Proportional Valves

CV

Load/Motor | Controls

Flow Controls

LE

DC

MV

Manual Valves

Solenoid Valves

CE

Coils & Electronics

BC

TD

Technical Data

### PRESSURE RELIEVING APO182YP		SERIES	CAVITY	DESCRIPTION	FLOW LPM/GPM	PRESSURE BAR/PSI	PAGE NO.
APO282VP		PRESSURE R	ELIEVING				
AP0462VP		AP01B2YP	2G	Increase Pressure/Increase Current	5.3/1.4	350/5000	PV7-PV8
AP01B2YR 2G Decrease Pressure/Increase Current 5.3/1.4 350/5000 PV13-AP02B2YR C08-2 Decrease Pressure/Increase Current 5.3/1.4 350/5000 PV15-AP02B2YR C10-2 Decrease Pressure/Increase Current 5.3/1.4 350/5000 PV15-AP04G2YR C10-2 Decrease Pressure/Increase Current 5.3/1.4 350/5000 PV15-AP04G2YR C10-2 Decrease Pressure/Increase Current 5.3/1.4 350/5000 PV15-AP04G2YR C10-2 Decrease Pressure/Increase Current 5.3/1.4 210/3000 PV15-GT02 34 C08-3 Pressure Reducing Valve 1.9/5 210/3000 PV25-GT04 34 C08-3 Pressure Reducing Valve 1.9/5 210/3000 PV25-GT04 34 C08-3 Pressure Reducing Valve 1.9/5 210/3000 PV25-GT04 34 C08-3 Pressure Reducing Valve 1.9/5 210/3000 PV25-GT05 C08-3 Prove Control, N.C. 150/40 210/3000 PV25-GT05 C08-3 Prove Control, N.C. 150/40 210/3000 PV25-GT05 C08-3 Prove Control, N.C. 150/40 210/3000 PV35-GT05 C08-3 Prove Control, N.C. 23/6 210/3000 PV35-GT05 C08-3 Prove Control, N.C. 23/6 210/3000 PV35-GT05 C08-3 Prove Control, N.C. 36/9.5 210/3000 PV35-GT05 C08-3 PV35-GT05 C08-4 PV							
AP0282YR C08-2 Decrease Pressure/Increase Current 5.3/1.4 350/5000 PV15-AP04G2YR C10-2 Decrease Pressure/Increase Current 95/25 350/5000 PV17- PRESSURE REDUCING GP01 30 54-1 Pressure Reducing Valve 1.9/5 210/3000 PV23-GTP02 34 C08-3 Pressure Reducing Valve 19/5 210/3000 PV23-GTP04 34 3X Pressure Reducing Valve 30/8 210/3000 PV23-GTP04 34 3X Pressure Reducing Valve 32/6 210/3000 PV23-GTP04 3X Pressure Reducing Valve 32/6 210/3000 PV33-GTP04 3X Pressure Reducing Valve 33/6 210/3000 PV33-GTP04 3X Pressure Reducing Va		AP04G2YP	C10-2	Increase Pressure/Increase Current	45/12	350/5000	PV11-PV12
PRESSURE REDUCING GPUT 30		AP01B2YR	2G	Decrease Pressure/Increase Current	5.3/1.4	350/5000	PV13-PV14
PRESSURE REDUCING GP01 30							
GP01 30 54-1 Pressure Reducing Valve 1.9/.5 210/3000 PV19-GTP02 34 C08-3 Pressure Reducing Valve 19/5 210/3000 PV21-GTP04 34 3X Pressure Reducing Valve 30/8 210/3000 PV23-DF122C C12-2 Flow Control, N.C 53/14 210/3000 PV25-DF122C C12-2 Flow Control, N.C 53/14 210/3000 PV25-DF201C C20-2 Flow Control, N.C 325/60 210/3000 PV29-DF201C C20-2 Flow Control, N.C 325/60 210/3000 PV31-DF201C C20-2 Flow Control, N.C 36/9.5 210/3000 PV35-DF402C Sa6/9.5 210/3000 PV35-DF402S Flow Control, N.C 36/9.5 210/3000 PV35-DF402S Sa6/9.5 Sa6/9.5 210/3000 PV35-DF402S Sa6/9.5 210/3000 PV35-DF402S Sa6/9.5 Sa6/9.5 210/3000 PV35-DF402S Sa6/9.5 Sa6/9.5 Sa6/9.5 Sa6/9.5 Sa6/9.5 Sa6/9.5 Sa6/9.5 Sa6/9.5 Sa6/9.5		AP04G2YR	C10-2	Decrease Pressure/Increase Current	95/25	350/5000	PV17-PV18
GTP02 34 C08-3 Pressure Reducing Valve 19/5 210/3000 PV21-GTP04 34 3X Pressure Reducing Valve 30/8 210/3000 PV23-DF201 C12-2 Flow Control, N.C 53/14 210/3000 PV25-DF201 C20-2 Flow Control, N.C 150/40 210/3000 PV25-DF201 C20-2 Flow Control, N.C 325/60 210/3000 PV29-DF201 C20-2 Flow Control, N.C 325/60 210/3000 PV35-JP04C 34 Flow Control, N.C 36/9.5 210/3000 PV35-JP04C 21 3X Flow Control, N.C 56.8/15 210/3000 PV35-JP04C Flow Control, N.C		PRESSURE R	EDUCING				
FLOW CONTROLS, 2-Way DF122C		GP01 30	54-1	Pressure Reducing Valve	1.9/.5	210/3000	PV19-PV20
FLOW CONTROLS, 2-Way DF122C	/V <u> </u>	GTP02 34	C08-3	Pressure Reducing Valve	19/5	210/3000	PV21-PV22
DF122C C12-2 Flow Control, N.C		GTP04 34	3X	Pressure Reducing Valve	30/8	210/3000	PV23-PV24
DF161C							
DF201C	W + **	DF122C	C12-2	Flow Control, N.C	53/14	210/3000	PV25-PV26
HP02C 2X Flow Control, N.C. 23/6 210/3000 PV31- JP02C C08-3 Flow Control, N.C. 23/6 210/3000 PV33- HP04C C10-2 Flow Control, N.C. 36/9.5 210/3000 PV35- JP04C 21 3X Flow Control, N.C. 36/9.5 210/3000 PV37- DFA125C21* C12-3L Flow Control, N.C. 56.8/15 210/3000 PV39- *The DFA125C21 will be available January 1, 2 HP02P 2X Flow Control, N.O. 19/5 210/3000 PV43- HP04P C10-2 Flow Control, N.O. 19/5 210/3000 PV43- HP04P C10-2 Flow Control, N.O. 30/8 210/3000 PV45- JP04P 3X Flow Control, N.O. 36/9.5 210/3000 PV47- DF122N C12-2 Flow Control, N.O. 53/14 210/3000 PV49- FLOW CONTROLS, 3-WAY JP04C 31 4C Priority Flow Control, N.C. 30/8 210/3000 PV49- DFA125C31 C12-4L Priority Flow Control, N.C. 56.8/15 210/3000 PV53- DIRECTIONAL CONTROL GP02 51 C08-4 4 Way, 3 Pos - Closed Center 21/5.5 350/5000 PV57- GP02 53 C08-4 4 Way, 3 Pos - Float Center 17/4.5 350/5000 PV57-		DF161C	C16-2	Flow Control, N.C	150/40	210/3000	PV27-PV28
JP02C C08-3 Flow Control, N.C 23/6 210/3000 PV33-HP04C C10-2 Flow Control, N.C 36/9.5 210/3000 PV35-JP04C 21 3X Flow Control, N.C 36/9.5 210/3000 PV37-DFA125C21* C12-3L Flow Control, N.C 56.8/15 210/3000 PV39-**The DFA125C21 will be available January 1, 22** HP02P	M + M	DF201C	C20-2	Flow Control, N.C	325/60	210/3000	PV29-PV30
HP04C C10-2 Flow Control, N.C 36/9.5 210/3000 PV35- JP04C 21 3X Flow Control, N.C 36/9.5 210/3000 PV37- DFA125C21* C12-3L Flow Control, N.C 56.8/15 210/3000 PV39- *The DFA125C21 will be available January 1, 2 HP02P 2X Flow Control, N.O 19/5 210/3000 PV41- JP02P C08-3 Flow Control, N.O 19/5 210/3000 PV43- HP04P C10-2 Flow Control, N.O 30/8 210/3000 PV45- JP04P 3X Flow Control, N.O 36/9.5 210/3000 PV47- DF122N C12-2 Flow Control, N.O 53/14 210/3000 PV49- FLOW CONTROLS, 3-WAY JP04C 31 4C Priority Flow Control, N.C 30/8 210/3000 PV53- DFA125C31 C12-4L Priority Flow Control, N.C 56.8/15 210/3000 PV53- DIRECTIONAL CONTROL GP02 51 C08-4 4 Way, 3 Pos - Closed Center 21/5.5 350/5000 PV57- DIRECTIONAL CONTROL GP02 53 C08-4 4 Way, 3 Pos - Float Center 17/4.5 350/5000 PV57-		HP02C	2X	Flow Control, N.C	23/6	210/3000	PV31-PV32
JP04C 21	M = 	JP02C	C08-3	Flow Control, N.C.	23/6	210/3000	PV33-PV34
DFA125C21* C12-3L Flow Control, N.C		HP04C	C10-2	Flow Control, N.C	36/9.5	210/3000	PV35-PV36
*The DFA125C21 will be available January 1, 2 HP02P							
HP02P 2X Flow Control, N.O. 19/5 210/3000 PV41- JP02P C08-3 Flow Control, N.O. 19/5 210/3000 PV43- HP04P C10-2 Flow Control, N.O. 30/8 210/3000 PV45- JP04P 3X Flow Control, N.O. 36/9.5 210/3000 PV47- DF122N C12-2 Flow Control, N.O. 53/14 210/3000 PV49- FLOW CONTROLS, 3-WAY JP04C 31 4C Priority Flow Control, N.C. 30/8 210/3000 PV51- DFA125C31 C12-4L Priority Flow Control, N.C. 56.8/15 210/3000 PV53- DIRECTIONAL CONTROL GP02 51 C08-4 4 Way, 3 Pos - Closed Center 21/5.5 350/5000 PV55- GP02 53 C08-4 4 Way, 3 Pos - Float Center 17/4.5 350/5000 PV57-		DFA125C21*	C12-3L	Flow Control, N.C	56.8/15	210/3000	PV39-PV40
JP02P C08-3 Flow Control, N.O. 19/5 210/3000 PV43-HP04P C10-2 Flow Control, N.O. 30/8 210/3000 PV45-JP04P 3X Flow Control, N.O. 36/9.5 210/3000 PV47-DF122N C12-2 Flow Control, N.O. 53/14 210/3000 PV49-DF122N C12-2 Flow Control, N.O. 53/14 210/3000 PV49-DF122N C12-4L Priority Flow Control, N.C. 30/8 210/3000 PV51-DFA125C31 C12-4L Priority Flow Control, N.C. 56.8/15 210/3000 PV53-DFA125C31 C08-4 4 Way, 3 Pos - Closed Center 21/5.5 350/5000 PV55-GP02 53 C08-4 4 Way, 3 Pos - Float Center 17/4.5 350/5000 PV57-DF122N C08-4 4 Way, 3 Pos - Float Center 17/4.5				*The DFA	125C21 will b	e available Jan	uary 1, 2011.
HP04P C10-2 Flow Control, N.O. 30/8 210/3000 PV45- JP04P 3X Flow Control, N.O. 36/9.5 210/3000 PV47- DF122N C12-2 Flow Control, N.O. 53/14 210/3000 PV49- FLOW CONTROLS, 3-WAY JP04C 31 4C Priority Flow Control, N.C. 30/8 210/3000 PV51- DFA125C31 C12-4L Priority Flow Control, N.C. 56.8/15 210/3000 PV53- DIRECTIONAL CONTROL GP02 51 C08-4 4 Way, 3 Pos - Closed Center 21/5.5 350/5000 PV55- GP02 53 C08-4 4 Way, 3 Pos - Float Center 17/4.5 350/5000 PV57-							
JP04P 3X Flow Control, N.O. 36/9.5 210/3000 PV47- DF122N C12-2 Flow Control, N.O. 53/14 210/3000 PV49- FLOW CONTROLS, 3-WAY JP04C 31 4C Priority Flow Control, N.C. 30/8 210/3000 PV51- DFA125C31 C12-4L Priority Flow Control, N.C. 56.8/15 210/3000 PV53- DIRECTIONAL CONTROL GP02 51 C08-4 4 Way, 3 Pos - Closed Center 21/5.5 350/5000 PV55- GP02 53 C08-4 4 Way, 3 Pos - Float Center 17/4.5 350/5000 PV57-							
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DFA125C31 C12-4L Priority Flow Control, N.C 56.8/15 210/3000 PV53- DIRECTIONAL CONTROL GP02 51 C08-4 4 Way, 3 Pos - Closed Center 21/5.5 350/5000 PV55- GP02 53 C08-4 4 Way, 3 Pos - Float Center 17/4.5 350/5000 PV57-							
DIRECTIONAL CONTROL GP02 51							
GP02 51 C08-4 4 Way, 3 Pos - Closed Center		DFA125C31	C12-4L	Priority Flow Control, N.C	56.8/15	210/3000	PV53-PV54
GP02 51 C08-4 4 Way, 3 Pos - Closed Center	1.1	DIDECTIONAL	CUNTDU				
GP02 53 C08-4 4 Way, 3 Pos - Float Center	M M T T W			4 Way 3 Pos - Closed Center	21/5 5	350/5000	P\/55_P\/56
DSP105C1 C10-4 4 Way, 3 Pos - Closed Center							
VVI) ((T) - 1 1/A 1/1/A		DSP105C1	C10-4	4 Way, 3 Pos - Closed Center	32/8 5	210/3000	PV59-PV61
TY 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	*** <u> </u>	DSP105C4	C10-4	4 Way 3 Pos - Float Center	32/8.5	210/3000	P\/59-P\/61



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INTRODUCTION

This technical tips section is designed to help familiarize you with the Parker line of Proportional Valves. In this section we present common options, technical terms, as well as a brief synopsis of the operation and applications of the various products offered in this section. The intent of this section is to help you in selecting the best products for your application.

COMMON OPTIONS

As you will see, Parker offers a variety of Proportional Valve products. As such, some of the options mentioned below may not be available on all valves. Consult the model coding and dimensions for each valve for specifics. Here are some of the common options available.

Seals: The majority of the products are available in Nitrile or Fluorocarbon Seals. The Winner's Circle products feature a standard 4301 Polyurethane "D"-Ring. The "D"-Ring eliminates the need for backup rings. You should match the seal compatibility to the temperature and fluid being used in your application.

Overrides: Overrides are standard on many of the Parker proportional valves. The override is generally a push type that is flush with the end of the tube. Consult the individual catalog pages for more details.

TECHNICAL TERMS

To help in applying our proportional valve line of product, we have listed some technical terms below, as well as some helpful hints in applying our valves.

Ohm's Law: Electrical current is generated as a result of the relationship between input voltage and the resistance to the flow of electrical current. It is represented in equation form by I = V/R (or V=IR), where I is current, V is voltage and R is resistance. This is an important relationship to remember when dealing with any electrically operated valves. Proportional valves allow varying control of flow or pressure, dependant on the current signal provided. As coils heat up, their resistance rises. This means a higher voltage must be available to maintain the same amount of pressure or flow. Thus, the application needs to be designed such that the full on position is about 70% of the initial current draw. On the individual catalog pages a maximum control current is specified to help in applying our proportional valves.

PWM: Pulse Width Modulation (PWM) is the preferred signal for controlling electrical current. PWM is on / off voltage in a square wave form. The percent "on" time or duty cycle provides the average voltage. The valve driver adjusts the duty cycle to obtain current control. We recommend valve drivers with current control for optimum performance. PWM signals also usually provide dither for the proportional valve. Dither is a

small back and forth movement of the valve spool around its set position. This rapid movement reduces the friction of the valve and leads to faster, more accurate response.

PWM Frequency: The frequency of a PWM signal is the rate at which the signal is turned on and off. Parker's analog proportional valves are designed to work with low frequency responses between 100-400 Hz. The performance curves on our catalog pages were performed with a PWM signal at 200 Hz.

Hysteresis: Due to various factors, the performance of a proportional valve will show a slightly different performance when the current signal is increasing than it will when the signal is being decreased. This difference is usually expressed as a percentage of total input change and is referred to as the hysteresis of the valve.

Deadband: Cracking or deadband refers to the amount of the control signal that is needed to produce any movement of the spool. Thus, a 20% deadband means that 20% of the control signal is needed before the spool will move.



Proportional Control Valves

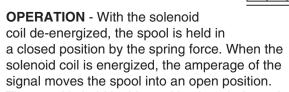
PRODUCT TYPES / APPLICATIONS

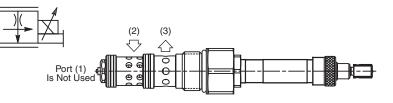
Proportional valves are nothing more than electrically adjustable hydraulic valves. They give the operator nearly infinite adjustment control and flexibility. Parker Hannifin offers various types of proportional flow control, pressure reducing, and relief valves.

Proportional Flow Control Valve

Proportional flow control valves provide pseudo pressure compensation and are used on systems requiring variable electronic control of flow. They allow the operator to vary the control signal to accelerate or decelerate an actuator. A compensator valve can be added to the circuit for enhanced compensation. Some typical applications would include the hoist control for a lift, or the speed control for a winch circuit. Parker offers both normally closed and normally open versions of proportional flow controls.

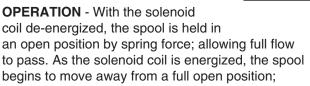
Normally Closed Proportional Flow Control

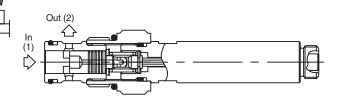




The spool is held in this position by a balance between spring force and electrical force. As the current increases, the spools opens further; allowing more flow. As the current decreases, the spool begins closing; allowing less flow. Pseudo compensation is obtained by the pressure drop across the orifices in the spool.

Normally Open Proportional Flow Control

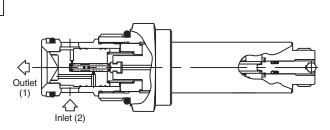




allowing less flow to pass. Once a full electronic signal is given, the spool is held in a closed position; allowing no flow to pass. As the electronic signal is then reduced, the spool begins to open; allowing flow to pass again. Once a constant electronic signal is given, the spool is held in that position by a balance between electronic force and spring force. Pseudo compensation is obtained by the pressure drop across the orifices in the spool.

Normally Closed Proportional Needle Valve

The proportional needle valves are electronic controlled variable needle valves. They are designed specifically for bleed off or unloading circuits as back pressure will affect performance.



OPERATION - With the solenoid de-energized, the main poppet is held in the closed position by spring force. When

the solenoid is energized, the sensing spool moves into a partially open position relative to the percentage of rated current flowing through the coil. This action allows the main poppet to move away from the valve seat to a degree that corresponds to sensing spool position. The valve will maintain a fixed amount of opening as long as the electrical current remains constant and will vary proportionally with an increase or decrease in current.

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Bodies & Cavities

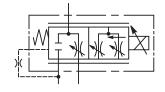
> Technical **Q** Data **Q**

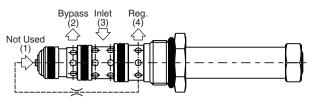


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Proportional Priority Bypass Flow Control

The proportional priority bypass flow controls allow electronic control of the flow setting for the priority flow circuit. The priority flow remains constant regardless of





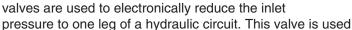
changes in load or pressure. The excess inlet flow is diverted

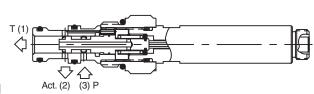
or bypassed to tank. The bypass port must not have any restrictions or performance will be hindered.

OPERATION - Flow enters the valve through port 3. With the coil de-energized, flow is bypassed to port 2. When the coil is energized, the internal orifice is increased allowing pressure compensated flow to the priority port (port 4). The excess flow is bypassed to port 2. As input current is increased, the priority flow increases and the bypass flow decreases. As the current is decreased, priority flow decreases and bypass flow is increased.

Direct Acting, Normally Closed Proportional Pressure Reducing Valve

Direct acting, normally closed proportional pressure reducing





when a fixed regulated pressure is required regardless of the inlet pressure. This valve could be used as a clutch control for power shift transmissions and PTO, or as a pilot control for directional control valves.

OPERATION - With the solenoid coil de-energized, the spool is held in a closed position by spring force. In this mode, the regulated pressure port is open to tank and the pressure inlet is blocked. As current is applied to the solenoid coil, the spool will begin to travel to a position where the pressure inlet port is connected to the regulated pressure port. At this point, reduced pressure becomes a function of the current signal. As long as the current signal is constant, the reduced pressure at the regulated pressure port will remain fixed regardless of any changes in inlet flow or inlet pressure. As the current signal increases or decreases, the reduced pressure at the regulated pressure port will change with respect to the changes in signal. Once the coil is fully energized, the reduced pressure of the regulated pressure port will be at the maximum reduced pressure for that valve.

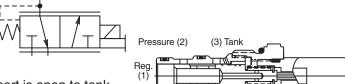


Normally Closed Proportional Pressure Reducing / Relieving Valve

Normally Closed Proportional Pressure Reducing/Relieving Valves are used to electronically reduce the inlet pressure to one leg of a hydraulic circuit. In addition these valves act as a relief valve, relieving any shocks or surges that occur between its regulating port and the actuator. Parker offers direct acting and pilot operated versions of this valve. The direct acting valves are faster responding and generally have lower hysteresis, but are limited to smaller reduced pressures (generally below 800 psi depending on the valve.) Pilot operated are generally slower on response due to the two stage performance, but can have a reduced pressure as high as 3000 psi.

Direct Acting

OPERATION - With the solenoid coil de-energized, the spool is held in a closed position by spring force.



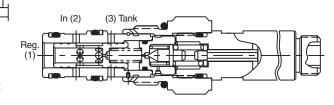
In this mode, the regulated pressure port is open to tank and the pressure inlet port is blocked. As an electronic signal is applied to the solenoid coil, the spool will begin

to travel to a position where the pressure inlet port is connected to the regulated pressure port. At this point, reduced pressure becomes a function of the voltage signal. As long as the electronic signal is constant, the reduced pressure at the regulated pressure port will remain fixed regardless of any changes in inlet flow or inlet pressure. As the electronic signal increases or decreases, the reduced pressure at the regulated port will change with respect to the change in electronic signal. Once a full signal is given, the reduced pressure of the regulated pressure port will be at the maximum reduced pressure for that valve.

Pilot Operated

OPERATION - With the solenoid coil de-energized, the pilot dart is held open by the spring force. This

allows the main spool to close and restricts flow from going from the inlet (2) port to the regulated port (1). As the electronic signal is applied to the coil, the pilot dart is moved towards the pilot seat restricting pilot flow. This



restriction raises the effective pressure inside the chamber between the spool and the pilot seat, allowing the spool to travel away from the pilot seat to a position where the pressure at inlet (2) is connected to the regulated pressure port (1). At this point, reduced pressure becomes a function of the electronic signal. As long as the electronic signal is constant, the reduced pressure at the regulated pressure port (2) will remain fixed regardless of any changes in inlet flow or inlet pressure. As the electronic signal increases or decreases, the reduced pressure at port (1) will change with respect to the change in the electronic signal.

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Bodies & Cavities

Technical **D**



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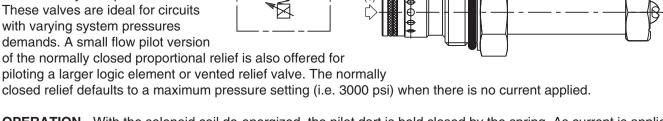
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Normally Closed Proportional Relief Valve

Normally closed proportional relief valves are used to electronically control the system pressure.

These valves are ideal for circuits with varying system pressures



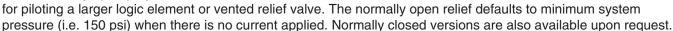
OPERATION - With the solenoid coil de-energized, the pilot dart is held closed by the spring. As current is applied to the coil, the pilot dart is moved creating less restriction of the pilot flow. As this restriction is reduced with the increasing current, the pressure setting also decreases. Once a constant electronic signal is given, the pilot dart is held in a given position, holding the pressure setting. This is maintained by the balance between the electronic spring force and the inlet pressure.

Normally Open Proportional Relief Valve

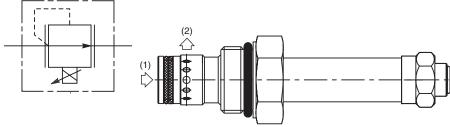
Normally open proportional relief valves are used to electronically control the system pressure. These valves are ideal for circuits

with varying system pressure demands. A small flow pilot version

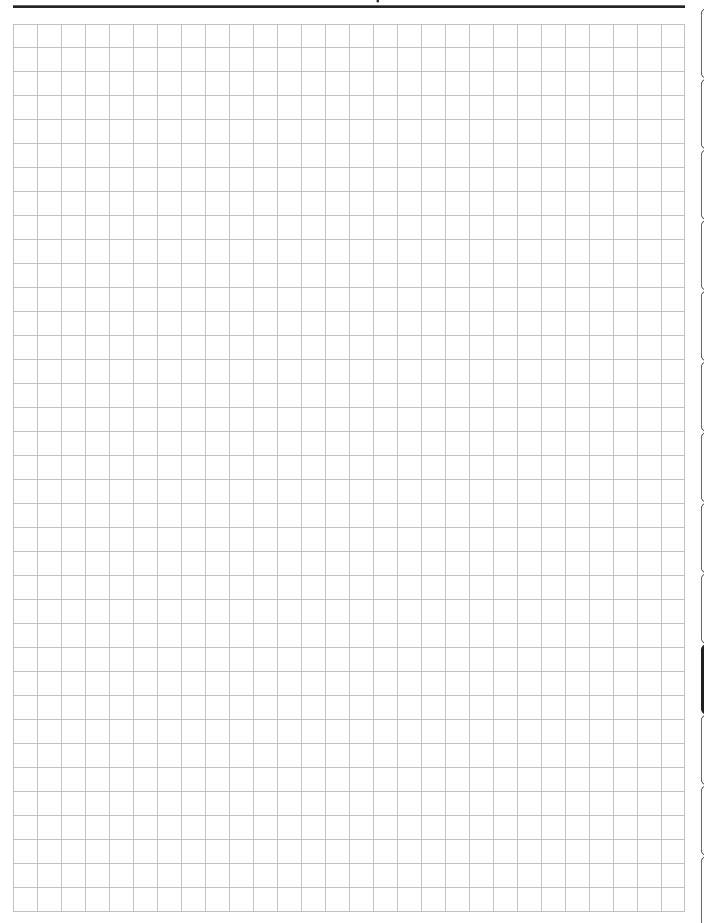
of the normally open proportional relief is also offered



OPERATION - With the solenoid coil de-energized, the pilot dart is held open by the spring. This allows the main spool to open at minimum pressure 10.4 Bar (150 psi). As current is applied to the coil, the pilot dart is moved towards the pilot seat restricting pilot flow. This restriction raises the effective pressure setting of the valve. Once a constant electronic signal is given, the pilot dart is held in a given position, holding the pressure setting. This is maintained by a balance between electronic spring force and inlet pressure. As the electronic signal is reduced, the pilot dart is moved away from the pilot seat. This lowers the effective pressure setting of the valve.



Proportional Control Valves





Pressure Controls

LE

D Logic Elements

Coils & Coils & Electronics

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PV6

Series AP01B2YP 07C, 14C, 21C, 35C

CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow Controls Pressure

L Logic

D Controls MV

Manual Valves S

Solenoid V

C Electronics

B Bodies & Cavities

Technical Data

General Description

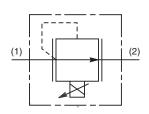
Technical Information

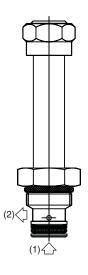
Proportional Relief Valve. Increasing Pressure With Increasing Current. For additional information see Technical Tips on pages PV1-PV6.

Features

- Analog Proportional Relief Valve regulates pressure proportionally to the solenoid current
- Direct acting poppet design
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.







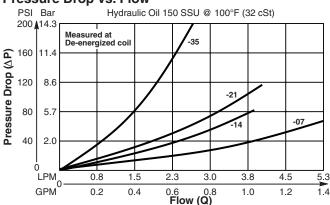
Specifications

•		
Rated Flow (At 70 PSI ΔP)	07C 5.3 LPM (1.4 GPM) 14C 3.4 LPM (0.9 GPM) 21C 3.0 LPM (0.8 GPM) 35C 1.3 LPM (.35 GPM)	
Max. Pressure At Port 1 @ 75% Input Current	07C 70 Bar (1000 PSI) 14C 140 Bar (2000 PSI) 21C 210 Bar (3000 PSI) 35C 350 Bar (5000 PSI)	
Hysteresis @ 200 Hz PWM	5%	
Cracking Pressure	07C .07 Bar (1 PSI) 14C .14 Bar (2 PSI) 21C .21 Bar (3 PSI) 35C .35 Bar (4 PSI)	
Cartridge Material	All parts steel. All operating parts hardened steel.	
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)	
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)	
Filtration	ISO Code 16/13, SAE Class 4 or better	
Approx. Weight	.06 kg (.14 lbs.)	
Cavity	2G (See BC Section for more details)	

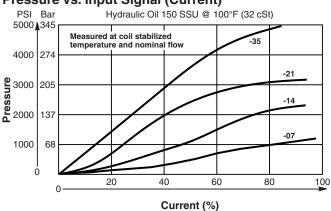
Performance Curves

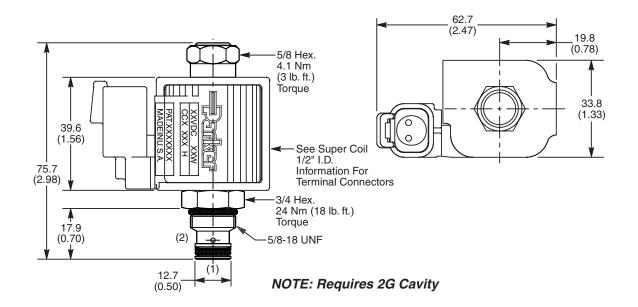
▲ PWM Current Regulator Recommended

Pressure Drop vs. Flow



Pressure vs. Input Signal (Current)







Ordering Information

AP01B2YP					
08 Size	Style	Seals	Coil	Coil	Coil

Code Style (Maximum Relief Pressure) 07C 70 Bar (1000 PSI) **140** Bar (2000 PSI) **210** Bar (3000 PSI) 350 Bar (5000 PSI)

Relief Valve

Custom pressure setting available. Consult factory.

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30129N-1)
V	Fluorocarbon / (SK30129V-1)
Ε	Ethylene Propylene

Code	Coil Type
Omit	Without Coil
SP	Super Coil - 19 Watts

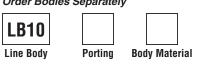
	Coil Voltage
Omit	Without Coil
D012	12 VDC
D024	24 VDC

PV8

Code	Coil Termination
Omit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See Super Coil 1/2" I.D. *DC Only

Order Bodies Separately



Code	Porting	Code	Body Material
324	1/4" SAE	Α	Aluminum
325	1/4" BSP	S	Steel



CV

Load/Motor Controls

Flow Controls

LE

DC

MV

BC

TD

Series AP02B2YP 07C, 14C, 21C, 35C

CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow PC P

Pressure L Logic Controls L Elements

Directional Controls

Manual Valves

MV

Solenoid Valves

General Description

Technical Information

Proportional Relief Valve. Increasing Pressure With Increasing Current. For additional information see Technical Tips on pages PV1-PV6.

Features

- Analog Proportional Relief Valve regulates pressure proportionally to the solenoid current
- Direct acting poppet design
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.

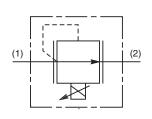
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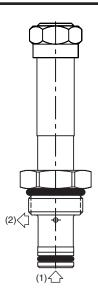
This valve will be available January 1, 2011.

Specifications

07C 5.3 LPM (1.4 GPM) 14C 3.4 LPM (0.9 GPM) 21C 3.0 LPM (0.8 GPM) 35C 1.3 LPM (.35 GPM)		
07C 70 Bar (1000 PSI) 14C 140 Bar (2000 PSI) 21C 210 Bar (3000 PSI) 35C 350 Bar (5000 PSI)		
5%		
07C .07 Bar (1 PSI) 14C .14 Bar (2 PSI) 21C .21 Bar (3 PSI) 35C .35 Bar (4 PSI)		
All parts steel. All operating parts hardened steel.		
-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)		
Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)		
ISO Code 16/13, SAE Class 4 or better		
.06 kg (.14 lbs.)		
C08-2 (See BC Section for more details)		



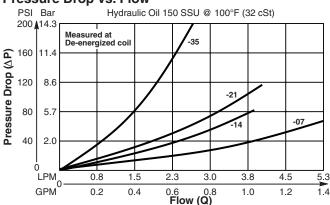




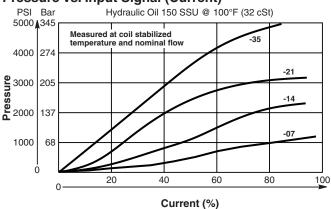
Performance Curves

▲ PWM Current Regulator Recommended

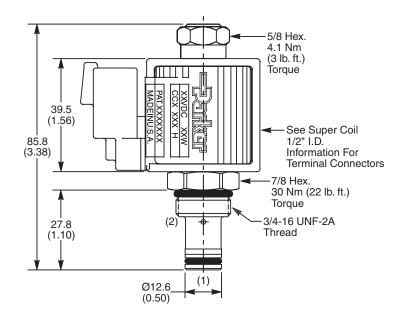
Pressure Drop vs. Flow

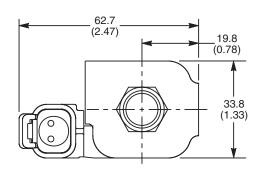


Pressure vs. Input Signal (Current)











Ordering Information

AP02B2YP

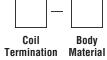
08 Size **Proportional** Relief Valve

Style	l
	1

Seals









NOTE: This valve will be available

January 1, 2011. Port Size

Code	Style (Maximum Relief Pressure)
07C	70 Bar (1000 PSI) 140 Bar (2000 PSI) 210 Bar (3000 PSI) 350 Bar (5000 PSI)
14C	140 Bar (2000 PSI)
21C	210 Bar (3000 PSI)
35C	350 Bar (5000 PSI)

Custom pressure setting available. Consult factory.

Code	Seals / Kit No.
0mit	"D"-Ring / (SK08-2)
N	Nitrile / Buna-N (Std.) (SK08-2N)
V	Fluorocarbon / (SK08-2V)

		Coil Type
		Without Coil
S	P	Super Coil - 19 Watts

	Coil Voltage
0mit	Without Coil
	12 VDC
D024	24 VDC

Code	Coil Termination
0mit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See Super Coil 1/2" I.D. *DC Only

PV10

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.
	Cartridge O	nly
4T 6T	SAE-4 SAE-6	(B08-2-*4T) (B08-2-*6T)
6B	3/8" BSPG	(B08-2-*6B)

^{*} Add "A" for aluminum, omit for steel.



CV

Load/Motor Controls

Flow Controls

DC

MV

BC

TD

Technical Information Series AP04G2YP 10C, 21C, 35C

CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow Controls PC

Pressure Controls

L Logic

D Controls MV

Manual Valves

Solenoid Valves

E Coils & Electronics

B Bodies & Cavities

Technical Data

General Description

Proportional Relief Valve. Increasing Pressure With Increasing Current. For additional information see Technical Tips on pages PV1-PV6.

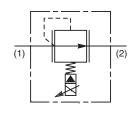
Features

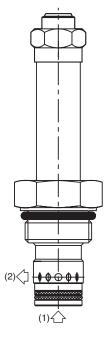
- Pilot operated spool-type design fits industry common cavity (10-2)
- Relieving pressure output is proportional to DC current input
- Precise setting of factory preset pressure in energized mode
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.

Specifications

Rated Flow (At 300 PSI ∆P) When Coil is Fully De-Energized	95 LPM (25 GPM)	
Factory Set Relief Pressure When Coil De-Energized Measured at 45 LPM (12 GPM)	10C 103 Bar (1500 PSI) 21C 210 Bar (3000 PSI) 35C 350 Bar (5000 PSI)	
Hysteresis @ 250 Hz PWM	< 7% of Maximum Pressure Setting	
Response Time At 75% of Nominal Voltage Change (Measured To 90% of Press. Change)	To Unload 10ms To Load 10C 45 ms 21C 60 ms 35C 80 ms	
Cartridge Material	All parts steel. All operating parts hardened steel.	
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)	
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)	
Filtration	ISO Code 16/13, SAE Class 4 or better	
Approx. Weight	.14 kg (.31 lbs.)	
Cavity	C10-2 (See BC Section for more details)	



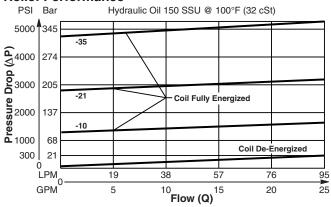




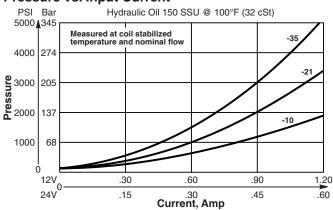
Performance Curves

▲ PWM Current Regulator Recommended

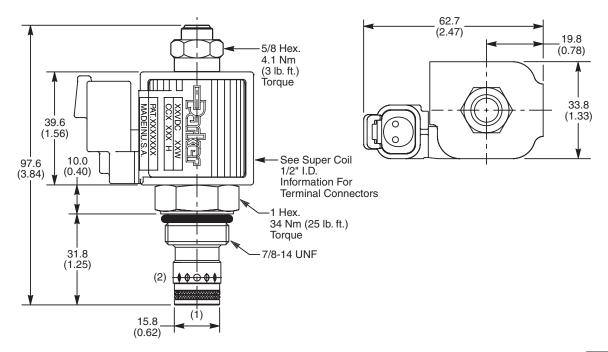
Relief Performance



Pressure vs. Input Current









Ordering Information

AP04G2YP							
10 Size Proportional Relief Valve	Style	Seals	Coil Type	Coil Voltage	Coil Termination	Body Material	Port Size

Code	Style (Maximum Relief Pressure)	
10C	104 Bar (1500 PSI) 210 Bar (3000 PSI) 350 Bar (5000 PSI)	
21C	210 Bar (3000 PSI)	
35C	350 Bar (5000 PSI)	

Custom pressure setting available. Consult factory.

Code	Seals / Kit. No.
N	Nitrile / Buna-N (Std.) (SK30503N-1)
V	Fluorocarbon / (SK30503V-1)

Code	Coil Type	
0mit	Without Coil	
SP	Super Coil - 19 Watts	

Code	Coil Voltage
	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination
Omit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See Super	Coil	1/2"	I.D.
*DC Only			

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.
Omit	Cartridge O	nly
4P 6P 8P	1/4" NPTF 3/8" NPTF 1/2" NPTF	(B10-2-*4P) (B10-2-*6P) (B10-2-*8P)
6T 8T T8T	SAE-6 SAE-8 SAE-8	(B10-2-*6T) (B10-2-*8T) (B10-2-T8T)†
6B	3/8" BSPG	(B10-2-*6B)

^{*} Add "A" for aluminum, omit for steel. † Steel body only.

CV

Check Valves

SH

Shuttle

Load/Motor **T** Controls **W**

Controls

PC slo

Pressi

Elements

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MV

Manual Valves

SV se

Proportional **T**

Coils & Soils & Soils

ВС

Bodies & Cavities

Technical **QT** Data **Q**



Series AP01B2YR 07A, 14A, 21A, 35A

CV

Check Valves

SH

Shuttle Valves LM

LM Load/Motor Controls FC

Flow Controls Pressure

Logic C Elements

LE

Directional Controls MV

Manual Valves

Solenoid Valves

al W Coils & Electronics

B Cavities

TD Technica Data **General Description**

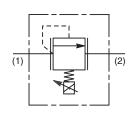
Technical Information

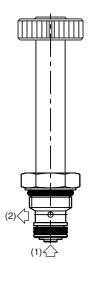
Proportional Relief Valve. Decreasing Pressure With Increasing Current. For additional information see Technical Tips on pages PV1-PV6.

Features

- Analog Proportional Relief Valve regulates pressure proportionally to the input solenoid current
- Direct acting poppet design
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.







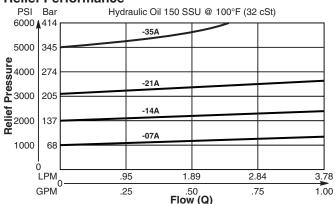
Specifications

Rated Flow (At 70 PSI ΔP)	07A 5.3 LPM (1.4 GPM) 14A 3.4 LPM (0.9 GPM) 21A 3.0 LPM (0.8 GPM) 35A 1.9 LPM (0.5 GPM)
Factory Set Relief Pressure When De-Energized (±5% -Std. ±2% - Low Variation)	07A 70 Bar (1000 PSI) 14A 140 Bar (2000 PSI) 21A 210 Bar (3000 PSI) 35A 350 Bar (5000 PSI)
Hysteresis @ 200 Hz PWM	< 10%
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.09 kg (.19 lbs.)
Cavity	2G (See BC Section for more details)

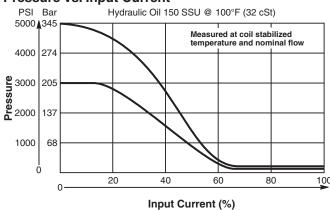
Performance Curves

▲ PWM Current Regulator Recommended

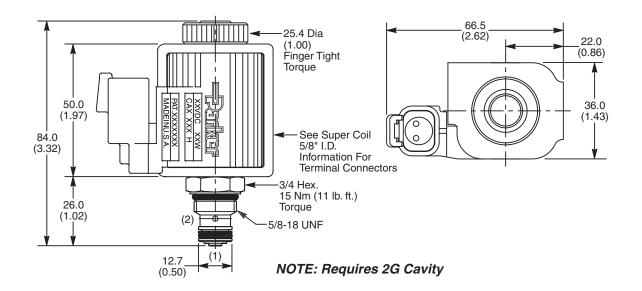
Relief Performance



Pressure vs. Input Current









Ordering Information

AP01B2YR





Seals



Type



Voltage

Coil Termination

08 Size Proportional Relief Valve

_	reliel valve	
е	Style (Maximum Relief Pressure)	
L	70 Bar (1000 PSI)	

Code	Style (Maximum Relief Pressure)	
07AL	70 Bar (1000 PSI)	
	140 Bar (2000 PSI)	
	210 Bar (3000 PSI)	
35AL	350 Bar (5000 PSI)	

Custom pressure setting available. Consult factory.

Code	Seals / Kit. No.
N	Nitrile / Buna-N (Std.) (SK30129N-1)
V	Fluorocarbon / (SK30129V-1)
Ε	Ethylene Propylene

Code	Coil Type
Omit	Without Coil
SP	Super Coil - 28 Watts

	Coil Voltage
Omit	Without Coil
D012	12 VDC
D024	24 VDC

PV14

Code	Coil Termination
Omit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See Super Coil 5/8" I.D. *DC Only

Order Bodies Separately







Code	Porting
324	1/4" SAE
325	1/4" BSP

Code	Body Material		
Α	Aluminum		
S	Steel		



CV

Load/Motor Controls

LE

DC

MV

BC

TD

CV

Check Valves

SH

Shuttle Valves

L Load/Motor Controls

FC

Flow Controls PC

Pressure Logic Controls Lements

D Directional Controls

Manual Valves S

MV

Solenoid Valves

al Eu Coils & C Electronics

B Cavities

TD Technical Data

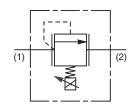
General Description

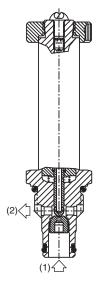
Proportional Relief Valve. Decreasing Pressure With Increasing Current. For additional information see Technical Tips on pages PV1-PV6.

Features

- Analog Proportional Relief Valve regulates pressure proportionally to the input solenoid current
- Direct acting poppet design
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.







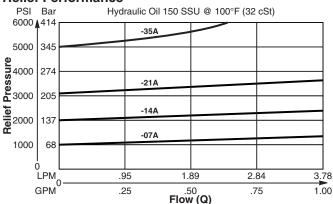
Specifications

Rated Flow (At 70 PSI ΔP)	07A 5.3 LPM (1.4 GPM) 14A 3.4 LPM (0.9 GPM) 21A 3.0 LPM (0.8 GPM) 35A 1.9 LPM (0.5 GPM)	
Factory Set Relief Pressure When De-Energized (±5% -Std. ±2% - Low Variation)	07A 70 Bar (1000 PSI) 14A 140 Bar (2000 PSI) 21A 210 Bar (3000 PSI) 35A 350 Bar (5000 PSI)	
Hysteresis @ 200 Hz PWM	< 10%	
Cartridge Material	All parts steel. All operating parts hardened steel.	
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)	
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)	
Filtration	ISO Code 16/13, SAE Class 4 or better	
Approx. Weight	.09 kg (.19 lbs.)	
Cavity	C08-2 (See BC Section for more details)	

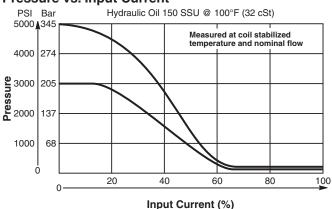
Performance Curves

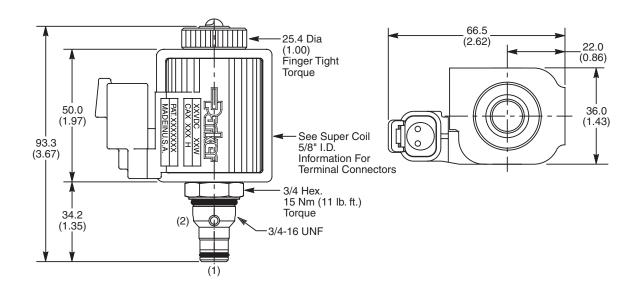
▲ PWM Current Regulator Recommended

Relief Performance



Pressure vs. Input Current







Ordering Information

AP02B2YR					_	-	
08 Size Proportional Relief Valve	Style	Seals	Coil Type	Coil Voltage	Coil Termination	Body Material	Port Size

Code	Style (Maximum Relief Pressure)		
	70 Bar (1000 PSI)		
14AL	140 Bar (2000 PSI)		
21AL	210 Bar (3000 PSI)		
35AL	350 Bar (5000 PSI)		

Custom pressure setting available. Consult factory.

Code	Seals / Kit. No.
N	Nitrile / Buna-N (Std.) (SK30006N-1)
V	Fluorocarbon / (SK30006V-1)
E	Ethylene Propylene

Code	Coil Type
0mit	Without Coil
SP	Super Coil - 28 Watts

	Coil Voltage
	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination	
Omit	Without Coil	
D	DIN Plug Face	
Α	Amp Jr. Timer*	
L	Dual Lead Wire*	
LS	Sealed Lead Wire*	
Н	Molded Deutsch*	
Can Cumar Cail E /0// L D		

See Super Coil 5/8" I.D. *DC Only

PV16

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.	
0mit	Cartridge Only		
4P 6P	1/4" NPTF 3/8" NPTF	(B08-2-*4P) (B08-2-*6P)	
4T 6T	SAE-4 SAE-6	(B08-2-*4T) (B08-2-*6T)	
6B	3/8" BSPG	(B08-2-*6B)	
* 444 6		(DUO-Z- UD)	

^{*} Add "A" for aluminum, omit for steel.



CV

Load/Motor Controls

LE

DC

MV

BC

TD

CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow Controls Pressure

L Logic

D Controls MV

Manual Valves S

Solenoid V Pr

C Electronics

B Bodies & Cavities

TD Technical Data

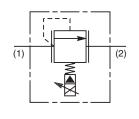
General Description

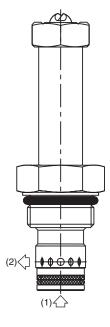
Proportional Relief Valve. Decreasing Pressure With Increasing Current. For additional information see Technical Tips on pages PV1-PV6.

Features

- Pilot operated spool-type design
- Precise setting of factory preset pressure in de-energized mode
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.







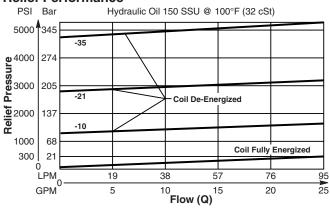
Specifications

_		
Rated Flow (At 300 PSI ΔP) When Coil is Fully Energized	95 LPM (25 GPM)	
Factory Set Relief Pressure When Coil De-Energized Measured at 45 LPM (12 GPM)	10C 103 Bar (1500 PSI) 21C 210 Bar (3000 PSI) 35C 350 Bar (5000 PSI)	
Hysteresis @ 250 Hz PWM	< 7% of Maximum Pressure Setting	
Response Time At 75% of Nominal Voltage Change (Measured To 90% of Press. Change)	To Unload 45ms To Load 25ms	
Cartridge Material	All parts steel. All operating parts hardened steel.	
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)	
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)	
Filtration	ISO Code 16/13, SAE Class 4 or better	
Approx. Weight	.14 kg (.30 lbs.)	
Cavity	C10-2 (See BC Section for more details)	

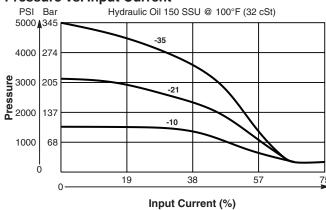
Performance Curves

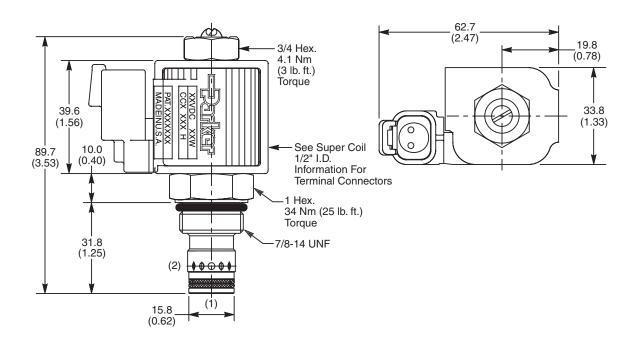
▲ PWM Current Regulator Recommended

Relief Performance



Pressure vs. Input Current





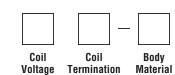


Ordering Information

AP04G2YR

Style







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Pro	וסמנ	rtiona	ı
		Valv	
		vaiv	_
		-	

	Style (Maximum Relief Pressure)
10C	104 Bar (1500 PSI)
21C	210 Bar (3000 PSI) 350 Bar (5000 PSI)
35C	350 Bar (5000 PSI)

Custom pressure setting available. Consult factory.

Code	Seals / Kit. No.
N	Nitrile / Buna-N (Std.) (SK30503N-1)
V	Fluorocarbon / (SK30503V-1)

Code	Coil Type
0mit	Without Coil
SP	Super Coil - 19 Watts

	Coil Voltage
	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination
Omit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See	Super	Coil	1/2" I.D.
*DC	Only		

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.
0mit	Cartridge O	nly
4P 6P 8P	1/4" NPTF 3/8" NPTF 1/2" NPTF	(B10-2-*4P) (B10-2-*6P) (B10-2-*8P)
6T 8T T8T	SAE-6 SAE-8 SAE-8	(B10-2-*6T) (B10-2-*8T) (B10-2-T8T)†
6B	3/8" BSPG	(B10-2-*6B)

^{*} Add "A" for aluminum, omit for steel. † Steel body only.

Check Valve

CV

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Load/Motor **T** Controls **W**

FC slout

PC S

| Pressu | Control

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rectional **O**

MV

Nanu Valve

Solenoid Valves

Proportional Valves

Coils & Coils

ВС

Bodies & Cavities

Technical **QL** Data **Q**



CV

Check Valves

SH

Shuttle Valves

L Load/Motor Controls

FC

Flow Controls PC

Pressure E

Logic C

D Controls MV

Manual Valves

Solenoid Valves

Electronics

B Bodies & Cavities

T Technical Data

General Description

3 Way, 2 Position, Proportional Pressure Reducing Valve. Bottom Cylinder Port. For additional information see Technical Tips on pages PV1-PV6.

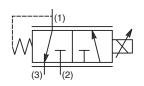
Features

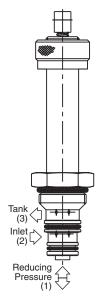
- Designed for pilot control of directional valves
- Low Hysteresis
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.

Specifications

Rated Flow (At 70 PSI ΔP)	1.9 LPM (0.5 GPM)
Max. Regulated Pressure @ 75% Current	Standard 17 Bar (250 PSI) High Pressure 22 Bar (320 PSI)
Max. Input Press. At Port 1	210 Bar (3000 PSI)
Max. Tank Press.	30 Bar (440 PSI)
Max. Drainage Flow In Regulating Zone	5 cc/min. When De-Energized 200 cc/min. In Regulating Zone At 68 Bar (1000 PSI) Input Pressure
Hysteresis @ 200 Hz PWM	2%
Dead End Response Time	t on = 30 ms t off = 10 ms At Step Signal 0 To 75% of Nominal Voltage
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.08 kg (.17 lbs.)
Cavity	54-1 (See BC Section for more details)



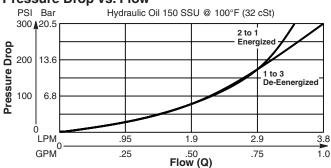




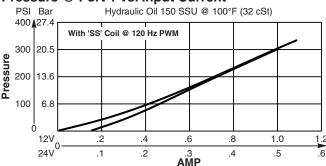
Performance Curves

▲ PWM Current Regulator Recommended

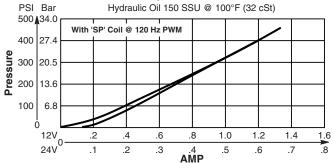
Pressure Drop vs. Flow



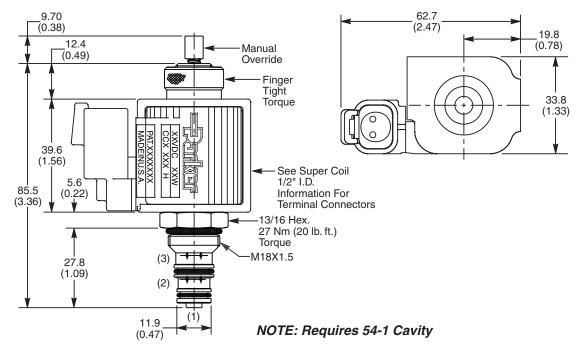
Pressure @ Port 1 vs. Input Current



Pressure @ Port 1 vs. Input Current









Ordering Information

GP01

30 Style



Option



Screen







Termination

08 Size Proportional Valve

	valve
Code	Style
30	Standard ('SS' Coil)
30	High Pressure
	('SP' Coil)

	Override Option
O mit	If No M.O.
1	Manual Override

Code	Filter Screen
Omit	Not Required
F	60 Mesh Screen on Inlet Port

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30122N-1)
V	Fluorocarbon / (SK30122V-1)

	Coil Type
	Without Coil
SS	Super Coil - 14 Watts
SP	Super Coil - 19 Watts

Code	Coil Voltage
Omit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination
Omit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See Super Coil 1/2" I.D. *DC Only

Order Bodies Separately







Porting	
1/4" SAE	
	-

Code	Body Material
Α	Aluminum
S	Steel



CV

Check Valves

SH

Load/Motor **T** SI Controls **W** V;

FC Contrib

Flow Controls

Pressure Controls

LE \$1

DC E

Directional Controls

MV

Manual Valves

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Proportional **d** Valves

Coils & **D** Electronics **E**

BC % se

D Bodies

Technical Data

CV

Check Valves

SH

Shuttle Valves LM

Load/Motor Controls FC

Flow Controls Pressure

L Logic C

D Controls MV

Manual Valves

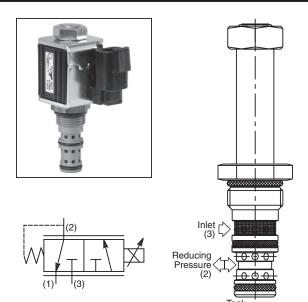
Solenoid Valves

General Description

3 Way, 2 Position, Proportional Pressure Reducing Valve. Side Cylinder Port. For additional information see Technical Tips on pages PV1-PV6.

Features

- Minimal Hysteresis
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly



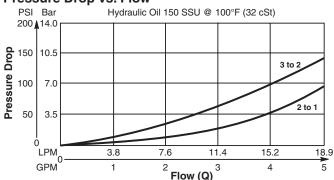
Specifications

Rated Flow (At 70 PSI ΔP)	19 LPM (5 GPM)				
Max. Regulated Pressure @ 75% Current (Using 'SP' Coil)	02 12/17 Bar (180/240 PSI) 03 19/26 Bar (270/375 PSI) 05 31/40 Bar (450/580 PSI) 06 41/51 Bar (600/740 PSI) 09 65/79 Bar (940/1140 PSI) 18 114/145 Bar (1650/2100 PSI)				
Max. Input Press. At Port 3	210 Bar (3000 PSI)				
Max. Drainage Flow In Regulating Zone	100 cc/min. When De-Energized 750 cc/min. In Regulating Zone At 21 Bar (300 PSI) Input Pressure				
Hysteresis @ 100 Hz PWM	3.5%				
Dead End Response Time	10 ms At Step Signal 0 To 75% of Nominal Voltage				
Cartridge Material	All parts steel. All operating parts hardened steel.				
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)				
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)				
Filtration	ISO Code 16/13, SAE Class 4 or better				
Approx. Weight	.08 kg (.17 lbs.)				
Cavity	C08-3 (See BC Section for more details)				

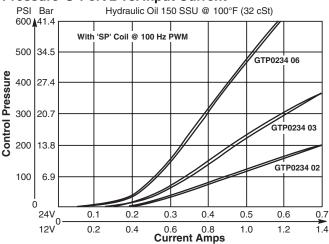
Performance Curves

▲ PWM Current Regulator Recommended

Pressure Drop vs. Flow



Pressure @ Port 2 vs. Input Current





CV

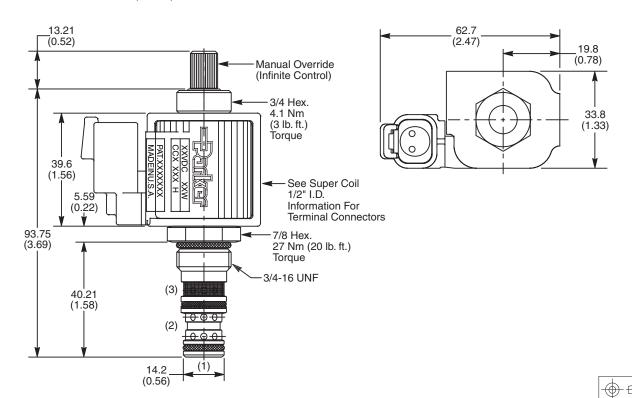
Load/Motor Controls

DC

BC

TD

Dimensions Millimeters (Inches)





GTP0234			1					-	
08 Size Proportional Valve	Style	Override Option	Filter Screen	Seals	Coil Type	Coil Voltage	Coil Termination	Body Material	Port Size

Code	Style (Maximum Regulated Pressure Range - SP COIL)
02	12/17 Bar (180/240 PSI)
03	19/26 Bar (270/375 PSI)
05	31/40 Bar (450/580 PSI)
06	41/51 Bar (600/740 PSI)
09	65/79 Bar (940/1140 PSI)
18	114/145 Bar (1650/2100 PSI)

Code	Override Option	
0	Not Required	
5	Detented M.O.	

Code	Filter Screen
	60 Mesh Screen on Inlet Port

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30081N-1)
V	Fluorocarbon / (SK30081V-1)

	Coil Type	
0mit	Without Coil	
SS	Super Coil - 14 Watts	
SP	Super Coil - 19 Watts	

Code	Coil Voltage
	Without Coil
	12 VDC
D024	24 VDC

Code	Coil Termination	
0mit	Without Coil	
D	DIN Plug Face	
Α	Amp Jr. Timer*	
L	Dual Lead Wire*	
LS	Sealed Lead Wire*	
Н	Molded Deutsch*	

See Super Coil 1/2" I.D. *DC Only

PV22

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.
Omit	Cartridge O	nly
4P	1/4" NPTF	(B08-3-*4P)
4T 6T	SAE-4 SAE-6	(B08-3-*4T)
6T	SAE-6	(B08-3-*6T)
6B	3/8" BSPG	(B08-3-*6B)

^{*} Add "A" for aluminum, omit for steel.



CV

Check Valves

SH

Shuttle Valves LM

Load/Motor Controls FC

Flow Controls Pressure

LE

Logic C Dire

Directional Solution Manual Controls Manual Valves

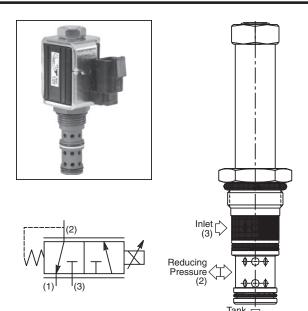
S Solenoic

General Description

3 Way, 2 Position, Proportional Pressure Reducing Valve. Side Cylinder Port. For additional information see Technical Tips on pages PV1-PV6.

Features

- Minimal Hysteresis
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly



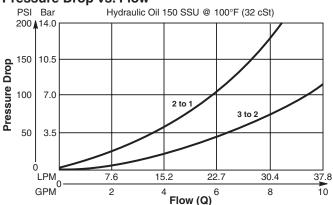
Specifications

Rated Flow (At 70 PSI ΔP)	30 LPM (8 GPM)	
Max. Regulated Pressure @ 75% Current (Using 'SP' Coil)	02 14/17 Bar (200/240 PSI) 03 21/27 Bar (300/390 PSI) 05 29/38 Bar (420/550 PSI) 09 56/74 Bar (810/1080 PSI)	
Max. Input Press. At Port 3	210 Bar (3000 PSI)	
Max. Drainage Flow In Regulating Zone	25 cc/min. When De-Energized 800 cc/min. In Regulating Zone At 21 Bar (300 PSI) Input Pressure	
Hysteresis @ 200 Hz PWM	3.5%	
Dead End Response Time	40 ms At Step Signal 0 To 75% of Nominal Voltage	
Cartridge Material	All parts steel. All operating parts hardened steel.	
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)	
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)	
Filtration	ISO Code 16/13, SAE Class 4 or better	
Approx. Weight	.13 kg (.28 lbs.)	
Cavity	3X (See BC Section for more details)	

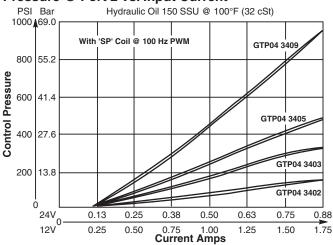
Performance Curves

▲ PWM Current Regulator Recommended

Pressure Drop vs. Flow



Pressure @ Port 2 vs. Input Current





CV

Load/Motor Controls

LE

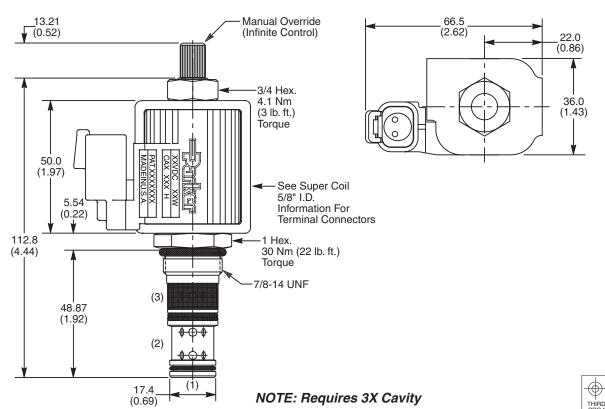
DC

MV

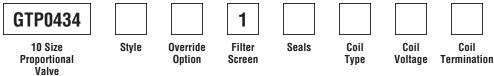
BC

TD

Dimensions Millimeters (Inches)



Ordering Information



Code	Style (Maximum Regulated Pressure Range - SP Coil)	
02	14/17 Bar (200/240 PSI) 21/27 Bar (300/390 PSI) 29/38 Bar (420/550 PSI)	
03	21/27 Bar (300/390 PSI)	
05	29/38 Bar (420/550 PSI)	
09	56/74 Bar (810/1080 PSI)	

Contact factory for other regulated pressure to 124 Bar (1800 PSI)

Override Option
Not Required
Detented M.O.

Code	Filter Screen
1	60 Mesh Screen on Inlet Port

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30081N-1)
V	Fluorocarbon / (SK30081V-1)

	Coil Type	
Omit	Without Coil	
SS	Super Coil - 18 Watts	
SP	Super Coil - 28 Watts	

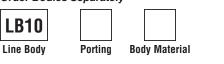
PV24

Code	Coil Voltage
Omit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination	
Omit Without Coil		
D	DIN Plug Face	
Α	Amp Jr. Timer*	
L	Dual Lead Wire*	
LS	Sealed Lead Wire*	
Н	Molded Deutsch*	

See Super Coil 5/8" I.D. *DC Only

Order Bodies Separately



Code	Porting	Code	Body Material
553	1/2" SAE	Α	Aluminum
554	3/8" BSP	S	Steel



CV

Check Valves

SH

Shuttle Valves

Load/Motor Controls

FC

Flow Controls Pressure

L Logic

D Controls MV

Manual Valves S

Solenoid Valves

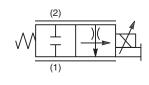
General Description

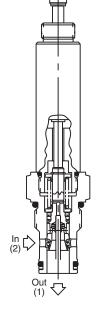
Normally Closed Proportional Flow Control Valve. For additional information see Technical Tips on pages PV1-PV6.

Features

- On-off type solenoids
- Low hysteresis
- PWM signal preferred
- Manual override standard
- All external parts zinc plated



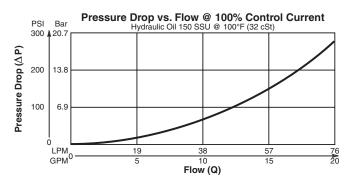


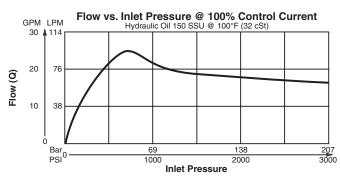


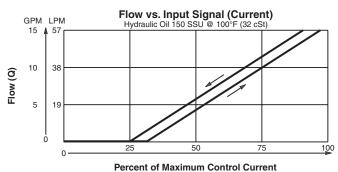
Specifications

Rated Flow Valve Fully Open	53 LPM (14 GPM)
Maximum Inlet Pressure	210 Bar (3000 PSI)
Hysteresis @ 200 Hz PWM	4%
Cracking (Dead band)	20% - 30% of Input Signal
Frequency	100 - 400 Hz (200 Hz Preferred)
Maximum Control Current	12 VDC 24VDC 2.45A 1.23A
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.32 kg (0.7 lbs.)
Cavity	C12-2 (See BC Section for more details)
Form Tool	Rougher None Finisher NFT12-2F

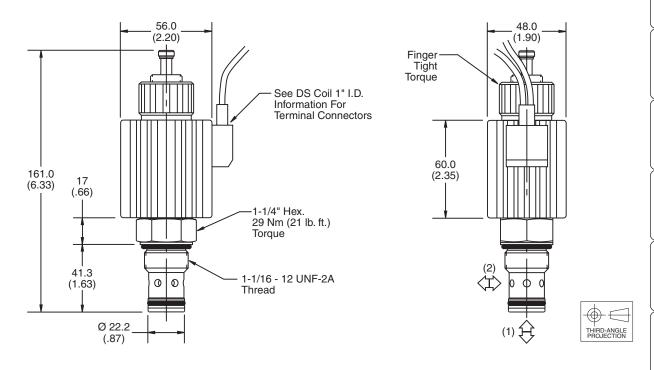
Performance Curves











Ordering Information

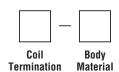














Size

Closed	ze Nori I Propo Control	rtional

Code	Override Options	
Omit	Push Type with Extended Rod	

Code	Seals / Kit. No.
Omit	Nitrile / (SK12-2)
V	Fluorocarbon / (SK12-2V)

	Coil Voltage	
0mit	Cartridge without Coil	
	12 VDC	
D024	24 VDC	

Code	Coil Wattage
Omit	Cartridge without Coil
	High Watt

Code	Coil Termination
Omit	Cartridge without Coil
D	DIN
P	Dual Spade
W	Dual Wire
See DS Coil 1" I.D.	

PV26

Code	Body Material
Omit	Steel
Α	Aluminum

	Port Size	Body Part No.
12P	3/4" NTPF	(B12-2-*12P)
8T 12T	SAE - 8 SAE - 12	(B12-2-*8T) (B12-2-*12T)

^{*} Add "A" for aluminum, omit for steel.



CV

Load/Motor Controls

MV

BC

TD

CV

Check Valves

SH

Shuttle Valves

Load/Motor Controls

FC

Flow Controls PC

Pressure E Controls

Logic C Directional Elements C Controls

Manual Valves S

MV

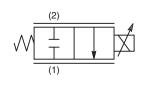
General Description

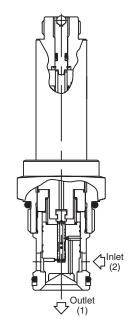
Normally Closed Proportional Needle Valve. This valve is designed specifically for bleed off or unloading circuits. Back pressure will affect performance. For additional information see Technical Tips on pages PV1-PV6.

Features

- On-off type solenoids
- Low hysteresis
- PWM signal preferred
- All external parts zinc plated



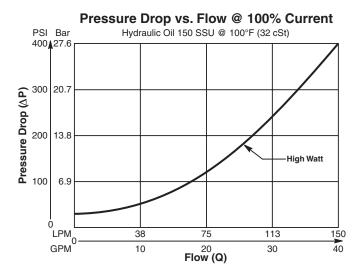


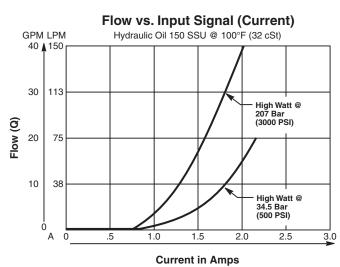


Specifications

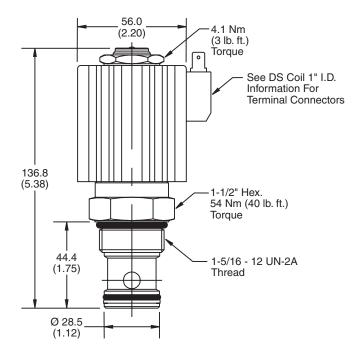
Rated Flow Valve Fully Open	High Watt Coil 150 LPM (40 GPM)	
Maximum Inlet Pressure	210 Bar (3000 PSI)	
Leakage at 150 SSU (32 cSt)	125 cc/min. (7.6 in³/min.)	
Hysteresis @ 200 Hz PWM	4%	
Cracking (Dead band)	20% - 30% of Input Signal	
Frequency	100 - 400 Hz (200 Hz Preferred)	
Maximum Control Current	12 VDC 24VDC High Watt 2.45A 1.23A	
Cartridge Material	All parts steel. All operating parts hardened steel.	
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)	
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)	
Filtration	ISO Code 16/13, SAE Class 4 or better	
Approx. Weight	.34 kg (0.75 lbs.)	
Cavity	C16-2 (See BC Section for more details)	
Form Tool	Rougher None Finisher NFT16-2F	

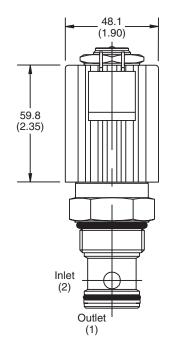
Performance Curves













Ordering Information

DF161C40				-	
16 Size Normally Closed Proportional Flow Control Valve	Seals	Coil Voltage	Coil Termination	Body Material	Port Size

	Seals / Kit. No.
Omit	Nitrile / (SK16-2)
V	Fluorocarbon / (SK16-2V)

Code	Coil Voltage	
Omit	Cartridge without Coil	
D012	12 VDC	
D024	24 VDC	

Coue	Coil Termination	
0mit	Cartridge without Coil	
D	DIN	
P	Dual Spade	
W	Dual Wire	

See	DS	Coil	1" I.D	

Code	Body Material	
Omit	Steel	
Α	Aluminum	

Code	Port Size	Body Part No.
12P	3/4" NTPF	(B16-2-*12P)
16P	1" NTPF	(B16-2-*16P)
8T	SAE - 8	(B16-2-*8T)
12T	SAE - 12	(B16-2-*12T)
16T	SAE - 16	(B16-2-*16T)
12B	3/4" BSPG	(B16-2-12B)†
16B	1" BSPG	(B16-2-*16B)

^{*} Add "A" for aluminum, omit for steel. † Steel body only.



Check Valves

SH

Shuttle Valves

Load/Motor P Controls

> Flow Controls

PC sone

Pressu

| Logic | Elements

Directional Controls

MV

Manu Valve

olenoid 7alves

Proportional **A** Valves

Coils & O

ВС

Bodies & Cavities

Technical **A** Data **Q**



CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow Controls Pressure

L Elements

D Controls MV

Manual Valves

> Solenoid Valves

E Coils & Electronics

BC

Bodies & Cavities

Technical Data

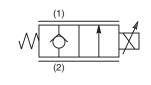
General Description

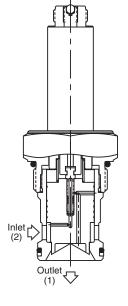
Normally Closed Proportional Needle Valve. This valve is designed specifically for bleed off or unloading circuits. Back pressure will affect performance. For additional information see Technical Tips on pages PV1-PV6.

Features

- On-off type solenoids
- Low hysteresis
- PWM signal preferred
- All external parts zinc plated



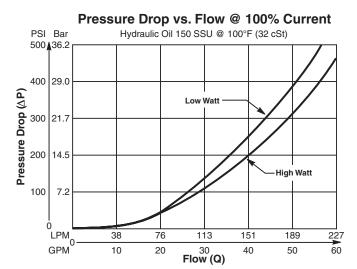


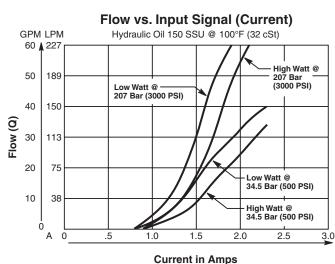


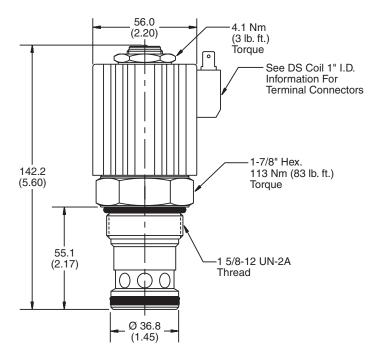
Specifications

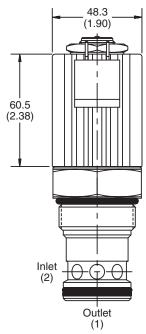
Rated Flow Valve Fully Open	Low Watt 180 LPM (48 GPM) High Watt 227 LPM (60 GPM)		
Maximum Inlet Pressure	210 Bar (3000 PSI)		
Leakage at 150 SSU (32 cSt)	125 cc/min. (7.6 in³/min.)		
Hysteresis @ 200 Hz PWM	4%		
Cracking (Dead band)	20% - 30% of Input Signal		
Frequency	100 - 400 Hz (200 Hz Preferred)		
Maximum Control Current	12 VDC 24VDC Low Watt 1.75A .91A High Watt 2.45A 1.23A		
Cartridge Material	All parts steel. All operating parts hardened steel.		
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)		
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)		
Filtration	ISO Code 16/13, SAE Class 4 or better		
Approx. Weight	.34 kg (0.75 lbs.)		
Cavity	C20-2 (See BC Section for more details)		
Form Tool	Rougher None Finisher NFT20-2F		

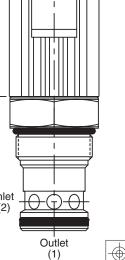
Performance Curves











Ordering Information

20 Size Normally

Closed Proportional

Flow Control Valve

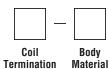




Voltage



Wattage





Size

Code	Seals / Kit. No.
0mit	Nitrile / (SK20-2)
V	Fluorocarbon / (SK20-2V)

	Coil Voltage
0mit	Cartridge without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Wattage
Omit	Cartridge without Coil
L	Low Watt
Н	High Watt

Code	Coil Termination	
Omit	Cartridge without Coil	
D	DIN	
Р	Dual Spade	
W	Dual Wire	
0 D0 0-114#1 D		

See	DS	Coil	1"	I.D.

Code	Body Material
Omit	Steel
Α	Aluminum

	Port Size	Body Part No.		
20T	SAE - 20	(B20-2-*20T)		
20B	1-1/4" BSPG	(B20-2-*20B)		

^{*} Add "A" for aluminum, omit for steel.

CV

Load/Motor Controls

LE

MV

BC

TD



CV

Check Valves

SH

Shuttle Valves

L Controls FC

Flow Controls

Pressure L Logic Controls L Elements

C Directional Controls

Manual Valves S

MV

Solenoid V F

E Coils & Electronics

B Cavities

Technical Data

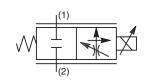
General Description

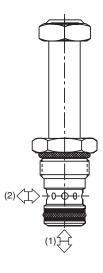
2 Way, Normally Closed, Proportional Flow Regulator Valve. Partially Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

Features

- Analog Proportional Partially Pressure Compensated Flow Regulator regulates flow proportionally to the input solenoid current.
- A low cost valve designed to be used in applications where fine pressure compensation is not required.
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly
- Factory-adjusted low variation option (Model "L") is available for applications where low variation of flow from valve to valve is essential at a given current or when an external pressure compensator is used.







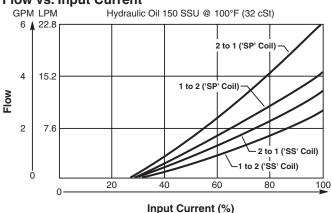
Specifications

Rated Flow @ 210 Bar (3000 PSI)	Standard ('SS' Coil) 2 to 1 13.3 LPM (3.5 GPM) 1 to 2 9.5 LPM (2.5 GPM) High Flow ('SP' Coil) 2 to 1 22.8 LPM (6.0 GPM) 1 to 2 15.0 LPM (4.0 GPM)
Preferable Input Port For Best Hysteresis	Port 1
Hysteresis @ 100 Hz PWM	<10%
Cracking Pressure	25% of Input Current
Variation of Flow @ 35% of Rated Current & Constant ΔP Maintained By Pressure Compensator	Standard Model Up To ±20% Of Rated Flow Model "L" ±7% Of Rated Flow
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.08 kg (.17 lbs.)
Cavity	2X (See BC Section for more details)

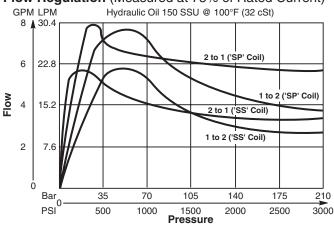
Performance Curves

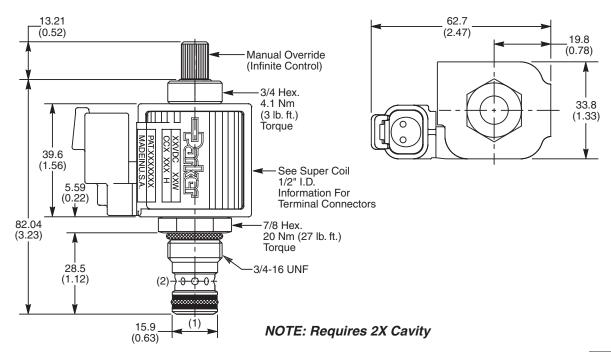
▲ PWM Current Regulator Recommended

Flow vs. Input Current



Flow Regulation (Measured at 75% of Rated Current)







Ordering Information

HP02C	21							
08 Size Proportional Valve	Style	Override Option	Filter Screen	Seals	Flow Variation	Coil Type	Coil Voltage	Coil Termination

Code	Style (Maximum Regulated Flow)
21	Standard ('SS' Coil) 13.3 LPM (3.5 GPM)
21	High Flow ('SP' Coil) 22.8 LPM (6.0 GPM)

Code	Override Option
0	Not Required
5	Detented M.O. (Infinite Control)

Code	Filter Screen
0	Not Available

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30076N-1)
V	Fluorocarbon / (SK30076V-1)

Code	Flow Variation
Omit	Standard Up to ±20% of Rated Flow
L	Low Variation (±7% of Rated Flow)

	Coil Type
O mit	Without Coil
SS	Super Coil - 14 Watts
SP	Super Coil - 19 Watts

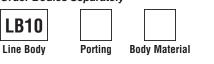
PV32

Code	Coil Voltage
O mit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination
0mit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See Super Coil 1/2" I.D. *DC Only

Order Bodies Separately



Code	Porting	Code	Body I
513	3/8" SAE	Α	Alumii
515	1/4" BSP	S	Steel

Code	Body Material	
Α	Aluminum	
S	Steel	



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Manual Valves

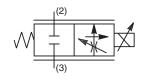
General Description

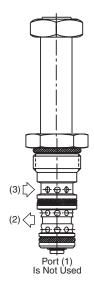
2 Way, Normally Closed, Proportional Flow Regulator Valve. Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

Features

- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly
- Factory-adjusted low variation option (Model "L") is available for applications where low variation of flow from valve to valve is essential at a given current.







Specifications

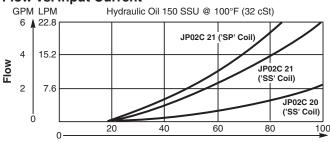
Specifications		
Rated Flow	20 21 21	7.5 LPM (2 GPM) Low Flow ('SS' Coil) 15 LPM (4 GPM) Standard ('SS' Coil) 23 LPM (6 GPM) High Flow ('SP' Coil)
Maximum Input Pressure At Port 2	210 Bar (3000 PSI)	
Minimum Pressure Differential	20 21 21	6.9 Bar (150 PSI) Low Flow 13.8 Bar (200 PSI) Standard 20.7 Bar (300 PSI) High Flow
Maximum Internal Leakage	570 cc (35 cu. in.) @ 210 Bar (3000 PSI)	
Hysteresis @ 100 Hz PWM	<10% (Low Flow and Standard) <3% (High Flow)	
Cracking Pressure	25% of Input Signal	
Variation of Flow	Standard Model Up To ±20% Of Rated Flow Model "L" ±7% Of Rated Flow	
@ 35% of Rated Current	Up To	±20% Of Rated Flow
@ 35% of Rated	Up To Mode ±7%	±20% Of Rated Flow
@ 35% of Rated Current	Up To Mode ±7% All parts -40°C (-40°I -31.7	0 ±20% Of Rated Flow BI "L" Of Rated Flow arts steel. All operating
@ 35% of Rated Current Cartridge Material Operating Temp.	Up To Mode ±7% All parts -40°C (-40°I -31.7 (-25°I Miner lubric	0 ±20% Of Rated Flow El "L" Of Rated Flow arts steel. All operating hardened steel. C to +93.3°C (Nitrile) F to +200°F) °C to +121.1°C (Fluorocarbon)
@ 35% of Rated Current Cartridge Material Operating Temp. Range/Seals Fluid Compatibility/	Up To Mode ±7% All pa parts -40°C (-40°I -31.7 (-25°I Miner lubric of 45	o ±20% Of Rated Flow el "L" Of Rated Flow arts steel. All operating hardened steel. C to +93.3°C (Nitrile) F to +200°F) °C to +121.1°C (Fluorocarbon) F to +250°F) ral-based or synthetic with rating properties at viscosities
@ 35% of Rated Current Cartridge Material Operating Temp. Range/Seals Fluid Compatibility/ Viscosity	Up To Mode ±7% All paparts -40°C (-40° -31.7 (-25° Minel lubric of 45 ISO (SAE	o ±20% Of Rated Flow el "L" Of Rated Flow arts steel. All operating hardened steel. C to +93.3°C (Nitrile) F to +200°F) °C to +121.1°C (Fluorocarbon) F to +250°F) ral-based or synthetic with eating properties at viscosities to 2000 SSU (6 to 420 cSt) Code 16/13,

(See BC Section for more details)

Performance Curves

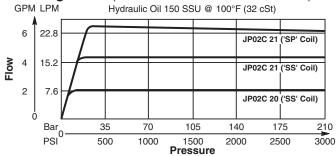
▲ PWM Current Regulator Recommended

Flow vs. Input Current

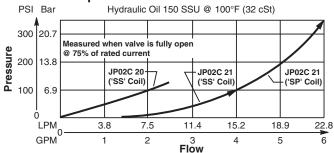


Input Current (%)

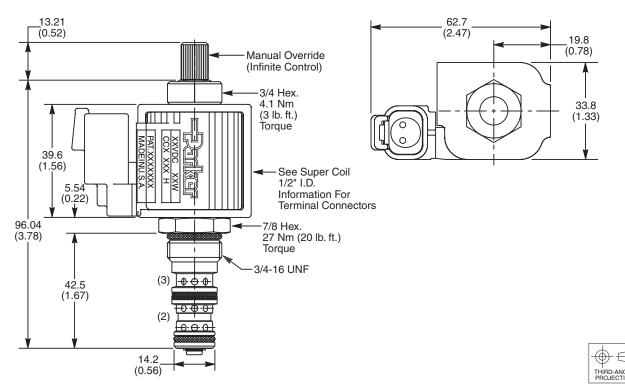
Flow Regulation (Measured 75% of Rated Current)



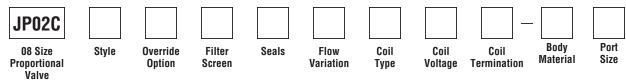
Pressure Drop vs. Flow











Code	Style (Maximum Regulated Flow)
20	Low Flow ('SS' Coil) 7.5 LPM (2 GPM)
21	Standard ('SS' Coil) 15 LPM (4 GPM)
21	High Flow ('SP' Coil) 23 LPM (6 GPM)

Code	Override Option	
0	Not Required	
5	Detented M.O. (Infinite Control)	

Code	Filter Screen	
0	Not Available	
1	60 Mesh Screen on Port 2	

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30105N-1)
V	Fluorocarbon / (SK30105V-1)

	Flow Variation
0mit	Standard Up to ±20% of Rated Flow
L	Low Variation (±7% of Rated Flow)

	Coil Type	
Omit	Without Coil	
	Super Coil - 14 Watts	
SP	Super Coil - 19 Watts	

Code	Coil Voltage
0mit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination	
Omit	Without Coil	
D	DIN Plug Face	
Α	Amp Jr. Timer*	
L	Dual Lead Wire*	
LS	Sealed Lead Wire*	
Н	Molded Deutsch*	

See Super Coil 1/2" I.D. *DC Only

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.
Omit	Cartridge O	nly
4P	1/4" NPTF	(B08-3-*4P)
4T	SAE-4	(B08-3-*4T)
6T	SAE-6	(B08-3-*6T)
6B	3/8" BSPG	(B08-3-*6B)

^{*} Add "A" for aluminum, omit for steel.

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Check Valves

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Coils & D

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Technical Data



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Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow Controls PC Pressure Controls

LE Logic Elements

DC Directional Controls MV

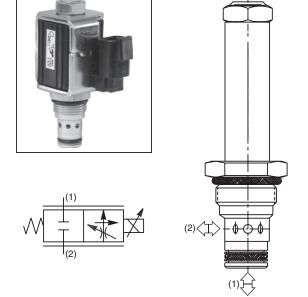
> Manual Valves SV

General Description

2 Way, Normally Closed, Proportional Flow Regulator Valve. Partially Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

Features

- Analog Proportional Partially Pressure Compensated Flow Regulator regulates flow proportionally to the input solenoid current.
- A low cost valve designed to be used in applications where fine pressure compensation is not required.
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly
- Factory-adjusted low variation option (Model "L") is available for applications where low variation of flow from valve to valve is essential at a given current or when an external pressure compensator is used.



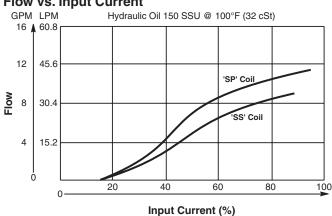
Specifications

Rated Flow 2 to 1 @ 210 Bar (3000 PSI)	Standard ('SS' Coil) 30 LPM (8 GPM) High Flow ('SP' Coil) 36 LPM (9.5 GPM)
Preferable Input Port For Best Hysteresis	Port 1
Hysteresis @ 100 Hz PWM	<10%
Cracking Pressure	21% of Rated Current (Standard) 17% of Rated Current (High Flow)
Variation of Flow @ 35% of Rated Current & Constant ΔP Maintained By Pressure Compensator	Standard Model Up To ±5% Of Rated Flow Model "L" ±2% Of Rated Flow
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.12 kg (.26 lbs.)
Cavity	C10-2 (See BC Section for more details)

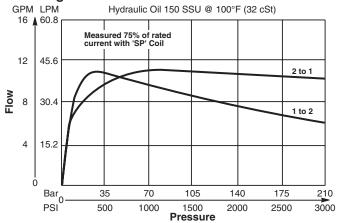
Performance Curves

▲ PWM Current Regulator Recommended

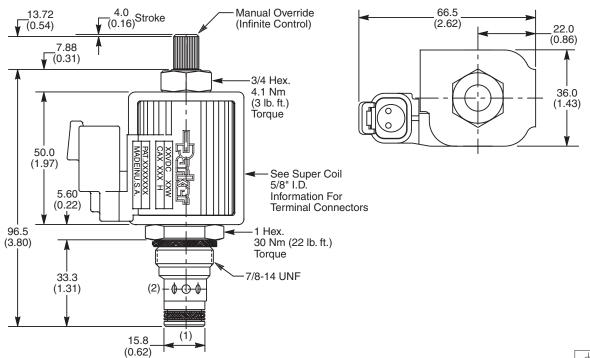
Flow vs. Input Current



Flow Regulation









Ordering Information

HP04C	21								-	
10 Size Proportional Valve	Style	Override Option	Filter Screen	Seals	Opening Point Variation	Coil Type	Coil Voltage	Coil Termination	Body Material	Port Size

Code	Style (Maximum Regulated Flow)
21	Standard ('SS' Coil) 30 LPM (8 GPM)
21	High Flow ('SP' Coil) 36 LPM (9.5 GPM)

		Code	Flow Var
ode	Override Option	Omit	Standard
0	Not Required		of Currer
5	Detented M.O. (Infinite Control)	L	Low Vari (±2% of
	-		

Code	Filter Screen
0	Not Available

Code	Flow Variation
Omit	Standard Up to ±5% of Current
L	Low Variation (±2% of Current Flow)

Seals / Kit No.

Nitrile / Buna-N (Std.) (SK30503N-1) Fluorocarbon / (SK30503V-1)

Code

	Coil Type
	Without Coil
SS	Super Coil - 18 Watts
SP	Super Coil - 28 Watts

variation				
Code	Coil Voltage			
Omit	Without Coil			
D012	12 VDC			
D024	24 VDC			

Code		Coil Termination	
	0mit	Without Coil	
	D	DIN Plug Face	
	Α	Amp Jr. Timer*	
	L	Dual Lead Wire*	
	LS	LS Sealed Lead Wire*	
	Н	Molded Deutsch*	

See Super Coil 5/8" I.D. *DC Only

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.
Omit	Cartridge O	nly
4P 6P 8P	1/4" NPTF 3/8" NPTF 1/2" NPTF	(B10-2-*4P) (B10-2-*6P) (B10-2-*8P)
6T 8T T8T	SAE-6 SAE-8 SAE-8	(B10-2-*6T) (B10-2-*8T) (B10-2-T8T)†
6B	3/8" BSPG	(B10-2-*6B)

^{*} Add "A" for aluminum, omit for steel. † Steel body only.

CV

Check Valves

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Technical Data



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LM Load/Motor Controls

FC

Flow Controls PC

Pressure Controls LE

Logic Elements DC

Directional Controls MV

Manual Valves SV

TD

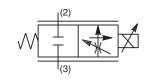
General Description

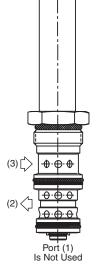
2 Way, Normally Closed, Proportional Flow Regulator Valve. Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

Features

- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly
- Factory-adjusted low variation option (Model "L") is available for applications where low variation of flow from valve to valve is essential at a given current.







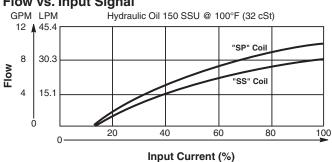
Specifications

Rated Flow	21	30 LPM (8 GPM) Standard ('SS' Coil) 36 LPM (9.5 GPM) High Flow ('SP' Coil)	
Maximum Input Pressure At Port 2	210 E	3ar (3000 PSI)	
Minimum Pressure Differential	21 21	13.8 Bar (200 PSI) Standard 20.7 Bar (300 PSI) High Flow	
Maximum Internal Leakage		cc (46 cu. in.) 0 Bar (3000 PSI)	
Hysteresis @ 100 Hz PWM	7%		
Cracking Pressure	25% of Input Signal		
Variation of Flow @ 35% of Rated Current	Standard Model Up To ±20% Of Rated Flow Model "L" ±7% Of Rated Flow		
Cartridge Material		arts steel. All operating hardened steel.	
Operating Temp. Range/Seals	(-40°l -31.7	C to +93.3°C (Nitrile) F to +200°F) °C to +121.1°C (Fluorocarbon) F to +250°F)	
Fluid Compatibility/ Viscosity	lubric	ral-based or synthetic with eating properties at viscosities to 2000 SSU (6 to 420 cSt)	
Filtration	1	Code 16/13, Class 4 or better	
Approx. Weight	.13 k	g (.28 lbs.)	
Cavity	3X (See	BC Section for more details)	

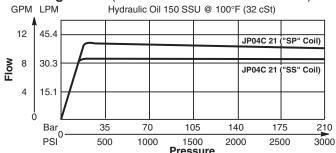
Performance Curves

▲ PWM Current Regulator Recommended

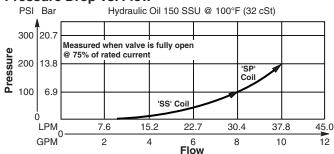
Flow vs. Input Signal



Flow Regulation (Measured 75% of Rated Current)



Pressure Drop vs. Flow





CV

Load/Motor Controls

LE

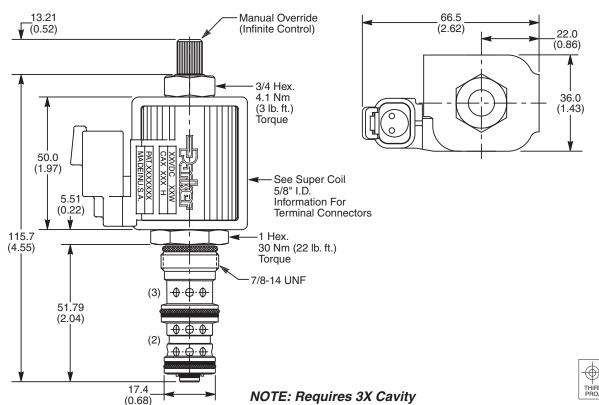
DC

MV

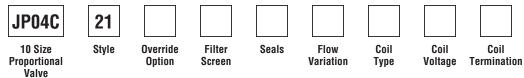
BC

TD

Dimensions Millimeters (Inches)



Ordering Information



Code	Style (Maximum Regulated Flow)
21	Standard ('SS' Coil) 30 LPM (8 GPM)
21	High Flow ('SP' Coil) 36 LPM 9.5 GPM)

Code	Override Option
0	Not Required
5	Detented M.O. (Infinite Control)

Code	Filter Screen
0	Not Required
1	60 Mesh Screen on Port 2
	POIL Z

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30106N-1)
V	Fluorocarbon / (SK30106V-1)

Code	Flow Variation	
Omit	Standard Up to ±20% of Rated Flow	
L	Low Variation (±7% of Rated Flow)	

	Coil Type
	Without Coil
SS	Super Coil - 18 Watts
SP	Super Coil - 28 Watts

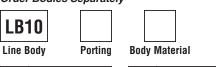
PV38

Code	Coil Voltage
Omit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination
0mit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See Super Coil 5/8" I.D. *DC Only

Order Bodies Separately



Code	Porting	Code	E
553	1/2" SAE	Α	F
554	3/8" BSP	S	3

Code	Body Material
Α	Aluminum
S	Steel

CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow Controls Pressure

LE Logic C

Directional Controls MV

Manual Valves S

Solenoid Valves

C Electronics

B Bodies & Cavities

T Technical Data

General Description

2 Way, Normally Closed, Proportional Flow Regulator Valve. Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

Features

- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.

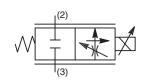
NOTE:

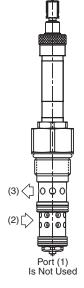
This valve will be available January 1, 2011.

Specifications

Rated Flow @ 75% of Rated Current	56.8 LPM (15 GPM) Requires ('SP' Coil)
Maximum Input Pressure At Port 2	210 Bar (3000 PSI)
Minimum Pressure Differential	20.7 Bar (300 PSI)
Maximum Internal Leakage	568 cc (35 cu. in.) @ 210 Bar (3000 PSI)
Hysteresis @ 100 Hz PWM	>15%
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.40 kg (.89 lbs.)
Cavity	C12-3L (See BC Section for more details)



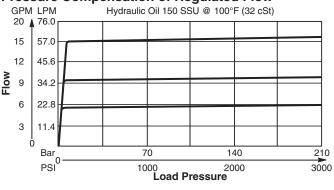




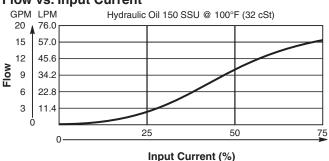
Performance Curves

▲ PWM Current Regulator Recommended

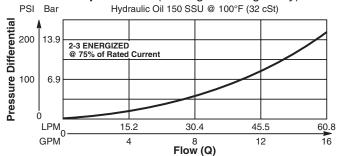
Pressure Compensation of Regulated Flow



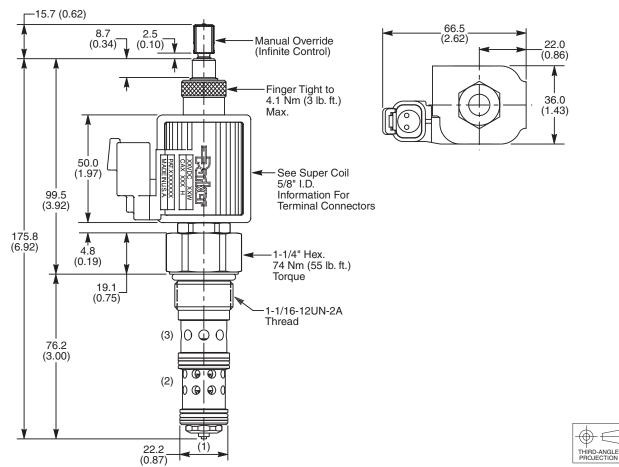
Flow vs. Input Current



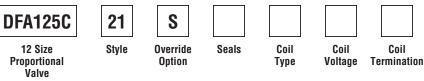
Pressure Drop vs. Flow (Through cartridge only)







Ordering Information



Style (Maximum	Code	Seals / Kit No.
Regulated Flow)	N	Nitrile / Buna-N (Std.)
High Flow ('SP' Coil)	1	(SK12-3LN)
56.8 LPM (15 GPM)	V	Fluorocarbon /
		(SK12-3LV)

IN	(SK12-3LN)		١
V	Fluorocarbon / (SK12-3LV)		_
		ı	0
			_

	Coil Type
Omit	Without Coil
SP	Super Coil - 28 Watts

Code	Coil Voltage
0mit	Without Coil
D012	12 VDC
D024	24 VDC

NOTE: This valve will be available January 1, 2011.

Code	Coil Termination
Omit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
S	Dual Spade*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See Super Coil 5/8" I.D. *DC Only

Order Bodies Separately

Code Styl

Code Override Option Not Available Standard M.O. (Infinite Control)



OUUC DU	ody Material	Co	de	Port Size
A Al	uminum	12	?T	SAE - 12

CV

Load/Motor Controls

LE

MV

Manual Valves

Solenoid Valves

BC

TD

CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow PC F

Pressure Logic Controls Lements

nts Directional Controls

Manual Valves

MV

General Description

2 Way, Normally Open, Proportional Flow Regulator Valve. Partially Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

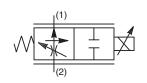
Features

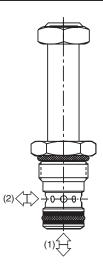
- Analog Proportional Partially Pressure Compensated Flow Regulator regulates flow proportionally to the input solenoid current
- The valve is designed to be used in applications where fine pressure compensation is not required and an economical solution is important
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly
- Factory-adjusted low variation option (Model "L") is available for applications where low variation of flow from valve to valve is essential at a given current or when an external pressure compensator is used.

Specifications

Rated Flow @ 210 Bar (3000 PSI)	2 to 1 19 LPM (5 GPM)
Preferable Input Port For Best Hysteresis	Port 1
Hysteresis @ 100 Hz PWM	<10%
Variation of Flow @ 35% of Rated Current & Constant ΔP Maintained By Pressure Compensator	Standard Model Up To ±20% Of Rated Flow Model "L" ±7% Of Rated Flow
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.08 kg (.17 lbs.)
Cavity	2X (See BC Section for more details)



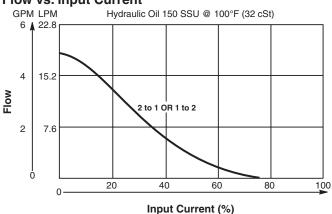




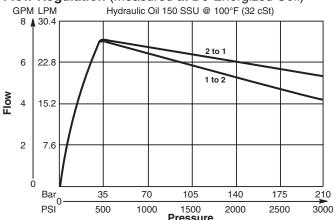
Performance Curves

▲ PWM Current Regulator Recommended

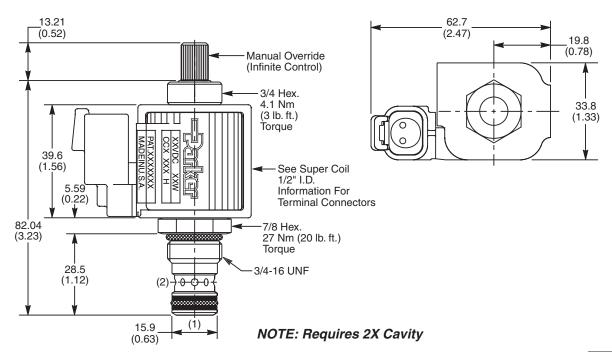
Flow vs. Input Current



Flow Regulation (Measured at De-Energized Coil)









CV

Load/Motor Controls

LE

DC

MV

BC

TD

Ordering Information

HP02P	21							
08 Size Proportional Valve	Style	Override Option	Filter Screen	Seals	Flow Variation	Coil Type	Coil Voltage	Coil Termination

Code	Style (Maximum Regulated Flow)
21	High Flow ('SP' Coil) 19 LPM (5 GPM)

Code	Override Option
0	Not Required
5	Detented M.O. (Infinite Control)

Code Filter Screen	
0 Not Available	

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30076N-1)
V	Fluorocarbon / (SK30076V-1)

Code	Flow Variation
Omit	Standard Up to ±20% of Rated Flow
L	Low Variation (±7% of Rated Flow)

Code	Coil Type	
0mit	Without Coil	
SP	Super Coil - 19 Watts	

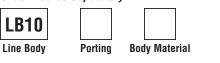
PV42

Code	Coil Voltage
0mit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination	
0mit	Without Coil	
D	DIN Plug Face	
Α	Amp Jr. Timer*	
L	Dual Lead Wire*	
LS	Sealed Lead Wire*	
Н	Molded Deutsch*	

See Super Coil 1/2" I.D. *DC Only

Order Bodies Separately



Code	Porting	Code	Body I
513	3/8" SAE	Α	Alumir
515	1/4" BSP	S	Steel

Code	Body Material	
Α	Aluminum	
S	Steel	



CV

Check Valves

SH

Shuttle Valves

L Controls C

Flow Controls Pressure

L Logic

D Controls MV

Manual Valves

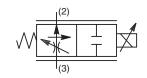
General Description

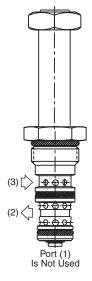
2 Way, Normally Open, Proportional Flow Regulator Valve. Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

Features

- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly
- Factory-adjusted low variation option (Model "L") is available for applications where low variation of flow from valve to valve is essential at a given current.







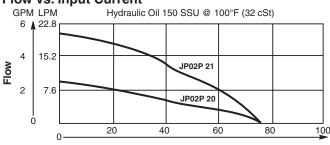
Specifications

Rated Flow	20	9.5 LPM (2.5 GPM) Standard ('SS' Coil)
	21	19 LPM (5 GPM) High Flow ('SP' Coil)
Maximum Input Pressure At Port 2	210 E	3ar (3000 PSI)
Minimum Pressure Differential	20 21	6.9 Bar (150 PSI) Standard 20.7 Bar (300 PSI) High Flow
Maximum Internal Leakage		cc (35 cu. in.) 0 Bar (3000 PSI)
Hysteresis @ 100 Hz PWM	<3%	
Variation of Flow @ 35% of Rated Current	Up To	dard Model o ±20% Of Rated Flow el "L" Of Rated Flow
Cartridge Material		arts steel. All operating hardened steel.
Operating Temp. Range/Seals	(-40° -31.7	C to +93.3°C (Nitrile) F to +200°F) °C to +121.1°C (Fluorocarbon) F to +250°F)
Fluid Compatibility/ Viscosity	lubric	ral-based or synthetic with cating properties at viscosities to 2000 SSU (6 to 420 cSt)
Filtration		Code 16/13, Class 4 or better
Approx. Weight	.08 k	g (.17 lbs.)
Cavity	C08-	3 BC Section for more details)

Performance Curves

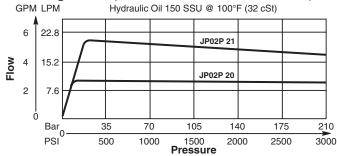
▲ PWM Current Regulator Recommended

Flow vs. Input Current

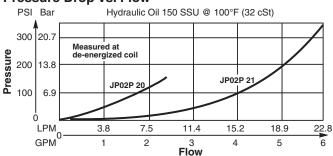


Input Current (%)

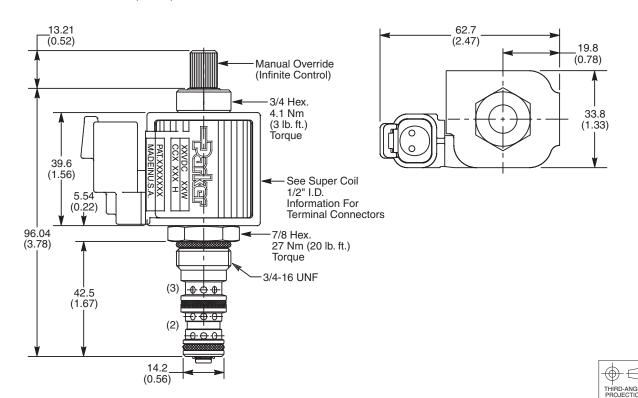
Flow Regulation (Measured 75% of Rated Current)



Pressure Drop vs. Flow









3										
JP02P									-	
08 Size Proportional Valve	Style	Override Option	Filter Screen	Seals	Flow Variation	Coil Type	Coil Voltage	Coil Termination	Body Material	Port Size
Code Style (Ma	aximum	Code S	eals / Kit No.		Code Coil Vo	Itage	Ī	Code Body Mat	erial	

Code	Style (Maximum Regulated Flow)
	Standard ('SS' Coil) 9.5 LPM (2.5 GPM)
21	High Flow ('SP' Coil) 19 LPM (5 GPM)

		Cod	Flo	ow Variation
Code	Override Option	Om	t St	andard Up to ±20%
0	Not Required		of	Rated Flow
	Detented M.O. (Infinite Control)	L		w Variation 7% of Rated Flow)

Code	Filter Screen
0	Not Required
1	60 Mesh Screen on Port 2

Code	Flow Variation
Omit	Standard Up to ±20% of Rated Flow
L	Low Variation (±7% of Rated Flow)

Nitrile / Buna-N (Std.) (SK30105N-1) Fluorocarbon / (SK30105V-1)

Code	Coil Type		
0mit	Without Coil		
SS	Super Coil - 14 Watts		
SP	Super Coil - 19 Watts		

Code	Coil Voltage
O mit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination
0mit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See Super Coil 1/2" I.D. *DC Only

Code	Body Material
Omit	Steel
Α	Aluminum

	Code	Port Size	Body Part No.
	0mit	Cartridge O	nly
	4P	1/4" NPTF	(B08-3-*4P)
	4T 6T	SAE-4 SAE-6	(B08-3-*4T)
1	ы	SAE-6	(B08-3-*6T)
l	6B	3/8" BSPG	(B08-3-*6B)

^{*} Add "A" for aluminum, omit for steel.

CV

Load/Motor Controls

LE

DC

MV

CE

BC

TD





CV

Check Valves

SH

Shuttle Valves LM

Load/Motor Controls FC

Flow Controls Pressure

Logic C D

LE

Directional Controls MV

Manual Valves S

Solenoid > Proportional Valves • Valves

C Electronics

B Cavities

TD Technica

General Description

2 Way, Normally Open, Proportional Flow Regulator Valve. Partially Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

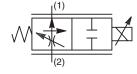
Features

- Analog Proportional Partially Pressure Compensated Flow Regulator regulates flow proportionally to the input solenoid current
- The valve is designed to be used in applications where fine pressure compensation is not required and an exonomical solution is important
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly
- Factory-adjusted low variation option (Model "L") is available for applications where low variation of flow from valve to valve is essential at a given current or when an external pressure compensator is used.

Specifications

Rated Flow @ 210 Bar (3000 PSI)	23 LPM (6 GPM)
Hysteresis @ 100 Hz PWM	<10%
Closing Point	65% of Rated Current
Variation of Closing Point	Standard Model Up To ±5% Of Rated Current Model "L" ±2% Of Rated Current
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.12 kg (.26 lbs.)
Cavity	C10-2 (See BC Section for more details)



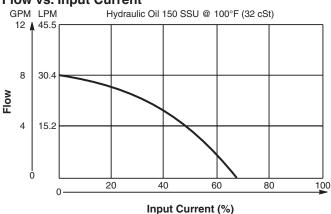




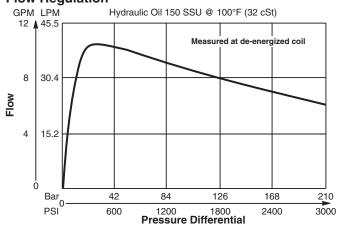
Performance Curves

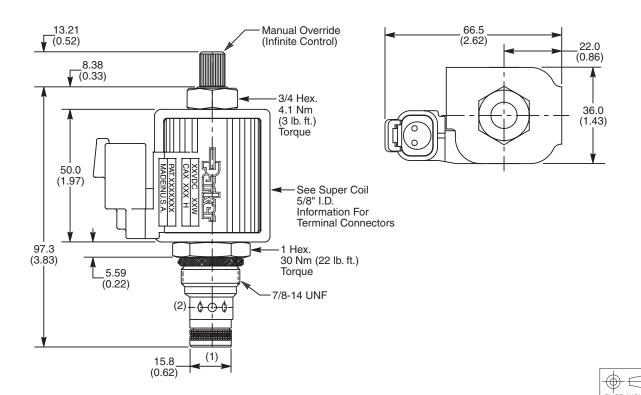
▲ PWM Current Regulator Recommended

Flow vs. Input Current



Flow Regulation







Ordering Information

HP04P	21								-	
10 Size Proportional Valve	Style	Override Option	Filter Screen	Seals	Opening Point Variation	Coil Type	Coil Voltage	Coil Termination	Body Material	Port Size

Code	Style (Maximum Regulated Flow)
21	High Flow ('SP' Coil) 30 LPM (8 GPM)
	30 LPM (8 GPM)

Code	Override Option
0	Not Required
5	Detented M.O. (Infinite Control)

Code	Filter Screen
0	Not Available

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30503N-1)
V	Fluorocarbon / (SK30503V-1)

Code	Flow Variation
Omit	Standard Up to ±5% of Current Flow
L	Low Variation (±2% of Current Flow)

Code	Coil Type
0mit	Without Coil
SP	Super Coil - 28 Watts

Code	Coil Voltage
	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination	
0mit	Without Coil	
D	DIN Plug Face	
Α	Amp Jr. Timer*	
L	Dual Lead Wire*	
LS	Sealed Lead Wire*	
Н	Molded Deutsch*	

See Super Coil 5/8" I.D. *DC Only

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.
O mit	Cartridge O	nly
4P 6P 8P	1/4" NPTF 3/8" NPTF 1/2" NPTF	(B10-2-*4P) (B10-2-*6P) (B10-2-*8P)
6T 8T T8T	SAE-6 SAE-8 SAE-8	(B10-2-*6T) (B10-2-*8T) (B10-2-T8T)†
6B	3/8" BSPG	(B10-2-*6B)

^{*} Add "A" for aluminum, omit for steel. † Steel body only.

CV

Check Valves

SH

tor **M** Shuttl

Load/Motor Controls

Controls

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LE

MV

Manual Valves

olenoid (

Proportional **d** Valves

Coils & O

ВС

Bodies & Cavities

TD

Technical Data



CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow PC F

Pressure Logic Controls Lements

D Directional Controls

Manual Valves S

MV

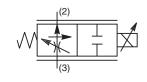
General Description

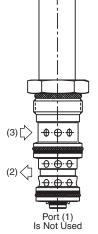
2 Way, Normally Open, Proportional Flow Regulator Valve. Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

Features

- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly
- Factory-adjusted low variation option (Model "L") is available for applications where low variation of flow from valve to valve is essential at a given current.







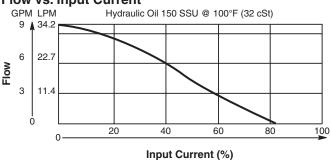
Specifications

	<u> </u>
Rated Flow	36 LPM (9.5 GPM) High Flow ('SP' Coil)
Maximum Input Pressure At Port 2	210 Bar (3000 PSI)
Minimum Pressure Differential	14 Bar (200 PSI)
Maximum Internal Leakage	780 cc (46 cu. in.) @ 210 Bar (3000 PSI)
Hysteresis @ 100 Hz PWM	7%
Variation of Flow @ 35% of Rated Current	Standard Model Up To ±20% Of Rated Flow Model "L" ±7% Of Rated Flow
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.13 kg (.28 lbs.)
Cavity	3X (See BC Section for more details)

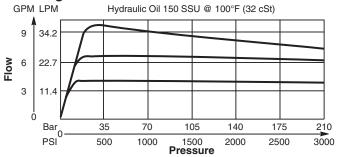
Performance Curves

▲ PWM Current Regulator Recommended

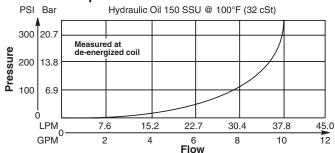
Flow vs. Input Current



Flow Regulation



Pressure Drop vs. Flow





CV

Shuttle Valves

Load/Motor Controls

LE

DC

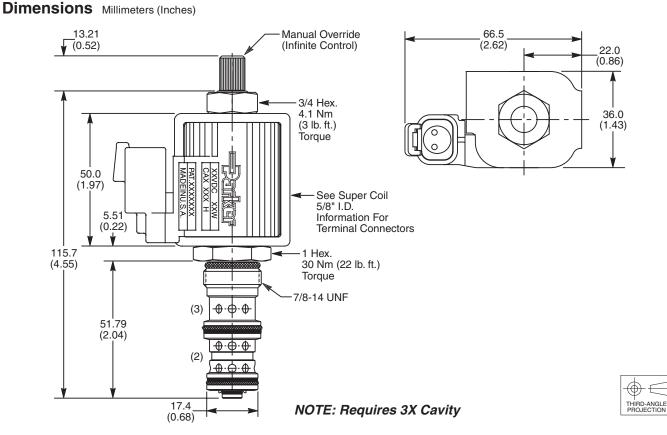
MV

Manual Valves

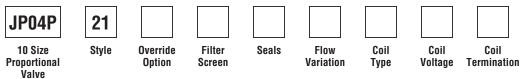
CE

BC

TD



Ordering Information



Code	Style (Maximum Regulated Flow)	
21	High Flow ('SP' Coil) 36 LPM 9.5 GPM)	

Code	Override Option	Code	Seals
0	Not Required	N	Nitrile
5	Detented M.O.		(SK30
	(Infinite Control)	V	Fluoro
			(CK2U-

Code	Filter Screen	
0	Not Required	
1	60 Mesh Screen on	
	Port 2	

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30106N-1)
V	Fluorocarbon / (SK30106V-1)

Code	Flow Variation
Omit	Standard Up to ±20% of Rated Flow
L	Low Variation (±7% of Rated Flow)

Code	Coil Type
Omit	Without Coil
SP	Super Coil - 28 Watts

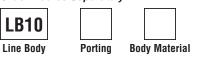
PV48

Code	Coil Voltage
O mit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination
0mit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

See Super Coil 5/8" I.D. *DC Only

Order Bodies Separately



Code	Porting	Code	Body Material
553	1/2" SAE	Α	Aluminum
554	3/8" BSP	S	Steel

CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow Controls PC

Pressure **L** Logic Controls **L** Elements

C Directional Controls

Wanual Valves

MV

Solenoid Valves

TD

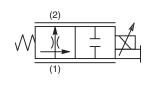
General Description

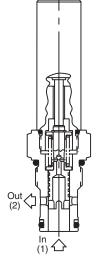
Normally Open Proportional Flow Control Valve. For additional information see Technical Tips on pages PV1-PV6.

Features

- On-off type solenoids
- Low hysteresis
- PWM signal preferred
- Manual override standard
- All external parts zinc plated





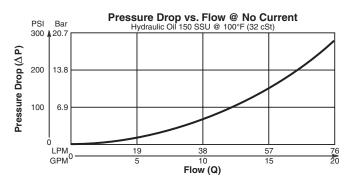


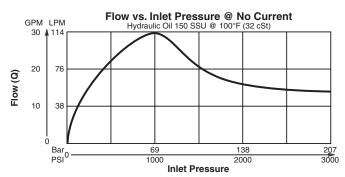
Specifications

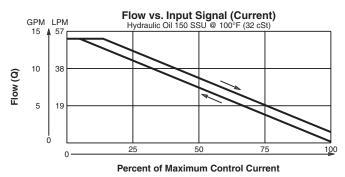
Rated Flow Valve Fully Open	53 LPM (14 GPM)			
Maximum Inlet Pressure	210 Bar (3000 PSI)			
Hysteresis @ 200 Hz PWM	4%			
Frequency	100 - 400 Hz (200 Hz Preferred)			
Maximum Control Current	12 VDC 24VDC 2.45A 1.23A			
Cartridge Material	All parts steel. All operating parts hardened steel.			
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)			
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)			
Filtration	ISO Code 16/13, SAE Class 4 or better			
Approx. Weight	.32 kg (0.7 lbs.)			
Cavity	C12-2 (See BC Section for more details)			
Form Tool	Rougher None Finisher NFT12-2F			

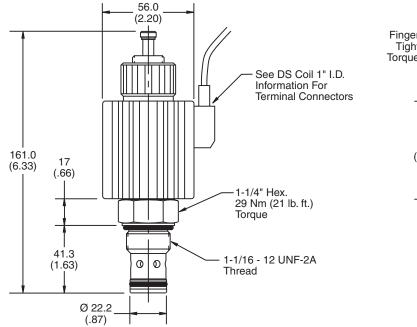
Note: 4.1 Bar (60psi) is required at port 1 to fully return Manual override.

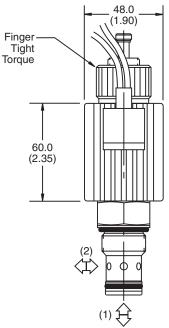
Performance Curves













CV

Pressure Controls

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AM Direction Controls

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SV

Solenoi Valves

Proportion S III Valves

Coils & Electronics

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Technical **T**Data **D**

Ordering Information



12 Size Normally

Open Proportional

Flow Control Valve

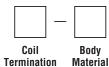
Override Options



Seals







Port
Cizo

	Override Options
Omit	Push Type with Extenden Rod

	Seals / Kit. No.
Omit	Nitrile / (SK12-2)
V	Fluorocarbon / (SK12-2V)

	Coil Voltage		
Omit	Cartridge without Coil		
	12 VDC		
D024	24 VDC		

	Coil Wattage
0mit	Cartridge without Coil
Н	High Watt

Code	Coil Termination
Omit	Cartridge without Coil
D	DIN
P	Dual Spade
w	Dual Wire

See DS Coil 1" I.D.

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.
12P	3/4" NTPF	(B12-2-*12P)
8T	SAE - 8 SAE - 12	(B12-2-*8T)
12T	SAE - 12	(B12-2-*12T)

^{*} Add "A" for aluminum, omit for steel.

CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

Flow Controls Pressure

Logic C Directional Elements C Controls

LE

MV Manual Valves

S Solenoid Valves

C Electronics

B Cavities

Technical Data

General Description

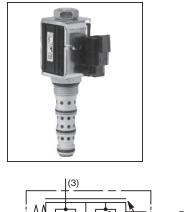
3 Way, Normally Closed, Proportional Flow Regulator Valve. Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

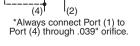
Features

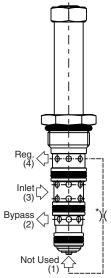
- Analog proportional pressure compensated flow control valve regulates flow proportionally to the input solenoid current
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- Nonmagnetic spool and housing assembly
- Factory-adjusted low variation option (Model "L") is available for applications where low variation of flow from valve to valve is essential at a given current.

Specifications

Rated Inlet Flow	60 LPM (16 GPM)		
Rated Regulated Flow	31 26 LPM (7 GPM) Standard ('SS' Coil) 31 30 LPM (8 GPM) High Flow ('SP' Coil)		
Maximum Input Pressure At Port 3	210 Bar (3000 PSI)		
Minimum Pressure Differential	31 13.8 Bar (200 PSI) Standard 31 20.7 Bar (300 PSI) High Flow		
Maximum Internal Leakage	780 cc (46 cu. in.) @ 210 Bar (3000 PSI)		
Hysteresis @ 100 Hz PWM	7%		
Opening Point	Standard 21% of Nominal Amperage High Flow 17% of Nominal Amperage		
	Standard Model Up To ±50% Of Amperage Model "L" ±20% Of Amperage		
Variation of Opening Point	Up To ±50% Of Amperage Model "L"		
	Up To ±50% Of Amperage Model "L"		
Opening Point	Up To ±50% Of Amperage Model "L" ±20% Of Amperage All parts steel. All operating		
Opening Point Cartridge Material Operating Temp.	Up To ±50% Of Amperage Model "L" ±20% Of Amperage All parts steel. All operating parts hardened steel. -40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon)		
Opening Point Cartridge Material Operating Temp. Range/Seals Fluid Compatibility/	Up To ±50% Of Amperage Model "L" ±20% Of Amperage All parts steel. All operating parts hardened steel. -40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F) Mineral-based or synthetic with lubricating properties at viscosities		
Opening Point Cartridge Material Operating Temp. Range/Seals Fluid Compatibility/ Viscosity	Up To ±50% Of Amperage Model "L" ±20% Of Amperage All parts steel. All operating parts hardened steel. -40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F) Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt) ISO Code 16/13,		



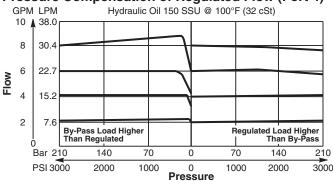




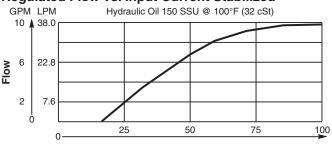
Performance Curves

▲ PWM Current Regulator Recommended

Pressure Compensation of Regulated Flow (Port 4)

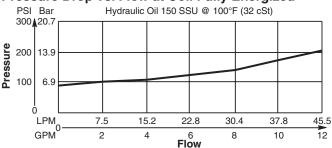


Regulated Flow vs. Input Current Stabilized

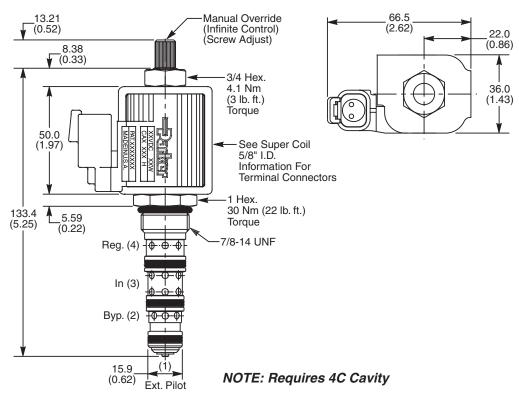


Input Current (%)

Pressure Drop vs. Flow at Coil Fully Energized









Ordering Information

JP04C	31							
10 Size Proportional	Style	Override Option	Filter Screen	Seals	Flow Variation	Coil Type	Coil Voltage	Coil Termination

Code	Style (Maximum Regulated Flow)
	Standard ('SS' Coil) 26 LPM (7 GPM)
31	High Flow ('SP' Coil) 30 LPM (8 GPM)

Code	Override Option
0	Not Required
5	Screw Adjust

Code	Filter Screen
0	Not Available

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30082N-1)
V	Fluorocarbon / (SK30082V-1)

Code	Flow Variation
Omit	Standard Up to ±50% of Opening Amps
L	Low Variation (±20% of Opening Amps)

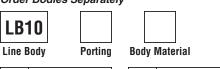
8 Watts
28 Watts

Code	Coil Voltage
O mit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination	
0mit	Without Coil	
D	DIN Plug Face	
Α	Amp Jr. Timer*	
L	Amp Jr. Timer* Dual Lead Wire*	
LS	Sealed Lead Wire*	
Н	Molded Deutsch*	

See Super Coil 5/8" I.D. *DC Only

Order Bodies Separately



Code	Porting	
562	1/2" SAE	
563	3/8" BSP	

Code	Body Material	
Α	Aluminum	
S	Steel	

CV

Load/Motor Controls

LE

MV

BC

TD

PV52

CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls FC

PC Pressure Controls

Flow Controls

LE Logic C

Directional Controls MV

S Solenoid

Manual Valves

Electronics

B Bodies & Cavities

T Technical Data

General Description

3 Way, Normally Closed, Proportional Flow Regulator Valve. Pressure Compensated. For additional information see Technical Tips on pages PV1-PV6.

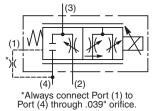
Features

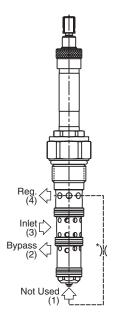
- Analog proportional pressure compensated flow control valve regulates flow proportionally to the input solenoid current
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.

Specifications

Rated Inlet Flow	75 LPM (20 GPM)
Rated Regulated Flow	56.8 LPM (15 GPM) Requires ('SP' Coil)
Maximum Input Pressure At Port 3	210 Bar (3000 PSI)
Minimum Pressure Differential	13.8 Bar (200 PSI)
Maximum Internal Leakage	568 cc (35 cu. in.) @ 210 Bar (3000 PSI)
Hysteresis @ 100 Hz PWM	>15%
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.45 kg (1.0 lbs.)
Cavity	C12-4L (See BC Section for more details)



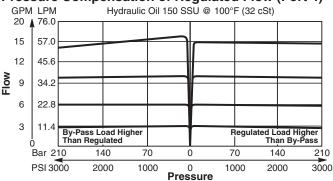




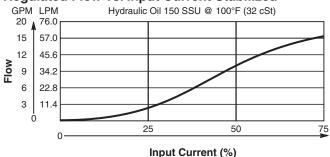
Performance Curves

▲ PWM Current Regulator Recommended

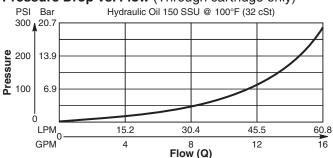
Pressure Compensation of Regulated Flow (Port 4)



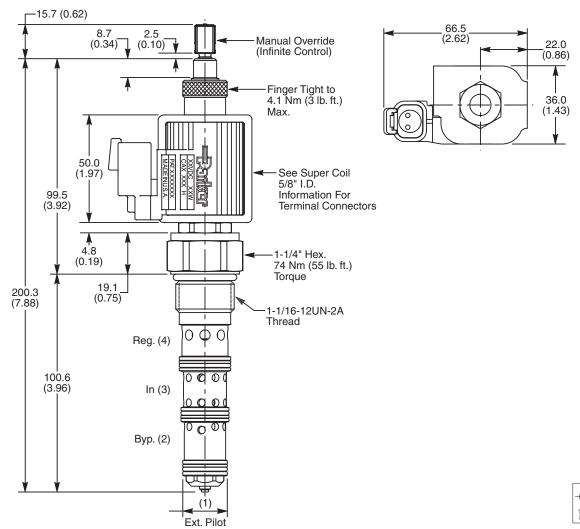
Regulated Flow vs. Input Current Stabilized



Pressure Drop vs. Flow (Through cartridge only)







Ordering Information



31

S

Override

Option







Type

*DC Only



Termination

BC

TD

MV

CV

Shuttle Valves

Load/Motor Controls

LE

12 Size **Proportional** Valve

Code Style (Maximum Regulated Flow) High Flow ('SP' Coil) 56.8 LPM (15 GPM)

Code Override Option Omit | Not Available

Code | Seals / Kit No.

Standard M.O. (Infinite Control)

Style

Code	Coil Type
0mit	Without Coil
SP	Super Coil - 28 Watts
	28 Watts

	Coil Voltage
	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination	
O mit	Without Coil	
D	DIN Plug Face	
Α	Amp Jr. Timer*	
S	Dual Spade*	
L	Dual Lead Wire*	
LS	Sealed Lead Wire*	
Н	Molded Deutsch*	
See Super Coil 5/8" I.D.		

PV54

Coil

Voltage

Order	Bodies	Separately
Order	Bodies	Separately

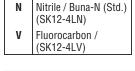


Code	Body Material		
Α	Aluminum	·	
			_

Code	Port Size
12T	SAE - 12

12T

Port Size





CV

Check Valves

SH

Shuttle Valves

LM Load/Motor Controls

Flow Controls

LE Logic Elements

DC Directional Controls MV

Manual Valves

General Description

4 Way, 3 Position, Proportional Directional Control Valve. Closed Center Spool. For additional information see Technical Tips on pages PV1-PV6.

Features

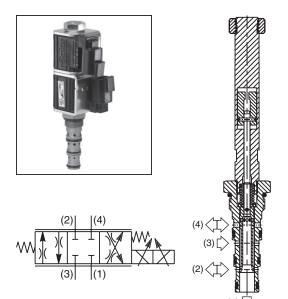
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.

Specifications

Operating Pressure	Ports 2, 3 and 4 350 Bar (5000 PSI) Port 1 210 Bar (3000 PSI)
	210 Bai (0000 1 01)
Hysteresis @ 100 Hz PWM	<6%
Cracking Flow	25% to 30% of Input Signal
Variation of Flow	±15% @ 75% of Nominal Current and Constant ΔP Maintained by Pressure Compensator
Port to Port Leakage	10 cu. in. @ 3000 PSI
Step Response Time at 75% of Amps	On 50 ms Off 40 ms
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.15 kg (.34 lbs.)
Cavity	C08-4

Typical Performance

SPOOL	RATED FLO OF NOMINA LPM -	SUPER COIL TYPE		Compensator	
TYPE AND FLOW	'a' SOLENOID PUSH P to A, B to T	'b' SOLENOID PULL P to B, A to T	PUSH	PULL	ΔP Bar (PSI)
51L	5.3 - (1.4)	5.3 - (1.4)	SP	SP	10 (150)
Low Flow	3.4 - (0.9)	3.4 - (0.9)	SS	SS	5 (75)
51	13.3 - (3.5)	17 - (4.5)	SP	SP	15 (220)
Standard	11.4 - (3.0)	15.2 - (4.0)	SS	SS	15 (220)
52	21 - (5.5)	17 - (4.5)	SP	SP	20 (290)
High Flow	17.4 - (4.5)	13 - (3.5)	SP	SP	15 (220)

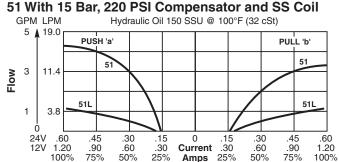


Performance Curves

▲ PWM Current Regulator Recommended

51L With 5 Bar, 75 PSI Compensator

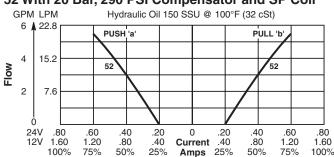
50%



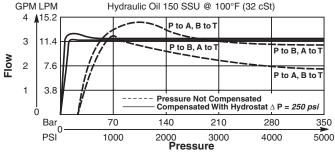
52 With 20 Bar, 290 PSI Compensator and SP Coil

Amps

100%







CV

LE

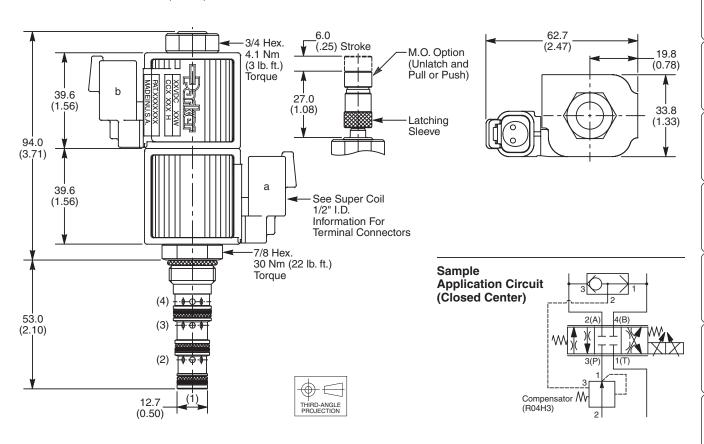
DC

MV

BC

TD

Dimensions Millimeters (Inches)



Ordering Information

GP02							-	
08 Size Proportional Valve	Style	Override Option	Seals	Coil Type	Coil Voltage	Coil Termination	Body Material	Port Size

Code	Style - Closed Center (Flow Pressure and Performance)
51	Standard
51L	Low Flow
52	High Flow

Code	Override Option
Omit	Not Required
1	Manual Override
2	Detented M.O.

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30078N-1)
V	Fluorocarbon / (SK30078V-1)

Code	Coil Type
	Without Coil
SS	Super Coil - 14 Watts
SP	Super Coil - 19 Watts

Code	Coil Voltage
0mit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination	
0mit	Without Coil	
D	DIN Plug Face	
Α	Amp Jr. Timer*	
L	Dual Lead Wire*	
LS	Sealed Lead Wire*	
Н	Molded Deutsch*	
Con Curror Coil 1/0// LD		

See Super Coil 1/2" I.D. *DC Only

PV56

Code	Body Material	
Omit	Steel	
Α	Aluminum	

Code	Port Size	Body Part No.
Omit	Cartridge O	nly
4T	SAE-4 SAE-6	(B08-4-*4T) (B08-4-*6T)
6B	3/8" BSPG	

^{*} Add "A" for aluminum, omit for steel.

CV

Check Valves

SH

Shuttle Valves

L Controls

FC

Flow Controls PC

re **L** Logic

C Directional Controls

MV

Manual Valves S

Solenoid Valves

al E Coils & Electronics

B Bodies & Cavities

Technical Data

General Description

4 Way, 3 Position, Proportional Directional Control Valve. Floating Center Spool. For additional information see Technical Tips on pages PV1-PV6.

Features

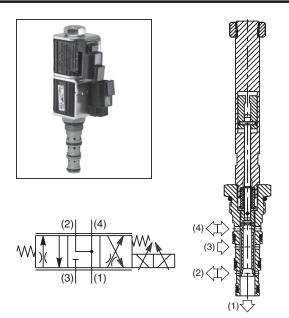
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.

Specifications

_	
Operating Pressure	Ports 2, 3 and 4 350 Bar (5000 PSI) Port 1 210 Bar (3000 PSI)
Hysteresis @ 100 Hz PWM	<6%
Cracking Flow	25% to 30% of Input Signal
Variation of Flow	±15% @ 75% of Nominal Current and Constant ΔP Maintained by Pressure Compensator
Port to Port Leakage	10 cu. in. @ 3000 PSI
Step Response Time at 75% of Amps	On 50 ms Off 40 ms
Cartridge Material	All parts steel. All operating parts hardened steel.
Operating Temp. Range/Seals	-40°C to +93.3°C (Nitrile) (-40°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)
Fluid Compatibility/ Viscosity	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)
Filtration	ISO Code 16/13, SAE Class 4 or better
Approx. Weight	.15 kg (.34 lbs.)
Cavity	C08-4

Typical Performance

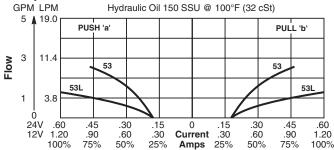
SPOOL	RATED FLO OF NOMINA LPM -	SUPER COIL TYPE		Compensator	
TYPE AND FLOW	'a' SOLENOID PUSH P to A, B to T	'b' SOLENOID PULL P to B, A to T	PUSH	PULL	ΔP Bar (PSI)
53L	5.3 - (1.4)	5 - (1.4)	SP	SP	10 (150)
Low Flow	4 - (1.0)	4 - (1.0)	SS	SS	5 (75)
53	14 - (3.8)	15 - (4.0)	SP	SP	10 (150)
Standard	9 - (2.5)	10 - (2.7)	SS	SS	5 (75)
54	17 - (4.5)	19 - (5.0)	SP	SP	20 (290)
High Flow	15 - (4.0)	15 - (4.0)	SS	SS	15 (220)



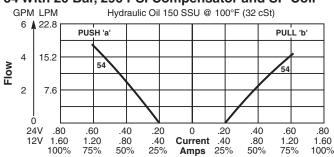
Performance Curves

▲ PWM Current Regulator Recommended 53 and 53L With 5 Bar, 75 PSI

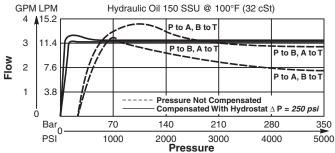
53 and 53L With 5 Bar, 75 PS Compensator and SS Coil



54 With 20 Bar, 290 PSI Compensator and SP Coil







CV

Flow Controls

LE

DC

MV

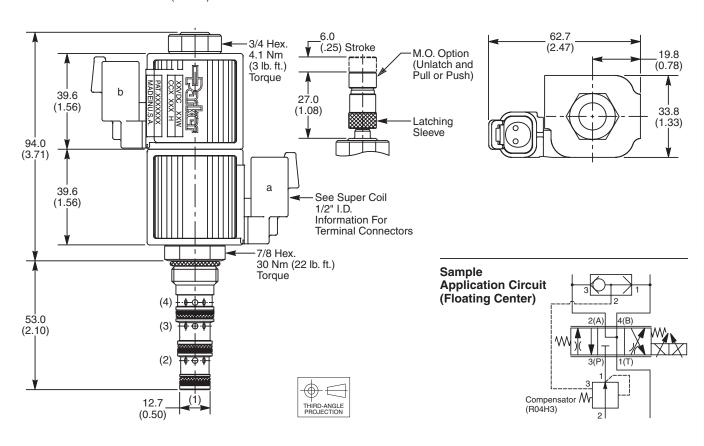
Manual Valves

CE

BC

TD

Dimensions Millimeters (Inches)



Ordering Information

GP02							-	
08 Size Proportional Valve	Style	Override Option	Seals	Coil Type	Coil Voltage	Coil Termination	Body Material	Port Size

Code	Style - Floating Center (Flow Pressure and Performance)
53	Standard
53L	Low Flow
54	High Flow

Manual Override

Detented M.O

53L	Low Flow		(SK30078V-1)
54	High Flow		
		Code	Coil Type
Code	Override Option	Omit	Without Coil
Omit	Not Required	SS	Super Coil - 14 Watts

Code	Seals / Kit No.
N	Nitrile / Buna-N (Std.) (SK30078N-1)
V	Fluorocarbon / (SK30078V-1)

SP Super Coil - 19 Watts

Code	Coll Termination
0mit	Without Coil
D	DIN Plug Face
Α	Amp Jr. Timer*
L	Dual Lead Wire*
LS	Sealed Lead Wire*
Н	Molded Deutsch*

Coil Voltage

Without Coil

D012 12 VDC **D024** 24 VDC

Code

Omit D012

See Super Coil	1/2" I.D.
*DC Only	

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.
O mit	Cartridge Only	
4T 6T	SAE-4 SAE-6	(B08-4-*4T) (B08-4-*6T)
6B	3/8" BSPG	(B08-4-*6B)
* Add "A" for aluminum amit for stool		

^{*} Add "A" for aluminum, omit for steel.

CV

Check Valves

SH

Shuttle Valves LM

Load/Motor Controls F

Pressure Controls

LE

Flow Controls

Logic C Directional Elements D Controls

M Manual Valves

S Solenoid Valves

General Description

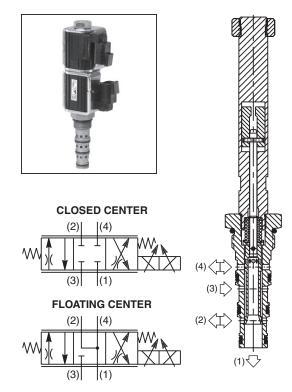
4 Way, 3 Position, Proportional Directional Control Valve. Closed Center or Floating Center Spool. For additional information see Technical Tips on pages PV1-PV6.

Features

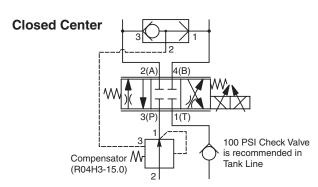
- One piece cartridge housing ensures internal concentricity
- Coil: Waterproof, hermetically sealed, requires no O'Rings; Symmetrical coil can be reversed without affecting performance.
- All external parts zinc plated

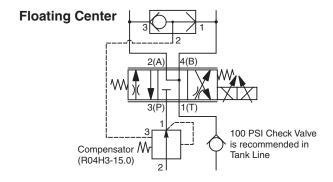
Specifications

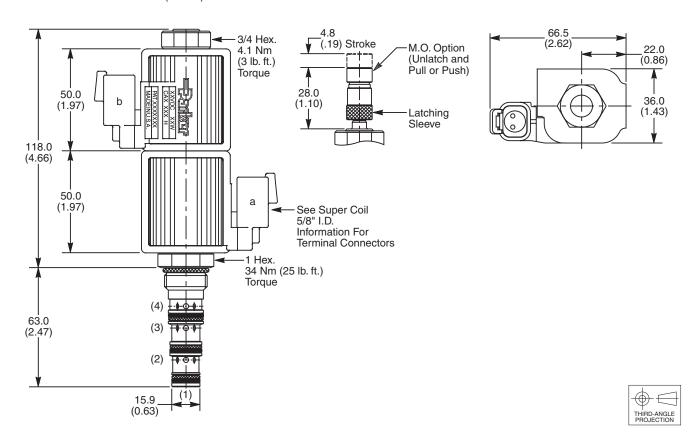
Operating Pressure	210 Bar (3000 PSI)	
Hysteresis @ 100 Hz PWM	<6%	
Cracking Flow	25% to 30% of Input Signal	
Variation of Flow	±15% @ 75% of Nominal Current and Constant ∆P Maintained by Pressure Compensator	
Port to Port Leakage	10 cu. in. @ 3000 PSI	
Step Response Time at 75% of Amps	On 50 ms Off 40 ms	
Cartridge Material	All parts steel. All operating parts hardened steel.	
Operating Temp. Range/Seals	-45°C to +93.3°C ("D"-Ring) (-50°F to +200°F) -31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)	
Fluid Compatibility/ Viscostiy	Mineral-based or synthetic with lubricating properties at viscosities of 45 to 2000 SSU (6 to 420 cSt)	
Filtration	ISO Code 16/13, SAE Class 4 or better	
Approx. Weight	.28 kg (.57 lbs.)	
Cavity	C10-4	



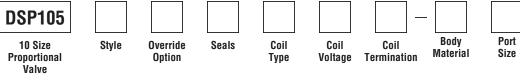
Sample Application Circuit











Code	Style
C1	(2) (4) W (3) (1)
C4	(2) (4)

Code	Override Option
0mit	None
M	Push/Pull

Code	Seals / Kit No.
0mit	"D"-Ring / (SK10-4)
N	"D"-Ring / (SK10-4) Nitrile / (SK10-4N)
V	Fluorocarbon / (SK10-4V)

Code	Coil Type	
0mit	Without Coil	
SP	Super Coil - 28 Watts	

	Coil Voltage
Omit	Without Coil
D012	12 VDC
D024	24 VDC

Code	Coil Termination	
Omit	Without Coil	
D	DIN Plug Face	
Α	Amp Jr. Timer*	
L	Dual Lead Wire*	
Н	Molded Deutsch*	

See Super Coil 5/8" I.D. *DC Only

Code	Body Material
Omit	Steel
Α	Aluminum

Code	Port Size	Body Part No.
Omit	Cartridge Only	
6P	3/8" NPTF	(B10-4-*6P)
6T 8T	SAE-6 SAE-8	(B10-4-*6T)
8T	SAE-8	(B10-4-*8T)
6B	3/8" BSPG	(B10-4-6B)†

* Add "A" for aluminum, omit for steel. † Steel body only. CV

Check Valves

SH

WT Shuttle Walves

Load/Motor P Controls M

Controls

ressure ontrols (

re F

Logic Elements

irectional ontrols

MV

Nanu Valve

Solenoid Valves

Proportional **A** Valves

Coils & D

BC

Bodies & Cavities

Technical **D** Data **D**



Performance Curves

CV

Check Valves

SH

Shuttle Valves LM

Controls F

PC Pressure Controls

Flow Controls

Le Logic C

Directional Controls MV

Wanual Solenoid Valves Valves

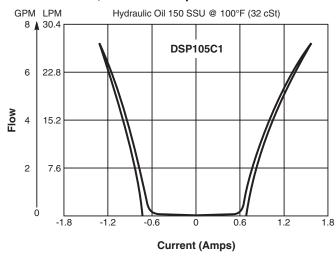
voportional Walves Coils & Electronics

& C Bodies & Cavities

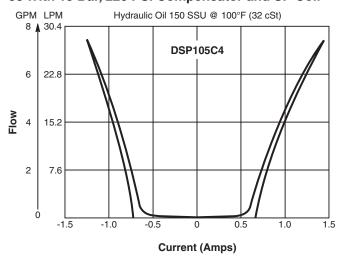
TD Technic

▲ PWM Current Regulator Recommended

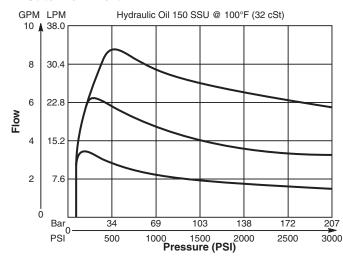
51 With 15 Bar, 220 PSI Compensator and SP Coil



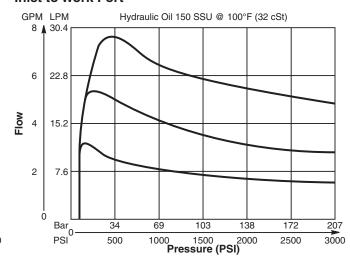
53 With 15 Bar, 220 PSI Compensator and SP Coil



Pressure Compensation Pull Coil Inlet to Work Port



Pressure Compensation Push Coil Inlet to Work Port



51 Spool Port 3 to 4

