

SERIES 55-200 ARMORED FLOWMETER

GENERAL

This instruction sheet provides installation, operation, and maintenance instructions for the U.S. Filter/Wallace & Tiernan (USF/W&T) Series 55-200 Armored Flowmeter, which is a variable area (plug and orifice) type of flowmeter designed for an industrial environment. A tapered float operates in a fixed-throat orifice to provide the variable metering area. The meter body is 316 stainless steel with a choice of O-ring materials including Buna-N, Viton, and EPR. The float is stainless steel for liquid or polypropylene for gas. All non-wetted parts are corrosion resistant. All parts are readily replaceable for easy conversion of service or capacity. All four nominal meter sizes (1/2, 1, 1-1/2, and 2 inches NPT) are included in this instruction sheet.

The Varea-Meter may be fitted with the following:

- A magnetic indicator that provides a visual indication of flow rate.
- A transmitter with a NEMA 4 enclosure that has a system flow rate indicator that operates independently of the transmitter or power supply. The transmitter may be set up as either a 2-wire, 4-20 mA closed loop transmitter, or as a 4-wire, 4-20 mA transmitter with separate DC power and signal lines.
- A transmitter with a NEMA 4 enclosure is offered as either an intrinsically safe or explosion-proof model. The indicator operates independently of the transmitter or power supply. The transmitter may be set up as either a 2-wire, 4-20 mA closed loop transmitter, or as a 4-wire, 4-20 mA transmitter with separate DC power and signal lines.
- An integral flow alarm is offered—either general purpose or intrinsically safe for locations classified hazardous. The intrinsically safe unit comes with a relay to energize an external circuit. Both models have one setpoint: flow increase or decrease.

Any of the above may also be furnished with an external flow switch unit (either general purpose or explosion-proof) that may energize an external alarm circuit on flow increase, flow decrease, or both. A separate instruction book is supplied with the flow switch, or the transmitter.

Only the basic Varea-Meter with magnetic indicator is covered in this instruction book. Separate books are supplied with the optional equipment.



CAUTION: Pressure operating limits for liquid and gas service are 1500 psi for up to and including 1-1/2-inch sizes and 1200 psi for 2-inch sizes, regardless of O-ring material. Temperature limits for liquid service are 250°F (standard Buna-N O-rings), 400°F (optional Viton O-rings), and 220°F (optional EPR O-rings). For gas service the temperature limit is 200°F regardless of O-ring material.



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 SHEET.

FOR PROBLEM FLUIDS AND MATERIAL COMPATIBILITY CHARTS, SEE TECHNICAL DATA SHEET 500.001.

INSTALLATION

When unpacking, remove packaging (used to prevent float damage) from ends of Flowmeter. The Flowmeter must be mounted vertically, discharge end up.

NOTE: Do not use a street elbow, bushing, or close nipple at the bottom of the meter as it may interfere with the float at extreme low readings. The inlet pipe should not be heavier than schedule 80. Deburr and taper the ID of the pipe so that it does not interfere with the float.

Flow switch brackets for the meters are listed in the parts table. In gas service, it is preferable to provide throttling of the flow near the discharge end to minimize float bounce.



WARNING: AFTER INSTALLATION, GRADUALLY PRESSURIZE THE FLOWMETER. CHECK FOR AND CORRECT ANY LEAKAGE. OBSERVE NORMAL SAFETY PROCEDURES RECOMMENDED WHEN WORKING WITH HIGH PRESSURE AND/OR HAZARDOUS MATERIALS.

TO ENSURE PROPER AND SAFE OPERATION OF THIS EQUIPMENT, USE ONLY USF/W&T LISTED PARTS, OR COMMERCIALY AVAILABLE PARTS, AS IDENTIFIED BY COMPLETE DESCRIPTION ON THE ACCOMPANYING PARTS LIST. THE USE OF UNLISTED PARTS CAN RESULT IN EQUIPMENT MALFUNCTIONS CAUSING POSSIBLE SEVERE PERSONAL INJURY.

DISASSEMBLY - REASSEMBLY (SEE PARTS DWG.)



WARNING: PRIOR TO DISASSEMBLY, RELIEVE ALL PRESSURE FROM FLOWMETER. OBSERVE NORMAL SAFETY PRECAUTIONS RECOMMENDED WHEN WORKING WITH HIGH PRESSURE AND/OR HAZARDOUS MATERIALS.

Remove the nuts and bolts that secure the indicator and the Flow Switch, if used, to the Flowmeter. Remove the top-end fitting by unscrewing it, and invert the Flowmeter carefully to allow the float to slide out into your hand. Unscrew the orifice fitting and remove it from the tube. To reassemble, install the two same-size O-rings into the grooves in the top-end fitting and the orifice fitting, lubricating them with silicone grease U10242 or equivalent.

NOTE: Avoid twisting O-rings when installing. A twisted O-ring may leak.

Screw the orifice fitting into the tube, threading it down snugly so that it bottoms against the tube. (Sealing quality is dependent on the O-rings only.) Carefully insert the float into the top of the tube, allowing it to slide down onto the orifice fitting.

NOTE: The float must be inserted with the long end below the guide ring, installed downward.

Thread the top-end fitting into the tube in same manner as for the orifice fitting. Install the indicator and the Flow Switch, if used, on the tube with the brackets, bolts, and nuts, fitting the bolts (or U-bolt, if used) into the grooves on the meter. Tighten the nuts to 30 to 40 in/lb. If necessary, adjust zero of indicator so that it reads REF by loosening the nuts securing the indicator to the bracket and sliding the indicator up or down until the correct setting is obtained.

NOTE: The meter must be in a vertical position, discharge end up. Make sure that the float is inserted in the orifice and that the indicator points to REF when there is no flow.

Tighten the indicator to the bracket using the nuts provided.

If O-rings are swollen, cracked, or hardened, remove and replace them. Apply a thin coating of silicone grease U10242 to the O-rings to facilitate assembly and disassembly.

OPERATION AND MAINTENANCE

The Flowmeter is operated by the flow of gas or liquid through the Flowmeter. It is preferable to start flow through the meter gradually rather than by a sudden surge. This aids in venting air or vapor in liquid service and avoids float bounce in the case of gas. The only adjustment made should be to the indicator, which must read REF at no-flow condition. The adjustment procedure is described under **DISASSEMBLY - REASSEMBLY**. Periodic cleaning is recommended, the frequency of such depending upon the quality of the fluid being measured.

APPLICATION DATA

Material of construction of “wetted” parts is shown on the parts drawings. This information, in combination with that provided in Cat. No. 500.001, will be useful if alternate application conditions are being considered.

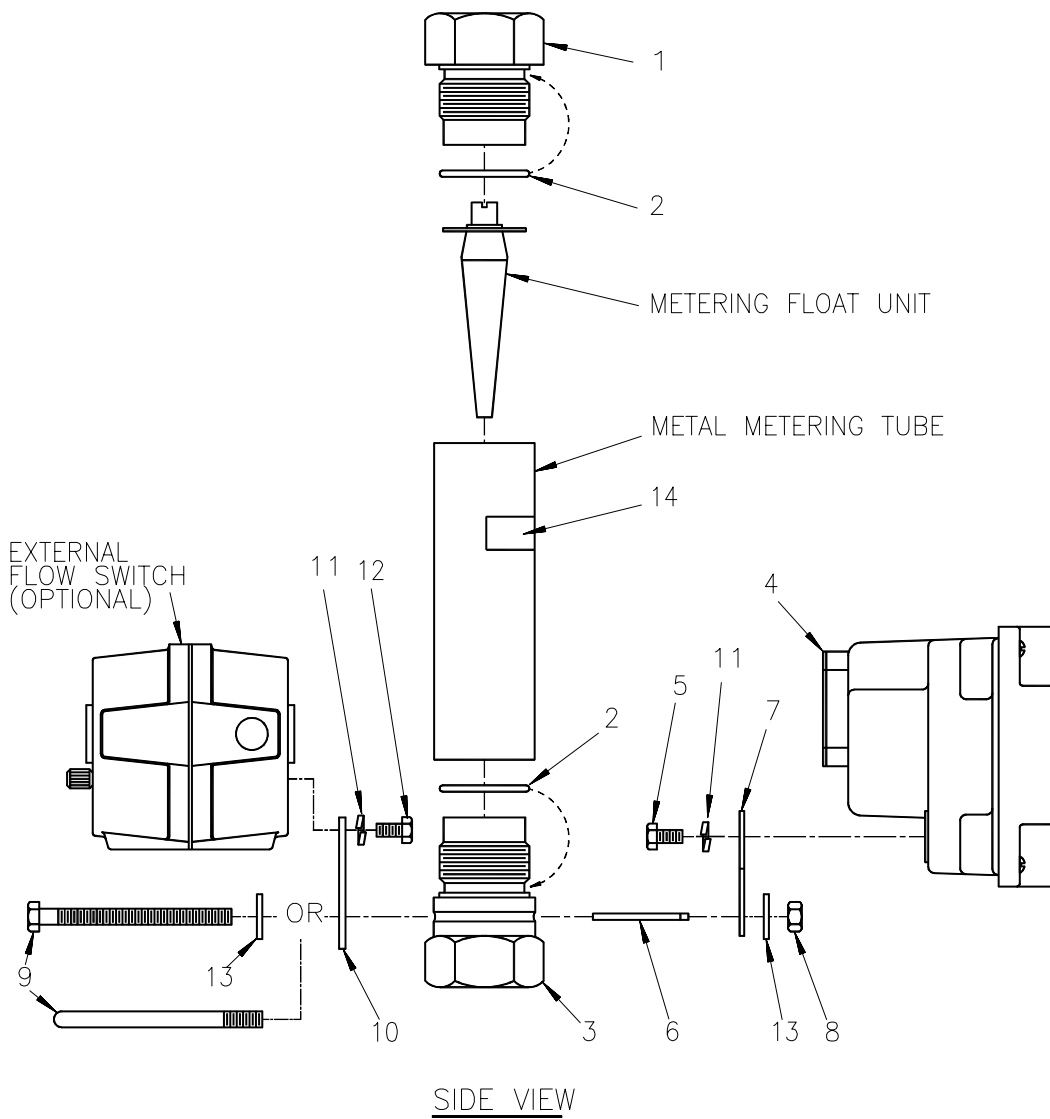
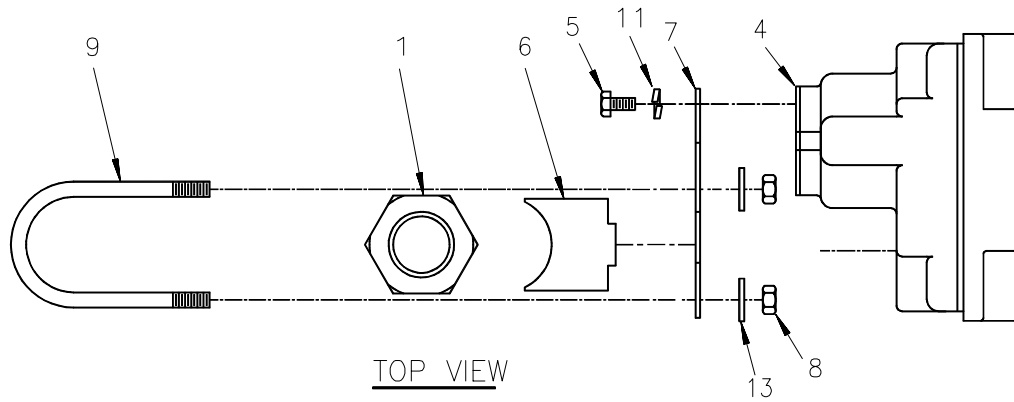
Parts ordering information is covered in the accompanying drawings and parts lists. When ordering parts, always specify model number of the Flowmeter involved.

WARNING LABEL

The following warning label is attached to the equipment:

NP2568: TO AVOID POSSIBLE PERSONAL INJURY OR DAMAGE TO EQUIPMENT, READ INSTRUCTION BOOK BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

SERIES 55-200 ARMORED FLOWMETER



NOTE: FOR PARTS LIST, SEE DWG. 550.200.000.001B.

SERIES 55-200 ARMORED FLOWMETER - PARTS

550.200.000.001A

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SERIES 55-200 ARMORED FLOWMETER

KEY NO.	DESCRIPTION	QTY.	METER SIZE			
			1/2"	1"	1-1/2"	2"
			S.S.	S.S.	S.S.	S.S.
1	END FITTING	1	NPXA2179	NPXA2180	NPXA2181	NPXA2182
2	O-RING					
	BUNA-N SIZE 213	2	FP5745			
	VITON SIZE 213	2	FPXA5745			
	EPR SIZE 213	2	FPXE5745			
	BUNA-N SIZE 222	2		P27083		
	VITON SIZE 222	2		PXA27083		
	EPR SIZE 222	2		PXE27083		
	BUNA-N SIZE 331	2			P31035	
	VITON SIZE 331	2			PXA31035	
	EPR SIZE 331	2			PXE31035	
	BUNA-N SIZE 338	2				P48609
	VITON SIZE 338	2				PXA48609
EPR SIZE 338	2				PXE48609	
3	ORIFICE FITTING	1	NPXA2175	NPXA2176	NPXA2177	NPXA2178
4	INDICATOR	1	AAA4784	AAA4784	AAA4784	AAA4784
	OR					
	TRANSMITTER GP	1	AAA4778	AAA4778	AAA4778	AAA4778
TRANSMITTER						
EXPLOSION-PROOF	1	AAA6293	AAA6293	AAA6293	AAA6293	
5	SCREW, 1/4-20x.50 LG.	2	P18279	P18279	P18279	P18279
6	BRACKET STRUT	1	NP2195	NP2196	NP2197	NP2198
7	BRACKET PLATE	1	NP2199	NP2200	NP2201	NP2202
8	NUT	2	P60289	P60289	P60289	P60289
9	U-BOLT	1	NP2191	NP2192	NP2193	NP2194
	OR					
●	HEX. BOLT	2	P51947	P51948	P51949	P51950
10 ●	MOUNTING BRACKET	1	NP2385	NP2385	NP2384	NP2384
11 ●	1/4" LOCKWASHER	4	P14635	P14635	P14635	P14635
12 ●	HEX. BOLT	2	P18279	P18279	P18279	P18279
13 ●	5/16" WASHER	4	P22616	P22616	P22616	P22616
14	LABEL	1	NP2568	NP2568	NP2568	NP2568

NOTE: ● USED ONLY WITH OPTIONAL EXTERNAL FLOW SWITCH.

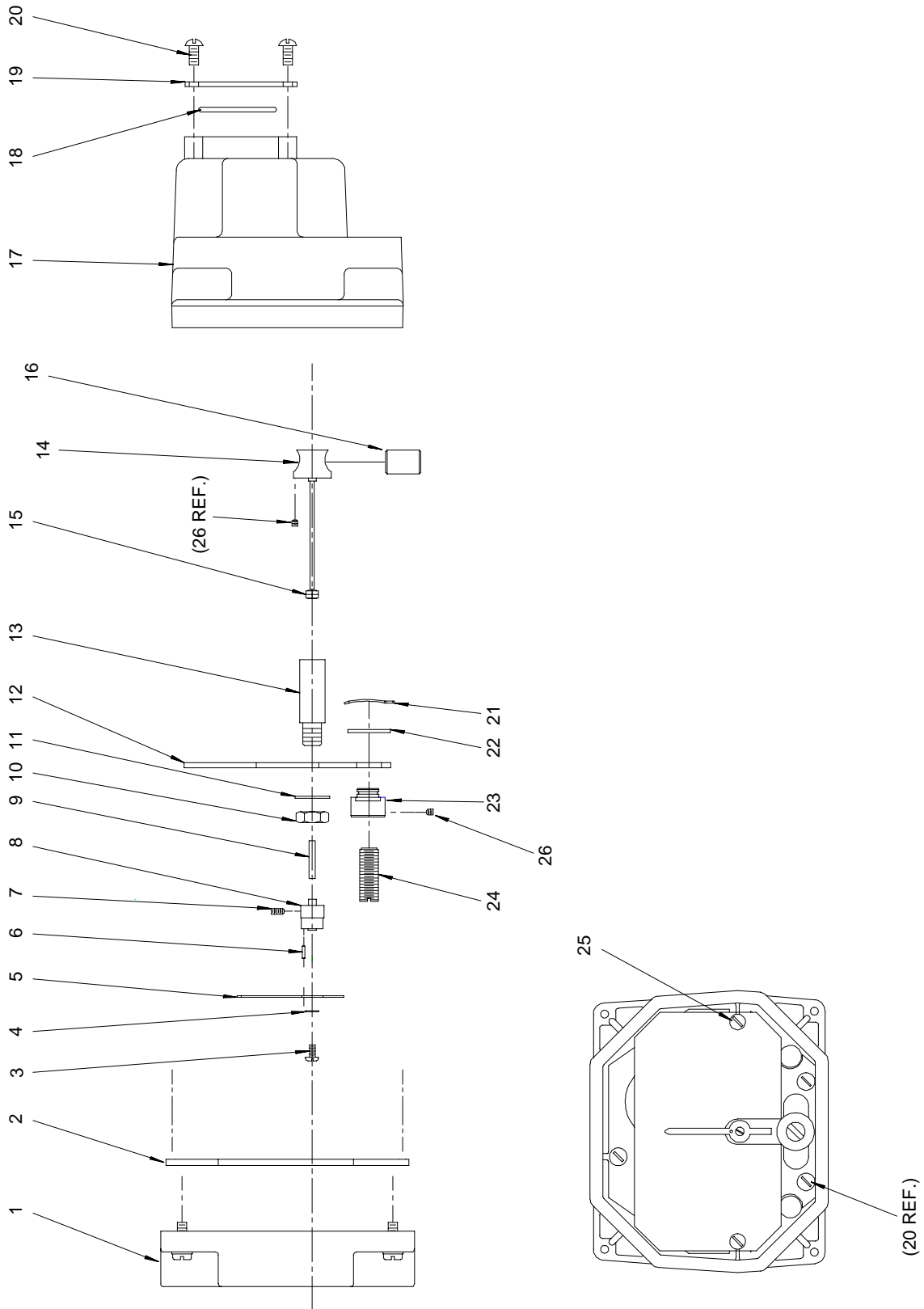
WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

SERIES 55-200 ARMORED FLOWMETER - PARTS LIST

550.200.000.001B

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SERIES 55-200 ARMORED FLOWMETER



AAA4784 FLOW INDICATOR - PARTS

520.205.010.013A

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SERIES 55-200 ARMORED FLOWMETER

KEY NO.	PART NO.	QTY.	DESCRIPTION
1	AAA 4676	1	COVER/WINDOW UNIT PLASTIC
2	AAA 5633	1	GASKET, HOUSING
3	P 46650	1	SCR. #4-40 x 1/4 PAN. HD
4	P 45194	1	LOCKWASHER #4
5	NP 2922	1	POINTER, INDICATOR
6	P 43122	1	GROOVE-PIN, 3/64 DIA. x 1/4 LG.
7	P 18293	1	SCR. SET #4-40 x 1/4
8	NP 2987	1	HUB, POINTER
9	CAA 3303	3	SPACER, TUBING 3/16 LG.
10	P 43067	1	NUT, JAM 3/8-24 SS
11	P 45195	1	LOCKWASHER, INTERNAL 3/8
12	NP 2941	1	PLATE, MTG.
13	NP 2944	1	RETAINER, BEARING
14	NU 1403	1	SHAFT & HUB UNIT
15	U 29278	2	BEARING, EXTENDED INNER RING
16	NP 1365	1	MAGNET, INDICATOR
17	NP 2964	1	CASE
18	P 40359	1	O-RING #126
19	NP 3005	1	PLATE, COVER
20	P 40335	5	SCR. #10-24 x 3/8 RD.HD., SS
21	P 60298	1	RING, RETAINING - BOWED
22	NP 2979	1	RING, BACKUP
23	NP 2975	1	BODY, SPAN ADJUSTER
24	NU 963	1	MAGNETIC SPAN ADJUST
25	P 28795	2	SCR. #4-40 x 1/4 RD.HD., SS
26	P18133	1	SET SCREW #4-40

WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

AAA4784 FLOW INDICATOR - PARTS LIST

520.205.010.013B

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WARRANTY

Seller warrants for a period of one year after shipment that the equipment or material of its manufacture is free from defects in workmanship and materials. Corrosion or other decomposition by chemical action is specifically excluded as a defect covered hereunder, except this exclusion shall not apply to chlorination equipment. Seller does not warrant (a) damage caused by use of the items for purposes other than those for which they were designed, (b) damage caused by unauthorized attachments or modifications, (c) products subject to any abuse, misuse, negligence or accident, (d) products where parts not made, supplied, or approved by Seller are used and, in the sole judgment of the Seller, such use affects the products' performance, stability or reliability, and (e) products that have been altered or repaired in a manner in which, in the sole judgment of Seller, affects the products' performance, stability or reliability. **SELLER MAKES NO OTHER WARRANTY OF ANY KIND, AND THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS OF THE MATERIAL OR EQUIPMENT FOR ANY PARTICULAR PURPOSE EVEN IF THAT PURPOSE IS KNOWN TO SELLER.** If Buyer discovers a defect in material or workmanship, it must promptly notify Seller in writing; Seller reserves the right to require the return of such defective parts to Seller, transportation charges prepaid, to verify such defect before this warranty is applicable. In no event shall such notification be received by Seller later than 13 months after the date of shipment. No action for breach of warranty shall be brought more than 15 months after the date of shipment of the equipment or material.

LIMITATION OF BUYER'S REMEDIES. The **EXCLUSIVE REMEDY** for any breach of warranty is the replacement f.o.b. shipping point of the defective part or parts of the material or equipment. Any equipment or material repaired or replaced under warranty shall carry the balance of the original warranty period, or a minimum of three months. Seller shall not be liable for any liquidated, special, incidental or consequential damages, including without limitation, loss of profits, loss of savings or revenue, loss of use of the material or equipment or any associated material or equipment, the cost of substitute material or equipment, claims of third parties, damage to property, or goodwill, whether based upon breach of warranty, breach of contract, negligence, strict tort, or any other legal theory; provided, however, that such limitation shall not apply to claims for personal injury.

Statements and instructions set forth herein are based upon the best information and practices known to U.S. Filter but it should not be assumed that every acceptable safety procedure is contained herein. Of necessity this company cannot guarantee that actions in accordance with such statements and instructions will result in the complete elimination of hazards and it assumes no liability for accidents that may occur.