Remote Control
VP04
Pneumatic Proportional Remote Control Valve

Catalogue HY17-8356/UK
October, 2006
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.

Each function area is given as a subheading, e.g. Connections, followed by a brief description. This is followed by a series of coded options, e.g. M, S, P, T, R, together with a brief description of what each code represents.

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

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<tr>
<th>Unit</th>
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<td>1 bar</td>
<td>14.504 psi</td>
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<tr>
<td>1 l</td>
<td>0.21997 UK gallon</td>
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<tr>
<td>1 l</td>
<td>0.26417 US gallon</td>
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<td>1 m</td>
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<tr>
<td>9/5 °C</td>
<td>32 °F</td>
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</table>
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The VPO4 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 VPO4 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.
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.

See page 7 for further description of different options.
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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

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 \(\varnothing6\) mm or \(\varnothing1/4''\) pipe. Supply and return ports are available with connections for \(\varnothing6\) mm, \(\varnothing8\) mm, \(\varnothing1/4''\) or \(\varnothing5/16''\) 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**

[Graph showing 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**

[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 two linear levers controlling one hydraulic directional valve with two spool sections.

[Diagram showing two-section VP04 with one coordinate lever (joystick) 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 Ø8 mm pipe in supply and return ports, and Ø6 mm pipe in the control-pressure ports.

S For Ø6 mm pipe in all ports.

P For Ø1/4" pipe in all ports.

T For Ø5/16" pipe in supply and return ports, and Ø1/4" pipe in the control-pressure 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.

- **8** Max. actuation gives a 8 bar control-pressure signal.
- **A24** Max. actuation gives a 7 bar control-pressure signal.
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Dimensional drawings

Control-pressure ports

Mounting holes

a) Applies to max. actuation of two function.
b) Applies to max. actuation of one function.
WARNING

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

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The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

Offer of Sale

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## Europe

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<th>Country</th>
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<tr>
<td>Austria</td>
<td>Wiener Neustadt</td>
<td>+32 (0)67 280 900</td>
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<td>Belgium</td>
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<td>Denmark</td>
<td>Ballerup</td>
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<td>+45 4373 3107</td>
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<td>Finland</td>
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<td>France</td>
<td>Contamine-sur-Arve</td>
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<td>Germany</td>
<td>Kaarst</td>
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<td>+49 (0)2131 4016 9199</td>
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<tr>
<td>Ireland</td>
<td>Dublin</td>
<td>+353 (0)1 293 9999</td>
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## Italy

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<td>+39 02 4 47 93 40</td>
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## The Netherlands

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## Norway

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## Poland

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## Portugal

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<td>+351 22 9961 527</td>
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## Slovakia

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## Spain

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## International

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Hydraulic Remote Controllers
Build Program

Joysticks  PCL401
Stackables PCL402
Foot Pedals  PCL402

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Material Handling

Construction

WARNING – USER RESPONSIBILITY

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SAFETY GUIDE

For safety information, see Safety Guide SG HY14-1000 at www.parker.com/safety or call 1-800-CParker.

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Parker PCL Build Program

The PCL Build Program is designed to help a stocking distributor increase the value and services offered to their customers. This is accomplished by having the in-house capability of being responsive to your customer’s needs. A wide variety of kits facilitate the conversion and customization of these controllers with a minimum amount of inventory.

Joysticks and stackable controllers have custom spring packs that are matched to our control valves and optimize controllability and machine performance.

The type of curve selected for the controllers in the program is referred to as “straight-line metering”. This means that the “start pressure” and “final pressure” of the controller is linear. Here is a sample of this type of curve.

The basic kits for the program are:
- Joysticks and stackables with no handle.
- Handle kits.
- Detent kits.
- Footpedal conversion kits.
- Stud kits.
- Spring pack kits.
- Service kits.

Reference information:

Joysticks
- All ports are SAE 6.
- All ports (P,T,1,2,3,4) are located on the bottom of the housing.
- Mounting plate is code M1.
- Boots are included in the handle kits.

Stackables
- All ports are SAE 6.
- Pump and tank ports are located on the side of the housing. Ports A&B are located on the bottom of the housing.
- Mounting plate is code M3.
- Boots are included in the handle kits.

Here is a list of documentation available to support this product:
- PCL4 Catalog HY17-8357/UK
- Catalog CD HY14-1800/US – includes the bulletin, the catalog, spare parts list, service and assembly documentation, PowerPoint sales presentation, and DXF engineering drawings.
### PCL401 Joystick and PCL402 Stackable Controllers

#### PCL401 Joystick and PCL402 Stackable Controllers

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#### PCL401 Joystick Handle Kits

- Includes standard round boot & loose lead wires for electric switch handles

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCL401-H1B, Straight ball handle</td>
<td>9120059052</td>
</tr>
<tr>
<td>PCL401-H1W, Straight handle with knob and removable plastic window</td>
<td>9120089358</td>
</tr>
<tr>
<td>PCL401-E0, Electric switch handle with no switches</td>
<td>9120089507</td>
</tr>
<tr>
<td>PCL401-E1, Electric (on/off) switch handle with 2 position thumb switch</td>
<td>9120059053</td>
</tr>
<tr>
<td>PCL401-E2, Electric (on/off) switch handle with 3 position toggle switch</td>
<td>9120059054</td>
</tr>
<tr>
<td>PCL401-N0, Electric ergonomic straight handle with no switches</td>
<td>9120089606</td>
</tr>
<tr>
<td>PCL401-N2T, Electric (on/off) ergonomic straight handle with 2 thumb switches &amp; 1 finger switch</td>
<td>9120089667</td>
</tr>
<tr>
<td>PCL401-N4T, Electric (on/off) ergonomic straight handle with 4 thumb switches &amp; 1 finger switch</td>
<td>9120089613</td>
</tr>
</tbody>
</table>

#### PCL401 Handle Conversion Kits

<table>
<thead>
<tr>
<th>From/To</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tilt lt/rt stem, PCL401-TLSTEM</td>
<td>PCL401-TLSTEM</td>
</tr>
<tr>
<td>Straight, PCL401-STSTEM</td>
<td>PCL401-STSTEM</td>
</tr>
</tbody>
</table>

#### PCL402 Handle Kits

- Includes standard boot and loose leads for electric switch handles

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCL402-H3-B, Straight ball handle</td>
<td>9120089362</td>
</tr>
<tr>
<td>PCL402-H4-B, Bent handle with ball knob - .59&quot; offset</td>
<td>9120089363</td>
</tr>
<tr>
<td>PCL402-H5B, Bent handle with ball knob - 1.18&quot; offset</td>
<td>9120089364</td>
</tr>
<tr>
<td>PCL402-H6B, Bent handle with ball handle - 1.77&quot; offset</td>
<td>9120089365</td>
</tr>
<tr>
<td>PCL402-H3-W, Straight handle with knob and removable plastic window</td>
<td>9120089367</td>
</tr>
<tr>
<td>PCL402-H4-W, Bent handle with knob and removable plastic window - .59&quot; offset</td>
<td>9120089368</td>
</tr>
<tr>
<td>PCL402-H5-W, Bent handle with knob and removable plastic window - 1.18&quot; offset</td>
<td>9120089369</td>
</tr>
<tr>
<td>PCL402-H6-W, Bent handle with knob and removable plastic window - 1.77&quot; offset</td>
<td>9120089370</td>
</tr>
<tr>
<td>PCL402-E0, Electric switch handle with no switches</td>
<td>9120089538</td>
</tr>
<tr>
<td>PCL402-E1, Electric (on/off) switch handle with 2 position thumb switch</td>
<td>9120089372</td>
</tr>
<tr>
<td>PCL402-E2, Electric (on/off) switch handle with 3 position thumb switch</td>
<td>9120089373</td>
</tr>
</tbody>
</table>
# PCL402 Stackable Controllers

## PCL402 Detent Kits (use PCL402 handle kits)

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCL402-MD2, Mechanical detent for ports A&amp;B</td>
<td>9120089614</td>
</tr>
<tr>
<td>PCL402-S2, Friction detent. (Note: 35mm spacer req’d if another section stacked adjacently)</td>
<td>9120089352</td>
</tr>
<tr>
<td>PCL402-S2-H, Lever bracket kit for code H type handle</td>
<td>9120089377</td>
</tr>
<tr>
<td>PCL402-S2-E, Lever bracket kit for code E type handle</td>
<td>9120089378</td>
</tr>
</tbody>
</table>

## PCL402 Marine Handle Parts

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCL402-M3-SS, Mounting plate - Code M3 out of stainless steel</td>
<td>9120089712</td>
</tr>
<tr>
<td>PCL402-B-SS, Hand Lever - Code B out of stainless steel</td>
<td>9120089713</td>
</tr>
</tbody>
</table>

## Spacer Block

35mm wide. Same as PCL402 section width. Does not include section seals. 91262411

## Footpedal Kits - converts a standard PCL402

**Code F. Steel stamped footpedal with required hardware. Includes M5 mounting plate.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>- PCL402-F-PK, Pedal Kit</td>
<td>9120089309</td>
</tr>
<tr>
<td>- PCL402-F-MBK, Mounting/Bearing Plate Assembly</td>
<td>9120089310</td>
</tr>
<tr>
<td>- PCL402-C6-PPS, C6 spring push pin set</td>
<td>9120089398</td>
</tr>
</tbody>
</table>

**Code A36. Cast aluminum footpedal with required hardware. Includes M5 mounting plate.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>- PCL402-A36-PK, Pedal Kit</td>
<td>9120089659</td>
</tr>
<tr>
<td>- PCL402-A36-MBK, Mounting/Bearing Plate Assembly</td>
<td>9120089660</td>
</tr>
<tr>
<td>- PCL402-C6-PPS, C6 spring push pin set</td>
<td>9120089398</td>
</tr>
</tbody>
</table>

## Stud Kits (includes seals)

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCL402-2-SK, 2 sections</td>
<td>9120089359</td>
</tr>
<tr>
<td>PCL402-3-SK, 3 sections</td>
<td>9120089303</td>
</tr>
<tr>
<td>PCL402-4-SK, 4 sections</td>
<td>9120089304</td>
</tr>
<tr>
<td>PCL402-5-SK, 5 sections</td>
<td>9120089305</td>
</tr>
<tr>
<td>PCL402-6-SK, 6 sections</td>
<td>9120089306</td>
</tr>
</tbody>
</table>

## Spring Packs

<table>
<thead>
<tr>
<th>Description</th>
<th>Start</th>
<th>Final</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP-100-330-SL, VA/VG20, VA/VG35 &amp; VO40</td>
<td>100</td>
<td>330</td>
<td>9126181824</td>
</tr>
<tr>
<td>SP-100-410-SL, PC25, PC55</td>
<td>100</td>
<td>410</td>
<td>9126181825</td>
</tr>
<tr>
<td>SP-75-260-SL, F130CF, L90, P70</td>
<td>75</td>
<td>260</td>
<td>9126181826</td>
</tr>
<tr>
<td>SP-90-400-SL, F130CP</td>
<td>75</td>
<td>400</td>
<td>9126181827</td>
</tr>
<tr>
<td>SP-80-310-SL, K170, K220</td>
<td>80</td>
<td>310</td>
<td>9126181828</td>
</tr>
</tbody>
</table>

**Matches curve for former CI & Gresen controllers**

<table>
<thead>
<tr>
<th>Description</th>
<th>Start</th>
<th>Final</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCL402-2-SK, 2 sections</td>
<td>50</td>
<td>220</td>
<td>9126181830-FO</td>
</tr>
<tr>
<td>PCL402-3-SK, 3 sections</td>
<td>100</td>
<td>300</td>
<td>9126181815-FO</td>
</tr>
</tbody>
</table>

## Service Kits

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Push pin seal kit (1 kit needed for each push pin)</td>
<td>9120089332</td>
</tr>
<tr>
<td>- PCL402 section seal (2 needed per section)</td>
<td>06636127</td>
</tr>
<tr>
<td>- PCL402 plug kit (needed to plug side P&amp;T UNF ports)</td>
<td>9120089329</td>
</tr>
<tr>
<td>- PCL402 pin/bushing kit for A36 footpedal</td>
<td>9120089661</td>
</tr>
<tr>
<td>- Cable 3/0.34/650 MM, for code E handles, no connector</td>
<td>9120089681</td>
</tr>
<tr>
<td>- Cable assembly N2T, no connector</td>
<td>9120089683</td>
</tr>
<tr>
<td>- Cable assembly N2, no connector</td>
<td>9120089684</td>
</tr>
<tr>
<td>- Cable assembly N4, no connector</td>
<td>9120089685</td>
</tr>
<tr>
<td>- Cable assembly N4T, no connector</td>
<td>9120089686</td>
</tr>
<tr>
<td>- Cable assembly N4T, Deutch/640 MM</td>
<td>9120089687</td>
</tr>
<tr>
<td>- Cable assembly N4T, Deutch/900 MM</td>
<td>9120089688</td>
</tr>
<tr>
<td>- Shim Kit (4000 total pieces)</td>
<td>20016558</td>
</tr>
</tbody>
</table>
Hydraulic Remote Controllers
Build Program

PCL401 Drawings

Bulletin HY14-1800/US

PCL401-M1
PCL401-H1B
PCL401-H1W
PCL401-E0
PCL401-E1
PCL401-E2
PCL401-N0
PCL401-N2T
PCL401-N4T
PCL401-TLSTEM
Hydraulic Remote Controllers
Build Program

PCL402 Drawings

Bulletin HY14-1800/US

PCL402-M3

PCL402-H3B-H6B

PCL402-E0

PCL402-E1

PCL402-E2

PCL402-MD2

PCL402-S2

PCL402-F

PCL402-A36

Backhoe Loader

Wheel Loader

Fork Lift

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