



8.2.3 Actuator PNC4508B Series

8.2.3.1 Technical Data PNC4508B-01, PNC4508B-02



Doc003753.png

Actuator, bolted to manifold pneumatic	
Valve pin operation	
Operation medium	pneumatic
Pressure range	6 - 12 bar (87 - 174 psi)
Operation pressure	max. 14 bar (203 psi)
Flow rate	1.5 l/min
Valve pin response time	~0.5 s / 6 bar (87 psi)
Valve pin stroke	8 mm
Adjustment	± 1 mm via adjustment threads from topside
Closing force	954 N / 6 bar (87 psi) 1272 N / 8 bar (116 psi) 1590 N / 10 bar (145 psi) 1908 N / 12 bar (174 psi)
Opening force	848 N / 6 bar (87 psi) 1131 N / 8 bar (116 psi) 1414 N / 10 bar (145 psi) 1696 N / 12 bar (174 psi)
Cooling	
The design provides an indirect cooling through the back plate (max. 80 °C / 175 °F), otherwise cooling lines are required.	
Piping	No piping.
Valve pin	
Valve pin diameter	Ø 3.8 mm (PNC4508B-01) Ø 3.0 mm (PNC4508B-02)
Attachment	T - head Valve pin is not secured against rotation

NOTICE

To ensure long life and continued flawless operation of the actuator, we recommend using filtered compressed air.

The coolant used should be properly modified, e.g. filtered water with an anti-corrosion and frost-proof agent.



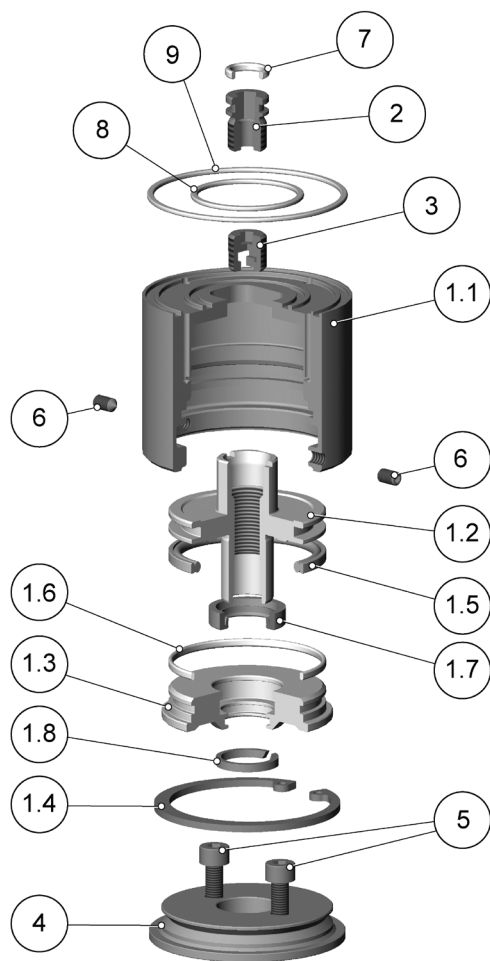
8.2.3.2 Exploded View PNC4508B Series

This section describes the disassembly and reassembly process to replace seals.

In this section the actuator parts are identified with the numbers indicated in the following figure, which shows the components.

NOTICE

Always tighten the screws to the torques specified in the respective table (section 13).



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Actuator Parts - PNC4508B Series

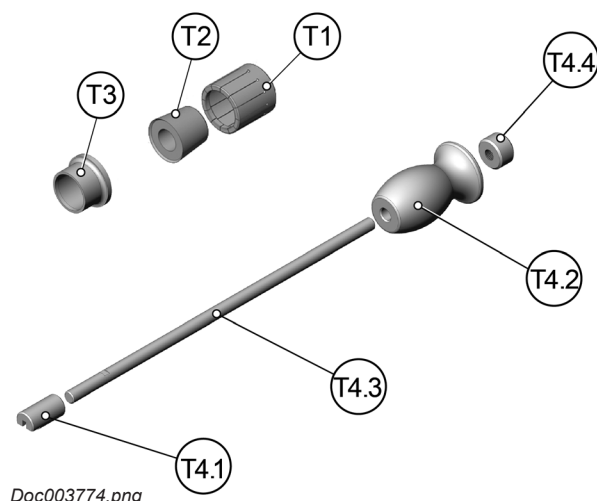
No.	Qty.	Description	Item
(1)		Cylinder housing complete	PNC4508B-HC-01
(1.1)	1	Cylinder housing	PNC4508B-CH-01
(1.2)	1	Piston	PNC4508B-PI-01
(1.3)	1	Buffer	PNC4508B-BU-01
(1.4)	1	Retaining ring	DIN472-50X2
* ()		Seal Kit PNC4508B includes: (1.5), (1.6), (1.7), (1.8), (7), (8), (9)	PNC4508B-SK-01
* (1.5)	1	Piston seal	2G2/45-37.5-3.2
* (1.6)	1	O-ring seal	VIOR-41X1.78FPM75
* (1.7)	1	Rod seal	C1-1044-V3664
* (1.8)	1	Guiding element	FB2.3-1.5L48.5
(2)	1	Lock screw	PNC4508B-LS-01
(3)	1	Hanger screw, Valve pin 3.8 (PNC4508B-01)	PNC4508B-HS-01
(3)	1	Hanger screw, Valve pin 3.0 (PNC4508B-02)	PNC4508B-HS-02
(4)	1	Holding ring	PNC4508B-HR-01
(5)	2	Hexagon socket cap screw	DIN912-M5X16-12.9
(6)	2	Hexagon socket set screw	DIN914-M4X8-45H
* (7)	1	Viton-ring seal	VIOR-RING 9.25X1.78 FPM 80 GREEN
* (8)	1	Viton-ring seal	VIOR-RING 28.30X1.78 FPM 80
* (9)	1	Viton-ring seal	VIOR-RING 53.70X1.78 FPM 80



8.2.3.3 Tools for Assembling, Disassembling and Adjusting the Actuator

The following overview contains a list of special tools needed for the assembly and disassembly of the actuator and to replace seals.

The assembly and disassembly tools are identified with the numbers indicated in the following figure, which shows the components in this section.

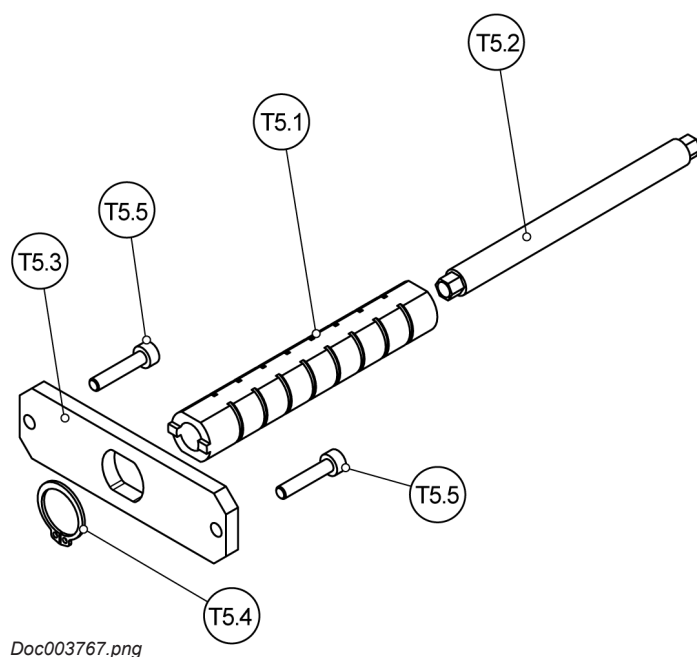


Tools to Mount Actuator Seals and the Piston

No.	Description	Item
(T1)	Spreader sleeve	ATCYL0405
(T2)	Mounting cone	ATCYL20
(T3)	Calibration sleeve (cone 45)	ATCYL19

Valve Pin Disassembly Tool ATCYL16

No.	Description	Item
(T4.1)	Adapter for valve pin \varnothing 3 mm and \varnothing 3,8 mm	ATCYL1601
(T4.2)	Slice hammer	ATCYL0101
(T4.3)	Guid	ATCYL0102
(T4.4)	Stop bolt	ATCYL0104



Assembly Tool ATCYL21

No.	Description	Item
(T5.1)	Adjustment Tool Typ01	ATCYL2101
(T5.2)	Adjustment Tool Typ02	ATCYL2102
(T5.3)	Adjustment Tool Typ03	ATCYL2103
(T5.4)	Retaining ring	DIN471-16x1
(T5.5)	Socket head cap screws	DIN912-M4x20-12.9

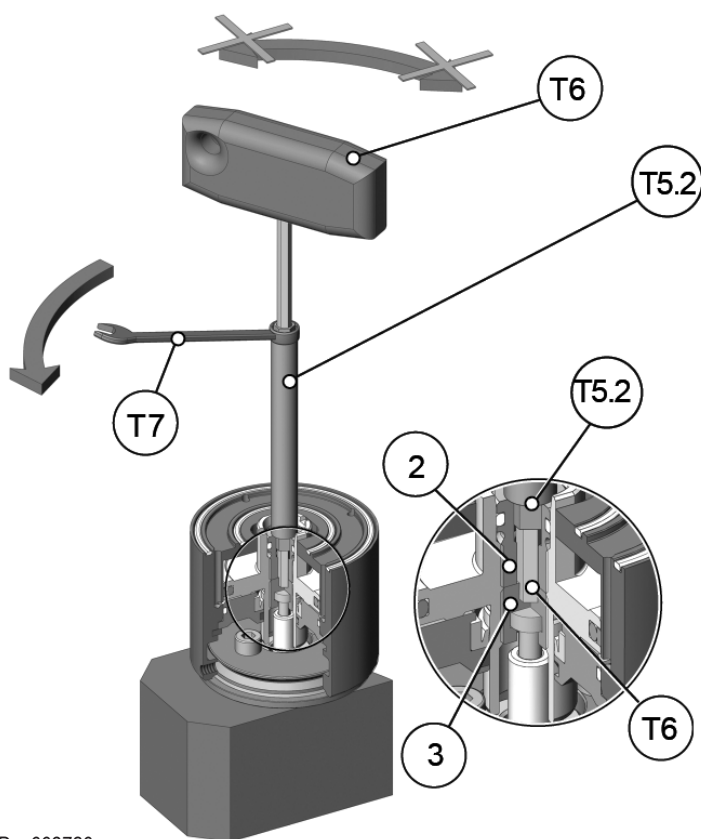
NOTICE

The tools ATCYL16, ATCYL19 and ATCYL20 are not included with the Hot Runner System and must be ordered from Synventive separately.

(EN)



8.2.3.4 Disassembling Actuator PNC4508B Series

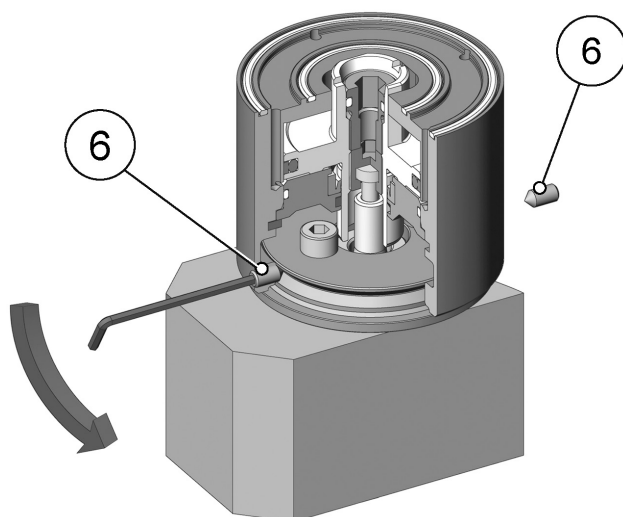


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NOTICE

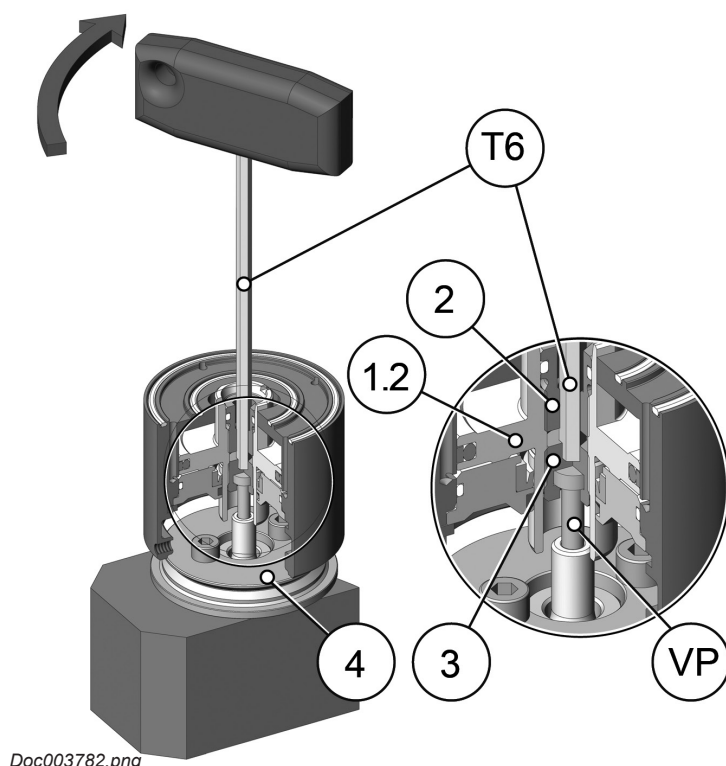
For actuator disassembly the lock screw (2) of the hanger screw (3) needs to be loosened.

- 1) Hold against turning the hanger screw (3) with the hexagon socket wrench (T6).
- 2) At the same time loosen the lock screw (2) with the adjustment tool ATCYL2102 (T5.2) and ring wrench (T7).



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- 3) Unscrew hexagon socket set screws (6).

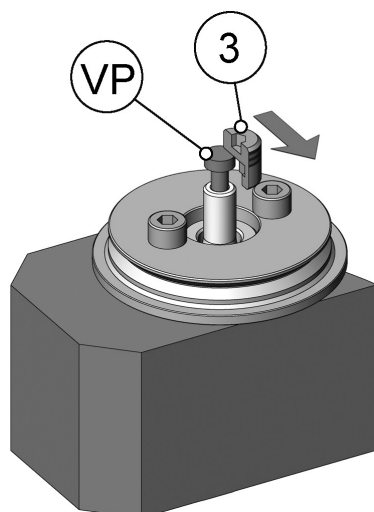


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- 4) With Hexagon socket wrench (T6) turn the hanger screw (3) clockwise until the hanger screw (3) is unscrewed out of the piston (1.2).

NOTICE

The actuator will be lifted from the holding ring (4) and will be separated from the valve pin (VP) and hanger screw (3).

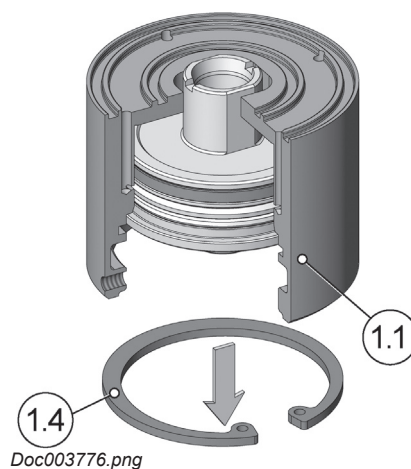


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- 5) Loosen the hanger screw (3) from the valve gate pin (VP).



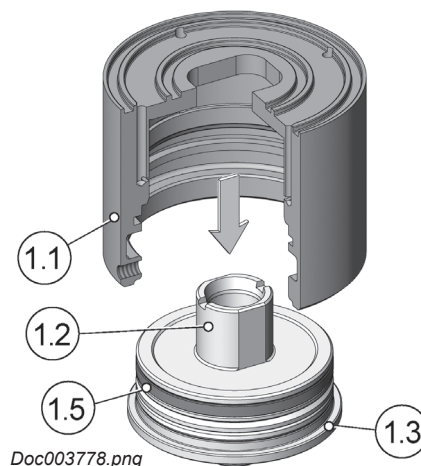
6) Remove the retaining ring (1.4).



7) Press the piston (1.2) and buffer (1.3) out of the cylinder housing (1.1).

8) Dismount the two piston seal (1.5) elements.

- O-ring (1.5) (a)
- Sealing element (1.5) (b)



9) Dismantling the valve pin (see section 9.1).

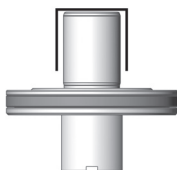
8.2.3.5 Assembling the Actuator PNC4508B Series

Lubrication of Piston and Ring Seals

NOTICE

For lubrication use Krytox GPL205.

To Lubricate the piston sliding surface is essential for the actuator life time.



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To Lubricate the piston ring seals is helpful to assemble the actuator.



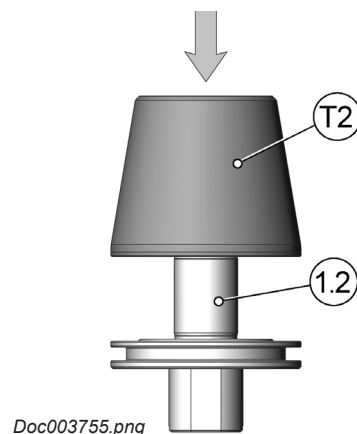
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Installation of the Sealing Ring on the Piston

- 1) Put the mounting cone (T2) on the piston (1.2).



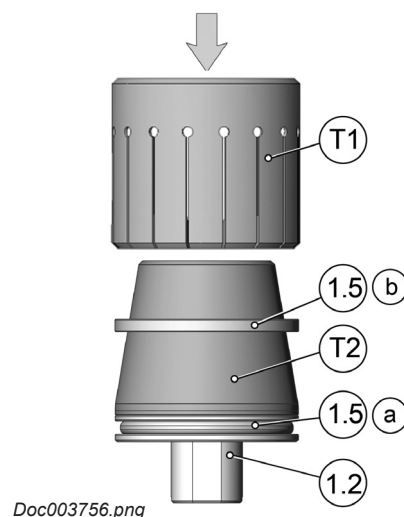
NOTICE

After disassembly of the sealing elements, the original seals should be replaced.

- 2) Mount the O-ring (1.5) (a) into the seal groove of the piston (1.2).
- 3) Using the spreader sleeve (T1) and the mounting cone (T2), push the sealing element (1.5) (b) into the seal groove of the piston (1.2).

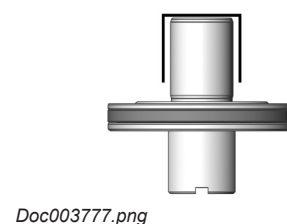
NOTICE

The sealing element (1.5) (b) is placed in the seal groove of the piston (1.2) above the O-ring (1.5) (a).



Installation of the Piston into the Actuator Housing

- 1) Degrease the piston sliding surface.
- 2) Lubricate the piston sliding surface.

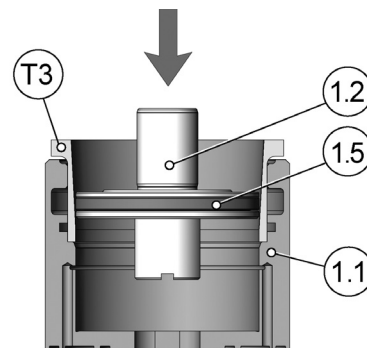




- 3) Insert the piston (1.2) into the calibration sleeve (T3).
- 4) Place the calibration sleeve (T3) into the cylinder housing (1.1).
- 5) Push the piston (1.2) into the cylinder housing.

NOTICE

The calibration sleeve (T3) prevents damage to the piston seal (1.5).

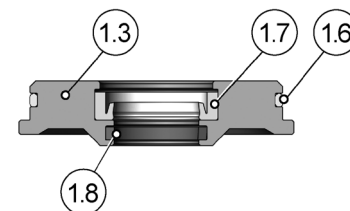


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NOTICE

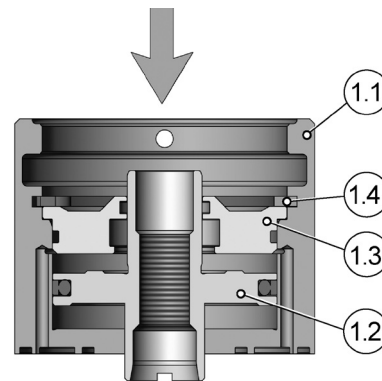
After disassembly of the system, the original seals should be replaced with new seals.

- 6) Install the following seals at the buffer (1.3).
 - O-ring seal (1.6)
 - Rod seal (1.7)
 - Guiding element (1.8)



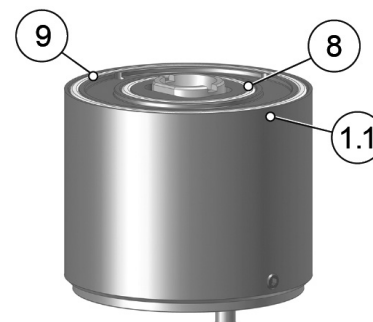
Doc003758.png

- 7) Mount buffer (1.3) into the cylinder housing (1.1).
- 8) Lock the buffer with the retaining ring (1.4).



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- 9) Install the following seals at the actuator housing (1.1).
 - Viton-ring seal (8)
 - Viton-ring seal (9)



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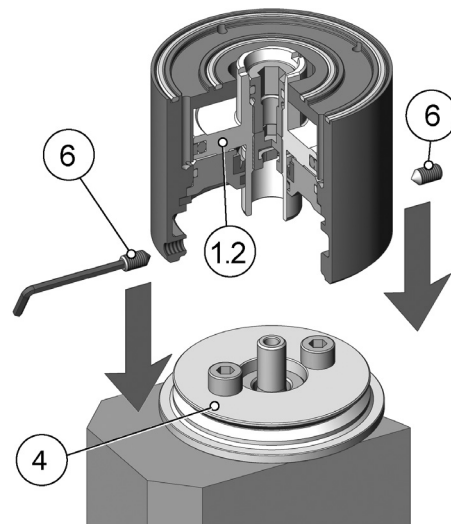
8.2.3.6 Mounting of the Actuator on the Manifold

- 1) Mount actuator to the holding ring (4).
- 2) Lubricate the thread of the hexagon socket set screws (6) with high-temperature assembly paste (anti-seize compound).

NOTICE

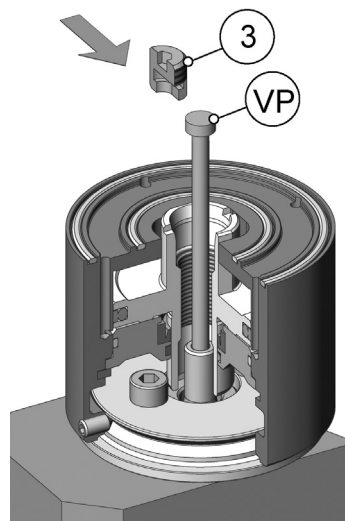
This is an important measure to prevent thread corrosion due to aggressive gases, which could be released during plastics processing.

- 3) Lock the actuator with hexagon socket set screws (6).
- 4) Push piston (1.2) in closed position.



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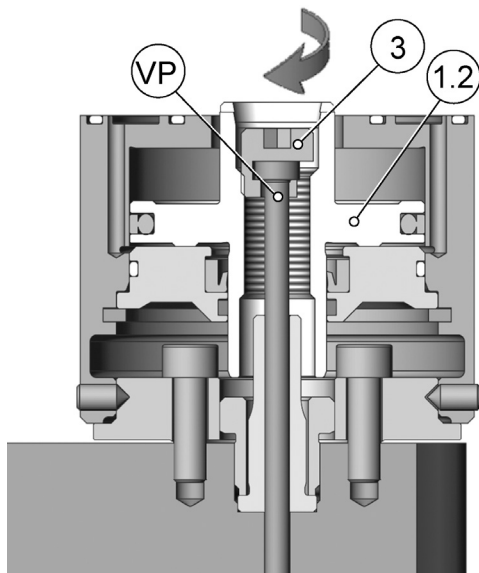
- 5) Mount the valve pin (VP) into the valve pin guide.
- 6) Place the hanger screw (3) on the valve pin (VP) head.



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8.2.3.7 Adjusting the Valve Pin to the Basic Position



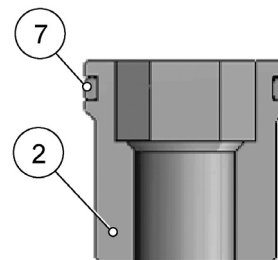
Doc003762.png

- 1) Screw the valve gate pin (VP) with the hanger screw (3) into the piston (1.2).

NOTICE

After disassembly of the system, the original seals should be replaced with new seals.

- 2) Lubricate the viton-ring seal (7) with hydraulic oil or white grease.
- 3) Install the viton-ring seal (7) at the lock screw (2).



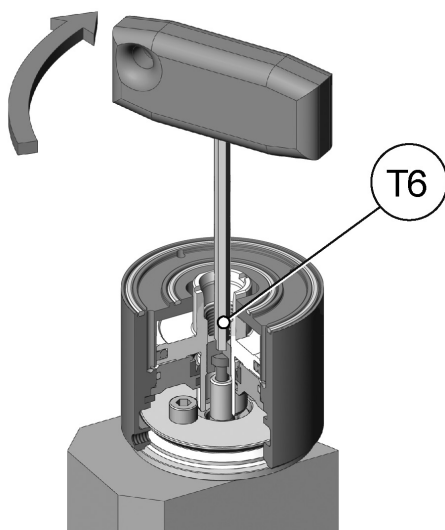
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- 4) Adjust the valve pin with a hexagon socket wrench (T6) as followed.

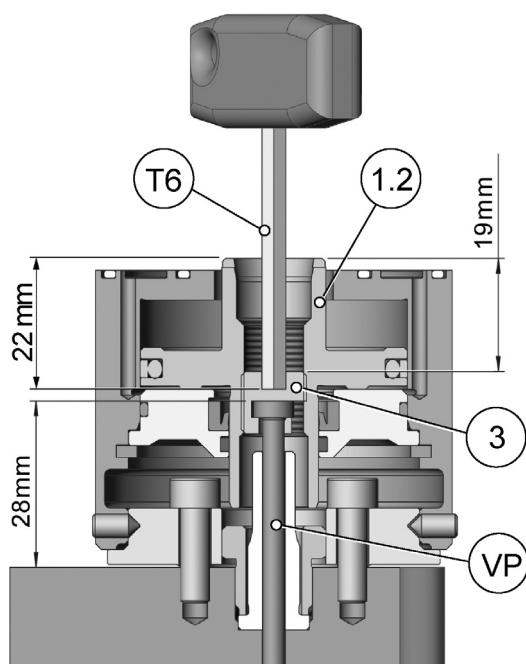
NOTICE

The basic setting for the valve gate pin is 22 mm between the piston (1.2) top edge and the bottom edge from the hanger screw (3) socket wrench seat.

- 5) Rotate the hanger screw (3) with a hexagon socket wrench (T6) into the piston (1.2).



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Doc003764.png

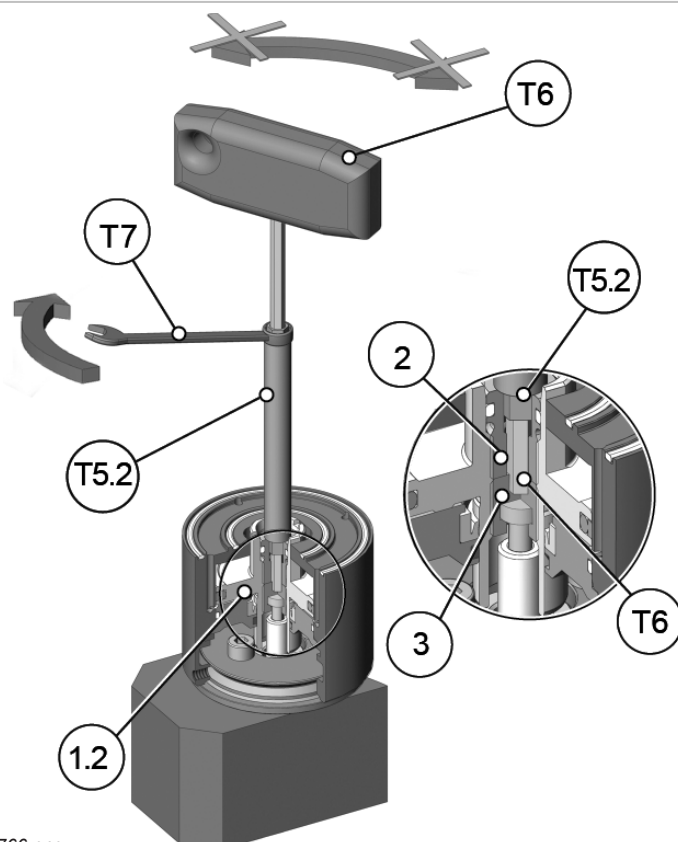
NOTICE

During the fine tuning process it is possible to move the valve pin (VP) in every direction 0.5 mm (1/2 rotation).

The exact position for the valve pin (VP) has to be checked at the front of the valve pin - depends on the nozzle tip.

The reason to unscrew the hanger screw (3) would be for valve pin maintenance or replacement.

If the deviation to the basic settings of 22 mm is more than 0,5 mm, the adjustments do not correspond to the parameters of the mold or do not correspond to the Synventive standard.



Doc003766.png

NOTICE

For actuator assembly the lock screw (2) has to be fastened against the hanger screw (3).

- 6) Rotate the lock screw (2) with the adjustment tool (T5.2) into the piston (1.2).
- 7) Hold against turning the hanger screw (3) with the hexagon socket wrench (T6).
- 8) At the same time tighten the lock screw (2) with the assembly tool (T5.2).



8.2.3.8 Valve Pin Height Adjustment PNC4508B Series

Precondition for the following steps are to be performed with the Hot Runner installed in the mold, and the system at operating temperature.

! WARNING



Hot Surfaces Hazard

Contact between the skin and hot surfaces could result in burns.

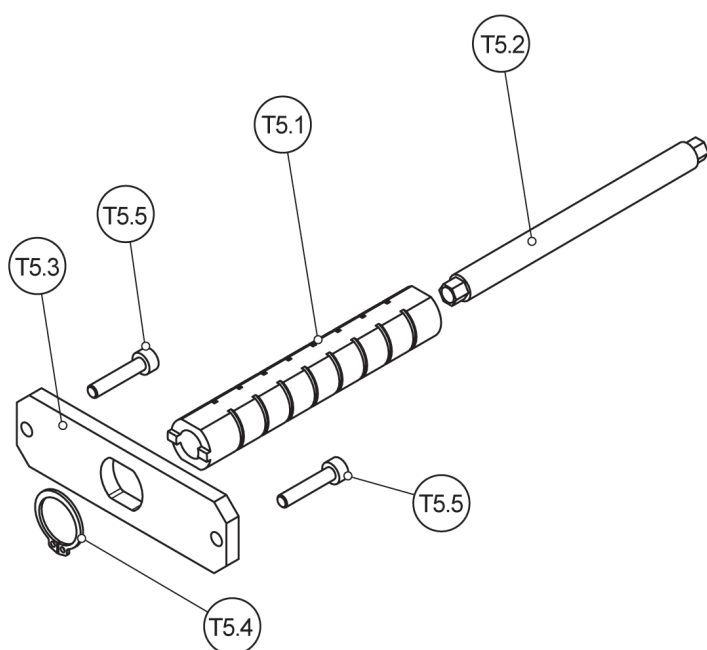
Use personal protective equipment, such as gloves, apron, sleeves and face protection, to guard against burns.

When servicing or handling the hot runner system outside the manifold plates or the injection molding machine, care must be taken to heed the hot surface exposure warnings.

For first aid contact your medical / safety representing



Valve Pin Adjustment Tool Kit



Doc003767.png

Tool Kit for PNC4508B, ATCYL21

No.	Description	Item
(T5.1)	Adjustment Tool Typ01	ATCYL2101
(T5.2)	Adjustment Tool Typ02	ATCYL2102
(T5.3)	Adjustment Tool Typ03	ATCYL2103
(T5.4)	Retaining ring	DIN471-16x1
(T5.5)	Socket head cap screws	DIN912-M4x20-12.9



Valve Pin Adjustment at mounted Hot Runner System

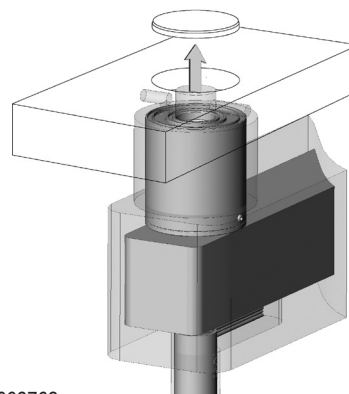
WARNING**Hot Surfaces Hazard**

Contact between the skin and hot surfaces could result in burns.

NOTICE

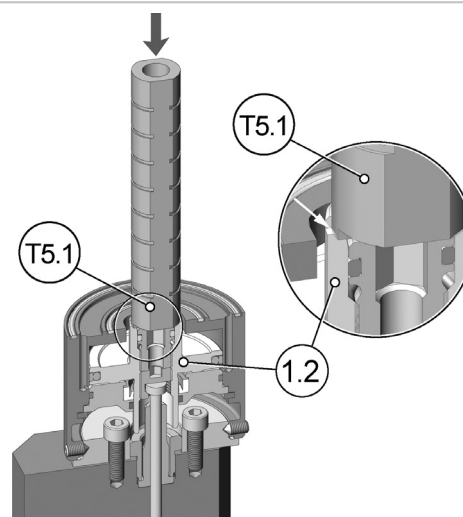
The actuator is covered with a plate, containing the pneumatic access to the actuator.

- 1) Enable access to the actuator.



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- 2) Slip the lug of the adjustment tool Typ01 (T5.1) into the gap of the piston (1.2).

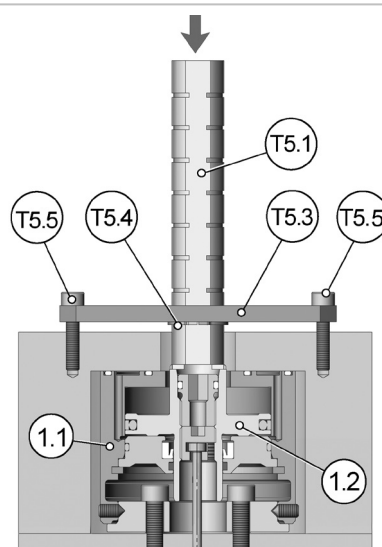


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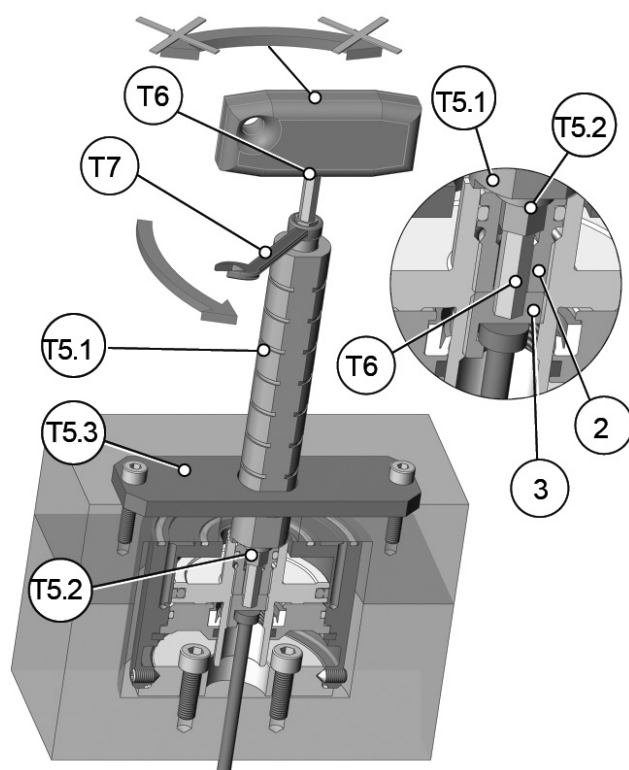
- 3) Push the fixed piston (1.2) forward to the close position.
- 4) Place the retaining ring (T5.4) at the adjustment tool Typ01 (T5.1).
- 5) Place the adjustment tool Typ03 (T5.3) on the retaining ring (T5.4) at the adjustment tool Typ01 (T5.1).
- 6) Fix the piston (1.2) against upstroke with the socket head cap screws (T5.5).

NOTICE

Use torque wrench with wrench insert and the torques indicated in the torque table (section 13).



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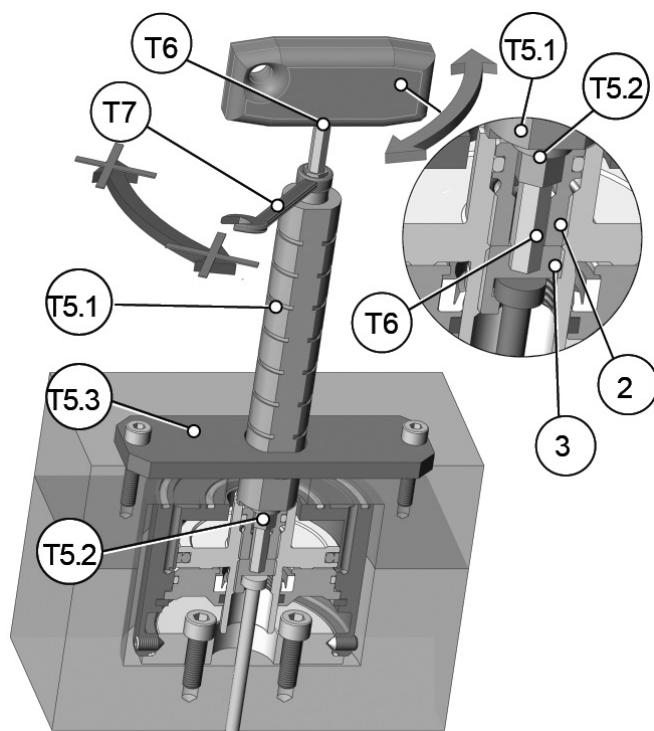


Doc003770.png

- 7) Fix the hanger screw (3) with the socket wrench (T6).
- 8) Slacken the lock screw (2) with the adjustment tool Typ02 (T5.2) and ring wrench (T7) attached to it.

Legend to Doc003770.png

- (T5.1) Adjustment tool Typ01
(T5.2) Adjustment tool Typ02
(T5.3) Adjustment tool Typ03
(3) Hanger screw
(2) Lock screw
(T6) Socket wrench HEX 4
(T7) Ring wrench HEX 7

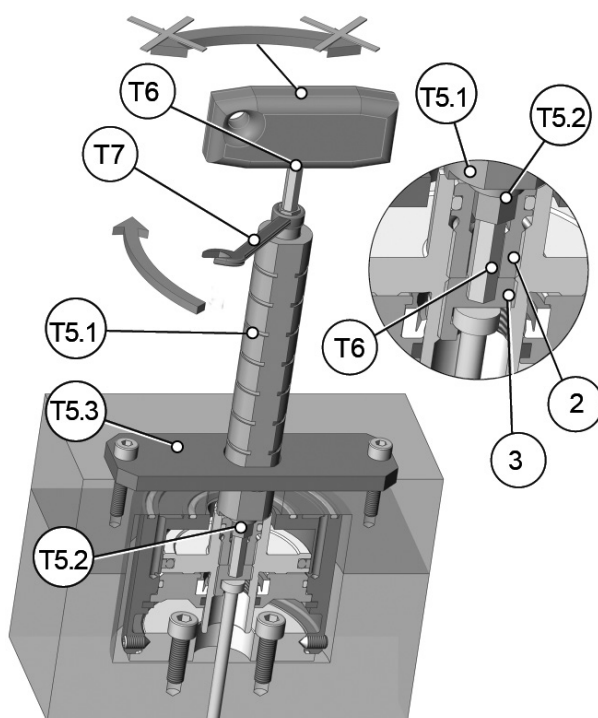


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- 9) To adjust valve pin position:
 - Fix the lock screw (2) with the adjustment tool Typ02 (T5.2) and a ring wrench (T7).
 - Turn the hanger screw (3) with the socket wrench (T6).

NOTICE

The screw pitch is 1 mm (right hand thread).



Doc003772.png

To Fix the Vale Pin Position:

- 10) Secure with the hexagon socket wrench (T6) the hanger screw (3) against turning
- 11) Tighten the lock screw (2) with the adjustment tool Typ02 (T5.2) and a ring wrench (T7).

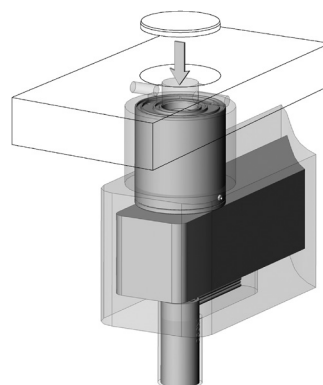
NOTICE

The reason to unscrew the hanger screw (3) would be for valve pin maintenance or replacement.

NOTICE

For the control of the valve pins, a pneumatic system is installed.

- 12) In case where the clamping plate has an opening for the valve pin adjustment, the opening must be capped airtight.



Doc003773.png