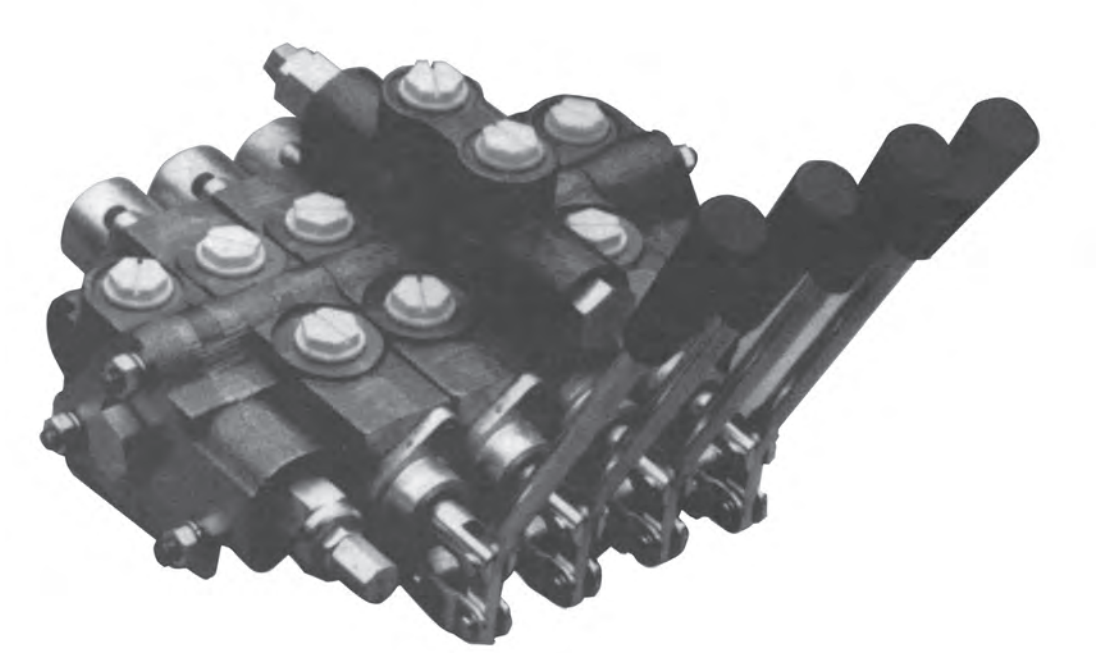
SECTIONAL BODY



Model SV

STANDARD FEATURES

- **1-10 Sections Per Valve Bank**
- **Load Checks On Each Section**
- **Hard Chrome Plated Spools**
- **Compact Construction**
- **Enhanced Metering Section Available in both the High and Low Sections**
- **Differential Poppet Style Relief, Adjustable from 1500 to 3000 psi (Also available in Low Pressure Version Adjustable from 500 to 1500 psi)**
- **Power Beyond Capability**
- **Reversible Handle**
- **Mid-Inlet and Lock Valve Section available**
- **Flow Control Inlet**

SPECIFICATIONS

Parallel or Series Circuit Construction
Pressure Rating
Maximum Operating Pressure ..... 3000 psi
Maximum Tank Pressure..... 500 psi
Nominal Flow Rating .....12 GPM
Refer to Pressure Drop Curves.
Filtration: For general purpose valves, fluid cleanliness should meet the ISO 4406 19/17/14 level. For extended life or for pilot operated valves, the 18/16/13 fluid cleanliness level is recommended.

Foot Mounting
Maximum Operating Temp......180°F
Weight Per Section
Inlet Section ..... Approx 3.75 lbs
Outlet Section ..... Approx 3.75 lbs.
Work Section (Standard) ..... Approx 5.50 lbs.
Work Section (High) ..... Approx 8.00 lbs.

ORDERING INFORMATION: The following is a listing of valve sections available from stock on a standard basis.
STANDARD SECTIONS AVAILABLE:

INLET SECTIONS ALL HAVE BOTH TOP AND SIDE INLET PORTS

PART NO.	RELIEF TYPE AND SETTING	PORT SIZE
SVI21	No Relief	#10 SAE ORB (7/8-14 THD)
SVI24	Adjustable Low Pressure Relief Set at 1000 PSI	#10 SAE ORB (7/8-14 THD)
SVI15	Adjustable High Pressure Relief Set At 2000 PSI	#8 SAE ORB (3/4-16 THD)
SVI25	Adjustable High Pressure Relief Set at 2000 PSI	#10 SAE ORB (7/8-14 THD)

WORK SECTIONS ALL HAVE #8 SAE ORB (3/4-16 THD) PORTS, LOAD CHECK AND STANDARD LEVER HANDLE

PART NO.	SPOOL TYPE AND ACTION
SVW1AA1	3-Way Single w/ Spring Center
SVW1BA1	4-Way Double Acting w/ Spring Center (Work Ports Blocked in Neutral)
SVW1BB1	4-Way Double Acting w/ 3 Position Detent (Work Ports Blocked in Neutral)
SVW1CA1	4-Way Motor Spool w/ Spring Center (Work Ports Open to Tank in Neutral)
SVW1CB1	4-Way Motor Spool w/3 Position Detent (Work Ports Open to Tank in Neutral)
SVW1DD1	4-Way 4 Position Float w/ Spring Center and Float Detent
SVL1CA1	4-Way Spool w/ Spring Center (with Pilot Operated Checks on Both Work Ports)
SVW1BA11	4-Way Double Acting w/ Spring Center (Work Ports Blocked in Neutral) / Enclosed Handle
SVW1BA2	4-Way Double Acting w/ Spring Center (Work Ports Blocked in Neutral) / Less Handle Only
SVW1BA9	4-Way Double Acting w/ Spring Center (Work Ports Blocked in Neutral) / Blank for Optional Joystick Handle
SVW1DD2	4-Way 4 Position Float w/ Spring Center and Float Detent / Less Handle Only
SVW2BA6	4-Way Double Acting w/ Spring Center (Work Ports Blocked in Neutral) / Clevis Spool End Only
SVW1BAA-S12H	4-Way Double Acting w/ Spring Center (Work Ports Blocked in Neutral) 12 VDC DIN 43650
SVW1BA1-S12Q	4-Way Double Acting w/ Spring Center (Work Ports Blocked in Neutral) 12 VDC Double Spade
SVW1BA2-S12L	4-Way Double Acting w/ Spring Center (Work Ports Blocked in Neutral) / Less Handle 12 VDC Double Wire

PORT RELIEF WORK SECTIONS ALL HAVE #8 SAE ORB (3/4-16 THD) PORTS, LOAD CHECK AND STANDARD LEVER HANDLE. MODELS WITH RELIEF FACTORY SET AT 2000 PSI AT 3 GPM.

PART NO.	SPOOL TYPE AND ACTION	PORT RELIEFS
SVH1BA1GG	4-Way Double Acting w/ Spring Center	Adjustable 1500-3000 PSI
SVH1BA1AH	4-Way Double Acting w/ Spring Center	Adjustable 500-1500 PSI
SVH1BA1HA	4-Way Double Acting w/ Spring Center	Adjustable 500-1500 PSI
SVR1ES1GG	4-Way Meter Spool w/ Spring Center	Adjustable 1500-3000 PSI
SVS1GA1AA	4-Way Double Acting Series w/ Spring Center	Port Relief Plugged
SVH1DD1BB	4-Way 4 Position Float w/ Spring Center and Float Detent	Shim Adjustable 1500-3000 PSI

OUTLET SECTIONS ALL HAVE BOTH TOP AND SIDE OUTLET PORTS

PART NO.	EXHAUST OPTIONS	PORT SIZE
SVE11	Open Center Outlet w/ Conversion Plug	#8 SAE ORB (3/4-16 THD)
SVE21	Open Center Outlet w/ Conversion Plug	#10 SAE ORB (7/8-14 THD)
SVE22	Power Beyond Outlet w/ #8 SAE Power Beyond Port	#10 SAE ORB (7/8-14 THD)
SVE23	Closed Center Outlet	#10 SAE ORB (7/8-14 THD)
SVE26	Open Center Outlet Pressure Build-Up Valve	#10 SAE ORB (7/8-14 THD)
SVE27	Power Beyond Pressure Build-Up Valve	#10 SAE ORB (7/8-14 THD)
SVE28	Medium Pressure Build-Up (for Low Flow Applications)	#10 SAE ORB (7/8-14 THD)

TIE ROD KITS

TIE ROD TORQUE
150in-lbs ± 6in-lbs
(12 1/2 ft-lbs ±1/2)

*Number of Work Sections

PART NO.	PART NO.
660401001 1 Section*	660401006 6 Sections*
660401002 2 Sections*	660401007 7 Sections*
660401003 3 Sections*	660401008 8 Sections*
660401004 4 Sections*	660401009 9 Sections*
660401005 5 Sections*	660401010 10 Sections*

SPECIAL INLET AND OUTLET SECTIONS AVAILABLE: Sections other than standard models listed can be made to order. Use order code Matrix below to generate a model number that meets your requirements. If you prefer, contact your Sales Representative with your specific requirements and a model number will be assigned for you. This model number can be used for future orders. A minimum order quantity will apply to special valves. Please consult Sales Representative.

INLET SECTIONS

All inlet sections have top and side inlets.

S V I X X - X X X X

PORT SIZE
1. #8 SAE ORB (3/4-16 THD)
2. #10 SAE ORB (7/8-14 THD)

RELIEF SETTING (in PSI)

RELIEF OPTION
1. No Relief Plug
4. Adj. Low Pressure 500-1500 PSI
5. Adj. High Pressure 1500-3000 PSI
6. Plastic Plug in relief cavity. Use only when cartridge is to be installed at a later date.

OUTLET SECTION

All outlet sections have top and side outlets.

S V E X X

PORT SIZE
1. #8 SAE ORB (3/4-16 THD)
2. #10 SAE ORB (7/8-14 THD)

[0] Often used with no relief. Review application

EXHAUST OPTION
1. Std. Open Center Outlet w/Conversion Plug
2. Power Beyond Outlet w/#8 SAE Beyond Port
3. Closed Center Outlet [0]
6. Open Center Outlet Pressure Build-up
7. Power Beyond Pressure Build-up #8 SAE Beyond Port
8. Medium Pressure Build-up (For Low Flow Applications)
9. Medium Pressure Build-up Power Beyond #8 SAE Beyond Port (For Low Flow Applications)

VALVE ASSEMBLIES

The Model SV sectional body directional control valve can be ordered as separate sections or as a complete factory tested assembly. This will need to be specified with each order. An assembly number will be assigned at the time of the order. This assembly number can then be used for future orders.

ASSEMBLY MODEL NUMBER SVA-XXXX

XXXX = Sequence of Numbers. This number will be assigned to final valve to be assembled and tested at the factory. Each new order or quote will be assigned a new assembly model number. Please use quotation sheet at the end of SV section.

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SEE PAGE 11 & 12 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SPECIAL WORK SECTIONS AVAILABLE:

Work Sections other than standard models listed can be made to order. Use order code Matrix below to generate a model number that meets your requirements. If you prefer, contact your Sales Representative with your specific requirements and a model number will be assigned for you. This model number can be used for future orders. A minimum order quantity will apply to special valves. Please consult Sales Representative.

WORK SECTIONS

S V X X X X X

SECTION TYPE
W - Std. Work Section
M - Metering Work Section[2]
L - Work Section with Double P.O. Checks[1]
F - Fine Metering[3]

PORT SIZE
1. #8 SAE ORB (3/4-16 THD)
2. #6 SAE ORB (9/16-18 THD)

SPOOL TYPE
A - 3-Way 3-Position
B - 4-Way 3-Position
C - 4-Way 3 Position Motor
D - 4-Way 4 Position Float (Must Use Float Action)
E - 4-Way 3 Position Metering (SVM only)
K - 4-Way 3 Position Counterbalance Drain (SVW)
M - 4-Way 3 Position Counterbalance Drain/Motor (SVM)
1. Lock Valve Section available only with Spool Option C.
2. Metering Section available only with Spool Options E, F, or M.
3. Fine Metering available only with Spool Options J.

HANDLE OPTION
1. Standard Lever Handle
2. Less Handle Only
3. Less Complete Handle Assembly
4. Adjustable Handle
5. Tang Spool End Only
6. Clevis Spool End Only
7. Vertical Handle
8. Straight Handle
9. Blank for Optional Joystick Handle
11. Enclosed Handle
12. Extended Enclosed Handle
13. Locking Handle

SPOOL ACTION
A - Spring Center (SVW & SVL only)
B - 3 Position Detent
C - Friction Detent
D - Spring Center w/Float Detent (SVW only) (Must Use Float Spool)
E - Light Spring Center
F - 2 Position Detent Neutral and Out (No IN Position)
G - 2 Position (Center and Spool Out) - Spring Loaded to Spool Out (Pressure to B Port) Position
H - 2 Position (Center and Spool In)-Spring Loaded to Spool In (Pressure to A Port) Position
J - S/C with MicroSwitch Bracket 2-Position (MicroSwitch not provided)
K - S/C with MicroSwitch Bracket 1-Position (MicroSwitch not provided) (activates on spool out only)
M - Spring Center Detent In
N - Spring Center Detent Out
P - 2 Position Detent Neutral and IN (No OUT Position)
R - Spring Center Pneumatic Actuator
S - Spring Center (SVM & SVF)

PORT RELIEF WORK SECTIONS

S V X X X X X X X

SECTION TYPE
H - Port Relief Section
R - Port Relief Metering Section[2]
S - Series Circuit Port Relief Section
G - Port Relief Fine Metering Section[3]

PORT SIZE
1.#8 SAE ORB (3/4-16 THD)
2.#6 SAE ORB (9/16-18 THD)

SPOOL TYPE
A - 3-Way 3-Position
B - 4-Way 3-Position
C - 4-Way 3 Position Motor
D - 4-Way 4 Position Float (Must Use Float Action)
E - 4-Way 3 Position Metering (SVR only)
G - 4-Way 3 Position Series (SVS only)
H - 4-Way 3 Position Motor Series (SVS only)
J - 4-Way 3 Position Fine Metering (SVG only)
K - 4-Way 3 Position Counterbalance Drain (SVH)
M - 4-Way 3 Position Counterbalance Drain/Motor (SVR)

SPOOL ACTION
A - Spring Center (SVH & SVS only)
B - 3 Position Detent
C - Friction Detent
D - Spring Center w/ Float Detent (SVH only) (Must Use Float Spool)
E - Light Spring Center
G - 2 Position Neutral and Out Spring Offset to Out
H - 2 Position Neutral and In Spring Offset to In
J - S/C with Micro Switch Bracket 2-Position*
K - S/C with MicroSwitch Bracket 1-Position*
M - Spring Center Detent In
N - Spring Center Detent Out
R - Spring Center Pneumatic Actuator
S - Spring Center (SVR & SVG)
*MicroSwitch not provided

HANDLE OPTION
1. Standard Lever Handle
2. Less Handle Only
3. Less Complete Handle Assembly
4. Adjustable Handle
5. Tang Spool End Only
6. Clevis Spool End Only
7. Vertical Handle
9. Blank for Optional Joystick Handle
12. Extended Enclosed Handle

PORT RELIEF "A" OPTION
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI
C - Non-Adjustable Direct Acting Relief 500-1500 PSI
D - Anti-Cavitation Check
E - Adjustable Combination Port Relief/Anti-Cavitation Check 1000-2500 PSI*
F - Non-Adjustable Combination Port Relief/Anti-Cavitation Check 1000-2500 PSI***
**G - Adjustable Direct Acting Relief 1500-3000 PSI
**H - Adjustable Direct Acting Relief 500-1500 PSI
** Cannot be used on work sections with float option due to interference with handle.
*** Do not use in applications that require low work port leakage. Max allowable leakage 5 in³/min @1000 psi.

PORT RELIEF "B" OPTION
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI
C - Non-Adjustable Direct Acting Relief 500-1500 PSI
D - Anti-Cavitation Check
E - Adjustable Combination Port Relief/Anti-Cavitation Check 1000-2500 PSI***
F - Non-Adjustable Combination Port Relief/Anti-Cavitation Check 1000-2500 PSI***
G - Adjustable Direct Acting Relief 1500-3000 PSI
H - Adjustable Direct Acting Relief 500-1500 PSI

For Work Port Relief Settings Other Than Standard
SVH1BA1GG-18-25

B PORT RELIEF PRESSURE IN HUNDREDS
EXAMPLE: 25=2500 PSI at 3 GPM
All Port Reliefs set at 3 GPM

A PORT RELIEF PRESSURE IN HUNDREDS
EXAMPLE: 18=1800 PSI at 3 GPM
All Port Reliefs set at 3 GPM

CUSTOM SECTION: For OEM application custom sections can often be designed to meet your specifications. Consult your sales representative with your specifications.

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SEE PAGE 11 & 12 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

FIELD CONVERSION KITS, REPAIR KITS AND RELIEF CARTRIDGES

SPOOL ATTACHMENT KITS

660180001 Spring Center Kit (except SVM)
660180002 3 Position Detent Kit
660180003 Friction Detent Kit
660180051 Float Detent Kit
660180036 Spring Center Detent In
660180037 Spring Center Detent Out
660180015 S/C w/Micro-Switch, 2 Position*
660180016 S/C w/Micro-Switch, 1 Position*

HANDLE KITS

660180011 Std. Handle Kit
660180032 Clevis Sub-Assy
660180005 Complete Handle Kit
660180031 Pin Kit
660180026 Vertical Handle Kit
660180028 Straight Handle Kit
660180007 Complete Adjustable Handle Kit
660180006 Adjustable Handle Kit
660180055 Joystick Handle Kit Less Handle
660180234 Locking Handle Kit

*Bracket only, Micro-Switch is not provided.

660180033 Bent Joystick Handle Kit
660180017 Straight Joystick Handle Kit
660180018 Offset Joystick Handle Kit
671300011 Rubber Boot for Joystick Handles**

SEAL KITS

660580001 SVW/SVM Replacement Seal Kit
660580002 Inlet Seal Kit
660580003 Outlet Seal Kit
660580004 Between Section Seal Kit
660580010 SVH/SVR Replacement Seal Kit
660580009 SVL Replacement Seal Kit
660580011 SVS Replacement Seal Kit

PORT RELIEFS

660280004 Port Relief Plug
660280003 Shim Adj. Port Relief 1500-3000 PSI
660280010 Shim Adj. Port Relief 500-1500 PSI
660280012 Adj. Combination Port Relief/Anti-Cav Check 1000-2500 PSI
660280008 Shim Adj. Combination Port Relief/Anti-Cav Check 1000-2500 PSI
660280005 Anti-Cavitation Check
660280009 Adj. Port Relief 1500-3000 PSI
660280011 Adj. Port Relief 500-1500 PSI
672000101 .015 SHIM
672000102 .033 SHIM
672000103 .060 SHIM
660180215 Shim Assortment

** Boot is to be ordered in addition to joystick handle kits

INLET RELIEFS

660250006 Inlet Relief Plug
660250003 Adj. Low Pressure Inlet Relief
660250002 Adj. High Pressure Inlet Relief

OUTLET CARTRIDGES

200400030 Open Center Plug
660280001 #8 SAE Power Beyond Cart.
660280002 Closed Center Plug
660280093 Open Center Build-Up Cart.
660280092 Power Beyond Build-Up Cart.
660280090 Med. Press. Open Center Build-Up Cart.
660280089 Med. Press. Power Beyond Build-Up Cart.

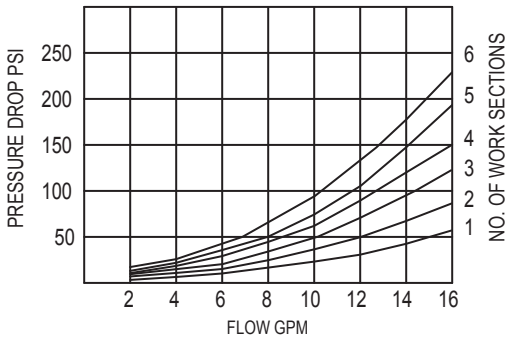
MISC. KITS

660180052 Load Check Kit

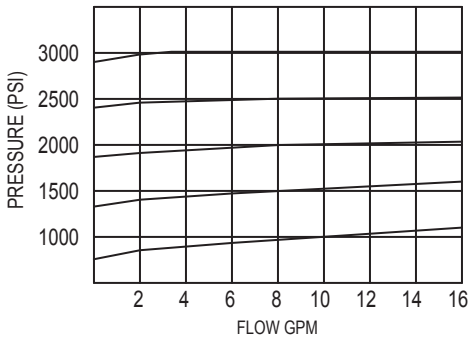
PERFORMANCE CURVES

PRESSURE DROP P TO T

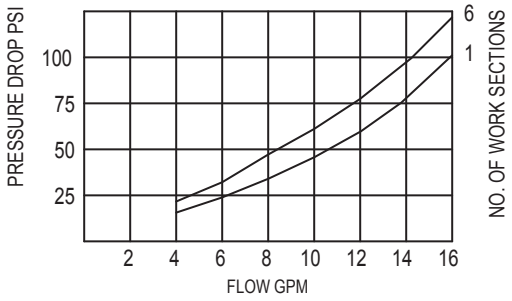
120 SUS OIL AT 100˚F



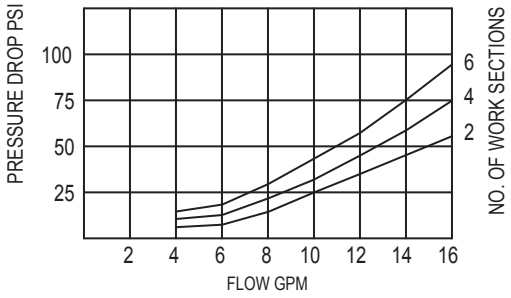
RELIEF VALVE CURVES



PRESSURE DROP P TO A OR B

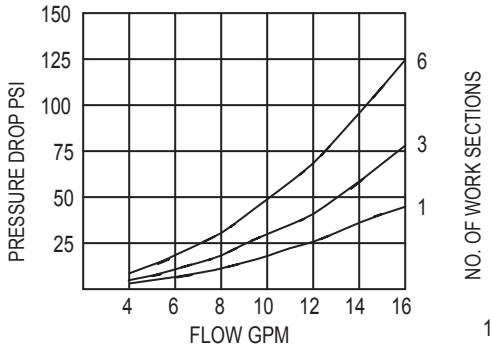


PRESSURE DROP A OR B TO T



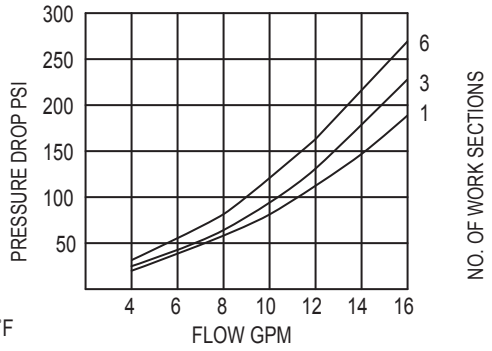
SVS SERIES SECTION TEST DATA

OPEN CENTER PRESSURE DROP P TO T



120 SUS OIL AT 100˚F

OPEN CENTER PRESSURE DROP P-A-B-T



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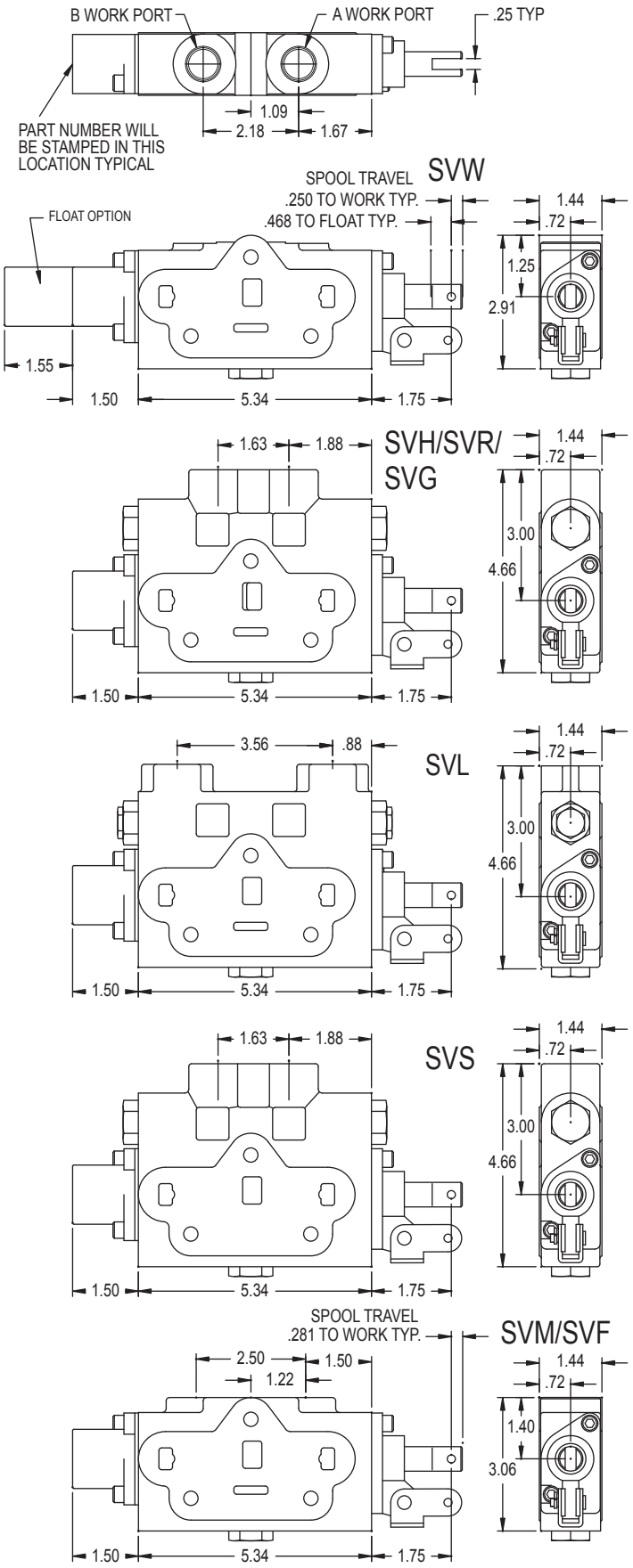
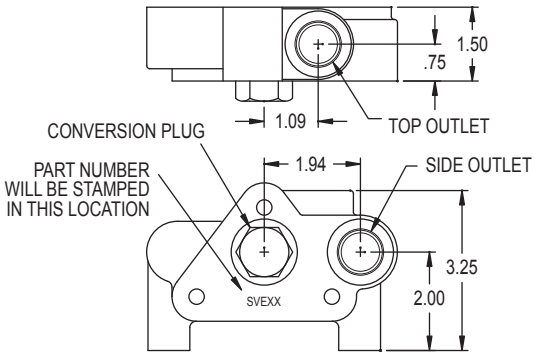
DIMENSIONAL DATA

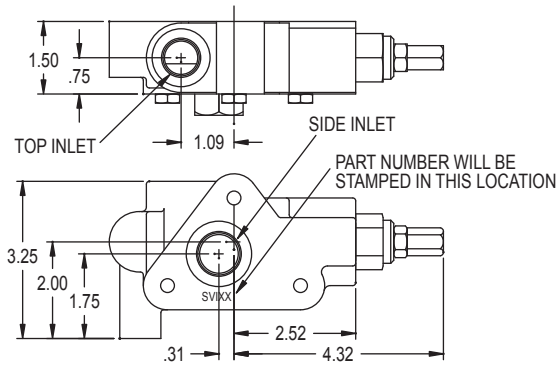
WORK SECTIONS



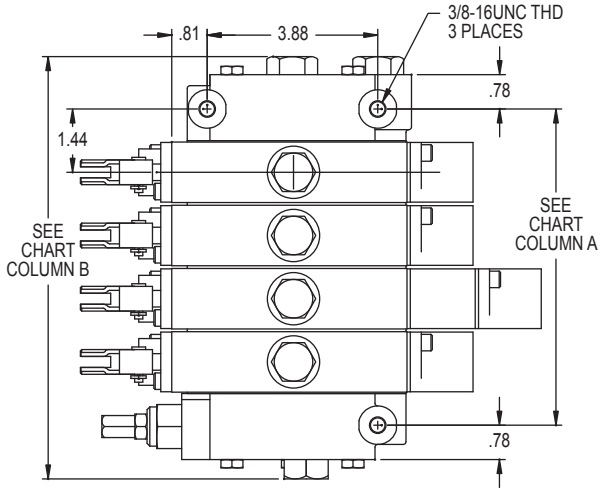
OUTLET COVER



INLET COVER



BOTTOM VIEW OF MOUNTING DIMENSIONS

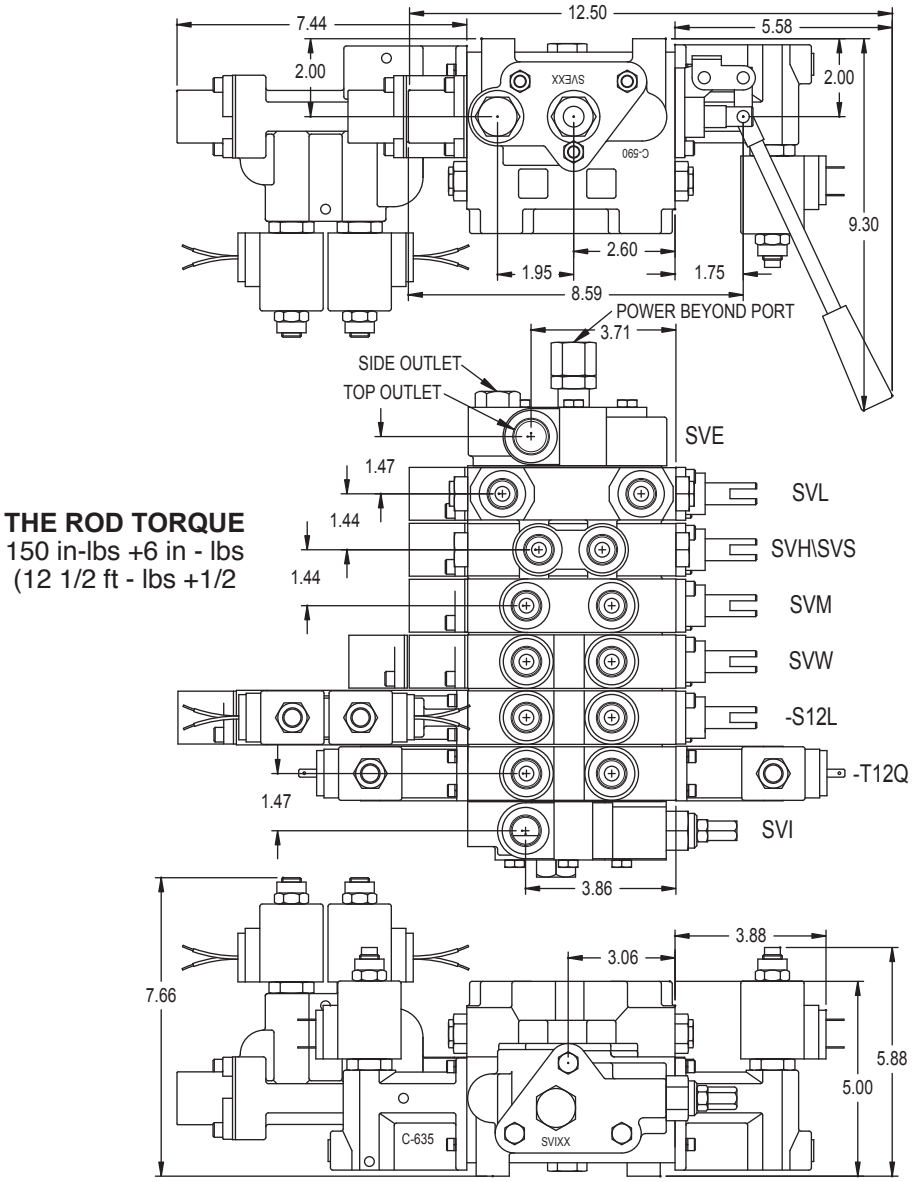


Number of Work Sections	"A"	"B*"
1	2.875	5.875
2	4.312	7.312
3	5.750	8.750
4	7.187	10.187
5	8.625	11.625
6	10.062	13.062
7	11.500	14.500
8	12.937	15.937
9	14.375	17.375
10	15.812	18.812

*With #10 plug in inlet & power beyond in outlet.

VALVES

TYPICAL STACK DIMENSIONAL DATA



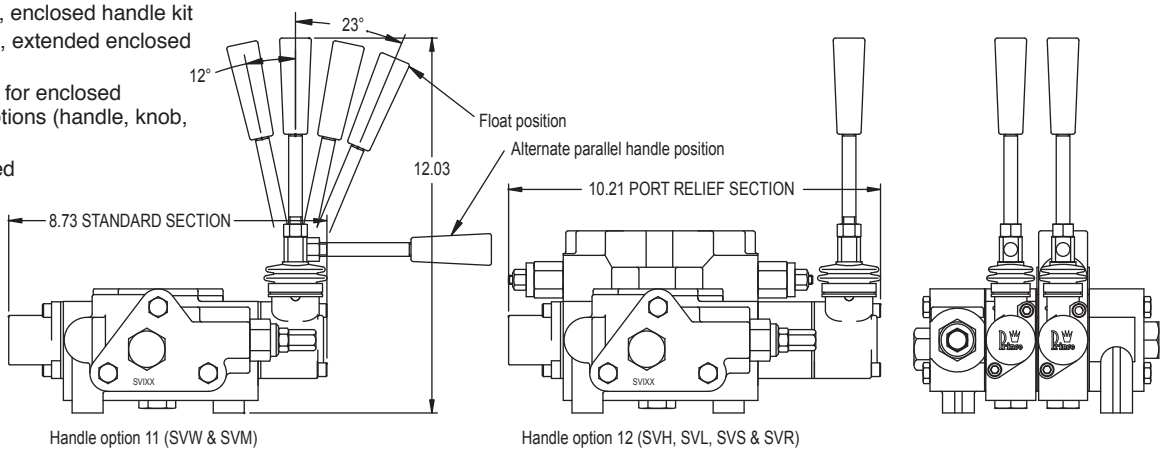
THE ROD TORQUE
150 in-lbs +6 in - lbs
(12 1/2 ft - lbs +1/2

ENCLOSED HANDLE, OPTIONS 11 AND 12

Durable die cast metal housing. Weather and oil resistant rubber boot. Reversible handle can be mounted in either a vertical or horizontal position. The extended handle option provides the necessary clearance for work port relief and lock cartridges. The extended handle option can also be used on the SVW and SVM, work sections when it is desired to keep handles aligned in an assembly with both low and high sections.

660180149 = Option 11, enclosed handle kit
660180151 = Option 12, extended enclosed handle kit
660180150 = handle kit for enclosed handle options (handle, knob, hex nut)

(handle kit is not included in the Option 11 or 12 kits above)



Handle option 11 (SVW & SVM)

Handle option 12 (SVH, SVL, SVS & SVR)

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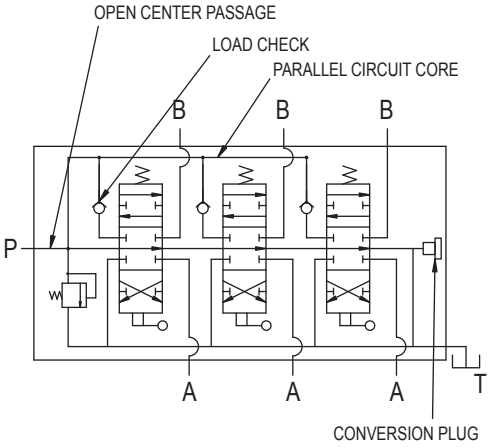
PARALLEL CIRCUIT SVW, SVM, SVF, SVH, SVR, SVG AND SVL WORK SECTIONS

Parallel circuit sections are by far the most common. The SVW, SVM, SVF, SVH, SVR, SVG and SVL are all of parallel circuit construction. They can be combined together in any order in an assembly. When any one of the spools is shifted, it blocks off the open center passage through the valve. The oil then flows into the parallel circuit core making oil available to all spools. If more than one spool is fully shifted, the oil will go to the spool with the lowest pressure requirements. However, it is possible to meter the flow to the spool with the least load and provide flow to two unequal loads.



ENHANCED METERING SECTIONS

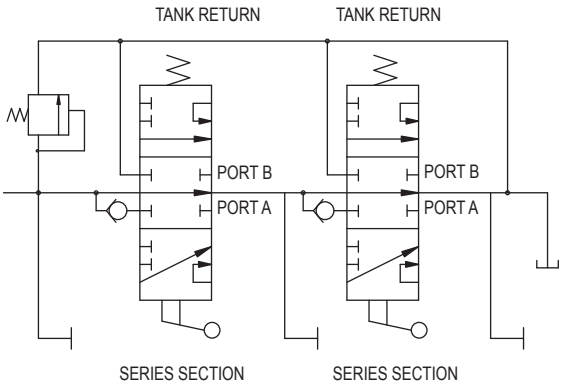
The SVM, SVF, SVR and SVG sections have metering notches machined into the spool to allow for better “feathering” of a load. The spool travel for these sections is also a little longer at .281” vs. .250” for the standard sections. In addition to the metering notches in the spool, the lands in the SVF and SVG bodies have been machined to give more precise control over the flow. The metering notches in the SVF and SVG have been optimized for flows of 10 gpm or less. For enhanced metering on higher flows, it is recommended that the SVM or SVR be used.

LOCK SECTIONS

The SVL section combines both a 4-way directional valve and a double pilot operated check valve. This provides very low leakage when the spool is in neutral. When the spool is shifted, oil is directed through a work port check to the cylinder. Pressure on the work port applies pressure to the shuttle spool, opening the opposite check valve and allowing oil to return into the valve. Depending on load pressures, the metering of the spool may be affected. In some cases a one way restrictor in a work port may be beneficial. Cracking pressure on the standard SVL section is 40psi. Higher pressure cartridges are available.

SERIES CIRCUIT SVS WORK SECTIONS

A series circuit valve is most commonly used to control more than one hydraulic component simultaneously. The entire circuit flow is available to each valve section that is actuated. In a two spool series valve with both spools actuated, the oil flows from the inlet to the work port of the first section. The return flow of the first section is directed to the open center core of the second section. (In a parallel valve the return oil from the work port is directed to the tank core.) From the open center core of the second section, the oil flows to the work port with the return oil going to the outlet. In a series circuit valve, the summation of the pressures required for each work section will equal the total pressure required for the circuit. The total pressure required must not exceed the system relief setting or the pump pressure rating. It is not required to have a SV Series section as the last section, unless series flow is required to a downstream valve. In this application, a power beyond plug must be used in the outlet section.



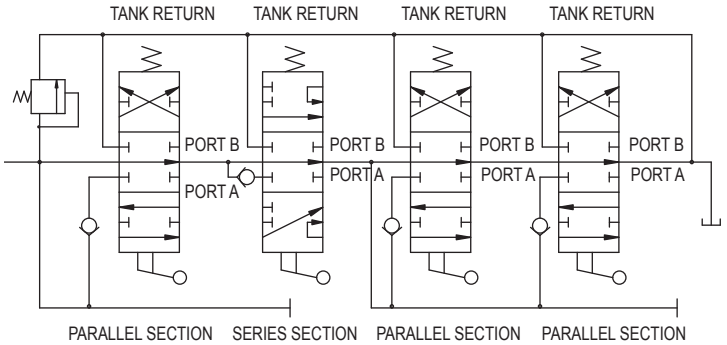
COMBINED SERIES / PARALLEL CIRCUITS

The SV Series circuit valve sections may be stacked with SV parallel circuit valve sections. This allows both series and parallel control in the same valve assembly.

In the valve assembly shown below, the first, third and fourth sections are parallel. The second section is series. The first parallel section has priority over all downstream valves. When the spool of the first parallel section is actuated, the return oil from the work port is directed to the tank core, thus oil flow to downstream sections is cut off. The second and third sections are in series with each other as is the second and fourth sections. The third and fourth sections are in parallel with each other.

SERIES MOTOR SPOOL

The SV Series Motor Spool provides control of reversible hydraulic motors. Both work ports are connected to the open center core in the neutral position. It should be noted that in the neutral position, the work ports will be equally pressurized to the same pressure that is required of any downstream valve sections and that a work port relief in the section will also limit the pressure of any other sections in the valve. The series motor spool should not be used to control a hydraulic cylinder as unwanted cylinder drift may occur in the neutral position.



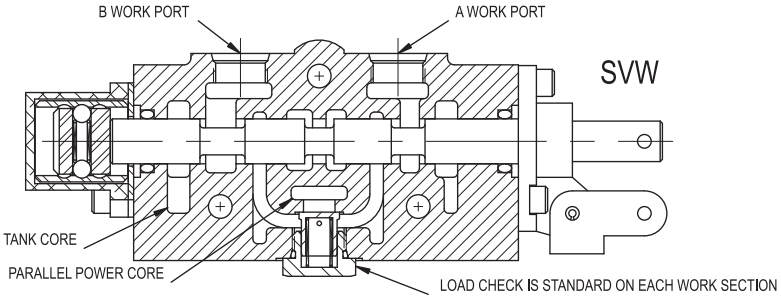
CLOSED CENTER APPLICATIONS

The SV Series Circuit Valve sections cannot be used in a closed center valve assembly.

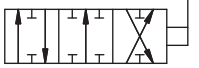
VALVES

WORK SECTIONS

SPOOL ATTACHMENT OPTION B
3 POSITION DETENT

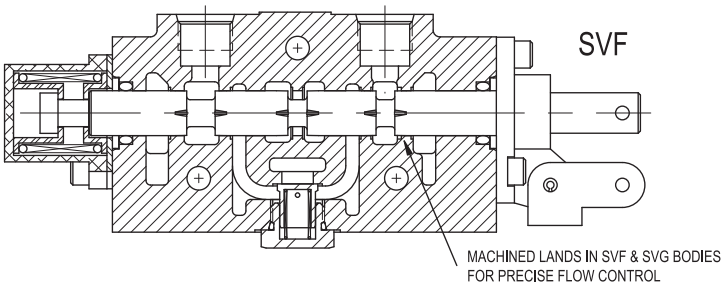


SPOOL OPTION B
DOUBLE ACTING WORK PORTS BLOCKED IN NEUTRAL

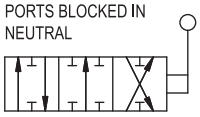


4 WAY 3 POSITION

SPOOL ATTACHMENT OPTION S
SPRING CENTER (FINE METERING)

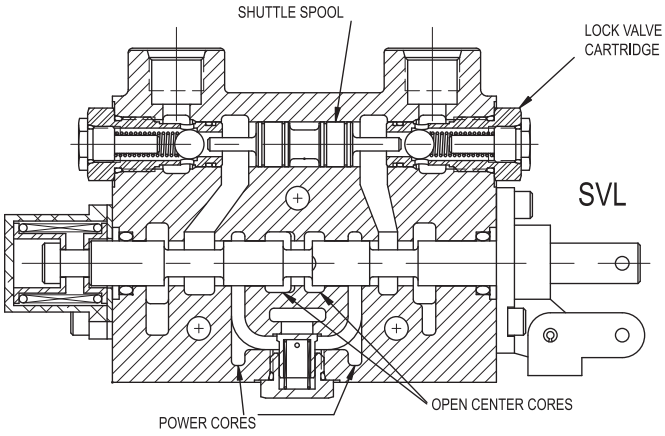


SPOOL OPTION J
DOUBLE ACTING WORK PORTS BLOCKED IN NEUTRAL

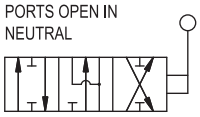


4 WAY 3 POSITION

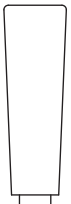
SPOOL ATTACHMENT OPTION A
SPRING CENTER



SPOOL OPTION C
DOUBLE ACTING WORK PORTS OPEN IN NEUTRAL

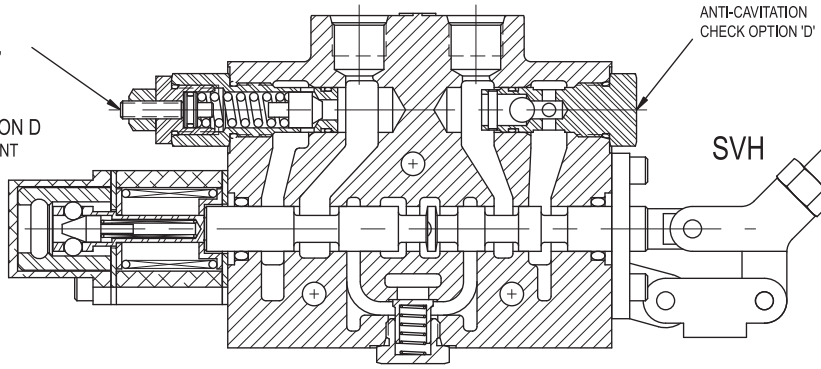


4 WAY 3 POSITION
MOTOR

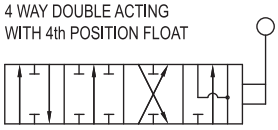


ADJUSTABLE HANDLE
OPTION 4

SPOOL ATTACHMENT OPTION D
SPRING CENTER W/FLOAT DETENT

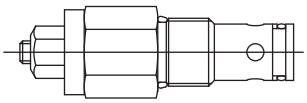


SPOOL OPTION D
4 WAY DOUBLE ACTING WITH 4th POSITION FLOAT



SV WORK PORT RELIEF*

SV WORK PORT RELIEFS, OPTION B, C, G, & H CAN BE ORDERED PRETESTED. USE ORDER CODE AT RIGHT



* Also used as standard main relief only models and RD4100 models.

PR	-	0		-	
MODEL NUMBER		PORT SIZE	RELIEF TYPE		PRESSURE SETTING
		0 CARTRIDGE ONLY	H- ADJUSTABLE 1500-3000 PSI L- ADJUSTABLE 500-1500 PSI NH- NON-ADJUSTABLE 1500-3000 PSI NL- NON-ADJUSTABLE 500-1500 PSI		SPECIFY RELIEF PRESSURE. LEAVE BLANK FOR STANDARD SETTINGS. STANDARD SETTING: 2000 PSI for H and NH 1000 PSI for L and NL

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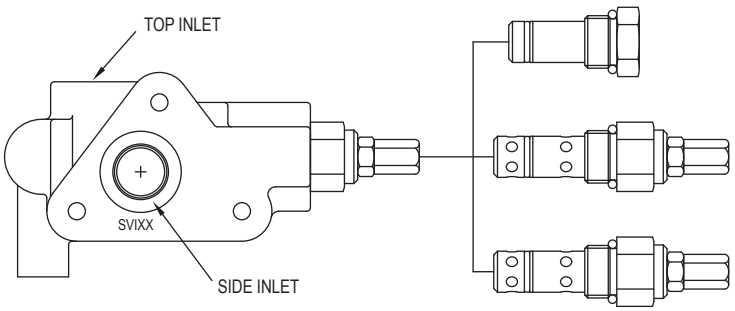
SV INLET RELIEF OPTIONS



OPTION 1 NO RELIEF

This option provides no built in relief. This is used when a relief is provided elsewhere in the system or in a closed center application. This plug can be replaced with a relief cartridge at a later date.

OPTION 4 LOW PRESSURE ADJUSTABLE RELIEF

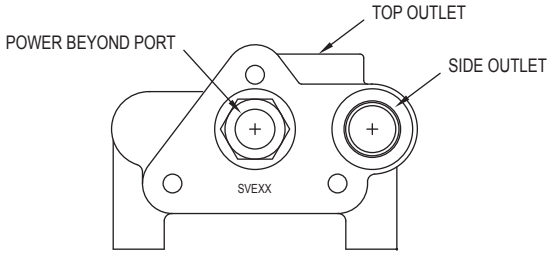
This option provides for a differential poppet relief adjustable from 500-1500 PSI. Set at 1000 PSI @ 10 GPM.

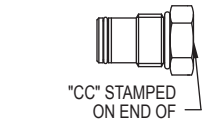
OPTION 5 HIGH PRESSURE ADJUSTABLE RELIEF

This option provides for a differential poppet relief adjustable from 1500-3000 PSI. Set at 2000 PSI @ 10 GPM. The differential poppet relief provides smooth quiet operation with high cracking pressure.

RELIEF CARTRIDGES CAN BE ORDERED PRETESTED SEE RV-OX RELIEF, PAGE V68.

SV OUTLET COVER OPTIONS



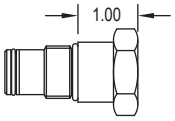


OPTION 3 CLOSED CENTER OUTLET

This option provides for closed center operation. This is typically used with a variable displacement pressure compensated pump or in a system with an unloading valve. When the spools are in neutral the inlet port is blocked. Closed center can also be accomplished by plugging the power beyond port of option 2.

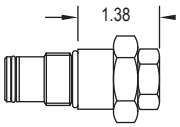
PLEASE NOTE that this closed center option does not provide for the drain off of standby spool leakage. This can allow a very small amount of oil to enter the work ports when in neutral.

OPTION 1 STANDARD OPEN CENTER OUTLET WITH CONVERSION PLUG This is the standard outlet option. This option allows for conversion in the field for power beyond or closed center applications. When spools are in neutral the inlet is unloaded to tank.



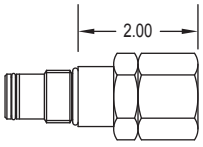
OPTION 2 POWER BEYOND OUTLET WITH #8 SAE BEYOND PORT

This option provides for a high pressure power beyond port. This would be used if a valve is to be added down stream. THE OUTLET PORT MUST STILL BE CONNECTED TO TANK. When spools are in neutral the inlet is connected to the power beyond port.



OPTION 6 OPEN CENTER OUTLET PRESSURE BUILD-UP VALVE FOR SOLENOID OPTION

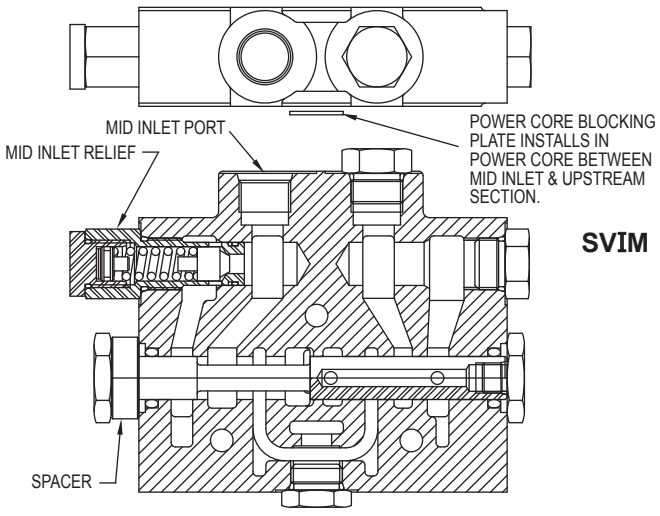
This option directs oil from open center core thru pressure build-up valve and then to tank. See solenoid section for description of operation. Option 8 is the same as option 6, but has a higher rate spring designed to build pressure in low flow applications. (Flows Ranging from 1 to 6 gpm.)



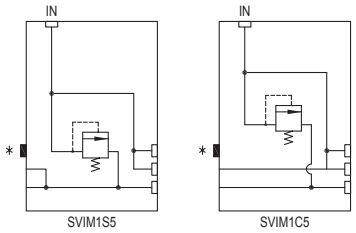
OPTION 7 POWER BEYOND PRESSURE BUILD-UP VALVE FOR SOLENOID OPTION

This option directs oil from inlet thru pressure build-up valve and then downstream. This pressure build-up valve provides a #8 SAE power beyond port. The outlet must be connected to tank. Option 9 is the same as option 7, but has a higher rate spring designed to build pressure in low flow applications. (Flows Ranging from 1 to 6 gpm.)

SV MID-INLET SECTION



SPLIT MID-INLET SHOWN CAN BE CONVERTED TO COMBINED MID-INLET BY MOVING SPACER TO OPPOSITE END



(*–POWER CORE BLOCKING PLATE)

SVIM 1 X X - X X X X

- Last Four Digits Specify A Non-Standard Relief Pressure. When blank, refer to standard setting
- 1-No Relief
  2-SHIM Adjustable 500-1500 PSI Std. Setting 1000 PSI @ 10GPM
  3-SHIM Adjustable 1500-3000 PSI Std. Setting 2000 PSI @ 10 GPM
  4-Adjustable 500-1500 PSI Std. Setting 1000 PSI @ 10 GPM
  5-Adjustable 1500-3000 PSI Std. Setting 2000 PSI @ 10 GPM
- C-Combined Flow Mid-Inlet
  S-Split Flow Mid-Inlet (not available after a series section)
  L-Pressure Build Up, Split Low Flow 1-6 GPM (for solenoid valves upstream)
  H-Pressure Build Up, Split High Flow 7-12 GPM (for solenoid valves upstream)
- See Section View at left. Note Location of Spacer, Part Number 671200035
- 1. Port Size #8 SAE ORB (3/4-16 THD)

DESCRIPTION:

A Mid-Inlet provides an inlet port for a second pump mid stream in the valve stack. A relief can be provided in this section. With the combined flow the flow from both pumps is available to the downstream sections when all the work sections upstream are in neutral. The split flow completely separates the two pump flows. The common tank passage is all that is shared between the two pump flows. **Note:** Split flow mid inlet is not available when used after a series section and the core block plate is not used after a series section.

VALVES

SV FLOW CONTROL INLET SECTION

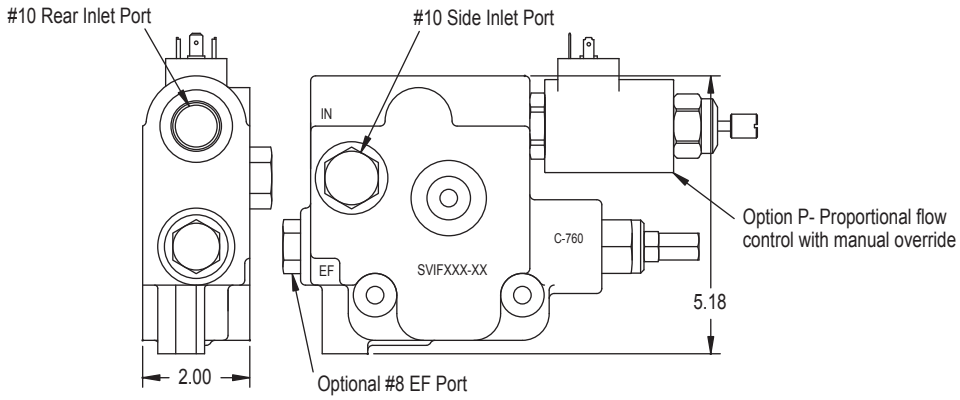
S V I F X X X X X X

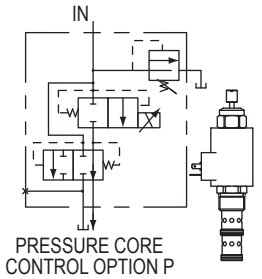
PORT SIZE
1- Side and End Inlet #10 SAE ORB
2- Side and End Inlet #10 SAE ORB, with #8 SAE ORB External EF Circuit

RELIEF VALVE
1- No Relief
2- Direct acting non-adjustable 500-1500 psi set at 1000 psi*
3- Direct acting non-adjustable 1500-3000 psi set at 2000 psi*
4- Direct acting adjustable 500-1500 psi set at 1000 psi*
5- Direct acting adjustable 1500-3000 psi set at 2000 psi*
*for other settings please specify, i.e. SVIF15P12Q2700 is set at 2700 psi

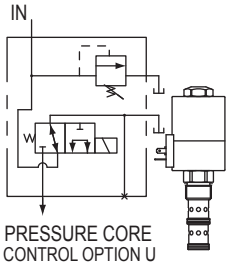
SOLENOID OPTION
Omit for Flow Control Option M
12Q-12VDC Double Spade Coil
24Q-24VDC Double Spade Coil
12H-12VDC DIN 43650 Coil
24H - 24VDC DIN 43650 Coil
12L-12VDC Double Lead Wire Coil
24L - 24VDC Double Lead Wire Coil
12W -12VDC Double Lead Wire w/ Weatherpak Connector Coil
24W - 24VDC Double Lead Wire w/ Weatherpak Connector Coil

FLOW CONTROL OPTION
M- Manual Flow Control
P- Electro-Proportional
U- Solenoid Unloading

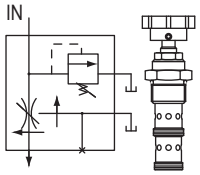




PRESSURE CORE CONTROL OPTION P CIRCUIT SCHEMATIC



PRESSURE CORE CONTROL OPTION U CIRCUIT SCHEMATIC



PRESSURE CORE CONTROL OPTION M CIRCUIT SCHEMATIC

The SVIF Flow Control Inlet is interchangeable with the standard SV inlet section.

FLOW CONTROL OPTIONS:
P OPTION incorporates a solenoid operated, electrically variable pressure-compensated flow control cartridge. With the solenoid de-energized, all of the inlet flow is diverted to the tank core/EF port. By increasing the current through the solenoid, the flow directed to the power core and downstream sections will be proportionally increased, (the maximum rating of the cartridge is 16 gpm at 1500 mA) Control current is normally provided via a controller card providing, a PWM signal.

U OPTION incorporates a solenoid operated, unloader cartridge. With the solenoid de-energized, all of the inlet flow is diverted to the tank core/EF port. With the solenoid energized all the inlet flow is directed to the power core and downstream sections.

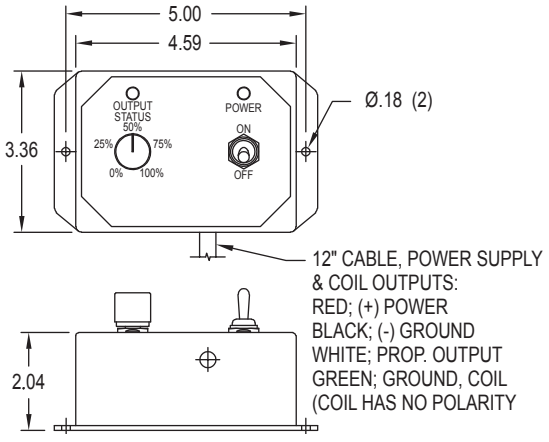
M OPTION incorporates a manually operated pressure-compensated flow control cartridge. With the control knob turned fully in (clockwise), all of the inlet flow is diverted to the tank core/EF port. By turning the flow control knob counter clockwise, the inlet flow directed to the power core and downstream sections is proportionally increased. Approximately 5 revolutions varies flow from no flow to full flow,

PORT OPTION 2 The flow being directed to the tank core/EF port may be utilized by a second circuit by inserting a 1/4 pipe plug into the tank core passage on the seal side of the casting and then connecting the EF port to the second circuit.

PROPORTIONAL CONTROL BOX (USE WITH SVIFP & 20IF FLOW CONTROL INLETS); P/N 671300048

The proportional control box is used to provide an adjustable electrical signal to a proportional solenoid on the SVIF and 20IF inlet sections. Once the dial is set, the regulated flow through the valve should remain approximately constant regardless of pressure. Within the operation range, flow varies approximately linearly with dial rotation.

CONNECTIONS AND OPERATION:
- Connect leads to the power supply and solenoid coil. Power supply should be between 9 and 30 VDC.
- With the power off, the inlet flow is directed to tank (or excess flow port).
- To provide power to the control, move the power switch to 'ON'. (RED LED is on when control box is powered).
- Minimum flow is directed into the valve when 0% on the dial is aligned with the center mark. Maximum flow is directed into the valve when 100% is aligned with the center mark.
- Clockwise knob rotation increases flow into the valve.
- Some adjustment may be needed for operation. I-min, I-max, dither frequency & ramp time can be adjusted. See drawing for calibration instructions



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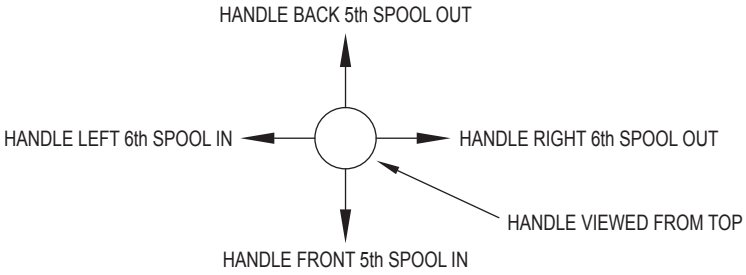
SEE PAGE 12 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

JOYSTICK HANDLE FOR MODEL SV STACK VALVE



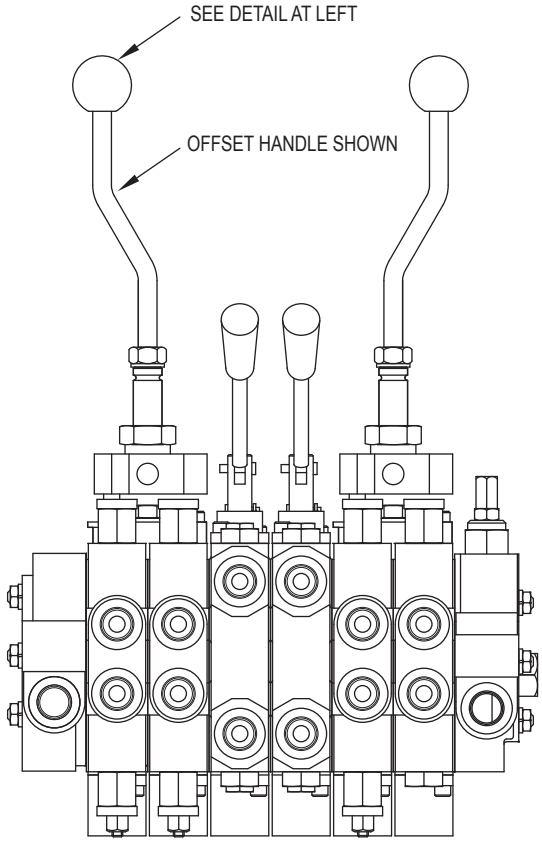
This is a special handle for the model SV stack valve that allows the spools of two adjacent sections to be operated by one common handle. The spools can be operated independently or simultaneously depending on handle movement. The option is normally used on spring center to neutral sections, but can also be used on other sections such as float sections. This handle is normally installed on valves assembled at the factory but can be installed on work sections that have handle option 3 or 9. The drawing at right shows two joysticks with offset handles installed on a six section valve. When two joysticks are installed on the same valve assembly it is recommended that there be two standard sections between them to prevent handle interference. A two section spacer is available, part no. 660380002.

Please refer to these part numbers and state which sections the handle is to be installed on when ordering a valve assembly. This handle can be installed in the field to work sections with handle option 3 (no handle).

JOYSTICK ASSEMBLY W/STRAIGHT HANDLE:
ASSEMBLED ON VALVE ..... SVJS
KIT 660180017

JOYSTICK ASSEMBLY W/OFFSET HANDLE:
ASSEMBLED ON VALVE ..... SVJO
KIT 660180018

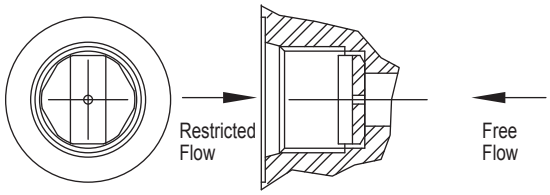
JOYSTICK ASSEMBLY W/BENT HANDLE:
ASSEMBLED ON VALVE ..... SVJB
KIT 660180033



A molded rubber boot (671300011) is available for the joystick.

ONE WAY WORK PORT RESTRICTOR FOR SVH, SVM, SVR, SVF, SVS, SVG& SVL WORK SECTIONS

This restrictor will restrict oil in one direction and allow free flow in the opposite direction. This restrictor consists of an orifice plate that simply drops into the #8 SAE work port of a SVH, SVM, SVR, SVF, SVS, SVG & SVL work section.



ORDERING INFORMATION

HEX BRASS RESTRICTOR

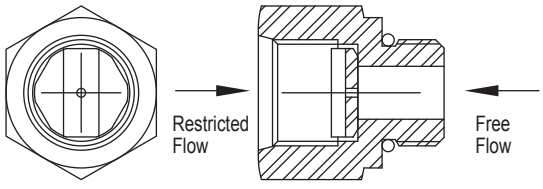
	#6 SAE 9/16-18	#8 SAE 3/4-16
	670806XXX	670805XXX
SQUARE STEEL RESTRICTOR CONICAL SPRING		661181XXX

The last three digits of part number are the orifice size in thousandths of an inch. **EXAMPLE:**

#6 SAE 9/16-18THD	#8 SAE 3/4-16THD	
670806062	670805062	.062 ORIFICE
670806125	670805125	.125 ORIFICE
670806000	670805000	NO ORIFICE

ONE WAY WORK PORT RESTRICTOR FOR SVW WORK SECTIONS

This restrictor will restrict oil in one direction and allow free flow in the opposite direction. This restrictor consists of the orifice plate as described at left and an adapter fitting that allow use in the standard SVW #8 SAE work port.



ORDERING INFORMATION

ADAPTER W/HEX BRASS RESTRICTOR

	#6 SAE 9/16-18	#8 SAE 3/4-16
	661280XXX	661180XXX
ADAPTER WITH SQUARE STEEL RESTRICTOR AND CONICAL SPRING		661182XXX

The last three digits of part number are the orifice size in thousandths of an inch. **EXAMPLE:**

#6 SAE 9/16-18THD	#8 SAE 3/4-16THD	
661280062	661180062	.062 ORIFICE
661280125	661180125	.125 ORIFICE
661280000	661180000	NO ORIFICE

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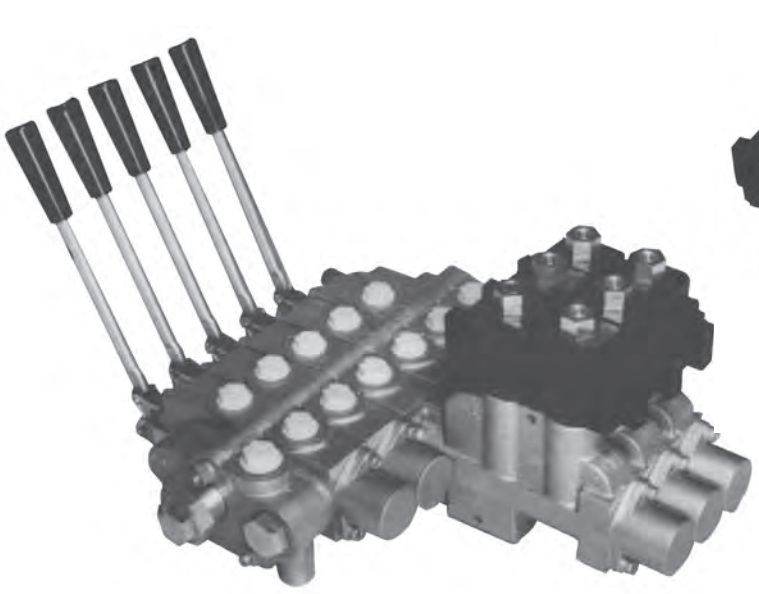
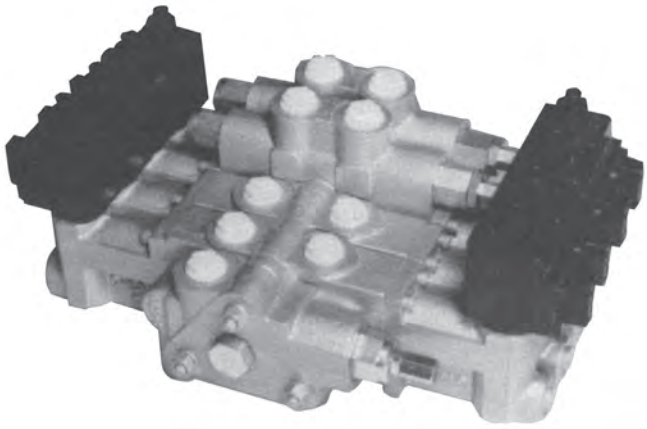
SV SOLENOID OPERATED

Work Sections

- Type “-D” and “-T” Solenoid Operated
- Type “-C” and “-S” Solenoid and Manual Operation





STANDARD FEATURES

- **Open center or closed center applications**
- **Port relief options available**
- **Internal pilot supply and drain**
- **12VDC, 24VDC and 120VAC**
- **Power beyond capability**
- **Load checks on each section**
- **May be stacked with Manual SV Sections**
- **8 Series (“C” and “D”) more economical and compact**

SPECIFICATIONS

Parallel or Series Circuit Construction
Pressure Rating

Maximum Operating Pressure	3000 psi
Maximum Tank Pressure	150 psi
Nominal Flow Rating	12 GPM
Differential Pressure Required to Actuator	**Approx. 150 PSI**

Filtration: For general purpose valves, fluid cleanliness should meet the ISO 4406 19/17/14 level. For extended life or for pilot operated valves, the 18/16/13 fluid cleanliness level is recommended.

Foot Mounting
Maximum Operating Temp. ..... 180°F
Weight Per Section

Inlet Section	Approx. 3.75 lbs.
Outlet Section	Approx. 3.75 lbs.
Solenoid Operated	
Type “-D” and “-T” Work Section	Approx. 11.0 lbs.
Type “-C” and “-S” Work Section	Approx. 14.5 lbs.

SV (8 SERIES) SOLENOID OR MANUAL WORK SECTIONS (BOTH SOLENOIDS ON ONE END) DESCRIPTION OF OPERATION

The Type "-C" SV Solenoid Work Section allows remote electrical on-off or manual control. The "-C" sections are 8 series work sections which use screw in cartridges with a #8 thread size. The screw in cartridges provide a robust platform for the higher tank pressures often seen in mobile applications and the #8 size allows for a more compact section size. Cartridges and coils on the 8 series are not interchangeable with the Prince 10 series solenoid sections or sections manufactured prior to November 2014. Any of the standard "-S", "-T", "-C" or "-D" style Prince SV solenoid operated work sections may be used in any combination within a stack valve assembly.

The Type "-C" SV Solenoid Section contains two 3-way 2-position, #8 solenoid cartridge valves and a pilot operated piston attached to the main control spool. When both solenoids are de-energized, both sides of the pilot piston are open to tank pressure and the spool remains spring centered. When solenoid "A" is energized, pilot pressure is applied to one side of the pilot piston, causing the spool to shift from the neutral position and direct flow to work port "A". When solenoid "B" is energized, pilot pressure is applied to the other side of the pilot piston, causing the spool to shift and direct flow to work port "B". An optional manual override feature is available for the solenoid cartridges.

Internal pilot lines provide pilot pressure to the solenoid actuator. Pilot pressure is generated by a "Pressure Build-Up Valve" that is installed in the standard outlet section. Two versions of the pressure build-up valve are offered, the open center pressure build-up valve and power beyond pressure build-up valve. Both versions supply 150-200 PSI pilot pressure to the solenoid actuator. A closed center assembly does not require a pressure build-up valve. For an open center system, the pilot pressure can also be provided by an in inlet manifold, which can provide filtered pilot flow.

ORDER CODE MATRIX - TYPE "-C" SOLENOID OR MANUAL WORK SECTIONS

8 SERIES SOLENOID OPERATED SVW, SVM AND SVL SECTION

S V W X X X X – C X X X

SECTION TYPE
W - Standard Work Section
L - Lock Section (Use C Spool)
M - Metering Work Section (Use E, F, or M Spool)

PORT SIZE
1. #8 SAE

SPOOL TYPE
A - 3-Way 3-Position
B - 4-Way 3-Position
C - 4-Way 3-Position Motor
E - 4-Way 3 Position Metering (SVM only)
F - 3-Way 3 Position Metering (SVM only)
K - 4-Way 3 Position Counterbalance Drain (SVW only)
M - 4-Way 3 Position Counterbalance Drain (SVM only)

SPOOL ACTIONS
A - Spring Center

HANDLE OPTION
1. Std. Lever Handle
2. Less Handle Only
3. Less Complete Handle Assembly
4. Adjustable Handle
5. Tang Spool End Only
6. Clevis Spool End Only
7. Vertical Handle
8. Straight Handle
11. Enclosed Handle
12. Extended Enclosed Handle

COIL VOLTAGE & TERMINATION *
12Q, 12 VDC Double Spade
12L, 12 VDC Double Wire
12H, 12 VDC DIN 43650
12D, 12 VDC Integral Deutsch
24Q, 24 VDC Double Spade
24 L, 24 VDC Double Wire
24H, 24 VDC DIN 43650
24D, 24 VDC Integral Deutsch
11H, 120 VAC DIN 43650

SOLENOID OPERATION
C - Standard Solenoid Cartridge
CM - Solenoid Cartridge w/Manual Override

8 SERIES SOLENOID OPERATED PORT RELIEF WORK SECTIONS

S V H X X X X X X – C X X X

SECTION TYPE
H - Port Relief Section
S - Series Section (Use G Spool)
R - Metering Work Section (Use E, F, or M Spool)

PORT SIZE
1. #8 SAE

SPOOL TYPE
A - 3-Way 3-Position
B - 4-Way 3-Position
C - 4-Way 3-Position Motor
E - 4-Way 3 Position Metering (SVR only)
F - 3-Way 3 Position Metering (SVR only)
G - 4-Way Series
H - 4-Way Series Motor
K - 4-Way 3 Position Counterbalance Drain (SVH only)
M-4-Way 3 Position Counterbalance Drain (SVR only)

SPOOL ACTIONS
A - Spring Center

HANDLE OPTION
1. Std. Lever Handle
2. Less Handle Only
3. Less Complete Handle Assembly
4. Adjustable Handle
5. Tang Spool End Only
6. Clevis Spool End Only
7. Vertical Handle
12. Extended Enclosed Handle

*See page V48 for Coil details

COIL VOLTAGE & TERMINATION*
12Q,12 VDC Double Spade
12L, 12 VDC Double Wire
12H, 12 VDC DIN 43650
12D, 12 VDC Integral Deutsch
24Q, 24 VDC Double Spade
24 L, 24 VDC Double Wire
24H, 24 VDC DIN 43650
24D, 24 VDC Integral Deutsch
11H, 120 VAC DIN 43650

SOLENOID OPERATION
C - Standard Solenoid Cartridge
CM - Solenoid Cartridge w/Manual Override

PORT RELIEF "B" OPTION
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI
C - Non-Adjustable Direct Acting Relief 500-1500 PSI

PORT RELIEF "A" OPTION
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI
C - Non-Adjustable Direct Acting Relief 500-1500 PSI
G - Adjustable Direct Acting Relief 1500-3000
H - Adjustable Direct Acting Relief 500-1500 PSI

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SEE PAGE 11 & 12 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SV (8 SERIES) SOLENOID WORK SECTION (SOLENOID ON BOTH ENDS) DESCRIPTION OF OPERATION

The Type "-D" SV Solenoid Work Section allows remote electrical on-off control. The "-D" sections are 8 series work sections which use screw in cartridges with a #8 thread size. The screw in cartridges provide a robust platform for the higher tank pressures often seen in mobile applications and the #8 size allows for a more compact section size. Cartridges and coils on the 8 series are not interchangeable with the Prince 10 series solenoid sections or sections manufactured prior to November 2014. Any of the standard "-S", "-T", "-C" or "-D" style Prince SV solenoid operated work sections may be used in any combination within a stack valve assembly.

The Type "-D" SV Solenoid Section contains two 3-way 2-position, #8 solenoid cartridge valves, one at each end of the main valve body. When both solenoids are de-energized, both ends of the control valve spool are open to tank pressure and the spool remains spring centered. When solenoid "A" is energized, pilot pressure is applied to one end of the control valve spool causing the spool to shift from the neutral position to full stroke which directs flow to work port "A". When solenoid "B" is energized, pilot pressure is applied to the other end of the control valve spool, causing the spool to shift to full stroke which directs flow to work port "B". An optional manual override feature is available for the solenoid cartridges.

Internal pilot lines provide pilot pressure to the solenoid actuator. Pilot pressure is generated by a "Pressure Build-Up Valve" that is installed in the standard outlet section. Two versions of the pressure build-up valve are offered, the open center pressure build-up valve and power beyond pressure build-up valve. Both versions supply 150-200 PSI pilot pressure to the solenoid actuator. A closed center assembly does not require a pressure build-up valve. For an open center system, the pilot pressure can also be provided by an in inlet manifold, which can provide filtered pilot flow.

ORDER CODE MATRIX - TYPE "-D" SOLENOID OR MANUAL WORK SECTIONS

8 SERIES SOLENOID OPERATED SVW, SVM AND SVL WORK SECTIONS

S V W X X X — D X X X

SECTION TYPE
W-Standard Work Section
L-Lock Section (Use C Spool)

PORT SIZE
1. #8 SAE

SPOOL TYPE
A - 3-Way 3-Position
B - 4-Way 3-Position
C - 4-Way 3-Position Motor
K - 4-Way 3-Position Counterbalance Drain (SVW only)

SPOOL ACTIONS
A - Spring Center

COIL VOLTAGE & TERMINATION *
12Q, 12 VDC Double Spade
12L, 12 VDC Double Wire
12H, 12 VDC DIN 43650
12D 12 VDC Integral Deutsch
24Q, 24 VDC Double Spade
24 L, 24 VDC Double Wire
24H, 24 VDC DIN 43650
24D 24 VDC Integral Deutsch
11H, 120 VAC Din 43650

SOLENOID OPERATION
D - Standard Solenoid Cartridge
DM - Solenoid Cartridge w/Manual Override

8 SERIES SOLENOID OPERATED PORT RELIEF WORK SECTION

S V H X X X X X — D X X X

SECTION TYPE
H - Port Relief Section
S - Series Section (Use G Spool)

PORT SIZE
1. #8 SAE

SPOOL TYPE
A - 3-Way 3-Position
B - 4-Way 3-Position
C - 4-Way 3-Position Motor
G - 4-Way Series
H - 4-Way Series Motor
K - 4-Way 3-Position Counterbalance Drain (SVH only)

SPOOL ACTIONS
A - Spring Center

PORT RELIEF "A" OPTION
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI
C - Non-Adjustable Direct Acting Relief 500-1500 PSI
G - Adjustable Direct Acting Relief 1500-3000 PSI
H - Adjustable Direct Acting Relief 500-1500 PSI

PORT RELIEF "B" OPTION
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI
C - Non-Adjustable Direct Acting Relief 500-1500 PSI
G - Adjustable Direct Acting Relief 1500-3000 PSI
H - Adjustable Direct Acting Relief 500-1500 PSI

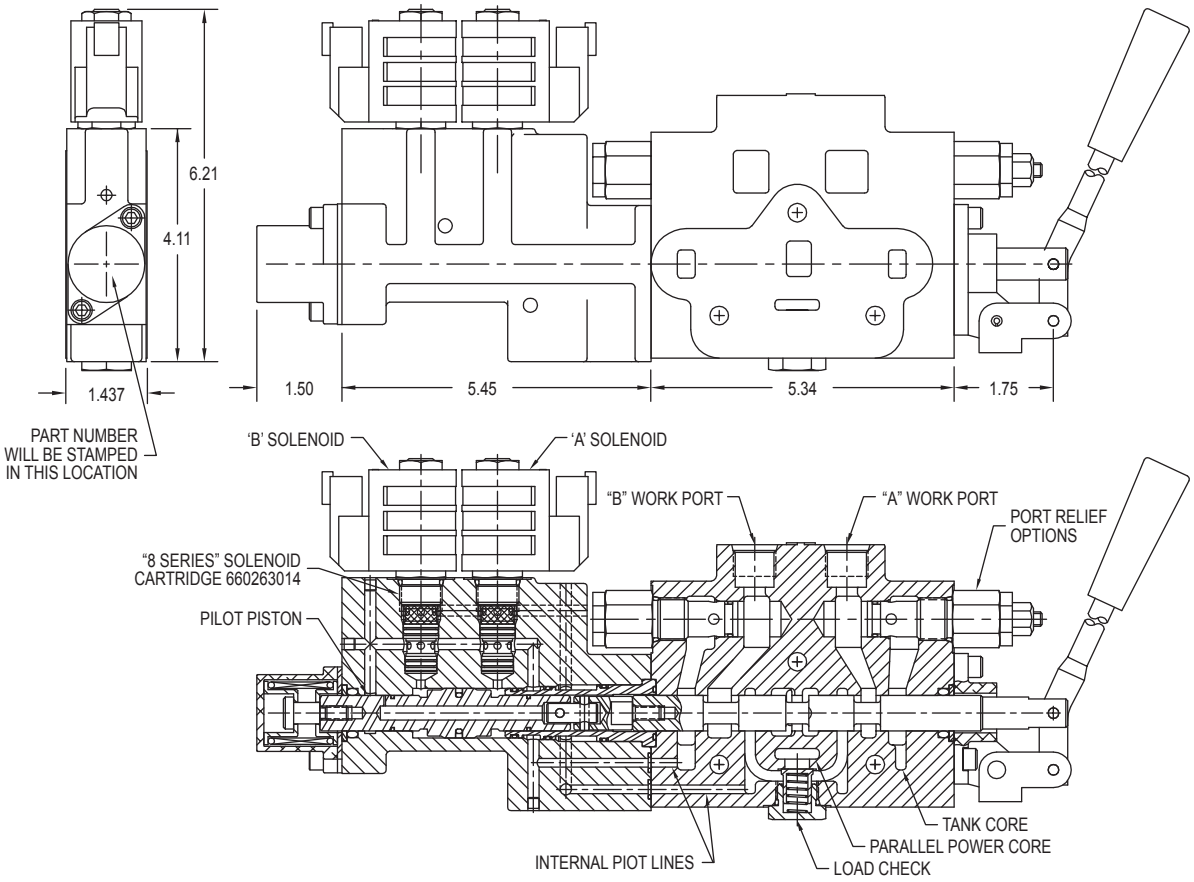
SOLENOID OPERATION
D - Standard Solenoid Cartridge
DM - Solenoid Cartridge w/Manual Override

COIL VOLTAGE & TERMINATION *
12Q, 12 VDC Double Spade
12L, 12 VDC Double Wire
12H, 12 VDC DIN 43650
12D 12 VDC Integral Deutsch
24Q, 24 VDC Double Spade
24L, 24 VDC Double Wire
24H, 24 VDC DIN 43650
24D 24 VDC Integral Deutsch
11H, 120 VAC DIN 43650

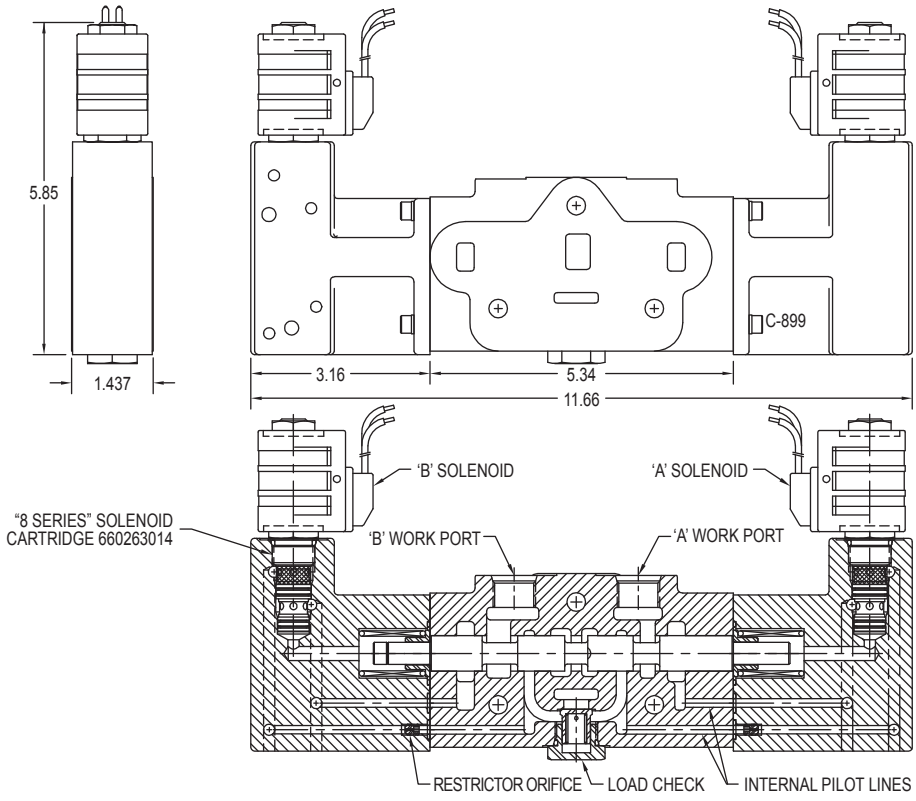
* See page V48 for coil details

SEE PAGE 11 & 12 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SV "8 SERIES" TYPE C
SOLENOID OR MANUAL WORK SECTION DIMENSIONS



SV "8 SERIES" TYPE D
SOLENOID WORK SECTION DIMENSIONS



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SV (10 SERIES) SOLENOID OR MANUAL WORK SECTIONS (BOTH SOLENOIDS ON ONE END) DESCRIPTION OF OPERATION

The Type "-S" SV Solenoid Work Section allows remote electrical on-off or manual control. The "-S" sections are 10 series work sections which use screw in cartridges with a #10 thread size. Cartridges and coils on the 10 series will be interchangeable with the components on Prince solenoid operated valves manufactured prior to November 2014 was well as current production 10 series valves. Any of the standard "-S", "-T", "-C" or "-D" style Prince SV solenoid operated work sections may be used in any combination within a stack valve assembly.

The Type "-S" SV Solenoid Section contains two 3-way 2-position, #10 solenoid cartridge valves and a pilot operated piston attached to the main control spool. When both solenoids are de-energized, both sides of the pilot piston are open to tank pressure and the spool remains spring centered. When solenoid "A" is energized, pilot pressure is applied to one side of the pilot piston, causing the spool to shift from the neutral position and direct flow to work port "A". When solenoid "B" is energized, pilot pressure is applied to the other side of the pilot piston, causing the spool to shift and direct flow to work port "B".

Internal pilot lines provide pilot pressure to the solenoid actuator. Pilot pressure is generated by a "Pressure Build-Up Valve" that is installed in the standard outlet section. Two versions of the pressure build-up valve are offered, the open center pressure build-up valve and power beyond pressure build-up valve. Both versions supply 150-200 PSI pilot pressure to the solenoid actuator. A closed center assembly does not require a pressure build-up valve. For an open center system, the pilot pressure can also be provided by an in inlet manifold, which can provide filtered pilot flow.

ORDER CODE MATRIX - TYPE "-S" SOLENOID OR MANUAL WORK SECTIONS

10 SERIES SOLENOID OPERATED SVW AND SVL SECTION

S V W X X X X – S X X X

SECTION TYPE
W - Standard Work Section
L - Lock Section (Use C Spool)
M - Metering Work Section (Use E, F or M spool)

PORT SIZE
1. #8 SAE

SPOOL TYPE
A - 3-Way 3-Position
B - 4-Way 3-Position
C - 4-Way 3-Position Motor
E - 4-Way 3 Position Metering (SVM only)
F - 3-Way 3 Position Metering (SVM only)
K - 4-Way 3 Position Counterbalance Drain (SVW only)
M - 4-Way 3 Position Counterbalance Drain (SVM only)

SPOOL ACTIONS
A - Spring Center

HANDLE OPTION
1. Std. Lever Handle
2. Less Handle Only
3. Less Complete Handle Assembly
4. Adjustable Handle
5. Tang Spool End Only
6. Clevis Spool End Only
7. Vertical Handle
8. Straight Handle
11. Enclosed Handle
12. Extended Enclosed Handle

COIL VOLTAGE & TERMINATION *
12Q, 12 VDC Double Spade
12L, 12 VDC Double Wire
12H, 12 VDC DIN 43650
12D, 12 VDC Deutsch
24Q, 24 VDC Double Spade
24 L, 24 VDC Double Wire
24H, 24 VDC DIN 43650
24D, 24 VDC Deutsch
11L, 120VAC Lead Wires

SOLENOID AND MANUAL OPERATION
S - Standard Solenoid Cartridge
SM - Solenoid Cartridge w/Manual Override

10 SERIES SOLENOID OPERATED PORT RELIEF WORK SECTIONS

S V H X X X X X X – S X X X

SECTION TYPE
H - Port Relief Section
S - Series Section (Use G & H Spools)
R - Metering Work Section (Use E, F or M spool)

PORT SIZE
1. #8 SAE

SPOOL TYPE
A - 3-Way 3-Position
B - 4-Way 3-Position
C - 4-Way 3-Position Motor
G - 4-Way Series
H - 4-Way Series Motor
E - 4-Way 3 Position Metering (SVR only)
F - 3-Way 3 Position Metering (SVR only)
K - 4-Way 3 Position Counterbalance Drain (SVH only)
M - 4-Way 3 Position Counterbalance Drain (SVR only)

SPOOL ACTIONS
A - Spring Center

HANDLE OPTION
1. Std. Lever Handle
2. Less Handle Only
3. Less Complete Handle Assembly
4. Adjustable Handle
5. Tang Spool End Only
6. Clevis Spool End Only
7. Vertical Handle
12. Extended Enclosed Handle

PORT RELIEF "A" OPTION
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI
C - Non-Adjustable Direct Acting Relief 500-1500 PSI
G - Adjustable Direct Acting Relief 1500-3000
H - Adjustable Direct Acting Relief 500-1500 PSI

PORT RELIEF "B" OPTION
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI
C - Non-Adjustable Direct Acting Relief 500-1500 PSI

COIL VOLTAGE & TERMINATION*
12Q,12 VDC Double Spade
12L, 12 VDC Double Wire
12H, 12 VDC DIN 43650
12D, 12 VDC Deutsch
24Q, 24 VDC Double Spade
24 L, 24 VDC Double Wire
24H, 24 VDC DIN 43650
24D, 24 VDC Deutsch
11L, 120VAC Lead Wires

SOLENOID AND MANUAL OPERATION
S - Standard Solenoid Cartridge
SM - Solenoid Cartridge w/Manual Override

*See page V48 for Coil details

SEE PAGE 11 & 12 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SV (10 SERIES) SOLENOID WORK SECTION (SOLENOID ON BOTH ENDS) DESCRIPTION OF OPERATION

The Type "-T" SV Solenoid Work Section allows remote electrical on-off control. The "-T" sections are 10 series work sections which use screw in cartridges with a #10 thread size. Cartridges and coils on the 10 series will be interchangeable with the components on Prince solenoid operated valves manufactured prior to November 2014 was well as current production 10 series valves. Any of the standard "-S", "-T", "-C" or "-D" style Prince SV solenoid operated work sections may be used in any combination within a stack valve assembly.

The Type "-T" SV Solenoid Section contains two 3-way 2-position, #10 solenoid cartridge valves, one at each end of the main valve body. When both solenoids are de-energized, both ends of the control valve spool are open to tank pressure and the spool remains spring centered. When solenoid "A" is energized, pilot pressure is applied to one end of the control valve spool causing the spool to shift from the neutral position to full stroke which directs flow to work port "A". When solenoid "B" is energized, pilot pressure is applied to the other end of the control valve spool, causing the spool to shift to full stroke which directs flow to work port "B".

Internal pilot lines provide pilot pressure to the solenoid actuator. Pilot pressure is generated by a "Pressure Build-Up Valve" that is installed in the standard outlet section. Two versions of the pressure build-up valve are offered, the open center pressure build-up valve and power beyond pressure build-up valve. Both versions supply 150-200 PSI pilot pressure to the solenoid actuator. A closed center assembly does not require a pressure build-up valve. For an open center system, the pilot pressure can also be provided by an in inlet manifold, which can provide filtered pilot flow.

ORDER CODE MATRIX - TYPE "-T" SOLENOID OR MANUAL WORK SECTIONS

10 SERIES SOLENOID OPERATED SVW AND SVL WORK SECTIONS

S V W X X X — T X X X

SECTION TYPE
W - Standard Work Section
L - Lock Section (Use C Spool)

PORT SIZE
1. #8 SAE

SPOOL TYPE
A - 3-Way 3-Position
B - 4-Way 3-Position
C - 4-Way 3-Position Motor
K - 4-Way 3 Position Counterbalance Drain (SVW only)

SPOOL ACTIONS
A - Spring Center

COIL VOLTAGE & TERMINATION *
12Q, 12 VDC Double Spade
12L, 12 VDC Double Wire
12H, 12 VDC DIN 43650
12D, 12 VDC Deutsch
24Q, 24 VDC Double Spade
24 L, 24 VDC Double Wire
24H, 24 VDC DIN 43650
24D, 24 VDC Deutsch
11L, 120VAC Lead Wires

SOLENOID OPERATION

10 SERIES SOLENOID OPERATED PORT RELIEF WORK SECTION

S V H X X X X X — T X X X

SECTION TYPE
H - Port Relief Section
S - Series Section (Use G & H Spools)

PORT SIZE
1. #8 SAE

SPOOL TYPE
A - 3-Way 3-Position
B - 4-Way 3-Position
C - 4-Way 3-Position Motor
G - 4-Way Series
H - 4-Way Series Motor
K - 4-Way 3 Position Counterbalance Drain (SVH only)

SPOOL ACTIONS
A - Spring Center

PORT RELIEF "A" OPTION
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI
C - Non-Adjustable Direct Acting Relief 500-1500 PSI
G - Adjustable Direct Acting Relief 1500-3000 PSI
H - Adjustable Direct Acting Relief 500-1500 PSI

PORT RELIEF "B" OPTION
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI
C - Non-Adjustable Direct Acting Relief 500-1500 PSI
G - Adjustable Direct Acting Relief 1500-3000 PSI
H - Adjustable Direct Acting Relief 500-1500 PSI

COIL VOLTAGE & TERMINATION *
12Q, 12 VDC Double Spade
12L, 12 VDC Double Wire
12H, 12 VDC DIN 43650
12D, 12 VDC Deutsch
24Q, 24 VDC Double Spade
24L, 24 VDC Double Wire
24H, 24 VDC DIN 43650
24D, 24 VDC Deutsch
11L, 120VAC Lead Wires

SOLENOID OPERATION

* See page V48 for coil details

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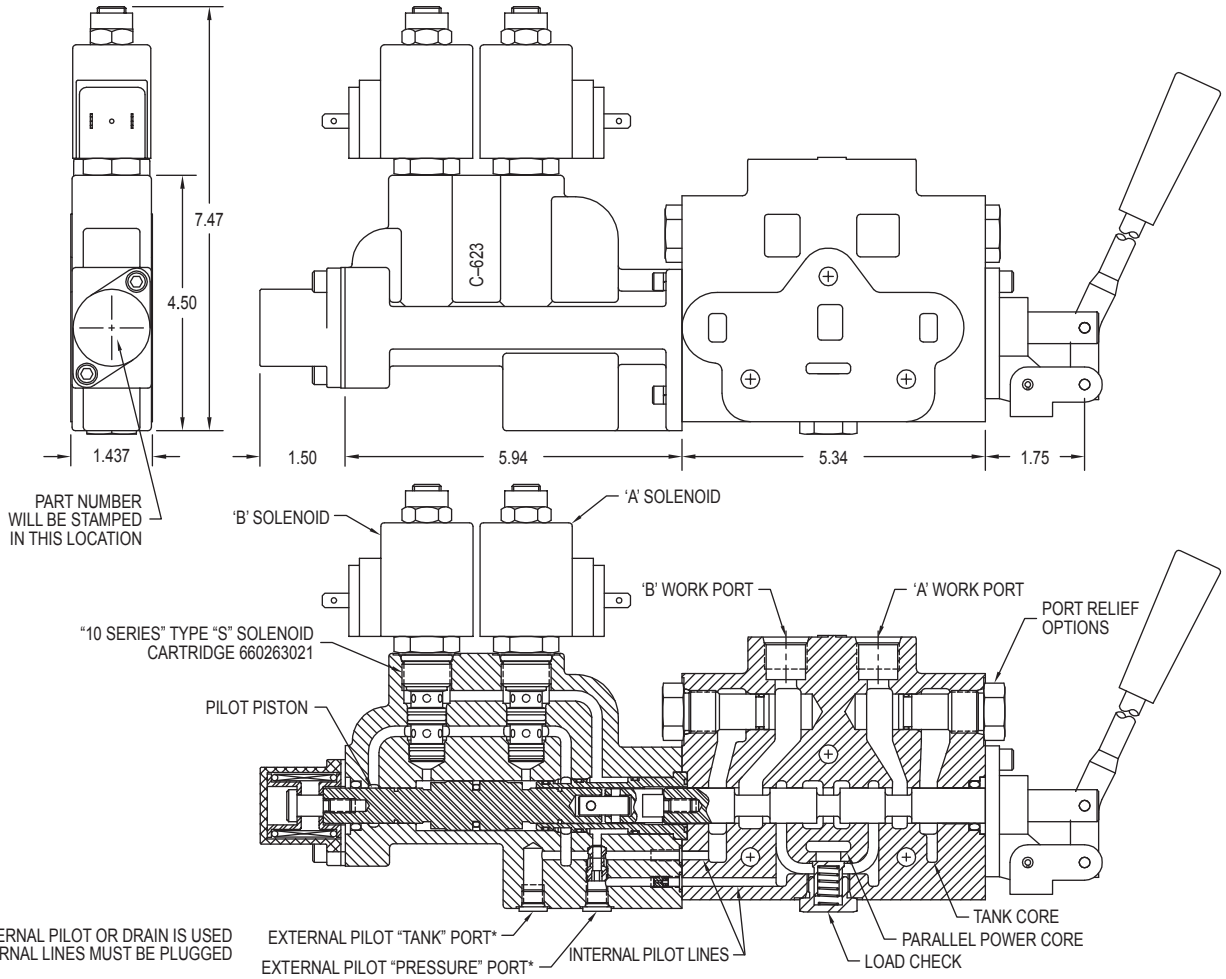
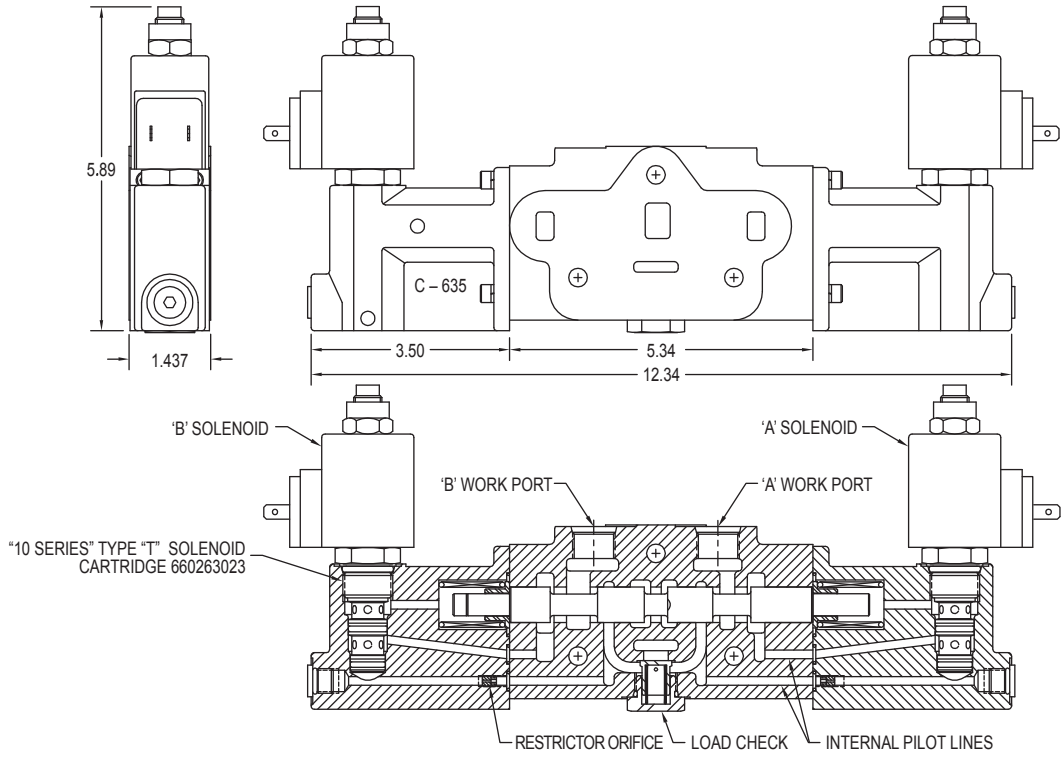
SEE PAGE 11 & 12 OF THE STANDARD PRODUCT PRICE LIST FOR PRICING

SV “10 SERIES” TYPE S SOLENOID OR MANUAL WORK SECTION DIMENSIONS



SV “10 SERIES” TYPE T SOLENOID WORK SECTION DIMENSIONS



VALVES

SV SOLENOID OPERATED WORK SECTION - APPLICATION INFORMATION

For over center or light load applications if the required work port load pressure drops below 200 PSI, the pilot pressure to the spool will drop to the same pressure causing the spring to move the control spool back towards the neutral position. The spool will end up in an intermediate position between neutral and fully shifted. **A restrictor installed in the work port or line may be required for this type of application.**

For closed center applications the Pressure Build-Up Valve is not required. However, a system pressure of 200 PSI must be maintained in the closed center position to actuate the valve properly.

Proper operation of the solenoid actuators requires a pressure differential of 150-200 PSI above tank pressure. **The maximum tank port pressure should not exceed 150 PSI.** On "C" and "S" solenoid sections, excessive tank pressure will increase "Seal Drag" and may prohibit, the spool from shifting.

The solenoid operated SV section may be converted to accept an external hydraulic pilot supply to the solenoid actuators. Please consult a Sales Representative for more information.

SERIES 8 SOLENOID COILS ALL "C", "D", AND "DP" WORK SECTIONS

COIL PART NUMBERS

12H – 671302168 -12 VDC DIN-43650
12L – 671302160 -12 VDC DUAL LEAD WIRES
12Q – 671302165 - 12 VDC DUAL SPADE
12D – 671302163 - 12 VDC INTEGRAL DEUTSCH
24H – 671302169 - 24 VDC DIN-43650
24L – 671302167 - 24 VDC DUAL LEAD WIRES
24Q – 671302166 - 24 VDC DUAL SPADE
24D – 671302164 - 24 VDC INTEGRAL DEUTSCH
11H – 671302170 - 110 VAC DIN-43650

COIL SPECIFICATIONS

DUTY RATING .....CONTINUOUS AT 100% VOLTAGE
INGRESS PROTECTION RATING IP65
IP69 FOR INTEGRAL DEUTSCH COIL & CONNECTOR
WATTAGE .....19 WATTS
AMPERAGE DRAW (NOMINAL)
12 VOLT ..... 1.6 AMPS
24 VOLT ..... 0.78 AMPS
110 VOLT..... 0.19 AMPS
LEAD WIRE LENGTH ..... 18 GAUGE 24" LONG
AC COILS HAVE INTERNAL FULL WAVE RECTIFIERS
RATED FOR 1000 VOLTS MAX REVERSE VOLTAGE
DIN STYLE COILS ARE DIN 43650 TYPE A
DEUTSCH COILS USE DT04-2P CONNECTORS

SERIES 10 SOLENOID COILS ALL "S" AND "T" WORK SECTIONS

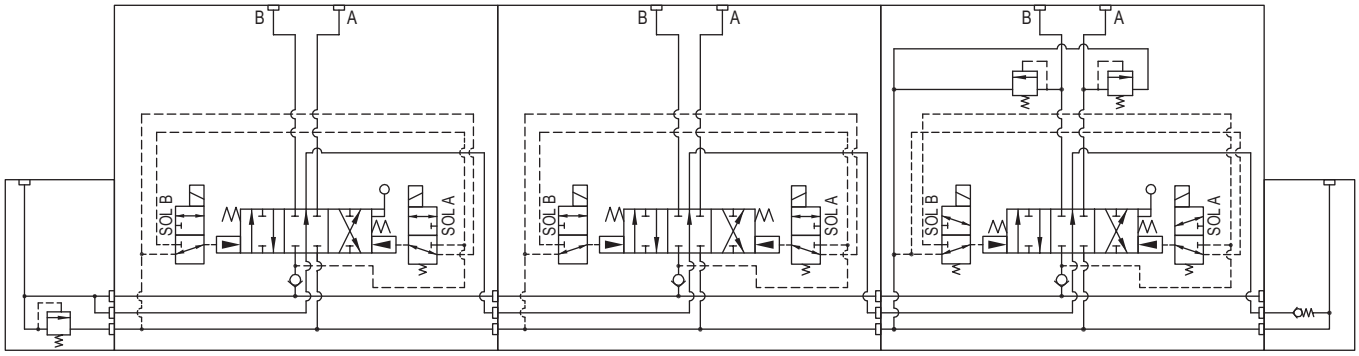
COIL PART NUMBERS

12H – 671302221 - 12 VDC COIL DIN 43650
12L – 671302220 - 12 VDC COIL DOUBLE WIRE
12Q – 671302226 - 12 VDC COIL DOUBLE SPADE
12D – 671302222 - 12 VDC COIL DEUTSCH
24H – 671302224 - 24 VDC COIL DIN 43650
24L – 671302223 - 24 VDC COIL DOUBLE WIRE
24Q – 671302227 - 24 VDC COIL DOUBLE SPADE
24D – 671302225 - 24 VDC COIL DEUTSCH
11L – 671302228 - 120 VAC LEAD WIRES

COIL SPECIFICATIONS

DUTY RATING .....CONTINUOUS AT 100% VOLTAGE
INGRESS PROTECTION RATING IP65
WATTAGE .....20 WATTS
STABILIZED TEMPERATURE 217°F WITH 77°F AMBIENT
AMP DRAW AT 77°
12VOLT ..... 1.70 AMPS
24 VOLT ..... .83 AMPS
120 VOLT..... .18 AMPS
LEAD WIRE LENGTH ..... 18 GAUGE 12" LONG
AC COILS HAVE A RECTIFIER ON THE LEAD WIRES.
LEAD WIRES ARE NOT TO BE REMOVED FOR USE.
AC LEAD WIRES ARE 6" LONG.
DIN STYLE COILS ARE DIN 43650 TYPE A.

SYMBOL SCHEMATIC OF A 3 SECTION, SOLENOID OPERATED STACK VALVE ASSEMBLY



SVI25 | SVW1BA1 – C12Q OR SVW1BA1 – S12Q | SVW1BA – D12Q OR SVW1BA – T12Q | SVH1BA1GB – C12Q OR SVH1BA1GB – S12Q | SVE26

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SV PROPORTIONAL WORK SECTIONS

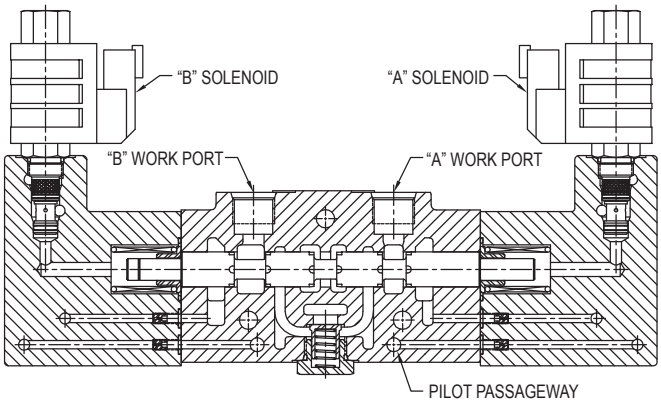
In the SV proportional work sections, varying pilot pressure is applied to the end of the spools to shift the spool against spring bias. Proportional pressure reducing cartridges are used to vary the pressure on the spools. As the current through the cartridge coil increases, the amount of the available pilot pressure applied to the ends of the spools also, proportionally increases. There will be a threshold pressure/current (dead band) to overcome the initial spring centering force and initial land coverage. Once this pressure/current has been exceeded, increasing the current through the coil will increase the flow from the work ports.

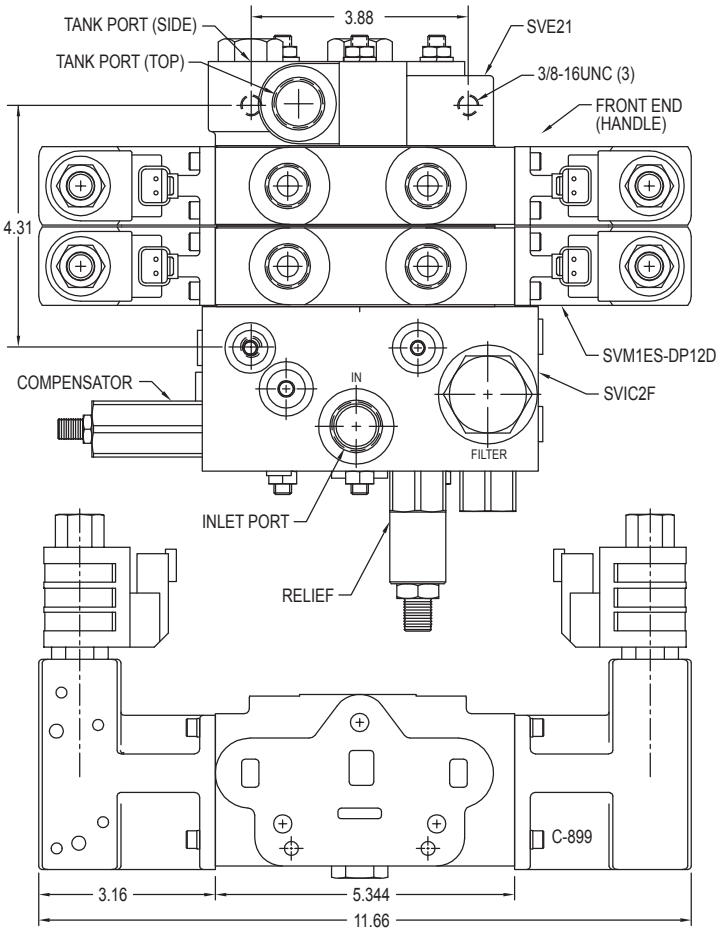
Current to the coils is typically provided by a PWM current control module and a joystick or other input device. The coils require a maximum current of approximately 1300 mA (@ 12 volts), and for reduced hysteresis, a dither frequency of approximately 100 Hz and a dither amplitude of 50 to 100 mA. The controller should have adjustable minimum current and maximum current settings to minimize the dead band before work port flow starts and to maximize the control resolution. See page V38 for examples of control module and joystick components.

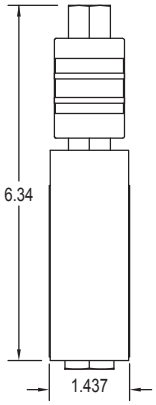
The proportional work sections require pilot pressure to shift the spools. Approximately 325 psi pilot pressure will fully shift the spool in Prince proportional sections. With open center valve assemblies, the pilot pressure is typically supplied by a compensator inlet (SVIC).

The SV proportional work sections are open center sections based on the SVM family. The open center sections, which are typically used with a fixed displacement (gear) pump, provide for a cost effective circuit. The open center sections will provide controlled starts and stops of the work port flow, however, the metering band is not as wide as the other proportional families and metering is somewhat pressure dependent. Using current minimum and current maximum settings on the controller will enhance the metering control.

SV PROPORTIONAL WORK SECTION DIMENSIONS







All SV proportional work sections require pilot supply passageways. All SVM-DPxxx proportional sections will automatically have pilot passageways, however, any non-proportional sections in the assembly will also have to have pilot passageways. To designate SVW, SVH, SVM, SVF, SVR or SVG non-proportional sections with pilot passageways, add a "P" after the three letter model prefix. For instance a SVW1BA1 section with pilot passageways would be called out as a SVWP1BA1. An example of a SVH with passageways would be a SVHP1BA1GG. An example of a non-proportional solenoid section to be included in a proportional assembly would be a SVWP1BA1-C12D. Please contact sales at Prince Manufacturing for additional assistance in configuring assemblies.

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SVM / SVR PROPORTIONAL SOLENOID OPERATED WORK SECTIONS

SV ___ S ___ - DP

WORK SECTION TYPE
M - Standard Metering Section
R - Port Relief Metering Section

PORT SIZE
1. #8 SAE ORB (3/4-16 Thread)

SPOOL TYPE
E - 4-Way 3-Position Metering
M - 4-Way 3-Position Counterbalance Drain/Motor

SPOOL ACTION
S - Spring Center (Metering sections)

PORT RELIEF "A" OPTIONS (OMIT FOR SVM)
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI set at 2000
C - Non-Adjustable Direct Acting Relief 500-1500 PSI set at 1000
G - Adjustable Direct Acting Relief 1500-3000 PSI set at 2000
H - Adjustable direct Acting Relief 500-1500 PSI set at 1000

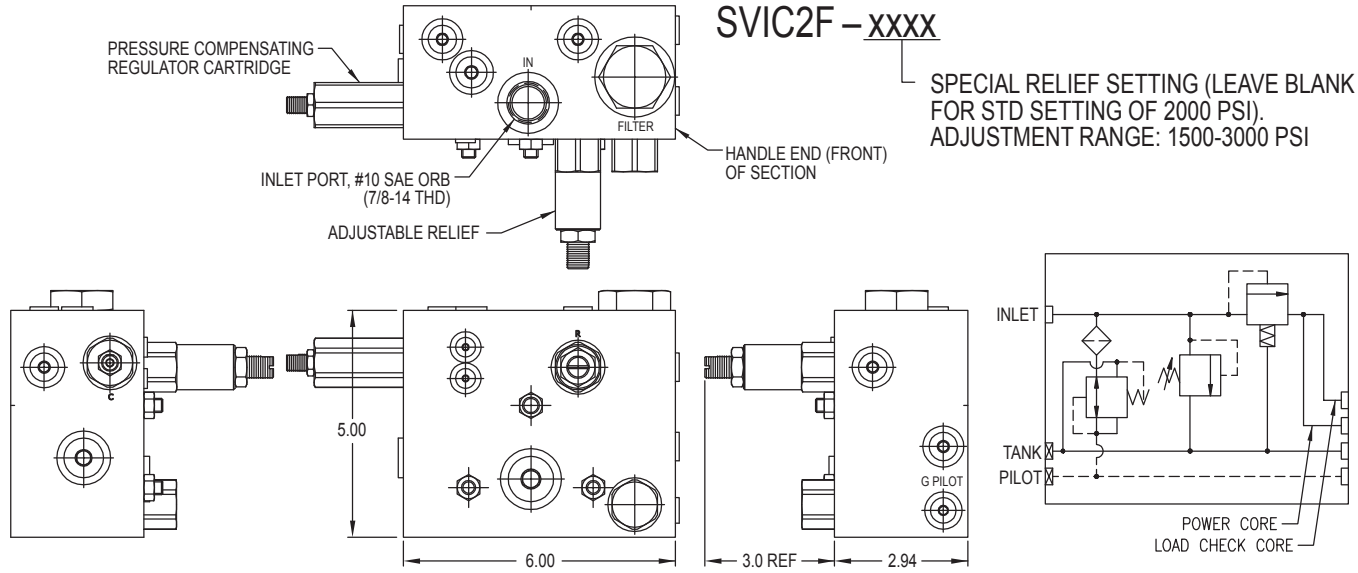
COIL VOLTAGE & TERMINATION
12Q, 12 VDC Double Spade
12L, 12 VDC Double Wire
12H, 12 VDC Din 43650
12D, 12 VDC Integral Deutsch
24Q, 24 VDC Double Spade
24L, 24 VDC Double Wire
24H, 24 VDC Din 43650
24D, 24 VDC Integral Deutsch
11H, 120 VAC Din 43650

SOLENOID OPERATION
DP - Solenoid on each end of section – no lever

PORT RELIEF "B" OPTION (OMIT FOR SVM)
A - Relief Cavity Plugged
B - Non-Adjustable Direct Acting Relief 1500-3000 PSI set at 2000
C - Non-Adjustable Direct Acting Relief 500-1500 PSI set at 1000
G - Adjustable Direct Acting Relief 1500-3000 PSI set at 2000
H - Adjustable direct Acting Relief 500-1500 PSI set at 1000

*See Page V48 Series 8 Coils for Coil Information.

SVIC2F INLET ASSEMBLY



SVIC2F – xxxx

SPECIAL RELIEF SETTING (LEAVE BLANK FOR STD SETTING OF 2000 PSI).
ADJUSTMENT RANGE: 1500-3000 PSI

APPLICATION NOTES:

The SVIC2F is an inlet assembly used with "SVM" (open center) proportional solenoid assemblies. It is used with fixed displacement pumps (typically gear pumps) and has a compensator cartridge in the manifold that provides approximately 350 psi pilot pressure for the proportional solenoids. It also incorporates a pressure reducing cartridge to limit pressure to the solenoid cartridges, and a 10 μ filter cartridge to filter the pilot flow. The SVIC2F requires a tie rod kit for one extra section. Any non-proportional "SV" work sections in the assembly require pilot passageways. A standard "SVE" open center outlet with conversion plug should be used in the assembly.

The SVIC2F has other applications such as low flow systems. The inlet can provide a constant pilot pressure regardless of flow, guaranteeing a shift in either on/off or proportional solenoids. Likewise, systems that also have little to no load induced pressure can benefit from the constant pilot pressure the SVIC2F provides, guaranteeing a shift regardless of work port pressure.

The 10 micron filter included in the inlet helps keep the pilot lines clean. This helps eliminate contamination in the oil being sent to the solenoid cartridges.

To configure work sections to use with this inlet, refer to the text on page V49 that talks about adding a 'P' to the model codes.

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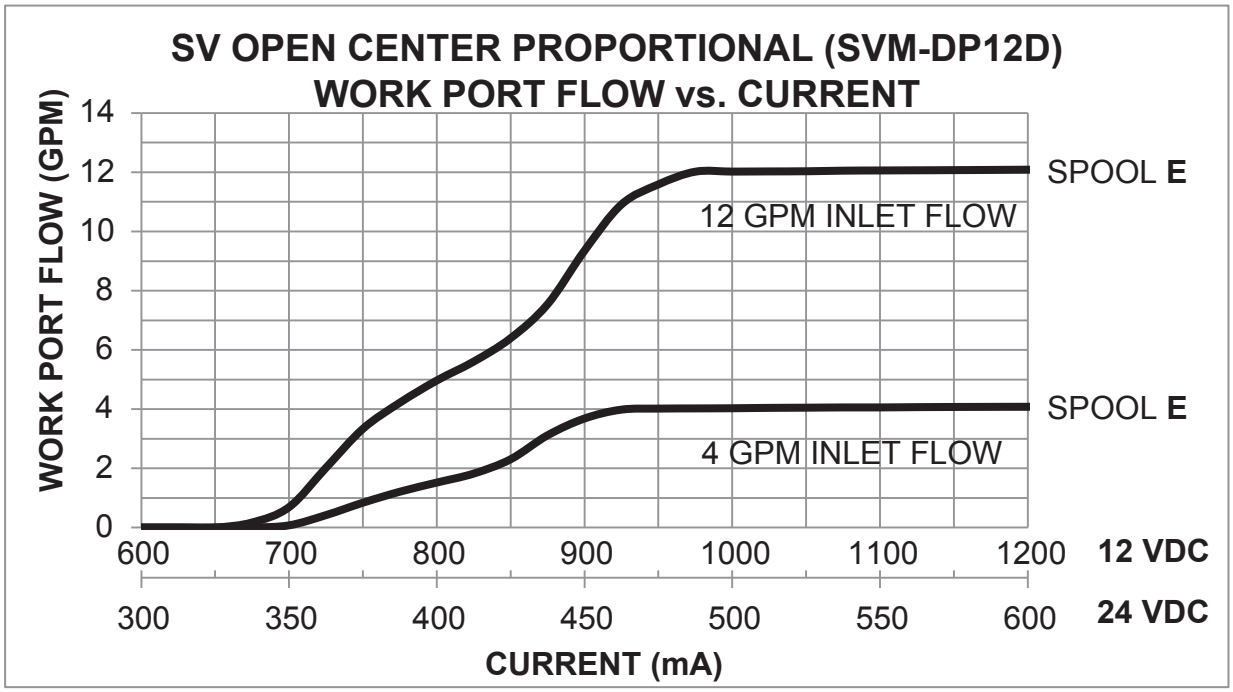
SV PROPORTIONAL WORK SECTIONS PERFORMANCE CURVES



EXAMPLES OF TYPICAL SV SOLENOID OPERATED SECTIONS AND ASSEMBLIES

ON – OFF SOLENOID ASSEMBLIES

SV COMMON WORK SECTIONS:
SVW1BA1-C12D (8 series solenoids)
SVW1BA-DM12D (8 series-manual override solenoids)
SVW1BA1-S12L (10 series solenoids)
SVW1BA-T12L (10 series solenoids)

SV common assembly:
SVI25; SVW1BA1-C12D; SVE26

OPEN CENTER PROPORTIONAL (fixed displacement pump)

SV COMMON WORK SECTION
SM1ES-DP12D (proportional solenoids)

SV common assembly: (note: non-solenoid sections require solenoid passageways)
SVIC2F (compensator inlet); SM1ES-DP12D; SVE21

ON – OFF SOLENOID				PUMP TYPE
Work Sect.	**Inlet**	**Utility**	**Outlet**	
SV(W/L/M) SV(H/S/R)	SVIxx	n/a	SVEx6	FIXED DISPLACEMENT PUMP
SV(W/L/M) SV(H/S/R)	SVIxx	n/a	SVEx3	PRESSURE COMPENSATED PUMP
OPEN CENTER PROPORTIONAL SOLENOID				**PUMP TYPE**
SV(M/R)	SVIC2F	n/a	SVEx1	FIXED DISPLACEMENT PUMP

RADIO REMOTE OFFERINGS FOR ON/OFF SOLENOID OPERATED VALVES

MACRO TRANSMITTERS

4 buttons
(2 section valve)
#671303111

6 buttons
(3 section valve)
#671303112

8 buttons
(4 section valve)
#671303113

RECEIVERS

4 outputs
(up to 2 section valve)
#671303001

8 outputs
(up to 4 section valve)
#671303002

CHARGER (MICRO USB)

12 VDC car charger
#671303003

Wall charger
#671303005

FEATURES:

- Palm sized transmitter (4.7" x 2.6" x .9" typical)
- Rechargeable transmitter - micro USB (20 hr of active transmitting battery life)
- Range of up to 300 ft
- Two way communication with real time feedback
- Easy sync with receiver
- 900 Hz
- Ingress protection IP66
- Receiver input voltage (9 - 30VDC)

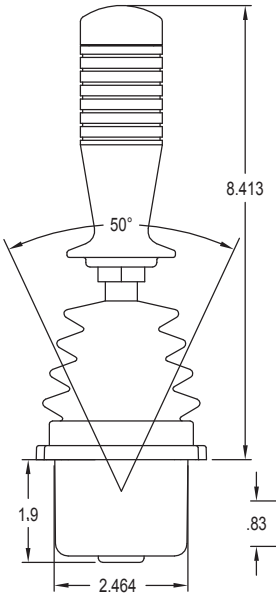
PROPORTIONAL CONTROLLERS & WIRING HARNESSES

Prince proportional operators are often controlled with a thumb or handle control and a PWM control module. Prince offers a small thumb control joystick and a larger handle control joystick, as well as a PWM control module that can be used in conjunction with these joysticks. The control module provides a performance enhancing dither to the current. The minimum and maximum current from the module can also be set to minimize the dead band before work port flow starts and to maximize the control resolution.

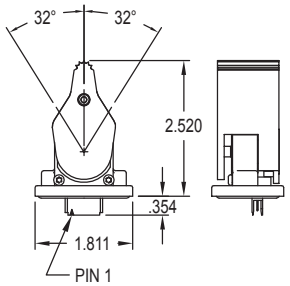
The connector on the thumb joystick is a Molex #CGRID/SL (7 male pins). The connector on the handle joystick is a Deutsch #HD14-9-16P (9 male pins). The connector on the PWM control module is a Deutsch #DT04-8P (8 male pins).

Prince offers a harness to connect the joystick, PWM module, and coils with Deutsch connectors. The harness system consists of a coil harness (approximately 60" long) to connect the PWM to the coils, to the power, etc. (671300108). The second part of the harness is a jumper harness that connects either the thumb control joystick or the handle control joystick to the PWM module. The standard length of the jumper harness is 10 feet, but other lengths are available. The 10 foot jumper harness for the thumb control joystick is 671304110. The 10 foot jumper harness for the handle control joystick is 671304210.

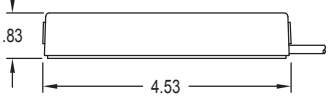
Additional controls such as multi spool proportional controllers as well as proportional RF controllers (belly packs) can be quoted upon request. Please contact sales at Prince Manufacturing for additional information.



Handle Control
Joystick
671300077



Thumb Control Joystick
671300076



671300107 PWM Control Module
I min & I max preset for 12 VDC

671300106 PWM Control Module
I min & I max preset for 24 VDC

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