

Tensioning system LJ 745 with new frame technology

1.3

State of the art

The tensioning system LJ 745 with new patented frame technology demonstrates a uniquely high stability (see picture 1).

The high stability is accomplished through the use of aluminium stabilizers which are mounted on the underside of the stencil. By integrating these stabilizers into the stencil, bending & folding of the stencil is prevented (see picture 2). Stencil foils as thin as 1 mil (25 micron) can be repeatedly pulled to a high tension of 40 N/cm, thus guaranteeing the high positioning accuracies required for ultra-fine-pitch applications. The new "backlight" option acts as a secondary inspection tool which can highlight defects such as anomalies in pad shape and blocked apertures. The tensioning frame is available in both 23"x23" and 29"x29". Green corner tabs can be employed for compliance with RoHS directives and unique product identification.

Advantages

- higher stability
- high and uniform clamping tension, comparable to stencils in mounted frames
- integrated "backlight" lightening unit
- frame sizes for most stencil printers are available
- coloured identification available
- simple and safe handling

Tensioning system

Only one clamping station is required per facility. "1st generation" LaserJob tensioning frames can be mounted and interspersed with new generation frames (see picture 4). An illumination unit can be optionally integrated in the tensioning system, to facilitate the inspection of the stencil or the apertures. The illumination unit consists of maintenance-free LED's with especially high numbers of lumens, that very small apertures can be easily inspected.

The tensioning system LJ 745 runs on compressed-air only (> 6 bar) for both pulling the >40 N/cm tensioning force and for releasing the stencil from the tensioning frame. An integrated compressed air regulator controls the working pressure to 5 bar. For exchange of the stencil, the tensioning frame is placed in the base station. The two-hand operation on the front side ensures easy and safe handling (see picture 4). The working station complies with all requirements of the German Employers Liability Insurance Association.

Tensioning frame

The tensioning frame is a ruggedized welded aluminium frame which is designed to easily accommodate the stencil foils. More than 250 leaf springs are mounted on all 4 exterior sides of the tensioning frame in order to provide uniform tension (>40 N/cm) across the entire surface of the stencil, regardless of stencil foil thickness (see picture 5). Prolonged stencil life is guaranteed and is comparable to the longevity of fixed-frame stainless steel mesh mounted stencils. The tensioning frame contains no moving parts. This allows the frame to be maintenance-free and is washable in all cleaning systems. The tensioning frame is available from stock in two standard sizes, 29"x29" and 23"x23".

Stencil

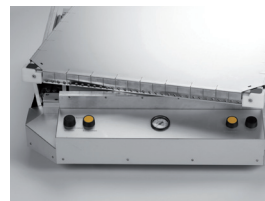
The tensioning system LJ 745 with integrated frame technology provides high stability for a multitude of stainless steel foil thicknesses. The welded tensioning frame provides both high stability and safe handling. No sharp edges, no risk of injury! The stencils can be produced in PatchWork® (step)- and NanoWork® technology. The stencils are cut in air controlled production rooms with a fiber laser. The precision of the lightly conical apertures allows for more efficient solder paste release and increases the process window in the



Picture 2: Aluminium profile



Picture 3: Coloured stencil corners



Picture 4: Tensioning system



Picture 5: Stencil in tensioning frame

Picture 1: Tensioning system with stencil



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pick and place operation. To produce true-to-size stencils, it is necessary that the laser cut process takes place with the foil strained at a very high tension. With this procedure, we guarantee an aperture positioning of $\pm 10\mu\text{m}$ within an area of $200 \times 200\text{ mm}$.

Advantages of laser cutting

- exact aperture geometry
- aperture size accuracy $\pm 3\mu\text{m}$
- aperture position accuracy $\pm 10\mu\text{m}$

Stencil rework

All LaserJob laser-cut stencils undergo a post-production brushing process. A CNC-controlled brushing system allows for the removal of cutting burrs on the laser exit side of the stencil. The brush head traverses the entire aperture area in 0° , 90° , 180° , and 270° .

Advantages of this rework process

- no enlargement of apertures
- lowest material removal $< 2\mu\text{m}$
- consistent thickness of stainless steel material

Fulfillment

Working station

Stainless steel & aluminum material

Stencil

Stainless steel material: 1.4301

Hardness (Hv): min 370

Tensile strength $[\text{N/mm}^2]$: > 1100

Tolerances

Thickness of metal sheet: $\pm 3\%$

Available material thicknesses

Stainless steel sheets (μm):

30, 40, 50, 60, 70, 80, 90, 100, 120, 130, 140, 150, 180, 200, 250, 300, 400

(mils): 1.0; 2.0; 3.0; 3.5; 4.0; 5.0; 6.9;

7.0; 8.0; 10.0; 12.0; 16.0

Storage cabinet

With a base area of only 0.7m^2 (7.5 sq. ft.), the LaserJob storage cabinet holds up to 100 stencils in a frame size of $29'' \times 29''$ or 150 stencils in a frame size of $23'' \times 23''$ (see picture 6). The stencils are suspended by a rail system by the use of hooks which are welded to the stencil. The stencils are easily placed in the rail systems and freely hang in the storage cabinet.

With the use of a numbering system, each stencil can be easily and quickly assigned (see picture 7). No additional bags or cartoons are required for storage of the stencils.

Advantages

- Foils are compactly stored and neatly arranged
- Up to 150 frames can be stored in each cabinet
- Minimum floor space is required for stencil access and storage

Storage cabinet

Powder coated steel

Rail system

Aluminum & galvanized steel material

Storage cabinet dimensions

Standard Cabinet height

$195\text{ cm} \times \text{length } 103\text{ cm} \times \text{width } 70\text{ cm}$

(approx. $77'' \times 41'' \times 28''$)

Storage bags

Storage bags with hooks are available for customers whose protocols require hermetic sealing of the stored stencils (see picture 8).

Shipping conditions

Delivery time

Ex works: 30 working days

Shipping

Transport per forwarder as well as transport per forwarder of your choice

We are ISO 9001:2015 certified



Picture 6: Storage cabinet



Picture 8: Storage bags

Picture 7: Rail system



LaserJob data sheets

1.0 SMD stencil

1.1 NanoWork® stencil

1.2 PatchWork® stencil

1.3 Tensioning system LJ 745

1.4 Frames and tensioning systems

1.5 Repair and Re-balling stencil

1.6 Wafer bumping-stencil

1.7 LTCC Via fill-stencil

2.0 Laser Material Processing

Auch in Deutsch erhältlich.