

# OPERATOR'S MANUAL

# H2XXXX-XXX-X

INCLUDING: APPLICATION, LUBRICATION, INSTALLATION & SERVICE

RELEASED: 11-20-87

REVISED: 1-26-01

(REV. A)

## H SERIES VALVES

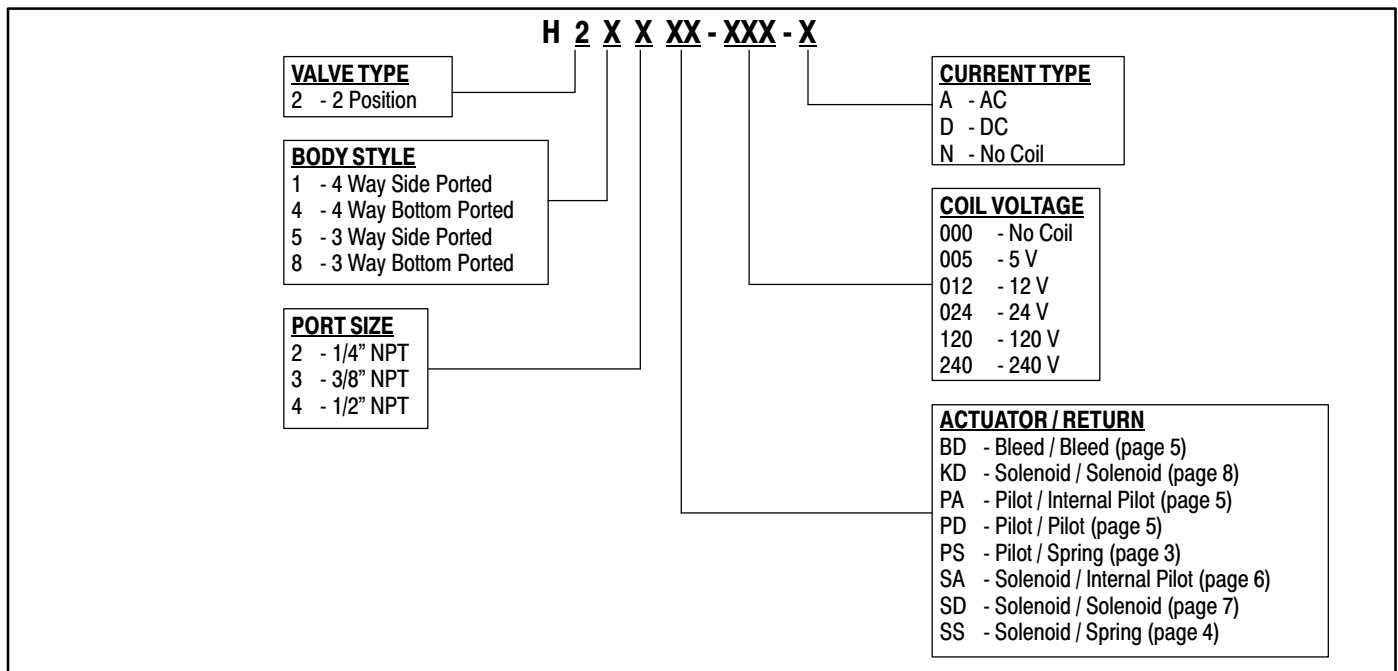


**READ THIS MANUAL CAREFULLY BEFORE INSTALLING,  
OPERATING OR SERVICING THIS EQUIPMENT.**

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.



### MODEL DESCRIPTION CHART



**airpumping.co.uk**

est. 1979

Unit 16, Upminster Trading Park, Warley St., Upminster, Essex, RM14 3PJ, ENGLAND



# Warnings and Cautions

## APPLICATION

### **WARNINGS:**

1. ARO valves are designed for use only in industrial pneumatic (air) and / or vacuum systems applications and are NOT to be used for individual consumer use, application or service.
2. When any ARO valve is used in any type application, safeguards must be provided to insure against bodily injury for the operator and / or other persons in the immediate area.
3. ARO valves are NOT to be used as a safety device or to operate and / or control the operation of full revolution clutch systems and / or brake systems on power presses or similar equipment. ARO valves are not designed or intended for such uses.

## LUBRICATION

Valve components are lubricated at the time of assembly at the factory and can normally be operated without air line lubrication to an approximate life of twenty million cycles, depending on application. If air line cylinders or other air line devices, used in conjunction with ARO valves, require lubrication, be sure the lubricating oils used are compatible with the valve seals and are of sufficient viscosity to assure adequate lubrication. Aro recommends an oil lubricant with a viscosity of 100 - 200 SUS at 100° F and an aniline point above 200° F. Aro does not recommend the use of compound oils containing graphite fillers, extremely low viscosities and other non-fluidic lubricants. **RECOMMENDED:** Aro 29665 air line lubricator oil is available in one quart containers.

## INSTALLATION AND SERVICE

### **WARNINGS:**

1. Shut off, disconnect and exhaust air pressure from system before installing or performing service to any ARO valve.
2. Shut off and disconnect electrical supply to system before installing or performing service to any ARO valve.
3. Allow only persons with a thorough understanding of the operation and application of all ARO valves being used in a particular system and how the ARO valve(s) relate to and interact with other components of the system to install or perform maintenance or service to any ARO valve or other components of the system.
4. DO NOT subject any ARO valve to any condition that exceeds

the limits set forth in the specifications for a particular valve model.

5. When a manually operated (actuated) valve is used or installed into a system, provisions must be made to prevent the valve from being accidentally operated (actuated), which may in turn cause bodily injury or otherwise cause a hazardous or dangerous condition
6. Damaged air pressure hoses or electrical wiring, or connections, can cause accidental valve operation (actuation), which may in turn cause bodily injury or otherwise cause a hazardous or dangerous condition. **KEEP ALL HOSES, ELECTRICAL WIRING, FITTINGS AND CONNECTIONS IN FIRST CLASS OPERATING CONDITION.**
7. **ARO 2-POSITION, 4-WAY VALVES:** Regardless of which of the 2-positions this type of ARO valve is in, when air pressure is applied to the inlet port(s) of these valves, there will always be an open flow path of air from the inlet to one of the valve outlets. A method to exhaust this trapped air pressure must be installed into the system so all air pressure can be removed from valve or system before performing service or maintenance to valve.
8. **ARO 3-POSITION, 4-WAY VALVES:** To actuate this type of ARO valve, either a double solenoid, double remote air pilot pressure or manual operation is used. When the valve actuator has shifted the valve, air pressure applied at the inlet port(s) will flow thru the valve to one of the two outlet ports. When the valve is not in a shifted position, the valve will automatically move to a center position. ARO valves can be either closed center or open center type and will reveal the following characteristics when the valve is in the center position:
  - a. **OPEN CENTER VALVES:** When this type ARO valve is in the center position, the inlet port(s) is blocked and the two outlet ports are open to the exhaust port(s) of the valve. With this type valve, in the center position, air pressure is not present at either outlet port. Do not use this type ARO valve if exhausting the air pressure from the valve will cause hazardous or dangerous condition.
  - b. **CLOSED CENTER VALVES:** When this type valve is in the center position, all inlet, outlet and exhaust ports are blocked. Do not use this type valve if having the air pressure blocked at the port(s) may cause a hazardous or dangerous condition in the application, installation and / or servicing of an ARO valve. These valves must not be used to control load holding devices without an additional mechanical positive stop on the holding device.

# PARTS LIST

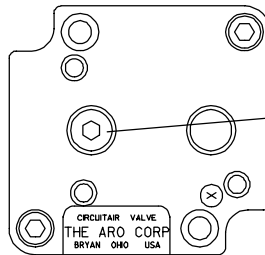
SERIES H POPPET VALVES  
SUB-BASE MOUNTED  
(1/4, 3/8 AND 1/2 N.P.T.F. PIPE PORTS)  
3-WAY PILOT, SPRING RETURN

PRESSURE RANGE: 30 - 150 p.s.i. (2.1 - 10.4 bar)

MODELS: H25XPS  
H28XPS

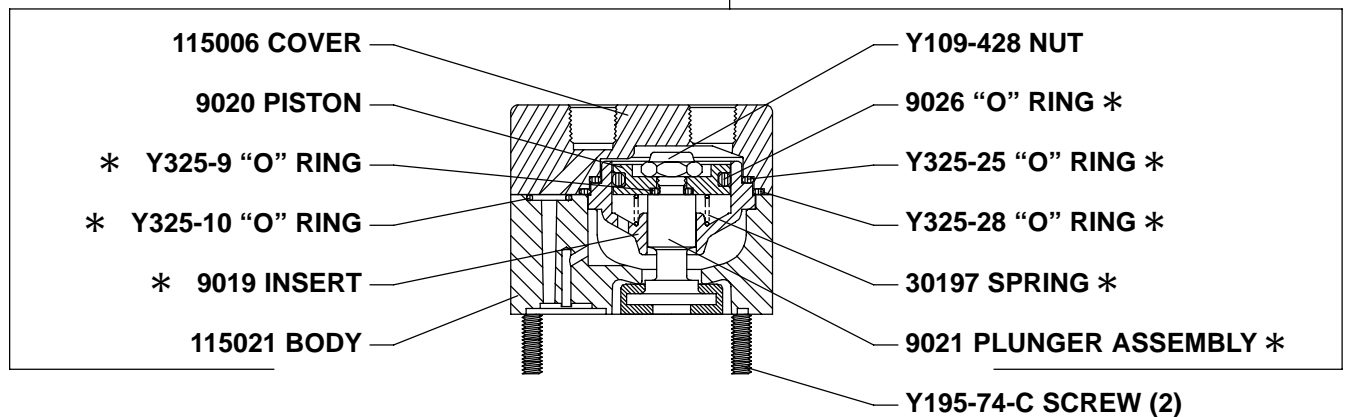
**NOT SHOWN**  
116343 LABEL

✓ Y195-68-C SCREW (2)



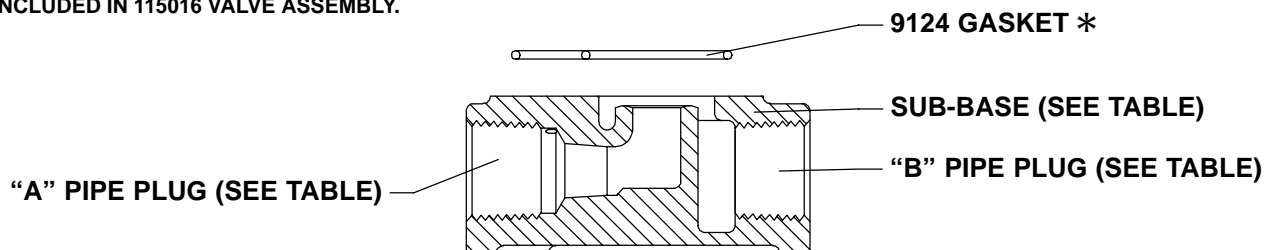
118126 PIPE PLUG

115016 VALVE ASSEMBLY



\* PARTS INCLUDED IN REPAIR KIT NO. 7102.

✓ INCLUDED IN 115016 VALVE ASSEMBLY.



MODEL NO.	SUB-BASE	PORT LOCATION	PORTS (NPTF)	PIPE PLUG "A"	PIPE PLUG "B"
H252PS	115013-1	SIDE	1/4	—	—
H253PS	115013-2	SIDE	3/8	—	—
H254PS	115009	SIDE	1/2	—	—
H282PS	115017-1	BOTTOM	1/4	Y227-3	Y227-4
H283PS	115017-2	BOTTOM	3/8	Y227-4	Y227-4

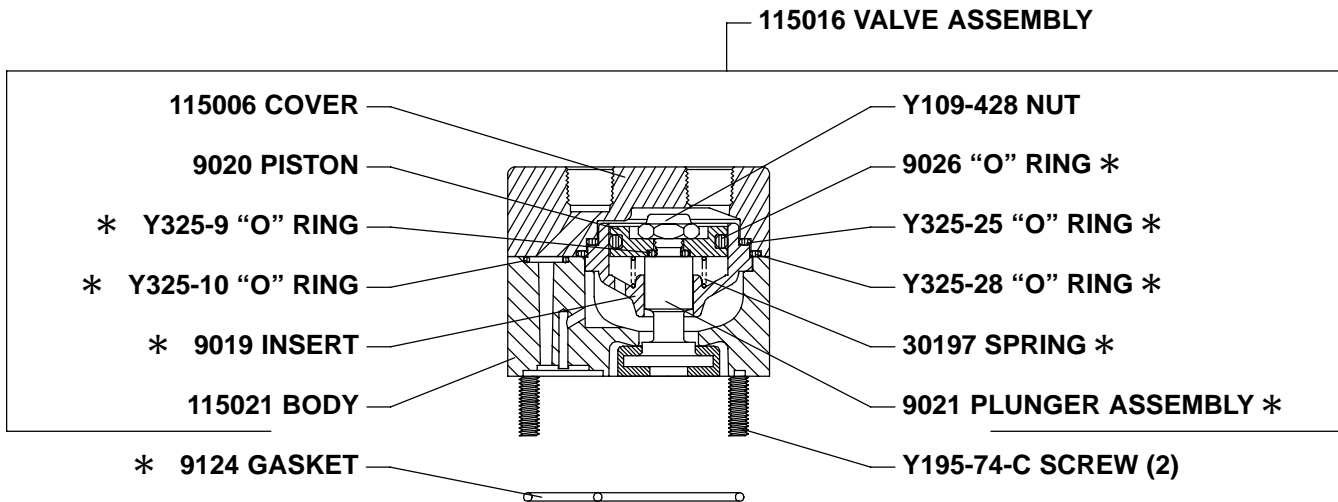
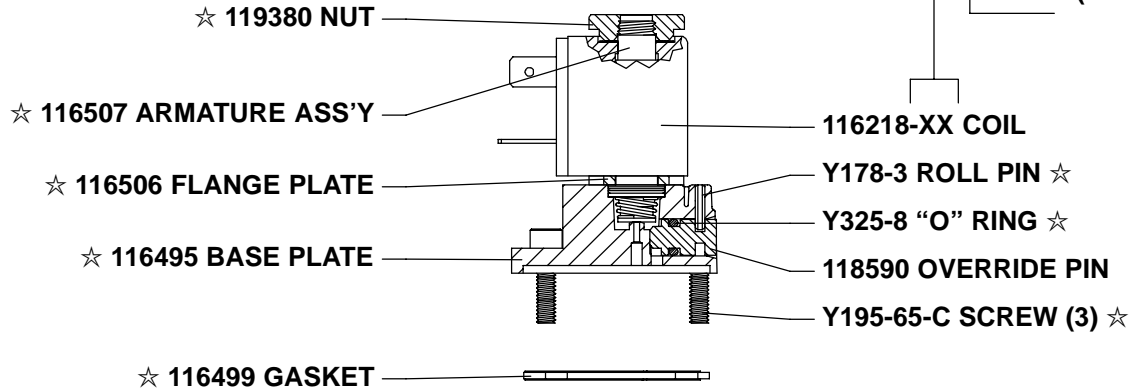
# PARTS LIST

## SERIES H POPPET VALVES SUB-BASE MOUNTED (1/4, 3/8 AND 1/2 N.P.T.F. PIPE PORTS) 3-WAY SOLENOID, SPRING RETURN

PRESSURE RANGE: 30 - 150 p.s.i. (2.1 - 10.4 bar)

**MODELS:** H25XSS-XXX-X  
H28XSS-XXX-X

31 = 12 VAC  
33 = 120 VAC  
35 = 240 VAC  
37 = 5 VDC  
38 = 24 VAC / 12 VDC  
(DUAL RATING)  
39 = 24 VDC / 48 VAC  
(DUAL RATING)



"A" PIPE PLUG (SEE TABLE)

SUB-BASE (SEE TABLE)

"B" PIPE PLUG (SEE TABLE)

NOT SHOWN

116343 LABEL

✓ Y195-68-C SCREW (2)

☆ 116346 SCREW (2)

☆ 118126 PIPE PLUG

\* PARTS INCLUDED IN REPAIR KIT NO. 7102.

✓ INCLUDED IN 115016 VALVE ASSEMBLY.

☆ PARTS INCLUDED IN REPAIR KIT NO. 116572.

MODEL NO.	SUB-BASE	PORT LOCATION	PORTS (NPTF)	PIPE PLUG "A"	PIPE PLUG "B"
H252SS-XXX-X	115013-1	SIDE	1/4	—	—
H253SS-XXX-X	115013-2	SIDE	3/8	—	—
H254SS-XXX-X	115009	SIDE	1/2	—	—
H282SS-XXX-X	115017-1	BOTTOM	1/4	Y227-3	Y227-4
H283SS-XXX-X	115017-2	BOTTOM	3/8	Y227-4	Y227-4

# PARTS LIST

SERIES H POPPET VALVES  
SUB-BASE MOUNTED  
(1/4, 3/8 AND 1/2 N.P.T.F. PIPE PORTS)  
4-WAY PILOT AND DOUBLE BLEED

PRESSURE RANGE: 20 - 150 p.s.i. (1.4 - 10.4 bar)

\* PARTS INCLUDED IN REPAIR KIT NO. 7103.

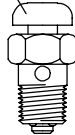
✓ INCLUDED IN 115014 VALVE ASSEMBLY.

118126 PLUG



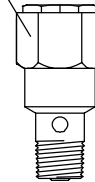
MODELS: H21XPA  
H24XPA

24130 BUTTON BLEEDER  
ASSEMBLY (2)



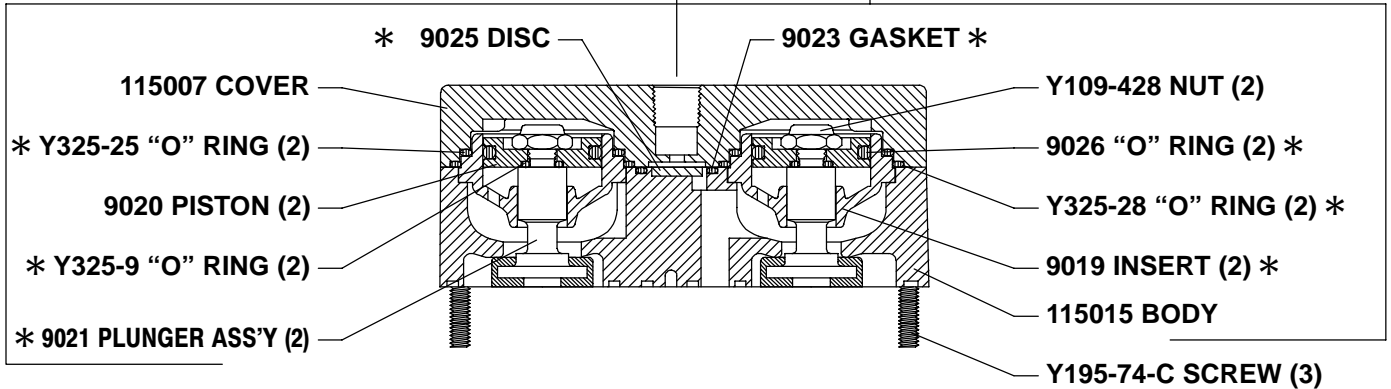
MODELS: H21XBD  
H24XBD

9600 PILOT BLEEDER  
ASSEMBLY (2)

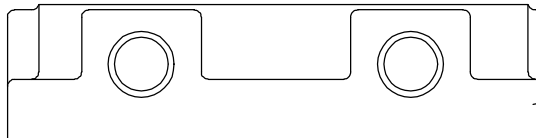


MODELS: H21XPD  
H24XPD

115014 VALVE ASSEMBLY



\* 9024 GASKET



SUB-BASE (SEE TABLE)

NOT SHOWN  
116154 LABEL

✓ Y195-68-C SCREW (2)

MODEL NO.	SUB-BASE	PORT LOCATION	PORTS (NPTF)	PIPE PLUG (2)
H212XX	115022-1	SIDE	1/4	—
H213XX	115022-2	SIDE	3/8	—
H214XX	115008	SIDE	1/2	—
H242XX	115029-1	BOTTOM	1/4	Y227-3
H243XX	115029-2	BOTTOM	3/8	Y227-4

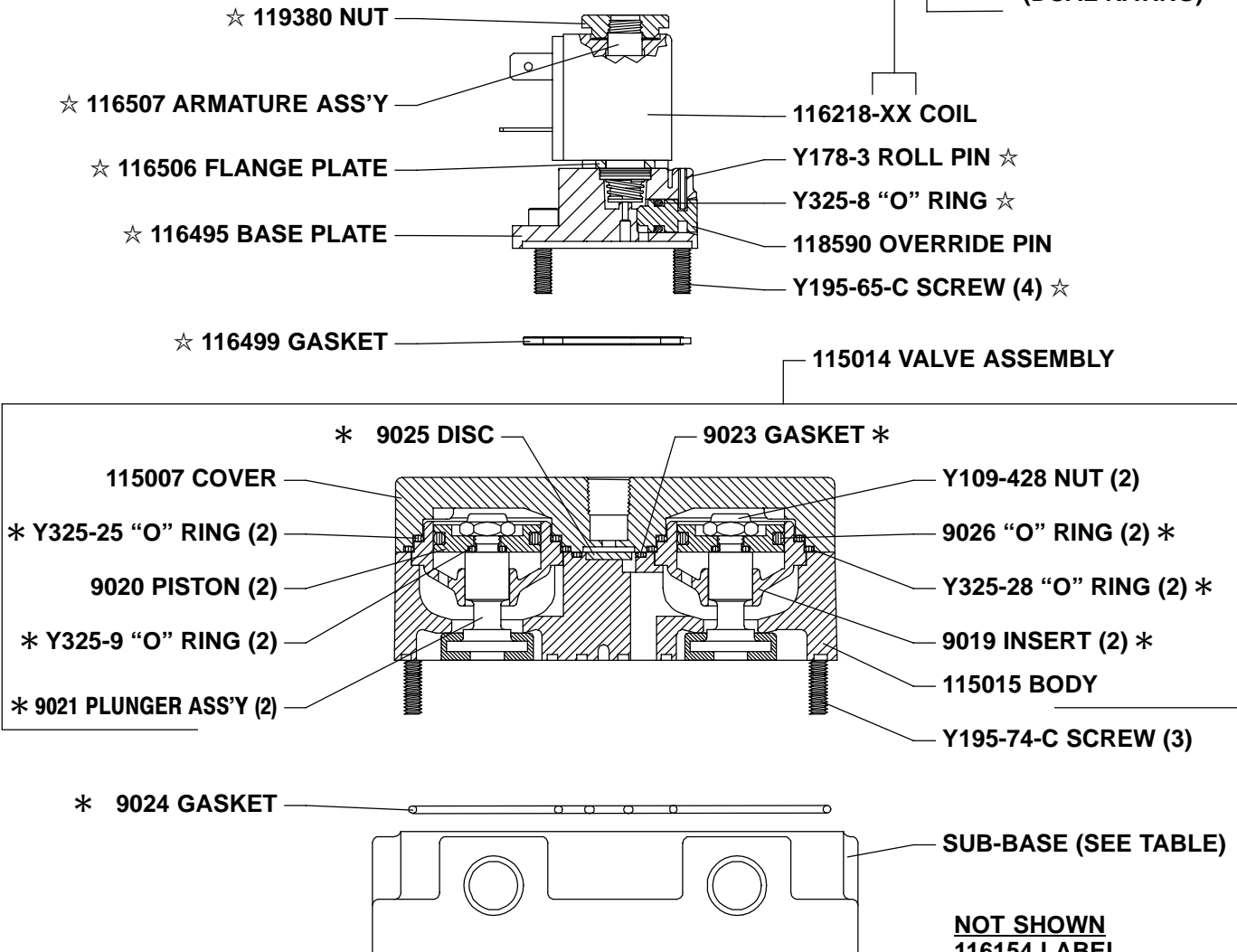
# PARTS LIST

## SERIES H POPPET VALVES SUB-BASE MOUNTED (1/4, 3/8 AND 1/2 N.P.T.F. PIPE PORTS) 4-WAY SOLENOID, INTERNAL PILOT RETURN

PRESSURE RANGE: 25 - 135 p.s.i. (1.7 - 9.3 bar)

**MODELS:** H21XSA-XXX-X  
H24XSA-XXX-X

31 = 12 VAC  
33 = 120 VAC  
35 = 240 VAC  
37 = 5 VDC  
38 = 24 VAC / 12 VDC  
(DUAL RATING)  
39 = 24 VDC / 48 VAC  
(DUAL RATING)



\* PARTS INCLUDED IN REPAIR KIT NO. 7103.

✓ INCLUDED IN 115014 VALVE ASSEMBLY.

☆ PARTS INCLUDED IN REPAIR KIT NO. 116572.

### NOT SHOWN

116154 LABEL

✓ Y195-68-C SCREW (2)

\* Y325-10 "O" RING

☆ 116346 SCREW (2)

☆ 118126 PIPE PLUG

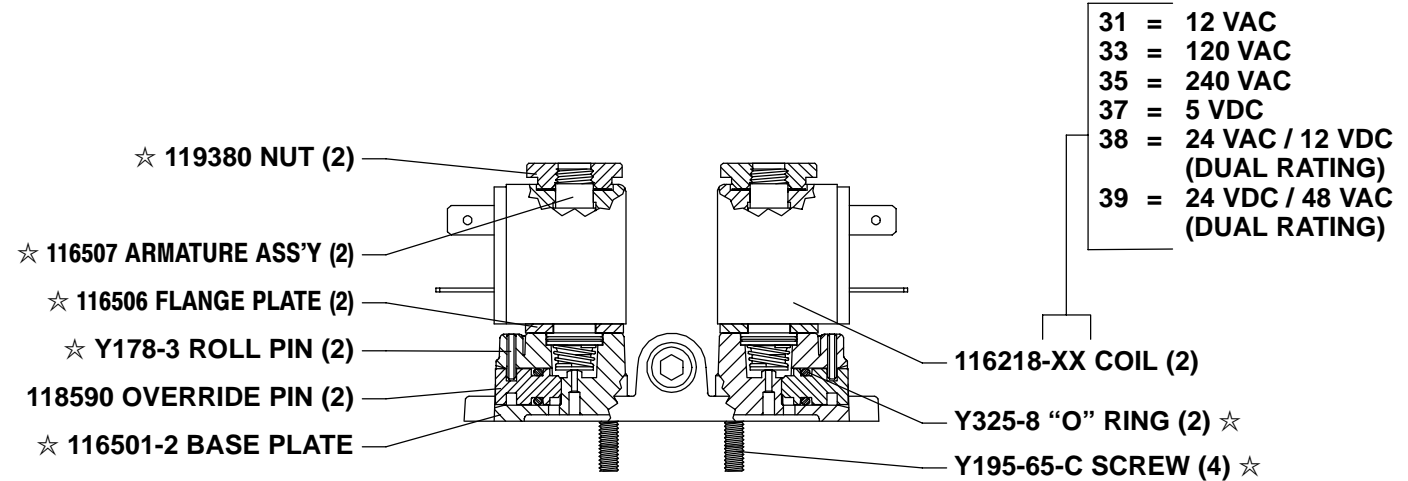
MODEL NO.	SUB-BASE	PORT LOCATION	PORTS (NPTF)	PIPE PLUG (2)
H212SA-XXX-X	115022-1	SIDE	1/4	—
H213SA-XXX-X	115022-2	SIDE	3/8	—
H214SA-XXX-X	115008	SIDE	1/2	—
H242SA-XXX-X	115029-1	BOTTOM	1/4	Y227-3
H243SA-XXX-X	115029-2	BOTTOM	3/8	Y227-4

# PARTS LIST

## SERIES H POPPET VALVES SUB-BASE MOUNTED (1/4, 3/8 AND 1/2 N.P.T.F. PIPE PORTS) 4-WAY DOUBLE SOLENOID

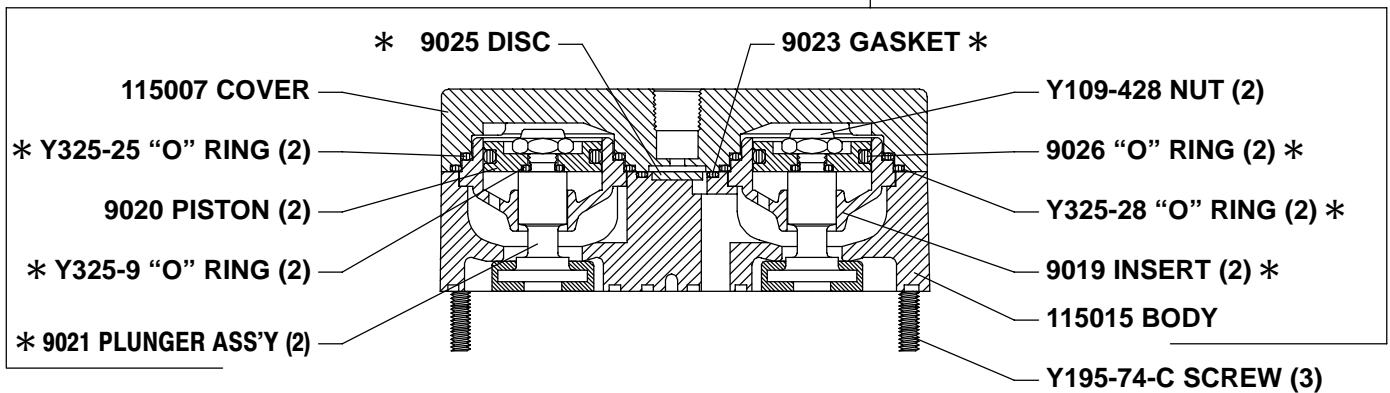
PRESSURE RANGE: 25 - 135 p.s.i. (1.7 - 9.3 bar)

MODELS: H21XSD-XXX-X  
H24XSD-XXX-X



☆ 116505 GASKET

115014 VALVE ASSEMBLY



\* 9024 GASKET

SUB-BASE (SEE TABLE)

\* PARTS INCLUDED IN REPAIR KIT NO. 7103.

✓ INCLUDED IN 115014 VALVE ASSEMBLY.

☆ PARTS INCLUDED IN REPAIR KIT NO. 116574.

### NOT SHOWN

116154 LABEL

✓ Y195-68-C SCREW (2)

☆ 116346 SCREW (4)

☆ 118126 PIPE PLUG

MODEL NO.	SUB-BASE	PORT LOCATION	PORTS (NPTF)	PIPE PLUG (2)
H212SD-XXX-X	115022-1	SIDE	1/4	—
H213SD-XXX-X	115022-2	SIDE	3/8	—
H214SD-XXX-X	115008	SIDE	1/2	—
H242SD-XXX-X	115029-1	BOTTOM	1/4	Y227-3
H243SD-XXX-X	115029-2	BOTTOM	3/8	Y227-4

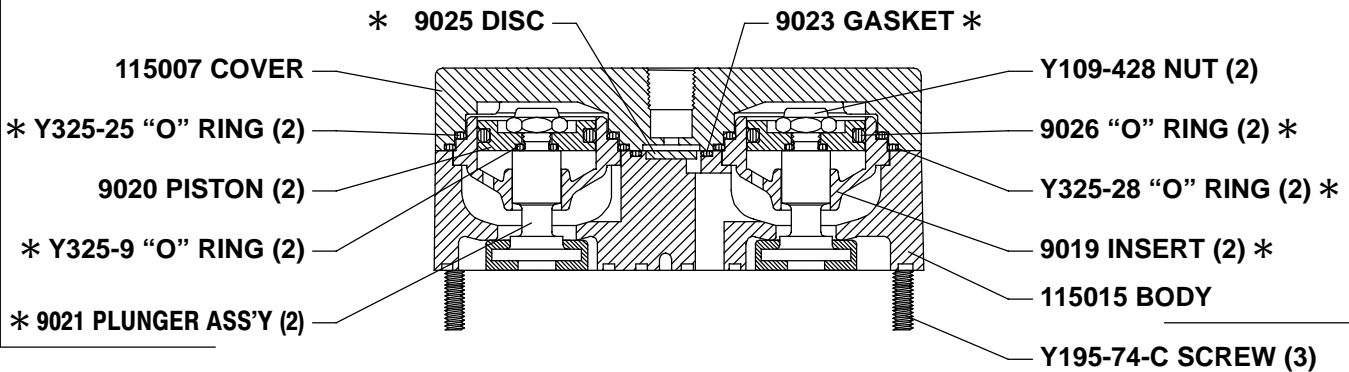
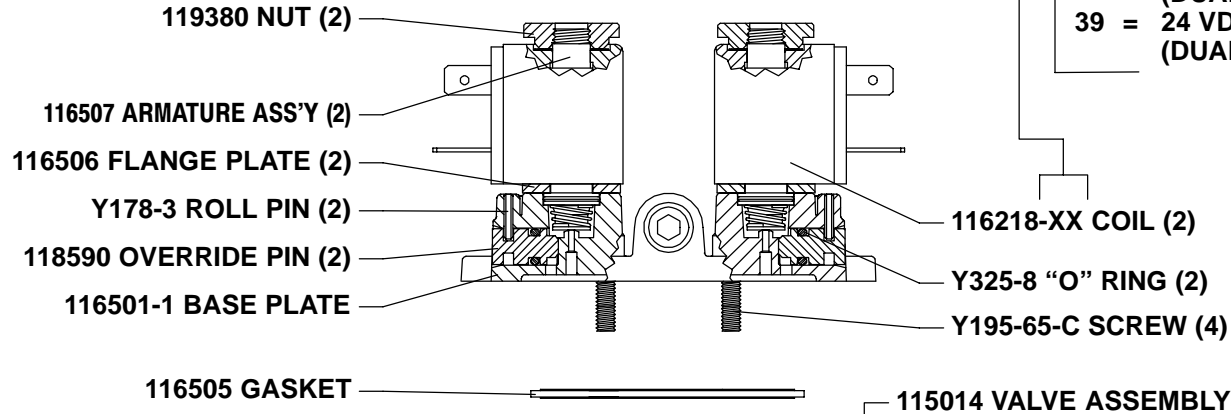
# PARTS LIST

## SERIES H POPPET VALVES SUB-BASE MOUNTED (1/4, 3/8 AND 1/2 N.P.T.F. PIPE PORTS) 4-WAY DOUBLE SOLENOID

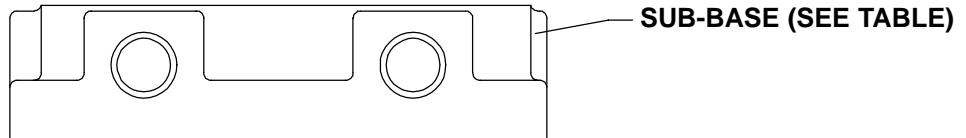
PRESSURE RANGE: 25 - 135 p.s.i. (1.7 - 9.3 bar)

**MODELS:** H21XKD-XXX-X  
H24XKD-XXX-X

31 = 12 VAC  
33 = 120 VAC  
35 = 240 VAC  
37 = 5 VDC  
38 = 24 VAC / 12 VDC  
(DUAL RATING)  
39 = 24 VDC / 48 VAC  
(DUAL RATING)



\* 9024 GASKET



### NOT SHOWN

116154 LABEL  
✓ Y195-68-C SCREW (2)  
116346 SCREW (4)  
118126 PIPE PLUG

\* PARTS INCLUDED IN REPAIR KIT NO. 7103.

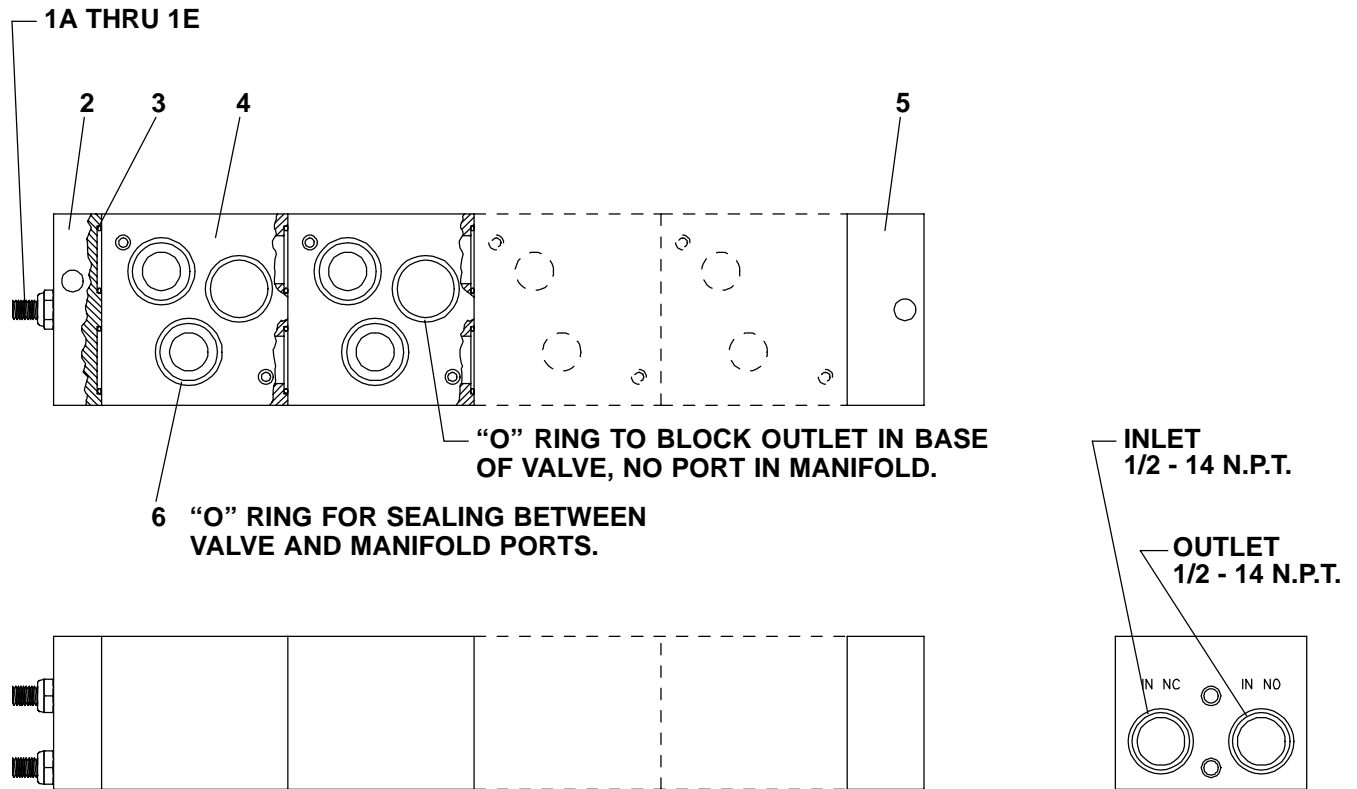
✓ INCLUDED IN 115014 VALVE ASSEMBLY.

MODEL NO.	SUB-BASE	PORT LOCATION	PORTS (NPTF)	PIPE PLUG (2)
H212KD-XXX-X	115022-1	SIDE	1/4	—
H213KD-XXX-X	115022-2	SIDE	3/8	—
H214KD-XXX-X	115008	SIDE	1/2	—
H242KD-XXX-X	115029-1	BOTTOM	1/4	Y227-3
H243KD-XXX-X	115029-2	BOTTOM	3/8	Y227-4



# PARTS LIST

## SERIES H POPPET VALVES SUB-BASE MOUNTED (1/4, 3/8 AND 1/2 N.P.T.F. PIPE PORTS) 3-WAY MANIFOLD ASSEMBLY

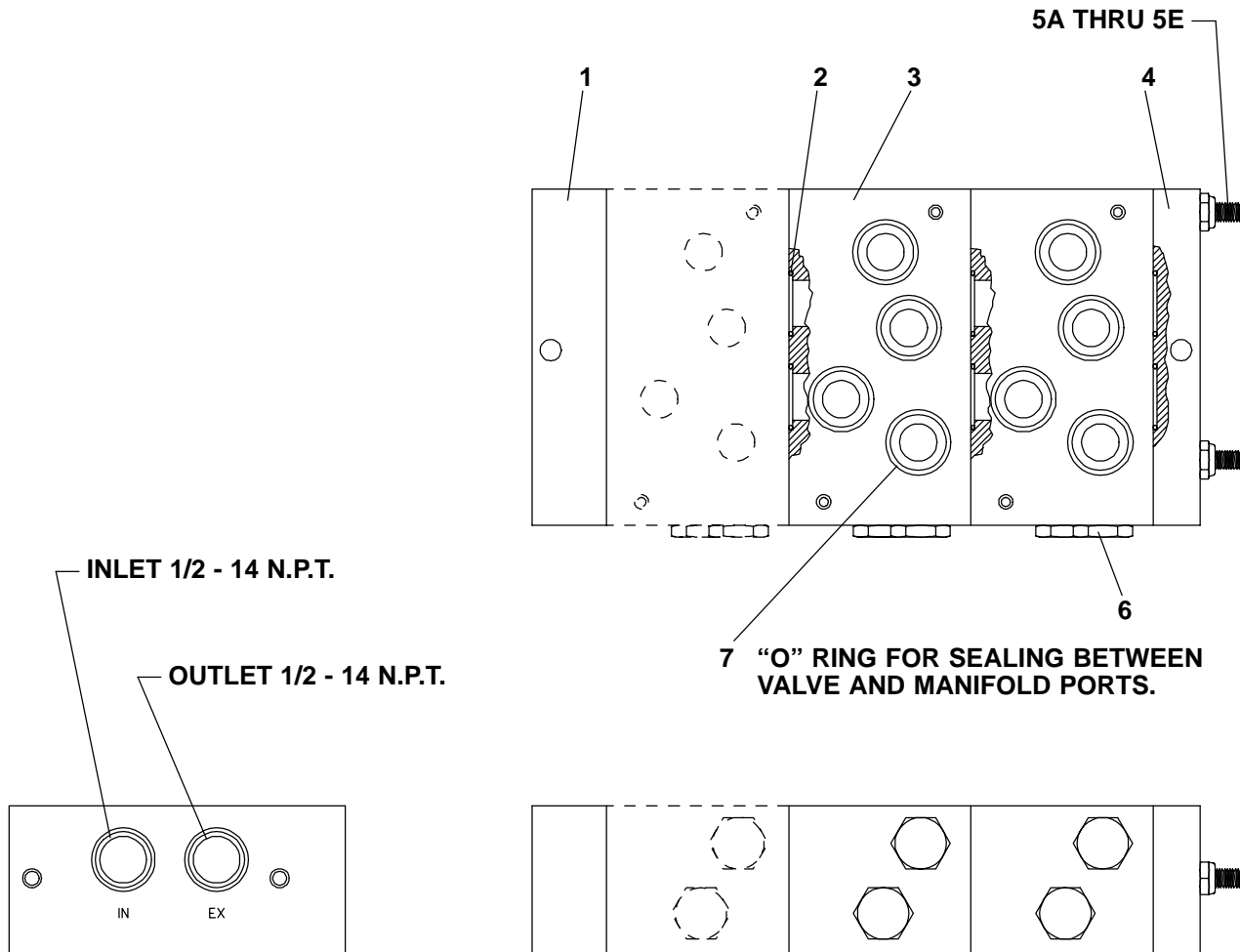


**NOTE: OUTLET ON VALVE MUST BE USED.  
NO OUTLET PORT IN MANIFOLD.**

			ASSEMBLY NUMBER				
			9104-2	9104-3	9104-4	9104-5	9104-6
SYMBOL NO.	DESCRIPTION	PART NO.	QUANTITY				
1A	TIE ROD ASSEMBLY	9129-2	2				
1B	TIE ROD ASSEMBLY	9129-3		2			
1C	TIE ROD ASSEMBLY	9129-4			2		
1D	TIE ROD ASSEMBLY	9129-5				2	
1E	TIE ROD ASSEMBLY	9129-6					2
2	END BLOCK	9130	1	1	1	1	1
3	“O” RING	Y325-18	6	8	10	12	14
4	MANIFOLD BLOCK	9127	2	3	4	5	6
5	INLET BLOCK	9128	1	1	1	1	1
6	“O” RING	Y325-18	6	9	12	15	18
	SCREW (NOT SHOWN)	Y154-57	4	6	8	10	12
	LOCK WASHER (NOT SHOWN)	Y14-10-C	4	6	8	10	12

# PARTS LIST

## SERIES H POPPET VALVES SUB-BASE MOUNTED (1/4, 3/8 AND 1/2 N.P.T.F. PIPE PORTS) 4-WAY MANIFOLD ASSEMBLY



			ASSEMBLY NUMBER									
			9007-2	9007-3	9007-4	9007-5	9007-6	9008-2	9008-3	9008-4	9008-5	9008-6
SYMBOL NO.	DESCRIPTION	PART NO.	QUANTITY									
1	INLET BLOCK	9028	1	1	1	1	1	1	1	1	1	1
2	"O" RING	Y325-18	6	8	10	12	14	6	8	10	12	14
3	MANIFOLD BLOCK	9027	2	3	4	5	6	2	3	4	5	6
4	END BLOCK	9030	1	1	1	1	1	1	1	1	1	1
5A	TIE ROD ASSEMBLY	9129-2	2					2				
5B	TIE ROD ASSEMBLY	9129-3		2					2			
5C	TIE ROD ASSEMBLY	9129-4			2					2		
5D	TIE ROD ASSEMBLY	9129-5				2					2	
5E	TIE ROD ASSEMBLY	9129-6					2					2
6	REDUCING BUSHING	Y45-103-C						4	6	8	10	12
7	"O" RING	Y325-18	8	12	16	20	24	8	12	16	20	24
	SCREW (NOT SHOWN)	Y99-43	4	6	8	10	12	4	6	8	10	12
	LOCK WASHER (NOT SHOWN)	Y14-416-C	4	6	8	10	12	4	6	8	10	12



