FDU HOTRUNNER

HOTRUNNER TECHNOLOGY

FOR SMART HIGHSPEED INJECTION

fdu-hotrunner.com

FDU - THE FUTURE OF INJECTION MOULDING

The „Flat Die Unit“ is a development synergy project. It combines the benefits of the injection moulding and extrusion technology.

The FDU is a establish hot-runner nozzle system for injection moulds. The flow channel in the nozzle has been projected onto a flat nozzle. The plastic flows evenly into the cavity through a defined narrow gap.

With FDU technical plastics and filled materials such as recycling material can also be used.

Finalised projects show that we achieved significant reductions of cycle time and injection pressures.

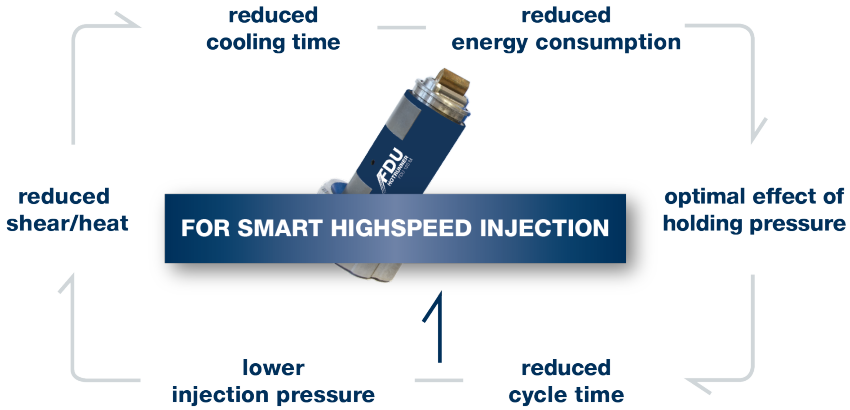
Benefit from the advantages of the FDU and the resulting higher productivity and use the future of injection moulding already right now!

COMPARISON FDU VS. ROUND NOZZLE

	Cross-section area FDU	Outlet diameter round nozzle	Cross-section area round nozzle
Midi 14 SO x 1,0	14 mm²	Ø 4,2	14 mm²
Midi 14 SLS x 2	28 mm²	Ø 6	28 mm²
Midi 14 SO x 1,5	21 mm²	Ø 5,2	21 mm²
Midi 14 SLS x 2,85	40 mm²	Ø 7,1	40 mm²
Maxi 25 SO x 2	50 mm²	Ø 8	50 mm²
Maxi 25 SLS x 2,5	62,5 mm²	Ø 9	62,5 mm²
Maxi 25 SO x 2,5	62,5 mm²	Ø 8,9	62,5 mm²
Maxi 25 SLS x 4,1	100 mm²	Ø 11,4	102,4 mm²

ADVANTAGES FDU

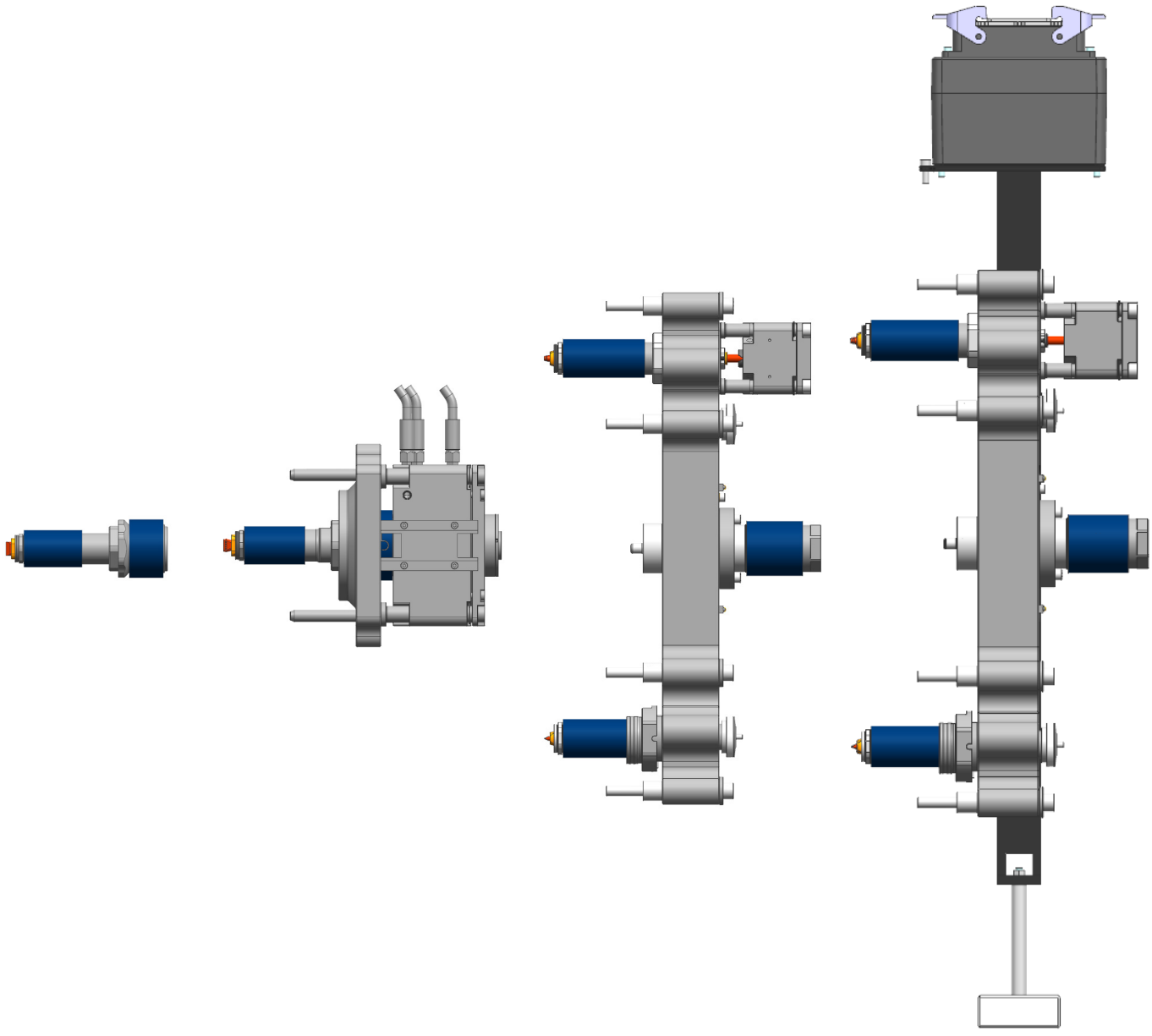
- **Reduction** of injection time
- **Reduction** of holding pressure time
- **Optimum effect** of holding pressure
- **Shorter** cooling times
- **Reduction** of shear
- **Improvement** of part quality
- **Use** of new materials/recycling-material
- **No** jetting
- **New** constructive connectivity options



FDU - PRODUCT OVERVIEW

The FDU is an innovative hotrunner system for injection moulds. The flow channel in the nozzle is projected onto a flat nozzle. The wide slot nozzle has a new outlet geometry. In the process, the plastic flows into the cavity evenly distributed through a defined long gap instead of through a small point gate. This reduces injection pressure, cycle time and much more.

The FDU is available in 2 versions. As an open hotrunner system and as a sword lock system under the designation FDU SLS (Slot Lock System).



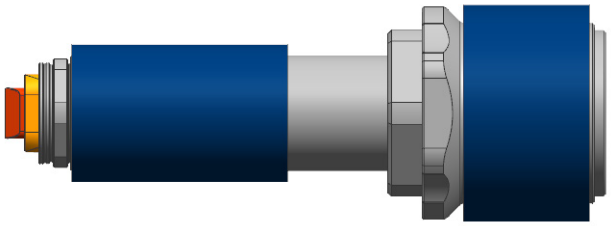
Single nozzle

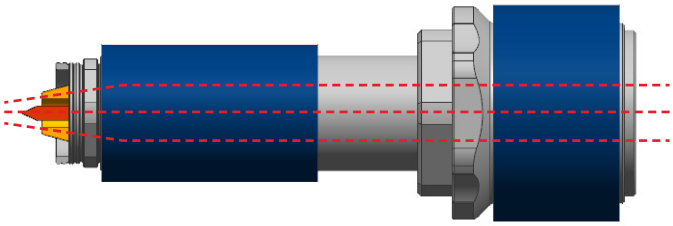
Single nozzle SLS

Hotrunner SLS and open nozzle

Hotrunner SLS and open nozzle incl. Electro & Hydraulics

SINGLE NOZZLE SO





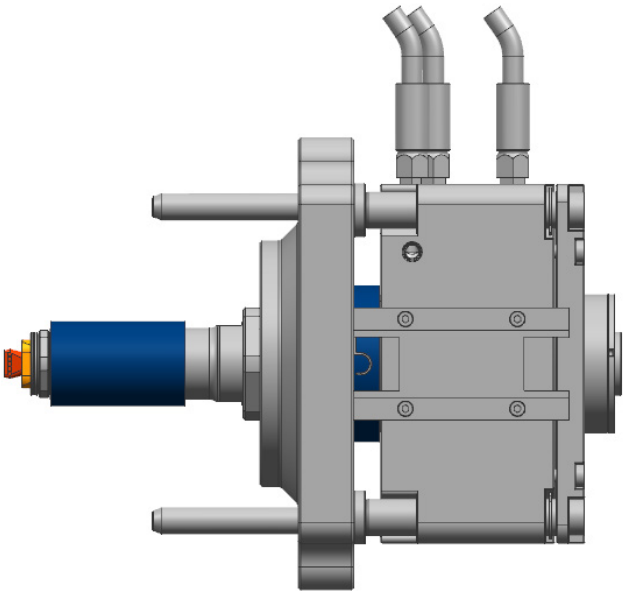
Suitable for plastics: PA 6 / POM / PP / HDPE / ABS

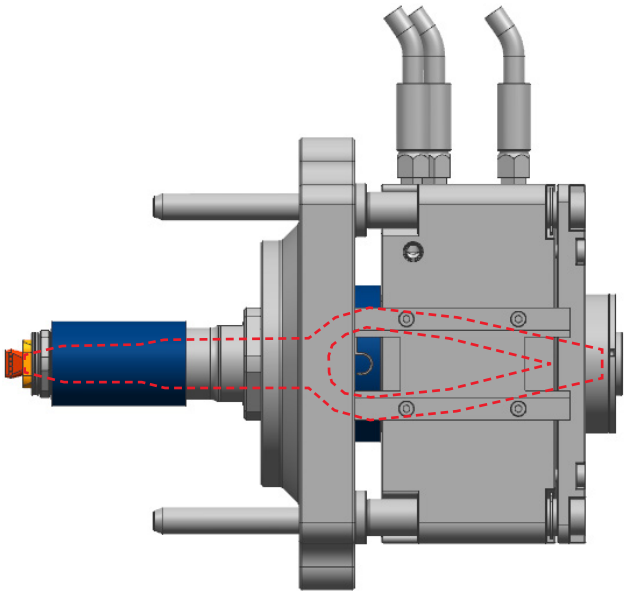
Application example:

ADVANTAGES

- Gating on rips possible
- No jetting
- Low shear at the gate
- Low distortion in the component

SINGLE NOZZLE SLS





Suitable for plastics: PA 6 / POM / PP / HDPE / ABS / PS

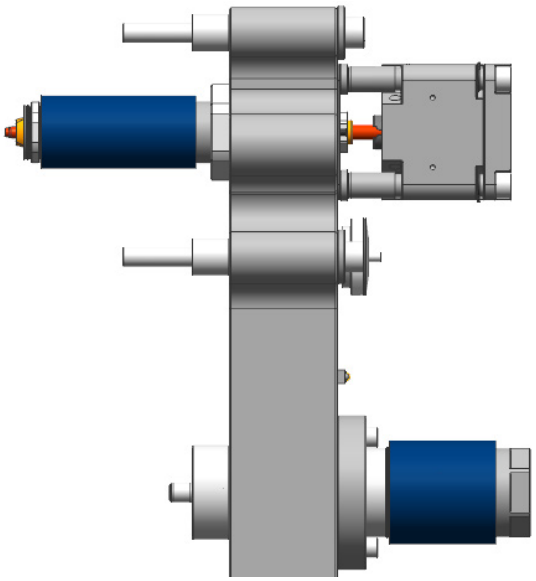
Application example:

ADVANTAGES

- Material flow axial
- Piston stroke always even
- Permissible up to 1,800 bar injection pressure
- Hydraulic pressure up to 50 bar permitted
- Good for color change
- High heat dissipation of the needle in the gate

HOTRUNNER SYSTEM

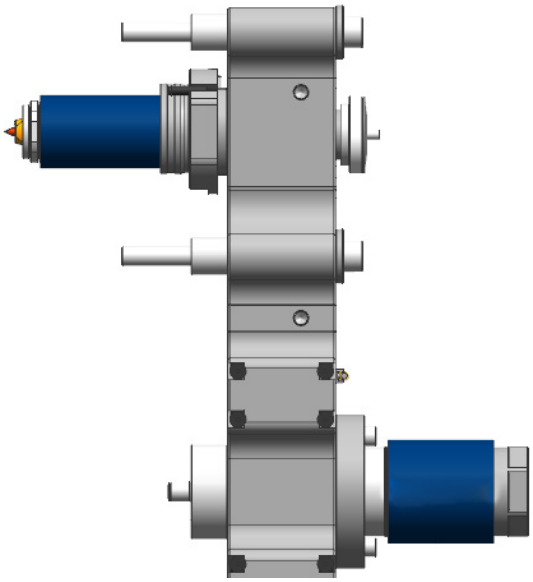
Depending on the material and application, FDU offers you a screwed-in or sliding hot runner system.



SCREW-IN SYSTEM (TV)

ADVANTAGES

- High tightness between manifold and nozzle
- Injection pressures up to 1,800 bar
- Less heat dissipation to the mould



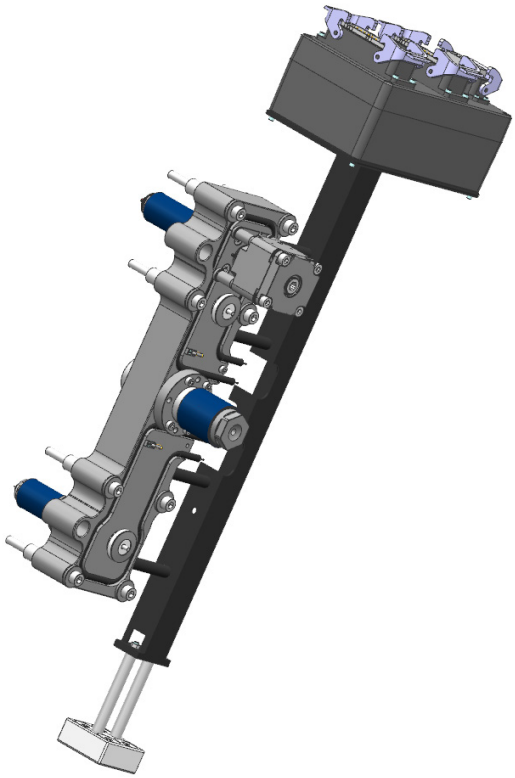
SLIDING SEALING SYSTEM (SV)

(only available as an open system)

ADVANTAGES

- Use of shorter nozzles possible
- Injection pressures up to 1,800 bar
- No bending of the nozzle

COMPLETE SYSTEM

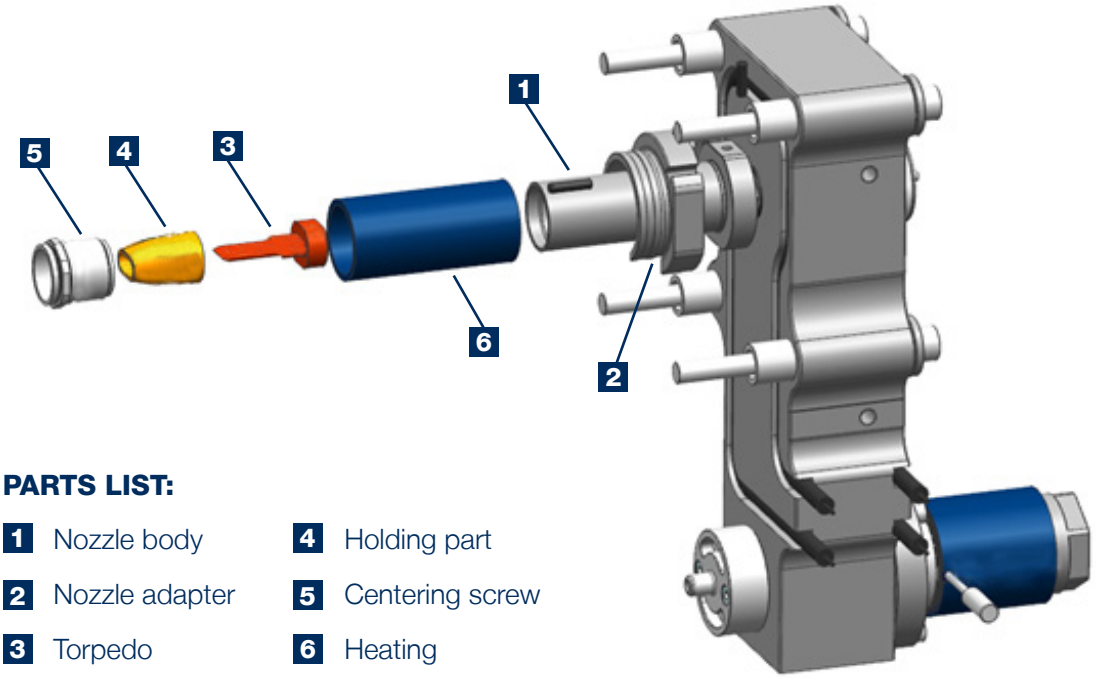


HOTRUNNER INCL. ADDITIONAL OPTIONS

1 Option:
System according to customer standard with cable console and plug wired.

2 Option:
Console with hydraulics according to customer standards hosed. Either with mono-coupling or multi-coupling.

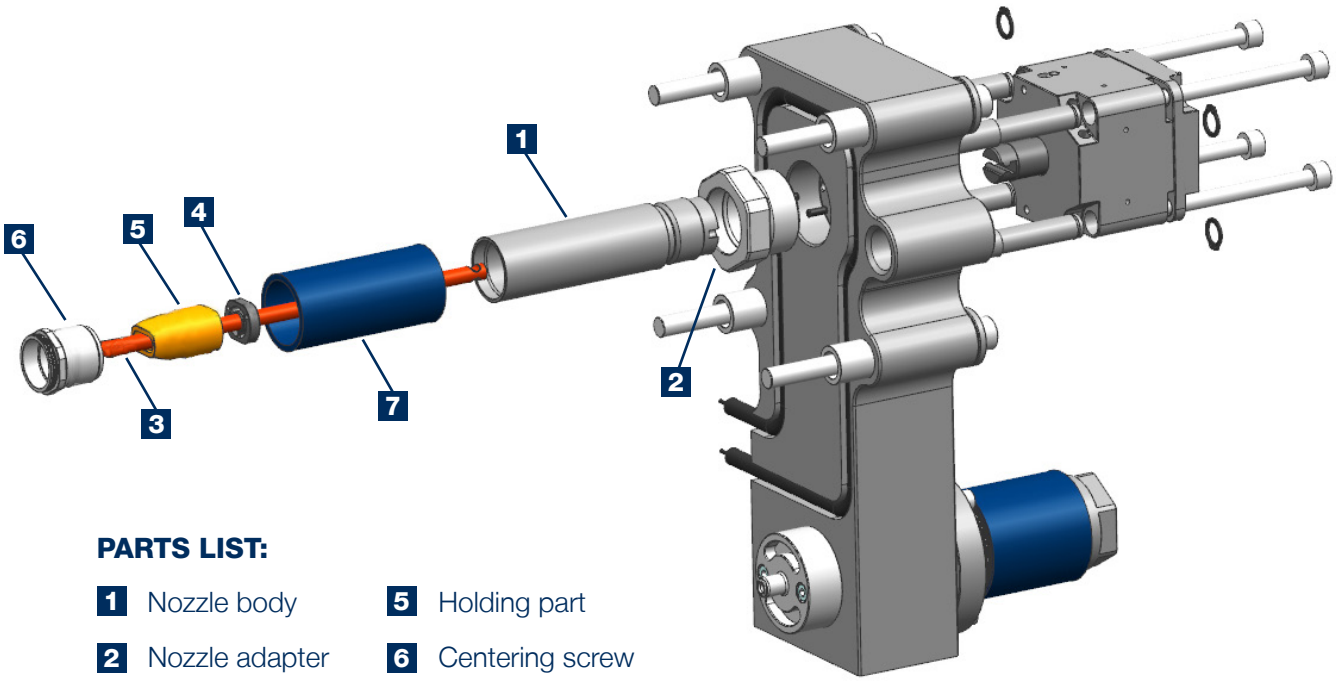
ASSEMBLY OF THE FDU - OPEN SYSTEM



PARTS LIST:

1 Nozzle body
2 Nozzle adapter
3 Torpedo
4 Holding part
5 Centering screw
6 Heating

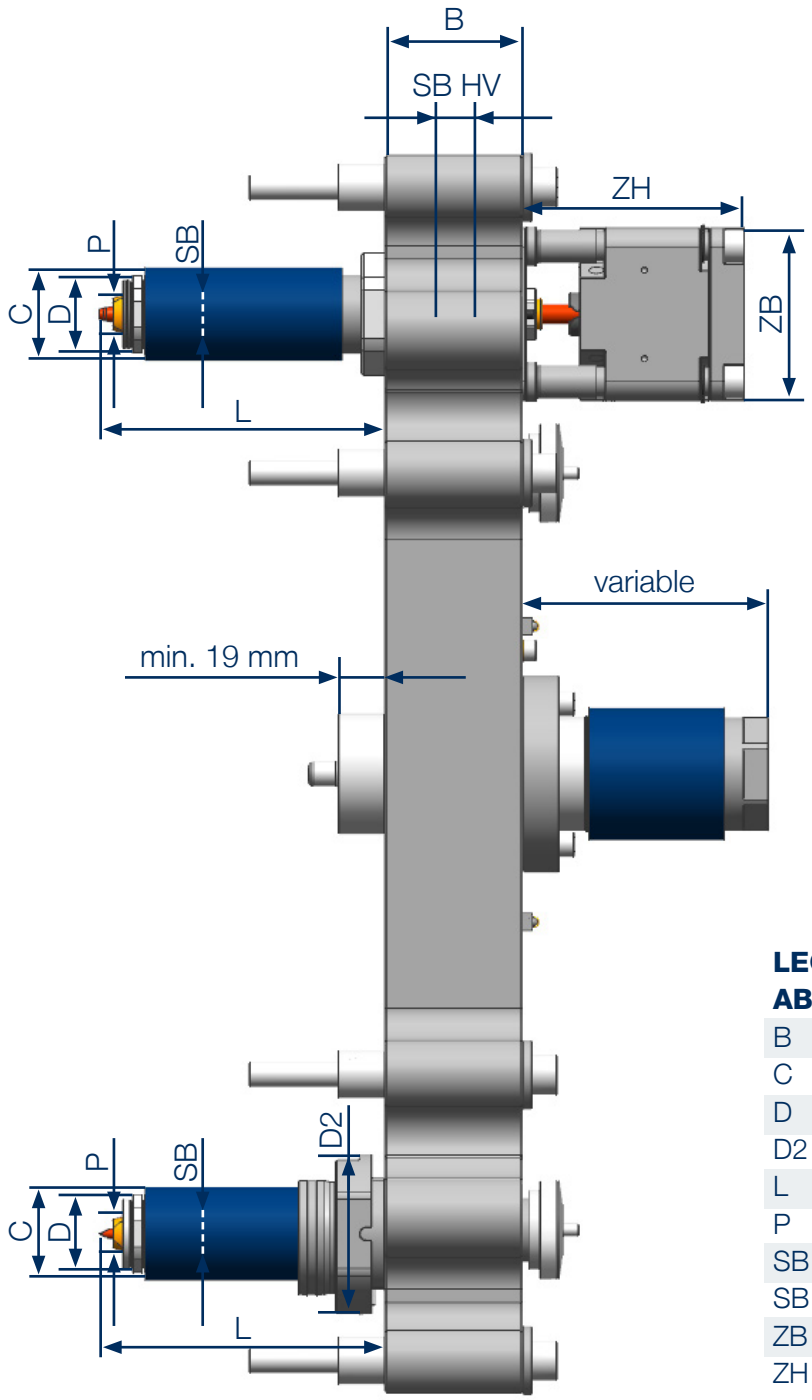
ASSEMBLY OF THE FDU - SLS SYSTEM



PARTS LIST:

1 Nozzle body
2 Nozzle adapter
3 Torpedo needle
4 Pre-centering
5 Holding part
6 Centering screw
7 Heating

DIMENSIONS - HOTRUNNER SYSTEM SLS/SO



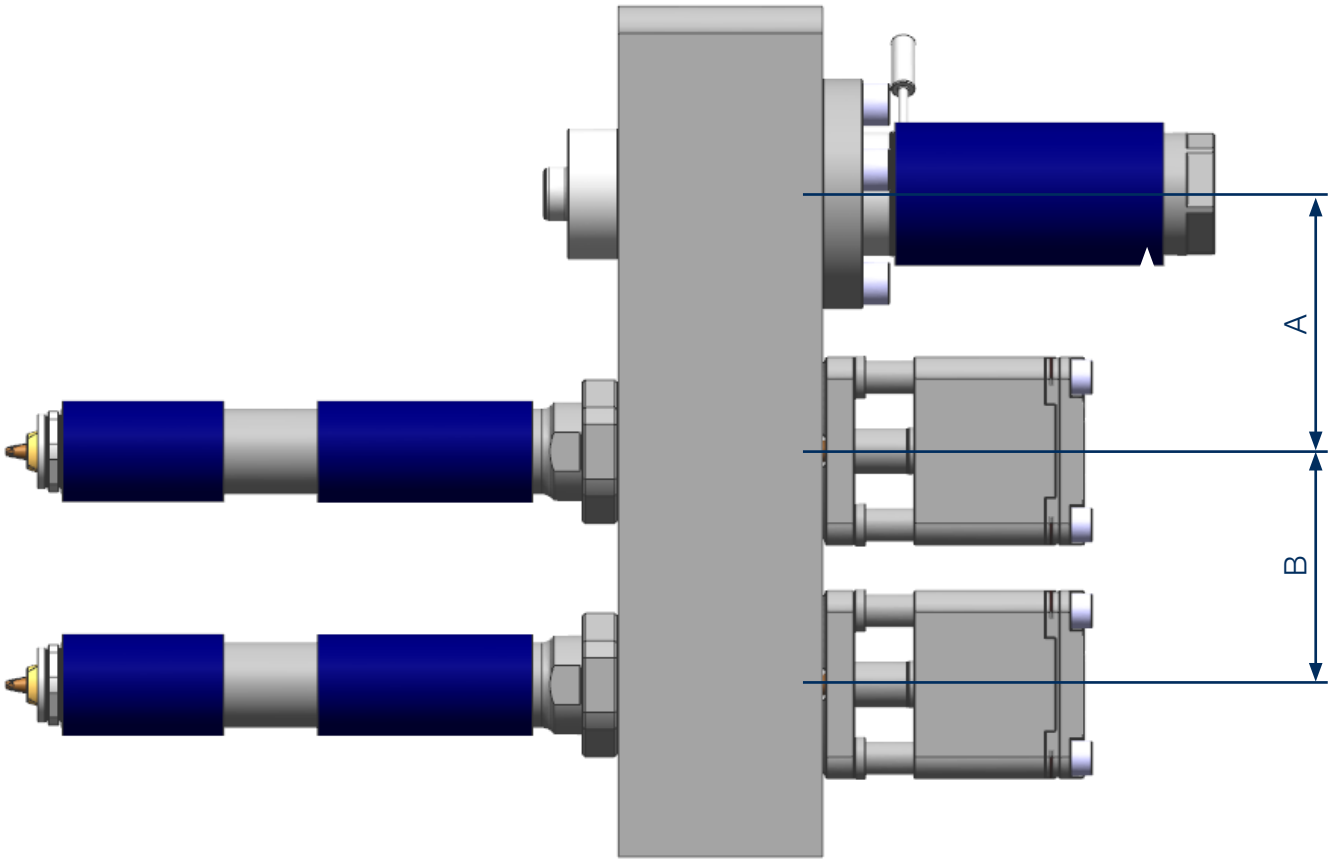
LEGEND

ABBREVIATION	DESCRIPTION
B	Height of manifold
C	Ø Cut out
D	Ø Nozzle
D2	Ø Nozzle attachment
L	Nozzle length
P	Ø Fit
SB	Ø Flow channel nozzle
SB HV	Ø Flow channel manifold
ZB	Cylinder width
ZH	Cylinder height

	Midi		Maxi
	SV SO	SLS	SLS
C	43	45	70
D	38,5	38	60
D2	57	n.A.	n.A.
L	ab 120	120 - 320	ab 110
P	28	28	44
SB	16	16	24
ZB	n.A.	70	80
ZH	n.A.	100	100

Manifold heights		
SB HV	B	
	SV	TV
10 - 14	50	58
16 - 24	66	76

MANIFOLD DIMENSIONS

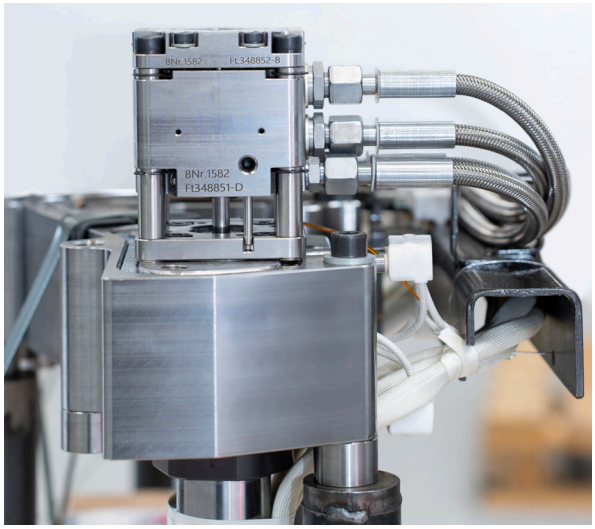


Cylinder dimension	AB - Cylinder	Cylinder - Cylinder
	A	B
	mm	
40	59	57
50	66	71,5
60	71	81,5

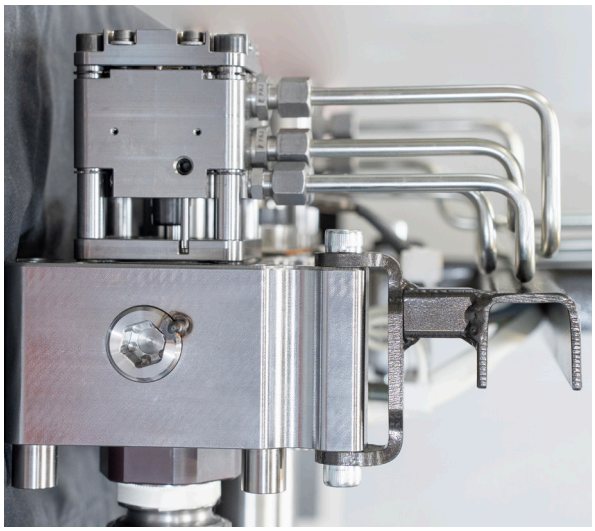
FDU HYDRAULIC CYLINDER

TECHNICAL DATA

- Hydraulic operating pressure up to 50 bar
- Precise adjustment of the needle by vernier
- +- 1mm variance
- Constant piston stroke of 14.5 mm
- Oil-free decoupling of the needle
- No post-cooling required after the end of production

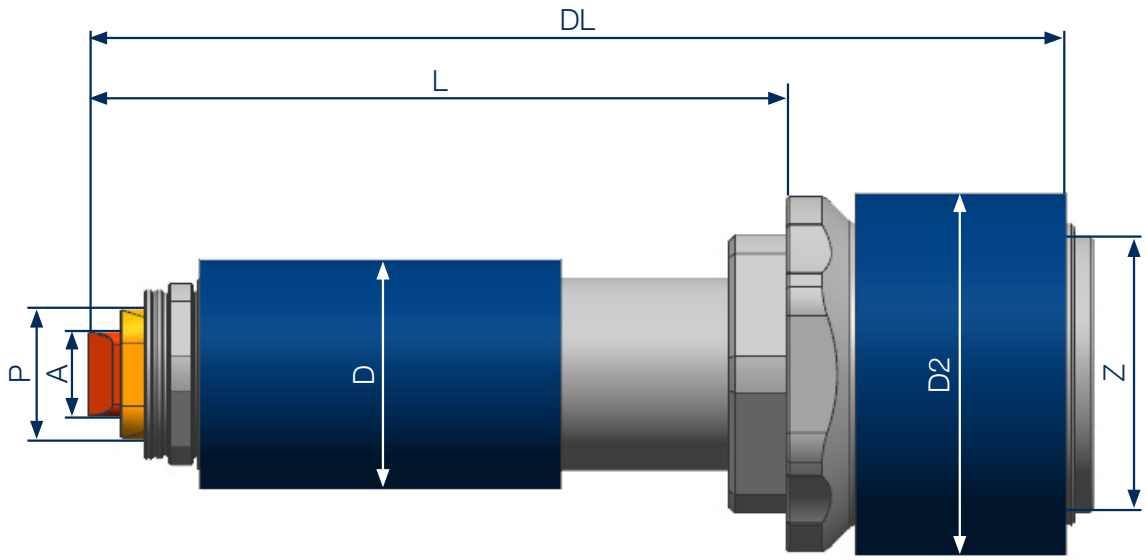


- Cost-effective solution with flex-hoses
- Fast spare parts procurement



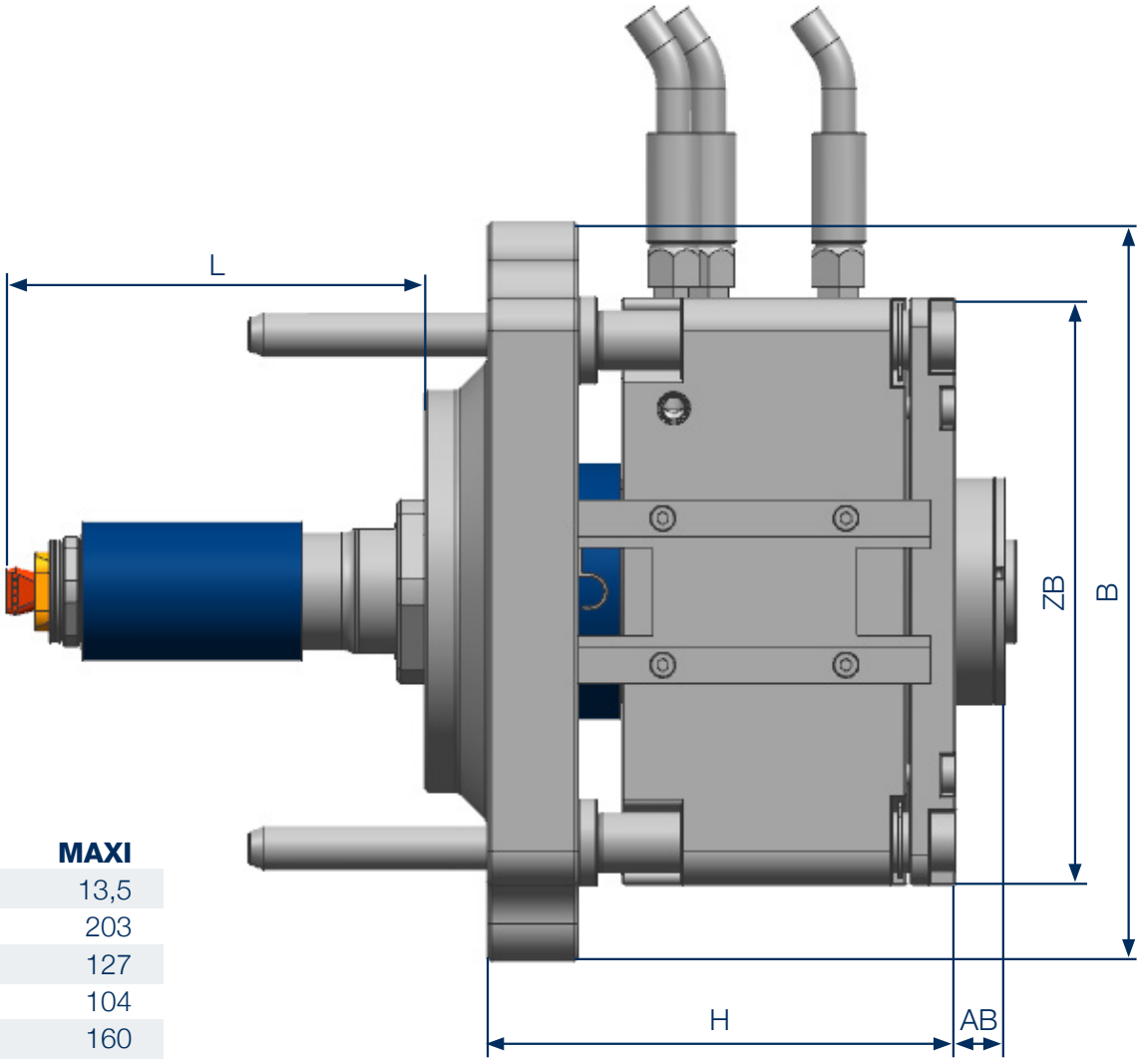
- Space-saving solution thanks to fixed pipes

DIMENSIONS - SO SINGLE NOZZLE MIDI



	MIDI
A	14
D	43
D2	68
DL	164
L	116
P	28
Z	46

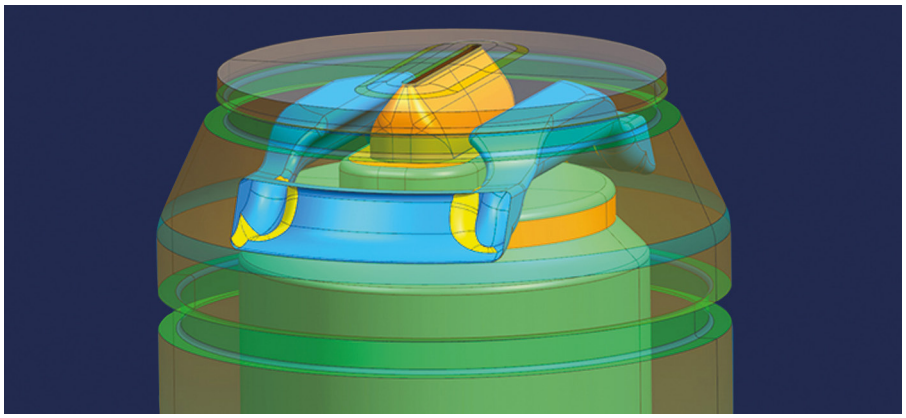
DIMENSIONS - SLS SINGLE NOZZLE MIDI/MAXI

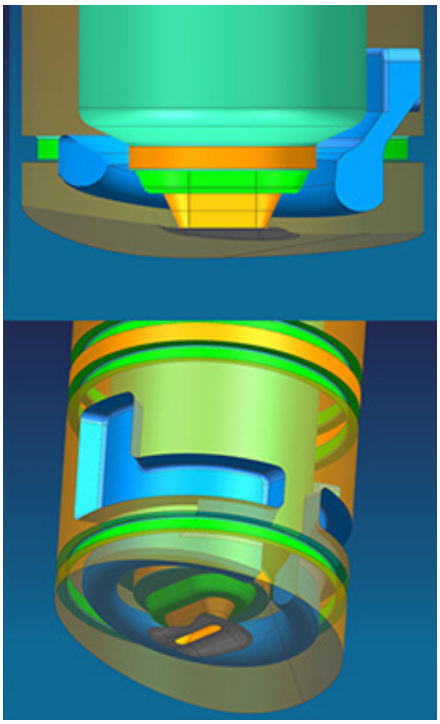


	MIDI	MAXI
AB	13,5	13,5
B	203	203
H	127	127
L	114	104
ZB	160	160

FDU TEMPERING INSERTS

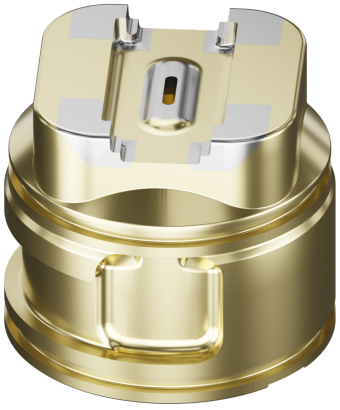
For ideal temperature control, we recommend FDU temperature control inserts.



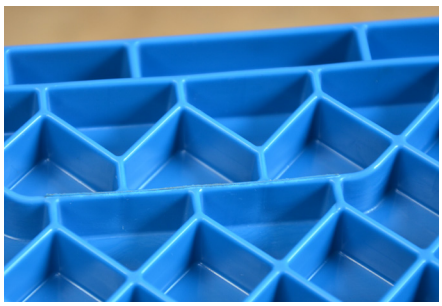


The FDU cooling inserts are available in several variants.
Our experts will be happy to help you make the best choice, perfectly tailored to your requirements and needs:

- Drilled variant
- Cooling bush made by metal 3D printing
- Hybrid laser-generated socket that connects between highly wear-resistant and good thermally conductive materials

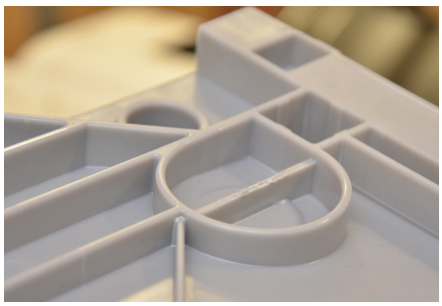


REALISED PROJECTS AND THEIR BENEFITS



LOGISTICS CONTAINER

- Cycle time reduction 17 %
- 300 bar less pressure drop
- Direct connection on the rib



WHITE GOOD

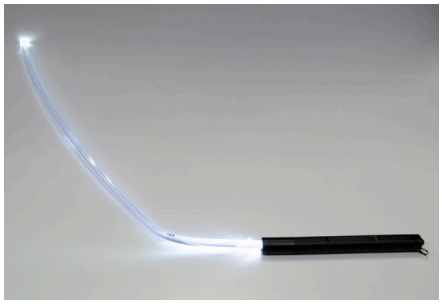
- Cycle time reduction 14 %
- 22 % less pressure drop
- Energy saving 2,6 ct/pc.

WRINKLE-POT

- Sequential injection with FDU SLS
- Optimal holding pressure effect
- Especially for foamed material

MOUTH NOSE COVER

- Material TPE / TPU
- Cosmetic tear-off quality with SLS
- Reduced injection pressure



FIBRE OPTICS

- Low-friction filling
- Improved holding pressure
- Variable profile of injection speed

AUTOMOTIVE

- Cycle time reduction
- Very good filling behavior
- No restriction of injection speed

FLOW CHANNEL

- Cosmetic tear-off quality
- Cycle time reduction by 16%
- Gentle processing of the polymers and their additives

SEAT SHELL

- Cycle time reduction by 22%
- Fast color change
- Optimal surfaces and filling behavior

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