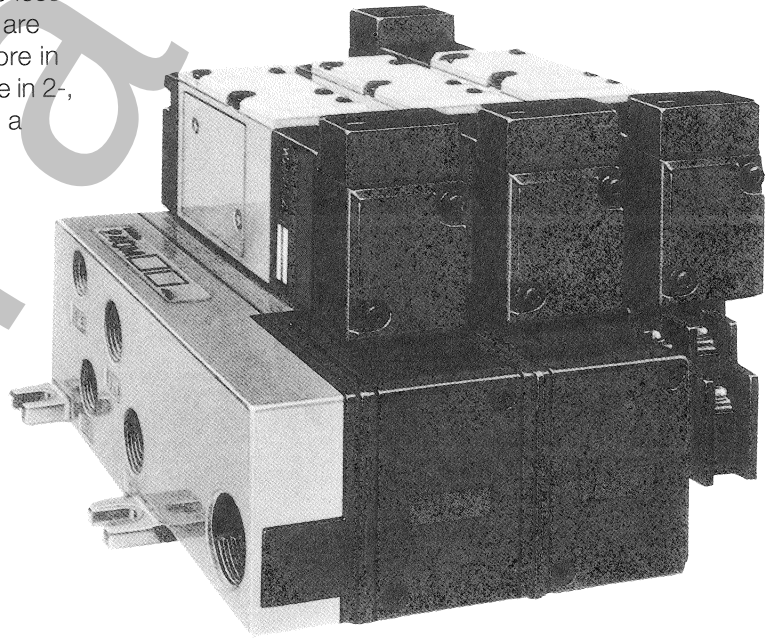


HUMPHREY H240 SERIES VALVES

FEATURES

- H240 Series 1/4-inch ported solenoid valves are ideal for designing high performance, flexible automatic equipment.
- The multiple application system of the H240 Series allows you to "customize" valves, subbases, and manifolds to your particular requirements. Plus, they're easy to change in the field.
- Plug-in type subbases and manifolds provide the ultimate in plumbing and wiring convenience in a "closed" pneumatic package design. Valves can be changed on the spot in seconds.
- The attractive, lightweight diecast aluminum design compliments the appearance of your equipment, and adds little to the size and weight of your finished product.
- These compact 1/8-inch ported air valves are less than 3/4-inches wide. With a Cv of .88, they are capable of operating air cylinders up to 5" bore in diameter. The H180 Series valves are available in 2-, 3-, or 4-way models. Power consumption is a low 1.6 watts. Various options include LED indicators, sandwich regulators, and plug-in electrical connectors.
- High flow. Cv is 0.88.
- Ideal for controlling 1 1/2 to 4" bore air cylinders and other pneumatic actuators.
- 4-way, 5-port, 2-position, single or double solenoid.
- 3-position models (either closed center or exhaust center) also available.
- Versatile mounting: in-line, subbase, stackable and solid manifolds.
- Options include straight or L-type electrical connectors, exhaust port flow controls and locking manual overrides.



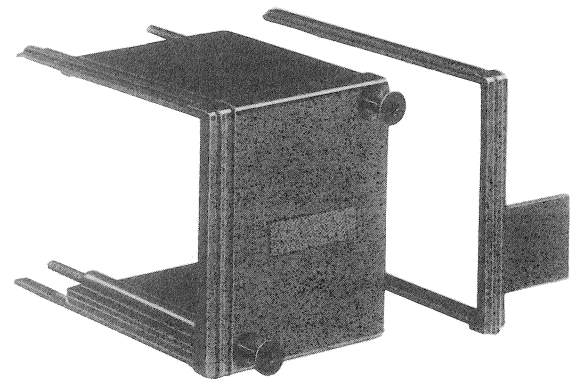
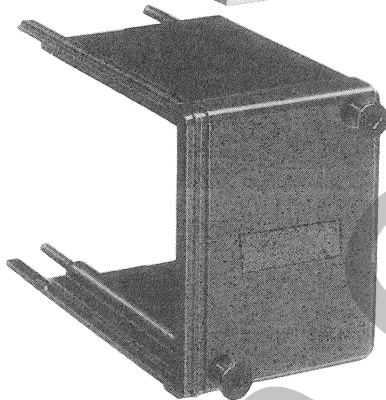
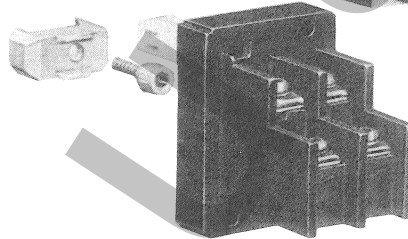
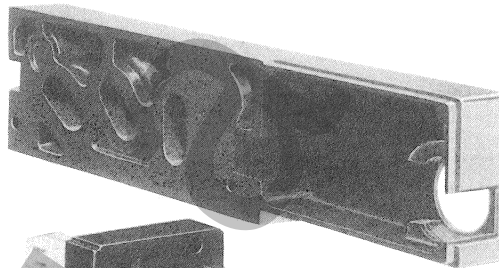
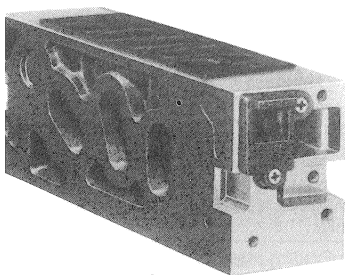
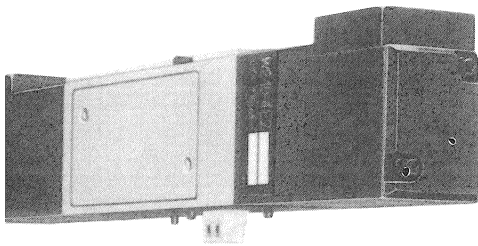
EASY MOUNTING/DISMOUNTING WITH PLUG-IN ELECTRICAL CONNECTORS

Plug-in electrical hookup between valve and sub-base or manifold provides quick and easy mounting and dismounting of valves.

NUMBER OF STACKING TYPE MANIFOLD STATIONS CAN BE EASILY INCREASED OR DECREASED

Since the stacking manifold is structurally independent from valves, the number of manifold stations can be changed at will.

Stacking manifold units can be stocked and assembled as required for each particular application thereby reducing inventory cost.



USE BOTTOM-PORTED SUBBASES AND MANIFOLDS FOR SEPARATE SUPPLY PRESSURES AND ALTERNATE PORTING

Multiple pressures can be used on a common manifold by installing a simple isolating device anywhere in the manifold stack.

Both side and bottom ports are provided for complete plumbing convenience.

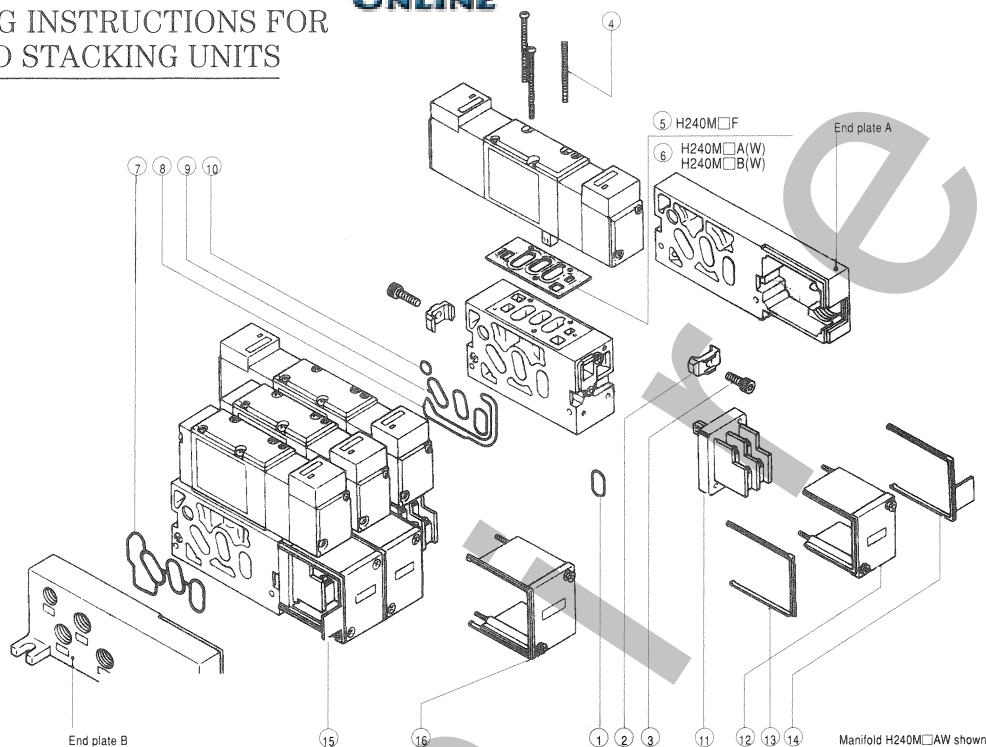
LOW POWER, HIGHLY RELIABLE SOLENOIDS CAN BE DRIVEN DIRECTLY BY COMPUTERIZED CONTROLS

Low power solenoid (1.6 watts, 24 VDC) is highly reliable and generates little heat for long service life.

MOUNTING INSTRUCTIONS FOR MANIFOLD STACKING UNITS

ORDER
ONLINE

Manifold



PIPING

IN port, EXH and Pilot EXH are located at both ends of the manifold. Plumbing direction can be determined according to installation requirements. Porting at one end of manifold is plugged during shipping. Remove plugs and reseal using sealing tape or other sealing agent prior to installation. Or, if necessary, provide supply pressure to both ends of manifold.

CAUTION:

1. Performance can be adversely affected by supply lines of insufficient diameter or excessive length. Use largest possible tubing size and minimum tubing length for optimum performance.
2. When installing plumbing or mufflers in the exhaust port, ensure there will be minimum exhaust restriction. Otherwise, the exhaust from one valve may interfere with the performance of another valve or cylinder.
3. When many manifold stations are assembled, or when operating valves with multiple pressures on the same manifold, supply pressure to the supply port at both ends of the manifold.
4. Select models B and BW (manifold ports on bottom) and use supply and exhaust ports on manifold bottom to prevent inadequate pressure or exhaust interference.
5. Valve body symbols and port identification:
IN = P, OUT1 = A, OUT2 = B, OUT 1 Exhaust = R1, OUT2 Exhaust = R2, Pilot Exhaust = PR.

PARTS DESCRIPTION

No.	Manifold model	Order Code	Parts and Quantities ()
	Stacking Unit for H240M□ A	HCR016	A-type stacking station (1), Joints (2), 3 – Joint mounting bolts (2), 4 – Valve mounting screws (3), 6 – Gasket (1), 8 – Gasket (1), 9 – o-rings (3)
	Stacking Unit for H240M□ B	HCR017	B-type stacking station (1), 2 – Joints (2), 3 – Joint mounting bolts (2), 4 – Valve mounting screws (3), 6 – Gasket (1), 8 – Gasket (1), 9 – o-rings (3), 10 – o-ring (1), Plug 1/8" NPT (5), Plug 1/4" NPT (2)
	Stacking Unit for H240M□ AW	HCR018	AW-type stacking station (1), 2 – Joints (2), 3 – Joint mounting bolts (2), 4 – Valve mounting screws (3), 6 – Gasket (1), 8 – Gasket (1), 9 – o-rings (3), 11 – Terminal (1), 12 – Terminal cover (1), 13 – Connection Cover A (1)
	Stacking Unit for H240M□ BW	HCR019	BW-type stacking station (1), 2 – Joints (2), 3 – Joint mounting bolts (2), 4 – Valve mounting screws (3), 6 – Gasket (1), 8 – Gasket (1), 9 – o-rings (3), 10 – o-ring (1), 11 – Terminal (1), 12 – Terminal cover (1), 13 – Connection Cover A (1), Plug 1/8" NPT (5), Plug 1/4" NPT (2)
	End Plate Kit for H240M□ A(B)	HCR057	End Plates A & B, 7 – Gasket (1), 14 – Connection Cover B (1), 15 – Connection Cover C (1), 2 – Joint (2), 3 – Joint Mounting Bolt (2)
	End Plate Kit for H240M□ AW(BW)	HCR058	End Plates A & B, 7 – Gasket (1), 14 – Connection Cover B (1), 15 – Connection Cover C (1), 2 – Joint (2), 3 – Joint Mounting Bolt (2)
1	Isolator disk	Y040514	For separate supply of IN port & EXH port
2	Joint	Y008189	
3	Joint mounting bolts	Y095157	
4	Valve mounting screws	Y095221	
5	Gasket	Y089105	For H240M□ F
6	Gasket	Y089106	For H240M□ A, H240M□ B, H240M□ AW, H240M□ BW
7*	Gasket	Y089107	For end plate B
8*	Gasket	Y089108	
9*	o-ring	Y090151	
10*	o-ring	Y090152	For H240M□ B, H240M□ BW
11	Terminal assembly cover	HCR020	
12	Connection cover	Y009542	
13	Connection cover A	Y009543	
14	Connection cover B	Y009544	
15	Connection cover C	Y009545	
16	Terminal cover mounting screw	Y095209	

* We recommend applying silicone grease to gasket and o-rings to maintain their location during assembly.

ORDER
ONLINE

STACKABLE

Models A, B, AW, and BW are stacking manifold stations, simplifying the addition or removal of stations from manifold.

I240M□A, H240M□B

To disassemble one station from another, loosen Joint Mounting Bolts (3) (hexagonal bolts) from both ends and remove Joints (2).

To assemble manifold stations, mount o-rings (9), (10), and gasket (8) on the stacking station and fasten the joints at each end. Tighten joints by using joint mounting bolts.

I240M□AW, H240M□BW

Loosen mounting screws from Terminal Cover, remove Terminal Cover (12), Connection Cover (13) and pull out the terminal (11).

To disassemble one station from another, loosen Joint Mounting Bolts (3) (hexagonal bolts) from both ends and remove Joints (2).

To assemble manifold stations:

First: Set o-rings (9), (10), gasket (8) on the stacking station and fasten joints at each end. Tighten joints with joint mounting bolts.

Second: Insert Terminal (11), mount the terminal Cover (12) with mounting screws and insert Connection Covers (13), (14), (15).

PORT LOCATION

Models B and BW have ports on the manifold bottom. Use bottom or side ports depending on application.

SEPARATE SUPPLY

Isolator Disks (part no. Y040514) separate IN port and EXH ports from adjacent stations. This permits use of multi-pressure valves on the same manifold and prevents exhaust interference.

Use Isolator Disks rather than o-rings between stations so IN and EXH will be isolated. Plumb separated valves to bottom IN and EXH ports.

LOCK-OFF PLATE

Use block-off plate (H240-BP) to suspend use of any station.

END PLATE KITS

End Plate Kits consist of two subbase end caps and fastening accessories that mount at each end of the completed subbase valve assembly. (See End Plate A and End Plate B in drawing on facing page).

For H240M□A or B, order HCR057.

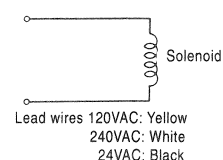
For H240M□AW or BW, order HCR058.

SOLENOIDS

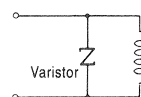
INTERNAL CIRCUIT

120 VAC, 240 VAC, 24 VAC

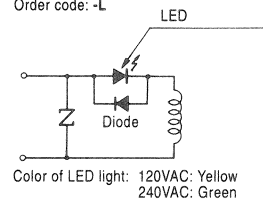
Standard solenoid



Solenoid with surge suppression
Order code: -ZR

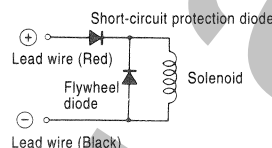


Solenoid with surge suppression and LED indicator
Order code: -L

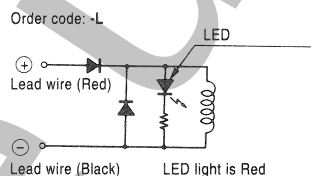


12 VDC, 24 VDC

Standard solenoid with surge suppression



Solenoid with surge suppression and LED indicator



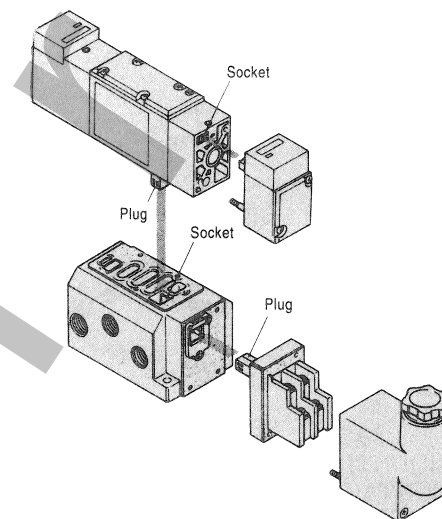
Cautions:

1. Do not install megger between lead wires.
2. 12 and 24 VDC solenoids will not short-out even with wrong polarity. However, solenoids with surge suppression will not operate.
3. If circuit current leakage is experienced, the valve may not turn off. Ensure that current leakage is below the maximum allowable leak rate.

PLUG-IN

INSTALLING VALVES

Valves may be changed with disconnecting air supply or electrical wiring. Loosen three valve mounting screws and pull valve straight out. When installing valves, insert valve plug directly into the subbase or manifold sockets and tighten valve mounting screws.



WIRING INSTRUCTIONS

Plug-in valves connect terminal and solenoids with plug and sockets. Loosen terminal cover mounting screws and remove terminal cover. Pull out terminal and connect wires. Insert terminal into subbase or manifold, replace terminal cover and tighten mounting screws.

SINGLE SOLENOID

Connect wiring to Terminal 2.

DOUBLE SOLENOID

Connect wiring from Terminal 1 to Solenoid 1 (S1) and Terminal 2 to Solenoid 2 (S2).

DC VOLTAGES

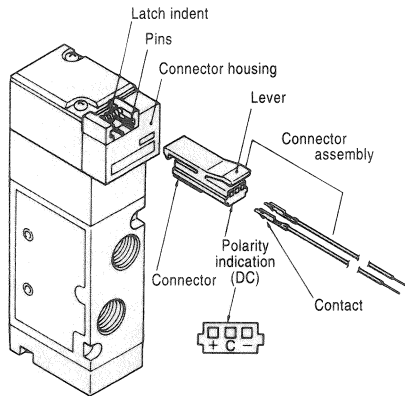
Improper voltage polarity prohibits valve operation, although no damage will result.

PLUG CONNECTOR

ATTACHING AND REMOVING CONNECTOR

Hold connector between thumb and forefinger and push connector onto pins. Push until lever claw engages pins.

To remove connector, squeeze lever and connector between thumb and forefinger and pull connector off pins.

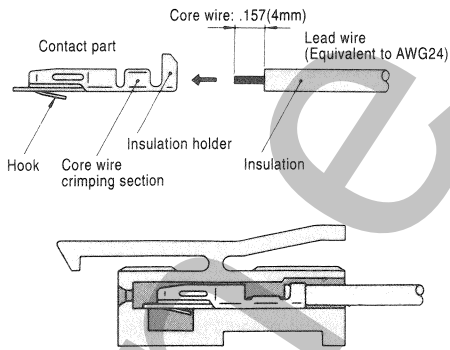


MOUNTING AND DISMOUNTING CONTACT FROM CONNECTOR

Ensure that contacts are properly shaped to ensure latching within connector.

Push contact with lead wire into connector until contact barb engages. Lightly pull lead wire to ensure proper engagement.

To remove lead wire and contact, locate the contact barb through rectangular hole on connector side. While pushing down on barb with a small tool, pull out lead wire.



Cautions:

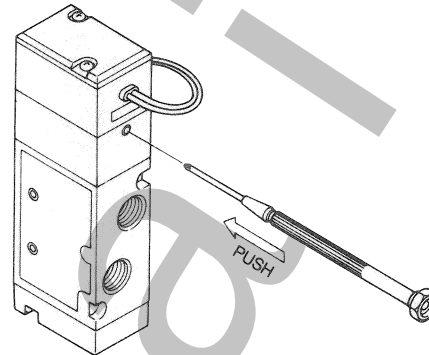
1. Do not pull lead wire with excessive force to avoid broken wire or connection.
2. When pin is bent, straighten with a small tool and attach to connector.

MANUAL OVERRIDE

NON-LOCKING

Single solenoid – Actuate valve by fully depressing manual override with small tool. Valve remains actuated until manual override is released. Upon release, valve spring returns valve to normal position.

Double solenoid – Fully depress manual override S1 with a small tool to deliver pressure to outlet port 2 (port 1 exhausts). Valve remains in this position until depressing manual override S2, which diverts pressure to outlet port 1 (port 2 exhausts). Note: If the solenoid nearest override S1 was last energized, only override S2 will be operable, and vice versa.

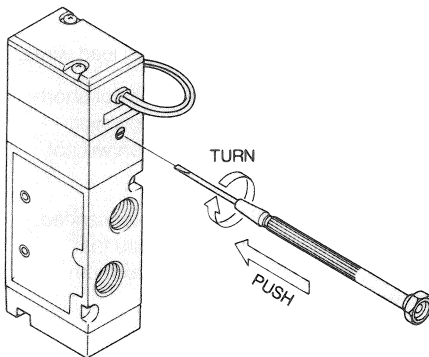


LOCKING

Use a small tool to push in, and turn manual override more than 45° to activate. Override turns in either direction.

Spring force will return override to normal position when override is turned past the locking position.

If override is not turned to activate, it may be operated like a non-locking override by depressing override.



Cautions:

1. Since H240 series valves are indirect acting, manual override will not activate unless air is supplied to IN port.
2. Take care to release locking override before resuming normal operation.

HANDLING CAUTIONS AND GENERAL TERMS

MOUNTING

1. Valves mount in any direction. However, avoid strong impact to solenoids when horizontal mounting base (Code -21) is used.
2. Use cover to protect from water, oil, or dust. Install muffler in exhaust port to prevent foreign objects from entering.
3. Before connecting fittings and tubing, blow all foreign material from these components. If using a sealant, take extra care that sealant does not enter valve causing malfunction and/or leaks.
4. When mounting valves inside small control panels or when application requires long actuation periods, install a ventilation fan.
5. Valve will not operate reliably with OUT port open to atmosphere.

MEDIA/PRESSURE

1. H240 Series valves are designed for use with compressed air or inert gases. Consult factory if using any other media.
2. Compressed air should be clean and uncontaminated. When in doubt, install an air filter with filtering capacity of 40 microns. Periodically remove and clean or replace filter element.
3. In low air pressure applications, use largest possible tubing size and minimum tubing length for optimum performance.

LUBRICATION

No lubrication is required. If air pistons/cylinders or other devices require lubrication, ensure that lubricating oils are chemically compatible with Buna N elastomers and are of sufficient viscosity to assure adequate lubrication. Thin or low viscosity oils (spindle oil, machine oil, etc.) do not provide a good residual film of lubrication.

ATMOSPHERE

When media or atmosphere contain the following substances, these valves should not be used: organic solvents, phosphoric acid, ester type machine oil, sulfuric acid, gas, chlorine gases, or other acids.

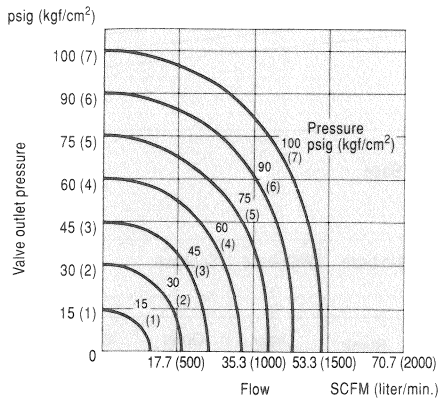
CAUTION

Compressed air is powerful and may be dangerous. Before attempting to remove a component from an air line or system, *always* disconnect the supply air and thoroughly exhaust the line or system. *Never* attempt to construct, operate, or service anything using compressed air unless you have been properly trained to do so. Failure to heed the warning could result in **SERIOUS, EVEN FATAL, PERSONAL INJURY.**

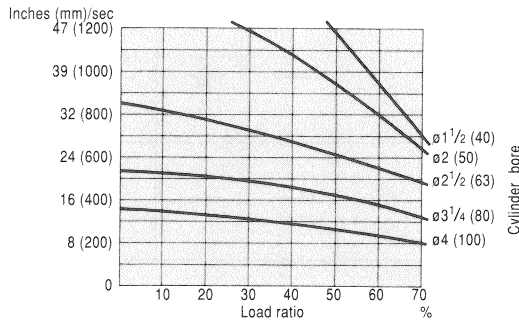
CYLINDER SPEED/FLOW

H240-4E1

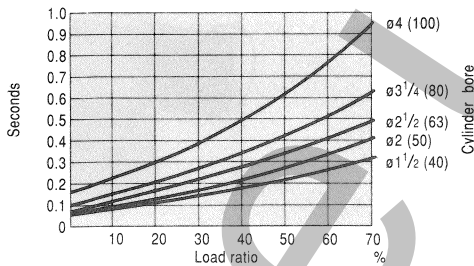
Flow



Maximum operating speed

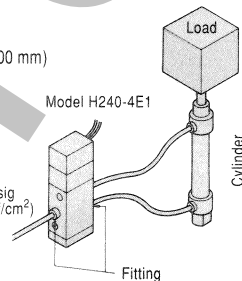


Delay time

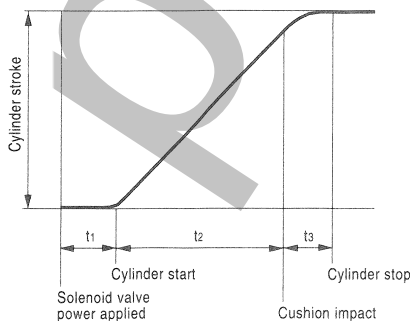


Measurement parameters

Air pressure: 71 psig (5 kgf/cm²)
 Piping external diameter and length: 0.3 x 39 in. (7.5 x 1000 mm)
 Load ratio = $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
 Cylinder stroke: 12 in. (300 mm)



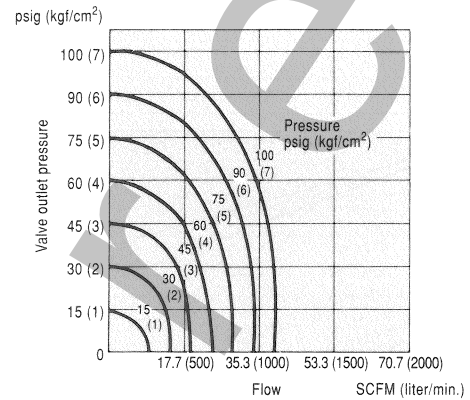
CYLINDER SPEED



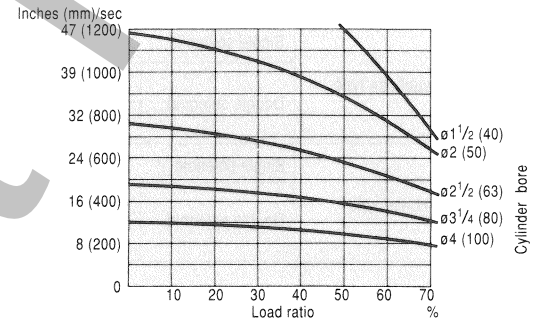
In order to obtain required time for cylinder to make one stroke, add cylinder's delay time t_1 (delay time between activating valve and actual starting time of cylinder) to the time t_2 at the maximum speed. If there is a cushion time, add the cushion time. General cushion time t_3 is around 0.2 seconds.

HA240-4E1-25

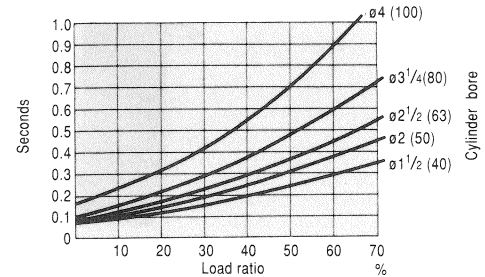
Flow



Maximum operating speed

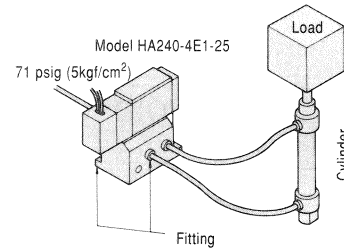


Delay time



Measurement parameters

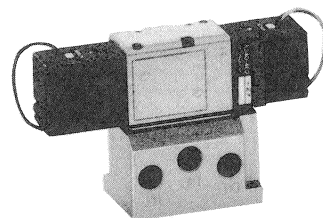
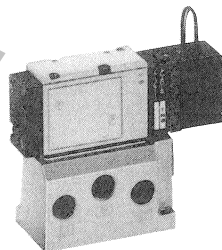
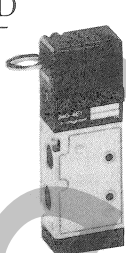
Air pressure: 71 psig (5 kgf/cm²)
 Piping external diameter and length: 0.3 x 39 in. (7.5 x 1000 mm)
 Load ratio = $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)
 Cylinder stroke: 12 in. (300 mm)



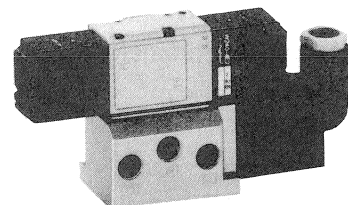
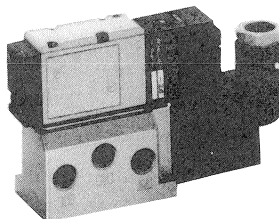
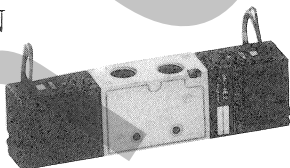
SOLENOID VALVE ORDER CODE

H240-4E1										120 VAC
Option specifications				Valve function		Base				
				Closed center (standard)	Exhaust center	No base	With base	Subbase		
Basic valve model				Blank	-13	Blank	Order separately	Order separately	Order separately	Order separately
Direct piping type	Single solenoid		H240-4E1	—	—	—	☆	—	—	—
	Double solenoid	2-position	H240-4E2	—	—	○	—	—	—	—
		3-position	H243-4E2	○	☆	—	—	—	—	—
Standard subbase type	Single solenoid		HA240-4E1	—	—	—	—	—	—	—
	Double solenoid	2-position	HA240-4E2	—	—	○	—	☆	—	☆
		3-position	HA243-4E2	○	☆	—	—	—	—	—
Plug-in subbase type	Single solenoid		HW240-4E1	—	—	—	—	—	—	—
	Double solenoid	2-position	HW240-4E2	—	—	○	—	—	☆	☆
		3-position	HW243-4E2	○	☆	—	—	—	—	—

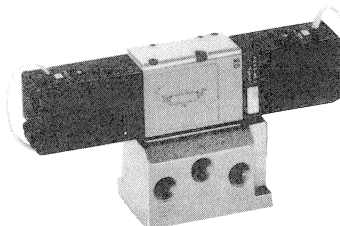
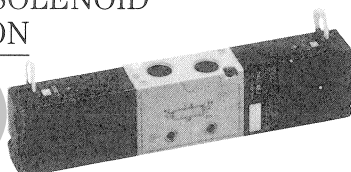
SINGLE SOLENOID



DOUBLE SOLENOID 2-POSITION



DOUBLE SOLENOID 3-POSITION



○ : Standard

☆ : Optional

☆¹ : Subbase mounting

☆² : 120 VAC and 240 VAC have surge suppressor varistor.
(24VDC has flywheel diode surge suppressor)

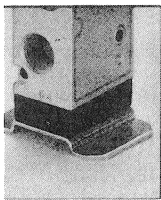
120 VAC and 240 VAC with LED indicator have surge suppressor varistor.

☆³ : Color of LED indicator light

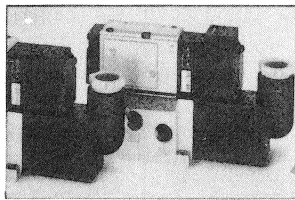
120 VAC = Yellow; 240 VAC = Green; 12 VDC and 24 VDC = Red;
24 VAC not available.

-PS-L and -PL-L have 12 in. (300 mm) lead wires. Optional
118 in. (3000 mm) lead wires are available. Specify ℓ = 3000 mm
at end of model number.

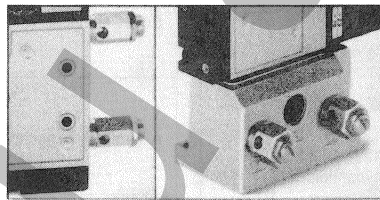
Speed controller		Manual override		Solenoid options							Voltage
Without speed controller	With speed controller	Non-lock type	Lock type	Standard Grommet	Grommet with surge suppressor varistor	Straight connector with LED indicator	L-connector	Standard plug-in	Plug-in with LED indicator	Plug-in with surge suppressor varistor	
Blank	Order separately	Blank	-81	Blank	-ZR	-PS-L	-PL-L	Blank	-L	-ZR	
○	☆	○	☆	○	☆ ²	☆ ³	☆ ³	—	—	—	240 VAC 120 VAC 24 VAC 12 VDC 24 VDC
○	☆ ¹	○	☆	○	☆ ²	☆ ³	☆ ³	—	—	—	
○	☆ ¹	○	☆	—	—	—	—	○	☆ ³	☆ ²	
○	☆ ¹	○	☆	—	—	—	—	○	☆ ³	☆ ²	
○	☆ ¹	○	☆	—	—	—	—	○	☆ ³	☆ ²	
○	☆ ¹	○	☆	—	—	—	—	○	☆ ³	☆ ²	



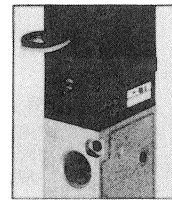
Mounting base



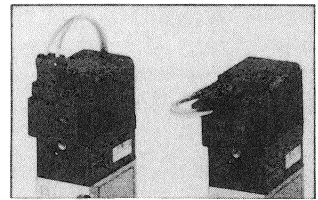
Plug-in type subbase



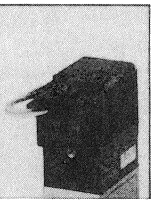
Speed control



Locking manual override



Straight connector



L connector

OPTIONS SPECIFICATIONS AND ORDER CODE

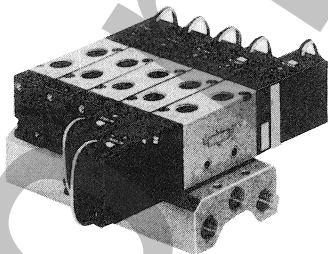
Specifications		Order code	Valves	Notes
Valve functions	Closed center	Blank		3 position only
	Exhaust center	-13	□ H243-4E1	
Base	No base	Blank		Standard
	With mounting base	H240-21	H240-4E1	Single solenoid only
Subbase	Ports at one side	Standard type	25-H240	HA240-4E□, HA243-4E2
		Plug-in type	26-HW240	HW240-4E□
	Ports at sides and bottom	Standard type	27-H240	HA240-4E□, HA243-4E2
		Plug-in type	28-HW240	HW240-4E□
Speed controller	1/8" speed controller	HSCE-01		Standard in-line valves
	1/4" speed controller	HSCE-02	for all models	Subbase type mounted to the subbase.
Manual override	Non-locking type	Blank		Standard
	Locking type	-81	□ H240-4E1, □ H243-4E2	
Solenoids	Standard type	Grommet	Blank	Standard (24VDC with standard flywheel diode)
			-ZR	AC with surge suppressor varistor (DC contains surge suppressor as standard)
		Straight connector	-PS-L	Lead wire, LED indicator, surge suppressor
		L-connector	-PL-L	
	Plug-in type	LED indicator without varistor	Blank	Standard (24VDC has flywheel diode as standard)
		LED indicator	-L	With surge suppressor
		Surge suppressor	-ZR	Without LED indicator (AC only. DC contains surge suppressor as standard.)
			H240-4E□ H243-4E2 HA240-4E□ HA243-4E2	

MANIFOLD ORDER CODE

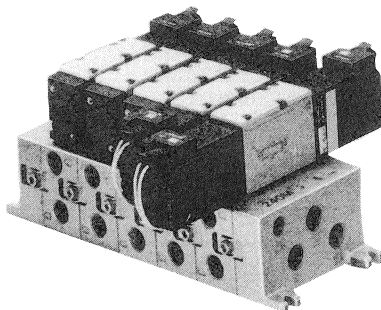
ORDER
ONLINE

H240M			Order valves separately	
H240 Manifold model	Units	Manifold type	Mounting valve model	Options order code
H240M	2 : 2	F : F IN, EXH	Manifold type	Applicable valve basic model
	3 : 3	A : A All ports manifold		
	⋮	B : B Ports at the bottom All ports manifold		
	10 : 10	AW : AW Plug-in All ports manifold		
		BW : BW Plug-in Ports at the bottom All port manifold		
			F-type manifold	H240-4E1
				H240-4E2
				H243-4E2
			A manifold, B manifold	HA240-4E1
				HA240-4E2
				HA243-4E2
			AW manifold, BW manifold	HW240-4E1
				HW240-4E2
				HW243-4E2

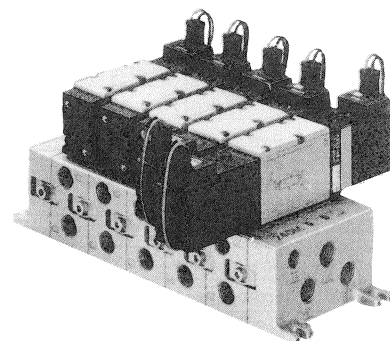
Close station with Block-off plate = H240-BP



F Manifold



A Manifold



B Manifold

Factory assembled manifolds
are available for an extra charge.
Consult factory for details.

○ : Standard

☆ : Optional

☆¹ : Subbase mounting

☆² : 120 VAC and 240 VAC have surge suppressor varistor.
(24VDC has flywheel diode surge suppressor)

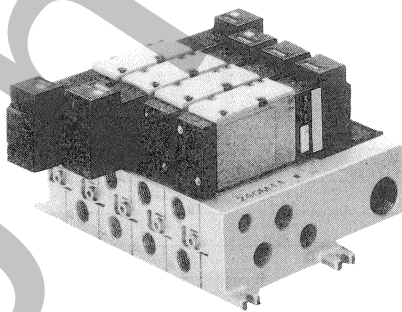
120 VAC and 240 VAC with LED indicator have surge suppressor varistor.

Color of LED indicator light

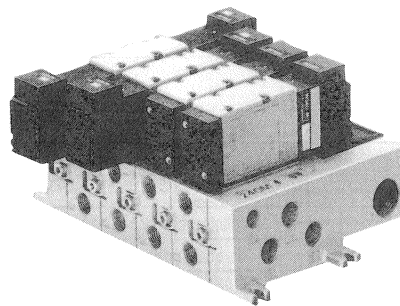
120 VAC = Yellow; 240 VAC = Green; 12 VDC and 24 VDC = Red;
24 VAC not available.

-PS-L and -PL-L have 12 in. (300 mm) lead wires. Optional
108 in. (3000 mm) lead wires are available. Specify ℓ = 3000 mm
at end of model number.

Valve functions		Manual override		Solenoid options							Voltages
Closed center (standard)	Exhaust center	Non-locking type	Locking type	Standard Grommet type	Grommet with surge suppressor varistor	Straight connector with LED indicator	L-connector with LED indicator	Standard plug-in	Plug-in with LED indicator	Plug-in with surge suppressor varistor	
Blank	-13	Blank	-81	Blank	-ZR	-PS-L	-PL-L	Blank	-L	-ZR	
—	—	○	☆	○	☆ ¹	☆ ²	☆ ²	—	—	—	240 VAC 120 VAC 24 VAC 12 VDC 24 VDC
—	—		☆		☆ ¹	☆ ²	☆ ²	—	—	—	
○	☆		☆		☆ ¹	☆ ²	☆ ²	—	—	—	
—	—	○	☆	○	☆ ¹	☆ ²	☆ ²	—	—	—	
—	☆		☆		☆ ¹	☆ ²	☆ ²	—	—	—	
—	—		☆		—	—	—	○	☆ ²	☆ ¹	
○	☆	○	☆	—	—	—	—	○	☆ ²	☆ ¹	
○	☆	○	☆	—	—	—	—	○	☆ ²	☆ ¹	

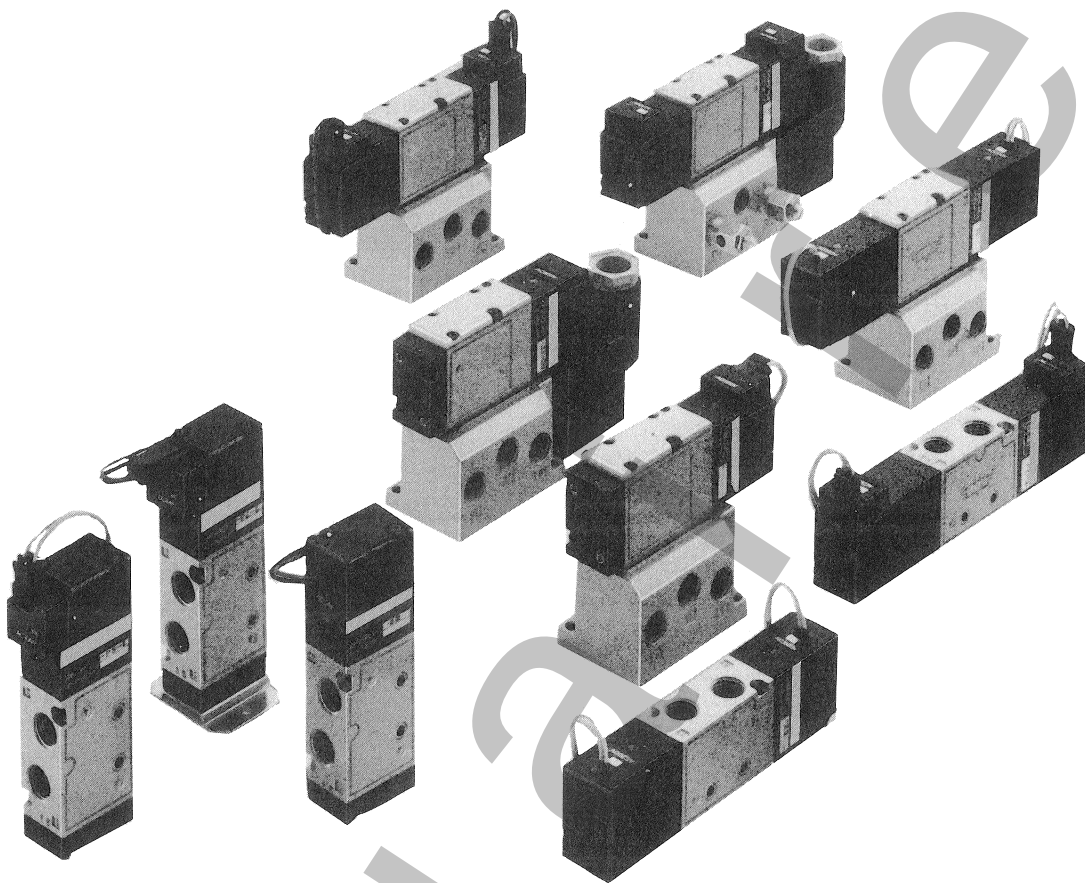


AW Manifold



BW Manifold

H240 SERIES SPECIFICATIONS



SPECIFICATIONS

Item	Basic models	Solenoid Specifications		
		Single solenoid	Double solenoid	Double solenoid, 3 position
	Direct piping or F type manifold	H240-4E1	H240-4E2	H243-4E2
	Standard type subbase, A type, B type manifolds	HA240-4E1	HA240-4E2	HA243-4E2
	Plug-in type subbase, AW type, BW type manifolds	HW240-4E1	HW240-4E2	HW243-4E2
Media	Air			
Type of operation	Indirect acting, internally piloted			
Number of positions	2-position			3-position
Valve function	—			Closed center (standard) and exhaust center (optional)
Flow – C_v	0.88			0.83
Ports	P, B, A: $\frac{1}{4}$; R: $\frac{1}{8}$ (P, B, A, R: $\frac{1}{4}$; PE: $\frac{1}{8}$) NOTE 1			
Lubrication	None required			
Pressure range – psig(kgf/cm ²)	25 ~ 100 (1.7 ~ 7)			
Temperature range (atmosphere or media) – °F (°C)	41 ~ 122 (5 ~ 50)			
Shock resistance – G	lateral direction	140		
	end direction	46	27	60
Mounting direction	Any			
Maximum operation frequency	5 cycle/sec.			
Response time – ms (ON/OFF)	12VDC, 24VDC 120VAC, 240VAC, 12VAC	21/39* 19/22	28/28* 12/12	12/38* 9/31 **
Weight – oz. (gf)		5.6 (160) 12.3 (350) NOTE 2 14.1 (400) NOTE 3	8.1 (230) 14.8 (420) NOTE 2 16.6 (470) NOTE 3	9.2 (260) 15.9 (450) NOTE 2 17.6 (500) NOTE 3

NOTE 1: Subbase port size.

NOTE 2: Weight of HA240-4E□ with subbase.

NOTE 3: Weight of HW240-4E□ with subbase.

* Incorporates surge suppression

** Response times for H243-4E2-13

12VDC, 24VDC 12/42*
120VAC, 240VAC, 12VAC 9/40

SOLENOID SPECIFICATIONS

Itage		120 VAC		240 VAC		24 VAC		12 VDC	24 VDC	
erating method		Shading ring								Flywheel diode (surge suppressor)
Itage range – V		90 ~ 132 (120 +10 / –25%)		180 ~ 264 (240 +10 / –25%)		21.6 ~ 26.4 (24 ± 10%)		10.8 ~ 13.2 (12 ± 10%)	21.6 ~ 26.4 (24 ± 10%)	
urrent value ated voltage applied)	Frequency Hz	50	60	50	60	50	60	–	–	
	Starting power mA r.m.s.	42	40	21	20	135	125	–	–	
	Holding power mA r.m.s.	30	26	15	13	85	70	130 (140)*	65 (75)*	
wer consumption (at rated voltage)		–		–		–		1.6 (1.7)*	1.6 (1.8)*	
ak rate (maximum allowed) mA		4		2		8		8	4	
emperature rise (at rated voltage) – °F (°C)		86° (30°) max. at rated voltage				68° (20°) max. at rated voltage				
ulation		Type B								
ulation resistance MΩ		Minimum 100								
nnection: ndard type	Standard	Grommet 11.8" (300mm)								
	Option	Plug connector type Straight connector: -PS: 11.8 in. (300 mm)** L-connector: -PL: 11.8 in. (300 mm)**								
nnection: plug-in type		Terminal type (subbase with conduit cover and AW and BW type manifolds)								
lor of lead wire		Yellow		White		Black		Red (+) Black (–)	Red (+) Black (–)	
lor of LED indicator (option)		Yellow		Green		–		Red	Red	
rae suppression		Varistor (optional)						Flywheel diode (standard)		

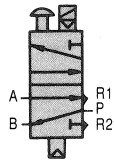
–: 24 VAC with LED indicator is not available.

(*) indicates valve with LED indicator.

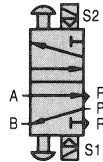
Optional 118 in. (3000 mm) lead wires are available. Specify $l = 3000$ mm at end of model number.

OPERATING PRINCIPLE, VALVE SYMBOLS, AND MATERIALS OF CONSTRUCTION

Single solenoid

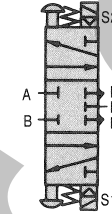


2-position double solenoid

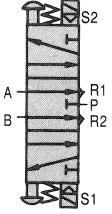


3-position double solenoid

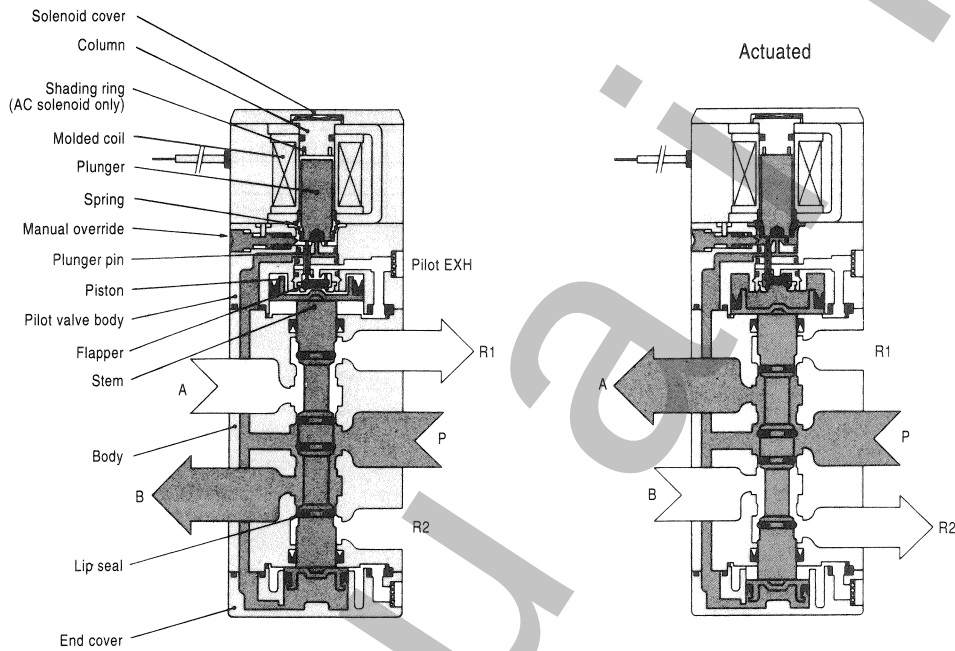
Closed center



Exhaust center



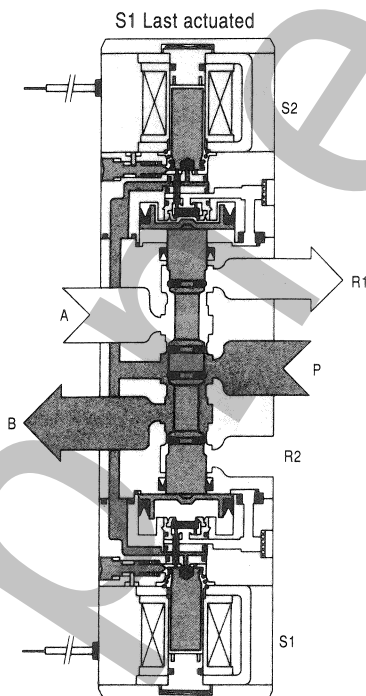
BASIC OPERATION AND NOMENCLATURE



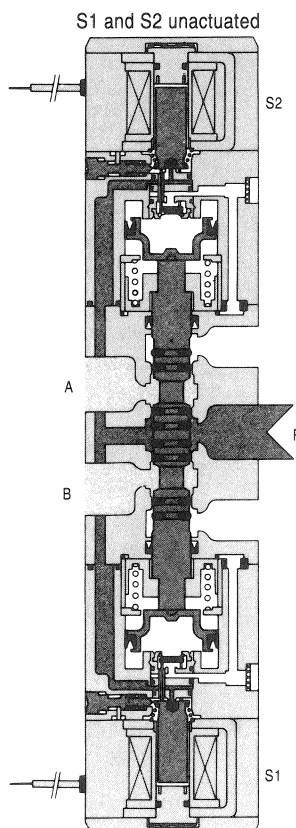
MATERIALS

Item	Material
Body	Diecast aluminum
Stem	Aluminum
Lip seal	Buna N
Flapper	Buna N
Mounting base	Mild steel (zinc plated)
Subbase	Diecast aluminum
Plunger	Electromagnetic stainless steel

H240-4E2



H243-4E2



H243-4E2-13

