

Section 1

Petroleum



Werts Welding & Tank Service, Inc.

CATAPP

Phone # 800-851-4452 / Fax # 618-254-6986 / E-mail; www.wertswelding.com

Wood River, IL. / San Antonio, TX. / Birmingham, AL. / Atlanta, GA. / Tampa, FL. / Des Moines, IA.

*****Credit Application*****

Company Name: _____ Ph. # () _____
_____ FAX # () _____

Billing Address: _____
City: _____ State: _____ Zip: _____

Shipping Address: _____
City: _____ State: _____ Zip: _____

Do you require a purchase order number? Yes _____ No _____

_____ Corporation _____ Partnership _____ Sole Proprietor

List corporate officers or all partners or owners:

NAME	ADDRESS	CITY	STATE	ZIP	PHONE #
1. _____	_____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____	_____

FEDERAL I.D. # or PERSONAL S.S. # _____
SALES TAX EXEMPTION # _____ (Attach or send Form)

BANK NAME: _____ ADDRESS: _____
CITY: _____ STATE: _____ ZIP: _____
ACCOUNT # _____

TRADE REFERENCES:

1. _____	PHONE#: _____	FAX#: _____
2. _____	PHONE#: _____	FAX#: _____
3. _____	PHONE#: _____	FAX#: _____
4. _____	PHONE#: _____	FAX#: _____

TERMS: All open accounts have the terms of NET-30 DAYS. In consideration of an open account, the undersigned hereby jointly and individually guarantees full and prompt payment to WERTS WELDING & TANK SERVICE, INC. of all indebtedness, obligation or liabilities of the above mentioned business. The undersigned further agrees to pay a 1-1/2% finance charge per month on any past due balance. The undersigned debtor, furthermore, agrees to pay all expenses, including legal expenses, court costs and attorney fees paid or incurred by WERTS WELDING & TANK SERVICE, INC. in any effort to collect such indebtedness.

I certify that all the information on this form is correct. I fully understand your credit terms and agree to the proper payment schedule in consideration of extended credit.

(Signature) _____ (Title) _____
(Print Name) _____ Date: _____

Copy or scan credit application and either fax or e-mail to Corporate Headquarters. Allow (7) business days for processing. If you have a Sales Tax Exemption # please go to Section (4) on the back of the cover page and you will find a form to fill out and send to us.

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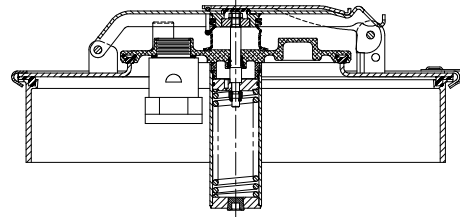
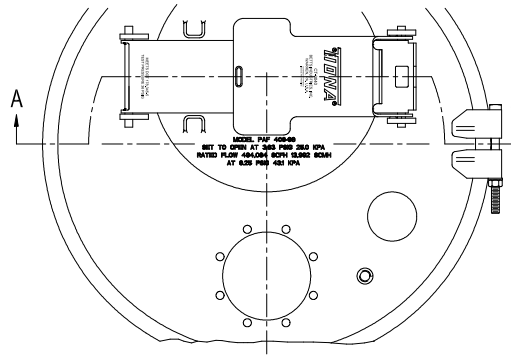
Petroleum

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20" PAF 406-98 OFFSET MANHOLE

With Integral Relief Valve/10" Fill

- INTEGRAL RELIEF VALVE/10" FILL**
- LESS THAN 1 LITER LEAKAGE**
- SET PRESSURE ADJUSTMENT**
- INCREASED FLOW RATE**
- SECONDARY SAFETY LATCH**


 Section A-A
 MODEL L820-STANDARD
 MODEL L863-SELF LATCHING

 Pressure Relief Valve setting 3.63 psig
 Rated Pressure Actuated Emergency Venting:
 494,084 cu. ft. free air per hour @ 6.25 psig
 Rated Liquid Flow Capacity 1335 gpm @ 5.0 psig

PAF manholes with integral latch style surge suppression relief valves are designed for use on DOT406 and replacement on MC306 specification cargo tanks. Manholes are certified and marked in accordance with 49CFR178.345-5 with a test pressure of 36 psig. Manhole covers are 7 gage steel or stainless and are secured to the tank weld collar with a clamp ring and bolt which can be easily removed to provide access into the tank.

The integral 10" relief valve provides emergency pressure relief and meets the 1 liter surge leakage limit imposed by 49CFR178.345-10(b)(3)(ii). The relief valve also serves as a 10" latch style fill which can be easily opened to provide access for filling the tank or for inspection. Relief valves contain an adjustment feature to allow for fine-tuning of set pressure in the field. Other standard features include a heavy duty clamp ring, secondary safety latch and model 6496ALB pressure-vacuum vent mounted in the 10" relief valve cover.

Manholes are available with a self-latching feature that allows the 10" relief valve/fill cover to drop and securely latch upon movement of the tank if the cover is inadvertently left open. For self-latching model substitute L863 for L820 in assembly number.

Note: 3¹/₂" Vent and Liquid Level Switch not included in assembly.

Cover Plate	Relief Valve	Clamping Ring, Bolt, Washer, Strongback, & Latch	Clamping Ring Nut	Normal Vent	Wt. (lb.)	Assembly No.
Steel Zinc Plt.	Alum.	Steel Zinc Plt.	Brass	Alum.	29.7	PPVL820BXB
Stnls 304	Alum.	Stnls 304	Stnls 304	Alum.	30.2	PPVL820CXB
Stnls 316	Alum.	Stnls 304	Stnls 304	Alum.	30.2	PPVL820DXB

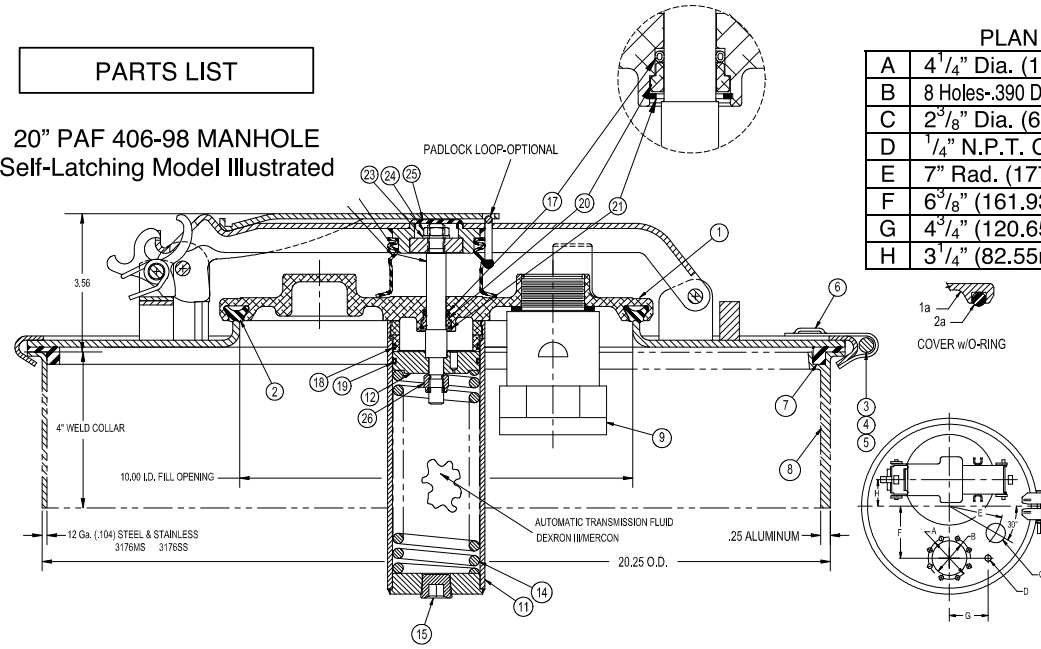
Note: Manhole assemblies, as listed above, have Buna-N gaskets (suffix "B"). For variation in gasketing change last letter of assembly number as follows.

- Suffix "V" indicates Viton collar gasket & Viton 10" fill gasket
- Suffix "W" indicates White Hypalon collar gasket & White Hypalon 10" fill gasket
- Suffix "T" indicates Teflon envelope collar gasket & Tef-Sil 10" fill o-ring

Manhole collars are available in aluminum, steel, and stainless steel. Please see parts page for correct numbers. When welding collars to tank, care should be exercised to insure collar remains flat and round.

PARTS LIST

**20" PAF 406-98 MANHOLE
Self-Latching Model Illustrated**



PLAN VIEW DIMENSIONS

A	4 1/4" Dia. (107.95mm)
B	8 Holes-.390 Dia. (9.90mm) on 4 1/8" (123.83mm) B.C.
C	2 3/8" Dia. (60.325mm) Hole
D	1/4" N.P.T. Coupling
E	7" Rad. (177.8mm)
F	6 3/8" (161.93mm)
G	4 3/4" (120.65mm)
H	3 1/4" (82.55mm)

No.	Description	Material	Part No.
1	Fill Cover	Alum/E-Coated	8297ALEY
1a	Fill Cover (O-Ring Grvd.)	Alum/E-Coated	8297ALEY389
2	Gasket - Integral Relief Valve	Buna-N	3119BN
		Viton	3119VT
		Wh. Hypalon	3119WH
2a	O-Ring	Tef-Sil	3902TS
3	Bolt-Clamp Ring	Steel Zinc Plt.	3029ZC
		Stnls 304	3029SL
4	Nut-Clamp Ring	Brass	3030BR
		Stnls 304	9Q5809
5	Washer-Clamp Ring	Steel Zinc Plt.	3031ZC
		Stnls 304	3031SL
6	Clamping Ring	Steel	3036MS
		Steel Zinc Plt.	3036ZC
		Stnls 304	3036SL
7	Manhole Gasket Channel Type	Buna-N	3560BN
		Viton	3560VT
		Wh. Hypalon	3560WH
		Teflon Env. w/ Wh. Hypalon	3033TF
8	Manhole Collar Channel Type	Steel	3176MS
		Aluminum	3176AE
		Stnls 304	3176SL
		Stnls 316	3176SS

No.	Description	Material	Part No.
9	Vent Assembly	Aluminum	6496ALB
10	Gasket	Buna-N	3716BN
11	Cylinder Assembly	Aluminum	6657AL
12	Piston	Aluminum	6654AL
13	Stem	Stnls 304	6688SL
14	Spring	Steel	4122MS
15	1/2" NPT Plug Zinc Plt.	Steel Zinc Plt.	9V4907
17	Stem O-Ring -112	Buna-N	4118BN
18	Cylinder O-Ring -137	Buna-N	4015BN
19	Piston O-Ring -137	Tef-Sil	4015TS
20	O-Ring Retainer	Alum/E-Coated	4117ALEY
21	Retainer Ring	Stnls 304	9Q4961
22	Bellows	EPDM	4020EPDM
23	Lockwasher Ext. Tooth 1/16"	Stnls 304	9Q5961
24	Nut Hex 1/16x20	Stnls 304	9Q5960
25	Plastic Plug	Polyethylene	9Z6163
26	3/8"-16 Hex Nut w/ Insert	Steel Zinc Plt.	9Q5896

Gasket Maximum Temperature

Buna-N (Nitrile)	250°F
Viton	400°F
White Hypalon	250°F
Teflon-Silicone	400°F
Teflon Envelope w/ White Hypalon Insert	250°F

Replace oil cylinder using Automatic Transmission Fluid Dexron III/Mercon, SAE 5W-20 with viscosity of 177 SUS at 100°F and a pour point of no greater than -45°F.

MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency to insure 10" Integral Relief Valve functions properly. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness to insure a liquid tight seal is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING Consult PAF406-98 maintenance manual prior to disassembly of this relief valve.

Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.



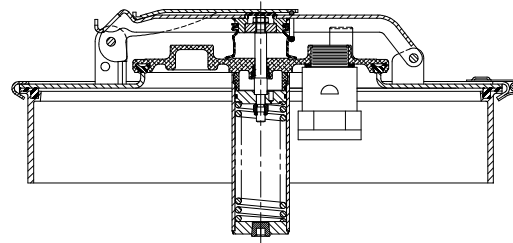
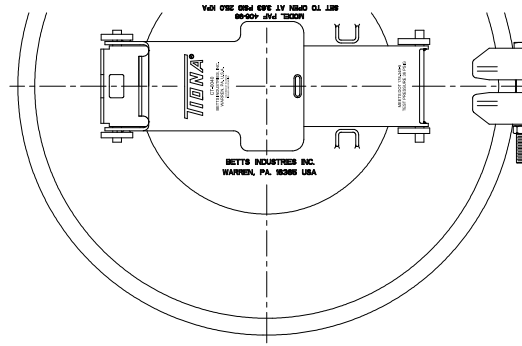
Sept 1999



20" PAF 406-98 MANHOLE

With Integral Relief Valve/10" Fill

- INTEGRAL RELIEF VALVE/10" FILL**
- LESS THAN 1 LITER LEAKAGE**
- SET PRESSURE ADJUSTMENT**
- INCREASED FLOW RATE**
- SECONDARY SAFETY LATCH**



MODEL L720-STANDARD
MODEL L763-SELF LATCHING

Pressure Relief Valve setting 3.63 psig
 Rated Pressure Actuated Emergency Venting:
 494,084 cu. ft. free air per hour @ 6.25 psig
 Rated Liquid Flow Capacity 1335 gpm @ 5.0 psig

PAF manholes with integral latch style surge suppression relief valves are designed for use on DOT406 and replacement on MC306 specification cargo tanks. Manholes are certified and marked in accordance with 49CFR178.345-5 with a test pressure of 36 psig. Manhole covers are 7 gage steel or stainless and are secured to the tank weld collar with a clamp ring and bolt which can be easily removed to provide access into the tank.

The integral 10" relief valve provides emergency pressure relief and meets the 1 liter surge leakage limit imposed by 49CFR178.345-10(b)(3)(ii). The relief valve also serves as a 10" latch style fill which can be easily opened to provide access for filling the tank or for inspection. Relief valves contain an adjustment feature to allow for fine-tuning of set pressure in the field. Other standard features include a heavy duty clamp ring, secondary safety latch and model 6496ALB pressure-vacuum vent mounted in the 10" relief valve cover.

Manholes are available with a self-latching feature that allows the 10" relief valve/fill cover to drop and securely latch upon movement of the tank if the cover is inadvertently left open. For self-latching model substitute L720 for L763 in assembly number.

Cover Plate	Relief Valve	Clamping Ring, Bolt, Washer, Strongback, & Latch	Clamping Ring Nut	Normal Vent	Wt. (lb.)	Assembly No.
Steel Zinc Plt.	Alum.	Steel Zinc Plt.	Brass	Alum.	30.5	PPVL720BXB
Stnls 304	Alum.	Stnls 304	Stnls 304	Alum.	31.0	PPVL720CXB
Stnls 316	Alum.	Stnls 304	Stnls 304	Alum.	31.0	PPVL720DXB

Note: Manhole assemblies, as listed above, have Buna-N gaskets (suffix "B"). For variation in gasketing change last letter of assembly number as follows.

- Suffix "V" indicates Viton collar gasket & Viton 10" fill gasket
- Suffix "W" indicates White Hypalon collar gasket & White Hypalon 10" fill gasket
- Suffix "T" indicates Teflon envelope collar gasket & Tef-Sil 10" fill o-ring

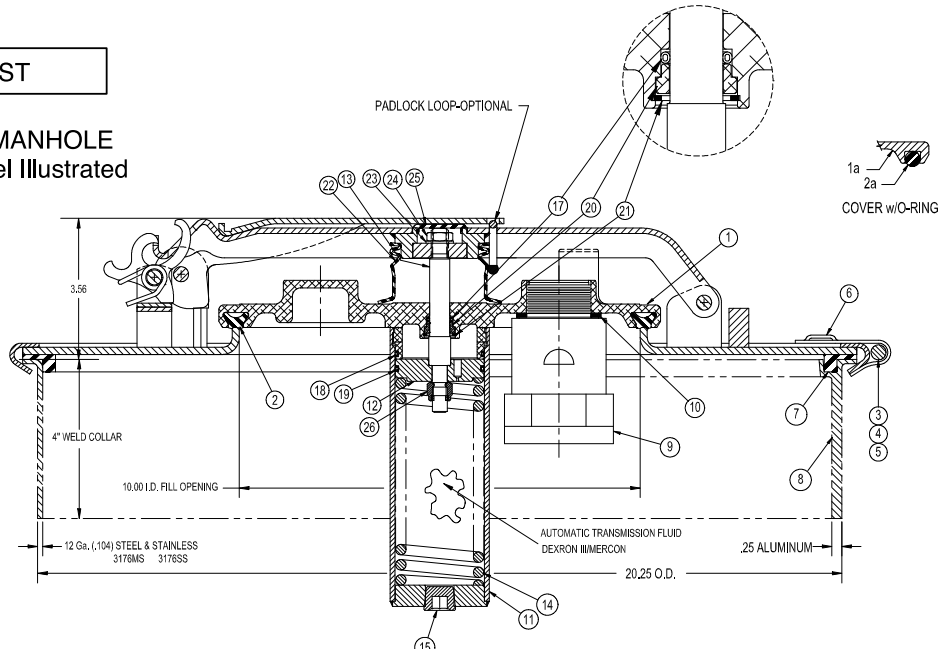
Manhole collars are available in aluminum, steel, and stainless steel. Please see parts page for correct numbers. When welding collars to tank, care should be exercised to insure collar remains flat and round.

Betts[™]
INDUSTRIES, INC.
WARREN, PA.

Sept 1999

PARTS LIST

**20" PAF 406-98 MANHOLE
Self-Latching Model Illustrated**



No.	Description	Material	Part No.
1	Fill Cover	Alum/E-Coated	8297ALEY
1a	Fill Cover (O-Ring Grvd.)	Alum/E-Coated	8297ALEY389
2	Gasket - Integral Relief Valve	Buna-N	3119BN
		Viton	3119VT
		Wh. Hypalon	3119WH
2a	O-Ring	Tef-Sil	3902TS
3	Bolt-Clamp Ring	Steel Zinc Plt.	3029ZC
		Stnls 304	3029SL
4	Nut-Clamp Ring	Brass	3030BR
		Stnls 304	9Q5809
5	Washer-Clamp Ring	Steel Zinc Plt.	3031ZC
		Stnls 304	3031SL
6	Clamping Ring	Steel	3036MS
		Steel Zinc Plt.	3036ZC
		Stnls 304	3036SL
7	Manhole Gasket Channel Type	Buna-N	3560BN
		Viton	3560VT
		Wh. Hypalon	3560WH
		Teflon Env. w/ Wh. Hypalon	3033TF
8	Manhole Collar Channel Type	Steel	3176MS
		Aluminum	3176AE
		Stnls 304	3176SL
		Stnls 316	3176SS

No.	Description	Material	Part No.
9	Vent Assembly	Aluminum	6496ALB
10	Gasket	Buna-N	3716BN
11	Cylinder Assembly	Aluminum	6657AL
12	Piston	Aluminum	6654AL
13	Stem	Stnls 304	6688SL
14	Spring	Steel	4122MS
15	1/2" NPT Plug Zinc Plt.	Steel Zinc Plt.	9V4907
17	Stem O-Ring -112	Buna-N	4118BN
18	Cylinder O-Ring -137	Buna-N	4015BN
19	Piston O-Ring -137	Tef-Sil	4015TS
20	O-Ring Retainer	Alum/E-Coated	4117ALEY
21	Retainer Ring	Stnls 304	9Q4961
22	Bellows	EPDM	4020EPDM
23	Lockwasher Ext. Tooth 1/16"	Stnls 304	9Q5961
24	Nut Hex 1/16x20	Stnls 304	9Q5960
25	Plastic Plug	Polyethylene	9Z6163
26	3/8-16 Hex Nut w/ Insert	Steel Zinc Plt.	9Q5896

Gasket Maximum Temperature

Buna-N (Nitrile)	250°F
Viton	400°F
White Hypalon	250°F
Teflon-Silicone	400°F
Teflon Envelope w/ White Hypalon Insert	250°F

Replace oil cylinder using Automatic Transmission Fluid Dexron III/Mercon, SAE 5W-20 with viscosity of 177 SUS at 100°F and a pour point of no greater than -45°F.

MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency to insure 10" Integral Relief Valve functions properly. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness to insure a liquid tight seal is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING Consult PAF406-98 maintenance manual prior to disassembly of this relief valve.
Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.



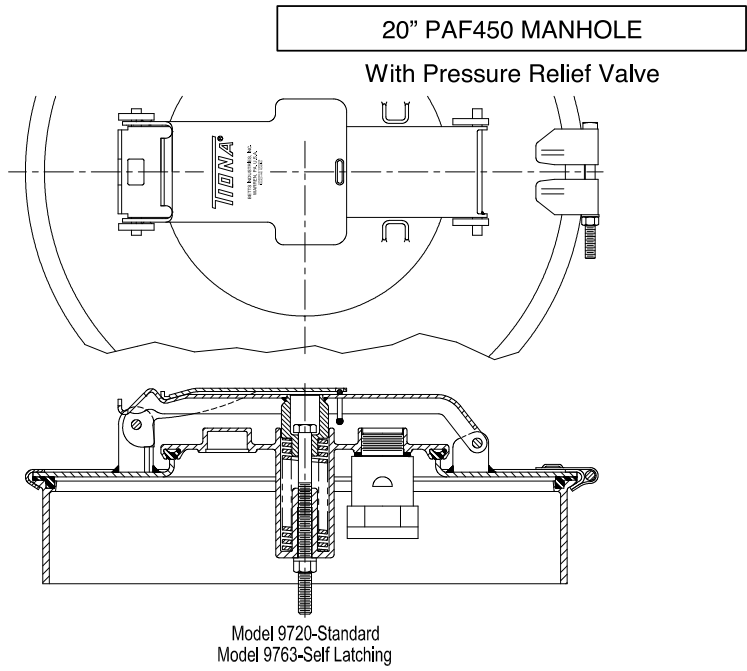
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- NORMAL VENT**
- WROUGHT STEEL COVER**
- SECONDARY SAFETY LATCH**
- HEAVY DUTY CLAMP RING**

Not legal as replacement on MC306 cargo tanks after August 31, 1998

Pressure Relief Valve setting 3.0 psig.
 Rated Pressure Actuated Emergency Venting:
 375,000 cu. ft. free air per hour @ 5.0 psig.



PAF Manholes with Model PAF450 10" Pressure Relief Valve are certified for use on MC306 cargo tanks. Manholes are certified and marked in accordance with 49CFR178.345-5 with test pressure of 36 psig.

Per 49CFR180.405(h)(3), PAF450 assemblies may not be installed on MC306 cargo tanks after August 31, 1998. However, relief valves installed on MC306 cargo tanks on or before August 31, 1998, may be repaired if required. PAF450 relief valves may be installed on non-specification tanks or in tanks built in countries other than the United States where regulations permit.

Relief valve also serves as a 10" latch style fill which can be easily opened for filling the tank or for inspection. Standard features include heavy duty clamp ring, secondary safety latch and model 6238AL Normal Vent.

*No provision has been made for venting of product due to overfilling.

Manholes are also available with a self-latching feature which allows the Pressure Relief Valve cover to open only 91 degrees and drop closed and securely latch upon movement of the tank if the cover is inadvertently left open. For self-latching model substitute 9763 for 9720 in assembly number.

Cover Plate	PRV Cover	Clamping Ring, Bolt & Washer, Strongback, Latch	Clamping Ring Nut	Spring Bolt & Nut	Spring	Normal Vent	Wt. (lb.)	Assembly No.
Steel Zinc Plt.	Alum.	Steel Zinc Plt.	Brass	Stnls 304**	Van Steel	Alum.	29.2	FVA9720BXB
Stnls 304		Stnls 304	Stnls 304	29.7			FVA9720CXB	
Stnls 316		Stnls 304	Stnls 304	29.7			FVA9720DXB	

**Nut Material – Steel Zinc Plated

NOTE: Manhole assemblies, as listed above, have a 6238AL vent (prefix "FVA") and Buna-N (suffix "B"). For variation or additional vents see catalog Section 95 for proper prefix or assembly number. For variation in gasketing change last letter of suffix as follows.

- Suffix "V" indicates Viton gasket
- Suffix "W" indicates White Hypalon gasket
- Suffix "T" indicates Tef-Sil pressure relief valve gasket and Teflon Envelope w/ White Hypalon insert collar gasket

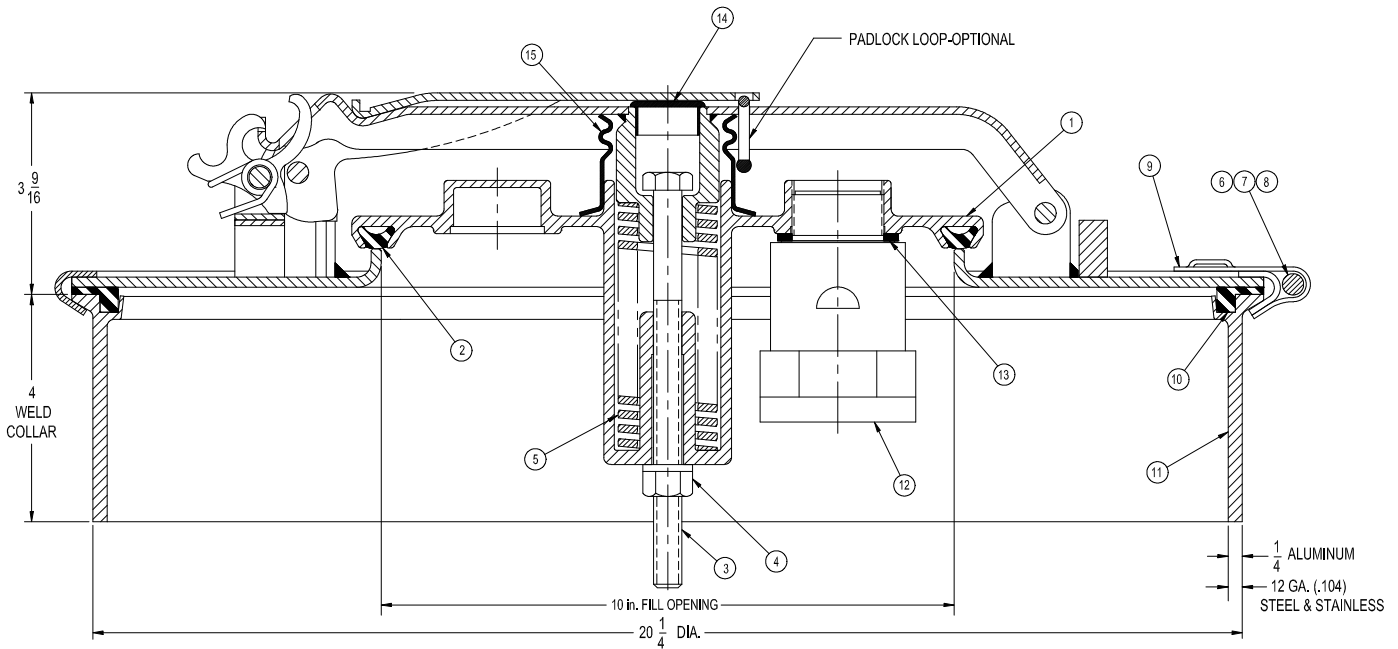
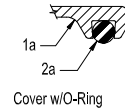
Manhole collars are available in aluminum, steel, and stainless steel. Please see parts page for correct numbers. When welding collars to tank, exercise care to insure collar remains flat and round.



Sept 1998

PARTS LIST

20" PAF 450 MANHOLE
Self-Latching Model Illustrated



No.	Description	Material	Part No.
1	Cover-Relief Valve	Aluminum	8241AL
1a	Cover (O-Ring Grvd.)	Aluminum	8246AL
2	Gasket-Relief Valve	Buna-N	3119BN
		Viton	3119VT
		Wh. Hypalon	3119WH
2a	O-Ring	Tef-Sil	3902TS
3	Bolt	Stnls 304	3876SL
		Steel Zinc Plt.	9Q5812
4	Hex Nut 1/2-13 Thd.	Stnls 304	9Q5853
		Van Steel	3859EY
5	Spring	Steel Zinc Plt.	3029ZC
		Stnls 304	3029SL
6	Bolt-Clamp	Brass	3030BR
		Stnls 304	9Q5809
7	Nut-Clamp 3/8-16 Thd.	Steel Zinc Plt.	3031ZC
		Stnls 304	3031SL
8	Washer-Clamp	Steel	3036MS
		Steel Zinc Plt.	3036ZC
		Stnls 304	3036SL
9	Clamping Ring	Steel	3036MS
		Steel Zinc Plt.	3036ZC
		Stnls 304	3036SL

No.	Description	Material	Part No.	
10	Manhole Gasket Channel Type	B	Buna-N	3560BN
		V	Viton	3560VT
		W	Wh. Hypalon	3560WH
		T	Teflon Env. w/ Wh. Hypalon	3033TF
11	Manhole Collar Channel Type	Steel	3176MS	
		Aluminum	3176AE	
		Stnls 304	3176SL	
	Stnls 316	3176SS		
12	Vent Assembly	Alum/Stnls	6238AL	
13	Gasket	Viton	3716VT	
14	Plastic Cap	Polyethylene	9Z6150	
15	Bellows	Buna-Urethane	4020BU	

Gasket Maximum Temperature

Buna-N (Nitrile)	250°F
Viton	400°F
White Hypalon	250°F
Teflon-Silicone	400°F
Teflon Envelope w/ White Hypalon Insert	250°F

MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency and due regard to the products carried to insure a liquid tight closure. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of the Pressure Relief Valve and Manhole Assembly.



Aug 1997

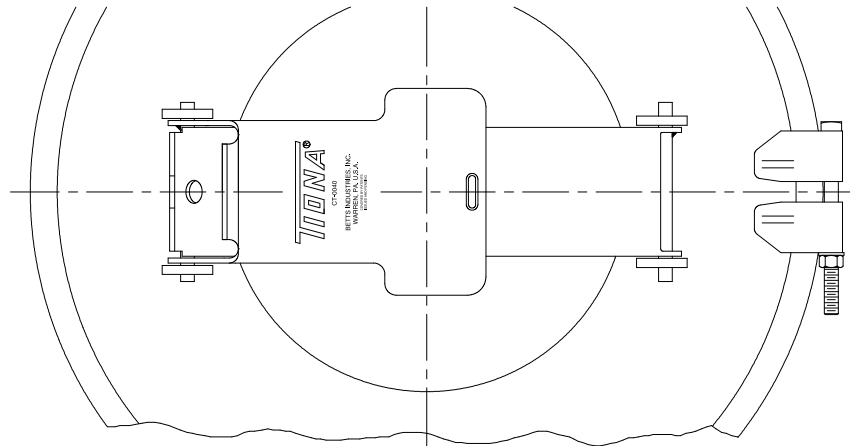
TIONA[®]

20" ROUND MANHOLE with 10" FILL

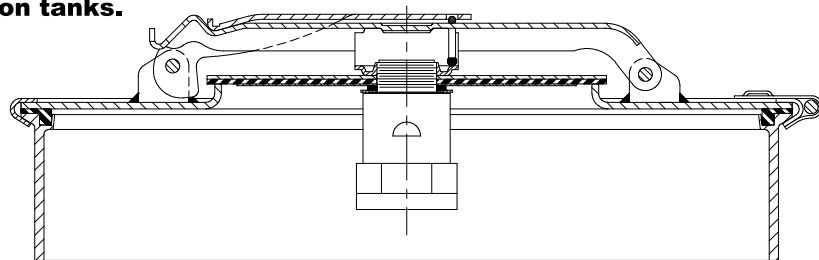
MODERN DESIGN

CLEAN LINES

LOW COST



Note: Not legal for DOT specification tanks.



Model 8020

Combining all the features of all full 20" manhole opening for inspection PLUS the 10" fill cap, Tiona Model No. 8020 is a real 2-in-1 value, offering both inspection and loading features in one husky unit. We pay more for top quality material but furnish it as standard equipment at competitive prices. Secondary Latch is standard on all assemblies.

Cover Plate, Fill Gasket Retainer, Shim Washer	Clamping Ring, Fill Cover, Strongback, Latch	Clamping Bolt and Washer	Clamping Bolt Nut	Vent	Wt. (lb.)	Assembly No.
Steel	Steel	Steel Zinc Plt.	Brass	Alum.	26.5	FVA8020SXB
Steel Zinc Plt.	Steel Zinc Plt.	Steel Zinc Plt.	Brass	Alum.	26.5	FVA8020BXB
Stnls 304*	Steel Zinc Plt.	Steel Zinc Plt.	Brass	Alum.	27.0	FVA8020GXB
Stnls 304	Stnls 304	Stnls 304	Stnls 304	Alum.	27.0	FVA8020CXB
Stnls 304	Stnls 304**	Stnls 304	Stnls 304	Alum.	27.0	FVA8020DXB

* Fill Gasket Retainer and Shims-Aluminum **Fill Cover Material-Stainless 316

NOTE: Inspection manhole assemblies, as listed above, have a 6238AL vent (prefix "FVA") and Buna-N gaskets (suffix "B"). For variation or additional vents see catalog Section 95 for proper prefix or assembly number. For variation in gasketing change last letter of suffix as follows.

Suffix "V" indicates Viton gasket

Suffix "W" indicates White Hypalon gasket

Suffix "T" indicates Teflon fill and collar gasket w/ White Hypalon backer

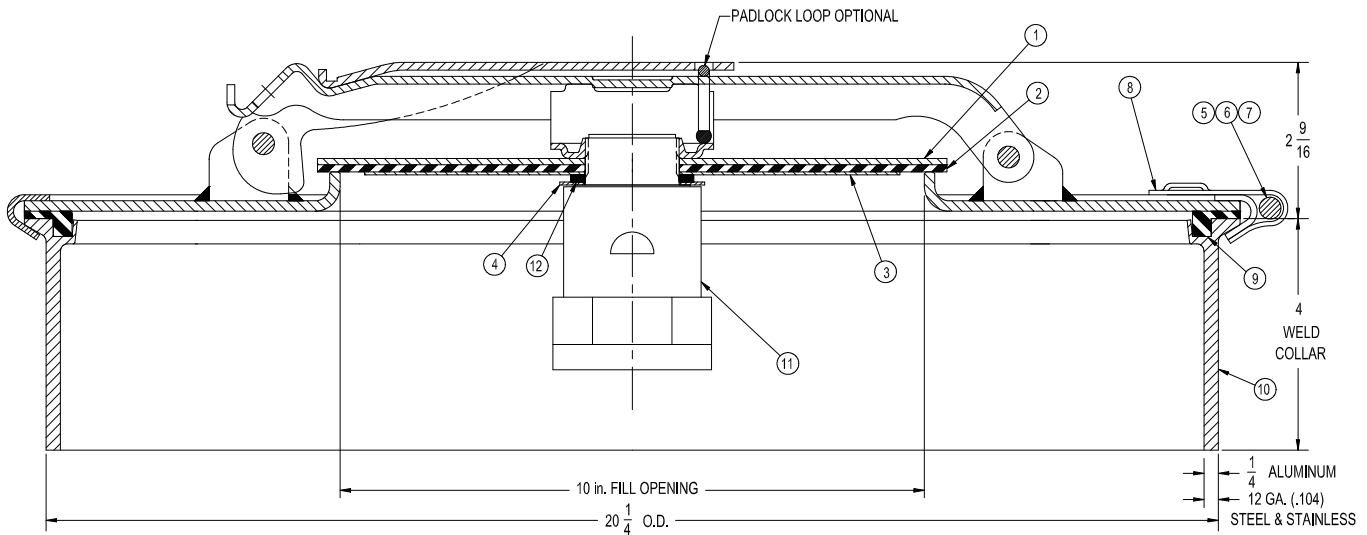
Manhole collars are available in aluminum, steel, and stainless steel. Please see parts page for correct numbers. When welding collars to tank, exercise care to insure collar remains flat and round.

Betts[™]
INDUSTRIES, INC.
WARREN, PA.

Oct 1998

PARTS LIST

20" Manhole w/ 10" Fill



No.	Description	Material	Part No.
1	Fill Cover	Steel	3021MS
		Steel Zinc Plt.	3021ZC
		Stnls 304	3021SL
		Stnls 316	3021SS
2	Fill Gasket	Bethane	3024BU
		Viton	3024VT
		Wh. Hypalon	3024WH
		Non-Asbestos	3024NA
		Teflon	3024TF
3	Retainer	Steel	3213MS
		Aluminum	3213AL
		Stnls 304	3213SL
		Stnls 316	3213SS
4	Shim Washer	Steel	3023MS
		Aluminum	3023AL
		Stnls 316	3023SS
5	Bolt-Clamp	Steel Zinc Plt.	3029ZC
		Stnls 304	3029SL
6	Nut-Clamp 3/8-16 Thd.	Brass	3030BR
		Stnls 304	9Q5809
7	Washer-Clamp	Steel Zinc Plt.	3031ZC
		Stnls 304	3031SL

No.	Description	Material	Part No.	
8	Clamping Ring	Steel	3036MS	
		Steel Zinc Plt.	3036ZC	
		Stnls 304	3036SL	
9	Manhole Gasket Channel Type	B	Buna-N	3560BN
		V	Viton	3560VT
		W	Wh. Hypalon	3560WH
		T	Teflon Env. w/ Wh. Hypalon	3033TF
10	Manhole Collar Channel Type	Steel	3176MS	
		1/4 Aluminum	3176AE	
		Stnls 304	3176SL	
		Stnls 316	3176SS	
11	Vent Assembly	Alum./Stnls	6238AL	
12	Gasket	Buna-N	3716BN	

Gasket Maximum Temperature

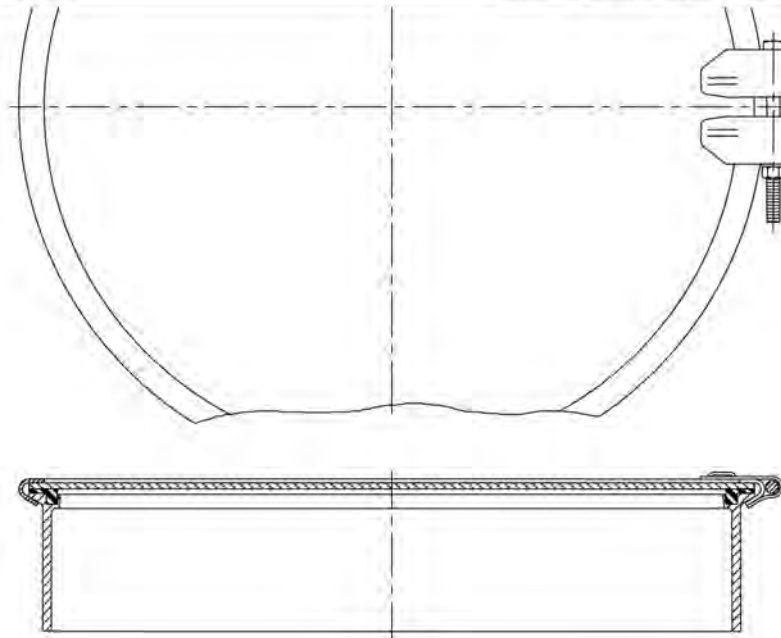
Bethane	250°F
Viton	400°F
White Hypalon	250°F
Teflon	400°F
Teflon Envelope w/ White Hypalon Insert	250°F
Non-Asbestos	350°F

MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency and due regard to the products carried to insure a liquid tight closure. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness is impaired in any way. Replacement gaskets must be compatible with products carried. Adjustment due to gasket wear may be necessary to insure proper sealing of the 10" fill. A shim washer, item No. 4, is provided for this purpose. To increase the sealing force of the 10" fill, remove shim from location shown above and re-position it above fill cover No. 1.

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.

Clamp Ring Style

- EASILY INSTALLED
- LOW MAINTENANCE
- ECONOMICAL
- LARGE OPENING



MODEL 8008

Tiona Inspection Manholes provide quick, safe entrance and exit from your tanks. Heavy gauge metal and welded construction minimizes maintenance. Manholes are certified and marked in accordance with 49CFR178.345-5 with a test pressure of 36 psi [2.48 bar].

Cover Plate	Clamping Ring	Clamping Bolt and Washer	Clamping Bolt Nut	Wt.	Assembly No.
Steel Zinc Plt.	Steel Zinc Plt.	Steel Zinc Plt.	Brass	21.7 lb. [9.8 kg]	8008BX*
Stnls 304	Stnls 304	Stnls 304	Stnls 304	22.2 lb. [10.1 kg]	8008CX*
Stnls 316	Stnls 304	Stnls 304	Stnls 304	22.2 lb. [10.1 kg]	8008DX*

* Add letters to part number to designate seal material. See material table at right for designation.

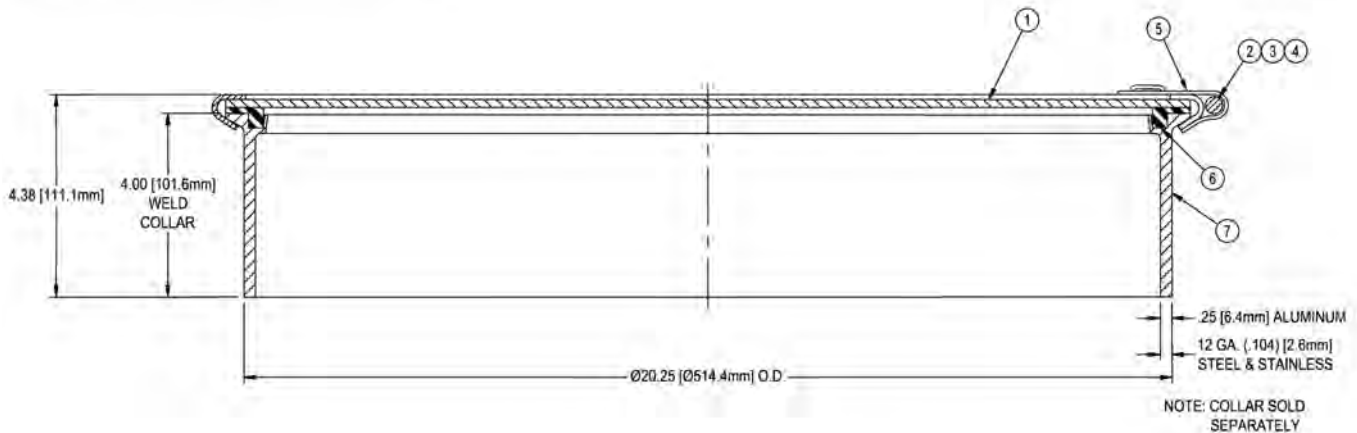
"X" in assembly number designates manhole collar sold separately. Collars are available in aluminum, steel and stainless steel. Please see parts page for part numbers.

Letter	Gasket Material	Temp. Range
B	Buna-N	-40°F to +220°F [-40°C to +104°C]
V	Viton®	-20°F to +400°F [-29°C to +204°C]
P	EPDM (White)	-40°F to +260°F [-40°C to +127°C]
W	White Hypalon	-40°F to +250°F [-40°C to +121°C]
T	PTFE Envelope w/ White Hypalon Insert	-40°F to +250°F [-40°C to +121°C]

During installation and welding to the tank, care should be exercised to insure collars remain flat and round. If necessary, a welding fixture should be used to prevent distortion.

Parts List

20" Inspection Manhole



NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.
1	1	Cover Plate	B Steel Zinc Plated	3034ZC
			C 304 Stainless Steel	3034SL
			D 316 Stainless Steel	3034SS
2	1	Bolt – Clamp Ring (³ / ₈ – 16 Thd.) *	Steel Zinc Plated	3029ZC
			304 Stainless Steel	3029SL
3	1	Nut – Clamp Ring (³ / ₈ – 16 Thd.) *	Brass	3030BR
			304 Stainless Steel	9Q5809
4	1	Washer – Clamp Ring *	Steel Zinc Plated	3031ZC
			304 Stainless Steel	3031SL
5	1	Clamp Ring	Steel Zinc Plated	3036ZC
			304 Stainless Steel	3036SL
6	1	Manhole Gasket (Channel Style)	B Nitrile (Buna-N)	3560BN
			V FKM (Viton®)	3560VT
			P EPDM (White)	3560WE
			W White Hypalon	3560WH
		Manhole Gasket (Flat Style)	T PTFE Envelope w/ W. Hypalon Insert	3033TF
7	1	Manhole Collar (Sold Separately)	Steel	3176MS
			1/4" Aluminum	3176AE
			304 Stainless Steel	3176SL
			316 Stainless Steel	3176SS

* Use part # 4121ZC001 for kit with Nut (3), Bolt (2), and Washer (4).

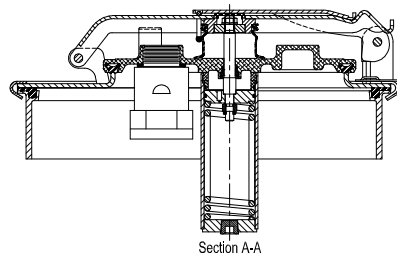
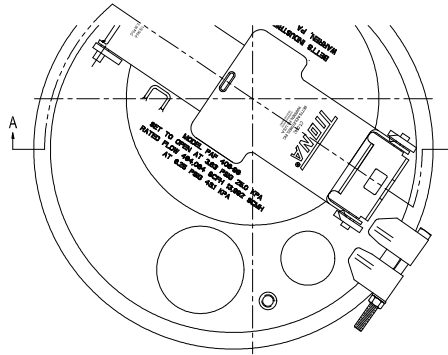
MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency and due regard to the products carried to insure a liquid tight closure. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING: Use only genuine BETTS INDUSTRIES INC. replacement parts. Substitute parts can impair the proper function of this product.



16" MANHOLE – OFFSET STYLE
With Integral Relief Valve/10" Fill

- INTEGRAL RELIEF VALVE/10" FILL**
- LESS THAN 1 LITER LEAKAGE**
- SET PRESSURE ADJUSTMENT**
- INCREASED FLOW RATE**
- SECONDARY SAFETY LATCH**



Section A-A
MODEL L816-STANDARD
MODEL L842-SELF LATCHING

Pressure Relief Valve setting 3.63 psig
Rated Pressure Actuated Emergency Venting: 494,084 cu. ft. free air per hour @ 6.25 psig
Rated Liquid Flow Capacity 1335 gpm @ 5.0 psig

PAF manholes with integral latch style surge suppression relief valves are designed for use on DOT406 and replacement on MC306 specification cargo tanks. Manholes are certified and marked in accordance with 49CFR178.345-5 with a test pressure of 36 psig. Manhole covers are 7 gage steel or stainless and are secured to the tank weld collar with a clamp ring and bolt which can be easily removed to provide access into the tank.

The integral 10" relief valve provides emergency pressure relief and meets the 1 liter surge leakage limit imposed by 49CFR178.345-10(b)(3)(ii). The relief valve also serves as a 10" latch style fill which can be easily opened to provide access for filling the tank or for inspection. Relief valves contain an adjustment feature to allow for fine-tuning of set pressure in the field. Other standard features include a heavy duty clamp ring, secondary safety latch and model 6496ALB pressure-vacuum vent mounted in the 10" relief valve cover.

Manholes are available with a self-latching feature that allows the 10" relief valve/fill cover to drop and securely latch upon movement of the tank if the cover is inadvertently left open. For self-latching model substitute L842 for L816 in assembly number.

NOTE: 3¹/₂" vent and Liquid Level Switch not included in assembly.

Cover Plate	Relief Valve	Clamping Ring, Bolt, Washer, Strongback, and Latch	Clamping Ring Nut	Normal Vent	Wt. (lb.)	Assembly No.
Steel Zinc Plt.	Alum.	Steel Zinc Plt.	Brass	Alum.	23.4	PPVL816BXB
Stnls 304	Alum.	Stnls 304	Stnls 304	Alum.	23.9	PPVL816CXB
Stnls 316	Alum.	Stnls 304	Stnls 304	Alum.	23.9	PPVL816DXB

NOTE: Manhole assemblies, as listed above, have Buna-N gaskets (suffix "B"). For variation in gasketing change last letter of assembly number as follows.

- Suffix "V" indicates Viton collar gasket & Viton 10" fill gasket
- Suffix "W" indicates White Hypalon collar gasket & White Hypalon 10" fill gasket
- Suffix "T" indicates Teflon envelope collar gasket & Tef-Sil 10" fill o-ring

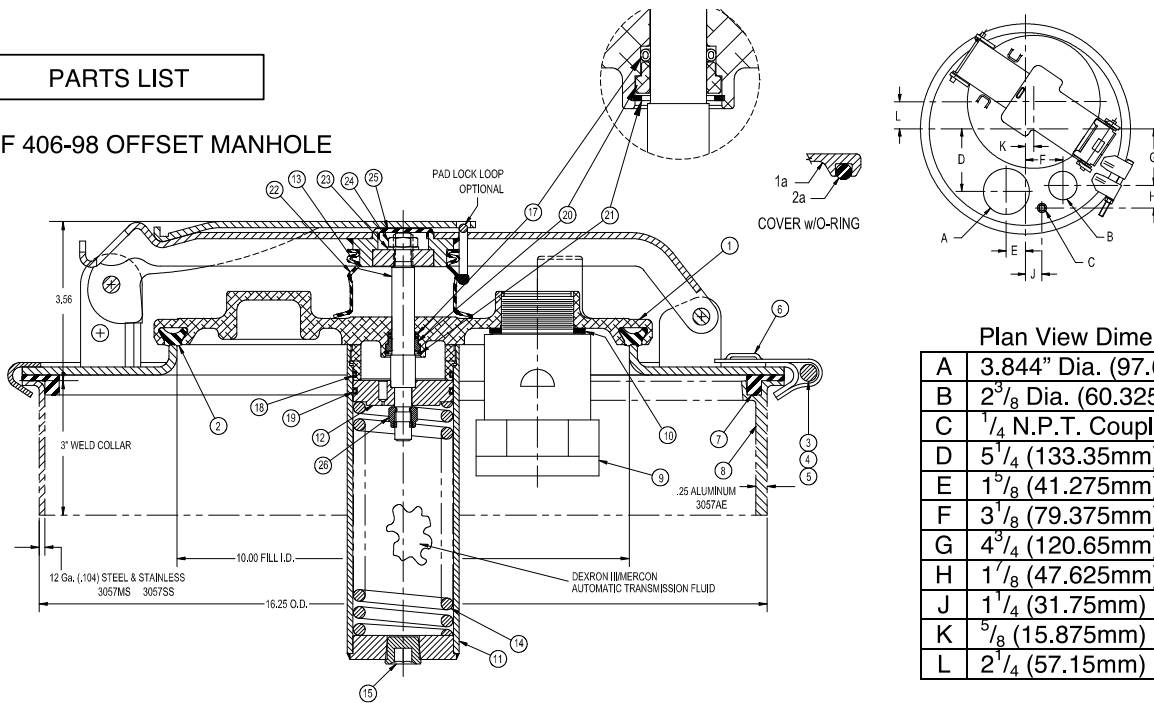
Manhole collars are available in aluminum, steel, and stainless steel. Please see parts page for correct numbers. When welding collars to tank, care should be exercised to insure collar remains flat and round.



Sept 1999

PARTS LIST

16" PAF 406-98 OFFSET MANHOLE



Plan View Dimensions

A	3.844" Dia. (97.638mm)
B	2 ³ / ₈ " Dia. (60.325mm) Hole
C	1 ¹ / ₄ " N.P.T. Coupling
D	5 ¹ / ₄ " (133.35mm)
E	1 ⁵ / ₈ " (41.275mm)
F	3 ¹ / ₈ " (79.375mm)
G	4 ³ / ₄ " (120.65mm)
H	1 ¹ / ₈ " (47.625mm)
J	1 ¹ / ₄ " (31.75mm)
K	5 ⁵ / ₈ " (15.875mm)
L	2 ¹ / ₄ " (57.15mm)

No.	Description	Material	Part No.
1	Fill Cover	Alum/E-Coated	8297ALEY
1a	Fill Cover (O-Ring Grvd.)	Alum/E-Coated	8297ALEY389
2	Gasket - Integral Relief Valve	Buna-N	3119BN
		Viton	3119VT
		Wh. Hypalon	3119WH
2a	O-Ring	Tef-Sil	3902TS
3	Bolt-Clamp Ring	Steel Zinc Plt.	3029ZC
		Stnls 304	3029SL
4	Nut-Clamp Ring	Brass	3030BR
		Stnls 304	9Q5809
5	Washer-Clamp Ring	Steel Zinc Plt.	3031ZC
		Stnls 304	3031SL
6	Clamping Ring	Steel	3028MS
		Steel Zinc Plt.	3028ZC
		Stnls 304	3028SL
		Stnls 316	3028SS
7	Manhole Gasket Channel Type	Buna-N	3559BN
		Viton	3559VT
		Wh. Hypalon	3559WH
		Teflon Env. w/ Wh. Hypalon	3025TF
8	Manhole Collar Channel Type	Steel	3057MS
		Aluminum	3057AE
		Stnls 304	3057SL
		Stnls 316	3057SS

No.	Description	Material	Part No.
9	Vent Assembly	Aluminum	6496ALB
10	Gasket	Buna-N	3716BN
11	Cylinder Assembly	Aluminum	6657AL
12	Piston	Aluminum	6654AL
13	Stem	Stnls 304	6688SL
14	Spring	Steel	4122MS
15	1/2" NPT Plug Zinc Plt.	Steel Zinc Plt.	9V4907
17	Stem O-Ring -112	Buna-N	4118BN
18	Cylinder O-Ring -137	Buna-N	4015BN
19	Piston O-Ring -137	Tef-Sil	4015TS
20	O-Ring Retainer	Alum/E-Coated	4117ALEY
21	Retainer Ring	Stnls 304	9Q4961
22	Bellows	EPDM	4020EPDM
23	Lockwasher Ext. Tooth 1/16"	Stnls 304	9Q5961
24	Nut Hex 1/16x20	Stnls 304	9Q5960
25	Plastic Plug	Polyethylene	9Z6163
26	3/8-16 Hex Nut w/ Insert	Steel Zinc Plt.	9Q5896

Gasket Maximum Temperature

Buna-N (Nitrile)	250°F
Viton	400°F
White Hypalon	250°F
Teflon-Silicone	400°F
Teflon Envelope w/ White Hypalon Insert	250°F

Replace oil cylinder using Automatic Transmission Fluid Dexron III/Mercon, SAE 5W-20 with viscosity of 177 SUS at 100°F and a pour point of no greater than -45°F.

MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency to insure 10" Integral Relief Valve functions properly. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness to insure a liquid tight seal is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING Consult PAF406-98 maintenance manual prior to disassembly of this relief valve.

Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.

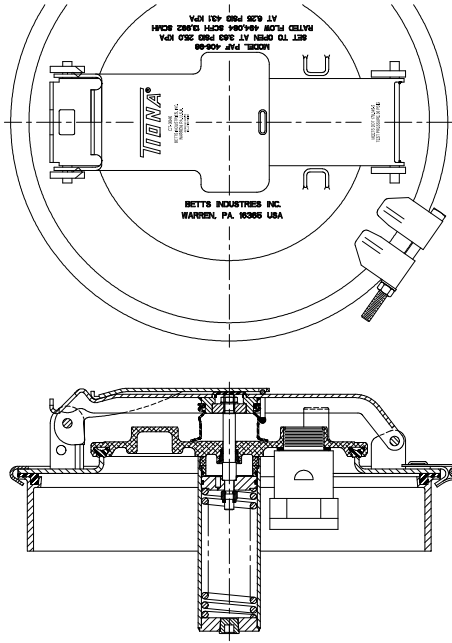


Sept 1999



16" PAF 406-98 MANHOLE
With Integral Relief Valve/10" Fill

- INTEGRAL RELIEF VALVE/10" FILL**
- LESS THAN 1 LITER LEAKAGE**
- SET PRESSURE ADJUSTMENT**
- INCREASED FLOW RATE**
- SECONDARY SAFETY LATCH**



Model L716 - Standard Model L742 - Self Latching

Pressure Relief Valve setting 3.63 psig
Rated Pressure Actuated Emergency Venting: 494,084 cu. ft. free air per hour @ 6.25 psig
Rated Liquid Flow Capacity 1335 gpm @ 5.0 psig

PAF manholes with integral latch style surge suppression relief valves are designed for use on DOT406 and replacement on MC306 specification cargo tanks. Manholes are certified and marked in accordance with 49CFR178.345-5 with a test pressure of 36 psig. Manhole covers are 7 gage steel or stainless and are secured to the tank weld collar with a clamp ring and bolt which can be easily removed to provide access into the tank.

The integral 10" Relief Valve provides emergency pressure relief and meets the 1 liter surge leakage limit imposed by 49CFR178.345-10(b)(3)(ii). The relief valve also serves as a 10" latch style fill which can be easily opened to provide access for filling the tank or for inspection. Relief valves contain an adjustment feature to allow for fine tuning of set pressure in the field. Other standard features include a heavy duty clamp ring, secondary safety latch and model 6496ALB pressure-vacuum vent mounted in the 10" relief valve cover.

Manholes are available with a self-latching feature that allows the 10" relief valve/fill cover to drop and securely latch upon movement of the tank if the cover is inadvertently left open. For self-latching model substitute L742 for L716 in assembly number.

Cover Plate	Relief Valve	Clamping Ring, Bolt, Washer, Strongback, & Latch	Clamping Ring Nut	Normal Vent	Wt. (lb.)	Assembly No.
Steel Zinc Plt.	Alum.	Steel Zinc Plt.	Brass	Alum.	24.2	PPVL716BXB
Stnls 304	Alum.	Stnls 304	Stnls 304	Alum.	24.7	PPVL716CXB
Stnls 316	Alum.	Stnls 304	Stnls 304	Alum.	24.7	PPVL716DXB

Note: Manhole assemblies, as listed above, have Buna-N gaskets (suffix "B"). For variation in gasketing change last letter of assembly number as follows.

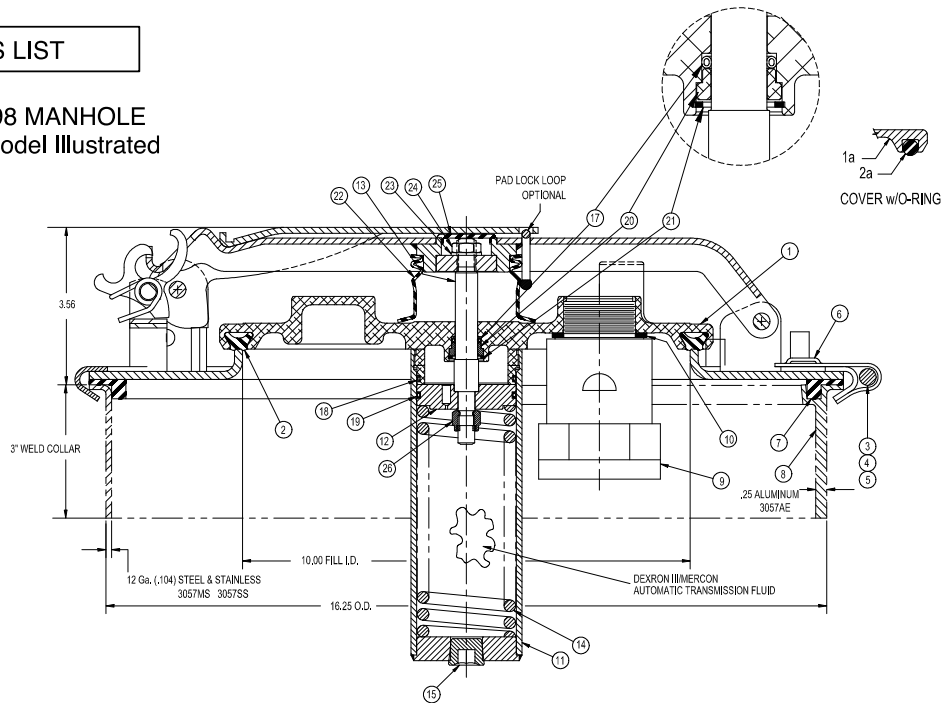
- Suffix "V" indicates Viton collar gasket & Viton 10" fill gasket
- Suffix "W" indicates White Hypalon collar gasket & White Hypalon 10" fill gasket
- Suffix "T" indicates Teflon envelope collar gasket & Tef-Sil 10" fill o-ring

Manhole collars are available in aluminum, steel, and stainless steel. Please see parts page for correct numbers. When welding collars to tank, care should be exercised to insure collar remains flat and round.



PARTS LIST

**16" PAF 406-98 MANHOLE
Self-Latching Model Illustrated**



No.	Description	Material	Part No.
1	Fill Cover	Alum/E-Coated	8297ALEY
1a	Fill Cover (O-Ring Grvd.)	Alum/E-Coated	8297ALEY389
2	Gasket - Integral Relief Valve	Buna-N	3119BN
		Viton	3119VT
		Wh. Hypalon	3119WH
2a	O-Ring	Tef-Sil	3902TS
3	Bolt-Clamp Ring	Steel Zinc Plt.	3029ZC
		Stnls 304	3029SL
4	Nut-Clamp Ring	Brass	3030BR
		Stnls 304	9Q5809
5	Washer-Clamp Ring	Steel Zinc Plt.	3031ZC
		Stnls 304	3031SL
6	Clamping Ring	Steel	3028MS
		Steel Zinc Plt.	3028ZC
		Stnls 304	3028SL
7	Manhole Gasket Channel Type	Buna-N	3559BN
		Viton	3559VT
		Wh. Hypalon	3559WH
		Teflon Env. w/ Wh. Hypalon	3025TF
8	Manhole Collar Channel Type	Steel	3057MS
		Aluminum	3057AE
		Stnls 304	3057SL
		Stnls 316	3057SS

No.	Description	Material	Part No.
9	Vent Assembly	Aluminum	6496ALB
10	Gasket	Buna-N	3716BN
11	Cylinder Assembly	Aluminum	6657AL
12	Piston	Aluminum	6654AL
13	Stem	Stnls 304	6688SL
14	Spring	Steel	4122MS
15	1/2" NPT Plug Zinc Plt.	Steel Zinc Plt.	9V4907
17	Stem O-Ring -112	Buna-N	4118BN
18	Cylinder O-Ring -137	Buna-N	4015BN
19	Piston O-Ring -137	Tef-Sil	4015TS
20	O-Ring Retainer	Alum/E-Coated	4117ALEY
21	Retainer Ring	Stnls 304	9Q4961
22	Bellows	EPDM	4020EPDM
23	Lockwasher Ext. Tooth 1/16"	Stnls 304	9Q5961
24	Nut Hex 1/16x20	Stnls 304	9Q5960
25	Plastic Plug	Polyethylene	9Z6163
26	3/8-16 Hex Nut w/ Insert	Steel Zinc Plt.	9Q5896

Gasket Maximum Temperature

Buna-N (Nitrile)	250°F
Viton	400°F
White Hypalon	250°F
Teflon-Silicone	400°F
Teflon Envelope w/ White Hypalon Insert	250°F

Replace oil cylinder using Automatic Transmission Fluid Dexron III/Mercon, SAE 5W-20 with viscosity of 177 SUS at 100°F and a pour point of no greater than -45°F.

MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency to insure 10" Integral Relief Valve functions properly. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness to insure a liquid tight seal is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING Consult PAF406-98 maintenance manual prior to disassembly of this relief valve.

Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.

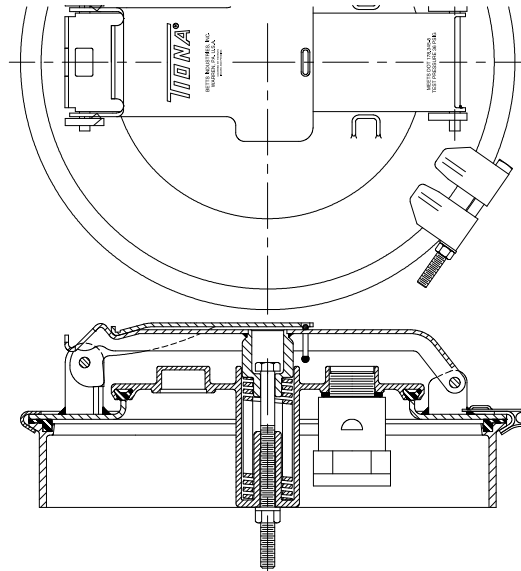




16" PAF 450 MANHOLE
With Pressure Relief Valve

- NORMAL VENT**
- WROUGHT STEEL COVER**
- SECONDARY SAFETY LATCH**
- HEAVY DUTY CLAMP RING**

Not legal as replacement on MC306 cargo tanks after August 31, 1998



Model 9716-Standard
Model 9742-Self Latching

Pressure Relief Valve setting 3.0 psig.
Rated Pressure Actuated Emergency Venting:
375,000 cu. ft. free air per hour @ 5.0 psig.

PAF Manholes with Model PAF450 10" Pressure Relief Valve are certified for use on MC306 cargo tanks. Manholes are certified and marked in accordance with 49CFR178.345-5 with a test pressure of 36 psig.

Per 49CFR180.405(h)(3), PAF450 assemblies may not be installed on MC306 cargo tanks after August 31, 1998. However, relief valves installed on MC306 cargo tanks on or before August 31, 1998, may be repaired if required. PAF450 relief valves may be installed in non-specification tanks or in tanks built in countries other than the United States where regulations permit.

Relief valve also serves as a 10" latch style fill which can be easily opened for filling the tank or for inspection. Standard features include heavy duty clamp ring, secondary safety latch and model 6238AL Normal Vent.

*No provision has been made for venting of product due to overfilling.

Manholes are also available with a self-latching feature which allows the Pressure Relief Valve cover to open only 91 degrees and drop closed and securely latch upon movement of the tank if the cover is inadvertently left open. For self-latching model substitute 9742 for 9716 in assembly number.

Cover Plate	PRV Cover	Clamping Ring, Bolt & Washer, Strongback, Latch	Clamping Ring Nut	Spring Bolt & Nut	Spring	Normal Vent	Wt. (lb.)	Assembly No.
Steel Zinc Plt.	Alum.	Steel Zinc Plt.	Brass	Stnls 304*	Van. Steel	Alum.	22.1	FVA9716BXB
Stnls 304		Stnls 304	Stnls 304	22.6			FVA9716CXB	
Stnls 316		Stnls 304	Stnls 304	Stnls 304			22.6	FVA9716DXB

* Nut Material – Steel Zinc Plated

Note: Manhole assemblies, as listed above, have a 6238AL vent (prefix "FVA") and Buna-N (suffix "B"). For variation or additional vents see catalog Section 95 for proper prefix or assembly number. For variation in gasketing change last letter of suffix as follows.

- Suffix "V" indicates Viton gasket
- Suffix "W" indicates White Hypalon gasket
- Suffix "T" indicates Tef-Sil pressure relief valve gasket and Teflon Envelope w/ White Hypalon insert collar gasket

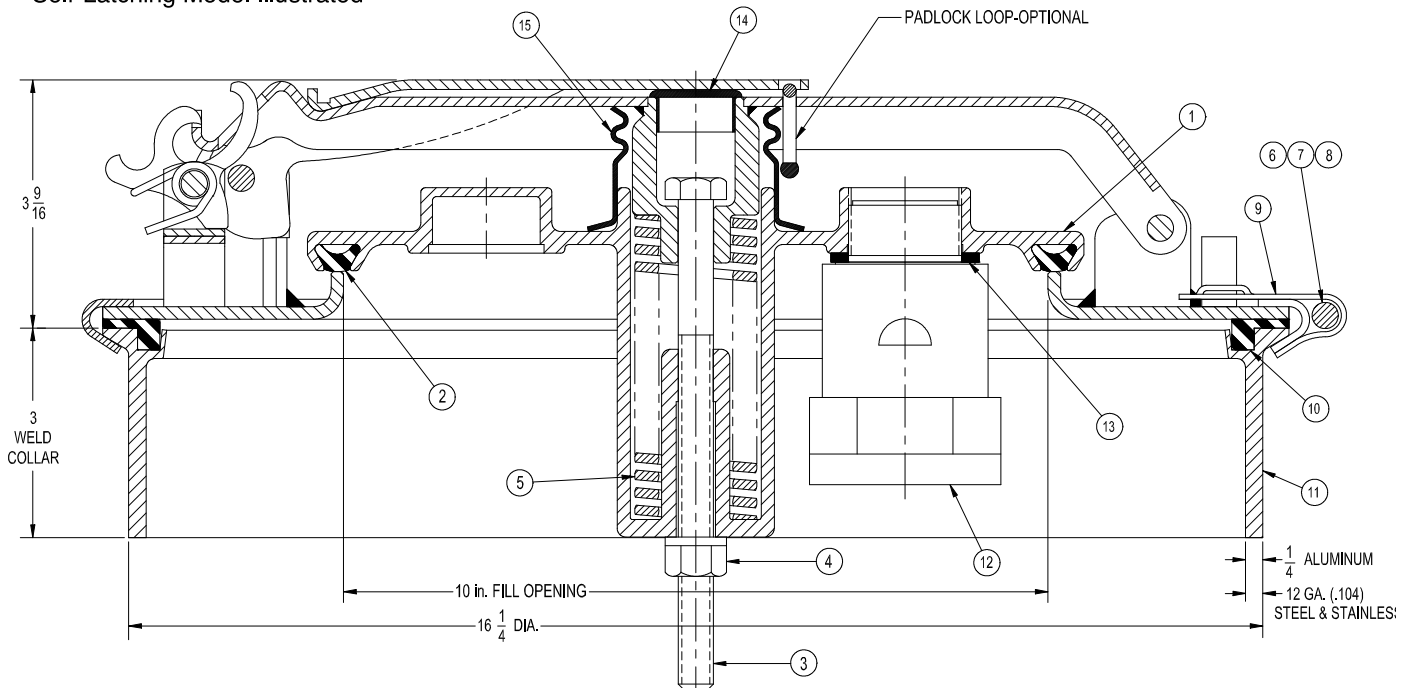
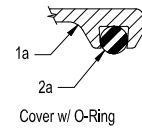
Manhole collars are available in aluminum, steel and stainless steel. Please see parts page for correct numbers. When welding collars to tank, exercise care to insure collar remains flat and round.



Sept 1998

PARTS LIST

**16" Manhole w/ 10" Fill
Self-Latching Model Illustrated**



No.	Description	Material	Part No.
1	Cover-Relief Valve	Aluminum	8241AL
1a	Cover (O-Ring Grvd)	Aluminum	8246AL
2	Gasket-Relief Valve	Buna-N	3119BN
		Viton	3119VT
		Wh. Hypalon	3119WH
2a	O-Ring	Tef-Sil	3902TS
3	Bolt	Stnls 304	3876SL
4	Hex Nut 1/2 -13 Thd.	Steel Zinc Plt.	9Q5812
		Stnls 304	9Q5853
5	Spring	Van Steel	3859EY
6	Bolt-Clamp	Steel Zinc Plt.	3029ZC
		Stnls 304	3029SL
7	Nut-Clamp 3/8 -16 Thd.	Brass	3030BR
		Stnls 304	9Q5809
8	Washer-Clamp	Steel Zinc Plt.	3031ZC
		Stnls 304	3031SL
9	Clamping Ring	Steel	3028MS
		Steel Zinc Plt.	3028ZC
		Stnls 304	3028SL
		Stnls 304	3028SL

No.	Description	Material	Part No.	
10	Manhole Gasket Channel Type	B	Buna-N	3559BN
		V	Viton	3559VT
		W	Wh. Hypalon	3559WH
		T	Teflon Env. w/ Wh. Hypalon	3025TF
11	Manhole Collar Channel Type	Steel	3057MS	
		Aluminum	3057AE	
		Stnls 304	3057SL	
		Stnls 316	3057SS	
12	Vent Assembly	Alum/Stnls	6238AL	
13	Gasket	Viton	3716VT	
14	Plastic Cap	Polyethylene	9Z6150	
15	Bellows	Buna-Urethane	4020BU	

Gasket Maximum Temperature

Buna-N (Nitrile)	250°F
Viton	400°F
White Hypalon	250°F
Teflon-Silicone	400°F
Teflon Envelope w/ White Hypalon Insert	250°F

MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency and due regard to the products carried to insure a liquid tight closure. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of the Pressure Relief Valve and Manhole Assembly.



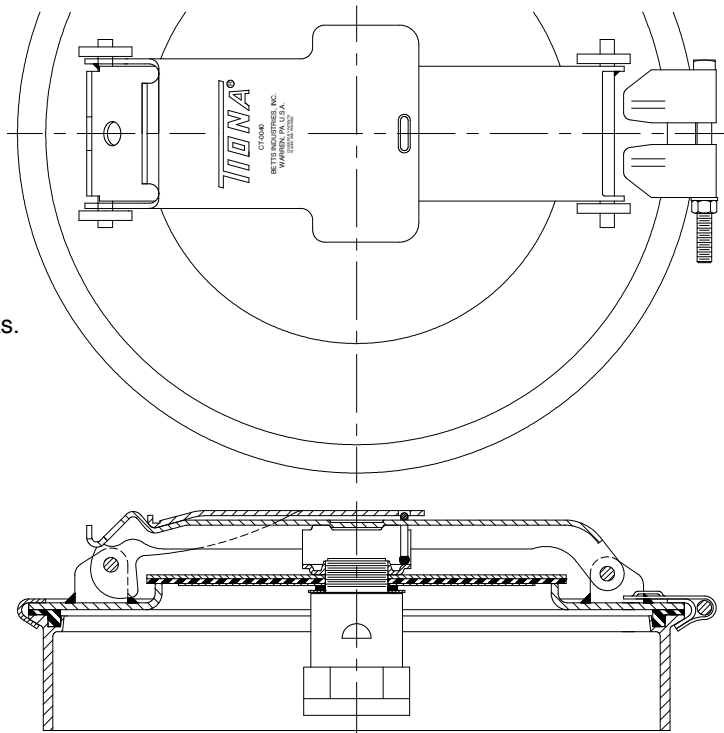
Aug 1997



16" ROUND MANHOLE WITH 10" FILL

- LIGHT WEIGHT**
- LESS MAINTENANCE**
- LOW SILHOUETTE**

NOTE: Not legal for DOT specification cargo tanks.



Model 8016

The 16" Manhole is fabricated for lighter weight and greater strength. The advanced design has low silhouette and clean lines. Fill gasket will not pull out; is easily replaced. To compensate for wear, tension on fill cover is easily adjusted by adding shim washers. Hinge pins welded in place to prevent removal. Adequate means provided for use of seal wire. One outside clamping ring provides means for attaching cover to collar. Cover may be oriented throughout 360°. Secondary Latch is standard on all assemblies.

Cover Plate Fill Gasket Retainer Shim Washer	Clamping Ring Fill Cover Strongback Latch	Clamping Bolt and Washer	Clamping Bolt Nut	Vent	Wt.	Assembly No.
Steel	Steel	Steel Zinc Plt.	Brass	Alum.	20.5	FVA8016SXB
Steel Zinc Plt.	Steel Zinc Plt.	Steel Zinc Plt.	Brass	Alum.	20.5	FVA8016BXB
Stnls 304	Steel Zinc Plt.	Steel Zinc Plt.	Brass	Alum.	20.7	FVA8016GXB
Stnls 304	Stnls 304	Stnls 304	Stnls 304	Alum.	20.7	FVA8016CXB
Stnls 316	Stnls 304*	Stnls 304	Stnls 304	Alum.	20.7	FVA8016DXB

! Fill Gasket Retainer and Shims-Aluminum

* Fill Cover Material-Stainless 316

Note: Manhole assemblies, as listed above, have a 6238AL vent (prefix "FVA") and Buna-N gaskets (suffix "B"). For variation or additional vents see catalog Section 95 for proper prefix or assembly number. For variation in gasketing change suffix as follows.

Suffix "V" indicates Viton gaskets.

Suffix "W" indicates White Hypalon gaskets.

Suffix "T" indicates Teflon fill and collar gasket w/ White Hypalon backer

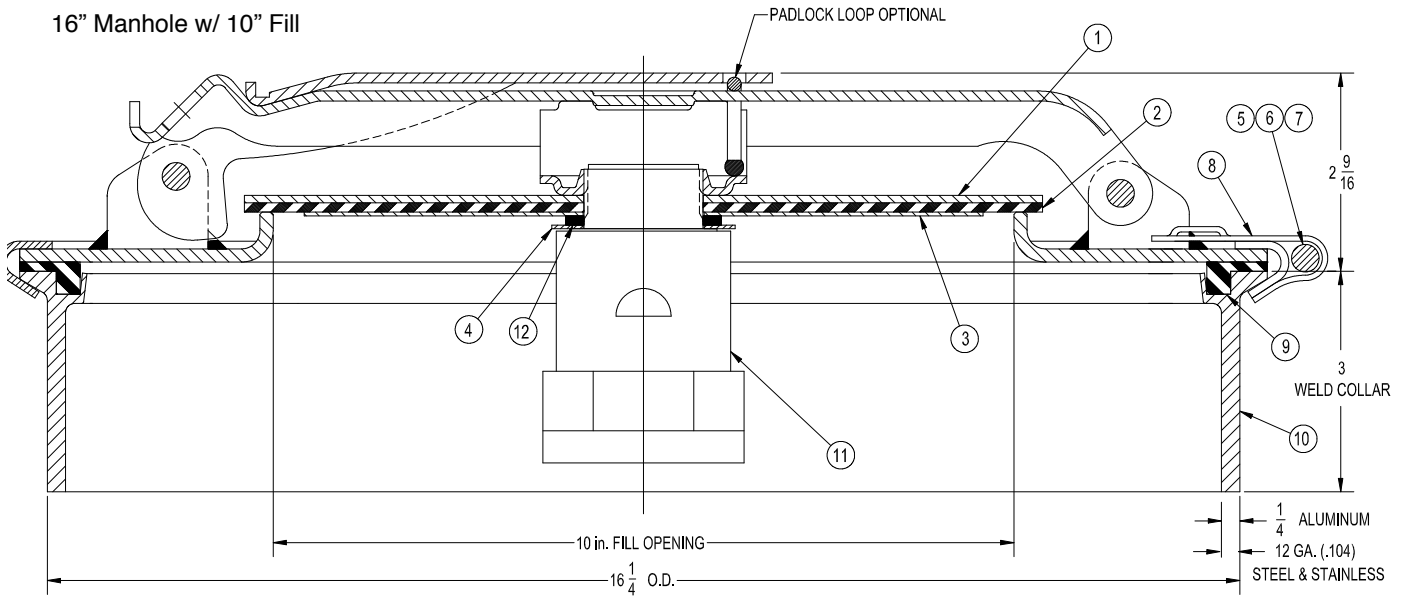
Manhole collars are available in aluminum, steel and stainless steel. Please see parts page for correct numbers. When welding collars to tank, care should be exercised to insure collar remains flat and round.



June 1998

PARTS LIST

16" Manhole w/ 10" Fill



No.	Description	Material	Part No.
1	Fill Cover	Steel	3021MS
		Steel Zinc Plt.	3021ZC
		Stnls 304	3021SL
		Stnls 316	3021SS
2	Fill Gasket	Bethane	3024BU
		Viton	3024VT
		Wh. Hypalon	3024WH
		Non-Asbestos	3024NA
		Teflon	3024TF
3	Retainer	Steel	3213MS
		Aluminum	3213AL
		Stnls 304	3213SL
		Stnls 316	3213SS
4	Shim Washer	Steel	3023MS
		Aluminum	3023AL
		Stnls 316	3023SS
5	Bolt-Clamp	Steel Zinc Plt.	3029ZC
		Stnls 304	3029SL
6	Nut-Clamp 3/8 -16 Thd.	Brass	3030BR
		Stnls 304	9Q5809
7	Washer-Clamp	Steel Zinc Plt.	3031ZC
		Stnls 304	3031SL

No.	Description	Material	Part No.	
8	Clamping Ring	Steel	3028MS	
		Steel Zinc Plt.	3028ZC	
		Stnls 304	3028SL	
9	Manhole Gasket Channel Type	B	Buna-N	3559BN
		V	Viton	3559VT
		W	Wh. Hypalon	3559WH
		T	Teflon Env. w/ Wh. Hypalon	3025TF
10	Manhole Collar Channel Type	Steel	3057MS	
		1/4 Aluminum	3057AE	
		Stnls 304	3057SL	
		Stnls 316	3057SS	
11	Vent Assembly	Alum./Stnls	6238AL	
12	Gasket	Buna-N	3716BN	

Gasket Maximum Temperature

Bethane	250°F
Viton	400°F
White Hypalon	250°F
Teflon	400°F
Teflon Envelope w/ White Hypalon Insert	250°F
Non-Asbestos	350°F

MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency and due regard to the products carried to insure a liquid tight closure. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness is impaired in any way. Replacement gaskets must be compatible with products carried. Adjustment due to gasket wear may be necessary to insure proper sealing of the 10" fill. A shim washer, item No. 4, is provided for this purpose. To increase the sealing force of the 10" fill, remove shim from location shown above and re-position it above fill cover No. 1.

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.



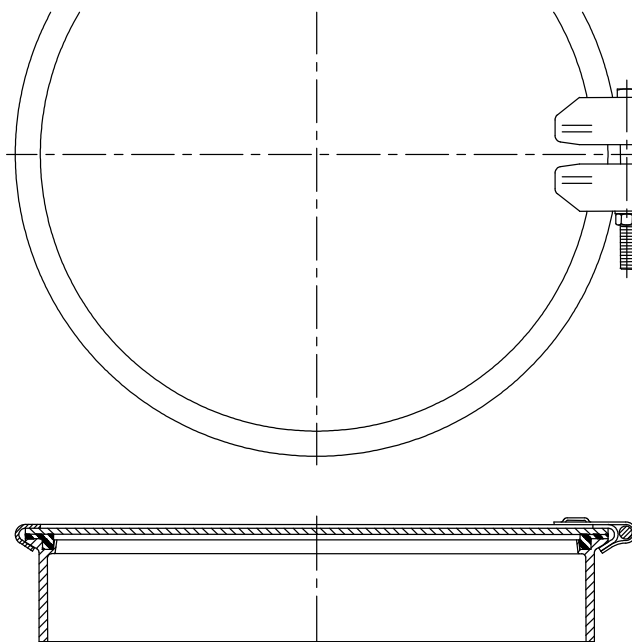
Sept 1996



16" INSPECTION MANHOLE

Clamp Ring Style

- EASILY INSTALLED
- LOW MAINTENANCE
- ECONOMICAL



MODEL 8007

Tiona Inspection Manholes provide quick, safe entrance and exit from your tanks. Heavy gauge metal and welded construction minimizes maintenance. Manholes are certified and marked in accordance with 49CFR178.345-5 with a test pressure of 36 psi [2.48 bar].

Cover Plate	Clamping Ring	Clamping Bolt and Washer	Clamping Bolt Nut	Weight	Assembly No.
Steel Zinc Plt.	Steel Zinc Plt.	Steel Zinc Plt.	Brass	15.8 lb. [7.2 kg]	8007BX*
Stnls 304	Stnls 304	Stnls 304	Stnls 304	16.4 lb. [7.4 kg]	8007CX*
Stnls 316	Stnls 304	Stnls 304	Stnls 304	16.4 lb. [7.4 kg]	8007DX*

* Add letters to part number to designate seal material. See material table at right for designation.

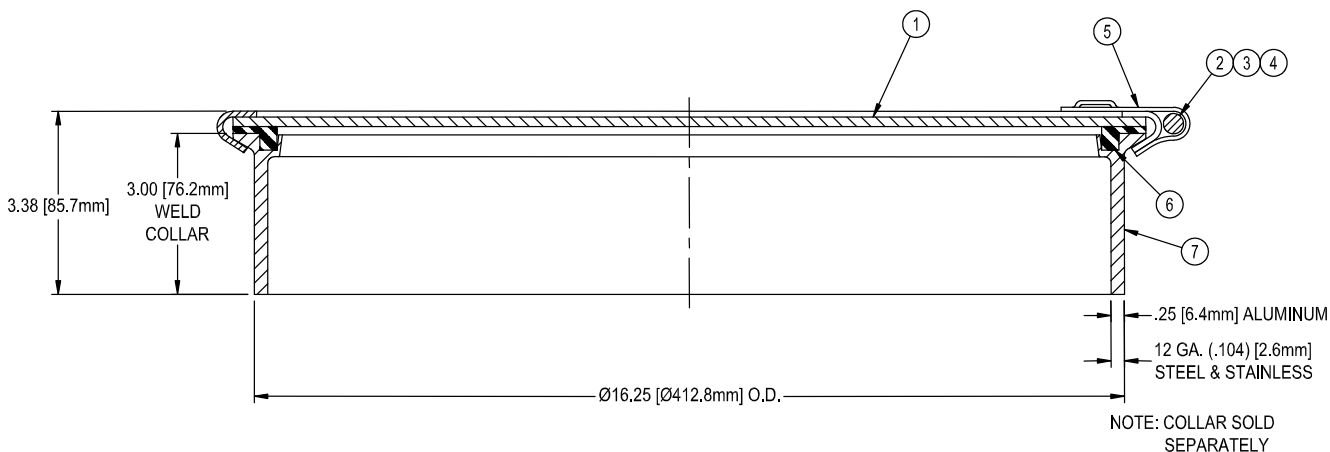
"X" in assembly number designates manhole collar sold separately. Collars are available in aluminum, steel and stainless steel. Please see parts page for part numbers.

Letter	Gasket Material	Temp. Range
B	Buna-N	-40°F to +220°F [-40°C to +104°C]
V	Viton®	-20°F to +400°F [-29°C to +204°C]
P	EPDM (White)	-40°F to +260°F [-40°C to +127°C]
W	White Hypalon	-40°F to +250°F [-40°C to +121°C]
T	PTFE Envelope w/ White Hypalon Insert	-40°F to +250°F [-40°C to +121°C]

During installation and welding to the tank, care should be exercised to insure collars remain flat and round. If necessary, a welding fixture should be used to prevent distortion.

Parts List

16" Inspection Manhole



NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.
1	1	Cover Plate	B Steel Zinc Plated	3026ZC
			C 304 Stainless Steel	3026SL
			D 316 Stainless Steel	3026SS
2	1	Bolt – Clamp Ring (³ / ₈ – 16 Thd.) *	Steel Zinc Plated	3029ZC
			304 Stainless Steel	3029SL
3	1	Nut – Clamp Ring (³ / ₈ – 16 Thd.) *	Brass	3030BR
			304 Stainless Steel	9Q5809
4	1	Washer – Clamp Ring *	Steel Zinc Plated	3031ZC
			304 Stainless Steel	3031SL
5	1	Clamp Ring	Steel Zinc Plated	3028ZC
			304 Stainless Steel	3028SL
6	1	Manhole Gasket (Channel Style)	B Nitrile (Buna-N)	3559BN
			V FKM (Viton®)	3559VT
			P EPDM (White)	3559WE
			W White Hypalon	3559WH
		Manhole Gasket (Flat Style)	T PTFE Envelope w/ W. Hypalon Insert	3025TF
7	1	Manhole Collar (Sold Separately)	Steel	3057MS
			1/4" Aluminum	3057AE
			304 Stainless Steel	3057SL
			316 Stainless Steel	3057SS

* Use part # 4121ZC001 for kit with Nut (3), Bolt (2), and Washer (4).

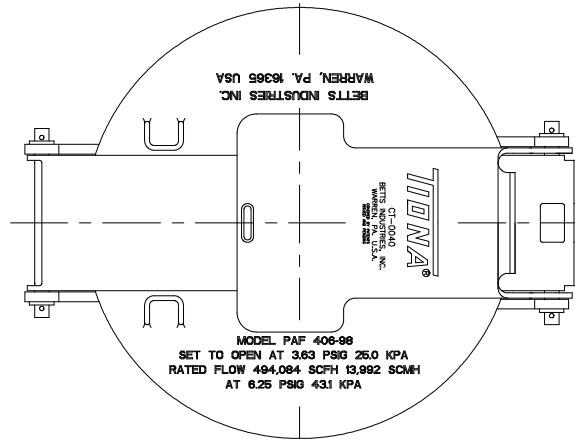
MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency and due regard to the products carried to insure a liquid tight closure. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING: Use only genuine BETTS INDUSTRIES INC. replacement parts. Substitute parts can impair the proper function of this product.



10" PAF 406-98 PRESSURE RELIEF VALVE

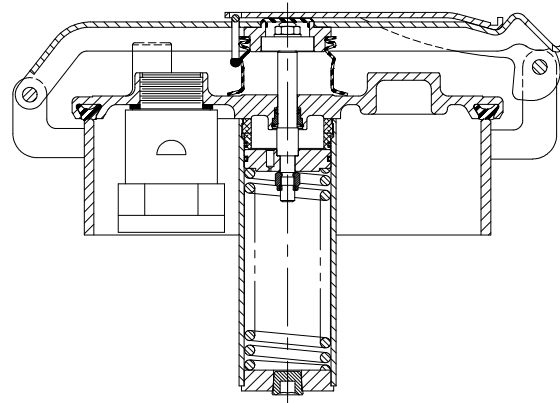
- DOT 406 RELIEF VALVE/10" FILL**
- LESS THAN 1 LITER LEAKAGE**
- SET PRESSURE ADJUSTMENT**
- SECONDARY SAFETY LATCH**



Pressure Relief Valve setting 3.63 psig

Rated Pressure Actuated Emergency Venting:
494,084 cu. Ft. free air per hour @ 6.25 psig

Rated Liquid Flow Capacity 1335 gpm @ 5.0 psig



The 10" relief valve provides emergency pressure relief and meets the 1 liter surge leakage limit imposed by DOT 406 Specifications in 49CFR178.345-10(b)(3)(ii). Also legal for replacement on MC306 specification cargo tanks. The relief valve also serves as a 10" latch style fill which can be easily opened to provide access for filling the tank or for inspection. Relief valves contain an adjustment feature to allow for fine-tuning of set pressure in the field. Other standard features include model 6496ALB pressure-vacuum vent mounted in the 10" relief valve cover.

Collar	Latch Hinge Arm	Cover	Hinge Pin Cotter Pin Washer	Spring	Normal Vent	Wt. (lb)	Assembly No.
Steel	Steel	Aluminum "E" Coated	Stnls 304	Van Steel "E" Coated	Aluminum	18.9	PPVL710BSB
Aluminum	Zinc Plt.					15.9	PPVL710BAB
Stnls 304	Stnls 304					18.9	PPVL710CCB
Stnls 316	Stnls 304					18.9	PPVL710DDB

NOTE: Relief Valve assemblies, as listed above, have Buna-N gaskets (suffix "B"). For variation in gasketing change last letter of assembly number as follows.

- Suffix "V" indicates Viton gasket
- Suffix "W" indicates White Hypalon gasket
- Suffix "T" indicates Tef-Sil gasket

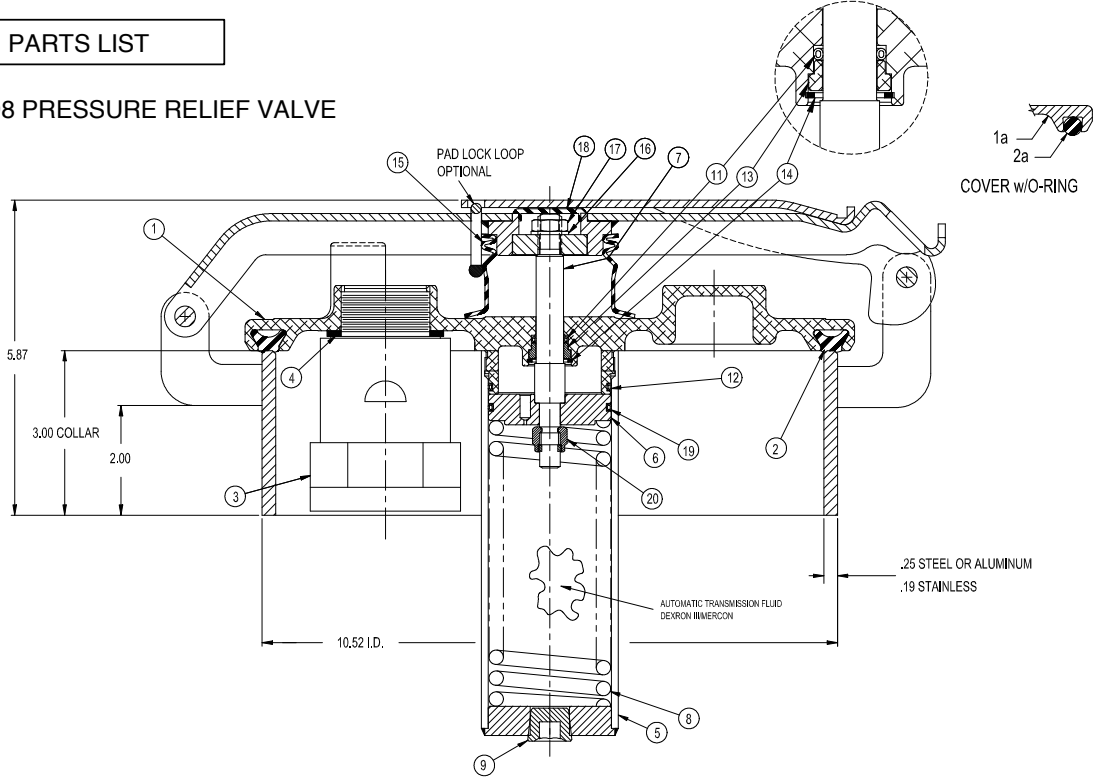
When welding collars to tank, care should be exercised to insure collar remains flat and round.



March 2000

PARTS LIST

10" PAF 406-98 PRESSURE RELIEF VALVE



No.	Description	Material	Part No.
1	Fill Cover	Alum/E-Coated	8297ALEY
1a	Fill Cover (O-Ring Grvd.)	Alum/E-Coated	8297ALEY389
2	Gasket - Integral Relief Valve	Buna-N	3119BN
		Viton	3119VT
		Wh. Hypalon	3119WH
2a	O-Ring	Tef-Sil	3902TS
3	Vent Assembly	Aluminum	6496ALB
4	Gasket	Buna-N	3716BN
5	Cylinder Assembly	Aluminum	6657AL
6	Piston	Aluminum	6654AL
7	Stem	Stnls 304	6688SL
8	Spring	Steel	4122MS

No.	Description	Material	Part No.
9	1/2" NPT Plug Zinc Plt.	Steel Zinc Plt.	9V4907
11	Stem O-Ring -112	Buna-N	4118BN
12	Cylinder O-Ring -137	Buna-N	4015BN
13	O-Ring Retainer	Alum/E-Coated	4117ALEY
14	Retainer Ring	Stnls 304	9Q4961
15	Bellows	EPDM	4020EPDM
16	Lockwasher Ext. Tooth 1/16"	Stnls 304	9Q5961
17	Nut Hex 1/16-20UNF	Stnls 304	9Q5960
18	Plastic Plug	Polyethylene	9Z6163
19	Cylinder O-Ring -137	Tef-Sil	4015TS
20	3/8-16UNC Hex Nut w/ Insert	Steel Zinc Plt.	9Q5896

Gasket Maximum Temperature

Buna-N (Nitrile)	250°F
Viton	400°F
White Hypalon	250°F
Teflon-Silicone	400°F

Replace oil in cylinder using Automatic Transmission Fluid Dexron III/Mercon, SAE 5W-20 with viscosity of 177 SUS at 100°F and a pour point of no greater than -45°F.

MAINTENANCE: 10" relief valve assemblies should be inspected with sufficient frequency to insure to relief valve functions properly. Any worn, damaged Or missing parts must be replaced. Gaskets should be replaced. Gaskets should be replaced if their effectiveness to insure a liquid tight seal is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING Consult PAF406-98 maintenance manual prior to disassembly of this relief valve.

Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.

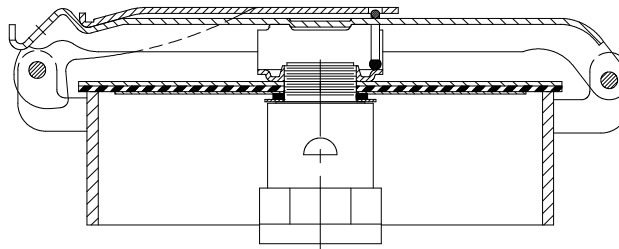
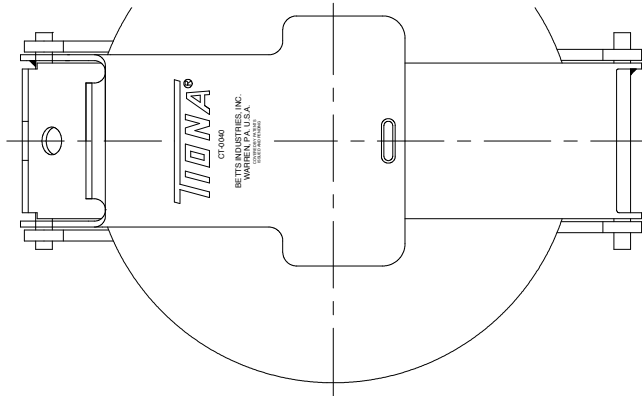


Sept 1999



- LIGHT WEIGHT**
- SIMPLE CONSTRUCTION**
- LESS MAINTENANCE**
- LOW SILHOUETTE**

10" FILL



Model 8010

Note: Not legal for DOT Specification Cargo Tanks.

The 10" fill is fabricated for lighter weight and greater strength. Heavy gauge collar is standard along with the secondary safety latch and a long lasting Bethane gasket.

Collar, Retainer Plate Shim Washer	Hinge Arm, Latch, Fill Cover	Hinge Pin, Washer, Cotter Pin	Vent	Weight	Assembly No.
Steel	Steel Zinc Plt.	Stainless 304	Aluminum	16.5 lb.	FVA8010BSM
Aluminum	Steel Zinc Plt.			12.0 lb.	FVA8010BAM
Stainless 304	Stainless 304			14.0 lb.	FVA8010CCM
Stainless 316	Stainless 304*			14.0 lb.	FVA8010DDM

* Fill Cover Material Stainless 316

Note: Fill assemblies, as listed above, have a 6238AL vent (prefix "FVA") and Bethane gasket (suffix "M"). For variation or additional vents see catalog Section 95 for proper prefix or assembly number. For variation in gasketing change last letter of suffix as follows.

- Suffix "M" indicates Bethane gasket
- Suffix "V" indicates Viton gasket
- Suffix "W" indicates White Hypalon gasket
- Suffix "A" indicates non-asbestos gasket
- Suffix "T" indicates Teflon gasket w/ White Hypalon backer

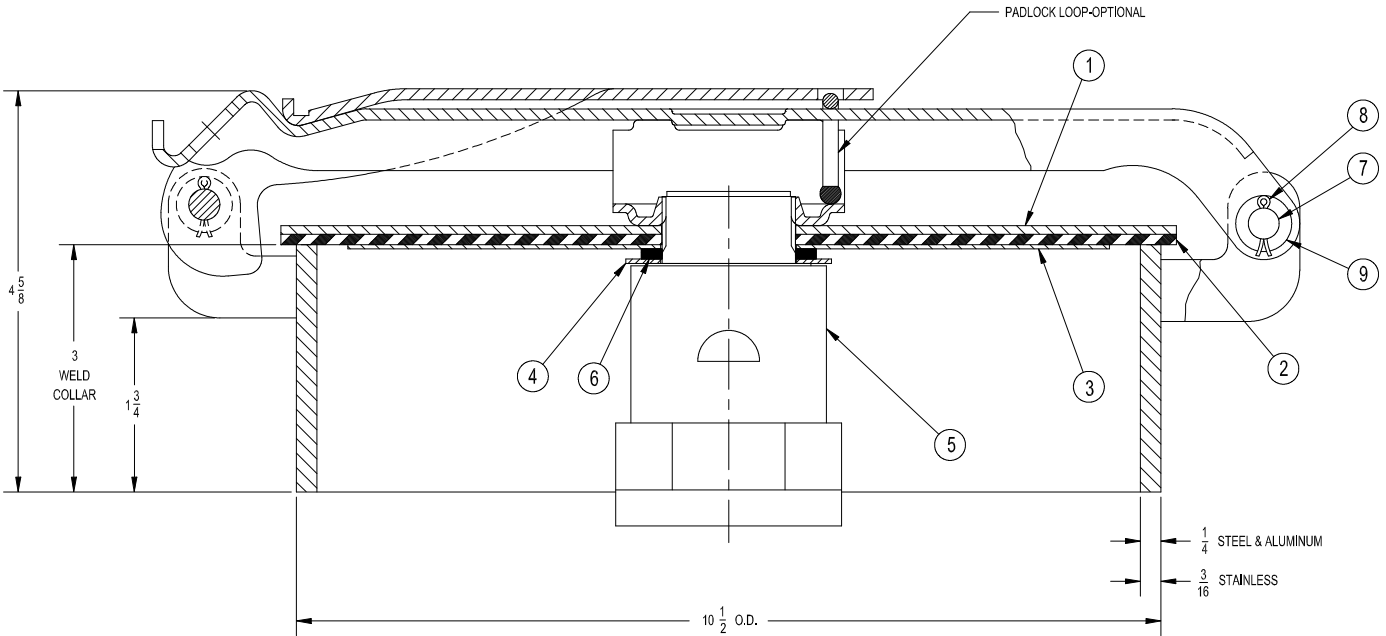
When welding collars to tank, exercise care to insure collar remains flat and round.



Sept 1998

PARTS LIST

10" FILL



No.	Description	Material	Part No.
1	Cover Plate	Steel	3021MS
		Steel Zinc Plt.	3021ZC
		Stnls 304	3021SL
		Stnls 316	3021SS
2	Fill Gasket	M Bethane	3024BU
		V Viton	3024VT
		W Wh. Hypalon	3024WH
		A Non-Asbestos	3024NA
		T Teflon	3024TF
3	Retainer-Fill Gasket	Steel	3213MS
		Aluminum	3213AL
		Stnls 304	3213SL
		Stnls 316	3213SS

No.	Description	Material	Part No.
4	Shim Washer	Steel	3023MS
		Aluminum	3023AL
		Stnls 316	3023SS
5	Vent	Alum/Stnls	6238AL
6	Gasket	Buna-N	3716BN
7	Hinge Pin	Stnls 304	3953SL
8	Cotter Pin	Stnls 304	9Q5866
9	Washer	Stnls 304	3031SL

Gasket Maximum Temperature

Bethane	250°F
Viton	400°F
White Hypalon	250°F
Non-Asbestos	350°F
Teflon	250°F

Adjustment due to gasket wear may be necessary to insure proper sealing on the 10" fill. A shim washer item No. 4 is provided for this purpose. To increase the sealing force of the 10" fill, remove shim from location shown above and reposition it above fill cover No. 1.

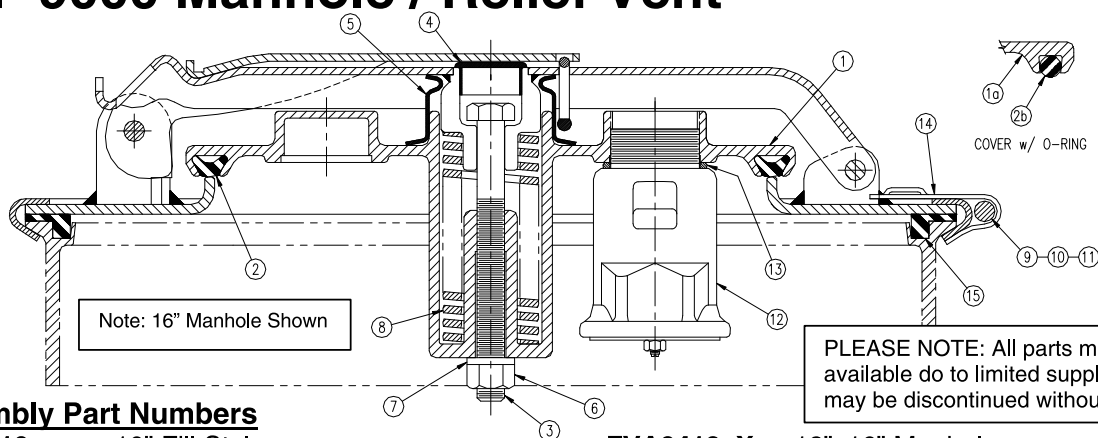
MAINTENANCE: Fill assemblies should be inspected with sufficient frequency and due regard to the products carried to insure a liquid tight closure. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.

Obsolete Section

Replacement Parts Only

PAF 9000 Manhole / Relief Vent



Assembly Part Numbers

FVA9110_ _ - 10" Fill Style

FVA9416_X - 16" Manhole

FVA9442_X - 16" Manhole Self Latch Style

FVA9412_X - 12"x16" Manhole

FVA9420_X - 20" Manhole

FVA9463_X - 20" Manhole Self Latch Style

Please Note: The standard PAF 9000 relief cover (8046AL) is **no** longer available. An available replacement cover kit is designated as "Model PAF 9000-R" (The "R" stands for replacement). The kit consists of a cover, spring, and bolt that must be used in conjunction with each other. If a new cover is required, the kit must be used. Once the 9000-R cover is installed, the designated replacement springs or bolts must be used on the PAF 9000-R. If a replacement spring or bolt is needed for the original 9000 cover, the original components listed below must be used.

No.	Description	Mat'l	Part No.
1	Cover Kit – PAF 9000-R Includes (Cover (8382AL), Spring (3859EY), & Bolt (3876SL).	Alum.	8046AL-KIT
	Cover Kit – PAF 9000-R Includes (Cover (8382AL), Spring (3859EY), Bolt (3876SL), & Gasket (3119*).	Alum.	8046AL*-KIT
	Cover Kit – PAF 9000-R with prov. for 2 vents. Includes (Cover, Spring (3859EY), Bolt (3876SL), and Gasket (3119*).	Alum.	8046AL*167-KIT
1a	Cover Kit w/ O-Ring groove– PAF 9000-R Includes (Cover, Spring (3859EY), & Bolt (3876SL).	Alum.	8253AL-KIT
	Cover Kit w/ O-Ring Groove– PAF 9000-R Includes (Cover, Spring (3859EY), Bolt (3876SL), & O-ring (3902TS).	Alum.	8253ALTS-KIT
2	Gasket-Relief Valve	Buna-N	3119BN
		Viton	3119VT
		Wh. Hyp	3119WH
2a	O-Ring	Tef-Sil	3902TS
3	Bolt – Original PAF9000	Stnls 304	3139SL
		Stnls 304	3876SL
4	Plastic Cap	Polyethyl	9Z6150
5	Bellows	EPDM	3998BU

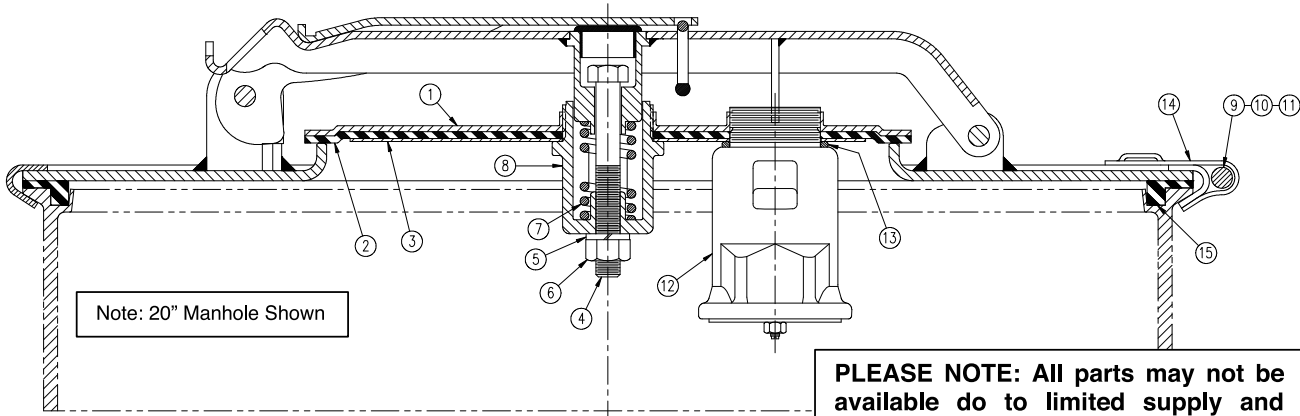
No.	Description	Mat'l	Part No.			
6	1/2"-13 Nut	Steel Zc Pt	9Q5812			
		Stnls 304	9Q5853			
7	Washer	Stnls 304	3575SL			
8	Spring-Original PAF9000 Spring – PAF 9000-R	Gray Chr. Sil	3129EY			
		Blk Chr. Sil	3859EY			
9	Bolt - Clamp	Steel Zc Pt.	3029ZC			
		Stnls 304	3029SL			
10	3/8"-16 Nut-Clamp	Brass	3030BR			
		Stnls 304	9Q5809			
11	Washer – Clamp	Steel Zinc Pt.	3031ZC			
		Stnls 304	3031SL			
12	Vent Assem.	Alum/Stnls	6238AL*			
13	O-Ring	Buna-N	17211BN			
		Viton	17211VT			
		EPDM	17211EP			
		PTFE	17211TF			
No.	Description	Mat'l	Part No.			
14	Clamp-ring	Steel	16"	12"x16"	20"	
		Steel Zinc Pt.	3028MS	3040MS	3036MS	
		Stnls 304	3028ZC	3040ZC	3036ZC	
		Stnls 304	3028SL	3040SL	3036SL	
15	Manhole Gasket	B	Buna-N	3559BN	3494BN	3560BN
		V	Viton	3559VT	3494VT	3560VT
		W	Wh. Hypalon	3559WH	3494WH	3560WH
		T	Tef. Env.w/ Wh. Hyp	3025TF	3038TF	3033TF

* Insert appropriate letters to signify seal material: BN = Buna-N, VT = Viton, WH = White Hypalon

Obsolete Section

Replacement Parts Only

PAF 1000 Manhole / Relief Vent



Assembly Part Numbers

PLEASE NOTE: All parts may not be available do to limited supply and may be discontinued without notice.

- FVA8110__ - 10" Fill Style
- FVA8416_X_ - 16" Manhole
- FVA8442_X_ - 16" Manhole Self Latch Style

- FVA8412_X_ - 12"x16" Manhole
- FVA8420_X_ - 20" Manhole
- FVA8463_X_ - 20" Manhole Self Latch Style

No.	Description	Material	Part No.
1	Cover-Relief Valve	Steel	6091MS
		Steel Zinc Pt.	6091ZC
		Stnls 304	6091SL
		Stnls 316	6091SS
2	Gasket-Relief Valve	Buna-N	3249BU
		Viton	3249VT
		Wh. Hypalon	3249WH
		Teflon	3249TF
3	Retainer Plate	Steel	3213MS
		Aluminum	3213AL
		Stnls 304	3213SL
		Stnls 316	3213SS
4	Bolt	Steel Zinc Pt.	3248ZC
		Stnls 316	3248SS
5	Lock Washer 7/16"	Steel Zinc Pt.	9Q8617
		Stnls 316	9Q8616
6	7/16"-14 Hex Nut	Steel Zinc Pt.	9Q8578
		Stnls 316	9Q8026
7	Spring	Stnls 17-7	3884SL
8	Spring Well	Aluminum	3247AL
		Stnls 316	3247SS

No.	Description	Material	Part No.			
9	Bolt-Clamp	Steel Zinc Pt.	3029ZC			
		Stnls 304	3029SL			
10	3/8"-16 Nut-Clamp	Brass	3030BR			
		Stnls 304	9Q5809			
11	Washer-Clamp	Steel Zinc Pt.	3031ZC			
		Stnls 304	3031SL			
12	Vent Assembly	Alum/Stnls	6238AL_			
13	O-Ring	Buna-N	17211BN			
		Viton	17211VT			
		EPDM	17211EP			
		PTFE	17211TF			
			16"	12"x16"	20"	
14	Clamping Ring	Steel	3028MS	3040MS	3036MS	
		Steel Zinc Pt.	3028ZC	3040ZC	3036ZC	
		Stnls 304	3028SL	3040SL	3036SL	
15	Manhole Gasket Channel Type	B	Buna-N	3559BN	3494BN	3560BN
		V	Viton	3559VT	3494VT	3560VT
		W	Wh. Hypalon	3559WH	3494WH	3560WH
		T	Teflon Env.w/ Wh. Hypalon	3025TF	3038TF	3033TF

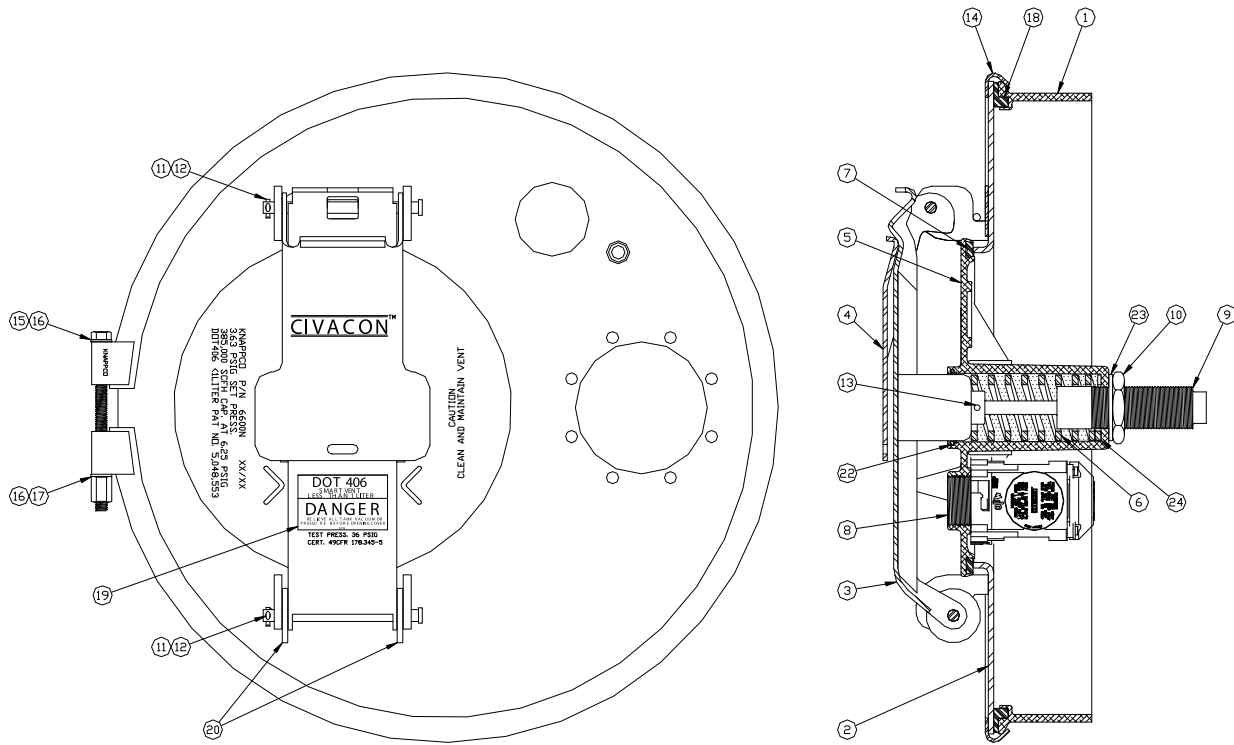
MAINTENANCE: Manhole assemblies should be inspected with sufficient frequency and due regard to the products carried to insure a liquid tight closure. Any worn, damaged or missing parts must be replaced. Gaskets should be replaced if their effectiveness is impaired in any way. Replacement gaskets must be compatible with products carried.

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of the Pressure Relief Valve and Manhole Assembly.



SSWN11120 20" Manhole Assembly

PARTS BREAK DOWN



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	4755	WELD RING	1
2	6049	COVER WELDMENT	1
3	6535 ¹	STRONGBACK	1
4	6121	LATCH	1
5	6533 ¹	FILL COVER	1
6	5895 ¹	SPRING	1
7	12022 ^{1,3}	GASKET	1
8	NV3000 ¹	PRESSURE VACUUM VENT	1
9	9241 ¹	MOTION CONTROL DEVICE	1
10	6374 ¹	LOCK NUT	1
11	5951	CLEVIS PIN	2
12	1045	COTTER PIN	2
13	6534 ¹	DRIVE PIN	1
14	3250	CLAMP RING	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
15	1110	SCREW	1
16	1113	WASHER	2
17	5009	NUT	1
18	4646 ²	GASKET	1
19	6209 ¹	DECAL	1
20	6025	WASHER	2
22	6532 ¹	ROD WIPER	1
23	6375 ¹	SEAL WASHER	1
24	5203 ¹	BUSHING	4

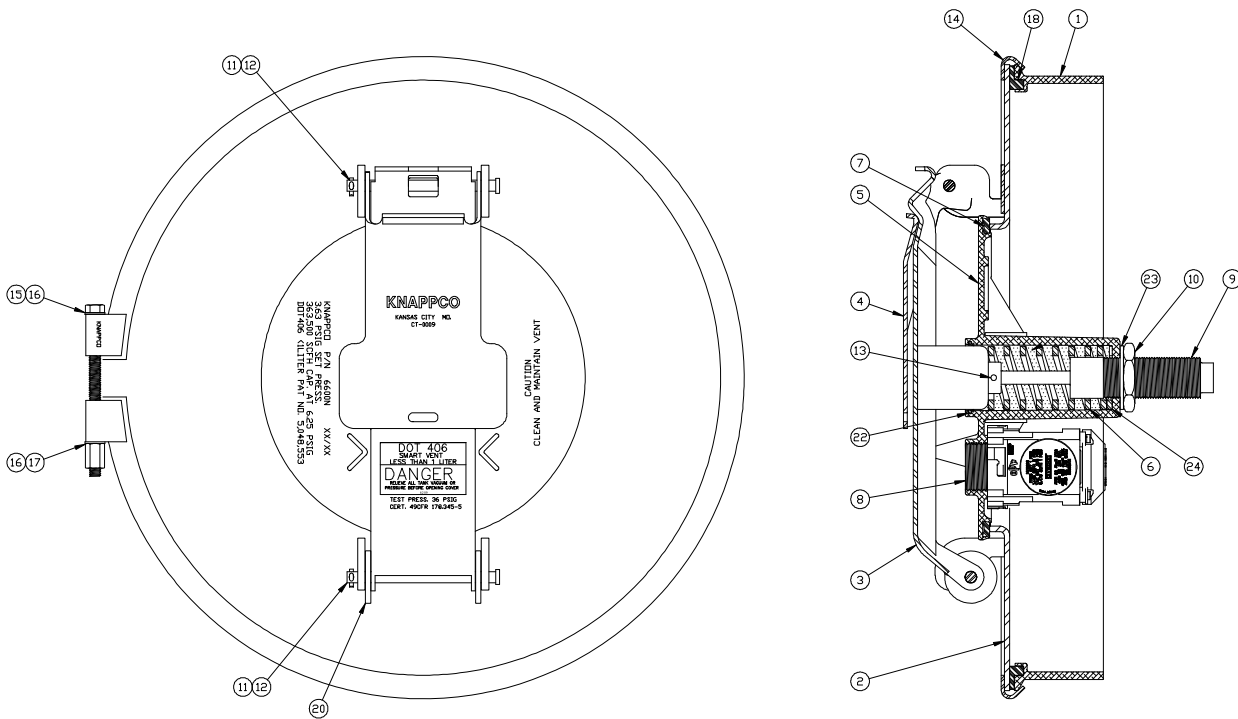
Available without Weld Ring—P/N SSWN101120

REPLACEMENT FILL COVER	
6600N	FILL COVER ASSEMBLY

1—Included in 6600N, 2—Also available in Viton—P/N 4874, 3—Also available in Viton—P/N 6263



SSUN11100 20" Manhole Assembly



PARTS BREAK DOWN

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	4755	WELD RING	1
2	6153	COVER WELDMENT	1
3	6535 ¹	STRONGBACK	1
4	6121	LATCH	1
5	6533 ¹	FILL COVER	1
6	5895 ¹	SPRING	1
7	12022 ^{1,3}	GASKET	1
8	NV3000 ¹	PRESSURE VACUUM VENT	1
9	9241 ¹	MOTION CONTROL DEVICE	1
10	6374 ¹	LOCK NUT	1
11	5951	CLEVIS PIN	2
12	1045	COTTER PIN	2
13	6534 ¹	DRIVE PIN	1
14	3250	CLAMP RING	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
15	1110	SCREW	1
16	1113	WASHER	2
17	5009	NUT	1
18	4646 ²	GASKET	1
19	6209 ¹	DECAL	1
20	6025	WASHER	2
22	6532 ¹	ROD WIPER	1
23	6375 ¹	SEAL WASHER	1
24	5203 ¹	BUSHING	4

Available without Weld Ring—P/N SSUN101100

REPLACEMENT FILL COVER	
6600N	FILL COVER ASSEMBLY

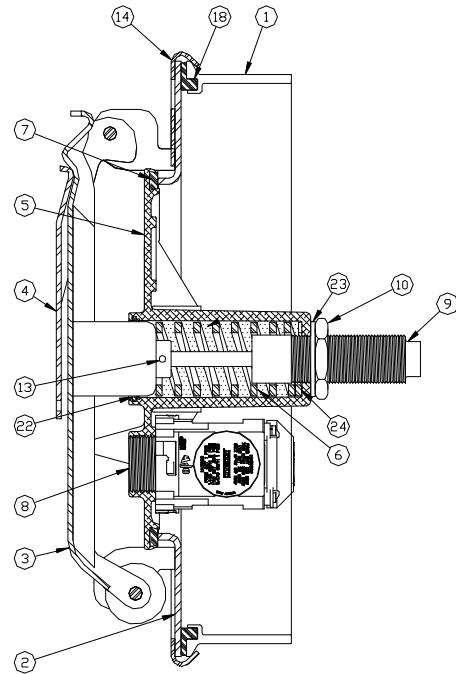
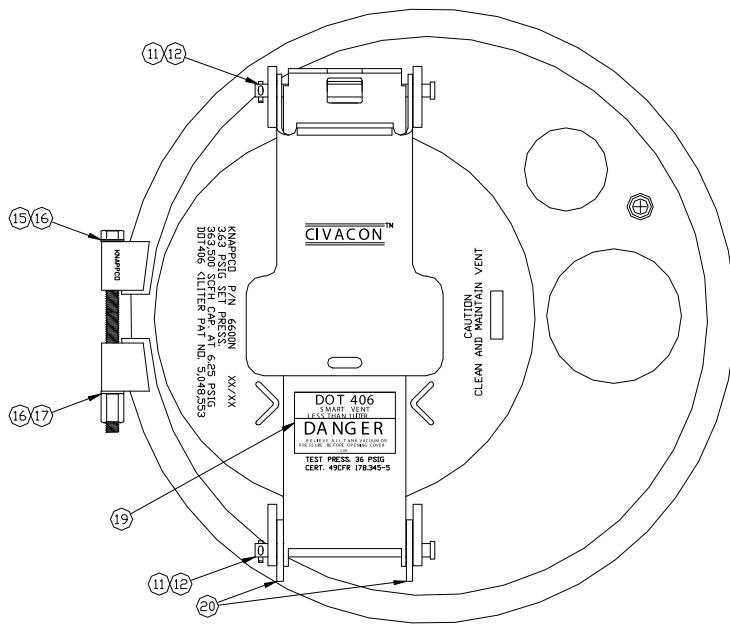
1—Included in 6600N, 2—Also available in Viton—P/N 4874, 3—Also available in Viton—P/N 6263





SSVN11110 16" Manhole Assembly

PARTS BREAK DOWN



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	4754	WELD RING	1
2	6006	COVER WELDMENT	1
3	6535 ¹	STRONGBACK	1
4	6121	LATCH	1
5	6533 ¹	FILL COVER	1
6	5895 ¹	SPRING	1
7	12022 ^{1,3}	GASKET	1
8	NV3000 ¹	PRESSURE VACUUM VENT	1
9	9241 ¹	MOTION CONTROL DEVICE	1
10	6374 ¹	LOCK NUT	1
11	5951	CLEVIS PIN	2
12	1045	COTTER PIN	2
13	6534 ¹	DRIVE PIN	1
14	3271	CLAMP RING	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
15	1110	SCREW	1
16	1113	WASHER	2
17	5009	NUT	1
18	4645 ²	GASKET	1
19	6209 ¹	DECAL	1
20	6025	WASHER	2
22	6532 ¹	ROD WIPER	1
23	6375 ¹	SEAL WASHER	1
24	5203 ¹	BUSHING	4

Available without Weld Ring—P/N SSVN101110

REPLACEMENT FILL COVER	
6600N	FILL COVER ASSEMBLY

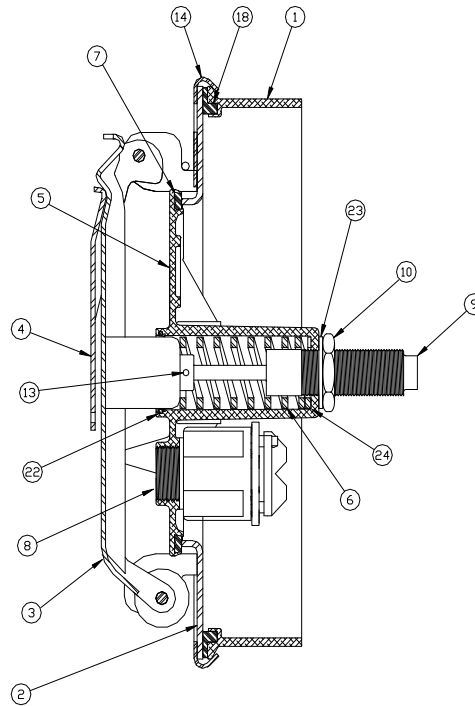
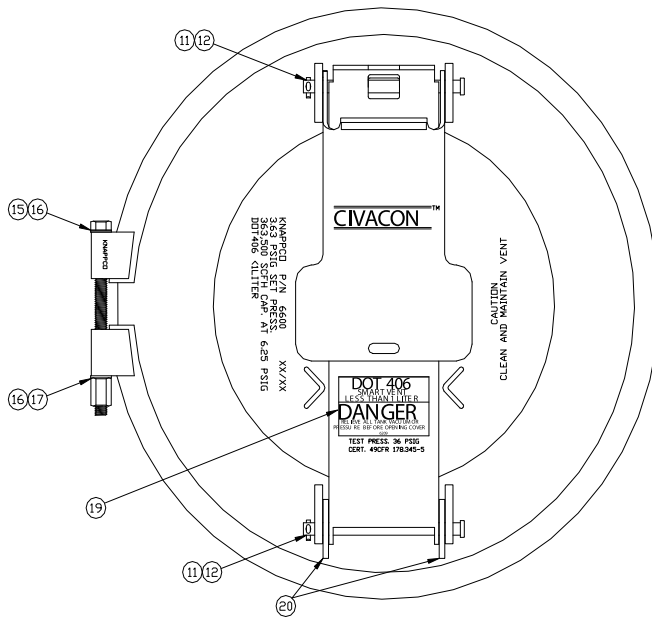
1—Included in 6600N, 2—Also available in Viton—P/N 4873, 3—Also available in Viton—P/N 6263





SSTN11100 16" Manhole Assembly

OBSOLETE
REPLACEMENT PARTS AVAILABLE



PARTS BREAK DOWN

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	4754	WELD RING	1
2	6151	COVER WELDMENT	1
3	6535 ¹	STRONGBACK	1
4	6121	LATCH	1
5	6533 ¹	FILL COVER	1
6	5895 ¹	SPRING	1
7	12022 ^{1,3}	GASKET	1
8	NV2001 ¹	PRESSURE VACUUM VENT	1
9	9241 ¹	MOTION CONTROL DEVICE	1
10	6374 ¹	LOCK NUT	1
11	5951	CLEVIS PIN	2
12	1045	COTTER PIN	2
13	6534 ¹	DRIVE PIN	1
14	3271	CLAMP RING	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
15	1110	SCREW	1
16	1113	WASHER	2
17	5009	NUT	1
18	4645 ²	GASKET	1
19	6209 ¹	DECAL	1
20	6025	WASHER	2
22	6532 ¹	ROD WIPER	1
23	6375 ¹	SEAL WASHER	1
24	5203 ¹	BUSHING	4

Available without Weld Ring—P/N SST101100

REPLACEMENT FILL COVER	
6600	FILL COVER ASSEMBLY

1—Included in 6600, 2—Also available in Viton—P/N 4873, 3—Also available in Viton—P/N 6263



3-1/2" Aluminum Vapor Valve

Sequential Interlock

AIR OPERATED

- Air Actuated Sequential Operation
- Stainless Trim with PTFE Seals
- Inward Opening

SERVICE TEMPERATURE RATINGS (°F)

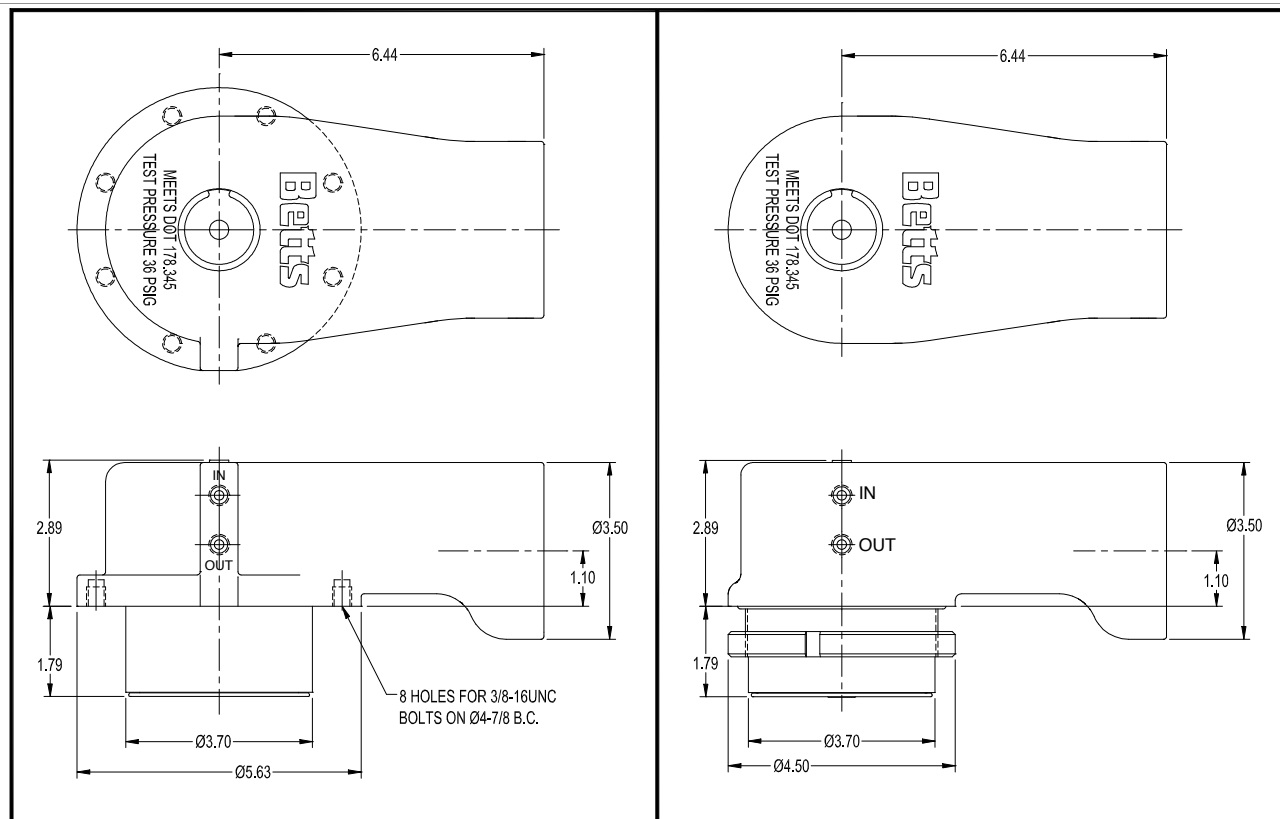
STANDARD VALVES -20 °F to 200 °F
VALVES W/023 SUFFIX -80 °F to 400 °F

NOTE: Temperature ratings are based on published information and may vary due to actual conditions.

Bolted Model: *AV46850ALTS

* Add suffix "022" for Stainless Mounting Bolts

Threaded Model: AV46855ALTS



Betts 3-1/2" Sequential Vapor Valves are designed for use as positive vapor recovery valves on cargo tanks during loading and unloading. Sequential interlock design allows the vapor valve to be plumbed in series with the emergency valve to insure the vapor valve is open before the emergency valve. Vapor valves can also be plumbed to operate independently of the emergency valves, if desired. Internal interlock device guarantees that all vapor valves and emergency valves will close fully when air pressure is released, regardless of their location in the plumbing system.

Available in two configurations - bolted design mounts in 20" offset PAF manhole cover using eight 3/8-16UNC bolts (included), while threaded design mounts in 16" offset PAF manhole. Both versions meet all requirements for loading/unloading venting devices on MC306 and DOT406 cargo tanks and are tested and marked with a test pressure of 36 psig in accordance with 49CFR178.345-5(f).

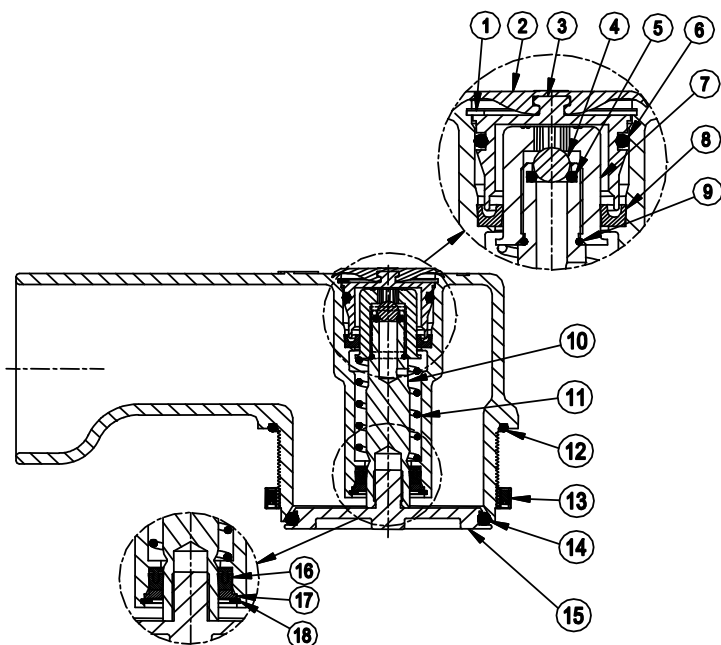
Inward opening action prevents loss of lading due to surge pressure during a roll-over accident. All moving parts are internal to minimize chance of freeze-ups during cold weather. Aluminum bodies with stainless trim minimize corrosion and PTFE seals in contact with vapors insure compatibility with a wide variety of products.

Betts[™]
INDUSTRIES, INC.
WARREN, PA.

April 2004

PARTS LIST

3 1/2" ALUMINUM VAPOR VALVE – SEQUENTIAL INTERLOCK



Note: Threaded Valve Shown

PLUMBING INFORMATION:

Vapor valves may be plumbed separately, in sequence with other vapor valves, or they may be interlocked with an air operated emergency valve so that the vapor valve must open before the emergency valve opens. Refer to Engineering Bulletin 1-2001 for more detailed instructions on suggested plumbing arrangements.

NO.	REQ'D	DESCRIPTION	MATERIAL	Part No.	
				Bolted Style	Threaded Style
1	1	Retaining Ring – Cap	Stainless Steel	9Q4977	9Q4977
2	1	Rubber Rain Cap	EPDM	75010EP	75010EP
3	1	Air Cylinder Cap	Alum./E-coat	19957ALEY	19957ALEY
4	1	Interlock Ball	316 Stainless	9Z4857	9Z4857
5	1	O-ring – Interlock	Buna **	19467BN **	19467BN **
6	1	O-ring – Cap	Buna **	19971BN **	19971BN **
7	1	Piston	Alum./Anodized	75212AL	75212AL
8	1	Seal – Piston	PTFE/SS	75119SSTF	75119SSTF
9	1	O-ring - Piston	Buna **	19931BN **	19931BN **
10	1	Hard Anodized Stem	Alum.	28117AL	28117AL
11	1	Spring	302 SS	19960SL	19960SL
12	1	Gasket	Cork/Buna	RGA301CB	N.A.
	1	O-ring – Mounting	Viton	N.A.	17657VT
13	1	Mounting Ring w/ Set Screws	Alum.	N.A.	19950AL
14	1	O-ring Seat	Tef-Sil	19930TS	19930TS
15	1	O-ring Holder	Alum.	28033AL	28033AL
16	1	Seal – Shaft	PTFE/SS	19973SSTF	19973SSTF
17	1	Shaft Seal Retainer	Alum.	19958AL	19958AL
18	1	Retaining Ring – Shaft Seal	Stainless Steel	9Q4976	9Q4976
19	1	Bolts & Lock washers	Steel/Zn Plt.	*75002ZC	N.A.

* Part number for Stainless Mounting Kit – 75002SL.

** Suffix "023" replaces Buna seals w/ Fluorosilicone i.e. 19467BN changes to 19467FS.

WARNING: Use only genuine BETTS INDUSTRIES INC. replacement parts. Use of substitute parts can impair the proper function of this product and void all warranties.

Betts™
INDUSTRIES, INC. WARREN, PA.

Oct 2005

3-1/2" Aluminum Vapor Valve

AIR OPERATED

- Air Actuated
- Stainless Trim with PTFE Seals
- Inward Opening

SERVICE TEMPERATURE RATINGS (°F)

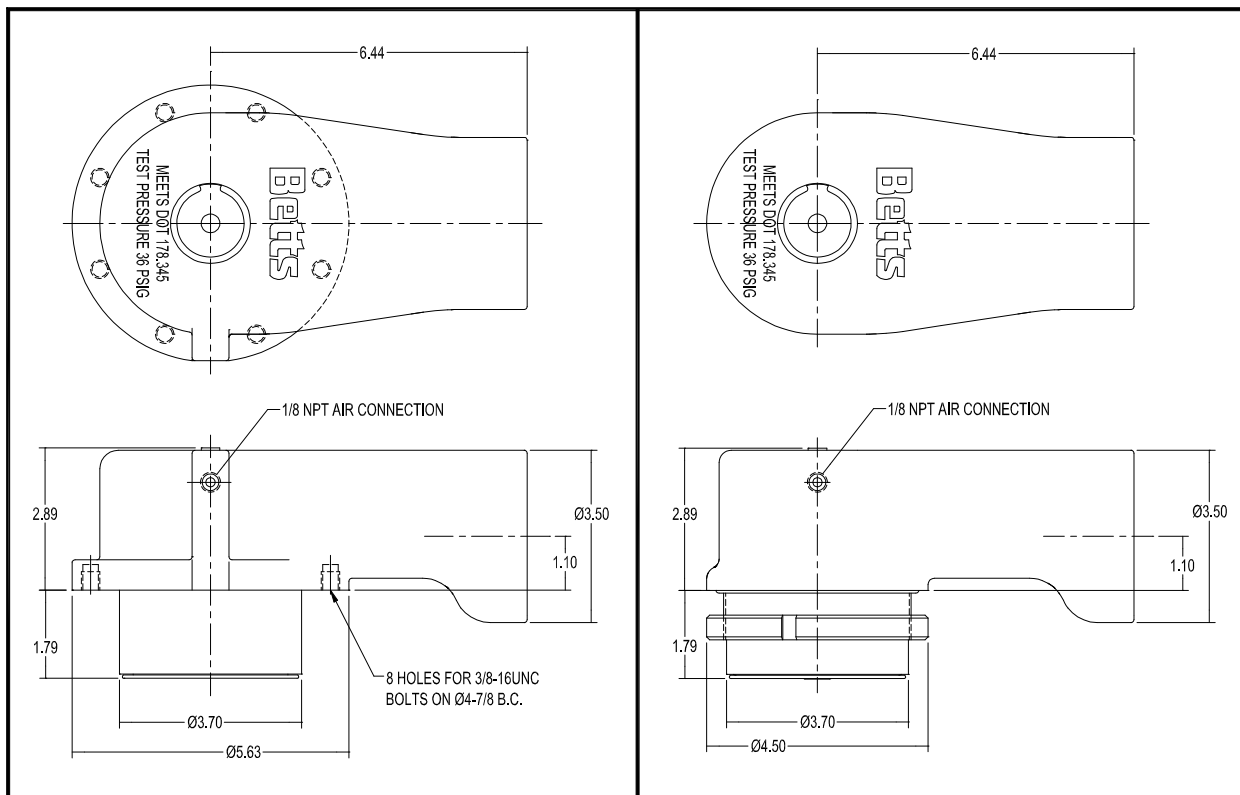
STANDARD VALVES -20 °F to 200 °F
 VALVES W/023 SUFFIX -80 °F to 400 °F

NOTE: Temperature ratings are based on published information and may vary due to actual conditions.

Bolted Model: *AV46865ALTS

* Add suffix "022" for Stainless Mounting Bolts

Threaded Model: AV46864ALTS



Betts 3-1/2" Vapor Valves are designed for use as positive vapor recovery valves on cargo tanks during loading and unloading.

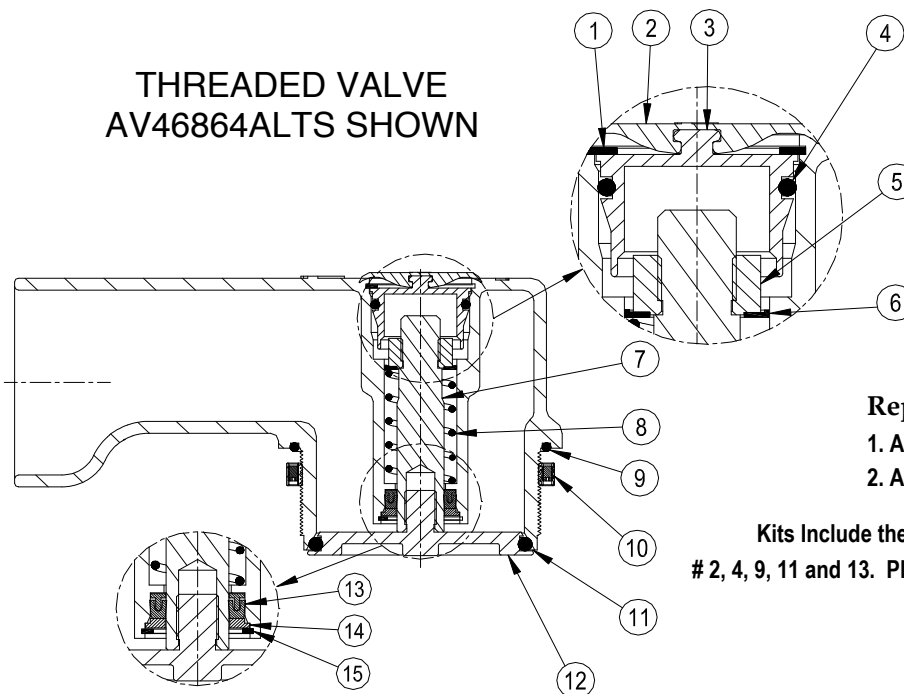
Available in two configurations - bolted design mounts in 20" offset PAF manhole cover using eight 3/8-16UNC bolts (included), while threaded design mounts in 16" offset PAF manhole. Both versions meet all requirements for loading/unloading venting devices on MC306 and DOT406 cargo tanks and are tested and marked with a test pressure of 36 psig in accordance with 49CFR178.345-5(f).

Inward opening action prevents loss of lading due to surge pressure during a roll-over accident. All moving parts are internal to minimize chance of freeze-ups during cold weather. Aluminum bodies with stainless trim minimize corrosion and PTFE seals in contact with vapors insure compatibility with a wide variety of products.

PARTS LIST

3-1/2" Aluminum Vapor Valve

**THREADED VALVE
AV46864ALTS SHOWN**



Repair Kits

- 1. AV75603TS
- 2. AV75604TS

Kits include the following item numbers;
2, 4, 9, 11 and 13. Please specify Bolted or Threaded.

NO.	REQ'D	DESCRIPTION	MATERIAL	Part No.	
				Bolted Style	Threaded Style
1	1	Retaining Ring – Cap	Stainless	9Q4977	9Q4977
2	1	Rubber Rain Cap	EPDM	75010EP	75010EP
3	1	Air Cylinder Cap	Alum./E-coat	19957ALEY	19957ALEY
4	1	O-ring - Cap	Buna **	19971BN **	19971BN **
5	1	Spring Retainer Nut	Alum.	19934AL	19934AL
6	1	Spring Retainer Washer	Brass	19959BR	19959BR
7	1	Hard Anodized Stem	Alum.	75006AL	75006AL
8	1	Spring	302 SS	19960SL	19960SL
9	1	Gasket	Cork/Buna	RGA301CB	N.A.
	1	O-ring - Mounting	Viton	N.A.	17657VT
10	1	Mounting Ring w/ Set Screws	Alum.	N.A.	19950AL
11	1	O-ring - Seat	Tef-Sil	19930TS	19930TS
12	1	O-ring Holder	Alum.	28033AL	28033AL
13	1	Seal – Shaft	PTFE/SS	75462SLTF	75462SLTF
14	1	Shaft Seal Retainer	Alum.	19958AL	19958AL
15	1	Retaining Ring – Shaft Seal	Stainless	9Q4976	9Q4976
16	1	Bolts & Lock washers	Steel/Zn Plt.	*75002ZC	N.A.

* Part number for Stainless Mounting Kit 75002SL.

** Suffix "023" on assembly number replaces Buna seals w/ Fluorosilicone i.e. 19467BN changes to 19467FS

WARNING Use only genuine BETTS INDUSTRIES INC. replacement parts. Use of substitute parts can impair the proper function of this product and void all warranties.

4" Aluminum Vapor Valve

AIR OPERATED

Sequential Interlock

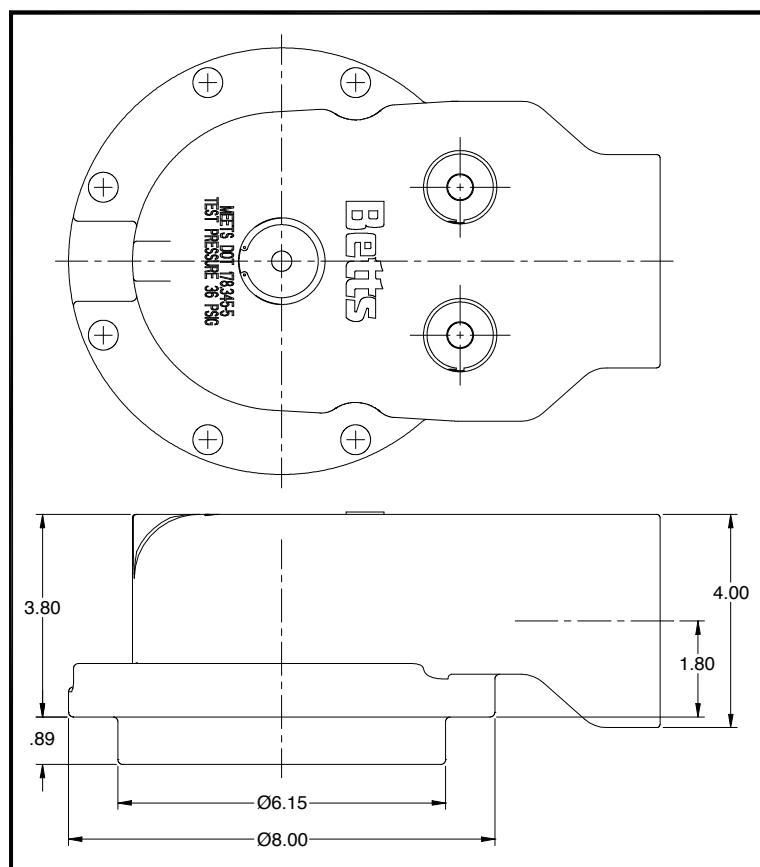
- Air Actuated Sequential Operation
- Stainless Trim with PTFE Seals
- Inward Opening

SERVICE TEMPERATURE RATINGS (°F)

STANDARD VALVES -20°F to 200°F
VALVES W/023 SUFFIX -80°F to 400°F

NOTE: Temperature ratings are based on published information and may vary due to actual conditions.

AV46836ALTS



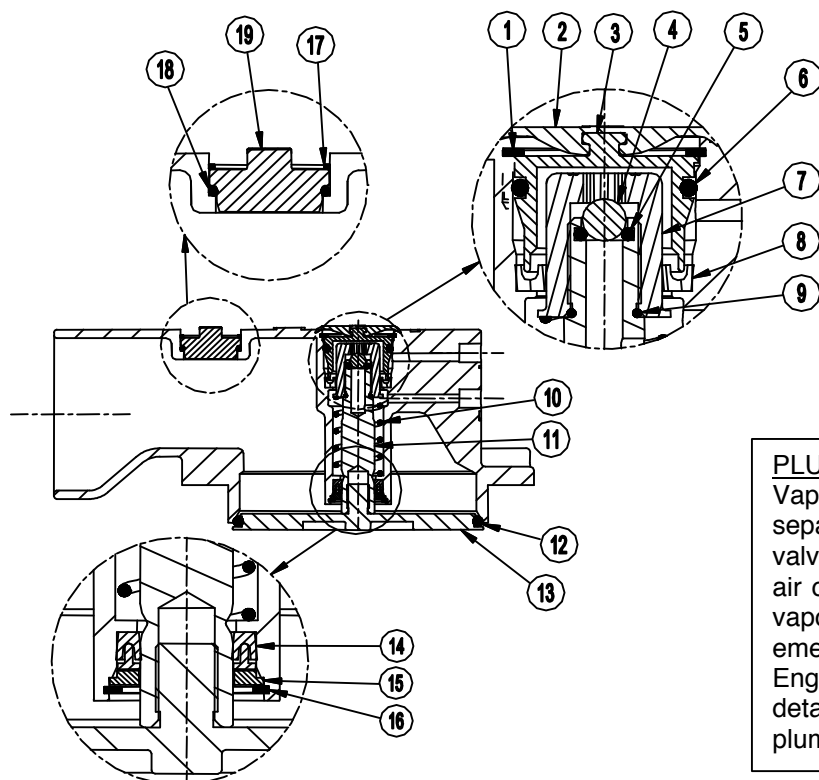
Betts 4" Sequential Vapor Valve is designed for use as a positive vapor recovery valve on cargo tanks during loading and unloading. Sequential interlock design allows the vapor valve to be plumbed in series with the emergency valve to insure the vapor valve is open before the emergency valve. Vapor valves can also be plumbed to operate independently of the emergency valves, if desired. Internal interlock device guarantees that all vapor valves and emergency valves will close fully when air pressure is released, regardless of their location in the plumbing system.

Mounts to standard 4" TTMA sump flange pattern. Meets all requirements for loading/unloading venting devices on MC306 and DOT406 cargo tanks and is tested and marked with a test pressure of 36 psig in accordance with 49CFR178.345-5(f).

Inward opening action prevents loss of lading due to surge pressure during a roll-over accident. All moving parts are internal to minimize chance of freeze-ups during cold weather. Aluminum bodies with stainless trim minimize corrosion and PTFE seals in contact with vapors insure compatibility with a wide variety of products.

PARTS LIST

4" ALUMINUM VAPOR VALVE – SEQUENTIAL INTERLOCK



Repair Kit AV75600TS

Kit includes the following item numbers;
2, 5, 6, 8, 9, 12, 14 and 18.

PLUMBING INFORMATION:

Vapor valves may be plumbed separately, in sequence with other vapor valves, or they may be interlocked with an air operated emergency valve so that the vapor valve must open before the emergency valve opens. Refer to Engineering Bulletin 1-2001 for more detailed instructions on suggested plumbing arrangements.

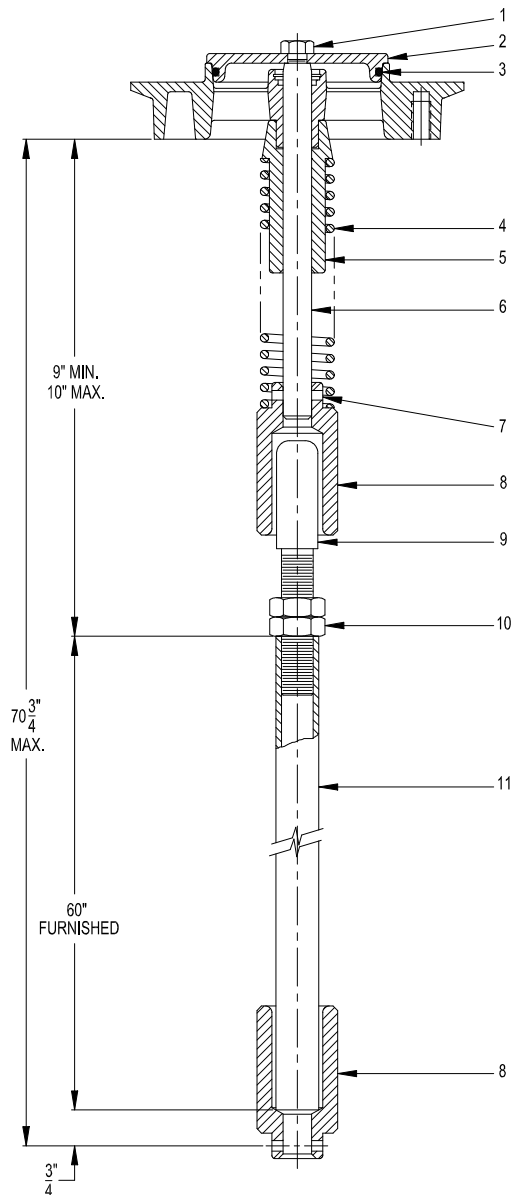
NO.	REQ'D	DESCRIPTION	MATERIAL	Part No.
1	1	Retaining Ring – Cap	Stainless Steel	9Q4977
2	1	Rubber Rain Cap	EPDM	75010EP
3	1	Air Cylinder Cap	Alum./E-coat	19957ALEY
4	1	Interlock Ball	316 Stainless	9Z4857
5	1	O-ring – Interlock	Buna **	19467BN **
6	1	O-ring – Cap	Buna **	19971BN **
7	1	Piston	Alum./Anodized	75212AL
8	1	Seal – Piston	PTFE/SS	75434SLTF
9	1	O-ring - Piston	Buna **	19931BN **
10	1	Spring	302 SS	19960SL
11	1	Hard Anodized Stem	Alum.	28117AL
12	1	O-ring – Seat	Tef-Sil	19935TS
13	1	O-ring Holder	Alum.	28000AL
14	1	Seal – Shaft	PTFE/SS	75462SLTF
15	1	Shaft Seal Retainer	Alum.	19958AL
16	1	Retaining Ring – Shaft Seal	Stainless Steel	9Q4976
17	2	Retaining Ring – Access Holes	Carbon Steel	9Q4934
18	2	O-ring – Access Holes	Buna **	19936BN **
19	2	Access Hole Plugs	Alum./E-coat	19929ALEY

* Part number for Stainless Mounting Kit – 75002SL.

** Suffix “023” replaces Buna seals w/ Fluorosilicone
i.e. 19467BN changes to 19467FS.

WARNING: Use only genuine BETTS INDUSTRIES INC. replacement parts. Use of substitute parts can impair the proper function of this product and void all warranties.

3 1/8" Push Vent


Complete Assembly
PV46063ALTS

PARTS LIST

No.	Description	Req.	Material	Part No.
1	Cap Screw $\frac{3}{8}$ -16x $\frac{3}{4}$	1	Stnls	9Q5884
2	Disc Holder	1	Alum	17841AL
3	O-Ring	1	Tef/Sil	18106TS
4	Spring	1	Stnls	17052SL
5	Body	1	Alum	26856AL
6	Stem	1	Alum	16971AL
7	Spirol Pin $\frac{3}{16}$ x1	1	Stnls	9Q5901
8	Spring Retainer	2	Alum	16974AL
9	Adjusting Bar	1	Alum	16554AL
10	Hex Jam Nuts $\frac{5}{8}$ -18 Thd	2	Stnls	9Q5868
11	Push Rod	1	Alum	17074AL

MAINTENANCE INSTRUCTIONS

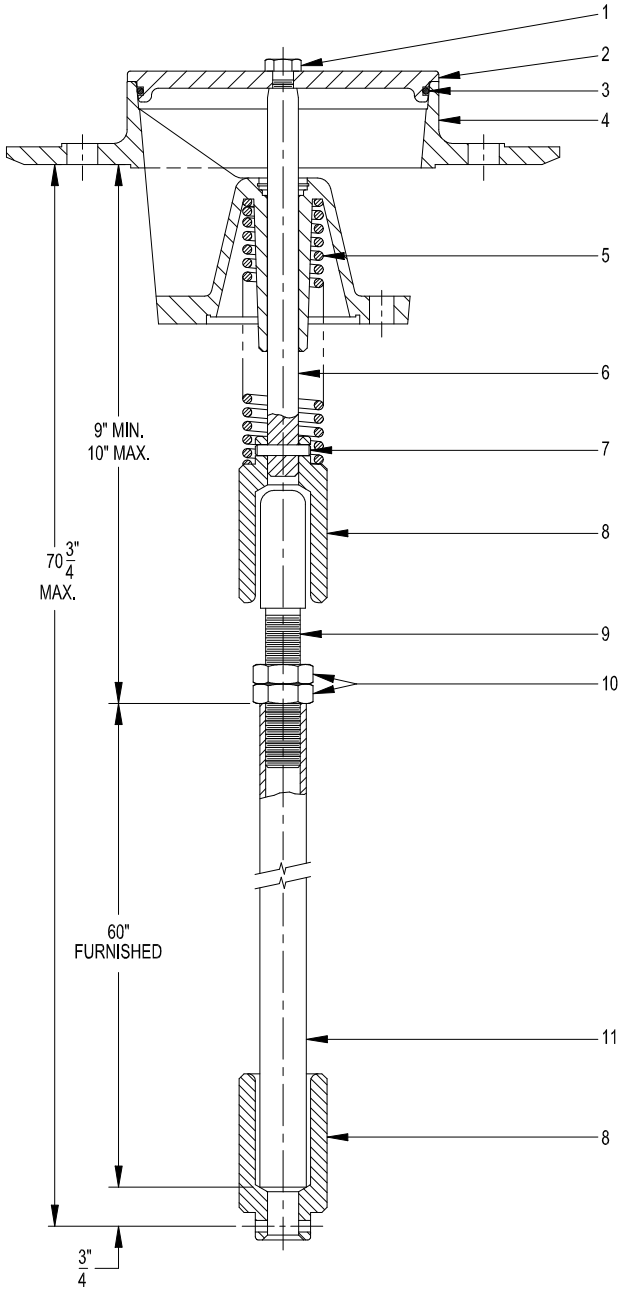
REPLACING O-RING SEAT: The O-ring can be replaced without removing the vent from tank. Open vent. For safety, insert a wooden stick between the disc holder #2 and body #4. Attach vice-grip pliers to stem. Remove screw #1 and O-ring holder #2. Replace O-ring #3. Re-assemble, then remove pliers.

INSTALLATION INSTRUCTIONS

Vent should be mounted directly over emergency valve. Cut push rod #11 to an approximate length. Install push rod and adjust item #9 allowing approximately $\frac{1}{8}$ " end clearance to ensure that vent will close.

5" Push Vent

Complete Assembly
PV46186ALTS



No.	Description	Req.	Material	Part No.
1	Cap Screw $\frac{3}{8}$ -16x $\frac{3}{4}$	1	Stnls	9Q5884
2	O-Ring Holder	1	Alum	26909AL
3	O-Ring	1	Tef/Sil	18250TS
4	Body	1	Alum	45736AL
5	Spring	1	Stnls	17052SL
6	Stem	1	Alum	16971AL
7	Spirol Pin $\frac{3}{16}$ x1	1	Stnls	9Q5901
8	Spring Retainer	2	Alum	16974AL
9	Adjusting Bar	1	Alum	16554AL
10	Hex Jam Nuts $\frac{5}{8}$ -18 Thd	2	Stnls	9Q5868
11	Push Rod	1	Alum	17074AL

MAINTENANCE INSTRUCTIONS

REPLACING O-RING SEAT: The O-ring can be replaced without removing the vent from tank. Open vent. For safety, insert a wooden stick between the disc holder #2 and body #4. Attach vice-grip pliers to stem. Remove screw #1 and O-ring holder #2. Replace O-ring #3. Re-assemble, then remove pliers and air pressure.

INSTALLATION INSTRUCTIONS

Vent should be mounted directly over emergency valve. Cut push rod #11 to an approximate length. Install push rod and adjust item #9 allowing approximately $\frac{1}{8}$ " end clearance to ensure that vent will close.

Obsolete Section

Air Operated Vapor Valve

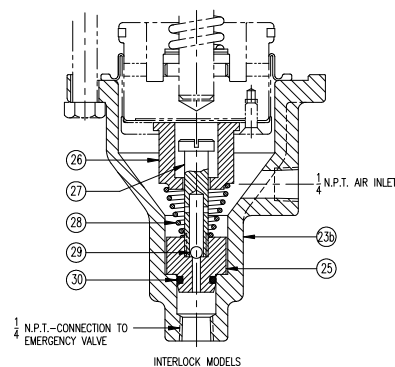
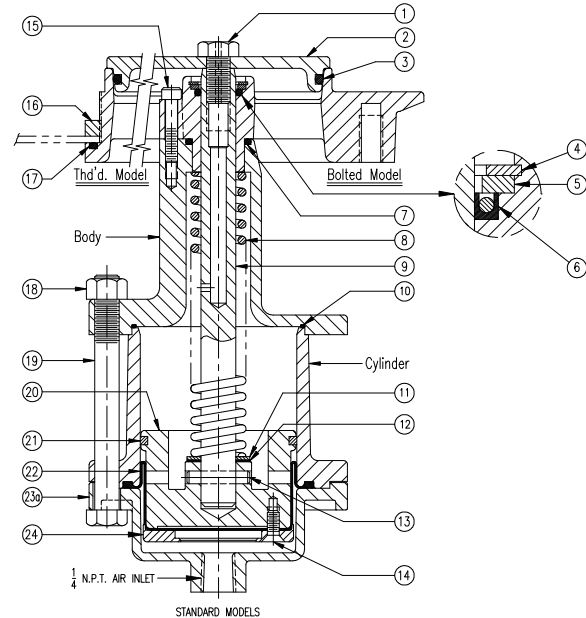
Replaced with New Designs (See Section 25)

Replacement Parts Only

PLEASE NOTE: All parts may not be available do to limited supply and may be discontinued without notice.

Size	Standard Model	Interlock Model	Seat O-Ring	Diaphragm
3 1/2" Bolted	AV46062ALHTS	AV46061ALHTS	Teflon/Silicone	Hydrin
	AV46062ALFTS	AV46061ALFTS		Flourosilicone
3 1/2" Th'd.	AV46065ALHTS	AV46064ALHTS	Teflon/Silicone	Hydrin
	AV46065ALFTS	AV46064ALFTS		Flourosilicone
5"	AV46184ALHTS	AV46185ALHTS	Teflon/Silicone	Hydrin
	AV46184ALFTS	AV46185ALFTS		Flourosilicone

No.	Description	Req.	Material	3 1/2" Part No.	5" Part No.
1	Hex. Hd. Cap Screw	1	Aluminum	18088AL	18088AL
2	O-Ring Holder	1	Aluminum	17841AL	26909AL
3	O-Ring	1	Tef/Sil	18106TS	18250TS
4	Lock-Ring	1	Stainless	9Q4929	9Q4929
5	Washer	1	Aluminum	17928AL	17928AL
6	Seal-Stem	1	Teflon	19326TF	19326TF
7	O-Ring	1	Tef/Sil	16844TS	NA
8	Spring	1	"E" Coated Stil.	15956EY	17052SL
9	Stem	1	Aluminum	16971AL	16971AL
10	O-Ring	1	Viton	18108VT	18108VT
11	Washer	1	Aluminum	17419AL	17418AL
12	Washer	1	Teflon	17419TF	17418TF
13	3/16 x 1 Spirol Pin	1	Stainless	9Q5901	9Q5901
14	Machine Screw	3	Steel Zinc Plt.	9Q5892	9Q5892
15	#10-32UNF-2A x 1 Lg. SHCS	3	Stainless	9Q5049	NA
16	Mounting Ring	1	Aluminum	17567AL	NA
17	O-Ring	1	Viton	17657VT	NA
18	3/8-16UNC-2A Hex Nut	3	Stainless	9Q5809	9Q5809
19	3/8-16UNC-2A x 3 3/4 Hex. Hd. Bolt	3	Stainless	9Q5891	9Q5891
20	Piston	1	Aluminum	26376AL	26376AL
21	Wear Ring	1	Teflon	17213TF	17213TF
22	Diaphragm	1	Hydrin	17212HD	17212HD
			Flourosilicone	17212FS	17212FS
23a	Std. End Cap	1	Aluminum	26369AL	26369AL
23b	Interlock End Cap	1	Aluminum	26370AL	26370AL
24	Retainer Plate	1	Aluminum	17196AL	17196AL
25	O-Ring Holder	1	Aluminum	18140AL	18140AL
26	Hub	1	Aluminum	17053AL	17053AL
27	Stem	1	Aluminum	15948AL	15948AL
28	Spring	1	Stainless	16041SL	16041SL
29	3/16" Dia. Ball	1	Stainless	9Z4853	9Z4853
30	O-Ring	1	Buna-N	18141BN	18141BN



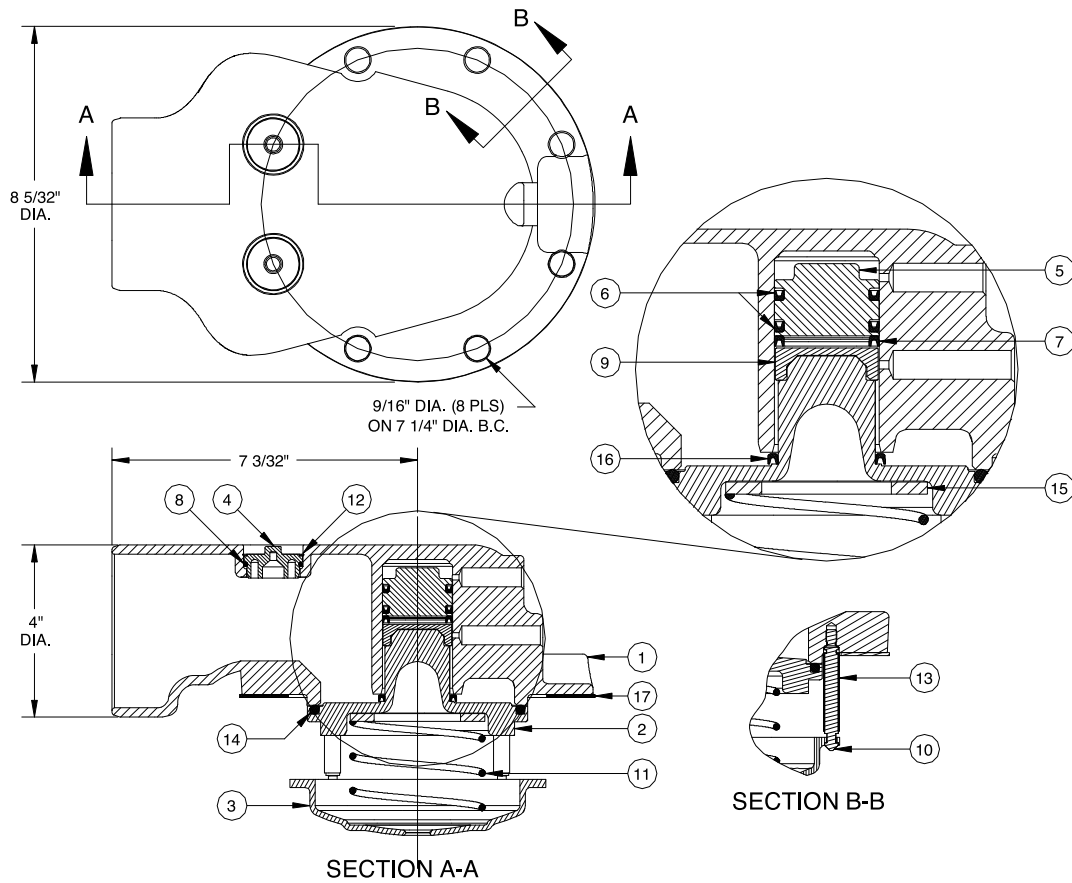
MAINTENANCE INSTRUCTIONS

1. REPLACING O-RING SEAT: The O-Ring can be replaced without removing the vent from tank. Open vent by applying 30 PSI (MIN.) air pressure to air inlet. For safety, insert a wooden stick between the disc holder No.2 and body. Attach vice-grip pliers to stem. Remove screw No.1 and O-Ring holder No.2. Replace O-Ring No.3. Re-assemble, then remove pliers and air pressure.
2. REPLACING DIAPHRAGM NO.22: Remove three (3) cap screws No.19 and nuts No.18. Then remove end cap No.23, cylinder and O-Ring No.10. Next, the three (3) screws No.14 and retainer plate No.24 should be removed freeing diaphragm No.22. Install a new diaphragm with the fabric side next to piston (marked piston side). Re-install retainer plate and three (3) screws. Torque screws evenly. Re-install O-Ring No.10 into body groove. Then install cylinder by squeezing diaphragm O.D. to permit diaphragm to slide thru cylinder bore. Lift cylinder until bead of diaphragm engages groove in cylinder. Hold the diaphragm bead in cylinder by placing both thumbs and index fingers on diaphragm flange. Gently push cylinder toward body to form convolution in diaphragm. Check to insure that cylinder lip is engaged in c'bore of body. Re-assemble end cap with three (3) cap screw No.19 and nuts No.18. Torque evenly.
3. REPLACING SHAFT SEAL: With stem No.9 removed from body, remove lock-ring No.4 and washer No.5, replace seal No.6, then re-install lock-ring and washer.
4. LEAKAGE TEST: Apply 80 PSIG air pressure to the air inlet port. Check for leakage at diaphragm bead flange and at O-Ring No.10 under cylinder. Also, check for leakage out hole in screw No.1.



1998 4" Sequential Vapor Vent

PARTS BREAK DOWN



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E51630A	BODY	1
2	E51633A	POPPET	1
3	D51637A	DEFLECTOR	1
4	H20516M	PLUG	2
5	D51631RP	PISTON	1
6	H51624M ¹	SEAL, BUNA-N U-CUP	2
7	H51625M ¹	SEAL RING, TEFLON	1
8	H20249M ¹	O-RING, BUNA-N	2
9	H51734RP	ACETAL DISC	1
10	C51632RE	GUIDE ROD	4
11	H51628M	SPRING	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
12	H20066M	RETAINING RING	2
13	H51693RP	TUBE, TEFLON	4
14	H51810M ¹	O-RING, VITON	1
15	9921	SPACER	1
16	9923 ¹	SEAL, BUNA-N U-CUP	1
17	H20572M ¹	GASKET, CORK/BUNA	1

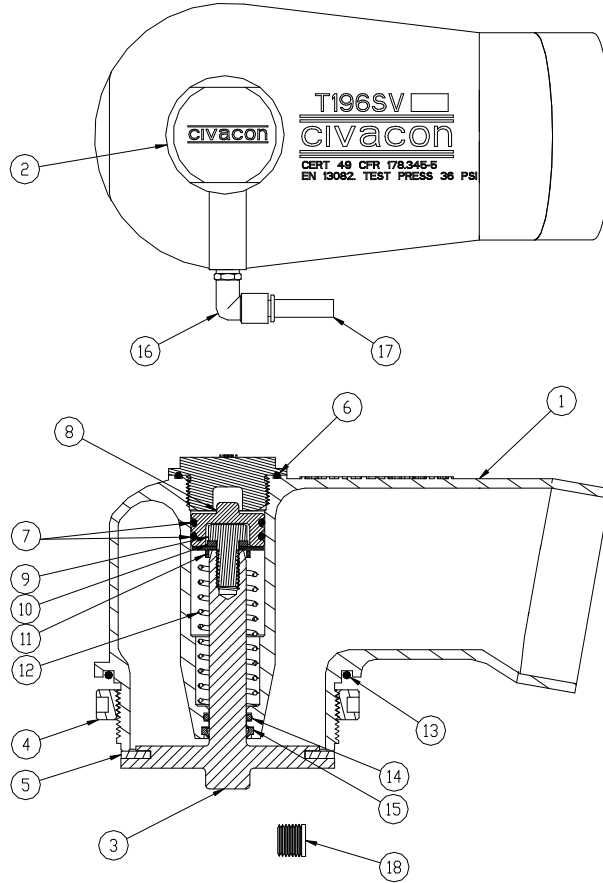
REPAIR KITS	
1998RK	VAPOR VENT REPAIR KIT
9182	FLANGE ADAPTOR KIT (1993 VENT)

¹ - Included in 1998RK



T196SV Vapor Recovery Vent

PARTS BREAK DOWN



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	11964	BODY, MACHINED	1
2	11672	CAP	1
3	11986	POPPET, MACHINED	1
4	H20083M	LOCKING RING	1
5	12007 ¹	GASKET, VITON GF	1
6	11692 ¹	O-RING, VITON GF	1
7	11776 ¹	O-RING, FLUOROSILICON	2
8	11772 ¹	PISTON	1
9	H20518M	SCREW	1
10	1760	LOCK WASHER	1
11	11990	SPRING GUIDE	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
12	11694	SPRING	1
13	H20124M ¹	O-RING, VITON	1
14	10681M ¹	O-RING, VITON GF	1
15	11696 ¹	WIPER	1
16	12066	ELBOW MALE, 1/8" NPT	1
17	12001BK	TUBING, BLACK	1.25'
18	H52199M	PLUG, 1/8" NPT	1

REPAIR KITS	
T196SVRK	REPAIR KIT FOR T196SV

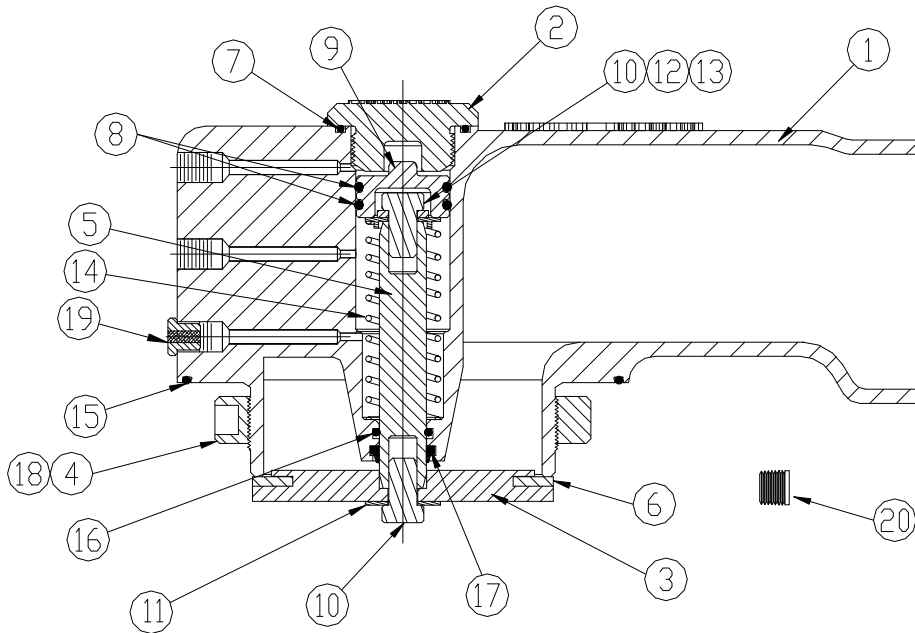
¹ - Included in T196SVRK





T195SV Vapor Recovery Vent

PARTS BREAK DOWN



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	11669	BODY, MACHINED	1
2	11672	CAP	1
3	11677	POPPET	1
4	11678	LOCKING RING	1
5	11673	SHAFT	1
6	11699 ¹	GASKET, VITON GF	1
7	11692 ¹	O-RING, VITON GF	1
8	11776 ¹	O-RING, FLUOROSILICON	2
9	11772 ¹	PISTON	1
10	H20518M	SCREW	2
11	11774	SEAL WASHER	1

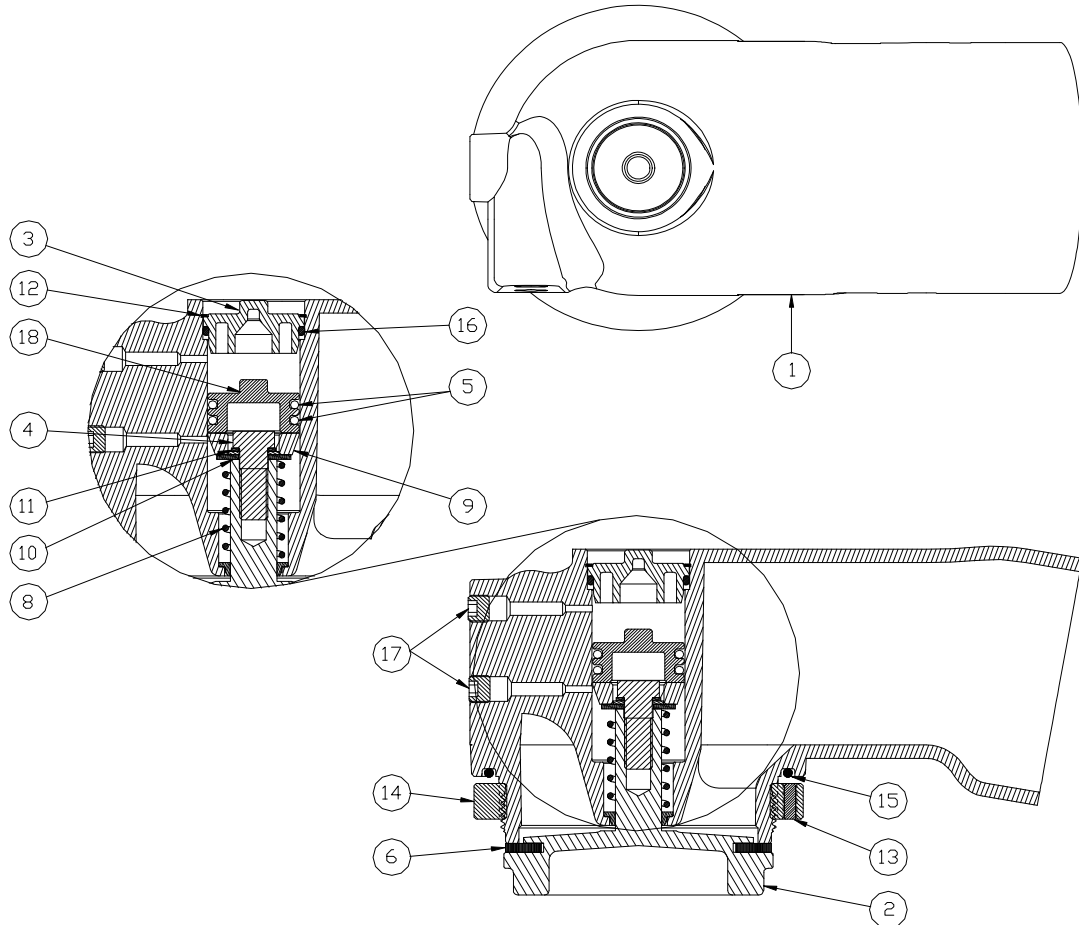
ITEM	PART NUMBER	DESCRIPTION	QTY.
12	1760	LOCK WASHER	1
13	11990	SPRING GUIDE	1
14	11694	SPRING	1
15	11695 ¹	O-RING, VITON GF	1
16	10681M ¹	O-RING, VITON GF	1
17	11696 ¹	WIPER	1
18	11697	SET SCREW	1
19	11775	EXHAUST FITTING	1
20	H52199M	PLUG, 1/8" NPT	1
REPAIR KITS			
T195SVRK		REPAIR KIT FOR T195SV	

¹ - Included in T195SVRK



1986SV 3" Sequential Vapor Vent

PARTS BREAK DOWN



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E52162A	MACHINED BODY	1
2	C10045A	MACHINED POPPET	1
3	H20516M ¹	PLUG, DELRIN	1
4	H20070M	SCREW, 3/8-24 X 1 SS	1
5	11776 ¹	O-RING, FLOUROSILICONE	2
6	H20749M ¹	GASKET, VITON	1
7	H52172RP ¹	DISC, ACETAL	1
8	H52179M	SPRING	1
9	H20517M	BEARING, DELRIN	1
10	H05487M	WASHER	1
11	H04467M	LOCK WASHER	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
12	H20066M ¹	RETAINING RING	1
13	H20123M	SET SCREW	1
14	H20083M	LOCKING RING	1
15	H20124M	O-RING, VITON	1
16	H20249M ¹	O-RING, BUNA-N	1
17	H52199M	PLUG, 1/8 NPT	2
18	11772 ¹	PISTON	1

REPAIR KITS	
1986SVRK	VENT REPAIR KIT

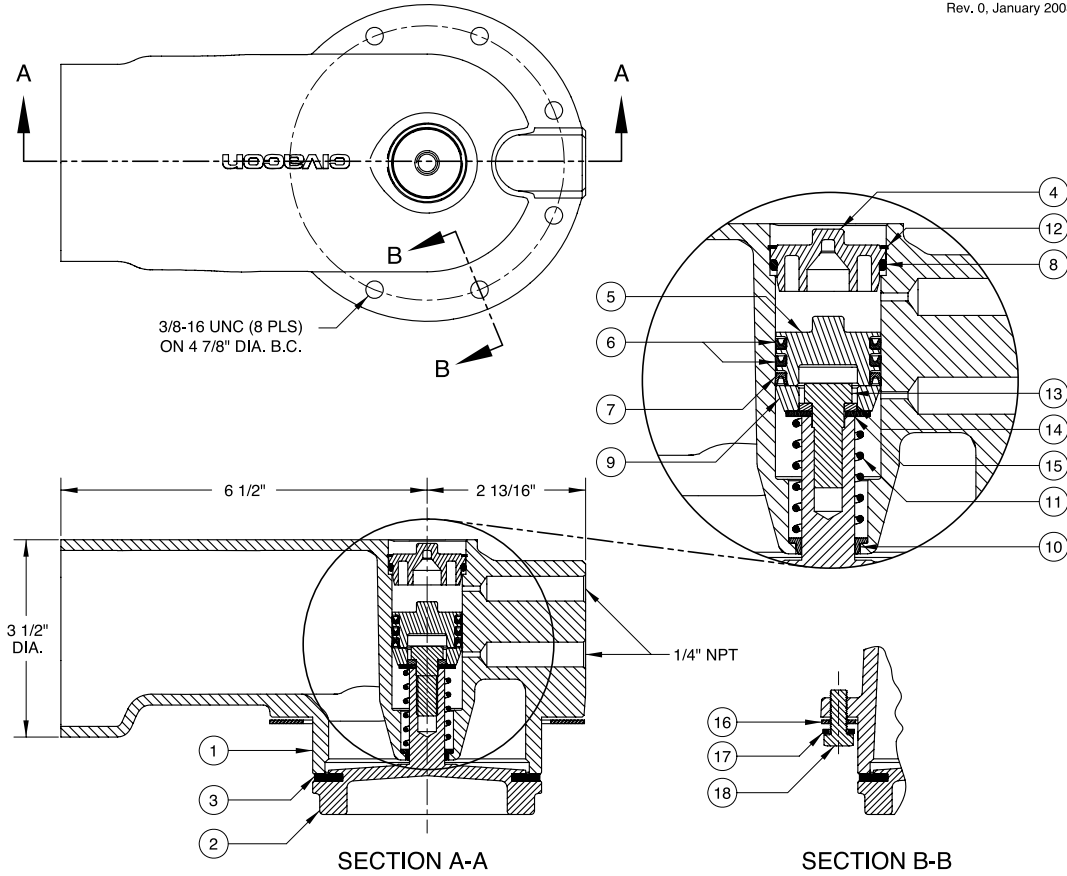
¹Included in 1986SVRK



1985SV 3" Sequential Vapor Vent

Replacement Parts

Rev. 0, January 2003



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E52313A	BODY	1
2	C10010A	POPPET	1
3	H20750M	SEAT DISC (VITON) ¹	1
4	H20516M	PLUG ¹	1
5	C52147RP	PISTON ¹	1
6	H20639M	SEAL (BUNA U-CUP) ¹	2
7	H20206M	SEAL RING (TEFLON)	1
8	H20249M	O-RING (BUNA) ¹	1
9	H52172RP	DISC (ACETAL) ¹	1
10	H20517M	BEARING	1
11	H52179M	SPRING	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
12	H20066M	RETAINING RING	1
13	H20070M	CAP SCREW	1
14	H04467M	WASHER (LOCKING)	1
15	H05487M	WASHER (FLAT)	1
16	C10011M	FLANGE GASKET	1
17	H20074M	SEAL WASHER	8
18	H20518M	CAP SCREW	8

REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
1985SVRK	VENT REPAIR KIT	N/A

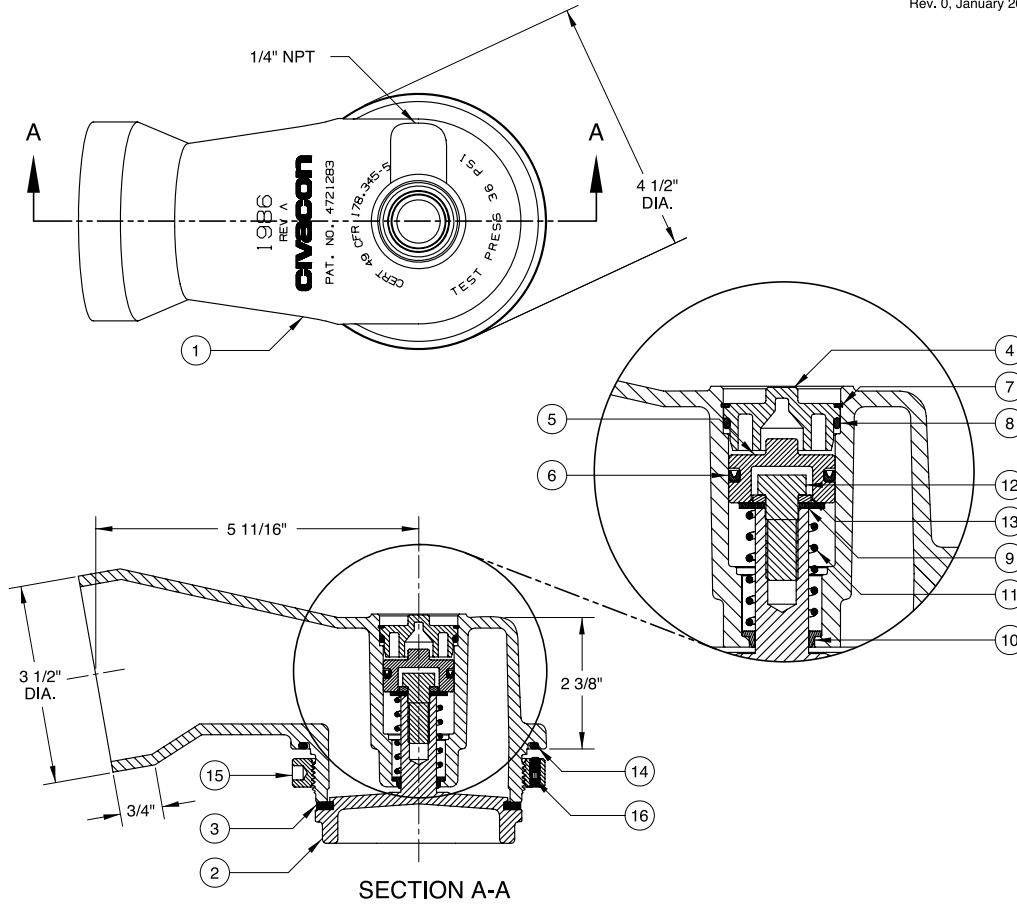
1 - Included in 1985SVRK



1986 3" Vapor Vent

Replacement Parts

Rev. 0, January 2003



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E10162A	BODY	1
2	C10045A	POPPET	1
3	H20749M	SEAT DISC (VITON) ¹	1
4	H20516M	PLUG ¹	1
5	H20063M	PISTON ¹	1
6	H20639M	SEAL (BUNA U-CUP) ¹	1
7	H20066M	RETAINING RING	1
8	H20249M	O-RING (BUNA) ¹	1
9	H05487M	WASHER (FLAT)	1
10	H20517M	BEARING	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
11	H52179M	SPRING	1
12	H20070M	CAP SCREW	1
13	H04467M	WASHER (LOCKING)	1
14	H20124M	O-RING (VITON)	1
15	H20083M	LOCKING RING	1
16	H20123M	SET SCREW	1

REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
1986RK	VENT REPAIR KIT	N/A

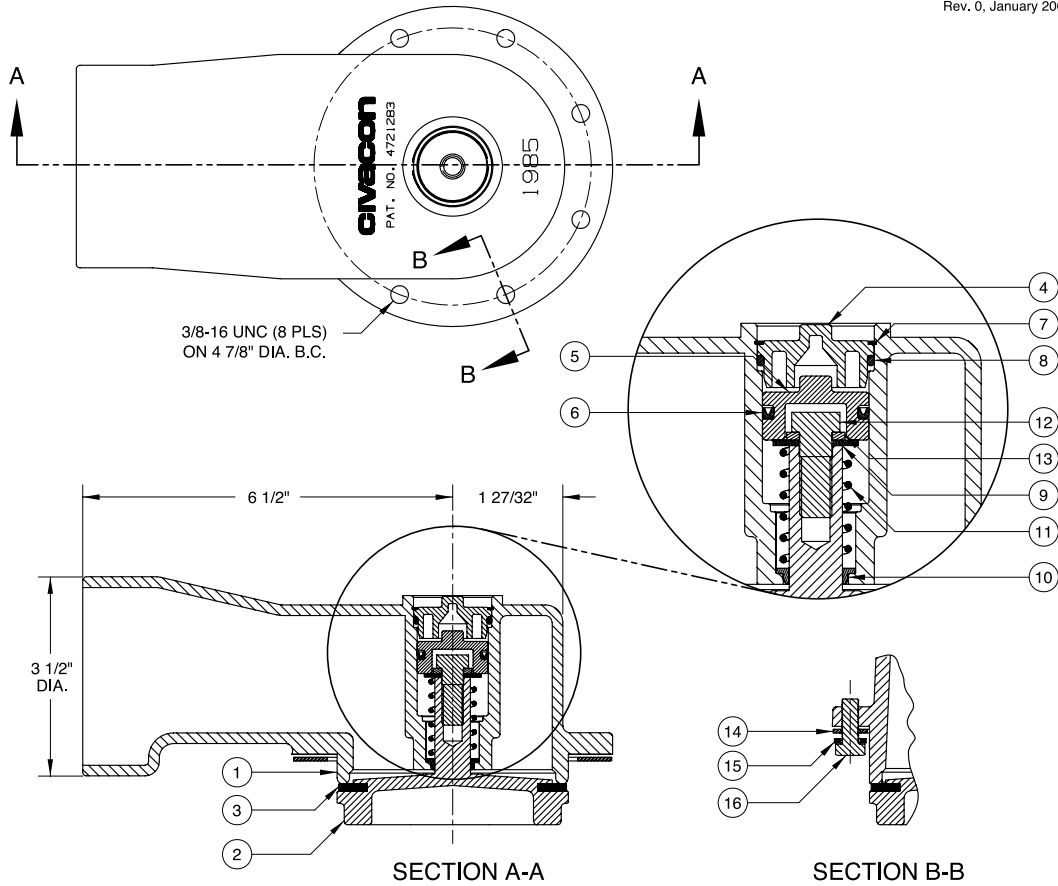
1 - Included in 1986RK



1985 3" Vapor Vent

Replacement Parts

Rev. 0, January 2003



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E10157A	BODY	1
2	C10010A	POPPET	1
3	H20750M	SEAT DISC (VITON) ¹	1
4	H20516M	PLUG ¹	1
5	H20063M	PISTON ¹	1
6	H20639M	SEAL (BUNA U-CUP) ¹	1
7	H20066M	RETAINING RING	1
8	H20249M	O-RING (BUNA) ¹	1
9	H05487M	WASHER (FLAT)	1
10	H20517M	BEARING	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
11	H52179M	SPRING	1
12	H20070M	CAP SCREW	1
13	H04467M	WASHER (LOCKING)	1
14	C10011M	FLANGE GASKET	1
15	H20074M	SEAL WASHER	8
16	H20518M	CAP SCREW	8

REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
1985RK	VENT REPAIR KIT	N/A

1 - Included in 1985RK

AIR-OPERATED SEQUENTIAL VAPOR VALVES

Transport
Systems



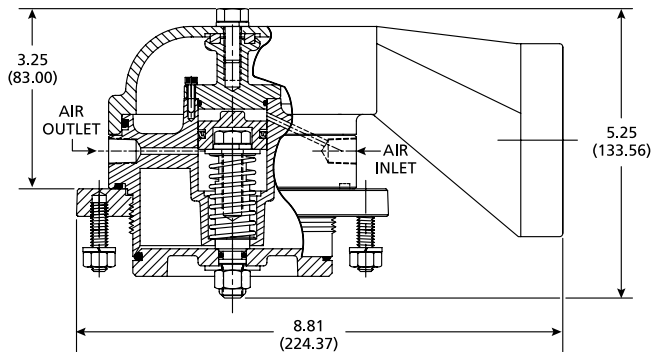
Handle fuel vapors safely and efficiently with this lightweight aluminum vapor valve. The air-operated valve allows fast vapor flow during loading and unloading. The poppet is designed to open into the tank, preventing accidental leakage from product surges or from a tank truck rollover. Easy-to-use air line connections are located outside the compartment for convenient installation and maintenance. The 3.5-inch vapor valve comes with male NPT threads or a TTMA flange for installation in conventional 16- or 20-inch manholes.

Also available as an option is a Betts Vapor Vent Replacement Kit Hood Adapter to make replacing an existing Betts unit with an EBW unit as simple as possible.

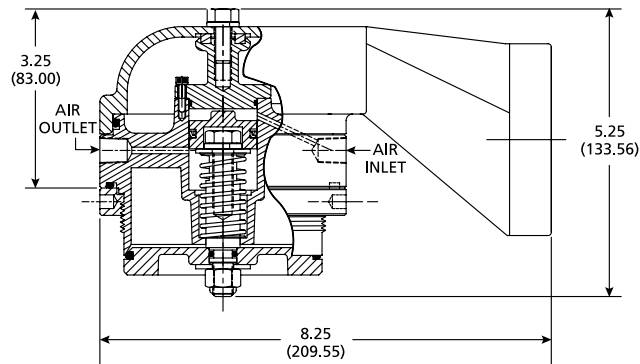
Features

- Lightweight aluminum body and hood.
- Fluorocarbon seal.
- TTMA specifications.

880-343-01



880-345-01

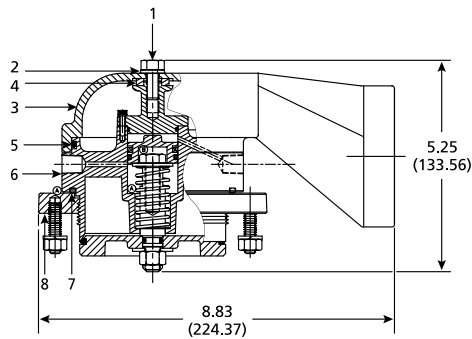


Dimensional drawings

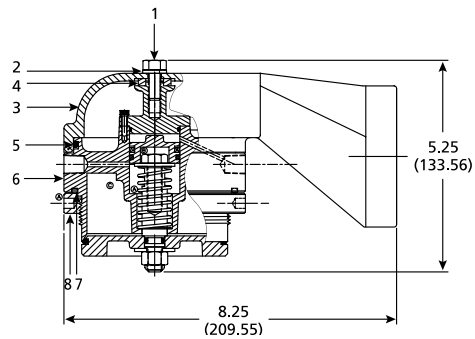


Air-Operated Sequential Vapor Valve Parts List

880-343-01



880-345-01



#	PART NAME	PART NUMBER	#	PART NAME	PART NUMBER
1	Hex Head Cap Screw	11176-18	5	O-ring Lube	11123-01
2	Stainless Steel Lockwasher Springs	11177-02	6	Sequential Vapor Valve Body Assembly	880-344-01
3	Vapor Recovery Valve Hood	880-378-02	7	O-ring	11003-26
4	Square Cut Seal Ring	11034-03	8	Mounting Assembly Flange	880-267-01

PART NUMBER	DESCRIPTION
880-341-01	Flanged without Hood for 16" Manhole
880-342-01	Threaded without Hood for 20" Manhole
880-343-01	Flanged with Hood for 16" Manhole
880-344-01	Vent Valve Only
880-345-01	Threaded with Hood for 20" Manhole
90067	Betts Adapter Kit

Part # 880-343-01



Part # 880-345-01



3" Compartment Vapor Valve for 20" Manhole

FEATURES AND BENEFITS

- **Unique piston design** allows highest flow rate in this size valve. 7.354 square inches of flow area.
- **Poppet** opens inward (into tank) to prevent leakage from product surges or from overturn of tank.
- **Lightweight aluminum** hood and low profile: 3-1/2" from top of manhole.
- **Tapered seat design** with Viton® O-ring seal provides leak tight seal.
- **Stainless steel** internal trim resists corrosion.
- **External** pneumatic connection.
- **Flanged model** installs easily into 20" manhole or separate 3" TTMA mounting ring.
- **Can be simply converted** to sequenced operation by removal of one plug.
- **Low temperature valve** for -40° applications.

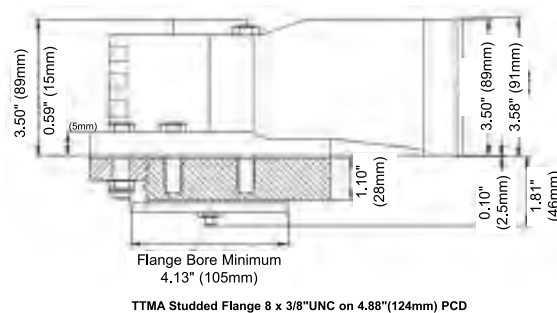


VAPOR VALVE

VARIANTS

PART NO.	DESCRIPTION	SEAL	WEIGHT
F592-101	3" TTMA, Optional Sequenced	Viton®	4.67 lbs.
F592-103	3" TTMA, Optional Sequenced Fluorosilicone	Viton®	4.67lbs.

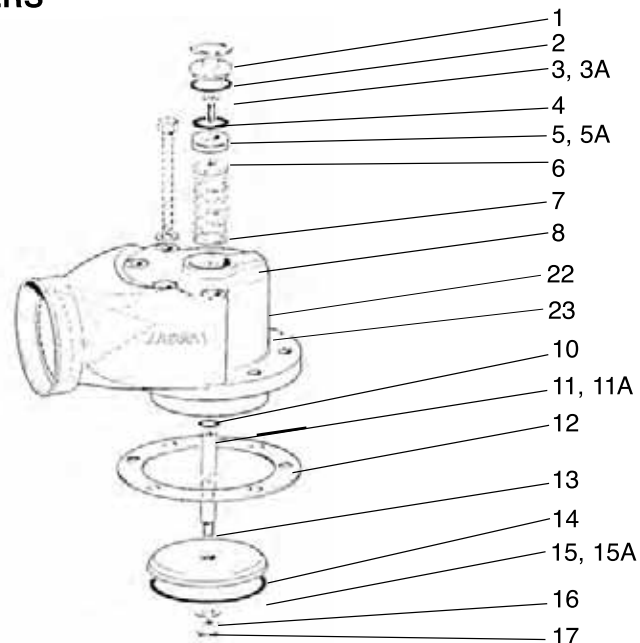
OVERALL DIMENSIONS



F592

3" Compartment Vapor Valve for 20" Manhole

DESCRIPTION AND PART NUMBERS



REF	DESCRIPTION	PART NO.	QTY
1	Circlip	618361	1
2	Plug	618357	1
3	O-Ring	618360	1
3A	O-Ring Fluorosilicone	619271	1
4	Screw M8 X 20 C'sk Soc	617358	1
5	Piston O-Ring	618359	1
5A	Piston O-Ring Fluorosilicone	619272	1
6	Piston	618356	1
7	Spring	618358	1
8	Body	619194	1
10	Washer Nytlite M10	615638	1
11	O-Ring	615224	1
11a	O-Ring Fluorosilicone	619274	1
12	Gasket	565872	1
13	Piston Rod	618355	1
14	Poppet	618354	1
15	Poppet O-Ring	565848	1
15A	Poppet O-Ring Fluorosilicone	670450	1
16	Washer Nytlite M8	615638	1
17	Nut Nylock M8	423109	1
19	Stud 3/8" UNC*	565850	8
20	Nut 3/8" UNC*	445577	8
21	Lock Washer 3/8" *	0185243	8
22	Plug 1/4" NPT	25104004	1
23	Swivel Elbow for Air Exhaust	82503320	1
	Seal Kit	619299	
	Seal Kit Fluorosilicone		
	* These items are not shown		

EMICO WHEATON™

LOADING & UNLOADING THE WORLD

3" Compartment Vapor Valve for 16" Manhole

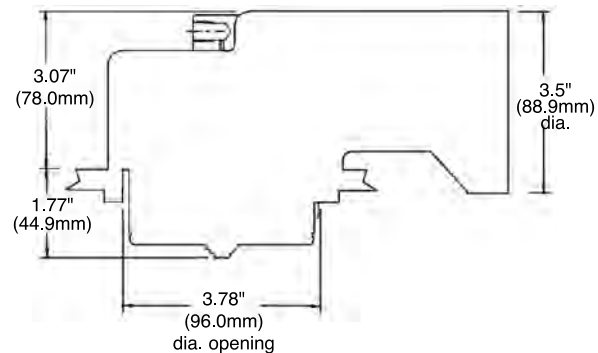
FEATURES AND BENEFITS

- **Unique piston design** allows highest flow rate in this size valve. 7.354 square inches of flow area.
- **Poppet** opens inward (into tank) to prevent leakage from product surges or from overturn of tank.
- **Lightweight aluminum hood** and low profile: 3-1/2" from top of manhole.
- **Tapered seat design** with Viton® O-ring seal provides leak tight seal.
- **Stainless steel** internal trim resists corrosion.
- **External** pneumatic connection.
- **Threaded model** installs easily into 16" manhole.
- **Can be simply converted** to sequenced operation by removal of one plug.
- **External vent** reduces risk of internal compartment pressure build up. Reduces product contamination of air cylinder.



VAPOR VALVE

OVERALL DIMENSIONS



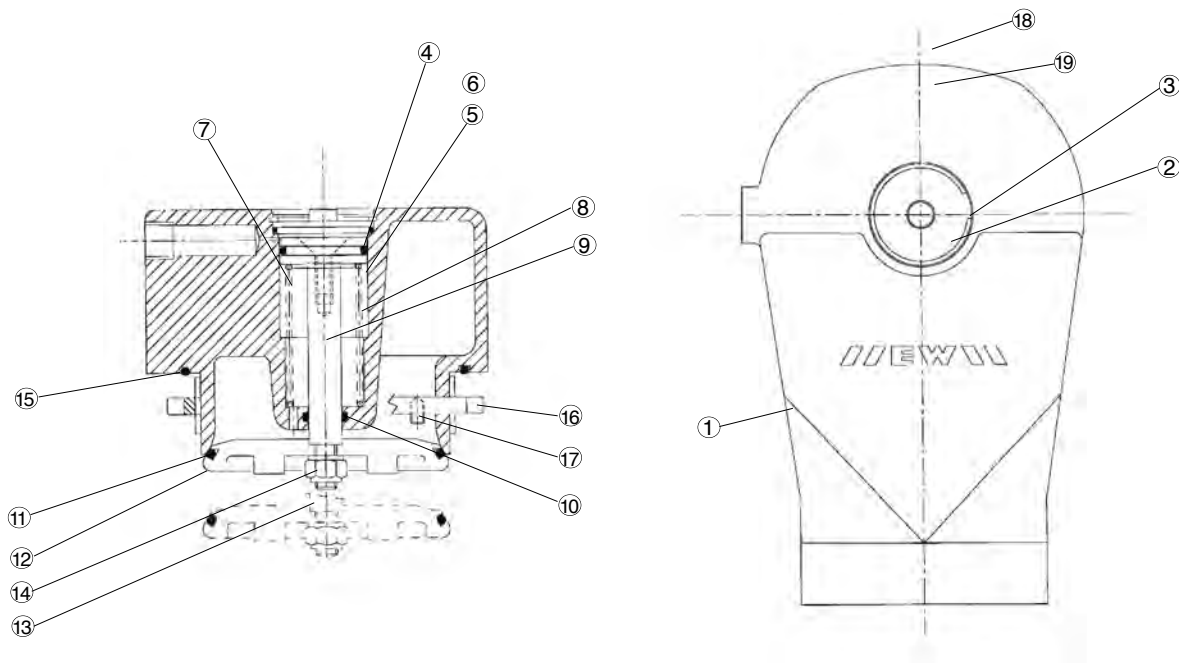
VARIANTS

PART NO.	DESCRIPTION	SEAL	WEIGHT
F592-301	3" TTMA, Optional Sequenced	Viton®	3.48 lbs.

F592

3" Compartment Vapor Valve for 16" Manhole

DESCRIPTION AND PART NUMBERS



ITEM NO.	DESCRIPTION	QTY.	PART NO. F592-301
1	Body	1	619717
2	Plug	1	618357
3	Circlip	1	618361
4	O-ring	1	618360
5	Screw, M8 x 20mm	1	617358
6	Piston	1	618356
7	O-ring, Piston	1	618359
8	Spring	1	618358
9	Piston Rod	1	618478
10	O-ring	1	615224
11	O-ring, Poppet, Viton®	1	618480
12	Poppet	1	618475
13	Seal Washer, M8	1	615638
14	Nut, Nylock, M8	1	423109
15	O-ring, Nitrile	1	618706
16	Ring Nut	1	618757
17	Screw, M5 x 10mm	1	618758
18	Air Exhaust Elbow (not shown)	1	825033204
19	Plug 1/4" NPT (not shown)	1	250104004
	Seal Kit	1	619190



LOADING & UNLOADING THE WORLD

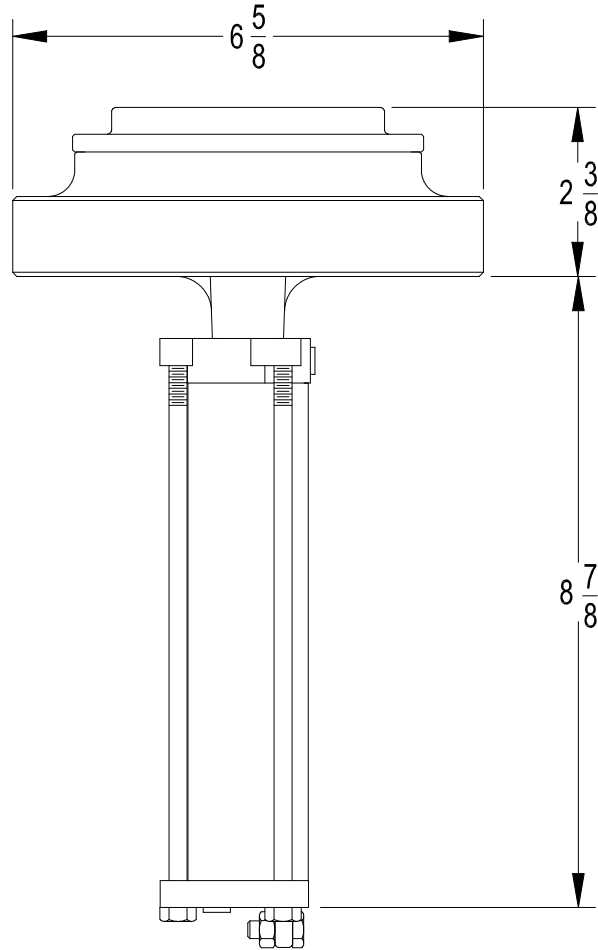
4" Surge Suppression Pressure Relief Valve

DUAL RATED MC306/DOT406

NO LIQUID LOSS AT IMPACT

ALUMINUM CONSTRUCTION

Pressure Relief Valve Setting 3.63 psig
Rated Pressure Actuated Emergency Venting: 142,203 Cu. Ft. Free Air per Hour @ 5.0 psig 181,828 Cu. Ft. Free Air per Hour @ 6.25 psig
Rated Liquid Flow Capacity 800 GPM @ 5.0 psig



Betts 4" Surge Suppression Pressure Relief Valve are designed to provide or augment the emergency venting capacity required for either MC306 or DOT406 specification cargo tanks. Because they release no liquid during the DOT specified pressure surge, the pressure relief valves exceed the requirements of 49 CFR 178.345-10(b)(3)(ii) which requires that pressure relief devices withstand a specified pressure surge with no more than one liter leakage.

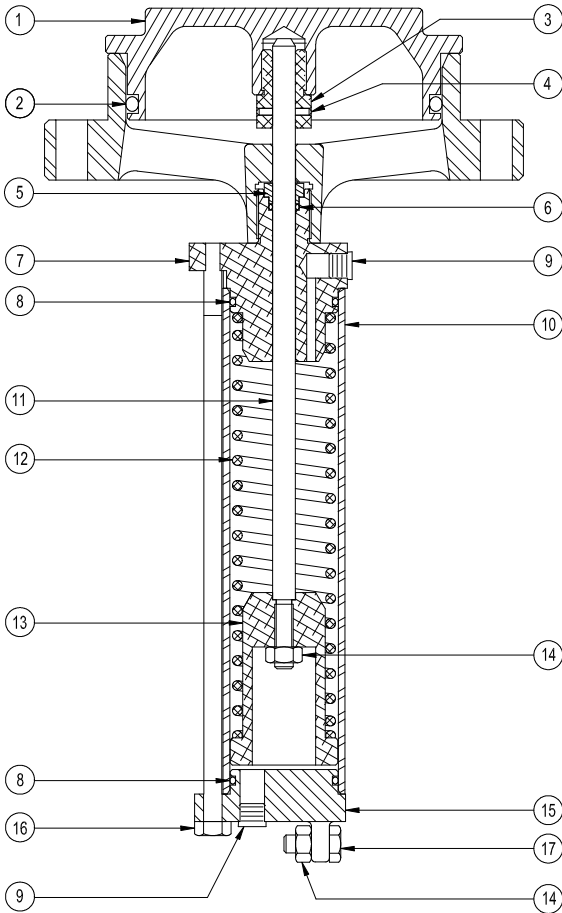
Model 8292ALTS mounts in a special 20" offset PAF manhole and model 8290ALTS mounts on either Betts model 6516 weld pad or a standard TTMA 4" weld flange. Both models are constructed of aluminum, stainless steel, zinc plated steel and Tef-Sil seals.

O-Ring Holder & Mtg. Flange	Stem	Bolts	Description	Wt.	Assembly No.
Aluminum	Stainless	Steel Zinc Plt.	For Mounting on Manhole	5.25#	8292ALTS
			For Mounting on Flange		8290ALTS

Aluminum w/ Stainless	Mounting Pad	2.5#	6516AL
Stainless	Mounting Pad	7.5#	6516SS

PARTS LIST

4" Surge Suppression Pressure Relief Valve



No.	Description	Req.	Material	Part No.
1	O-Ring Holder	1	Aluminum	6510ALEY
2	O-Ring (Seat)	1	Tef/Sil	19028TS
3	Stem Adapter	1	Aluminum	3985AL
4	Spring Pin	1	Stainless	9Q4921
5	O-Ring Retainer	1	Aluminum	3986ALEY
6	O-Ring (Stem)	1	Tef/Sil	18591TS
7	Top Cylinder Endplate	1	Aluminum	6512ALEY
8	O-Ring (Endplate)	2	Tef/Sil	18592TS
9	Pipe Plug $\frac{1}{8}$ NPT	2	Steel	9V4915
10	Cylinder Tube	1	Aluminum	3989AL
11	Stem	1	Stainless	3988SL
12	Spring	1	Steel	4068MS
13	Spring Holder (Piston)	1	Aluminum	3987AL
14	Locknut $\frac{1}{4}$ -28UNF	1	Steel	9Q5807
15	Bottom Cylinder Endplate	1	Aluminum	6513AL
16	Cylinder Bolt $\frac{1}{4}$ -28UNFx8"	3	Steel	9Q5053
17	Bolt $\frac{1}{4}$ -28UNFx $\frac{3}{4}$ "	1	Steel	9Q5823

* When ordering a replacement O-ring holder please add as a suffix to the 6510ALEY number, the model number of the unit on which the replacement O-ring holder is to be used.
 EXAMPLE: 6510ALEY-8292

INSTALLATION

4" Surge Suppression Pressure Relief Valve may be installed on manhole covers or flanged outlets having a $4\frac{1}{4}$ minimum I.D. and the 4" TTMA outlet flange drilling (8- $\frac{7}{16}$ holes on $5\frac{7}{8}$ B.C.). Adequate space should be provided to allow the O-ring holder to travel approx. $1\frac{1}{2}$ ". A static ground wire should be connected to the lug provided on the bottom of the cylinder.

NOTE: do not attach air or hydraulic lines to the $\frac{1}{8}$ NPT ports in the spring cylinder end plates. These ports are only intended for loading or draining the hydraulic oil contained in the spring cylinder.

MAINTENANCE

When bench testing valve, increase test pressure slowly in order to get an accurate reading of the set pressure. If pressure is applied to quickly, it will appear that the set pressure is too high. Note that valve cap must lift $\frac{1}{2}$ " before valve opens.

If it is necessary to replace the seat O-ring #2 first remove pipe plugs #9 and drain oil from the cylinder #10. Remove cylinder #10 by removing cylinder bolts #16. Compress spring to where O-ring holder #1 is free to be unscrewed from stem adapter #3. Replace O-ring #2 and reassemble.

Replace oil in cylinder using Kendall Hyken Glacial Blu Hydraulic Fluid, or if unavailable, a high quality SAE 5W-10W oil with viscosity of 90 SUS at 100°F and a pour point of no greater than -50°F. Set valve in an upright position and force oil into lower port until it starts to flow out the upper port. Reinstall pipe plugs.

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of the Valve.



Oct 1995

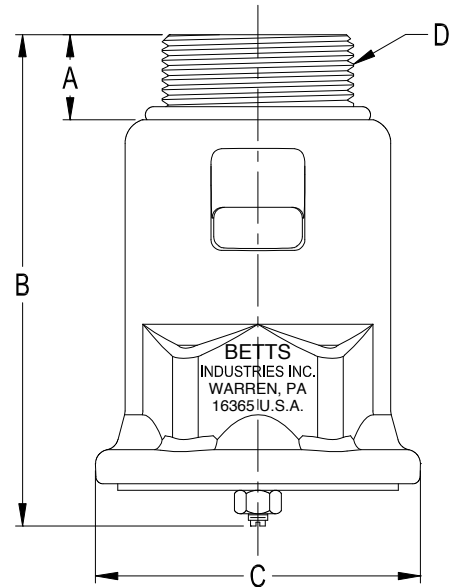


PRESSURE / VACUUM NORMAL VENT

- Dual Purpose Vent
- Roll Over Protection
- Compact Design
- Interior Mount

A normal vent designed for use on MC306 & DOT406 cargo tanks. Model 6496 has a pressure setting per 178.346-3(b)(2) of “not less than 1 PSIG” and a vacuum setting per 178.346-3(c)(2) “no more than 6 ounces” which allows for efficient recovery of vapors during closed system loading and off-loading. Unique roll over protection retains product at any attitude of rollover. Vent is flow tested and marked.

NOTE: While normal vents provide limited vapor venting during loading/unloading, it is recommended that positive vapor valves (typically air operated) be provided when loading/unloading with the manhole closed. If positive vapor valves are not used, insure normal vent is functioning properly or open manhole cover before beginning loading/unloading. Failure to do so may result in head reversals or other tank failure.



See Section 95 Page 1D for parts list and maintenance instructions.

Description	Assembly No.	Body Mat'l	Set Pressure**		Flow Capacity		Dimensions				Wt. (lbs).
			Pressure (psig)	Vacuum (psig)	Out-breathing	In-breathing	A	B	C	D (Threads)	
FVA MC306 Normal Vent	6238AL*	Alum.	0.8 to 1.0	0.25 to 0.375	1,750 CF @ 3 psi	3,350 CFH @ 1 psi	.72"	4.16"	2.75"	1 ⁵ / ₈ -12UN	1.0 lb.
	6238SL*	303 SS									2.5 lb.
PPV DOT406 Normal Vent	6496AL*	Alum.	1.0 to 1.5	0.25 to 0.375	1,200 CFH @ 3 psi	3,350 CFH @ 1 psi	.72"	4.16"	2.75"	1 ⁵ / ₈ -12UN	1.0 lb.
	6496SL*	303 SS									2.5 lb.

Letter	Mat'l	Temp. Range
B	Buna-N	-40°F to +220°F
V	Viton®	-20°F to +400°F
EP	EPDM (Black)	-40°F to +260°F

* Add letters to part number to designate seal material. See material table at right for designation.

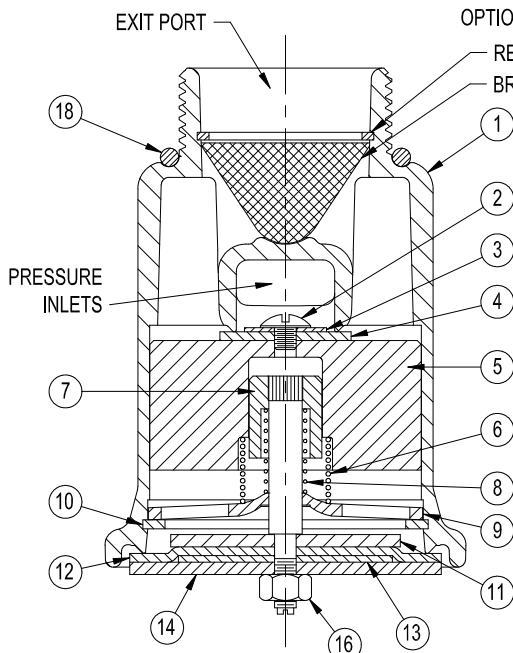
** Proper maintenance is required to ensure effective performance of normal vent. Dust, dirt, or residue will reduce the ability of the vent to hold required set-pressure.



July 2004

Parts List

Pressure/Vacuum Normal Vent



Inspection & Maintenance

Per TTMA Technical Bulletin No. 92 "Inspect pressure relief valves and normal pressure/vacuum valves with sufficient frequency, but no less than once a month, to insure they are operational. Corroded parts must be replaced. Valves that are filled with residue must be cleaned. If venting devices are not operational, do not operate the cargo tank until the venting devices are repaired or replaced. Failure to follow this procedure can result in liquid or vapor leakage and tank damage."

To inspect vent, remove from tank and check for obstructions in the exit port and pressure inlets. Shake vent to ensure roll-over guide block (#5) slides freely up and down. The vacuum disc (#14) is spring-loaded and should open approximately 1/8" to expose vacuum seat when the hex nut (#16) is gripped with a pair of pliers and pulled directly down.

Dirt and residue can be cleaned from the vent by soaking in mild detergent, rinsing with clean water, and blowing out with compressed air.

For more detailed instructions refer to the most recent version of Engineering Bulletin 1-99

No.	Req.	Description	Material	Part No.
1	1	Vent Body	Aluminum	7516AL001
			303 SS	7533SL
2	1	#8-32 Truss Hd. Mach. Screw	304 SS	9Q8216
3	1	Pressure Disc Retainer Washer	Nylon	3645NY
4	1	Pressure Seal Disc	Buna-N	3644BN
			Viton®	3644VT
			EPDM	3644EP
5	1	Roll-Over Guide Block	303 SS	3640SL
6	1	Pressure Relief Spring for 6496 (DOT406)	302 SS Coated Black	3812SL
		Pressure Relief Spring for 6238 (MC306)	302 SS Coated Blue	3725SL
7	1	Spring Collar Assembly	304 SS	3643SL
8	1	Vacuum Relief Spring	302 SS	3653SL
9	1	Retainer Plate	Aluminum	3649AL
			316 SS	3649SS
10	1	Retaining Ring	Steel Zc. Plt.	9Q8206
			Stainless	9Q8207
11	1	Vacuum Disc Retainer Washer	Aluminum	3647AL
			316 SS	3647SS
12	1	Vacuum Seal Disc	Buna-N	3646BN
			Viton®	3646BN
			EPDM	3646EP
13	1	Vacuum Spacer Washer	Nylon	3675NY
14	1	Vacuum Disc Support & Rating Plate For 6496 (DOT406)	Aluminum	3969AL
			316 SS	3969SS
		Vacuum Disc Support & Rating Plate For 6238 (MC306)	Aluminum	3648AL
			316 SS	3648SS
16	1	Hex. Nut with Nylon insert #8-32 Thd.	Steel Zc. Plt.	9Q8220
			304 SS	9Q9348
18	1	Mounting O-Ring	Buna-N	17211BN
			Viton®	17211VT
			EPDM	17211EP

3795RK* - Repair kit for 6238AL* } Kits include item #'s
 4141RK* - Repair kit for 6496AL* } 2,3,4,6,8,12,13,14,16,&18

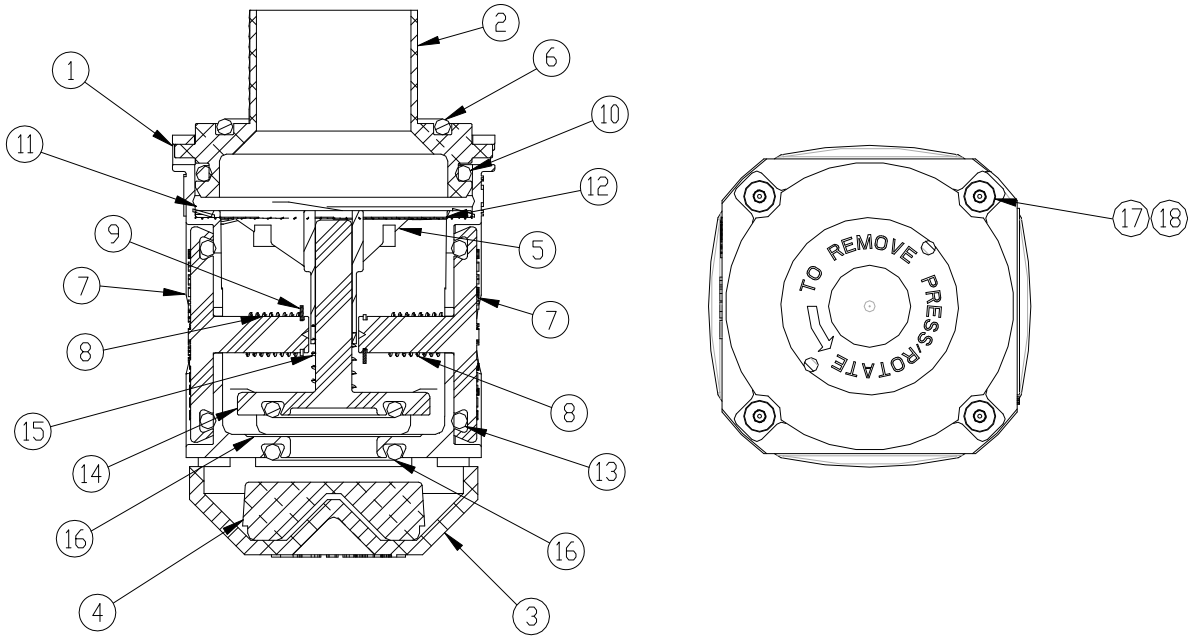
* Add letters to part number to designate seal material. See table in Section 95 Page 1C.

WARNING: Use only Betts Industries, Inc replacement components. Use of substitute parts can impair the proper function of this product and void all warranties.



NV3000 Pressure Vacuum Vent

PARTS BREAK DOWN

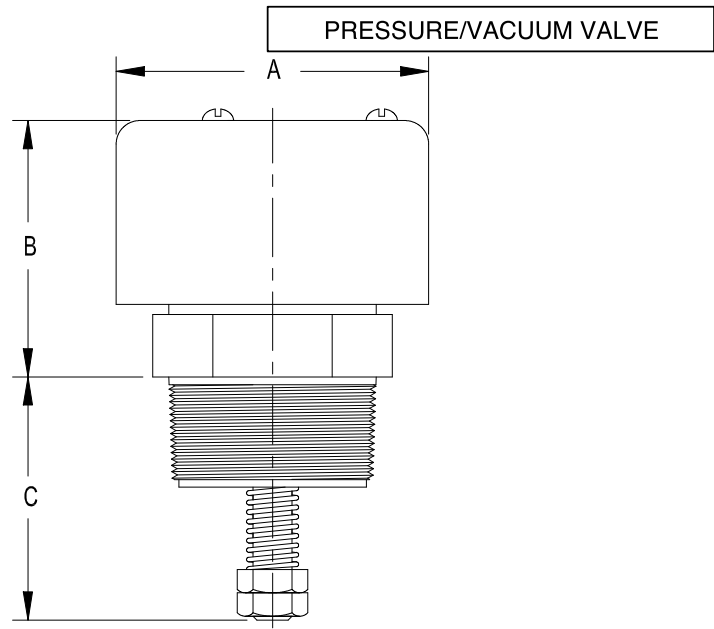


ITEM	PART NUMBER	DESCRIPTION	QTY.
1	H71323	BODY, MACHINED	1
2	H71322	TOP ENCLOSURE	1
3	H71321	HOUSING SHUTOFF	1
4	6461	DISK SHUTOFF	1
5	H71325	POPPET GUIDE	1
6	6479	O-RING	1
7	H71327	VACUUM POPPET	2
8	H71328	VACUUM SPRING	2
9	H71329	RETAINING CLIP	2

ITEM	PART NUMBER	DESCRIPTION	QTY.
10	H71335	O-RING	1
11	H71324	FLAME ARRESTOR	1
12	11745	WAVE SPRING	1
13	11943	O-RING	2
14	H71326	PRESSURE POPPET	1
15	H71330	PRESSURE SPRING	1
16	9428	O-RING	2
17	H71401	SCREW	4
18	11851	LOCK WASHER	4



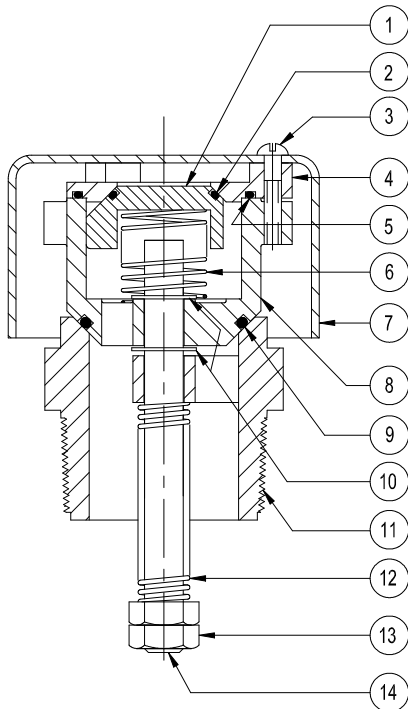
The all new pressure/vacuum valve is designed to provide the pressure relief and inbreathing needed for many types of containers. Valves are available with various pressure settings and are flow tested and marked.



	Thru Area	Set Pressure	1 PSIG	1.5 PSIG	2 PSIG	5 PSIG	7 PSIG	9 PSIG
Inbreathing	.44 sq. in.	3 oz.	1350 cfh	1800 cfh	2200 cfh	NA	NA	NA
Outbreathing	.80 sq. in.	3 PSIG	NA	NA	NA	13,750 cfh	16,250 cfh	18,200 cfh
		* 5 PSIG	NA	NA	NA	NA	15,500 cfh	17,800 cfh

* For Valve with 5 PSIG setting add: suffix 239 to Assembly No.

Material			Thread Size	Dimensions			Wt.	Assembly No.
Body	Vac. Disc	Seals		A	B	C		
316 Stnls.	Teflon	Viton	1 1/4 NPT	2 1/4	2 1/4	1 3/4	19oz.	6460SSV *



PARTS LIST

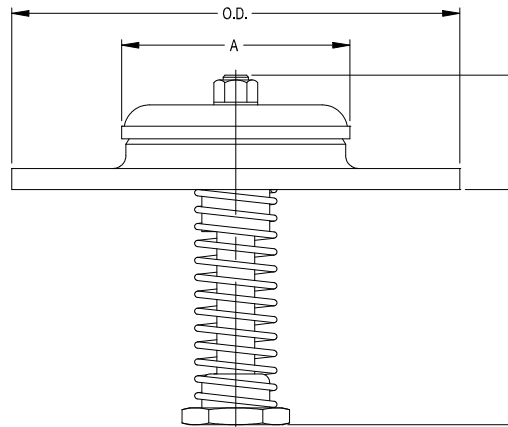
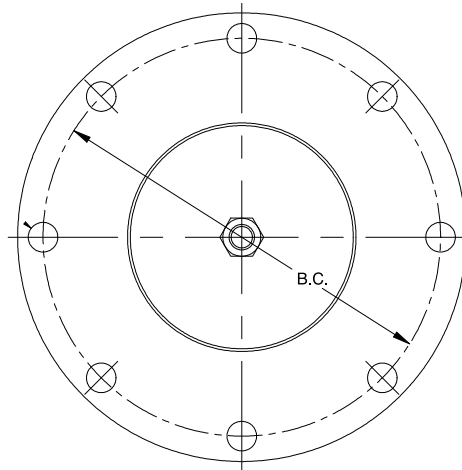
No.	Req.	Part No.	Description
1	1	3922TG	Vacuum Valve
2	1	3926VT	O-Ring
3	3	9Q5842	#6-32 Rd. Hd. Mach. Screw
4	1	3923SS	Vacuum Valve Retainer
5	1	3943VT	O-Ring
6	1	3933SS	Spring
7	1	3925SS	Cap
8	1	3921SS	Pressure Valve
9	1	3357VT	O-Ring
10	2	9Q4957	Retaining Rings
11	1	3920SS	Body
12	1	3307SS	Spring-3# Setting
12a		3558SS	Spring-5# Setting
13	2	9Q5859	5/16-18UNC-3B Hex. Nut
14	1	3924SS	Stem

Vents

VAPOR SYSTEM VENT

Outbreathing Vent

EASILY INSTALLED
ADDS TANK PROTECTION
THRU AREA - SIX SQUARE INCHES



Dimensions

A	B	C	Mounting Flange				Disc Travel
			O.D.	B.C.	N.H.	S.H.	
3 ³ / ₈	1 ¹¹ / ₁₆	3 ¹ / ₄	6 ⁵ / ₈	5 ⁷ / ₈	8	7 ⁷ / ₁₆	2"

Opening Pressure: 1 psig

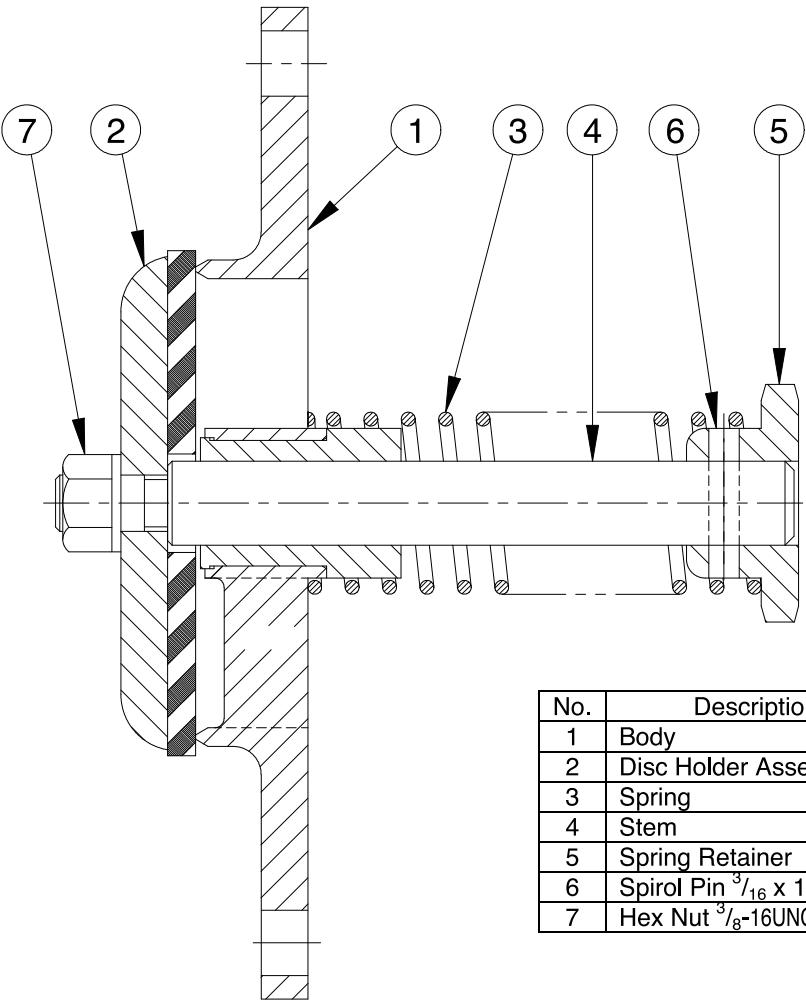
Venting Capacity Air:
 51,000 cu. ft. hr./3 psig

A supplemental vent designed for installation in tank vehicle vapor recovery system to provide venting protection in the event the vapor recovery system should be closed or blocked while bottom loading. This vent mounts to a 4" TTMA flange.

Description	Material	Wt.	Assembly No.
Vent Assembly	Aluminum/Stainless with Buna-N Disc	1.5	PV26363 AL B
Gasket	Cork-Buna-N		RGA 401-CB

PARTS LIST

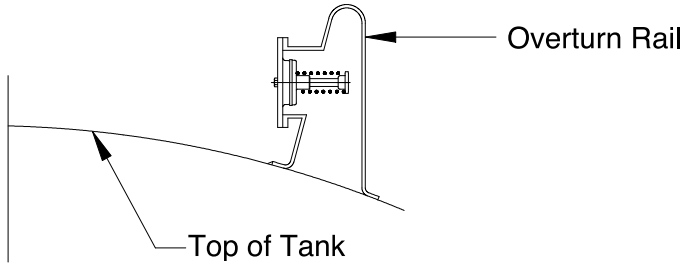
VAPOR SYSTEM VENT



No.	Description	Req'd.	Material	Part No.
1	Body	1	Aluminum	26382AL
2	Disc Holder Assembly	1	Alum/Buna-N	17210AB
3	Spring	1	Steel "E" Coated	17192EY
4	Stem	1	Stainless	17204SL
5	Spring Retainer	1	Aluminum	17051AL
6	Spirol Pin ³ / ₁₆ x 1	1	Stainless	9Q5901
7	Hex Nut ³ / ₈ -16UNC-2A Thd.	1	Stainless	9Q5809

INSTALLATION

Vent is designed to bolt to a standard 4" TTMA outlet flange. Care should be taken to provide adequate space for the spring end of the vent.



NOTE: The above is not intended to be a recommendation that overturn rails be used for conduits in vapor recovery system or that vent must be mounted as shown. It merely shows one type of mounting to illustrate that clearance is needed for the spring end of vent to insure proper operation.

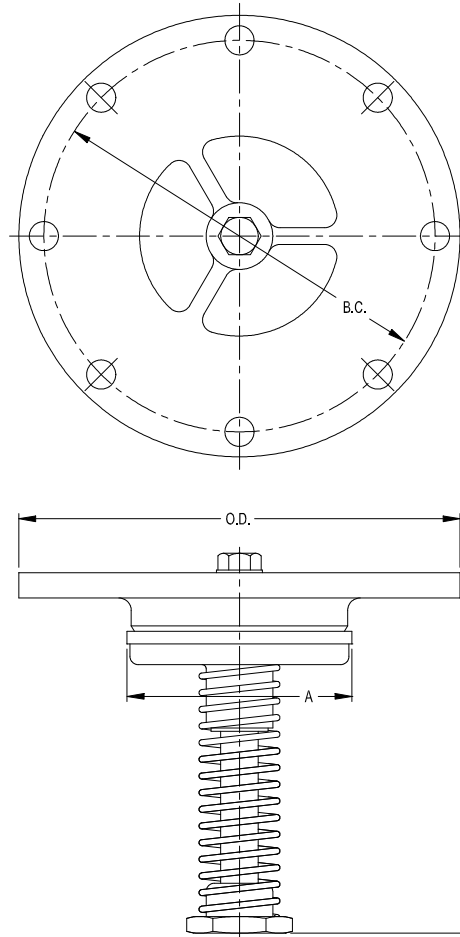
WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of the Vent.

Vents

VAPOR SYSTEM VENT

Inbreathing Vent

EASILY INSTALLED
ADDS TANK PROTECTION
THRU AREA - SIX SQUARE INCHES



Opening Pressure: 6 oz. per sq. in.
 Venting Capacity Air:
 12,000 cu. ft. hr./1 psig

Dimensions

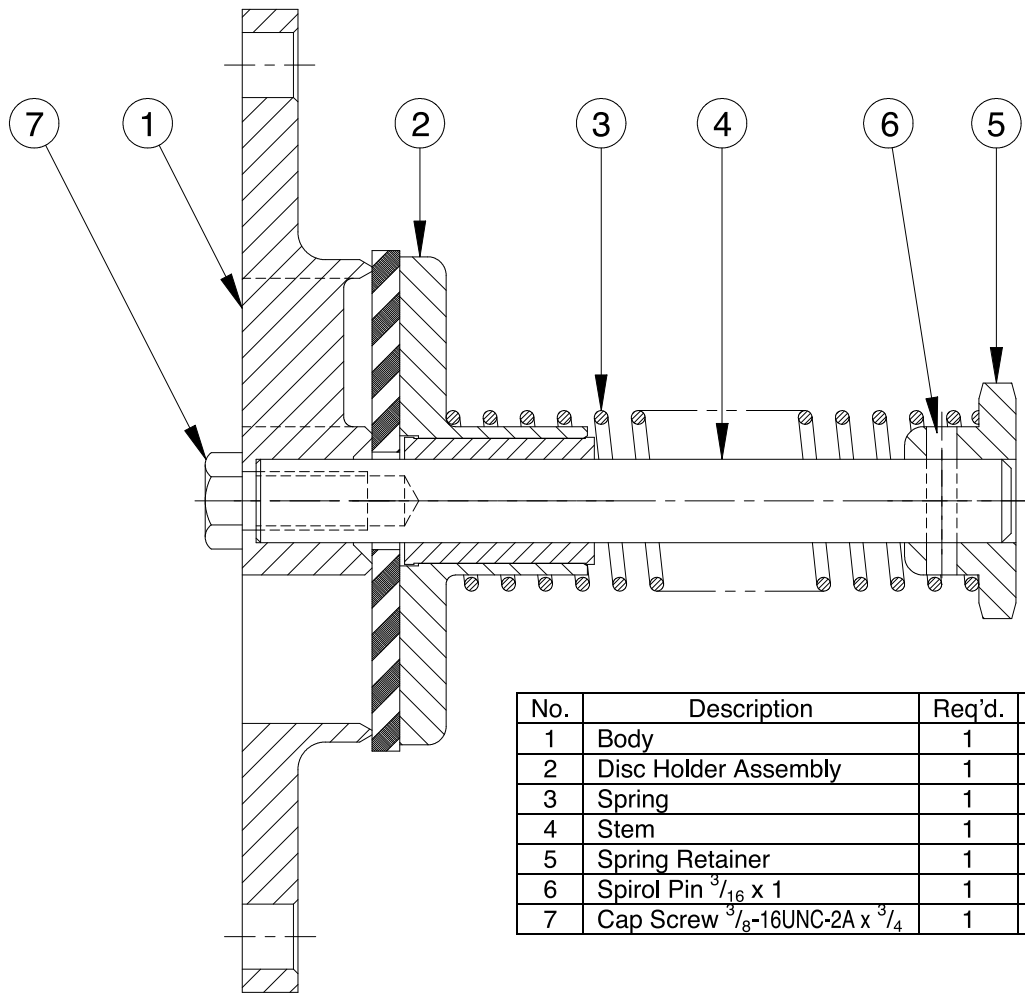
A	B	C	Mounting Flange				Disc Travel
			O.D.	B.C.	N.H.	S.H.	
3 ³ / ₈	5 ⁵ / ₈	4 ¹³ / ₁₆	6 ⁵ / ₈	5 ⁷ / ₈	8	7 ⁷ / ₁₆	2"

Note: When vent is mounted in tubing, a 4³/₈ Minimum I.D. is required to provide sufficient area around disc holder assembly.

A supplemental vent designed for installation in tank vehicle vapor recovery system to provide venting protection in the event the vapor recovery system should be closed or blocked while discharging product from the tank. This vent mounts to a 4" TTMA flange.

Description	Material	Wt.	Assembly No.
Vent Assembly	Aluminum/Stainless with Buna-N Disc	2.0	PV26364-AL-B
Gasket	Cork-Buna-N		RGA 401-CB

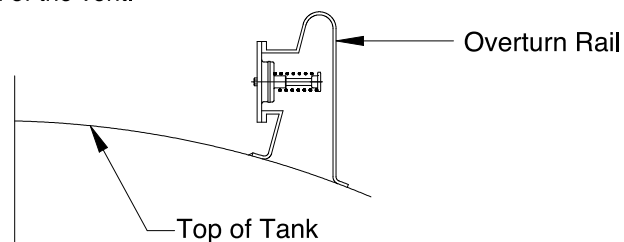
PARTS LIST

VAPOR SYSTEM VENT

No.	Description	Req'd.	Material	Part No.
1	Body	1	Aluminum	26381AL
2	Disc Holder Assembly	1	Alum/Buna-N	17209AB
3	Spring	1	Steel "E" Coated	17192EY
4	Stem	1	Stainless	17205SL
5	Spring Retainer	1	Aluminum	17051AL
6	Spirol Pin $\frac{3}{16} \times 1$	1	Stainless	9Q5901
7	Cap Screw $\frac{3}{8}$ -16UNC-2A $\times \frac{3}{4}$	1	Stainless	9Q5884

INSTALLATION

Vent is designed to bolt to a standard 4" TTMA outlet flange. A minimum $4\frac{3}{8}$ " I.D. should be provided to allow sufficient venting area between the O.D. of disc holder and I.D. of mounting. Care should be taken to provide adequate space for the spring end of the vent.



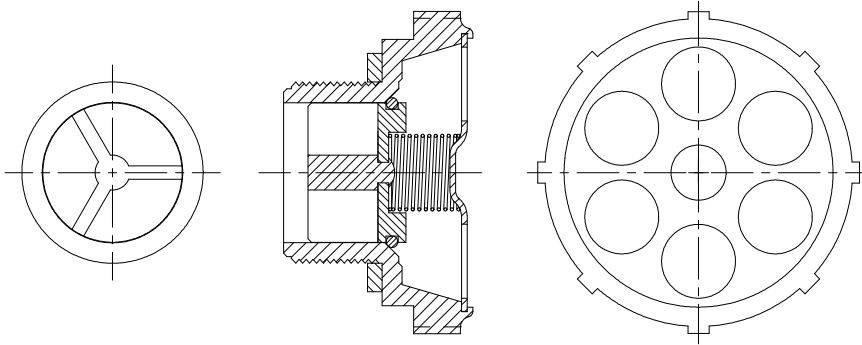
NOTE: The above is not intended to be a recommendation that overturn rails be used for conduits in vapor recovery system or that vent must be mounted as shown. It merely shows one type of mounting to illustrate that clearance is needed for the spring end of vent to insure proper operation.

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of the Vent.

Betts[™]
INDUSTRIES, INC.
WARREN, PA.

Feb 1993

INBREATHING VENT – 1⁵/₈-12 THD.



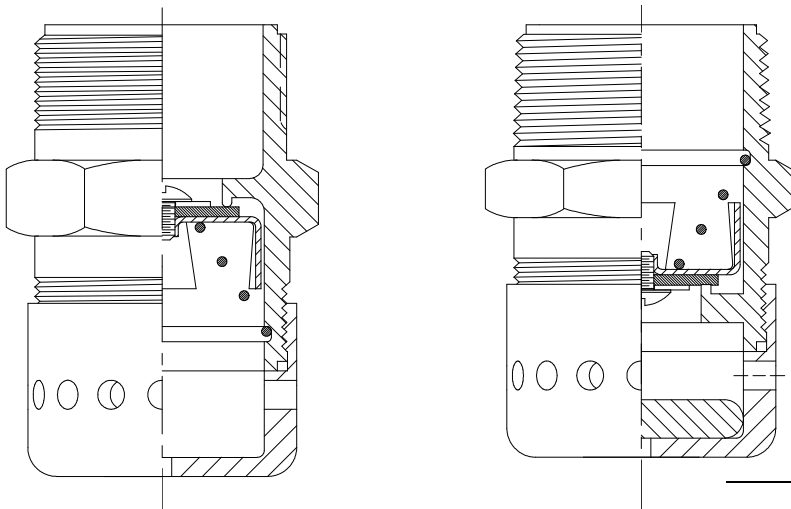
Designed to supplement the 6238AL vent to provide additional inbreathing capacity when required. This vent may be used singly or in multiples according to requirements.

NOTE: While this vent does provide additional inbreathing capacity, it is recommended that positive vents, which will open with the emergency valve, be provided when discharging product with the manhole closed.

	Thru Area	Capacity at 1 PSIG
Inbreathing	1.00 sq. in.	4000 cu. ft. hr.

Material			Thread Size	A	Wt.	Assembly No.
Body & O-Ring Holder	O-Ring	Spring				
Aluminum	Viton	Stnls. 316	1 ⁵ / ₈ -12	1 ¹¹ / ₁₆	4.5 oz.	6234AL

COMBINATION VENT PACKAGE



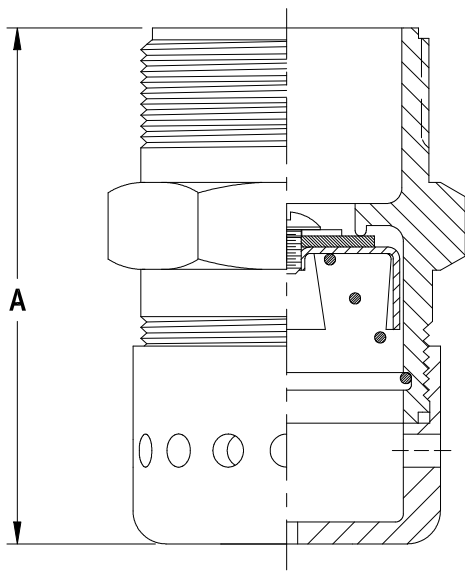
VENT PACKAGE

Combination Vent Packages, consisting of Tiona's all new single-purpose vents, are available for all combination manholes with fill. Each vent provides 0.44 sq. in. of venting area. They are easily cleaned, have high capacity, and are available in a variety of materials. These vents have been flow tested and marked in accordance with Nat. Fire Protection Assn. No. 385 (1964) Par. 2263 and No. 407 (1964) Par. 616.

	Thru Area	Capacity
Inbreathing	0.44 sq. in.	1750 cu. ft. hr. @ 1 PSIG
Outbreathing	0.44 sq. in.	3285 cu. ft. hr. @ 3 PSIG

Material	Combination Vent Package Includes	Wt.	Symbo
Aluminum	1-No. 3006 Intake Vent with 1 ⁵ / ₈ -12 Thread 1-No. 3008 Exhaust Vent with 1 ¹ / ₄ I.P.S. Thread	7.5 oz.	CVA
Stnls. 316	1-No. 3052 Threaded Opening and Weatherhood	19.3 oz.	CVD

INBREATHING VENT – 1⁵/₈-12 THD.

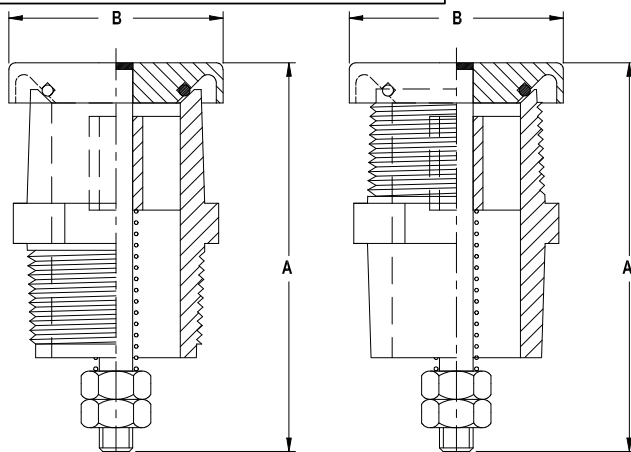


S.P. INBREATHING 1⁵/₈-12
 This vent is to be used with Exhaust Vent No. 3008, as shown on Page 87-1. Vent is installed under fill cover; protected from weather and damage. Vent is easily cleaned and available in a variety of material. This vent has been flow tested and marked in accordance with Nat. Fire Protection Assn. No. 385 (1964) Par. 2263 and No. 407 (1964) Par. 616.

	Thru Area	Capacity at 1 PSIG
Inbreathing	0.44 sq. in.	1750 cu. ft. hr.

Material			Thread Size	A	Wt.	Symbol	Assembly No.
Body	Spring	Disc					
Alum.	Stnls. 316	Viton	1 ⁵ / ₈ -12	2 ¹⁵ / ₁₆	3.0 oz.	SPA	3006-ALV
Stnls. 316	Stnls. 316	Viton			7.7 oz.	SPS	3006-SSV

PAV-125 EMERGENCY VENT



EXTERIOR

INTERIOR

This Pressure-Actuated Vent is rated at 10,000 cubic feet of air per hour at 5 PSIG. It is designed to provide the pressure-actuated emergency venting as required by DOT MC-306, NFPA No. 385, and No. 407. This model may be installed from the tank exterior in such devices as manhole covers or pipe caps. The PAV 125 has been flow tested and marked in accordance with DOT MC-306 Par. 178.341-4(e), NFPA 385 Par. 2263, and NFPA 407 Par. 616.

RATED CAPACITY @ 5 PSIG-10,000 cu. ft. hr.

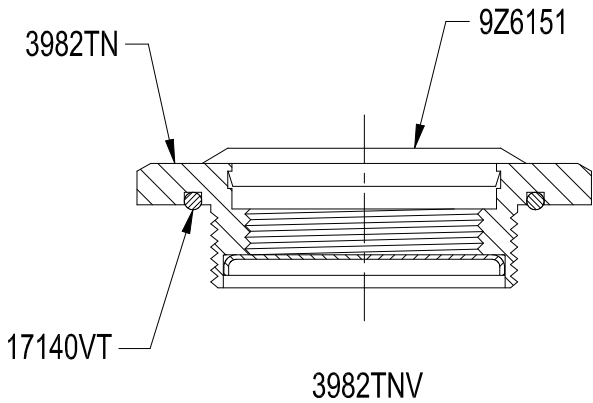
NOTE: To provide a proper load on disc, spring should be loaded to length of 1⁵/₈ inches.

Material			Thread Size	Dimensions		Wt.	Assembly No.	
Body	Disc	Trim		A	B			
Aluminum Stnls. 316	Viton	Stnls. 316	1 ¹ / ₄ I.P.S.	3 ³ / ₄	2	8 oz.	Interior	3350-ALV
						18 oz.		3350-SSV
Aluminum Stnls.316	Viton	Stnls. 316	1 ¹ / ₄ I.P.S.	3 ³ / ₄	2	8 oz.	Exterior	3338-ALV
						18 oz.		3338-SSV



EMERGENCY DRAIN PLUG

Emergency Drain Plugs provide a place to install a 1 1/2 N.P.T. pipe for the emergency unloading of an overturned tank. When a 1 1/2 N.P.T. pipe is screwed into this plug a disc is forced out of the way allowing product to travel through the 1 1/2 pipe. Shut off valves or hose connections to control product flow are at the option of the user.



Note: Manhole assemblies produced after Sept 1, 1992 that were ordered with the Emergency Drain Plug have the threaded ring welded to the underside of cover.

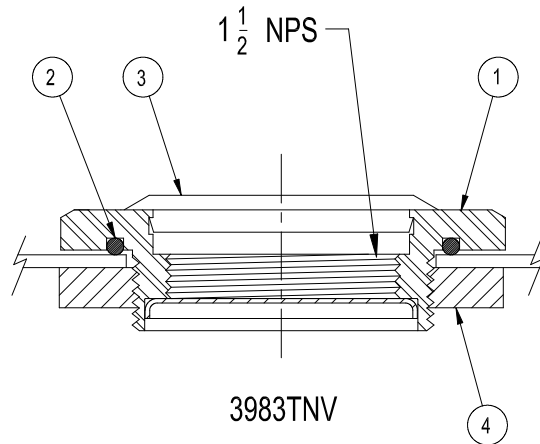
Sub Assembly 3982TNV includes the following:

Description	Material	External Thd.	Internal Thd.	Wt.	Part No.
Emergency Drain Plug	Steel Tin Plated	2" NPS	1 1/2 NPS	10 oz.	3982TN
O-Ring	Viton				17140VT
Cap Plug	Polyethylene				9Z6151

Retrofit Kit is also available for use on manhole which had the Emergency Drain Plug and were produced prior to Sept. 1992. These assemblies did not have a threaded ring welded to the underside of the cover.

Retrofit Kit 3983TNV includes the following:

	Description	Material	Part No.
1	Emergency Drain Plug	Steel Tin Plated	3982TN
2	O-Ring	Viton	17140VT
3	Cap Plug	Polyethylene	9Z6151
4	Retainer Nut	Steel Tin Plated	3980TN



Instructions for using Emergency Drain Plugs
 Remove cap plug 9Z6151. Install 1 1/2 N.P.T. pipe nipple with control valve on end. This operation will force a soldered in disc out of the way allowing product to flow through 1 1/2 nipple.

Emission Collection Hood

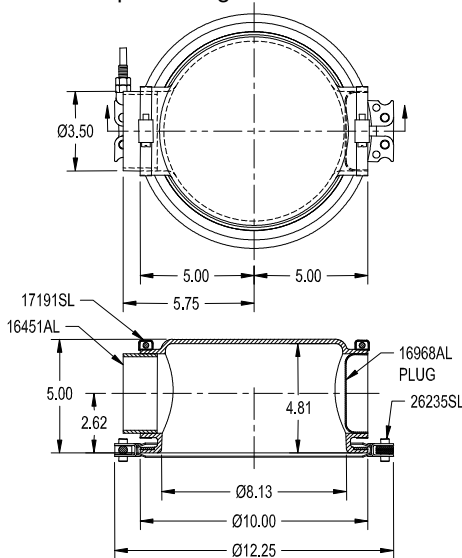
VENT ACCESSORIES

Use with Betts Push Type or Air Operated Vapor Valves

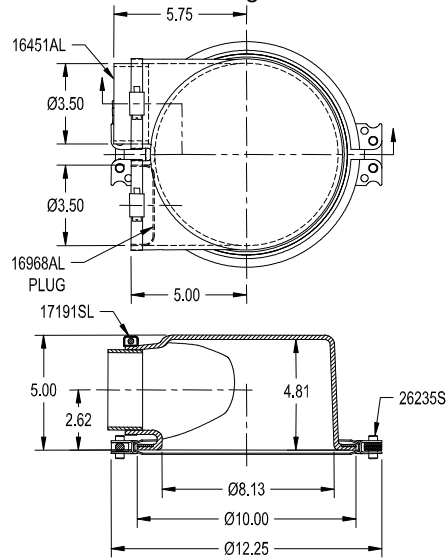
The Betts emission collection hood provides an economical means of connecting the positive vapor vent to the vapor rail. The hoods are made of ozone and ultraviolet resistant nitrile and are designed to collapse in case of rollover without adversely affecting the product retention of the cargo tank. The hoods for the 5" valve are provided with two outlets and one of them is plugged with an aluminum end cap. Hoods are available less the mounting clamp with suffix "001" added to the end of the assembly number.

Hoods for 5" Valve

VR45725BU – Vapor hood with provisions for two outlets 180° apart. Weight 3.7 lbs.

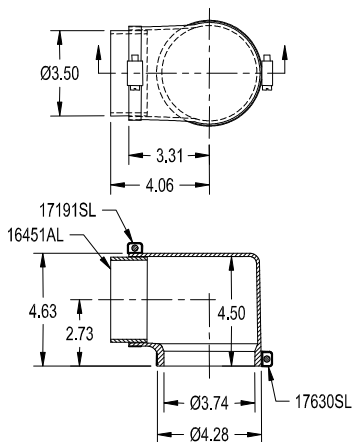


VR45742BU – Vapor hood with provisions for two outlets on same side. Weight 3.7 lbs.



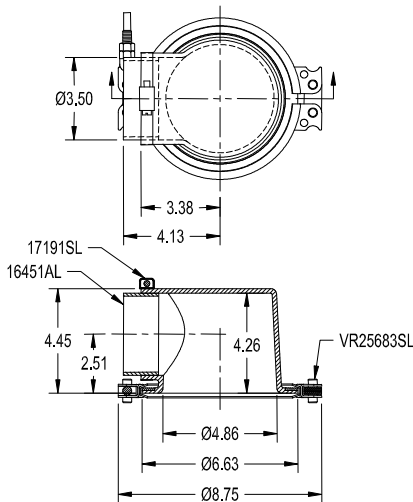
Hood for 3 1/2" Threaded Style

VR45962BU – Weight 1.0 lbs.



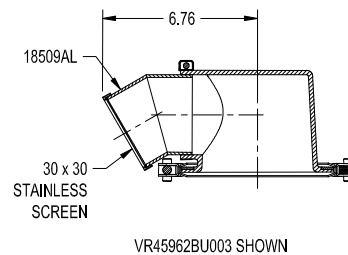
Hood for 3 1/2" Bolted Style

VR45784BU – Weight 2.3 lbs



Optional 30° Screened Outlet

Add suffix "003" to end of assembly number.



Vapor Recovery Hood (Obsolete Item)

FEATURES AND BENEFITS

- **Used with F265 vents** to convert mechanical vent to vapor recovery.
- **Two 3" outlets**, 90° apart for flexibility of connection to vapor header or roll-over rail.
- **Collapsible hood.**

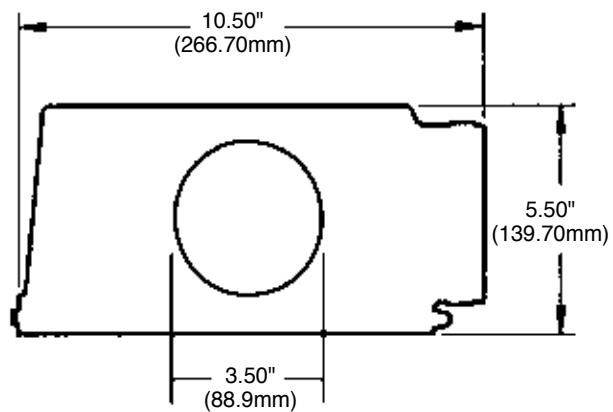


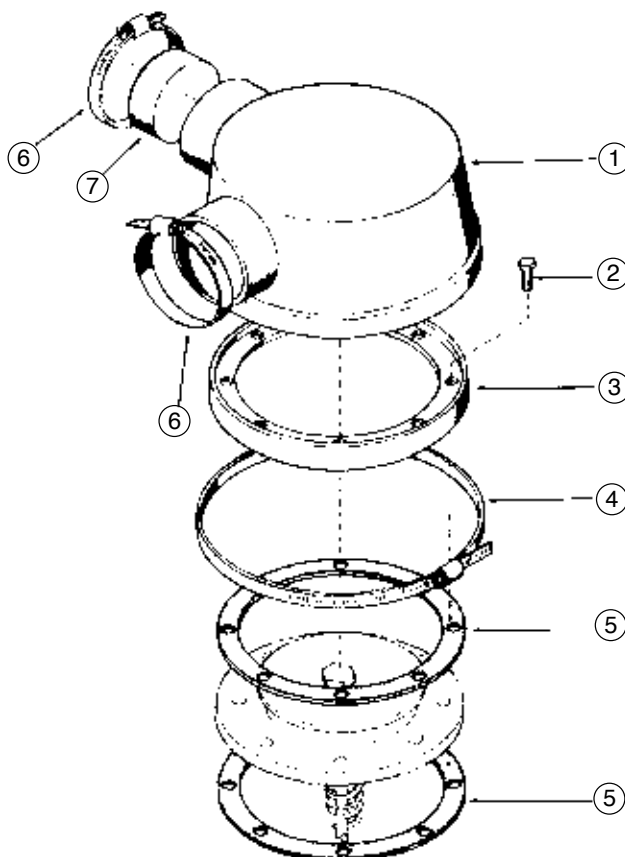
VAPOR RECOVERY HOOD

VARIANTS

PART NO.	DESCRIPTION	WEIGHT
F270-901	Vapor Hood - 5"	3.25 lbs.

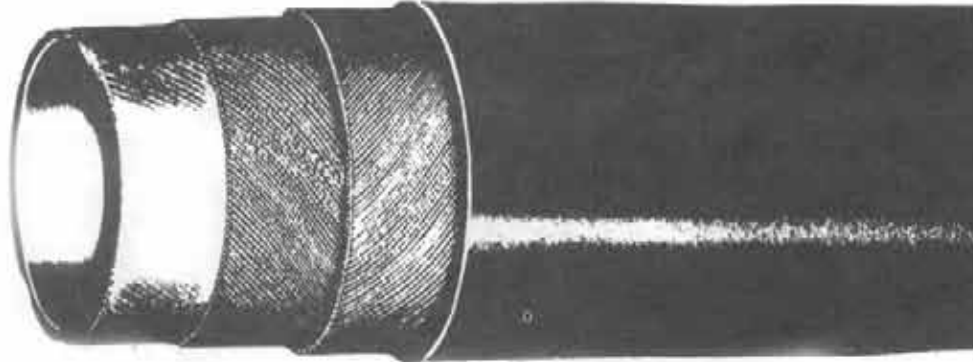
OVERALL DIMENSIONS



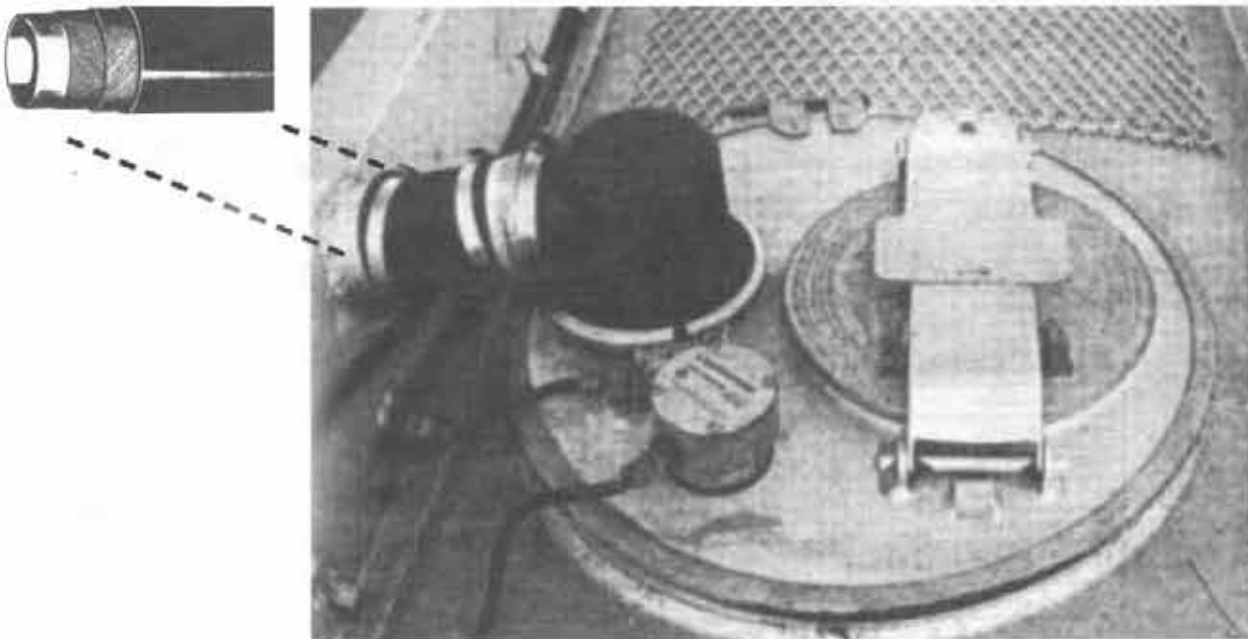
F270**Vapor Recovery Hood (Obsolete Item)****DESCRIPTION AND PART NUMBERS**

ITEM NO.	DESCRIPTION	QTY.	PART NO. F270-901 5"	MATERIAL
1	Vapor Recovery Hood	1	408479	Buna
2	Hex Head Screws	8	405766	Steel
3	Adapter	1	561446	Aluminum
4	Band	1	408949	Stainless Steel
4	Clamp	1	451678	Stainless Steel
5	Gasket	2	443543	Corprene
6	Clamps	2	408480	Stainless Steel
7	Plug	1	408481	Aluminum

VAPOR RECOVERY HOOD HOSE

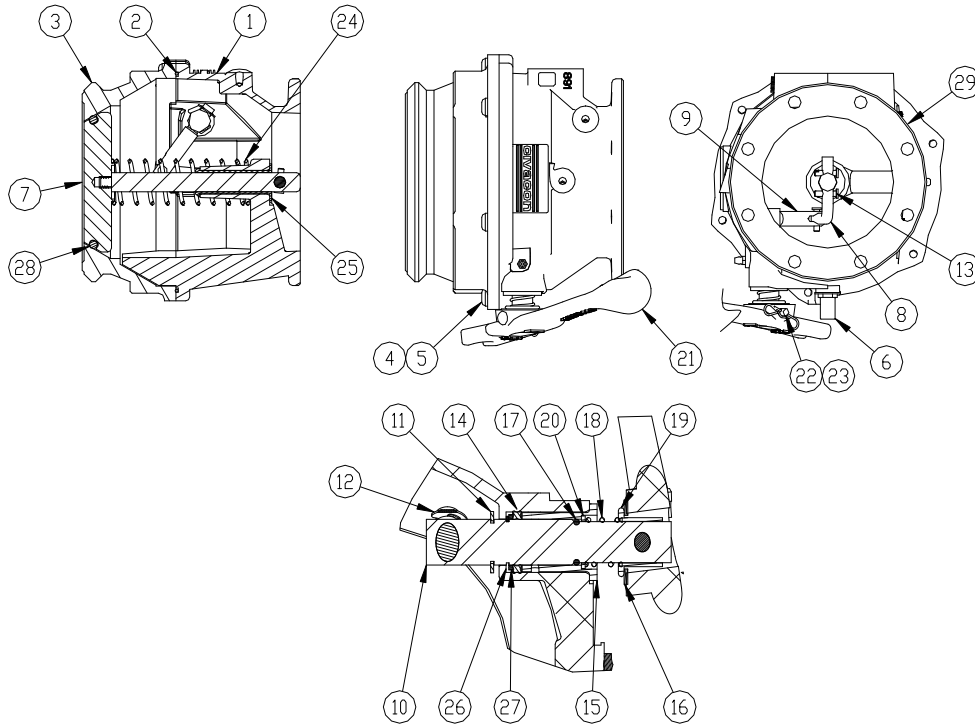


TITLE:	HOODVENT VAPOR RECOVERY
ID:	3-1/2"
OD:	3.9"
TUBE:	.080" GA NITRILE
REINFORCEMENT:	2 PLY POLYESTER CORD
COVER:	.050" NEOPRENE
WEIGHT PER FOOT:	1.2 LBS





891A Bottom Loading Adaptor



PARTS BREAK DOWN

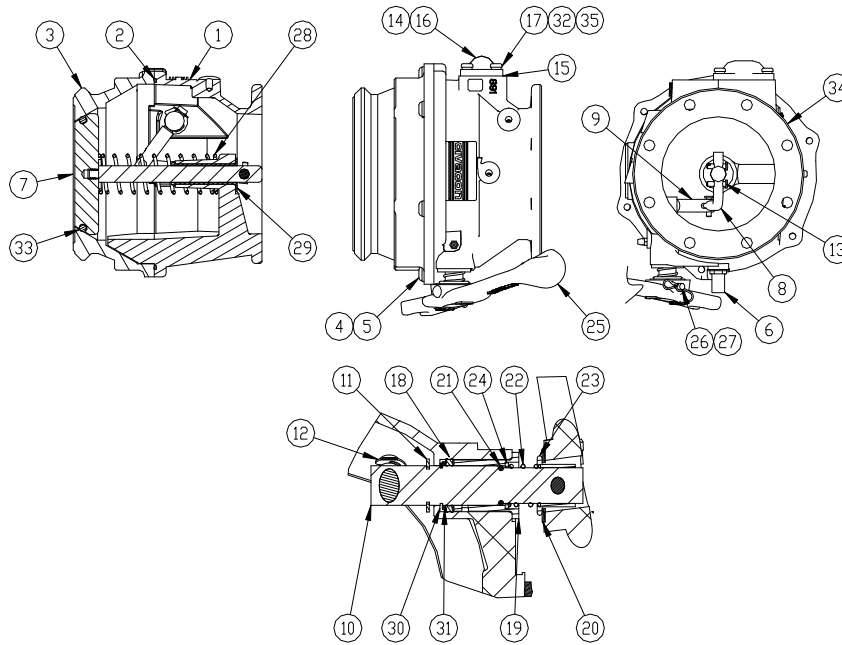
ITEM	PART NUMBER	DESCRIPTION	QTY.	ITEM	PART NUMBER	DESCRIPTION	QTY.
1	11750	BODY, MACHINED	1	18	H20182M ^{1,3}	SPRING	1
2	11905 ²	O-RING	1	19	11490 ^{1,3}	HUB	1
3	11550	ADAPTOR FACE	1	20	H20199M ^{1,3}	NYLON WASHER	1
4	10806M	LOCK WASHER	6	21	11460 ¹	HANDLE	1
5	11534	SCREW	6	22	H08901M ^{1,3}	FULCRUM PIN	1
6	H20051M	STOP PIN	1	23	11623 ^{1,3}	BOWTIE CLIP	1
7	11850	POPPET	1	24	11664	SPRING	1
8	11545	LINK, POPPET/HANDLE	1	25	11665	BEARING	1
9	11544	LINK, SHAFT	1	26	11703	RETAINING RING	1
10	11543 ^{1,3}	SHAFT	1	27	11704 ^{1,3}	WASHER	1
11	11661	E-CLIP	1	28	H20058M ²	O-RING	1
12	11662	E-CLIP	1	29	12080	PLUG, 3/8' NPT	1
13	11618	CLEVIS PIN	3	REPAIR KITS			
14	11705 ^{1,2,3}	QUAD RING	1	891HRK	HANDLE REPAIR KIT		
15	11536 ^{1,3}	BEARING	1	891ORK	O-RING REPAIR KIT		
16	10840 ^{1,3}	NYLON WASHER	1	891SRK	SHAFT REPAIR KIT		
17	H06924M ^{1,2,3}	O-RING	1				

1—Included in 891HRK, 2—Included in 891ORK, 3—Included in 891SRK





891BA Bottom Loading Adaptor



PARTS BREAK DOWN

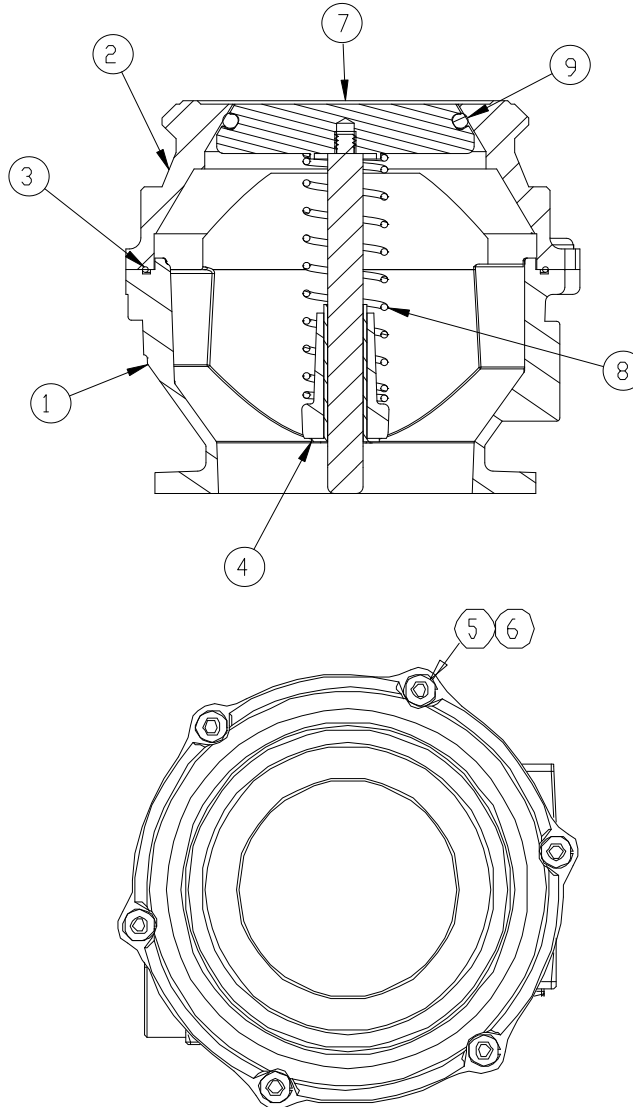
ITEM	PART NUMBER	DESCRIPTION	QTY.	ITEM	PART NUMBER	DESCRIPTION	QTY.
1	11548	BODY, MACHINED	1	21	H06924M ^{1,2,3}	O-RING	1
2	11905 ²	O-RING	1	22	H20182M ^{1,3}	SPRING	1
3	11550	ADAPTOR FACE	1	23	11490 ^{1,3}	HUB	1
4	10806M	LOCK WASHER	6	24	H20199M ^{1,3}	NYLON WASHER	1
5	11534	SCREW	6	25	11460 ¹	HANDLE	1
6	H20051M	STOP PIN	1	26	H08901M ^{1,3}	FULCRUM PIN	1
7	11850	POPPET	1	27	11623 ^{1,3}	BOWTIE CLIP	1
8	11545	LINK, POPPET/HANDLE	1	28	11664	SPRING	1
9	11544	LINK, SHAFT	1	29	11665	BEARING	1
10	11543 ^{1,3}	SHAFT	1	30	11703	RETAINING RING	1
11	11661	E-CLIP	1	31	11704 ^{1,3}	WASHER	1
12	11662	E-CLIP	1	32	H20057M ⁴	LOCK WASHER	4
13	11618	CLEVIS PIN	3	33	H20058M ²	O-RING	1
14	11365M ⁴	SIGHT GLASS	1	34	12080	PLUG, 3/8" NPT	1
15	H51437M ⁴	O-RING	1	35	H20312M ⁴	WASHER	4
16	H51384M ⁴	FLOAT BALL	1	REPAIR KITS			
17	11366M ⁴	SCREW	4	891HRK	HANDLE REPAIR KIT		
18	11705 ^{1,2,3}	QUAD RING	1	891ORK	O-RING REPAIR KIT		
19	11536 ^{1,3}	BEARING	1	891SRK	SHAFT REPAIR KIT		
20	10840 ^{1,3}	NYLON WASHER	1	891BRK	SIGHT GLASS REPAIR KIT		

1—Included in 891HRK, 2—Included in 891ORK, 3—Included in 891SRK, 4—Included in 891BRK



891N Bottom Loading Adaptor

PARTS BREAK DOWN



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	11748	BODY, MACHINED	1
2	11550	ADAPTOR FACE	1
3	11537	O-RING	1
4	11665	BEARING	1
5	10806M	LOCK WASHER	6

ITEM	PART NUMBER	DESCRIPTION	QTY.
6	11534	SCREW	6
7	11580	POPPET	1
8	11664	SPRING	1
9	H20058M	POPPET O-RING	1

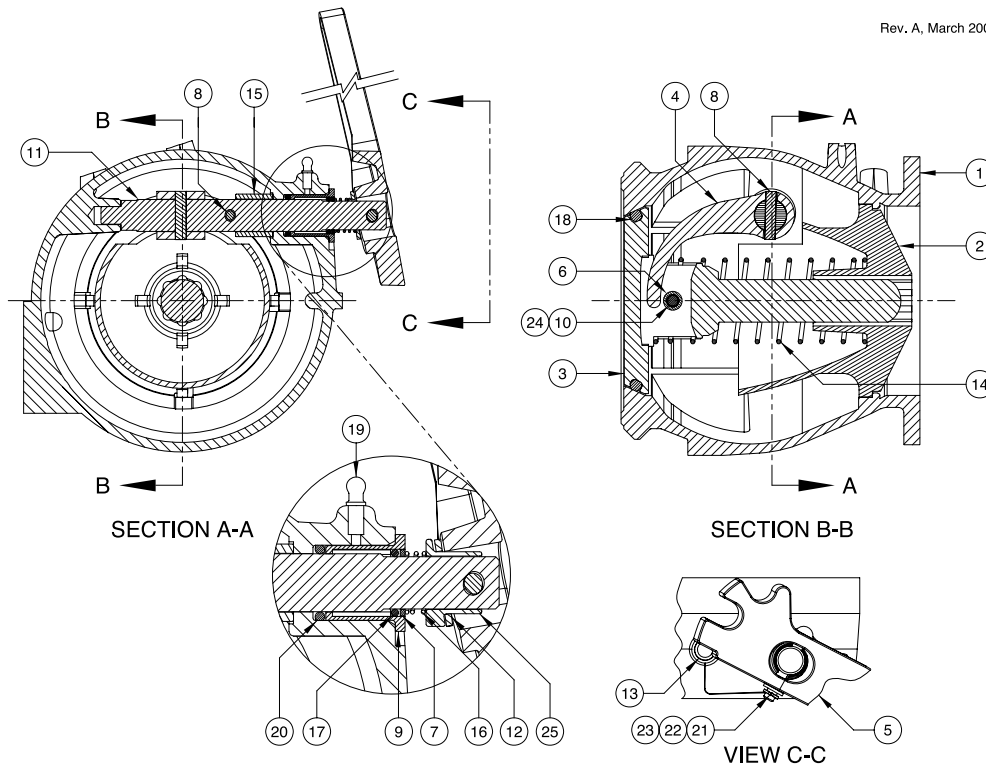




897A Bottom Loading Adaptor

Replacement Parts

Rev. A, March 2006



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E51718A	BODY	1
2	E51507M	DEFLECTOR	1
3	E10004A	POPPET	1
4	C10008EW	CAM	1
5	D51940M	HANDLE (ALUMINUM) ²	1
6	H20052M	ROLLER	1
7	10840	WASHER ²	1
8	H20092M	LOCK PIN (SHAFT)	2
9	H20048M	BEARING ²	1
10	H20078M	ROLLER BEARING	1
11	H20050RE	SHAFT	1
12	H52344M	WASHER ²	1
13	H20051M	STOP PIN	1
14	H20178M	SPRING (POPPET)	1
15	H20203M	SPACER	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
16	H20182M	SPRING (HANDLE) ²	1
17	H06924M	O-RING (OUTER SHAFT, BUNA) ^{1,2}	1
18	H20058M	O-RING (POPPET, VITON)	1
19	H20285M	GREASE FITTING	1
20	H20311M	O-RING (INNER SHAFT, BUNA) ¹	1
21	H08901M	FULCRUM PIN ²	1
22	H20312M	WASHER ²	1
23	H04981M	COTTER PIN ²	1
24	H20361M	LOCK PIN (POPPET)	1
25	H20049M	HUB ²	1

REPAIR KITS	
PART NUMBER	DESCRIPTION
861ORK	O-RING REPAIR KIT
861HRK-ALUM	HANDLE REPAIR KIT (ALUMINUM)

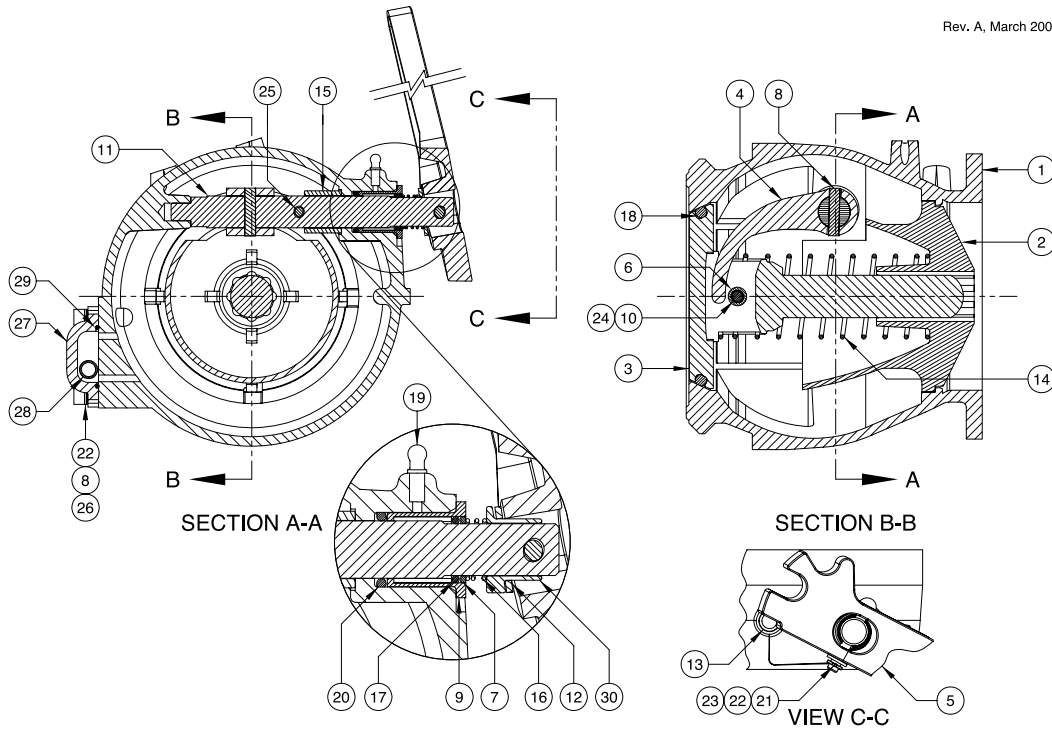
1 - Included in 861ORK, 2 - Included in 861HRK-ALUM



897BA Bottom Loading Adaptor

Replacement Parts

Rev. A, March 2006



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E51483A	BODY	1
2	E51507M	DEFLECTOR	1
3	E10004A	POPPET	1
4	C10008EW	CAM	1
5	D51940M	HANDLE (ALUMINUM) ³	1
6	H20052M	ROLLER	1
7	H20199M	WASHER ³	1
8	H20057M	LOCK WASHER ²	4
9	H20048M	BEARING ³	1
10	H20078M	ROLLER BEARING	1
11	H20050RE	SHAFT	1
12	10840	WASHER ²	1
13	H20051M	STOP PIN	1
14	H20178M	SPRING (POPPET)	1
15	H20203M	SPACER	1
16	H20182M	SPRING (HANDLE) ³	1
17	H06924M	O-RING (OUTER SHAFT, BUNA) ^{1,3}	1
18	H20058M	O-RING (POPPET, VITON) ¹	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
19	H20285M	GREASE FITTING	1
20	H20311M	O-RING (INNER SHAFT, BUNA) ¹	1
21	H08901M	FULCRUM PIN ³	1
22	H20312M	WASHER ^{2,3}	5
23	H04981M	COTTER PIN ³	1
24	H20361M	LOCK PIN (POPPET)	1
25	H20092M	LOCK PIN (SHAFT)	2
26	H51477M	SCREW ²	4
27	C10316M	SIGHT GLASS ²	1
28	H51384M	FLOAT BALL ²	1
29	H51437M	O-RING (SIGHT GLASS) ²	1
30	H20049M	HUB ²	1

REPAIR KITS	
PART NUMBER	DESCRIPTION
861ORK	O-RING REPAIR KIT
861BRK	SIGHT GLASS REPAIR KIT
861HRK-ALUM	HANDLE REPAIR KIT (ALUMINUM)

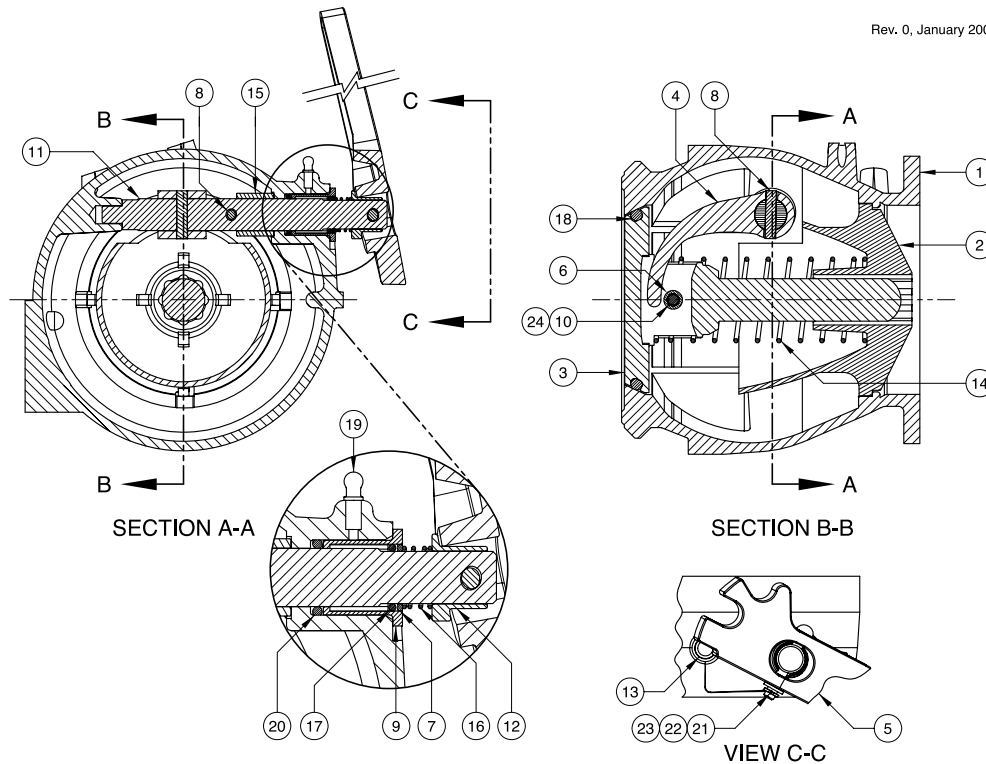
1 - Included in 861ORK, 2 - Included in 861BRK, 3 - Included in 861HRK



897 Bottom Loading Adapter

Replacement Parts

Rev. 0, January 2003



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E51718A	BODY	1
2	E51507M	DEFLECTOR	1
3	E10004A	POPPET	1
4	C10008EW	CAM	1
5	C10009M	HANDLE (DURATUFF) ²	1
6	H20052M	ROLLER	1
7	H20199M	WASHER ²	1
8	H20092M	LOCK PIN (SHAFT)	2
9	H20048M	BEARING ²	1
10	H20078M	ROLLER BEARING	1
11	H20050RE	SHAFT	1
12	H20049M	HUB ²	1
13	H20051M	STOP PIN	1
14	H20178M	SPRING (POPPET)	1
15	H20203M	SPACER	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
16	H20182M	SPRING (HANDLE) ²	1
17	H06924M	O-RING (OUTER SHAFT, BUNA) ^{1,2}	1
18	H20058M	O-RING (POPPET, VITON) ¹	1
19	H20285M	GREASE FITTING	1
20	H20311M	O-RING (INNER SHAFT, BUNA) ¹	1
21	H08901M	FULCRUM PIN ²	1
22	H20312M	WASHER ²	1
23	H04981M	COTTER PIN ²	1
24	H20361M	LOCK PIN (POPPET)	1

REPAIR KITS	
PART NUMBER	DESCRIPTION
861ORK	O-RING REPAIR KIT
861HRK	HANDLE REPAIR KIT (DURATUFF)

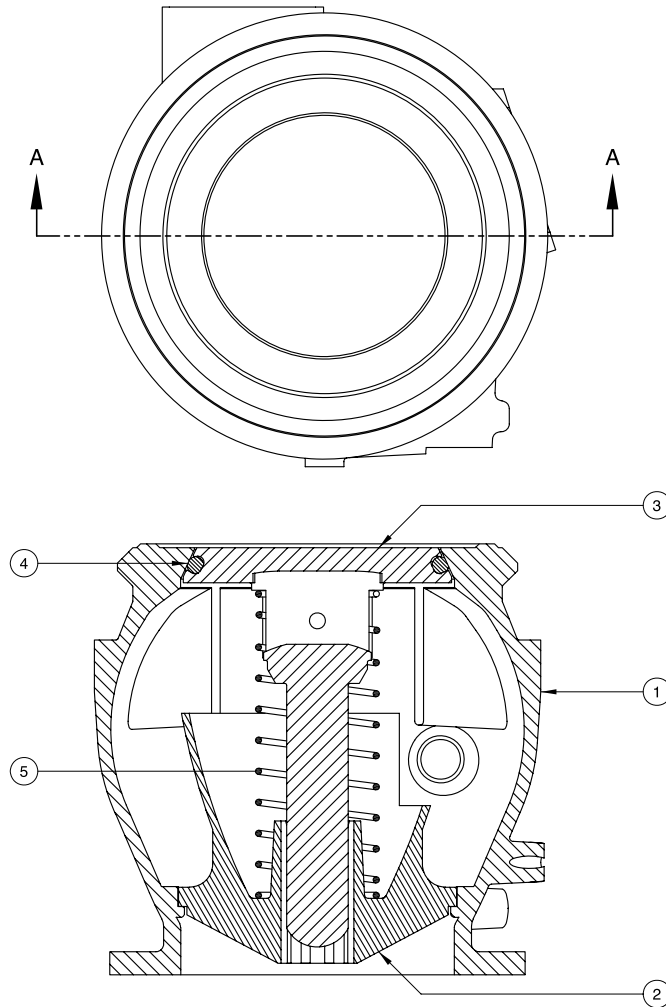
1 - Included in 861ORK, 2 - Included in 861HRK



897N Bottom Loading Adaptor

Replacement Parts

Rev. 0, January 2003



SECTION A-A

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E51838A	BODY	1
2	E51507M	DEFLECTOR	1
3	E10004A	POPPET	1

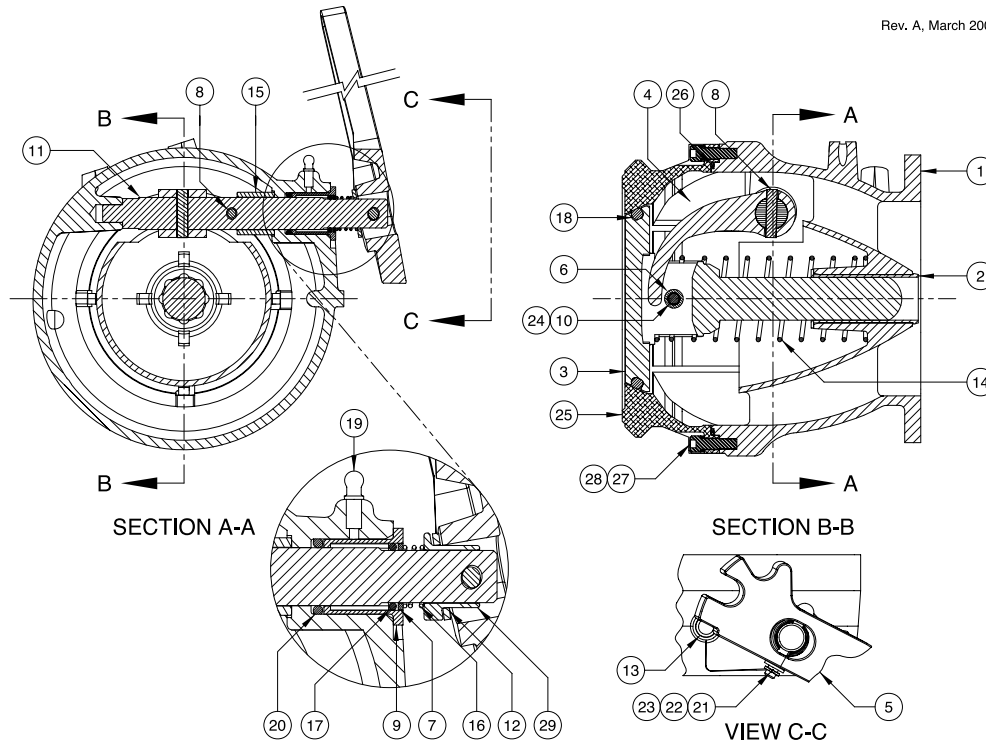
ITEM	PART NUMBER	DESCRIPTION	QTY.
4	H20058M	O-RING (VITON)	1
5	H20178M	SPRING	1



861A Bottom Loading Adaptor

Replacement Parts

Rev. A, March 2006



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E10066A	BODY	1
2	H20071M	BEARING (POPPET)	1
3	E10004A	POPPET	1
4	C10008EW	CAM	1
5	D51940M	HANDLE (ALUMINUM) ²	1
6	H20052M	ROLLER	1
7	H20199M	WASHER ²	1
8	H20092M	LOCK PIN (SHAFT)	2
9	H20048M	BEARING ²	1
10	H20078M	ROLLER BEARING	1
11	H20050RE	SHAFT	1
12	10840	WASHER ²	1
13	H20051M	STOP PIN	1
14	H20178M	SPRING (POPPET)	1
15	H20203M	SPACER	1
16	H20182M	SPRING (HANDLE) ²	1
17	H06924M	O-RING (OUTER SHAFT, BUNA) ^{1,2}	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
18	H20058M	O-RING (POPPET, VITON) ¹	1
19	H20285M	GREASE FITTING	1
20	H20311M	O-RING (INNER SHAFT, BUNA) ¹	1
21	H08901M	FULCRUM PIN ²	1
22	H20312M	WASHER ²	1
23	H04981M	COTTER PIN ²	1
24	H20361M	LOCK PIN (POPPET)	1
25	E10003AH	ADAPTOR FACE (ANODIZED)	1
26	H20315M	O-RING (BUNA)	1
27	H20151M	CAP SCREW	8
28	H20057M	LOCK WASHER	8
29	H20049M	HUB ²	1

REPAIR KITS	
PART NUMBER	DESCRIPTION
861ORK	O-RING REPAIR KIT
861HRK-ALUM	HANDLE REPAIR KIT (ALUMINUM)

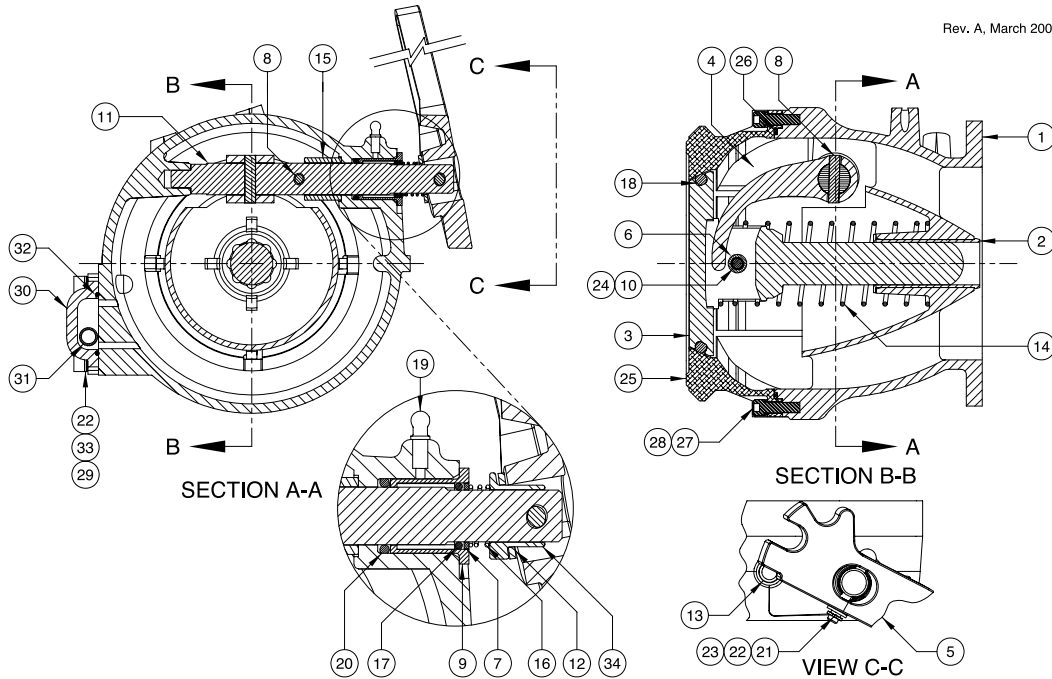
1 - Included in 861ORK, 2 - Included in 861HRK-ALUM



861BA Bottom Loading Adaptor

Replacement Parts

Rev. A, March 2006



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E10066A	BODY	1
2	H20071M	BEARING (POPPET)	1
3	E10004A	POPPET	1
4	C10008EW	CAM	1
5	D51940M	HANDLE (ALUMINUM) ³	1
6	H20052M	ROLLER	1
7	H20199M	WASHER ³	1
8	H20092M	LOCK PIN (SHAFT)	2
9	H20048M	BEARING ³	1
10	H20078M	ROLLER BEARING	1
11	H20050RE	SHAFT	1
12	10840	WASHER ³	1
13	H20051M	STOP PIN	1
14	H20178M	SPRING (POPPET)	1
15	H20203M	SPACER	1
16	H20182M	SPRING (HANDLE) ³	1
17	H06924M	O-RING (OUTER SHAFT, BUNA) ^{1,3}	1
18	H20058M	O-RING (POPPET, VITON) ¹	1
19	H20285M	GREASE FITTING	1
20	H20311M	O-RING (INNER SHAFT, BUNA) ¹	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
21	H08901M	FULCRUM PIN ³	1
22	H20312M	WASHER ^{2,3}	5
23	H04981M	COTTER PIN ³	1
24	H20361M	LOCK PIN (POPPET)	1
25	E10003AH	ADAPTOR FACE (ANODIZED)	1
26	H20315M	O-RING (BUNA)	1
27	H20151M	CAP SCREW	8
28	H20057M	LOCK WASHER	8
29	H51477M	SCREW ²	4
30	C10316M	SIGHT GLASS ²	1
31	H51384M	FLOAT BALL ²	1
32	H51437M	O-RING (SIGHT GLASS) ²	1
33	H20057M	LOCK WASHER ²	4
34	H20049M	HUB ²	1

REPAIR KITS	
PART NUMBER	DESCRIPTION
861ORK	O-RING REPAIR KIT
861BRK	SIGHT GLASS REPAIR KIT
861HRK-ALUM	HANDLE REPAIR KIT (ALUMINUM)

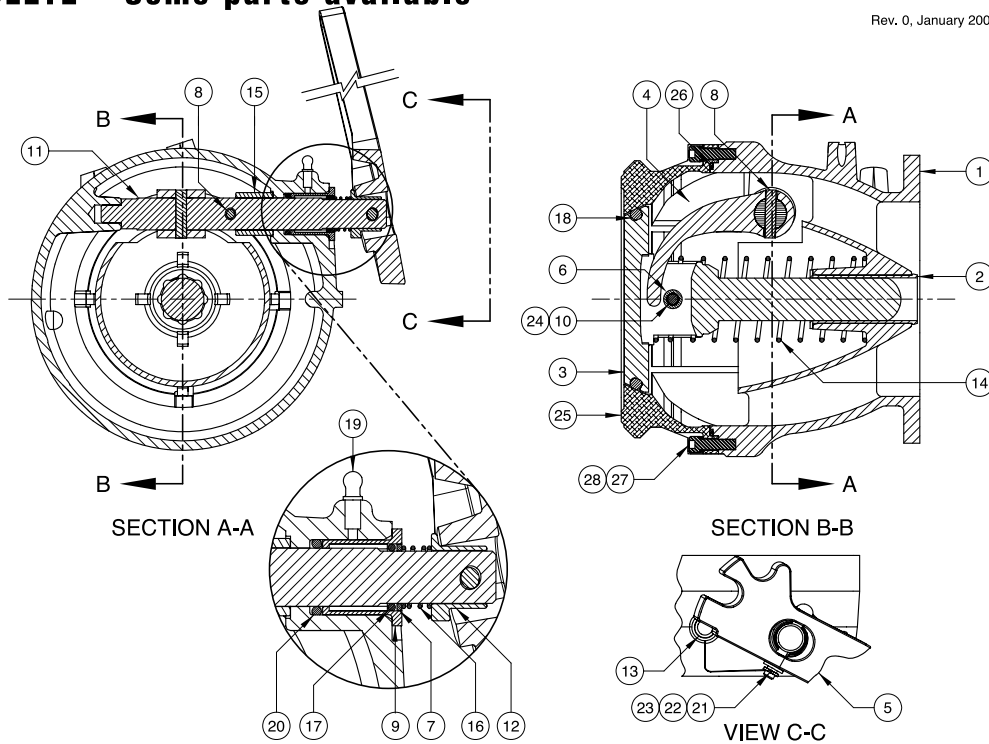
1 - Included in 861ORK, 2 - Included in 861BRK, 3 - Included in 861HRK-ALUM



861 Bottom Loading Adaptor

Replacement Parts OBSOLETE – Some parts available

Rev. 0, January 2003



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E10066A	BODY	1
2	H20071M	BEARING (POPPET)	1
3	E10004A	POPPET	1
4	C10008EW	CAM	1
5	C10009M	HANDLE (DURATUFF) ²	1
6	H20052M	ROLLER	1
7	H20199M	WASHER ²	1
8	H20092M	LOCK PIN (SHAFT)	2
9	H20048M	BEARING ²	1
10	H20078M	ROLLER BEARING	1
11	H20050RE	SHAFT	1
12	H20049M	HUB ²	1
13	H20051M	STOP PIN	1
14	H20178M	SPRING (POPPET)	1
15	H20203M	SPACER	1
16	H20182M	SPRING (HANDLE) ²	1
17	H06924M	O-RING (OUTER SHAFT, BUNA) ^{1,2}	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
18	H20058M	O-RING (POPPET, VITON) ¹	1
19	H20285M	GREASE FITTING	1
20	H20311M	O-RING (INNER SHAFT, BUNA) ¹	1
21	H08901M	FULCRUM PIN ²	1
22	H20312M	WASHER ²	1
23	H04981M	COTTER PIN ²	1
24	H20361M	LOCK PIN (POPPET)	1
25	E10003AH	ADAPTOR FACE (ANODIZED)	1
26	H20315M	O-RING (BUNA)	1
27	H20151M	CAP SCREW	8
28	H20057M	LOCK WASHER	8

REPAIR KITS	
PART NUMBER	DESCRIPTION
861ORK	O-RING REPAIR KIT
861HRK	HANDLE REPAIR KIT (DURATUFF)

1 - Included in 861ORK, 2 - Included in 861HRK

API Adapter "Y" Valve

FEATURES AND BENEFITS

Specifically designed for high speed unloading.

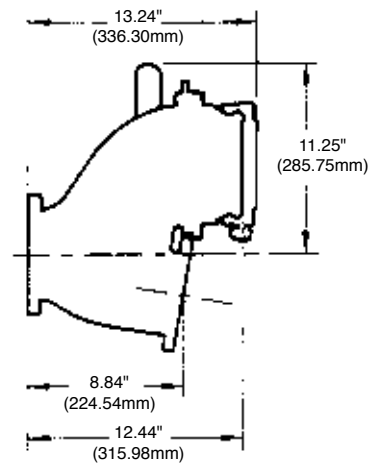
- **Highest flow rate** in the industry.
- **Designed and built** in accordance with API RP-1004.
- **Product loading** accomplished via API head. Product unloading accomplished via bottom faucet configuration.
- **Two piece all aluminum body.** API head hard coat anodized to reduce wear and corrosion.
- **Faucet disc** moves out of product flow, providing unrestricted unloading.
- **4" TTMA** piping connection and faucet outlet.
- **Faucet outlet hose connector** (F557) and mounting lugs for installation of brake interlock valve: F537 or F527, refer to air interlock section.
- **Handle is ductile iron** with baked on coating to eliminate corrosion.
- **Standard:** Dust cap F499.



API ADAPTER

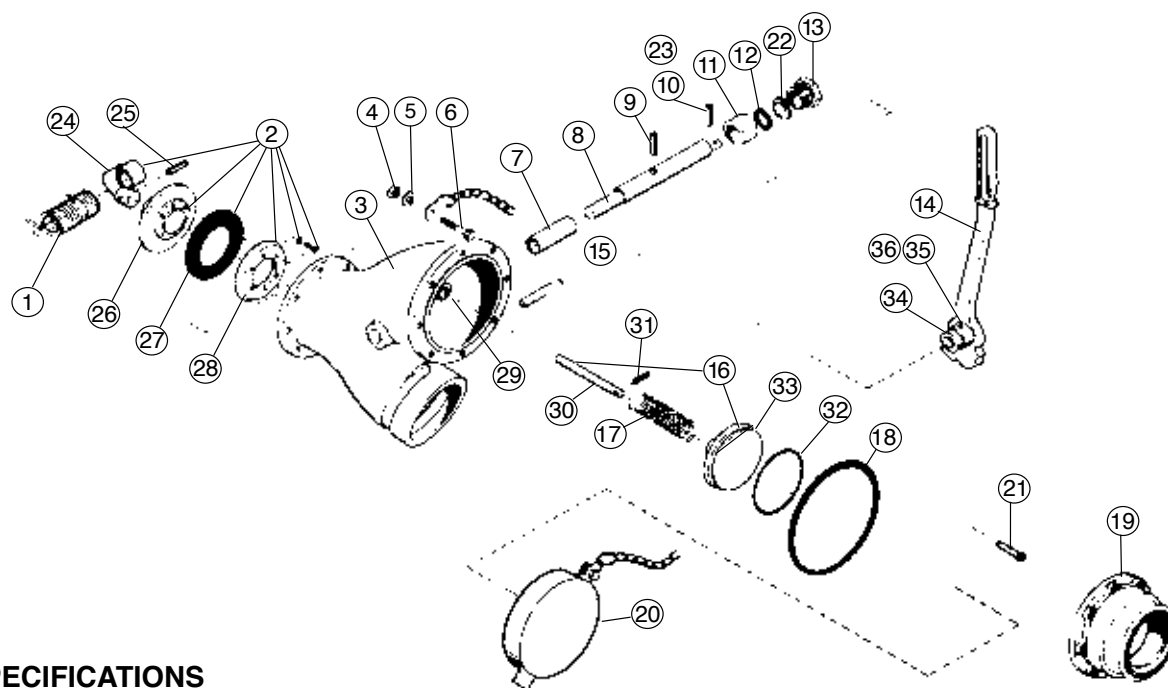
VARIANTS

PART NO.	DESCRIPTION	WEIGHT
F552-023	Viton® with Dust Cap	23.50 lbs.
Optional:		
F557-012	Flange, 3" Cam & Groove x 4" TTMA	2.38 lbs.
F557-013	Flange, 4" Cam & Groove x 4" TTMA	2.38 lbs.



F552

API Adapter "Y" Valve



SPECIFICATIONS

ITEM NO.	DESCRIPTION	QTY.	PART NO. F552-023	MATERIAL	ITEM NO.	DESCRIPTION	QTY.	PART NO. F552-023	MATERIAL
1	Lifter Spring	1	405378	Stainless Steel	19	Adapter	1	407984	Aluminum
2	Lifter Assembly	1	491438	-	20	API Dust Cap Assembly	1	F499-121	-
	Screw	6	405387	-	21	Screws	7	444552	Stainless Steel
	Washer	6	408594	-	22	Washer	1	409553	-
3	Body	1	491900	Aluminum	23	Nut	1	564277	-
4	Hex Nut	1	406234	Stainless Steel	24	Lifter		405372	-
5	Lockwasher	1	405767	-	25	Roll Pin	1	405392	-
6	Screw	1	408032	Stainless Steel	26	Basket	1	405374	Aluminum
7	Sleeve	1	405398	Nylatron	27	Disc	1	405101	Viton®
8	Lifter Stem	1	405377	Steel		Disc	1	405100	Buna
9	Roll Pin	1	577759	Stainless Steel	28	Disc Retainer	1	405376	Nylon
10	Bolt	1	564278	Stainless Steel	29	Bushing	1	408026	-
11	Drive Bushing	1	405379	Steel	30*	Stem	1	563165	-
12	O-ring	2	408054	Viton®	31*	Roll Pin	1	408635	-
13	Stuffing Box	1	408627	Aluminum	32*	O-ring	1	408061	Viton®
14	Lever Assembly	1	F616-005	Iron	32*	O-ring	1	408931	Buna
14	Lever	1	408116	-	33*	Poppet Disc	1	408028	-
15	Stud	1	405383	Stainless Steel	34	Socket	1	409061	-
16	Poppet Assembly	1	492846	Viton®	35	Screw	1	577652	-
17	Spring	1	563166	Steel	36	Nut	1	564277	-
18	O-ring	1	409638	Viton®		Mounting Kit	1	451117	-

*Included in poppet assembly when ordered as item 16



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EMCO WHEATON™

LOADING AND UNLOADING THE WORLD

F5001

API Adapter, Openable

FEATURES AND BENEFITS

API adapter with a one piece body, hard anodized replaceable nose ring and flat bottom.

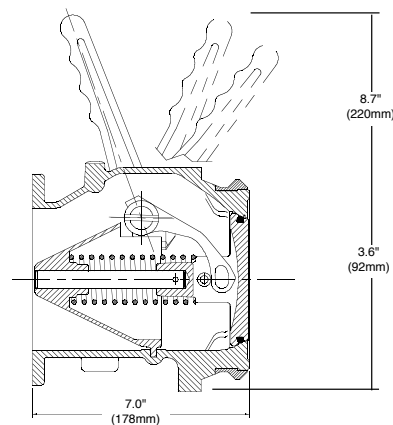
- **All running surfaces are bushed** for smooth operation and extended life.
- **Hard anodized replaceable nose ring** that can be indexed through four positions for extended life.
- **Nose ring** can be rotated without draining the line.
- **Flat bottom** of valve body ensures complete product drainage and minimizes contamination.
- **Two stage fixed aluminum lever** gives positive indication of valve position.
- **Conforms to API RP1004** for total compatibility with API couplers.
- **Lightweight die cast aluminum** construction for increased payloads with strength.
- **Viton® seals** are standard for compatibility with high octane fuels and additives.
- **Hydrodynamic design** minimizes pressure drop for high flow rates.
- **Stainless steel** internal components.
- **Top mounting** for hose interlock.
- **Mounting flange** meets 4" TTMA specification.



API ADAPTER

VARIANTS

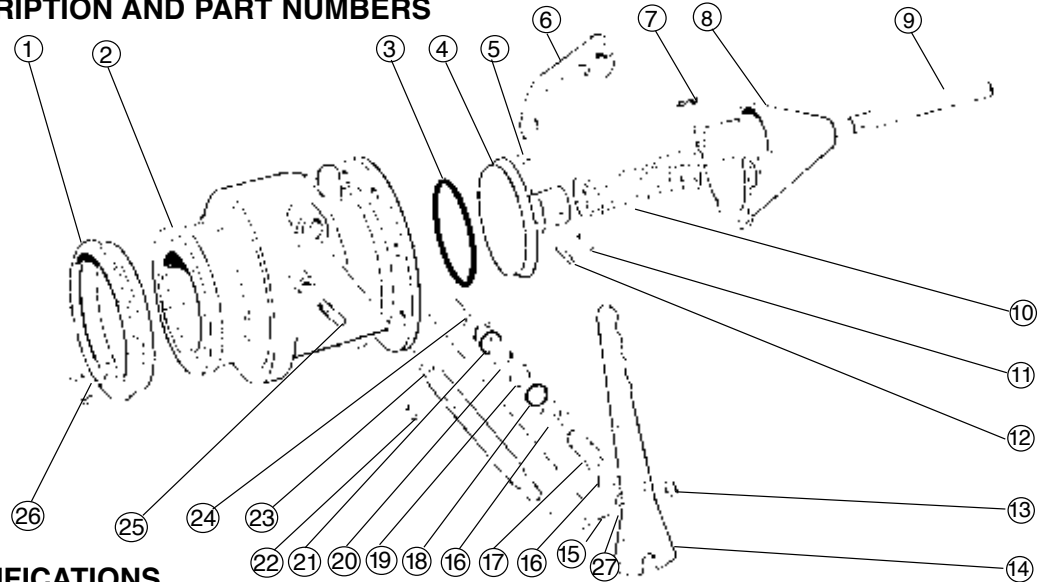
PART NO.	DESCRIPTION	SEAL	WEIGHT
F5001-001	4" Adapter, Aluminum	Viton®	9.7 lbs.
F5001-002	4" Adapter, Aluminum	PTFE	9.7 lbs.



F5001

API Adapter, Openable

DESCRIPTION AND PART NUMBERS



SPECIFICATIONS

REF	DESCRIPTION	PART NO. F5001-001 VITON	PART NO. F5001-002 PTFE	QTY
1	Nose Ring	619323	619323	1
2	Body	619350	619350	1
3	O-Ring	850027	619410	1
4	Poppet	619348	619348	1
5	Bearing Roller	409436	409436	1
6	Cam	619312	619312	1
7	Hair Pin Clip	560489	560489	2
8	Deflector Cone	619308	619308	1
9	Stem	619309	619309	1
10	Compression Spring	619454	619454	1
11	Roll Pin	619311	619311	1
12	Bearing Pin	563161	563161	1
13	Nut	564277	564277	1
14	Lever	619314	619314	1
15	Screw	564278	564278	1
16	Washer Nylon	564275	564275	2
17	Spring	564273	564273	1
18	O-Ring	561320	561320	1
19	Retaining Ring	408169	408169	1
20	Spacer	408167	408167	1
21	O-Ring	407433	577191	1
22	Roll Pin	561852	561852	2
23	Shaft	619316	619316	1
24	Bearing	409443	409443	1
25	Stud	619313	619313	1
26	Screw M5 C'sk	619370	619370	2

SERVICE KITS

PART NO.	DESCRIPTION
619504	Service Kit
619506	Nose Ring Kit
619636	Lever Kit
619927	Poppet Seal Kit
670085	Lever & Shaft Kit



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API Adapter, Openable with Liquid Indicator

FEATURES AND BENEFITS

API adapter with a one piece body, hard anodized replaceable nose ring and flat bottom.

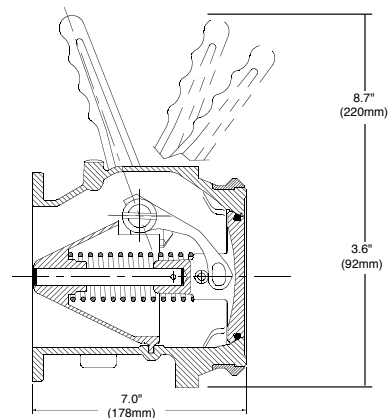
- **All running surfaces are bushed** for smoother operation and extended life.
- **Hard anodized replaceable nose ring** that can be indexed through four positions for extended life.
- **Flat bottom** of valve body ensures complete product drainage and minimizes contamination.
- **Product sight glass** fitted at lowest point of valve for visual check of product in pipework.
- **Two stage fixed aluminum lever** gives positive indication of valve position.
- **Conforms to API RP1004** for total compatibility with API couplers.
- **Light weight die cast aluminum** construction for increased payloads with strength.
- **Viton® seals** are standard for compatibility with high octane fuels and additives.
- **Hydrodynamic design** minimizes pressure drop for high flow rates.
- **Stainless steel** internal components.
- **Top mounting** for hose interlock.
- **Dryline ready** for proposed future regulation.



API ADAPTERS

VARIANTS

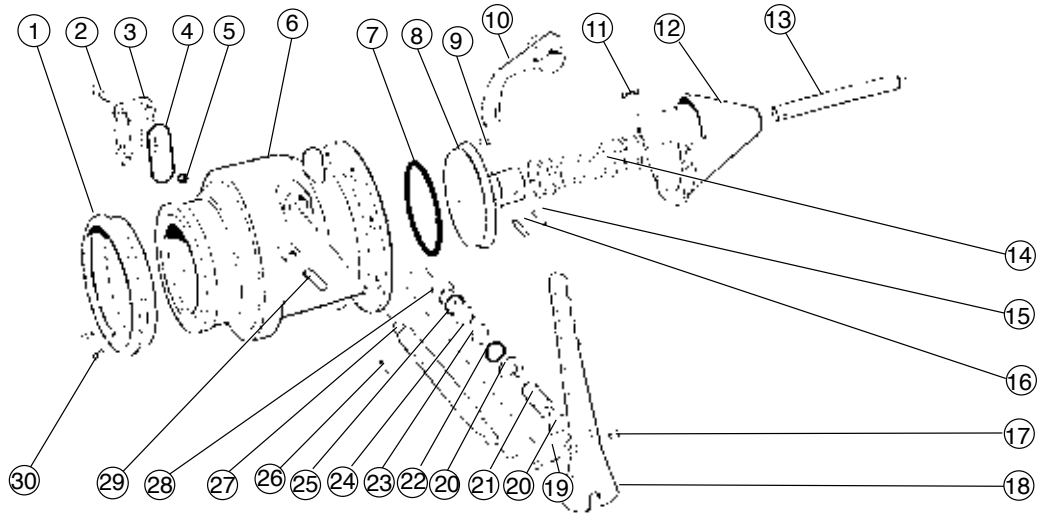
PART NO.	DESCRIPTION	SEAL	WEIGHT
F5002-041	4" Adapter, Aluminum	Viton®	9.8 lbs.
F5002-041	4" Adapter, Aluminum	PTFE	9.8 lbs.



F5002

API Adapter, Openable with Liquid Indicator

DESCRIPTION AND PART NUMBERS



SPECIFICATIONS

REF	DESCRIPTION	PART NO. F5002-001 VITON	PART NO. F5002-002 PTFE	QTY	REF	DESCRIPTION	PART NO. F5002-001 VITON	PART NO. F5002-002 PTFE	QTY
1	Nose Ring	619323	619323	1	21	Spring	564273	564273	1
2	Screw	602747	602747	4	22	O-Ring	561320	561320	1
3	Sight Glass	618148	618148	1	23	Retaining Ring	408169	408169	1
4	O-Ring	577105	577253	1	24	Spacer	408167	408167	1
5	Hollow Ball	603602	603602	1	25	O-Ring	407433	577191	1
6	Body	619349	619349	1	26	Roll Pin	561852	561852	2
7	O-Ring	850027	619410	1	27	Shaft	619316	619316	1
8	Poppet	619327	619327	1	28	Bearing	409443	409443	1
9	Bearing Roller	409436	409436	1	29	Stud	619313	619313	1
10	Cam	619328	619328	1	30	Screw M5 C'sk	619370	619370	2
11	Hair Pin Clip	560489	560489	2	N/S	Washer M6	616399	616399	4
12	Deflector Cone	619308	619308	1					
13	Stem	619309	619309	1					
14	Spring	619454	619454	1					
15	Roll Pin	619311	619311	1					
16	Bearing Pin	563161	563161	1					
17	Nut	564277	564277	1					
18	Lever	619314	619314	1					
19	Screw	564278	564278	1					
20	Washer Nylon	564275	564275	2					

SERVICE KITS

PART NO.	DESCRIPTION
619499	Sight Glass Kit
619504	Service Kit
619506	Nose Ring Kit
619636	Lever Kit
619927	Poppet Seal Kit
670085	Lever & Shaft Kit

Note:

This Parts Breakdown does not cover the F5002-041 Series of API Adaptor.



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F5000

API Adapter

FEATURES AND BENEFITS

API adapter with a one piece body, hard anodized replaceable nose ring and flat bottom.

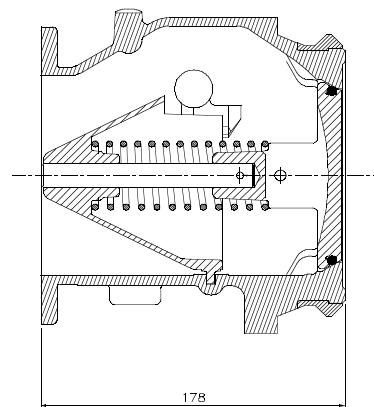
- **All running surfaces are bushed** for smooth operation and extended life.
- **Hard anodized replaceable nose ring** that can be indexed through four positions for extended life.
- **Nose ring** can be rotated without draining the line.
- **Flat bottom** of valve body ensures complete product drainage and minimizes contamination.
- **Conforms to API RP1004** for total compatibility with API couplers.
- **Lightweight die cast aluminum** construction for increased payloads with strength.
- **Viton® seals** are standard for compatibility with high octane fuels and additives.
- **Hydrodynamic design** minimizes pressure drop for high flow rates.
- **Stainless steel** internal components.
- **Top mounting** for hose interlock.
- **Mounting flange** meets 4" TTMA specification.

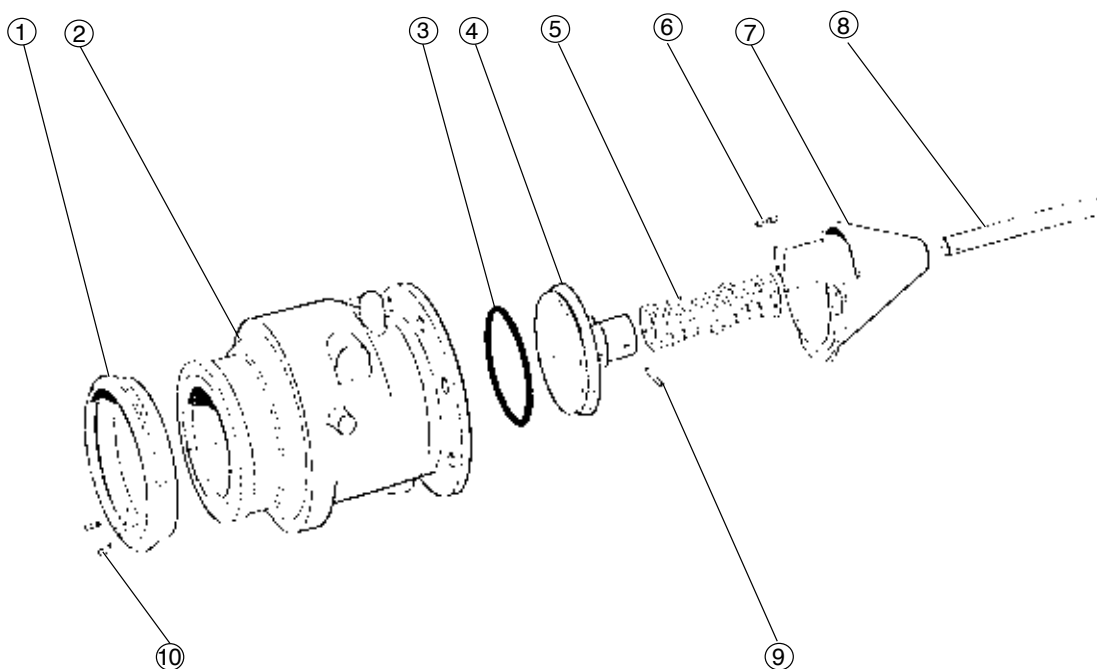


API ADAPTER

VARIANTS

PART NO.	DESCRIPTION	SEAL	WEIGHT
F5000-001	4" Adapter, Aluminum	Viton®	7.8 lbs.
F5000-002	4" Adapter, Aluminum	PTFE	7.8 lbs.



F5000**API Adapter****DESCRIPTION AND PART NUMBERS****SPECIFICATIONS**

REF	DESCRIPTION	PART NO.	PART NO.	QTY
		F5000-001 VITON	F5000-002 PTFE	
1	Nose Ring	619323	619323	1
2	Body	619351	619351	1
3	O-Ring	850027	619410	1
4	Poppet	619348	619348	1
5	Spring	619454	619454	1
6	Hair Pin Clip	560489	560489	2
7	Cone	619308	619308	1
8	Stem	619309	619309	1
9	Roll Pin	619311	619311	1
10	Screw M5 C'sk	619370	619370	2



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EMCO WHEATON™**LOADING AND UNLOADING THE WORLD**



Advantages

• Long Life

Front API head may be rotated up to seven times to maximize the life of the adapter.

Enhanced 3.5" sight glass provides greater impact strength and is compatible with Biofuels including E85 and Biodiesel.

• Safety

Free floating poppet is opened by pressure from the terminal adapter probe to minimize spills during loading.

• Speed of Delivery

The cam design utilized to retract the adapter poppet minimizes product flow restriction during off loading and loading.

• Compatibility

Fully compatible with biofuels including E85 and Biodiesel.

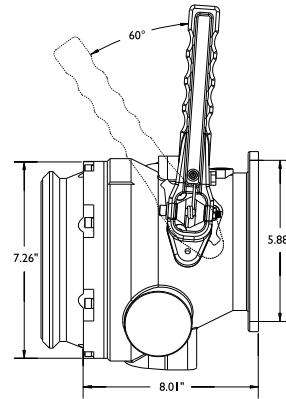
API Bottom Loading Adapters

Loading and off-loading fuel from a transport truck is easier than ever with the bottom loading adapters from Franklin Fueling Systems. While loading, the free floating poppet opens under pressure allowing the handle to remain in the closed position. This minimizes spillage caused by leaving the handle in the open position when disconnected from the bottom loader. The adapter handle is offered in aluminum or nylon and provides two open positions of flow allowing the delivery driver to manage the flow rate while off-loading fuel from the truck.

The lightweight, heavy-duty adapter is engineered and tested to meet API RP 1004 specifications and is fully compatible with biofuels including E85 and Biodiesel. The outer end is made of hard coated aluminum and rotates seven times to maximize the products life and prevent wear that can be caused by terminal off-loading couplings. The inner wall of the adapter is fully tapered, minimizing product retention inside of the valve when off loading is complete. Each model is compatible with all API dry disconnect couplers and are constructed with a standard TTMA 4" tank truck flange and mounting lugs for FFS air interlock valves. Sight glass options are mounted on the side of the valve to maximize visibility during fuel transfer and are available in 1" and 3.5" sizes. Fuel loading and off loading management has never been easier, safer or more efficient.



Short Stroke, 3.5" Sight Glass



880-500-01



880-500-02

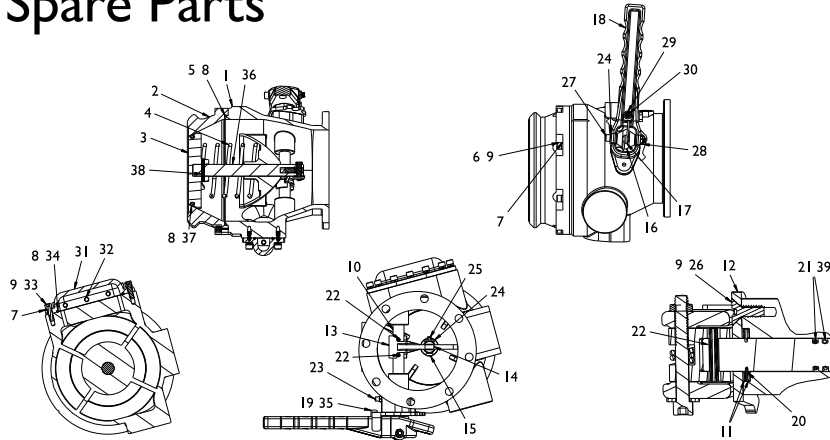


Model #	Description
880-500-01	Non-openable
880-500-02	Short stroke three position, no sight glass
880-500-03	Short stroke three position, 1" sight glass
880-500-04	Short stroke three position, 3.5" sight glass
880-500-07	Short stroke, removable handle, no sight glass

Transport Systems



Spare Parts



Item	Description	Part Number	880-500 Model
1	Tank adapter with handle for 1" sight glass	880-502-03	-03
	Tank adapter with handle for 3.5" sight glass	880-502-04	-04
2	Adapter, API	880-501-01	-01, -02, -03, -04, -07
3	Poppet head	880-509-01	-01, -02, -03, -04, -07
4	Spring, poppet	880-127-01	-01, -02, -03, -04, -07
5	O-ring	11039-38	-01, -02, -03, -04, -07
6	Cap screw, socket head, 1/4-20 x 1"	11170-15	-01, -02, -03, -04, -07
7	Lock washer, 1/4", high collar	400263003	-01, -02, -03, -04, -07
8	Petroleum jelly	11378-01	-01, -02, -03, -04, -07
9	Anti-seize lubricant	11144-01	-01, -02, -03, -04, -07
10	Shaft, cross	880-510-01	-02, -03, -04, -07
11	Washer, flat, 5/8" ID	880-191-01	-02, -03, -04, -07
12	Latch dual	880-506-01	-02, -03, -04, -07
13	Cam, loading arm	880-215-01	-02, -03, -04, -07
14	Roller, cam	880-190-01	-02, -03, -04, -07
15	Pin, roller cam	880-189-01	-02, -03, -04, -07
16	Hex, permanent handle	880-198-01	-02, -03, -04, -07
17	Spring, handle	880-102-01	-02, -03, -04, -07
18	Handle, dual latching	880-505-01	-02, -03, -04, -07
	Handle, dual latching (Canada)	880-505-03	-07
19	Pin, latch	880-192-01	-02, -03, -04, -07
20	Retaining ring, 5/8"	11001-06	-02, -03, -04, -07
21	O-ring, cross shaft	11039-12	-02, -03, -04, -07
22	Pin, 3/16", spirol	11086-04	-02, -03, -04, -07
23	Fitting, grease	11111-01	-02, -03, -04, -07
24	Washer, flat, 1/4" ID	11136-01	-02, -03, -04, -07
25	Pin, 3/32 x 1/2" cotter	11460-01	-02, -03, -04, -07
26	Screw, flat head 1/4-20 x 5/8"	11067-06	-02, -03, -04, -07
27	Cap screw, socket head 1/4-20 x 2"	11170-16	-02, -03, -04, -07
28	Locknut, 1/4-20	11041-05	-02, -03, -04, -07
29	Washer, flat, .203 ID	11275-07	-02, -03, -04, -07
30	Cap screw, socket head, 10-24 x 5/8"	11030-10	-02, -03, -04, -07
31	Sight glass, 1" bubble	880-511-01	-03
	Sight glass, 3.5" bubble	880-512-01	-04
32	Ball, float indicator, 1/4", orange	880-124-01	-03
33	Cap screw, socket head, 1/4-20 x 3/4"	11170-17	-03, -04
34	O-ring, sight glass, 1" bubble	11039-36	-03
	O-ring, sight glass, 3.5" bubble	11039-37	-04
35	Thread locker	12002-01	-02, -03, -04, -07
36	Stem, cam	880-513-01	-02, -03, -04, -07
37	O-ring, poppet	400333343	-02, -03, -04, -07
38	Spirol pin	11086-06	-02, -03, -04, -07
39	Lubricant, O-ring	11529-01	-02, -03, -04, -07
40	Ball, flow indicator, 3/8", green	880-124-02	-03

4" API Valves

API Valves are used for bottom loading and unloading of petroleum tankers. Valve nose shape and opening comply with American Petroleum Institute standard (API RP-1004) enabling Dixon's API valves to interchange with competitor items made to the same specification. Two styles are available: a load model without handle and, a load/unload model with a handle to allow manual opening.

- unique flow and fluid level sight indicator are available
- load/unload versions feature an ergonomically curved handle that opens with a short 62° stroke, can be ordered with a fixed or removable handle
- chemical resistant crank seals and poppet seal (Teflon® seals optional)
- any required maintenance is simplified, can be completely rebuilt without removing the valve from the tank
- the ALH (anodized aluminum hard coat) nose ring can be rotated to provide a fresh cam service
- see page 7 for tank truck flange gaskets
- aluminum ergonomic handle
- **5204NG** approved for use in the following service: gasoline, diesel, E10 10% ethanol, E85 85% ethanol, E100 100% ethanol, B15 15% bio-diesel/diesel, B20 20% bio-diesel/diesel
- **5204NG** tested performance to -40°F/C with 100% ethanol, B15 15% bio-diesel and B20 20% bio-diesel
- **5204NGV** approved for use in the following service: B100 100% bio-diesel



5204



5204SFI



5204L

API Load/Unload Valve

Part #	Description
5204NG	fixed handle, without sight glass, ALH nose ring, Baylast™ seal
5204	fixed handle, sight glass, ALH nose ring, Baylast™ seal
5204C	removable handle ¹ , sight glass, ALH nose ring, Baylast™ seal
5204NGC	removable handle ¹ , without sight glass, ALH nose ring, Baylast™ seal
5204SNG	fixed handle, without sight glass, ALH nose ring, stainless steel spring for crude oil, Baylast™ seal
5204TNG	fixed handle, without sight glass, ALH nose ring, Teflon® seals
5204NGV	fixed handle, without sight glass, Viton® seals
5204SFI	fixed handle, with inline full body sight glass, ALH nose ring, Baylast™ seal

¹ removable handle for Canadian market

API Load Only Valve

Part #	Description
5204L	load only API valve with sight glass, ALH nose ring
5204LNG	load only API valve without sight glass, ALH nose ring

* **Note:** Please reference pages 56 and 57 for repair kits and replacement parts.

API Dust Caps



5000-25



5205

Part #	Description
41450-DCAL	aluminum API cap with flat gasket
5000-25	nylon API cap with flat gasket, pad lockable arm
5205	aluminum API cap with quick release arm and chain
5000-24	aluminum API cap with O-ring seal

* **Note:** Please reference pages 58 for repair kits and replacement parts.



The Right Connection™

Replacement Parts

5204 Series, API Bottom Load Valves

Bill of Materials

Quantity of Components per Unit

	Description	Part#	5204	5204NG	5204TNG	5204SNG	5204NGV	5204C	5204NGC	5204L	5204LNG
1	body - pipe end	---	1	1	1	1	1	1	1	1	1
2	nose ring	use kit 5204K3	1	1	1	1	1	1	1	1	1
3	shaft	390812	1	1	1	1	1	1	1	N/A	N/A
4	handle pin	111559	1	1	1	1	1	N/A	N/A	N/A	N/A
5	shaft spacer	390813	1	1	1	1	1	1	1	N/A	N/A
6	shaft bearing	111557	1	1	1	1	1	1	1	N/A	N/A
7	stop pin	5204-SP	1	1	1	1	1	1	1	N/A	N/A
8A	fixed handle	use kit 5204K7	1	1	1	1	1	N/A	N/A	N/A	N/A
8B	removeable handle	use kit 5204K5	N/A	N/A	N/A	N/A	N/A	1	1	N/A	N/A
9A	poppet (Load/Unload versions)	341755	1	1	1	1	1	1	1	N/A	N/A
9B	poppet (Load only versions)	341756	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	1
10	poppet bearing	111558	1	1	1	1	1	1	1	1	1
11	cam	111550	1	1	1	1	1	1	1	N/A	N/A
12	sight glass	use kit 5204K8	1	N/A	N/A	N/A	N/A	1	N/A	1	N/A
13	poppet roller	390815	1	1	1	1	1	1	1	N/A	N/A
14	poppet roller bearing	111556	1	1	1	1	1	1	1	N/A	N/A
15	retaining ring	111560	1	1	1	1	1	1	1	1	1
16A	Baylast™ poppet O-ring	5204K1	1	1	N/A	1	N/A	1	1	1	1
16B	Viton® poppet O-ring	5204KV1	N/A	N/A	N/A	N/A	1	N/A	N/A	N/A	N/A
16C	Teflon® encapsulated poppet O-ring	use kit 5204K6	N/A	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A
17A	nose ring O-ring	111554	1	1	N/A	1	1	1	1	1	1
17B	Teflon® nose O-ring	use kit 5204K6	N/A	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A
18A	shaft O-ring	111552	1	1	N/A	1	1	1	1	N/A	N/A
18B	Teflon® shaft O-ring	use kit 5204K6	N/A	N/A	1	N/A	N/A	N/A	N/A	N/A	N/A
19	shaft and cam roll pin	6000-12	2	2	2	2	2	2	2	N/A	N/A
20	pin roller	111566	1	1	1	1	1	1	1	N/A	N/A
21	grease fitting	111561	1	1	1	1	1	1	1	N/A	N/A
23	sight glass screw	use kit 5204K12	6	N/A	N/A	N/A	N/A	6	N/A	6	N/A
24	nose ring screw	use kit 5204K11	8	8	8	8	8	8	8	8	8
25A	Baylast™ sight glass O-ring	use kit 5204K8	1	N/A	N/A	N/A	N/A	1	N/A	1	N/A
25B	Teflon® sight glass O-ring	use kit 5204K6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26	washer	111562	5	1	1	1	1	4	N/A	4	N/A
27	cotter pin	111563	1	1	1	1	1	N/A	N/A	N/A	N/A
28A	main spring-steel	111564	1	1	N/A	N/A	1	1	1	1	1
28B	main spring- stainless steel	111542	N/A	N/A	1	1	N/A	N/A	N/A	N/A	N/A
29	handle spring	111565	1	1	1	1	1	1	1	N/A	N/A
30	dust seal O-ring	111553	1	1	1	1	1	1	1	N/A	N/A
31	lock washer 1/4"	111569	14	8	8	8	8	14	8	14	8
32	handle shaft spring washer	111573	1	1	1	1	1	1	1	N/A	N/A
33	handle shaft washer	111574	1	1	1	1	1	1	1	N/A	N/A
34	back-up ring	111579	1	1	1	1	1	1	1	N/A	N/A
35	u-cup seal	111580	1	1	1	1	1	1	1	N/A	N/A
36	flow indicator	use kit 5204K8	1	N/A	N/A	N/A	N/A	1	N/A	N/A	N/A
37	float ball	use kit 5204K8	1	N/A	N/A	N/A	N/A	1	N/A	1	N/A
38 *	retaining ring	use kit 5204K13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
39 *	SFI sight glass	use kit 5204K13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40 *	SFI sight glass O-ring (Baylast™)	use kit 5204K13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Petroleum Replacement Parts

* not illustrated, parts for 5204-SFI

N/A = Not Applicable

Tank Truck Flanged Sight Flow Indicators

Designed to be a drop in replacement for the one-piece acrylic sight glass used behind the API load head. Rugged aluminum construction is more durable than the single piece acrylic doughnut commonly used. The cast aluminum design is suited to rough over the road trucking and load rack service. Replacement sight glass is a fraction of the cost of the one-piece design. Rated for **150 PSI** hydrostatic pressure at **70°F**. Large 4-3/8" I.D. for use with tank truck flanged butterfly valves.

- Strong and lightweight
- Allows for visual identification of the fuel grade prior to opening the valve
- Works with tank truck flanged butterfly valves found on gasoline trucks
- 1 3/4" width replaces acrylic doughnut sightglass
- Flange gaskets are no longer supplied, a retaining ring and machined lip hold the acrylic tube in place.



Part #	Description
5200-SFI	4" TTMA pattern flanged short sight flow indicator
5200-SFI3	3" TTMA pattern flanged short sight flow indicator
112029	3" cork buna flange gasket
112030	4" cork buna flange gasket



- Allows for visual identification of the fuel grade prior to opening the valve
- Works with tank truck flanged butterfly valves found on gasoline trucks
- Larger I.D. allows tank truck flanged butterfly valves to connect to either end of the 400-SFI-AL
- 3 3/4" width



Part #	Description
400-SFI-AL	4" sight flow indicator

Replacement Part Kits

Part #	Description
4SFIPSG	Replacement plexiglass for 400-SFI-AL
O249BU	Replacement buna-N O-ring for 400-SFI-AL
4SFI-G-VI	Viton® plexiglass gasket for 400-SFI-AL and 5200-SFI
4SFIPSGS	Replacement plexiglass for 5200-SFI

Note: For tank truck flange gaskets see page 7
For dimensional information on tank truck flange drilling see page 20

Product Identification Markers

4 & 8 SIDED

Individual Decals available for both Roto Tags

Roto Tag 4



- Pre-Assembled
- Four Basic Product Labels furnished as Indicated
- API Colors and Symbols
- Unit made of black, durable glass and polypropylene
- L 6 1/4" - W 2 1/4" - H 2 1/2"
- Special tags made from Polyetholene can also be used to tag location fills
- Label Lettering 1/4"

Roto Tag 8



- All aluminum construction
- Spring loaded positive lock
- Weatherproof vinyl decals
- Comes standard with the following decals:

- Premium Unleaded
- Unleaded Plus
- Regular Unleaded
- Diesel
- Kerosene
- Diesel High Sulphur
- Diesel Low Sulphur
- Empty or Vapor

JIKOH Sight Glasses



Part Number	Part Description	Inside Diameter	Outside Diameter	Bolt Hole Circle	Number Bolt holes	Nominal Thickness
OK4BCT*	4" beveled X 1-1/2"	4.000	7.075	5.875	8	1.500
JDG105**	4" beveled X 1-1/2"	4.000	7.075	5.875	8	1.500
OK3B	3" straight X 1-3/4"	3.500	6.000	4.875	8	1.750
OK4S1	4" straight X 1"	4.250	7.000	5.875	8	1.000
OK2S	2" straight X 1-3/4"	2.500	4.500	3.750	6	1.750

Nominal thickness is thickness of material before machining. Both sidewalls are machined to insure proper mating surfaces for gaskets and flanges.

* behind part number denotes **CROWN TOP**.

** JDG105 is a new proprietary product for use with Ethanol and Soy or Bio-Diesel products.

OPTI-Klear sight glasses are machined on CNC machining centers and CNC lathes to impart the best optical sight glasses available. They are machined flat on both sides walls (with the exception of the OK4S1 & JDG-1051) to keep the sidewall tolerances in line with standard API flanges and meet TTMA specifications. All JIKOH sight glasses are annealed to help reduce cracking and crazing caused by certain fuel additives.

PT Sight Glasses



Part#	Description
TTF40WS	4" Aluminum housing sight glass TTMA flange Wide (pictured above)
TTF40WSG	4" Aluminum housing sight glass TTMA flange Narrow

JIKOH
MANUFACTURING, INC.
OMAHA, NEBRASKA



Introducing The NEW Jikoh,

Opti-Lite™

Illuminated Sight Glass

**The story of the New Jikoh Opti-Lite
Illuminated Sight Glass.**

People came to us and asked,
"What about seeing at night?"

Drivers are out 24/7 and at night
they cannot see into the sight glass
without carrying illumination.

We went to work to provide a new
Revolutionary Illuminated Sight
Glass that would light the way.

It needed to be super bright, so we
made it that way.

It needed to last for years, so we
installed long lasting L.E.D. lights.

In today's market it had to be
Ethanol Compatible, so of course,
it is.

There is much more we could say,
send us an e-mail or call us today!

JIKOH Lights The Way

NEW

Opti-Lite™
ILLUMINATED SIGHT GLASS

- Super Bright High Intensity LED
- Draws Only .12 Amps
- 100,000 Hour Rated LED Light
- Can Be Operated From Control Box
- Electronics Sealed in Epoxy To Prevent Corrosion & Moisture
- Increased Driver Safety
- Ethanol Compatible
- Part #: JDG-105-0L

JIKOH
MANUFACTURING, INC.
"Leaders In Sight Glass Technology"

ASSOCIATE MEMBER NTEC

8806 Washington Circle • Omaha, NE 68127 • USA
P 402-677-0123 • F 402-445-8112 • Visit Us Online at www.jikohmfg.com

Part # JDG1050L/EP - 4" Ethanol glass, L.E.D. w/ 15' lead wire



Engineered Systems

1004D3/1005E3 API Bottom Loading Coupler

H32094PA
July 2009

The 1004D3 is the standard in “drip-less” bottom loading couplers and a proven performer at major oil terminals worldwide. The 1004D3 mates with all 4” bottom loading adaptors built in accordance with API RP-1004 requirements to significantly reduce liquid loss at disconnect.



1005E3
Small handles used
Throughout Europe



1004D3
Large handles used
Throughout the Americas

BENEFITS

5 Cam Design

Design insures easy alignment, tight connection and resists side forces during loading.

Fully Interlocked

The 1004D3 cannot be opened unless it is properly connected to an API adaptor nor can it be disconnected when the poppet is open.

Easy and inexpensive to maintain!

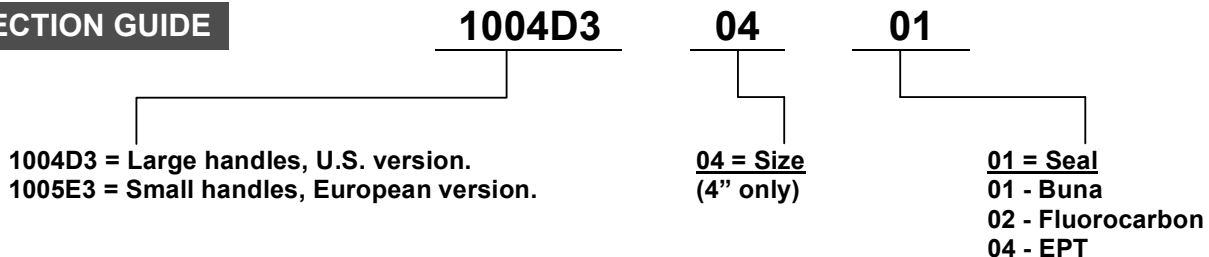
Redundant Sealing

Simple and reliable, consisting of dual heavy duty cross-section o-rings.

Smoother, Easier Operation

Built-In roller bearing handle and Teflon impregnated poppet and cylinder provide for smoother, easier movement.

SELECTION GUIDE

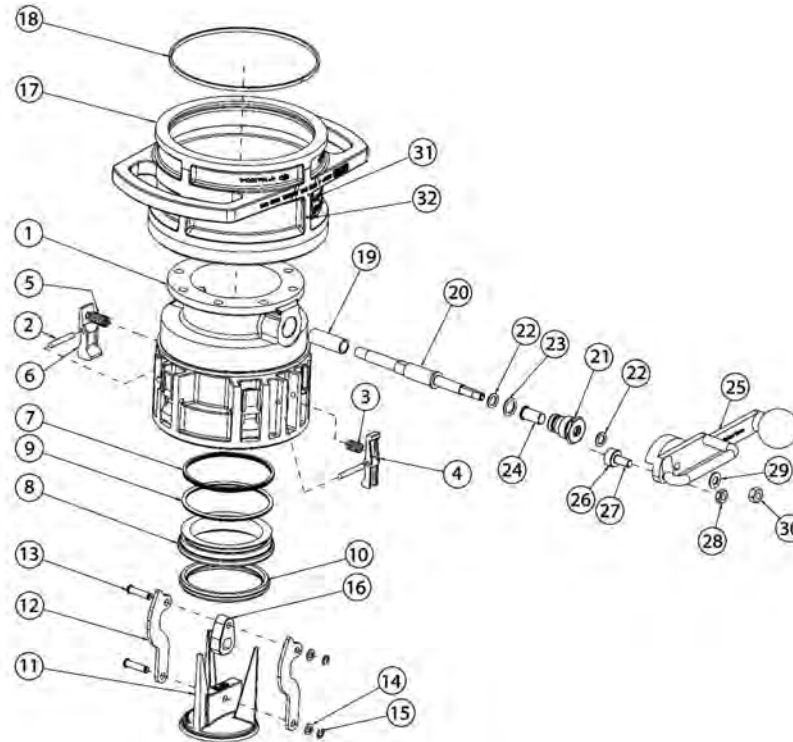


Design Parameters:		Materials:	
Max Design Pressure:	125 psi (g), 8.6 bar(g)	Body, Sleeve, Poppet	Aluminum (A356-T6)
Max Allowable Working Pressure:	75psi (g), 5 bar (g)	Cam , Interlock	316 SST ASTM A351 CF8M
Max Flow Rate:	600GPM, 135 M3/H	Cylinder	Aluminum (6061-T6)
Max Temperature:	See seal options (page 3)	Shaft	13-8 Condition RH 950 Stainless Steel.
Weight:	18.5lbs (8.39 kg)	Seals	See Seal Options
Pressure Drop (At Max Flow Rate)	2-5 psi (g), .24 bar (g)	Clevis Pin	17-4 PH SST condition H900 Hardened.

*Unit tested to 300 psi (21 bar) in the closed position to withstand excessive thermal expansion. Reference API Standard RP-1004 for additional information.

API Bottom Loading Coupler

1004D3/1005E3



#	Description	Qty	Material	Part #	
1	Body	1	Aluminum A356-T6, ASTM B26 Anodized.	E20064AH	
2	Spirol Pin	7	Carbon Steel Zinc Plated.	H31396M	
3	Interlock Spring	2	Carbon Steel Zinc Plated.	H31743M	
4	Interlock	2	316 SST, ASTM A351 CF-8M.	C20062M	
5	Cam Spring	5	18-8 SST.	H06753M	
6	Cam	5	316 SST, ASTM A351 CF-8M.	C20063M	
7	Wave Spring	1	17-7 PH SST, Condition H900 Hardened.	H31091M	
8	Cylinder	1	Aluminum 6061-T6.	C21283AH	
9	Cylinder O-Ring	1	See Seal Options Chart.	-	*
10	Nose Seal	1	See seal Options Chart.	-	*
11	Poppet	1	Aluminum A356-T6, ASTM B26, Anodized.	D20069AH	
12	High Pressure Link	2	410 SST Hardened.	H30552M	
13	Clevis Pin	2	17-4 PH SST, Condition H900 Hardened.	H30610RE	
14	Washer	2	18-8 SST.	H30206M	
15	E - Ring	2	SST	H30554M	
16	Drive Link	1	316 SST, ASTM A351 CF-8M.	C21255EW	
17	Sleeve	1	Aluminum A356-T6 ASTM B26 Anodized.	E20013AH (1004D3) E20026AH (1005E3)	
18	Dust Seal	1	Felt	H30214M	
19	Tube Spacer	1	316 SST.	C21254RE	
20	Handle Shaft	1	13-8 Condition RH 950 Stainless Steel.	C21290RE	
21	Stuff Box	1	316L ASTM A479 316.	C20812RE	
22	Stuff Box O-Ring	2	See Seal Options Chart.	-	*
23	Stuff Box O-Ring	1	See Seal Options Chart.	-	*
24	Sleeve Bearing	1	97180	H32163M	*
25	Operating Handle	1	316 SST, ASTM A351 CF-8M.	E20070EW	
26	Cam Follower	1	17-4 PH SST, Condition H900 Hardened.	H32029RE	
27	Loctite	As required	Thread Locking Compound.	TYPE 242	
28	3/8-24 Hex Nut	1	Carbon Steel Zinc Plated.	H30220M	
29	Belleville Disc Spring	1	300 Series Stainless Steel	H32158M	
30	Nut, Hex, SST, M10-1.5	1	SST	H32111M	
31	ID Tag	1	0.12 Satin.	-	
32	6-20 X 3/16" Thread Screw	4	Type B, Steel, Zinc plated	H32149M	

* Items included in seal replacement kits (1004D3SRK)

API Bottom Loading Coupler

1004D3/1005E3

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SEAL OPTIONS

Seal Material	Coupler Model #	Nose Seal (10)	Stuff Box Seal (22)	Stuff Box Seal (23)	Cylinder Seal(9)	Temp Rating
Buna N 1500	1004D3-0401/1005E3-0401	H30482M	H20129M	H31705M	H30258M	-20°F - 250°F (-29°C - 121° C)
Fluorocarbon	1004D3-0402/1005E3-0402	H30483M	H20175M	H31706M	H30217M	-20°F - 400°F (-29°C - 204° C)
EPT E 692	1004D3-0404/1005E3-0404	H31957M	H20176M	H31707M	H31956M	-50°F - 225°F (-46°C - 107° C)

Consult factory for additional seal options.

SEAL REPLACEMENT KITS

OPW 1004D3SRK Seal Replacement Kits include everything needed to change the seals in the 1004D3/1005E3 API coupler. **Seal Replacement Kits are always recommended as spare parts.**

Seal Material	Seal Replacement Kit Part #
Buna N 1500	1004D3SRK-0401
Fluorocarbon	1004D3SRK-0402
EPT E 692	1004D3SRK-0404

Tools Needed

- 11/16 inch or 17mm socket
- 1-1/4 inch or 32mm deep reach socket.

ASSEMBLY

API coupler Installation Preparations

Safety precautions

Warning: Read & Understand these instructions before starting installation.

- Coupler to be used for its designated purpose only.
- Local regulations for (un)loading must be followed at all times.
- Product flow may result in static electricity; grounding of equipment is required.
- **Although the 1004D3/1005E3 designed for higher pressures, proper measures must be taken within the system to allow for thermal expansion.**
- OPW instructions must be followed for installation.

Make sure to use adequate personal protection at all times during operation.

Note: All images depict the 1004D3 (large handles). The steps for 1005E3 coupler (small handles) are the same as 1004D3

Step 1



- Secure whatever device coupler will be mounted to the e.g. loading arm.
- Sandwich gasket between coupler and load device flanges.

Step 2

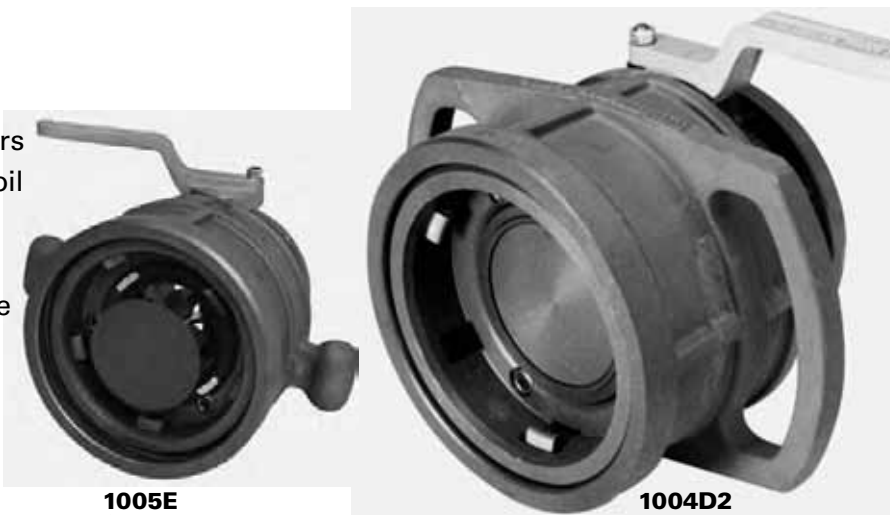


- Align coupler bolt holes with bolt holes on loading device.
- Insert two bolts into the highest bolt holes on the flange and hand tighten. This is to secure coupler, and prevent damage due to bending as the remaining bolts are installed.

Warning: Under pressure, poppet will cause handle to rotate violently if not restrained.

1004D2/1005E API Bottom Loading Coupler

The 1004D2 is the standard in "drip-less" bottom loading couplers and a proven performer at major oil terminals worldwide. The 1004D2 mates with all 4" bottom loading adaptors and is built in accordance with API RP-1004 requirements to significantly reduce liquid loss at disconnect.



1005E
 Small handles used throughout Europe

1004D2
 Large handles used throughout the Americas

BENEFITS

5 Cam Design

Design insures easy alignment, tight connection and resists side forces during loading.

Fully Interlocked

The 1004D2 cannot be opened unless it is properly connected to an API adaptor nor can it be disconnected when the poppet is open.

Redundant Sealing

Simple and reliable, consisting of dual heavy-duty cross-section O-rings.

Smoother, Easier Operation

Built-in roller bearing handle and PTFE impregnated poppet and cylinder provide for smoother, easier movement.

Easy and inexpensive to maintain!

SELECTION GUIDE

1004D2

04

02

1004D2 = Large handles, U.S. version
1005E = Small handle, European version

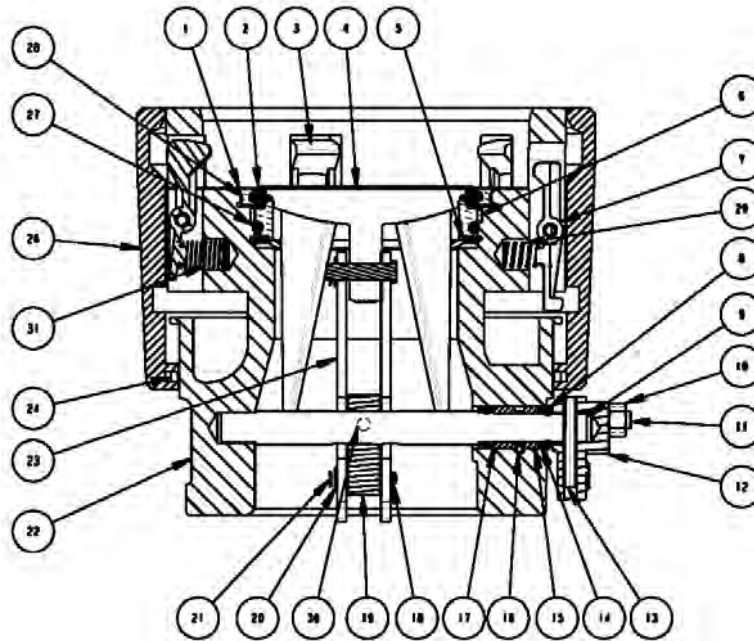
04 = size (4" only)

02= Seal
01 - Buna-N
02 - Fluorocarbon GFLT
04 - EPDM

DESIGN PARAMETERS:		MATERIALS:	
*Max Allowable Working Pressure:	75 psi (g), 5 bar (g)	Body, Sleeve, Poppet	Aluminum (A356-T6)
Max Flow Rate:	600 GPM, 135 M3/H	Cam Arms, Interlock, Drive Link	Stainless Steel (ASTM A351 CF8M)
Max Temperature:	See seal options (page 3)	Cylinder	Aluminum (6061-T6)
Weight:	18.5 lbs (8.39 kg)	Shaft	Stainless Steel (17-4 PH)
Pressure Drop (At Max Flow Rate)	2-5 psi (g), .24 bar (g)	Seals	See Seal Options

*Unit tested to 300 psi (21 bar) in the closed position to withstand excessive thermal expansion. Reference API Standard RP-1004 for additional information.

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MAIN AND BACK-UP SEALS

#	Description	Qty	Material	Part #	
1	Screw	3	Carbon Steel	H30222M	
2	Nose seal	1	See Seal Option Chart	See Seal Options	*
3	Locking Cam Arm	5	316 SST ASTM A351 CF-8M	C20063M	
4	Poppet	1	Aluminum A356-T6 ASTM B26 Anodized	D20069AH	
5	Wave Spring	1	17-7 PH Stainless Steel	H31091M	
6	Cylinder	1	6061-T6 Aluminum Anodized	C20144RAH	
7	Interlock	1	316 SST ASTM A351 CF-8M	C20062M	
8	Shaft Dust Seal	1	Felt	H30228M	*
9	Shaft	1	17-4 PH SST Condition H1025 Hardened	C20145RE	
10	Nut, Hex	1	Carbon Steel, Zinc plated	H30220M	
11	Roller Bearing	1	Carbon Steel	H30219M	
12	Lever	1	Aluminum A356-T6 ASTM B26	D20037A	
13	Spiral Pin	7	Carbon Steel Zinc plated	H31396M	
14 a, b	Shaft O-Ring	2	See Seal Option Chart	See Seal Options	*
15	Bushing	1	Brass UNS C-36000	H30809RB	
16	Groove Pin	1	Carbon Steel Zinc plated	H30212M	*
17 a, b	Washer	2	18-8 SST	H30209M	
18	Clevis Pin	2	17-4 PH SST Condition H900 Hardened	H30610RE	
19	Drive Link	1	316 SST ASTM A351 CF-8M	H30207EW	
20	Washer	2	18-8 SST	H30206M	
21	E-Ring	2	15-7 PH SST	H30554M	*
22	Body	1	Aluminum A356-T6 ASTM B26 Anodized	E20038AH	
23	Bent Link	2	410 SST Hardened	H30552M	
24	Dust Seal	1	Felt	H30214M	
26	Sleeve	1	Aluminum A356-T6 ASTM B26 Anodized	E20013AH (1004D2) E20026AH (1005E)	
27	Cylinder O-Ring	1	See Seal Option Chart	See Seal Options	*
28	Keeper	3	18-8 SST	H30221M	
29	Spring, Interlock	1	Carbon Steel Zinc plated	H31743M	
30	Set screw	1	18-8 SST	H30602M	*
31	Spring, Cam Arm	5	18-8 SST	H06753M	

*Items included in seal replacement kits (1004D2SRK)

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SEAL OPTIONS

Seal Material	Coupler Model #	Nose Seal (2)	Shaft Seal (14)	Cylinder Seal (27)	Temp Rating
Fluorocarbon	1004D2-0402/1005E-0402	H30483M	H30808M	H30217M	-20°F - 400°F (-29°C - 204° C)
Buna	1004D2-0401/1005E-0401	H30482M	H30259M	H30258M	-20°F - 250°F (-29°C - 121° C)
EPT	1004D2-0404/1005E-0404	H31957M	H31955M	H31956M	-50°F - 225°F (-46°C - 107° C)

Consult factory for additional seal options.

SEAL REPLACEMENT KITS

OPW 1004D2SRK Seal Replacement Kits include everything needed to change the seals in the 1004D2/1005E Bottom Loading Coupler. **Seal Replacement Kits are always recommended as spare parts.**

Seal Material	Seal Replacement Kit Part #
Fluorocarbon	1004D2SRK-0402
Buna	1004D2SRK-0401
EPT	1004D2SRK-0404

ASSEMBLY

API Coupler Installation Preparations

Safety precautions

Warning: Read & understand this instruction before starting installation.

- Coupler to be used for its designated purpose only.
- Local regulations for (un)loading must be followed at all times.
- Product flow may result in static electricity; grounding of equipment is required.
- **Although the 1004D2/1005E is designed for higher pressures, proper measures must be taken within the system to allow for thermal expansion.**
- OPW instructions must be followed for installation.
- Make sure to use adequate personal protection at all times during operation.

Step 1

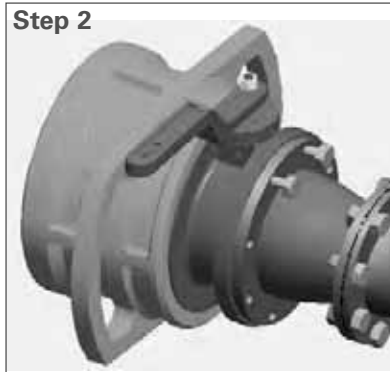


- Secure whatever device Coupler will be mounted to (e.g., Loading Arm)
- Sandwich gasket between Coupler and Loading Device flanges.
- Align Coupler bolt holes with bolt holes on Loading Device.
- Insert two bolts into the highest bolt holes on the flange and hand tighten. This is to secure Coupler, and prevent damage due to bending as the remaining bolts are installed.

Note: All images depict the 1004D2 (large handles).

The steps for 1005E Coupler (small handles) are the same as 1004D2.

Step 2



Install remaining bolts and tighten down to recommended torque value.

Note: Torque value is based on material and grade of bolts used.

Warning: Under pressure, poppet will cause handle to rotate violently if not restrained.

Step 3



Connect Coupler to adaptor and slide sleeve forward. Rotate the handle locking the sleeve in position and opening the poppet.

J451 - _____ (add variant) 4" API Bottom Loading Coupler



Variants Available

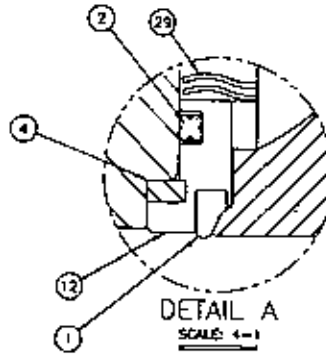
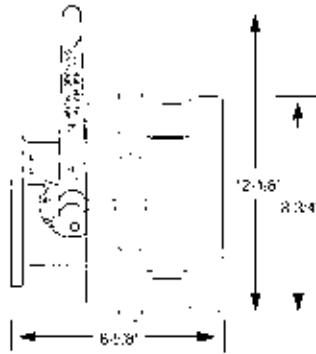
Variant	Seal
-022	Buna
-023	Chemraz®
-031	High Performance Viton
-051	High Pressure Viton

Retort Kit

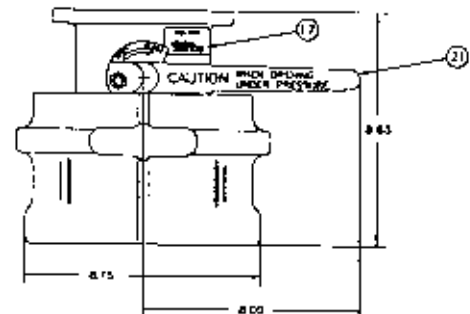
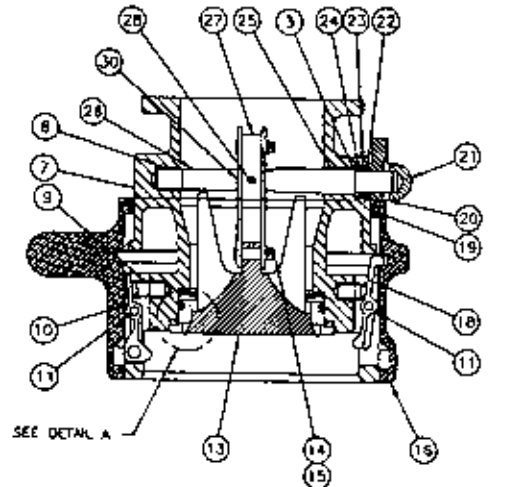
J1000-022	Buna
J1000-023	Chemraz®
J1000-031	High Performance Viton

Seal Kit

494069	High Performance Viton
--------	------------------------



ITEM	PART No.	PART NAME	MAT.	QTY.
1	564759	NOSE SEAL	N.P. VITON	1
2	564760	DUAD RING (NOTE 1)	N.P. VITON	1
3	407433	O-RING (SHAFT)	N.P. VITON	1
4	565936	AXIAL SEAL	N.P. VITON	1
5	564806	CARTON	CHROME	1
6	564607	INSERT	CHROME	1
7	408259	BODY	ALUM.	1
8	560595	BEARING	PLAST.	1
9	408261	SPRING	ALUM.	4
10	408256	LOCKING LUG	SST	3
11	470078	ROLL PIN	SST	4
12	564658	NOSE PIECE	ALUM.	1
13	564657	POPPET	ALUM.	1
14	408252	LINK PIN	SST	2
15	560963	COTTER PIN	SST	2
16	565940	SLEEVE	ALUM.	1
17	566180	I.D. TAG	ALUM.	1
18	408258	INTERLOCK LUG	SST	1
19	408278	DUST SEAL	FELT	1
20	560295	SHEAR PROOF PIN	STEEL	1
21	565934	LEVER SUB-ASSEMBLY	---	1
22	561320	DUST SEAL O-RING	BUNA	1
23	408189	RETAINING RING	STEEL	1
24	408167	WASHER	SST	1
25	560594	BEARING	PLAST.	1
26	408259	SHAFT	SST	1
27	408254	LINK	SST	1
28	561852	H.O.COILED SPRING PIN	SST	1
29	564090	WAVE SPRING	SST	1
30	408262	BENT LINK	SST	2



AIR INTERLOCKS

F0567

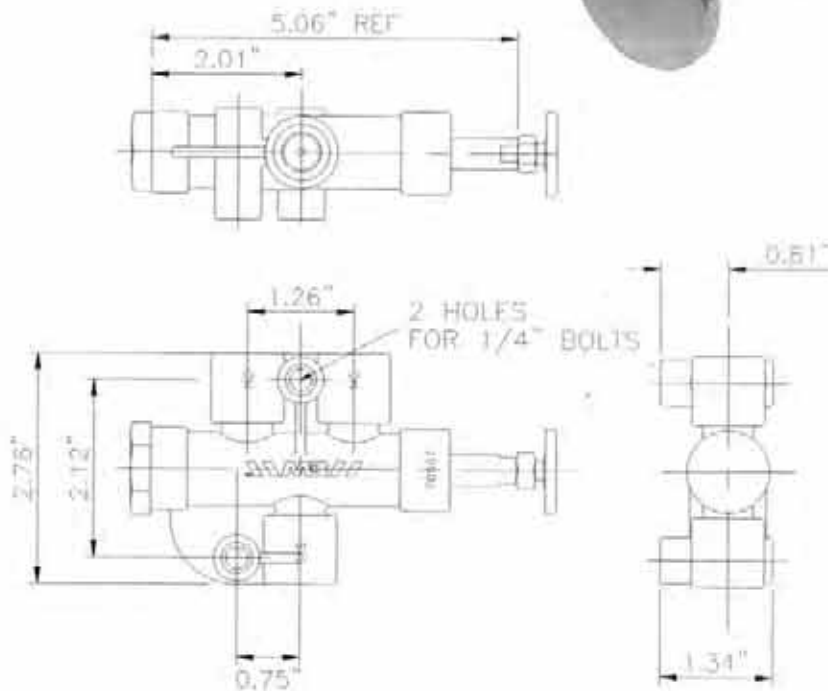
METAL AIR INTERLOCK VALVE

EMCO WHEATON
A Gardner Denver Product

FEATURES & BENEFITS

The F0567 Metal Air Interlock is designed for installation on API Adaptors, Vapor Adaptors, and Guardbar Systems. It can be used for interlocking a vehicles brakes or controlling other pneumatic components.

- **Electrically continuous** to prevent the build up of static electricity
- **Stainless steel** operating shaft, spring, end cap and button eliminates corrosion
- **Zinc plated** bolt location inserts
- **Reversible mounting** for different height requirements and applications
- **1/4" NPT** Air Connections
- **Adjustable button** for different couplings and applications
- **Different end buttons** are available to suit the specific application
- **Electronic limit switch** available



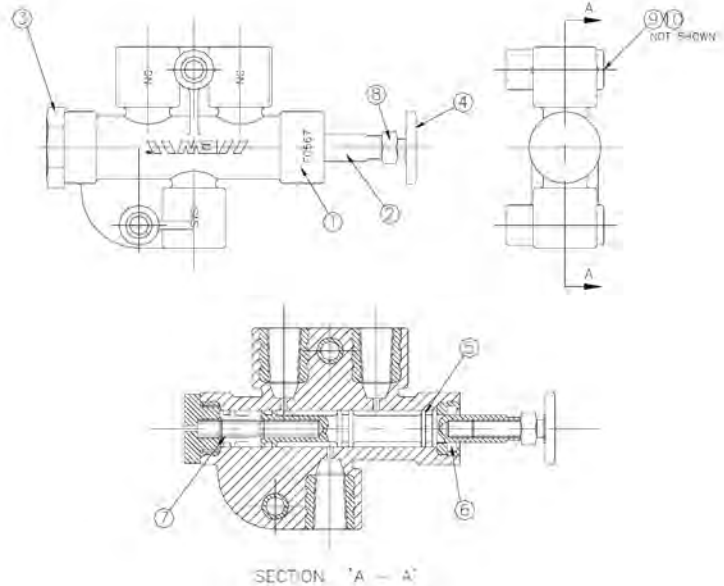
VARIANTS

PART NO.	DESCRIPTION	WEIGHT
F0567-501	Metal Air Interlock with 1" Button	0.50
F0567-511	Metal Air Interlock with 1.5" Button	0.50
F0567-521	Metal Air Interlock with Butterfly Button	0.52

F0567

Air Interlock Valve

DESCRIPTION AND PART NUMBERS



ITEM NO.	DESCRIPTION	QTY	PART NO.
1	BODY	1	F0567-001
2	STEM	1	670471
3	PLUG	1	670474
4	BUTTON ASSEMBLY	1	298541
5	O-RING*	3	670422
6	WIPER SEAL*	1	560085
7	SPRING*	1	670472
8	NUT	1	470040
9	BOLT	2	564278
10	WASHER	2	403107
Additional Items Available			
-	1.5" BUTTON KIT	1	724002200
-	BUTTERFLY BUTTON KIT	1	724002201
-	LIMIT SWITCH KIT	1	670753
-	INTERLOCK SERVICE KIT	1	670836

ITEMS MARKED * ARE CONTAINED WITHIN THE SERVICE KIT

As a part of a continuous commitment to product development the company reserves the right to alter the specification of its products without prior notice.

EMCO WHEATON
INNOVATIVE SYSTEMS
FOR TRANSPORT

AIR INTERLOCK VALVES

**Transport
Systems**



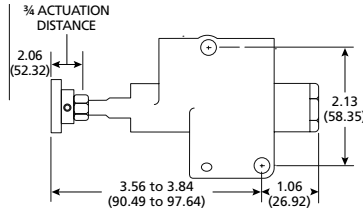
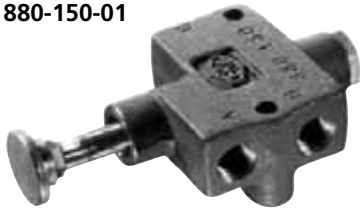
Three-way Air Valves

Play it safe with this lightweight valve that locks up the brakes on the trailer, preventing it from leaving the loading rack while connected to the loading arm. This three-way air valve can be used normally open or normally closed, has an adjustable stem, and comes with standardized TTMA and API mounting holes. The anodized aluminum valve is used on all API bottom loading adapters and all Vapor Check Valves.

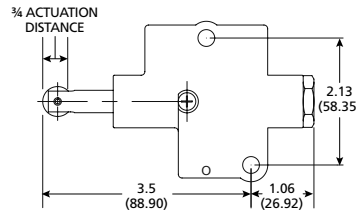
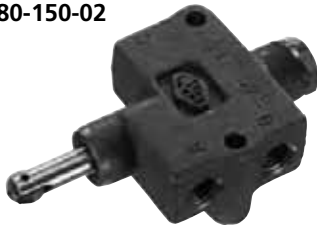
Features

- Heat-treated, anodized aluminum construction.
- 1/4" NPT connection ports.
- Field serviceable.
- Adjustable stem button.

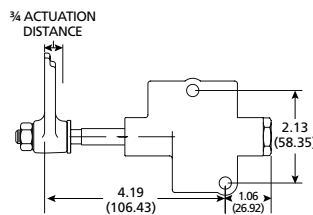
880-150-01



880-150-02



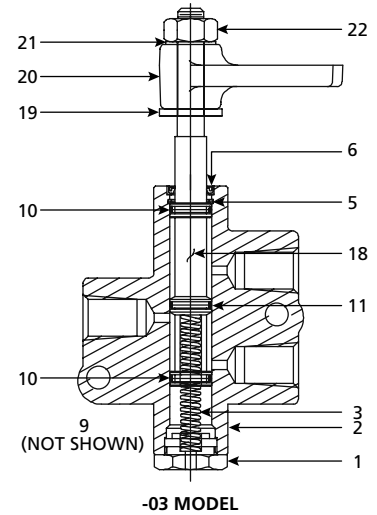
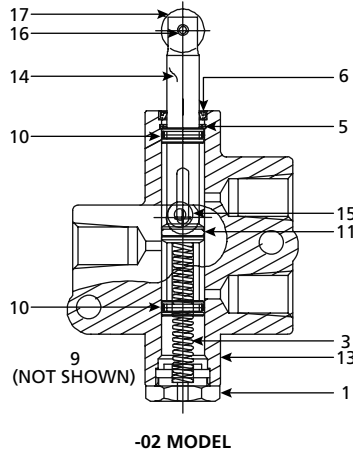
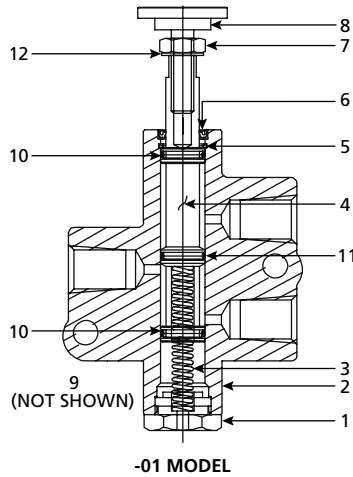
880-150-03



MODEL UNIT	880-150-01	880-150-02	880-150-03
Width (Inches/Millimeters)	3.00/76.2	3.00/76.2	3.00/76.2
Length (Inches/Millimeters)	4.25/107.96	4.25/107.96	4.25/107.95
Pounds	0.69	0.69	0.69
Kilograms	0.31	0.31	0.31



Air Interlock Valves Parts List



#	PART NAME	QTY. REQ.			PART NUMBER	#	PART NAME	QTY. REQ.			PART NUMBER
		-01	-02	-03				-01	-02	-03	
1	Plug - Nut	1	1	1	880-145-01	14	Spool & O-ring Assembly, Roller Tip	0	1	0	880-171-02
2	Body Air Valve	1	0	1	880-323-01	15	Screw 6-32 x 0.62 (Self Sealing)	0	1	0	11477-01
3	Spring	1	1	1	880-148-01	16	Rollpin	0	1	0	881-119-01
4	Spool & O-ring Assembly	1	0	1	880-171-01	17	Roller	0	1	0	881-119-01
5	Retaining Ring	1	1	1	11090-04	18	Spool & O-ring Assembly	0	0	1	881-122-01
6	Dust Seal	1	1	1	880-142-01	19	Washer 5/16 Int. Lock	0	0	1	11163-05
7	Nut - 1/4-20 Hex Jam	1	0	0	11021-03	20	Actuator - Offset	0	0	1	881-120-01
8	Screw Adjuster 1.0	1	0	0	880-144-01	21	Washer 5/16 Int. Lock	0	0	1	11163-05
9	Screw 1/4-20 x 1.75 Hex Head	2	2	2	11063-07	22	Nut - 5/16-18 Hex	0	0	1	11179-05
10	O-ring	2	2	2	11134-01		880-150-01 Service Kit*	1	0	0	90012
11	O-ring	1	1	1	11134-02		880-150-02 Service Kit**	0	1	0	90055
12	Washer - 1/4 Int. Lock	1	0	0	11163-04		880-150-03 Service Kit***	0	0	1	90056
13	Body-Air Valve, Roller Tip	0	1	0	880-323-02						

* Note: Service Kit includes: (1) #3, (1) #4, (1) #5, (1) #6, (1) #7, (1) #8, (1) #12
 **Note: Service Kit includes: (1) #3, (1) #5, (1) #6, (1) #14, (1) #15, (1) #16, (1) #17
 ***Note: Service Kit includes: (1) #3, (1) #5, (1) #6, (1) #18, (1) #19, (1) #20, (1) #21, (1) #22

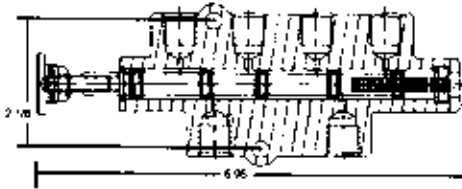
PART NUMBER	DESCRIPTION
880-113-01	Screw Adjuster Assembly 1.5" Button
880-150-01	Three-way Air Interlock Valve
880-150-02	Three-way Air Interlock Valve, Roller Tip
880-150-03	Three-way Air Interlock Valve, Offset Actuator



Air Interlock Valve

880-256

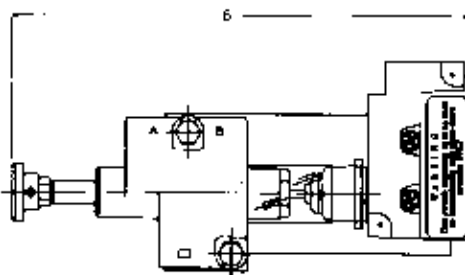
Features	Part no.	Width (in.)	Lbs.
Heat treated, anodized aluminum construction	880-256-01	3.00	0.09



Air Interlock with Limit Switch

880-155

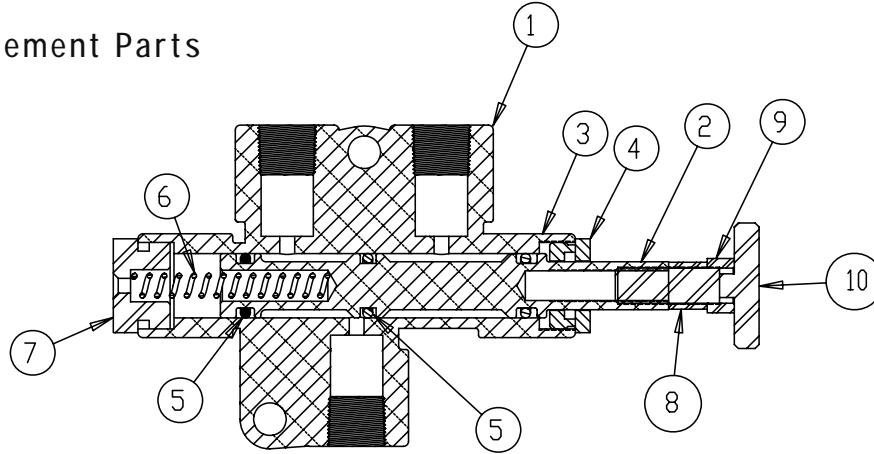
Features	Part no.	Length (in.)	Lbs.
Heat treated, anodized aluminum construction	880-155-01	6.00	1.25



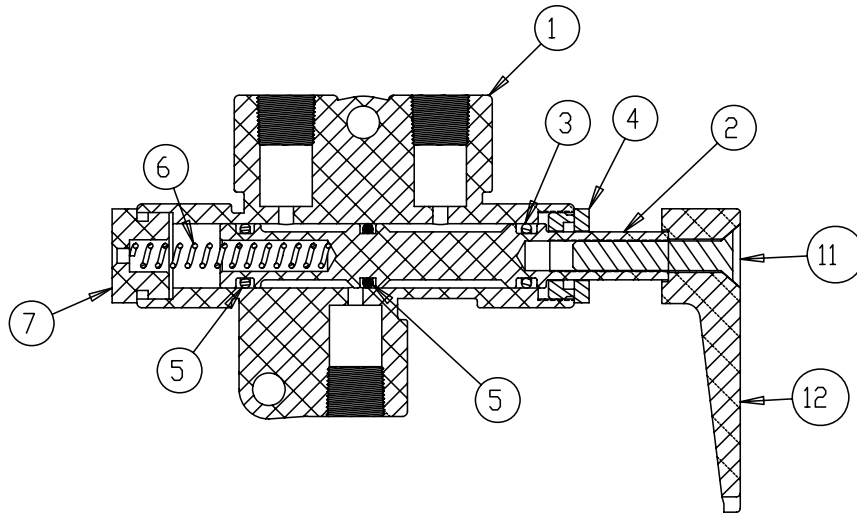


Air Interlock Valve Model 200

Replacement Parts



Air Interlock Valve Model 201



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	200-1	BODY	1
2	200-2	SHAFT	1
3	200-3	O-RING	1
4	200-4	NUT, GLAND	1
5	200-8	O-RING	2
6	200-9	SPRING, AIR INTERLOCK	1
7	200-10	NUT, END	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
8	200-5	SPACER	1
9	200-6	HEX NUT	1
10	200-7	ADJUSTER	1
11	11393	PUSH PLATE	1
12	11374	FLAT HEAD SCREW	1

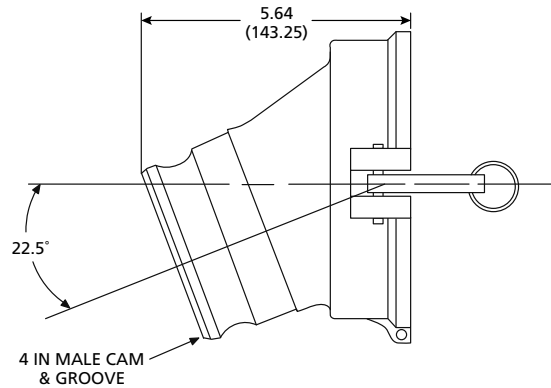
GRAVITY DROP ADAPTERS

Transport Systems



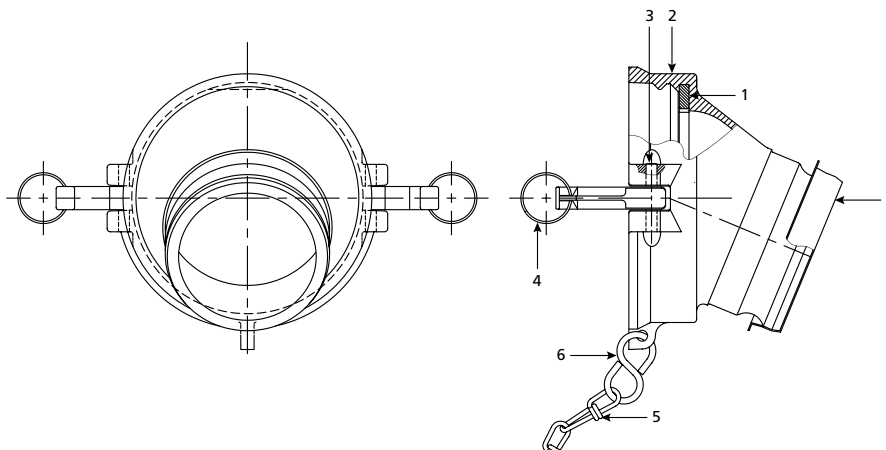
Male Gravity Drop Adapter

880-411-01



MODEL UNIT	880-410-01	880-411-01
Size (Inches/Millimeters)	3.00/76.2	4.00/101.6
Weight (Pounds/Kilograms)	4.00/1.81	5.00/2.27

Male Gravity Drop Adapter Part List



#	PART NAME	PART NUMBER	#	PART NAME	PART NUMBER
1	Rubber Gasket	880-206-01	5	Double Loop Chain	880-115-02
2	4" Drop Adapter - Body Only	880-412-01	6	S-Hook	11110-01
3	Groove Pin	11125-07	7	Protective Closure	11065-08
4	Cam Arm & Pull Ring Assembly	774-116-03		3" Drop Adapter - Body Only	880-413-01

PART NUMBER	DESCRIPTION
880-410-01	3" Male Cam & Groove
880-411-01	4" Male Cam & Groove
880-206-01	Gasket - API End

GRAVITY DROP ADAPTERS

Transport
Systems



Female Gravity Drop Adapter

Let gravity do all the work with these high strength, corrosion-resistant adapters.

A 22.5 degree angle makes service station drops a breeze with easy hose coupling and fast, unrestricted off-loading. Engineered to mate with API RP 1004 Bottom Loading Adapters, each adapter comes with a heavy-duty attachment chain and uses a large, resilient gasket that guarantees minimum product loss. The lightweight adapters are available in 3" male NPT or male cam and groove; 4" male NPT, male cam and groove or female cam and groove.

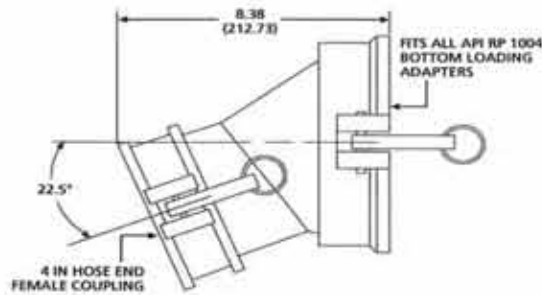
Features

- Heat-treated, anodized alloy body.
- Buna-N gaskets.
- Forged bronze cams and stainless steel pins.
- Meets API RP 1004 specifications.

880-330-01

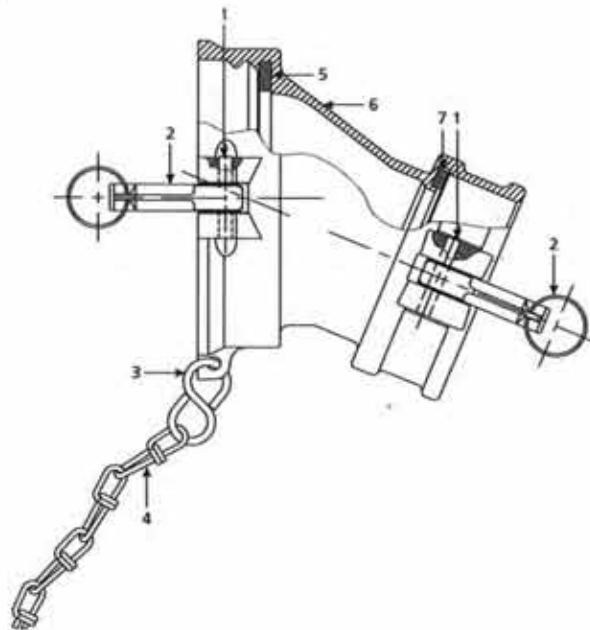


Weight (Pounds/Kilograms)
6.06 / 2.75



MODEL UNIT

880-330-01



#	PART NAME	PART NUMBER	#	PART NAME	PART NUMBER
1	Groove Pin	11125-07	5	Gasket	880-206-01
2	Cam Arm & Ring Assembly	774-116-03	6	Angle Drop Adapter	880-435-01
3	S-Hook	11110-01	7	Gasket	774-202-04
4	Double Loop Chain	880-115-02			

PART NUMBER	DESCRIPTION
880-330-01	Female Gravity Drop Adapter
880-206-01	Gasket - API End
774-202-04	Gasket - Hose End



876 Series Gravity Coupler

Rev. +, Oct. 2009

NEW Model 876 Series Gravity Couplers

- **Maximum Performance**
- **Minimum Wear**
- **Maximum Safety**

Civacon's 876 Gravity Couplers are used in the unloading process to connect the 4" API adaptor to 3" or 4" hose connections. Requiring just a one handed operation frees up the operators second hand for maneuvering hoses around. They mate with 4" API RP-1004 tank truck adaptors. The 876 Gravity Couplers come standard with aluminum bodies and Nitrile seals and hose connections which angle 15° downward for better drainage. If you want safer faster unloads, you want Civacon's new 876 Gravity Coupler.



4" Male Outlet (876-AL40) Shown

Features and Benefits

- Fast Positive Connection to a standard 4" API RP-1004 Loading Adaptor via a new Single-Cam Lever Design
- One-Handed operation to install or remove the coupler
- Cam Block "slides" down behind API lip at the top to minimize wear
- New "Multi-Lip" Gasket provides multiple sealing surfaces against API Adaptor face
- Drop Adaptor is pressure tested & rated to 45 PSIG (3 bars)
- Industry Standard 3" & 4" male Cam & Groove 3" and 4" Female drop hoses
- Cold climate field tested and rated to -40°F (-40° C)
- Standard Low-Swell Nitrile Gasket
- 19" Stainless Steel Cable for strong securement

Ordering Specifications

876 Series Gravity Couplers

876-AL40	4" Male Cam & Groove Outlet, Single Cam, Nitrile
876-AL4030	3" Male Cam & Groove Outlet, Single Cam, Nitrile
876V-AL40	4" Male Cam & Groove Outlet, Single Cam, Viton
876V-AL4030	3" Male Cam & Groove Outlet, Single Cam, Viton
876-W059	4" Male Cam & Groove Outlet, Single Cam, Nitrile w/ Cap
876-W058	3" Male Cam & Groove Outlet, Single Cam, Nitrile w/ Cap
876V-W059	4" Male Cam & Groove Outlet, Single Cam, Viton w/ Cap
876V-W058	3" Male Cam & Groove Outlet, Single Cam, Viton w/ Cap

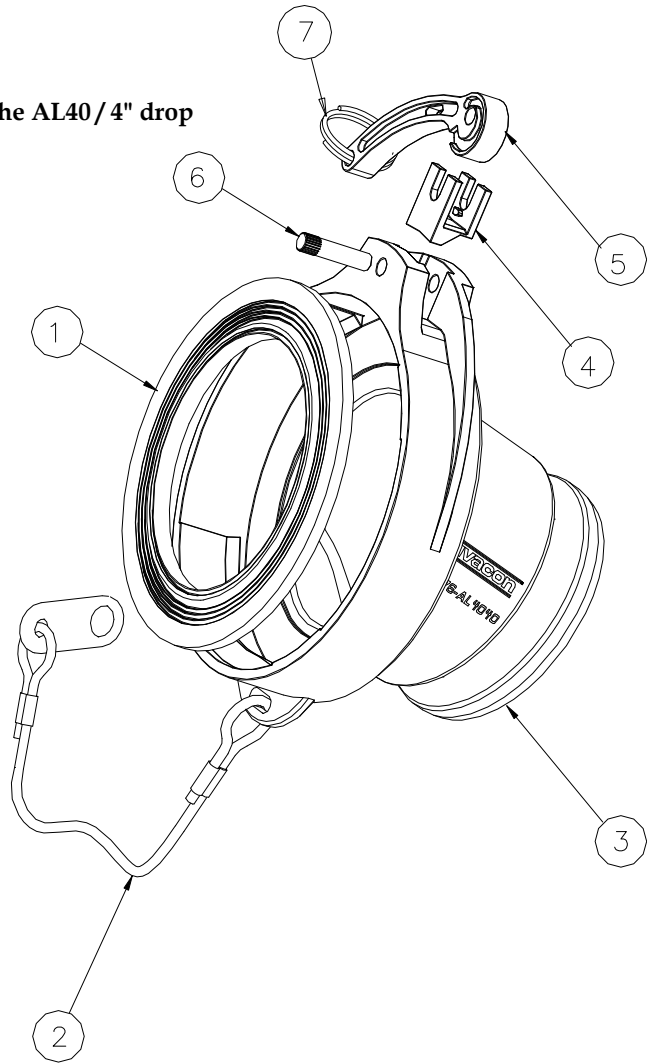




876-AL40 4" & 876-AL4030 4 X 3 Gravity Coupler

PARTS BREAK DOWN

Drawing shown is the AL40/4" drop



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10918	GASKET	1
2	10919	LANYARD	1
3	11027	BODY, MACHINED AL40	1
4	H71132 ¹	LOCKING BLOCK	1
5	H71133 ¹	CAM LEVER	1
6	H71149 ¹	CAM PIN	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
7	H20050M ¹	FINGER RING	1
3A	11026	BODY, MACHINED / AL4030 (Not Shown)	1
		4 X 3 GRAVITY COUPLER	

REPAIR KITS	
11474	CAM LEVER REPAIR KIT

¹—Included in 11474

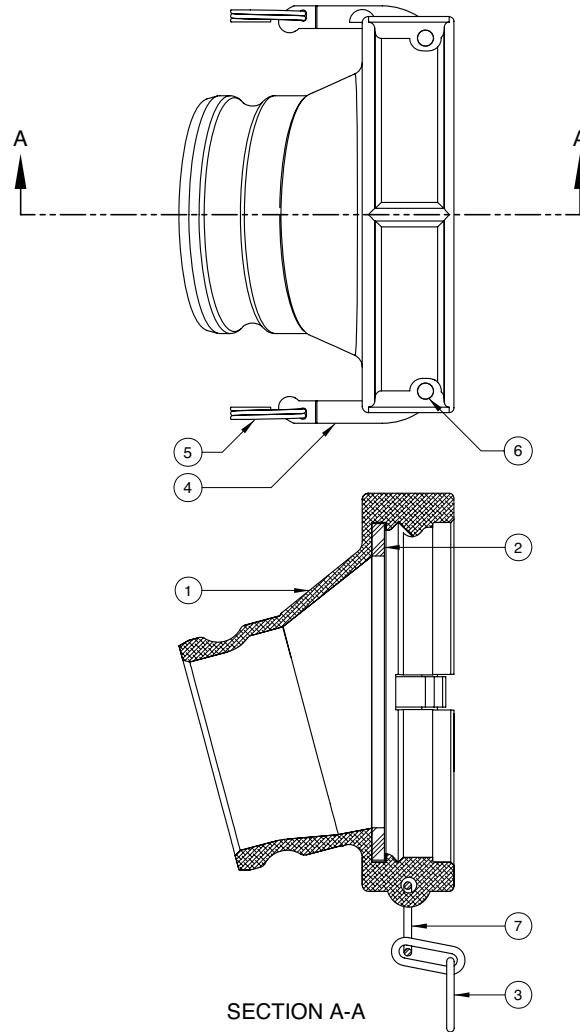




871A-AL40 4" Gravity Coupler

Replacement Parts

Rev. 0, January 2003



Repair Kit
Part # 871ARMKIT

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E00221A	BODY	1
2	H08347M	GASKET (BUNA)	1
3	H20325M	CHAIN	1
4	D10184M	KAM ARM	2

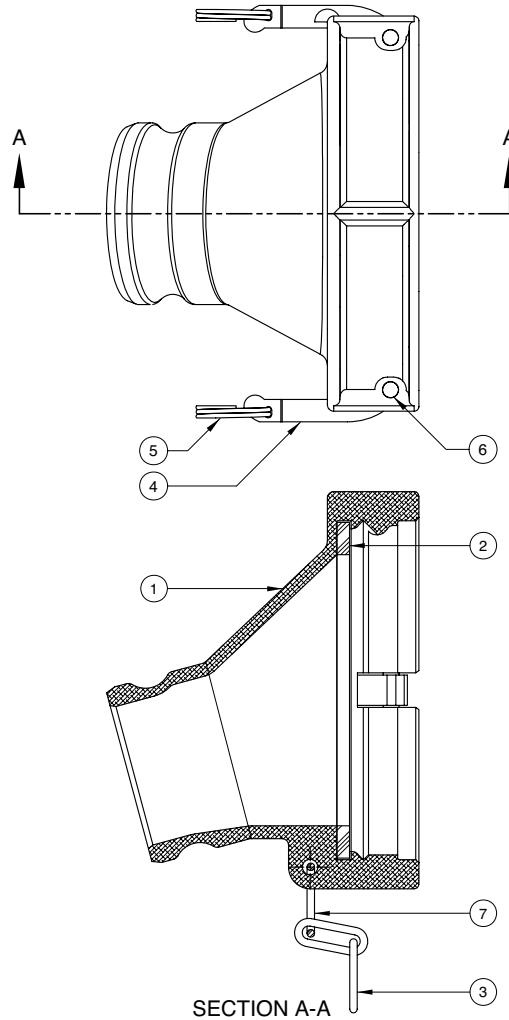
ITEM	PART NUMBER	DESCRIPTION	QTY.
5	H20550M	FINGER RING	2
6	H20144M	GROOVE PIN	2
7	H08328M	CONNECTOR RING	1



871A-AL4030 4" x 3" Gravity Coupler

Replacement Parts

Rev. 0, January 2003



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E10086A	BODY	1
2	H08347M	GASKET (BUNA)	1
3	H20325M	CHAIN	1
4	D10184M	KAM ARM	2

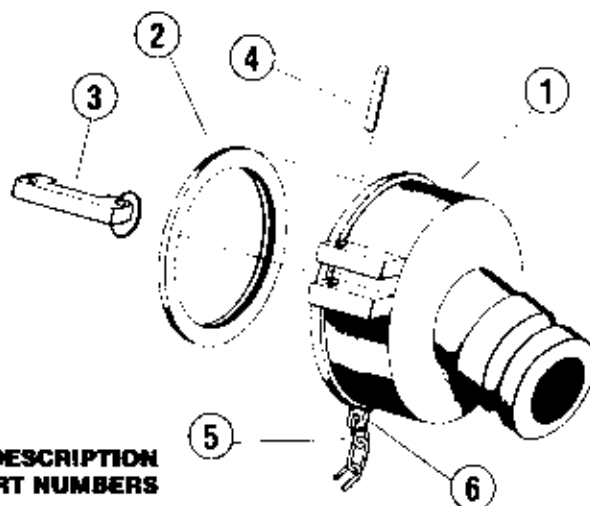
ITEM	PART NUMBER	DESCRIPTION	QTY.
5	H20550M	FINGER RING	2
6	H20144M	GROOVE PIN	2
7	H08328M	CONNECTOR RING	1

F459 4" API Gravity Drop Adapter

EMCO WHEATON

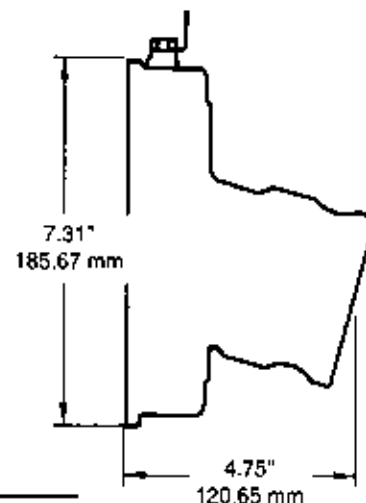
FEATURES AND BENEFITS

- Exclusive built-in shoulder at top of fitting to grip API valve head contributes additional support for weight of product hose attached to cam & groove discharge end. (F50001, F5002, F531, F552)
- Brass carms reduce wear on API head and eliminates corrosion.



DESCRIPTION AND PART NUMBERS

PART NUMBER	DESCRIPTION	WEIGHT
F459-006	Buna 4' x 3' C & G Outlet (Seal - 560611)	4.0 lbs - 1.81 kg
F459-007	Buna 4' x 4' C & G Outlet (Seal - 560611)	5.0 lbs - 2.27 kg
F459-010	EPR 4' x 3' C & G Outlet (Seal - 565158)	4.0 lbs - 1.81 kg
F459-011	EPR 4' x 4' C & G Outlet (Seal - 565158)	5.0 lbs - 2.27 kg



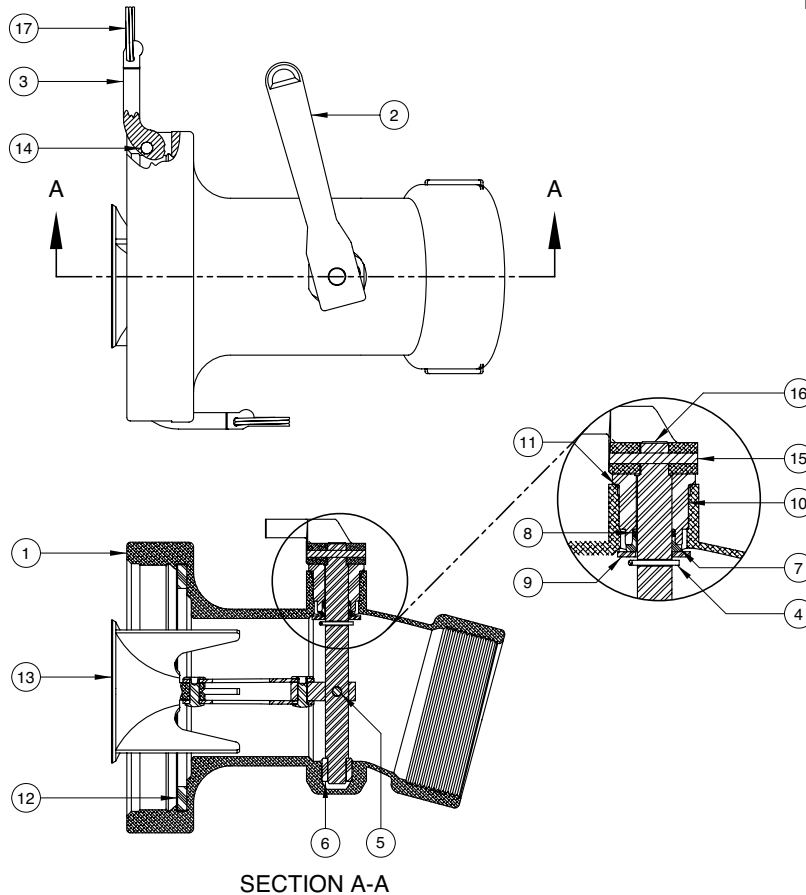
REF	DESCRIPTION	PART # F459-006 BUNA - 3"	PART # F459-007 BUNA - 4"	PART # F459-010 EPR - 3"	PART # F459-011 EPR - 4"	REQ'D	MATERIAL
1	Hose End Fitting	561302	561300	561302	561300	1	Aluminum
2	Seal	560611	560611	565158	565158	1	Buna/EPR
3	Cam & Ring Assembly	491248	491248	491248	491248	2	Brass/SST
4	Pins	409660	409660	409660	409660	2	Stainless Steel
5	Open End Link	563504	563504	563504	563504	1	Steel
6	Chain Link Assembly	491544	491544	491544	491544	1	Steel



871ED-AL40 4" Gravity Coupler

Replacement Parts

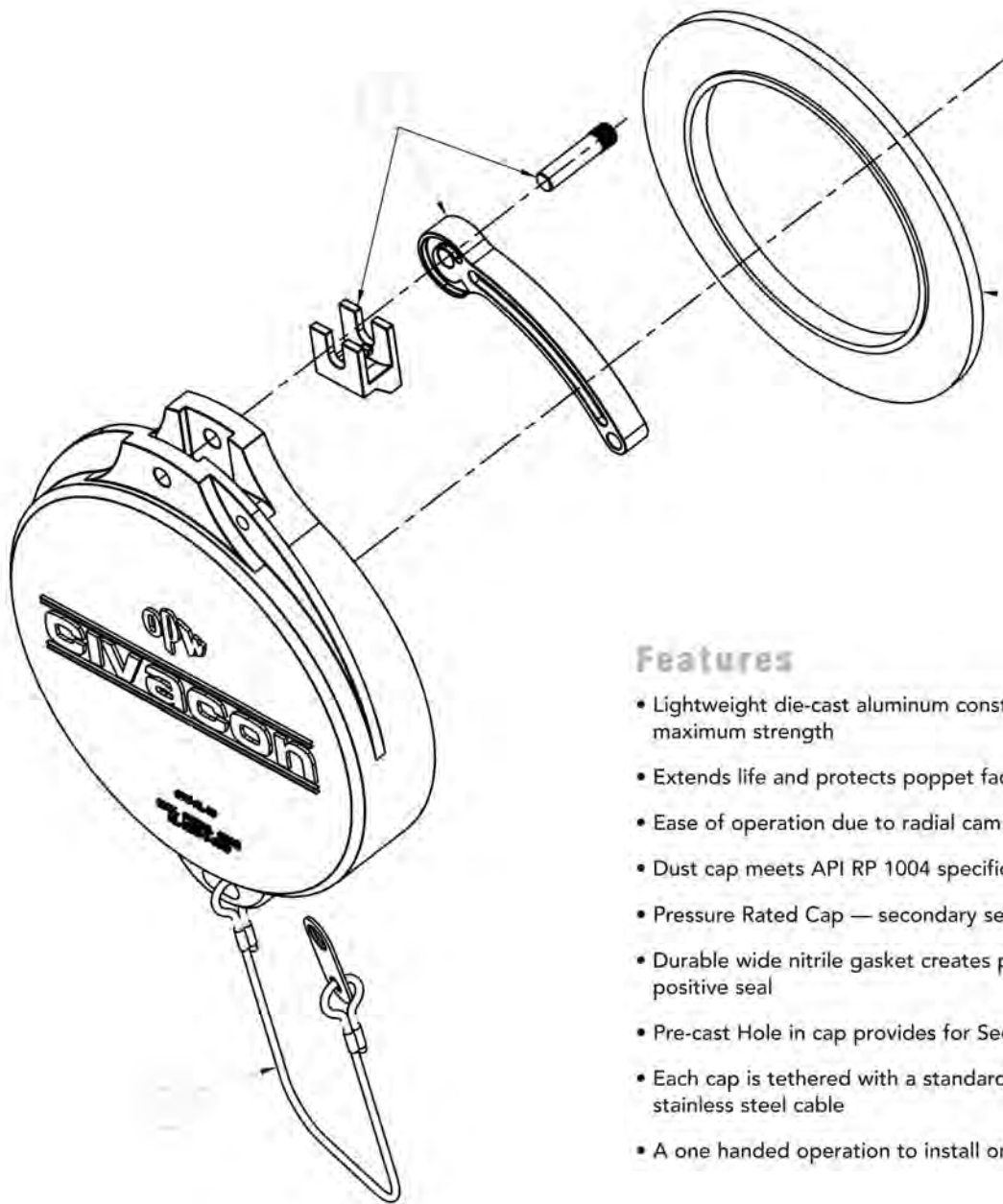
Rev. 0, January 2003



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E00227A	BODY	1
2	C10116DI	LEVER	1
3	D10184M	KAM ARM	2
4	H01186M	COTTER PIN	1
5	H04139M	PIN	1
6	H06111RP	BUSHING	1
7	H06121RP	SHAFT RETAINER	1
8	H06281M	O-RING (BUNA)	1
9	H06364M	WASHER	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
10	H07724M	STUFFING BOX	1
11	H07725M	O-RING (BUNA)	1
12	H08347M	GASKET (BUNA)	1
13	H08475	POPPET	1
14	H20144M	GROOVE PIN	2
15	H20342M	DRIVE PIN	1
16	H20345RE	SHAFT	1
17	H20550M	FINGER RING	2

875 DUST CAP



Features

- Lightweight die-cast aluminum construction for maximum strength
- Extends life and protects poppet face of API Head
- Ease of operation due to radial cam and lug design
- Dust cap meets API RP 1004 specification
- Pressure Rated Cap — secondary seal
- Durable wide nitrile gasket creates pressure rated positive seal
- Pre-cast Hole in cap provides for Security Seal Tab
- Each cap is tethered with a standard jacketed stainless steel cable
- A one handed operation to install or remove cap

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10918	GASKET (LOW SWELL NITRILE)	1
2	10919	CABLE	1
3	11474	CAM LEVER KIT	1

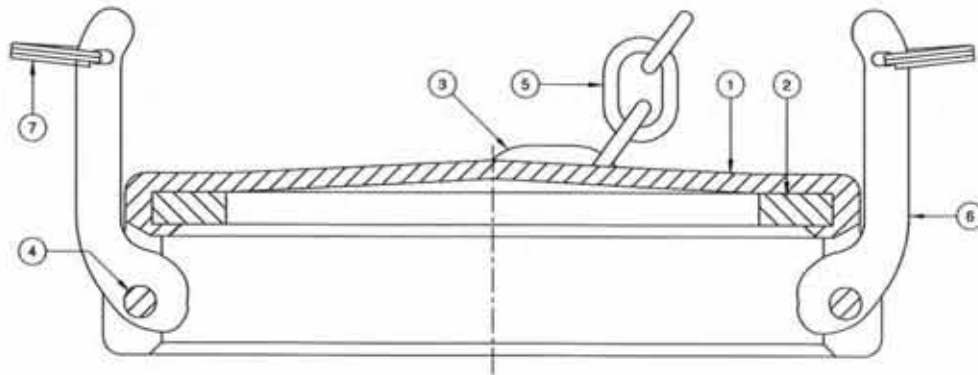
CIVAICON™



873 4" Dust Cap (aluminum)

Replacement Parts

Rev. 0, January 2003



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	SC02614A	CAP (ALUMINUM)	1
2	H08347M	GASKET (BUNA)	1
3	H08328M	CONNECTOR RING	1
4	H20144M	GROOVE PIN	2

ITEM	PART NUMBER	DESCRIPTION	QTY.
5	H20325M	CHAIN	1
6	D10184M	CAM ARM	2
7	H20550M	FINGER RING	2



API Bottom Loading Adapters

Dust Cap

This lightweight API Dust Cap shields valuable bottom loading valves from destructive outside elements. The cap easily couples on all EBW API bottom loading adapters using a reliable Buna-N gasket. The corrosion-resistant cap comes with forged brass cam arms and a heavy-duty attachment chain. This Dust Cap also meets API RP 1004 Specifications.



880-403-01

Model Unit	880-403-01	880-206-01
Description	Dust Cap	Gasket
Inches	4.00	4.00
Millimeters	101.6	101.6
Pounds	3.06	—
Kilograms	1.39	—

Part Number	Description
880-403-01	API Bottom Loading Adapter Dust Cap
880-206-01	API Bottom Loading Adapter Gasket

F499

4" API Dust Cap

FEATURES AND BENEFITS

Durable, easy to use aluminum dust cap suitable for all API valves manufactured to API RP1004.

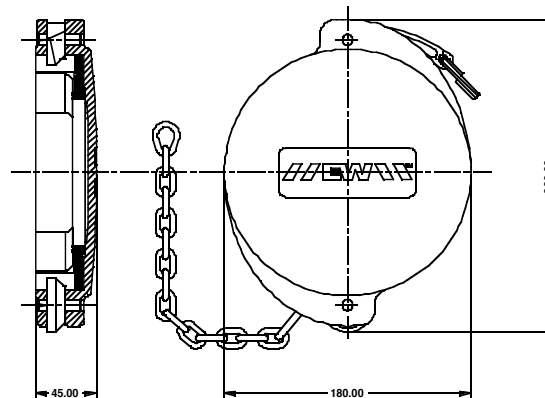
- **Suitable for** F5000, F5001, F5002 & F552 series API valves.
- **Protects** poppet face of API, prolongs life of seals.
- **High quality** die cast body and component materials to international standards are used for durability and performance.
- **Radial cam and lug design** for one hand operation.
- **Glass filled nylon cams** reduce wear and eliminate risk of corrosion.
- **Buna seal** fitted as standard.
- **Heavy duty stainless steel chain** supplied as standard for attachment to API adapter.
- **19" chain as standard.**

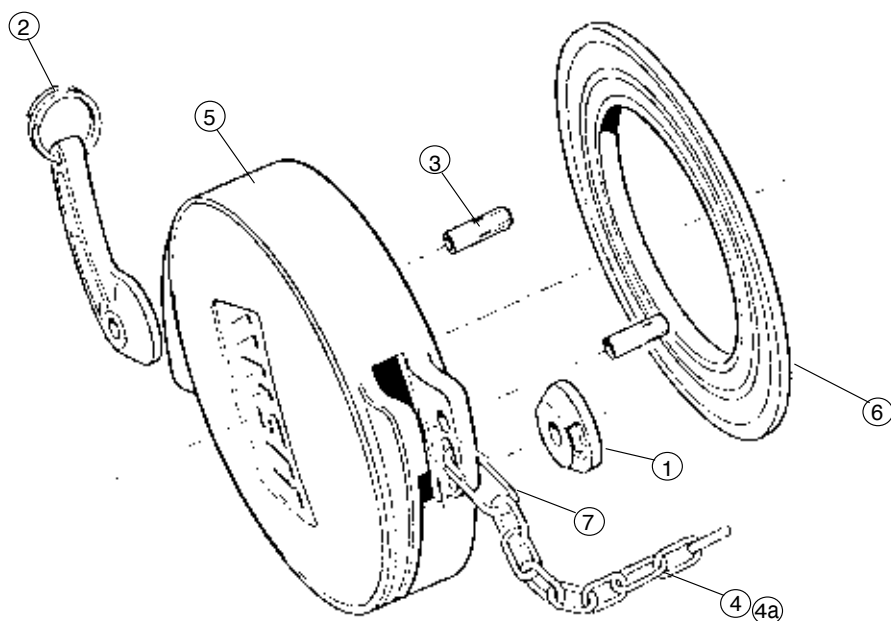


API ADAPTER

VARIANTS

PART NO.	DESCRIPTION	WEIGHT
F499-121	Buna, with Chain	2.0 lbs.



F499**4" API Dust Cap****SPECIFICATIONS**

ITEM NO.	DESCRIPTION	QTY.	PART NO.	MATERIAL
1	Cam Lug	1	561474	Nylon
2	Cam Arm & Ring Assembly	1	492345	Nylon/sst
3	Pins	2	409793	Stainless Steel
4	Chain & Link Assembly	1	670311	Stainless Steel
4a	Optional Chromed Chain Assembly	1	491544	Steel/Chrome
5	Dust Cap Body	1	619646	Aluminum
6	Seal	1	619127	Buna
7	Open End Link	1	563504	Steel



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EMCO WHEATON™
LOADING AND UNLOADING THE WORLD



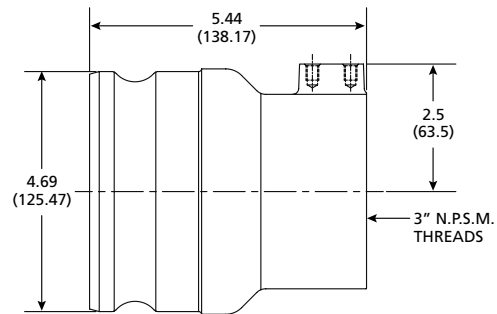
Threaded Vapor Check Valve

Use this Vapor Check Valve to return vapor to the truck during terminal loading and service station drops. The 3-inch poppet opens when coupled and closes when disconnected, preventing the vapors from escaping into the atmosphere. The valve has 3-inch or 4-inch female NPSM threads, a 4-inch cam and groove, and tapped mounting holes for the EBW Air Interlock Brake. The 303 series is available without a poppet to serve as a male quick coupler with an Air Interlock Valve mounting pad.

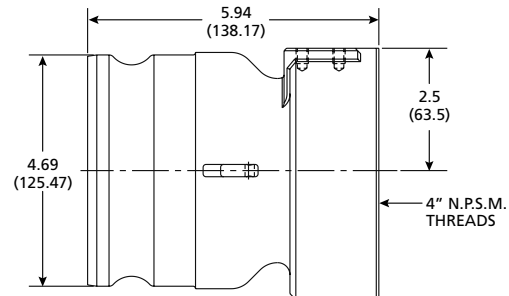
Features

- Anodized aluminum construction.
- Stainless steel stem and spring.
- Buna-N gasket.
- Aluminum guide.

301-300-01



303-444-04



MODEL UNIT	301-300-01	301-300-02	303-333-03	303-444-04
Poppet	Yes	Yes	No	No
Thread Size	3.00-NPSM	4.00-NPSM	3.00-NPSM	4.00-NPSM
Weight (Pounds/Kilograms)	4.50/2.04	4.81/2.18	3.81/1.73	4.31/1.96

Dimensional Drawings

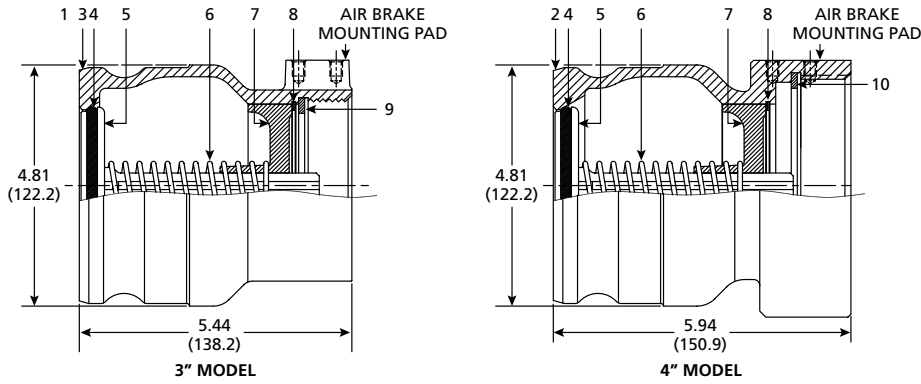
VAPOR CHECK VALVES

Transport Systems

Threaded Vapor Check Valve Parts List

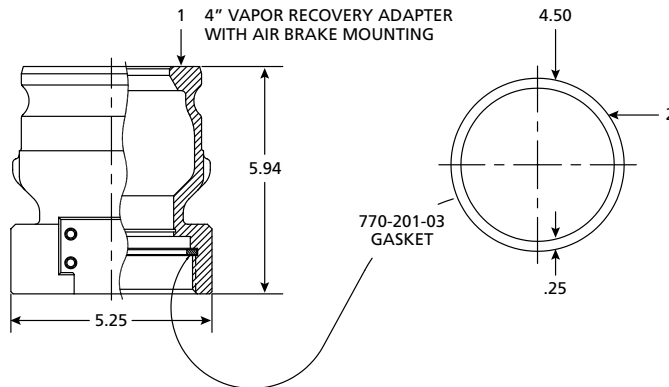


301-300-01/301-300-02



#	PART NAME	PART NUMBER	#	PART NAME	PART NUMBER
1	Vapor Recovery Adapter - 3" N.P.S.M.	300-305-02	6	Spring - Poppet	300-105-01
2	Vapor Recovery Adapter - 4" N.P.S.M.	300-302-02	7	Guide - Poppet Stem	300-205-01
3	Vapor Recovery Adapter - 3" B.S.P.P.	300-305-32	8	Retaining Ring	11090-02
4	O-ring	11039-15	9	3" Gasket Cover	770-201-02
5	Poppet	300-203-01	10	4" Gasket Cover	770-201-03

303-444-04/303-333-03



#	PART NAME	PART NUMBER	#	PART NAME	PART NUMBER
1	4" Vapor Recovery Adapter	300-302-02	2	Gasket 3" Fill Adapter	770-201-02
1	3" Vapor Recovery Adapter	300-305-02	2	Gasket Cover	770-201-03

303-333-03

PART NAME	PART NUMBER
3" N.P.S.M. Vapor Recovery Adapter, with Poppet	301-300-01
4" N.P.S.M. Vapor Recovery Adapter, with Poppet	301-300-02
3" N.P.S.M. Vapor Recovery Adapter, No Poppet	303-333-03
4" N.P.S.M. Vapor Recovery Adapter, No Poppet	303-444-04

VAPOR CHECK VALVES

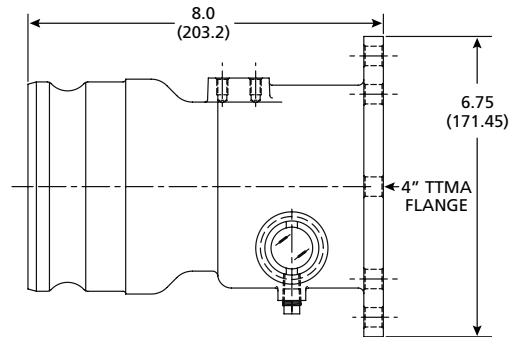
Transport Systems



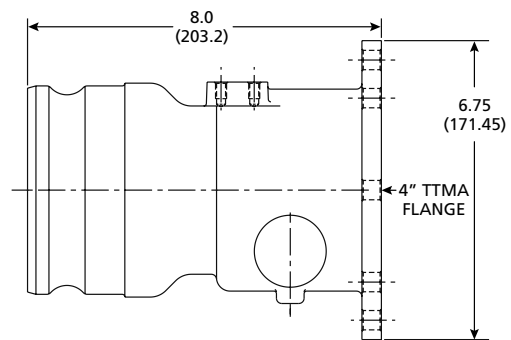
Flanged Vapor Check Valve

The sight glasses featured on this vapor recovery fitting can help detect liquid accumulation in the vapor manifold of a transport. A drain plug lets any extra fuel drain out, and the poppet prevents vapors from escaping when disconnected from the hose. A low pressure drop makes flow rates faster and vapor recovery safer. The adapter is constructed with a standard 4-inch TTMA flange, a 4-inch cam and groove, and a mounting pad for the Air Interlock Valve.

302-300-01



302-300-02

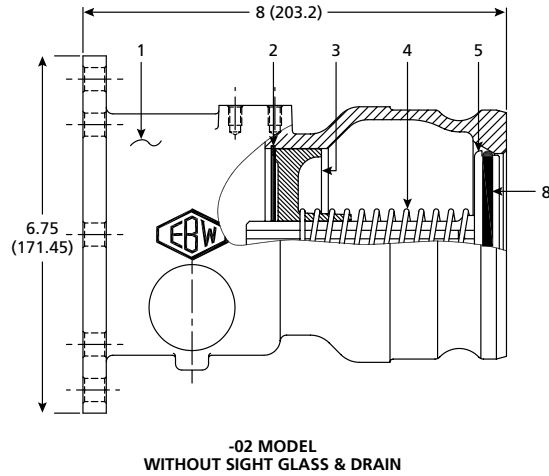
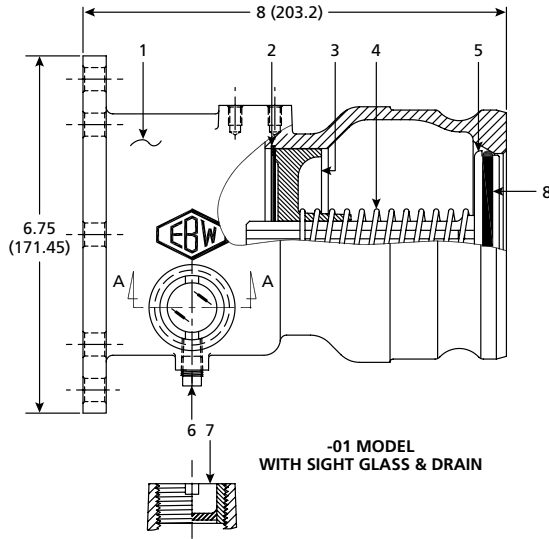


MODEL UNIT	302-300-01	302-300-02	302-400-02
Size (Inches/Millimeters)	4.00/101.6	4.00/101.6	4.00/101.6
Weight (Pounds/Kilograms)	6.00/2.72	6.00/2.72	6.00/2.72

Dimensional Drawings



Flanged Vapor Check Valve Parts List



#	PART NAME	PART NUMBER	#	PART NAME	PART NUMBER
1	Vapor Recovery Body	302-400-01	5	4" Poppet Vapor Recovery Adapter	300-203-01
2	Retaining Ring	11090-02	6	Pipe Plug	11010-02
3	Poppet Stem Guide	300-205-01	7	Sight Glass	11215-04
4	Poppet Spring	300-105-01	8	O-ring	11039-15

PART NUMBER	DESCRIPTION
302-300-01	Flanged Vapor Check Valve with Sight Glass
302-300-02	Flanged Vapor Check Valve without Sight Glass
302-400-02	Flanged Vapor Check Valve without Sight Glass, No Poppet



302-300-01 (with sight glass)



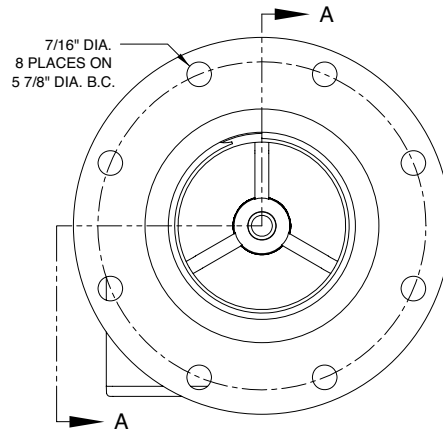
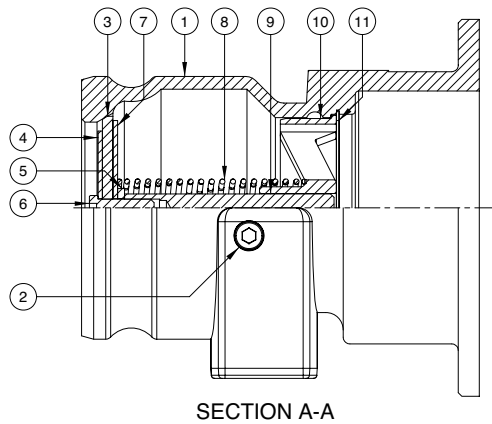
302-300-02 (no sight glass)



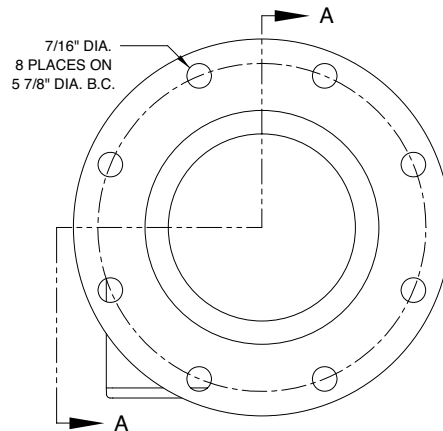
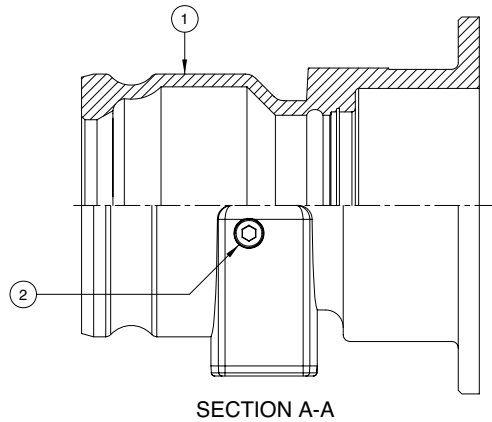
611F Flanged Vapor Recovery Coupler

Replacement Parts

Rev. 0, May 2006



610F Flanged Vapor Recovery Coupler



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	9951	BODY	1
2	10068	PLUG (1/4 NPT)	1
3	H10043M	SEAT RING (BUNA) ¹	1
4	H20433M	RETAINER (SMALL) ¹	1
5	H20235M	SPACER ¹	1
6	H20446M	CAP SCREW ¹	1
7	H20432M	RETAINER (LARGE) ¹	1
8	H08989M	SPRING	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
9	H20389RE	POPPET STEM ¹	1
10	C02642M	BRIDGE GUIDE	1
11	H08607M	RETAINING RING	1

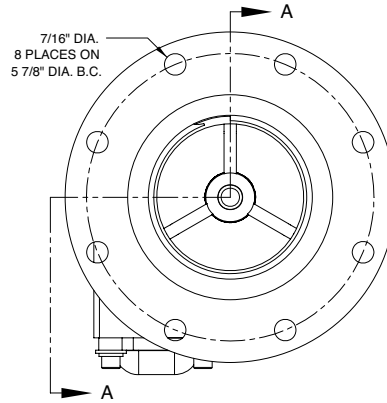
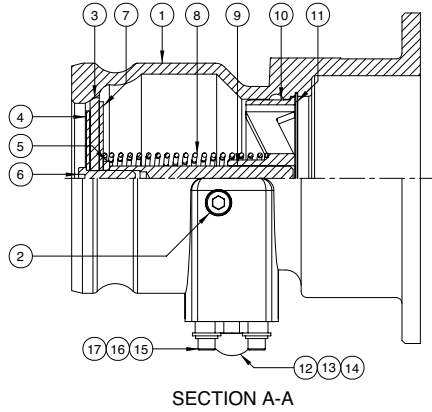
REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
H20695	POPPET SUB-ASSEMBLY	N/A

¹- Included in H20695



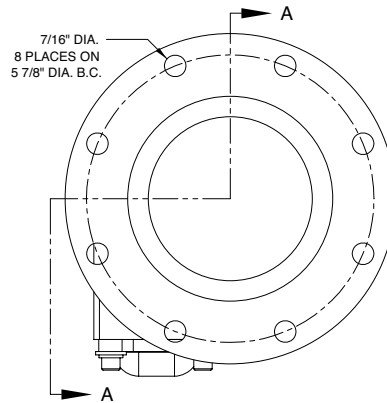
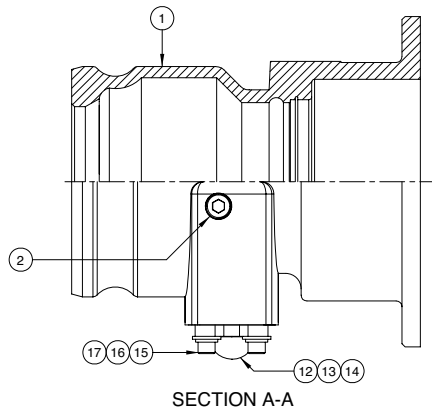
611FB Flanged Coupler with Sight Glass

Replacement Parts



Rev. 0, May 2006

610FB Flanged Coupler with Sight Glass



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	9951	BODY	1
2	10068	PLUG (1/4 NPT)	1
3	H10043M	SEAT RING (BUNA) ¹	1
4	H20433M	RETAINER (SMALL) ¹	1
5	H20235M	SPACER ¹	1
6	H20446M	CAP SCREW ¹	1
7	H20432M	RETAINER (LARGE) ¹	1
8	H08989M	SPRING	1
9	H20389RE	POPPET STEM ¹	1
10	C02642M	BRIDGE GUIDE	1
11	H08607M	RETAINING RING	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
12	C10316M	SIGHT GLASS ²	1
13	H51384M	BALL (FLOAT) ²	1
14	H51437M	O-RING ²	1
15	H51477M	SCREW ²	4
16	H20312M	WASHER ²	4
17	H20057M	LOCK WASHER ²	4

REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
H20695	POPPET SUB-ASSEMBLY	N/A
861BRK	SIGHT GLASS REPAIR KIT	N/A

1- Included in H20695, 2- Included in 861BRK

VAPOR CAPS

**Transport
Systems**



These lockable vapor caps act like dust covers, but won't activate the Air Interlock Valve when used on vapor check valves and adapters. Iron-copper infiltrated cams create a solid push-down-and-pull-up movement for quick, easy removal and replacement; steel latches hold the caps secure. Orange in color to indicate vapor recovery, the caps can be used with any 4-inch male cam and groove. Caps also available with finger ring and chains.

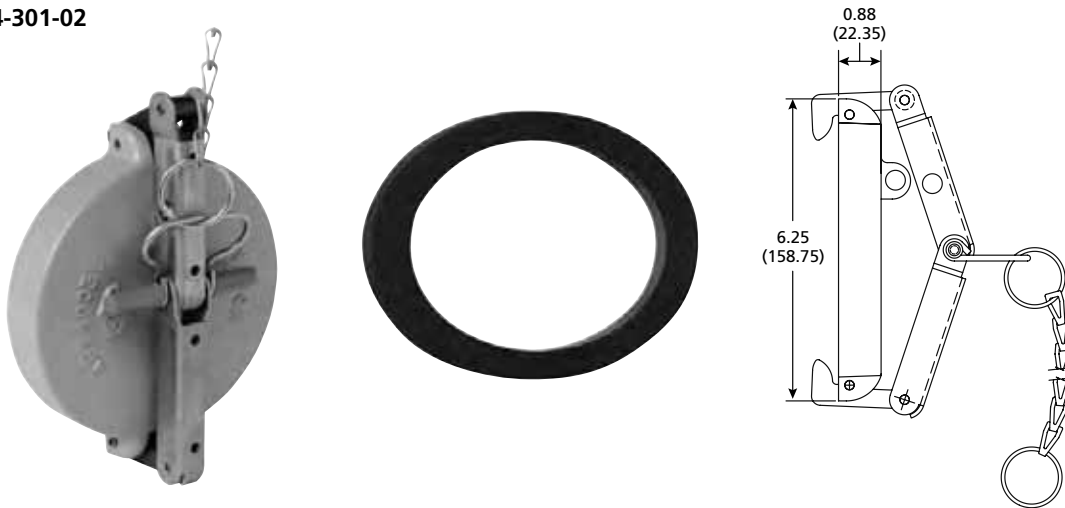
Features

- Meets API RP 1004 Standard.
- Aluminum or glass-filled nylon construction.
- Iron-copper infiltrated cams and steel latches.
- Lockable.

304-200-05



304-301-02



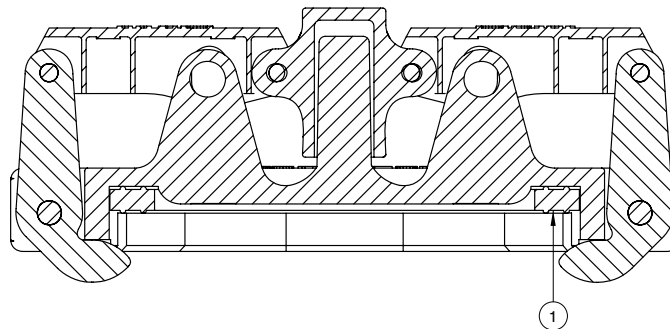
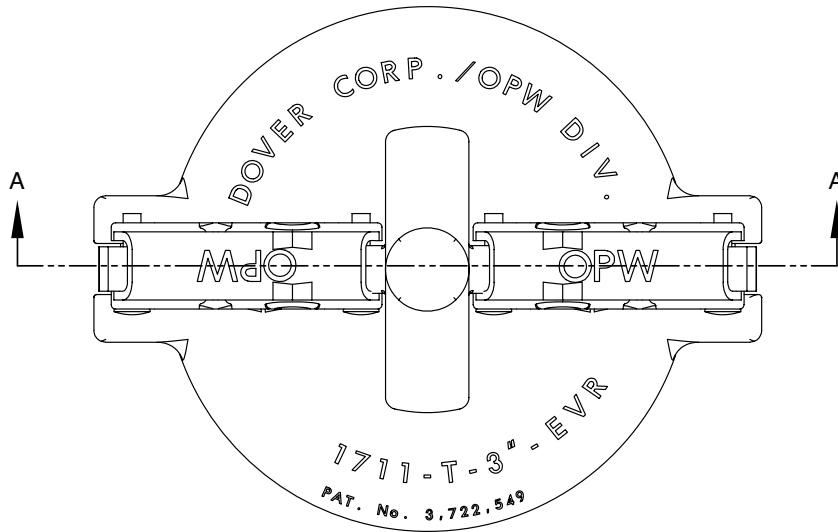
MODEL UNIT	304-200-01	304-200-02	304-200-04	304-200-05	304-301-01	304-301-02
Size (Inches/Millimeters)	4.00/101.6	4.00/101.6	4.00/101.6	4.00/101.6	4.00/101.6	4.00/101.6
Weight (Pounds/Kilograms)	1.19/.54	1.19/.54	1.19/.54	1.19/.54	1.19/.54	1.19/.54
Gasket No.	777-111-01	777-111-02	304-105-01	304-105-01	777-110-04	777-110-04



1711T 3" Dust Cap

Replacement Parts

Rev. 0, January 2003



SECTION A-A

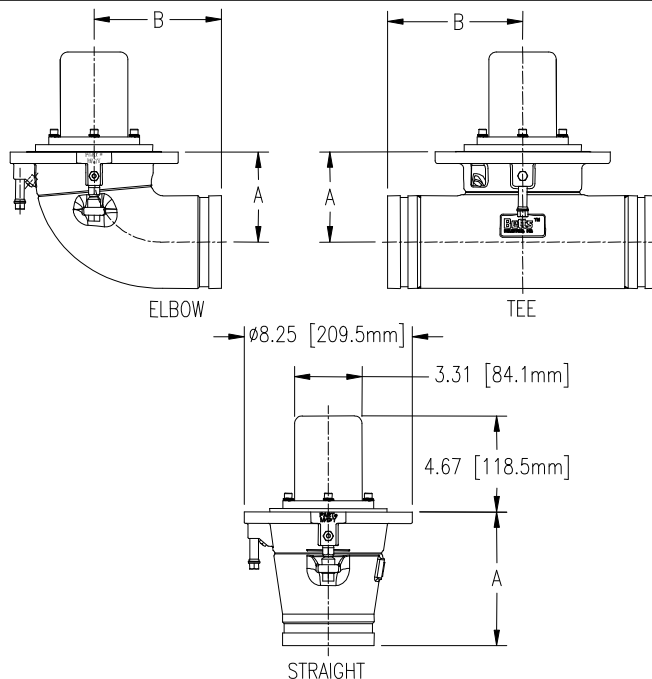
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	H10866M	GASKET (BUNA)	1

Emergency Valve

INTERNAL AIR

4" Aluminum Internal Air

Betts internal air emergency valve meets the requirements of an internal self-closing stop valve. Body is constructed of aluminum and incorporates a shear section that satisfies 49CFR178.345-8 tested per TTMA RP 84. The 1/8" NPT air inlet fitting separates with shear section to dump air pressure and insure the valve closes in case of an under-ride accident. Fusible plug installed in valve to dump air pressure if temperatures exceed 212°F.†† Valves are designed and manufactured to use Teflon® encapsulated seals for compatibility with a wide range of products. Other seal options are also available. Internal air cylinder saves space on exterior of valve providing maximum clearance for piping. Air cylinder is hard-coated with hard-anodized shaft. Valves are equipped with a stainless steel jackscrew that allows for manual operation of the valve in case of an air system failure. Rated 140 psi minimum burst pressure.



See section 30 Page 13B for 4" parts list.

Size	Assembly No.	Inlet Flange (4" Sump)		Outlet (4" TTMA)		Dimensions		Wt.	F _{b-max} Per TTMA RP86	Valve MAWP * Based on max tank pressure valve can open against w/ given air line pressure.				
		B.C	8 Holes	B.C.	8 Holes	A	B							
4" Straight Grooved	EV46909ALTS	7.25" [184 mm]	.563" Dia. [14.3 mm]	4" GROOVED O.D. 4.5" [114.3 mm]		6.50" [165 mm]	N.A.	8.0 lb. [3.6 kg]	24,000 lb. [10,886 kg]	18 psi w/ 80 psi air line pressure				
4" Straight Flanged	EV46910ALTS			5.88" [149 mm]	.438" Dia. [11.1 mm]	6.50" [165 mm]	N.A.	8.5 lb. [3.9 kg]						
4" Elbow Grooved	EV46911ALTS	7.25" [184 mm]	.563" Dia. [14.3 mm]	4" GROOVED O.D. 4.5" [114.3 mm]		4.38" [111.3 mm]	6.25" [158.8 mm]	8.7 lb. [4.0 kg]			44,400 lb. [20,140 kg]	25 psi w/ 100 psi air line pressure		
4" Elbow Flanged	EV46912ALTS			4.88" [149 mm]	.438" Dia. [11.1 mm]	4.38" [111.3 mm]	5.00" [127.0 mm]	9.0 lb. [4.1 kg]						
4" Tee Grooved	EV46991ALTS	7.25" [184 mm]	.563" Dia. [14.3 mm]	4" GROOVED O.D. 4.5" [114.3 mm]		4.38" [111.3 mm]	6.63" [168.4 mm]	10.5 lb. [4.8 kg]					32,000 lb [14,515 kg]	35 psi w/ 135 psi air line pressure
4" Tee Flanged	EV46992ALTS			4.88" [149 mm]	.438" Dia. [11.1 mm]	4.38" [111.3 mm]	5.13" [130.3 mm]	10.8 lb. [4.9 kg]						

* Values shown are test values. Actual values may vary due to service conditions.

** Last two letters of part number designate seal material. See material table at right for seal options.

†† Fusible plug melts at 212°F [100°C]. If valve is subject to higher temperatures, the fusible plug must be relocated to isolate fusible from heat.

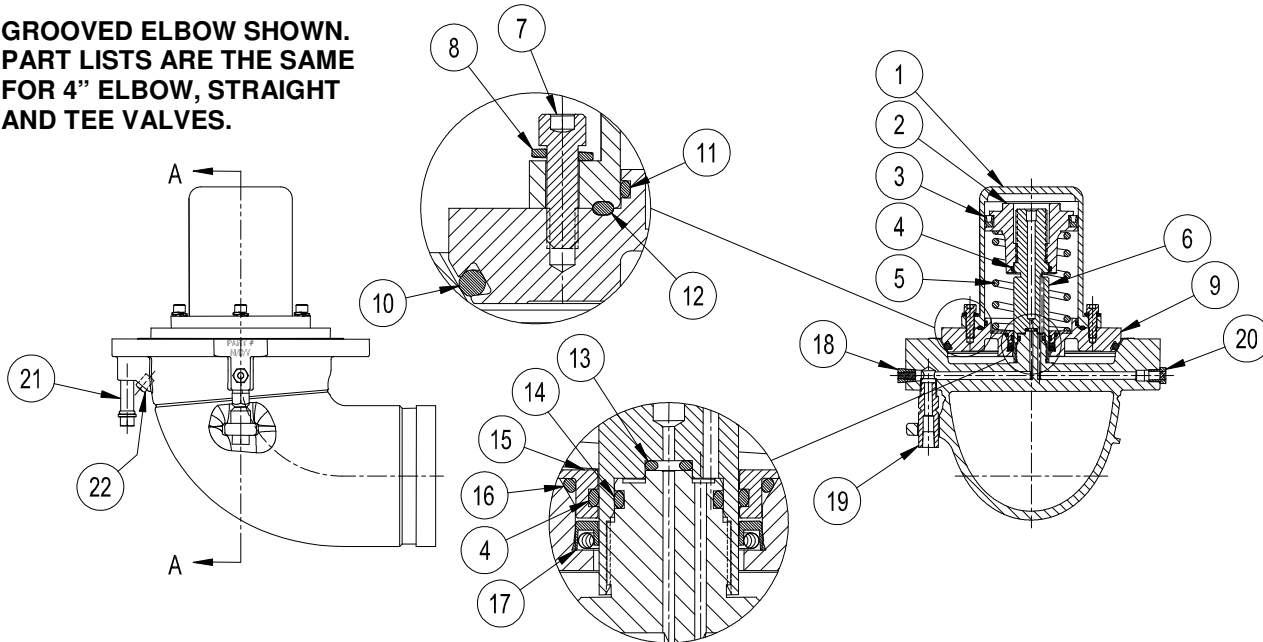
CAUTION: Valve must be properly installed and maintained. Never bottom load through emergency valve without first opening valve. Failure to do so may result in damage to the tank and/or valve.

Part # Suffix	Description	Valve Temp. Range * ††
TS	Teflon product contact seals, nitrile interior seals, and polyurethane air piston seal.	-40°F to +220°F [-40°C to 104°C]
TS030	Teflon product contact seals, FKM "A" interior seals.	-20°F to +400° F [-29°C to 204°C]
TS038	Teflon product contact seals, fluorosilicone interior seals, and polyurethane air piston seal.	-50°F to +220° F [-45°C to 104°C]
VB	FKM "BLT" product contact seals w/ polyurethane air piston seal.	-20°F to +220° F [-29°C to 104°C]
VF	FKM "GFLT-s" product contact seals w/ polyurethane air piston seal.	-20°F to +220° F [-29°C to 104°C]

Parts List

4" Internal Air Aluminum Emergency Valve

GROOVED ELBOW SHOWN.
PART LISTS ARE THE SAME
FOR 4" ELBOW, STRAIGHT
AND TEE VALVES.



No.	Description	Req.	Material	Part No.
1	3" Air Cylinder	1	Alum. (356-T6)	36001AL
2	3" Piston	1	Alum. (319)	75092AL
3	3" U-Cup Seal	1	Polyurethane	75564PY
			Nitrile	17669BN
4	Piston/Shaft O-Ring	2	FKM "A"	17669VT
			Nitrile	3357BN
			FKM "A"	3357VT
			FKM "BLT"	3357VB
			FKM "GFLT-s"	3357VF
5	Spring	1	Steel (E-Coated)	18222EY
6	Air Supply Shaft	1	Alum. Anodized	75090AL
7	Cap Screw	4	18-8 SS	9Q5822
8	Lock Washer	4	304 SS	9Q5844
9	4" O-Ring Holder	1	Alum. (319)	28157AL
10	4" Main Seat O-Ring	1	Tef-Sil	19935TS
			Nitrile	19935BN
			FKM "A"	19935VT
			FKM "BLT"	19935VB
			FKM "GFLT-s"	19935VF
11	O-Ring 3" Air Cylinder Bore	1	Nitrile	75097BN
			FKM "A"	75097VT
			FKM "BLT"	75097VB
			FKM "GFLT-s"	75097VF
			Fluorosilicone	75097FS

No.	Description	Req.	Material	Part No.
12	O-Ring 3" Face	1	Tef-Sil	75410TS
13	O-Ring Air Inlet Shaft	1	Nitrile	75159BN
			FKM "A"	75159VT
			FKM "BLT"	75159VB
			FKM "GFLT-s"	75159VF
			Fluorosilicone	75159FS
14	O-Ring Air Inlet Shaft Bore	1	Nitrile	75096BN
			FKM "A"	75096VT
			FKM "BLT"	75096VB
			FKM "GFLT-s"	75096VF
			Fluorosilicone	75096FS
15	Seal Retainer	1	Aluminum	75100AL
16	O-Ring Seal Retainer	1	Nitrile	75426BN
			FKM "A"	75426VT
			FKM "BLT"	75426VB
			FKM "GFLT-s"	75426VF
17	Shaft U-Cup Seal	1	Teflon®/301 SS	75210SSTF
18	Fusible Plug	1	Brass/Solder	FP15003BR
19	Air Inlet Frangible	1	Aluminum	75108AL
20	Breather Plug	1	Steel (Nic. Plt.)	9Z4895
21	Jack Screw	1	303 SS/Nitrile	75141SLBN
22	1/8" NPT Plug	1	316 SS	9V4921

Seal Kit # EV75435ALTS includes: (12) 75410TS, (17) 75210SSTF, (3) 17669BN, (4) 3357BN -2, (11) 75097BN, (13) 75159BN, (14) 75096BN, (15) 75100AL, & (16) 75426BN.

Seal Kit # EV75435ALTS038 (low temp.) includes: (12) 75410TS, (17) 75210SSTF, (2) 75092AL, (3) 75564PY, (4) 3357FS -2, (11) 75097FS, (13) 75159FS, (14) 75096FS, (15) 75110AL, & (16) 75426FS.

WARNING: Use only genuine BETTS INDUSTRIES INC. replacement parts. Substitute parts can impair the proper function of this product.

Betts[™]
INDUSTRIES, INC. WARREN, PA.

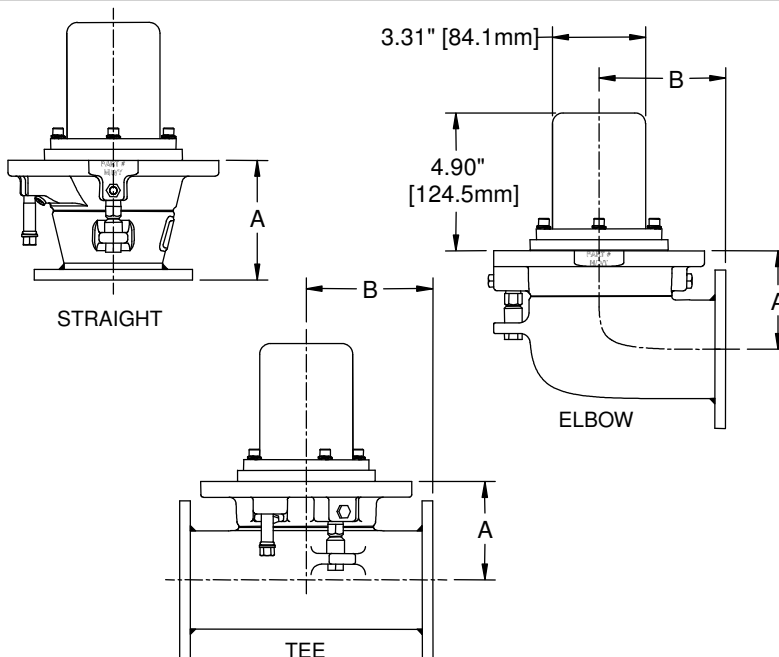
July 2009

Emergency Valve

INTERNAL AIR

3" Aluminum Internal Air

Betts internal air emergency valve meets the requirements of an internal self-closing stop valve. Body is constructed of aluminum and incorporates a shear section that satisfies 49CFR178.345-8 tested per TTMA RP 84. The 1/8" NPT air inlet fitting separates with shear section to dump air pressure and insure the valve closes in case of an under-ride accident. Fusible plug installed in valve to dump air pressure if temperatures exceed 212°F.^{††} Valves are designed and manufactured to use Teflon[®] encapsulated seals for compatibility with a wide range of products. Other seal options are also available. Internal air cylinder saves space on exterior of valve providing maximum clearance for piping. Air cylinder is hard coated with hard-anodized shaft. Valves are equipped with a stainless steel jackscrew that allows for manual operation of the valve in case of an air system failure. Rated 140 psi minimum burst pressure.



See section 30 Page 12B for 3" parts list.

Size	Assembly No.	Inlet Flange (3" Sump)		Outlet (3" TTMA)		Dimensions		Wt.	F _b -max Per TTMA RP86	Valve MAWP * Based on max tank pressure valve can open against w/ given air line pressure.
		B.C	6 Holes	B.C.	8 Holes	A	B			
3" Straight Grooved	EV46964AL**	6.25" [159 mm]	.563" Dia. [14.3 mm]	3" GROOVED O.D. 3.5" [88.9 mm]		5.71" [145 mm]	N.A.	7.3 lb. [3.3 kg]	25,800 lb. [11,702 kg]	25 psi w/ 80 psi air line pressure 35 psi w/ 100 psi air line pressure
3" Straight Flanged	EV46967AL**			4.88" [124 mm]	.438" Dia. [11.1 mm]	4.25" [108 mm]	N.A.	7.5 lb. [3.4 kg]		
3" Elbow Grooved	EV46934AL**	6.25" [159 mm]	.563" Dia. [14.3 mm]	3" GROOVED O.D. 3.5" [88.9 mm]		3.50" [88.9 mm]	6.06" [153.9 mm]	8.1 lb. [3.67 kg]	50,400 lb. [22,861 kg]	
3" Elbow Flanged	EV46947AL**			4.88" [124 mm]	.438" Dia. [11.1 mm]	3.50" [88.9 mm]	4.50" [114.3 mm]	8.3 lb. [3.76 kg]		
3" Tee Grooved	EV46980AL**	6.25" [159 mm]	.563" Dia. [14.3 mm]	3" GROOVED O.D. 3.5" [88.9 mm]		3.50" [88.9 mm]	5.94" [150.9 mm]	8.8 lb. [3.99 kg]	36,200 lb [16,420 kg]	
3" Tee Flanged	EV46981AL**			4.88" [124 mm]	.438" Dia. [11.1 mm]	3.50" [88.9 mm]	4.50" [114.3 mm]	9.2 lb. [4.17 kg]		

* Values shown are test values. Actual values may vary due to service conditions.

** Last two letters of part number designate seal material. See material table at right for seal options.

†† Fusible plug melts at 212°F [100°C]. If valve is subject to higher temperatures, the fusible plug must be relocated to isolate fusible from heat.

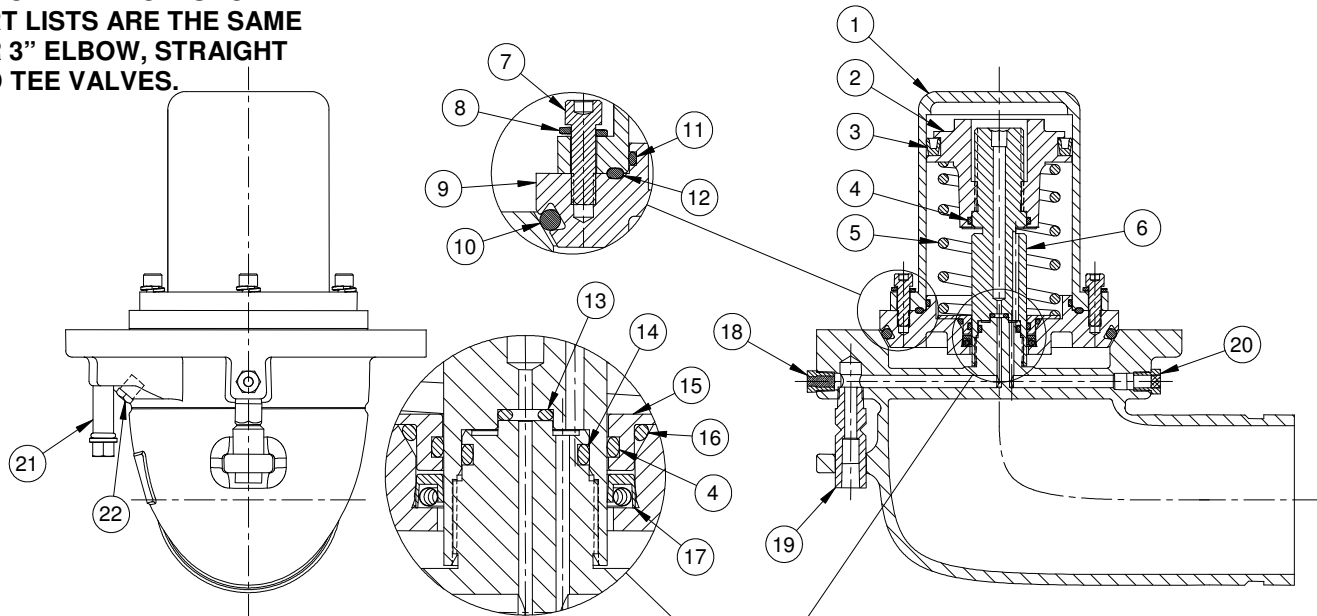
CAUTION: Valve must be properly installed and maintained. Never bottom load through emergency valve without first opening valve. Failure to do so may result in damage to the tank and/or valve.

Part # Suffix	Description	Valve Temp. Range *
TS	Teflon product contact seals, nitrile interior seals, and polyurethane air piston seal.	-40°F to +220°F [-40°C to 104°C]
TS030	Teflon product contact seals, FKM "A" interior seal.	-20°F to +400° F [-29°C to 204°C]
TS038	Teflon product contact seals, fluorosilicone interior seals, and polyurethane air piston seal.	-50°F to +220° F [-45°C to 104°C]
VB	FKM "BLT" product contact seals w/ polyurethane air piston seal.	-20°F to +220° F [-29°C to 104°C]
VF	FKM "GFLT-s" product contact seals w/ polyurethane air piston seal.	-20°F to +220° F [-29°C to 104°C]

Parts List

3" Internal Air Aluminum Emergency Valve

GROOVED ELBOW SHOWN.
PART LISTS ARE THE SAME
FOR 3" ELBOW, STRAIGHT
AND TEE VALVES.



No.	Description	Req.	Material	Part No.
1	3" Air Cylinder	1	Alum. (356-T6)	36001AL
2	3" Piston	1	Alum. (319)	75092AL
3	3" U-Cup Seal	1	Polyurethane	75564PY
			Nitrile	17669BN
			FKM "A"	17669VT
4	Piston/Shaft O-Ring	2	Nitrile	3357BN
			FKM "A"	3357VT
			FKM "BLT"	3357VB
			FKM "GFLT-s"	3357VF
			Fluorosilicone	3357FS
5	Spring	1	Steel (E-Coated)	18222EY
6	Air Supply Shaft	1	Alum. Anodized	75090AL
7	Cap Screw	4	18-8 SS	9Q5822
8	Lock Washer	4	304 SS	9Q5844
9	3" O-Ring Holder	1	Alum. (319)	35914AL
10	3" Main Seat O-Ring	1	Tef-Sil	17944TS
			Nitrile	17944BN
			FKM "A"	17944VT
			FKM "BLT"	17944VB
			FKM "GFLT-s"	17944VF
11	O-Ring 3" Air Cylinder Bore	1	Nitrile	75097BN
			FKM "A"	75097VT
			FKM "BLT"	75097VB
			FKM "GFLT-s"	75097VF
			Fluorosilicone	75097FS

No.	Description	Req.	Material	Part No.
12	O-Ring 3" Face	1	Tef-Sil	75410TS
13	O-Ring Air Inlet Shaft	1	Nitrile	75159BN
			FKM "A"	75159VT
			FKM "BLT"	75159VB
			FKM "GFLT-s"	75159VF
			Fluorosilicone	75159FS
14	O-Ring Air Inlet Shaft Bore	1	Nitrile	75096BN
			FKM "A"	75096VT
			FKM "BLT"	75096VB
			FKM "GFLT-s"	75096VF
			Fluorosilicone	75096FS
15	Seal Retainer	1	Aluminum	75100AL
16	O-Ring Seal Retainer	1	Nitrile	75426BN
			FKM "A"	75426VT
			FKM "BLT"	75426VB
			FKM "GFLT-s"	75426VF
			Fluorosilicone	75426FS
17	Shaft U-Cup Seal	1	Teflon®/301 SS	75210SSTF
18	Fusible Plug	1	Brass/Solder	FP15003BR
19	Air Inlet Frangible	1	Aluminum	75108AL
20	Breather Plug	1	Steel (Nic. Plt.)	9Z4895
21	Jack Screw	1	303 SS/Nitrile	75141SLBN
22	1/8" NPT Plug	1	316 SS	9V4921

Seal Kit # EV75435ALTS includes: (12) 75410TS, (17) 75210SSTF, (3) 17669BN, (4) 3357BN -2, (11) 75097BN, (13) 75159BN, (14) 75096BN, (15) 75100AL, & (16) 75426BN.

Seal Kit # EV75435ALTS038 (low temp.) includes: (12) 75410TS, (17) 75210SSTF, (2) 75092AL, (3) 75564PY, (4) 3357FS -2, (11) 75097FS, (13) 75159FS, (14) 75096FS, (15) 75110AL, & (16) 75426FS.

WARNING: Use only genuine BETTS INDUSTRIES INC. replacement parts. Substitute parts can impair the proper function of this product.

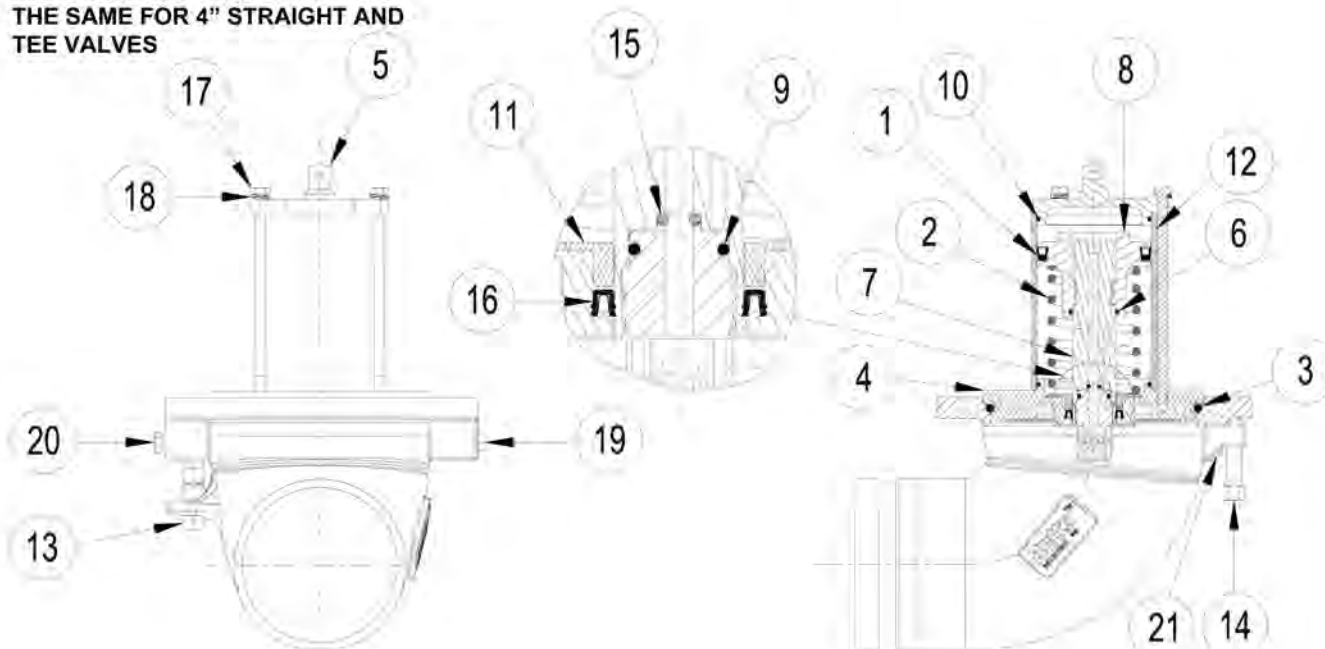
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INDUSTRIES, INC. WARREN, PA.

June 2009

PARTS LIST - (Obsolete)

4" Internal Air Tapered Seat Aluminum Emergency Valve

GROOVED ELBOW SHOWN AS A REFERENCE. PARTS LIST'S ARE THE SAME FOR 4" STRAIGHT AND TEE VALVES



NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.
1	1	3" U-cup Seal	Buna-N*	17669BN*
2	1	Emergency Valve Spring	Steel Zinc Coated	18222ZC
3	1	Main Seal O-ring	Tef-Sil	19935TS
4	1	O-ring Holder	319-F Aluminum	28157AL
5	1	Air Cylinder Top Plate	319-F Aluminum	28160AL
6	1	Piston O-ring	Buna-N*	3357BN*
7	1	Air Supply Shaft	Hard Anodized Aluminum	75090AL
8	1	Air Cylinder Piston	319-F Aluminum	75092AL
9	1	Air Exhaust Shaft O-ring	Buna-N*	75096BN*
10	2	Air Cylinder O-ring	Tef-Sil	75097TS
11	1	Seal Retainer	Hard Anodized Aluminum	75100AL
12	1	Air Cylinder Tube	Hard Anodized Aluminum	75277AL
13	1	Frangible Air Inlet	Aluminum	75108AL
14	1	Jack Screw with O-ring	303 Stainless Steel/Buna-N	75141SLBN
15	1	Air Inlet Shaft O-ring	Buna-N*	75159BN*
16	1	Main Shaft Seal	Teflon® / 301 SS	75210SSTF
17	3	Air Cylinder Tie Bolts	Steel Zinc Coated	9Q5938
18	3	Tie Bolt Split Lock Washer	304 Stainless Steel	9Q5844
19	1	Sintered Breather Plug	Nickel Plated Steel/Sintered Brass	9Q5056
20	1	Fusible Plug	Brass/Solder	FP15003BR
21	1	1/8-27 NPT Pipe Plug	Steel Zinc Coated	9V4915

* For 030 Suffix Valves (i.e. EV46911ALTS030) replace suffix BN with VT in the part no. This will change the material from Buna-N to Viton® (i.e. 17669BN becomes 17669VT).

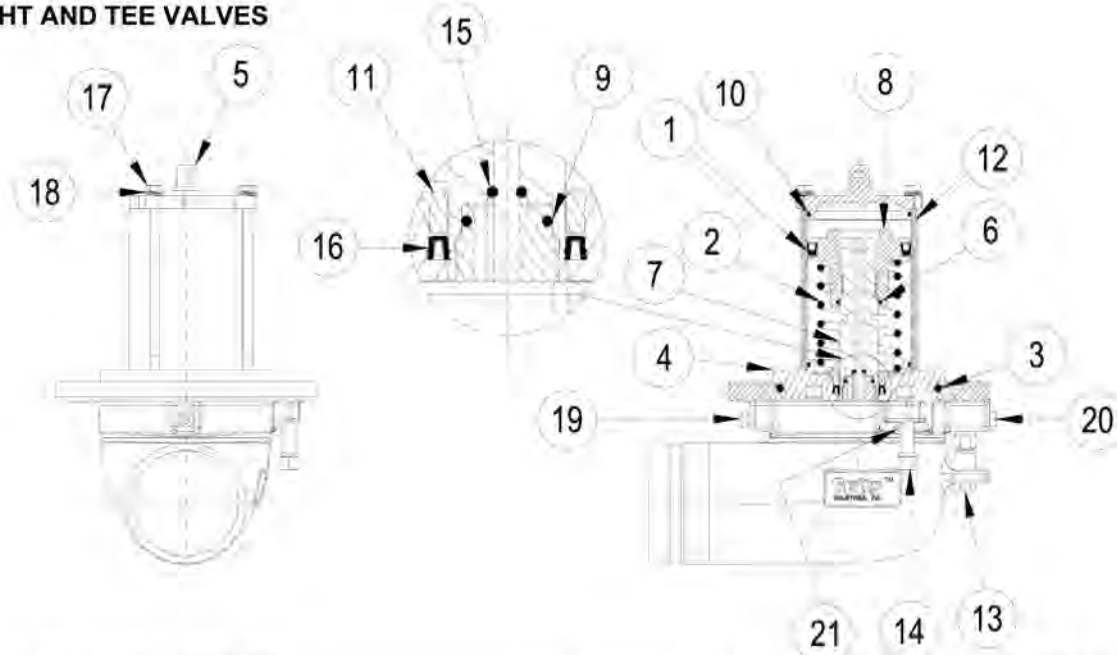
WARNING: Use only genuine BETTS INDUSTRIES INC. replacement parts. Substitute parts can impair the proper function of this product.

Betts™
INDUSTRIES, INC.

PARTS LIST - (Obsolete)

3" Internal Air Tapered Seat Aluminum Emergency Valve

GROOVED ELBOW SHOWN AS A REFERENCE. PARTS LIST'S ARE THE SAME FOR 3" STRAIGHT AND TEE VALVES



NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.
1	1	3" U-cup Seal	Buna-N*	17669BN*
2	1	Emergency Valve Spring	Steel Zinc Coated	18222ZC
3	1	Main Seal O-ring	Tef-Sil	19935TS
4	1	O-ring Holder	319-F Aluminum	28157AL
5	1	Air Cylinder Top Plate	319-F Aluminum	28160AL
6	1	Piston O-ring	Buna-N*	3357BN*
7	1	Air Supply Shaft	Hard Anodized Aluminum	75090AL
8	1	Air Cylinder Piston	319-F Aluminum	75092AL
9	1	Air Exhaust Shaft O-ring	Buna-N*	75096BN*
10	2	Air Cylinder O-ring	Tef-Sil	75097TS
11	1	Seal Retainer	Hard Anodized Aluminum	75100AL
12	1	Air Cylinder Tube	Hard Anodized Aluminum Tube	75277AL
13	1	Frangible Air Inlet	Aluminum	75108AL
14	1	Jack Screw	303 Stainless Steel/Buna-N	75141SLBN
15	1	Air Inlet Shaft O-ring	Buna-N*	75159BN*
16	1	Main Shaft Seal	Teflon® / 301 SS	75210SSTF
17	3	Air Cylinder Tie Bolts	Steel Zinc Coated	9Q5938
18	3	Tie Bolt Split Lock Washer	304 Stainless Steel	9Q5844
19	1	Sintered Breather Plug	Nickel Plated Steel/Sintered Brass	9Q5056
20	1	Fusible Plug	Brass/Solder	FP15003BR
21	1	1/8-27 NPT Pipe Plug	Steel Zinc Coated	9V4915

*For 030 Suffix Valves (i.e.EV46934ALTS030) replace suffix BN with VT in the part no. This will change the material from Buna-N to Viton® (i.e. 17669BN becomes 17669VT).

WARNING Use only genuine BETTS INDUSTRIES INC. replacement parts. Substitute parts can impair the proper function of this product.

Emergency Valve

Aluminum Tapered Seat Style

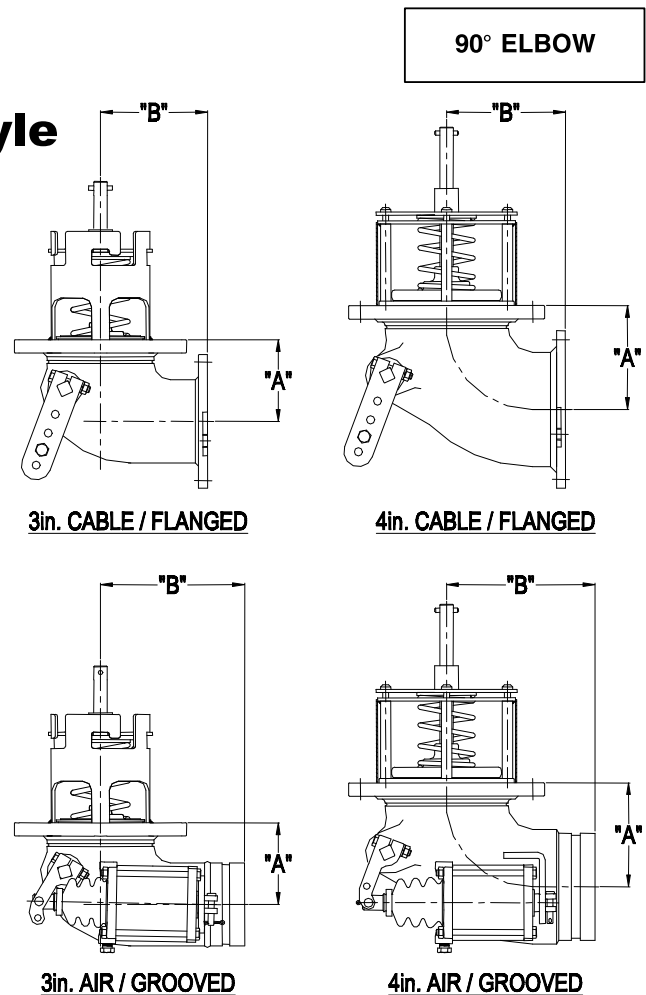
- Air or Cable Operated
- Stainless Trim
- Teflon Encapsulated Seals

Betts tapered seat emergency valves are designed and manufactured to use Teflon encapsulated seals for compatibility with a wide range of products. Body is constructed of aluminum with stainless steel trim. Shear section tested per TTMA RP84 and meets 49CFR178.345-8.

Air operated valves are provided with an external air cylinder to help prevent gasoline or other products from contaminating the air supply. The air cylinder is hard-coated aluminum with a polished stainless steel shaft. Cylinders have 1/8" NPT port for air connection and are supplied with a fusible plug installed.

Cable operated valves are supplied with a universal lever arm which provides up to 8 cable travel options to work with most operators. Lever arm is "E" Coated to provide exceptional corrosion resistance.

Left-hand valves are available with air cylinder or cable lever arm on opposite side of valve as shown at right. Add suffix -005 for left-hand option. Add suffix -004 for optional screen.



See section 30 Page 10B for 3" parts list; See section 30 Page 11A for 4" parts list

Size	Assembly No.	Air /Cable	Outlet	Wt.	Dimensions		Inlet Flange		Outlet Flange	
					A	B	B.C.	Holes	B.C.	Holes
3"	EV46169ALTS	Air	3" Grv	9.7	3.50"	6.06"	6.25"	6-9/16	N.A.	N.A.
	EV46158ALTS	Cable	3" Grv	7.5						
	EV46152ALTS	Air	3" Flg	9.7	3.50"	4.50"	6.25"	6-9/16	4.88"	8-7/16
	EV46157ALTS	Cable	3" Flg	7.5						
4"	EV46455ALTS	Air	4" Grv	13.5	4.38"	6.25"	7.25"	8-9/16	N.A.	N.A.
	EV46458ALTS	Cable	4" Grv	11.3						
	EV46456ALTS	Air	4- 1/2 " Grv	13.5	4.38"	6.25"	7.25"	8-9/16	N.A.	N.A.
	EV46459ALTS	Cable	4- 1/2 " Grv	11.3						
	EV46454ALTS	Air	4" Flg	13.5	4.38"	5.00"	7.25"	8-9/16	5.88"	8-7/16
	EV46457ALTS	Cable	4" Flg	11.3						

Force rating from TTMA RP86: 3" Valves: F_{b-max}=15,300 lb. 4" Valves: F_{b-max}=24,000 lb.

CAUTION: Never bottom load through emergency valves without first opening valve. Failure to do so may result in damage to the tank and/or valve.

Emergency Valve

Aluminum Tapered Seat Style

STRAIGHT

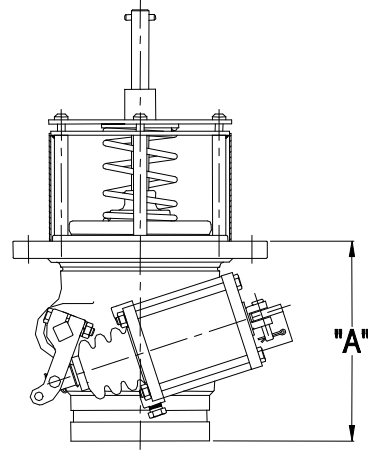
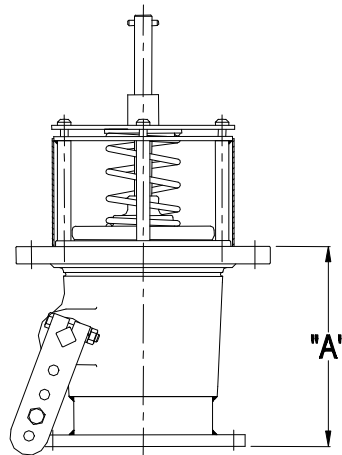
- Air or Cable Operated
- Stainless Trim
- Teflon Encapsulated Seals

Betts tapered seat emergency valves are designed and manufactured to use Teflon encapsulated seals for compatibility with a wide range of products. Body is constructed of aluminum with stainless steel trim. Shear section tested per TTMA RP84 and meets 49CFR178.345-8.

Air operated valves are provided with an external air cylinder to help prevent gasoline or other products from contaminating the air supply. The air cylinder is hard-coated aluminum with a polished stainless steel shaft. Cylinders have 1/8" NPT port for air connection and are supplied with a fusible plug installed.

Cable operated valves are supplied with a universal lever arm which provides up to 8 cable travel options to work with most operators. Lever arm is "E" Coated to provide exceptional corrosion resistance.

Left-hand valves are available with air cylinder or cable lever arm on opposite side of valve as shown at right. Add suffix -005 for left-hand option. Add suffix -004 for optional screen.

**AIR / GROOVED****CABLE / FLANGED**

See section 30 Page 11A for parts list

Size	Assembly No.	Air /Cable	Outlet	Wt.	Dimensions	Inlet Flange		Outlet Flange	
					A	B.C.	Holes	B.C.	Holes
4"	EV46461ALTS	Air	4" Grv	13.5	6.50"	7.25"	8-9/16	N.A.	N.A.
	EV46464ALTS	Cable	4" Grv	10.0					
	EV46462ALTS	Air	4- 1/2 " Grv	13.5	6.50"	7.25"	8-9/16	N.A.	N.A.
	EV46465ALTS	Cable	4- 1/2 " Grv	10.0					
	EV46460ALTS	Air	4" Flg	13.5	6.50"	7.25"	8-9/16	5.88"	8-7/16
	EV46463ALTS	Cable	4" Flg	10.0					

Force rating from TTMA RP86:

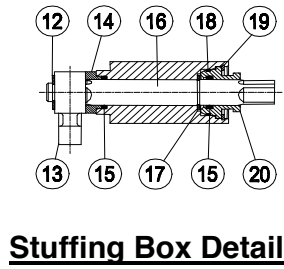
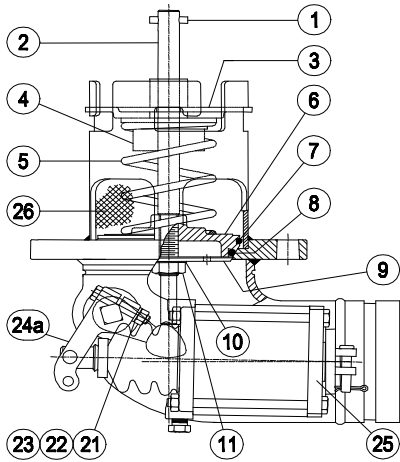
4" Valves: $F_{b-max}=15,000$ lb.

CAUTION: Never bottom load through emergency valves without first opening valve. Failure to do so may result in damage to the tank and/or valve.

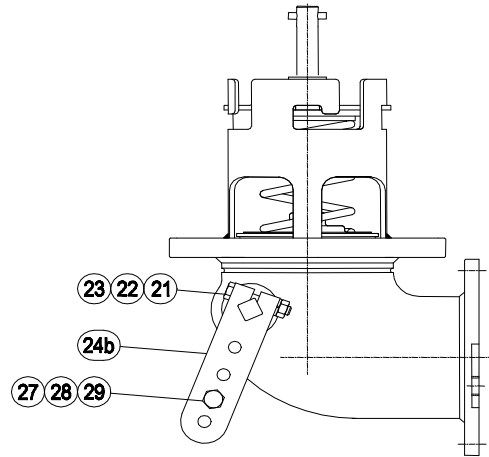
PARTS LIST

Emergency Valve

3" Tapered Seat Aluminum



Stuffing Box Detail



Cable Operated

Air Operated

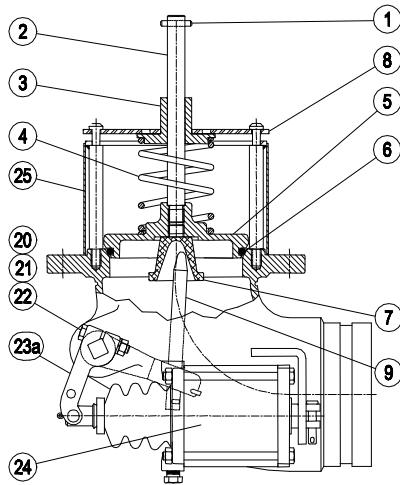
NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.
1	1	Bail Pin 3/16 dia. X 1"	Stnls 18-8	9Q5901
2	1	Stem	Stnls 316	26886SS
3	1	Bonnet	Stnls 316	18770SS
4	1	Spring Washer & Shaft Guide	Teflon W/Glass	18881TG
5	1	Spring	Stnls 316	18222SS
6	1	O-Ring Holder	Aluminum	18768AL
7	1	Guide Ring	Teflon	18283TF
8	1	O-Ring Seat	Viton	18098VT
			Tef - Sil	18098TS
9	1	Retainer Plate	Aluminum	18769AL
10	1	Lockwasher 1/2" external Tooth	Stnls 410	9Q5916
11	1	Hex Half Nut 1/2-20UNF	Stnls 304	9Q5909
12	1	Retaining Ring - Cam	Stnls 410	9Q4933
13	1	Cam	Stnls 316	19021SS
14	1	Retainer Sleeve	Teflon W/Glass	18467TG
15	2	O-Ring Cam Shaft	Viton	17946VT
			Tef-Sil	17946TS
16	1	Cam Shaft	Stnls 316	27340SS
17	1	Retaining Ring - Cam Shaft	Stnls 316	9Q4970
18	1	O-Ring Gland	Viton	17945VT
			Tef-Sil	17945TS
19	1	Retaining Ring - Gland	Stnls 316	9Q4968
20	1	Gland	Aluminum	17821AL
21	1	Bolt 1/4-20UNC x 1.50 lg.	Steel - Zinc Plt.	9Q5947
22	1	Lockwasher 1/4"	Steel - Zinc Plt.	9Q5845
23	1	Hex Nut 1/4-20UNC	Steel - Zinc Plt.	9Q5806
24a	1	Lever Arm - Air	Steel "E" Coated	18366EY
24b	1	Lever Arm - Cable	Steel "E" Coated	10587EY
25	1	Air Cylinder Assembly	Aluminum	AC35005ALB
26	1	Screen - Optional	Stnls 304	17644SL
27	1	Bolt 5/16-18UNC - 1" lg.	Steel - Zinc Plt.	9Q5829
28	1	Lockwasher 5/16"	Steel - Zinc Plt.	9Q5845
29	1	Hex Nut 5/16-18UNC Thd.	Steel - Zinc Plt.	9Q5808

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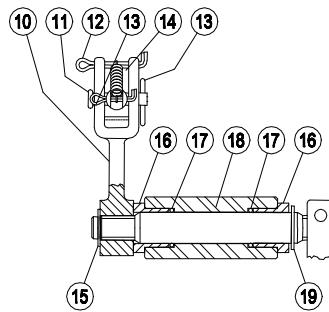
PARTS LIST

Emergency Valve

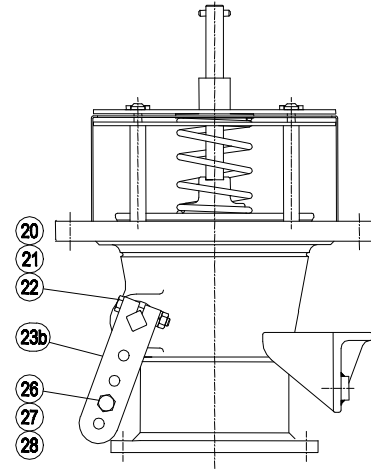
Tapered Seat 4" & 6" x 4"



Air Operated



Stuffing Box Detail



Cable Operated

NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.	
				4" VALVE	6"x 4" VALVE
1	1	Bail Pin 3/16 dia. X 1"	Stnls 18-8	9Q5901	9Q5901
2	1	Stem	Stnls 316	27415SS	27415SS
3	1	Spring Washer & Shaft Guide	Teflon W/Glass	19180TG	19180TG
4	1	Spring	Stnls 316	18222SS	18222SS
5	1	O-Ring Holder	Aluminum	27413AL	27412AL
6	1	O-Ring Seat	Tef - Sil	19028TS	18872TS
7	1	Lift Cup	Stnls 316	19178SS	19178SS
8	1	Bonnet Plate	Stnls 316	27017SS	27184SL
9	1	Lift Stem	Stnls 316	19179SS	19179SS
10	1	Lift Arm	Stnls 316	27414SS	27414SS
11	1	Clevis Pin 1/4 x 1-1/8	Stnls 303	9Q4727	9Q4727
12	1	Cotter Pin 1/8 x 1-1/4	Stnls 316	9Q4939	9Q4939
13	2	Cotter Pin 3/32 x 1-3/4	Stnls 304	9Q5866	9Q5866
14	1	Lift Spring	Stnls 302	19183SL	19183SL
15	1	Retaining Ring - Cam Shaft	Stnls	9Q4933	9Q4933
16	2	Spacer Sleeve	Teflon W/Glass	19034TG	19034TG
17	2	O-Ring Cam Shaft	Tef-Sil	17946TS	17946TS
18	1	Cam Shaft	Stnls 316	27332SS	27332SS
19	1	Retaining Ring - Cam Shaft	Stnls	9Q4970	9Q4970
20	1	Bolt 1/4-20UNC x 1.50 lg.	Steel - Zinc Plt.	9Q5947	9Q5947
21	1	Lockwasher 1/4"	Steel - Zinc Plt.	9Q5845	9Q5845
22	1	Hex Nut 1/4-20UNC	Steel - Zinc Plt.	9Q5806	9Q5806
23a	1	Lever Arm - Air	Steel "E" Coated	18366EY	18366EY
23b	1	Lever Arm - Cable	Steel "E" Coated	10587EY	10587EY
24	1	Air Cylinder Assembly	Aluminum/Buna	AC35005ALB	AC35005ALB
25	1	Screen - Optional	Stnls 304	18969SL	18935SL
26	1	Bolt 5/16-18UNC x 1 lg.	Steel - Zinc Plt.	9Q5829	9Q5829
27	1	Lockwasher 5/16"	Steel - Zinc Plt.	9Q5847	9Q5847
28	1	Hex Nut 5/16-18UNC Thd.	Steel - Zinc Plt.	9Q5808	9Q5808

WARNING Use only genuine BETTS INDUSTRIES INC. replacement parts. Use of substitute parts can impair the proper functioning of this product.

Emergency Valve

Aluminum Flat Seat Style

- Air or Cable Operated
- Groove or Flange Outlet
- Buna Urethane or Viton Seals

Betts flat seat style emergency valves combine Betts quality with an economical design. Valves feature aluminum construction with a specially designed seat disc to provide positive sealing. Shear section tested per TTMA RP84 and meets 49CFR178.345-8.

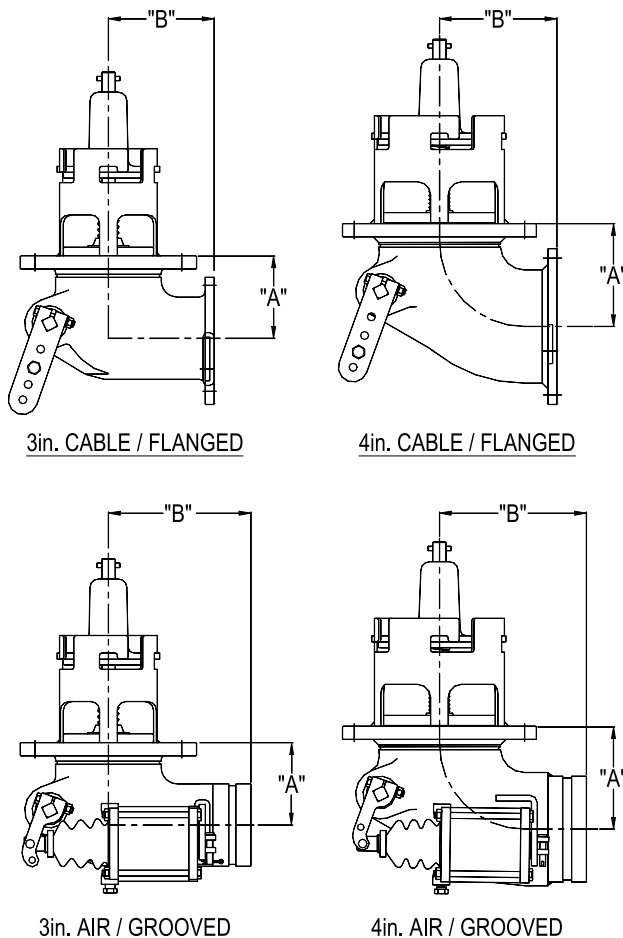
Air operated valves are provided with an external air cylinder to help prevent gasoline or other products from contaminating the air supply. The air cylinder is hard-coated aluminum with a polished stainless steel shaft. Cylinders have 1/8" NPT port for air connection and are supplied with a fusible plug installed.

Cable operated valves are supplied with a universal lever arm which provides up to 8 cable travel options to work with most operators. Lever arm is "E" Coated to provide exceptional corrosion resistance.

Left-hand valves are available with air cylinder or cable lever arm on opposite side of valve as shown at right. Add suffix -005 for left-hand option. Add suffix -004 for optional screen.

4" Valves are available with Stainless Trim, add suffix 010. See section 30 Page 10A for parts list.

90° ELBOW



Size	*Assembly No.	Air/Cable	Outlet	Wt.	Dimensions		Inlet Flange		Outlet Flange	
					A	B	B.C.	Holes	B.C.	Holes
3"	EV46672ALB	Air	3" Grv	10.5	3.50"	6.06"	6.25"	6-9/16	N.A.	N.A.
	EV46673ALB	Cable	3" Grv	8.2						
	EV46670ALB	Air	3" Flg	10.5	3.50"	4.50"	6.25"	6-9/16	4.88"	8-7/16
	EV46671ALB	Cable	3" Flg	8.2						
4"	EV46435ALB	Air	4" Grv	12.7	4.38"	6.25"	7.25"	8-9/16	N.A.	N.A.
	EV46398ALB	Cable	4" Grv	10.4						
	EV46428ALB	Air	4" Flg	12.7	4.38"	5.00"	7.25"	8-9/16	5.88"	8-7/16
	EV46399ALB	Cable	4" Flg	10.4						

*Specify Viton seals by substituting "V" for "B" in Assembly Number.

Force rating from TTMA RP86: 3" Valves: $F_{b-max} = 21,035 \text{ lb.}$ 4" Valves: $F_{b-max} = 15,500 \text{ lb.}$

CAUTION: Never bottom load through emergency valves without first opening valve. Failure to do so may result in damage to the tank and/or valve.

Emergency Valve

Aluminum Flat Seat Style

- Air or Cable Operated
- Groove or Flange Outlet
- Buna Urethane or Viton Seals

Betts flat seat style emergency valves combine Betts quality with an economical design. Valves feature aluminum construction with a specially designed seat disc to provide positive sealing. Shear section tested per TTMA RP84 and meets 49CFR178.345-8.

Air operated valves are provided with an external air cylinder to help prevent gasoline or other products from contaminating the air supply. The air cylinder is hard-coated aluminum with a polished stainless steel shaft. Cylinders have 1/8" NPT port for air connection and are supplied with a fusible plug installed.

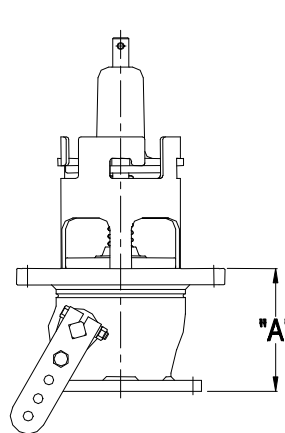
Cable operated valves are supplied with a universal lever arm which provides up to 8 cable travel options to work with most operators. Lever arm is "E" Coated to provide exceptional corrosion resistance.

Left-hand valves are available with air cylinder or cable lever arm on opposite side of valve as shown at right. Add suffix -005 for left-hand option. Add suffix -004 for optional screen.

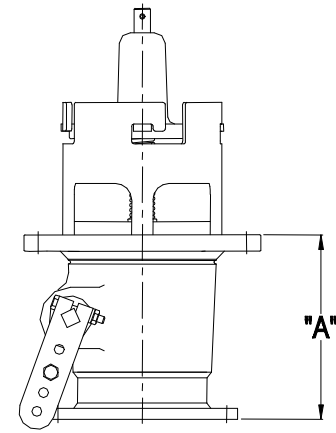
4" Valves are available with Stainless Trim, add suffix 010.

See section 30 Page 10A for parts list.

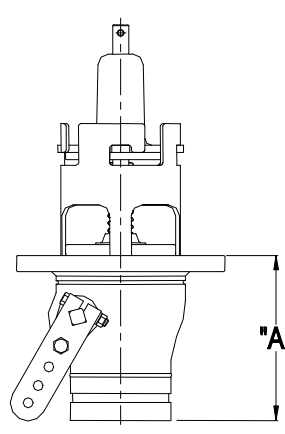
STRAIGHT



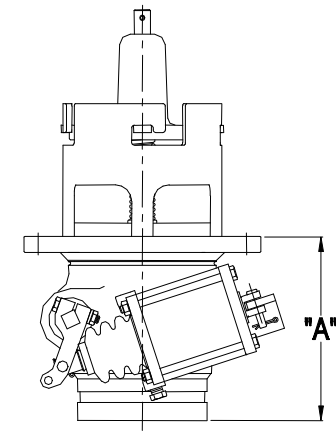
3in. CABLE / FLANGED



4in. CABLE / FLANGED



3in. CABLE / GROOVED



4in. AIR / GROOVED

Size	*Assembly No.	Air/Cable	Outlet	Wt.	Dimensions	Inlet Flange		Outlet Flange	
					A	B.C.	Holes	B.C.	Holes
3"	Not Available	Air	3" Grv	N.A.	5.71"	6.25"	6-9/16"	N.A.	N.A.
	EV46539ALB	Cable	3" Grv	7.2					
	Not Available	Air	3" Flg	N.A.	4.25"	6.25"	6-9/16"	4.88"	8-7/16"
	EV46540ALB	Cable	3" Flg	7.2					
4"	EV46436ALB	Air	4" Grv	11.1	6.38"	7.25"	8-9/16"	N.A.	N.A.
	EV46423ALB	Cable	4" Grv	8.9					
	EV46544ALB	Air	4" Flg	11.1	6.38"	7.25"	8-9/16"	5.88"	8-7/16"
	EV46543ALB	Cable	4" Flg	8.9					

* Specify Viton seals by substituting "V" for "B" in Assembly Number.

Force rating from TTMA RP86: 3" Valves : F_{b-max} = Grooved 7,469 lb. / Flanged 10,754 lb. 4" Valves : F_{b-max} = 10,000 lb.

CAUTION: Never bottom load through emergency valves without first opening valve. Failure to do so may result in damage to the tank and/or valve.

Emergency Valve

Aluminum Flat Seat Style

TEE

- Air or Cable Operated
- Groove or Flange Outlet
- Buna Urethane or Viton Seals

Betts flat seat style emergency valves combine Betts quality with an economical design. Valves feature aluminum construction with a specially designed seat disc to provide positive sealing. Shear section tested per TTMA RP84 and meets 49CFR178.345-8.

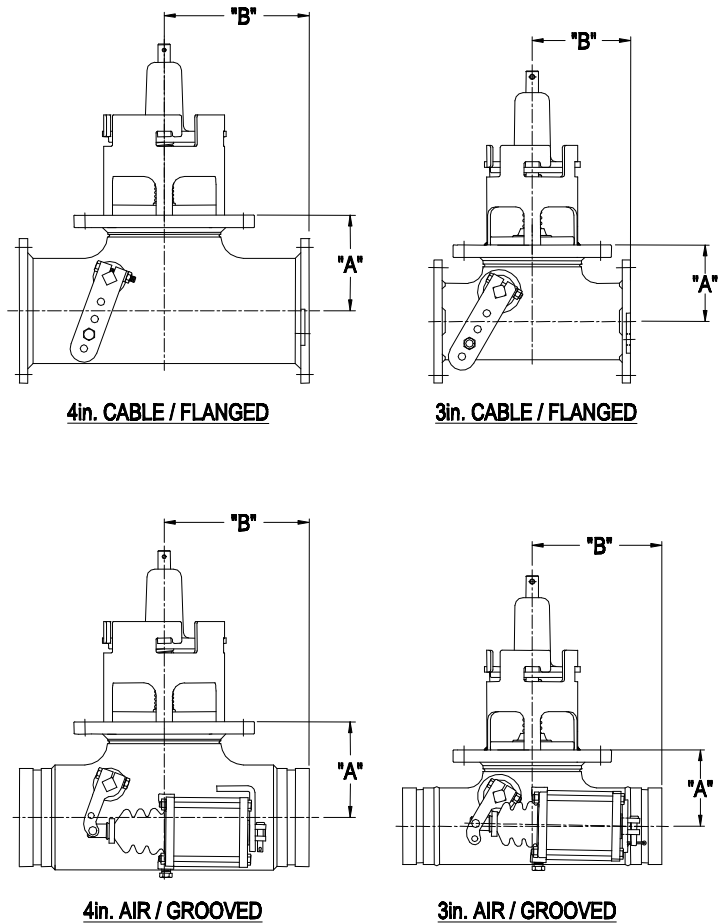
Air operated valves are provided with an external air cylinder to help prevent gasoline or other products from contaminating the air supply. The air cylinder is hard-coated aluminum with a polished stainless steel shaft. Cylinders have 1/8" NPT port for air connection and are supplied with a fusible plug installed.

Cable operated valves are supplied with a universal lever arm which provides up to 8 cable travel options to work with most operators. Lever arm is "E" Coated to provide exceptional corrosion resistance.

Left-hand valves are available with air cylinder or cable lever arm on opposite side of valve as shown at right. Add suffix -005 for left-hand option. Add suffix -004 for optional screen.

4" Valves are available with Stainless Trim, add suffix 010.

See Section 30 Page 10A for parts list.



Size	*Assembly No.	Air/Cable	Outlet	Wt.	Dimensions		Inlet Flange		Outlet Flange	
					A	B	B.C.	Holes	B.C.	Holes
3"	EV46536ALB	Air	3" Grv	11.8	3.50"	5.94"	6.25"	6-9/16	N.A.	N.A.
	EV46534ALB	Cable	3" Grv	9.5						
	EV46537ALB	Air	3" Flg	11.8	3.50"	4.50"	6.25"	6-9/16	4.88"	8-7/16
	EV46535ALB	Cable	3" Flg	9.5						
4"	EV46625ALB	Air	4" Grv	12.9	4.38"	6.63"	7.25"	8-9/16	N.A.	N.A.
	EV46623ALB	Cable	4" Grv	10.6						
	EV46626ALB	Air	4" Flg	12.9	4.38"	5.13"	7.25"	8-9/16	5.88"	8-7/16
	EV46624ALB	Cable	4" Flg	10.6						

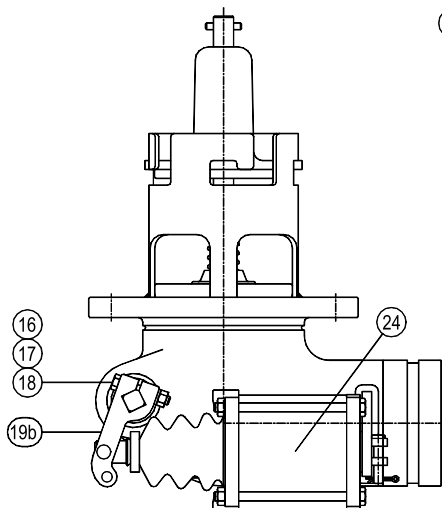
*Specify Viton seals by substituting "V" for "B" in Assembly Number.

Force rating from TTMA RP86: 3" Valves: $F_{b-max}=15,300$ lb. 4" Valves: $F_{b-max}=15,500$ lb.

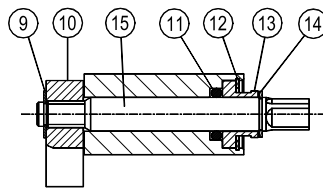
CAUTION: Never bottom load through emergency valves without first opening valve. Failure to do so may result in damage to the tank and/or valve.

PARTS LIST

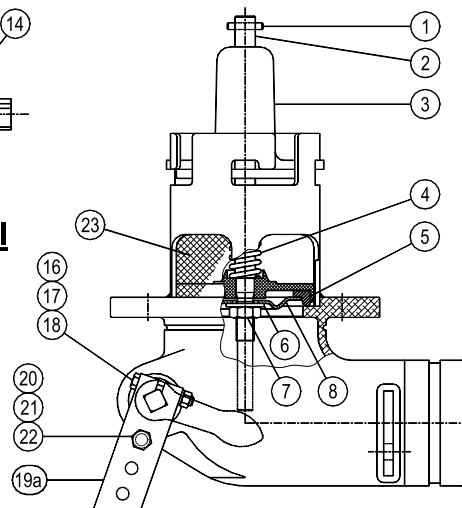
Emergency Valve 3" & 4" Flat Seat Aluminum



Air Operated



Stuffing Box Detail



Cable Operated

NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.	
				3" VALVE	4" VALVE
1	1	Bail Pin 3/16 Dia. X 1"	Stnls 18-8	9Q5901	9Q5901
2	1	Stem & Disc Holder Assembly	Alum./Steel Zinc Plt.	**27773ZA ***27517ZA	17991CA / *17991SA
3	1	Bonnet	Aluminum	25074AL	25248AL
4	1	Spring	Steel "E" Coated	15196EY	15196EY/ *15196SS
5	1	Disc	Buna Urethane	19018BU	19017BU
			Viton	19018VT	19017VT
6	1	Lockwasher 1/2" external tooth	Stnls 410	9Q5916	9Q5918/ *9Q5916
7	1	Hex Nut 1/2-20UNF Thd.	Stnls 18-8	9Q5909	9Q5909
8	1	Disc Retainer Plate	Aluminum	15006AL	15051AL
9	1	Cam Retaining Ring	Stnls 316	9Q4933	9Q4933
10	1	Cam	Steel	19022MS	19022MS/ *19022SS
11	1	O-Ring (Cam Shaft)	Buna-N	19082BN	19082BN
			Viton	19082VT	19082VT
12	1	Retaining Ring-Gland	Stnls 316	9Q4968	9Q4968
13	1	Retaining Gland	Aluminum	19081AL	19081AL
14	1	Retaining Ring - Cam shaft	Stnls 316	9Q4970	9Q4970
15	1	Cam Shaft	Steel	27332ZC	27332ZC/ *27332SS
16	1	Bolt 1/4-20UNC x 1.75" lg.	Steel Zinc Plt.	9Q5825	9Q5825
17	1	Lockwasher 1/4"	Steel Zinc Plt.	9Q5845	9Q5845
18	1	Hex Nut 1/4-20UNC Thd	Steel Zinc Plt.	9Q5806	9Q5806
19a	1	Lever Arm - Cable	Steel "E" Coated	10587EY	10587EY
19b	1	Lever Arm - Air	Steel "E" Coated	18366EY	18366EY
20	1	Bolt 5/16-18UNC x 1" lg.	Steel Zinc Plt.	9Q5829	9Q5829
21	1	Lockwasher 5/16"	Steel Zinc Plt.	9Q5847	9Q5847
22	1	Hex Nut 5/16-18UNC Thd	Steel Zinc Plt.	9Q5808	9Q5808
23	1	Screen - Optional	Stnls 304	17644SL	17645SL
24	1	Air Cylinder Assembly	Aluminum	AC35005ALB	AC35005ALB

* Indicates Part No. for Valves with Stainless Trim

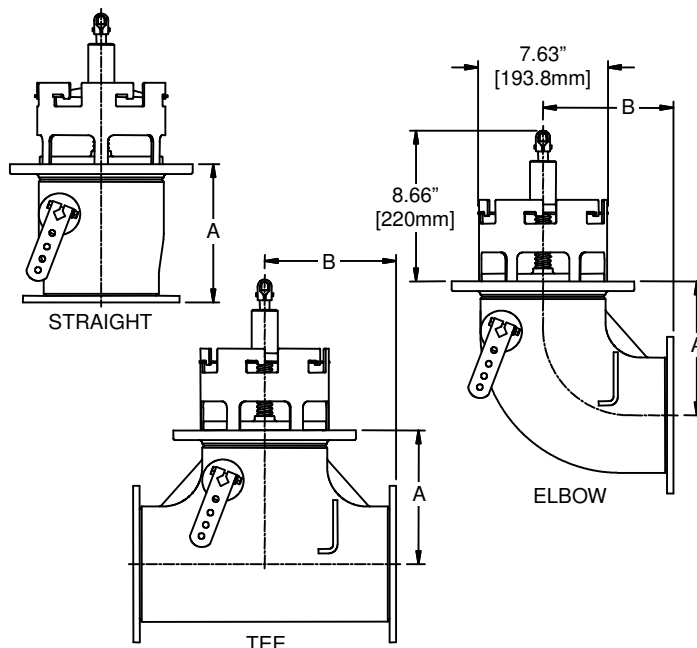
** Indicates Part No. for 90 Deg. Elbow

*** Indicates Part No. for Straight & Tee

Emergency Valve

6" X 6" Cable Operated Aluminum

The 6" Emergency Valve product line offers a lightweight versatile valve capable of handling a wide variety of products. The valve is available in a flanged or grooved outlet with available body configurations of straight, 90° elbow, or tee style. The body is constructed of aluminum and meets 49CFR178.345-8-shear section test per TTMA RP 84. The body, disc holder, and bonnet assembly come standard with a black epoxy e-coat for added corrosion protection. Valves supplied with universal lever arm with multiple mounting holes for versatile cable attachment. See catalog section 28 and 29 for mechanical operators and remote control lever.



See Section 30 Page 25B for 6"x6" parts list

Size	Assembly No.	Inlet Flange		Outlet		Dimensions		Wt. (lbs.)	F _{b-max} Per TTMA RP86	MAWP †
		B.C	Holes	B.C	Holes	A	B			
6 X 6 Straight	EV47055AY*	9.25" [235 mm]	12 Holes .59" Dia. [15 mm]	6" GROOVED		9.38" [238.3 mm]	N.A.	14.5lb. [6.58 kg]	21,690 lb. [9,838 kg]	12 psi (82.7 kPa)
	EV47056AY*	9.25" [235 mm]	12 Holes .59" Dia. [15 mm]	8.13" [206.4 mm]	12 Holes 7/16" Dia. [11.1 mm]	7.94" [201.7 mm]	N.A.	14.5lb. [6.58 kg]		
6 X 6 Elbow	EV47059AY*	9.25" [235 mm]	12 Holes .59" Dia. [15 mm]	6" GROOVED		7.69" [195.3 mm]	8.95" [227.3 mm]	17.3 lb. [7.82 kg]	27,041 lb. [12,265 kg]	
	EV47060AY*	9.25" [235 mm]	12 Holes .59" Dia. [15 mm]	8.13" [206.4 mm]	12 Holes 7/16" Dia. [11.1 mm]	7.69" [195.3 mm]	7.51" [190.8 mm]	17.3 lb. [7.82 kg]		
6 X 6 Tee	EV47063AY*	9.25" [235 mm]	12 Holes .59" Dia. [15 mm]	6" GROOVED		7.69" [195.3 mm]	9.01" [228.9 mm]	19.8 lb. [8.96 kg]	27,041 lb [12,265 kg]	
	EV47064AY*	9.25" [235 mm]	12 Holes .59" Dia. [15 mm]	8.13" [206.4 mm]	12 Holes 7/16" Dia. [11.1 mm]	7.69" [195.3 mm]	7.62" [193.5 mm]	19.8 lb. [8.96 kg]		

* Last letters of part number designate seal material. See material table at right for seal options.

† Valve MAWP rating is based on the maximum internal tank pressure that the valve can be opened against.

‡ Temp. Rating: Valve working temp. is dependant on seal material. See table at right.

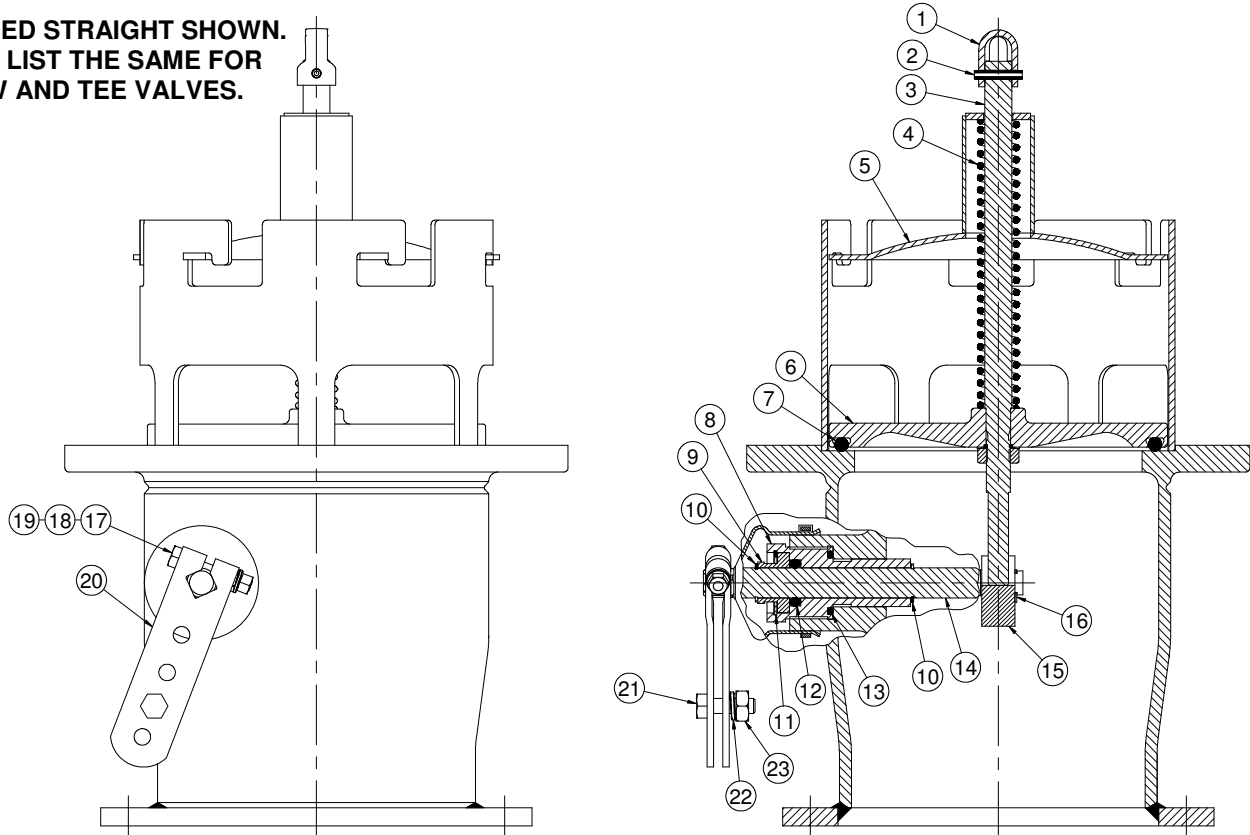
Letter	Mat'l	Temp. Range
BN	Nitrile	-40°F to +220° F [-40°C to 104°C]
VT	FKM	-20°F to +400° F [-29°C to 204°C]
TS	FEP (fluoropolymer) Encapsulated Silicone	-40°F to +400° F [-40°C to 204°C]

CAUTION: Valve must be properly installed and maintained. Never bottom load through emergency valve without first opening valve. Failure to do so may result in damage to the tank and/or valve.

Parts List

6" X 6" Cable Operated Aluminum Emergency Valve

FLANGED STRAIGHT SHOWN.
PARTS LIST THE SAME FOR
ELBOW AND TEE VALVES.



NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.
1	1	6" EV Bail	Aluminum E-Coated	A11129EY
2	1	Bail Pin	Stainless Steel	9Q5901
3	1	Stem	Steel Zinc Plated	27300ZC
4	1	6" Spring	316 Stainless Steel	SS11288H
5	1	6" Bonnet	Aluminum E-Coated	A21006EY
6	1	Disc Holder	Aluminum E-Coated	28367ALEY001
7	1	Seat Seal	Nitrile	75463BN
			FKM	75463VT
			Tef-Sil	75463TS
8	1	Threaded Stuffing Box	Anodized / Aluminum	28359AL
9	1	Stuffing Box Retainer	Aluminum	19081AL
10	2	Retaining Ring	Steel Zinc Plated	9Q4970
11	1	Internal Snap Ring	Stainless Steel	9Q4968
12	1	O-Ring (Cam Shaft)	Nitrile	18824BN
			Nitrile	19082BN
			FKM	19082VT
13	1	O-Ring (Stuffing Box)	Teflon	75483SLTF
			316 Stainless Steel	36048SS
			Coated Steel	19022MS
14	1	Cam Shaft	316 Stainless Steel	36048SS
15	1	Cam	Coated Steel	19022MS
16	1	E-Clip	Stainless Steel	9Q4933
17	1	1/4-20 Hex Nut	Steel Zinc Plated	9Q5806
18	1	1/4" Lockwasher	Steel Zinc Plated	9Q5845
19	1	1/4-20 UNC x 1.50 Hex Bolt	Steel Zinc Plated	9Q5947
20	1	Universal Lever Arm	Steel E-Coated	10587EY
21	1	5/16-18UNF-1.00 Hex Head Bolt	Steel Zinc Plated	9Q5829
22	1	5/16 Lockwasher	ASA Steel Zinc Plated	9Q5847
23	1	5/16-18 Nut	Steel Zinc Plated	9Q5808

WARNING Use only genuine BETTS INDUSTRIES INC. replacement parts. Substitute parts can impair the proper function of this product.

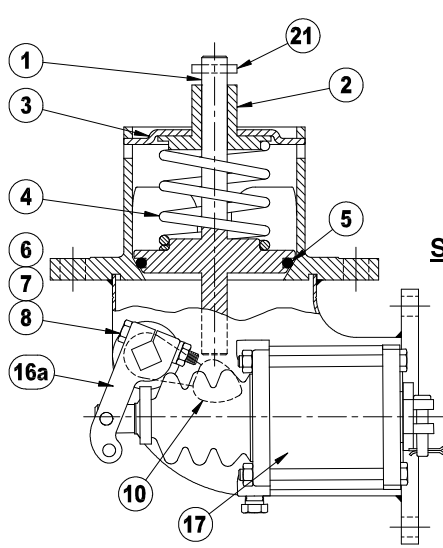
Betts™ INDUSTRIES, INC. WARREN, PA.

Jan. 2007

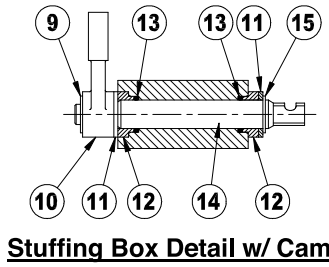
PARTS LIST

Emergency Valve

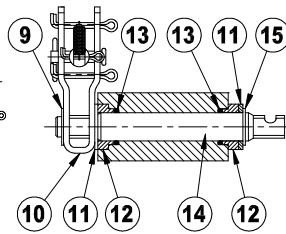
Stainless Steel



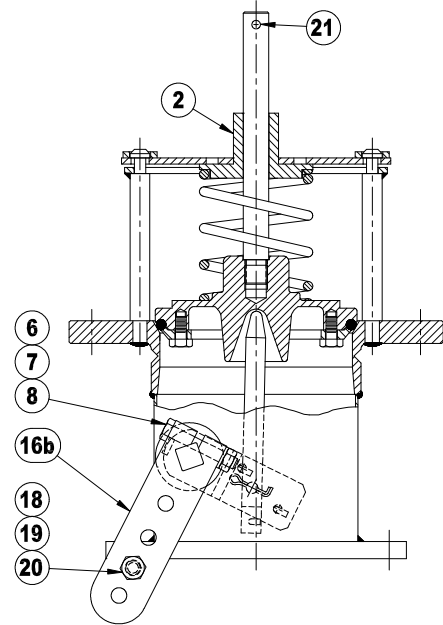
3in. Air Operated / Elbow



Stuffing Box Detail w/ Cam



Stuffing Box Detail w/ Straight Lift (4" only)



4in. Cable Operated / Straight

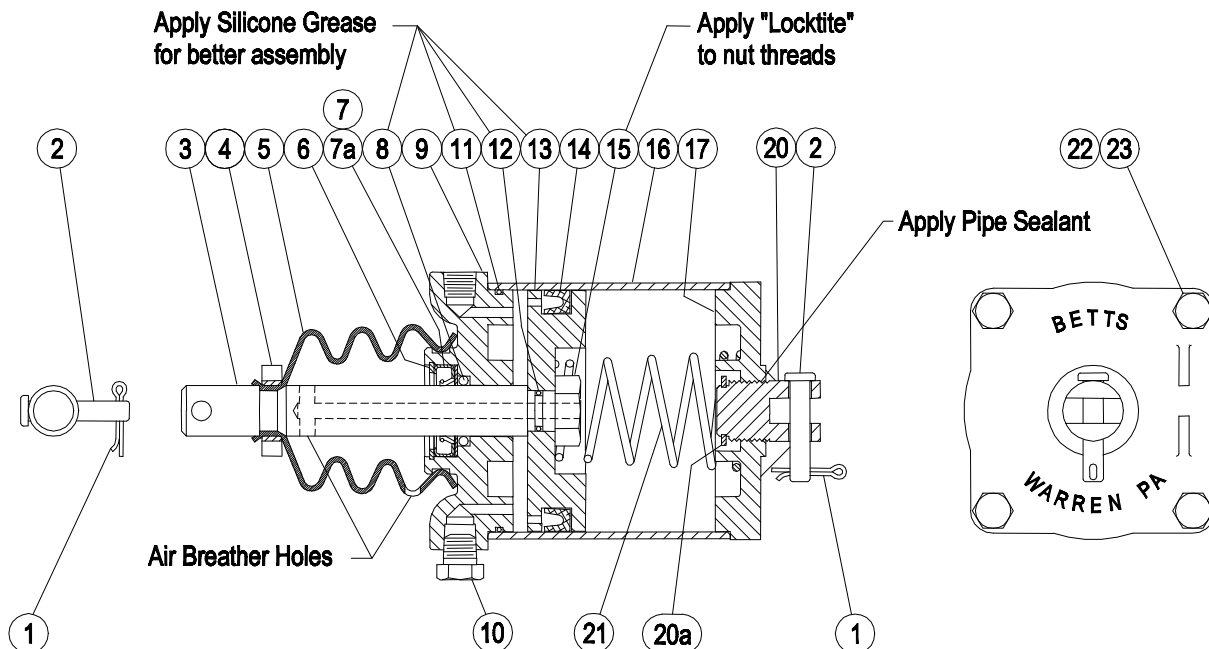
NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.	
				3" VALVE	4" VALVE
1	1	Stem & O-Ring Holder	Stnls 316	18119SS	28141SS001
1a	1	O-Ring Retainer	Stnls 316	N.A.	27443SS
1b	4	Cap Screw 1/4 -28 x 1/2	Stnls 316	N.A.	9Q4174
2	1	Shaft guide	Stnls 316	75310SS	75310SS
3	1	Bonnet	Stnls 316	17888SS	27017SS
4	1	Spring	Stnls 316	17884SS	18222SS
5	1	Seat O-Ring	Tef-Sil	17890TS	19033TS
6	1	Cap Screw 1/4-20UNC x 1-1/2"	Steel – Zinc Plt.	9Q5947	9Q5947
7	1	Lockwasher 1/4"	Steel – Zinc Plt.	9Q5845	9Q5844
8	1	Hex Nut 1/4-20UNC	Steel – Zinc Plt.	9Q5806	9Q5806
9	1	Cam Retaining Ring	Stnls 316	9Q4933	9Q4933
10	1	Cam	Stnls 316	15086SS	N.A.
10a	1	Straight Lift Assembly	Stnls 316	N.A.	28137SS
11	2	Washer	Teflon	15432TF	15432TF
12	2	Retaining Sleeve	Stnls 316	18467SS	18467SS
13	2	Cam Shaft O-Ring	Tef-Sil	17946TS	17946TS
14	1	Cam Shaft	Stnls 316	18469SS	18469SS
15	1	Spacer Sleeve Retaining Ring	Stnls 316	9Q4970	9Q4970
16a	1	Lever Arm – Air Cylinder	Steel – Plt.	18366EY	18705MS
16b	1	Lever Arm – Cable	Steel – "E" Coated	10587EY	10587EY
17	1	Air Cylinder	Aluminum/Buna	AC35005ALB	AC35005ALB
18	1	Bolt 5/16-18UNC x 1" lg.	Steel – Zinc Plt.	9Q5829	9Q5829
19	1	Lockwasher 5/16"	Steel – Zinc Plt.	9Q5847	9Q5847
20	1	Hex Nut 5/16-18UNC Thd.	Steel – Zinc Plt.	9Q5808	9Q5808
21	1	Bail Pin 3/16 x 1" lg.	Stnls 316	9Q5901	9Q5901
22	1	Stuffing Box Boot	Neoprene	19937NE	19937NE
23	1	Cable Tie	Nylon	9W3384	9W3384

N.A. Not Applicable

PARTS LIST

Air Cylinder

AC35005ALB

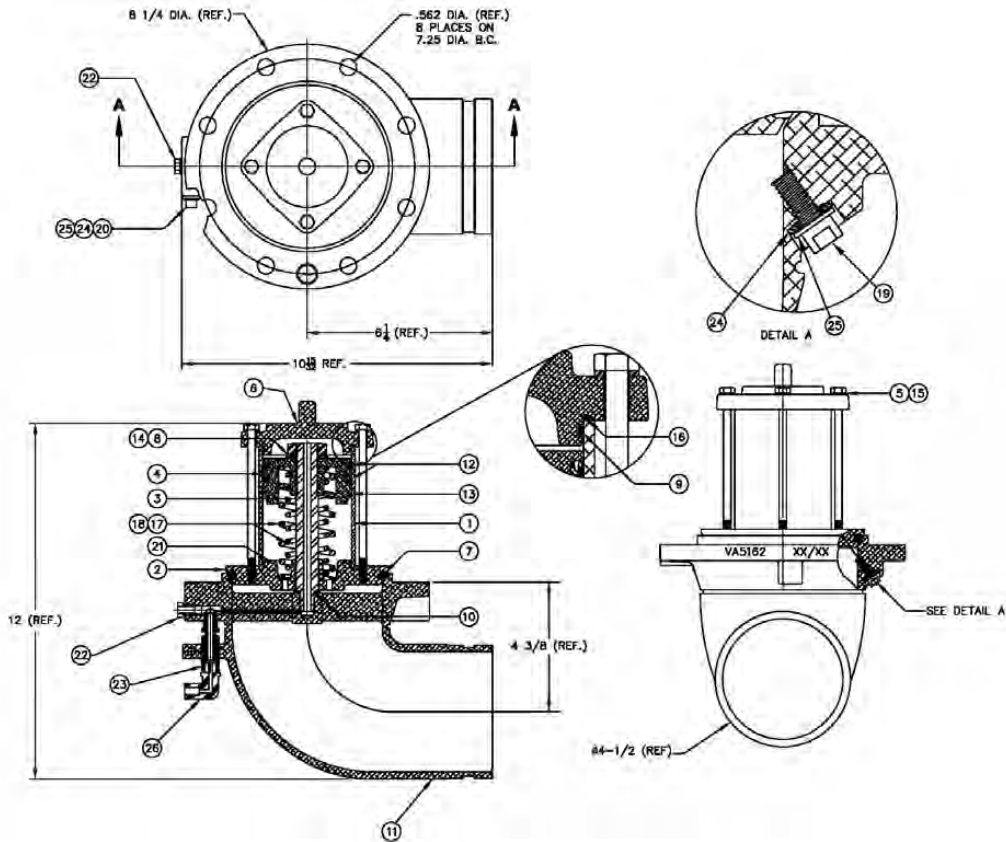


REBUILD KIT AC19307BN - Includes Items 3, 4, 5, 7, 7a, 8, 11, 12, 14, 20, and 21
 REPAIR KIT AC18674BN - Includes Items 4, 5, 6, 7, 7a, 8, 11, 12, and 14

NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.
1	2	Cotter Pin 3/32 X 3/4"	Brass	9Q5865
2	2	Clevis Pin	Steel Zinc Plt.	9Q4728
3	1	Shaft	Stnls 304	17661SL
4	1	Boot Retainer	Delrin	17952DL
5	1	Boot	Neoprene	17777NE
6	1	Retaining Ring	Steel - Zinc Plt.	9Q4967
7	1	Wiper Seal	Steel - Phosphate Coated	19085PA
7a	1	Spacer	Teflon	19057TF
8	1	O-Ring Shaft Seal	Buna-N	18066BN
9	1	End Plate	Aluminum	17880AL
10	1	Fusible Plug	Brass	FP15003BR
11	1	O-Ring - End Plate	Buna-N	17666BN
12	1	O-Ring - Shaft	Buna-N	17781BN
13	1	Piston	Aluminum	17660AL
14	1	Piston Seal	Buna-N (special low temp.)	17669BN
15	1	Hex Half Nut 1/2-20 Thd.	Steel - Zinc Plt.	9Q5910
16	1	Cylinder	Aluminum	17659AL
17	1	Mounting End Plate	Aluminum	17881AL
20	1	Clevis	Steel - Black Epoxy Coated	19060EY
20a	1	Clevis Retaining Ring	Stnls. 316	9Q4970
21	1	Spring	Steel - Black Epoxy Coated	18742EY
22	4	Locknut 1/4-28 Thd.	Steel - Zinc Plt.	9Q5807
23	4	Bolt 1/4-28 X 4"	Steel - Zinc Plt.	9Q1270



VA5162 5" X 4" Emergency Valve



PARTS BREAK DOWN

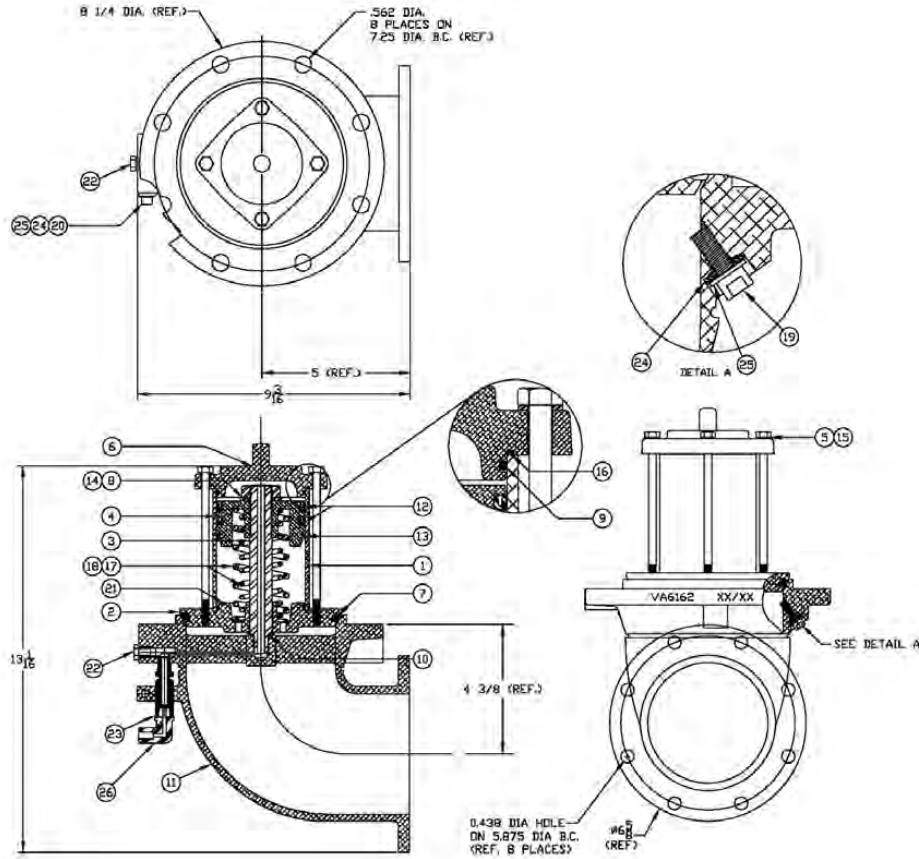
ITEM	PART NUMBER	DESCRIPTION	QTY.	ITEM	PART NUMBER	DESCRIPTION	QTY.
1	6950	CYLINDER BODY	1	15	H50086M	LOCK WASHER	4
2	6951	CYLINDER DISK	1	16	6964 ¹	O-RING, VITON	2
3	6953	STEM	1	17	6233	SPRING (INNER)	1
4	6954	PISTON	1	18	6234	SPRING (OUTER)	1
5	6956	HEX CAP SCREW	4	19	9163	SCREW	1
6	6957	CAP	1	20	6967	SCREW	1
7	6959 ¹	O-RING, TEF-O-SIL	1	21	6969 ¹	O-RING, VITON	1
8	6960 ¹	SEAL WASHER	1	22	5047	FUSIBLE PLUG	1
9	6961 ¹	O-RING, BUNA-N	2	23	11000	SHEAR SCREW	1
10	6962 ¹	SEAL WASHER	1	24	10344	SEAL WASHER	2
11	11018	MACHINED BODY	1	25	H20312M	WASHER	2
12	5865 ¹	U-CUP SEAL	2	26	9489	ELBOW AIR FITTING	1
13	6966 ¹	U-CUP SEAL	1	REPAIR KIT			
14	5687	HEX JAM NUT	1	12150	CYLINDER REPAIR KIT		

¹—Included in 10002



VA6162 5" X 4" Emergency Valve

PARTS BREAK DOWN



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	6950	CYLINDER BODY	1
2	6951	CYLINDER DISK	1
3	6953	STEM	1
4	6954	PISTON	1
5	6956	HEX CAP SCREW	4
6	6957	CAP	1
7	6959 ¹	O-RING, TEF-O-SIL	1
8	6960 ¹	SEAL WASHER	1
9	6961 ¹	O-RING, BUNA-N	2
10	6962 ¹	SEAL WASHER	1
11	11035	MACHINED BODY	1
12	5865 ¹	U-CUP SEAL	2
13	6966 ¹	U-CUP SEAL	1
14	5687	HEX JAM NUT	1

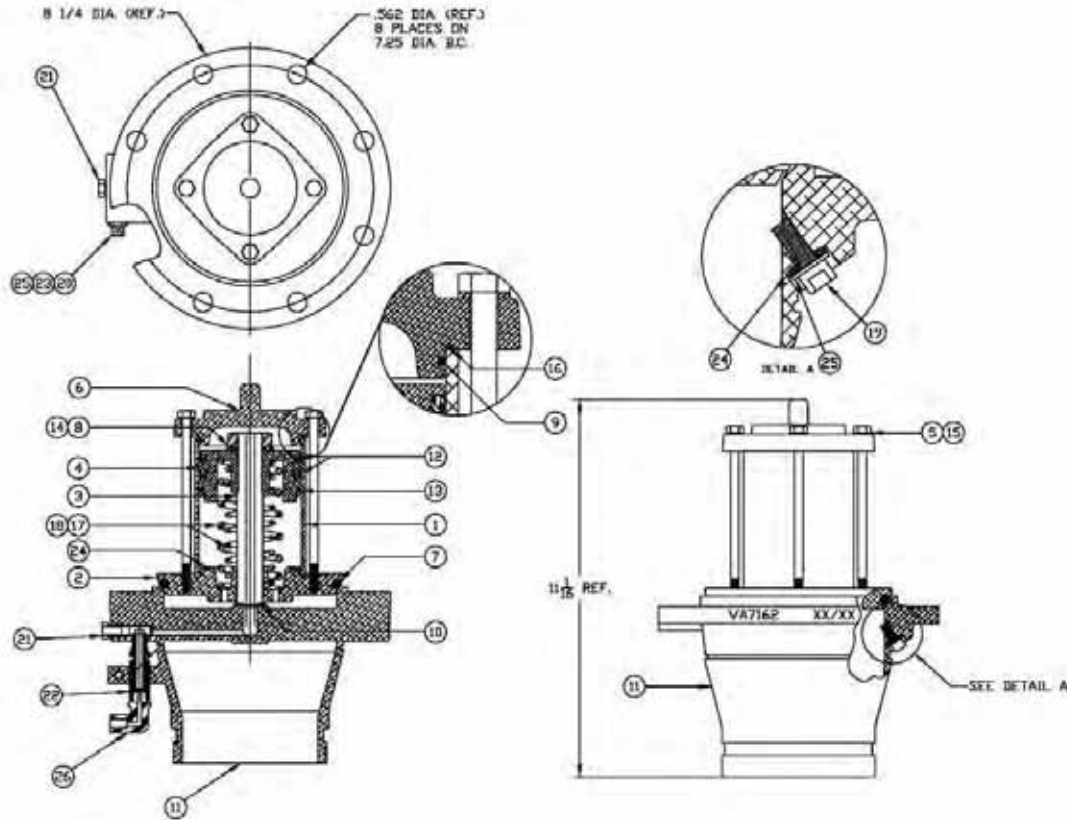
ITEM	PART NUMBER	DESCRIPTION	QTY.
15	H50086M	LOCK WASHER	4
16	6964 ¹	O-RING, VITON	2
17	6233	SPRING (INNER)	1
18	6234	SPRING (OUTER)	1
19	6965	SEAL SCREW	1
20	6967	SCREW	1
21	6969 ¹	O-RING, VITON	1
22	5047	FUSIBLE PLUG	1
23	11000	SHEAR SCREW	1
24	10344	SEAL WASHER	2
25	H20312M	WASHER	2
26	9489	ELBOW AIR FITTING	1
REPAIR KIT			
	12150	CYLINDER REPAIR KIT	

¹—Included in 10002



VA7162 5" X 4" Emergency Valve

PARTS BREAK DOWN



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	6950	CYLINDER BODY	1
2	6951	CYLINDER DISK	1
3	6953	STEM	1
4	6954	PISTON	1
5	6956	HEX CAP SCREW	4
6	6957	CAP	1
7	6959 ¹	O-RING, TEF-O-SIL	1
8	6960 ¹	SEAL WASHER	1
9	6961 ¹	O-RING, BUNA-N	2
10	6962 ¹	SEAL WASHER	1
11	11033	MACHINED BODY	1
12	5865 ¹	U-CUP SEAL	2
13	6966 ¹	U-CUP SEAL	1
14	5687	HEX JAM NUT	1

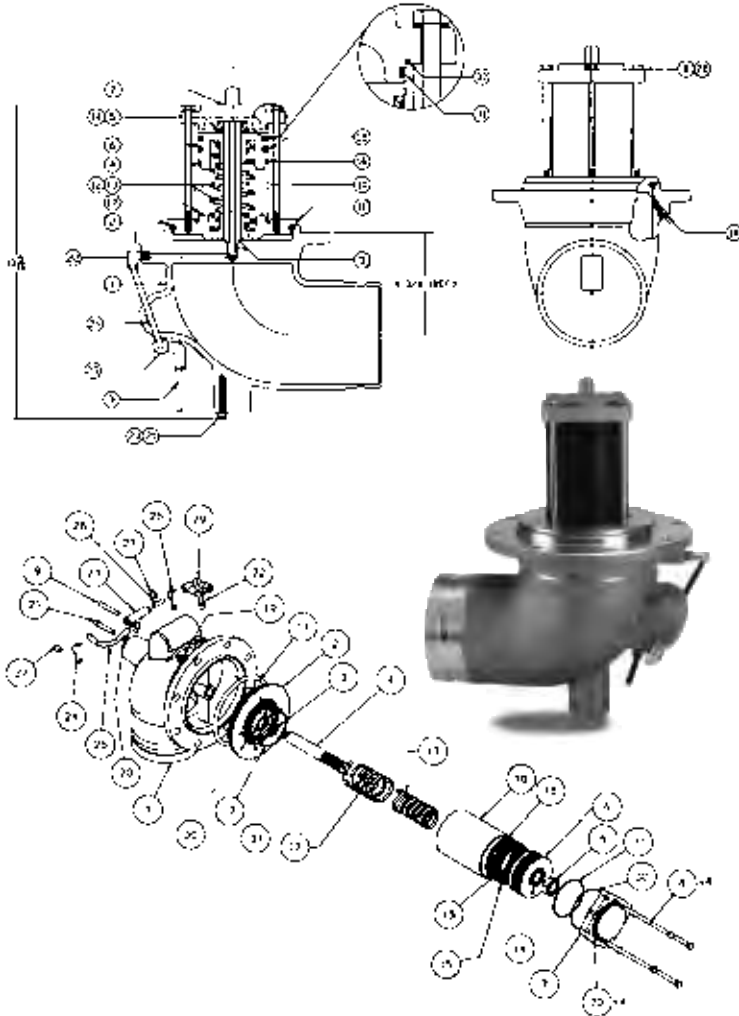
15	H50086M	LOCK WASHER	4
16	6964 ¹	O-RING, VITON	2
17	6233	SPRING (INNER)	1
18	6234	SPRING (OUTER)	1
19	9163	SCREW	1
20	6967	SCREW	1
21	5047	FUSIBLE PLUG	1
22	11000	SHEAR SCREW	1
23	10344	WASHER	2
24	6969 ¹	O-RING, VITON	1
25	H20312M	WASHER	2
26	9489	ELBOW AIR FITTING	1
REPAIR KIT			
	12150	CYLINDER REPAIR KIT	

¹—Included in 10002

Civacon MaxAir™ Air Operated Internal Valve

PARTS LIST FOR TYPICAL VA5142

ITEM	PART#	DESCRIPTION
1	6963	Valve Body (elbow, Victaulic)
2	6951	Cylinder Disk (aluminum)
3	6962	Seal Washer (Buna/plated steel)
4	6953	Stem (303 stainless steel)
5	5687	Hex Jam Nut (plated steel)
6	6954	Piston (aluminum)
7	6957	Cap (aluminum)
8	6956	Hex Cap Screw (plated steel)
9	9052	1/4" Exhaust Tubing
10	6950	Cylinder Body (anodized aluminum)
11	6959	O-Ring (TFE-O-Sil)
12	6234	Spring (outer)
13	6233	Spring (inner)
14	6960	Seal Washer (Buna /pld. steel)
15	5865	U-Cup Seal (Buna)
16	6966	Energized U-Cup Seal (Teflon)
17	6969	O-Ring (Viton)
18	6965	Seal Screw (pld. 1/4 — 20 x 1/2)
19	5047	Fusible Plug
20	6633	Lock Washer (plated steel)
21	6967	Screw 1/4 — 20 x 1, 1/2 FI Thd
22	9054	Elbow Male 1/8 NPT
23	9050	1/4" Quick Exhaust Valve
24	9102	Clamp 1/2" Nylon
25	9091	Clamp 7/16" Nylon
26	9051	1/4" Outlet Tubing
27	9103	Screw 8 — 32 x 3/8" Lg Ext. Sems
28	9059	1/4" Nipple
29	9053	Elbow Female 1/8" NPT
30	6964	O-Ring (Viton)
31	6961	O-Ring (Buna)



MAXAIR AIR OPERATED INTERNAL VALVE ORDERING INFORMATION

TYPE	CODE	BODY	CODE	OPERATION	CODE	SEAL
VA	51	90° Elbow/Victaulic	4	Internal Air	1	Viton*
	61	90° Elbow/Flanged	4		2	Tef-Sil
	71	Straight/Victaulic	4		3	Kalrez*
	81	Straight/Flanged	4		4	Nitrile*

Use suffix "S" for slotted mounting holes configuration

e.g. VA5142S = 90° Elbow/Victaulic, MaxAir air operated internal valve with slotted mounting holes and Tef-Sil seal

Approximate weights: MaxAir Elbow = 11.20 lbs.; MaxAir Straight = 8.95 lbs

*Please contact Civacon for availability



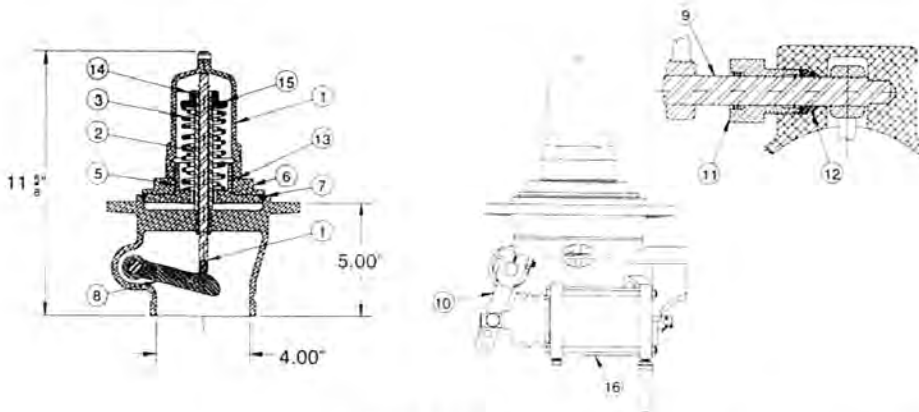
**REAL WORLD. REAL SOLUTIONS.
THAT'S CIVAICON.**



UNIVERSAL
KNAPPCO 5" X 4"
ALUMINUM STRAIGHT INTERNAL VALVE
High Flow Valve To Fit Standard 4" TTMA Sump

TYPE	CODE	BODY TYPE	CODE	INTERNALS	CODE	OPERATION	CODE	SEALS
VA	7	Straight Victaulic	1	Aluminum, SS Bronze & Brass Plated steel	1	Mechanical	1	Viton
	8	Straight Flanged			2	Air	2	Tef-sil
							3	Kalrez
							4	Nitrile

Add suffix 'S' for slotted mounting holes



5X4 INTERNAL VALVE (STRAIGHT)

REFERRALS	DESCRIPTION	ALUMINUM	PLATED	BRASS	SS	OTHER
PARTS FOR VALVES WITH TEF-SIL GASKETS						
1	Cap	6140				
2	Stem				2899	
3	Spring kit		6493			
4	Push Rod Assembly		6280		5692	
5	Disc	6138				
6	Disc Nut	6139				
7	Disc Seal, Teflon O-Ring					7342
8	Lift Lever			5798	5799	
9	Shaft Assembly				6494	
10	Handle			7939	5698	
	Long Handle (Mechanical Models)		6117			
11	Gland Rebuild Tef-Sil			6427	6428	
	Gland Rebuild Viton			6429	6430	
	Gland Rebuild Hi Acrylo Nitrile			6431	6432	
12	Packing					7117
13	Gasket, Teflon					6227
14	Jam Nut (3/4-16)		5687			
15	Washer (spring holder)	6228				
16	Air Cylinder Assembly Victaulic					5042
	Air Cylinder Assembly Flanged					5940
	Air Cylinder Repair Kit					5862
	Boot Repair Kit					5863
PARTS FOR VALVE WITH VITON OR NITRILE GASKETS						
4	Push Rod Assembly		6442		5784	
5	Disc	6440				
6	Disc Nut	6441				
SEALS, O-RINGS & GASKETS						
7	Seal, Disc	VITON 7266	TEF-SIL 7342	KALREZ 7282	NITRILE 5243	
ACCESSORIES						
	Mounting Gasket Cork/Buna					7341
	Drain Screen					6369
	Cable Bracket					5730

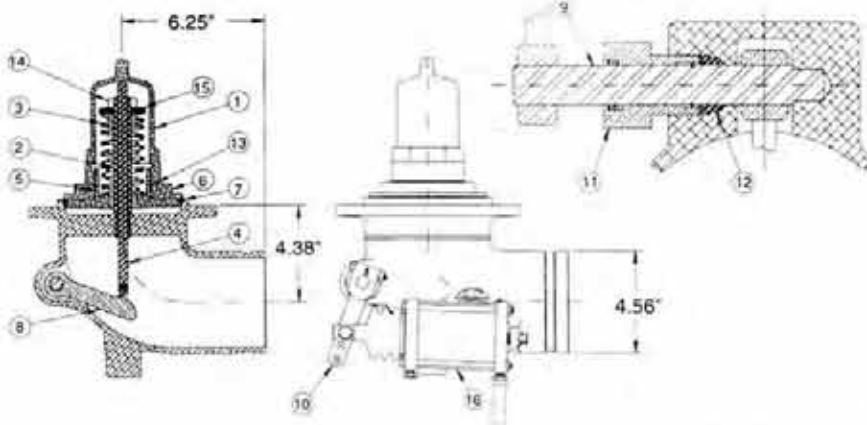


UNIVERSAL
KNAPPCO 5" X 4"
ALUMINUM ELBOW INTERNAL VALVE

High Flow Valve To Fit Standard 4" TTMA Sump

TYPE	CODE	BODY TYPE	CODE	INTERNAL	CODE	OPERATION	CODE	SEALS
VA	5	90° Elbow Volute	1	Aluminum SS Brass & Steel Pneumatic	1	Mechanical	1	Viton
	6	90° Elbow Flanged				air	2'	Tef-sil
							2	Kalrez
					3	Nitril		

Add suffix "S" for drilled mounting holes.



5X4 INTERNAL VALVE (ELBOW)

REFERRALS	DESCRIPTION	ALUMINUM	PLATED	BRASS	SS	OTHER
PARTS FOR VALVES WITH TEF-SIL GASKETS						
1	Cap	6140				
2	Stem Assembly				2899	
3	Spring Kit		6193			
4	Push Rod Assembly		6275		5656	
5	Disc	6138				
6	Disc Nut	6139				
7	Disc Seal, Teflon O-Ring					7342
8	Lift Lever			7898	5956	
9	Shaft Assembly				6494	
10	Handle			6495	6496	
11	Gland Rebuild Tef-Sil			6427	6428	
	Gland Rebuild Viton			6429	6430	
	Gland Rebuild HI Acrylo Nitrile			6431	6432	
12	Packing					7117
13	Gasket					6227
14	Jam Nut (3/4-16)		5687			
15	Washer (spring holder)	6228				
16	Air Cylinder Assembly					4639
	Air Cylinder Repair Kit					5862
	Boot Repair Kit					5863
PARTS FOR VALVE WITH VITON OR NITRILE GASKETS						
4	Push Rod Assembly		6439		5769	
5	Disc	6440				
6	Disc Nut	6441				
SEALS, O-RINGS & GASKETS		VITON	TEF-SIL	KALREZ	NITRILE	
7	Seal Disc	7266	7342	7262	5243	
ACCESSORIES						
	Mounting Gasket Cork/Buna					7341
	Drain Screen					6369



VA1050 - 3" Air Operated Emergency Valve

Meet the demand of today's fuel delivery tank trucks with compact, high-performing Internal Air Operated Emergency Valves from Civacon.

The VA1050 3" Emergency Valve is specifically engineered to allow greater flexibility of tank truck design and assembly. The internal air operation cylinder allows maximum utilization of under tank chassis space while the "bellowed body" profile allows higher flow rates when unloading, and lower pressure drop when at the loading rack.

The VA1050 is purposely designed for fuel oil, lube oil and heating oil delivery trucks. Civacon, the name to depend on for innovation and reliable performance.

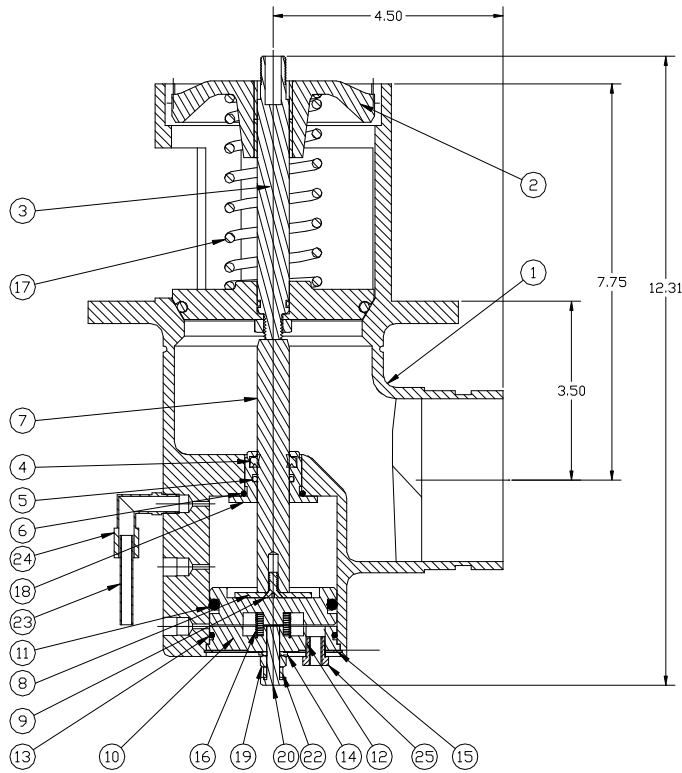


Features

- 3" TTMA compact elbow design for greater flexibility of tank truck design
- 3" Victaulic pipe connection for close proximity pipe work runs
- Internal air cylinder allows for simpler air pipe runs - no external linkage
- Pneumatic actuation can be "single acting" or "sequential" to confirm the position of the valve
- Slotted tank flange to ease installation
- Viton seals for product compatibility
- Air cylinder rated to -40° F to 150° F (-40° C to 66° C)
- External shear groove to TTMA specifications
- Low pressure drop for higher flow rates
- Light weight and robust aluminum and stainless steel construction for long service life
- Quick strip for easy maintenance
- Manual override feature included
- Mesh filter screen is available as an option



VA1050 3" Emergency Valve



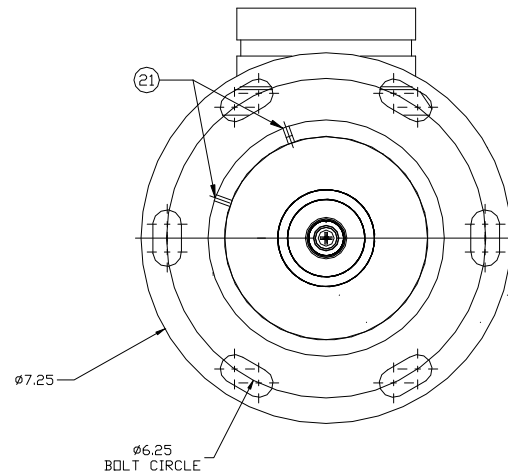
3" Air Operated Emergency Valves

VA1050 - 3" Valve, Air Operated, Victaulic, Viton Seals

VA1051 - 3" Valve, Air Operated, Victaulic, Viton w/Screen

VA2050 - 3" Valve, A.O., Flanged Outlet, Viton Seals

VA2051 - 3" Valve, A.O., Flanged Outlet, Viton w/Screen



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10684	MACHINED BODY	1
2	10819	TOP CAP ASSEMBLY	1
3	10810M	POPPET SUB-ASSEMBLY	1
4	10238M	WIPER SEAL	1
5	10681M	O-RING, VITON GF	1
6	10700	O-RING, VITON GF	1
7	10692	ROD, SS	1
8	10338	WASHER	1
9	10339	SCREW, 10-24 x 1/2 18-8	1
10	10683	PISTON	1
11	10676M	O-RING, FLUROSILICONE	1
12	10719	END CAP	1
13	10720	O-RING, BUNA-N	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
14	10344	SEAL WASHER, 1/4" SS	1
15	10345	RETAIN CLIP	1
16	10346	SPRING, POPPET	1
17	10347	SPRING, AIR CYLINDER	1
18	10823	GLAND NUT	1
19	1088	NUT, 1/4-20 18-8	1
20	9541	SCREW, 1/4-20 x 1 18-8	1
21	9760	PIN, SS	2
22	10746	JACK SCREW	1
23	9052	QUICK EXHAUST	1
24	9054	BRASS ELBOW	1
25	5047	FUSIBLE PLUG	1

F7020 & F7021

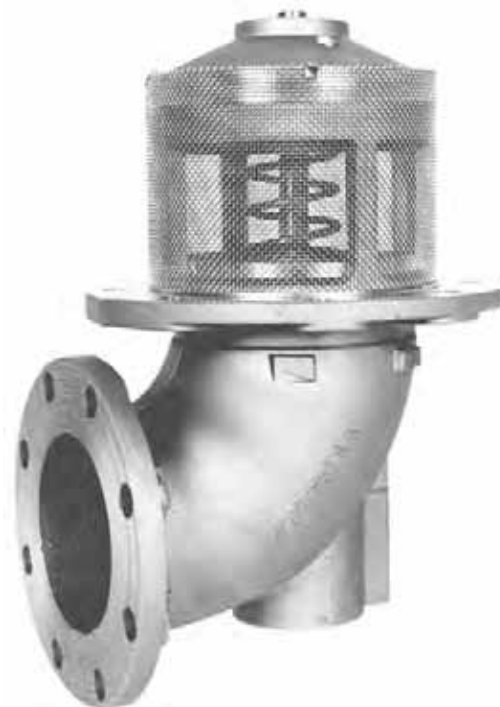
4" High Flow Emergency Valve, Integral Pneumatic

EMERGENCY VALVE

FEATURES AND BENEFITS

Specifically designed for ease of maintenance, maximum flow and durability. The simplicity of the design makes it ideally suited to oil companies and transporters of petroleum products who require a tough, reliable, high flow emergency valve.

- **Always opens fully.**
- **Internal air cylinder** protected from road spray.
- Air cylinder is internal and is warmed by the product allowing flawless function in extremely cold weather.
- **High quality** die cast body and component materials to international standards are used for durability and performance.
- **Lightweight aluminum** construction for increased payloads.
- **External shear groove** meets TTMA and DOT 406 requirements to limit product spillage in the event of an accident.
- **Closure** by self centering plunger and durable compression spring.
- **Removable bonnet assembly** enables seal change without removing valve from the tank truck.
- **Parts common** to others valves in our range to minimize spare parts inventory.
- **Manual opening device** for emergency discharge of cargo.
- **Hydrodynamic body** design and high lift poppet minimizes pressure drop to give maximum flow rate.
- **Sequenced air cylinder option** provides for positive open/closed indication.
- **Easy servicing** allows the air cylinder piston to be replaced without removing the valve from the tank pipework.
- **Dryline ready** for proposed future regulations.
- **Buna, Viton® and PTFE Seal** variance available.



* Optional screen shown

VARIANTS

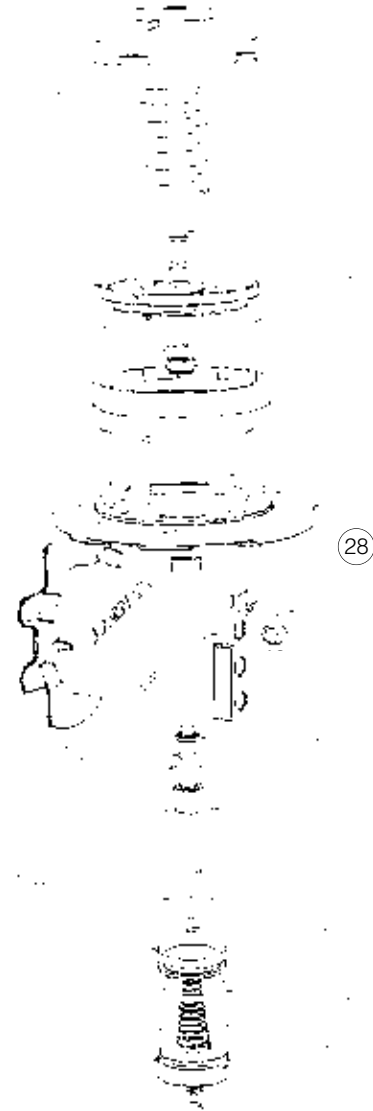
PART NO.	DESCRIPTION	OPERATION	SEAL	WEIGHT
F7020-201	Elbow Flanged	Int. Pneumatic	Viton®	10.7 lbs.
F7021-201	Elbow Victualic	Int. Pneumatic	Viton®	10.4 lbs.

F7020 & F7021

4" High Flow Emergency Valve, Integral Pneumatic

SPECIFICATIONS

ITEM NO.	DESCRIPTION	QTY.	PART NO.	F7020 / 21
1	Body - TTMA flanged	1	670235	
1	Body - Victaulic	1	670329	
2	Cap	1	619511	
3	Poppet	1	619513	
4	Seal Disc	1	615992	
5	Spring	1	577264	
6	Poppet Stem	1	619666	
7	Shakeproof Washer	1	619532	
8	Nylock Nut, M12	1	618841	
9	Seal Holder	1	619667	
10	Wiper Seal, Viton®	1	425890	
10	Wiper Seal, Buna	1	670411	
11	O-ring	2	603653	Viton®
	O-ring	2	619249	PTFE
	O-ring	2	619523	Buna
12	O-ring	1	422724	Viton®
	O-ring	1	619941	PTFE
	O-ring	1	670410	Buna
13	Rod	1	619732	
14	Washer	1	603917	
15	Tatite Screw, M5 x 12	1	603846	
16	Piston	1	619668	
17	O-ring	1	613427	Viton®
	O-ring	1	613427	PTFE
	O-ring	1	600991	Buna
18	End Cap	1	618898	
19	O-ring	1	604552	Viton®
	O-ring	1	613427	PTFE
	O-ring	1	670409	Buna
20	Retaining Ring	1	618843	
21	Hex Screw, M6 x 6	1	308987	
22	Bonded Washer	1	410107	
23	Conical Spring	1	619819	
26	Hex Screw, M6	1	410798	
27	Elbow, 6mm x 1/4"	2	825033204	
28	Washer	1	429117	
•	Screen Kit	1	619663	
•	Poppet Cylinder Seal Kit	1	619756	
•	Cylinder Seal Kit	1	619757	



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3" Emergency Valve, Integral Pneumatic

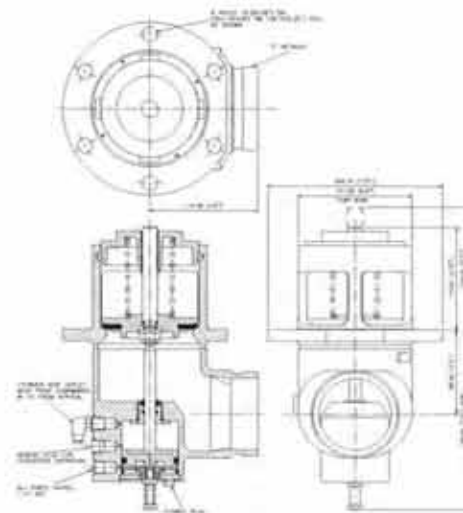
FEATURES & BENEFITS

The 3" Internal Air Emergency Valve has been designed using the latest 3D design techniques to achieve the maximum flow through the valve in the most compact form. It is manufactured in our robotic machining cell to ensure maximum repeatability of quality performance.

Its compact design with integral air cylinder allows the tank builder maximum flexibility during the tank design process when compared to an externally actuated valve.

- **Compact design** requires minimal space during installation on Bobtail tanks.
- **Internal** air cylinder for full stroke of operation.
- **Lightweight** aluminium construction for increased payloads.
- **Opens** fully every time.
- **Sequenced** air cylinder provides positive open/closed indication.
- **Function** tested at -40F without a problem.
- **External** shear groove meets TTMA and DOT 406 requirements.
- **Viton®** seat as standard.
- **Manual opening** device for emergency discharge of cargo.
- **Stainless steel** internal components.
- **Parts common** to 4" integral air emergency valve to minimize spare parts inventory
- **Easy servicing** allows the air cylinder piston to be replaced without removing the valve from the tank pipe work.
- **Strainer kit** available for product filtering applications

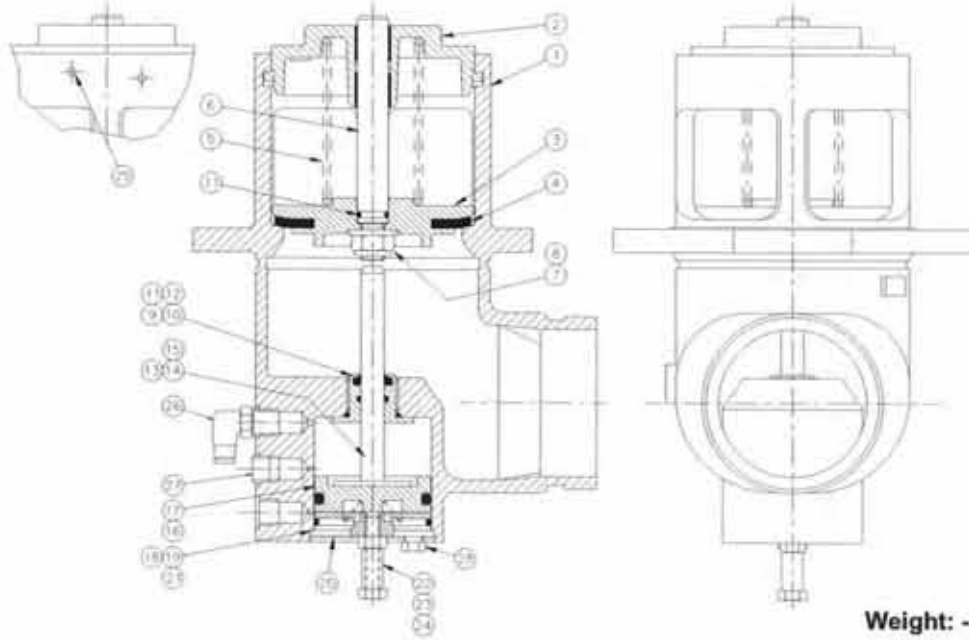
SEE OUR CURRENT F END PRICE LIST FOR AVAILABLE VARIANTS



F7051

3" Emergency Valve, Integral Pneumatic

SPECIFICATIONS



Weight: - 7.94lbs

Det	Description	Qty	Part No.	Det	Description	Qty	Part No.
			F7051-201				F7051-201
1	Body	1	670907	15	Taptite Screw	1	603846
2	Cap	1	670982	16	Piston	1	619668
3	Poppet	1	670967	17	O-Ring	1	613427
4	Seal Disc	1	670971	18	End Cap	1	670515
5	Spring	1	566037	19	O-Ring	1	604552
6	Poppet Stem	1	670970	20	Retaining Ring	1	618843
7	Shakeproof Washer	1	619532	21	Conical Spring	1	619819
8	Nyloc Nut	1	618841	22	Screw	1	670848
9	Seal Holder	1	619667	23	Nut	1	670849
10	Wiper Seal	1	425890	24	Tube x 0.82" Lg	1	ORM10108
11	O-Ring	2	603653	25	Pin	2	425360
12	O-Ring	1	422724	26	Swivel Elbow 1/4"	1	670182
13	Rod	1	670969	27	Plug 1/4"	1	670467
14	Washer	1	603917	28	Fusible Plug	1	565948

OPTIONS

Description	Part No.
Screen Kit	671101

As a part of a continuous commitment to product development the company reserves the right to alter the specification of its products without prior notice

EMCO WHEATON

**INNOVATIVE SYSTEMS
FOR TRANSPORT**

F7000 & F7001

4" High Flow Emergency Valve, Mechanical

FEATURES AND BENEFITS

Specifically designed for ease of maintenance, high flow and durability the simplicity of the design of this valve make it ideally suited to oil companies and transporters of petroleum products who require a tough, reliable, high flow emergency valve.

- **High quality** die cast body and component materials to international standards are used for durability and performance.
- **Lightweight** aluminium construction for increased payloads.
- **Packed gland** shaft for easy servicing.
- **Plug fitted** ready for dryline application.
- **All running surfaces** are bushed for smoother operation and longer service.
- **High lift** poppet for maximum flow.
- **Shear groove** meets TTMA and NTTC DOT 406 to limit product spillage in the event of an accident.
- **Closure** by self centring plunger and durable compression spring.
- **Removable bonnet** assembly enables seal change without removing valve from the tank.
- **Stainless steel** cam with bearing boot on plunger stem for smooth operation and extended life.
- **Victaulic and TTMA** flanged variants available.
- **Dryline ready** for proposed future regulations.
- **Air cylinder** kit available.

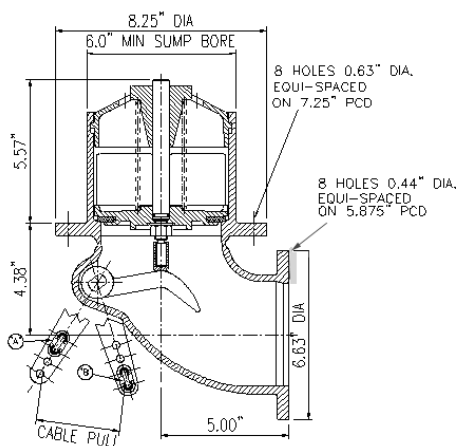


EMERGENCY VALVE

VARIANTS

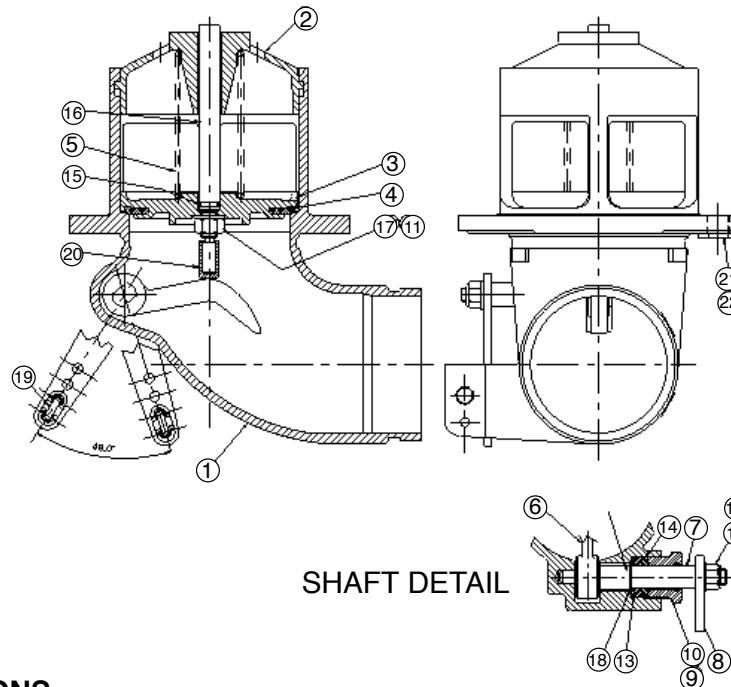
PART NO.	DESCRIPTION	WEIGHT
F7000.041	Flanged Elbow Viton® Seal	10.36 lbs
F7000.042	Flanged Elbow PTFE Seal	10.36 lbs
F7000.043	Flanged Elbow Buna Seal	10.36 lbs
F7001.041	Victaulic Elbow Viton® Seal	10.08 lbs
F7001.042	Victaulic Elbow PTFE Seal	10.08 lbs
F7001.043	Victaulic Elbow Buna Seal	10.08 lbs

OVERALL DIMENSIONS



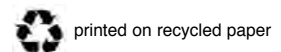
F7000 & F7001

4" High Flow Emergency Valve, Mechanical



SPECIFICATIONS

Ref	Description	F7000041	F7001041	Qty
1	Body	670535	670530	1
2	Cap	619511	619511	1
3	Poppet	619513	619513	1
4	Seal Disc	615992	615992	1
5	Spring	577264	577264	1
6	Cam	619516	619516	1
7	Cam Spindle	670557	670557	1
8	Lever	619533	619533	1
9	Gland Nut	670560	670560	1
10	O-Ring Buna	670569	670569	1
11	M12 Nyloc Nut	618841	618841	2
12	Plain Washer	599007	599007	1
13	Packing Support Washer	670561	670561	1
14	Gland Packing	407804	407804	2
15	O-Ring	603653	603653	1
16	Poppet Stem	619514	619514	1
17	Shakeproof Washer	619532	619532	1
18	Retaining Ring	670570	670570	1
19	U - Bolt	452710	452710	1
20	Poppet Stem Boot	619515	619515	1
21	Sealing Ring Nylon	670545	670545	1
22	Blanking Plug	670544	670544	1



As part of a continuous commitment to product development the Company reserve the right to alter the specification of its products without prior notice.

F7010 & F7011

4" High Flow Emergency Valve, Mechanical

FEATURES AND BENEFITS

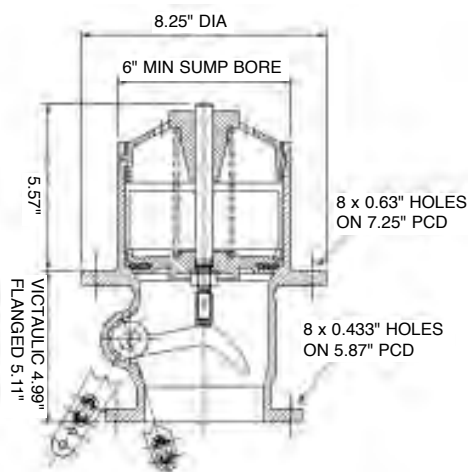
Specifically designed for ease of maintenance, high flow and durability the simplicity of the design of this valve make it ideally suited to oil companies and transporters of petroleum products who require a tough, reliable, high flow emergency valve.

- **High quality** die cast body and component materials to international standards are used for durability and performance.
- **Lightweight** aluminium construction for increased payloads.
- **Packed gland** shaft for easy servicing.
- **Plug fitted** ready for dryline application.
- **All running surfaces** are bushed for smoother operation and longer service.
- **High lift** poppet for maximum flow.
- **Shear groove** meets TTMA and NTTC DOT 406 to limit product spillage in the event of an accident.
- **Closure** by self centring plunger and durable compression spring.
- **Removable bonnet** assembly enables seal change without removing valve from the tank
- **Stainless steel** cam with bearing boot on plunger stem for smooth operation and extended life.
- **Victaulic and TTMA** flanged variants available.
- **Dryline ready** for proposed future regulations.
- **Air cylinder** kit available.



VARIANTS

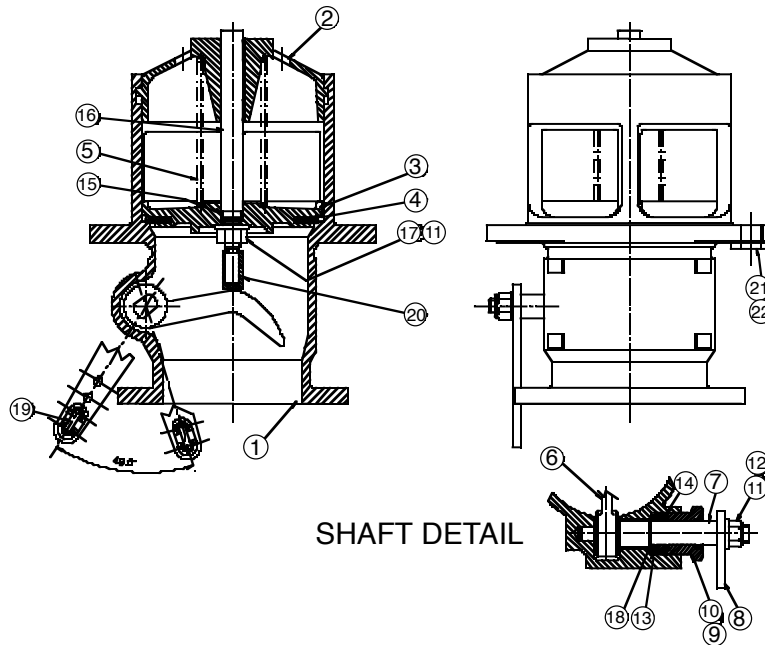
PART NO.	DESCRIPTION	WEIGHT
F7010.041	Flanged Elbow Viton® Seal	9.35 lbs
F7010.042	Flanged Elbow PTFE Seal	9.35 lbs
F7010.043	Flanged Elbow Buna Seal	9.35 lbs
F7011.041	Victaulic Elbow Viton® Seal	9.07 lbs
F7011.042	Victaulic Elbow PTFE Seal	9.07 lbs
F7011.043	Victaulic Elbow Buna Seal	9.07 lbs



EMERGENCY VALVE

F7010 & F7011

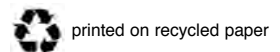
4" High Flow Emergency Valve, Mechanical



SHAFT DETAIL

SPECIFICATIONS

Ref	Description	F7010041	F7011041	Qty
1	Body	670536	670536	1
2	Cap	619511	619511	1
3	Poppet	619513	619513	1
4	Seal Disc	615992	615992	1
5	Spring	577264	577264	1
6	Cam	619516	619516	1
7	Cam Spindle	670557	670557	1
8	Lever	619533	619533	1
9	Gland Nut	670560	670560	1
10	O-Ring Buna	670569	670569	1
11	M12 Nyloc Nut	618841	618841	2
12	Plain Washer	599007	599007	1
13	Packing Support Washer	670561	670561	1
14	Gland Packing	407804	407804	2
15	O-Ring	603653	603653	1
16	Poppet Stem	619514	619514	1
17	Shakeproof Washer	619532	619532	1
18	Retaining Ring	670570	670570	1
19	U - Bolt	452710	452710	1
20	Poppet Stem Boot	619515	619515	1
21	Sealing Ring Nylon	670545	670545	1
22	Blanking Plug	670544	670544	1



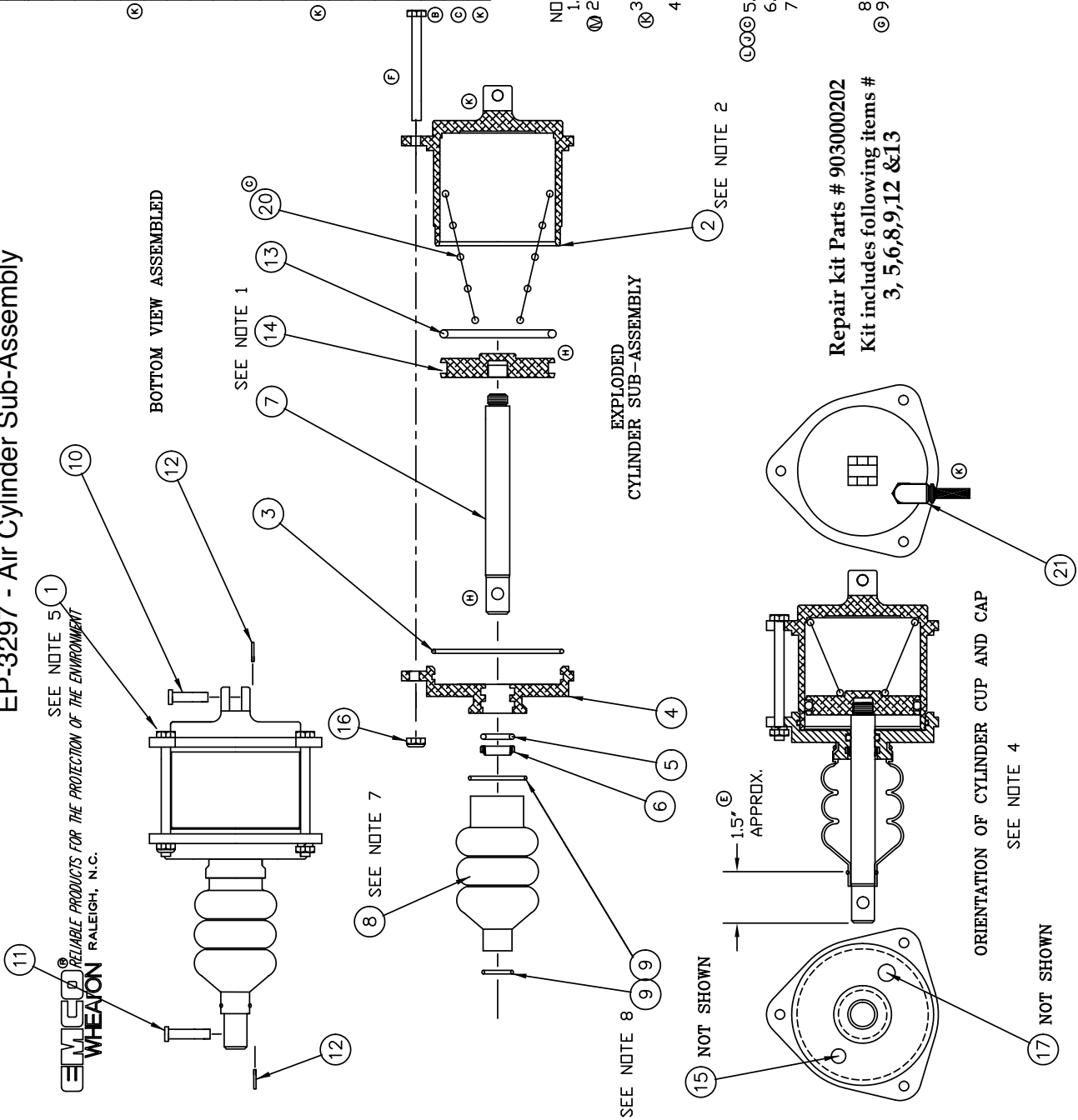
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As part of a continuous commitment to product development the Company reserve the right to alter the specification of its products without prior notice.

EMCO WHEATON™
LOADING AND UNLOADING THE WORLD

EP-3297 - Air Cylinder Sub-Assembly

BILL OF MATERIALS			
ITEM	PART No.	PART NAME	MAT'L QTY
1	565882	TIE ROD BOLT	ST/INCH 3
2	565943	CYLINDER CUP	ALUM. 1
3	565726	O-RING	NITRILE 1
4	565907	TOP CYLINDER	ALUM. 1
5	522001234	O-RING	NITRILE 1
6	565718	WIPER SEAL	URETHANE 1
7	565877	PISTON ROD	SST 1
8	565879	BELLOWS	NEOPRENE 1
9	565880	CLAMP	PLASTIC 2
10	565875	CLEVIS PIN, BOTTOM	SST 1
11	565876	CLEVIS PIN, TOP	SST 1
12	565874	COTTER PIN	STEEL 2
13	522001235	O-RING	NITRILE 1
14	565898	PISTON	ALUM. 1
15	565948	FUSIBLE PLUG	BRASS 1
16	236104400	LOCK-NUT	STL/ZNC 3
17	566113	INLET PLUG	PLASTIC 1
19	453403	ZIP-LOC BAG	PLASTIC 1
20	577052	CONICAL SPRING	SST 1
21	825033210	ELBOW 1/8"NPTxPUSH-IN	— 1



- NOTES:
1. APPLY LOCTITE RC/680 TO ROD THREADS
 2. APPLY THIN LAYER OF TEFLON GREASE TO WALLS OF CYLINDER CUP BEING SURE TO COAT ALL SURFACES OF BORE.
 3. AT INSTALLATION, COAT ALL O-RINGS WITH PARKER O-RING LUBE.
 4. CAP SHOULD BE ORIENTED AS SHOWN WITH PLASTIC PLUG IN THE 4 O'CLOCK POSITION WITH CUP FORK TO BE VERTICAL AND PARALLEL WITH HOLE IN THE ROD
 5. TIGHTEN NUTS BETWEEN 40-43 IN-LBS.
 6. TEST PER TP-145
 7. BELLOWS TO BE POSITIONED SO THAT SLIT IS ON THE BOTTOM WHEN INSTALLED WITH SMALL END APPROX. 1.5" FROM SHAFT END. (SEE FIGURE)
 8. PULL TIES TIGHT AND TRIM OFF EXCESS
 9. AFTER TEST, BAG ITEMS 10,11 AND 12 AND TAPE ZIP-LOC BAG TO CYLINDER BODY

Revisions

K	ECN 21198-MODIFY CUP	11/20/00	JW
J	R N21094 REV. NOTE 5	5/24/00	JW
H	RN 20287	8/17/96	MGS
G	RN 20242	3/9/96	MGS
F	RN 20167 ROTATE BOLT	9/27/94	EMM
E	RN 20128 BELLOWS CLAMP	7/11/94	MGS
D	RN 20092 ADD MAT.	3/25/94	MGS
C	RN 20082 SPRING RING	3/14/94	MGS
B	RN# 13735 ADD BAG	06/17/93	MGS
A	RELEASE RN# 13545	04/23/93	MGS

Morrison Bros. Co.

Fig. 603 Manual Emergency Valve

Specification Sheet

The Morrison Fig. 603 Tank Truck Emergency Valve is mounted on the underside of a petroleum tank truck or tanker.

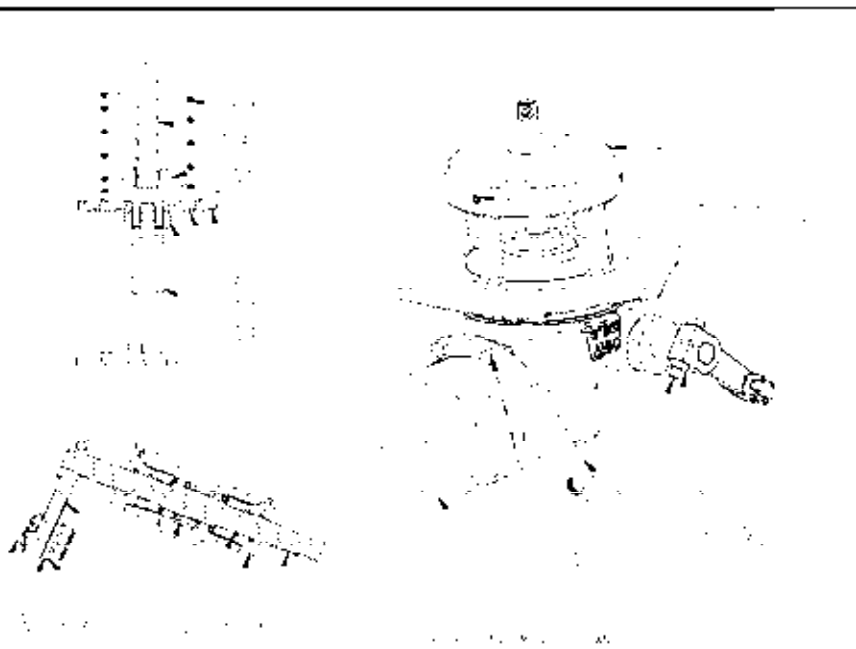


- High Flow Rate
- Fits Standard TTMA Sump
- Handles are interchangeable for left-hand or right-hand operation.

2" & 3" inlet & outlet & 6 holes $\frac{37}{64}$ " on a $6\frac{1}{4}$ " BC
 4" inlet and outlet and 8 holes $\frac{9}{16}$ " on a $7\frac{1}{4}$ " BC
 Bolt Circle Meets TTMA RP No. 28-94

3" Emergency Valve parts breakdown 603ALV

PARTS LISTING			
NO.	DESCRIPTION	QTY	MATERIAL
1	BODY - MACHINED	1	ALUMINUM
2	CAP	1	ALUMINUM
3	FLUNGER	1	BRASS
4	HANDLE	1	BRASS
6	FULCRUM SHAFT	1	BRASS
7	FULCRUM LEVER	1	DISTALLOY ALLOY
8	STUFFING BOX NUT	2	BRASS
12	* LONG BAIL	1	BRASS
13	O-RING	4	VITON
14	SPRING	1	STAINLESS STEEL
15	DISC	1	SEE PART I.D. CHART
16	DISC NUT	1	STEEL - ZINC PLATED
17	DISC WASHER	1	STEEL - ZINC PLATED
19	CAP SCREW	1	STEEL
20	LOCK NUT	3	STEEL - ZINC PLATED
20A	FUSE PLATE	1	FUGIBLE METAL
20B	STEEL PLATE	1	STEEL
21	* SCREEN 20 MFSH	1	STAINLESS STEEL
22	SET SCREW	3	STEEL
23	U-BOLT	1	STEEL
25	* INLET GASKET	1	CORK
27	CABLE BRACKET	1	STAINLESS STEEL
28	CAP SCREW	2	STEEL
40	LOWER STEM	1	BRASS
41	UPPER STEM	1	BRASS

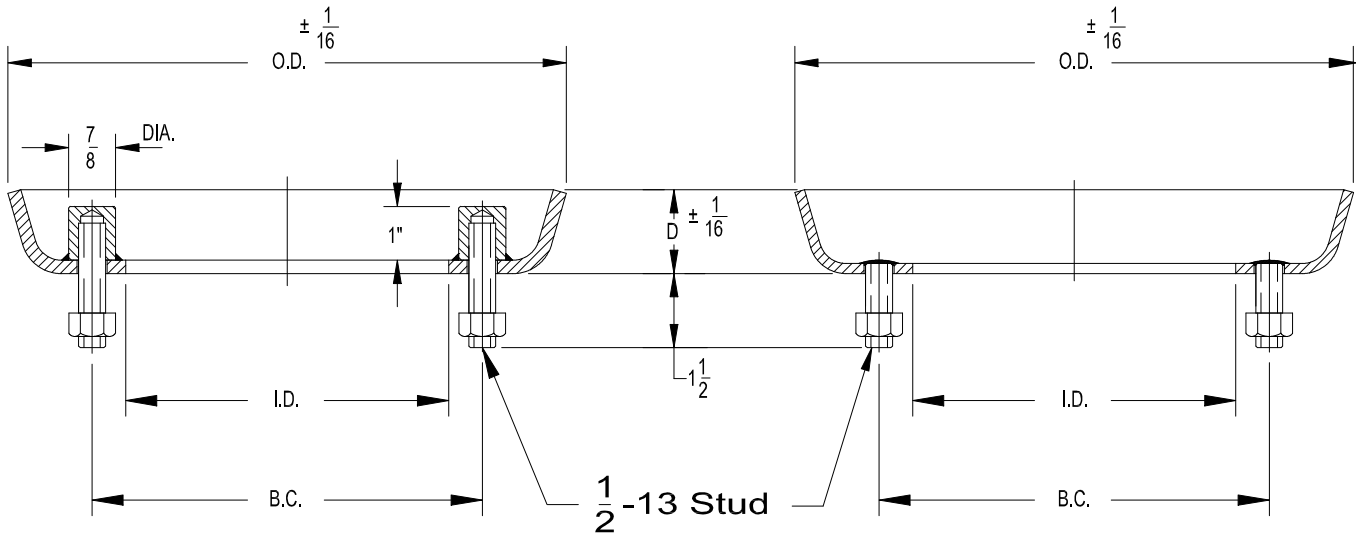


REV	DESCRIPTION	DATE

EMERGENCY VALVE FIG NO 603ALV		STANDARD CONNECTIONS SCHEDULE 30 STEEL PIPE 2" FLANGE 28.000 - 100 - 100 4" FLANGE 36.000 - 100 - 100 DRAINAGE 4" PIPES	Morrison Bros. Co. 3500016 14
WATERLINE SPEC	DATE: 11/11/04	CHECKED: JKL	DATE: 11/11/04
PART I.D. NO	SEE PART I.D. CHART	DRAWN: JKL	DATE: 11/11/04
PART I.D. NO		SEE PART I.D. CHART	DWG NO B-40370

Morrison Bros. Co.
Established 1850

DRAIN SUMPS

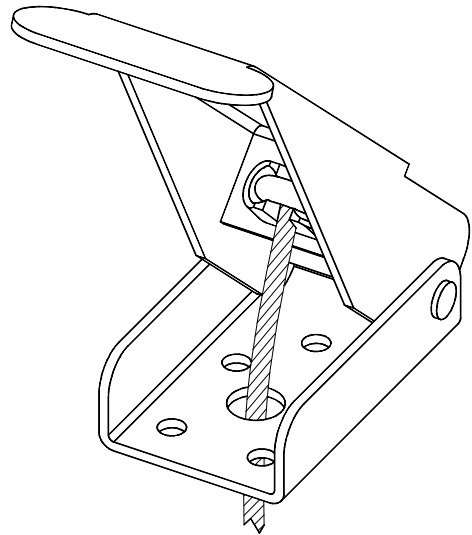
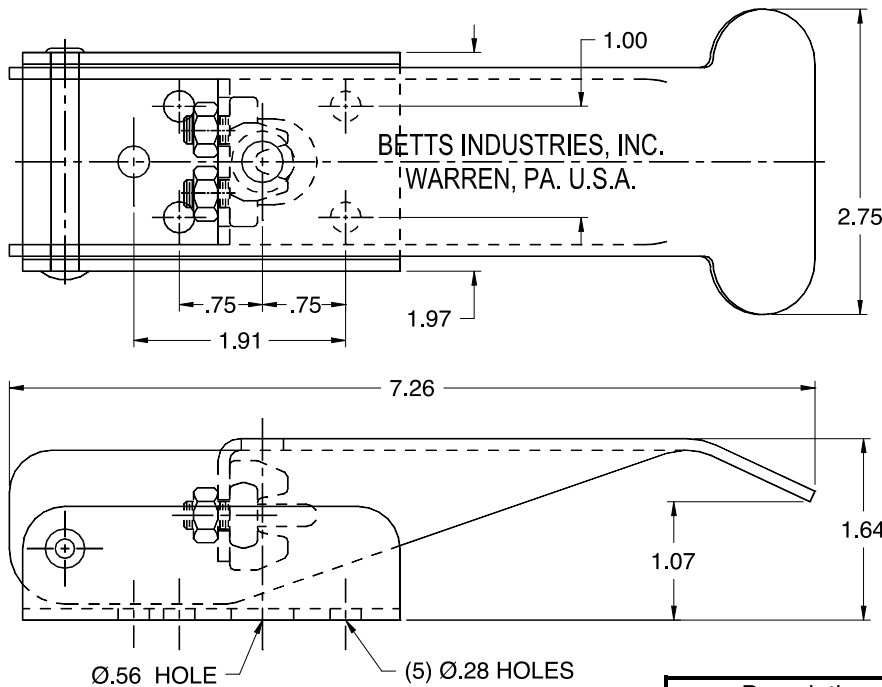


DIMENSIONS

Size	Material	Wt.	Part No.	I.D.	O.D.	B.C.	D	No. of Studs
SUMP WITH SOCKETS AND STUDS								
3"	Steel	5.2	SU25187MS	5	9 ¹ / ₈	6 ¹ / ₄	1 ⁹ / ₁₆	6
	Aluminum	2.8	SU25187AL					
	Stnls 304	5.2	SU25187SL					
	Stnls 316	5.2	SU25187SS					
4"	Steel	6.5	SU25188MS	6	10 ³ / ₈	7 ¹ / ₄	1 ⁹ / ₁₆	8
	Aluminum	3.4	SU25188AL					
	Stnls 304	6.5	SU25188SL					
	Stnls 316	6.5	SU25188SS					
6"	Steel	7.8	SU25535MS	8 ³ / ₁₆	12 ³ / ₄	9 ¹ / ₄	1 ⁷ / ₈	12
	Aluminum	5.1	SU25535AL					
	Stnls 304	7.8	SU25535SL					
	Stnls 316	7.8	SU25535SS					
SUMP WITH WELDED STUDS								
3"	Steel	4.3	SU25388MS	5	9 ¹ / ₈	6 ¹ / ₄	1 ⁹ / ₁₆	6
	Stnls 304		SU25388SL					
	Stnls 316		SU25388SS					
4"	Steel	5.3	SU25389MS	6	10 ³ / ₈	7 ¹ / ₄	1 ⁹ / ₁₆	8
	Stnls 304		SU25389SL					
	Stnls 316		SU25389SS					
6"	Steel	6.5	SU25505MS	8 ³ / ₁₆	12 ³ / ₄	9 ¹ / ₄	1 ⁷ / ₈	12
	Stnls 304		SU25505SL					
	Stnls 316		SU25505SS					

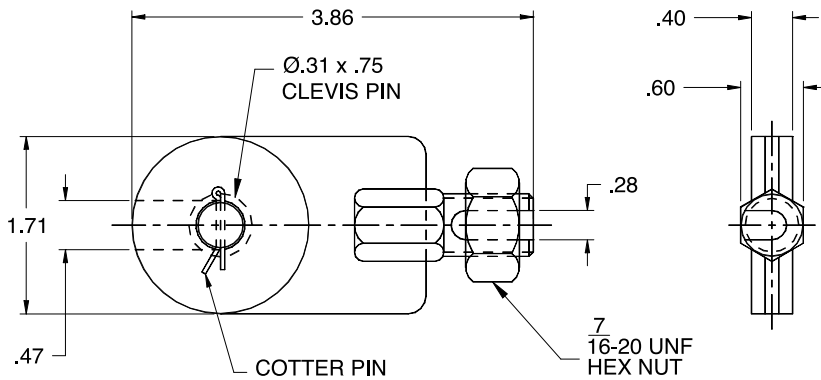
NOTE: Sump materials are 3/16 Plate Steel or Stainless and 1/4 Aluminum 5454-H32. Full tooling assures accuracy of dimensions and flatness of surfaces. Bolt Circles in accordance with TTMA recommended standards.

Operator Accessories



Description	Part No.	Material	Weight (lb)
Remote Control Assy.	35603SL	Stainless	1.10
Cable Clamp only	9Q1660		.10

New design provides greater stroke (2-1/8") and leverage. Stainless steel to resist corrosion. Remote attaches to trip lever on operator using cable. Pulling remote lever rotates operator trip lever and bar assembly, causing all open emergency valves to close. Per 49CFR178.345-11, remote must be located at least 10 feet away from loading/unloading outlet (where vehicle length allows) or on the end of the cargo tank farthest from the loading/unloading outlet. Test cable remote controls and operators at least once a day to insure proper functioning.



Fusible Link

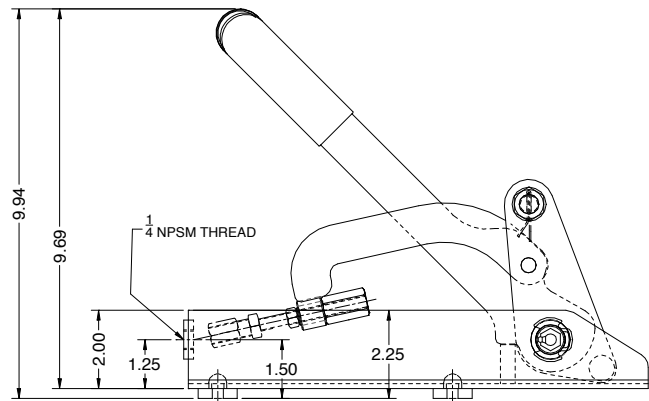
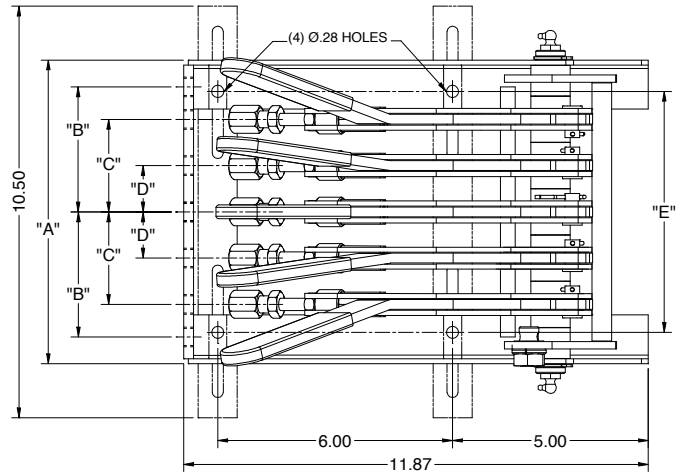
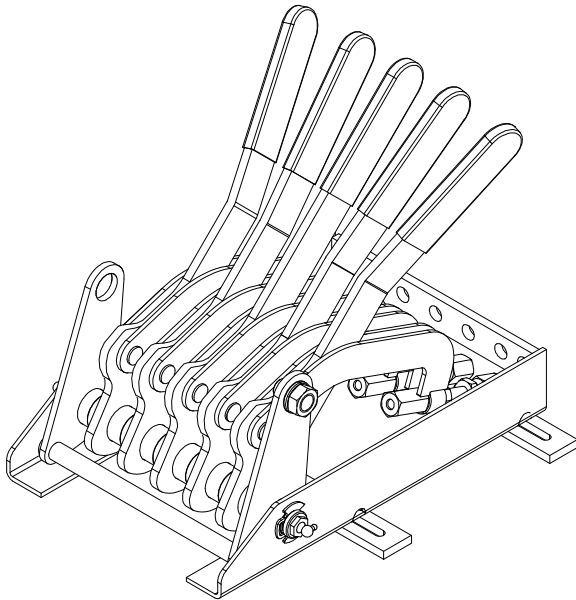
Part No.	Material	Weight (lb)
21050A	Steel	.17

Heavy duty fusible cable links are designed to attach the cable to the emergency valve cable lever arm and to provide thermal activation at the emergency valve. Fusible element melts at not more than 250°F, releasing the cable tension and allowing the emergency valve to close. Uses same non-slip, adjustable cable attachment as on Betts operators.

Mechanical Operator

COMPACT - LUBRICATED

- **Compact Design**
- **Stainless or Powder Coated Steel**
- **2-3/8" Stroke**
- **Solid Handles**
- **Lubricated Stainless Shaft**



Betts Compact Mechanical Operators function cable operated emergency valves from a central location on a cargo tank. Available from 1 up to 5 compartments in stainless or powder coated steel; each compartment is supplied with a fusible link designed to melt at not more than 250°F as well as non-slip cable connectors that allow cable to be cut to length after installation.

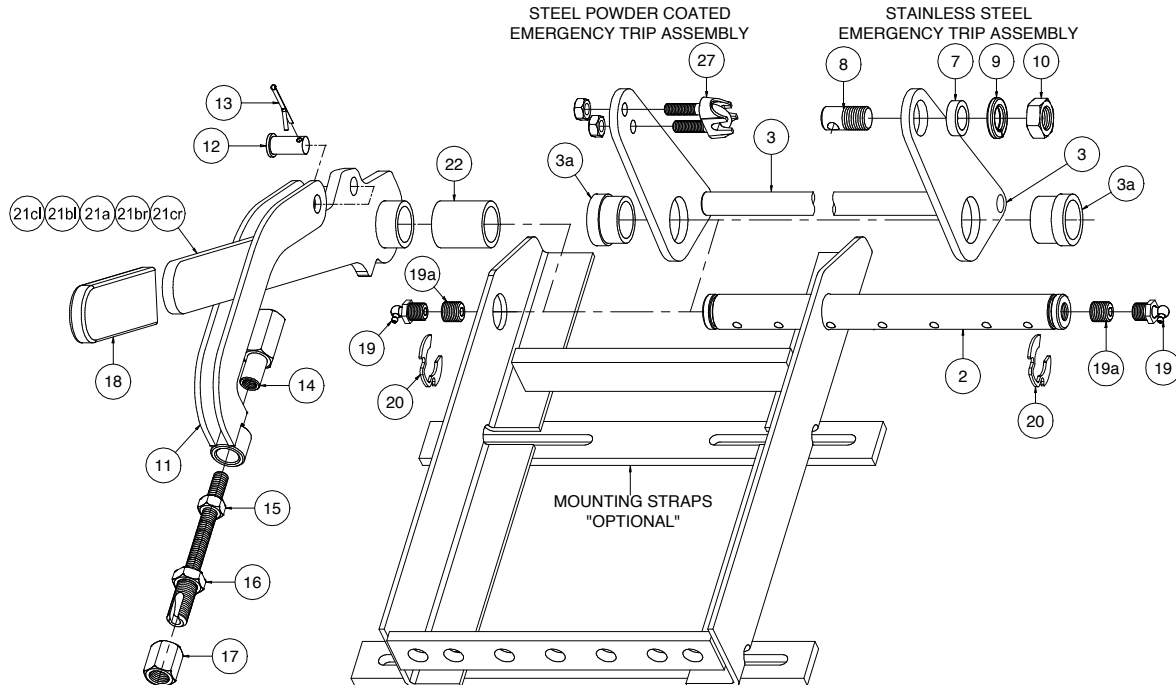
New design is more compact than comparable Universal or Deluxe models. Slotted mounting straps are available as an option to allow for replacement of Deluxe operators without drilling new mounting holes. Specify straps by adding suffix "001" to assembly number. Lubricated shaft and handle is standard. Grease fittings on both ends of shaft.

Lever arms provide 2-3/8" stroke and 5.6:1 mechanical advantage. Two trip levers provided for flexibility in locating cable remote control or for attaching two remotes, if required. See Section 29, Page 1A for cable remote control.

No. of Compts.	Material	Weight (lb)	Part No.	Dim. "A" (in.)	Dim. "B" (in.)	Dim. "C" (in.)	Dim. "D" (in.)	Dim. "E" (in.)
1	Stainless	7.0	OP9001SL	4.20	1.41	N/A	.59	2.60
	Steel Powder Coated		OP9001EY					
2	Stainless	9.4	OP9002SL	7.75	3.19	2.36	1.18	6.15
	Steel Powder Coated		OP9002EY					
3	Stainless	12.5	OP9003SL	7.75	3.19	2.36	1.18	6.15
	Steel Powder Coated		OP9003EY					
4	Stainless	14.9	OP9004SL	7.75	3.19	2.36	1.18	6.15
	Steel Powder Coated		OP9004EY					
5	Stainless	17.3	OP9005SL	7.75	3.19	2.36	1.18	6.15
	Steel Powder Coated		OP9005EY					

PARTS LIST

Compact Mechanical Operator Lubricated



No.	Description	Material		Part No.				
		Steel Model	Stainless Model	1 Compt.	2 Compt.	3 Compt.	4 Compt.	5 Compt.
2	GREASABLE SHAFT	304 SS		27766SL		27715SL		
3	EMERGENCY TRIP LEVER ASSEMBLY	STEEL PC	304 SS	35659EY-2* / 35686SL-2**		35659EY-5* / 35686SL-5**		
7	EMERGENCY CABLE CLAMP BUSHING	NA	304 SS	19617SL**				
8	EMERGENCY TRIP CABLE CLAMP	NA	304 SS	19622SL**				
9	1/2 in. SPRING LOCK WASHER	NA	304 SS	9Q5908**				
10	1/2 -20 JAM NUT	NA	304 SS	9Q5909**				
11	LINK ARM ASSEMBLY	STEEL PC	304 SS	27815EY* / 27815SL**				
12	CLEVIS PIN	STEEL ZC	304 SS	15757ZC* / 19621SL**				
13	3/32 in. x 3/4 in. COTTER PIN	BRASS	304 SS	9Q5865* / 9Q5866**				
14	FUSIBLE BUSHING NUT	BRASS		19724BR				
15	5/16 -24 HEX NUT	STEEL ZC	304 SS	9Q5808A* / 9Q5858**				
16	ADJUSTING BOLT	STEEL	303 SS	20040ZC* / S20040A**				
17	CLAMPING NUT	STEEL ZC	304 SS	10268ZC* / S10268A**				
18	HANDLE GRIP - RED/BLUE	VINYL - RED	VINYL - BLUE	9Z4830* / 9Z4829**				
19	GREASE FITTING	STEEL		9Z4873				
19a	THREADED INSERT	NA	NA	9Z9017				
20	RETAINING RING	STEEL ZC	304 SS	9Q4974* / 9Q4973**				
21cl	LEVER ARM ASSEMBLY - LEFT #2	STEEL PC	304 SS	NA	35650EYL2* / 35650SLL2**			
21bl	LEVER ARM ASSEMBLY - LEFT #1	STEEL PC	304 SS	NA	NA	NA	NA	35650EYL1*/35650SLL1**
21a	LEVER ARM ASSEMBLY - STRAIGHT	STEEL PC	304 SS	35650EY*/35650SL**		35650EY* / 35650SL**		
21br	LEVER ARM ASSEMBLY - RIGHT #1	STEEL PC	304 SS	NA	NA	NA	NA	35650EYR1*/35650SLR1**
21cr	LEVER ARM ASSEMBLY - RIGHT #2	STEEL PC	304 SS	35650EYR2* / 35650SLR2**				
22	REPLACEMENT BUSHING	STEEL PC	304 SS	19624EY*/ 9624SL**		NA	19624EY* / 19624SL**	
27	CABLE CLAMP	STEEL ZC	NA	9Q1660*				

"EY" FOR STEEL POWDER COATED GLOSS BLACK, "SL" FOR STAINLESS, "ZC" STEEL ZINC COATED.

* PARTS FOR STEEL POWDER COATED GLOSS BLACK MODELS ONLY

** PARTS FOR STAINLESS MODELS ONLY

WARNING Use only genuine BETTS INDUSTRIES INC. replacement parts. Use of substitute parts can impair the proper function of this product.

Note: Adjusting Bolt assembly 20040A001 and S20040A001 includes items 14,15,16,17.

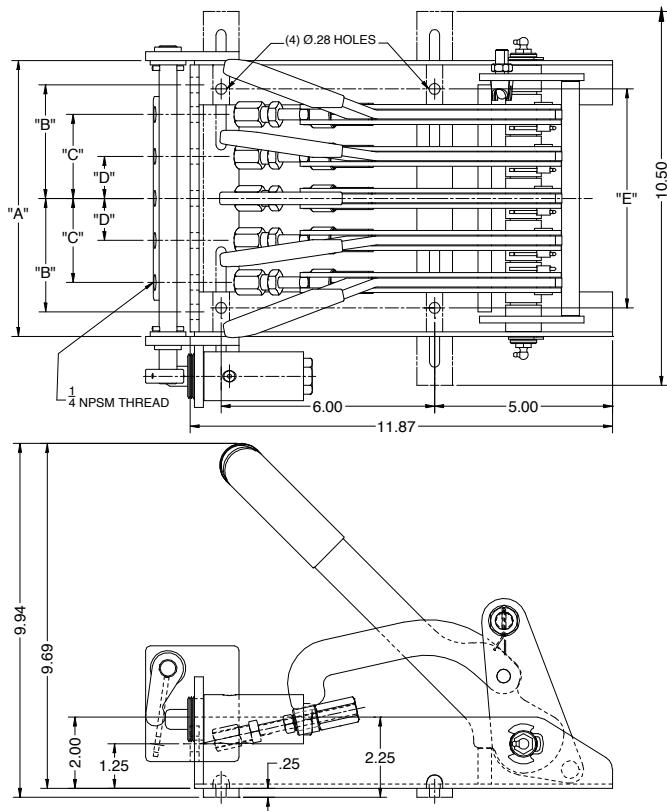
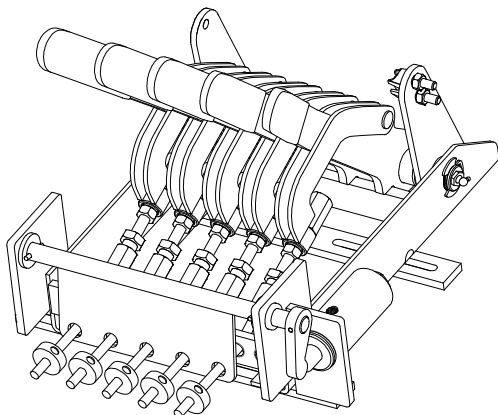
Betts INDUSTRIES, INC.
WARREN, PA.

Feb 2003

Mechanical Operator

COMPACT - DELTA I - LUBRICATED

- Automatically Energizes Air Vents
- Compact Design
- Stainless or Powder Coated Steel
- 2-3/8" Stroke
- Solid Handles
- Lubricated Stainless Shaft



Betts Compact Mechanical Operators function cable operated emergency valves from a central location on a cargo tank. Provision is made for mounting 3-way air valve (part no. 20761) on side of operator. Air valve is actuated when any compartment is opened, thereby assuring that air vents are energized when any emergency valve is opened. Air valve is not included. Add suffix "003" to include air valve. Available from 1 up to 5 compartments in stainless or powder coated steel; each compartment is supplied with a fusible link designed to melt at not more than 250°F as well as non-slip cable connectors that allow cable to be cut to length after installation.

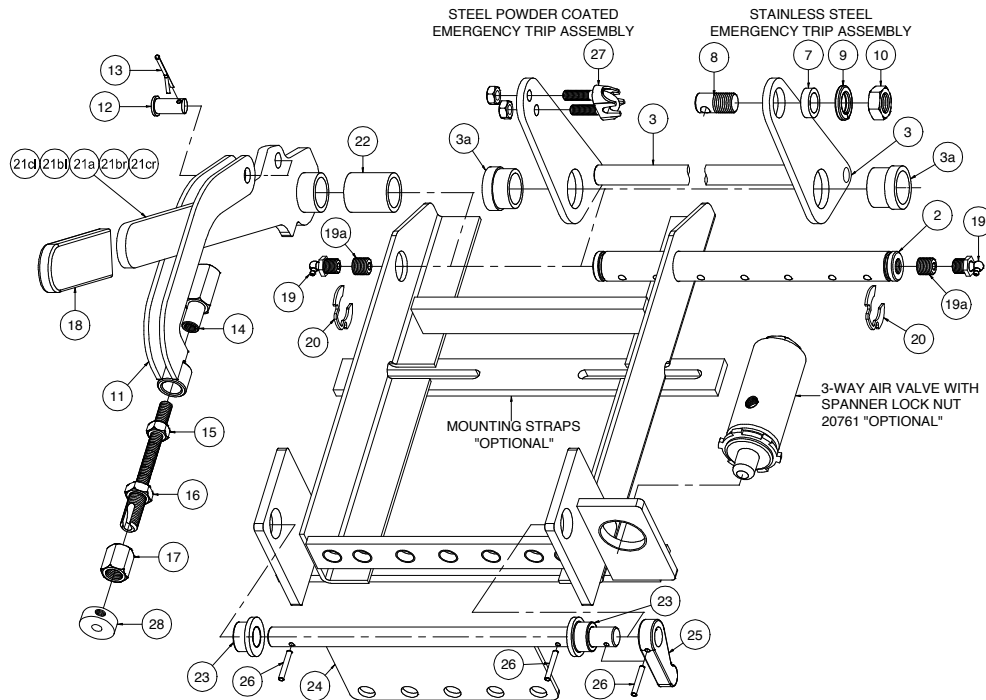
New design is more compact than comparable Universal or Deluxe models. Slotted mounting straps are available as an option to allow for replacement of Deluxe operators without drilling new mounting holes. Specify straps by adding suffix "001" to assembly number. Other mounting options available by contacting sales. Lubricated shaft and handle is standard. Grease fittings on both ends of shaft.

Lever arms provide 2-3/8" stroke and 5.6:1 mechanical advantage. Two trip levers provided for flexibility in locating cable remote control or for attaching two remotes, if required. See Section 29, Page 1A for cable remote control.

No. of Compts.	Material	Weight (lb)	Part No.	Dim. "A" (in.)	Dim. "B" (in.)	Dim. "C" (in.)	Dim. "D" (in.)	Dim. "E" (in.)
1	Stainless	9.8	OP9101SL	4.20	1.41	N/A	.59	2.60
	Steel Powder Coated		OP9101EY					
2	Stainless	12.2	OP9102SL	7.75	3.19	2.36	1.18	6.15
	Steel Powder Coated		OP9102EY					
3	Stainless	15.8	OP9103SL	7.75	3.19	2.36	1.18	6.15
	Steel Powder Coated		OP9103EY					
4	Stainless	18.2	OP9104SL	7.75	3.19	2.36	1.18	6.15
	Steel Powder Coated		OP9104EY					
5	Stainless	20.6	OP9105SL	7.75	3.19	2.36	1.18	6.15
	Steel Powder Coated		OP9105EY					

PARTS LIST

Compact Mechanical Operator Delta I - Lubricated



No.	Description	Material		Part No.				
		Steel	Stainless Model	1 Compt.	2 Compt.	3 Compt.	4 Compt.	5 Compt.
2	SHAFT	304 SS		277766SL		27715SL		
3	EMERGENCY TRIP LEVER ASSEMBLY	STEEL	304 SS	35659EY-2* / 35686SL-2**		35659EY-5* / 35686SL-5**		
3a	FLANGED BUSHING	NA	NA	9V4255				
7	EMERGENCY CABLE CLAMP BUSHING	NA	304 SS	19617SL**				
8	EMERGENCY TRIP CABLE CLAMP	NA	304 SS	19622SL**				
9	1/2 in. SPRING LOCK WASHER	STEEL	304 SS	9Q5899* / 9Q5908**				
10	1/2 -20 JAM NUT	STEEL	304 SS	9Q5910* / 9Q5909**				
11	LINK ARM ASSEMBLY	STEEL	304 SS	27815EY* / 27815SL**				
12	CLEVIS PIN	STEEL	304 SS	15757ZC* / 19621SL**				
13	3/32 in. x 3/4 in. COTTER PIN	BRASS	304 SS	9Q5865* / 9Q5866**				
14	FUSIBLE BUSHING NUT	BRASS		19724BR				
15	5/16 -24 HEX NUT	STEEL	304 SS	9Q5808A* / 9Q5858**				
16	ADJUSTING BOLT	STEEL	303 SS	20040ZC* / S20040A**				
17	CLAMPING NUT	STEEL	304 SS	10268ZC* / S10268A**				
18	HANDLE GRIP - RED/BLUE	VINYL -	VINYL - BLUE	9Z4830* / 9Z4829**				
19	GREASE FITTING	STEEL		9Z4873				
19a	THREADED INSERT	NA		9Z9017				
20	RETAINING RING	STEEL ZC		9Q4974* / 9Q4974**				
21cl	LEVER ARM ASSEMBLY - LEFT #2	STEEL	304 SS	NA	35650EYL2* / 35650SLL2**			
21bl	LEVER ARM ASSEMBLY - LEFT #1	STEEL	304 SS	NA	NA	NA	NA	35650EYL1* / 35650SLL1**
21a	LEVER ARM ASSEMBLY -STRAIGHT	STEEL	304 SS	35650EY* / 35650SL**		NA	35650EY* / 35650SL**	
21br	LEVER ARM ASSEMBLY - RIGHT #1	STEEL	304 SS	NA	NA	NA	NA	35650EYR1* / 35650SLR1**
21cr	LEVER ARM ASSEMBLY - RIGHT #2	STEEL	304 SS	NA	35650EYR2* / 35650SLR2**			
22	REPLACEMENT BUSHING	STEEL	304 SS	19624EY* / 19624SL**	NA	19624EY* / 19624SL**		NA
23	BUSHING	BRONZE		9Z4869				
24	SHAFT & GATE ASSEMBLY	STEEL	304 SS	27811ZC* / 27811SL**		27812ZC* / 27812SL**		
25	CAM	STEEL ZC		10938ZC				
26	ROLL PIN 1/8 x 7/8	STEEL	420 SS	9Q5894* / 9Q5920**				
27	CABLE CLAMP	STEEL	NA	9Q1660*				
28	CABLE BUSHING & SET SCREW	STEEL ZC		10942				

*"EY" FOR STEEL POWDER COATED GLOSS BLACK, "SL" FOR STAINLESS, "ZC" STEEL ZINC COATED.

* PARTS FOR STEEL POWDER COATED GLOSS BLACK MODELS ONLY

** PARTS FOR STAINLESS MODELS ONLY

WARNING Use only genuine BETTS INDUSTRIES INC. replacement parts. Use of substitute parts can impair the proper function of this product.

Note: Adjusting Bolt assembly 20040A001 and S20040A001 includes items 14,15,16,17.

Betts INDUSTRIES, INC.
WARREN, PA.

Feb 2003

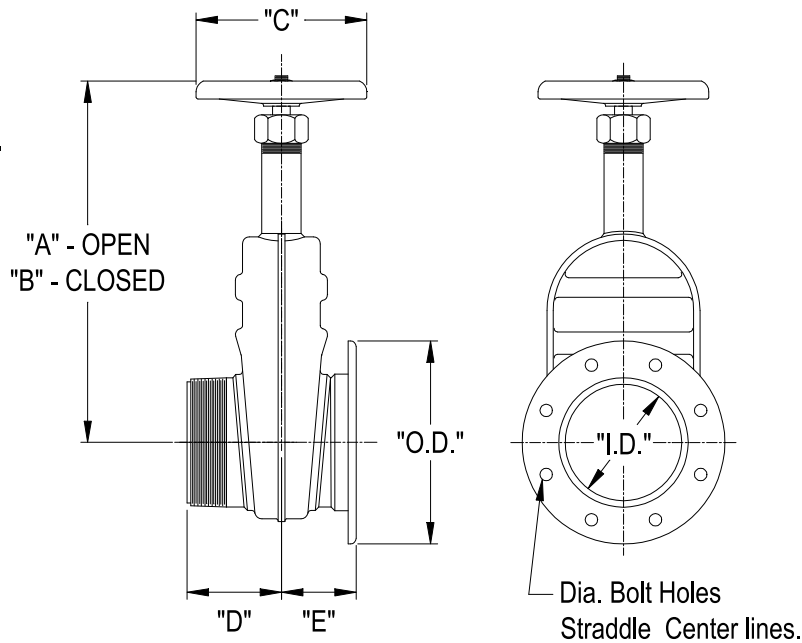
Gate Valve

Flanged x Threaded

Fabricated – Double Acting

- Flexible action of Stainless Steel Belleville Discs insures a tighter valve over longer periods of time.
- No elastomers to deteriorate.
- Fabricated for greater strength, lighter weight and lower cost, in steel, stainless and aluminum.
- Double acting stem threads double the speed of operation. Valve closes in half the time.

MAWP 50 PSI



See section 18 Page 4A for parts list.

Flanges are Drilled to TTMA Recommendations.

Dimensions											
Pipe Size	Body					Pipe Thread	Flange				
	A	B	C	D	E		I.D.	O.D.	B.C.	No.	Dia.
3	14 1/4	12 5/8	4 1/2	3 3/16	2 1/4	3" NPT	3 1/16	Stl & SS 6 1/8	4 7/8	8	7/16
								Aluminum 5 5/8			
4	15 1/4	13 1/8	6	3 5/16	2 5/8	4" NPT	4 1/32	Stl & SS 7 1/8	5 7/8	8	7/16
								Aluminum 6 5/8			

Descriptions						
Pipe Size	Material				Part Numbers	Wt Lbs.
	Body	Stem	Discs	Packing		
3	Steel	Brass	Stainless Steel	3 Teflon Suspensoid Rings	G 1003	9.4
	Steel	Steel	Stainless Steel		FG 1003	9.3
	Aluminum	Aluminum	Stainless Steel		AAG 1003	4.5
	Aluminum	Stainless Steel	Stainless Steel		ASG 1003	5.0
	Stainless Steel	Stainless Steel	Stainless Steel		SG 1003	9.3
	316 Stainless	316 Stainless	316 Stainless		SSG 1003	9.3
4	Steel	Brass	Stainless Steel	3 Teflon Suspensoid Rings	G 1004	12.5
	Steel	Steel	Stainless Steel		FG 1004	12.3
	Aluminum	Aluminum	Stainless Steel		AAG 1004	6.3
	Aluminum	Stainless Steel	Stainless Steel		ASG 1004	6.9
	Stainless Steel	Stainless Steel	Stainless Steel		SG 1004	12.3
	316 Stainless	316 Stainless	316 Stainless		SSG 1004	12.3

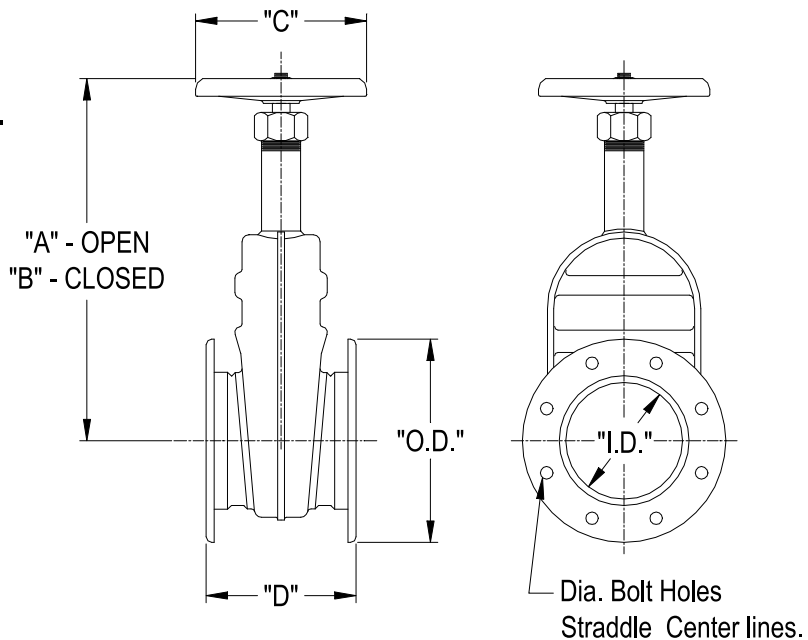
Gate Valve

Flanged x Flanged

Fabricated – Double Acting

- Flexible action of Stainless Steel Belleville Discs insures a tighter valve over longer periods of time.
- No elastomers to deteriorate.
- Fabricated for greater strength, lighter weight and lower cost, in steel, stainless and aluminum.
- Double acting hand stem threads double the speed of operation. Valve closes in half the time.

MAWP 50 PSI



See section 18 Page 4A for parts list.

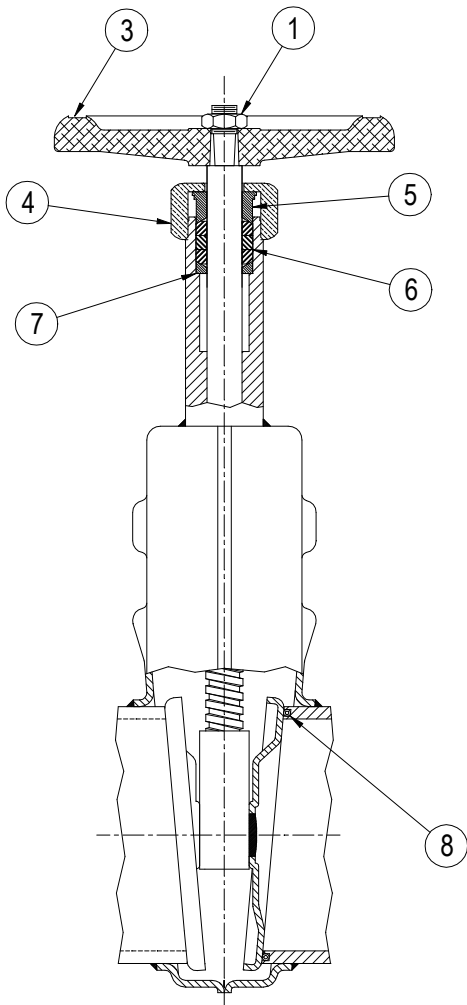
Flanges are Drilled to TTMA Recommendations.

Dimensions										
Pipe Size	Body				Pipe Thread	Flange				
	A	B	C	D		I.D.	O.D.	B.C.	No.	Dia.
3	14 1/4	12 5/8	4 1/2	4 1/2	N/A	3 1/16	Stl & SS 6 1/8	4 7/8	8	7/16
							Aluminum 5 5/8			
4	15 1/4	13 1/8	6	5 1/4	N/A	4 1/32	Stl & SS 7 1/8	5 7/8	8	7/16
							Aluminum 6 5/8			

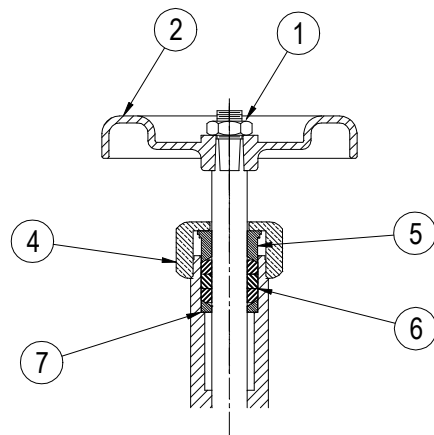
Descriptions						
Pipe Size	Material				Part Numbers	Wt Lbs.
	Body	Stem	Discs	Packing		
3	Steel	Brass	Stainless Steel	3 Teflon Suspensoid Rings	G 1013	9.9
	Steel	Steel	Stainless Steel		FG 1013	9.8
	Aluminum	Aluminum	Stainless Steel		AAG 1013	4.7
	Aluminum	Stainless Steel	Stainless Steel		ASG 1013	5.2
	Stainless Steel	Stainless Steel	Stainless Steel		SG 1013	9.8
	316 Stainless	316 Stainless	316 Stainless		SSG 1013	9.8
4	Steel	Brass	Stainless Steel	3 Teflon Suspensoid Rings	G 1014	13.3
	Steel	Steel	Stainless Steel		FG 1014	13.1
	Aluminum	Aluminum	Stainless Steel		AAG 1014	6.6
	Aluminum	Stainless Steel	Stainless Steel		ASG 1014	7.2
	Stainless Steel	Stainless Steel	Stainless Steel		SG 1014	13.1
	316 Stainless	316 Stainless	316 Stainless		SSG 1014	13.1

Gate Valves

PARTS LIST



4" Gate Valve



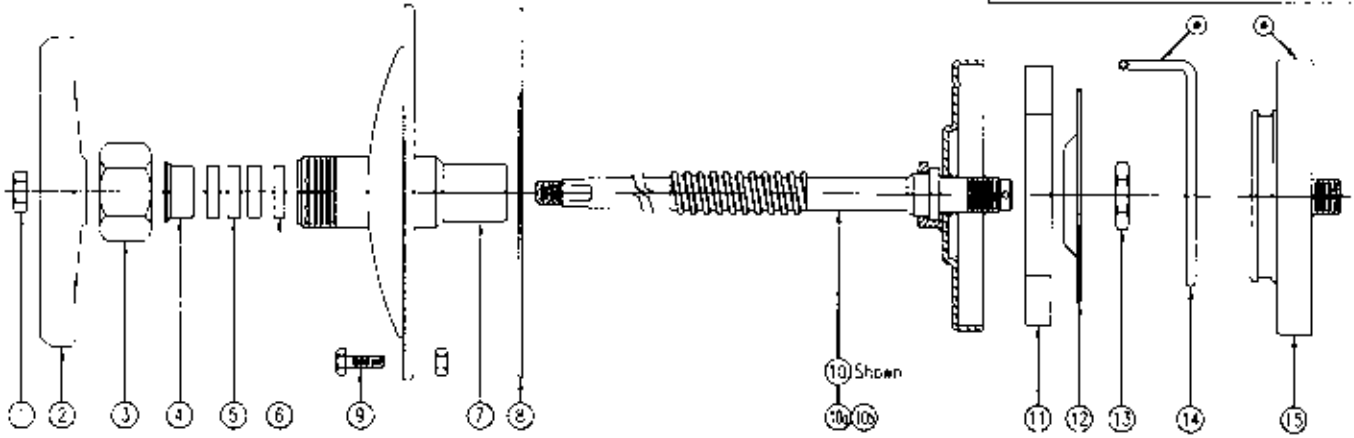
3" Gate Valve

NO.	REQ.	DESCRIPTION	MATERIAL	PART NO.
1	1	7/16-14 hex Nut	Steel	9Q5811
2	1	3" Hand Wheel	Aluminum	25186AL
3	1	4" Hand Wheel	Aluminum	25245AL
4	1	Stuffing Box Nut	Anodized Aluminum	15026AL
			Stainless Steel	15026SS
5	1	Gland Follower	Stainless Steel	15220SS
6	1	Packing Set (3 Rings per Set)	Teflon Suspensoid	15227NT
7	1	Gland Washer	Stainless Steel	15076SS
8	2	* Seat O-Ring (4" valve only)	Tef-Sil	19430TS

* Replaceable Seat Valves only.

Manifold Valve

PARTS LIST



* TO CONVERT FROM FIXED DISC TO SWING DISC ORDER PARTS 10a, 14 & 15.

No.	Description	Req'd.	Size	Material	Part No.	No.	Description	Req'd.	Size	Material	Part No.
1	Hex Nut $\frac{7}{16}$ -14 Thd.	1	2"- 4"	Steel Zinc Plt.	9Q5811	10a	Stem	1	2"	Aluminum	25210AL
2	Handwheel	1	2"	Aluminum	25047AL				3"	Aluminum	25039AL
			3"	Aluminum	25186AL				4"	Aluminum	15016AL
			4"	Aluminum	25245AL	10b	Stem Lock Nut	1	2"- 4"	Brass	16417BR
3	Stuffing Box Nut	1	2"- 4"	Aluminum	15026AL				316 Stnls	16417SS	
4	Top Gland	1	2"- 4"	316 Stnls	15220SS	11	Disc	1	2"	Buna-N	15156BU
5	Packing Set	Set	2"- 4"	Non-Asbestos	15227NT				3"	Buna-N	15202BU
6	Bottom Gland	1	2"- 4"	316 Stnls	15076SS				Non-Asbestos	15202NA	
7	Tophead & Bonnet	1	2"	Aluminum	25305AL				Viton	15202VT	
			3"	Aluminum	15382AL				Teflon	15202TF	
			4"	Aluminum	25365AL				Buna-N	15024BU	
8	Tophead Gasket	1	2"	Cork-Buna-N	15208CB				4"	Non-Asbestos	15024NA
			2"	Non-Asbestos	15208NA				Viton	15024VT	
			3"	Teflon-Env.	15208TF				Teflon	15024TF	
			3"	Cork-Buna-N	15022CB	12	Disc Retaining Plate	1	2"	Steel	9Q1043
			3"	Non-Asbestos	15022NA				3"	Aluminum	15006AL
			3"	Teflon-Env.	15022TF				4"	Aluminum	15051AL
			4"	Cork-Buna-N	15265CB	13	Disc Plate Nut	1	2"- 4"	316 Stnls	15204SS
			4"	Non-Asbestos	15265NA	14	Swing Arms	1	2"	18-8 Stnls	15034SL
			4"	Teflon-Env.	15265TF				3"	18-8 Stnls	15179SL
9	Bolts & Nuts (Set)	Set	2"	Steel Zinc Plt.	16807ZC				4"	18-8 Stnls	15289SL
			3"	Steel Zinc Plt.	15023ZC	15	Swing Disc Holder	1	2"	Aluminum	15155AL
			4"	Steel Zinc Plt.	16549ZC				3"	Aluminum	25189AL
10	Disc Holder & Stem Assy.	1	2"	Aluminum	17682AL				4"	Aluminum	15152AL
			3"	Aluminum	17683AL						
			4"	Aluminum	17684AL						

MANIFOLD SUB-ASSEMBLIES

Size	Manifold Material	Standard & Bottom Loading Style		Pressure Style
		Fixed Disc (Parts 1-13)	Swing Disc (Parts 1-9, 10a & 11-15)	Fixed Disc
		Assembly No.	Assembly No.	Assembly No.
2"	Steel	WV17592ALB	WV17602ALB	N/A
3"	Steel	WV17593ALB	WV17603ALB	WV17593ALB
	Aluminum	WV17594ALB	WV17604ALB	WV17594ALB
4"	Steel	WV17594ALB	WV17604ALB	WV17594ALB
	Aluminum			

NOTES:

Manifold sub-assemblies as listed above are standard with Buna-N disc, non-asbestos packing and cork Buna-N gasket. (Suffix "B")

VARIATIONS: (Suffix "A") when used would include non-asbestos disc, packing and gasket.

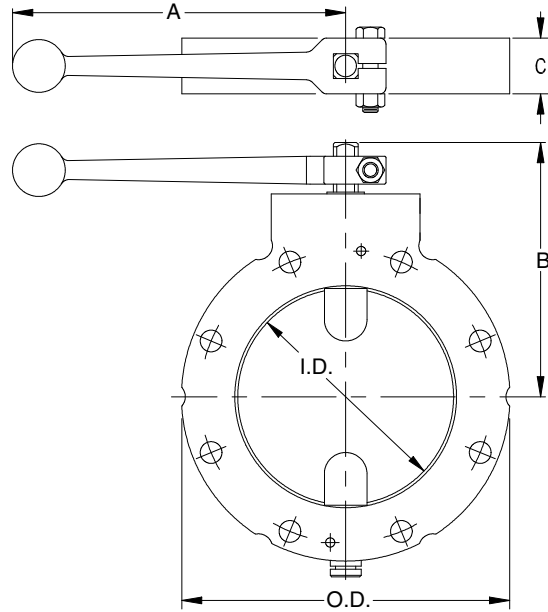
(Suffix "T") when used would include teflon disc, packing and gasket.

(Suffix "V") when used would include viton disc teflon packing and gasket.

Wet-R-Dri Valves / Standard & Detent

TTMA STYLE

LIGHTWEIGHT
COMPACT
VERSATILE



Size	Standard Model	Wt.	Detent Model	Wt.	Standard Material		Max. Working Pressure	Temperature Range
	Assembly No.		Assembly No.		Body	Disc		
2"	WD200 AL B	2.4	WD201 AL B	2.4	Aluminum	Buna-N	75 PSI	See Chart Below
	WD200 GI B	4.6	WD201 GI B	4.6	Grey Iron			
3"	WD300 AL B	3.6	WD301 AL B	3.6	Aluminum	Buna-N	75 PSI	
	WD300 GI B	6.9	WD301 GI B	6.9	Grey Iron			
4"	WD400 AL V	4.5	WD401 AL V	4.5	Aluminum	Viton	75 PSI	
	WD400 GI V	8.3	WD401 GI V	8.3	Grey Iron			
5"	WD500 AL V	7.9	WD501 AL V	7.9	Aluminum	Viton	50 PSI	
6"	WD600 AL U	11.8	WD601 AL U	11.8	Aluminum	Urethane	50 PSI	
8"	WD800 AL U	17.3	WD801 AL U	17.3	Aluminum	Urethane	50 PSI	

NOTE: Standard drilling fits TTMA recommended standards.

Valves are available with the following options: Stainless steel liners and shafts, grease fittings installed in the drive and bearing shafts, and "E" Coating of aluminum valves (recommended for aluminum valves used in water service). For repair kit, see Section 20, Page 5B.

Dimensions

Size	A	B	C	I.D.	O.D.	B.C.	Holes
2"	6 ³ / ₄	4 ¹ / ₄	1 ¹ / ₈	2 ¹ / ₄	3 ³ / ₄	3 ³ / ₄	6 ⁻⁷ / ₁₆
3"	6 ³ / ₄	4 ⁵ / ₈	1 ¹ / ₈	3 ³ / ₈	5 ⁵ / ₈	4 ⁷ / ₈	8 ⁻⁷ / ₁₆
4"	6 ³ / ₄	5 ¹ / ₈	1 ¹ / ₈	4 ³ / ₈	6 ⁵ / ₈	5 ⁷ / ₈	8 ⁻⁷ / ₁₆
5"	6 ³ / ₄	6 ³ / ₈	2 ¹ / ₈	5 ⁷ / ₁₆	7 ⁵ / ₈	7	12 ⁻⁷ / ₁₆
6"	12	7	2 ¹ / ₈	6 ¹ / ₈	8 ⁵ / ₈	8 ¹ / ₈	12 ⁻⁷ / ₁₆
8"	12	8	2 ¹ / ₂	8	10 ⁷ / ₈	10 ¹ / ₈	16 ⁻⁷ / ₁₆

Suffix for Disc Material

Buna-N		Viton	Urethane		EPDM
Black	White		Black	White	
B	WB	V	U	WU	E
-40°F	-40°F	-0°F	-40°F	-40°F	-50°F
+200°F	+200°F	+400°F	+200°F	+200°F	+300°F

NOTE: Temperature ranges based on published information and may vary due to actual operating conditions.

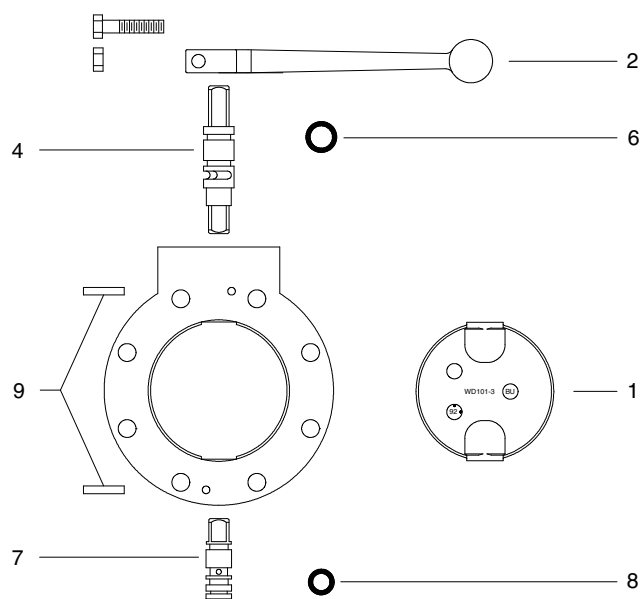
INSTALLATION:

The Wet-R-Dri Valve may be mounted in any position with handle located for easy operation. Valve, as assembled, opens by turning handle 1/4 turn counter clockwise (right hand operation). If clockwise rotation is desired (left hand operation) please specify. Care should be taken when mounting valve to be sure the I.D. of adjoining flanges or pipe is large enough to allow disc of valve to open freely. We suggest using our accompanying flanges and adapters shown in later sections of our catalog.



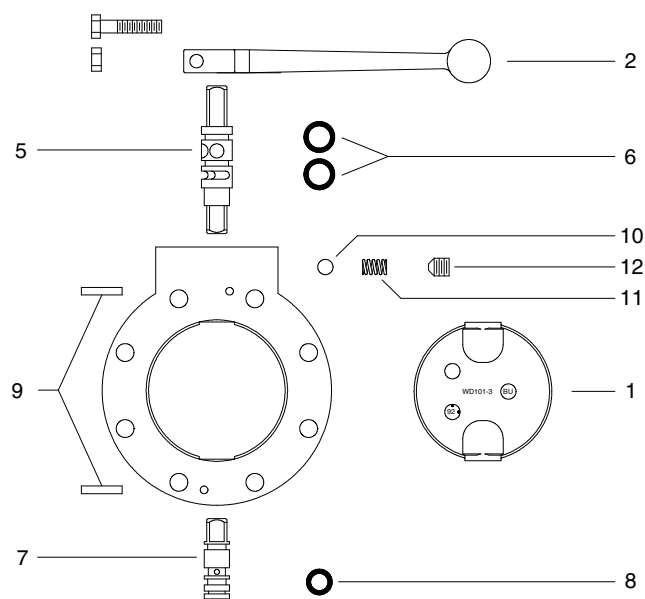
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PARTS LIST



STANDARD MODEL

Wet-R-Dri Valves



DETENT MODEL

No.	Description	Material	2" Size	3" Size	4" Size	5" Size	6" Size	8" Size
			Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
1	Disc	Buna-N	WD101-2 BN	WD101-3 BN	WD101-4 BN	WD101-5 BN	WD101-6 BN	WD101-8 BN
		Viton	WD101-2 VT	WD101-3 VT	WD101-4 VT	WD101-5 VT	WD101-6 VT	WD101-8 VT
		Urethane	WD101-2 PY	WD101-3 PY	WD101-4 PY	WD101-5 PY	WD101-6 PY	WD101-8 PY
		EPDM	WD101-2 EP	WD101-3 EP	WD101-4 EP	WD101-5 EP	WD101-6 EP	WD101-8 EP
2	Handle	Mall. "E" Coated	25884EY	25884EY	25884EY	25884EY	25933AL	25933AL
	Cap Screw	Steel Zinc Plt.	9Q5813	9Q5813	9Q5813	9Q5813	9Q5898	9Q5898
	Hex. Nut	Steel Zinc Plt.	9Q5808	9Q5808	9Q5808	9Q5808	9Q5808	9Q5808
4	Drive Shaft	Steel	27053MS	27050MS	27050MS	27051MS	16229MS	16229MS002
5	Drive Shaft	Steel	27053MS001	27050MS001	27050MS001	27051MS001	16229MS	16229MS002
6	O-Ring	To Match Disc Mat'l.	17889**	17889**	17889**	17889**	18831**	18831**
7	Bearing Shaft	Steel	16006MS	15913MS	15913MS	15913MS	16230MS	16230MS002
8	O-Ring	To Match Disc Mat'l.	17781**	18141**	18141**	18141**	18831**	18831**
9	Driv-Lok-Pin	Steel Zinc Plt.	9Q4893	9Q4893	9Q4893	9Q4925	9Q4926	9Q4938
10	Detent Ball	440 Stnls	9Z4856	9Z4856	9Z4856	9Z4856	9Z4856	9Z4856
11	Detent Spring	304 Stnls	15229SL	15229SL	15229SL	15229SL	15229SL	15229SL
12	Ret. Screw	304 Stnls	9Q5838	9Q5838	9Q5838	9Q5838	9Q5838	9Q5838

** O-Ring material suffix to match Disc suffix (i.e.-17889VT)

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of the Wet-R-Dri Valve.

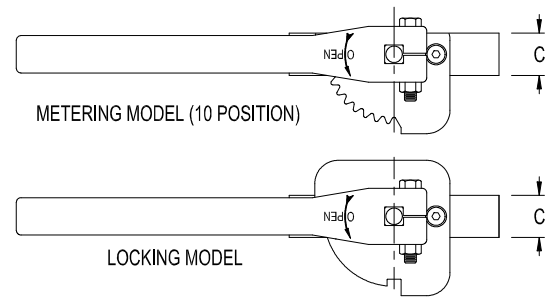
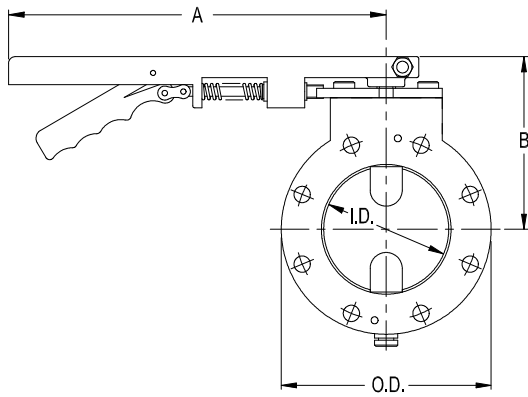
Betts[™]
INDUSTRIES, INC.
WARREN, PA.

Jan 1993

Wet-R-Dri Valves / LOCKING & METERING

TTMA STYLE

LIGHTWEIGHT
COMPACT
VERSATILE



The Betts Wet-R-Dri Valve is designed for handling liquid, gaseous or dry products, and is available in a variety of sizes and models. This space saving valve is lightweight, easily maintained, and has a positive stop in the open and closed position. The Locking model has a 2 notch indexing plate which locks disc in the open or closed positions. The Metering model has a 10 notch indexing plate which allows disc to be positioned in 10 various positions.

Size	<i>Locking Model</i>	Wt.	<i>Metering Model</i>	Wt.	Standard Material		Max. Working Pressure	Temperature Range
	Assembly No.		Assembly No.		Body	Disc		
2"	WD202 AL B	3.3	WD204 AL B	3.1	Aluminum	Buna-N	75 PSI	See Chart Below
	WD202 GI B	5.5	WD204 GI B	5.3	Grey Iron			
3"	WD302 AL B	4.5	WD304 AL B	4.3	Aluminum	Buna-N	75 PSI	
	WD302 GI B	7.8	WD304 GI B	7.6	Grey Iron			
4"	WD402 AL V	5.4	WD404 AL V	5.2	Aluminum	Viton	75 PSI	
	WD402 GI V	9.2	WD404 GI V	9.0	Grey Iron			
5"	WD502 AL V	8.8	WD504 AL V	8.6	Aluminum	Viton	50 PSI	
6"	WD602 AL U	12.4	WD604 AL U	12.2	Aluminum	Urethane	50 PSI	
8"	WD802 AL U	17.9	WD804 AL U	17.7	Aluminum	Urethane	50 PSI	

NOTES: Standard drilling fits TTMA recommended standards.

Valves are available with the following options: Stainless steel liners and shafts, grease fittings installed in the drive and bearing shafts, and "E" Coating of aluminum valves (recommended for aluminum valves used in water service). For repair kit, see Section 20, Page 5B.

Dimensions

Size	A	B	C	I.D.	O.D.	B.C.	Holes
2"	10 ¹ / ₈	4 ¹ / ₄	1 ¹ / ₈	2 ¹ / ₄	3 ³ / ₄	3 ³ / ₄	6 ⁻⁷ / ₁₆
3"	10 ¹ / ₈	4 ⁵ / ₈	1 ¹ / ₈	3 ³ / ₈	5 ⁵ / ₈	4 ⁷ / ₈	8 ⁻⁷ / ₁₆
4"	10 ¹ / ₈	5 ¹ / ₈	1 ¹ / ₈	4 ³ / ₈	6 ⁵ / ₈	5 ⁷ / ₈	8 ⁻⁷ / ₁₆
5"	10 ¹ / ₈	6 ³ / ₈	2 ¹ / ₈	5 ⁷ / ₁₆	7 ⁵ / ₈	7	12 ⁻⁷ / ₁₆
6"	12	7	2 ¹ / ₈	6 ¹ / ₈	8 ⁵ / ₈	8 ¹ / ₈	12 ⁻⁷ / ₁₆
8"	12	8	2 ¹ / ₂	8	10 ⁷ / ₈	10 ¹ / ₈	16 ⁻⁷ / ₁₆

Suffix for Disc Material

Buna-N		Viton	Urethane		EPDM
Black	White		Black	White	
B	WB	V	U	WU	E
-40°F	-40°F	-0°F	-40°F	-40°F	-50°F
+200°F	+200°F	+400°F	+200°F	+200°F	+300°F

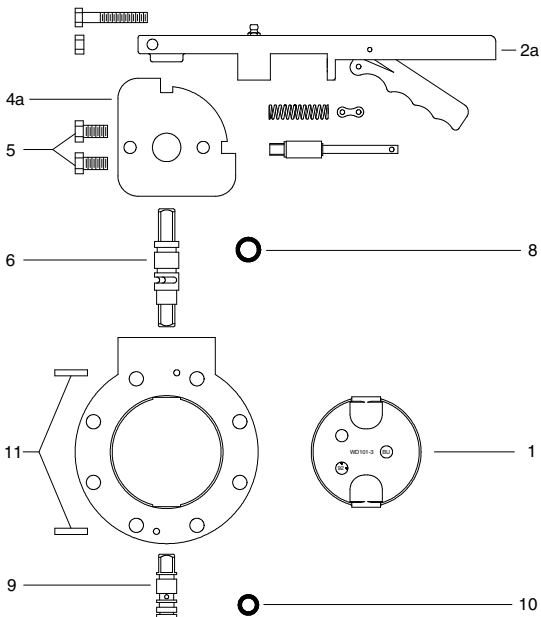
NOTE: Temperature ranges based on published information and may vary due to actual operating conditions.

INSTALLATION:

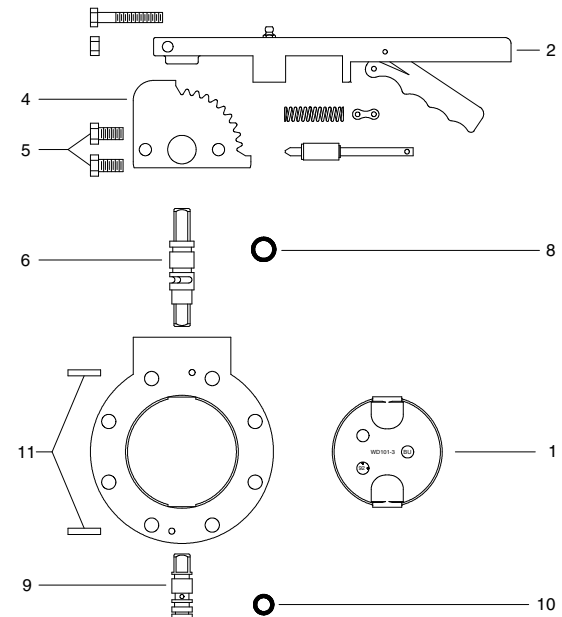
The Wet-R-Dri Valve may be mounted in any position with handle located for easy operation. Valve, as assembled, opens by turning handle 1/4 turn counter clockwise (right hand operation). If clockwise rotation is desired (left hand operation) please specify. Care should be taken when mounting valve to be sure the I.D. of adjoining flanges or pipe is large enough to allow disc of valve to open freely. We suggest using our accompanying flanges and adapters shown later in our catalog.

PARTS LIST

Wet-R-Dri Valves



LOCKING MODEL



METERING MODEL

No.	Description	Material	2" Size	3" Size	4" Size	5" Size	6" Size	8" Size
			Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
1	Disc	Buna-N	WD101-2 BN	WD101-3 BN	WD101-4 BN	WD101-5 BN	WD101-6 BN	WD101-8 BN
		Viton	WD101-2 VT	WD101-3 VT	WD101-4 VT	WD101-5 VT	WD101-6 VT	WD101-8 VT
		Urethane	WD101-2 PY	WD101-3 PY	WD101-4 PY	WD101-5 PY	WD101-6 PY	WD101-8 PY
		EPDM	WD101-2 EP	WD101-3 EP	WD101-4 EP	WD101-5 EP	WD101-6 EP	WD101-8 EP
2	Handle Assy.	Alum. "E" Coated	26284AL	26284AL	26284AL	26284AL	26287AL	26287AL
2a	Handle Assy.	Alum. "E" Coated	26075AL	26075AL	26075AL	26075AL	26077AL	26077AL
	Handle/Grip	Alum. "E" Coated	25815ALEY	25815ALEY	25815ALEY	25815ALEY	25802ALEY	25802ALEY
	Spring	302 Stnls	16365SL	16365SL	16365SL	16365SL	16365SL	16365SL
	Plunger-Metering	Steel	16969MS	16969MS	16969MS	16969MS	17020MS	17020MS
	Plunger-Locking	Steel	16385MS	16385MS	16385MS	16385MS	16400MS	16400MS
	Chain Link	Steel	9Z4915	9Z4915	9Z4915	9Z4915	9Z4915	9Z4915
	Cap Screw	Alum. Or Steel	9Q5897	9Q5897	9Q5897	9Q5897	9Q5898	9Q5898
	Hex. Nut	Steel Zinc Plt.	9Q5808	9Q5808	9Q5808	9Q5808	9Q5808	9Q5808
4	Indexing Plate	Steel "E" Coated	17012EY	17012EY	17012EY	17012EY	17016EY	17016EY
4a	Indexing Plate	Steel "E" Coated	16358EY	16358EY	16358EY	16358EY	16668EY	16668EY
5	Cap Screw	Stainless	9Q5884	9Q5884	9Q5884	9Q5884	9Q5884	9Q5884
6	Drive Shaft	Steel	27053MS	27050MS	27050MS	27051MS	16229MS	16229MS002
8	O-Ring	To Match Disc Mat'l.	17889**	17889**	17889**	17889**	18831**	18831**
9	Bearing Shaft	Steel	16006MS	15913MS	15913MS	15913MS	16230MS	16230MS
10	O-Ring	To Match Disc Mat'l.	17781**	18141**	18141**	18141**	18831**	18831**
11	Driv-Lok-Pin	Steel Zinc Plt.	9Q4893	9Q4893	9Q4893	9Q4925	9Q4926	9Q4938

** O-Ring material suffix to match Disc suffix (i.e.-17889VT)

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.

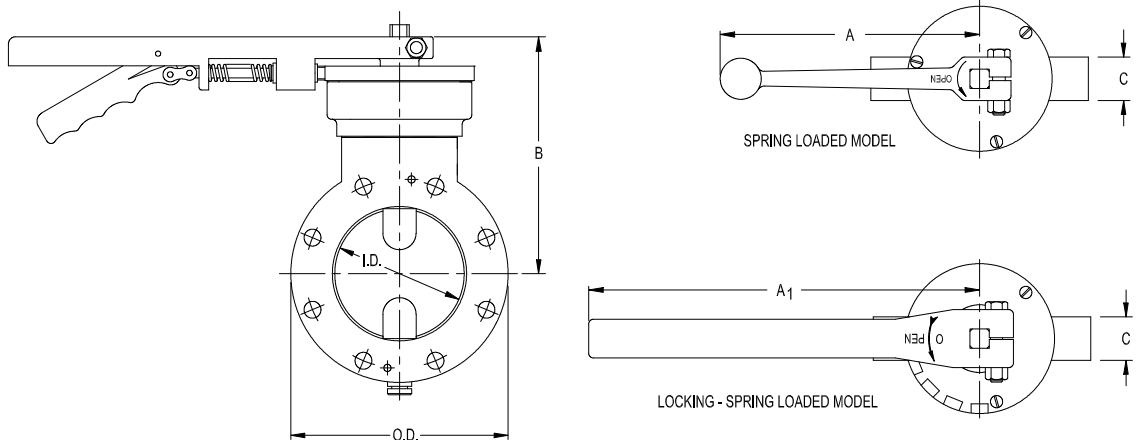


April 2002

Wet-R-Dri Valves / LOCKING SPRING LOADED & SPRING LOADED

TTMA STYLE

LIGHTWEIGHT
COMPACT
VERSATILE



The Betts Wet-R-Dri Valve is designed for handling liquid, gaseous or dry products, and is available in a variety of sizes and models. This space saving valve is lightweight, easily maintained, and has a positive stop in the open and closed position. Both spring loaded valves provide an immediate and positive shut off. The locking type permits valve to be mechanically held open while the spring loaded type can be used for remote operation or as a dead man valve.

Size	Locking-Spring Loaded	Wt.	Spring Loaded	Wt.	Standard Material		Max. Working Pressure	Temperature Range
	Assembly No.		Assembly No.		Body	Disc		
2"	WD203 AL B	5.5	WD205 AL B	4.4	Aluminum	Buna-N	75 PSI	See Chart Below
	WD203 GI B	7.7	WD205 GI B	6.6	Grey Iron			
3"	WD303 AL B	6.7	WD305 AL B	5.6	Aluminum	Buna-N	75 PSI	
	WD303 GI B	10.0	WD305 GI B	8.9	Grey Iron			
4"	WD403 AL V	7.6	WD405 AL V	6.5	Aluminum	Viton	75 PSI	
	WD403 GI V	11.4	WD405 GI V	10.3	Grey Iron			
5"	WD503 AL V	11.0	WD505 AL V	9.9	Aluminum	Viton	50 PSI	

NOTES: Standard drilling fits TTMA recommended standards.

Valves are available with the following options: Stainless steel liners and shafts, grease fittings installed in the drive and bearing shafts, and "E" Coating of aluminum valves (recommended for aluminum valves used in water service).

For repair kit, see Section 20, Page 5B.

Dimensions

Size	A	A ₁	B	C	I.D.	O.D.	B.C.	Holes
2"	6 ³ / ₄	10 ¹ / ₈	6	1 ¹ / ₈	2 ¹ / ₄	3 ³ / ₄	3 ³ / ₄	6 ⁻ / ₁₆
3"	6 ³ / ₄	10 ¹ / ₈	6 ¹ / ₄	1 ¹ / ₈	3 ³ / ₈	5 ⁵ / ₈	4 ¹ / ₈	8 ⁻ / ₁₆
4"	6 ³ / ₄	10 ¹ / ₈	6 ³ / ₄	1 ¹ / ₈	4 ³ / ₈	6 ⁵ / ₈	5 ¹ / ₈	8 ⁻ / ₁₆
5"	6 ³ / ₄	10 ¹ / ₈	8	2 ¹ / ₈	5 ⁷ / ₁₆	7 ⁵ / ₈	7	12 ⁻ / ₁₆

Suffix for Disc Material

Buna-N		Viton	Urethane		EPDM
Black	White		Black	White	
B	WB	V	U	WU	E
-40°F	-40°F	-40°F	-40°F	-40°F	-40°F
+200°F	+200°F	+200°F	+200°F	+200°F	+200°F

NOTE: Temperature ranges based on published information and may vary due to actual operating conditions.

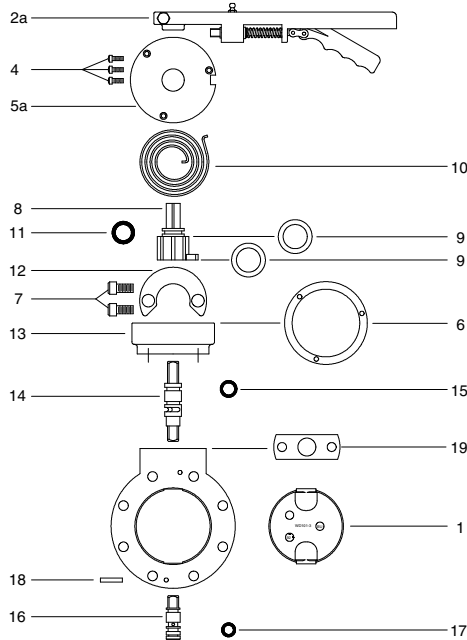
INSTALLATION:

The Wet-R-Dri Valve may be mounted in any position with handle located for easy operation. Valve, as assembled, opens by turning handle 1/4 turn counter clockwise (right hand operation). If clockwise rotation is desired (left hand operation) please specify. Care should be taken when mounting valve to be sure the I.D. of adjoining flanges or pipe is large enough to allow disc of valve to open freely. We suggest using our accompanying flanges and adapters shown later in our catalog.



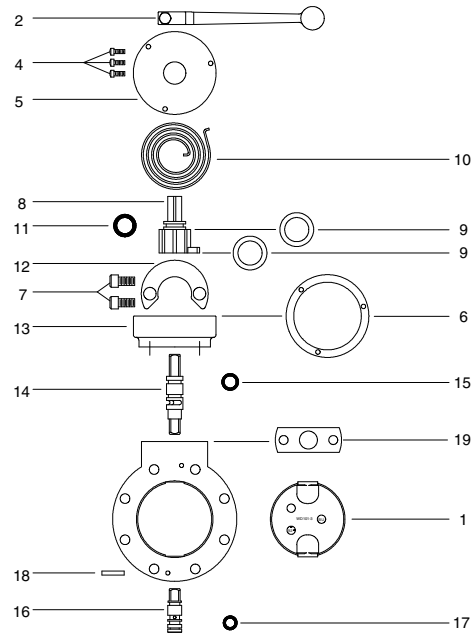
Apr 1992

PARTS LIST



LOCKING TYPE SPRING LOADED MODEL

Wet-R-Dri Valves



SPRING LOADED MODEL

No.	Description	Material	2" Size	3" Size	4" Size	5" Size
			Part No.	Part No.	Part No.	Part No.
1	Disc	Buna-N	WD101-2 BN	WD101-3 BN	WD101-4 BN	WD101-5 BN
		Viton	WD101-2 VT	WD101-3 VT	WD101-4 VT	WD101-5 VT
		Urethane	WD101-2 PY	WD101-3 PY	WD101-4 PY	WD101-5 PY
		EPDM	WD101-2 EP	WD101-3 EP	WD101-4 EP	WD101-5 EP
2	Handle	Mall. "E" Coated	25884EY	25884EY	25884EY	25884EY
2a	Handle Assy.	Alum. "E" Coated	26075AL	26075AL	26075AL	26075AL
4	Screws	Stainless	9Q5837	9Q5837	9Q5837	9Q5837
5	Cover Plate	Aluminum	16929AL	16929AL	16929AL	16929AL
5a	Cover Plate	Steel	16961MS	16961MS	16961MS	16961MS
6	Gasket	Cork-Neoprene	17427CN	17427CN	17427CN	17427CN
7	Cap Screw	Steel	9Q5848	9Q5848	9Q5848	9Q5848
8	Spring Adapter	304 Stainless	16934SL	16934SL	16934SL	16934SL
9	Washer	Teflon	17418TF	17418TF	17418TF	17418TF
10	Spring	Steel "E" Coated	16945EY	16945EY	16945EY	16945EY
11	O-Ring	Buna-N	18831BN	18831BN	18831BN	18831BN
12	Stop Plate	304 Stainless	16928SL	16928SL	16928SL	16928SL
13	Housing	Aluminum	26190AL	26190AL	26190AL	26190AL
14	Drive Shaft	Steel	27053MS	27050MS	27050MS	27051MS
15	O-Ring	To Match Disc Mat'l.	17889**	17889**	17889**	17889**
16	Bearing Shaft	Steel	16006MS	15913MS	15913MS	15913MS
17	O-Ring	To Match Disc Mat'l.	17781**	18141**	18141**	18141**
18	Driv-Lok-Pin	Steel Zinc Plt.	9Q4893	9Q4893	9Q4893	9Q4925
19	Gasket	Cork-Neoprene	18308CN	18308CN	18308CN	18308CN

** O-Ring material suffix to match Disc suffix (i.e.-17889VT)

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of the Wet-R-Dri Valve.

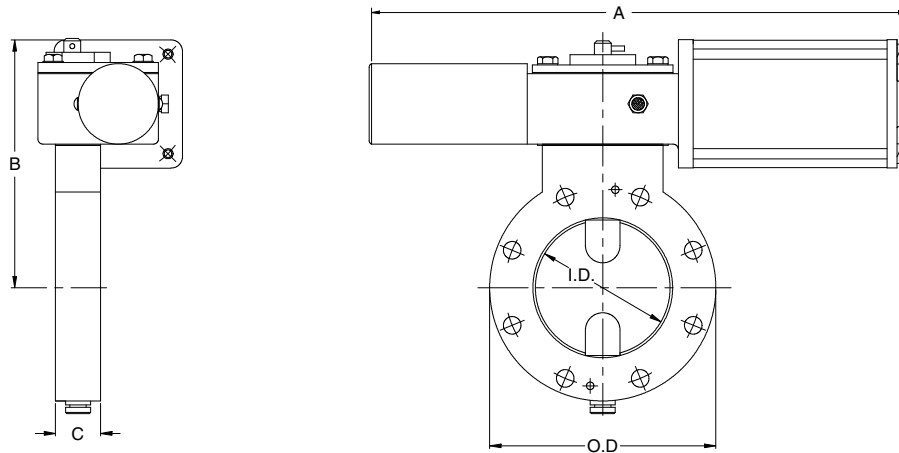
Betts[™]
INDUSTRIES, INC.
WARREN, PA.

April 2002

Wet-R-Dri Valves / AIR ACTUATED & AIR - SPRING

TTMA STYLE

LIGHTWEIGHT
COMPACT
VERSATILE



The Betts Wet-R-Dri Valve is designed for handling liquid, gaseous or dry products, and is available in a variety of sizes and models. This space saving valve is lightweight, easily maintained, and has a positive stop in the open and closed position. The air operated valve is opened and closed by air. The air-spring operated valve can be sold as either an air to open, spring return valve or as an air to close spring to open valve. Please specify.

Size	<i>Air Actuated Model</i>	Wt.	<i>Air-Spring Model</i>	Wt.	Standard Material		Max. Working Pressure	Temperature Range
	Assembly No.		Assembly No.		Body	Disc		
2"	WD217 AL B	5.9	WD219 AL B	6.4	Aluminum	Buna-N	75 PSI	See Chart Below
	WD217 GI B	8.1	WD219 GI B	8.6	Grey Iron			
3"	WD317 AL B	7.1	WD319 AL B	7.6	Aluminum	Buna-N	75 PSI	
	WD317 GI B	10.4	WD319 GI B	10.9	Grey Iron			
4"	WD417 AL V	8.0	WD419 AL V	8.5	Aluminum	Viton	75 PSI	
	WD417 GI V	11.8	WD419 GI V	12.3	Grey Iron			
5"	WD517 AL V	11.4	WD519 AL V	11.9	Aluminum	Viton	50 PSI	
6"	WD617 AL U	15.3	WD619 AL U	15.8	Aluminum	Urethane	50 PSI	
8"	WD817 AL U	20.8	WD819 AL U	21.3	Aluminum	Urethane	50 PSI	

NOTES: Standard drilling fits TTMA recommended standards.

Valves are available with the following options: Stainless steel liners and shafts, and "E" Coating of aluminum valves (recommended for aluminum valves used in water service).

Size	A	B	C	I.D.	O.D.	B.C.	Holes
2"	13 ⁵ / ₁₆	5 ¹³ / ₁₆	1 ¹ / ₈	2 ¹ / ₄	3 ³ / ₄	3 ³ / ₄	6 ⁻⁷ / ₁₆
3"	13 ⁵ / ₁₆	6 ⁵ / ₃₂	1 ¹ / ₈	3 ³ / ₈	5 ⁵ / ₈	4 ⁷ / ₈	8 ⁻⁷ / ₁₆
4"	13 ⁵ / ₁₆	6 ¹¹ / ₁₆	1 ¹ / ₈	4 ³ / ₈	6 ⁵ / ₈	5 ⁷ / ₈	8 ⁻⁷ / ₁₆
5"	13 ⁵ / ₁₆	7 ⁷ / ₈	2 ¹ / ₈	5 ⁷ / ₁₆	7 ⁵ / ₈	7	12 ⁻⁷ / ₁₆
6"	13 ⁵ / ₁₆	8 ⁷ / ₁₆	2 ¹ / ₈	6 ¹ / ₈	8 ⁵ / ₈	8 ¹ / ₈	12 ⁻⁷ / ₁₆
8"	13 ⁵ / ₁₆	9 ³ / ₈	2 ¹ / ₂	8	10 ⁷ / ₈	10 ¹ / ₈	16 ⁻⁷ / ₁₆

Buna-N		Viton	Urethane		EPDM
Black	White		Black	White	
B	WB	V	U	WU	E
-40°F	-40°F	-0°F	-40°F	-40°F	-50°F
+200°F	+200°F	+400°F	+200°F	+200°F	+300°F

NOTE: Temperature ranges based on published information and may vary due to actual operating conditions.

INSTALLATION:

The Wet-R-Dri Valve may be mounted in any position.

Care should be taken when mounting valve to be sure the I.D. of adjoining flanges or pipe is large enough to allow disc of valve to open freely. We suggest using our accompanying flanges and adapters shown later in our catalog.

PARTS LIST

Wet-R-Dri Valves / AIR ACTUATED & AIR - SPRING

ACTUATOR ONLY PART NOS.

2" Thru 5" Spring Return Act. Part No. 46495AL
 2" Thru 5" Double Acting Act. Part No. 46504AL
 6" & 8" Spring Return Act. Part No. 46496AL
 6" & 8" Double Acting Act. Part No. 46519AL

INDICATOR PIN ASSEMBLY PART NO.

2" Thru 5" Part No. 19531AL
 6" & 8" Part No. 19532AL

No.	Description	Req'd.	Size	Material	Part No.
1	Mtg. End Plate	1	2"Thru 8"	Aluminum	19243ALEY
2	O-Ring	2	2"Thru 8"	Buna-N	17666BN
3	Piston Seal	As Req'd.	2"Thru 8"	Buna-N	17669BN
†4	Piston	1	2"Thru 8"	Aluminum	19437AL
††4a	Piston	1	2"Thru 8"	Aluminum	19285AL
†5	Spring	1	2"Thru 8"	316 Stnls.	19413SS
6	Cylinder	1	2"Thru 8"	Aluminum	19240AL
7	Stop Tube	1	2"Thru 8"	Aluminum	19241AL
8	Housing	1	2"Thru 5"	Aluminum	35390ALEY
		1	6" & 8"	Aluminum	35400ALEY
9	Clevis	1	2"Thru 5"	17-4 Stnls.	19237SL
		1	6" & 8"	17-4 Stnls.	19238SL
10	Button Head S.C.S.	2	2"Thru 8"	Steel	9Q5940
11	Hex Jam Nut	2	2"Thru 8"	Steel Zinc Plt.	9Q5910
12	O-Ring	1	2"Thru 8"	Buna-N	17781BN
13	Shaft	1	2"Thru 8"	304 Stnls.	19239SL
14	O-Ring	1	2"Thru 8"	Buna-N	19350BN
15	Washer	1	2"Thru 8"	Aluminum	19268AL
16	End Cap	1	2"Thru 8"	Aluminum	19244ALEY
17	1/4 Lockwasher	4	2"Thru 8"	Steel	9Q5845
18	Hex. Hd. Bolt	4	2"Thru 8"	Steel Zinc Plt.	9Q5938
19	Retaining Ring	2	2"Thru 8"	Steel Plated	9Q4932
20	Bearing	2	2"Thru 8"	Bronze	9Z4870
21	Clevis Pin	1	2"Thru 8"	Steel Plated	9Q4729
22	Cover Plate	1	2"Thru 8"	Aluminum	19490ALEY
23	Hex. Hd. Bolt	4	2"Thru 8"	Steel Zinc Plt.	9Q5849
23a	1/4 Star Washer	4	2"Thru 8"	Steel Zinc Plt.	9Q5923
24	Gasket	1	2"Thru 8"	Cork-Neoprene	19269CN
26	O-Ring	1	2"Thru 8"	Buna-N	18066BN
††27	Socket Hd. Screw	1	2"Thru 8"	Steel	9Q5798
†28	1/8 Pipe Plug	1	2"Thru 8"	Steel	9V4915
A1	Plug	1	2"Thru 8"	Aluminum	19489AL
A2	O-Ring	1	2"Thru 8"	Buna-N	19357BN
A3	O-Ring	1	2"Thru 8"	Buna-N	19505BN

** O-Ring material suffix to match Disc suffix (i.e.-17889VT)

† PART REQ'D ON SPRING RETURN MODELS ONLY

†† PART REQ'D ON DOUBLE ACTING MODELS ONLY

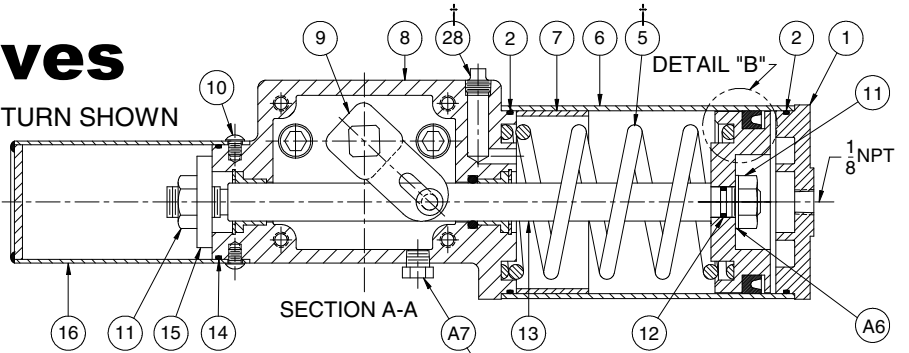
No.	Description	Req'd.	Size	Material	Part No.
A4	Indicator Pin	1	2"Thru 5"	316 Stnls.	19528SS
			6" & 8"	316 Stnls.	19529SS
A5	Spirol Pin	1	2"Thru 8"	304 Stnls.	9Q8601
A6	1/2 Star Washer	1	2"Thru 8"	410 Stnls.	9Q5916
A7	Breather	1	2"Thru 8"	Brass	9Z4895
31	Cap Screw	2	2"Thru 8"	Steel	9Q5856
32	Gasket	1	2" 3" & 4"	Cork-Neoprene	18308CN
			5" 6" & 8"	Cork-Neoprene	19351CN
33	O-Ring	1	2"Thru 5"	Buna-N	17889**
			6"	Buna-N	18831**
		2	8"	Buna-N	18831**
34	Drive Shaft	1	2"	Steel	27053MS
			3" & 4"	Steel	27050MS
			5"	Steel	27051MS001
			6"	Steel	16229MS
			8"	Steel	16229MS002
35	Disc	1	2"	* Specify Material See Section 20 Page 4C	WD101-2*
			3"		WD101-3*
			4"		WD101-4*
			5"		WD101-5*
			6"		WD101-6*
8"	WD101-8*				
36	O-Ring	1	2"	Buna-N	17781**
			3"Thru 5"	Buna-N	18141**
36a	O-Ring	1	6" & 8"	Buna-N	18831**
37	Bearing Shaft	1	2"	Steel	16006MS
			3"Thru 5"	Steel	15913MS
			6"	Steel	16230MS
38	Driv-Lok Pin	2	8"	Steel	16230MS002
			2"Thru 5"	Steel Zinc Plt.	9Q4893
38	Driv-Lok Pin	2	6"	Steel Zinc Plt.	9Q4926
			8"	Steel Zinc Plt.	9Q4938
39	Grease Fitting	1	8"	Steel	9Z3058

WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.

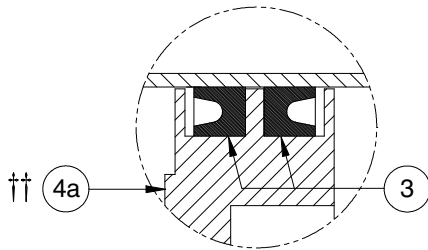
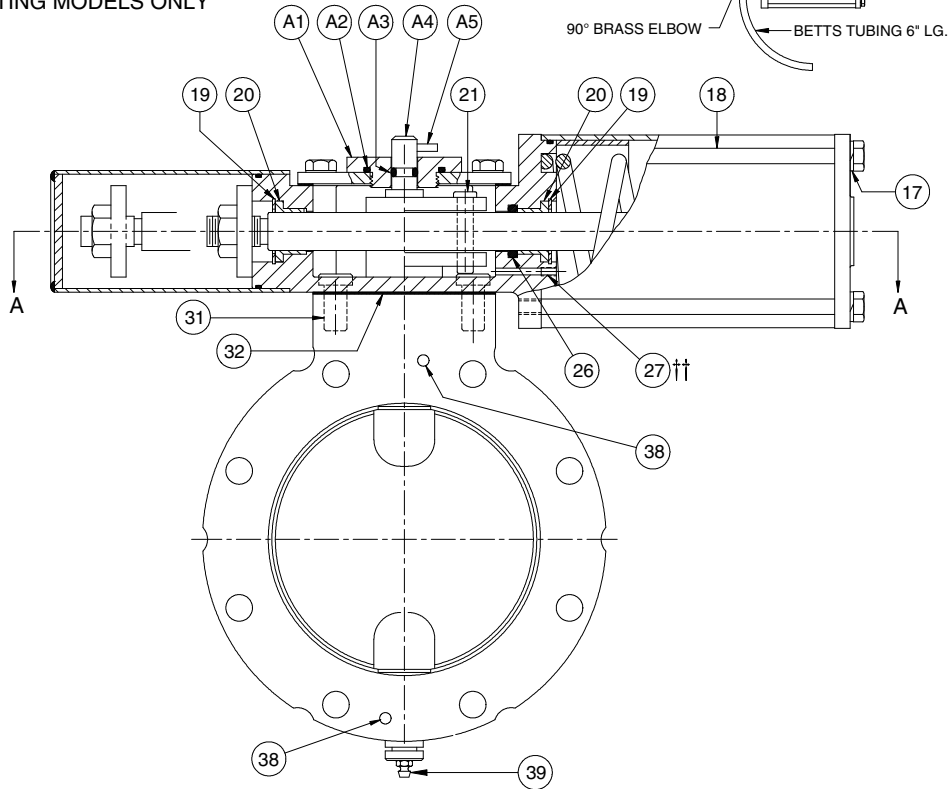
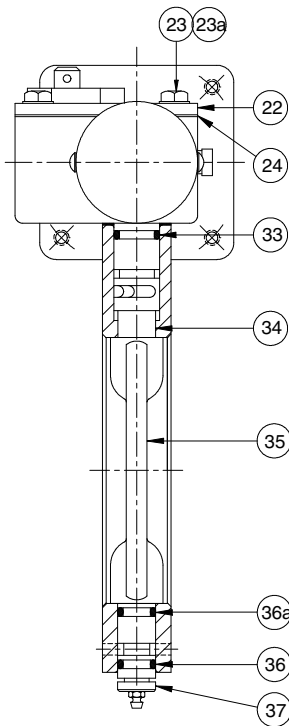
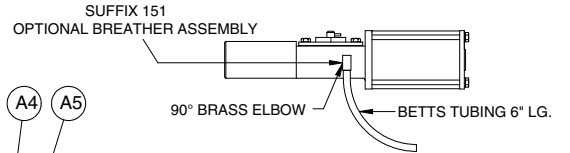
PARTS LIST

Wet-R-Dri Valves

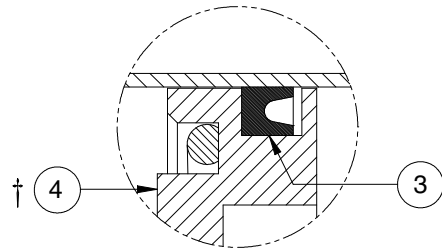
AIR TO OPEN OR CLOSE – SPRING RETURN SHOWN



† PART REQ'D ON SPRING RETURN MODELS ONLY
 †† PART REQ'D ON DOUBLE ACTING MODELS ONLY



DETAIL "B" PISTON & SEAL
 DOUBLE ACTING MODEL ONLY



SPRING RETURN MODEL ONLY
 DETAIL "B" PISTON & SEAL

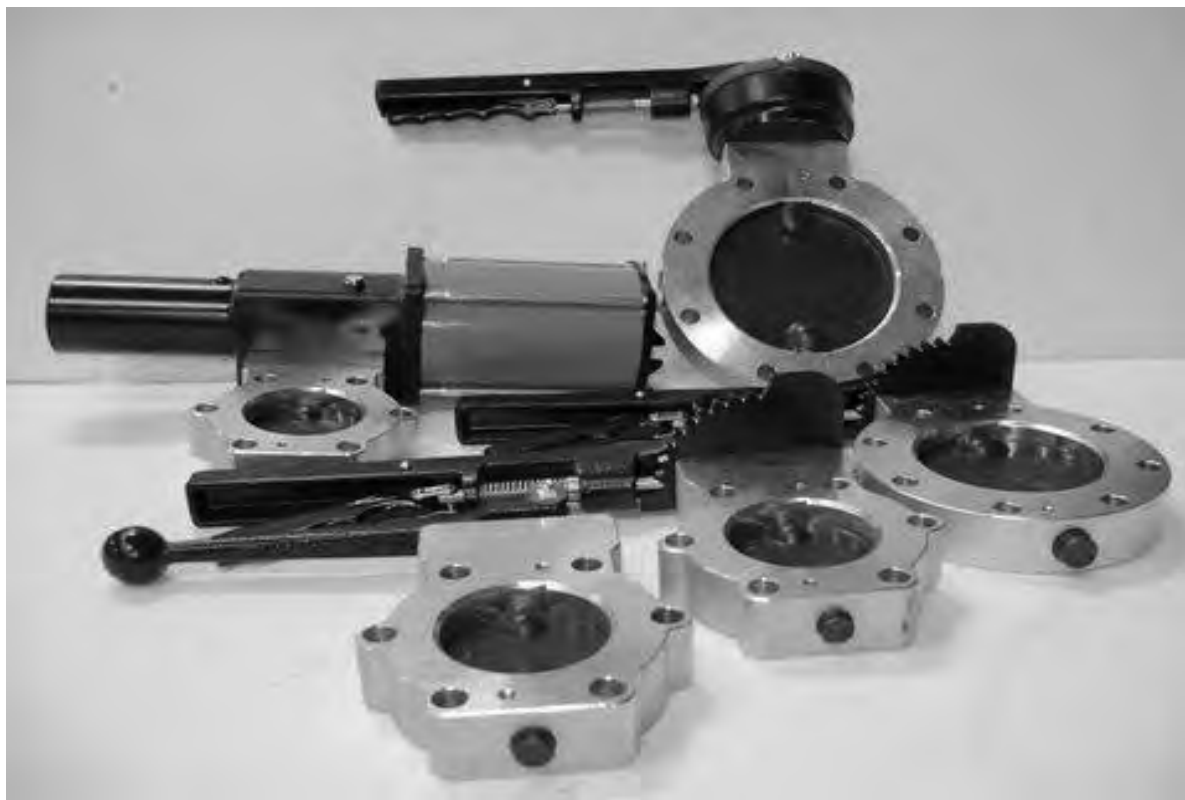
WARNING Use only genuine Betts Industries Inc. replacement parts. Use of substitute parts can impair the proper functioning of this product.

BETTS - Wet-R-Dri Valves

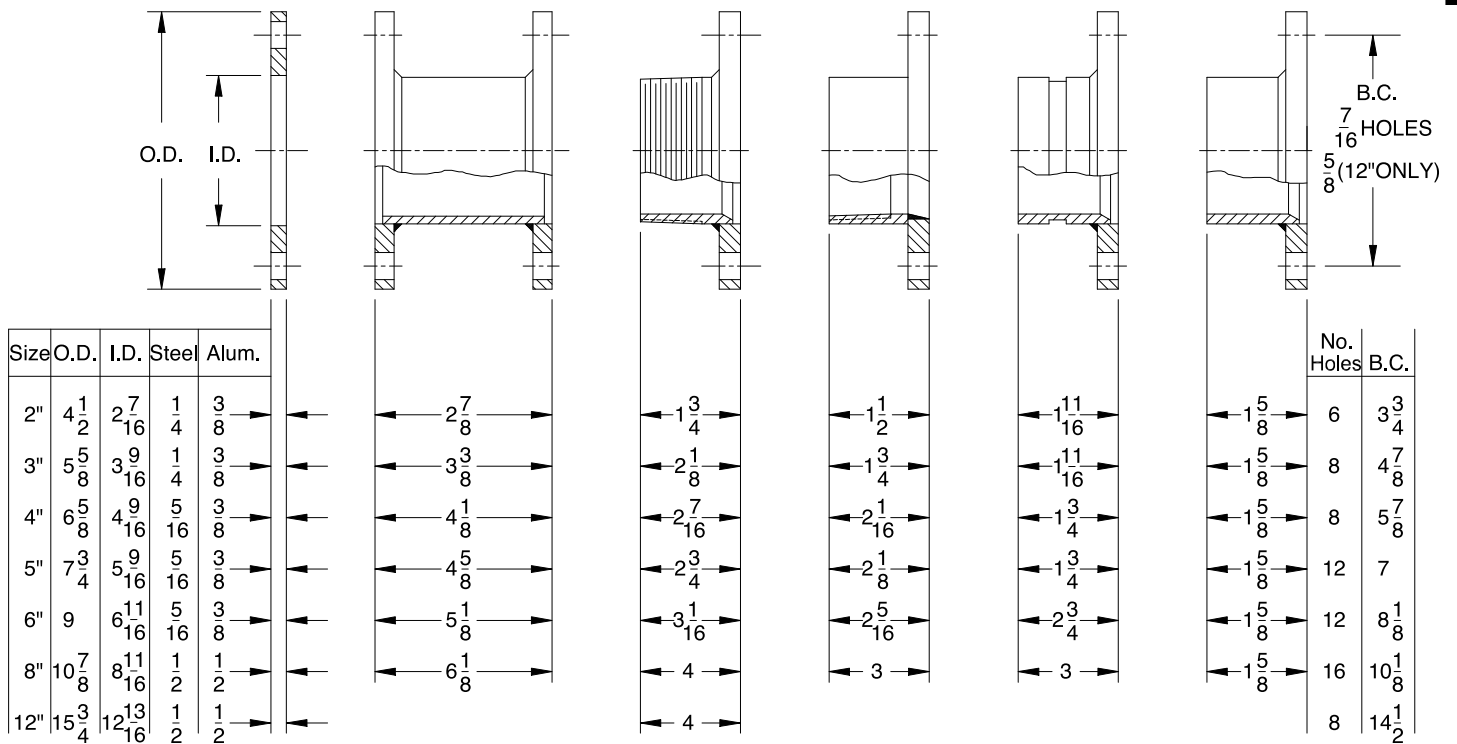
REPAIR KITS

For WD Valve Size	Repair Kit Part No.	Suffix: BN Buna-N Disc PY Urethane Disc VT Viton Disc EP EPDM Disc
2"	WD18402BN	REPAIR KITS CONSIST OF: 1 Disc 2 Drive Shaft O-Rings 1 Bearing Shaft O-Ring 2 Drive Lock Pins 2 Flange Gaskets 1 Sec. 20, Page 1A & B
	WD18402VT	
3"	WD18403BN	
	WD18403VT	
4"	WD18404VT	
5"	WD18405VT	
6"	WD18406PY	
	WD18406VT	
8"	WD18408PY	
	WD18408VT	
All Detent	WD18400SL	Detent Repair Kit (For all sizes detent models) CONSISTS OF: 1 Detent Ball WD109SL 1 Detent Spring WD110SL 1 Retaining Screw WD111SL

For Detent model valves a Detent Repair Kit is required in addition to the appropriate size valve repair kit.



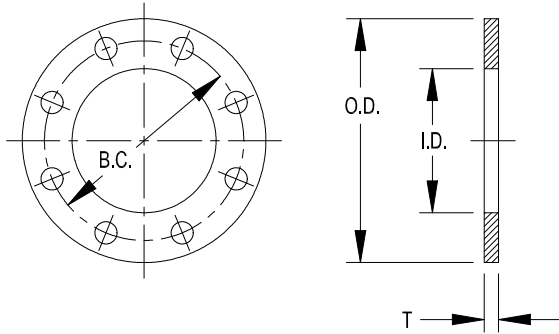
BETTS - SPACERS and ADAPTERS



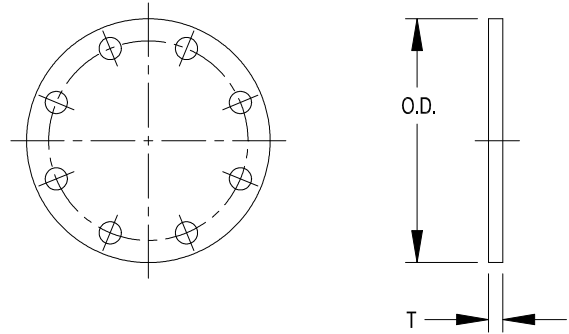
PART NUMBERS

		SINGLE SPACER	DOUBLE FLANGED	FLANGE and THREADED	FLANGE and HALF COUPLING	FLANGE and GROOVED	FLANGE and WELDING NECK
Size	Material	Part No.	Part No.	Part No.	Part No.	Part No.	Part No.
2"	Steel	WF201MS	DF2MS	FT2MS	FH2MS	FG2MS	FW2MS
	Aluminum	WF201AL	DF2AL	FT2AL	FH2AL	FG2AL	FW2AL
3"	Steel	WF301MS	DF3MS	FT3MS	FH3MS	FG3MS	FW3MS
	Aluminum	WF301AL	DF3AL	FT3AL	FH3AL	FG3AL	FW3AL
4"	Steel	WF401MS	DF4MS	FT4MS	FH4MS	FG4MS	FW4MS
	Aluminum	WF401AL	DF4AL	FT4AL	FH4AL	FG4AL	FW4AL
5"	Steel	WF501MS	DF5MS	FT5MS	FH5MS	FG5MS	FW5MS
	Aluminum	WF501AL	DF5AL	FT5AL	FH5AL	FG5AL	FW5AL
6"	Steel	WF601MS	DF6MS	FT6MS	FH6MS	FG6MS	FW6MS
	Aluminum	WF601AL	DF6AL	FT6AL	FH6AL	FG6AL	FW6AL
8"	Steel	WF801MS	DF8MS	FT8MS	FH8MS	FG8MS	FW8MS
	Aluminum	WF801AL	DF8AL	FT8AL	FH8AL	FG8AL	FW8AL
12"	Steel	WF1201MS		FT12MS			

NOTES: All flanges are drilled for TTMA Standard bolt circles. Dimensions shown are standard lengths. Longer lengths available on request. Standard Double Flanged Spacer and Gasket with Wet-R-Dri Valve equals Gate Valve dimensions. For gaskets see page 184 of our catalog.



WELD FLANGE

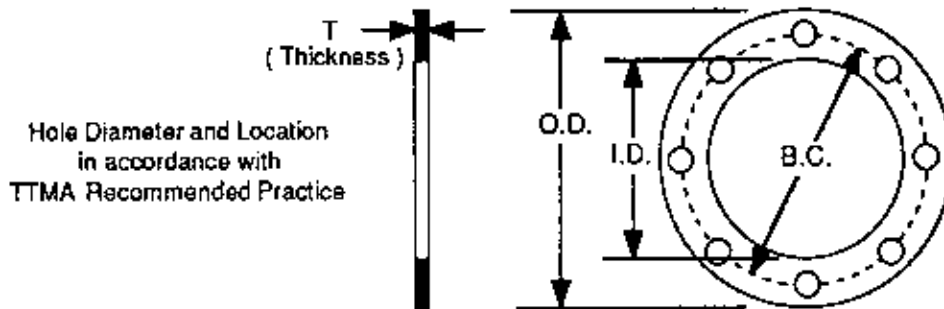


BLIND FLANGE

Size	Material	WELD FLANGE	BLIND FLANGE	Thickness	O.D.	I.D.	B.C.	No. of Holes	Hole Size
		Part No.	Part No.						
2"	Steel	WF201MS	BWF201MS	$\frac{1}{4}$	$4\text{-}\frac{1}{2}$	$2\text{-}\frac{7}{16}$	$3\text{-}\frac{3}{4}$	6	$\frac{7}{16}$
	Aluminum	WF201AL	BWF201AL	$\frac{3}{8}$					
3"	Steel	WF301MS	BWF301MS	$\frac{1}{4}$	$5\text{-}\frac{5}{8}$	$3\text{-}\frac{9}{16}$	$4\text{-}\frac{7}{8}$	8	$\frac{7}{16}$
	Aluminum	WF301AL	BWF301AL	$\frac{3}{8}$					
4"	Steel	WF401MS	BWF401MS	$\frac{5}{16}$	$6\text{-}\frac{5}{8}$	$4\text{-}\frac{9}{16}$	$5\text{-}\frac{7}{8}$	8	$\frac{7}{16}$
	Aluminum	WF401AL	BWF401AL	$\frac{3}{8}$					
5"	Steel	WF501MS	BWF501MS	$\frac{5}{16}$	$7\text{-}\frac{3}{4}$	$5\text{-}\frac{9}{16}$	7	12	$\frac{7}{16}$
	Aluminum	WF501AL	BWF501AL	$\frac{3}{8}$					
6"	Steel	WF601MS	BWF601MS	$\frac{5}{16}$	9	$6\text{-}\frac{11}{16}$	$8\text{-}\frac{1}{8}$	12	$\frac{7}{16}$
	Aluminum	WF601AL	BWF601AL	$\frac{3}{8}$					
8"	Steel	WF801MS	BWF801MS	$\frac{1}{2}$	$10\text{-}\frac{7}{8}$	$8\text{-}\frac{11}{16}$	$10\text{-}\frac{1}{8}$	16	$\frac{7}{16}$
	Aluminum	WF801AL	BWF801AL	$\frac{1}{2}$					
12"	Steel	WF1201MS		$\frac{1}{2}$	$15\text{-}\frac{3}{4}$	$12\text{-}\frac{13}{16}$	$14\text{-}\frac{1}{2}$	8	$\frac{5}{8}$

NOTE: Drilling in accordance with TTMA recommended standards

GASKETS



ROUND FLANGE GASKETS

Nom Size	Material	Part Number	Thick-ness	I. D.	O.D.	B. C.	Bolt Hole Dia.	No. Bolt Holes
1	Non-Asbestos*	10233 F	3/32	1 3/8	3 7/16	2 21/32	7/16	4
2	Cork	10231 A	3/32	2 9/16	4 1/2	3 3/4	7/16	6
	Cork & Buna-N	10232 A	3/32	2 9/16				
	Teflon Envelope	10100 A	9/64	2 1/4				
	Non-Asbestos*	10233 A	3/32	2 9/16				
2 1/2	Cork & Buna-N	10734	3/32	2 15/16	5	4 1/4	7/16	6
3	Cork	10231 B	3/32	3 11/16	5 5/8	4 7/8	7/16	8
	Cork & Buna-N	10232 B	3/32	3 11/16				
	Teflon Envelope	10100 B	9/64	3 1/4				
	Non-Asbestos*	10233 B	3/32	3 11/16				
4	Cork	10231 C	3/32	4 11/16	6 5/8	5 7/8	7/16	8
	Cork & Buna-N	10232 C	3/32	4 11/16				
	Teflon Envelope	10100 C	9/64	4 5/16				
	Non-Asbestos*	10233 C	3/32	4 11/16				
5	Cork	15961	3/32	5 9/16	7 3/4	7	7/16	12
	Cork & Buna-N	15961 CB	3/32	5 9/16				
6	Cork	15587	3/32	6 11/16	9	8 1/8	7/16	12
	Cork & Buna-N	10232 F	3/32	6 11/16				
	Teflon Envelope	10100 F	9/64	6 7/16				

DRAIN POCKET (SUMP) GASKETS

Nom Size	Material	Part Number	Thick-ness	I. D.	O.D.	B. C.	Bolt Hole Dia.	No. Bolt Holes
3	Cork & Buna-N	10232 D	1/8	5 1/8	7 1/4	6 1/4	9/16	6
	Teflon Envelope	10100 D	11/64	4 3/4				
	Non-Asbestos*	10233 D	1/8	5 1/8				
4	Cork & Buna-N	10232 E	1/8	6 1/8	8 1/4	7 1/4	9/16	8
	Teflon Envelope	10100 E	11/64	5 3/4				
	Non-Asbestos*	10233 E	1/8	6 1/8				
6	Cork & Buna-N	25507 CB	1/8	8	10 1/4	9 1/4	9/16	12
	Teflon Envelope	25507 TF	11/64	7 5/8				



CivaFlo Manifold

CivaFlo Dual Manifold System

The CIVAFLO Dual Manifold & Fuel Control System by CIVACON helps improve the quality and performance of your delivery service. Single Manifold also available (Not shown).

Eliminate the number of adaptors, couplers, and jumper hoses needed to unload fuel:

- Improves driver productivity.
- Improves driver safety.
- Eliminates mess and hassles.
- Reduces potential environmental hazards and clean-up costs.

Ensure that pipe connections are correctly matched with fuel compartments before any fuel can be unloaded:

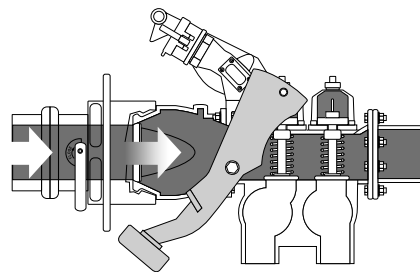
- Ensures Quality Control On All Deliveries.
- Reduces Potential Product Cross Contamination.
- Enhances Security

Manifold Valve

The air activated manifold chamber is a double-acting cylinder assembly that guarantees valve opening/closing every time. Its closed loop pneumatic system keeps debris from entering the valve. The manifold chamber open/close status is clearly indicated by a "red" indicator visible through the transparent lens located on the top of each manifold valve.

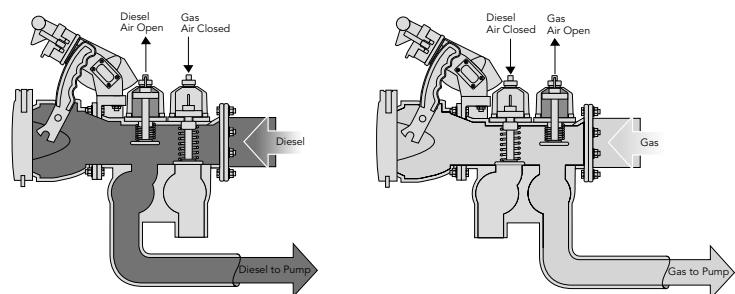
Interlocked/Independent Manifold Galleries

Two different fuel types can be dispensed from the same vehicle by simply selecting between the two independent manifold galleries. The air activation system only allows one manifold to be opened at any time. The manifold galleries are specific to either the gasoline or the diesel PTO and pump, this means that the manifold chambers are discriminate depending on the fuel selected to ensure that cross contamination is never a problem.



Bottom Loading

The guard bar is released to provide access to the API coupler. Both manifold valves remain closed providing for high, unobstructed flow rates



Pump Unloading – Manifold and Valve Operation

During pump unloading, the appropriate manifold and valve is selected to allow the flow of fuel into the collection tubes, through the pump and then dispensed through the meter and hose.



CivaControl™ Air System

Take Control of Your Entire Tank System During Loading and Unloading

Fail Safe Operation

Our CivaControl Air System will provide a simple Control for the entire tank system during loading and unloading. CivaControl Air Systems bring together the control of Compartment Vents, Vapor Recovery Valves, Internal Valves, Overfill Detection and Vehicle Drive Away systems.

Tank Protection

Fully-sequenced operation ensures the tank can only be loaded or unloaded when the truck is in a totally ready condition.

Purpose Built

Specifically-designed, unique-function, heavy-duty pneumatic control valves ensures reliable performance in extreme operating conditions.

- Temperature range (-40° F to 150° F).
- Robust controls are ergonomically positioned for ease of operation.
- Available for tanks with 1 to 12 compartments.



CCP-1 used as a Load Valve to release the Guard Bar Lock over APIs. Pop-Up confirms Vapor Vents are "open".



Easy to Install

All valves are conveniently pre-mounted on a stainless steel panel for easy mounting in a central location.

Versatile

CivaControl Air Systems control the full spectrum of tank truck and tank trailer functions. Whether installed on petroleum transport trailers or tank trucks equipped with Civacon Manifolds, you're always in complete control. Conveniently mounted air pressure gauge and visual indicator advise the readiness of the system.

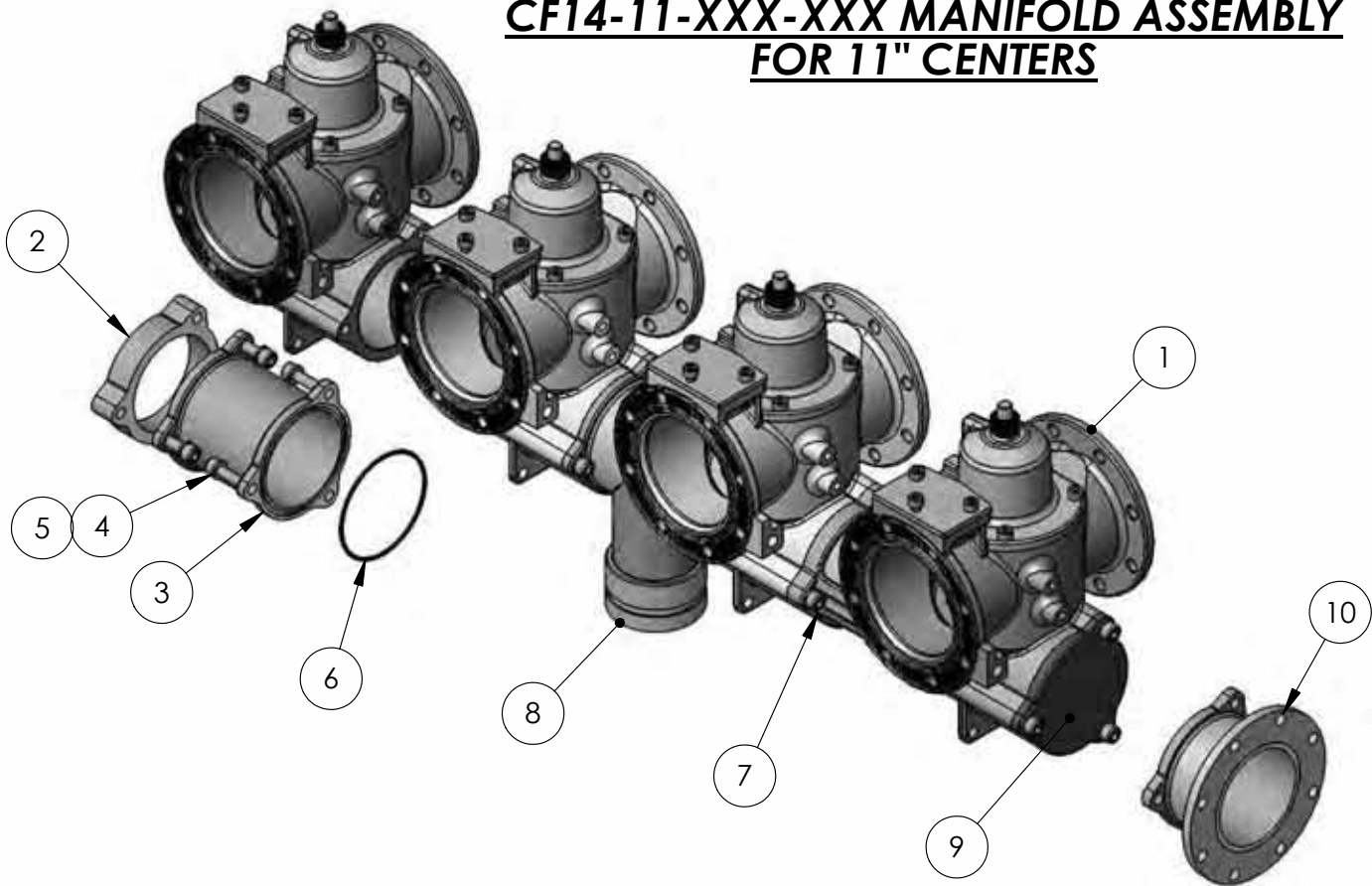
CivaControl Ordering Information

Number of Compartments	Part Number	Panel Length 'L'
1	CCP-1	4.5" Square
2	CCP-2	12.0"
3	CCP-3	12.0"
4	CCP-4	12.0"
5	CCP-5	12.0"
6	CCP-6	13.8"
7	CCP-7	17.2"
8	CCP-8	17.2"
9+	Consult Factory	

NOTE: CCP-1 has no Pressure Gauge.

CF14-14-XXX-XXX MANIFOLD ASSEMBLY FOR 14" CENTERS

CF14-11-XXX-XXX MANIFOLD ASSEMBLY FOR 11" CENTERS



ITEM	PART NUMBER	DESCRIPTION
1	10540M	SINGLE MANIFOLD VALVE ASSEMBLY
2	10982M	SPACER, 1" WIDE FOR 12" CENTERS
3	10562M	COLLECTOR PIPE FOR 14" CENTERS
3	10561M	COLLECTOR PIPE FOR 11" CENTERS
4	10773M	SCREW, M10 X 30 ZINC PLATED (TYPICAL)
5	10237M	WASHER, M10 ZINC PLATED (TYPICAL)
6	10494M	O-RING, 102 X 3 NITRILE (TYPICAL)
7	10644M	COLLECTOR SIGHT GLASS FOR 14" CENTERS
7	10698M	COLLECTOR SIGHT GLASS FOR 11" CENTERS
8	10798M	COLLECTOR TEE FOR 14" CENTERS, 3" VICTAULIC
8	10697M	COLLECTOR TEE FOR 11" CENTERS, 3" VICTAULIC
9	10558M	END CAP, COLLECTOR
10	10983M	OUTLET ADAPTER, 4" TTMA (OPTIONAL)

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REV 1 29AUG05

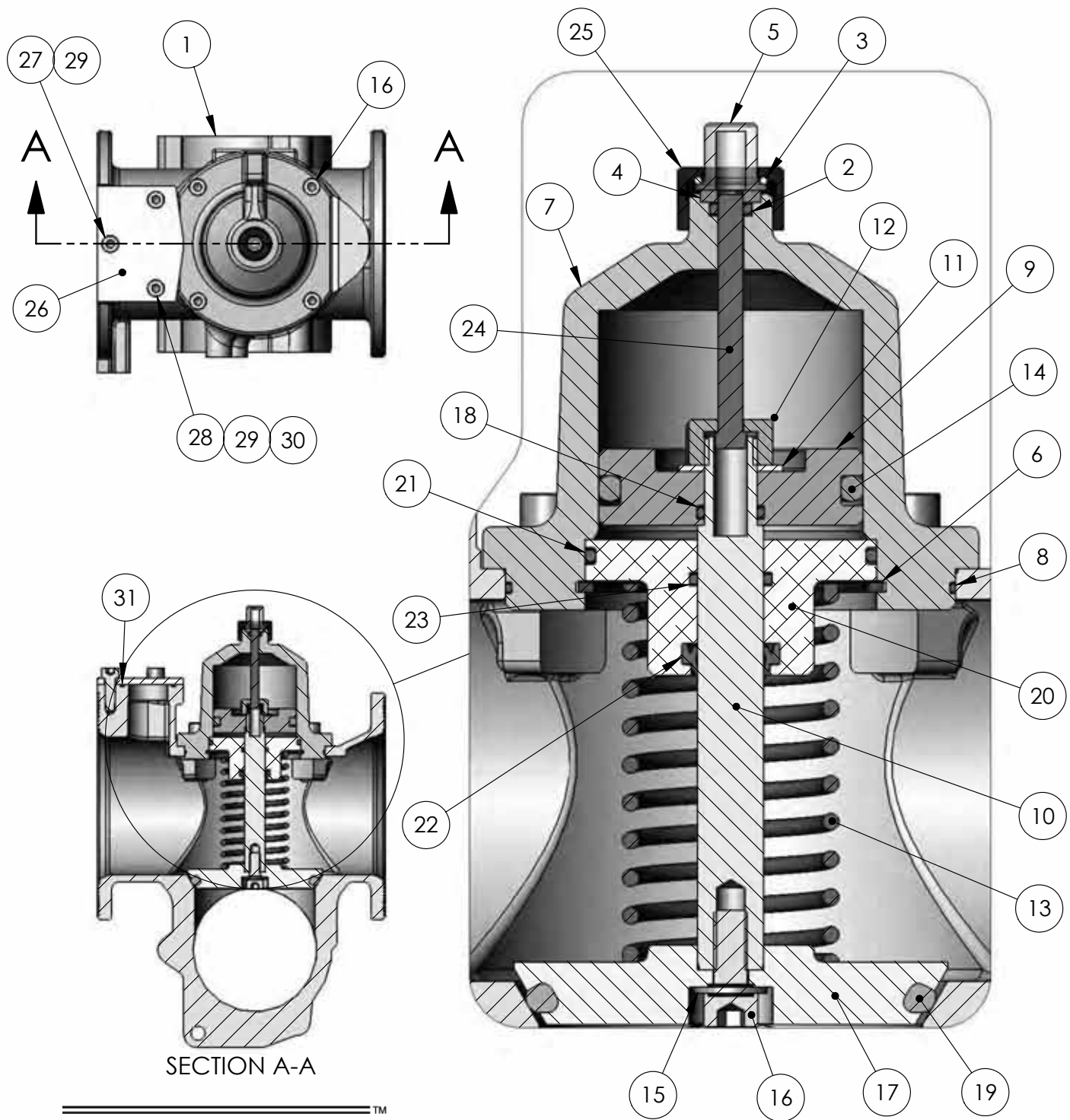
10540M SINGLE MANIFOLD VALVE ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10387M	BODY, SINGLE MANIFOLD, MACHINED	1
2	10241M	O-RING, 6 X 2.5	1
3	10776M	O-RING, -015	1
4	10209M	INDICATOR WASHER	1
5	10773M	SIGHT GLASS	1
6	10237M	RETAINING RING, 2-3/4" ZINC PLATED	1
7	10390M	CYLINDER, SINGLE MANIFOLD, MACHINED	1
8	10242M	O-RING, 103 X 2 VITON	1
9	10203M	PISTON	1
10	10204M	MAIN SHAFT	1
11	10206M	PISTON WASHER	1
12	10205M	PISTON SHAFT NUT	1
13	10233M	SPRING, COMPRESSION	1
14	10476M	O-RING, 52 X 6	1
15	10232M	SEAL WASHER, 5/16"	1
16	10235M	SCREW, M8 X 20	5
17	10210M	POPPET	1
18	10240M	O-RING, 12.5 X 2.5	1
19	10211M	O-RING, 79 X 7 VITON	1
20	10202M	CYLINDER END PLATE	1
21	10243M	O-RING 63 X 3	1
22	10238M	WIPER SEAL, .625 ID, VITON GF	1
23	10520M	O-RING, 15.9 X 2.4	1
24	10207M	INDICATOR ROD	1
25	10772M	CARRIER, SIGHT GLASS	1
26	10537M	BLANKING PLATE, RETURN SPOUT	1
27	10276M	SCREW, M8 X 25	1
28	10277M	SCREW, M8 X 35	2
29	10263M	WASHER, M8 FLAT PLATED	3
30	10262M	NUT, M8 HEX PLATED	2
31	10269M	O-RING, 39 X 2.5	1

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REV 1 1SEP05

10540M SINGLE MANIFOLD VALVE ASSEMBLY

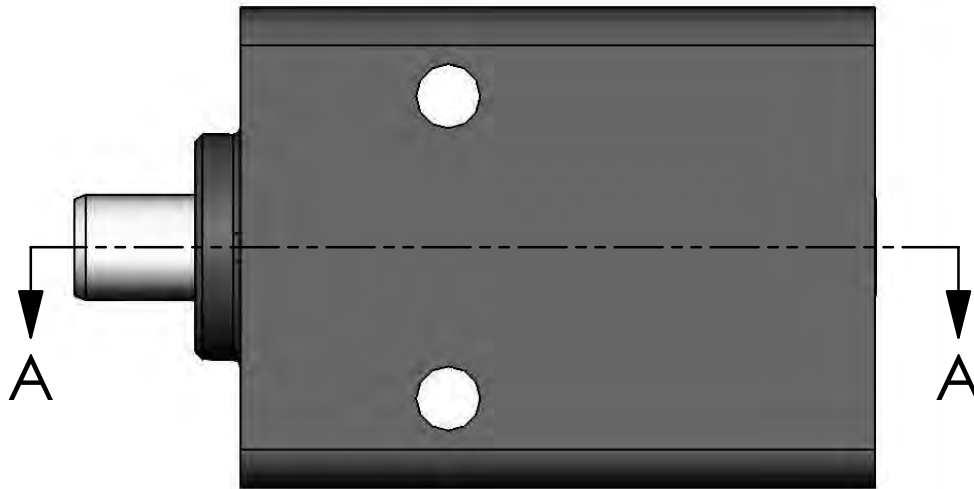
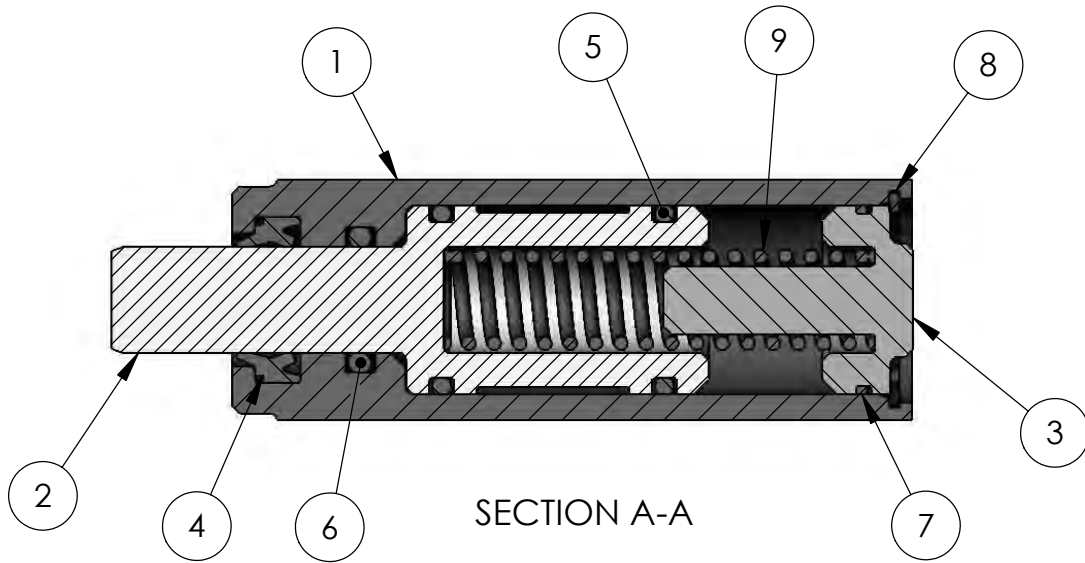


SECTION A-A

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REV 1 1SEP05

10544M GUARD BAR LOCKING VALVE ASSEMBLY



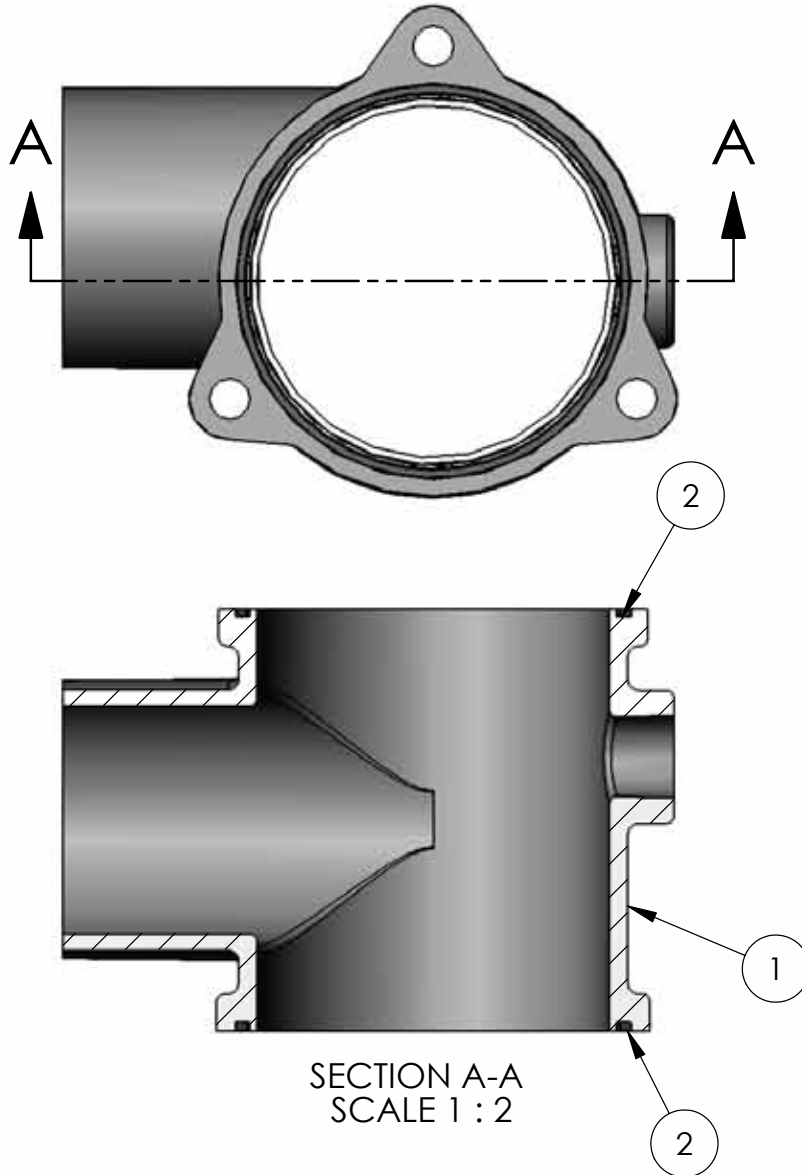
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10221M	BODY, ANODIZED ALUMINUM	1
2	10222M	PISTON	1
3	10223M	END CAP	1
4	10224M	WIPER SEAL, NITRILE	1
5	10225M	O-RING, 20 X 2.5, NITRILE	2
6	10226M	O-RING, 14 X 3, NITRILE	1
7	10227M	O-RING, 22 X 1.5 NITRILE	1
8	10228M	RETAINING RING, 1-1/16"	1
9	10229M	SPRING, COMPRESSION	1



REV 1 29AUG05

**10557M COLLECTOR TEE ASSEMBLY
FOR 14" CENTERS**

**10556M COLLECTOR TEE ASSEMBLY
FOR 11" CENTERS**



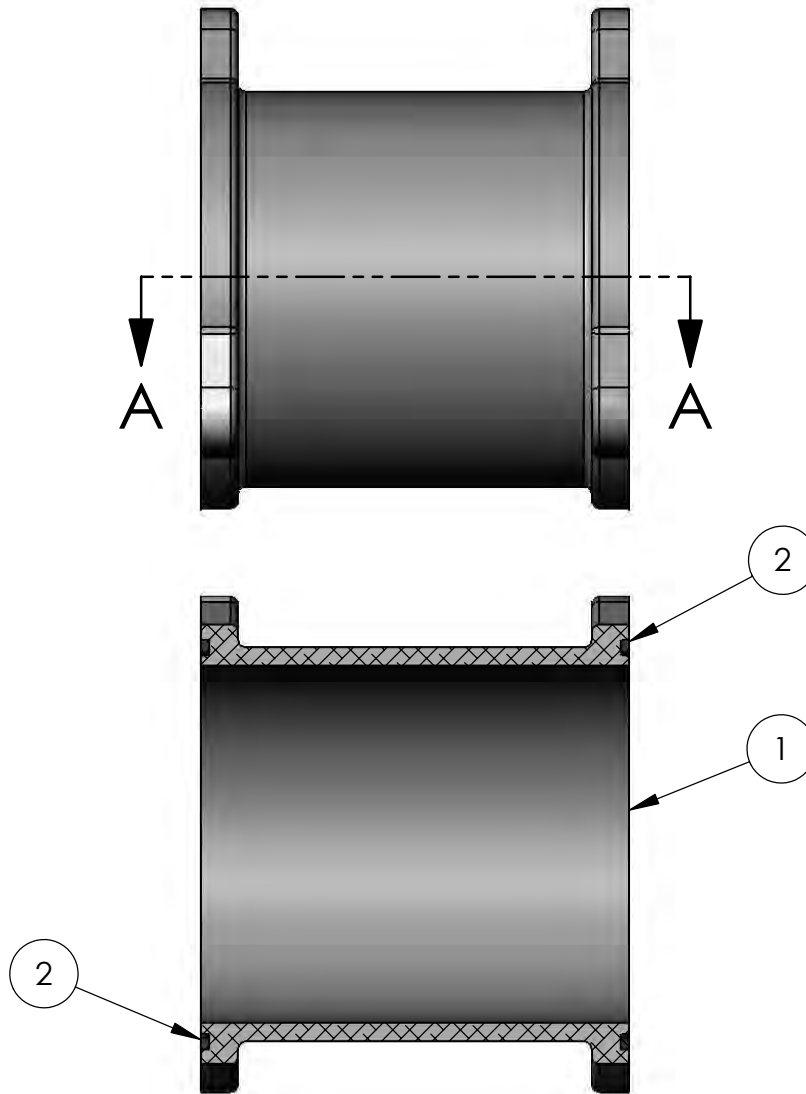
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10797M	COLLECTOR TEE FOR 14" CENTERS	1
1	10755M	COLLECTOR TEE FOR 11" CENTERS	1
2	10494M	O-RING, 102 X 3 VITON	2



REV 1 29AUG05

**10562M COLLECTOR PIPE ASSEMBLY
FOR 14" CENTERS**

**10561M COLLECTOR PIPE ASSEMBLY
FOR 11" CENTERS**



SECTION A-A
SCALE 1 : 2

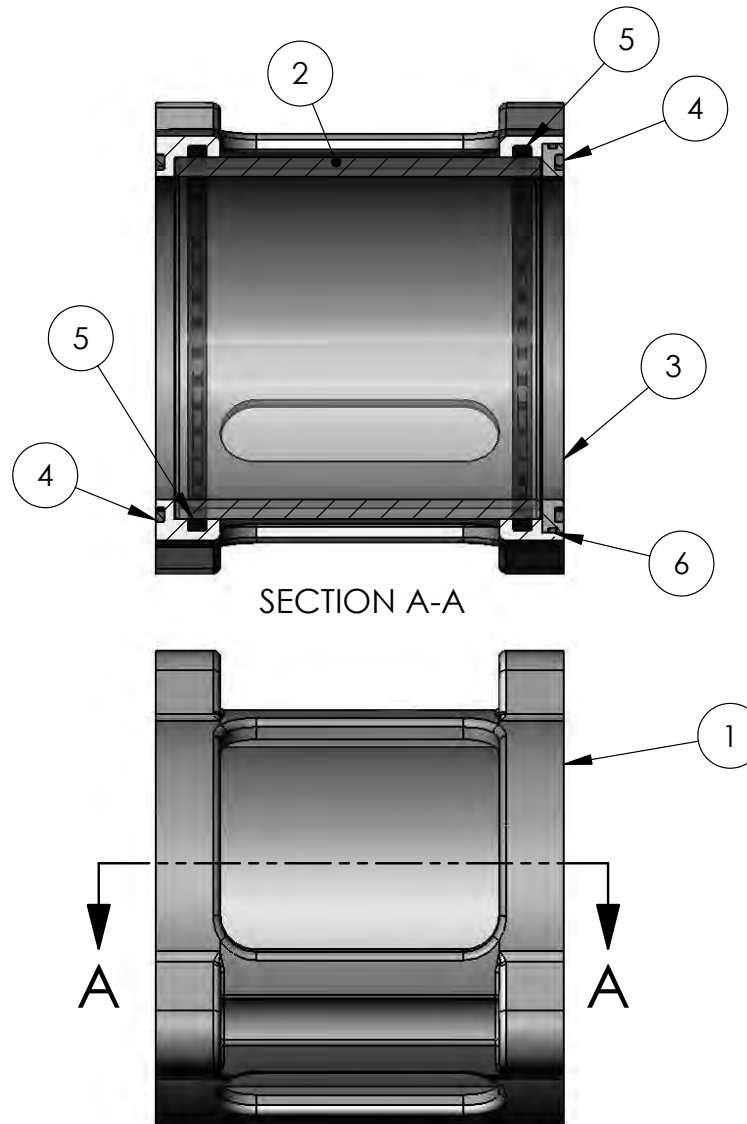
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10571M	COLLECTOR PIPE FOR 14" CENTERS	1
1	10570M	COLLECTOR PIPE FOR 11" CENTERS	1
2	10494M	O-RING, 102 X 3 VITON	2
-	10576M	SCREW, M10 X 1. 5 X 35 LONG, ZINC PLATED	6
-	10740M	WASHER, M10 SPRING LOCK, ZINC PLATED	6

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REV 1 29AUG05

10644M SIGHT GLASS ASSEMBLY FOR 14" CENTERS

10698M SIGHT GLASS ASSEMBLY FOR 11" CENTERS

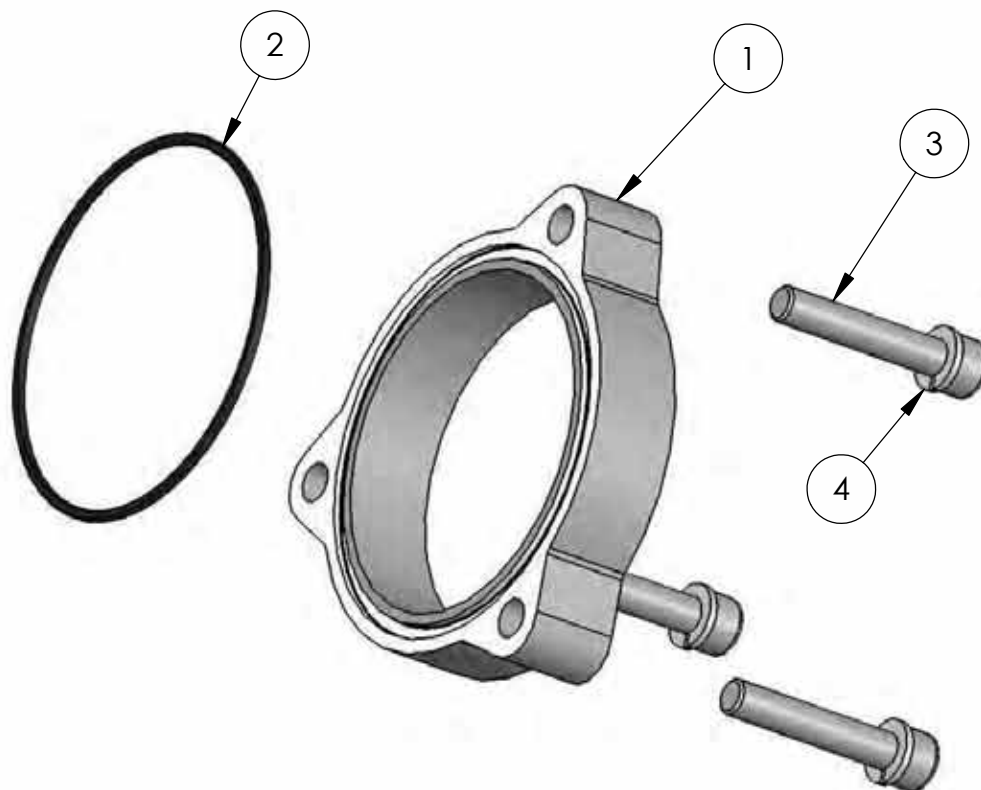


ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10569M	COLLECTOR SIGHT GLASS HOUSING, 14" CENTERS	1
1	10568M	COLLECTOR SIGHT GLASS HOUSING, 11" CENTERS	1
2	10525M	SIGHT GLASS FOR 14" CENTERS	1
2	10524M	SIGHT GLASS, 11" CENTERS	1
3	10507M	ALUMINUM SEAL RING, COLLECTOR SIGHT GLASS	1
4	10494M	O-RING, 102 X 3 VITON, BODY TO MANIFOLD VALVE	2
5	10495M	O-RING, 104 X 4 VITON, GLASS SEALING	2
6	10496M	O-RING, -046 VITON SEAL RING	1
-	10576M	SCREW, M10 X 1. 5 X 35 LONG, ZINC PLATED	6
-	10740M	WASHER, M10 SPRING LOCK, ZINC PLATED	6

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REV 1 29AUG05

10982M 1" COLLECTOR SPACER ASSEMBLY

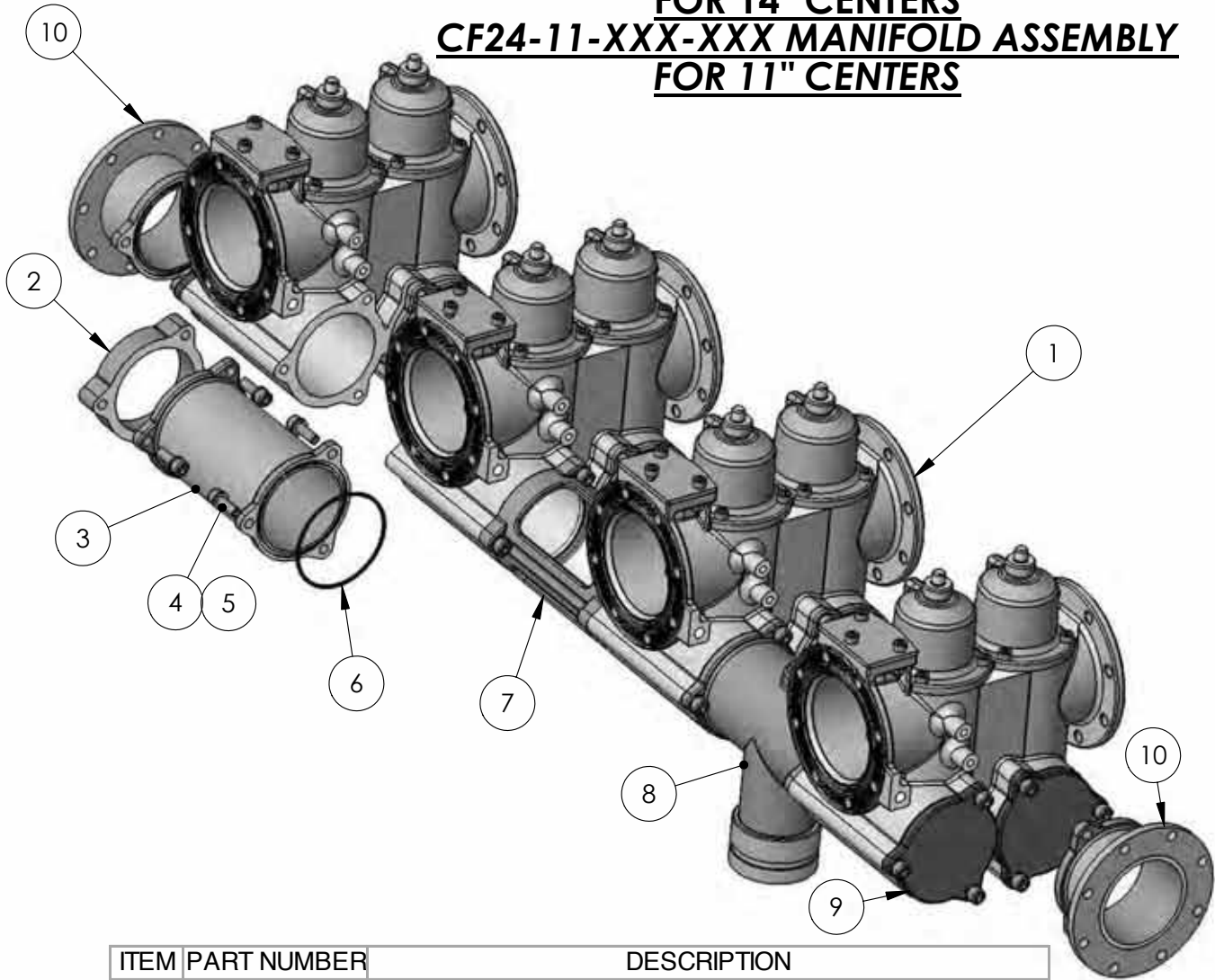


ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10751M	SPACER, 1" WIDE FOR COLLECTOR	1
2	10494M	O-RING, 102 X 3 NITRILE	1
3	10750M	SCREW, M10 X 1.5 X 55, ZINC PLATED	1
4	10740M	WASHER, M10 SPRING LOCK, ZINC PLATED	1

CIVACONTM

REV 1 29AUG05

**CF24-14-XXX-XXX MANIFOLD ASSEMBLY
FOR 14" CENTERS**
**CF24-11-XXX-XXX MANIFOLD ASSEMBLY
FOR 11" CENTERS**



ITEM	PART NUMBER	DESCRIPTION
1	10541M	DUAL MANIFOLD VALVE ASSEMBLY
2	10982M	SPACER, 1" WIDE FOR 12" CENTERS
3	10562M	COLLECTOR PIPE FOR 14" CENTERS
3	10561M	COLLECTOR PIPE FOR 11" CENTERS
4	10521M	SCREW, M10 X 30 ZINC PLATED (TYPICAL)
5	10740M	WASHER, M10 ZINC PLATED (TYPICAL)
6	10494M	O-RING, 102 X 3 NITRILE (TYPICAL)
7	10644M	COLLECTOR SIGHT GLASS FOR 14" CENTERS
7	10698M	COLLECTOR SIGHT GLASS FOR 11" CENTERS
8	10798M	COLLECTOR TEE FOR 14" CENTERS, 3" VICTAULIC
8	10697M	COLLECTOR TEE FOR 11" CENTERS, 3" VICTAULIC
9	10558M	END CAP, COLLECTOR
10	10983M	OUTLET ADAPTER, 4" TTMA (OPTIONAL)

CIVAICONTM

REV 1 29AUG05

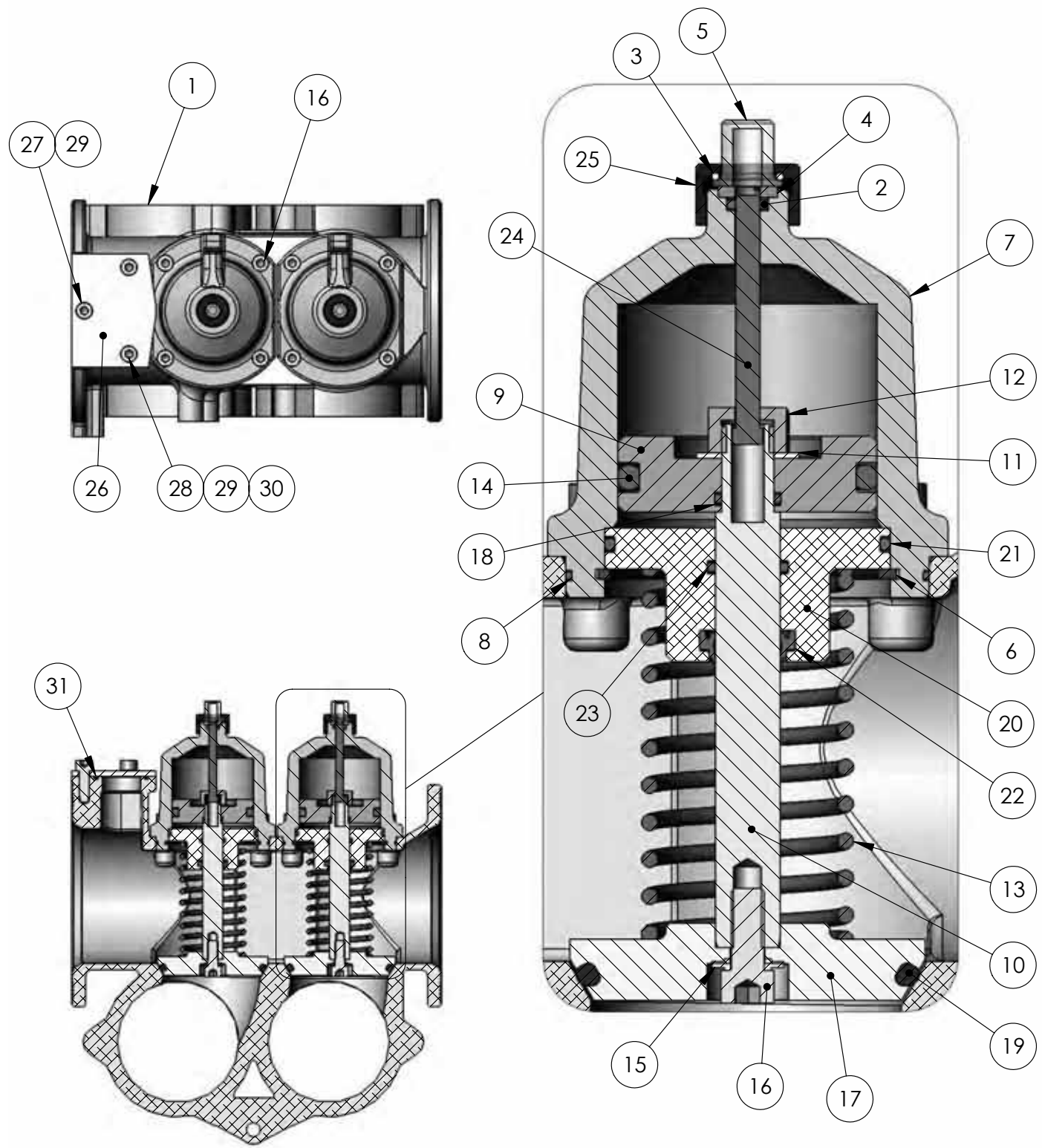
10541M DUAL MANIFOLD VALVE ASSEMBLY

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10386M	BODY, DOUBLE MANIFOLD, MACHINED	1
2	10241M	O-RING, 6 X 2.5	2
3	10776M	O-RING, -015	2
4	10209M	INDICATOR WASHER	2
5	10773M	SIGHT GLASS	2
6	10237M	RETAINING RING, 2-3/4" ZINC PLATED	2
7	10391M	CYLINDER, DUAL MANIFOLD, MACHINED	2
8	10267M	O-RING, 85 X 2 VITON	2
9	10203M	PISTON	2
10	10204M	MAIN SHAFT	2
11	10206M	PISTON WASHER	2
12	10205M	PISTON SHAFT NUT	2
13	10233M	SPRING, COMPRESSION	2
14	10476M	O-RING, 52 X 6	2
15	10232M	SEAL WASHER, 5/16"	2
16	10235M	SCREW, M8 X 20	10
17	10265M	POPPET	2
18	10240M	O-RING, 12.5 X 2.5	2
19	10783M	O-RING, -335 VITON	2
20	10202M	CYLINDER END PLATE	2
21	10243M	O-RING 63 X 3	2
22	10238M	WIPER SEAL, .625 ID, VITON GF	2
23	10520M	O-RING, 15.9 X 2.4	2
24	10207M	INDICATOR ROD	2
25	10772M	CARRIER, SIGHT GLASS	2
26	10537M	BLANKING PLATE, RETURN SPOUT	2
27	10276M	SCREW, M8 X 25	1
28	10277M	SCREW, M8 X 35	2
29	10263M	WASHER, M8 FLAT PLATED	3
30	10262M	NUT, M8 HEX PLATED	2
31	10269M	O-RING, 39 X 2.5	1

CIVACONTM

REV 1 1SEP05

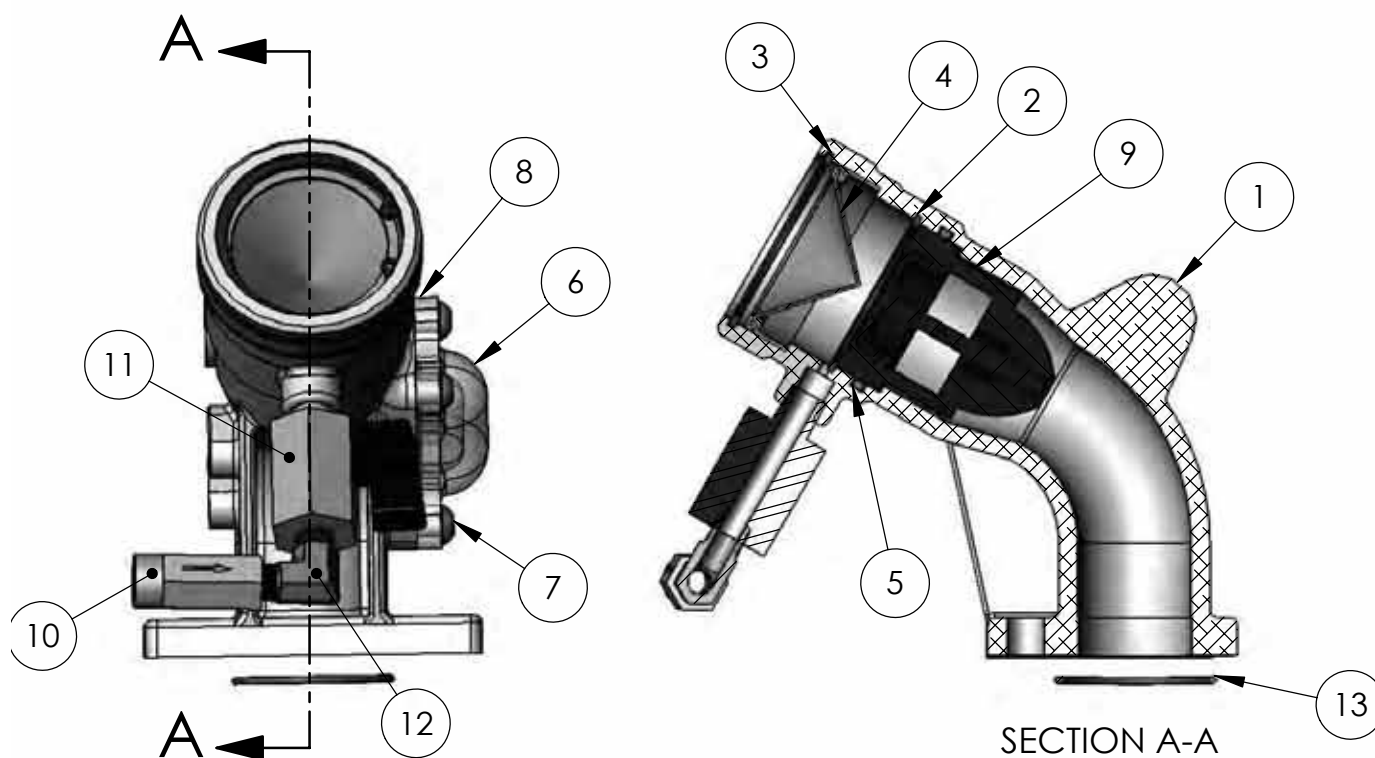
10541M DUAL MANIFOLD VALVE ASSEMBLY



CIVAICONTM

REV 1 1SEP05

10546M NPT RETURN SPOUT ASSEMBLY

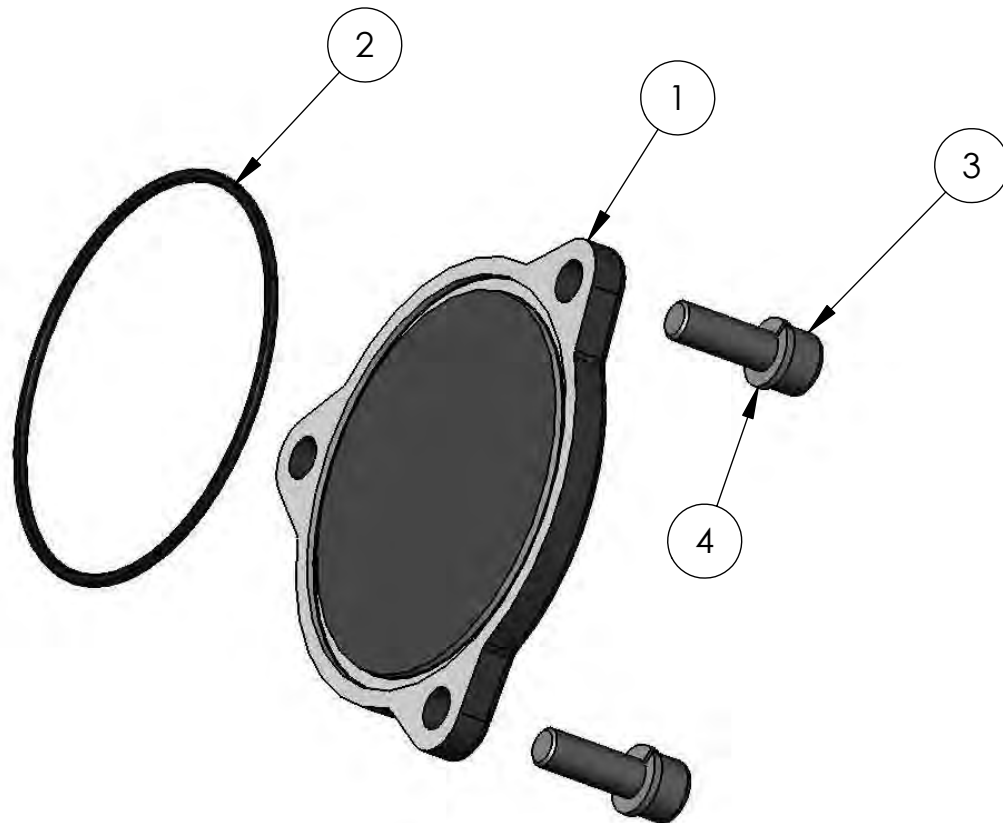


ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10539M	BODY, RETURN SPOUT NPT, MACH.	1
2	10249M	RETAINING RING, 1-3/4"	1
3	10250M	RETAINING RING, 2"	1
4	10251M	STRAINER, SS	1
5	10252M	O-RING, 44 X 3, NITRILE	1
6	C10316M	SIGHT GLASS	1
7	10512M	SCREW, M6 X 1 X 12	4
8	H51437M	O-RING, SIGHT GLASS, NITRILE	1
9	10733M	CHECK VALVE, RETURN SPOUT	1
10	10765M	CHECK VALVE, BLOW-DOWN	1
11	10766M	BALL VALVE, BLOW-DOWN	1
12	10767M	FITTING, BRASS ELBOW	1
13	10269M	O-RING, 39 X 2.5, NITRILE	1
-	10276M	SCREW, M8 X 1.25 X 25	1
-	10277M	SCREW, M8 X 1.25 X 35	2
-	10263M	WASHER, M8 FLAT	2
-	10262M	NUT, M8	2

CIVAconTM

REV 1 29AUG05

10558M END CAP ASSEMBLY

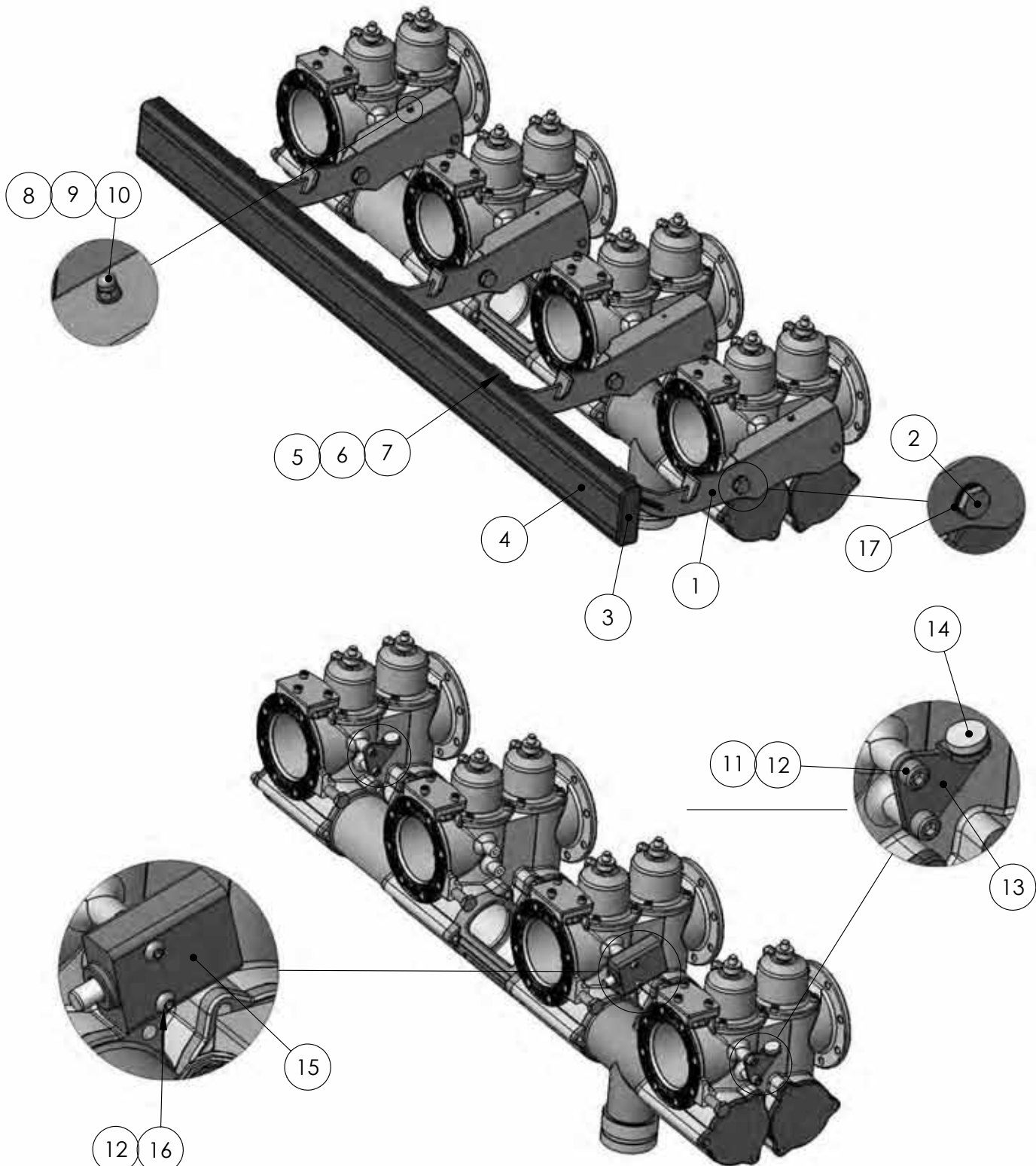


ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10506M	END CAP, MANIFOLD COLLECTOR	1
2	10494M	O-RING, 102 X 3 NITRILE	1
3	10521M	SCREW, M10 X 1.5 X 30, ZINC PLATED	3
4	10740M	WASHER, M10 SPRING LOCK, ZINC PLATED	3

civacon[™]

REV 1 29AUG05

10641M API GUARD BAR ASSEMBLY



(GUARD BAR NOT SHOWN IN THIS VIEW)

CIVAconTM

REV 1 29AUG05

10641M API GUARD BAR ASSEMBLY

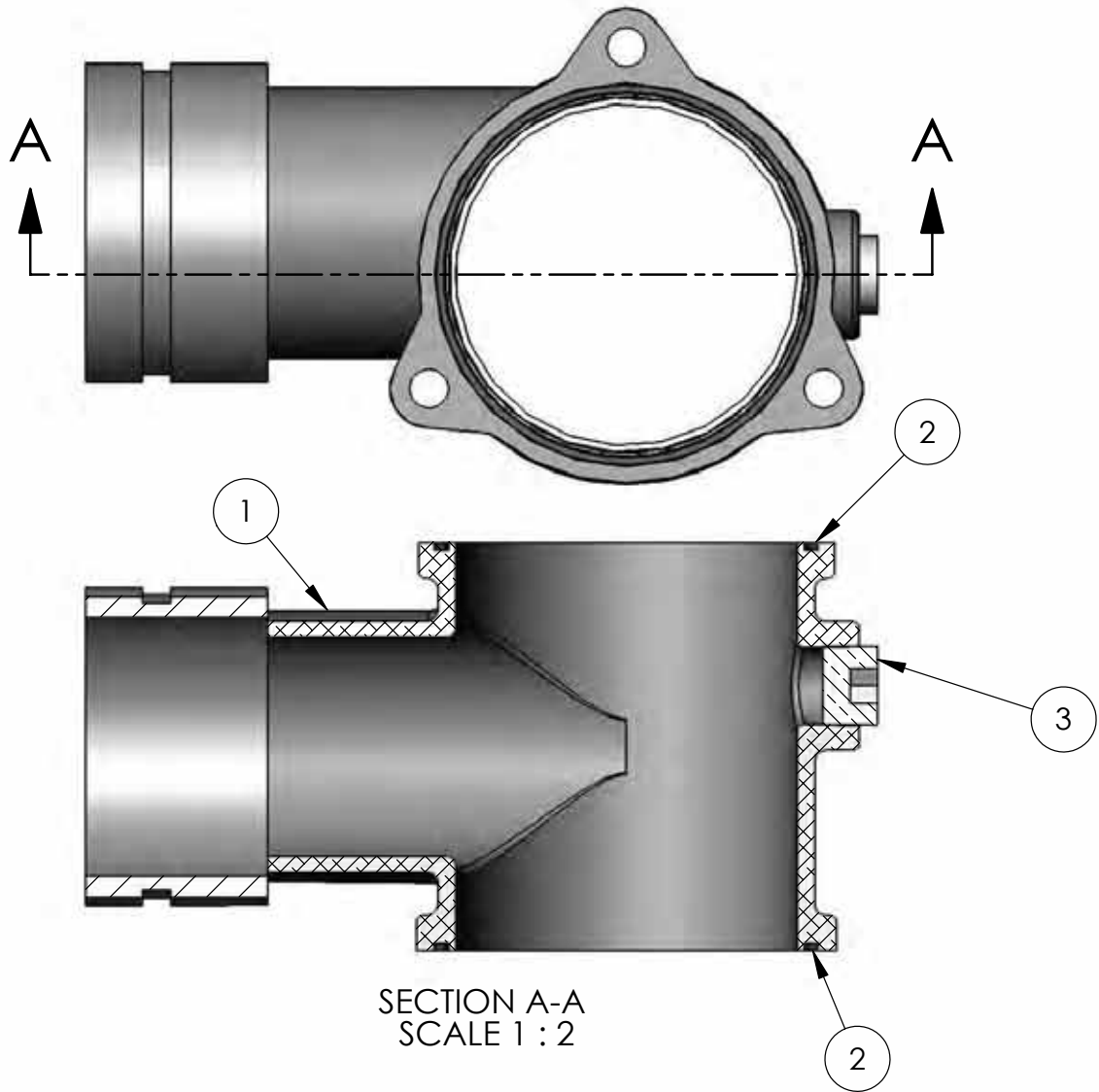
ITEM	PART NUMBER	DESCRIPTION
1	10542M	ASSEMBLY, API GUARD BAR ARM
2	10213M	SHOULDER BOLT, GUARD BAR ARM
3	10745M	CAP, GUARD BAR ARM
4	10643M-LENGTH	GUARD BAR EXTRUSION
5	1228	SCREW, 1/4-20 X 1" ZINC PLATED
6	1691	WASHER, 1/4 FLAT ZINC PLATED
7	10807M	NUT, 1/4-20 NYLON LOCKING
8	10274M	NUT, M5 ACORN, PLATED
9	10255M	WASHER, M5 PLATED
10	10258M	MAGNET BUTTON, PLATED
11	10264M	SCREW, M8 X 40 ZINC PLATED
12	10263M	WASHER, M8 FLAT PLATED
13	10534M	MAGNET BRACKET
14	10270M	MAGNET
15	10544M	GUARD BAR LOCK
16	10280M	SCREW, M8 X 45 ZINC PLATED
17	10245M	BUSHING, GUARD BAR ARM



REV 1 29AUG05

10798M COLLECTOR TEE ASSEMBLY
FOR 14" CENTERS with 3" VICTAULIC OUTLET

10697M COLLECTOR TEE ASSEMBLY
FOR 11" CENTERS with 3" VICTAULIC OUTLET

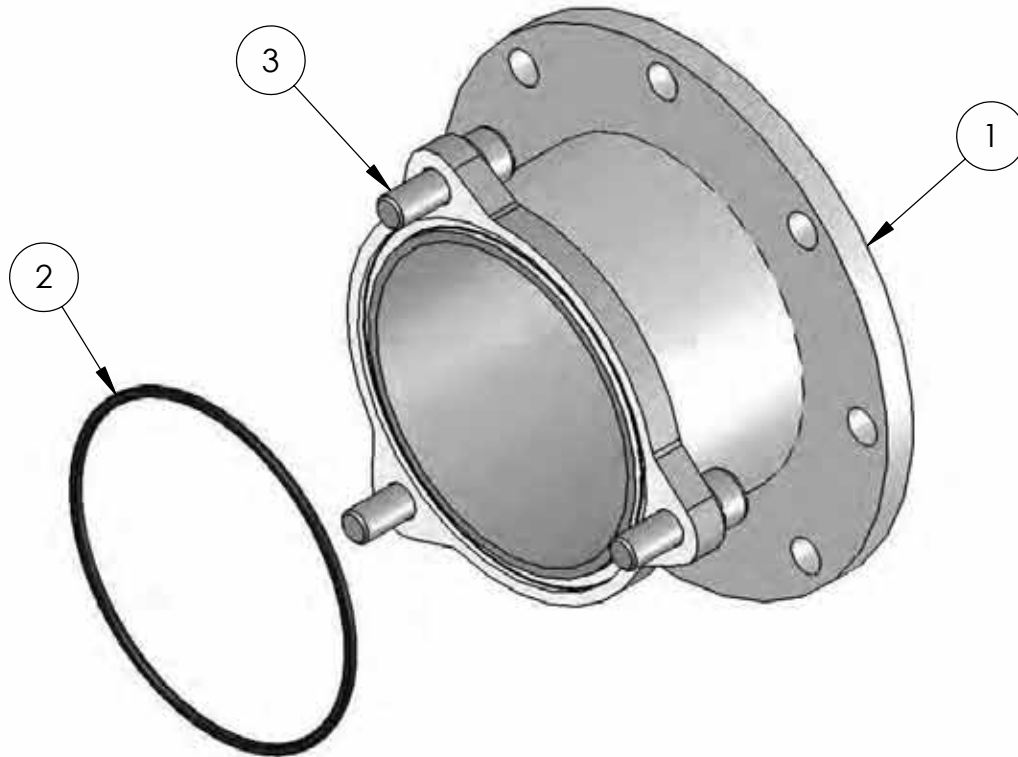


ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10797M	COLLECTOR TEE FOR 14" CENTERS	1
1	10755M	COLLECTOR TEE FOR 11" CENTERS	1
2	10494M	O-RING, 102 X3 VITON	2
3	9901	PLUG, 1/2 NPT BRASS	1
-	10576M	SCREW, M10 X 1. 5 X 35 LONG, ZINC PLATED	6
-	10740M	WASHER, M10 SPRING LOCK, ZINC PLATED	6

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REV 1 29AUG05

10983M 4" TTMA ADAPTER ASSEMBLY



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	10974M	4" TTMA FLANGE WELDMENT (2-3/4" LONG)	1
2	10494M	O-RING, 102 X 3 NITRILE	1
3	10521M	SCREW, M10 X 1.5 X 30, ZINC PLATED	3
4	10740M	WASHER, M10 SPRING LOCK, ZINC PLATED	3

civaconTM

REV 1 29AUG05

Air Distributor – Sequential Push-Pull Master Control

AIR SYSTEM ACCESSORIES

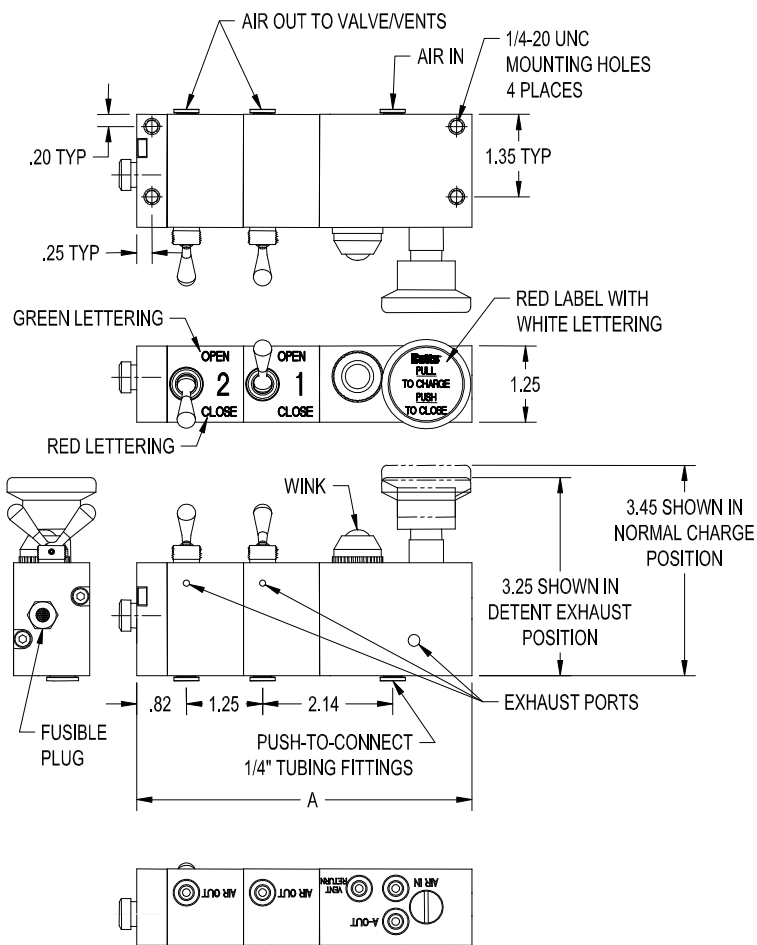
The Betts air distributor is designed as a corrosion resistant, modular, lightweight and compact air distribution system that can be used to control any sequential or non-sequential air operated valve or vent system.

The distributor body is made from anodized aluminum, with internal parts made from brass and stainless steel with nitrile seals. The individual valve toggle switches are easily accessible for replacement. Push-to-connect fittings are included to allow quick and easy installation with 1/4" air lines.

The air distributor includes a push-pull master control valve. The push-pull master control is a two position detent valve. Pull and hold the master control knob out to send air to the sequential vapor valves. Once the vapor valves have all opened, the air is returned to the master control and enters the "VENT RETURN" port.

A pressure wink changes from black to green to indicate air is back to the master control from the vents and the system is charged.

The individual compartment toggle valves are used to open and close the emergency valves. The master control valve can be used as a complete system shutdown. If the master control knob is depressed to the detent exhaust position, air is fully vented from the system shutting down all valves/vents connected to the toggle outlets.



Description	Part Number	A in. [mm]	Weight lb. [kg]	
1 Compartment	AD36098-1ALB	4.25 [108]	1.35 [.61]	Maximum Operating Pressure = 125 psi [9 bar] compressed air.
2 Compartment	AD36098-2ALB	5.50 [139.7]	1.68 [.77]	
3 Compartment	AD36098-3ALB	6.75 [171.5]	2.01 [.92]	Temperature Range = -20°F to 180°F [-29°C to 82°C]
4 Compartment	AD36098-4ALB	8.00 [203.2]	2.34 [1.07]	
5 Compartment	AD36098-5ALB	9.25 [235]	2.67 [1.22]	

- See maintenance manual MM-AD001 for more information.
- Mount with exhaust ports unobstructed.

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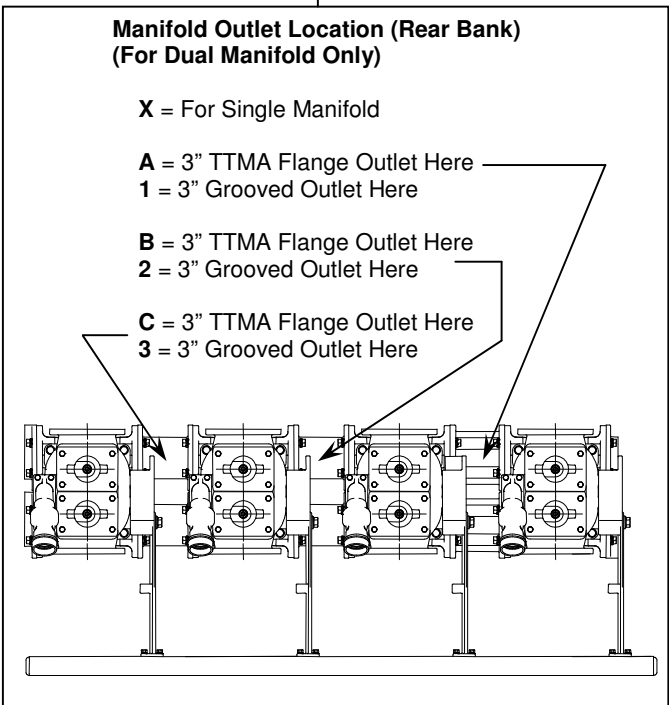
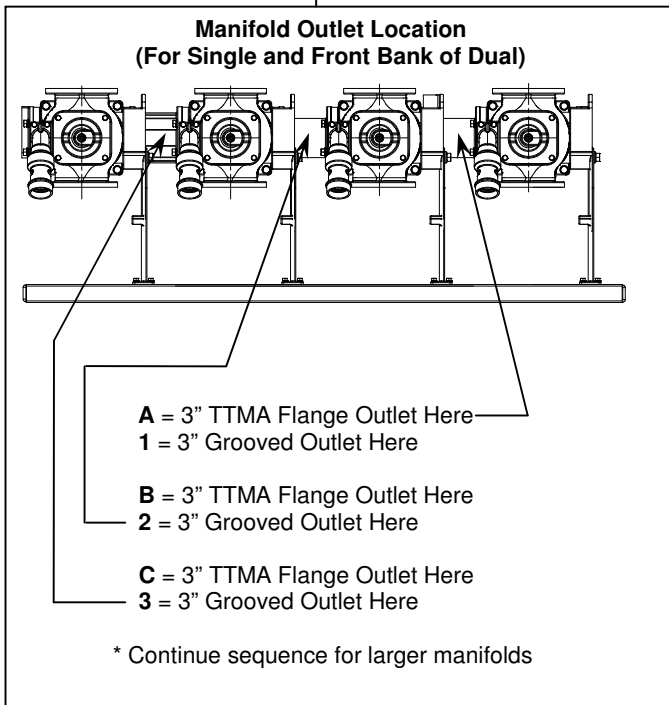
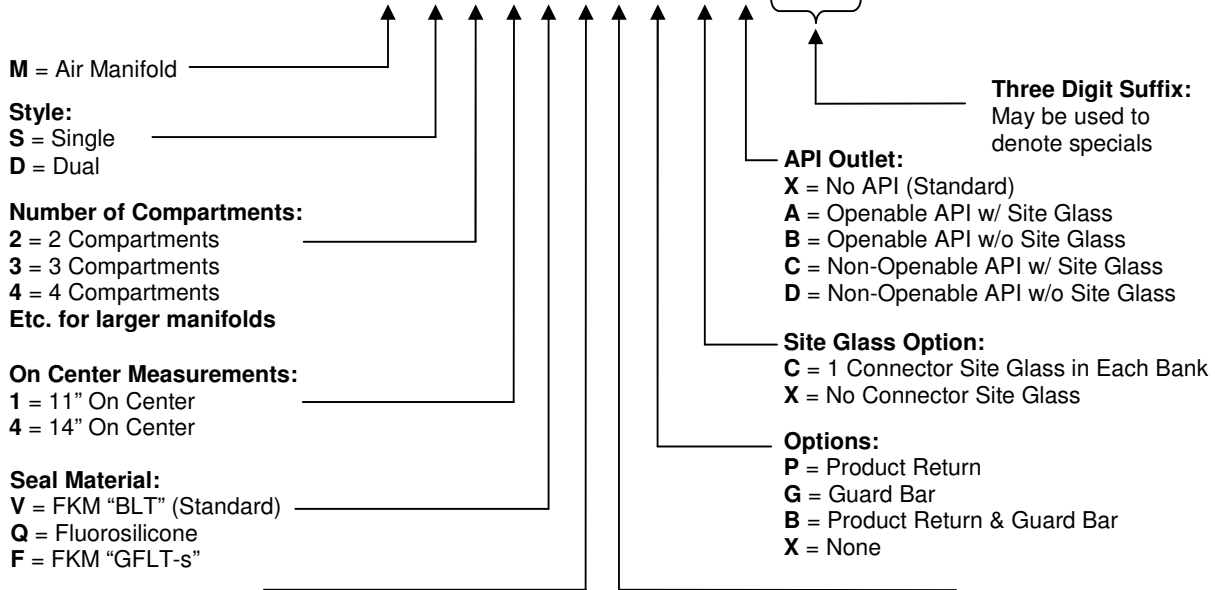
June 2009

BETTS Air Manifold

PART NUMBER CODES

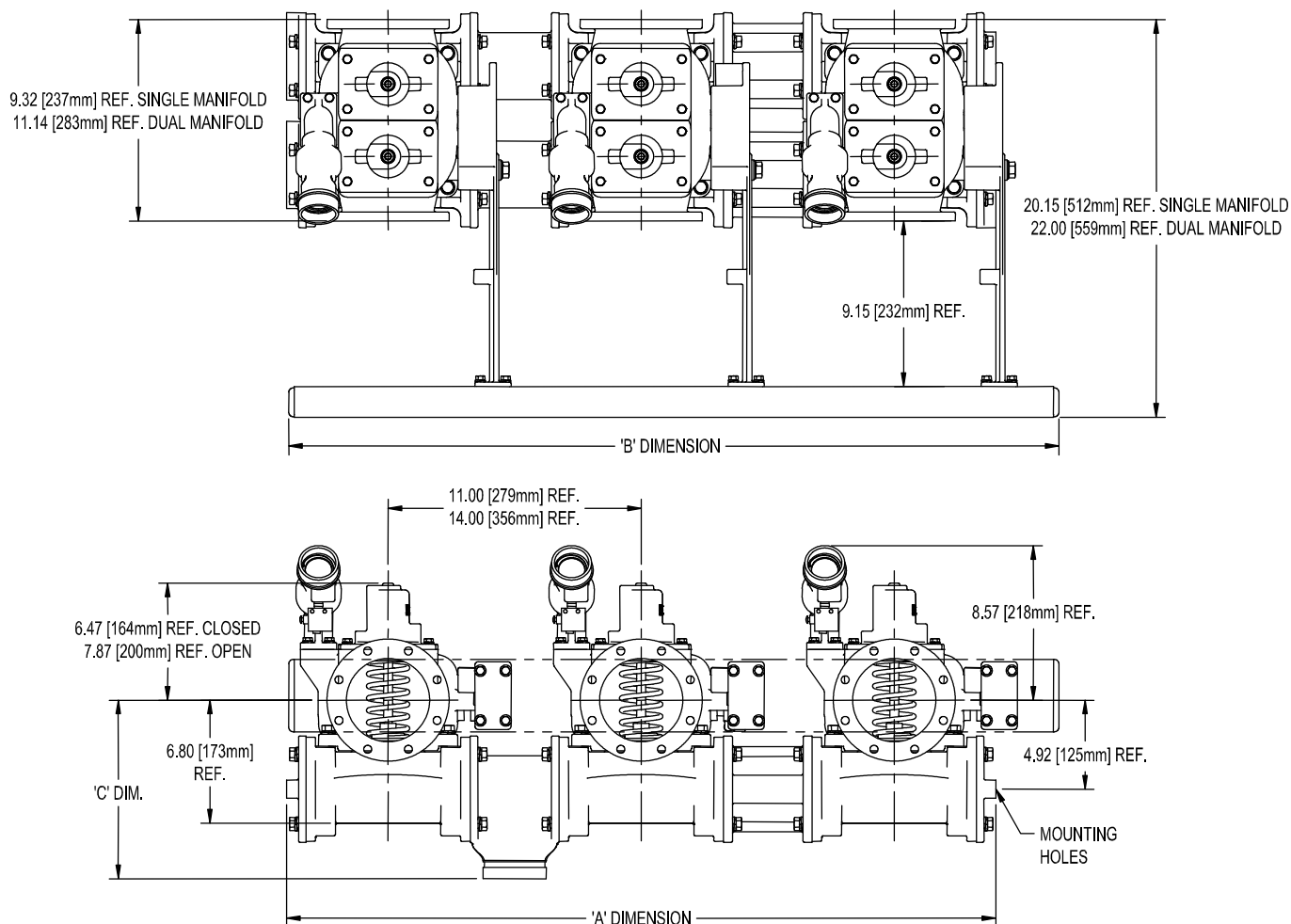
A representative part numbering system is used for air manifolds. Each letter or digit in the part number is indicative of a particular feature or option as shown in the chart. If a particular option is not covered by the standard numbering system, a three digit suffix will apply.

Sample Part #: MD34V12BCX001



Air Manifold

DIMENSIONS



DIMENSION / FEATURE	ON-CENTER DISTANCE	NUMBER OF COMPARTMENTS							
		2	3	4	5	6	7	8	
A	11" CENTERS	22.2 563 mm	33.2 843 mm	44.2 1123 mm	55.2 1410 mm	66.2 1682 mm	77.2 1961 mm	88.2 2240 mm	
	14" CENTERS	25.2 640 mm	39.2 996 mm	53.2 1351 mm	67.2 1707 mm	81.2 2063 mm	95.2 2418 mm	109.2 2774 mm	
B	11" CENTERS	22.6 574 mm	33.6 853 mm	44.6 1133 mm	55.6 1412 mm	66.6 1692 mm	77.6 1971 mm	88.6 2250 mm	
	14" CENTERS	28.6 726 mm	42.6 1082 mm	56.6 1438 mm	70.6 1793 mm	84.6 2148 mm	98.6 2504 mm	112.6 2860 mm	
C	11" CENTERS	10.4 [264 mm]							
	14" CENTERS	9.9 [252 mm]							

- Inlet/outlet flanges are 4" TTMA.
- Tee outlets are 3" Victaulic grooved or 3" TTMA flanged.
- Product return inlets (when equipped) are 2" male NPT.
- Each endplate has two 7/16-14 mounting holes located 2.75" apart horizontally, on center with each manifold bank, 4.92" below the main 4" TTMA flanges.

Air Manifold

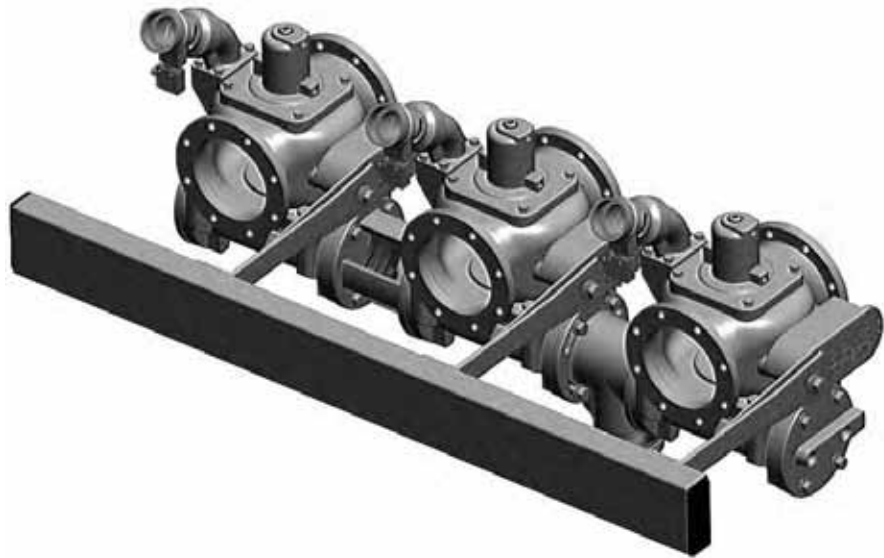
SINGLE BANK

Betts pneumatic manifold is an air-operated valve system designed to be used on tanker trucks hauling a variety of products that unload multiple compartments by a pump system. It can be specified to accommodate bottom-loading, gravity-unloading and product return.

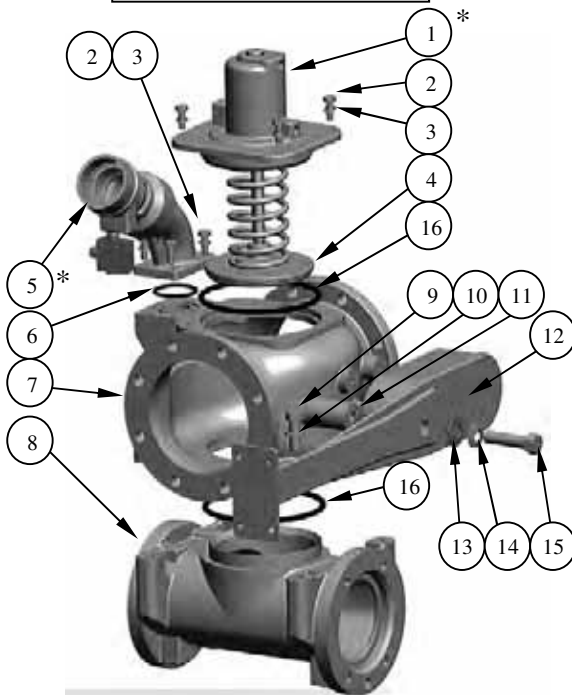
The single bank configuration is designed for tanks equipped with a single pump-off system. In this configuration, all products are unloaded through a common manifold outlet.

Construction is aluminum with stainless hardware. The inlet/outlet flanges are 4" TTMA, and bottom chamber outlet is 3". Product return threading is 2" NPT.

Available options include a guard bar for safety and security, product return nozzles, and clear acrylic site glass connectors. The manifold can be ordered with one to eight compartments, and the distance between the outlet flanges can be 14" or 11". Manifold outlets are available as 3" flanged or grooved. API bottom loading adapters can be ordered with assembly. FKM 'BLT' is the standard seal, with fluorosilicone or FKM 'GFLT-S' available as options.



**47098ALVB SINGLE
MANIFOLD ASSEMBLY**



ITEM	PART #	Req.	DESCRIPTION
1	36082ALVB	1	AIR CYLINDER ASSEM. - SINGLE MF
2	9Q5822	8	HH BOLT - 1/4"
3	9Q5844	8	1/4" SPRING LOCK WASHER
4	18134VB	1	POPPET O-RING - SINGLE MF
5	36083ALVB	1	PRODUCT RETURN ASSEMBLY
6	18832VB	1	PRODUCT RETURN O-RING
7	47081AL	1	UNLOADING BODY - SINGLE MF
8	47084AL	1	MANIFOLD BODY - SINGLE MF
9	9Q3004	4	HH BOLT - 7/16"
10	9Q8616	4	7/16" SPRING LOCK WASHER
11	9Z6192	1	GUARD BAR BEARING
12	47088AL	1	GUARD BAR SWING ARM
13	9Q8613	1	BRASS WASHER
14	9Q8614	1	BELLEVILLE WASHER
15	9Q5986	1	HH BOLT 1/2"
16	17944VB	2	MAIN BODY SEAL - SINGLE MF

SEAL MATERIAL	TEMPERATURE RANGE
FKM 'BLT'	-20 °F to 220 °F [-29 °C to 104 °C]
FLUOROSILICONE	-50 °F to 220 °F [-45 °C to 104 °C]
FKM 'GFLT-S'	-20 °F to 220 °F [-29 °C to 104 °C]

MAWP	25 PSI [172 kPa]
BURST PRESSURE	100 PSI [689 kPa]

CONFIGURATION	WEIGHT PER COMP.
STANDARD	24 lbs [10.9 kg]
W/ GUARD BAR	27.5 lbs [12.5 kg]
W/ PRODUCT RETURN	25.5 lbs [11.6 kg]
W/ GUARD BAR. & PROD. RETURN	29 lbs [13.2 kg]
W/ G.B., PROD. RET., & API VALVE	44 lbs [20 kg]

CAUTION: Manifold must be properly installed and maintained per maintenance manual MM-AM001. Failure to do so may result in damage to the tank and or manifold. Use only genuine Betts Industries Inc. replacement parts. Substitute parts can impair the proper function of this product.

Betts™ INDUSTRIES, INC. WARREN, PA.

March 2009

Air Manifold

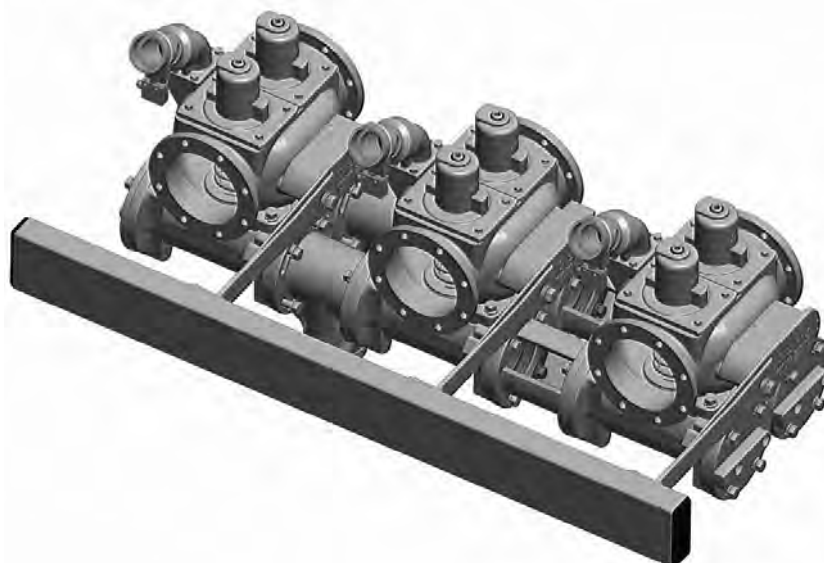
DUAL BANK

Betts pneumatic manifold is an air-operated valve system designed to be used on tanker trucks hauling a variety of products that unload multiple compartments by a pump system. It can be specified to accommodate bottom-loading, gravity-unloading and product return.

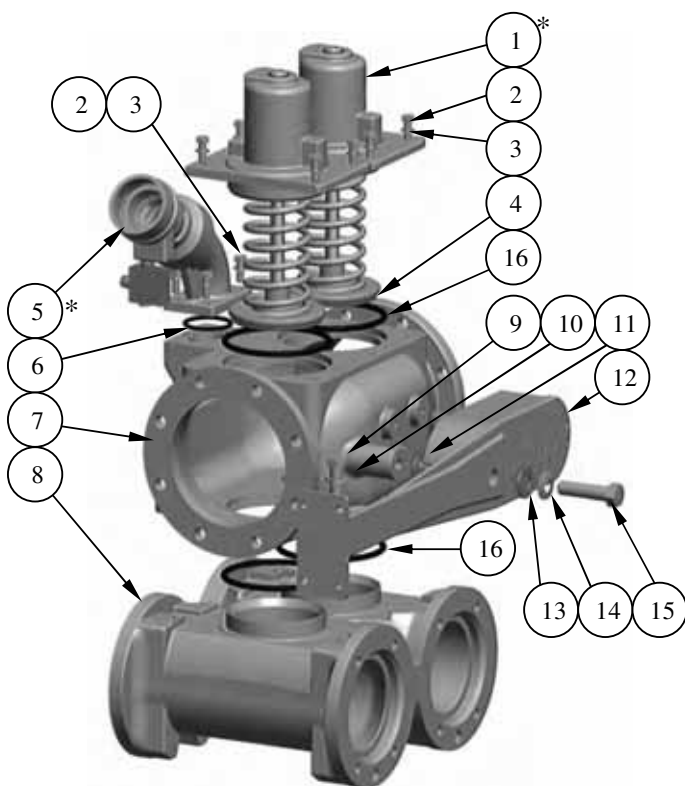
The dual bank configuration is designed for tanks equipped with two pump-off systems. This is common on tanks that haul both gasoline and diesel.

Construction is aluminum with stainless hardware. The inlet/outlet flanges are 4" TTMA, and bottom chamber outlet is 3". Product return threading is 2" NPT.

Same options available for dual manifold as specified for single manifold on section 6 page 1B.



47108ALVB DUAL MANIFOLD ASSEMBLY



ITEM	PART #	Req.	DESCRIPTION
1	36085ALVB	2	AIR CYL. ASSEM. - DUAL MF
2	9Q5822	12	HH BOLT - 1/4"
3	9Q5844	12	1/4" SPRING LOCK WASHER
4	19115VB	2	POPPET O-RING - DUAL MF
5	36083ALVB	1	PRODUCT RETURN ASSEMBLY
6	18832VB	1	PRODUCT RETURN O-RING
7	47079AL	1	UNLOADING BODY - DUAL MF
8	47086AL	1	MANIFOLD BODY - DUAL MF
9	9Q3004	4	HH BOLT - 7/16"
10	9Q8616	4	7/16" SPRING LOCK WASHER
11	9Z6192	1	GUARD BAR BEARING
12	47088AL	1	GUARD BAR SWING ARM
13	9Q8613	1	BRASS WASHER
14	9Q8614	1	BELLEVILLE WASHER
15	9Q5986	1	HH BOLT 1/2"
16	75553VB	4	MAIN BODY SEAL - DUAL MF

SEAL MATERIAL	TEMPERATURE RANGE
FKM 'BLT'	-20 °F to 220 °F [-29 °C to 104 °C]
FLUOROSILICONE	-50 °F to 220 °F [-45 °C to 104 °C]
FKM 'GFLT-S'	-20 °F to 220 °F [-29 °C to 104 °C]

MAWP	25 PSI [172 kPa]
BURST PRESSURE	100 PSI [689 kPa]

CONFIGURATION	WEIGHT PER COMP.
STANDARD	35 lbs [15.9 kg]
W/ GUARD BAR	38.5 lbs [17.5 kg]
W/ PRODUCT RETURN	36.5 lbs [16.6 kg]
W/ GUARD BAR. & PROD. RETURN	40 lbs [18.1 kg]
W/ G.B, PROD. RET., & API VALVE	55 lbs [25.0kg]

CAUTION: Manifold must be properly installed and maintained per maintenance manual MM-AM001. Failure to do so may result in damage to the tank and or manifold. Use only genuine Betts Industries Inc. replacement parts. Substitute parts can impair the proper function of this product.

Betts™ INDUSTRIES, INC. WARREN, PA.

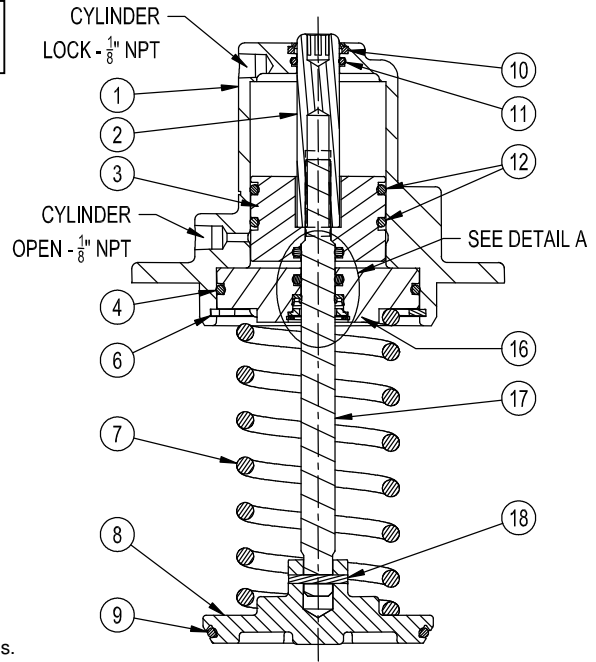
March 2009

Air Manifold

SUB-ASSEMBLIES

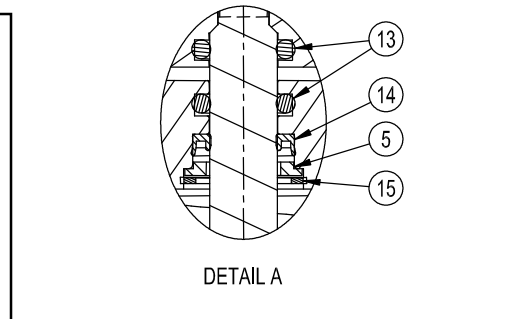
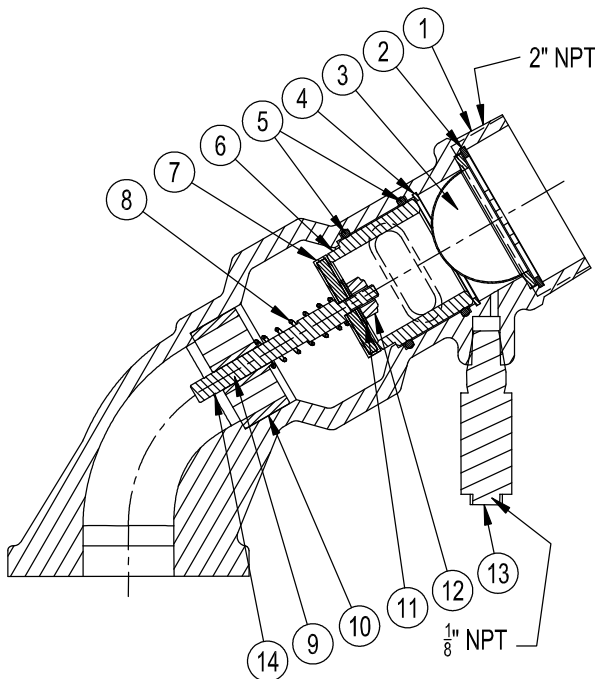
36082ALVB – AIR CYLINDER ASSEMBLY, SINGLE MANIFOLD
 36085ALVB – AIR CYLINDER ASSEMBLY, DUAL MANIFOLD

ITEM	MATERIAL	PART NO	DESCRIPTION
1A	ALUMINUM	36062AL	AIR CYLINDER - SINGLE MANIFOLD
1B	ALUMINUM	36064AL	AIR CYLINDER - DUAL MANIFOLD
2	ALUMINUM	75543AL	INDICATOR PIN
3	ALUMINUM	75516AL	PISTON
4	FKM 'BLT'	75527VB	INSERT O-RING
5	ALUMINUM	19395AL	U-SEAL INSERT
6	STEEL ZINC-PLATE	9Q4984	INSERT SNAP-RING
7	304 SS	75525SL	SPRING
8A	ALUMINUM	28434AL	O-RING HOLDER - SINGLE MANIFOLD
8B	ALUMINUM	28436AL	O-RING HOLDER - DUAL MANIFOLD
9A	FKM 'BLT'	18134VB	O-RING - SINGLE MANIFOLD
9B	FKM 'BLT'	19115VB	O-RING - DUAL MANIFOLD
10	POLYURETHANE	75531PY	INDICATOR SCRAPER
11	NITRILE	17946BN	INDICATOR O-RING
12	NITRILE	75529BN	PISTON O-RING
13	NITRILE	19509BN	STEM O-RING
14	PTFE W/ 316 SS	19510SSTF	U-SEAL
15	STEEL ZINC-PLATE	9Q4983	U-SEAL SNAP-RING
16	ALUMINUM	28441AL	INSERT
17	304 SS	28440SL	STEM
18	420 SS	9Q5920	ROLL-PIN



* Air cylinder assemblies also available with fluorosilicone (FS) and FKM 'GFLT-s' (VF) seals.
 ** Seal kit for 36082ALVB is 75585VB; seal kit for 36085ALVB is 75586VB. Seal kits replace items 4, 9, 10, 11, 12, 13, & 14. Kits also available in fluorosilicone and FKM 'GFLT-s'.

36083ALVB - PRODUCT RETURN ASSEMBLY



ITEM	PART NUMBER	MATERIAL	DESCRIPTION
1	36065AL	ALUMINUM	PRODUCT RETURN BODY
2	9Q4985	STEEL ZINC-PLATE	SCREEN SNAP RING
3	75533SL	304 SS	SCREEN
4	9Q4986	STEEL ZINC-PLATE	SITE-GLASS SNAP RING
5	75545VB	FKM 'BLT'	SITE-GLASS O-RING
6	75544AC	ACRYLIC	SITE-GLASS
7	75547SLVB	304 SS W/ FKM 'BLT'	CHECK VALVE POPPET
8	75548SL	304 SS	SPRING
9	75542SL	304 SS	SHAFT
10	75546AL	ALUMINUM	BEARING INSERT
11	3645NY	NYLON	NYLON WASHER
12	9Q8220	STEEL ZINC-PLATE	LOCK NUT
13	9Z6196	BRASS W/ FKM	AIR VALVE
14	9Z6194	STEEL ZINC-PLATE	CHECK VALVE SNAP RING

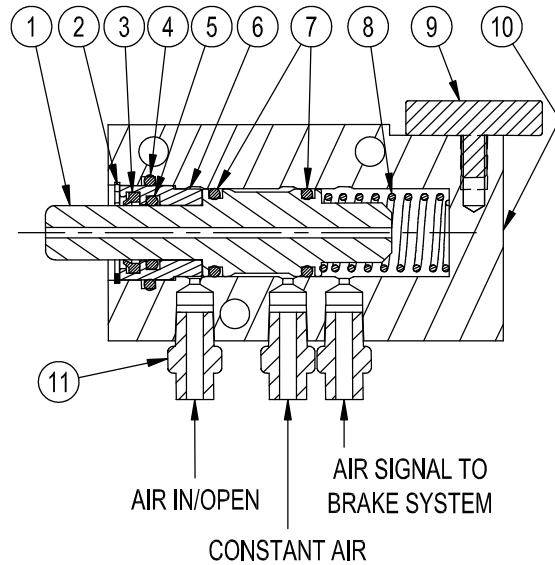
Product Return also available with fluorosilicone (FS) and FKM 'GFLT' (VF) seals.
 ** Seal kit for 36083ALVB is 75587VB. Kit replaces items 5, 6 & 7. Kit also available in fluorosilicone and FKM 'GFLT-s'.

Air Manifold

SUB-ASSEMBLIES

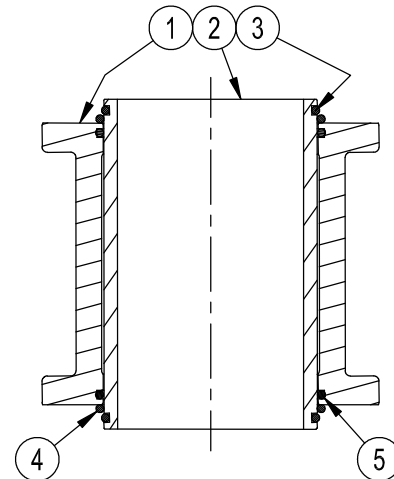
28456ALBN GUARD BAR AIR-CYLINDER ASSEMBLY

ITEM	PART NUMBER	MATERIAL	DESCRIPTION
1	28455SL	303 SS	PISTON
2	9Q4929	STEEL ZC-PLATE	SNAP-RING
3	75532PY	POLYURETHANE	PISTON WIPER
4	75317BN	NITRILE	INSERT O-RING
5	4118BN	NITRILE	STEM O-RING
6	75536AL	ALUMINUM	INSERT
7	17946BN	NITRILE	PISTON O-RINGS
8	75524SL	304 SS	SPRING
9	9Z6195	STEEL ZC-PLATE	MAGNET
10	28454AL	ALUMINUM	BODY
11	9Z6198	BRASS	FITTING



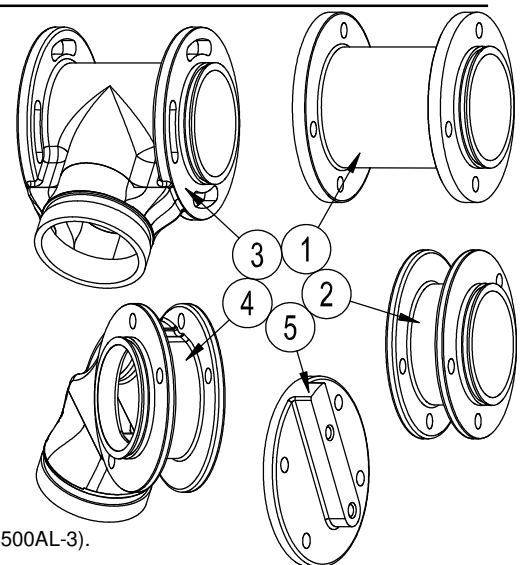
28480ALBN CONNECTOR SITE-GLASS – 14" CENTERS 28528ALBN CONNECTOR SITE-GLASS – 11" CENTERS

ITEM	PART NUMBER	MATERIAL	DESCRIPTION
1A	28478AL	ALUMINUM	SITE GLASS CONNECTOR - 14" CENTERS
1B	28508AL	ALUMINUM	SITE GLASS CONNECTOR - 11" CENTERS
2A	75551AC	ACRYLIC	SITE GLASS - 14" CENTERS
2B	75560AC	ACRYLIC	SITE GLASS - 11" CENTERS
3	18283VB	FKM 'BLT'	CONNECTOR BORE SEAL
4	18134VB	FKM 'BLT'	CONNECTOR FACE SEAL
5	18134BN	NITRILE	SITE GLASS BUSHING O-RING



CONNECTORS AND FASTENERS

ITEM	PART NUMBER	MATERIAL	DESCRIPTION
1	28427AL	ALUMINUM	STANDARD CONNECTOR – 14" CENTERS
2	28490AL	ALUMINUM	STANDARD CONNECTOR – 11" CENTERS
3	36067AL	ALUMINUM	TEE OUTLET CONNECTOR – 14" CENTERS
4	28492AL	ALUMINUM	TEE OUTLET CONNECTOR – 11" CENTERS
	28461AL-*	ALUMINUM	GUARD BAR – 14" CENTERS
	28500AL-*	ALUMINUM	GUARD BAR – 11" CENTERS
	9Q3004	304 SS	CONNECTOR BOLTS – 14" CENTERS
	9Q5984	304 SS	CONNECTOR STUDS – 11" CENTERS
	9Q8616	304 SS	CONNECTOR LOCK WASHERS
	9Q5985	304 SS	CONNECTOR NUT – 11" CENTERS
	9Q3006	304 SS	4" CONNECTOR BOLT – 11" CENTERS
5	75520AL	ALUMINUM	CONNECTOR END CAP

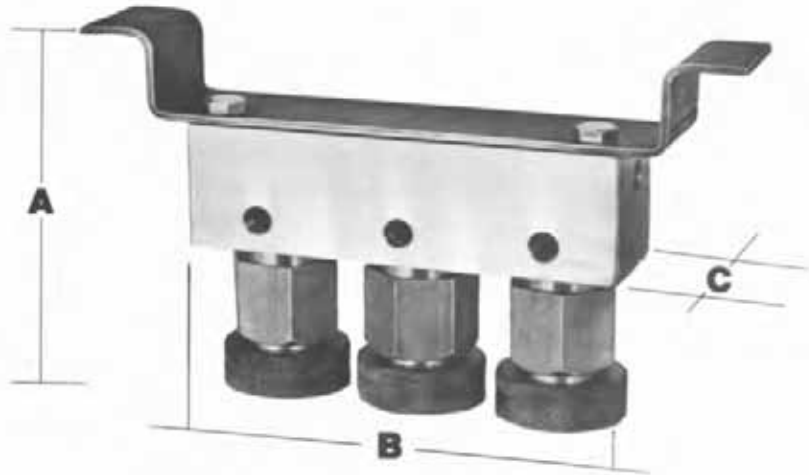


* For guard bars, specify number of compartments in part number (Example: 28461AL-4 or 28500AL-3).

AIR VALVE ACCESSORIES (Obsolete)

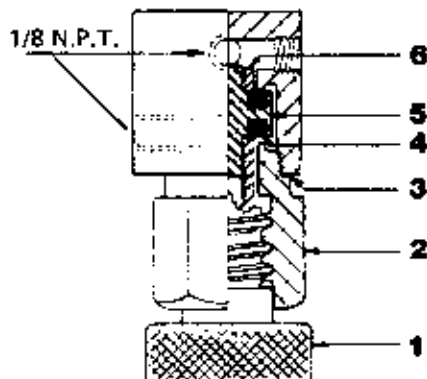
AIR DISTRIBUTOR

QUICK-ACTING ¼ TURN
EACH VALVE INDEPENDENT
COMPOSITION DISCS



BETTS Air Distributors have quick-acting ¼ turn valves. Each valve operates independently and has long lasting composition discs. Mounting bracket furnished on all distributors.

No. Comp.	Assembly No.	Weight	Material	Dimensions		
				A	B	C
1	AD25011-1ALB	1.50	Alum.	5-5/16	4"	1-3/4
2	AD25011-2ALB	1.80	Alum.	5-5/16	4"	1-3/4
3	AD25011-3ALB	2.69	Alum.	5-5/16	6"	1-3/4
4	AD25011-4ALB	3.63	Alum.	5-5/16	8"	1-3/4
5	AD25011-5ALB	4.50	Alum.	5-5/16	10"	1-3/4
6	AD25011-6ALB	5.40	Alum.	5-5/16	12"	1-3/4
7	AD25011-7ALB	6.30	Alum.	5-5/16	14"	1-3/4
8	AD25011-8ALB	7.40	Alum.	5-5/16	16"	1-3/4

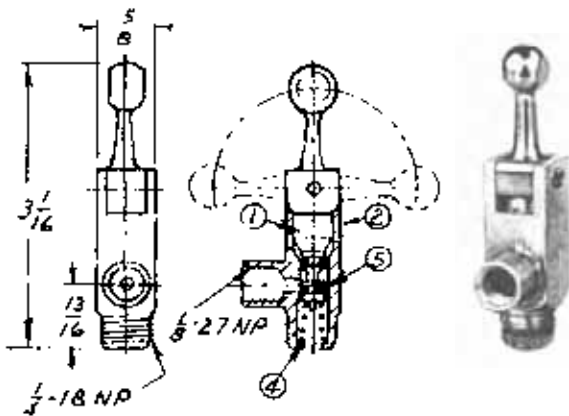


PARTS LIST				
No.	Description	Req.	Material	Part No.
1	Stem	1	Aluminum	AD15008AL
2	Upper Seat	1	Aluminum	AD15009AL
3	Gasket	1	Fiber	AD15518FB
4	Comp Disc.	2	Buna-N	AD15011BN
5	Disc Holder	1	Aluminum	AD15010AL
6	Disc Ret. Nut	1	Stainless	AD16868SL

NOTE: For complete replacement sub-assembly (Items 1-6) order Part No. AD17826ALBN.

MASTER CONTROL VALVES, DISTRIBUTOR VALVES AND MANIFOLDS

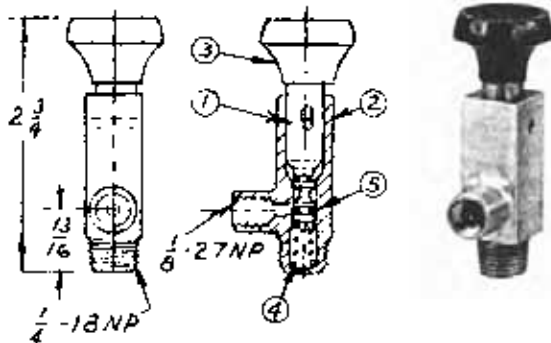
3-WAY AIR DISTRIBUTOR VALVE



3-WAY AIR DISTRIBUTOR VALVE

Description	Mat'l	Part No.	Wt. Lb.	
Distributor Valve	See Parts	20931	.21	
Parts List				
1	Stem	Brass	20931 A	.021
2	Body	Brass	20931 B	.134
3	Lever	Brass	20931 C	.05
4	Spring	Stainless	20931 D	.002
5	O-Ring	Buna-N	2-007	-

MASTER CONTROL AIR VALVE

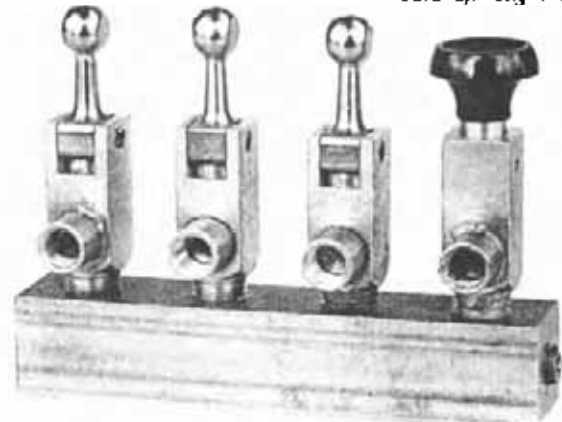
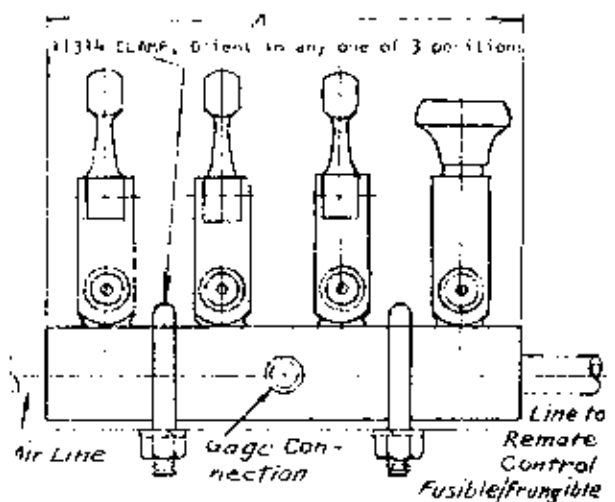


Spring Loaded to Closed Position

MASTER CONTROL AIR VALVE

Description	Mat'l	Part No.	Wt. Lb.	
Master Control	See Parts	20933	.21	
Parts List				
1	Stem	Brass	20933 A	.042
2	Body	Brass	20933 B	.154
3	Knob	Plastic	533	.014
4	Spring	Stainless		.002
5	O-Ring	Buna-N	2-007	-

MANIFOLD ASSEMBLY



MANIFOLD ASSEMBLY

Description	Mat'l	Part No.	Wt. Lb.	A
1 Compartment	Brass	20930 A	.92	2 1/2
2 Compartment	"	20930 B	1.56	3 1/2
3 Compartment	"	20930 C	2.15	5
4 Compartment	"	20930 D	2.75	6 1/2
5 Compartment	"	20930 E	3.36	7 1/2
6 Compartment	"	20930 F	3.95	8 3/4

For use with Emergency Valves and other Accessories

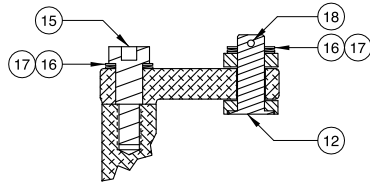
(Obsolete)



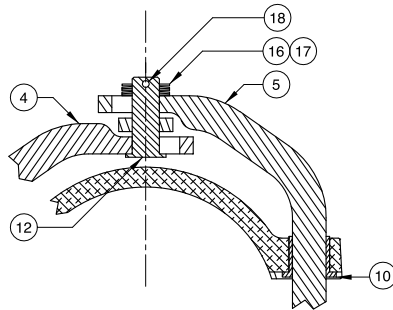
60TTC 4" Product Delivery Elbow

Replacement Parts

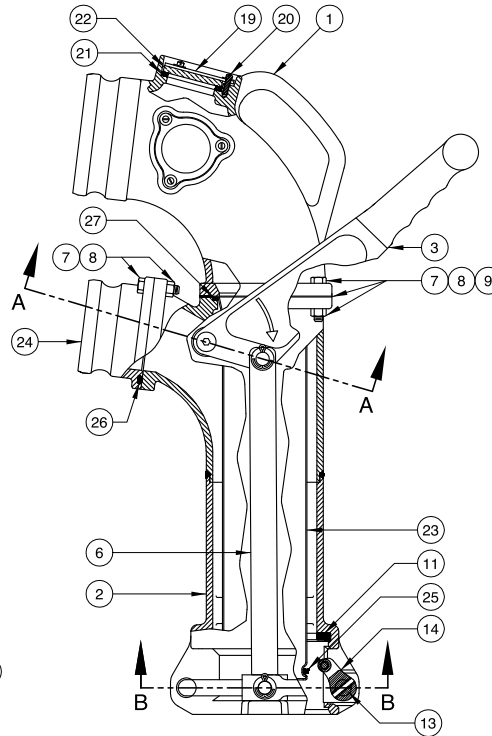
Rev. 2, May 2008



SECTION A-A



SECTION B-B



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E00269A	UPPER BODY ⁴	1
2	C10012	LOWER BODY	1
3	C10125M	HANDLE ³	1
4	C10143M	DRIVE STEM (INNER) ³	1
5	C10144M	DRIVE STEM (OUTER) ³	1
6	C10124M	ELBOW LINK (UPPER BODY) ³	1
7	H03114M	HEX CAP SCREW	8
8	H06151M	HEX NUT	8
9	H10039M	GASKET (NEOPRENE FIBER)	1
10	H10090M	FLANGE BEARING	4
11	H04137M	SEAT RING (BUNA)	1
12	H20373M	PIN (CLEVIS) ³	2
13	H20476M	PIN (SPRING) ^{2,3}	2
14	H20495M	YOKE ASSEMBLY ²	2
15	H51427M	SHOULDER SCREW ³	1
16	H03866M	FLAT WASHER ³	6
17	H10088M	SPRING WASHER ³	4
18	H51787M	COTTER PIN ³	2

ITEM	PART NUMBER	DESCRIPTION	QTY.
19	H04135M	RETAINING PLATE ^{1,4}	3
20	H52471M	SCREW ^{1,4}	9
21	H20010M	GASKET (BUNA) ^{1,4}	3
22	H20583M	WINDOW ^{1,4}	3
23	C03355M	TUBE	1
24	C10049M	VAPOR ADAPTOR	1
25	H05471M	LIP SEAL (VITON)	1
26	H20191M	O-RING (BUNA)	1
27	H10262M	GASKET (BUNA)	1

REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
E00269	UPPER BODY ASSY (W / WINDOWS)	N/A
60WRK	WINDOW REPLACEMENT KIT	N/A
60TTK	YOKE ASSEMBLY REPLACEMENT KIT	N/A
60CRK	HANDLE/LINKAGE REPLACEMENT KIT	N/A

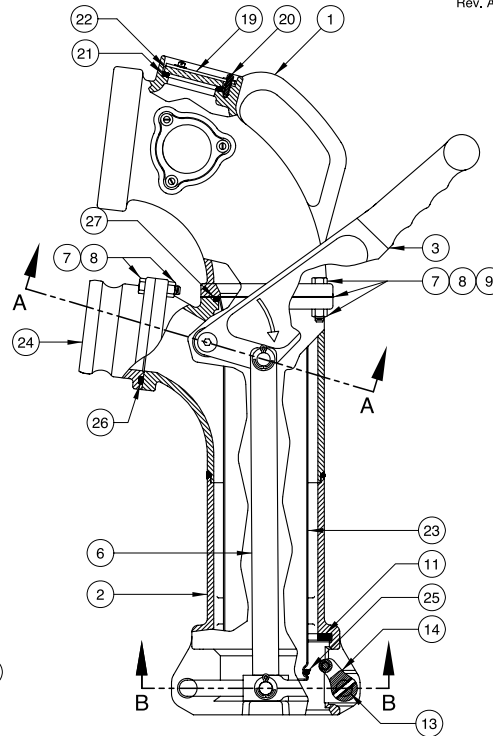
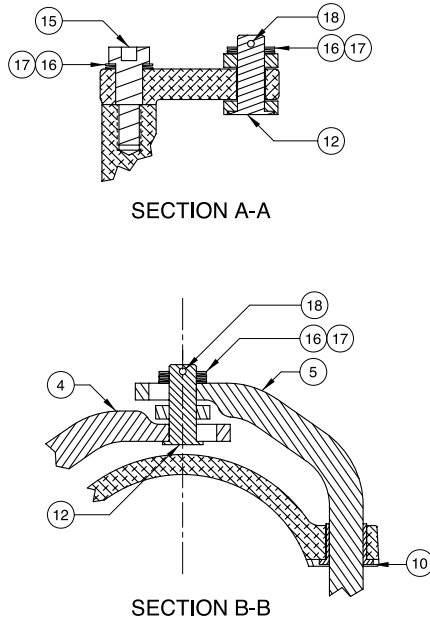
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60TTCF 4" Product Delivery Elbow

Replacement Parts

Rev. A, March 2006



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E00264A	UPPER BODY ⁴	1
2	C10012	LOWER BODY	1
3	C10125M	HANDLE ³	1
4	C10143M	DRIVE STEM (INNER) ³	1
5	C10144M	DRIVE STEM (OUTER) ³	1
6	C10124M	ELBOW LINK (UPPER BODY) ³	1
7	H03114M	HEX CAP SCREW	8
8	H06151M	HEX NUT	8
9	H10039M	GASKET (NEOPRENE FIBER)	1
10	H10090M	FLANGE BEARING	4
11	H04137M	SEAT RING (BUNA)	1
12	H20373M	PIN (CLEVIS) ³	2
13	H20476M	PIN (SPRING) ^{2,3}	2
14	H20495M	YOKE ASSEMBLY ²	2
15	H51427M	SHOULDER SCREW ³	1
16	H03866M	FLAT WASHER ³	6
17	H10088M	SPRING WASHER ³	4
18	H51787M	COTTER PIN ³	2

ITEM	PART NUMBER	DESCRIPTION	QTY.
19	H04135M	RETAINING PLATE ^{1,4}	3
20	H52471M	SCREW ^{1,4}	9
21	H20010M	GASKET (BUNA) ^{1,4}	3
22	H20583M	WINDOW ^{1,4}	3
23	C03355M	TUBE	1
24	C10049M	VAPOR ADAPTOR	1
25	H05471M	LIP SEAL (VITON)	1
26	H20191M	O-RING (BUNA)	1
27	H10262M	GASKET (BUNA)	1

REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
E00264	UPPER BODY ASSY (W / WINDOWS)	N/A
60WRK	WINDOW REPLACEMENT KIT	N/A
60TTK	YOKE ASSEMBLY REPLACEMENT KIT	N/A
60CRK	HANDLE/LINKAGE REPLACEMENT KIT	N/A

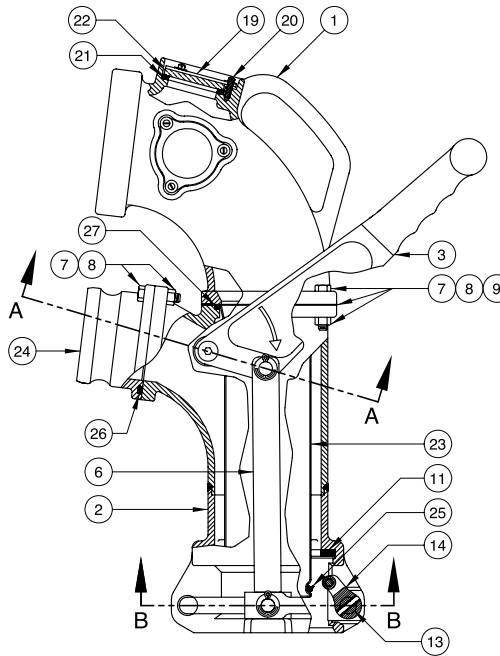
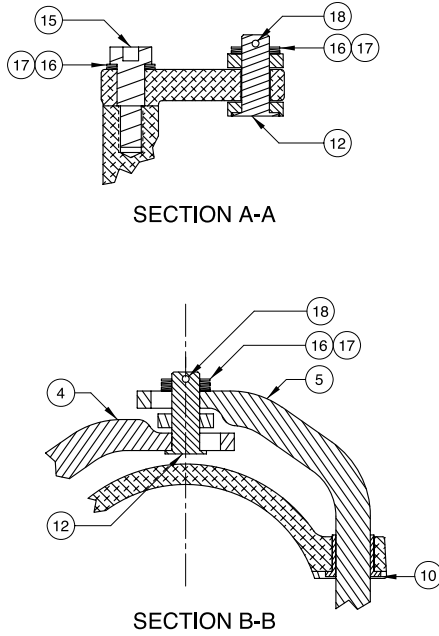
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60TTCS 4" Product Delivery Elbow

Replacement Parts

Rev. A, March 2006



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E00269A	UPPER BODY ^{1,4}	1
2	C10056	LOWER BODY	1
3	C10125M	HANDLE ³	1
4	C10143M	DRIVE STEM (INNER) ³	1
5	C10144M	DRIVE STEM (OUTER) ³	1
6	C10145M	ELBOW LINK (UPPER BODY) ³	1
7	H03114M	HEX CAP SCREW	8
8	H06151M	HEX NUT	8
9	H10039M	GASKET (NEOPRENE FIBER)	1
10	H10090M	FLANGE BEARING	4
11	H04137M	SEAT RING (BUNA)	1
12	H20373M	PIN (CLEVIS) ³	2
13	H20476M	PIN (SPRING) ^{2,3}	2
14	H20495M	YOKE ASSEMBLY ²	2
15	H51427M	SHOULDER SCREW ³	1
16	H03866M	FLAT WASHER ³	6
17	H10088M	SPRING WASHER ³	4
18	H51787M	COTTER PIN ³	2

ITEM	PART NUMBER	DESCRIPTION	QTY.
19	H04135M	RETAINING PLATE ^{1,4}	3
20	H52471M	SCREW ^{1,4}	9
21	H20010M	GASKET (BUNA) ^{1,4}	3
22	H20583M	WINDOW ^{1,4}	3
23	C10007M	TUBE	1
24	C10049M	VAPOR ADAPTOR	1
25	H05471M	LIP SEAL (VITON)	1
26	H20191M	O-RING (BUNA)	1
27	H10262M	GASKET (BUNA)	1

REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
E00269	UPPER BODY ASSY (W / WINDOWS)	N/A
60WRK	WINDOW REPLACEMENT KIT	N/A
60TTK	YOKE ASSEMBLY REPLACEMENT KIT	N/A
60CSRK	HANDLE/LINKAGE REPLACEMENT KIT	N/A

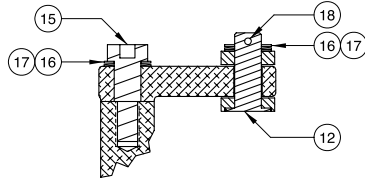
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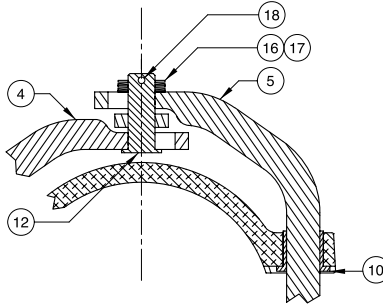
60TTCS 4" Product Delivery Elbow

Replacement Parts

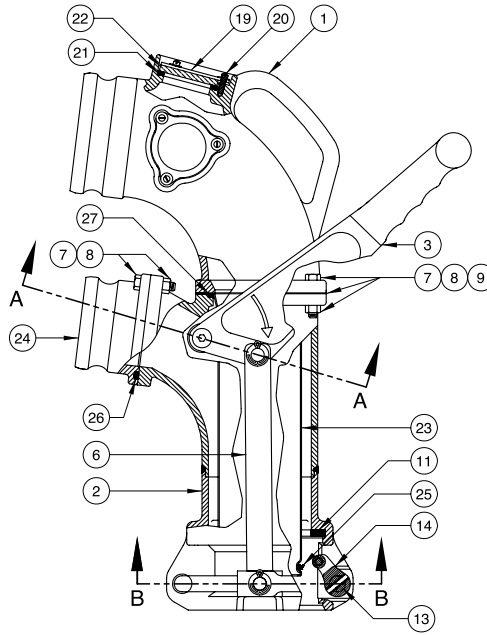
Rev. 0, January 2003



SECTION A-A



SECTION B-B



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E00266A	UPPER BODY ⁴	1
2	C10056	LOWER BODY	1
3	C10125M	HANDLE ³	1
4	C10143M	DRIVE STEM (INNER) ³	1
5	C10144M	DRIVE STEM (OUTER) ³	1
6	C10145M	ELBOW LINK (UPPER BODY) ³	1
7	H03114M	HEX CAP SCREW	8
8	H06151M	HEX NUT	8
9	H10039M	GASKET (NEOPRENE FIBER)	1
10	H10090M	FLANGE BEARING	4
11	H04137M	SEAT RING (BUNA)	1
12	H20373M	PIN (CLEVIS) ³	2
13	H20476M	PIN (SPRING) ^{2,3}	2
14	H20495M	YOKE ASSEMBLY ²	2
15	H51427M	SHOULDER SCREW ³	1
16	H03866M	FLAT WASHER ³	6
17	H10088M	SPRING WASHER ³	4
18	H51787M	COTTER PIN ³	2

ITEM	PART NUMBER	DESCRIPTION	QTY.
19	H04135M	RETAINING PLATE ^{1,4}	3
20	H52471M	SCREW ^{1,4}	9
21	H20010M	GASKET (BUNA) ^{1,4}	3
22	H20583M	WINDOW ^{1,4}	3
23	C10007M	TUBE	1
24	C10049M	VAPOR ADAPTOR	1
25	H05471M	LIP SEAL (VITON)	1
26	H20191M	O-RING (BUNA)	1
27	H10262M	GASKET (BUNA)	1

REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
E00266	UPPER BODY ASSY (W / WINDOWS)	N/A
60WRK	WINDOW REPLACEMENT KIT	N/A
60TTK	YOKE ASSEMBLY REPLACEMENT KIT	N/A
60CSRK	HANDLE/LINKAGE REPLACEMENT KIT	N/A

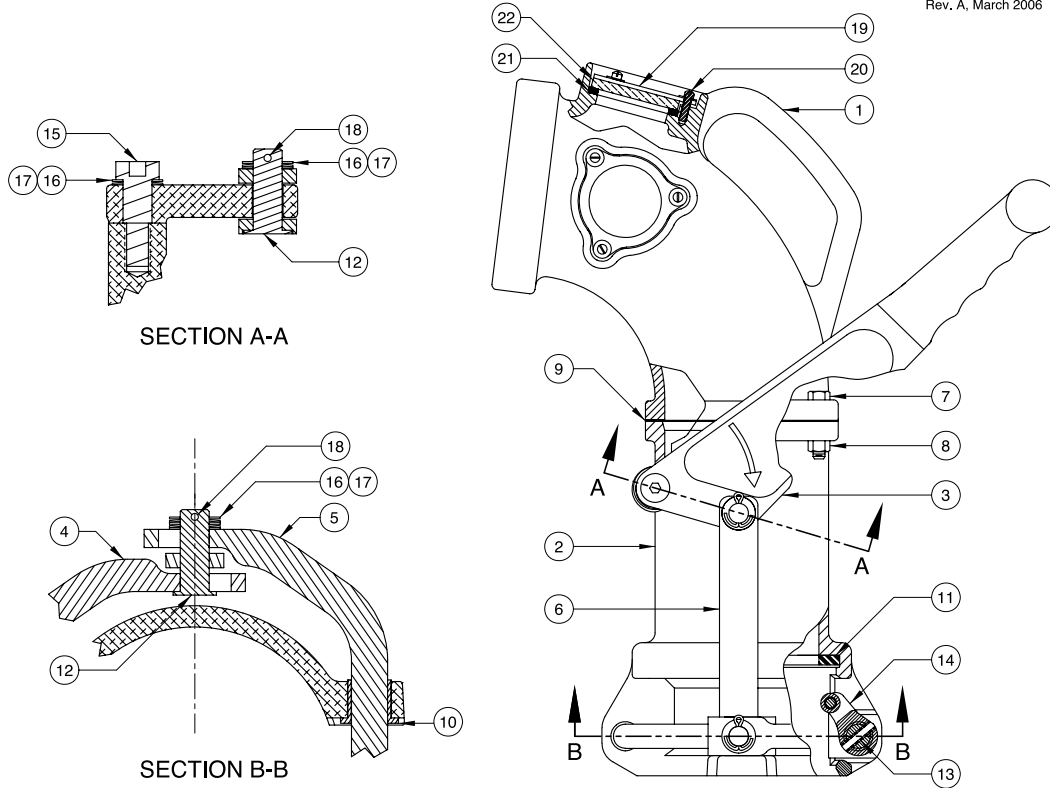
1 - Included in 60WRK, 2 - Included in 60TTK, 3 - Included in 60CSRK, 4 - Included in E00266



60TTF 4" Product Delivery Elbow

Replacement Parts

Rev. A, March 2006



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E00269A	UPPER BODY ⁴	1
2	E00259A	LOWER BODY	1
3	C10125M	HANDLE ³	1
4	C10143M	DRIVE STEM (INNER) ³	1
5	C10144M	DRIVE STEM (OUTER) ³	1
6	C10146M	ELBOW LINK (UPPER BODY) ³	1
7	H03114M	HEX CAP SCREW	4
8	H06151M	HEX NUT	4
9	H10039M	GASKET (NEOPRENE FIBER)	1
10	H10090M	FLANGE BEARING	4
11	H04137M	SEAT RING (BUNA)	1
12	H20373M	PIN (CLEVIS) ³	2
13	H20476M	PIN (SPRING) ^{2,3}	2
14	H20495M	YOKE ASSEMBLY ²	2
15	H51427M	SHOULDER SCREW ³	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
16	H03866M	FLAT WASHER ³	6
17	H10088M	SPRING WASHER ³	4
18	H51787M	COTTER PIN ³	2
19	H04135M	RETAINING PLATE ^{1,4}	3
20	H52471M	SCREW ^{1,2}	9
21	H20010M	GASKET (BUNA) ^{1,4}	3
22	H20583M	WINDOW ^{1,4}	3

REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
E00269	UPPER BODY ASSY (W / WINDOWS)	N/A
60WRK	WINDOW REPLACEMENT KIT	N/A
60TTK	YOKE ASSEMBLY REPLACEMENT KIT	N/A
60TTRK	HANDLE/LINKAGE REPLACEMENT KIT	N/A

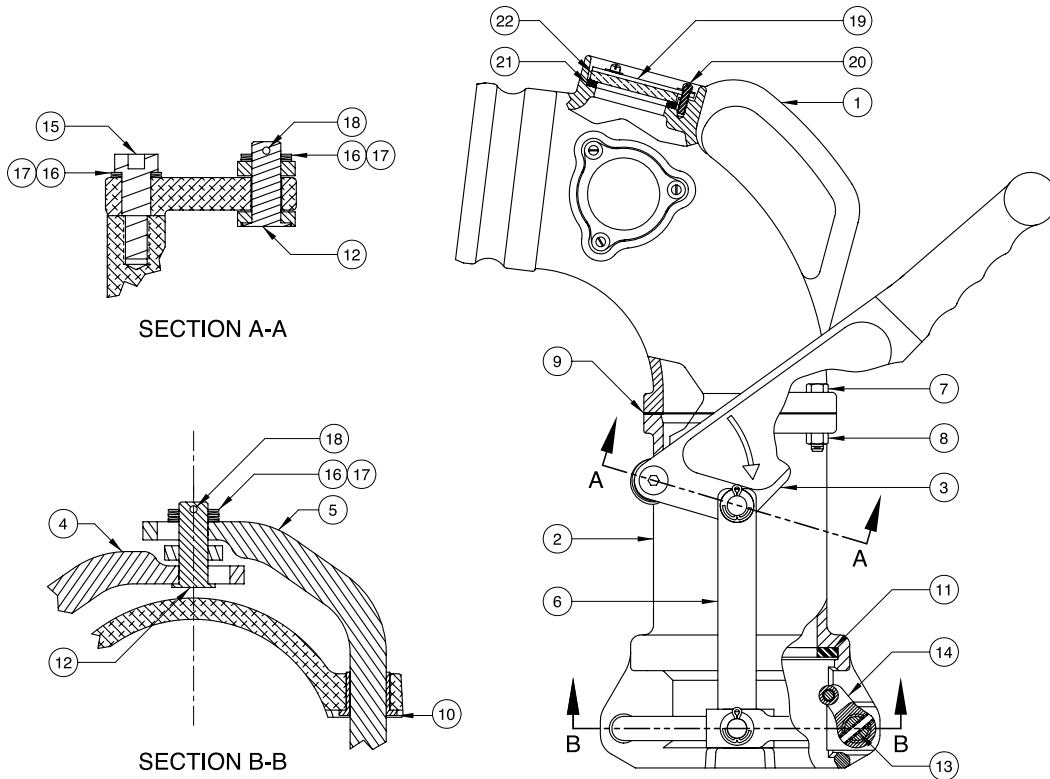
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60TT 4" Product Delivery Elbow

Replacement Parts

Rev. A, March 2006



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	E00266A	UPPER BODY ⁴	1
2	E00259A	LOWER BODY	1
3	C10125M	HANDLE ³	1
4	C10143M	DRIVE STEM (INNER) ³	1
5	C10144M	DRIVE STEM (OUTER) ³	1
6	C10146M	ELBOW LINK (UPPER BODY) ³	1
7	H03114M	HEX CAP SCREW	4
8	H06151M	HEX NUT	4
9	H10039M	GASKET (NEOPRENE FIBER)	1
10	H10090M	FLANGE BEARING	4
11	H04137M	SEAT RING (BUNA)	1
12	H20373M	PIN (CLEVIS) ³	2
13	H20476M	PIN (SPRING) ^{2,3}	2
14	H20495M	YOKE ASSEMBLY ²	2
15	H51427M	SHOULDER SCREW ³	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
16	H03866M	FLAT WASHER ³	6
17	H10088M	SPRING WASHER ³	4
18	H51787M	COTTER PIN ³	2
19	H04135M	RETAINING PLATE ^{1,4}	3
20	H52471M	SCREW ^{1,4}	9
21	H20010M	GASKET (BUNA) ^{1,4}	3
22	H20583M	WINDOW ^{1,4}	3

REPAIR KITS		
PART NUMBER	DESCRIPTION	QTY.
E00266	UPPER BODY ASSY (W / WINDOWS)	N/A
60WRK	WINDOW REPLACEMENT KIT	N/A
60TTK	YOKE ASSEMBLY REPLACEMENT KIT	N/A
60TRK	HANDLE/LINKAGE REPLACEMENT KIT	N/A

1 - Included in 60WRK, 2 - Included in 60TTK, 3 - Included in 60TRK, 4 - Included in E00254

New - 80TT - 80TTA & 80TTF Vapor Recovery Elbow

July 2010

This vapor recovery elbow replaces the 1711VL-AL30. All parts on the 80TT are either the same or inter-changeable with the 1711VL-AL30. **Note: The body of the 1711VL-AL30 is NO LONGER AVAILABLE.**

Product Specifications

Product Number:

80TT- (SHOWN) 3" Male Cam and Groove Adapter
 80TTA - 4" Male Cam and Groove Adapter
 80TTF - 3" NPT Female Adapter

Dimensions:

Height 16.57" (42.09 cm)
 Width 10.71" (27.20 cm)

Materials:

Aluminum, Stainless Steel, Buna N Gaskets

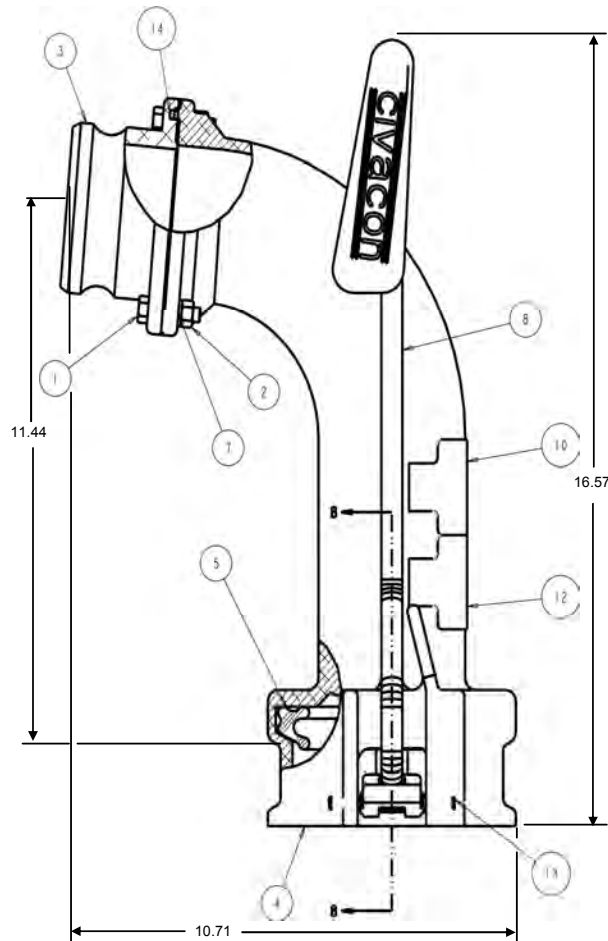
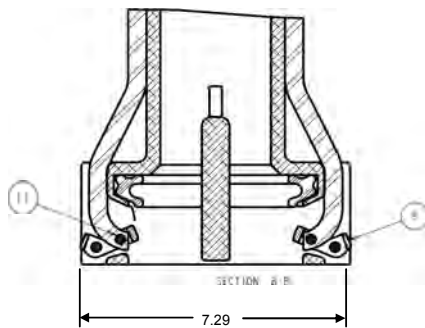
Weight:

12 lbs. (5.45 kg)

Temp Range:

-30° to +150° F (-34.4° to +65.5° C)

3" Male Cam and Groove Fitting Shown



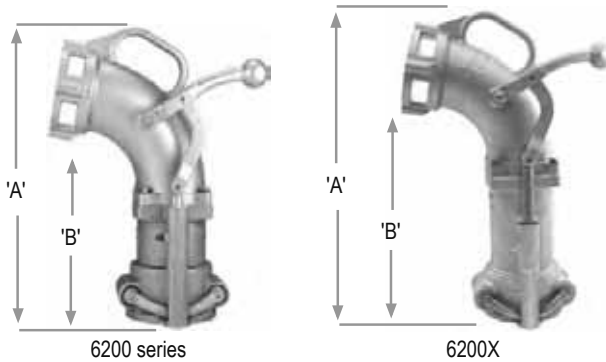
Item	Part #	Description	Item	Part #	Description
1	6112	Screw Hex Head 5/16" – 18 x 1" LG	8	C10078M	Latch Handle
2	7816	Nut hex Head 5/16 –18	9	C10079A	Cam Lever
3	11588	3" Male Adapter (Shown)	10	C10104M	Operation Label
3A	D10231A	4" Male Adapter (Not Shown - For 80TTA)	11	H20140M	Groove Pin ¼" Diameter
3B	12228	3" NPT Female Adapter (Not Shown - For 80TTF)	12	H20257M	Warning Label
4	12064	Body, Machined	13	H20304M	Groove Pin ¼ x 3 LG SS
5	12157	Gasket - Tank Connection	14	H52373M	Gasket - Hose Adapter
6	12226	Model Label (Not Shown)	15	H53001M	Label Screw (Not Shown)
7	10806M	Lock Washer MB			



Drop Elbows and Accessories

Drop elbows connect to the underground tank fill collar on one end and to the tanker drop hose at the other. They allow convenient hose connection and prevent hose damage due to kinks. Bayco brand elbows are built tough for consistent positive locking using solid bronze arms with modular construction for easy, low cost maintenance. Locking mechanisms, cam arms and bottom assemblies are interchangeable.

4" Drop Elbows



- comes with acrylic sight glass and Buna seals for sight glass
- bolt-on inlets for easy replacement
- solid bronze locking arms housed in polymer bushings provide the best bite of any elbows in the market
- lubrication fitting for locking stem, stem made of stainless steel
- modular quality cast aluminum construction
- field repair and upgrade are made simple due to modular design

Part #	Description	'A' Overall Height	'B' Ground Clearance
6200	elbow only, without inlet connection	17-3/4"	10-7/8"
6200A	elbow with 4" adapter inlet	17-3/4"	10-7/8"
6200AT ¹	elbow with 4" adapter inlet and anti-spill sleeve	17-3/4"	10-7/8"
6200B ¹	elbow with 3" coupler inlet	17-3/4"	10-7/8"
6200C	elbow with 3" adapter inlet	17-3/4"	10-7/8"
6200D	elbow with 4" coupler inlet	17-3/4"	10-7/8"
6200RH	elbow only, right side lever without inlet connection	17-3/4"	10-7/8"
6200RHA	elbow with right side lever with 4" adapter inlet	17-3/4"	10-7/8"
6200T	elbow with anti-spill sleeve without inlet connection	17-3/4"	10-7/8"
6200X	tall elbow only, without inlet connection	21"	13-3/4"
6200XA	tall elbow with 4" adapter inlet	21"	13-3/4"
6200XAT ¹	tall elbow with 4" adapter inlet and anti-spill sleeve	21"	13-3/4"
6200XB ¹	tall elbow with 3" coupler inlet	21"	13-3/4"
6200XC ¹	tall elbow with 3" adapter inlet	21"	13-3/4"
6200XD ¹	tall elbow with 4" coupler inlet	21"	13-3/4"
6200XT ¹	tall elbow with anti-spill sleeve without inlet connection	21"	13-3/4"

¹ factory direct

* **Note:** Please reference page 64 for repair kits and replacement parts.

Elbow Options

- **6000EXT:** Extension Kit (page 11) provides extra height for deep fill boxes, kit increases elbow ground clearance by approximately 3". Can be used with all standard height 6000/6200/6500 series drop elbows.
- **6200SLK:** Safety Latch Kit (page 11) locks the side lever of the 6200/6400 series elbows.
- **6200-17:** for standard height 6000/6200/6500 series elbows with anti spill sleeve kit (page 11)
- **6200X-17:** Anti Spill Sleeve Kit for tall 6200/6500 series elbows (page 11)
- **6000F:** Inline strainer for drop elbows

Elbow Inlets

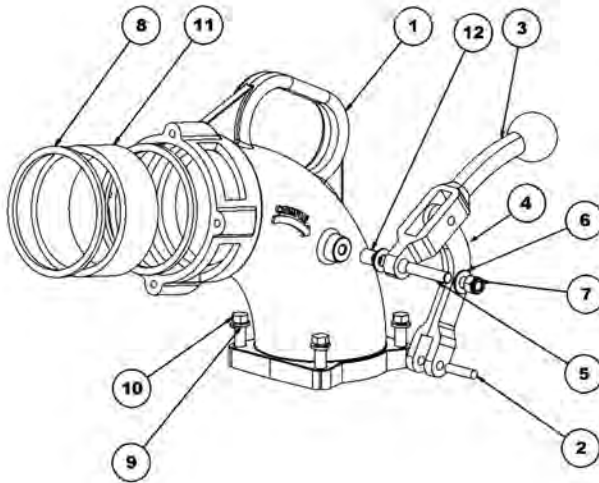


- for 6000, 6000AS, 6200, 6500 elbows
- bolt-on easy to install/replace
- aluminum bodies with bronze cam arms
- comes with stainless steel cap screws (4)

Part #	Description
6000-14	4" coupler inlet
6000-15	3" coupler inlet
6000-16	3" adapter inlet
6000-17	4" adapter inlet
6000-20	4" FNPT inlet
VR6000-6	3" adapter outlet for vapor elbows

Top Side Lever Elbow

Fits 6200 Elbow Only



Bill of Materials

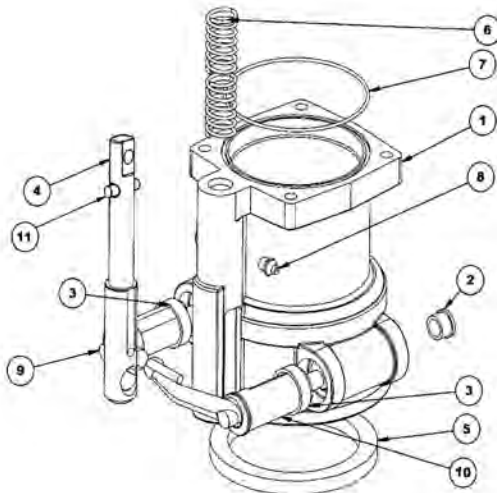
Item #	Description	Part #	Qty
1	body	6200-1	1
2	pin	PIN5/16X 1 1/4-P	2
3	handle	use kit 6200-15ASSM	1
4	handle linkage	use kit 6200-15ASSM	1
5	stud	use kit 6200SHK	1
6	washer	use kit 6200SHK	2
7	hex nut	use kit 6200SHK	1
8A	Baylast™ gasket	4433	2
8B	Viton™ gasket (optional)	4426	2
9	lock washer	use kit 6000EHK	4
10	bolt	use kit 6000EHK	4
11	sight glass	use kit 6200SGK	1
12	bushing	use kit 6200SHK	1

Repair Kits

Part #	Description	Includes Item #
6200SGK	replacement sight glass and Baylast™ seals	8, 11
6000EHK	replacement bolts and washers	9, 10
6200-15ASSM	replacement handle, lever and pin	2, 3, 4
6200SHK	replacement pivot stud, bushing, washer and lock nut	5, 6, 7, 12

Bottom Unit, for Side Lever Elbows

Fits 6200, 6400 and 6500 Standard and Tall Elbows



Bill of Materials

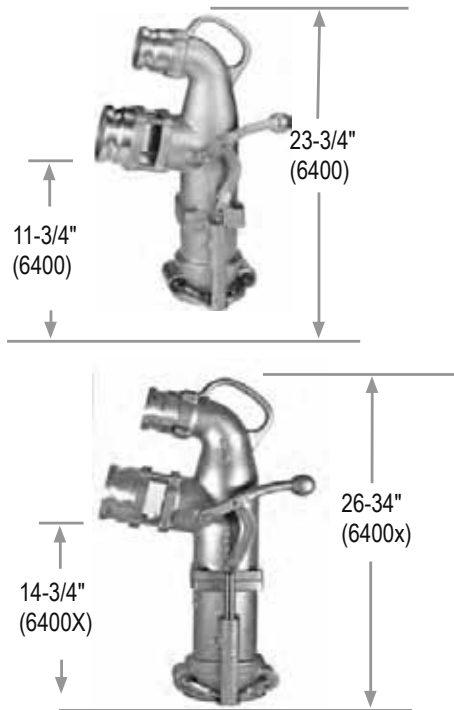
Item #	Description	Part #	Qty
1	body	6000-2	1
2	small bushing	use kit 6200BK	2
3	large bushing	use kit 6200BK	2
4A	handle stem (standard)	6200-7	1
4B	handle stem (tall)	6200-7X	1
5	main gasket	6000-9	1
6	spring	112012	1
7	O-ring	AS156	1
8	grease nipple	NIPPLE/1	1
9	right arm	use kit 6200ARK	1
10	left arm	use kit 6200ARK	1
11	pin	PIN5/16X 1 1/4-P	1

Repair Kits

Part #	Description	Includes Item #
6230	complete standard replacement bottom unit	all
6230X	complete tall replacement bottom unit	all
6200ARK	replacement L and R arms, main gasket, O-rings, small and large bushings	2, 3, 5, 7, 9, 10
6200BK	replacement small and large bushings	2, 3

Coaxial Elbows

- for single point vapor recovery only
- 3" male vapor outlet (top)
- Comes assembled with choice of 3" or 4" adapter or coupler inlets. **Note:** 6400 series coaxial inlets will not fit our other elbow series, please see page 8 for inlets.
- quality cast aluminum construction with solid bronze arms
- bolt-on inlets/outlets for easy, fast replacement
- acrylic sight glass with Buna seals
- 6400EXT Kit (page 11) raises elbow clearance an additional 3" to approximately 14¾" when extra height for deep fill boxes is required.



6400 Series Coaxial Elbow Inlets

Part #	Description
6400	elbow with 4" adapter inlet
6400F	elbow with 4" coupler inlet
6400L	elbow with 4" adapter inlet and safety latch
6400FL ¹	elbow with 4" coupler inlet and safety latch
6430	elbow with 3" adapter inlet
6430L ¹	elbow with 3" adapter inlet and safety latch
6430F ¹	elbow with 3" coupler inlet
6430FL ¹	elbow with 3" coupler inlet and safety latch
6400X	tall elbow with 4" adapter inlet
6400XF	tall elbow with 4" coupler inlet
6400XFL ¹	tall elbow with 4" coupler inlet and safety latch
6400XL ¹	tall elbow with 4" adapter inlet and safety latch
6430X ¹	tall elbow with 3" adapter inlet
6430XF ¹	tall elbow with 3" coupler inlet
6000-14C	4" coupler inlet, only for 6400 series elbow
6000-15C	3" coupler inlet, only for 6400 series elbow
6000-16C	3" adapter inlet, only for 6400 series elbow
6000-17C	4" adapter inlet, only for 6400 series elbow

* **Note:** Please reference page 66 for repair kits and replacement parts.

¹ factory direct

Side Seal Drop Elbows

- for use with special 4" side seal style fill collars only
- modular, easy repair, bolt-on construction
- comes with acrylic sight glass, Buna seals and bronze arms
- choice of 3" or 4" inlets
- available with anti-spill sleeve (locking ring is available)



Part #	Description
6000AS	6000AS without inlet connection
6000ASA	6000AS with 4" adapter inlet
6000ASAT ¹	6000AS with 4" adapter inlet and anti-spill tube
6000ASB ¹	6000AS with 3" coupler inlet
6000ASC ¹	6000AS with 3" adapter inlet
6000ASD	6000AS with 4" coupler inlet
6000ASAL	6000ASA with locking ring
6000ASR	locking ring kit
6000AST ¹	6000AS with anti-spill sleeve

¹ factory direct

* **Note:** Please reference page 67 for repair kits and replacement parts.

Side Seal Adapter

- allows conventional top seal elbows to be used with side seal style fill collars
- bottom connects to side seal collar/top section accepts standard 4" top seal elbows



Part #	Description
6000-SSA	side seal adapter

* **Note:** Please reference page 67 for repair kits and replacement parts.



Vapor Recovery Products

Bayco brand petroleum tanker vapor return products are designed for interchangeability with competitor products and built to the highest quality standards for trouble-free service. They allow transfer of underground storage tank vapor to the tanker compartments during the off-loading of petroleum

Vapor Elbows



VR6000NP



VR6100



VR6200



VR6500

- for use in two point vapor recovery systems
- choice of 4 models with probe, with & without poppet and with or without adapter outlet
- one piece bronze locking arms housed in polymer bushings
- advanced design side lever locking system
- Buna seals and stainless steel hardware
- bolt on 3" male outlet included (can rotate for extended life)
- Use VR6000-6 as a replacement 3" adapter for VR6200 model
- VR6200, VR6000, and VR6500 shares a common bottom end with other vapor elbows
- lubrication fitting on locking stem

Note: See 6400 drop elbow (page 10) for single point vapor recovery coaxial elbow.

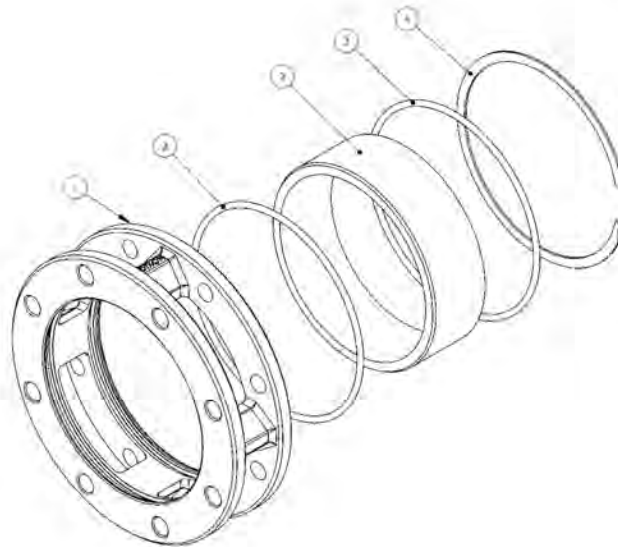
Part #	Description
VR6000NP	VR6000 elbow with 3" adapter outlet, D-type handle, no poppet valve
VR6100	VR6100 with 3" adapter outlet, push-on style, includes outlet poppet valve
VR6100NP	VR6100 with 3" adapter outlet, push-on style, without outlet poppet valve
VR6200	VR6200 elbow with 3" adapter outlet, outlet poppet valve
VR6200ANP	VR6200 with 4" adapter without poppet
VR6200L ¹	VR6200 with safety latch, 3" adapter outlet & poppet valve
VR6200LNP	VR6200 with safety latch, 3" adapter outlet without poppet valve
VR6200LPNP ¹	VR6200 with safety latch kit and extension, 3" adapter outlet without poppet valve
VR6200NP	VR6200 with 3" adapter outlet without poppet valve
VR6200NPB ¹	VR6200 with 3" coupler outlet, no outlet poppet valve
VR6200NPBP ¹	VR6200 with 3" coupler outlet and extension kit assembled, no outlet poppet valve
VR6200NPBU ¹	VR6200 elbow only, without 3" adapter outlet, without poppet valve
VR6200NPDP ¹	VR6200 with 4" coupler outlet and extension kit assembled, no outlet poppet valve
VR6200PNP	VR6200 with 3" adapter outlet, no outlet poppet valve with extension kit
VR6500	VR6500 elbow with 3" adapter outlet, includes outlet poppet valve
VR6500NP	VR6500 elbow with 3" adapter outlet, without outlet poppet valve
VR6500LPNP	VR6500 with safety latch, 3" adapter outlet without poppet valve & extension kit assembled

¹ factory direct

• Elbow inlets can be found on page 8

* **Note:** Please reference pages 68, 69, 70 and 71 for repair kits and replacement parts.

5200-SFI Series, Sight Glass



Bill of Materials

Item #	Description	Part #	Qty
1	body	---	1
2	sight glass	see repair kit below	1
3A	3" Baylast™ O-ring (3" std)	see repair kit below	2
3B	3" Viton® O-ring (3" optional)	see repair kit below	2
3C	4" Baylast™ O-ring (4" std)	see repair kit below	2
3D	4" Viton® O-ring (4" optional)	see repair kit below	2
4A	3" retainer ring	see repair kit below	1
4B	4" retaining ring	see repair kit below	1

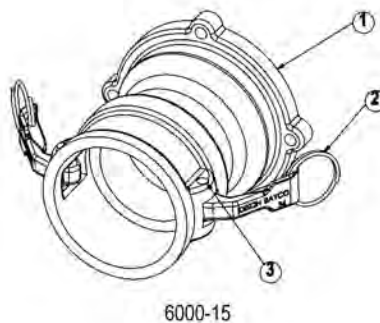
Repair Kits

Part #	Description	Includes Item #
5200-SFI-3-RK1	3" replacement sight glass, Baylast™ O-ring and retainer ring kit	2, 3A, 4A
5200-SFI-3V-RK1	3" replacement sight glass, Viton® O-ring and retainer ring kit	2, 3B, 4A
5200-SFI-RK1	4" replacement sight glass, Baylast™ O-ring and retainer ring kit	2, 3C, 4B
5200-SFIV-RK1	4" replacement sight glass, Viton® O-ring and retainer ring kit	2, 3D, 4B

Drop Elbow Inlets

Fits 6000, 6200, and 6500 Series Elbows
6000-14 and 6000-15 Female Coupler Inlets

Petroleum Replacement Parts



Bill of Materials

Item #	Description	Part #	Qty
1	body	---	1
2	cam arm and ring	ACAR34BZ	2
3A	4" cam arm pin	L519-12	2
3B	3" cam arm pin	L519-19	2
4A	4" gasket (6000-14)	400-G-BU	1
4B	3" gasket (6000-15)	300-G-BU	1
5	hex screw	use kit 6000NPHK	4
6	lock washer	use kit 6000NPHK	4

Repair Kits

Part #	Description	Includes Item #
6000NPHK	replacement hex screws and lockwashers	5, 6

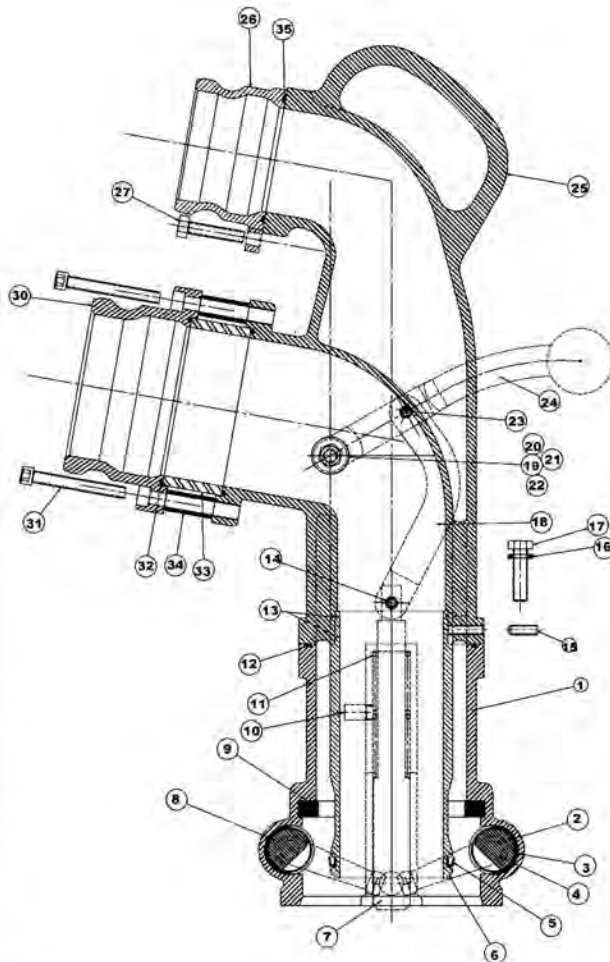


6400 Series Co-axial Drop Elbow with 3" Male Vapor Outlet

6400 (4" male inlet), 6400F (4" female inlet), 6430 (3" male inlet), 6430F (3" female inlet)

Bill of Materials

Item #	Description	Part #	Qty
1	bottom body	6000-2	1
2	right arm	use kit 6400ARK	1
3	large bushing	use kit 6200BK	2
4	small bushing	use kit 6200BK	2
5	tube U cup seal	U-CUP-2/75	1
6	tube	use kit 6400DTK	1
7	lever stem (standard)	6200-7	1
7A	lever stem (tall)	6200-7X	1
8	left arm	use kit 6400ARK	1
9	main gasket	6000-9	1
10	grease nipple	NIPPLE/1	1
11	stem spring	112012	1
12	O-ring	AS156	1
13	tube O-ring	O-RING#39	2
14	stem pin	PIN5/16X 1 1/4-P	1
15	set screw	SC3/8NCX1/2	1
16	lock washer	use kit 6000EHK	4
17	bolt	use kit 6000EHK	4
18	linkage	use kit 6200-15ASSM	1
19	pivot stud	use kit 6200SHK	1
20	pivot bushing	use kit 6200SHK	1
21	washer	use kit 6200SHK	2
22	pivot lock nut	use kit 6200SHK	1
23	handle pin	PIN5/16X 1 1/4-P	1
24	handle	use kit 6200-15ASSM	1
25	top co-axial elbow body	6400-1	1
26	3" vapor adapter outlet	6400-4	1
27	vapor adapter bolt	4432	4
30A	4" adapter fuel inlet (6400)	use kit 6000-17C	1
30B	4" coupler fuel inlet (6400F)	use kit 6000-14C	1
30C	3" adapter fuel inlet (6430)	use kit 6000-16C	1
30D	3" coupler fuel inlet (6430F)	use kit 6000-15C	1
31A	inlet bolt	SC5/16-18X2.5P	4
31B	inlet bolt lock washer	111723	4
32	inlet O-ring	AS156	2
33	sight glass	use kit 6400SGK	1
34	inlet bolt spacer	6544CA-1	4
35	vapor adapter O-ring	110601	1



Petroleum Replacement Parts

Inlet Adapter and Coupler Kits

Part #	Description	Includes Item #
6000-14C	4" coupler inlet kit	30B, 31A, 31B
6000-15C	3" coupler inlet kit	30D, 31A, 31B
6000-16C	4" adapter inlet kit	30A, 31A, 31B
6000-17C	3" adapter inlet kit	30C, 31A, 31B

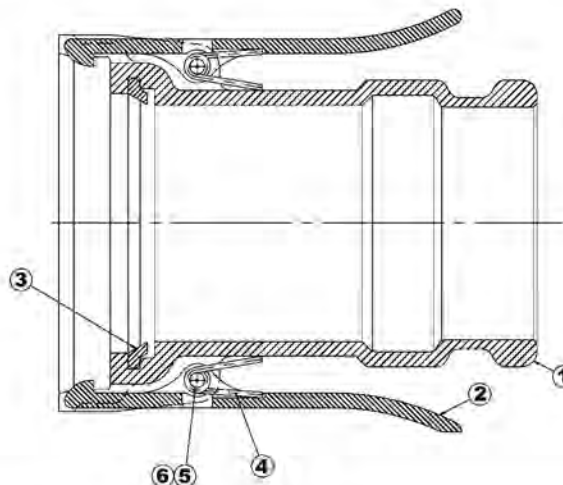
Repair Kits

Part #	Description	Includes Item #
6230	complete standard replacement bottom unit	1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 14
6230X	complete tall replacement bottom unit	1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 14
6400ARK	replacement L & R arms, main gasket, O-rings, small & large bushings	2, 3, 4, 5, 8, 9, 12, 13
6200BK	replacement small & large bushings	3, 4
6400SGK	replacement sight glass and seal	32, 33
6200-15ASSM	replacement handle, lever and pin	18, 23, 24
6000EHK	replacement bolts and washers	16, 17
6400DTK	replacement tube, O-ring & U cup seal	5, 6, 13
6200SH	replacement pivot stud, bushing, washer and lock nut	19, 20, 21, 22

6000-SSA Series 4" Side Seal Adapter

Bill of Materials

Item #	Description	Part #	Qty
1	body	---	1
2	coupler arm	use kit 6000SSHK	2
3	lip seal	L2373	1
4	spring	L2312	2
5	pin	L2311	2
6	retaining ring	TRUARC-5100-25	4



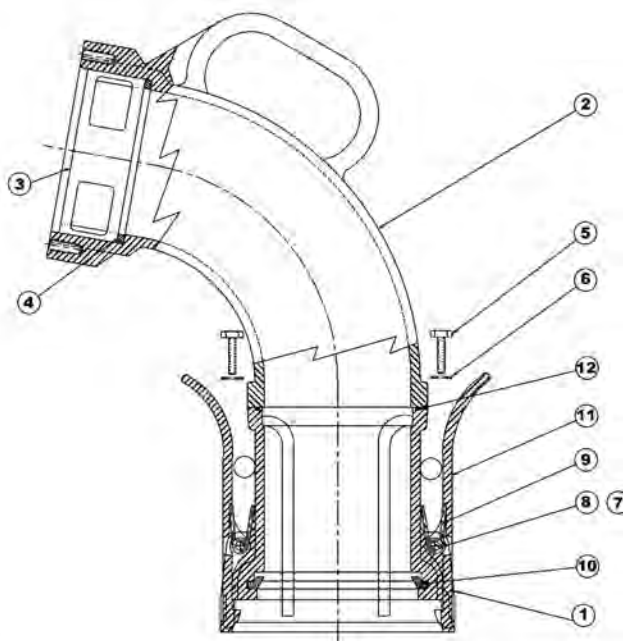
Repair Kit

Part #	Description	Includes Item #s
6200SSHK	replacement arms, springs, pins and retaining rings	2, 4, 5, 6

6000AS Series Side Seal Elbow

Bill of Materials

Item #	Description	Part #	Qty
1	bottom body	6000AS-1	1
2	top body	6200-1	1
3	sight glass	use kit 6200SGK	1
4A	Baylast™ seal	4433	2
4B	Viton® seal	4426	2
5	bolt	use kit 6000EHK	4
6	lock washer	use kit 6000EHK	4
7	retaining ring	TRUARC-5100-25	4
8	pin	L2311	2
9	spring	L2312	2
10	lip seal	L2373	1
11	arm	use kit 6000SSHK	2
12	O-ring	AS156	1



Petroleum Replacement Parts

Repair Kits

Part #	Description	Includes Item #s
6000ASK	replacement lip seal and body O-ring	10, 12
6030AS	complete replacement bottom unit	1, 7, 8, 9, 10, 11, 12
6200SGK	replacement sight glass and Baylast™ seals	3, 4
6000EHK	replacement lock washers and bolts	5, 6
6000SSHK	replacement arms, springs, pins and retaining rings	7, 8, 9, 11
6000ASR	arm lock ring	not illustrated



The Right Connection™

Replacement Parts

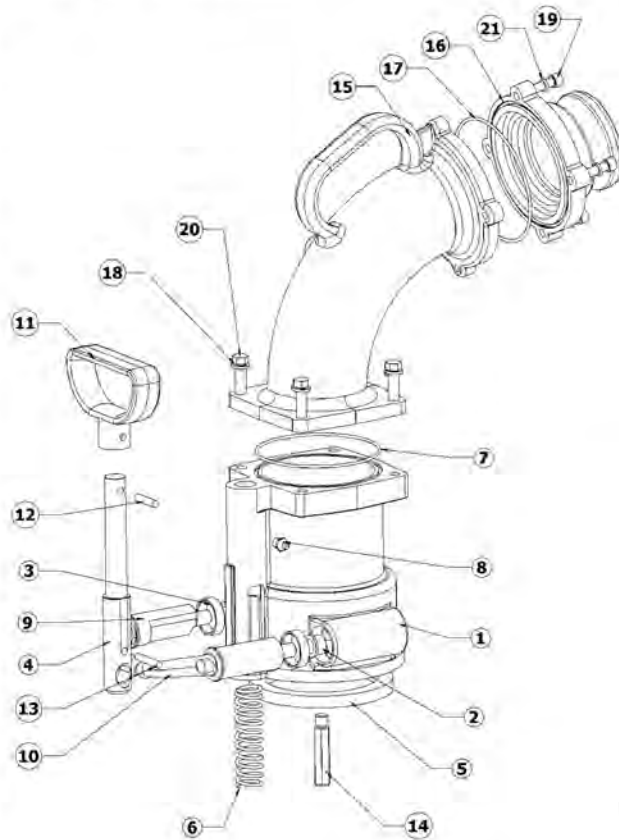
Bill of Materials

VR6000NP Series Vapor Elbows

Item #	Description	Part #	Qty
1	bottom body	VR6000-2	1
2	small bushing	use kit 6200BK	2
3	large bushing	use kit 6200BK	2
4	handle stem	390842	1
5	main seal gasket	6000-9	1
6	spring	112012	1
7	O-ring	AS156	1
8	grease nipple	NIPPLE/1	1
9	right arm	VR6000-8	1
10	left arm	VR6000-9	1
11	D-handle	6000-8	1
12	D-handle pin	6000-13	1
13	spring pin	6000-12	1
14	probe	VR6000-7	1
15	elbow body	VR6000-1	1
16	outlet adapter & O-ring	VR6000-6	1
17	outlet O-ring (only)	110319	1
18	body lock washer	use kit 6200EHK	4
19	outlet adapter bolt	use kit 6000NPHK	4
20	body hex bolt	use kit 6200EHK	4
21	outlet adapter lock washer	use kit 6000NPHK	4

Repair Kits

Part #	Description	Includes Item #s
6200BK	replacement small (2) and large (2) large bushing kit	2, 3
6000EHK	replacement body lock washers and bolts	18, 20
6000NPHK	adapter kit bolts (4) and lock washers	19, 21
400637	complete replacement bottom unit	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

A World Leader in
Hose Fittings and Accessories

The Right Connection™

At Dixon Bayco We Commit;

1. To ensure that internal and external customer needs are identified and that our products and services meet these needs.
2. To fully meet and exceed the requirements of the ISO 9001 Quality Program.
3. To strive for quality in each and every phase of our business.
4. To exceed competitor's quality.
5. To provide systems and training for all Dixon employees.
6. To create an environment that will allow each employee to do it right the first time, and except the responsibility for quality in each and every task they perform.
7. That no employee will ever be called on to do anything morally, legally or ethically wrong.

Thank you for considering Dixon Bayco products.



VR6000NP / Vapor Elbow

Petroleum Replacement Parts

F298

Product Drop Elbow Co-Axial for Product And Vapor

FEATURES AND BENEFITS

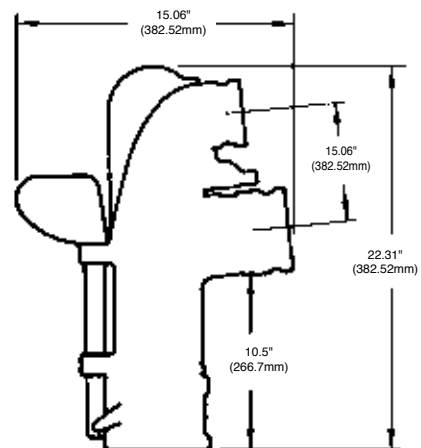
- **Lightweight** aluminum.
- **Excellent** flow rate.
- **Sight glass** in product port allows inspection of product flow.
- **Sight glass protected** by aluminum body. Prevents damage when stored in tool box.
- **Can be subjected to pump off pressure** (versus gravity unloading) to 25psi.
- **Product connection** (3" or 4" cam & groove) is located below vapor connection (3" cam & groove) reduces stress on adapter, piping and connection to tank.
- **No vapor emission or product leak.** Special seal assures tight connection.
- **Quick and easy** to rebuild.
- **Option: Interlock available** to assure vapor connection prior to product connection.
- **Most parts interchangeable** with F523 and F77.



DROP ELBOW

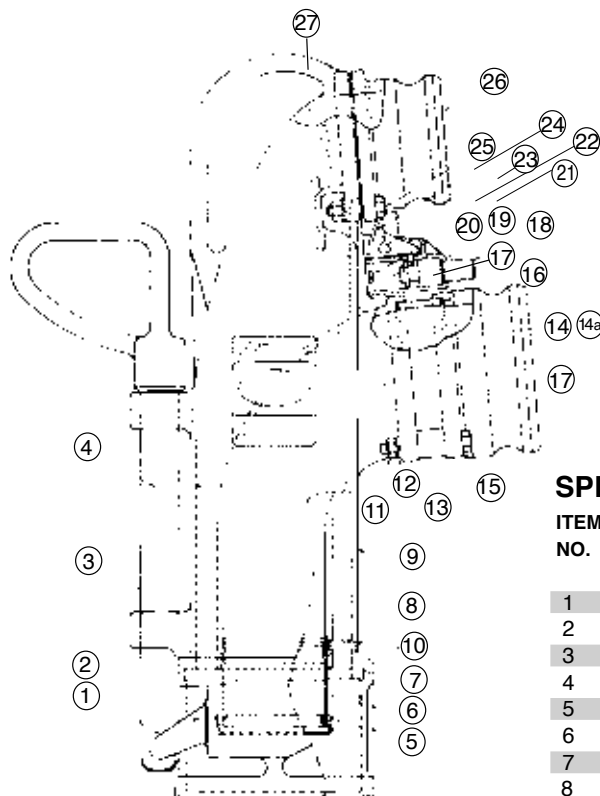
VARIANTS

PART NO.	DESCRIPTION	WEIGHT
F298-004	4" x 3" with Interlock	18.25 lbs.
F298-006	4" x 3" less Interlock	17.75 lbs.
F298-007	4" x 3" less Interlock, with 4" FNPT Product Connection.	17.75 lbs.
F298-008	3" x 3" with Interlock, Buna	17.25 lbs.
F298-009	3" x 3" less Interlock, Buna	16.75 lbs.



F298

Product Drop Elbow Co-Axial for Product And Vapor



SPECIFICATIONS

ITEM NO.	DESCRIPTION	QTY.		MATERIAL
1	Cam, right hand	1	408615	Bronze Plated
2	Cam, left hand	1	408617	Bronze Plated
3	Handle	1	562246	Aluminum
4	Roll Pin	1	470078	Steel
5	Seal	1	561566	Buna
6	Coupler Tube	1	561641	Aluminum
7	Gasket	1	408604	Buna
8	Screw, 1/4"-20 x .75	1	562236	Steel
9	Body	1	561640	Aluminum
10	O-ring	1	561868	Buna
11	Hex Nut, 5/16"-18	8	403150	Steel/Cad
12	Lockwasher, 5/16"	8	470034	Steel/Cad
13	Spacer	4	561567	Aluminum
14	4" Male NPT Adapter	1	561558	Aluminum
14a	4" Female NPT Adapter	1	564218	Aluminum
15	Screw, 5/16-18 x 2 1/4"	4	447380	Steel
16	Tetraseal	2	561814	Buna
17	Sight Glass	1	561568	Acrylic
18	Interlock Piston	1	561556	Nylon
19	Interlock Body	1	561555	Nylon
20	Spring	1	409325	Steel
21	Screw, 1/4"-20 x .5"	3	447459	Stainless Steel
22	Interlock Latch	1	561570	Aluminum
23	Pin	1	404840	Steel
24	Spring	1	409340	Stainless Steel
25	Screw, 5/16"-18 x 1 1/4"	4	452345	Steel/Cad
26	3" Vapor Adapter	1	409312	Aluminum
27	Vapor Gasket	1	562239	-
O	Sight Glass Kit	1	562249	-
O	Coupling Tube Kit	1	562250	-



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EMCO WHEATON
LOADING AND UNLOADING THE WORLD

F523

4" Product Drop Elbow

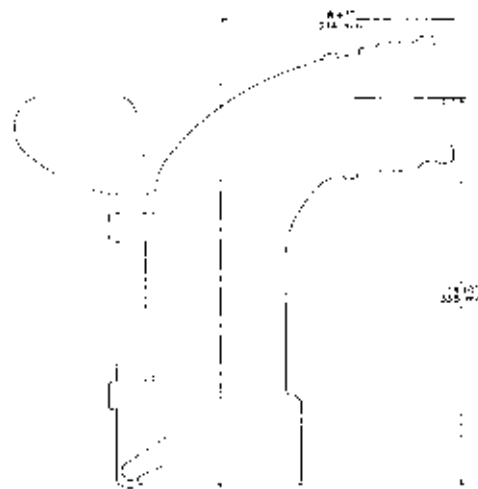
FEATURES AND BENEFITS

- **Industry's lightest** 4" x 4" product drop elbow.
- **Excellent flow rate.**
- **Simple and reliable** cam design. Minimum number of moving parts.
- **Easy and quick** to rebuild.
- **Two piece construction** allows change of connector size and style.
- **Sight glass is protected** by aluminum body. No damage when stored in tool box.
- **Most parts interchangeable** with F298 and F77.


DROP ELBOW

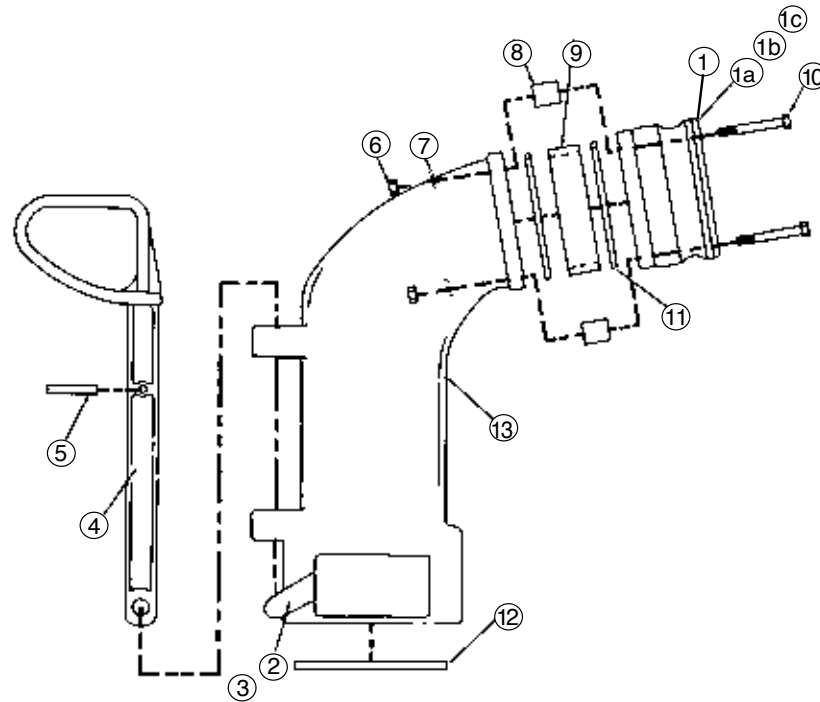
VARIANTS

PART NO.	DESCRIPTION	WEIGHT
F523-006	4" x 4" Cam & Groove	13.00 lbs.
F523-007	4" x 4" FNPT	13.00 lbs.
F523-008	4" x 3" Cam & Groove	12.94 lbs.
F523-009	4" x 3" FNPT	12.94 lbs.



F523

4" Product Drop Elbow



SPECIFICATIONS

ITEM NO.	DESCRIPTION	QTY.		MATERIAL
1	4" Cam & Groove Adapter	1	561558	Aluminum
1a	4" FNPT Adapter		564218	Aluminum
1b	3" Cam & Groove Adapter		565233	Aluminum
1c	3" FNPT Adapter		565235	Aluminum
2	Cam, right hand	1	408615	Aluminum & Bronze
3	Cam, left hand	1	408617	Aluminum & Bronze
4	Handle	1	562246	Aluminum
5	Pin	1	470078	Stainless Steel
6	Hex Nuts, 5/16-18	4	403150	Steel
7	Lockwashers, 5/16	4	470034	Steel
8	Spacers	4	561567	Aluminum
9*	Sight Glass	1	561568	Acrylic
	Sight Glass Kit	1	562249	Acrylic
10	Hex Cap Screws	4	447380	Steel Plated
11*	Tetraseals	2	561814	-
12	Gasket	1	408604	Buna
13	Body	1	565231	Aluminum

*In Kit



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EMCO WHEATON™

LOADING AND UNLOADING THE WORLD

F77

4" Vapor Drop Elbow

FEATURES AND BENEFITS

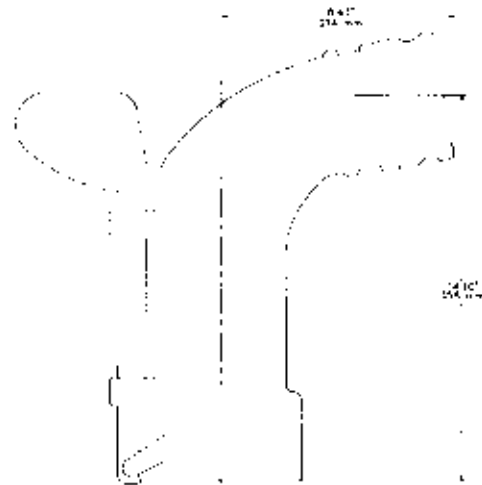
- **Industry's lightest** 4"x 4" vapor drop elbow.
- **Low pressure drop**, ensuring high product flow rates.
- **Available with and without** internal poppet assembly.
- **Simple and reliable** cam design. Minimum number of moving parts.
- **Easy and quick** to rebuild.
- **Two piece construction** allows change of hose connection size and style.
- **Most parts interchangeable** with F298 and F523.



DROP ELBOW

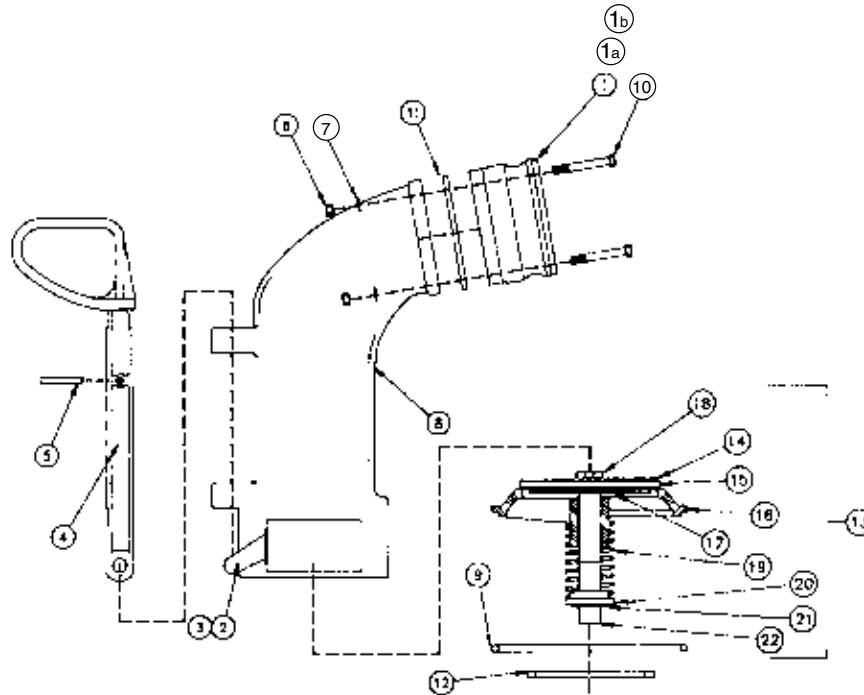
VARIANTS

PART NO.	DESCRIPTION	WEIGHT
F77-007	4" x 3" Cam & Groove, Poppeted	13.06 lbs.
F77-008	4" x 3" FNPT, Poppeted	13.06 lbs.
F77-009	4" x 3" Cam & Groove, Non-Poppeted	12.62 lbs.
F77-010	4" x 3" FNPT, Non-Poppeted	12.62 lbs.
F77-011	4" x 4" Cam & Groove, Poppeted	13.06 lbs.
F77-012	4" x 4" Cam & Groove, Non-Poppeted	12.62 lbs.



F77

4" Vapor Drop Elbow



SPECIFICATIONS

ITEM NO.	DESCRIPTION	QTY.	
1	3" Cam & Groove Adapter	1	565233
1a	3" FNPT Adapter		565235
1b	4" Cam & Groove Adapter		561558
2	Cam, right hand	1	563435
3	Cam, left hand	1	563436
4	Handle	1	562246
5	Roll Pin	1	470078
6	Hex Nuts	4	403150
7	Lockwashers	4	470034
8	Body	1	565868
9	Retaining Ring	1	409350
10	Hex Cap Screws	4	444518
11	Vapor Gasket, Buna	1	565869
12	Gasket, Buna	1	408604
13	Internal Poppet Assembly	1	492901
14	Disc Top Plate	1	577020
15	Disc, Buna	1	577021
16	Poppet Guide	1	563455
17	Disc Bottom Plate	1	577019
18	Hex Head Screw	1	444514
19	Spring	1	409560
20	Spring Retainer	1	563456
21	Retaining Ring	1	563461
22	Plunger	1	563638



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EMCO WHEATON™
LOADING AND UNLOADING THE WORLD



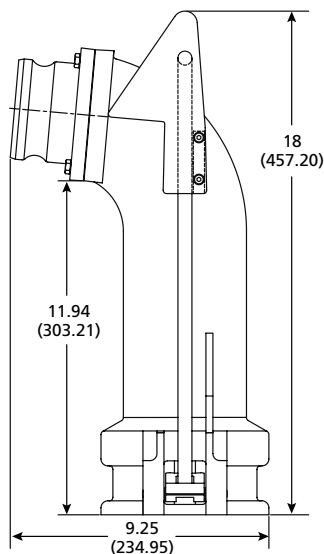
Dual Point Vapor Recovery Elbow

This durable cast aluminum elbow ensures complete vapor recovery for dual point systems, and can be ordered with a variety of different adapters to meet any requirement. The simple four bolt flange design allows for easy replacement of adapters over competitive threaded styles. Its low profile design allows for convenient storage and the specially designed quick grip one hand operation handle allows for easy on and off attachments.

Features

- Cast aluminum.
- Compact, low profile design.
- Four bolt flange pattern.
- Protective base shield.

880-465-01



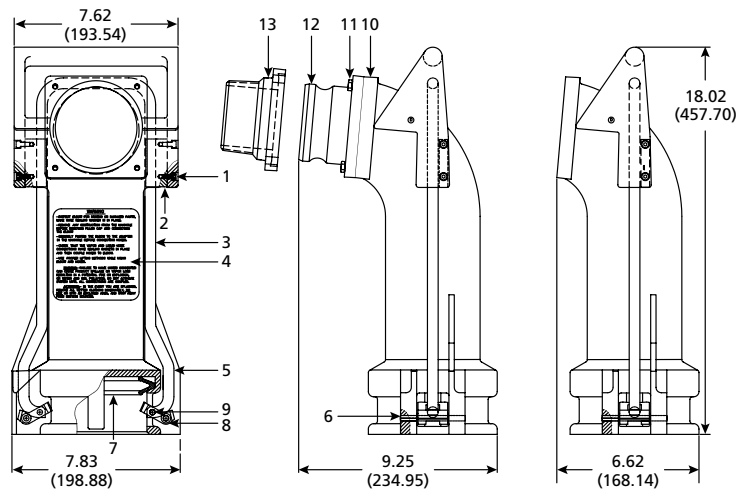
MODEL UNIT	880-460	880-465-01
Size (Inches/Millimeters)	—	3/76.2
Weight (Pounds/Kilograms)	11/4.99	12.38/5.62

Dimensional Drawing

PRODUCT DROP ELBOWS

Transport
Systems

Dual Point Vapor Recovery Elbow Parts List



#	PART NAME	PART NUMBER	#	PART NAME	PART NUMBER
1	#10 - 24 x 1/2 Socket Head Cap Screw	11170-12	8	Locking Cam	880-245-01
2	Handle Retainer Block	880-246-01	9	Grooved (Straight) Pin	11126-01
3	Vapor Elbow Body	880-469-01	10	Adapter Flange Gasket	880-247-01
4	Pressure Sensitive (Warning) Label	880-107-01	11	Screw - 5/16-18 x 1 Hex Head Stainless Steel	11176-20
5	Vapor Elbow Locking Bar	880-391-01	12	3" Coupling Adapter	880-396-01
6	Grooved (Straight) Pin	11126-07	13	3" NPT Adapter	880-397-01
7	Elbow Seal	870-200-01			

PART NUMBER	DESCRIPTION
880-460-01	Body Only
880-465-01	3" Male Cam & Groove Adapter
880-465-02	3" Male NPT Adapter



880-465-01

Dual Point Vapor Recovery Elbow

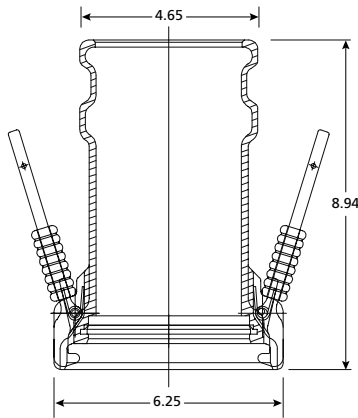
SIDE SEAL ADAPTER



The Side Seal Adapter is designed to give flexibility to top seal drop elbows. Your 4" top seal delivery elbow can now be used on a side 4" seal fill adapter. You don't have to bring a separate side seal elbow, which reduces cost and the number of fittings required on your truck.

Two lever clamps secure the adapter to the station's side seal fitting and allow a 4" elbow to attach to the adapter. Special locking rings prevent accidental cam arm release during filling. Cast aluminum makes the side seal adapter light and strong. The specially designed seal gives you the added insurance that no leaks will occur.

880-445-01

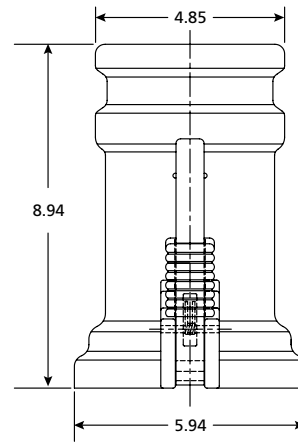
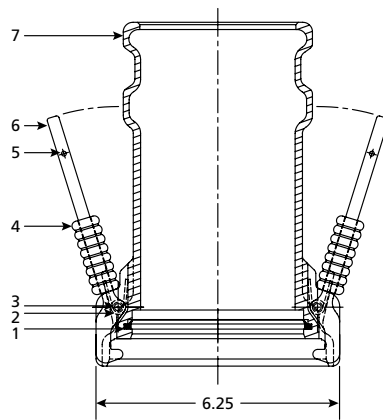


Features

- Designed for use with 4" side seal service station fittings.
- Lightweight.
- Cast aluminum body.
- Special innovative seal design.
- No separate side seal elbow to transport.
- Locking rings to prevent accidental cam arm release during filling.

MODEL UNIT	880-445-01
Weight (Pounds/Kilograms)	10.0/4.58

Side Seal Adapter Parts List



#	PART NAME	PART NUMBER	#	PART NAME	PART NUMBER
1	Seal	881-202-01	5	Pin, 0.125 x 0.875, Groove Type "E"	11459-01
2	Release Lever Spring	881-103-01	6	Release Lever	881-200-01
3	Pin, 0.187 x 1.500, Groove Type "C"	11126-08	7	Side Seal Adapter Body	880-446-01
4	Release Lever Interlock	881-201-01			

PART NUMBER	DESCRIPTION
880-445-01	Side Seal Adapter

Top Seal Drop Accessories

Morrison Bros. Co.



305 TIGHT-FILL ADAPTOR

(Top Seal)

All Brass Construction
Fig. 305H or 305LH - 2 1/4" High

Size	Weight
3" THD. x 4" (305L - with Lugs).....	2-1/2 lbs.
4" THD. x 4" (305 - without Lugs).....	.3 lbs.
4" THD x 4" (305-L - with Lugs).....	.3 lbs.

305-C

TOP SEAL CAP

CONSTRUCTION
Aluminum-Epoxy Coating
Gasket: Buna-N
Also Fits 605 Adaptor



Size	Weight
------	--------

605

COAXIAL ADAPTOR

All Brass Construction



Size	Weight
4".....	5-1/2 lbs

Side Seal Drop Accessories



405 TIGHT-FILL ADAPTOR

(Side Seal)

All Brass Construction



Size	Weight
4".....	2-1/4 lbs.

405-C SIDE SEAL CAP

CONSTRUCTION
Aluminum-Epoxy Coating
Gasket: Buna-N

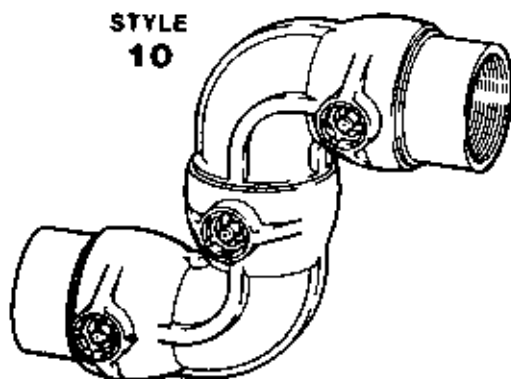


Size	Weight
4".....	.2 lbs.

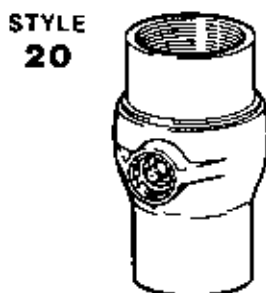
SWIVEL JOINT

CAST SERIES

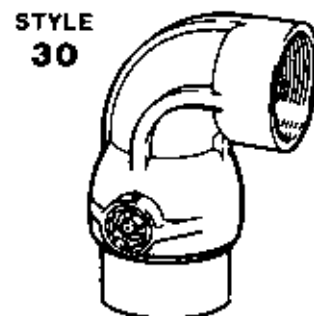
3200, 3300, 3600, 3700 AND 3800



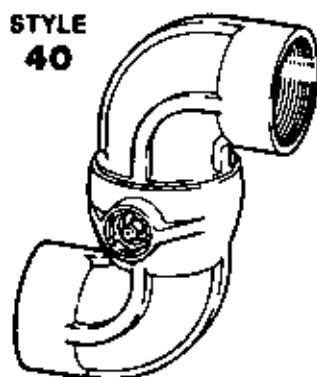
3 PLANES OF ROTATION



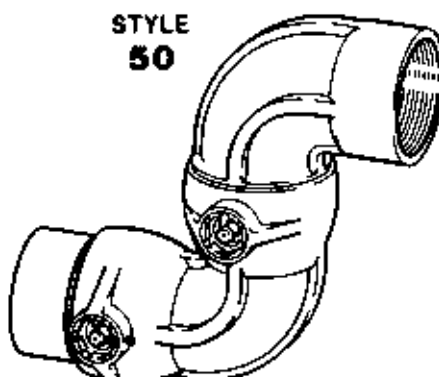
1 PLANE OF ROTATION



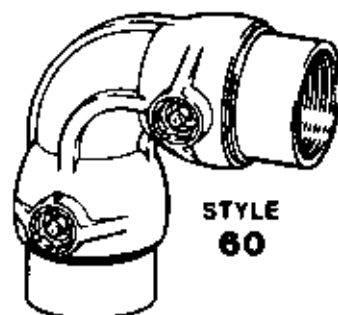
1 PLANE OF ROTATION



1 PLANE OF ROTATION



2 PLANES OF ROTATION



2 PLANES OF ROTATION



REPLACEMENT KIT ASSEMBLIES

- 3001-K Buna-N Seal Replacement Kit.** Available in the following sizes: $\frac{1}{4}$ " or 1", $1\frac{1}{4}$ " or $1\frac{1}{2}$ ", 2", $2\frac{1}{2}$ " or 3", 4" and 6".
- 3002-K Viton Seal Replacement Kit.** Available in the following sizes: $\frac{1}{4}$ " or 1", $1\frac{1}{4}$ " or $1\frac{1}{2}$ ", 2", $2\frac{1}{2}$ " or 3", 4" and 6".
- 3003-K Teflon Seal Replacement Kit.** Available in the following sizes: $\frac{1}{4}$ " or 1", $1\frac{1}{4}$ " or $1\frac{1}{2}$ ", 2", $2\frac{1}{2}$ " or 3" and 4". Main seal is Teflon with garter spring.

Each kit consists of the following parts:

- $\frac{1}{4}$ " and 1" — One main seal* (O-ring), one dust seal (O-ring), one grease fitting, four balls and an instruction sheet.
- $1\frac{1}{4}$ ", $1\frac{1}{2}$ " and 2" — One main seal (O-ring), one dust seal (O-ring) and one dust seal (felt). One grease fitting, four balls and an instruction sheet.
- $2\frac{1}{2}$ ", 3", 4" and 6" — One main seal (O-ring), one felt dust seal, four balls and an instruction sheet.

1700ESL Kamvalok[®] Coupler

OPW Transport Series Dry Disconnect Couplings are considered the standard of the industry. For use on multi-compartment petroleum, solvent and chemical product delivery trucks with an on-board pumping unit.

BENEFITS

Spill Protection – Helps to reduce the hazards involved in the connection/disconnection process of transferring hazardous materials.

Provides For Total Closed-Loop Loading Capabilities – Keeps hazardous liquids and vapors in-line and out of the environment.

Dual Protection – Poppeted seal cylinder design provides automatic closure from both directions – the coupler and the adaptor – to avoid accidental spills.

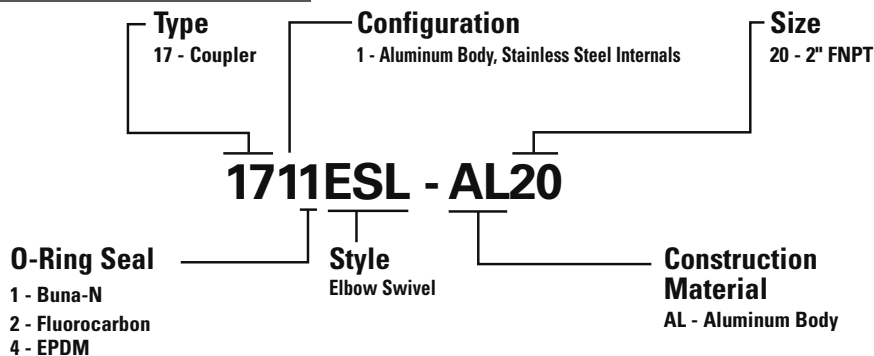
Autolok™ Locking Arms – Provide added protection with an automatic locking mechanism signaled by a positive click. Uncoupling requires only an easy tug on the lock release.

SST Locking Lever Assembly – Locks in position to prevent accidental opening or closing of valve.

Ease of Use – Built-in elbow swivel and simple connection and disconnection design provides freedom of movement and smooth operation.



ORDERING GUIDE



DESIGN PARAMETERS

Design Standard	Size	ASME B31.3
Max. Design Temp	2"	200° F (93° C)
Min. Design Temp	2"	-20° F (-29° C)
Max. Design Pressure	2"	150 PSI (10.5 BAR)

CUSTOMER SERVICE

Call OPW
 Customer Service at
 800-547-9393 for
 complete ordering
 information.



1700ESL Kamvalok® Coupler

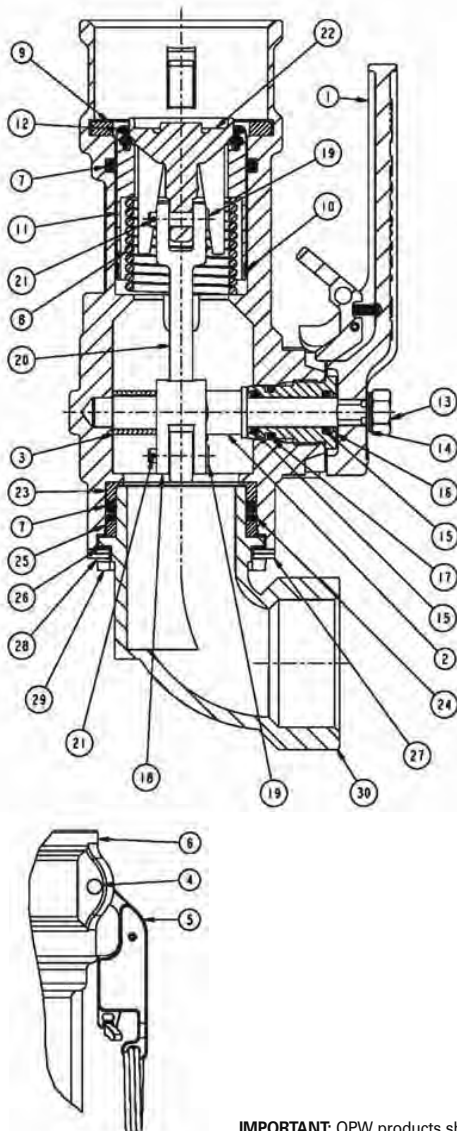
1700ESL MAINTENANCE

MATERIALS

Materials	Aluminum (250°F / 121°C)
Body, Poppet	A356-T6 ASTM B-26
Cam Arms	ASTM A351 CF8M 316 SST
Seal Cylinder	6061-T6
Shaft	ASTM A479 Ferralium 255 SST
Seals	See Chart
Poppet Link	A351 CD4MCU Duplex SST
Shaft Link	A351 CD4MCU Duplex SST

Seal Options	Repair Kit	Temperature Rating
Buna-N	1711ERKL-0020	-20° F – 212° F (-29° C – 100° C)
Fluorocarbon	1712ERKL-0020	-20° F – 400° F (-29° C – 204° C)
EPDM	1714ERKL-0020	-50° F – 250° F (-46° C – 121° C)

PART NUMBERS



#	Description	Qty	1711ESL	1712ESL	1714ESL	RK
1	Lever Assembly	1	H32040	H32040	H32040	
2	Shaft	1	C21123RE	C21123RE	C21123RE	
3	Spacer	1	H32030RE	H32030RE	H32030RE	
4	Groove Pin, Cam Arm	2	H20141M	H20141M	H20141M	
5	Autolok Arm Assy	1	733ARK-SS20	733ARK-SS20	733ARK-SS20	
6	Body	1	C21131A	C21131A	C21131A	
7	O-Ring, Main Seal	2	H06223M	H01076M	H06142M	+
8	Spring	1	H04328M	H04328M	H04328M	
9	Gasket	1	H20545M	H00974M	H20537M	+
10	Guide, Seal Cylinder	1	H31540M	H31540M	H31540M	+
11	Seal Cylinder	1	H31543A	H31543A	H31543A	+
12	Nose Seal	1	H31528M	H31531M	H31534M	+
13	Nut, Shaft	1	H32111M	H32111M	H32111M	
14	Lock Washer Shaft	1	H31920M	H31920M	H31920M	
15	O-Ring, Shaft	2	H20129M	H20175M	H20176M	+
16	StuffingBox	1	C20812RE	C20812RE	C20812RE	
17	O-Ring, Stuffingbox	1	H31705M	H31706M	H31707M	+
18	Shaft Link	1	9C21125EW	9C21125EW	9C21125EW	
19	Clevis Pin	2	H31692M	H31692M	H31692M	
20	Poppet Link	1	9C21124EW	9C21124EW	9C21124EW	
21	Cotter Pin	2	H04981M	H04981M	H04981M	+
22	Poppet	1	C21129A	C21129A	C21129A	
23	Bearing	1	H05096M	H05096M	H05096M	+
24	Back Up Ring	1	H05155M	H20617M	HX91574	+
25	Bearing	1	H05097M	H05097M	H05097M	+
26	Washer	1	H05100M	H05100M	H05100M	+
27	Flange	4	H05095RS	H05095RS	H05095RS	
28	Lock Washer	4	H20441M	H20441M	H20441M	
29	Screw	4	H03657M	H03657M	H03657M	
30	Elbow	1	C01345A	C01345A	C01345A	

+Items included in repair kits

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MAINTENANCE

2"	O-Ring, Main Seal	Gasket	Nose Seal	O-Ring, Shaft	O-Ring, Stuffingbox
Buna-N	H06223M	H20545M	H31528M	H20129M	H31705M
Fluorocarbon	H01076M	H00974M	H31531M	H20175M	H31706M
EPDM	H06142M	H20537M	H31534M	H20176M	H31707M



Installation Preparations: Read & understand these instructions before starting installation or dismantling:

- Coupler to be used for its designated purpose only
- Local regulations for (un)loading must be followed at all times
- Product flow may result in static electricity; grounding of equipment is required
- OPW instructions must be followed for installation or dismantling at all times
- **Make sure to use adequate personal protection at all times during operation**
- Secure whatever device Coupler will be mounted to (e.g. Loading Arm, hose, etc.)
- Thread coupler onto pipe (use proper thread sealant)



Caution: All OPW products have literature that indicates the maximum service conditions for the unit. This information must be reviewed prior to installation and start-up. If there is any doubt of applicability for operation in a system under actual service conditions, consult the factory before placing in service.



Caution: Do not attempt any maintenance/ service while the equipment is in operation. System pressure must be relieved and the product drained before attempting any service on the unit. The line must be locked out while service is in progress. Read the operating instructions in the maintenance manual before using or servicing this product. Failure to do so could result in serious personal injury, property damage or product failure.

MAINTENANCE



Attention: The same risks and procedures of initial installation apply.



Specific Warnings:

- Remove pressure from the system before attempting to remove coupler
- Secure piping before attempting to remove coupler



Consider the following when servicing the Coupler:

- When Coupler is over-pressurized, it must be inspected thoroughly
- After maintenance is performed, it must be tested before the next use (see Testing After Servicing)
- Periodic inspection (every 3 months) for leakages (especially with toxic or hazardous mediums)
- Maintenance must be performed by authorized personnel
- Periodic maintenance (once a year) is required according to the maintenance instructions
- In case of (parts of) couplers being redirected, the initiator must provide information about the mediums, which have been in contact with (parts of) the coupler
- During maintenance (partial) dismantling could be necessary, the same risks and procedures apply



Caution: Do not drop OPW products onto hard surfaces. Chipping and deformation of the product may occur. Repeated mishandling of the product could result in personal injury, property damage or product failure.



Warning: OPW products do not eliminate possible exposure to hazardous substances. The conditions of handling and use are beyond our control, and we make no guarantee and assume no liability for damages or injuries related to the use of our products. Follow the safety precautions outlined in the Material Safety Data Sheets for the material being used. It is the responsibility of the user to comply with all federal, state and local regulations. Always employ proper safety precautions and handling techniques. Failure to do so could result in serious personal injury, property damage or product failure.



Warning: Proper seal and wetted material part selection is critical for safe operation. To assure maximum life for the service intended, use only those materials compatible with the fluids being handled. Please note material being supplied and make certain that it is suited for the intended service. Failure to do so could result in serious personal injury, property damage or product failure.

Kamvalok[®] Dry Disconnect Couplings

OPW Kamvalok[®] Dry Disconnect Couplings are considered the standard of the industry. Used at liquid transfer points where product loss could occur, OPW Kamvaloks[®] provide a reliable solution to prevent spillage during connection or disconnection.

BENEFITS

Spill Protection

Helps to reduce the hazards involved in the connection/disconnection process of transferring hazardous materials.

Provides for Total Closed-Loop Loading Capabilities

Keeps hazardous liquids and vapors in-line and out of the environment.

Dual Protection

Provides automatic closure from both directions – the coupler and the adaptor.

Autolok™ Locking Arms

Provides added protection with an automatic locking mechanism signaled by a positive click. Release requires only an easy tug on the lock release.

SST Locking Lever Assembly

Locks in both the opened and closed positions to prevent accidental release or uncoupling.

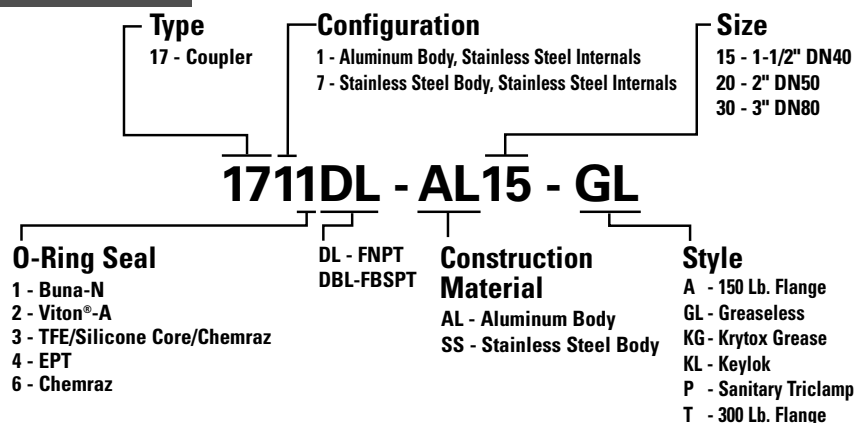
Ease of Use

Simple connection and disconnection design provides for smooth and easy operation.



1700DL
 Dry Disconnect Couplings

ORDERING GUIDE



DESIGN PARAMETERS

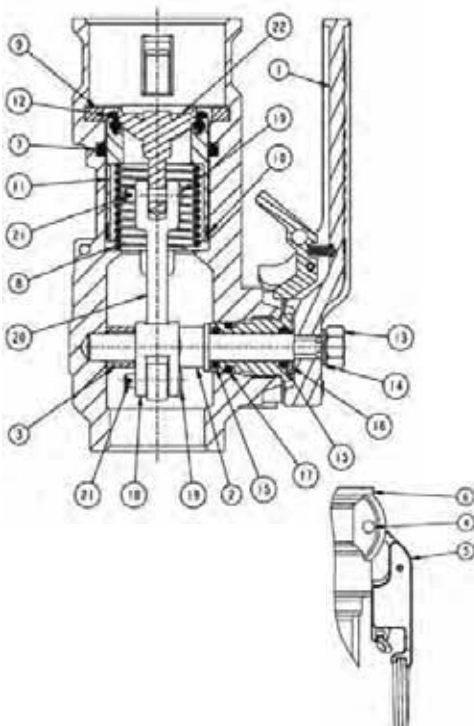
Design Standard	Size	ASME B31.3	ASME B31.3
Max. Design Temp	ALL	See Material Section	See Material Section
Min. Design Temp	ALL	See Material Section	See Material Section
Max. Design Pressure	1-1/2"	15 Bar	210 psi
	2"	10.5 Bar	150 psi
	3"	8.5 Bar	120 psi

© Copyright 2009 OPW Engineered Systems

Materials	Aluminum (250° F/121° C Max Temp)	SST (see seal chart)
Body, Poppet	A356-T6 ASTM B-26	ASTM A351 CF3M 316L SST
Cam Arms	ASTM A351 CF8M 316 SST	ASTM A351 CF8M 316 SST
Seal Cylinder	6061-T6	A351 CD4MCU Duplex SST
Shaft	ASTM A479 Ferralium 255 SST	ASTM A479 Ferralium 255 SST
Seals	See Chart	See Chart
Poppet Link	A351 CD4MCU Duplex SST	A351 CD4MCU Duplex SST
Shaft Link	A351 CD4MCU Duplex SST	A351 CD4MCU Duplex SST

Seal Options / Kits	Mat'l	1 1/2"	2"	3"	Temperature Rating
Buna-N1500	AL	1711RKL-0015	1711RKL-0020	1711RKL-0030	-20° F – 250° F
	SST	1771RKL-0015	1771RKL-0020	1771RKL-0030	(-29° C – 121° C)
Viton®	AL	1712RKL-0015	1712RKL-0020	1712RKL-0030	-20° F – 400° F
	SST	1772RKL-0015	1772RKL-0020	1772RKL-0030	(-29° C – 204° C)
Teflon®	AL	1713RKL-0015	1713RKL-0020	1713RKL-0030	-15° F – 400° F
	SST	1773RKL-0015	1773RKL-0020	1773RKL-0030	(-26° C – 204° C)
EPT E692	AL	1714RKL-0015	1714RKL-0020	1714RKL-0030	-50° F – 225° F
	SST	1774RKL-0015	1774RKL-0020	1774RKL-0030	(-46° C – 107° C)
Chemraz 505	AL	1716RKL-0015	1716RKL-0020	1716RKL-0030	-15° F – 400° F
	SST	1776RKL-0015	1776RKL-0020	1776RKL-0030	(-26° C – 204° C)

PART NUMBERS



#	Description	Qty	1-1/2"	2"	3"	RK
1	LEVER ASSEMBLY	1	H32040	H32040	H32040	
2	SHAFT	1	C21119RE	C21123RE	C21112RE	
3	SPACER	1	H32031RE	H32030RE	H32032RE	
4	GROOVE PIN, CAM ARM	2	H20141M	H20141M	H20144M	
5	AUTOLOK™ ARM ASSEMBLY	1	733ARK-SS20	733ARK-SS20	733ARK-SS30-PADDLE	
6	BODY	1	C21120A (EW)	C21128A (EW)	C21113A (EW)	
7	O-RING, MAIN SEAL	1	See Seal Options	See Seal Options	See Seal Options	+
8	SPRING	1	H06128M	H04328M	H10352M	
9	GASKET	1	See Seal Options	See Seal Options	See Seal Options	+
10	GUIDE, SEAL CYLINDER	1	H31539M	H31540M	H31541M	+
11	SEAL CYLINDER	1	H31542A (EW)	H31543A (EW)	H31544A (EW)	+
12	NOSE SEAL	1	See Seal Options	See Seal Options	See Seal Options	+
13	NUT, SHAFT	1	H32111M	H32111M	H32111M	
14	LOCK WASHER, SHAFT	1	H31920M	H31920M	H31920M	
15	O-RING, SHAFT	2	See Seal Options	See Seal Options	See Seal Options	+
16	STUFFINGBOX	1	C20812RE	C20812RE	C20812RE	
17	O-RING, STUFFINGBOX	1	See Seal Options	See Seal Options	See Seal Options	+
18	SHAFT LINK	1	9C21118EW	9C21125EW	9C21111EW	
19	CLEVIS PIN	2	H31692M	H31692M	H31688M	
20	POPPET LINK	1	9C21117EW	9C21124EW	9C21110EW	
21	COTTER PIN	2	H04981M	H04981M	H04981M	+
22	POPPET	1	C21121A (EW)	C21129A (EW)	C21115A (EW)	
23*	GUIDEBEARING	1	N/A	N/A	H32118M	+

NOTE: (EW) denotes

A for SST Fittings

+ Items included in repair kits

*NOTE: N/A denotes

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SEALS

1 1/2"	O-Ring, Main Seal	Gasket	Nose Seal	O-Ring, Shaft	O-Ring, Stuffingbox
Buna-N1500	H03051M	H20544M	H31527M	H20129M	H31705M
Viton®	H03070M	H00973M	H31530M	H20175M	H31706M
Teflon®	H20184M	H07904M	H31536M	H20522M	H31708M
EPT E692	H03596M	H20536M	H31533M	H20176M	H31707M
Chemraz 505	H20688M	H20687M	H31536M	H20522M	H31708M

2"	O-Ring, Main Seal	Gasket	Nose Seal	O-Ring, Shaft	O-Ring, Stuffingbox
Buna-N1500	H06223M	H20545M	H31528M	H20129M	H31705M
Viton®	H01076M	H00974M	H31531M	H20175M	H31706M
Teflon®	H20185M	H07905M	H31537M	H20522M	H31708M
EPT E692	H06142M	H20537M	H31534M	H20176M	H31707M
Chemraz 505	H20552M	H20624M	H31537M	H20522M	H31708M

3"	O-Ring, Main Seal	Gasket	Nose Seal	O-Ring, Shaft	O-Ring, Stuffingbox
Buna-N1500	H05152M	H20265M	H31529M	H20129M	H31705M
Viton®	H05136M	H20131M	H31532M	H20175M	H31706M
Teflon®	H20186M	H31562M	H31538M	H20522M	H31708M
EPT E692	H10209M	H20266M	H31535M	H20176M	H31707M
Chemraz 505	H20715M	H20714M	H31538M	H20522M	H31708M

INSTALLATION PREPARATIONS



WARNING: Read & understand these instructions before starting installation or dismantling:

- Coupler to be used for its designated purpose only
- Local regulations for (un)loading must be followed at all times
- Product flow may result in static electricity; grounding of equipment is required
- OPW instructions must be followed for installation or dismantling at all times
- Make sure to use adequate personal protection at all times during operation
- Secure whatever device coupler will be mounted to (e.g. loading arm, hose, etc.)
- Thread coupler onto pipe (use proper thread sealant)



MAINTENANCE



ATTENTION: The same risks and procedures of initial installation apply.

Consider the following when servicing the coupler:

- When coupler is over pressurized, it must be inspected thoroughly
- After maintenance is performed, it must be tested before the next use (see Testing After Servicing)
- Periodic inspection (every 3 months) for leakages (especially with toxic or hazardous mediums)
- Maintenance must be performed by authorized personnel
- Periodic maintenance (once a year) is required according to the maintenance instructions
- In case of (parts of) couplers being redirected, the initiator must provide information about the mediums, which have been in contact with (parts of) the coupler
- During maintenance, (partial) dismantling could be necessary; the same risks and procedures apply

1711ES & 1712ES SERIES COUPLERS

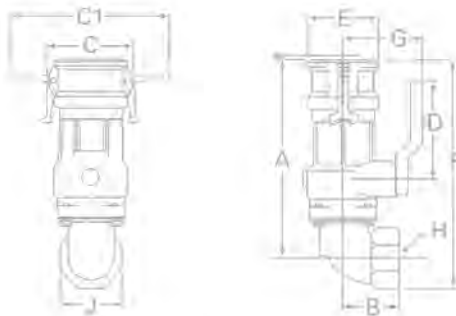
OPW Transport Series Dry Disconnect Couplings are used on multi-compartment petroleum, solvent and chemical product delivery trucks with an on-board pumping unit.

Benefits

- **Spill Protection** – Helps to reduce the hazard potential of spilled liquid during the connection/disconnection process. Special automatic shut-off design minimizes product loss in the event of an accidental disconnection.
- **Ease Of Use** – The built-in elbow/swivel design provides freedom of movement when used with a hose on tank trucks.

Features

- **Built-In Elbow/Swivel** – Provides freedom of movement when used with a hose on tank trucks.
- **Swivel** - 2" female NPT.
- **Poppeted Adaptor and Coupler** – Closes both ends of process during routine disconnect.
- **Built-In Valve** – For reliability of functionality. No additional valves required.
- **Quick Disconnect Cam and Groove Design** – Provides for smooth, easy connection/disconnection action.
- **360° Orientation** – The coupling can be connected in any orientation onto the adaptor.
- **Automatic Shut-Off Device** – Minimizes product loss in the event of accidental disconnection.
- **Lever Actuation** – For easy open/closing.
- **Manufactured in compliance with the highest quality standards of design, material, and construction.**
- **Available in Aluminum Plated Steel Internals with Buna-N Seals or Viton®.**



Dimensions

SIZE IN INCHES (Nominal)	2"
A Top of Body to Centerline of Elbow	9-9/16"
B Centerline of Elbow to End of Elbow	2-3/4"
C Distance across Cam Arms when closed	4-3/8"
C1 Distance across Cam Arms when open	8"
D Centerline of Stem to end of Lever	4-5/8"
E Diameter of Coupler End	3-33/64"
F Length of Unit	11-3/16"
G Centerline of Coupler to outside of Lever	3-5/8"
H Pipe Thread (NPT)	2"
J Distance across Flats of Octagon	3"

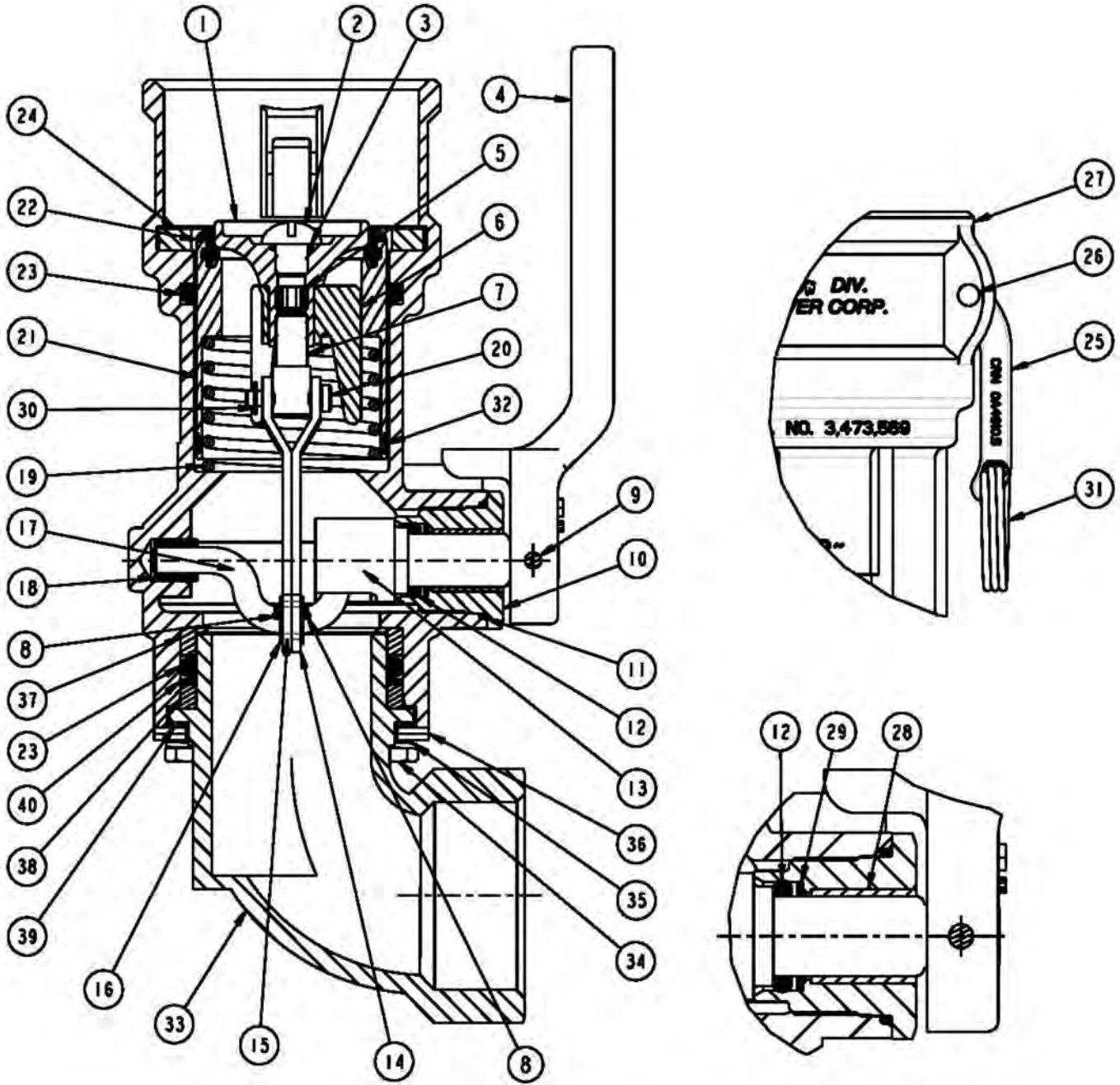
Ordering Specifications

PRODUCT NO.	PRODUCT	SIZE	CONSTRUCTION	SEALS
1711ES-0200	90° Elbow/Swivel Coupler	2"	Aluminum, Acetal	Buna-N
1712ES-0200	90° Elbow/Swivel Coupler	2"	Aluminum, Acetal	Viton®

OPW[®] Engineered Systems

A Dover Company

2" ES KAMVALOK COUPLER PARTS LIST



OPW Engineered Systems

A Dover Company

2" ES KAMVALOK COUPLER PARTS LIST

KEY	DESCRIPTION	1711ES 2"	1712ES 2"	1714ES 2"
1	POPPET	H-04471-RA	H-04471-RA	H-04471-RA
2	SCREW, POPPET	H-04468-M	H-04468-M	H-04468-M
3	SEAL, POPPET SCREW	▶H-02149-M	▶H-04916-M	▶H-06138-M
4	LEVER	C-10111-DI	C-10111-DI	C-10111-DI
5	SET SCREW	H-04310-M	H-04310-M	H-04310-M
6	POPPET GUIDE	▶H-04470-M	▶H-04470-M	▶H-04470-M
7	YOKE	H-04257-RE	H-04257-RE	H-04257-RE
8	COTTER PIN	▶H-04981-M (2)	▶H-04981-M (2)	▶H-04981-M (2)
9	GROOVE PIN, LEVER	H-20342-M	H-20342-M	H-20342-M
10	STUFFING BOX	▶C-10310-RAH	▶C-10310-RAH	▶C-10310-RAH
11	SEAL, STUFFING BOX	▶H-07725-M	▶H-05948-M	▶H-07442-M
12	SEAL, STEM	▶H-09423-M	▶H-06283-M	▶H-06321-M
13	STEM	C-10112-RE	C-10112-RE	C-10112-RE
14	LINK SUB ASS'Y	H-04255-M	H-04255-M	H-04255-M
15	BEARING	▶H-04273-M	▶H-04273-M	▶H-04273-M
16	WASHER	H-04626-M (2)	H-04626-M (2)	H-04626-M (2)
17	CAM SHAFT	H-09778-RE	H-09778-RE	H-09778-RE
18	BUSHING	H-04278-M	H-04278-M	H-04278-M
19	SPRING	H-04274-M	H-04274-M	H-04274-M
20	PIN, RIVET	H-20032-RE	H-20032-RE	H-20032-RE
21	SEAL CYLINDER	▶H-31543-A	▶H-31543-A	▶H-31543-A
22	NOSE SEAL	▶H-31528-M	▶H-31531-M	▶H-31534-M
23	MAIN SEAL	▶H-06223-M (2)	▶H-01076-M (2)	▶H-06142-M (2)
24	GASKET	▶H-20545-M	▶H-00974-M	▶H-20537-M
25	CAM ARM	C-10171-M (2)	C-10171-M (2)	C-10171-M (2)
26	GROOVE PIN, CAM ARM	H-20141-M (2)	H-20141-M (2)	H-20141-M (2)
27	BODY	D-00586-A	D-00586-A	D-00586-A
28	BUSHING, STUFFING BOX	▶H-10377-M	▶H-10377-M	▶H-10377-M
29	BACK UP RING	▶H-10376-M	▶H-10376-M	▶H-10376-M
30	E-RING	H-20627-M	H-20627-M	H-20627-M
31	FINGER RING	H-20550-M (2)	H-20550-M (2)	H-20550-M (2)
32	GUIDE STRIP, CYLINDER	▶H-31540-M	▶H-31540-M	▶H-31540-M
33	ELBOW	C-01345-A	C-01345-A	C-01345-A
34	SCREW	H-03657-M (4)	H-03657-M (4)	H-03657-M (4)
35	LOCK WASHER	H-20441-M (4)	H-20441-M (4)	H-20441-M (4)
36	FLANGE	H-05095-RS (4)	H-05095-RS (4)	H-05095-RS (4)
37	BEARING	▶H-05096-M	▶H-05096-M	▶H-05096-M
38	BEARING	▶H-05097-M	▶H-05097-M	▶H-05097-M
39	WASHER	▶H-05100-M	▶H-05100-M	▶H-05100-M
40	BACK UP RING	▶H-05155-M	▶H-20617-M	▶HX-91574

▶ PARTS INCLUDED IN REPAIR KITS

1700D SERIES COUPLERS

OPW Kamvalok® Dry Disconnect Couplings are considered the standard of the industry. Used at liquid transfer points where product loss could occur, OPW Kamvaloks® provide a reliable solution to prevent spillage during connection or disconnection.

OPW Kamvalok® Dry Disconnect Couplings are used by manufacturers of paint, lacquers, inks, adhesives, fatty acids, pharmaceuticals, liquid soaps, and many other liquid products. They are particularly well suited for handling petroleum products, solvents, ag-chemicals, vegetable oils, detergents and many acids and caustics.

Benefits

- **Spill Protection** – Helps to reduce the hazards involved in the connection/disconnection process of transferring hazardous materials.
- **Provides For Total Closed-Loop Loading Capabilities** – When used with the OPW 2173N Vapor Recovery Dry Disconnect coupling protects people and property from dangerous and potentially costly exposure by keeping hazardous liquids and vapors in-line and out of the environment.
- **Dual Protection** – OPW Kamvaloks® provide automatic closure from both directions – the coupler and the adaptor.
- **Ease of Use** – The simple connection and disconnection design and lever actuated internal poppet configuration makes this the first choice for liquid transfer operations.

Features

- **Manufactured in compliance with the highest quality standards of design, materials and construction.**
- **Cam and Groove Design** – The cam and groove design makes connection and disconnection smooth and easy.
- **Lever Actuation** – The open/close lever action helps to ensure that liquid flow can only begin once the coupling and adaptor are securely coupled. The lever provides for smooth opening and closing even for high pressure applications.
- **360° Orientation** – The coupling can be connected in any orientation onto the adaptor.



Dimensions

SIZE IN INCHES (Nominal)	3/4"	1 1/2"	2"	3"
A Length of Body	5-3/8"	6-25/32"	7-9/32"	9-3/4"
B Diameter of Body	1-7/8"	2-15/16"	3-33/64"	5-1/2"
C Distance across Cam Arms – closed	2-3/4"	3-15/16"	4-5/16"	7-21/32"
C1 Distance across Cam Arms – open	4-7/8"	8-1/16"	8-9/16"	15-1/4"
D Centerline of Stem to end of Lever	3-1/8"	6"	6-1/16"	7-1/4"
E Diameter of Coupler End	1-7/8"	2-15/16"	3-1/8"	5-1/2"
F Length, Pipe End to end of Lever	NA	7-1/2"	7-11/16"	9-3/4"
G Centerline of Coupler to outside of Lever	2-1/8"	3-17/32"	3-17/32"	5-3/8"
H Pipe Thread (NPT)	3/4"	1-1/2"	2"	3"

Ordering Specifications

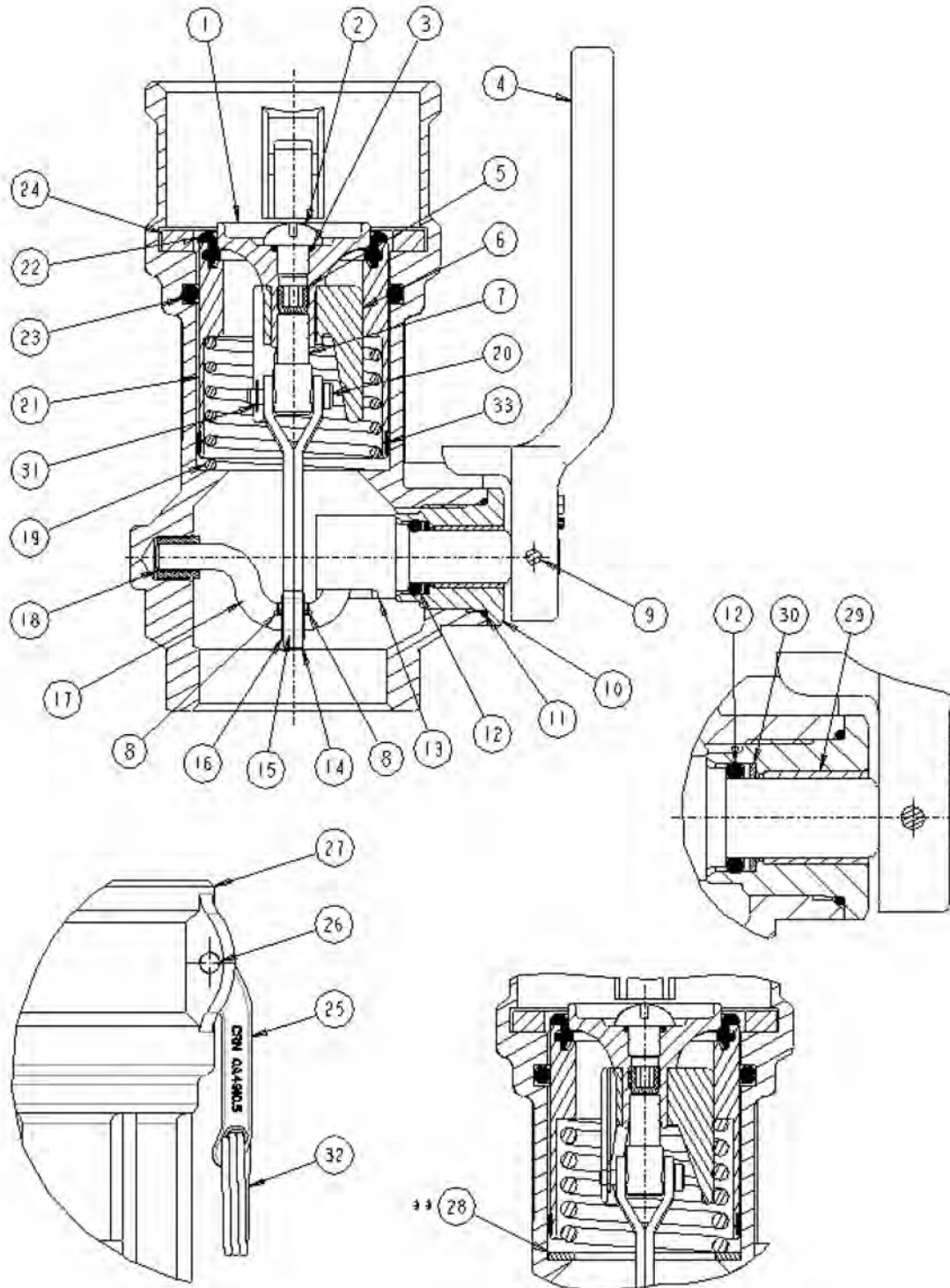
COUPLER	CONFIGURATION	O-RING SEAL	COUPLER TYPE	CONSTRUCTION MATERIAL	SIZE	STYLE
SERIES 17	1 – Aluminum Body, Plated Steel Internals 6 – Aluminum Body, Stainless Steel Internals, 7 – Stainless Steel Body, Stainless Steel Internals	1 – Buna-N 2 – Viton®-A 3 – TFE/Silicone Core/Chemraz® 4 – EPT 6 – Chemraz® 7 – TFE/Viton® Core/Chemraz® 9 – Viton®-B	D	AL – Aluminum Body SS – Stainless Steel	15-1 1/2" FNPT 20-2" FNPT 30-3" FNPT	A – 150 lb. Flange GL – Greaseless KG – Krytox Grease KL – Keylok P – Sanitary Triclamp T – 300 lb. Flange

EXAMPLE: **1711D – AL 15 – A**

opw[®] Engineered Systems

A Dover Company

2" KAMVALOK COUPLER PARTS LIST



** USED ON 1771D, 1772D, 1773D, 1774D, 1776D

A Dover Company

2" KAMVALOK COUPLER PARTS LIST

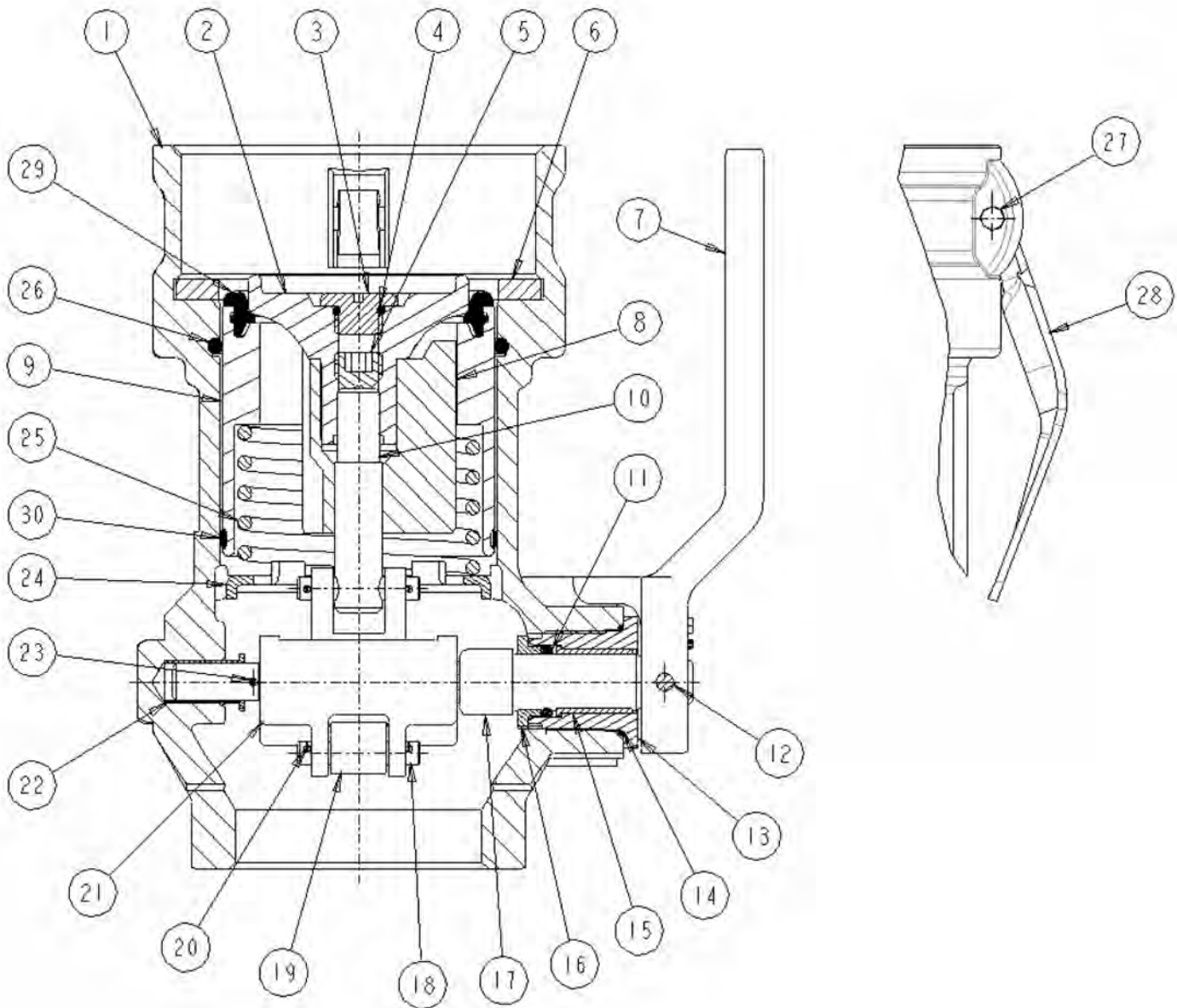
KEY DESCRIPTION	1711D 2"	1712D 2"	1761D 2"	1762D 2"	1763D 2"	1764D 2"	1771D 2"	1772D 2"	1773D 2"	1774D 2"	1776D 2"
1 POPPET	H-04471-RA	H-04471-RA	H-04471-RA	H-04471-RA	H-04471-RA	H-04471-RA	H-04858-RE	H-04858-RE	H-04858-RE	H-04858-RE	H-04858-RE
2 SCREW, POPPET	H-04468-M	H-04468-M	H-04468-M	H-04468-M	H-04468-M	H-04468-M	H-04468-M	H-04468-M	H-04468-M	H-04468-M	H-04468-M
3 SEAL, POPPET SCREW	▶H-02149-M	▶H-04916-M	▶H-02149-M	▶H-04916-M	▶H-04459-M	▶H-06138-M	▶H-02149-M	▶H-04916-M	▶H-04459-M	▶H-06138-M	▶H-04459-M
4 LEVER	C-10111-DI	C-10111-DI	C-10111-DI	C-10111-DI	C-10111-DI	C-10111-DI	C-10111-DI	C-10111-DI	C-10111-DI	C-10111-DI	C-10111-DI
5 SET SCREW	H-04310-M	H-04310-M	H-04310-M	H-04310-M	H-04310-M	H-04310-M	H-04310-M	H-04310-M	H-04310-M	H-04310-M	H-04310-M
6 POPPET GUIDE	▶H-04470-M	▶H-04470-M	▶H-06192-EW	▶H-06192-EW	▶H-06192-EW	▶H-06192-EW	▶H-06192-EW	▶H-06192-EW	▶H-06192-EW	▶H-06192-EW	▶H-06192-EW
7 YOKE	H-04257-RE	H-04257-RE	H-04257-RE	H-04257-RE	H-04257-RE	H-04257-RE	H-04257-RE	H-04257-RE	H-04257-RE	H-04257-RE	H-04257-RE
8 COTTER PIN	▶H-04981-M (2)	▶H-04981-M (2)	▶H-04981-M (2)	▶H-04981-M (2)	▶H-04981-M (2)	▶H-04981-M (2)	▶H-04981-M (2)	▶H-04981-M (2)	▶H-04981-M (2)	▶H-04981-M (2)	▶H-04981-M (2)
9 GROOVE PIN, LEVER	H-20342-M	H-20342-M	H-20342-M	H-20342-M	H-20342-M	H-20342-M	H-20342-M	H-20342-M	H-20342-M	H-20342-M	H-20342-M
10 STUFFING BOX	▶C-10310-RAH	▶C-10310-RAH	▶C-10310-RAH	▶C-10310-RAH	▶H-10375-RE	▶C-10310-RAH	▶H-10375-RE	▶H-10375-RE	▶H-10375-RE	▶H-10375-RE	▶H-10375-RE
11 SEAL, STUFFING BOX	▶H-07725-M	▶H-05948-M	▶H-07725-M	▶H-07442-M	▶H-07442-M	▶H-07442-M	▶H-07442-M	▶H-07442-M	▶H-07442-M	▶H-07442-M	▶H-07442-M
12 SEAL, STEM	▶H-09423-M	▶H-06283-M	▶H-09423-M	▶H-06283-M	▶H-20521-M	▶H-06321-M	▶H-09423-M	▶H-06283-M	▶H-20521-M	▶H-06321-M	▶H-20521-M
13 STEM	C-10112-RE	C-10112-RE	C-10112-RE	C-10112-RE	C-10112-RE	C-10112-RE	C-10112-RE	C-10112-RE	C-10112-RE	C-10112-RE	C-10112-RE
14 LINK SUB ASS'Y	H-04255-M	H-04255-M	H-04322-M	H-04322-M	H-04322-M	H-04322-M	H-04322-M	H-04322-M	H-04322-M	H-04322-M	H-04322-M
15 BEARING	▶H-04273-M	▶H-04273-M	▶H-04655-RE	▶H-04655-RE	▶H-04655-RE	▶H-04655-RE	▶H-04655-RE	▶H-04655-RE	▶H-04655-RE	▶H-04655-RE	▶H-04655-RE
16 WASHER	H-04626-M (2)	H-04626-M (2)	H-05033-M (2)	H-05033-M (2)	H-05033-M (2)	H-05033-M (2)	H-05033-M (2)	H-05033-M (2)	H-05033-M (2)	H-05033-M (2)	H-05033-M (2)
17 CAM SHAFT	H-09778-RE	H-09778-RE	H-09778-RE	H-09778-RE	H-09778-RE	H-09778-RE	H-09778-RE	H-09778-RE	H-09778-RE	H-09778-RE	H-09778-RE
18 BUSHING	H-04278-M	H-04278-M	H-04623-RE	H-04623-RE	H-04623-RE	H-04623-RE	H-04623-RE	H-04623-RE	H-04623-RE	H-04623-RE	H-04623-RE
19 SPRING	H-04274-M	H-04274-M	H-04328-M	H-04328-M	H-04328-M	H-04328-M	H-04328-M	H-04328-M	H-04328-M	H-04328-M	H-04328-M
20 PIN, RIVET	H-20032-RE	H-20032-RE	H-20032-RE	H-20032-RE	H-20032-RE	H-20032-RE	H-20032-RE	H-20032-RE	H-20032-RE	H-20032-RE	H-20032-RE
21 SEAL CYLINDER	▶H-31543-A	▶H-31543-A	▶H-31543-A	▶H-31543-A	▶H-31543-EW	▶H-31543-A	▶H-31543-EW	▶H-31543-EW	▶H-31543-EW	▶H-31543-EW	▶H-31543-EW
22 NOSE SEAL	▶H-31528-M	▶H-31531-M	▶H-31528-M	▶H-31531-M	▶H-31537-M	▶H-31534-M	▶H-31528-M	▶H-31531-M	▶H-31537-M	▶H-31534-M	▶H-31537-M
23 MAIN SEAL	▶H-06223-M	▶H-01076-M	▶H-06223-M	▶H-01076-M	▶H-20185-M	▶H-06142-M	▶H-06223-M	▶H-01076-M	▶H-20185-M	▶H-06142-M	▶H-20552-M
24 GASKET	▶H-20545-M	▶H-00974-M	▶H-20545-M	▶H-00974-M	▶H-07905-M	▶H-20537-M	▶H-20545-M	▶H-00974-M	▶H-07905-M	▶H-20537-M	▶H-20624-M
25 CAM ARM	C-10171-M (2)	C-10171-M (2)	C-10171-M (2)	C-10171-M (2)	C-10171-M (2)	C-10171-M (2)	C-10175-M (2)	C-10175-M (2)	C-10175-M (2)	C-10175-M (2)	C-10175-M (2)
26 GROOVE PIN, CAM ARM	H-20141-M (2)	H-20141-M (2)	H-20141-M (2)	H-20141-M (2)	H-20141-M (2)	H-20141-M (2)	H-20141-M (2)	H-20141-M (2)	H-20141-M (2)	H-20141-M (2)	H-20141-M (2)
27 BODY	D-00506-A	D-00506-A	D-00506-A	D-00506-A	D-00506-A	D-00506-A	D-00506-EW	D-00506-EW	D-00506-EW	D-00506-EW	D-00506-EW
28 ** WASHER, CYLINDER	N/A	N/A	N/A	N/A	N/A	N/A	H-04814-M	H-04814-M	H-04814-M	H-04814-M	H-04814-M
29 BUSHING, STUFFING BOX	▶H-10377-M	▶H-10377-M	▶H-10377-M	▶H-10377-M	▶H-10377-M	▶H-10377-M	▶H-10377-M	▶H-10377-M	▶H-10377-M	▶H-10377-M	▶H-10377-M
30 BACK UP RING	▶H-10376-M	▶H-10376-M	▶H-10376-M	▶H-10376-M	▶H-10376-M	▶H-10376-M	▶H-10376-M	▶H-10376-M	▶H-10376-M	▶H-10376-M	▶H-10376-M
31 E-RING	H-20627-M	H-20627-M	H-20627-M	H-20627-M	H-20627-M	H-20627-M	H-20627-M	H-20627-M	H-20627-M	H-20627-M	H-20627-M
32 FINGER RING	H-20550-M (2)	H-20550-M (2)	H-20550-M (2)	H-20550-M (2)	H-20550-M (2)	H-20550-M (2)	H-20550-M (2)	H-20550-M (2)	H-20550-M (2)	H-20550-M (2)	H-20550-M (2)
33 GUIDE STRIP, CYLINDER	▶H-31540-M	▶H-31540-M	▶H-31540-M	▶H-31540-M	▶H-31540-M	▶H-31540-M	▶H-31540-M	▶H-31540-M	▶H-31540-M	▶H-31540-M	▶H-31540-M

▶PARTS INCLUDED IN REPAIR KITS

OPW[®] Engineered Systems

A Dover Company

3" KAMVALOK COUPLER PARTS LIST



A Dover Company

3" KAMVALOK COUPLER PARTS LIST

KEYDESCRIPTION	1711D 3"	1712D 3"	1761D 3"	1762D 3"	1763D 3"	1764D 3"	1771D 3"	1772D 3"	1773D 3"	1774D 3"	1776D 3"
1 BODY	E-00104-A	E-00104-A	E-00104-A	E-00104-A	E-00104-A	E-00104-A	E-00262-EW	E-00262-EW	E-00262-EW	E-00262-EW	E-00262-EW
2 POPPET	H-20578-RA	H-20578-RA	H-20578-RA	H-20578-RA	H-20578-RA	H-20578-RA	C-01153-EW	C-01153-EW	C-01153-EW	C-01153-EW	C-01153-EW
3 SCREW, POPPET	H-20577-RA	H-20577-RA	H-20577-RA	H-20577-RA	H-20577-RA	H-20577-RA	H-05645-RE	H-05645-RE	H-05645-RE	H-05645-RE	H-05645-RE
4 SEAL, POPPET SCREW	▶H-06414-M	▶H-20149-M	▶H-06414-M	▶H-20149-M	▶H-04485-M	▶H-10210-M	▶H-06414-M	▶H-20149-M	▶H-04485-M	▶H-10210-M	▶H-04485-M
5 SET SCREW	H-04612-M	H-04612-M	H-08946-M	H-08946-M	H-08946-M	H-08946-M	H-08946-M	H-08946-M	H-08946-M	H-08946-M	H-08946-M
6 GASKET	▶H-20265-M	▶H-20131-M	▶H-20265-M	▶H-20131-M	▶H-31582-M	▶H-20265-M	▶H-20265-M	▶H-20131-M	▶H-31582-M	▶H-20265-M	▶H-20131-M
7 LEVER	C-10114-DI	C-10114-DI	C-10114-DI	C-10114-DI	C-10114-DI	C-10114-DI	C-10114-DI	C-10114-DI	C-10114-DI	C-10114-DI	C-10114-DI
8 POPPET GUIDE	C-01173-M	C-01173-M	C-10084-EW	C-10084-EW	C-10084-EW	C-10084-EW	C-10084-EW	C-10084-EW	C-10084-EW	C-10084-EW	C-10084-EW
9 SEAL CYLINDER	▶H-31544-A	▶H-31544-A	▶H-31544-A	▶H-31544-A	▶H-31544-EW	▶H-31544-A	▶H-31544-EW	▶H-31544-EW	▶H-31544-EW	▶H-31544-EW	▶H-31544-EW
10 STEM	H-05072-RE	H-05072-RE	H-05072-RE	H-05072-RE	H-05072-RE	H-05072-RE	H-05072-RE	H-05072-RE	H-05072-RE	H-05072-RE	H-05072-RE
11 SEAL, CAM SHAFT	▶H-20311-M	▶H-05138-M	▶H-20311-M	▶H-05138-M	▶H-20520-M	▶H-10211-M	▶H-20311-M	▶H-05138-M	▶H-20520-M	▶H-10211-M	▶H-20520-M
12 GROOVE PIN, LEVER	H-20141-M	H-20141-M	H-20141-M	H-20141-M	H-20141-M	H-20141-M	H-20141-M	H-20141-M	H-20141-M	H-20141-M	H-20141-M
13 STUFFING BOX	H-10347-RAH	H-10347-RAH	H-10347-RAH	H-10347-RAH	H-10347-RE	H-10347-RAH	H-10347-RE	H-10347-RE	H-10347-RE	H-10347-RE	H-10347-RE
14 SEAL, STUFFING BOX	▶H-10459-M	▶H-10351-M	▶H-10459-M	▶H-10351-M	▶H-10350-M	▶H-20077-M	▶H-10459-M	▶H-10351-M	▶H-10350-M	▶H-20077-M	▶H-10350-M
15 BUSHING	▶H-05120-M	▶H-05120-M	▶H-10346-M	▶H-10346-M	▶H-10346-M	▶H-10346-M	▶H-10346-M	▶H-10346-M	▶H-10346-M	▶H-10346-M	▶H-10346-M
16 SHAFT RETAINER	H-20005-RE	H-20005-RE	H-20005-RE	H-20005-RE	H-20005-RE	H-20005-RE	H-20005-RE	H-20005-RE	H-20005-RE	H-20005-RE	H-20005-RE
17 CAM SHAFT	H-20343-M	H-20343-M	H-20343-M	H-20343-M	H-20343-M	H-20343-M	H-20343-M	H-20343-M	H-20343-M	H-20343-M	H-20343-M
18 PIN	H-05675-RE (2)	H-05675-RE (2)	H-05675-RE (2)	H-05675-RE (2)	H-05675-RE (2)	H-05675-RE (2)	H-05675-RE (2)	H-05675-RE (2)	H-05675-RE (2)	H-05675-RE (2)	H-05675-RE (2)
19 LINK	H-05069-EW	H-05069-EW	H-05069-EW	H-05069-EW	H-05069-EW	H-05069-EW	H-05069-EW	H-05069-EW	H-05069-EW	H-05069-EW	H-05069-EW
20 COTTER PIN	▶H-04981-M (4)	▶H-04981-M (4)	▶H-04981-M (4)	▶H-04981-M (4)	▶H-04981-M (4)	▶H-04981-M (4)	▶H-04981-M (4)	▶H-04981-M (4)	▶H-04981-M (4)	▶H-04981-M (4)	▶H-04981-M (4)
21 YOKE	H-05070-EW	H-05070-EW	H-05070-EW	H-05070-EW	H-05070-EW	H-05070-EW	H-05070-EW	H-05070-EW	H-05070-EW	H-05070-EW	H-05070-EW
22 BUSHING	H-20372-M	H-20372-M	H-20372-M	H-20372-M	H-20372-M	H-20372-M	H-20372-M	H-20372-M	H-20372-M	H-20372-M	H-20372-M
23 COTTER PIN	▶H-01186-M	▶H-01186-M	▶H-01186-M	▶H-01186-M	▶H-01186-M	▶H-01186-M	▶H-01186-M	▶H-01186-M	▶H-01186-M	▶H-01186-M	▶H-01186-M
24 WASHER, CYLINDER	H-05030-M	H-05030-M	H-05030-M	H-05030-M	H-05160-M	H-05030-M	H-05160-M	H-05160-M	H-05160-M	H-05160-M	H-05160-M
25 SPRING	H-10392-M	H-10392-M	H-10352-M	H-10352-M	H-10352-M	H-10352-M	H-10352-M	H-10352-M	H-10352-M	H-10352-M	H-10352-M
26 MAIN SEAL	▶H-05152-M	▶H-05136-M	▶H-05152-M	▶H-05136-M	▶H-20186-M	▶H-10209-M	▶H-05152-M	▶H-05136-M	▶H-20186-M	▶H-10209-M	▶H-20186-M
27 GROOVE PIN, CAM ARM	H-20144-M (2)	H-20144-M (2)	H-20144-M (2)	H-20144-M (2)	H-20144-M (2)	H-20144-M (2)	H-20144-M (2)	H-20144-M (2)	H-20144-M (2)	H-20144-M (2)	H-20144-M (2)
28 CAM ARM	D-00272-B (2)	D-00272-B (2)	D-00272-B (2)	D-00272-B (2)	D-00272-B (2)	D-00272-B (2)	D-00272-EW (2)	D-00272-EW (2)	D-00272-EW (2)	D-00272-EW (2)	D-00272-EW (2)
29 NOSE SEAL	▶H-31529-M	▶H-31532-M	▶H-31529-M	▶H-31532-M	▶H-31538-M	▶H-31535-M	▶H-31529-M	▶H-31532-M	▶H-31538-M	▶H-31535-M	▶H-31538-M
30 GUIDE STRIP, CYLINDER	▶H-31541-M	▶H-31541-M	▶H-31541-M	▶H-31541-M	▶H-31541-M	▶H-31541-M	▶H-31541-M	▶H-31541-M	▶H-31541-M	▶H-31541-M	▶H-31541-M

▶PARTS INCLUDED IN REPAIR KITS

1600AN

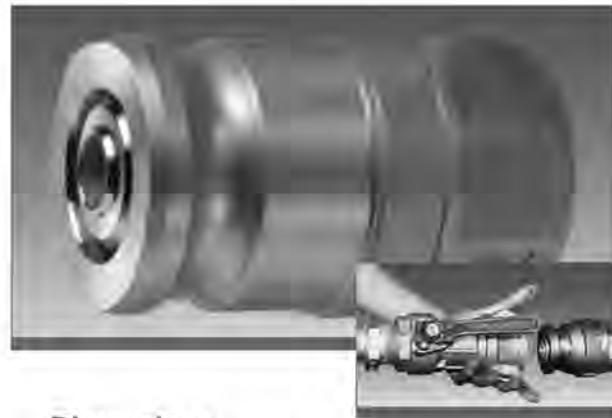
The 1600AN Series Adaptor is specifically designed to mate with OPW Kamvalok® Couplings to help prevent liquid spillage during the connection/disconnection process. The adaptor contains a spring-loaded poppet to assure fast closing and tight seal.

Benefits

- **Single Piece Design** – Eliminates a possible leak path
- **Spill Prevention** – Poppet-actuated design can only be opened with a ® coupling; designed to provide a tight seal when closed.
- **Reliability of Operation** – The simple spring-loaded poppet design and heavy-duty construction provide for reliable, long-life operation.
- **Optimum Flow Rate** – Even flow and low pressure drop are achieved by a built-in deflector that reduces turbulence.

Features

- **Heavy-Duty Construction** – Available in aluminum, and 316 stainless steel construction.
- **Female Threads** – Can be fitted to either a male pipe end or to a hose fitting.
- **Flanged End** – Available for specific operations, including in-plant and transportation.
- **Spring-Loaded Poppet Design** – Assures fast closing and tight seal.
- **Wide Range of Seals** – Available in Buna-N, Viton®, Teflon®, EPT, Chemraz®.



Dimensions



1611AN - 1679AN

SIZE IN INCHES (Nominal)

	1 1/2"	2"	3"
A	4-3/4"	4-15/16"	6-17/32"
B	2-1/2"	3-1/4"	4-1/2"
C	1-1/2"	2"	3"
D	2-21/32"	3-1/4"	4-7/8"



1661SFN

SIZE IN INCHES (Nominal)

	2"
A Overall Length	4-1/4"
B Diameter of Bolt Holes	9/16"
C Bolt Circle	4-1/2"
D Square Flange	4-1/4"

Ordering Specifications

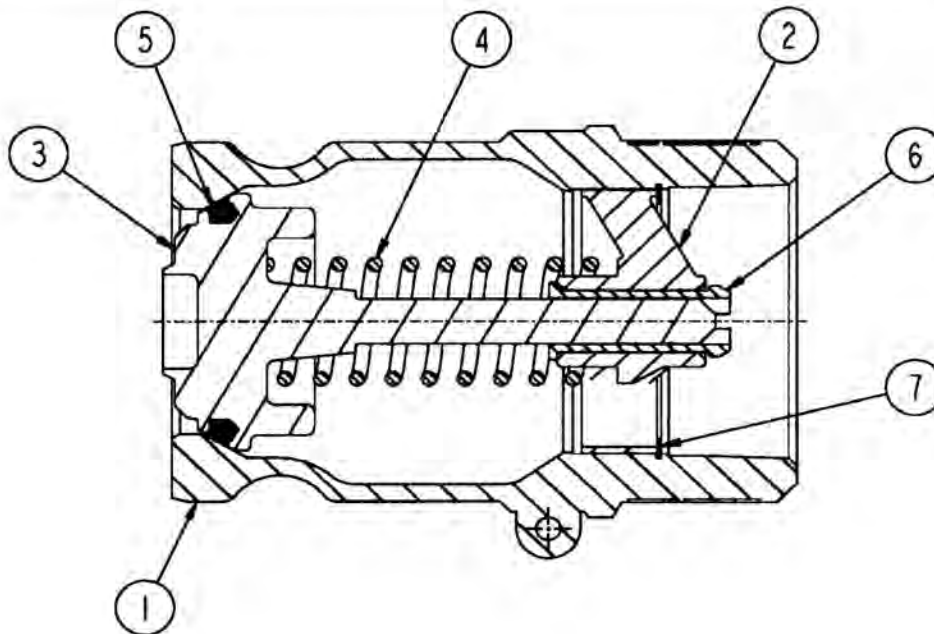
Stainless Steel Adaptors - Female NPT

Prod. No.	Size/Description
1671AN-SS15	1-1/2" Buna Seal, Stainless Steel
1671AN-SS20	2" Buna Seal, Stainless Steel
1671AN-SS30	3" Buna Seal, Stainless Steel
1672AN-SS15	1-1/2" Viton® Seal, Stainless Steel
1672AN-SS20	2" Viton® Seal, Stainless Steel
1672AN-SS30	3" Viton® Seal, Stainless Steel
1673AN-SS15	1-1/2" Teflon® Silicone Seal, Stainless Steel
1673AN-SS20	2" Teflon® Silicone Seal, Stainless Steel
1673AN-SS30	3" Teflon® Silicone Seal, Stainless Steel
1674AN-SS15	1-1/2" EPT Seal, Stainless Steel
1674AN-SS20	2" EPT Seal, Stainless Steel
1674AN-SS30	3" EPT Seal, Stainless Steel
1676AN-SS15	1-1/2" Chemraz® Seal, Stainless Steel
1676AN-SS20	2" Chemraz® Seal, Stainless Steel
1676AN-SS30	3" Chemraz® Seal, Stainless Steel
1677AN-SS15	1-1/2" Teflon®-Viton® Seal, Stainless Steel
1677AN-SS20	2" Teflon®-Viton® Seal, Stainless Steel
1677AN-SS30	3" Teflon®-Viton® Seal, Stainless Steel
1679AN-SS15	1-1/2" Viton®-B Seal, Stainless Steel
1679AN-SS20	2" Viton®-B Seal, Stainless Steel
1679AN-SS30	3" Viton®-B Seal, Stainless Steel

Aluminum Adaptors - Female NPT

Prod. No.	Size/Description
1611AN-AL15	1-1/2" Buna Seal, Alum. & Stainless Steel
1611AN-AL20	2" Buna Seal, Alum. & Stainless Steel
1611AN-AL30	3" Buna Seal, Alum. & Stainless Steel
1612AN-AL15	1-1/2" Viton® Seal, Alum. & Stainless Steel
1612AN-AL20	2" Viton® Seal, Alum. & Stainless Steel
1612AN-AL30	3" Viton® Seal, Alum. & Stainless Steel
1612A-AL07	3/4" Viton® Seal, Alum. & Stainless Steel
1613AN-AL15	1-1/2" Teflon® Seal, Alum. & Stainless Steel
1613AN-AL20	2" Teflon® Seal, Alum. & Stainless Steel
1613AN-AL30	3" Teflon® Seal, Alum. & Stainless Steel
1614AN-AL15	1-1/2" EPT Seal, Alum. & Stainless Steel
1614AN-AL20	2" EPT Seal, Alum. & Stainless Steel
1614AN-AL30	3" EPT Seal, Alum. & Stainless Steel
1616AN-AL15	1-1/2" Chemraz® Seal, Alum. & Stainless Steel
1616AN-AL20	2" Chemraz® Seal, Alum. & Stainless Steel
1616AN-AL30	3" Chemraz® Seal, Alum. & Stainless Steel
1619A-AL07	3/4" Viton®-B Seal, Alum.
1619AN-AL15	1-1/2" Viton®-B Seal, Alum.
1619AN-AL20	2" Viton®-B Seal, Alum.
1619AN-AL30	3" Viton®-B Seal, Alum.

1600 AN SERIES 1-1/2", 2" & 3" KAMVALOK ADAPTOR



New One Piece Design Effective 5/2004

KEY	DESCRIPTION	1611AN 1-1/2"	1612AN 1-1/2"	1613AN 1-1/2"	1614AN 1-1/2"	1671AN 1-1/2"	1672AN 1-1/2"	1673AN 1-1/2"	1674AN 1-1/2"	1676AN 1-1/2"
1	ADAPTOR BODY	C-20447-A	C-20447-A	C-20447-A	C-20447-A	C-20447-EW	C-20447-EW	C-20447-EW	C-20447-EW	C-20447-EW
2	BRIDGE	C-20448-M	C-20448-M	C-20448-M	C-20448-M	C-20448-M	C-20448-M	C-20448-M	C-20448-M	C-20448-M
3	POPPET	C-20449-EW	C-20449-EW	C-20449-EW	C-20449-EW	C-20449-EW	C-20449-EW	C-20449-EW	C-20449-EW	C-20449-EW
4	SPRING	H-04903-M	H-04903-M	H-04903-M	H-04903-M	H-04903-M	H-04903-M	H-04903-M	H-04903-M	H-04903-M
5	O-RING	▶H-20357-M	▶H-20359-M	▶H-20574-M	▶H-20358-M	▶H-20357-M	▶H-20359-M	▶H-20574-M	▶H-20358-M	▶H-20690-M
6	BEARING	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M
7	RETAINING RING	▶H-31368-M	▶H-31368-M	▶H-31368-M	▶H-31368-M	▶H-31368-M	▶H-31368-M	▶H-31368-M	▶H-31368-M	▶H-31368-M

KEY	DESCRIPTION	1611AN 2"	1612AN 2"	1613AN 2"	1614AN 2"	1671AN 2"	1672AN 2"	1673AN 2"	1674AN 2"	1676AN 2"
1	ADAPTOR BODY	C-20434-A	C-20434-A	C-20434-A	C-20434-A	C-20434-EW	C-20434-A	C-20434-A	C-20434-A	C-20434-A
2	BRIDGE	C-20435-M	C-20435-M	C-20435-M	C-20435-M	C-20435-M	C-20435-M	C-20435-M	C-20435-M	C-20435-M
3	POPPET	C-20446-EW	C-20446-EW	C-20446-EW	C-20446-EW	C-20446-EW	C-20446-EW	C-20446-EW	C-20446-EW	C-20446-EW
4	SPRING	H-04903-M	H-04903-M	H-04903-M	H-04903-M	H-04903-M	H-04903-M	H-04903-M	H-04903-M	H-04903-M
5	O-RING	▶H-20337-M	▶H-20339-M	▶H-20525-M	▶H-20338-M	▶H-20337-M	▶H-20339-M	▶H-20525-M	▶H-20338-M	▶H-20551-M
6	BEARING	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M	▶H-31106-M
7	RETAINING RING	▶H-31143-M	▶H-31143-M	▶H-31143-M	▶H-31143-M	▶H-31143-M	▶H-31143-M	▶H-31143-M	▶H-31143-M	▶H-31143-M

KEY	DESCRIPTION	1611AN 3"	1612AN 3"	1613AN 3"	1614AN 3"	1671AN 3"	1672AN 3"	1673AN 3"	1674AN 3"	1676AN 3"
1	ADAPTOR BODY	D-20145-A	D-20145-A	D-20145-A	D-20145-A	D-20145-EW	D-20145-EW	D-20145-EW	D-20145-EW	D-20145-EW
2	BRIDGE	C-20453-M	C-20453-M	C-20453-M	C-20453-M	C-20453-M	C-20453-M	C-20453-M	C-20453-M	C-20453-M
3	POPPET	C-20454-A	C-20454-A	C-20454-A	C-20454-A	C-20454-EW	C-20454-EW	C-20454-EW	C-20454-EW	C-20454-EW
4	SPRING	H-04525-M	H-04525-M	H-04525-M	H-04525-M	H-04525-M	H-04525-M	H-04525-M	H-04525-M	H-04525-M
5	O-RING	▶H-30686-M	▶H-31280-M	▶H-31218-M	▶H-31261-M	▶H-30686-M	▶H-31280-M	▶H-31216-M	▶H-31261-M	▶H-31282-M
6	BEARING	▶H-31115-M	▶H-31115-M	▶H-31115-M	▶H-31115-M	▶H-31115-M	▶H-31115-M	▶H-31115-M	▶H-31115-M	▶H-31115-M
7	RETAINING RING	▶H-31144-M	▶H-31144-M	▶H-31144-M	▶H-31144-M	▶H-31144-M	▶H-31144-M	▶H-31144-M	▶H-31144-M	▶H-31144-M

▶ Parts included in repair kits.

CIVAICON

CARGO TANK PRODUCTS GROUP

DRY DISCONNECT ADAPTORS AND COUPLERS

1711GC,

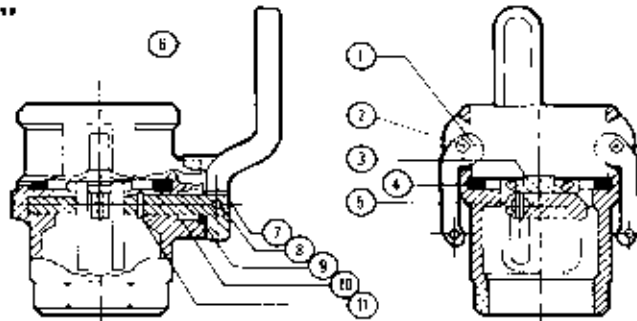
1661SF,

1661SFN



1711GC

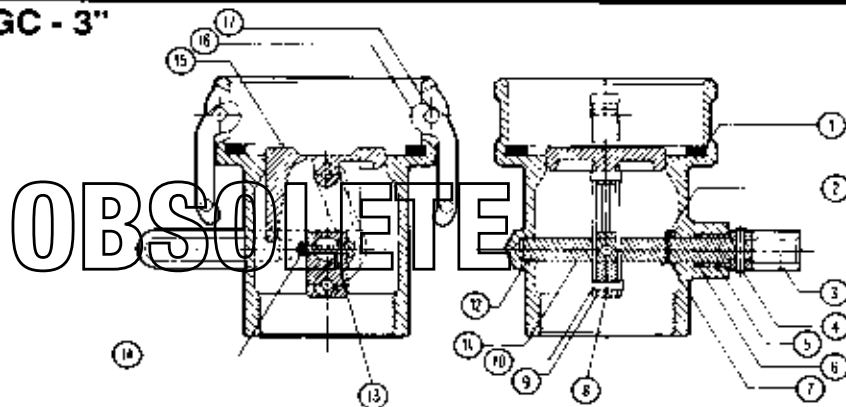
1711GC - 2"



Key	Part No.	Description
1	C-10171-M	Cam (2)
2	H-9770-RE	Pin (2)
3	H-5311-M	Lift Pad
4	H-20545-M	Gasket
5	H-9259-RB	Lift Arm
6	C-1414-DL	Lever

Key	Part No.	Description
7	H-5731-RE	Shaft
8	H-5732-RE	Pin
9	H-5730-M	Bearing
10	H-5810-M	Seal Ring
11	H-5251-M	Pin (2)

1711GC - 3"



Key	Part No.	Description
1	H-20547-M	Gasket
2	H-7821-M	Cutter Pin
3	C-1414-DL	Lever
4	H-5732-RE	Pin
5	H-8861-RP	Bearing
6	H-9423-M	O-Ring
7	H-6364-M	Washer
8	H-8473-RS	Drive Link
9	H-8472-M	Link (2)

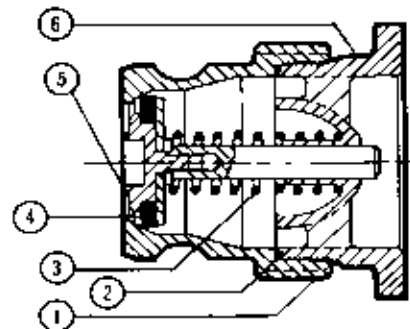
Key	Part No.	Description
10	H-20011-M	Hexel (2)
11	H-8863-RS	Shaft
12	H-8862-RP	Bushing
13	H-8463-RE	Fulcrum Pin
14	H-4981-M	Cutter Pin (2)
15	H-8864-AH	Poppet Actuator
16	D-10172-M	Cam Arm (2)
17	H-9771-RE	Pin (2)

1661SF

Key	Part No.	Description
1	C-1121-A	Adaptor
2	H-4239-M	Tetra Seal
3	H-4903-M	Spring
4	H-4907	Poppet Sub-Assy.
5	C-1312-A	Flanged Pipe End

1661SFN Same as 1661SF except as noted below

Key	Part No.	Description
1	C-10109-A	Adaptor
4	H-20336-RA	Poppet
	H-20337-M	D-Ring



COUPLER

Emco Wheaton DRY-BREAK™ Couplers and Adapters are used anywhere spill-free fluid transfer is required.

- Cannot be opened until connected to adapter or disconnected until lever is moved to closed position thus eliminating accidental spillage
- Product loss on disconnect virtually eliminated
- Aluminum version available with straight or 90° integrated ball-bearing swivel for kink-free hose connection
- Easily serviced in the field using the *Emco Wheaton Repair Kit Program*
- Interchangeable with all existing Emco Wheaton 1.5" and 2" inlet adapters

ADAPTER

- Enhanced poppet design allows for better flow characteristics in either direction
- Rear-entry design allows for easy field servicing
- One-piece poppet means fewer components for service
- Interchangeable with all existing Emco Wheaton 1.5" and 2" inlet couplers

EMCO WHEATON
A Gardner Denver Company

ACCESSORIES

Dust Cap for Adapter



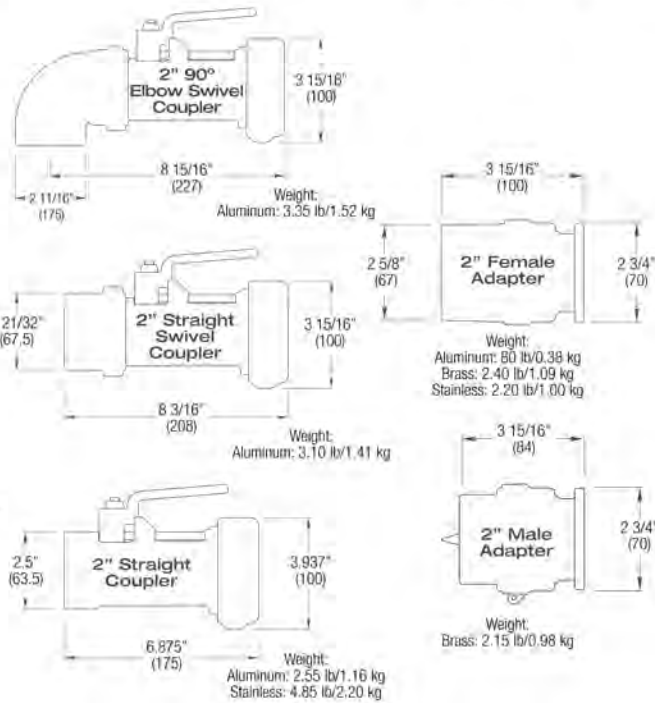
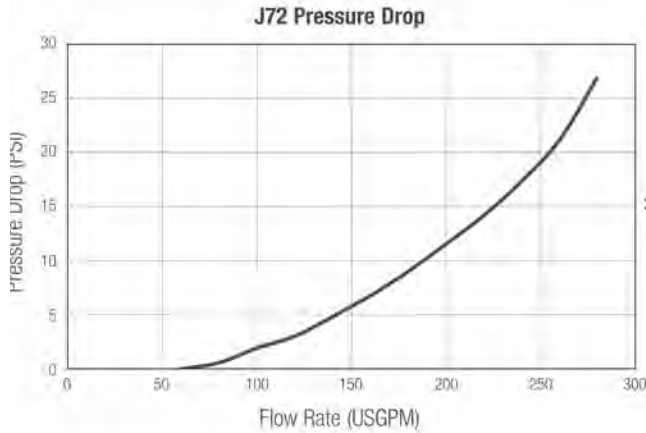
Adapter Opener



Dust Plug for Coupler



TECHNICAL SPECIFICATIONS



TO ORDER 2-INCH PRODUCTS

Configure your part number as shown below.
 Sample Part Number:

J 7 2 C - S V N 0 - B 0 0 1

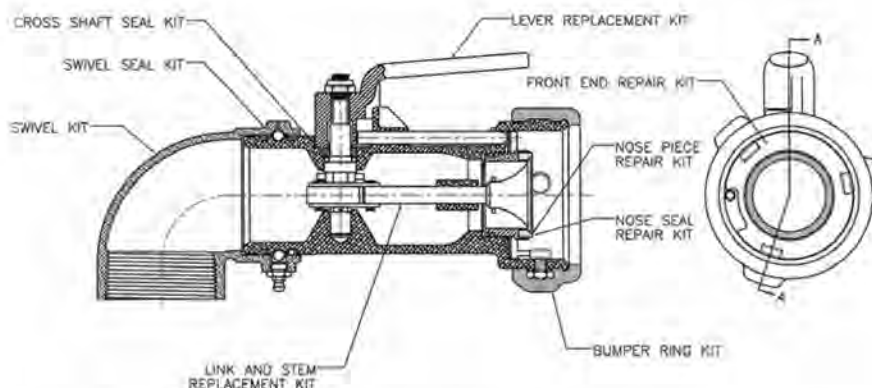
Type	Body Material	Seals	Inlet	Swivel	Rev.	Special Features
C=Coupler	S=Stainless Steel	V=Viton	N=Female NPT	0=Straight (No Swivel)	A	001=90° Handle
A=Adapter	A=Aluminum	B=Buna	M=Male NPT	1=Straight with Swivel	B	002=SST Trim
	B=Brass	P=Perfluoroelastomer (Chemraz)	I=ISO 228 Parallel	2=90° with Swivel	C	003=Selective (3-pin)
					etc.	004=with dust cap
						008=Selective (2-pin)

Note: for 1.5" inlet, use J79 instead of J72.

DRY-BREAK II™ PRODUCT BULLETIN

J72 & J79 COUPLER & ADAPTER REPAIR KITS (A & B VERSIONS)

Emco Wheaton has developed a series of REPAIR KITS suitable for the field repair of the J72 & J79 Series Couplers & Adapters.



Each kit includes an instruction sheet and all components and consumables needed to repair the specific wear zone. The part number is prominently displayed for easy stock identification. Below is a summary of the usage and key content of each type of KIT (*All Kits include Silicone Oil, Diagram, and Instruction Sheet*):

Front End Repair Kits (Major): For rebuilding the front end of the coupler. Contains Wave spring, O-Ring, Wave washer, Interlock plate, Interlock Pin, Bayonet Studs (3) and Lock Nuts (3), Bumper Ring, Nose Seal, Nose Piece, Cotter Pin, and Coiled Spring Pin.

Front End Repair Kits (Minor – Soft Parts): For repairing the front end of the coupler. Contains Wave spring, O-Ring, Wave washer, Bayonet studs (3) and Lock Nuts (3), Bumper ring, Nose seal, Cotter Pin, and Coiled Spring Pin.

Nose Seal Kit: For replacing the Nose Seal. Contains Nose seal, O-Ring, and Cotter Pin.

Nose Piece Kit: For replacement of a damaged poppet and nosepiece. Contains Nose Piece, Nose Seal, O-Ring, Poppet, and Cotter Pin.

Bumper Ring Kit: For replacing bumper rings that are worn or damaged. Contains 4 Bumper rings

Cross Shaft Seal Kit: For repairing leaks in the cross-shaft area. Contains O-Ring, Nylock Nut, Groove Pin, Roll Pin, and Follower. "B" Version Stainless contains O-Ring, Nylock Nut, Shaft retainer, Bearing (2), Washer, Inner Bearing, and Collar.

Lever Replacement Kit: For replacing the lever and cross-shaft. Contains Lever, cross shaft and contents of "Cross Shaft Seal Kit" (see above).

Link & Stem Replacement Kit: For complete replacement of a damaged Link & Stem Assembly. Contains Link & Stem Assembly and contents of "Cross Shaft Seal Kit" (see above).

Swivel Seal Kit: For complete repair and rebuilding of either 90° or straight Swivel. Contains Dust seal O-Ring, Liquid seal O-Ring, Grease Fitting, Ball bearings (6), Bearing Strip, Ball Retainer Screw, and gasket (ISO / BSPP versions only).

Swivel Replacement Kit: For complete replacement of either 90° or straight Swivel. Contains Swivel Body, and contents of "Swivel Seal Kit" (See above).

Adapter Repair Kit: For all adapter repairs. Contains Seal O-Ring or Disc, Valve Spring, and where applicable, Screw, Retaining Ring, Nylon Insert, and/or Nylon Washer. Listed below are the repair kits that are now available for Adapters.

Adapter Part #	Kit #	Adapter Part #	Kit #
All J1302 & J1304 Viton or Buna	800529	J72 STAINLESS / VITON REV. A	800331
J72 & J79 Buna REV. A Alum & Brass	494118	J72 STAINLESS / CHEMRAZ REV. A	800333
J72 & J79 VITON REV. A Alum & Brass	494119	J72 STAINLESS / VITON REV. B	800834
J72 & J79 Buna REV. B Alum & Brass	800300	J72 STAINLESS / CHEMRAZ REV. B	800833
J72 & J79 VITON REV. B Alum & Brass	800303		

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DRY-BREAK II™ PRODUCT BULLETIN

J72 & J79 COUPLER & ADAPTER REPAIR KITS (A & B VERSIONS)

COUPLERS

To determine the applicable repair kits for your coupler, find the part number in the list at the left-hand side. Then follow the line to determine the kit part number. For example, the cross shaft seal kit for J72C-ABN1-B is 299786.

"A" Versions

Coupler	Nose Seal Kit	Front End Kit (Minor)	Front End Kit (Major)	Nose Piece Kit	Cross Shaft Seal Kit	Lever Replacement Kit	Link & Stem Replacement Kit	Swivel Seal Kit	Swivel Replacement Kit	Bumper Ring Kit
J72C-ABB0-A	800412	800174	299780	299813	299786	299789	299796			299785
J72C-ABN0-A001	800412	800174	299780	299813	299786	299794	299796			299785
J72C-ABN0-A002	800412	800176	299782	299815	299786	299789	299796			299785
J72C-ABN1-A	800412	800174	299780	299813	299786	299789	299796	299801	299811	299785
J72C-ABN2-A	800412	800174	299780	299813	299786	299789	299796	299803	299809	299785
J72C-ABN2-A001	800412	800174	299780	299813	299786	299794	299796	299803	299809	299785
J72C-ABN2-A002	800412	800176	299782	299815	299786	299789	299796	299803	299809	299785
J72C-AVB0-A	800413	800175	299781	299814	299787	299790	299797			299785
J72C-AVB1-A	800413	800175	299781	299814	299787	299790	299797	800536	299808	299785
J72C-AVN0-A	800413	800175	299781	299814	299787	299790	299797			299785
J72C-AVN0-A001	800413	800175	299781	299814	299787	299795	299797			299785
J72C-AVN0-A002	800413	800177	299783	299816	299787	299790	299797			299785
J72C-AVN1-A	800413	800175	299783	299814	299787	299790	299797	299802	299812	299785
J72C-AVN2-A	800413	800175	299783	299814	299787	299790	299797	299804	299810	299785
J72C-AVN2-A001	800413	800175	299783	299814	299787	299795	299797	299804	299810	299785
J72C-SBN0-A	800412	800176	299782	299815	299786	299791	299798			299785
J72C-SPB0-A	800414	800178	299784	299817	299788	299793	299800			299785
J72C-SPN0-A	800414	800178	299784	299817	299788	299793	299800			299785
J72C-SVB0-A	800413	800177	299783	299816	299787	299792	299799			299785
J72C-SVN0-A	800413	800177	299783	299816	299787	299792	299799			299785

"B" Versions

Coupler	Nose Seal Kit	Front End Kit (Minor)	Front End Kit (Major)	Nose Piece Kit	Cross Shaft Seal Kit	Lever Replacement Kit	Link & Stem Replacement Kit	Swivel Seal Kit	Swivel Replacement Kit	Bumper Ring Kit
J72C-ABN0-B	800412	800174	299780	299813	299786	299789	299796			299785
J72C-ABN0-B001	800412	800174	299780	299813	299786	299794	299796			299785
J72C-ABN1-B	800412	800174	299780	299813	299786	299789	299796	299801	299811	299785
J72C-ABN1-B003	800412	800174	299780	299813	299786	299789	299796	299801	299811	299785
J72C-ABN2-B	800412	800174	299780	299813	299786	299789	299796	299803	299809	299785
J72C-ABN2-B001	800412	800174	299780	299813	299786	299794	299796	299803	299809	299785
J72C-ABN2-B002	800412	800176	299782	299815	299786	299789	299796	299803	299809	299785
J72C-AVI0-B	800413	800175	299781	299814	299787	299790	299797			299785
J72C-AVI1-B	800413	800175	299781	299814	299787	299790	299797	800536	299808	299785
J72C-AVI2-B	800413	800175	299781	299814	299787	299790	299797	800537	299806	299785
J72C-AVN0-B	800413	800175	299781	299814	299787	299790	299797			299785
J72C-AVN0-B001	800413	800175	299781	299814	299787	299795	299797			299785
J72C-AVN0-B002	800413	800177	299783	299816	299787	299790	299797			299785
J72C-AVN0-B003	800413	800175	299781	299814	299787	299790	299797			299785
J72C-AVN1-B	800413	800175	299781	299814	299787	299790	299797	299802	299812	299785
J72C-AVN1-B002	800413	800177	299783	299816	299787	299790	299797	299802	299812	299785
J72C-AVN1-B003	800413	800175	299781	299814	299787	299790	299797	299802	299812	299785
J72C-AVN2-B	800413	800175	299781	299814	299787	299790	299797	299804	299810	299785
J72C-AVN2-B001	800413	800175	299781	299814	299787	299795	299797	299804	299810	299785
J72C-SBN0-B	800412	800909	800272	800284	800274	800276	800282			299785
J72C-SPB0-B	800414	800912	800285	800293	800286	800289	800291			299785
J72C-SPI0-B	800414	800912	800285	800293	800286	800289	800291			299785
J72C-SPN0-B	800414	800912	800285	800293	800286	800289	800291			299785
J72C-SVI0-B	800413	800911	800288	800280	800287	800290	800292			299785
J72C-SVN0-B	800413	800911	800288	800280	800287	800290	800292			299785
J72C-SVN0-B001	800413	800911	800288	800280	800287	CALL	800292			299785
J72C-SVN0-B003	800413	800911	800288	800280	800287	800290	800292			299785
J72C-SVN0-B008	800413	800911	800288	800280	800287	800290	800292			299785
J72C-SBI0-B	800412	800909	800272	800284	800274	800276	800282			299785

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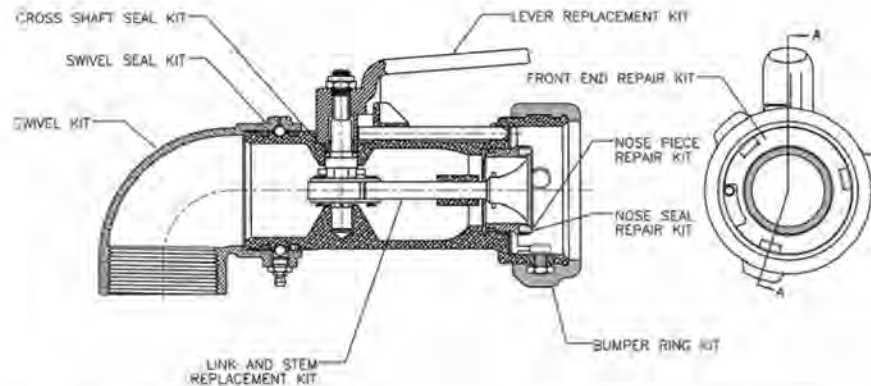
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DRY-BREAK II™ PRODUCT BULLETIN

J72 & J79 COUPLER & ADAPTER REPAIR KITS (C & D VERSIONS)

Emco Wheaton has developed a series of REPAIR KITS suitable for the field repair of the J72 & J79 Series Couplers & Adapters.



Each kit includes an instruction sheet and all components and consumables needed to repair the specific wear zone. The part number is prominently displayed for easy stock identification. Below is a summary of the usage and key content of each type of KIT (*All Kits include Silicone Oil, Diagram, and Instruction Sheet*):

Front End Repair Kits (Major): For rebuilding the front end of the coupler. Contains Wave spring, O-Ring, Wave washer, Interlock plate, Interlock Pin, Bayonet Studs and Lock Nuts (3 or 4 for 4-pin models), Bumper Ring, Nose Seal, Nose Piece, Cotter Pin, and Coiled Spring Pin.

Front End Repair Kits (Minor – Soft Parts): For repairing the front end of the coupler. Contains Wave spring, O-Ring, Wave washer, Bayonet Studs and Lock Nuts (3 or 4 for 4-pin models), Bumper ring, Nose seal, Cotter Pin, and Coiled Spring Pin.

Nose Seal Kit: For replacing the Nose Seal. Contains Nose seal, O-Ring, and Cotter Pin.

Nose Piece Kit: For replacement of a damaged poppet and nosepiece. Contains Nose Piece, Nose Seal, O-Ring, Poppet, and Cotter Pin.

Bumper Ring Kit: For replacing bumper rings that are worn or damaged. Contains 4 Bumper rings

Cross Shaft Seal Kit: For repairing leaks in the cross-shaft area. "C" Version Stainless Contains O-Ring, Nylock Nut, E-clip, Bearing (2), Washer, Inner Bearing, and Collar. "D" Version Aluminum contains O-Ring, Nylock Nut, Groove Pin, Roll Pin, and Follower.

Lever Replacement Kit: For replacing the lever and cross-shaft. Contains Lever, cross shaft and contents of "Cross Shaft Seal Kit" (see above).

Link & Stem Replacement Kit: For complete replacement of a damaged Link & Stem Assembly. Contains Link & Stem Assembly and contents of "Cross Shaft Seal Kit" (see above).

Swivel Seal Kit: For complete repair and rebuilding of either 90° or straight Swivel. Contains Dust seal O-Ring, Liquid seal O-Ring, Grease Fitting, Ball bearings (6), Bearing Strip, Ball Retainer Screw, and gasket (ISO / BSPP versions only).

Swivel Replacement Kit: For complete replacement of either 90° or straight Swivel. Contains Swivel Body, and contents of "Swivel Seal Kit" (See above).

Adapter Repair Kit: For all adapter repairs. Contains Seal O-Ring, Valve Spring, and where applicable, Screw, Retaining Ring, Nylon Insert, and/or Nylon Washer.

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DRY-BREAK II™ PRODUCT BULLETIN

J72 & J79 COUPLER & ADAPTER REPAIR KITS (C & D VERSIONS)

COUPLERS

To determine the applicable repair kits for your coupler, find the part number in the list at the left-hand side. Then follow the line to determine the kit part number. For example, the cross shaft seal kit for J72C-SVN0-C is 800944.

"C" Versions

Coupler	Nose Seal Kit	Front End Kit (Minor)	Front End Kit (Major)	Nose Piece Kit	Cross Shaft Seal Kit	Lever Replacement Kit	Link & Stem Replacement Kit	Swivel Seal Kit	Swivel Replacement Kit	Bumper Ring Kit
J72C-SVN1-C010	800413	800913	800916	800280	800944	800945	800947		6226-4047	800951
J72C-SVN0-C	800413	800911	800288	800280	800944	800945	800947			299785
J72C-AVN2-C003	800413	800175	299781	299814	299787	299790	299797	299804	299810	299785
J72C-SPN0-C	800414	800912	800285	800293	800956	800957				299785
J72C-SBN0-C010	800412	800920	800917	800284	800942	800950	800948			800951
J72C-SBN0-C	800412	800909	800272	800284	800942	800950	800948			299785

"D" Versions

Coupler	Nose Seal Kit	Front End Kit (Minor)	Front End Kit (Major)	Nose Piece Kit	Cross Shaft Seal Kit	Lever Replacement Kit	Link & Stem Replacement Kit	Swivel Seal Kit	Swivel Replacement Kit	Bumper Ring Kit
J72C-ABI0-D	800412	800174	299780	299813	299786	299789	299796			299785
J72C-ABI1-D	800412	800174	299780	299813	299786	299789	299796	800532	299807	299785
J72C-ABI1-D003	800412	800174	299780	299813	299786	299789	299796	800532	299807	299785
J72C-ABI2-D	800412	800174	299780	299813	299789	299789	299796	800533	299805	299785
J72C-ABI2-D003	800412	800174	299780	299813	299786	299789	299796	800533	299805	299785
J72C-ABN0-D	800412	800174	299780	299813	299786	299789	299796			299785
J72C-ABN0-D001	800412	800174	299780	299813	299786	299794	299796			299785
J72C-ABN1-D	800412	800174	299780	299813	299786	299789	299796	299801	299811	299785
J72C-ABN1-D003	800412	800174	299780	299813	299786	299789	299796	299801	299811	299785
J72C-ABN2-D	800412	800174	299780	299813	299786	299789	299796	299803	299809	299785
J72C-ABN2-D002	800412	800176	299782	299815	299786	299789	299796	299803	299809	299785
J72C-ABN2-D003	800412	800174	299780	299813	299786	299789	299796	299803	299809	299785
J72C-APN0-D	800414	800983	800984	800985	299788	800986	800987			299785
J72C-AVI0-D	800413	800175	299781	299814	299787	299790	299797			299785
J72C-AVI1-D	800413	800175	299781	299814	299787	299790	299797	800536	299808	299785
J72C-AVI1-D003	800413	800175	299781	299814	299787	299790	299797	800536	299808	299785
J72C-AVI2-D	800413	800175	299781	299814	299787	299790	299797	800537	299806	299785
J72C-AVI2-D003	800413	800175	299781	299814	299787	299790	299797	800537	299806	299785
J72C-AVN0-D001	800413	800175	299781	299814	299787	299795	299797			299785
J72C-AVN0-D002	800413	800177	299783	299816	299787	299790	299797			299785
J72C-AVN0-D003	800413	800175	299781	299814	299787	299790	299797			299785
J72C-AVN0-D008	800413	800175	299781	299814	299787	299790	299797			299785
J72C-AVN1-D002	800413	800177	299783	299816	299787	299790	299797	299802	299812	299785
J72C-AVN1-D003	800413	800175	299781	299814	299787	299790	299797	299802	299812	299785
J72C-AVN2-D	800413	800175	299781	299814	299787	299790	299797	299804	299810	299785
J72C-AVN2-D001	800413	800175	299781	299814	299787	299795	299797	299804	299810	299785
J72C-AVN2-D003	800413	800175	299781	299814	299787	299790	299797	299804	299810	299785

ADAPTERS

Listed below are the repair kits that are now available for Adapters.

ADAPTER	REPAIR KIT
J1302 & J1304 VITON OR BUNA	800529
J72 & J79 ALUM. OR BRASS BUNA VERSION A	494118
J72 & J79 ALUM. OR BRASS VITON VERSION A	494119
J72 & J79 ALUM. OR BRASS BUNA VERSION B	800300
J72 & J79 ALUM. OR BRASS VITON VERSION B	800303
J72 STAINLESS VITON VERSION A	800331
J72 STAINLESS CHEMRAZ VERSION A	800333
J72 STAINLESS VITON VERSION B	800834
J72 STAINLESS CHEMRAZ VERSION B	800833

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COUPLER

Emco Wheaton DRY-BREAK™ Couplers and Adapters are used anywhere spill-free fluid transfer is required.

- Cannot be opened until connected to adapter or disconnected until lever is moved to closed position thus eliminating accidental spillage
- Product loss on disconnect virtually eliminated
- Available with straight or 90° integrated ball-bearing swivel for loading arm or kink-free hose connection
- Easily serviced in the field using the *Emco Wheaton Repair Kit Program*
- Interchangeable with all existing Emco Wheaton 3" inlet adapters

ADAPTER

- Enhanced poppet design allows for better flow characteristics in either direction
- Rear-entry design allows for easy field servicing
- One-piece poppet means fewer components for service
- Interchangeable with all existing Emco Wheaton 3" inlet couplers

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ACCESSORIES

Dust Cap for Adapter



Adapter Opener

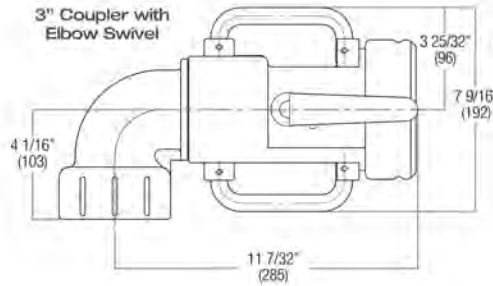
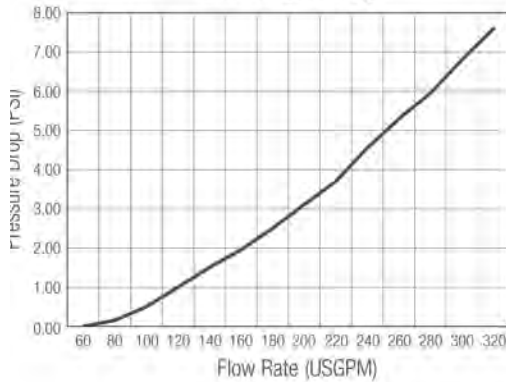


Dust Plug for Coupler

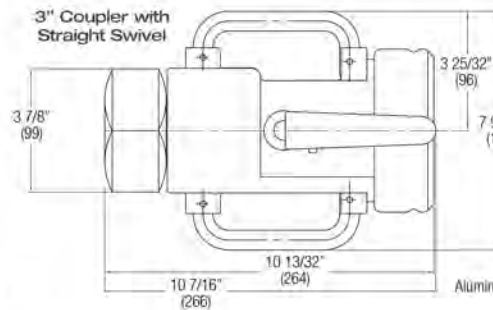


TECHNICAL SPECIFICATIONS

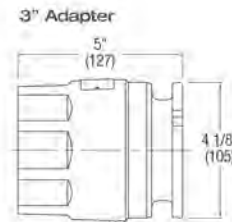
J73 Pressure Drop



Weight:
Aluminum: 9.00 lb/4.1 kg



Weight:
Aluminum: 8.15 lb/3.7 kg



Weight:
Aluminum: 2.50 lb/1.1 kg
Brass: 8.00 lb/3.6 kg

HOW TO ORDER 3-INCH PRODUCTS

Configure your part number as shown below.

Sample Part Number:

J 7 3 C - A V N 1 - B 0 0 3

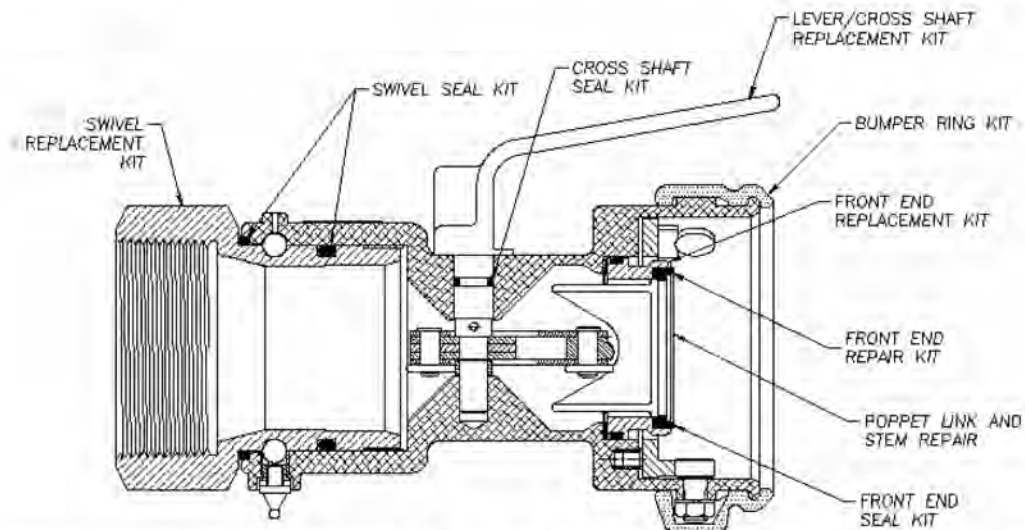
Type	Body Material	Seals	Inlet	Swivel	Rev.	Special Features
C=Coupler A=Adapter	A=Aluminum B=Brass	V=Viton B=Buna E=EPDM	N=Female NPT I=ISO 228 Parallel T=ISO 228 Tapered	0=Straight (No Swivel) 1=Straight with Swivel 2=90° with Swivel	A B etc.	003=Selective (3-pin)

EMCO WHEATON
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DRY-BREAK II™ PRODUCT BULLETIN

J73 COUPLER & ADAPTER REPAIR KITS

Emco Wheaton has developed a series of REPAIR KITS suitable for the field repair of the J73 Series Couplers & Adapters.



Our previous experience with this type of KIT PROGRAM has proven its value. If a Coupler or an Adapter has a leaky seal or 'O' Ring, or a part worn, the feeling is the installation of a complete REPAIR KIT in that area of concern will give the user far better value for the money, rather than just replacing one or two parts. The installation of the KIT renders a wear zone on the Coupler or Adapter completely rebuilt, and will consequently give longer service life. These KITS are available off the shelf, and come complete with Instruction Sheet and diagram. The part number is prominently displayed for easy stock identification. Below is a summary of the usage and key content of each type of KIT (*All Kits include Silicone Oil, Diagram, and Instruction Sheet*):

Front End (Major) Replacement Kit: For major rebuild of the front end of the coupler. Kit Contains: Nose Piece, Nose Seal, Front End O-ring, Cross Shaft O-ring, roll pins, wave spring, springs, spacer, Interlock Plate, Bayonet Studs (3), Eyelets (3) and nuts (3), Interlock Pin, Retaining ring, and bumper ring.

Front End (Minor) Repair Kit: For minor repair of the front end of the coupler. Kit Contains: Nose Seal, Cross Shaft O-ring, Front End O-Ring, Roll Pin, Bayonet Studs (3), Eyelets (3) and nuts (3), wave spring, Loctite and bumper ring.

Front End Seal Kit: For nose seal replacement only. Kit Contains: Nose Seal, Cross Shaft O-ring, Front End O-Ring, Roll Pin, and Aluminium spacer.

Bumper Ring Kit: Contains two (2) Bumper Rings.

Cross Shaft Seal Kit: For replacement of cross shaft seal only. Kit Contains: Cross Shaft O-ring, and Roll Pin.

Lever / Cross Shaft Kit: For replacing the lever and cross-shaft. Kit Contains: Cross Shaft O-Ring, Roll Pin, Aluminum Spacer, and Cross Shaft / Lever Assembly.

Poppet / Link & Stem Replacement Kit: For complete replacement of a damaged Poppet / Link & Stem Assembly. Kit Contains: Poppet / Link & Stem Assembly (complete), Roll Pin, and Cross-Shaft O-Ring.

Swivel Seal Kit: For repair of the straight or 90° swivel. Kit Contains: Ball bearings (6), Bearing Strip, Felt Wiper, Lube Fitting, Quad Ring Seal, Ball Retainer, and Seal Disc (BSP/ISO only).

Swivel Replacement Kit: For replacement of the straight or 90° swivel. Kit Contains: Ball bearings (27), Swivel Body, Bearing Strip, Felt Wiper, Lube Fitting, Quad Ring Seal, Ball Retainer, and Seal Disc (BSP/ISO only).



DRY-BREAK II™ PRODUCT BULLETIN

J73 COUPLER & ADAPTER REPAIR KITS

COUPLERS

To determine the correct repair kit for your coupler, find the part number of the coupler in the list at the left-hand side. Then follow the line to determine the kit number. For example, the cross shaft seal kit for J73C-ABN2-A is 800453.

COUPLER PART #	Front End Replacement Kit	Front End Repair Kit	Front End Seal Kit	Cross Shaft Seal Kit	Lever / Cross Shaft Replacement Kit	Poppet / Link & Stem Repair Kit	Swivel Replacement Kit	Swivel Seal Kit	Bumper Ring Kit						
COUPLERS WITH STRAIGHT SWIVEL															
J73C-ABB1-A	800447	800476	800450	800453	800470	800471	800461	800458	8 0 0 4 7 4						
J73C-ABI1-B							800464	800467							
J73C-ABN1-A							800448	800477		800451	800454	800456	800472	800462	800459
J73C-ABN1-A003														800465	800468
J73C-ABN1-B															
J73C-ABN1-B003															
J73C-AVB1-A															
J73C-AVI1-B															
J73C-AVN1-A															
J73C-AVN1-A003															
J73C-AVN1-B															
J73C-AVN1-B003															
COUPLERS WITH 90° ELBOW SWIVEL															
J73C-ABN2-A	800447	800476	800450	800453	800470	800471	800479	800467	800474						
J73C-ABN2-B								800458							
J73C-ABI2-B															
J73C-AVN2-A	800448	800477	800451	800454	800456	800472	800480	800468							
J73C-AVN2-B								800459							
J73C-AVI2-B															

ADAPTERS

Listed below are the repair kits that are now available for Adapters.

ADAPTER PART #	Kit #
J73A-ABN0-A	800339
J73A-ABT0-A	
J73A-AVN0-A	
J73A-AVN0-A003	800340
J73A-AVT0-A	
J73A-BBN0-A	800336
J73A-BBN0-A003	
J73A-BBT0-A	
J73A-BEN0-A003	800337
J73A-BVN0-A	800335
J73A-BVN0-A003	
J73A-BVT0-A	

Each of the above kits includes the following items: Front End and Back End Retaining Screws, Poppet and Screw O-Rings, Sealing Washer, Spring, Flat Washer.

ADAPTER PART #	Kit #
J73A-ABN0-B	800647
J73A-BBN0-B	
J73A-BBN0-B003	
J73A-ABI0-B	800650
J73A-BBI0-B	
J73A-AVN0-B	800648
J73A-AVN0-B003	
J73A-BVN0-B	
J73A-BVN0-B003	
J73A-AVI0-B	800651
J73A-BVI0-B	

Each of the above kits includes the following items: O-Ring, Spring, Retaining Ring, Sealing Disc (ISO 228 Inlet Kits only).

ADAPTER PART #	Kit #
All J1302 w/ VITON seals	493374
All J1302 w/ BUNA seals	493373

Each of the above kits includes the following items: Retaining Screw, Screw O-Ring, Seal Ring, Spring.

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