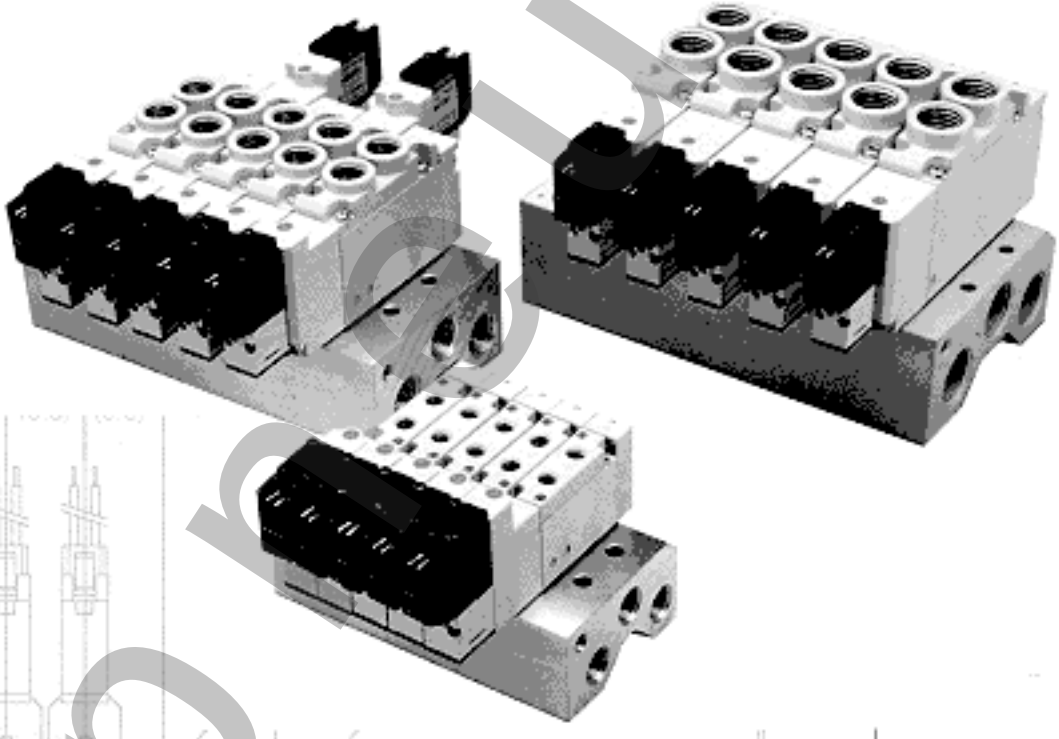
Humphrey
SUPERIOR SERVICE. UNLEASHED.

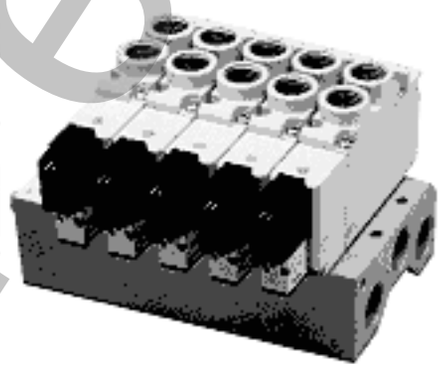
CATALOG HGF

HUMPHREY HGF SERIES PNEUMATIC CONTROL VALVES



- Two or three position, four way valves
- Compact size
- Three flow rates (Cv = 0.28, 0.56, 1.00)
- Low power consumption (0.5w on DC, 1.0w on AC)
- Long life
- LED standard
- Locking and non locking override standard
- Externally piloted valves or vacuum valves also available

HGF SERIES



The *new* HGF Series Pneumatic Solenoid Valves offer the OEM or end user a combination of a simple, reliable valve design and state of the art performance, outstanding versatility and long life.

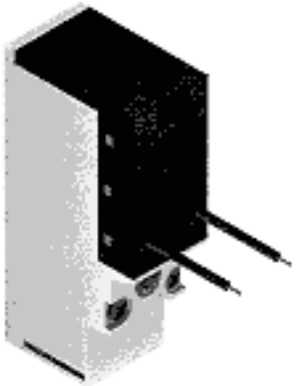
Two or three position 4-way valves in three sizes are available with overrides, LEDs as standard and inline or manifold mounting.

HIGH FLOW

High flow design. The HGF Series has more than twice the flow of comparably sized valves.

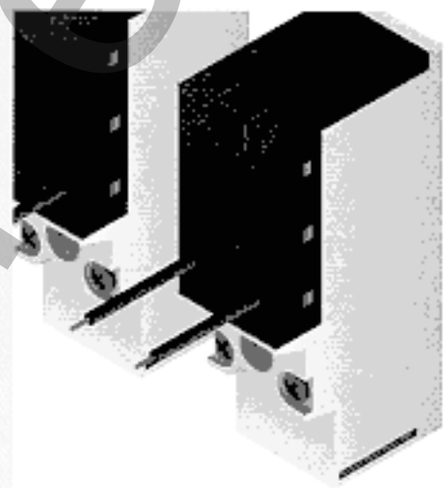
The flow path has been maximized to achieve a Cv of 0.28 in a 10mm body, 0.56 in 15mm, and 1.0 in 18mm.

LOW POWER



Power consumption on the HGF Series is 0.5 watts for DC operation and 1.0 watts for AC operation. Low power consumption provides for smaller, more economical power supplies, or more solenoids operated off of the same power supply. Battery operated, portable devices are also possible.

SET UP AND TROUBLESHOOTING

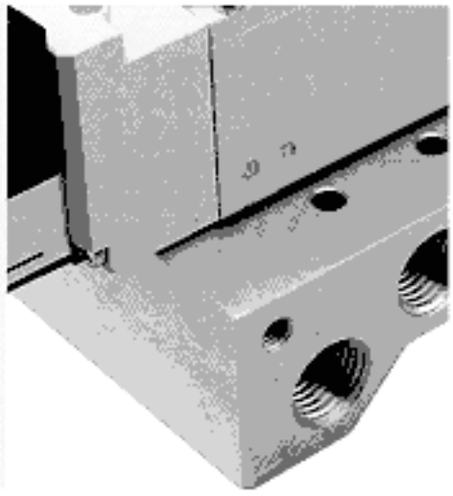


Every HGF valve is offered with two manual overrides on different surfaces for easy manual operation during machine set up or troubleshooting.

LEDs are standard equipment and act as visual indicators of solenoid actuation.

Pneumatic tubing connections do not have to be disturbed if valves are changed.

CLEAN OPERATION



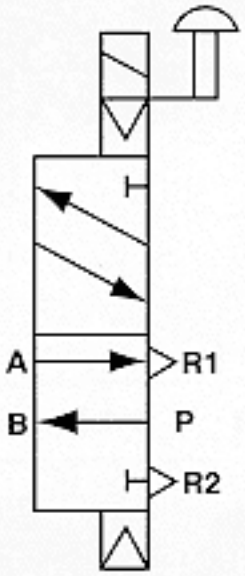
More manufacturing facilities are demanding cleaner pneumatic products and complete control of the exhausting compressed air . . . . . including facilities such as clean rooms.

Exhausting air from the primary exhaust, *and from the pilot exhaust*, on HGF Series manifold or subbase mounted valves can be piped away.

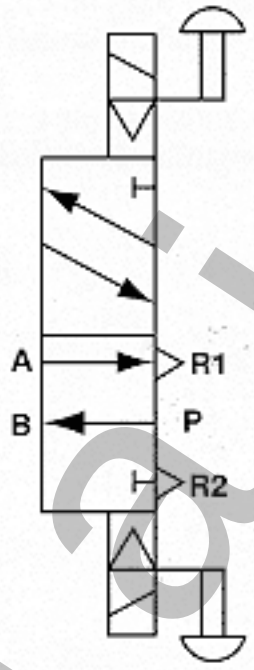
THE TOTAL PACKAGE

- State of the art performance: high flow, low power, small size, low cost.
- Clean lines and a lighter, attractive appearance enhance the look of your finished product.
- Many mounting and function options to choose from.

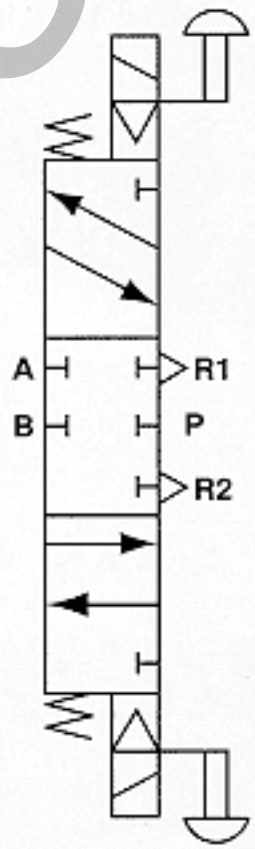
SINGLE SOLENOID



DOUBLE SOLENOID



THREE POSITION, DOUBLE SOLENOID



MANIFOLD MOUNT

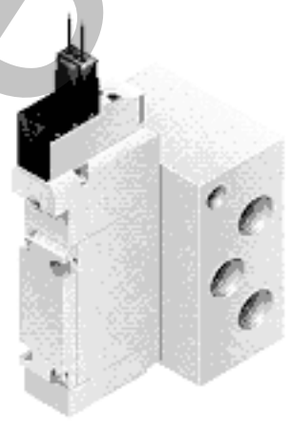
Both two and three position valves can be mounted onto manifolds that are available in two through twenty stations. All exhausting air from the valves through the manifold can be captured and piped away.

Delivery port plates and blocking plates on the valves and on the manifolds are interchangeable, adding to the versatility of the HGF Series.

- Purchase delivery port plates on the manifold as standard, and select manifold mount valves (all piping ports in manifold) to achieve easy serviceability, and horizontal piping.
- Or exchange blocking plates on the manifold and delivery port plates on the valves for vertical piping and space saving.

SUBBASE MOUNTED VALVES

Mounting the manifold type valve to a single station subbase provides manifold benefits in single valve applications.



INLINE VALVES

The base valve can be ordered with an input port block for inline valve functions.

ELECTRICAL OPTIONS

There are three electrical connection options:

- PS-type: straight connector (300 mm or 3000 mm lead wires).
- PL-type: vertical connector (300 mm or 3000 mm lead wires).
- Grommet type: lead wires (300 mm length).

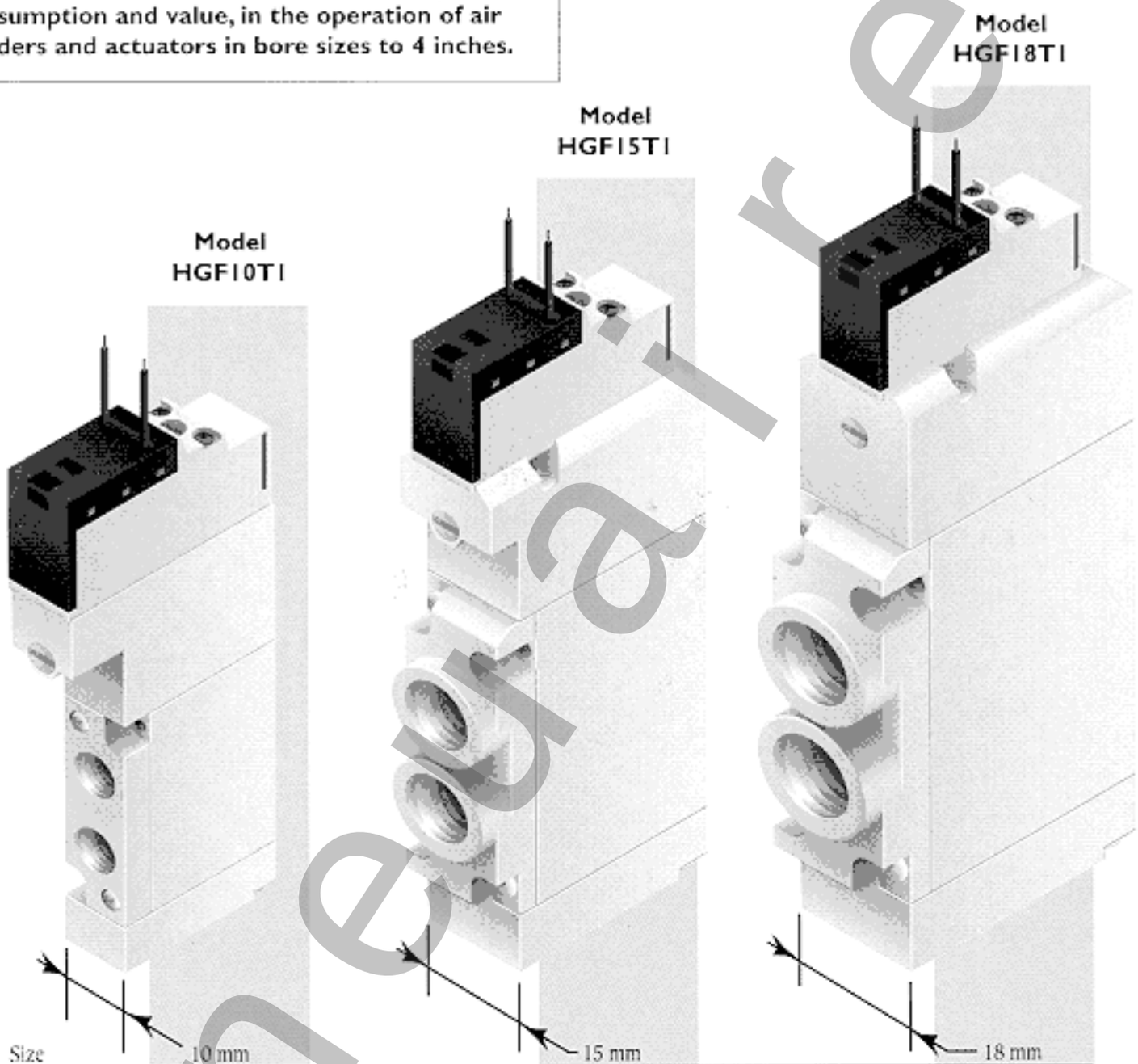
All three have LED, standard.

PS-type

PL-type

Grommet type

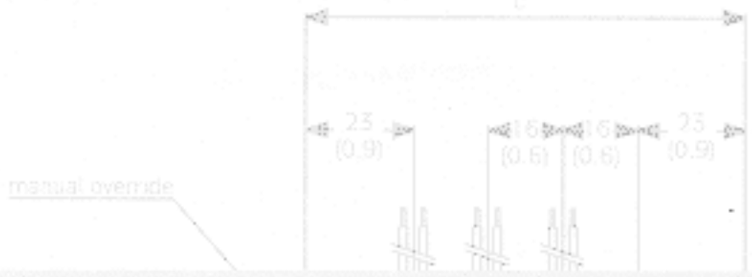
HGF Series . . . State of the Art size, flow, power consumption and value, in the operation of air cylinders and actuators in bore sizes to 4 inches.



Size	10 mm	15 mm	18 mm
Flow	0.28 Cv	0.56 Cv	1.00 Cv
Power	0.5 watt	0.5 watt	0.5 watt

Basic mode	HGF□T1	HGF□T2	HGF□T3
Type	4-way	4-way	4-way
Number of positions	2	2	3
Number of ports	5	5	5
Valve function	single solenoid	double solenoid	double solenoid block center

□ = Specify 10, 15, or 18 mm size.



Specifications

	Models HGF10 T1	HGF10 T2	HGF10 T3	HGF15 T1	HGF15 T2	HGF15 T3	HGF18 T1	HGF18 T2	HGF18 T3
Media	Air or Inert Gases (for vacuum see note)								
Flow - Cv	0.28	0.28	0.25	0.56			1.00		
On/Off Response time - ms: DC	15/20	15/20	15/30	20/35	20/35	15/50	30/50	30/50	20/70
AC	15/15	15/15	15/25	20/25	20/25	15/40	25/40	25/40	20/60
Port threads	10-32			1/8 NPT			1/4 NPT		
Pressure range PSI	30 - 100			20 - 100			20 - 100		
Maximum cycles/second	5								
Operating temperature F° (C°)	40 - 122 (5 - 50)								
Mounting direction	Unrestricted								
Operation (see notes)	Internal pilot								
Shock resistance G	60, or in stem direction 30.0								
Filtration	40 micron recommended								
Lubrication	Not required, but if needed, use turbine oil type 1 (ISO VG32 or equivalent, or lithium grease)								
Major materials	Plastic, Diecast aluminum, buna, magnetic stainless steel, aluminum								

Note: For low body pressure applications, specify external pilot option (code G, ex HGF10T1G). Body pressure range is 0 - 100 psi and external pilot pressure range is 30 - 100 psi.

Note: For vacuum pressure applications, specify vacuum option (code V, ex HGF10T1V). Body pressure range is 28"Hg - 20 psi and external pilot pressure range is 30 - 100 psi.

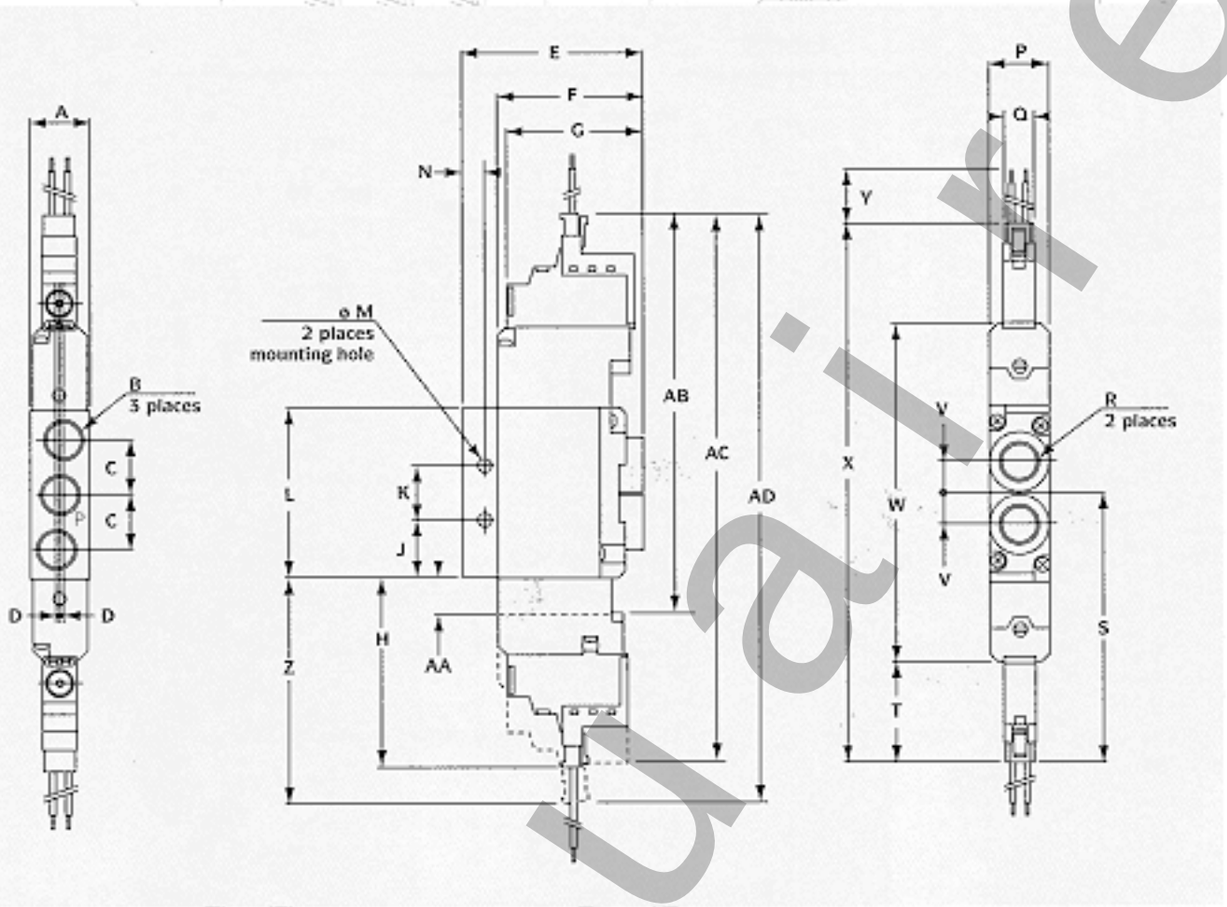
Electrical specifications

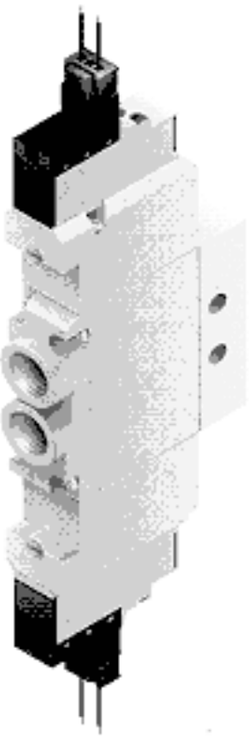
	12 VDC	24VDC	120 VAC*	240 VAC*
Operating voltage range (V)	10.8 - 13.2 (12 ± 10%)	21.6 - 26.4 (24 ± 10%)	108 - 132 (120 ± 10%)	216 - 264 (240 ± 10%)
Rated frequency (Hz)	-	-	50 60	
Current (at rated voltage) (mA (r.m.s.))	42	21	11	8
Power consumption	0.5W		1.1VA	1.6VA
Allowable circuit current leak (mA)	1.0		1.0	
Lead wire color	Red (+), Black (-)		Yellow	White
Surge suppressor	Flywheel diode		Full wave bridge rectifier	
LED indicator color	Red			
Insulation resistance (MΩ)	Minimum 100			
Wiring method and lead wire length	Grommet type: 300 mm Plug connector type: 300 mm, 3000 mm			

***Note:** Valves with AC voltages have full wave bridge rectifier. Therefore, inrush current and holding current are identical. When valves with AC voltages are energized for long periods of time, please contact the factory. When valves with AC voltages are in operation, make sure to maintain ambient temperatures within catalog specifications.

HGF SERIES DIMENSIONS

INLINE





mm (in)	A	B	C	D	E	F
HGF10	12 (0.47)	10-32 UNF	10 (0.39)	1.6 (0.06)	41.5 (1.63)	33 (1.30)
HGF15	16 (0.63)	1/8 NPT	14.5 (0.57)	1 (0.04)	46.5 (1.83)	37 (1.46)
HGF18	20 (0.79)	1/4 NPT	19 (0.75)	2 (0.08)	55.5 (2.19)	44 (1.73)

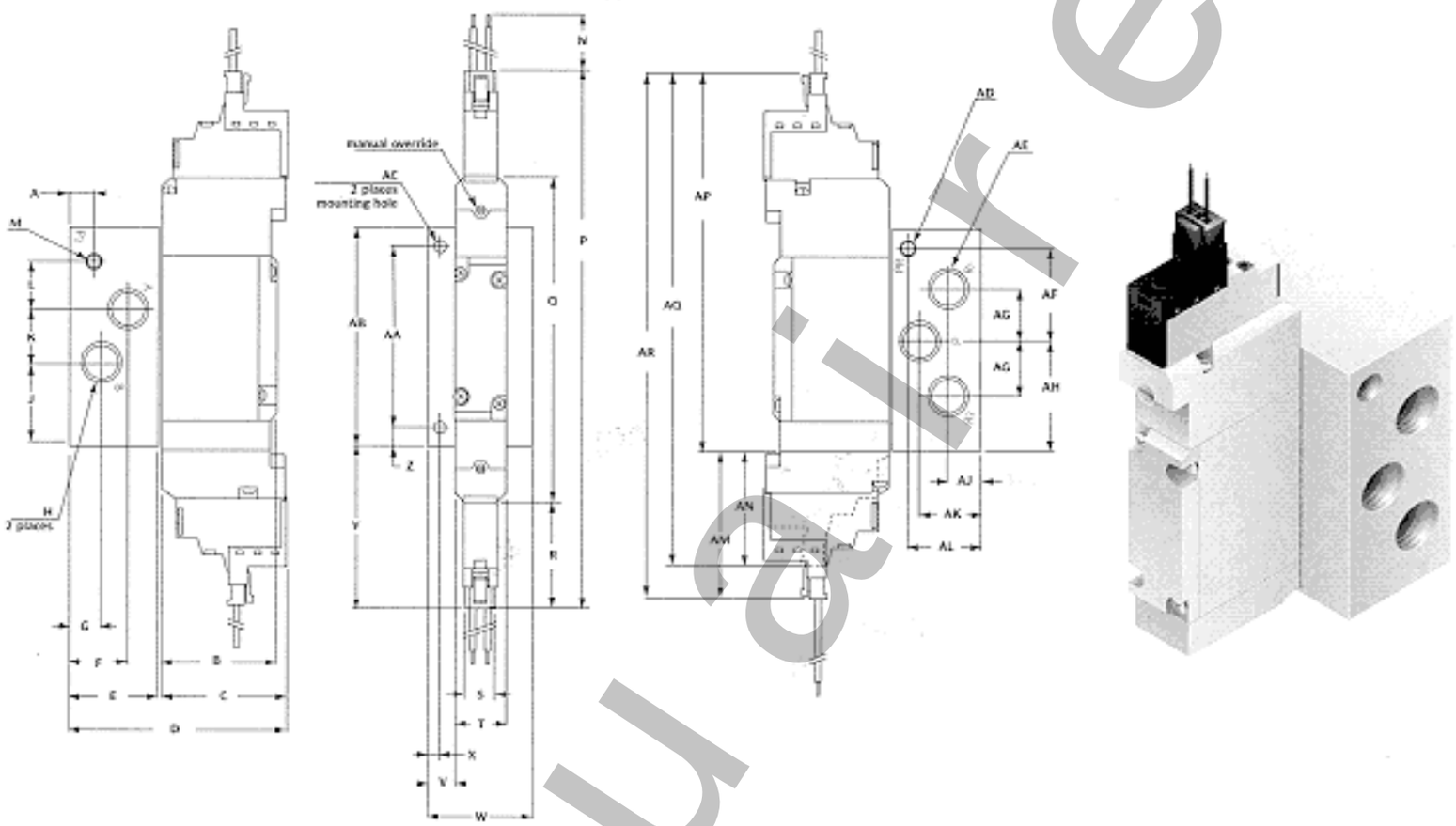
	G	H	J	K	L	M
HGF10	24 (0.94)	48.7 (1.92)	11.5 (0.45)	10 (0.39)	33 (1.30)	3.2 (0.13)
HGF15	35 (1.38)	51.2 (2.02)	15.5 (0.61)	15 (0.59)	46 (1.81)	3.4 (0.13)
HGF18	35.5 (1.40)	52.7 (2.07)	17.5 (0.69)	19 (0.75)	54 (2.13)	4.5 (0.18)

	N	P	Q	R	S	T
HGF10	5 (0.20)	10 (0.39)-	10 (0.39)	10-32 UNF	65.2 (2.57)	30.2 (1.19)
HGF15	6 (0.24)	15 (0.59)	10 (0.39)	1/8 NPT	84.2 (3.31)	29.7 (1.17)
HGF18	7 (0.28)	18 (0.71)	10 (0.39)	1/4 NPT	91.7 (3.61)	29.7 (1.17)

	V	W	X	Y	Z	AA
HGF10	70 (2.76)	5.9 (0.23)	130.4 (5.13)	300 (11.81)	56.5 (2.22)	6.5 (0.26)
HGF15	99 (3.90)	7.75 (0.31)	158.4 (6.24)	300 (11.81)	61.2(2.42)	9 (0.35)
HGF18	112 (4.41)	9.5 (0.37)	171.4 (6.75)	300 (11.81)	64.7 (2.55)	10.5 (0.41)

	AB	AC	AD
HGF10	88.2 (3.47)	130.4 (5.13)	138.4 (5.45)
HGF15	106.2 (4.18)	148.4 (5.83)	158.4 (6.24)
HGF18	117.2 (4.61)	159.4 (6.28)	171.4 (6.75)

SUBBASE



mm (in)	A	B	C	D	E	F
HGF10	6 (0.23)	24 (0.94)	33 (1.30)	57.5 (2.26)	24 (0.94)	14.5 (0.57)
HGF15	7.5 (0.30)	32 (1.26)	35 (1.38)	60.5 (2.38)	25 (0.98)	17 (0.67)
HGF18	19 (0.75)	35.5 (1.40)	37 (1.46)	67.5 (2.66)	30 (1.18)	24 (0.94)

	G	H	J	K	L	M
HGF10	7.5 (0.30)	1/8 NPT	18.8 (0.74)	12.4 (0.49)	9.7 (0.38)	10-32
HGF15	9 (0.35)	1/8 NPT	23.5 (0.93)	12 (0.47)	12 (0.47)	10-32
HGF18	10 (0.39)	1/4 NPT	23.5 (0.93)	20 (0.79)	16.5 (0.65)	10-32

	N	P	Q	R	S	T
HGF10	300 (11.81)	138.4 (5.45)	78 (3.07)	30.2 (1.19)	10 (0.39)	10 (0.39)
HGF15	300 (11.81)	158.4 (5.84)	89 (3.50)	29.7 (1.17)	10 (0.39)	15 (0.59)
HGF18	300 (11.81)	171.4 (6.75)	112 (4.41)	29.7 (1.17)	10 (0.39)	18 (0.71)

	V	W	X	Y	Z	AA
HGF10	8 (0.32)	25 (0.98)	3 (0.12)	48.2 (1.90)	3 (0.12)	44 (1.73)
HGF15	7.5 (0.30)	30 (1.18)	3.5 (0.14)	43.2 (1.70)	6 (0.24)	50 (1.97)
HGF18	8 (0.32)	34 (1.34)	3.5 (0.14)	55.7 (2.19)	6 (0.24)	60 (2.36)

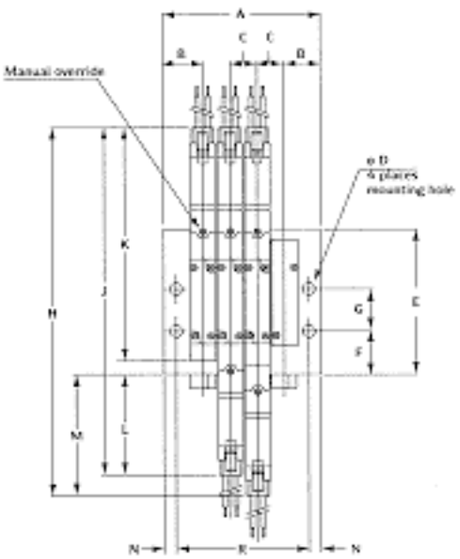
	AB	AC	AD	AE	AF	AG
HGF10	50 (1.97)	3.2 (0.13)	10-32	1/8 NPT	19.5 (0.77)	11 (0.43)
HGF15	62 (2.44)	3.4 (0.13)	10-32	1/8 NPT	26 (1.02)	15 (0.59)
HGF18	72 (2.83)	4.5 (0.18)	10-32	1/4 NPT	31 (1.22)	20 (0.79)

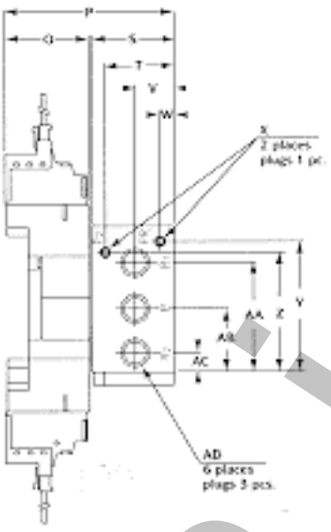
	AH	AJ	AK	AL	AM	AN
HGF10	25 (0.98)	7.5 (0.30)	16.5 (0.65)	19 (0.75)	48.2 (1.90)	40.2 (1.58)
HGF15	31 (1.22)	9 (0.35)	17 (0.67)	20 (0.79)	53.2 (2.09)	43.2 (1.70)
HGF18	36 (1.42)	15 (0.59)	20 (0.79)	25 (0.98)	55.7 (2.19)	43.7 (1.72)

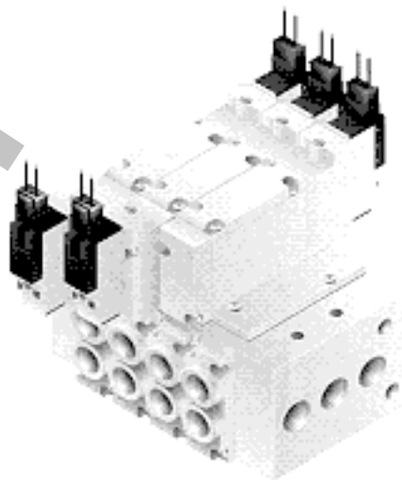
	AP	AQ	AR
HGF10	88.2 (3.47)	130.4 (5.13)	138.4 (5.45)
HGF15	106.2 (4.18)	148.4 (5.83)	158.4 (6.24)
HGF18	117.2 (4.61)	159.4 (6.28)	171.4 (6.75)

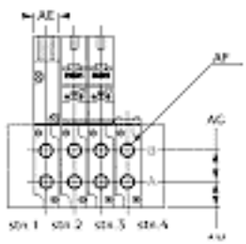
HGF SERIES DIMENSIONS

A TYPE MANIFOLD









stn. 1: 2 position, single solenoid
stn.2: 2 position, double solenoid
stn.3: 3 position, double solenoid
stn.4: block-off plate

mm (in)	B	C	D	E	F	G
HGF10	14 (0.55)	10.5 (0.41)	4.5 (0.18)	56 (2.20)	16.5 (0.65)	16 (0.63)
HGF15	16 (0.63)	16 (0.63)	4.5 (0.18)	64 (2.52)	22.5 (0.89)	18 (0.71)
HGF18	19 (0.75)	19 (0.75)	4.5 (0.18)	77 (3.03)	25 (0.98)	23 (0.91)

	H	J	K	L	M	N
HGF10	138.4 (5.45)	130.4 (5.13)	88.2 (3.47)	36.7 (1.44)	44.7 (1.76)	4 (0.16)
HGF15	158.4 (6.24)	148.4 (5.83)	106.2 (4.18)	42.7 (1.68)	52.7 (2.07)	4 (0.16)
HGF18	171.4 (6.75)	159.4 (6.28)	117.2 (4.61)	42.7 (1.68)	54.7 (2.15)	5 (0.19)

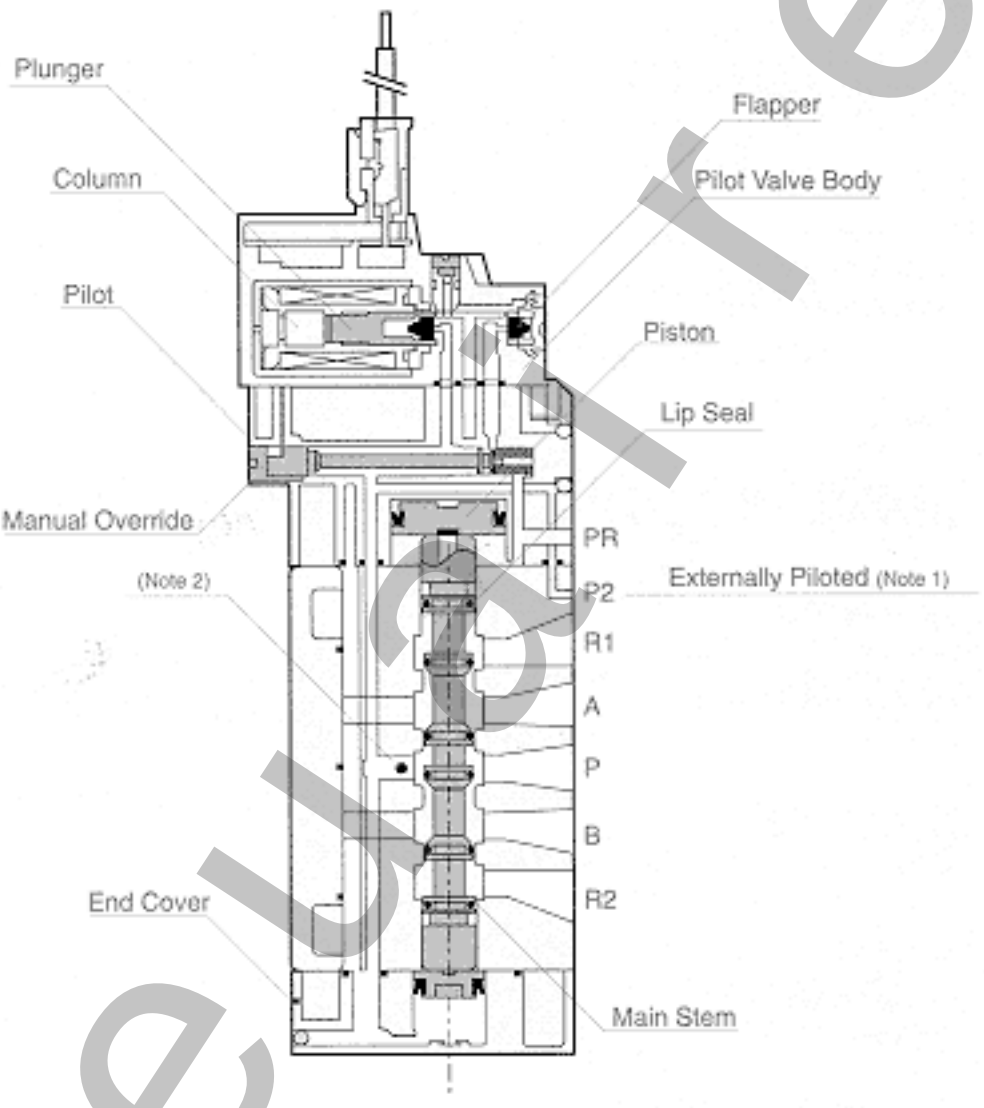
	P	Q	S	T	V	W
HGF10	65.5 (2.58)	33 (1.30)	32 (1.26)	26 (1.02)	16 (0.63)	6 (0.24)
HGF15	81.5 (3.21)	35 (1.38)	46 (1.81)	38 (1.50)	23 (0.91)	9 (0.35)
HGF18	89 (3.50)	35.5 (1.40)	53 (2.09)	40 (1.57)	25 (0.98)	11 (0.43)

	X	Y	Z	AA	AB	AC
HGF10	10-32 UNF	50 (1.97)	50 (1.97)	41 (1.61)	24.5 (0.96)	8 (0.32)
HGF15	10-32 UNF	58 (2.28)	54.5 (2.15)	50 (1.97)	30 (1.18)	10 (0.39)
HGF18	10-32 UNF	70 (2.76)	65 (2.56)	61 (2.40)	36.5 (1.44)	12 (0.47)

	AD	AE	AF	AG	AH
HGF10	1/8 NPT	10 (0.39)	10-32 UNF	11.8 (0.46)	10.1 (0.40)
HGF15	1/4 NPT	15 (0.59)	1/8 NPT	15.5 (0.61)	15.3 (0.60)
HGF18	3/8 NPT	18 (0.71)	1/4 NPT	19 (0.75)	17 (0.67)

Number of Stations	HGF10		HGF15		HGF18	
	A	R	A	R	A	R
2	38.5 (1.52)	30.5 (1.20)	48 (1.89)	40 (1.57)	57 (2.24)	47 (1.85)
3	49 (1.93)	41 (1.61)	64 (2.52)	56 (2.20)	76 (2.99)	66 (2.60)
4	59.5(2.34)	51.5 (2.03)	80 (3.15)	72 (2.80)	95 (3.74)	85 (3.35)
5	70 (2.76)	62 (2.44)	96 (3.78)	88 (3.46)	114 (4.49)	104 (4.09)
6	80.5 (3.17)	72.5 (2.85)	112 (4.41)	104 (4.09)	133 (5.24)	123 (4.84)
7	91 (3.58)	83 (3.27)	128 (5.04)	120 (4.72)	152 (5.98)	142 (5.59)
8	101.5 (4.00)	93.5 (3.68)	144 (5.67)	136 (5.35)	171 (6.73)	161 (6.34)
9	112 (4.41)	104 (4.09)	160 (6.30)	152 (5.98)	190 (7.48)	180 (7.09)
10	122.5 (4.82)	114.5 (4.51)	176 (6.93)	168 (6.61)	209 (8.23)	199 (7.83)
11	133 (5.24)	125 (4.92)	192 (7.56)	184 (7.24)	228 (8.98)	218 (8.58)
12	143.5 (5.65)	135.5 (5.33)	208 (8.19)	200 (7.87)	247 (9.72)	237 (9.33)
13	154 (6.06)	146 (5.75)	224 (8.82)	216 (8.50)	266 (10.47)	256 (10.08)
14	164.5 (6.48)	156.5 (6.16)	240 (9.45)	232 (9.13)	285 (11.22)	275 (10.83)
15	175 (6.89)	167 (6.57)	256 (10.08)	248 (9.76)	304 (11.97)	294 (11.57)
16	185.5 (7.30)	177.5 (7.00)	272 (10.71)	264 (10.39)	323 (12.72)	313 (12.32)
17	196 (7.72)	188 (7.40)	288 (11.34)	280 (11.02)	342 (13.46)	332 (13.07)
18	206.5 (8.13)	198.5 (7.81)	304 (11.97)	296 (11.65)	361 (14.21)	351 (13.82)
19	217 (8.54)	209 (8.23)	320 (12.60)	312 (12.28)	380 (14.96)	370 (14.57)
20	227.5 (8.96)	219.5 (8.64)	3	328 (12.91)	399 (15.71)	389 (15.31)

PARTS IDENTIFICATION



Note 1: For externally piloted type only.
Note 2: Externally piloted type does not contain this portion.

Material

Valve

Part name	Part material
Valve body	Aluminum die cast
Pilot valve body	Plastic
Main stem	Aluminum alloy
Lip seal	Synthetic rubber
Flapper	Synthetic rubber
Plunger	Electro-magnet stainless steel
Column	Electro-magnet stainless steel
Piston	Plastic
Manual override	Plastic
Pilot	Plastic
End cover	Plastic

Manifold

Part name	Part material
Solid body type	Aluminum alloy (Almite treated)
Separate body type	Plastic
Block off plate	Soft steel (Nickel plated)
Packing	Synthetic rubber

HGF SERIES
HOW TO ORDER

ORDER CODE, HGF VALVES

HGF 10 T1 G - 80 - FM - PS - 24VDC (order example)

- **AVAILABLE VOLTAGES**
  12VDC, **24VDC**, **120VAC**, 240VAC
- **ELECTRICAL CONNECTIONS**
  No Code Grommet w/LED
  PS Straight-Type Plug-In w/LED, 300 mm lead length
  PL L-Type Plug-In w/LED, 300 mm lead length
  PS3 Straight Plug-In w/LED, 3000 mm lead length
  PL3 L-Type Plug-In w/LED, 3000 mm lead length
- **PORT OPTIONS**
  No code Basic valve
  F4 Inline valve mount (with input port block)
  A1 A-Type manifold mount
- **OVERRIDE**
  80 Non-Locking recessed
- **BASIC OPTIONS**
  No code Standard valve
  G Externally piloted valve (low pressure)
  V Vacuum
- **BODY TYPE**
  T1 Two position, single solenoid
  T2 Two position, double solenoid
  T3 Three position, double solenoid, closed center position
- **VALVE SIZE**
  10 10mm width, 0.28 Cv flow
  15 15mm width, 0.56 Cv flow
  18 18mm width, 1.00 Cv flow

ORDER CODE, HGF MANIFOLDS

HGF 10 M 6 AM G (order example)

- **VALVE PILOT CONNECTION**
  No code Internal Pilot
  G External Pilot
- **MANIFOLD TYPE: AM**
- **NUMBER OF STATIONS**
  Choose from 2 thru 20 stations.
  (4, 6, 8, 10, and 12 in stock)
- **M** Manifold
- **CORRESPONDING VALVE SIZE**
  10 10mm width, 0.28 Cv flow
  15 15mm width, 0.56 Cv flow
  18 18mm width, 1.00 Cv flow

ORDER CODE, HGF PARTS

HGF 10Z G - 25 (order example)

- **PART**
  25 Single station subbase
  P Blank valve plate
  M Ported valve plate
  MP Inline input port block
  GS 1 Valve to manifold gasket
- **VALVE PILOT CONNECTION**
  No code Internal pilot
  G External Pilot
- **CORRESPONDING VALVE SIZE**
  10 10mm width, 0.28 Cv flow
  15 15mm width, 0.56 Cv flow
  18 18mm width, 1.00 Cv flow

ORDER CODE, HGF BLOCK OFF PLATE

HGF 10 BP (order example)

- **VALVE SIZE**
  10 10mm width, 0.28 Cv flow
  15 15mm width, 0.56 Cv flow
  18 18mm width, 1.00 Cv flow

Underlined and bold option codes - delivery from stock