Multi-Function HSPECxx-34 Cartridge Valves
Offer Efficient Load-Holding and Gravity-Lowering

The HSPECxx-34 electroproportional flow control valves are the next wave of high-pressure multi-function valves introduced by HydraForce, complementing the HSPECxx-30 models launched just last year.

While the HSPECxx-30 valves were designed for flow-sharing applications, the built-in damping of the HSPECxx-34 valves makes them ideal for superior load-holding while allowing for precise and stable flow control. They can also be applied in power-down and gravity-assisted lowering systems.

Available in several sizes and flow ratings, from 36 lpm (9.5 gpm) to 98 lpm (26 gpm) HSPECxx-34 valves are rated to handle high hydraulic pressures of 350 bar (5075 psi).

HSPECxx-34 valves are pilot-operated, normally closed valves with a sealed internal compensator and a full-flow pump-blocking check. With inlet at port 3, the HSPECxx-34 regulates flow out of port 2 regardless of load pressure with the flow rate proportional to current applied to the solenoid. When de-energized, the HSPECxx-34 valve blocks flow from port 3 to 2.

Both the HSPECxx-30 and HSPECxx-34 valves provide multiple functions in a single cartridge, allowing the hydraulic manifold to be more compact in size, which results in reduced manifold space claim on a machine and greater flexibility in application.

For a complete listing of efficient and energy-saving multi-function valves available from HydraForce, see the back page of this Bulletin.
Application Ideas for HSPECxx-34 Multi-Function Valves

Forklift trucks, telehandlers, and combine harvesters require precise control when adjusting their height as inefficient movement can cause a load to drop or decrease harvesting efficiency.

An ideal application for the HSPECxx-34 valves are lift, lower and tilt functions of a harvester header. The HSPECxx-34 valves can provide smooth and responsive raising/lowering of the header. These stable electrohydraulic control valves ensure the header follows terrain at a height that keeps dirt and debris out of the feed chute, providing maximum yield of good, clean crop.

An innovative application for the HSPECxx-34 valves is a boom control circuit that benefits from the ability to selectively choose between power-down and gravity-assisted lowering.

By using the boom’s structurally induced load pressure, the HSPECxx-34 harnesses the natural force of gravity and provides smooth and stable lowering. With an emphasis toward increased efficiency, the HSPECxx-34 has the potential to convert gravity-assist lowering into significant fuel savings.

A typical application for HSPECxx-34 valves is for the single-acting lift cylinder of a forklift truck. The schematic below shows how the HSPECxx-34 can be used for the lowering function of the circuit.

**HSPECxx-34 multi-function valves as applied in a circuit for smooth, responsive lowering of a combine header.**

**HSPECxx-34 cartridge valves provide efficient, low-leakage load-holding for construction, material-handling and agricultural equipment.**
**Features/Benefits**

The HSPECxx-34 proportional flow control valve is a high pressure, 3-way, normally closed, solenoid-operated cartridge valve designed for post-compensated applications with load-sense systems.

**Load Holding**
Load-holding is one of the HSPECxx-34 valve's most useful features.

**Low Leakage**
The sealed compensator of the HSPECxx-34 valve reduces the potential for hydraulic leakage.

**Space Savings**
A single HSPECxx-34 valve replaces several valves as it combines the functionality of an electro-proportional flow control valve, a pressure compensating logic element and a load-holding valve. This takes up less space in the manifold, allowing it to have a smaller "hydraulic footprint." This translates to savings in multiple areas - reduced size and weight for the machine, lower fuel cost, greater efficiency, parts consolidation, etc.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tr>
<td>Sealed compensator and poppet-style configuration.</td>
<td>Low hydraulic leakage.</td>
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<td>Built-in damping.</td>
<td>Smooth lowering capability.</td>
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<td>Multi-function.</td>
<td>Reduced manifold space claim and improved circuit efficiencies.</td>
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<tr>
<td>Waterproof E-coils rated up to IP69K are standard.</td>
<td>Can be specified in wet, humid, and outdoor applications.</td>
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<td>Several flow ratings from 35 to 132 lpm (9 to 35 gpm)</td>
<td>Well-suited for a range of applications.</td>
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<td>Operating pressure to 5075 psi/350 bar continuous duty; 420 bar (6090 psi) 10% cycle life</td>
<td>Can be specified for high-pressure, horsepower-efficient applications.</td>
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<tr>
<td>Tested to 1 million cycles at full rated flow and pressure.</td>
<td>Long life; no worries about wear or decreased performance over time.</td>
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<tr>
<td>Designed, inspected and tested to HydraForce Quality standards with 5-year warranty. (See full warranty statement in the catalog.)</td>
<td>Guaranteed use for five years or longer.</td>
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*At the HydraForce Innovation and Technology Center in Vernon Hills, Illinois, flow control valve engineers work with applications engineering to develop customized models of new multi-function valves.*

*For More Information*
If you have questions about the new HSPECxx-34 cartridge valves, contact your HydraForce Regional Sales Manager, or visit www.Hydraforce.com.
Efficient and energy-saving . . .

More Multi-Function Valves from HydraForce . . .

SVCL - Solenoid Valve with Integral Load-Sense Check

N.C. Poppet
SVCL10-30
Flow: 57 lpm/15 gpm
Pressure: 250 bar/3625 psi

SVCL10-32
Flow: 57 lpm/15 gpm
Pressure: 250 bar/3625 psi

SVCL12-32
Flow: 113.6 lpm/30 gpm
Pressure: 240 bar/3500 psi

SVCV - Solenoid Valve with Load-Holding and Reverse Flow Check

N.C. Blocking/Poppet
SVCV08-20
Flow: 22.7 lpm/6 gpm
Pressure: 207 bar/3000 psi

SVCV12-20
Flow: 113.6 lpm/30 gpm
Pressure: 240 bar/3500 psi

SVCV08-21
Flow: 22.7 lpm/6 gpm
Pressure: 207 bar/3000 psi

SPCL - Proportional Valve with Integral Load-Holding and Optional Load-Sense Check

N.C. Poppet, 3-Way Proportional Directional Control with Check-Isolated Load-Sense
SPCL10-30
Flow: 57 lpm/15 gpm
Pressure: 250 bar/3625 psi

SPCL16-30
Flow: 152 lpm/40 gpm
Pressure: 250 bar/3625 psi

ECR - Piloted Logic Element with Integral Pressure Relief

Spool, Blocking
ECR16-S35
Flow: 189.3 lpm/50 gpm
Pressure: 241 bar/3500 psi

FRRV - Flow Control Valve with Adjustable Pressure Relief

Fixed-Compensated, Priority Type
FRRV10-41
Flow: 19 lpm/5 gpm
Pressure: 207 bar/3000 psi

FRRV12-41F
Flow: 45.4 lpm/12 gpm
Pressure: 207 bar/3000 psi

RVCV - Direct-Acting, Anti-Cavitation, Pressure Relief

Poppet, Direct-Acting, with Built-In Reverse Flow
RVCV10-22H
Flow: 37.9 lpm/10 gpm at 68.9 bar (1000 psi) Port 1 to 2; 68.1 lpm/18 gpm at 275.8 bar (4000 psi) Port 2 to 1; 68.1 lpm/18 gpm Reverse Flow
Pressure: 275.8 bar/4000 psi at Port 2; 68.9 bar/1000 psi at Port 1

RVCV56-20
Flow: 113.6 lpm/30 gpm Port 1 to 2; 174 lpm/46 gpm Port 2 to 1
Pressure: 420 bar/6100 psi at Port 1; 68.9 bar/1000 psi at Port 2

HSPEC - HyPerformance™ Proportional Flow Control Valve with Integral Post-Compensator

N.C. Poppet, 3-Way, Flow Control with Integral Post-Compensator and Load-Sense
HSPEC10-30A
Flow: 35 lpm/9 gpm
Pressure: 350 bar/5075 psi

HSPEC12-30A
Flow: 70 lpm/18.5 gpm
Pressure: 350 bar/5075 psi

HSPEC16-30
Flow: 132 lpm/35 gpm
Pressure: 350 bar/5075 psi

EPFR - Logic Element with Integral Flow Regulator

Spool, Spring-Biased Bypass-Type Directional Control
EPFR16-S35
Flow: 189.3 lpm/50 gpm
Pressure: 241 bar/3500 psi

EPFR20-S35
Flow: 303 lpm/80 gpm
Pressure: 320 bar/4600 psi

EPFR50-S35
Flow: 151 lpm/40 gpm
Pressure: 345 bar/5000 psi

EPFR58-S35
Flow: 38 lpm/10 gpm
Pressure: 345 bar/5000 psi

SVRV - Solenoid Valve with Integral Pressure Relief

N.O. Spool, 2-Way
SVRV10-26
Flow: 83 lpm/22 gpm
Pressure: 297 bar/4300 psi

SVRV12-26F
Flow: 189 lpm/50 gpm
Pressure: 297 bar/4300 psi

U.S. Patent 7,921,880