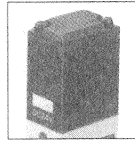
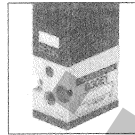


HUMPHREY SERIES H030 VALVES

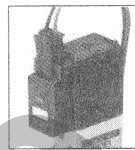
- Small size: less than one inch long.
- Light weight: less than 2.5 oz., any model.
- High flow: 1.0 scfm at 70 psig.
- Low power: 1.6 watts (1.8 watts with LED).
- 10-32 ports, F01 manifold has 1/8-inch ports.
- A very versatile series of valves – the same model can be used either in-line or on three different manifolds.
- In addition to various manifolds, other options include plug-in electrical connectors, locking manual override, and vacuum service capability.
- Operate cylinders up to 3/4-inch bore.
- Pilot larger process valves.



Low current solenoid: 29mA at 120VAC. Varistor for AC voltages and flywheel diode for DC voltages. Surge suppressor is standard.



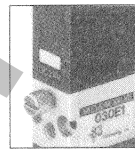
Small size, yet high flow: 1.0 scfm at 70 psig. Choose in-line or manifold mounting for centralized, expandable valving.



Optional plug connector provides easy electrical connections. Both straight and L-type connectors are available.



DIN connector or 36 to 108 inch flying leads also available.



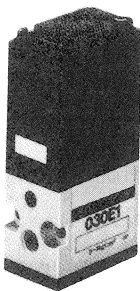
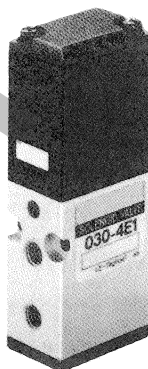
Non-locking manual override is standard. A locking manual override (Order Code: -83) is optional.

IN-LINE VALVES ASSEMBLE DIRECTLY TO T, F, AND F01 SERIES MANIFOLDS

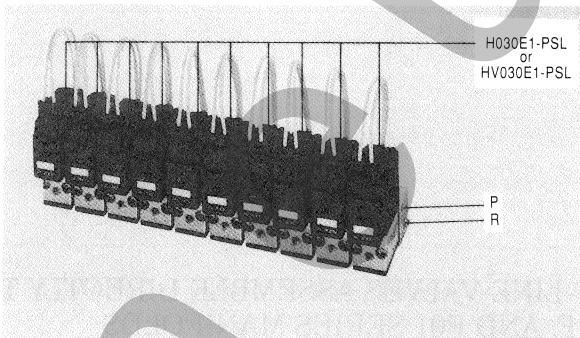
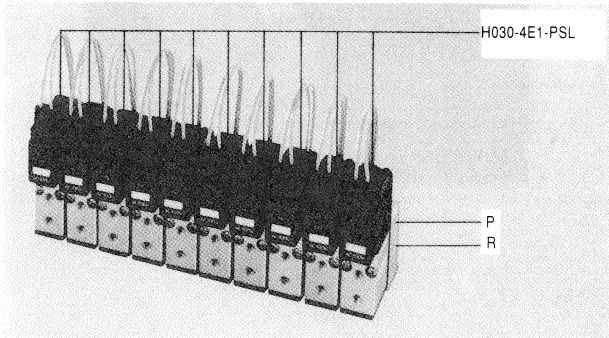
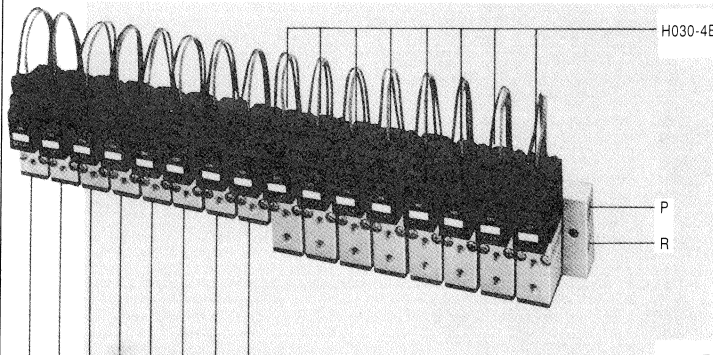
- Versatile and economical (fewer items to stock).
- T Series manifolds accept any combination of 2- and 3-way valves on manifolds up to 10 stations.
- F Series manifolds accept any combination of 2-, 3- and 4-way valves up to 10 stations.
- F01 Series: Same as F Series except with 1/8-inch NPT supply and exhaust ports. Also, F01 Series manifolds are available up to 20 stations.

BASIC MODELS AND CONFIGURATIONS – H030

IN-LINE VALVES

Direct acting	Indirect acting
2- and 3-way	4-way
Normally closed (N/C)	2 position
	
H030E1 or HV030E1	H030-4E1

MANIFOLD VALVES

2- and 3-way – air or vacuum HYM□ T – T type (P, R) manifold	2-, 3- and 4-way – air HYM□ F – F type (P, R) manifold
	
	

LIST OF SPECIFICATIONS – SOLENOID VALVES H030

BASIC MODEL AND VALVE FUNCTIONS

Item	Model		
	Direct piping or T, F, F01 type manifold	H(V)030E1	H030-4E1
Number of positions		2 position	
Number of ports		2- or 3-way	4-way
Valve functions		Normally closed (N/C)	Single solenoid

NOTE: See How To Order section of this catalog for option specifications.

SPECIFICATIONS

Item	Model		
	Direct piping or T, F, F01 type manifold	H(V)030E1	H030-4E1
Media		Air (HV030E1 – vacuum)	
Type of operation		Direct acting	Indirect acting
C _v		In to cyl – 0.03, cyl to exh – 0.04	
Port threads ^{NOTE 1}		10-32 UNF	
Lubrication		Not required	
Pressure range – psig (kgf/cm ²)		0 ~ 100 (0 ~ 7)	20 ~ 100 (1.5 ~ 7)
Vacuum range (HV030E1) – in. Hg (mm Hg)		0 ~ 29.5 (0 ~ 750)	–
Response time ^{NOTE 2} ON/OFF ms	12VDC, 24VDC	Below 10/25	
	120VAC, 240VAC	Below 15/40	
Maximum cycles/second		5	
Ambient range of operating temperature °F (°C)		40 ~ 120 (5 ~ 50)	
Shock resistance G		12	
Mounting direction		Any	

NOTE 1: Please refer to Port Dimensions chart for details.

NOTE 2: Value with air pressure at 71 psig (5 kgf/cm²).

ELECTRICAL SPECIFICATIONS CHART

Item		Voltage			
		12 VDC	24 VDC	120 VAC	240 VAC
Type		Flywheel diode incorporated for surge suppression		Shading type	
Voltage range VDC		10.8 ~ 13.2 (12 ± 10%)	21.6 ~ 26.4 (24 ± 10%)	90 ~ 132 (120 ± 10-25%)	180 ~ 264 (240 ± 10-25%)
Current mA	Frequency – Hz	–	–	50	60
	Starting – mA (r.m.s.)	–	–	44	40
	Holding – mA (r.m.s.)	130 (1.6W) [w/LED: 140 (1.7w)]	65 (1.6W) [w/LED: 75 (1.8w)]	32	26
Maximum allowable current leakage mA		8	4	4	2
Heat rise °F (°C)		Below 77° (25°)			
Insulation resistance MΩ		Over 100			
Connector and lead wire length	Standard	Grommet type 12 in. (300mm)			
	Option	Plug connector type 12 in. (300mm) ^{NOTE 3}			
Lead wire colors		Brown (+) Black (–)	Red (+) Black (–)	Yellow	White
LED indicator		Red		Yellow	Green
Surge suppression		Flywheel diode		Varistor	

NOTE 3: Please refer to optional lead wire length information in this catalog.

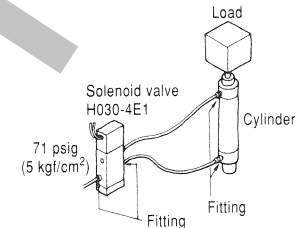
MEASUREMENT CONDITIONS

Air pressure: 71 psig (5 kgf/cm²)

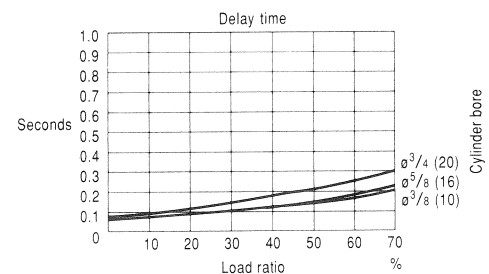
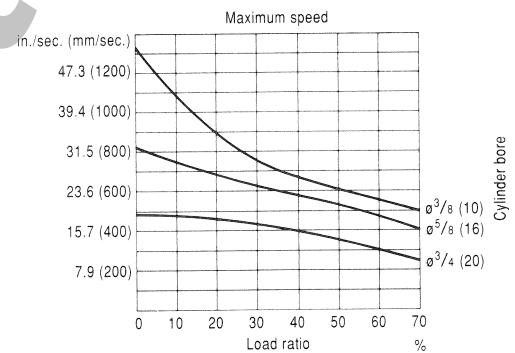
Tubing I.D. and length: ø 0.125 in. (3mm) x 24 in. (600mm)

Load ratio = $\frac{\text{Load}}{\text{Cylinder theoretical thrust}}$ (%)

Cylinder stroke examples: for ø 3/8 in. nominal (ø 10mm actual), ø 5/8 in. nominal (ø 16mm actual) bore, the stroke is 2.5 in. (60mm). For ø 3/4 in. nominal (ø 20mm actual), ø 1 1/4 in. nominal (ø 32mm actual) bore, the stroke is 4 in. (100mm).

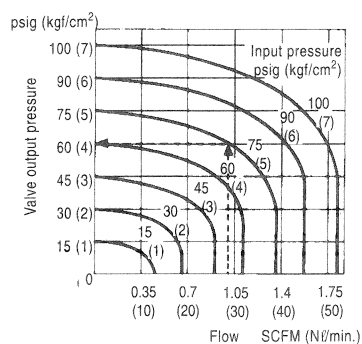


CYLINDER SPEED



AIR FLOW

H030 Series



VALVE PORT DIMENSIONS

Model	Port	Type	Dimensions
H(V)030E1	P	Female thread	10-32 UNF
	A		
	R	—	0.07" (1.8mm) dia. hole
H030-4E1	P	Female thread	10-32 UNF
	A, B		
	R	—	0.07" (1.8mm) dia. hole

VALVE WEIGHTS

oz. (gf)

Model	Weight per unit
H030E1	2.0 (57)
H030-4E1	2.5 (71)

MANIFOLD CONNECTION PORT DIMENSIONS

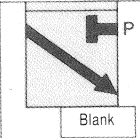
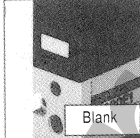
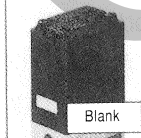
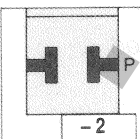
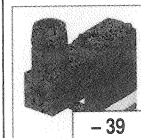
Manifold model	Port	Component	Dimensions
HYM□T	P	Manifold	10-32 UNF
	A	Valve	
	R	Manifold	M6x1
HYM□F	P	Manifold	10-32 UNF
	A, B	Valve	
	R	Manifold	M6x1
HYM□F01	P	Manifold	1/8" NPT
	A, B	Valve	10-32 UNF
	R	Manifold	1/8" NPT

MANIFOLD WEIGHT

oz. (gf)

Type	Weight calculation of each station (n = number of stations)	Block-off plate
HYM□T	$0.4 \times n (11 \times n) - 0.04 (1)$	0.11 (3)
HYM□F	$0.7 \times n (20.5 \times n) - 0.04 (1)$	
HYM□F01	$0.7 \times n (20 \times n) + 0.8 (23)$	

H030 SERIES ORDERING NOMENCLATURE

		Model	2- and 3-way valve function	Manual override	Connector type Standard length 12 in. (300)	Voltage
Direct piping	2- and 3-port	H030E1	3-way  Blank	Non-locking type Manual override  Blank	Grommet type  Blank	
	2- and 3-port	HV030E1	2-way  - 2	Protruding locking type Manual override  - 83	Straight plug connector with LED  - PSL	12VDC 120VAC
	5-port	H030-4E1			L-type plug connector with LED  - PLL DIN-type  - 39 Not available with LED	24VDC 240VAC

Note: Optional lead wire length for code -PSL, -PLL:
ℓ 3 – 108 in. (3000) [example: -PSL ℓ 3]

H030 MANIFOLD

Manifold model			
Manifold 2- and 3-way only	HYM	2	T
Manifold for 2-, 3-, and 5-way valves		10 (20)	F F01

T and F type manifolds are 2-10 station.
F01 manifolds are 2-20 station.

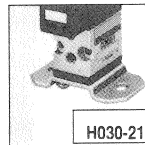
OPTIONAL PARTS

Muffler

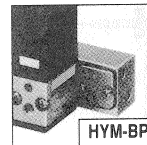


For manifold only.

Mounting base



Block-off plate

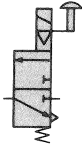


OPERATING PRINCIPLE AND MATERIALS OF MAIN PARTS

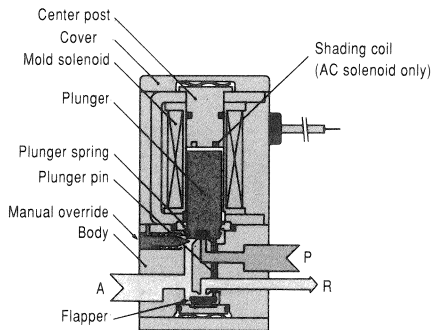
2- AND 3-WAY

H(V)030E1

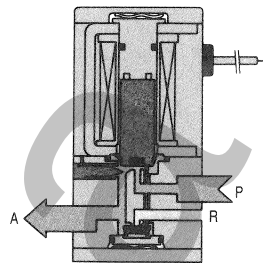
Normally closed (N/C)



De-energized



Energized



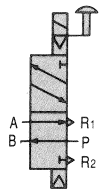
MATERIALS OF MAIN PARTS

Part	Material
Body	Aluminum
O-ring	Buna
Flapper	Buna
Diaphragm	Polyurethane
Plunger	Electro magnetic
Center post	Stainless steel
Spring	Stainless steel
Mounting base	Steel (zinc plated)
Body	Aluminum
Block-off plate	Steel (zinc plated)
Bracket	Steel (zinc plated)
Packing	Buna

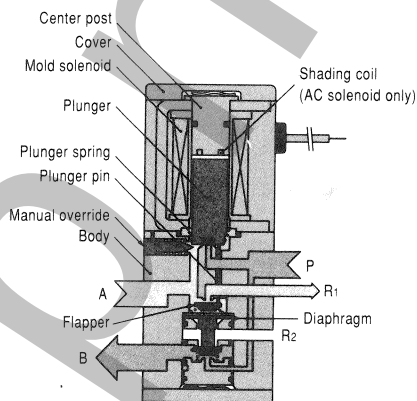
4-WAY

H030-4E1

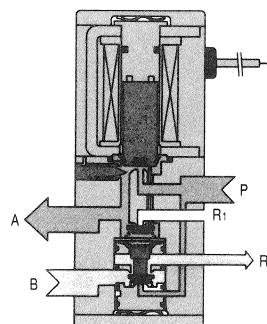
Single solenoid



De-energized



Energized

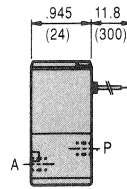
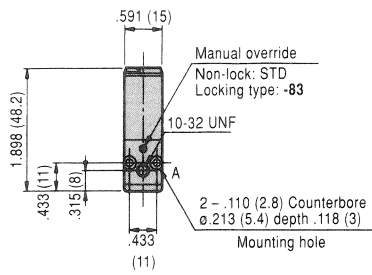


SOLENOID VALVE DIMENSION DIAGRAMS

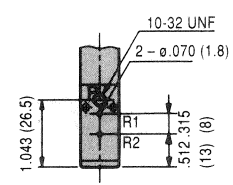
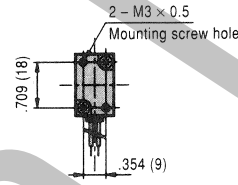
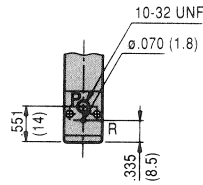
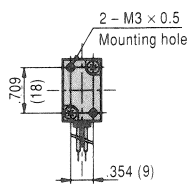
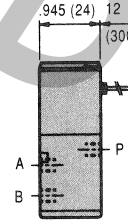
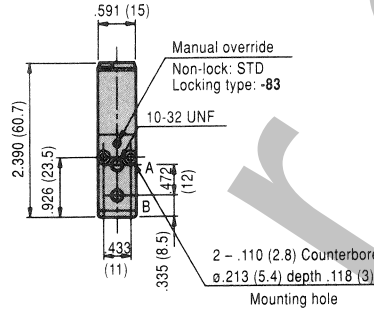
in. (mm)

2-, 3-way

H(V)030E1

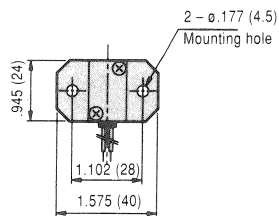
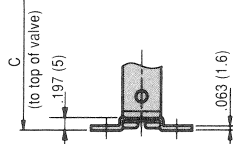


H030-4E1



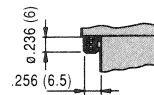
ADDITIONAL PARTS (sold separately)

Mounting base: H030-21

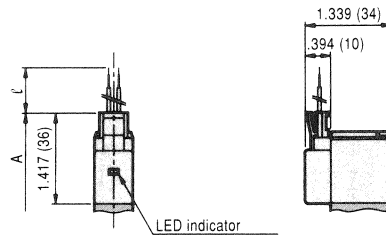


OPTIONS

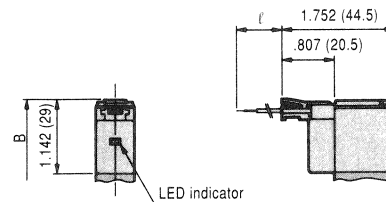
Locking protruding type manual override: -83



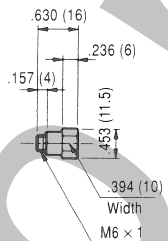
Straight connector solenoid: -PSL



L-connector solenoid: -PLL



Muffler: KM-06



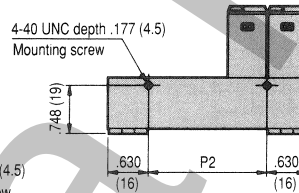
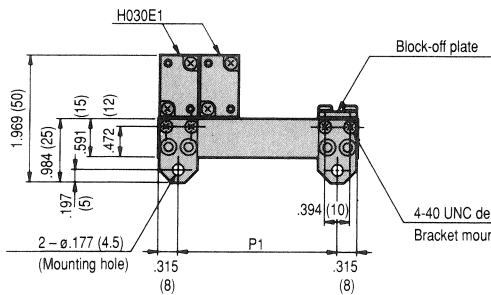
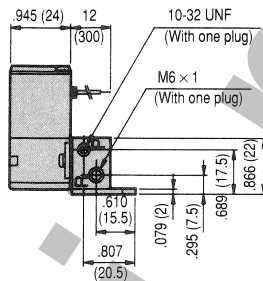
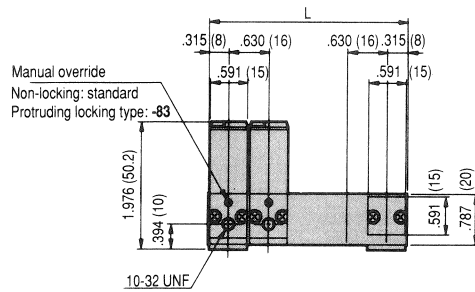
Type	Letter			Lead wire length - in. (mm)	Note
	A	B	C		
H(V)030E1	2.205 (56)	1.929 (49)	2.094 (53.2)	-PSL, -PLL: 12 (300)	Length to valve or subbase
H030-4E1	2.697 (68.5)	2.421 (61.5)	2.587 (65.7)	Optional length: L 1; 108 (3000)	

MANIFOLD DIMENSION DIAGRAMS

in. (mm)

2-, 3-way

HYM□T



DIMENSIONS BY UNIT

in. (mm)

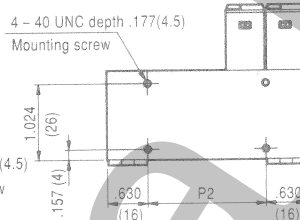
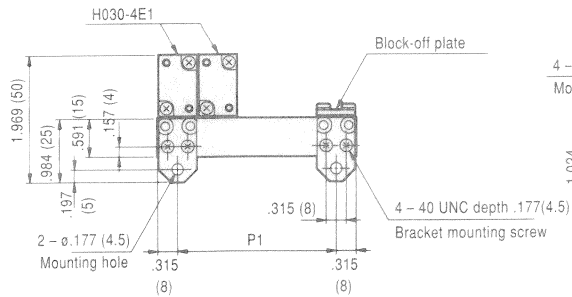
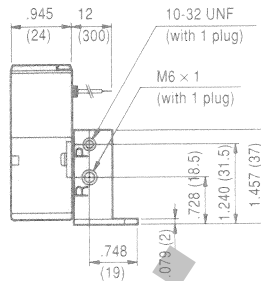
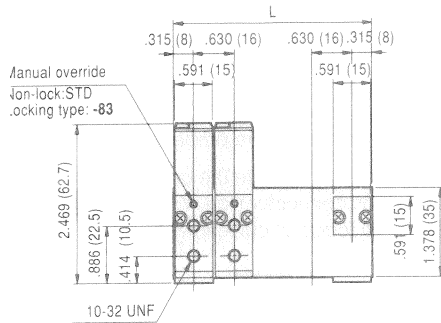
Model	L	P1	P2
HYM2T	1.260 (32)	0.630 (16)	-
HYM3T	1.890 (48)	1.260 (32)	0.630 (16)
HYM4T	2.520 (64)	1.890 (48)	1.260 (32)
HYM5T	3.150 (80)	2.520 (64)	1.890 (48)
HYM6T	3.780 (96)	3.150 (80)	2.520 (64)
HYM7T	4.409 (112)	3.780 (96)	3.150 (80)
HYM8T	5.039 (128)	4.409 (112)	3.780 (96)
HYM9T	5.669 (144)	5.039 (128)	4.409 (112)
HYM10T	6.299 (160)	5.669 (144)	5.059 (128)

MANIFOLD DIMENSION DIAGRAMS

in. (mm)

-, 3-, and 4-way

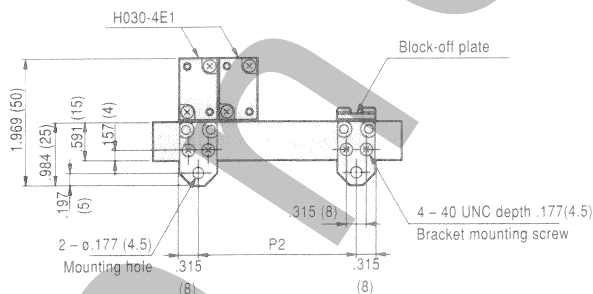
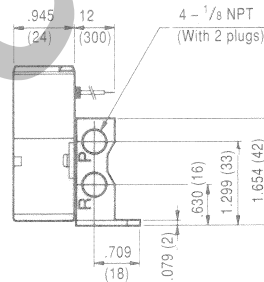
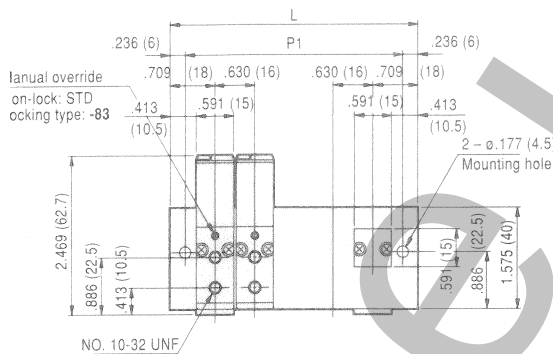
HYM□F

DIMENSIONS
BY UNIT

in. (mm)

Model	L	P1	P2
HYM2F	1.260 (32)	0.630 (16)	-
HYM3F	1.890 (48)	1.260 (32)	0.630 (16)
HYM4F	2.520 (64)	1.890 (48)	1.260 (32)
HYM5F	3.150 (80)	2.520 (64)	1.890 (48)
HYM6F	3.780 (96)	3.150 (80)	2.520 (64)
HYM7F	4.409 (112)	3.780 (96)	3.150 (80)
HYM8F	5.039 (128)	4.409 (112)	3.780 (96)
HYM9F	5.669 (144)	5.039 (128)	4.409 (112)
HYM10F	6.299 (160)	5.669 (144)	5.059 (128)

HYM□F01

DIMENSIONS
BY UNIT

in. (mm)

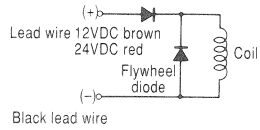
Model	L	P1	P2
HYM2F01	2.047 (52)	1.575 (40)	0.630 (16)
HYM3F01	2.677 (68)	2.205 (56)	1.260 (32)
HYM4F01	3.307 (84)	2.835 (72)	1.890 (48)
HYM5F01	3.937 (100)	3.465 (88)	2.520 (64)
HYM6F01	4.567 (116)	4.094 (104)	3.150 (80)
HYM7F01	5.197 (132)	4.724 (120)	3.780 (96)
HYM8F01	5.827 (148)	5.354 (136)	4.409 (112)
HYM9F01	6.457 (164)	5.984 (152)	5.039 (128)
HYM10F01	7.087 (180)	6.614 (168)	5.669 (144)
HYM11F01	7.717 (196)	7.244 (184)	6.299 (160)
HYM12F01	8.346 (212)	7.874 (200)	6.929 (176)
HYM13F01	8.976 (228)	8.504 (216)	7.559 (192)
HYM14F01	9.606 (244)	9.134 (232)	8.189 (208)
HYM15F01	10.236 (260)	9.764 (248)	8.819 (224)
HYM16F01	10.866 (276)	10.394 (264)	9.449 (240)
HYM17F01	11.496 (292)	11.024 (280)	10.079 (256)
HYM18F01	12.126 (308)	11.654 (296)	10.709 (272)
HYM19F01	12.756 (324)	12.283 (312)	11.339 (288)
HYM20F01	13.386 (340)	12.913 (328)	11.969 (304)

PROPER HANDLING AND PRECAUTIONS

SOLENOID

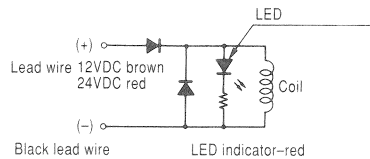
INTERNAL CIRCUIT

STANDARD SOLENOID (Transient suppression)



SOLENOID WITH LED INDICATOR (Transient suppression)

Order No. -PSL, -PLL



CAUTIONS

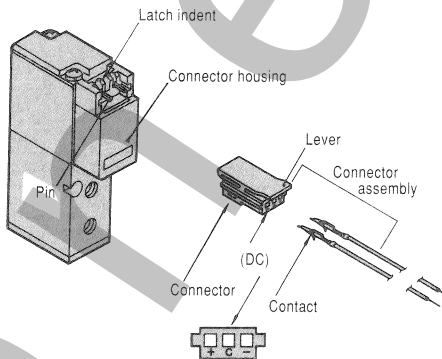
1. Do not apply megger across lead wires.
2. Valve is polarity protected.
3. If current leakage within the circuit exceeds the maximum recommended value, the solenoid may not drop out. This malfunction is demonstrated by the valve not returning to the "home" position when de-energized.

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.

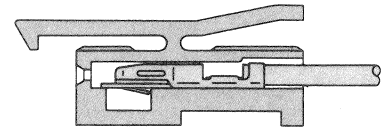
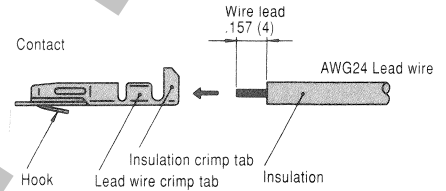


MOUNTING AND DISMOUNTING CONTACT FROM CONNECTOR

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.

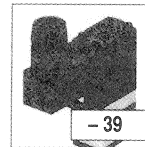
To remove lead wire and contact, locate the contact barb through rectangular hole on connector side. While pushing down on barb with a small tool, pull out lead wire.



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.

DIN CONNECTOR: -39



High performance in contamination and environmental protection.

Surge suppressors are equipped as standard feature.

LED indicator cannot be used.

Solenoid w/DIN connector:

No need to strip lead wire. Insert lead wire into terminal body until seated with stopper and press down with pliers to ensure positive connection with the contact.

MANUAL OVERRIDE

NON-LOCKING

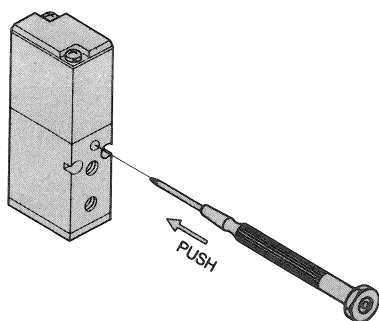
Actuate valve by fully depressing manual override with small tool. Valve remains actuated until manual override is released. Upon release, valve spring returns valve to normal position.

LOCKING

Use a small tool to push in and turn manual override more than 45° to actuate. 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 actuate, it may be operated like a non-locking override merely by depressing.



CAUTIONS

- Since H030-4E1 valves are indirect acting, manual override will not actuate unless air is applied to IN port.
- Do not use a sharp instrument to operate the override as it may damage the button.
- Take care to release locking override before resuming normal operation.

MANIFOLD

PIPING

Ports P and R are located at both ends of the manifold. Piping direction can be determined according to the mounting location. Ports at one end of the manifold are temporarily plugged during shipping. Remove plugs and reseal with sealing agent.

BLOCK OFF PLATE

Use Block Off Plate to close stations when they are not in use. See chart on page 16 for proper model.

CAUTIONS

- For P port piping, make sure to select fitting sizes to fit the manifold connecting pipe dimensions. Actuators may not operate properly if there is insufficient flow and/or pressure due to improper piping.
- When installing fittings or mufflers to R port, make sure that exhaust remains unrestricted. Restriction of exhaust may cause actuators to operate erratically. Consider using R ports at both ends of manifold to enhance exhaust.
- When several manifold valves are to be operated simultaneously, connect supply air to both ends of manifold. Also exhaust through both ends of manifold. This ensures adequate supply and exhaust capacity.

POINTS TO BE CONSIDERED

INSTALLATION

- Mount valves in any direction. However, mount valves perpendicular to significant shock or vibration.
- Location near water, oil, or in excessively dusty conditions requires adequate solenoid housing protection to prevent solenoid actuator contamination. Also consider the installation of breather/muffler in exhaust ports to prevent foreign objects from entering valves.
- Before installing fittings and tubing, blow all foreign material from them. If using a sealant, take extra care that sealant does not enter valve causing potential malfunction and/or leaks.
- When valves are installed in tight enclosures, consider the possibility of heat build up. Ensure adequate ventilation.
- Valves with A or B ports open to atmosphere will not operate properly.

AIR SOURCE

- Use compressed air or inert gas in accordance with the pressure rating in the specifications.
- 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.
- For optimum performance, use largest possible tubing size and minimum tubing length.

LUBRICATION

No externally applied lubrication is required. However, when dry air is used (air that does not contain water or oil), use of a turbine SAE 20 oil (ISO VG32) or equivalent is recommended. Thin or low viscosity oils (spindle oil, machine oil, etc.) do not provide a good residual film of lubrication, thus should not be used.

AIR QUALITY

These valves cannot be used when media or ambient conditions contain organic solvents, phosphoric acid, ester type machine oil, sulfuric acid gas, or other acids.