XT-1
Load Module
User's Manual

Revision: A

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Limited Warranty

This unit is warranted by the manufacturer, Toledo Integrated Systems, to be free of defects in workmanship and materials for one year from date of manufacturer's shipment. This warranty is limited to repairing or replacing products which manufacturer's investigation shows were defective at the time of shipment by the manufacturer.

All products subject to this warranty must be returned for examination, repair or replacement

F.O.B. to: Toledo Integrated Systems
1345 Ford Street
Maumee, Ohio 43537

The express warranty set forth herein is in lieu of all other warranties, expressed or implied, including without limitation any warranties of merchant-ability or fitness for a particular purpose. All such warranties are hereby disclaimed and excluded by the manufacturer.
Repair or replacement of defective products as provided above is the sole and exclusive remedy provided thereunder. The manufacturer shall not be liable for any further loss, damages, or expenses, including incidental or consequential damages, directly or indirectly arising from the sale or use of this product.

Any unauthorized repair voids this warranty.

There are no warranties that extend beyond those expressly set forth herein.

Features Overview

- Design to work with strain gage sensors and load cells.
- 0 to 10V voltage output and 0 to 20mA current output available at the same time.
- Peak hold function controlled by an external probe signal.
- LED voltage indicator for easy setup and diagnostic.
- Built-in 1 mega ohm calibration shunt resistor. External shunt resistor interface available as an option.
- Selectable x1 or x10 gain range to work with strong or weak load sensor signal.
- Auto-zero function can be enabled to compensate zeroing errors caused by environmental changes such as temperature, humidity, etc.
- Plug-in connector design for easy wiring and installation.
- DIN rail mount design simplifies systems integration.

The XT-1 tonnage load module is designed for critical force measurement applications where accuracy, extreme stability, and dependable noise rejection is essential.

It is equipped with an LED voltage indicator for easy setup and diagnostic.

The XT-1 is DIN rail mountable and is designed to interface with PLC analog cards and human machine interfaces (HMI).

Specifications

Transducers	Full bridge, 120 to 1000 ohms.
Sensor Excitation	Built in +12VDC at 500mA max.
Balance Range	+/- 1mV/V of sensor imbalance
Gain Ranges	Low range = x100 to x1,100 adjustable High range = x1,000 to x11,000 adjustable
Calibration Shunt	Built-in 1 mega ohm (.1%). External custom shunt optional.
Voltage Output Range	Peak mode = 0 to 10VDC Track mode = -10 to +10VDC
Current Output Range	Peak mode = 0 to 20mA Track mode = -20 to +20mA
Circuit Inaccuracy	+/- .1% of full-scale max.
Circuit Non-linearity	+/- .02% of full-scale max.
Auto Zero	Time constant = 10 seconds. DIP switch enabled.
Frequency Response	DC to 5,000 Hz
Speed Limit	2,000 SPM max.
Operating Temperature	-20 to 70 deg C (-4 to 158 deg F)
Indicator	LED voltage indicator for setup and diagnostic
Peak Hold	Controlled by external probe signal
Probe connection	Accept signal from PLC digital I/O output. 24VDC out to work with solid state or dry contact relay.
Input Power	24VDC at 0.7A max. Automatic resettable fuse.
Dimensions	23.9 mm W x 109.9 mm H x 113.8 mm D
Mounting	Standard DIN rail mount

➢ Installation

Mounting the XT-1

The XT-1 is designed to clip onto standard top hat DIN rail (TH 35-7.5 or TH 35-15).

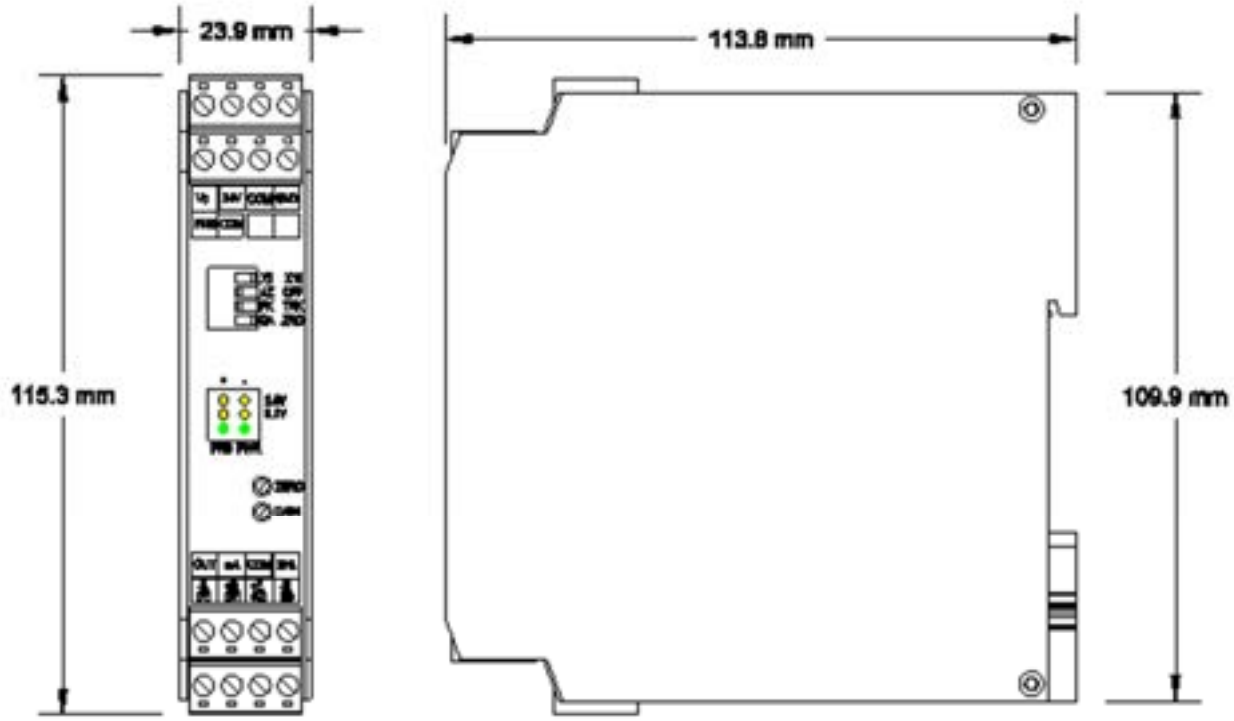


Figure 1: Mounting Dimensions

DC Power Connection

24VDC power is connected to the XT-1 as shown in Figure 2.

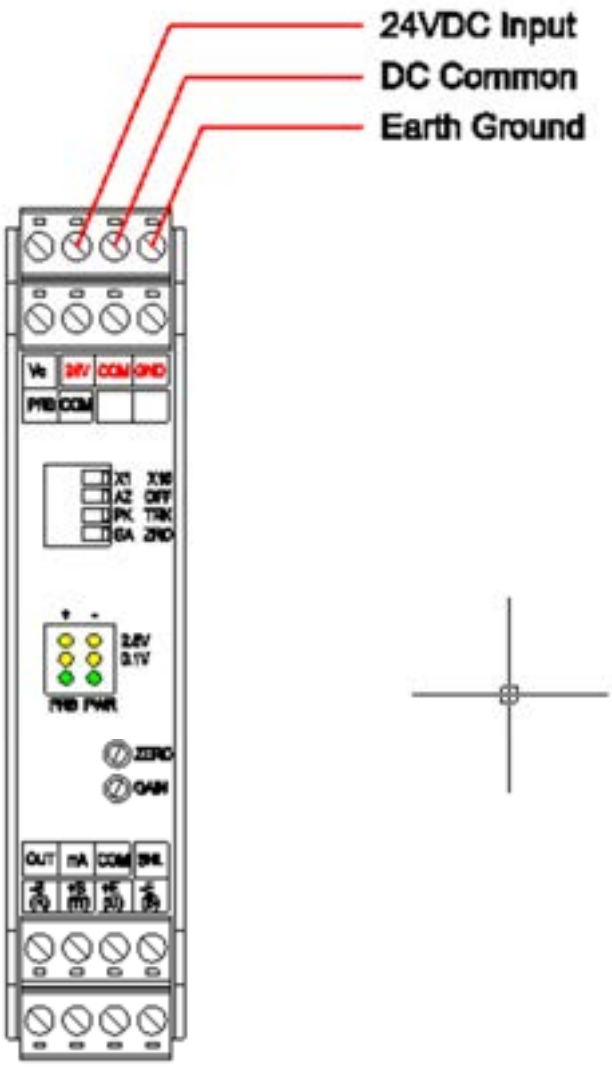


Figure 2: DC Power Wiring

Notes:

1) The 24VDC source can be in range from 18VDC to 32VDC.
2) It is important to connect an Earth Ground to the GND terminal.
3) Do not apply power until all the wirings in this Installation Section are done.

Strain Gage Sensor Connection

Refer to Figure 3 for the procedures below:

1) Prepare the sensor cable for termination as described in Illustration A on page 9.

2) Remove the (2) green plugs from their sockets on the bottom of the unit and wire the sensor cable as described in Illustration B on page 10.

3) The green plugs can then be inserted back into their sockets.

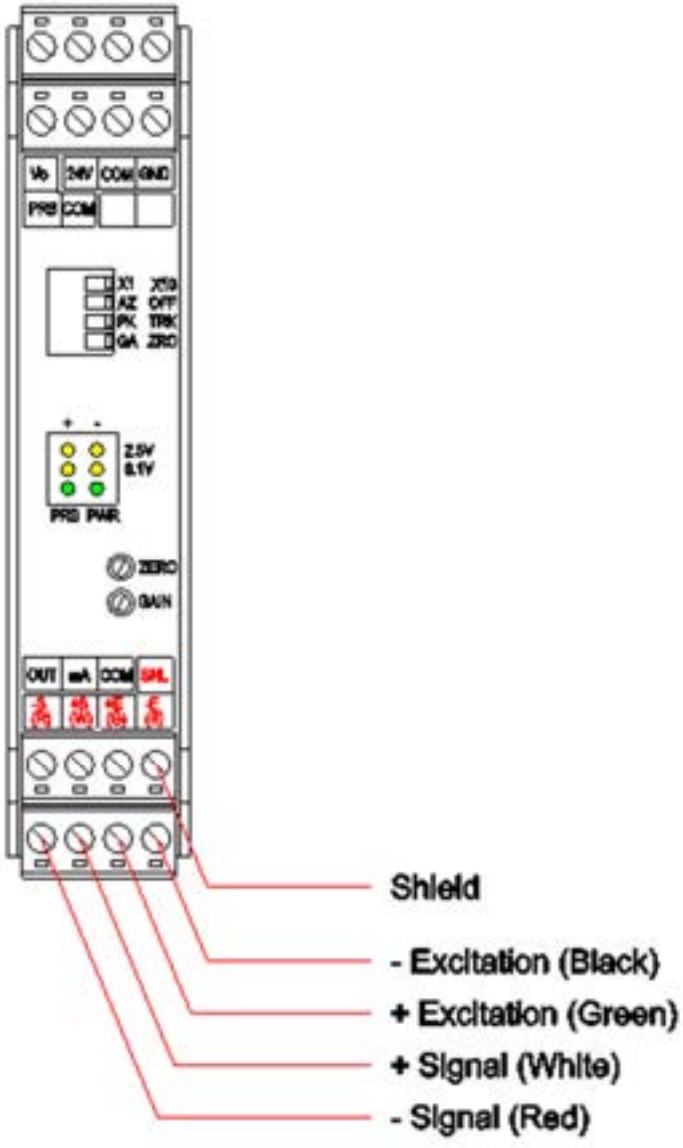


Figure 3: Strain Gage Sensor Input

Illustration A - Sensor Cable Termination

1) Strip the sensor cable as shown in Figure 4 below. Be sure not to nick any of the signal conductors or cut the braid shield.

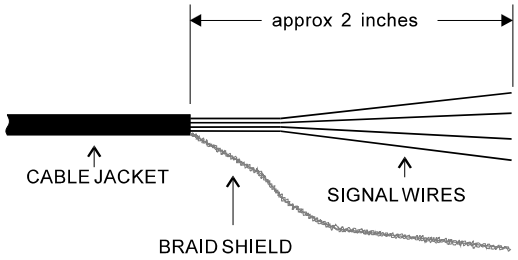


Figure 4: Strain Gage Sensor Cable Stripping

2) Strip approximately ¼" of insulation from each of the four signal conductors.

Note: If your sensor cable is not double shielded with both foil and a braid, electrical noise may affect your output readings.

Illustration B - Sensors Connection

The XT-1 accepts the signals from Toledo Integrated Systems T-400 sensors as well as other strain gage sensors.
Figure **5** illustrates the sensor connections.

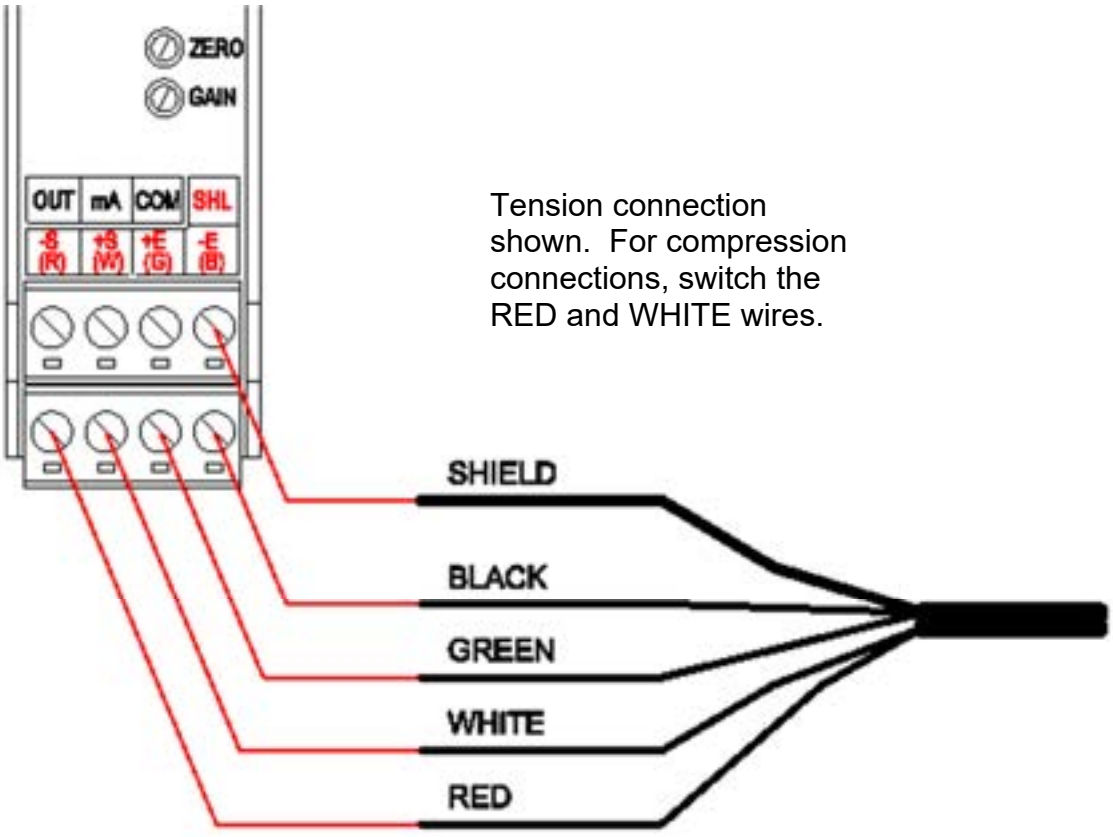


Figure 5: Strain Gage Sensor Wiring

Analog Voltage Output

The analog voltage output is provided on a plug/socket connector for easy access and wiring.

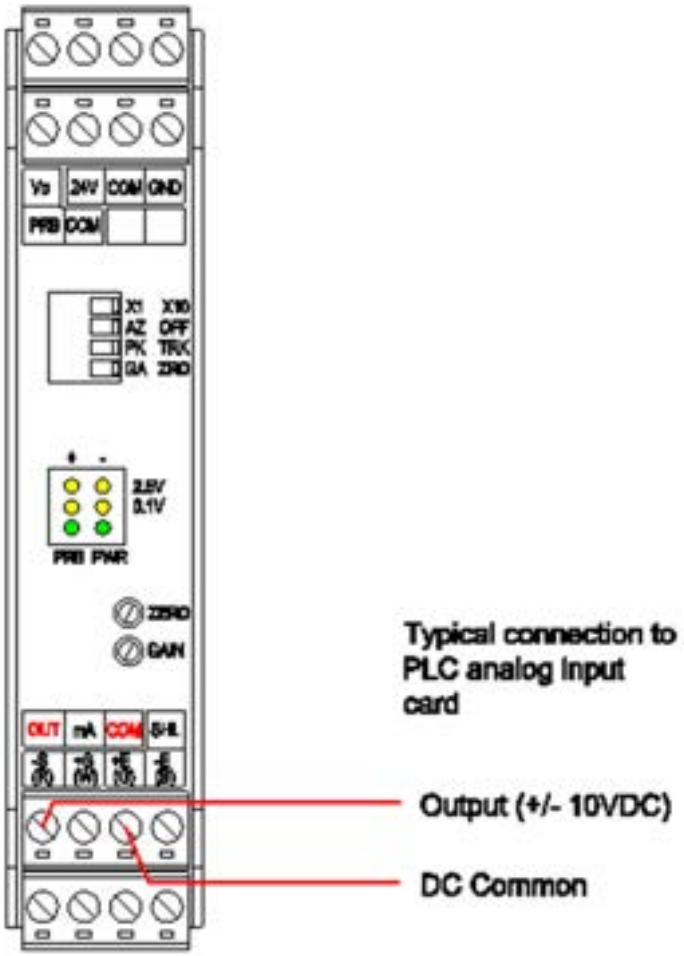


Figure 6: Analog Voltage Output Wiring

Note: OUT terminal outputs either Peak or Track signal, depending on the PK/TRK switch setting on the front panel.

Analog Current Output

The analog current output is provided on a Phoenix connector for easy access and for interfacing with other peripherals.

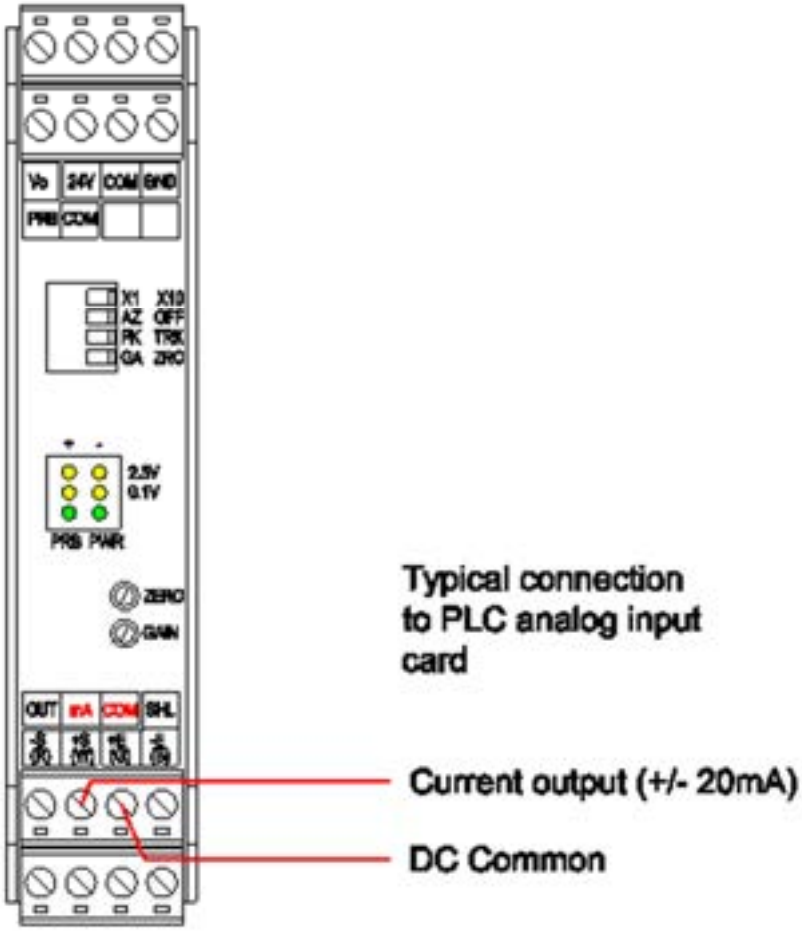


Figure 7: Analog Current Output Wiring

Note: mA terminal outputs either Peak or Track signal, depending on the PK/TRK switch setting on the front panel.

Peak Hold Probe Input

The XT-1 peak hold function is controlled an external probe signal. The probe supply voltage (+24VDC) is provided by the XT-1. The figure below illustrates the typical wiring to a PLC.

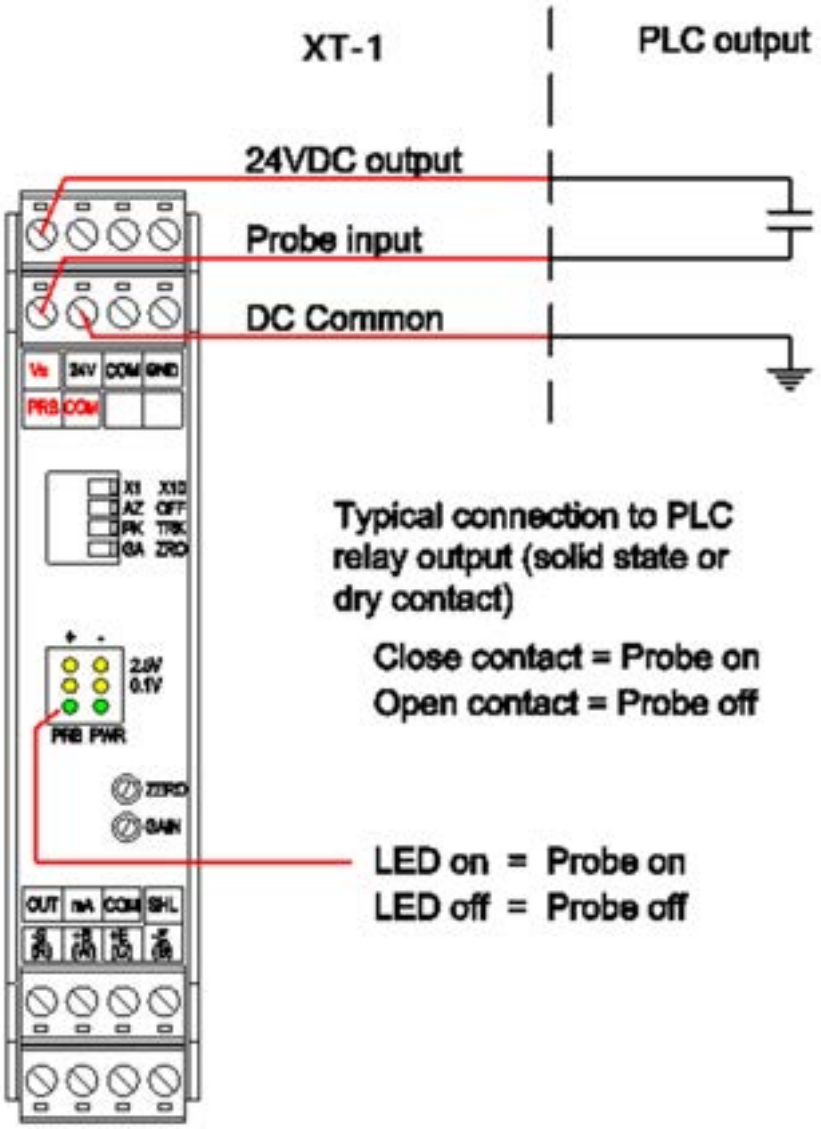


Figure 8: Probe Input Wiring

The probe (PRB) indicator should turn on when the probe turns on and turn off when the probe turns off.

If the front panel Auto-Zero (AZ) switch is enabled, the XT-1 will remain in the auto-zeroing mode of operation until an external probe is applied.

The auto-zero feature is important for accurate readings. Over time the press frame will slightly change in its structure. This may be due to temperature or press frame tension. The XT-1 will compensate for the slight change. It will readjust the zero base line. This zero base line is the no-load value of the press. With a consistent zero value, the tonnage output readings should remain accurate.

When the probe turns on, the XT-1 opens the window to read a load signal. In peak mode the load level rises to the highest value.

When the probe turns off, the peak is reset back to the zero level and the auto-zeroing function is resumed (Notice the dotted line below).

The timing of the probe should be such that it turns on just before the machine begins generating a load (140°) and remains on until the load is removed (240°).

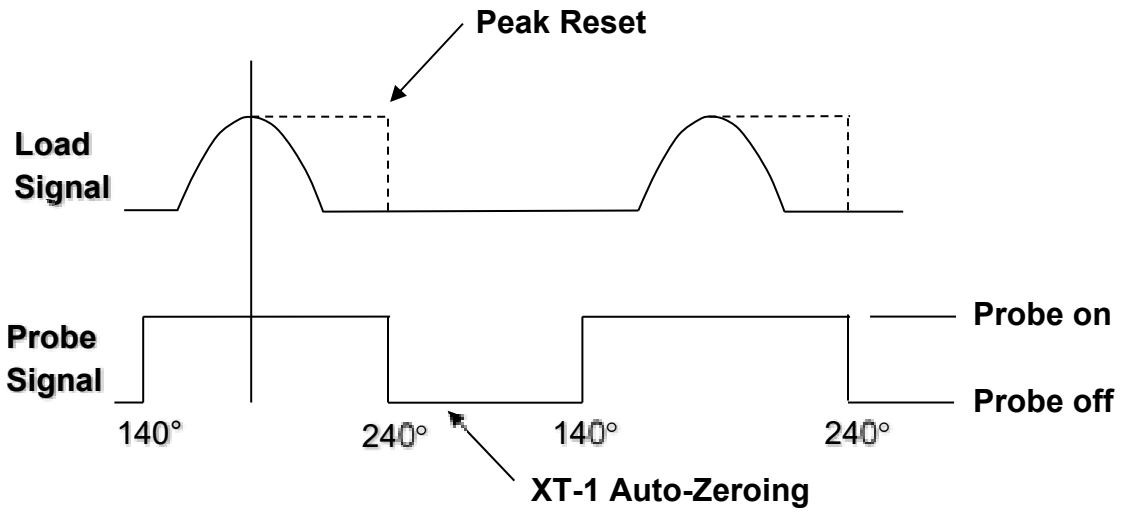
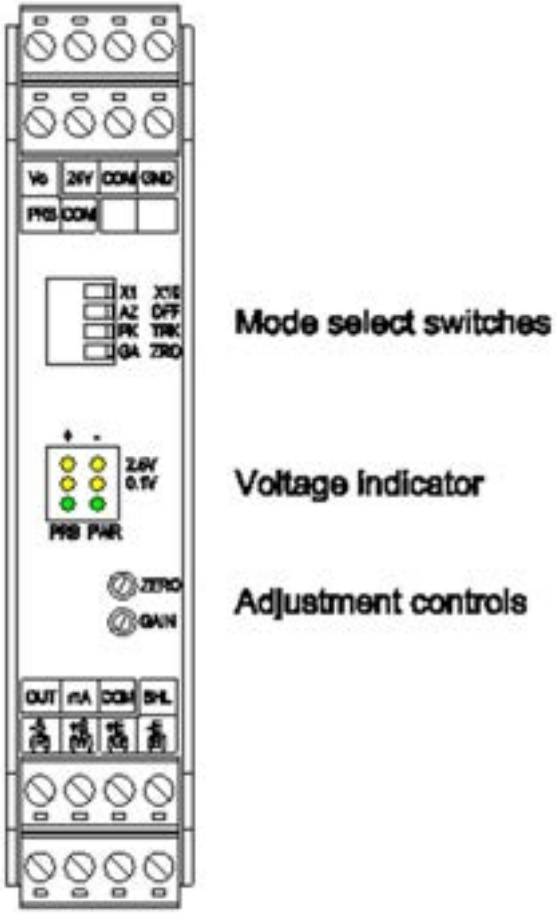


Figure 9: Probe Timing Diagram

➢ Calibration

Refer to the diagram below for control locations.



1) With the sensor placed in the best possible location, (see appendix A), torque the sensor down to 150 in-lbs on the sensor bolts. Do not put the sensor enclosure cover on yet. You will need to test the sensor location.

2) Find the shut height of the press.

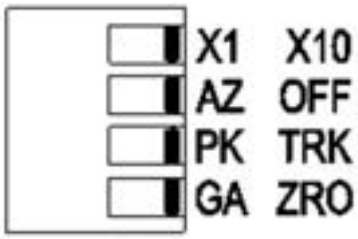
   - Jog the press until the ram is at bottom dead center (BDC) or 180º without the load cell or die in the press.

   - Determine the amount of spacers needed with your load cell. Cycle the press without the load cell to insure correct height.

3) Place the load cell in the correct position in the press.

- The load cell should be placed so that it is centered in the press.
- Cycle the press without hitting the load cell first.
- Place cardboard on the top and bottom of the load cell.

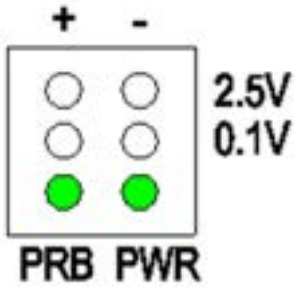
4) Toggle the mode select switches to X10, AZ OFF, TRACK, ZERO.



5) Balance the tonnage sensor.

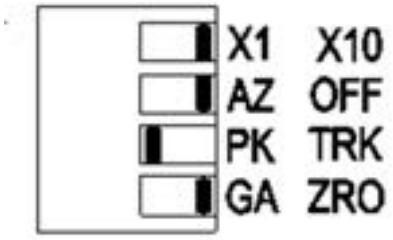
- Adjust the ZERO pot until the yellow voltage LEDs are all turned off. This indicates a balanced or zeroed state.

  Note: Using the built-in bar-graph voltmeter for calibration will achieve calibration accuracy of +/-1% of capacity. If more accurate result is needed, use a digital voltmeter to measure the voltage across the OUT and COM terminals (see Figure 10).



6) Cycle the press.

- Set the mode switches to X10, AZ OFF, PEAK, and ZERO.



- Further adjust the shut height so that the press impacts the load cell and generates a load at 100% of press capacity. See warning below.

WARNING

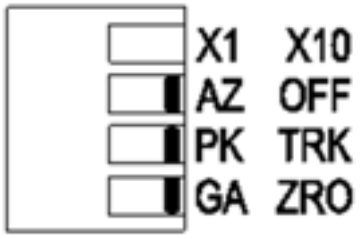
Depending on the press capacity and the size of the load cells being used, loading the press at capacity with load cells could indent the ram or bolster. If this is a concern, you may choose to calibrate the press only up to 80% of capacity.

7) Adjust the gain.

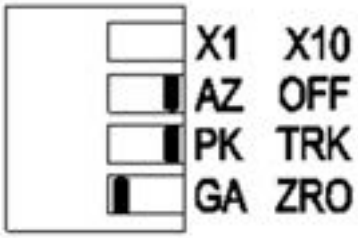
- Run the press for 2 cycles at capacity.
- Compare the PLC HMI load reading with the load cell reading.
- Adjust the GAIN pot.
- Repeat Step 7 until the PLC HMI reading matches with the load cell reading.
- If less gain is needed, change the Gain switch to X1, then repeat from Step 4.

8) Record the Calibration Gain Voltage.

- Set the mode switches to AZ OFF, TRACK, and ZERO as shown, and verify that the sensor is at zero.



- Set the GA/ZRO switch to GAIN and use a digital voltmeter to measure the voltage across the OUT and COM terminals. Record this value as the Calibration Gain Voltage.



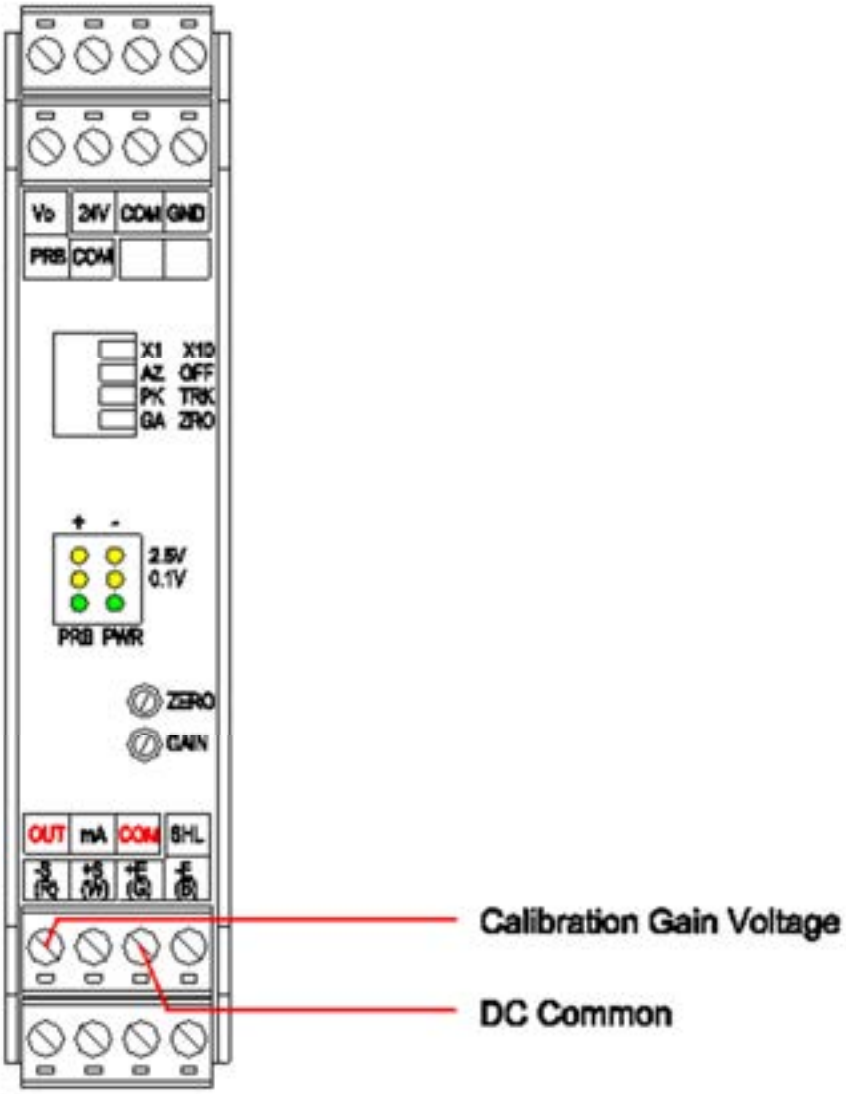
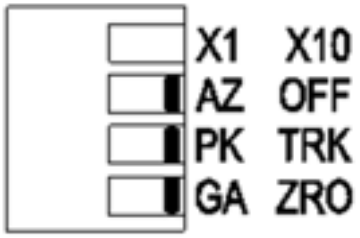


Figure 10: Calibration Gain Voltage Measurement

9) Calibration complete.

- Fill in the Calibration Card (a sample shown below) which is located in the side pocket.
- Set mode switches as shown.



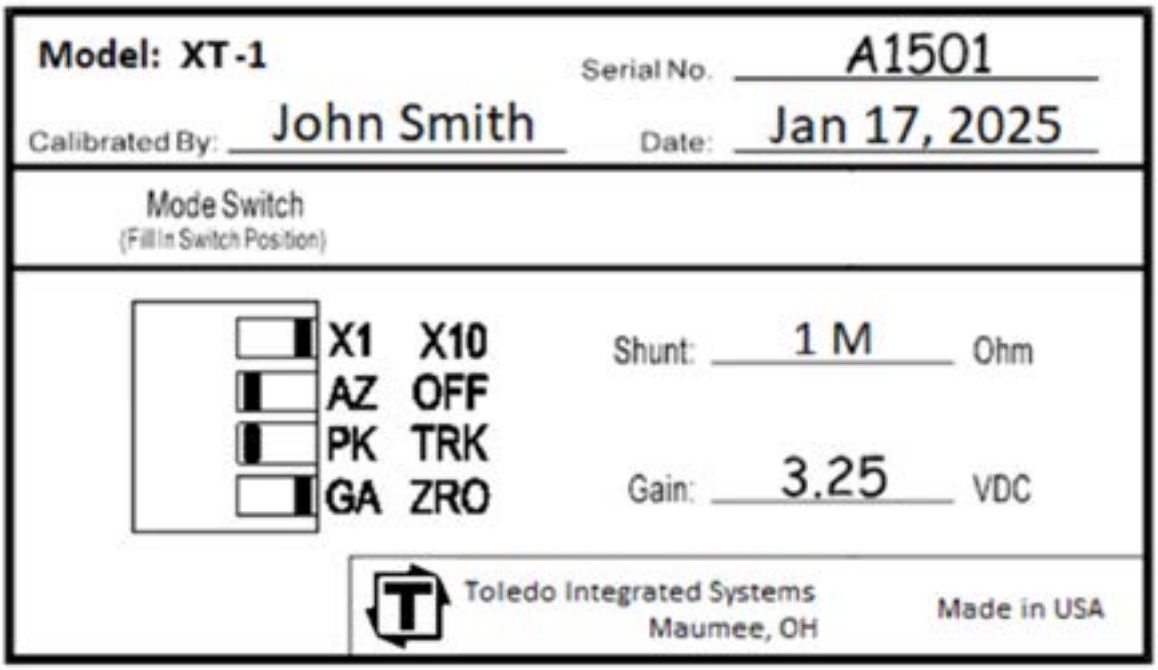


Figure 11: Calibration Card Sample

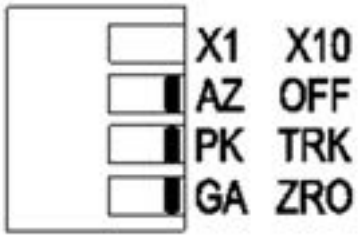
➢ Operation

Once the XT-1 has been calibrated, it is ready for continuous use. This section details the setup for Peak Mode and Track Mode operations.

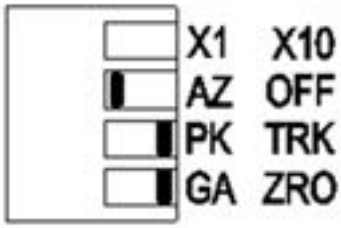
I) Peak Mode operation

In Peak Mode, the output will increase to the highest load level and remain at that voltage when the probe on.

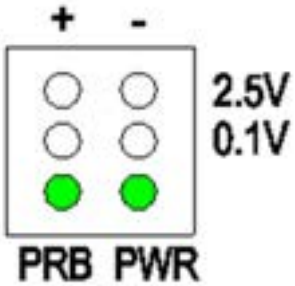
1) Set the Mode Select Switches to AZ OFF, PRB OFF, TRK, and ZRO as shown above.



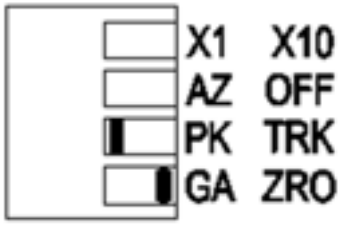
2) Skip this step if Auto-Zero is not needed.
   a) Toggle the AZ/OFF switch to AZ to start Auto-Zero.



   b) When Auto-Zero is done, all the yellow LEDs are turned off.



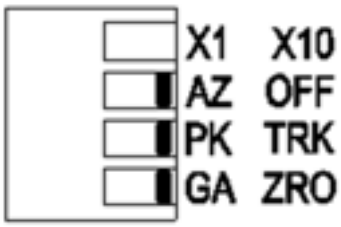
3) Set the PK/TRK switch to PEAK. Peak mode operation is now ready.



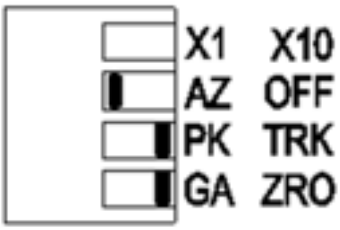
II) Track Mode operation

In Track Mode, output will follow the loading on the sensor as the load on the machine increases and decreases.

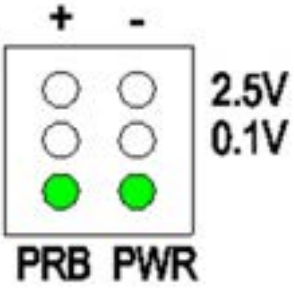
1) Set the Mode Select Switches to AZ OFF, TRK, and ZRO as shown below.
   If Auto-Zero is not needed, it is done. Skip the following steps.



2) If Auto-Zero is needed, then
   a) Toggle the AZ/OFF switch to AZ to start Auto-Zero.



   b) When Auto-Zero is done, all the yellow LEDs are turned off.



3) Use the probe to turn on and off the Auto Zero. Track mode operation is now ready.

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Appendix

A) Sensor Installation (Doc# 11080)
B) Calibration Sheets (2) (Form# 1224)

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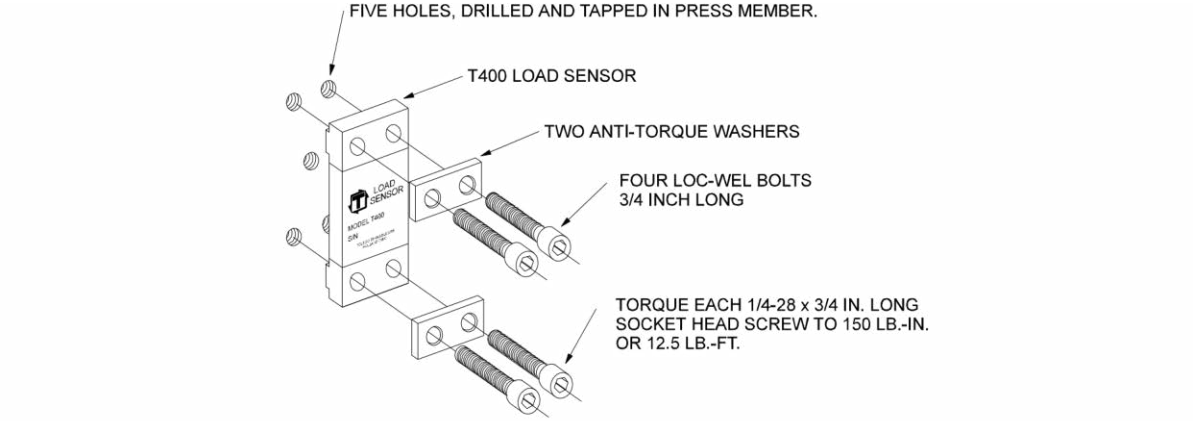
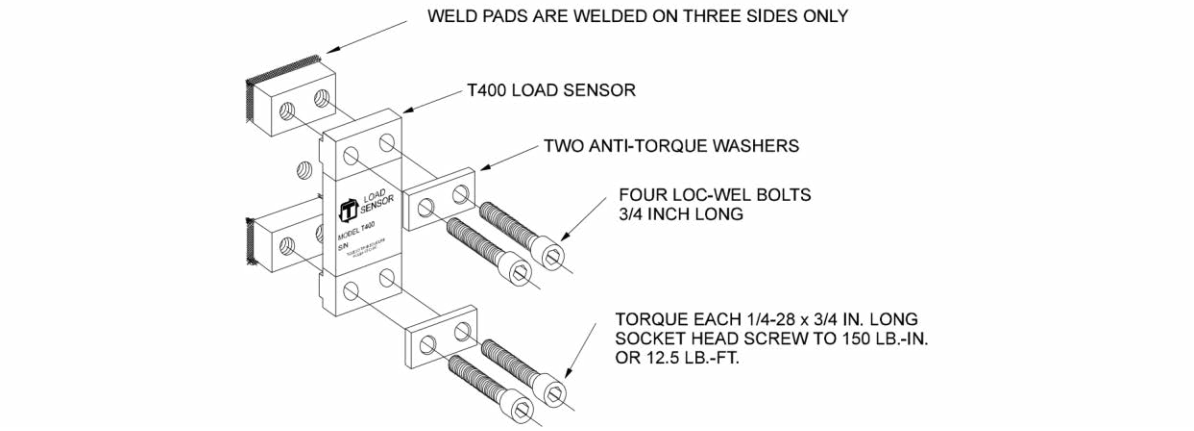
Appendix A

Sensor Installation (Doc# 11080)

INSTALLING T400 LOAD SENSORS





The above illustrations represent the proper arrangement of Model T400 Load Sensor kit parts using either the Drill and Tap method or the Weld method.

A proper installation is necessary to produce good results.

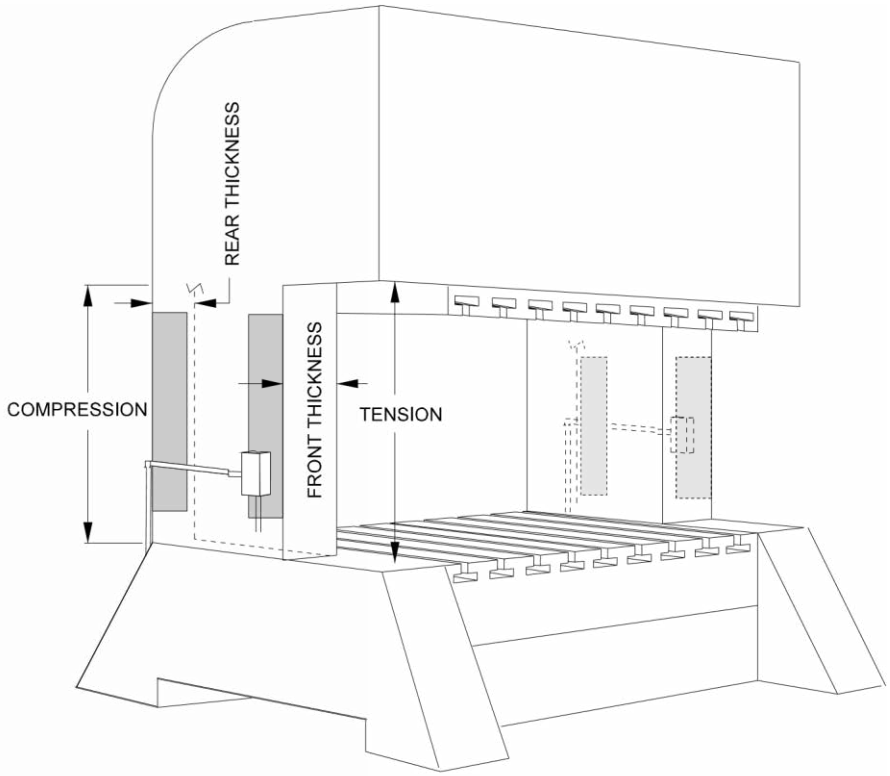
Before installing the sensors, please read the appropriate instructions listed below.

NOTES:

1) (2) SENSORS REQUIRED
2) (2) SENSOR ENCLOSURES ARE INCLUDED. THESE HELP PROTECT THE T400 SENSOR GAUGES. THESE ENCLOSURES INCLUDE 1/2" KNOCK-OUT HOLES. IF CONDUIT IS USED, WE SUGGEST USING 1/2" STRAIN RELIEFS IN THE KNOCK-OUT HOLES.

SENSOR PLACEMENT

Sensor location must be determined. You have two locations. The front or the rear of the press. (Shown in the shaded area.)



HOW TO DETERMINE THE BEST LOCATION

* MEASURE THE REAR THICKNESS

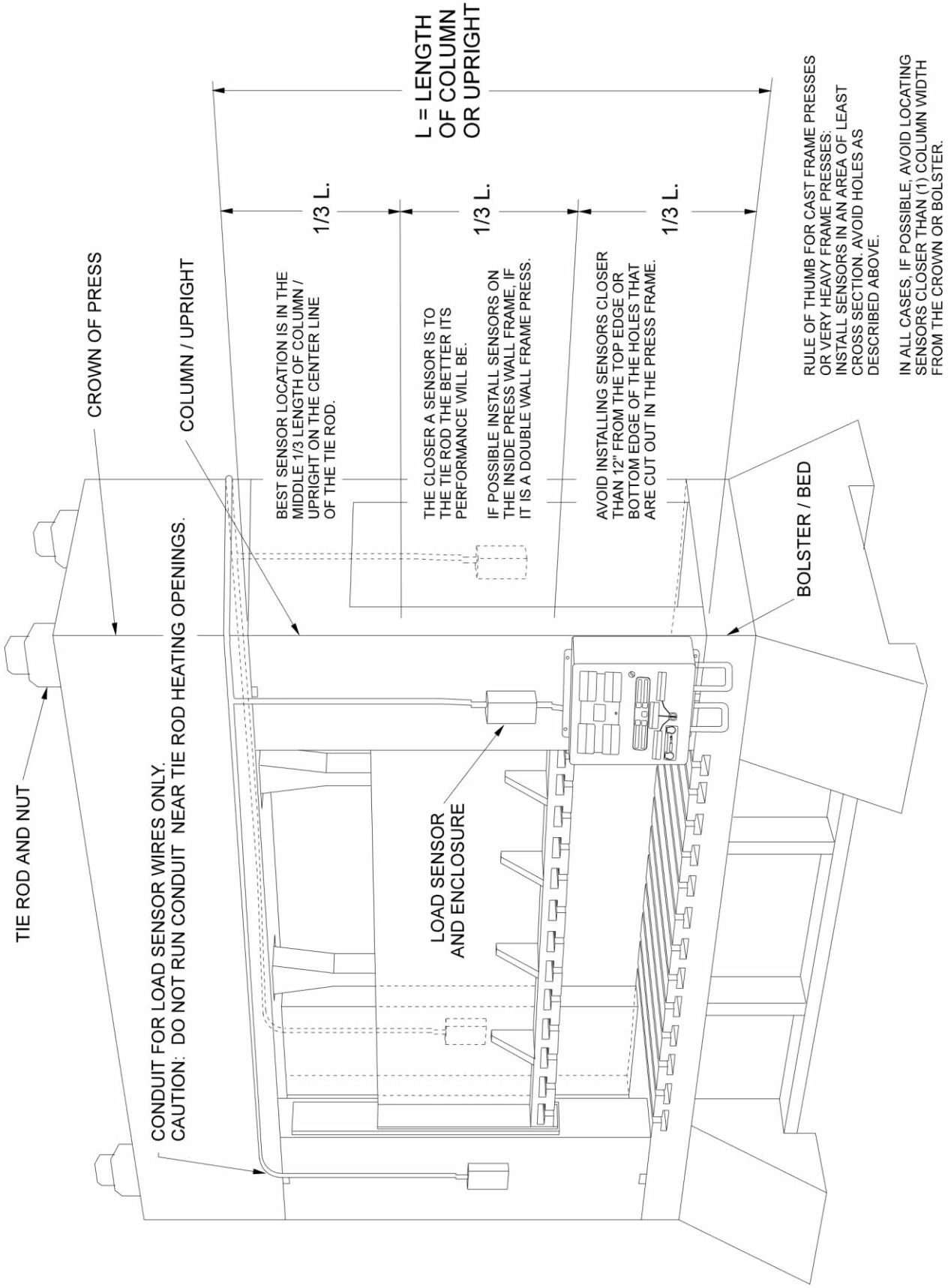
_____REAR

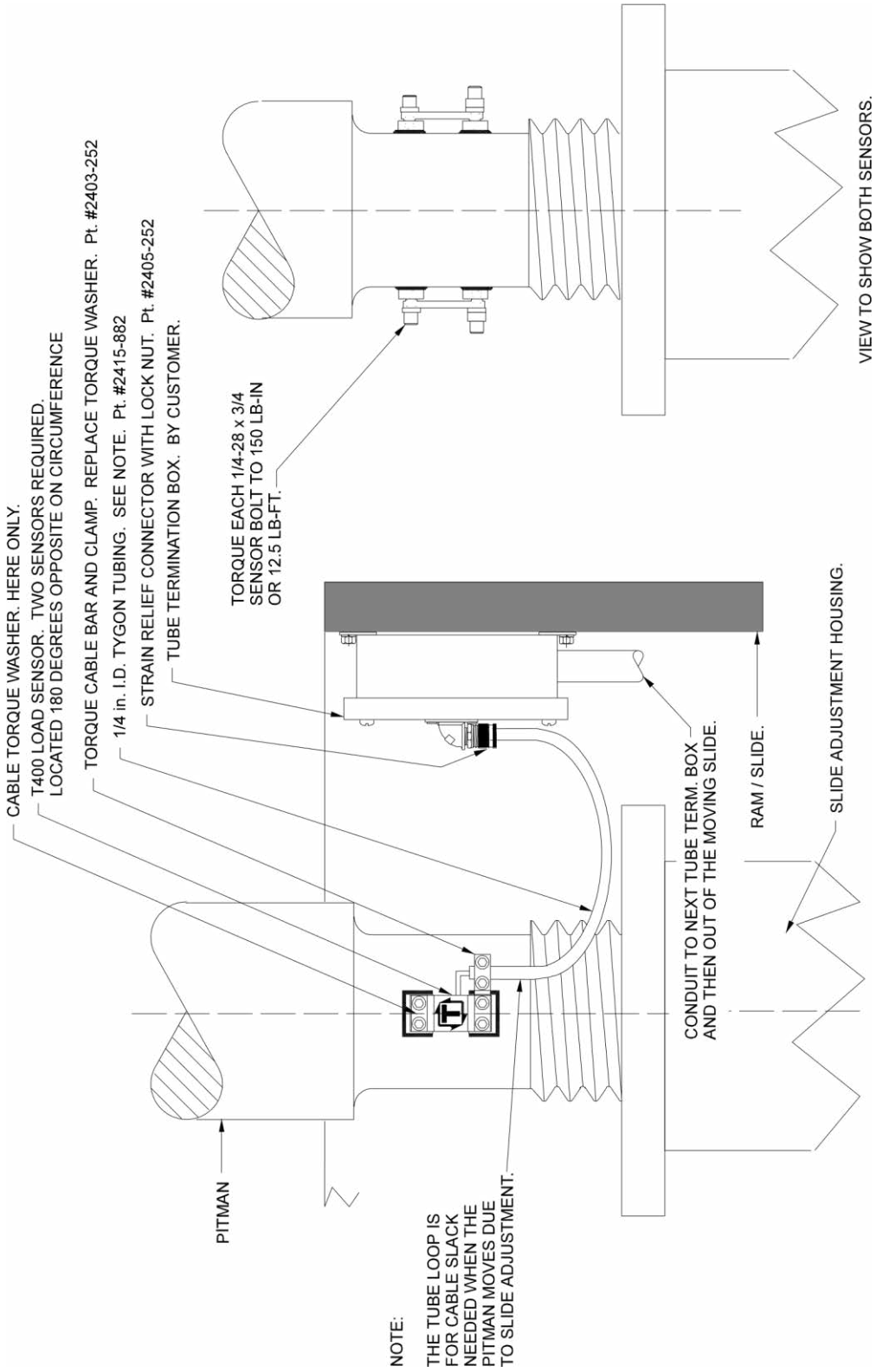
* MULTIPLY BY THREE X 3 = ☐

* MEASURE THE FRONT THICKNESS

_____FRONT

If the front thickness is smaller than value in ☐, then mount sensors in the front. (This is the most common.) If the front thickness is larger, then place the sensor in the rear. Adjust the input connection for compression readings instead of tension.

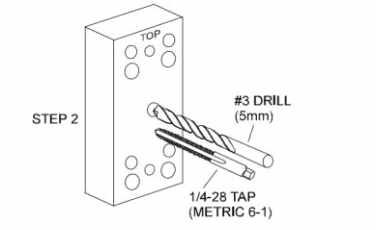

L = LENGTH
OF COLUMN
OR UPRIGHT
1/3 L.
1/3 L.
1/3 L.
CROWN OF PRESS
COLUMN / UPRIGHT
BEST SENSOR LOCATION IS IN THE MIDDLE 1/3 LENGTH OF COLUMN / UPRIGHT ON THE CENTER LINE OF THE TIE ROD.
THE CLOSER A SENSOR IS TO THE TIE ROD THE BETTER ITS PERFORMANCE WILL BE.
IF POSSIBLE INSTALL SENSORS ON THE INSIDE PRESS WALL FRAME, IF IT IS A DOUBLE WALL FRAME PRESS.
AVOID INSTALLING SENSORS CLOSER THAN 12" FROM THE TOP EDGE OR BOTTOM EDGE OF THE HOLES THAT ARE CUT OUT IN THE PRESS FRAME.
RULE OF THUMB FOR CAST FRAME PRESSES OR VERY HEAVY FRAME PRESSES: INSTALL SENSORS IN AN AREA OF LEAST CROSS SECTION. AVOID HOLES AS DESCRIBED ABOVE.
IN ALL CASES, IF POSSIBLE, AVOID LOCATING SENSORS CLOSER THAN (1) COLUMN WIDTH FROM THE CROWN OR BOLSTER.
BOLSTER / BED
TIE ROD AND NUT
CONDUIT FOR LOAD SENSOR WIRES ONLY.
CAUTION: DO NOT RUN CONDUIT NEAR TIE ROD HEATING OPENINGS.
LOAD SENSOR
AND ENCLOSURE


CABLE TORQUE WASHER. HERE ONLY.
T400 LOAD SENSOR. TWO SENSORS REQUIRED.
LOCATED 180 DEGREES OPPOSITE ON CIRCUMFERENCE
TORQUE CABLE BAR AND CLAMP. REPLACE TORQUE WASHER. Pt. #2403-252
1/4 in. I.D. TYGON TUBING. SEE NOTE. Pt. #2415-882
STRAIN RELIEF CONNECTOR WITH LOCK NUT. Pt. #2405-252
TUBE TERMINATION BOX. BY CUSTOMER.
TORQUE EACH 1/4-28 x 3/4
SENSOR BOLT TO 150 LB-IN
OR 12.5 LB-FT.
VIEW TO SHOW BOTH SENSORS.
SLIDE ADJUSTMENT HOUSING.
RAM / SLIDE.
CONDUIT TO NEXT TUBE TERM. BOX
AND THEN OUT OF THE MOVING SLIDE.
PITMAN
NOTE:
THE TUBE LOOP IS
FOR CABLE SLACK
NEEDED WHEN THE
PITMAN MOVES DUE
TO SLIDE ADJUSTMENT.

USING THE T400 SENSOR INSTALLATION FIXTURE KIT No. 1977-749 (METRIC INSTALLATION FIXTURE KIT No. 1974-749)

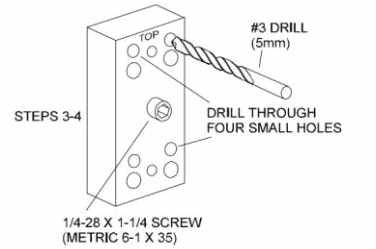
DRILL AND TAP METHOD FOR MOUNTING SENSORS

BE SURE THE SENSOR LOCATION FOLLOWS THE BEST LOCATION DESCRIBED ON THE PREVIOUS PAGES.



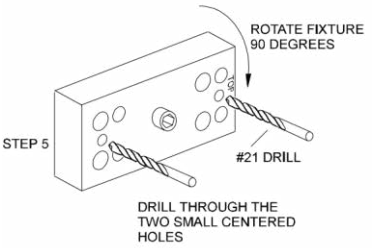
STEP 1 Remove all paint and grease from sensor mount area. If the machine surface is flat (total indicated reading of .002" and s ooth 12 in. the load sensor can be bolted directly to the surface.

STEP 2 Drill and tap the center hole for mounting the fixture to the press member. This hole should be ½ inch (13mm) deep.



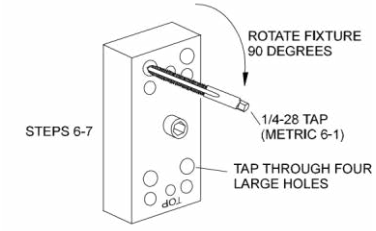
STEP 3 Bolt the fixture to the press member using the ¼-28 by 1-¼ inch (M6-1 x 35) long socket head cap screw in the center of the fixture.

STEP 4 Insert the number 3 drill (5mm) into the smaller corner hole and drill out all four holes to a depth of ¾ of an inch (19mm.)



STEP 5 Loosen the fixture. Rotate the fixture 90 degrees clockwise. Tighten the center screw of the fixture. Insert the number 21 drill into the small centered hole and drill out both holes to a depth of 3/8 of an inch. These holes are for mounting the sensor enclosure. The fixture does not allow for tapping these holes. They are tapped without the fixture. Enclosure mounting is not done in metric.

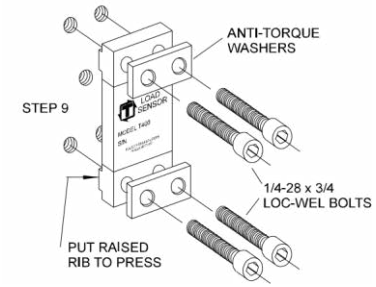
STEP 6 Loosen the fixture. Rotate the fixture another 90 degrees clockwise such that the larger corner holes line up with the holes drilled in Step 4. Insert a tap to be sure the holes line up. Lock the fixture in place by tightening the center screw.



STEP 7 Insert the tap into the larger tap guide holes and tap each hole.

BE SURE TO USE PLENTY OF TAPPING FLUID.

STEP 8 Remove the fixture and repeat Steps 1-7 for each additional sensor mounting position.

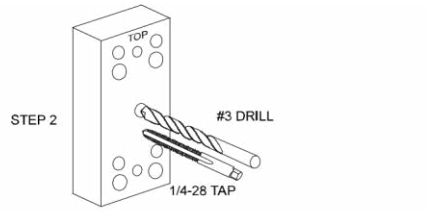


STEP 9 Mount the sensor with the raised rib to the press. The anti-torque washers should go between the screw and the sensor body. Torque each ¼-28 x ¾ in. long socket head cap screw to 150 LB.-IN or 12.5 LB.-FT.

USING THE T400 SENSOR
INSTALLATION FIXTURE KIT No. 1977-749

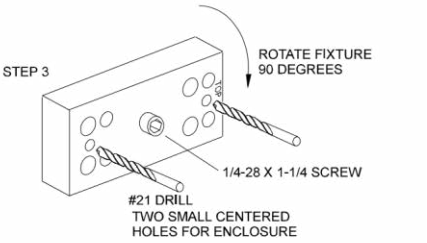
WELD PAD METHOD FOR MOUNTING SENSORS

BE SURE THE SENSOR LOCATION FOLLOWS THE BEST LOCATION DESCRIBED ON THE PREVIOUS PAGES.

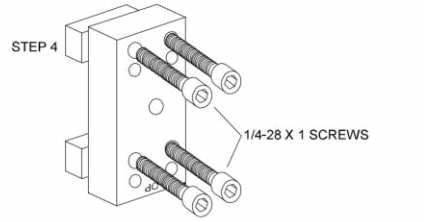


STEP 1 Remove all paint, grease, and or rust from surface to be welded. (Surface should be flat T.I.R. 1/32 of an inch.)

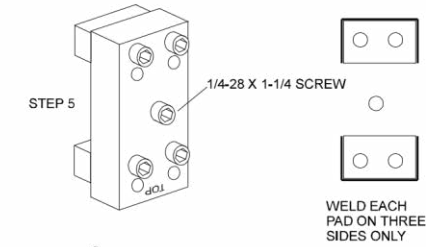
STEP 2 Drill and tap the center hole for mounting the fixture to the press member. This hole should be ½ inch deep. (Optional)



STEP 3 Bolt the fixture to the press member using the ¼-28 by 1-¼ inch long socket head cap screw in the center of the fixture. Orient the fixture as shown and drill out the #21 holes to a depth of 3/8 of an inch for the enclosure mounting. The fixture is not used for tapping these holes. (Optional)

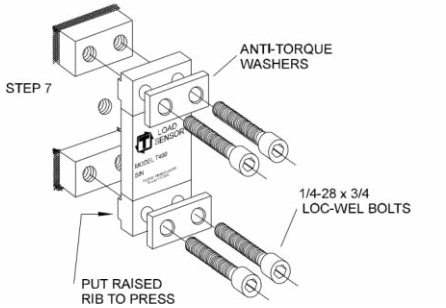


STEP 4 Remove the fixture from the press member. Bolt the weld pads to the fixture with ¼-28 by 1 inch long socket head cap screws provided. Reattach the fixture with the weld pads bolted on using the center hole as in Step 3. Orient the fixture as shown.



STEP 5 Weld the weld pads to the press member. (BE SURE TO ONLY WELD THE WELD PADS ON THREE SIDES AS SHOWN.) A single pass is sufficient. Do not remove the fixture until slag is removed and or assembly has cooled. When welding cast iron, use a dry nickel rod such as: Lincoln Electric "Soft Weld", Hobart "NI Cast 99", or MB Weld Prod. "MG 210. Strike arc on steel then puddle into the cast iron.

STEP 6 Remove the weld fixture. <u>DO NOT WELD AFTER FIXTURE IS REMOVED.</u> The 4 screws holding the pads to the fixture and the 1 center screw may be discarded. <u>DO NOT USE THE FOUR 1 INCH LONG SCREWS TO ASSEMBLE SENSOR.</u> The sensor kit contains four ¾ inch long screws for assembling the sensor to the press member. Weld pad surface must be clean – no weld bumps, scratches, etc. Be sure the weld pad tapped holes are clean and bottom of holes are free of weld flash.

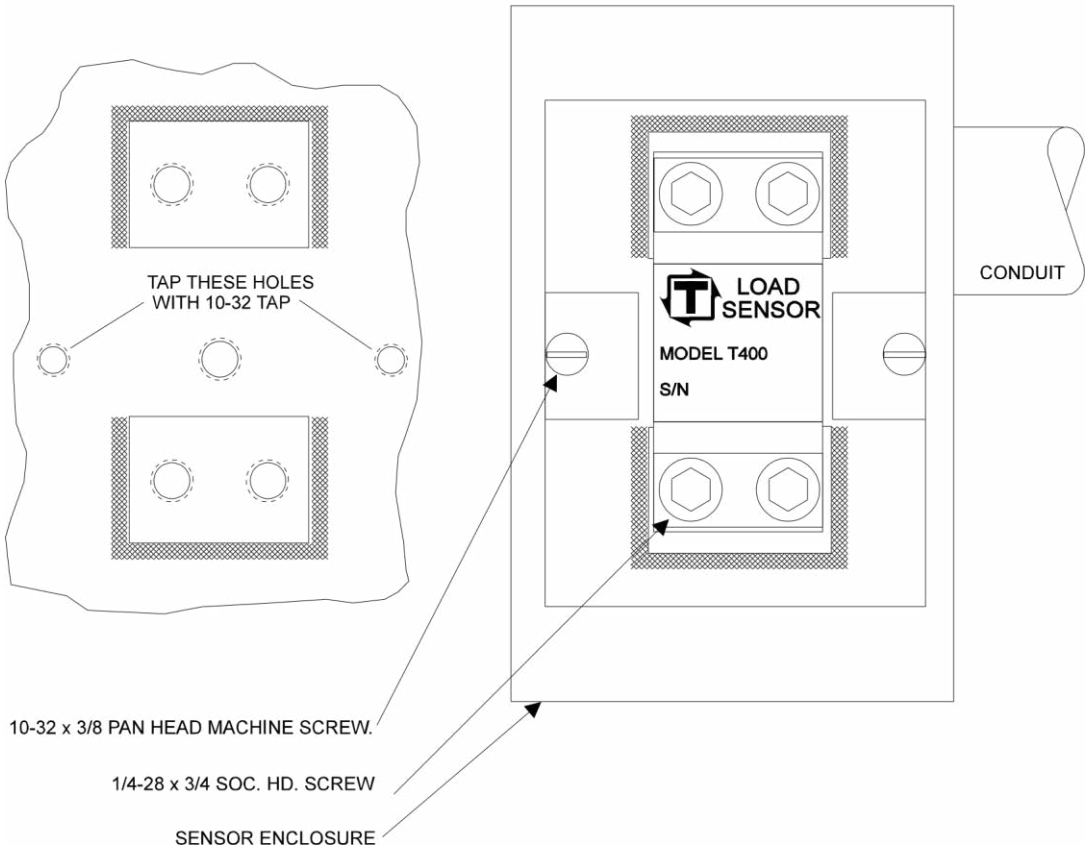


STEP 7 Mount the sensor with the raised rib to the press. The anti-torque washers should go between the screw and the sensor body. Torque each ¼-28 x ¾ in. long socket head screw to 150 LB.-IN or 12.5 LB.-FT.

SENSOR ENCLOSURE MOUNTING

USE 10-32 TAP IN THE TWO 3/8 DEEP HOLES THAT WERE DRILLED WITH THE FIXTURE IN THE PREVIOUS INSTRUCTIONS. MOUNT THE ENCLOSURE TO THE PRESS MEMBER AND RUN 1/2 INCH CONDUIT TO THE LOAD MONITOR ENCLOSURE.

RUN SENSOR CABLE THROUGH CONDUIT. PLACE SENSOR ON MOUNTING HOLES. PLACE ANTI-TORQUE WASHERS OVER SENSOR HOLES. SCREW IN SENSORS BOLTS, (4) EACH, FINGER TIGHT. USE ONLY THE 1/4-28 x 3/4 "LOC-WEL" BOLTS THAT ARE IN THE SENSOR PACKAGE. TORQUE EACH 1/4-28 x 3/4 SCREW TO 150 LB.-IN. OR 12.5LB.-FT. ASSEMBLE BOX COVER.



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Appendix B

Calibration Sheets (2) (Form# 1224)

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TOLEDO TRANSDUCERS, INC **PRESS CALIBRATION TEST DATA** MAUMEE, OHIO U.S.A.

COMPANY: _____ **DATE:** _____

PRESS SERIAL No: _____

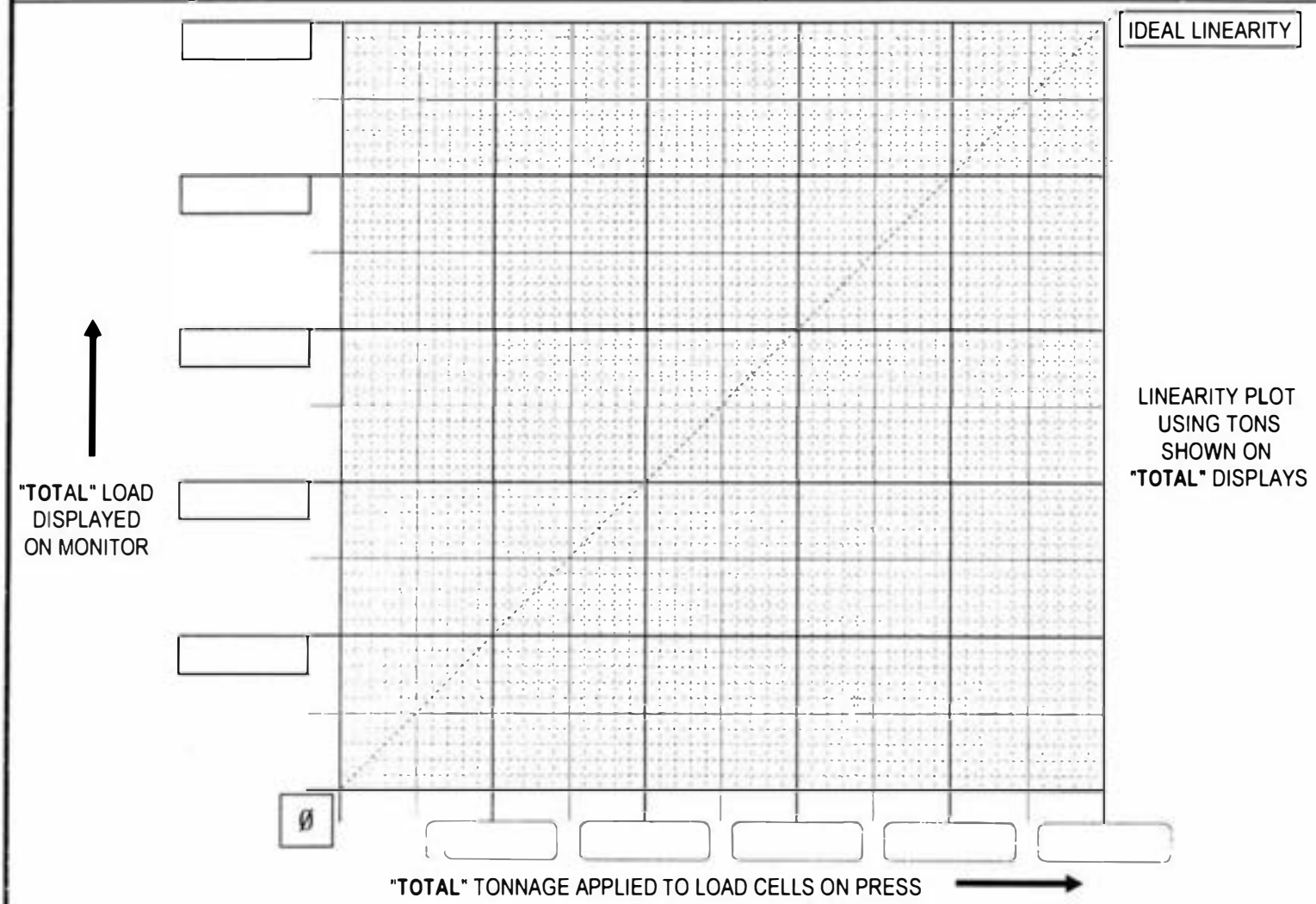
PRESS (Type and & No.): _____

CONTACT: _____ **PRESS CAPACITY:** _____

PHONE: (____) _____ **LOAD MONITOR MODEL:** _____

SERVICE ORDER #: _____ **MONITOR SERIAL No.** _____

SLIDE-ADJUST INDICATOR	TONNAGE APPLIED TO **LOAD CELLS** ON PRESS				TONNAGE DISPLAYED ON **LOAD MONITOR**			
	LR	TOTAL		RR	LR	TOTAL		RR
	LF			RF	LF			RF
	LR	TOTAL		RR	LR	TOTAL		RR
	LF			RF	LF			RF
	LR	TOTAL		RR	LR	TOTAL		RR
	LF			RF	LF			RF
	LR	TOTAL		RR	LR	TOTAL		RR
	LF			RF	LF			RF



DRAW IN :

- CHANNEL NUMBER
- SENSOR LOCATION
- MONITOR LOCATION
- LOAD CELL LOCATION
- DIRECTION OF MATL. FLOW

SHUNT RESISTORS:

ONE MEG ? YES ___ NO ___

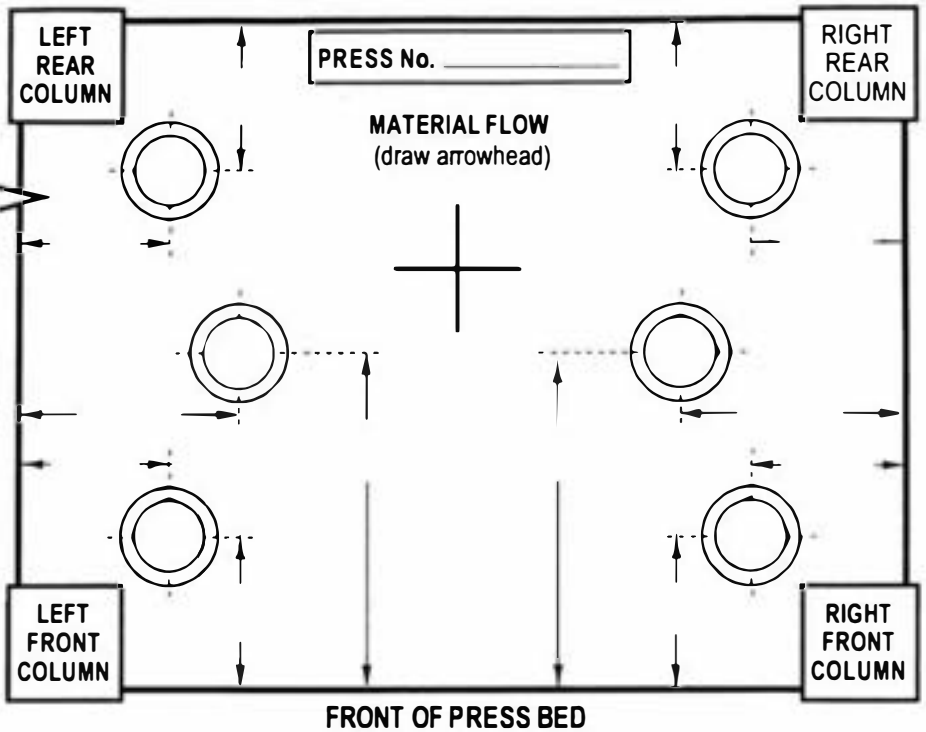
OTHER RESISTORS:

CHAN. 1 _____

CHAN. 2 _____

CHAN. 3 _____

CHAN. 4 _____



FRONT OF PRESS BED

TYPE OF LOAD CELLS: _____ **TYPE OF LOAD CELL READOUT:** _____

TONNAGE SENSORS

SENSOR NUMBER	SERIAL NO.	CAL. NO.	X 10	LOCATION (LF, RF, LR, RR)
1				
2				
3				
4				

CALIBRATION LOAD CELLS

CELL NUMBER	CAPACITY TONS	SERIAL NO.	CAL. NO.
1			
2			
3			
4			

CCM TYPE: _____ **CCM OFFSET:** _____ **STI REFERENCE NUMBER:** LOW: _____ HIGH: _____

STI DEGREES IN CHANNEL No. 1: _____

TRIGGERED FROM PROBE ? YES ___ NO ___ (Show threshold value if not triggered from probe): _____

TRIPPED ALARM RELAY STOPS PRESS ? YES ___ NO ___ EXPLAIN: _____

ALL STICKERS AND DOCUMENTS FILLED OUT ? YES ___ NO ___ **IF NOT, EXPLAIN WHY:** _____

TFP No.: HIGH 2 ___ LOW 2 ___ HIGH 4 ___ LOW 4 ___ HIGH 6 ___ LOW 6 ___ HIGH 8 ___ LOW 8 ___

COMMENTS: _____

TESTS MADE BY: _____ **TESTS ACCEPTED BY:** _____ **DATE:** _____

MAIL ADDRESS:

TOLEDO TRANSDUCERS, INC.
1345 FORD STREET
MAUMEE, OHIO 4353 7

SHIPPING ADDRESS:

TOLEDO TRANSDUCERS, INC.
1345 FORD STREET
MAUMEE, OHIO 43537

PHONE: 1 (419) 867-4170
FAX: 1 (419) 867-4180

TOLEDO TRANSDUCERS, INC **PRESS CALIBRATION TEST DATA** MAUMEE, OHIO U.S.A.

COMPANY: _____ **DATE:** _____

PRESS SERIAL No: _____

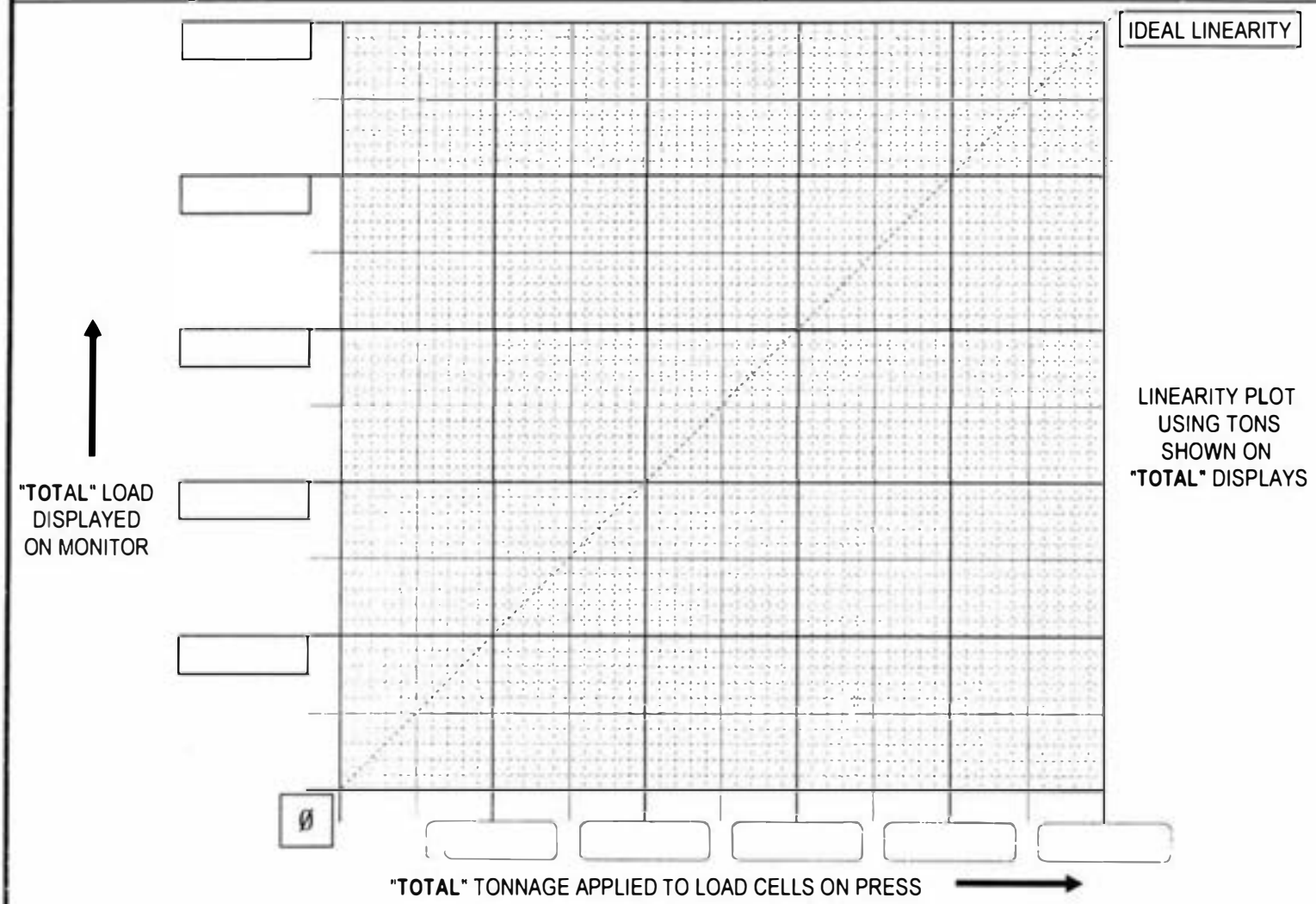
PRESS (Type and & No.): _____

CONTACT: _____ **PRESS CAPACITY:** _____

PHONE: (____) _____ **LOAD MONITOR MODEL:** _____

SERVICE ORDER #: _____ **MONITOR SERIAL No.** _____

SLIDE-ADJUST INDICATOR	TONNAGE APPLIED TO **LOAD CELLS** ON PRESS				TONNAGE DISPLAYED ON **LOAD MONITOR**			
	LR	TOTAL		RR	LR	TOTAL		RR
	LF			RF	LF			RF
	LR	TOTAL		RR	LR	TOTAL		RR
	LF			RF	LF			RF
	LR	TOTAL		RR	LR	TOTAL		RR
	LF			RF	LF			RF
	LR	TOTAL		RR	LR	TOTAL		RR
	LF			RF	LF			RF



DRAW IN :

- CHANNEL NUMBER
- SENSOR LOCATION
- MONITOR LOCATION
- LOAD CELL LOCATION
- DIRECTION OF MATL. FLOW

SHUNT RESISTORS:

ONE MEG ? YES ___ NO ___

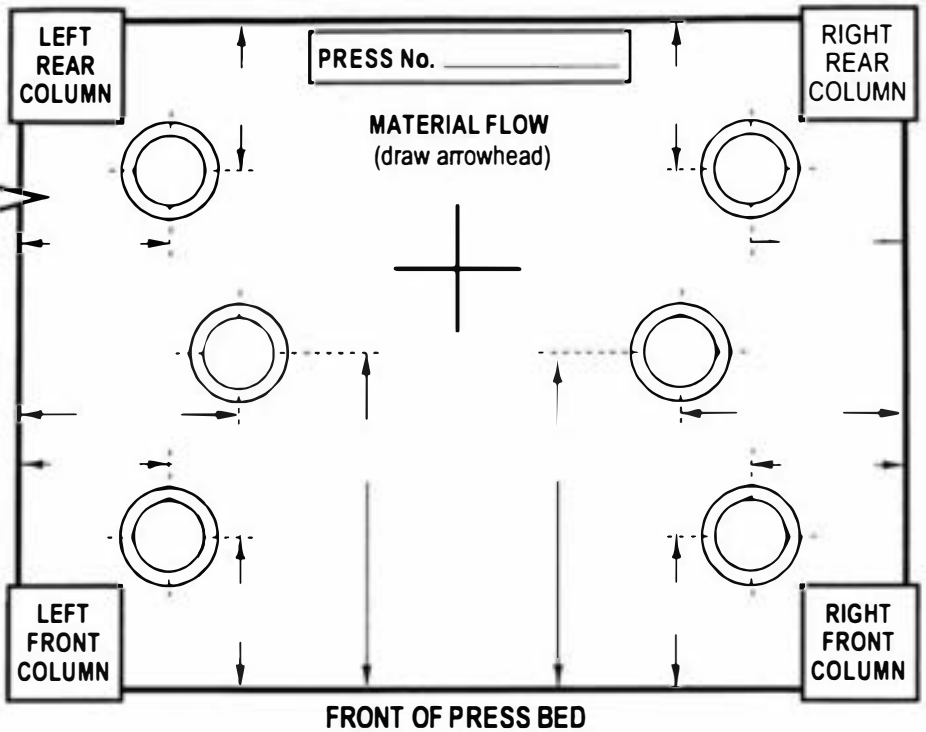
OTHER RESISTORS:

CHAN. 1 _____

CHAN. 2 _____

CHAN. 3 _____

CHAN. 4 _____



FRONT OF PRESS BED

TYPE OF LOAD CELLS: _____ **TYPE OF LOAD CELL READOUT:** _____

TONNAGE SENSORS

SENSOR NUMBER	SERIAL NO.	CAL. NO.	X 10	LOCATION (LF, RF, LR, RR)
1				
2				
3				
4				

CALIBRATION LOAD CELLS

CELL NUMBER	CAPACITY TONS	SERIAL NO.	CAL. NO.
1			
2			
3			
4			

CCM TYPE: _____ **CCM OFFSET:** _____ **STI REFERENCE NUMBER:** LOW: _____ HIGH: _____

STI DEGREES IN CHANNEL No. 1: _____

TRIGGERED FROM PROBE ? YES ___ NO ___ (Show threshold value if not triggered from probe): _____

TRIPPED ALARM RELAY STOPS PRESS ? YES ___ NO ___ EXPLAIN: _____

ALL STICKERS AND DOCUMENTS FILLED OUT ? YES ___ NO ___ **IF NOT, EXPLAIN WHY:** _____

TFP No.: HIGH 2 ___ LOW 2 ___ HIGH 4 ___ LOW 4 ___ HIGH 6 ___ LOW 6 ___ HIGH 8 ___ LOW 8 ___

COMMENTS: _____

TESTS MADE BY: _____ **TESTS ACCEPTED BY:** _____ **DATE:** _____

MAIL ADDRESS:

TOLEDO TRANSDUCERS, INC.
1345 FORD STREET
MAUMEE, OHIO 4353 7

SHIPPING ADDRESS:

TOLEDO TRANSDUCERS, INC.
1345 FORD STREET
MAUMEE, OHIO 43537

PHONE: 1 (419) 867-4170
FAX: 1 (419) 867-4180