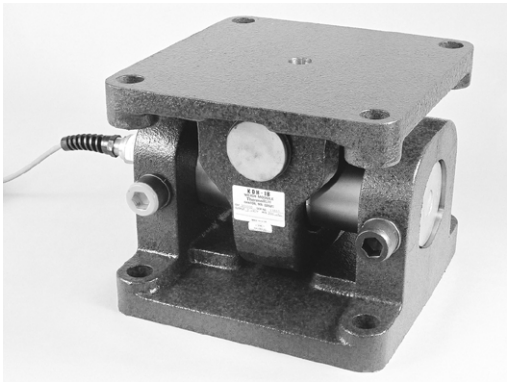
High Capacity Weigh Module



FEATURES

- Capacity range: 200K and 300K lb (90.7K and 136K kg)
- Low profile and low deflection with symmetrical mounting bolt pattern for easy installation
- Floating design allows for thermal expansion and contraction
- Seismic and wind resistant self-checking design
- FM and CSA approved for hazardous locations

DESCRIPTION

KDH-1B series weigh modules use a unique double-ended shear beam design that produces a compact, high strength, inventory or process weighing sensor. For use on large inventory and process vessels, the modules offer checkless (no check or stay rods) design, low profile, and symmetrical bolt spacing.

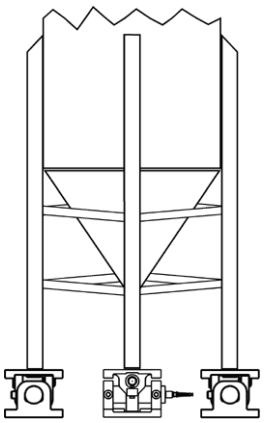
The floating top plate and yoke arrangement allows the module to accommodate vessel thermal expansion and contraction without measurement errors. Sideload resistance provides high accuracy on systems subjected to wind loads and vibration. The integral conduit fitting and potted cavities give superior humidity and hose-down protection.

Ideally suited for weighed structures requiring inherent ‘overdesign’, KDH modules bolster the engineering task of meeting or exceeding ANSI/ASCE 7-98 standards. KDH-1B modules excel where adverse forces are created by wind, thermal expansion, and earthquakes.

APPLICATIONS

- Product inventory weighing/control
- Large outdoor silos
- Conveyor belt force measurement

CONFIGURATION



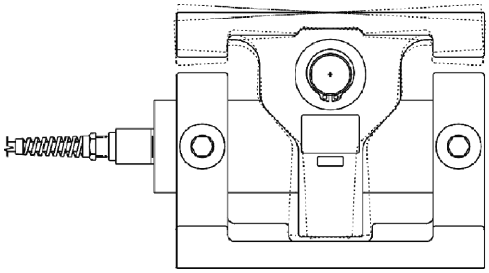
DESIGN FEATURES

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 are ideally suited for use on large outdoor storage vessels where temperature, wind, and possibly seismic forces are encountered.

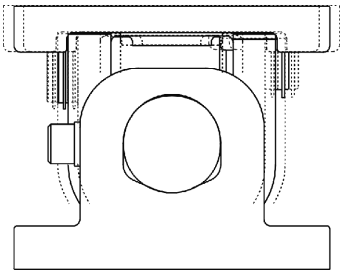
The cylindrical tube-type transducer offers several advantages over rectangular shear beam designs. Superior resistance to moisture contamination is accomplished by eliminating gaged pockets on the outside of the beam. Instead, the KDH uses strain gages applied to the inside wall of the tube. In addition, 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, wind, or process dynamics.

The design of the mounting hardware eliminates the need for 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, symmetrical mounting bolt patterns, and optional top plates make KDH modules easy to install on new or existing structures and vessels.

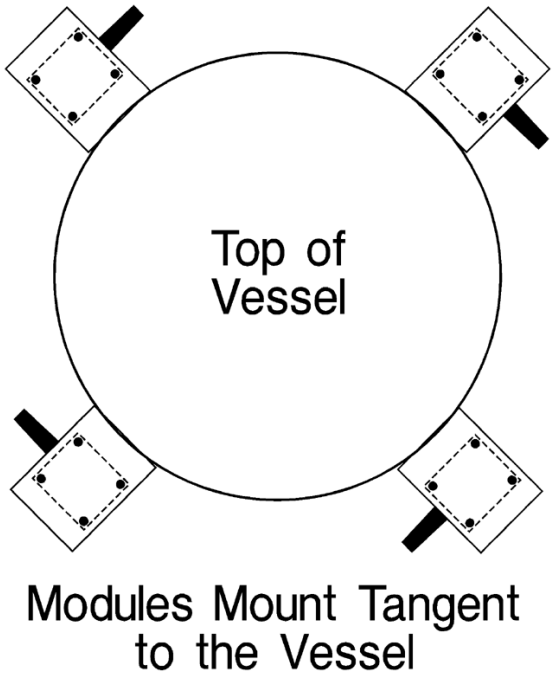


Accommodates construction variations +/-3°.

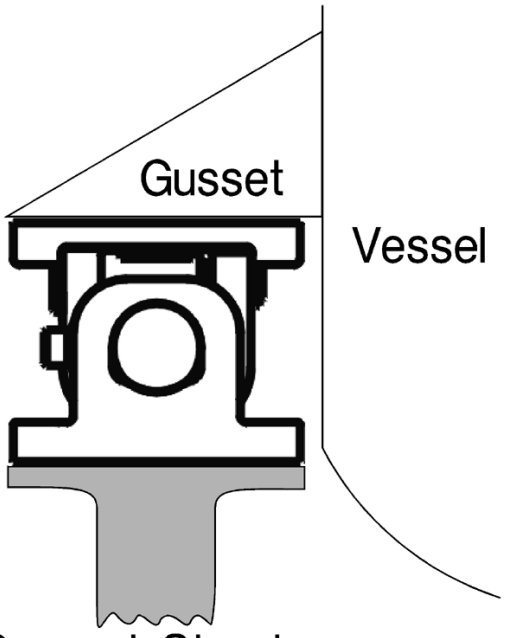


Thermal expansion/contraction compensation.

TYPICAL KDH-1B WEIGH MODULE MOUNTING ARRANGEMENTS

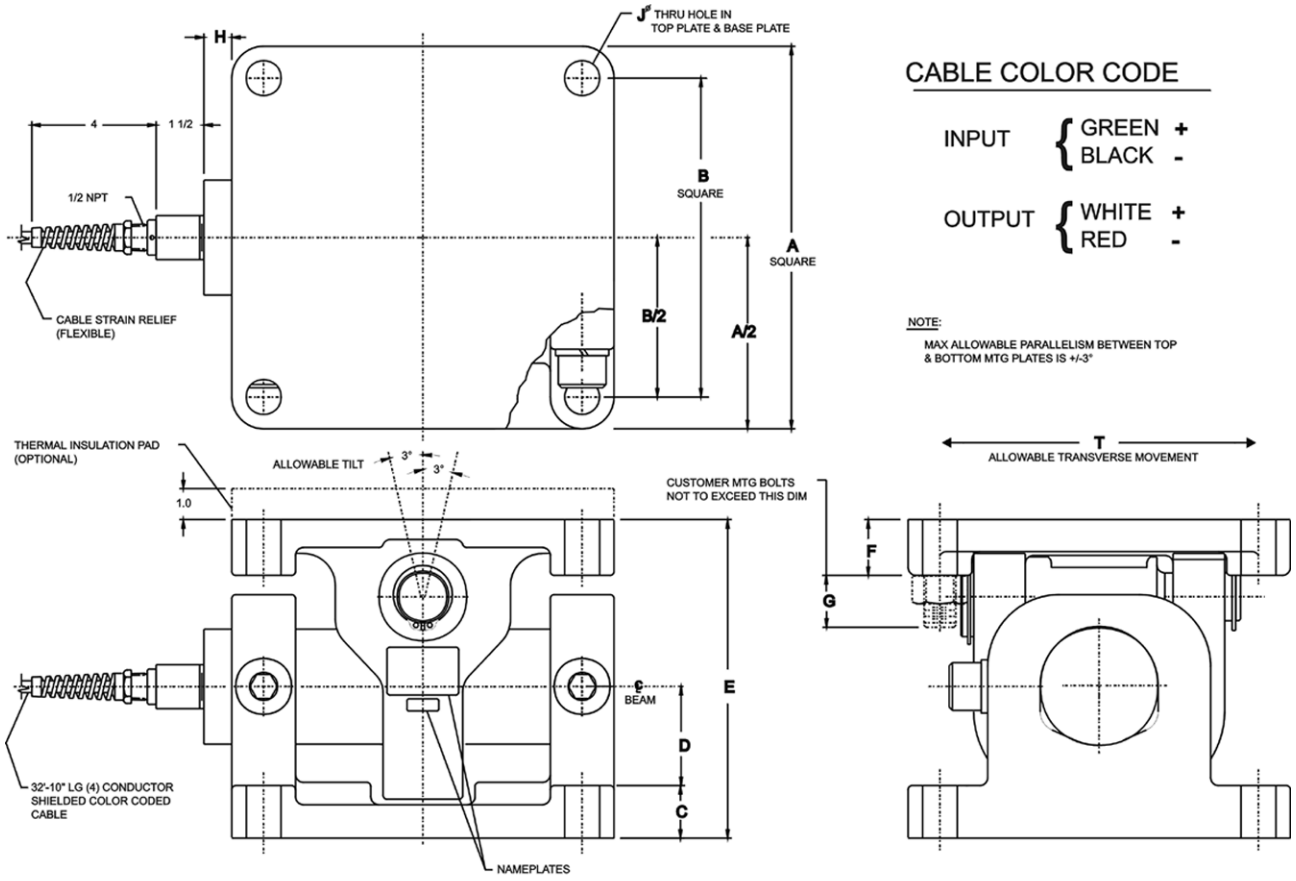


Modules Mount Tangent to the Vessel



Support Structure

DIMENSIONS



CAPACITY (lbs)	A	B	C	D	E	F	G	H	J	T
200,000	12.00	10.00	1.65	3.11	9.99 +/-.035	1.75	1 5/8	7/8	1 3/32	.47
300,000	14.00	11.00	1.90	3.49	10.85 +/-.035	1.75	2.0	.60	1 5/8	.75

Dimensions shown in inches.

KDH-1B

BLH — High Capacity Weigh Module

VISHAY PRECISION GROUP

SPECIFICATIONS

Performance

Capacity	200K and 300K lb (90.7K and 136K kg)
Rated Output (R.O.)	2.0mV/V ± 0.1% mV/V
Zero Balance	1% R.O.
Combined Error (best fit)	0.10% R.O.
Creep (20 minutes)	0.03% R.O.
Repeatability	0.02% R.O.

Electrical

Input Resistance	700 ohms ± 7 ohms
Output Resistance	700 ohms ± 7 ohms
Recommended Excitation	10Vac or dc (20V max.)

Temperature

Safe Range	-34.4 to 104.4°C (-30 to 220°F)
Compensated Range	-1 to 54°C (30 to 130°F)
Temperature Effects	(30 -130°F)
Zero Balance	0.0025% R.O. per °F
Span	0.0015% Reading per °F

Loading Specifications %Rated Capacity

Capacity Selection	200K lb	300K lb
Safe Load	150%	150%
Ultimate Load	300%	300%
Safe Uplift	100%	100%
Ultimate Uplift	110%	155%
Safe Sideload (Axial)	20%	50%
Ultimate Sideload (Axial)	40%	105%
Safe Sideload (Trans.)	85%	55%
Ultimate Sideload (Trans.)	170%	110%

Material

Beam	ultra high strength steel
Brackets	ductile iron
Environmental Class	NEMA 6, IEC IP 67
Moisture Protection	IEC 68-2-4 test D, 200 cycles (min)

Deflection Under Load and Unit Weight

CAPACITY	DEFLECTION	WEIGHT
200K lb	0.029 in.	250 lb
300K lb	0.050 in.	300 lb

Corrosion Protection

KDH-1B	zinc chromate beam painted hardware

Termination

200K, 300K	10m (32', 10") cable with conduit fitting

Approvals

FM (Factory Mutual)	3611 (Class I, II, III; Div.1,2; Groups A-G)
CSA	C22.2 (Class I, II,III; Div.1,2; Groups A-G)

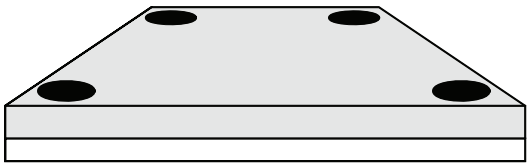
Documentation List

Outline Drawing	# 472456-3

NOTES: Many performance specifications are proven on a statistical sample basis.

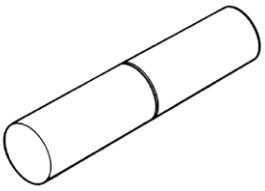
BLH is continually seeking to improve product quality and performance. Specifications may change accordingly.

WEIGH MODULE ACCESSORIES



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 recommends using insulation pads if the vessel mounting surface temperature exceeds 52C (130F). Pads are 1 inch thick with bolt spacing identical to module top plates.



Dummy Beams

Optional dummy beams are solid steel shafts with the same dimensions as the corresponding KDH-1 beam. Dummy beams are used in place of the KDH-1 beams during the installation process. Using dummy beams eliminates the risk of damaging precision KDH-1 beams while welding and/or positioning the weigh vessel.