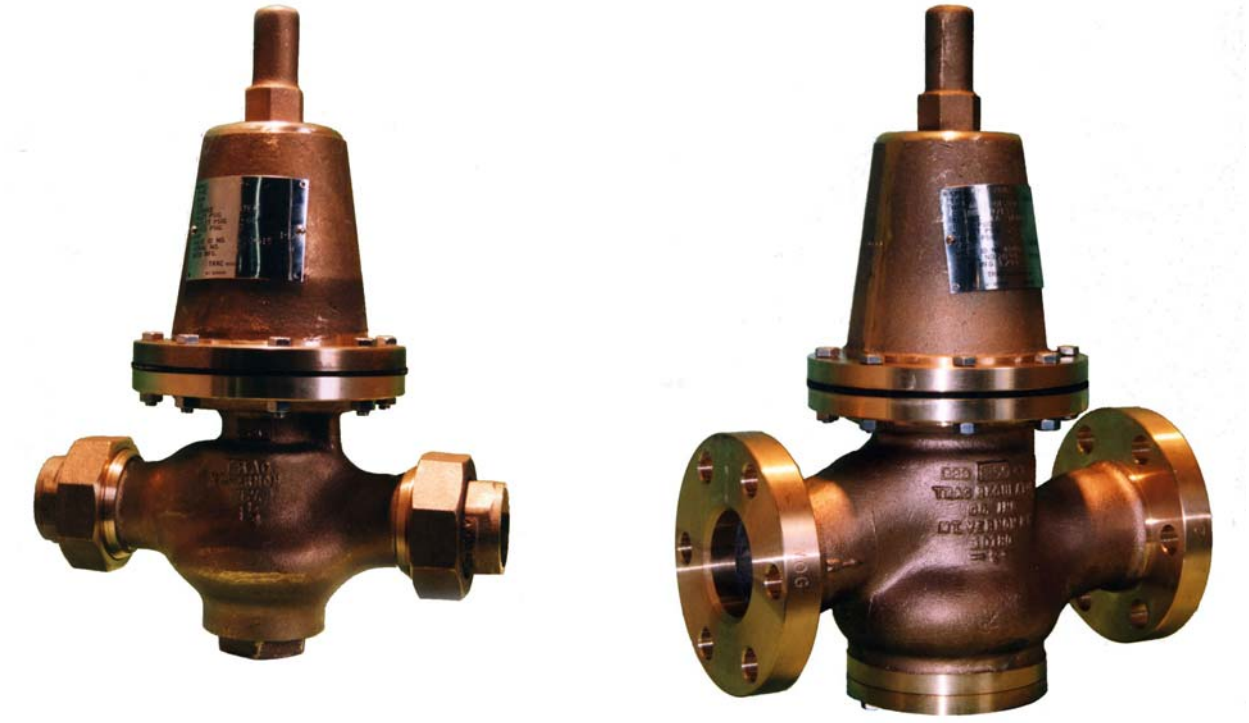
MANUAL NUMBER H-1

TRAC REGULATOR CO.,INC.

MAINTENANCE MANUAL
FOR
SEA WATER PRESSURE
REDUCING VALVES
TRAC STYLE 'H'



TRAC Regulator Company Inc.
160 South Terrace Avenue
Mount Vernon, New York USA 10550-2408

Phone: (914) 699-9352
Fax: (914) 699-9367

FOR GENERAL DISTRIBUTION

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

SECTION 1

GENERAL INFORMATION

INTRODUCTION

The TRAC Style ‘H’ pressure reducing valve is a spring loaded diaphragm operated device for regulating and reducing high pressure water to any desired operating pressure within its adjustable range. The design, construction, and materials utilized for the TRAC Style ‘H’ pressure reducing valve are ideally suited for shipboard seawater systems service.

PRINCIPLES OF OPERATION

Fluid enters the pressure reducing valve assembly (Figure 1) in the direction of the arrow cast in the body and passes downward through the seat to the outlet side of the valve. The outlet pressure is exerted on the underside of the diaphragm, indicated in the figure as the diaphragm chamber. The downstream pressure is obtained through an internal sensing line connected to outlet side port of the body. The spring is adjusted by turning the adjusting screw to balance the outlet pressure at any desired point within the range stamped on the nameplate. The pressure reducing valves will open or shut whenever this balance is changed due to any change in downstream pressure. The purpose of the O-ring on the valve stem is to form a piston seal to balance the pressure reducing valve. The seal ensures that variations in the inlet pressure will not change the downstream-regulated pressure.

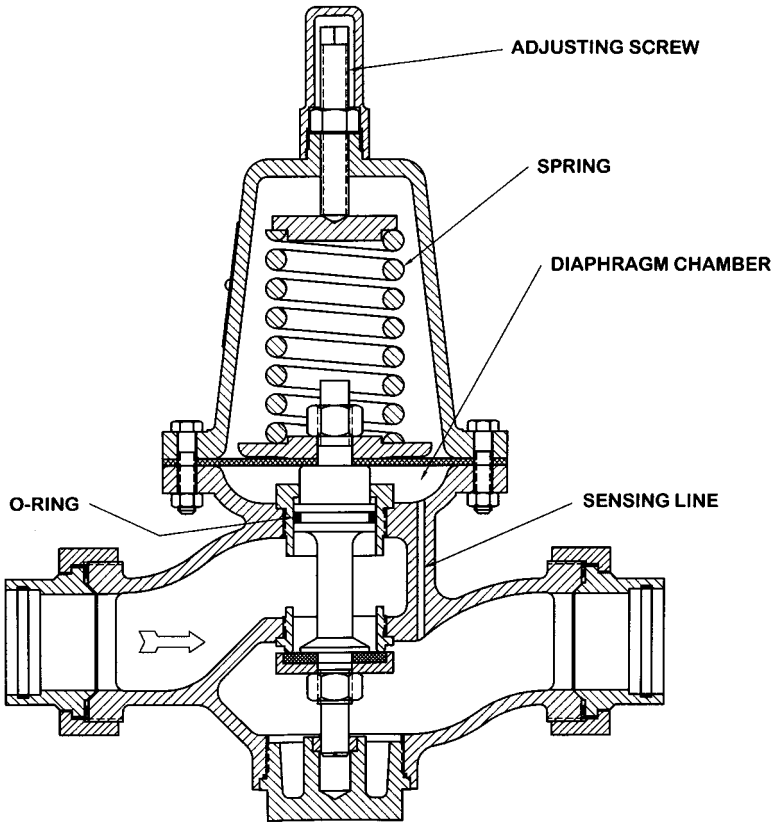


Figure 1 VALVE ASSEMBLY

SECTION 2

OPERATING INSTRUCTIONS

PRESSURE ADJUSTMENT

The valve can be set to control at any pressure within the limits of the pressure stamped on the nameplate. This type of valve is provided with spring adjustment. More or less tension of spring will cause the valve to control at a higher or lower pressure.

CHANGING PRESSURE SETTING

The valve can be set to control at any pressure within the limits of the pressure stamped on the nameplate. This type of valve is provided with spring adjustment. More or less tension of spring will cause the valve to control at a higher or lower pressure. See Figure 2 for pressure adjustment illustration.

To increase pressure, remove Cover (1), loosen Locknut (2) and turn Adjustment Spindle (17) clockwise.

To decrease pressure, remove Cover (1), loosen Locknut (2) and turn Adjustment Spindle (17) counter-clockwise.

After pressure setting adjustment has been made, always lock Adjustment Spindle (17) to prevent rotation with Locknut (2) and replace Cover (1).

IN SERVICE OPERATION

Once the valve has been set to design requirements, operation of the pressure reducing valves is automatic to control a preset downstream pressure. There is no in-service operator action required.

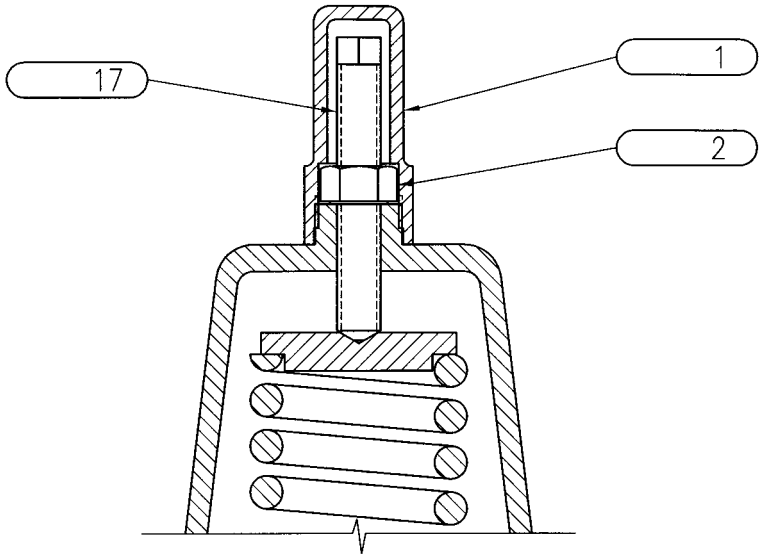


Figure 2 ADJUSTMENT

SECTION 3

INSTALLATION

The pressure reducing valve must be clean and free from packing material and other foreign matter before installing into a clean pipeline. Connect the valve into the pipe line so that the flow is in the direction indicated by the arrow cast on the body. The valve will work equally well in any position, but it is preferable to install the valve with the adjusting spring vertically upward. This will minimize wear on all moving parts.

BYPASS INSTALLATION

Although not always required, it is a good engineering practice to install a hand operated bypass around any automatic control valve, permitting uninterrupted service during necessary servicing of automatic devices. A typical installation diagram incorporating a bypass line is provided in Figure 3.

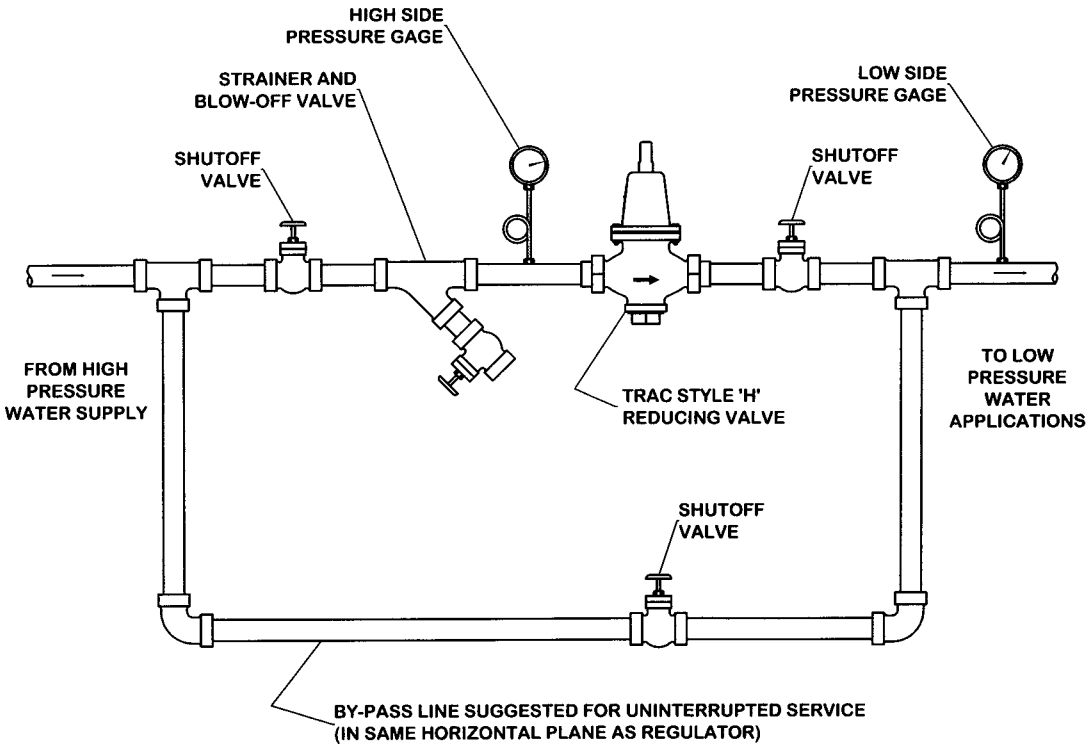


Figure 3 BYPASS INSTALLATION

SECTION 4

MAINTENANCE

DISASSEMBLY

Disassembly of 1/4" through 1-1/2" Pressure Reducing Valve

WARNING

To prevent injury or death to personnel, ensure the water supply to the pressure reducing valve is depressurized and tagged OUT OF SERVICE.

a. Shut off water supply to the pressure reducing valve, Tag water supply and pressure reducing valve OUT OF SERVICE according to ship's procedures.

b. Loosen union nuts that connect valve body to piping to allow water to drain from body and piping, then remove valve from pipe line.

Disassemble the pressure reducing valve according to the following steps:
(See Figure 4 for exploded view Illustration of valve assembly)

1. Ensure that procedures necessary to shut off the water supply to the pressure reducing valve have been completed and that all pressure has been relieved prior to disassembly or removal. Verify that the water supply and pressure reducing valve have been tagged OUT OF SERVICE according to ship's procedures.

2. Remove cover (1), loosen Locknut (2), and turn adjusting screw (17) counter-clockwise until all spring tension has been relieved.

3. Remove Nuts (25) and bolts (6). Lift off spring chamber (18).

4. Remove Spring Retainer (3) and Adjusting Spring (19 or other)(find number varies by set pressure- see individual drawing for specifics).

5. Apply wrench to flats at the top of the Stem (23), remove Stem Nut (21) and Diaphragm Plate (22).

6. Lift Diaphragm (7) and Diaphragm Disc (8)(for valve sizes 1/4" to 3/4" only) off of valve Stem (23).

7. Remove Bottom Plug Assembly (28) and O-ring (20). Carefully slide valve Stem (23) out through the bottom of valve.

8. Remove the Liner (24) and Seat Ring (13). Seat Ring Tool (33) and Liner Tool (32) are available, but not provided with valve. 1/4" to 3/4" valves use a 1" Hex deep socket for the Liner Tool.

9. Remove Seat and Liner O-rings (26) and Stem O-ring (9).

10. To remove Disc (14) and Disc Holder (15) apply wrench to flats at the top of the Stem (23) and remove Disc Holder Nut (16).

SECTION 4

MAINTENANCE

DISASSEMBLY

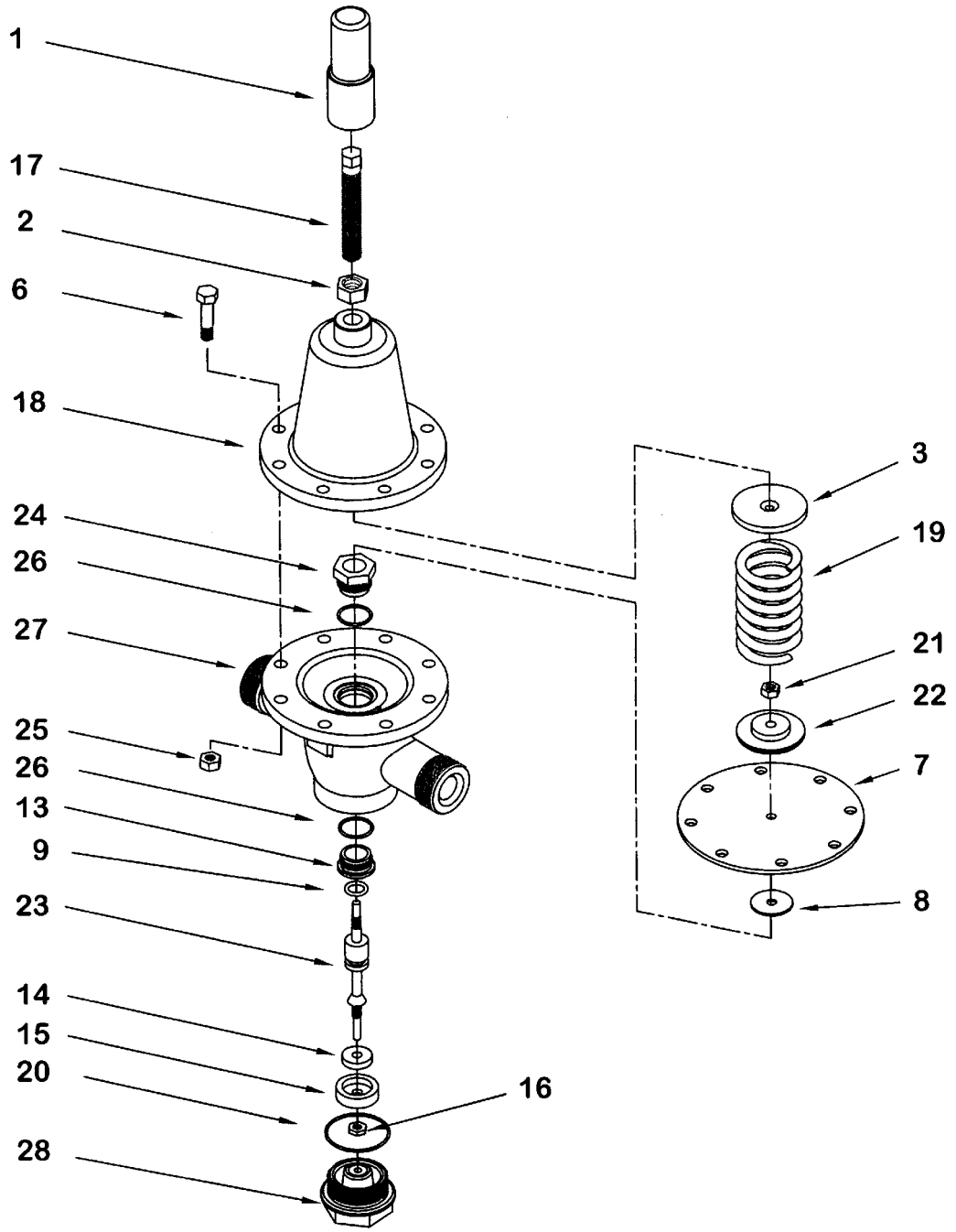


Figure 4 EXPLODED VIEW – TYPICAL 1/2" THROUGH 1-1/2" VALVE ASSEMBLY

SECTION 4

MAINTENANCE

DISASSEMBLY

Disassembly of 2" through 4" Pressure Reducing Valve

WARNING

To prevent injury or death to personnel, ensure the water supply to the pressure reducing valve is depressurized and tagged OUT OF SERVICE.

a. Shut off water supply to the pressure reducing valve, Tag water supply and pressure reducing valve OUT OF SERVICE according to ship's procedures.

b. Loosen union nuts that connect valve body to piping to allow water to drain from body and piping, then remove valve from pipe line.

Disassemble the pressure reducing valve according to the following steps:
(See Figure 5 for exploded view Illustration of valve assembly)

1. Ensure that procedures necessary to shut off the water supply to the pressure reducing valve have been completed and that all pressure has been relieved prior to disassembly or removal. Verify that the water supply and pressure reducing valve have been tagged OUT OF SERVICE according to ship's procedures.

2. Remove cover (4), loosen Locknut (5), and turn adjusting screw (5) counter-clockwise until all spring tension has been relieved.

3. Remove Nuts (18) and bolts (15). Lift off spring chamber (1).

4. Remove Spring Retainer (7) and Adjusting Spring (10)(find number varies by set pressure- see individual drawing for specifics).

5. Apply wrench to flats at the top of the Stem (11), remove Stem Nut (12) and Diaphragm Plate (13).

6. Lift Diaphragm (16) and Diaphragm Disc (17) off of valve Stem (23).

7. Remove Bottom Flange Screws (3).

9. Remove Bottom Flange Assembly (2) and O-ring (23) and carefully slide valve Stem (11) out through the bottom of valve.

10. Remove the Liner (19) and Seat Ring (25). Seat Ring Tool (28) and Liner tool (27) are available, but not provided with valve.

11. Remove Seat Ring and Liner O-rings (24) and Stem O-ring (21).

12. To remove Disc (26) and Disc Holder (20) apply wrench to flats at the top of the Stem (11) and remove Disc Holder Nut (14).

SECTION 4

MAINTENANCE

DISASSEMBLY

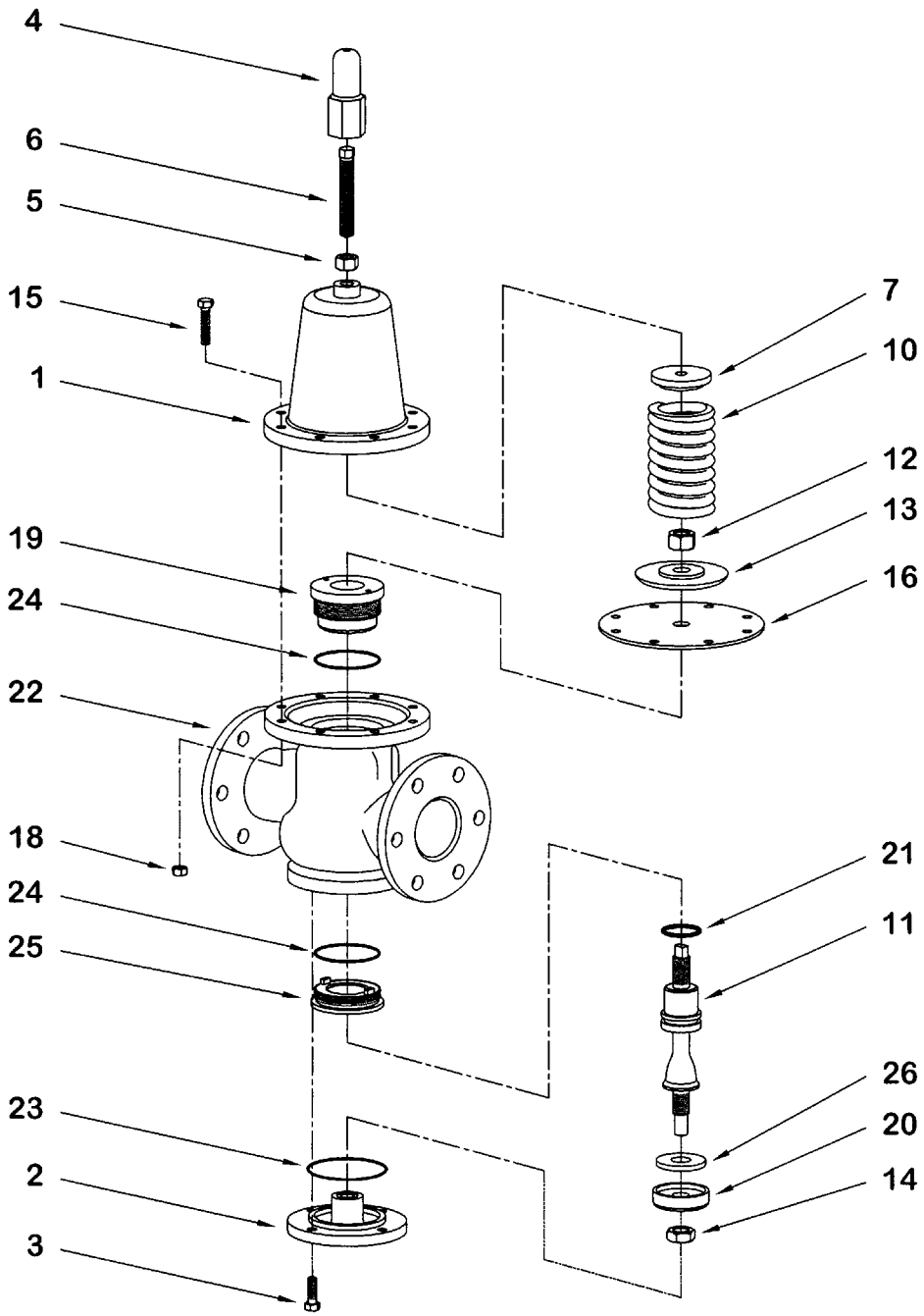


Figure 5 EXPLODED VIEW - TYPICAL 2” THROUGH 4” VALVE ASSEMBLY

SECTION 4

MAINTENANCE

INSPECTION AND REPLACEMENT OF PARTS

Check seat face of seat ring for smoothness. Check stem guide and O-ring seal surface of Liner. Replace if scored or worn. Remove Liner and Seat Ring by unthreading from upper diaphragm area.

If the serviceability of any part is questionable, replace it. Replace all o-rings, seals, gaskets, and packing whenever valve is disassembled. Replace all discs and diaphragms that show signs of wear. If replacement parts are not available and the valve must be reassembled (due to emergency), used o-rings, seals, gaskets, and packing may be reused. If old parts are used the equipment should be closely monitored for leakage and proper operation.

REASSEMBLY

Reassemble in reverse order of disassembly procedure.

Restore water flow to the pressure reducing valve.

Adjust valve outlet pressure. Follow the instructions for Pressure Adjustment in Section 2.

Remove OUT OF SERVICE tags.

REFERENCE DATA

For specific information regarding a particular valve, consult the nameplate (Figure 6) affixed to the spring chamber of each production valve. For operating characteristics for a valve installed in a particular shipboard system consult the applicable certification data sheet or ship's drawing index.

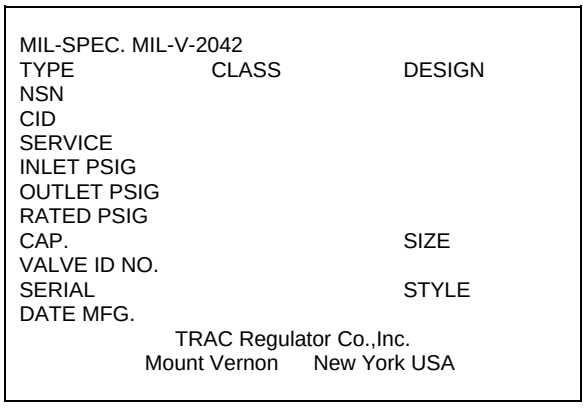


Figure 6 NAMEPLATE

SECTION 5

TROUBLESHOOTING

This section provides information to aid qualified maintenance personnel in troubleshooting the pressure reducing valves. The most common malfunctions, their causes, and appropriate corrective actions are identified and listed in Table 1.

Preliminary troubleshooting consists of system checks and procedures to determine if all operating procedures have been performed correctly. Preliminary checks are performed to expedite the troubleshooting process and possibly eliminate the need for detailed troubleshooting which may involve the removal and disassembly of the valve from the system.

At the fist sign of a malfunction, shut down the valve and it's associated equipment. Check the procedures for startup and normal operation to ensure that these procedures have been performed correctly.

The troubleshooting guide (Table 1) is used if the preliminary troubleshooting checks did not identify and correct the malfunctions. The procedures in the guide direct the user to the most probable cause of an observed malfunction. Recommended corrective action may be in the form of immediate action contained within the guide, or action requiring adjustment/ alignment or repair and overhaul.

Table 1 TROUBLESHOOTING GUIDE

Malfunction	Probable Cause	Corrective Action
Valve Will Not Open	Valve Installation	Valve was installed backwards, verify that the arrow cast on the valve body points in the desired direction of flow
Valve Will Not Control Pressure	Sensing Line in Valve Body Blocked	If this hole becomes plugged it will keep the valve in whatever position it is in. To check it, disassemble and push the appropriate sized drill into the hole. For valve sizes 1/4" thru 2" use a 1/8" drill and for valve sizes 2-1/2" thru 4" use a 3/16" drill.
	Upper and Lower Guide Surfaces Damaged or Dirty	Disassemble, Clean and Replace Scored or Worn Parts: Stem, Liner, and/or Bottom Plug
Valve Will Not Shut (Inlet and Outlet Pressure are the Same Regardless of Demand Downstream)	Leak in Diaphragm	Disassemble; Replace Diaphragm
Valve Will Not Shut (Outlet Pressure Continues to Rise Above Lockup Pressure When There is No Demand Downstream)	Stem O-Ring is Damaged	Disassemble, Clean and Replace Scored or Worn Parts: Stem, Liner, and/or Stem O-Ring
	Damaged Disc or Seating Surface	Disassemble, Clean and Replace Scored or Worn Parts: Seat Ring, and/or Disc
	Seat and/or Liner O-Ring is Damaged	Disassemble, Clean and Replace Scored or Worn Parts: Seat and/or Liner O-Ring

SECTION 6

STANDARD PARTS LISTING

Standard Parts Listing for 1/4” through 2” 150# and 250# Union End Pressure Reducing Valve Type II

NOTE: This table and associated illustration are provided to list standard parts for valves normally supplied for shipboard water service. For application specific information consult the applicable certification data sheet for operating characteristics, Trac valve identification number, drawing number and revision, and departures from the manufacturer’s drawings. When possible, consult the applicable drawing revision for parts and materials listing specific to that equipment.

Table 2 1/4”–2” TYPE II SERIES 150# and 250# UNION END (MIL-F-1183)

(See Figure 7 for Illustration of Valve Assembly)

FIND NO.	1/4”	3/8”	1/2”	3/4”	1”	1-1/4”	1-1/2”	2”
1	919-02							
2	164-28							
3	921-01				736-03			
4	174-02							
5	464-00							
6	144-44				144-38			
7	923-01				733-02		733-03	
8	970-00				NOT APPLICABLE			
9	432-02				429-02		750-01	428-02
10	1104-00	1066-00	192-00	193-00	194-00	195-00	196-00	197-00
11	928-00	1150-00	180-00	181-00	182-00	183-00	184-00	185-00
12	1105-00	1067-00	186-00	187-00	188-00	189-00	190-00	191-00
13	930-02				730-04		906-04	768-04
14	931-01				729-01		910-01	769-01
15	932-00				728-00		909-00	770-00
16	164-33				164-21		164-18	
17	737-02							
18	960-00				721-00			
19	See Spring Table in Figure 7 for specifics							
20	942-00				845-00		652-00	718-00
21	164-34				164-22		164-20	
22	936-01				734-01		763-03	
23	937-00				727-00		907-00	762-00
24	925-00				731-00		908-00	765-00
25	164-19							
26	938-00				740-00		746-00	757-00
27	1098-00	1080-00	947-00	957-00	722-00	886-00	916-00	879-00
28	60144-00				60080-00		60137-00	60088-00
29	NOT APPLICABLE							144-40
30	1149-00	1351-00	263-00	264-00	265-00	266-00	267-00	268-00
31	1578-00	938-02	269-01	270-01	271-02	272-03	273-02	274-02
32	1230-00				60398-00		60399-00	60400-00
33	NOT APPLICABLE				60391-00		60392-00	60393-00
34	NOT APPLICABLE							

SECTION 6

STANDARD PARTS LISTING

Standard Parts Listing for 1/4” through 2” 150# and 250# Union End Pressure Reducing Valve Type I

NOTE: This table and associated illustration are provided to list standard parts for valves normally supplied for shipboard water service. For application specific information consult the applicable certification data sheet for operating characteristics, Trac valve identification number, drawing number and revision, and departures from the manufacturer’s drawings. When possible, consult the applicable drawing revision for parts and materials listing specific to that equipment.

Table 3 1/4”–2” TYPE I SERIES 150# and 250# UNION END (MIL-F-1183)

(See Figure 7 for Illustration of Valve Assembly)

FIND NO.	1/4”	3/8”	1/2”	3/4”	1”	1-1/4”	1-1/2”	2”
1	919-02							
2	164-28							
3	921-01				736-03			
4A	174-00							
5A	464-01							
6	144-44				144-38			
7	923-01				733-02		733-03	
8	970-00				NOT APPLICABLE			
9	432-02				429-02		750-01	428-02
10	1104-00	1066-00	192-00	193-00	194-00	195-00	196-00	197-00
11	928-00	1150-00	180-00	181-00	182-00	183-00	184-00	185-00
12	1105-00	1067-00	186-00	187-00	188-00	189-00	190-00	191-00
13	930-02				730-04		906-04	768-04
14	931-01				729-01		910-01	769-01
15	932-00				728-00		909-00	770-00
16	164-33				164-21		164-18	
17	737-02							
18A	934-00				961-00			
19	See Spring Table in Figure 7 for specifics							
20	942-00				845-00		652-00	718-00
21	164-34				164-22		164-20	
22	936-01				734-01		763-03	
23	937-00				727-00		907-00	762-00
24	925-00				731-00		908-00	765-00
25	164-19							
26	938-00				740-00		746-00	757-00
27	1098-00	1080-00	947-00	957-00	722-00	886-00	916-00	879-00
28	60144-00				60080-00		60137-00	60088-00
29	NOT APPLICABLE							144-40
30	1149-00	1351-00	263-00	264-00	265-00	266-00	267-00	268-00
31	1578-00	938-02	269-01	270-01	271-02	272-03	273-02	274-02
32	1230-00				60398-00		60399-00	60400-00
33	NOT APPLICABLE				60391-00		60392-00	60393-00
34	NOT APPLICABLE							

SECTION 6

STANDARD PARTS LISTING

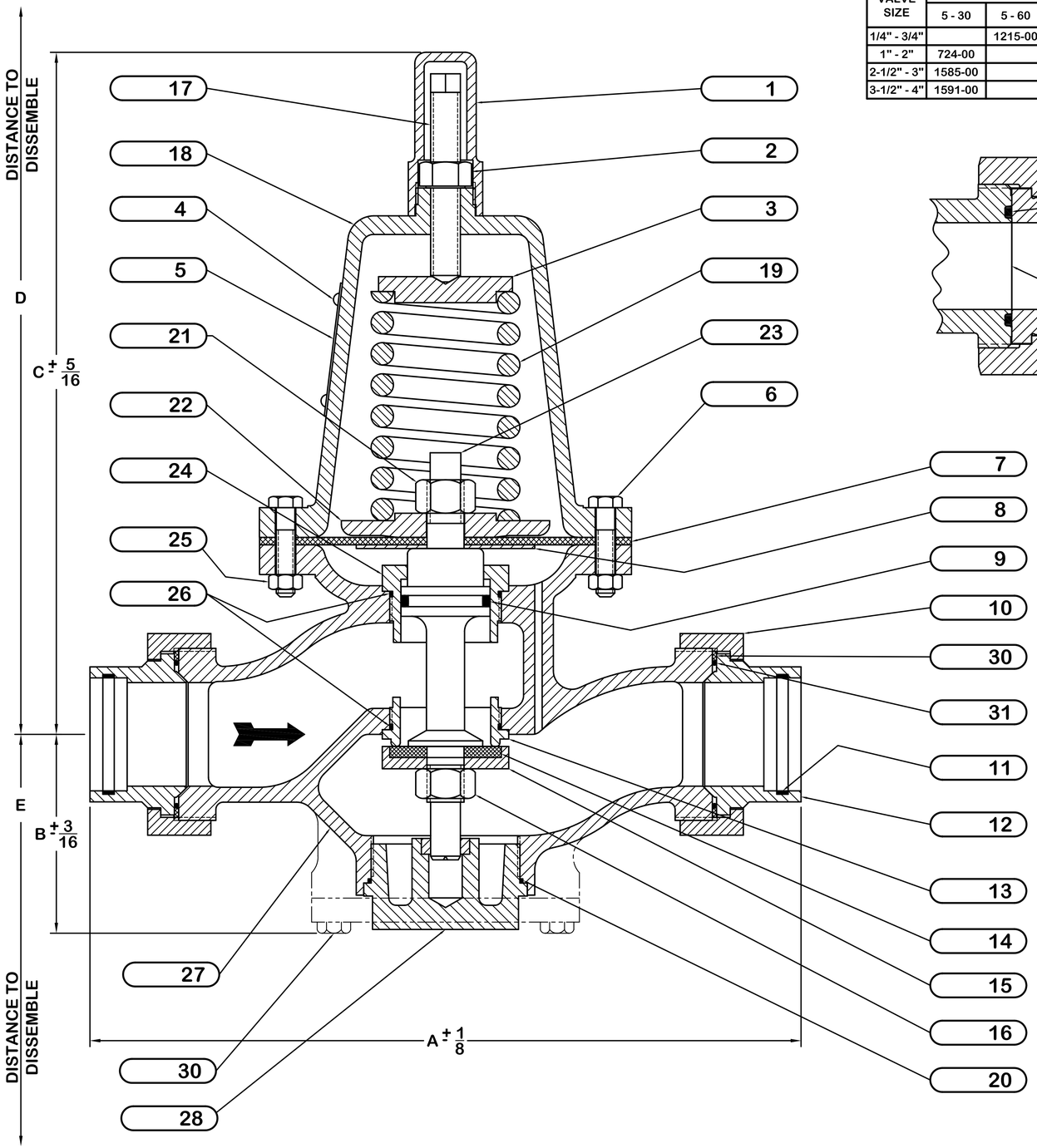
Standard Parts Listing for 1/4” through 2” 700# Union End Pressure Reducing Valve Type I

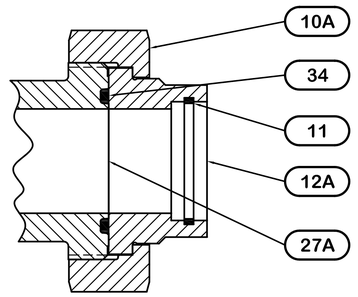
NOTE: This table and associated illustration are provided to list standard parts for valves normally supplied for shipboard water service. For application specific information consult the applicable certification data sheet for operating characteristics, Trac valve identification number, drawing number and revision, and departures from the manufacturer’s drawings. When possible, consult the applicable drawing revision for parts and materials listing specific to that equipment.

Table 4 1/4”–2” TYPE I SERIES 700# UNION END (810-1385946)

(See Figure 7 for Illustration of Valve Assembly)

FIND NO.	1/4”	3/8”	1/2”	3/4”	1”	1-1/4”	1-1/2”	2”
1	919-02							
2	164-28							
3	921-01				736-03			
4A	174-00							
5A	464-01							
6	144-44				144-38			
7	923-01				733-02		733-03	
8	970-00				NOT APPLICABLE			
9	432-02				429-02		750-01	428-02
10A	927-00		1259-00	1262-00	951-00	1265-00	1268-00	1271-00
11	928-00	1150-00	180-00	181-00	182-00	183-00	184-00	185-00
12A	929-00		1258-00	1261-00	950-00	1262-00	1267-00	1270-00
13	930-02				730-04		906-04	768-04
14	931-01				729-01		910-01	769-01
15	932-00				728-00		909-00	770-00
16	164-33				164-21		164-18	
17	737-02							
18A	934-00				961-00			
19	See Spring Table in Figure 7 for specifics							
20	942-00				845-00		652-00	718-00
21	164-34				164-22		164-20	
22	936-01				734-01		763-03	
23	937-00				727-00		907-00	762-00
24	925-00				731-00		908-00	765-00
25	164-19							
26	938-00				740-00		746-00	757-00
27A	918-00		1257-00	1260-00	948-00	1263-00	1266-00	1269-00
28	60144-00				60080-00		60137-00	60088-00
29	NOT APPLICABLE							144-40
30	1149-00	1351-00	263-00	264-00	265-00	266-00	267-00	268-00
31	1578-00	938-02	269-01	270-01	271-02	272-03	273-02	274-02
32	1230-00				60398-00		60399-00	60400-00
33	NOT APPLICABLE				60391-00		60392-00	60393-00
34	939-00		1256-00	163-00	395-00	428-02	162-00	1272-00





ADJUSTING SPRING CHART (PC. NO. 19)									
VALVE SIZE	ADJUSTABLE RANGE (PSIG)								
	5 - 30	5 - 60	5 - 150	25 - 60	50 - 100	50 - 125	50 - 150	75 - 150	100 - 200
1/4" - 3/4"		1215-00	1588-00						
1" - 2"	724-00			1581-00		1583-00			1350-00
2-1/2" - 3"	1585-00			1586-00	1584-00		1337-00		
3-1/2" - 4"	1591-00			1592-00	774-00			1370-00	

VALVE DIMENSIONS						
VALVE SIZE	'E' DIM.	'D' DIM.	'C' DIM.	'B' DIM.	'A' DIM. 150-400#	'A' DIM. 700#
1/4"	8-3/4	12	9-1/4	2-5/16	8-13/16	8-15/16
3/8"	8-3/4	12	9-1/4	2-5/16	9	
1/2"	8-3/4	12	9-1/4	2-5/16	9-3/16	9-13/32
3/4"	8-3/4	12	9-1/4	2-5/16	9-5/8	9-3/4
1"	8-3/4	12	11-5/8	3-1/8	9-7/8	10
1-1/4"	9	12-1/2	11-5/8	3-1/8	10-7/8	10-29/32
1-1/2"	9-1/2	13	11-1/2	3-1/4	11-15/16	12-3/32
2"	11	13	12	3-1/2	13-13/16	13-11/32

TORQUE REQUIREMENTS FOR STYLE 'H' VALVES

NOTE: UNLESS A TORQUE IS SPECIFIED IN THE TABLE, TORQUE TOLERANCE IS +/- 10% FOR ALL VALUES

PIECE TO PIECE	DESCRIPTION	1/4"+3/8"		1/2"		3/4"		1"		1-1/4"		1-1/2"		2"	
		In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb
13 TO 27	SEAT TO BODY	50	4.2	50	4.2	50	4.2	200	16.7	200	16.7	200	16.7	150	12.5
24 TO 27	LINER TO BODY	50	4.2	50	4.2	50	4.2	200	16.7	200	16.7	200	16.7	150	12.5
16 TO 23	DISC NUT TO STEM	8	---	8	---	8	---	50	4.2	50	4.2	100	8.5	120	10
21 TO 23	DIAPHGRAM NUT TO STEM	50	4.2	50	4.2	50	4.2	150	12.5	150	12.5	150	12.5	150	12.5
28 TO 27	BOTTOM PLUG TO BODY	350	29.2	350	29.2	350	29.2	450	37.5	450	37.5	520	43.4	150	12.5
30 TO 27	BOTTOM FLANGE BOLTS TO BODY	---	---	---	---	---	---	---	---	---	---	---	---	150	12.5
6 TO 25	SPRING CHAMBER NUTS BOLTS	50	4.2	50	4.2	50	4.2	150	12.5	150	12.5	150	12.5	150	12.5

LIST OF MATERIAL

PC. NO.	DESCRIPTION	QTY.	MATERIAL	MATERIAL SPEC.	PART NO.	REMARKS
1	COVER	1	CST. BRONZE	ASTM-B61		
2	LOCK NUT	1	COR.RES.ST.	QQ-S-763		
3	SPRING RETAINER	1	COR.RES.ST.	QQ-S-763		CLASS 303 - COLD - COND.A
4	DRIVE SCREW	2	COR.RES.ST.	QQ-S-763		(TYPE II ONLY)
4A	DRIVE SCREW	4	COR.RES.ST.	QQ-S-763		TYPE I VALVES ONLY
5	NAME PLATE	1	COR.RES.ST.	QQ-S-763		(TYPE II ONLY)
5A	NAME PLATE	1	COR.RES.ST.	QQ-S-763		TYPE I VALVES ONLY
6	BOLT	8	COR.RES.ST.	ASTM-F-593		MATERIAL GROUP I, COND.CW
7	DIAPHRAGM	1	BUNA-N	COMMERICAL		
8	DIAPHRAGM DISC - LOWER	1	MONEL	QQ-N-281		1/4"-3/4" VALVES ONLY
9	O-RING - STEM	1	BUNA-N	MIL-P-25732		
10	UNION NUT	2	CST. BRONZE	MIL-F-1183		
10A	UNION NUT	2	CST. BRONZE	QQ-C-390		810-1385946 (700# ONLY)
11	BRAZING RING	2	SIL.BRAZ.ALY.	MIL-F-1183		
12	UNION TAILPIECE	2	CST. BRONZE	MIL-F-1183		
12A	UNION TAIL PIECE	2	CST. BRONZE	QQ-C-390		810-1385946 (700# ONLY)
13	SEAT RING	1	CST. MONEL	ASTM-A-494		COMP.M25-S
14	DISC	1	BUNA-N	MIL-P-25732		
15	DISC HOLDER	1	CST. MONEL	ASTM-A-494		COMP.M35-2 OR M30C
16	NUT - DISC HOLDER	1	MONEL	QQ-N-281		
17	ADJUSTMENT SPINDLE	1	COR.RES.ST.	QQ-S-763		CLASS 303 - COLD - COND.A
18	SPRING CHAMBER	1	CST. BRONZE	ASTM-B61		(TYPE II ONLY)
18A	SPRING CHAMBER	1	CST. BRONZE	ASTM-B61		TYPE I VALVES ONLY
19	SPRING - ADJUSTING	1	COR.RES.ST.	ASTM-A-313		(SEE SPRING TABLE)
20	O-RING - BOTTOM PLUG	1	BUNA-N	MIL-P-25732		
21	NUT - STEM	1	COR.RES.ST.	QQ-S-763		
22	DIAPHRAGM PLATE	1	COR.RES.ST.	QQ-S-763		CLASS 303 - COLD - COND.A
23	VALVE STEM	1	CST. MONEL	ASTM-A-494		COMP. M35-2 OR M30C
24	LINER	1	CST. MONEL	ASTM-A-494		COMP. M25-S
25	NUT	8	COR.RES.ST.	ASTM-F-594		MATERIAL GROUP I, COND. CW
26	O-RING SEAT & LINER	2	BUNA-N	MIL-P-25732		
27	BODY	1	CST. BRONZE	ASTM-B61		
27A	BODY	1	CST. BRONZE	ASTM-B61		700# ONLY
28	BOTTOM PLUG ASSY.	1	CST. BRONZE	ASTM-B61		HAS S-MONEL INSERT
29	BOLT	4	COR.RES.ST.	ASTM-F-593		MATERIAL GROUP I, COND.CW (2" VALVE ONLY)
30	RETAINING RING	2	CST. BRONZE	ASTM-B61		
31	O-RING UNION END	2	VITON	MIL-R-83248		
32	TOOL - LINER	1	STEEL	COMMERICAL		NOT SUPPLIED WITH VALVES
33	TOOL - SEAT	1	STEEL	COMMERICAL		NOT SUPPLIED WITH VALVES
34	O-RING UNION END	2	BUNA-N	MIL-P-25732		700# ONLY

TOLERANCES UNLESS OTHERWISE SPECIFIED:
SURFACE FINISH:125RHR
FRACTION: +/- 1/64
DECIMAL: +/- .005
ANGLE: +/- 1/2°

DATE: 07/27/05
DRAWN BY: L.B.
APPROVED:

TRAC REGULATOR CO., INC.
MOUNT VERNON, NEW YORK 10550

1/4" - 2" TRAC STYLE 'H'
SEA WATER PRESSURE REDUCING VALVE
PER MIL-V-2042D TYPE I & II
SERIES 150# THRU 700# UNION END

SIZE	FSCM NO.	DRAWING NO.	REV.
D	55378	FIGURE 7	

SCALE: NTS | WT. ACT.: | SHEET 1 OF 1

SECTION 6

STANDARD PARTS LISTING

Standard Parts Listing for 1/4” through 1-1/2” 150# and 250# Flanged End Pressure Reducing Valve Type II

NOTE: This table and associated illustration are provided to list standard parts for valves normally supplied for shipboard water service. For application specific information consult the applicable certification data sheet for operating characteristics, Trac valve identification number, drawing number and revision, and departures from the manufacturer’s drawings. When possible, consult the applicable drawing revision for parts and materials listing specific to that equipment.

Table 5 1/4” to 1–1/2” TYPE II SERIES 150# and 250# FLANGED END (MIL-F-20042)

(See Figure 8 for Illustration of Valve Assembly)

FIND NO.	1/4”	3/8”	1/2”	3/4”	1”	1-1/4”	1-1/2”
1	960-00				721-00		
2	60144-00				60088-00		60137-00
3	NOT APPLICABLE						
4	919-02						
5	164-28						
6	737-02						
7	921-01				736-03		
8	174-02						
9	464-00						
10	See Spring Table in Figure 8 for specifics						
11	937-00				727-00		907-00
12	164-34				164-22		164-20
13	936-01				734-01		763-03
14	164-33				164-21		164-18
15	144-44				144-38		
16	923-01				733-02		733-03
17	970-00				NOT APPLICABLE		
18	164-19						
19	925-00				731-00		908-00
20	932-00				728-00		909-00
21	432-02				429-02		750-01
22			990-00	992-00	954-00	956-00	905-00
22A			991-00	993-00	955-00	994-00	926-00
23	942-00				845-00		652-00
24	938-00				740-00		746-00
25	930-02				730-04		906-04
26	931-01				729-01		910-01
27	NOT APPLICABLE				60391-00		60392-00
28	1230-00				60398-00		60399-00

SECTION 6

STANDARD PARTS LISTING

Standard Parts Listing for 2” through 4” 150# and 250# Fanged End Pressure Reducing Valve Type II

NOTE: This table and associated illustration are provided to list standard parts for valves normally supplied for shipboard water service. For application specific information consult the applicable certification data sheet for operating characteristics, Trac valve identification number, drawing number and revision, and departures from the manufacturer’s drawings. When possible, consult the applicable drawing revision for parts and materials listing specific to that equipment.

Table 6 2”–4” TYPE II SERIES 150# and 250# FLANGED END (MIL-F-20042)

(See Figure 8 for Illustration of Valve Assembly)

FIND NO.	2”	2-1/2”	3”	3-1/2”	4”
1	721-00	703-00		831-00	
2	60088-00	60078-00	60128-00	60115-00	
3	144-40	144-37		144-42	
4	738-02	717-02		832-02	
5	164-28	164-37		164-36	
6	737-02	716-01		833-01	
7	736-03	715-01		834-00	
8	174-02				
9	464-00				
10	See Spring Table in Figure 8 for specifics				
11	762-00	706-00	893-00	829-01	
12	164-20	164-17			
13	763-03	713-01		836-00	
14	164-18	164-16			
15	144-38	144-36		144-43	
16	733-03	712-01		837-01	
17	NOT APPLICABLE				
18	164-19	164-15		164-28	
19	765-00	710-00	894-00	839-01	
20	770-00	707-00	901-00	843-01	
21	428-02	720-01	895-01	572-00	
22	767-00	704-00	898-00	915-00	828-00
22A	933-00	920-00	968-00	989-00	913-00
23	718-00	897-00	433-01	857-00	
24	757-00	1065-00	897-00	878-00	
25	768-04	709-02	899-04	841-02	
26	769-01	708-01	900-01	842-01	
27	60393-00	60394-00	60395-00	60496-00	
28	60400-00	60401-00	60402-00	60403-00	

SECTION 6

STANDARD PARTS LISTING

Standard Parts Listing for 1/4” through 1-1/2” 150# and 250# Flanged End Pressure Reducing Valve Type I

NOTE: This table and associated illustration are provided to list standard parts for valves normally supplied for shipboard water service. For application specific information consult the applicable certification data sheet for operating characteristics, Trac valve identification number, drawing number and revision, and departures from the manufacturer’s drawings. When possible, consult the applicable drawing revision for parts and materials listing specific to that equipment.

Table 7 1/4” to 1–1/2” TYPE I SERIES 150# and 250# FLANGED END (MIL-F-20042)

(See Figure 8 for Illustration of Valve Assembly)

FIND NO.	1/4”	3/8”	1/2”	3/4”	1”	1-1/4”	1-1/2”
1A	934-00				961-00		
2	60144-00				60088-00		60137-00
3	NOT APPLICABLE						
4	919-02						
5	164-28						
6	737-02						
7	921-01				736-03		
8A	174-00						
9A	464-01						
10	See Spring Table in Figure 8 for specifics						
11	937-00				727-00		907-00
12	164-34				164-22		164-20
13	936-01				734-01		763-03
14	164-33				164-21		164-18
15	144-44				144-38		
16	923-01				733-02		733-03
17	970-00				NOT APPLICABLE		
18	164-19						
19	925-00				731-00		908-00
20	932-00				728-00		909-00
21	432-02				429-02		750-01
22			990-00	992-00	954-00	956-00	905-00
22A			991-00	993-00	955-00	994-00	926-00
23	942-00				845-00		652-00
24	938-00				740-00		746-00
25	930-02				730-04		906-04
26	931-01				729-01		910-01
27	NOT APPLICABLE				60391-00		60392-00
28	1230-00				60398-00		60399-00

SECTION 6

STANDARD PARTS LISTING

Standard Parts Listing for 2” through 4” 150# and 250# Fanged End Pressure Reducing Valve Type I

NOTE: This table and associated illustration are provided to list standard parts for valves normally supplied for shipboard water service. For application specific information consult the applicable certification data sheet for operating characteristics, Trac valve identification number, drawing number and revision, and departures from the manufacturer’s drawings. When possible, consult the applicable drawing revision for parts and materials listing specific to that equipment.

Table 8 2”–4” TYPE I SERIES 150# and 250# FLANGED END (MIL-F-20042)

(See Figure 8 for Illustration of Valve Assembly)

FIND NO.	2”	2-1/2”	3”	3-1/2”	4”
1A	961-00	984-00		985-00	
2	60088-00	60078-00	60128-00	60115-00	
3	144-40	144-37		144-42	
4	738-02	717-02		832-02	
5	164-28	164-37		164-36	
6	737-02	716-01		833-01	
7	736-03	715-01		834-00	
8A	174-00				
9A	464-01				
10	See Spring Table in Figure 8 for specifics				
11	762-00	706-00	893-00	829-01	
12	164-20	164-17			
13	763-03	713-01		836-00	
14	164-18	164-16			
15	144-38	144-36		144-43	
16	733-03	712-01		837-01	
17	NOT APPLICABLE				
18	164-19	164-15		164-28	
19	765-00	710-00	894-00	839-01	
20	770-00	707-00	901-00	843-01	
21	428-02	720-01	895-01	572-00	
22	767-00	704-00	898-00	915-00	828-00
22A	933-00	920-00	968-00	989-00	913-00
23	718-00	897-00	433-01	857-00	
24	757-00	1065-00	897-00	878-00	
25	768-04	709-02	899-04	841-02	
26	769-01	708-01	900-01	842-01	
27	60393-00	60394-00	60395-00	60496-00	
28	60400-00	60401-00	60402-00	60403-00	

SECTION 6

STANDARD PARTS LISTING

Standard Parts Listing for 1/4” through 1-1/2” 700# Flanged End Pressure Reducing Valve Type I

NOTE: This table and associated illustration are provided to list standard parts for valves normally supplied for shipboard water service. For application specific information consult the applicable certification data sheet for operating characteristics, Trac valve identification number, drawing number and revision, and departures from the manufacturer’s drawings. When possible, consult the applicable drawing revision for parts and materials listing specific to that equipment.

Table 9 1/4” to 1–1/2” TYPE I SERIES 700# FLANGED END (810 1385947)

(See Figure 8 for Illustration of Valve Assembly)

FIND NO.	1/4”	3/8”	1/2”	3/4”	1”	1-1/4”	1-1/2”
1A	934-00				961-00		
2	60144-00				60088-00		60137-00
3	NOT APPLICABLE						
4	919-02						
5	164-28						
6	737-02						
7	921-01				736-03		
8A	174-00						
9A	464-01						
10	See Spring Table in Figure 8 for specifics						
11	937-00				727-00		907-00
12	164-34				164-22		164-20
13	936-01				734-01		763-03
14	164-33				164-21		164-18
15	144-44				144-38		
16	923-01				733-02		733-03
17	970-00				NOT APPLICABLE		
18	164-19						
19	925-00				731-00		908-00
20	932-00				728-00		909-00
21	432-02				429-02		750-01
22B					1617-00		
23	942-00				845-00		652-00
24	938-00				740-00		746-00
25	930-02				730-04		906-04
26	931-01				729-01		910-01
27	NOT APPLICABLE				60391-00		60392-00
28	1230-00				60398-00		60399-00

SECTION 6

STANDARD PARTS LISTING

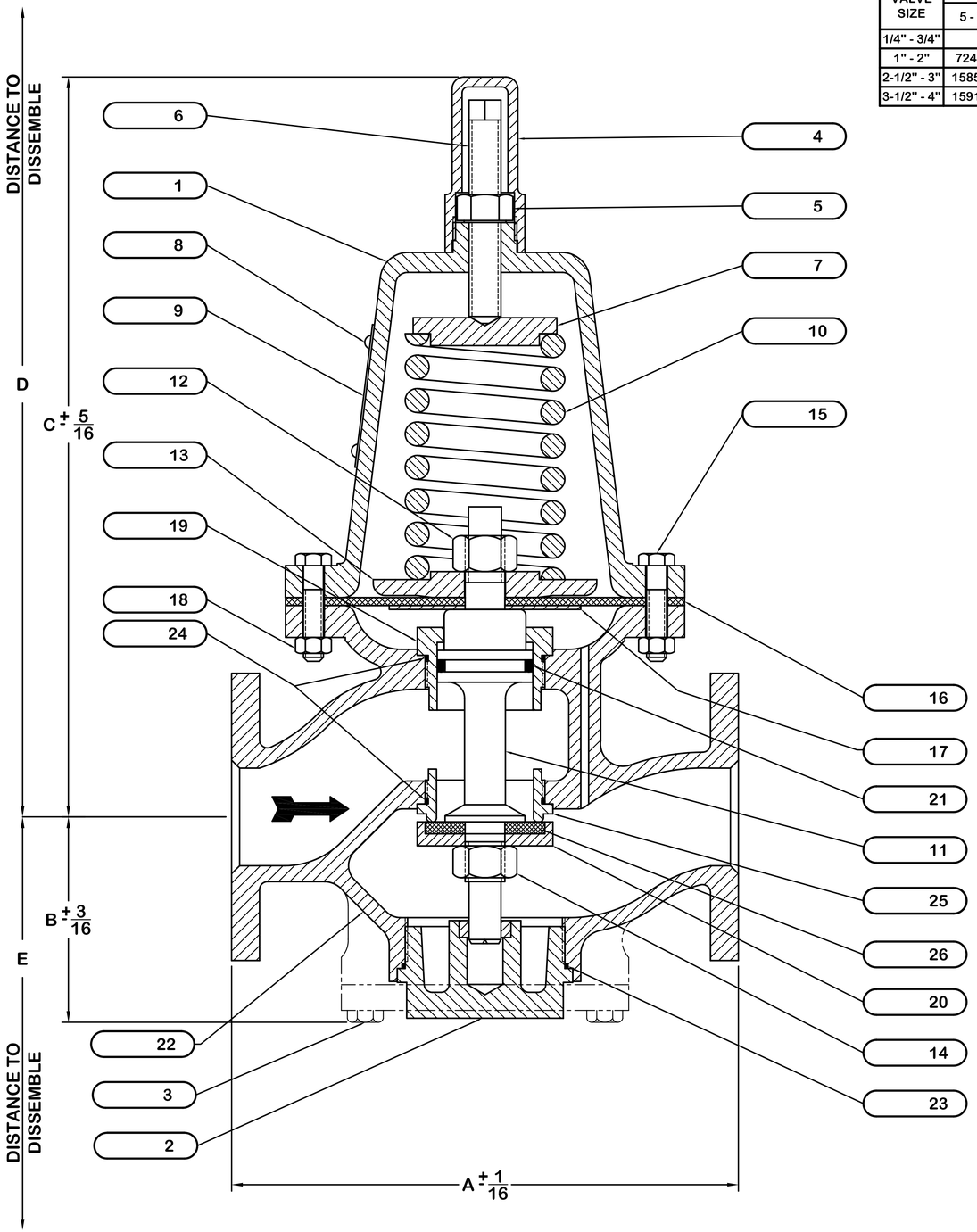
Standard Parts Listing for 2” through 4” 700# Fanged End Pressure Reducing Valve Type I

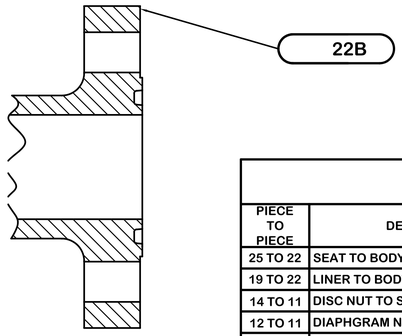
NOTE: This table and associated illustration are provided to list standard parts for valves normally supplied for shipboard water service. For application specific information consult the applicable certification data sheet for operating characteristics, Trac valve identification number, drawing number and revision, and departures from the manufacturer’s drawings. When possible, consult the applicable drawing revision for parts and materials listing specific to that equipment.

Table 10 2”–4” TYPE I SERIES 700# FLANGED END (810 1385947)

(See Figure 8 for Illustration of Valve Assembly)

FIND NO.	2”	2-1/2”	3”	3-1/2”	4”
1A	961-00	984-00		985-00	
2	60088-00	60078-00	60128-00	60115-00	
3	144-40	144-37		144-42	
4	738-02	717-02		832-02	
5	164-28	164-37		164-36	
6	737-02	716-01		833-01	
7	736-03	715-01		834-00	
8A	174-00				
9A	464-01				
10	See Spring Table in Figure 8 for specifics				
11	762-00	706-00	893-00	829-01	
12	164-20	164-17			
13	763-03	713-01		836-00	
14	164-18	164-16			
15	144-38	144-36		144-43	
16	733-03	712-01		837-01	
17	NOT APPLICABLE				
18	164-19	164-15		164-28	
19	765-00	710-00	894-00	839-01	
20	770-00	707-00	901-00	843-01	
21	428-02	720-01	895-01	572-00	
22B		1273-00	1274-00	1275-00	1276-00
23	718-00	897-00	433-01	857-00	
24	757-00	1065-00	897-00	878-00	
25	768-04	709-02	899-04	841-02	
26	769-01	708-01	900-01	842-01	
27	60393-00	60394-00	60395-00	60496-00	
28	60400-00	60401-00	60402-00	60403-00	





ADJUSTING SPRING CHART (PC. NO. 10)									
VALVE SIZE	ADJUSTABLE RANGE (PSIG)								
	5 - 30	5 - 60	5 - 150	25 - 60	50 - 100	50 - 125	50 - 150	75 - 150	100 - 200
1/4" - 3/4"		1215-00	1588-00						
1" - 2"	724-00			1581-00		1583-00			1350-00
2-1/2" - 3"	1585-00			1586-00	1584-00		1337-00		
3-1/2" - 4"	1591-00			1592-00	774-00			1370-00	

VALVE DIMENSIONS							
VALVE SIZE	'E' DIM.	'D' DIM.	'C' DIM.	'B' DIM.	'A' DIM. 150#	'A' DIM. 250#	'A' DIM. 700#
1/4"	8-3/4	12	9-1/4	2-5/16	7-1/4	7-7/8	
3/8"	8-3/4	12	9-1/4	2-5/16	7-1/4	7-7/8	
1/2"	8-3/4	12	9-1/4	2-5/16	7-1/4	7-7/8	
3/4"	8-3/4	12	9-1/4	2-5/16	7-3/8	7-7/8	
1"	8-3/4	12	11-5/8	3-1/8	7-3/8	8	8-11/16
1-1/4"	9	12-1/2	11-5/8	3-1/8	7-15/16	8-11/16	
1-1/2"	9-1/2	13	11-3/4	3-1/4	8-3/4	9-1/2	
2"	11	13	12	3-1/2	10	10-3/4	
2-1/2"	9-1/4	22-1/8	16-1/8	4-3/16	10-7/8	11-3/4	12
3"	16	24	16-3/4	4-3/4	11-5/8	12-1/2	13-3/8
3-1/2"	16	24	18-7/8	5-5/8	11-5/8	12-5/8	13-1/2
4"	16	24	18-7/8	5-5/8	13-1/2	14-1/2	15-3/8

TORQUE REQUIREMENTS FOR STYLE 'H' VALVES

NOTE: UNLESS A TORQUE IS SPECIFIED IN THE TABLE, TORQUE TOLERANCE IS +/- 10% FOR ALL VALUES

PIECE TO PIECE	DESCRIPTION	1/4"+3/8"		1/2"		3/4"		1"		1-1/4"		1-1/2"		2"		2-1/2"		3"		3-1/2"		4"	
		In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb	In/lb	ft/lb
25 TO 22	SEAT TO BODY	50	4.2	50	4.2	50	4.2	200	16.7	200	16.7	200	16.7	150	12.5	200	16.7	300	25	300	25	300	25
19 TO 22	LINER TO BODY	50	4.2	50	4.2	50	4.2	200	16.7	200	16.7	200	16.7	150	12.5	200	16.7	300	25	300	25	300	25
14 TO 11	DISC NUT TO STEM	8	---	8	---	8	---	50	4.2	50	4.2	100	8.5	120	10	150	12.5	150	12.5	200	16.7	200	16.7
12 TO 11	DIAPHGRAM NUT TO STEM	50	4.2	50	4.2	50	4.2	150	12.5	150	12.5	150	12.5	150	12.5	150	12.5	150	12.5	200	16.7	200	16.7
2 TO 22	BOTTOM PLUG TO BODY	350	29.2	350	29.2	350	29.2	450	37.5	450	37.5	520	43.4	---	---	---	---	---	---	---	---	---	---
3 TO 22	BOTTOM FLANGE BOLTS TO BODY	---	---	---	---	---	---	---	---	---	---	---	---	150	12.5	200	16.7	200	16.7	300	25	300	25
15 TO 18	SPRING CHAMBER NUTS BOLTS	50	4.2	50	4.2	50	4.2	150	12.5	150	12.5	150	12.5	150	12.5	300	25	300	25	300	25	300	25

LIST OF MATERIAL

PC. NO.	DESCRIPTION	QTY.	MATERIAL	MATERIAL SPEC.	PART NO.	REMARKS
1	SPRING CHAMBER	1	CST. BRONZE	ASTM-B61		TYPE II VALVES ONLY
1A	SPRING CHAMBER	1	CST. BRONZE	ASTM-B61		TYPE I VALVES ONLY
2	BOTTOM PLUG	1	CST. BRONZE	ASTM-B61		HAS S-MONEL INSERT
3	SCREW-CAP HD. HEX.	4	COR.RES.ST.	ASTM-F-593		MATERIAL GROUP I,COND.CW(2"-4" VALVES ONLY)
4	COVER	1	CST. BRONZE	ASTM-B61		
5	LOCKNUT	1	COR.RES.ST.	QQ - S - 763		
6	ADJUSTMENT SCREW	1	COR.RES.ST.	QQ - S - 763		CLASS 303 - COLD - COND. A
7	SPRING RETAINER	1	COR.RES.ST.	QQ - S - 763		CLASS 303 - COLD - COND. A
8	DRIVE SCREW	2	COR.RES.ST.	QQ - S - 763		TYPE II VALVES ONLY
8A	DRIVE SCREW	4	COR.RES.ST.	QQ - S - 763		TYPE I VALVES ONLY
9	NAME PLATE	1	COR.RES.ST.	QQ - S - 763		TYPE II VALVES ONLY
9A	NAME PLATE	1	COR.RES.ST.	QQ - S - 763		TYPE I VALVES ONLY
10	SPRING	1	COR.RES.ST.	ASTM-A-313		TYPE 302 - CLASS I
11	VALVE STEM	1	CST. MONEL	ASTM-A-494		COMP.M35 - 2 OR M30C
12	NUT - DIAPHRAGM	1	COR.RES.ST.	QQ - S - 763		
13	DIAPHRAGM PLATE	1	COR.RES.ST.	QQ - S - 763		CLASS 303 - COLD - COND.A
14	NUT - DISC	1	MONEL	QQ - N - 281		
15	BOLT	8	COR.RES.ST.	ASTM-F-593		MATERIAL GROUP I, COND CW
16	DIAPHRAGM	1	BUNA-N	COMMERCIAL		
17	DISC,DIAPHRAGM PLATE	1	MONEL	QQ - N - 281		1/4" - 3/4" VALVES ONLY
18	NUT	8	COR.RES.ST.	ASTM-F-594		MATERIAL GROUP I, COND CW
19	LINER	1	CST. MONEL	ASTM-A-494		COMP.M25S
20	HOLDER, DISC	1	CST. MONEL	ASTM-A-494		COMP.M35 - 2 OR M30C
21	O-RING-STEM	1	BUNA-N	MIL-P-25732		
22	BODY	1	CST. BRONZE	ASTM-B61		150# CLASS (MIL-F-20042)
22A	BODY	1	CST. BRONZE	ASTM-B61		250# CLASS (MIL-F-20042)
22B	BODY	1	CST. BRONZE	ASTM-B61		700# CLASS (810-1385947)
23	O-RING-BOTTOM PLUG	1	BUNA-N	MIL-P-25732		
24	O-RING-SEAT & LINER	2	BUNA-N	MIL-P-25732		
25	SEAT RING	1	CST. MONEL	ASTM-A-494		COMP.M25 - S
26	DISC	1	BUNA-N	MIL-P-25732		
27	TOOL - LINER	1	STEEL	COMMERCIAL		
28	TOOL - SEAT	1	STEEL	COMMERCIAL		

TOLERANCES UNLESS OTHERWISE SPECIFIED:
SURFACE FINISH:125RHR
FRACTION: +/- 1/64
DECIMAL: +/- .005
ANGLE: +/- 1/2°

DATE: 07/27/05
DRAWN BY: L.B.
APPROVED:

TRAC REGULATOR CO., INC.
MOUNT VERNON, NEW YORK 10550

1/4" - 4" TRAC STYLE 'H'
SEA WATER PRESSURE REDUCING VALVE
PER MIL-V-2042D TYPE I & II
SERIES 150#, 250# AND 700# FLANGED END

SIZE	FSCM NO.	DRAWING NO.	REV.
D	55378	FIGURE 8	

SCALE: NTS | WT. ACT.: | SHEET 1 OF 1