



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



M250LS

Mobile Directional Control Valve

Proportional, Load Sensing



ENGINEERING YOUR SUCCESS.

Conversion factors

1 kg	= 2.2046 lb
1 N	= 0.22481 lbf
1 bar	= 14.504 psi
1 l	= 0.21997 UK gallon
1 l	= 0.26417 US gallon
1 cm ³	= 0.061024 in ³
1 m	= 3.2808 feet
1 mm	= 0.03937 in
9/5 °C + 32	= °F

**WARNING – USER RESPONSIBILITY**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

Offer of Sale

Please contact your Parker representation for a detailed "Offer of Sale".

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[00] refers to item numbers in customer specification.

Breadth of Line

Parker is the world's leading supplier of motion control components and system solutions serving the mobile, industrial and aerospace markets.

Parker is your single source for any hydraulic valve requirement. We provide a wide selection of open-centre and load-sense directional control valves for construction, off-highway, or on-highway applications. Many of our open-centre valves can be adapted and used as closed-centre constant-pressure, and constant-pressure unloaded valves. Each of these technologies offers unique features for improved machine performance over traditional, open-centre control valves.

When remote control is required, Parker provides a broad line of pilot controllers that are compact and pressure-matched with our control valves to provide consistent and optimized machine control. There are a variety of electric-switch handle options available for additional function control by the operator.

Parker's premier IQAN electronics packages range from simple stand-alone controllers to large, multiple CAN bus systems with colour displays. For example, IQAN interfaces with new electronic diesel engines over the SAE J1939 CAN bus.

No matter what type of system you choose, Parker solutions provide top-notch performance and reliability. Our systems are optimized to reduce complexity, size, cost, and fluid leakage. Therefore, working with Parker can significantly cut your machine-build time.

State-of-the-Art Manufacturing

Parker is committed to using lean manufacturing to eliminate waste while streamlining processes. Lean technology helps us meet customer request dates quickly and cost-effectively. We also rely on state-of-the-art equipment and technology, such as computer-aided machining, to ensure product quality.

We regularly invest in our ISO 9001 certified manufacturing facilities because we are committed to meeting all international standards for safety and quality.

In addition, Parker hydraulic valves and valve manifolds are fully tested and certified before being released to the customer. You can expect Parker hydraulic valves to work the first time, every time.

Customer Service with A Global Reach

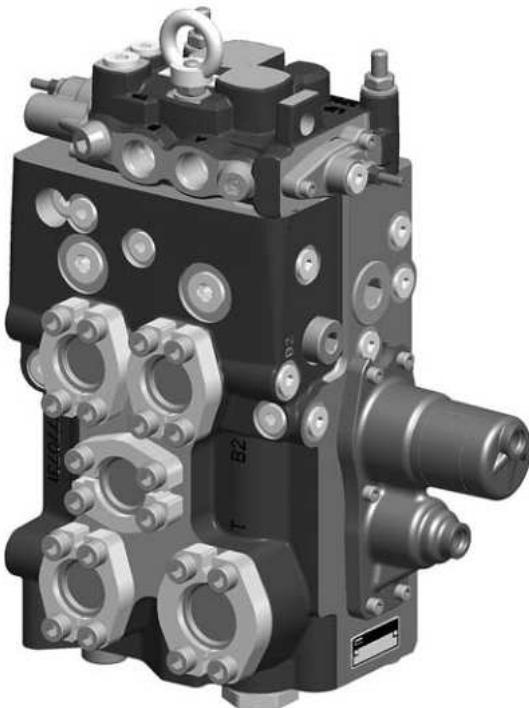
Parker's worldwide network of field sales engineers and Mobile Systems Engineers are the best in the business. A field sales engineer works closely with you, acting as a single point of contact to evaluate applications and design solutions. MSEs support field sales efforts by managing difficult design problems and complex circuit design.

You also benefit from Parker Mobile Technology Centers that are staffed by specially trained distributors who provide only the highest levels of customer service. These one-stop shops offer complete hydraulic systems design for mobile applications, as well as technology services such as diagnostics, troubleshooting, computer design, testing, and integration of electronic controls.

Finally, our thousands of dependable distributors are strategically located in your markets. They carry inventory to meet specific, local market needs, and they ensure that products arrive when and where they are needed. You can count on Parker distributors to minimize downtime.

Total Machine Motion Control

You can turn to us for all your mobile motion control solutions. We offer stand-alone valves, as well as custom-designed manifolds with integrated directional control valves.



The M250LS is a directional valve intended for machines such as small and midsize wheel loaders, mine loaders, fork-lift trucks, etc. It is designed for use in closed-centre (LS) hydraulic systems with variable pumps, and is suitable for tough operating conditions.

Simple installation

Good machine design and the right hydraulic system gives a cost-effective installation, which in turn gives a competitive product. The pump and work ports in the M250LS are arranged in such a way that hosing and piping can be kept to an absolute minimum. The valve is equipped with double work ports at 180°, which eliminates T-connectors and gives the shortest and simplest path to the cylinders. This also enables dimensions to be kept small, since only half the flow passes through each work port.

Double pump connections, located optimally for easy installation, enable the simple connection of a second pump.

When the valve is mounted upright on the bottom plate good access for installation and work is obtained.

Safety

The M250LS is of robust construction. Many of the components are of the cartridge or module types, which facilitate servicing. It has both spool and poppet elements that give double safety in the case of hanging loads. The valve is also extremely well sealed, which prevents unintentional load sinking.

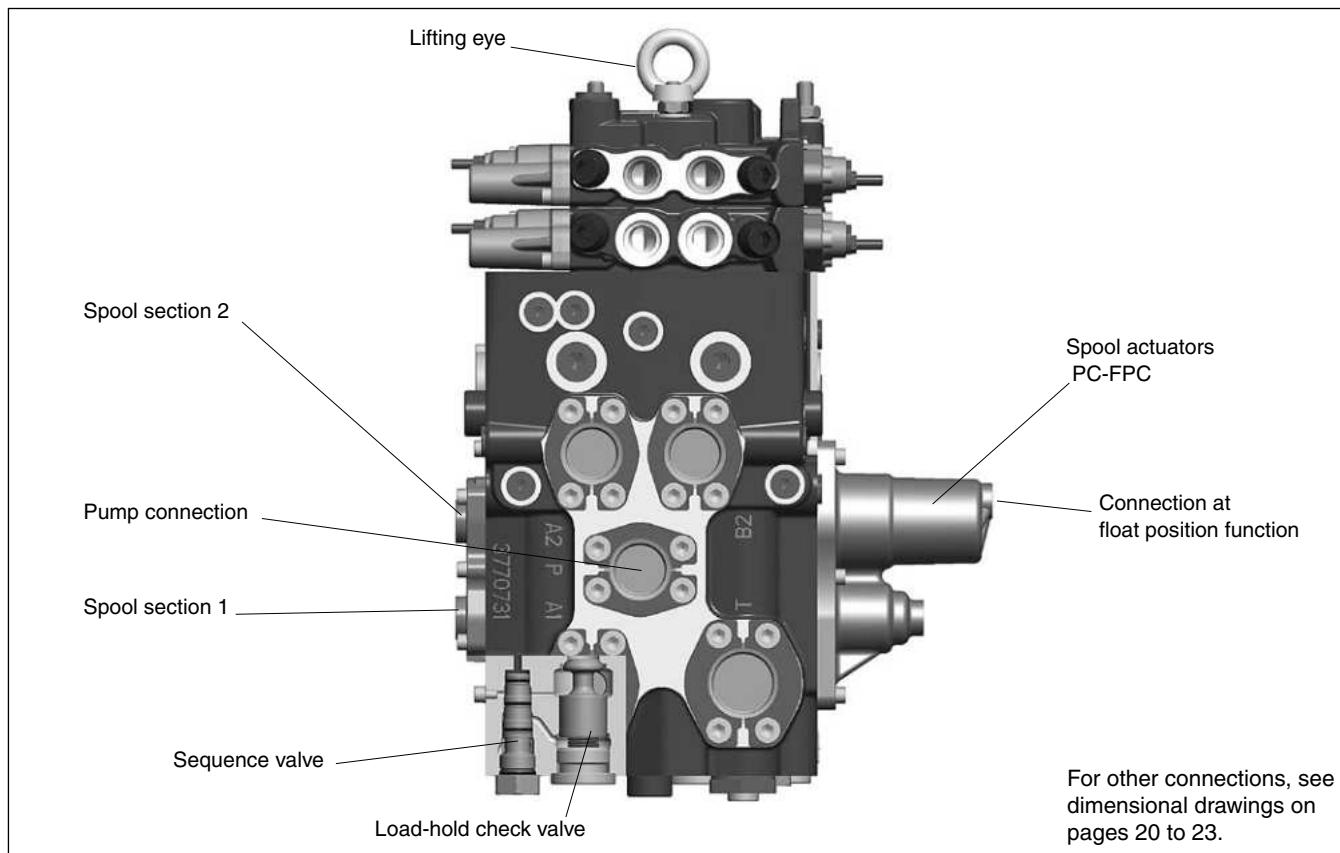
Design

The M250LS is a monoblock valve with the possibility to add up to 4 extra auxiliary sections. It is of LS design for variable pumps. It is casted in high quality material to enable it to withstand high pressures without deformation. The valve is of spool type to give safe and precise regulation of the flow. To ensure tight sealing in the case of hanging loads, there is also a poppet element which, together with the spool, effectively blocks the hanging load. The poppet elements are controlled via a logic system and opened by pilot pressure. The poppet element also functions as a Load-hold check valve and as a prioritizing poppet for bucket up priority.

The gallery system in the valve housing is generously dimensioned to give minimal pressure drop. This enables low pressure regeneration in order to save energy and avoid cavitation.

Essential characteristics

- Excellent sealing: work ports closed by means of poppet valves.
- Not sensitive to temperature shocks: poppet-valve concept gives relatively large clearance between spool and bore.
- Good energy efficiency: low pressure drops for high function speeds; gives low energy consumption.
- Easy to install: designed with simple installation in mind.
- Stackable up to 4 auxiliary functions.
- Optional float-position function: built-in, pressure-controlled float-position function eliminates the need for external components and signals.
- Great precision: low hysteresis gives precise control and good operator comfort.
- Pressure compensated lift and lowering functions gives superior controllability.
- Easy to service.
- Long service life: efficient port-relief and anti-cavitation valves reduce the number of pressure peaks and cavitations in the system, thus prolonging the life of the machine.



Pressure

Pump connection	max.	350 bar* (5075 psi)
Work port	max.	400 bar* (5800 psi)
Tank connection, static	max.	20 bar (290 psi)
Pressure in drain line	recommended	1 bar (14.5 psi)

*Stated pressures are maximum absolute shock pressures at 10 bar tank pressure.

Flow rate (recommended)

Return from work port	320 l/min (84.5 US gpm) at $\Delta p = 15$ bar (218 psi)
To work port	300 l/min** (79.5 US gpm) at $\Delta p = 20$ bar (290 psi)

**Depending on choice of spool.

Leakage from work port to tank

From A- or B-port: max. 20 cm³/min (1.22 in³/min) at 100 bar (1450 psi), oil temperature 50 °C (122 °F) and viscosity 30 mm²/s (cSt), when fitted with load-hold check valves.

Installation

While the valve can be mounted in any direction, it is best mounted upright (i.e. with lifting eye upwards) to give good access for servicing and enable simple handling. The base must be flat and stable to avoid stressing the valve on mounting.

Filtration

Filtration must be arranged so that Target Contamination Class 20/18/14 according to ISO 4406 is not exceeded. For the pilot circuit, Target Contamination Class 18/16/13 according to ISO 4406 must not be exceeded.

Temperature

Oil temperature, working range +20 to +90 °C*** (68 to 194 °F)

***Product operating limits are broadly within the above range, but satisfactory operation within the specification may not be accomplished. Leakage and response will be affected when used at temperature extremes and it is up to the user to determine acceptability at these levels.

In case of demands for high temperature resistance, please contact Parker for further information.

Hydraulic fluids

Best performance is obtained using mineral-base oil of high quality and cleanliness in the hydraulic system.

Hydraulic fluids of type HLP (DIN 51524), oil for automatic gearboxes Type A and engine oil type API CD can be used.

Viscosity, working range 15-380 mm²/s

Technical information in this catalogue is applicable at an oil viscosity of 30 mm²/s and temperature of 50 °C (122 °F) using nitrile rubber seals.

Performance efficiency will be reduced if outside the ideal values. These extreme conditions must be evaluated by the user to establish suitability of the products performance.

Weight

See pages 21 and 23.

Connections

Pump, tank and work-port connections are of the SAE flange type.

Valve block	U3 [09]		U6 [09]	
Connection (see pages 20-23)	Flange/Thread (U-version)		Flange/Thread (U-version)	
Pump, P	SAE 1" -S**	M10x18	SAE 1" -H*	M12x28
Work ports A1, B1, A2, B2	SAE 1" -S**	M10x18	SAE 3/4" -H*	M10x18
Tank, T	SAE 1 1/4" -S**	M10x18	SAE 1 1/4" -S**	M10x18
Drainage, LS, LSP, pilot pressure, priority, pilot tank 2, gauge port	9/16-18 UNF		9/16-18 UNF	
Pilot tank 1	3/4-16 UNF		3/4-16 UNF	
Pilot pressure MP	G1/4		G1/4	
Mounting hole	M12x20		M12x20	
Work ports section 3 - 6	7/8-14 UNF		7/8-14 UNF	
Extra ports A2, B2, pump	7/8-14 UNF		7/8-14 UNF	

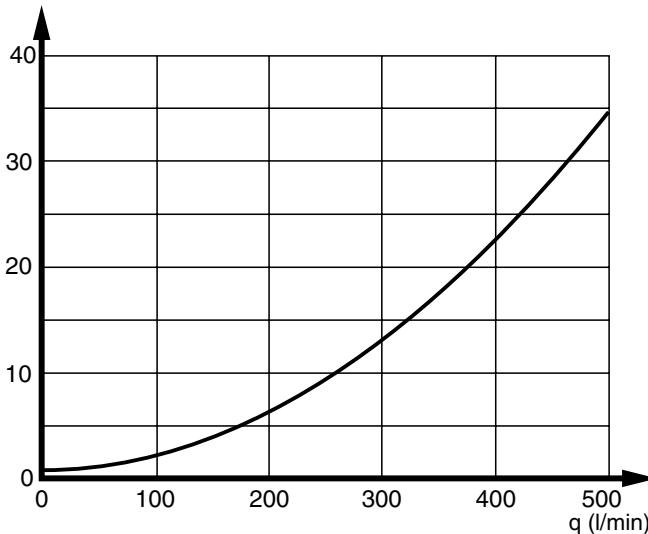
* High pressure (400 bar) according to ISO 6162.

** Standard pressure (330 bar) according to ISO 6162.

Pressure drop

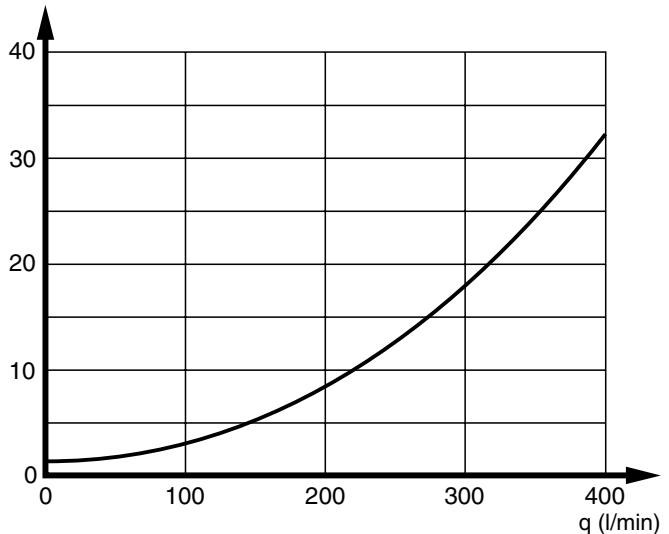
Pressure drop measured with fully open spool intended for max. flow.

Δp (bar) Pressure drop - work port to tank

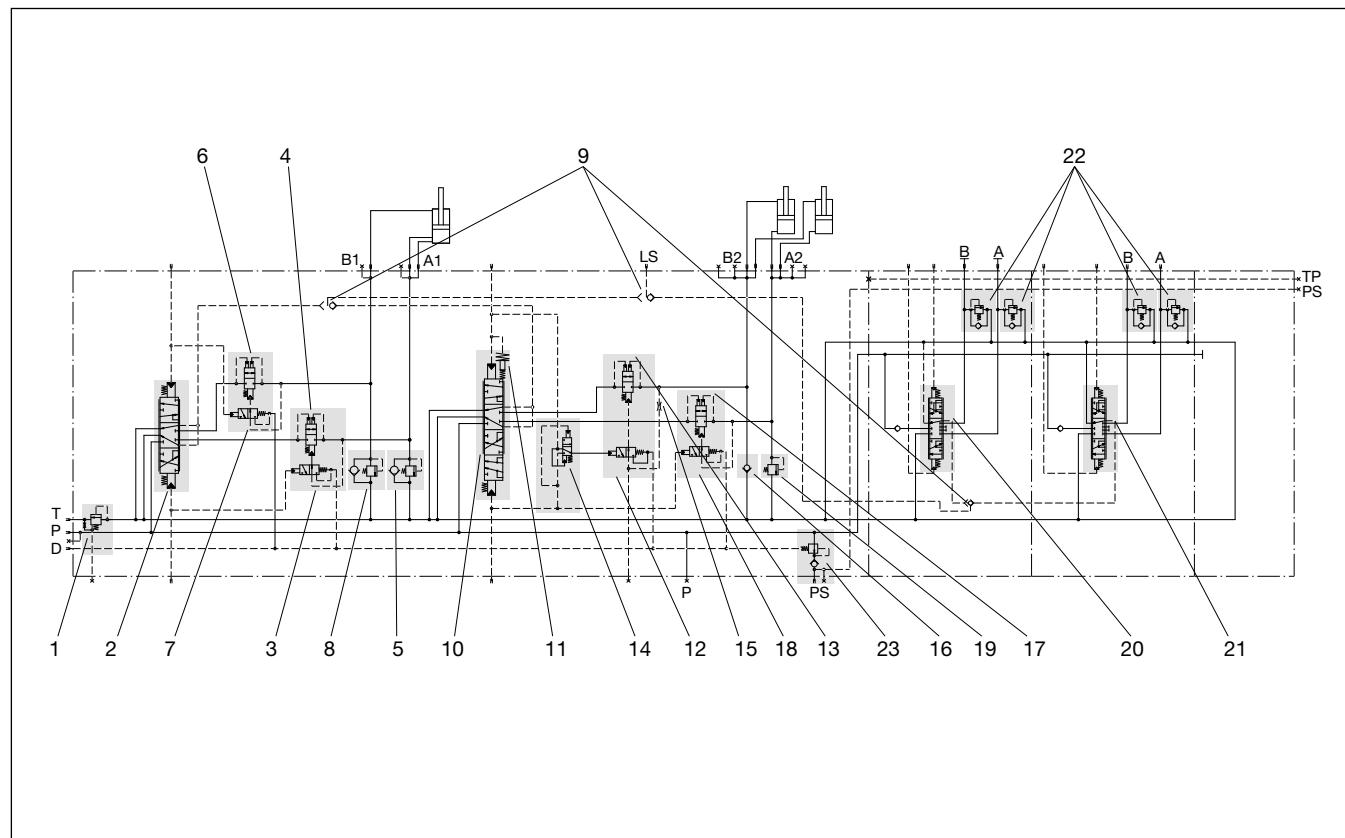


Pressure drop from work port A/B to tank connection T.

Δp (bar) Pressure drop - P1/P2 to work port A/B

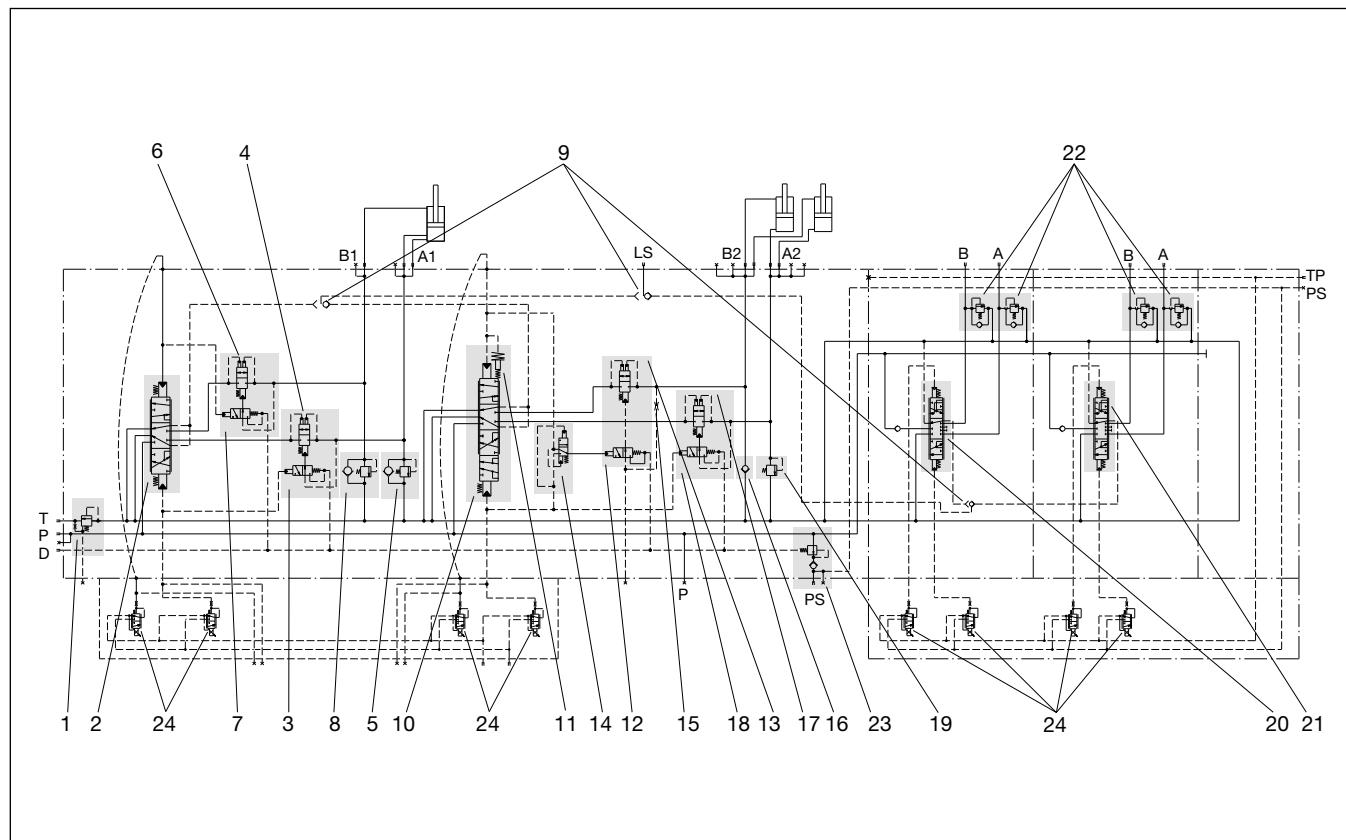


Pressure drop from pump connection P1/P2 to work port A/B.



Hydraulic circuit diagram for hydraulic remote controlled valve (PC)

Pos.	Function	Pos.	Function
1	Counter pressure valve [10]	13	Load-hold check valve, B2 [54 B]
2	Section 1	14	Sequence spool float position
3	Sequence valve, A1	15	Restrictor, priority
4	Load-hold check valve, A1 [34 A]	16	Port relief valve, B2 [52 B, 53 B]
5	Port relief valve, A1 [32 A, 33 A]	17	Load-hold check valve, A2 [54 A]
6	Load-hold check valve, B1 [34 B]	18	Sequence valve, A2
7	Sequence valve, B1	19	Port relief valve, A2 [52 A, 53 A]
8	Port relief valve, B1 [32 B, 33 B]	20	Section 3
9	Shuttle valve LS	21	Section 4
10	Section 2	22	Port relief valves [72 A/B, 73 A/B, 92 A/B, 93 A/B]
11	Float position device	23	Pilot reducer
12	Sequence valve, B2		



Hydraulic circuit diagram for electro hydraulic remote controlled valve (EC)

Pos.	Function	Pos.	Function
1	Counter pressure valve [16]	13	Load-hold check valve, B2 [54 B]
2	Section 1	14	Sequence spool float position
3	Sequence valve, A1	15	Restrictor, priority
4	Load-hold check valve, A1 [34 A]	16	Port relief valve, B2 [52 B, 53 B]
5	Port relief valve, A1 [32 A, 33 A]	17	Load-hold check valve, A2 [54 A]
6	Load-hold check valve, B1 [34 B]	18	Sequence valve, A2
7	Sequence valve, B1	19	Port relief valve, A2 [52 A, 53 A]
8	Port relief valve, B1 [32 B, 33 B]	20	Section 3
9	Shuttle valve LS	21	Section 4
10	Section 2	22	Port relief valves [72 A/B, 73 A/B, 92 A/B, 93 A/B]
11	Float position device	23	Pilot reducer
12	Sequence valve, B2	24	Pilot valves

Connections [09]

Also see table on page 7.

U6 Connections with UNF threads,
 SAE 6000 psi.

U3 Connections with UNF threads,
 SAE 3000 psi.

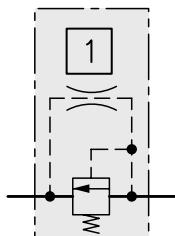
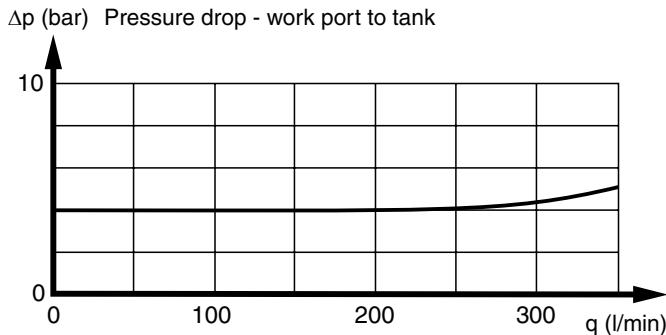
Counter pressure function [10]

The valve can be equipped with a counter pressure valve in the tank connection to ensure that oil from the cylinders is used primarily to replenish the system. This is possible thanks to the generous gallery dimensions and anti-cavitation valves. The valve is factory set.

MX No counter pressure valve in tank gallery.

MF4 Counter pressure valve set to 4 bar at 20 l/min.

MP Pilot operated counter pressure valve.



Counter pressure symbol. See also complete circuit diagram, page 8 and 9, pos 1.

Number of sections [11]

You can choose from 2 up to 6 sections, where the first 2 sections is the main valve and sections after are for the auxiliary functions.

Surface treatment (painted) [12]

P Default value - unless otherwise stated valve will be supplied painted with a single coat of black primer.

X Unpainted.

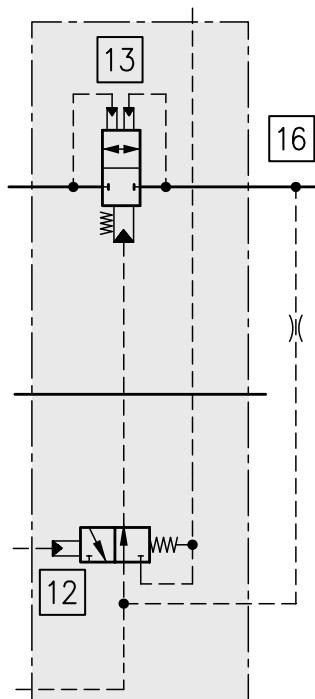
For full corrosion protection, the valve must be painted with an outer coat.

Prioritizing function [16]

Section 1 can be pressure prioritized over section 2. This means that if there is a light load on section 2, heavier loads can be handled with section 1, e.g. so that an empty bucket can be tilted up at the same time as the main loading arms are lowered (prioritizing pressure approx. 50 bar). Prioritization is automatic and is controlled via pilot signal logic.

PRB Prioritizing function blocked.

PR1 Port A1 has priority over port B2 (approx. 50 bar).



Priority function.

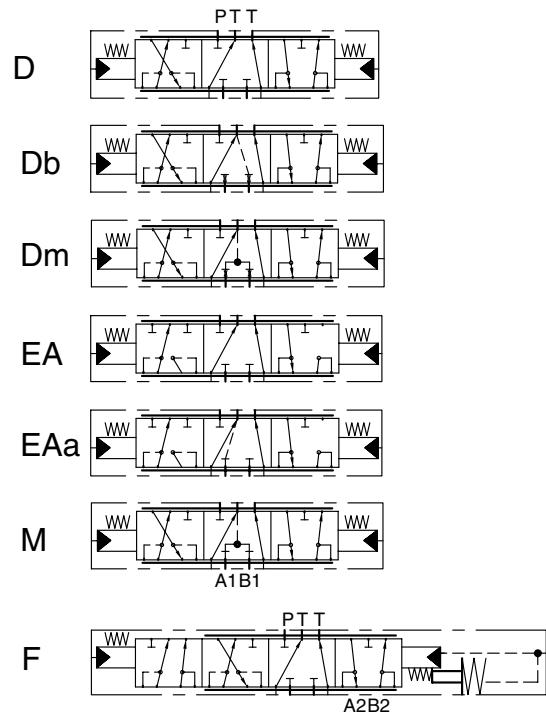
Choice of spool

The spool is the most important link between the actions of the machine operator and the movement of the controlled function. Parker therefore goes to great lengths to optimize spools for different flows, load conditions and functions. This ongoing development work results in the continual introduction of new spools. For this reason, it is not practical to list in this catalogue the different spools available at any one time. For assistance in the choice of spool, we therefore ask you to contact Parker directly.

Spool function [21, 41]

Parker spools are divided into different groups depending on their basic functions.

- D** Double-acting spool for, e.g. double-acting cylinder. Blocked in the neutral position.
- Db** Double-acting spool with drainage B to T, which prevents pressure build-up in the B-port in the neutral position. The spool is used as a double spool in combination with, e.g. an over-centre valve.
- Dm** Double-acting spool with drainage A to T and B to T, which prevents pressure build-up in the neutral position. The spool is used as a double-acting spool in combination with, e.g. an overcentre valve.
- EA** Single-acting spool for, e.g. single-acting cylinder. Blocked in the neutral position. Work port B blocked.
- EAa** Single-acting spool for, e.g. single-acting cylinder. Blocked in the neutral position. Work port B blocked. Drainage of work port A to tank.
- M** Double-acting spool for, e.g. hydraulic motor. Work ports connected to tank (float position) in the neutral position.
- F** Double-acting spool with fourth position in which both work ports are connected to tank (float position). Blocked in the neutral position.



Spool designations [22, 42]

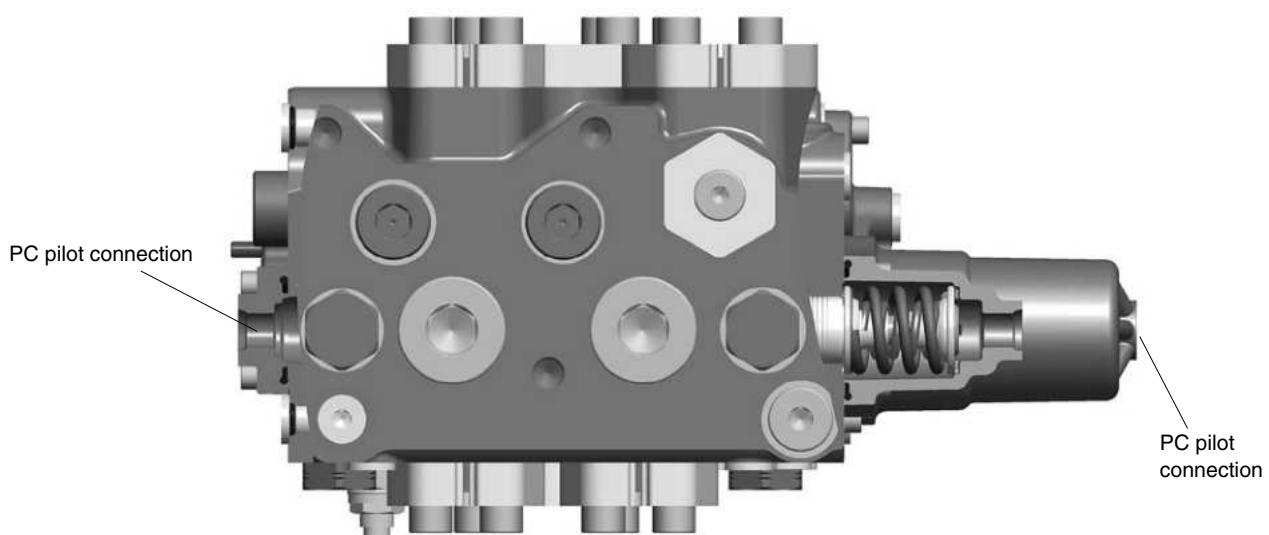
Every spool is given a letter code, which is stamped on the spool. This facilitates identification of the spool when servicing is carried out.

Area relationships [25, 45]

The area relationship for the section in question is calculated by dividing the cylinder area connected to the B-port by the cylinder area connected to the A-port. When the big side of the cylinder is connected to the A-port, the area relationship is less than 1. The area relationship for a motor is 1.

PC

PC



Also see dimensional drawings on pages 20 to 21 for location of all connections.

PC-PC Both section 1 and section 2 have hydraulic, proportionally controlled, spring-centred spool actuators. Best controlled by a PCL4 remote control valve (see catalogue HY17-8357/UK).

Breakaway pressure: * 6.5 bar
Final pressure: * 16 bar
(max 35 bar)

Connection thread: 9/16-18 UNF

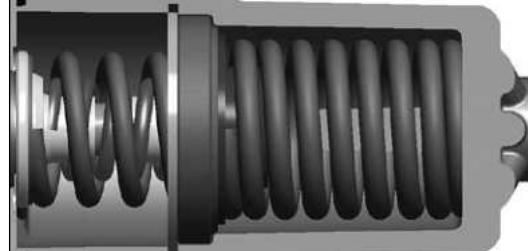
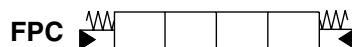
PC-FPC Both section 1 and section 2 have hydraulic, proportionally controlled, spring-centred spool actuators with a fourth position for shifting the spool into the float position in section 2.

Breakaway pressure: * 6.5 bar
Final pressure: * 16 bar
Pressure for float position: min 24 bar
(max 35 bar)

Connection thread: 9/16-18 UNF

FPC

FPC

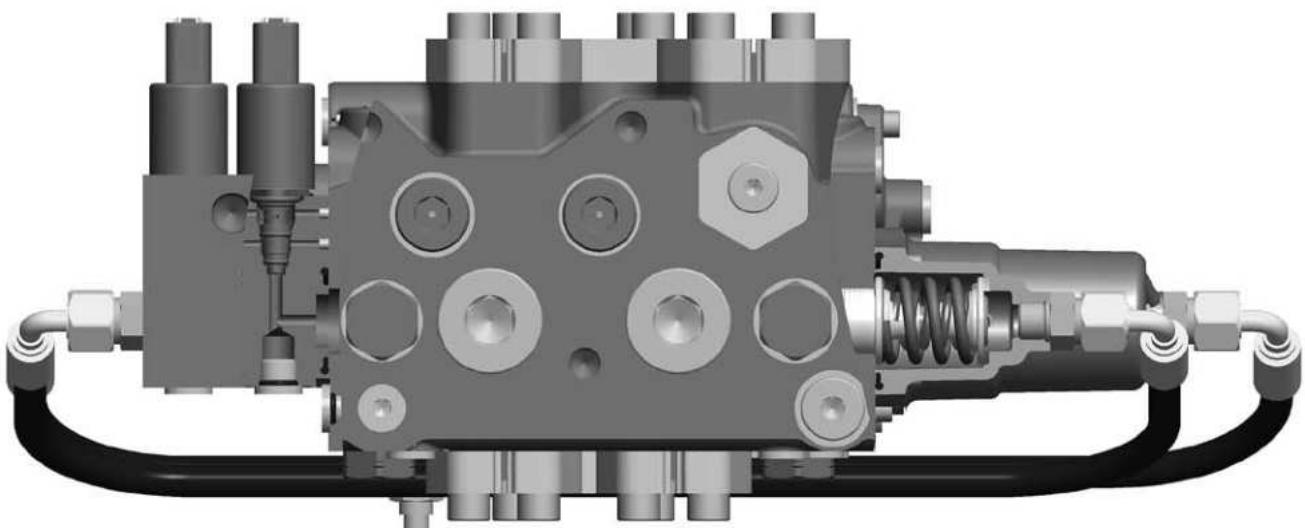


*

The breakaway pressure refers to the pressure needed for the directional valve to open the connection "pump to work port". The final pressure is the lowest pressure needed to effect full actuation of a spool in the directional valve. With the FPC spool actuator, the float position is obtained by further increasing the final pressure from max. 18 bar to min. 24 bar. The foregoing data must be taken into consideration when choosing control units, since the opening pressure of the control unit must be lower than the breakaway pressure of the spool actuator in order to avoid jerky starting and stopping. However, the control unit's final pressure must be higher than the final pressure of the directional valve in order to ensure that the spools can be fully actuated.

EC

EC 



Also see dimensional drawings on pages 22 to 23 for location of all connections.

EC-EC Both section 1 and section 2 have electro-hydraulically, proportionally controlled, spring-centred spool actuators. The EC spool actuator is best controlled by means of a Parker electric remote-control system (see catalogue HY17-8368/UK).

Voltage	12 V	24 V
Breakaway current:*	max 640 mA	max 300 mA
Final current:*	min 1020 mA	min 500 mA

EC-FEC Both section 1 and section 2 have electro-hydraulically, proportionally controlled, spring-centred spool actuators. FEC is a proportionally controlled, spring-centred spool actuator with a fourth position for shifting the spool into the float position in section 2. The FEC spool actuator is best controlled by means of a Parker electric remote-control system (see catalogue HY17-8368/UK).

Voltage	12 V	24 V
Breakaway current:*	max 640 mA	max 300 mA
Final current:*	min 1020 mA	min 500 mA
Float position current:	max. 1450 mA min. 1320 mA	max. 730 mA min. 660 mA
Solenoid (PS25):	max 1450 mA, 100% ED	max 730 mA, 100% ED

Coil resistance at +20 °C:	4,7 Ω	20,8 Ω
Inductance:	8,8 mH	36,1 mH
Tank pressure:	max 15 bar	max 15 bar
Connection thread:	9/16-18 UNF	

Connector Type [04]

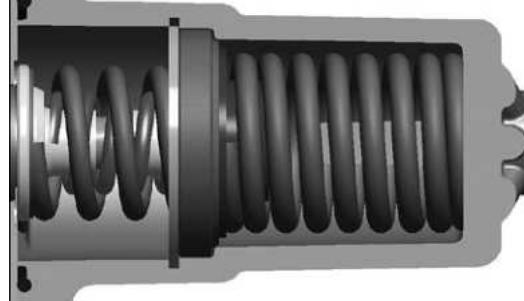
The connector of the solenoid is of type:

- A** AMP Junior-Timer type C.
- D** Deutsch type DT06-2P.

The connector must be ordered separately.

FEC

FEC 

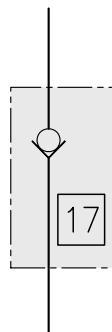
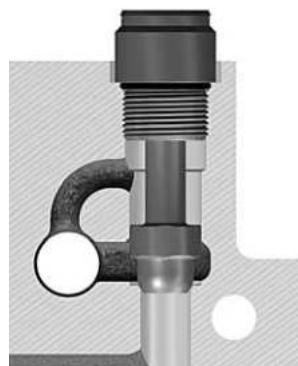


* The breakaway current refers to the current needed for the directional valve to open the connection "pump to work port". The final current is the lowest current needed to effect full actuation of a spool in the directional valve. With the FEC spool actuator, the float position is obtained by further increasing the final current, see table. The foregoing data must be taken into consideration when choosing control units, since the opening current of the control unit must be lower than the breakaway current of the spool actuator in order to avoid jerky starting and stopping. However, the control unit's final current must be higher than the final current of the directional valve in order to ensure that the spools can be fully actuated.

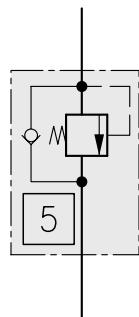
Port relief valves [32A/B, 52 A/B]

In spool sections the cartridge can be used as a combined port-relief and anti-cavitation valve in the work ports to protect the valve and consumer from high system pressure and pressure surges.

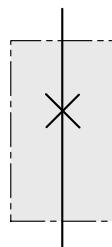
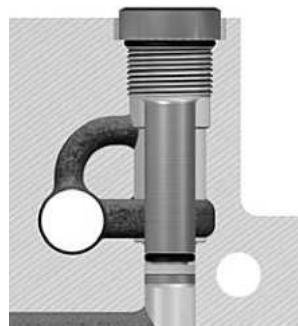
The cartridge is a direct-acting pressure relief valve with a fast response and good pressure characteristic. The interchangeable cartridge is factory set. The make-up function enables oil to flow from the tank gallery to the work-port side in the event of negative pressure in the work ports, in order to prevent cavitation.



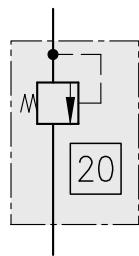
Anti-cavitation valve type N2.



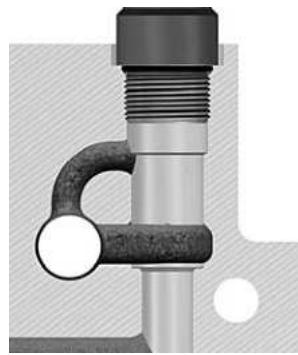
Port relief valve type PA.



No port-relief or anti-cavitation valve fitted. Connection work port to tank gallery is blocked, type Y2.



Port relief valve type PAY.



No port relief valve fitted. Work port connected to valve's tank gallery, type X2.

Port relief valve [32 A/B, 52 A/B]

PA Combined port-relief and anti-cavitation valve fitted.
 Valve is factory set.

PAY Port relief valve without anti-cavitation function fitted.
 Valve is factory set.

N2 Only anti-cavitation function fitted.

Y2 No port-relief or anti-cavitation valve fitted. Connection work port to tank gallery is blocked.

X2 No port relief valve fitted. Work port connected to valve's tank gallery.

Pressure settings [33 A/B, 53 A/B]

Setting range: 40 - 400 bar.

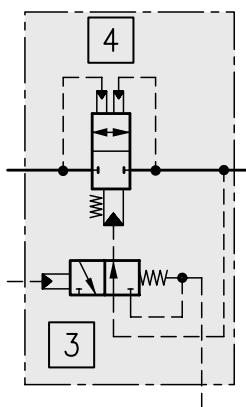
Pressure settings are made at a flow of 20 l/min through the valve.

Load-hold check valve [34 A/B, 54 A/B]

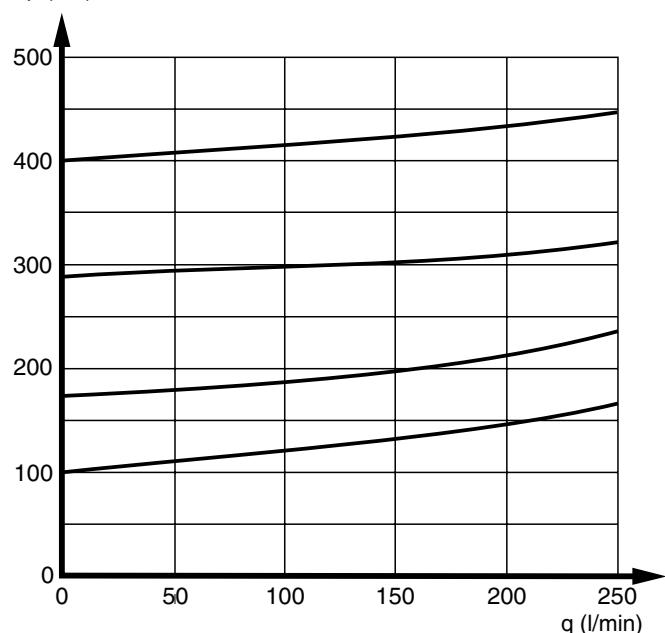
The valve is normally equipped with pilot operated Load-hold check valves for operations that demand low leakage.
 These check valves are optional if the machine is equipped with outer Load-holding valves.

N Fitted with Load-hold check valve.

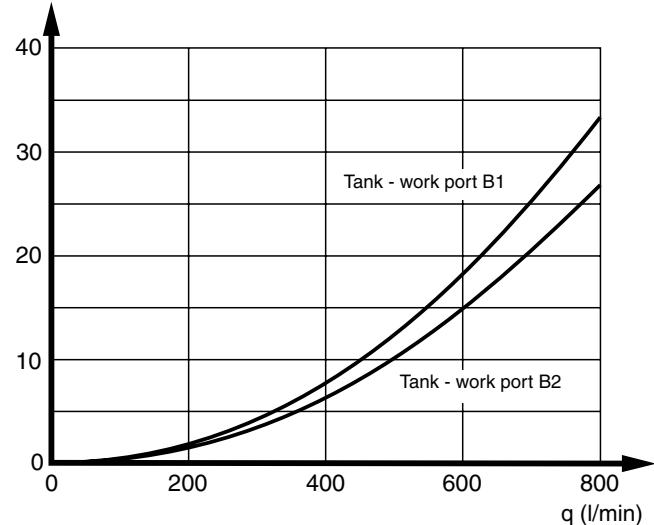
X3 Without Load-hold check valve.



Δp (bar) Port relief valve characteristics



Δp (bar) Anti-cavitation characteristics



Spool function [61, 81, 101, 121]

D Double-acting spool for, e.g. double-acting cylinder.
Blocked in the neutral position.

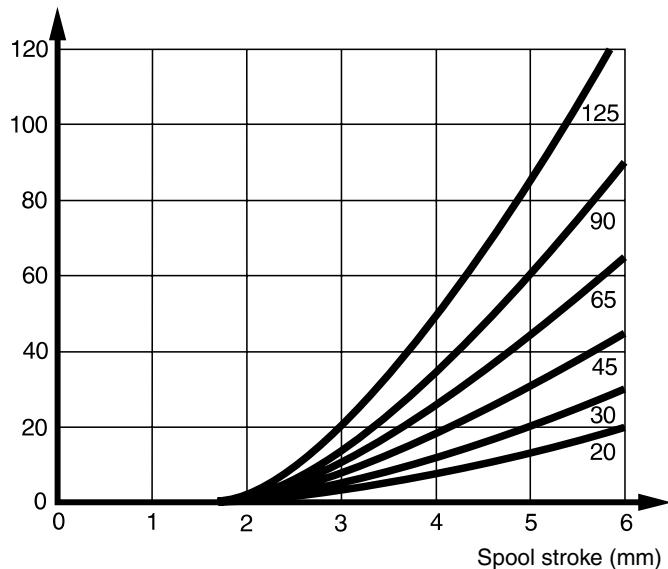


Flow requirements [63, 64, 83, 84, 103, 104, 123, 124]

Without individual pressure-compensators, flows up to 125 l/min per spool section are obtainable, depending on the adjusted differential between the load-signal pressure and the pump pressure.

The maximum flow is then set by limiting the spool stroke by means of adjustment screws on the spool actuators or, in the case of electro-hydraulic remote control, by tuning the electronics.

q (l/min) Flow rate in motor connection



Typical curves showing flow as a function of spool stroke.

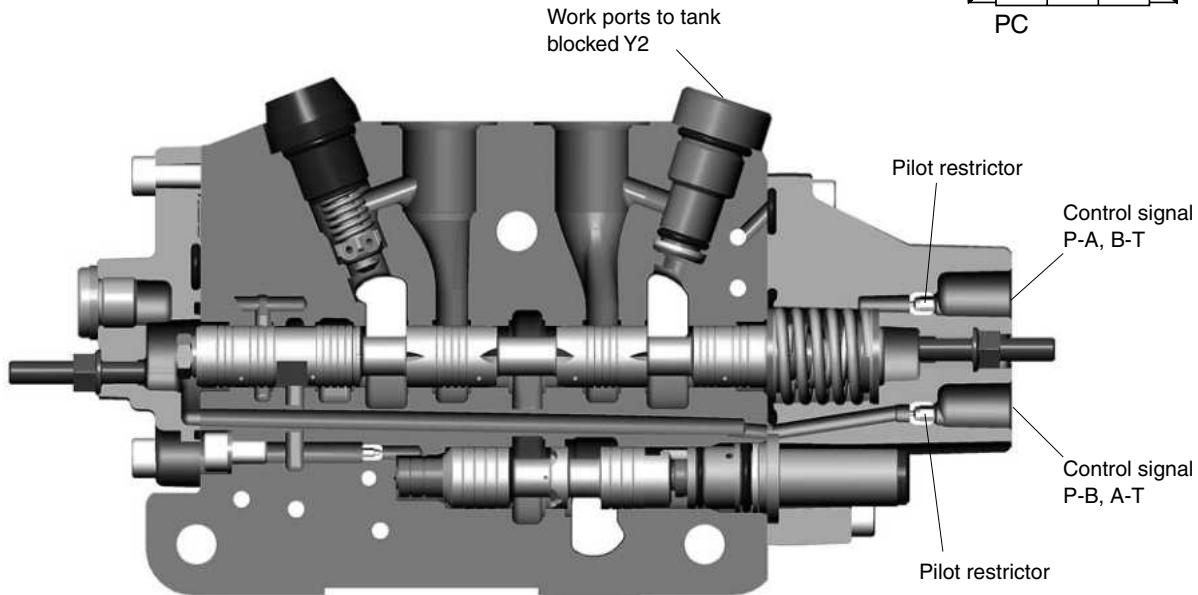
Area ratios [65, 85, 105, 125]

The area ratio for a spool section is calculated by dividing the cylinder area that is connected to the B-port by the area connected to the A-port. When the large side of the cylinder is connected to the A-port, the area ratio is less than 1. The area ratio for a motor is 1.

Load-hold check valve [66, 86, 106, 126]

N Section equipped with load-hold check valve.

PC



Proportionally remote-controlled actuators, with enclosed spool-ends and facility for manual control
[67, 87, 107, 127]

PC Hydraulic spool-actuator

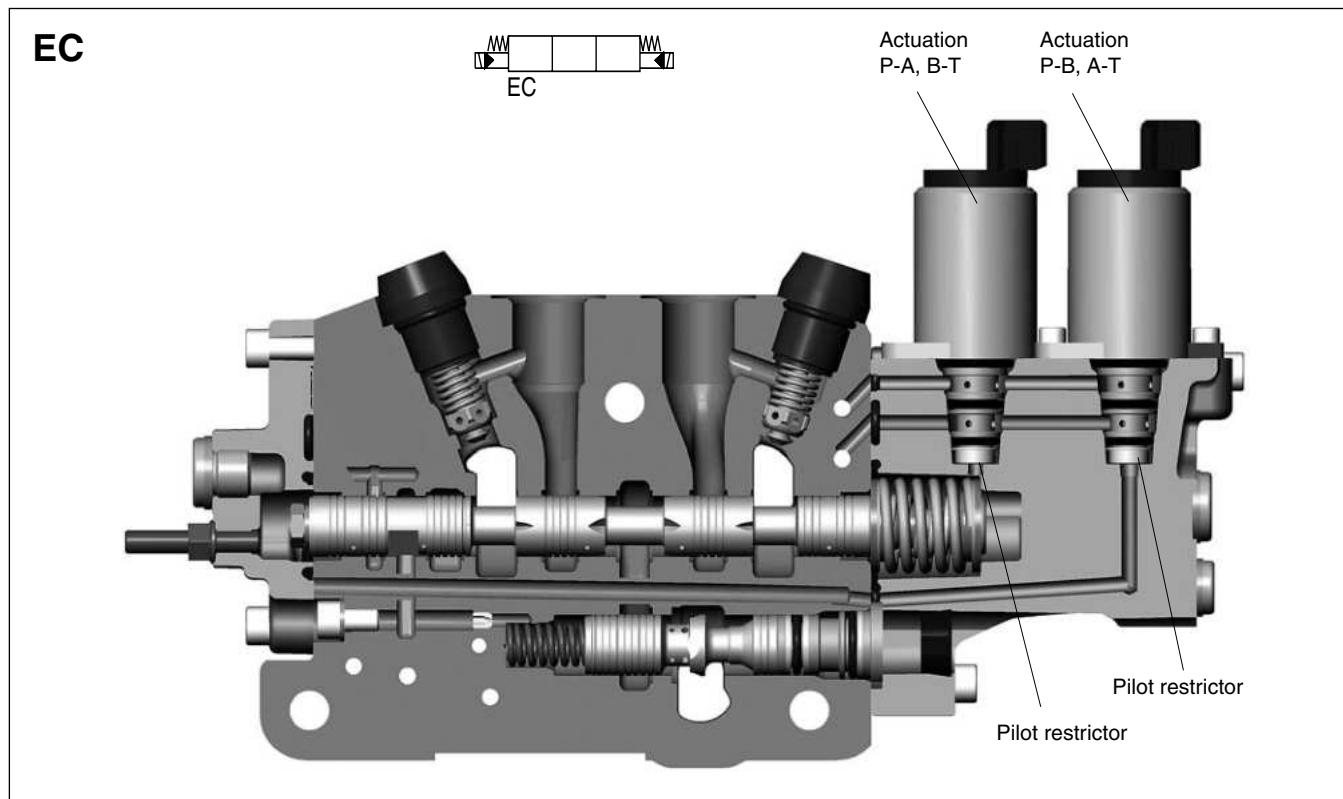
The PC and PCH are proportional, hydraulically controlled spool actuators with spring-centring to neutral. They are intended to be controlled by the **PCL4** remote-control valve. When determining a suitable control pressure for the PCL4, bear in mind that its breakaway pressure should be approx. 0,5 bar lower than that of the directional valve in order to ensure gentle starting and stopping. The pilot pressure for the PCL4 can be tapped from the internal pilot-pressure supply in the end section of the directional valve, via the PS connection.

Breakaway pressure*: 5.5 bar
Final pressure*: 15.0 bar
Permissible pressure in pilot cap: max. 35 bar
Connections: 9/16-18 UNF

*

The breakaway pressure is the pressure needed for the directional valve to open the connection "pump to work port". The final pressure is the lowest pressure needed to effect full actuation of a spool in the directional valve. This data must be taken into consideration when choosing control units, since the opening pressure of the control unit must be lower than the breakaway pressure of the spool actuator in order to avoid jerky starting and stopping. However, the control unit's final pressure must be higher than the final pressure of the directional valve in order to ensure that the spools can be fully actuated.

See also separate catalogue HY17-8357/UK for PCL4.



Proportionally remote-controlled actuators, with enclosed spool-ends

[67, 87, 107, 127]

EC Electro-hydraulic spool actuator

The EC are proportional, electro-hydraulically controlled spool actuators with spring centering to neutral. They are intended to be controlled remotely by the IQAN control systems. Pilot-pressure oil is led to the spool actuators through internal ducts in the directional valve. This means that only the cable connectors from the control system to the converter valve needs to be connected externally.

Control current for 12 V

Breakaway*	min. 550 mA
Fully actuated	max. 980 mA

Control current for 24 V

Breakaway*	min. 260 mA
Fully actuated	max. 510 mA

The control current must be regulated for temperature compensation and with ripple to minimise hysteresis. Measuring connections: 9/16-18 UNF

*

The breakaway current refers to the current needed for the directional valve to open the connection "pump to work port". The final current is the lowest current needed to effect full actuation of a spool in the directional valve. This data must be taken into consideration when choosing control units, since the opening current of the control unit must be lower than the breakaway current of the spool actuator in order to avoid jerky starting and stopping. However, the control unit's final current must be higher than the final current of the directional valve in order to ensure that the spools can be fully actuated.

Connector types [04]

A AMP Junior-Timer type C.
D Deutsch type DT06-2P.

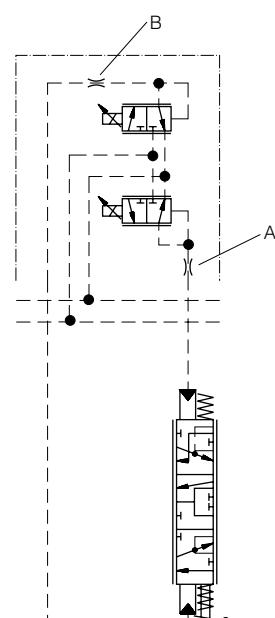
For ordering of connector, see page 19.

Pilot restrictor [68 A/B, 88 A/B, 108 A/B, 128 A/B]

To give gentle control characteristics, remote-controlled spool actuators with enclosed spool-ends are fitted with pilot restrictors, which can be chosen individually for each work port. The restrictor gives a kind of ramp function.

Restrictors from 0.8, 1.5 and 2.0 mm available.

As standard 0.8 mm is recommended.



Pilot restrictor.

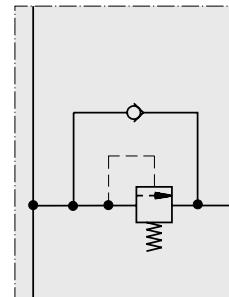
Port relief valves

[72 A/B, 92 A/B, 112 A/B, 132 A/B]

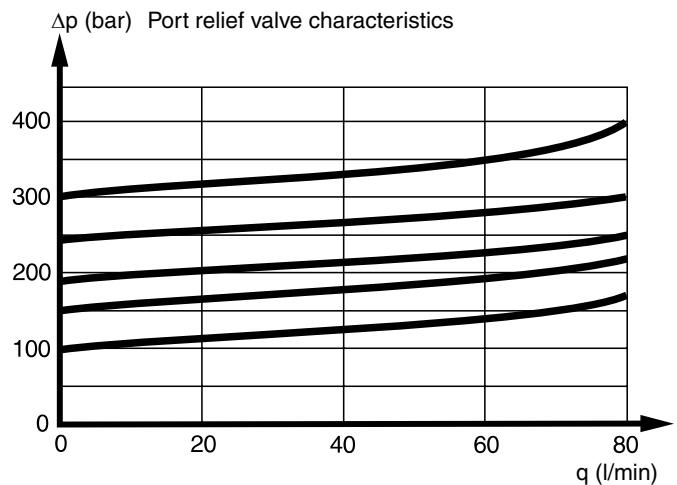
In spool sections the cartridge can be used as a combined port-relief and anti-cavitation valve in the work ports to protect the valve and consumer from high system pressure and pressure surges.

The cartridge is a direct-acting pressure relief valve with a fast response and good pressure characteristic. The interchangeable cartridge is factory set. The make-up function enables oil to flow from the tank gallery to the work-port side in the event of negative pressure in the work ports, in order to prevent cavitation.

- X2** Section machined for port relief valve. Work port open to tank.
- Y2** Section machined for port relief valve. Connection work ports to tank blocked with plug.
- N2** Work ports of section equipped with anti-cavitation valve.
- PA** Combined port-relief and anti-cavitation valve fitted. Valve is pre-set.



Circuit diagram for port relief valve.

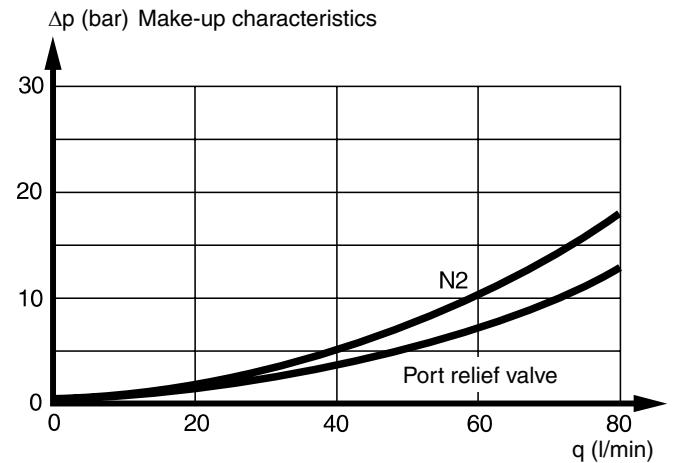


Pressure settings

[73 A/B, 93 A/B, 113 A/B, 133 A/B]

Setting range: 50 - 350 bar.

Pressure settings are made at a flow of 20 l/min through the valve.



Connectors

Connectors are not included with spool actuators, and should be ordered separately as per the lists below or ordered from your local connector supplier.

Spool actuators EC, FEC

Suitable connectors for option A in pos [04] are:

AMP Junior-Timer type C, 963040-3,

Bosch 1 928 402 404.

Assembly kits complete with pins and seals can be ordered on following kit numbers:

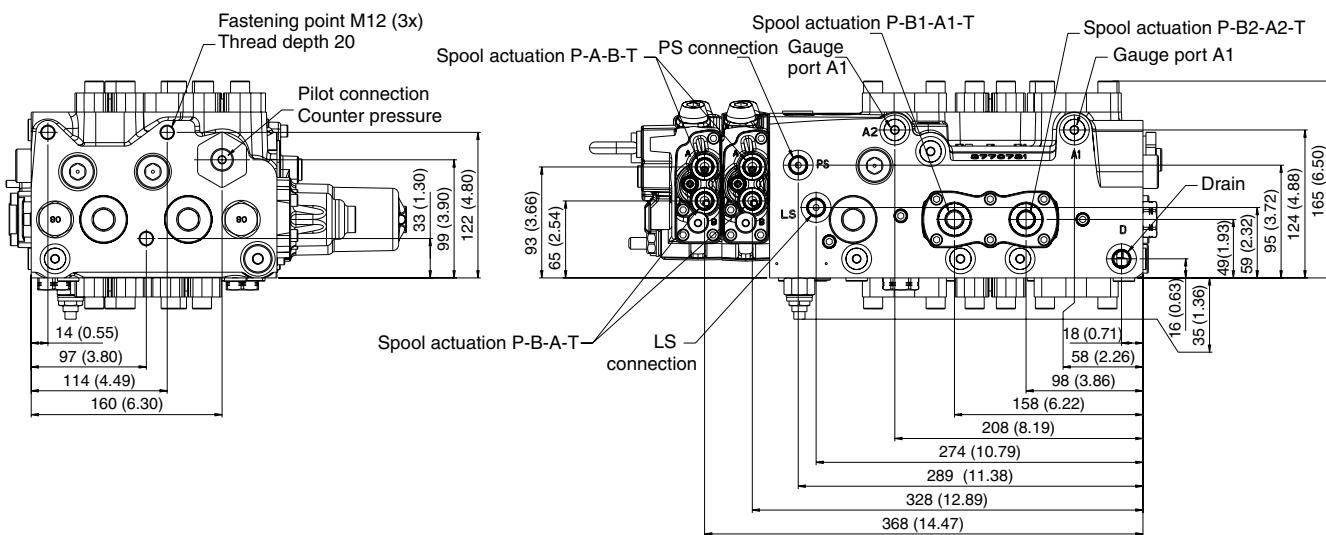
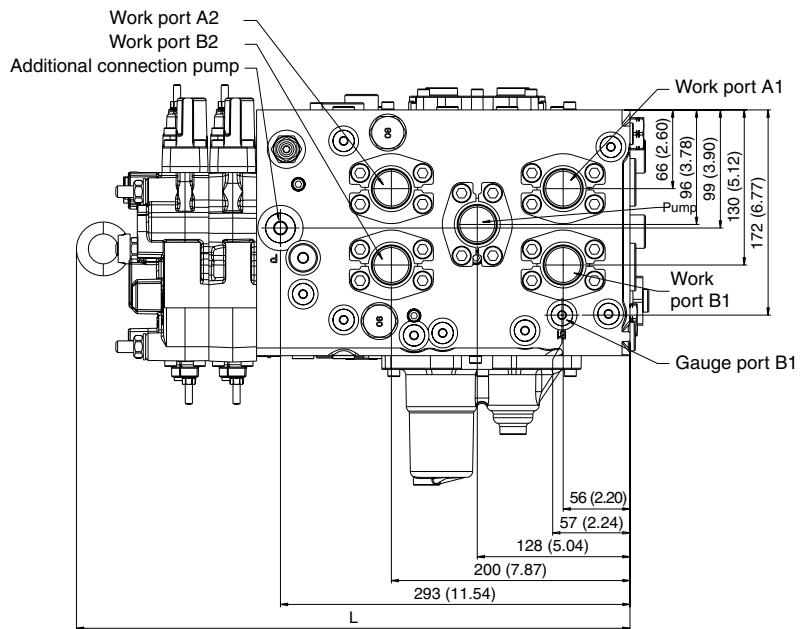
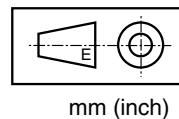
1 off	393000K822
10 off	393000K825
50 off	393000K826
100 off	393000K827

For more information, see catalogue HY17-8558/UK.

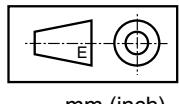
Suitable connectors for option D in pos [04] are:

Deutsch type DT06-2S.

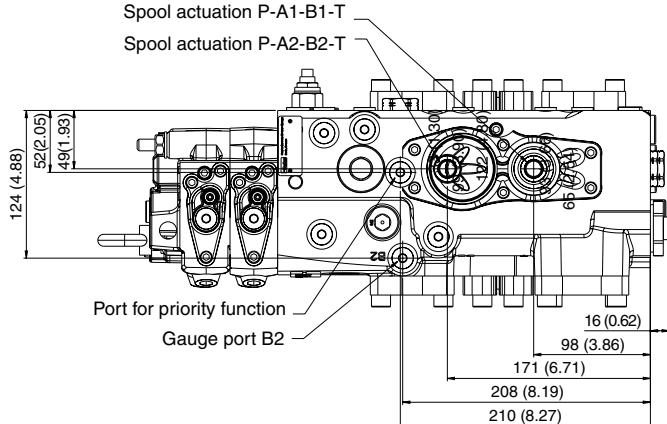
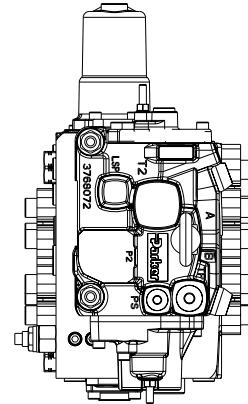
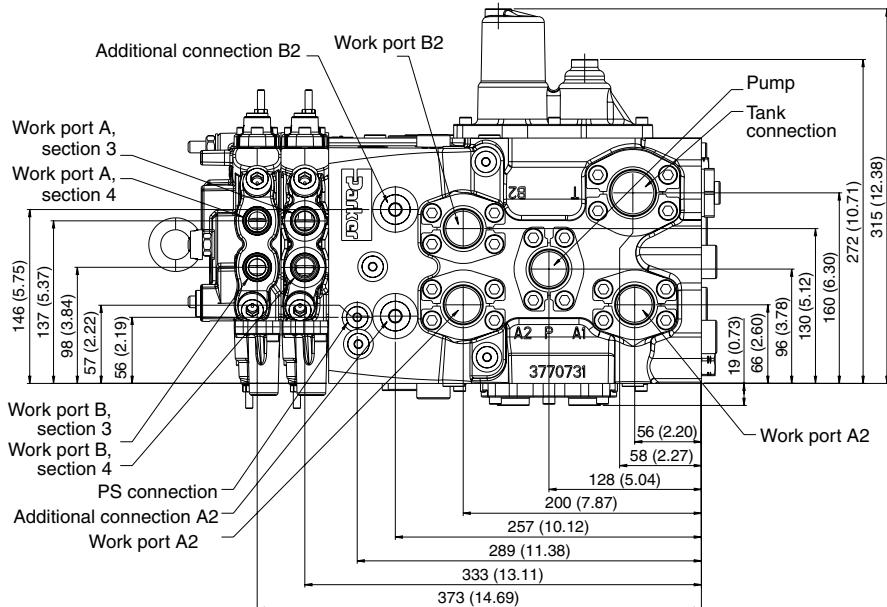
Hydraulic remote controlled (PC - PC) / (PC - FPC)



Hydraulic remote controlled (PC - PC) / (PC - FPC)

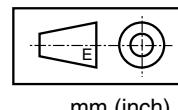


mm (inch)

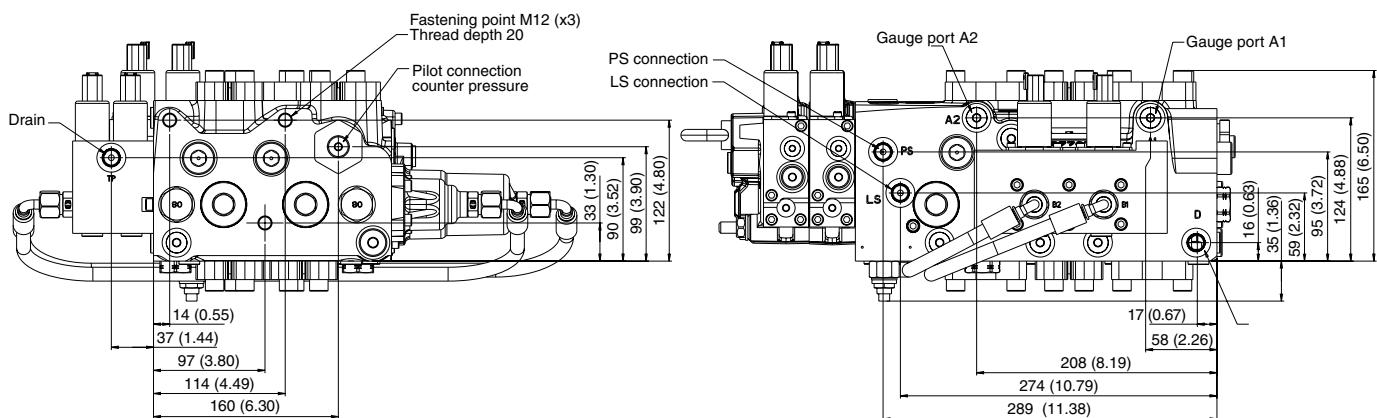
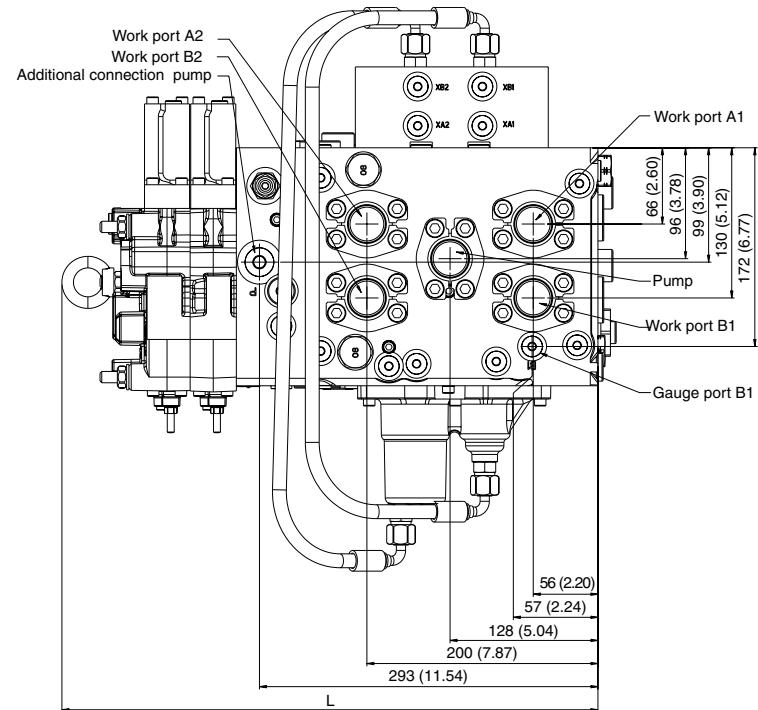


Number of sections	L mm	L inch	Weight kg
2	380	(14.96)	50
3	424	(16.69)	55
4	464	(18.27)	60
5	504	(19.84)	65
6	544	(21.42)	70

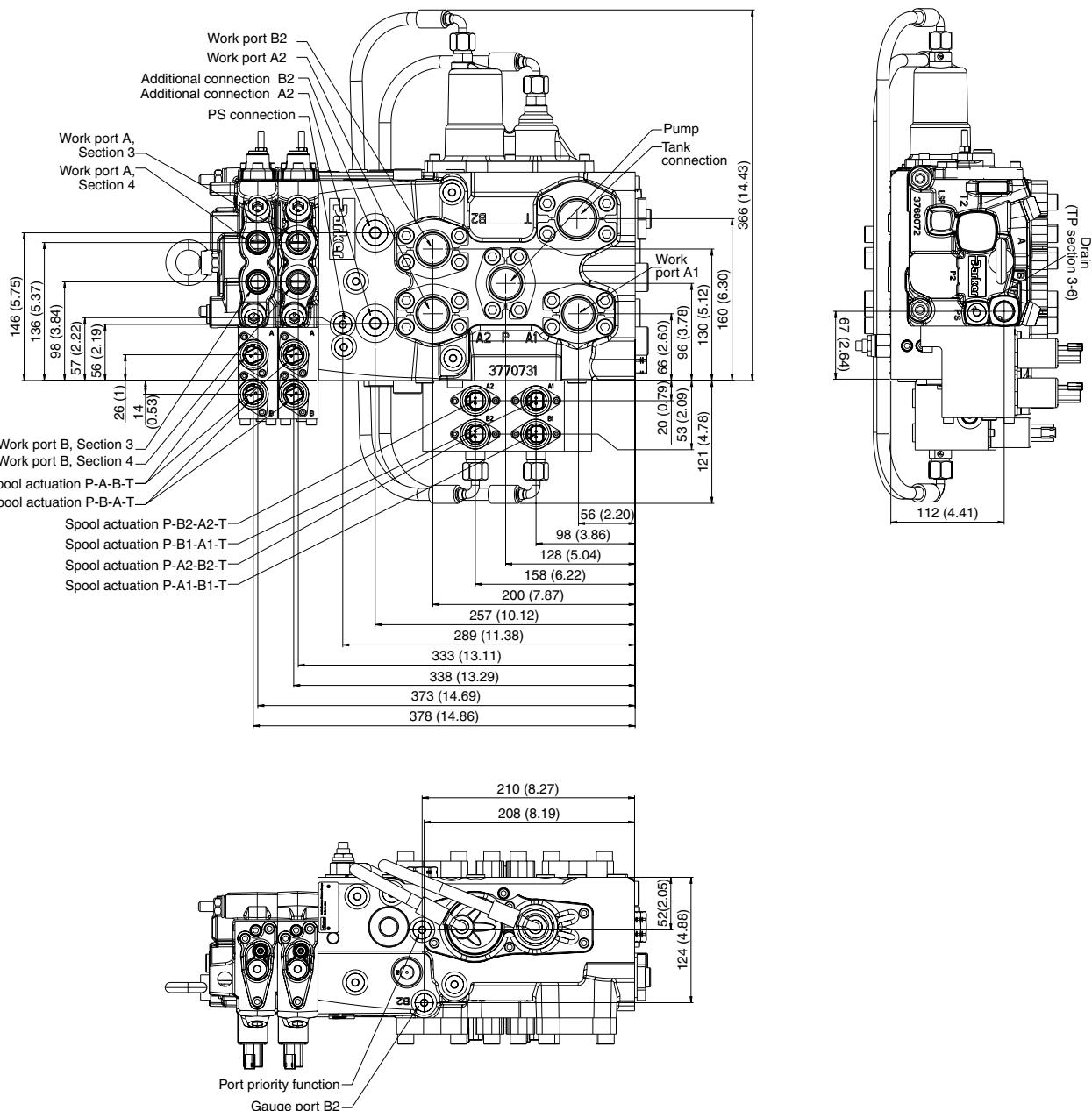
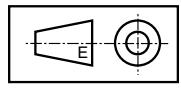
Electro-hydraulic remote controlled (EC - EC) / EC - FEC)



mm (inch)



Electro-hydraulic remote controlled (EC - EC) / EC - FEC)



Number of sections	L mm	L inch	Weight kg
2	380	(14.96)	50
3	424	(16.69)	56
4	464	(18.27)	62
5	504	(19.84)	68
6	544	(21.42)	74

Parker Worldwide

AE – UAE, Dubai
Tel: +971 4 8127100
parker.me@parker.com

AR – Argentina, Buenos Aires
Tel: +54 3327 44 4129

AT – Austria, Wiener Neustadt
Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe,
Wiener Neustadt
Tel: +43 (0)2622 23501 900
parker.easternEurope@parker.com

AU – Australia, Castle Hill
Tel: +61 (0)2-9634 7777

AZ – Azerbaijan, Baku
Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/LU – Belgium, Nivelles
Tel: +32 (0)67 280 900
parker.belgium@parker.com

BR – Brazil, Cachoeirinha RS
Tel: +55 51 3470 9144

BY – Belarus, Minsk
Tel: +375 17 209 9399
parker.belarus@parker.com

CA – Canada, Milton, Ontario
Tel: +1 905 693 3000

CH – Switzerland, Etoy
Tel: +41 (0) 21 821 02 30
parker.switzerland@parker.com

CL – Chile, Santiago
Tel: +56 2 623 1216

CN – China, Shanghai
Tel: +86 21 2899 5000

CZ – Czech Republic, Klicany
Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst
Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup
Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid
Tel: +34 902 330 001
parker.spain@parker.com

FI – Finland, Vantaa
Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve
Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Athens
Tel: +30 210 933 6450
parker.greece@parker.com

HK – Hong Kong
Tel: +852 2428 8008

HU – Hungary, Budapest
Tel: +36 1 220 4155
parker.hungary@parker.com

IE – Ireland, Dublin
Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IN – India, Mumbai
Tel: +91 22 6513 7081-85

IT – Italy, Corsico (MI)
Tel: +39 02 45 19 21
parker.italy@parker.com

JP – Japan, Fujisawa
Tel: +81 (0)4 6635 3050

KR – South Korea, Seoul
Tel: +82 2 559 0400

KZ – Kazakhstan, Almaty
Tel: +7 7272 505 800
parker.easternEurope@parker.com

LV – Latvia, Riga
Tel: +371 6 745 2601
parker.latvia@parker.com

MX – Mexico, Apodaca
Tel: +52 81 8156 6000

MY – Malaysia, Shah Alam
Tel: +60 3 7849 0800

NL – The Netherlands,
Oldenzaal
Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Ski
Tel: +47 64 91 10 00
parker.norway@parker.com

NZ – New Zealand, Mt Wellington
Tel: +64 9 574 1744

PL – Poland, Warsaw
Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal, Leca da Palmeira
Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest
Tel: +40 21 252 1382
parker罗马尼亞@parker.com

RU – Russia, Moscow
Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Spånga
Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SG – Singapore
Tel: +65 6887 6300

SK – Slovakia, Banská Bystrica
Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto
Tel: +386 7 337 6650
parker.slovenia@parker.com

TH – Thailand, Bangkok
Tel: +662 717 8140

TR – Turkey, Istanbul
Tel: +90 216 4997081
parker.turkey@parker.com

TW – Taiwan, Taipei
Tel: +886 2 2298 8987

UA – Ukraine, Kiev
Tel: +380 44 494 2731
parker.ukraine@parker.com

UK – United Kingdom,
Warwick
Tel: +44 (0)1926 317 878
parker.uk@parker.com

US – USA, Cleveland
(industrial)
Tel: +1 216 896 3000

US – USA, Lincolnshire
(mobile)
Tel: +1 847 821 1500

VE – Venezuela, Caracas
Tel: +58 212 238 5422

ZA – South Africa,
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parker.southafrica@parker.com



European Product Information Centre

Free phone: 00 800 27 27 5374
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