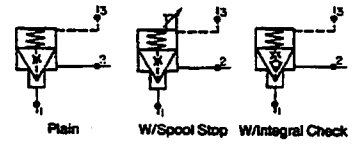
Oilgear

VALVE, SCREW-IN CARTRIDGE

30 USGPM △ 100 PSI
(113,7 LPM △ 6,9 Bar)

HSP803

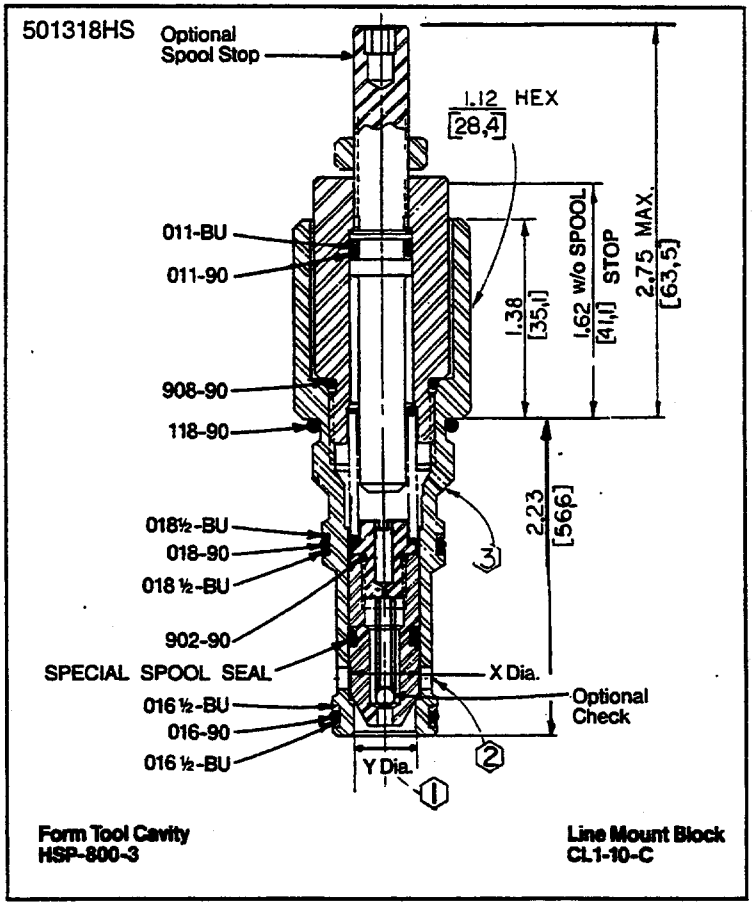
ENGINEERING | 1



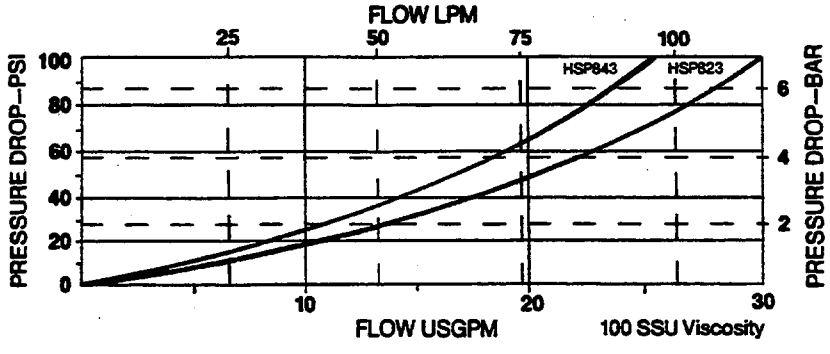
Data Sheet — **Normally Closed Poppet Valve**

Application

The HSP cartridge valve can be used as a pilot operated check valve, directional control valve (one or more cartridges can be used to provide 2-, 3-, and 4-way functions), flow control valve (when used with stroke limiter operation) and as a pressure control valve (when used with appropriate pilot valve).



Performance Curve



Operation

Opening and closing of the valve is a function of force balances on three areas; diameter "X" (port 3), diameter "X-Y" (port 2) and diameter "Y" (port 1). Pressure in ports 1 and 2 acting on respective area "Y" and effective area "X-Y" tend to open the main spool (poppet). Spring force and pressure (when operative) acting on top of main spool close the plunger. NOTE: Orifice in spool allows port 1 pressure to operate on the much larger top area of the spool—thus holding spool in closed position unless vented thru port 3. Also NOTE: orifice is available with integral check valve to prevent flow from port 3, thru the orifice to port 1.

If port 3 is vented and pressure is applied to port 1 (spool is imbalanced) and spool rises to allow flow to port 2. If pressure is applied to port 2 and port 3 is vented, pressure on annular area raises the spool and allows flow to port 1. Closing port 3 vent and or applying pressure at port 3 tends to close poppet valve.

Features

Availability of two (different) ratio poppets (spools) and several springs provides many "cracking" pressure ratios. A spool stop option permits use as flow control valve. The valve is constructed of steel parts, operating parts are hardened and ground as required. Cartridge is designed for easy service or field repair.

Specifications

Ratio (Y to X) HSP823=1:1.25
HSP843=1:1.67
Rated flow
HSP823—0 to 30 USgpm △ 100 psi
(0-113,7 lpm △ 6,9 bar)
HSP843—0 to 25 USgpm △ 100 psi
(0-94,8 lpm △ 6,9 bar)
Maximum operating pressure—
5000 psi (345 bar)
Cracking pressure—See "How To Order"
Pilot displacement—0.04 in.³/m (0.66 cm³/m)
Spool stop turns, full to full 1:1.25=4
1:1.67=2.5
Viscosity range—27-30 SSU at 100°F
35-2000 SSU at 100°F
Seals—Viton
Operating temperature—-40°F to 350°F
(-39,6°C to 175°C)
Filtration—Maintain SAE Class 6, ISO 18/15
Seal kit, standard—HSSK-800-F
w/spool seal option - HSSK-800-H

Telephone: (414) 327-1700
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OILGEAR
2300 So. 51st. Street
Milwaukee, WI USA 53219

Reissued: Nov., 1995

DS 80050-C8.1

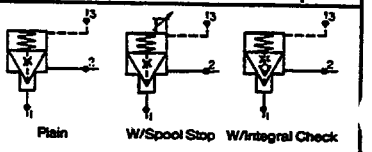
Oilgear

VALVE, SCREW-IN CARTRIDGE

30 USGPM △ 100 PSI
(113,7 LPM △ 6,9 Bar)

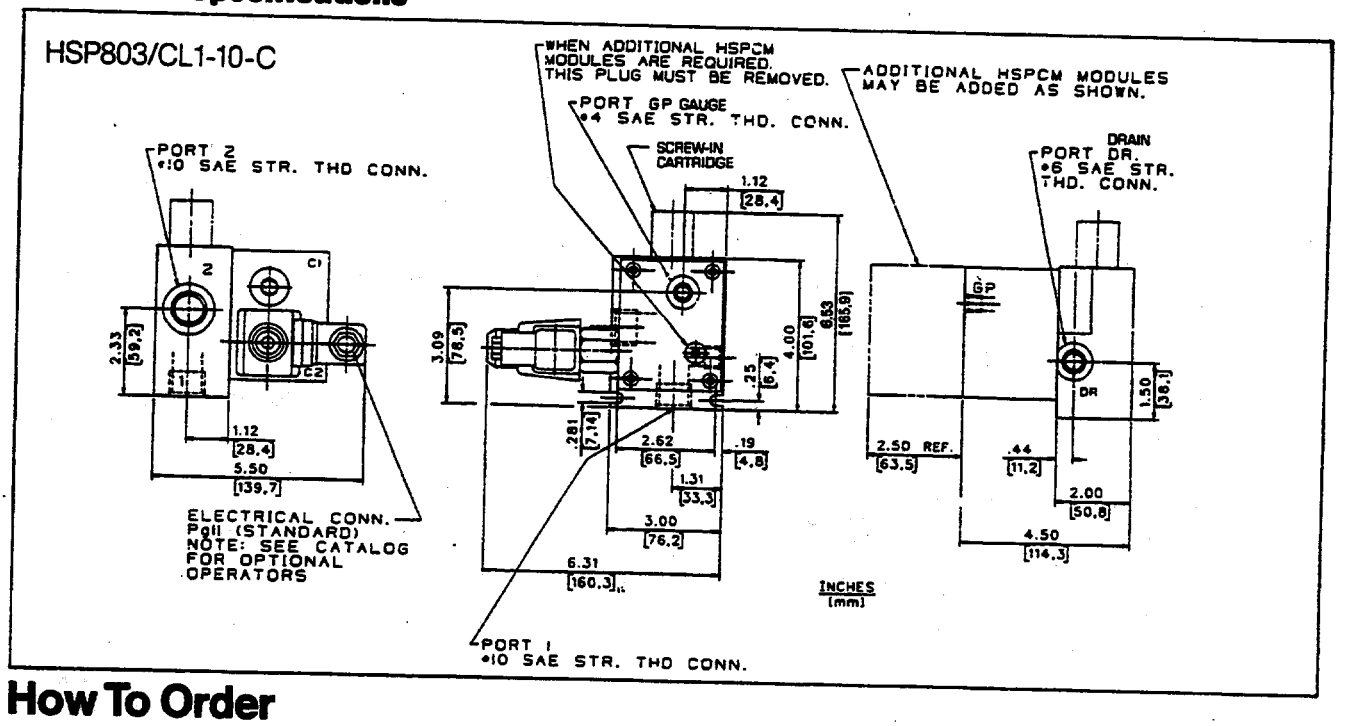
HSP803

ENGINEERING | **2**



Data Sheet — **Normally Closed Poppet Valve**

Line Mount Specifications



How To Order

Screw-In Cartridge Only

HSP8-__-__-__-__

	Orifice Diameter		
	w/o integral check	w/integral check	
0	0.000		
3	0.032	0.032	C3
4	0.040	0.040	C4
5	0.050	0.050	C5
6	0.062	0.062	C6

	Spool Stop & Seals
S	Spool stop
P*	Spool seals
SP*	Spool stop and seal
	Omit if not required

*For springs 1 and 2 only.

	Ratios	Spool diameter (X) & port (Y) area relationship
23	1:1.25	Area of diam. "Y" is 20% less than "X"
43	1:1.67	Area of diam. "Y" is 40% less than "X"

		Cracking Pressure			
		Flow Port 1 to 2		Flow Port 2 to 1	
Spring	Model	psi	bar	psi	bar
1	HSP823	92	6,34	292	20,14
	HSP843	148	10,21	185	12,76
2	HSP823	44	3,03	139	9,59
	HSP843	70	4,83	88	6,07
3	HSP823	15	1,03	48	3,31
	HSP843	25	1,72	31	2,14

Cartridge With Line Mount Block

HSP8-__-__-__-__/CL1-10-C

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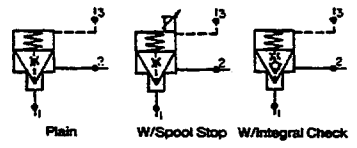
VALVE, SCREW-IN CARTRIDGE

30 USGPM △ 100 PSI
(113,7 LPM △ 6,9 Bar)

HSP803

ENGINEERING | 3



Data Sheet — Normally Closed Poppet Valve

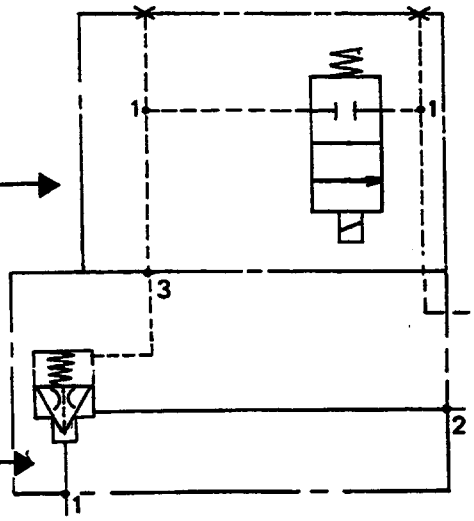
Cartridge Must Have Pilot Control Module

This cartridge valve requires pilot logic to offer added flexibility in providing maximum pressure consistently and smoothly. At least one pilot control module must be added to the valve.

Typical HSP803 How To Order Example

HSP823-C3-1-SP / CL1-10-C / 2-0-S-C

- Cartridge
- Line Mount Block
- Pilot Control Module (PCM) (For detailed information on Pilot Control Modules See DS 85100)



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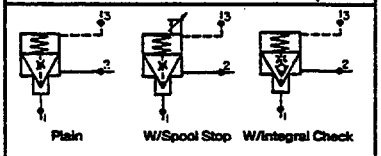
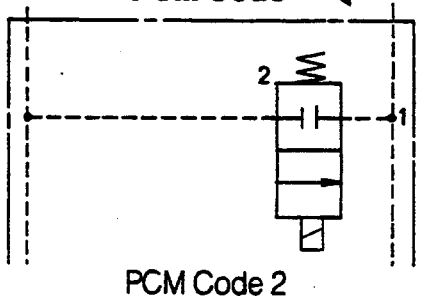


Data Sheet — Normally Closed Poppet Valve

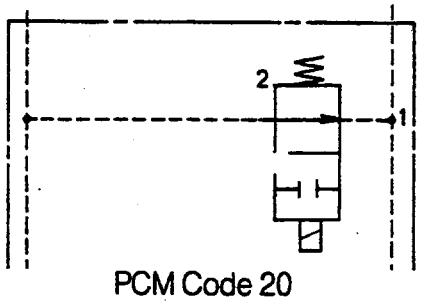
How To Order

Typical PCM How To Order Example: /2 - 0 S - C

PCM Code



PCM Code 2



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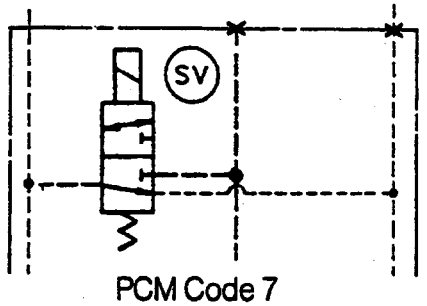
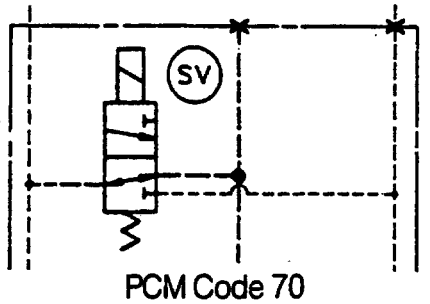


PCM Code 7



PCM Code 70

Solenoid Voltage (if required)
0 = 115 V.A.C./60 HZ. or 110 V.A.C./50 HZ. Solenoid
1 = 230 V.A.C./60 HZ. or 220 V.A.C./50 HZ. Solenoid
2 = 12 V.D.C. Solenoid
3 = 24 V.D.C. Solenoid
Other voltages are available, consult factory

Electrical Connector (if required)
S = Cable connector w/o indicator light (standard)
L = Cable connector with indicator light (115 V.A.C. only)
R = .500 NPTF connector w/o indicator light
W = .500 NPTF connector w/indicator light
C = Three pin Brad Harrison/DIN 43650 connector w/mating plug

Block Material
C = Nodular Iron (standard)

See DS 85100 for additional information on pilot controls.

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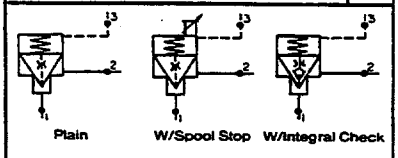
Oilgear

VALVE, SCREW-IN CARTRIDGE

50 USGPM △ 100 PSI
(189,5 LPM △ 6,9 Bar)

HSP1201

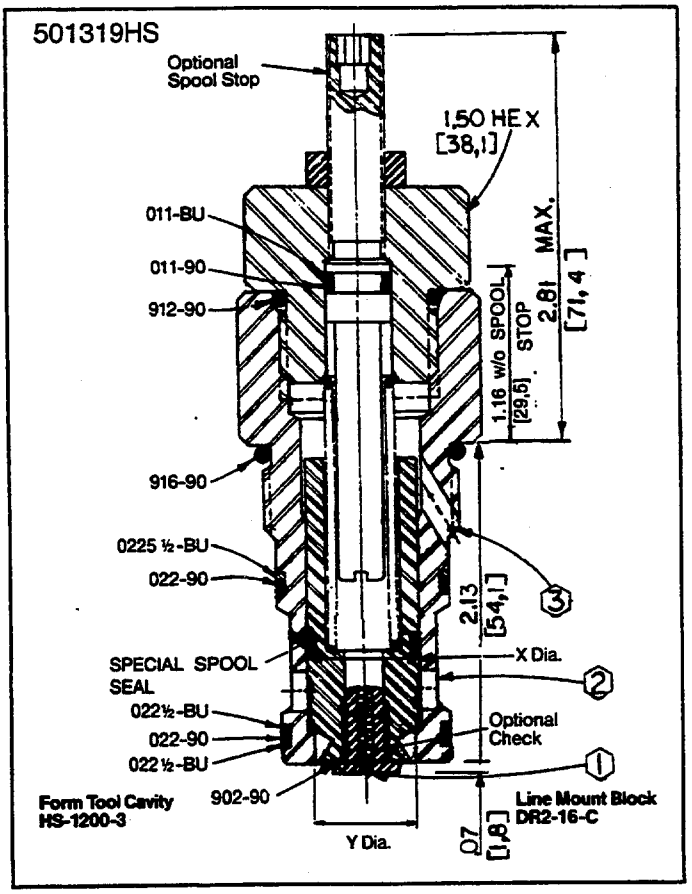
ENGINEERING | 1



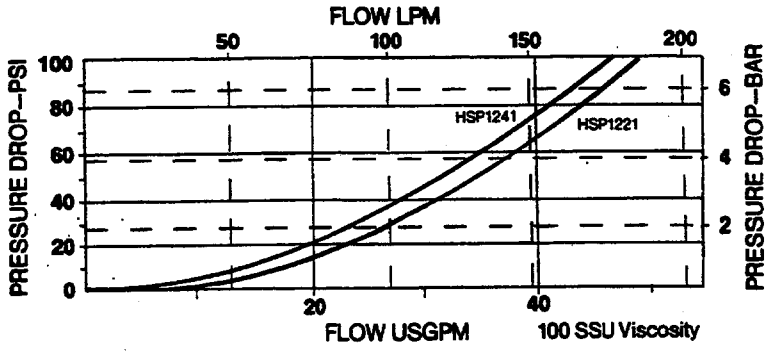
Data Sheet — **Normally Closed Poppet Valve**

Application

The HSP cartridge valve can be used as a pilot operated check valve, directional control valve (one or more cartridges can be used to provide 2-, 3-, and 4-way functions), flow control valve (when used with stroke limiter operation) and as a pressure control valve (when used with appropriate pilot valve).



Performance Curve



Operation

Opening and closing of the valve is a function of force balances on three areas: diameter "X" (port 3), diameter "X-Y" (port 2) and diameter "Y" (port 1). Pressure in ports 1 and 2 acting on respective area "Y" and effective area "X-Y" tend to open the main spool (poppet). Spring force and pressure (when operative) acting on top of main spool close the plunger. NOTE: Orifice in spool allows port 1 pressure to operate on the much larger top area of the spool—thus holding spool in closed position unless vented thru port 3. Also NOTE: orifice is available with integral check valve to prevent flow from port 3, thru the orifice to port 1.

If port 3 is vented and pressure is applied to port 1 (spool is imbalanced) and spool rises to allow flow to port 2. If pressure is applied to port 2 and port 3 is vented, pressure on annular area raises the spool and allows flow to port 1. Closing port 3 vent and/or applying pressure at port 3 tends to close poppet valve.

Features

Availability of two (different) ratio poppets (spools) and several springs provides many "cracking" pressure ratios. A spool stop option permits use as flow control valve. The valve is constructed of steel parts, operating parts are hardened and ground as required. Cartridge is designed for easy service or field repair.

Specifications

Ratio (Y to X) HSP1221=1:1.25
HSP1241=1:1.67

Rated flow
HSP1221—0 to 50 USgpm △ 100 psi
(0-189,5 lpm △ 6,9 bar)
HSP1241—0 to 45 USgpm △ 100 psi
(0-170,6 lpm △ 6,9 bar)

Maximum operating pressure—
5000 psi (345 bar)

Cracking pressure—See "How To Order"

Pilot displacement—0.22 in³/m (3.61 cm³/m)

Spool stop turns, full to full 1:1.25=11
1:1.67=2.5

Viscosity range—27-30 SSU at 100°F
35-2000 SSU at 100°F

Seals—Viton

Operating temperature—-40°F to 350°F
(-39,6°C to 175°C)

Filtration—Maintain SAE Class 6, ISO 18/15

Seal kit, standard—HSSK-1200-E
w/spool seal option—HSSK-1200-H

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DS 80050-C8.2

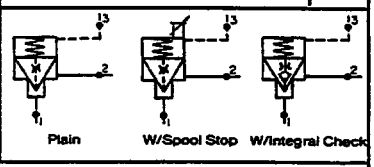
Oilgear

VALVE, SCREW-IN CARTRIDGE

50 USGPM △ 100 PSI
(189,5 LPM △ 6,9 Bar)

HSP1201

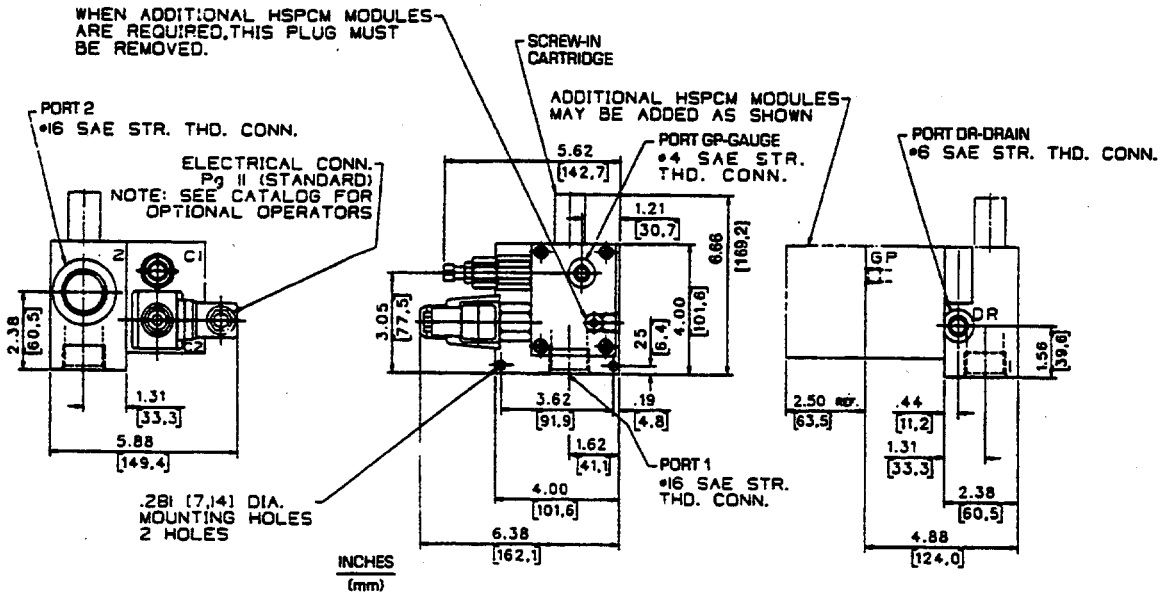
ENGINEERING | **2**



Data Sheet — **Normally Closed Poppet Valve**

Line Mount Specifications

HSP1201/DR2-16-C



How To Order

Screw-In Cartridge Only

HSP12__-__-__-__

Orifice Diameter			
	w/o integral check	w/integral check	
0	0.000		
3	0.032	0.032	C3
4	0.040	0.040	C4
5	0.050	0.050	C5
6	0.062	0.062	C6

	Spool Stop & Seals
S	Spool stop
P*	Spool seals
SP*	Spool stop and seal

*For spring 2 only.

	Ratios	Spool diameter (X) & port (Y) area relationship
21	1:1.25	Area of diam. "Y" is 20% less than "X"
41	1:1.67	Area of diam. "Y" is 40% less than "X"

Spring	Model	Cracking Pressure Flow Port 1 to 2 psi	Flow Port 1 to 2 bar	Flow Port 2 to 1 psi	Flow Port 2 to 1 bar
1	HSP1221	14	0,96	55	3,79
	HSP1241	18	1,24	27	1,86
2	HSP1221	36	2,48	142	9,79
	HSP1241	48	3,31	71	4,90

Cartridge With Line Mount Block

HSP12__-__-__-__/DR2-16-C

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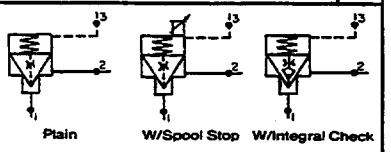
VALVE, SCREW-IN CARTRIDGE

50 USGPM △ 100 PSI
(189,5 LPM △ 6,9 Bar)

HSP1201

ENGINEERING 3



Data Sheet — **Normally Closed Poppet Valve**

Cartridge Must Have Pilot Control Module

This cartridge valve requires pilot logic to offer added flexibility in providing maximum pressure consistently and smoothly. At least one pilot control module must be added to the valve.

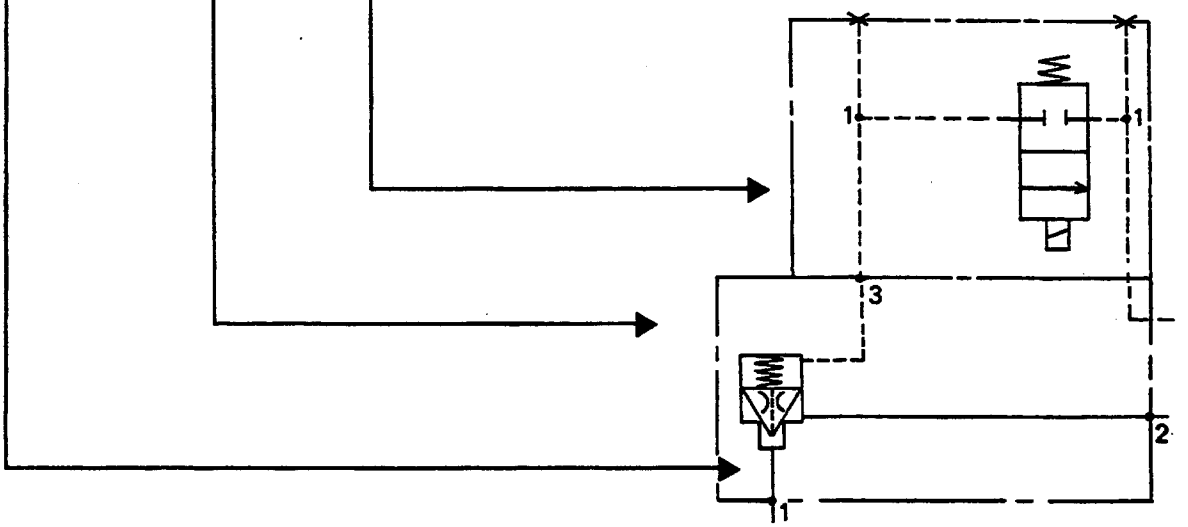
Typical HSP1201 How To Order Example

HSP1221-C3-1-SP / DR2-16-C / 2-0-S-C

Cartridge

Line Mount Block

Pilot Control Module (PCM)
(For detailed information on Pilot Control Modules See DS 85100)



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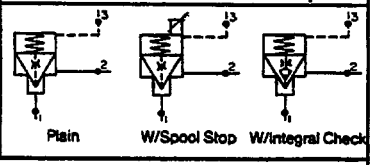
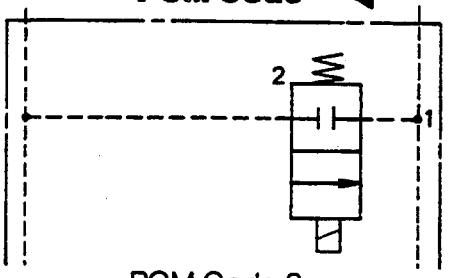


Data Sheet — Normally Closed Poppet Valve

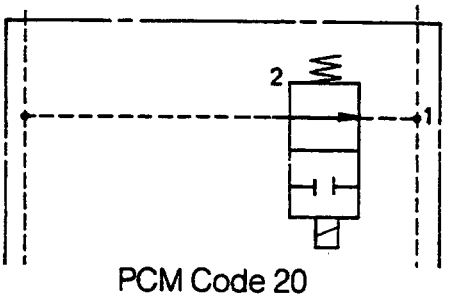
How To Order

Typical PCM How To Order Example: / 2 - 0 S - C

PCM Code



PCM Code 2



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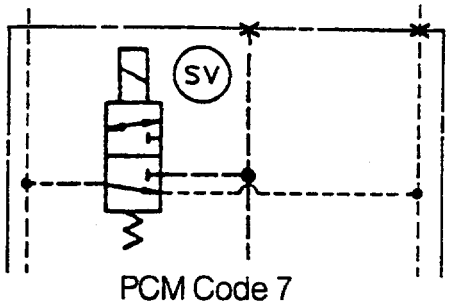

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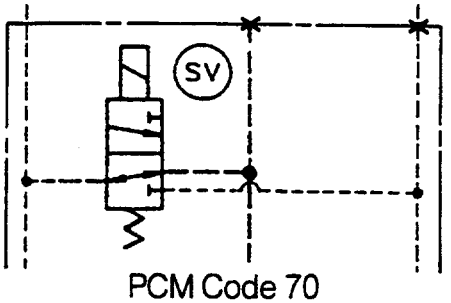

PCM Code 70

Solenoid Voltage (if required)
0 = 115 V.A.C./60 HZ. or 110 V.A.C./50 HZ. Solenoid
1 = 230 V.A.C./60 HZ. or 220 V.A.C./50 HZ. Solenoid
2 = 12 V.D.C. Solenoid
3 = 24 V.D.C. Solenoid
Other voltages are available, consult factory

Electrical Connector (if required)
S = Cable connector w/o indicator light (standard)
L = Cable connector with indicator light (115 V.A.C. only)
R = .500 NPTF connector w/o indicator light
W = .500 NPTF connector w/indicator light
C = Three pin Brad Harrison/DIN 43650 connector w/mating plug

Block Material
C = Nodular Iron (standard)

See DS 85100 for additional information on pilot controls.

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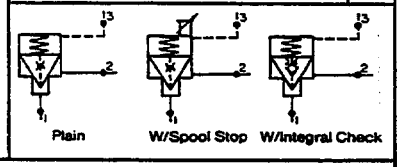
Oilgear

VALVE, SCREW-IN CARTRIDGE

100 USGPM △ 100 PSI
(379,0 LPM △ 6,9 Bar)

HSP1601

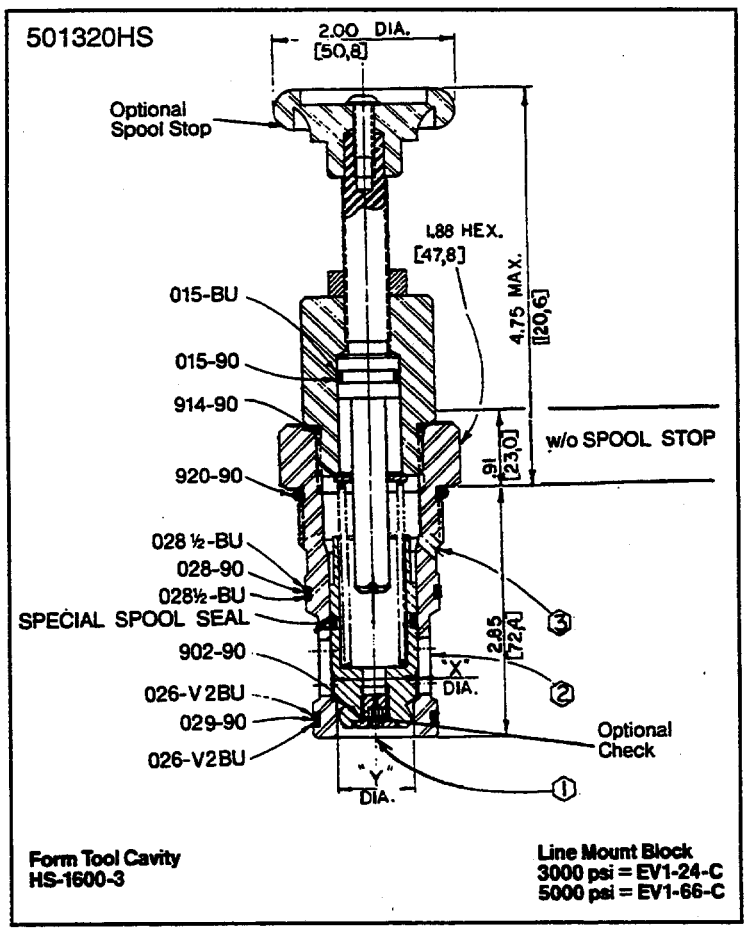
ENGINEERING | **1**



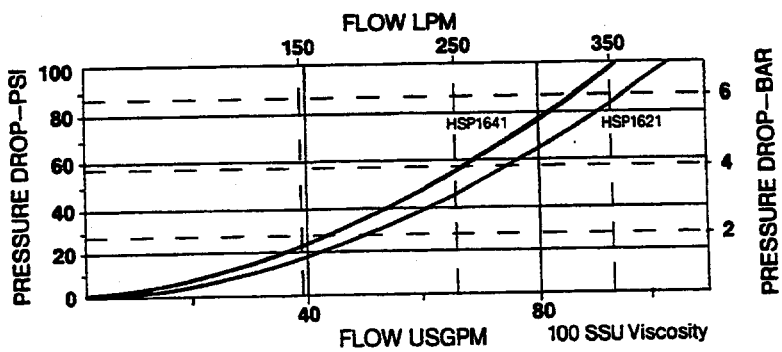
Data Sheet — **Normally Closed Poppet Valve**

Application

The HSP cartridge valve can be used as a pilot operated check valve, directional control valve (one or more cartridges can be used to provide 2-, 3-, and 4-way functions), flow control valve (when used with stroke limiter operation) and as a pressure control valve (when used with appropriate pilot valve).



Performance Curve



Operation

Opening and closing of the valve is a functior of force balances on three areas; diameter "X" (port 3), diameter "X-Y" (port 2) and diameter "Y" (port 1). Pressure in ports 1 and 2 acting on respective area "Y" and effective area "X-Y" tend to open the main spool (poppet). Spring force and pressure (when operative) acting on top of main spool close the plunger. NOTE: Orifice in spool allows port 1 pressure to operate on the much larger top area of the spool—thus holding spool in closed position unless vented thru port 3. Also NOTE: orifice is available with integral check valve to prevent flow from port 3, thru the orifice to port 1.

If port 3 is vented and pressure is applied to port 1 (spool is imbalanced) and spool rises to allow flow to port 2. If pressure is applied to port 2 and port 3 is vented, pressure on annular area raises the spool and allows flow to port 1. Closing port 3 vent and or applying pressure at port 3 tends to close poppet valve.

Features

Availability of two (different) ratio poppets (spools) and several springs provides many "cracking" pressure ratios. A spool stop option permits use as flow control valve. The valve is constructed of steel parts, operating parts are hardened and ground as required. Cartridge is designed for easy service or field repair.

Specifications

Ratio (Y to X) HSP1621=1:1.25
HSP1641=1:1.67
Rated flow
HSP1621—0 to 100 USgpm △ 100 psi
(0-379,0 lpm △ 6,9 bar)
HSP1641—0 to 90 USgpm △ 100 psi
(0-341,1 lpm △ 6,9 bar)
Maximum operating pressure—
5000 psi (345 bar)
Cracking pressure—See "How To Order"
Pilot displacement—0.52 in.³/m (8,52 cm³/m)
Spool stop turns, full to full 1:1.25=14
1:1.67=14
Viscosity range—27-30 SSU at 100°F
35-2000 SSU at 100°F
Seals—Viton
Operating temperature—-40°F to 350°F
(-39,6°C to 175°C)
Filtration—Maintain SAE Class 6, ISO 18/15
Seal kit—Standard—HSSK-1600-E
w/spool seal option—HSSK-1200-H

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DS 80050-C8.3

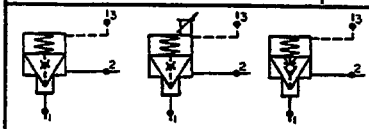
Oilgear

VALVE, SCREW-IN CARTRIDGE

100 USGPM △ 100 PSI
(379,0 LPM △ 6,9 Bar)

HSP1601

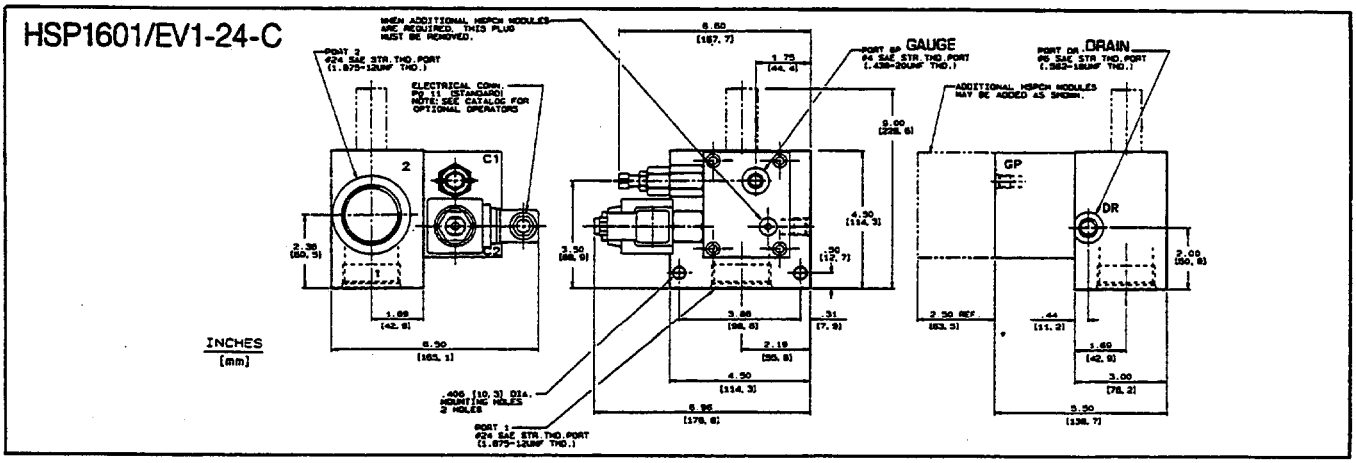
ENGINEERING | **2**



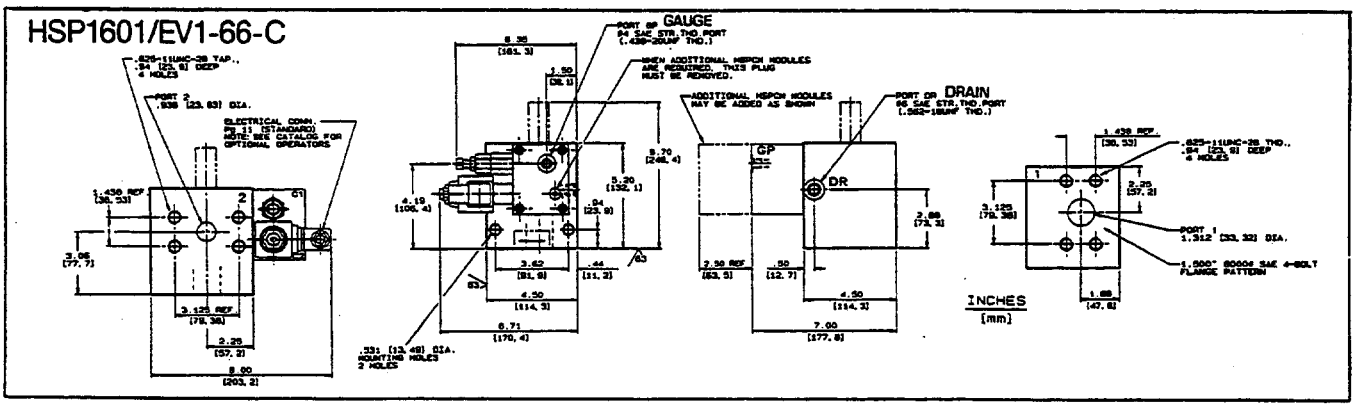
Data Sheet — **Normally Closed Poppet Valve**

Line Mount Specifications

HSP1601/EV1-24-C



HSP1601/EV1-66-C



How To Order

Screw-In Cartridge Only

HSP16__-__-__-__

	Orifice Diameter		
	w/o integral check	w/integral check	
0	0.000		
3	0.032	0.032	C3
4	0.040	0.040	C4
5	0.050	0.050	C5
6	0.062	0.062	C6

	Spool Stop & Seals
S	Spool stop
P*	Spool seals
SP*	Spool stop and seal

*For springs #2 and 3 only.

	Ratios	Spool diameter (X) & port (Y) area relationship
21	1:1.25	Area of diam. "Y" is 20% less than "X"
41	1:1.67	Area of diam. "Y" is 40% less than "X"

Spring	Model	Cracking Pressure Flow Port 1 to 2 psi	Flow Port 1 to 2 bar	Flow Port 2 to 1 psi	Flow Port 2 to 1 bar
1	HSP1621	12	0,83	49	3,38
	HSP1641	16	1,10	24	1,66
2 (Std)	HSP1621	28	1,93	115	7,93
	HSP1641	38	2,62	56	3,86
3	HSP1621	49	3,38	204	14,07
	HSP1641	66	4,55	99	6,83

*Use #3 spring for all pressure control functions.

Cartridge With Line Mount Block

3000 psi (207 bar) service pressure
HSP16__-__-__-__/EV1-24-C

5000 psi (345 bar) service pressure
HSP16__-__-__-__/EV1-66-C

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DS 80050-C8.3

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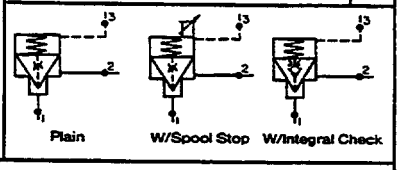
VALVE, SCREW-IN CARTRIDGE

100 USGPM △ 100 PSI
(379,0 LPM △ 6,9 Bar)

HSP1601

ENGINEERING | 3



Data Sheet — **Normally Closed Poppet Valve**

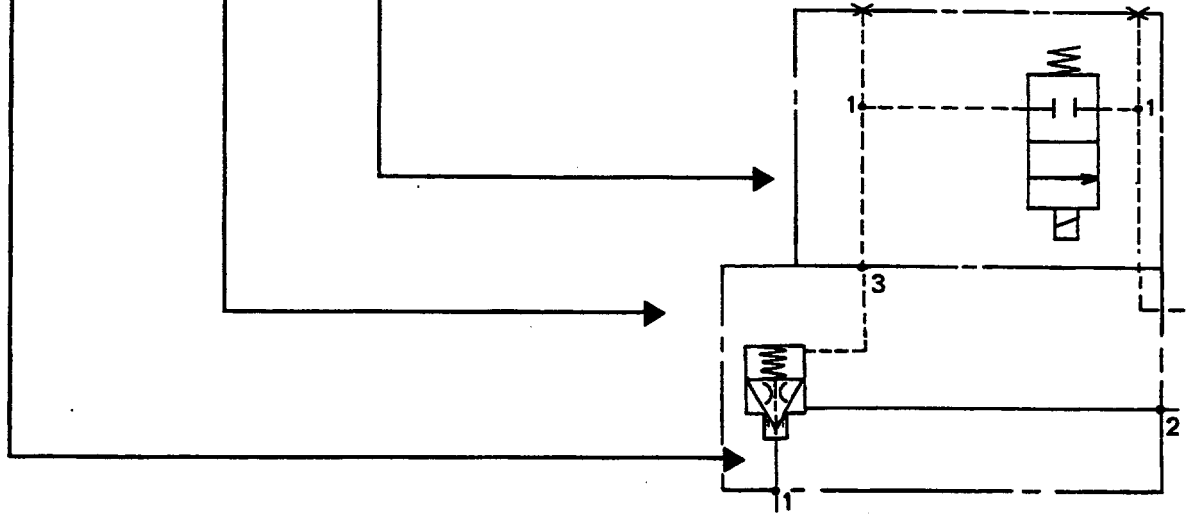
Cartridge Must Have Pilot Control Module

This cartridge valve requires pilot logic to offer added flexibility in providing maximum pressure consistently and smoothly. At least one pilot control module must be added to the valve.

Typical HSP1601 How To Order Example

HSP1621-C3-1-S / EV1-24-C / 2-0-S-C

- Cartridge
- Line Mount Block
- Pilot Control Module (PCM) (For detailed information on Pilot Control Modules See DS 85100)



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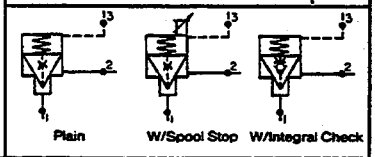
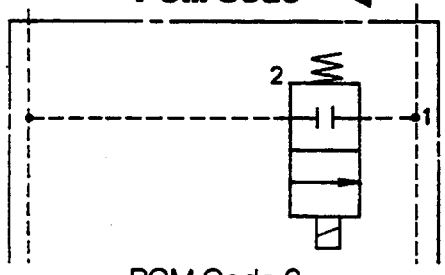


Data Sheet — Normally Closed Poppet Valve

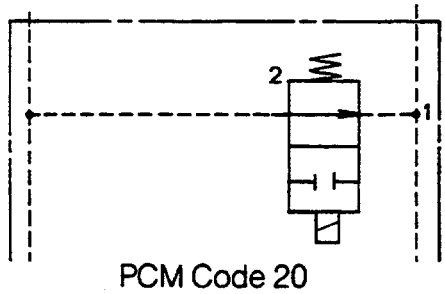
How To Order

Typical PCM How To Order Example: / 2 - 0 S - C

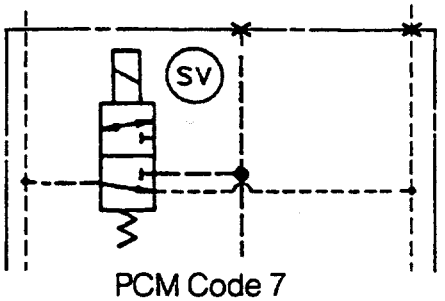
PCM Code



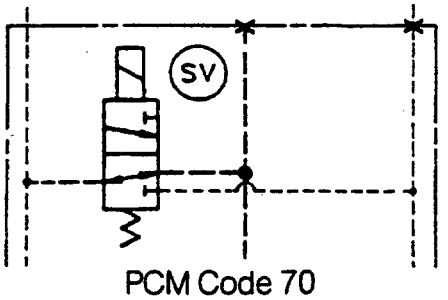
PCM Code 2



PCM Code 20



PCM Code 7



PCM Code 70

Solenoid Voltage (if required)
0 = 115 V.A.C./60 HZ. or 110 V.A.C./50 HZ. Solenoid
1 = 230 V.A.C./60 HZ. or 220 V.A.C./50 HZ. Solenoid
2 = 12 V.D.C. Solenoid
3 = 24 V.D.C. Solenoid
Other voltages are available, consult factory

Electrical Connector (if required)
S = Cable connector w/o indicator light (standard)
L = Cable connector with indicator light (115 V.A.C. only)
R = .500 NPTF connector w/o indicator light
W = .500 NPTF connector w/indicator light
C = Three pin Brad Harrison/DIN 43650 connector w/mating plug

Block Material
C = Nodular Iron (standard)

See DS 85100 for additional information on pilot controls.

OILGEAR
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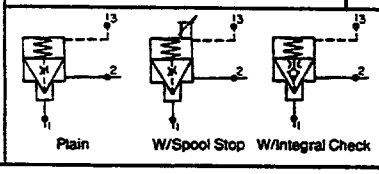
VALVE, SCREW-IN CARTRIDGE

230 USGPM △ 100 PSI
(871,7 LPM △ 6,9 Bar)

HSP2001

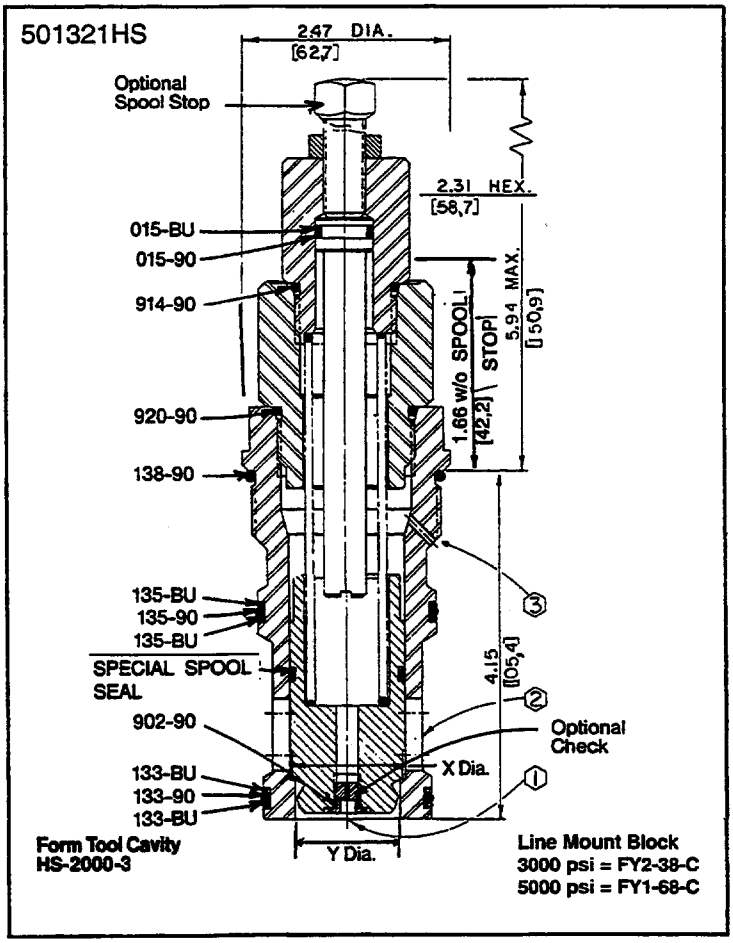
ENGINEERING 1



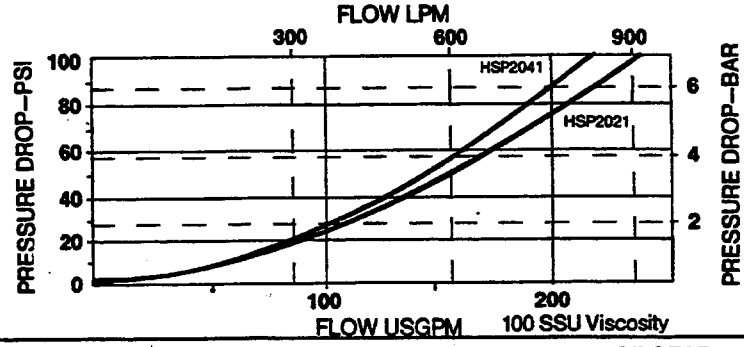
Data Sheet — **Normally Closed Poppet Valve**

Application

The HSP cartridge valve can be used as a pilot operated check valve, directional control valve (one or more cartridges can be used to provide 2-, 3-, and 4-way functions), flow control valve (when used with stroke limiter operation) and as a pressure control valve (when used with appropriate pilot valve).



Performance Curve



Operation

Opening and closing of the valve is a function of force balances on three areas; diameter "X" (port 3), diameter "X-Y" (port 2) and diameter "Y" (port 1). Pressure in ports 1 and 2 acting on respective area "Y" and effective area "X-Y" tend to open the main spool (poppet). Spring force and pressure (when operative) acting on top of main spool close the plunger. NOTE: Orifice in spool allows port 1 pressure to operate on the much larger top area of the spool—thus holding spool in closed position unless vented thru port 3. Also NOTE: orifice is available with integral check valve to prevent flow from port 3, thru the orifice to port 1.

If port 3 is vented and pressure is applied to port 1 (spool is imbalanced) and spool rises to allow flow to port 2. If pressure is applied to port 2 and port 3 is vented, pressure on annular area raises the spool and allows flow to port 1. Closing port 3 vent and or applying pressure at port 3 tends to close poppet valve.

Features

Availability of two (different) ratio poppets (spools) and several springs provides many "cracking" pressure ratios. A spool stop option permits use as flow control valve. The valve is constructed of steel parts, operating parts are hardened and ground as required. Cartridge is designed for easy service or field repair.

Specifications

Ratio (Y to X) HSP2021=1:1.25
HSP2041=1:1.67

Rated flow
HSP2021—0 to 230 USgpm △ 100 psi (0-871,7 lpm △ 6,9 bar)
HSP2041—0 to 210 USgpm △ 100 psi (0-795,9 lpm △ 6,9 bar)

Maximum operating pressure—5000 psi (345 bar)

Cracking pressure—See "How To Order"

Pilot displacement—1.51 in.³/m (24,7 cm³/m)

Spool stop turns, full to full 1:1.25=24
1:1.67=27

Viscosity range—27-30 SSU at 100°F
35-2000 SSU at 100°F

Seals—Viton

Operating temperature—-40°F to 350°F (-39,6°C to 175°C)

Filtration—Maintain SAE Class 6, ISO 18/15

Seal kit, standard—HSSK-2000-F
w/spool seal option—HSSK-2000-G

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Reissued: Nov., 1995

DS 80050-C8.5

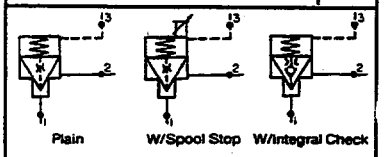
Oilgear

VALVE, SCREW-IN CARTRIDGE

230 USGPM Δ 100 PSI
(871,7 LPM Δ 6,9 Bar)

HSP2001

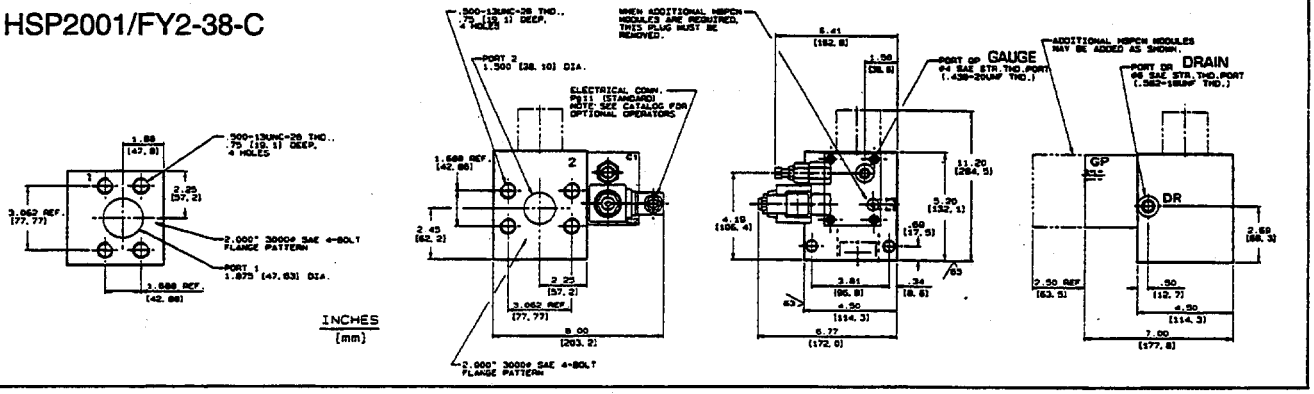
ENGINEERING | **2**



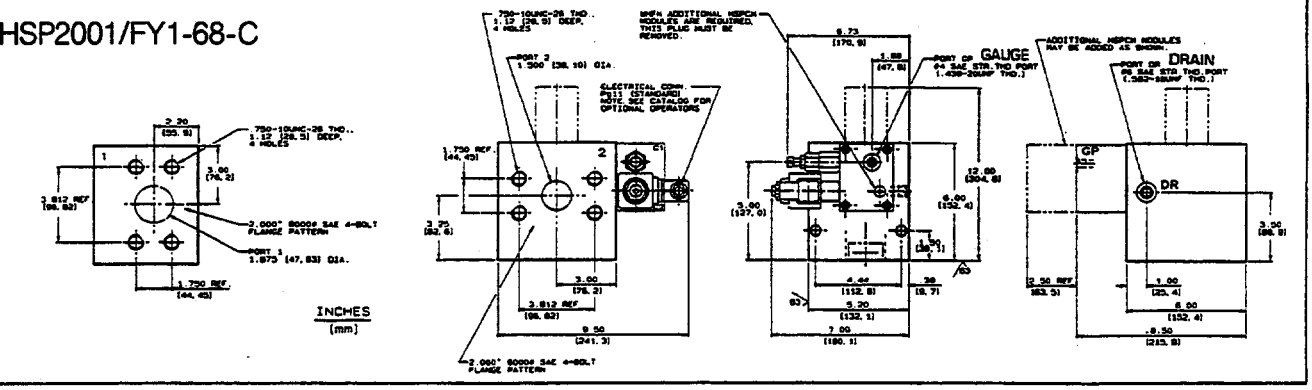
Data Sheet — **Normally Closed Poppet Valve**

Line Mount Specifications

HSP2001/FY2-38-C



HSP2001/FY1-68-C



How To Order

Screw-In Cartridge Only

HSP20__-__-__-__

Orifice Diameter			
	w/o integral check	w/integral check	
0	0.000		
3	0.032	0.032	C3
4	0.040	0.040	C4
5	0.050	0.050	C5
6	0.062	0.062	C6

	Spool Stop & Seals
S	Spool stop
SP	Spool stop and seal

	Ratios	Spool diameter (X) & port (Y) area relationship
21	1:1.25	Area of diam. "Y" is 20% less than "X"
41	1:1.67	Area of diam. "Y" is 40% less than "X"

Spring	Model	Cracking Pressure Flow Port 1 to 2 psi	Flow Port 1 to 2 bar	Flow Port 2 to 1 psi	Flow Port 2 to 1 bar
1	HSP2021	7	0,48	30	2,07
	HSP2041	8	0,55	12	0,38
4	HSP2021	47	3,24	214	14,76
	HSP2041	54	3,72	79	5,45
5	HSP2021	72	4,96	327	22,55
	HSP2041	82	5,66	120	8,28
6	HSP2021	163	11,24	742	51,17
	HSP2041	187	12,90	274	18,90

Cartridge With Line Mount Block

3000 psi (207 bar) service pressure
HSP20__-__-__-__/FY2-38-C
5000 psi (345 bar) service pressure
HSP20__-__-__-__/FY1-68-C

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DS 80050-C8.5

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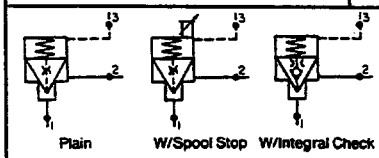
VALVE, SCREW-IN CARTRIDGE

230 USGPM Δ 100 PSI
(871,7 LPM Δ 6,9 Bar)

HSP2001

ENGINEERING | 3



Data Sheet — **Normally Closed Poppet Valve**

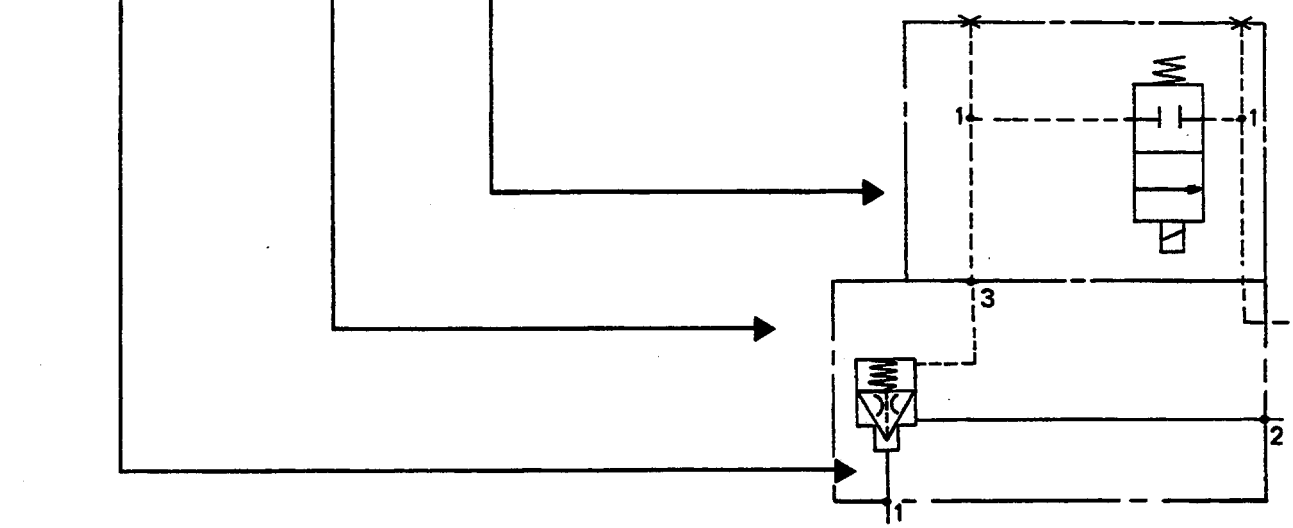
Cartridge Must Have Pilot Control Module

This cartridge valve requires pilot logic to offer added flexibility in providing maximum pressure consistently and smoothly. At least one pilot control module must be added to the valve.

Typical HSP2001 How To Order Example

HSP2021-C3-1-S / FY2-38-C / 2-0-S-C

- Cartridge
- Line Mount Block
- Pilot Control Module (PCM) (For detailed information on Pilot Control Modules See DS 85100)



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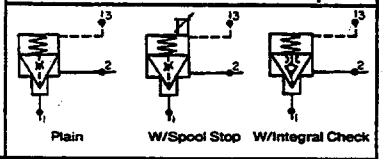
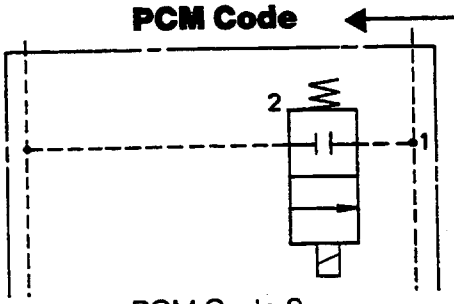


Data Sheet — Normally Closed Poppet Valve

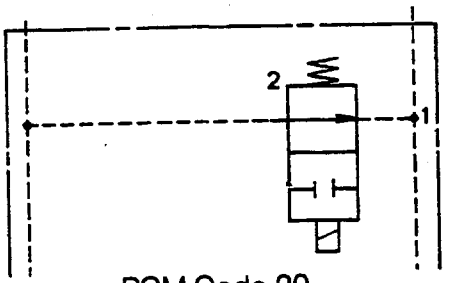
How To Order

Typical PCM How To Order Example: / 2 - 0 - S - C

PCM Code



PCM Code 2



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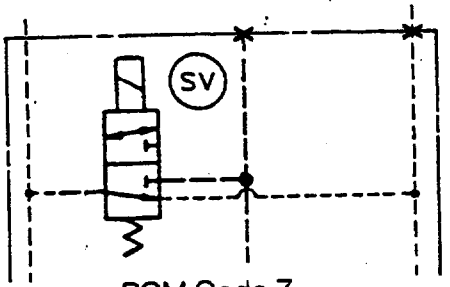

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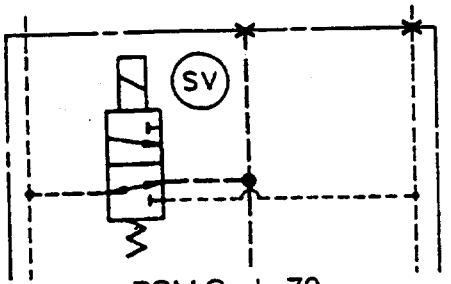

PCM Code 70

Solenoid Voltage (if required)
0 = 115 V.A.C./60 HZ. or 110 V.A.C./50 HZ. Solenoid
1 = 230 V.A.C./60 HZ. or 220 V.A.C./50 HZ. Solenoid
2 = 12 V.D.C. Solenoid
3 = 24 V.D.C. Solenoid
Other voltages are available, consult factory

Electrical Connector (if required)
S = Cable connector w/o indicator light (standard)
L = Cable connector with indicator light (115 V.A.C. only)
R = .500 NPTF connector w/o indicator light
W = .500 NPTF connector w/indicator light
C = Three pin Brad Harrison/DIN 43650 connector w/mating plug

Block Material
C = Nodular Iron (standard)

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