

Pressure Cars



MIDLAND™



Midland Pressure Railcar Products

Reliable Quality and Innovative Design Combines to Provide Peace-of-Mind Safety in the Most Demanding Applications

Angle Valves

Midland angle valves provide complete, long-life, high performance sealing, superior flow, and low maintenance.

All Midland angle valves incorporate built-in self-cleaning action which is achieved through built-in self-cleaning design using wide angle operating ranges. Midland angle valves are available in a wide range of materials, sizes, ratings, and options for your application. Midland angle valves are used in a wide range of applications including: pulp, industrial, chemical, fertilizer, oil, and offshore.



Valve Actuators

Midland Valve Actuators can drive a valve to open from either manual, automatic, or pneumatic means in the event of a power or hydraulic communication during loading or unloading.

Midland Valve Actuators are designed to provide a wide range of options to meet your needs. Midland Valve Actuators are available in a wide range of materials, sizes, ratings, and options for your application. Midland Valve Actuators are used in a wide range of applications including: pulp, industrial, chemical, fertilizer, oil, and offshore.



Pressure Relief Valves

Midland Pressure Relief Valves are designed to provide complete, long-life, high performance sealing, superior flow, and low maintenance.

Midland Pressure Relief Valves are designed to provide a wide range of options to meet your needs. Midland Pressure Relief Valves are available in a wide range of materials, sizes, ratings, and options for your application. Midland Pressure Relief Valves are used in a wide range of applications including: pulp, industrial, chemical, fertilizer, oil, and offshore.



Check Valves

Midland Check Valves are designed to provide complete, long-life, high performance sealing, superior flow, and low maintenance. Midland Check Valves are available in a wide range of materials, sizes, ratings, and options for your application. Midland Check Valves are used in a wide range of applications including: pulp, industrial, chemical, fertilizer, oil, and offshore.



Magnetic Coupling Devices

Midland Magnetic Coupling Devices are designed to provide complete, long-life, high performance sealing, superior flow, and low maintenance. Midland Magnetic Coupling Devices are available in a wide range of materials, sizes, ratings, and options for your application. Midland Magnetic Coupling Devices are used in a wide range of applications including: pulp, industrial, chemical, fertilizer, oil, and offshore.



Needle Valves

Midland Needle Valves are designed to provide complete, long-life, high performance sealing, superior flow, and low maintenance. Midland Needle Valves are available in a wide range of materials, sizes, ratings, and options for your application. Midland Needle Valves are used in a wide range of applications including: pulp, industrial, chemical, fertilizer, oil, and offshore.

Flareconnects

Midland Flareconnects are designed to provide complete, long-life, high performance sealing, superior flow, and low maintenance. Midland Flareconnects are available in a wide range of materials, sizes, ratings, and options for your application. Midland Flareconnects are used in a wide range of applications including: pulp, industrial, chemical, fertilizer, oil, and offshore.



Handway Covers

Midland Handway Covers are designed to provide complete, long-life, high performance sealing, superior flow, and low maintenance. Midland Handway Covers are available in a wide range of materials, sizes, ratings, and options for your application. Midland Handway Covers are used in a wide range of applications including: pulp, industrial, chemical, fertilizer, oil, and offshore.

Lift Assemblies

Midland Lift Assemblies are designed to provide complete, long-life, high performance sealing, superior flow, and low maintenance. Midland Lift Assemblies are available in a wide range of materials, sizes, ratings, and options for your application. Midland Lift Assemblies are used in a wide range of applications including: pulp, industrial, chemical, fertilizer, oil, and offshore.



MIDLAND



Learn more about Midland. Go to www.midlandcorp.com and follow the link to <http://www.midlandcorp.com>

7733 Gross Point Road • Skokie, IL 60077 USA • Telephone: +1 847 677 0333 • Fax: +1 847 677 0138 • www.midlandcorp.com

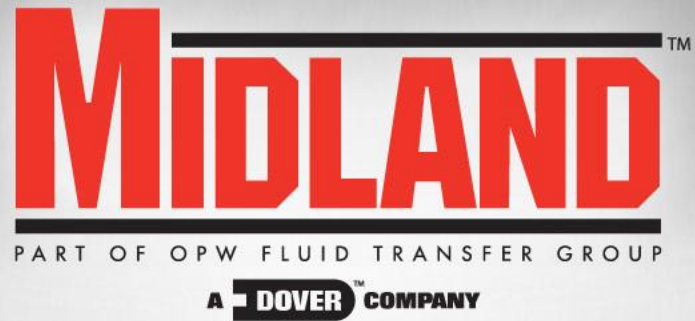
CFV Midland is a member of the

Current LPG Configuration









Pressure Relief Valves

**Products typically shipped in Pressure cars using internal
Pressure Relief Valves.
(a.k.s. PRVs)**

- LPG
- Anhydrous Ammonia
- VCM
- Ethylene Oxide
- Co₂



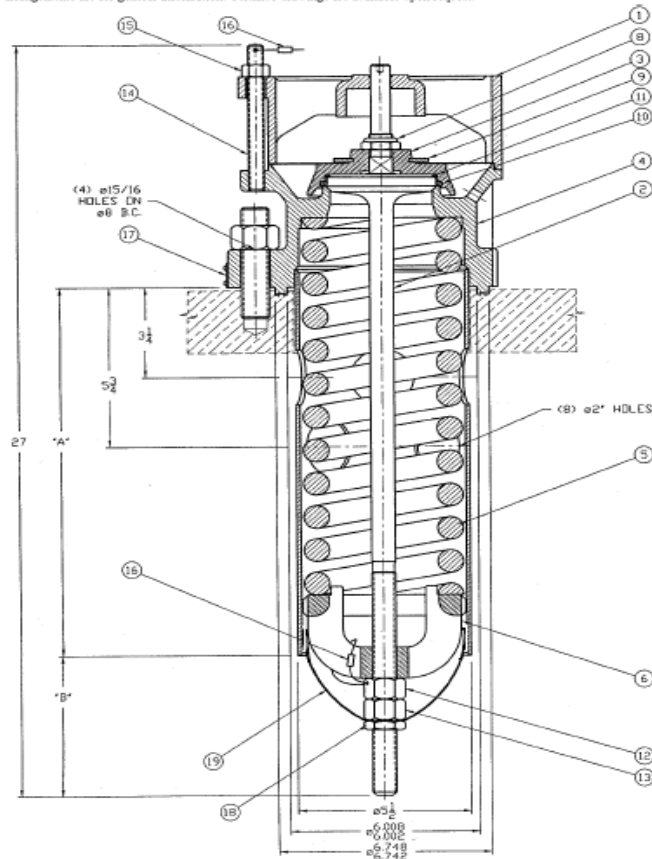
PRESSURE RELIEF VALVES

Page 56

PRESSURE RELIEF VALVES

A-37000-XL SERIES,
A-37004-XL SERIES

© 2002 Midland Manufacturing Corp.
All designs subject to change without notice. Installation dimensions and mounting arrangements are for general information. Certified drawings are available upon request.



ITEM NO.	QTY.	PART NAME	A-37000-XL SERIES		A-37004-XL SERIES	
			MATERIAL	PART NO.	MATERIAL	PART NO.
1	1	TOP GUIDE	STEEL W/SS INSERT	34-1-XS	STAINLESS STEEL	34-1-SS
2	1	STEM	STAINLESS	31-2-SS	STAINLESS STEEL	31-2-SS
3	1	RETAINER	STEEL, PLATED ⁽¹⁾⁽⁶⁾	37-3-CS	STAINLESS STEEL	37-3-SS
4	1	BODY & GUIDE ASM	STEEL ⁽⁶⁾	34-411-CS	STAINLESS STEEL	34-411-SS
5	1	SPRING	ALLOY STEEL, PLATED ⁽⁶⁾⁽⁸⁾	SEE TABLE	STAINLESS STEEL	SEE TABLE
6	1	FOLLOWER	STEEL, PLATED	34-6-CS	STAINLESS STEEL	34-6-SS
7						
8	1	TOP LOCK NUT	STEEL, PLATED ⁽¹⁾	23-8-CS	STAINLESS STEEL	23-8-SS
9	1	WASHER	NEOPRENE	23-9-NE	NEOPRENE	23-9-NE
10	1	SEAT *O* RING	BUNA-N ⁽²⁾	31-10-BN	BUNA-N ⁽²⁾	31-10-BN
11	1	STEM *O* RING	BUNA-N ⁽²⁾	31-11-BN	BUNA-N ⁽²⁾	31-11-BN
12	1	ADJUSTMENT NUT	STEEL, PLATED ⁽¹⁾	23-12-CS	STAINLESS STEEL	23-12-SS
13	1	LOCK NUT	STEEL, PLATED ⁽¹⁾	23-13-CS	STAINLESS STEEL	23-13-SS
14						
15	4	NUT	STEEL	23-15-CS	STAINLESS STEEL	23-15-SS
16	2	WIRE SEAL	SS/LEAD	23-7-PB	SS/LEAD ⁽²⁾	23-7-PB
17	1	NAMEPLATE	STAINLESS	SEE TABLE	STAINLESS STEEL	SEE TABLE
18	1	COVER LOCK NUT	STEEL, PLATED	34-67-CS	STAINLESS STEEL	23-53-SS
19	1	COVER	STAINLESS	346-66-SS	STAINLESS	346-66-SS

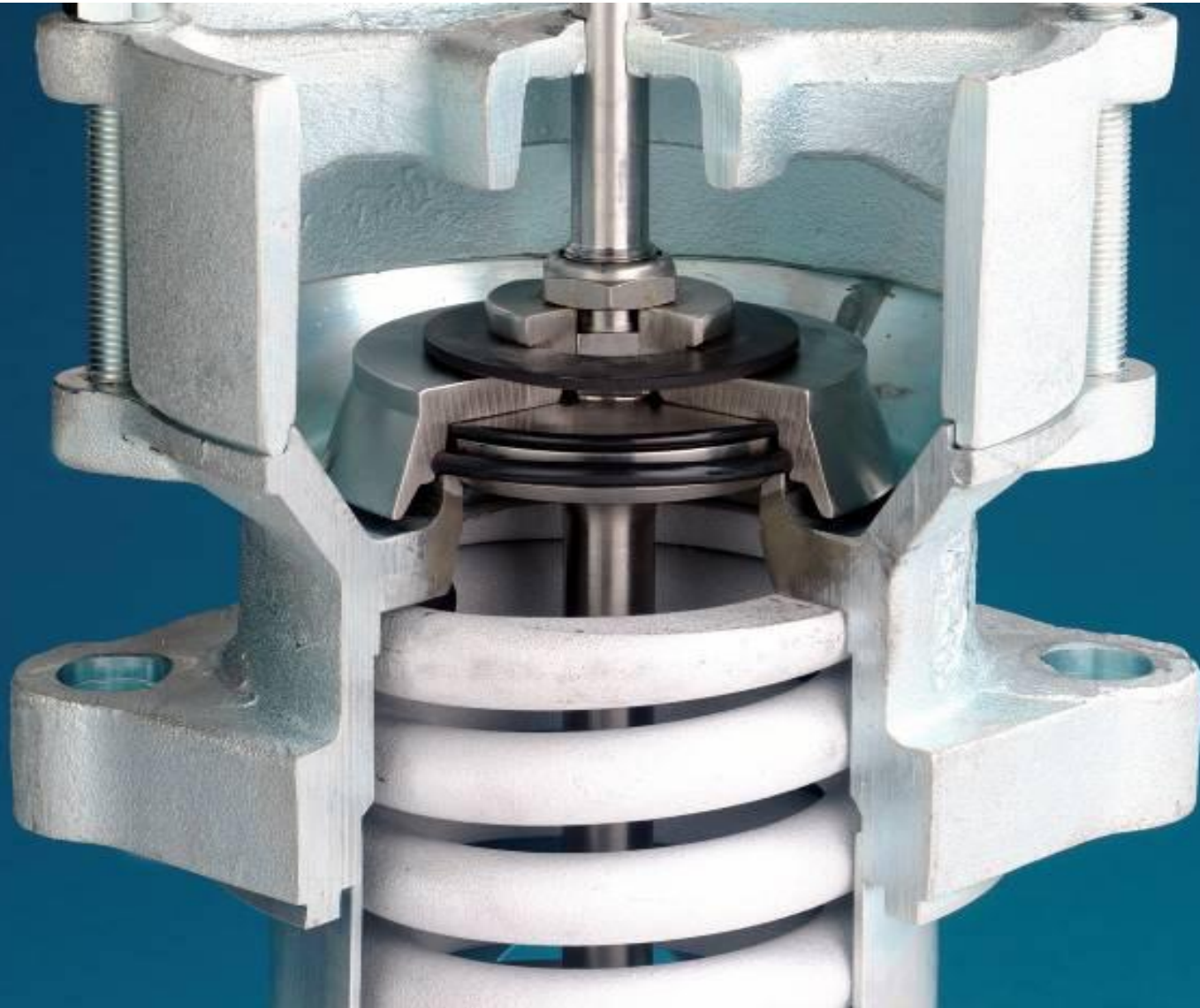
NOTES: 1 Standard plating is zinc or cadmium. 2 Alternate materials available. 3 Standard plating is zinc w/dichromate. For aluminum coated spring, specify AS/AL. For stainless steel spring, specify SS. 4 Not sold separately. 5 Consult factory. 6 For stainless retainer, stainless body seat and aluminum coated spring, add suffix -XS to valve part number after -XL.

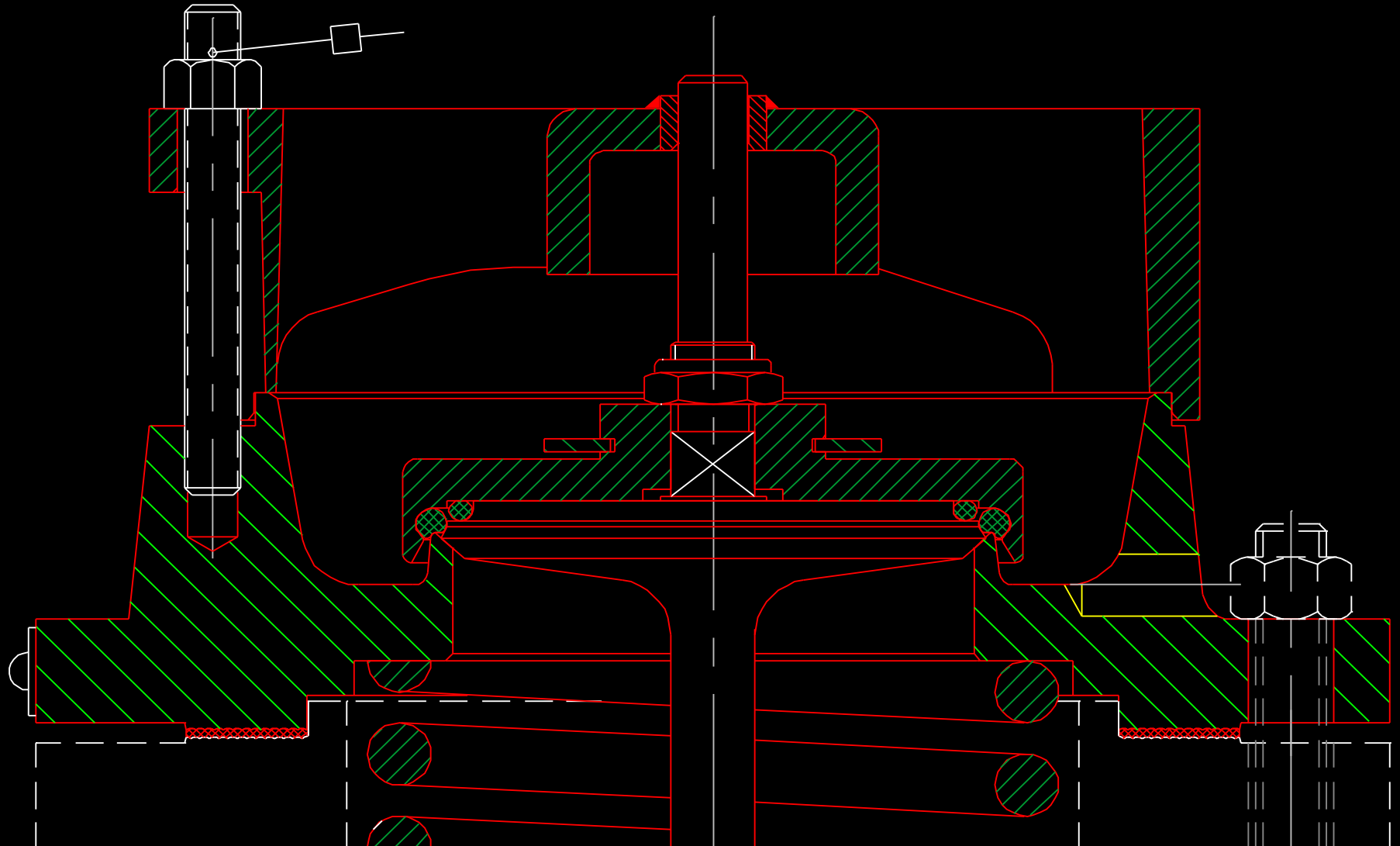
PRESSURE SETTING (PSIG)	FLOW RATE (SCFM-AIR)	NAMEPLATE PART NO.	A-37000-XL SERIES		A-37004-XL SERIES		DIM "A"	DIM "B"
			VALVE PART NO.	SPRING PART NO.	VALVE PART NO.	SPRING PART NO.		
225	(6)	37-25-SS	A-37225-XL	(6)	A-37229-XL	(6)	-	-
247.5	(6)	37-247-SS	A-37247-XL	34-255-AS	A-37251-XL	(6)	10.87	7.44
255	(6)	37-272-SS	A-37255-XL	34-255-AS	A-37259-XL	(6)	10.87	7.44
280.5	38,483	37-282-SS	A-37280-XL	34-5-AS	A-37284-XL	(6)	13.25	5.06
300	(6)	37-29-SS	A-37300-XL	(6)	A-37304-XL	(6)	-	-
330	(6)	37-30-SS	A-37330-XL	(6)	A-37334-XL	(6)	-	-

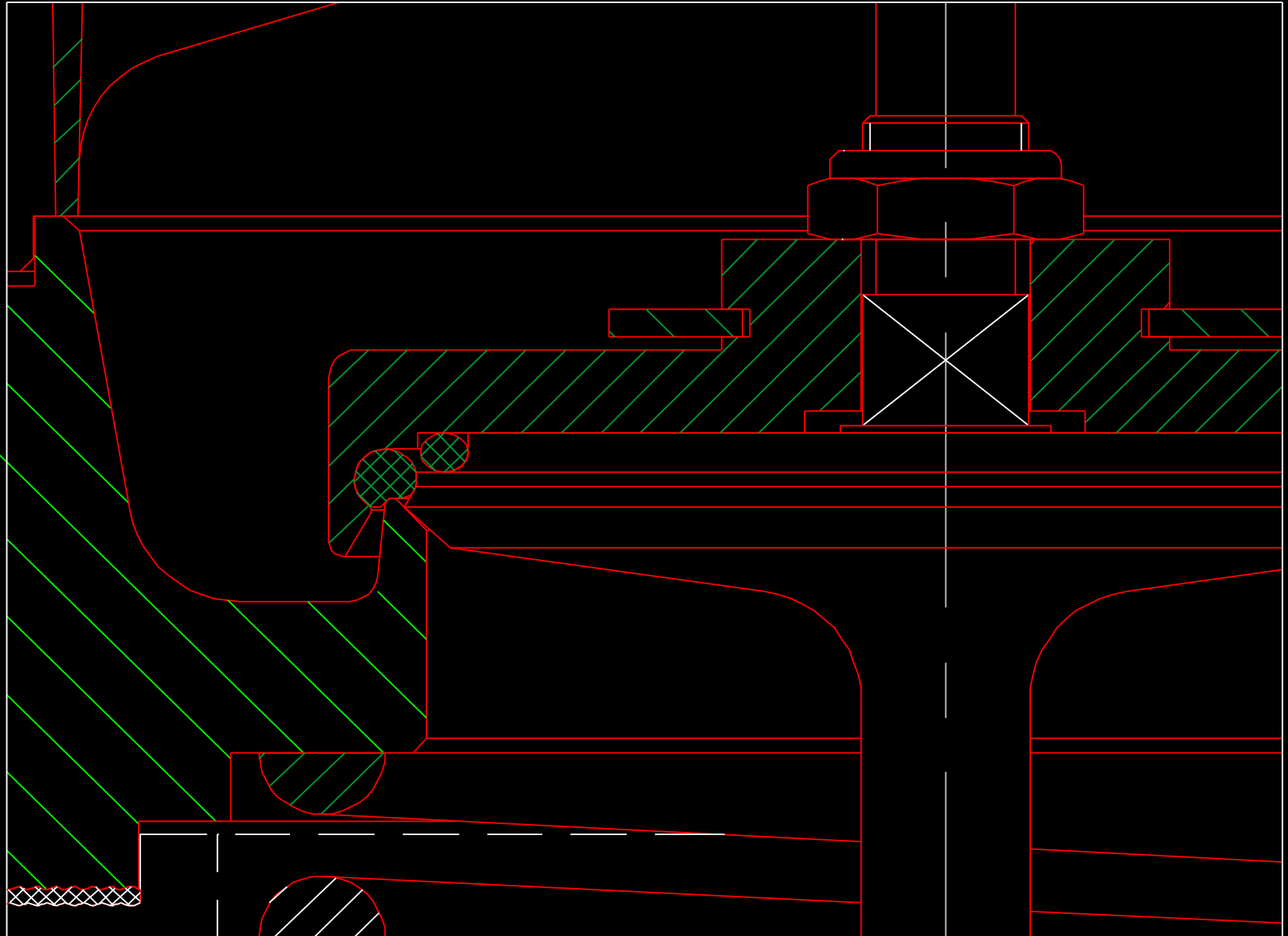
THESE VALVES REPLACE A-3400-XL AND A-3404-XL SERIES VALVES.

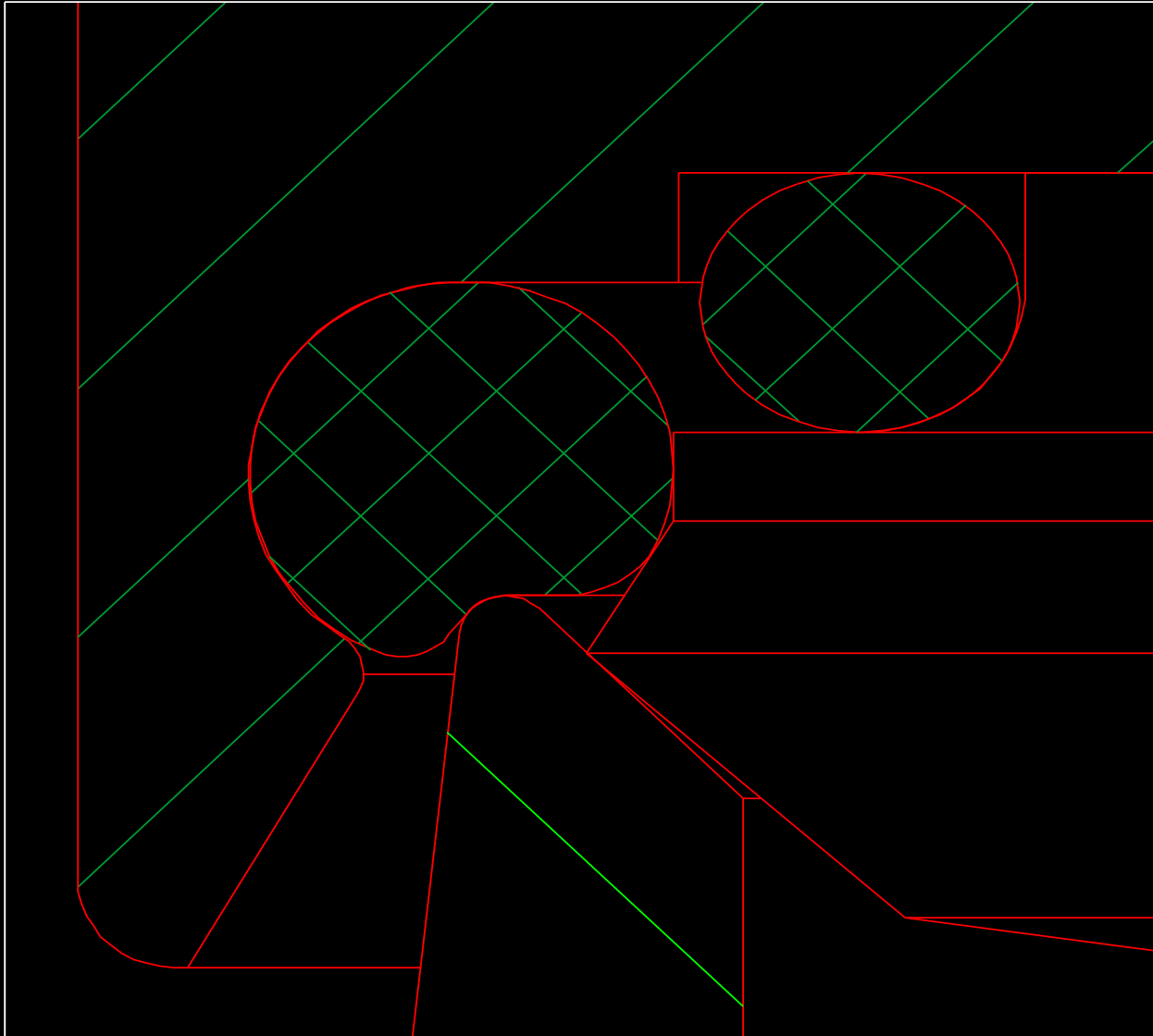
NET FLOW AREA: 7.85 SQUARE INCHES
WEIGHT OF VALVE: 70 LBS.





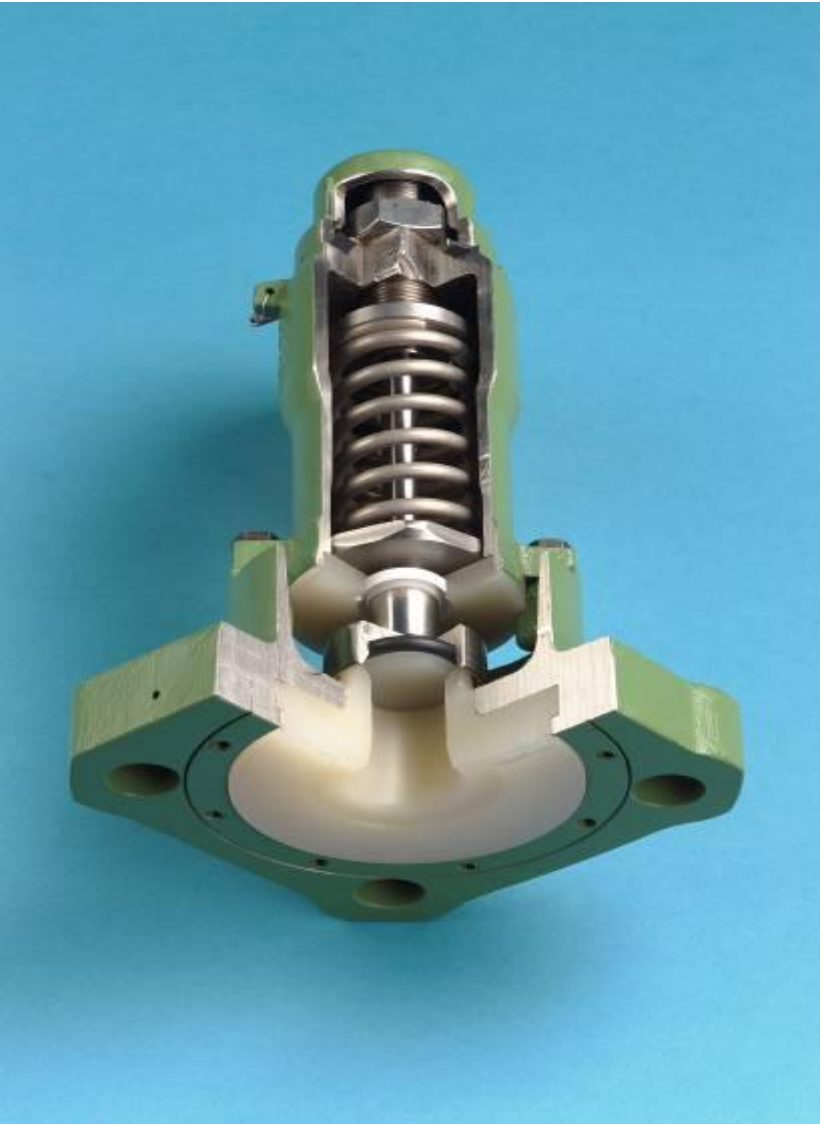






**Products typically shipped in Pressure cars using external
Pressure Relief Valves.
(a.k.a. PRVs)**

- Chlorine
- Ethylene Oxide
- Co₂
- AHF

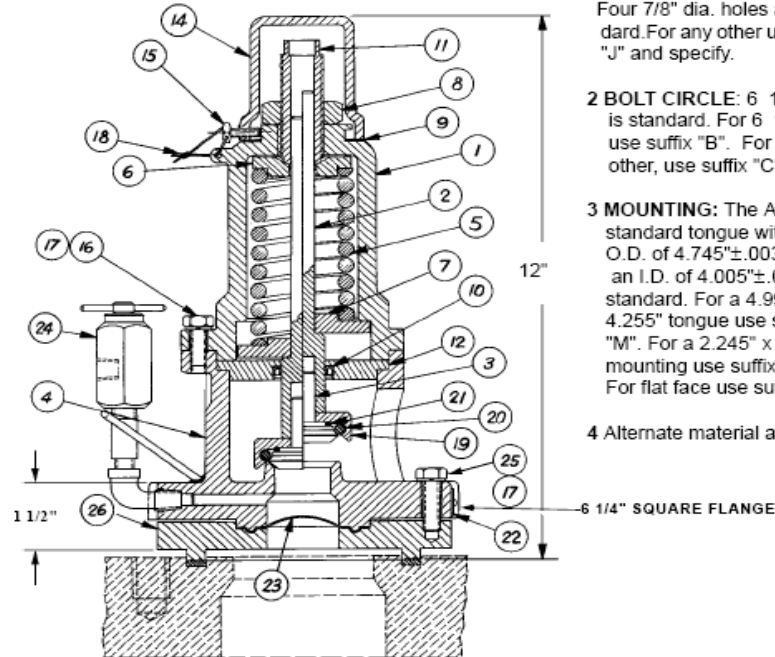


PRESSURE RELIEF VALVES

PRESSURE RELIEF VALVES TOP STYLE

A-17150-T thru A-17454-T

© 2002 Midland Manufacturing Corp.
All designs subject to change without notice. Installation dimensions and mounting
arrangements are for general information. Certified drawings are available upon request.



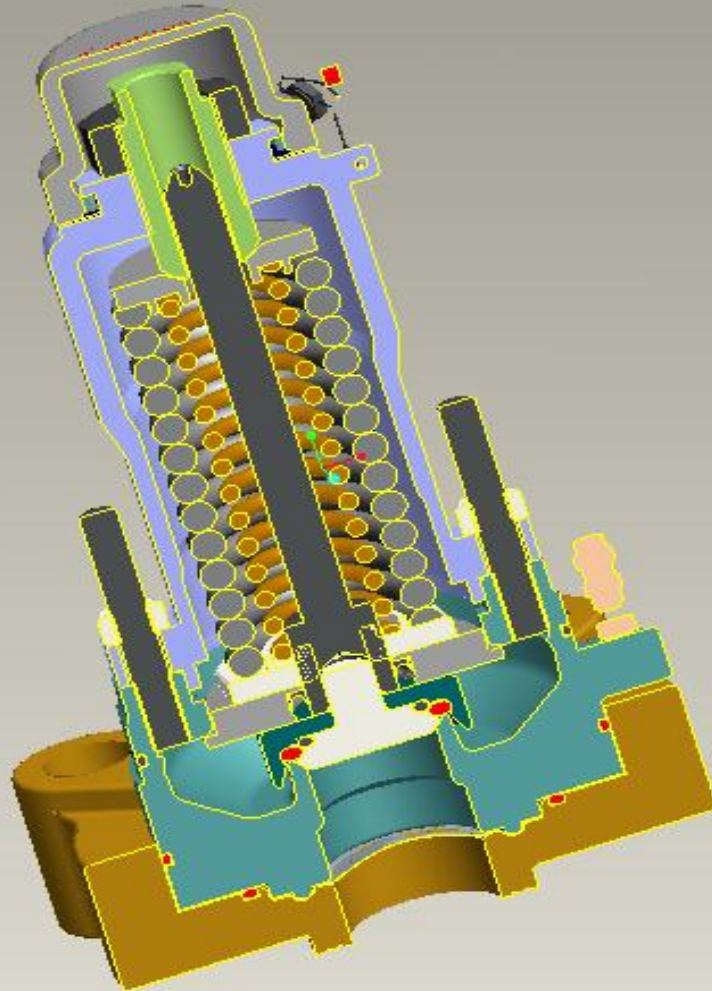
- NOTES:**
- 1 SIZE OF FLANGE HOLES:** Four 7/8" dia. holes are standard. For any other use suffix "J" and specify.
 - 2 BOLT CIRCLE:** 6 1/4" dia. is standard. For 6 1/2" dia. use suffix "B". For any other, use suffix "C".
 - 3 MOUNTING:** The AAR standard tongue with an O.D. of 4.745"±.003" and an I.D. of 4.005"±.003" is standard. For a 4.995" x 4.255" tongue use suffix "M". For a 2.245" x 1.505" mounting use suffix "R". For flat face use suffix "P".
 - 4 Alternate material available**

NET FLOW AREA: .994 SQUARE INCHES
WEIGHT OF VALVE: 25 LBS.

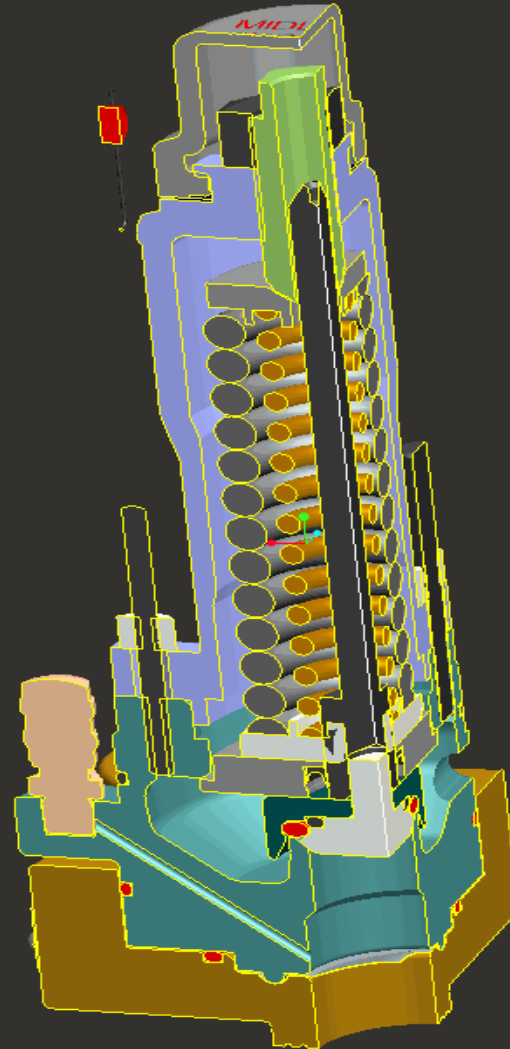
ITEM NO.	QTY.	PART NAME	A-17150-T THRU A-17450-T STAINLESS TRIM		A-17154-T THRU A-17454-T STAINLESS STEEL	
			MATERIAL	PART NO.	MATERIAL	PART NO.
1	1	TOP GUIDE	STEEL	15-1-CS	STAINLESS	15-1-SS
2	1	STEM	STAINLESS	17-2-SS	STAINLESS	17-2-SS
3	1	PLUG	STAINLESS	17-3-SS	STAINLESS	17-3-SS
4	1	BODY	STEEL	15-44-CS	STAINLESS	15-44-MO
5	1	SPRING	STAINLESS	SEE TABLE	STAINLESS	SEE TABLE
6	1	FOLLOWER	STEEL	14-6-CS	STAINLESS	14-6-SS
7	1	GUIDE	STAINLESS	15-7-SS	STAINLESS	15-7-SS
8	1	TOP NUT	STEEL	15-8-CS	STEEL ⁽⁴⁾	15-8-CS
9	1	TOP GASKET	BUNA-N ⁽⁴⁾	15-9-BN	BUNA-N ⁽⁴⁾	15-9-BN
10	1	SHAFT SEAL	TEFLON	17-10-TF	TEFLON	17-10-TF
11	1	ADJUSTMENT SCREW	STAINLESS	15-11-SS	STAINLESS	15-11-SS
12	1	SEAL RETAINER	STEEL	17-12-CS	STAINLESS	17-12-SS
13						
14	1	CAP	STAINLESS	15-14-SS	STAINLESS	15-14-SS
15	1	CAP SCREW	STEEL	15-15-CS	STEEL	15-15-CS
16	3	BOLT	STEEL	15-16-CS	STAINLESS	15-16-SS
17	5	LOCKWASHER	STEEL	15-17-CS	STAINLESS	15-17-SS
18	1	WIRE SEAL	SS/LEAD	15-18-PB	SS/LEAD	15-18-PB
19	1	RETAINER	STAINLESS	17-19-SS	STAINLESS	17-19-SS
20	1	SEAT "O" RING	BUNA-N ⁽⁴⁾	10-10-BN	BUNA-N ⁽⁴⁾	10-10-BN
21	1	PLUG "O" RING	BUNA-N ⁽⁴⁾	10-11-BN	BUNA-N ⁽⁴⁾	10-11-BN
22	1	NAMEPLATE	STAINLESS	SEE TABLE	STAINLESS	SEE TABLE
23	1	RUPTURE DISC	STAINLESS ⁽⁴⁾	AS SPECIFIED	STAINLESS ⁽⁴⁾	AS SPECIFIED
24	1	NEEDLE VALVE NIPPLE & ELBOW	STAINLESS	A-253-BN ⁽⁴⁾ 421-SS	STAINLESS	A-253-BN ⁽⁴⁾ 421-SS
25	2	BOLTS	STEEL	17-31-SS	STAINLESS	17-31-SS
26	1	RUPTURE DISC FLANGE	STEEL	17-34-CS	STAINLESS	17-34-SS

PRESSURE SETTING (PSIG)	FLOW RATE (SCFM-AIR)	SPRING PIN	A-17150-T thru A-17450-T STAINLESS TRIM		A-17154-T thru A-17454-T STAINLESS STEEL	
			VALVE PIN	NAMEPLATE PIN	VALVE PIN	NAMEPLATE PIN
150	1960	15-150-SS	A-17150-T	17-25-SS	A-17154-T	17-29-SS
165	2827	15-165-SS	A-17165-T	17-44-SS	A-17169-T	17-48-SS
225	3250	15-225-SS	A-17225-T	17-26-SS	A-17229-T	17-30-SS
247.5	3368	15-300-SS	A-17247-T	17-45-SS	A-17251-T	17-49-SS
255	3490	15-300-SS	A-17255-T	17-53-SS	A-17259-T	17-54-SS
280.5	3782	15-300-SS	A-17280-T	17-46-SS	A-17284-T	17-51-SS
300	4020	15-300-SS	A-17300-T	17-34-SS	A-17304-T	17-35-SS
330	3935	15-375-SS	A-17330-T	17-47-SS	A-17334-T	17-52-SS
375	3646	15-375-SS	A-17375-T	17-375-SS	A-17379-T	17-37-SS
450	4198	15-450-SS	A-17450-T	17-40-SS	A-17454-T	17-41-SS

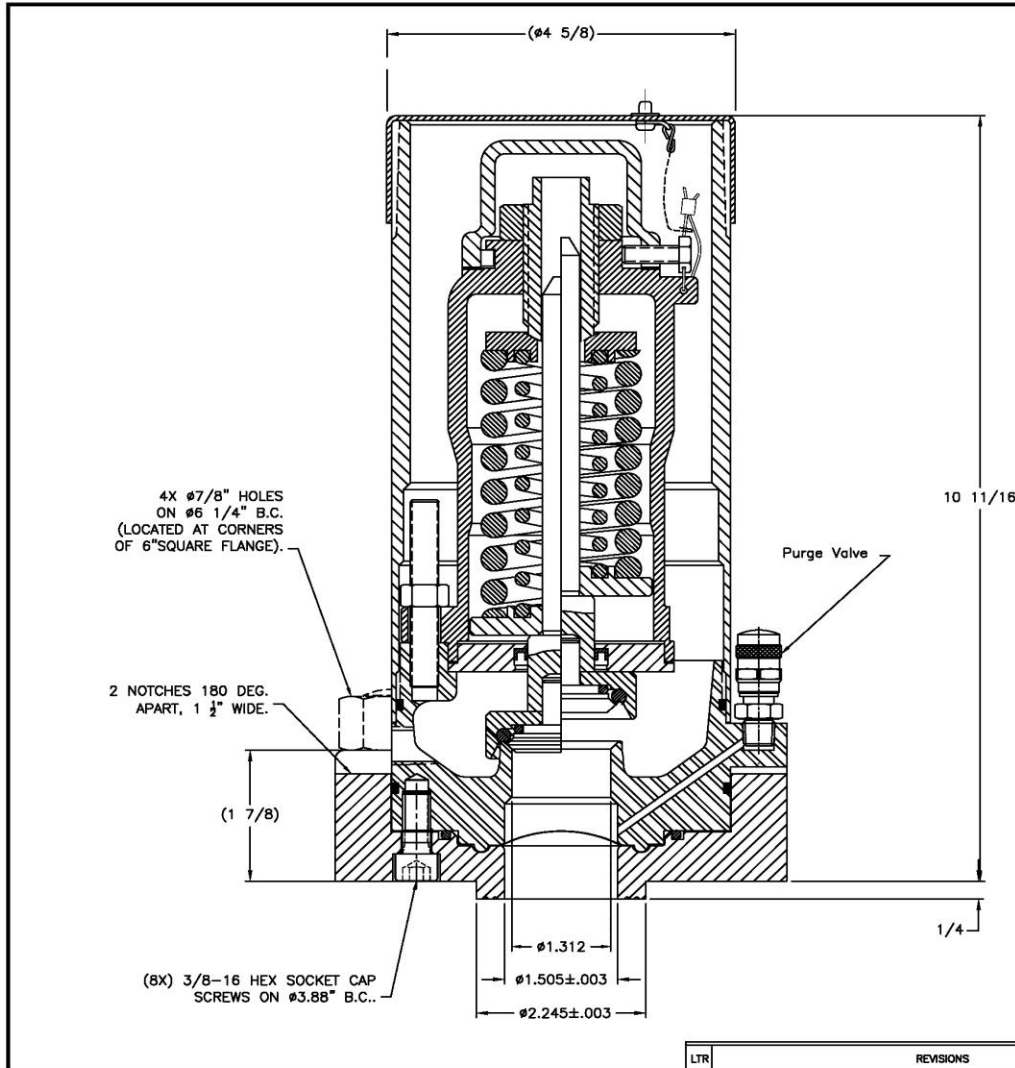
Updated
A14377-C-ML-VL



Updated
A14377-C-ML-VL



Clipping State:A



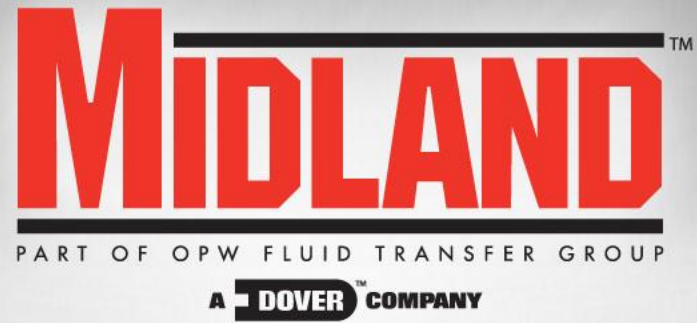
Midland Mfg. Property

Updated A14377-C-ML-VL

FOR CHLORINE SERVICE

MIDLAND™ MANUFACTURING CORP. SKOKIE, IL, U.S.A.			
TOP STYLE SAFETY VALVE, O-RING SEAL WITH RUPTURE DISC			
MATERIAL:	TBD	TOLERANCES UNLESS SPECIFIED: 2 PLACE DECIMAL $\pm .015$ 3 PLACE DECIMAL $\pm .005$ ANGULAR $\pm 1'$, FRACTIONS $\pm 1/64$ CHAMFERS AND WELD PREP $\pm 3'$	
REMOVE ALL BURRS. BREAK ALL EDGES & CORNERS.		FINISH (Ra) : $\sqrt{=125}$	
SCALE: 3/4	DRAWN: MN	DATE: 9/27/07	APPROVED: MN
CAD FILE NO.	SIZE	DWG NO.	REV
8464	B	A-1402-C SERIES	

LTR	REVISIONS	DRN	DATE	APP
-----	-----------	-----	------	-----



Angle Valves

Midland model A-720

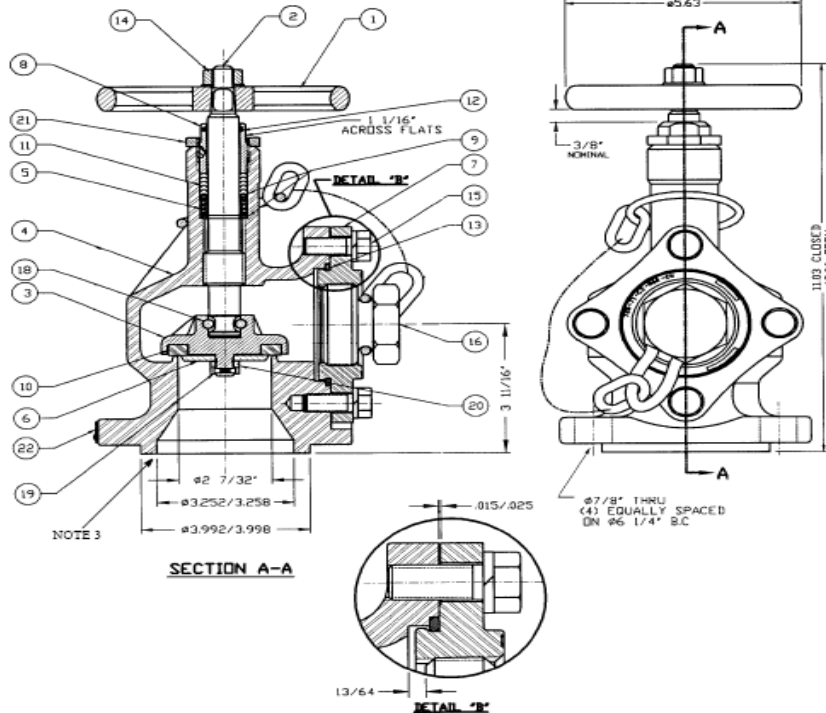


TOP TRANSFER VALVES

TOP TRANSFER VALVES 2" ANGLE VALVE

A-720 and A-724

© 2002 Midland Manufacturing Corp.
All designs subject to change without notice. Installation dimensions and mounting arrangements are for general information. Certified drawings are available upon request.



ITEM NO.	QTY	PART NAME	A-720 STAINLESS TRIM		A-724 STAINLESS	
			MATERIAL	PART NO.	MATERIAL	PART NO.
1	1	HANDWHEEL ⁽²⁾	ALUMINUM ⁽¹⁾	720-1-AL	ALUMINUM ⁽¹⁾	720-1-AL
2	1	STEM	STAINLESS	720-2-SS	STAINLESS	720-2-SS
3	1	GASKET RETAINER ⁽⁴⁾	STEEL	720-3-CS	STAINLESS	720-3-SS
4	1	BODY	STEEL	720-4-CS	STAINLESS	724-4-SS
5	1	SPRING	STAINLESS	720-5-SS	STAINLESS	720-5-SS
6	1	RETAINER COVER	STEEL	720-6-CS	STAINLESS	720-6-SS
7	1	OUTLET FLANGE	STEEL, PLATED	720-71-CS	NITRONIC 60, PLATED ⁽⁵⁾	720-71-N60
8	1	PACKING SCREW W/IN-SERT	STEEL, PLATED	720-8-CS	STAINLESS	720-8-N60
9	1	PACKING WASHER	STAINLESS	720-93-SS	STAINLESS	720-93-SS
	1		TOP	STAINLESS		
10	1	SEAT SEAL	TEFLON	720-10-TF	TEFLON	720-10-TF
11	5	PACKING RING	TEFLON	720-11-TF	TEFLON	720-11-TF
12	1	STEM SEAL	BUNA-N ⁽¹⁾	720-12-BN	BUNA-N ⁽¹⁾	720-12-BN
13	1	O-RING OUTLET	BUNA-N ⁽¹⁾	720-131-BN	BUNA-N ⁽¹⁾	720-131-BN
14A	1	NUT	STAINLESS	720-14-SS	STAINLESS	720-14-SS
14B	1	WASHER	STEEL, PLATED	308-12-CS	STEEL, PLATED	308-12-CS
15A	4	BOLT	STAINLESS	724-15-SS	STAINLESS	724-15-SS
15B	4	LOCKWASHER	STAINLESS	724-152-SS	STAINLESS	724-154-SS
16	1	OUTLET PLUG & CHAIN ⁽¹⁾	STEEL, PLATED	720-16-CS	STAINLESS	720-16-SS
18A	1	STEM RETAINER	STAINLESS	720-18-SS	STAINLESS	720-18-SS
18B	2					
19	1	PIN	STAINLESS	720-19-SS	STAINLESS	720-19-SS
20	1	RETAINER NUT	STEEL, PLATED	720-20-CS	STAINLESS	724-20-SS
21	1	PACKING LOCK NUT	STEEL, PLATED	720-21-CS	STAINLESS	724-21-SS
22	1	NAMEPLATE	STAINLESS	720-22-SS	STAINLESS	724-22-SS

NOTE: 1 Alternate material available. 2 For optional 7 1/2" dia. handwheel, order part number 720-101-AL. 3 For optional mounting gasket order part number 720-23-AB.

4. For retainer assembly consisting of items 3, 6, 10, 19 & 20, order part number 720-301-CS or 724-301-SS 5. If no plating is desired, specify.

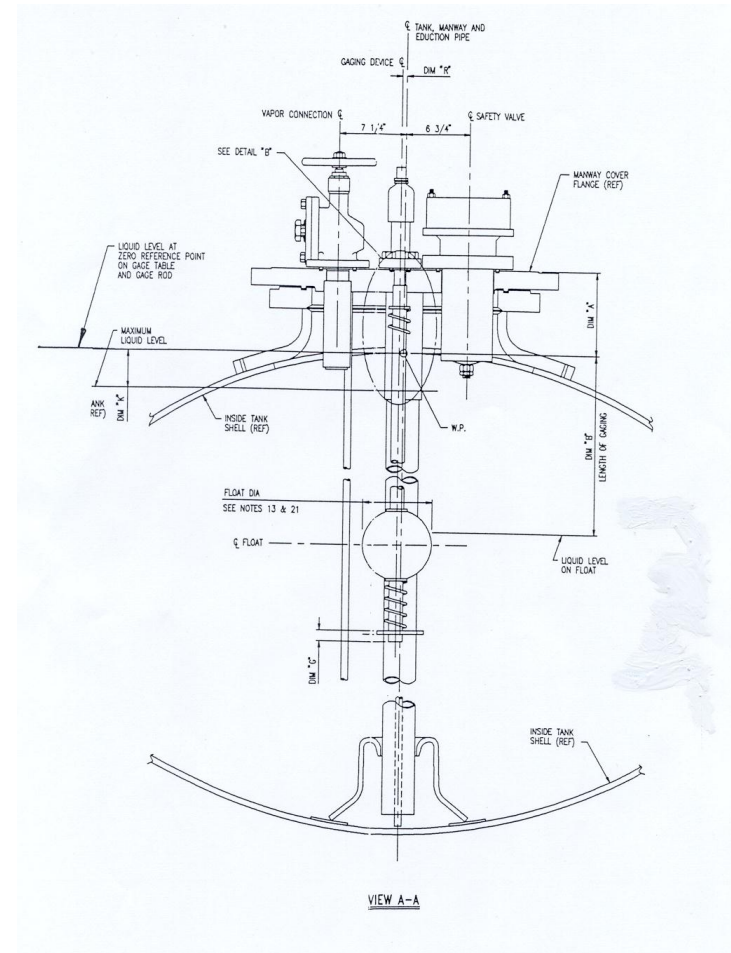
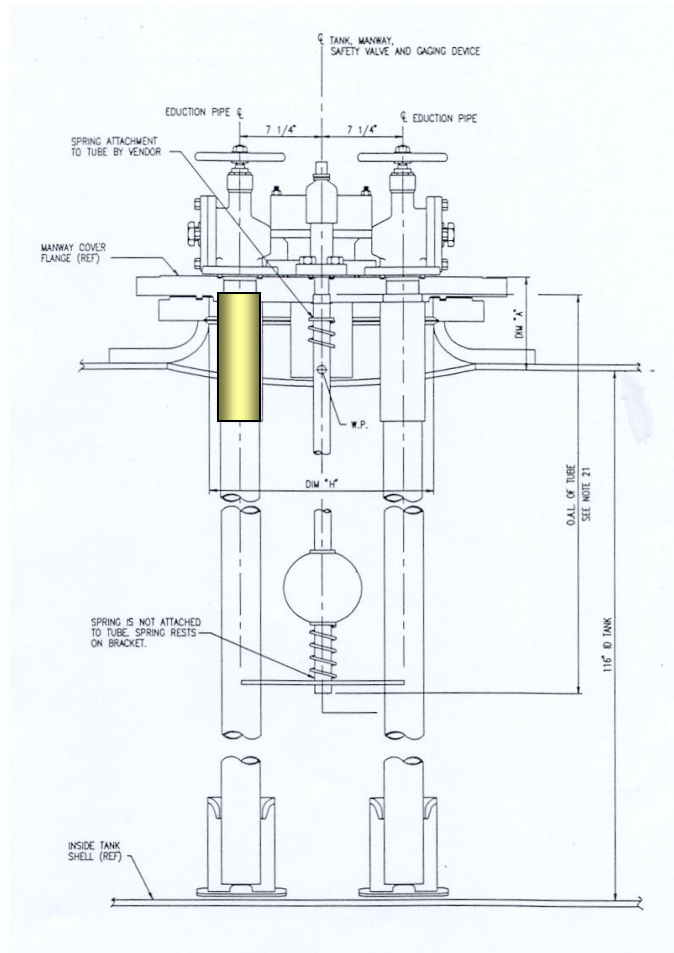
1" Chlorine Angle Valve

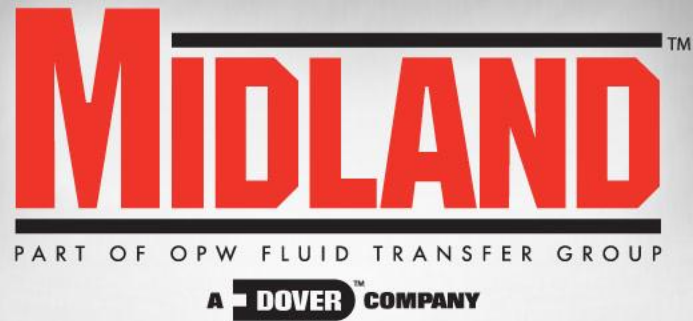


Check valves



Check Valve Application View





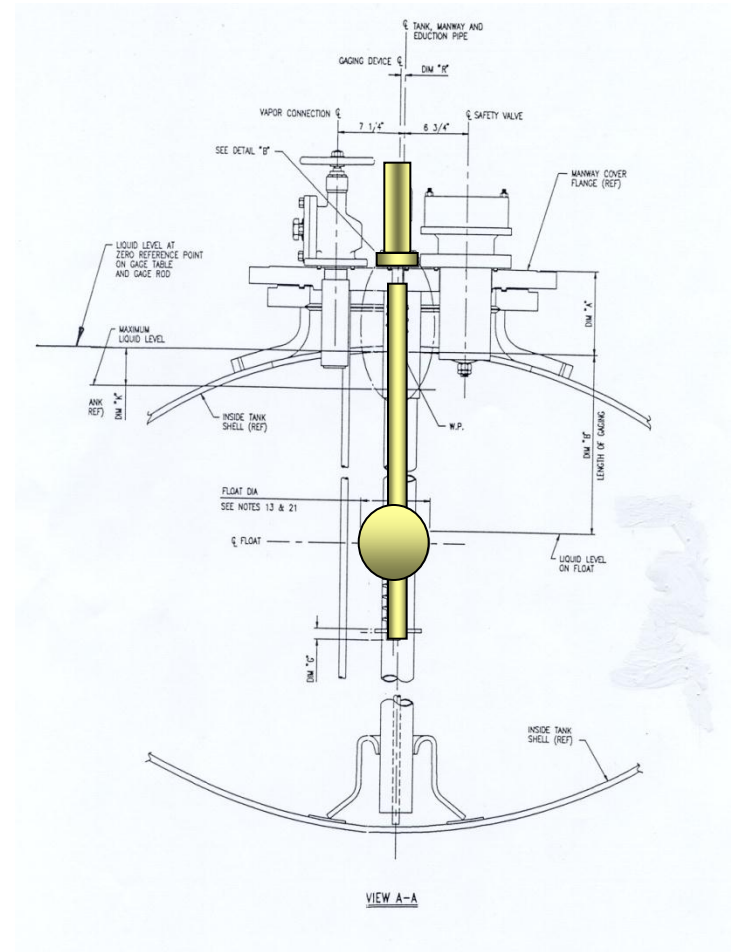
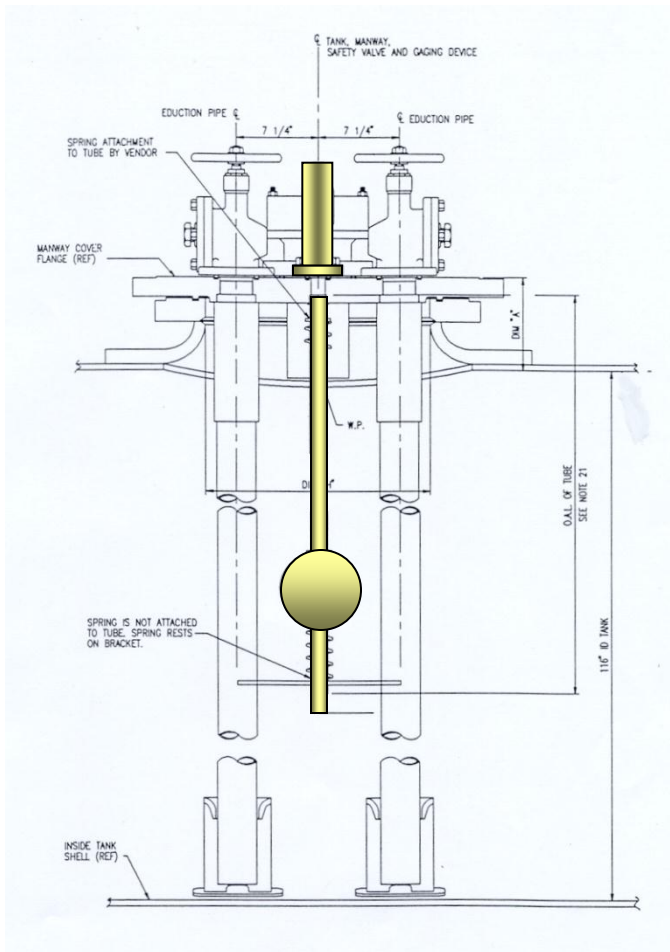
Magnetic liquid level gauging device



Why are level gauges needed?

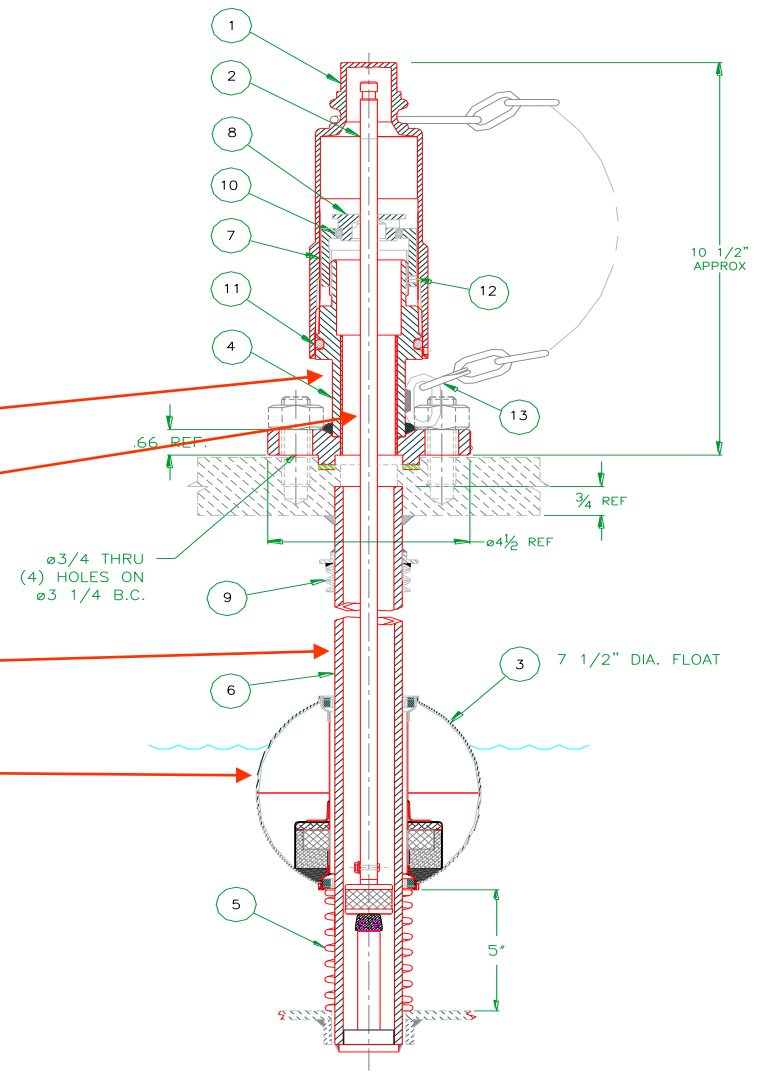
- **Per API (American Petroleum Institute) Manual of Petroleum Measurement Standards, Chapter 3 –Tank Gauging**
 - Section 2-Standard Practice for Gauging Petroleum and Petroleum Products in Tank Cars:
 - “When tank cars can be opened for manual measurements, gauge tapes bobs and gauge bars may be used to measure the level of liquid contents”.
 - “When tank cars **cannot** be opened for gauging contents, closed-system measurement equipment must be used for gauging”.

Typical Pressure Car Installation



Main Components

- Body
- Rod
- Guide tube
- Float



Needle Valves & Accessories

- Sample Valves
 - Needle Valve
- Thermowells
- Lift Assisters



NEEDLE VALVES

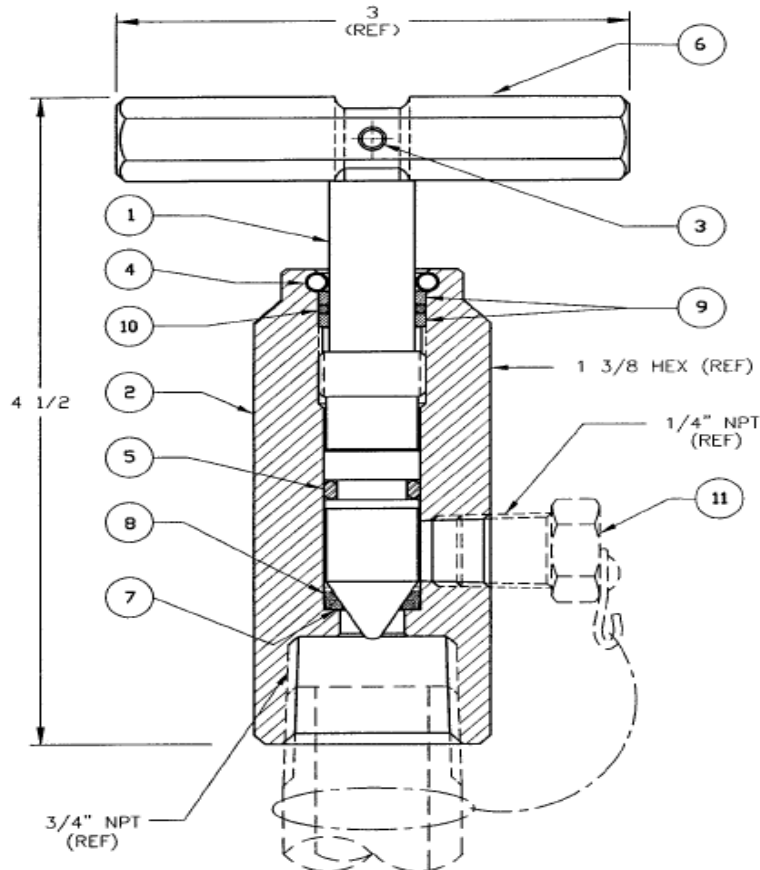
Page 8

NEEDLE VALVES

A-257-SS, A-257-MO

3/4" NPT

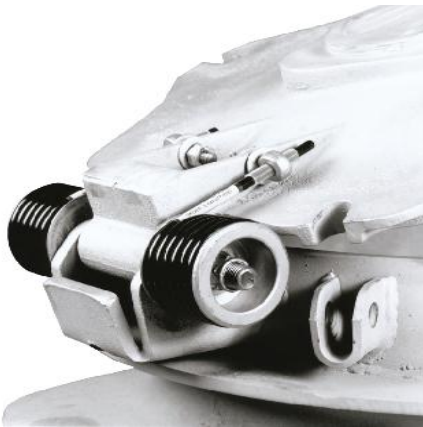
© 2002 Midland Manufacturing Corp.
All designs subject to change without notice. Installation dimensions and mounting arrangements are for general information. Certified drawings are available upon request.



ITEM NO.	QTY.	PART NAME	A-257-SS		A-257-MO	
			MATERIAL	PART NO.	MATERIAL	PART NO.
1	1	STEM	STAINLESS	257-1-SS	STAINLESS	257-1-MO
2	1	BODY	STAINLESS	257-2-SS	STAINLESS	257-2-MO
3	1	PIN	STAINLESS	720-19-SS	STAINLESS	720-19-SS
4	2	ROLL PIN	STAINLESS	253-4-SS	STAINLESS	253-4-SS
5	1	"O" RING	BUNA-N ⁽²⁾	257-5-BN	BUNA-N ⁽²⁾	257-5-BN
6	1	HANDLE	STEEL	254-61-C5	STEEL	254-61-C5
7	1	SEAT	TEFLON	257-7-TF	TEFLON	257-7-TF
8	1	RETAINER	STAINLESS	257-8-SS	STAINLESS	257-8-MO
9	2	STOP RING	STAINLESS	257-9-SS	STAINLESS	257-9-SS
10	1	"O" RING	BUNA-N	257-10-BN	BUNA-N	257-10-BN
11	1	PLUG ⁽¹⁾	STAINLESS	20-SS	STAINLESS	20-MO

NOTE: 1 Not furnished unless requested. 2 Alternate material available.

LIFT ASSISTERS

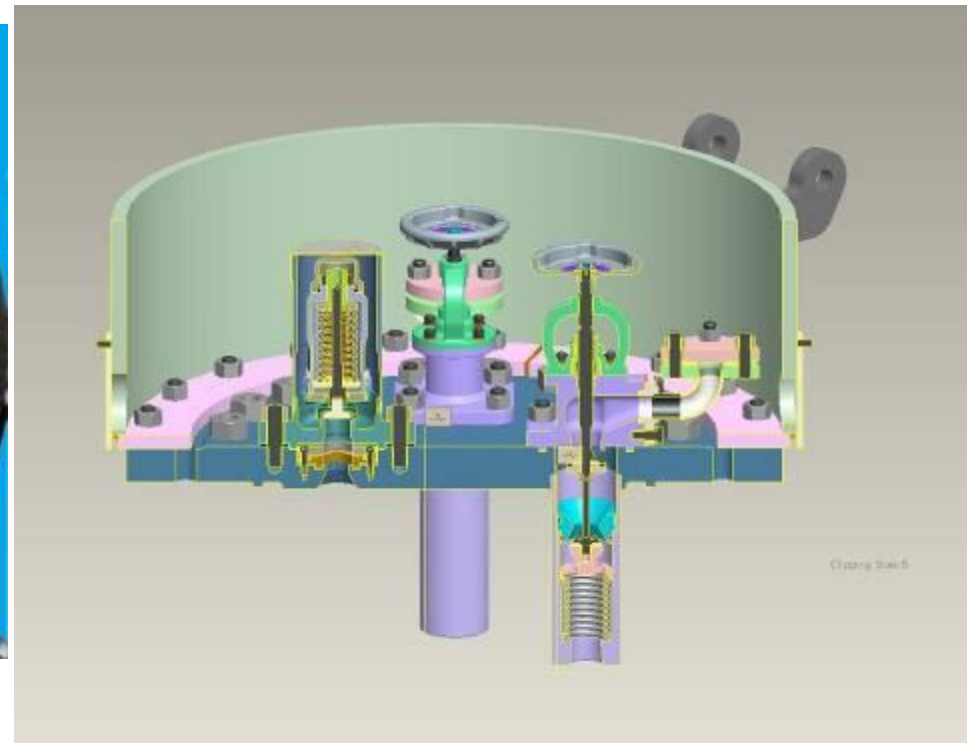


- Available for use with either insulated or non-insulated manway covers
- Provides lifting assistance up to 88 lbs to improve operator safety
- Powder-coated springs to prevent corrosion in harsh chemical environments
- Unique low-profile lifter design doesn't interfere with personnel on top of the car
- Self-centering design prevents pinching and damage of the manway gasket, potentially reducing NAR's



Enhanced Fittings Package

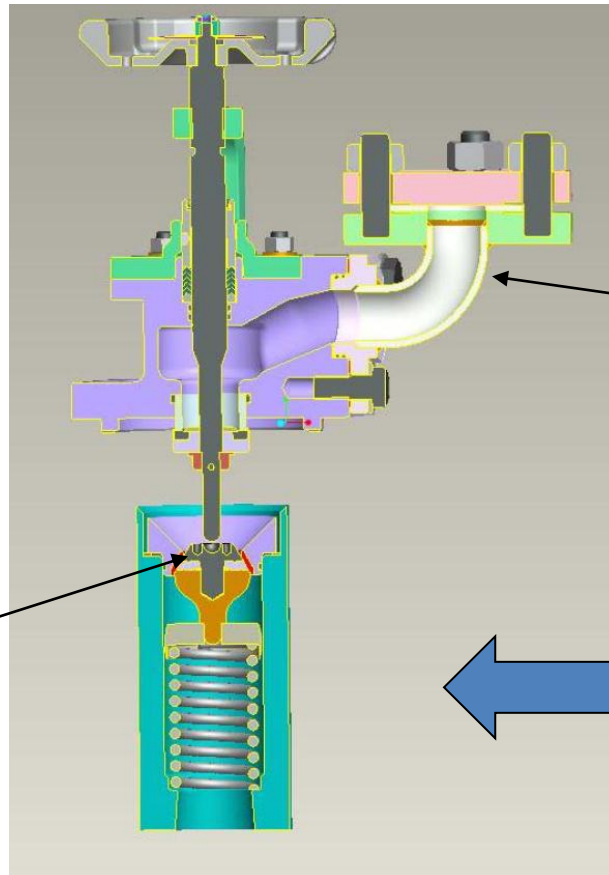
NGRTC Enhanced Fittings Or “Dual Valve Assemblies”



New NGRTC Combination Chlorine Angle & Check Valve



New angle valve operates in conjunction with check valve

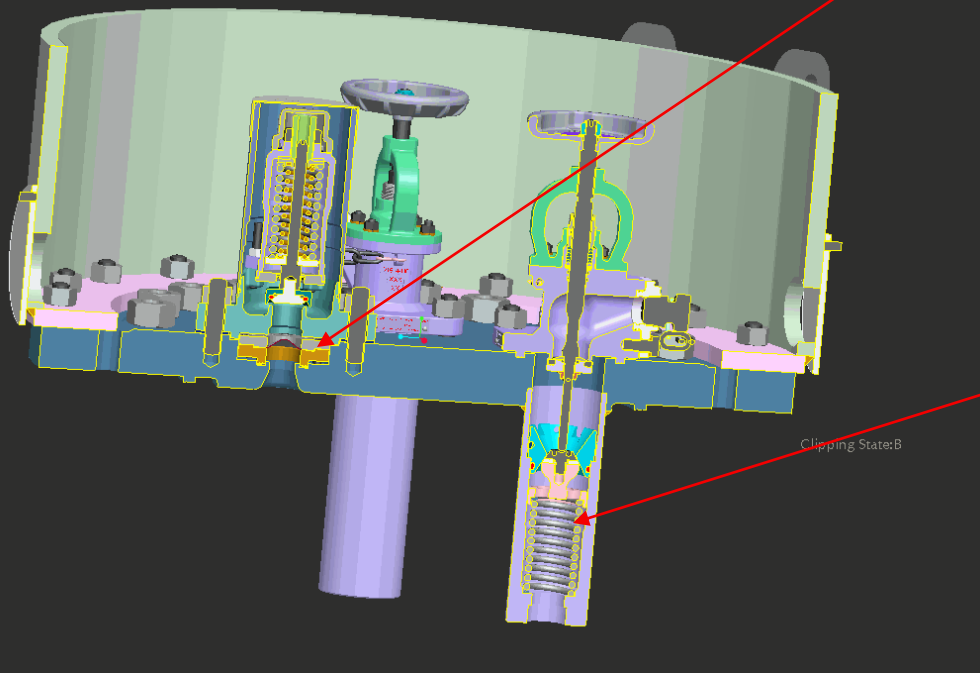


The A-718 is available with top loading or the traditional side loading

Check Valve A-180-ML-TG

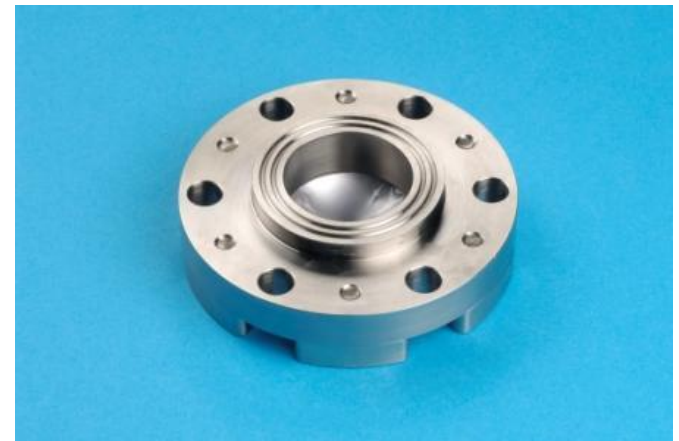
A-180-ML-TG Enhanced Fittings Check Valve





- **Note the PRV rupture disc is mounted in the pressure plate**
 - Mounting is separate from the PRV
- **The check valve is mechanically operated by the angle valve**
 - The check valve spring maintains a positive seal on the valve until pushed open by the angle valve stem
- **Primary seals are below the pressure plate surface**

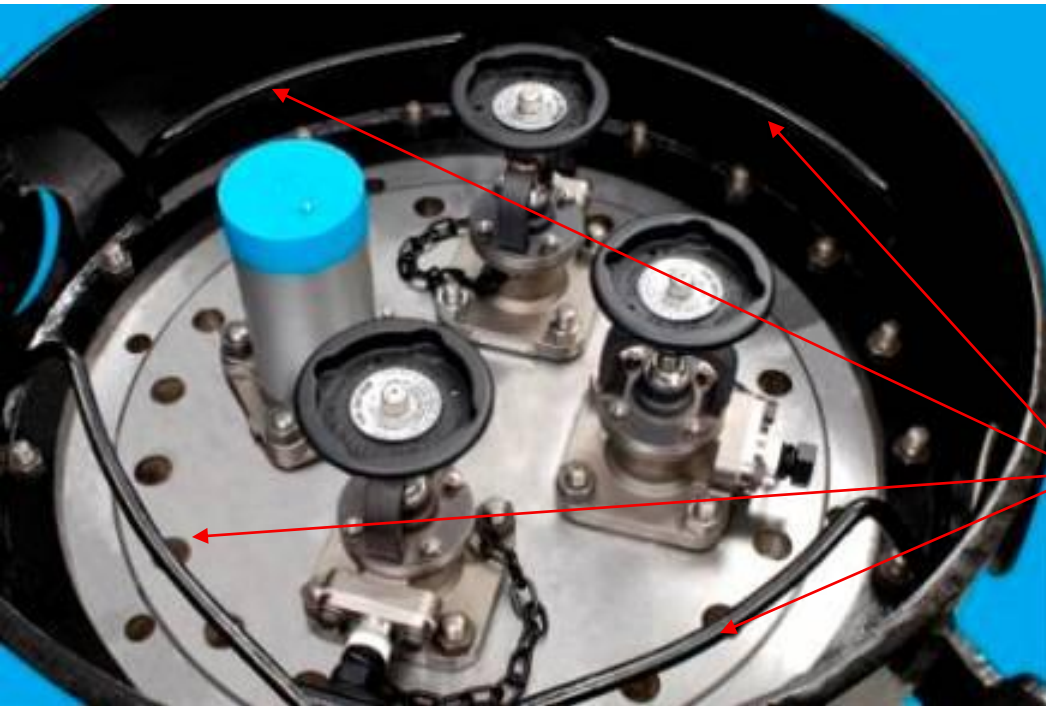
NGRTC - A-14378-ML-VL



A-14378-ML-VL



ERK and “C” Kit Mounting to the NGRTC “Enhanced Fittings” Package



- The NGRTC fittings package has a new protective housing for Chlorine applications
 - Lower profile
 - Wider layout, equal to an LPG style or 20” housing
- Four bars are mounted inside the housing to accommodate the “C” kit



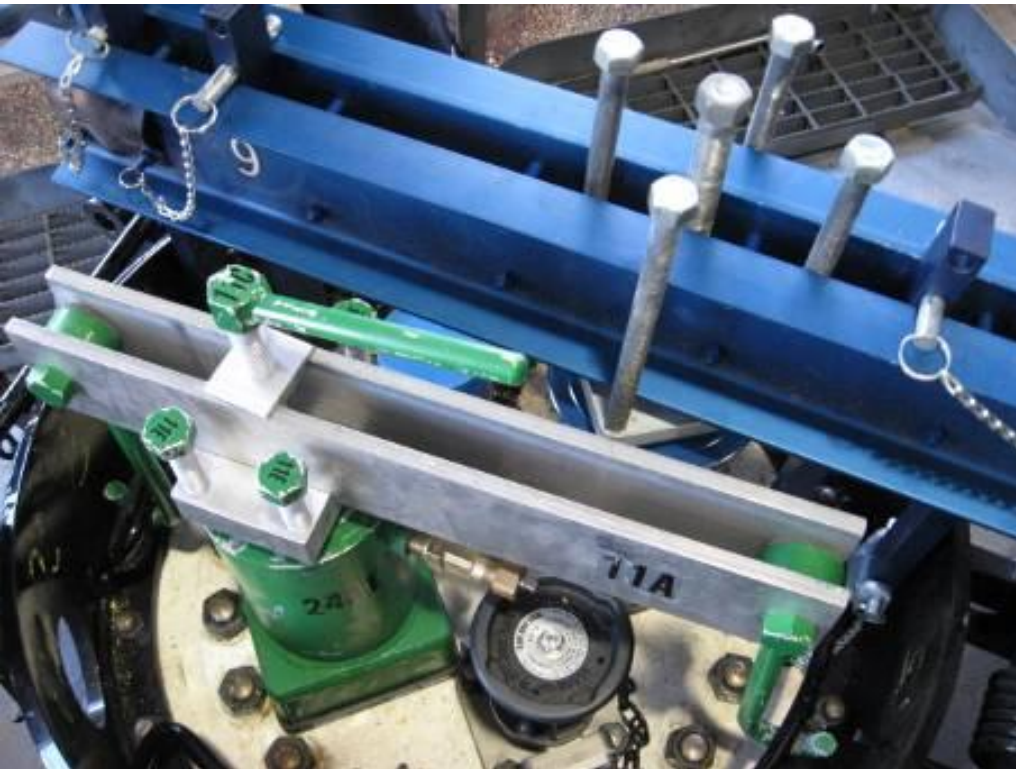
- **Note that two kits were able to be applied simultaneously using the bars inside the dome**
 - The Midland ERK could also use the port holes to connect just as is currently done today.
 - If using the port holes, only one kit could be applied at a time
- **The angle valves require the same capping can as the PRV**
 - Midland capping can #4 is the correct can to use
 - The C kit capping can 24A1 is the correct can to use



- With the four interior bars, the “C” kit hooks and the ERK tie bars have room to “find” the right spot to create a good connection for sealing over the capping can
- The bar does not interfere with the valves or the side of the protective housing



- **The Angle Valve does not require the hand wheel be removed before capping with the Midland #4 can or the C kit 24A1 can**
 - Removal of the hand wheel does make the application easier to accomplish
- **The flange face plate also needs to be removed before capping**
 - A recommended practice to aid in removal of the flange is to apply a 1" pipe (as shown) to help pull out the flange plate
 - The 1" pipe is not included in either the ERK or "C" kits and would need to be added
- **The chain and plug do not need to be removed, wrap these around the valve to keep out of the way of the can**



- **The bars have been used for the initial railcars. Other options could be considered in the future**
 - Any new designs need to consider the “reach” of the C kit hooks
- **The C kit will work in the port holes through the following:**
 - Unbolt one of the hooks
 - Mount both hooks into port holes
 - Re-attach the hook and tighten normally



OUR COMMON GOAL !