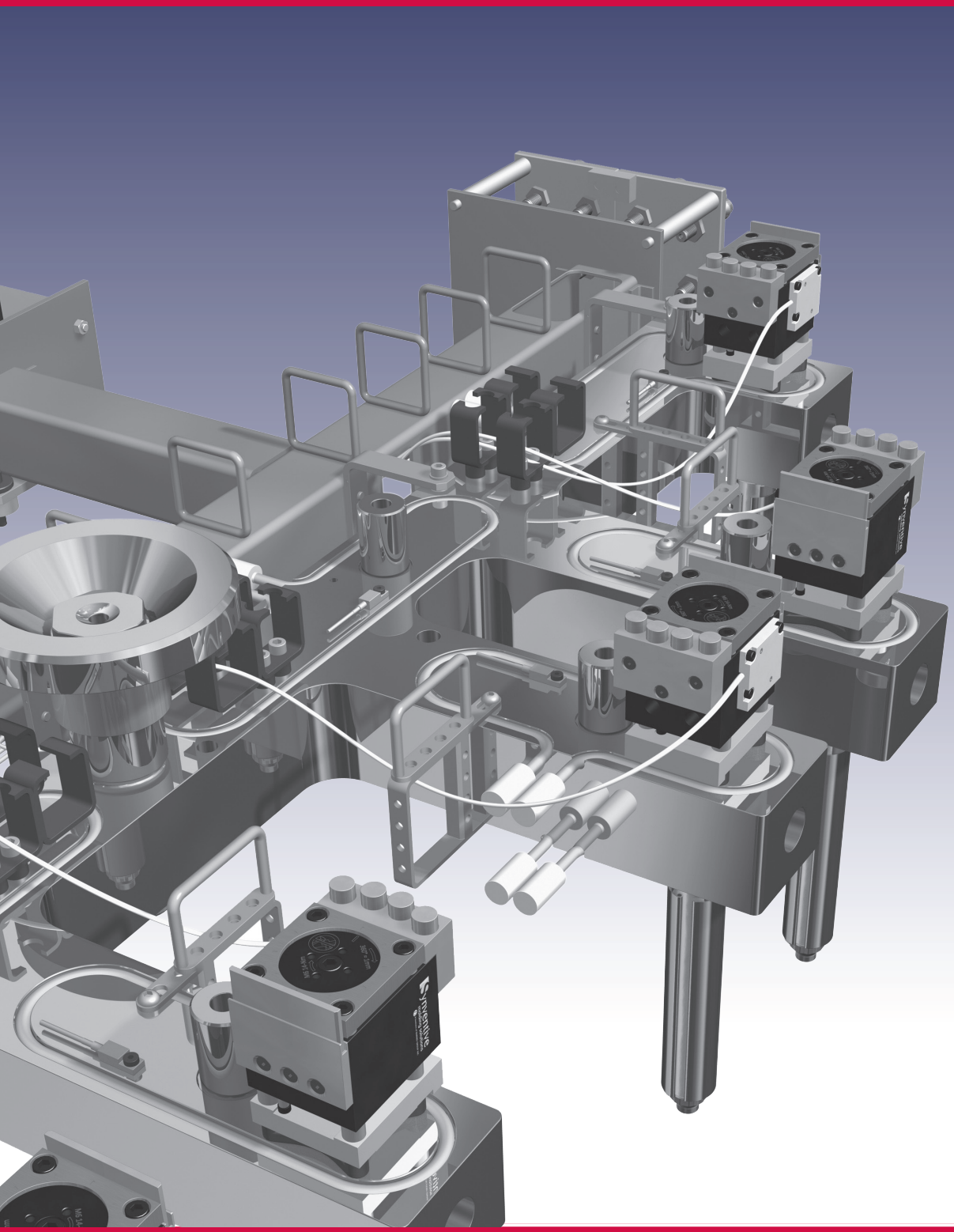
Actuators and Accessories

Product Catalog



Stabilize your Process

CAT-03-0001_EN-Rev21 EN 11 / 2022

Synventive™ molding solutions
A business of BARNES

Valve Gate Components

Product Type

Components and accessories to be added to hot runner systems in order to use them as valve gate systems:

1. Valve gate nozzle head for single nozzles

Nozzle head for single valve gate nozzles; inherent part of the nozzle which will always be delivered including the complete nozzle.

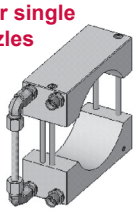
2. Actuator, bolted onto the manifold

Actuator for manifold systems bolted onto the manifold. A required cooling plate is located between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

3. Actuator, in mold plate

Actuator for manifold systems mounted in the mold plate. The actuator is cooled by the cooling system of the plate.

4. Cooling unit for single valve gate nozzles



Without being directly cooled the available single valve gate nozzles can be used up to a mold temperature of 80 °C.
For higher temperatures the associated cooling unit has to be used.

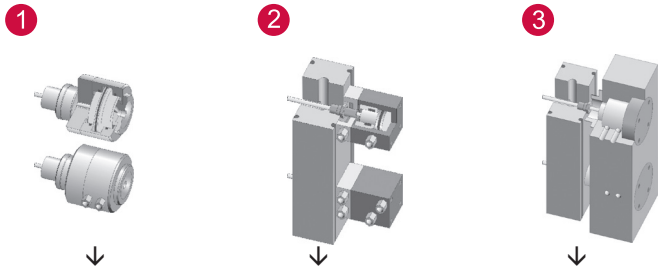
5. SynCool® 1

The actively-cooled HB actuator series with SynCool® 1 technology allows the user to turn off the actuator cooling together with system shutdown. No post cooling required (see page 20 for more information).

6. SynCool® 3

The passively-cooled HB and PB actuator series with SynCool® 3 technology eliminate the need for cooling at pre-heat stations, during operation and post cooling (see page 21 and 24 for more information).

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.



Operation principle	Actuator for single valve gate nozzles	Actuator, bolted onto manifold	Actuator, in mold plate
pneumatic	3 CBNS 5 GANS 7 GBNS	13 PNC3008B 14 PNC4508B 15 PNC4512B 16 PNC6018B 22 PB4008 / PB6016 / PB8016	25 VP4008P 26 VP8016P
hydraulic	9 HYC2013S 11 HYC2314S	17 HYC4520M 18 HB2508 / HB4016	27 HYZ3908 28 QCVG16
electric		32 ELA7616M	29 ELA4308P 30 ELA5708P 31 ELA8708P

For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

CBNS - Pneumatic Actuator for Single Valve Gate Nozzles 09SVP

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Pneumatic actuator for single valve gate nozzles; Inherent part of the nozzle which will always be delivered including the complete nozzle.

Valve pin operation

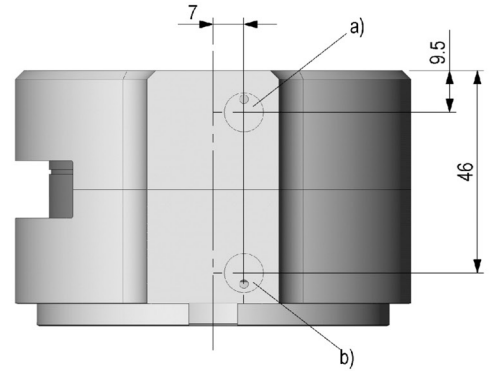
Operation medium	pneumatic
Pressure range	5...10 bar (72.5 - 145 psi)
Flow rate	1.2 l/min
Reaction time	~1.2 s
Valve pin stroke	8 mm
Adjustment	±1.5 mm via adjustment threads from outside
Closing force	792 N / 6 bar (87 psi)
Opening force	792 N / 6 bar (87 psi)
Connections	M10x1 a) close b) open

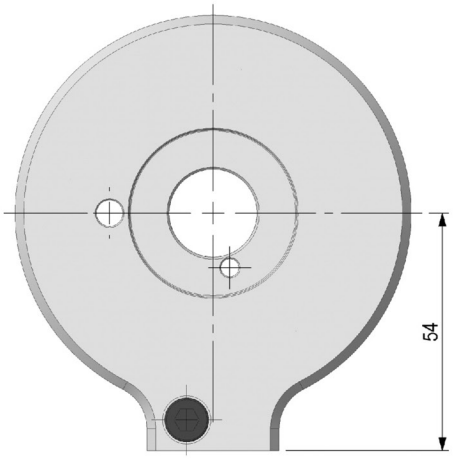
Cooling

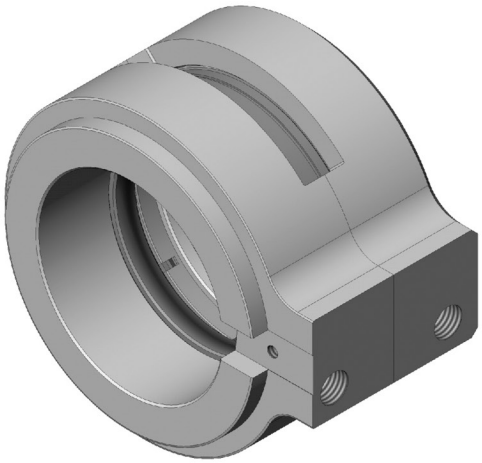
Without being directly cooled the nozzle can be used up to a mold temperature of 80 °C (176 °F). For higher temperatures the associated cooling unit has to be used.

Valve pin

Valve pin diameter	Ø 3.8 mm
Attachment	anti-rotation







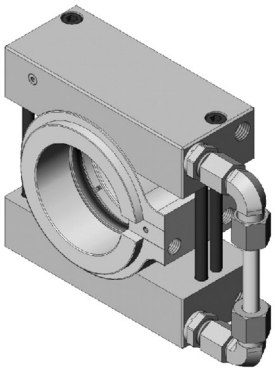
CU07SVP01 - Cooling unit for the Head of the Single Valve Gate Nozzles 09SVP

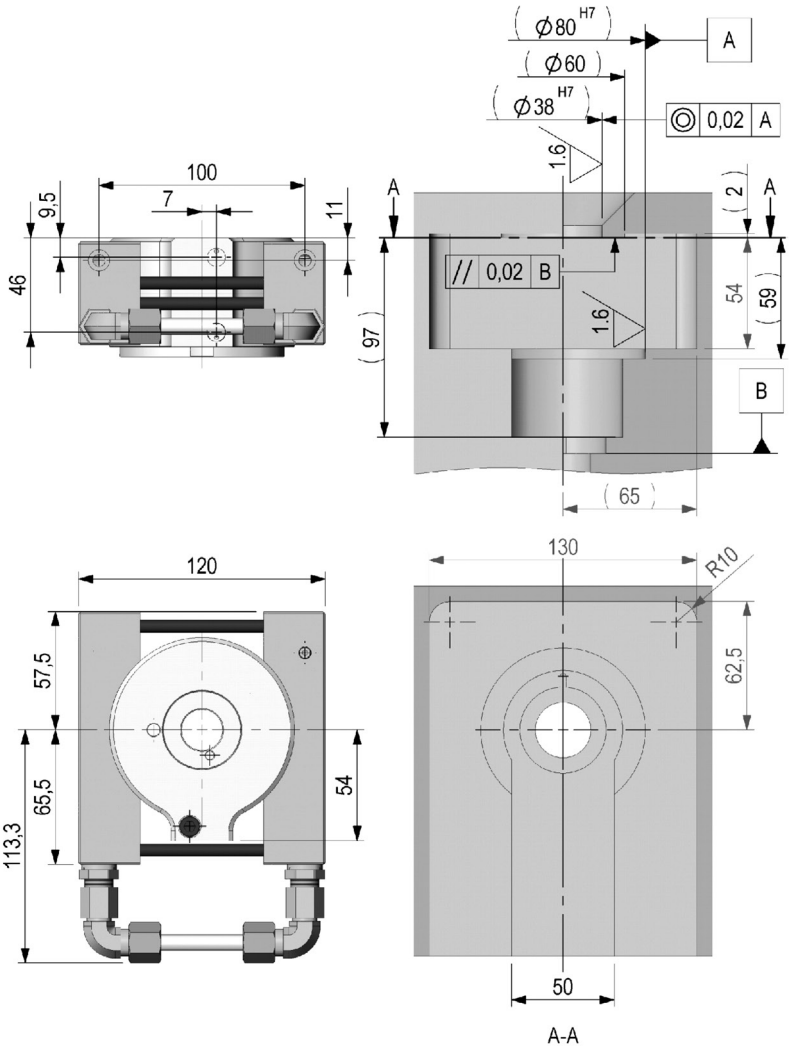
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Without being directly cooled the single valve gate nozzles 09SVP can be used up to a mold temperature of 80 °C (176 °F). For higher temperatures the cooling unit shown here has to be used.

Cooling

Medium	Cooling water
Flow rate	4 l/min
Pressure	max. 8 bar (116 psi)
Temperature	30...60 °C (86 - 140 °F)
Connections	M14x1.5





GANS - Pneumatic Actuator for Single Valve Gate Nozzles 12SVP

Pneumatic actuator for single valve gate nozzles; Inherent part of the nozzle which will always be delivered including the complete nozzle.

Valve pin operation

Operation medium	pneumatic
Pressure range	5...10 bar (72.5 - 145 psi)
Flow rate	5.4 l/min / 5 bar (72.5 psi)
Reaction time	~1.2 s
Valve pin stroke	13 mm
Adjustment	±1.5 mm via adjustment threads from outside
Closing force	2081 N / 6 bar (87 psi)
Opening force	2081 N / 6 bar (87 psi)
Connections	M12x1.5 a) close b) open

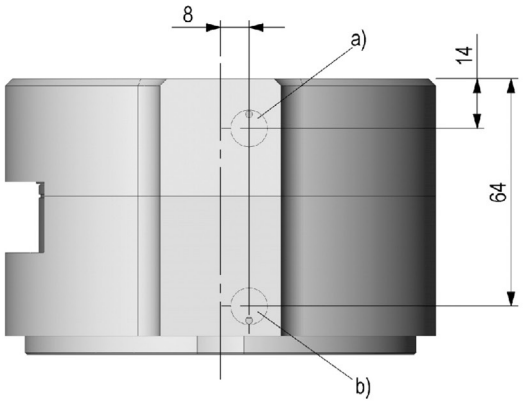
Cooling

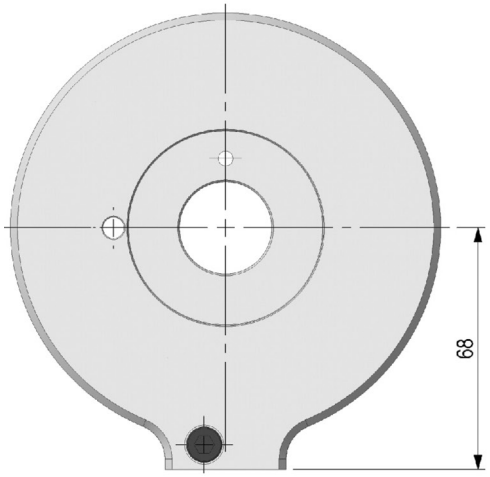
Without being directly cooled the nozzle can be used up to a mold temperature of 80 °C (176 °F). For higher temperatures the associated cooling unit has to be used.

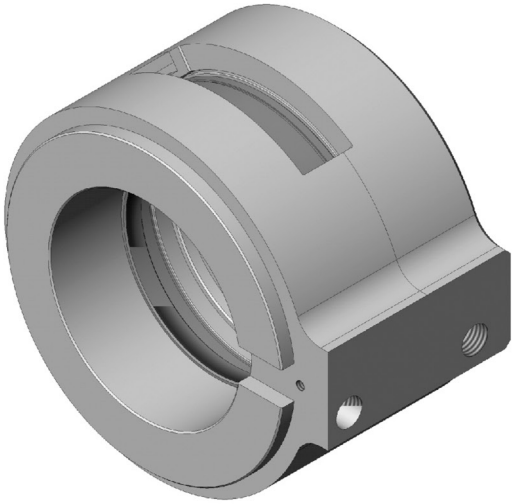
Valve pin

Valve pin diameter	Ø 6 mm
Attachment	anti-rotation

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.







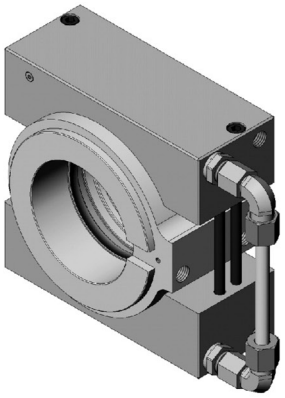
CU12SVP01 - Cooling unit for the Actuator of the Single Valve Gate Nozzles 12SVP

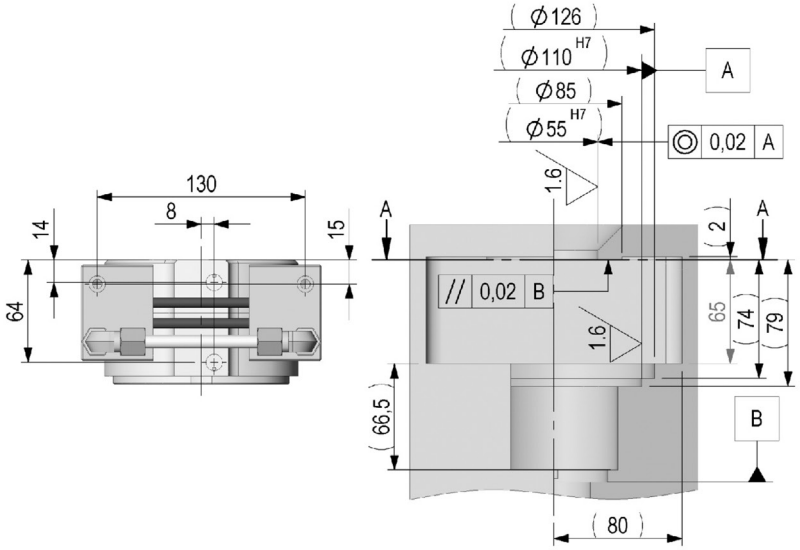
Without being directly cooled the single valve gate nozzles 12SVP can be used up to a mold temperature of 80 °C (176 °F). For higher temperatures the cooling unit shown here has to be used.

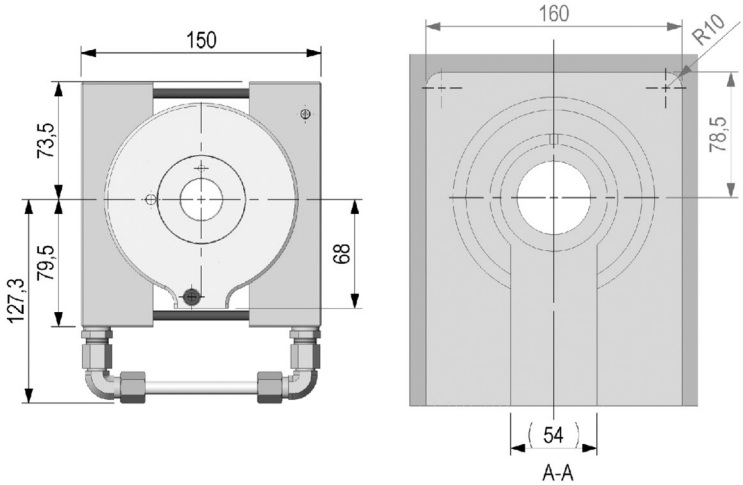
Cooling

Medium	Cooling water
Flow rate	4 l/min
Pressure	max. 8 bar (116 psi)
Temperature	30...60 °C (86 - 140 °F)
Connections	M14x1.5

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.







For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

GBNS - Pneumatic Actuator for Single Valve Gate Nozzles 16SVP

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Pneumatic actuator for single valve gate nozzles; Inherent part of the nozzle which will always be delivered including the complete nozzle.

Valve pin operation

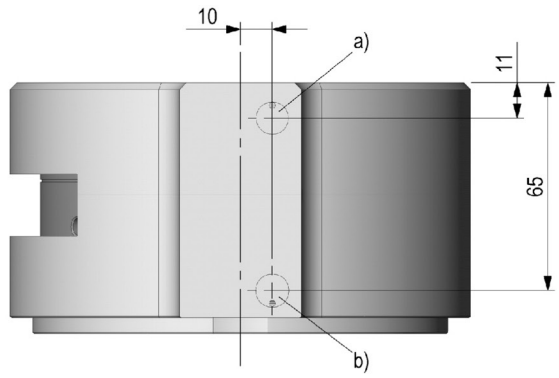
Operation medium	pneumatic
Pressure range	5...10 bar (72.5 - 145 psi)
Flow rate	10 l/min / 5 bar (72.5 psi)
Reaction time	~1.4 s
Valve pin stroke	14 mm
Adjustment	±1.5 mm via adjustment threads from outside
Closing force	3579 N / 6 bar (87 psi)
Opening force	3579 N / 6 bar (87 psi)
Connections	M12x1.5 a) Close b) Open

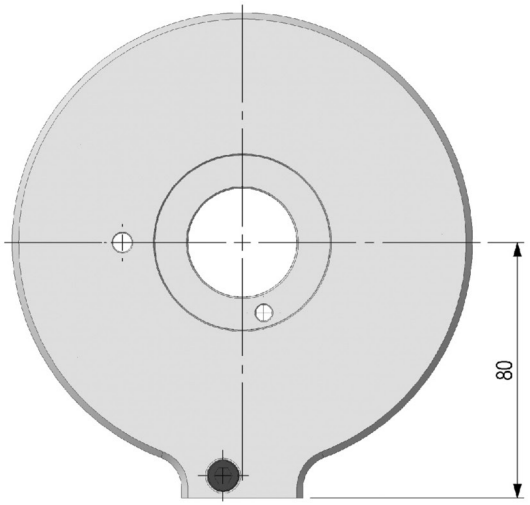
Cooling

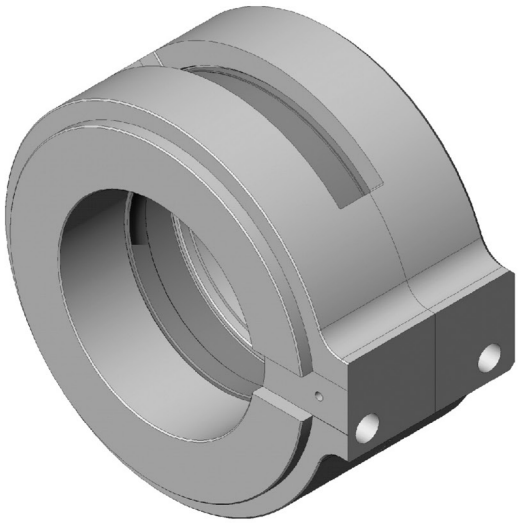
Without being directly cooled the nozzle can be used up to a mold temperature of 80 °C (176 °F). For higher temperatures the associated cooling unit has to be used.

Valve pin

Valve pin diameter	Ø 8 mm
Attachment	anti-rotation







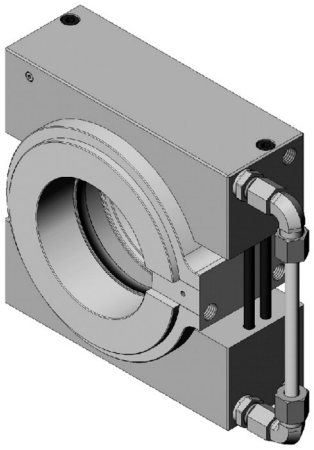
CU16SVP01 - Cooling unit for the Actuator of the Single Valve Gate Nozzles 16SVP

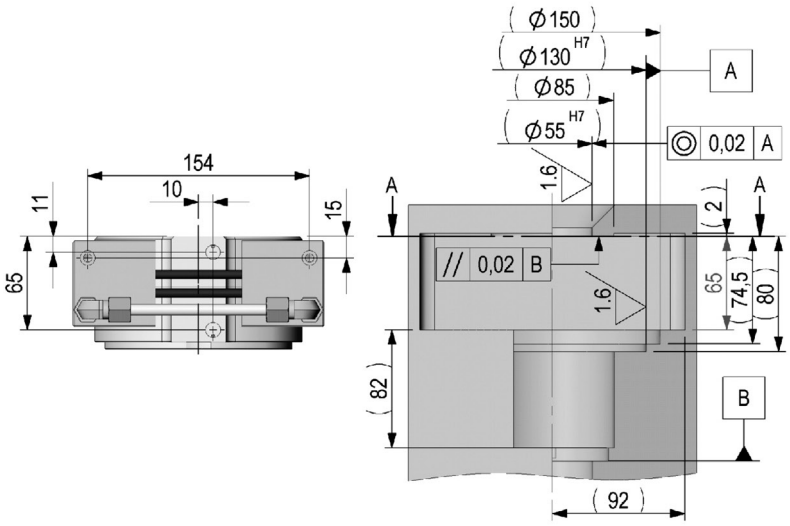
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

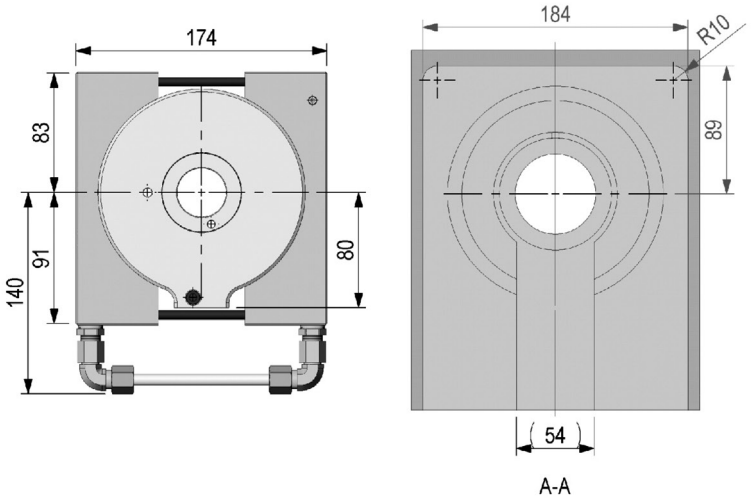
Without being directly cooled the single valve gate nozzles 16SVP can be used up to a mold temperature of 80 °C (176 °F). For higher temperatures the cooling unit shown here has to be used.

Cooling

Medium	Cooling water
Flow rate	4 l/min
Pressure	max. 8 bar (116 psi)
Temperature	30...60 °C (86 - 140 °F)
Connections	M14x1.5







For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

HYC2013S01 - Hydraulic Actuator for Single Valve Gate Nozzles 12SVH

Hydraulic actuator for single valve gate nozzles; Inherent part of the nozzle which will always be delivered including the complete nozzle.

Valve pin operation

Operation medium	hydraulic
Operating pressure	40.bar (580 psi)
Pressure range*	40 - 60 bar (580...870 psi)

*for operating pressure > 40 bar (580 psi) please consult Synventive

Flow rate	2.5 l/min
Reaction time	~0.5 s
Valve pin stroke	13 mm
Adjustment	±1 mm via adjustment threads from outside
Closing force	3770 N (40 bar)
Opening force	2825 N (40 bar)
Connections	M12x1.5 (8-L) a) close b) open

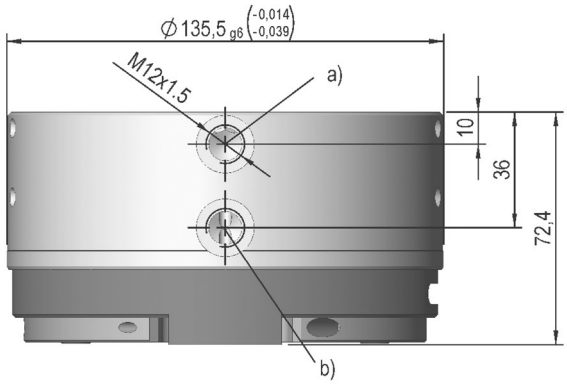
Cooling

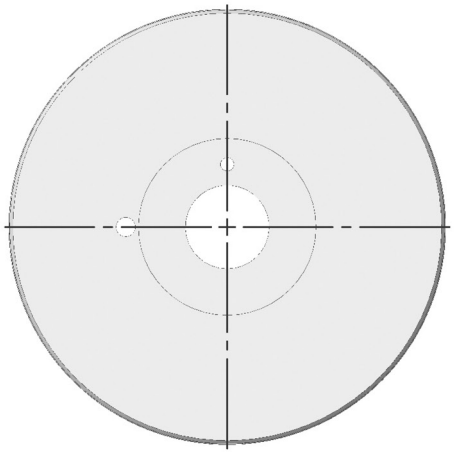
Without being directly cooled the nozzle can be used up to a mold temperature of 80 °C (176 °F). For higher temperatures the associated cooling unit has to be used.

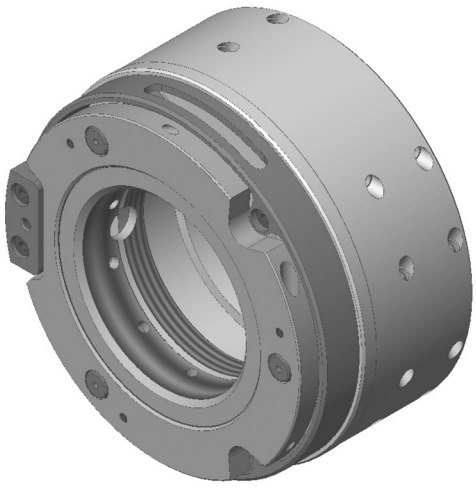
Valve pin

Valve pin diameter	Ø 6 mm
Attachment	anti-rotation

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.







For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

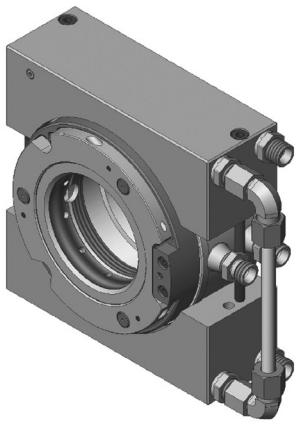
CU12SVH - Cooling unit for the Actuator of the Single Valve Gate Nozzles 12SVH

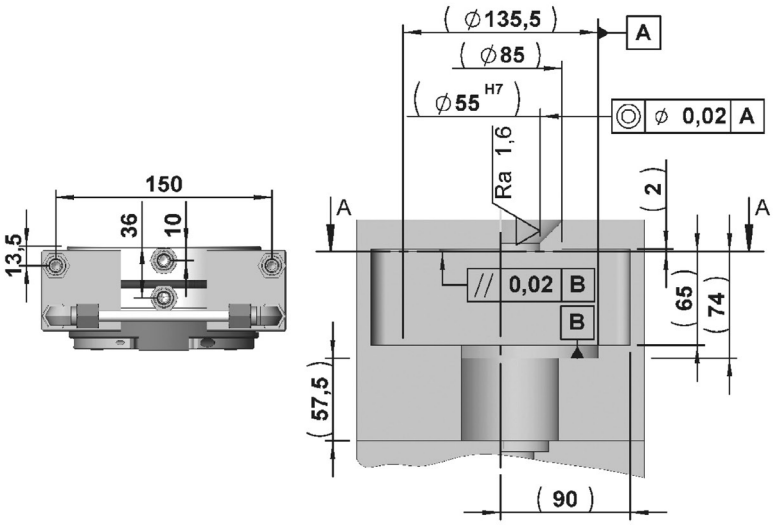
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

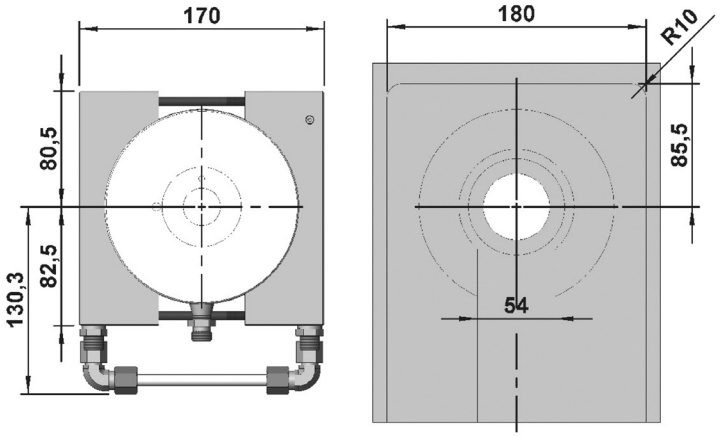
Without being directly cooled the single valve gate nozzles 12SVH can be used up to a mold temperature of 80 °C (176 °F). For higher temperatures the cooling unit shown here has to be used.

Cooling

Medium	Cooling water
Flow rate	4 l/min
Pressure	max. 8 bar (116 psi)
Temperature	30...60 °C (86 - 140 °F)
Connections	M14x1.5







HYC2314S - Hydraulic Actuator for Single Valve Gate Nozzles 16SVH

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Hydraulic actuator for single valve gate nozzles; Inherent part of the nozzle which will always be delivered including the complete nozzle.

Valve pin operation

Operation medium	hydraulic
Operating pressure	40.bar (580 psi)
Pressure range*	40 - 60 bar (580...870 psi)

*for operating pressure > 40 bar (580 psi) please consult Synventive

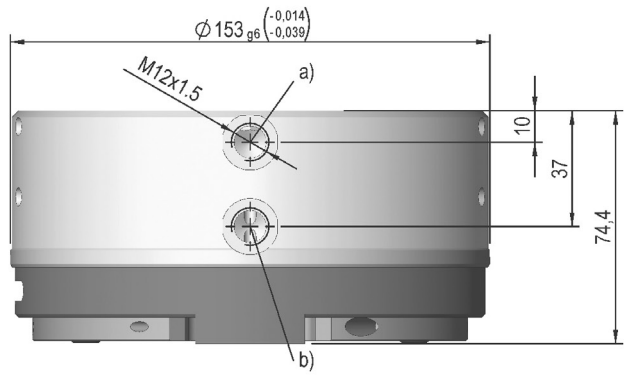
Flow rate	2.5 l/min
Reaction time	~0.5 s
Valve pin stroke	14 mm
Adjustment	±1 mm via adjustment threads from outside
Closing force	4984 N / 40 bar (580 psi)
Opening force	4043 N / 40 bar (580 psi)
Connections	M12x1.5 (8-L) a) close b) open

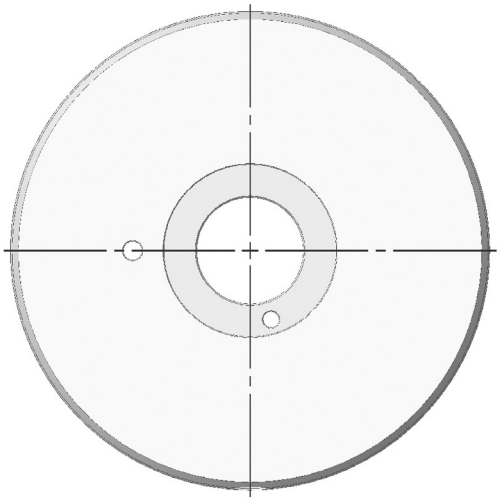
Cooling

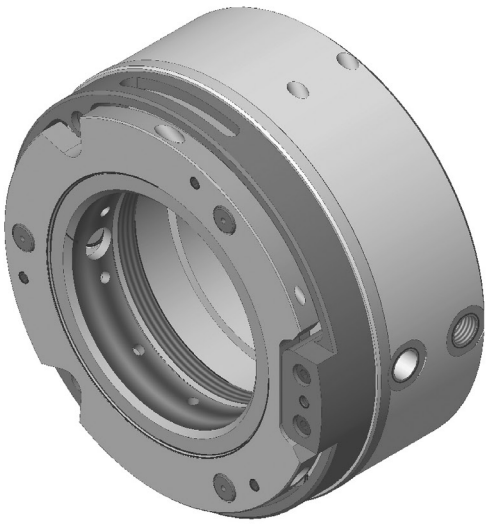
Without being directly cooled the nozzle can be used up to a mold temperature of 80 °C (176 °F). For higher temperatures the associated cooling unit has to be used.

Valve pin

Valve pin diameter	Ø 8 mm
Attachment	anti-rotation







For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

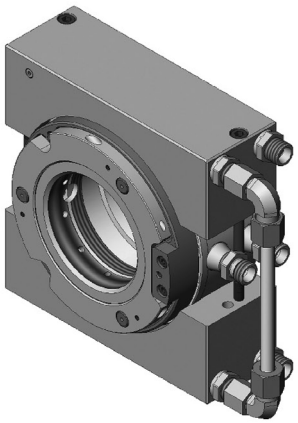
CU16SVH - Cooling unit for the Actuator of the Single Valve Gate Nozzles 16SVH

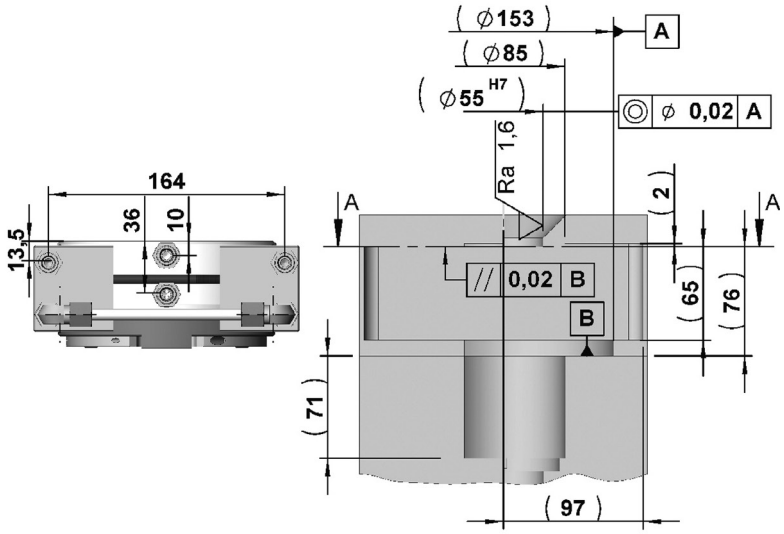
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

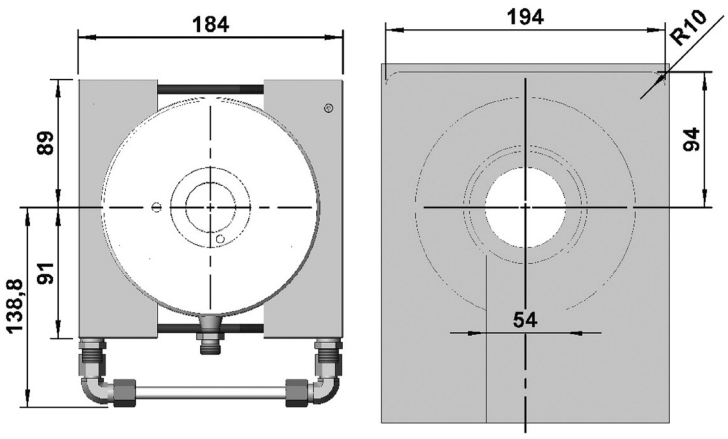
Without being directly cooled the single valve gate nozzles 16SVH can be used up to a mold temperature of 80 °C. For higher temperatures the cooling unit shown here has to be used.

Cooling

Medium	Cooling water
Flow rate	4 l/min
Pressure	max. 8 bar (116 psi)
Temperature	30...60 °C (86 - 140 °F)
Connections	M14x1.5







PNC3008B Series - Pneumatic Actuator, bolted onto manifold

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Actuator for manifold systems, bolted onto the manifold. It is sealed by the back plate based on the thermal expansion of the manifold stack height.

Valve pin operation

Operation medium	pneumatic
Pressure range	6...12 bar (87...174 psi)
Flow rate	2 l/min
Reaction time	~0.5 s
Valve pin stroke	8 mm
Adjustment	± 1 mm via adjustment threads from topside
Closing force	424 N / 6 bar (87 psi) 848 N / 12 bar (174 psi)
Opening force	332 N / 6 bar (87 psi) 663 N / 12 bar (174 psi)

Cooling

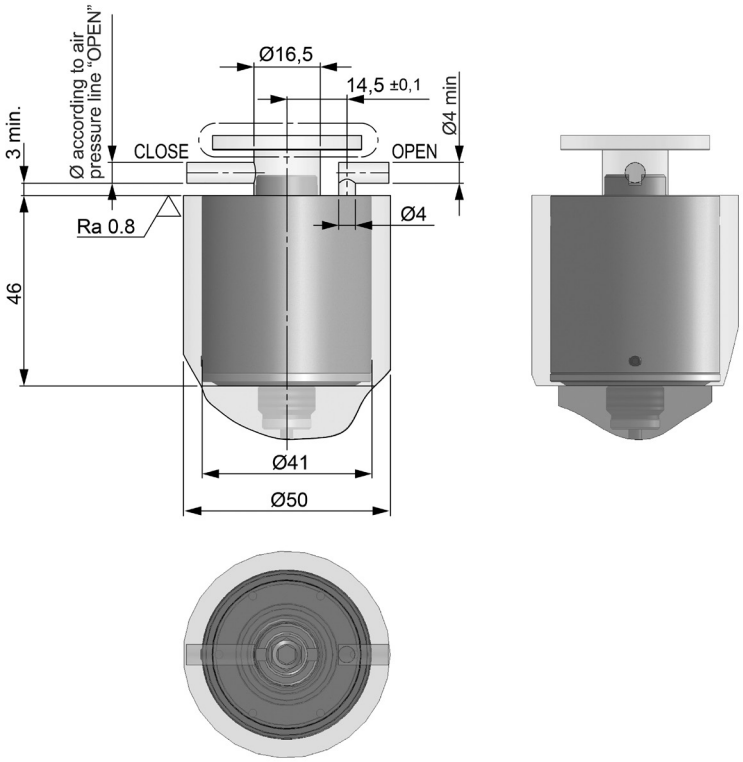
The design provides an indirect cooling through the back plate (max. 80 °C / 175 °F), otherwise cooling lines are required.

Connections

No piping. Pressure line provided by back plate.

Valve pin

Valve pin diameter	Ø 3 mm
Attachment	T - head



Equal length air pressure (OPEN / CLOSE) lines to each actuator are required in order to achieve balanced air pressure and simultaneous actuation.

For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

PNC4508B Series - Pneumatic actuator, bolted onto manifold

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Actuator for manifold systems, bolted onto the manifold. It is sealed by the back plate based on the thermal expansion of the manifold stack height.

Valve pin operation

Operation medium	pneumatic
Pressure range	6...12 bar (87...174 psi)
Flow rate	5 l/min
Reaction time	~0.5 s
Valve pin stroke	8 mm
Adjustment	± 1 mm via adjustment threads from topside
Closing force	924 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.

Connections

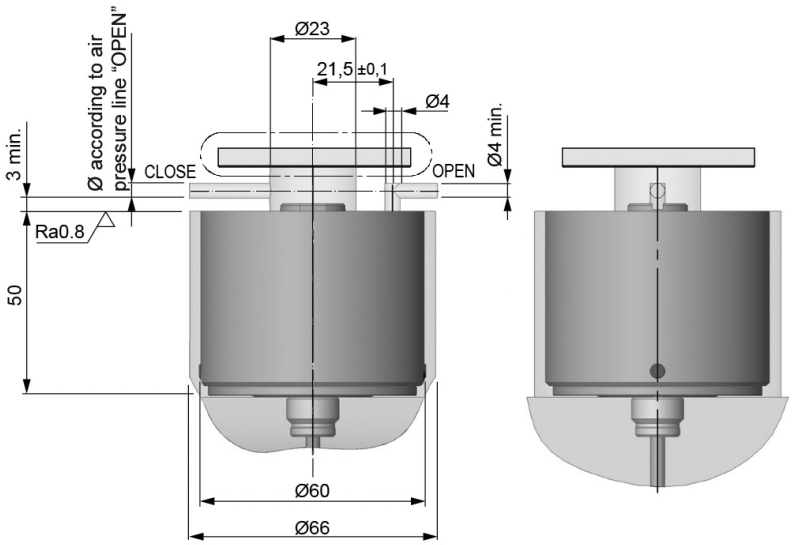
No piping. Pressure line provided by back plate.

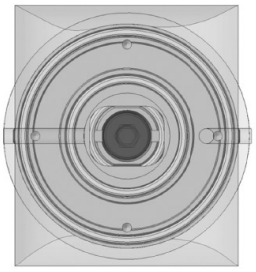
Valve pin

Valve pin diameter	Ø 3 mm, Ø 3.8 mm
Attachment	T - head

Available versions

PNC4508B-01	Valve pin Ø 3.8 mm
PNC4508B-02	Valve pin Ø 3 mm





Equal length air pressure (OPEN / CLOSE) lines to each actuator are required in order to achieve balanced air pressure and simultaneous actuation.

PNC4512B Series - Pneumatic actuator, bolted onto manifold

Product Description

Actuator for manifold systems, bolted onto the manifold. It is sealed by the back plate based on the thermal expansion of the manifold stack height.
The Position Sensor detects pin position and sends a signal to activeGate® products providing closed loop position control or pin position indication and speed monitoring with Valve Monitoring Interface (VMI).
The limit switch provide the open and close signal of valve pin.

Valve pin operation

Operation medium	pneumatic
Pressure range	6...12 bar (87...174 psi)
Flow rate	7 l/min
Valve pin stroke	12 mm
Adjustment	± 1 mm via adjustment threads from topside
Closing force	924 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)

Valve pin

Attachment	T - head

Available versions

Part Number	Position Sensor	Valve Pin
PNC4512B-02	Available with, 1 m cable	Ø3.8 mm
PNC4512B-03	Available with, 1 m cable	Ø3 mm
PNC4512B-04	----------	Ø3.8 mm
PNC4512B-05	----------	Ø3 mm
PNC4512B-06	Available with, 3 m cable	Ø3.8 mm
PNC4512B-07	Available with, 3 m cable	Ø3 mm
PNC4512B-08	Available with, 3 m cable	Ø3.8 mm
PNC4512B-09	Available with, 3 m cable	Ø3 mm

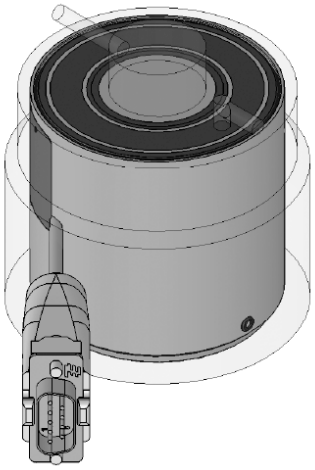
Cooling

The design provides an indirect cooling through the back plate (max. 80 °C / 175 °F), otherwise cooling lines are required.

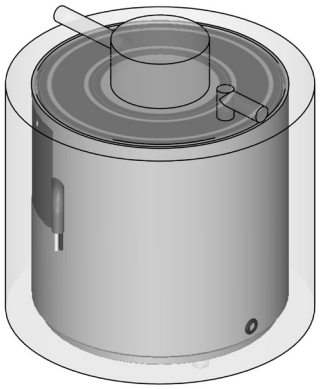
Connections

No piping. Pressure line provided by back plate.

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

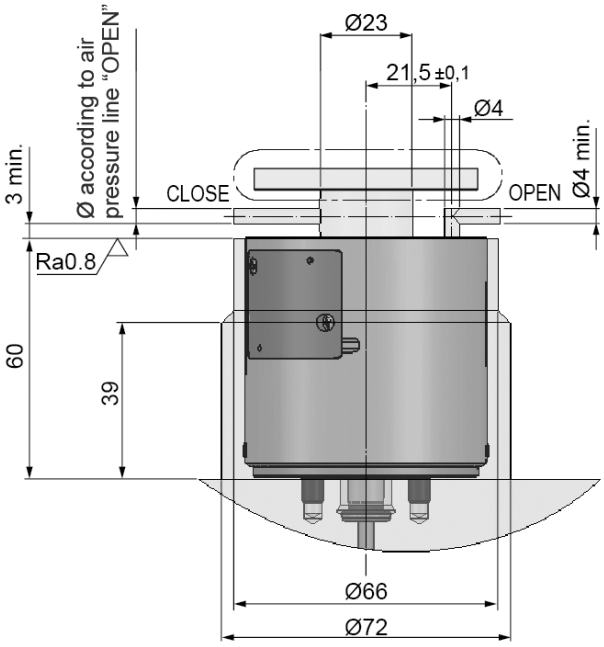


PNC4512B-02/03/06/07



PNC4512B-08/09

PNC4512B-04/05 without sensor



Equal length air pressure (OPEN / CLOSE) lines to each actuator are required in order to achieve balanced air pressure and simultaneous actuation.

PNC6018B-02 - Pneumatic actuator, bolted onto manifold

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Actuator for manifold systems, bolted onto the manifold. It is sealed by the back plate based on the thermal expansion of the manifold stack height.

Valve pin operation

Operation medium	pneumatic
Pressure range	6...12 bar (87...174 psi)
Flow rate	6.5 l/min
Reaction time	~0.5 s
Valve pin stroke	18 mm
Adjustment	± 1 mm via adjustment threads from topside
Closing force	1696 N / 6 bar (87 psi) 3393 N / 12 bar (116 psi)
Opening force	1447 N / 6 bar (87 psi) 2894 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.

Connections

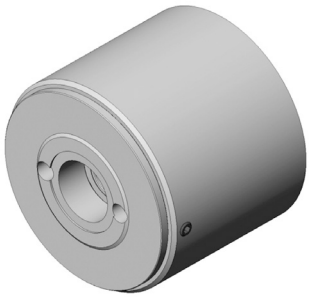
No piping. Pressure line provided by back plate.

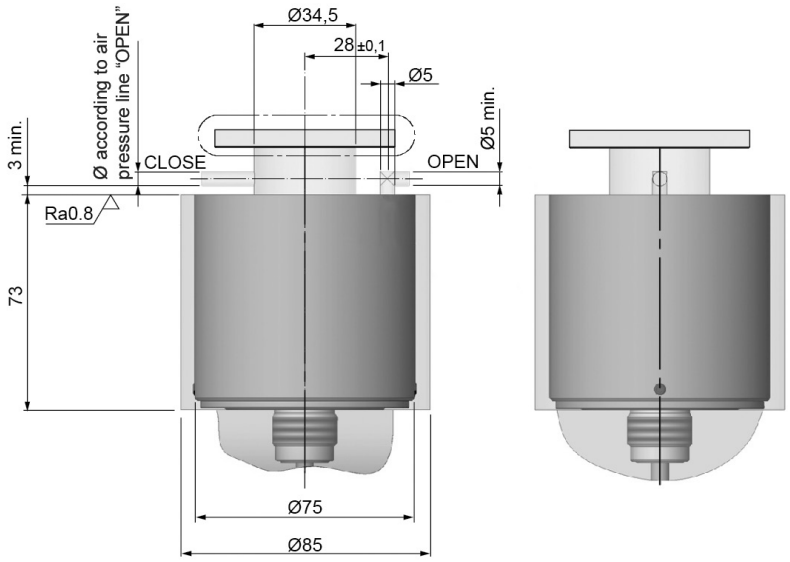
Valve pin

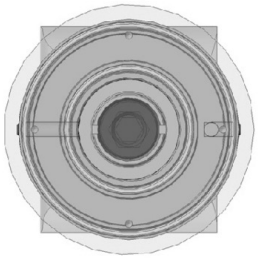
Valve pin diameter	Ø 6 mm Ø 5 mm
Attachment	T - head

Available versions

PNC6018B-02	Valve pin, anti-rotation







Equal length air pressure (OPEN / CLOSE) lines to each actuator are required in order to achieve balanced air pressure and simultaneous actuation.

HYC4520M Series - Hydraulic Actuator, bolted onto manifold

Actuator for manifold systems bolted onto the manifold. A required cooling plate is located between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

Valve pin operation

Operation medium hydraulic

Operating pressure	**HYC4520M04 series** 120 bar (1740 psi) **HYC4520M05 series** 50...60 bar (730...870psi)
Flow rate	**HYC4520M04 series** 3 l/min **HYC4520M05 series** 3 l/min
Reaction time	~0.5 s
Valve pin stroke	20 mm
Adjustment	±1.5 mm via adjustment threads from outside
Closing force	14100 N / 120 bar (1740 psi)
Opening force	14100 N / 120 bar (1740 psi)
Connections	M12x1.5 (8-L) a) close b) open

Cooling

Medium	Cooling water
Flow rate	6 l/min
Temperature	30...60 °C (86 - 140 °F)
Connections	M12x1.5 (8-L) max. 3 Actuators in a row c) different positions on cooling plate

Valve pin

Valve pin diameter	Ø 6 mm, Ø 8 mm
Attachment	Quick coupling, anti-rotation

Available versions

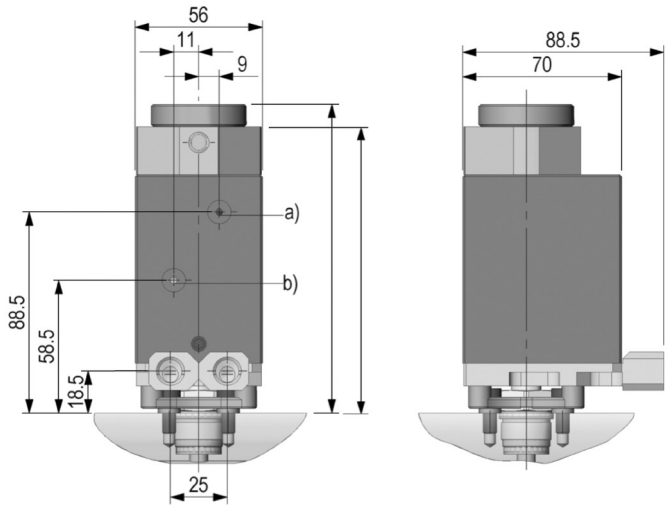
HYC4520M04-F/-R	with position sensor
HYC4520M05-F/-R	without position sensor

-F = Cooling Full for valve pin guide

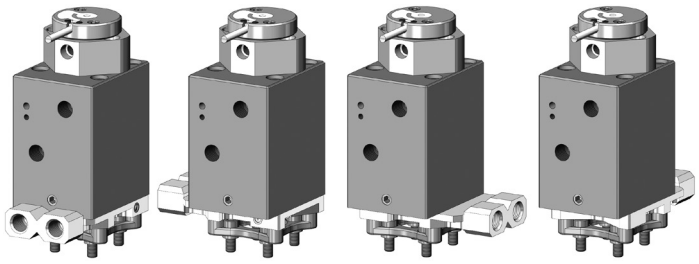
-R = Cooling Reduced for valve pin guide

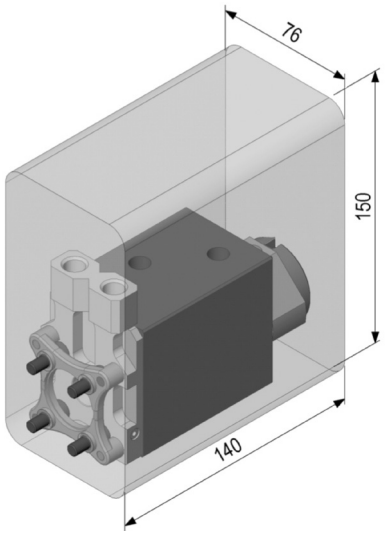
We recommend to cool the actuator after the end of production for 60 minutes at 30°C to protect it against overheat due to heat flow from the manifold.

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.



c) different positions





HB Series - Actively-cooled Hydraulic Actuator, bolted onto manifold

Available Versions

HB2508
HB4016

Product Description

The actively-cooled HB hydraulic actuator series is bolted onto the manifold.

Each Actuator is available with optional Thermocouple (TC) and patented Position Sensor (PS).

The Position Sensor detects pin position and sends a signal to activeGate® products providing closed loop position control or pin position indication and speed monitoring with Valve Monitoring Interface (VMI).

All HB series actuators are provided with the following features:

- Automatic bleed for air removal in Hydraulic lines to provide consistent actuation
- Easy Valve Pin adjustment through cutout in top clamp plate
- Valve Pin quick coupling
- Valve Pin anti-rotation feature

Note: An oil filter with a rating of 10 micron or smaller is required in order to ensure proper automatic bleed performance.

Cooling the Actuator

The cooling plate between the Actuator and the manifold (not shown) provides active cooling of the needle guide and the Actuator to thermally separate it from the hot manifold surface.

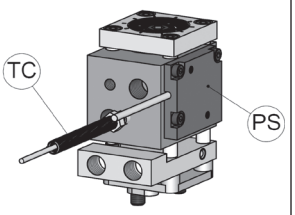
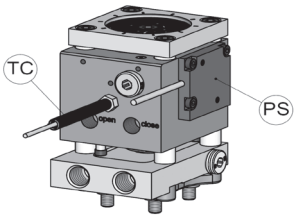
A maximum of three Actuators can be plumbed in series to create an independent cooling circuit to prevent overheating of the Actuators.

Maintaining Actuator cooling after end of production for fifteen minutes will protect against overheating.

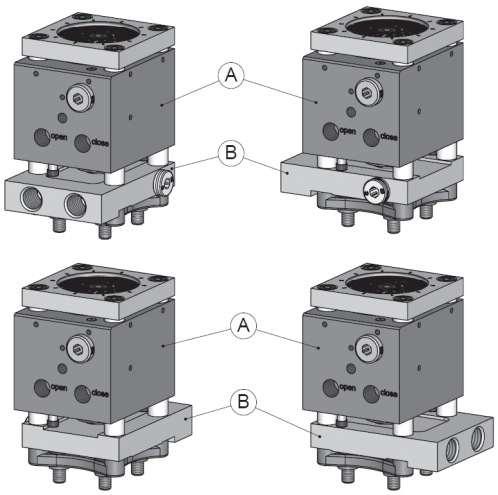
Cooling Plate (B) can be rotated independently of the Actuator Housing (A).

Note: SynCool® 1 option is available to eliminate post-cooling requirement for many applications (see page 20 for more information).

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

HB2508	HB4016
	

Parameter	HB2508	HB4016
Valve Pin Diameter	3 mm, 3.8 mm	5 mm, 6 mm, 8 mm
Nozzle Series	06E, 09E	12E, 16E, 22E
Pin Adjustment	+/- 1 mm	+/- 1.5 mm
Min/Max Close Forces	1963/2945N	5027/7540N
Min/Max Open Forces	443/2267N	3506/5259N
Min/Max. Hydraulic Pressure	40/60bar (600/870psi)	40/60bar (600/870psi)
Valve Pin Stroke	8 mm	16 mm
Hydraulic Connections	M10x1.0	M10x1.0
Cooling Temperature	30/60°C	30/60°C
Cooling Connections	M10x1.0	M12x1.5



For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

HB Series - Actively-cooled Hydraulic Actuator, bolted onto manifold

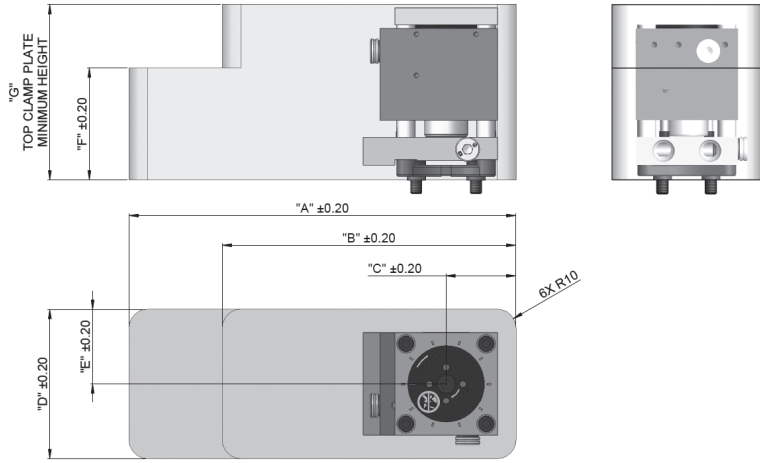
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Cutout Dimensions

Cutout dimensions are provided for reference as a guide to determine basic requirements. Reference system drawings for actual dimensions.

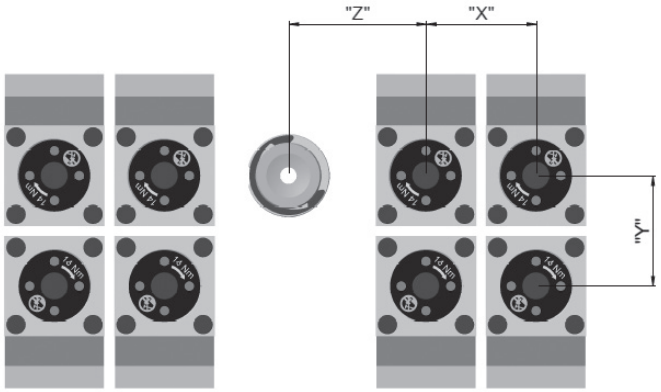
Actuator	"A"	"B"	"C"	"D"	"E"	"F"	"G"
HB2508	198	N/A	28	61	30.5	N/A	76
HB4016	207.5	157.5	37.5/ (40*)	80	40	60	94/(98*)

*SynCool® 3 option dimensions



Pitch Dimensions

Pitch dimensions are provided for reference as a guide to determine minimum basic requirements. Consult Synventive for applications requiring tighter pitches.



Without Position Sensor					
Actuator	"X"	"Y"	"Z" (IB24)	"Z" (IB32)	"Z" (IB50)
HB2508	38	38	39	43	56
HB4016	61	56	53	57	70
With Position Sensor					
HB2508	44	38	56	61	83
HB4016	63	56	65	70	93

Add 12 mm to the "Y" dimension when SynCool® 3 is used

HB Series - Actively-cooled, using SynCool® 1 Technology, bolted onto manifold

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

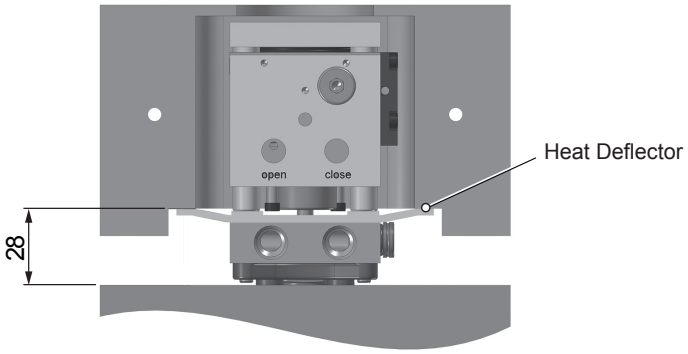
Description

The actively-cooled HB actuator series is available with SynCool® 1 technology. The cooling plate between the actuator and the manifold provides active cooling of the needle guide and the actuator in order to thermally separate it from the hot manifold surface.

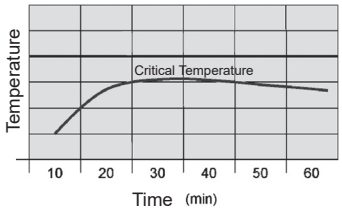
SynCool® 1 technology provides indirect cooling from the top clamp plate, which allows the operator to turn off the hotrunner system, actuator and mold cooling without the risk of decomposing hydraulic oil or damaging seals after ending of production.

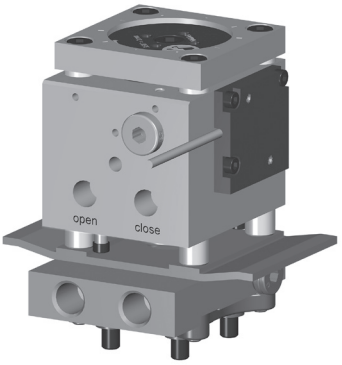
Requirements

- For applications <280 °C processing temperature & <80 °C mold temperature.
- The Actuator stack height and valve pin length increases by 4 mm for HB4016 (2.5 mm for HB2508).
- 28 mm dimension is required for HB4016 Heat Deflector to make contact with mold (25 mm for HB2508).



Thermal profile SynCool® 1





HB Series - Passively-cooled, using SynCool® 3 Technology, bolted onto manifold

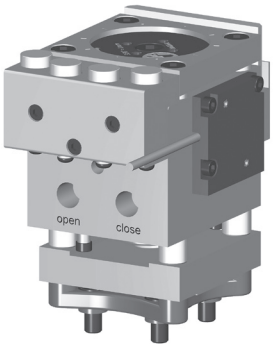
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

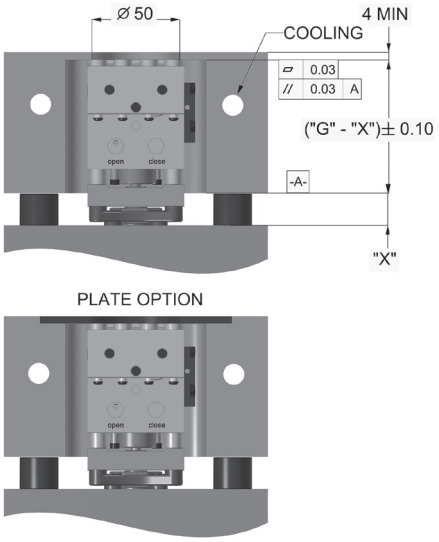
SynCool® 3

The passively-cooled HB4016 hydraulic actuator is using the patent pending SynCool® 3 technology that provides passive actuator cooling via spring acting thermal conductors creating contact with the top clamp plate (TCP) having cooling lines.*

Features

- Eliminates numerous hose-plumbed cooling circuits to Actuators
- Provides long-term stable performance by eliminating issues (such as damaged seals and oil decomposition) associated with clogged cooling circuits
- Enables safe Hot Runner use at pre-heat stations* without need for cooling
- Improved manifold thermal uniformity
- Facilitates quick mold changes by enabling simultaneous shut down of Mold Cooling* and Hot Runner.





SynCool3® is ideally suited for use when molding PP, TPO, or HDPE, eliminating the need for actuator cooling lines. To confirm suitability with other materials, please contact Synventive.

Examples

Figure A on the right shows the temperature of an actuator with SynCool® 3 for applications not requiring TCP cooling, as well as the temperature of an actuator with active cooling. The Hot Runner is at the same operating temperature for both actuators.

The temperature of the actuator with active cooling spikes into a temperature range that could lead to issues when cooling is shut off, while the actuator with SynCool®3 operates at a stable temperature at all times.

Figure A

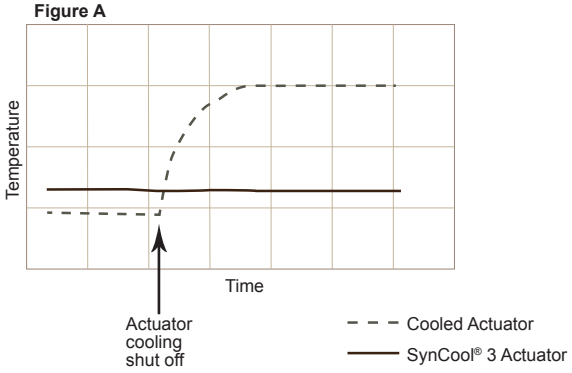
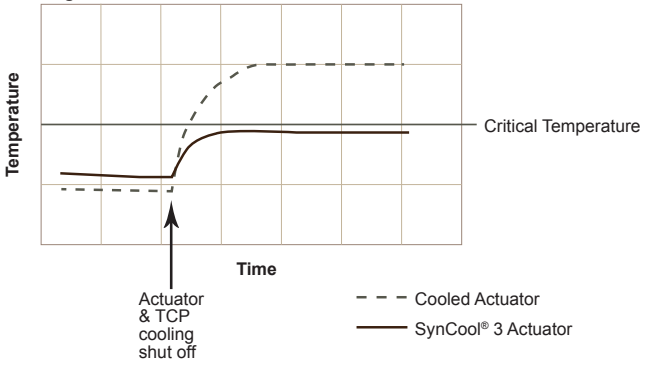


Figure B on the right shows the temperature of an actuator with SynCool® 3 for applications requiring TCP cooling, as well as the temperature of an actuator with active cooling. The Hot Runner is at the same operating temperature for both actuators.

Upon shutting off cooling, the temperature of the actuator with active cooling spikes into a temperature range that could lead to issues, while the temperature of the actuator with SynCool® 3 remains cooler during production.

Figure B



For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

PB Series - Actively-cooled Pneumatic Actuator, bolted onto manifold

Available Versions

PB4008
PB6016
PB8016

Product Description

The actively-cooled PB pneumatic actuator series is bolted onto the manifold.

Each Actuator is available with optional

- Thermocouple (TC)
- and patented Position Sensor (PS)

The Position Sensor detects pin position and sends a signal to activeGate® products providing closed loop position control or pin position indication and speed monitoring with Valve Monitoring Interface (VMI).

All PB series actuators are provided with the following features:

- Easy Valve Pin adjustment through cutout in top clamp plate
- Valve Pin quick coupling
- Valve Pin anti-rotation feature

Cooling the Actuator

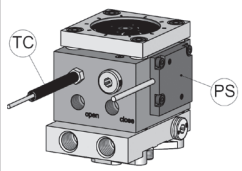
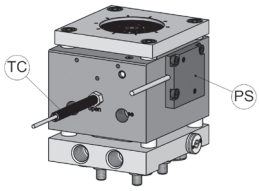
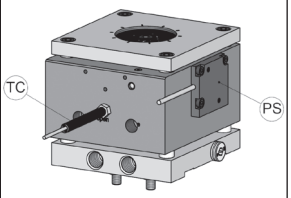
The cooling plate between the Actuator and the manifold (not shown) provides active cooling of the needle guide and the Actuator to thermally separate it from the hot manifold surface.

A maximum of three Actuators can be plumbed in series to create an independent cooling circuit to prevent overheating of the Actuators.

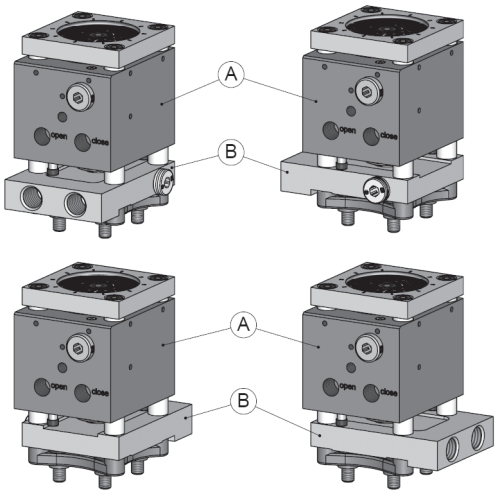
Maintaining Actuator cooling after end of production for fifteen minutes will protect against overheating.

Cooling Plate (B) can be rotated independently of the Actuator Housing (A).

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

PB4008	PB6016	PB8016
		

Parameters	PB4008	PB6016	PB8016
Valve Pin Diameter	3 mm, 3.8 mm	5 mm	5 mm, 6 mm, 8 mm
Nozzle Series	06E, 09E	12E	12E, 16E, 22E
Pin Adjustment	+/- 1 mm	+/- 1.5 mm	+/- 1.5 mm
MIn/Max Close Forces	754/1508N	1696/3393N	3016/6032N
Min/Max Open Forces	526/1052N	1468/2937N	2788/5576N
Min/Max. Pneumatic Pressure	6/12 bar (87/175psi)	6/12 bar (87/175psi)	6/12 bar (87/175psi))
Valve Pin Stroke	8 mm	16 mm	16 mm
Pneumatic Connections	M10x1.0	M10x1.0	M10x1.0
Cooling Temperature	30/60 °C	30/60 °C	30/60 °C
Cooling Connections	M12x1.5	M12x1.5	M12x1.5



For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

PB Series - Actively-cooled Pneumatic Actuator, bolted onto manifold

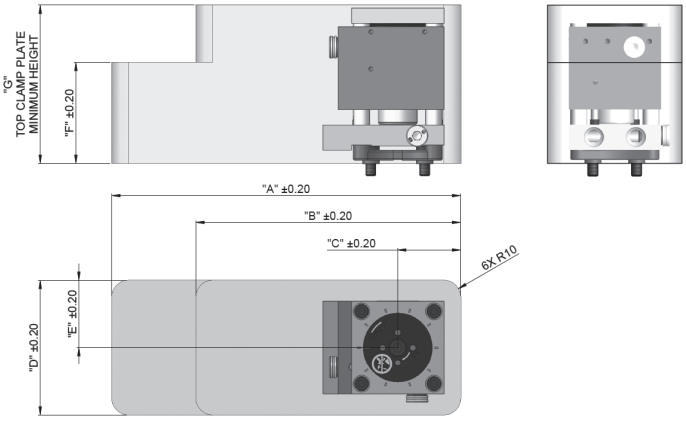
Cutout Dimensions

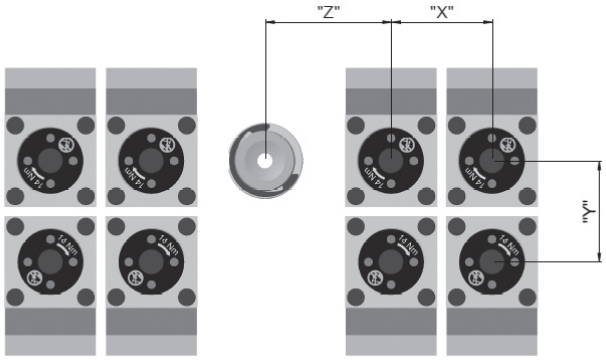
Cutout dimensions are provided for reference as a guide to determine basic requirements. Reference system drawings for actual dimensions.

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Actuator	"A"	"B"	"C"	"D"	"E"	"F"	"G"
PB4008	207.5	157.5	37.5	80	40	55	77.5
PB6016	215.5	165.5	45.5/ (48*)	96	48	60	94/(98*)
PB8016	225.5	175.5	55.5/ (58*)	116	58	60	98/ (102*)

*SynCool® 3 option dimensions





Pitch Dimensions

Pitch dimensions are provided for reference as a guide to determine minimum basic requirements. Consult Synventive for applications requiring tighter pitches.

Without Position Sensor					
Actuator	**"X"**	**"Y"**	**"Z" (IB24)**	**"Z" (IB32)**	**"Z" (IB50)**
PB4008	61	56	53	57	70
PB6016	77	72	61	65	78
PB8016	97	92	71	75	88
With Position Sensor					
PB4008	63	56	65	70	93
PB6016	79	72	73	78	101
PB8016	99	92	83	88	111
Add 12 mm to the "Y" dimension when SynCool® 3 is used					

For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

PB Series - Passively-cooled, using SynCool® 3 Technology, bolted onto manifold

The passively-cooled PB6016 & PB8016 pneumatic actuators are using the patent pending SynCool® 3 technology that provides passive actuator cooling via spring acting thermal conductors creating contact with the active cooled top clamp plate (TCP).

Features

- Eliminates numerous hose-plumbed cooling circuits to Actuators
- Provides long-term stable performance by eliminating issues (such as damaged seals) associated with clogged cooling circuits.
- Enables safe Hot Runner use at pre-heat stations* without need for cooling
- Improved manifold thermal uniformity
- Facilitates quick mold changes by enabling simultaneous shut down of Mold Cooling* and Hot Runner.

Requirements
Reference the Temperature Requirements
Guideline shown to the right to determine when TCP cooling* is required.

Contact Synventive when considering SynCool® 3 for TPE or LDPE applications.

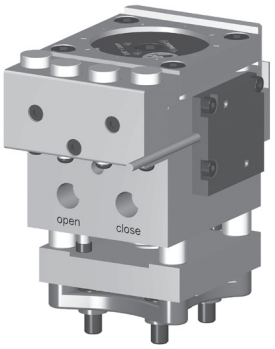
Examples
Figure A on the right shows the temperature of an actuator with SynCool® 3 for applications not requiring TCP cooling, as well as the temperature of an actuator with active cooling. The HotRunner is at the same operating temperature for both actuators.

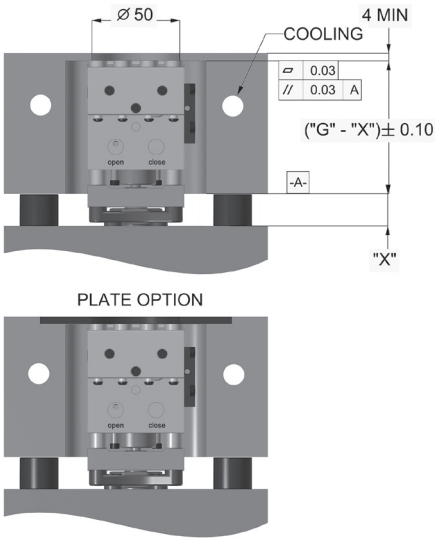
The temperature of the actuator with active cooling spikes into a temperature range that could lead to issues when cooling is shut off, while the actuator with SynCool® 3 operates at a stable temperature at all times.

Figure B on the right shows the temperature of an actuator with SynCool® 3 for applications requiring TCP cooling, as well as the temperature of an actuator with active cooling. The HotRunner is at the same operating temperature for both actuators.

Upon shutting off cooling, the temperature of the actuator with active cooling spikes into a temperature range that could lead to issues, while the temperature of the actuator with SynCool® 3 remains cooler during production

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.





* **Temperature Requirements Guideline**
Actuators without Position Sensors
TCP cooling not required for Hot Runners operating lower than 320°C.

Actuators with Position Sensors
SynCool3 is ideally suited for use when molding PP, TPO, or HDPE, eliminating the need for actuator cooling lines. To confirm suitability with other materials, please contact Synventive.

Figure A

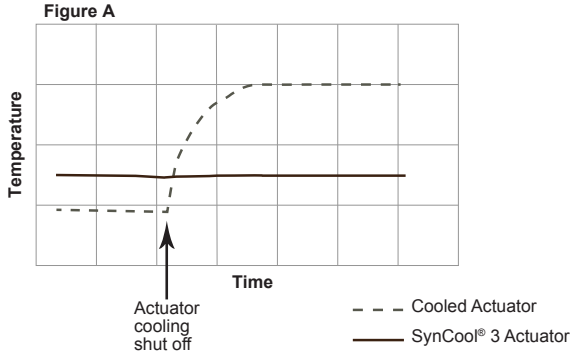
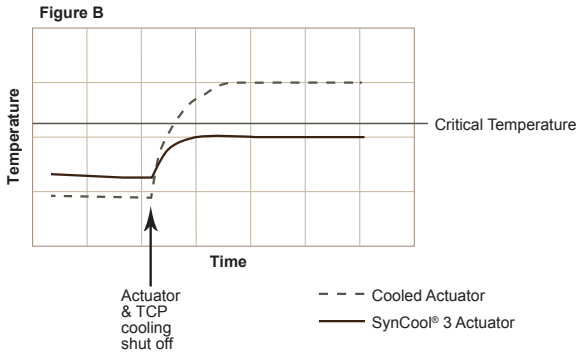


Figure B



For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

VP4008P Series - Pneumatic Actuator, in mold plate

Pneumatic actuator for manifold systems mounted in the back plate. The actuator is cooled by the cooling system in the plate.

Valve pin operation

Operation medium	pneumatic
Operating pressure	6 - 10 bar (87 - 145 psi)
Operation pressure max.	11 bar (160 psi)
Flow rate	4 l/min
Valve pin stroke	8 mm
Adjustment	By adjusting a height adjustment piece.
Closing force	754 N / 6 bar (87 psi)
Opening force	686 N / 6 bar (87 psi)
Connections	M10x1

Cooling

Medium

Clamping plate cooling
max. 100 °C (210 °F).
Cooling lines are required in clamping plate.

Valve pin

Valve pin diameter	Ø 3,0 mm, Ø 3,8 mm
Attachment	Valve pin head inside piston

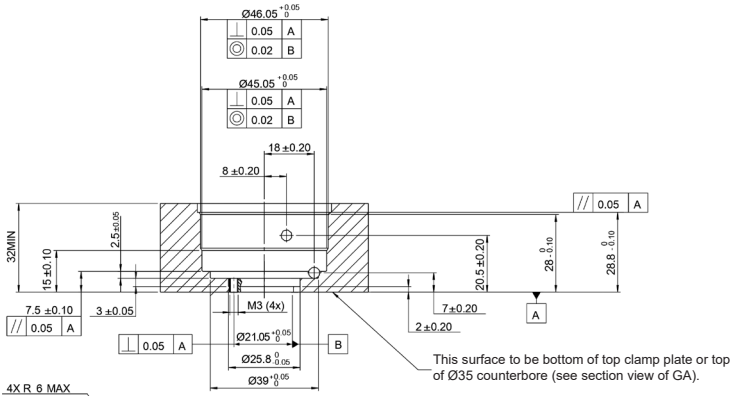
Different Informations

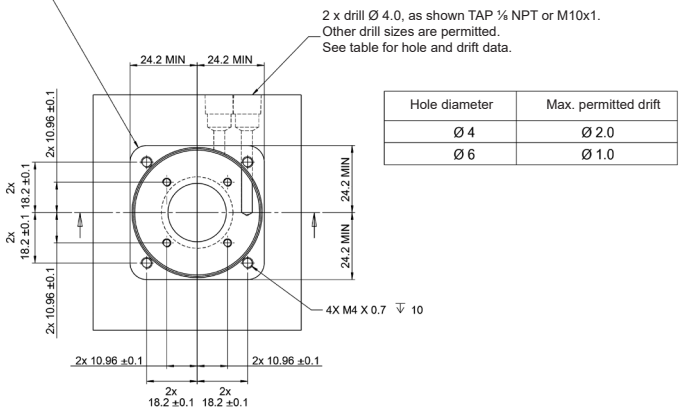
Minimum clamping plate thickness	32 mm
Minimum distance between two actuators	55 mm
Max. distance from actuator to center support	650 mm

Important

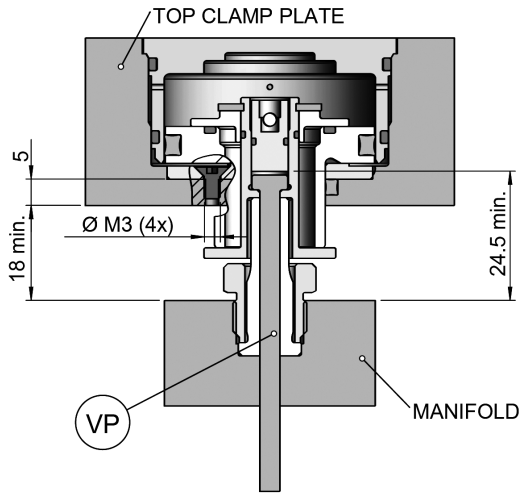
Customer must use clean, lubricated air for proper actuation

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.





Hole diameter	Max. permitted drift
Ø 4	Ø 2.0
Ø 6	Ø 1.0



For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

VP8016P Series - Pneumatic Actuator, in mold plate

Pneumatic actuator for manifold systems mounted in the back plate. The actuator is cooled by the cooling system in the plate.

Valve pin Operation

Operation medium	pneumatic
Pressure range	6 - 10 bar (87 - 145 psi)
Operation pressure max.	11 bar (160 psi)
Flow rate	10 l/min
Valve pin stroke	16 mm
Adjustment	By adjusting a height adjustment piece
Closing force	3016 N / 6 bar (87 psi)
Opening force	2788 N / 6 bar (87 psi)
Connections	M12x1.5

Valve pin

Valve pin diameter	Ø 5 mm, Ø 6 mm, Ø 8 mm
Attachment	Valve pin head inside piston

Cooling

Medium

Clamping plate cooling
max. 100 °C (210 °F).
Cooling lines are required in clamping plate.

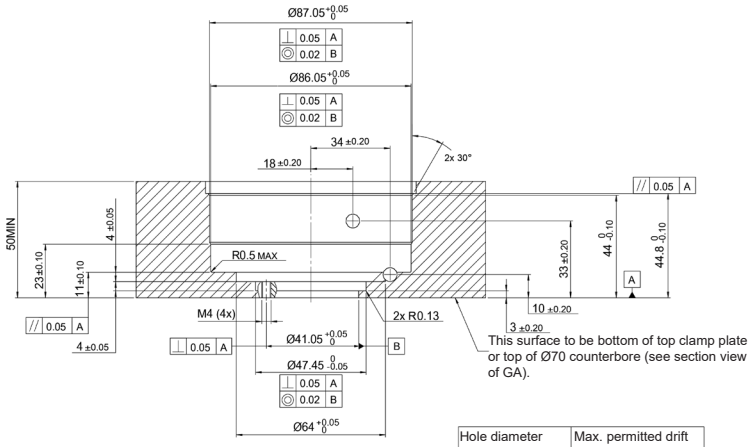
Different Informations

Minimum clamping plate thickness	50 mm
Minimum distance between two actuators	97 mm
Max. distance from actuator to center support	650 mm

Important

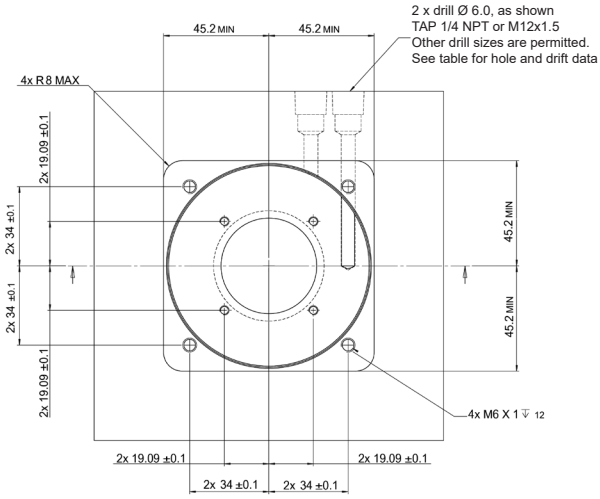
Customer must use clean, lubricated air for proper actuation

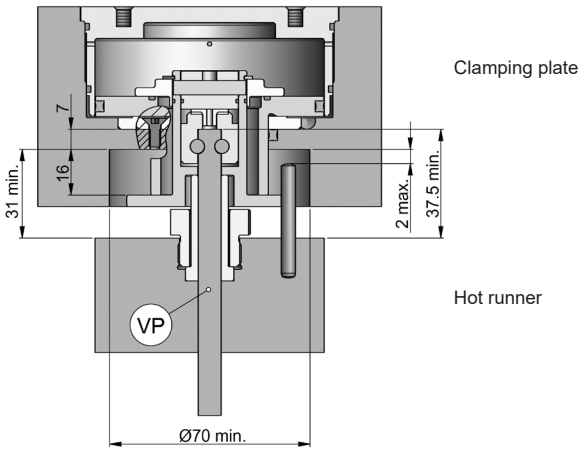
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.



SECTION

Hole diameter	Max. permitted drift
Ø6	4.0
Ø8	3.0
Ø10	2.0





HYZ3908 Series - Hydraulic Actuator, in mold plate

Hydraulic actuator for manifold systems mounted in the clamping plate. The actuator is cooled by the cooling system in the plate.

Valve pin operation

Operation medium	hydraulic
Operating pressure max.	40 bar (600 psi)
Flow rate	1.5 l/min
Reaction time	~0.2 s
Valve pin stroke	8 mm
Adjustment	By height adjusting of washers above and below valve pin head
Closing force	1964 N / 40 bar (580 psi)
Opening force	1512 N / 40 bar (580 psi)
Connections	Ø 5 mm

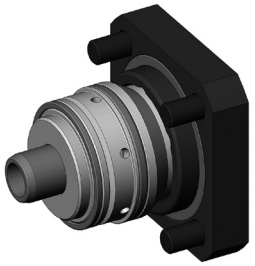
Cooling

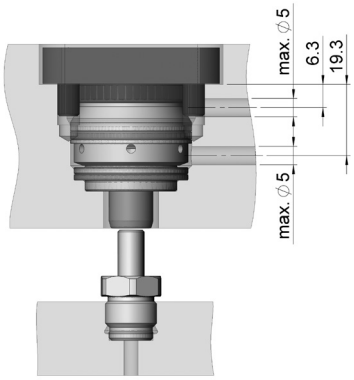
Medium	Clamping plate cooling max. 60 °C (140 °F). Cooling lines are required in clamping plate.

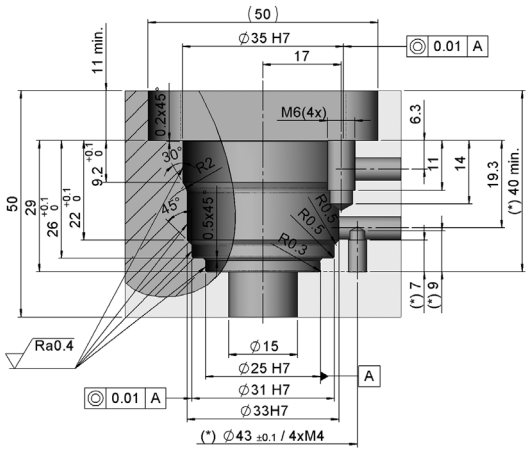
Valve pin

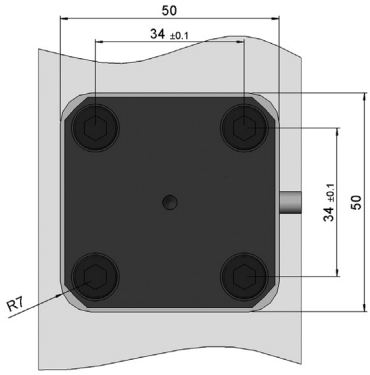
Valve pin diameter	Ø 3.8 mm
Attachment	Valve pin head inside piston.

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.









QCVG16 Series - Hydraulic Actuator, in mold plate

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Hydraulic actuator for manifold systems mounted in the clamping plate. The actuator is cooled by the cooling system in the plate, and features a mechanism that automatically bleeds air out of the hydraulic lines when the piston is in the fully retracted position.

Valve pin operation

Operation medium	hydraulic
Pressure range	35 - 42 bar (500 - 600 psi)
Operating pressure max.	103 bar (1500 psi)
Flow rate	1.8 l/min
Valve pin stroke	16 mm
Adjustment	± 1 mm via adjustment nut from top
Closing force	6670 N / 100 bar (1450 psi)
Opening force	6670 N / 100 bar (1450 psi)
Connections	Ø 1/8 NPT

Cooling

Medium

Clamping plate cooling
max. 100 °C (210 °F).
Cooling lines are required in clamping plate.

Valve pin

Valve pin diameter	Ø 5 mm, Ø 6 mm, Ø 8 mm
Attachment	Quick coupling, anti-rotation

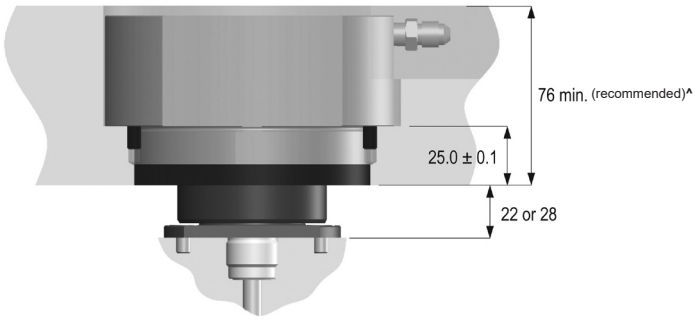
Available versions

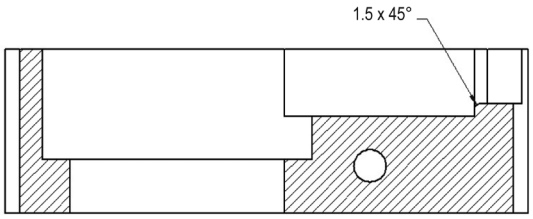
QCVG16M04	Standard Offering (Cutout shown on the right hand side)
QCVG16M06	Position sensor Option for hGate® applications.
QCVG16M07	Limit Switch Option

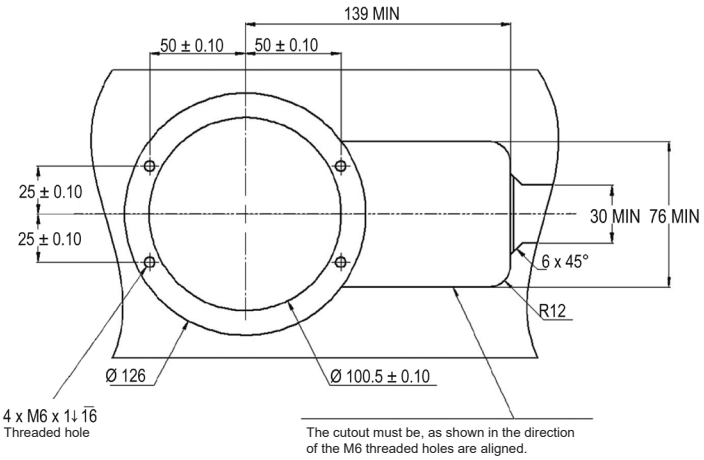
Note

The QCVG16M04 is available with optional Position Sensor for detecting and sending pin position signals for use with applications utilizing Synflow® and valve monitoring interface (VMI).

^ Minimum top clamp plate thickness when using Position Sensor:
- 80 mm
- 95 mm when used with magnetic platen







ELA4308P Series - Electrical Actuator, in mold plate

Electrical Actuator
For manifold systems mounted in mold plate.

Valve pin operation

Operation medium	electrical
Valve pin stroke	up to 9 mm
Adjustment	High precision, individual pin position, 0.01 mm fine increments with flexibility to adjust in user-defined increments.

Cooling
A separate actuator retainer plate cooling circuit at a temperature less than or equal to 26°C (80°F) is required.
An insulator plate (6 mm) is required if the cavity plate temperature exceeds 26°C (80°F).

Valve pin

Valve pin diameter	Ø 2 mm
Attachment	Quick coupling, no anti-rotation

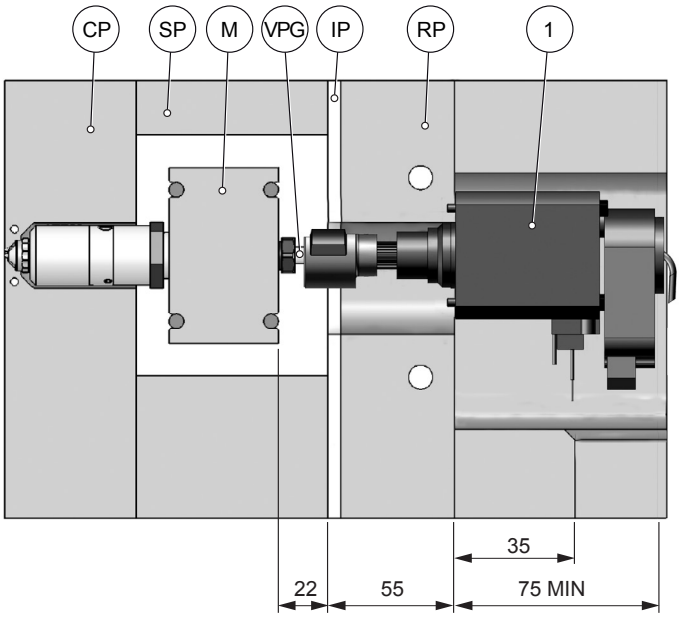
Available versions

ELA4308P05	1000 mm cable length
ELA4308P06	2000 mm cable length

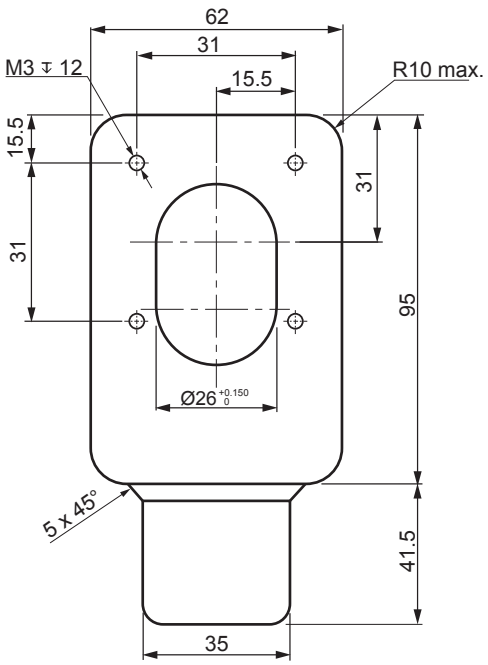
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Components for the Mounting of the Actuator ELA4308P

(1) Actuator
(SP) Spacer plate
(RP) Retainer plate
(IP) Insulator plate
(VPG) Valve pin guide
(M) Manifold
(CP) Cavity plate



Cutout



For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

ELA5708P Series - Electrical Actuator, in mold plate

Electrical Actuator
For manifold systems mounted in mold plate.

Valve pin operation

Operation medium	electrical
Valve pin stroke	up to 9 mm
Adjustment	High precision, individual pin position, 0.01 mm fine increments with flexibility to adjust in user-defined increments.

Cooling
A separate actuator retainer plate cooling circuit at a temperature less than or equal to 26°C (80°F) is required.
An insulator plate (6 mm) is required if the cavity plate temperature exceeds 26°C (80°F)

Valve pin

Valve pin diameter	Ø 2 mm
Attachment	Quick coupling, no anti-rotation

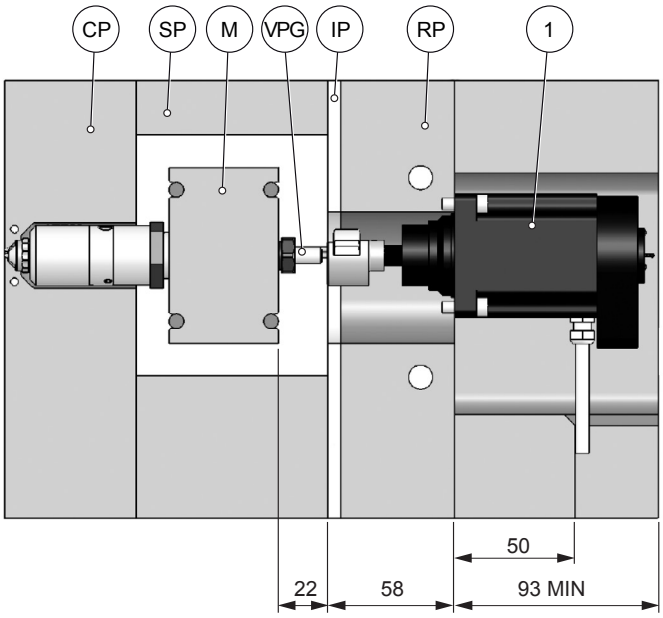
Available versions

ELA5708P01	1000 mm cable length
ELA5708P02	2000 mm cable length

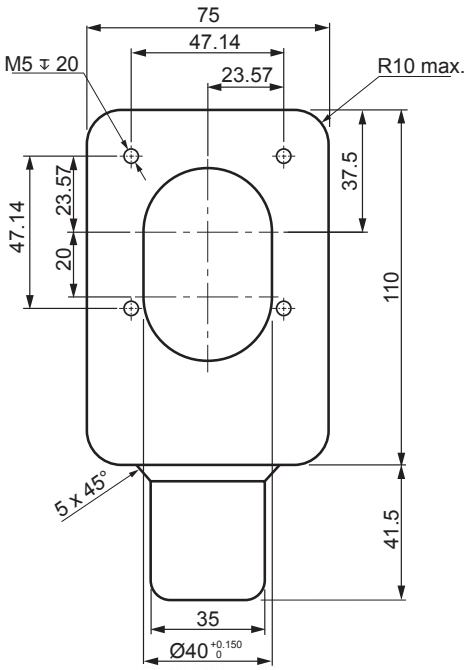
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Components for the Mounting of the Actuator ELA5708P

(1) Actuator
(SP) Spacer plate
(RP) Retainer plate
(IP) Insulator plate
(VPG) Valve pin guide
(M) Manifold
(CP) Cavity plate



Cutout



For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

ELA8708P Series - Electrical Actuator, in mold plate

Electrical Actuator
For manifold systems mounted in mold plate.

Valve pin operation

Operation medium	electrical
Valve pin stroke	up to 9 mm
Adjustment	High precision, individual pin position, 0.01 mm fine increments with flexibility to adjust in user-defined increments.

Cooling
A separate actuator retainer plate cooling circuit at a temperature less than or equal to 55 °C (131 °F) is required.
An insulator plate (6 mm) is required if the cavity plate temperature exceeds 55 °C (131 °F)

Valve pin

Valve pin diameter	Ø 3 mm
Attachment	Quick coupling, no anti-rotation

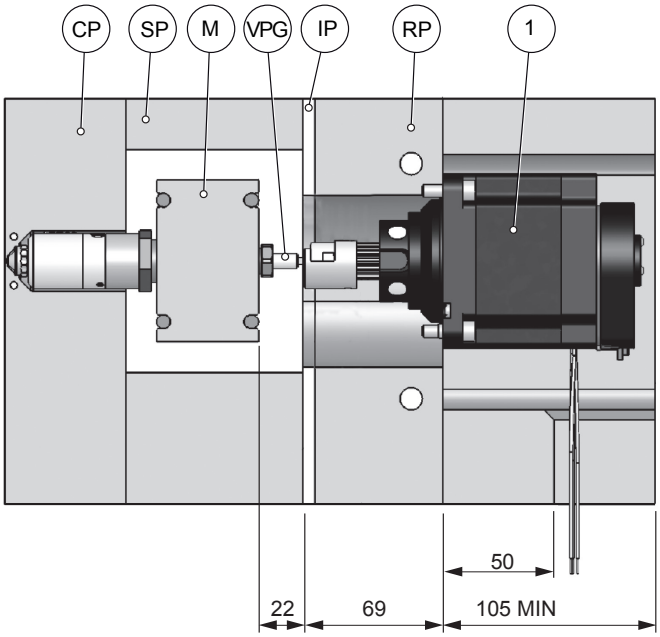
Available versions

ELA8708P01	1000 mm cable length
ELA8708P02	2000 mm cable length
ELA8708P03	3000 mm cable length

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Components for the Mounting of the Actuator ELA8708P

(1) Actuator
(SP) Spacer plate
(RP) Retainer plate
(IP) Insulator plate
(VPG) Valve pin guide
(M) Manifold
(CP) Cavity plate



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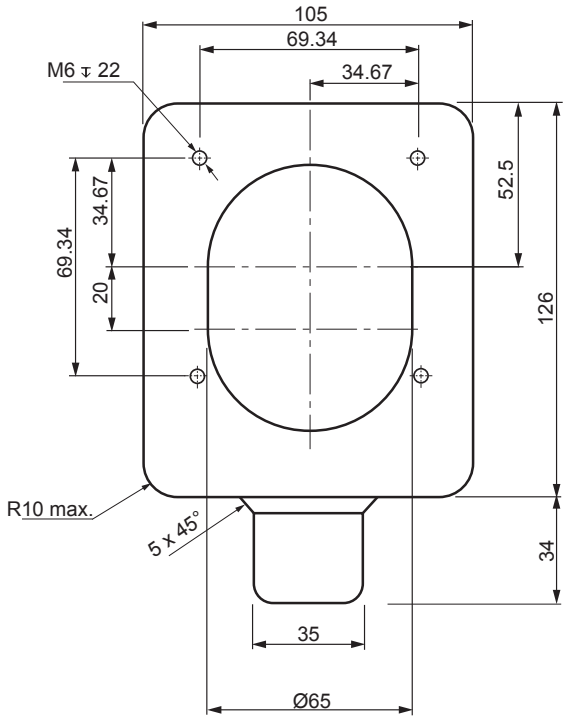


ELA7616M Series - Electrical Actuator, bolted onto manifold

Electrical Actuator

Actively-cooled Electric Actuator Assembly that is bolted onto the manifold. The Electric Actuator Assembly has pre-terminated cable connections for easy installation to the Junction Box.

Valve pin operation

Operation medium	electrical
Valve pin stroke	up to 16 mm
Adjustment	High precision, individual pin position, 0.01 mm fine increments with flexibility to adjust in user-defined increments.

Cooling

The plate between the actuator and manifold provides indirect cooling of the needle guide via the actuator cooling jacket, while also providing thermal isolation from the hot manifold surface.

A maximum of three Actuators can be plumbed in series to create an independent cooling circuit to prevent overheating of the Actuators. Maximum temperature of each cooling circuit is 55°C / 131°F.

Consult Synventive for applications processing at temperatures greater than 260°C

Valve pin

Valve pin diameter	Ø 5 mm Ø 6 mm Ø 8 mm
Attachment	Quick coupling, anti-rotation

Available versions

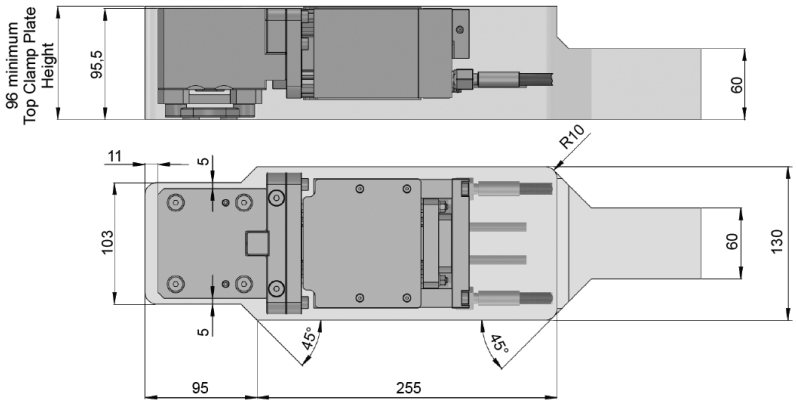
ELA7616M01	1000 mm cable length
ELA7616M03	3000 mm cable length
ELA7616M06	6000 mm cable length

Reference to eGate Product-Catalog 2.0 for Medium-to-Large Part Molding CAT-16-0039_EN-Rev##

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

Cutout

Cutout dimensions are provided for reference as a guide to determine basic requirements. Reference system drawings for actual dimensions.



XDM ... Hydraulic Valve Manifolds, Single Solenoid

Servo valves to operate the valve pins of valve gate hot runner systems.
Servo valves are mounted to a valve block. This valve block and its components can either be mounted to the hot runner system or directly to the tool.

Operating Data

Pressure	40 bar (600 psi)
Max. inlet pressure	250 bar
Connection	G 1/2"
Operating voltage	24 VDC
Supported hydraulic Actuators and Nozzle Series	Actuator Series for all available needle Ø and Nozzle Series
Type of reset	Air spring
Operating medium	Hydraulic oil HLP 32 DIN 51524-2, purity level 21/18/13 according ISO 4406

Configure your valve manifold here

1. Example of description

XDM 05 1
- 1 - C - Type of recovery
- 05 - B - Number of circuits
- XDM - A - Product group

2. Selection of variables

A - Product group
XDM - hydraulic valves

B - Number of circuits
- number of circuits / valve gate nozzles

C - Type of recovery
1 spring recovery

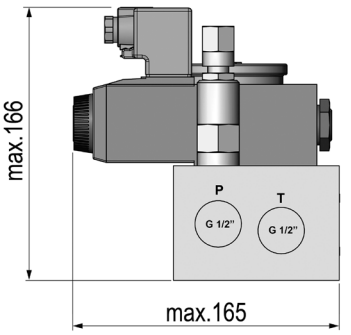
3. Your specification

A	B	C

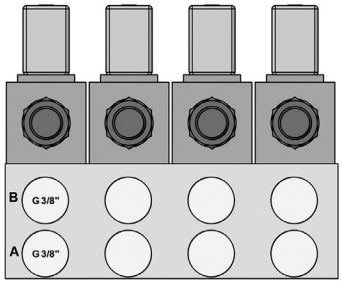
Fill in your specification according to the explanation given above.

Note
"The Hydraulic Valve manifold is available as XFM ... in China, unless otherwise specified"

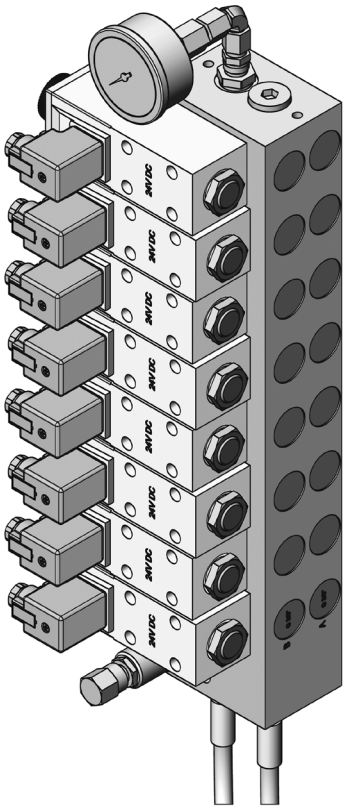
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

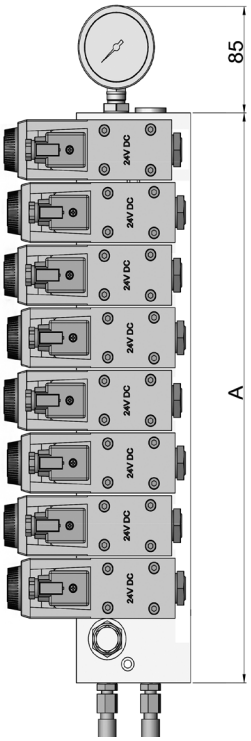


P, T : G1/2"



A, B : G3/8"





Number of circuits	A (mm)
2	155
3	205
4	255
5	305
6	355
7	405
8	455
9	555
10	605
11	655
12	705
13	755
14	805
15	855
16	905

For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

XDM ... Hydraulic Valve Manifolds, Double Solenoid

Servo valves to operate the valve pins of valve gate hot runner systems.
Servo valves are mounted to a valve block. This valve block and its components can either be mounted to the hot runner system or directly to the tool.

Operating Data

Pressure	40 bar (600 psi)
max. inlet pressure	250 bar
Connection	G 1/2”
Operating voltage	24 VDC
Supported hydraulic Actuators and Nozzle Series	Actuator series for all available needle diameter and nozzle series
Type of reset	Air spring or double solenoid operated
Operating medium	Hydraulic oil HLP 32 DIN 51524-2, purity level 21/18/13 according ISO 4406

Configure your valve manifold here

1. Example of description

XDM 05 2
- 2 - C - Type of recovery
- 05 - B - Number of circuits
- XDM - A - Product group

2. Selection of variables

A - Product group
XDM - hydraulic valves

B - Number of circuits
- number of circuits / valve gate nozzles

C - Type of recovery
2 electrically operating of both side, with latching function

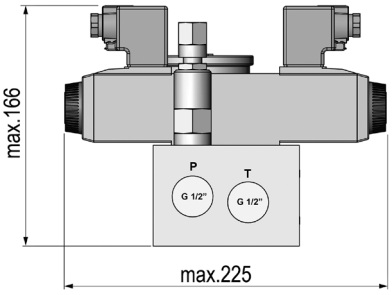
3. Your specification

A	B	C

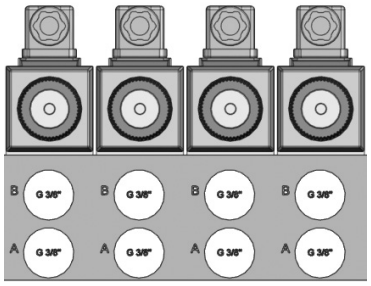
Fill in your specification according to the explanation given above.

Note
“The Hydraulic Valve manifold is available as XFM ... in China, unless otherwise specified”

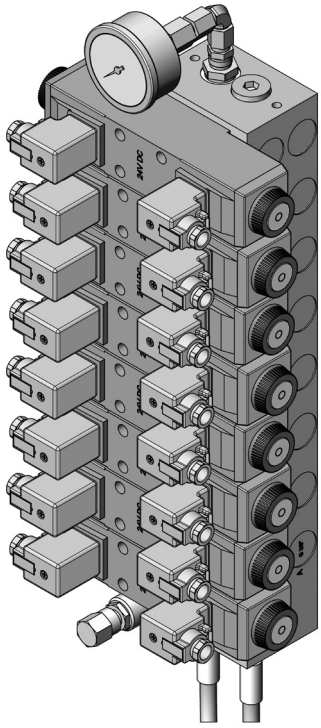
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

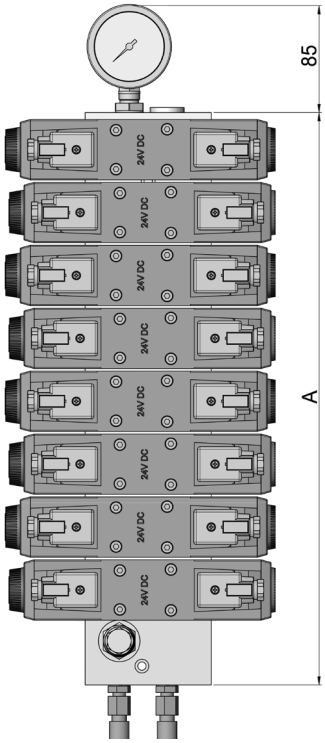


P, T : G1/2"



A, B : G 3/8 "





Number of circuits	A (mm)
2	155
3	205
4	255
5	305
6	355
7	405
8	455
9	555
10	605
11	655
12	705
13	755
14	805
15	855
16	905

For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

XCM ... Hydraulic Valve Manifolds, Single Solenoid

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

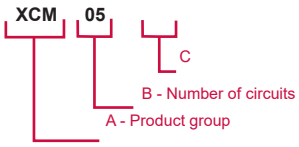
Servo valves to operate the valve pins of valve gate hot runner systems.
Servo valves are mounted to a valve block. This valve block and its components can either be mounted to the hot runner system or directly to the tool.

Operating Data

Pressure	40 bar
Max. inlet pressure	250 bar
Connection	G 1/2”
Operating voltage	24 VDC
Supported hydraulic Actuators and Nozzle Series	Actuator series with needle diameter up to 3.8 mm for nozzle series 06E, 09E
Type of reset	Air spring
Operating medium	Hydraulic oil HLP 32 DIN 51524-2, purity level 21/18/13 according ISO 4406

Configure your valve manifold here

1. Example of description



2. Selection of variables

A - Product group

XCM - hydraulic valves

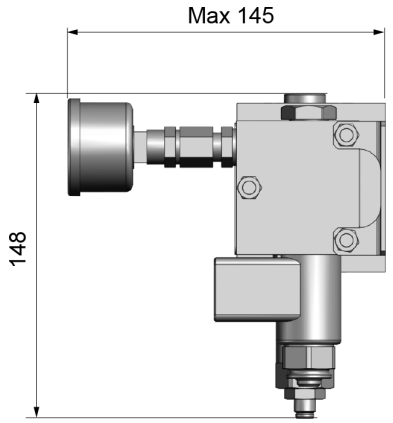
B - Number of circuits

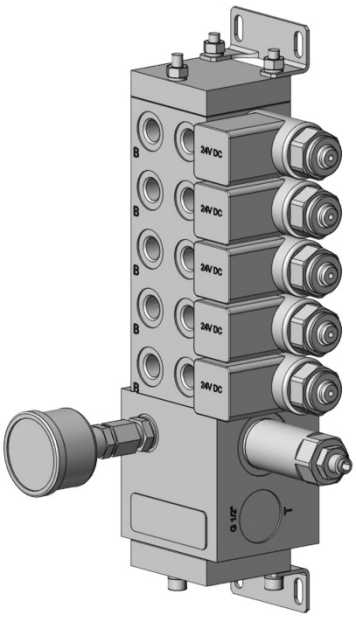
- number of circuits / valve gate nozzles

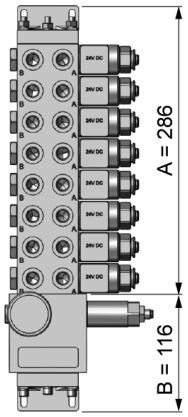
3. Your specification

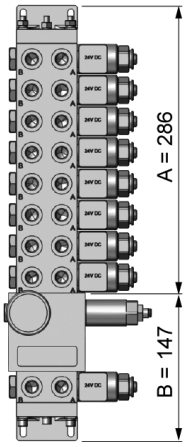
A	B	C

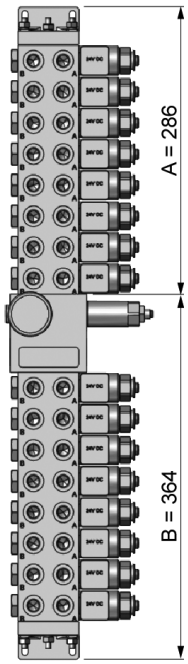
Fill in your specification according to the explanation given above.











Number of circuits	A (mm)	B (mm)
2	100	116
3	131	116
4	162	116
5	193	116
6	224	116
7	255	116
8	286	116
9	286	147
10	286	178
11	286	209
12	286	240
13	286	271
14	286	302
15	286	333
16	286	364

For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

XBM ... Pneumatic Valve Manifolds, Single Solenoid

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

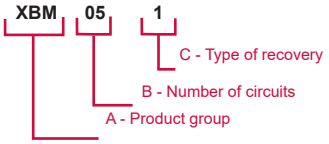
Servo valves to operate the valve pins of valve gate hot runner systems.
Servo valves are mounted to a valve block. This valve block and its components can either be mounted to the hot runner system or directly to the tool.

Operating data

Pressure	2 - 10 bar / 29 - 145 psi
Connections	G 3/8”
Operating voltage	24 VDC / 230VAC
Type of reset	Air spring
Operating medium	Filtered compressed air, grade of filtration 40 µm, lubricated or unlubricated
Medium temp.	-5 - 50 °C / 23 - 122 °F

Configure your valve manifold here

1. Example of description



2. Selection of variables

A - Product group

XBM - pneumatic valves

B - Number of circuits

- number of circuits / valve gate nozzles

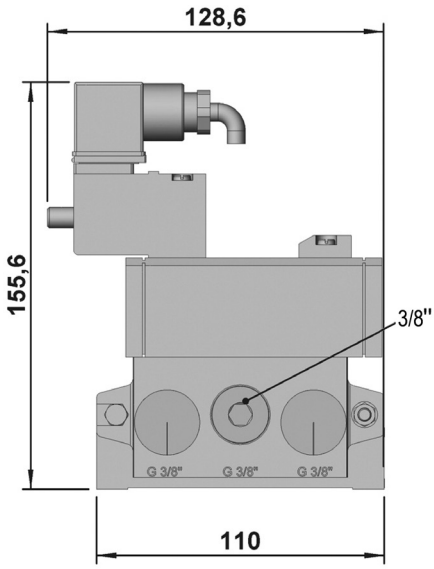
C - Type of recovery

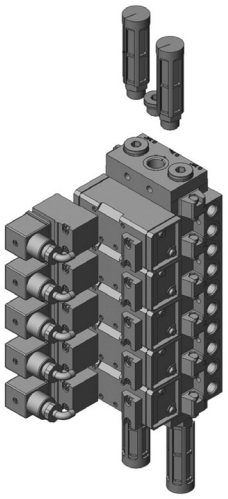
1	spring recovery
2	electrically operating of both side

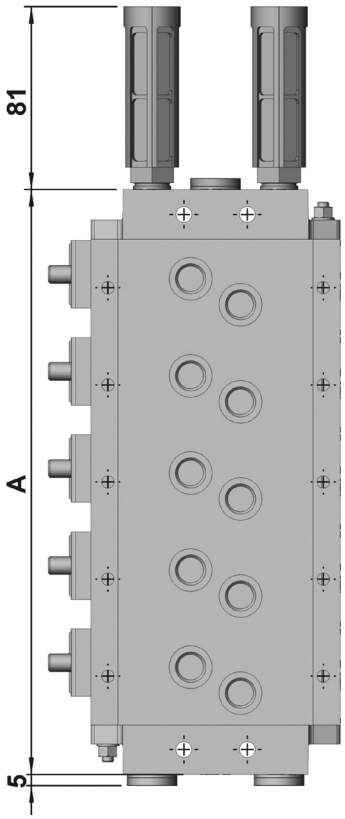
3. Your specification

A	B	C

Fill in your specification according to the explanation given above.







Number of circuits	A (mm)
2	130
3	173
4	216
5	259
6	302
7	345
8	388
9	431
10	474

For design and application information, see the Synventive Hot Runner Guide.
For a specific application, please consult Synventive.

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