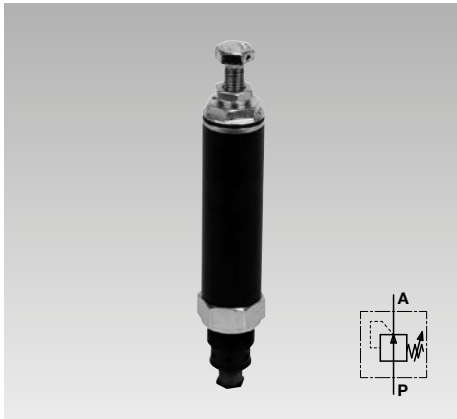




**Pressure Reducing Valve**  
**Poppet valve without overpressure function**  
**max. operating pressure 500 bar**



**Advantages**

- Optimisation of the clamping force of individual cylinders or subassemblies
- Pressure limitation to the admissible operating pressure of individual cylinders or subassemblies.
- Automatic readjustment in case of pressure drop
- No leakage oil port required
- Can be used in uncoupled clamping systems e.g. on clamping pallets
- Big adjusting range
- Possibility to lead
- Different connecting possibilities

Low pressure



High pressure

**Definition**

Pressure reducing valves keep the outlet pressure constant, also in case of a changeable, but always higher inlet pressure. This version without overpressure function cannot compensate a pressure increase of the outlet pressure that exceeds the set pressure (see important notes).

**Application**

In hydraulic clamping systems, it is often necessary to pressurise single clamping elements or groups of clamping elements with reduced pressure.

This pressure reducing valve without overpressure function is especially suitable for clamping systems which will be uncoupled from the pressure generator, e.g. pallets, because an additional leakage oil line is not available.

**Limits of application**

This pressure reducing valve can only be used in static clamping systems. The connected clamping elements must be leakage-free.

**Important notes!**

An increasing pressure cannot be compensated at the outlet side due to the missing overpressure function. Causes for a pressure increase can be:

- Temperature increase (approx. 10 bar per 1 °C)
- Force increase acts on the clamping cylinder
- Damage of the valve seat by swarf

Remedy: Installation of an additional safety valve on the outlet side that is set 10% higher than the pressure reducing valve (see application example).

The outlet pressure can be set and controlled by means of a pressure gauge.

Thus, also the required sealing of the system is monitored.

Pressure adjustment and pressure changes should only be made with simultaneous pressure gauge control.

In the case of incorrect pressure setting, there may be a risk of injury due to overload of the connected elements.

**Function**

Below the set outlet pressure, the hydraulic oil flows unhindered from P to A. In case of a pressure increase the set spring force is overcome and a check valve cuts off the flow hermetically sealed. Thus, a further pressure increase is avoided, also in case of increasing inlet pressure p. In case of a pressure drop, e.g. because of a leakage at a cylinder, the check valve will be opened by a strong spring against the existing inlet pressure p. Hydraulic oil can continue flowing until the set outlet pressure is obtained.

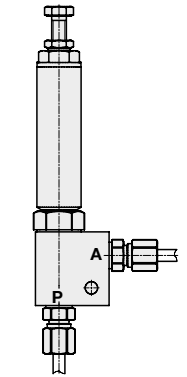
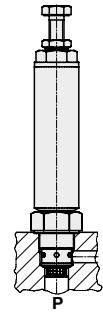
Increasing outlet pressure, e.g. due to temperature rise cannot be compensated by this pressure reducing valve (see Important notes).

A return flow from A to P is only possible if the inlet pressure p drops below the set outlet pressure.

**Connecting possibilities**

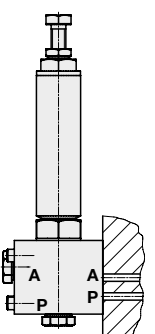
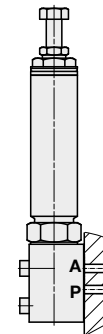
Screw-in valve

Pipe thread



Manifold-mounting connection

Manifold mounting or pipe thread



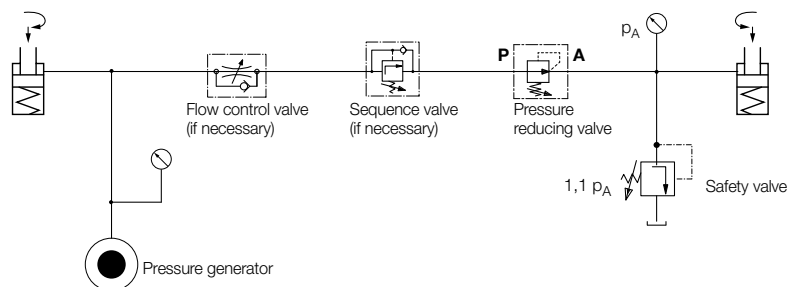
**Maximum flow rate**

The maximum volume flow rate depends on the selected adjustment range of the outlet pressure (see table on page 2).

If the flow rate of the pump is higher, a flow control valve has to be installed in front of the pressure reducing valve.

**Application example**

To guarantee perfect functioning of the pressure reducing valves, flow control valves and sequence valves must always be installed in front of the pressure reducing valve in the shown sequence.



**Pressure reducing valves with overpressure function see data sheet C 2.9534.**

# Technical data Dimensions

Type	Range of adjustment [bar]	Max. flow rate [l/min]	Part no.	Part no.
①	(10)* 30...380	10	<b>2953-100</b>	-
②	8...130	4...10**	<b>2953-115</b>	-
③	20...200	10		<b>2953-120</b>

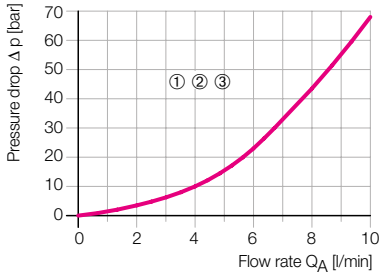
\* see diagram "Minimum set pressure"  
\*\* see diagram "Max. flow rate"

## Technical data

Type	2-way ball-type poppet valve
Mounting position	any
Max. operating pressure (inlet pressure)	500 bar
Adjustment range (outlet pressure)	see part no.
Max. flow rate	see part no.
Max. return pressure	20 bar
$\Delta p$ -Q characteristic curve	see diagram
Hydraulic oil	HLP as per DIN 51524
Viscosity class	ISO VG 10...68 as per DIN 51519
Viscosity range	10...500 mm <sup>2</sup> /s (recommendation)
Purity class	20 / 17 / 13 as per ISO 4406
Oil temperature	-25...+80 °C
Environmental temperature	-40...+80 °C

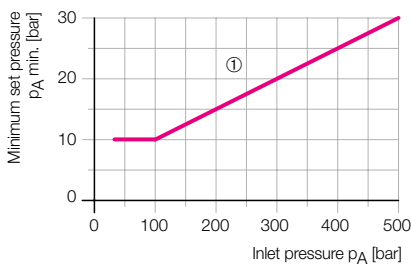
## $\Delta p$ -Q characteristic curves (P → A and A → P)

(with open valve, if  $p_p$  is smaller than  $p_A$ )  
Test medium viscosity: 50 mm<sup>2</sup>/s (cSt)



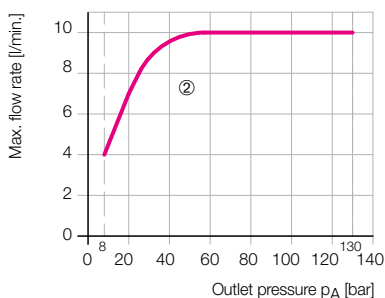
## Minimum set pressure $p_{A \text{ min}}$

as a function of the inlet pressure  $p_p$



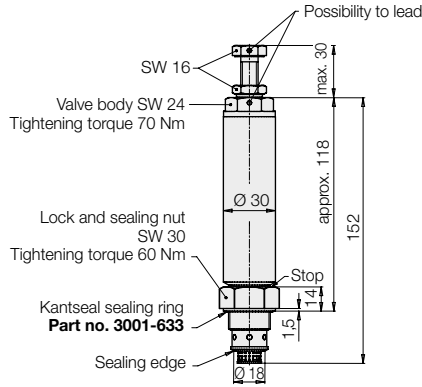
## Max. flow rate

as a function of the set outlet pressure  $p_A$



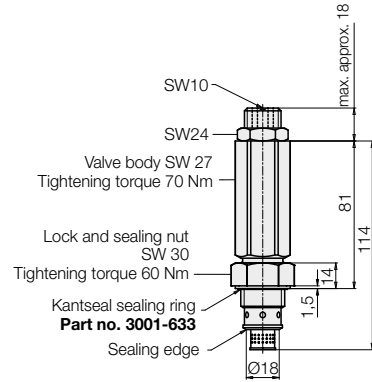
## Screw-in valve ① + ②

Weight: approx. 0.7 kg

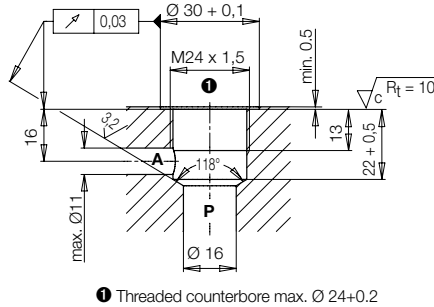


## Screw-in valve, short design ③

Weight: approx. 0,5 kg



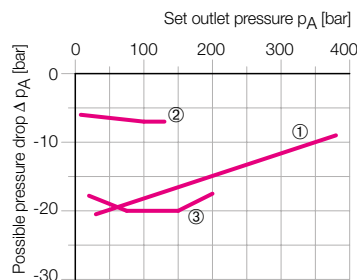
## Porting details



## Installation note

1. Before screwing in, turn back lock and sealing nut up to the stop.
  2. Screw in valve body and tighten by 70 Nm. Sealing is made metallically on the counterbore of 118°.
  3. Tighten the lock and sealing nut by 60 Nm. Sealing is made by the Kantseal sealing ring on the counterbore diameter of 30 mm. The sealing ring is included in the delivery.
- Disassembly is made in reverse sequence.

## Possible drop of the outlet pressure $\Delta p_A$ before starting the setting function

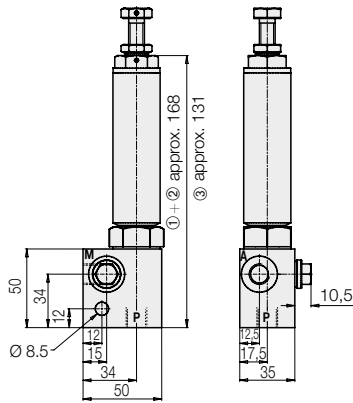


## Technical data Dimensions

Type	Part no.	Part no.	Part no.
①	<b>2953-111</b>	<b>2953-114</b>	<b>2953-110</b>
②	<b>2953-112</b>	<b>2953-117</b>	<b>2953-116</b>
③	<b>2953-121</b>	<b>2953-123</b>	<b>2953-122</b>
Connecting block without valve	<b>0353-438</b>	<b>0353-439</b>	<b>0353-440</b>

### Pipe thread

Weight: approx. 1.3 kg ① + ②  
approx. 1.1 kg ③

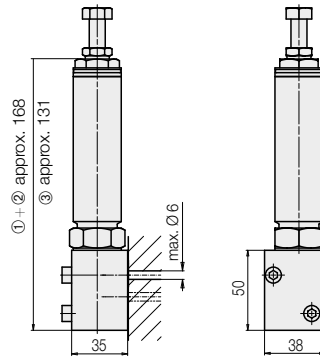


Ports **A**, **P** and **M** = G 1/4

**M** = pressure gauge connection

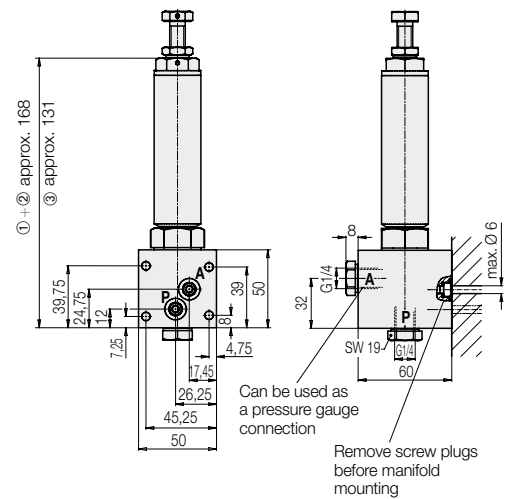
### Manifold-mounting connection

Weight: approx. 1.1 kg ① + ②  
approx. 0.9 kg ③

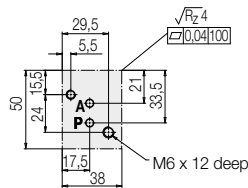


### Manifold mounting or pipe thread

Weight: approx. 1.7 kg ① + ②  
approx. 1.5 kg ③



### Connecting scheme



Included in our delivery:

O-rings 7.65 x 1.78

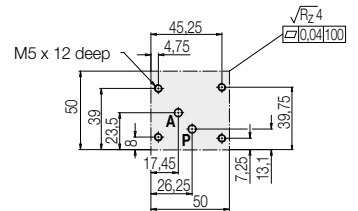
**Part no. 3000-654**

Screws M6 x 45 DIN 912-8.8

**Part no. 3300-231**

Tightening torque 10 Nm

### Connecting scheme



Manifold-mounting connection with hole pattern as per DIN 24340 form A 6, CETOP 4.2-4.3, ISO 4401

O-ring 10x2

**Part no. 3001-078**

(included in the delivery)

4 screws M5x70 DIN 912-12.9

**Part no. 3300-310**

(not included in the delivery)

Tightening torque 10 Nm