



aseo

T H I N K

C R E A T E

A U T O M A T E

CATALOGUE

MACHINE FOR CUTTING & MILLING ALUMINUM HINGES

MAIN FUNCTION

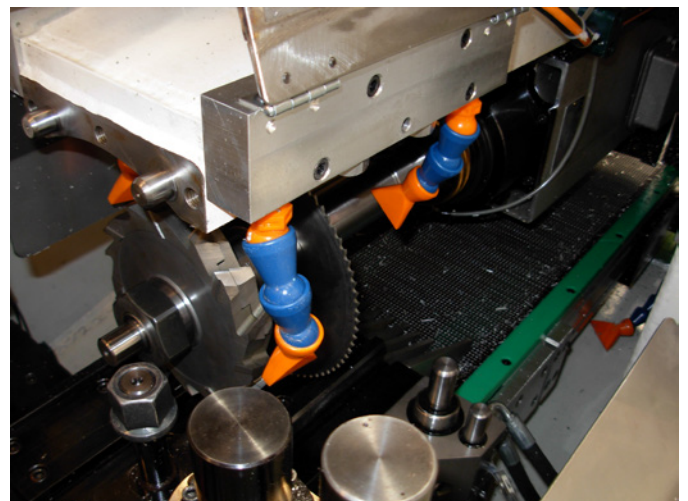
Obtain from two 4 m long extruded aluminum profiles, by cutting and milling, some particular pieces with pre-established length and shape.



DESCRIPTION

This special machine for aluminium hinge cutting and milling is a self-contained system, substantially consisting of an electrowelded steel bed, where the following components are fixed:

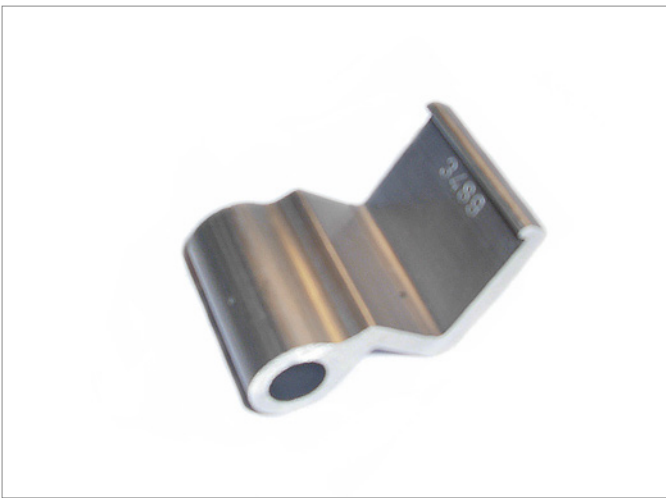
- An adjustable roller line for loading of aluminium extruded sections, consisting of an aluminium framework where a set of idle rollers are mounted;
- A carriage unit with mobile vice, the adjustable stroke of which is software-controlled;
- An adjustable fixed vice unit;
- A cutting and milling head unit, software-controlled;
- A finished parts unloading conveyor belt;
- A chips belt filter unit.



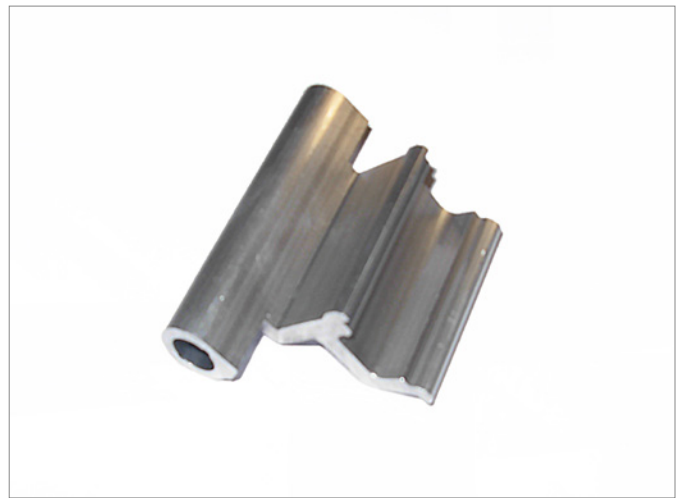
Detail of cutting and milling spindle



Aluminium extruded sections before the machining process



Machined part. Cutting and stamping operations

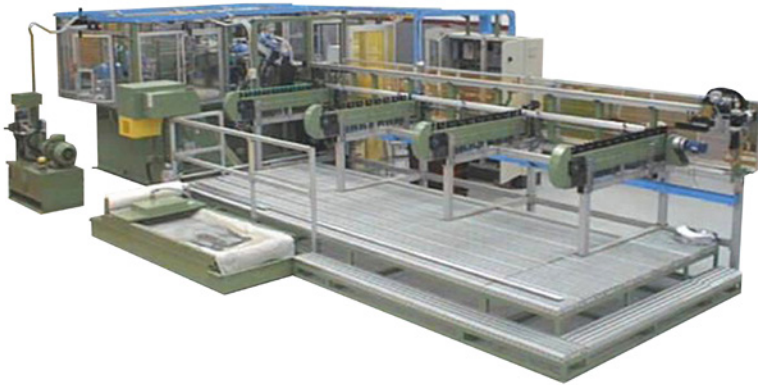


Machined part. Cutting and milling operations

AUTOMATIC LINE FOR HINGE MACHINING

MAIN FUNCTION

Carry out the sequential machining of one type of frame flange hinges and one type of wing flange hinges, having different centre distance and length, by working on blank bars, 6 metres long that are loaded in sequence on a specific conveyor capable to hold up to 10 bars on full load condition.



Machined part

DESCRIPTION

The machine runs its working cycle in fully automatic mode, except for the bar loading that, as already explained, is carried out by an operator.

The loaded bars then reach position, moved by a special pusher: here they are marked with their identity code, then clamped and cut off.

The hinges, cut from the blank bar, are then loaded on to the working fixture by a Scara robot equipped with a gripper finger.

The four fixtures installed on the rotary table of the machine are square (90°) to each other, so as to feed the four STATIONS of the machine.

In fact, the table rotates clockwise to move the fixtures, therefore also the hinges clamped thereon, to the three working stations:

- STATION 2
- STATION 3
- STATION 4, dove le cerniere subiranno le opportune lavorazioni.

Once the cycle is complete, the fixture returns to the loading position, where the insertion of a new hinge to be machined causes the unloading of the hinge, which has finished its cycle.

The hinges are removed on a conveyor belt.

SPECIFICATIONS

WORKING CYCLE AUTOMATIC.

IN: manual bar loading to loader unit.

OUT: automatic unloading to the finished hinges removing device.

TYPE OF MACHINED HINGES

- a) Wing Flange Hinge.
- b) Frame Flange Hinge.

CYCLE TIME

- Cycle time, hinge type a): 12 sec.
- Cycle time, hinge type b): 14 sec.

MACHINING OPERATIONS CARRIED OUT ON HINGE TYPE A)

- STATION 2
drilling of n°2 holes, 8.2 Ø, in the hinge foot by means of double-spindle units,
- STATION 3:
external drilling of dimple in the hub M6 (Ø 5/Ø 6.2) and chamfering of n°2 holes, 8.2 Ø, previously carried out in STATION 2,
- STATION 4:
tapping of the hole M6 in the hub.

MACHINING OPERATIONS CARRIED OUT ON HINGE TYPE B)

STATION 2:

drilling of n°2 holes (8.2 Ø /13.5 Ø) in the hinge foot by means of horizontal double-spindle unit, and n°2 spot facings, 26Ø, 2.5 deep,

STATION 3:

chamfering of n°2 holes, 8.2 Ø, previously drilled in STATION 2,

STATION 4:

tapping of n°2 side holes in the hub M 18x1.5, 14.5 deep.

FUNCTIONING SYSTEM

Overall dimensions on the ground: 11580 x 6130 x h 2600 mm, weight: ~ 13000 Kgs.

INSTALLED POWER (WHOLE SYSTEM)

~ 17 kW power spindles.

~ 3 kW strainer.

~ 0.3 KW hydraulic power pack.

SAFETY GUARDS

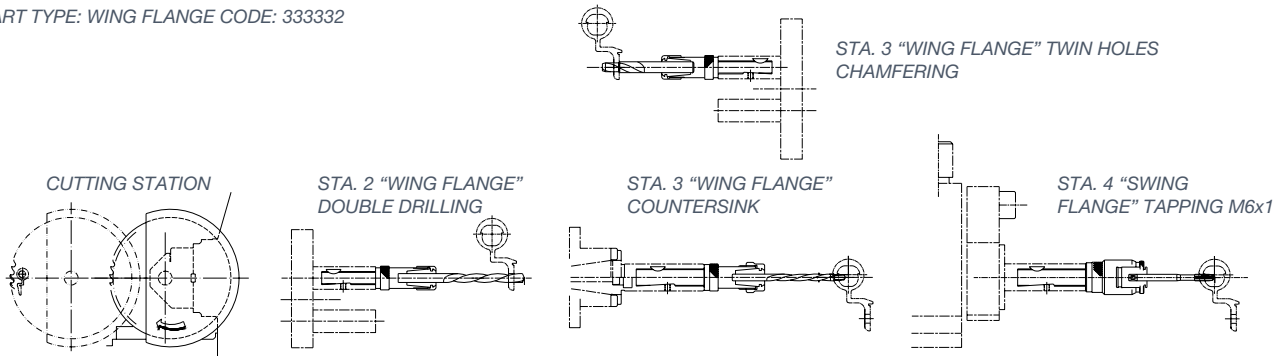
In the hinge machining area: extruded aluminium alloy section bars, anodised, with lexan panels, 3 mm thick, and n° 6 doors equipped with safety microswitches with positive lock.

In the bar loading area: n° 4 protection casings, semicircular, of sheet metal, side lexan side guards, rear structure consisting of extruded aluminium sections, anodised, and steel wire net gratings mounted on the above section bars, complete with n°1 opening.

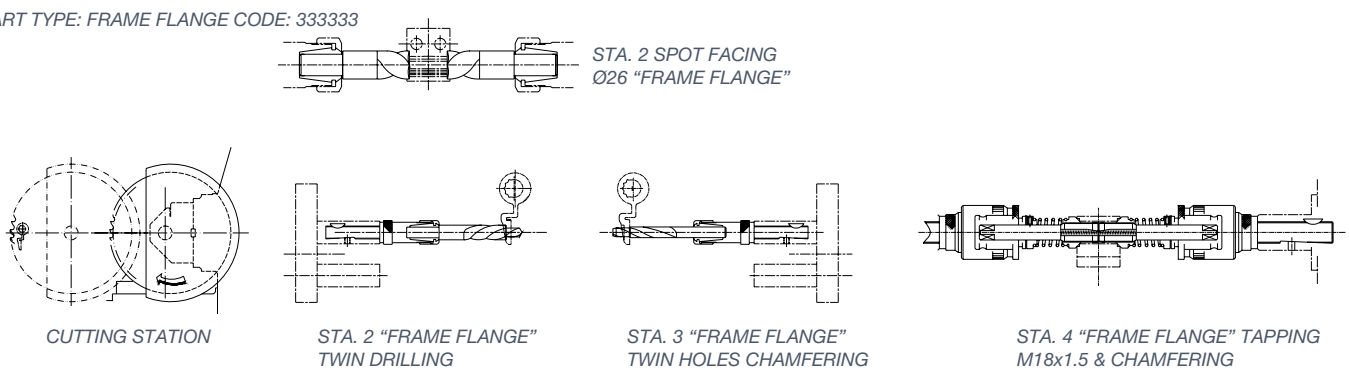
In the hinge unloading area: structure consisting of extruded aluminium section bars, anodised, and steel wire net gratings, mounted on the above sections, complete with n°3 openings.

DIAGRAM

PART TYPE: WING FLANGE CODE: 333332



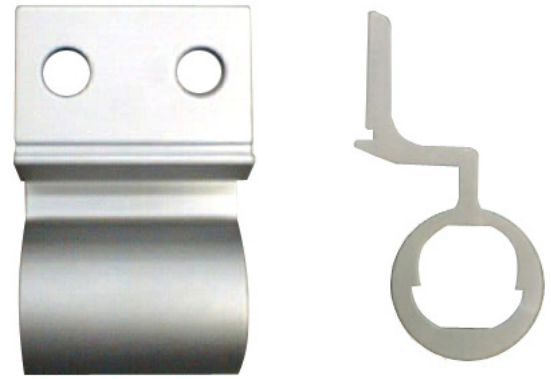
PART TYPE: FRAME FLANGE CODE: 333333



SPECIAL MACHINE WITH ROTARY TABLE

MAIN FUNCTION

Carry out sequential work on frame wing and door wing hinges with different center distances and variable lengths.



Machined part

DESCRIPTION

In particular, the machine can clamp the blanks on two fixtures located side by side (FIXTURE A and FIXTURE B), mounted on the perimeter of a rotary table. The rotary table starts its anti-clockwise rotation and it positions the hinges on three fixed working stations, secured to the machine base and offset by 90° to each other.

Each station includes special units capable to carry out the following operations: HORIZONTAL and VERTICAL DRILLING, HORIZONTAL SPOT FACING, HORIZONTAL DRILLING WITH MULTIPLE-HEAD, TAPPING, and HORIZONTAL CHAMFERING.

For each hinge, the complete machine cycle provides for two machining steps: first, the blank is manually placed by the operator on fixture A, to undergo a first machining sequence through the three above-mentioned stations; then, when the workpiece returns to the starting station 1, it is manually unloaded from fixture A and reloaded, still by hand, on to fixture B to undergo another machining step.

Finally, the part is released from the fixture and removed from the machine.

SPECIFICATIONS

WORKING CYCLE
AUTOMATIC.

IN: manual feed of hinges, in STA. 1 (Fixture A/B).

OUT: manual unloading of hinges, in STA. 1 (Fixture B).

CYCLE TIME

Cycle time per Wing Flange hinge: 12 sec.

Cycle time per Frame Flange hinge: 12 sec.

MACHINING PERFORMED ON WING FLANGE HINGE

STATION 2A (fixture "A"): drilling of n°2 holes, 11 Ø, in the hinge foot,

STATION 3A (fixture "A"): drilling in the hub, 5 Ø /6.2 Ø,

STATION 4A (fixture "A"): tapping of hole M6x1 in the hub, carried out in STATION 3A,

STATION 4A (fixture "A"): countersink of n°2 holes, carried out in the hinge foot, in STATION 2A,

STATION 2B (fixture "B"): drilling, 4.5 Ø,

STATION 3B (fixture "B"): spot facing, 7.3 Ø, of the hole drilled in STA. 2B.

MACHINING PERFORMED ON FRAME FLANGE HINGE

STATION 2A (attrezzo "A"): foratura n°2 fori Ø 11 nel piede della cerniera,

STATION 2A (attrezzo "A"): lamatura Ø 26 da un lato del mozzo della cerniera,

STATION 4A (attrezzo "A"): svasatura n°2 fori, eseguiti in STATION 2A, nel piede della cerniera,

STATION 4A (attrezzo "A"): maschiatura M18x1.5 da un lato del mozzo della cerniera,

STATION 2B (attrezzo "B"): foratura Ø 4.5,

STATION 2B (attrezzo "B"): lamatura $\varnothing 26$ da un lato del mozzo della cerniera,

STATION 3B (attrezzo "B"): lamatura $\varnothing 7.3$ del foro eseguito in STATION 2B,

STATION 4B (attrezzo "B"): maschiatura M18x1.5 da un lato del mozzo della cerniera.

FUNCTIONING SYSTEM

Overall dimensions on the ground: 6850 x 4300 x h 2500 mm, weight: ~ 10000 Kgs.

INSTALLED POWER (WHOLE SYSTEM)

~ 16 kW power spindles, ~ 3 kW strainer, ~ 0,3 KW hydraulic power pack.

SAFETY GUARDS

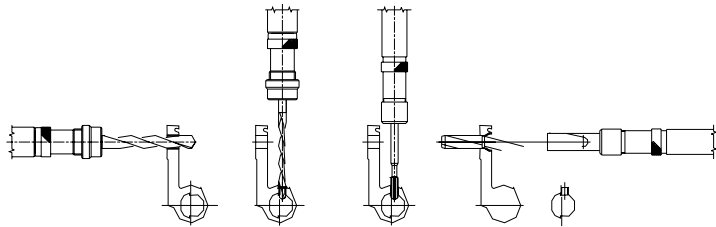
Guards consisting of aluminium section bars and lexan panels, properly surrounding the entire machine in order to prevent from any accidental access to the moving parts of the machine during its normal operation.

The brushing is fixed where no maintenance or worktype change activity is required; any way, n°8 doors are provided throughout the lateral and rear perimeter, electronically controlled by as many safety switches with positive lock.

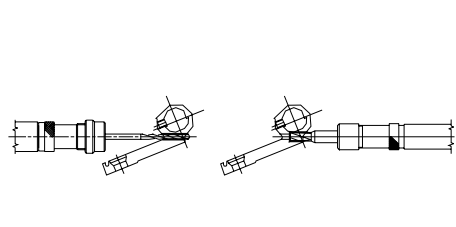
The front face of the machine is free from brushing, in order to facilitate the hinge loading and unloading operations; however, a photoelectric barrier has been provided for the sake of safety.

DIAGRAM

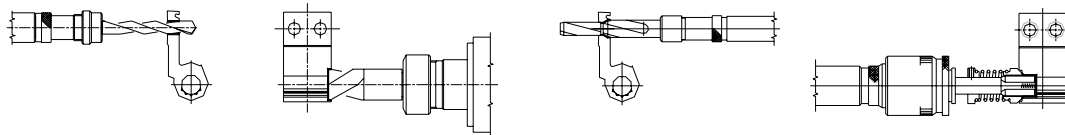
WING FLANGE MACHINING ON FIXTURE "A"



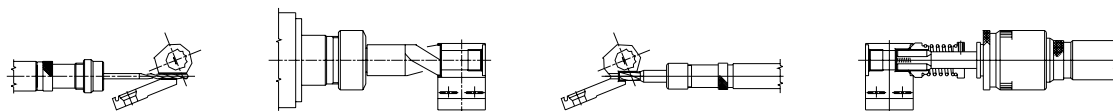
WING FLANGE MACHINING ON FIXTURE "B"



FRAME FLANGE MACHINING ON FIXTURE "A"



FRAME FLANGE MACHINING ON FIXTURE "B"



LIFT-OFF HINGES MACHINING PROCESS

MAIN FUNCTION

Carry out aluminium lift-off hinges starting from extruded aluminium bars, 6 to 6.5 m long, suitably cut off by the machine during the working cycle.



Machined Part



DESCRIPTION

The operator manually loads a pair of bars (male and female) onto the entry conveyor, where they are automatically fed into the machine.

In the first step, 4 slots are punched (n° 2 on the male hinge and n°2 on the female hinge), with subsequent countersink of the 4 slots by means of a twist drill.

Once the bars have been positioned and clamped, the SAVIO logo (requested by the customer) is stamped to the lower part of the hinge, i.e. on the same side as the previously performed countersink operations.

Afterwards, a special unit engraves the hinge identification codes.

In the last step of the route, the bars are cut off, while the finished hinges are feeding out on the exit conveyor belt.

SPECIFICATIONS

WORKING CYCLE
AUTOMATIC.

IN: manual feed of bars to the entry loading conveyor.

OUT: automatic unloading of finished hinges on to exit conveyor belt.

TYPE OF HINGES ON PROCESS
Lift-off hinge, Male and Female Flanges.

CYCLE TIME
2.64 sec/piece.
Hourly output: 1363 pcs/h.
Parts machined from the bar: 121 minimum.

FUNCTIONING SYSTEM
Overall dimensions on the ground: 9300 x 2800 x h 2720 mm, weight: ~ 1900 Kg.

INSTALLED POWER (WHOLE SYSTEM)

~ 17 kW.

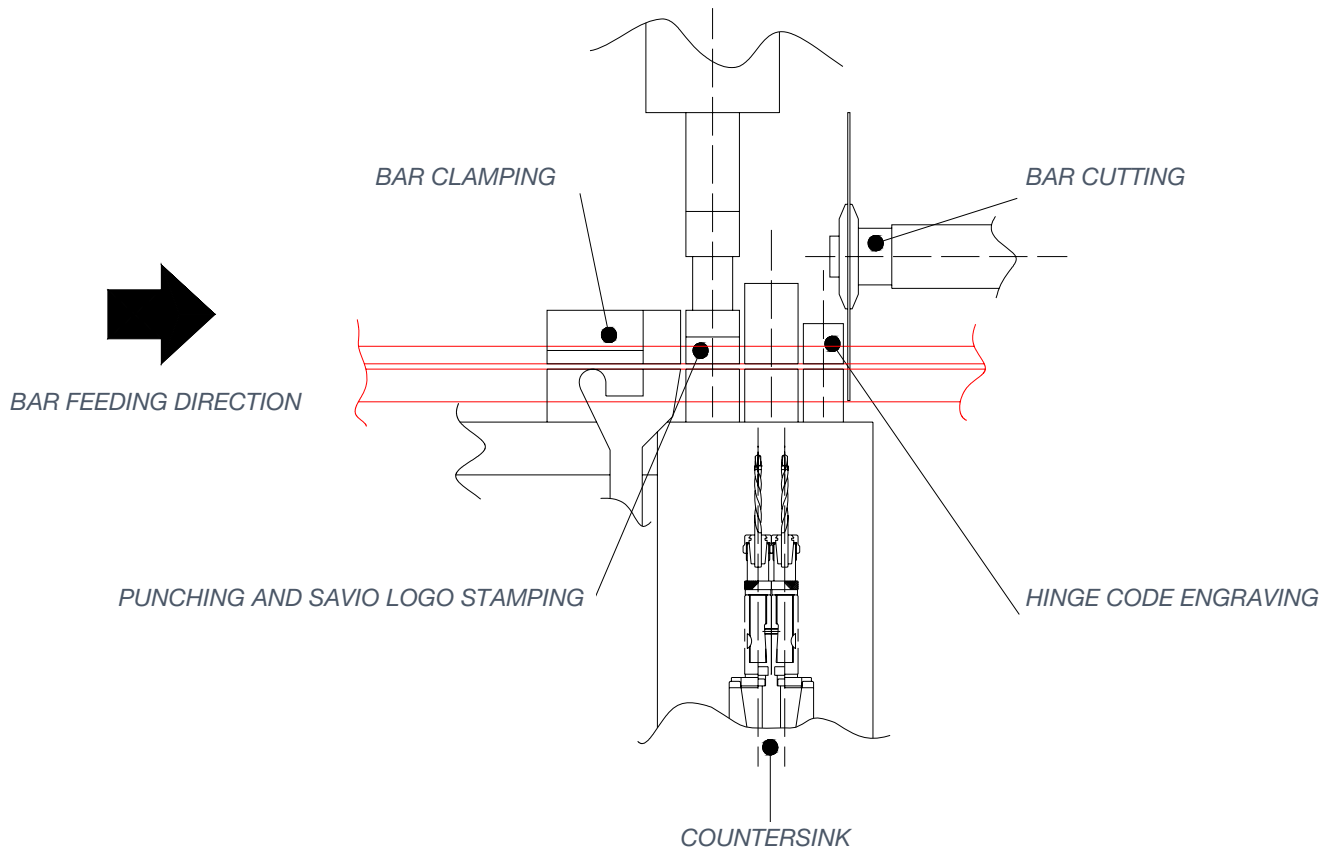
SAFETY GUARDS

Soundproof cabin, closed on five sides, suitable for full disassembly and complete with sheetmetal telescoping panels.

Telescoping panels of press-formed and treated plate, with dampening rolled sections and deadening materials.

On two sides of the structure, there are n°2 sliding openings, while on four sides of the structure there are n° 5 portholes with burglarproof laminated glass.

DIAGRAM





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