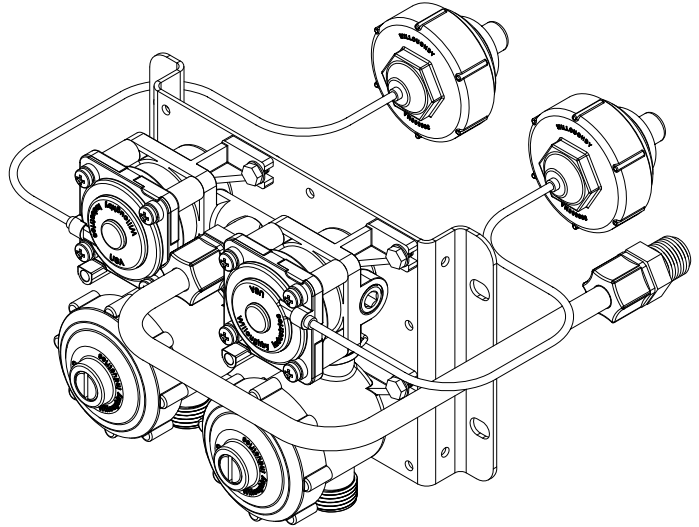
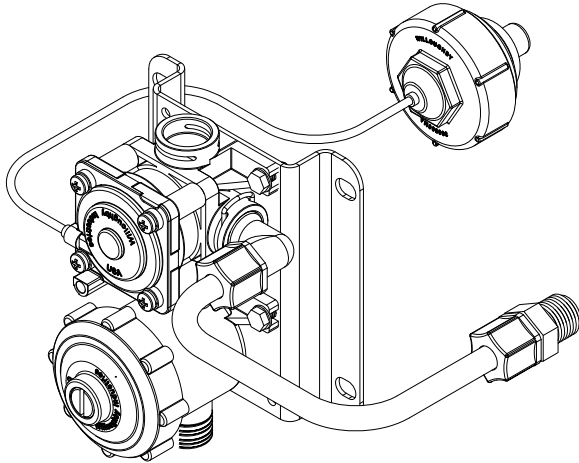


**WILLOUGHBY**  
**LEAD-FREE**  
**VALVE ASSEMBLIES**



**INSTALLATION AND  
OPERATION MANUAL**



**MODELS:**

**PSL1 and PSL2**

Lead-free Non-metering Pneumatic Valve Assemblies (Plastic Bodied)

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**WILLOUGHBY**

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## PRE-INSTALLATION INFORMATION

# INSTALLATION NOTICE!

CHECK ROUGH-IN LOCATIONS **PRIOR** TO INSTALLATION

FLUSH LINES THOROUGHLY **PRIOR** TO HOOK-UP

When installing **Willoughby Industries' PSL1 or PSL2 Lead-free Non-metering Pneumatic Valves:**

**BEFORE** Step 1 of the installation instructions, ensure that all relevant plumbing rough-ins are in their correct locations.

The valve assembly, including the spray head, **MUST NOT BE** connected until *after* all lines have been flushed to remove the small particles of debris that are inherent with new construction projects and all chemicals that are used in flushing are purged from the system.

Chemicals used in flushing plumbing systems can attack the internal components of the valve and spray head and severely damage them, so any flushing of the system must be followed by a full flushing with pure water to clear any harsh chemicals remaining in the system. Debris in the system if allowed to enter the valve assembly and spray head can cause poor performance or outright failure.

Again **DO NOT** attempt to connect the valve assembly and spray head until *after* all flushing is complete and pure water is the only media that will be passing through the system. Damage to the valve assembly or spray head caused by harsh chemicals or debris will not be covered by the manufacturer's warranty.

**DO NOT** use pipe joint compound on any threaded connections to plastic components, use teflon thread tape only.

# INSTALLATION NOTICE!

CHECK ROUGH-IN LOCATIONS **PRIOR** TO INSTALLATION

FLUSH LINES THOROUGHLY **PRIOR** TO HOOK-UP

# VALVE OPERATION

## NON-METERING PNEUMATIC VALVE ASSEMBLIES

The Willoughby Pneumatic Valve Assembly is designed as a pressure-operated, pilot orifice, non-metering water valve. This type of valve is used for drinking fountains, wash fountains, certain lavatories, and some shower fixtures.

By virtue of its design, a pneumatic valve is non-hold open. The operating sequence of the valve begins with pressing the push button. This action causes the closed-system air pressure to increase, opening the water valve, and sending the water through a bubbler, filler, spout, or shower head to the user. When the push button is released, the system pressure will drop, and the water flow stops.

A pilot orifice valve uses the water pressure in the line to assist in opening and closing the valve. In this case the pilot orifice extends through the center of the diaphragm guide and is opened and closed by a rubber bumper molded onto a stainless steel disk. The bypass orifice is molded in the edge of the diaphragm. Both of these orifices must be clear for the valve to function properly.

As system air is forced from the push button into the valve body, the pressure pushes the magnet assembly downward towards the stainless steel separator cup. As the magnet moves closer to the cup, the magnetic force passes through the cup and lifts the disk off of the water diaphragm. With the pilot orifice uncovered, line pressure lifts the diaphragm and water flows through the valve.

The valve continues to run as long as the increased system air pressure caused by the push button remains. When the push button is released, the magnet moves away from the cup, and the magnetic field weakens sufficiently for the disk to drop back down onto the water diaphragm. At this point water passes through the bleed orifice, pressurizes the area above the diaphragm, and causes it to close down on the valve seat.

If the pneumatic valve drips after shutting off and the seat and diaphragm have smooth sealing surfaces, a PVK-2 diaphragm assembly kit should be installed.

A strainer/checkstop is an integral part of the valve assembly and provides a means of shutting off the water if the valve needs servicing. A check valve in the checkstop eliminates cross flow of hot or cold water into the opposite supply line. A fine mesh stainless steel strainer keeps normal line debris from interfering with the mechanical components of the valve.

If the pneumatic valve does not open and the problem is not in the pneumatic pump or tubing, a PVK-1SC valve body assembly kit should be installed.

# VALVE OPERATION (Continued)

## OPERATIONAL DIAGRAMS

### WHEN THE VALVE IS CLOSED:

#### BEGIN

PUSH BUTTON IS IN RELEASED POSITION, KEEPING THE SYSTEM AIR PRESSURE LOW

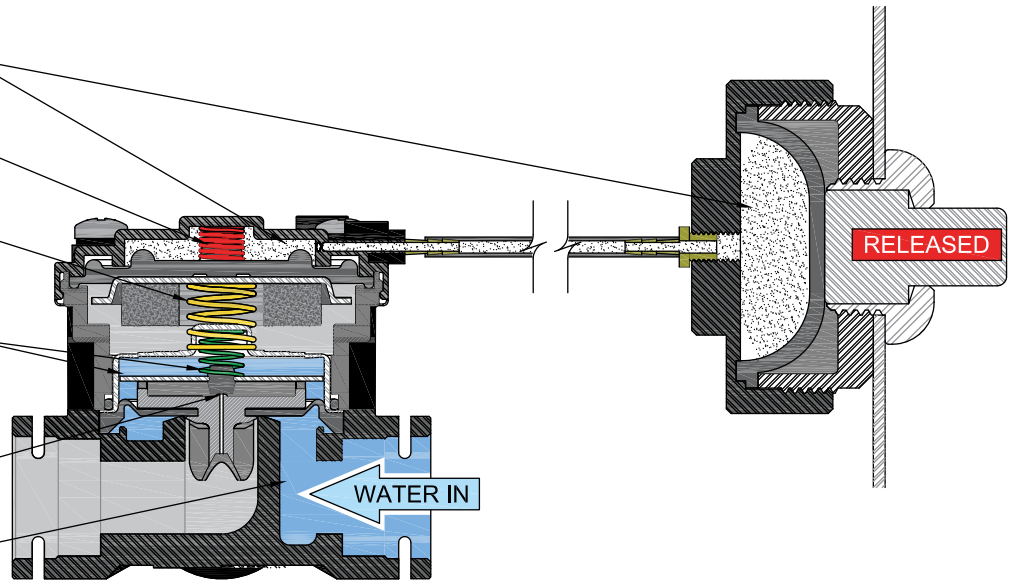
AIR-SIDE-SPRING IS COMPRESSED AGAINST THE TOP COVER BY THE MAGNET-SPRING

MAGNET-SPRING HOLDS MAGNET, MAGNET-CUP, AND AIR-SIDE-DIAPHRAGM UP AND AWAY FROM THE BARRIER-CUP

WATER-SIDE-SPRING AND BLEED-ORIFICE WATER PRESSURE PRESS ACTUATOR-DISK / DIAPHRAGM AGAINST THE VALVE-BASE, STOPPING THE WATER FLOW

BLEED-ORIFICE IN DIAPHRAGM GUIDE IS CLOSED BY THE RUBBER STOPPER IN ACTUATING-DISK

SUPPLY WATER IS HELD IN THE VALVE BODY SUPPLY INLET BY THE WATER-SIDE-DIAPHRAGM



### WHEN THE VALVE IS OPENED:

#### CONTINUE

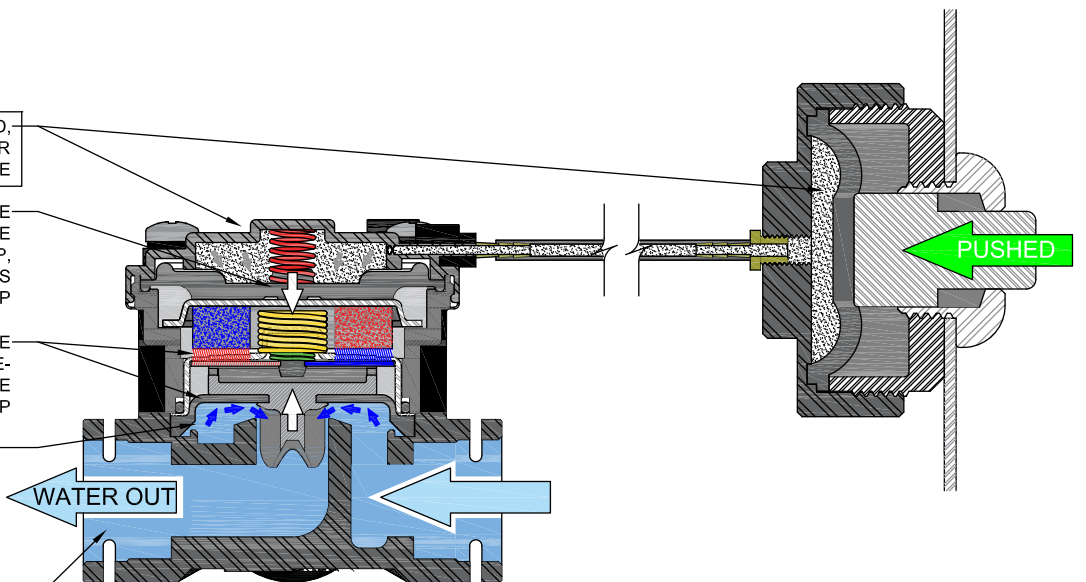
PUSH BUTTON IS PUSHED, INCREASING THE SYSTEM AIR PRESSURE

THE INCREASED AIR PRESSURE AND AIR-SIDE-SPRING FORCE THE AIR-SIDE-DIAPHRAGM, MAGNET-CUP, AND MAGNET DOWN TOWARDS THE BARRIER-CUP

THE MAGNET ATTRACTS THE ACTUATOR-DISK / WATER-SIDE-DIAPHRAGM UP TOWARDS THE BARRIER CUP

AS THE MAGNET PULLS THE ACTUATOR-DISK TOWARDS THE BARRIER CUP, THE WATER PRESSURE PUSHES THE WATER-SIDE-DIAPHRAGM UPWARDS, OPENING THE VALVE

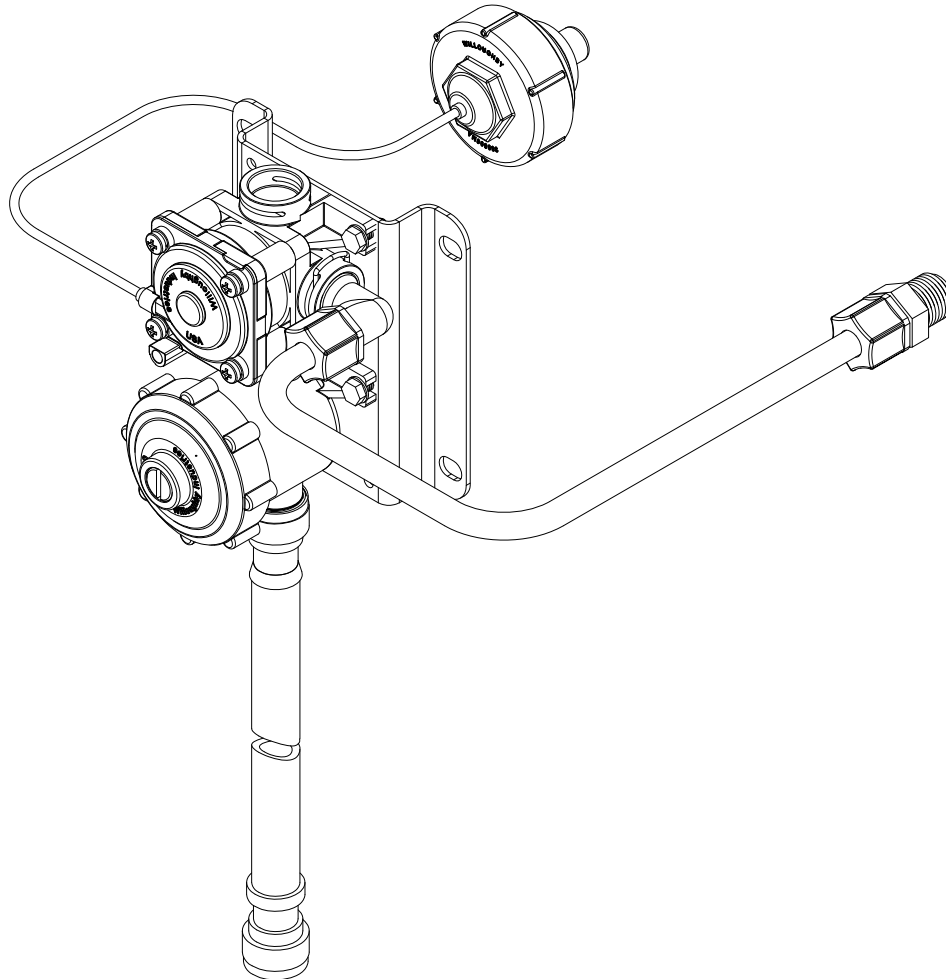
WATER CONTINUES TO FLOW THROUGH THE VALVE AS LONG AS THE PUSH BUTTON IS HELD





# PHYSICAL DIMENSIONS

## PSL11 VALVE BREAKDOWN

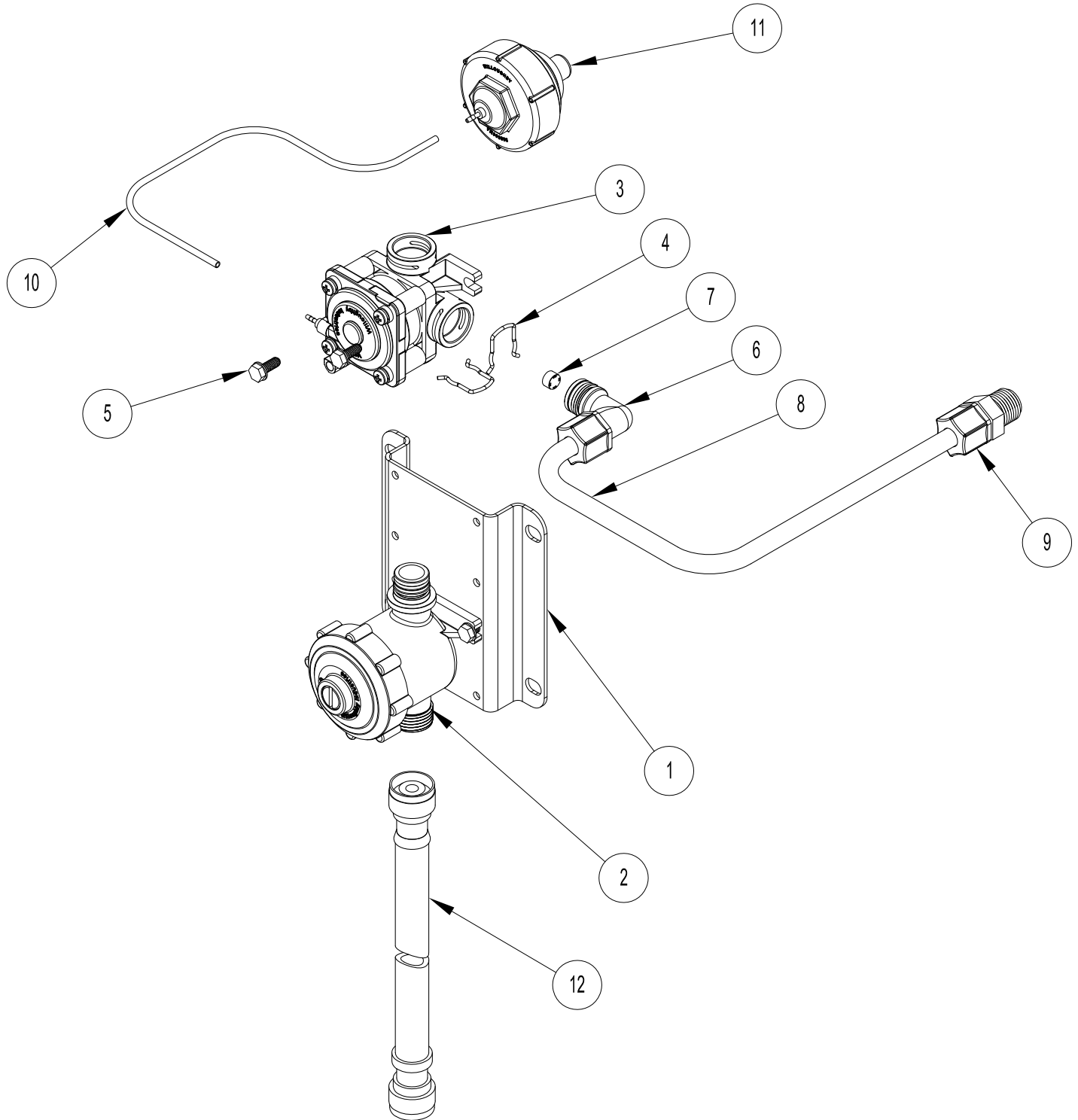


ITEM NO.	PART #	DESCRIPTION	QTY
1	980501	PM1 VALVE BRACKET	1
2	980183	CHECKSTOP ASSEMBLY	1
3	980403PR	PNEUMATIC SELF-CLOSING VALVE ASSEMBLY- RIGHT PLUGGED PORT	1
4	980140	SPRING CLIP	2
5	800133	#10-16 SELF TAP TYPE B HEX HEAD SCREW	4
6	980600A	VALVE FITTING ASSEMBLY, 3/8" ELBOW	1
7	380138	FLOW REGULATOR 0.5 GPM (MR03 RED)*	1
8	600523	FLEXIBLE TUBING 3/8"OD X 1/4"ID	1
9	320566	CONNECTOR 3/8" TUBE X 3/8" MPT	1
10	600470	PNEUMATIC TUBING 1/16"ID (RED)	1
11	600307	(STANDARD) PNEUMATIC PUSH BUTTON	1
	600306	(OPTIONAL) LIGATURE-RESISTANT PNEUMATIC PUSH BUTTON	1
	600311	(OPTIONAL) PALM PNEUMATIC PUSH BUTTON	1
12	980506	(OPTIONAL) 6" STAINLESS STEEL FLEX HOSE	1
	980520	(OPTIONAL) 20" STAINLESS STEEL FLEX HOSE	1

\*PSL11 IS AVAILABLE WITHOUT FLOW CONTROL

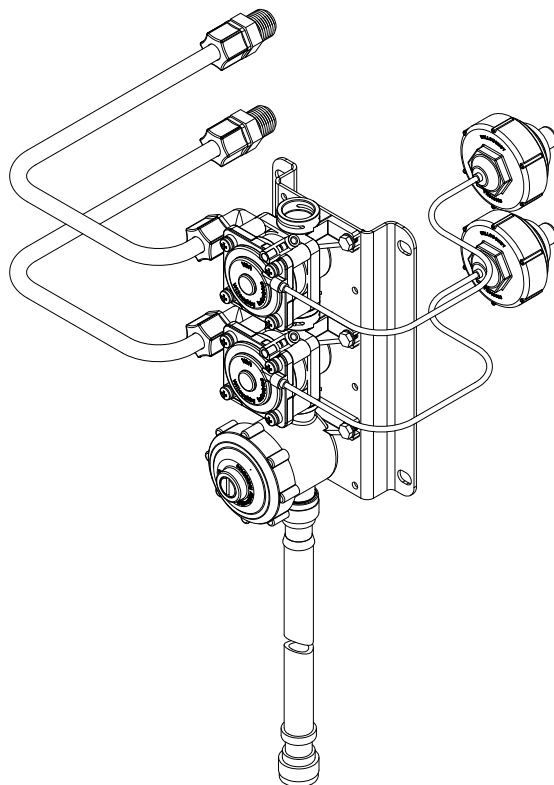
# PHYSICAL DIMENSIONS (Continued)

## PSL11 VALVE BREAKDOWN / EXPLODED VIEW



# PHYSICAL DIMENSIONS (Continued)

## PSL12 MANIFOLD VALVE BREAKDOWN

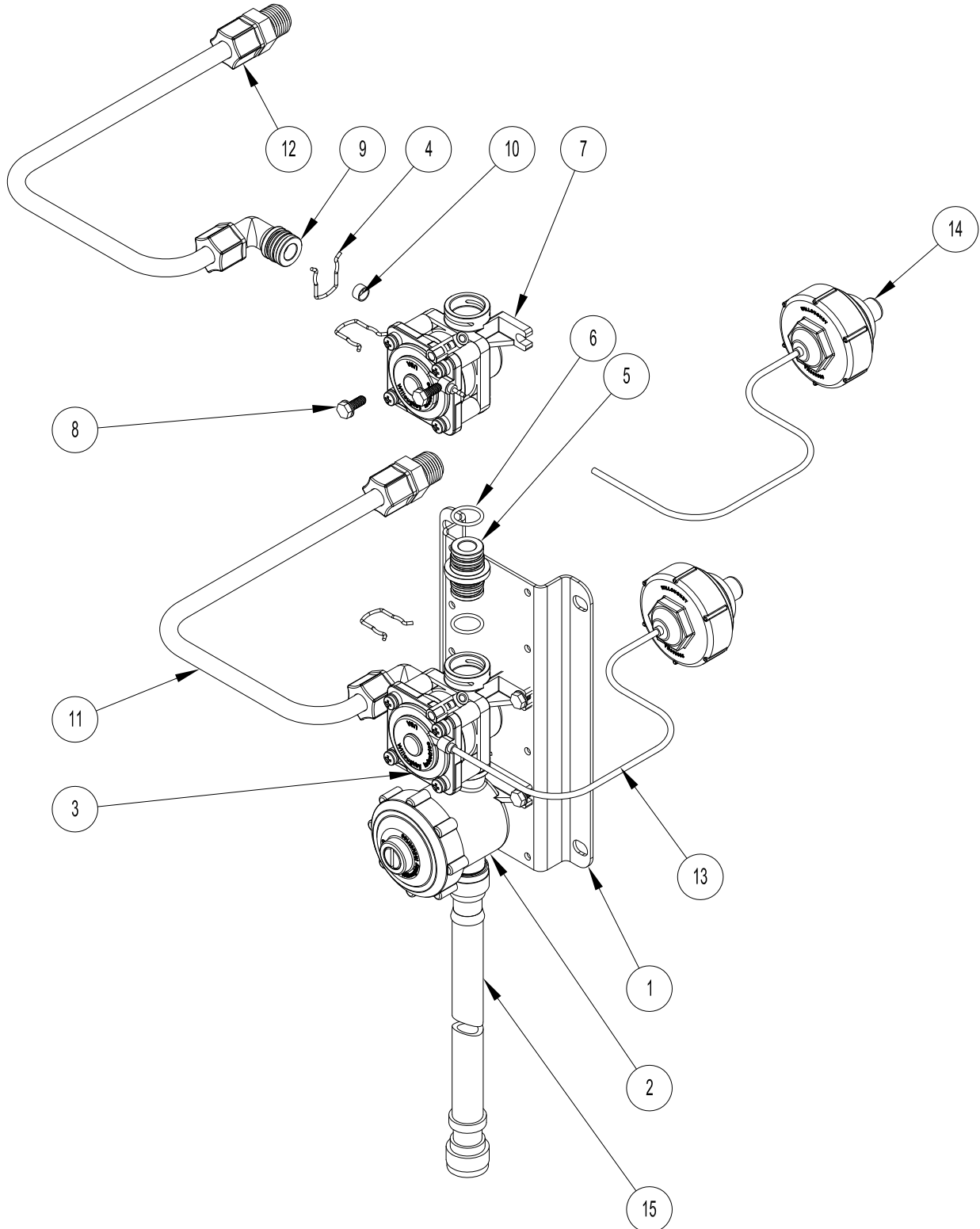


ITEM NO.	PART #	DESCRIPTION	QTY: PSL12	QTY: PSL13	QTY: PSL14
1	9805012	PM1-MA2 VALVE BRACKET	1	N/A	N/A
	9805013	PM1-MA3 VALVE BRACKET	N/A	1	N/A
	9805014	PM1-MA4 VALVE BRACKET	N/A	N/A	1
2	980183	CHECKSTOP ASSEMBLY	1	1	1
3	980403	PNEUMATIC SELF-CLOSING VALVE ASSEMBLY	1	2	3
4	980140	SPRING CLIP	5	8	11
5	980197	PLASTIC VALVE COUPLING	1	2	3
6	980164	O-RING, #015	2	5	8
7	980406PL	PNEUMATIC SELF-CLOSING VALVE ASSEMBLY- LEFT PLUGGED PORT	1	1	1
8	800133	#10-16 SELF TAP TYPE B HEX HEAD SCREW	6	8	10
9	980600A	VALVE FITTING ASSEMBLY, 3/8" ELBOW	2	3	4
10	380138	FLOW REGULATOR 0.5 GPM (MR03 RED)*	2	3	4
11	600523	FLEXIBLE TUBING 3/8" OD X 1/4" ID	2	3	4
12	300566	(OPTIONAL) CONNECTOR, 3/8" TUBE x 3/8" MPT	2	3	4
	320577	(OPTIONAL) ELBOW, 3/8" TUBE x 3/8" MPT	2	3	4
13	600470	PNEUMATIC TUBING 1/16" ID (RED)	2	3	4
14	600307	(STANDARD) PNEUMATIC PUSH BUTTON	2	3	4
	600306	(OPTIONAL) LIGATURE-RESISTANT PNEUMATIC PUSH BUTTON	2	3	4
	600311	(OPTIONAL) PALM PNEUMATIC PUSH BUTTON	2	3	4
15	980506	(OPTIONAL) 6" STAINLESS STEEL FLEX HOSE	1	1	1
	980520	(OPTIONAL) 20" STAINLESS STEEL FLEX HOSE	1	1	1

\*PSL12 IS AVAILABLE WITHOUT FLOW CONTROL

# PHYSICAL DIMENSIONS (Continued)

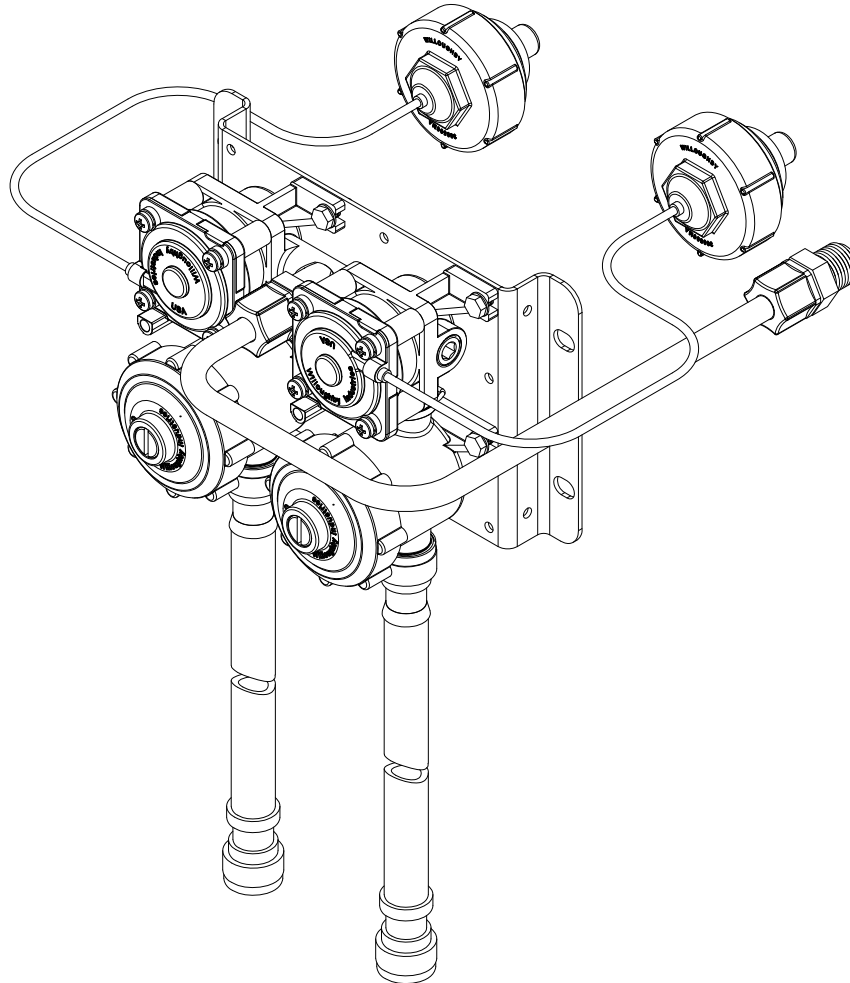
## PSL12 MANIFOLD VALVE BREAKDOWN / EXPLODED VIEW



# PHYSICAL DIMENSIONS (Continued)



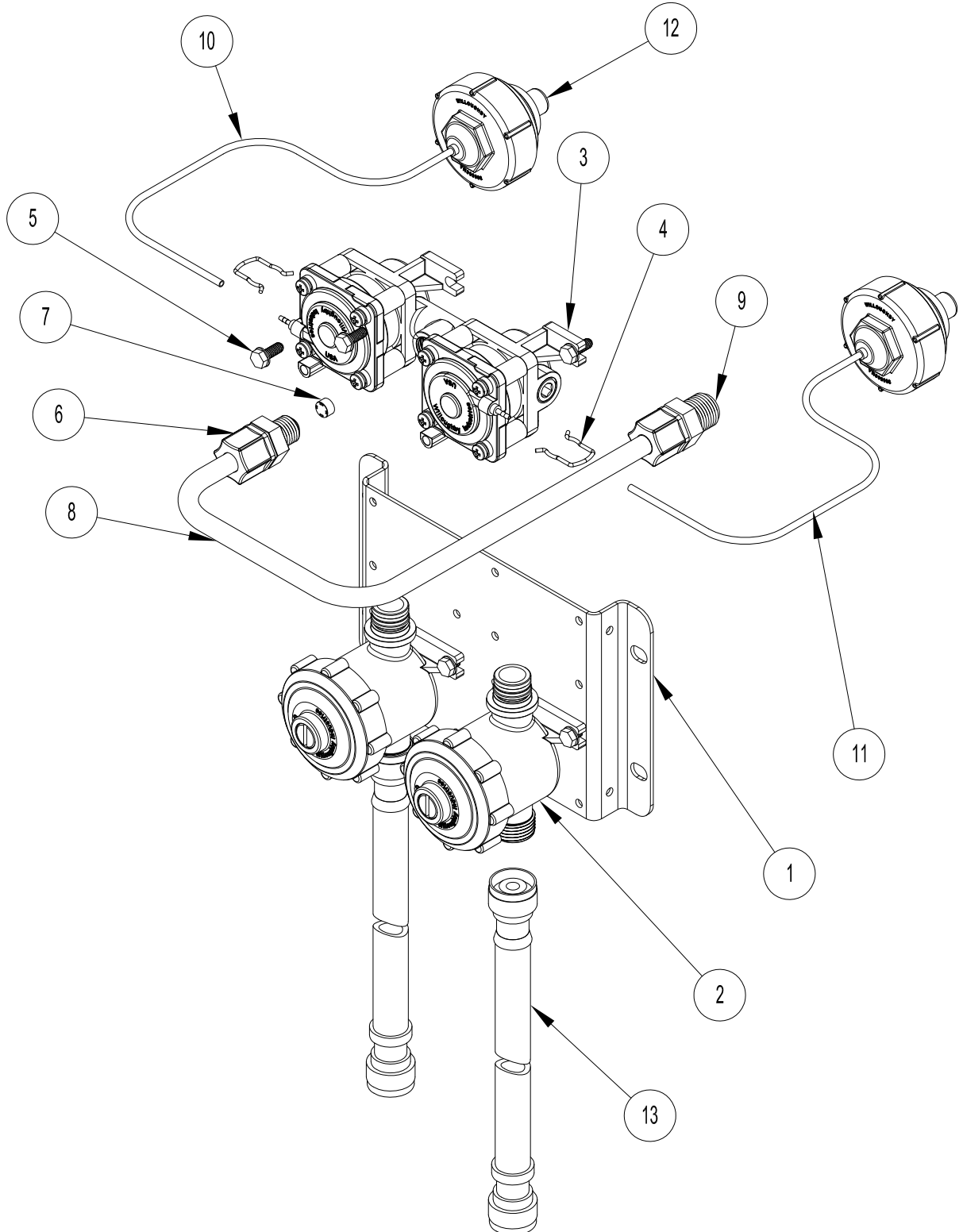
## PSL21 VALVE BREAKDOWN



ITEM NO.	PART #	DESCRIPTION	QTY
1	980502	PM2 VALVE BRACKET	1
2	980183	CHECKSTOP ASSEMBLY	2
3	980404	DUAL TEMP PNEUMATIC SELF-CLOSING VALVE ASSEMBLY	1
4	980140	SPRING CLIP	2
5	800133	#10-16 SELF TAP TYPE B HEX HEAD SCREW	8
6	321010	3/8" TUBE x 1/4" MPT CONNECTOR	1
7	380138	FLOW REGULATOR 0.5 GPM (MR03 RED)	1
8	600523	FLEXIBLE TUBING 3/8"OD X 1/4"ID	1
9	320566	CONNECTOR 3/8" TUBE x 3/8" MPT	1
10	600470	PNEUMATIC TUBING 1/16" ID (RED)	1
11	600475	PNEUMATIC TUBING 1/16" ID x 1/8" OD (BLUE)	1
12	600307	(STANDARD) PNEUMATIC PUSH BUTTON	2
	600306	(OPTIONAL) LIGATURE-RESISTANT PNEUMATIC PUSH BUTTON	2
	600311	(OPTIONAL) PALM PNEUMATIC PUSH BUTTON	2
13	980506	(OPTIONAL) 6" STAINLESS STEEL FLEX HOSE	2
	980520	(OPTIONAL) 20" STAINLESS STEEL FLEX HOSE	2

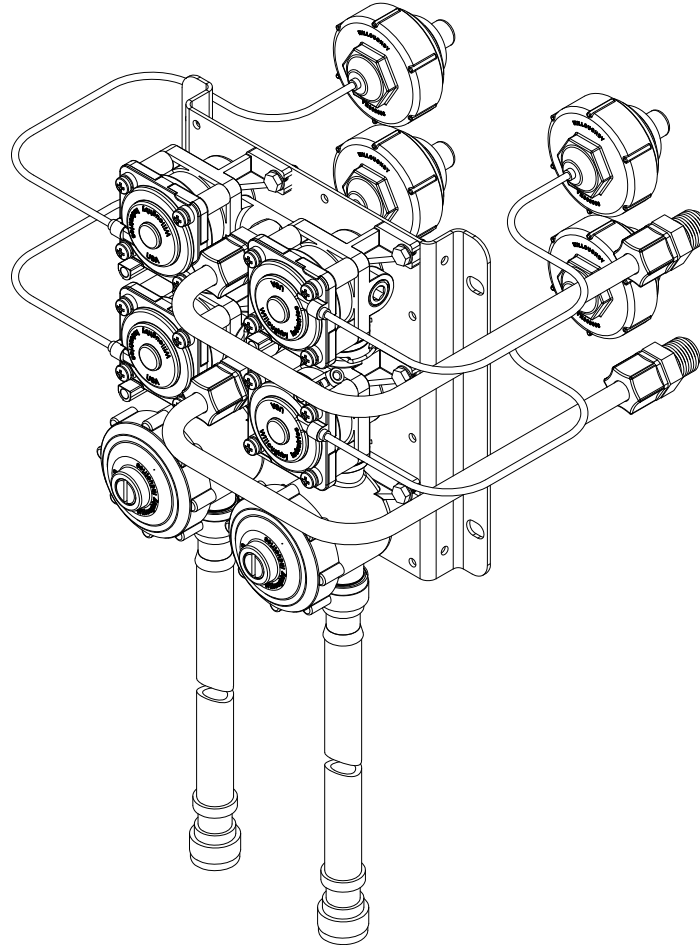
# PHYSICAL DIMENSIONS (Continued)

## PSL21 VALVE BREAKDOWN / EXPLODED VIEW



# PHYSICAL DIMENSIONS (Continued)

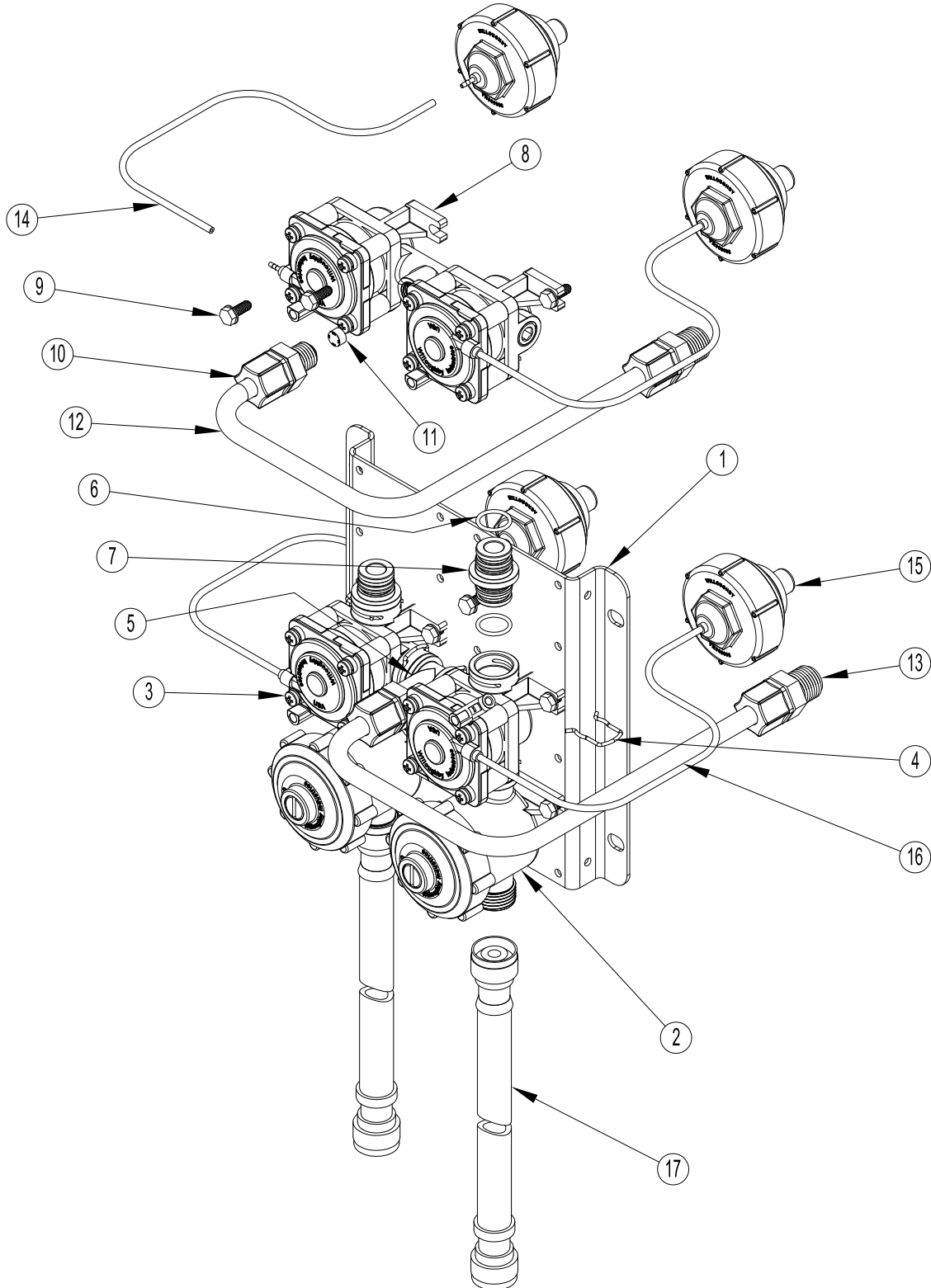
## PSL22 MANIFOLD VALVE BREAKDOWN



ITEM NO.	PART #	DESCRIPTION	QTY
1	9805022	PM22 VALVE BRACKET	1
2	980183	CHECKSTOP ASSEMBLY	2
3	980403	PNEUMATIC SELF-CLOSING VALVE ASSEMBLY	2
4	980140	SPRING CLIP	8
5	980196	PLASTIC VALVE T	1
6	980164	O-RING, #015	6
7	980197	PLASTIC VALVE COUPLING	2
8	980404	PNEUMATIC SELF-CLOSING VALVE ASSEMBLY- LEFT PLUGGED PORT	1
9	800133	#10-16 SELF TAP TYPE B HEX HEAD SCREW	12
10	321010	3/8" TUBE x 1/4" MPT CONNECTOR	2
11	380138	FLOW REGULATOR 0.5 GPM (MR03 RED)	2
12	600523	FLEXIBLE TUBING 3/8" OD X 1/4" ID	2
13	300566	3/8" x 3/8" MPT CONNECTOR	2
14	600475	PNEUMATIC TUBING 1/16" ID x 1/8" OD (BLUE)	2
15	600307	PNEUMATIC PUSH BUTTON	4
16	600470	PNEUMATIC TUBING 1/16" ID (RED)	2
17	980506	6" FLEX HOSE, 1/2 F.I.P CONNECTION	2

# PHYSICAL DIMENSIONS (Continued)

## PSL22 MANIFOLD VALVE BREAKDOWN / EXPLODED VIEW



## **CHECK CONTENTS**

- Separate all parts from packaging and make sure all parts are accounted for before discarding any packaging material. If any parts are missing, do not attempt to install PSL1 or PSL2 Lead-free Non-metering Pneumatic Valves until you obtain the missing parts.

**NOTE: Before beginning installation, all supply, drain and waste piping for the PSL1 or PSL2 Lead-free Non-metering Pneumatic Valves must be completed according to specified rough-ins. If you have not received rough-in details, please contact Willoughby Industries, Inc. (800) 428-4065**

**IMPORTANT: Flush all the water supply lines before making connections.**

# **INSTALLATION INSTRUCTIONS**

## **NON-METERING PNEUMATIC VALVE ASSEMBLY**

- (1) Clear and flush all valve assembly supply lines.
- (2) Clear any debris from all plastic tubing using only air; **DO NOT USE WATER.**
- (3) Mount the valve assembly at any convenient location, making sure all plastic tubing will reach between valves and the filler/bubblers or shower heads. Typical maximum distance is 120" from the valve assembly to the fixture.
- (4) Make sure all checkstop assembly on the valve assembly are in the closed position, then attach the water supplies to the valve assembly inlets on each hot or cold water checkstop (either directly or by using an optional manufacturer-provided, stainless steel flex hose).
- (5) Install all push button assemblies, filler/bubblers, or shower heads through the pre-punched holes on the appropriate fixture backsplashes and control panels. Repeat as necessary.
- (6) Thread a 3/8" M.P.T. x (1/4" or 3/8") I.D. COMP. plastic adapter into the rear threading of each filler/bubbler or shower head. Repeat as necessary.
- (7) Insert one end of (1/4" or 3/8") O.D. plastic tubing into the (1/4" or 3/8") I.D. COMP. side of the adapter on each filler/bubbler or shower head. Then insert the other end of the plastic tubing into the (1/4" or 3/8") I.D. COMP. adapter on the valve assembly corresponding to the appropriate filler/bubbler or shower head. Repeat as necessary.
- (8) Taking care to avoid kinking, gently push one end of 1/16" O.D. pneumatic tubing onto the pneumatic tubing barb on the water valve assembly corresponding to the appropriate filler/bubbler or shower head. Then push the other end of the pneumatic tubing onto the pneumatic barb on the back of the correct push button assembly.  
*Take care to avoid connecting hot water valves to cold water push buttons, connecting the push buttons for the "Bubbler A" valve to the "Bubbler B" valve instead, etc.* Repeat as necessary.
- (9) Open all water supply stops and checkstop valves and check for water leaks.
- (10) Actuate, hold, and release push buttons several times to check that water lines and valves are purged of trapped air and to ensure consistent flow at all locations. Complete a final check for leaks and other possible issues at all connections before completing the installation.

# INSTALLATION INSTRUCTIONS (Continued)

## JACO FITTING INSTRUCTIONS

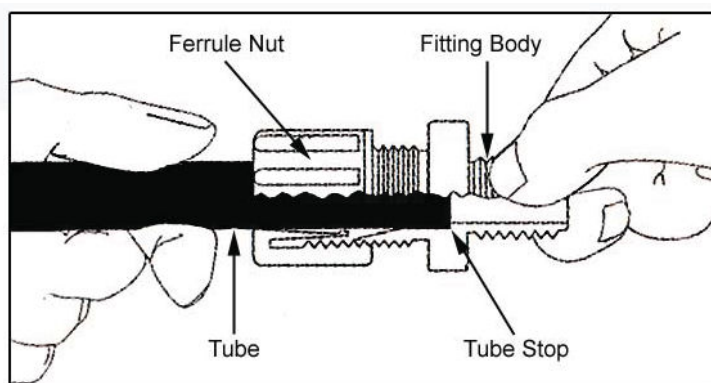
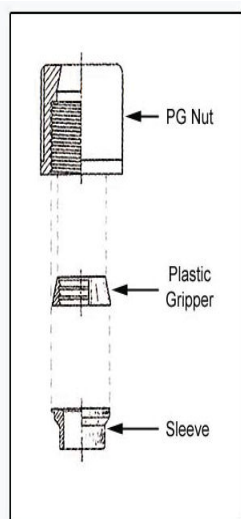


*Note: It is not necessary to disassemble this fitting for application. Merely insert tubing to stop and tighten seal.*

1. Cut tubing end squarely and remove the internal burrs.
2. Insert the tubing through the back of the nut all the way through the nut assembly to the tube stop in the fitting body (see illustration). If the tubing does not enter the nut easily, loosen the nut one turn and reinsert the tubing all the way to the tube stop in the fitting body.
3. Turn the nut hand tight.
4. Wrench tighten the nut  $1\frac{1}{2}$  - 2 turns.
5. All nuts must be retightened when the system reaches projected operating temperature.

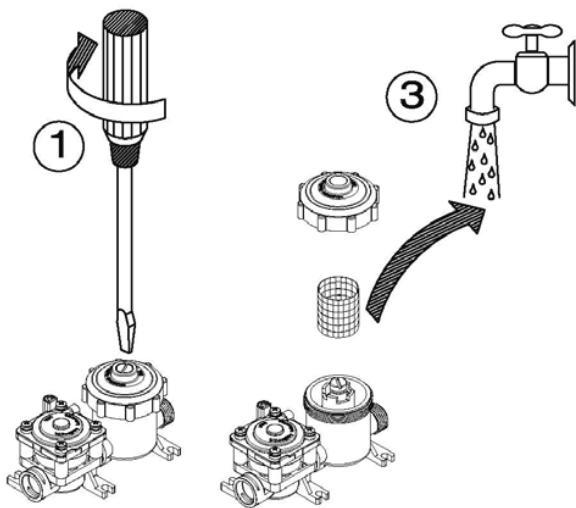
*Note: To ensure proper assembly, tubing MUST be fully inserted into the fitting body all the way to the tube stop.*

*Note: Squeaking sound when tightening nut is normal. For pipe threaded connections, Teflon tape must be used.*



# CARE AND MAINTENANCE

## NON-METERING PNEUMATIC VALVE CLEANING INSTRUCTIONS

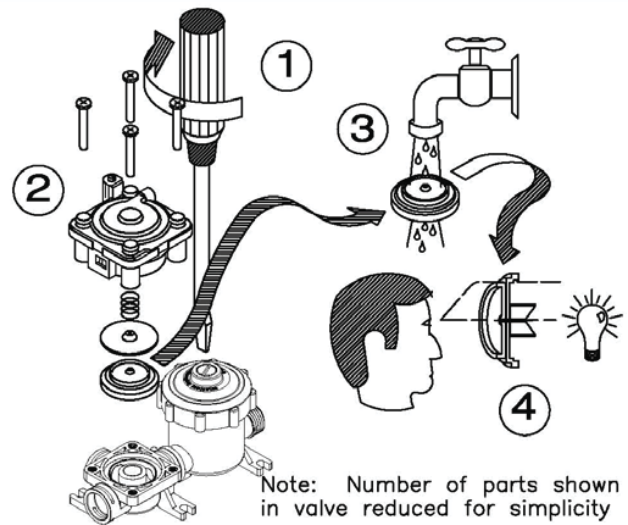


### To clean strainer:

1. Close stop
2. Remove strainer cap & strainer
3. Rinse strainer



Willoughby Industries, Inc.



### To clean valve:

1. Close stop
2. Carefully remove valve motor
3. Wash water side diaphragm
4. Check for unobstructed diaphragm openings (2)

**NOTE: DO NOT** disassemble air side (top) of valve motor

# **TROUBLESHOOTING**

## **NON-METERING PNEUMATIC VALVE ASSEMBLIES**

### **VALVE WILL NOT OPEN OR DELIVER WATER:**

- (1) Check the plastic tubing that runs from the push button actuator to the pneumatic valve for air leaks.
- (2) Make sure the checkstop on the supply to the valve is fully open. Do not partially close the checkstop for any reason as it is not a throttling or flow-reducing valve. The checkstop should either be fully open (normal operation) or fully closed (when servicing the valve).
- (3) Close checkstop and then inspect the strainer in the supply line (installed after the checkstop) to make sure the strainer is not blocked or partially blocked prohibiting water flow.

### **VALVE WILL NOT SHUT OFF:**

- (1) Separate valve motor from casting by removing the four (4) # 8 screws.
- (2) Inspect the water diaphragm assembly to see if bypass hole in diaphragm is blocked. Remove any debris by blowing on diaphragm or using force of air. Do not use any tool (such as straight pin) to remove any debris. Enlarging the hole can cause erratic operation.

### **VALVE CONTINUES TO TRICKLE WATER AFTER PUSH BUTTON IS RELEASED:**

- (1) Inspect seating area on valve base to make sure no debris, pitting or scoring is present.
- (2) Clean seat or replace seat as necessary.
- (3) Inspect seating area of diaphragm for debris, clean as necessary. If debris has caused permanent indentations in the rubber, it may have to be replaced.

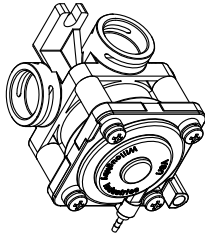
DRAWING: VALVE ASSEMBLY DETAIL

ITEM #	PART #	DESCRIPTION	QTY.
1	980420	SINGLE TEMP BASE w/INSERTS (ALL PORTS OPEN)	1
2	980305	WATER SIDE DIAPHRAGM/ADAPTOR ASSY.	1
3	980310	WATER SIDE DISK ASSEMBLY	1
4	980136	SPRING, WATER SIDE DIAPHRAGM	1
5	980126	BARRIER CUP	1
6	980127	O-RING M1.5x32 BUNA-70	1
7	380802M	BODY, MOLDED W/ PNEU. MTRG.	1
8	980135	SPRING, AIR SIDE MAGNET	1
9	980405	METERING VALVE MAGNET/CUP ASSEMBLY	1
10	980130	DIAPHRAGM, AIR SIDE, PNEUMATIC METERING VALVE	1
11	980134	AIR SIDE SPRING	1
12	380801M	AIR SIDE TOP COVER	1
13	380840	FITTING, HOSE BARB, PUSH-IN, 1/16" (BRASS)	1
14	980001A	#8-32 x 1 1/4" SCREW	4

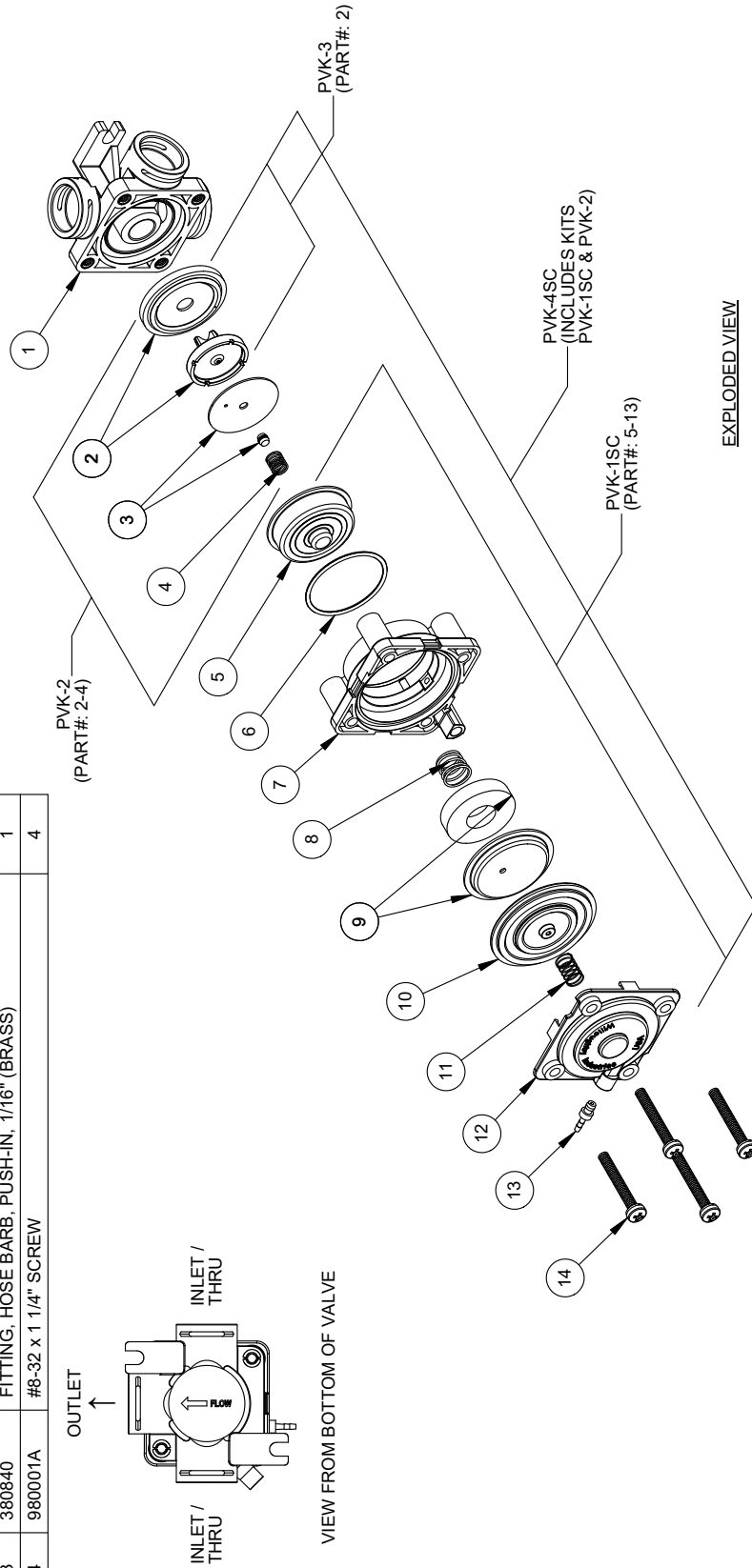
**NOTE:** PARTS LISTED IN THE PVK REPAIR KITS ARE NOT SOLD INDIVIDUALLY

**NOTE:** REPAIR KIT ORDERING #S ARE LISTED IN THE EXPLODED VIEW.

**NOTE:** PVK-1SC, PVK-2, & PVK-3 PARTS ARE AVAILABLE IN KIT FORM ONLY.



ASSEMBLED VIEW



EXPLODED VIEW

		TITLE / DESC: PNEUMATIC SELF-CLOSING VALVE ASSEMBLY		PART # 980403	
TOLERANCES EXCEPT AS NOTED		MATL: AS NOTED, SEE BOM		REVISION (ORG): TRB 9/23/09 STANDARD	
SIZE: 40/100		SCALE: 1:2.5		REV: MW 2/23/17 SHEET: 1 OF 1	
3 PLS: 40/100		REF:		A	
FRACTIONS: 1/16"		REF:		A	
ANGLE: 1°		REF:		A	

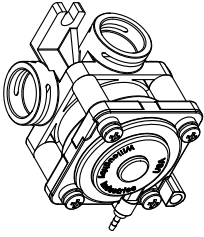
DRAWING: VALVE ASSEMBLY DETAIL

ITEM #	PART #	DESCRIPTION	QTY.
1	980420L	SINGLE TEMP BASE w/INSERTS, LEFT - PLUGGED PORT	1
2	980305	WATER SIDE DIAPHRAGM/ADAPTOR ASSY.	1
3	980310	WATER SIDE DISK ASSEMBLY	1
4	980136	SPRING, WATER SIDE DIAPHRAGM	1
5	980126	BARRIER CUP	1
6	980127	O-RING M1.5x32 BUNA-70	1
7	380802M	BODY, MOLDED W/ PNEU. MTRG.	1
8	980135	SPRING, AIR SIDE MAGNET	1
9	980405	METERING VALVE MAGNET/CUP ASSEMBLY	1
10	980130	DIAPHRAGM, AIR SIDE, PNEUMATIC METERING VALVE	1
11	980134	AIR SIDE SPRING	1
12	380801M	AIR SIDE TOP COVER	1
13	380840	FITTING, HOSE BARB, PUSH-IN, 1/16" (BRASS)	1
14	980001A	#8-32 x 1 1/4" SCREW	4

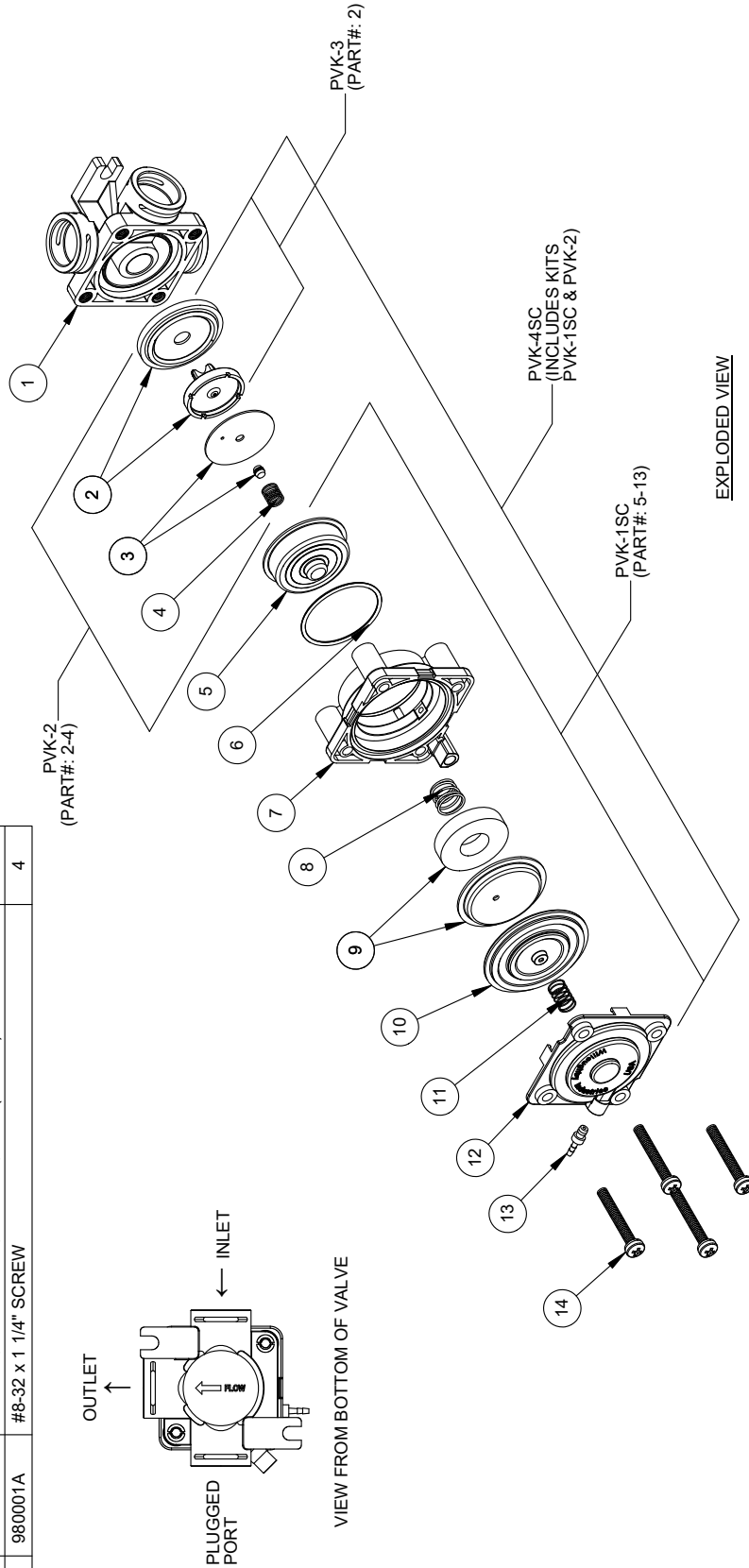
**NOTE:** PARTS LISTED IN THE PVK REPAIR KITS ARE NOT SOLD INDIVIDUALLY

**NOTE:** REPAIR KIT ORDERING #S ARE LISTED IN THE EXPLODED VIEW.

**NOTE:** PVK-1SC, PVK-2, & PVK-3 PARTS ARE AVAILABLE IN KIT FORM ONLY.



ASSEMBLED VIEW



EXPLODED VIEW

<p>Willoughby Industries Inc. Indianapolis, Indiana</p>	TITLE/DESC:	PNEUMATIC SELF-CLOSING VALVE ASSY - LEFT PLUGGED PORT	PART #:	980403PL
	TOLERANCES EXCEPT AS NOTED	2 PLCS: 0.015 3 PLCS: 0.015 FRACTIONS: 1/32" ANGLE: 1°	MATERIAL:	STANDARD
WILLOUGHBY	SCALE:	1:2.5	REV:	TRB 11/02/12
	REF:		REV:	TRB 11/02/12
	REF:		REV:	TRB 11/02/12
	REF:		REV:	TRB 11/02/12

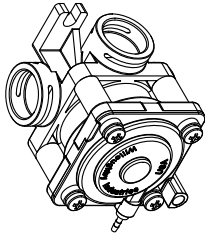
DRAWING: VALVE ASSEMBLY DETAIL

ITEM #	PART #	DESCRIPTION	QTY.
1	980420R	SINGLE TEMP BASE w/INSERTS - PLUGGED PORT	1
2	980305	WATER SIDE DIAPHRAGM/ADAPTOR ASSY.	1
3	980310	WATER SIDE DISK ASSEMBLY	1
4	980136	SPRING, WATER SIDE DIAPHRAGM	1
5	980126	BARRIER CUP	1
6	980127	O-RING M1.5x32 BUNA-70	1
7	380802M	BODY, MOLDED W/ PNEU. MTRG.	1
8	980135	SPRING, AIR SIDE MAGNET	1
9	980405	METERING VALVE MAGNET/CUP ASSEMBLY	1
10	980130	DIAPHRAGM, AIR SIDE, PNEUMATIC METERING VALVE	1
11	980134	AIR SIDE SPRING	1
12	380801M	AIR SIDE TOP COVER	1
13	380840	FITTING, HOSE BARB, PUSH-IN, 1/16" (BRASS)	1
14	980001A	#8-32 x 1 1/4" SCREW	4

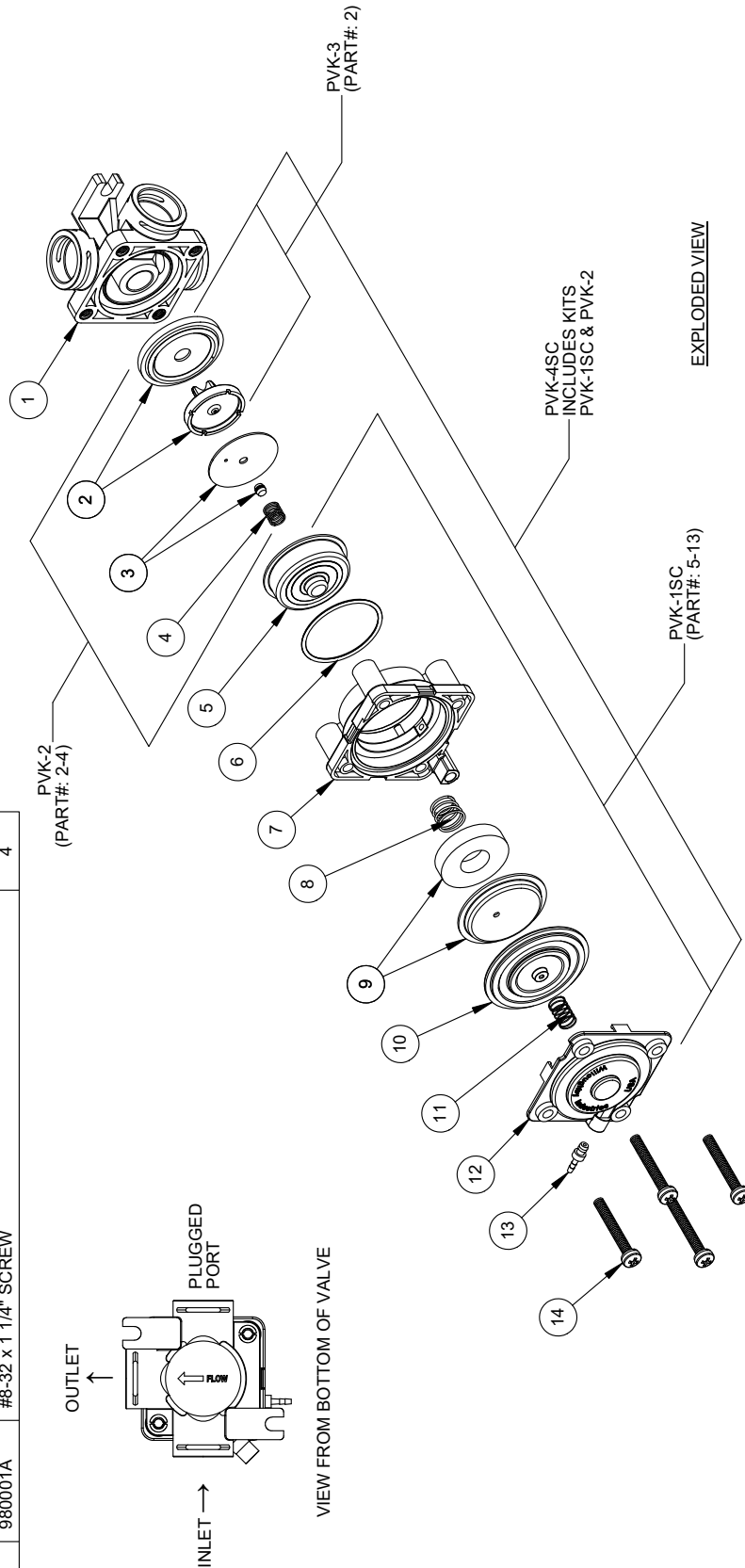
**NOTE:** PARTS LISTED IN THE PVK REPAIR KITS ARE NOT SOLD INDIVIDUALLY

**NOTE:** REPAIR KIT ORDERING #S ARE LISTED IN THE EXPLODED VIEW.

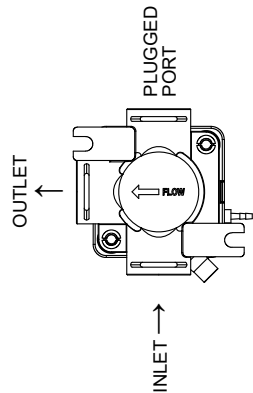
**NOTE:** PVK-1SC, PVK-2, & PVK-3 PARTS ARE AVAILABLE IN KIT FORM ONLY.



ASSEMBLED VIEW



EXPLODED VIEW



VIEW FROM BOTTOM OF VALVE

<b>Willoughby Industries Inc.</b> Indianapolis, Indiana		PART # 980403PR	
TOLERANCES EXCEPT AS NOTED		REVISION (ORG): EEF 1/20/15 STANDARD SHEET: 1 OF 1	
CS: 30.000	SIZE: A	REV: EEF	1/20/15
3 PLS: 40.000	SCALE: 1:2.5	A	
FRACTIONS: 1/32"	ANGLE: 1°	REF:	
TITLE (DESC): PNEUMATIC SELF-CLOSING VALVE ASSY - RIGHT PLUGGED PORT			
MATERIAL: N/A			



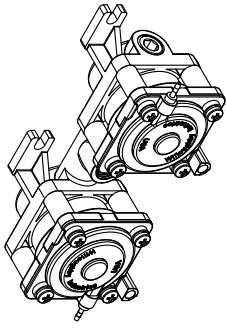
WILLOUGHBY

DRAWING: VALVE ASSEMBLY DETAIL

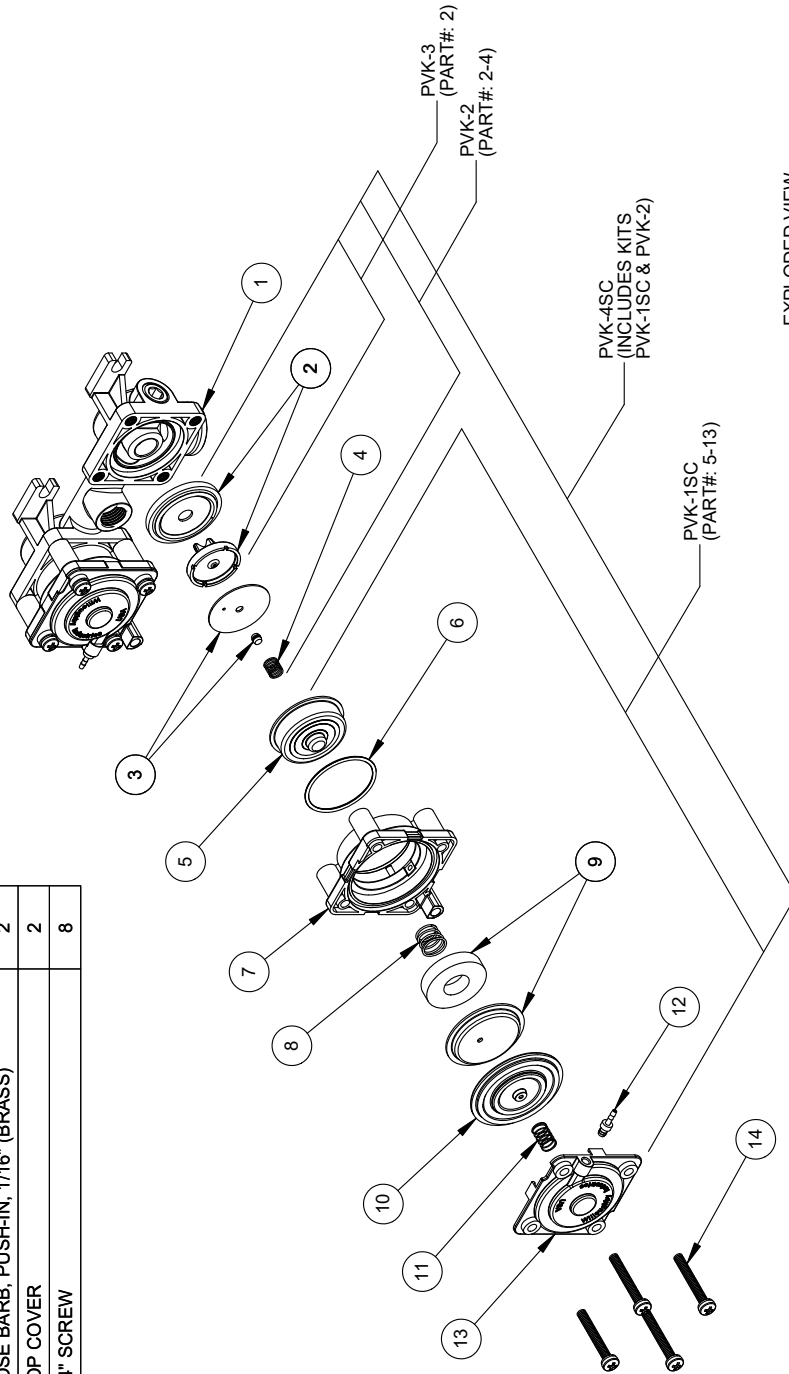
**NOTE:** PARTS LISTED IN THE PVK REPAIR KITS ARE NOT SOLD INDIVIDUALLY

**NOTE:** REPAIR KIT ORDERING #'S ARE LISTED IN THE EXPLODED VIEW.

**NOTE:** PVK-1SC, PVK-2, & PVK-3 PARTS ARE AVAILABLE IN KIT FORM ONLY.



ASSEMBLED VIEW

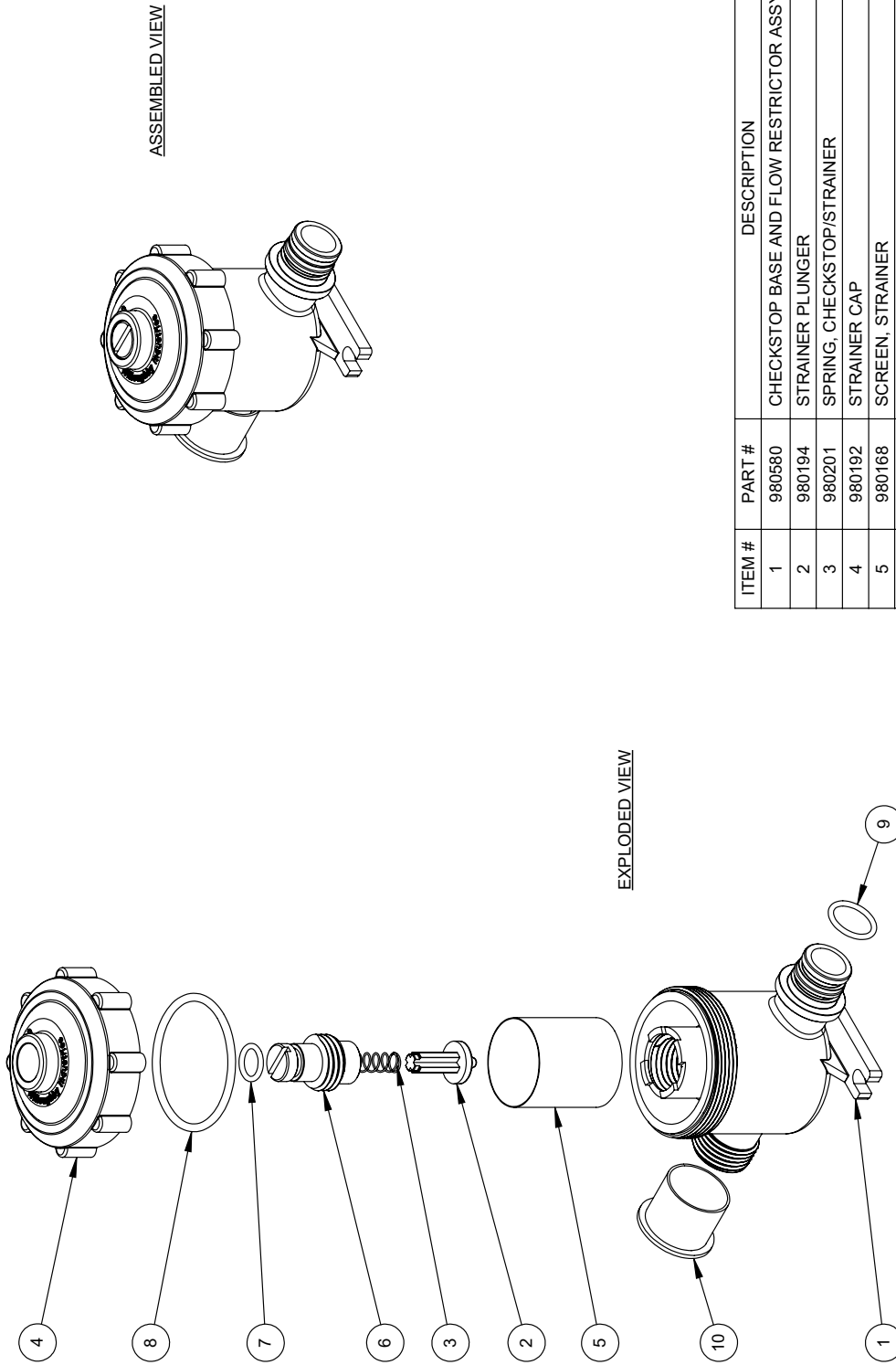


EXPLODED VIEW

ITEM #	PART #	DESCRIPTION	QTY.
1	980415	DUAL TEMP BASE W/INSERTS	1
2	980305	WATER SIDE DIAPHRAGM/ADAPTOR ASSY.	2
3	980310	WATER SIDE DISK ASSEMBLY	2
4	980136	SPRING, WATER SIDE DIAPHRAGM	2
5	980126	BARRIER CUP	2
6	980127	O-RING M1.5x32 BUNA-70	2
7	380802M	BODY, MOLDED WI PNEU. MTRG.	2
8	980135	SPRING, AIR SIDE MAGNET	2
9	980405	METERING VALVE MAGNET/CUP ASSEMBLY	2
10	980130	DIAPHRAGM, AIR SIDE, PNEUMATIC METERING VALVE	2
11	980134	AIR SIDE SPRING	2
12	380840	FITTING, HOSE BARB, PUSH-IN, 1/16" (BRASS)	2
13	380801M	AIR SIDE TOP COVER	2
14	980001A	#8-32 x 1 1/4" SCREW	8

		TITLE / DESC: DUAL TEMP PNEUMATIC SELF-CLOSING VALVE ASSEMBLY		PART # 980404	
TOLERANCES EXCEPT AS NOTED		3 DEC: 40/1000 FRACTIONS: 1/32" SCALE		REVISION (ORG: TRB) 12/11/09 STANDARD REV: TRB 12/11/09 SHEET: 1 OF 1	
WILLOUGHBY		WATL: N/A		A	

DRAWING: CHECKSTOP DETAIL



ASSEMBLED VIEW

EXPLODED VIEW

ITEM #	PART #	DESCRIPTION	QTY.
1	980580	CHECKSTOP BASE AND FLOW RESTRICTOR ASSY	1
2	980194	STRAINER PLUNGER	1
3	980201	SPRING, CHECKSTOP/STRAINER	1
4	980192	STRAINER CAP	1
5	980168	SCREEN, STRAINER	1
6	980200	CHECKSTOP SCREW	1
7	980163	O-RING, #012	1
8	980165	O-RING, #130	1
9	980164	O-RING, #015	1
10	800610	FLANGED CAP	1

**Willoughby Industries, Inc.**  
Indianapolis, Indiana

TOLERANCES EXACT AS NOTED

3 PLS. ±0.01  
5 PLS. ±0.015  
FRACTIONS ±1/32" SCALE  
ANGLE 1/2"

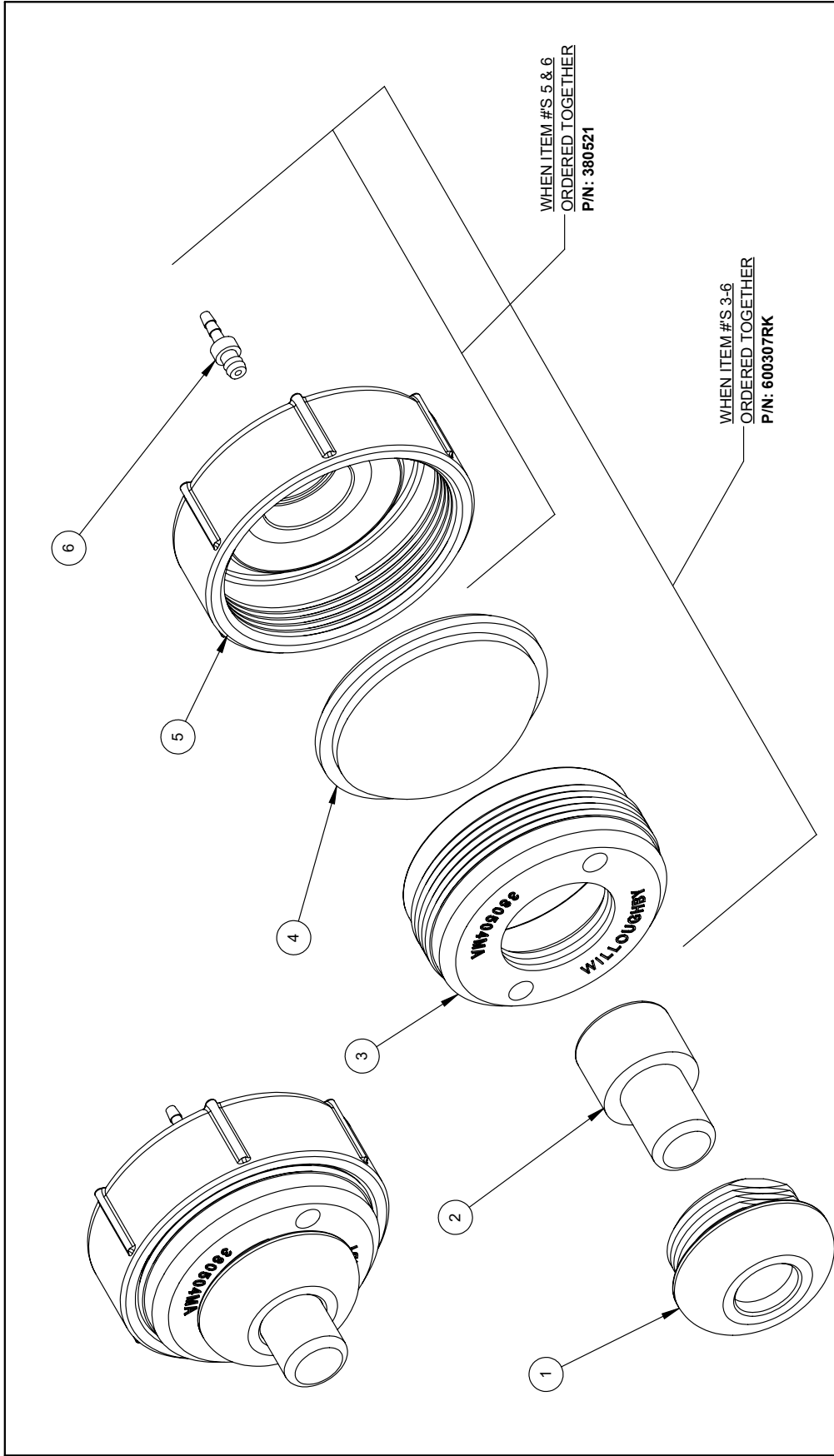
MATL: N/A  
REV: A  
REV. ORG: EEF  
REV. SEC: 01/28/22

DATE: 1/19/15  
SHEET: 1 OF 1


TITLE/DESC: CHECKSTOP ASSEMBLY  
PART #: 980183



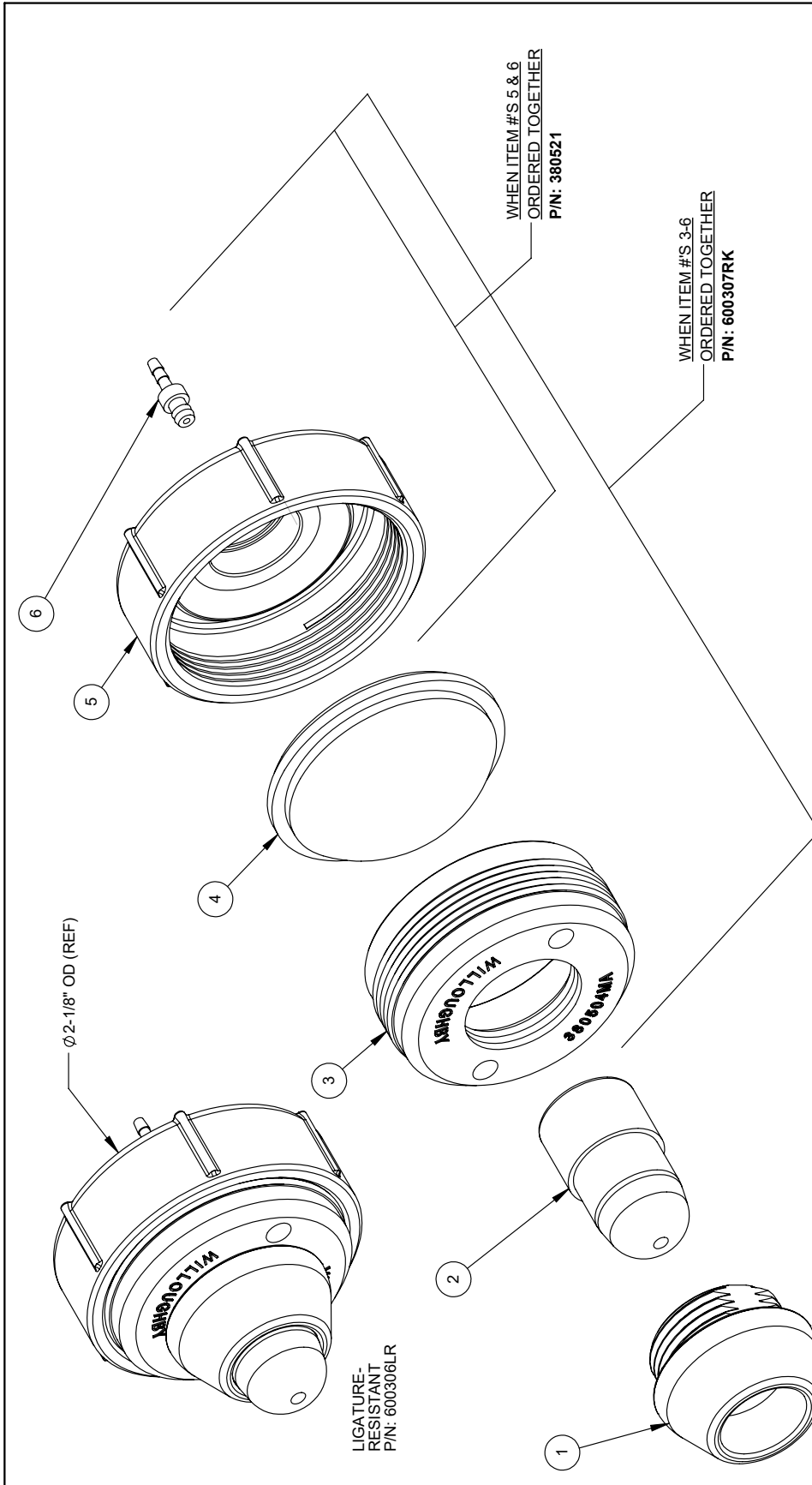
DRAWING: PUSH BUTTON DETAIL



ITEM #	PART #	DESCRIPTION	QTY.
1	380124	SLEEVE, DIAPHRAGM PUMP PUSHBUTTON	1
2	600057	PUSHBUTTON, DIAPHRAGM PUMP	1
3	380504MA	CAP, DIAPHRAGM PUMP, MOLDED	1
4	600201	DIAPHRAGM, PNEUMATIC PUMP	1
5	380506MA	BODY, PUSH BUTTON DIAPHRAGM PUMP, MOLDED	1
6	380840	FITTING, HOSE BARB, PUSH-IN, 1/16" (BRASS)	1

		TITLE / DESC.: (PPB) PNEUMATIC PUSHBUTTON	
Willoughby Industries, Inc. Indianapolis, Indiana		PART #: 600307	
TOLERANCES EXCEPT AS NOTED 2 PLCS: ±0.03 3 PLCS: ±0.015 FRAG: ANGLE: 1:1		REVISION: CRG: JBU 3/14/00 A	
MATERIAL: AS NOTED, SEE BOM		STANDARD SHEET: 1 OF 1	
REF:		REV: NAL 5/5/23	

DRAWING: PUSH BUTTON DETAIL



ITEM #	PART #	DESCRIPTION	QTY.
1	380119	PUSHBUTTON SLEEVE, LIGATURE-RESISTANT DIAPH. PUMP	1
2	600046	PUSHBUTTON, LIGATURE-RESISTANT DIAPHRAGM PUMP	1
3	380504MA	CAP, DIAPHRAGM PUMP, MOLDED	1
4	600201	DIAPHRAGM, PNEUMATIC PUMP	1
5	380506MA	BODY, PUSH BUTTON DIAPHRAGM PUMP, MOLDED	1
6	380840	FITTING, HOSE BARB, PUSH-IN, 1/16" (BRASS)	1

**Willoughby Industries, Inc.**  
Indianapolis, Indiana

TOLERANCES EXCEPT AS NOTED

2 PLUS .003 SIZE  
3 PLUS .005 SIZE  
FRAG ANGLE: 1°

MATL: AS NOTED, SEE BOM  
SCALE: 1:20  
REV: A

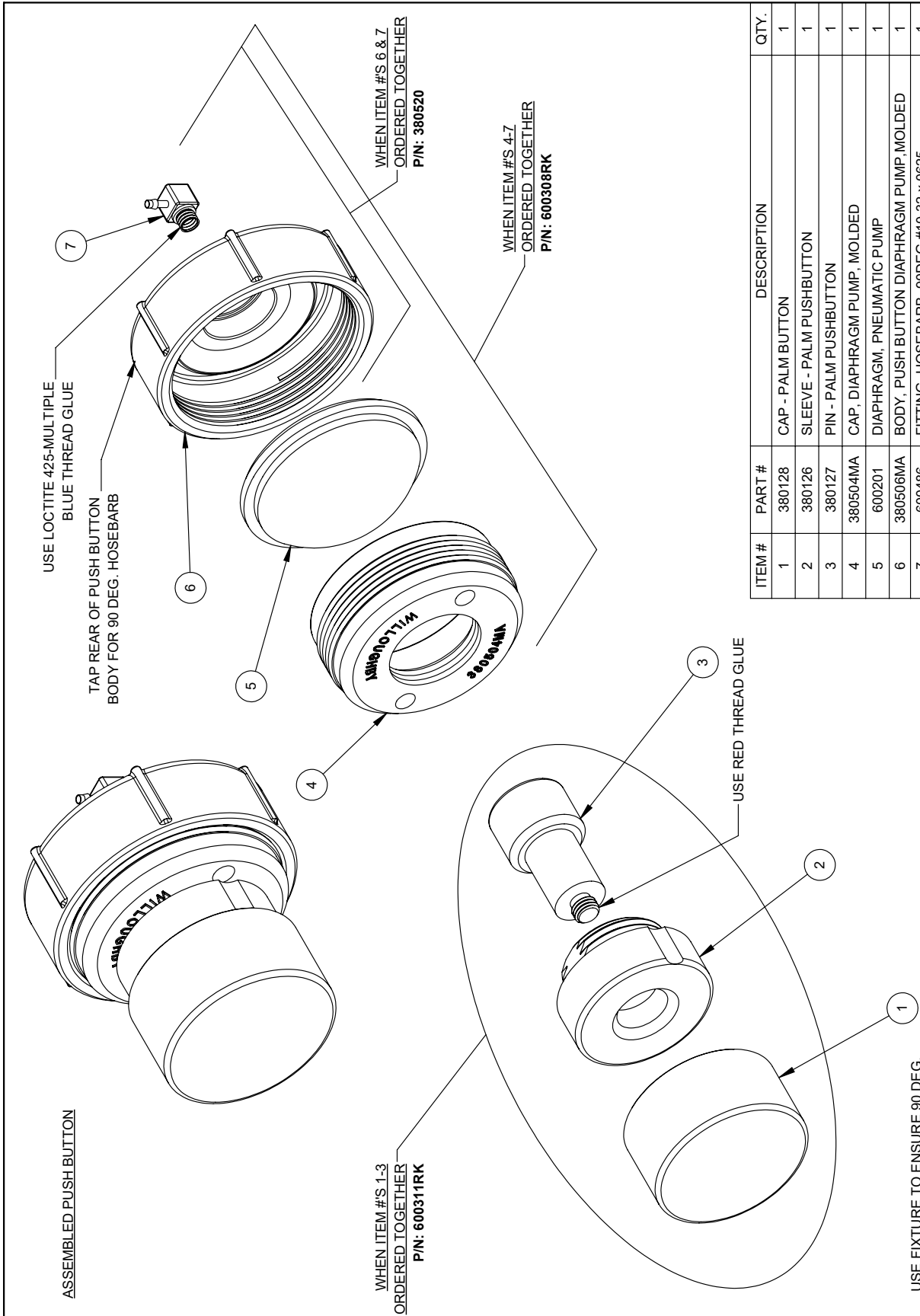
REVISION ORG: EEF 4/5/17  
STANDARD

PART #:  
600306LR

REF: NAL 5/5/23  
SHEET: 1 OF 1



DRAWING: PUSH BUTTON DETAIL



ITEM #	PART #	DESCRIPTION	QTY.
1	380128	CAP - PALM BUTTON	1
2	380126	SLEEVE - PALM PUSHBUTTON	1
3	380127	PIN - PALM PUSHBUTTON	1
4	380504MA	CAP, DIAPHRAGM PUMP, MOLDED	1
5	600201	DIAPHRAGM, PNEUMATIC PUMP	1
6	380506MA	BODY, PUSH BUTTON DIAPHRAGM PUMP, MOLDED	1
7	600486	FITTING, HOSEBARB, 90DEG #10-32 x.0625	1

TITLE / DESC:		PART #:	
PALM / FOOT PUSH BUTTON ASSEMBLY (PLPB)		600311	
REVISION ORG: JR	2/10/06	STANDARD	
REV: A	NAL 5/5/23	SHEET: 1 OF 1	

**Willoughby Industries, Inc.**  
Indianapolis, Indiana

TOLERANCES: 3 PLS: 100%  
EXCEPT AS NOTED: 1:1, 1:25  
FRACTIONS: 1/32" SCALE: 1:1, 1:25  
ANGLE: 1°

WILLOUGHBY

## **WARRANTY**

With respect to goods manufactured by Willoughby, Willoughby warrants the goods to be free from defects in materials and workmanship under normal use and service for one year from the date of shipment; and Willoughby will replace or repair, at its option, any goods which are found defective in material or workmanship within said one-year period from date of shipment upon notification by Buyer identifying each and every defect. Willoughby's obligation with respect to such goods shall be limited to replacement or repair, F.O.B. Indianapolis, Indiana, and in no event shall Willoughby be liable for consequential or special damages, or for transportation, installation, adjustment, replacement or other expenses which may arise in connection with such goods. Any misuse or abuse of the goods voids this limited warranty.

**THIS WARRANTY IS EXPRESSLY MADE IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**