

Laser-cut shims and plates made of stainless steel, manufactured according to your design. For slot-dies of any manufacturer and for self-developed slot-dies – in thicknesses from 75 to 200 µm, from single pieces to small series. This document contains the specifications, our design recommendations and the ordering information.

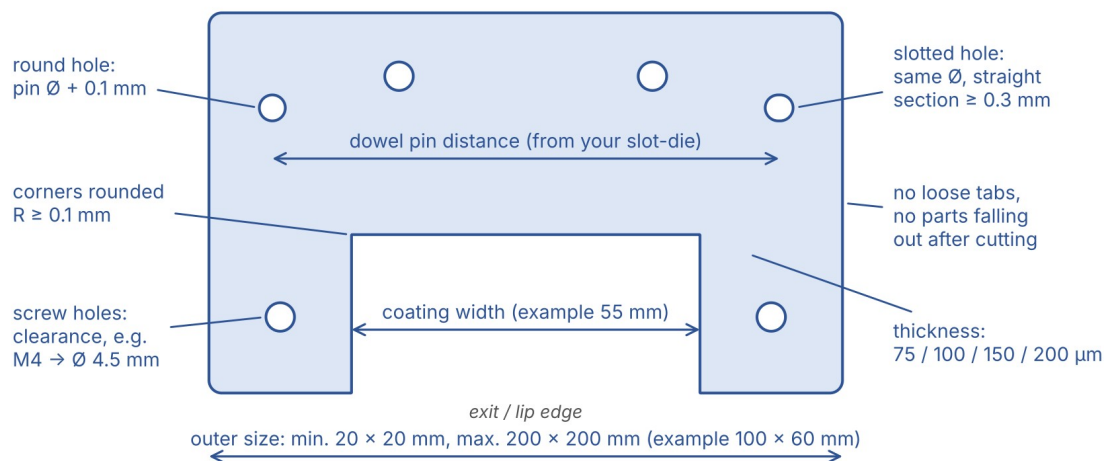


Figure 1 Example of a custom shim with the main design rules (example geometry, see DXF template).

Function

In a slot-die, shims and plates form a stack that guides the fluid from the inlet to the exit line. The shim defines the slot gap and the coating width; the plates can define the protrusion. Custom shims are needed to change the slot gap, coating width or protrusion – or when shims are no longer available or a self-developed slot-die is used.

Specifications

Table 1 Specifications of custom shims and plates.

Specifications	
Material	Stainless steel
Manufacturing	Laser cutting
Thickness	75 / 100 / 150 / 200 µm
Precision of the manufacturing process	± 10 µm
Outer size	min. 20 × 20 mm, max. 200 × 200 mm
Smallest radius (inner and outer corners)	0.1 mm
Delivery time	typically 2 weeks after all technical questions are clarified

Design recommendations

Table 2 Design rules for custom shims and plates.

#	Rule	Value
1	No loose tabs, no parts that fall out after laser cutting	–
2	Smallest radius of all inner and outer corners	≥ 0.1 mm
3	Outer size	20 × 20 mm ... 200 × 200 mm
4	Dowel pin 1: round hole with oversize	pin Ø + 0.1 mm (+50 µm on radius)
5	Dowel pin 2: slotted hole along the axis between both dowel pins, width = Ø round hole; pin expected in the middle of the straight section	straight section ≥ 0.3 mm
6	Screw holes (slot-dies are typically bolted with e.g. four screws): clearance hole, if the shim is positioned by dowel pins	Ø screw + approx. 0.5–1 mm, e.g. M6 → Ø 6.5 mm
7	All dimensions and tolerances are defined bindingly by the customer	–

Why rounded corners? Sharp corners cause problems in manufacturing, and lint tends to collect in them during cleaning.

Dowel pin and screw holes

Slot-dies typically use two dowel pins to position the shims precisely. Use a round hole with a small oversize for the first pin and a slotted hole for the second pin. The slotted hole extends along the axis between the two dowel pins; the pin is expected in the middle of its straight section. This compensates for tolerances of the pin distance, so the shim can always be inserted without stress.

For the screws that bolt the slot-die together, provide clearance holes so that the screws can be passed through easily. Without dowel pins, the screw holes must have a smaller tolerance – here we cannot give a recommendation.

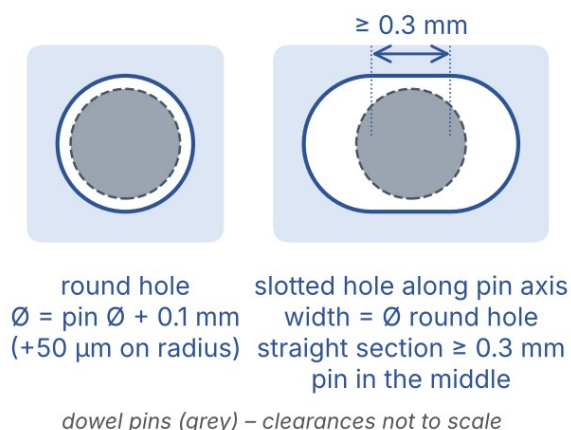


Figure 2 Round hole and slotted hole for the dowel pins; pin in the middle of the straight section (clearances not to scale).

Common mistakes

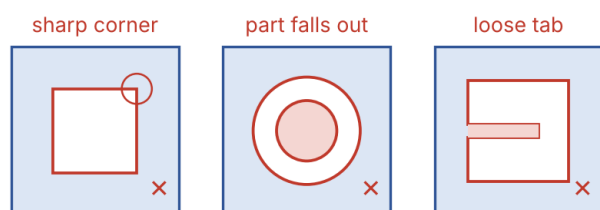


Figure 3 Not manufacturable: sharp corners, parts that fall out (closed ring cut), long loose tabs.

Your files

- **DXF (preferred):** scale 1:1, unit mm; closed contours only, one part per file; cutting contours on layer CUT, text and dimensions on layer INFO (not cut); file name = name of the design.
- **Dimensioned drawing:** PDF, scan or photo – hand drawings are fine. State all dimensions, critical tolerances and the position and diameter of dowel pins and screws. We create the digital drawing for manufacturing (charged per variant).

A DXF template with an example shim is available for download: [custom-shims-dxf-template.dxf](#)

Services

Table 3 Services included in the quotation.

Service	Description
Design check	Check of your DXF files for manufacturability. If problems are to be expected, small adjustments in agreement with you – or you send a revised file.
Digital drawing	Only if a dimensioned drawing instead of a DXF file is provided: creation of the digital drawing for manufacturing, per variant.
Production	Order handling and production of the requested shims and plates (laser cutting).
Shipping	Flat rate, stated in the quotation.

How to order

1. Send us your files (info@jbinstruments.de) and state company name, contact person, address and desired delivery time.
2. State thickness and quantity for each design (see Table 4).
3. We check your files and send you a quotation.
4. After your order, the shims are manufactured and shipped – typically within 2 weeks after all technical questions are clarified.

Table 4 Example of a request with two designs.

Design	Thickness	Quantity
Design 1 (DXF1)	100 µm	5
Design 2 (DXF2)	150 µm	2

Checklist before sending

- ☐ all corners rounded with $R \geq 0.1$ mm
- ☐ no loose tabs, no parts that fall out
- ☐ outer size between 20×20 mm and 200×200 mm
- ☐ round hole and slotted hole for the dowel pins
- ☐ clearance holes for all screws
- ☐ thickness and quantity stated for each design
- ☐ all dimensions checked

Prices

Prices on request. Unit prices depend on quantity, size, thickness and complexity of the geometry. Quantity discounts apply to the total number of shims in an order. The quotation also lists the services (Table 3); the design check depends on the complexity of the design and on whether the design has already been produced by JB Instruments.

Liability

Shims and plates are made according to the customer's design. The customer is responsible for all dimensions and tolerances. JB Instruments assumes no liability for the function of the parts or for the sufficiency of tolerances.