Remote Control
VP04
Pneumatic Proportional Remote Control Valve

Catalogue HY17-8356/UK
June, 2005
Catalogue Information

Remote Control – Pneumatic
VP04

Catalogue layout

This catalogue has been designed to give a brief overview of the VP04, and to make it easy for you to study and choose from the different options available, so that we may customize your remote-control valve in accordance with your wishes. In addition to general information and basic technical data, the brochure therefore contains descriptions of the options available for the valve.

How to order your valve

The next step is to complete our so-called Customer Specification Form to specify the options and characteristics you wish to be incorporated into your remote-control valve. When all the control-pressure ports are equal you can specify the valve with the order code at page 5. To specify your valve, simply choose the options you require and enter the corresponding code into the appropriate box in the Customer Specification Form.

Should you require assistance completing the Customer Specification Form or the order code, please do not hesitate to contact your nearest Parker Hannifin representative, who will either help personally or refer you to the appropriate product specialist.

The information in your Customer Specification Form is then entered into our computerized valve specification program, which initiates the assembly process and generates a unique product ID number that is subsequently stamped into the data plate on your valve, or if you have completed an order code this will be stamped into the plate. Your valve specifications remain on our database to facilitate subsequent re-ordering or servicing of your valve.

Early consultation with Parker Hannifin saves time and money

Our experienced engineers have in-depth knowledge of the different types of hydraulic system and the ways in which they work. They are at your disposal to offer qualified advice on the best system for the desired combination of functions, control characteristics and economic demands. By consulting Parker early in the project planning stage, you are assured of a comprehensive hydraulic system that gives your machine the best possible operating and control characteristics.

Conversion factors

<table>
<thead>
<tr>
<th>Unit</th>
<th>Conversion Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kg</td>
<td>2.2046 lb</td>
</tr>
<tr>
<td>1 N</td>
<td>0.22481 lbf</td>
</tr>
<tr>
<td>1 bar</td>
<td>14.504 psi</td>
</tr>
<tr>
<td>1 l</td>
<td>0.21997 UK gallon</td>
</tr>
<tr>
<td>1 l</td>
<td>0.26417 US gallon</td>
</tr>
<tr>
<td>1 cm³</td>
<td>0.061024 in³</td>
</tr>
<tr>
<td>1 m</td>
<td>3.2808 feet</td>
</tr>
<tr>
<td>1 mm</td>
<td>0.03937 in</td>
</tr>
<tr>
<td>9/5 °C</td>
<td>32 °F</td>
</tr>
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The VP04 is a stackable, pneumatic control-pressure valve intended for the proportional, pneumatic remote control of directional valves, positioning cylinders etc. It can be supplied with a coordinate lever (joystick) or different linear levers.

**Freedom in machine design**
Good machine design is heavily dependent on the availability of flexible components and systems that can be combined in different ways to give optimum operating and control characteristics. Parker Hannifin control systems give you the freedom to design your machines the way you want them, since they themselves are designed to enable components such as directional valves and other control devices to be located ideally on the machine. This gives advantages in production too, since it greatly facilitates the building of machine subassemblies at different sites prior to collation for final assembly.

Moreover, the wide range of Parker Hannifin pneumatic, hydraulic and electric control devices enables optimum design of the machine-control station in terms of ergonomics. (Please see separate brochures for information about our hydraulic and electric remote-control systems.)

**Safety**
In spite of the sophistication of the final functions it may serve, the VP04 remote control valve is of robust and simple construction. This greatly facilitates training and servicing which, together with predictable control characteristics and great dependability, does much to improve the operational safety of the machine.

**Design**
The valve is made up of sections, each of which contains two 3-way pressure reducing valves (one per signal port). Up to 8 sections can be stacked together to give a total of 16 signal ports. The valve can be equipped with either one linear lever per section, or with a coordinate lever (joystick) when two sections are stacked to give four signal ports.

**Essential characteristics**
- Low, well adapted operating forces and short lever strokes give good operator comfort.
- Small dimensions enable simple, compact installation.
- Push-in couplings enable fast, simple connection.
- Low hysteresis ensures consistent pressure output value for a given lever stroke.
- Simple design makes the valve easy to service.
- Quality materials and great precision in manufacturing, assembly and testing assure you of a quality product with low internal leakage and long service life.
- Wide range of control devices and accessories gives great flexibility in system design.
- Total compatibility with Parker Hannifin directional valves gives predictable and harmonious system characteristics.
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Order code

VP04

See page 7 for further description of different options.

How to order your valve

To specify your valve, simply choose the options you require and enter the corresponding code into the appropriate box in the Customer Specification Form. When all the control-pressure ports are equal you can specify the valve with the order code above.

Should you require assistance completing the Customer Specification Form or the order code, please do not hesitate to contact your nearest Parker Hannifin representative, who will either help personally or refer you to the appropriate product specialist.
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Pressure
Supply pressure max. 10 bar (145 psi)
(at least 2 bar higher than max. control pressure)
Control pressure max. 8 bar (116 psi)

Volume rate of flow
Control flow at $\Delta p = 6$ bar (87 psi) 7 Nl/s (14.8 cfm free flow)

Hysteresis
Hysteresis max. 1 bar (14.5 psi)

Temperature
Min. ambient temperature -30 °C (86 °F)
(assuming dry air or use of agent to reduce freezing-point).
Max. ambient temperature +70 °C (158 °F)

Air quality
The air quality determines the service life of the valve.
See ISO 8573.

Filter
Filtration max. 20 µm or better

Lever forces
Normal force for linear lever fully actuated 3.1 Nm (2.29 lbf·ft)
Normal force for coordinate lever one function fully actuated 3.9 Nm (2.88 lbf·ft)
two functions fully actuated 5.5 Nm (4.06 lbf·ft)

Warning
If the filtration demands are not met, the valve poppet can jam in the open position, with the result that the valve remains actuated. It is not possible to force back a jammed poppet mechanically.
Electrical data
Concerns switch in E-type levers.
Data given below is what is needed to obtain maximum service life. The values can be exceeded with retained function, but will result in a reduction in service life. In the event of inductive loading, a protective diode must be fitted.

Breaking capacity
- DC, resistive loading: 2A/24V
- DC or AC, inductive loading: 1A/24V

Connections
All connections are equipped with push-in connectors and are available for different pipe dimensions.
- Signal ports are available with connections for $\varnothing 6$ mm or $\varnothing 1/4"$ pipe. Supply and return ports are available with connections for $\varnothing 6$ mm, $\varnothing 8$ mm, $\varnothing 1/4"$ or $\varnothing 5/16"$ pipe.

Weight
The weight of the unit varies somewhat, depending on configuration.
- Linear lever: approx. 0.8 kg/section (1.76 lb)
- Coordinate lever: approx. 1.7 kg (3.75 lb)

Control-pressure characteristic

Diagram showing control-pressure characteristic of the VP04-valve. Valid for 8 - 10 bar supply pressure. If lower the curve will level out at obtained supply pressure.

Circuit

Circuit diagram showing two-section VP04 with two linear levers controlling one hydraulic directional valve with two spool sections.

Circuit diagram showing two-section VP04 with one coordinate lever (joystick) controlling one hydraulic directional valve with two spool sections.
Every valve is customized. The following options are used to configure a valve.

Control-pressure ports

2-16 Each valve section contains two control-pressure ports. Two valve sections are needed for coordinate levers (joysticks), since they require 4 control-pressure ports.

Connection options

M For ∅ 8 mm pipe in supply and return ports, and ∅ 6 mm pipe in the control-pressure ports.
S For ∅ 6 mm pipe in all ports.
P For ∅ 1/4" pipe in all ports.
T For ∅ 5/16" pipe in supply and return ports, and ∅ 1/4" pipe in the control-pressure ports.
R For ∅ 5/32" pipe in all ports.

Lever options

Lever units are available in several different versions. For coordinate movements (4 control-pressure ports), the H1, E1, E2, E3 and E4 units can be used.

For linear movements (2 control-pressure ports), the H2, H3, E1, E2, E3 and E4 units can be used. Owing to the width of the lever unit, only E-levers can be used for valves containing two control-pressure ports, unless a special spacer block is fitted between the sections. E-levers contain a switch that can be used for different external functions.

H1 Coordinate lever (joystick) with ball.
H2 Straight linear lever with ball.
H3 Bent linear lever with ball.
E1 Linear or coordinate lever (joystick) with 2-position push-button switch.
E2 Linear or coordinate lever (joystick) with 3-position, spring-centred toggle switch.
E3 Linear or coordinate lever (joystick) with 3-position toggle switch with detent at one end position.
E4 Linear or coordinate lever (joystick) with 3-position toggle switch with detents at both end positions.

Lever detent options

MD2 Detent for linear levers that locks the lever in the fully actuated position. The lever is moved out of the detented position by pulling it to release the detent.
A09 Detent for H2 lever that locks the lever in the neutral position. To move the lever out of neutral, the detent must be disengaged by lifting with the fingers.
A10 Same as A09, but locks the lever in the neutral position and in one fully actuated position (port 2).
A11 Same as A09, but locks the lever in the neutral position and in one fully actuated position (port 1).

Control-pressure options

The control-pressure curve is proportional to the lever stroke. For maximum signal pressure to be obtained, the supply pressure must be at least 2 bar higher than the maximum control pressure.

Max. actuation gives a 8 bar control-pressure signal.
Max. actuation gives a 7 bar control-pressure signal.
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Dimensional drawings

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Control-pressure ports

Mounting holes

H1

Return connection

Supply connection

E1

E2, E3, E4

a) Applies to max. actuation of two functions.
b) Applies to max. actuation of one functions.
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