



# ***Auxiliary valves***

## ***PLC series***

*Direct-acting pressure relief valves*

*Catalogue HY17-8702/UK  
August 2005*



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## **WARNING**

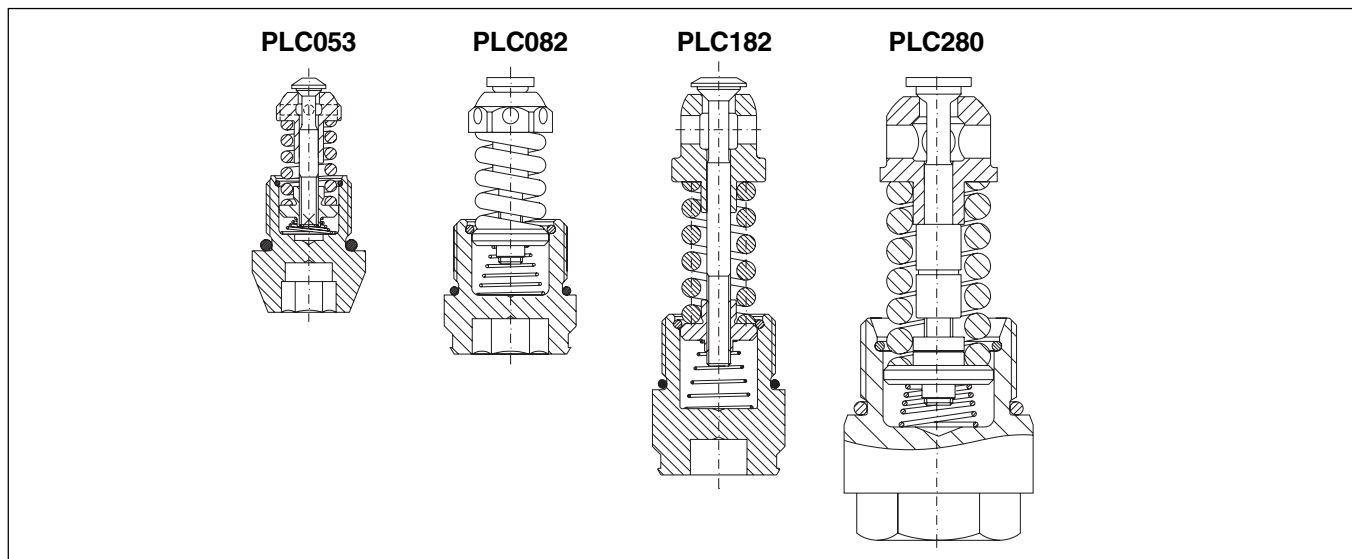
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The PLC series auxiliary valves are direct-acting, factory-set pressure relief valves of the cartridge type that can be supplied with or without a threaded plug. They can also be supplied with housings to facilitate in-line installation.

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:

PLC053	50 l/min
PLC082	80 l/min
PLC182	180 l/min
PLC280	280 l/min

#### 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

PLC053	0,06 kg
PLC082	0,11 kg
PLC182	0,165 kg
PLC280	0,39 kg

The PLC valves are all supplied with a threaded plug.

Housing for PLC082 cartridge (inclusive of cartridge)	1,6 kg
Housing for two PLC082 cartridges (inclusive of cartridges)	2,8 kg

#### Hydraulic fluids

Best performance is obtained using mineral-base oil of high quality and cleanness 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 mm<sup>2</sup>/s (cSt).

#### 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

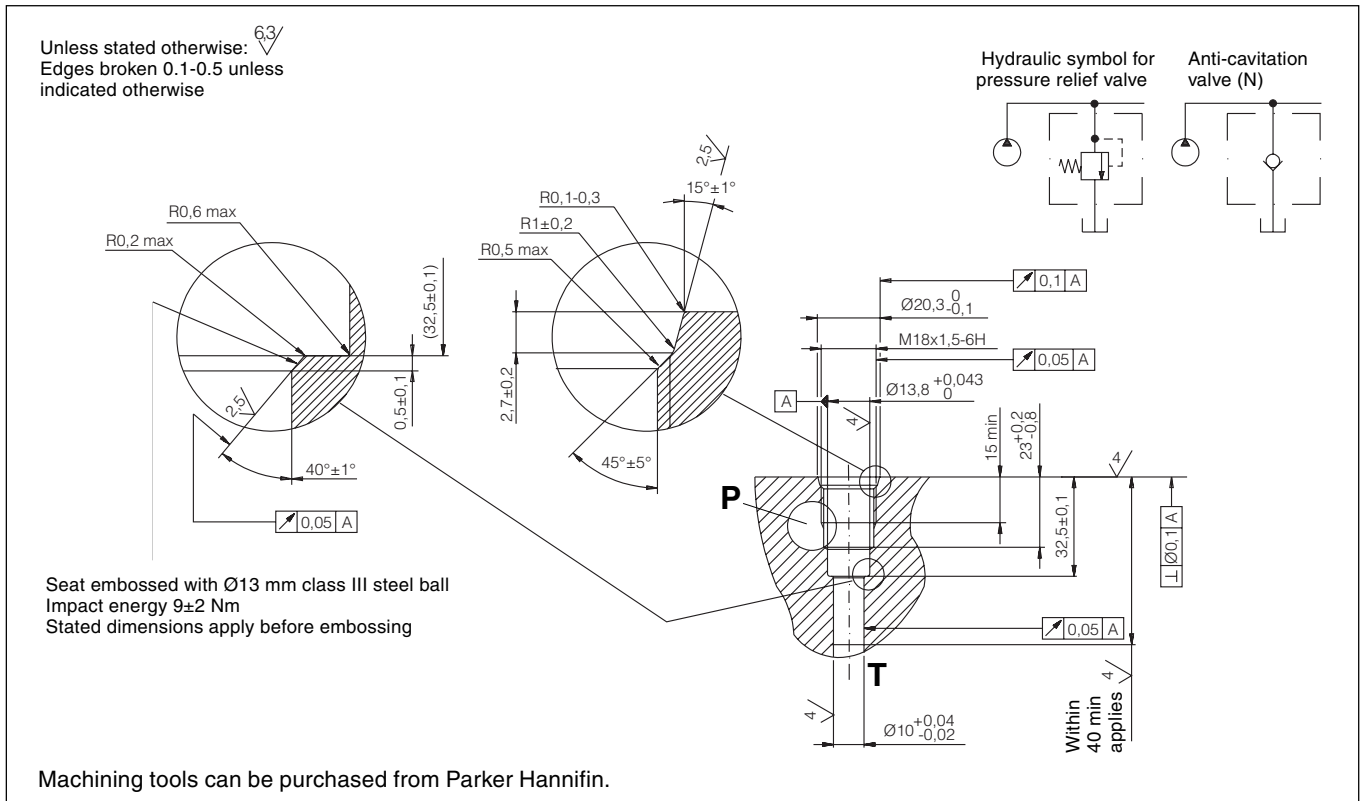
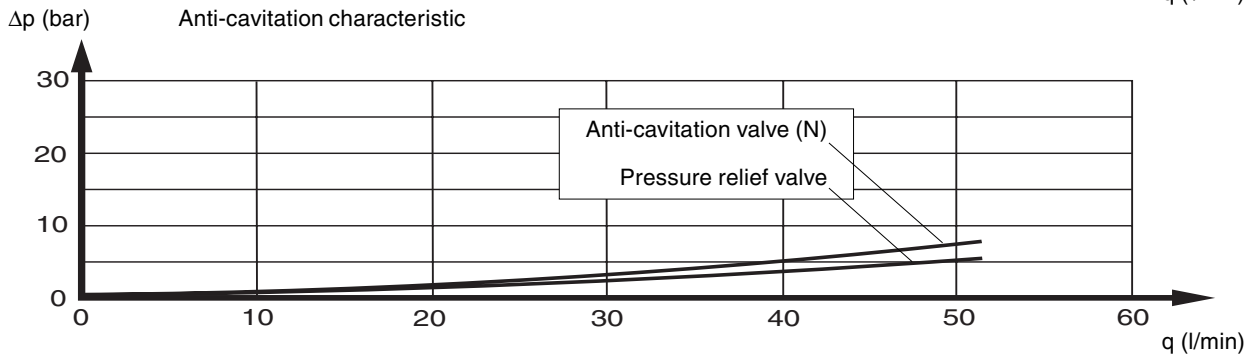
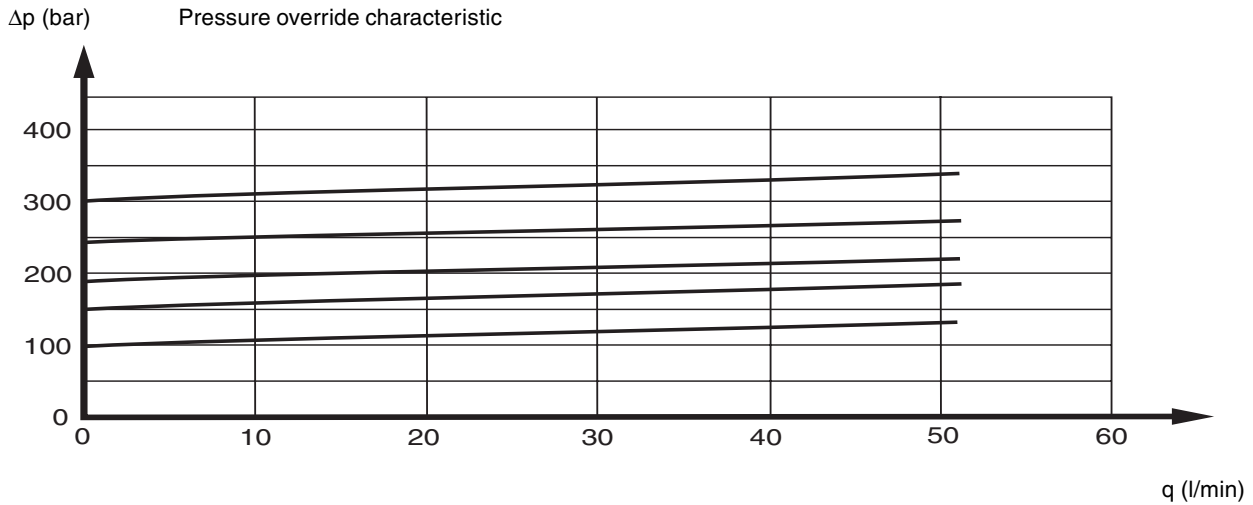
#### General

The data given in this catalogue is applicable at an oil temperature of 50 °C and viscosity of 30 mm<sup>2</sup>/s (cSt) using mineral-base oil complying with DIN 51524, when the cartridge valve is installed in a master manifold.

#### Features and benefits

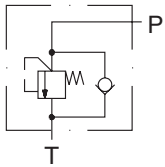
- Small dimensions - easy to install
- Single unit - facilitates installation
- Very tight - no unnecessary leakage losses
- Good characteristic – small pressure change between different flows
- Good opening and closing characteristics – distinct opening and closing
- Low hysteresis – good precision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

**Diagram for PLC053 pressure relief valve**

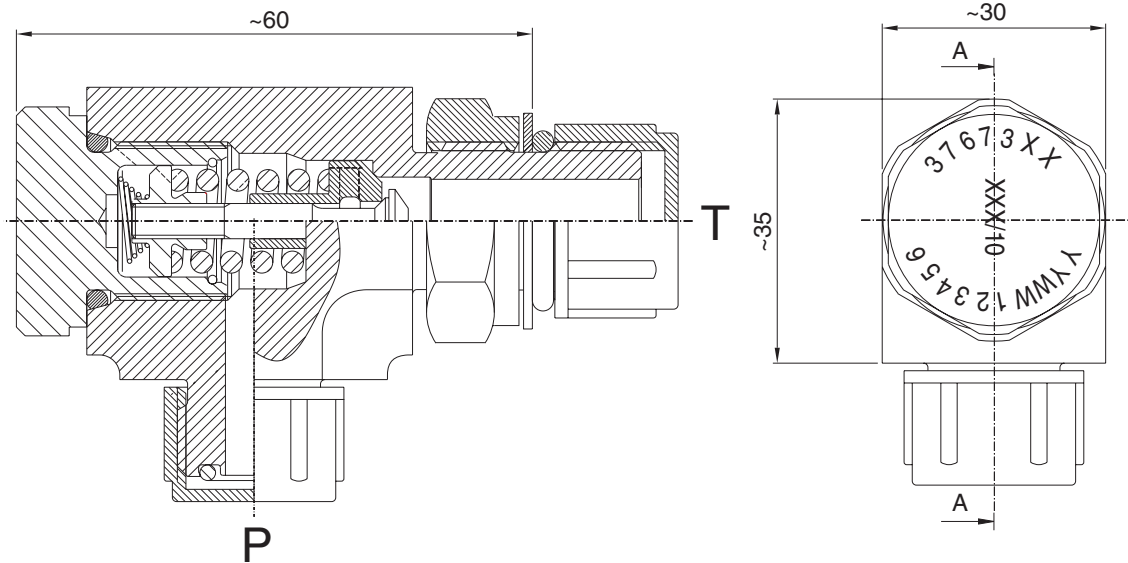


Cavity drawing, PLC053

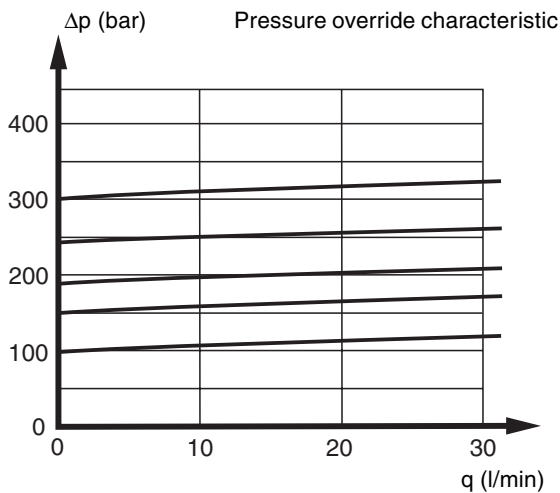
**Single housing**



Hydraulic symbol for single housing



**Diagram for PLC053 pressure relief valve**



**Ordering**

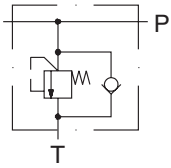
**PLC053 mounted in single housing**

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.

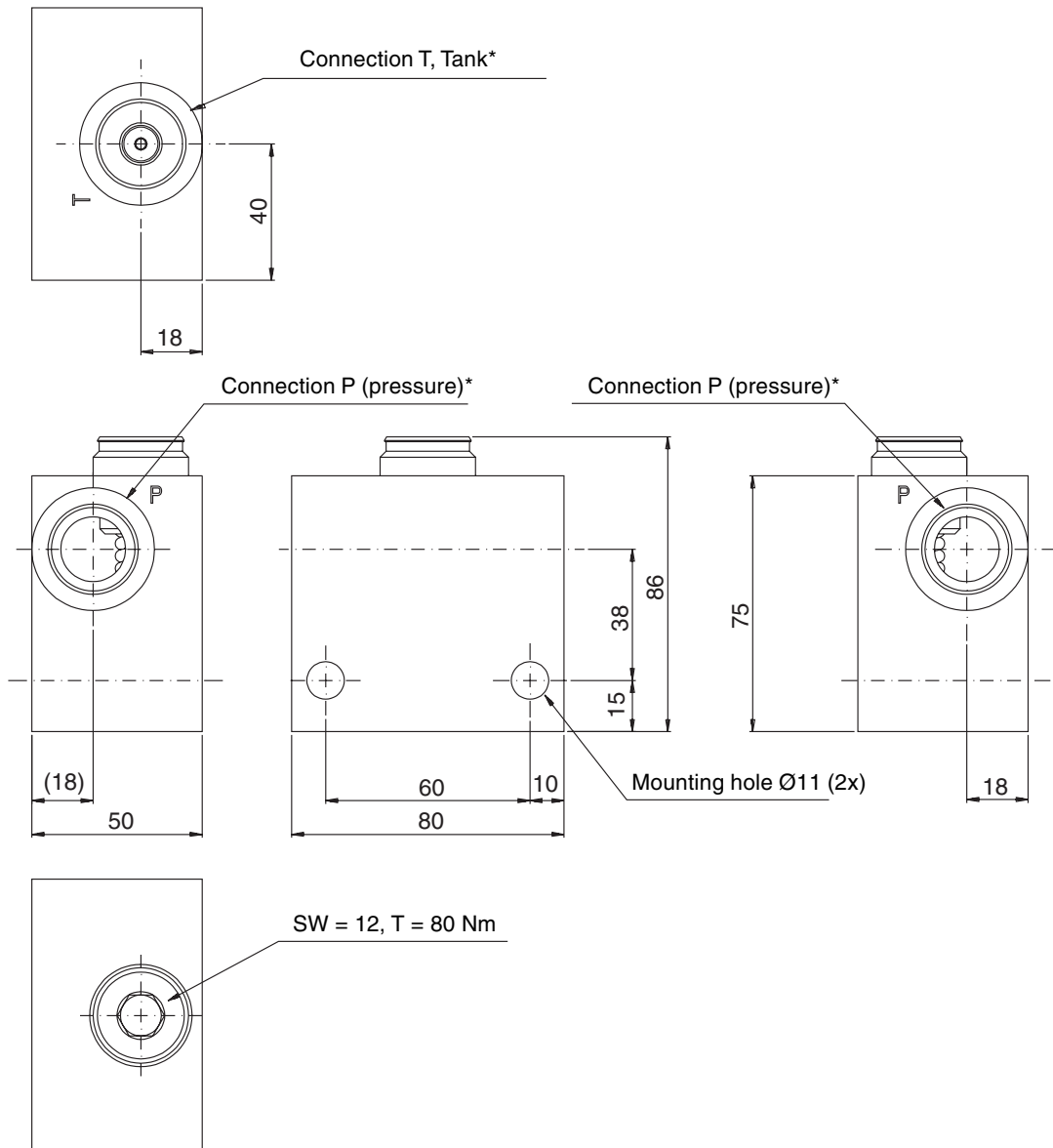
Pressure [bar]	Ordering No
50	3767317
63	3767318
80	3767319
100	3767320
125	3767321
140	3767322
160	3767323
175	3767324
190	3767325
210	3767326
230	3767327
240	3767328
250	3767329
260	3767330
270	3767331
280	3767332



**Single housing**



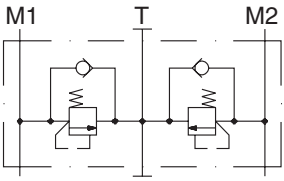
Hydraulic symbol for single housing



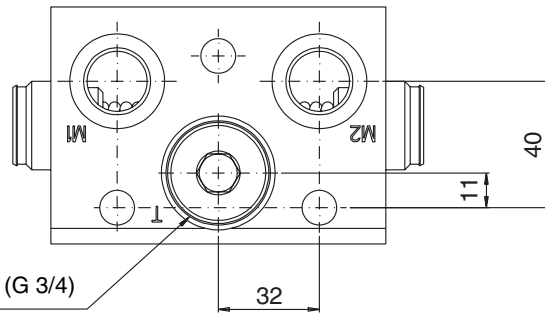
\*) Thread dimension G 1/2 or G 3/4.  
See page 11.

SW = spanner width  
T = tightening torque

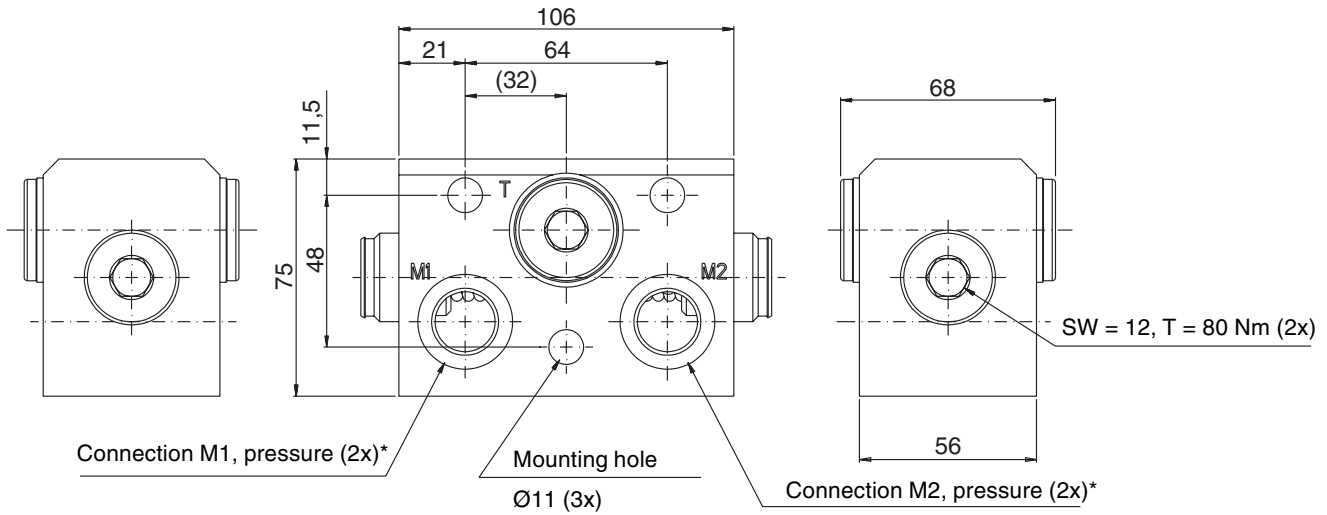
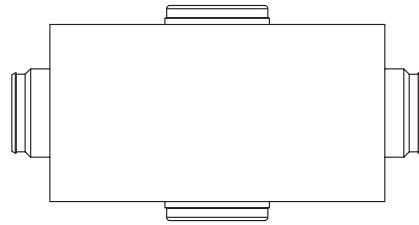
**Double housing**



Hydraulsymbol för dubbelhus



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

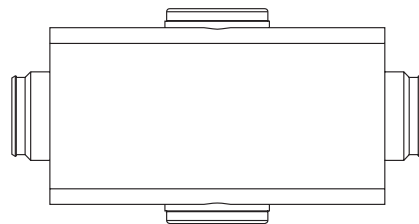


Connection M1, pressure (2x)\*

Mounting hole  
 Ø11 (3x)

Connection M2, pressure (2x)\*

SW = 12, T = 80 Nm (2x)



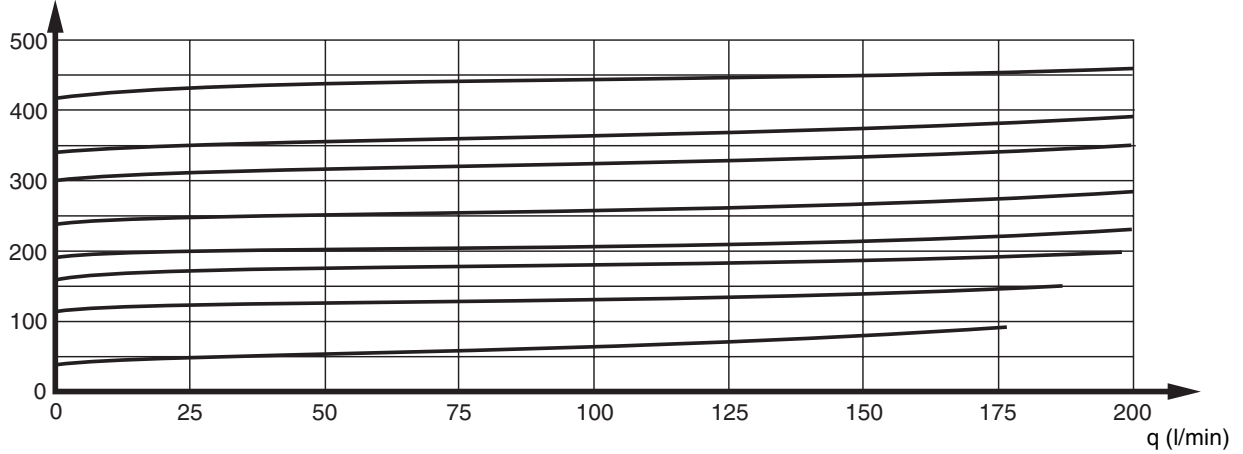
\*) Thread dimension G 1/2 or G 3/4.  
 See page 11.

SW = spanner width  
 T = tightening torque

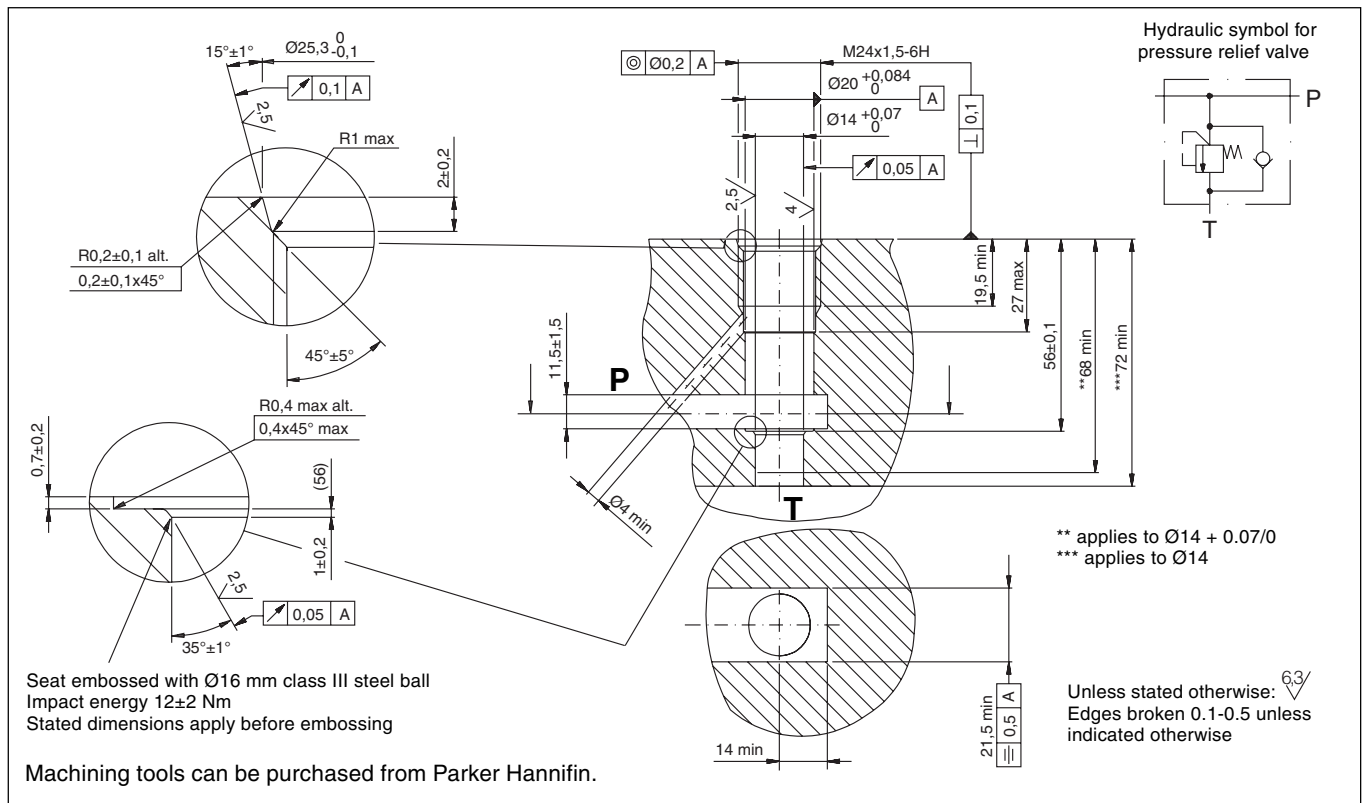
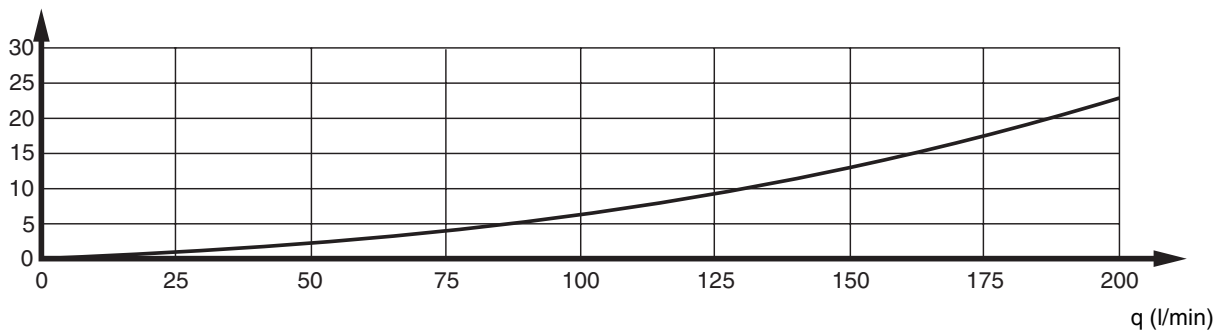


**Diagram for PLC182 pressure relief valves**

$\Delta p$  (bar) Pressure override characteristic

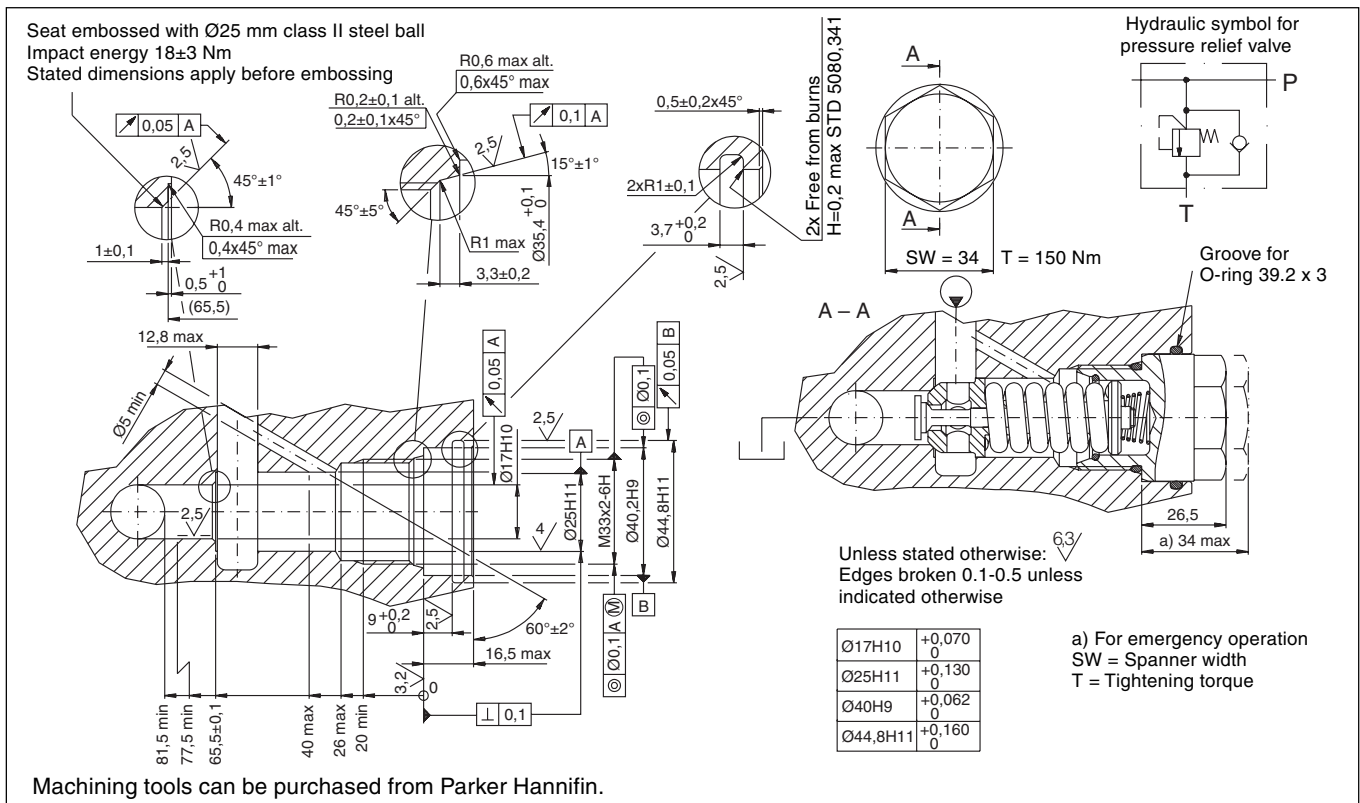
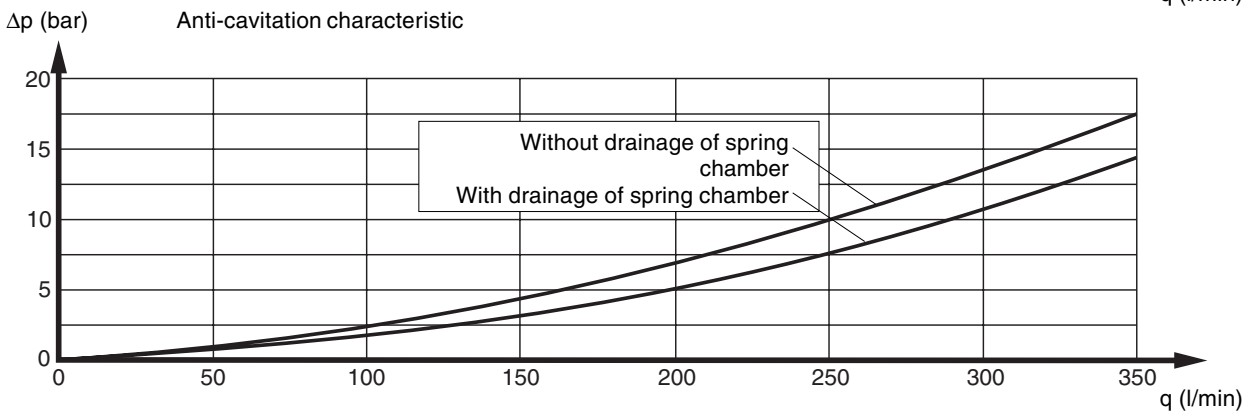
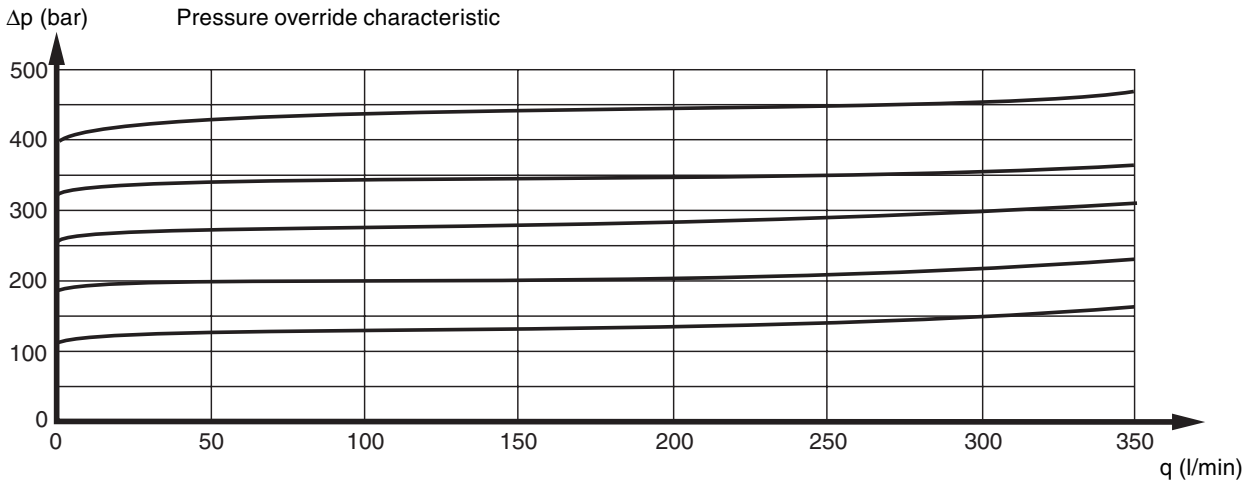


$\Delta p$  (bar) Anti-cavitation characteristic



Cavity drawing, PLC182

**Diagram for PLC280 pressure relief valve**



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.

Pressure PLC053 [bar]	PLC082	PLC182	PLC280 with plug
40	—	9120 0291 03	9120 0292 50
50	393000K176	9120 0291 04	9120 0292 51
63	393000K177	9120 0291 05	9120 0292 52
80	393000K178	9120 0291 06	9120 0292 53
100	393000K179	9120 0291 07	9120 0292 54
125	393000K180	9120 0291 08	9120 0292 55
140	393000K181	9120 0291 09	9120 0292 56
160	393000K182	9120 0291 10	9120 0292 57
175	393000K183	9120 0291 11	9120 0292 58
190	393000K184	9120 0291 12	9120 0292 59
210	393000K185	9120 0291 13	9120 0292 60
230	393000K186	9120 0291 14	9120 0292 61
250	393000K187	9120 0291 15	9120 0292 62
280	393000K189	9120 0291 16	9120 0292 63
300	393000K190	9120 0291 17	9120 0292 64
330	393000K191	9120 0291 18	9120 0292 65
350	393000K192	9120 0291 19	9120 0292 66
380	393000W018	9120 0291 20	9120 0292 67
400	—	9120 0291 21	9120 0292 68
420	393000U020	9120 0291 22	9120 0292 69
N*	393000K194	9120099686	—

\* 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.

Pressure [bar]	G1/2	G3/4
50	3766780	3766789
125	3766781	—
160	3766782	—
175	3766783	—
190	3766784	3766903
210	3766785	3766904
230	3766786	3766862

**PLC082 mounted in double housing**

Pressure [bar]	G1/2	G3/4
140	3766767	—
160	3766769	3766777
175	3766770	—
190	3766771	—
210	3766772	—
230	3766773	3766900
250	—	3766901
280	—	3766873

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