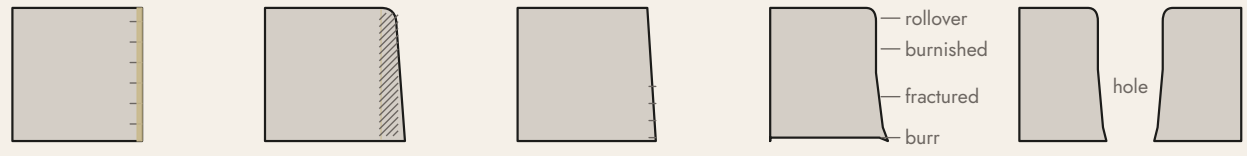
Metal fabrication methods *compared*

Choose the method from the edge you will see, the heat that can show and the thickness. Laser suits thinner sheet, plasma heavy plate, waterjet adds no heat; a fold needs an inside radius.

AT A GLANCE

Method	Thickness (published)	Edge and heat	Where it suits interiors
Laser cutting	0.5 to 32 mm in the EN ISO 9013 scope. Stainless to about 12 mm (TWI, IMOA).	Narrow kerf, small HAZ. Nitrogen assist keeps stainless free of oxide; the edge can often be used as cut (IMOA). Fibre lasers cut copper, brass, aluminium (TWI).	Fine screens, lettering, inlay, flat patterns.
Plasma (and oxyfuel)	Plasma 0.5 to 150 mm; oxyfuel 3 to 300 mm (EN ISO 9013 scope). Plasma: usual for stainless plate from 25 mm (IMOA).	Top rounding, poor squareness or bevel. Intermediate HAZ; as-cut stainless edges can lose corrosion resistance. Oxyfuel: widest HAZ, not for stainless.	Heavy plate and bases; edge machined or hidden.
Abrasive waterjet	No lower limit found; over 100 mm possible. Poor value on thin sheet (IMOA).	No heat-affected zone (TWI, IMOA). Edges normally high quality, with a larger bevel on thick sections.	Thick or heat-sensitive work; fine perforations.
Shearing (guillotine)	Modern shears to 25 mm in standard austenitic stainless plate (IMOA).	Cold-worked edge with a burr. Forming after shearing can crack an undressed edge (IMOA).	Straight blanks; dress the edge.
Punching and piercing	Hole at least one gauge over the thickness; spacing at least half the hole diameter (stainless, IMOA).	Dull tools smear metal, a crevice risk. Distortion often needs levelling.	Perforated panels; waterjet for dense patterns.
Press-brake folding	Minimum inside radius 0.5 to 1.5 t in annealed stainless, more in harder tempers (IMOA Table 10).	Spring-back means overbending. Stainless needs about 50 per cent more press power than carbon steel (Euro Inox).	Boxes, door skins, channels, cills.
Rolling	Three-roll bending for cylinders and curves; roll forming for long open sections (IMOA).	Strength varies between batches, so roll-formed dimensions vary (IMOA).	Curved cladding, tubes.
Spinning	Round parts formed from a rotating disc or tube (IMOA).	Needs ductile, low work-hardening metal; may need annealing between stages (stainless, IMOA).	Bowls, lamp shells, finials.

HAZ: heat-affected zone. Detail is for stainless steel (IMOA, 2020): ask the partner about other metals. No prices.



Laser
Square, narrow kerf
Small HAZ

Plasma
Top rounded, bevel
Wider HAZ

Waterjet
No HAZ
Taper on thick sections

Sheared
Cold-worked edge
Burr to dress

Punched hole
Same zones both sides
Dull tools smear

Five cut edges in section. Original schematic by Make Bespoke Studio, not to scale; edge features after TWI job knowledge and IMOA (2020), Fig. 25.

MINIMUM INSIDE BEND RADIUS, PRESS BRAKE

Standard austenitic stainless, in multiples of the thickness t (IMOA Table 10): annealed 0.5 to 1.5; quarter hard 1 to 2; half hard 2.5 to 4; full hard 4 to 6. Other metals: ask the partner.

SPECIFICATION WORDING

CUT PROFILES AND EDGES

Profiles cut by [laser / waterjet / plasma] from [metal, thickness]. Thermally cut edges classified to EN ISO 9013 (edition [to be confirmed]): perpendicularity or angularity range [__] and mean profile height range [__], dimensional tolerance class [__], as shown on the partner's test cuts [ref. __]. Stainless steel laser cut with [nitrogen] assist, edges free of dross and heat tint. Visible edges [ground / dressed / polished] to match approved sample [ref. __]. Burrs removed from every sheared or punched edge before forming.

FOLDED AND ROLLED PARTS

Bends: inside radius not less than [__] x thickness for [grade and temper]; bend lines [parallel / across] the grain as the shop drawing shows. Flat pattern and bend allowance by the fabricator from a K-factor trial [__]. Fold angle [90] degrees within [__] degrees, spring-back compensated. First-off bend sample approved before production.

PUNCHED AND SPUN PARTS

Punched holes: diameter not less than [thickness plus one gauge size], spacing not less than [half the hole diameter]; panels levelled after punching, flatness [__] mm over [__] mm. Dense or irregular patterns by [laser / waterjet]. Spun parts: [metal and temper], approved sample [ref. __].

TERMS USED

Heat-affected zone (HAZ)

A non-melted area of metal beside a weld or thermal cut that has undergone changes in material properties (TWI).

Kerf

The width of the slot a cutting process removes.

Spring-back

The partial return of a bent part towards its original shape when the forming force is released, so it is overbent to land on the angle.

STANDARDS AND SOURCES

- EN ISO 9013:2017 (+A1:2024): thermal cuts; BS EN ISO 9013:2017 current, under review (BSI). Text not read.
- IMOA, Practical Guidelines for the Fabrication of Austenitic Stainless Steels, 2nd ed. 2020: stainless only.
- TWI job knowledge (laser cutting, plasma arc cutting, heat-affected zone); Euro Inox Vol. 1 (2005)

Full guide: https://makebespoke.com/trade/technical/metal-fabrication-methods-compared. Make Bespoke Studio coordinates manufacture through its partner workshops. Figures are guidance only and your specification governs; some may be superseded, so contact the studio to verify.