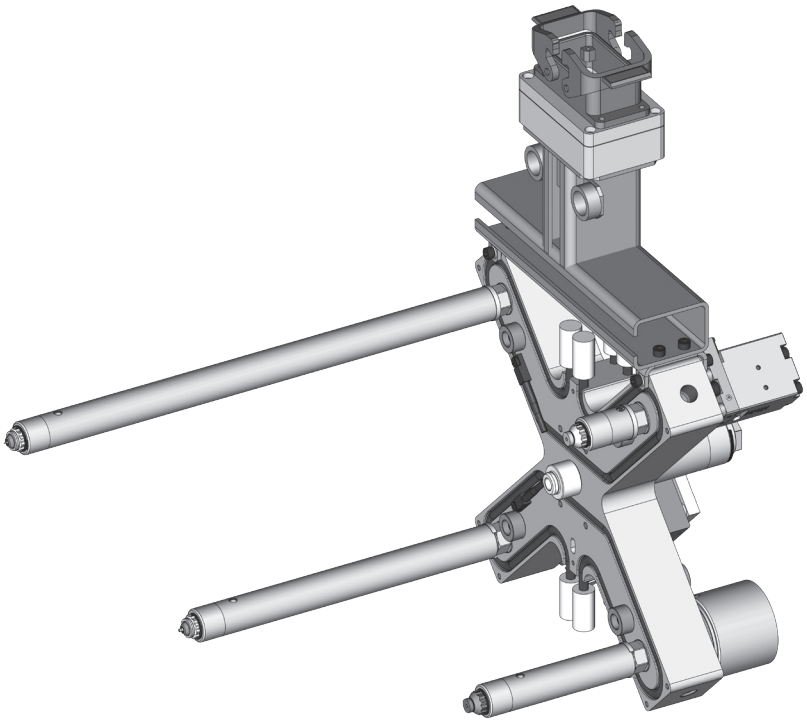
BARNES™
MOLDING SOLUTIONS

HOT RUNNER TECHNOLOGY

09E-03
Threaded Nozzles

Product Catalog

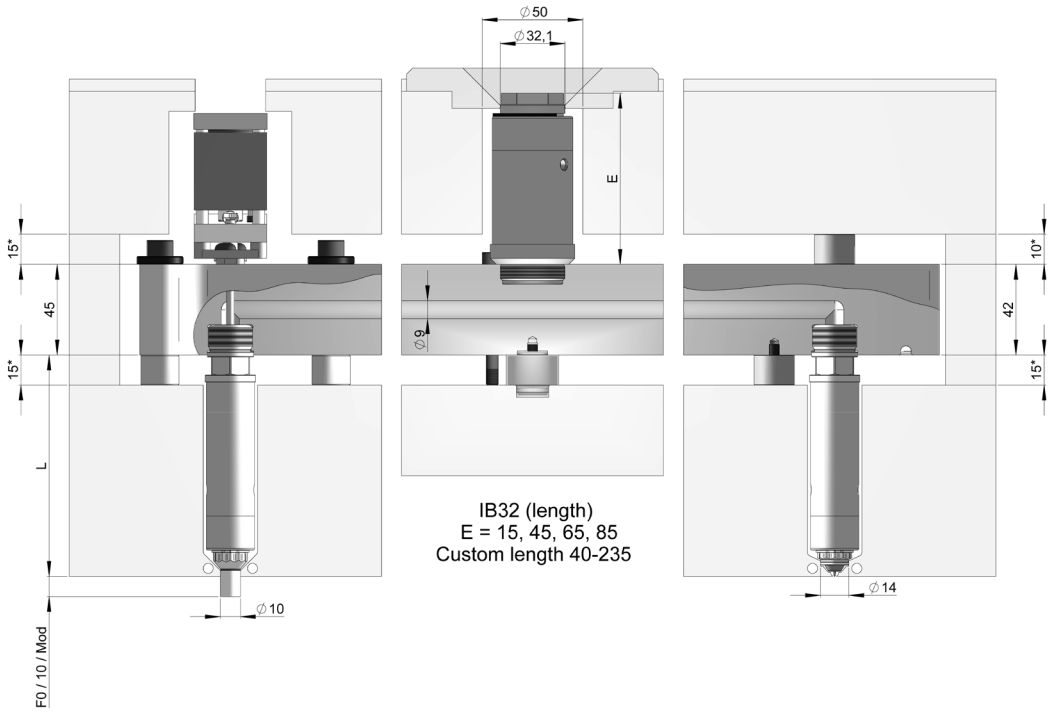


Doc009201_RIS.png

Synventive molding solutions

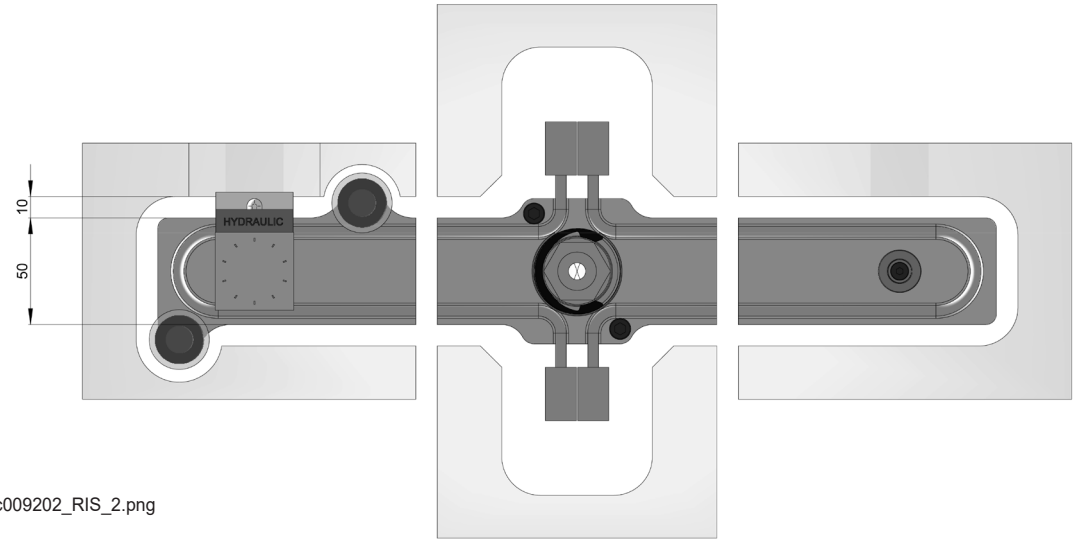
CAT-10-0038_EN-Rev03 / 2024-04

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



Doc009202_RIS_1.png

Bolt down selection | Inlet bushing | Thrust pad selection

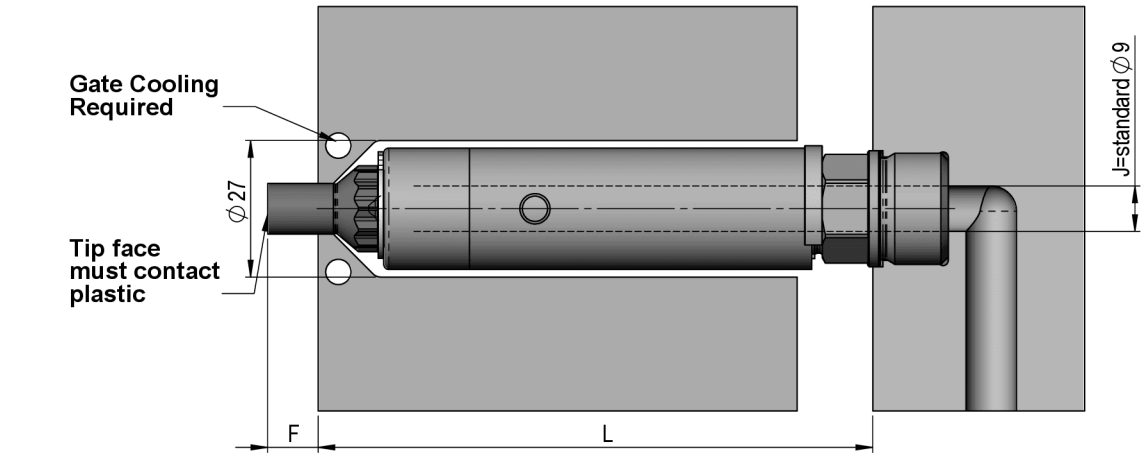


Doc009202_RIS_2.png

*min.10 [1] For a specific application, please consult Synventive

Shown is a hot runner system to support actuators, consist of V-45 Manifold and IB 32 Inlet bushing.
For hot runner systems with thermal shut-off nozzles, V-42 manifolds and IB 24 inlet bushing are available, for detailed dimensions consult Synventive.

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



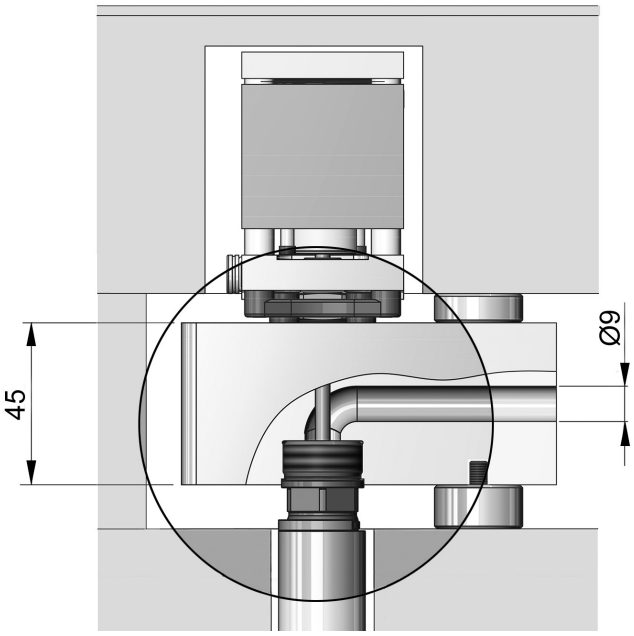
Doc009203_RIS_en.png

One control area (thermocouple)			Two control areas (thermocouple)			
L (mm)		Heater zone power (Watt)	L (mm)		Heater zone power [1] (Watt)	
Standard lengths	Custom lengths	Power 1	Standard lengths	Custom lengths	Power 1	Power 2
60	>60-<70	150 W	-	>170-<180	150 W	130 W
70	>70-<80	180 W	180	=>180-<190	150 W	140 W
80	>80-<90	210 W	-	>190-<200	150 W	150 W
90	>90-<100	215 W	200	=>200-<210	150 W	160 W
100	>100-<110	220 W	-	>210-<220	150 W	170 W
110	>110-<120	225 W	220	=>220-<230	150 W	180 W
120	>120-<130	230 W	-	>230-<240	150 W	190 W
130	>130-<140	235 W	240	=>240-<250	150 W	200 W
140	=>140-<150	250 W	-	>250 -<260	150 W	210 W
-	>150-<160	255 W	260	=>260 -<270	150 W	220 W
160	=>160-<170	260 W	-	>270-<280	150 W	230 W
			280-	=>280-<290	150 W	240 W
			-	>290-<300	150 W	250 W
			300	=>300-<310	150 W	260 W
			-	>310-<320	150 W	270 W
			320	=>320-<330	150 W	280 W
			-	>330-<340	150 W	290 W
			340	=>340-<350	150 W	300 W
			-	>350-<360	150 W	310 W
			360	=>360-<370	150 W	320 W
			-	>370-<380	150 W	330 W
			380	=>380-<390	150 W	340 W
			-	>390-<400	150 W	350 W
			400	-	150 W	360 W

[1] The numbering of the heating zones starts at the nozzle tip and ends at the nozzle head

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

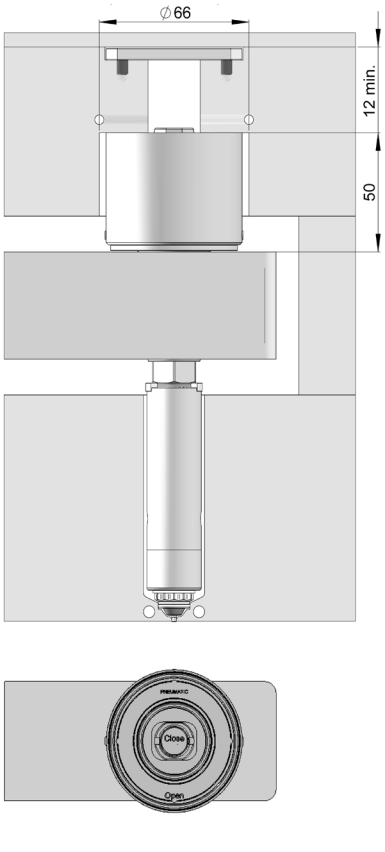
Smooth Flow



Doc007711.png

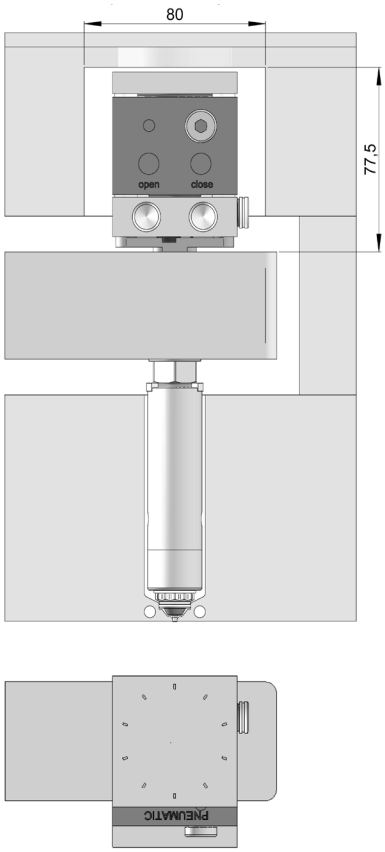
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.

PNC4508B (pneumatic)



Pressure range:
6 - 12 bar (87 - 174 psi)
Min/Max Close Forces:
954 N / 1908 N

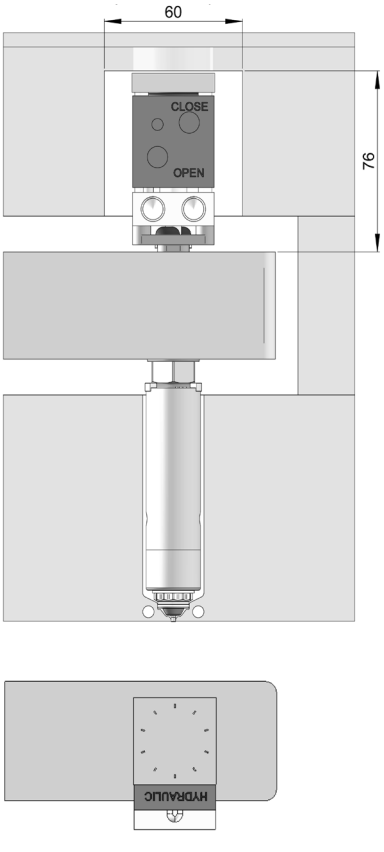
PB4008 (pneumatic)



Pressure range:
6 - 12 bar (87 - 174 psi)
Min/Max Close Forces:
754 N / 1508 N

Available features:
- ♦ Position Sensor
- ♦ SynCool®

HB2508 (hydraulic)



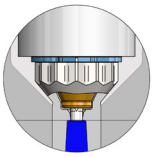
Pressure range:
40 - 60 bar (600 - 870 psi)
Min/Max Close Forces:
1963 N / 2945 N

Available features:
- ♦ Position Sensor
- ♦ SynCool®

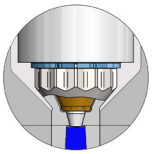
Doc009204_RIS.png

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
H = Gate orifice diameter, F = Tip extension, Dt = Tip Diameter, Mod = Modifiable

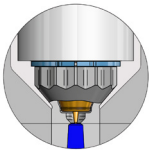
VSP Valve Gate - Straight Pin - Plunged Through

Tip Style		Description	Dt = Ø10 F10, 0, Mod
			H=2.5
	**VSP** Doc009110_RIS.png	Standard	✓

VTP Valve Gate - Tapered Pin - Plunged Through

Tip Style		Description	Dt = Ø10 F10, 0, Mod
			H=2.5
	**VTP** Doc009111_RIS.png	Standard	✓

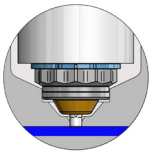
TTP Thermal Gate – Torpedo - Plunged Through

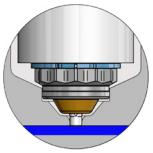
Tip Style		Description	Dt = Ø10 F10, 0, Mod		
			H=1.5	H=2.0	H=2.5
	**TTP** Doc009109_RIS.png	Standard	✓	✓	✓

✓ Preferred (✓) Available ✘ Not Available

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
H = Gate orifice diameter, F = Tip extension, Dt = Tip Diameter, Mod = Modifiable

VSW Valve Gate - Straight Pin - Blind

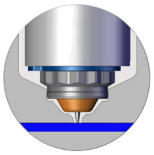
Tip Style		Description	Dt = Ø14					
			H=1.5	H=2.0	H=2.5	H=3.0		
	**VSW** Doc009112_RIS.png	Standard	✓	✓	✓	✓		

Tip Style		Description	Dt = Ø14					
			H=1.2	H=1.6	H=1.8	H=2.0	H=2.5	H=2.7
	**TA-VSW** Doc009112_RIS.png	Standard	✓	✓	✓	✓	✓	✓

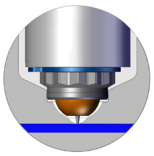
VTW Valve Gate - Tapered Pin - Blind

Tip Style		Description	Dt = Ø14		
			H=1.5	H=2.0	H=2.5
	**VTW** Doc009113_RIS.png	Standard	✓	✓	✓

TTW Thermal Gate – Torpedo - Blind

Tip Style		Description	Dt = Ø14			
			H=1.2	H=1.6	H=2.0	H=2.5
	**TTW** Doc009114_RIS.png	Standard	✓	✓	✓	✓

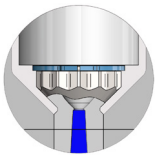
TTW-C Thermal Gate – Torpedo - Blind

Tip Style		Description	Dt = Ø14			
			H=1.2	H=1.6	H=2.0	H=2.5
	**TTW-C** Doc009115_RIS.png	Standard	✓	✓	✓	✓

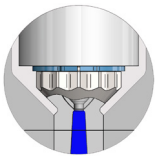
✓ Preferred (✓) Available ✗ Not Available

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
H = Gate orifice diameter, F = Tip extension, Dt = Tip Diameter, Mod = Modifiable

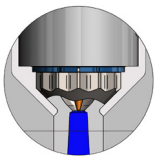
TPK Thermal Gate – Full Flow - Plunged Through

Tip Style		Description	Dt = Ø10 F = 10	
			H=2.0	H=2.5
	**TPK** Doc009119_RIS.png	Standard	✓	✓

TNK Thermal Gate – Full Flow - Plunged Through

Tip Style		Description	Dt = Ø10 F = 10	
			H=2.0	H=2.5
	**TNK** Doc009120_RIS.png	Standard Cold Runner	✓	✓

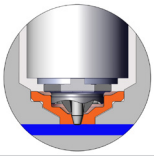
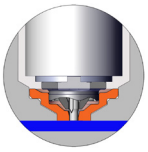
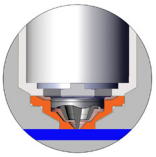
TTK Thermal Gate – Torpedo - Plunged Through

Tip Style		Description	Dt = Ø10 F = 10	
			H=2.0	H=2.5
	**TTK** Doc009121_RIS.png	Standard Cold Runner	✓	✓

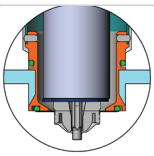
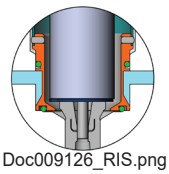
✓ Preferred (✓) Available ✗ Not Available

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
H = Gate orifice diameter, F = Tip extension, Dt = Tip Diameter, Mod = Modifiable

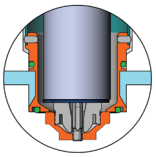
Wear Inserts

Part		Description	F = 0, 10, Mod					
			H=1.2	H=1.5	H=1.6	H=2.0	H=2.5	H=3.0
	**WI-VTW** Doc009122_RIS.png	Wear Insert for VTW Nozzle tips	✗	✓	✗	✓	✓	✗
	**WI-VSW** Doc009123_RIS.png	Wear Insert for VSW Nozzle tips	✗	✓	✗	✓	✓	✓
	**WI-TTW**	Wear Insert for TTW Nozzle tips	✓	✗	✓	✓	✓	✗

Cooling Bushings

Part		TTW	VSW	VTW	TTP	VSP	VTP	TPK	TNK	TTK
 Doc009125_RIS.png  Doc009126_RIS.png	**NC** Nozzle Cooling Bushing for Nozzle Tips, Blind and Plunged Through	✓	✓	✓	✓	✓	✓	✓	✓	✓

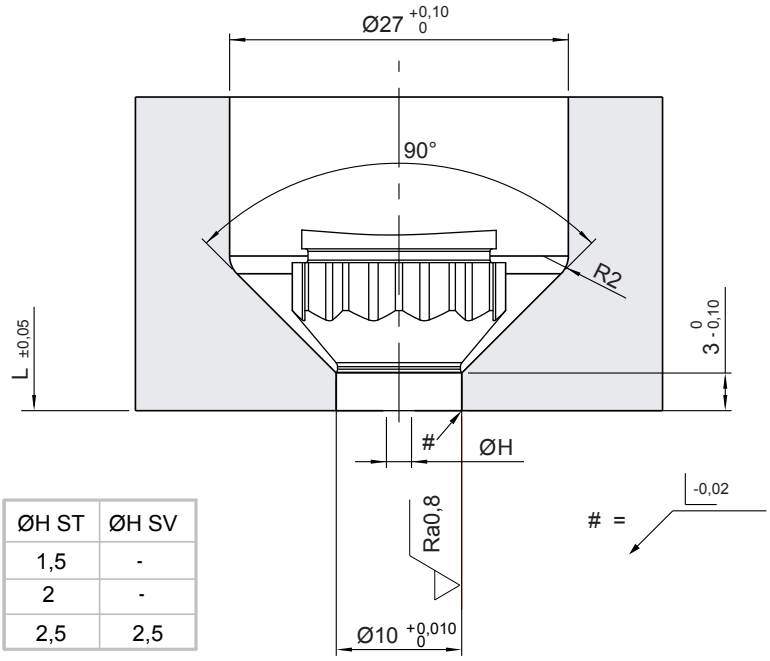
Wear Insert and Cooling Bushing

Part		TTW	VSW	VTW
 Doc009127_RIS.png	**NC + WI** Wear Insert combined with Nozzle Cooling Bushing for Nozzle Tip Blind	✓	✓	✓

✓ Preferred (✓) Available ✗ Not Available

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

TTP, VSP, VTP Nozzle tip cutout dimensions



ØH ST	ØH SV
1,5	-
2	-
2,5	2,5

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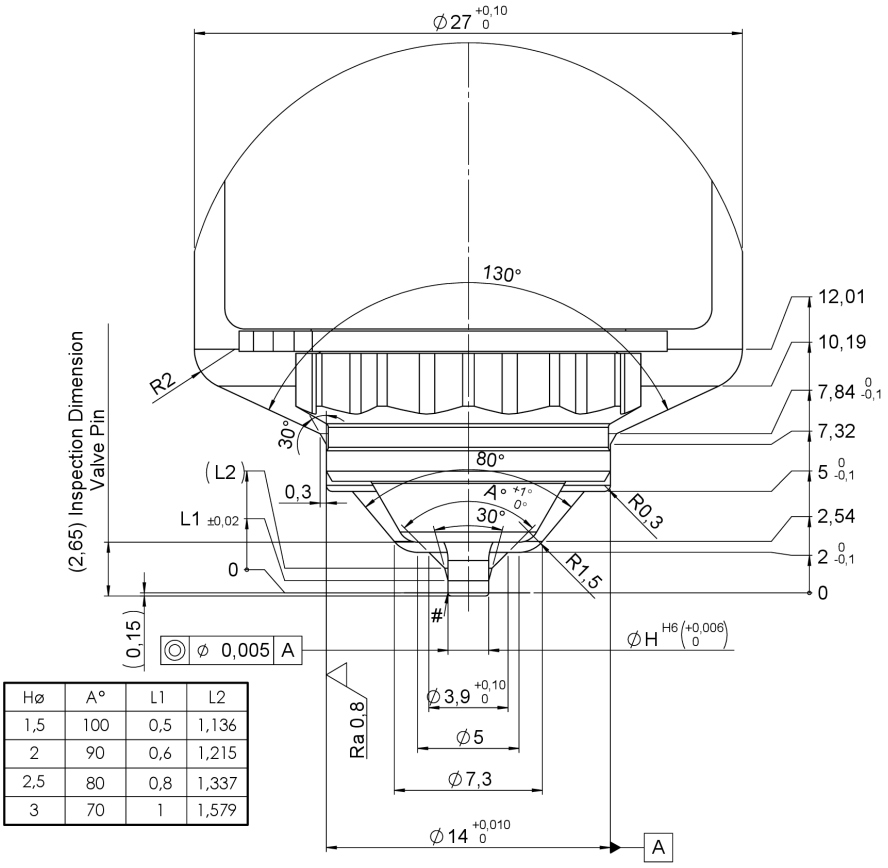
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

VSW - Nozzle tip cutout dimensions



Hø	A°	L1	L2
1,5	100	0,5	1,136
2	90	0,6	1,215
2,5	80	0,8	1,337
3	70	1	1,579

Notes:

→ Cooling required around the nozzle tip, opposite to the nozzle tip
→ The front of the nozzle tip must always be against plastic.

Doc009205_RIS.png

General tolerances according to DIN ISO 2768-mK

At the area of the nozzle gate replaceable, hardened (52 +2/-1 HRC) inserts are recommended by Synventive.

Radius / chamfer at the front of the valve pin shall not be removed.

Synventive recommends that the gate area geometry is manufactured by grinding and not EDM with a surface quality of $\nabla^{Ra\,0.8}$.

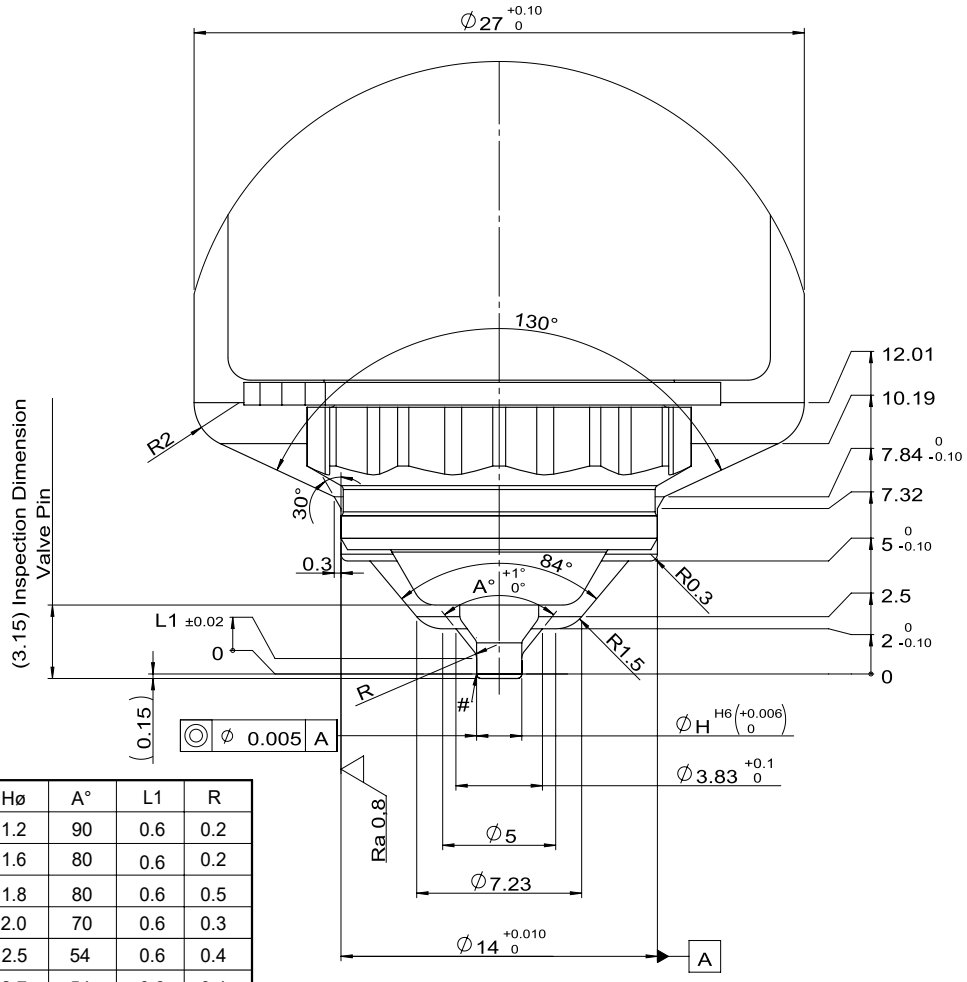
To avoid a deformation at the gate the space to move freely has to be checked at hot condition.

For angled surface the valve pin may not be adjusted toward cavity.

Ensure 0.5 mm sealing surface is maintained.

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

TA-VSW - Nozzle tip cutout dimensions



Hø	A°	L1	R
1.2	90	0.6	0.2
1.6	80	0.6	0.2
1.8	80	0.6	0.5
2.0	70	0.6	0.3
2.5	54	0.6	0.4
2.7	54	0.8	0.4

Notes:

→ Cooling required around the nozzle tip, opposite to the nozzle tip

→ The front of the nozzle tip must always be against plastic.

Doc009280_RIS.pdf

At the area of the nozzle gate use only replaceable hardened (52 +2/-1 HRC) inserts.

Radius chamfer at the front of the valve pin has to be manufactured to the original dimensions after adjusting the gate / valve pin area.

At the gate area geometry is manufactured by grinding and not EDM with a surface quality of ▽Ra 0.8 .

For angled surface without sprue the valve pin adjust max. 1 mm towards to cavity.

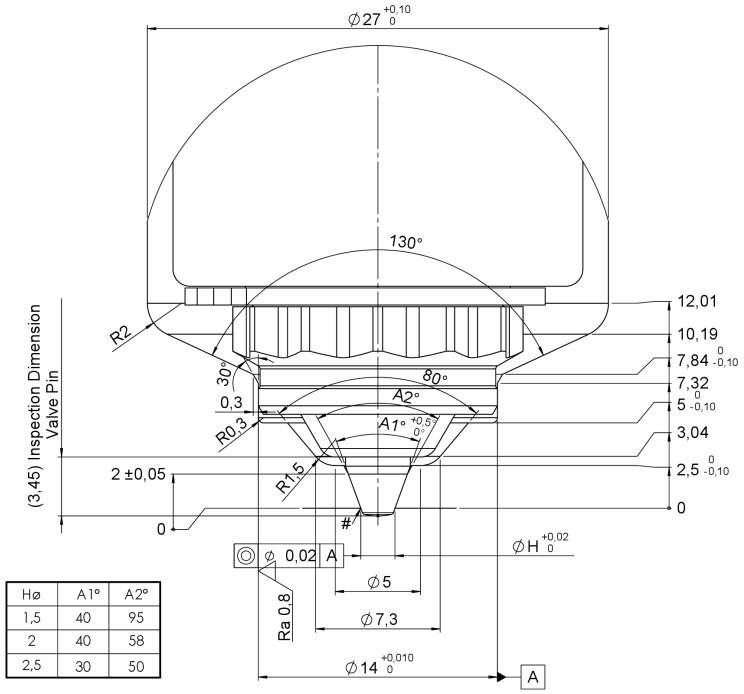
Attention: to avoid a collision the mininum distance between valve pin and steel has to be 0.3 mm (hot condition) see picture.

During closing, the needle is forced to one side due to the angle. This gives more wear at the needle and tip.

Keep the sealing surface L1.

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

VTW - Nozzle tip cutout dimensions



Hø	A1°	A2°
1,5	40	95
2	40	58
2,5	30	50

Doc009207_RIS.png

Notes:

→ Cooling required around the nozzle tip, opposite to the nozzle tip

→ The front of the nozzle tip must always be against plastic.

General tolerances according to DIN ISO 2768-mK

At the area of the nozzle gate replaceable, hardened (52 +2/-1 HRC) inserts are recommended by Synventive.

Radius / chamfer at the front of the valve pin shall not be removed.

Synventive recommends that the gate area geometry is manufactured by grinding and not EDM with a surface quality of $\sqrt{}^{Ra\ 0.8}$.

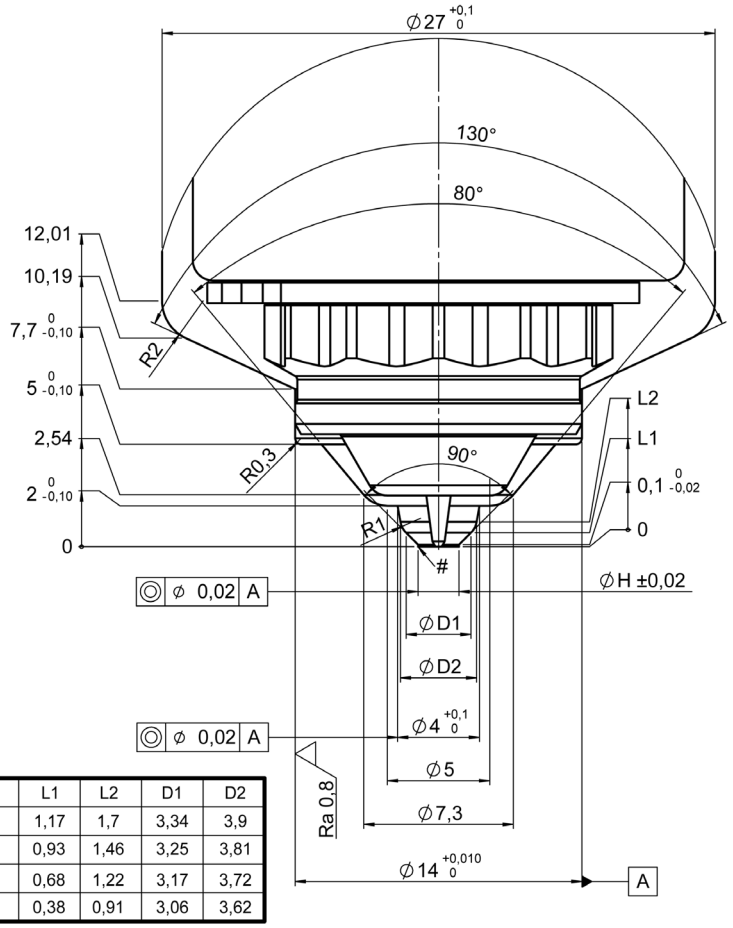
To avoid a deformation at the gate the space to move freely has to be checked at hot condition.

For angled surface the valve pin may not be adjusted toward cavity.

Ensure 0.5 mm sealing surface is maintained.

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

TTW - Nozzle tip cutout dimensions



Hø	L1	L2	D1	D2
1,2	1,17	1,7	3,34	3,9
1,6	0,93	1,46	3,25	3,81
2	0,68	1,22	3,17	3,72
2,5	0,38	0,91	3,06	3,62

Doc009206_RIS.png

Notes:

→ Cooling required around the nozzle tip, opposite to the nozzle tip

→ The front of the nozzle tip must always be against plastic.

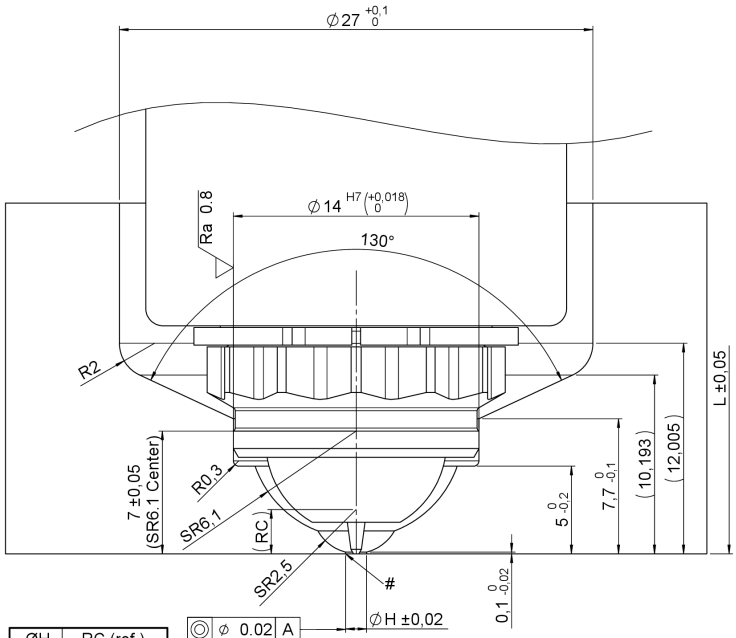
General tolerances according to DIN ISO 2768-mK

At the area of the nozzle gate replaceable, hardened (52 +2/-1 HRC) inserts are recommended by Synventive.

Synventive recommends that the gate area geometry is manufactured by grinding and not EDM with a surface quality of $\sqrt{Ra\ 0.8}$.

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

TTW-C - Nozzle tip cutout dimensions



ØH	RC (ref.)
1.2	(2.527)
1.6	(2.469)
2.0	(2.391)
2.5	(2.265)

Doc009209_RIS.png

Notes:

→ Cooling required around the nozzle tip, opposite to the nozzle tip

→ The front of the nozzle tip must always be against plastic.

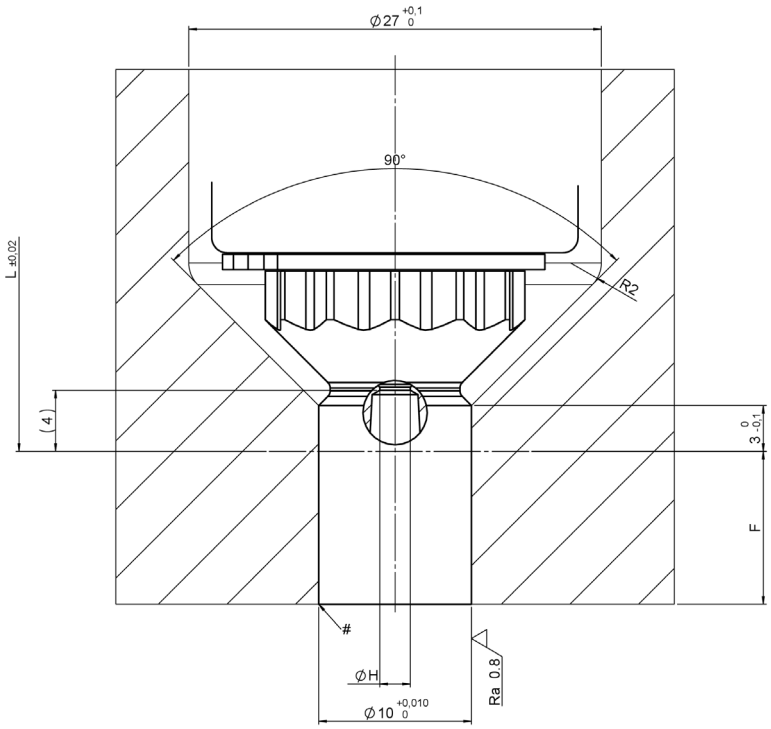
General tolerances according to DIN ISO 2768-mK

At the area of the nozzle gate replaceable, hardened (52 +2/-1 HRC) inserts are recommended by Synventive.

Synventive recommends that the gate area geometry is manufactured by grinding and not EDM with a surface quality of ▽ Ra 0.8 .

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

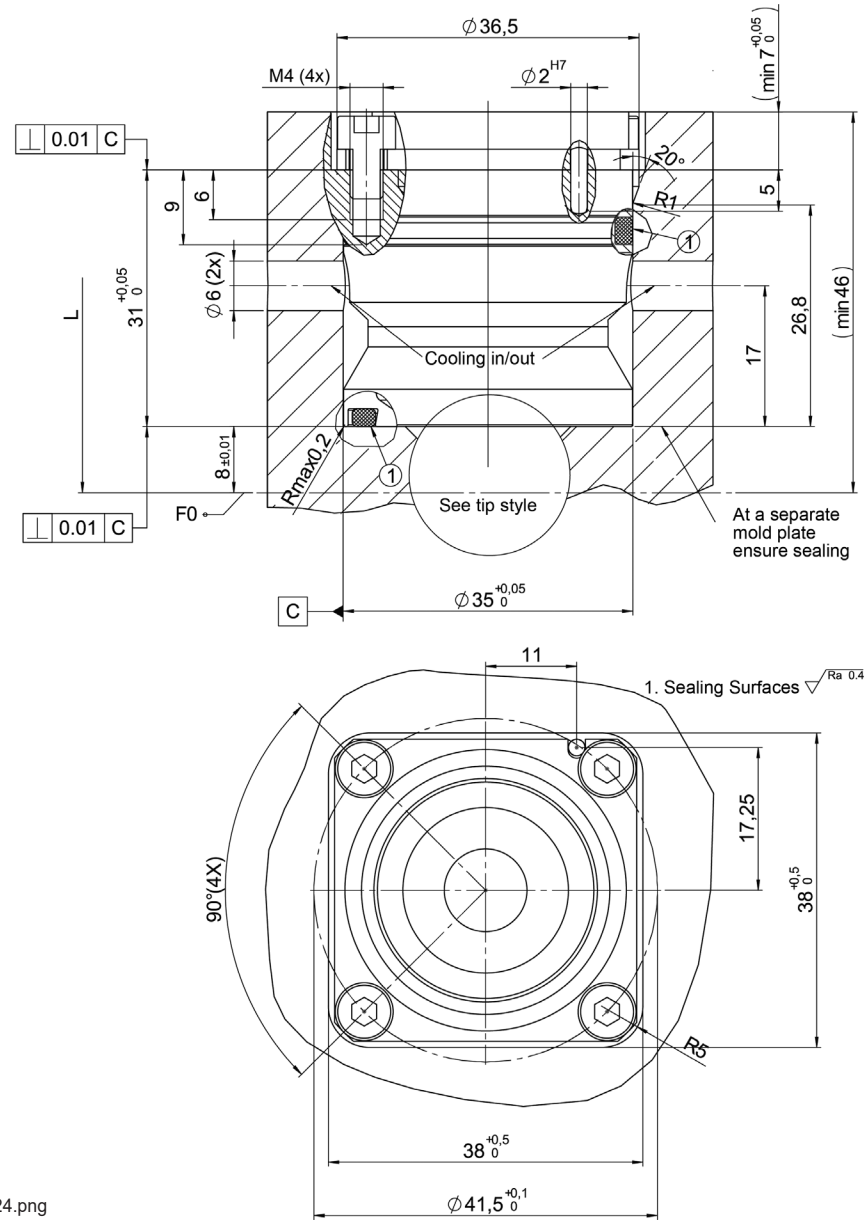
TPK, TNK, TTK Series - Nozzle tip cutout dimensions



Doc009208_RIS.png

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

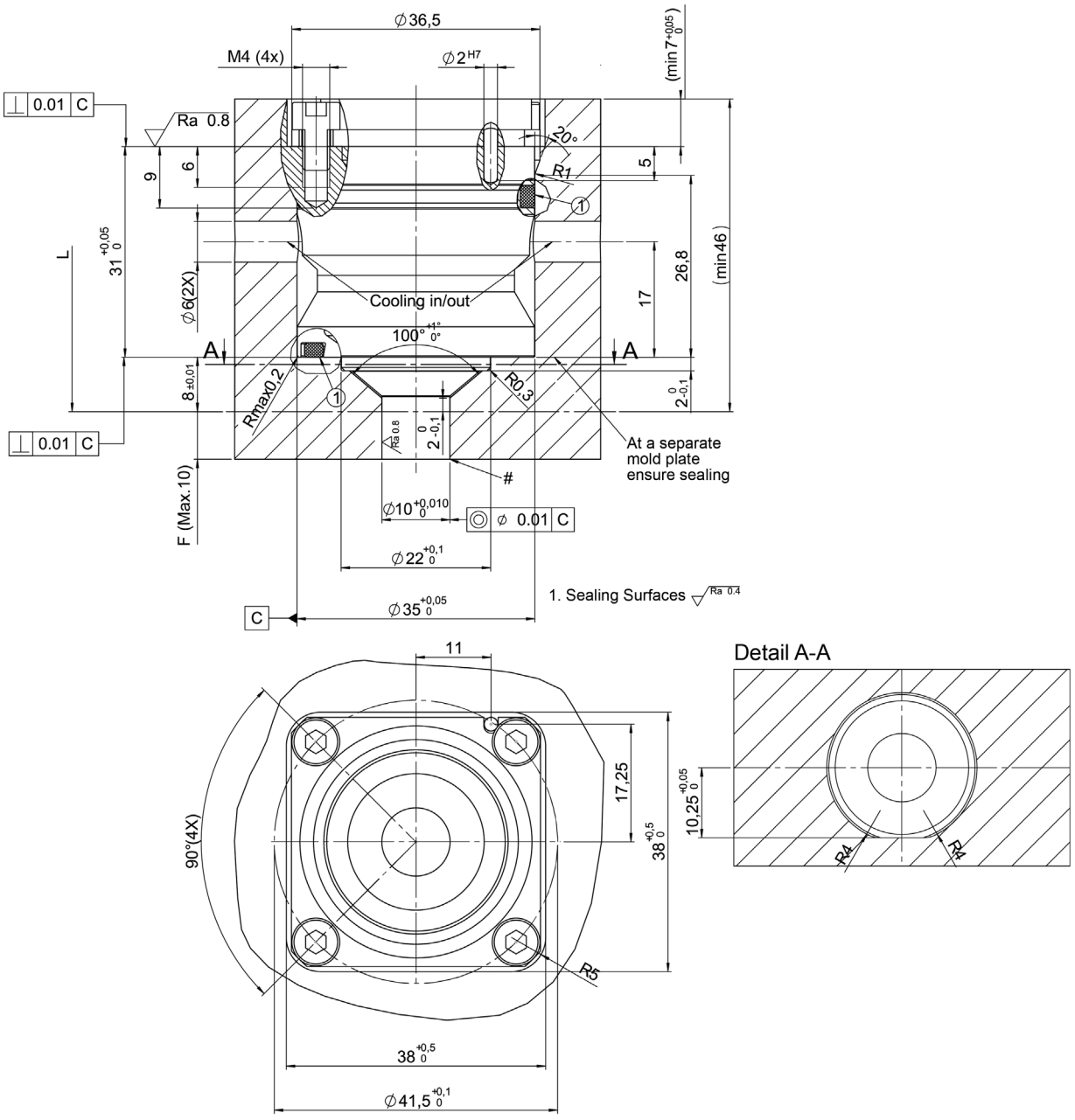
Cooling Bushing Cutout Dimensions



Doc007724.png

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

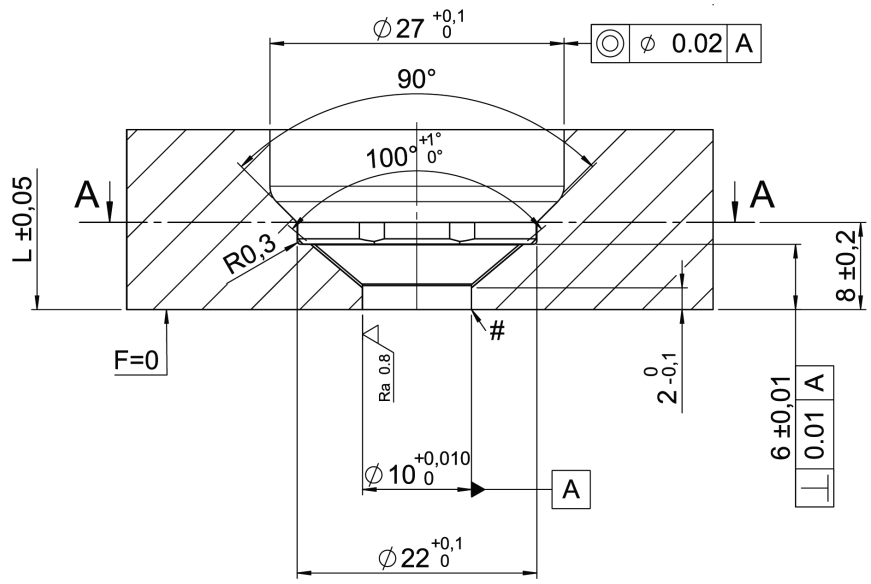
VSW, VTW, TTW - Cooling Bushing with Wear Insert Cutout Dimensions

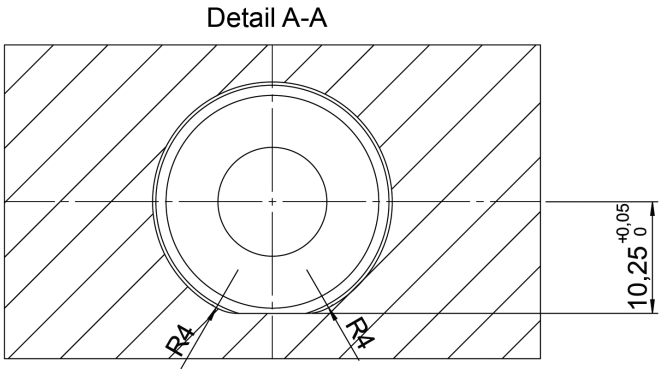


Doc007723.png

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

VSW, VTW, TTW - Wear Insert cutout dimensions





Doc007725.png

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