

••••• **INNOVATION AT WORK FOR YOU** •••••

**NEW Patent-Pending Solenoid-Operated On/Off or Proportional Valves
with Integral Piloting or Load-Signaling Capability**

The new HydraForce SVCL and SPCL series valves offer the unique capability of providing integral piloting or load-signaling in a solenoid-operated on/off or proportional cartridge valve. This is an efficient, compact and cost-effective solution for directional control and load-holding applications. Patents are pending for these unique and innovative new valves, allowing us to offer the most advanced, high-performance hydraulic circuits in the industry.

The SVCL and SPCL products are initially released in the 10-size version, using the common VC10-3 cavity profile with a modified pre-drill as shown in the catalog. Other sizes are in development which will allow a flow range capability up to 40 gpm or 151 lpm. Rated operating pressure is 3625 psi / 250 bar while the load-holding port number 1 is capable of 5000 psi / 350 bar maximum pressure and is qualified to 4:1 burst pressure per ANSI test specifications.

The SVCL valves use HydraForce D-Series and E-series coils with various connector options. E-series environmental coils are rated IP69K. They have been extensively tested and approved under severe mobile machinery application conditions. Coil test and option details are available at www.hydraforce.com/Electro/Electcon.htm

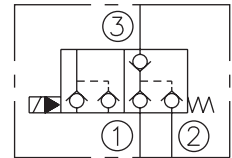
SVCL10 and SPCL10 Valves:

- System Operating Pressure: 3625 psi / 250 bar
- Holding Pressure: 5000 psi / 350 bar at Port 1
- Rated Flow: 15 gpm / 56.9 lpm
 @ 175 psi / 12 bar differential for SVCL
 @ 225 psi / 15.5 bar differential for SPCL
- Leakage: 5 drops per minute
- Cavity: VC10-3 with modified pre-drill



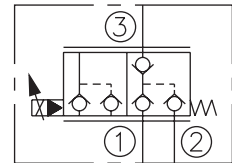
SVCL10-30 [go to SVCL10-30 catalog page](#)

SVCL10-30 valves are low leakage, on/off solenoid operated poppet valves with an integral load-sensing check valve. External load-sensing shuttle valves are eliminated, allowing for a smaller, lower-cost installation. In the de-energized position, the sensing port is isolated from the load, preventing load drift and enabling the load-sense signal to be externally vented to zero when the system is inactive.



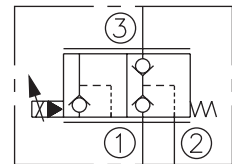
SPCL10-30 [go to SPCL10-30 catalog page](#)

SPCL10-30 valves are electrically-proportional, low-leakage poppet valves with integral load-sensing check valve capability. The proportional poppet design allows for accurate electro-hydraulic system control for a wide range of load sensing applications.



SPCL10-32 [go to SPCL10-32 catalog page](#)

SPCL10-32 valves are electrically-proportional, low-leakage valves with an integral piloting port. The piloting feature can be used in counterbalance circuits providing both superior load-holding, as well as accurate flow regulation.



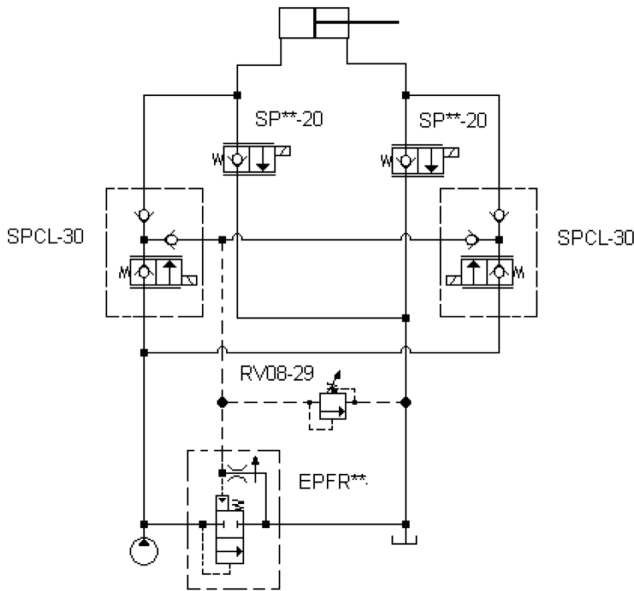
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NEW Patent-Pending Solenoid-Operated On/Off or Proportional Valves with Integral Piloting or Load-Signaling Capability

APPLICATION EXAMPLES:

Pump-Unloading Directional Control Circuit



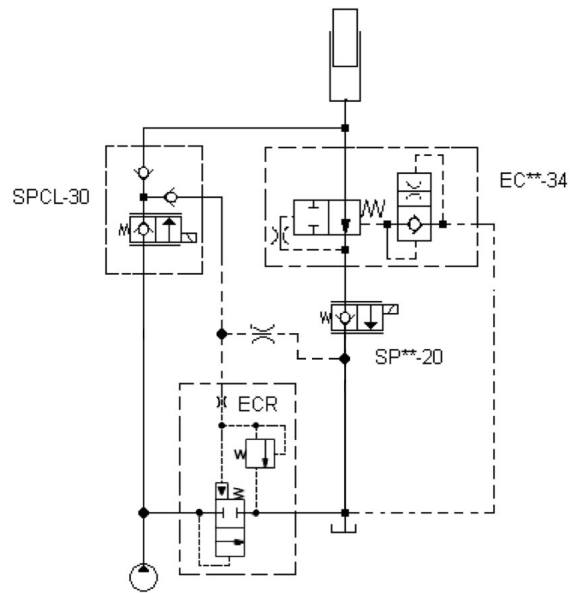
The SVCLxx-30 or SPCLxx-30 can be used in load sensing circuits as a directional control, and for signaling system demand to either a pump unloading element or a load sensing pump compensator. The circuit drawing above shows a pump-unloading directional control circuit where the SPCLxx-30 regulates input flow to the cylinder, SPxx-20 valves regulate return flow to tank, and the EPFR provides excess flow unloading. Flow not required by the cylinder is vented to tank at load pressure (plus spring value) rather than relief valve pressure, improving system efficiency and reducing heat.

The RV08-29 relief valve is used to set maximum system operating pressure. When the valve setting is reached, pilot flow is vented allowing the EPFR to bypass pump flow to tank. The small RV08-29 is used in place of a separate high-flow relief, allowing an economical and compact package configuration. The RV08-29 is designed to provide stable performance in low-flow pilot circuits.

The SPCL and the EPFR are both part of HydraForce's family of multi-function valves which integrate two functions into a single cavity. The EPFR integrates a venting flow regulator into the bypass compensator. The flow regulator brings the sense line to zero when there is no demand at the cylinder, accelerating the compensator response speed. The flow regulator is pressure-compensated so that the vent flow does not increase at higher pressures, assuring high overall efficiencies.

Single Acting Cylinder Application

In a single acting cylinder application, the SPCLxx-30 is used to control flow for raising the cylinder. In addition it provides the load-sense signal to the ECR valve for excess flow unloading. The SPxx-20 proportional solenoid valve controls lowering flow, while the ECxx-34 provides load compensation.



The SPCLxx-30 as well as the SPxx-20 are poppet-style valves, preventing load drift when holding the cylinder under pressure. The ECxx-34 includes a poppet sealed pilot stage, also preventing load drift, while assuring that the lowering speed is accurately regulated independent of the weight supported by the cylinder.

The ECR is another HydraForce multi-function valve. The ECR acts as a bypass compensator, unloading flow not required by the cylinder, to the tank. The valve incorporates a built-in relief valve to set maximum system operating pressure, eliminating the need for an external valve and additional cavity drilling.

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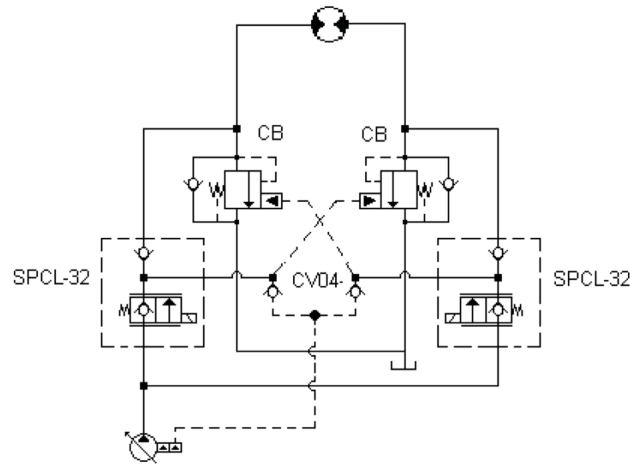
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Directional Bridge Circuit

This shows a directional bridge circuit configuration using the SPCLxx-32 style valve. In this version the check valve in the integral sensing line is eliminated, allowing the load pressure to be used as a piloting signal.

The SPCLxx-32 provides proportional control of the inlet flow to the motor. A pressure signal, supplied by the pilot line of the SPCL, is required in order to open the counterbalance valve thus allowing the motor function. Using this circuit configuration, a return side directional element is eliminated, without loss of motor control. Return flow from the motor passes directly to tank, eliminating back-pressure, minimizing circuit components, improving overall efficiency, and significantly reducing cost versus a conventional directional control system.

The addition of a check valve allows the higher of two pressure signals to be used as a load sensing pressure. In these applications, please note that sealed pilot operated check valves and pressure compensated pumps should not be used in conjunction because the result would effectively eliminate the system's pilot pressure bleed path. This causes pressure to build in the pilot lines, prevents the pilot operated check valves from closing, and gives the working lines an open path to tank. Additionally, when using pilot operated checks in a load sense configuration, the spring bias must be set higher than the load sense pressure to ensure proper operation of the valve.



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