

## REFERENCE

ANSI B 40.100

## CERTIFICATE

ISO 9001 : 2008

ISO 14001 : 2004

BS OHSAS 18001 : 2007

### 1 WARNING

Pressure gauges should be selected and installed by this the possibility of failure resulting in injury or damage caused by misuse or misapplication is can eliminate or minimized. For correct selection and use of gauges, refer to standard ASME B40.100.

### 2 Important factors for proper gauge selection are:

- 2a Process: Wetted parts must be compatible / suitable with the measured media.
- 2b Pressure: The Pressure Range of the Gauge should generally be twice the working pressure. The working pressure in all cases should be limited to 75% of the gauge full scale range. Where alternating pressure and pulsation are encountered, working pressure should be limited to 2/3 of the gauge range.
- 2c Pulsation / Vibration: Pressure pulsation and vibration could result in fatigue failure of the measuring system. Therefore, dampening provisions such as liquid filling of the gauge, installing flow restricting devices snubber / Dampening screw / Jelly filled movement or isolating (Through capillary / spring) from the vibration source should be considered.
- 2d Temperature: Excessive temperature exposure may result in damage to the measuring system and/or gauge outer parts, case, gasket, and window. Preventive temperature lowering devices such as the ITEC cooling Tower or a siphon should be considered.
- 2e Liquid Fill: Be sure that the filling liquid can safely mix with the process fluid.

### 3 General

ITEC gauges are designed and built to deliver long and reliable service under conditions of severe stress. For inquiries concerning gauge selection and operation, the standard specification ASME B40.100 should be considered.

### 4 Installation

Gauges should always be mounted by using the wrench / Spanner flats (squares) provided on the pressure connection. Under no circumstances should the pressure connection be tightened by applying force to the gauge case by hand.

- 5 It is preferable to mount gauges in a location free from mechanical vibration. If this is not possible, a liquid filled gauge or a flexible capillary connection is necessary.

- 6 The gauge should be located so that it is not exposed to abnormally low or high temperatures. This may cause an additional accuracy error, depending on the deviation from the reference temperature of 25°C. For steam service, the gauge must be protected by a water-filled siphon.

- 7 If severe pulsation is present, the gauge should be equipped with proper accessories like snubber / Dampening screw.

### 8 Maintenance

All the gauges should be checked regularly for wear and tear, accuracy, and proper functioning by comparing them to a precision test gauge or a dead weight tester. Replace all broken or damaged parts immediately.

### 9 Disassembly

Tools Needed , Bench vise, Flat (-) Screw driver, Pointer Puller, Bezel opener fixture, Pointer Press tool.

*NOTE: ITEC has developed special service tools which make Gauge repair. Tools are available from ITEC factory for a nominal charge.*

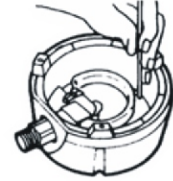
### Threaded Ring Removal

Place the gauge into the Proper fixture face-up by clamping the connection (gauge socket) firmly on the fixture. Seat the Threaded Ring opening Tool into the ring between the tightening notches and loosen the threaded ring counterclockwise. You can unscrew the ring once it is loose by using the Threaded Ring Tool.

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### Window Removal

If the window sticks to the O-ring and will not come out easily, you will have to remove the blow-out back. See paragraph 12. There is an oil overflow hole located on the "solid front" wall on the gauge, Insert a small screwdriver into this hole, and carefully and slowly push the window out.



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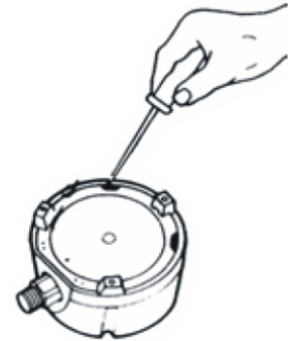
### Blow-out Back Removal

To remove the blow-out back, you will need a screwdriver to loosen the 6 screws, look at the back of the gauge, and please note the small openings gap in the blow-out back. Remove the back plate by insert the screw driver at the gap slowly. and then remove rubber diaphragm by hand.

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### Pointer Removal

To remove the adjustable pointer you will need to use the Pointer Puller Tool and Pointer Puller Handle. Insert the tip of the Pointer Puller Handle into the center of the pointer. Then insert the notch of the Pointer Puller Tool between the pointer shaft and the other end above the Pointer Puller Handle. Squeeze gently on the Pointer Puller Tool and the adjustable pointer should pop upward.



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### Dial Removal

To remove the dial, you will need a small plus (+) head screw driver. On both sides of the pointer shaft there are two small screws. Remove both of these screws and the dial can then be lifted straight up from the case.

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### Dial Rotation

To rotate the dial on the gauge, remove both screws on each side of the pointer shaft. Rotate the dial in increments of 90 degrees until you reach the desired position. Line up the holes of the dial with those of the case and then insert the screws and tighten.

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### Restrictor Removal & Cleaning

To remove the dampening screw insert a small flat headed screw drive into the bottom center of the socket Turn the dampening screw counter clock wise to loosen and remove. To clean debris from the dampening screw, push a thin metal wire through one end until it protrudes out the other side. If this is not possible, the dampening screw should be replaced.

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### Assembly

#### Dial Assembly

To assemble the dial, place it back into the case in the same position as it was originally removed. Line up the screw holes of the dial and case. Place the screws into the holes and tighten.

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#### Pointer Assembly and Adjustment

To install the pointer, gently place the pointer onto the shaft. Rotate the pointer until the tip is exactly on zero. Lightly tap the center of the pointer with the end of a screw driver to secure the pointer to the shaft. If, after installing the pointer, it is not exactly on zero, there is an adjustment screw located on the pointer. While gently holding the pointer, turn the adjustment screw clockwise to increase pressure or counterclockwise to decrease pressure until the pointer tip is exactly on the zero mark.

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### 19 Threaded Ring Assembly

First make sure the O-ring is properly seated in the groove located just below the window thread rings. Place the window such that the flat side comes in contact with the O-ring. Then place the threaded ring on the gauge. The threaded ring tabs should face up. The threaded should turn easily without binding. If the ring not enters properly, unscrew the threaded ring and repeat the step above. You can use the Threaded Ring tool to hand tighten the threaded ring. To seat it firmly, insert the Threaded Ring Tool and tighten the threaded ring by one-quarter turn with 16 ft.lbs of torque.

### 20 Blow-Out Back Assembly

First make sure the rubber diaphragm membrane is seated properly on the blow-out back (lubricate the sealing surface of the case or membrane with glycerine or silicone when installing a membrane), and press the back down with your hands. Place the gauge in the Arbor Press and align it underneath the press plate. Press the blow-out back onto the case until touch the case face and then make screwing by flat screw driver.

### 21 Restrictor Assembly

A dampening screw is recommended for all applications that will encounter pressure surges, pulsations or fluctuations. To install a dampening screw, locate the bottom center of the socket where you will notice a threaded bore. Place the pointed end of the dampening screw into the bore and turn clockwise until tight using a small flat headed screw driver, Once tight, hand torque the restrictor with 0.5 to 1.0 ft.-lbs of torque to ensure it will not come loose during operation.

### 22 Liquid Filling Of Dry Case

For gauges with pressure ranges of 60 psi or less, the pointer must be pre-adjusted before liquid filling. To adjust the pointer, use the adjustment screw on the pointer (Pointer Assembly and Adjustment). Remove the filling plug from the top of the gauge (12 o'clock) with a small screwdriver filling. The membrane to maintain an air pocket which will help alleviate temperature induced zero shifts. Fill the gauge with the correct fluid for your application using a small funnel or tube. The gauge must be filled in an upright position. Be careful not to touch the Bourdon tube, as this may cause a shift in the gauge calibration. The fluid level should be as full as possible Once you have the correct fluid level, clean the area around the filling hole, and insert the filling plug. The final step is to check the zero position of the pointer. If the pointer is not within the tolerance field of the zero mark, the pointer must be readjusted. To do this, drain the gauge, reversing the steps above, adjust the pointer and then repeat the procedure from the start.