PLC series
Auxiliary Valves
Direct-acting Pressure Relief Valves

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding
# Pressure relief valves

## PLC series

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<td>11</td>
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Subject to alteration without prior notice. The curves and diagrams in this catalogue are typical examples only. While the contents of the catalogue are updated continuously, the validity of the information given should always be confirmed. For more detailed information, please contact Parker Hannifin.

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**Offer of Sale**

Please contact your Parker representation for a detailed "Offer of Sale".
The PLC series auxiliary valves are direct-acting, factory-set pressure relief valves of the cartridge type that can be supplied with or without a threaded plug. They can also be supplied with housings to facilitate in-line installation.

PLC valves are intended primarily to act as combined pressure-relief and anti-cavitation valves - otherwise known as port relief valves - in the service ports of our directional valves. However, they can also be used to advantage in other situations where pressure relief valves in this size range are required. Indeed, PLC cartridge valves are purchased in great quantities by several of the world’s leading pump and transmission manufacturers.

Construction and function
PLC pressure relief valves are made of high-strength steel and consist of a seat, poppet, spring and nut. After the pressure setting has been made, the damper nut is locked against the poppet by welding, in order to prevent the factory-set opening value from changing. When the cartridge is supplied with a plug, a spring is included to enable the cartridge to function as an anti-cavitation valve. An anti-cavitation valve is essentially a check valve that enables oil to be sucked from the tank line in order to prevent cavitation in a consumer. The plug is fitted with an O-ring of nitrile rubber.

Poppets without a pressure relief function are also available. They are used when only a ‘check valve’ is required to perform an anti-cavitation function.

Technical data
Flow capacity
The flow capacities of the respective PLC valves are dependent on the extent of pressure increment that can be accepted, and are illustrated in the typical graphs that begin overleaf. The nominal flow capacities, however, are as follows:

<table>
<thead>
<tr>
<th>Valve</th>
<th>Flow Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC053</td>
<td>50 l/min</td>
</tr>
<tr>
<td>PLC082</td>
<td>80 l/min</td>
</tr>
<tr>
<td>PLC182</td>
<td>180 l/min</td>
</tr>
<tr>
<td>PLC280</td>
<td>280 l/min</td>
</tr>
</tbody>
</table>

Pressure-setting flow
As standard, the desired pressure is set with a flow of 20 l/min passing through the pressure relief valve. The exception is the PLC053, for which the pressure setting is made with a flow of 10 l/min passing through the valve.

Weights

<table>
<thead>
<tr>
<th>Valve</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC053</td>
<td>0.06 kg</td>
</tr>
<tr>
<td>PLC082</td>
<td>0.11 kg</td>
</tr>
<tr>
<td>PLC182</td>
<td>0.165 kg</td>
</tr>
<tr>
<td>PLC280</td>
<td>0.39 kg</td>
</tr>
</tbody>
</table>

The PLC valves are all supplied with a threaded plug.

Housing for two PLC082 cartridges (inclusive of cartridges) 2.8 kg

Filtration
Filtration should be arranged so that Target Contamination Class 20/18/14 according to ISO 4406 is not exceeded.

Temperature
Temperature range, fluid: -20 °C to +90 °C
Temperature range, ambient: -40 °C to +60 °C
Temperature shock resistance: max. 100 °C/second

General
The data given in this catalogue is applicable at an oil temperature of 50 °C and viscosity of 30 mm²/s (cSt) using mineral-base oil complying with DIN 51524, when the cartridge valve is installed in a master manifold.

Features and benefits
- Small dimensions - easy to install
- Single unit - facilitates installation
- Very tight - no unnecessary leakage losses
- Good characteristic – small pressure change between different flows
- Good opening and closing characteristics – distinct opening and closing
- Low hysteresis – good precision in pressure maintenance
- Fast acting – reacts quickly to pressure surges
- Setting locked by welding – prevents undesirable changing of pressure setting

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.

Synthetic, fire-resistant and environmentally friendly oils can also be used. If in doubt about the suitability of an oil, please contact your nearest Parker representative for advice.

For best function, oil viscosity should be between 15 and 45 mm²/s (cSt).
Diagram for PLC053 pressure relief valve

- **Pressure override characteristic**
  - Δp (bar) vs. q (l/min)
  - Lines indicate different pressures

- **Anti-cavitation characteristic**
  - Δp (bar) vs. q (l/min)
  - Lines indicate different pressures

**Technical Information**

- **Seat embossed with Ø13 mm class III steel ball**
- **Impact energy 9±2 Nm**
- **Stated dimensions apply before embossing**

**Cavity drawing, PLC053**

- Hydraulic symbol for pressure relief valve
- Anti-cavitation valve (N)

**Machining tools can be purchased from Parker Hannifin.**
Single housing

Hydraulic symbol for single housing

Ordering

PLC053 mounted in single housing
The PLC053 mounted in a single housing can be ordered using the ordering numbers below. Should you require a pressure setting not listed in the table, please contact your Parker Hannifin representative.

<table>
<thead>
<tr>
<th>Pressure [bar]</th>
<th>Ordering No</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>3767317</td>
</tr>
<tr>
<td>63</td>
<td>3767318</td>
</tr>
<tr>
<td>80</td>
<td>3767319</td>
</tr>
<tr>
<td>100</td>
<td>3767320</td>
</tr>
<tr>
<td>125</td>
<td>3767321</td>
</tr>
<tr>
<td>140</td>
<td>3767322</td>
</tr>
<tr>
<td>160</td>
<td>3767323</td>
</tr>
<tr>
<td>175</td>
<td>3767324</td>
</tr>
<tr>
<td>190</td>
<td>3767325</td>
</tr>
<tr>
<td>210</td>
<td>3767326</td>
</tr>
<tr>
<td>230</td>
<td>3767327</td>
</tr>
<tr>
<td>240</td>
<td>3767328</td>
</tr>
<tr>
<td>250</td>
<td>3767329</td>
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<tr>
<td>260</td>
<td>3767330</td>
</tr>
<tr>
<td>270</td>
<td>3767331</td>
</tr>
<tr>
<td>280</td>
<td>3767332</td>
</tr>
</tbody>
</table>
Diagram for PLC082 pressure relief valves

Pressure override characteristic

Anti-cavitation characteristic

Machining tools can be purchased from Parker Hannifin.

Seat embossed with Ø16 mm class III steel ball
Impact energy 12±2 Nm

Stated dimensions apply before embossing

Hydraulic symbol for pressure relief valve
Single housing

Hydraulic symbol for single housing

Connection P (pressure)*

Connection T, Tank*

Mounting hole Ø11 (2x)

SW = 12, T = 80 Nm

*) Thread dimension G ½ or G ¾.
See page 11.

SW = spanner width
T = tightening torque
Double housing

Connection T, Tank, plugged (G 3/4)

Connection M1, pressure (2x)*

Mounting hole Ø11 (3x)

Connection M2, pressure (2x)*

*) Thread dimension G ½ or G ¾.

See page 11.

SW = spanner width
T = tightening torque
Diagram for PLC182 pressure relief valves

Pressure override characteristic

Anti-cavitation characteristic

Seat embossed with Ø16 mm class III steel ball
Impact energy 12±2 Nm
Stated dimensions apply before embossing

Machining tools can be purchased from Parker Hannifin.

Cavity drawing, PLC182
Pressure relief valves

Diagram for PLC280 pressure relief valve

Pressure override characteristic

Anti-cavitation characteristic

Seat embossed with Ø25 mm class II steel ball
Impact energy 18±3 Nm
Stated dimensions apply before embossing

Hydraulic symbol for pressure relief valve

Machining tools can be purchased from Parker Hannifin.

Cavity drawing, PLC280
PLC-series pressure relief valves can be ordered using the ordering numbers in the table below.

Should you require a pressure setting not listed in the table, or require the pressure setting to be made at a flow different to standard, please contact your Parker Hannifin representative.

<table>
<thead>
<tr>
<th>Pressure [bar]</th>
<th>PLC053</th>
<th>PLC082</th>
<th>PLC182</th>
<th>PLC280 with plug</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>—</td>
<td>9120 0291 03</td>
<td>9120 0292 50</td>
<td>—</td>
</tr>
<tr>
<td>50</td>
<td>393000K176</td>
<td>9120 0291 04</td>
<td>9120 0292 51</td>
<td>—</td>
</tr>
<tr>
<td>63</td>
<td>393000K177</td>
<td>9120 0291 05</td>
<td>9120 0292 52</td>
<td>—</td>
</tr>
<tr>
<td>80</td>
<td>393000K178</td>
<td>9120 0291 06</td>
<td>9120 0292 53</td>
<td>—</td>
</tr>
<tr>
<td>100</td>
<td>393000K179</td>
<td>9120 0291 07</td>
<td>9120 0292 54</td>
<td>—</td>
</tr>
<tr>
<td>125</td>
<td>393000K180</td>
<td>9120 0291 08</td>
<td>9120 0292 55</td>
<td>—</td>
</tr>
<tr>
<td>140</td>
<td>393000K181</td>
<td>9120 0291 09</td>
<td>9120 0292 56</td>
<td>—</td>
</tr>
<tr>
<td>160</td>
<td>393000K182</td>
<td>9120 0291 10</td>
<td>9120 0292 57</td>
<td>—</td>
</tr>
<tr>
<td>175</td>
<td>393000K183</td>
<td>9120 0291 11</td>
<td>9120 0292 58</td>
<td>—</td>
</tr>
<tr>
<td>190</td>
<td>393000K184</td>
<td>9120 0291 12</td>
<td>9120 0292 59</td>
<td>—</td>
</tr>
<tr>
<td>210</td>
<td>393000K185</td>
<td>9120 0291 13</td>
<td>9120 0292 60</td>
<td>—</td>
</tr>
<tr>
<td>220</td>
<td>393000K186</td>
<td>9120 0291 14</td>
<td>9120 0292 61</td>
<td>20006727</td>
</tr>
<tr>
<td>250</td>
<td>393000K187</td>
<td>9120 0291 15</td>
<td>9120 0292 62</td>
<td>20004981</td>
</tr>
<tr>
<td>280</td>
<td>393000K189</td>
<td>9120 0291 16</td>
<td>9120 0292 63</td>
<td>20007439</td>
</tr>
<tr>
<td>300</td>
<td>9120 0291 17</td>
<td>9120 0292 64</td>
<td>20005798</td>
<td></td>
</tr>
<tr>
<td>330</td>
<td>393000K190</td>
<td>9120 0291 18</td>
<td>9120 0292 65</td>
<td>—</td>
</tr>
<tr>
<td>350</td>
<td>393000K191</td>
<td>9120 0291 19</td>
<td>9120 0292 66</td>
<td>20000990</td>
</tr>
<tr>
<td>380</td>
<td>393000W018</td>
<td>9120 0291 20</td>
<td>9120 0292 67</td>
<td>20006115</td>
</tr>
<tr>
<td>400</td>
<td>9120 0291 21</td>
<td>9120 0292 68</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>420</td>
<td>393000U020</td>
<td>9120 0291 22</td>
<td>9120 0292 69</td>
<td>00153481</td>
</tr>
<tr>
<td>N*</td>
<td>393000K194</td>
<td>9120099686</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

* Anti-cavitation valve without pressure-relief function

**PLC082 mounted in single housing**

The PLC082 mounted in a single housing can be ordered using the ordering numbers below. Should you require a pressure setting not listed in the table, please contact your Parker Hannifin representative.

<table>
<thead>
<tr>
<th>Pressure [bar]</th>
<th>G1/2</th>
<th>G3/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>3766780</td>
<td>3766789</td>
</tr>
<tr>
<td>125</td>
<td>3766781</td>
<td>—</td>
</tr>
<tr>
<td>160</td>
<td>3766782</td>
<td>—</td>
</tr>
<tr>
<td>175</td>
<td>3766783</td>
<td>—</td>
</tr>
<tr>
<td>190</td>
<td>3766784</td>
<td>3766903</td>
</tr>
<tr>
<td>210</td>
<td>3766785</td>
<td>3766904</td>
</tr>
<tr>
<td>230</td>
<td>3766786</td>
<td>3766862</td>
</tr>
</tbody>
</table>

**PLC082 mounted in double housing**

<table>
<thead>
<tr>
<th>Pressure [bar]</th>
<th>G1/2</th>
<th>G3/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>140</td>
<td>3766767</td>
<td>—</td>
</tr>
<tr>
<td>160</td>
<td>3766768</td>
<td>3766777</td>
</tr>
<tr>
<td>175</td>
<td>3766770</td>
<td>—</td>
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<tr>
<td>190</td>
<td>3766771</td>
<td>—</td>
</tr>
<tr>
<td>210</td>
<td>3766772</td>
<td>—</td>
</tr>
<tr>
<td>230</td>
<td>3766773</td>
<td>3766900</td>
</tr>
<tr>
<td>250</td>
<td>—</td>
<td>3766901</td>
</tr>
<tr>
<td>280</td>
<td>—</td>
<td>3766873</td>
</tr>
</tbody>
</table>
Parker Worldwide

Europe, Middle East, Africa
AE – United Arab Emirates, Dubai
Tel: +971 4 8127100
parker.me@parker.com

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.easteurope@parker.com

AZ – Azerbaijan, Baku
Tel: +994 50 22 33 458
parker.azerbaijan@parker.com

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

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

CH – Switzerland, Etoy
Tel: +41 (0)21 821 87 00
parker.switzerland@parker.com

CZ – Czech Republic, Klecany
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

HU – Hungary, Budaoers
Tel: +36 23 885 470
parker.hu@parker.com

IE – Ireland, Dublin
Tel: +353 (01) 466 6370
parker.ie@parker.com

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

KZ – Kazakhstan, Almaty
Tel: +7 7273 561 000
parker.easteurope@parker.com

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

NO – Norway, Asker
Tel: +47 66 75 34 00
parker.norway@parker.com

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.romania@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

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

TR – Turkey, Istanbul
Tel: +90 216 499 7081
parker.turkey@parker.com

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

ZA – South Africa, Kempton Park
Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

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

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

US – USA, Elk Grove Village (mobile)
Tel: +1 847 258 6200

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

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

HK – Hong Kong
Tel: +852 2428 8008

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

JP – Japan, Fujisawa
Tel: +81 (0) 46635 3050

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

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

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

SG – Singapore
Tel: +65 6887 6300

TH – Thailand, Bangkok
Tel: +662 717 8140

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

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

BR – Brazil, Cachoeirinha RS
Tel: +55 21 3470 9144

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

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

EMEA Product Information Centre
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