INSTRUCTION MANUAL

includes Parts List
FLOW PRODUCTS
10A6100 DESIGN LEVEL B

PURGEMASTER™ FLOWMETERS



PN24616

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CAUTION notices apply to hazards or unsafe practices which could result in property damage.

NOTES highlight procedures and contain information which assist the operator in understanding the information contained in this manual.

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WARNING
POSSIBLE PROCESS UPSETS

Maintenance must be performed only by qualified personnel and only after securing equipment controlled by this product. Adjusting or removing this product while it is in the system may upset the process being controlled. Some process upsets may cause injury or damage.

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READ FIRST

WARNING

All Flowmeters being returned to ABB Automation must be free of any hazardous materials (acids, alkalis, solvents, etc). A Material Safety Data Sheet (MSDS) for all process liquids must accompany returned equipment. Contact ABB Automation for authorization prior to returning equipment.

⚠ SYMBOL DEFINITION

Where product damage or unsafe conditions might occur, ⚠ directs the user to refer to this bulletin for specific information. ⚠ appears next to the information indicated by ⚠ on the product.

Read these instructions before starting installation; save these instructions for future reference.

1.0 INTRODUCTION

1.1 General Precautions

⚠The ABB Automation Series 10A6100 PURGEMASTER™ Flowmeters have been designed to operate up to maximum design working pressures and temperatures as shown in the following chart.

MAXIMUM FLUID PRESSURE (PSIG)							
END FITTING/ADAPTER MATERIAL							
316 SST/316 SST		316 SST/KYNAR		BRASS/KYNAR		KYNAR/KYNAR	
FLUID TEMPERATURE		FLUID TEMPERATURE		FLUID TEMPERATURE		FLUID TEMPERATURE	
MAX. 250° F	DESIGN 100° F	MAX. 200° F	DESIGN 100° F	MAX. 200° F	DESIGN 100° F	MAX. 150° F	DESIGN 100° F
250 psig	250 psig	200 psig	250 psig	200 psig	250 psig	150 psig	200 psig

Minimum Fluid Temperature:

32° F (0° C).

Ambient Temperature:

32° F (0° C) to 140° F (60° C).

Purgemaster with Differential Pressure Regulator:

Design Pressure: 200 psig at 100° F (38° C)
Maximum Operating pressure: 200 psig at 200° F (93° C)

CAUTION
Meters with TROGAMID™ tubes can only be used to a maximum temperature of 140° F (60° C). Consult ABB Automation for specific applications and precautions when using TROGAMID tubes.

This is not a certification that the glass tubes will not break at pressures less than those listed above. Inherent material limitations can result in tube breakage due to conditions beyond our control. For example: glass is a brittle material which may break upon impact; glass if subjected to thermal shock may break; glass is notch sensitive in that scratches, nicks or cracks may result in breakage when pressurized; faulty installation or operating methods can cause tube breakage regardless of operating pressure.

Glass meter tubes are not recommended for either hot or strong alkalies, fluorine, hydrofluoric acid, steam or water over 200° F (93° C). Glass meter tubes should be periodically inspected for signs of wear. With certain fluids the glass may erode evenly so wear is not visible. If wear is suspected, the tube must be replaced.

It is important that the meter construction be compatible with the process to which the meter is applied. It is especially important that the O-ring material be compatible with the process fluid. The glass meter tube can break if the improper materials are used.

For example: VITON® O-rings must never be used for ammonia service; the corrosive attack of ammonia on VITON is extreme, and could cause a VITON O-ring to swell and break the glass metering tube.

The meter should be mounted or supported to minimize vibration.

The use of a pressure relief valve and/or a rupture disc is recommended in the pipeline containing the flowmeter. The device should be located so as to prevent glass meter tube breakage in the event of an over pressurization of the line.

Avoid the use of quick acting devices in the fluid stream since they can cause shock waves which may damage the meter.

When applied to a high pressure gas cylinder, at least two stepdown pressure regulators are to be used between the flowmeter and the cylinder.

Fully relieve pressure from the flowmeter before attempting to remove the meter tube.

Make sure the fasteners that lock the meter end fittings in place are secure. The fasteners must be checked before the flowmeter is put into service or when it is returned to service after maintenance. Loose end fittings may result in glass meter tube breakage.

The glass meter tube must be periodically inspected and replaced if cracked, nicked, scratched or worn.

Operator protection shields which have been damaged or show any signs of degradation must be replaced.

It is recommended that the piping system be checked for leaks prior to start-up.

WARNING
DO NOT OPERATE THE FLOWMETER WITHOUT THE OPERATOR PROTECTION SHIELD IN PLACE. TO DO SO MAY RESULT IN OPERATOR INJURY.

1.2 Description

The ABB Automation Series 10A6100 PURGEMASTER meter is a low capacity, glass tube type, variable area meter used to measure and visually indicate the flow rates of liquids and gases.

The meters are available in 1-1/2, 3, 5 and 10 inch scale lengths. The 1-1/2 and 3 inch meters use plain taper tubes; the 5 and 10 inch meters use guided tubes (tri-flat and beaded). The meter tube may have either a 1/16, 1/8, 5/32 or 1/4 inch inlet bore along with the appropriate ball float for the capacity and fluid being measured. The 1-1/2 inch meter tube scale is only offered in percent of maximum flow. The scale on the 3 inch meter tube may be calibrated for direct reading for air and water flow or for percent of maximum flow. The 5 and 10 inch meters have either direct reading scales for air and water or a millimeter scale. For the millimeter scale, a calibration curve is furnished so the position of the ball float, as read in millimeters, can be converted to flow rate values.

The body of the PURGEMASTER meter is stainless steel. The inlet and outlet end fittings, which can be stainless steel, brass or KYNAR®, are inserted into holes in the body and are held in place with a retainer clip or nut. These end fittings contain the tube adapters that hold the meter tube and float. The tube is installed from the front of the meter without disassembling the meter or removing the process connections. An operator protection shield snaps into position over the tube and is held in place by the meter body.

PURGEMASTER meters are available with either a control valve located in the inlet end fitting or in the outlet end fitting, or with no control valve. For models with the control valve in the inlet end fitting or with no control valve, an internal back check is installed in the outlet end fitting. For models with the control valve in the outlet end fitting, no back check is provided.

Standard mountings for the meter are covered in Section 2.0. A flush panel mounting option is covered in Instruction Bulletin 10A9026.

1.3 Model Number Breakdown

Refer to the ABB Automation manufacturing specification sheet or to the instrument nameplate to determine the specific model number of the instrument furnished. Standard instrument options may be identified from the following breakdown.

10A 61 _ _ _ B _ _ – – – – – – –

Engineering Reference — 10A

Design Designation — 61

Connections
- 1/4 inch NPT — 3
- R1/4 inch — 4
- 1/4 inch BSPT — 5
- Specials — Z

Scale Length
- Without Tube — 0
- 3 inch (75 mm) — 1
- 5 inch (127 mm) — 2
- 10 inch (250 mm) — 3
- 1-1/2 inch (38 mm) — 4
- 3 inch (75 mm) Trogamid — 5

Control Valve
- Without Control Valve — A
- With Outlet Control Valve, Standard Capacity — M
- With Inlet Control Valve, Standard Capacity — N
- With Outlet Control Valve, High Capacity — E
- With Inlet Control Valve, High Capacity — F
- With Outlet Control Valve, Low Capacity — C
- With Inlet Control Valve, Low Capacity — D

With DVGW Valve:
- *With Outlet Control Valve, Standard Capacity — Q
- *With Inlet Control Valve, Standard Capacity — R
- *With Outlet Control Valve, High Capacity — U
- *With Inlet Control Valve, High Capacity — V
- *With Outlet Control Valve, Low Capacity — S
- *With Inlet Control Valve, Low Capacity — T

Design Level — B

Meter Tube
- Without Tube — 0
- 1/8 inch — 1
- 1/4 inch — 2
- 1/16 inch — 3
- 5/32 inch — 4

Material of Construction

Fittings	"O" rings	Tube Adapter	
316 SST	VITON	SST	B
Brass	Buna N	KYNAR	C
KYNAR	VITON	KYNAR	D
316 SST	Buna N	SST	E
Brass	VITON	KYNAR	F
KYNAR	Buna N	KYNAR	G
316 SST	VITON	KYNAR	H
316 SST	Buna N	KYNAR	J
Brass	**EPR	KYNAR	K
316 SST	**EPR	SST	L

* Future
** Ethylene Propylene

1.3 Model Number Breakdown (continued)

10A 61 _ _ _ B _ _

Mounting - Meter/Regulator
- In Line — 1
- Wall Mounting (Regulator only) — 2
- Rear Panel Mounting — 3
- Front Panel Mounting — 4
- Laboratory Stand (Meter only) — 5
- Front Panel Mounting with Adapter Plate — 6
- Front Panel Mounting with End Caps — 7
- Front Panel Mounting with Adapter Plate and End Caps — 8

Regulator and Piping Material
- Not Required — X
- 316 SST — A
- Brass — B

Alarm Ring Sensor
- Not Required — 00
- Minimum — 10
- Maximum — 20
- Minimum/Maximum — 30
- Alarm Meter Body without Sensors — 90

Connection Accessories
- Not Required — A
- Hose, R1/4 inch, 6-7 mm ID, Brass — B
- Hose, R1/4 inch, 9-10 mm ID, Brass — C
- Hose, R1/4 inch, 6 mm ID, SST — D
- Hose, R1/4 inch, 8 mm ID, SST — E
- Hose, R1/4 inch, 10 mm ID, SST — F
- Male Tube Connector, R1/4 inch, 6 mm OD, Brass — G
- Male Tube Connector, R1/4 inch, 8 mm OD, Brass — H
- Male Tube Connector, R1/4 inch, 6 mm OD, SST — K
- Male Tube Connector, R1/4 inch, 8 mm OD, SST — J

LOGO
- Required — A
- Not Required — B

LANGUAGE
- English — E
- German — G

Alarm Switching Amplifier
- Not Required — X
- 24 V ac — 1
- 42 V ac — 2
- 110 V ac — 3
- 220 V ac — 4

1.4 Alarm Specifications

1.4.1 Ring Sensor:

RJ10-Bi-Y 20593 for 1/8 inch meter tubes, RJ15-Bi-Y 20594 for 1/4 inch meter tubes
Bistable Switching Action
EEx ia IIC T6, EEx ib IIC T6
Certificate of Conformity Ex 83/2022X
FM Approved Nonincendive for Class I, Div 2 Groups A, B, C and D, and Class II, Div I Groups E, F and G
Power Supply Requirements: approximately 10 V dc
Load Current (current range): ≤ 2.9 mA, ≥ 4.8 mA
Repeatability: ± 1 mm
Self Inductance: 60 μH
Self Capacitance: 100 nF
Ambient Temperature Limits: 50° F (10° C) to 104° F (40° C)
Protection Class: according to DIN 40050 IP 67
Cable: 6 1/2 feet (2 m) standard (maximum 9800 feet (3000 m) possible)

1.4.2 Switching Amplifier:

Type WE77/ExI-Bi for each sensor
Contact Rating: 250 VA or 4 A at 250 V
Power Consumption: approximately 3.5 VA
Supply Voltage: 24 V ac, 42 V ac, 110 V ac, 220 V ac – 10% + 15%, 45 - 65 Hz
Response Time: Energize approximately 20 ms, De-energize approximately 10 ms
Output Type: Single Pole Double Throw (SPDT)
Ambient Temperature Limits: – 13° F (– 25° C) to + 140° F (+ 60° C)
Maximum Wire Size: (2) #16 AWG
Cerificate of Conformity Ex - 79/2043X, BASEEFA approved to Ex 80244X
FM Approved for use with RJ10 - Bi - Y sensors. WE77/ExI - Bi must be installed in a non-hazardous area. When RJ10 - Bi - Y sensors are used with WE77/ExI - Bi amplifiers, sensors can be installed in Class I, Div. 1 and 2, Groups A, B, C, D, E, F and G.

2.0 INSTALLATION

WARNING
DO NOT OPERATE THE FLOWMETER WITHOUT THE OPERATOR PROTECTION SHIELD IN PLACE. TO DO SO MAY RESULT IN OPERATOR INJURY.

The meter may be mounted directly in the pipeline or on the surface of a wall or panel. Whenever making piping connections, support the meter end fittings with a 7/8 inch open-end wrench to prevent damage to the meter assembly.

To mount the meter with or without an in-line differential pressure regulator to the surface of a panel, perform the following procedure:

1. Remove the tube by performing the steps presented in the Maintenance Section 4 of this manual.

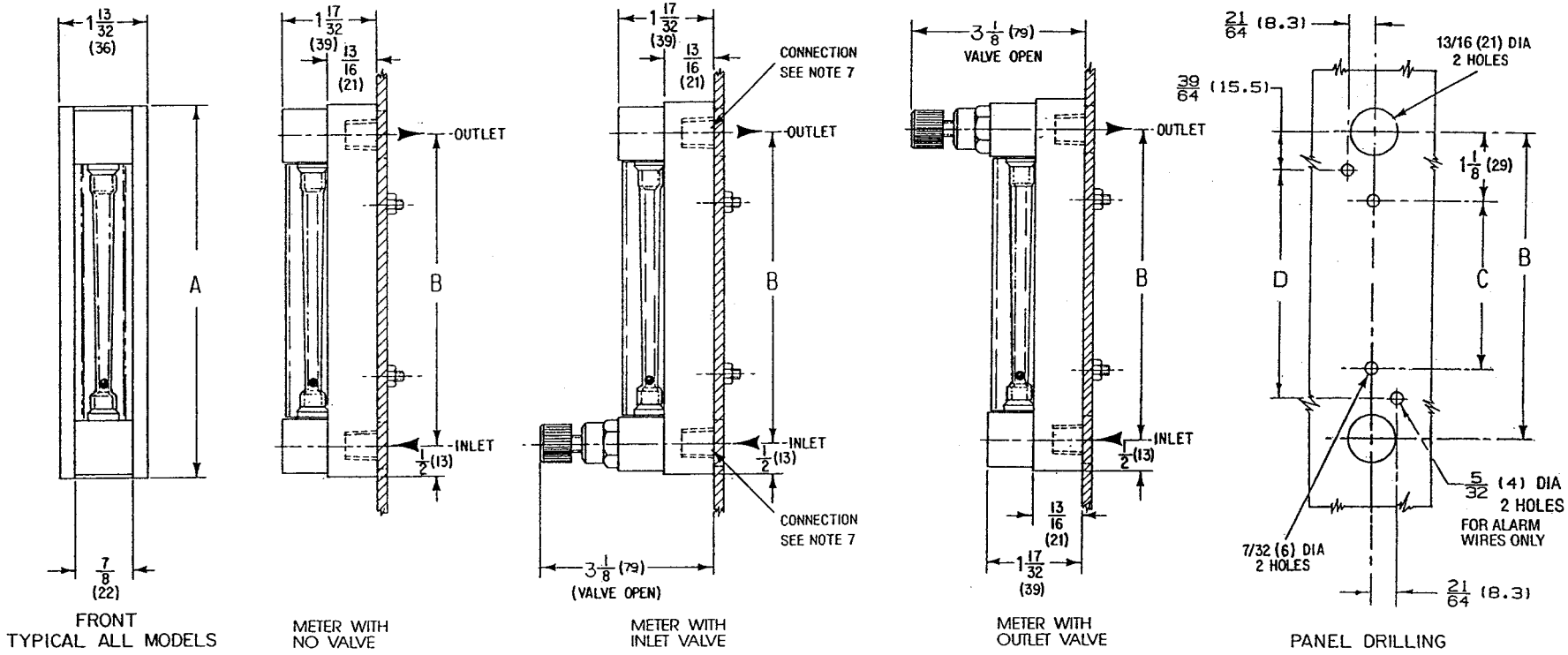
2. Remove the white backing from the meter body. To do this slide the backing to one side and insert a small screwdriver (or similar tool) under the exposed edge to pry the backing up and out.

3. The meter body has two countersunk holes for mounting the meter with #8 flat head screws. Holes must be provided in the panel for piping connections to the meter fittings. Refer to Figures 2-1 and 2-2 for the outline and mounting dimensions for panel mounted meters.

4. The meter body can now be fastened to the panel and the white backing, tube, and operator safety shield can be replaced.

Refer to Figure 2-3 for outline and mounting dimensions for wall-mounted meters with a differential pressure regulator.

If the alarm option is supplied with the meter, refer to Figures 2-4, 2-5 and 2-6, and Sub-Section 3.2.



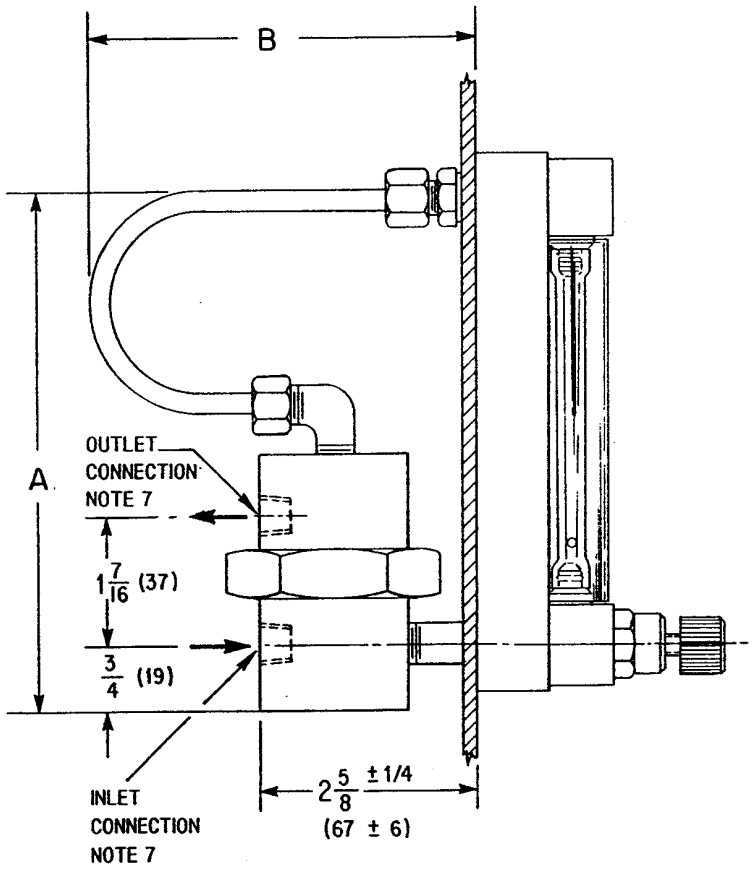
NOM SCALE LENGTH		A		B		C		D	
INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm
1 1/2	38	4 3/4	121	3 23/32	94	1 15/32	37	—	—
3	76	5 15/16	151	4 15/16	125	2 11/16	68	3 23/32	94
5	127	10 3/8	264	9 3/8	238	7 1/8	181	8 5/32	207
10	254	14 13/16	376	13 13/16	351	11 9/16	294	12 19/32	320

NOTES:

1. DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS IN PARENTHESES ( ) ARE IN MILLIMETERS.
3. ALL DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCE OF ±1/8 INCH (3mm), UNLESS OTHERWISE SPECIFIED.
4. DIMENSIONS GUARANTEED ONLY IF THIS PRINT IS CERTIFIED.
5. TO PANEL MOUNT METER, WHITE BACKGROUND MUST BE REMOVED TO GAIN ACCESS TO HOLES IN BACKPLATE. USE #8 FLAT HEAD SCREWS.
6. THIS DRAWING IS THIRD ANGLE PROJECTION AS SHOWN :-
7. CONNECTIONS ARE AVAILABLE IN 1/4 NPT, R1/4 BSP & 1/4 BSPTr.

FIGURE 2-1. METER OUTLINE AND MOUNTING DIMENSIONS

OD-10-2711 R3



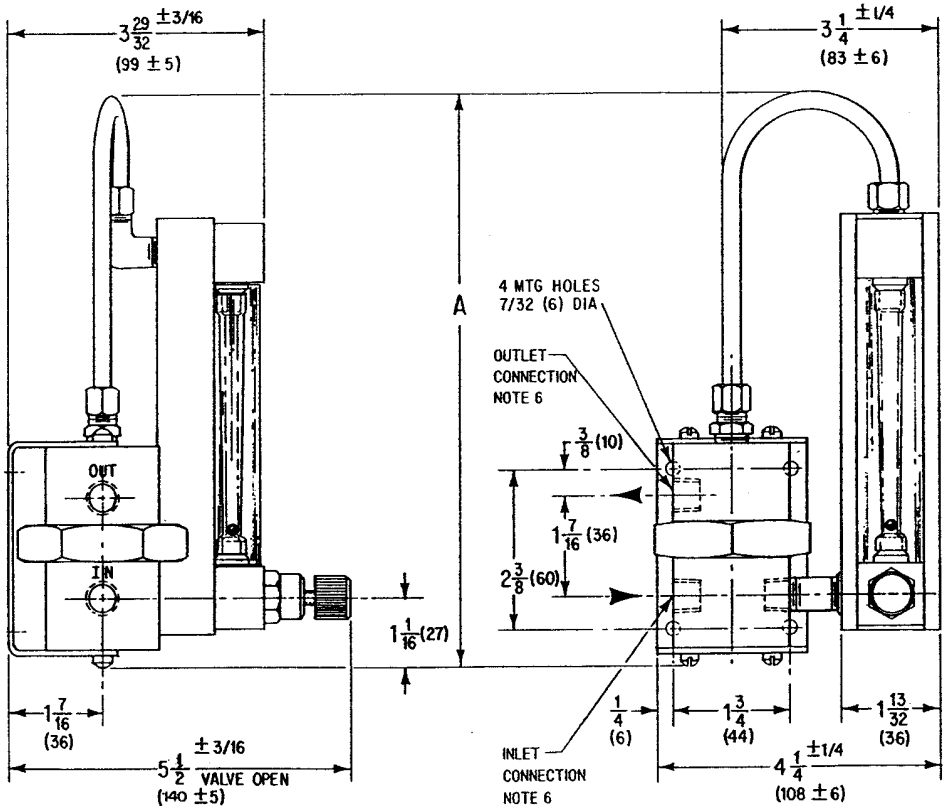
NOTES:

1. DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS IN PARENTHESES ( ) ARE IN MILLIMETERS.
3. ALL DIMENSIONS ARE SUBJECT TO A MANUFACTURING TOLERANCE OF ± 1/8 INCH (3 mm), UNLESS OTHERWISE SPECIFIED.
4. DIMENSIONS GUARANTEED ONLY IF THIS PRINT IS CERTIFIED.
5. FOR OUTLINE DIMENSIONS OF METER AND PANEL DRILLING DIMENSIONS SEE OD-10-2711 OR OD-10-2750
6. TO PANEL MOUNT A FACTORY ASSEMBLED METER WITH REGULATOR THE TUBING AND REGULATOR MUST BE REMOVED.
7. CONNECTIONS ARE AVAILABLE IN 1/4 NPT, R1/4 BSP & 1/4 BSPTr.

NOM SCALE LENGTH		A		B	
INCH	mm	INCH	mm	INCH	mm
1 1/2	38	5 7/8	149	4 3/8 ± 1/4	111 ± 6
3	76	5 7/8	149	4 3/8 ± 1/4	111 ± 6
5	127	10 1/4	260	2 25/32 ± 1/4	71 ± 6
10	254	14 11/16	373	2 25/32 ± 1/4	71 ± 6

FIGURE 2-2. OUTLINE DIMENSIONS FOR PANEL MOUNTED OR IN-LINE METER WITH REGULATOR

OD-10-2712 R3



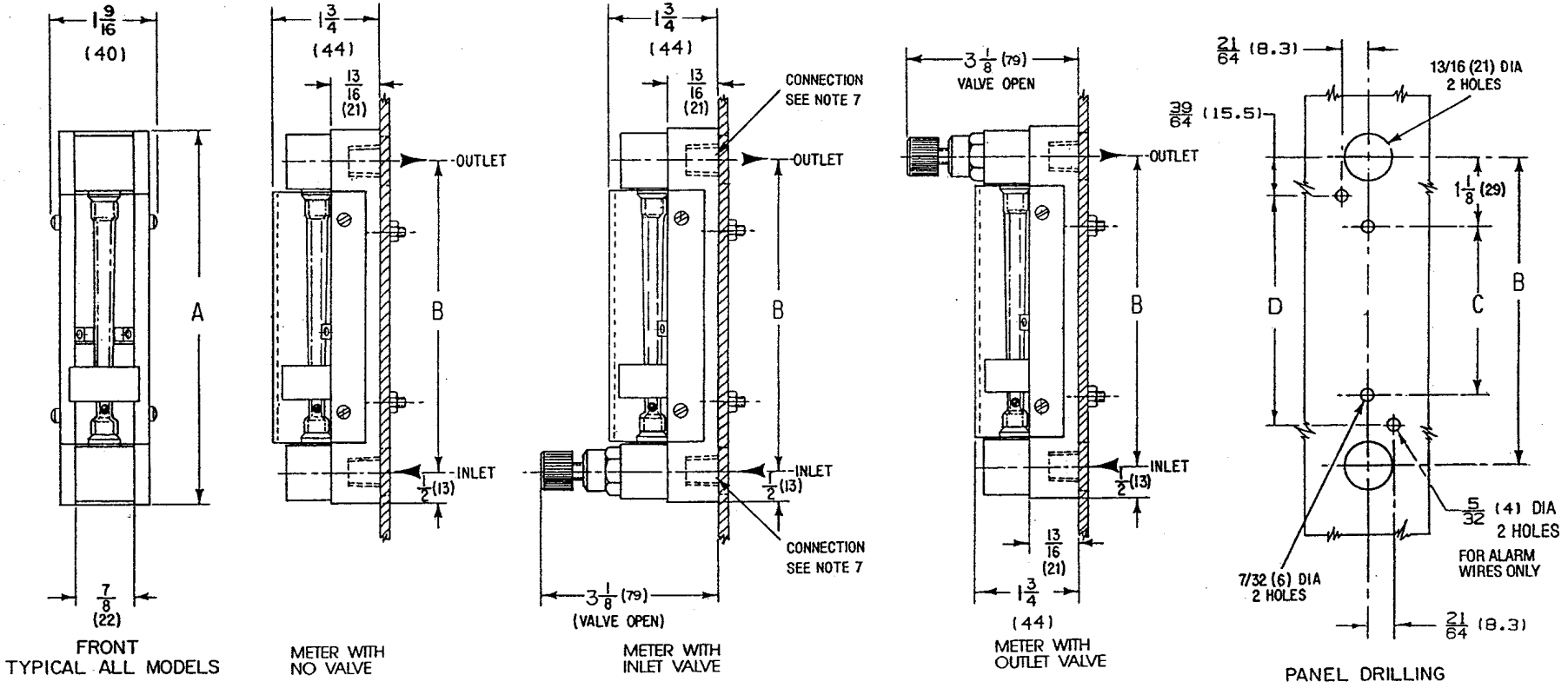
NOM SCALE LENGTH		A	
INCH	mm	INCH	mm
1½	38	7½	190
3	76	8 7/8	225
5	127	13 5/16	338
10	254	17¾	451

NOTES:

1. DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS IN PARENTHESES ( ) ARE IN MILLIMETERS.
3. ALL DIMENSIONS SUBJECT TO A MANUFACTURING TOLERANCE OF ±1/8 INCH (3 mm), UNLESS OTHERWISE SPECIFIED.
4. DIMENSIONS GUARANTEED ONLY IF THIS PRINT IS CERTIFIED.
5. FOR OUTLINE DIMENSIONS OF METER, SEE DWG NO. C-OD-10-2711 & OD-10-2750
6. CONNECTIONS ARE AVAILABLE IN 1/4 NPT, R1/4 BSP & 1/4 BSPTr.

FIGURE 2-3. OUTLINE DIMENSIONS FOR WALL MOUNTED METER WITH REGULATOR

OD-10-2713 R3



NOM SCALE LENGTH		A		B		C		D	
INCH	mm	INCH	mm	INCH	mm	INCH	mm	INCH	mm
3	76	5 15/16	151	4 15/16	125	2 11/16	68	3 23/32	94
5	127	10 3/8	264	9 3/8	238	7 1/8	181	8 5/32	207
10	254	14 13/16	376	13 13/16	351	11 9/16	294	12 19/32	320

NOTES:

1. DIMENSIONS ARE IN INCHES, UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS IN PARENTHESES ( ) ARE IN MILLIMETERS.
3. ALL DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCE OF ±1/8 INCH (3mm), UNLESS OTHERWISE SPECIFIED.
4. DIMENSIONS GUARANTEED ONLY IF THIS PRINT IS CERTIFIED.
5. TO PANEL MOUNT METER, WHITE BACKGROUND MUST BE REMOVED TO GAIN ACCESS TO HOLES IN BACKPLATE. USE #8 FLAT HEAD SCREWS.
6. THIS DRAWING IS THIRD ANGLE PROJECTION AS SHOWN:-
7. CONNECTIONS ARE AVAILABLE IN 1/4 NPT, R1/4 BSP & 1/4 BSPTr.

OD-10-2750 R0

FIGURE 2-4. METER WITH ALARM

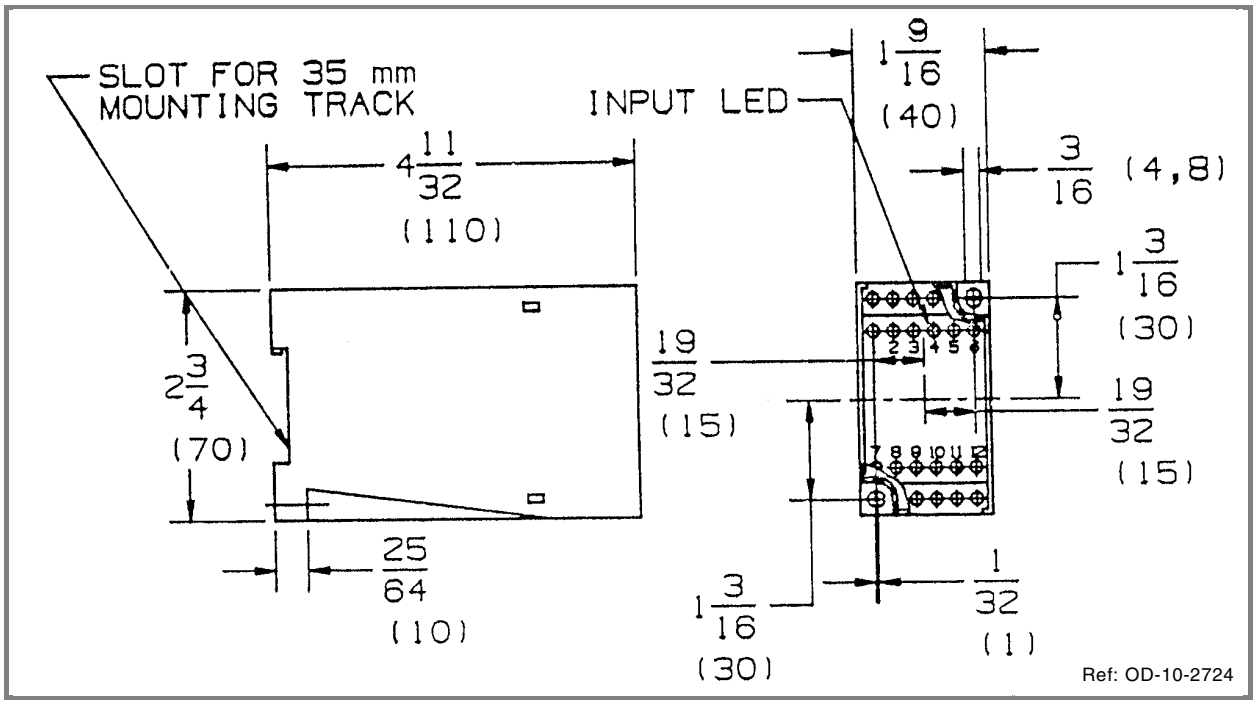


FIGURE 2-5. ALARM SWITCHING AMPLIFIER

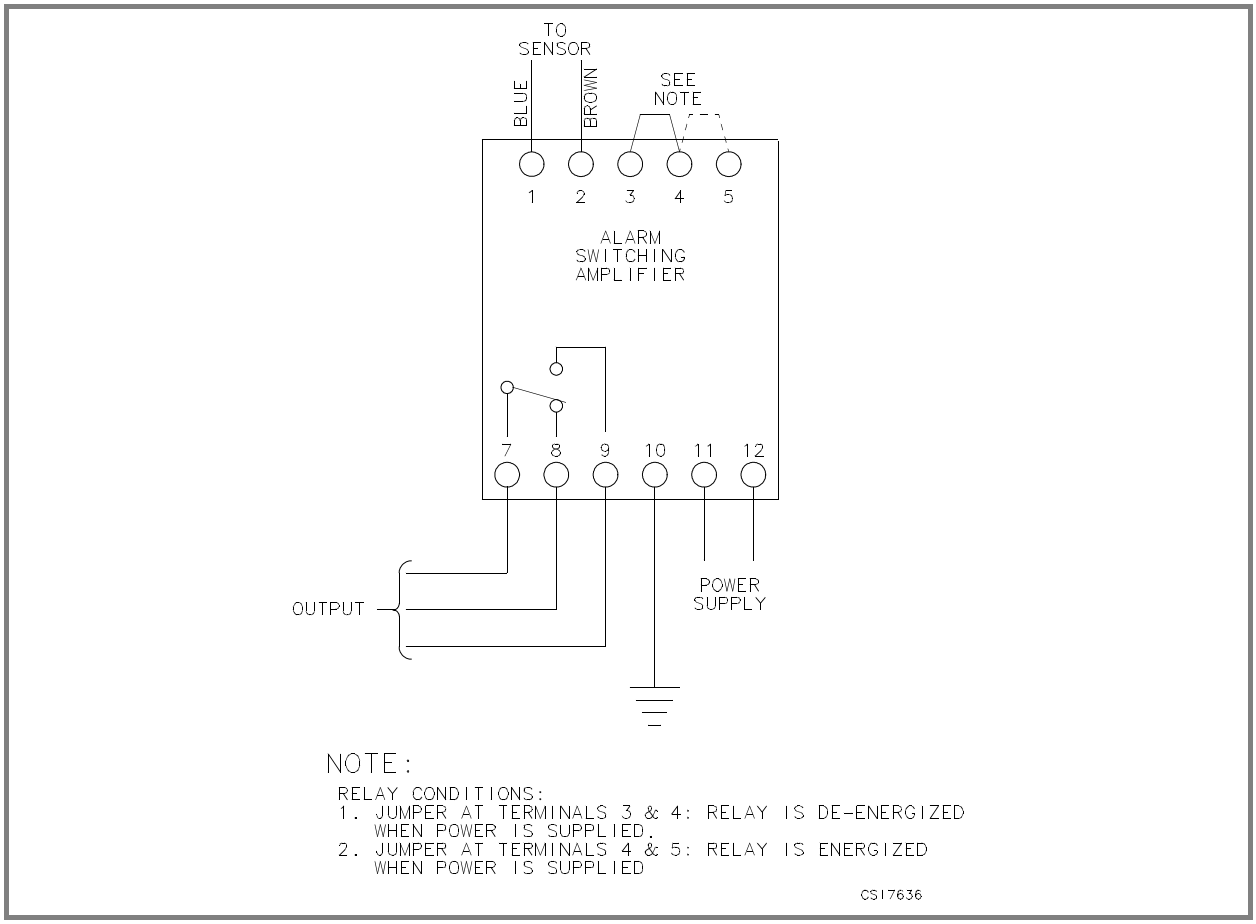


FIGURE 2-6. ALARM INTERCONNECTION DIAGRAM

3.0 START-UP and OPERATION

3.1 Flowmeter

Start flow through the meter slowly to avoid violent movement of the float that could damage the meter parts. Flow rate is determined by reading the tube scale at the point corresponding to the horizontal center line of the ball float.

3.2 Flowmeter with Alarms

Purgemaster meters can be supplied with alarms for 1/8 and 1/4 inch tubes in 3, 5 and 10 inch scale lengths. Metalic ball floats must be used in all meters with alarms. Due to the shorter metering tube, 3 inch scale length meters are only available with single alarms (minimum or maximum). Single and dual alarms are available in 5 and 10 inch scale length meters.

The alarm consists of a ring sensor (that encircles the meter tube) and a remote mounted switching amplifier. The sensor with a bistable switching action uses the position of the ball float as the input signal for actuation. The sensor is adjustable over the metering range of the tube. The sensor can be adjusted using a 1.5 mm hex socket wrench to loosen the locking screws and sliding the sensor up or down on the meter tube (refer to Figures 2-4 and 5-2). Re-tighten the locking screws.

WARNING
Remove all pressure from the meter before removing the operator protection shield to adjust the sensors. Replace the operator protection shield before placing the meter back into service.

The alarm sensors are suitable for hazardous locations because the sensors are intrinsically safe when used with the switching amplifier. However, the amplifier is only suitable for non-hazardous locations. Wiring between sensors and amplifier shall be in accordance with ANSI/ISA RP12.6 Installation Of Intrinsically Safe Systems For Hazardous (Classified) Locations.

Refer to Sub Section 1.4 for alarm specifications

4.0 MAINTENANCE

4.1 General

The only maintenance required is the occasional cleaning of the tube, float and operator protection shield. The meter should be cleaned frequently enough to assure accuracy and float visibility. To clean the tube and float proceed as follows:

1. Shut off fluid flow to the meter. Then drain and/or purge if possible. **BE ABSOLUTELY SURE ALL PRESSURE HAS BEEN RELIEVED.**

2. Starting at either end of the meter, squeeze one side of the shield inward to disengage the shield retaining lip. Continue to squeeze one side inward while advancing along the length of the shield using a forward rolling motion to remove the shield from the body.

3. Remove the glass tube by grasping it at mid-point and pushing up against the compression of the spring load (or down if a valve is on the outlet) and pulling it out.

4. With a pair of tweezers, pull the float stop out from the outlet end of the tube. Then, with one hand over the outlet end, invert the tube to catch the ball float. The tube and float are precision manufactured parts and as such should never be subjected to unnecessary shock or strains either mechanically or through extreme temperature change. Handle the float with care as a nick or scratch may affect meter accuracy.

5. Clean the tube and float with a mild detergent and water, or a suitable solvent. Use a soft cloth or tube brush to clean the meter tube.

6. Clean the shield with a solution of detergent and water. If this does not clean the shield sufficiently, use kerosene and follow up with detergent and water. Rinse with clean water and dry with a soft cloth.

Reassembly is accomplished by following the above procedure in reverse.

CAUTION
Do not clean the protective shield with cleaners containing strong mineral acids or organic solvents such as ketones, chlorinated hydrocarbons or aromatics. Using such cleaners may impair the protective and optical qualities of the shield.

4.2 Meter Disassembly

Refer to Figure 5-1

1. To remove either end fitting from the meter body after the tube and float are removed proceed as appropriate:

For brass or stainless steel end fittings, use a screwdriver to pry the retainer out of the locking groove at the back of the body. For KYNAR end fittings, loosen and remove the nut that screws onto the end fitting from the back of the body. Remove the appropriate end fitting from the body.

2. To replace the adapter O-rings, first remove the retainer spring by using a thin, pointed tool to pry one end of the spring inward and upward simultaneously. With the retainer spring removed, the adapter can be lifted from the fitting and the O-rings can be removed and replaced. Do not use any tool that will damage the O-ring seal areas. Replacement O-rings should be lightly lubricated with silicone grease.

3. Reassemble the adapters into the end fittings as appropriate. Install the retainer spring by inserting one end in the groove in the end fitting and progressively working around the perimeter of the spring with a small flat blade screwdriver. **IT IS IMPORTANT THAT THE RETAINER SPRING IS FIRMLY SEATED IN THE GROOVE TO SECURELY RETAIN THE ADAPTER IN THE END FITTING.**

4. To reassemble the end fittings into the body, make sure that the tube adapter in each end fitting is facing the other and install each end fitting as appropriate.

4.3 Removing the Control Valve

To remove the control valve from the end fitting for cleaning purposes without removing the tube, operator shield, or end fitting, perform the following procedure. Fluid flow in the meter must first be shut off, the meter must be drained or purged, and **ANY RESIDUAL PRESSURE IN THE METER MUST BE RELIEVED BEFORE PROCEEDING.**

a. While supporting the end fitting with a 7/8 inch open end wrench, loosen the valve bonnet nut on the valve stem with an 11/16 inch box end or open end wrench, and unscrew the valve stem assembly (counter clockwise) from the end fitting. For meters with KYNAR end fittings, when removing the valve stem assembly, the locking tab on the safety lock washer must be bent up away from the nut to permit rotation (see Figure 4-1). (Note: Further disassembly of the valve stem assembly is not required and is not recommended.)

b. Screw the valve stem clockwise into the valve bonnet nut as far as possible to expose the O-ring seal. Using a plastic or wooden toothpick, pry the O-ring from the groove and lightly lubricate it with silicone grease. Replace the O-ring. DO NOT USE A METAL TOOL TO REMOVE OR REPLACE THE O-RING AS SEVERE DAMAGE MAY RESULT TO THE O-RING GROOVE ON THE VALVE STEM.

c. Before inserting the valve stem into the end fitting, rotate the valve stem counter clockwise in the valve bonnet nut as far as possible. Then, for stainless steel and brass fittings only, insert the valve stem into the end fitting and tighten the nut while supporting the end fitting with a 7/8 inch open end wrench. **TO ENSURE SAFE OPERATION, TORQUE THE VALVE BONNET NUT TO 100 IN-LBS FOR STAINLESS STEEL AND BRASS END FITTINGS.**

When replacing the valve stem assembly for KYNAR end fittings, place the safety lock washer on the valve end of the fitting with the restraining tab positioned beneath the end fitting as shown in Figure 4-1. Assemble the valve stem into the end fitting as appropriate and torque the valve bonnet nut to 20 in-lbs. If a flat side of the valve bonnet nut does not line up with one of the locking tabs on the lock washer, continue tightening the nut (clockwise) until alignment is attained. Bend down the center locking tab against the appropriate flat on the valve bonnet nut. Should the center locking tab break off, use one of the other two locking tabs and then order spare lock washer(s) (ABB Automation Part No. 377B009U01) to ensure availability for future valve assembly maintenance.

WARNING
NEVER REASSEMBLE THE VALVE ASSEMBLY INTO A KYNAR END FITTING WITHOUT THE SAFETY LOCK WASHER PROPERLY INSTALLED AND THE LOCKING TAB BENT DOWN ON A FLAT OF THE BONNET NUT. THIS IS TO PREVENT INADVERTENT REMOVAL OF THE VALVE STEM ASSEMBLY DURING METER ADJUSTMENT.

d. To complete the assembly, rotate the valve stem clockwise to the desired operating position.

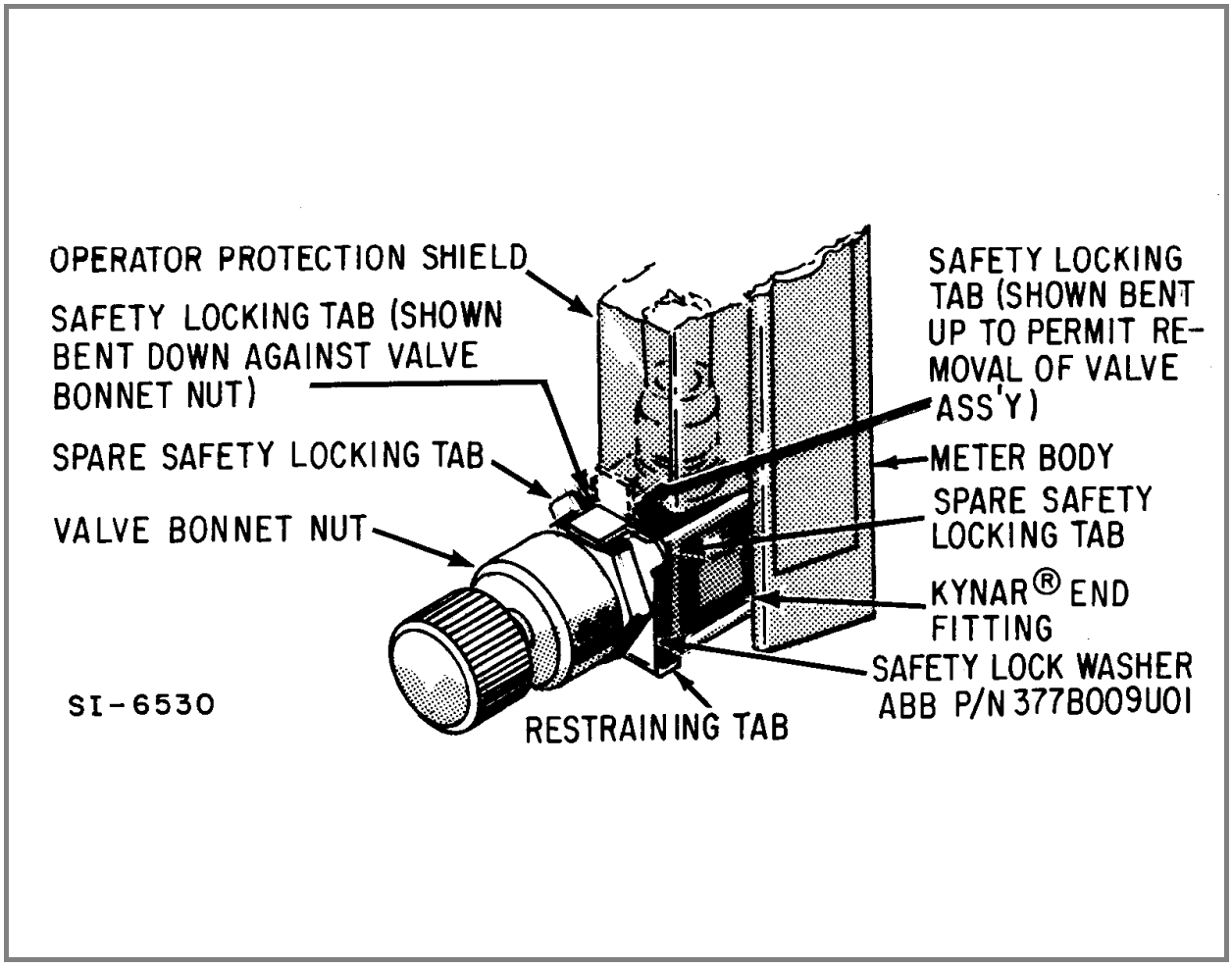


FIGURE 4-1. VALVE STEM ASSEMBLY FOR KYNAR END FITTING

5.0 PARTS LIST

When ordering parts for the 10A6100 PURGEMASTER Flowmeter, reference the serial number and model number of the meter.

CAUTION

It is important that the meter construction be compatible with the process to which the meter is applied. It is especially important that the O-ring material be compatible with the process fluid. The glass meter tube can break if the improper materials are used.

For example: VITON O-rings must never be used for ammonia service; the corrosive attack of ammonia on VITON is extreme, and could cause a VITON O-ring to swell and break the glass metering tube.

TABLE 5-1. BASIC METER PARTS (refer to Figure 5-1)

KEY	PART DESCRIPTION	QTY	END FITTING/ADAPTER MATERIAL AND PART NUMBER			
			316 SST/SST	316 SST/KYNAR	BRASS/KYNAR	KYNAR/KYNAR
1	Body - 1-1/2" scale length - 3" scale length - 5" scale length - 10" scale length	1	355A411U04 355A411U01 355A411U02 355A411U03	355A411U04 355A411U01 355A411U02 355A411U03	355A411U04 355A411U01 355A411U02 355A411U03	355A411U04 355A411U01 355A411U02 355A411U03
2	Shield - 1-1/2" scale length - 3" scale length - 5" scale length - 10" scale length	1	351C193U04 351C193U01 351C193U02 351C193U03	351C193U04 351C193U01 351C193U02 351C193U03	351C193U04 351C193U01 351C193U02 351C193U03	351C193U04 351C193U01 351C193U02 351C193U03
3	Backing - 1-1/2" scale length - 3" scale length - 5" scale length - 10" scale length	1	331C062U04 331C062U01 331C062U02 331C062U03	331C062U04 331C062U01 331C062U02 331C062U03	331C062U04 331C062U01 331C062U02 331C062U03	331C062U04 331C062U01 331C062U02 331C062U03
4	Tube	1	ORDER BY ABB AUTOMATION SERIAL NUMBER			
5	Float	1				
6	Inlet float stop - 1-1/2" scale, 1/16" tube - 1-1/2", 3" scale, 1/8", 5/32" tube - 1-1/2", 3" scale, 1/4" tube - 5", scale, 1/16" tube - 5", 10" scale, 1/8" tube - 5", 10" scale, 1/4" tube	1	--- 304B096U01 304B071T60 304B097U02 304A304U02 304A303U02	--- 304B096U01 304B071T60 304B097U02 304A304U02 304A303U02	--- 304B096U01 304B071T60 304B097U02 304A304U02 304A303U02	--- 304B096U02 304B071H20 304B097U01 304A304U02 304A303U02
7	Outlet float stop -1-1/2" scale,1/16" tube - 1-1/2", 3" scale, 1/8", 5/32" tube - 1-1/2", 3" scale, 1/4" tube - 5", scale, 1/16" tube - 5", 10" scale, 1/8" tube - 5", 10" scale, 1/4" tube	1	304B026T12 304B051T60 304B014T60 304B025T12 304A304U01 304A303U01	304B026T12 304B051T60 304B014T60 304B025T12 304A304U01 304A303U01	304B026T12 304B051T60 304B014T60 304B025T12 304A304U01 304A303U01	304B026H20 304B051H20 304B014H20 304B025H20 304A304U01 304A303U01
8	End fitting and valve assembly	1	ORDER BY ABB AUTOMATION SERIAL NUMBER			
9	End fitting - no valve - 1/4" NPT - R1/4" - 1/4" BSPTr	1 or 2	301A346U02 301A346U04 301A346U06	301A346U02 301A346U04 301A346U06	301A346U01 301A346U03 301A346U05	301A348U01 --- ---
10	Retainer	2	390C037V91	390C037V91	390C037V91	---
11	Nut	2	---	---	---	397B068U01
12	Safety lock washer	1	---	---	---	377B009U01
13	Adapter - 1/16", 1/8", 5/32" tube - 1/4" tube - 1/16" tube, 5" scale	2	376C160U01 376C161U01 376C167U01	376C163U01 376C162U01 376C168U01	376C163U01 376C162U01 376C168U01	376C163U01 376C162U01 376C168U01
14	O-ring - Buna-N - VITON	2	101A902U01 101W902U01	101A902U01 101W902U01	101A902U01 101W902U01	101A902U01 101W902U01
15	O-ring - Buna-N - 1/16, 1/8, 5/32" tube - VITON - 1/16, 1/8, 5/32" tube - Buna-N - 1/4" tube - VITON - 1/4" tube - Buna-N - 1/16" tube, 5" scale - VITON - 1/16" tube, 5" scale	2	101A701U01 101W701U01 101A705U01 101W705U01 101A794U01 101W794U01	101A701U01 101W701U01 101A705U01 101W705U01 101A794U01 101W794U01	101A701U01 101W701U01 101A705U01 101W705U01 101A794U01 101W794U01	101A701U01 101W701U01 101A705U01 101W705U01 101A794U01 101W794U01
16	Gasket - 1/16, 1/8, 5/32" tube - 1/4" tube - 1/16" tube, 5" scale	2	333C469P30 333C470P30 333C246P30	--- --- ---	--- --- ---	--- --- ---
17	Spring - Retainer	2	376H091U01	376H091U01	376H091U01	376H091U01
18	Spring - Adapter	1	424A433U01	424A433U01	424A433U01	424A434U01
19	Ball	1	103A073U01	103A073U01	103A073U01	103A073U01
20	Spacer	1	301C178U01	301C178U02	301C178U02	301C178U02
21	Tag (not shown)	1	338D318U01	338D318U01	338D318U01	338D318U01

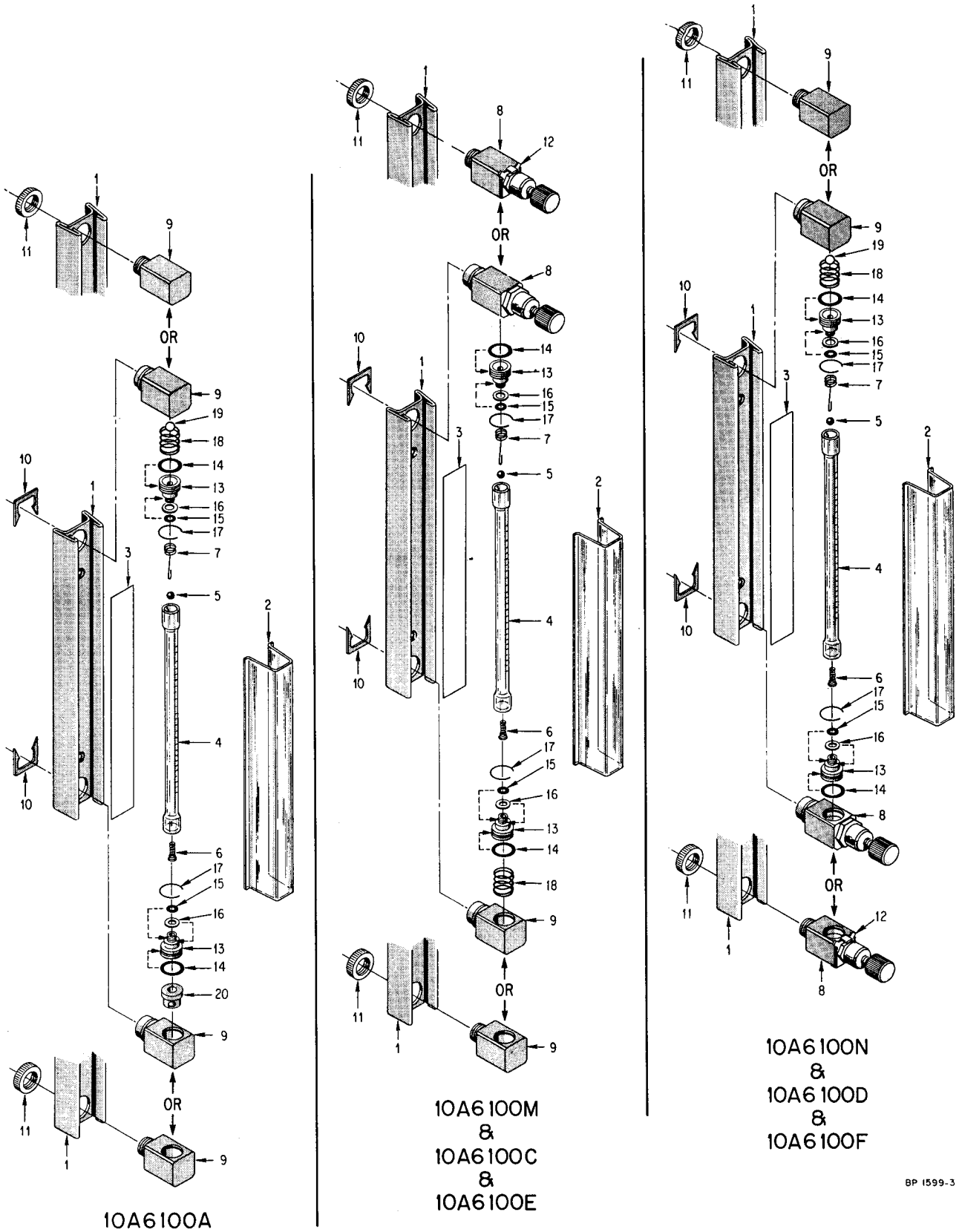


FIGURE 5-1. BASIC METER PARTS

TABLE 5-2. ALARM PARTS (refer to Figure 5-2)

KEY	PART DESCRIPTION	PART NUMBER	QUANTITY
1	Alarm Meter Body - 3" Scale	355A440U01	1
	Alarm Meter Body - 5" Scale	355A440U02	1
	Alarm Meter Body - 10" Scale	355A440U03	1
2	Alarm Shield - 3" Scale	D351C066U03	1
	Alarm Shield - 5" Scale	D351C066U04	1
	Alarm Shield - 10" Scale	D351C066U05	1
3	Screw, 4-40 x 1/4 inch	014F004T10	4
4	Backing - 3" Scale	CD331C002U02	1
	Backing - 5" Scale	CD331C002U03	1
	Backing - 10" Scale	CD331C002U04	1
5	Ring Sensor - 1/8" Tube	D699A023U01	1 or 2
	Ring Sensor - 1/4" Tube	D699A023U02	1 or 2

TABLE 5-3. ALARM SWITCHING AMPLIFIER

POWER SUPPLY	PART NUMBER	QUANTITY
24 V ac	D163A005U09	1 or 2
42 V ac	D163A005U10	1 or 2
110 V ac	D163A005U07	1 or 2
220 V ac	D163A005U08	1 or 2

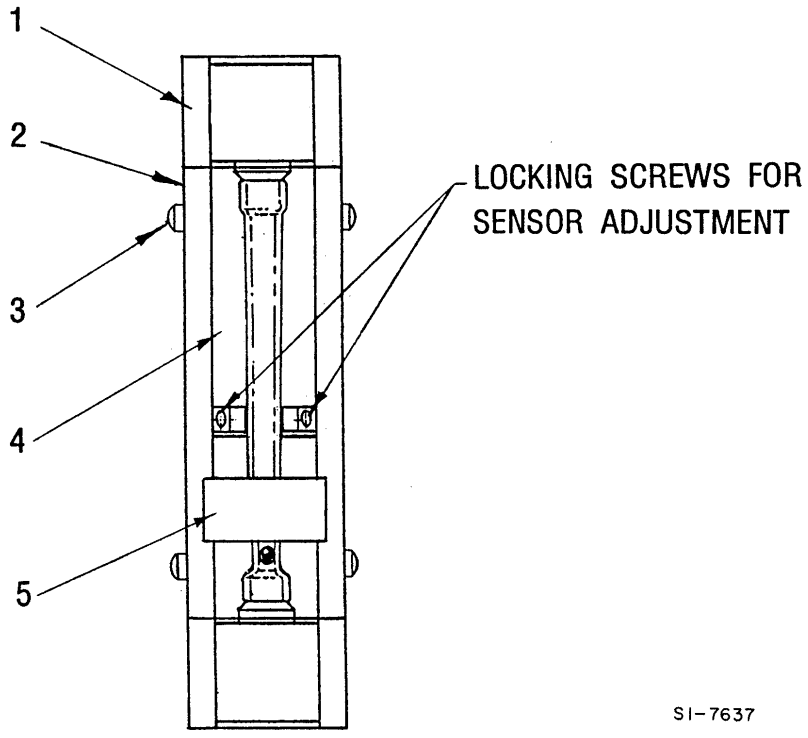


FIGURE 5-2. ALARM PARTS

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