

# GLASS TUBE TYPE PURGE METERS

## 1-1/2- AND 3-INCH MODELS

### GENERAL

This instruction sheet provides installation, operation, and maintenance instructions for the UGSI Chemical Feed, Inc. Glass Tube Type Purge Meters, which are furnished in two scale lengths, 1-1/2 and 3-inch, with or without control valves. A flow controller (accessory item) is available for use with the purge meter with control valve. Purge meters are available for use with 316 stainless steel frames with wetted parts (end fittings) of 316 stainless steel. O-ring seals may be Buna-N, Viton, or EPR as desired. Control valve stems are furnished either with knobs for hand operation or with slots for screwdriver adjustment. All parts are readily replaceable and completely interchangeable. An integral check valve is standard on the no valve and valve bottom configurations.



**WARNING:** TO AVOID POSSIBLE SEVERE PERSONAL INJURY OR DAMAGE TO THE EQUIPMENT, THIS EQUIPMENT SHOULD BE INSTALLED, OPERATED, AND SERVICED ONLY BY TRAINED, QUALIFIED PERSONNEL WHO ARE THOROUGHLY FAMILIAR WITH THE ENTIRE CONTENTS OF THIS INSTRUCTION BOOK.



**WARNING:** THE FOLLOWING SAFETY RELATED PRECAUTIONS MUST BE OBSERVED:

- **FLUID:** DO NOT USE GLASS TUBE METERS FOR TOXIC OR HAZARDOUS FLUIDS OR FLUIDS THAT ATTACK GLASS. REFER TO UGSI CHEMFEED, INC. CAT. NO. WT.500.001.000. UA.CG FOR CHEMICAL COMPATIBILITY AND MATERIAL SELECTION IF APPLICATION IS TO BE CHANGED.
- **OPERATING PRESSURE:** DO NOT EXCEED OPERATING PRESSURE AND TEMPERATURE LIMITS PRESENTED IN THIS INSTRUCTION SHEET.
- **TUBE SHIELD:** ALWAYS USE FRONT TUBE SHIELD PROVIDED TO PROTECT OPERATOR IN THE EVENT OF TUBE BREAKAGE.
- RELIEVE PRESSURE AND DRAIN SYSTEM BEFORE SERVICING.

# GLASS TUBE TYPE PURGE METER

## INSTALLATION

All connections are 1/4" NPT. The outlet connection must be at the top.

PRESSURE/TEMPERATURE LIMITS			
TUBE RETAINER	O-RINGS	PRESSURE (PSIG)	TEMPERATURE (°F)
Kynar	Buna-N	200	200
Kynar	Viton	200	200
316 SS	Viton	250	250
Kynar	EPR	200	200
316 SS	EPR	250	250

## DISASSEMBLY AND ASSEMBLY

- Compress the shield slightly to disengage the lugs on one side of the shield from the slots in the frame. Lift the free side out and remove the shield from the frame.
- Rotate nut from left to right until it is all the way up.
- Lift metering tube and retainer. Pull out bottom of tube to remove.
- To remove check stem, turn metering tube retainer until the notch permits the retainer to pass the tab in the frame.
- To avoid possible damage to valve stem or valve seat, always have control valve in open position before removing or installing valve stem adapter or seat.
- For valve stem removal, first remove control valve stem adapter from meter. Remove knob from valve stem, then thread stem inward through adapter.
- If O-rings are swollen, cracked, or hardened, remove and replace. Apply a thin coating of silicone grease (AEK5662) to the new O-rings to facilitate meter assembly and disassembly.



**WARNING:** WHEN USED IN OXYGEN SERVICE, TO AVOID SEVERE PERSONAL INJURY DUE TO FIRE OR EXPLOSION, LUBRICATE ONLY WITH HALOCARBON LUBRICANT (U27546).

- When reinstalling tube, tighten tube nut moderately and rotate tube to aid engagement of O-rings. Check that O-rings are not pinched and full contact line is visible through ends of glass tube.

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## INVERTING THE PURGE METER WITH CONTROL VALVE

- a. Remove the metering tube retainer and the check-valve stem from the meter. Discard the check-valve and reinstall the retainer.
- b. Install the metering tube with the bottom of the scale toward the metering tube retainer.
- c. If the meter is for AIR-HIGH CAPACITY, the metering tube retainer must be changed (see table) and the NP 302 flow insert installed on the new retainer.
- d. If a check valve is required for a particular system, a check valve similar to Nupro, Cat. No. SS-4CP5-1/3 can be installed on the meter outlet.

## PARTS ORDERING INFORMATION

The complete ordering number of the meter is marked on the back of the frame when the meter is assembled in the factory. This number is applied in such a way that, if field changes are made, the number may be removed or changed to suit.

The first two digits of the ordering number identify the frame and fittings as shown in Table 1 and the letter with the next four digits identifying the tube and float as shown in Table 2.



**WARNING:** TO ENSURE PROPER AND SAFE OPERATION OF THIS EQUIPMENT, USE ONLY UGSI CHEMICAL FEED, INC. LISTED PARTS EXCEPT FOR COMMERCIALLY AVAILABLE PARTS AS IDENTIFIED BY COMPLETE DESCRIPTION ON PARTS LIST. THE USE OF UNLISTED PARTS CAN RESULT IN EQUIPMENT MALFUNCTIONS CAUSING POSSIBLE SEVERE PERSONAL INJURY.

## WARNING LABEL

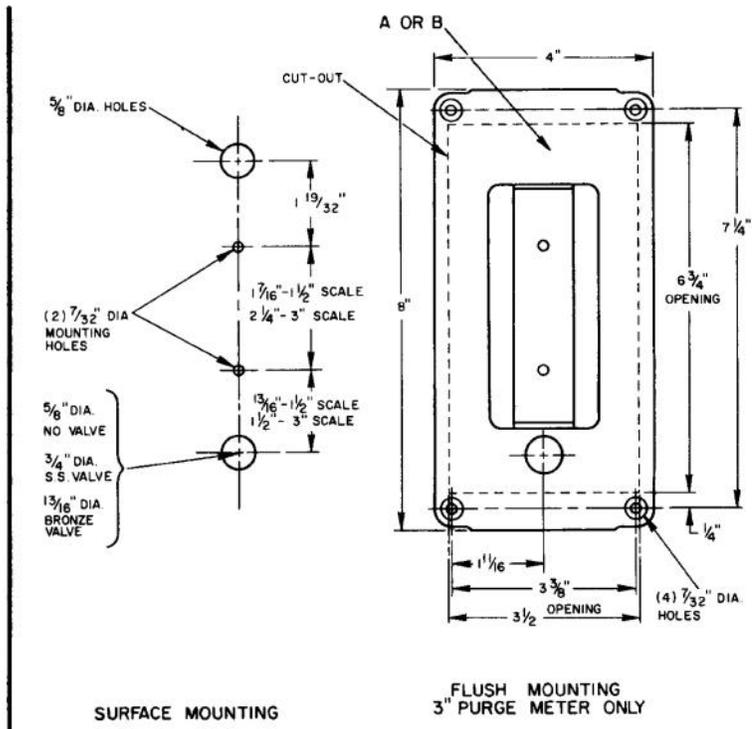
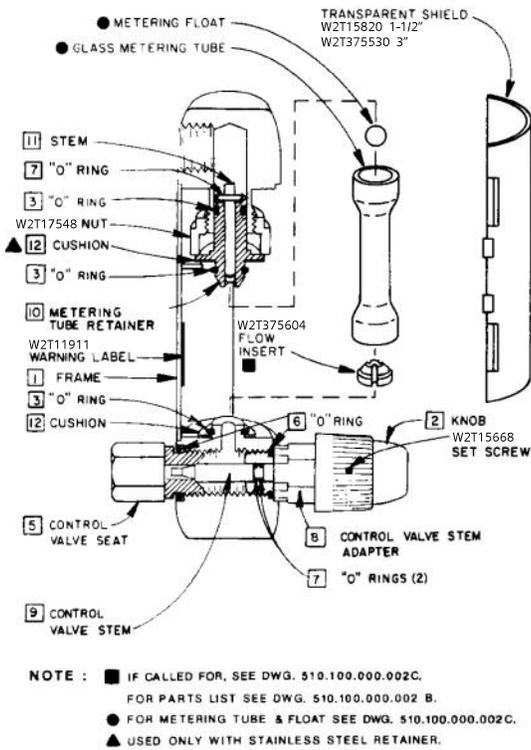
The following label has been attached to the equipment:

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L2099:           SEE INSTRUCTIONS FOR PRECAUTIONS. TO AVOID INJURY DO NOT  
OPERATE WITHOUT SHIELDS.  
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# GLASS TUBE TYPE PURGE METER

## FLOW CONTROLLERS

CAP	MODEL NUMBER		MAX CAPACITIES		MAX TEMP °F	MAX INLET PRESS PSI	MIN PRESS DROP PSI	MATERIALS OF CONSTRUCTION		
	INLET	OUTLET	AIR FLOW SCFH	H <sub>2</sub> O GPH				BODY	DIAPH	STEM
LOW	5810	5820	30	5	250	200	6	316SS	TEFLON	316SS
HIGH	5850	5860	110	40	250	200	8	316SS	TEFLON	316SS



- (A) NU-129 BEZEL FOR METER WITHOUT CONTROL VALVE
- (B) NU-130 BEZEL FOR METER WITH CONTROL VALVE

# GLASS TUBE TYPE PURGE METER

**TABLE 1**

	PURGE METERS (WITH CONTROL VALVE)				PURGE METERS (NO VALVE)	
END FITTINGS	316 SS				316 SS	
ORDERING NUMBER:						
EXTRA LOW CAPACITY					20	30
LOW CAPACITY	22	26	32	36	20	30
HIGH CAPACITY	24	28	34	38	20	30
<b>1. FRAME</b>						
1-1/2" MODEL                      3" MODEL						
NUXA 858                              NUXA 859						
NU 1395                                NU 1396						
<b>2. KNOB</b>						
NP 2304						
NP 2275 (CAP FOR SLOTTED VALVE STEM)						
<b>3. O-RING 1/4" x 3/8"                      (SIZE 010)</b>						
P 25900 (BUNA-N)						
PXA 25900 (VITON-A)						
PXE 25900 (EPR) or AAC2798 (Kalrez 4079)	OPTIONAL					
<b>5. CONTROL VALVE SEAT</b>						
LOW CAP (.081")                      HIGH CAP (.156")						
NPXA 2271                              NPXA 2272 (316 SS)						
<b>6. O-RING 7/16" x 9/16"                      (SIZE 013)</b>						
P 38437 (BUNA-N)						
PXA 38437 (VITON-A)						
PXE 38437 (EPR) or AAC2801 (Kalrez 4079)	OPTIONAL					
<b>7. O-RING 1/8" x 1/4"                      (SIZE 006)</b>						
P 24161 (BUNA-N)						
PXA 24161 (VITON-A)						
PXE 24161 (EPR) or AAC2795 (Kalrez 4079)	OPTIONAL					
<b>8. VALVE STEM ADAPTER</b>						
NPXA 2273 (316 SS)						
NPXA 2274 (316 SS)						
<b>9. CONTROL VALVE STEM</b>						
NPXA 2270 (316 SS)						
NPXA 2276 (316 SS)						
<b>10. METERING TUBE RETAINER</b>						
NP 107 (KYNAR)						
NPXA 107 (316 SS)	ALTERNATE FOR NP 107					
NP 1605 (KYNAR)	USE IN PLACE OF NP 107 WHEN METER IS INVERTED IN HIGH CAPACITY AIR SERVICE					
NPXA 1605 (316 SS)	ALTERNATE FOR NP 1605					
<b>11. CHECK STEM</b>						
NP 794 (316 SS)						
<b>12. CUSHION</b>						
NP 2282 (KYNAR)						

# GLASS TUBE TYPE PURGE METER

## TABLE 2

METERING TUBE AND FLOAT SELECTION SHEET											
TUBE AND FLOAT						TUBE		FLOAT			
CAPACITY AND SCALE UNIT		ORDERING NUMBER				NOTE	PART NUMBER	SIZE	FORM	PART NUMBER AND MATERIAL	
WATER	AIR	1-1/2" SCALE		3" SCALE						SIZE	FORM
WATER	AIR	WATER	AIR	WATER	AIR						
EXTRA LOW	(0.32 CCM)%	(30 SCCM)%			C013	D013	B	NPXP 1413	1/16"	I	P 43118 SAPPHIRE
	(0.34 CCM)%		C021				B	NPXP 1412	1/16"	I	P 43118 SAPPHIRE
	(0.65 CCM) %	(46 SCCM)%			C033	D033	B	NPXP 1413	1/16"	I	P 43120 316 SS
		(50 SCCM)%		D021			B	NPXP 1412	1/16"	I	P 43118 SAPPHIRE
	(0.95 CCM)%		C041				B	NPXP 1412	1/16"	I	P 43120 316 SS
	(1.10 CCM)%	(87 CCM)%			C053	D053	B	NPXP 1413	1/16"	I	P 43117 TANTALUM
		(105 SCCM)%		D041			B	NPXP 1412	1/16"	I	P 43120 316 SS
	(1.75 CCM)%	(145 SCCM)%	C061	D061			B	NPXP 1412	1/16"	I	P 43117 TANTALUM
LOW CAPACITY	0.1 GPH				A073			NPXP 142	1/8"	I	NPXA 148 BLACK GLASS
		1.0 SCFH									
	%	%	C017	D071				NPXG 138			
	30 CCM				C073	D073		NPXG 142			
		1.0 SCFH		E071				NPXQ 138			
		2.5 SCFH				E073		NPXQ 142			
	0.5 GPH		A081					NPXB 138	1/8"	I	P 36605 316 SS
	60 CCM				A083			NPXB 142			
	30 CCM	6.0 SCFH			B083			NPXF 142			
	%	%	C081	D081				NPXG 138			
	180 CCM				C083	D083		NPXG 142			
		2.5 SCFH		E081				NPXD 138			
		12.0 SCFH				E083		NPXD 142			
	1.0 GPH	20.0 SCFH	A091					NPXP 139	3/16"	I	NPXA 149 BLACK GLASS
	60 CCM		B091		A093			NPXP 143			
					B093			NPXS 139			
			C091	D091				NPXS 143			
	%	%			C093	D093		NPXG 139			
		6.0 SCFH		E091				NPXQ 139			
						E093		NPXQ 143			
	3.0 GPH		A101					NPXB 139	3/16"	I	P 34665 316 SS
	180 CCM				A103			NPXB 143			
			B101					NPXF 139			
					B103			NPXF 143			
	%	%	C101	D101				NPXG 139			
					C103	D103		NPXG 143			
		12.0 SCFH		E101				NPXD 139			
						E103		NPXD 143			
	%		D121			A	NPXG 140	1/4"	I	NPXA 150 BLACK GLASS	
					D123	A	NPXG 144				
	20.0 SCFH		E121			A	NPXP 140				
					E123	A	NPXP 144				
5.0 GPH	30.0 SCFH	A111	E111			AD	NPXP 137	3/16"	I	NPXA 149 BLACK GLASS	
				A113	E113	AD	NPXP 2578				

(A) ADD INSERT NP 302; (B) ADD STOPS NP 1437; (D) DUAL SCALE TUBE

# GLASS TUBE TYPE PURGE METER

## TABLE 2 (CONT'D)

METERING TUBE AND FLOAT SELECTION SHEET										
TUBE AND FLOAT						NOTE	TUBE PART NUMBER	FLOAT SIZE	FORM	PART NUMBER AND MATERIAL
CAPACITY AND SCALE UNIT		ORDERING NUMBER								
WATER	AIR	WATER	AIR	WATER	AIR					
HIGH CAPACITY	8.0 GPH		A121				NPXB 140	1/4"	I	NP 299 316 SS
					A123		NPXB 144			
	500 CCM		B121				NPXF 140			
					B123		NPXF 144			
	%		C121				NPXG 140			
					C123		NPXG 144			
	15 GPH		A131				NPXA 141	5/16"	I	NP 300 316 SS
					A133		NPXA 145			
	900 CCM		B131				NPXE 141			
					B133		NPXE 145			
	%		C131				NPXG 141			
					C133		NPXG 145			
	%		D131			A	NPXG 140	1/4"	I	P 40334 316 SS
					D133	A	NPXG 144			
	36.0 SCFH				E133	A	NPXD 144			
(16 GPH)%				SPECIAL			NPXG 145	5/16"	I	NP 1846 BRONZE
25.0 GPH		A141					NPXB 141	5/16"	I	NP 301 316 SS
				A143			NPXB 145			
1500 CCM		B141					NPXF 141			
				B143			NPXF 145			
%		C141					NPXG 141			
				C143			NPXG 145			
	%		D141			A	NPXG 141	5/16"	I	NPXA 151 BLACK GLASS
					D143	A	NPXG 145			
	60.0 SCFH		E141			A	NPXP 141			
					E143	A	NPXP 145			
40.0 GPH		A151					NPXH 141	5/16"	I	NP 310 TANTALUM
				A153			NPXH 145			
2500 CCM							NPXJ 145			
				B153			NPXJ 145			
%		C151					NPXG 141			
				C153			NPXG 145			
	%		D151			A	NPXG 141	5/16"	I	P 15940 316 SS
					D153	A	NPXG 145			
	110 SCFH		E151			A	NPXD 141			
					E153	A	NPXD 145			

(A) ADD INSERT NP 302; (B) ADD STOPS NP 1437; (D) DUAL SCALE TUBE

# GLASS TUBE TYPE PURGE METER

## UGSI CHEMICAL FEED, INC. HEADQUARTERS

### WARRANTY STATEMENT

(a.) Limited Product Warranty Statements. For each Product purchased from Seller or an authorized reseller, Seller makes the following limited warranties: (i) the Product is free from defects in material and workmanship, (ii) the Product materially conforms to Seller's specifications that are attached to, or expressly incorporated by reference into, these terms, and (iii) at the time of delivery, Seller has title to the Product free and clear of liens and encumbrances (collectively, the "Limited Warranties"). Warranties with respect to software which may be furnished by Seller as part of the Product, if any, are expressly set forth elsewhere in these terms. The Limited Warranties set forth herein do not apply to any software furnished by Seller.

(b.) Conditions to the Limited Warranties. The Limited Warranties are conditioned on (i) the Product being stored, installed, operated and maintained in accordance with Seller's instructions, (ii) no repairs, modifications or alterations being made to the Product other than by Seller or its authorized representatives, (iii) the Product being used in compliance with any conditions or parameters set forth in specifications that are attached to, or expressly incorporated by reference into, these terms, (iv) use of the Product being discontinued after the Buyer or user has, or should have had, knowledge of any defect in the Product, (v) Buyer providing prompt written notice of any warranty claims within the warranty period described below, (vi) at Seller's discretion, Buyer either removing and shipping the Product or non-conforming part thereof to Seller, at Buyer's expense, or Buyer granting Seller access to the Products at all reasonable times and locations to assess the warranty claims, and (vii) Buyer not being in default of any payment obligation to Seller.

(c.) Exclusions from Limited Warranty Coverage. The Limited Warranties specifically exclude any equipment comprising part of the Product that is not manufactured by Seller or not bearing its nameplate. To the extent permitted, Seller hereby assigns any warranties made to Seller for such equipment. Seller shall have no liability to Buyer under any legal theory for such equipment or any related assignment of warranties. Additionally, any Product that is described as being experimental, developmental, prototype, or pilot is specifically excluded from the Limited Warranties and is provided to Buyer "as is" with no warranties of any kind. Also excluded from the Limited Warranties are normal wear and tear items including any expendable items that comprise part of the Product, such as fuses, light bulbs and lamps.

(d.) Limited Warranty Period. Buyer shall have 12 months from initial operation of the Product or 18 months from shipment, whichever occurs first, to provide Seller with prompt, written notice of any claims of breach of the Limited Warranties. Continued use or possession of the Product after expiration of the warranty period shall be conclusive evidence that the Limited Warranties have been fulfilled to the full satisfaction of Buyer and user, unless Buyer has previously provided Seller with notice of a breach of the Limited Warranties.

(e.) Remedies for Breach of Limited Warranty. Buyer's sole and exclusive remedies for any breach of the Limited Warranties are limited to Seller's choice of repair or replacement of the Product, or non-conforming parts thereof, or refund of all or part of the purchase price for the subject Product or part. The warranty on repaired or replaced Product or parts is limited to the remainder of the original warranty period. Buyer shall be responsible for any labor required to gain access to the Product so that Seller can assess the available remedies and (ii) Buyer shall be responsible for all costs of installation of repaired or replaced Products or parts. All Products or parts replaced under this Limited Warranty will become the **property of Seller**.

(f.) Transferability. The Limited Warranties shall be transferable during the warranty period to the initial end-user of the Product. THE LIMITED WARRANTIES SET FORTH IN THIS SECTION ARE Seller's SOLE AND EXCLUSIVE WARRANTIES AND ARE SUBJECT TO THE LIMITS OF LIABILITY SET FORTH IN SECTION 8 BELOW. Seller MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTIES THAT MIGHT ARISE FROM COURSE OF DEALING AND USAGE OF TRADE.

### INSTALLATION, OPERATION, MAINTENANCE, AND SERVICE INFORMATION

Direct any questions concerning this equipment that are not answered in this instruction manual to the reseller from whom the equipment was purchased. If the equipment was purchased directly from UGSI Chemical Feed, Inc., Vineland, NJ, contact the office indicated below.

#### UNITED STATES

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