

## HARDY HIBSX BENCH SCALES

### Installation & Operations Manual



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**CAUTION:**

**UNPACK WITH CARE**

**WHEN UNPACKING, DO NOT DISCARD THE PACKING CASE OR ANY PACKING MATERIAL, UNTIL THE CONTENTS OF THE PACKING CASE ARE INSPECTED AND CAREFULLY COMPARED WITH THE SHIPPING DOCUMENTS.**

**IF ANYTHING IS UNSATISFACTORY, PLEASE NOTIFY HARDY PROCESS SOLUTIONS IMMEDIATELY BY CALLING, FAXING OR E-MAILING TO:**

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Hardy Process Solutions  
10075 Mesa Rim Road  
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Web Address: [www.hardysolutions.com](http://www.hardysolutions.com)

**TO RETURN DEFECTIVE OR DAMAGED PRODUCT(S) CALL HARDY TECHNICAL SUPPORT FOR A HARDY SERVICE TICKET NUMBER (HST#). YOUR COMPANY NAME, ADDRESS, TELEPHONE NUMBER, SERIAL NUMBER OF THE UNIT AND A BRIEF DESCRIPTION OF THE PROBLEM SHOULD BE READY WHEN CALLING. FOR ALL NON-WARRANTY REPAIRS AN RMA NUMBER AND A PURCHASE ORDER OR CREDIT CARD IS REQUIRED.**

**IN CASE OF DAMAGE DUE TO SHIPPING, NOTIFY THE DELIVERING CARRIER IMMEDIATELY FOR AN INSPECTION.**

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## CHAPTER 1 - OVERVIEW

### Introduction

Congratulations on your purchase of a Hardy Bench Scale. Behind your purchase is over 100 years of quality, reliability, and technical innovation.

The Hardy Bench Scales are designed for table-top or floor applications requiring high accuracy and reliability. The covers are all stainless steel for durability. The bases have no bearings, spirit levels, or moving parts that can be damaged or wear out. The active element of the scale is a precise and accurate strain gauge load sensor.

### Description

All Hardy BSX Bench Scales come standard in 12"x12" or 24"x24", sizes, and range in capacity. Custom sizes and capacities are available from Hardy upon request.

The basic Hardy Bench Scale major components:

1. Stainless Steel Top Cover.
2. Top and Bottom Plates (12"x12") or Bottom plate (24"x24")
3. A single Load Sensor for 12"x12" or 4 load sensors and a junction box for the 24"x24" scales
4. Four Leveling feet.

### **The Top Cover**

The top cover is a single piece constructed of 304 Stainless Steel. The cover provides a washdown weighing surface and offers protection.

### **Top and Bottom Plates**

12" x 12": The top and bottom plates come equipped with four leveling feet, a load sensor, and corner overload protection.



### **Bottom Plate**

24"x24": The bottom plate comes with four leveling feet, four planar beam load cells, an integrated junction box and corner overload protection.



## **Scale Interface**

Directly attach the scale's cable to any weighing instrument. If interfacing with a Hardy instrument, you can take full advantage of WAVERSAVER<sup>®</sup> and C2<sup>®</sup> Electronic Calibration.

**NOTE:** *WAVERSAVER<sup>®</sup> and C2<sup>®</sup> are registered trademarks of Hardy Process Solutions.*

## **BSX Models 12"x12" SS-SS**

The SS-SS version of the BSX series includes a stainless IP69K load cell, providing the maximum amount of washdown capability and protection for the harshest sanitation environments.

The frame is precision cut from two pieces of .250 in 304 grade stainless plate.

## **12" x 12" SS-AL**

The SS-AL version of the BSX series includes a aluminum IP67 load cell with the lowest profile available and washdown capability.

The frame is precision cut from two pieces of .250 in 304 grade stainless plate.

## **24"x24" HPBZ**

The low-profile 24 x 24-inch scales use four (4) 304SS stainless steel HIPBZ C2<sup>®</sup> load cells with an integrated junction box. The HIPBZ load cells features IP67 stainless steel, environmentally potted load cells that are suitable for light washdown or dry and dusty hazardous conditions. Each load cell has a +/- 0.02% accuracy specification.

The Frame is precision cut from a single plate of stainless steel.

## **CHAPTER 2 - SPECIFICATIONS**

### **Hardy HIBSX Bench Scale Specifications**

#### **Platter Construction**

304 Stainless Steel (all models)

Size: 12" x 12" or 24" x 24"

#### **Deck Height**

SS-SS - 3.4" (75 mm) adjustable

SS-AL - 2.02" (51.3 mm) adjustable

HIPBZ – 2.25" (57.2 mm) adjustable

#### **Capacity Range**

- 12 x 12 SS Versions: 10 lbs to 165 lbs (5 to 75 kg)
- 12 x 12 AL Versions: 10 lbs to 100 lbs (5 to 45 kg)
- 24 x 24 PBZ Versions: 150 to 1300 lbs (68-590 kg)

#### **Rated Output**

Overload: 150% R.O.

Corner loading: 100% R.O.

#### **Cable Length**

SS-SS – 10 ft (3 m)

SS-AL - 6.5 ft (2 m)

HIPBZ – 15 ft. (4.5 m)

#### **Base Construction**

Stainless Steel

#### **Temperature**

Operating: -10 to +40 degrees celsius

Storage: -20 to +65 degrees celsius

#### **Warranty**

Two-year limited warranty

#### **Approvals**

FM IS Hazardous Class I, Div 1 Load Cell (12"x12" versions only)

Refer to load cell certifications for details

#### **Shipping Weight**

12" x 12": 22 lbs (11 kg)

24-in 48.8 lbs (22 kg)

**Load Sensors 12" x 12"**

<b>Specifications</b>	<b>HISP6 (SS-SS)</b>	<b>HISPA22 (SS-AL)</b>
Metallurgy	17-4PH Stainless Steel	2024 Aluminum
Rated Output (ES)	2±0.10mV/V	2±10% mV/V
Non-Linearity	<±0.0166 % R.O.	<±0.0166 % R.O.
Hysteresis	<±0.0166 % R.O.	<±0.0166 % R.O.
Zero Balance	<±5.0 % R.O.	<±5.0 % R.O.
Combined Error	<±0.02 % R.O.	<±0.02 % R.O.
Creep @ 30 Min.	<±0.0166 % R.O.	<±0.0166 % R.O.
Temp Effect Output	<±0.0112 % R.O./C	<±0.0233 % R.O./C
Temp Effect Sensitivity	<±0.010 % R.O./C	<±0.010 % R.O./C
Input Resistance	1100 ± 50 ohm	413 ± 20 ohm
Output Resistance	960 ± 50 ohm	350 ± 25 ohm
Insulation Resistance	≥5000 Mohm	≥5000 Mohm
Excitation	5 - 15 vdc	5 - 15 vdc
Safe Load Limit	200 % Emax	150 % Emax
Safe Side Load	100 % Emax	100 % Emax
Hazardous	FM IS, Class1, Div 1	FM IS, Class1, Div 1
Approvals	IP68/IP69K	IP67
Warranty	Two years	Two Years

**Load Sensors 24” x 24”**

<b>Specifications</b>	<b>HIPBZ</b>
Metallurgy	17-4PH Stainless Steel
Rated Output (ES)	2±0.10mV/V
Non-Linearity	<±0.0166 % R.O.
Hysteresis	<±0.0166 % R.O.
Zero Balance	<±5.0 % R.O.
Combined Error	<±0.02 % R.O.
Creep @ 30 Min.	<±0.0166 % R.O.
Temp Effect Output	<±0.0233 % R.O./C
Temp Effect Sensitivity	<±0.010 % R.O./C
Input Resistance	1100 ± 50 ohm
Output Resistance	1100 ± 2 ohm
Insulation Resistance	≥5000 Mohm
Excitation	5 - 15 vdc
Safe Load Limit	200 % Emax
Safe Side Load	100 % Emax
Hazardous	N/A
Approvals	IP67
Warranty	Two years



**Standard Sizes & Capacities**

12-Inch SS Versions	Capacity	Load Cell	Load Cell Material	Safe Load Limit
HIBSX-12SS-SS6-5KG	10 lbs/5 kg	HISP6-10	17-4PH SS	10 lbs
HIBSX-12SS-SS6-15KG	30 lbs/15 kg	HISP6-20	17-4PH SS	55 lbs
HIBSX-12SS-SS6-40KG	100 lbs/45kg	HISP6-50	17-4PH SS	187 lbs
HIBSX-12SS-SS6-75KG	165 lbs/75 kg	HISP6-100	17-4PH SS	319 lbs
12-inch AL Versions	Capacity	Load Cell	Load Cell Material	Safe Load Limit
HIBSX-12SS-AL22-5KG	10 lbs/5 kg	SPA22-10	2024 AL	10 lbs
HIBSX-12SS-AL22-15KG	30 lbs/15 kg	SPA22-20	2024 AL	38.5 lbs
HIBSX-12SS-AL22-25KG	50 lbs/25 kg	SPA22-30	2024 AL	71.5lbs
HIBSX-12SS-AL22-35KG	75 lbs/35 kg	SPA22-40	2024 AL	104.5 lbs
HIBSX-12SS-AL22-45KG	100 lbs/45 kg	SPA22-50	2024 AL	137.5 lbs
24-Inch SS Versions	Capacity	Load Cell	Load Cell Material	Safe Load Limit
HIBSX-24SS-PBZ-150LB	150 lbs/68 kg	HIPBZ-44LB-L1.25FT	304SS	300 lbs
HIBSX-24SS-PBZ-400LB	400 lbs/181 kg	HIPBZ-110LB-L1.25FT	304SS	800 lbs
HIBSX-24SS-PBZ-800LB	800 lbs/262 kg	HIPBZ-220LB-L1.25FT	304SS	1600 lbs
HIBSX-24SS-PBZ-1300LB	1300 lbs/590 kg	HIPBZ-440LB-L1.25FT	304SS	2600 lbs

**CHAPTER 3 - INSTALLATION**

**Precautions**

**Do not** store or operate the scale out of its specified temperature range.

**Do not** store other equipment on the scale when it is not in use or in storage.

**Do not** allow a build-up of debris on, around or under the scale.

**Do not** set the scale in water or allow water to settle around the scale. Provide Proper drainage.

**Do not** allow static or other electrical discharges through the scale.

**Do not** try to repair the scale. Contact Hardy Process Solutions Technical Support Department for all repairs.

**Do not** try to lift the scale by the load cell cable. Doing so will damage the load cells and could potentially cause serious bodily harm. Lift the scale only by the inside stainless steel platters. Do not use the cover.

### **Unpacking**

Hardy Bench scales are shipped fully assembled and only require adjustment of the overload stops and adjustment of the leveling feet. If there is any damage to the shipping container or to the scale, save all the packaging material and file a report with the shipper.

### **Adjusting the Mechanical Overload Stops**

There is a bolt in each corner of the frame that is fully engaged for shipping protection. Each should be adjusted to allow the load cell to deflect to its maximum deflection distance, but no further.

#### **Maximum Deflection at Capacity:**

HISP6 - 0.17mm

HISPA22 - 0.4mm

HIPBZ - 0.17mm

**Leveling the Scale**    **12"x12"**: Adjust the level of the scale by using the leveling bubble and the adjustable feet.



**24"x24"**: To level the platform, use a spirit level and turn the leveling feet clockwise to lower the scale corner, or counter clockwise to raise it until you show a level reading on the spirit level.

### **Scale Connections**

The scale has a cable exiting the rear. Wire to the preferred instrument by referring to the instrument and cell wiring diagram.

Make sure the cable is not pinched and is clear of the feet. The Bench Scale requires a recommended DC or AC excitation voltage of 5 volts with a maximum of 15 volts. Wire the Scale cable to an instrument or indicator following the color code label found on the cable.

### **WARNING**

**USE CAUTION WHEN WIRING. MAKE SURE TO DISCONNECT ALL POWER TO THE SCALE. FAILURE TO REMOVE POWER CAN RESULT IN SCALE OR INSTRUMENT DAMAGE, DEGRADATION OF PERFORMANCE OR PERSONAL INJURY**

### **NOTE:**

*Drawings and wiring diagrams are available at [www.hardysolutions.com](http://www.hardysolutions.com)*

## CHAPTER 4 - CALIBRATION

### **About Calibration of the Hardy HIBSX**

The HIBSX scales come calibrated from the factory. Make sure the scale is correctly wired to the weighing instrument or indicator. Refer to the weighing instrument or indicator manual for calibration instructions.

### **C2 Second Generation Calibration**

C2 electronically calibrates a scale system without the need for test weights. If you are using a Hardy Process Solutions Weight Controller, Weight Processor, Indicator or Weigh Module, all that's required is to enter a reference point. Refer to the instrument or module manual for calibration instructions using C2

### **Test Weight Calibration (Hard Cal)**

This is the traditional means of calibration requiring certified class F test weights equal to a minimum of 80% of the rated scale capacity.

Three weights between 10% and 100% of the scale capacity should be available to check the mid-range. Several low-capacity weights equivalent to one or two instrument divisions are necessary to check the system sensitivity.

### **Material Substitution**

When certified test weights are not available, use an accurately weighed material to calibrate the system. In this method, a material is weighed on a secondary, calibrated scale and delivered to the site of the scale that needs to be calibrated. The secondary calibrated scale should be of the same accuracy or greater and have a capacity approximately equal to the scale being calibrated.

# CHAPTER 5- TROUBLESHOOTING

## SCOPE

All the information in Chapter 5 pertains to the troubleshooting and resolution of operating problems that may occur. All maintenance personnel and users should be familiar with both Chapters 3 and 4 before attempting to troubleshoot problems with the Scale.

### Problem:

#### **Scale Does Not Respond When Weight is Applied**

- Step 1. Make sure the scale is wired correctly to the instrument or network and there are no breaks in the wiring.
- Step 2. Check to see if there is packing material or debris wedged under or against the scale.
- Step 3. Make sure the corner mechanical overload stops are not engaged with the platform. Lower as necessary.

#### **Scale Indication is not linear**

- Step 1. Check the instrument for proper calibration.
- Step 2. Check to see if there is packing material or debris wedged under or on the side of the scale.
- Step 3. Make sure the corner mechanical overload stops are not engaged with the platform. Lower as necessary.
- Step 4. Make sure all electrical connections are tight with no corrosion and that there has not been an ingress of moisture to the system.

#### **Scale Reads Backwards**

- Step 1. Check for correct wiring to the instrument. The +- signal or excitation wires may be reversed.

#### **Scale Reading drifts or is Erratic**

- Step 1. Make sure all electrical connections are tight with no corrosion and that there has not been an ingress of moisture to the system.

## **Hardy Bench Scales**

- Step 2. Make sure the corner mechanical overload stops are not engaged with the platform. Lower as necessary.
- Step 3. Verify that the instrument or network is operating properly.
- Step 4. Make sure there are no high voltage wires close to the scale.
- Step 5. Check that the scale and instrument are properly grounded.
- Step 6. If high static electricity is present a ground strap should be added from the top cover to the chassis and to earth ground.

## **Service and Repair (All Models)**

For Service and Repairs, contact your local Hardy Representative.

Before returning any product to Hardy Process Solutions, please contact the Hardy Service Center for a return authorization number (RMA). Please have the scale model number and a serial number and a brief description of the problem ready when you call.

Technical Support  
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