the most harsh of environments.

## APPLICATIONS

- Process control
- Batch weighing
- Silo/hopper weighing
- Belt scale weighing

## OUTLINE DIMENSIONS in mm



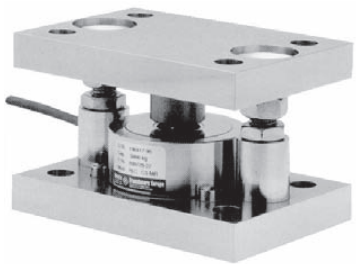




| Capacity | 0.5t, 1t | 2t, 3.5t, 5t | 10t |
|---|---|---|---|
| A | 150 | 160 | 210 |
| B | 100 | 110 | 120 |
| C | 75 | 100 | 110 |
| D | 120 | 120 | 175 |
| E | 70 | 70 | 85 |
| F | 15 | 20 | 20 |
| G | 20 | 20 | 30 |
| V | Ø13 | Ø16 | Ø18 |

## ACCESSORIES

### Self Aligning Mount

The stainless steel RLC mount tolerates controlled movement in all directions. The silo or hopper is held captive, eliminating the need, unless major load movement is anticipated, for additional check rods. The unique design allows the load cell to be placed or replaced after installation of the mount.



### Non Adjustable Foot

The non-adjustable, stainless steel foot carries the same specifications as the height adjustable version, while providing an even lower profile.

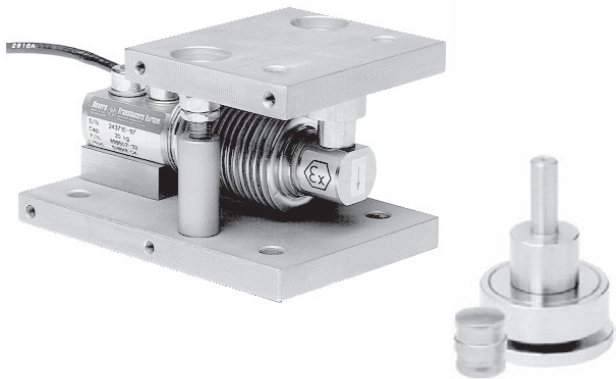
### Height Adjustable Foot

This stainless steel foot, which has 5mm of height adjustment, provides excellent load introduction to the load cell. The foot allows flexibility in platform design without compromising overall system performance.

**Further information:**

| Self Aligning Mount | 0.25 - 1t | 2 - 5t | 10t |
|---|---|---|---|
| Height, mount assembly + RLC | 75 | 100 | 110 |
| Outline drawing | 899043-00 | 899045-00 | 499094-10 |
| Mount assembly guideline | AG 05/7-100/01 | AG 05/7-100/01 | - |
| **Self Aligning Feet** | **0.25 - 1t** | **2 - 5t** | **10t** |
| Outline drawing non-adjustable foot | 899041-00 | 899042-00 | - |
| Height of non-adjustable foot + RLC | 50 | 85.2 | - |
| Outline drawing adjustable foot | 499083-00 | 499084-00 | 499093-00 |
| Height of adjustable foot + RLC | 60+5 | 92.6+5 | 120.2+5 |

# SHBxR Self Aligning Accessories



## FEATURES

- Capacities: 5 - 500kg
- Hardened components at all load bearing surfaces
- Rocker pin load introduction
- Built in horizontal movement control and lift-off protection
- Load cell (re)placement after installation of the mount

## OPTIONAL FEATURES

- Stainless steel or Nickel plated steel versions available
- Optional stay rod assembly

## DESCRIPTION

The SHBxR self aligning silo mount, combined with the SHBxR load cell family, provides weighing assemblies suitable for process control, batch weighing, silo/hopper and belt scale applications.

The SHBxR foot assembly is an ideal solution for low and medium capacity platform scales.

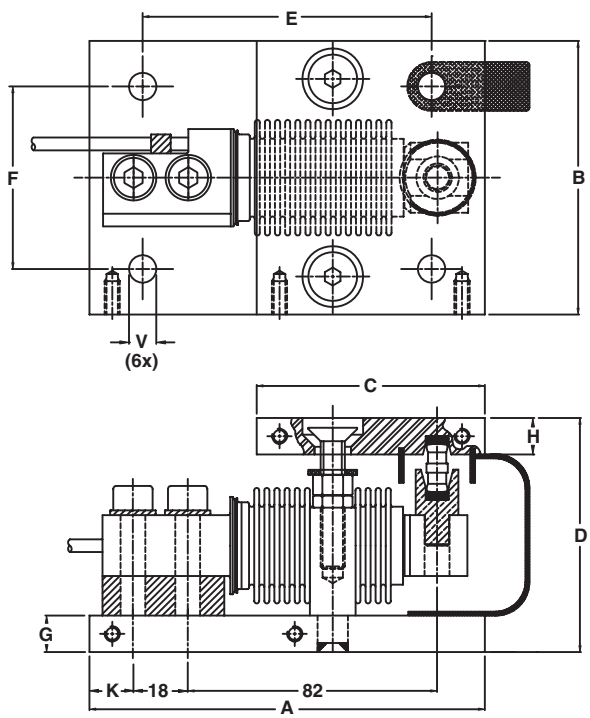
The SHBxR mount and foot are based on a rocker pin design, combining excellent load introduction to the transducer with an overall low profile.

Hardened components are used at all load bearing surfaces. The stainless steel construction guarantees long term reliability, even in the most harsh of environments.

## APPLICATIONS

- Process control
- Batch weighing
- Silo/hopper weighing
- Belt scale weighing

## OUTLINE DIMENSIONS in mm

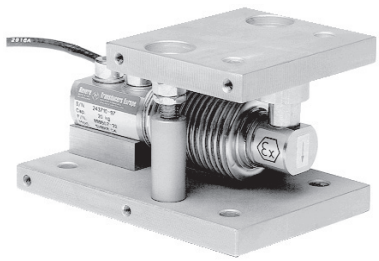



| Capacity | 5 - 200kg | 350 - 500kg |
|---|---|---|
| A | 130 | 160 |
| B | 90 | 120 |
| C | 75 | 100 |
| D | 77 | 90 |
| E | 95 | 100 |
| F | 60 | 80 |
| G | 12 | 15 |
| K | 14.5 | 33.8 |
| H | 12 | 20 |
| V | Ø9 | Ø14 |

## ACCESSORIES

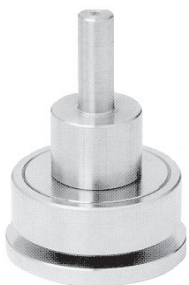
### Self Aligning Mount

The SHBxR mount permits controlled horizontal movement in all directions. The design allows the load cell to be (re)placed after installation of the mount. The critical load introduction area is mechanically protected.



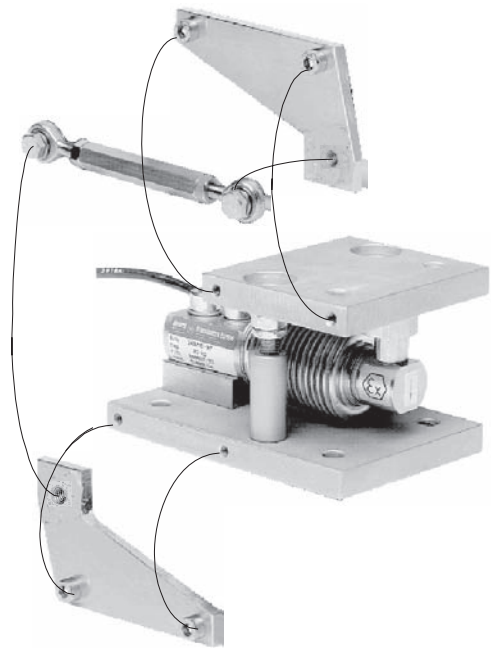
### Height Adjustable Foot

The stainless steel foot, which has 5mm of adjustment, provides excellent load introduction to the transducer. The foot allows flexibility in platform design without compromising overall system performance.



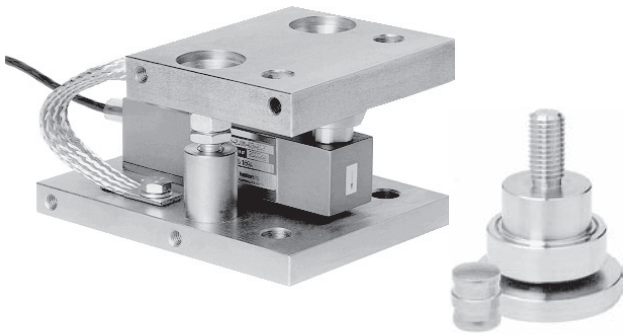
### Stay Rod Assembly

If major load movement is anticipated stay rods should be used to restrain a vessel or platform. The SHBxR stay rod assembly can be bolted to the mount prior to or after its installation.



| FURTHER INFORMATION | | Height, assembly + SHBxR (5 - 200kg) | | Height, assembly + SHBxR (350 - 500kg) | |
|---|---|---|---|---|---|
| **Self Aligning Mount** | mm | 77 | | 90 | |
| **Height Adj. Foot** | mm | 65+5 | | - | |
| **Mount / Foot** | **Assembly guidelines** | **Outline drawing (5 - 200kg)** | | **Outline drawing (350 - 500kg)** | |
| | | **Stainless steel** | **Nickel plated** | **Stainless steel** | **Nickel plated** |
| **Self Aligning Mount** | AG 10/06-104/02 | 499048-10 | 499048-00 | 499095-10 | 499095-00 |
| **Stay Rod Assembly** | AG 09/06-202/02 and AG 01/07-200/03 | 499061-10 | 499061-00 | 499068-10 | 499068-00 |
| **Height Adj. Foot** | - | 499070 | - | - | - |

# 9123/5123 Self Aligning Accessories



## FEATURES

- Capacities: 0.5 - 5t
- Hardened components at all load bearing surfaces
- Rocker pin load introduction
- Built in horizontal movement control and lift-off protection
- Load cell (re)placement after installation of the mount

## OPTIONAL FEATURES

- Stainless steel or Nickel plated steel versions available
- Optional stay rod assembly

## DESCRIPTION

The 9123/5123 self aligning silo mount, combined with the 9123/5123 load cell family, provides weighing assemblies suitable for process control, batch weighing, silo/hopper and belt scale applications.

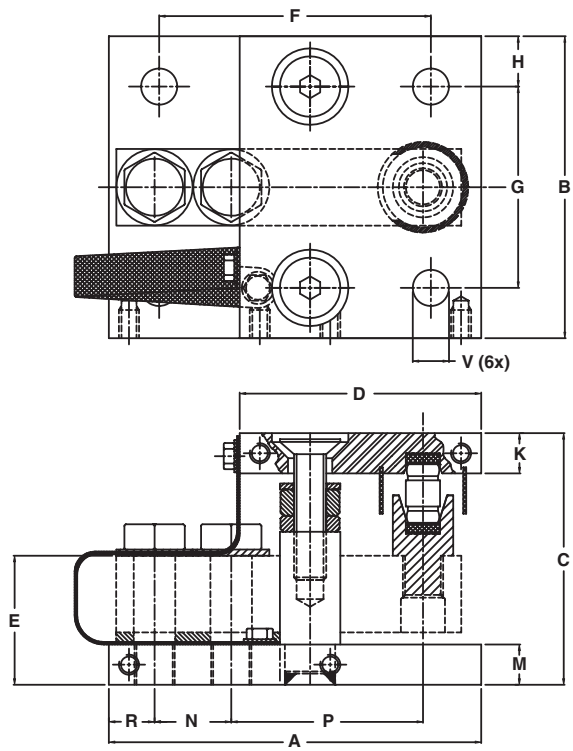
The 9123/5123 foot assembly is an ideal solution for medium and high capacity platform scales.

The 9123/5123 mount and foot are based on a rocker pin design, combining excellent load introduction to the transducer with an overall low profile. Hardened components are used at all load bearing surfaces. The stainless steel construction guarantees long term reliability, even in the most harsh of environments.

## APPLICATIONS

- Process control
- Batch weighing
- Silo/hopper weighing

## OUTLINE DIMENSIONS in mm

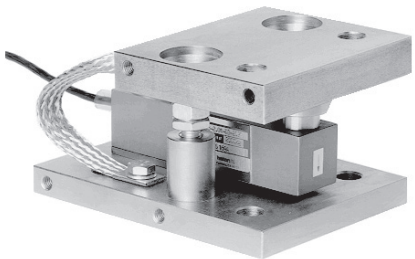



| Capacity | 0.5t - 2t | 5t |
|---|---|---|
| A | 160 | 185 |
| B | 120 | 150 |
| C | 90 | 125 |
| D | 100 | 120 |
| E | 50.8 | 64 |
| F | 100 | 135 |
| G | 80 | 100 |
| H | 20 | 25 |
| K | 20 | 20 |
| M | 15 | 20 |
| N | 25.4 | 38.1 |
| P | 76.2 | 95.3 |
| R | 32.2 | 22.7 |
| V | Ø14 | Ø18 |

## ACCESSORIES

### Self Aligning Mount

The 9123/5123 mount permits controlled horizontal movement in all directions. The design allows the load cell to be (re)placed after installation of the mount. The critical load introduction area is mechanically protected.

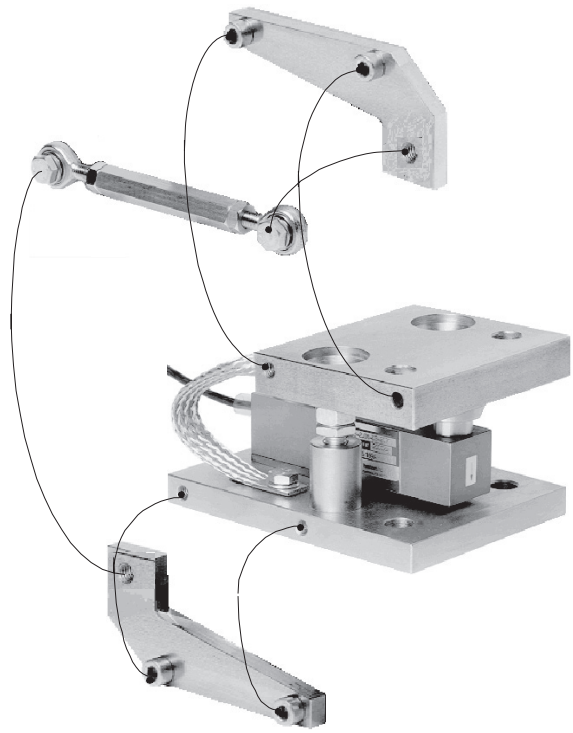


### Height Adjustable Foot

The stainless steel foot, which has approx. 10mm height adjustment, provides excellent load introduction to the load cell. The foot allows flexibility in platform design without compromising overall system performance.

### Stay Rod Assembly

If major load movement is anticipated stay rods should be used to restrain a vessel or platform. The 9123/5123 stay rod assembly can be bolted to the mount prior to or after its installation.



| FURTHER INFORMATION | | Height, assembly + 9123/5123 (0.5 - 2t) | | Height, assembly + 9123/5123 (5t) | |
|---|---|---|---|---|---|
| **Self Aligning Mount** | mm | 90 | | 125 | |
| **Height Adj. Foot** | mm | 71+10 | | 101+10 | |
| **Mount / Foot** | **Assembly guidelines** | **Outline drawing (0.5 - 2t)** | | **Outline drawing (5t)** | |
| | | **Stainless steel** | **Nickel plated** | **Stainless steel** | **Nickel plated** |
| **Self Aligning Mount** | AG 10/06-103/02 | 499057-10 | 499057-00 | 499058-10 | 499058-00 |
| **Stay Rod Assembly** | AG 09/06-200/02 | 499068-10 | 499068-00 | 499069-10 | 499069-00 |
| **Height Adj. Foot** | | 499081 | - | 499082 | - |

# ASC/DSC Self Aligning Accessories

## FEATURES

- Capacities: 30 - 50t
- Hardened components at all bearing surfaces
- Self-aligning construction
- Stainless steel

## DESCRIPTION

The ASC and DSC Self Aligning Set, provides weighing assemblies suitable for truck scale, rail scale and process weighing applications.

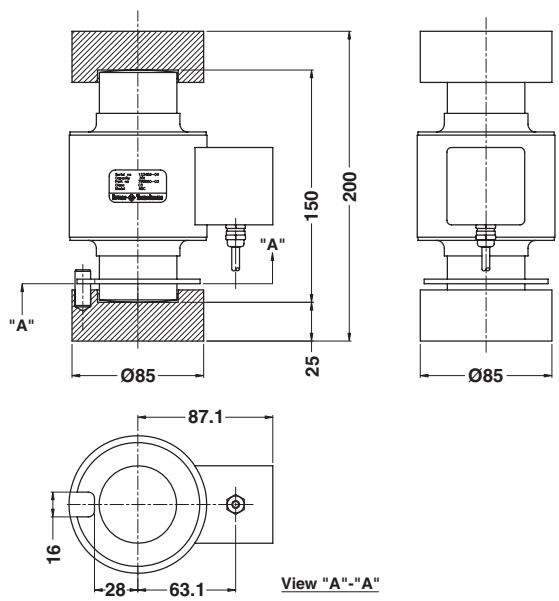
The Self Aligning Set is specially designed to be used in weighbridges without stay or check rods. Eccentric washers are used to ensure that the load cell is placed in a vertical position, and perpendicular to its mounting surfaces.

Long-term reliability is assured through the use of hardened corrosion resistive steel on all mount parts.

## APPLICATIONS

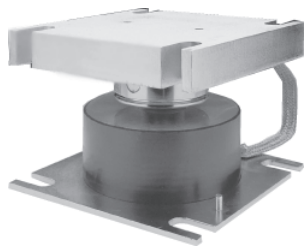
- Truck and rail scale applications
- Silo and weighbridge applications

## OUTLINE DIMENSIONS in mm




| Mount | Assembly guidelines | P/N |
|---|---|---|
| Self Aligning Set | 02/03-110/01 | 799863-00 |
| Set of 3 eccentric washers | | 499125-00 |

## Mount For Weighbridge Mount/Truck Scales



### FEATURES

- For use on steel or concrete weighbridges
- Above ground or pit mounted
- Composite rubber and plated steel construction
- Low profile
- Simple installation
- Shock resistance

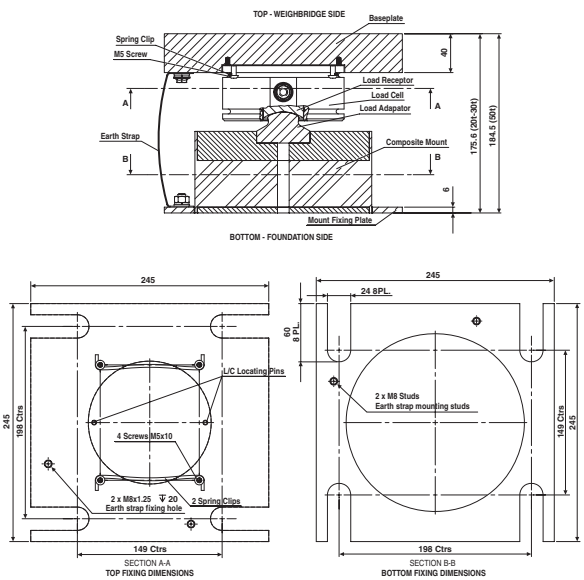
### DESCRIPTION

Model 220 is ideally suited for use in steel or concrete weighbridge applications. When used in conjunction with the composite mount it forms a compact assembly which is rugged and tolerant of heavy treatment.

The mount assembly allows free motion in any direction in the horizontal plane at the same time as supplying restoring moment (return to centre motion) and retaining low vertical deflection. It supplies the required rigidity whilst retaining shock absorption capability. It exhibits low effects to changes of temperature and allows for thermal expansion of the bridge structure.

The complicated arrangements that often accompany conventional installations of load cell mountings are avoided. Tedea-Huntleigh's system for truck scales can be installed in a matter of a few hours instead of more than one day.

### OUTLINE DIMENSIONS in mm




The two mounting kits are:

MTS-COMP-30T

MTS-COMP-50T

Comprising composite mount, load adaptor, mount fixing plate, earth strap, nut and washers. Packed weight; 12.5kg.

MTS-BASEKIT-50T-CS

MTS-BASEKIT-30T

Comprising baseplate, location pins x 2, spring clips x 2, M5 screws x 4, screw & washers for earth strap. Packed weight; 18kg

1. To ensure safe use of the weighbridge mount; Restraints should be fitted between the weighbridge deck and foundation.
2. Tedea-Huntleigh cannot accept responsibility for the improper installation of the weighbridge mount.
3. Because of the weight of the base plate and consequent freight costs, customers might wish to machine it locally.
Manufacturing details of this simple plate are available free of charge on request.
4. A separate kit of spring clips, location pins and screw is available (MTS-CLIPKIT-50T).
5. An alternative weighbridge mount is available for use with the 220 load cell. Details of the Rocker Pin (MTS-ROCKER-50T) are available upon request.

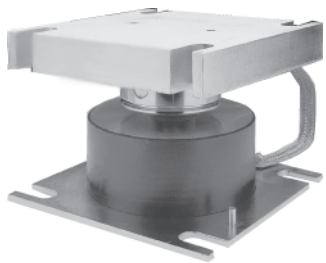
**Tedea-Huntleigh provide installation details separately, please refer to Technical Support Document, TSD.0007**

# Model 220-10T Weighbridge Mount

Tedea-Huntleigh

VISHAY PRECISION GROUP

## 10 Tonne Weighbridge Mount



### FEATURES

- For use on steel or concrete weighbridges
- Above ground or pit mounted
- Composite rubber and plated steel construction
- Low profile
- Simple installation
- Shock resistance

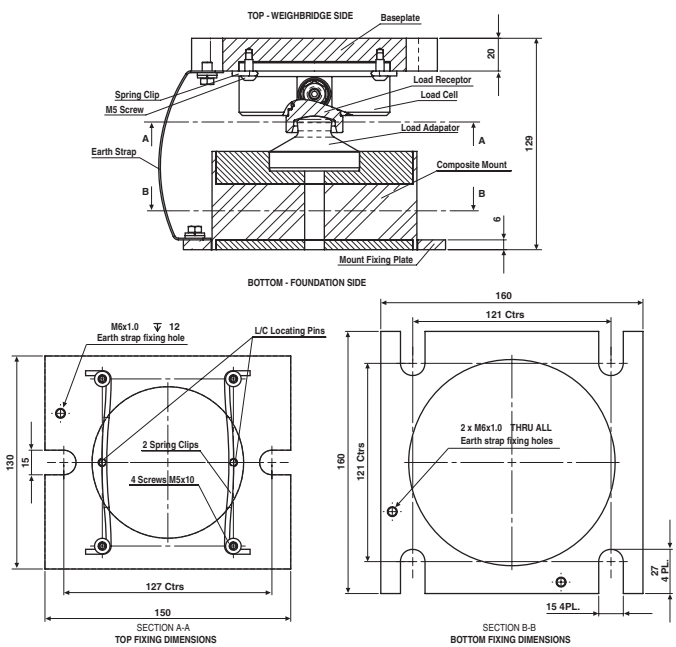
### DESCRIPTION

Model 220 is ideally suited for use in steel or concrete weighbridge applications. When used in conjunction with the composite mount it forms a compact assembly which is rugged and tolerant of heavy treatment.

The mount assembly allows free motion in any direction in the horizontal plane at the same time as supplying restoring moment (return to centre motion) and retaining low vertical deflection. It supplies the required rigidity whilst retaining shock absorption capability. It exhibits low effects to changes of temperature and allows for thermal expansion of the bridge structure.

The complicated arrangements that often accompany conventional installations of load cell mountings are avoided. Tedea-Huntleigh's system for truck scales can be installed in a matter of a few hours instead of more than one day.

### OUTLINE DIMENSIONS in mm




MTS-COMP-10T

Comprising composite mount, load adaptor, mount fixing plate, earth strap, nut and washers.
Packed weight; 5kg.

MTS-BKIT-10T-CS

Comprising baseplate, location pins x 2, spring clips x 2, M5 screws x 4, screw & washers for earth strap.
Packed weight; 5kg

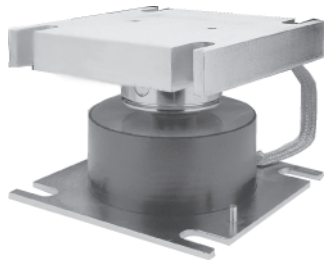
1. To ensure safe use of the weighbridge mount; Restraints should be fitted between the weighbridge deck and foundation.

2. Tedea-Huntleigh cannot accept responsibility for the improper installation of the weighbridge mount.

3. Because of the weight of the base plate and consequent freight costs, customers might wish to machine it locally. Manufacturing details of this simple plate are available free of charge on request.

**Tedea-Huntleigh provide installation details separately, please refer to Technical Support Document, TSD.0007**

# 5 Tonne Weighbridge Mount



## FEATURES

- For use on steel or concrete weighbridges
- Above ground or pit mounted
- Composite rubber and plated steel construction
- Low profile
- Simple installation

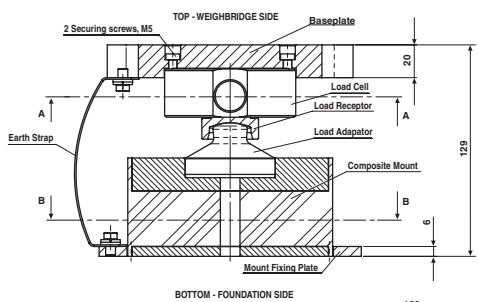
## DESCRIPTION

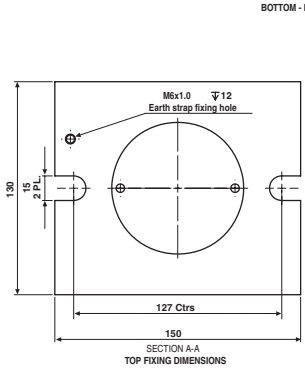
Model 220 is ideally suited for use in steel or concrete weighbridge applications. When used in conjunction with the composite mount it forms a compact assembly which is rugged and tolerant of heavy treatment.

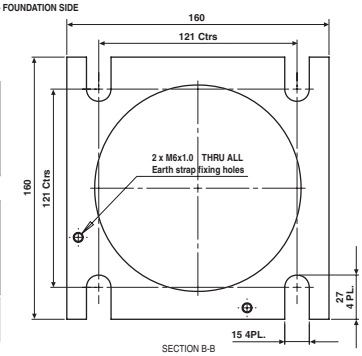
The mount assembly allows free motion in any direction in the horizontal plane at the same time as supplying restoring moment (return to centre motion) and retaining low vertical deflection. It supplies the required rigidity whilst retaining shock absorption capability. It exhibits low effects to changes of temperature and allows for thermal expansion of the bridge structure.

The complicated arrangements that often accompany conventional installations of load cell mountings are avoided. Tedea-Huntleigh's system for truck scales can be installed in a matter of a few hours instead of more than one day.

## OUTLINE DIMENSIONS in mm




MTS-COMP-5T
Comprising composite mount, load adaptor, mount fixing plate, earth strap, nut and washers.
Packed weight; 5kg.

MTS-BKIT-5T-CS
Comprising baseplate, location pins x 2, spring clips x 2, M5 screws x 4, screw & washers for earth strap.
Packed weight; 5kg

1. To ensure safe use of the weighbridge mount; Restraints should be fitted between the weighbridge deck and foundation.

2. Tedea-Huntleigh cannot accept responsibility for the improper installation of the weighbridge mount.

3. Because of the weight of the base plate and consequent freight costs, customers might wish to machine it locally. Manufacturing details of this simple plate are available free of charge on request.

**Tedea-Huntleigh provide installation details separately, please refer to Technical Support Document, TSD.0007**

# Model 220 Rocker Pin Mount

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Rocker Pin For Weighbridge Truck Scale

### FEATURES

- For use on steel or concrete weighbridges
- Above ground or pit mounted
- Stainless steel pin
- Plated steel base
- Simple installation
- Low profile

### DESCRIPTION

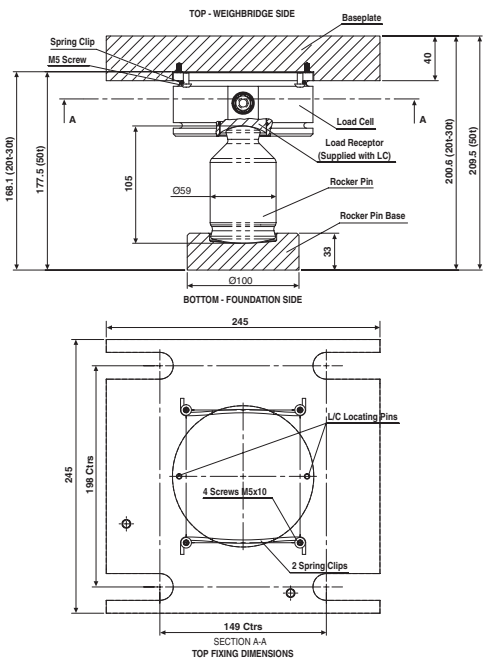
The 220 Rocker Pin Mount is ideal for use in steel or concrete weighbridge/truckscale applications when used in conjunction with the Model 220 load cell.

It forms a compact assembly which is rugged and tolerant of heavy treatment.

The Rocker Pin mount assembly allows free motion in any direction in the horizontal plane up to ±6°C. The self-centering design is tolerant of misalignment and can therefore be used in silo weighing applications.

Complicated arrangements that often accompany conventional installation of load cell mountings are avoided.

### OUTLINE DIMENSIONS in mm




The mounting kit is designated;

MTS-ROCKER-30T Comprising rocker pin, rocker pin base. Packed weight; 3.5kg.

The baseplate kit is designated;

MTS-BASEKIT-30T Comprising baseplate, location pins x 2, spring clips x 2, M5 screws x 4. Packed weight; 18kg.

1. To ensure safe use of the rocker pin mount; restraints must be fitted between the weighbridge deck and foundation.
2. Tedea-Huntleigh cannot accept responsibility for the improper installation of the rocker pin mount.
3. Because of the weight of the base plate and consequent freight costs, customers might wish to machine it locally. Manufacturing details of this simple plate are available free of charge on request.
4. A separate kit of spring clips, location pins and screws is available (MTS-CLIPKIT-30T). Tedea- Huntleigh provide installation details separately, please refer to Technical Support Document.

# Heavy Duty Silo Mount For The 220 Load Cell

## FEATURES

- 5, 10, 20 and 30 tonnes capacity
- Low profile
- Tolerant of angular misalignment
- Stainless steel mounting option
- Jacking support system
- Lift-off protection
- Allowance for thermal expansion

## DESCRIPTION

The 220 Silo Mount is specifically designed for the support of tanks, silos and hoppers, making it ideal for indoor or outdoor process control applications when high accuracy weighing is demanded.

The Silo Mount is designed to support a uniformly distributed load and is capable of tilting through a maximum of ±3° from vertical.

The Silo Mount forms a compact assembly offering simple installation which is rugged and tolerant of heavy industrial environments. Heavy gauge steel construction provides a rigid, robust load cell mount for high accuracy and prolonged life. An earth strap with fixing bolts is provided.

The Silo mount provides a unique jacking support system which allows the mounts to be installed in the raised position without the load cells, this aids the installation, and preventing accidental damage of the load cells.

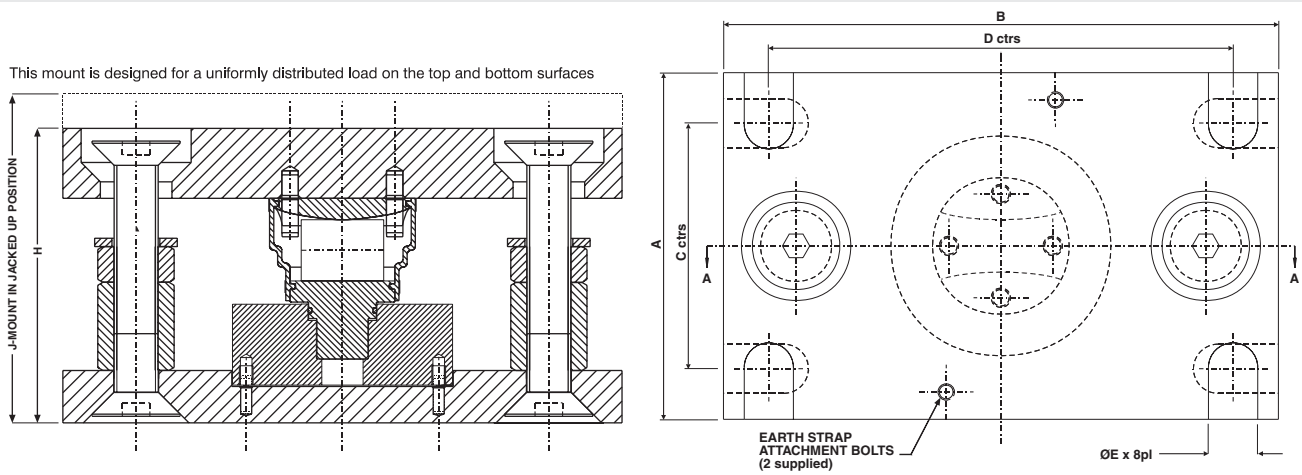
Lift-off protection and an allowance for thermal expansion of the weighing vessel is also incorporated into the mount design.

## APPLICATIONS

- Silo mount
- Tank weighing
- Hopper weighing

For specifications refer to model 220.

## OUTLINE DIMENSIONS in mm



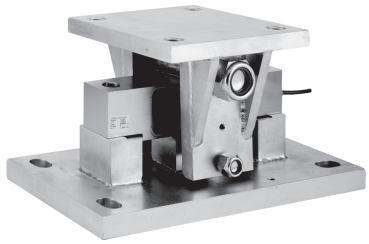

| CAPACITY | A | B | C | D | ØE | H | J |
|---|---|---|---|---|---|---|---|
| 5 & 10T | 127 | 203 | 90 | 170 | 18 | 107 | 118 |
| 20 & 30T | 152 | 245 | 115 | 208 | 24 | 148 | 156 |

# Model 4158 Silo Mount

Tedea-Huntleigh

VISHAY PRECISION GROUP

## Heavy Duty Silo Mount for Use With 4158 Load Cell



### FEATURES

- Capacities upto 75klb
- Use on tanks or silos
- All steel construction
- Low profile
- Simple installation

### DESCRIPTION

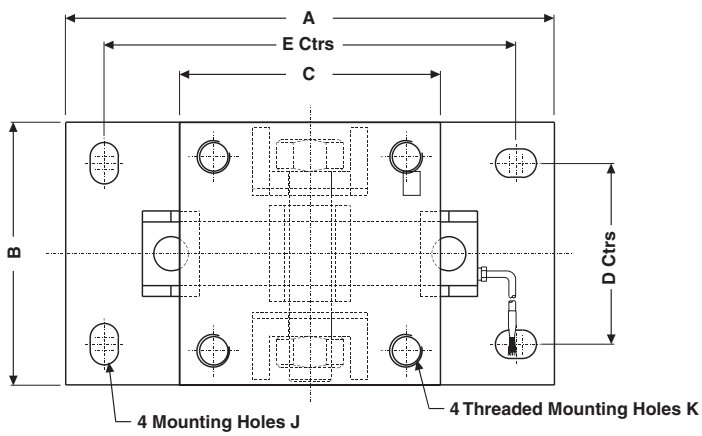
The 4158 silo mount is suitable for the support of tanks and silos, making it ideal for indoor or outdoor process control applications.

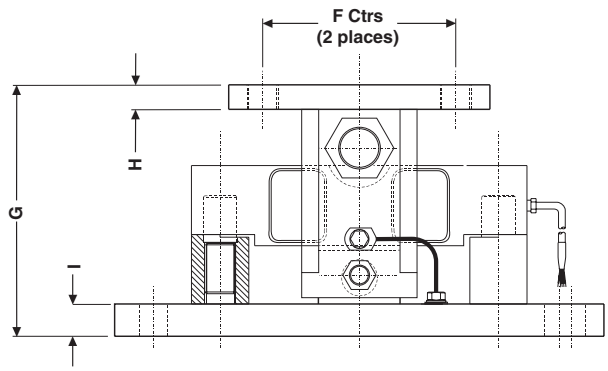
It is designed to support a uniformly distributed load and will allow tilt in any direction up to a maximum of ±3°.

It forms a compact assembly which is rugged and tolerant of heavy industrial environments. Heavy gauge steel plate provides a rigid, robust load cell mount for high accuracy and prolonged life.

It incorporates lift-off protection and allows for thermal expansion of the weighing vessel.

### OUTLINE DIMENSIONS in mm




**This mount is designed for a uniformly distributed load on the top and bottom surfaces**

Each comprises base plate assy, top plate assy, loading pin & support, bottom pin, mounting posts, retaining clips, earth strap with bolts & washers.

| CAPACITY | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 - 25klb | 240 | 180 | 180 | 130 | 190 | 130 | 142 | 12.7 | 19 | Ø18x28 | M20 |
| 40klb | 380 | 203 | 203 | 140 | 320 | 150 | 195 | 19 | 25 | Ø22x32 | M24 |
| 50 - 75klb | 380 | 203 | 203 | 140 | 320 | 150 | 210 | 19 | 25 | Ø22x32 | M24 |

# Load Cell Mounting Feet

## FEATURES

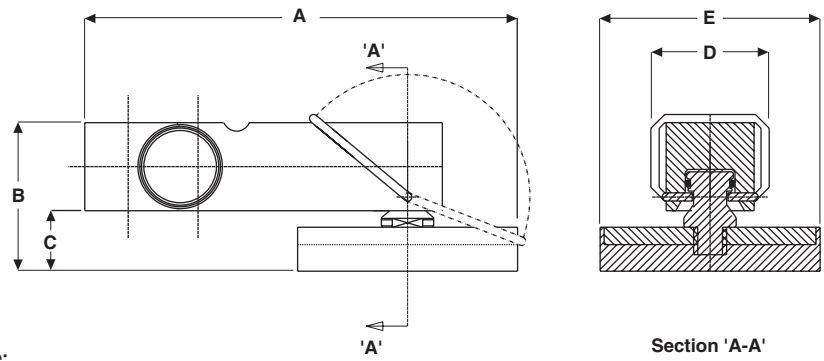
- Adjustable height or fixed height version
- Designed to work with T-end version shear beams
- Low profile
- Stainless steel
- Anti-vibration
- Easy installation

## DESCRIPTION

T-End mounting feet are ideal for platform use where a number of load cells are used together. The stainless steel construction with the inert rubber foot makes the assembly impervious to most industrial chemicals and ideal for harsh environments a food grade rubber option is also available.

They must be used with the appropriate load cells, which are current matched and specially machined to accept T-End accessories. It is recommended to order load cells and T-End mounting feet together.

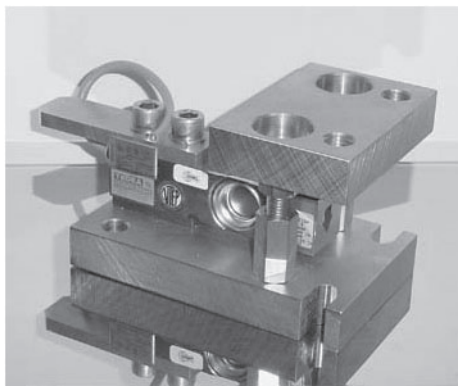
## OUTLINE DIMENSIONS in mm




**Note:**
**1. All dimensions in mm**
**2. A mounting foot adapter is available which increases the heights 'B' & 'C' by 7mm (for standard shear beams)**

| Load Cell Type | | | 3410 | | | 3510 | |
|---|---|---|---|---|---|---|---|
| Capacity | | | 250-4000lbs | 500-1000kg | 2000kg | 300-2000kg | 5000kg |
| Both T foot versions | A | | 157.4 | 157.4 | 157.4 | 157.4 | 202.4 |
| | D | | 43 | 43 | 43 | 43 | 57 |
| | ØE | | 80 | 80 | 80 | 80 | 100 |
| Fixed height foot | B | | 52 | 52 | 58 | 54 | 77.5 |
| | C | mm | 22 | 22 | 22 | 22 | 29.5 |
| Adjustable height foot | B low | | 58 | 58 | 64 | 60 | - |
| | B high | | 70 | 70 | 76 | 72 | - |
| | C low | | 28 | 28 | 28 | 28 | - |
| | C high | | 40 | 40 | 40 | 40 | - |

# Load Cell Mounting Assembly for Models 355, 3410, 3420 and 3510



## FEATURES

- Simplifies load cell installation on tanks, silos and other weighing vessels
- 3 models suitable for load cell models 3510, 3410, 3420, and 355
- Accepts load cells ranging in capacity from 5 to 5,000kg
- Permanent protection against load cell damage
- Grounding strap provides low resistance path to minimize electrical potentials
- Provision for thermal expansion, contraction and lift-off due to winds or collision
- Cable gland protector prevents cable damage
- Stainless steel construction
- Internal jack for load cell easy installation and replacing
- Ball and cup version also available

## DESCRIPTION

The CellMate™ is a superior load cell mounting assembly that dramatically simplifies load cell installation.

A perfect solution to vessel weighing in diaries, chemical, bottling and food processing plants, stainless steel CellMate™ mounts can be used on tanks, silos and many other weighing vessels and applications.

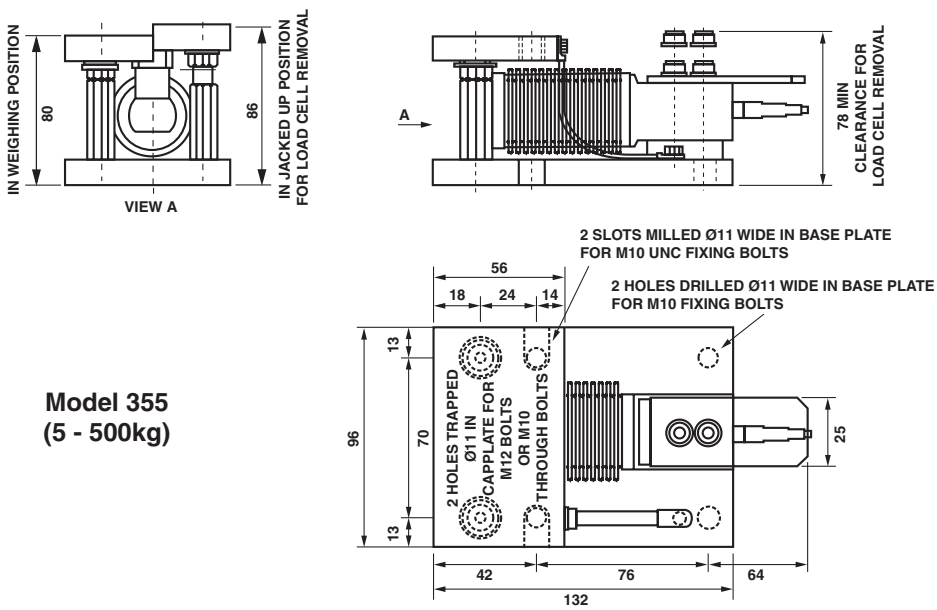
The CellMate™ family of mountings also provides an unparalleled degree of protection for load cells and maintains a permanent load cell safety system, reducing load cell damage and plant down-time.

CellMate™ assemblies are available in three models with weighing capacities from 5 to 5000kg in stainless steel. Standard dimensions and hole sizes provide for fast and easy placement of load cells. Ideal for use with Tedea-Huntleigh's line of hermetically sealed shear and bending beam load cells. CellMate™ includes an internal jack which enables users to install the fittings on silos or tanks with or without load cells.

## APPLICATIONS

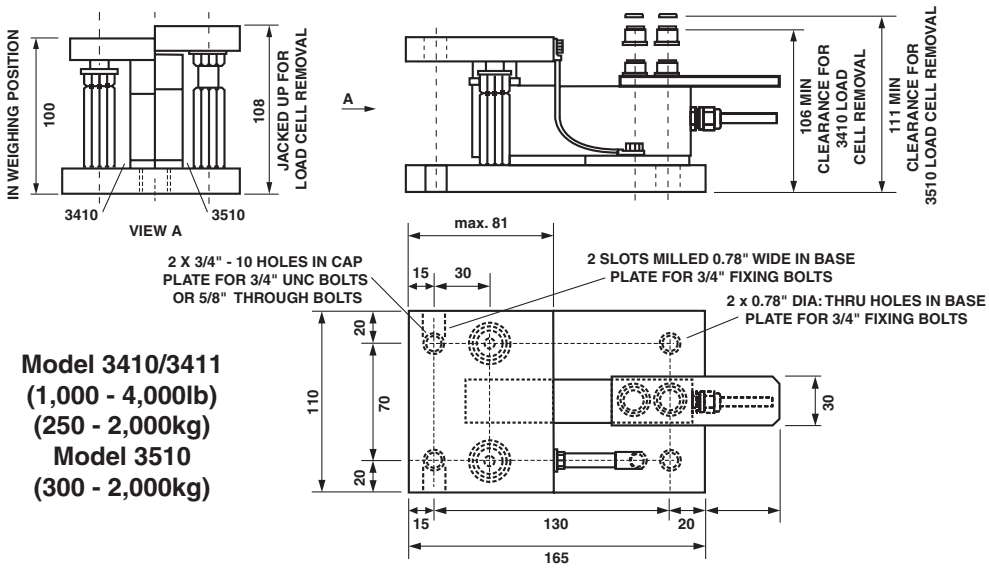
- Hostile environments applications
- Process control
- Batch weighing
- Silo/hopper weighing
- Belt scale weighing

## OUTLINE DIMENSIONS in mm



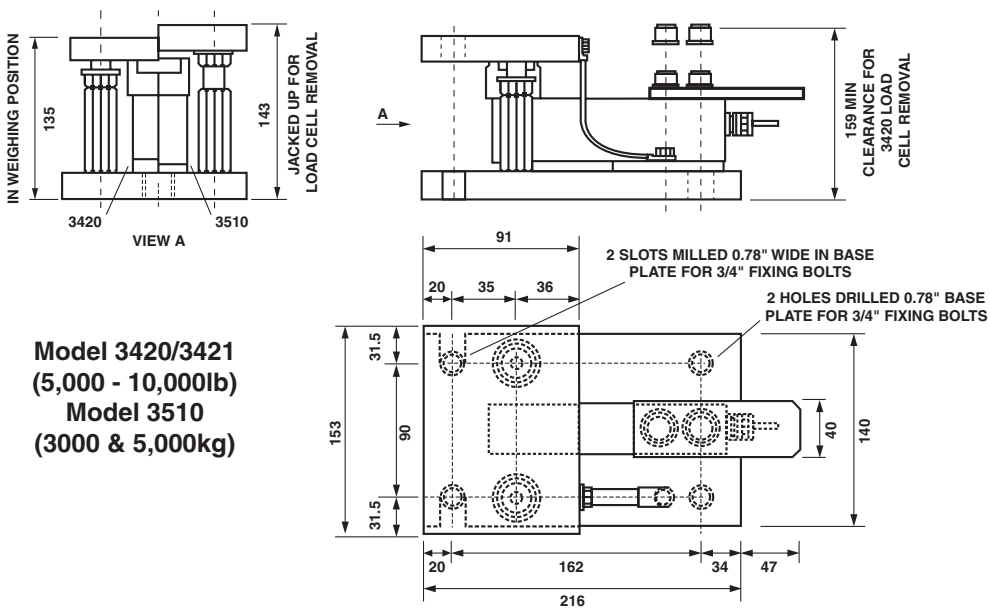

**Model 355 (5 - 500kg)**

## OUTLINE DIMENSIONS in mm




**Model 3410/3411**
**(1,000 - 4,000lb)**
**(250 - 2,000kg)**
**Model 3510**
**(300 - 2,000kg)**

## OUTLINE DIMENSIONS in mm



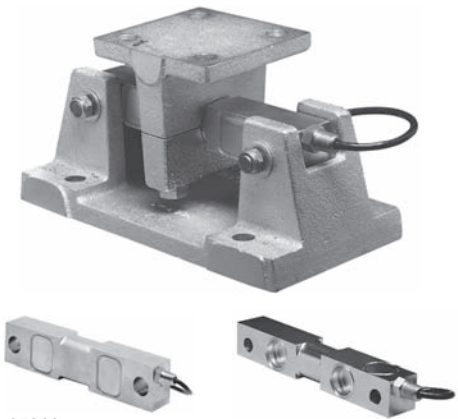

**Model 3420/3421**
**(5,000 - 10,000lb)**
**Model 3510**
**(3000 & 5,000kg)**

# Model 65016-TWA

Sensortronics

VISHAY PRECISION GROUP

## Tank Weighing Assembly



65016 65016-0104W

Factory Mutual System Approved

### FEATURES

- Capacity ranges of 1000 to 125,000 pounds
- Mounts directly to the floor or structural support
- Self-checking with provisions for thermal expansion and contraction
- Insensitive to side loads and bending moments
- High output - well suited to high deadload/low liveload applications
- Load cells have matched outputs for multi-cell systems
- Excellent combined error and repeatability
- Accuracies exceed 0.1% with agitated loads
- Integral conduit adaptor
- Certified for uniform building code seismic zones 1 thru 4
- *Sensorgage*™ sealed to IP67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!)

### OPTIONAL FEATURE

- Stainless steel, welded seal assemblies available

### DESCRIPTION

The 65016-TWA is a mid to high capacity nickel plated alloy steel weighing assembly.

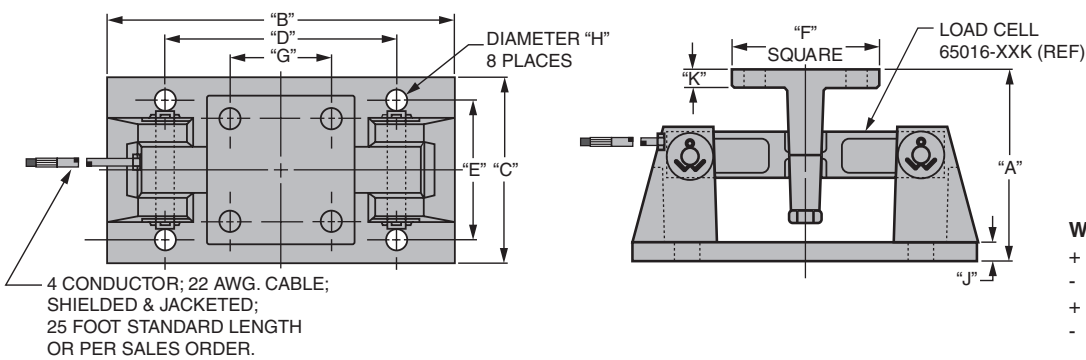
This product is the standard in tank and container weighing due to the Zone 4 earthquake rating. It has high side load rejection, and is able to withstand loads in all directions up to and exceeding its rated capacity without permanent damage or the threat of structural failure. This weighing assembly is also designed to move in the direction of thermal expansion, guaranteeing accurate measurements regardless of conditions. Nickel plating and IP67 rated sealing make this load cell suitable for use in outdoor applications as well as applications that are subject to high pressure wash down. For a higher degree of corrosion and water resistance please see 65016-0104W, the stainless steel and welded seal version of 65016.

This load cell is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments.

### APPLICATIONS

- Tank, bin and hopper weighing
- Silo weighing
- Batching, blending, mixing, level and inventory monitoring

### OUTLINE DIMENSIONS in inches




**Wiring**

| | |
|---|---|
| + Excitation | Red |
| - Excitation | Black |
| + Output | Green |
| - Output | White |

| CAPACITY | A | B | C | D | E | F | G | H | J | K | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1K - 5K | 5.13 | 9.35 | 5.00 | 6.25 | 3.75 | 4.00 | 2.75 | 0.56 | 0.90 | 0.50 | 22.0 |
| 10K - 35K | 7.90 | 12.00 | 8.00 | 7.50 | 6.00 | 8.00 | 6.00 | 0.78 | 0.75 | 0.75 | 73.0 |
| 50K - 75K | 9.30 | 16.25 | 12.00 | 11.50 | 9.50 | 9.00 | 6.50 | 0.78 | 1.00 | 1.00 | 172.0 |
| 100K - 125K | 11.75 | 23.50 | 14.00 | 20.00 | 12.00 | 10.00 | 8.00 | 1.12 | 1.50 | 1.50 | 250.0 |

Capacities are in pounds.



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11604
Revision: 12-Feb-10

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 1K, 1.5K, 2.5K, 5K, 10K, 15K, 25K, 35K, 50K, 75K, 100K, 125K | lbs |
| **NTEP/OIML Accuracy class** | **Standard** | |
| **Maximum no. of intervals (n)** | -- | |
| **Rated output-R.O.** | 3.0 | mV/V |
| **Rated output tolerance** | 0.25 | ±% mV/V |
| **Zero balance** | 1.0 | ±% FSO |
| **Combined error** | 0.03 | ±% FSO |
| **Non-repeatability** | 0.01 | ±% FSO |
| **Creep error (20 minutes)** | 0.03 | ±% FSO |
| **Temperature effect on zero** | 0.0015 | ±% FSO/°F |
| **Temperature effect on output** | 0.0008 | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | °F (°C) |
| **Sideload rejection ratio** | 500:1 | |
| **Safe sideload** | 100 | % of R.C. |
| **Maximum safe central overload** | 150 | % of R.C. |
| **Ultimate central overload** | 300 | % of R.C. |
| **Excitation, recommended** | 15 | Vdc or Vac rms |
| **Excitation, maximum** | 25 | Vdc or Vac rms |
| **Input impedance** | 686 - 714 | Ω |
| **Output impedance** | 699 - 707 | Ω |
| **Insulation resistance at 50VDC** | >1000 | MΩ |
| **Material load cell** | Nickel plated alloy tool steel or stainless steel | |
| **Material assembly** | Zinc plated cast steel | |
| **Environmental protection** | IP67 | |

FSO -Full Scale Output

# Tank Weighing Assembly

## FEATURES

- Rated capacities of 50 to 2500 pounds
- Steel or stainless steel construction
- Low profile design
- Trade certified for NTEP Class IIIL: 10000 divisions and Class III: 5000 divisions available in 1000 to 2500 pounds
- Mounts directly to floor or structural support
- Unique neoprene isolation mount accommodates shock/ vibration, thermal expansion and load misalignment
- *Sensorgage*™ sealed to IP65/67 standards
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!)

## DESCRIPTION

The 65059-TWA is low to mid capacity alloy steel weighing assembly.

This product simply and easily converts any industrial tank, table, or platform into a high accuracy scale. The 65059 weighing assembly is shipped pre-assembled and ready to bolt between the support legs of a platform, tank, or container and the concrete floor. The top pad of this assembly is constructed from a special stiff neoprene rubber. This pad further simplifies installation by creating a self-leveling system that eliminates the shimming process of the installation. This neoprene pad further benefits the user by creating a vibration dampening effect that helps protect and isolate the load cell. The load cell is available in both nickel plated and stainless steel construction and sealed to IP67 standards, assuring reliability in industrial and wash down applications. The assembly is available only with zinc plating for corrosion resistance.

This weighing assembly is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments. This weighing assembly is certified for Legal For Trade applications by both American NTEP and International OIML standards.

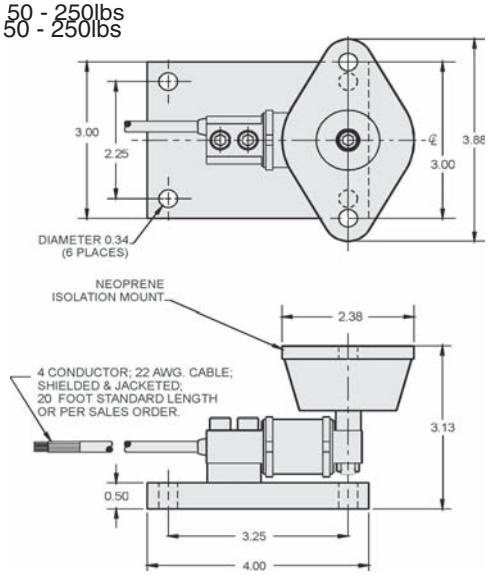
## APPLICATIONS

- Tank, bin and hopper weighing
- Batching, blending and mixing
- Low capacity weighing

## OUTLINE DIMENSIONS in inches

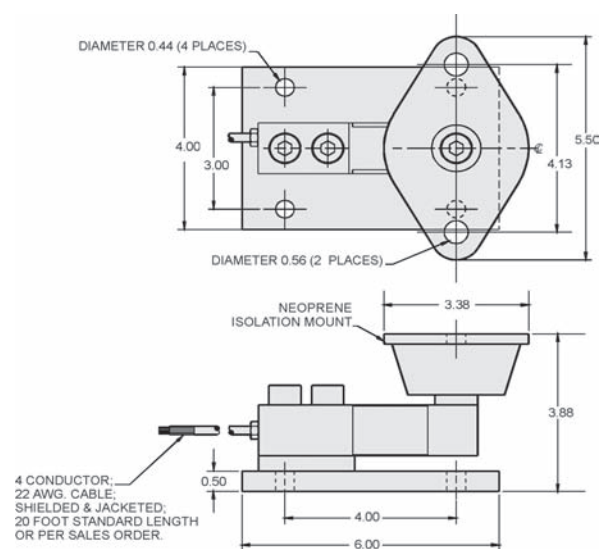
50 - 250lbs

50 - 250lbs




500lbs

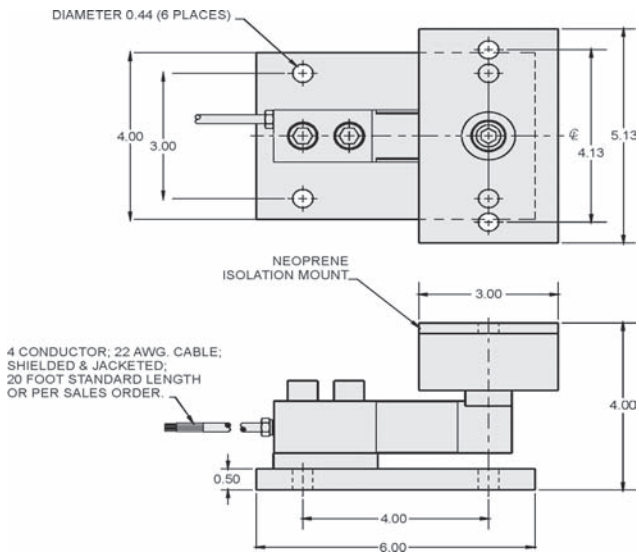
500lbs



## OUTLINE DIMENSIONS in inches

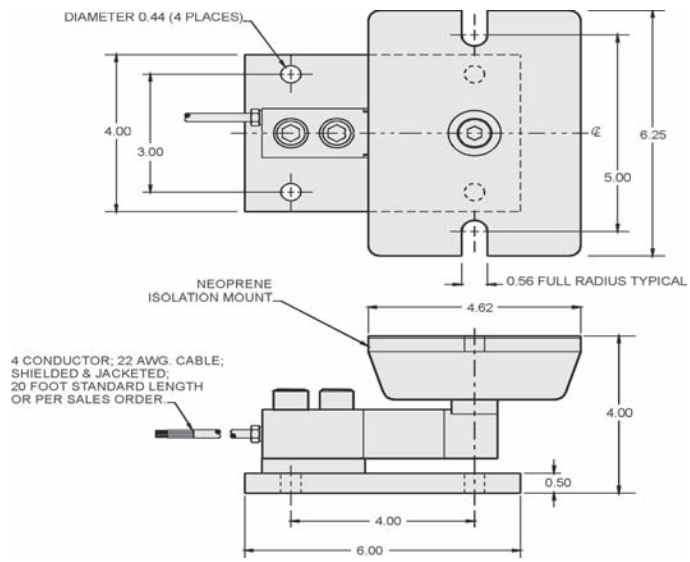
1Klbs

1Klbs

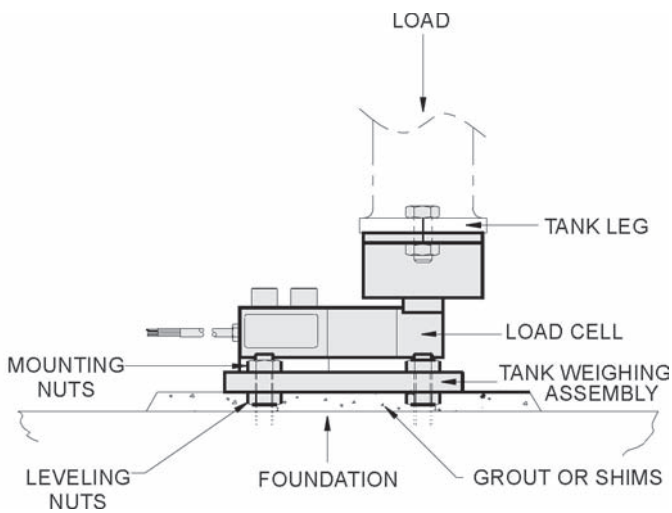


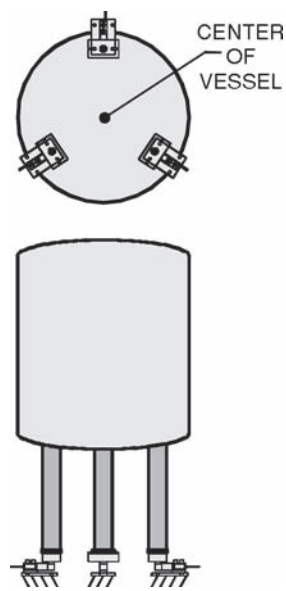

1.5K, 2K, 2.5K

1.5K, 2K, 2.5K




## TYPICAL INSTALLATION




Vessel with Three Supports

Vessel with Three Supports

## SPECIFICATIONS

| PARAMETER | VALUE | | | UNIT |
|---|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 50, 75, 100, 150, 250, 500, 1K, 1.5K, 2.5K | | | lbs |
| **NTEP/OIML Accuracy class** | **NTEP IIIL** | **Standard** | **OIML R60** | |
| **Maximum no. of intervals (n)** | 10000 | | 3000* | |
| **$Y = E_{max}/V_{min}$** | NTEP cert. 86-044A2 | | 6250 | Maximum available |
| **Rated output-R.O.** | 3.0 | | | mV/V |
| **Rated output tolerance** | 0.25 | | | ±% mV/V |
| **Zero balance** | 1.0 | | | ±% FSO |
| **Combined error** | 0.02 | 0.03 | 0.02 | ±% FSO |
| **Non-repeatability** | 0.01 | 0.01 | 0.01 | ±% FSO |
| **Creep error (30 minutes)** | 0.03 | 0.03 | 0.017 | ±% FSO |
| **Temperature effect on zero** | 0.0010 | 0.0015 | 0.0010 | ±% of load/°F |
| **Temperature effect on output** | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | | | °F (°C) |
| **Maximum safe central overload** | 150 | | | % of R.C. |
| **Ultimate central overload** | 300 | | | % of R.C. |
| **Excitation, recommended** | 10 | | | Vdc or Vac rms |
| **Excitation, maximum** | 15 | | | Vdc or Vac rms |
| **Input impedance** | Capacities 50-250lbs - 380-450 | | Cap. 500-2500lbs - 343-357 | Ω |
| **Output impedance** | Capacities 50-250lbs - 349-355 | | Cap. 500-2500lbs - 349-355 | Ω |
| **Insulation resistance at 50VDC** | >1000 | | | MΩ |
| **Material load cell** | Nickel plated alloy tool steel** | | | |
| **Material assembly** | Zinc plated steel | | | |
| **Environmental protection** | IP67 | | | |
| **Recommended torque** | All capacities up to 2500lbs - 136 | | | N*m |

* OIML approval 1-2.5Klbs only

** Stainless steel available

FSO - Full Scale Output

# Truck Scale Assembly

65058

65058S

Approved

## FEATURES

- Rated capacities of 10,000 to 75,000 pounds
- High quality cast components
- *Unilink*™ "floating" suspension system allows controlled floating of the scale deck
- Incorporates model 65058 double-ended shear beam load cells
- *Sensorgage*™ sealed to IP67 standards
- Trade certified load cells for NTEP Class IIIL: 10000 divisions; Class III: 5000 divisions available
- Factory Mutual System Approved for Classes I, II, III; Divisions 1 and 2; Groups A through G. Also, non-incendive ratings (No barriers!)

## OPTIONAL FEATURES

- Optional load equalizer pads available
- Stainless steel version available

## DESCRIPTION

The 65058-TSA is a high capacity truck scale weighing assembly.

This product is designed to simplify the installation of the 65058 load cell into a certified Legal For Trade high capacity weigh bridge. UnilinkTM floating suspension allows controlled floating of the scale deck, providing a reliable and accurate weighing system. The load cell is nickel plated or stainless steel and sealed to IP67 standards, assuring reliability. The mount assembly is provided with a primer coat finish to simplify the manufacture of the scale.

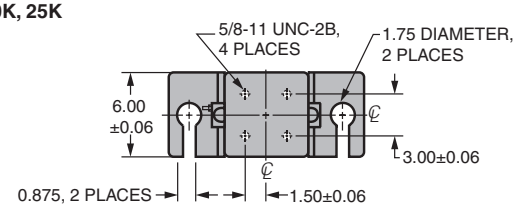
This weighing assembly is rated intrinsically safe by the Factory Mutual System (FM); making it suitable for use in potentially explosive environments. This weighing assembly is certified for Legal For Trade applications by both American NTEP and International OIML standards.

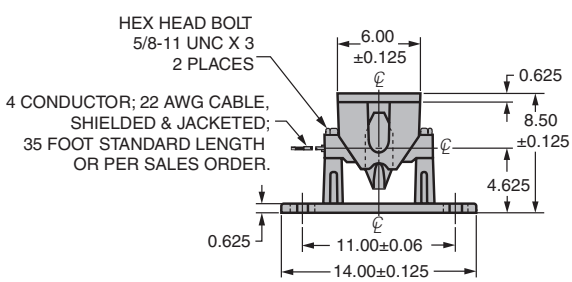
## APPLICATIONS

- Truck scales
- Railroad track scales
- "Legal for Trade" tank, bin and hopper weighing

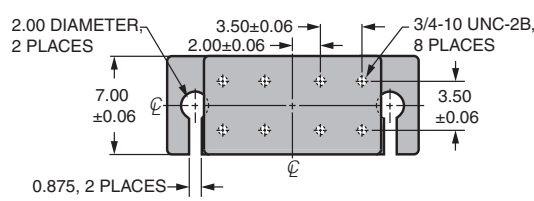
## OUTLINE DIMENSIONS in inches

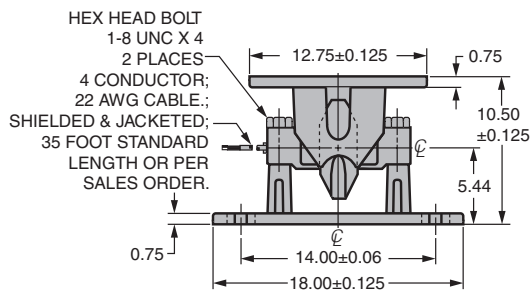
**10K, 20K, 25K**




**50K, 60K, 75K**




**Wiring**

+ Excitation Red + Output Green
- Excitation Black - Output White

Capacities are in pounds.

## SPECIFICATIONS

| PARAMETER | VALUE | | | | UNIT |
|---|---|---|---|---|---|
| **Rated capacity-R.C. ($E_{max}$)** | 10K, 25K, 40K, 50K, 60K, 75K | | | | lbs |
| **NTEP/OIML Accuracy class** | **NTEP III** | **NTEP IIIL** | **Standard** | **OIML R60** | |
| **Maximum no. of intervals (n)** | 5000 multiple | 10000 multiple | | 3000 | |
| **Y = $E_{max}/V_{min}$** | See NTEP cert. 86-046A3 | | | 6667 | Maximum available |
| **Rated output-R.O.** | 3.0 | | | | mV/V |
| **Rated output tolerance** | 0.25 | | | | ±% mV/V |
| **Zero balance** | 1.0 | | | | ±% FSO |
| **Combined error** | 0.02 | 0.02 | 0.03 | 0.02 | ±% FSO |
| **Non-repeatability** | 0.01 | 0.01 | 0.015 | 0.01 | ±% FSO |
| **Creep error (30 minutes)** | 0.025 | 0.030 | 0.03 | 0.017 | ±% FSO |
| **Temperature effect on zero** | 0.0010 | 0.0010 | 0.0015 | 0.0010 | ±% FSO/°F |
| **Temperature effect on output** | 0.0008 | 0.0008 | 0.0008 | 0.0007 | ±% of load/°F |
| **Compensated temperature range** | 14 to 104 (-10 to 40) | | | | °F (°C) |
| **Operating temperature range** | 0 to 150 (-18 to 65) | | | | °F (°C) |
| **Storage temperature range** | -60 to 185 (-50 to 85) | | | | °F (°C) |
| **Sideload rejection ratio** | 500:1 | | | | |
| **Safe sideload** | 100 | | | | % of R.C. |
| **Maximum safe central overload** | 150 | | | | % of R.C. |
| **Ultimate central overload** | 300 | | | | % of R.C. |
| **Excitation, recommended** | 10 | | | | Vdc or Vac rms |
| **Excitation, maximum** | 25 | | | | Vdc or Vac rms |
| **Input impedance** | 686 - 714 | | | | Ω |
| **Output impedance** | 699 - 707 | | | | Ω |
| **Insulation resistance at 50VDC** | >1000 | | | | MΩ |
| **Material** | Nickel plated alloy tool steel* | | | | |
| **Environmental protection** | IP67 | | | | |

* Stainless steel available

FSO - Full Scale Output

VISHAY PRECISION GROUP

# Weighing Indicators and Accessories

## Contents




Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Model VT 50

Revere

VISHAY PRECISION GROUP

## Weight Indicator


### FEATURES

- Economical general-purpose weighing indicator
- Large 6 digit LED display
- Serial port for printer and EDP/PC connection
- Heavy duty industrial plastic enclosure
- Sample rate up to 30 conversions per second
- 3 level digital filtering
- Consecutive transaction numbering (optional)
- Programmable ticket format up to 100 characters

### NOT AVAILABLE IN THE FOLLOWING REGIONS:

**North America, Central America, South America**

### DESCRIPTION

The VT 50 is an economical general purpose weighing indicator for platform scales and other industrial applications.

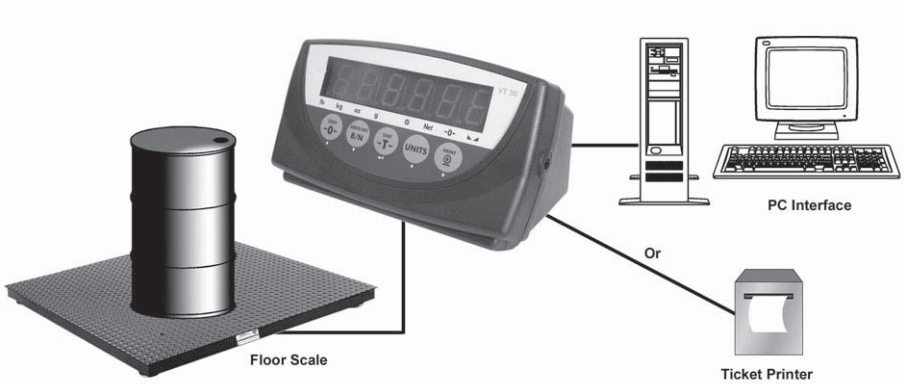
Serial RS-232 port provides interface to a PC/EDP or a printer, depending on the protocol selected. Ticket format can be edited and downloaded with programmable ticket numbers.

The heavy duty ABS enclosure is designed for desktop installation, yet easily adjusted for wall (tilt) or post mounting.

### APPLICATIONS

- Shipping and receiving scales
- Floor Scales
- Bench scales

### CONFIGURATION




### OPTIONS

- UL power adaptor
- TUV power adapter
- UK power adapter
- High tilt stand
- Low tilt stand

# Weight Indicator

## SPECIFICATIONS

### PERFORMANCE

| | |
|---|---|
| Resolution: | 10000 or 50000 dd (selectable) |
| Conversion Speed: | 3, 7, 15, or 30 samples (selectable) |
| Sensitivity: | 0.5µV/e (non-approved) |
| Full scale range: | 3mV/V |
| Linearity: | 0.01% of full scale |
| Excitation: | +5VDC with sense (6 wires) |
| Number of Cells: | Up to 4, 350 ohm load cells |
| Filter: | digital filter - 3 stages |
| A/D Converter Type: | Sigma-Delta, ratiometric |
| Count By: | x1, x2, x5, x10, x50 |
| Decimal Point: | between any digits of the weight display |
| Calibration Methods: | dead load and span, store in EEPROM |
| Weighing Functions: | automatic zero tracking, motion detection, auto-zero on power-up, zero, tare, gross/net print, units conversion |

### ENVIRONMENTAL

| | |
|---|---|
| Operating Temp: | -10°C to +40°C (14°F to 104°F) |
| Storage Temp: | -10°C to +70°C (-4°F to 158°F) |
| Relative Humidity: | 40-90% RH, non condensing |

### DISPLAY AND KEYBOARD

| | |
|---|---|
| Display: | 6 digit, 7-segment, LED, 20.3mm |
| Status Enunciators: | no motion, zero, net, units (kg, lb, g, oz) |
| Weight Digits: | 4, 5 or 6 (setup selectable) |
| Keyboard: | 5 key membrane keyboard, with tactile feedback |

### ELECTRICAL

| | |
|---|---|
| Voltage: | 9VDC or 115 or 230VAC using power adapter |
| Power: | 8W |

### SERIAL COMMUNICATION

| | |
|---|---|
| Serial Output: | RS-232 |
| Baud Rate: | 300 - 9600 baud, full duplex |
| Applications: | printer output, or PC/EDP interface |

### ENCLOSURE

Heavy duty industrial plastic enclosure

| | |
|---|---|
| Dimensions: | 186.3x103x95mm LxHxD (7.32x4.05x3.74in. LxHxD) |
| Mounting: | desktop standard<br>optional wall (tilt) and post mount |

VPG Transducers is continually seeking to improve product quality and performance. Specifications may change accordingly.

# Model VT 100

Revere

VISHAY PRECISION GROUP

## Weight Indicator


### FEATURES

- Economical general-purpose weighing indicator
- Large 6 digit LED display
- Two serial ports for simultaneous printer and PC connection
- Heavy duty ABS enclosure
- Sample rate up to 30 conversions per second
- OIML R-76 and NTEP approved to 10000d
- 3 level digital filtering
- Programmable ticket format up to 185 characters
- Consecutive transaction numbering

### NOT AVAILABLE IN THE FOLLOWING REGIONS:

**North America, Central America, South America**

### DESCRIPTION

The VT 100 is an economical general purpose weighing indicator for platform scales and other industrial applications.

Two serial ports, RS-232 and current loop, provide simultaneously PC and printer interface capability. Ticket formats may be edited and downloaded with programmable ticket numbering, date, and time.

Load cells are connected using a quick disconnect plug, allowing simple installation and maintenance.

The heavy duty ABS enclosure easily adjusts for desktop, wall (tilt), or post mounting.

### APPLICATIONS

- Shipping and receiving scales
- Floor scales
- Bench scales

### CONFIGURATION


### OPTIONS

- UL power adaptor
- TUV power adapter
- UK power adapter
- High tilt stand
- Low tilt stand

## Weight Indicator

## SPECIFICATIONS

### PERFORMANCE

| | |
|---|---|
| Resolution: | 10000 or 100000 dd (selectable) |
| Conversion Speed: | 3, 7, 15, or 30 samples (selectable) |
| Sensitivity: | 1.0µV/Vsi for approved scales, 0.5µV/Vsi for non-approved scales. |
| Full Scale Range: | 3mV/V |
| Linearity: | 0.01% of full scale |
| Long Term Stability: | 0.005% of full scale per year |
| Excitation: | +5VDC with sense (6 wires) |
| Number of Cells: | Up to 8, 350 ohm load cells |
| Filter: | digital filter - 3 stages |
| Offset Drift: | 3.5ppm/°C |
| Span Drift : | 3.5ppm/°C |
| A/D Converter Type: | Sigma-Delta, ratiometric |
| Count By: | x1, x2, x5, x10, x50 |
| Decimal Point: | between any digits of the weight display |
| Calibration Methods: | dead load and span, store in EEPROM |
| Weighing Functions: | automatic zero tracking, motion detection, auto-zero on power-up, zero, tare, gross/net, print, units conversion |

### ENVIRONMENTAL

| | |
|---|---|
| Operating Temp: | -10°C to +40°C [14°F to 104°F] |
| Storage Temp: | -10°C to +70°C [-4°F to 158°F] |
| Relative Humidity: | 40-90% RH, non-condensing |

### DISPLAY AND KEYBOARD

| | |
|---|---|
| Display: | 6 digit, 7-segment, LED, 20.3mm |
| Status Enunciators: | no motion, zero, net, units (kg, g) |
| Weight Digits: | 4, 5 or 6 (setup selectable) |
| Keyboard: | 5 key membrane keyboard, with tactile feedback |

### ELECTRICAL

| | |
|---|---|
| Voltage: | 9VDC or 115 or 230VAC using power adapter |
| Power: | 8W |

### SERIAL COMMUNICATION

| | |
|---|---|
| Serial Output #1: | RS-232 |
| Baud Rate: | 1200 - 38400 baud, full duplex |
| Applications: | continuous or printer output, PC interface |
| Serial Output #2: | 20mA current loop - output only |
| Baud Rate: | 1200 - 9600 baud |
| Applications: | printer port |

### ENCLOSURE

Heavy Gage ABS:

| | |
|---|---|
| Dimensions: | 186.3x103x95mm LxHxD [7.32x4.05x3.74in. LxHxD] |
| Mounting: | desktop, wall and tilt mount |

### APPROVALS (ACCURACY CLASS III)

| | |
|---|---|
| OIML R-76: | 10000d EU-type approval no. T6877 |
| NTEP: | 10000d single interval |

VPG Transducers is continually seeking to improve product quality and performance. Specifications may change accordingly.

# Model VT 120

Revere

VISHAY PRECISION GROUP

## Weight Indicator With Internal Battery


### FEATURES

- Economical general-purpose weighing indicator
- 100 hours rechargeable battery with front panel opening for easy replacement
- Large 6 digit LCD display with back light
- Numeric key pad
- Two serial ports for simultaneous printer and PC connection
- Heavy duty ABS enclosure
- Sample rate up to 30 conversions per second
- OIML R-76 approved to 10000d
- Hold function
- Preset tare
- Programmable ticket format up to 500 characters
- Consecutive transaction numbering

### NOT AVAILABLE IN THE FOLLOWING REGIONS:

**North America, Central America, South America**

### DESCRIPTION

The VT 120 is an economical general purpose weighing indicator for platform scales and other industrial applications.

Two serial ports, RS-232 and current loop, provide simultaneously PC and printer interface capability. Ticket formats may be edited and downloaded with programmable ticket numbering, date, and time.

The VT 120 has a numeric key pad for easy entering of numeric values during calibration and pre-setting of the tare value.

Load cells are connected using a quick disconnect plug, allowing simple installation and maintenance.

The heavy duty ABS enclosure easily adjusts for desktop, wall (tilt), or post mounting.

An internal rechargeable battery allows working for 100 hours under normal conditions. Front panel cover allows replacement of battery without affecting the unit's sealing.

### APPLICATIONS

- Shipping and receiving scales
- Floor scales
- Bench scales
- Medical applications

### CONFIGURATION



Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11651
Revision: 29-Mar-10

## Weight Indicator

## SPECIFICATIONS

### PERFORMANCE

| | |
|---|---|
| Resolution: | 10000 or 100000 dd (selectable) |
| Conversion Speed: | 30 samples |
| Sensitivity: | 1.0µV/Vsi for approved scales, 0.5µV/Vsi for non-approved scales. |
| Full Scale Range: | 3mV/V |
| Linearity: | 0.01% of full scale |
| Long Term Stability: | 0.005% of full scale per year |
| Excitation: | +5VDC with sense (6 wires) |
| Number of Cells: | Up to 4, 350 ohm load cells |
| Filter: | digital filter - 3 stages |
| Offset Drift: | ±150nV/°C, maximum |
| Span Drift : | 3.5ppm/°C |
| A/D Converter Type: | Sigma-Delta, ratiometric |
| Count By: | x1, x2, x5, x10, x50 |
| Decimal Point: | between any digits of the weight display |
| Calibration Methods: | dead load and span, store in EEPROM |
| Weighing Functions: | automatic zero tracking, motion detection, auto-zero on power-up, zero, tare, gross/net, print, units conversion, preset tare with 10 tare memmories, hold function |

### ENVIRONMENTAL

| | |
|---|---|
| Operating Temp: | -10°C to +40°C [14°F to 104°F] |
| Storage Temp: | -10°C to +70°C [-4°F to 158°F] |
| Relative Humidity: | 40-90% RH, non-condensing |

### DISPLAY AND KEYBOARD

| | |
|---|---|
| Display: | 6 digit, 7-segment, LCD, 21.2mm |
| Status Enunciators: | no motion, zero, net, units (kg, g) |
| Weight Digits: | 4, 5 or 6 (setup selectable) |
| Keyboard: | 18 key membrane keyboard, with tactile feedback (5 weight functions, 9 numeric, clear & enter) |

### ELECTRICAL

| | |
|---|---|
| Voltage: | 5VDC or 115 or 230VAC using power adapter |
| Power: | 11W |

### SERIAL COMMUNICATION

| | |
|---|---|
| Serial Output #1: | RS-232 |
| Baud Rate: | 1200 - 38400 baud, full duplex |
| Applications: | continuous or printer output, PC interface |
| Serial Output #2: | 20mA current loop - output only |
| Baud Rate: | 1200 - 9600 baud |
| Applications: | printer port and remote display |

### ENCLOSURE

Heavy Gage ABS:

| | |
|---|---|
| Dimensions: | 186.3x103x95mm LxHxD [7.32x4.05x3.74in. LxHxD] |
| Mounting: | desktop, wall and tilt mount |

### APPROVALS (ACCURACY CLASS III)

| | |
|---|---|
| OIML R-76: | 10000d EU-type approval no. T7334 |

VPG Transducers is continually seeking to improve product quality and performance. Specifications may change accordingly.

# Model VT 200/220

Revere

VISHAY PRECISION GROUP

## Weight Indicator


### DESCRIPTION

VT200/VT220 units are versatile, general purpose weight indicators, with a wide range of industrial and commercial applications.

The eight key panel enables easy operation, calibration, and setup of the instru- ment. An integral printer interface allows easy, programmable, ticket formatting. Automatic date and time storage with the real-time clock option clearly documents all printout records

The VT220 with the LCD display includes internal rechargeable battery option for stand-alone autonomous operation.

Enclosure selections include tilted, wallmount, and desktop arrangements.

### FEATURES

- Large 6 digit LED (VT200) or LCD (VT220) display
- Built-in weighing and counting modes
- Two opto-isolated setpoints
- Alibi (Flash) memory retains last 10,000 transactions
- Dual scale operation (optional)
- Two serial ports for printing and networking (one standard)
- Analog output (option)
- Stainless steel enclosure (IP65), aluminum enclosure (option)
- Programmable ticket format
- High sample rate - up to 70 conversions per second
- OIML R-76 and NTEP approved to 10000d
- Battery operation (optional with aluminum enclosure)
- Real time clock (option)

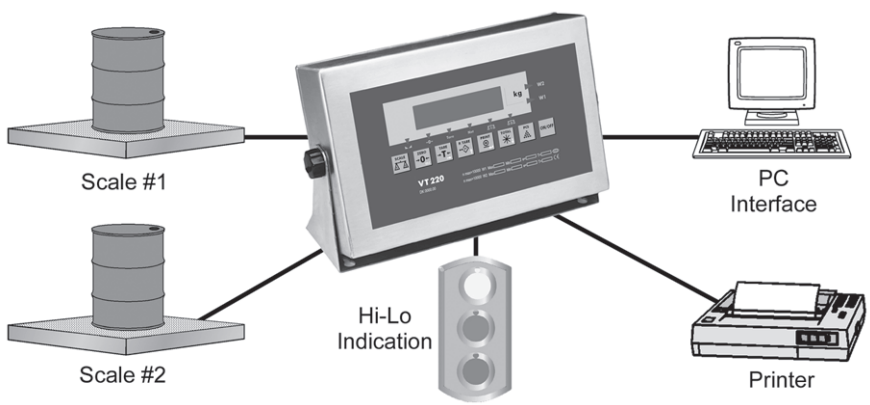
### APPLICATIONS

- Bench and floor scales
- Counting scales
- Inventory control
- Various industrial weighing systems

### OPTIONS

- Aluminum enclosure
- Stainless steel enclosure
- UL/TUV/UK power adapter
- LED/LCD display
- Analog input
- Analog output
- Second RS-232 port
- RS-485 port
- Real time clock
- Battery (for aluminum only)

### CONFIGURATION





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11641
Revision: 14-Jun-10

## SPECIFICATIONS

**PERFORMANCE**

| | |
|---|---|
| Resolution: | selectable up to 990000 dd |
| Conversion Speed: | 3 - 70 samples per second (selectable) |
| Sensitivity: | 0.4µV/Vsi for approved scales, 0.1µV/Vsi for non-approved scales. |
| Full Scale Range: | -0.25 to 1.75mV/V [-1.25mV to 8.75mV] or -0.25 to 3.75mV/V [-1.25mV to 18.75mV] |
| Linearity: | 0.002% of full scale |
| Long Term Stability: | 0.005% of full scale per year |
| Excitation: | +5V alternating polarity or +5VDC (selectable), with sense (6 wires) |
| Number of Cells: | Up to 10, 350 ohm load cells |
| Filter: | FIR automatically adjusted to conversion speed, Rolling average. |
| Offset Drift: | ≤2ppm/°C |
| Span Drift : | ≤2ppm/°C |
| A/D Converter Type: | Sigma-Delta, ratiometric |
| Count By: | x1, x2, x5, x10, x50 |
| Decimal Point: | between any digits of the weight display |
| Calibration Methods: | dead load and span, or data sheets calibration, via the mV/V output values of the load cell. Calibration of two analog inputs (optional) with individual coefficients. |
| Weighing Functions: | automatic zero tracking, motion detection, auto-zero on power-up, zero tare, preset tare, net mode, multiple test functions |
| Memory Allocation: | calibration data EEPROM, Flash tally-roll (Alibi) memory capable of 10,000 weight registrations |

Piece Counting Mode
Real-Time Clock (optional)

**ENVIRONMENTAL**

| | |
|---|---|
| Operating Temp: | -10°C to +40°C [14°F to 104°F] |
| Storage Temp: | -10°C to +70°C [-4°F to 158°F] |
| Relative Humidity: | 40-90% RH, non-condensing |

**DISPLAY AND KEYBOARD**

| | |
|---|---|
| Display: | 6 digit, 7 segment, LED or LCD |
| Digit Height: | 20mm (VT200), 16mm (VT220) |
| Status Enunciators: | no motion, zero, tare in use, net, scale in operation (#1 or #2 or sum #1+2, if second scale connected), piece counting mode |
| Weight Digits: | 4, 5 or 6 (setup selectable) |
| Keyboard: | 8 key membrane keyboard, with tactile feedback |

**ELECTRICAL**

| | |
|---|---|
| Voltage: | 85 - 265VAC |
| Current: | 500mA |
| Battery Operation (Option): | Internal rechargeable battery (VT220) Aluminum version only |

**ISOLATED ANALOG OUTPUT (OPTIONAL)**

| | |
|---|---|
| Resolution: | 16 bit DAC |
| Voltage Output: | 0.02-10V |
| Current: | 0-20mA or 4-20mA |
| Linearity | 0.002% of full scale |
| Offset Drift: | ≤2ppm/°C |

**INPUT & OUTPUTS**

| | |
|---|---|
| (x1) Logic Input: | 9-24VDC, negative common, opto-isolated to 2.5KV. |
| (x2) Logic Output: | 24Vdc±10%, positive common, max current 100mA, opto-isolated to 2.5KV. |

**SERIAL COMMUNICATION**

| | |
|---|---|
| Serial Output #1: | RS-232, non-programmable |
| Baud Rate: | 2400 baud, full duplex |
| Applications: | continuous, print (on demand), alibi print |
| Serial Output #2 (Optional): | RS-232 or RS-485 setup programmable |
| Baud Rate: | 2400 - 57800 baud, half duplex |
| Applications: | EDP output, master-slave protocols, continuous output, remote printer |

**ENCLOSURE**

Stainless Steel Enclosure:

| | |
|---|---|
| Dimensions: | 252x152x62mm LxHxD [10x6x2.5in. LxHxD] |
| Mounting: | Wall and tilt mount |
| Protection: | IP65 |
| Wiring Connections: | Cable glands |

Aluminium Enclosure:

| | |
|---|---|
| Dimensions: | 194x100x107mm LxHxD [7.64x3.94x4.21in. LxHxD] |
| Mounting: | Desktop |
| Protection: | IP40 |
| Wiring Connections: | D-sub connectors |

**APPROVALS (ACCURACY CLASS III / IIIL)**

| | |
|---|---|
| OIML R-76: | 10000d single or dual interval EU-type approval no. DK0199.62 |
| NTEP: | 10000d single or dual interval NTEP CC#..... |

VPG Transducers is continually seeking to improve product quality and performance. Specifications may change accordingly.

# Model VT 300

Revere

VISHAY PRECISION GROUP

## Weighbridge Weight Indicator


### DESCRIPTION

The VT 300 is a powerful alphanumeric terminal, designed for weighbridges, inventory control, and other demanding weighing applications.

The extended keyboard includes alphanumeric and functional keys for easy data entry and setup.

A 16-character dot-matrix LCD display supports the required user interface in complex industrial applications.

VT 300 software manages various transactions allowing choices of customer, material type, or truck identification. Documented records of all daily activities are maintained in memory and made available for computer reporting. Printable tickets and reports are easily formatted and edited.

Enclosure selections include tilted, wall-mount, and desktop.

### FEATURES

- Specially designed as a weighbridge terminal
- Large, 16 character LCD display
- 27 key alphanumeric and functions keyboard
- Up to two serial ports with printing and networking (one standard)
- Analog output for PLC interface (optional)
- Two opto-isolated weight setpoints
- Alibi (Flash) memory and programmable database of transaction records
- Real time clock
- Stainless steel enclosure (IP65), aluminum enclosure (optional)
- Weighing and counting operating modes
- OIML R-76 and NTEP approved to 10000d
- Dual scale operation (optional)
- 4 programmable ticket formats

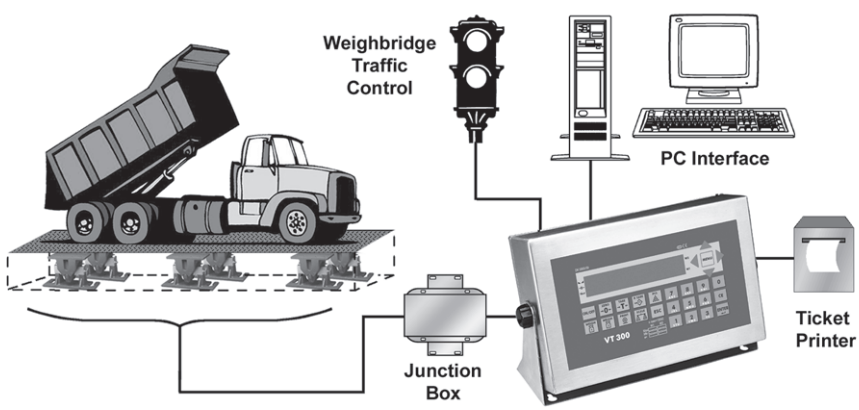
### APPLICATIONS

- Weighbridges
- Inventory control
- Industrial weighing systems
- Bench, floor, and counting scales

### OPTIONS

- Aluminum enclosure
- Stainless steel enclosure
- UL/TUV/UK/China/Japan plug
- Second RS-232 port
- RS-485 port
- Analog input
- Analog output
- Battery (for aluminum only)

### CONFIGURATION





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11642
Revision: 14-Jun-10

## SPECIFICATIONS

**PERFORMANCE**

| | |
|---|---|
| Resolution: | selectable up to 990000 dd |
| Conversion Speed: | 3 - 70 samples per second (selectable) |
| Sensitivity: | 0.4µV/Vsi for approved scales, 0.1µV/Vsi for non-approved scales. |
| Full Scale Range: | -0.25 to 1.75mV/V [-1.25mV to 8.75mV] or -0.25 to 3.75mV/V [-1.25mV to 18.75mV] |
| Linearity: | 0.002% of full scale |
| Long Term Stability: | 0.005% of full scale per year |
| Excitation: | +5V alternating polarity or +5VDC (selectable), with sense (6 wires) |
| Number of Cells: | Up to 10, 350 ohm load cells |
| Filter: | FIR automatically adjusted to conversion speed, rolling average. |
| Offset Drift: | ≤2ppm/°C |
| Span Drift: | ≤2ppm/°C |
| A/D Converter Type: | Sigma-Delta, ratiometric, 550,000 internal counts |
| Count By: | x1, x2, x5, x10, x50 |
| Decimal Point: | between any digits of the weight display |
| Calibration Methods: | dead load and span, or data sheets calibration, via the mV/V output values of the load cell. Calibration of two analog inputs (optional) with individual coefficients. |
| Weighing Functions: | automatic zero tracking, no motion detection, auto-zero on power-up, zero tare, preset tare, net mode, multiple test functions. |
| Memory Allocation: | calibration data EEPROM, flash tally-roll (Alibi) memory capable of 10,000 weight registrations, 250 records database (trucks) |
| Piece Counting Mode | |
| Real-Time Clock | |

**ENVIRONMENTAL**

| | |
|---|---|
| Operating Temp: | -10°C to +40°C [14°F to 104°F] |
| Storage Temp: | -10°C to +70°C [-4°F to 158°F] |
| Relative Humidity: | 40-90% RH, non-condensing |

**DISPLAY AND KEYBOARD**

| | |
|---|---|
| Display: | 16 character, LCD, backlit |
| Digital Height: | 14.5mm [0.57in.] |
| Status Enunciators: | no motion, zero, tare in use, net, scale in operation (#1 or #2 or sum # 1+2, if second scale connected), piece counting mode |
| Weight Digits: | 4, 5 or 6 (setup selectable) |
| Keyboard: | pseudo-alphanumeric, 27 keys, with tactile feedback |

**ELECTRICAL**

| | |
|---|---|
| Voltage: | 85 - 265VAC |
| Current: | 500mA |
| Battery Operation (Option): | internal rechargeable battery, 6V/3Ah (aluminum version only) |

**ISOLATED ANALOG OUTPUT (OPTIONAL)**

| | |
|---|---|
| Resolution: | 16 bit DAC |
| Voltage Output: | 0.02-10V |
| Current: | 0-20mA or 4-20mA |
| Linearity: | 0.01% of full scale |
| Thermal Stability: | 50ppm /°C typical |

**INPUTS & OUTPUTS**

| | |
|---|---|
| (x1) Logic Input: | 9-24VDC, negative common, opto-isolated to 2.5KV. |
| (x2) Logic Output: | 24VDC±10%, positive common, max current 100mA, opto-isolated to 2.5KV. |

**SERIAL COMMUNICATION**

| | |
|---|---|
| Serial Output #1: | RS-232, non-programmable |
| Baud Rate: | 2400 baud, full duplex |
| Applications: | Printer output, Weight output. |
| Serial Output #2 (optional) : | RS-232 or RS-485 setup programmable |
| Baud Rate: | 2400 - 57800 baud, half duplex |
| Applications: | EDP output, master-slave protocols, continuous output, remote printer. |

**ENCLOSURE**

Stainless Steel Enclosure:

| | |
|---|---|
| Dimensions: | 252x152x62mm LxHxD [10x6x2.5in. LxHxD] |
| Mounting: | wall and tilt mount |
| Protection: | IP65 |
| Wiring Connections: | cable glands |

Aluminum Enclosure:

| | |
|---|---|
| Dimensions: | 194x100x107mm LxHxD [7.64x3.94x4.21in. LxHxD] |
| Mounting: | desktop |
| Protection: | IP40 |
| Wiring Connections: | D-sub connectors |

**APPROVALS (ACCURACY CLASS III)**

| | |
|---|---|
| OIML R-76: | 10000d single or dual interval EU-type approval no. DK0199.62 |
| NTEP: | 10000d single or dual interval NTEP CC# ..... |

VPG Transducers is continually seeking to improve product quality and performance. Specifications may change accordingly.

# Model VT 300D

Revere

VISHAY PRECISION GROUP

## Weighbridge Indicator for Digital and Analog Load Cells


### DESCRIPTION

The VT 300D is a powerful alphanumeric terminal, designed for digital and analog weighbridges, inventory control, and other demanding weighing applications.

The extended keyboard includes alphanumeric and functional keys for easy data entry and setup.

A 16-character dot-matrix LCD display supports the required user interface in complex industrial applications.

Using a weighing system that includes the VT300D together with Vishay digital load cells (DSC, SCC, SBC & MDBD) enables very easy installation, calibration, corner compensation, maintenance and diagnostics of the system.

VT 300D software manages various transactions allowing choices of customer, material type, or truck identification. Records of all activities are maintained in memory and made available for computer reporting. Printable tickets and reports are easily formatted and edited.

The VT300D can support one digital load cells weighbridge and one analog load cell weighbridge at same time.

Enclosure selections include tilted, wall-mount, and desktop.

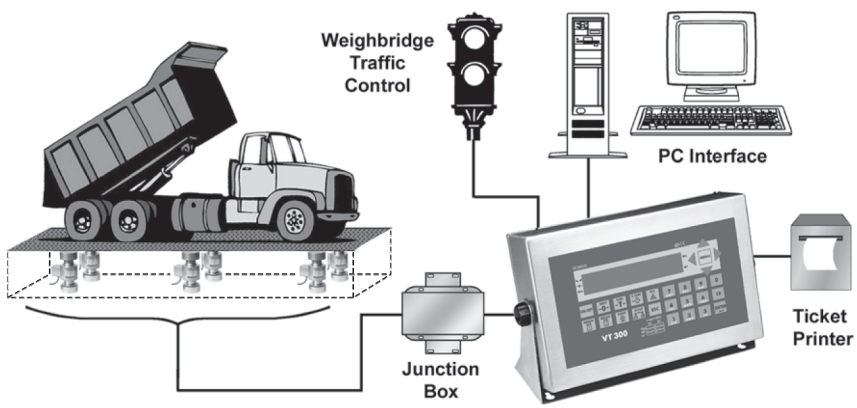
### FEATURES

- Supports digital and analog load cells
- Easy calibration using the digital load cells
- Easy digital corner compensation
- Elaborated diagnostics of digital weighbridge load cells
- Easy service and maintenance
- Large, 16 character LCD display
- 27 key alphanumeric and functions keyboard
- Two serial ports with printing and networking
- Analog output for PLC interface (optional)
- Two opto-isolated weight setpoints
- Alibi (Flash) memory for transaction records
- Real time clock
- Stainless steel enclosure (IP65), aluminum enclosure (optional)
- Weighing and counting operating modes
- OIML R-76 approved to 10,000d
- Dual scale operation (one digital, one analog)
- 4 programmable ticket formats

### APPLICATIONS

- Weighbridges
- Inventory control
- Industrial weighing systems
- Bench, floor, and counting scales

### CONFIGURATION





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11652
Revision: 14-Jun-10

## SPECIFICATIONS

**PERFORMANCE**

Analog Load Cell Interface Performance:

| | |
|---|---|
| Resolution: | selectable up to 990,000 dd |
| Conversion Speed: | 3 - 70 samples per second (selectable) |
| Sensitivity: | 0.4µV/Vsi for approved scales, 0.1µV/Vsi for non-approved scales. |
| Full Scale Range: | -0.25 to 1.75mV/V or -0.25 to 3.75mV/V |
| Linearity: | 0.002% of full scale |
| Long Term Stability: | 0.005% of full scale per year |
| Excitation: | +5V alternating polarity or +5VDC (selectable), with sense (6 wires) |
| Number of Cells: | Up to 10, 350 ohm load cells |
| Filter: | FIR automatically adjusted to conversion speed, rolling average. |
| Offset Drift: | ≤2ppm/°C |
| Span Drift: | ≤2ppm/°C |
| A/D Converter Type: | Sigma-Delta, ratiometric, 550,000 internal counts |

Digital Load Cell Interface Performance:

| | |
|---|---|
| Resolution: | selectable up to 990,000 dd |
| Update Rate: | 25 updates per second |
| Supply to load cell: | 14 - 18Vdc; 1.5A (Standard 15V) |
| Number of Cells: | up to 12 |
| Compatible Load Cells: | DSC, SCC, SBC, MDBD |

General Performance:

| | |
|---|---|
| Count By: | x1, x2, x5, x10, x50 |
| Decimal Point: | between any digits of the weight display |
| Calibration Methods: | dead load and span, or data sheets calibration, via the mV/V output values of the load cell. Digital corner correction. Digital default calibration. |
| Weighing Functions: | automatic zero tracking, no motion detection, auto-zero on power-up, zero tare, preset tare, net mode, multiple test functions. |
| Memory Allocation: | calibration data EEPROM, flash tally-roll (Alibi) memory capable of 10,000 weight registrations, 250 records database (trucks). Stores the digital load cell performance and calibration data. |

Piece Counting Mode
Real-Time Clock

**ENVIRONMENTAL**

| | |
|---|---|
| Operating Temp: | -10°C to +40°C [14°F to 104°F] |
| Storage Temp: | -10°C to +70°C [-4°F to 158°F] |
| Relative Humidity: | 40-90% RH, non-condensing |

**DISPLAY AND KEYBOARD**

| | |
|---|---|
| Display: | 16 character, LCD, backlit |
| Digital Height: | 14.5mm |
| Status Enunciators: | no motion, zero, tare in use, net, scale in operation (#1 or #2 or sum # 1+2, if second scale connected), piece counting mode |
| Weight Digits: | 4, 5 or 6 (setup selectable) |
| Keyboard: | pseudo-alphanumeric, 27 keys, with tactile feedback |

**ELECTRICAL**

| | |
|---|---|
| Voltage: | 85 - 265VAC |
| Current: | 500mA |

**ISOLATED ANALOG OUTPUT (OPTIONAL)**

| | |
|---|---|
| Resolution: | 16 bit DAC |
| Voltage Output: | 0.02-10V |
| Current: | 0-20mA or 4-20mA |
| Linearity: | 0.01% of full scale |
| Thermal Stability: | 50ppm /°C typical |

**INPUTS & OUTPUTS**

| | |
|---|---|
| (x1) Logic Input: | 9-24VDC, negative common, opto-isolated to 2.5KV. |
| (x2) Logic Output: | 24VDC±10%, positive common, max current 100mA, opto-isolated to 2.5KV. |

**SERIAL COMMUNICATION**

| | |
|---|---|
| Serial Output #1: | RS-232, non-programmable |
| Baud Rate: | 2400 baud, full duplex |
| Applications: | Printer output, Weight output. |
| Serial Output #2: | RS-485 setup programmable |
| Baud Rate: | 2400 - 57800 baud, half duplex |
| Applications: | EDP output, master-slave protocols, continuous output, remote printer and digital load cell communication. |

**ENCLOSURE**

Stainless Steel Enclosure:

| | |
|---|---|
| Dimensions: | 252x152x62mm LxHxD |
| Mounting: | wall and tilt mount |
| Protection: | IP65 |
| Wiring Connections: | cable glands |

Aluminum Enclosure:

| | |
|---|---|
| Dimensions: | 194x100x107mm LxHxD |
| Mounting: | desktop |
| Protection: | IP40 |
| Wiring Connections: | D-sub connectors |

**APPROVALS (ACCURACY CLASS III)**

| | |
|---|---|
| OIML R-76: | 10,000d single or dual interval EU-type approval no. DK0199.62 |

VPG Transducers is continually seeking to improve product quality and performance. Specifications may change accordingly.

# Weight Controller/Indicator


## FEATURES

- Inventory and batching control terminal
- High sample rate, up to 70 samples per second
- Up to two serial ports with printing and networking (one standard)
- Analog output (optional)
- Two opto-isolated weight setpoints
- Large 6 digit LED display
- Alibi (Flash) memory for last 10,000 transactions
- OIML R-76 approved to 10000d
- Panel mount IP40 enclosure
- IP54 front panel cover (optional)
- Input power 24VDC

## DESCRIPTION

VT 400 Weight Controllers provide weighing and control functions for industrial process systems.

Two opto-isolated control outputs, a choice of up to two serial interfaces (RS-232 and RS-485) and an analog output (optional) allow full communication with higher level PCs or PLCs. Up to 30 units can be interconnected through the RS-485 network.

The standard VT 400 panel mount enclosure is rated IP40. However, it can be upgraded with an IP54 front panel cover (optional).

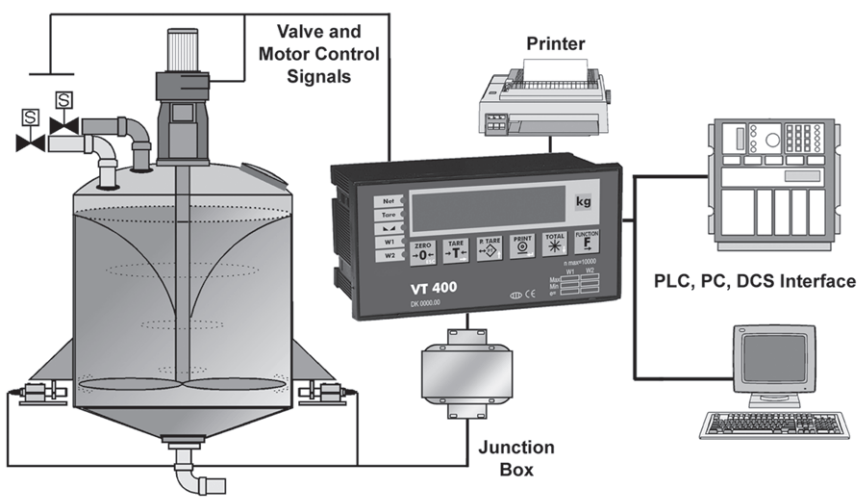
## APPLICATIONS

- Process weighing
- Inventory control

## OPTIONS

- Analog output
- RS-485 port
- Second RS-232 port

## CONFIGURATION






Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com


Document Number: 11639
Revision: 14-Jun-10

## SPECIFICATIONS

### PERFORMANCE

| | |
|---|---|
| Resolution: | selectable up to 990,000 dd |
| Conversion Speed: | 3 - 70 samples per second (selectable) |
| Sensitivity: | 0.4µV/Vsi for approved scales, 0.1µV/Vsi for non-approved scales. |
| Full Scale Range: | -0.25 to 1.75mV/V [-1.25mV to 8.75mV] or -0.25 to 3.75mV/V [-1.25mV to 18.75mV] |
| Linearity: | 0.002% of full scale |
| Long Term Stability: | 0.005% of full scale per year |
| Excitation: | +5V alternating polarity or +5VDC (selectable), with sense (6 wires) |
| Number of Cells: | Up to 10, 350 ohm load cells |
| Filter: | FIR automatically adjusted to conversion speed, rolling average. |
| Offset Drift: | < 2ppm/°C |
| Span Drift: | < 2ppm/°C |
| A/D Converter Type: | Sigma-Delta, ratiometric |
| Count By: | x1, x2, x5, x10, x50 |
| Decimal Point: | between any digits of the weight display |
| Calibration Methods: | dead load and span, or data sheets calibration, via the mV/V output values of the load cell. |
| Weighing Functions: | automatic zero tracking, motion detection, auto-zero on power-up, zero tare, multiple test functions. |
| Memory Allocation: | calibration data EEPROM (32kb), Flash tally-roll (Alibi) memory capable of 10,000 weight registrations (64kb) |

### ENVIRONMENTAL

| | |
|---|---|
| Operating Temp: | -10°C to +40°C [14°F to 104°F] |
| Storage Temp: | -10°C to +70°C [-4°F to 158°F] |
| Relative Humidity: | 40-90% RH, non-condensing |

### DISPLAY AND KEYBOARD

| | |
|---|---|
| Display: | 6 digit, 7 segment, LED |
| Digital Height: | 14mm [0.55in.] |
| Status Enunciators: | no motion, zero, tare in use, net, setpoint in operation |
| Weight Digits: | 4, 5 or 6 (setup selectable) |
| Keyboard: | 6 membrane keys, with tactile feedback |

### ELECTRICAL

| | |
|---|---|
| Voltage: | 24VDC |
| Current: | 500mA |

### ISOLATED ANALOG OUTPUT (OPTIONAL)

| | |
|---|---|
| Resolution: | 16 bit DAC |
| Voltage Output: | 0.02-10V |
| Current: | 0-20mA or 4-20mA |
| Linearity: | 0.01% (or better) of full scale |
| Thermal Stability: | 50ppm/°C typical |

### INPUTS & OUTPUTS

| | |
|---|---|
| (x1) Logic Input: | 9-24VDC, negative common, opto-isolated to 2.5KV. |
| (x2) Logic Output: | 24VDC±10%, positive common, max current 100mA, opto-isolated to 2.5KV, programmable as weight setpoints |

### SERIAL COMMUNICATION

| | |
|---|---|
| Serial Output #1: | RS-232, non-programmable |
| Baud Rate: | 2400 baud, full duplex |
| Applications: | continuous, print (on demand), alibi print |
| Serial Output #2: | RS-232 or RS-485 setup programmable |
| Baud Rate: | 2400 - 57800 baud, half duplex |
| Applications: | EDP and master-slave protocols, continuous output, remote printer, weight output |

### ENCLOSURE

Heavy duty plastic enclosure:

| | |
|---|---|
| Dimensions: | 144x72x132mm LxHxD [5.7x2.8x5in. LxHxD] |
| Mounting: | panel mount |
| Protection: | IP40 standard, optional front panel cover - IP54 |
| Wiring Connections: | mini D-type connectors |

### APPROVALS (ACCURACY CLASS III/IIIL)

| | |
|---|---|
| OIML R-76: | 10000d single or dual interval EU-type approval no. DK0199.62 |

VPG Transducers is continually seeking to improve product quality and performance. Specifications may change accordingly.

# Remote Weight Display


## FEATURES

- Large 6 digit Red LED display
- Digit height - 57mm
- Digit-for-digit replication from the transmitting VT indicator
- Communication interface - RS-232, RS-485, or 20mA
- Baud rate and data format - DIP switch selectable
- Compatible with all VT indicators
- Environmental protection to IP65

## APPLICATIONS

- Truck scales/weighbridges
- Warehouse scales
- Loading bays
- All outdoor weighing applications

## OPTIONS

- UL/TUV/UK/China/Japan plug

## DESCRIPTION

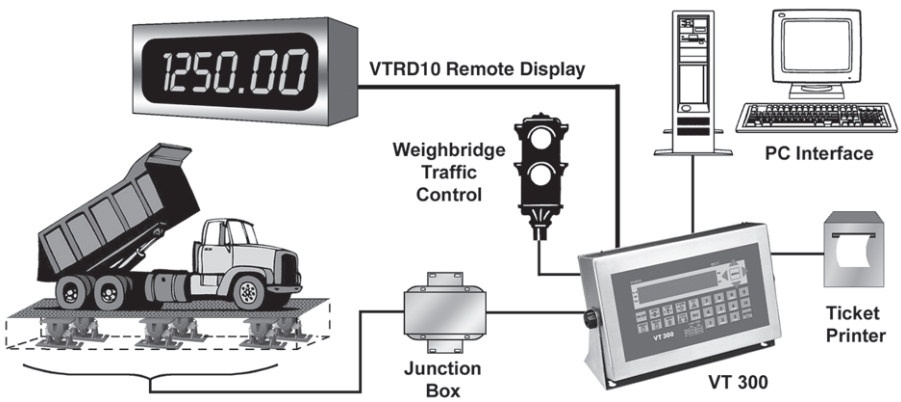
VPG Transducers' RD10 is a compact, digit-for-digit, high visibility remote display.

The large LED display (57mm digits) and wide viewing angle contribute to ease of reading at long distances.

The VTRD10 is environmentally protected to IP65 and is suitable for outdoor use.

A standard serial interface (RS-232 or RS-485 or 20mA current loop) allows easy connection between the local indicator and the VTRD10 at distances up to 600 meters (RS-485). The VTRD10 is fully compatible with VT Weight Indicator models 50, 100, 200, 300, 400 and 500.

## CONFIGURATION



## SPECIFICATIONS

### DISPLAY AND SERIAL INTERFACE

| | |
|---|---|
| Display: | 6 digits, LED, high visibility (57mm, red) |
| Serial Interface: | RS-232 or RS-485 or 20mA current loop, terminated with screw type terminals |
| Baud Rate: | DIP switch selectable 1200, 2400, 9600, 19200 baud |
| Character Format: | DIP switch selectable:<br>a) 7 data bits, even parity, 1 stop bit<br>b) 8 data bits, no parity, 1 stop bit<br>c) 8 data bits, even parity, 1 stop bit |
| Distance: | RS-232 and 20mA current loop = 50 meters<br>RS-485 = 600 meters |

### ENVIRONMENTAL

| | |
|---|---|
| Operating Temp: | -10°C to +40°C (14°F to 104°F) |
| Storage Temp: | -20°C to +55°C (4°F to 158°F) |
| Relative Humidity: | 90% RH max., non condensing |

### ELECTRICAL

| | |
|---|---|
| Voltage: | 115/230VAC+10%, 50-60Hz |
| Power: | 7W max. |

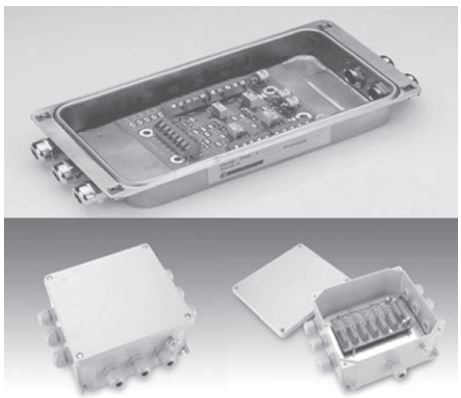
### ENCLOSURE

| | |
|---|---|
| Stainless Steel: | |
| Dimensions: | 328.3x72x40mm LxHxD |
| Protection: | IP65 |
| Wiring Connections: | cable glands |

### CE APPROVAL

VPG Transducers is continually seeking to improve product quality and performance. Specifications may change accordingly.

# Analog Junction Box



## FEATURES

- Connection of 1 to 10 load cells
- Robust enclosure with cable glands sealed to IP67
- Easy trimming via resistors or potentiometers
- Integrated surge protection devices
- Strain relief cable fittings
- EMC compatibility

## DESCRIPTION

VTAJB family of analog junction boxes supplement the VT indicators family line. It offers easy connection of 4 to 10 load cells in a platform, with output trimming, surge protection and meeting EMC compatibility requirements.

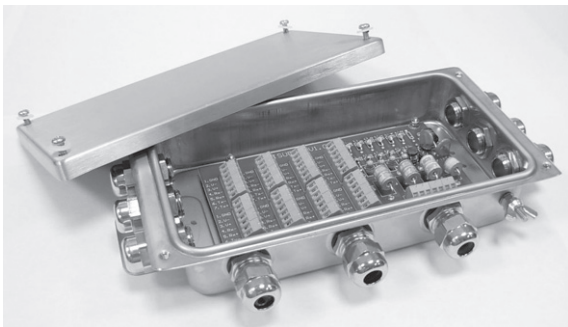
## APPLICATIONS

- Truck scales/ Weighbridges
- Floor scales
- Tanks and silos

# Analog Junction Box

| SPECIFICATIONS | |
|---|---|
| **GENERAL** | |
| Electromagnetic compatibility: | Compliant with EN45501 |
| Connectors | Screw terminals |
| Trimming | Signal trim by resistors or potentiometer (max. 20 Ohm), both available in every box |
| Surge protection | 90V clamp. Withstands up to 20kV and up to 10kA |
| Temperature range | -10 to +60°C |
| | |
| **AJB-4** | |
| Enclosure | Stainless steel |
| External dimensions (mm) | 199 x106 x 43.7 (LxWxH) |
| Protection class | IP67 |
| Cable fittings | Stainless steel cable glands PG9 (cable diameter 3-9mm) |
| | |
| **AJB-6** | |
| Enclosure | Stainless steel or Aluminum |
| External dimensions (mm) | Stainless steel: 199 x106 x 43.7 (LxWxH)<br>Aluminum: 240 x 200 x 80 (LxWxH) |
| Protection class | Stainless steel enclosure: IP67<br>Aluminum enclosure: IP65 |
| Cable fittings (Stainless steel) | Stainless steel cable glands PG9 (cable diameter 3-9mm) |
| Cable fittings (Aluminum) | Plastic cable glands PG11 (cable diameter 6-12mm) |
| | |
| **AJB-8** | |
| Enclosure | Aluminum or Polyester |
| External dimensions (mm) | Aluminum: 240 x 200 x 80 (LxWxH)<br>Polyester : 120 x 318 x 80 (LxWxH) |
| Protection class | IP65 |
| Cable fittings | Plastic cable glands PG11 (cable diameter 6-12mm) |
| | |
| **AJB-10** | |
| Enclosure | Polyester |
| External dimensions (mm) | 120 x 318 x 80 (LxWxH) |
| Protection class | IP65 |
| Cable fittings | Plastic cable glands PG11 (cable diameter 6-12mm) |

# Junction Box for Digital Load Cells (DLC)



## FEATURES

- Available for a maximum of 4 and 8 load cells
- Stainless steel construction
- IEC529 enclosure Class IP66
- Optional dedicated surge protection board available
- Protects digital load cells and associated equipment
- Protects against voltages of up to 20kV
- Protects against currents of up to 10kA
- Requires no specific grounding techniques

## DESCRIPTION

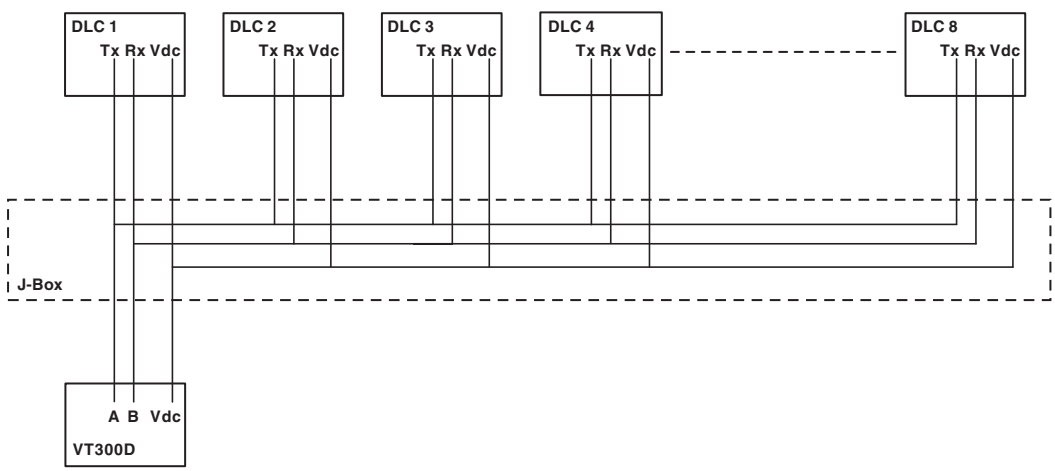
These junction boxes have been designed to ease connection of digital load cell (DLC) systems. There are two variants, one supporting up to 4 digital load cells (SJB4), the other up to 8 digital load cells (SJB8).

The surge protection device protects digital load cells and associated equipment against damage from transient over-voltages or high impulse currents on field cabling. Surges such as these can be caused by nearby lightning strikes, power supply faults and heavy electrical load switching.

## APPLICATIONS

- Digital weigh bridge
- Digital platform scales
- Any systems that use digital load cells

## CONFIGURATIONS



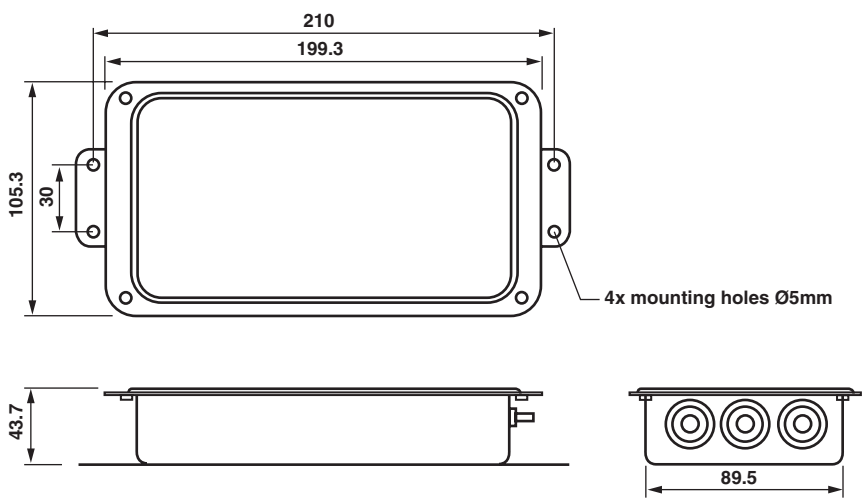


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11888
Revision: 29-Mar-10

## SPECIFICATIONS

| PARAMETER | | VALUE | UNIT |
|---|---|---|---|
| **Junction Box** | | | |
| Max. number of load cells | SJB-4 | 4 | |
| | SJB-8 | 8 | |
| Types of DLC cables | | 3 or 5 times twisted pair | |
| Terminating resistors | | 2 x 120 | Ω |
| Operating temperature range | | -40 to +70 | °C |
| Storage temperature range | | -40 to +80 | °C |
| Humidity | | 0 - 85% non-condensing | |
| Data transmission type | | RS485 / RS422 | |
| With SPD protection against voltages up to | | 20 | kV |
| With SPD protection against currents up to | | 10 | kA |
| Sealing (to IEC 529 / EN 60.529) | | IP66 | |
| Material | | Stainless steel | |
| Weight | | 1.3 | kg |
| Cable glands: acceptable cable diameter | | 5 -10 | mm |
| **Surge Protection Device** | | | |
| Protection against voltage surges up to | | 20 | kV |
| Protection against current surges up to | | 10 | kA |
| Line to line protection | | Yes | |
| Line to ground protection | | Yes | |
| Line to ground let-through | | <200 | V |
| Screen to ground let-through | | <400 | V |
| Maximum current | | 600 | mA |
| Printed circuit board dimensions | | 80 x 60 | mm |
| Inductance per line | | 110 | µH |
| DC resistance per line | | <2.1 | Ω |
| Wiring type | | 5 times twisted pair plus screen | |
| Hexagonal mounting columns | | 3 x M4, 40mm | |

## OUTLINE DIMENSIONS in millimeters




Wiring for the junction box:

| JB terminal | SPD wire |
|---|---|
| V+ | Green |
| V- | Black |
| Rx+ | Yellow |
| Rx- | Blue (Brown) |
| Tx+ | Red |
| Tx- | White |
| Shield | Transparent |

# Weighing System Surge Protector


## FEATURES

- Protects measuring equipment and load cells from damage caused by lightning, heavy electrical load switching, etc
- Suitable for ac or dc excitation voltages
- No influence on system accuracy;
  **EC certified to EN45.501, ''8.1**
- Automatic reset function
- Housed in a fully sealed waterproof enclosure
- Can be used in EEx(i) systems without further certification

## DESCRIPTION

The LC30 Surge Protection Device protects weighing systems and load cell installations from possible malfunction and damage caused by severe over-voltages or high impulse currents on signal cabling.

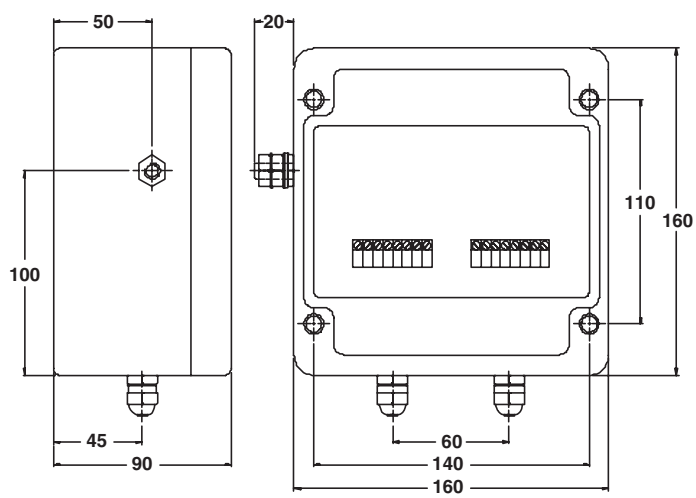
Potentially destructive surges can be generated from a variety of sources, including lightning, power cable faults and heavy electrical load switching.

The advanced triple stage protection concept used in the LC30 removes the need for additional earthing systems, therefore simplifying installation and reducing cost.

## APPLICATIONS

- Weigh bridge

## OUTLINE DIMENSIONS in mm




**Mounting; internal 7mm diameter, through-holes.**


Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com,
China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com
Document Number: 11886
Revision: 10-Feb-10

## SPECIFICATIONS

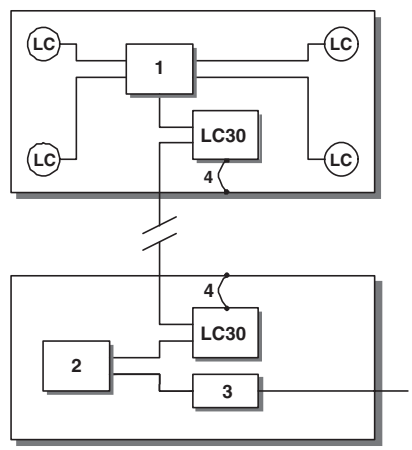
| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Nominal excitation voltage** | 10 - 15 | Vac/Vdc |
| **Maximum excitation voltage[1]** | 22 | Vac |
| **Maximum excitation voltage[1]** | 32 | Vdc |
| **Series resistance** | ≤1 | Ω |
| **Minimum impedance[2]** | 55 | Ω |
| **Minimum signal level[2]** | 1 | μV/d |
| **Leakage current at 32Vdc** | ≤10 | μA |
| **Peak impulse current (8/20μs)** | 10 | kA |
| **Let-through voltage (after 6kV/3kA IEC801.5 comb. wave test)** | 80 | V |
| **Compensated temperature range** | -10 to +40 | °C |
| **Operating temperature range** | -20 to +60 | °C |
| **Storage temperature range** | -30 to +70 | °C |
| **Humidity** | 5 - 95 (Non-condensing) | %RH |
| **Sealing (to IEC 529 / DIN 40.050)** | IP65 | |
| **Connections** | Input/Output/Sense + Earth | |
| **Max. terminal conductor size** | 1.5 | $mm^2$ |
| **Main earth connection** | M8 external stud | |
| **Weight** | 1.5 | kg |

1 Symmetrical to ground
2 For approved systems only

The LC30 protects the system at the point of installation only. A system is likely to have at least one LC30 installed at the load cell network and a secondary LC30 in the weighing control room.

Additional protection should also be provided for the main power supply and any other system interconnected with the weighing package eg. remote computer links, data-communications via telephone lines, etc.

**Typical weighbridge system connections:**




**1: Junction box**
**2: Measuring device or indicator**
**3: Additional power supply protection**
**4: Local structural bond**

# Model LCT-01

Tedea-Huntleigh

VISHAY PRECISION GROUP

# Load Cell Tester

## FEATURES

- Provides the user with essential data about electrical conditions and physical distortion (zero balance)
- Fits most load-cells available in the market
- No need to remove the load-cell from the scale to do the test
- Stand-alone, portable, battery-operated
- Clear screen messages, user-friendly, easy to use

## DESCRIPTION

The LCT-01 is a stand-alone portable hand-held device that was especially designed to help technical people immediately analyze the condition of strain-gage based load cells. The LCT fits all common types of load cells available in the market today: four wires, 6 wires (with sense) and all rated gain outputs.

The LCT provides the user with the essential data needed about the conditions of the tested load cell, such as physical distortion (possibly caused by overload, shock load or metal fatigue), and electrical conditions (bridge resistance, shielding and resistance to ground).

The LCT allows the user to test the load cell whether it is installed or removed. The unit is fully computerized and battery operated. A 16 x 2 alphanumeric LCD display guides the operator through all test stages and clearly displays the results. It is also equipped with a buzzer and LED which will alert the user as to any suspicious result.

The unit's three operation keys (plus an on/off switch) and concise messages on the display guide the user in a step-by-step fashion to it takes only a few minutes to learn how to use the LCT-01.

## SPECIFICATIONS

| PARAMETER | VALUE | UNIT |
|---|---|---|
| **Power source** | four standard AA alkaline batteries | |
| **Approximate working time** | 500 | hrs |
| **Connectors** | screw terminal | |
| **Total connecting points** | 8 (2 input, 2 output, 2 sense, 1 shield, 1 ground) | |
| **Size** | 100 X 180 X 44 | mm |
| **Weight** | approx. 250 | gram |
| **Excitation** | 2.5 | Vdc |
| **Internal resolution** | 12 | bit |
| **Accommodate load cell type** | four or six wire, up to 8K | |
| **Total accuracy** | 2% | |
| **Accommodate load cell gain** | 1mV/V - 5mV/V in 0.1mV/V steps | |
| **Input resistance** | 1 | resolution |
| **Output resistance** | 1 | resolution |
| **Shielding to input/output impedance** | up to 10 | Ohms |
| **Ground to input/output impedance** | up to 10 | Ohms |

# Load Moment Indicators


## FEATURES

- Visual display provides continuous awareness of loading
- Proportional display of loading using 7 colored high intensity LED
- Dash mount
- Quickly and easily calibrated in the field
- Visual and audible warnings of over load
- Straight forward installation
- Fully automatic operation requiring no operator input
- Two dry contact for motion shut down and slow down
- A cost effective solution
- Digital strain gage sensor
- Environmental protection class: IP66
- Automatic self test at power on

## OPTIONAL FEATURES

- Redundant sensors support
- Private label units
- Display enclosure according to customer requirements
- Operation definition according to customer definitions

## DESCRIPTION

In conjunction with an extensometer or other type of strain gage based sensor, the LMI 521 Load Moment Indicator insures that the operator of telescopic loaders or other types of lifting equipment are continuously informed on the momentary machine load moment. An audible alarm warns that the machine has reached a maximum load moment condition. Two analog outputs are available as a slowdown output, used to trigger a slowdown of all machine functions that would lead to an increase in load moment. A second output is triggered at 100% of maximum load moment and normally used to initiate a shutdown of all functions that would lead to an increase in load moment. Trigger level, audible and visible alarms may be tailored to customer specifications.

The LMI 521 compact design makes it suitable for those applications where space is limited.

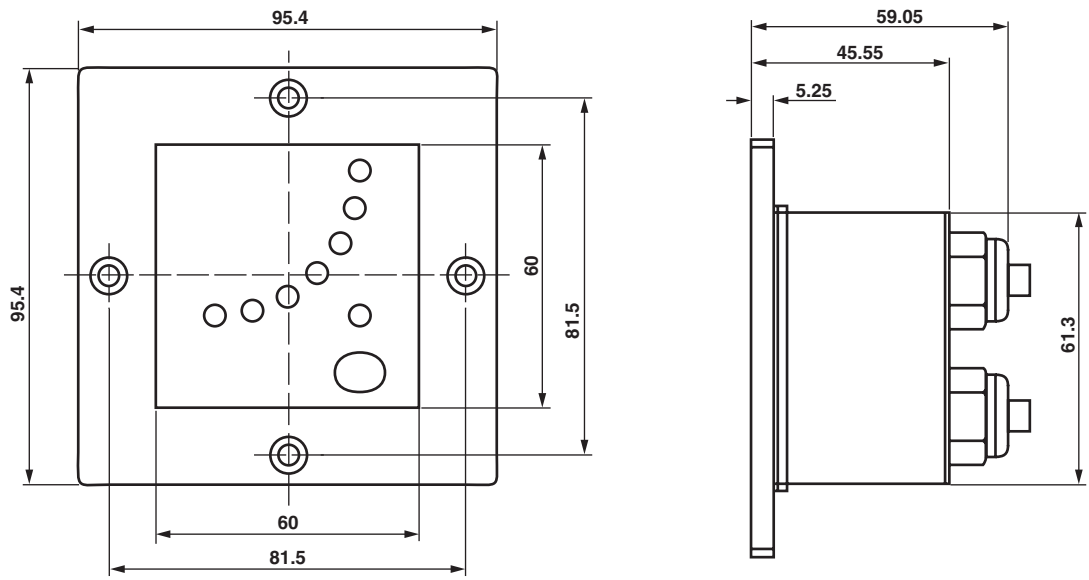
## APPLICATIONS

- Lifting machines
- Telescopic loaders

## Load Moment Indicators

| SPECIFICATIONS | | | | |
|---|---|---|---|---|
| **PARAMETER** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| **Digital bus:** | | | | |
| **Output type** | LIN-Protocol Specification Rev 1.3, 2.0 | | | |
| **Maximum rating bus** | -20 | | +30 | V |
| **(T ≤ 500ms)** | | | 40 | V |
| **Buzzer:** | | | | |
| **Full open sound level at 30cm** | 76 | | | db |
| | | | | |
| **Digital output (for shut-down and slow-down function):** | | | | |
| **Output type** | Relay output, normal contact, normal close | | | |
| **Contact current (continuous, at 85°C** | | | 6 | A |
| **Power supply:** | | | | |
| **Input voltage** | 9.5 | 12 | 18.5 | VDC |
| **Power consumption** | | | 6 | W |
| **Reverse power protection** | -60 | | | V |
| **Protection from short** | Power input short protect | | | |
| **Environmental protection** | IP66 | | | |

## **OUTLINE DIMENSIONS** in millimeters





Technical contact in Americas: lc.usa@vishaypg.com, Europe: lc.eur@vishaypg.com, China: lc.china@vishaypg.com, Taiwan: lc.roc@vishaypg.com

# Notes

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