

## High Capacity Weigh Modules

### FEATURES

- All Stainless Steel
- 22,500, 45,000, and 112,500 pound capacities
- Seismic and wind resistant self-checking design
- Resistant to sideloads
- Accommodates process dynamics and thermal expansion
- Fault protected transducer excitation

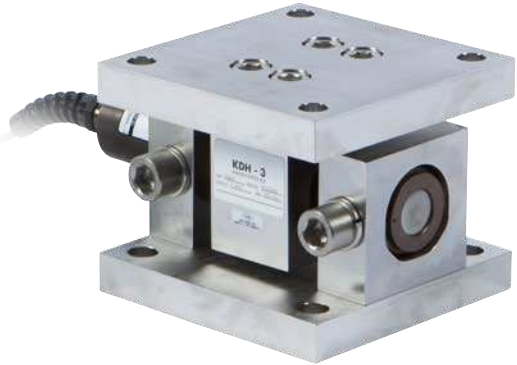
### APPLICATIONS

- Mixing tanks
- Blenders
- Reactors

### DESCRIPTION

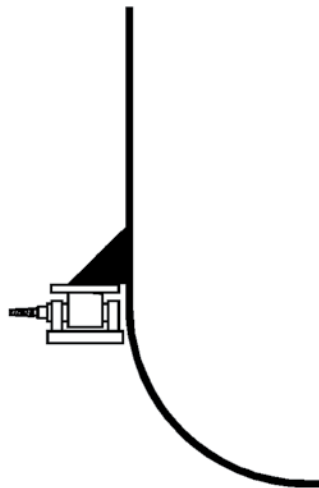
KDH-3 Weigh Modules incorporate a cylindrical double-ended shear beam transducer that is highly resistant to measurement errors caused by process dynamics. The self checking mounting hardware is designed to meet both ANSI and ASCE structural requirements for wind and seismic applications, while allowing for vessel thermal expansion and contraction. This statement should not be relied upon as a complete engineering evaluation.

Both the beam transducer and mounting hardware assembly are constructed entirely of hardened stainless steel. The mounting hardware is electropolished and the beam is sealed to IP67 for reliable use in sanitary and/or corrosive process environments.



The KDH-3 ability to measure accurately in applications where thermal expansion and dynamic forces are present, make it very well suited for heated and agitated process weighing systems.

### CONFIGURATION



High Capacity Weigh Modules

**DESIGN FEATURES**

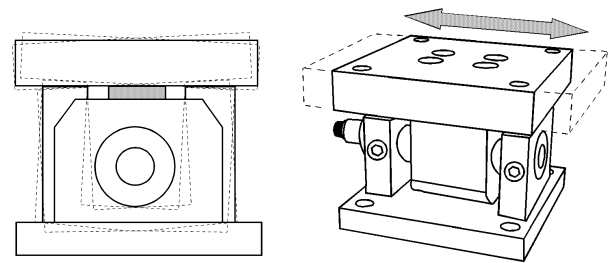
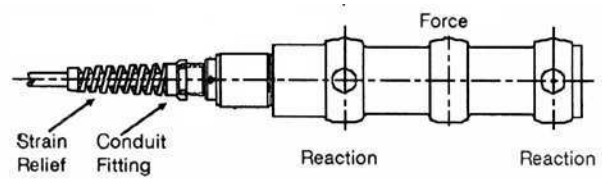
The cylindrical double ended shear beam module is designed to measure shear stresses induced by an applied load without errors caused by thermal expansion. The combination beam and mounting hardware is ideally suited for use on large dynamic process vessels where temperature changes, vibration, and possibly seismic forces are encountered.

The cylindrical tube type transducer offers several advantages over rectangular shear beam designs. Superior resistance to moisture contamination is accomplished by eliminating gaged pockets on the outside of the beam.

Instead, the KDH uses strain gages applied to the inside wall of the tube. In addition, the cable entry is equipped with a conduit fitting for cable protection and is internally potted.

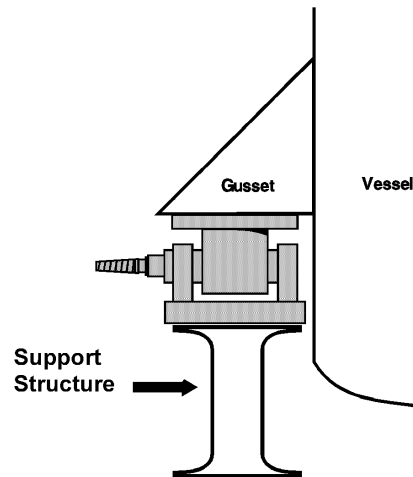
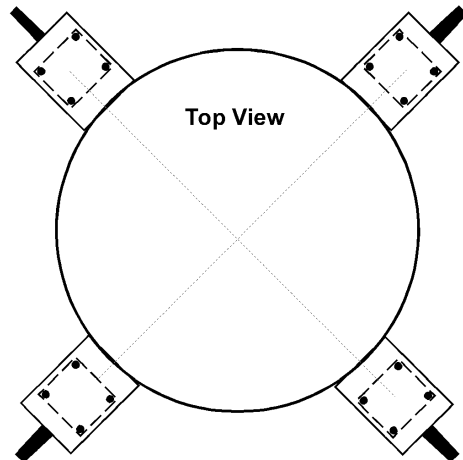
Structurally, the cylindrical tube is equally strong in both the vertical and horizontal planes. Unlike rectangular shear beams that are typically weaker in the horizontal plane, KDH modules are less affected by sideloads induced by vibration, temperature, or process dynamics.

The design of the mounting hardware eliminates the need for highly stressed pins and/or bolts to attach the beam. This reduces the adverse effects of varying edge and point stresses and makes the overall module less



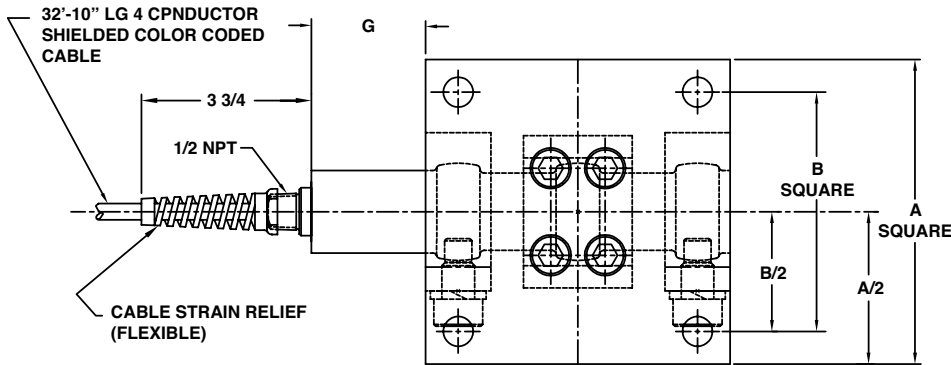
susceptible to calibration changes. Low profile design and symmetrical mounting bolt patterns make KDH modules easy to install on new or existing structures and vessels.

**TYPICAL KDH WEIGH MODULE MOUNTING ARRANGEMENTS**



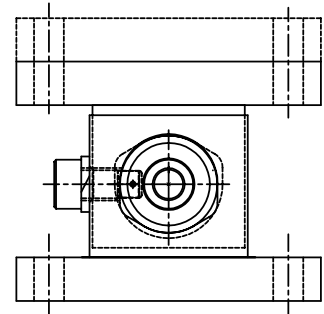
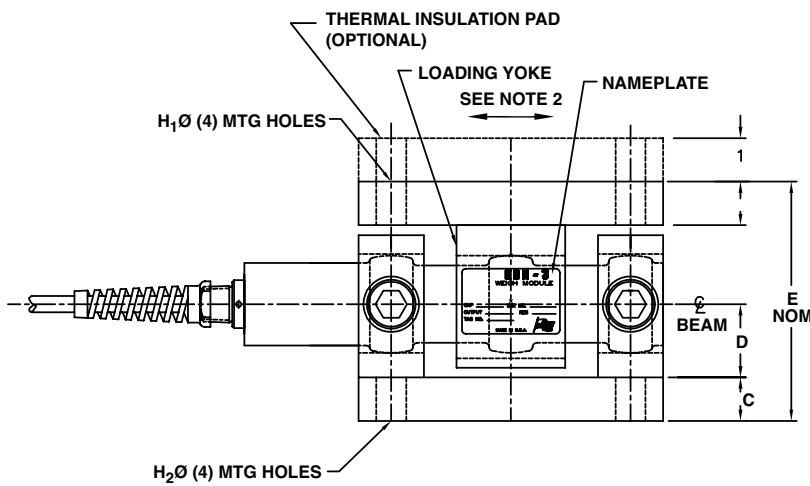
High Capacity Weigh Modules

**DIMENSIONS**



**NOTE:**

1. MAX ALLOWABLE TILT BETWEEN TOP & BOTTOM MTG PLATES IS  $\pm 3^\circ$
2. ALLOWABLE AXIAL TRAVEL IS SHOWN BY "T" DIM.



| CAPACITY<br>kN/(kLB)     | A          | B             | C           | D            | E             | F            | G              | H <sub>1</sub> Ø | H <sub>2</sub> Ø | T±           | WEIGHT<br>kg/(LB) |
|--------------------------|------------|---------------|-------------|--------------|---------------|--------------|----------------|------------------|------------------|--------------|-------------------|
| 100 & 200<br>(22.5) (45) | 178<br>(7) | 140<br>(5.50) | 25<br>(1)   | 46<br>(1.82) | 146<br>(5.75) | 25<br>(1)    | 66.7<br>(2.62) | 17<br>(0.69)     | 18<br>(0.72)     | 19<br>(0.75) | 21<br>(46)        |
| 500<br>(113)             | 229<br>(9) | 191<br>(7.50) | 38<br>(1.5) | 60<br>(2.36) | 197<br>(7.75) | 38<br>(1.48) | 50.8<br>(2.00) | 20<br>(0.81)     | 21<br>(0.84)     | 25<br>(1)    | 52<br>(115)       |

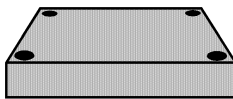
**CABLE COLOR CODE**

- INPUT { GREEN +  
          BLACK -
- OUTPUT { WHITE +  
          RED -

High Capacity Weigh Modules

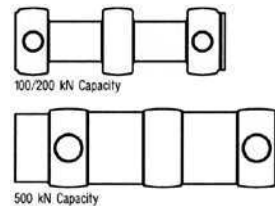
| SPECIFICATIONS                                   |  |              |              |
|--|--|--------------|--------------|
| PARAMETER  | VALUE  |              |              |
| <b>LOADING SPECIFICATIONS – % RATED CAPACITY</b> |  |              |              |
| Capacities                                       | 100 kN   | 200 kN       | 500 kN       |
| Load, safe                                       | 150%   | 150%         | 150%         |
| Load, ultimate                                   | 300%   | 300%         | 300%         |
| Uplift, safe                                     | 150%   | 75%          | 75%          |
| Uplift, ultimate                                 | 300%   | 150%         | 150%         |
| Sideload (Axial), safe                           | 100%   | 50%          | 50%          |
| Sideload (Axial), ultimate                       | 200%   | 100%         | 100%         |
| Sideload (Transverse), safe                      | 100%   | 50%          | 50%          |
| Sideload (Transverse), ultimate                  | 200%   | 100%         | 100%         |
| <b>PERFORMANCE</b>                               |  |              |              |
| Input resistance                                 | 700 Ω ±7 Ω   |              |              |
| Output resistance                                | 700 Ω ±7 Ω   |              |              |
| Rated output (RO)                                | 2.0 mV/V ±0.1%   |              |              |
| Zero balance                                     | 1% RO  |              |              |
| Combined error (best fit)                        | 0.12% RO   |              |              |
| Creep (20 minutes)                               | 0.05% RO   |              |              |
| Repeatability                                    | 0.02% RO   |              |              |
| Recommended excitation                           | 10 VAC or VDC (20 V max.)                                |              |              |
| Temperature range, safe                          | -34.4 to 104.4°C (-30 to 220°F)                          |              |              |
| Temperature range, compensated                   | -1 to 54°C (30 to 130°F)                                 |              |              |
| PARAMETER  | VALUE  |              |              |
| <b>TEMPERATURE EFFECTS (30 TO 130°F)</b>         |  |              |              |
| Zero balance                                     | 0.0025% RO per °F  |              |              |
| Span   | 0.0015% Reading per °F                                   |              |              |
| <b>MATERIAL</b>                                  |  |              |              |
| Beams and brackets                               | 15-5 PH or 17-4 PH SS                                    |              |              |
| Environmental class and moisture protection      | NEMA 4X/6, IEC IP67 IEC 68-2-4 Test D, 200 cycles (min.) |              |              |
| <b>DEFLECTION UNDER LOAD AND UNIT WEIGHT</b>     |  |              |              |
| Deflection mm (in)                               | 0.51 (0.020)   | 0.33 (0.013) | 0.31 (0.012) |
| Weight   | 45 lb  | 46 lb        | 75 lb        |
| <b>CORROSION PROTECTION</b>                      |  |              |              |
| All units  | electropolished stainless steel (mounting hardware)      |              |              |
| <b>TERMINATION</b>                               |  |              |              |
| 100, 200, 500 kN                                 | 10 m (32 ft, 10 in) cable with conduit fitting           |              |              |
| <b>DOCUMENTATION LIST</b>                        |  |              |              |
| Outline drawing                                  | # 468140-3   |              |              |

BLH Nobel is continually seeking to improve product quality and performance. Specifications may change accordingly. Many performance specifications are proven on a statistical sample basis.



**THERMAL INSULATION PADS**

Thermal insulation pads reduce heat conducted from a heated vessel. The pads are made of rigid laminate with extremely low thermal conductivity, BLH Nobel recommends using insulation pads if the vessel mounting surface temperature exceeds 52°C (130°F). Pads are 1 in thick with bolt spacing identical to module top plates.



**SIMULATED WEIGH BEAMS**

Optional simulated (dummy) beams are used in place of actual KDH transducers during the installation process. Using simulated beams eliminates the risk of damaging the KDH transducer while welding or positioning the weigh vessel. All critical simulated beam dimensions are identical to actual KDH outline specifications.



## Disclaimer

ALL PRODUCTS, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Vishay Precision Group, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "VPG"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

The product specifications do not expand or otherwise modify VPG's terms and conditions of purchase, including but not limited to, the warranty expressed therein.

VPG makes no warranty, representation or guarantee other than as set forth in the terms and conditions of purchase. **To the maximum extent permitted by applicable law, VPG disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.**

Information provided in datasheets and/or specifications may vary from actual results in different applications and performance may vary over time. Statements regarding the suitability of products for certain types of applications are based on VPG's knowledge of typical requirements that are often placed on VPG products. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. You should ensure you have the current version of the relevant information by contacting VPG prior to performing installation or use of the product, such as on our website at [vpgsensors.com](http://vpgsensors.com).

No license, express, implied, or otherwise, to any intellectual property rights is granted by this document, or by any conduct of VPG.

The products shown herein are not designed for use in life-saving or life-sustaining applications unless otherwise expressly indicated. Customers using or selling VPG products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify VPG for any damages arising or resulting from such use or sale. Please contact authorized VPG personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.

Copyright Vishay Precision Group, Inc., 2014. All rights reserved.