Fabrication of Jansen profile systems

JANSEN
Steel Systems

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EDELSTAHL® Rost frei
INOX
STAINLESS STEEL

Steel is robust and resistant to mechanical wear and tear.

Very narrow profile dimensions bring more light and more scope for creativity. Architects, developers and users value the range of options available.
Jansen profile systems are therefore particularly suitable for use in all projects with heavy use by the public, in commercial and industrial buildings, in schools and hospitals, sports and leisure centres, in service centres and railway stations. Of the materials widely used in building construction, steel has the highest modulus of elasticity at around 210 kN/mm2.

The material benefits offer new and interesting options in structural dimensioning, in fire applications, burglar-resistant constructions and in sound reduction.
The range also includes thermally insulated stainless steel systems and profiles in the following grades:
1.4401 / AISI/SAE 316 / UNS S31600
1.4404 / AISI/SAE 316L / UNS 31603
1.4307 / AISI/SAE 304L / UNS S3040
1.4301 / AISI/SAE 304

Jansen hollow steel profiles are characterised by a high degree of straightness and dimensional accuracy conforming to EN 10305, Part 1 to 6 (Fig. 1 to 6).

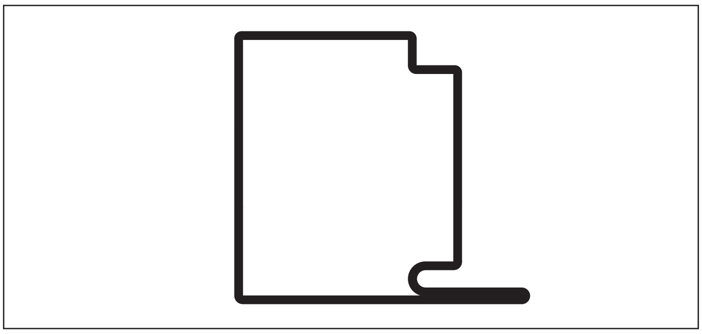


Fig. 1 Jansen-Economy 50/60 (steel raw/pre-galvanised)

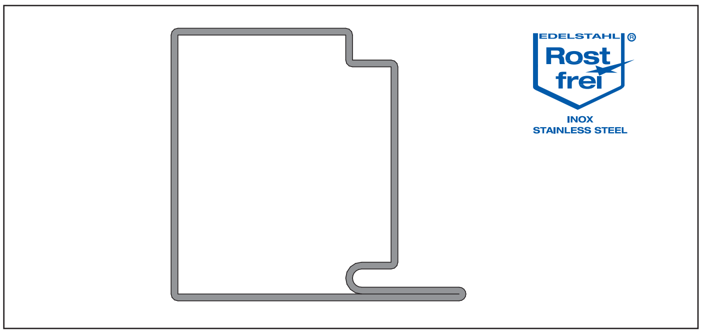


Fig. 2 Jansen-Economy 50/60 (stainless steel)

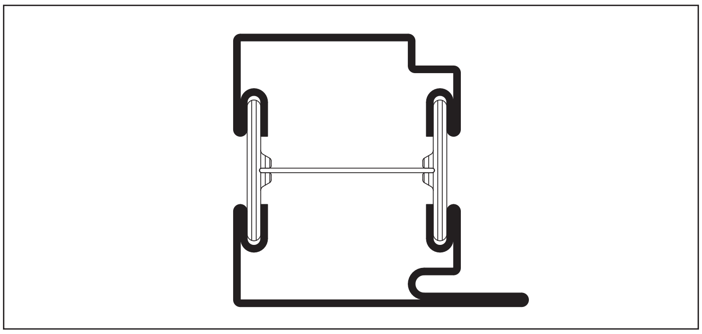


Fig. 3 Janisol (steel raw/pre-galvanised)

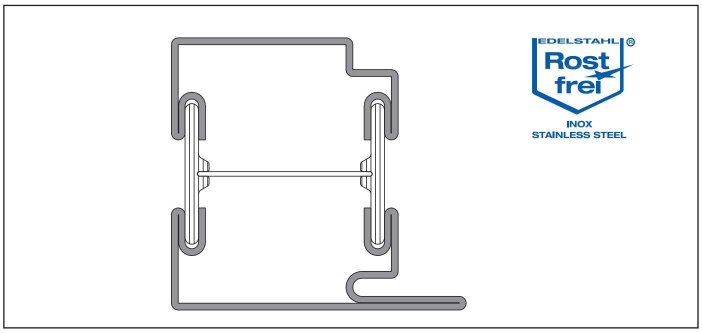


Fig. 4 Janisol (stainless steel)

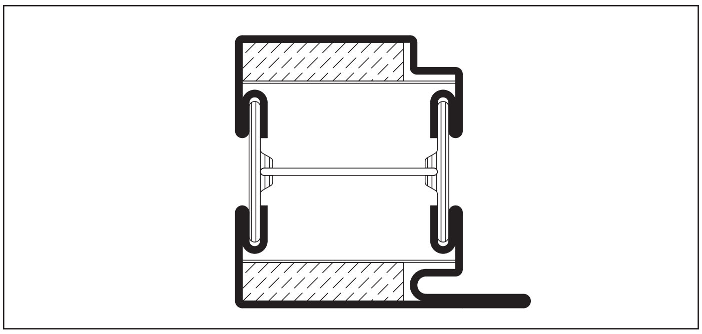


Fig. 5 Janisol 2 EI30 (steel raw/pre-galvanised)

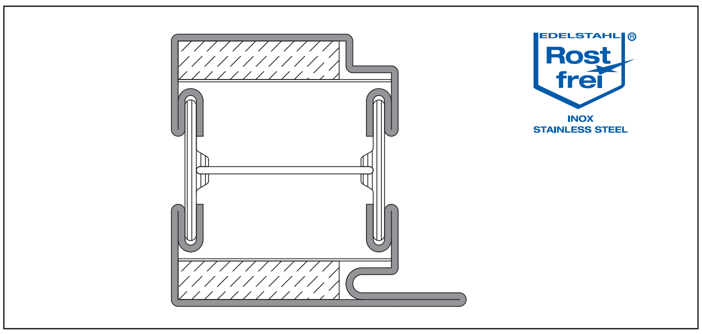


Fig. 6 Janisol 2 EI30 (stainless steel)

The prerequisite for economical fabrication is the correct storage of hollow steel profiles (Fig. 7 / 8).

To prevent the profile surface finish from being marked or damaged, tubular frames with plastic inlays are ideal. Stocking the storage bins in the optimum way also prevents the need for subsequent rearrangement (Fig. 9). A dry storage location is essential to avoid condensation.
To be able to prevent the risk of extraneous rust forming on stainless steel profiles, they must be stored in dry conditions and separate from steel profiles.
Linished profiles must also be stored carefully. To avoid scratches, marks or even deformation, we recommend using wooden or plastic liners.
Storing the profiles in the immediate vicinity of the cutting machines will avoid cumbersome handling. To prevent the high quality profiles and their surface finishes from being damaged, they should only be removed from the storage racks by lifting them out from the side. The double-sided roll-out material rack manufactured by Stierli Bieger AG (Fig. 10 to 12) satisfies these requirements in the most impressive way. In addition to a highly robust construction with a load-bearing capacity of up to 1500 kg/work arm, it is also very compact. Among its many benefits, this system improves the utilisation of space, the tidiness within workshops, the downtimes of production machinery and occupational safety in all operations.
The different pull-out shelves and the top rack permit a large number of profiles to be stored in a confined space. The open construction and simple operation mean it is easy to insert steel profiles or other materials. The pull-out shelves can be removed safely and with a minimum of effort by hand. Removing the profiles lengthwise should be avoided where possible to ensure that the profile surfaces do not scratch against one another. This obviates the need for time-consuming re-touching of the surface finish.

Fig. 7

Fig. 8

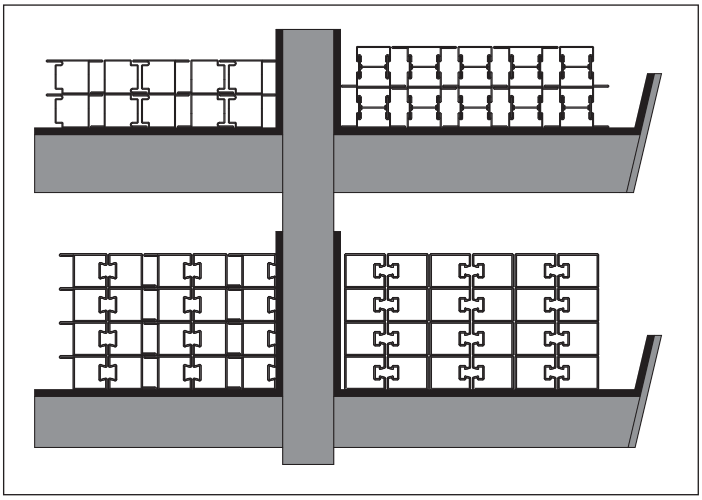


Fig. 9 Tubular frames with plastic inlay

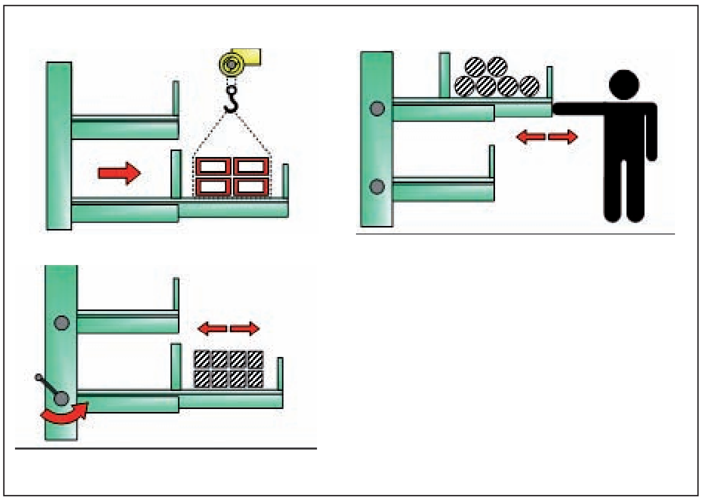


Fig. 10 Roll-out storage rack

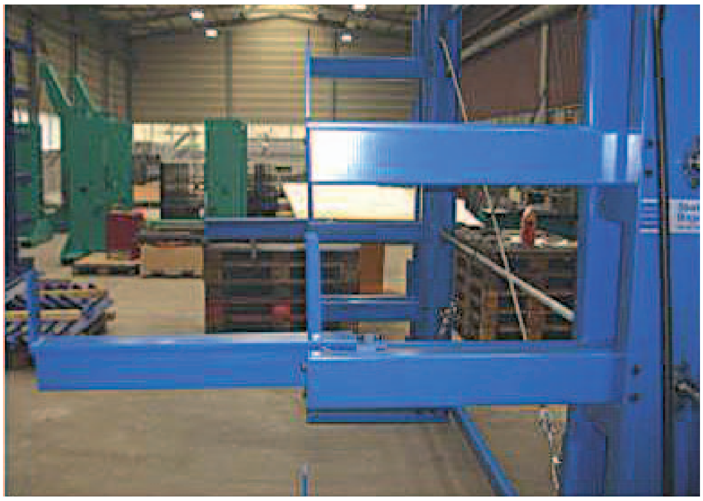
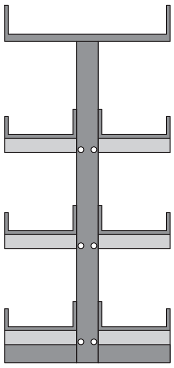
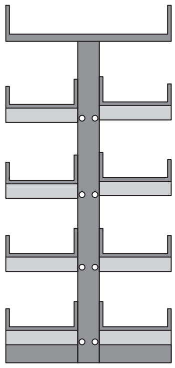
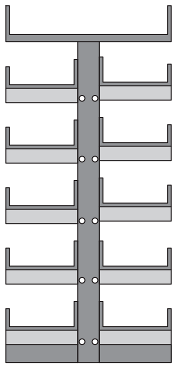
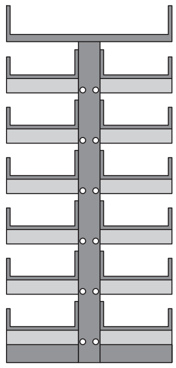


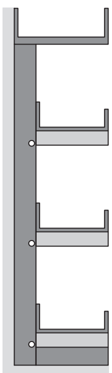
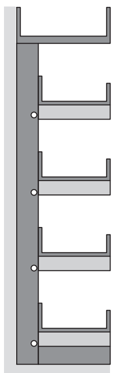
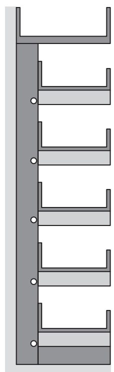
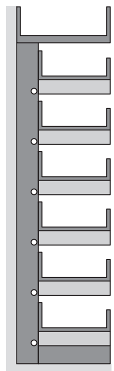
Fig. 11 Removable work arm

Fig. 12 Option with sheet metal channel for short material

Stierli Bieger storage rack option. Double-sided design with shelves that can be pulled out on both sides.

Model	11 t / 6+1	15 t / 8+1	17 t / 10+1	20 t / 12+1
				
Load-bearing capacity	11 t	15 t	17 t	20 t
Shelves (with 2 work arms)	6 x pull-out + 1 fixed top shelf	8 x pull-out + 1 fixed top shelf	10 x pull-out + 1 fixed top shelf	12 x pull-out + 1 fixed top shelf
Load-bearing capacity per shelf	1500 kg	1500 kg	1500 kg	1500 kg
Usable depth	600 mm	600 mm	600 mm	600 mm
Usable height	670 mm	470 mm	350 mm	270 mm
Dimensions HxWxL	2800x1500x3000	2800x1500x3000	2800x1500x3000	2800x1500x3000

Stierli Bieger storage rack option. Single-sided design with shelves that can be pulled out on one side.

Model	6 t / 3+1	8 t / 4+1	9 t / 5+1	11 t / 6+1
				
Load-bearing capacity	6 t	8 t	9 t	11 to
Shelves (with 2 work arms)	3 x pull-out + 1 fixed top shelf	4 x pull-out + 1 fixed top shelf	5 x pull-out + 1 fixed top shelf	6 x pull-out + 1 fixed top shelf
Load-bearing capacity per shelf	1500 kg	1500 kg	1500 kg	1500 kg
Usable depth	600 mm	600 mm	600 mm	600 mm
Usable height	670 mm	470 mm	350 mm	270 mm
Dimensions HxWxL	2800x850x3000	2800x850x3000	2800x850x3000	2800x850x3000

Hollow steel profiles are most frequently cut using universal circular saws with a saw table. They can be rotated through 180° in both directions and permit precise and clean cuts. Such circular saw machines are available in different models. There is a choice between manual and semi-automatic models.
Semi-automatic mitre saws with digital length dimension input are the latest technological development.
Kaltenbach circular saws combine high performance and efficiency with an extraordinary level of user comfort. Its high level of automation and broad area of use make the KKS machine an all-rounder for all kinds of saw applications.
It is suitable for processing flat, angled and solid materials, as well as tubes and profiles.
It is ideally suited to cutting Jansen profiles of any type and material quality due to the adjustable cutting speed and the infinitely adjustable pressure control system (Fig. 13 to 13.5).
As an alternative to circular saws, band saws can also be used. Optimum cutting performance is achieved as a result of frequency controlled, infinitely adjustable drive technology. It must be ensured that a precise cut of 90° or 45° is achieved.

Fig. 13 «Kaltenbach KKS 400» universal circular saw: hydraulic clamping device, digital end stop. Performance saw blade, ø = 400 x 3.0 mm, 160 teeth (also suitable for stainless steel)

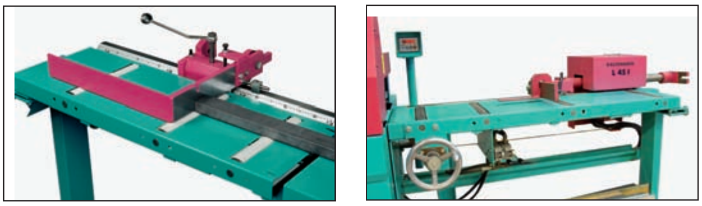


Fig. 13.1 Manual or digital measuring stop

Fig. 13.2 Digital end stop with programming function, automatic action

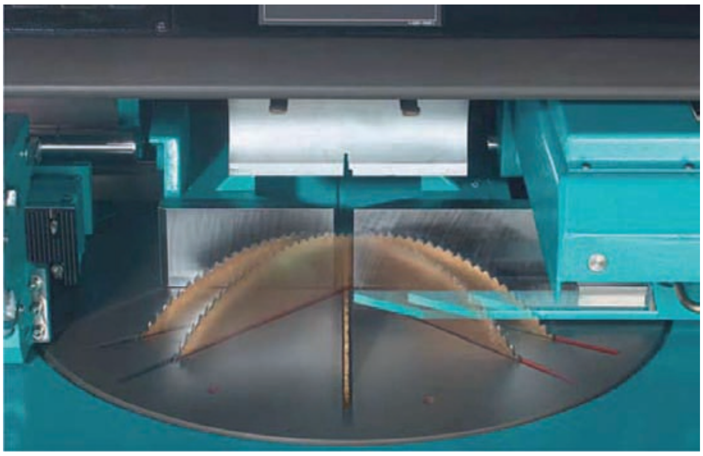


*Fig. 13.3 Swivel table made from high quality, hard-wearing, spheroidal graphite cast iron with smooth-running ball bearings and sealing on all sides.
Vertical vice can be infinitely adjusted using the hydraulic cylinder and crank handle.
Clamps on both sides of the saw blade for precise and clean cuts*

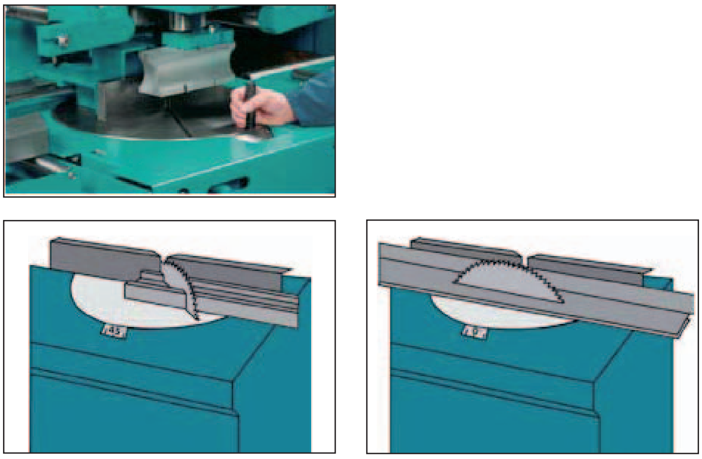


Fig. 13.4 Variable adjustment of the cutting angle

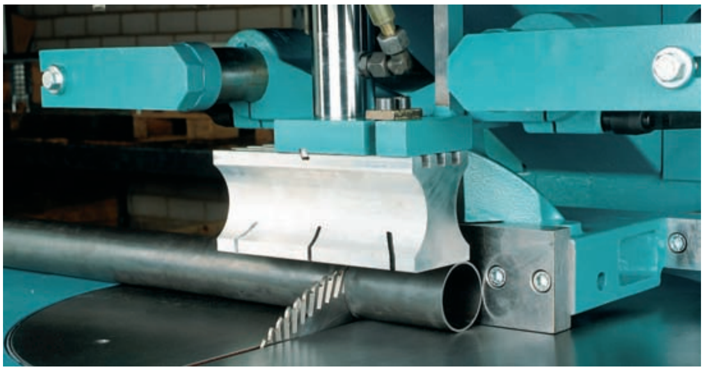


*Fig. 13.5 Horizontal vice on the right and left of the saw blade for precision angle cuts
KKS 400/450 saw table can be rotated 0-180°*

The KKS 400 H can be upgraded to a double circular saw, the KKS 400 DH. It then consists of two machines with a travelling frame and central control unit. To set the required cutting length, one of the machines is operated using the hand wheel or the NC control. Both machines are operated centrally using pedal switches, but both saws can be operated individually at all times.
A length measuring device can also be fitted on one of the machines (Fig. 14).

Fig. 14

Double-headed mitre saws for steel are currently the most cutting edge and economical cutting devices. The «Twin Ferro» manufactured by Emmegi is a double-headed mitre saw with horizontal blade feed for cutting steel and stainless steel profiles. With its brushless motors, the double-headed mitre saw is capable of positioning both the saw heads at right angles of 45°, 90° and 135° as well as all vertical mitre cuts with an accuracy of 240 intermediate positions for each degree. They are characterised by extraordinary dimensional accuracy and high capacity (Fig. 15 to 15.2).

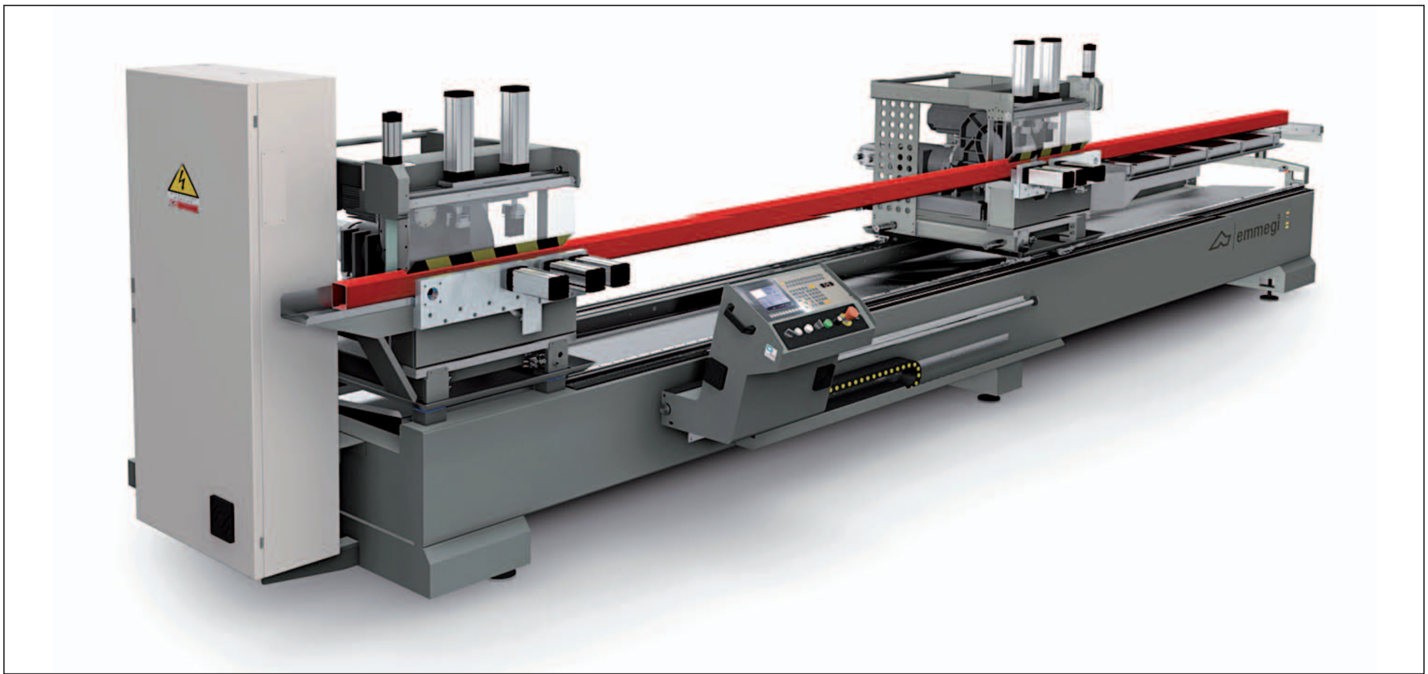


Fig. 15 «Emmegi Twin Ferro» steel double-headed mitre saw: cutting length 4000 - 6000 mm depending on the type Max. saw blade diameter ø = 350 mm (also suitable for stainless steel)

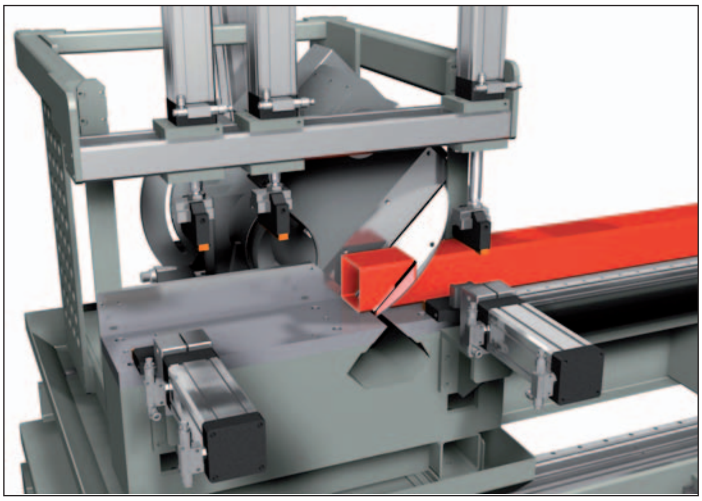


Fig. 15.1 Pneumatic clamping of the steel profile

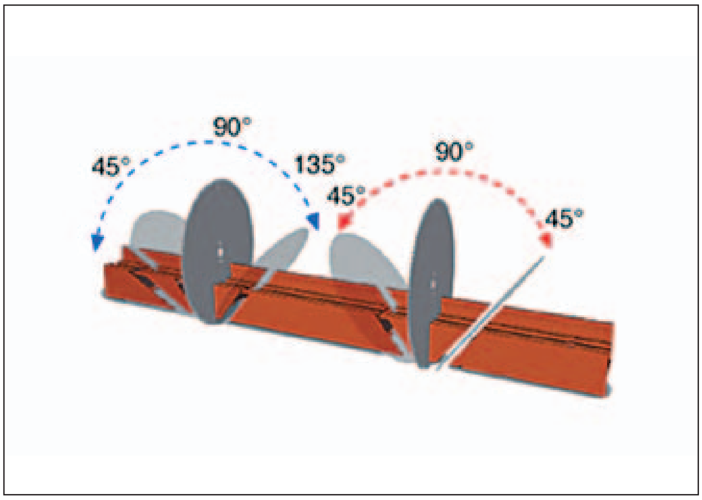


Fig. 15.2 Adjustable cutting angle: -45°, 90° and +45°

The saw blades are the key to optimum cutting. Depending on the area of use, different saw blade types are available. The following illustrations (Fig. 16 to 19) provide a brief overview in this respect. Your machinery supplier will provide you with more detailed information as to which saw blade is the correct one for your usage requirements.

TiN coated solid steel saw blade with 3 mm blade width, for long useful life (Fig. 16).

«Performance» saw blade with 3 mm blade width, specially designed for mitre profile cuts (Fig. 17).

«Power» saw blade with 2.2 mm blade width, specially designed for straight cuts (Fig. 18).

To achieve optimum cutting quality, the following tooth pitch is recommended for Jansen steel profiles (Fig. 19):

– *For steel Jansen profiles with a wall thickness > 1.75 mm*
  HSS circular saw blade ø 400 mm, 3 mm thick, 120 teeth, tooth pitch (t) 10 mm

– *For steel and stainless steel Jansen profiles with a wall thickness < 1.75 mm*
  HSS circular saw blade ø 400 mm, 3 mm thick, 160 teeth, tooth pitch (t) 8 mm

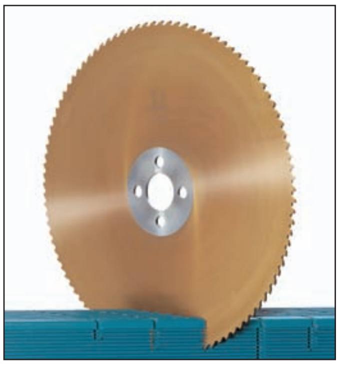


Fig. 16

Fig. 17

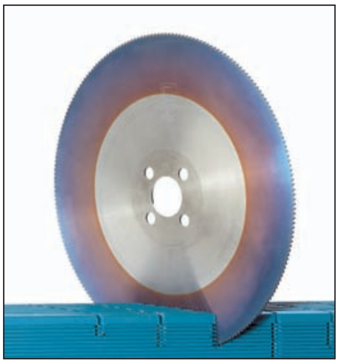


Fig. 18

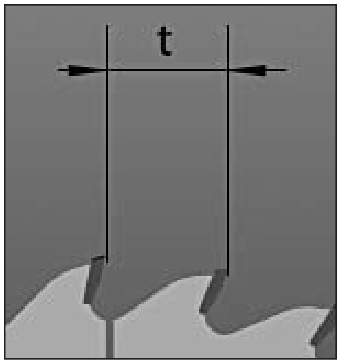


Fig. 19

Pay particular attention to the cutting speeds, feed and agreed amount of lubrication. The optimum cutting speed and feed will depend on the saw blade type and the material to be processed (Fig. 20).

Material	Cutting speed Vc = m/min	Feed per tooth fz = mm/Z	Cutting angle SW	Clearance angle FW	High speed steel type and surface finish
Steels (solid material) up to 500 N/mm²	30 - 50	0,05 - 0,08	18 - 20°	8 - 12°	DMo 5 and steam treated design
Steels (tubes and profiles) up to 500 N/mm²	- 240	0,08 - 0,12	18 - 20°	8 - 12°	DMo and hard material coating
Steels (solid material) up to 800 N/mm²	20 - 40	0,03 - 0,06	15 - 17°	6 - 8°	DMo and steam treated design
Steels (tubes and profiles) up to 800 N/mm²	- 1200	0,05 - 0,08	15 - 18°	6 - 8°	DMo and hard material coating
Stainless steel (solid material)	10 - 25	0,04 - 0,07	14 - 16°	6 - 8°	EMo and steam treated design
Stainless steel (tubes and profiles)	- 50	0,06 - 0,10	16 - 18°	6 - 8°	EMo and hard material coating
Aluminium and aluminium alloys (solid material)	600 - 900	0,05 - 0,10	22 - 25°	10 - 12°	DMo and polished design
Aluminium and aluminium alloys (tubes and profiles)	800 - 1200	0,07 - 0,12	22 - 25°	10 - 12°	DMo and polished design

Abb. 20 Technical guideline values of Arntz GmbH + CO KG, 42855 Remscheid/Germany for economical use of HSS circular saw blades. The data in this table are guideline values.
Note: normal steel (< 500 N/mm2) / hard steel (500-800 N/mm²)

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Note on processing stainless steel

Saw blades fabricated from high speed steel (HSS-E) with fine toothing must be used to cut stainless steel profiles. To prevent corrosion forming on stainless steel, these must not be used for plain carbon steel. The emulsion fluid must not contain any ferritic components (e.g. swarf etc.).

It must also be ensured that the support points are clean and the profiles are placed flat on top of them.

Janisol profiles are cut with an inserted aluminium cover plate. To prevent the aluminium cover plate from sliding out, it can be fixed in place by pulling it out, bending it slightly and re-inserting it (Fig. 21). As an alternative, the cover plate can also be fixed in place by bending it down or using clamps (Fig. 22 / 23).

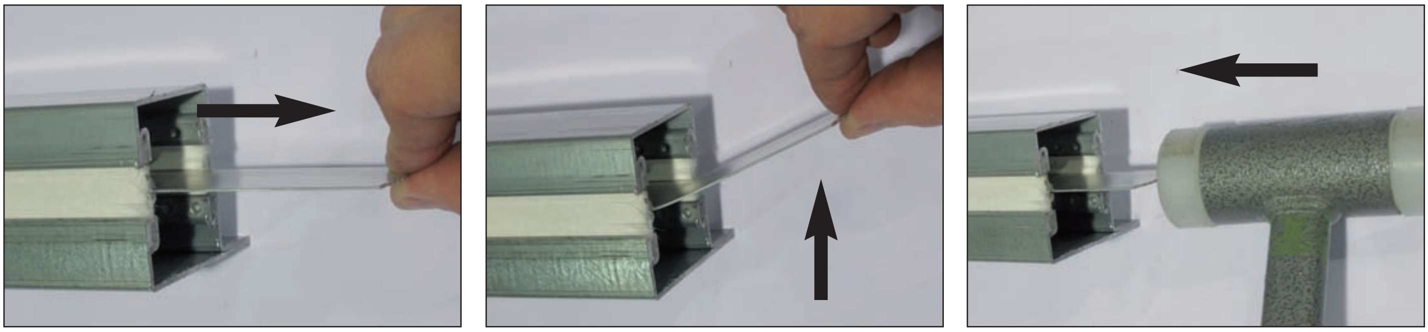


Fig. 21 Pull out the aluminium cover plate, bend it slightly and re-insert it using a plastic hammer

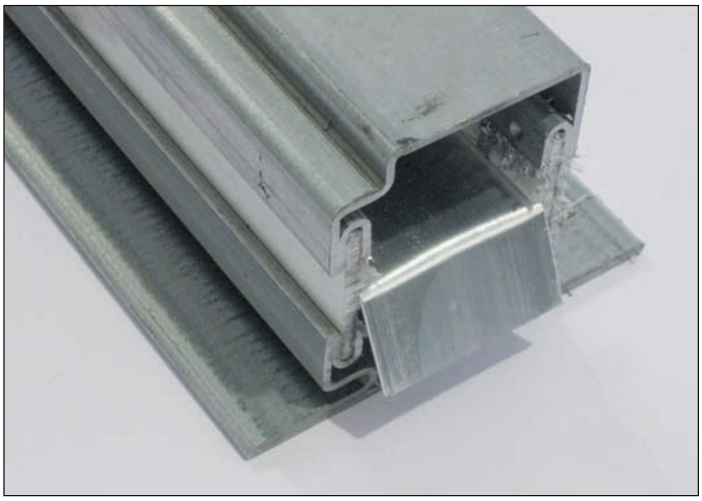


Fig. 22 Alternative: fix the aluminium cover plate in place by bending it down

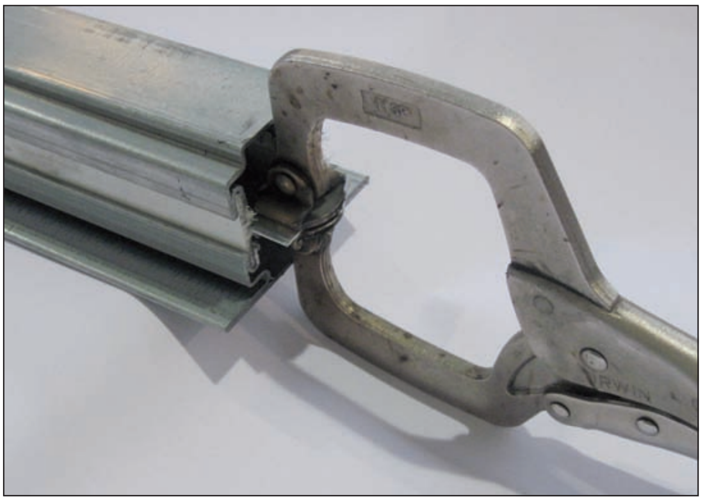


Fig. 23 Alternative: fix the aluminium cover plate in place using clamps

Also key for a long, useful saw blade life is the correct coolant (Fig. 24)

Material	Coolant and lubricant
Steels up to 500 N/mm²	Emulsion 1:20 or spray cooling lubricant
Steels up to 800 N/mm²	Emulsion 1:15 or spray cooling lubricant
Stainless steel	Emulsion 1:10 or spray cooling lubricant
Aluminium	Emulsion or spray cooling lubricant

Abb. 24

Cutting is the key to clean fabrication. It must be ensured that the profiles are not crushed. For saws with pneumatic or hydraulic pressure, we therefore recommend adjusting them manually. The use of suitable supports is recommended when clamping profiles.

Standard rectangular tubes can be used for Jansen-Economy profiles (e.g. 20x40 / 20x50 / 15x40 / 15x50) Fig. 25 / 26.

Suitable aluminium clamping supports made from aluminium are also available for Janisol profiles (Fig. 27 to 30).

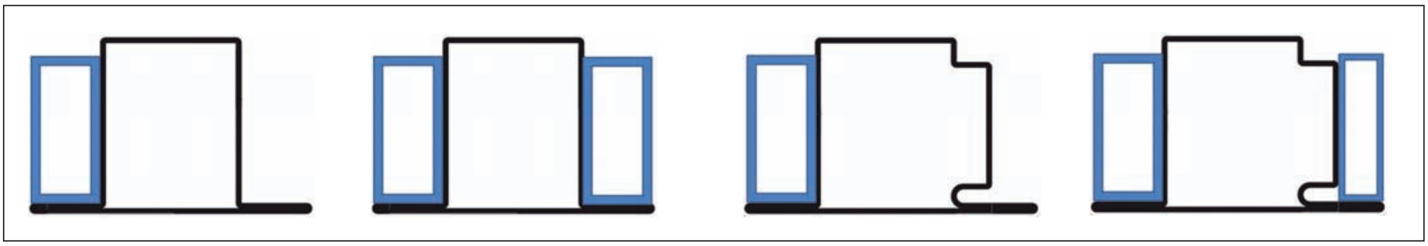


Fig. 25 Jansen-Economy 50/60

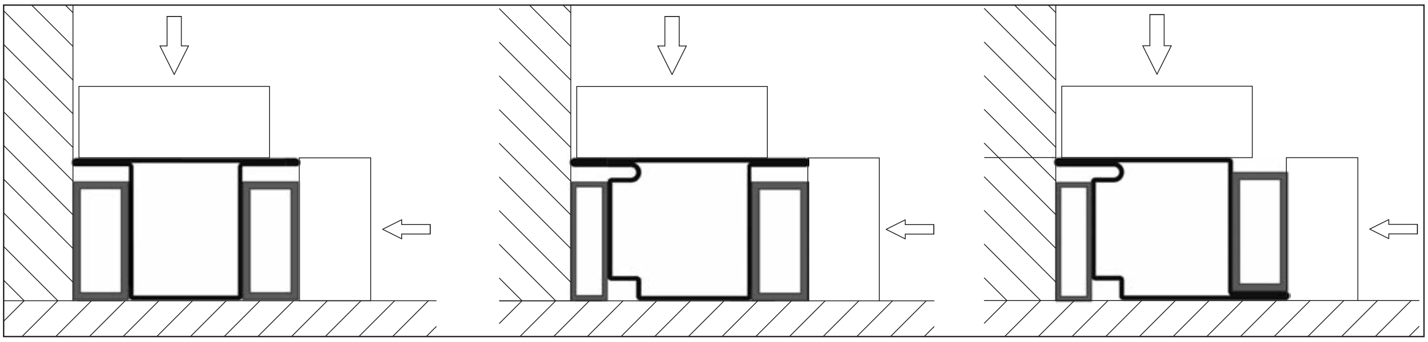


Fig. 26 Jansen-Economy 50/60

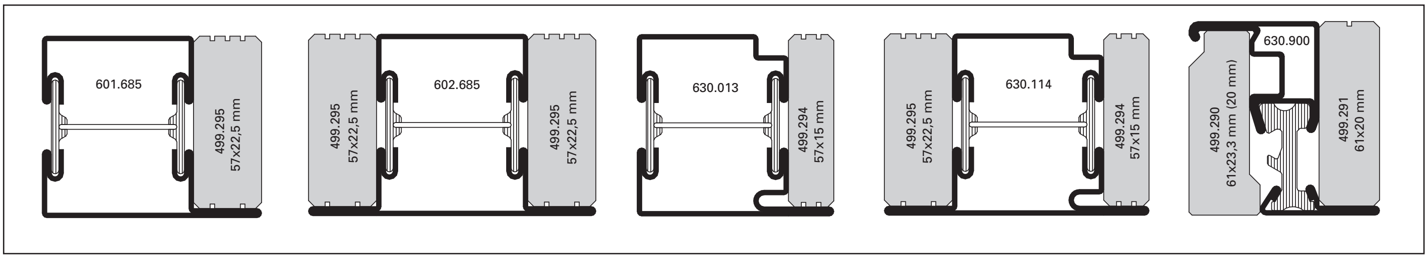


Fig. 27 Janisol with clamping supports

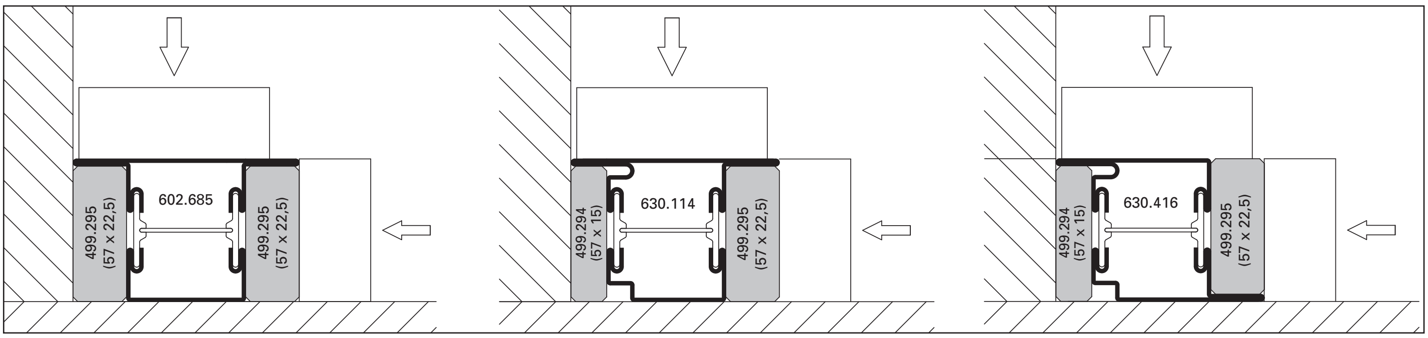


Fig. 28 Janisol with clamping supports

Fig. 29 Janisol Primo with clamping supports

Fig. 30 Janisol with clamping supports

Note on processing stainless steel

When processing stainless steel profiles, ensure that the profiles are protected against any damage, e.g. scratches, grinding sparks, metal swarf, building mortar, etc. from storage to installation.
Covering the profiles with a self-adhesive Jansen protective foil prior to cutting is recommended to ensure that the surface finish is protected during fabrication and installation (Fig. 31).

Jansen stainless steel profiles linished in the factory are always supplied with protective foils (Fig. 32).

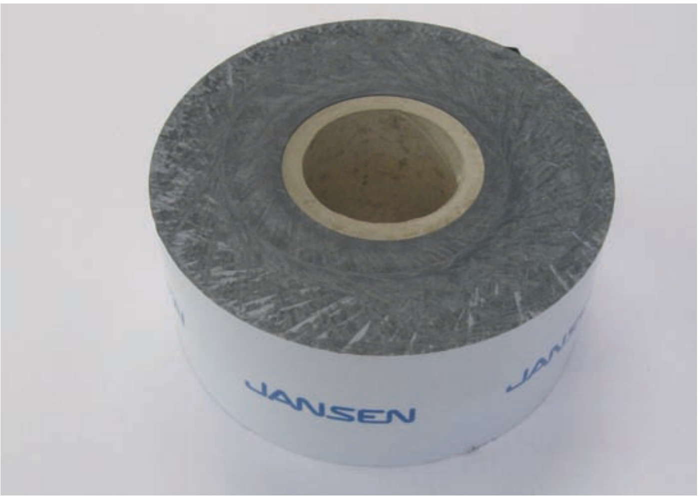


Fig. 31 Jansen protective foil for stainless steel profiles

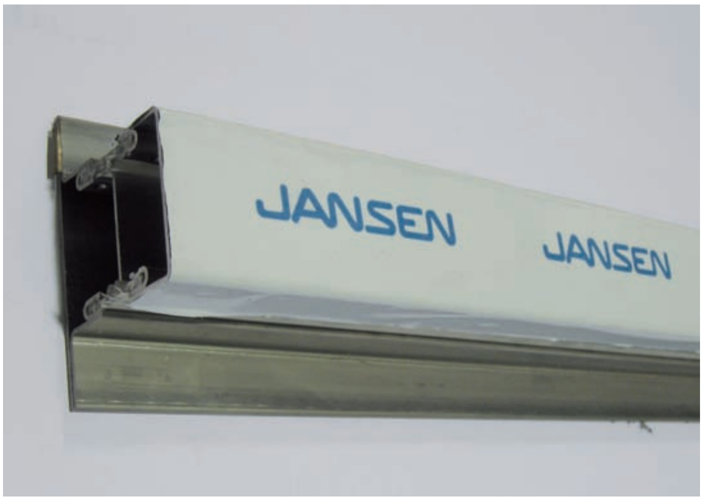


Fig. 32 Jansen stainless steel profile with protective foil

For constructions with hollow steel profiles, the vertical mullions are generally inserted continuously (structural load transfer). Consequently, the transoms are inserted between them and must be notched accordingly (Fig. 33 / 34).

By contrast, for narrow frames and for structural reasons, the transoms can be inserted continuously and the mullions mounted between them accordingly (Fig. 35).

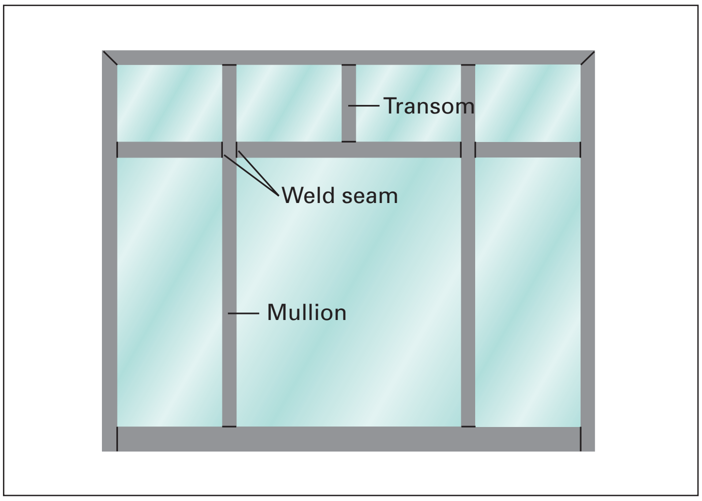


Fig. 33 Fixed glazing

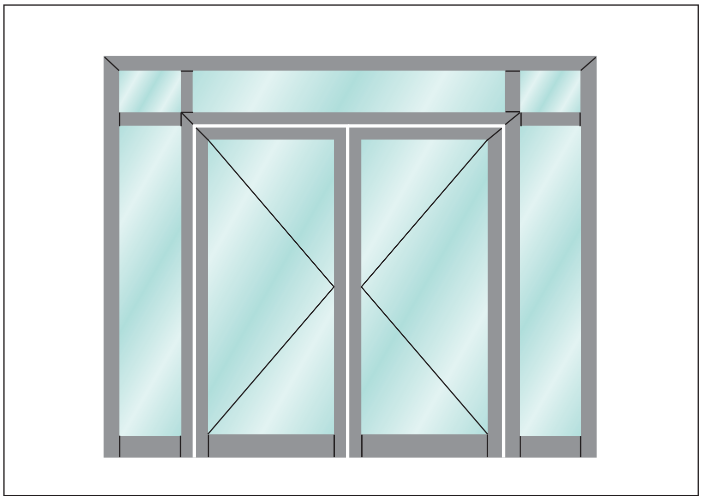


Fig. 34 Door unit with fixed glazing

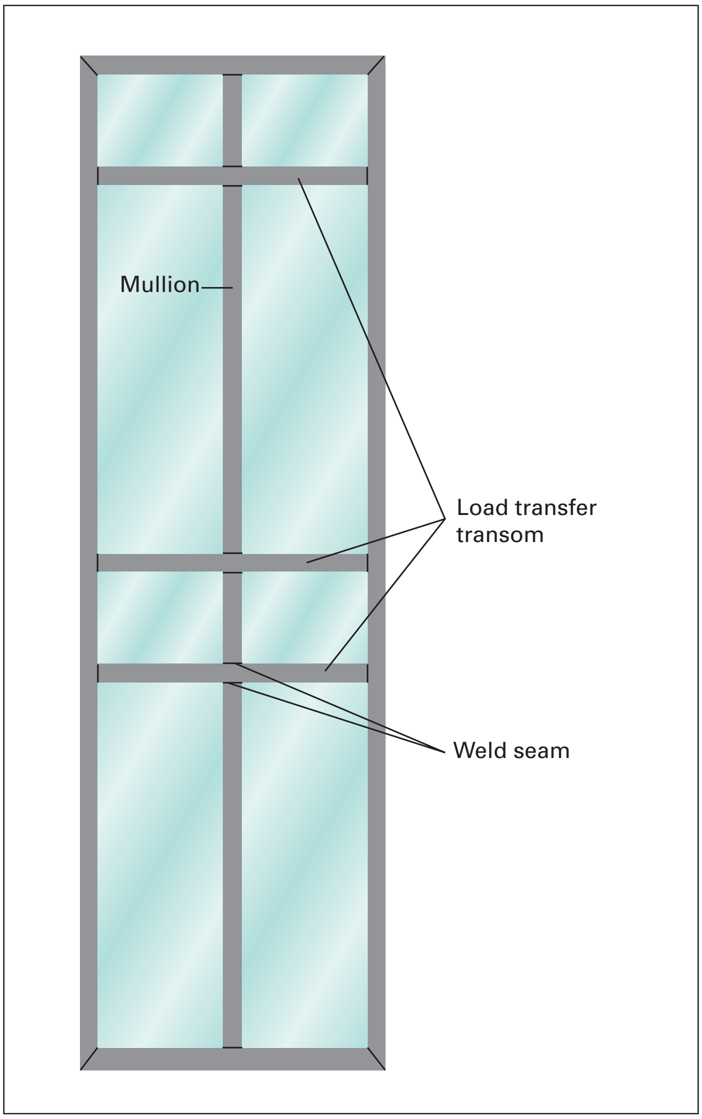


Fig. 35 Multi-storey ribbon window

Hollow steel profiles can be notched using a circular saw (Fig. 36). The recess dimension for Jansen Economy or Standard profiles is 20 mm (Fig. 37) and 22.5 mm for Janisol profiles (Fig. 38).

More detailed information on T-joint notching and profile mitre cuts can be found in Jansen system manuals in the «Fabrication instructions» section (Fig. 39 / 40).

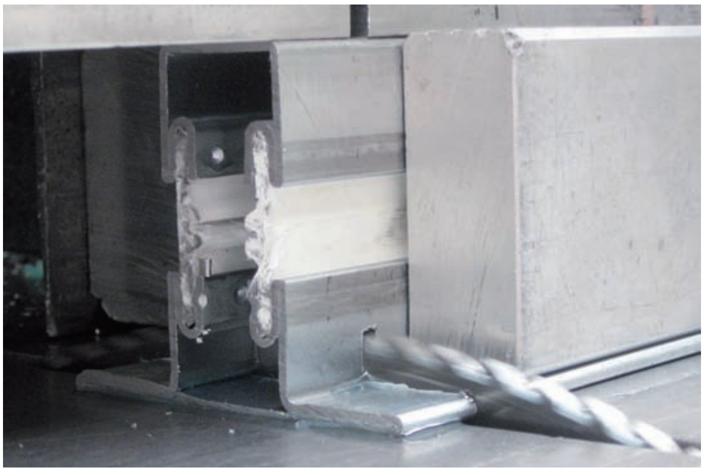


Fig. 36 Profile notching with circular saw

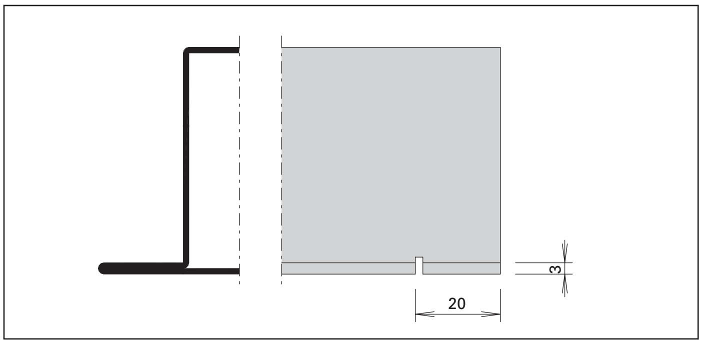


Fig. 37 Recess dimension for Jansen-Economy 50/60

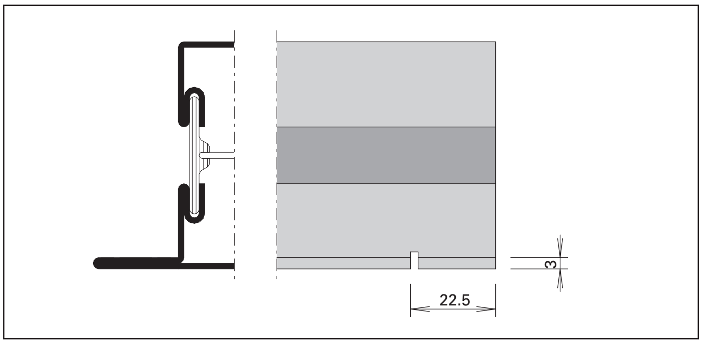


Fig. 38 Recess dimension for Janisol / Janisol Primo / Janisol 2 / Janisol C4

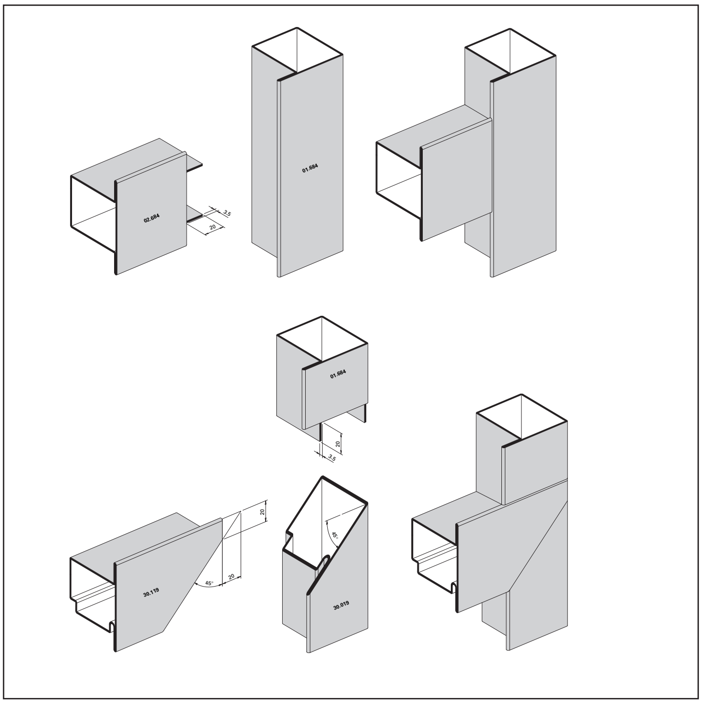


Fig. 39 Notching example for Jansen-Economy 50/60

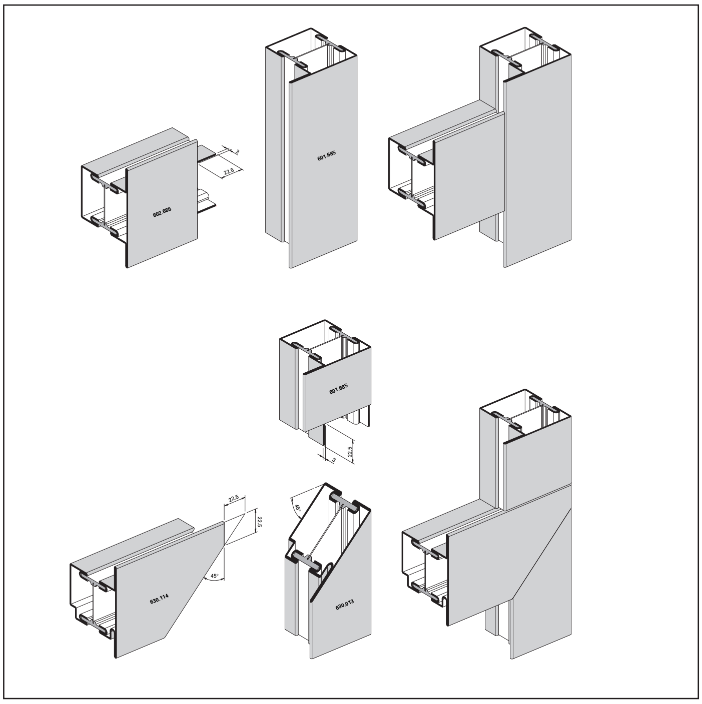


Fig. 40 Notching example for Janisol

A hand saw can be used to cut into the front end (Fig. 41).
Alternatively, a cutting disc can also be used (Fig. 42)

Fig. 41 Cutting using a hand saw (Jansen-Economy and Janisol)

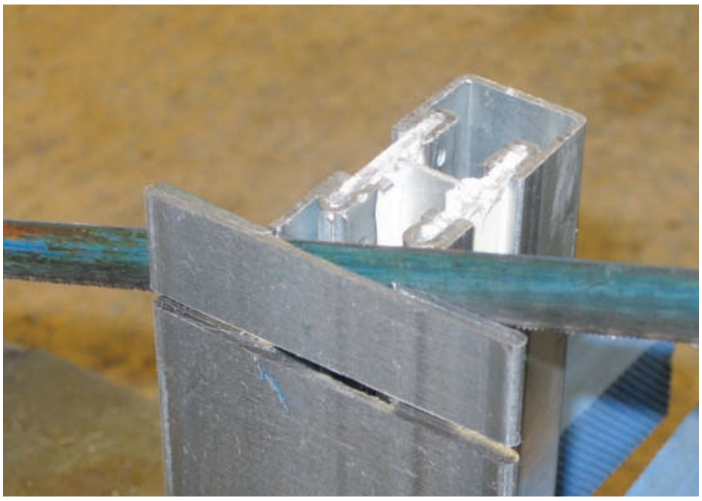


Fig. 41a

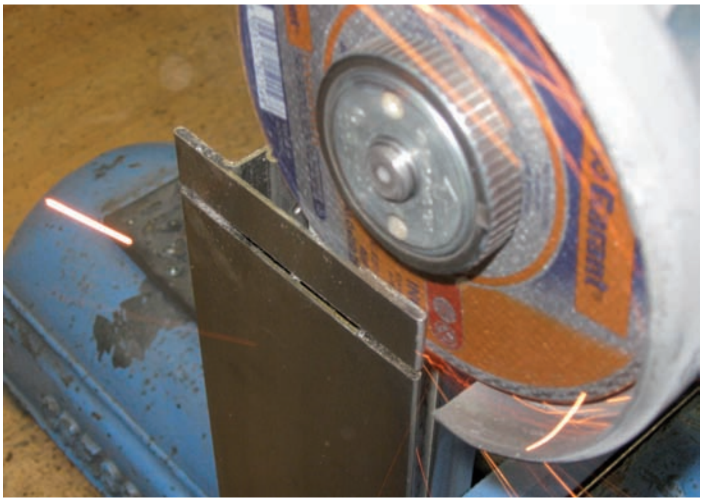


Fig. 42 Alternative: cutting using a cutting disc

To fabricate door or window constructions, different recesses must be created for locks, window shoot bolts etc. Depending on the application and series, different devices and machines are suitable for doing this.

For smaller series, recesses can be created simply and economically using Jansen drilling jigs (Fig. 43 to 46).

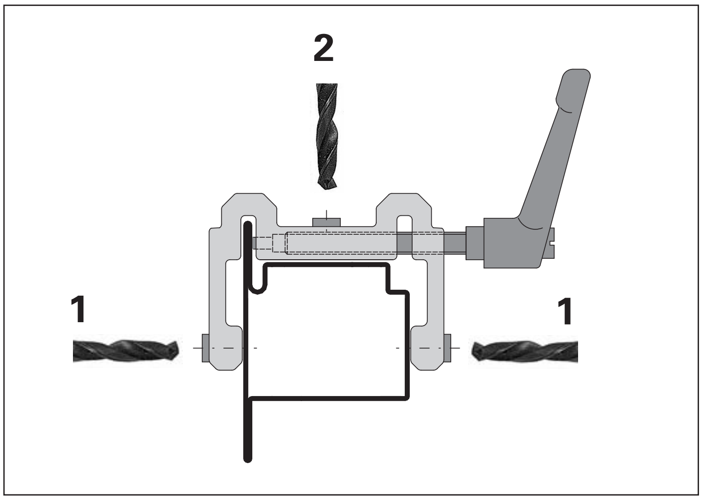


Fig. 43 Drilling jig for Jansen-Economy 50/60

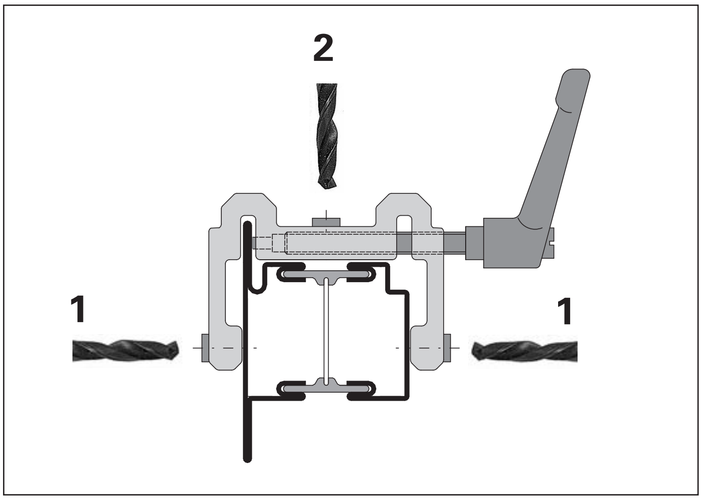


Fig. 44 Drilling jig for Janisol and Janisol 2/C4

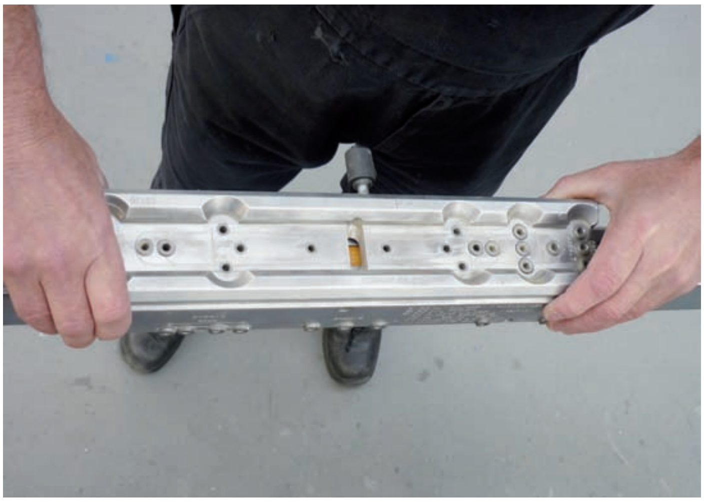


Fig. 45 Place the drilling jig in position

Fig. 46 Profile processing

Lock case longitudinal slots can be created using a drill bit and a jigsaw (Fig. 47 / 48).
Alternatively, it is also possible to create the longitudinal slot in the lock case using an upright drilling machine and traverse table (Fig. 49 / 50).

Fig. 47 Drill the lock case end points

Fig. 48 Create the lock case longitudinal slot

Fig. 49 Lock case longitudinal slot with routing tool

Fig. 50 HSS-PM roughing cutter (TiAlN coating)

Steel routing bit recommendation

For example, HSS-PM roughing cutter (TiAlN coating) can be used for steel and stainless steel. Relief-ground, finely knurled profile. Front end cutting geometry to plunging (Art. No. 19 2860) available with ø 4 to 32 mm. For more information on the area of use, visit the following Internet address: www.hoffmann-group.com

More detailed information on recesses for fittings can be found in the relevant order manuals (Fig. 51/52).

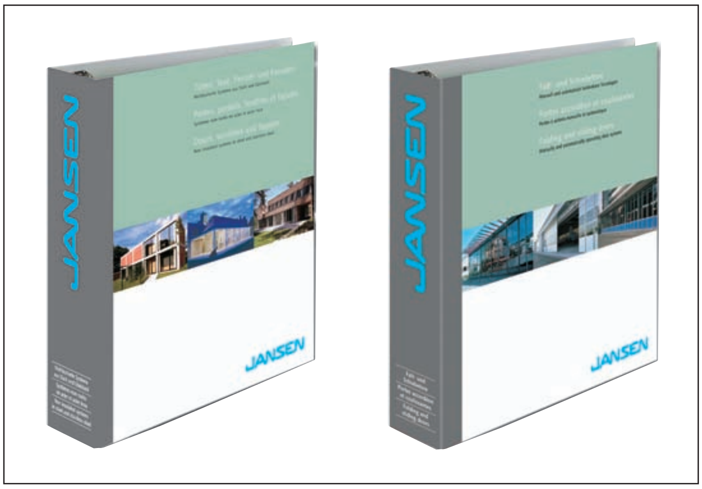


Fig. 51 Order manual for non-insulated systems and folding and sliding doors

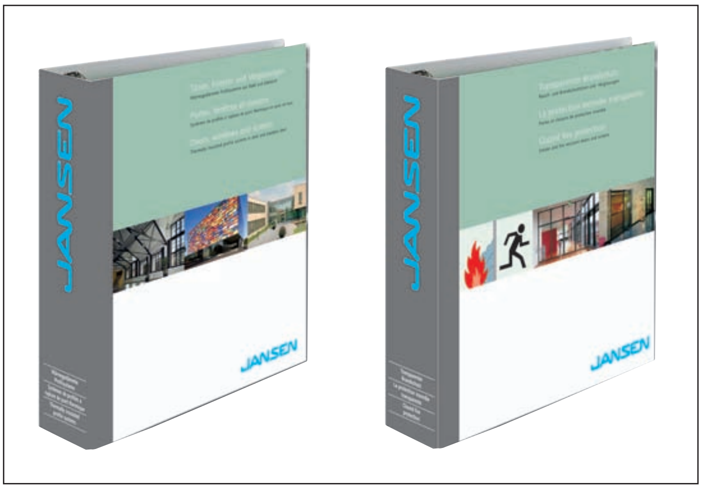


Fig. 52 Order manual for thermally insulated systems and fire protection systems

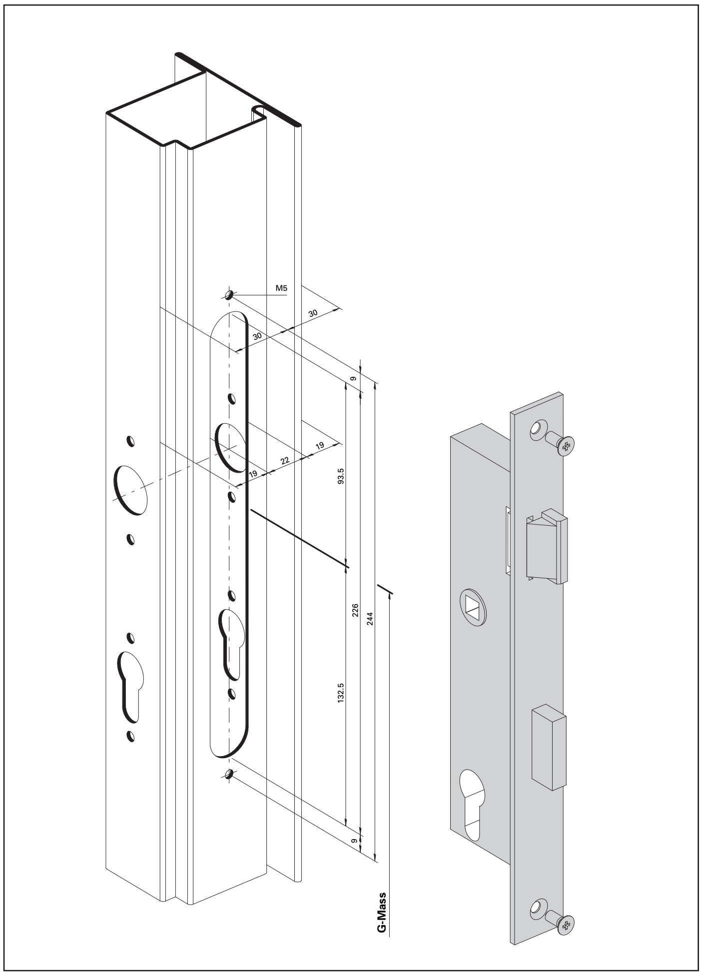


Fig. 53 Lock recess for Jansen-Economy 50/60

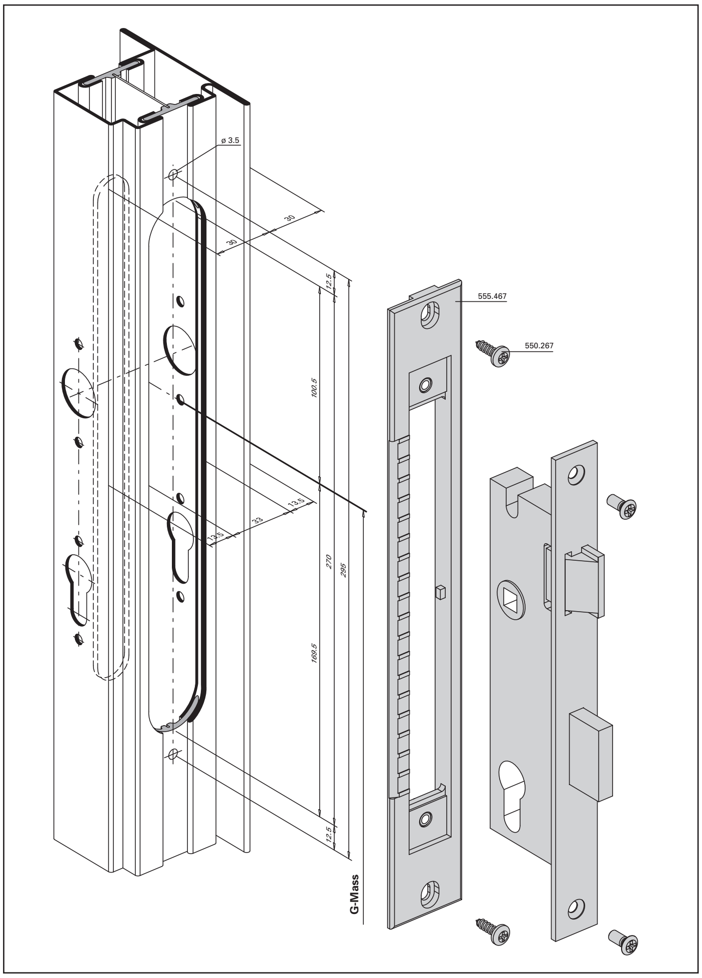


Fig. 54 Lock recess for Janisol

For larger series, the use of drilling and milling machines or special processing centres is recommended (Fig. 55). The Micromatic Star made by Emmegi shown below makes it possible to process the workpiece on four sides without rechucking (Fig. 56 / 57).

Fig. 55 Micromatic Star drilling and milling machine

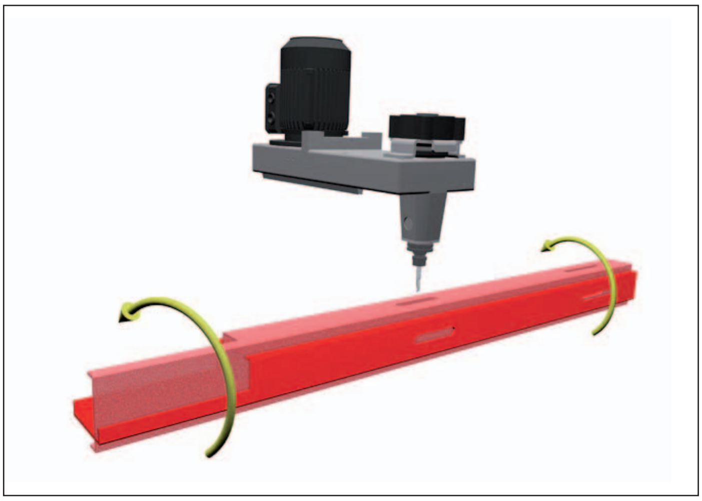


Fig. 56 Processing of multiple sides

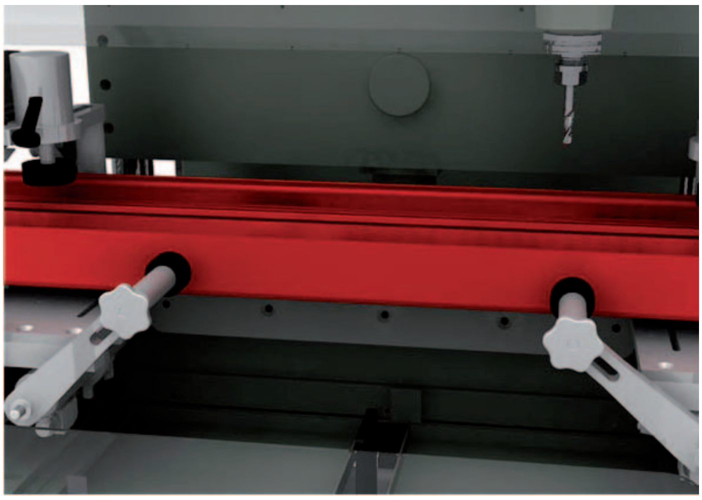


Fig. 57

The Phantomatic T3 milling machine (Fig. 58 to 61) with 3 CNC-controlled axes for processing aluminium, PVC-U, steel or stainless steel profiles with a wall thickness up to 3 mm. The machine executes continuous processing.
It is also equipped with a moveable work bench which facilitates loading and unloading of the workpiece. Saving time when machining out fittings is the key to efficient fabrication.

Depending on the material quality, various types of routing tools are available. The optimum cutting speed is essential for a long useful life. For more information as to which type of routing tool is the correct one for the materials you are using, contact your machinery supplier.

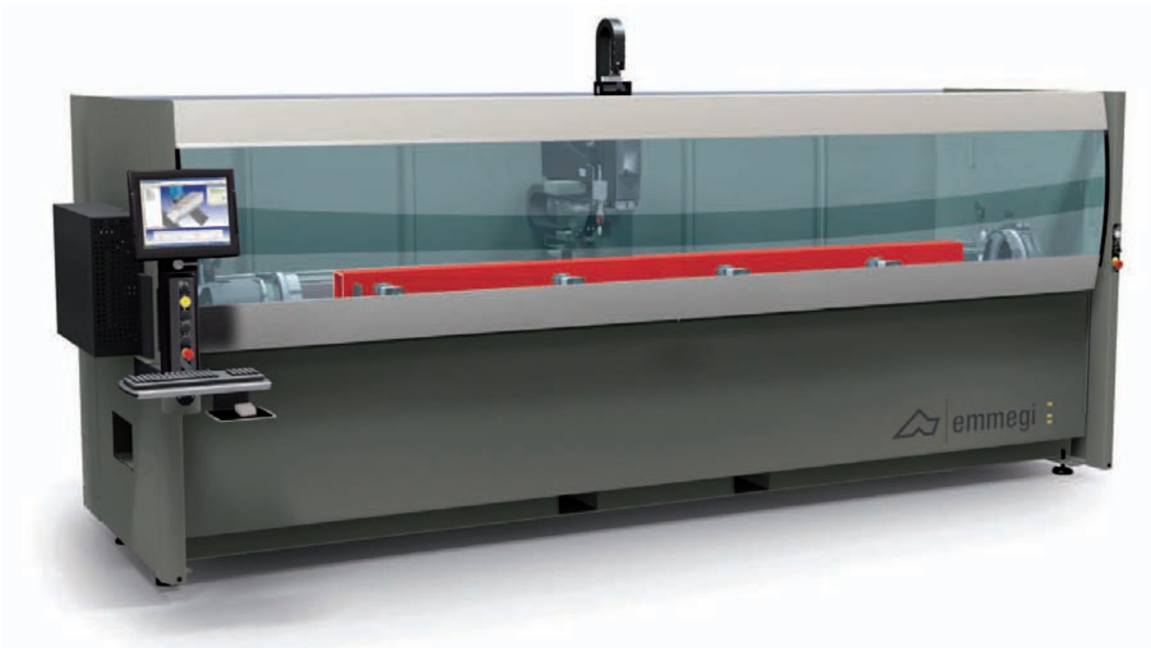


Fig. 58 Phantomatic T3 milling machine

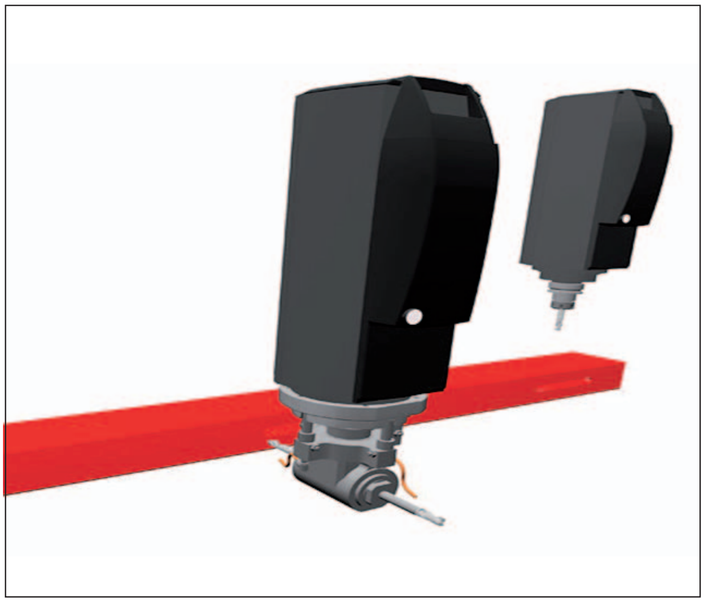


Fig. 59 Automatic profile processing

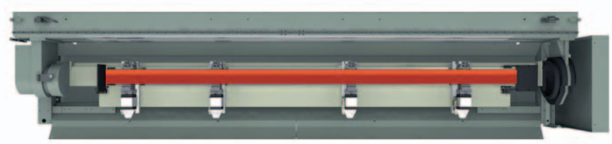


Fig. 60 Single-piece operating mode

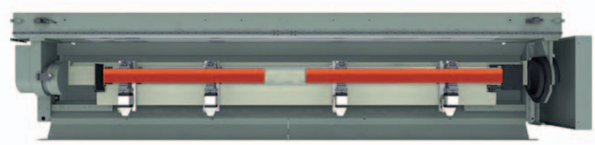


Fig. 61 Multi-piece operating mode (max. 2 workpieces)

Note on processing stainless steel

Drilling:
Twist drills made from high speed steel (HSS-E or coated) must be used to drill stainless steel. The drill bits must always be kept sharp. It is not advisable to mark drill centres with a centre punch, as this will cause cold hardening.

Please note:
Use Jansen drilling jigs wherever possible.

Routing:
Routing bits with heavily undercut cutting edges and wide, helical flutes made from high speed steel (HSS) or with a carbide coating are suitable for routing stainless steel.

Important:
To prevent the cutting, drilling or routing tools from overheating, stainless steel must always be well lubricated during processing, e.g. with Rocol RTD liquid made by Blaser Swisslube, Switzerland or Rocol Lubricants in Leeds, England. To significantly increase the useful life of your tools, ask your supplier about recommended lubricants.

Smoke extraction

Where possible, the smoke generated during welding should be purified using a suitable extraction device. The microparticles contained in the smoke are classified as hazardous to health. When fabricating galvanised and nickel chromium steel in particular, consideration must be given to the exposure of the welder to smoke.
The extraction unit used must be designed in accordance with the existing building component geometries and workplace design, as well as the operating time of the welding torch each day. It is only possible to determine whether a mobile (Fig. 62) or a stationary system (Fig. 63) is more beneficial by considering the above variables. A precise on-site assessment is also required.
Ask your welding machine supplier which smoke extraction device is the right one for your requirements.

Fig. 62 Mobile extraction unit

Fig. 63 Stationary extraction unit

To guarantee optimum fusion penetration when welding, the cut edges must be chamfered as follows (Fig. 64 to 69).

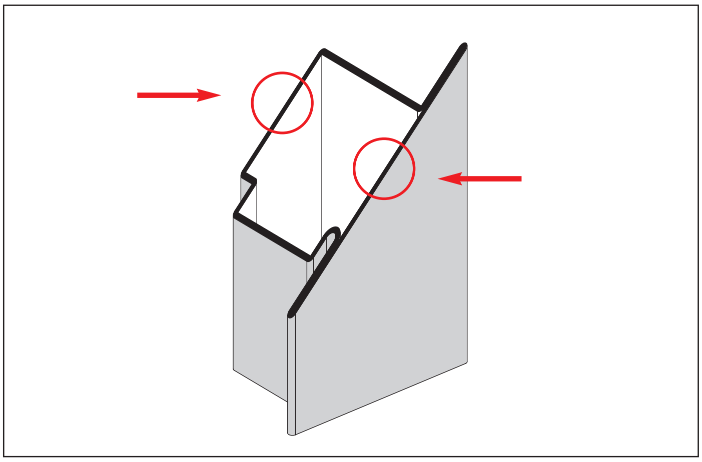


Fig. 64 Welding edge preparation for Jansen-Economy 50/60

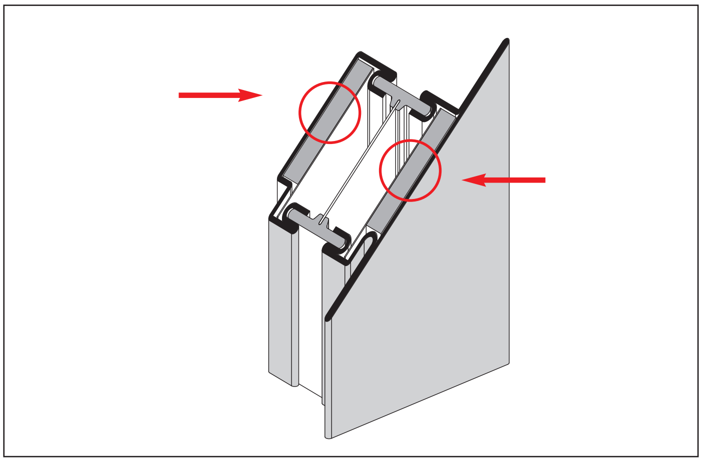


Fig. 65 Welding edge preparation for Janisol 2 / C4

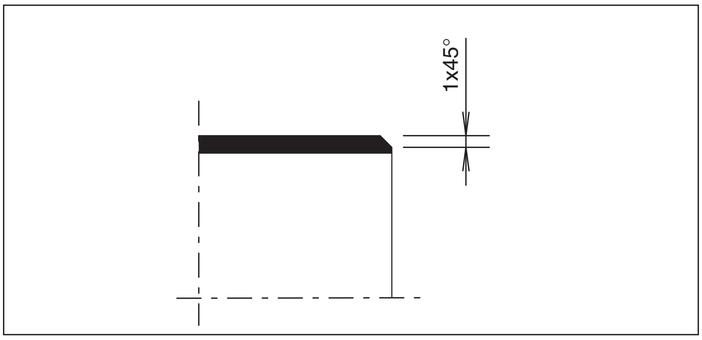


Fig. 66 Welding edge preparation for Jansen-Economy 50/60

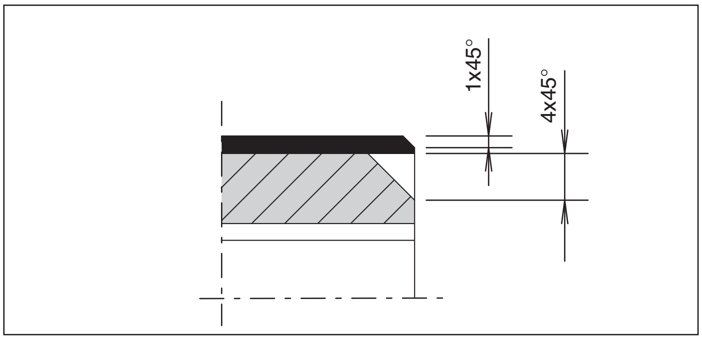


Fig. 67 Welding edge preparation for Janisol 2 / C4

Fig. 68 Chamfer using a 36 grit fibre disc

Fig. 69 Chamfer the welded edges at an angle of 45°

To achieve a seamless weld for fire protection profiles as well, we recommend that you remove the plaster or ceramic compound using a knife, drill bit, or routing bit (Fig. 70 / 71).

Fig. 70 Freeing the weld seam of Janisol 2 fire protection profiles using a knife

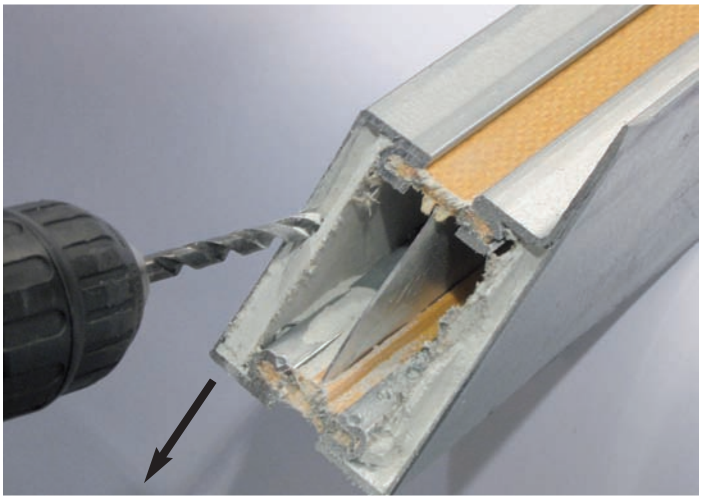


Fig. 71 Freeing the weld seam of Janisol 2 fire protection profiles using a drill bit

Note on processing stainless steel

Weld seam preparation: lightly deburr the profiles using a file.

Important: no ferritic residues on the file.

Then use acetone to clean the inside and outside of the profiles at the welded ends.
Remove as much of the excess lubricant in the profile as possible (blow it out), so that when the unit is rotated, no lubricant gets to the ends that are still to be welded.

Clamping
A frequent source of error for frame constructions subsequently becoming distorted and contorted begins with tacking.

Important
Before assembling the frame constructions, ensure that the trestles are appropriately aligned on the supporting surface. It is particularly important that the heights of X and Y at the sides (Fig. 72) are aligned parallel to one another. If necessary, lay supports underneath.

Remove any spatter from the surfaces of the trestles using an angle grinder.

Prior to welding, the cut hollow steel profiles are clamped to the correct frame dimensions and tacked. To do this, use rectangular tube sections as clamping supports and quick action clamps (Fig. 73 to 75).

For larger series, time-saving jigs can also be created.

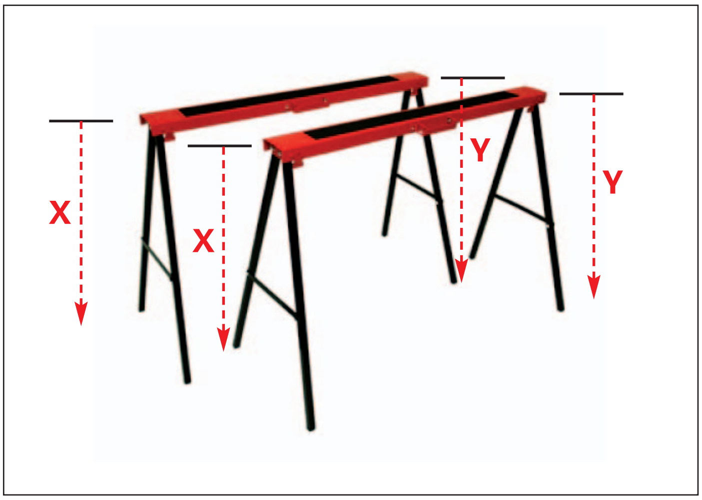


Fig. 72 *Align the trestles (ensure that the trestles are aligned parallel in height).*

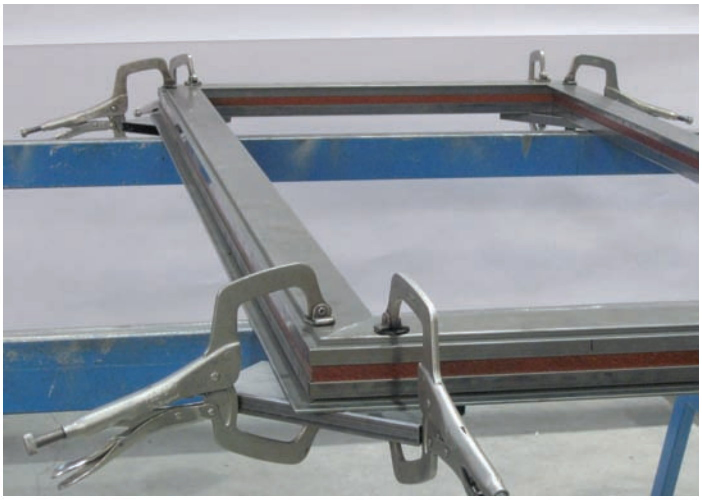


Fig. 73 *Clamp the frame constructions using quick action clamps*

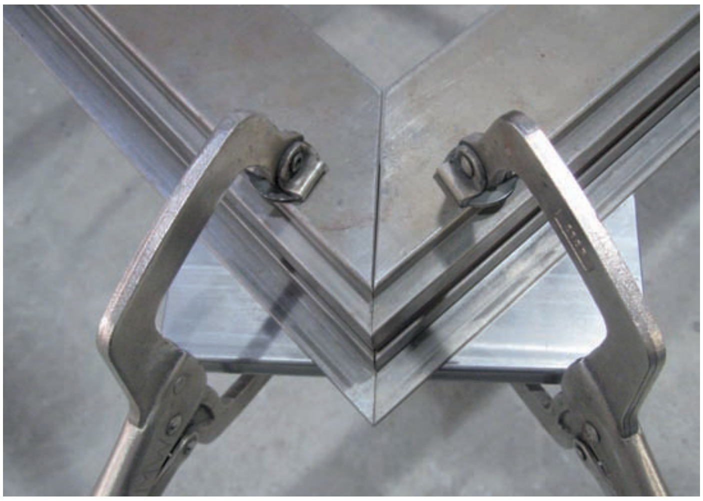


Fig. 74 *Clamp the frame corners using rectangular tube sections and clamps*

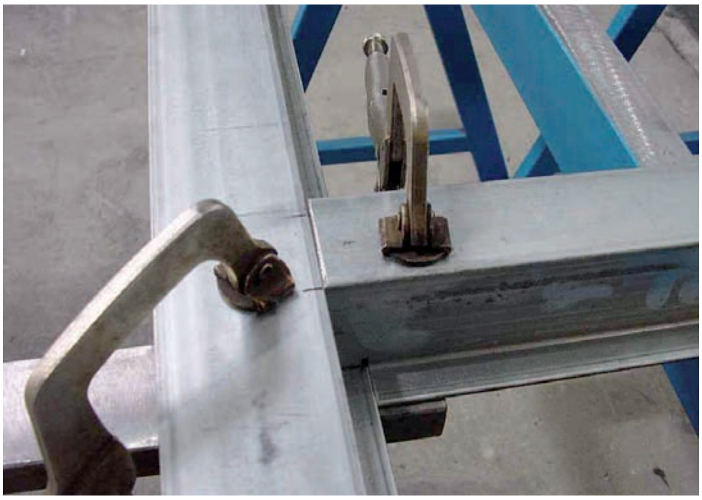


Fig. 75 *Clamp mid-rails and transoms using rectangular tube sections and clamps*

For efficient fabrication, use of the Jansen welding table is recommended (Fig. 76 to 78).

- One-man operation, savings on labour and costs of up to 50%
- Clamping height of clamping device up to 280 mm
- Short set-up time with simple and streamlined clamping
- Accurate setting of frame dimensions in the shortest time
- No additional dimension checks required across diagonals and angles
- Robust base construction for heavy loads of up to 300 kg
- Adjustable operating height from 970 to 1020 mm
- All-round clamping and 3-sided welding possible in a single operation
- Concealed adjustment mechanism provides protection against spatter

Fig. 76

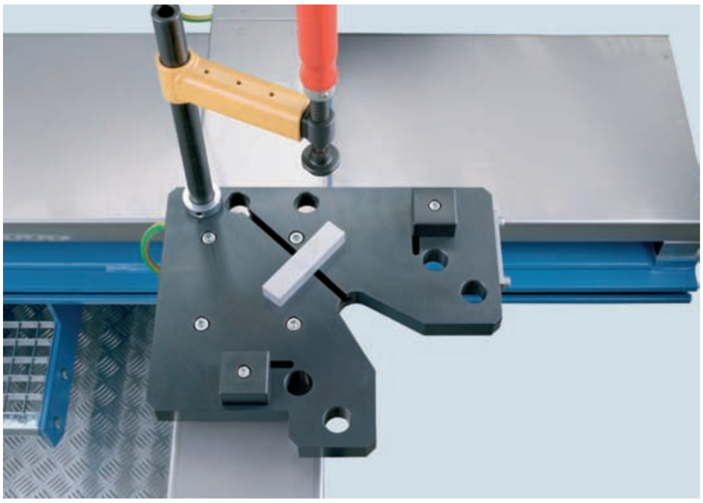


Fig. 77 *Coated base plates prevent scorching from spatter*

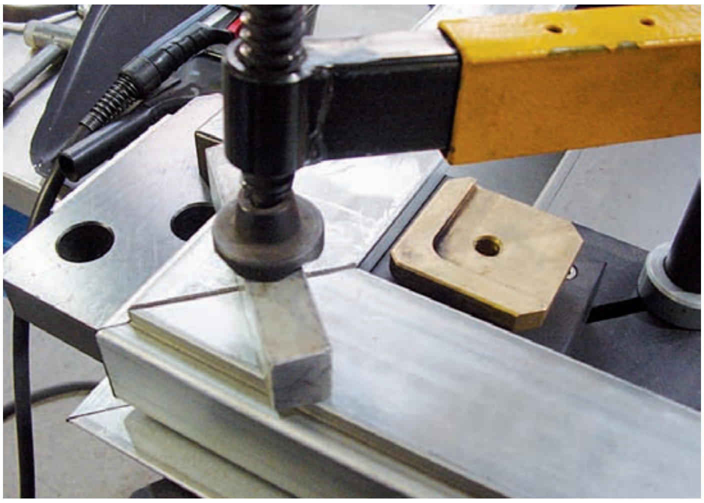


Fig. 78 *Simple to clamp frame constructions*

EDELSTAHL Rost frei INOX STAINLESS STEEL

Note on processing stainless steel

Clamping:
Accurately and securely clamp the profiles on a material which is clean, even and of the same or higher quality (possibly copper plate). Mask the contact surface of the trestles with protective foil.

To prevent high quality stainless steel profiles from becoming scratched or damaged, we recommend fixing plastic supports to clamps or screw clamps.

To counteract any distortion as a result of build-up of heat when welding steel constructions, we recommend placing tacking points every 20 to 30 mm.

Tacking sequence
1. Align the diagonals
2. Tack the corners on the outside and door sill joints on the profile surface on the inside (Fig. 79 / 80)
3. Check the diagonals and realign, if necessary (Fig. 81)
4. Tack the visible surfaces (Fig. 82 to 87)
5. Insert and tack any mid-rails (Fig. 88 / 89)

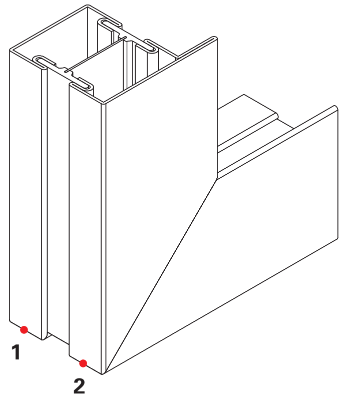


Fig. 79 Tack the corners (1 and 2) on the outside

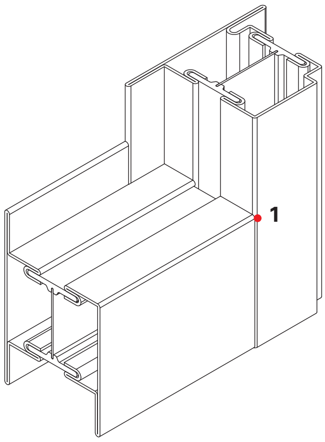


Fig. 80 Tack the door sill corner on the inside (1)

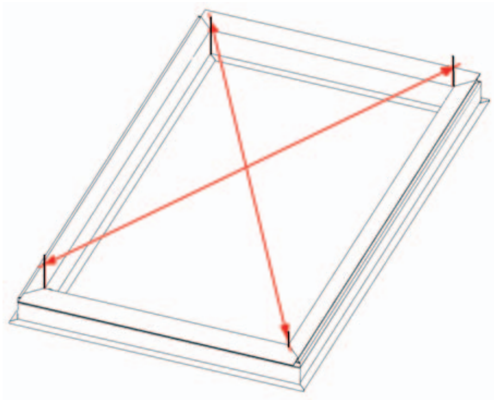


Fig. 81 Then check the diagonals and realign, if necessary

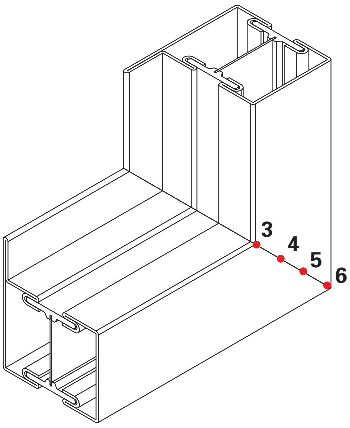


Fig. 82 Tack the smaller surface every 20 to 30 mm (3-6)

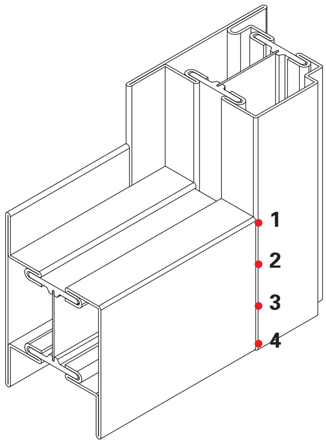


Fig. 83 Tack the door sill every 20 to 30 mm (1-4)

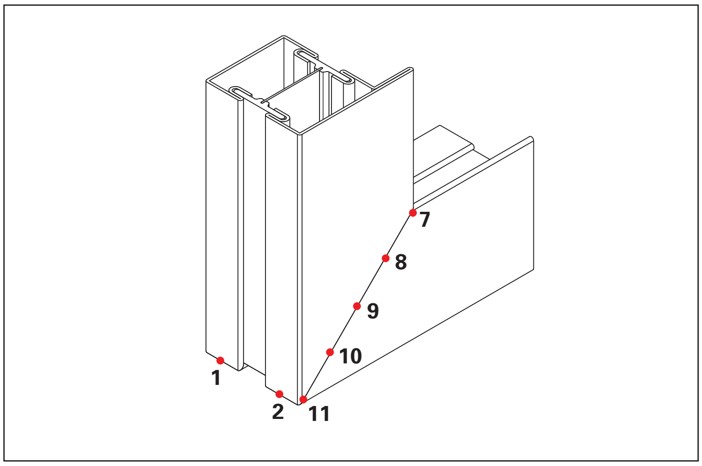


Fig. 84 *Tack the larger surface every 20 to 30 mm (7-11)*

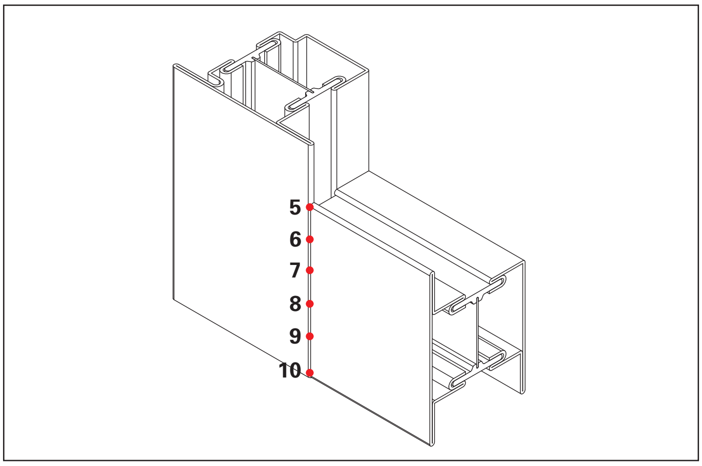


Fig. 85 *Tack the door sill every 20 to 30 mm (5-10)*

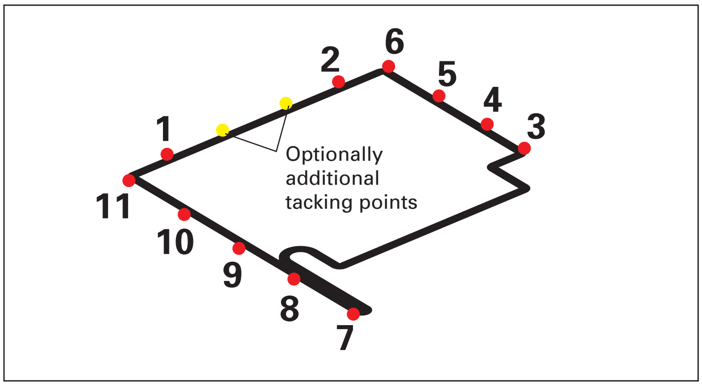


Fig. 86 *Sequence for tacking points for Jansen-Economy 50/60*

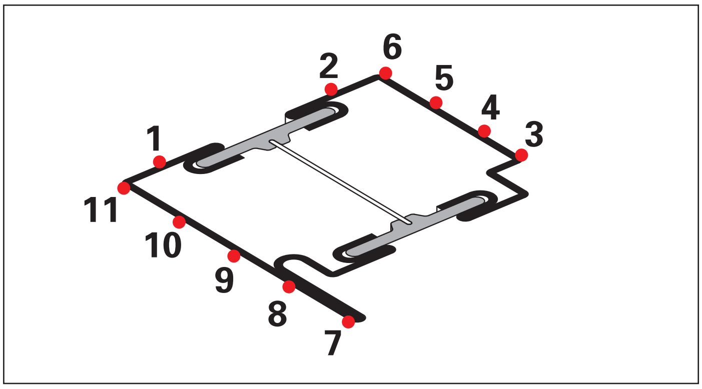


Fig. 87 *Sequence for tacking points for Janisol*

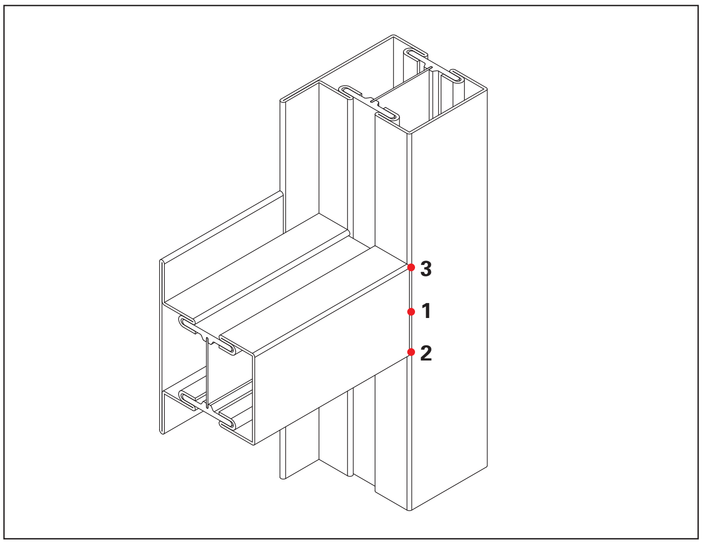


Fig. 88 *Tack the T-mid-rails to the smaller surface every 20 to 30 mm (2-3) beginning in the centre (1)*

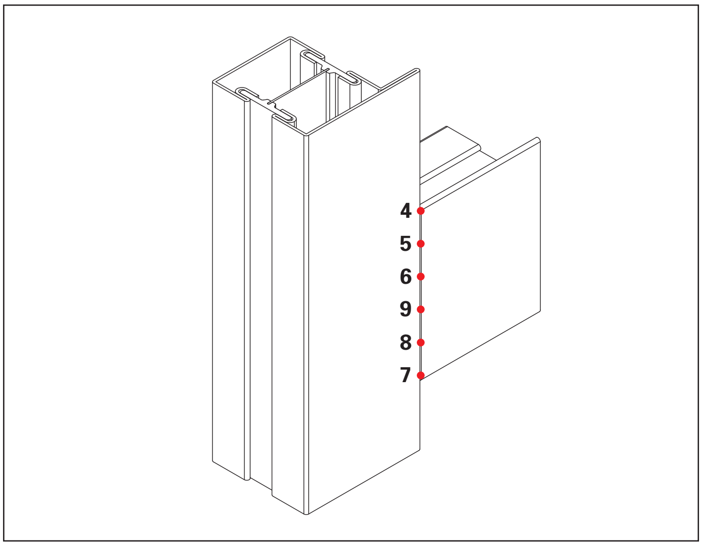


Fig. 89 *Then, on the opposite side, tack every 20 to 30 mm (5-9) beginning at the corner (4)*

Welding

Jansen hollow steel profiles can be welded using standard welding apparatus. The most common welding procedure is MIG/MAG welding (explanations of these two procedures can be found below). Manual electrode welding is also available as an alternative.

The term “MSG procedure” covers all inert gas welding procedures, where the arc burns between a consumable wire electrode and the workpiece.

A distinction is made between the following:

- **MAG** welding procedure: **M**etal **A**ctiv **G**as welding
- **MIG** welding procedure: **M**etal **I**nert **G**as welding

Some of the important factors which influence MIG/MAG welding are detailed below.

Arc types and their use / properties

Depending on the type of building component, workpiece thickness, inert gas and welding position, different arcs can be used in MSG welding.

Arc type	Sheet thickness	Performance range	Constrained positions	Tendency to spatter
Short arc	Thin sheet	Low	Suitable	Low
Intermediate arc	Average sheet thicknesses	Average	Less suitable	Moderate
Impulse arc*	All sheet thickness ranges	All performance ranges	Suitable	Very low

* Inert gas: CO_2 content of 18% is recommended (specified by LISTEC Schweisstechnik AG)

Inert gases and their use / properties

The different types of inert gases are specifically selected for use based on their properties. The inert gas can influence and improve the welding process in a number of ways (fusion penetration form, chemical composition of the weld metal, surface tension of the melt, development of pores and protection against lack of fusion).

One key distinguishing feature of the inert gases is their level of reactivity with the molten metal. Active gases react with the melt (weld allowance). For inert gases, there is a minimal chemical reaction between the melt and the gas.

Gas	Base metal	Spatter formation	Pore frequency	Fusion penetration form
CORGON® 18 Argon (Ar): 82% / Carbon dioxide (CO_2): 18%	Construction steel, shipbuilding steel, fine-grained steel, pressure vessel steel, galvanised or aluminium coated steel sheets	Low	Average	Very good
CO2	Plain carbon steels and low-alloy steels	High	Low	Very good

Setting the parameters for MIG / MAG welding

In terms of settings options, MIG / MAG welding is different from the other welding procedures in various respects. More parameter, voltage and current (wire feed) options are available to the welder to adjust the settings of the welding process in terms of the welding position, arc type and deposition rate. However, this flexibility requires the welder to be well trained to prevent incorrect operation and the risk of welding errors as a result.

The technology available today simplifies the operation of welding machines in a number of ways. For modern power sources, for example, welding parameters are saved for the most common applications and can be selected. Another option is to select the parameters by inputting the wire diameter, base metal, sheet thickness and gas type. The control unit for the power source calculates the appropriate parameters based on this data. Fine adjustments can be made to these programs and saved under new names. The user is therefore able to set programs for their own individual use. (Fig. 90/91).

Fig. 90 MIG/MAG welding device (CEA Digistar 250)

Fig. 91 MIG/MAG welding

Welding torch settings

The welding torch position for MIG/MAG welding influences the fusion penetration form and the outer seam geometry. A slight push (forehand) welding angle produces less fusion penetration and a flatter seam. If the push welding angle is too acute, there is a risk of lack of fusion due to the molten weld pool ahead. Using the pull/drag (backhand) technique, the fusion penetration is greater and the seam is narrower and raised. For WIG welding, a slight push (forehand) welding angle is most often used to prevent the tack welds cracking during subsequent welding. Cracked tack welds must never be welded over. They must be ground out. The belief that the cracked material is melted once again when being welded over is incorrect (Fig. 92/93).

Welding of pre-galvanised hollow steel profiles

The following problem must be taken into account when welding pre-galvanised hollow steel profiles. Zinc evaporates when the welding temperature of steel is reached. As a result, the volume of zinc increases massively and suddenly. Depending on the seam type and the edge form, the zinc vapour is not able to escape steadily. Excess pressure builds up in the melt which is relieved explosively. The melt is entrained by the escaping zinc vapour and small pores develop in the weld seam.

Butt joints or L-shaped joints can be welded if there is only a small amount of zinc in the cut edges from previous processing operations.

Alternatively, special flux-cored wires can also be used.

- The zinc layer does not need to be removed prior to welding
- No weld seam preparation required for pre-galvanised Jansen profiles
- Pore-free and low spatter weld seams
- Lower thermal intake, i.e. no fusing of thin sheets.
- Can be welded using any gas. Ar CO_2 82/18 is ideal

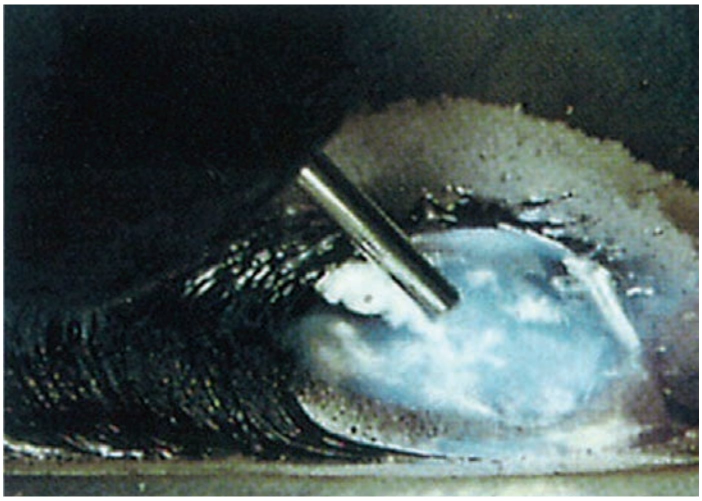


Fig. 92 MIG welding

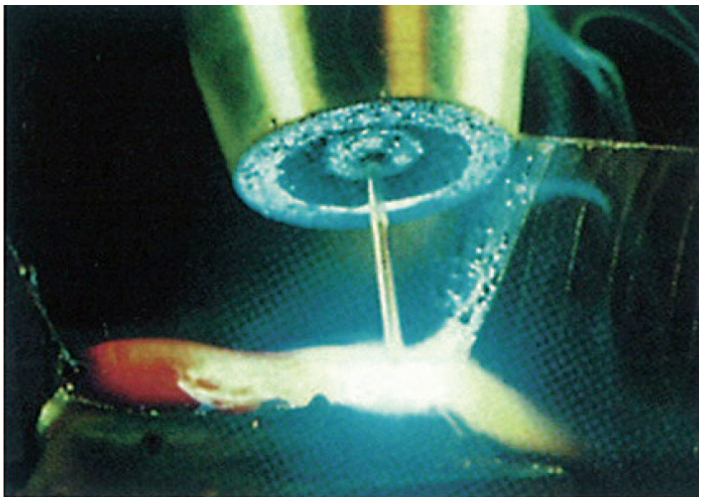


Fig. 93 MAG welding

More information on the topic

Find out more about MIG/MAG or WIG/TIG welding, how to set the parameters of welding equipment, techniques, arc types, build-up welding, materials, inert gases etc. in the «PanGas» welding and cutting technology manual from Linde Gas (Fig. 94).

Fig. 94 Manual on welding and cutting technology

Distortion

Building component distortion is largely dependent on the heat applied during welding. The greater the thermal intake, the greater the measurable distortion.

Important factors which influence the thermal intake:

– The welding procedure used. The thermal intake is lower for the MIG/MAG welding procedure than the WIG/TIG welding procedure
– The welding sequence: the welding sequence refers to the targeted welding of the different seams according to a pre-defined plan

Note

To guarantee electrical conductivity between the two steel components of Janisol profiles, use the Jansen magnetic block Art. No. 499.107 (Fig. 95/96).

Welding direction

To prevent or reduce distortion of the frame from welding, the weld direction is of great importance.

1. From inside to outside for frames and mitred vent corners (Fig. 97 to 102)
2. From outside to the centre for transoms (T-joints) (Fig. 103/104)

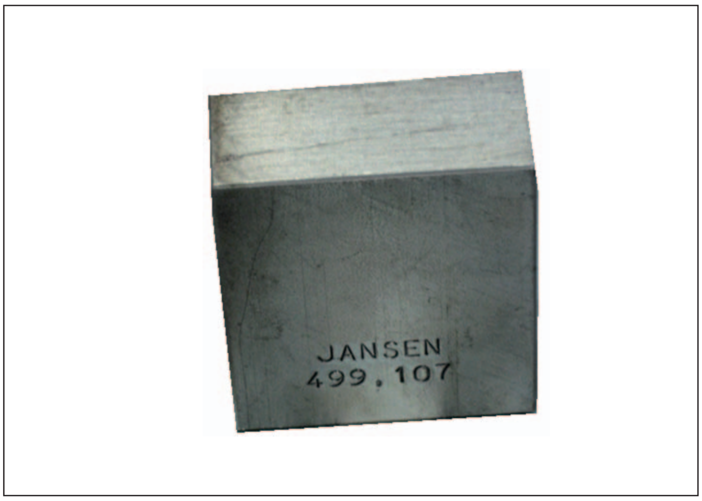


Fig. 95 Jansen magnet block (Art. No. 499.107)

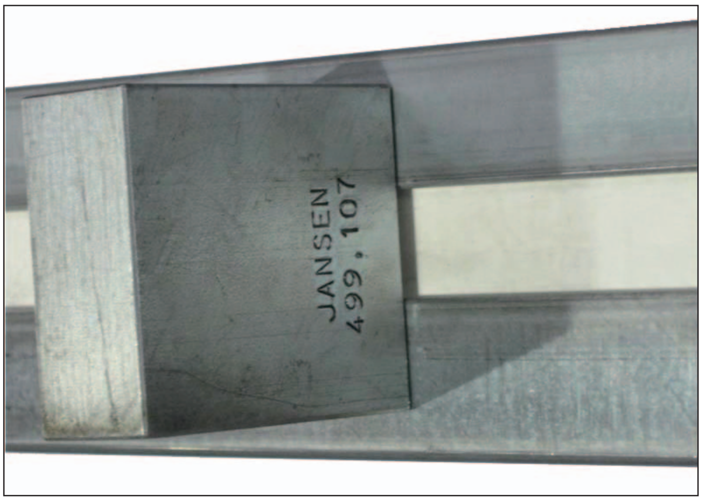


Fig. 96 Jansen magnet block in use

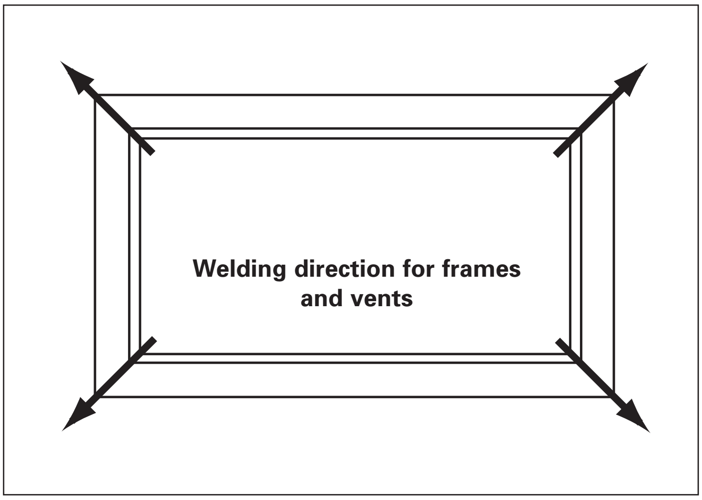


Fig. 97 Welding direction from inside to outside

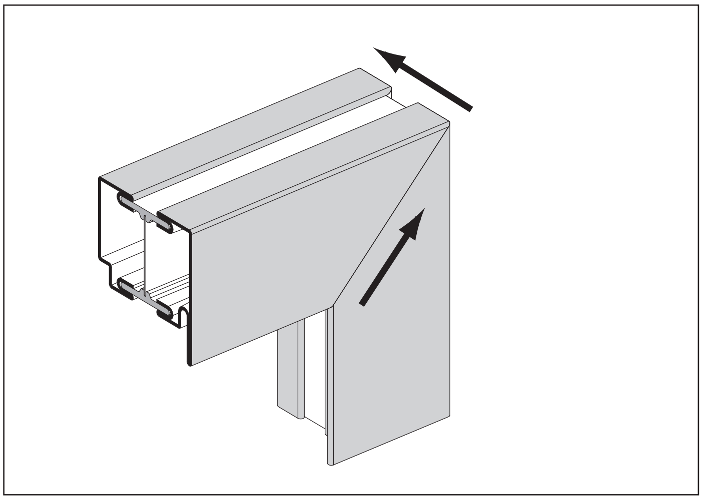


Fig. 98 Welding direction from inside to outside

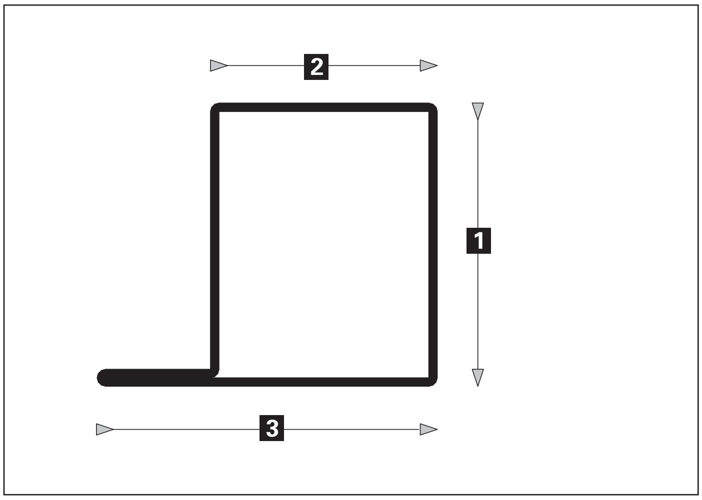


Fig. 99 Welding sequence for Jansen-Economy frame profile

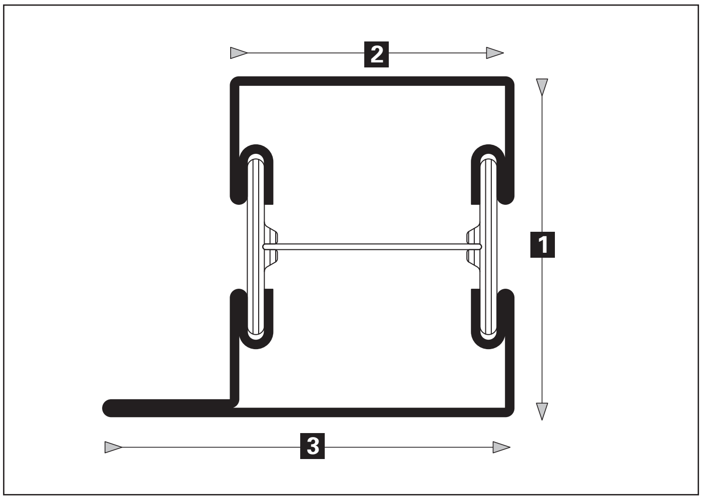


Fig. 100 Welding sequence for Janisol frame profile

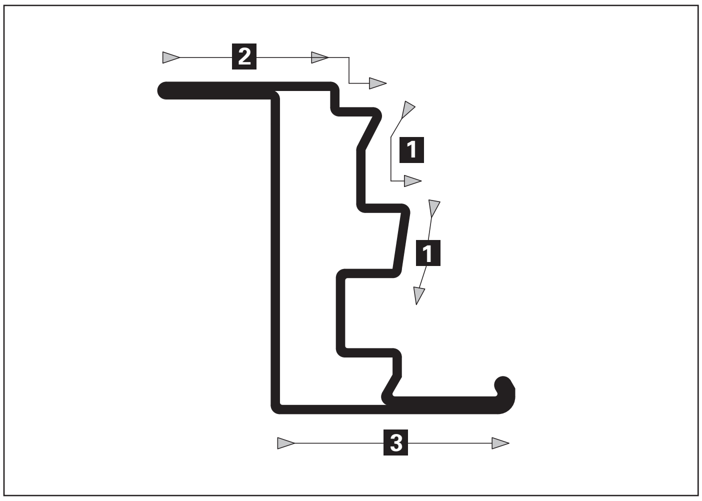


Fig 101 Welding sequence for Jansen-Economy window profile

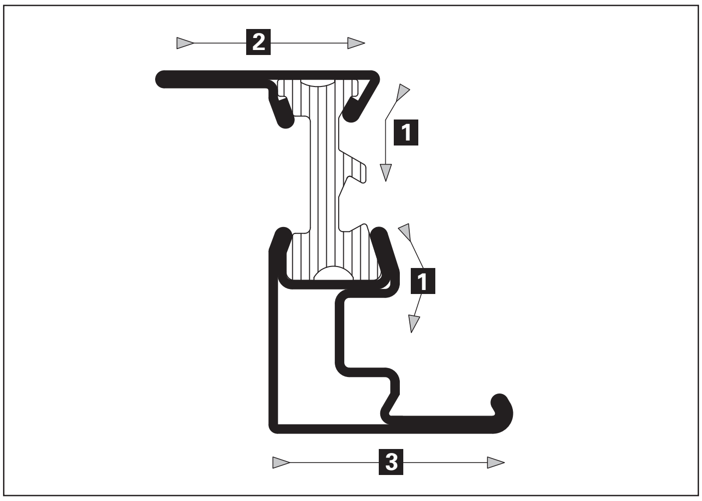


Fig. 102 Welding sequence for Janisol window profile

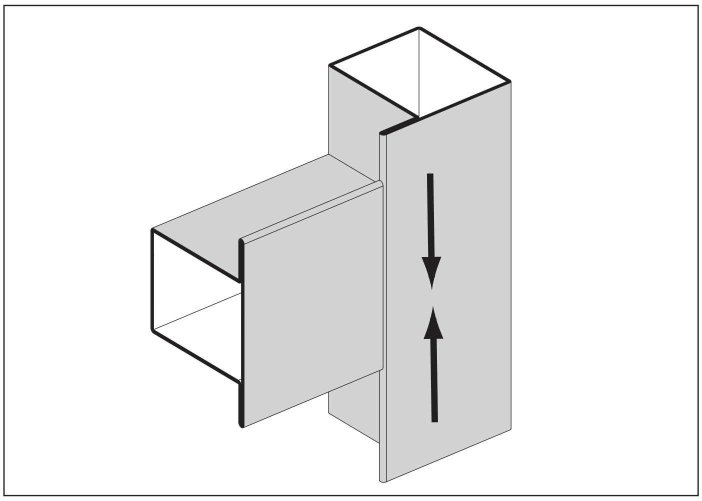


Fig. 103 Weld the T-joint from outside to inside

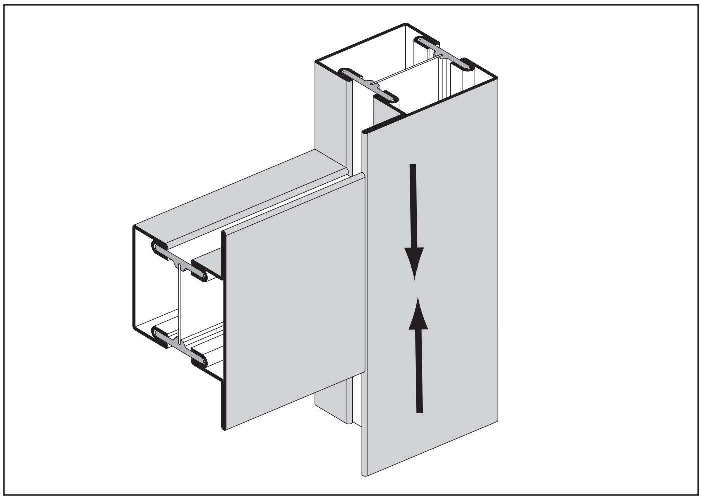


Fig. 104 Weld the T-joint from outside to inside

Welding of door leaf frames

Experience shows that wide door leaves without a transom or without a raised sill rail tend to sag on the lock side due to the weight of the glass.
To counteract this, it is recommended to raise slightly the leading edge of the leaf (approx 1 mm) prior to welding, and to construct the frame as rigidly as possible (Fig. 105).

The following measures create rigid leaf frames:

- One or several transoms (Fig. 106)
- High sill rail (height approx. 200 mm) Fig. 106
- Weld the profiles continuously, where possible Fig. 107/108)

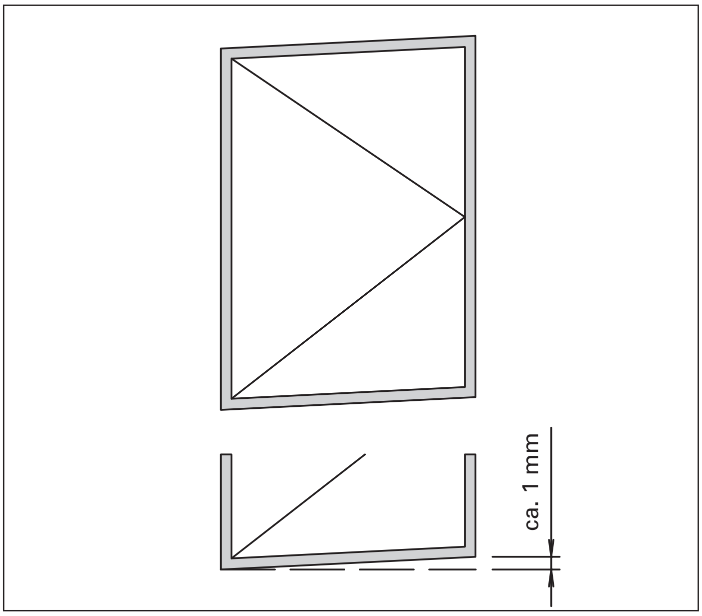


Fig. 105 Door leaf frame raised by approx. 1 mm on the lock side

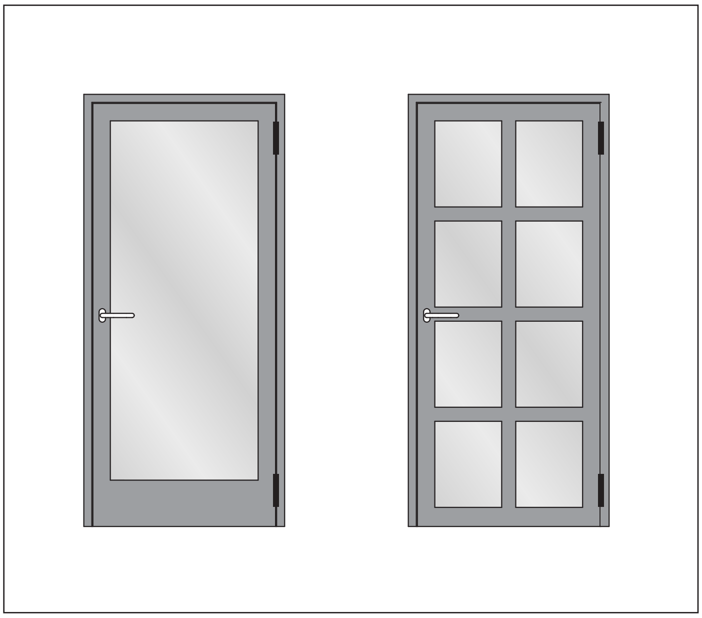


Fig. 106 Rigid leaf frame with mid-rails or a high sill rail

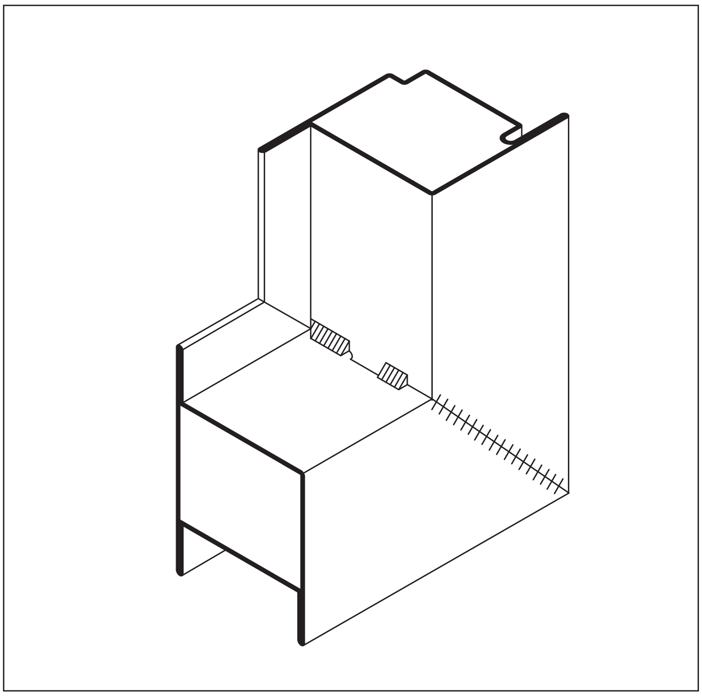


Fig. 107 Jansen-Economy 50/60 door leaf frame welded in the glazing rebate

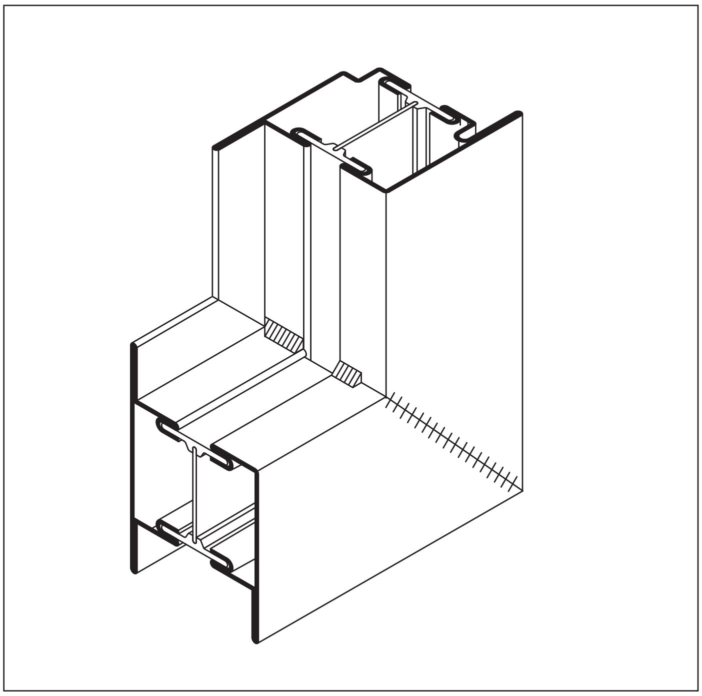


Fig. 108 Janisol door leaf frame welded in the glazing rebate

If the frame becomes slightly distorted during welding, it can be realigned using screw presses or a Quick Lock device. To prevent the profiles from becoming marked, suitable wooden supports must be used for protection (Fig. 109 to 127).

Note:
Frames should be realigned prior to linishing the weld seams!

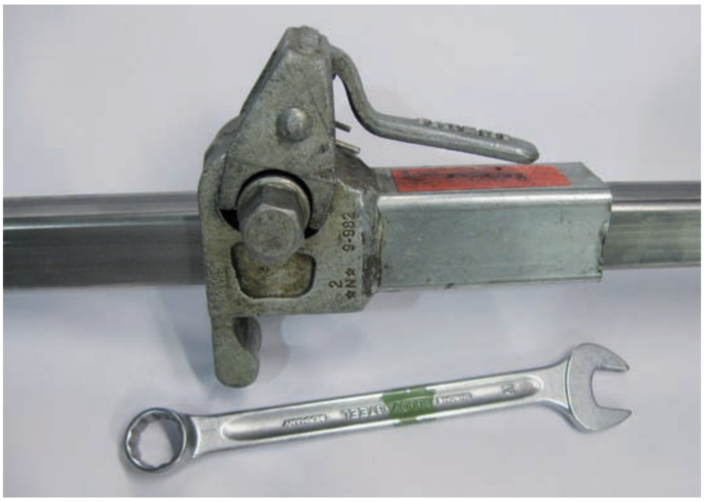


Fig. 109 Quick Lock aligning tool

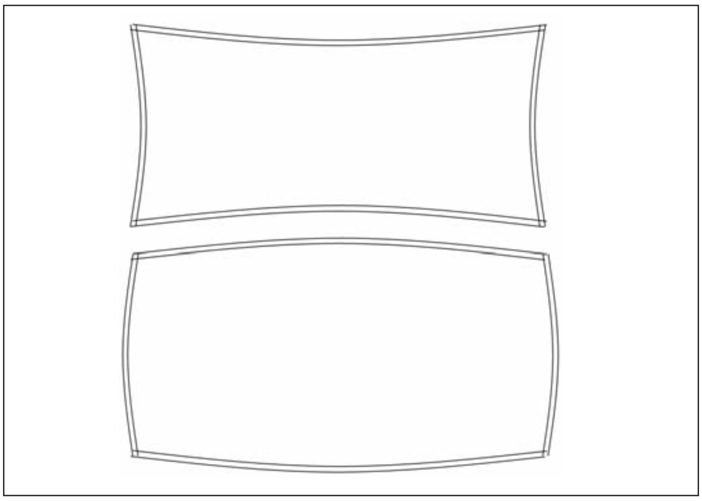


Fig. 110 Frames distorted outwards or inwards after welding

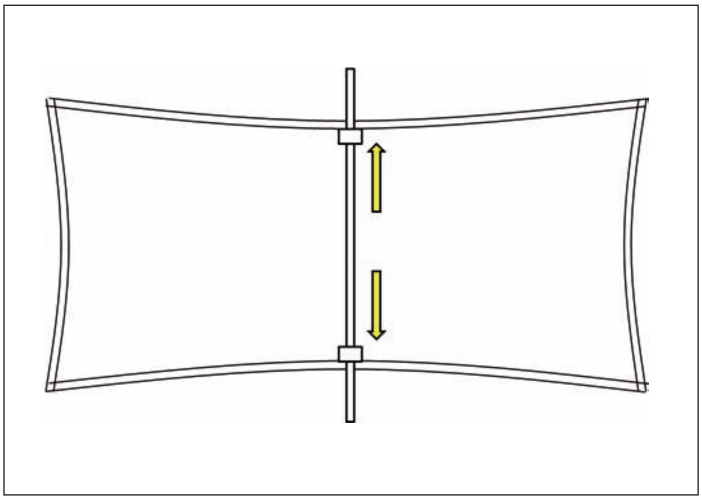


Fig. 111 Realignment using a Quick Lock device (exert pressure from inside to outside)

Fig. 112 Aligning tool on the profile

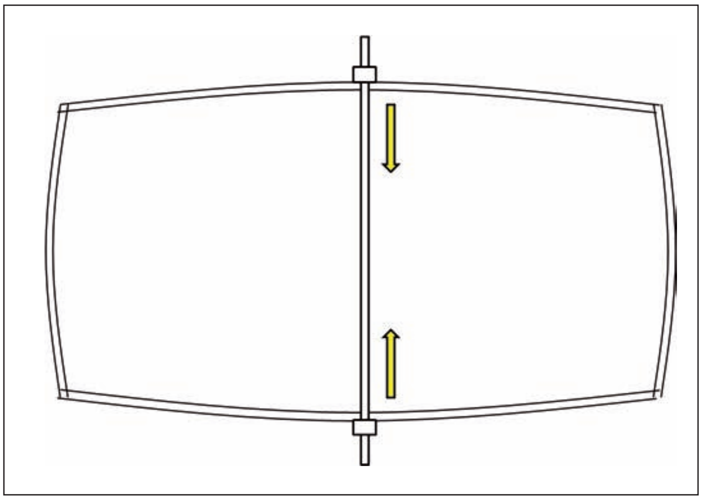


Fig. 113 *Realignment using a Quick Lock device (exert pressure from outside to inside)*

Fig. 114 *Aligning tool on the profile*

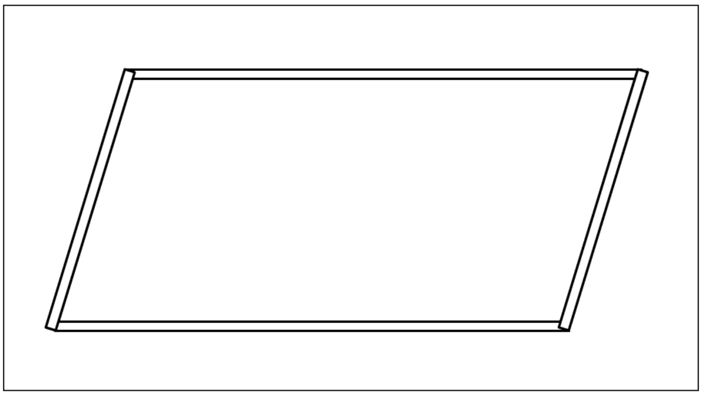


Fig. 115 *Diagonal distortion of the frame after welding (Cause: welding sequence not followed)*

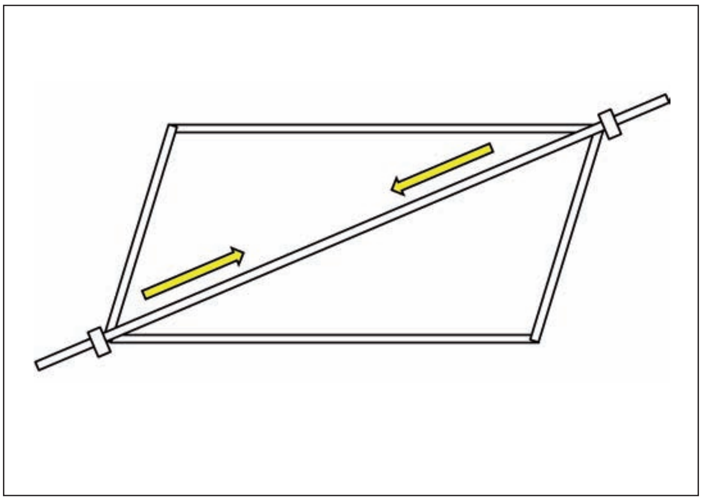


Fig. 116 *Realignment using a Quick Lock device (exert pressure from outside to inside)*

Fig. 117 *Aligning tool on the profile*

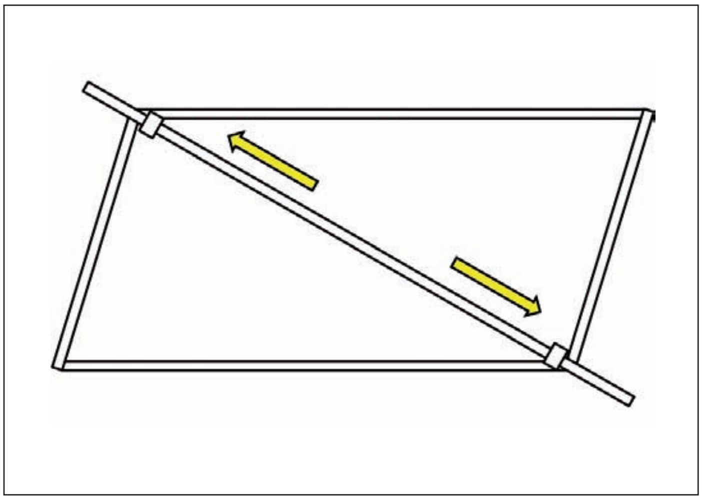


Fig. 118 *Realignment using a Quick Lock device (exert pressure from inside to outside)*

Fig 119 *Aligning tool on the profile*

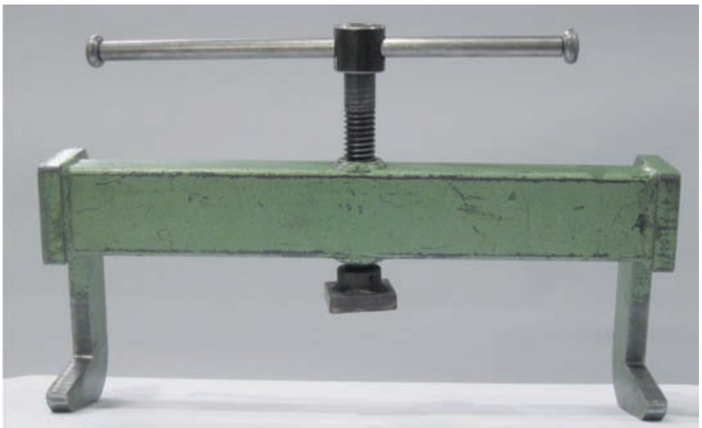


Fig. 120 *Hand-held screw press*

Fig. 121 *Stationary screw press*

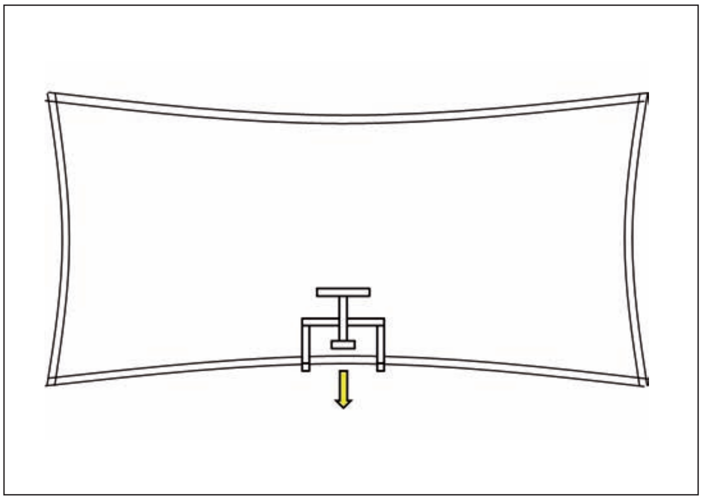


Fig. 122 *Realignment using a screw press (exert pressure from inside to outside)*

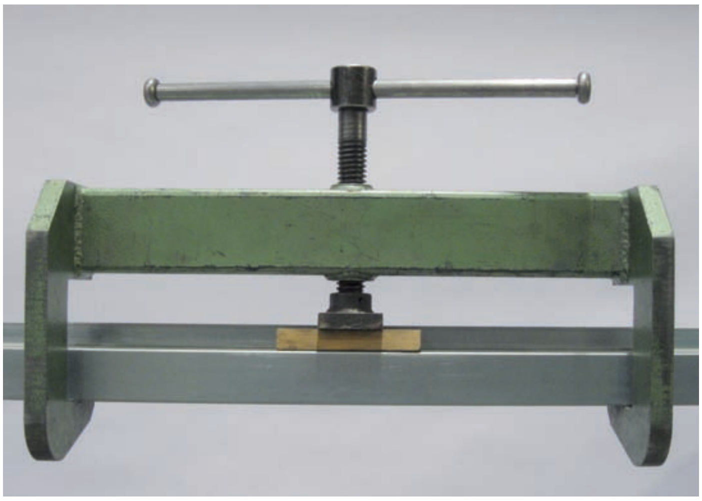


Fig. 123 *Aligning tool on the profile*

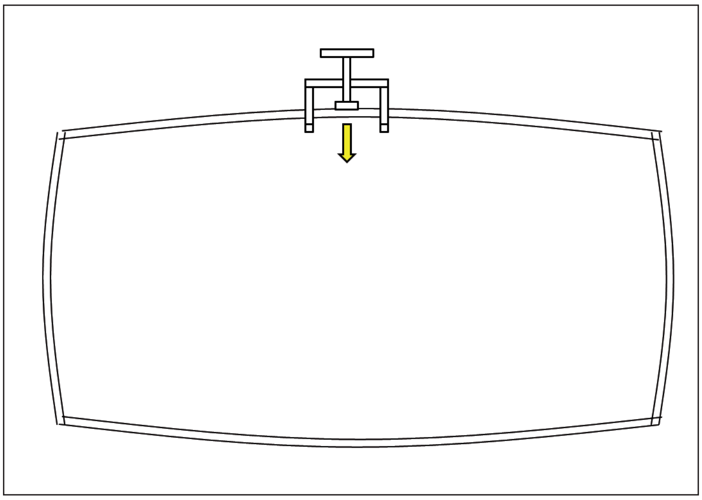


Fig. 124 Realignment using a screw press (exert pressure from outside to inside)

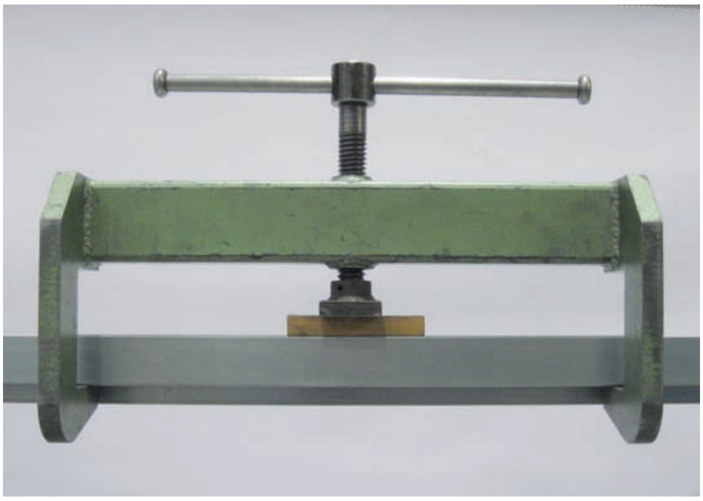


Fig. 125 Aligning tool on the profile

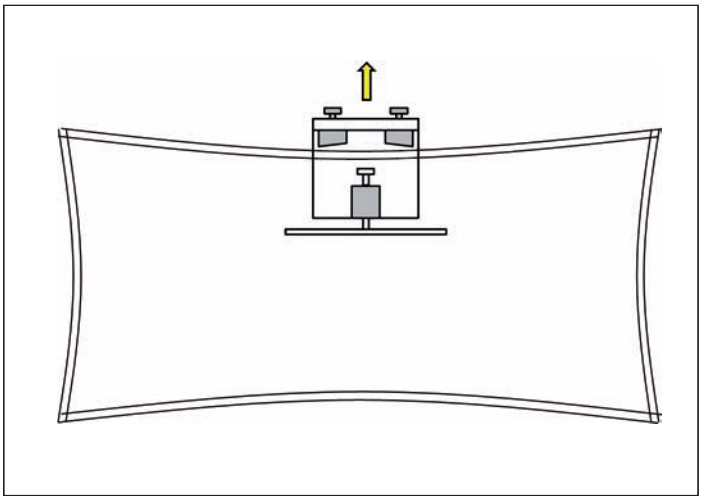


Fig. 126 Realignment using a stationary screw press (exert pressure from inside to outside)

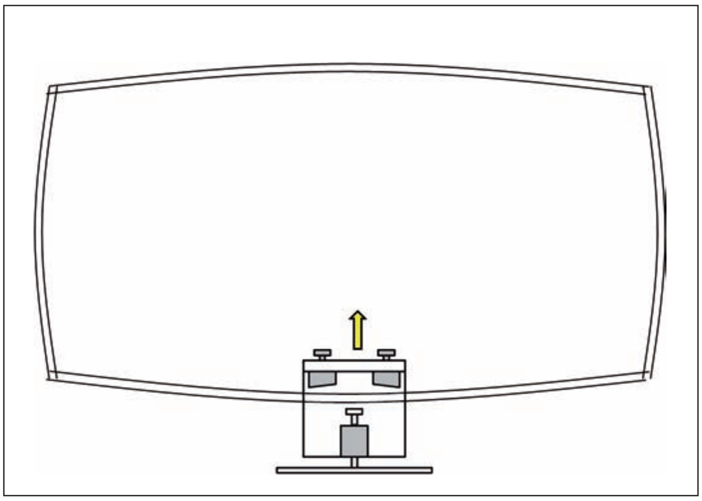


Fig. 127 Realignment using a stationary screw press (exert pressure from outside to inside)

To linish the weld seams we recommend using angle grinding machines and fibre discs (Fig. 128/129). Too much pressure can create heat damage leading to discolouration of the material. It must be ensured that no polishing grooves result from using too coarse a grit, as these will leave unattractive marks during surface treatment.
If possible, linish welded corners from the inside of the corner. This will provide you with as large a contact surface as possible and the machine can then run more accurately (Fig. 130/131).

In the following images (Fig. 132 to 138) we are referring to the linishing products and recommendations of 3M AG.

Fig. 128 Angle grinding machines

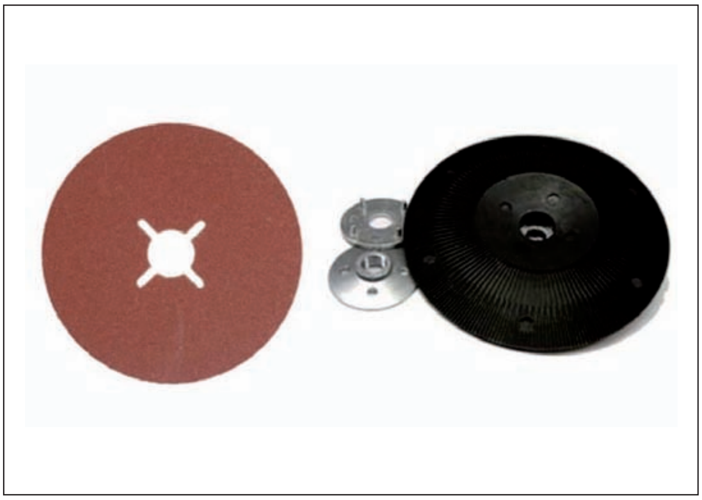


Fig. 129 Fibre disc and back-up pad

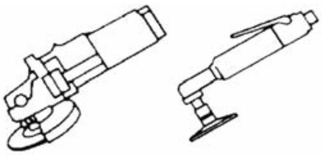
Fig. 130 Machine the welded corner from inside to outside

Fig. 131 Machining the welded corner

Recommended process for mill finish or pre-galvanised steel profiles

1. Starting point:
   Mill finish profile MIG/MAG welded in accordance with the ‘Welding of steel profiles’ chapter (Fig. 132).

2. Roughly linished:
   For example, using an angle grinder, 36 grit 3M fibre disc and high performance back-up pad for the fibre disc (Fig. 133)



3. Profile after rough linishing (Fig. 134).

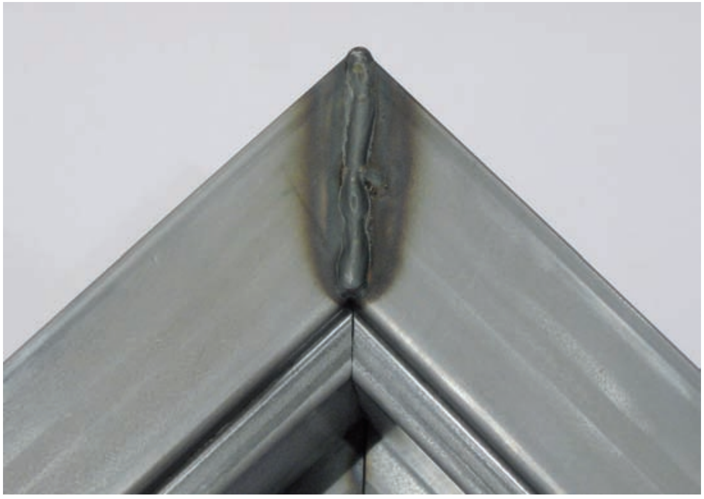


Fig 132 Profile corner MIG/MAG welded

Fig. 133 Angle grinder with 36 grit 3M fibre disc

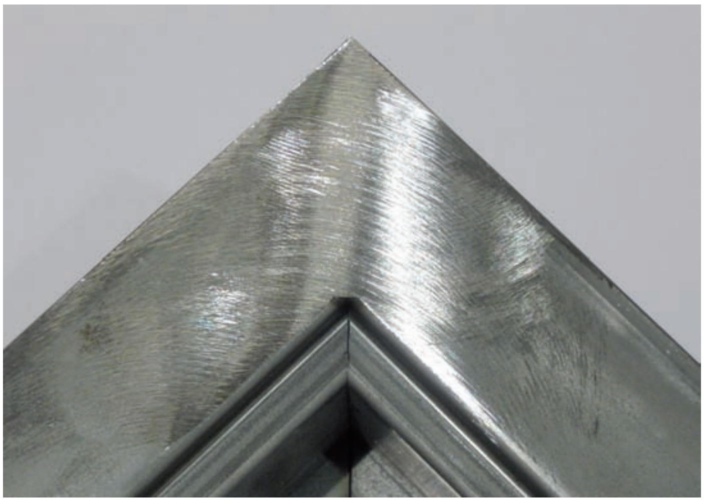


Fig. 134 Welded corner after rough linishing

4. Finely linished:
   Using an angle grinder, 80-120 grit 3M fibre disc and high performance back-up disc for the fibre disc Fig. 135)

Recommendation
When using a new fibre disc, deeper scratches appear in the initial machining surface. These become smaller as the abrasive particles continue to be worn down. If the corners are not refined prior to surface treatment, the streaks may remain visible after colour coating. This also happens if too coarse a grit is used.

It is recommended to linish the first surface again using a fibre disc which has already been worn down.

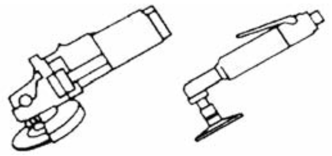


Fig. 135 Angle grinder with 80-120 grit 3M fibre disc

5. After fine linishing, the corners should be filed (Fig. 136)

Fig. 136 After fine linishing, file the corners

6. Finish
   Refine the surface as preparation for surface treatment, e.g. using 3M Scotch Brite or 3M Hookit abrasive disc (Fig. 137)

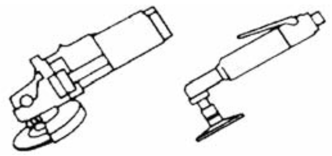


Fig. 137 Finish for surface treatment

4. Profile after finishing (Fig. 138)

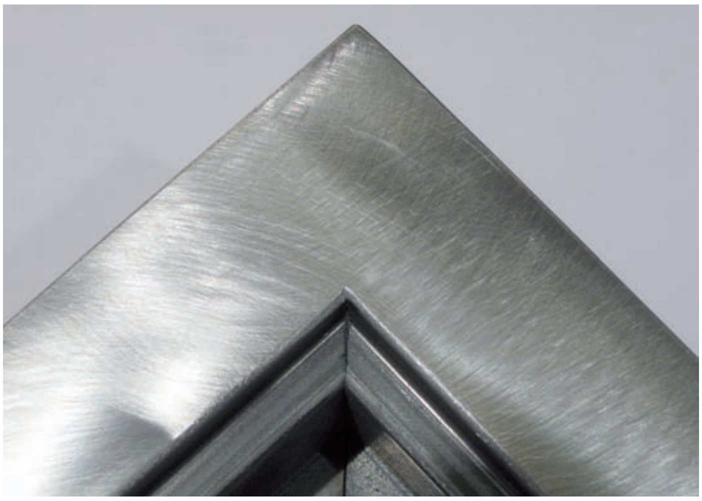


Fig. 138 Profile after finishing

To process stainless steel frames, protective foil or rubber must first be applied to the contact surface of the trestles. Otherwise, the stainless steel frames to be linished can move with the vibration of the polishing machines and leave scratches on the linished surface (Fig. 139 to 141).

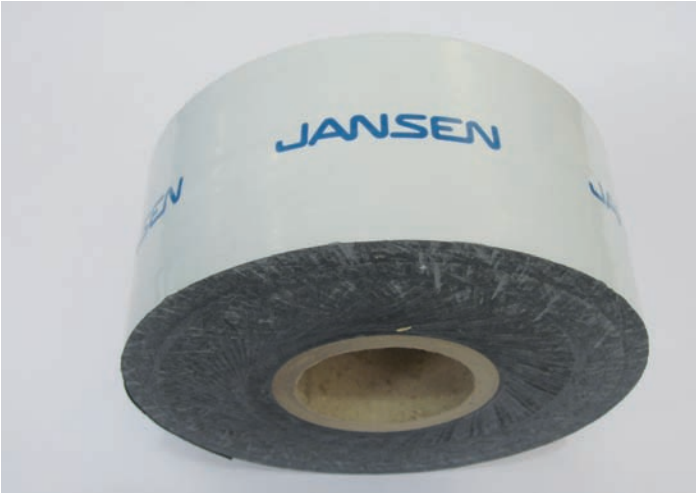


Fig. 139 Jansen protective foil for stainless steel profiles

Fig. 140 Mask the trestles with protective foil

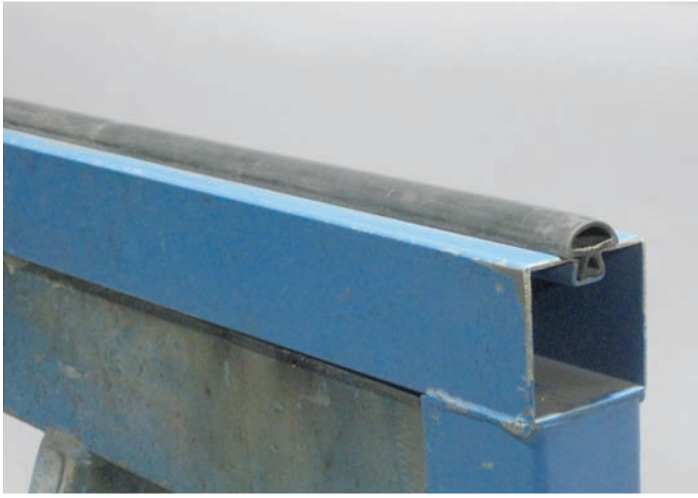


Fig. 141 Fit rubber to the trestle

To counteract any distortion as a result of build-up of heat when welding stainless steel constructions, we recommend placing tacking points every 10 to 15 mm.

Tacking sequence
1. Align the diagonals
2. Tack the corners on the outside and door sill joints on the profile surface on the inside (Fig. 142/143)
3. Check the diagonals and realign, if necessary (Fig. 144)
4. Tack the visible surfaces (Fig. 145 to 150)
5. Insert and tack any mid-rails (Fig. 151/152)

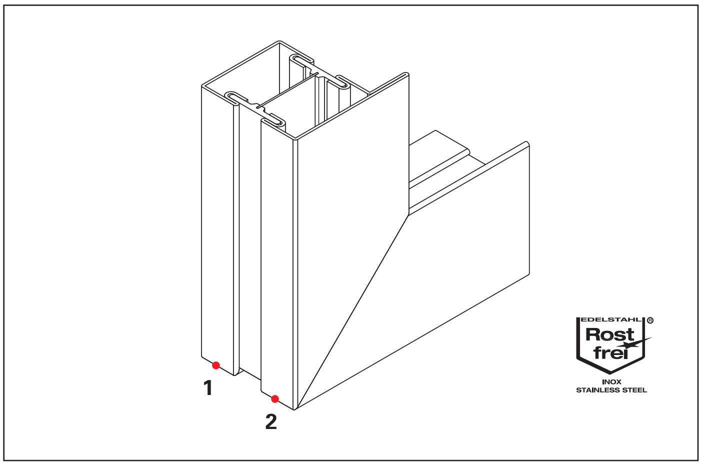


Fig. 142 *Tack the corners (1 and 2) on the outside*

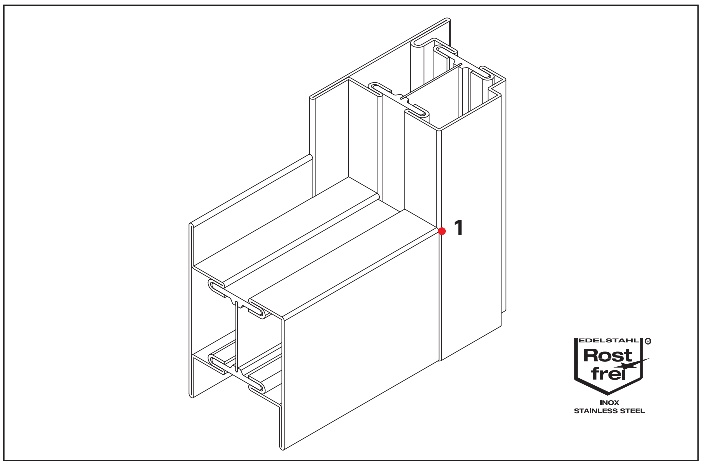


Fig. 143 *Tack the door sill corner on the inside (1)*

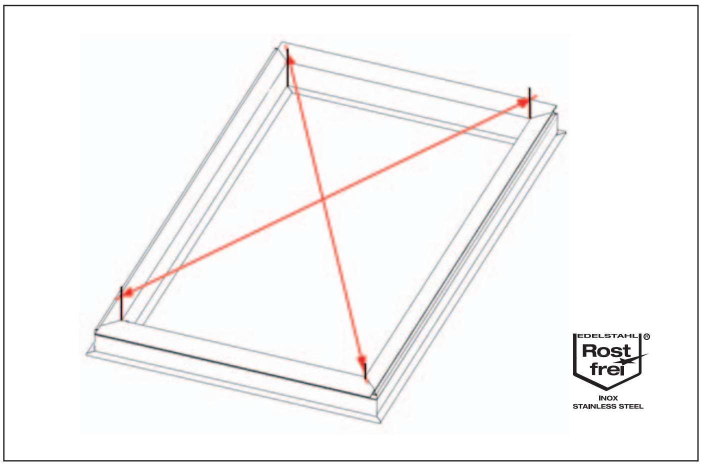


Fig 144 *Then check the diagonals and realign, if necessary*

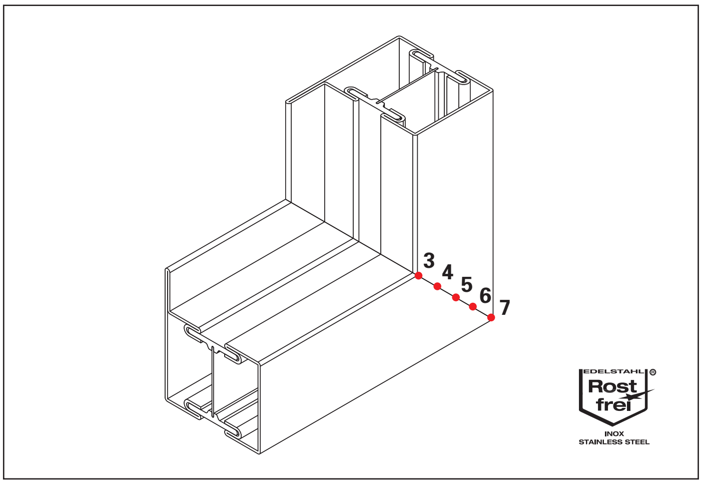


Fig. 145 *Tack the smaller surface every 10 to 15 mm (3-7)*

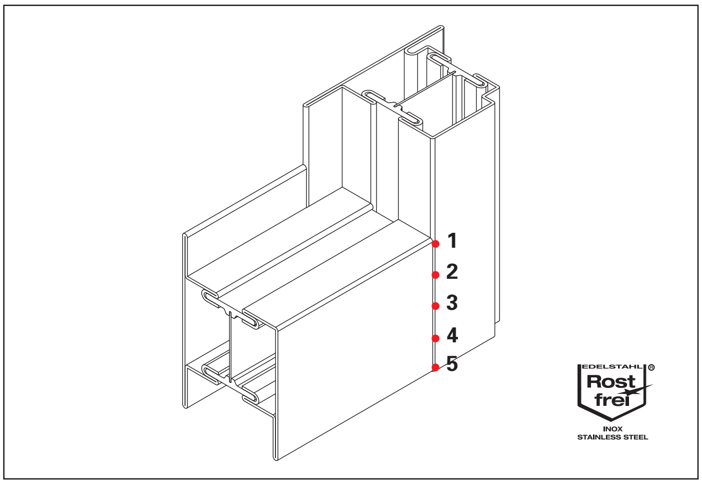


Fig. 146 *Tack the door sill every 10 to 15 mm (1-5)*

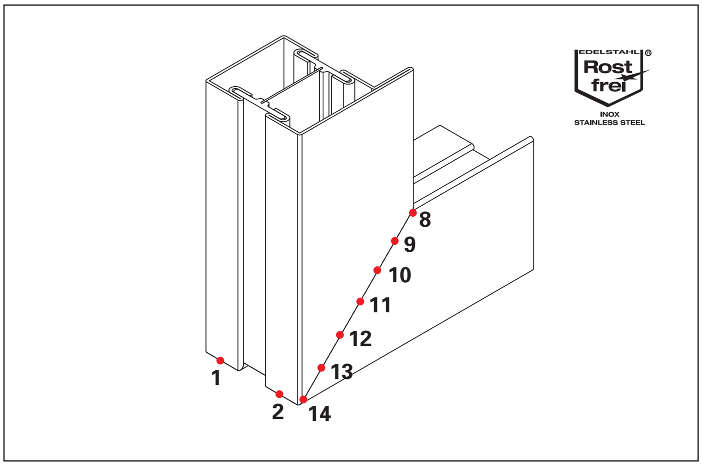


Fig. 147 *Tack the larger surface every 10 to 15 mm (8-14)*

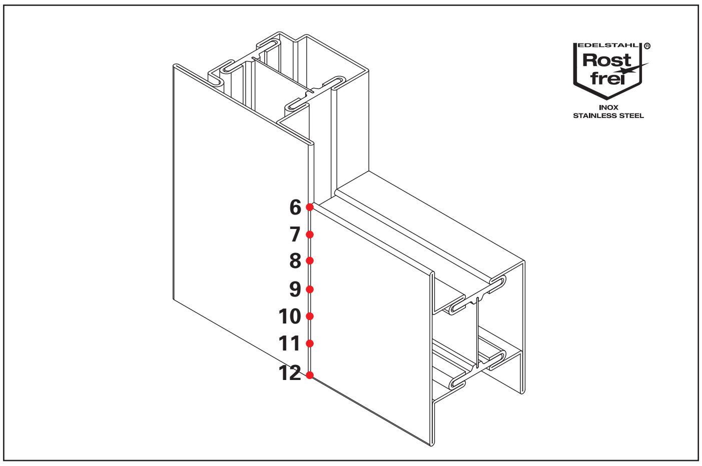


Fig 148 *Tack the door sill every 10 to 15 mm (6-12)*

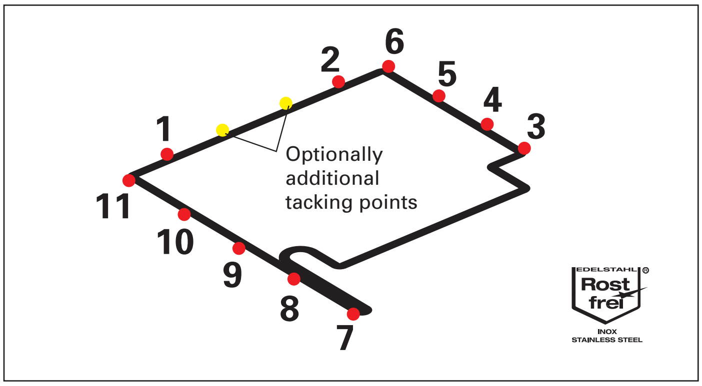


Fig. 149 *Sequence for tacking points for Jansen-Economy 50/60*

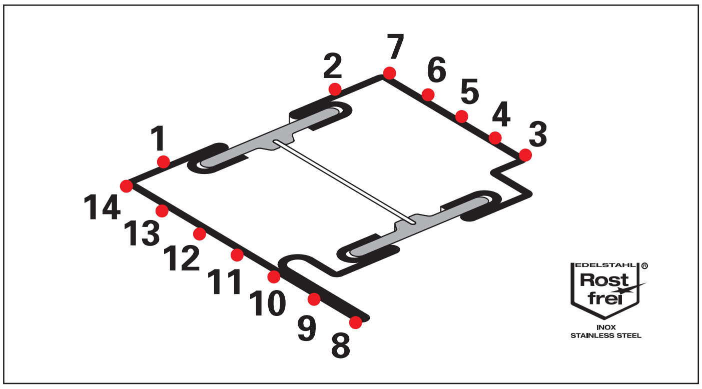


Fig. 150 *Sequence for tacking points for Janisol*

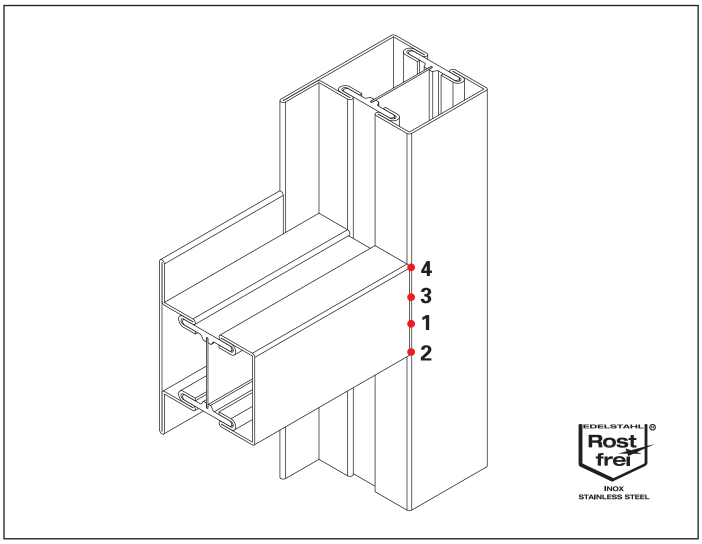


Fig. 151 *Tack the T-mid-rails to the smaller surface every 10 to 15 mm (2-4) beginning in the centre (1)*

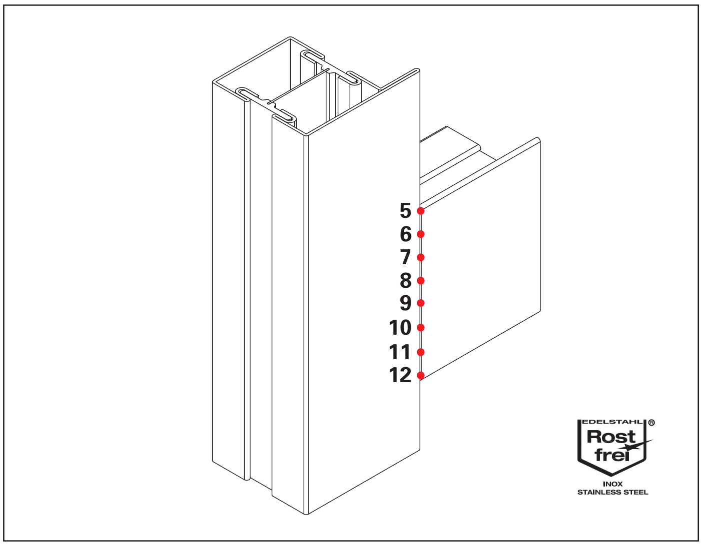


Fig. 152 *Then, on the opposite side, tack every 10 to 15 mm (6-12) beginning at the corner (5)*

Welding

Jansen stainless steel profiles can be welded using standard welding apparatus. The most common welding procedure is WIG/TIG welding.

In WIG welding, often also called TIG welding, an arc is struck between the base metal and a non-consumable tungsten electrode. The base metal and any filler metal used are melted by this arc. Explanations of these two variants can be found below.

The arc and the melt are protected from the ambient temperature by an inert gas. If the tungsten electrode is not sufficiently protected from oxygen, it would oxidize (combust) at the high temperatures.

- **WIG** welding procedure:
  Wolfram **I**nert **G**as welding
- **TIG** welding procedure:
  Tungsten **I**nert **G**as welding

Some of the important factors which influence WIG/TIG welding are detailed below.

Inert gases and their use / properties

For WIG/TIG welding of stainless steel and aluminium, argon or an argon-helium mixture are mostly used. Raising the helium content in argon-helium mixtures increases the build-up of heat in the arc. This makes faster welding speeds possible. In rare cases, pure helium is also used (cost factor). For nickel chromium steels and nickel alloys, argon-hydrogen mixtures are also used. Hydrogen improves the fusion penetration and therefore permits faster welding speeds.

Gas	Base metal	Spatter formation	Pore frequency	Fusion penetration form
Argon-CO_2 (CO_2 up to 2,5%)	Nickel chromium steels	Low	Average	Argon finger (narrow)
Argon	Aluminium	–	–	Argon finger (narrow)
Argon-helium	Aluminium	–	–	Good
Helium*	Aluminium	–	–	Good

** Helium is expensive (specifications of LISTEC Schweisstechnik AG)

Setting the parameters for WIG/TIG welding

For WIG/TIG welding, either direct or alternating current can be used. For aluminium, it is recommended to weld using alternating current.
For WIG/TIG welding, the negative pole is connected to the tungsten electrode.

Welding parameters for WIG/TIG welding

Sheet thickness mm	Welding current A	Electrode ø mm	Inert gas l/min	Additional wire mm
Plain carbon steel (direct current, argon, without filler metal)				
0.9	100	1.6	4	
1.5	100 - 140	1.6	5	
2.2	140 - 170	2.4	7	
Plain carbon steel (direct current, argon, with filler metal)				
1.0	80 - 100	1.6	5	1.5
1.5	100 - 120	1.6	6	2.0
2.0	120 - 150	2.4	6	2.5
Aluminium (alternating current, argon, without filler metal)				
1.5	60 - 90	1.6	7	
3.0	115 - 160	2.4	8	
Aluminium (alternating current, argon, with filler metal)				
1.0	30 - 45	1.6	4 - 6	1.2 - 2.0
1.5	60 - 85	2.4	4 - 6	2.0
2.0	70 - 90	2.4	4 - 6	2.0

Cleanliness

For WIG/TIG welding, cleanliness is very important for a durable welded joint. The workpiece flanks to be joined must be bare metal and free from oil, dirt and water.

Tungsten electrode

A variety of tungsten electrode configurations are available to the user. By varying the configuration, the ignition characteristics, arc stability, current carrying capacity and useful life can be influenced (Fig. 153/154).

Fig. 153 TIG welding device (CGA from LISTEC)

Fig. 154 WIG/TIG welding

Welding torch position

For WIG welding, a slight push (forehand) welding angle is most often used to prevent the tack welds cracking during subsequent welding. Cracked tack welds must never be welded over. They must be ground out. The belief that the cracked material is melted once again when being welded over is incorrect (Fig. 155/156).

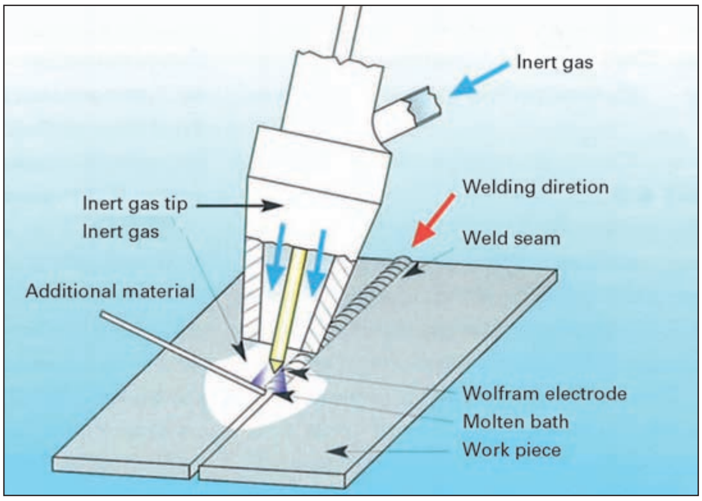


Fig. 155 WIG/TIG welding diagram

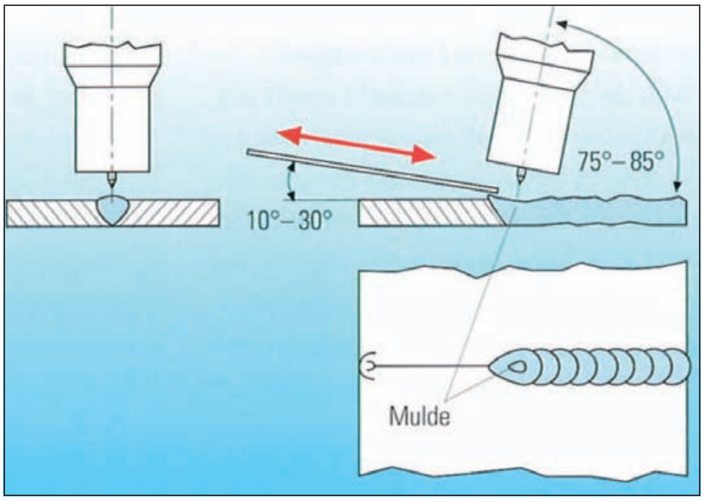


Fig. 156 WIG/TIG welding torch position

More information on the topic

Find out more about WIG/TIG or MIG/MAG welding, how to set the parameters of welding equipment, techniques, arc types, build-up welding, materials, inert gases etc. in the «PanGas» welding and cutting technology manual from Linde Gas (Fig. 157).

Fig. 157 Manual on welding and cutting technology

Distortion

Building component distortion is largely dependent on the heat applied during welding. The greater the thermal intake, the greater the measurable distortion.

Important factors which influence the thermal intake:
- The welding procedure used. The thermal intake is greater for the WIG/TIG welding procedure than the MIG/MAG welding procedure

Use the copper Jansen welding gauge to counteract the build-up of heat on the workpiece (Fig. 158) and to keep the temperature as low as possible (fastest possible welding speed).

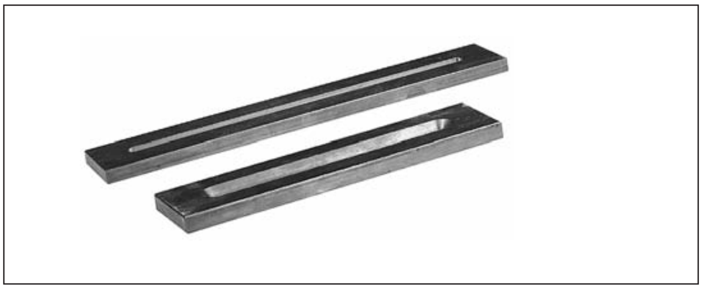


Fig. 158 Jansen copper welding gauge (Art. No. 499.261)

Note

The copper welding gauge is also used as a guide for the welding torch (Fig. 159/160).

Fig. 159 Copper welding gauge as a welding torch guide

Welding direction

To prevent or reduce distortion of the frame from welding, the weld direction is of great importance.

Welding sequence

The welding sequence refers to the targeted welding of the different seams according to a pre-defined plan.

1. From inside to outside for frames and mitred vent corners (Fig. 161 to 168)
2. From the centre to the outside for transoms (T-joints) (Fig. 169 to 172)

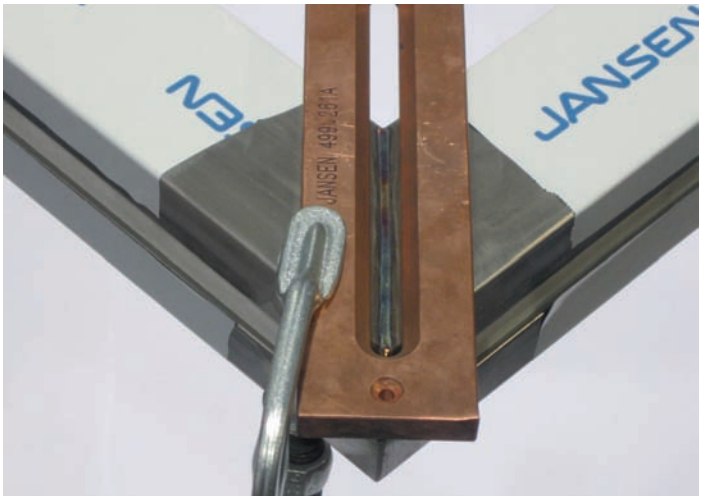


Fig. 160 Clamp the copper welding gauge firmly in place

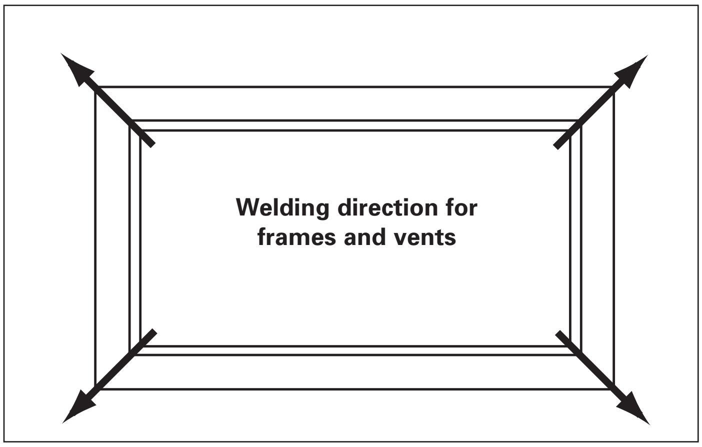


Fig. 161 *Welding direction from inside to outside*

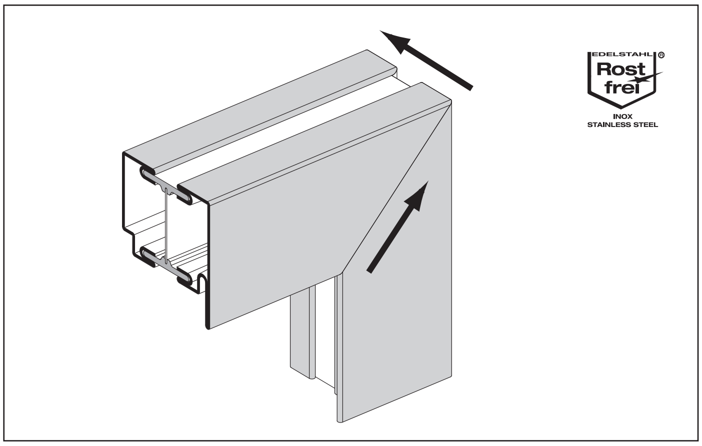


Fig. 162 *Welding direction from inside to outside*

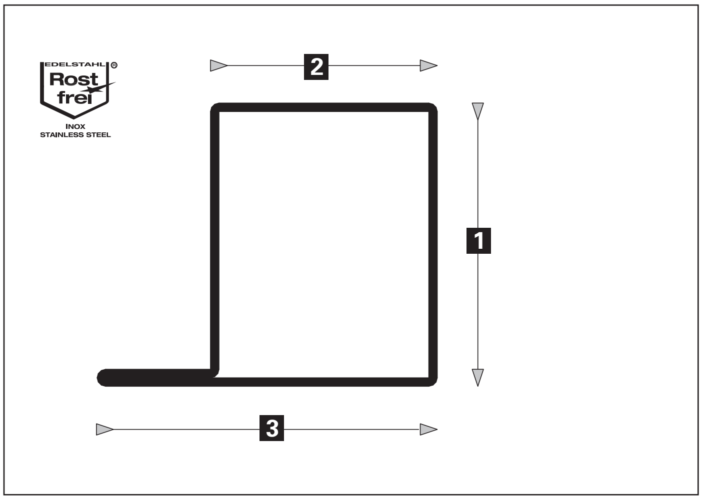


Fig. 163 *Welding sequence for Jansen-Economy stainless steel frame profile*

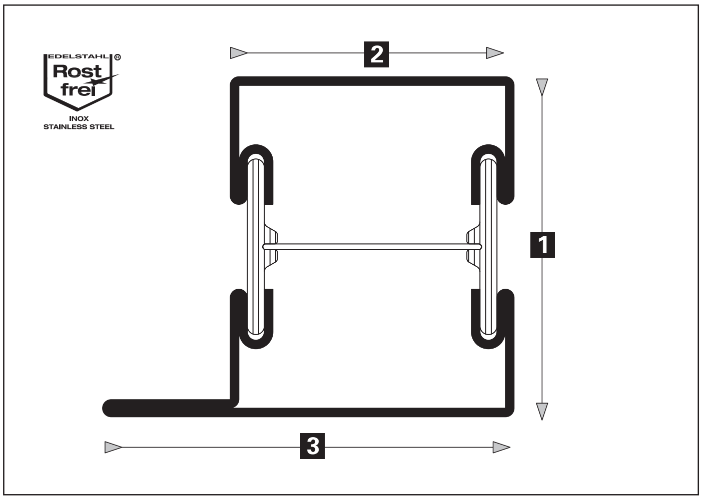


Fig. 164 *Welding sequence for Janisol stainless steel frame profile*

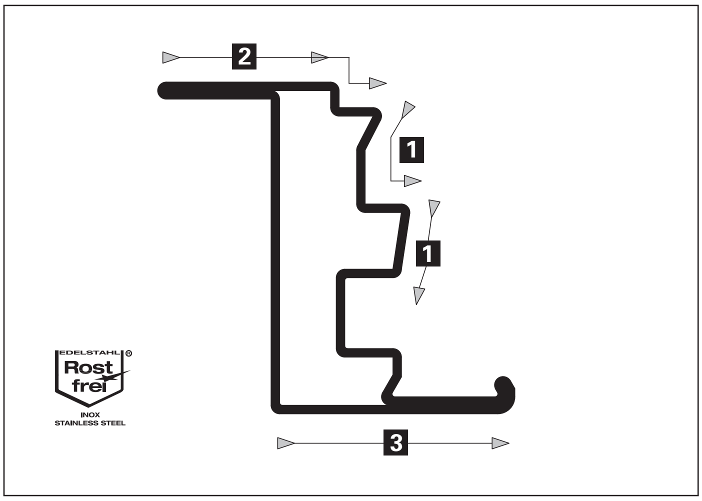


Fig. 165 *Welding sequence for Jansen-Economy stainless steel window profile*

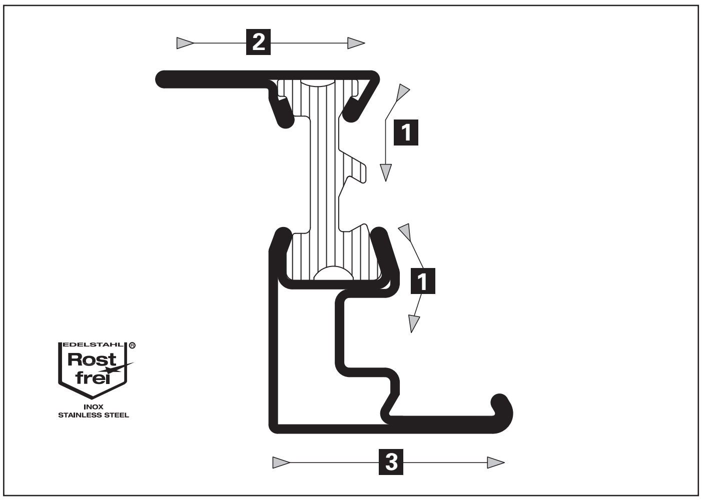


Fig. 166 *Welding sequence for Janisol stainless steel window profile*

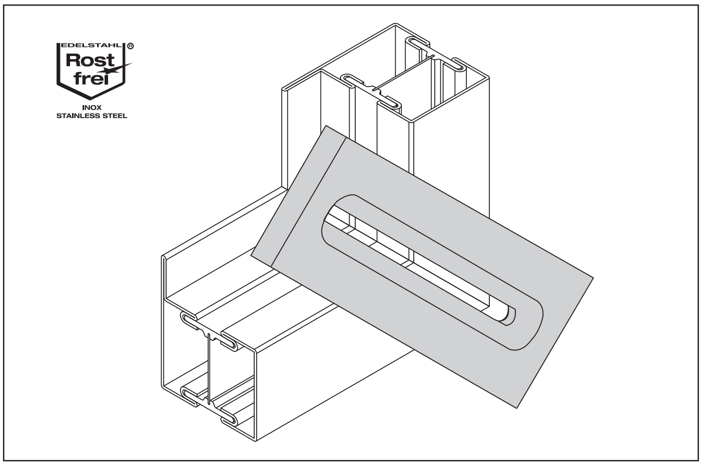


Fig. 167 Use the copper welding gauge on the inside of the profile in the mitre area

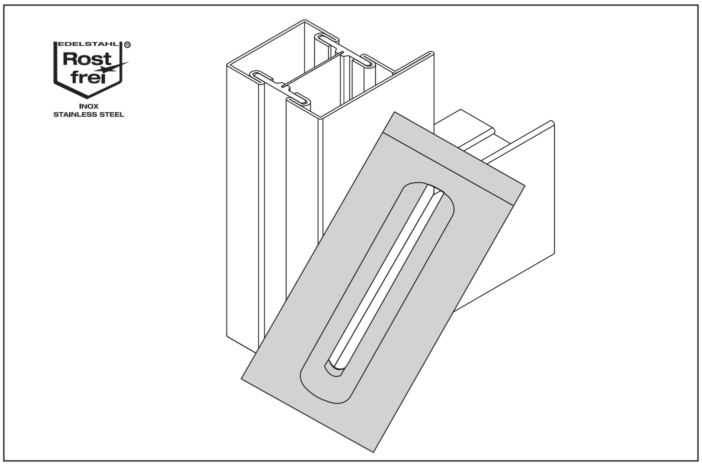


Fig. 168 Use the copper welding gauge on the outside of the profile in the mitre area

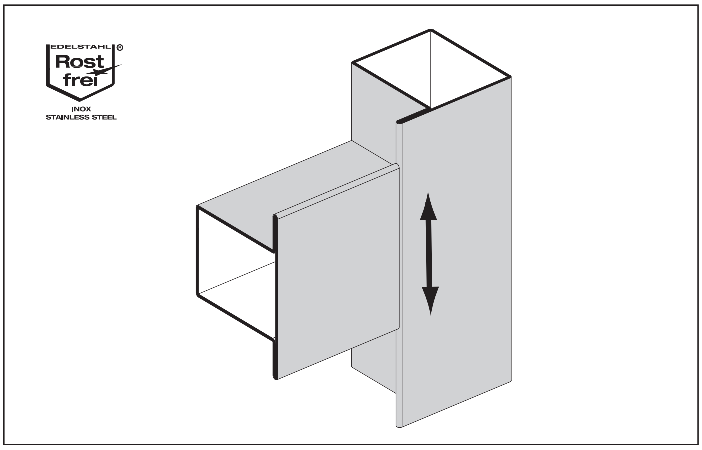


Fig. 169 Weld the T-joint from the centre to the outside

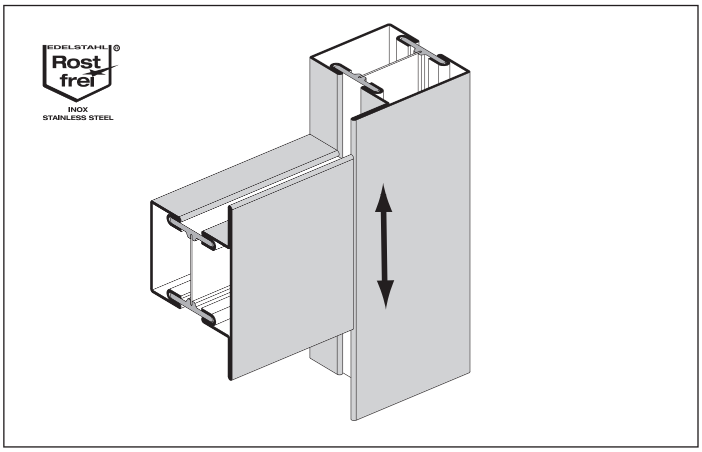


Fig. 170 Weld the T-joint from the centre to the outside

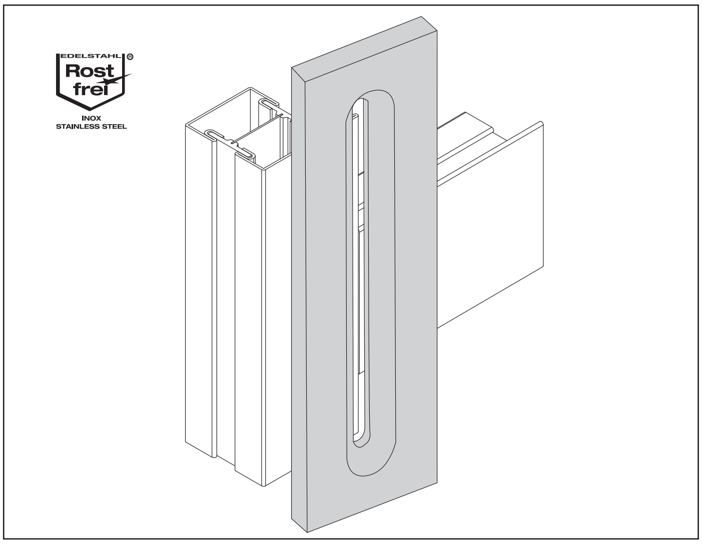


Fig. 171 Use the copper welding gauge on the outside of the profile in the T-joint area

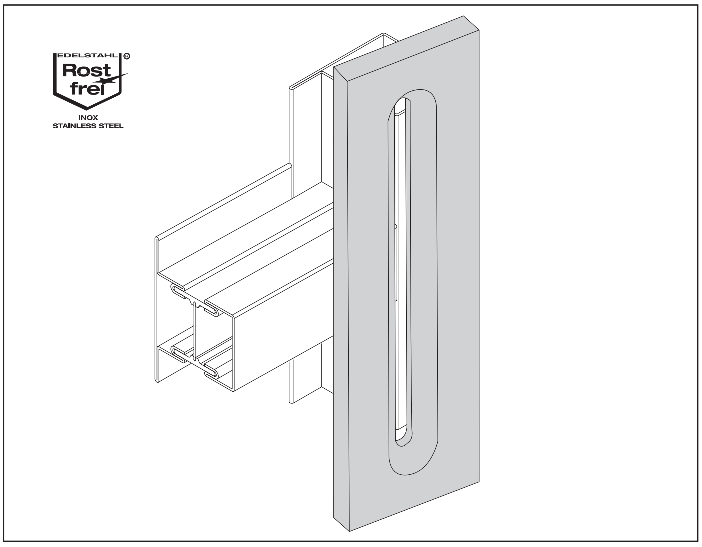


Fig. 172 Use the copper welding gauge on the inside of the profile in the T-joint area

For WIG/TIG build-up welding, always keep the additional wire in the inert gas area on the gas nozzle to prevent occlusion (Fig. 173/174).

Fig. 173 Stainless steel corner welded with additional wire (build-up welding)

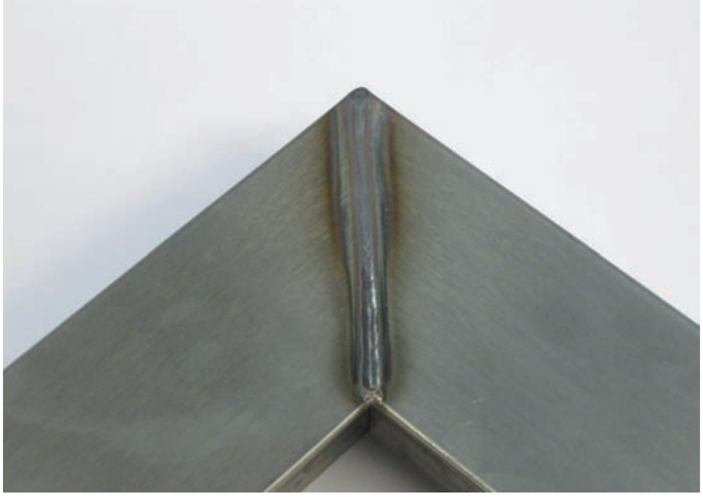


Fig. 174 Stainless steel corner welded with additional wire

As an economical option, stainless steel constructions can also be welded without additional wire (fusion welding) (Fig. 175/176).

Due to the lack of welding material, these constructions have a different finish. More detailed information can be found in the «Linishing of stainless steel constructions» section.

Fig. 175 Stainless steel corner welded without additional wire (fusion welding)

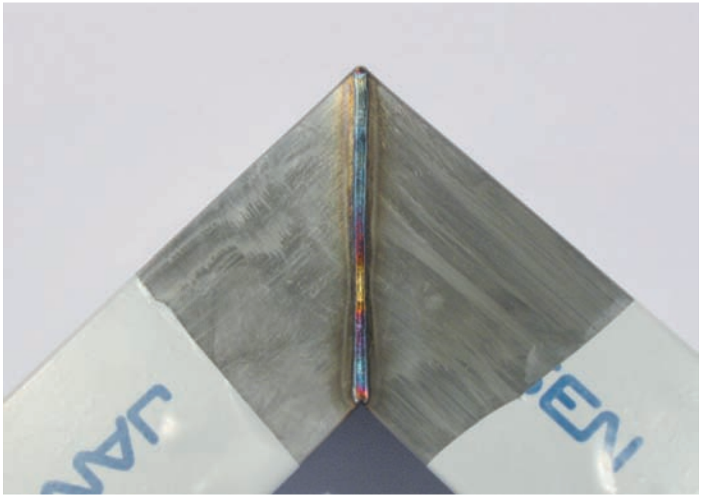


Fig. 176 Stainless steel corner welded without additional wire

Welding of door leaf frames

Experience shows that wide door leaves without a transom or without a raised sill rail tend to sag on the lock side due to the weight of the glass.
To counteract this, it is recommended to raise slightly the leading edge of the leaf (approx 1 mm) prior to welding, and to construct the frame as rigidly as possible (Fig. 177).

The following measures create rigid leaf frames:

- One or several transoms (Fig. 178)
- High sill rail (height approx. 200 mm) (Fig. 178)
- Weld the profiles continuously, where possible (Fig. 179/180)

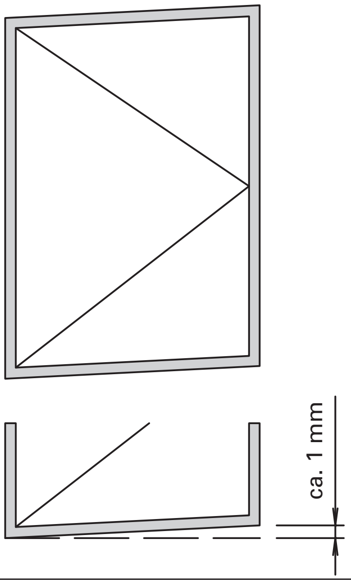


Fig. 177 Door leaf frame raised by approx. 1 mm on the lock side

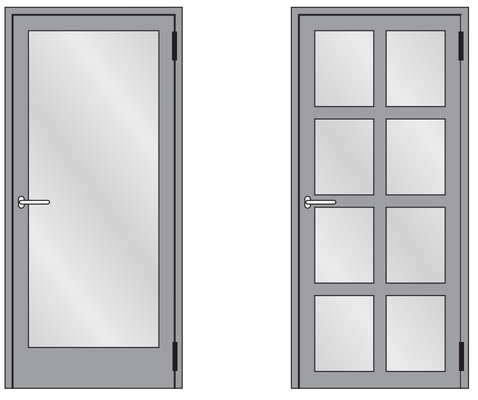


Fig. 178 Rigid leaf frame with mid-rails or a high sill rail

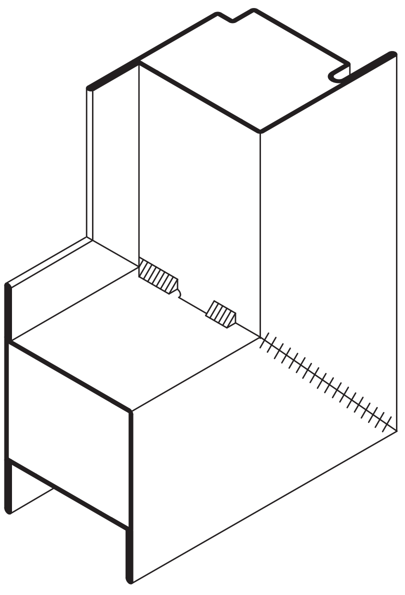


Fig. 179 Jansen-Economy 50/60 door leaf frame welded in the glazing rebate

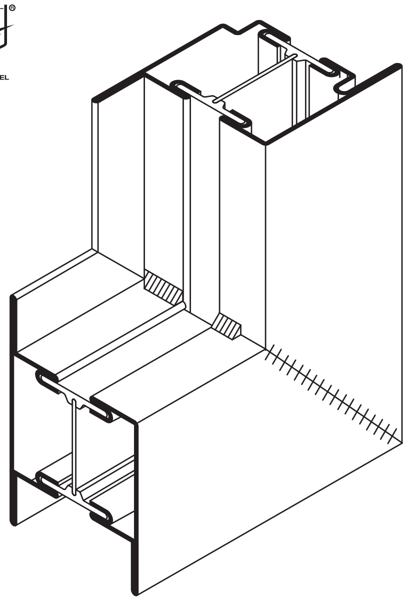


Fig. 180 Janisol door leaf frame welded in the glazing rebate

If the frame becomes slightly distorted during welding, it can be realigned using screw presses or a Quick Lock device. To prevent the profiles from becoming marked, suitable wooden supports must be used for protection (Fig. 181 to 199).

Note:
Frames should be realigned prior to linishing the weld seams!

It is also recommended to protect stainless steel profiles using adhesive foil to prevent the surfaces from becoming scratched.

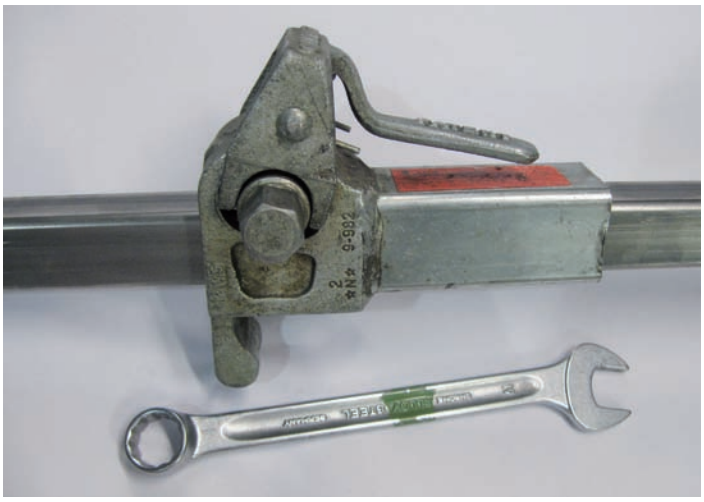


Fig. 181 Quick Lock aligning tool

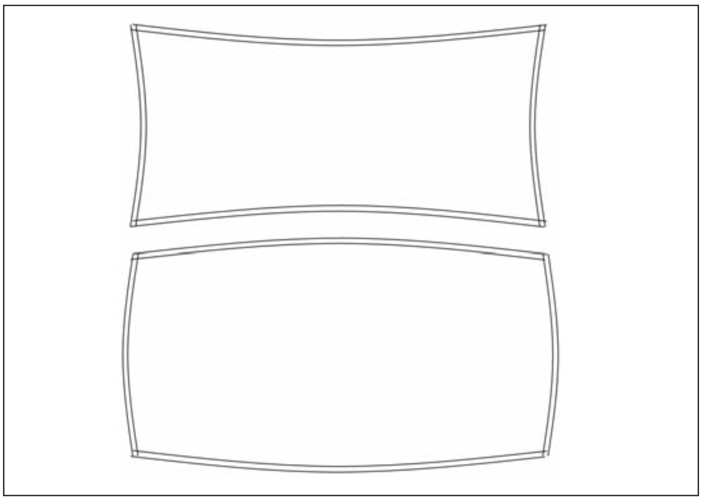


Fig. 182 Frames distorted outwards or inwards after welding

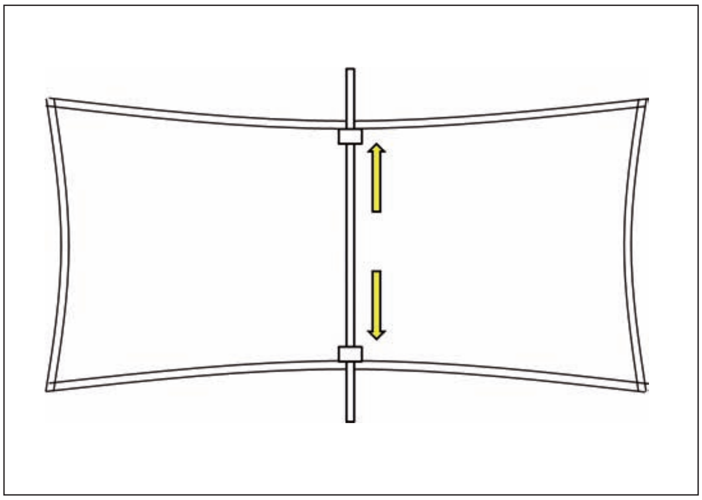


Fig. 183 Realignment using a Quick Lock device (exert pressure from inside to outside)

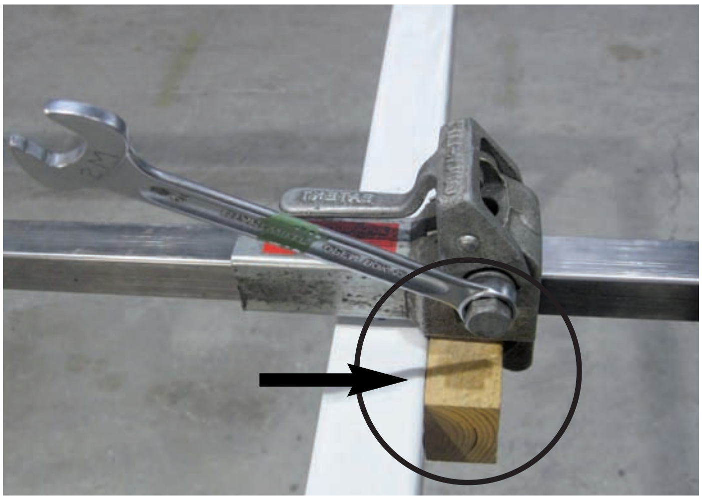


Fig. 184 Aligning tool on the profile (important to use wooden supports for protection)

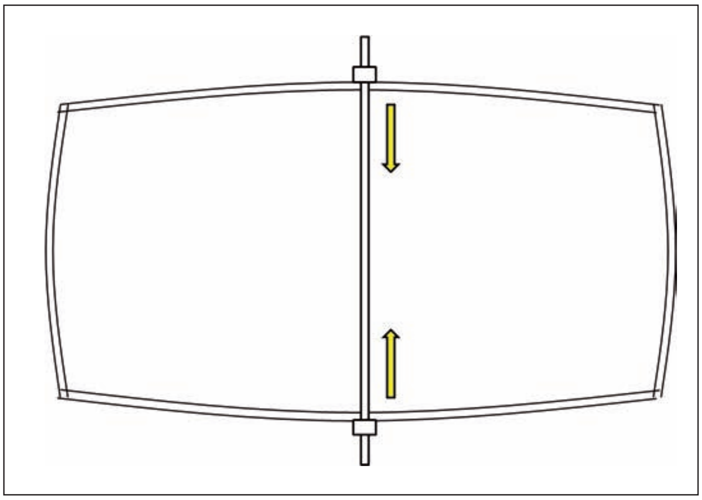


Fig. 185 Realignment using a Quick Lock device (exert pressure from outside to inside)

Fig. 186 Aligning tool on the profile (important to use wooden supports for protection)

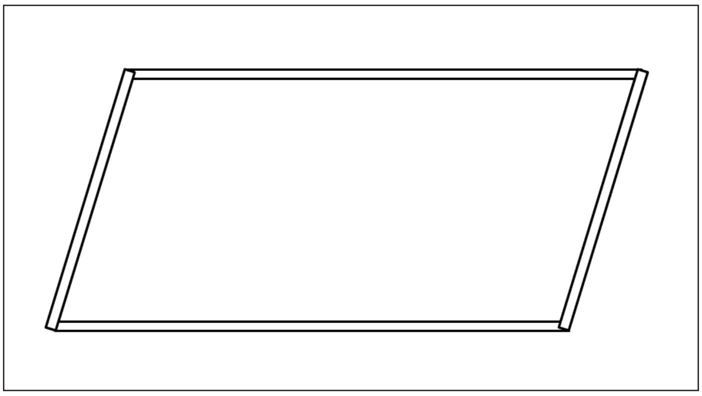


Fig. 187 Diagonal distortion of the frame after welding (cause: welding sequence not followed)

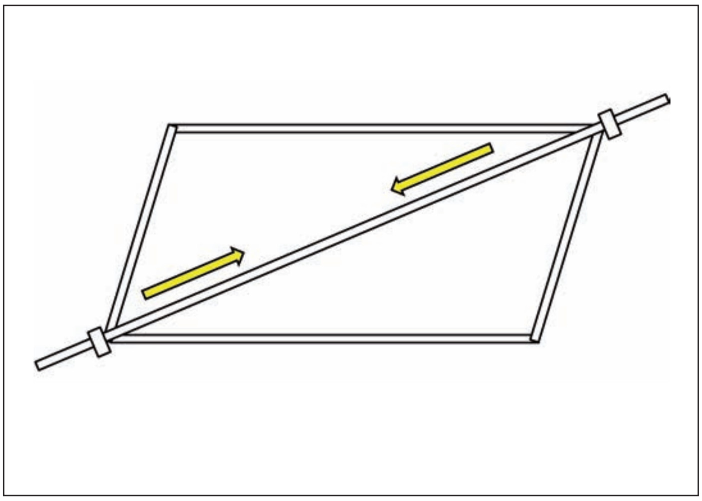


Fig. 188 Realignment using a Quick Lock device (exert pressure from outside to inside)

Fig. 189 Aligning tool on the profile (important to use wooden supports for protection)

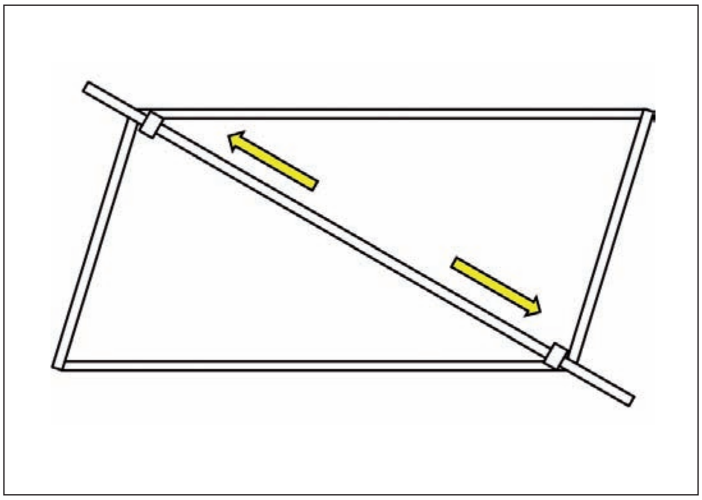


Fig. 190 *Realignment using a Quick Lock device (exert pressure from inside to outside)*

Fig. 191 *Aligning tool on the profile (important to use wooden supports for protection)*

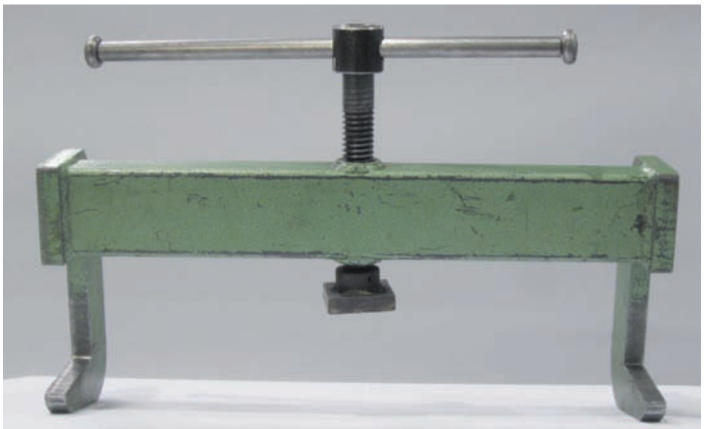


Fig. 192 *Hand-held screw press*

Fig. 193 *Stationary screw press*

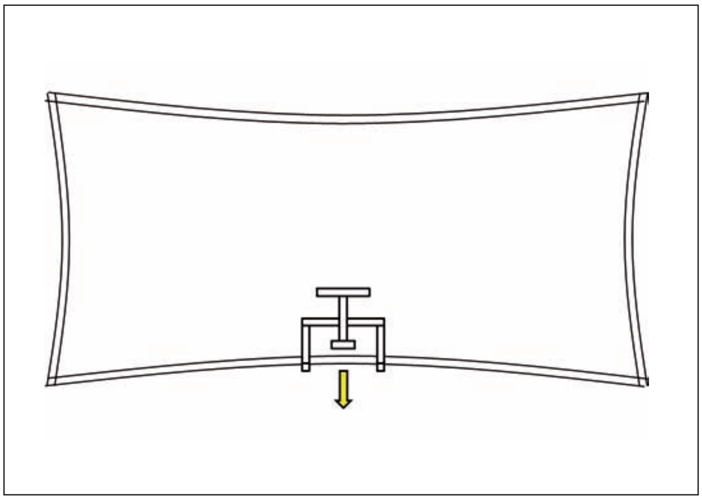


Fig. 194 *Realignment using a screw press (exert pressure from inside to outside)*

Fig. 195 *Aligning tool on the profile (important to use wooden supports for protection)*

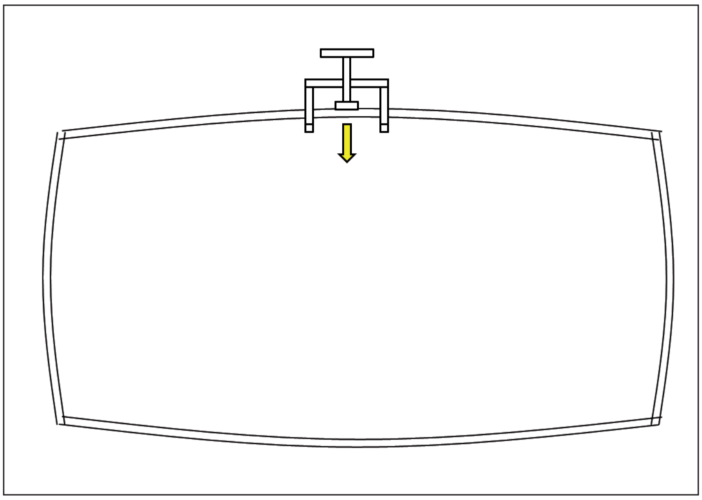


Fig. 196 Realignment using a screw press (exert pressure from outside to inside)

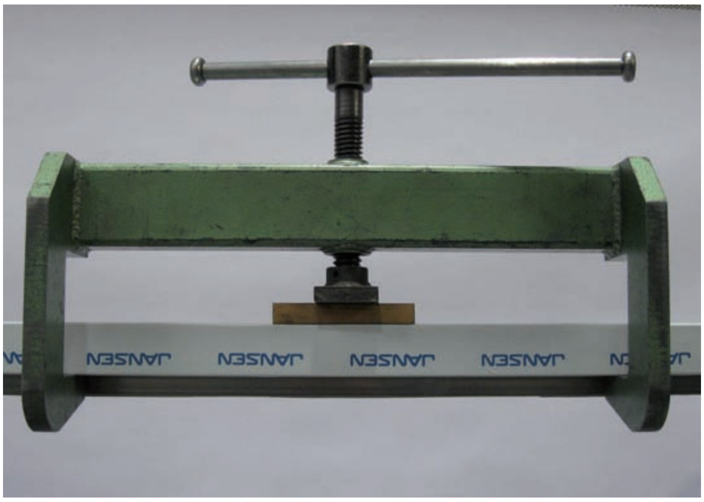


Fig 197 Aligning tool on the profile (important to use wooden supports for protection)

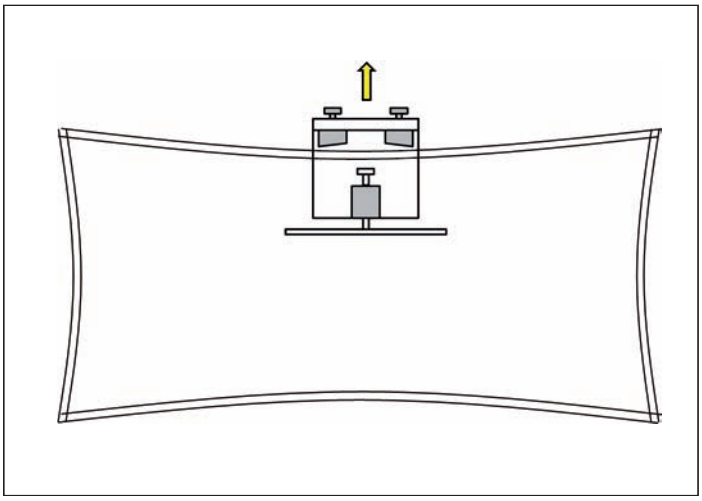


Fig. 198 Realignment using a stationary screw press (exert pressure from inside to outside)

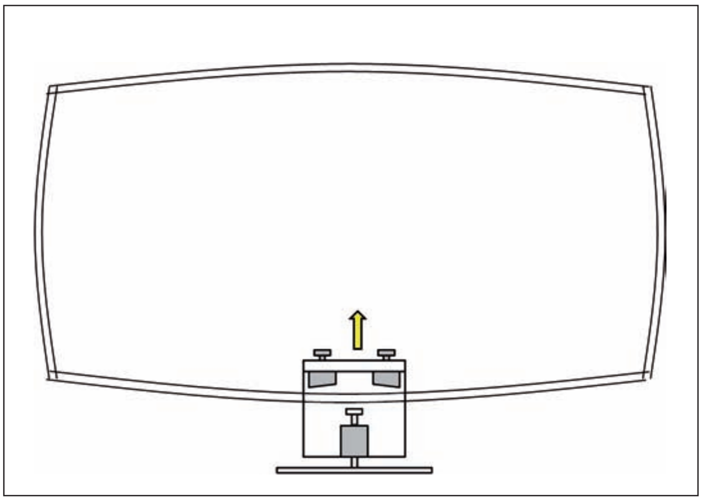


Fig. 199 Realignment using a stationary screw press (exert pressure from outside to inside)

Even stainless steel can rust...

...if the surface is not treated correctly. The corrosion resistance of stainless steels is based on the ability to form a passive layer, which essentially consists of chromium oxides.
For stainless steel to be corrosion resistant, the passive layer on the surface described above, which protects (passivates) the component from corrosion, must not have any gaps in it.

This passive layer forms independently under the influence of oxygen and the relative ambient air humidity if the chrome content in the alloy is at least 10.5% (Fig. 200).

If the surface finish of the stainless steel products is as smooth, clean and metallically pure as possible (e.g. 2B, 2R), the conditions are good for the passive layer to regenerate. Layers of scale or tempering colours are not passive layers and are therefore potential starting points for corrosion.

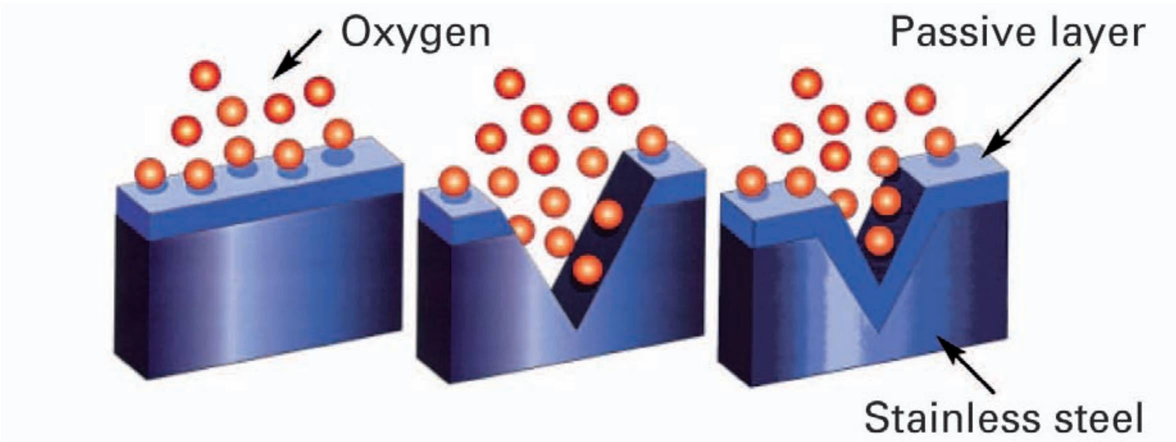
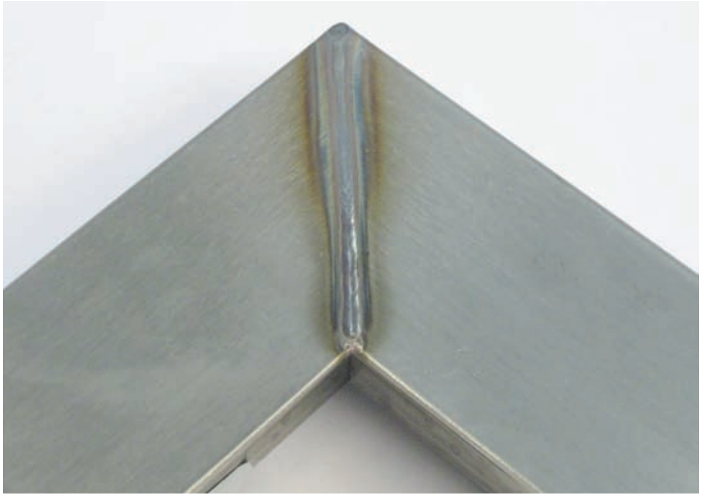


Fig. 200 Development of the passive layer

When must stainless steel be pickled?

Stainless steels must be pickled if the optimum surface finish condition for corrosion resistance is no longer guaranteed for the following reasons:

- Formation of layers of scale during heat treatment
- Formation of tempering colours due to welding, linishing, etc.
- Residues from spatter
- Deposits of metal oxides (e.g. from weld smoke or dust from linishing) or extraneous rust from another source (especially if any non-stainless steels are processed in the vicinity of the stainless steel)
- Abraded iron from processing with steel tools
- Formation of chromium carbide due to the effect of heat when rotating or drilling without using cooling lubricant
- Formation of transformed martensite caused by microstructural changes during cold forming



Pickling preparation

Prior to pickling, all interfering substances must be removed from the surfaces to permit the pickling chemicals to be able to react uniformly.
Organic lubricants, drilling oils, aliphatic cooling emulsions, preservatives, colour codes, protective foils, labels and even adhesive residues have a negative effect on the pickling result, as the pickling acids are not able to penetrate the stainless steel surface finish.

Pickling products with a hydrofluoric and nitric acid base have a slightly degreasing effect in their own right, which means that minimal traces of grease, e.g. fingerprints, do not have a negative effect on the pickling result.

- Pickling device: e.g. Surfox (LISTEC Schweisstechnik AG) (Fig. 201/202)

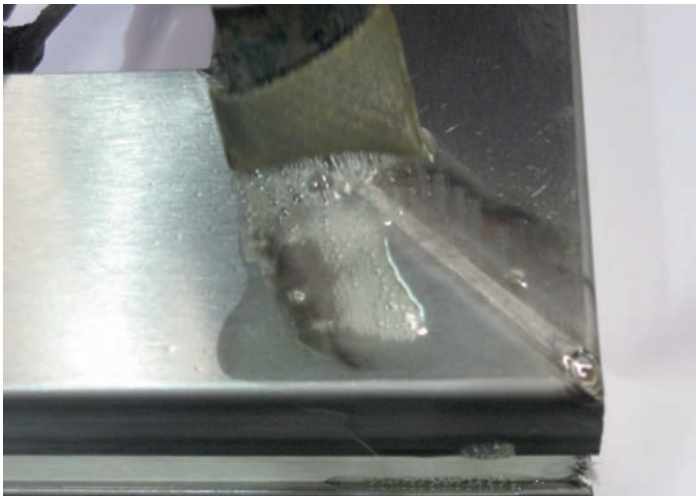


Fig. 201 Pickling the weld seam

Pickling agent and pickling times

Pickling is an intensive chemical treatment of the stainless steel surface, during which inorganic contaminants are dissolved (Fig. 203).

Selecting the correct pickling agent primarily depends on three criteria:

– What sort of stainless steel or what stainless steel structure is to be pickled?
– How severe is the scaling?
– What are the surface finish requirements for the pickled product?

Important note

After cleaning, the pickled item must be rinsed to ensure it is acid-free and must be dry before further processing. Frame constructions contain hollow spaces in which the pickling compound may remain. Such constructions must be left standing for a day before linishing. This ensures that no acid trickles out and leaves white discolouration on the stainless steel surface after the surface has been finished.

Fig. 202 Pickling device

Fig. 203 Stainless steel weld seam before and after pickling

Chemical	Mechanical
Pickling in a bath	Abrasive blasting (e.g. with corundum)
Pickling with pickling paste (seam pickling)	Glass bead blasting
Also passivate (after pickling)	CO_2 pellets
Anodic pickling and electrochemical polishing	Polishing
	Linishing
	Blasting with crushed hazelnut and walnut shells
	Stainless steel brushes and bristles

For more information about stainless steel and its preparation, refer to the following association:
Informationsstelle Edelstahl Rostfrei, Postfach 10 2205, 40013 Düsseldorf (www.edelstahl-rostfrei.de)

To process stainless steel frames, protective foil or rubber must first be applied to the contact surface of the trestles. Otherwise, the stainless steel frames to be linished may move with the vibration of the polishing machine, leaving scratches on the linished surface (Fig. 204/205).

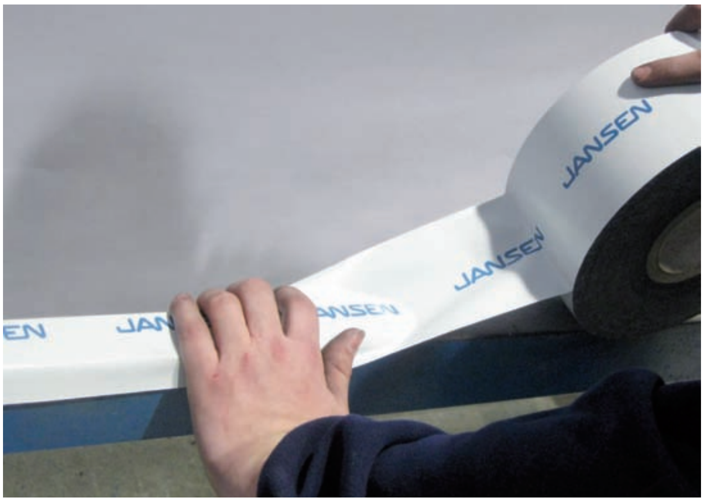


Fig. 204 Mask the trestles with protective foil

Fig. 205 Fit rubber to the trestle

Additional clamping of the frame construction with trestles prevents slippage and fixes the frame construction securely in place.

Important:
Use wooden or plastic supports to protect the linished stainless steel surface (Fig. 206/207).

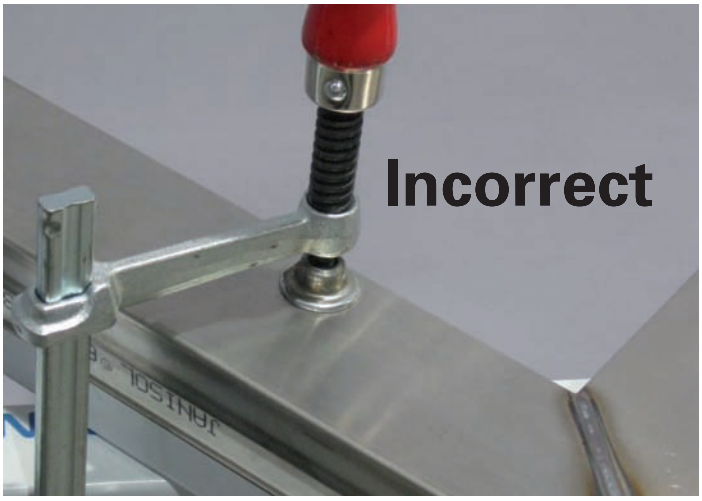


Fig. 206

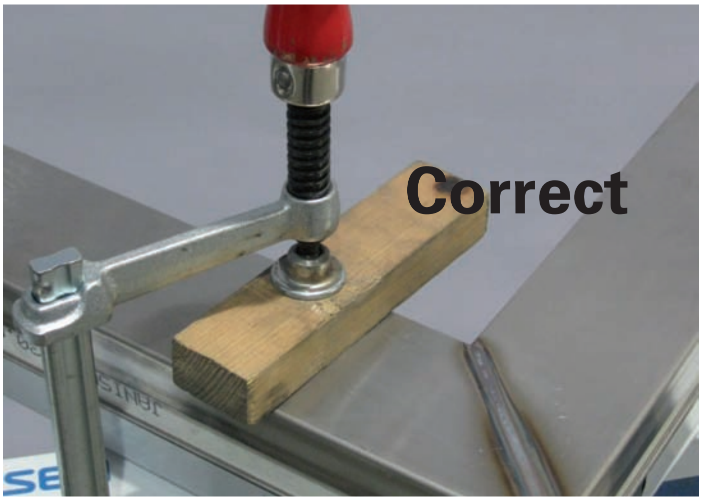


Fig. 207 Use wooden or plastic supports to clamp the frame in place

To linish the weld seams we recommend using angle grinding machines and fibre discs with an infinitely adjustable speed setting (Fig. 208/209).

Too much pressure can create heat damage leading to discolouration of the material. It must be ensured that no polishing grooves result from using too coarse a grit, as this is very difficult to remove before finishing.
If possible, linish welded corners from the inside of the corner. This will provide you with as large a contact surface as possible and the machine can then run more accurately (Fig. 210).

In the following images (Fig. 208 to 264) we are referring to the linishing products and recommendations of 3M AG.

Important
When linishing stainless steel profiles, ensure that the pressure applied to the abrasive disc is not too high. Otherwise, the material overheats in the linished corner, which then warps. At this stage, such a defect cannot be corrected.

Protective measures
A breathing mask and safety glasses must be worn when linishing and welding stainless steel (Fig. 211).

Fig. 208 Polishing machines for stainless steel

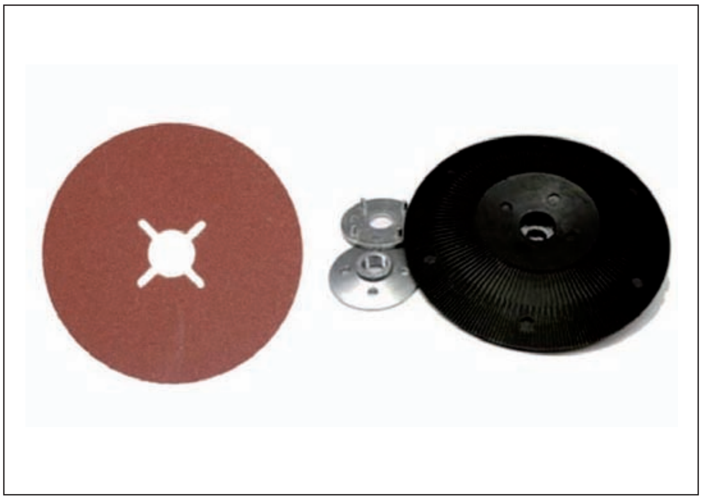


Fig. 209 Fibre disc and back-up pad

Fig. 210 Machine the welded corner from inside to outside

Fig. 211 Use a breathing mask and safety glasses

Type 1

Profile welded with additional wire.
Build-up welding.
The required finish in 5 steps.

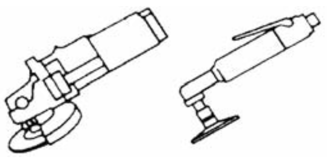
Recommended process for pre-polished stainless steel profiles

Starting point:
WIG/TIG welded profile (with additional wire) as per the chapter «Welding of stainless steel profiles» (Fig. 212).

Step 1

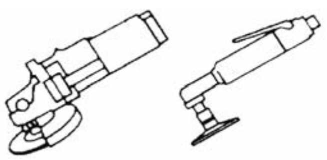
Roughly linished:
For example, using an angle grinder (an infinitely adjustable speed setting is advisable), 3M high performance fibre disc especially for stainless steel, 100-120 grit, and a suitable high performance back-up pad (Fig. 213).

Note the linishing direction of the profiles when rough linishing.



Linishing direction
In most cases, stainless steel profiles are supplied with a linish of 200-240 grit.
After the parts are welded together, the linishing directions are at right angles to one another. To achieve the perfect finish, we recommend that the profiles are linished from inside to outside (Fig. 214 to 217).

Aim:
To create a geometrically even surface for further processing.



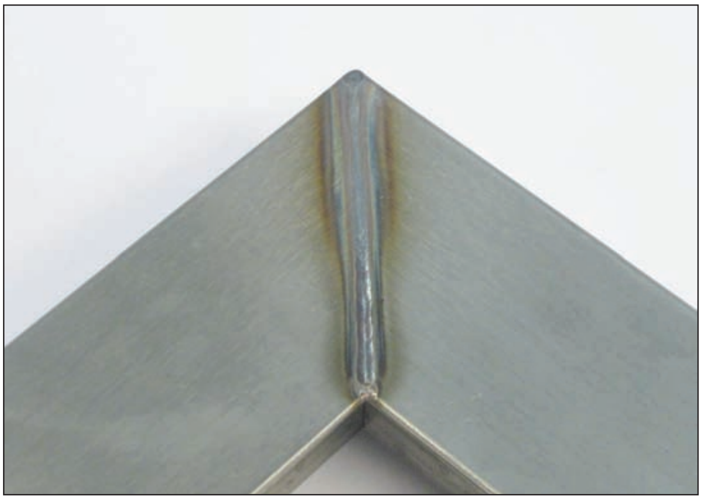


Fig. 212 WIG/TIG profile corner welded with additional wire (build-up welding)

Fig. 213 Angle grinder with 3M high performance fibre disc specially for stainless steel grit 100-120

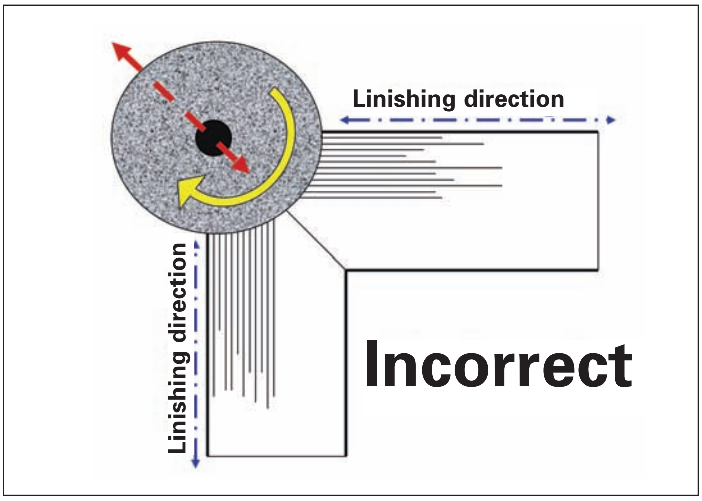
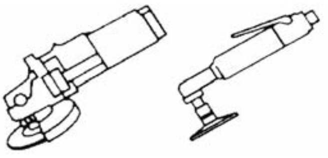


Fig. 214 Never linish the profile against the linishing direction

Wear down the weld seam by applying light pressure to the workpiece. Adhere to the linishing direction (from inside to outside) and avoid overheating the base metal. A little more than hand-hot.
If the material overheats, stop the process immediately and move on to the next corner. In the meantime, the overheated material can cool down again. You can also cool the overheated area down using compressed air.



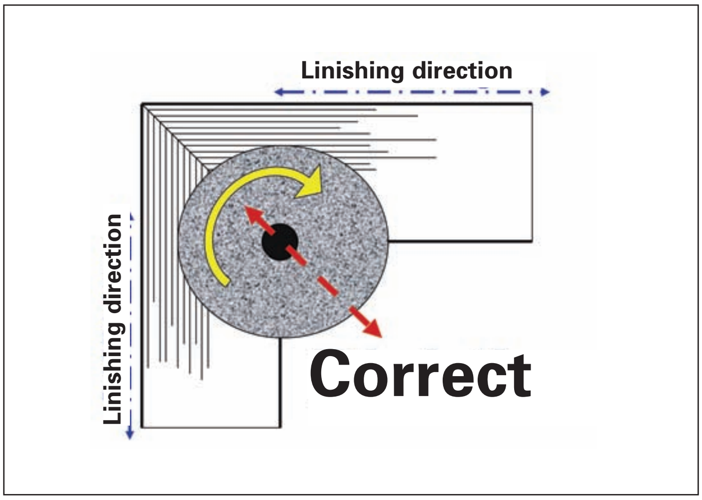
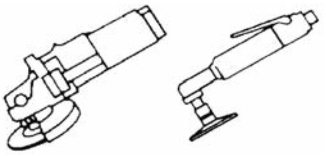


Fig. 215 *Always linish the profile from inside to outside*

When using a new fibre disc, you will notice that it leaves deeper streaks. These scratches will become finer the more the fibre disc is used.
We recommend that corners with which you began are linished again using a disc that has already been used.
This procedure makes the next step (intermediate linishing) considerably easier.



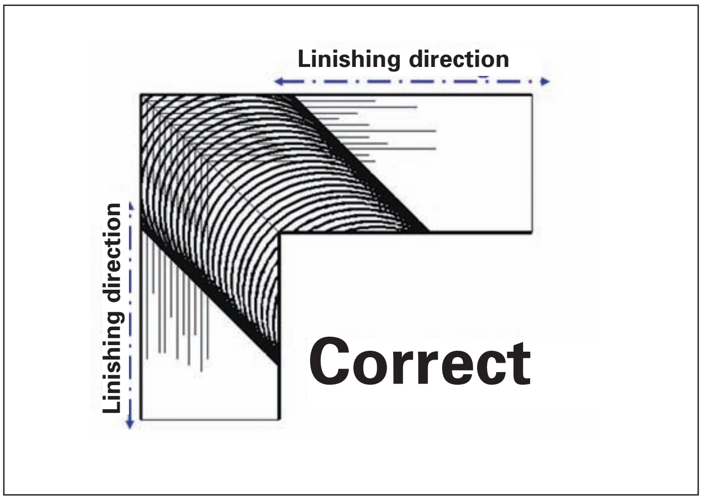


Fig. 216 *Finish after linishing*

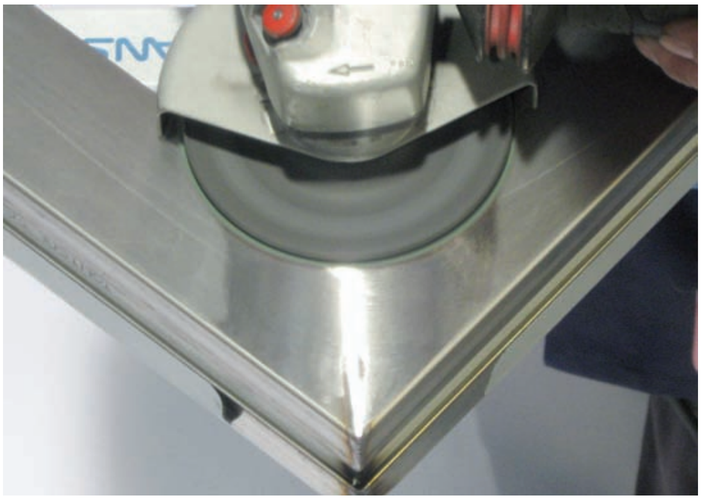


Fig. 217 *Using the polishing machine*

Finish after rough linishing (Fig. 218)

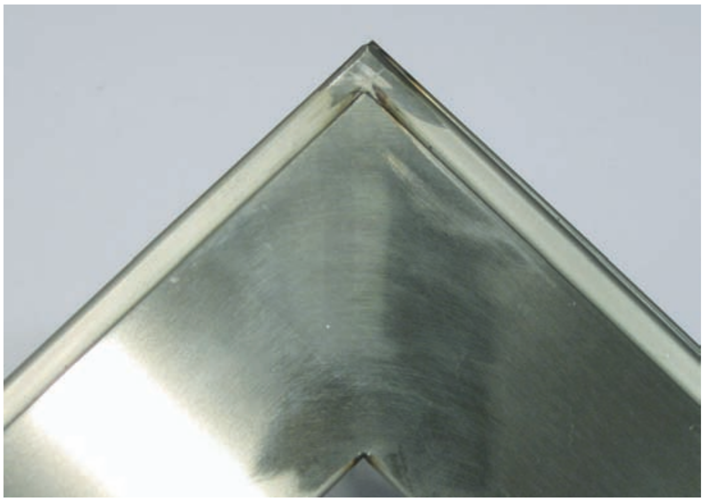


Fig. 218 *Profile after rough linishing*

Step 2

After rough linishing, lightly file the inner and outer edges of the welded corners (Fig. 219).

For stainless steel, you cannot use a file which you have previously used on standard steel. In addition, we recommend that the corners are machined before they are finely linished.

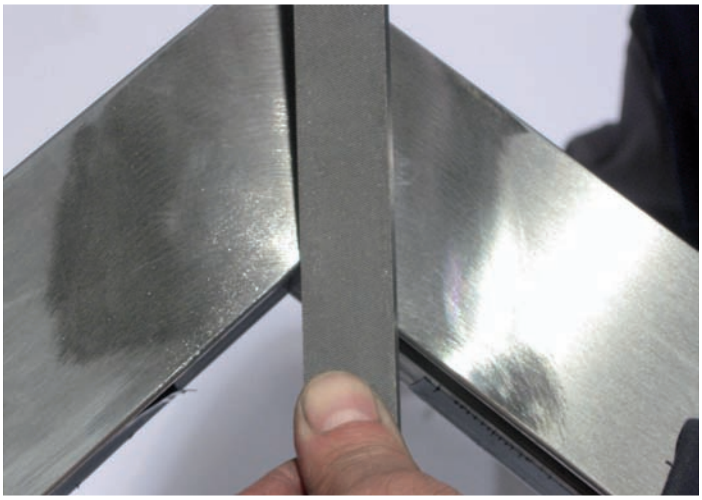


Fig. 219 *Filing the mitred corner*

Step 3

Intermediate linishing
For example, using a PTX polishing machine (an infinitely adjustable speed setting is advisable), 3M Trizact sleeve A65 and a suitable pneumatic roller (Fib. 220).

Aim
Remove the linishing scratches made by the fibre disc. Always work in the linishing direction.

Fig. 220 *PTX polishing machine, 3M Trizact sleeve A65 and suitable pneumatic roller*

Intermediate linishing with a linear polishing machine and Trizact linishing sleeve.
Ensure that all the streaks from the rough linishing have been removed. Otherwise, they will be visible at the end (Fig. 221).

Note
Ensure that the pneumatic roller is not over-inflated. It is recommended that after filling the roller, e.g. with an air line or using a hand pump, some pressure must be released. The roller should then be easy to push in. This ensures that it is easier to adjust the Trizact linishing sleeve to the surface being processed when linishing.

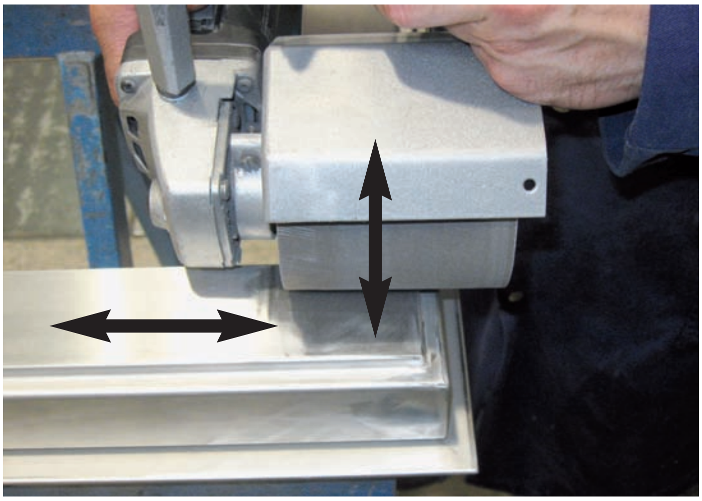


Fig. 221 Intermediate linishing with a linear polishing machine and linishing sleeve

Profile after intermediate linishing (Fig. 222)

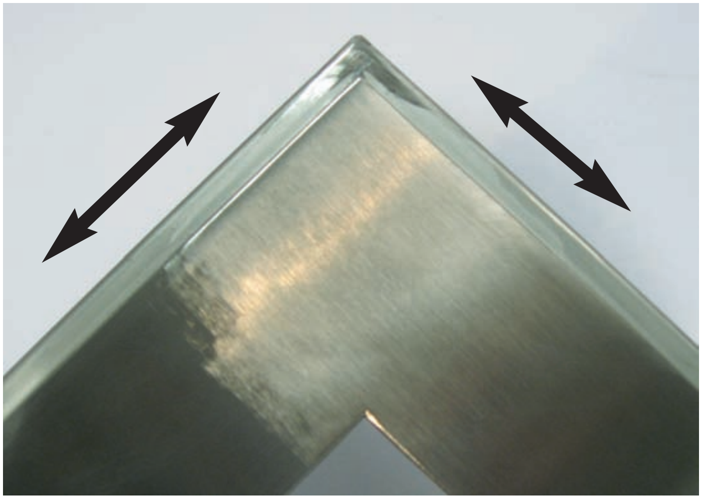


Fig. 222 Polish before the mitre is linished

Step 4

To create a clean mitre joint, use a PTX polishing machine, pneumatic roller, Trizact A65 and 3M self-adhesive tape, highly compressed for high mechanical loading (Fig. 223).

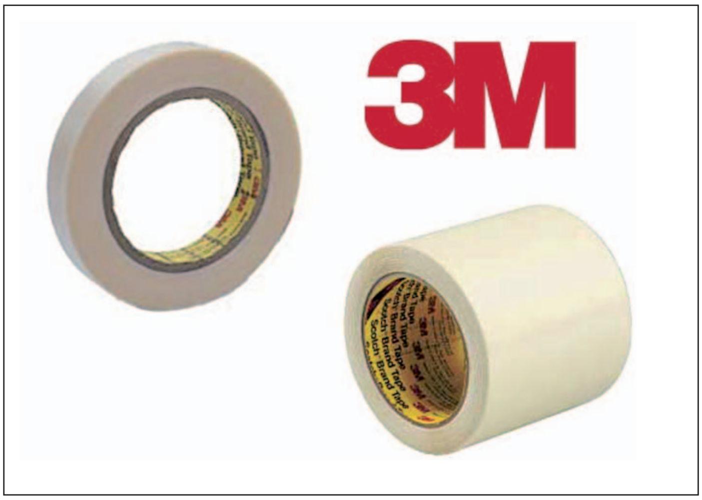


Fig. 223 3M tape

Mask one side of the profile along the mitre with 3M tape (Fig. 224).
Ensure that the tape is applied approximately 1 mm from the mitre. By using the round linishing sleeve, the finish ends exactly on the mitre.

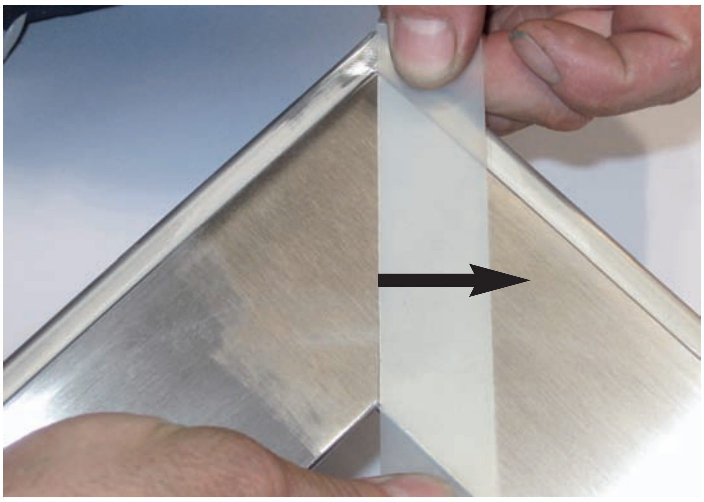


Fig. 224 Apply 3M tape to one side of the profile

Use the linear polishing machine and the Trizact sleeve along the length of the tape to create the finish (Fig. 225).

Aim
To create a clean mitre cut and to prepare for the brush finish.

Note
Ensure that the Trizact linishing sleeve runs right on the edge of the tape (see arrow). This creates a clean mitre line. Also ensure that the profile being machined does not overheat. Otherwise, the adhesive particles from the tape may loosen and be incorporated into the profile surface.

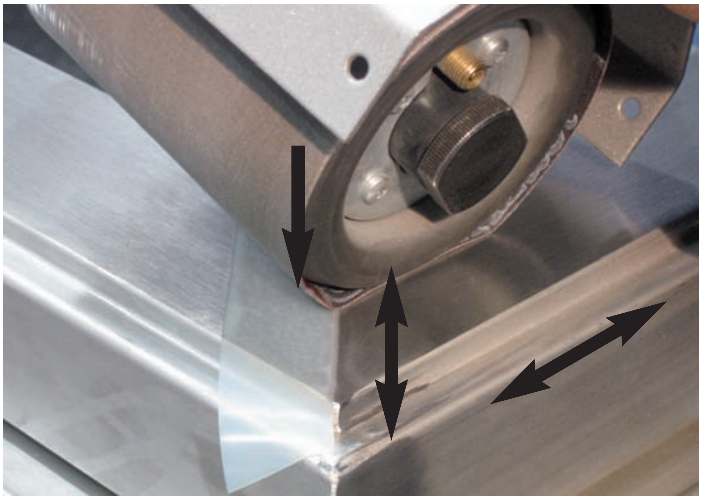


Fig. 225 Run the polishing machine along the tape

Move the 3M tape to the side of the mitre that has already been machined (Fig. 226) and repeat the linishing procedure.

Ensure that the tape is once again applied approximately 1 mm from the mitre.

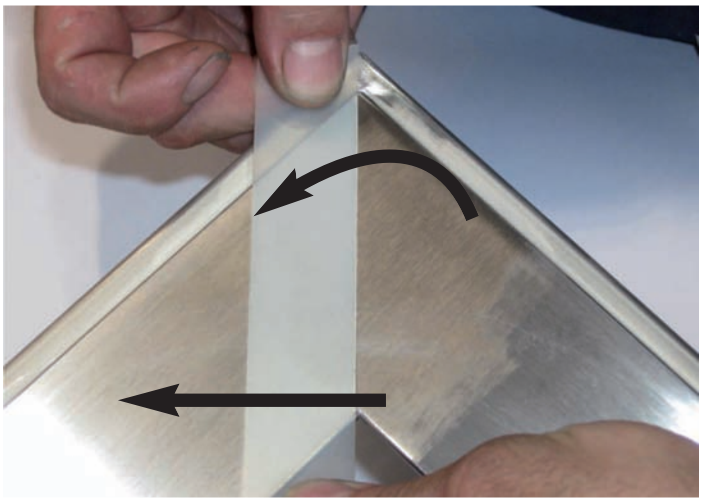


Fig. 226 Apply the 3M tape to the side that has already been machined

Profile after intermediate linishing as preparation for the brush finish.
After completing this step, make sure the streaks are in line with the finish direction (Fig. 227).

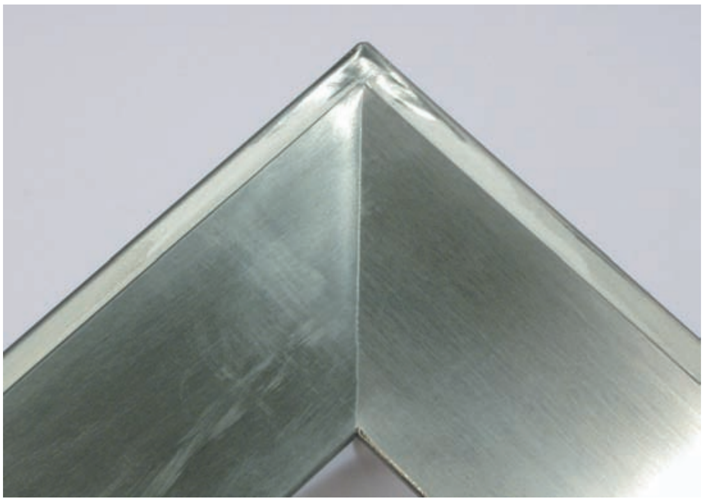


Fig. 227 Finish after intermediate linishing as preparation for the finish

Step 5

Line finish
For example, match the grit on the finish of the profiles with the PTX polishing machine and 3M CS-MB A Coirs Scotch Brite brush (Fig. 228).

Fig. 228 PTX polishing machine and 3M CS-MB A Coirs Scotch-Brite brush

Create a line finish in exactly the same way as for the intermediate finish (step 4). Mask one side of the mitre joint with 3M tape.

Important
Apply 3M tape exactly on the mitre and then create the linished finish along the tape (Fig. 229). If the linished finish does not match the pre-polished profile, adjust to a finer or rougher brush along the profile.

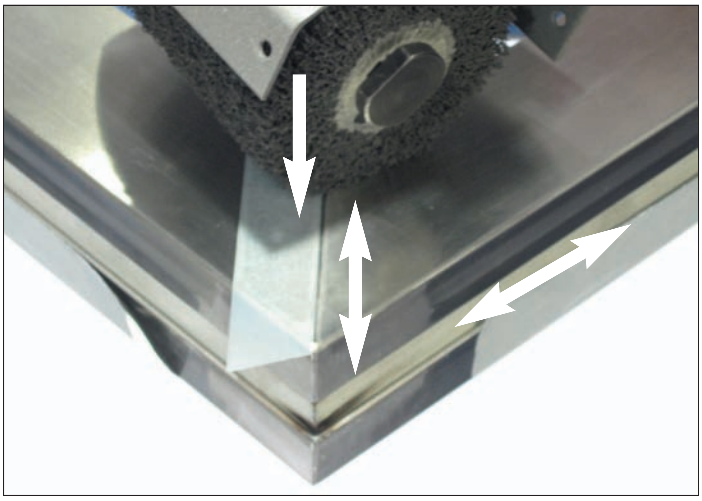


Fig. 229 Run the polishing machine along the tape

Move the 3M tape to the machined side of the mitre (Fig. 230) and repeat the linishing procedure.

Profile after finishing (Fig. 231)

Note
To avoid going over the same section when linishing, it is recommended to always run the machine over a longer distance. If necessary linish the whole profile length once more as a final operation.

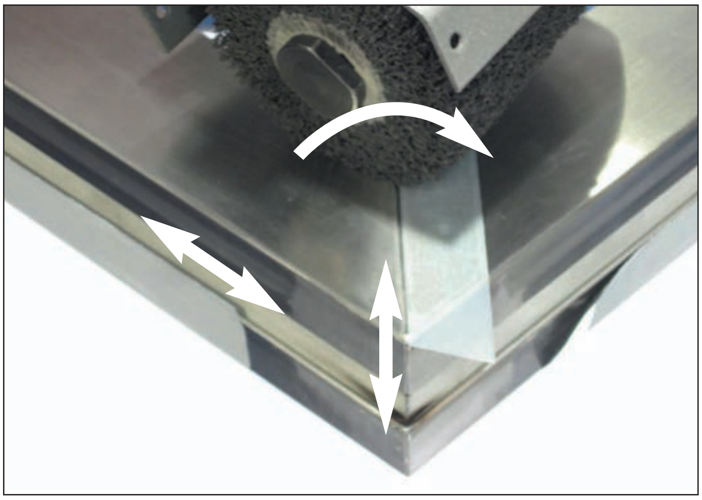


Fig. 230 Run the polishing machine along the tape

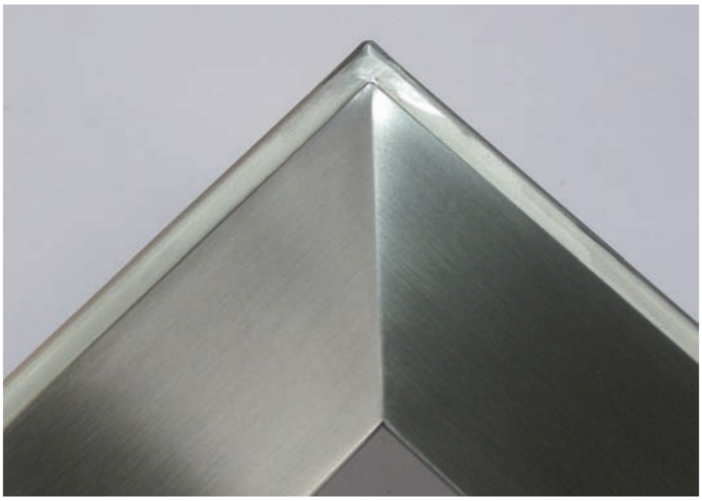


Fig. 231 Profile corner after the line finish

Type 2

Profile welded with additional wire.
Build-up welding.
The required finish in 4 steps.

Recommended process for pre-polished stainless steel profiles

Starting point:
WIG/TIG welded profile (with additional wire) as per the chapter «Welding of stainless steel profiles» (Fig. 232).

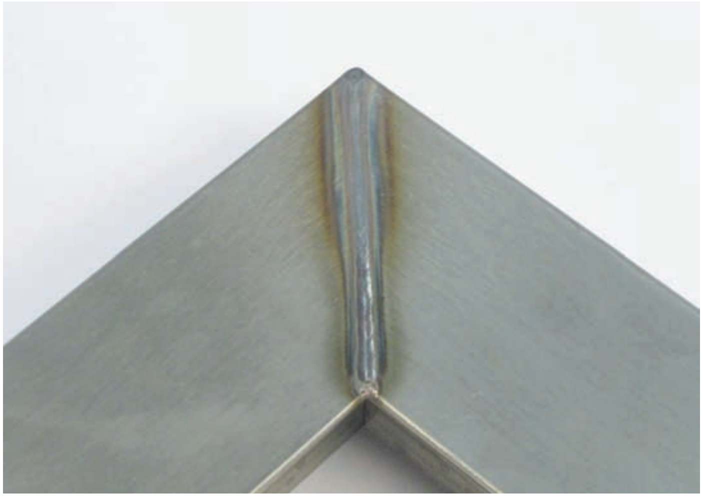


Fig 232 WIG/TIG profile corner welded with additional wire (build-up welding)

Step 1

Roughly linished:
For example, using an angle grinder (an infinitely adjustable speed setting is advisable), 3M high performance fibre disc especially for stainless steel, 100-120 grit, and a suitable high performance back-up pad (Fig. 233).

Note the linishing direction of the profiles when rough linishing

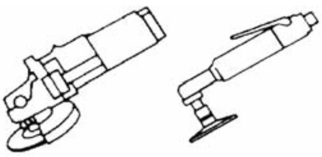
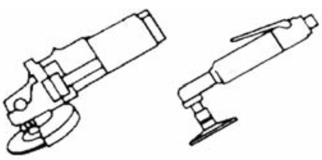


Fig. 233 Angle grinder with 3M high performance fibre disc specially for stainless steel grit 100-120

Linishing direction
In most cases, stainless steel profiles are supplied with a linish of 200-240 grit.
After the parts are welded together, the linishing directions are at right angles to one another. To achieve the perfect finish, we recommend that the profiles are linished from inside to outside (Fig. 234 to 237).

Aim:
To create a geometrically even surface for further processing.



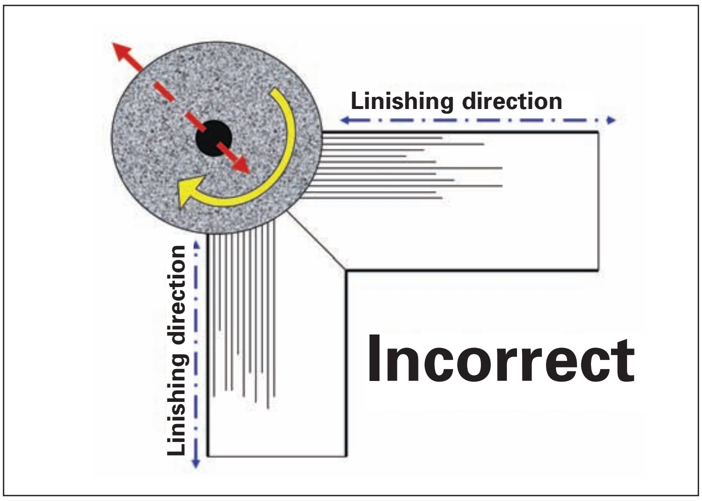
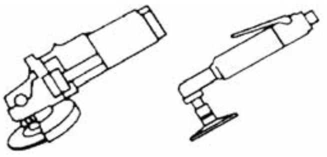


Fig. 234 Never linish the profile against the linishing direction

Wear down the weld seam by applying light pressure to the workpiece. Adhere to the linishing direction (from inside to outside) and avoid overheating the base metal. A little more than hand-hot.
If the material overheats, stop the process immediately and move on to the next corner. In the meantime, the overheated material can cool down again. You can also cool the overheated area down using compressed air.



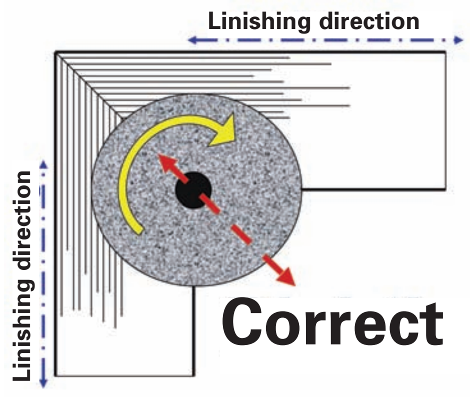
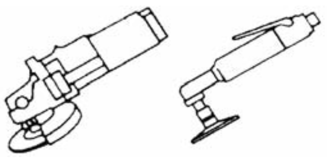


Fig. 235 Always linish the profile from inside to outside

When using a new fibre disc, you will notice that it leaves deeper streaks. These scratches will become finer the more the fibre disc is used.
We recommend that corners with which you began are linished again using a disc that has already been used.
This procedure makes the next step (intermediate linishing) considerably easier.



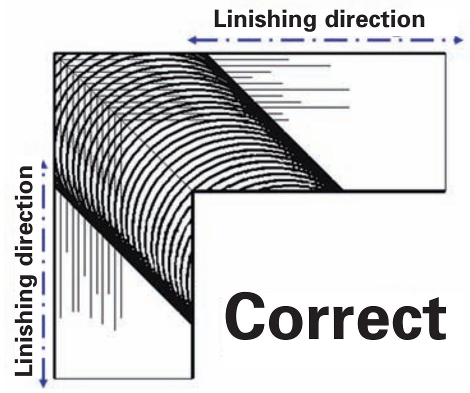


Fig. 236 Finish after linishing

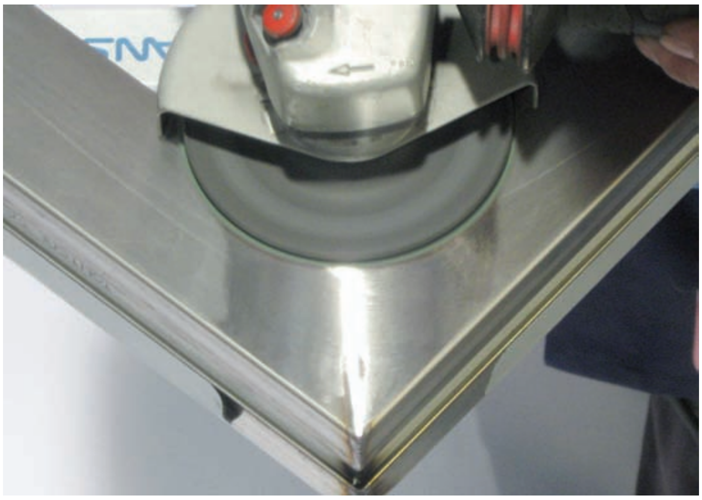


Fig. 237 Using the polishing machine

Finish after rough linishing (Fig. 238)

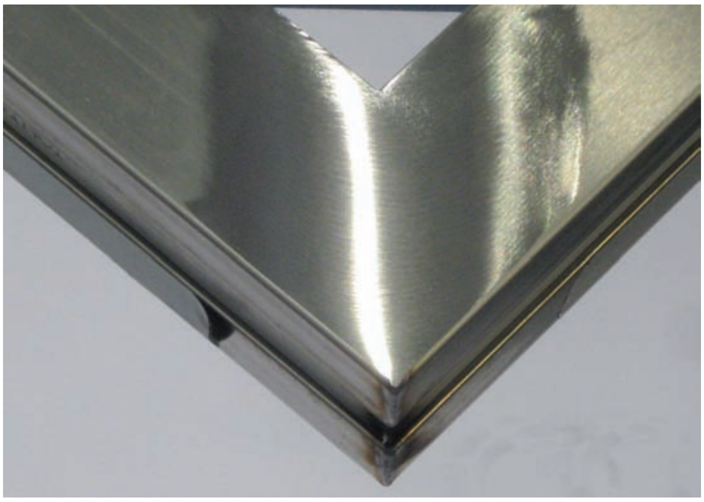


Fig. 238 Profile after rough linishing

Step 2

After rough linishing, lightly file the inner and outer edges of the welded corners (Fig. 239).

For stainless steel, you cannot use a file which you have previously used on standard steel. In addition, we recommend that the corners are machined before they are finely linished.

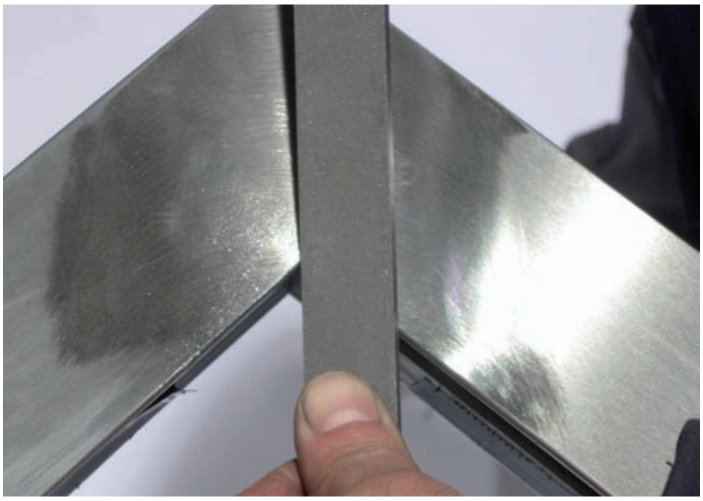


Fig. 239 Filing the mitred corner

Step 3

Intermediate linishing
For example, using an angle grinder (an infinitely adjustable speed setting is advisable), 3M Trizact Velcro disc A45, ø approx. 115 mm and a suitable back-up pad for the Velcro disc (Fig. 240).

Aim
To remove the linishing scratches made by the fibre disc. Linishing procedure (linishing direction) as shown in Fig. 235 to 237.

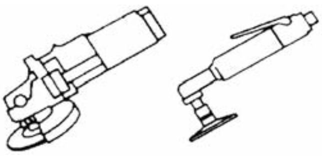


Fig. 240 Angle grinder, 3M Trizact Velcro disc A5, ø approx. 115 mm

Ensure that all the steaks from the rough linishing have been removed.

Begin in the mitred corner and then linish the rough linishing streaks with light pressure. Ensure that all the rough linishing streaks are removed at this stage, otherwise they will remain visible (Fig. 241 to 245).

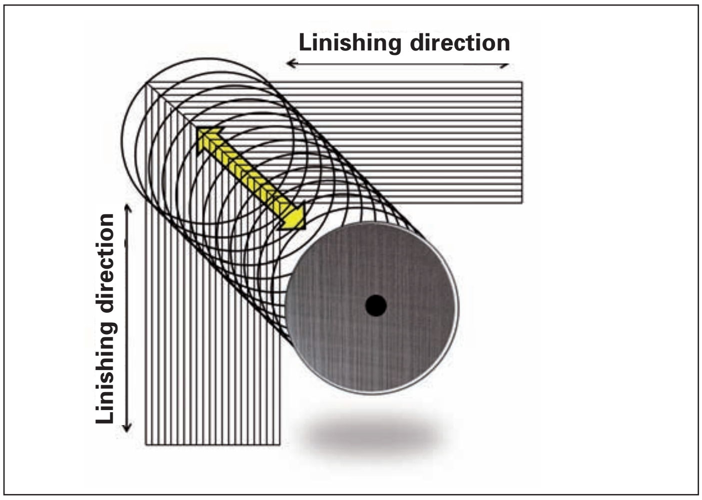


Fig. 241 *Begin in the mitred corner with Intermediate linishing*

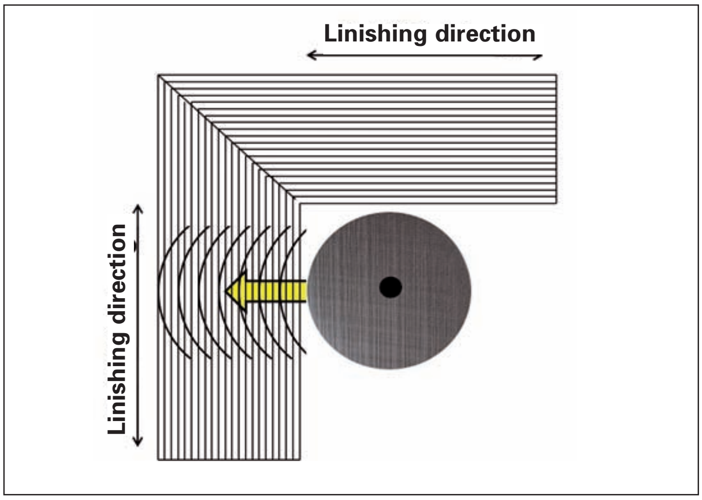


Fig. 242

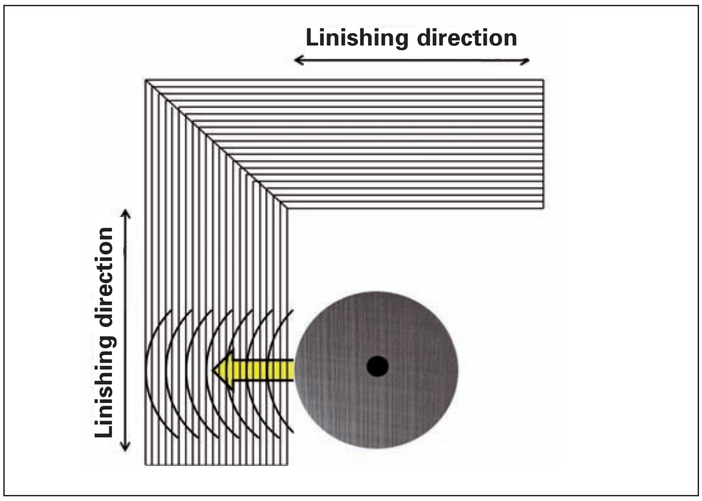


Fig. 243

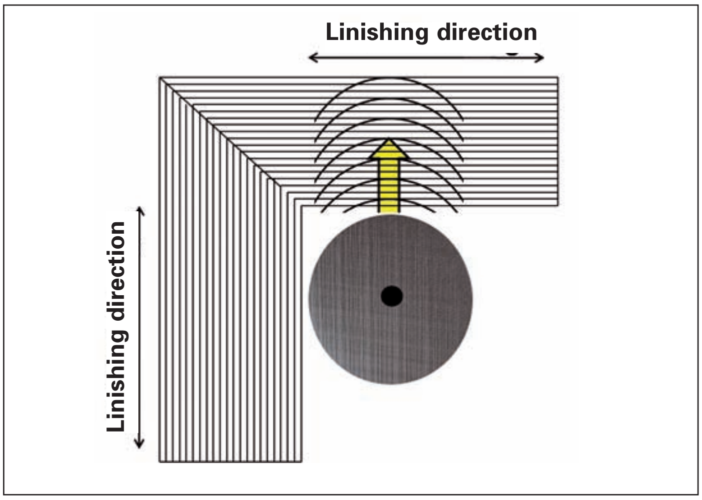


Fig. 244

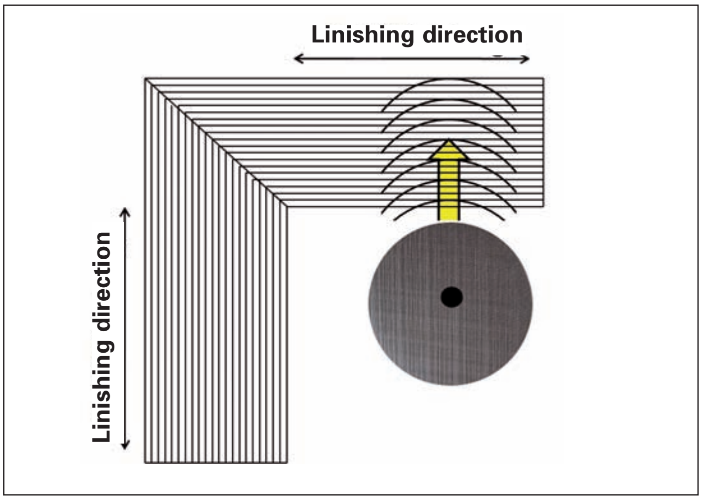


Fig. 245

Finish after intermediate linishing (Fig. 246)

Step 4

For a clean mitre joint, use a PTX polishing machine, 3M CS-MB A Coirs Scotch Brite brush (grit corresponds with the finish of the profiles) and 3M self-adhesive, highly compressed tape for high mechanical loading (Fig. 247/248).

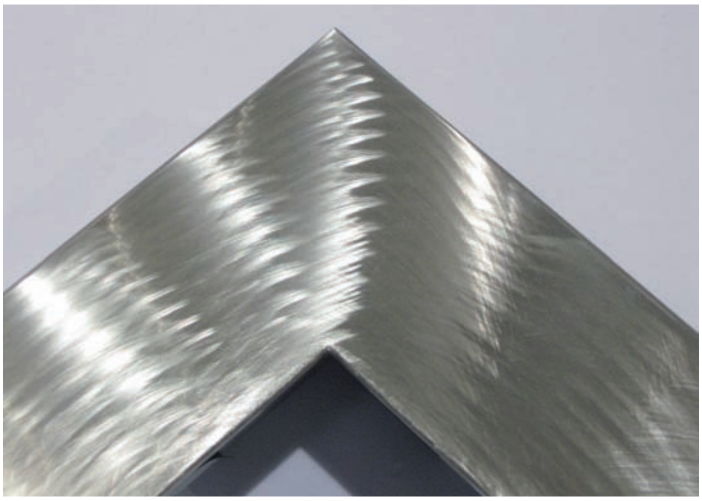


Fig. 246 Welded corners after intermediate linishing

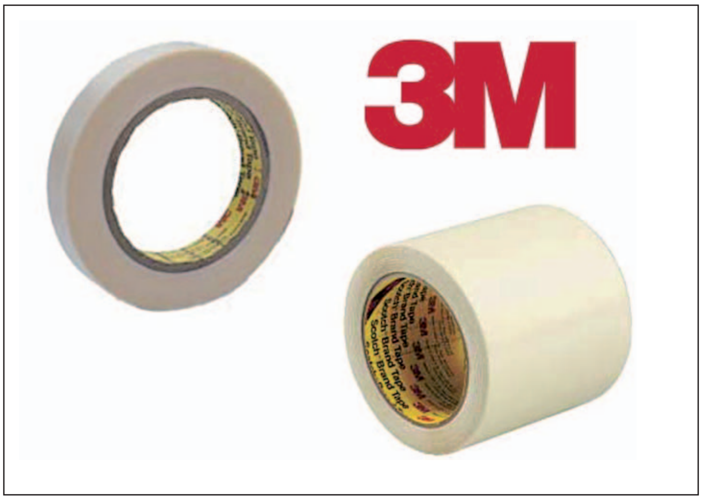


Fig. 247 3M tape

Fig. 248 PTX polishing machine and 3M CS-MB A Coirs Scotch-Brite brush

Mask one side of the profile along the mitre with 3M tape (Fig. 249).

Ensure that the tape is applied exactly on the mitre.

Run the brush along the tape for the line finish. When the required finish has been achieved, move the 3M tape to the side that has already been machined and repeat the process on the side that still needs to be machined (Fig. 250 to 252).

Note

Ensure that the Scotch Brite brush is run exactly on the edge of the tape and in the linishing direction of the profiles (see arrow). This creates a clean mitre line. Also ensure that the profile being machined does not overheat. Otherwise, the adhesive particles may loosen from the tape and be incorporated into the profile surface finish.

To avoid going over the same section when linishing, it is recommended to always run the machine over a longer distance. If necessary linish the whole profile length once more as a final operation.

If the linished finish does not match the pre-polished profile, adjust to a finer or rougher brush along the profile.

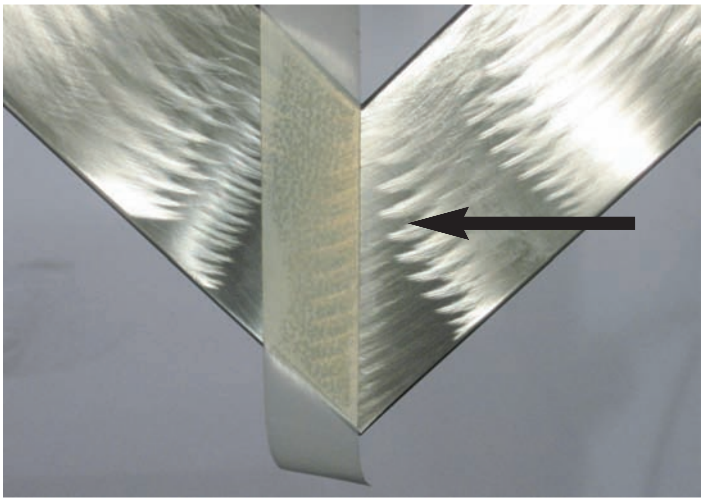


Fig. 249 Mask one side of the profile with 3M tape, then the other

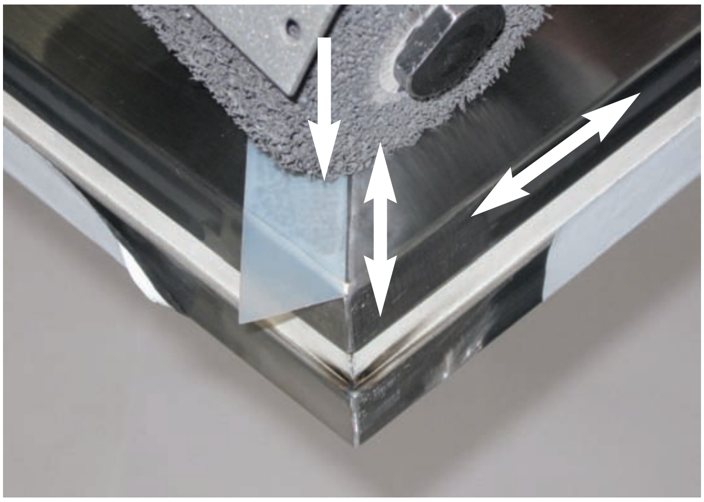


Fig. 250 Run the polishing machine along the tape

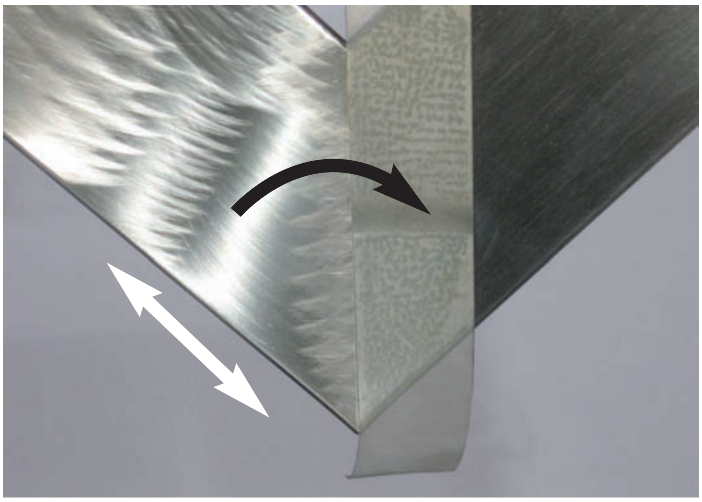


Fig. 251 Move the tape to the side already machined

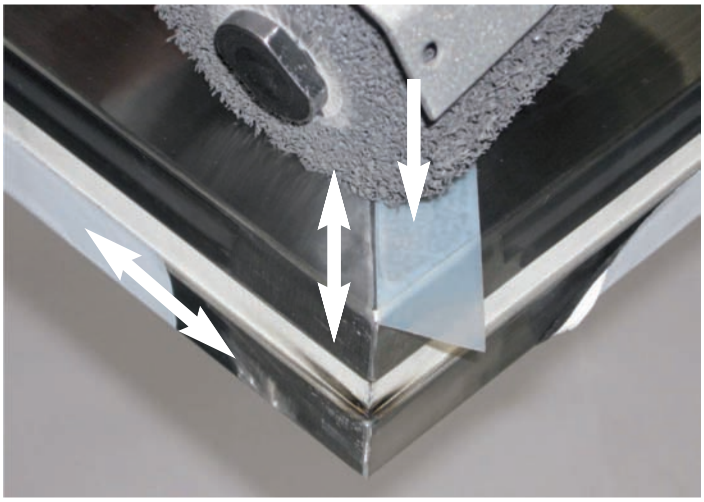


Fig. 252 Run the polishing machine along the tape

Profile after finishing (Fig. 253).

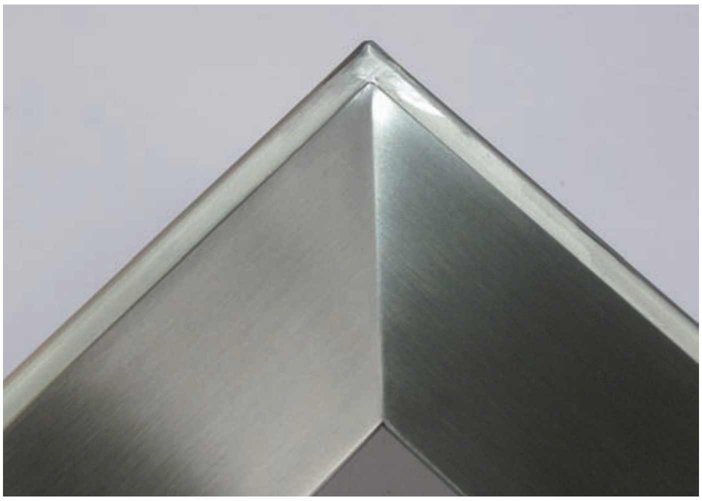


Fig. 253 Welded corner after the line finish

Type 3

Profile welded without additional wire.
Fusion welding.
An economical option, e.g. for industrial areas and on the side opposite the visible surface.

Recommended process for pre-polished stainless steel profiles

Starting point:
WIG/TIG welded profile (without additional wire) as per the chapter «Welding of stainless steel profiles» (Fig. 254).

Step 1

Pickle the weld seam as per the section «Pickling of stainless steel profiles» (Fig. 255).

Profile corners after pickling (Fig. 256).

Important note

After cleaning, the pickled item must be rinsed to ensure it is acid-free and must be dry before further processing.

Frame constructions contain hollow spaces in which the pickling compound may remain. Such constructions must be left standing for a day before linishing. This ensures that no acid trickles out and leaves white discolouration on the stainless steel surface after the surface has been finished.

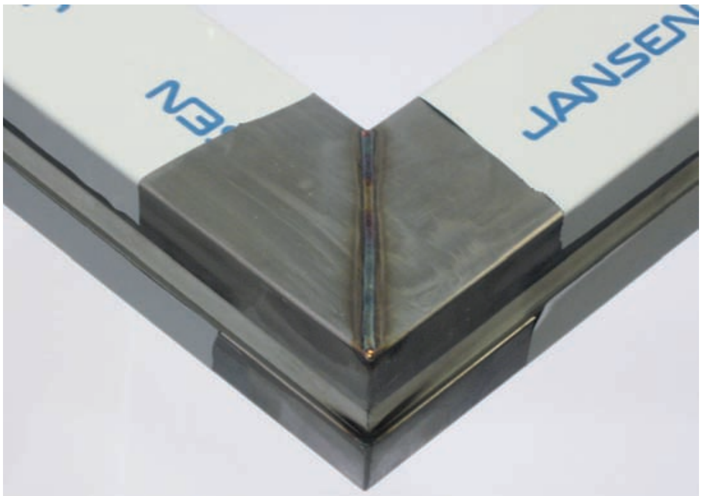


Fig. 254 WIG/TIG profile corner welded without additional wire

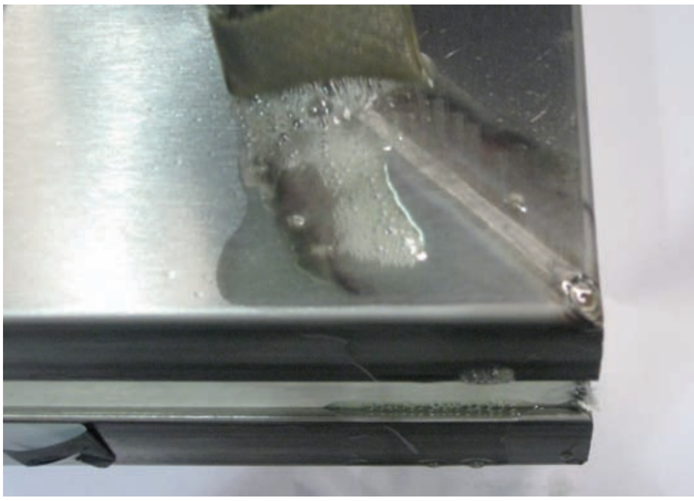


Fig. 255 Pickling the weld seam

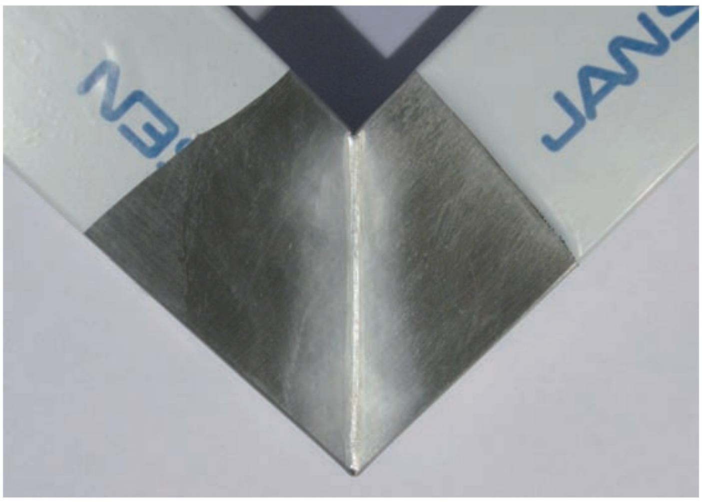


Fig. 256 Profile corner after pickling

Step 2

For a clean mitre joint, use a PTX polishing machine, 3M CS-MB A Coirs Scotch Brite brush (grit corresponds with the finish of the profiles) and 3M self-adhesive, highly compressed tape for high mechanical loading (Fig. 257/258).

Mask one side of the profile along the mitre with 3M tape (Fig. 259).

Ensure that the tape is applied exactly on the mitre.

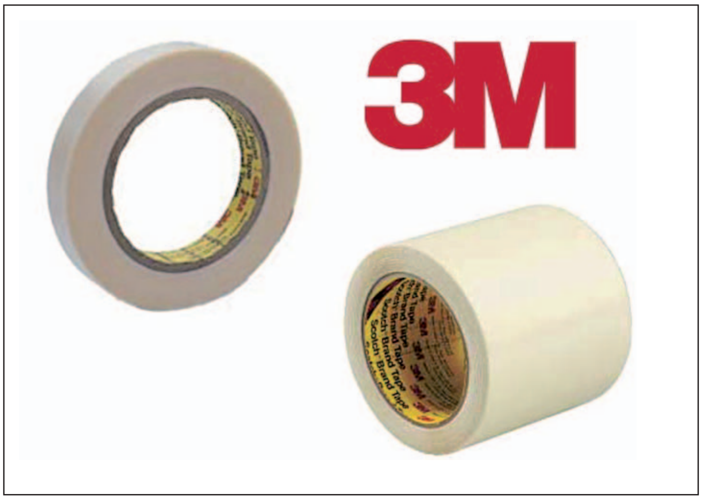


Fig. 257 3M tape

Fig. 258 PTX polishing machine and 3M CS-MB A Coirs Scotch-Brite brush

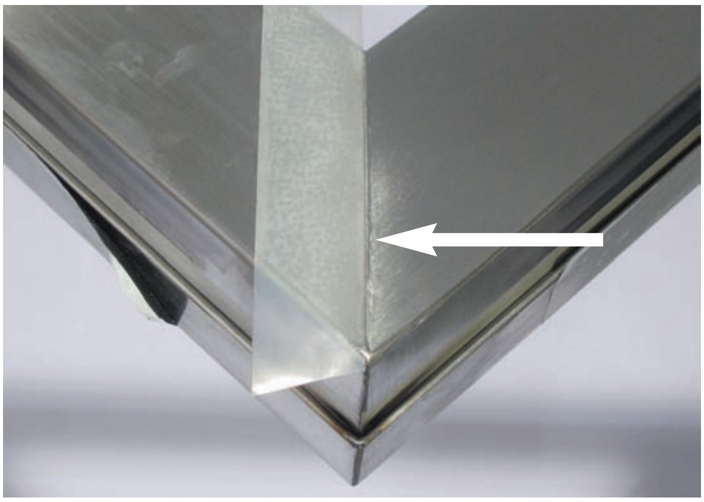


Fig. 259 Mask one side of the profile with 3M tape, then the other (apply the tape directly on the mitre)

Run the brush along the tape for the line finish. When the required finish has been achieved, move the 3M tape to the side that has already been machined and repeat the process on the side that still needs to be machined (Fig. 260 to 262).

Note

Ensure that the Scotch Brite brush is run exactly on the edge of the tape and in the linishing direction of the profiles (see arrow). This creates a clean mitre line. Also ensure that the profile being machined does not overheat. Otherwise, the adhesive particles may loosen from the tape and be incorporated into the profile surface finish.

To avoid going over the same section when linishing, it is recommended to always run the machine over a longer distance. If necessary linish the whole profile length once more as a final operation.

If the linished finish does not match the pre-polished profile, adjust to a finer or rougher brush along the profile.

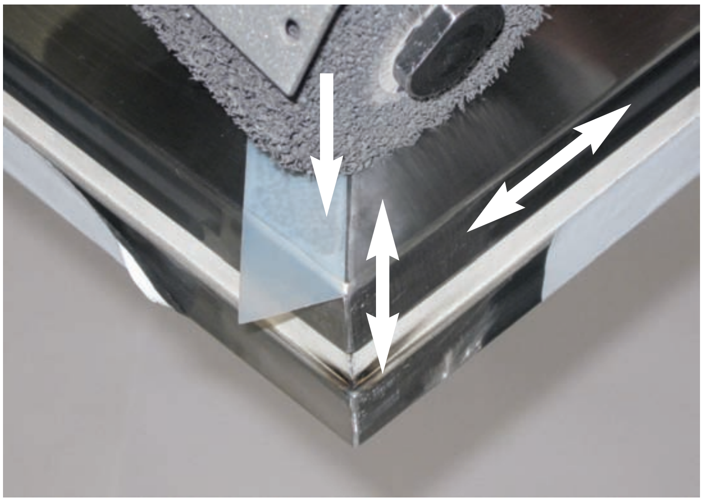


Fig. 260 Run the polishing machine along the tape

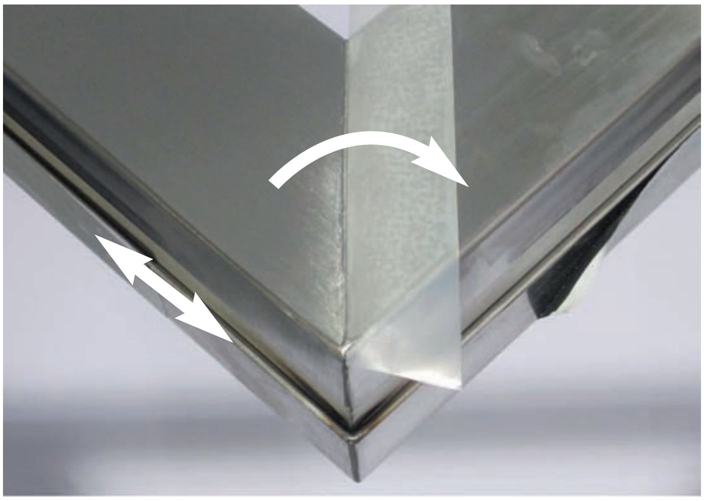


Fig. 261 Move the tape to the side already machined

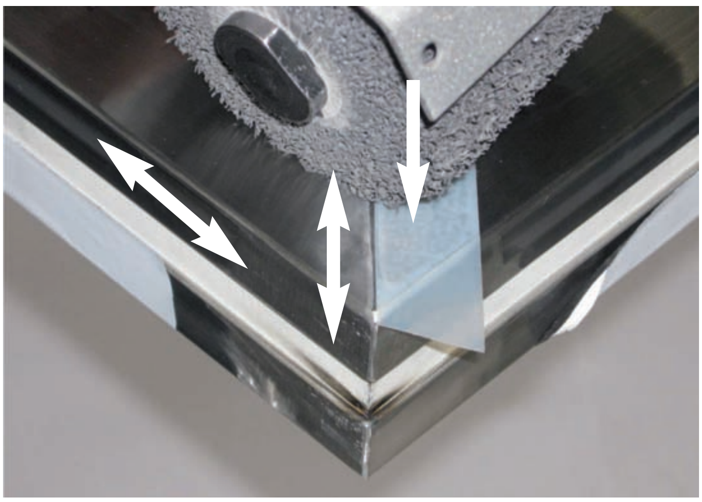


Fig. 262 Run the polishing machine along the tape

Profile after finishing (Fig. 263).

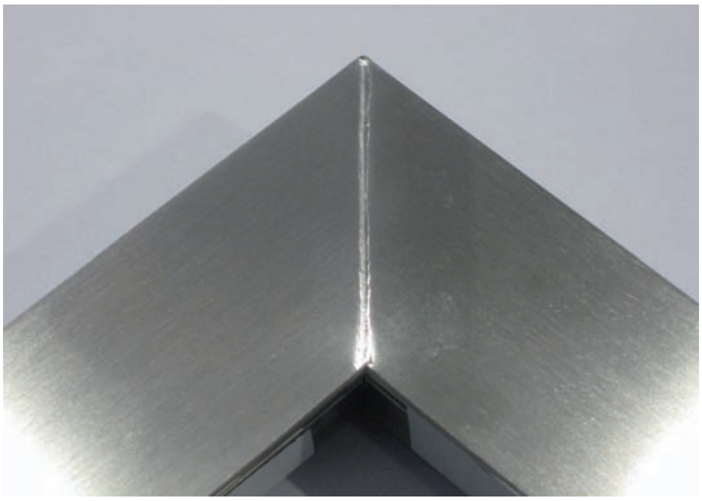


Fig. 263 Welded corner after the line finish

Important
Stainless steel owes its corrosion resistance to a microscopically thin protective oxide layer, which is destroyed when linished. However, this layer re-forms within approximately 24 hours and protects the profiles from corrosion and discolouration. Prerequisite for the formation of a homogenous and thick passive layer is a clean, metallically pure surface.

The immediate absorption of stainless steel cleaners or other protective products prevents the formation of this passive layer. For example, this results in discolouration in the profile surface at a later stage.

Fig. 264 3M cleaning and maintenance kit

Cleaning and maintenance of stainless steel profiles
A damp cloth is sufficient for the daily maintenance of stainless steel. For example, we recommend using 3M Scotch Brite micro fibre cleaning cloth 2060. Clean the stainless steel unit using a damp cloth (with a small amount of household detergent, if required) and polish it dry using a soft, lint-free cloth.

However, you can use a special stainless steel cleaner (e.g. 3M Stainless Steel Cleaner & Polish) several times a month. After cleaning, this will protect the material with a silicone oil protective film.

By maintaining the stainless steel, it is easy to remove grease and other dirt.

Do not use any abrasive cleaners or solvents. Special maintenance products for polished stainless steel are available from specialist companies (Fig. 264).

For more information about stainless steel and its preparation, refer to the following associations:

Informationsstelle
Edelstahl Rostfrei
Postfach 10 2205
40013 Düsseldorf

www.edelstahl-rostfrei.de

International Stainless Steel Forum
Rue Colonel Bourg 120
1140 Brüssel/BE

www.worldstainless.org

The fabrication tools specially developed for the individual systems provide a guarantee for simple and efficient fabrication of Jansen systems. Please refer to the detailed descriptions in the relevant system chapters.

Glazing bead fixing kit

The glazing bead fixing kit is ideal for efficiently fitting magazines of Jansen glazing bead coupling studs (Fig. 265 / 266).

Fig. 265 Jansen glazing bead fixing kit

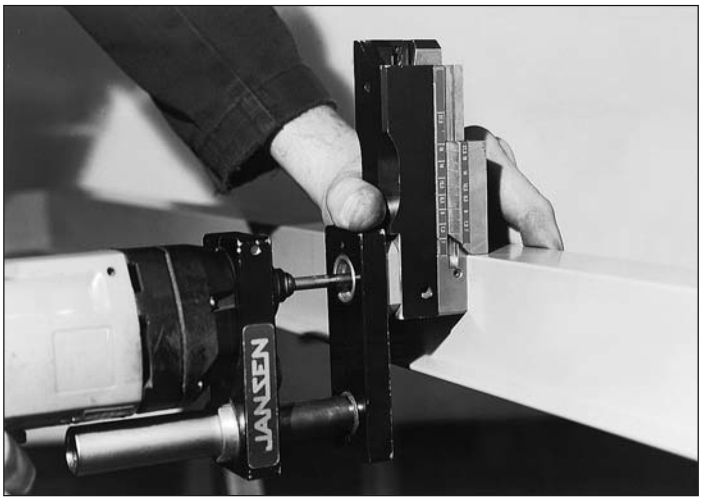


Fig. 266 Fixing kit in use

Using SR1 screws – The secure hold for Jansen screws

The tried-and-tested self-tapping Jansen screws with SR1 head are a reaction to efficient fabrication in metal fabrication. This obviates the need for thread cutting.

The patented 4-edged tip prevents the screw from slipping and reduces scratches on coated profiles to a minimum. With a perfect hold, screws can also be used at mounting locations that are difficult to access (e.g. overhead) without any issues. Due to its precise shape, the screw does not move around. This not only increases health & safety, but also markedly saves time (Fig. 267 / 268).

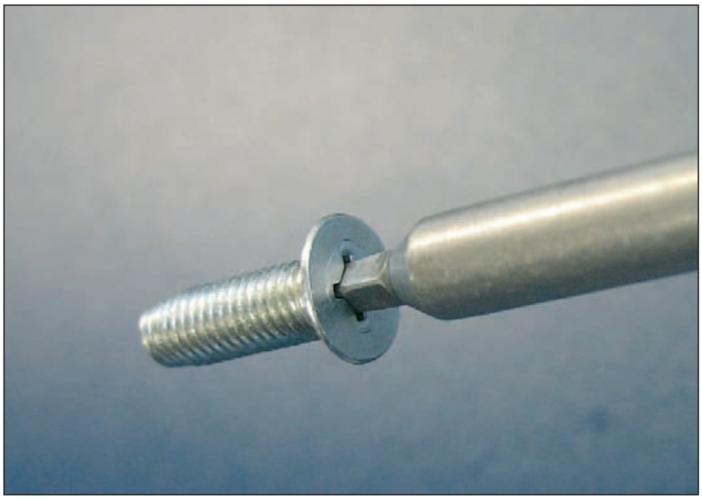


Fig. 267 Use of SR1 screws

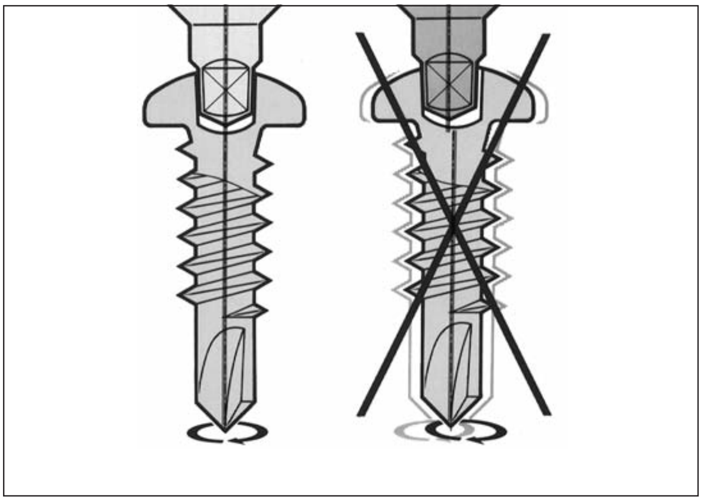


Fig. 268 More secure hold for Jansen screws

Assembly tools

To ensure the systems are fabricated correctly, Jansen provides a variety of fabrication and installation guidelines:

- Fixing kit for glazing beads
- Drilling jigs
- Fittings installation - jigs
- Special tools / installation tools

The simple layout of the information brochures with graphics and images makes the fabrication of complex constructions simple for metal fabricators in production and installation. Please also refer to the detailed descriptions in the relevant chapter (Fig. 269 / 270).

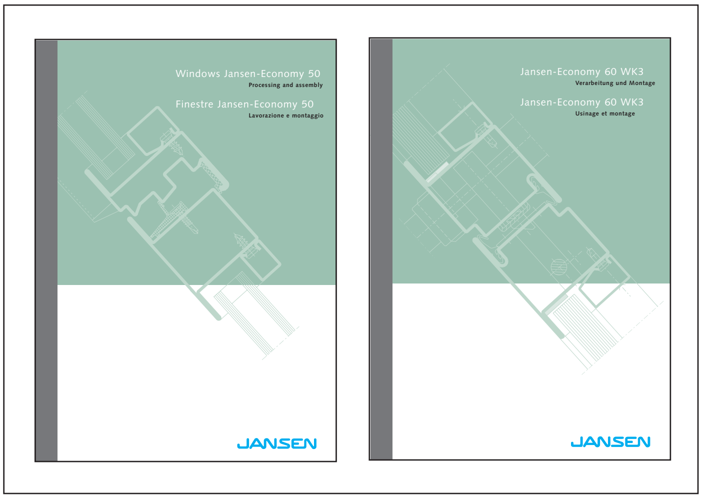


Fig. 269

Fig. 270

Fittings installation

The fabrication and installation guidelines are characterised by simple installation instructions with illustrations. The following images show the installation of a fitting in a Jansen Economy 60 WK3 door construction.

Shorten the lock face plate at the top to match the height of the leaf rebate.

Insert the multi-point locking lock in the profile and install the door handle. This aligns the height.

Insert a screw 550.322 above and below the main lock (Fig. 271).

Fig. 271

Insert the cylinder lock and check the smooth operation of the lock bolt.

If in order, attach the lock face plate at the centre of the profile, and drill a core hole ø 4.7 mm above and below each ancillary lock (Fig. 272). Remove the swarf.

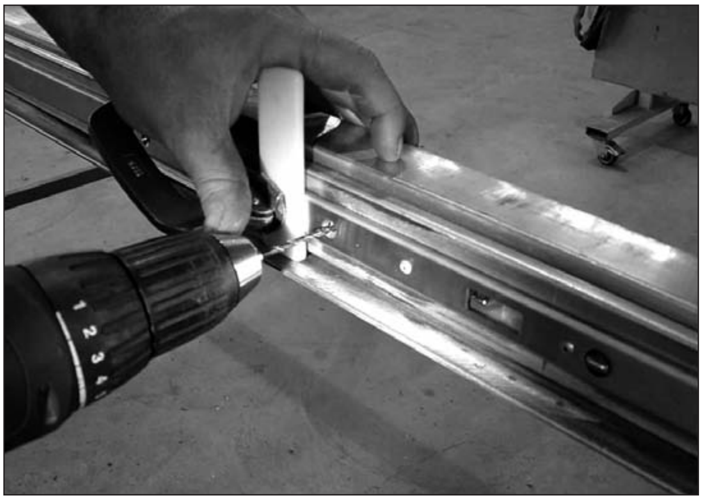


Fig. 272

Then insert a screw 550.322. Insert a self-tapping screw 550.376 in each of the remaining fixing holes (Fig. 273).

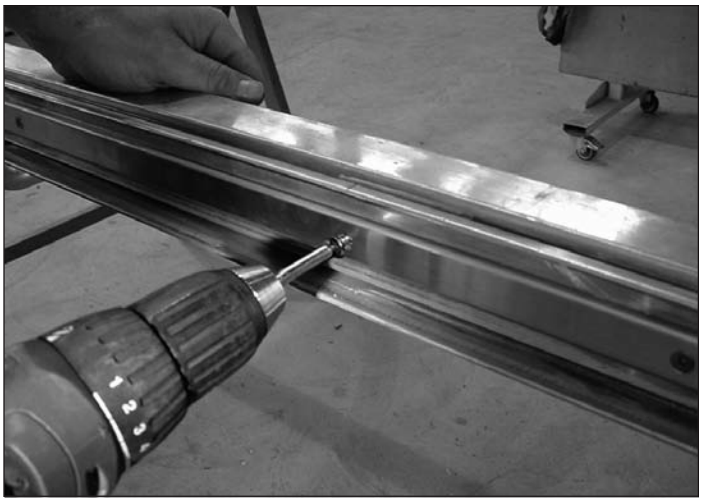


Fig. 273

Glazing weatherstrip installation for Jansen Economy and Janisol windows, doors and fixed glazing

Cleaning the profile rebate
The profile overlap must be cleaned with care before bonding the external glazing weatherstrip. The rebate must be dry and free from dirt, oil and grease (Fig. 274).

Fig. 274 Cleaning the profile rebate

Cutting the external glazing weatherstrip
The external glazing weatherstrips must be mitre cut in advance with some excess (approx. 5 mm/m) (Fig. 275).

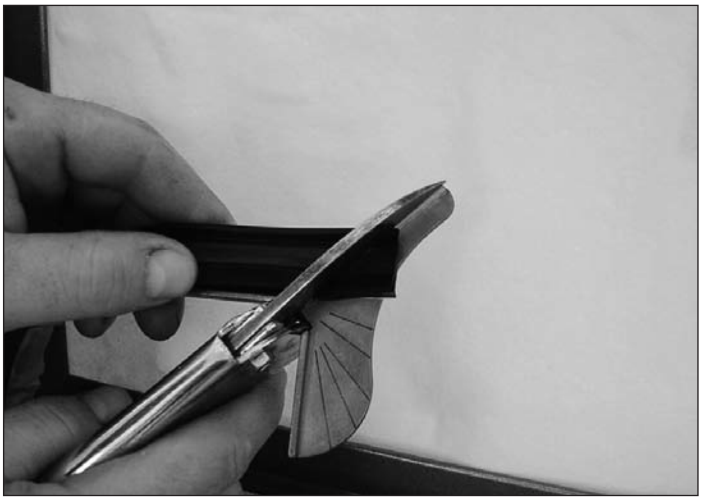


Fig. 275 Cutting the external glazing weatherstrip

Inserting the external glazing weatherstrip
Remove the protective film from the butyl tape and bond the external glazing weatherstrip 455.027 to the profile rebate (Fig. 276).

Fig. 276 Installing the external glazing weatherstrip

Inserting the external glazing weatherstrip
Mitred corners must be bonded using a suitable standard superglue (Fig. 277).

Fig. 277 Bonding the mitred corners

Installing infills and glazing beads
Insert, align and block the infill. Clip in all the glazing beads (Fig. 278/279).

Fig. 278 Installing the infill

Fig. 279 Installing the glazing beads

Installing the inner glazing weatherstrip
The inner glazing weatherstrips must be mitre cut to 30° in advance with some excess (approx. 5 mm/m) (Fig. 280).

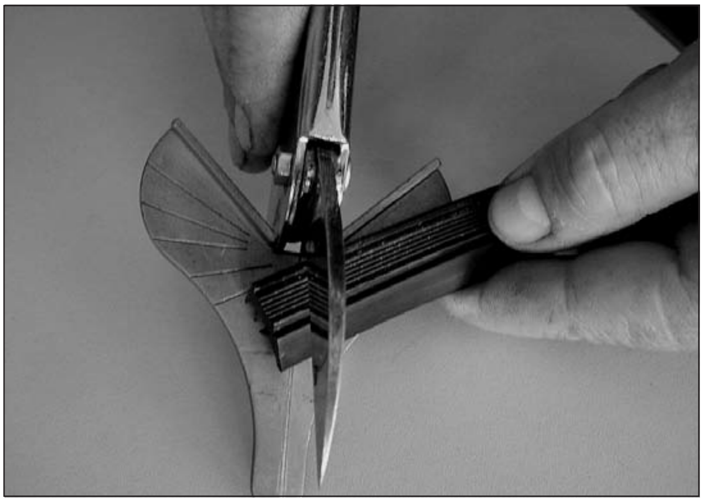


Fig. 280 Mitre cutting the inner glazing weatherstrip

Installing the inner glazing weatherstrip
The inner glazing weatherstrip should be fitted approximately 5 cm from the corner and then pushed into the mitre (Fig. 281/282).

Fig. 281 Pressing in the glazing weatherstrip

Fig. 282 Installing the inner glazing weatherstrip

Installing the glazing weatherstrip in Jansen Economy and Janisol doors

Installing the door rebate glazing weatherstrip
The Jansen door rebate glazing weatherstrip is supplied with a tear-off glazing weatherstrip. This prevents the glazing weatherstrip lips from bonding together after being stored for a long time. The glazing weatherstrips are also supplied packed in rolls to save space. The tear-off lips prove to be useful in this respect as well. The glazing weatherstrip retains its shape over a very long period of time and provides the pressure required for weather-tightness when installed in the door construction (Fig. 283).

These tear-off lips must be removed shortly before installation (Fig. 284).

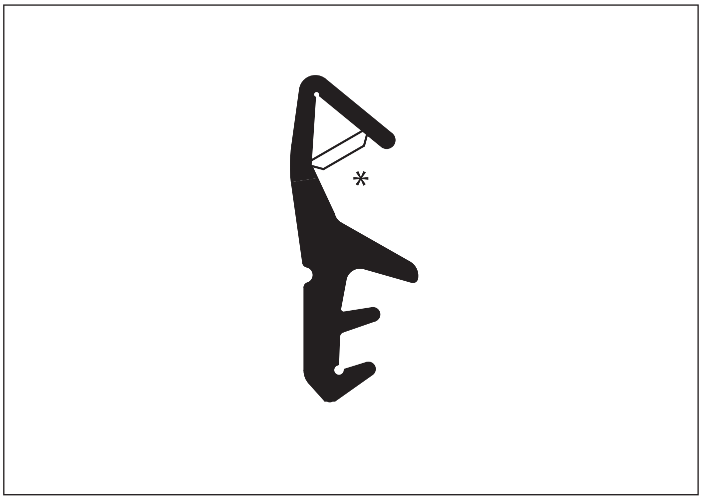


Fig. 283

Fig. 284 Removing the tear-off lips before installation

Cutting the door rebate glazing weatherstrip
The rebate glazing weatherstrips must be mitre cut in advance with some excess (approx. 5 mm/m) (Fig. 285).

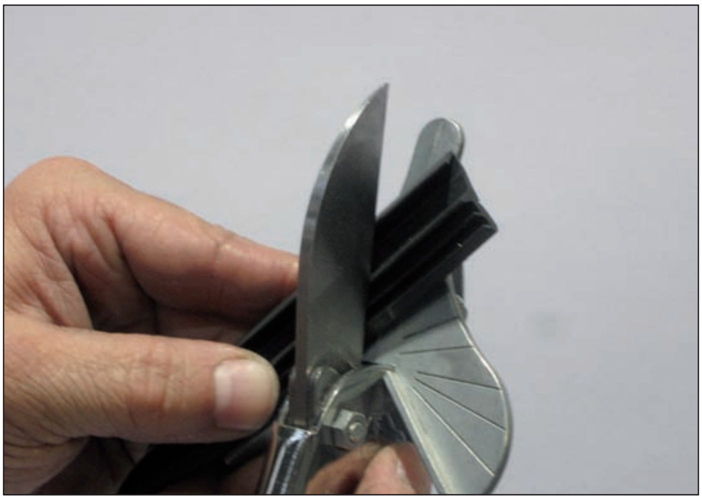


Fig. 285 Cutting the rebate glazing weatherstrip

Installing the rebate glazing weatherstrip

Press the glazing weatherstrip into the profile grooves (Fig. 286)

Installing the rebate glazing weatherstrip (Fig. 287)

Mitred corners must be bonded using a suitable standard superglue (Fig. 288)

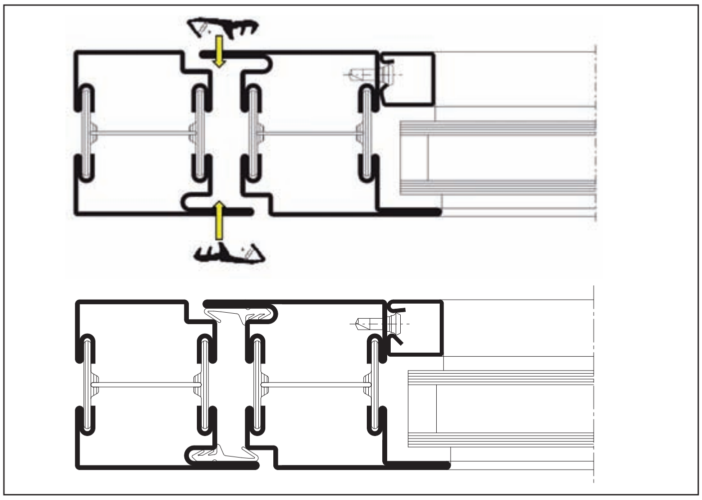


Fig. 286 Pressing in the glazing weatherstrip

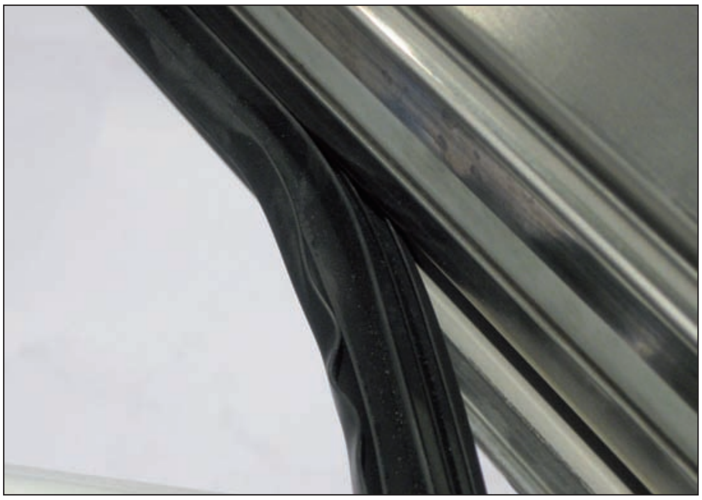


Fig. 287 Inserting the glazing weatherstrip

Fig. 288 Bonding the corner

Installing the glazing weatherstrip in the mitre area
(Fig. 289)

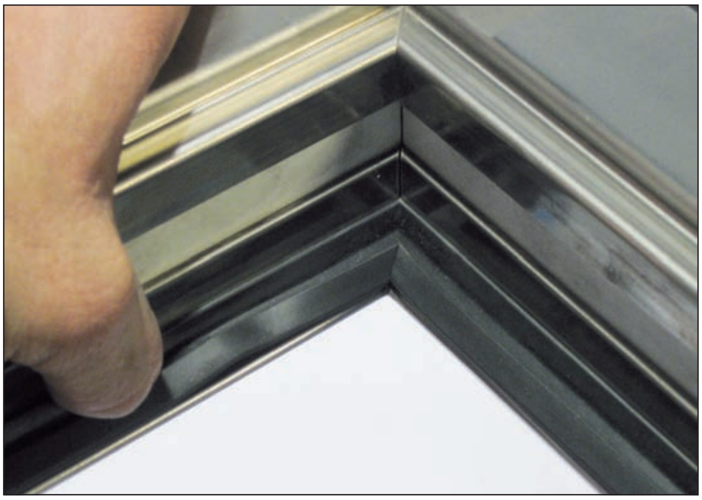


Fig. 289 Pressing the glazing weatherstrip into the mitred corner

Meeting stile glazing weatherstrip for double-leaf doors

Installation at the top
The glazing weatherstrip is installed in the secondary leaf on the inside and outside. The meeting stile glazing weatherstrip (1) is aligned in the corner area of the profile rebate glazing weatherstrip and bonded to the rebate glazing weatherstrip (2) using superglue (Fig. 290).

Installation at the bottom
For doors with a stepped edge, installation is the same as for the top meeting stile glazing weatherstrip, but only on one side of the overlapping leaf (Fig. 291).

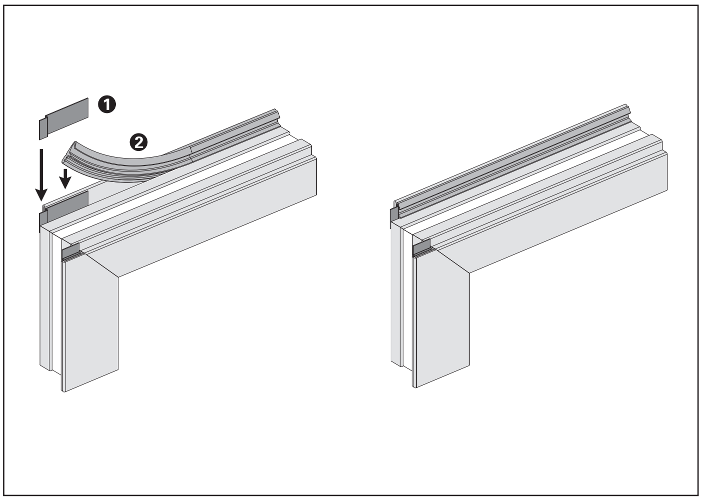


Fig. 290 Meeting stile glazing weatherstrip at the top

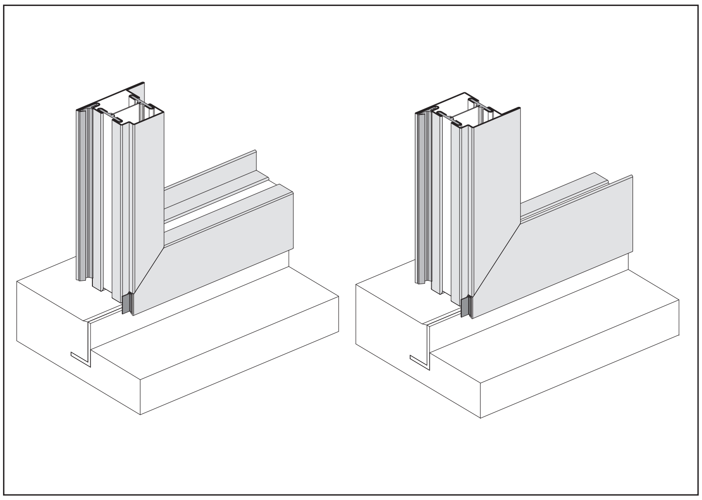


Fig. 291 Meeting stile glazing weatherstrip at the bottom

Minimum effort for an enduring look

Jansen windows and doors are characterised by a particularly long product life due to the selected quality of the materials and the excellent fabrication.
However, steel, like any other material, must be maintained to retain its look for many decades to come. With some maintenance, the fittings will operate smoothly for a long time. This maintains their quality and saves high repair costs.

Cleaning during the construction phase

As early as the construction phase, the windows, doors and façades must be treated carefully and protected. Appropriate protective measures must be taken to protect the surfaces from contact with plaster or mortar.

Ensure that you only use adhesive tape, which is compatible with water-based acrylic paints (risk of damaging the paint), e.g. TESA 4438 or 4838.
The adhesive tape must be removed within 2 weeks at the latest. This also applies to masking work on neighbouring sections, e.g. laying tiles etc.

If plaster or mortar gets on to the surface, it must be immediately removed.

Cleaning when the building is occupied

Depending on the loading situation, the following measures must be taken at least twice a year.

Use neutral general purpose cleaner to clean the components. Do not use cleaners which contain aggressive substances, solvents or lubricants, as they can damage the surface finish.

Steel profiles must be washed and then rubbed down at least once a year with a soft sponge or a cloth using a neutral wetting agent (e.g. a detergent).
Preservative maintenance products give the profiles and glazing weatherstrips an additional protective layer against dirt and water. Drainage slots ensure that rainwater is drained away to the outside. Check that the slots remain clear and operational on a regular basis.

Cleaning glazing weatherstrips

Your windows and doors must be fitted with maintenance-free glazing weatherstrip profiles. You must check annually that the glazing weatherstrip is positioned and functioning correctly. These glazing weatherstrips must not be coated. If the inner rebates need to be subsequently coated, the glazing weatherstrips must be removed. A replacement may be required after several years to maintain the function of the glazing weatherstrips, depending on the loading.
To guarantee the durability of the rubber glazing weather-strips, the use of preservative maintenance products is recommended to prevent the material from becoming brittle.

To make the maintenance of the windows and doors easier, Jansen has provided maintenance instructions for standard and fire products (Fig. 292).

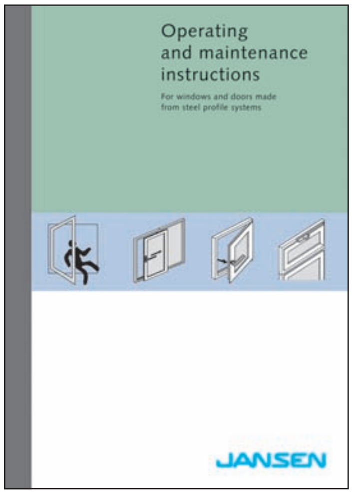


Fig. 292 Maintenance instructions

Protecting the surface finish of stainless steel profiles

Particularly for stainless steel profiles linished in advance, it is recommended that the surface finish is protected for the fabrication and installation. Adhesive foils which are easy to apply and remove are ideal for profiles.

Note the following:

- Protective foils have a limited durability
- Process profiles with foil as quickly as possible
- Protect protective foils from UV radiation
- Remove protective foils immediately after installation, particularly for constructions exposed to the weather
- After removing the self-adhesive protective foil, the profiles must be thoroughly cleaned (to remove adhesive residues)

Steel Systems I 06.2014 I Änderungen vorbehalten

Jansen AG

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