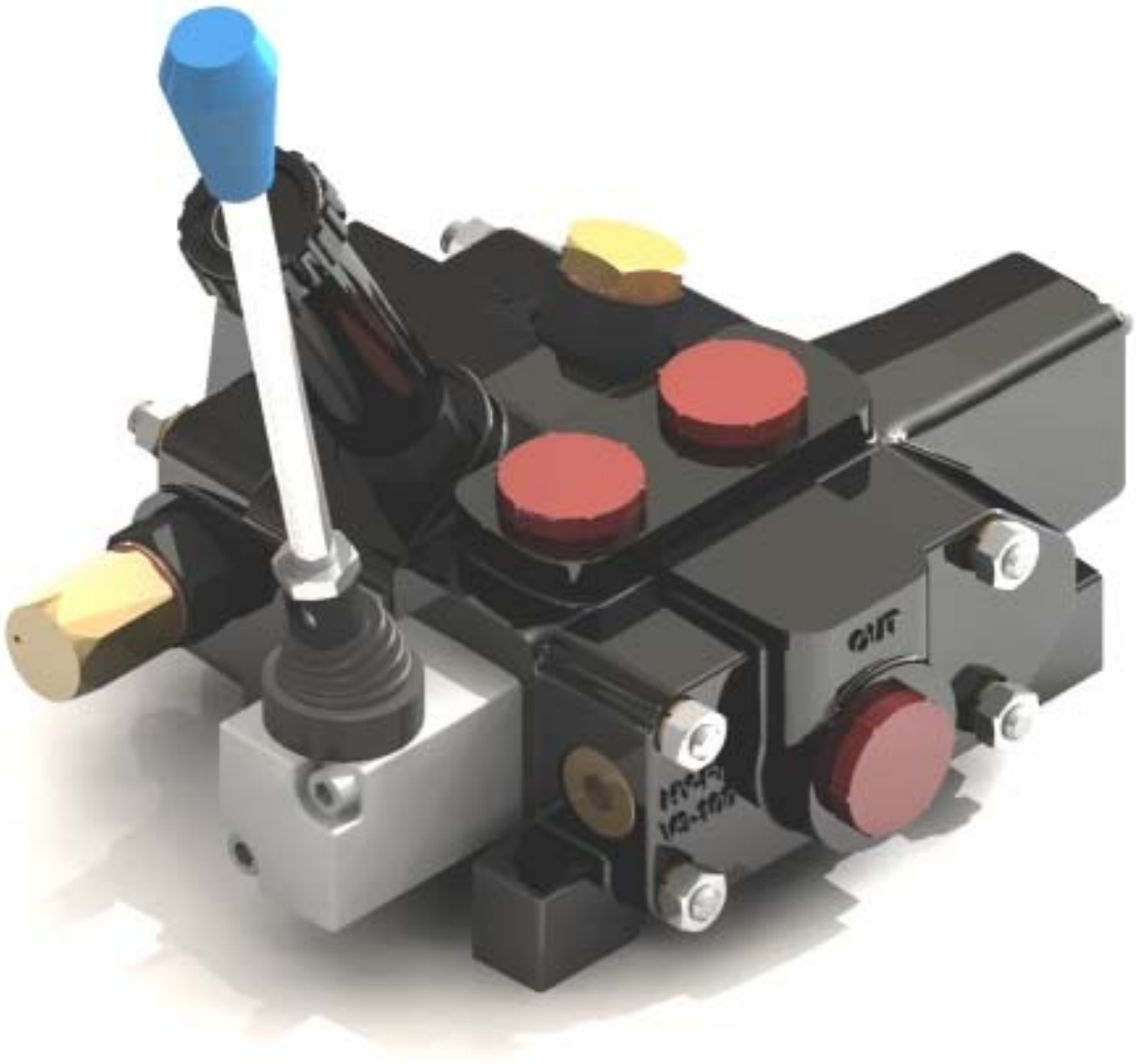
Hy-Pro

motion and control solutions

V3 100 LPM SECTIONAL SPOOL VALVE



V3-100 LPM SECTIONAL SPOOL VALVE

Description

The V3-100 sectional spool valve is one of the most compact 100 l/min valve available. Designed for pressures up to 250 bar the valve is available with two, three and four position spool control options and a range of spool types. The lever mechanism is a pressure die casting which totally encloses the spool for added protection. A range of optional ancillary valves are also available to be able to match the requirements of the most complicated and demanding circuits.

The V3-100 is also available with solenoid control. It uses powerful yet compact 24 watt DC coils to switch the internal oil pilot to engage the main spool. A damping orifice fitted in the pilot line eliminates the harshness usually associated with standard direct acting solenoid valves and gives a positive feel to the control system.

Both manual and solenoid sections can be built into a valve assembly and the solenoid sections have the options of lever override.

Application

Designed to be used in applications requiring a rugged, compact control valve with the option of remote control. Typically in the automotive recovery, recycling and agricultural industries where a mix of manual and solenoid control is essential.

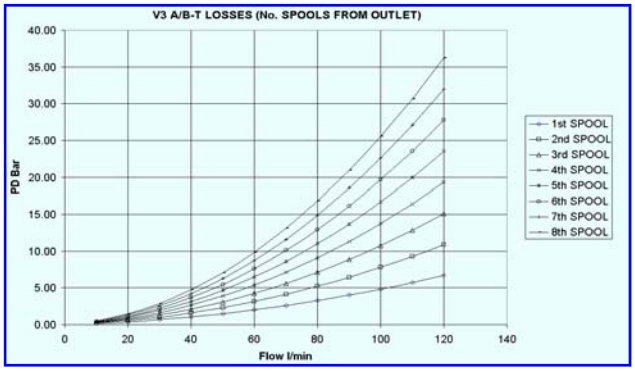
Features

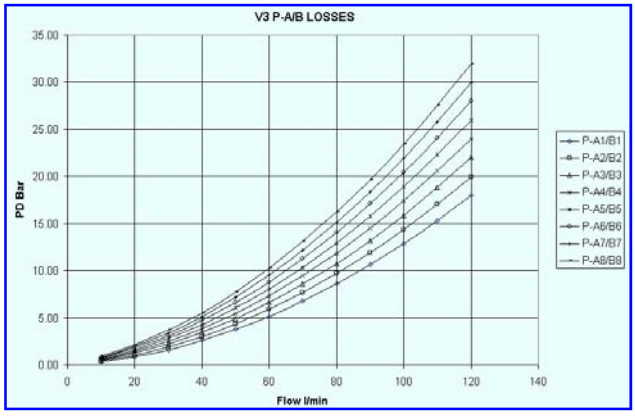
- Excellent metering characteristics.
- Excellent load holding.
- Integral load check valve.
- Open and closed centre option.
- Adjustable, pilot operated relief valve.
- Robust enclosed lever mechanism.
- Flow control option.
- 100% production testing.
- Environmental protection option.
- 12 and 24V DC.
- Soft spool action.
- Interchangeable with manual sections.
- Lever override option.
- Low coil power drain.

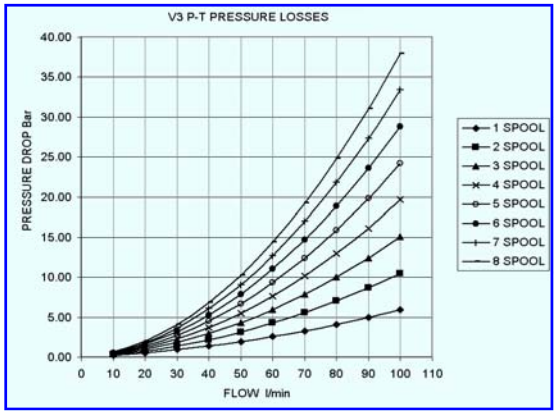
V3-100 Typical manual / solenoid valve assembly

V3-100 VALVE TECHNICAL INFORMATION

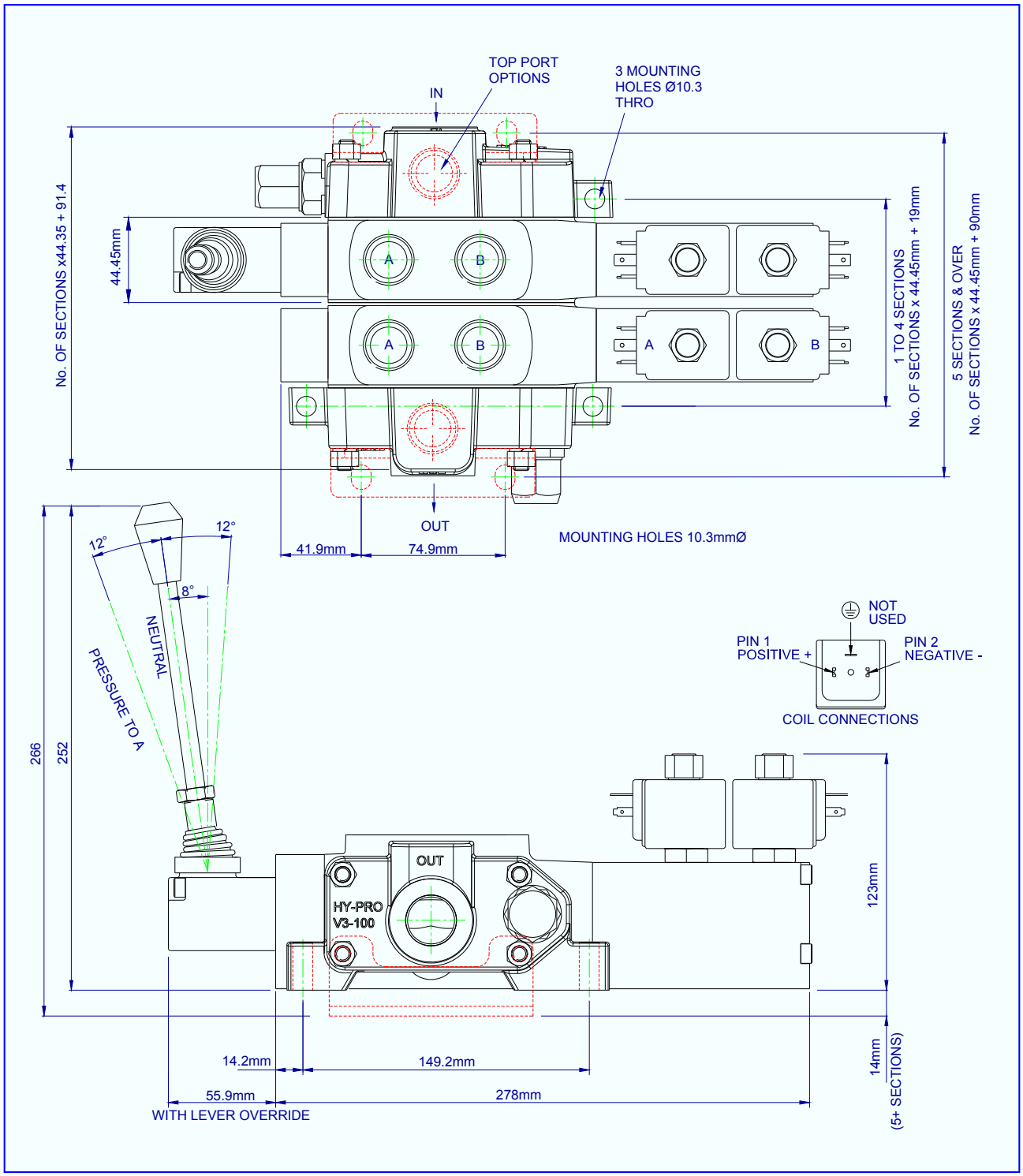
Performance	**Manual Section**	**Solenoid Section**
Rated Flow	100 l/min	100 l/min
Max pressure, service port	250 bar	250 bar
Max pressure, inlet port	250 bar	210 bar
Max back pressure, outlet port	35 bar	35 bar
Temp rating: minimum	-20°C	-20°C
Temprating: maximum	+65°C	+65°C
Spool leakage at 210 bar at 20ºc	<6cc/min	<6cc/min
Electrical		
Coil voltage nominal	-	12/24VDC or 110vac 50 Hz
Coil power	-	24W
Connection	-	DIN 43650
Protection	-	IP67
Cable Ø (not supplied)	-	6 - 8mm
Weight (1 bank)	6.9 kg	8.7 kg
Recommended Oil		
Mineral based hydraulic	ISO VG37	ISO VG37
Filtration (minimum)	25 micron	25 micron
Materials		
Body - cast iron	BS1452-250	BS1452-250
Manifold	-	Aluminium BS1490
Tie studs M8	M/F45T	M/F45T
Tie studs torque	13.5 Nm	13.5 Nm
Seals	Nitrile	Nitrile



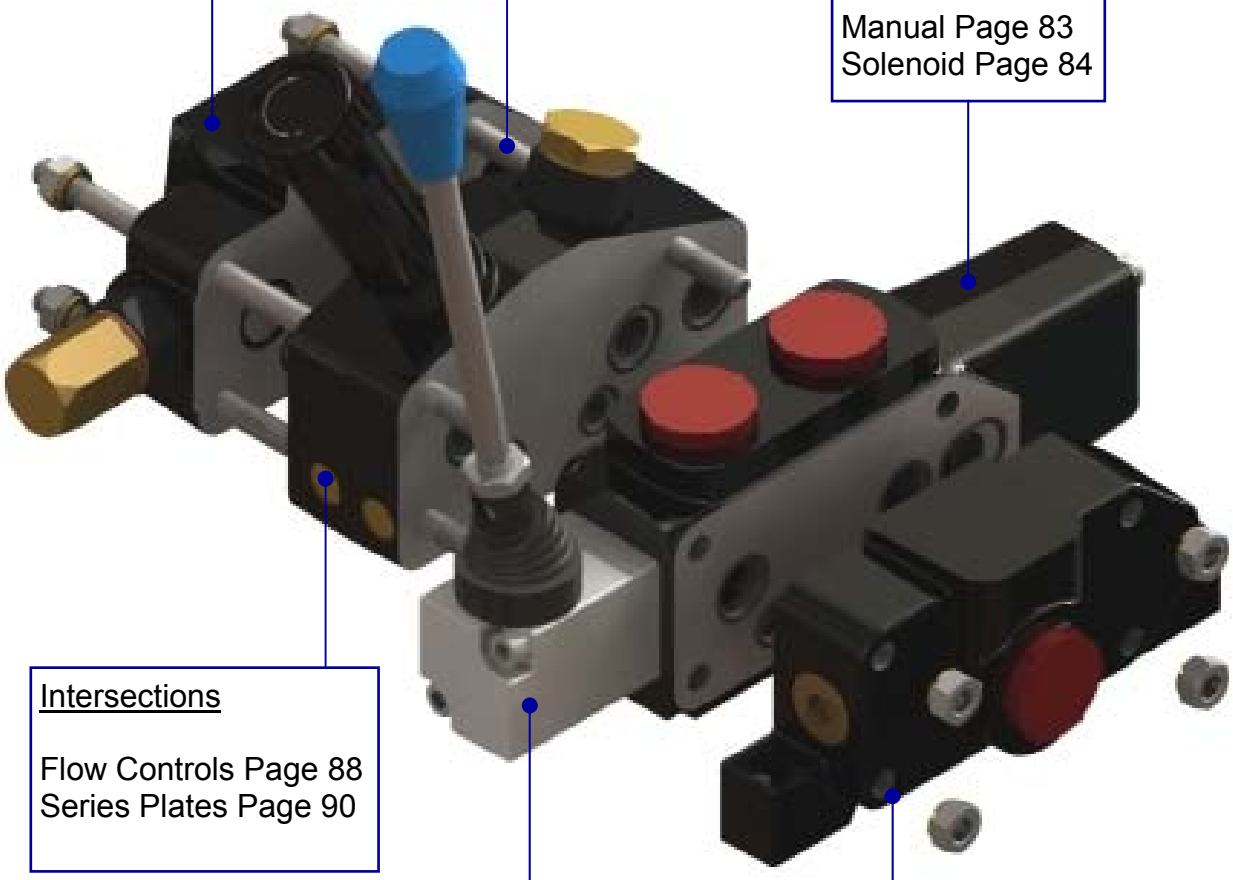




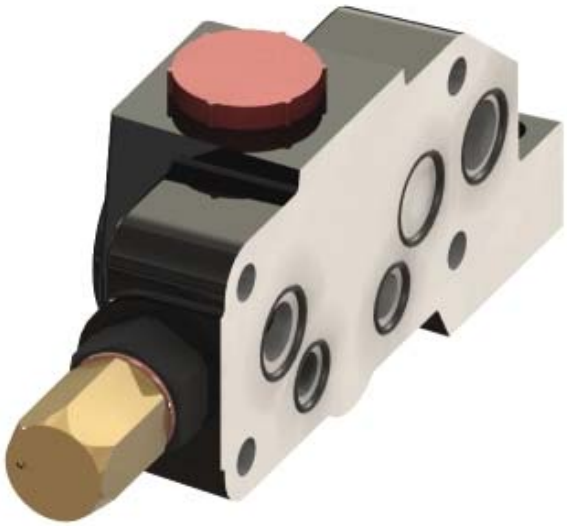
V3E INSTALLATION DETAILS



V3 VALVE ANATOMY



V3 INLET COVER



SPECIFICATION

Material
Cast Iron BS1452-250

Relief Valve
Adjustable. Pilot Operated or Direct Acting. Pre-set 140bar unless stated

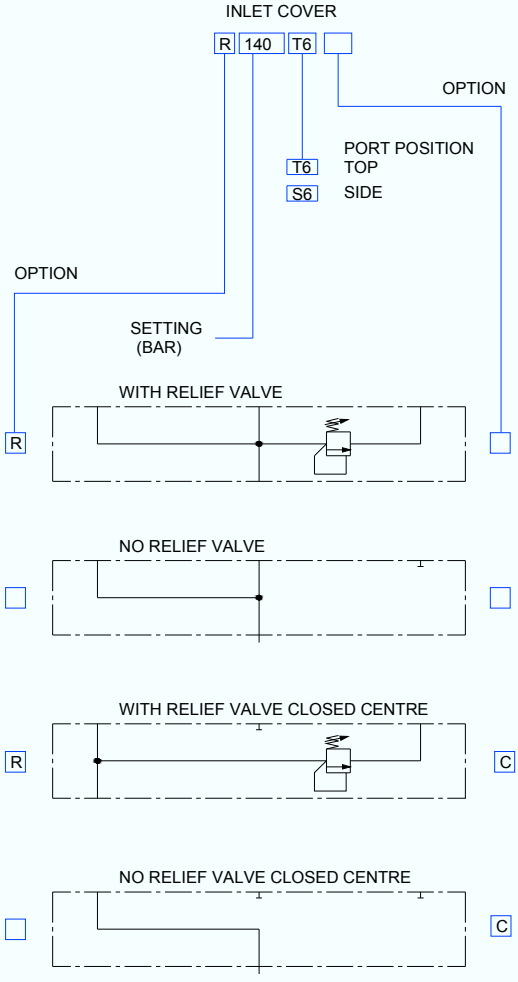
Ports
Top or Side entry
G3/4 standard size
Metric And SAE options available

Pressurising Valve
17 Bar back pressure min.

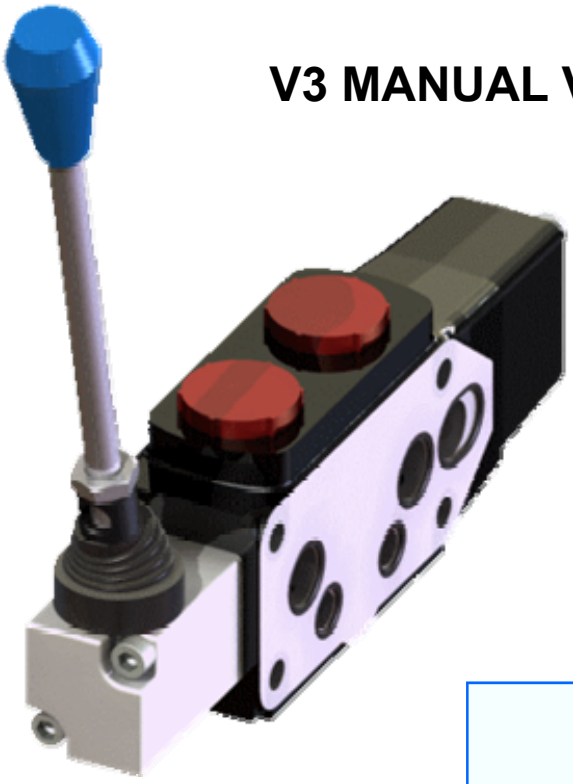
Options
With Relief Valve (standard)
No Relief Valve
Closed Centre

Mounting
1 x Ø13.4mm Through

Weight
1.88kg with Relief Valve



V3 MANUAL VALVE SECTION



SPECIFICATION

Body Material
Cast Iron BS1452-250

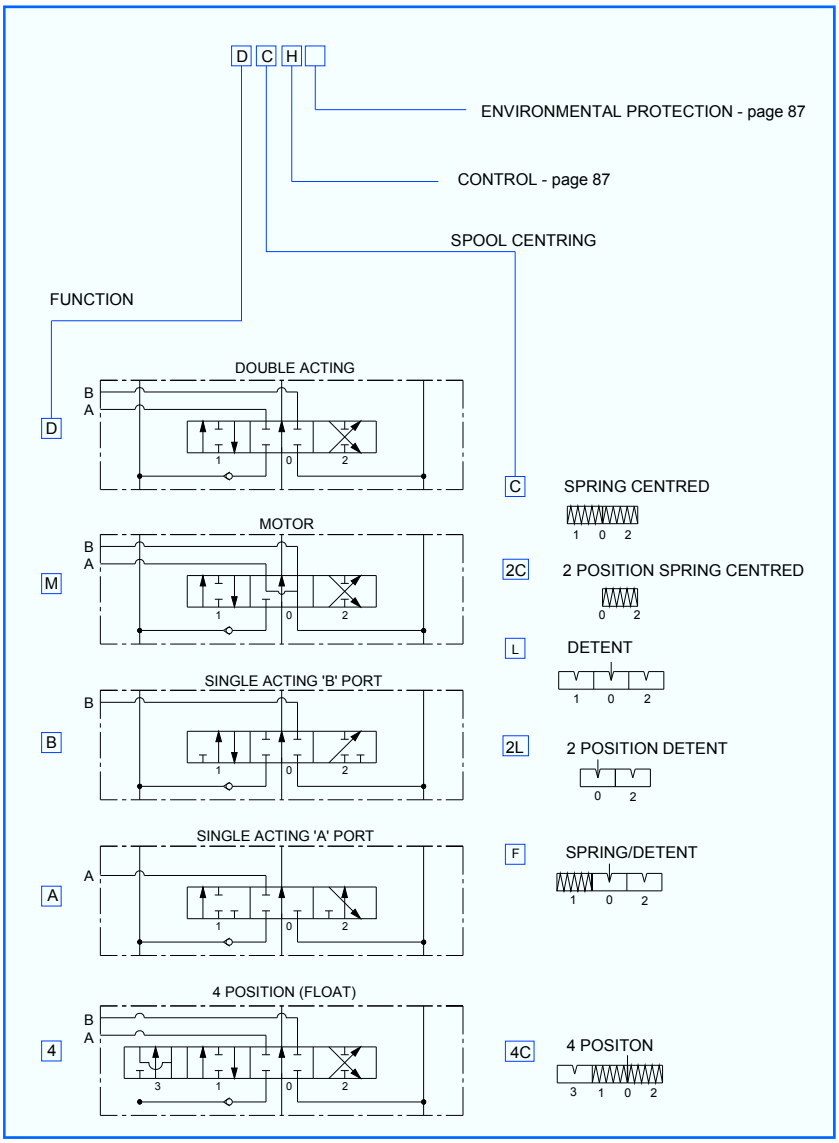
Spool
Mild steel. Case hardened and ground

Ports
G3/4 standard size (options available)

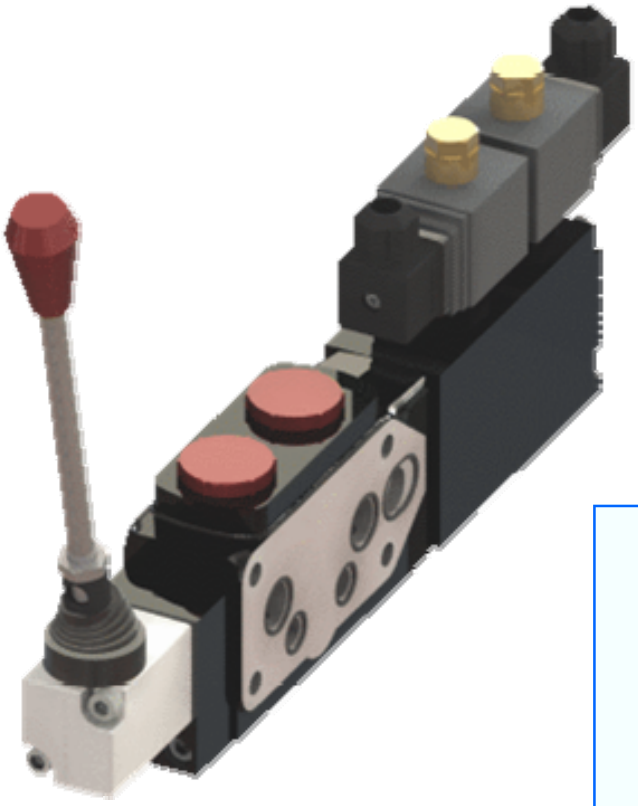
Environmental protection option
Housing: Anodised
Lever: Stainless steel 304

Weight
3.07kg with lever

Tie Studs
BS970 pt1 1991 605M36 (EN16T)
Torque 13.5Nm



V3E SOLENOID VALVE SECTION



SPECIFICATION

Body Material
Cast Iron BS1452-250

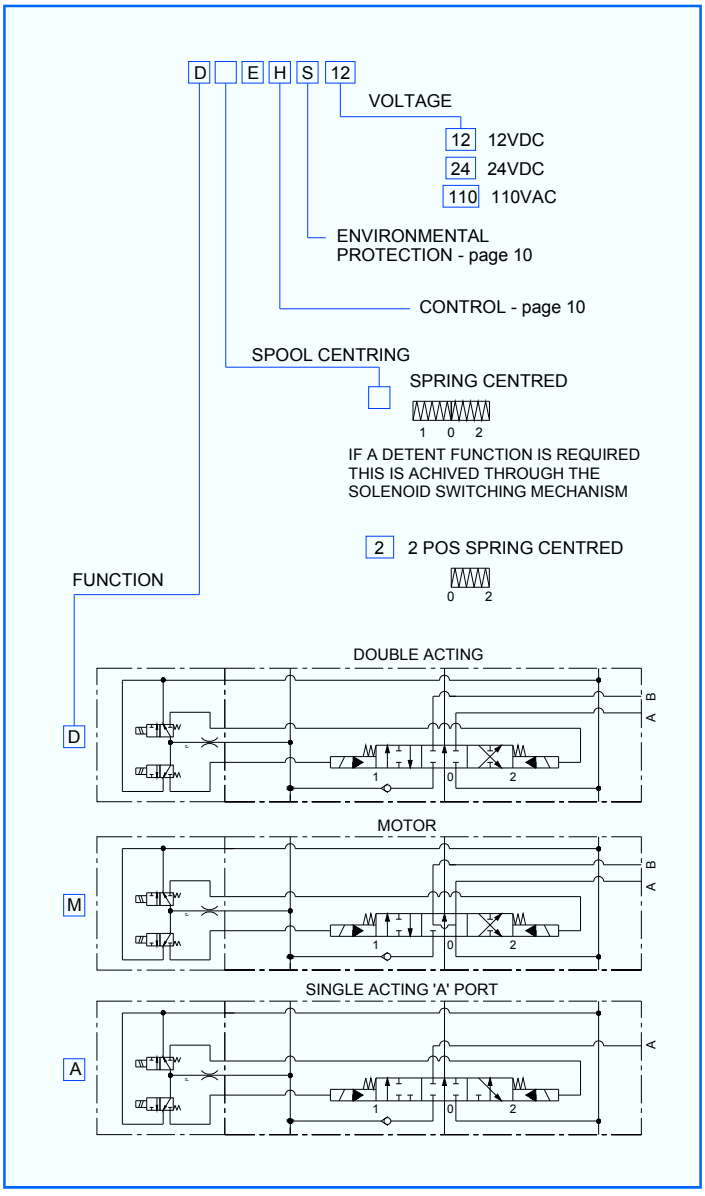
Manifold
Aluminium BS1490

Spool
Mild steel. Case hardened and ground

Ports
G3/4 standard size (options available)

Weight
4.87kg with lever

Tie Studs
BS970 pt1 1991 605M36 (EN16T)
Torque 13.5Nm



V3 LEVER

SPECIFICATION

Materials
Housing: Aluminium LM24TF
Actuator: Steel Nitro-carburised
Pivot: Steel Hardened
Fasteners: Deltatone

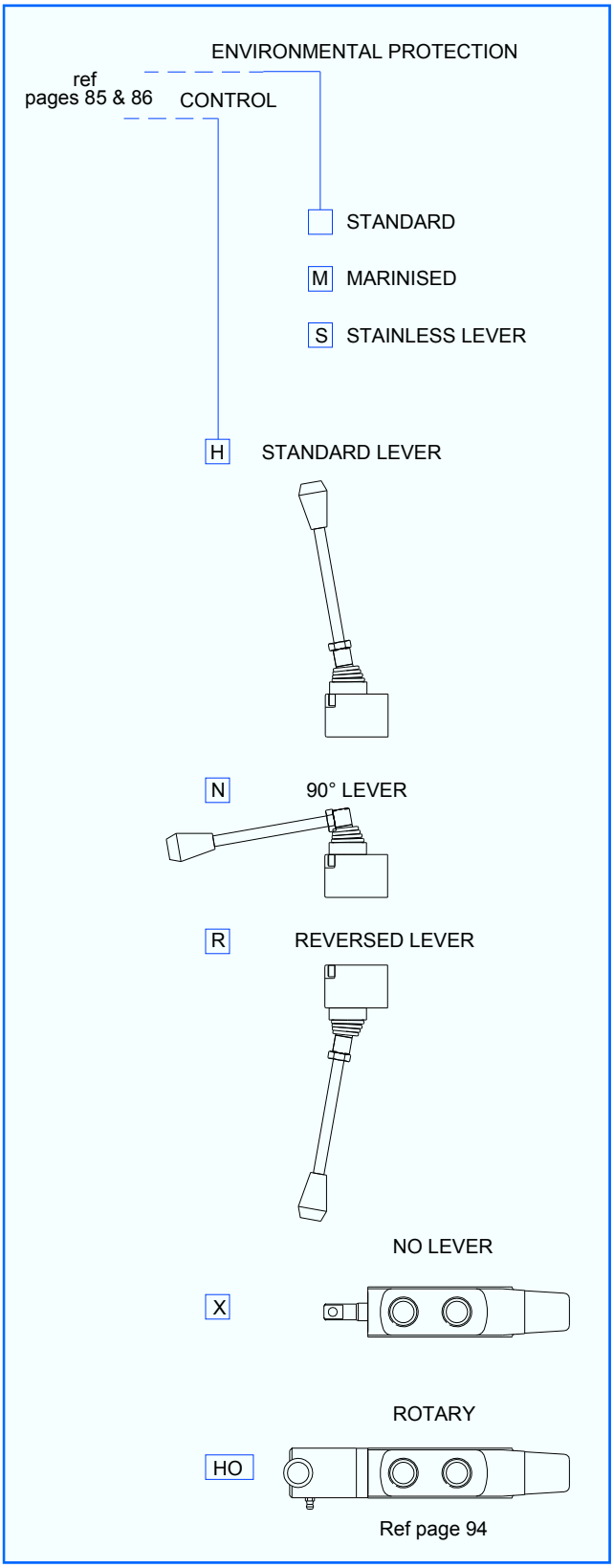
Fixing
2x M6 Cap screw (Torque - 10lbs/ft)

Knob
Black standard, Red, Blue, Green, Red, Yellow and Ident' type available

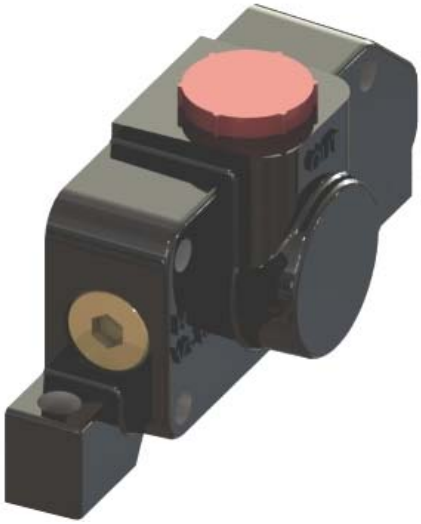
Options
Standard or Multi-axis
Aux cable attachment

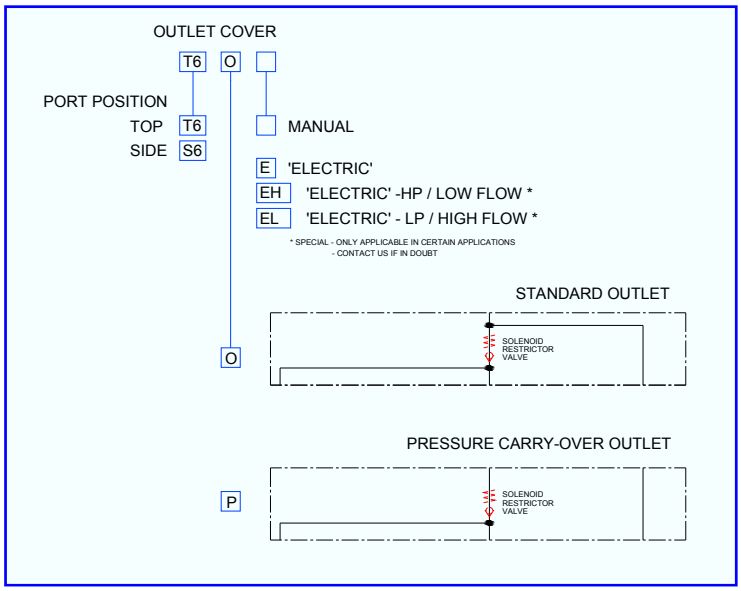
Environmental protection option
Housing: Anodised
Lever: Stainless steel 304

Weight
0.3kg



V3 OUTLET COVERS





Standard Outlet Cover

SPECIFICATION

Material
Cast Iron BS1452-250

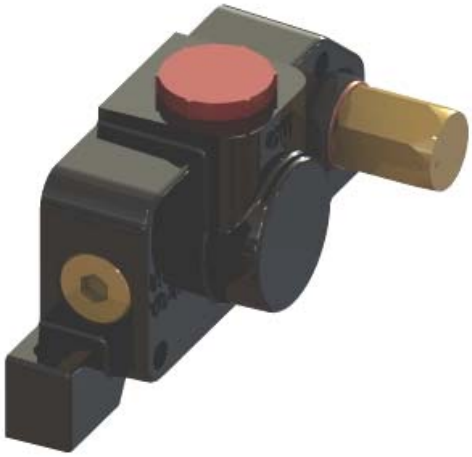
Ports
Top or Side entry
G3/4 standard size
G1, Metric And SAE options available

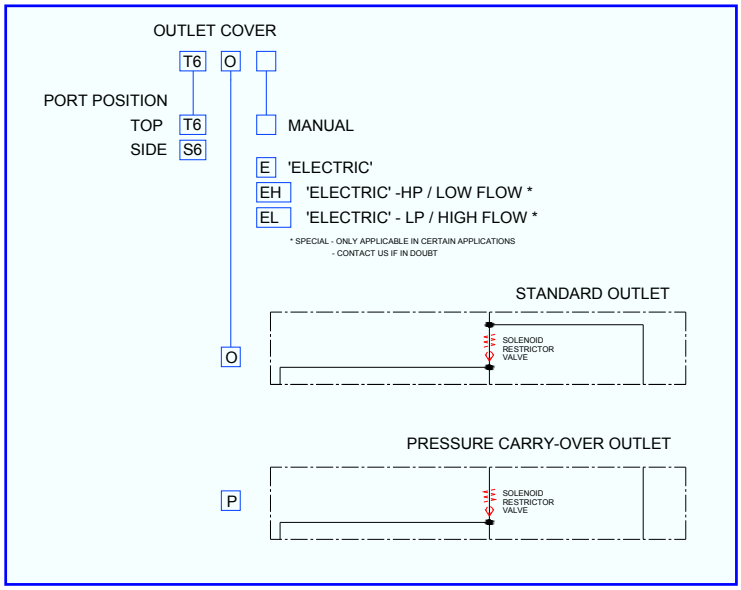
Mounting
2 x Ø13.4mm Through

Weight
1.88kg

Options
Standard Outlet (Tank port)
Pressure Carry-Over
(Tank port plus a Pressure port to feed further valves in the circuit)

V3E OUTLET COVERS





Solenoid Outlet Cover

The V3E solenoid valve outlet cover contains a small restrictor valve which maintains a pressure for the solenoid oil-pilot valves. The restrictor valve is available with special options for certain low and high flow applications - contact us for details.

The solenoid outlet cover must be used when a solenoid section is present in the valve assembly. It is not suitable for use in assemblies with only manual sections.

SPECIFICATION

Material
Cast Iron BS1452-250

Ports
Top or Side entry
G3/4 standard size
G1, Metric And SAE options available

Mounting
2 x Ø13.4mm Through

Weight
1.88kg

Options
Standard Outlet (Tank port)
Pressure Carry-Over
(Tank port plus a Pressure port to feed further valves in the circuit)

V3 INTERSECTIONS

V3-100 FLOW CONTROL INTERSECTION

A pressure compensated meter-in type flow control which can be included in V3-100 valve manual or solenoid assemblies. The regulated flow is supplied via the pressure gallery to 'down stream' sections, while 'up stream' are unaffected. The flow can be continuously adjusted using a knob or preset with a screw and lock nut.
A relief valve can be fitted to protect the circuit. It has metering and environmental protect options.

Description

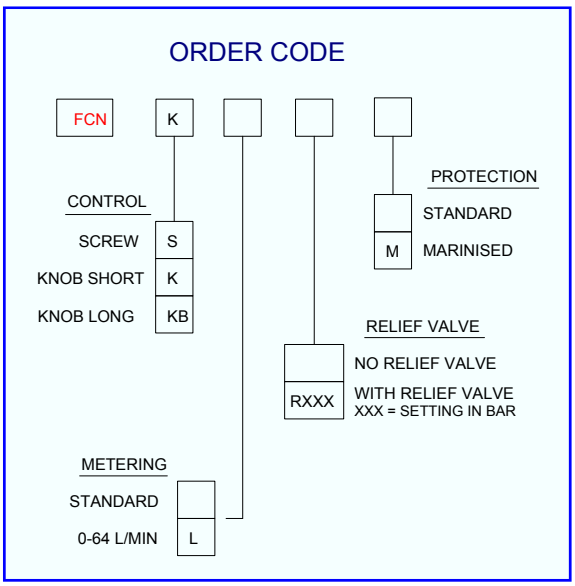
A meter-in type flow control intersection, which regulates flow to 'down stream' sections only. Pressure compensated, it returns the excess flow to the tank gallery. This ensures consistent control and minimum heat generation.

Application

To be used in applications requiring precise speed control in addition to stop, start and reverse functions of the spool valve, such as winches, hose reels and industrial conveyors. It can also be used to control the speed of cylinders.

Features

- Minimum heat generation
- Pressure compensated
- Adjustable or pre-set
- Screw or knob adjusted
- Relief valve option
- Limited max flow option
- Hardened components for long life
- Harsh environment protection (marinised)



V3 INTERSECTIONS

Technical Data

Performance

Rated flow	100 l/min
Adjustable range	0-100 l/min
ΔP Inlet to outlet 40 l/min	1.0 bar
ΔP Inlet to service	6.9 bar
Maximum pressure	250 bar
Maximum back pressure	25 bar
Temperature rating min	-20°c
Temperature rating max	+60°c

Recommended Oil

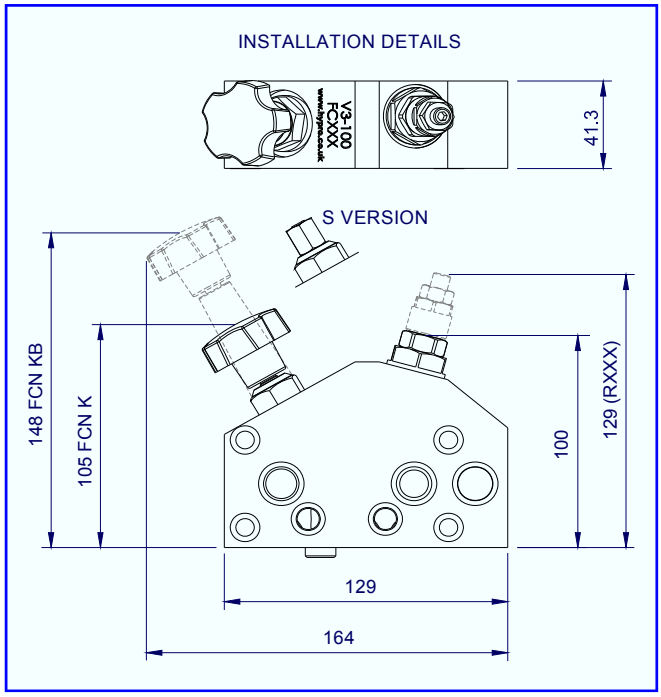
Mineral based hydraulic	ISO VG37
Filtration minimum	25 micron

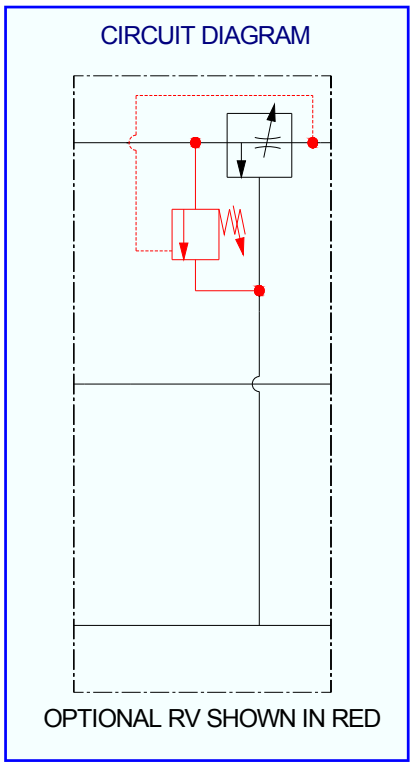
Materials

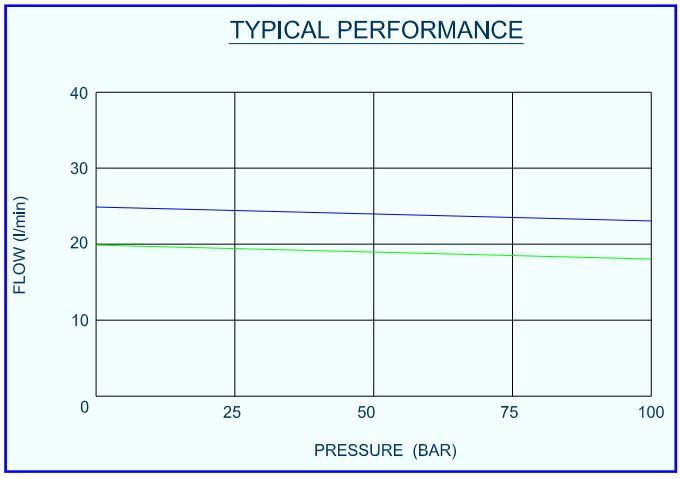
Body – Aluminium	BS 1490
Needle – Stainless Steel	EN58AM
External plating –	
Zinc chromate	BS 1706 Zn3
Seals	Nitrile/PTFE
Tie stud torque	13.5Nm

Weight

FCN K	1.2 kg







V3 INTERSECTIONS

SERIES CONNECTOR

Hy-Pro series connectors are designed to be fitted between two valve sections, connecting in series the actuators that they control. Series connectors are often used to synchronize two hydraulic motors where the return oil from one is fed to the inlet of the second.

The series connector effects only the valve sections immediately upstream and downstream of its position in the valve bank. Other sections remain connected in parallel. When using the series connectors, consideration must be given to upstream sections. This is because the normally open tank gallery in the valve bank is pressurized when the series connected actuators are on load. If this is a problem specially designed inlet covers are available which contain a separate outlet port for the relief valve bypass flow.

Special provision has also to be made for ancillary valves when used with series-connected valve banks. In such cases, customers are advised to discuss their circuit design with Hy-Pro.

Description

This intersection connects the up stream tank galleries to the pressure galleries of the down stream section enabling the flow to power a second service .

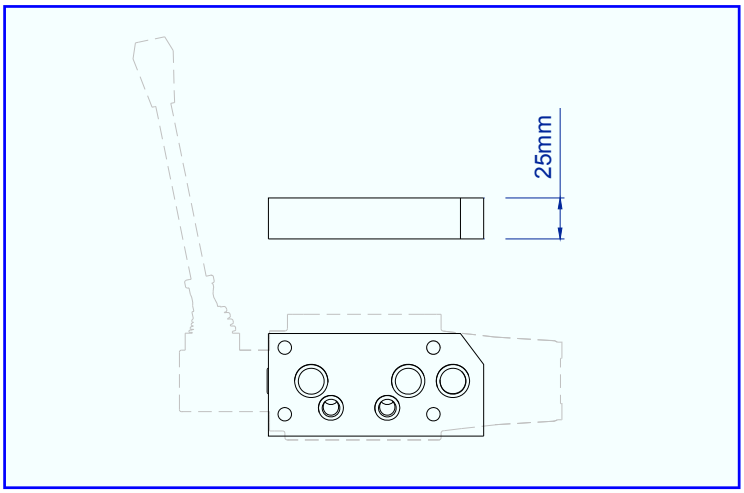
Application

Used where two or more services are required to operate simultaneously with differing loads. Often used to synchronize two hydraulic motors.

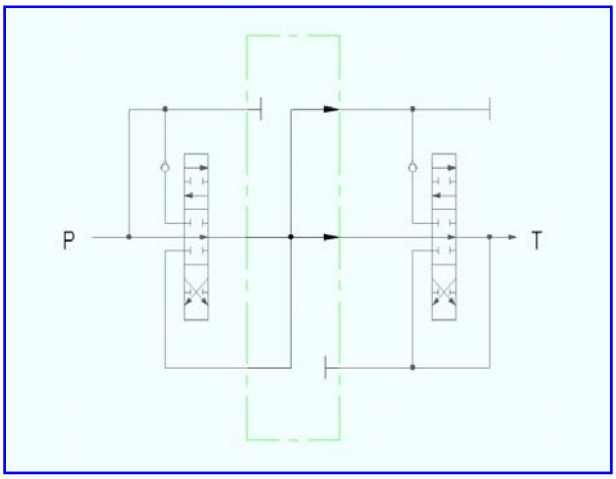
Features

- Used with standard sections.
- Converts both manual and solenoid sections.
- Anodised option

V3 INTERSECTIONS



Series Connector Specification



Performance

Rated flow	100 l/min
Max pressure	250 bar
∆p at rated flow P to T	0.8 bar
Temperature rating minimum	-20˚c
Temperature rating maximum	+65˚c

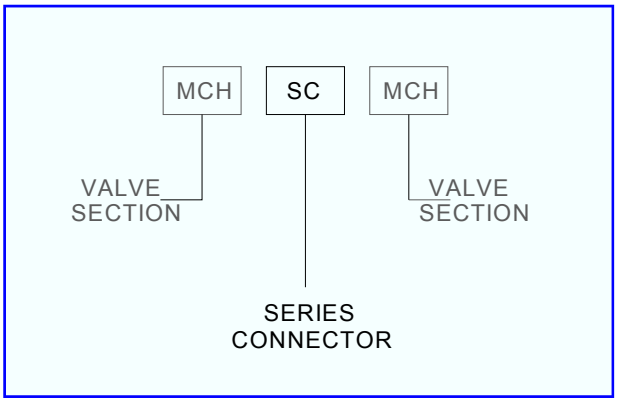
Recommended Oil

Mineral based hydraulic	ISO VG37
Filtration (minimum)	25 micron

Materials

Aluminium	BS1490

Weight 0.4kg



V3 CONTROL

V3-100 ROTARY LEVER

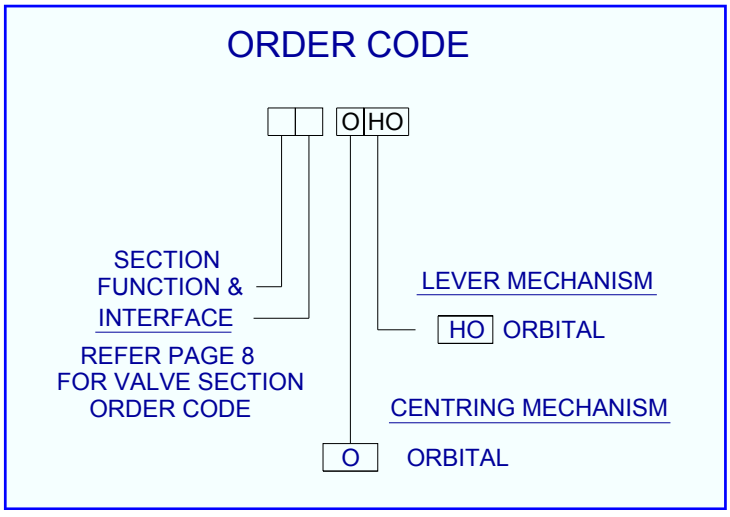
Description

The Hy-Pro rotary lever has been developed specifically to enable the operator precise control of motors and cylinders.

The lever swings through an 180° arc and works by means of a scroll which converts the rotary action of the lever into axial movement of the spool.

The centring mechanism has a friction detent feature which positively holds the spool in neutral then maintains the

Because of the geometry of the lever it is not possible to include it in multi-section valves but it is retro-fitable to existing V3-100 single



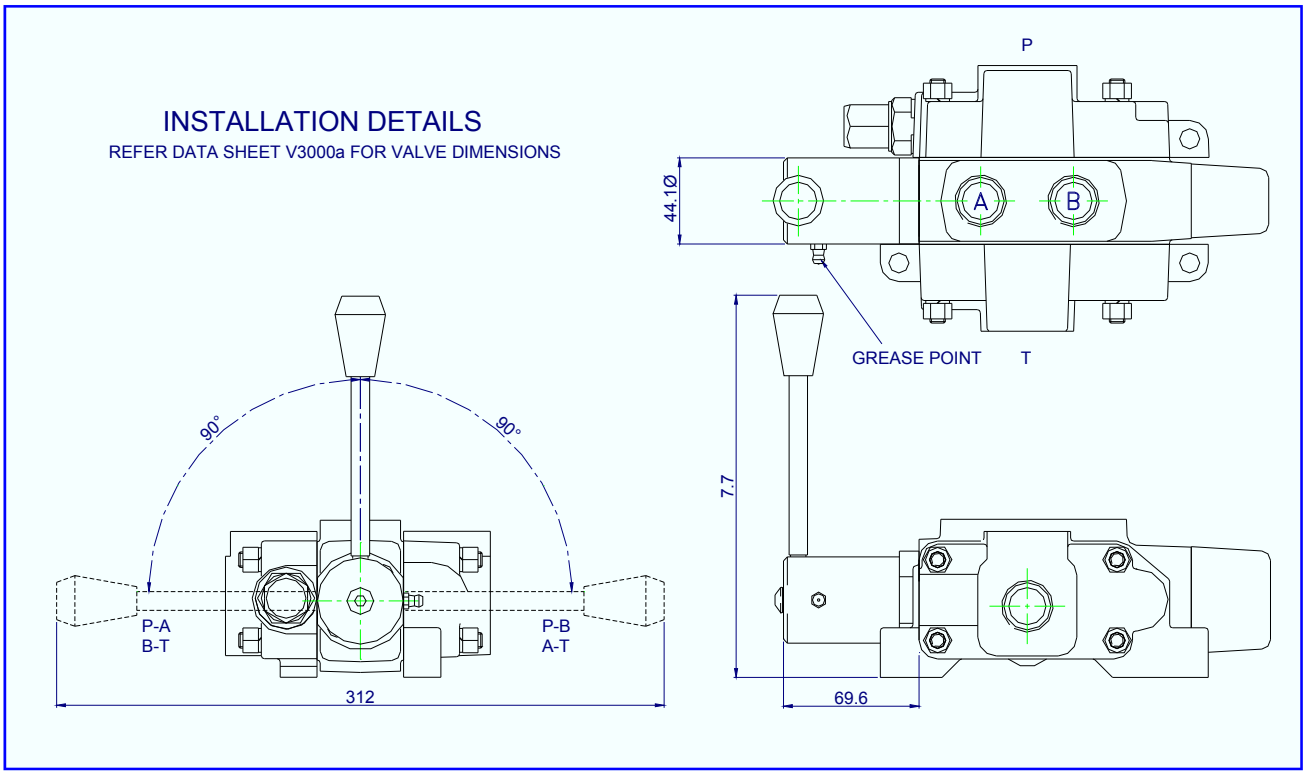
Application

Used extensively in the forestry and fishing industry to control the speed of conveyors and winches.

Features

- 180° movement.
- Compact design.
- Spool options.
- Detent in neutral.
- Friction hold.
- Robust mechanism.
- Toughened components.
- Cast iron Body and scroll
- Retro fit-able.

V3 CONTROL



Technical Data

Performance	See graph
Movement	±90°
Materials	
Body	Cast Iron BS 1452
Scroll	Manganese Bronze CZ114
Detent	Nitro-carburised NQ3
Weight	7.5 kg
Assembled	(as per drawing)