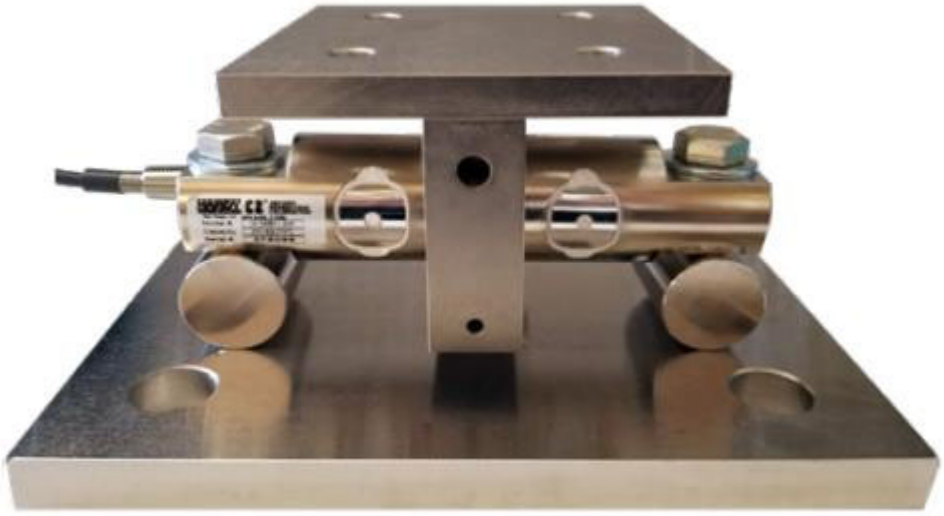
HIDSB and HIDSBMT Installation Guide



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INTRODUCTION

Double-ended Shear beams are medium- and high-capacity workhorses that are very rugged, stable, and able to handle side loads well. The HIDSBMT mount is recommended for the center-loaded Load Cell model HIDSB.

In applications where substantial thermal expansion/contraction is expected, or room is not available to raise a vessel significantly for load cell replacement, the HIDSB mount is highly recommended in this type of application. Using a double-ended, center-loaded module is an excellent choice to handle vessel movement and limited space requirements.

The mount uses a round-load cell that allows the top-loading pivot to correct minor alignment problems. The weigh module can also accommodate substantial movement in the direction perpendicular to the longitudinal axis of the load cell.

The load cell in the mount is supported on hardened circular pivots (RC-46/48). Screws secure it to the base. The top chair is held captive by removable pins on the top and bottom of the load cell. This allows the load cell replacement without raising the vessel by merely taking the load off of the weigh module.

This document contains important guidelines for applying load to a center-loaded, double-ended shear beam load cell and for orienting the mount for use with model HIDSB.

Additional References

For information about dimensions, model numbers, and schematic drawings, refer to the following webpages:

- Mount: https://www.hardysolutions.com/tenants/hardy/documents/Load_Cell_Mount_HIDSBMT.pdf
- Cell: https://www.hardysolutions.com/tenants/hardy/documents/Load_Sensor_HIDSB01-02.pdf

Load Cell Specifications

The HIDSB Double Ended Shear Beam Load Cells come in two varieties: HIDSB01 versions are Stainless Steel and HIDSB02 versions are Nickel Plated Alloy Steel.

SPECIFICATIONS	HIDSB01	HIDSB02
Capacities	5K, 10K, 20K, 40K, 50K, 60K, 100K, 150K, 200K	5K, 10K, 20K, 40K, 50K, 60K, 100K, 150K, 200K
Rated Output (ES)	3.0 mv/v ± 0.10%	3.0 mv/v ± 0.10%
Zero Balance	<±1.0 % Rated Output	<±1.0 % R.O.
Hysteresis	< 0.02% Full Scale	< 0.02% Full Scale
Non Linearity	< 0.03% Full Scale	< 0.03% Full Scale
Combined Error	<±0.02% R.O.	<±0.02% R.O.
Input Resistance	700±7 ohm	700±7 ohm
Output Resistance	703 ± 4 ohm	703 ± 4 ohm
Excitation	10VDC - Maximum 15VDC	10VDC - Maximum 15VDC
Safe Load Limit	150% Emax	150% Emax
Sensor Material	Stainless Steel 17-4PH	Nickel Plated Alloy Steel
Temperature - Compensated Range	0 - 150 deg. F	0 - 150 deg. F
Temperature - Effect on Zero	< 0.0011% FS O/deg. F	< 0.0011% FSO/deg. F
Sealing	Potted	Potted
Approvals	CE, IP67, RoHS, REACH	CE, IP67, RoHS, REACH
Warranty	Two years	Two years

1 HIDSBMT INSTALLATION INSTRUCTIONS

1.1 Overview

The HIDSBMT mount is designed for use with the HIDSB Nickel Chrome plated alloy steel or HIDSB stainless shear beams. Together these two products compose the mount weighing assembly.

1.2 Installation Hints

- The mounting surfaces for the BASE (4) and LOADING PLATE (12) must be level, and the distance between them must be within 1/32" of the nominal height (7). If the BASE is mounted on concrete, grouting is an accepted method for leveling.
- All welding on and around the installation should be done before installing LOAD CELLS (2).
- Proper drainage is a must and should be provided so that the weighing assembly is not standing in water.
- If weighing vessels and surrounding equipment are frequently steam cleaned, a protective shroud for the weighing assembly is recommended.

1.3 HIDSBMT Orientation

The best mounting/installation for several vessel types is shown in Figure 1-4, where a line of the vessel is at right angles to the longitudinal axis of the load cell. These recommendations are particularly important when significant thermal expansion/contraction is expected.

The HIDSB should be oriented with the load cell's longitudinal axis in line with the expected movement.

Figure 1-1 shows the recommended placement and orientation for double-ended beam typical installations.

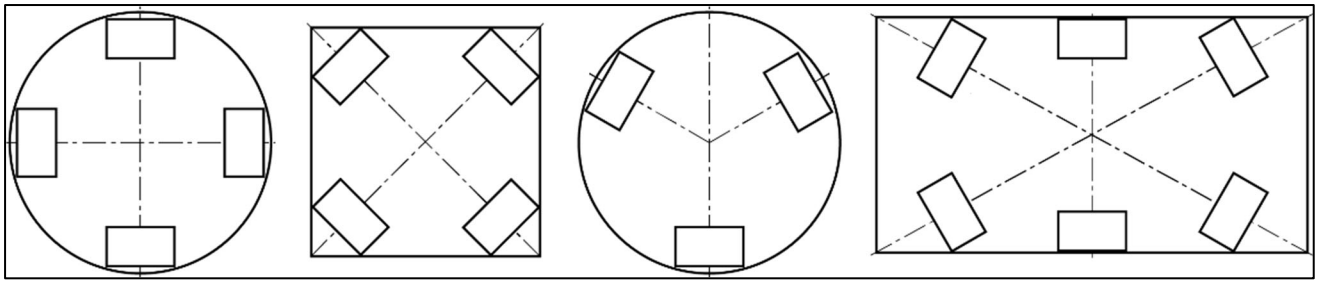

Figure 1-1. Recommended Placement and Orientation (Double-Ended Beam Installations)

1.4 HIDSBMT General Mounting Principles

- The load cell should be horizontal in both directions.
- The load should be applied vertically through the cell's center.
- The load should be introduced without producing a twisting effect around the center.
- The load must not move along the cell.

1.5 HIDSBMT Allowable Movement

Figure 1-2 shows the HIDSBMT allowable movement.

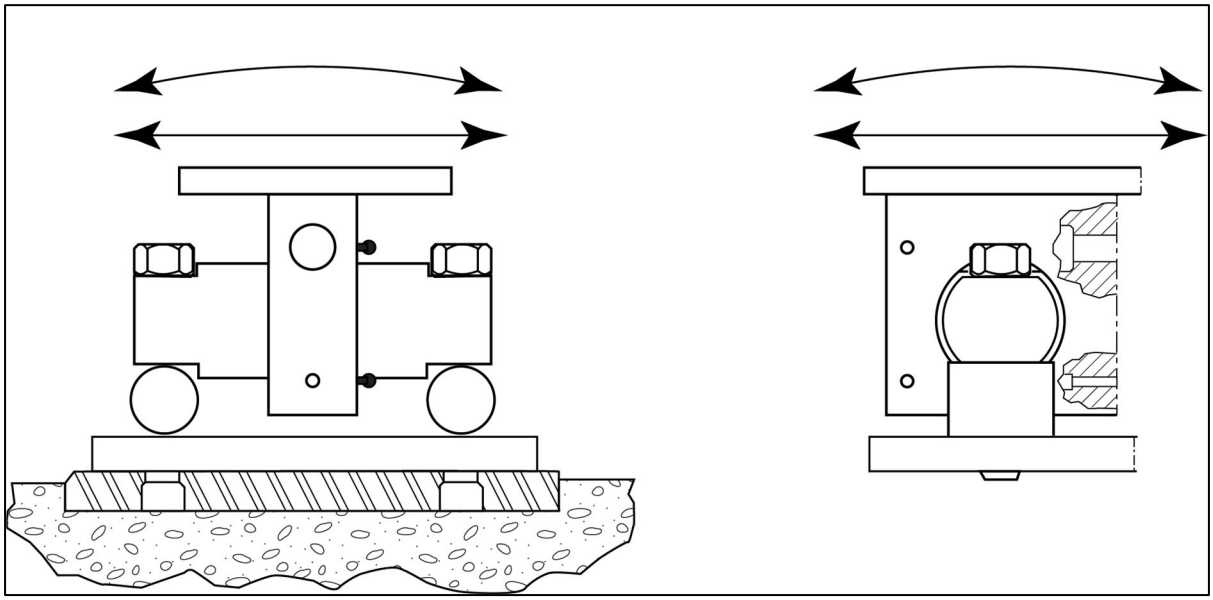

Figure 1-2. HIDSBMT Allowable Movement

Table 1-1. Specifications

Movement	Degrees
Axial movement (left image in Figure 1-2)	±0.5 degrees
Radial movement (right image in Figure 1-2)	±0.5 degrees

1.6 Assembly Procedure

The HIDSBMT weighing module has six major parts (see Figure 1-3):

- The BASE (4) is attached to the mounting surface that supports the entire assembly.
- The LOAD CELL (2) and SUPPORT PINS (3) are bolted to the BASE (4).
- The LOADING BRACKET (1) is held captive by the RETAINING PIN (9).

The type of installation will dictate how you locate, attach, and assemble the parts for the mount weigh module assembly. Some judgement must be exercised depending on application.

In a typical installation:

1. Locate the BASE (4) and LOADING BRACKET (1), and bolt them to the mounting surface and weighing vessel, respectively.
2. Insert the LOAD CELL (2) through the large hole in the side of the LOADING BRACKET (1).
3. Pass the MOUNTING BOLTS (10) through the ends of the LOAD CELL (2) and SUPPORT PINS (3), and threaded into the BASE (4) and hand tightened. The center line of the SUPPORT PINS (3) must be perpendicular to the center line of the LOAD CELL (2).
4. If properly positioned, the BEARING PIN (11) and RETAINING PIN (9) will easily slide into the LOADING BRACKET (1). Neither should be forced into position. Use COTTER PINS (7) to hold both PINS captive.
5. For multi-cell applications, install the other mount weighing assemblies in the same way.
6. Make the final height adjustments by inserting spacers between the top of the LOADING BRACKET (1) and the weighing vessel.
7. Torque the MOUNTING BOLTS (10) to 20 foot-pounds.

Figure 1-3 shows the HIDSBMT outline drawing and parts identification.

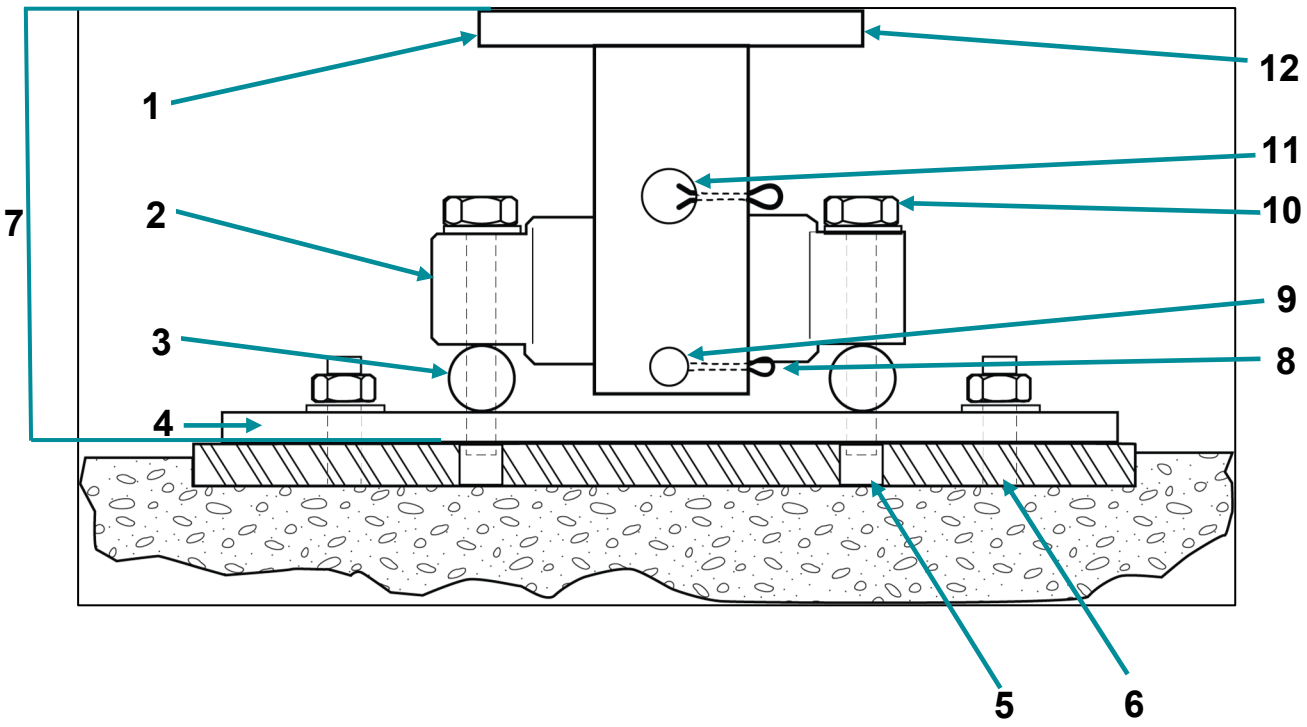

Figure 1-3. HIDSBMT Outline Drawing and Parts Identification

Number	Description
1	Loading bracket
2	Load cell (model HIDSB)
3	Support pins (2 plcs)
4	Base
5	Thru holes in subplate to clear mounting plate “S” Dia. 2 pl
6	Subplate recommended 1 in. up 60 Klbs 11/2 in. up to 150 Klbs 2 in. up to 250 Klbs.
7	Nominal height dimension
8	Cotter pins (2 plcs)
9	Retaining pin
10	Mounting Bolt (2 plcs)
11	Bearing pin
12	Loading plate

1.7 HIDSBMT and HIDSB Typical Application

Figure 1-4 shows a typical application for the HIDSBMT and HIDSB.

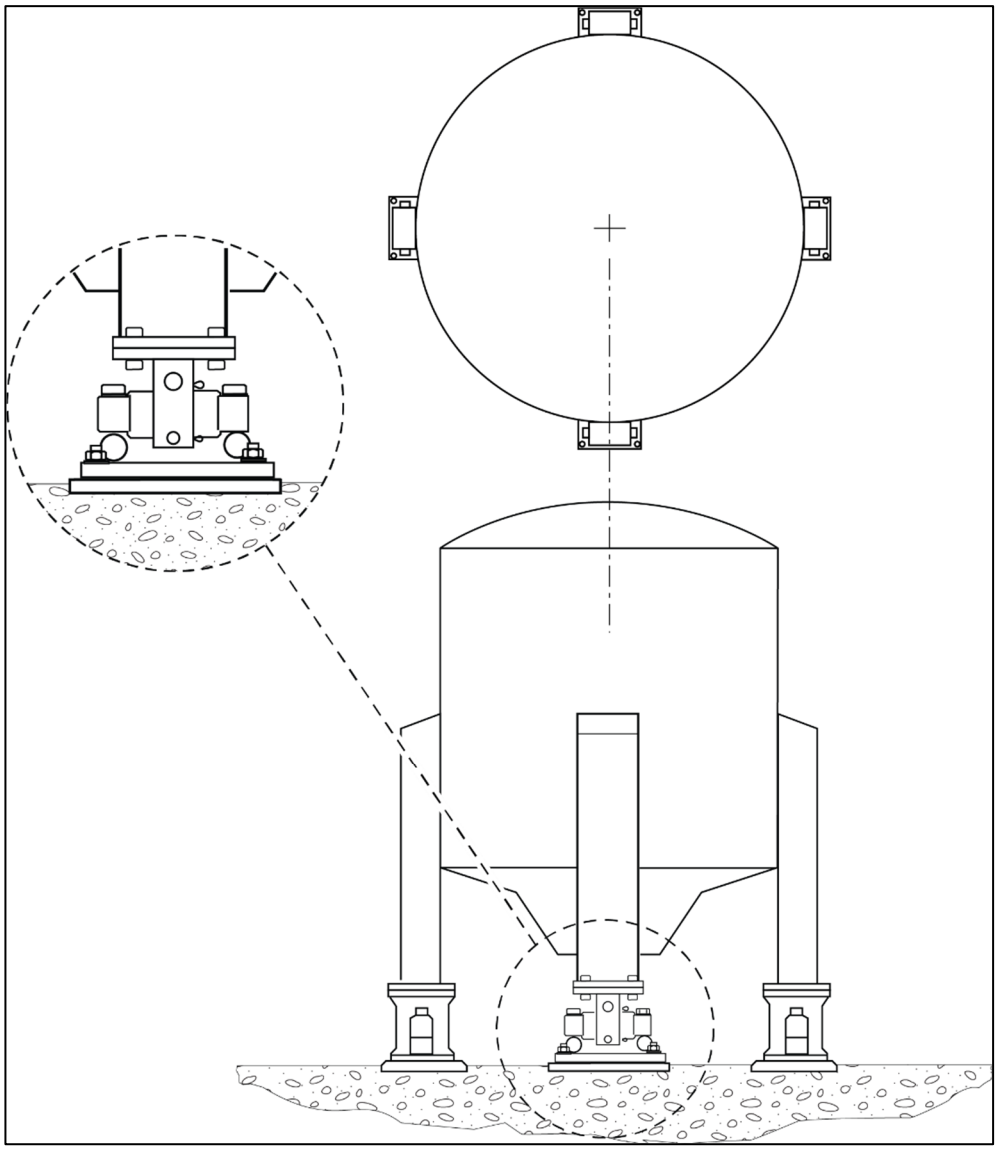

Figure 1-4. HIDSBMT and HIDSB Typical Application

2 HIDSBMT CONSTRUCTION AND FEATURES

Each end of the load cell is screwed to a base through a hardened cylindrical spacer, which is cross-drilled to allow the screw to pass through.

The chair assembly has a clearance through which the load cell passes. A hardened load pin is inserted horizontally at the top of the clearance hole, which transmits the load to the cell. Another pin sits in an angular groove at the center of the cell.

This arrangement allows the chair to move in practically all directions, as shown in Figure 1-2, while providing checking in all directions.

To remove the load cell, raise the vessel only enough to relieve the load from the cell.

The HIDSB design locks the tank or hopper to the weigh module, obviating the need for check rods in most applications.

- Safe overload: 150%
- Ultimate Overload: 300%
- Safe side load: 50%
- Weighing system accuracy: ±.02%

(Overall System accuracy is dependent on the quality of the installation.)

- Meets UBC 94 Seismic Zone 1-4 Requirements

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