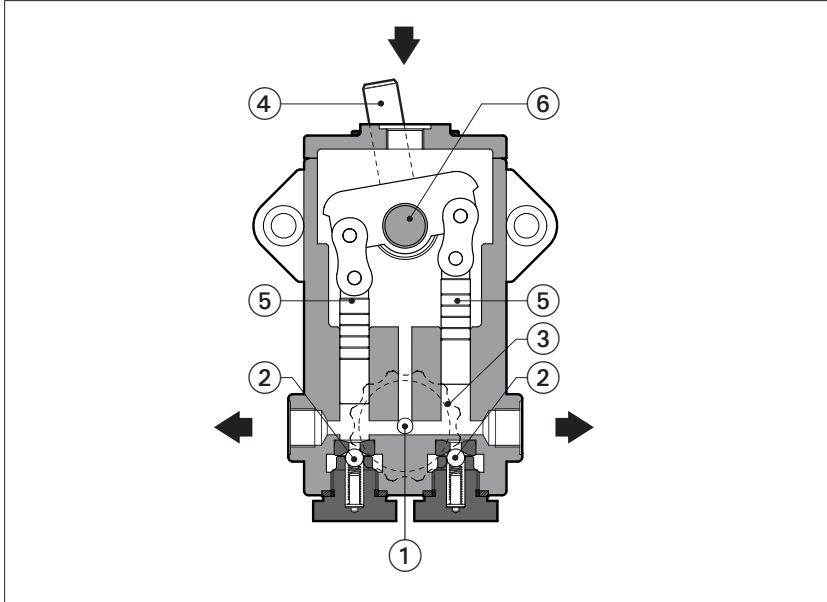


# Hand pumps type PM

2-plunger



PM are double alternate-acting hand pumps with simple and rugged construction for minimum service and long operating life.

They are provided with one by-pass valve ① which connects directly the delivery ports with the inlet port through the delivery valves ②. The by-pass valve is operated by a handwheel ③.

Pumping operation is made by alternative movement of the lever ④ and consequently movement of plungers ⑤, after having locked the by-pass valve by means of the handwheel.

The splined shaft attachment ⑥ permits to turn the lever shaft in the best position.

On the pump body are available two outlet ports (one supplied plugged).

Suitable for hydraulic oils according to DIN 51524...535 or synthetic fluids having similar lubricating characteristics.

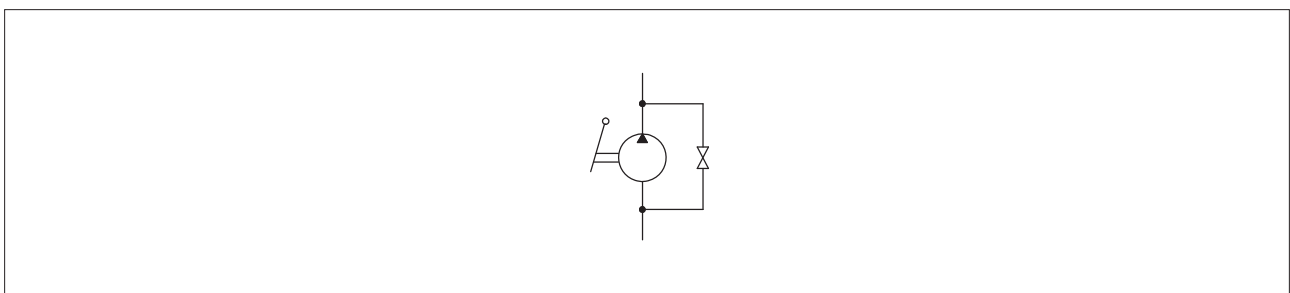
Displacements: from 12 to 20 cm<sup>3</sup> for double stroke.

Max pressure 250 bar

**1** MODEL CODE

<b>PM</b>	-	<b>112</b>	*	/	*
2-plunger hand pump			Seals material: omit for NBR (mineral oil & water glycol) <b>PE</b> = FPM		
Displacement, see section <b>2</b>			Series number		
<b>112</b> = 12 cm <sup>3</sup> /double stroke					
<b>120</b> = 20 cm <sup>3</sup> /double stroke					

**2** OPERATING CHARACTERISTICS with hydraulic fluid having a viscosity of 24 mm<sup>2</sup>/s and 40°C



Model	Displacement for double stroke [cm <sup>3</sup> ]	Max pressure [bar]	Shaft rotation angle [degree]	Maximum torque required [Nm]
<b>PM-112</b>	12	250	± 35°	133
<b>PM-120</b>	20	120	± 35°	116

### 3 MAIN CHARACTERISTICS OF HAND PUMP TYPE PM

Installation position	Vertical position, with inlet port facing upward to ensure complete case filling		
Commissioning	<p>Pumping operation is made by alternative movement of the lever after closing by-pass valve.</p> <p><b>Note:</b> the by-pass valve connects the delivery ports with inlet port and when locked it could allow some leakage from outlet ports.</p> <p>Two opposite outlet ports are available for pump delivery: one of these is supplied plugged.</p> <p>The pumps are supplied without lever arm that could be made by a simple tube with <math>\varnothing 18</math> mm inside diameter. Usually a length of 500 to 600 mm is appropriate.</p> <p>Lever position can be selected by proper assembling of lever on splined shaft.</p>		
Ambient temperature	<b>Standard</b> = $-25^{\circ}\text{C} \div +80^{\circ}\text{C}$ / <b>PE</b> option $-15^{\circ}\text{C} \div +80^{\circ}\text{C}$		
Fluid	Hydraulic oil as per DIN 51524...535; for other fluids see section <b>I</b>		
Recommended viscosity	$10 \div 100$ mm <sup>2</sup> /sec at $40^{\circ}\text{C}$ (ISO VG 15 - 100)		
Max fluid contamination level	normal operation	ISO4406 class 21/19/16 NAS1638 class 10	see also filter section at <a href="http://www.atos.com">www.atos.com</a> or KTF catalog
	longer life	ISO4406 class 18/16/13 NAS1638 class 8	
Fluid temperature	$-20^{\circ}\text{C} +60^{\circ}\text{C}$	$-20^{\circ}\text{C} +50^{\circ}\text{C}$ (water glycol)	$-20^{\circ}\text{C} +80^{\circ}\text{C}$ (/PE seals)
Compliance	RoHS Directive 2011/65/EU as last update by 2015/65/EU REACH Regulation (EC) n°1907/2006		

### 4 DIMENSIONS [mm]

