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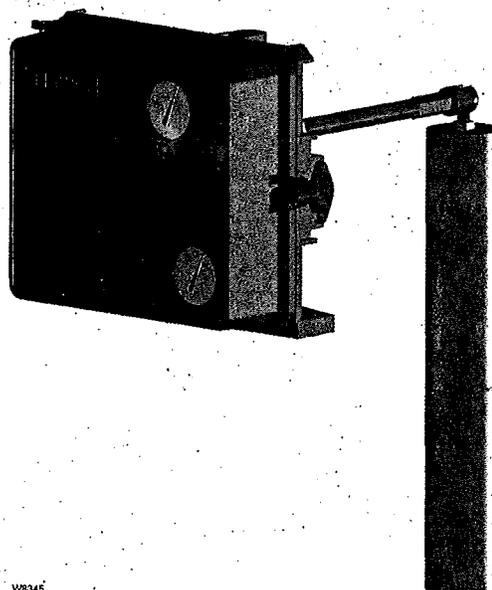


YREVA 

Type L2 Liquid Level Controllers

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V8345

Figure 1. Type L2 Liquid Level Controller

Introduction

Scope of Manual

This instruction manual includes installation, adjustment, maintenance, and parts ordering information for Type L2 liquid level controllers.

Only personnel qualified through training or experience should install, operate and maintain this controller. If there are any questions regarding the instructions in this manual, contact your Fisher sales office before proceeding.

Description

The rugged Type L2 liquid level controllers use a displacer-type sensor (see figure 1) to detect liquid level or the interface of two liquids of different specific gravities.



Table 1. Specifications

Available Configurations

Controllers: Snap-acting or throttling
Sensor: Displacer-type liquid level sensor for mounting to side of tank. Displacer travel is transmitted to controller by pivotal movement of displacer rod

Input Signal⁽¹⁾

Type: Liquid level or liquid-to-liquid interface

Level Change Required for Full Change in Output Signal in 1.0 Specific Gravity Liquid, with 1.4 Bar (20 Psig) Supply, Direct Action, and Standard 48 x 305 mm (1-7/8 X 12-Inch) Vertical Displacer with Standard Lever Arm Length:

Control Mode	Maximum Proportional Band Level Change, mm (Inches)	Minimum Proportional Band Level Change, mm (Inches)
Throttling	102 (4)	305 (12)
On/Off	127 (5)	305 (12)
Snap-acting	13 (0.5)	20 (0.8)

Minimum Specific Gravity⁽²⁾

Throttling and On/Off Controllers: Minimum specific gravity, or specific gravity differential for interface applications, is 0.1 (see note 3)

Snap-Acting Controllers: Minimum specific gravity, or specific gravity differential for interface applications, is 0.1

Output Signal⁽¹⁾

Pneumatic ■ on-off or ■ proportional pressure signal

Ranges:

Throttling: ■ 0.2 to 1.0 bar (3 to 15 psig) or ■ 0.4 to 2.0 bar (6 to 30 psig)

On/Off: 0 (off) or full supply pressure (on)

Action: Field-reversible between direct (increasing level increases output signal) and reverse (increasing level decreases output signal)

Supply Pressure Requirements

Throttling and On/Off Controller

Throttling: 1.4 bar for 0.2 to 1.0 bar output signal (20 psig for 3 to 15 psig output signal) and 2.4 bar for 0.4 to 2.0 bar output signal (35 psig for 6 to 30 psig output signal)

On/Off: Any desired pressure between 1.4 and 3.4 bar (20 and 50 psig).

Snap-Acting Controller: Any desired pressure between 1.4 and 5.2 bar (20 and 50 psig) direct, and 1.4 bar and 2.4 bar (20 and 35 psig) reverse

Do not use supply pressure below 1.4 bar (20 psig)

Steady-State Air Consumption⁽⁵⁾

Throttling Controller: ≤0.03 normal m³/hr (1.0 scfh) at 1.4 bar (20 psig) supply pressure

Snap-Acting Controller: ≤0.03 normal m³/hr (1.0 scfh) at 1.4 bar (20 psig) supply pressure or ≤0.04 normal m³/hr (1.5 scfh) at 2.4 bar (35 psig) supply pressure in tripped condition; air consumption increases during trip

Standard Displacer Size

48 x 305 mm, 541 cm³ (1-7/8 x 12 inches, 33 in³)

Maximum Displacer Working Pressure⁽⁴⁾

258 bar (3750 psig)

Maximum Displacer Insertion Length

Standard lever arm length plus one 6-inch extension, horizontal or vertical

Sensor to Vessel Connection

51 mm (2-inch) screwed (NPT)

Maximum Sensor Working Pressure⁽⁴⁾

Consistent with Class 1500 pressure temperature ratings per ASME B16.34 up to maximum pressure of 258 bar (3750 psig)

For PED (97/23/EC) maximum pressure limited to 200 bar (2900 psig)

Operative Ambient Temperature Limits⁽¹⁾⁽⁴⁾

Controller: -29 to 71°C (-20 to 160°F)

Sensor Temperature Limits⁽¹⁾⁽⁴⁾

Displacer -29 to 79°C (-20 to 175°F)

O-Rings: -40 to 204°C (-40 to 400°F)

Standard Supply, and Output Pressure Gauge Indications

Triple scale gauges in 0 to 60 psig/0 to 0.4 MPa/0 to 4.0 bar

Controller Connections

Supply: 1/4 in. NPT female located on the bottom of the case

Output: 1/4 in. NPT female located on the top of the case

Case Vent: 1/4 in. NPT female with vent screen assembly located on the back of the case

1. This term is defined in ISA Standard S51.1.

2. Depends on float rod/displacer orientation and length. Contact your Fisher sales office for further information.

3. Minimum specific gravity differential with standard displacer is 0.4. Minimum specific gravity differential of 0.1 is possible with special displacer, consult your Fisher sales office for displacer sizing information.

4. The pressure and temperature limits in this document and any applicable code limitations should not be exceeded.

5. Normal m³/hr—Normal cubic meters per hour (0°C and 1.01325 bar, absolute) Scfh—Standard cubic feet per hour (60°F and 14.7 psia).

These low-bleed controllers use a single four-mode relay to provide the applicable control and action. The device delivers a pneumatic output signal to a control valve.

Specifications

Specifications for the controller and sensor are listed in table 1.

Installation

WARNING

To avoid personal injury or property damage caused by the sudden release of process fluid, be certain the service conditions do not exceed the sensor pressure limits. Use pressure-limiting or pressure-relieving devices to prevent service conditions from exceeding these limits.

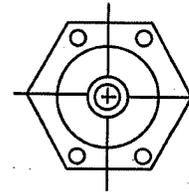
CAUTION

If the Type L2 level controller is installed on a vessel that is to be shipped to a different location (e.g. skid mounted units), remove the displacer and displacer rod extensions before shipment. Failure to do so could result in damage to the displacer rod due to vibration and impact loading during shipment. After the vessel is installed at its final location, reassemble the displacer and displacer rod extension.

1. Be sure there are no obstructions inside the tank that will interfere with displacer installation or operation.
2. Provide the appropriate connection in the tank wall to match the sensor connection. Locate the tank wall connection such that the displacer will be at the desired control level.
3. If necessary, reinforce the tank connection so that it will be capable of supporting the sensor and controller.

Attaching a Vertical Displacer

Refer to figure 7 for part locations.



CORRECT CONTROLLER MOUNTING HOLE ORIENTATION WHEN MOUNTED ON VESSEL

A6830 / IL

Figure 2. Sensor Orientation

1. Thread jam nut (key 68) all the way onto the threaded portion of the universal joint assembly (key 69).
2. Thread the displacer (key 81) all the way onto the threaded portion of the universal joint assembly.
3. Tighten the jam nut (key 63) against the displacer (key 81).

Attaching a Horizontal Displacer

Refer to figure 7 for part locations.

1. Thread the displacer (key 81) all the way onto the displacer rod (key 64) or extension (key 82).
2. Tighten the jam nut (key 63) against the displacer (key 81).

Attaching the Sensor to the Vessel

Insert the displacer end of the controller-sensor assembly into the tank connection, and screw the sensor threads into the tank connection. Tighten sufficiently to seal the threads. If necessary, loosen or tighten slightly to obtain the orientation shown in figure 2. Make sure that the controller case is level.

CAUTION

Do not pick up the controller/sensor by lifting the displacer rod (key 64). This action could place excessive stress on the displacer rod and cause the unit to malfunction.

Type L2

Pressure Connections

WARNING

Personal injury or property damage may result from an uncontrolled process if the supply medium is not clean, dry, oil-free, or non-corrosive gas. Industry instrument air quality standards describe acceptable dirt, oil, and moisture content. Due to the variability in nature of the problems these influences can have on pneumatic equipment, Fisher has no technical basis to recommend the level of filtration equipment required to prevent performance degradation of pneumatic equipment. A filter or filter regulator capable of removing particles 40 microns in diameter should suffice for most applications. Use of suitable filtration equipment and the establishment of a maintenance cycle to monitor its operation is recommended.

1. Provide a source of clean, dry air that meets the requirements of ISA Standard S7.3 as the operating medium. Refer to table 1 to determine supply pressure.
2. Connect the supply pressure to the 1/4-inch NPT female connection on the bottom of the controller case.
3. Connect the output signal line to the equipment being operated and to the 1/4-inch NPT output connection on the top of the controller case.

Vent

WARNING

If a flammable or hazardous gas is to be used as the supply pressure medium, personal injury or property damage could result from fire or explosion of accumulated gas or from contact with hazardous gas. The controller/actuator assembly does not form a gas-tight seal, and when the assembly is enclosed, a remote vent line, adequate ventilation, and necessary safety measures should be used. A remote vent pipe alone cannot

be relied upon to remove all hazardous gas. Vent line piping should comply with local and regional codes and should be as short as possible with adequate inside diameter and few bends to reduce case pressure buildup.

The vent opening or the end of the remote vent pipe, if one is required, must be protected against the entrance of all foreign matter that could plug the vent. Use 1/2-inch (13 mm) diameter pipe for the remote vent pipe. Check the vent periodically to be certain it is free of any obstructions.

Changing Controller Action or Mode

WARNING

To avoid personal injury caused by a sudden release of pressure, shut off the supply pressure and bleed pressure from the supply lines before performing any procedure in this section.

Throttling and On/Off Controller

The action of a throttling and on/off controller may be changed between either direct or reverse, and the control mode may be changed between either on/off or throttling.

Refer to figure 3. Loosen the four switch retention screws on the relay. Move the switches to the control action and control mode required by the application. Tighten the four switch retention screws.

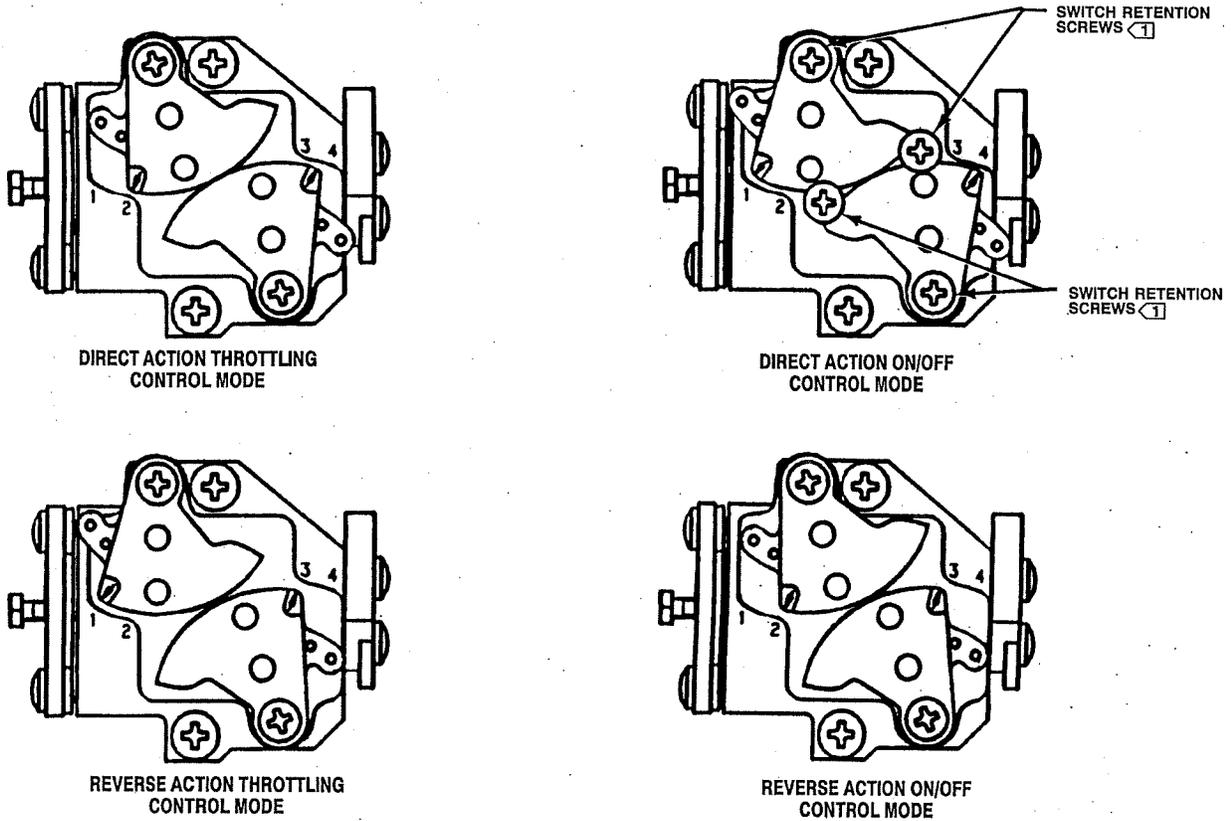
Snap-Acting Controller

The action of a snap-acting controller may be changed between either direct or reverse. The control mode is always snap acting.

Refer to figure 4. Loosen the four switch retention screws on the relay. Move the switches to the control action required by the application. Tighten the four switch retention screws.

Proportional Band Adjustment

Except where indicated, key numbers referenced in the following procedures are shown in figure 8. The span levers and other proportional band information are shown in figure 5.

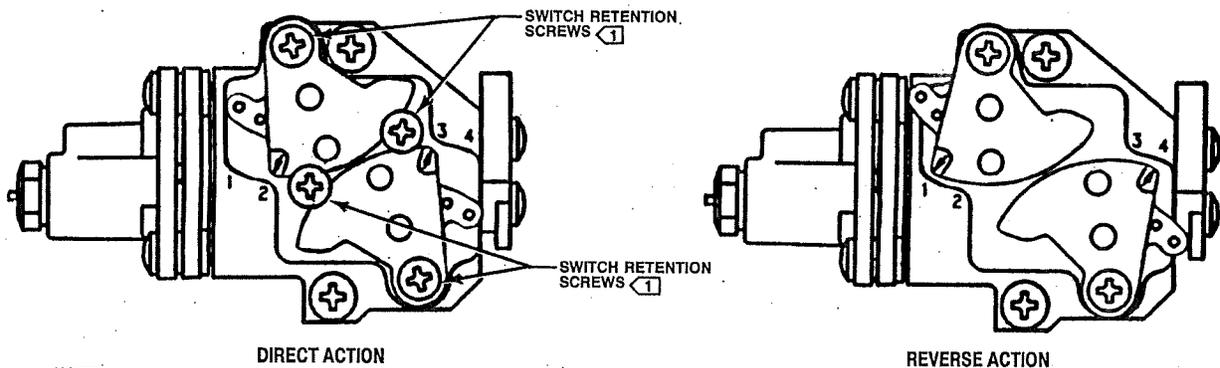


NOTE:

1 ALL FOUR SWITCH RETENTION SCREWS SHOWN ONLY ON THIS VIEW. OTHER VIEWS SHOW ONLY TWO SWITCH RETENTION SCREWS IN ORDER TO ILLUSTRATE THE SWITCH CONFIGURATION.

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Figure 3. Type L2 Throttling and On/Off Controller Switch Positions for Changing Action and Control Mode



NOTE:

1 ALL FOUR SWITCH RETENTION SCREWS SHOWN ONLY ON THIS VIEW. OTHER VIEWS SHOW ONLY TWO SWITCH RETENTION SCREWS IN ORDER TO ILLUSTRATE THE SWITCH CONFIGURATION.

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Figure 4. Type L2 Snap-Acting Controller Switch Positions for Changing Action

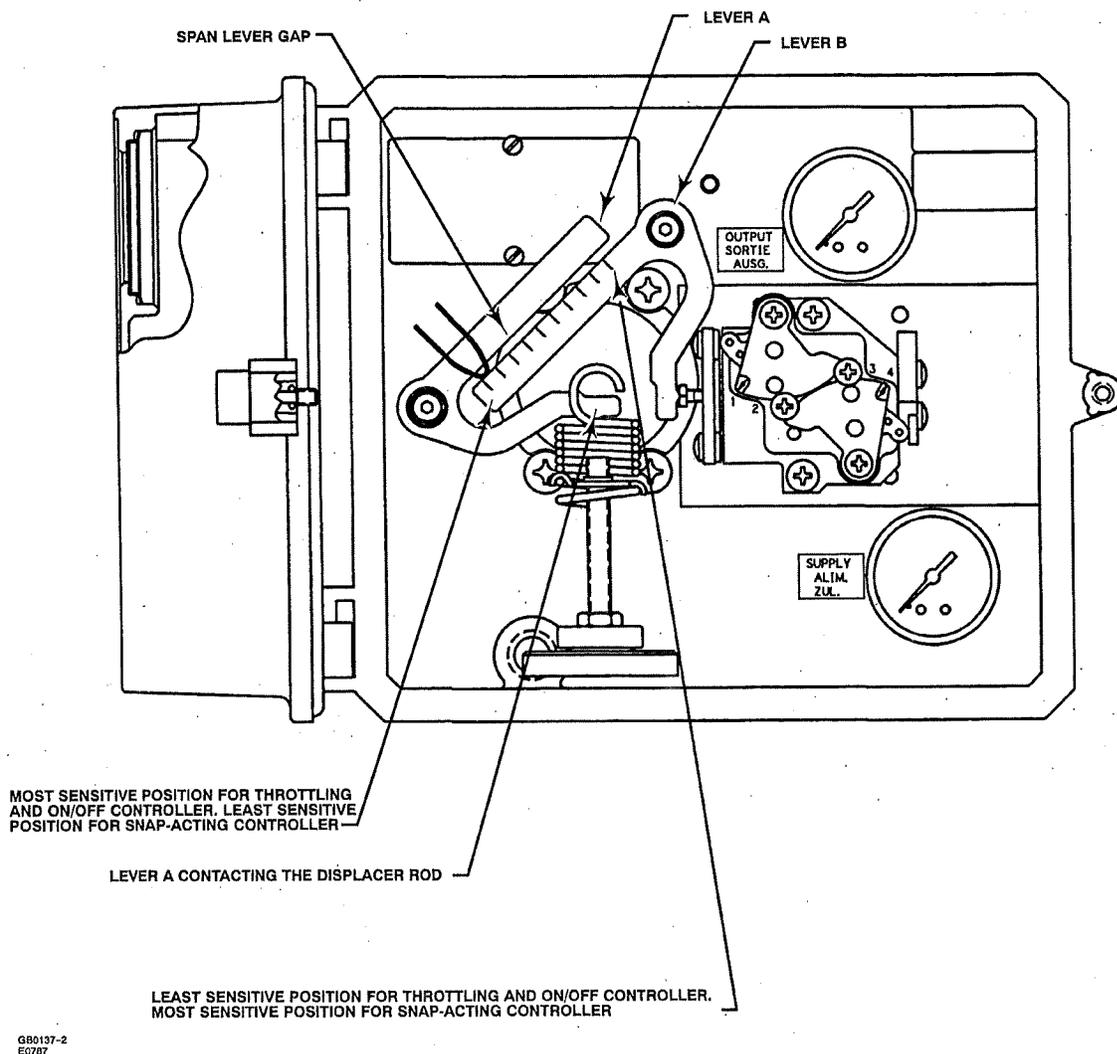


Figure 5. Proportional Band Adjustments

Preliminary Checks

1. Check the supply pressure gauge (key 10) to be certain that the supply pressure is at the desired value. Adjust the supply pressure as required.
2. Adjust the displacer rod to the horizontal position with the spring adjustment (key 4).
3. Bounce the end of the displacer rod (key 64, figure 7) up and down to check that the sensor is operating freely.
4. Place the span adjuster (key 9) at the desired position (see figure 5).
5. Check figures 3 and 4 for correct control action and control mode.
6. Adjust the relay adjustment screw (key 49, throttling controller) or the valve assembly (key 51, snap-acting controller) so that the gap between the span levers (see figure 5) is equal when lever A is contacting the displacer rod.

Direct-Acting Throttling Controllers

1. Make certain the Preliminary Checks procedure at the start of this section has been completed.
2. Lower the liquid level so that it is below the bottom of the displacer or at the lowest desired

operating point on the displacer. For interface applications, completely cover the displacer with the lighter fluid. The heavier fluid should be below the bottom of the displacer or at the lowest desired operating point on the displacer.

3. Adjust the spring adjustment (key 4) until the output pressure is 1 to 2 psig for a 3 to 15 psig output range, or 2 to 4 psig for a 6 to 30 psig output range.

Reverse-Acting Throttling Controllers

1. Make certain the Preliminary Checks procedure at the start of this section has been completed.

2. Lower the liquid level so that it is below the bottom of the displacer or at the lowest desired operating point on the displacer. For interface applications, completely cover the displacer with the lighter fluid. The heavier fluid should be below the bottom of the displacer or at the lowest desired operating point on the displacer.

3. Adjust the spring adjustment (key 4) until the output is 16 to 17 psig for a 3 to 15 psig output range, or 31 to 34 psig for a 6 to 30 psig output range.

Direct-Acting On/Off and Snap-Acting Controllers

1. Make certain the Preliminary Checks procedure at the start of this section has been completed.

2. Lower the liquid level so that it is below the bottom of the displacer or at the lowest desired operating point on the displacer. For interface applications, completely cover the displacer with the lighter fluid. The heavier fluid should be below the bottom of the displacer or at the lowest desired operating point on the displacer.

3. Adjust the spring adjustment (key 4) until the output pressure is at full supply pressure.

4. Readjust the spring adjustment (key 4) until the output pressure goes to zero psig.

Reverse-Acting On/Off and Snap-Acting Controllers

1. Make certain the Preliminary Checks procedure at the start of this section has been completed.

2. Lower the liquid level so that it is below the bottom of the displacer or at the lowest desired operating point on the displacer. For interface applications, completely cover the displacer with the lighter fluid. The heavier fluid should be below the bottom of the displacer or at the lowest desired operating point on the displacer.

3. Adjust the spring adjustment (key 4) until the output pressure goes to zero psig.

4. Readjust the spring adjustment (key 4) until the output pressure goes to full supply pressure.

Principle of Operation

The operation of Type L2 controllers in combination with the sensor is based on Archimedes Principle, which states that a body immersed in a liquid will be buoyed up by a force equal to the weight of the liquid displaced. The buoyant force and resultant movement of the displacer in the liquid is transmitted to the controller which delivers a pneumatic signal to a control valve.

Figure 6 shows a simple schematic of the controller and sensor. In its normal position, the counterclockwise moment due to the weight of the displacer about pivot point O is balanced by the clockwise zero spring moment and the counterclockwise relay zero force moment applied through lever A to the displacer rod. The weight of the displacer decreases when the liquid level increases and the subsequent buoyant force increases causing a force imbalance between the zero spring, relay, and displacer forces. This force imbalance is transmitted to the relay by levers A and B. The relay compensates for the force imbalance by converting it to a pressure output to a control valve and bringing the forces back into equilibrium.

For throttling control, the relay pressure output will be proportional to the buoyant force. For on/off control, the relay pressure output will be either zero or equal to the supply pressure over the range of liquid level change. The liquid level change required to fully operate the relay is adjusted by sliding the proportional band adjustment along lever A to vary the lever ratio between levers A and B.

With reverse-acting proportional control, the principle of operation remains the same as that for direct action; however, the controller delivers an increasing pneumatic signal to the control valve when the liquid level falls.

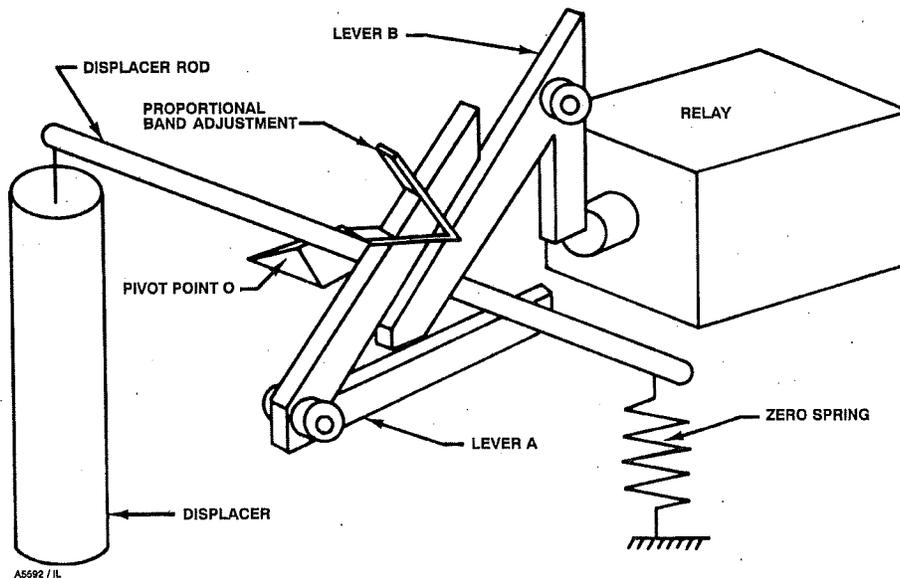


Figure 6. Operational Schematic

Maintenance

Parts are subject to normal wear and must be inspected periodically and replaced as necessary. The frequency of parts inspection and replacement depends upon the severity of service conditions. When inspection or repairs are required, disassemble only those parts necessary to accomplish the task.

Due to the care Fisher takes in meeting all manufacturing requirements (heat treating, dimensional tolerances, etc.), use only replacement parts manufactured by Fisher.

WARNING

To avoid personal injury or property damage caused by the release of pressure or process fluid, observe the following before starting maintenance:

- Provide some temporary means of control for the process before taking the controller out of service.
- Provide a means of containing the process fluid before removing any measurement devices from the process.
- Vent any trapped process pressure.

Removing the Controller From the Sensor

Observe the warning given at the start of the "Maintenance" section.

1. Disconnect the supply and output pressure lines.
2. Slide the hook end of the zero spring (key 5, figure 8) over and off the controller end of the displacer rod (key 64, figure 7).
3. Remove the four controller mounting screws (key 11, figure 8), and pull the controller straight away from the sensor.

Replacing the Sensor O-Rings

Observe the warning given at the start of the "Maintenance" section. Refer to figure 7 for key number locations unless otherwise indicated.

Disassembly

1. Remove the controller from the sensor by following the procedure outlined in the previous section.
 2. Remove the sensor from the tank.
 3. Unscrew the hex nut (key 67) and remove the spacer (key 66) and spring (key 68). After removing the spring, replace the spacer (key 66) and hex nut (key 67) on the displacer rod.
- From the displacer end, pull the displacer rod away from the sensor connection (key 65) to pull the pivot base (key 73) loose from the sensor connection.

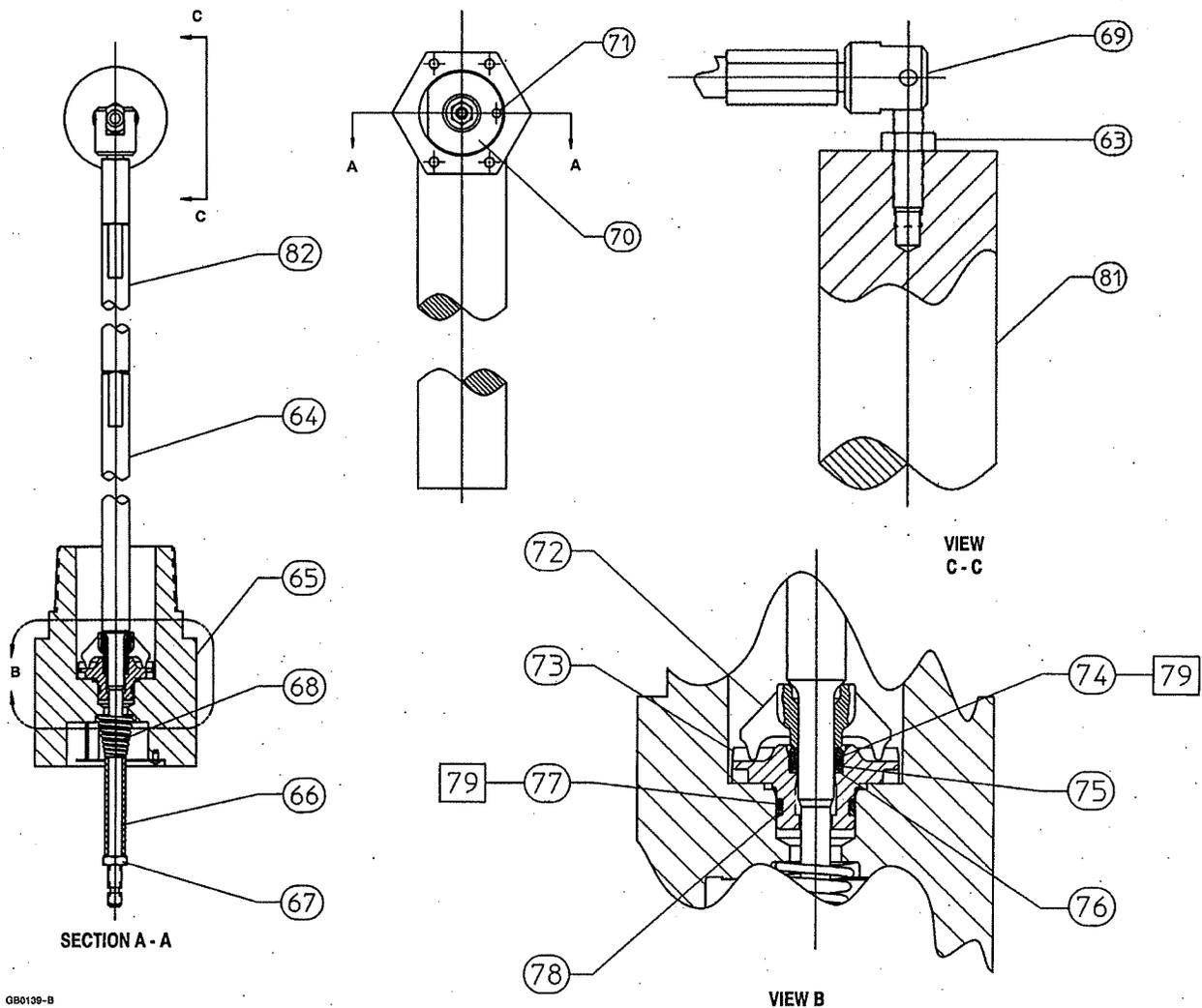


Figure 7. Sensor

Remove the hex nut (key 67) to permit removing the displacer rod, pivot base, pivot body, and spacer from the sensor connection.

4. Slide the pivot base (key 73), retaining ring (key 76), anti-extrusion ring (key 75), and O-ring (key 74) off the displacer rod. Remove the O-ring (key 77) and backup ring (key 78) from the pivot base.

Assembly

WARNING

Improper assembly of the O-rings, anti-extrusion ring, and backup ring could result in O-ring extrusion and permit leakage of process fluids. To avoid personal injury or property damage from leaking process fluid, be sure the O-rings, anti-extrusion ring and backup ring are assembled in the order shown in figure 7.

Type L2

1. Place the pivot body (key 72) on the displacer rod (key 64) so that it is positioned as shown in figure 7.
2. Slide the O-ring (key 74), anti-extrusion ring (key 75) and retaining ring (key 76) onto the displacer rod assembly (key 64). Be sure the O-ring, anti-extrusion ring, and retaining ring are in the order shown in figure 7. Slide the pivot base onto the displacer rod so that the points of the pivot body (key 72) will engage the slots in the pivot base (key 73).
3. Install the O-ring (key 77) and backup ring (key 78) into the groove on the pivot base (key 73). Be sure the backup ring is on the downstream pressure side of the O-ring as shown in figure 7.
4. Insert the displacer rod (key 64) into the vessel side of the sensor connection (key 65).
5. The pivot base must seat in the slots cast in the sensor connection. These slots will be horizontal when the sensor connection (key 65) is oriented as shown in figure 2.
6. To reduce the possibility of nicking the O-ring (key 77) on the pivot base, keep the displacer rod centered in the sensor connection as much as possible while pushing the pivot base into the sensor connection. Be sure the pivot base seats in the slots cast in the sensor connection.
7. Slide the spring (key 68) and spacer (key 66) onto the displacer rod and secure with the hex nut (key 67). Fully tighten the hex nut (key 67).
8. View the sensor connection from the vessel side. Ensure that the pivot body arms remain aligned with the pivot base arms (the two pivot body points are seated in the pivot base slots).
9. Install the sensor on the tank.

Replacing the Controller Relay

Observe the warning given at the start of the "Maintenance" section. Refer to figure 8 for key number locations unless otherwise indicated.

1. Disconnect the supply and output pressure lines.
2. Remove the two relay mounting screws (key 33), and pull the relay away from the controller base (key 1).
3. Install the new relay using two relay mounting screws (key 33). Make certain that the relay mounting O-rings (keys 43 and 44, not shown) are completely in their mounting bosses before installing

the relay. Make certain span lever B (see figure 5) is in line with and pushing in on the end of either the relay adjustment screw (key 49, throttling controller) or the pilot valve plug of the valve assembly (key 51, snap-acting controller).

Replacing the Controller Supply Filter

Observe the warning given at the start of the "Maintenance" section. Refer to figure 8 for key number locations unless otherwise indicated.

1. Disconnect the supply and output pressure lines.
2. Loosen the filter cap screws (key 17), and rotate the filter cap (key 14) to the side to uncover the supply filter (key 15).
3. Remove the old filter (key 15), and remove any debris from the filter boss.
4. Install a new supply filter. Reinstall the filter cap (key 14), and tighten the filter cap screws (key 17).

Note

Fisher does not assume responsibility for the selection, use, or maintenance of any product. Responsibility for proper selection, use, and maintenance of any Fisher product remains solely with the purchaser.

Parts Ordering

When corresponding with your Fisher sales office about this equipment, always mention the serial number of the controller. The serial number can be found on the nameplate (key 55, figure 8). When ordering replacement parts, also specify the complete 11-character part number of each part required as found in the following parts list.

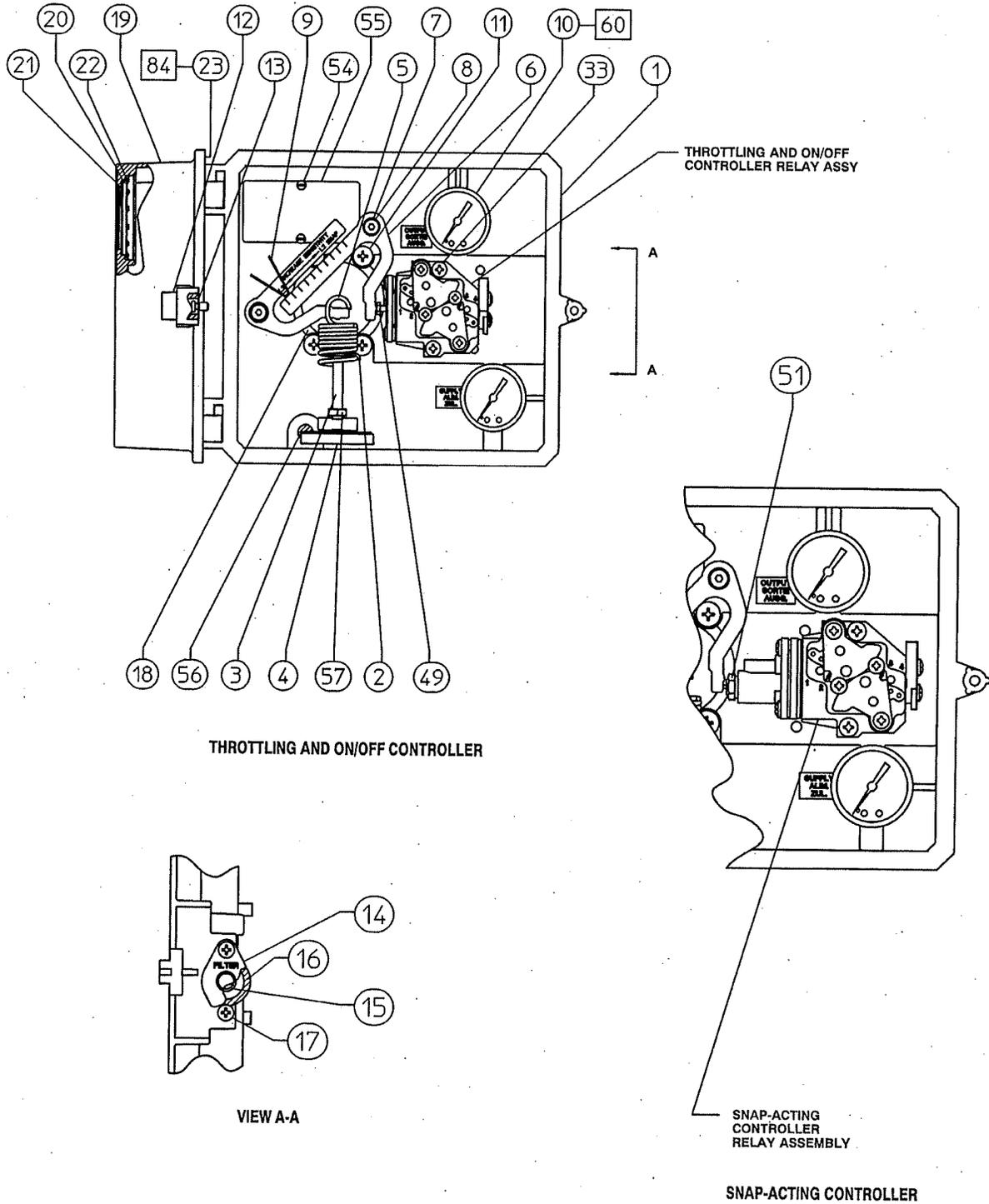
Parts Kits

Key	Description	Part Number
	Controller	
	Repair kit includes O-rings (keys 13 and 16) and gaskets (keys 18, 21, and 23)	RL2CNTRX012
	Relay	
	Repair kits include relay assembly, relay mounting screws (key 33), and O-rings (keys 33, 43, and 44)	
	Throttling and On/Off Controller	GB0138 X0012
	Snap-Acting Controller	GB0138 X0022
	Sensor	
	Repair kit includes keys 74, 75, 77, and 78 (fluoroelastomer O-rings, anti-extrusion ring, and fluoroelastomer backup ring)	RL2SENSX012

Instruction Manual

Form 5732
April 2002

Type L2



□ APPLY LUB/SEALANT
G60137-B

Figure 8. Type L2 Liquid Level Controllers

Parts List

Note
For part numbers not shown, contact your Fisher sales office.

Controller

Key	Description	Part Number
1	Controller Base, marine grade aluminum	
2	Zero Spring Seat, 316 SST	
3	Zero Adjustment Bolt, stainless steel	
4	Spring Adjustment, 316 SST	
5	Zero Spring, 17-7PH SST	
6	Span Lever Assembly, stainless steel	
7	Shoulder Screw, stainless steel (2 req'd)	
8	Flanged Bearing, nylon (4 req'd)	
9	Span Adjustor, stainless steel	
10	Pressure Gauge (2 req'd)	
11	Mounting Screw, stainless steel (4 req'd)	
12	Cover Screw, stainless steel	
13*	O-Ring, nitrile	
14	Filter Cap, reinforced plexiglass	
15	Filter	11B2307 X012
16*	O-Ring, nitrile	
17	Machine Screw, stainless steel (2 req'd)	
18*	Sensor Gasket, composition	
19	Cover, marine grade aluminum	
20	Cover Lens, plexiglass (2 req'd)	
21*	Gasket, neoprene (2 req'd)	
22	Retaining Ring, steel (2 req'd)	
23*	Cover Gasket, nitrile	
33	Relay Mounting Screw, stainless steel (2 req'd)	
43*	Relay Mounting O-Ring, nitrile (not shown)	
44*	Relay Mounting O-Ring, nitrile (not shown)	
49	Relay Adjustment Screw	
51	Valve Assembly	
52	Valve Assembly O-Ring	

Key	Description	Part Number
53	Label, setup and calibration	
54	Self-Tapping Screw, stainless steel (2 req'd)	
55	Nameplate	
56	Screen, stainless steel	
57	Hex Nut, stainless steel	
60	Sealant Zinc-plate No. 770 (not furnished with controller)	
61	Lubricant, Dow Corning 111 (not furnished with controller)	
62	Sealant, Loctite No. 222 (not furnished with controller)	
84	Adhesive, Loctite 416	

Sensor

81	Displacer, PVC 1-7/8x12-inches	12B2936 X032
63	Hex Nut, 316 SST	
64	Displacer Rod, 17-4 SST (17-4PH SST)	
65	Sensor Connection	
66	Spacer, 304 SST (304 SST)	
67	Hex Nut, 316 SST	
68	Conical Spring, 316 SST	
69	Universal Joint, 316 SST (vert displ only)	
70	Nameplate	
71	Drive Screw, stainless steel	
72	Pivot Body, CB7CU-1 (17-4PH SST)	
73	Pivot Base, CF8M (316 SST)	
74*	O-Ring, fluoroelastomer	
75*	Anti-Extrusion Ring, PTFE	
76	Retaining Ring, 304 SST	
77*	O-Ring, fluoroelastomer	
78*	Backup Ring, fluoroelastomer	
79	Lubricant, Lubriplate Mag (not furnished with sensor)	
80	Instruction Tag	
82	Extension, S31600	12B2953 X022

*Recommended spare parts

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Installation for L1100, L1200, L1200N Series Liquid Level Switches and DV850, DV875, and DV2100 Series Dump Valves

DV models are Patent pending.

LDV-92151N
Revised 05-00
Section 15
(00-02-0175)



Please read the following instructions before installing. A visual inspection for damage during shipping is recommended before mounting.

GENERAL INFORMATION

WARNING

BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT

- ✓ Disconnect all electrical power to the machine.
- ✓ Make sure the machine cannot operate during installation.
- ✓ Follow all safety warnings of the machine manufacturer.
- ✓ Read and follow all installation instructions.
- ✓ OBSERVE all pressure and electrical ratings and requirements for the devices and the operating environment.
- ✓ BE SURE all pressure HAS BEEN REMOVED from the vessel before opening any pressure connections.

Description



Series L1100 and L1200 Liquid Level Switches are float activated to operate an electrical SPDT snap switch (optional DPDT on some models) for alarm or shutdown of an engine or electric motor. They screw directly into the wall of the vessel. Series L1200 can also be used with a weld collar or external float chamber.

Series L1200N is a float-activated, pneumatic-vent level device used to operate dump valves or similar devices. This model screws directly into the vessel or can be mounted via an external float chamber. It cannot be used with weld collar 150510375. Model variations include a dump valve operator with or without a filter/pressure regulator and indicating pressure gauge.

NOTE: All stainless steel versions of L1100, L1200, L1200N, L1200NDVO, and L1200NDVOR series carry Canadian Registration Number OF1476.2.

Series DV850, DV875 & DV2100 Dump Valves receive a pneumatic input signal to cause an orifice to open or close allowing liquid condensate to be drained from a pressure vessel. A pop up button indicates valve open/closed. Stainless steel versions available. *NOTE: All stainless steel versions of DV850, DV875, and DV2100 series carry Canadian Registration Number OC1476.2.*

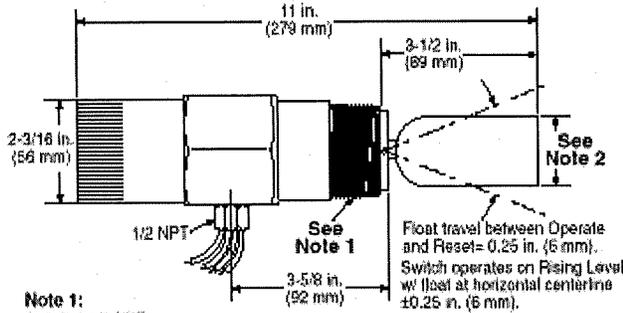
Specifications	L1100	L1111	L1150	L1200	L1250	L1200N	L1200NDVO	L1200NDVOR
Body								
• Standard: Electroless Nickel plated steel	X ^A	X ^A	X ^A	X ^B				
• Optional: 316 Stainless Steel [†]	X ^A	X ^A	X ^A	X ^B				
Pressure Rating								
• 15 psi (103 kPa) [1.03 bar] Polyethylene Float			X		X			
• 1500 psi (10.3 MPa) [103.42 bar] Stainless Float	X	X		X		X	X	X
• 2000 psi (13.8 MPa) [138 bar] BUOYGLAS™ Float	X	X		X		X	X	X
Temperature Rating								
• Standard: -20/175°F (-29/79°C)			X		X			
• Standard: -20/300°F (-29/149°C)	X	X		X		X	X	X
• Optional: -20/400°F (-29/204°C) [‡]	X	X		X		X	X	X
Specific Gravity								
• Standard: 0.5 with BUOYGLAS™ float	X	X		X		X	X	X
• Optional: 0.65 with 304 Stainless Steel [†]	X	X		X		X	X	X
• Standard 0.73 Polyethylene Float			X		X			
Electrical								
• Standard SPDT: 5 A @ 125/480 VAC (see p. 3 for full ratings)	X	X	X	X	X			
• Optional DPDT: 10 A @ 250 VAC (see p. 3 for full ratings)	X	X	X	X	X			
Wire: 18 AWG x 36 in. (1.0 mm* x 914 mm)	X	X	X	X	X			
O-Rings: Viton	X	X	X	X	X	X	X	X
Valve: Two-way snap-action vent type								
• 1/8 in. (3 mm) orifice w/Viton "A" seat								
• 1/8 NPT inlet; 1/4 NPT outlet						X	X	X
• 30-70 psi (207-483 kPa) [2.07-4.83 bar] operating pressure								
Dump Valve Operator: Operates Murphy DV Series dump valves or similar.							X	X
Pressure Regulator/Filter and Murphy 20BPG: 0-75 psi (0-5.17 kPa) [0-5.17 bar] pressure gauge. Maximum Input 300 psi (2.07 MPa) [20.68 bar].								X
Operation: H=For high level, L=For low level	H	L	H	H	H	H	H	H

^A -1-1/2 NPT ^B -2 NPT [†] Meets NACE standard MIL-01-75 for direct exposure to H₂S service. [‡] Not available with DPDT snap-switch.

* Products covered by this literature comply with EMC Council directive 89/336/EEG regarding electromagnetic compatibility.

DIMENSIONS

L1100 and L1200

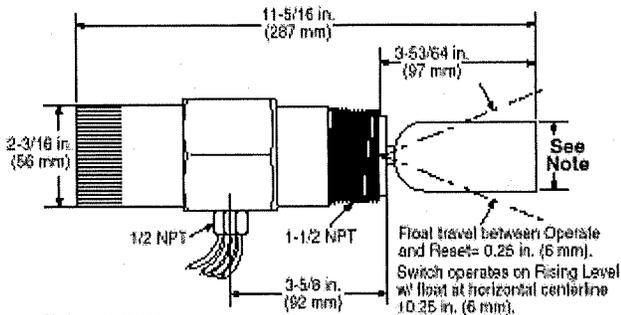


Note 1:
L1100: 1-1/2 NPT
L1200: 2 NPT

Note 2: 1-5/16 (40 mm)

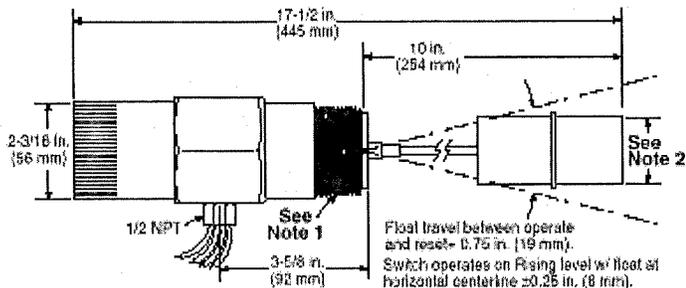
SF option:
L1100: 1-1/2 (38 mm)
L1200: 1-3/4 (44 mm)

L1111



Note: 1-5/16 (40 mm)
SF option: 1-1/2 (38 mm)

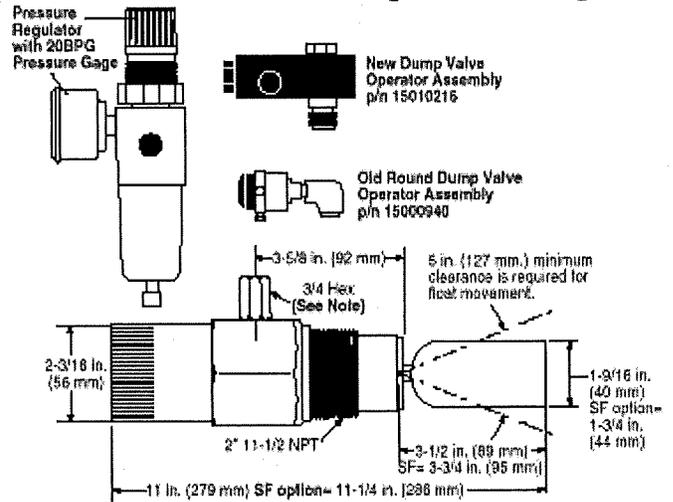
L1150 and L1250



Note 1:
L1150: 1-1/2 NPT
L1250: 2 NPT

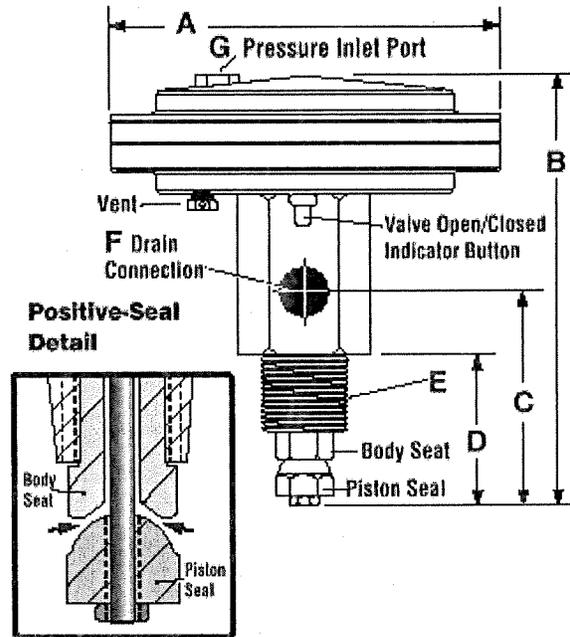
Note 2:
L1150: 1-1/2 in. (38 mm)
L1250: 2 in. (51 mm)

L1200N, L1200NDVO and L1200NDVOR with Dump Valve Operator, Pressure Regulator and Gauge



Note: For use only with Old Round Dump Valve Operator Assembly (15000940).

DV850, DV875, and DV2100 Series Dump Valves



	DV850/SS	DV875/SS	DV2100/SS
A	6-3/4 (171)	6-3/4 (171)	6-3/4 (171)
B	7-9/64 (183)	7-9/64 (183)	7-59/64 (201)
C	3-9/32 (83)	3-9/32 (83)	3-63/64 (104)
D	2-19/64 (53)	2-19/64 (55)	2-5/32 (55)
E	1 NPT	1 NPT	2 NPT
F	1/2 NPT	3/4 NPT	1 NPT
G	1/8 NPT	1/8 NPT	1/8 NPT

NOTE: Dimensions are in inches and (millimeters)

REPLACING AND INSTALLING THE DVOA ASSEMBLY

When replacing/installing the old style DVO assembly with the new style (DVOA), tubing and fitting modifications are required. We suggest removing the L1200NDVO/DVOR from the vessel. Relieve pressure from the vessel or use block valves before removing the L1200NDVO/DVOR.

Replacing and Installing the DVOA Assembly For Models L1200NDVO & L1200NDVOR

Tools Needed: Strap or pipe wrench; 3/4" Hex wrench; 9/16" hex wrench; needle nose pliers; tubing cutters and benders and the appropriate tools for the fittings.

1. Block off and bleed the instrument gas pressure supply to the L1200NDVO.
2. Remove the tubing between the L1200NDVO and the separator dump valve, and remove the supply gas tubing (regulator [-R] if used).
3. Remove the L1200NDVO from the vessel (optional).
4. If the L1200N was removed from the vessel, mount it in a suitable vise on a work bench (if possible).
5. Using the proper tools, disconnect the Inlet, Outlet and Exhaust fittings from the existing DVO (see fig. 1). You will re-connect these to the new DVOA in a later step.

NOTE: The following steps must be done with the DVO in the upright position (on top of the L1200N).

6. Remove the L1200N cover (this will aid with the alignment of the new DVOA Valve Bushing). The use of a strap wrench or a pipe wrench may be needed.
7. Insert the new Valve Bushing through the new DVOA (see fig. 2). The markings on top of the DVOA must be facing up. This will be needed in step 9.
8. With a 3/4" hex wrench loosen the existing DVO, valve stem, and static seal (see fig. 3). Once the assembly is loosened, **VERY CAREFULLY** use needle nose pliers to hold the Valve Seat Assembly in place. Remove the existing DVO making sure the Valve Seat Assembly inside the L1200NDVO is aligned and straight (see fig. 4).



CAUTION: MAKE SURE the Valve Seat Assembly inside the L1200N remains in place after removing the DVO.

9. Holding the Seat Assembly up with the needle nose pliers inside the L1200NDVO body, place the tip of the new DVOA valve bushing through the spring and into the hole in the center of the valve seat, and tighten the valve bushing. The Valve Seat Assembly should be able to move freely up and down after the bushing has been tightened. The DVO red button must face away from the vessel.
10. With the new DVOA aligned over the hex on the L1200NDVO body, tighten the Valve Bushing using the 9/16" hex wrench. You may need to hold the DVOA while tightening the Valve Bushing to keep it from rotating (see fig. 5).
11. If the L1200N is in the vise, operate the float and inspect for smooth and proper operation of the Valve Seat Assembly.
12. Replace the L1200NDVO cover (see fig. 6).
13. Using the appropriate tools re-install the Inlet, the Outlet and the Exhaust fittings to the new DVOA (see fig. 5).
14. If the L1200N was removed from the vessel re-install it at this time.
15. Modify existing or install new tubing to connect the Inlet, the Outlet and Exhaust fittings.

NOTE: Clean, dry instrument quality gas should be used. Use of filters will improve service life and reliability.

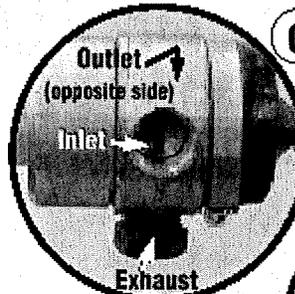


Figure 1



Figure 2
New DVOA



Figure 3

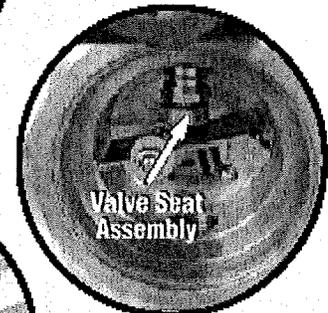


Figure 4

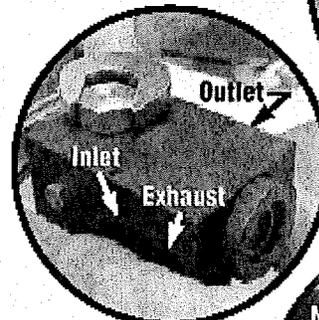


Figure 5

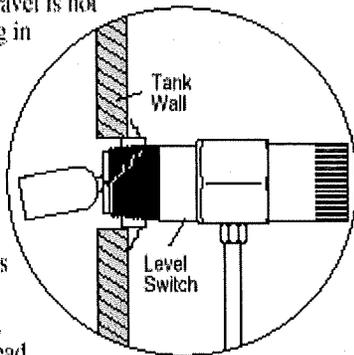


Figure 6

PRESSURE VESSEL INSTALLATION: L1100, L1200, and L1200N

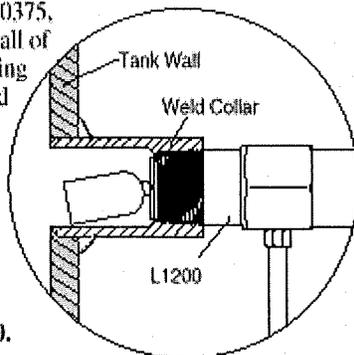
Direct Installation into the Wall of the Pressure Vessel

1. Determine that the float travel is not obstructed by the coupling in the vessel wall, internal baffles, etc. Do NOT use more than one arm extension P/N 15050395.
2. BE SURE that the float and extension are tight and that the lock washer is in place.
3. Before installing the level switch a suitable pipe thread sealant is recommended. Screw the unit directly into the threaded connection in the wall of the pressure vessel.
4. Be sure that the electrical connection is positioned at the bottom. For L1200N the 1/8 NPT pneumatic connection should be on top (the 1/4 NPT vent connection should be on the bottom). See "Pneumatic models" section for further instructions for the L1200N.
5. Make the electrical wiring connections according to appropriate wiring diagrams for the alarm or shutdown system to be used. The electrical connection is 1/2-14 NPT.
6. BE SURE all electrical connections are insulated and the cover is fully installed before reconnecting electrical power.
7. BE SURE all pressure connections are tight before pressurizing the system.



Installation with a Weld Collar

1. The weld collar, P/N 15050375, must be welded into the wall of the pressure vessel according to code standards and good welding practices.
2. Follow above instructions for installation directly into the wall of the pressure vessel.
3. NOTE: Weld collar 15050375 can be used ONLY with model L1200.



Installation Using External Float Chamber 15050697

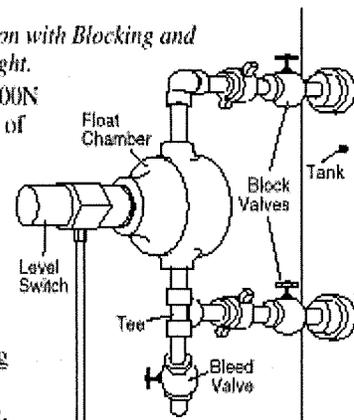
CAUTION: USE "NON SPARKING TOOLING".

1. Install the float chamber 15050697 on the outside wall of the pressure vessel using 1 NPT piping. Position the 2 NPT threaded connection at the height where you want the level switch to operate. The 2 NPT threaded connection must be positioned away from the tank wall.

2. A tee is typically installed at the bottom of the lower 1 inch pipe riser to allow draining of the float chamber for servicing or replacement.

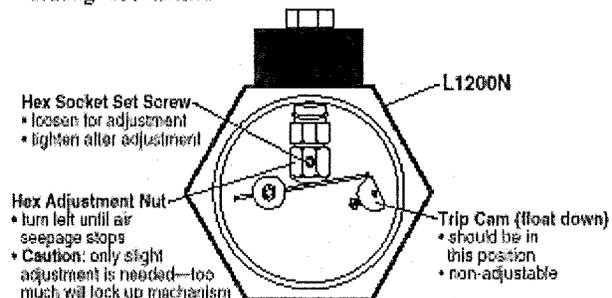
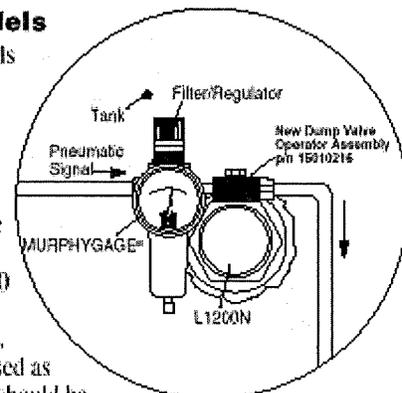
NOTE: A typical installation with Blocking and Bleed valves is shown at right.

3. Install the L1200 or L1200N in the 2 NPT connection of the float chamber. BE SURE float travel is not restricted and that the float is tight onto the float shaft.
4. To complete installation and wiring, follow the instructions for mounting directly into wall of the vessel and for wiring.



Pneumatic Models

1. All pneumatic models operate on the vent principle. The pneumatic signal source MUST BE CLEAN AND DRY. The input pneumatic signal must be regulated between 30 and 70 psi (2.07-4.83 kPa) [2.07-4.83 bar]. If produced gas is used as the signal source, it should be taken after gas passes through the final scrubber. A suitable filter must be positioned before the L1200NDVO to prevent liquids and/or particulates from entering the dump valve operator. *NOTE: Check filter periodically for wear and tear and elements that hamper the flow of the pneumatic signal.*
2. All pressure connections must be tight and maintained tight so as not to leak air/gas.
3. Valve seat adjustment can be made if air/gas begins to leak. Care should be taken when adjusting as only slight movement is necessary to stop the leakage; excessive force will bind the seating mechanism.



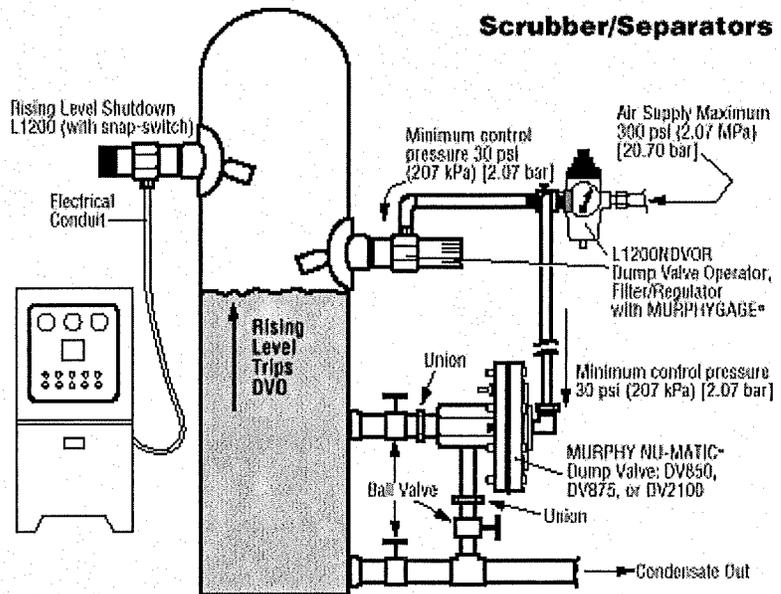
TYPICAL INSTALLATION ON GAS COMPRESSORS

Basic Operation

As condensate rises in the scrubber, the float on the L1200NDVOR rises and trips its pneumatic valve. The valve opens allowing pressure to enter the dump valve pilot chamber. Once the pressure enters the pilot chamber it forces the diaphragm and valve stem forward thus opening the valve seat (valve open/closed indicator button pops out) and releasing condensate through the valve stem and out the drain. As the condensate level drops, the L1200NDVOR pneumatic valve closes to shut off the pressure to the dump valve causing it to close.

If for any reason the condensate continues to rise beyond normal dump levels, model L1200 operates the alarm and/or shuts down the equipment.

The L1200NDVOR Filter/Regulator and the MURPHYGAGE® help keep the control pressure clean and dry. They also allow the operator to adjust pressure to recommended levels.



DUMP VALVE INSTALLATION

DV850 - DV875 - DV2100



CAUTION: USE "NON SPARKING TOOLING".

The following steps describe the "Block and Bleed" method for installing the dump valve. The "Direct Mounting" method to the tank wall is also accepted.

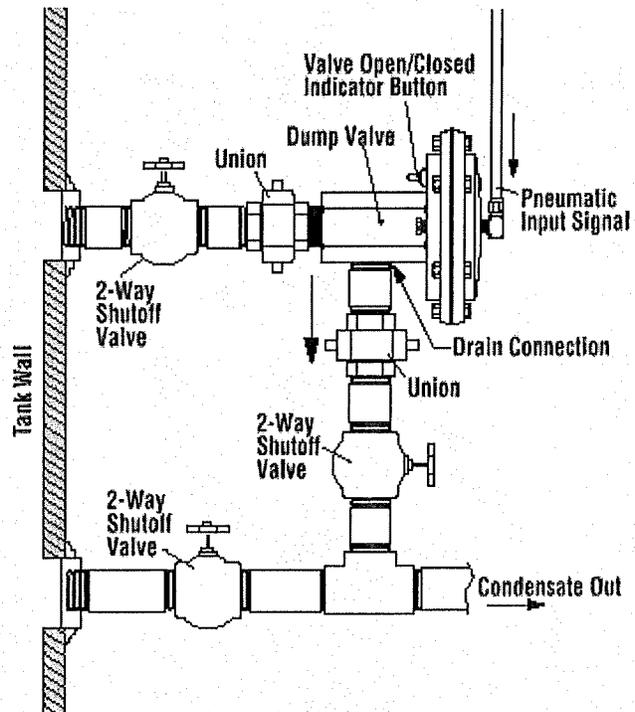
1. Install a manual shutoff (2-way) valve and a union between the DV valve and the vessel to facilitate valve repair or replacement.
2. Position the DV valve drain connection so it is on the bottom.
3. Install a 2-way valve to the drain line between the lower vessel entry and the condensate out line.
4. Be sure the unit is screwed tight and does not leak liquid.
5. Install the piping for the pneumatic input signal into the 1/8 NPT threaded connection of the pressure inlet port (on top of the DV valve).
6. Install a 2-way valve and union between the DV drain connection and the condensate out line.

NOTE: The typical procedure to remove the valve should be:

1. Close the shutoff valve between the scrubber and the DV valve.
2. Operate the dump valve to equalize pressure to the drain (condensate out) line.
3. Close the shutoff valve downstream of the drain.

Be Careful, pressure will still be in the system at the drain pressure when the unions are loosened.

Typical Dump Valve installation



REPLACING THE DUMP VALVE SEAT KIT

Replacing the Seat Kit on the Dump Valves

Tools needed: 7/8" hex wrench, 7/16" hex wrench, 1-1/8" hex wrench, and thread sealer; optional pressure source.

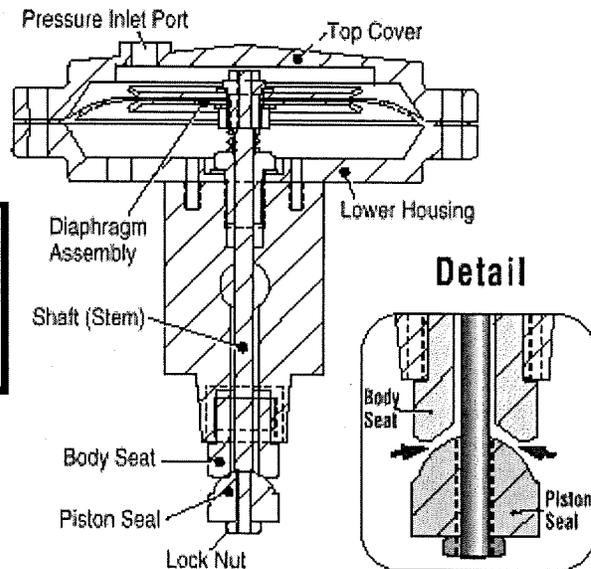
NOTE: Relieve pressure from scrubber or use the block valves before removing the DV dump valve.

1. Remove the valve from the Scrubber.



CAUTION: THE BODY SEAT AND PISTON SEAL WILL BE DAMAGED IF ALLOWED TO TURN AGAINST EACH OTHER. THE PREFERRED METHOD IS TO USE AIR TO KEEP THE VALVE OPEN. IF AIR IS NOT AVAILABLE, CAREFULLY FOLLOW THE ALTERNATE INSTRUCTIONS (STEPS 2A & 8A). ALSO, DO NOT GRIP THE OPERATING STEM WITH ANY TOOLS. IF STEM NEEDS TO BE HELD, USE THE NUT ON THE BACK OF THE DIAPHRAGM.

2. Apply 30 psi to the pressure inlet port (top of valve). The Shaft and Piston Seal will extend.
- 2A. **IF AIR IS NOT AVAILABLE DO THE FOLLOWING:** Remove the valve Top Cover (bolts/nuts). Note the orientation of the Top Cover to the bottom. Mark both sides of the Diaphragm Housing before dis-assembly. Once the Top Cover is removed, carefully turn the valve upside down with the Piston Seal pointing up. Clamp the bottom housing down, or secure it against a flat surface to compress the spring and open the Piston Seal and Body Seat. Be careful not to damage the diaphragm. The valve must be kept in this fashion, with this much clearance throughout the following operations.
3. Hold the Piston Seal with the 7/8" hex wrench, and remove the Locknut with 7/16" hex wrench.
4. Unscrew the Piston Seal with the 7/8" hex wrench. Now, unscrew the Body Seat (use 7/8" hex wrench for DV850 and DV875 models). Use the 1-1/8" hex wrench for the DV2100 Series models.



5. Apply thread sealer to new Body Seat, and screw it in place tightening with the wrench until it stops. **NOTE:** Clean the female threads in the body before inserting the new Body Seat to facilitate threading.
6. Apply thread sealer to the shaft (stem), and screw the new Piston Seal on to the shaft (stem).
7. Hold the Piston Seal with the 7/8" hex wrench and screw the Locknut in place.
8. Remove the 30 psi pressure to the pressure inlet port, and re-install the valve into the scrubber.
- 8A. Re-install the Top Cover, paying attention to the alignment marks made in step 2A. Re-install the DV into the scrubber.

REPLACING THE DUMP VALVE DIAPHRAGM ASSEMBLY

Replacing the Diaphragm Assembly for all DV models (Refer to the Illustration above)

Tools needed: 7/8" hex wrench, 7/16" hex wrench, 5/8" hex wrench or socket, and thread sealer.

NOTE: Relieve pressure from scrubber or use the block valves before removing the DV dump valve.

1. Remove the valve from the Scrubber.
2. Remove the valve Top Cover (bolts/nuts). Note the orientation of the Top Cover to the bottom. Mark both sides of the Diaphragm Housing before dis-assembly.



CAUTION: MAKE SURE TO USE A 7/8" HEX WRENCH TO HOLD THE PISTON SEAL WHILE REMOVING THE DIAPHRAGM ASSEMBLY. DO NOT GRIP THE DIAPHRAGM (BLACK RUBBER) WITH ANY TOOLS.

3. Hold the Piston Seal with a 7/8" hex wrench making sure to keep the shaft (stem) from turning, and remove the nut on the back of the diaphragm assembly with the 7/16" wrench.
4. While holding the piston seal with the 7/8" wrench, proceed to remove the diaphragm assembly by hand.

NOTE: You will be turning the assembly against the spring when unscrewing the diaphragm assembly.

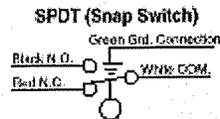
5. To re-assemble the assembly, apply thread sealer to the shaft/stem threads and hold the Piston Seal with a 7/8" hex wrench.
6. Keep holding the Piston Seal with 7/8" hex wrench. Make sure the 3/4" nut side of the new diaphragm assembly is toward the shaft. Press the diaphragm assembly into the shaft threads and tighten it on to the shaft threads by hand.
7. Keep holding the Piston Seal with 7/8" hex wrench. Apply thread sealer to 7/16" nut, and screw it on to the shaft threads to lock the diaphragm assembly in place, tighten the nut with the 7/16" wrench.
8. Press down the diaphragm assembly with your hands to open the valve, and *very carefully* turn to align the diaphragm holes with the lower housing bolt holes.



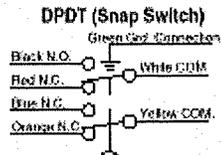
CAUTION: THE BODY SEAT AND PISTON SEAL WILL BE DAMAGED IF ALLOWED TO TURN AGAINST EACH OTHER.

9. Re-install the Top Cover, paying attention to the alignment marks made in step 2. Be sure to tighten the bolts and nuts evenly. Re-install the DV into the scrubber.

ELECTRICAL INFORMATION



Switch Rating: 5 A @ 125-250-480 VAC
 1/2 A @ 125 VDC
 1/4 A @ 250 VDC
 2A @ 6-30 VDC Resistive
 1A @ 6-30 VDC Inductive



Switch Rating: 10 A @ 125-250 VAC
 1/2 A @ 125 VDC
 1/4 A @ 250 VDC
 10 A @ 6-24 VDC Inductive/Resistive

REPLACEMENT PARTS

Order by part number designation.

L1100/L1200*

- 15000893: BUOYGLAS™ float
- 15000894: Stainless Steel float for L1200
- 15000937: Stainless Steel float for L1100
- 15000124: SPDT snap switch assembly
- 15010213: L1100 counter balance assembly
- 15010214: L1200 counter balance assembly

L1200N

- 15050420: Cam spring return
- 15050421: Cam
- 15000893: BUOYGLAS™ float
- 15000894: Stainless Steel float for L1200N
- 15050453: Valve stem
- 15010189: Counter balance assembly

L1200NDVO and L1200NDVOR

- 55050621: Regulator only
- 05706499: 20BPG-D-75 Pressure MURPHYGAGE®
0-75 psi (517 kPa) [5.17 bar]
- 15010216: DVOA assembly (New rectangular style)
- 15000940: DVO assembly (Old round style)
- 00003341: Filter for regulator
- 00003340: Regulator Diaphragm Kit

DV850, DV850SS, DV875, DV875SS, DV2100 and DV2100SS

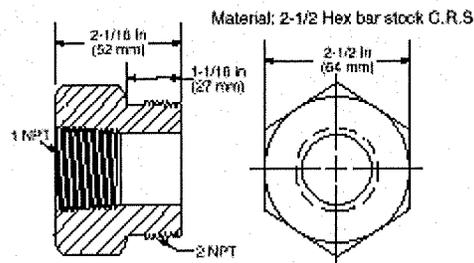
- 55000219: Diaphragm Assembly (all models)
- 55000224: Seat Kit (DV850, DV850SS, DV875 and DV875SS)
- 55000225: Seat Kit (DV2100 and DV2100SS)
- 55050617: Optional Adapter Bushing 2 NPT to 1 NPT

*To maintain hazardous location listings, all other repairs must be made by the factory.

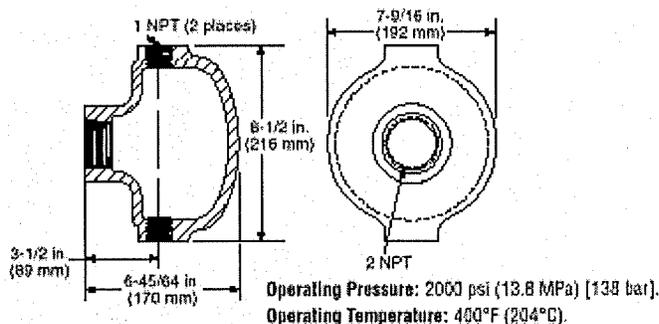
ACCESSORIES

Order by part number designation.

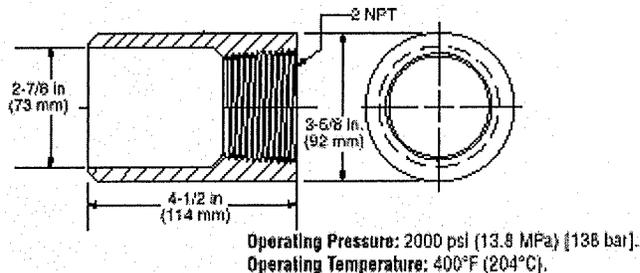
55050617: DV850/DV875 Adapter Bushing



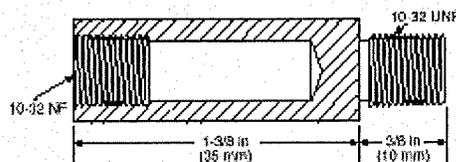
15050697: External Float Chamber



15050375: Weld Collar



15000892: Float Shaft Extension



Warranty

A two-year limited warranty on materials and workmanship is given with this Murphy product.
Details are available on request and are packed with each unit.

In order to consistently bring you the highest quality, full featured products, we reserve the right to change our specifications and designs at any time.

murphy

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EXPLOSION-PROOF I/P TRANSDUCER

Operating and Maintenance Instructions

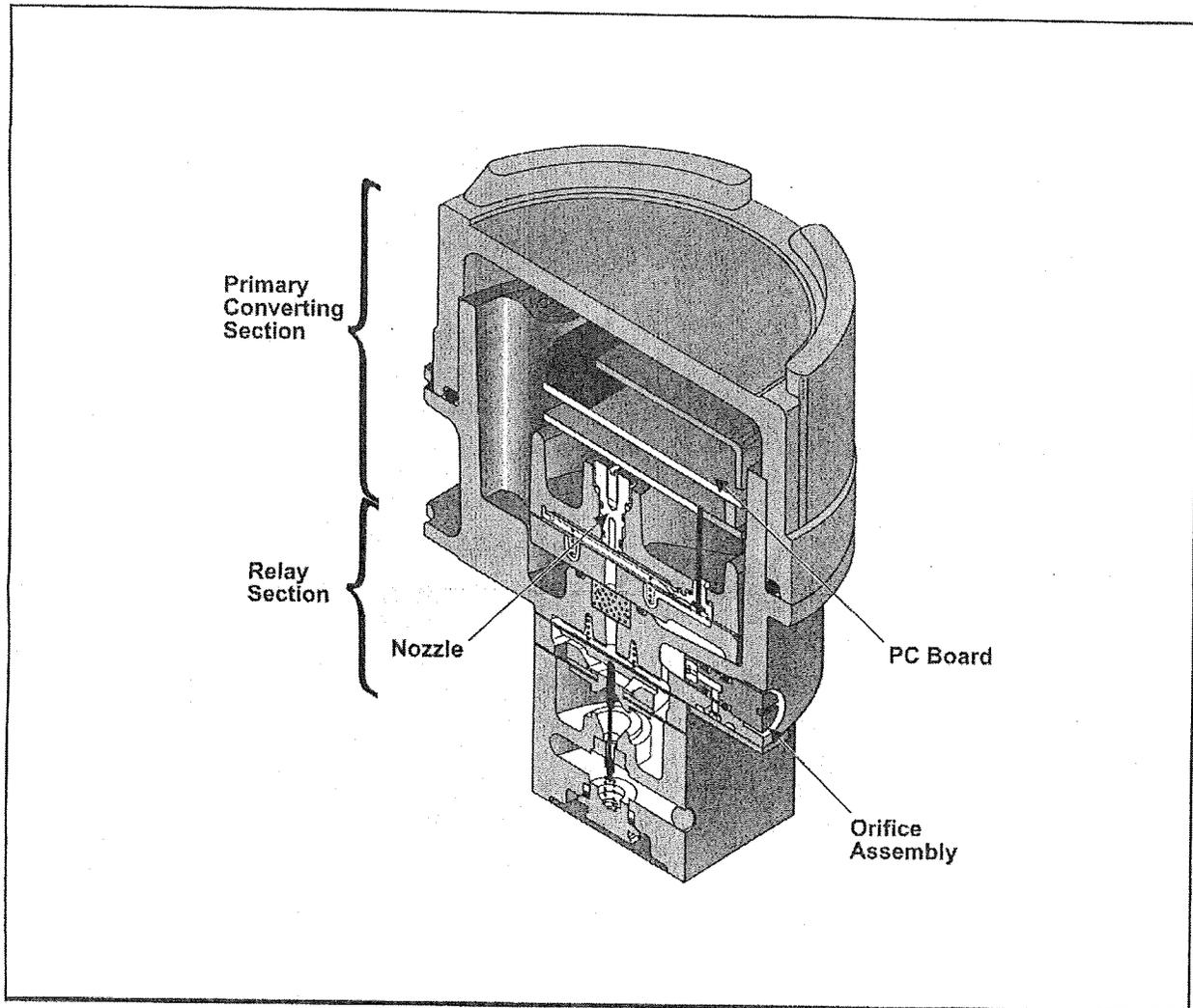


Figure 1. TXI7800 Operating & Calibration Controls.

GENERAL INFORMATION

The Model TXI7800 Explosion-Proof I/P Transducer transmits a pneumatic signal which is linearly proportional to a DC input signal from electronic control devices.

The Model TXI7800 Transducer uses low powered micro-electronics and pressure feedback control to provide a stable, accurate pneumatic output for the operation of valve actuators.

CALIBRATIONS/ADJUSTMENTS

Equipment Required for Calibration:

- Pneumatic Supply capable of delivering up to 150 psig.
- Current Supply capable of delivering up to 30 mA.
- Pressure Gage capable of a digital readout up to 50 psig with an accuracy of .1%.
- Digital Volt Meter capable of a readout up to 30 mA with an accuracy of .02%.

The following adjustments are provided:

Full Range Operation
Lo/Hi Span
Forward/Reverse Mode
Calibration - Zero and Span
Split Range Operation
Damping Adjustments

FULL RANGE OPERATION

Lo/Hi Span Adjustment

1. Set the Lo/Hi Span switch to the **Lo** position for 3-15 psig output. Set the Lo/Hi Span Switch to the **Hi** position for 3-27 & 6-30 psig output. For more detail information, see Figure 2. "TXI7800 Calibration Configuration".

Forward Acting Mode Adjustment

2. Set Fwd/Rev Mode switch to Forward position.
- **Forward Acting Calibration - Zero**
 3. Apply the minimum input signal to the Terminal Block and adjust the Zero screw for minimum output pressure.
 - **Forward Acting Calibration - Span**
 4. Apply the maximum input signal to the Terminal Block and adjust the Span screw for maximum output pressure.
 5. Repeat steps 3-4 until the desired output range is obtained.

Reverse Acting Mode Adjustment

6. Set Fwd/Rev Mode switch to the Reverse position.
- **Reverse Acting Calibration-zero**
 7. Apply the maximum input signal to the Terminal Block and adjust the Zero screw for minimum output pressure.
 - **Reverse Acting Calibration-Span**
 8. Apply the minimum input signal to the Terminal Block and adjust the Span screw for maximum output pressure.
 9. Repeat steps 7-8 until the desired output range is obtained.

SPLIT RANGE OPERATION

Lo/Hi Span Adjustment

1. Set the Lo/Hi Span switch to the **Lo** position for a 4-20 mA input signal and 3-9, 3-15, 6-18, 9-15, 15-27 & 18-30 psig output. Set the Lo/Hi Span Switch to the **Hi** position for a 4-12, 12-20 mA input signal and 3-15 psig output. For more detail information, see Figure 2. "TXI7800 Calibration Configuration".

Forward Acting Mode Adjustment

2. Set Fwd/Rev Mode switch to the Forward position.
- **Forward Acting Calibration - Zero**
 3. Apply the minimum input signal to the Terminal Block and adjust the Zero screw for minimum output pressure.
 - **Forward Acting Calibration - Span**
 4. Apply the maximum input signal to the Terminal Block and adjust the Span screw for maximum output pressure.
 5. Repeat steps 3-4 until the desired output range is obtained.

Reverse Acting Mode Adjustment

6. Set Fwd/Rev Mode switch to the Reverse position.
- **Reverse Acting Calibration-zero**
 7. Apply the maximum input signal to the Terminal Block and adjust the Zero screw for minimum output pressure.
 - **Reverse Acting Calibration-Span**
 8. Apply the minimum input signal to the Terminal Block and adjust the Span screw for maximum output pressure.
 9. Repeat steps 7-8 until the desired output range is obtained.

Additional Adjustments

• Damping Adjustment

The Damping Adjustment is used so that the transducer can be tuned for optimum response and stability in a particular application.

For best performance start Damping Adjustment at maximum adjustment (fully clockwise). Gradually turn counterclockwise until slight oscillation occurs and then turn back clockwise until oscillation is minimized.

1. Turn damping adjustment clockwise to increase damping function.
2. Turn damping adjustment counterclockwise to decrease damping function.

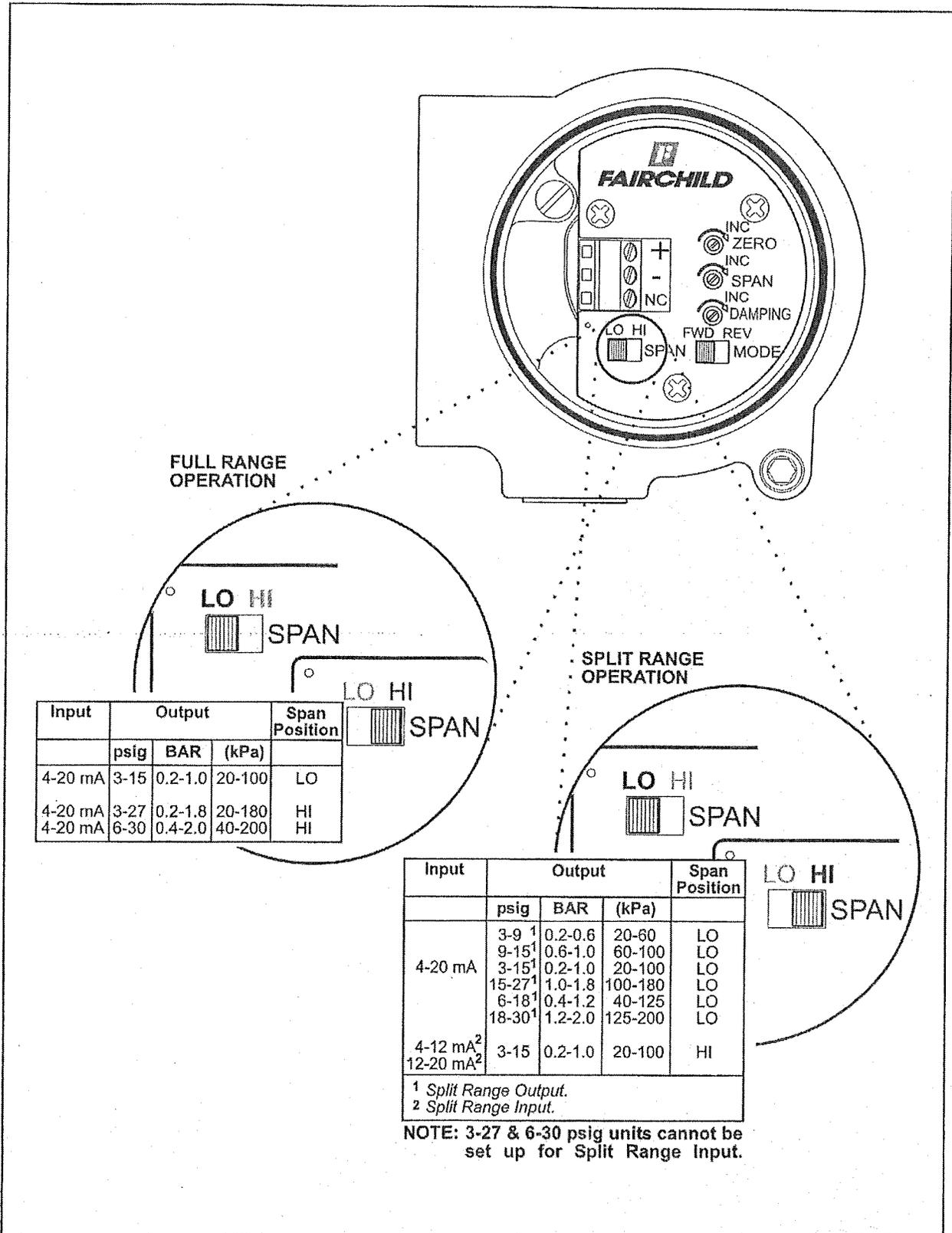


Figure 2. TXI7800 Calibration Configuration.

MAINTENANCE

To clean the Orifice, use the following procedure:

1. Shut off the valve that is supplying air to transducer. It is not necessary to remove the Transducer from the air line.
2. Remove the Orifice Assembly from the unit. For more detailed information see Figure 1. "TX17800 Operating & Calibration Controls" on page 1.
3. Clean with alcohol and dry with compressed air.
4. Lubricate O-Rings on Orifice Assembly (4) with silicone grease or equivalent lubricant before reassembling.

NOTES: Parts must be completely dry before reassembling.

If the standard maintenance procedure does not correct the trouble, install Service Kit EA-19268. (Sold Separately)

TROUBLE-SHOOTING

Table 1. Trouble-Shooting.	
Problem	Solution (check)
No Output	Supply Pressure Clogged Orifice
Leakage	Connections
Low or Improper Span Adjust	Zero and Span Adjust Supply Pressure Low Output Leakage
Erratic Operation	DC Signal Loose Wires or Connections Liquid in Air Supply

WARNING: Failure of Transducer could result in output pressure increasing to supply pressure possibly causing personal injury or damage to equipment.

FAIRCHILD TXI7800

EXPLOSION-PROOF I/P TRANSDUCER

Installation Instructions

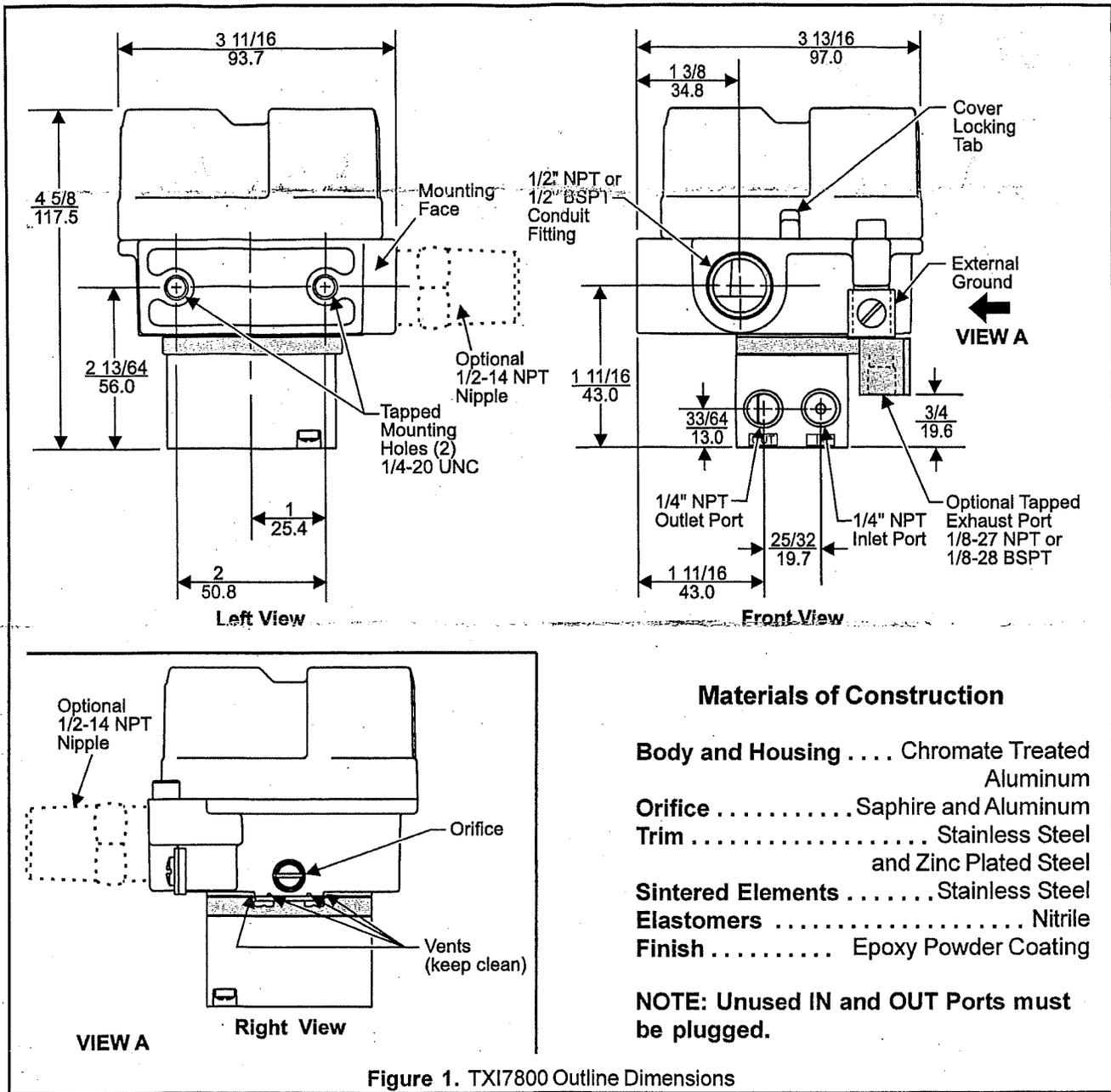


Figure 1. TXI7800 Outline Dimensions

INSTALLATION

You can mount the Model TXI7800 directly on a flat surface using the two tapped mounting holes in the mounting face of the housing. For more information, see Figure 1.

TCXI7800, TEXI7800, TFXI7800 Installation with the "N" Option

NOTE: For Hazardous Location in Potentially Explosive Atmosphere Installations

Materials of Construction

- Body and Housing Chromate Treated Aluminum
- Orifice Sapphire and Aluminum
- Trim Stainless Steel and Zinc Plated Steel
- Sintered Elements Stainless Steel
- Elastomers Nitrile
- Finish Epoxy Powder Coating

NOTE: Unused IN and OUT Ports must be plugged.

1. Tapped exhaust required for installations in Class I, Division 2/Zone 2 (European Union) classified locations with Group D/Group IIA (European Union) gases such as Natural Gas and Methane-Industrial as the pressure supply medium.
2. The explosion-proof pipe nipple seal (N option) supplied with this unit is an integral component of the design safety of this version and must not be removed. Use caution to avoid marring the threads on the pipe nipple which voids the explosion-proof integrity of the device.
3. Gases used as the pressure supply medium in hazardous location applications must be compatible with the elastomer indicated in Materials of Construction.

Installation (continued)

A Mounting Kit is available to mount the TXI7800 on a flat surface or on a 2" pipe. For more information, see Figure 2.

ATEX Directive- Special Conditions for Safe Use

The enclosure is manufactured from aluminum alloy. In rare cases, ignition sources due to impact and friction sparks could occur. This shall be considered when the equipment is installed in locations that specifically require Group II, category 1G equipment.

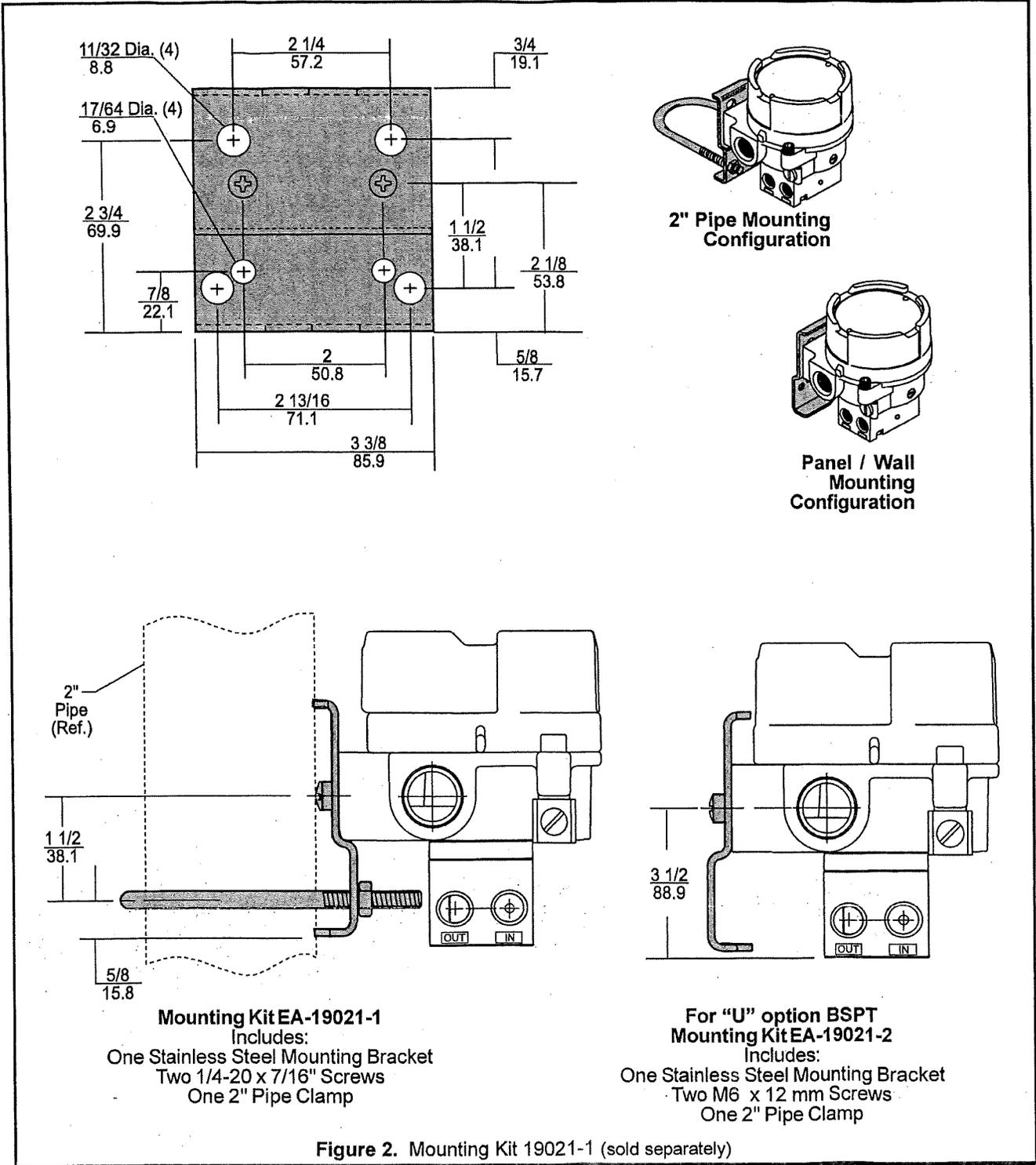


Figure 2. Mounting Kit 19021-1 (sold separately)

Pneumatic Connections

Clean all pipelines to remove dirt and scale before installation.

Apply a minimum amount of pipe compound to the male threads of the fitting only. **Do not use teflon tape as a sealant.** Start with the third thread back and work away from the end of the fitting to avoid the possibility of contaminating the transducer. Install the transducer in the air line.

The inlet and outlet ports are labeled on the side of the transducer. Tighten connections securely. Avoid undersized fittings that limit the flow through the transducer and cause a pressure drop downstream. For more information, see Figure 1.

NOTES: Instrument quality air, per ISA Standards S7.3-1981, is required. Use a filter to remove dirt and liquid in the air line ahead of the transducer. If an air line lubricator is used, it **MUST** be located downstream to avoid interference with the transducer.

The user is responsible for insuring that the environment in which the unit is installed and the operating gas are compatible with the materials in the transducer.

Electrical Connections

Make connections to the Terminal Block through the 1/2-14 NPT Conduit Port in the base of the housing. For more information, see Figure 3.

Wiring in Hazardous Areas

Wiring in hazardous areas should comply with the codes in Table 1 and with any local codes that apply.

Country	Agency	Code
U.S.	FM	ANSI/ISA RP 12.6, ANSI/NFPA 70
Canada	CSA	CEC Part 1
Europe	ATEX	EN 50 039, EN 60079-14, IEC 60079-14
Australia	SAA	AS/NZS 3000, AS2381.1

Intrinsically Safe Connections

For more information, see the latest revision of the drawings listed in Table 2.

Underwriting Group	Drawing Number
FM (Factory Mutual)	EC-18970
CSA (Canadian Standards Assoc.)	EC-18971
ATEX	EC-18972
SAA (Standard Australia Assoc.)	ED-19271

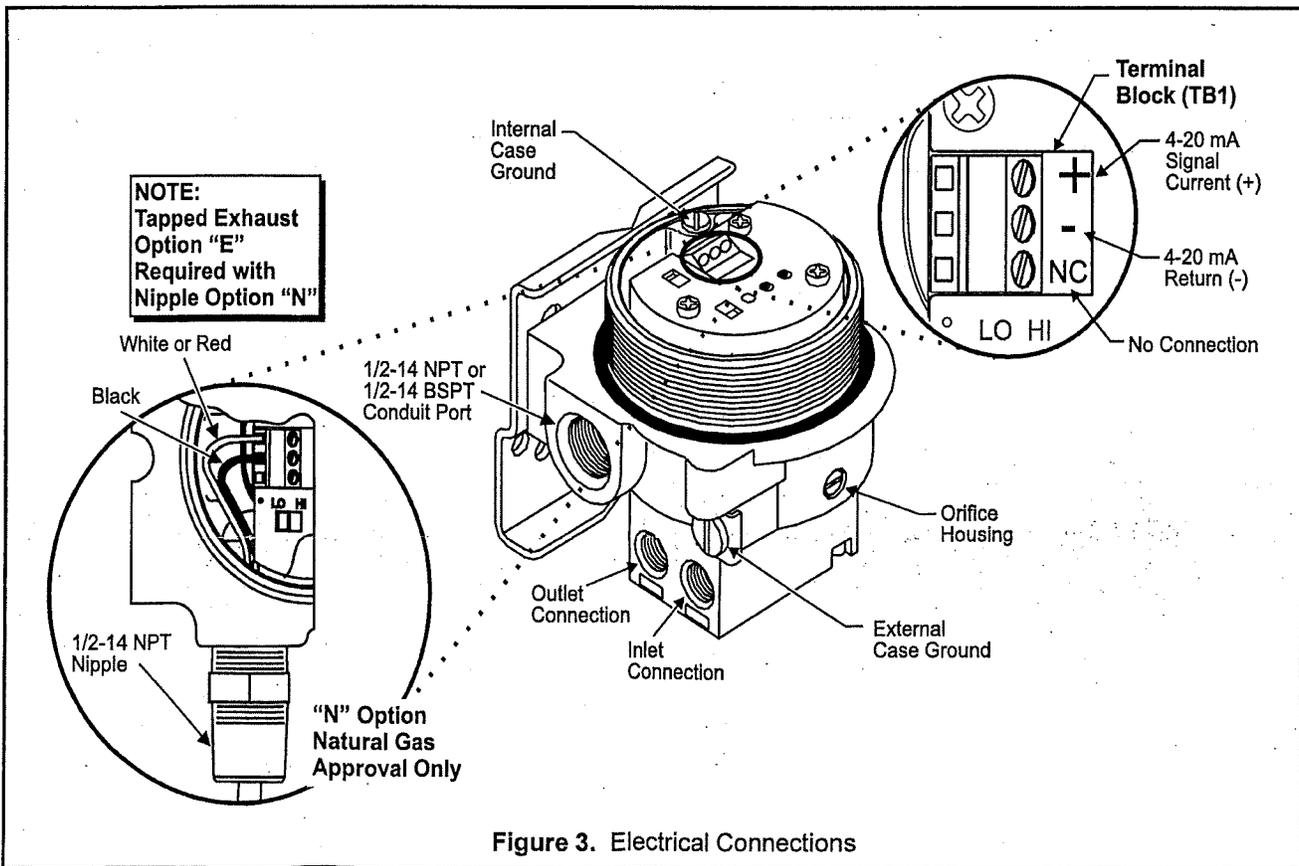
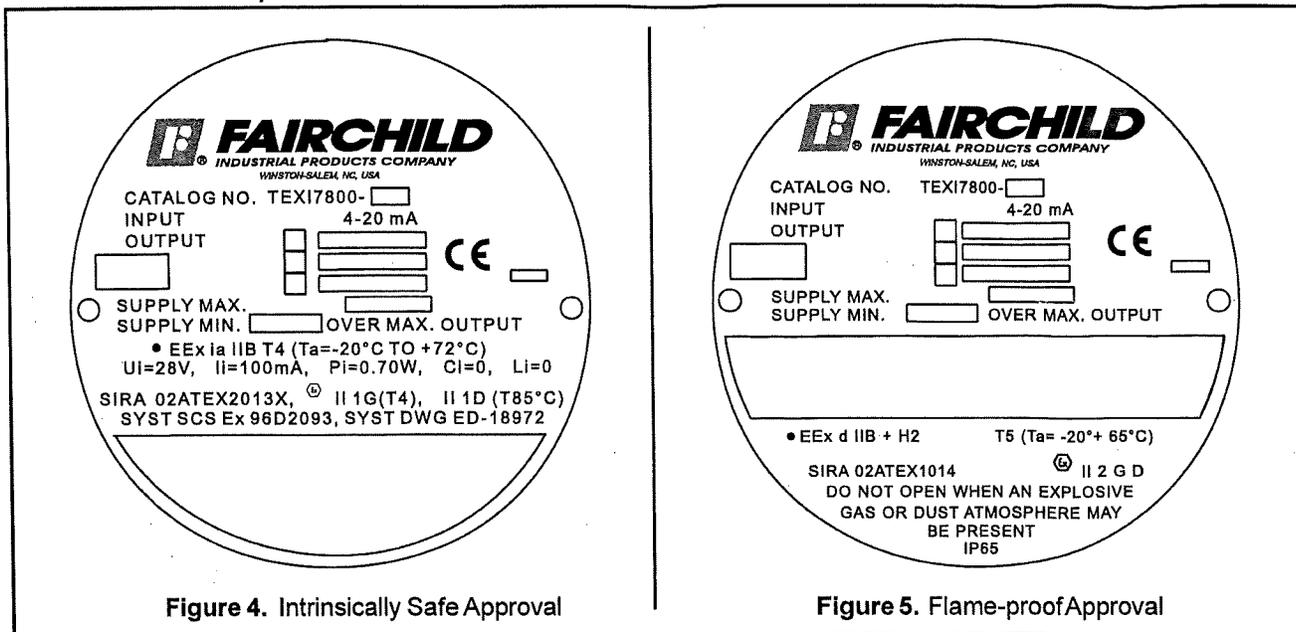


Figure 3. Electrical Connections

HAZARDOUS AREA SPECIFICATIONS

ATEX Directive Nameplates



LEGAL NOTICE:

The information set forth in the foregoing Installation Instructions shall not be modified or amended in any respect without prior written consent of Fairchild Industrial Products Company. In addition, the information set forth herein shall be furnished with each product sold incorporating Fairchild's unit as a component thereof.



ISO 9001:2000
FM NO. 25571

www.fairchildproducts.com

II-5TXI7800
Litho in USA
Rev. D 9/04

ACTION

Indirect throttle; Pilot Output Pressure (Yellow) decreases with temperature rise.

APPLICATION:

Used to control a set temperature in indirect heaters, emulsion treaters, reboilers, steam generators, heat exchangers, cooler shutter controls, and salt bath heaters.

WORKING PRESSURE (sensing element):

psig	kg/cm ²
500	35.15 max. without Separable Socket.
4000	281.23 max. with Separable Socket.
7000	492.15 max. with Special Separable Socket.

Separable Socket is an extra price item and must be ordered separately, if desired. To order Separable Sockets refer to Table of Contents

TEMPERATURE RANGE:

T 12, T 18	-30°F minimum TO 400°F maximum -34°C minimum to 204°C maximum
HT 12, HT 18	-30°F minimum to 750°F maximum -34°C minimum to 399°F maximum

OPERATION:

These Thermostat Base Assemblies consist of a STAINLESS TUBE for monitoring the changing temperature, which is connected by a Low Expansion Alloy Rod to a DIAPHRAGM or BELLOWS ASSEMBLY. The differential pressure across the Diaphragm or Bellows combined with changes in the length of the STAINLESS TUBE throttle a PILOT PLUG seat. The PILOT PLUG consists of two stainless balls rigidly connected together. The seat at BALL 1 is the Supply Pressure inlet (Violet to Yellow). The seat at BALL 2 is the pressure vent (Yellow to Atmosphere).

Assume the set temperature of the Thermostat is above that of the system. The vent at BALL 2 is closed and the inlet at BALL 1 is open. Output Pressure (Yellow) is being sent to any Pilot or Motor Valve.

As the temperature rises in the system, the STAINLESS TUBE increases in length to move the Thermostat Diaphragm (or Bellows) Assembly in a direction to first close the seat at BALL 1 (Violet to Yellow) and open the seat at BALL 2 (Yellow to Atmosphere). Output Pressure (Yellow) decreases to cause the desired Pilot or Motor Valve action.

As the temperature decreases, the action is reversed to increase Output Pressure (Yellow).

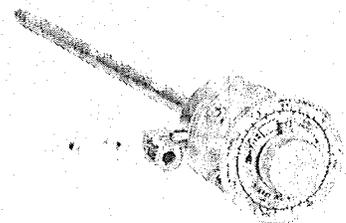
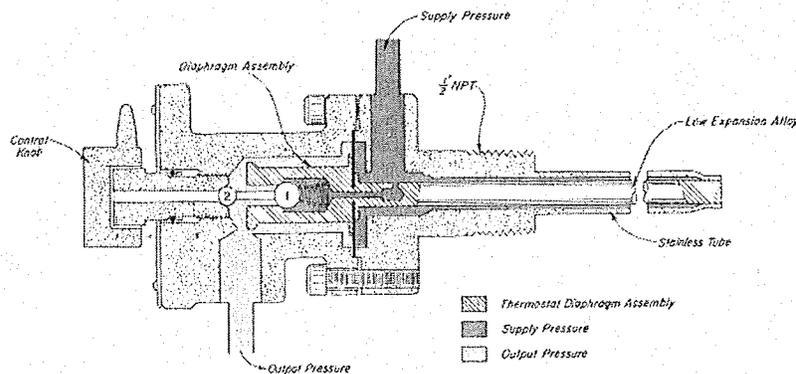
SUPPLY PRESSURE:

5 to 30 psig
.35 to 2.11 kg/cm ²

RESPONSE RANGE:

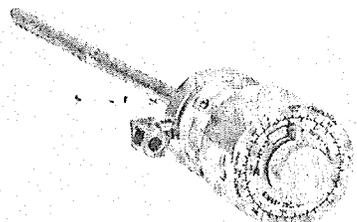
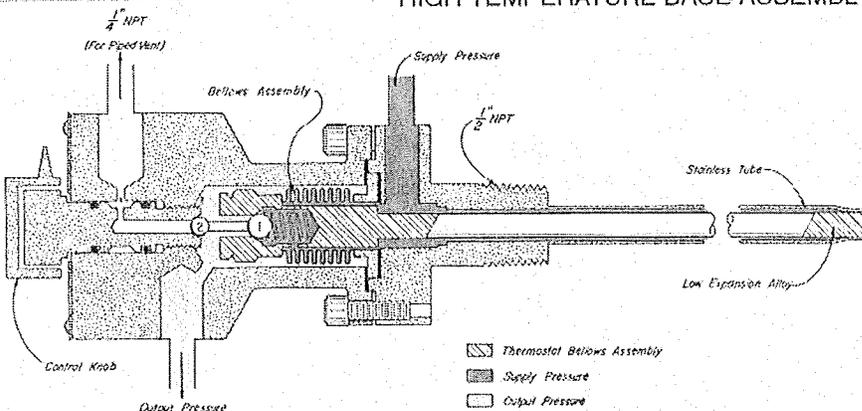
T 12	- 1.75 psig/°F, .22 kg/cm ² /°C
T 18	- 2.50 psig/°F, .31 kg/cm ² /°C
HT 12	- 2.50 psig/°F, .31 kg/cm ² /°C
HT 18	- 3.75 psig/°F, .47 kg/cm ² /°C

LOW TEMPERATURE BASE ASSEMBLY



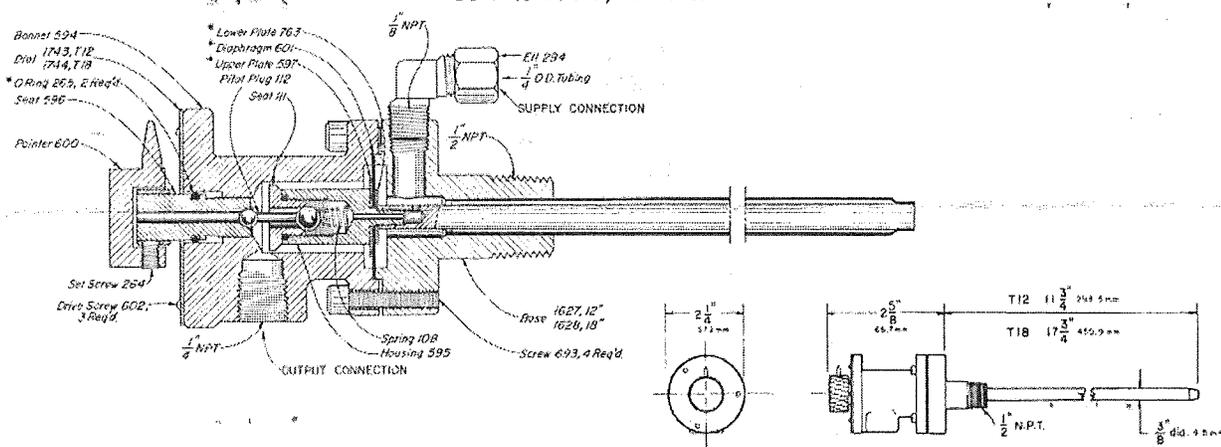
T 12

HIGH TEMPERATURE BASE ASSEMBLY



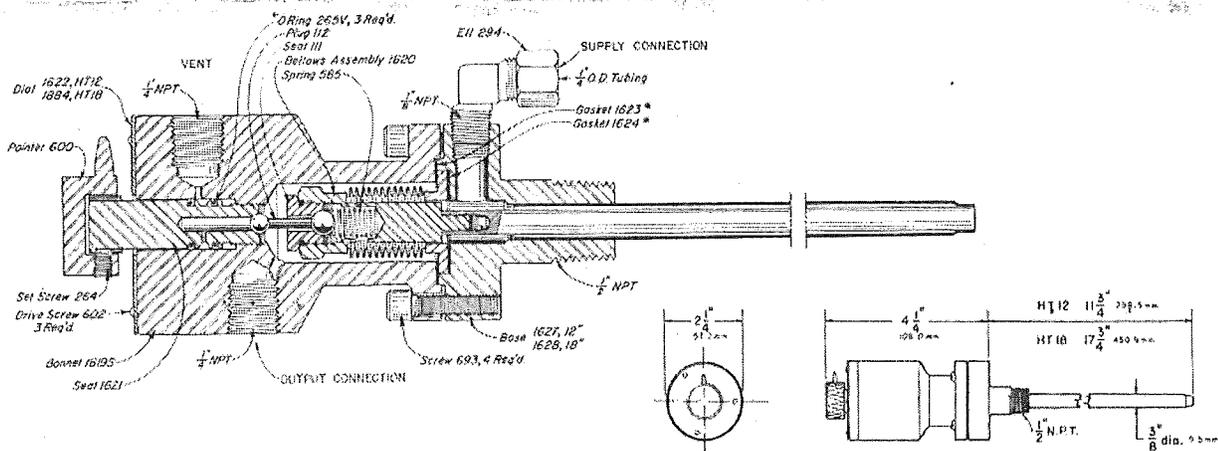
HT 12

T 12/18
DUCTILE
500 lbs. W.P.
-30°F to 400°F, -34°C to 204°C



T 12 & T 18 DIMENSIONS

HT 12/18
STEEL
500 lbs. W.P.
-30°F to 750°F, -34°C to 399°C



HT 12 & T 18 DIMENSIONS

INDIRECT BASE ASSEMBLIES AVAILABLE:
DUCTILE or STEEL

CAT. NO.	BASE ASSEMBLY	MAX. TEMP. °F	MAX. TEMP. °C
HAA	T 12	400	204
HAB	T 18	400	204
HBA	HT 12	750	399
HBB	HT 18	750	399

*These are recommended spare parts and are stocked as repair kits. To order repair kit, specify; "T12B Repair Kit, RLB" or; "HT Repair Kit, RLQ."

Separable Sockets are available at extra cost, refer to Table of Contents for ordering.