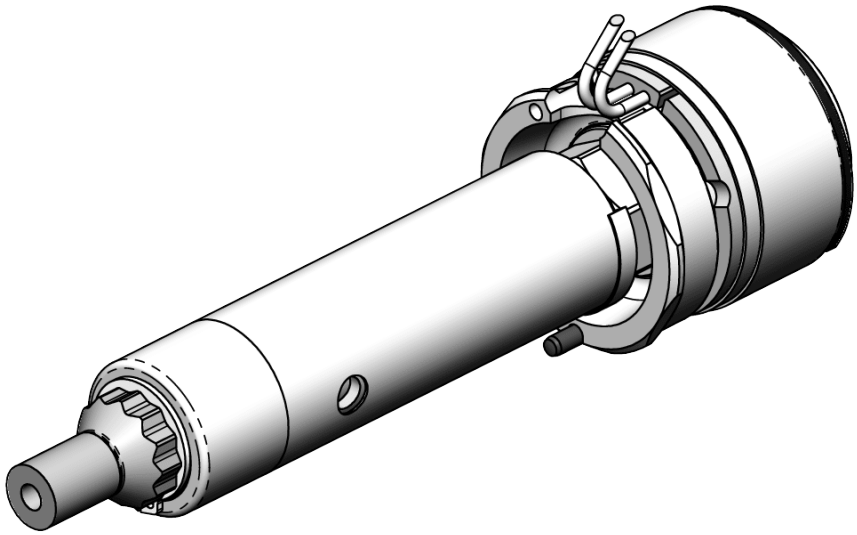
BARNES™
MOLDING SOLUTIONS

HOT RUNNER TECHNOLOGY

09S-03
Sprue Bushings
Product Catalog



Doc009130_RIS.png

Synventive molding solutions

CAT-01-0102_EN-Rev02 / 2024-04

Product Type

Hot runner nozzles in the 09S-03 range;

- Nozzle size 09: Flow bore - Ø 9 mm
- Nozzle style S: Sprue bushing

Different gate options can be implemented, see table on right.

Application

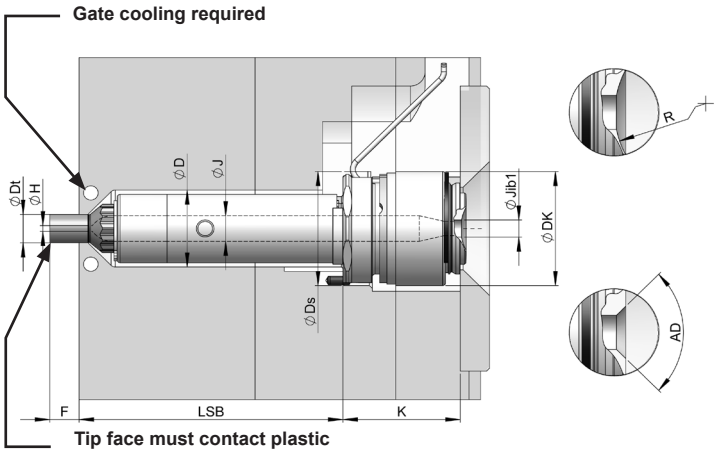
For all usual thermoplastics Max. shot weight per nozzle (g):

- 250 (open, low viscosity)

Heating 09S-03

- externally heated, 230 V AC
- replaceable heater & thermocouple
- Nozzle heater zones, 150...510 W
- Head heater, 450 W
  Thermocouples, EN 60584
  Fe-CuNi 0 = Typ J;
  NiCr-Ni = Typ K

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



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Major Dimensions (mm)

J	Flow bore Ø	Ø 9 [1]	**K**	Head height	40
Jib1	Flow bore Ø inlet bushing	Ø 4,5, 6, 8	**Dk**	Head Ø	Ø40
LSB	Nozzle length	50...390 [2]	**Ls**	Depth of head centring	10
F	Tip Extension	see page 4	**Ds**	Diameter of head centering	Ø40
D	Cutout Ø	Ø27	**R**	Nozzle contact radius	0...40
Dt	Tip Ø	see page 4	**AD**	Nozzle contact angle	90°...120°
H	Gate Orifice	see page 4			

[1] Standard flow bore value = Ø9

[2] Standard lengths shown, consult Synventive for custom lengths.

09S-03 Nozzle Lengths

One control area (thermocouple)			Two control areas (thermocouple)				Head
LSB (mm)		Heater zone power (Watt)	LSB (mm)		Heater zone power [1] (Watt)		
Standard lengths	Custom lengths	Power1	Standard lengths	Custom lengths	Power 1	Power 2	Power
50	>50-<60	150 W	-	=>160-<170	150 W	130 W	450 W
60	>60-<70	180 W	170	>170-<180	150 W	140 W	450 W
70	>70-<80	210 W	-	=>180-<190	150 W	150 W	450 W
80	>80-<90	215 W	190	>190-<200	150 W	160 W	450 W
90	>90-<100	220 W	-	=>200-<210	150 W	170 W	450 W
100	>100-<110	225 W	210	>210-<220	150 W	180 W	450 W
110	>110-<120	230 W	-	=>220-<230	150 W	190 W	450 W
120	>120-<130	235 W	230	>230-<240	150 W	200 W	450 W
130	>130-<140	250 W	-	=>240-<250	150 W	210 W	450 W
-	=>140-<150	255 W	250	>250 -<260	150 W	220 W	450 W
150	>150-<160	260 W	-	=>260 -<270	150 W	230 W	450 W
			270	>270-<280	150 W	240 W	450 W
			-	=>280-<290	150 W	250 W	450 W
			290	>290-<300	150 W	260 W	450 W
			-	=>300-<310	150 W	270 W	450 W
			310	>310-<320	150 W	280 W	450 W
			-	=>320-<330	150 W	290 W	450 W
			330	>330-<340	150 W	300 W	450 W
			-	=>340-<350	150 W	310 W	450 W
			350	>350-<360	150 W	320 W	450 W
			-	=>360-<370	150 W	330 W	450 W
			370	>370-<380	150 W	340 W	450 W
			-	=>380-<390	150 W	350 W	450 W
			390	-	150 W	360 W	450 W

[3] 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.

1. Cutout for the nozzle

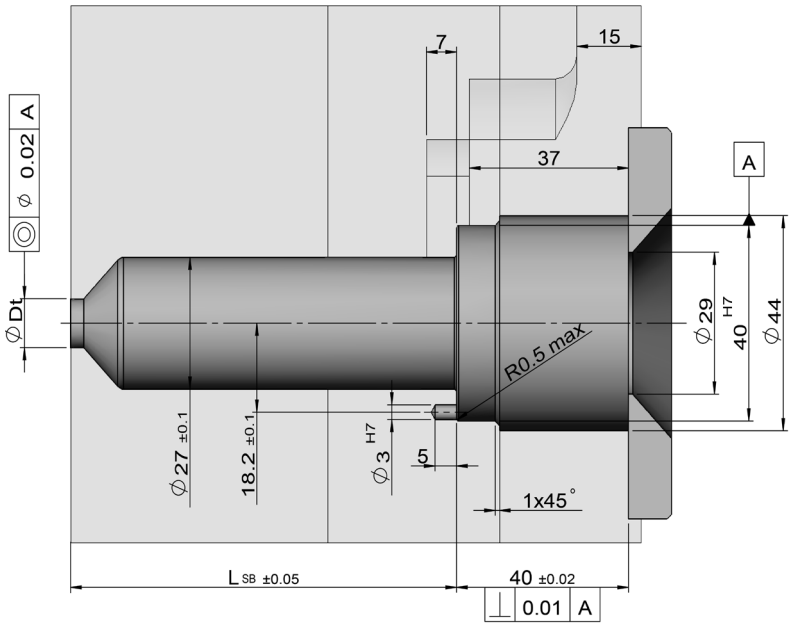
LSB Nozzle length

General tolerances: DIN ISO 2768-mK

Surfaces: $\sqrt{Ra\ 3.2}$ ($\sqrt{Ra\ 1.6}$ $\sqrt{Ra\ 0.8}$)

Values of the dimension LSB can be found in the data sheet on page 2.

1



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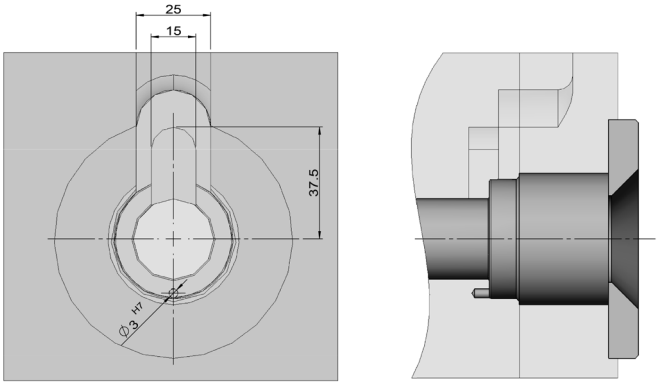
2. Cutout for connections

→ Electrical power

→ Thermocouple

2



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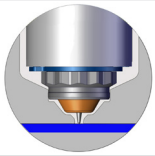
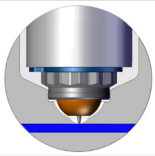
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
H = Gate orifice diameter, F = Tip extension, Dt = Tip Diameter, Mod = Modifiable

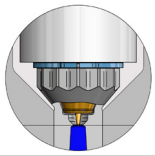
TTW Thermal Gate – Torpedo - Blind

Tip Style		Description	Dt = Ø14			
			H=1.2	H=1.6	H=2.0	H=2.5
	**TTW** Doc009086_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** Doc009087_RIS.png	Standard	✓	✓	✓	✓

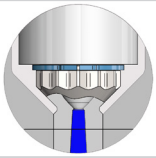
TTP Thermal Gate – Torpedo - Plunged Through

Tip Style		Description	Dt = Ø10 F = 10		
			H=1.5	H=2.0	H=2.5
	**TTP** Doc009088_RIS.png	Standard	✓	✓	✓

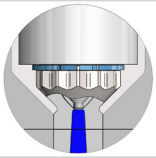
✓ Preferred (✓) Available ✘ Not Available

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

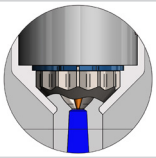
TPK Thermal Gate – Full Flow - Plunged Through

Tip Style		Description	Dt = Ø10 F = 10	
			H=2.0	H=2.5
	**TPK** Doc009089_RIS.png	Standard	✓	✓

TNK Thermal Gate – Full Flow - Plunged Through

Tip Style		Description	Dt = Ø10 F = 10	
			H=2.0	H=2.5
	**TNK** Doc009090_RIS.png	Standard Cold Runner	✓	✓

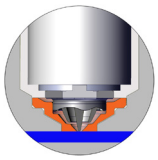
TTK Thermal Gate – Torpedo - Plunged Through

Tip Style		Description	Dt = Ø10 F = 10	
			H=2.0	H=2.5
	**TTK** Doc009091_RIS.png	Standard Cold Runner	✓	✓

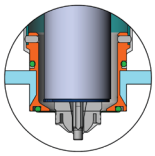
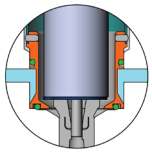
✓ Preferred (✓) Available ✘ Not Available

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

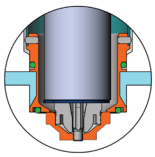
Wear Insert

Part		Description	F = 0, 10, Mod			
			H=1.2	H=1.6	H=2.0	H=2.5
 Doc009092_RIS.png	**WI-TTW**	Wear Insert for TTW Nozzle tips	✓	✓	✓	✓

Cooling Bushing

Part		TTW	TTP	TPK	TNK	TTK
 Doc009093_RIS.png  Doc009094_RIS.png	**NC** Nozzle Cooling Bushing for Nozzle Tips, Blind and Plunged Through	✓	✓	✓	✓	✓

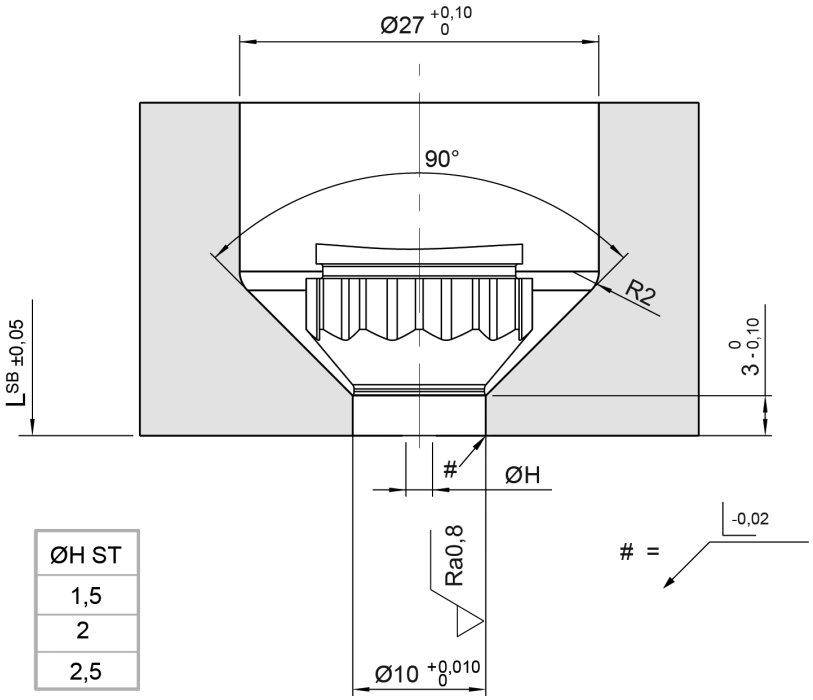
Wear Insert and Cooling Bushing

Part		TTW
 Doc009095_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 Nozzle tip cutout dimensions



ØH ST
1,5
2
2,5

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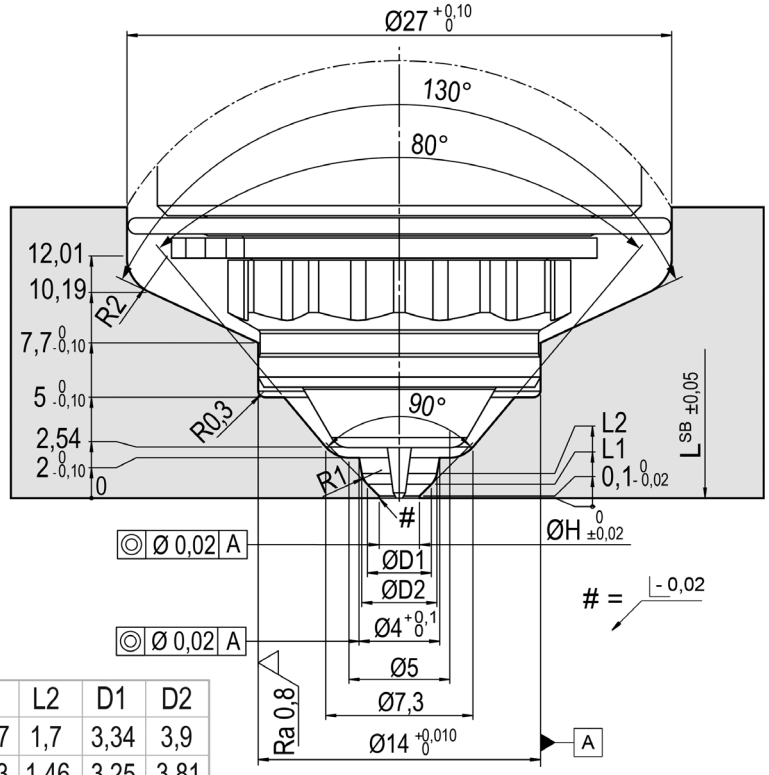
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

TTW - Nozzle tip cutout dimensions



ØH	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

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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.
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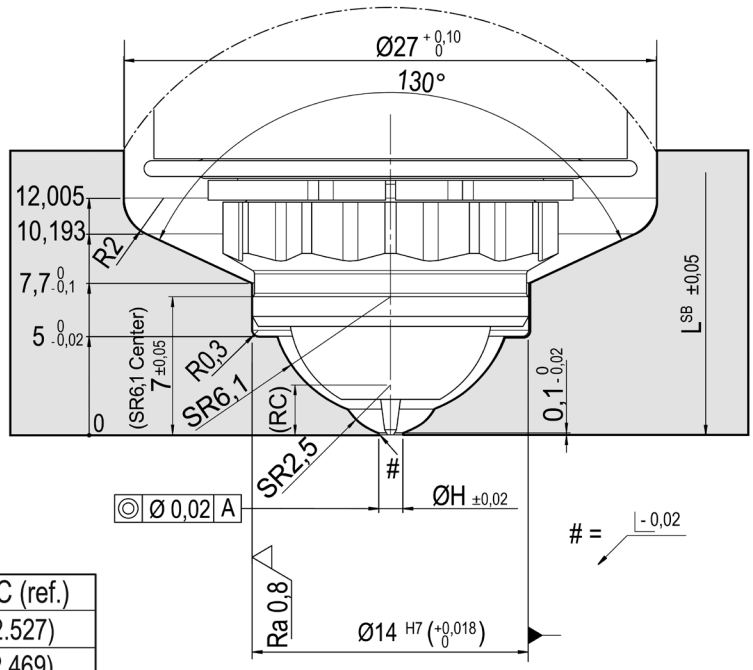
TTW-C - Nozzle tip cutout dimensions



ØH	RC (ref.)
1,2	(2.527)
1,6	(2.469)
2	(2.391)
2,5	(2.265)

Notes:

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

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

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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 .

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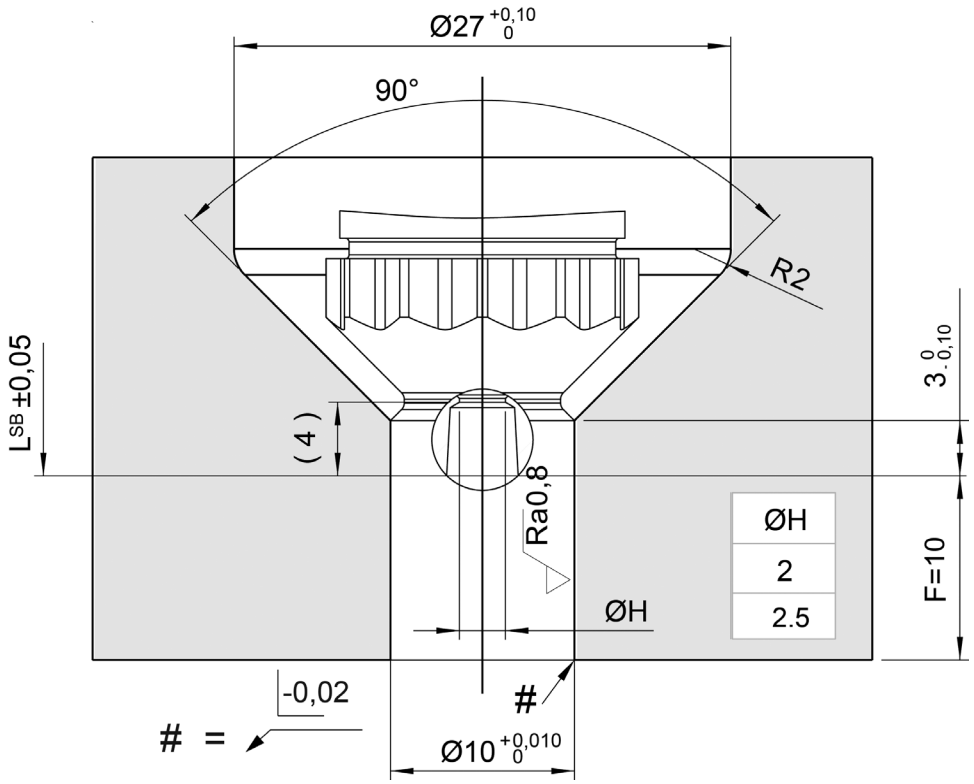
KP, KN, KT Series - Nozzle tip cutout dimensions



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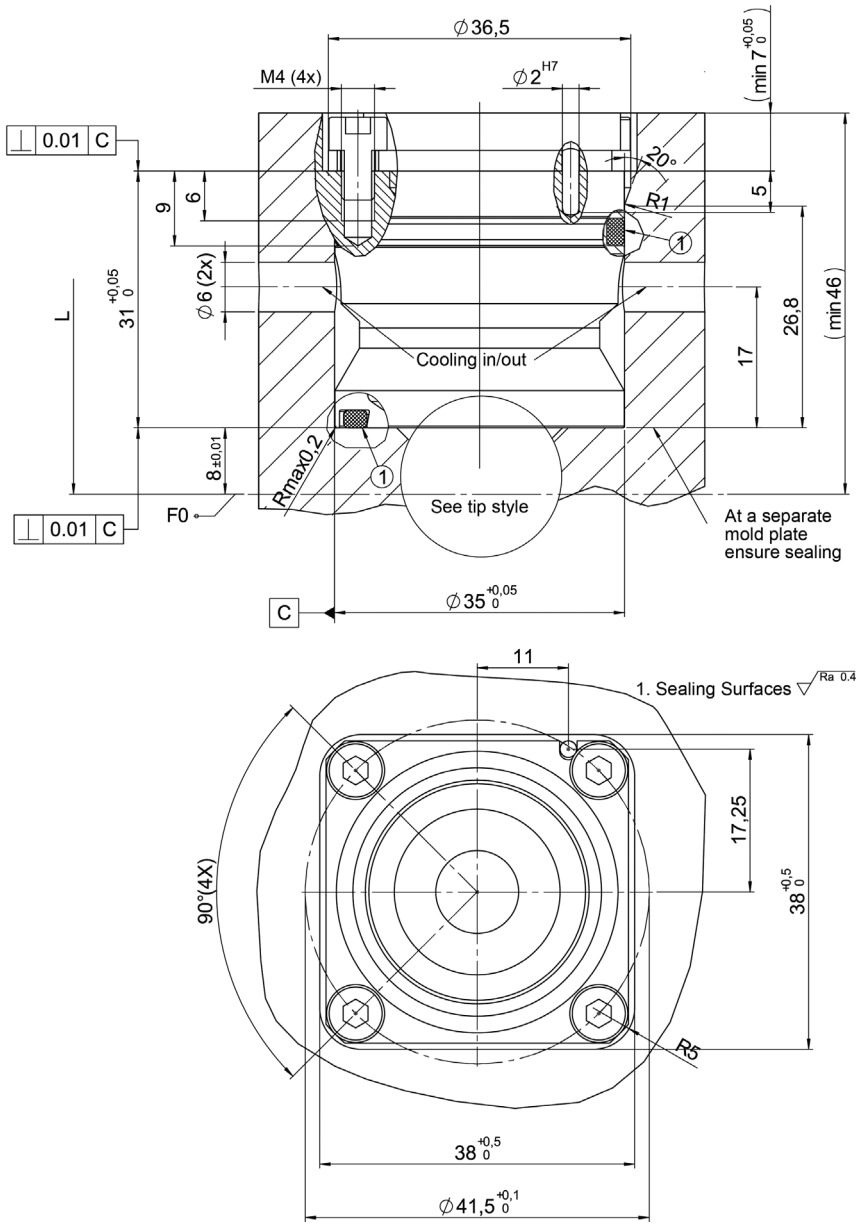
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

S, K, W Series - Cooling Bushing Cutout Dimensions



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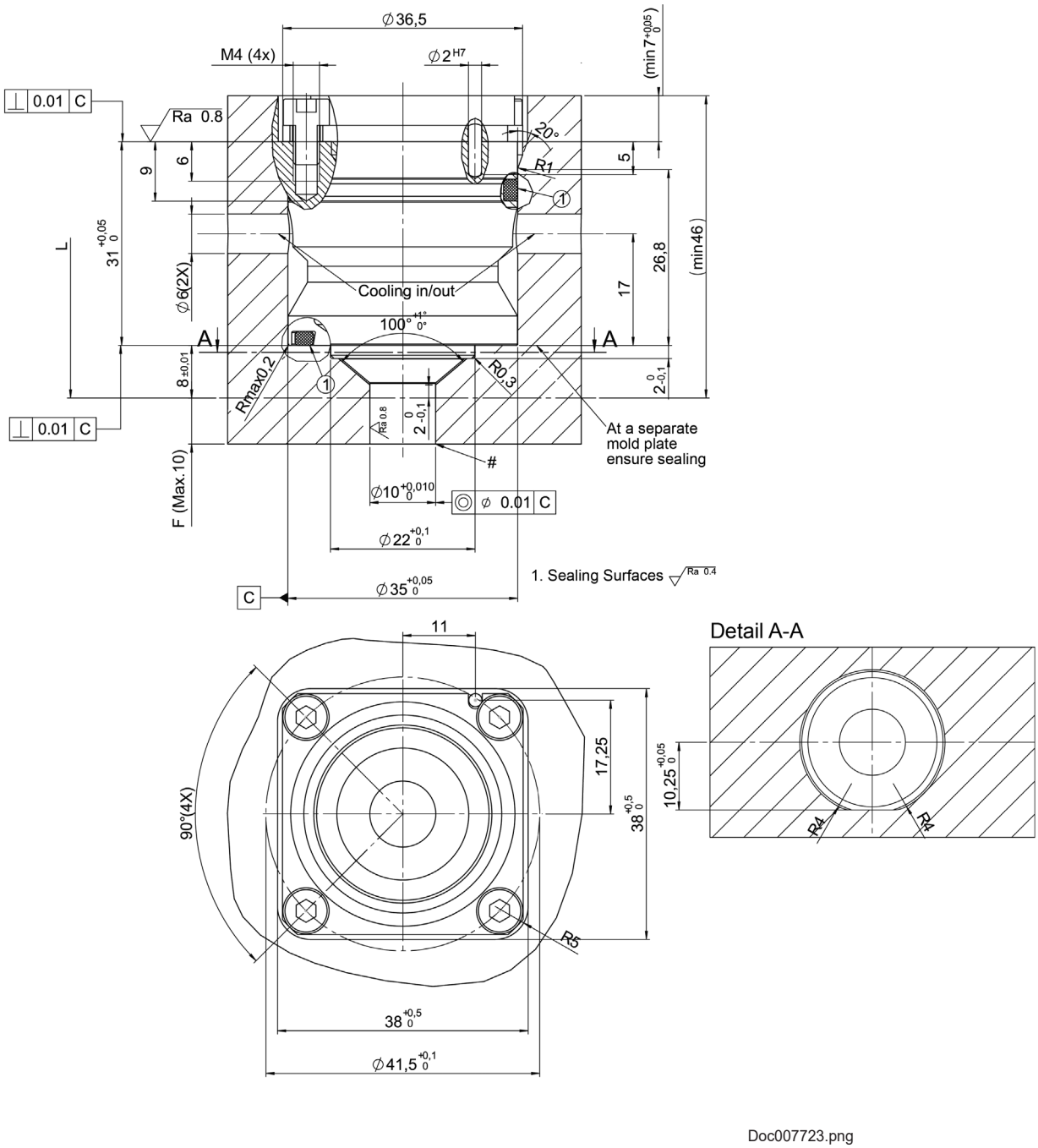
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

TTW - Cooling Bushing with Wear Insert Cutout Dimensions



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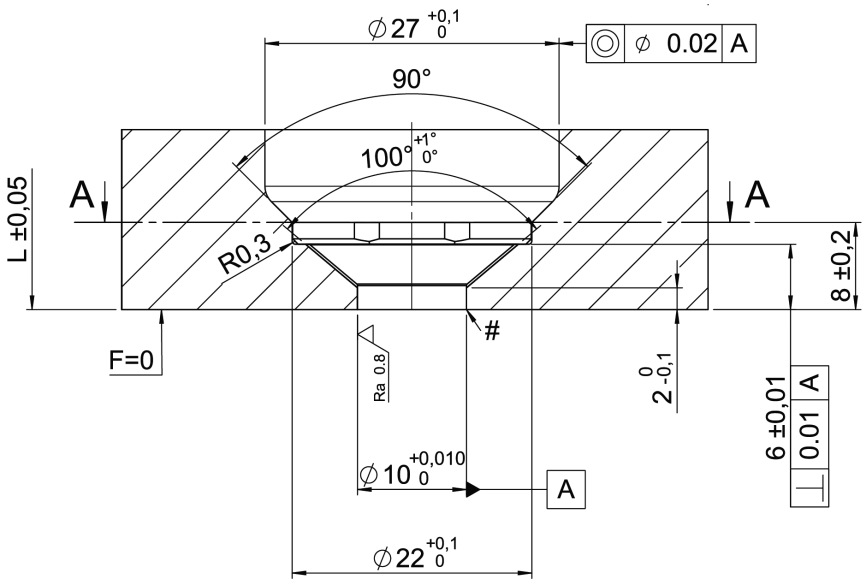
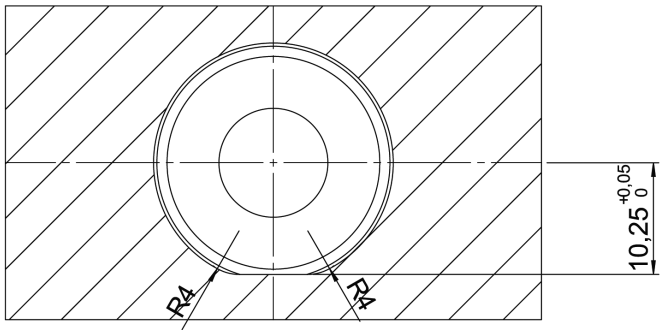
Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
Dimensions for reference only. Reference system drawing for complete dimensions prior to machining gate detail in mold.

TTW - Wear Insert cutout dimensions



Detail A-A



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