

This document contains the recommended procedures for installing, operating and maintaining a 2 - 6" Pressure and Vacuum Relief Vent (PVRV). Read and understand this document prior to installation, operation or maintenance of the PVRV.

NOTE: INFORMATION REQUIRED FOR SUCCESSFUL INSTALLATION

CAUTION: INFORMATION IF NOT FOLLOWED MAY RESULT IN DAMAGE OR INSTALLATION FAILURE

WARNING: INFORMATION IF NOT FOLLOWED MAY RESULT IN INJURY OR DEATH

PART A: INSTALLATION

THE ILLUSTRATIONS IN THIS DOCUMENT PRIMARILY DEPICT A PVRV WITH PRESSURE AND VACUUM RELIEF WHERE BOTH VALVES ARE UBR VALVES. THE WRITTEN INSTRUCTIONS, HOWEVER, UNLESS OTHERWISE STATED, APPLY TO ALL CONFIGURATIONS OF PVRV. ALL PARTS ARE IDENTIFIED AND ILLUSTRATED ON PAGE 4 OF THIS DOCUMENT FOR REFERENCE.

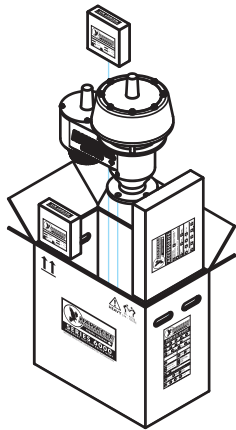
TOOLS

- » Box or Socket Wrench for mounting hardware (torque wrench recommended)
- » 15/16 for 2, 3 and 4" ANSI 150# connections
- » 1-1/8 for 6" ANSI 150# connection
- » 3/4 for 8" API 12B/F connection

PARTS REQUIRED

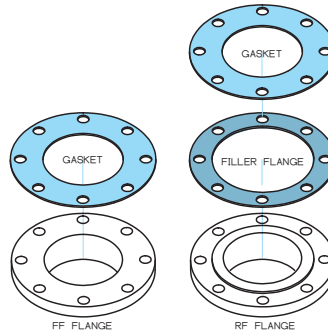
- » 1 Series 6000 PVRV
- » 1 Base Gasket
- » 1 Bolt Kit

- 1** Remove the PVRV, weight boxes and documentation/ bolt kit box from the PVRV box. NOTE: Some boxes are used for packing purposes and may be empty. Boxes with required components are distinctively labelled.



**DO NOT
THROW AWAY
REQUIRED
COMPONENTS INSIDE**

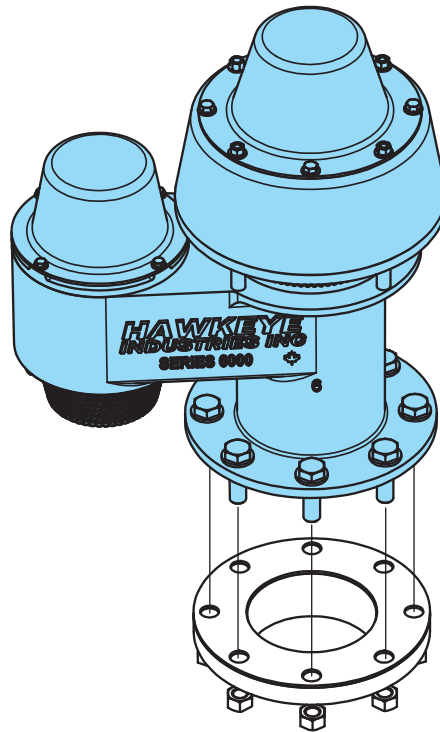
- 2** Place the connection gasket on the tank connection and align holes.



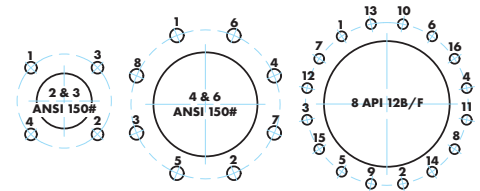
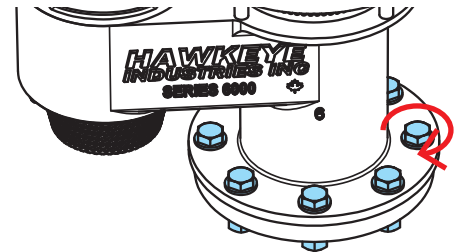
NOTE: IF MOUNTING THE PVRV TO A RAISED-FACE (RF) FLANGE, A FILLER FLANGE IS REQUIRED.

CAUTION: MOUNTING THE PVRV ON A RAISED FACE FLANGE WITHOUT A FILLER FLANGE CAN DAMAGE THE VENT AND AFFECT PERFORMANCE.

- 3** Mount the PVRV on the base gasket and align holes.



- 4** Fasten with supplied bolt kit and torque the bolts according to the table and sequence illustrated below. Torque may require adjustment based on conditions and gasket type used.



TORQUE RECOMMENDATION

CXN	2 ANSI	3 ANSI	4 ANSI	6 ANSI	8 API
Torque	20 ft-lb	25 ft-lb	15 ft-lb	23 ft-lb	14 ft-lb

- 5** If equipped with a pipe-away connection, fasten to piping system with appropriate connection hardware and gaskets.

PART B: RELIEF CONFIGURATION

One- or both-sides (pressure and/or vacuum) of the device may have weight plates factory-installed, depending on valve setting and configuration. A label on the device will indicate if weights are already installed, and the following procedure is not required. For device that require installation of weight plates, follow steps 1 through 5 for the pressure side, 6 through 10 for vacuum.

IF SET PRESSURE IS CHANGED FROM THE FACTORY SETTING, THE DEVICE TAG MUST BE REPLACED WITH ONE SHOWING THE REVISED RELIEF RATING. REMOVE THE OLD TAG AND INSTALL THE NEW TAG WITH THE SUPPLIED DRIVE SCREWS.

AN EXPLODED VIEW CONTAINING ALL PARTS AND VENT COMBINATIONS IS PROVIDED FOR REFERENCE ON THE LAST PAGE OF THIS DOCUMENT.

TOOLS

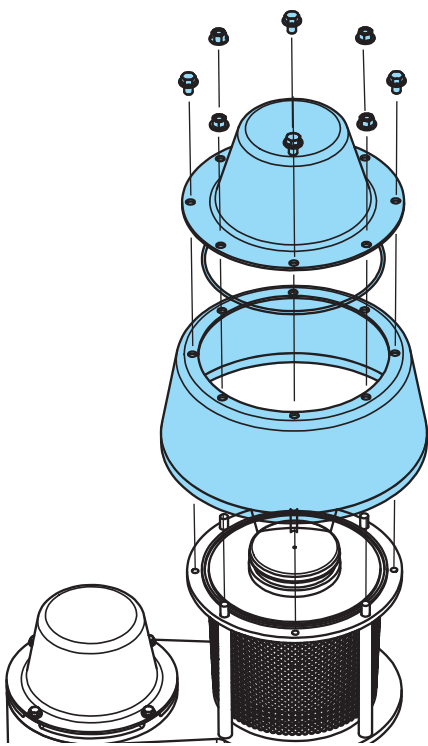
- » 7/16 Box or Socket Wrench
- » 9/16 Box or Socket Wrench
- » Small Prying Tool (flat Screw driver)
- » 4561 Severe Service Grease

PARTS REQUIRED

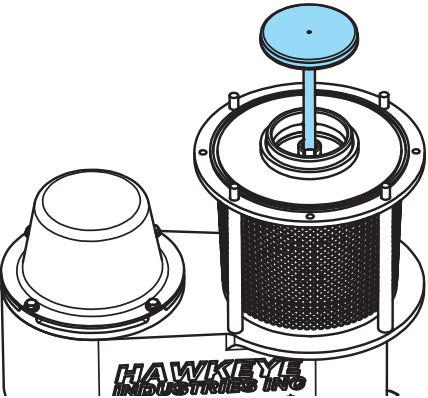
- » 1 Series 6000 PVRV Weight Kit(s)

PRESSURE SIDE

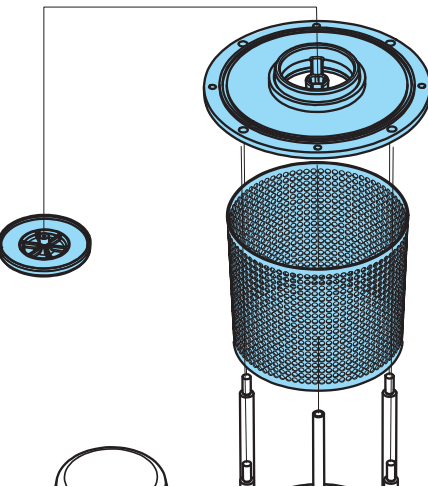
- 1** Remove the 3/8" bolts and nuts from the pressure side with the 9/16" Wrench and remove the pressure cap/cover, pressure hood and O-ring.



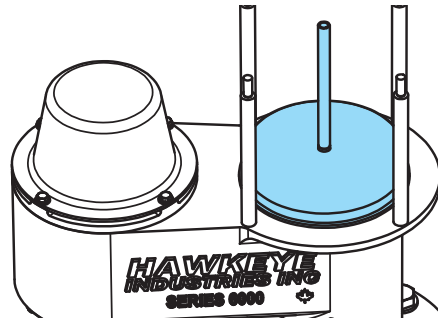
2 UBR VALVES ONLY Lift the pressure pilot pallet enough to expose the stem below. Lightly grip the stem with the pliers and unscrew the pressure pilot pallet from the stem; set aside for later servicing. Note, by feel, how tight the pallet is threaded on to the stem. Replace this connection to the same tightness (finger tight).



3 Remove the pressure pilot pallet seat holder (UBR valves only) and pressure screen to reveal the pressure pallet.



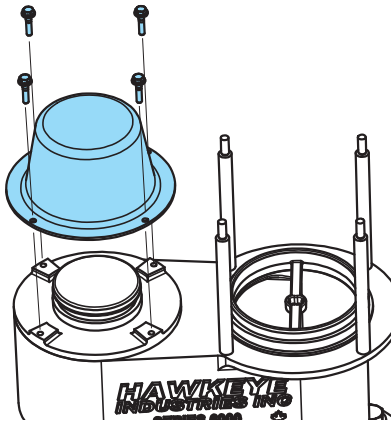
4 Install the weight plates over the upper guide stem of the pressure pallet. Refer to the table at the end of this section for weight plate configurations.



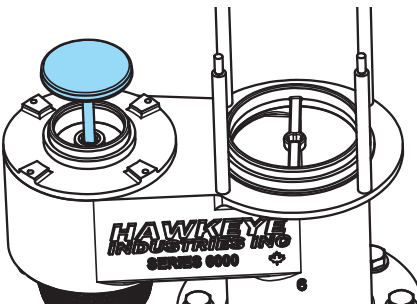
5 Follow steps 1 - 3 in reverse order to reassemble the pressure-side of the device. For UBR valves, see reassembly note at the end of this section.

VACUUM SIDE

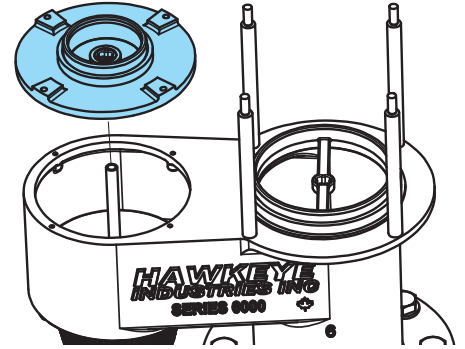
6 Remove the 1/4" bolts from the vacuum side with the 7/16" Box or Socket Wrench and remove the vacuum cap/cover.



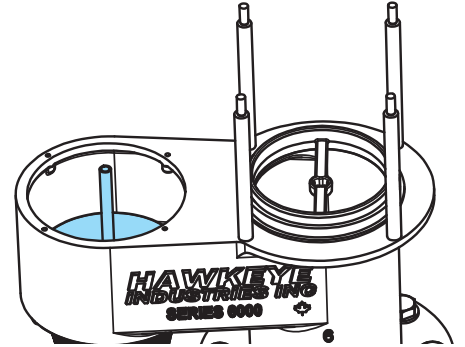
7 UBR VALVES ONLY Lift the vacuum pilot pallet enough to expose the stem below. Lightly grip the stem with the pliers and unscrew the pressure pilot pallet from the stem; set aside for later servicing. Note, by feel, how tight the pallet is threaded on to the stem. Replace this connection to the same tightness (finger tight).



8 UBR VALVES ONLY Remove the vacuum pilot pallet seat to reveal the vacuum pallet.

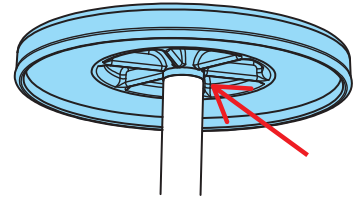


9 Install the weight plates over the upper guide stem of the vacuum pallet. Refer to the table at the end of this section to for weight plate configurations.



10 Follow steps 6 - 8 in reverse order to reassemble the vacuum-side of the device. For UBR valves, see reassembly note at the end of this section.

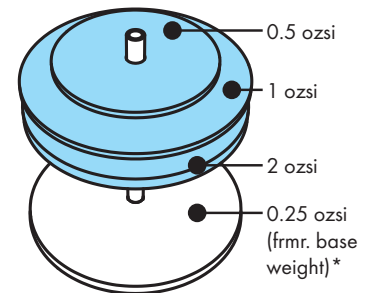
UBR REASSEMBLY NOTE: ENSURE THE PILOT PALLET THREAD FULLY SEATS ON THE GUIDE STEM AND THERE IS NO GAP BETWEEN THE TWO. TIGHTEN ALL FASTENERS UNTIL SNUG. ENSURE ALL PALLET STEMS ARE PROPERLY POSITIONED IN THE GUIDES.



WEIGHT CONFIGURATION

**EACH VALVE REQUIRES NO MORE THAN:
1 × 0.25 OZSI WEIGHT
1 × 0.5 OZSI WEIGHT AND
1 × 1 OZSI WEIGHT**

PLACE THE LARGEST WEIGHT PLATES ON THE BOTTOM AND END WITH THE SMALLEST WEIGHT PLATE ON THE TOP.



WEIGHT CONFIGURATION		
	STD Valve	UBR Valve
Base Pressure / Vacuum Setting (no weight)	0.25 ozsi	0.50 ozsi
Weight Colour	Silver	Gold
Weight Part Numbers		
0.15 ozsi	220.310.010	n/a
0.25 ozsi	220.310.020	n/a
0.5 ozsi	220.310.030	220.310.031
1.0 ozsi	220.310.040	220.310.041
2.0 ozsi	220.310.050	220.310.051

Desired Setting	Weight Configuration	
	STD Valve	UBR Valve
0.25 ozsi	No Weights	N/A
0.4 ozsi	1 × 0.15 Weight	N/A
0.5 ozsi	1 × 0.25 Weight	No Weights
1.0 ozsi	1 × 0.25 Weight 1 × 0.5 ozsi Weight	1 × 0.5 ozsi Weight
1.5 ozsi	1 × 0.25 Weight 1 × 1 ozsi Weight	1 × 1 ozsi Weight
2.0 ozsi	1 × 0.25 Weight 1 × 0.5 ozsi Weight 1 × 1 ozsi Weight	1 × 0.5 ozsi Weight 1 × 1 ozsi Weight
2.5 ozsi	1 × 0.25 Weight 1 × 2 ozsi Weight	1 × 2 ozsi Weight
4.0 ozsi	1 × 0.25 Weight 1 × 0.5 ozsi Weight 1 × 1 ozsi Weight 1 × 2 ozsi Weight	1 × 0.5 ozsi Weight 1 × 1 ozsi Weight 1 × 2 ozsi Weight
16 ozsi	1 × 0.25 Weight 1 × 0.5 ozsi Weight 1 × 1 ozsi Weight 7 × 2 ozsi Weight	1 × 0.5 ozsi Weight 1 × 1 ozsi Weight 7 × 2 ozsi Weight

PART C: REPLACING OR GREASING PRESSURE AND VACUUM SEAL

The instructions below are for a PVRV with pressure and vacuum relief where both valves are UBR valves. The same general steps apply to any combination of pressure, vacuum or pipe-away vents with standard or UBR valves, however standard valves will not have the pilot pallets and seat assemblies.

TOOLS

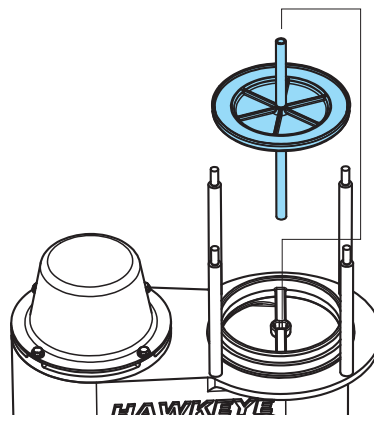
- » 7/16 Box or Socket Wrench
- » 9/16 Box or Socket Wrench
- » Small Prying Tool (flat Screw driver)
- » 4561 Severe Service Grease

PARTS REQUIRED

- » 1 Replacement Gaskets (if required)

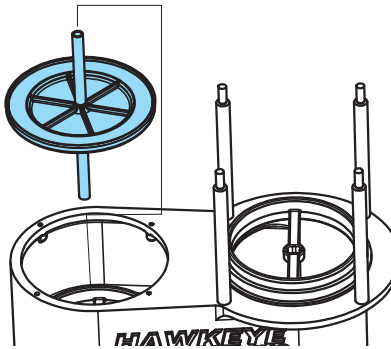
PRESSURE SIDE DISASSEMBLY

- 1** Follow steps 1 - 3 in SECTION B to expose the pressure pallet. Remove the pressure relief pallet and set aside with pressure pilot pallet.



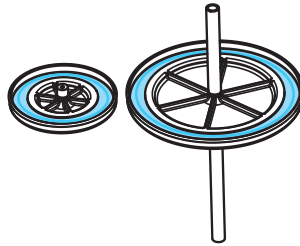
VACUUM SIDE DISASSEMBLY

- 2** Follow steps 6-8 in SECTION B to expose the vacuum pallet. Remove the vacuum relief pallet and set aside with pressure pilot pallet.

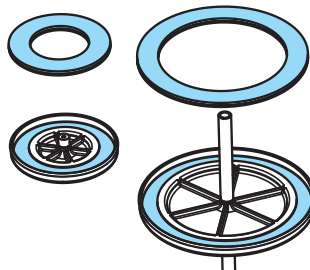


INSPECTION, REPLACEMENT AND GREASING OF SEALS

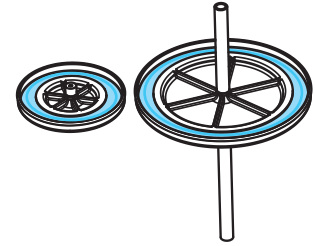
- 3** Inspect all of the removed seals. A ring shaped indentation from the pallet seat may be present in the seals, this is normal and improves the sealing performance of the valve. The seal should be replaced if there are signs of cracking, erosion, swelling, multiple intersecting indentations, etc.



- 4** If the seal does not require replacing, proceed to step #8
- 5** If the seal requires replacing, remove the seal by sliding the small prying tool along the outer edge and then behind the seal to lift the edge. Pull the seal outwards and out of the retaining groove.



- 6** Entirely coat the new seal with a thin coating of 4561 Severe Service Grease to assist with installation.
- 7** Place the new seal in the retaining groove. Press and massage the seal into place until it sits flat against the pallet with no creases or waves.
- 8** Clean all surfaces and apply an even coating of 4561 Severe Service Grease to the sealing surface.



NOTE: PRESSURE AND VACUUM PATTERNS ARE NOT INTERCHANGEABLE. GUIDE RODS ARE COLOUR-CODED TO AID IN IDENTIFICATION.

PALLET IDENTIFICATION

	Top Guide	Bottom Guide
Pressure - Standard	Green	Red
Pressure - UBR	Blue	Red
Vacuum - Standard	Gold	Red
Vacuum - UBR	Orange	Red

PART D: TROUBLESHOOTING

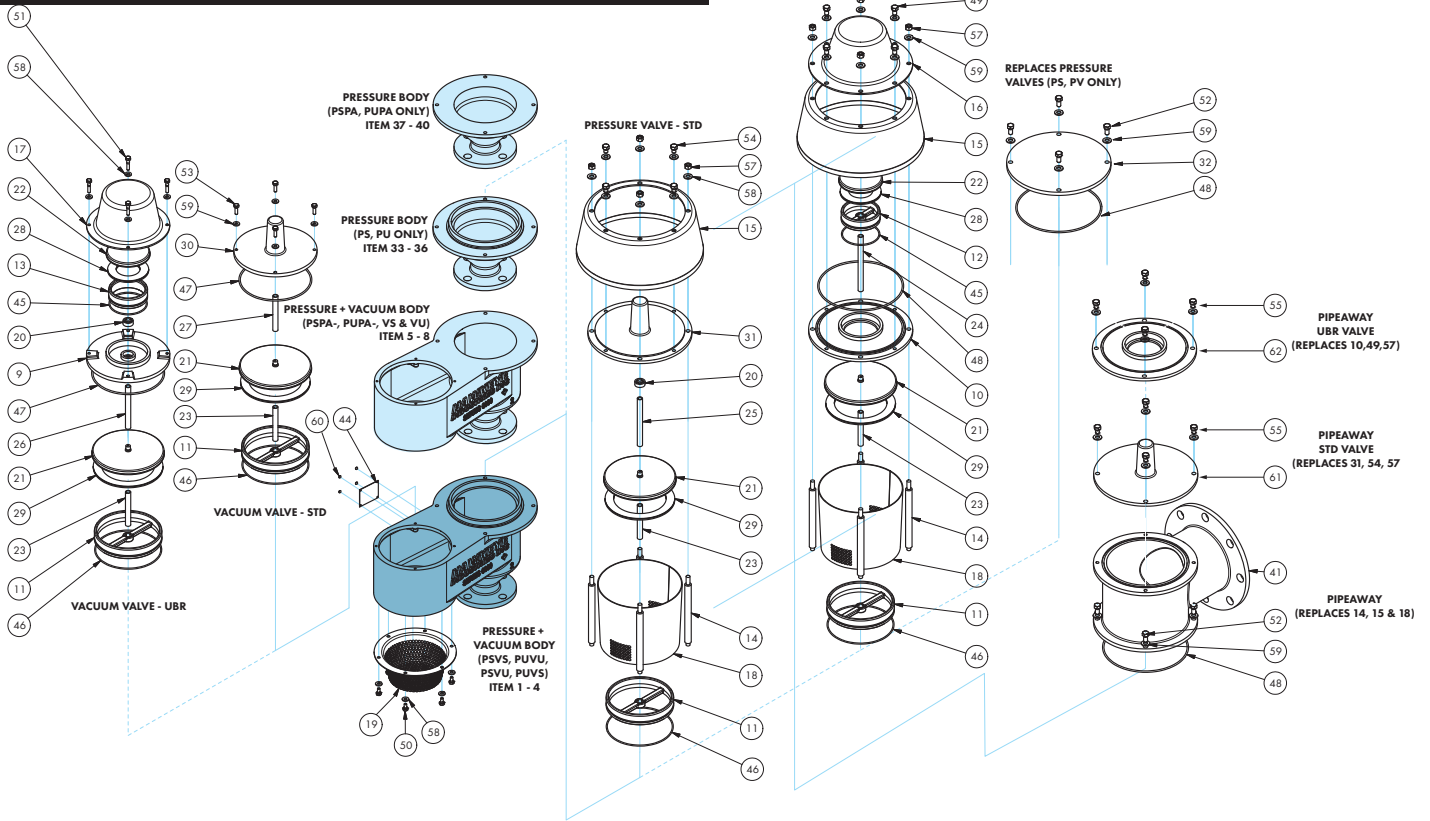
PROBLEM: Vent is Leaking or Frequently Opening

Symptom Of	Solution
Unlubricated Pressure / Vacuum Seal	Perform the inspection and re-lubrication procedures detailed in SECTION C.
Worn or Damaged Pressure Vacuum Seal	
Set pressure set too close to operating pressure	Ensure that the set pressure of the Series 6000 PVRV is sufficiently above the operating pressure of the tank.

PROBLEM: Vent is not opening

Symptom Of	Solution
Debris blocking action	Ensure the vent cavity is clear of debris and obstructions.
Stuck Pressure or Vacuum Pallet	Ensure the pressure and vacuum pallets are free to move and are free from ice.
Set pressure set too far from operating pressure	Ensure that the set pressure of the Series 6000 PVRV is sufficiently below the desired relieving pressure and the design pressure of the tank.

EXPLODED VIEW AND PARTS LIST



#	Part Name	Part#	Material	#	Part Name	Part#	Material	#	Part Name	Part#	Material
1	PVRV Base – 2"	220.302.010	319 Al	26	Vac. Pallet Center Guide Rod (Orange)	220.300.070	6061 Al	51	1/4 UNC x 1-1/4 Hex Bolt	010.006.040	18-8 SS
2	PVRV Base – 3"	220.303.010	319 Al	27	Vac. Pallet Top Guide Rod (Gold)	220.300.060	6061 Al	52	3/8 UNC x 3/4 Hex Bolt	010.006.160	18-8 SS
3	PVRV Base – 4"	220.304.010	319 Al	28	Composite Pilot Gasket	220.200.710	FKM	53	1/4 UNC x 7/8 Hex Bolt	010.006.090	18-8 SS
4	PVRV Base – 6"	220.306.010	319 Al	29	Composite Relief Gasket	220.200.000	FKM	54	3/8 UNC x 1/2 Hex Bolt	010.006.150	18-8 SS
5	PVRV PA Base – 2"	220.302.020	319 Al	30	Vac. Cover	220.300.010	319 Al	55	3/8 UNC x 7/8 Hex Bolt	010.006.180	18-8 SS
6	PVRV PA Base – 3"	220.303.020	319 Al	31	Pres. Cover	220.300.020	319 Al	57	3/8 UNC Hex Nut	010.0A6.100	18-8 SS
7	PVRV PA Base – 4"	220.304.020	319 Al	32	Vac.-Only Cover	220.300.030	319 Al	58	1/4 SAE Flat Washer	010.0B6.040	18-8 SS
8	PVRV PA Base – 6"	220.306.020	319 Al	33	Pres.-Only Base 2"	220.302.110	319 Al	59	3/8 SAE Flat Washer	010.0B6.060	18-8 SS
9	Vac. Pilot Pallet Seat Holder	220.300.120	GF PA66	34	Pres.-Only Base 3"	220.303.110	319 Al	60	#4x5/16 ZP Drive Screw	010.0F6.020	CS ZP
10	Pres. Pilot Pallet Seat Holder	220.300.130	319 Al	35	Pres.-Only Base 4"	220.304.110	319 Al	61	Pres. Cover for PA	220.300.110	319 Al
11	Relief Pallet Seat	220.300.320	GF PA66	36	Pres.-Only Base 6"	220.306.110	319 Al	62	Pres. Pilot Pallet Seat Holder for PA	220.300.150	319 Al
12	Pres. Pilot Pallet Seat	220.300.140	GF PA66	37	Pres.-Only Base 2" PA	220.302.120	319 Al				
13	Vac. Pilot Pallet Seat	220.300.040	GF PA66	38	Pres.-Only Base 3" PA	220.303.120	319 Al				
14	Pres. Stand-off	220.300.100	6061 Al	39	Pres.-Only Base 4" PA	220.304.120	319 Al				
15	Pres. Hood	220.300.530	3003 Al	40	Pres.-Only Base 6" PA	220.306.120	319 Al				
16	Pres. Cap	220.300.520	3003 Al	41	Pipe Away Body	220.306.000	319 Al				
17	Vac. Hood	220.300.510	3003 Al	42	Pipe Away Pres. Cover	220.300.110	319 Al				
18	Pres. Screen	220.800.620	304 SS	43	Pres. Pilot Pallet Seat Hldr (PA)	220.300.150	319 Al				
19	Vac. Screen	220.800.610	304 SS	44	Vapour Control Tag	010.909.060	6061 Al				
20	Guide Insert	220.800.310	GF PA66	45	153 O-Ring	010.338.110	FKM				
21	Relief Pallet	220.300.330	GF PA66	46	164 O-Ring	010.338.130	FKM				
22	Pilot Pallet	220.300.310	GF PA66	47	261 O-Ring	010.338.280	FKM				
23	Lower Pallet Guide Rod (Red)	220.300.050	6061 Al	48	266 O-Ring	010.338.290	FKM				
24	Pres. Pallet Center Guide Rod (Blue)	220.300.090	6061 Al	49	3/8 UNC x 1 Hex Bolt	010.006.140	18-8 SS				
25	Pres. Pallet Top Guide Rod (Green)	220.300.080	6061 Al	50	1/4 UNC x 1/2 Hex Bolt	010.006.070	18-8 SS				



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