SkyAzúl
EQUIPMENT SOLUTIONS

LOHD 975/977
LOAD AND HOOK SYSTEM

INSTALLATION AND CALIBRATION MANUAL

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MANUAL REVISIONS

REV	DATE	NAME	DESCRIPTION
-	05/03/11	SC	975/977 Load and Hook System (SkyAzúl) – Rev 10/99

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LOHD 975/977™

LOAD ON HOOK SYSTEMS

LOHD™ -975/977
LOAD ON HOOK SYSTEMS (HYDRAULIC CRANES)

INSTALLATION AND CALIBRATION

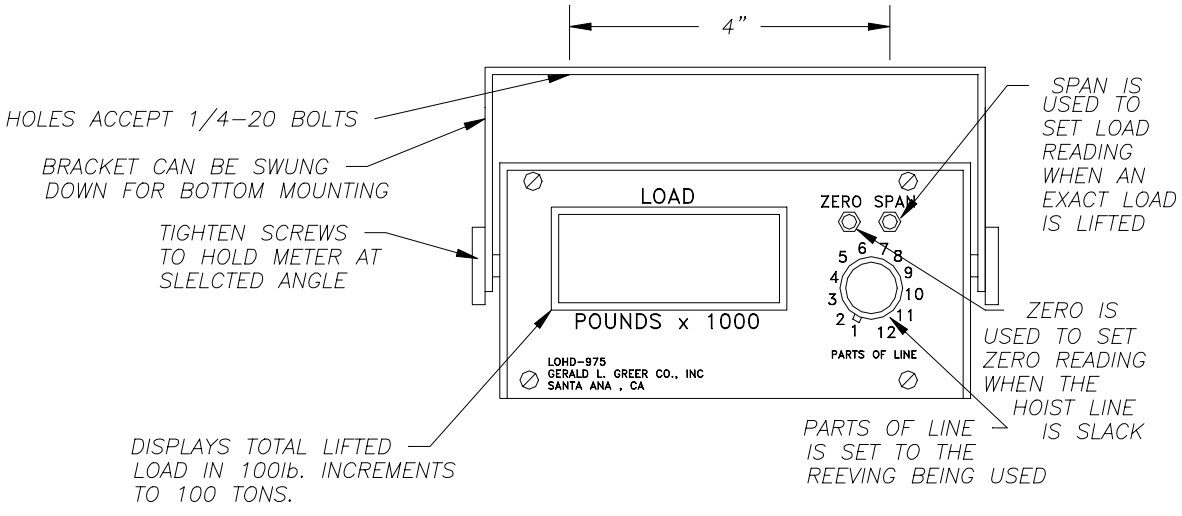
The **LOHD™- 975/977 Load On Hook Systems** have three major components: a hoist rope tensiometer, a digital display (meter), and an interconnecting cable.

- The **hoist rope tensiometer** measures the tension in the hoist rope with a roller deflection system and a precision strain-gauge load cell. The load cell is powered by the display circuitry.
- The **LOHD™-975 Display** identifies loads up to 199,000 pounds. (Refer to Drawing 10991.)The **LOHD™-977 Display** identifies loads up to 500,000 pounds.
- The **interconnect cable** is a four-wire shielded cable made especially for this application. It is covered with a specially designed and durable polyurethane jacket that can withstand severe abrasion without damage.

DISPLAY INSTALLATION

Refer to Drawing # 10991 below.

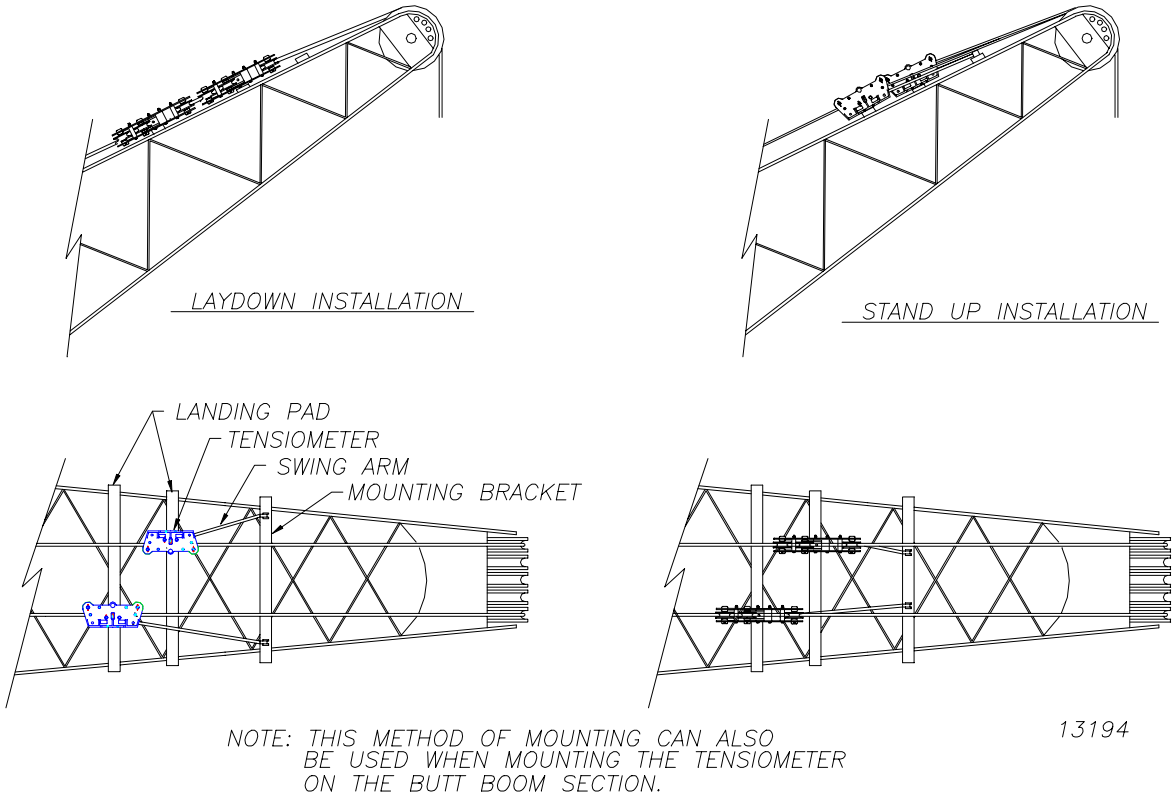
1. Mount the display inside the cab in a position for easy viewing by the operator with all controls within reach. Calibration controls on the front of the display must be accessible. The display mounting bracket can be repositioned and tilted to permit mounting the display near the top window in the cab.
2. Bolt the tilt bracket with two 1/4-20 bolts in the location selected.



10991

3. Route the power cable to a 12 or 24 volt DC buss, which is turned off when the ignition is turned off.
4. Connect the white wire to the +12 VDC or +24VDC and the black wire to the same ground used for other instruments. On some displays, red and black wires are supplied. In this case, connect RED to + and BLACK to - .

INSTALLING A SWING ARM MOUNTED TENSIOMETER (LATTICE CRANES)



NOTE: THIS METHOD OF MOUNTING CAN ALSO BE USED WHEN MOUNTING THE TENSIOMETER ON THE BUTT BOOM SECTION.

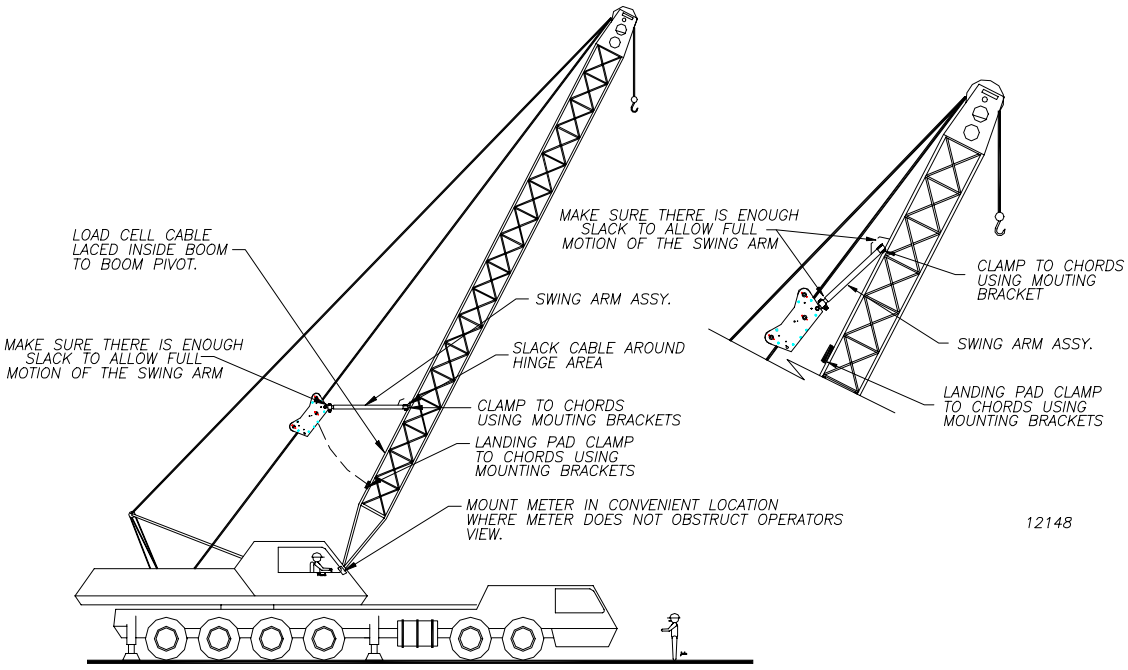
SINGLE OR DUAL LOAD CHANNEL

Refer to Drawing 13194 (above) & 12148 (next page).

1. Mount the tensiometer at **either** the **top of the tip section** or the **top of the butt section** of the boom. The method is the same for either installation. **Note:** The setup chosen depends on the number of tensiometers to be installed and whether or not the winch reels are side-by-side or tandem.
2. Lower the boom to the ground, lay the swing-arm bracket on the top of the boom, and position the bracket so that the clamps can be loosely installed without interfering with the lattice.
3. Mount the swing-arm to the bracket with the bolt and nut supplied.
4. Place the landing pad bracket on the top of the boom. The center of the bracket should be approximately 7” from the end of the swing arm. Loosely install the clamps. Place the tensiometer on top of the landing pad with the load cell cable

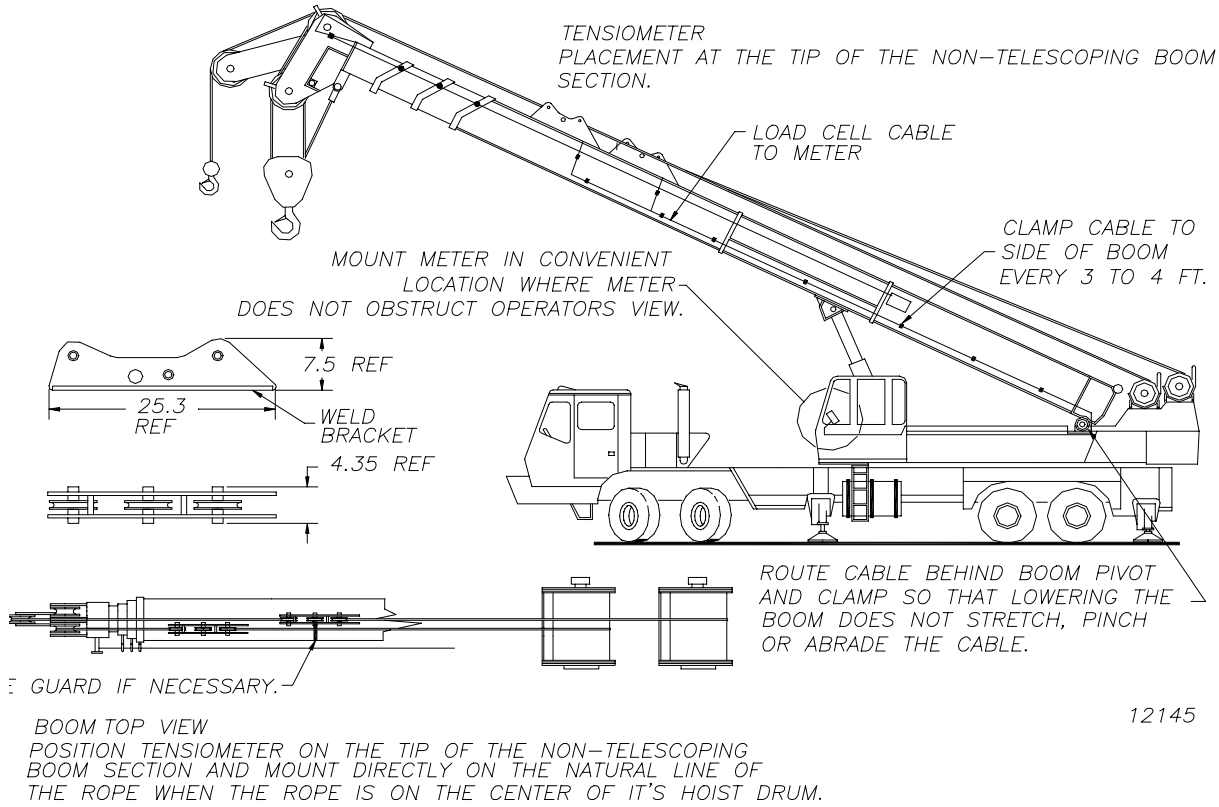
toward the swing arm; bolt the cable to the swing arm with the nut and bolt supplied.

5. Before tightening the clamps on the swing arm bracket and landing pad, ensure that the center of the tensiometer is over the center of the landing pad. If two tensiometers are to be installed, mount the second tensiometer before tightening the clamps. Ensure that the joints on both ends of the swing arm move freely.
6. Remove the bolt that secures the rocker-arm/center roller assembly during shipping. Feed the hoist cable under the back end of the roller, over the top of the center roller, and under the front roller to the head sheaves.
7. **If it is inconvenient to un-reeve the block,** install the cable on the tensiometer as follows:
   a Remove the cotter pins from the shafts of the two end rollers.
   b With a drift, punch, or bolt, slowly remove the shafts.
   c Catch the washers and rollers.
   d Set the hoist cable into the tensiometer on the center roller.
   e Replace the end rollers (with a washer on each side of each roller).
8. Before operating, grease the rollers via the 4 zerk fittings on the tensiometer.
9. Clamp the cable to the frame of the tensiometer for strain relief. Ensure that the load lines will not rub on the cable.
10. Install cable clamps approximately every 12” along the swing arm. **Leave enough slack** so that the tensiometer can swing to the stops in all directions without pulling on the load cell plug.



11. **Leave enough slack** at the lower universal joint of the swing arm to allow free swing arm movement; then, route the cable down to the lower edge of the boom.

INSTALLING A TENSIOMETER AT THE BOOM HEAD (HYDRAULIC CRANES)



BOOM TOP VIEW
POSITION TENSIOMETER ON THE TIP OF THE NON—TELESCOPING BOOM SECTION AND MOUNT DIRECTLY ON THE NATURAL LINE OF THE ROPE WHEN THE ROPE IS ON THE CENTER OF IT'S HOIST DRUM.

SOLID MOUNT, SINGLE OR DUAL LOAD CHANNELS

Refer to Drawing #12145 above.

1. Using the weld-on brackets supplied, mount the tensiometer near the tip of the non-telescoping boom section.

   Note: Cranes with one winch that use an "A" frame or gantry for the jib (where the load line runs to a separate sheave above the boom) will need to use a swing-arm arrangement to mount the tensiometer.

2. Lower the boom to a horizontal position and set the tensiometer, with weld-on brackets attached, at the tip of the non-telescoping boom section.

3. Align the rollers of the tensiometer with the head sheave used for that load line and the center of the winch reel.

4. Ensure that the weld-brackets are on a solid, flat section of the boom. Tack-weld the brackets to the boom taking care not to burn the load cell cable.

5. Remove the tensiometer from the weld-on brackets and weld the brackets solidly to the boom.
6. After allowing the brackets to cool, clean and paint the brackets.
7. Replace the tensiometer and secure it to the brackets

   Note: If two tensiometers are to be mounted on the boom, the second tensiometer may have to be set back from the first, depending on the width of the boom. Ensure that the rollers of the tensiometer line up with the head sheaves and the center of the winch reel.
8. Remove the bolt that secures the rocker-arm/center roller assembly during shipping. Feed the hoist cable under the back end of the roller, over the top of the center roller and under the front roller to the head sheaves.
9. **If it is inconvenient to un-reeve the block,** install the cable on the tensiometer as follows:
   a Remove the cotter pins from the shafts of the two end rollers.
   b With a drift, punch, or bolt, slowly remove the shafts.
   c Catch the washers and rollers.
   d Set the hoist cable into the tensiometer on the center roller.
   e Replace the end rollers (with a washer on each side of each roller).
10. Before operating, grease the rollers via the 4 zerk fittings on the tensiometer.
11. Clamp the cable to the frame of the tensiometer for strain relief.

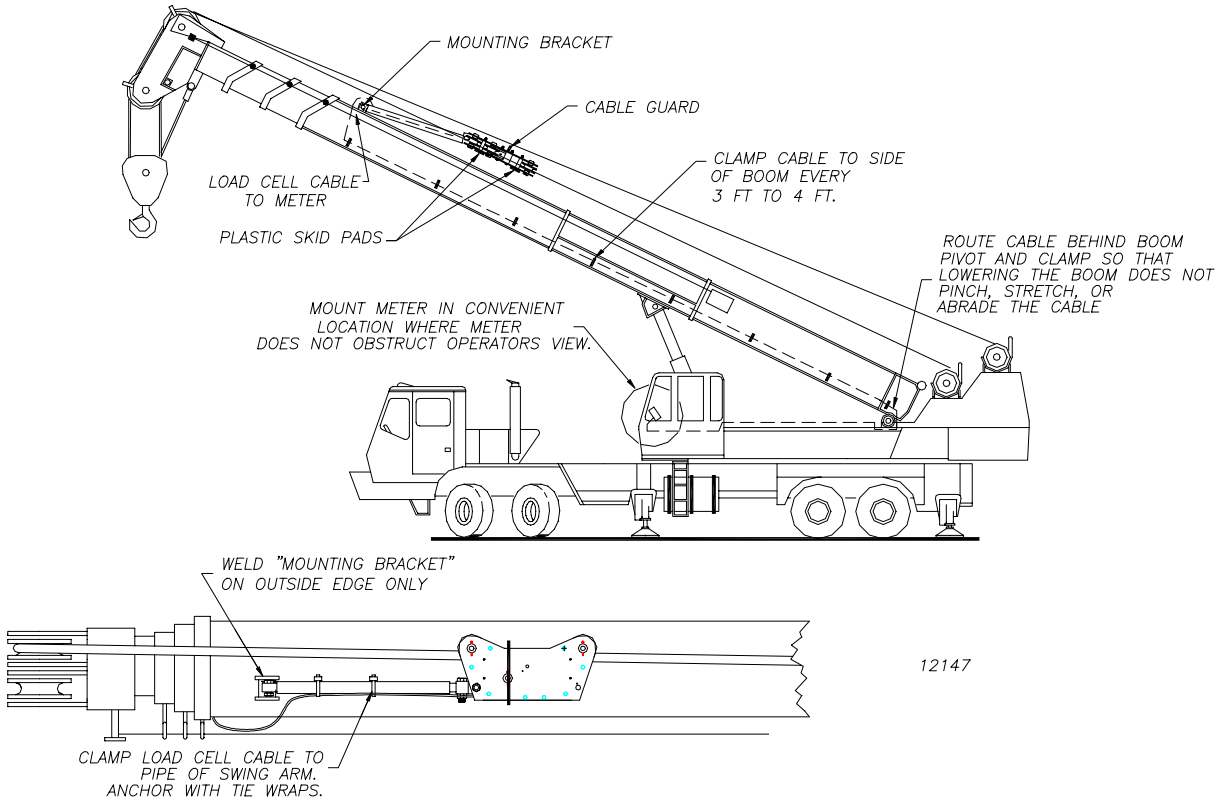
    Note: Ensure that the load lines will not rub the cable. Add some steel guards or guides, as needed, to prevent this condition.
12. Secure the cable from the tensiometer to the meter every 3 to 4 feet along the side of the boom and behind the boom pivot.

    Note: Lowering the boom should not stretch, pinch, or abrade the cable.

INSTALLING A SWING ARM MOUNTED TENSIOMETER (HYDRAULIC CRANE)

SINGLE LOAD CHANNEL

Refer to Drawing 12147 below.



1. Assemble the swing arm to the tensiometer and place it on the boom with the lower end of the swing arm at the tip of the non-telescoping boom section.

   Note: For cranes with two winches, mount the tensiometer so that the load line from the **front** reel will be used. To protect the tensiometer from the rear winch line, ensure that the cable guards are mounted to the top of the tensiometer.

2. Mount the tensiometer with the plastic skid pads next to the boom, aligning the rollers of the tensiometer with the sheave used for the front load line and the center of the winch reel.

3. Position the swing arm parallel to the boom and weld the side brackets to the boom around the outside edges.

4. After allowing the brackets to cool, clean and paint the brackets.

5. Replace the tensiometer and secure it to the brackets.

6. Remove the bolt that secures the rocker-arm/center roller assembly during shipping.

7. Feed the hoist cable under the back end of the roller, over the top of the center roller and under the front roller to the head sheaves.
8. **If it is inconvenient to un-reeve the block,** install the cable on the tensiometer as follows:
   a Remove the cotter pins from the shafts of the two end rollers.
   b With a drift, punch, or bolt, slowly remove the shafts.
   c Catch the washers and rollers.
   d Set the hoist cable into the tensiometer on the center roller.
   e Replace the end rollers (with a washer on each side of each roller).
9. Before operating, grease the rollers via the 4 zerk fittings on the tensiometer.
10. Camp the cable to the frame of the tensiometer for strain relief.

    Note: Ensure that the load lines will not rub on the cable. Install cable clamps every 12” along the swing arm. **Leave enough slack** to permit the tensiometer to swing to the stops in all directions without pulling on the load cell plug. **Leave enough slack** at the lower universal joint of the swing arm for free swing arm movement.
11. Route the cable down to the lower edge of the boom. Secure the cable between the tensiometer and the display every 3 to 4 feet along the side of the boom and behind the boom pivot.

    Note: Lowering the boom should not stretch, pinch, or abrade the cable.

CALIBRATION INSTRUCTIONS

1. Select a weight for calibration which is about 50% of the capacity for the ‘PARTS OF LINE’ reeved. Add the weight of the rope below the head sheaves, hook block, slings, and rigging to the known test weight. The total weight should be known to 1% accuracy.
2. Set the hook and all other rigging on the ground so that the line is slacked.
3. Set PARTS OF LINE switch to 12.
4. Adjust ‘ZERO’ on LOHD-975/977 front panel until the display indicates +00.0
5. Set PARTS OF LINE switch to the number of Parts of Line rigged on the crane.
6. Lift the known weight and stop smoothly. Adjust ‘SPAN’ on LOHD™ 975/977 front panel until the display indicates the total weight being lifted (known weight plus the hook block, rope, slings and rigging or any other rigging on the line).See example on next page.

Table 1:

EXAMPLE	
KNOWN WEIGHT =	**19,400 Pounds**
HOOK BLOCK, ROPE, SLINGS and RIGGING=	**900 Pounds**
TOTAL=	**20,300 Pounds**

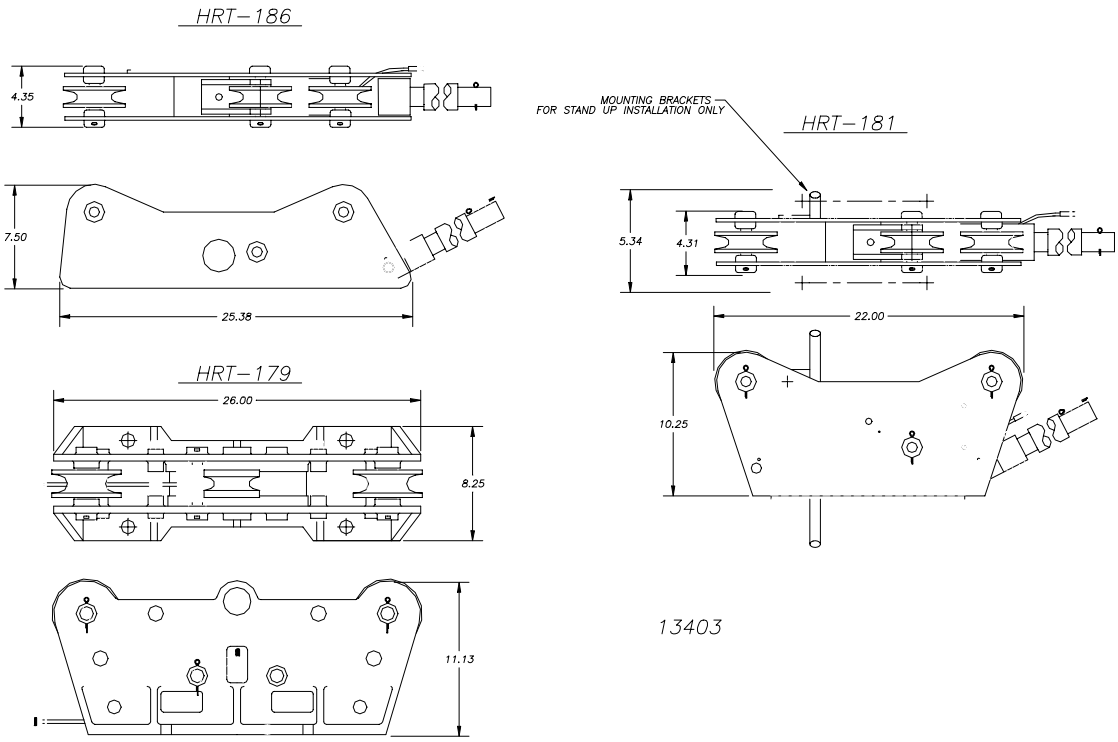
7. Adjust SPAN until the display indicates +20.3
8. Lift the load several inches, stop smoothly, and check the weight again.
9. Repeat steps 3 through 8 and adjust the ZERO and SPAN controls, if necessary.

OPERATING INSTRUCTIONS

1. Ensure that the system has been recently calibrated or that the calibration has been checked.
2. Set the PARTS OF LINE switch to match the number of PARTS OF LINE actually reaved on the crane.
3. Lift the load and stop smoothly.
4. On the display, observe the total weight being lifted. Measurement is in thousands of pounds.
5. Total weight includes the rope, hook block, slings, rigging, and load.

EXAMPLES	
1. +123.4 pounds x 1000 =	**123,400 pounds**
2. +12.3 pounds x 1000 =	**12,300 pounds**
3. +0..5.9 pounds x 1000 =	**5,900 pounds**

TENSIOMETER DIMENSIONAL DRAWING



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