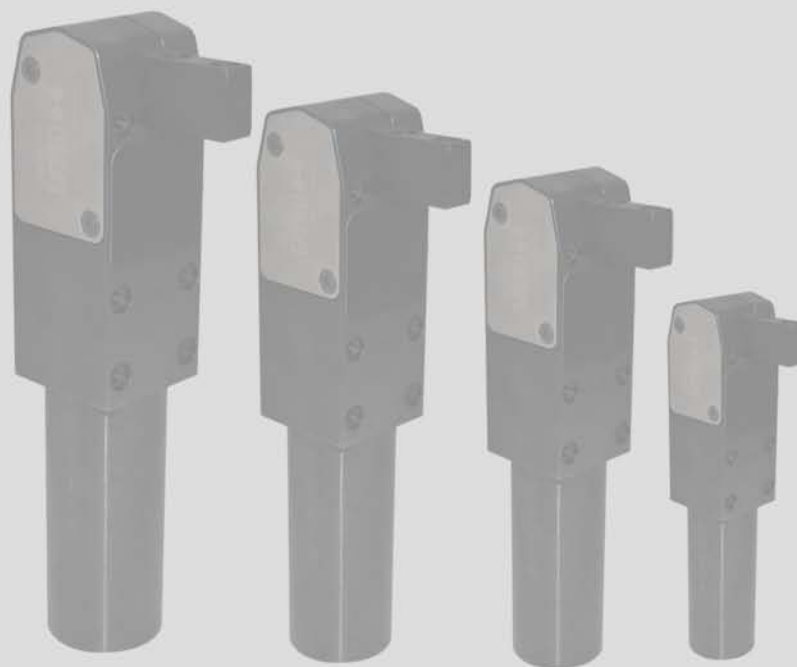




Technical Presentation

FASTENING CLAMP



MISATI, founded in 1979 in Barcelona (Spain), is a leading company in the design, manufacturing and worldwide distribution of high-quality pneumatic fastening elements.

In order to provide the best solutions to our customers, we offer:

- ➔ **OWN DESIGN:** our R&D dept. develops and improves different elements according to our customers' needs.
- ➔ **PRODUCTION:** mass production, automated manufacturing with our own patented technology.
- ➔ **DISTRIBUTION:** standard elements on stock, with after-sales service.
- ➔ **ENGINEERING SERVICE:** studies, project, samples for customers' tests and technical advice.





Misati clamps have been designed bearing in mind most usual requirements in tools, so their **unique advantages** give a great **added value** to the user.

These unique advantages represent a step forward in this technical field (worldwide patent).

- ✓ **Higher force**
- ✓ **Smaller**
- ✓ **Standard Gripper Fingers**
- ✓ **Welding Anti-spatter**
- ✓ **Lower Consumption**

1. Standard Components
2. Operation Principle
3. Unique Advantages
 - 3.1. Higher Clamping Force
 - 3.2. Smaller Size
 - 3.3. Standard Gripper Fingers
 - 3.4. Study of Special Gripper Fingers
 - 3.5. Anti-spatter Coating
 - 3.6. Reduced Air Consumption
 - 3.7. Adjusting the Fastening Clamp
 - 3.8. Long Working Life
 - 3.9. Built-in Connections
 - 3.10. Monoblock Steel Body
 - 3.11. Non-reversibility
 - 3.12. Positioning the Fastening Clamp
 - 3.13. Fixing the Gripper Fingers
 - 3.14. Pneumatic Installation
without Flow Regulators
 - 3.15. Pneumatic Cushioning
 - 3.16. Air tightness of the Piston
 - 3.17. Pneumatic Spare Parts
 - 3.18. Guarantee
4. Comparative Studies
5. Examples of Application
6. Service

1. STANDARD COMPONENTS



MISATI has a complete program of standard elements (gripper fingers, mountings, sensors, etc.) which will **simplify the design and save the customer from producing special parts.**

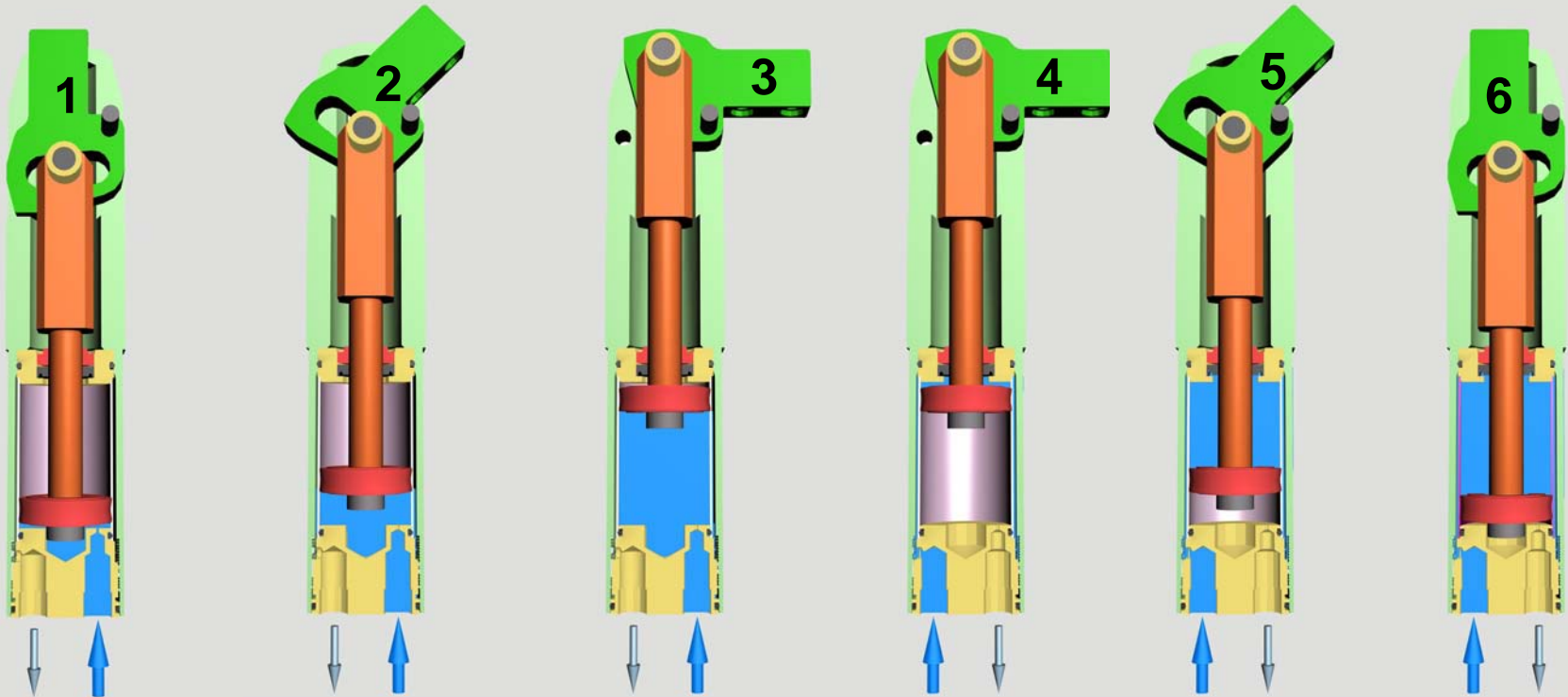
2. OPERATION PRINCIPLE

Closing Clamp

Making force

Opening Clamp

At rest



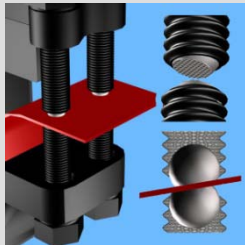
The clamp has a double-effect pneumatic cylinder which transmits a turning movement to the clamping arm along the shaft. Thanks to the special shape of the oblong hole, the clamp makes a big force (see paper clamp).

3. UNIQUE ADVANTAGES OF THE MINICLAMPS



Higher Holding Force

Reduced Size



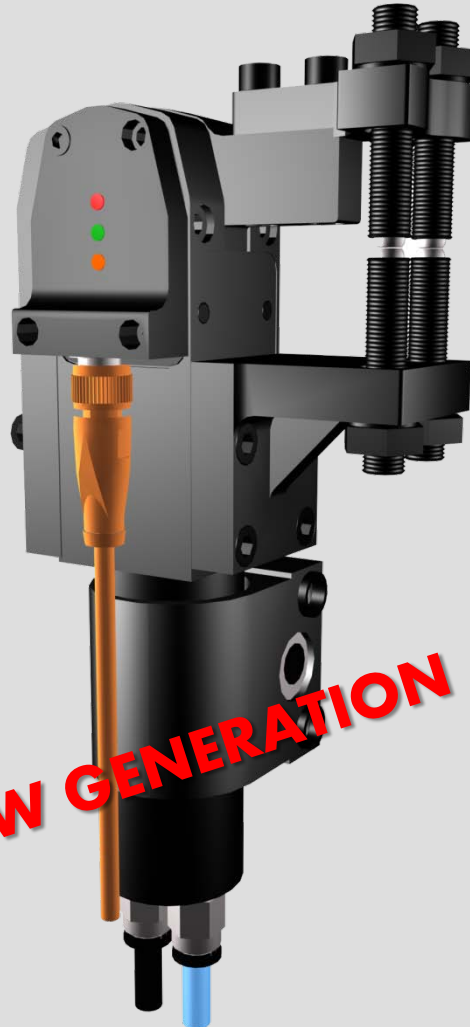
Standard Tread Fingers with Ribbed Ball-&-Socket Joint

Gripper Fingers for Moulded Surfaces



Anti-spatter Clamps for Welding

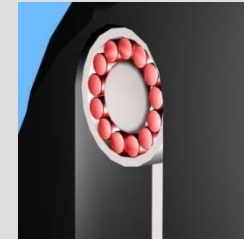
NEW GENERATION



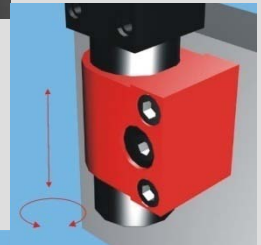
Low Air Consumption



Rolling System (20 million cycles)



Fastening of the Holding Point



Built-in Connections with no Flow Regulators

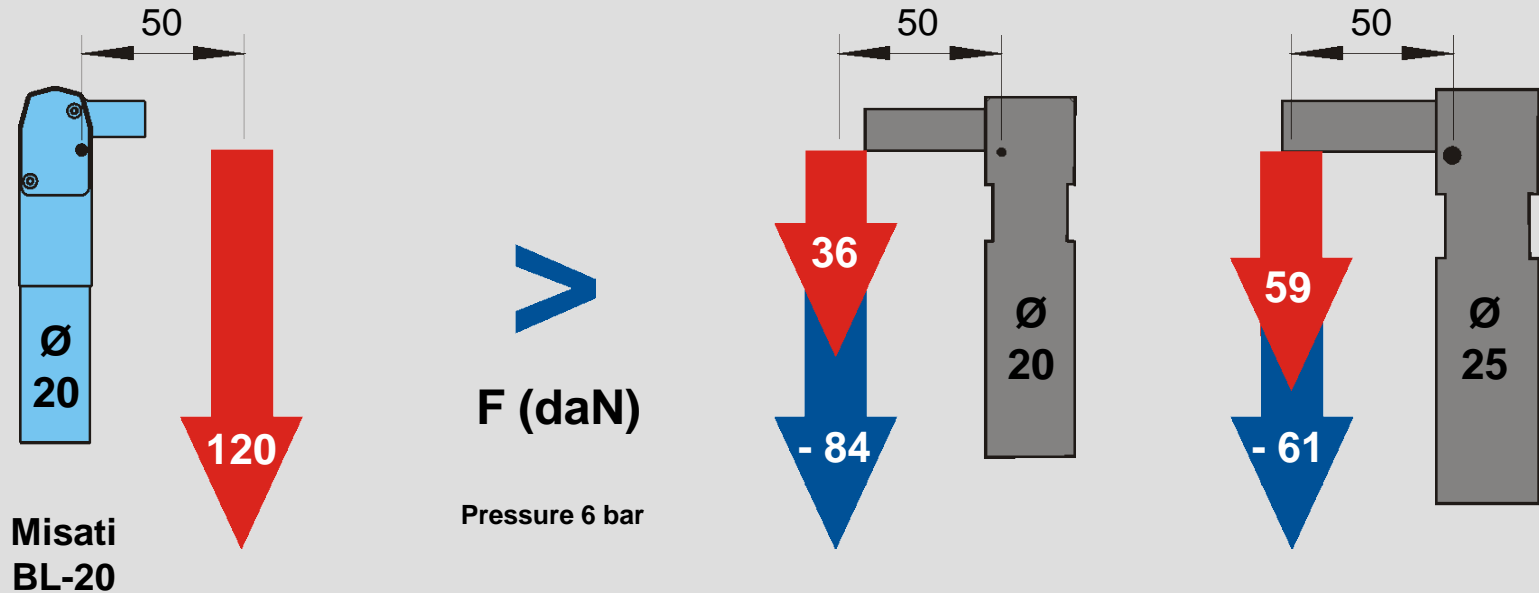


Monobloc Body of Mechanized & Treated Steel



If we compare clamps with the same diameter...

Other Clamps

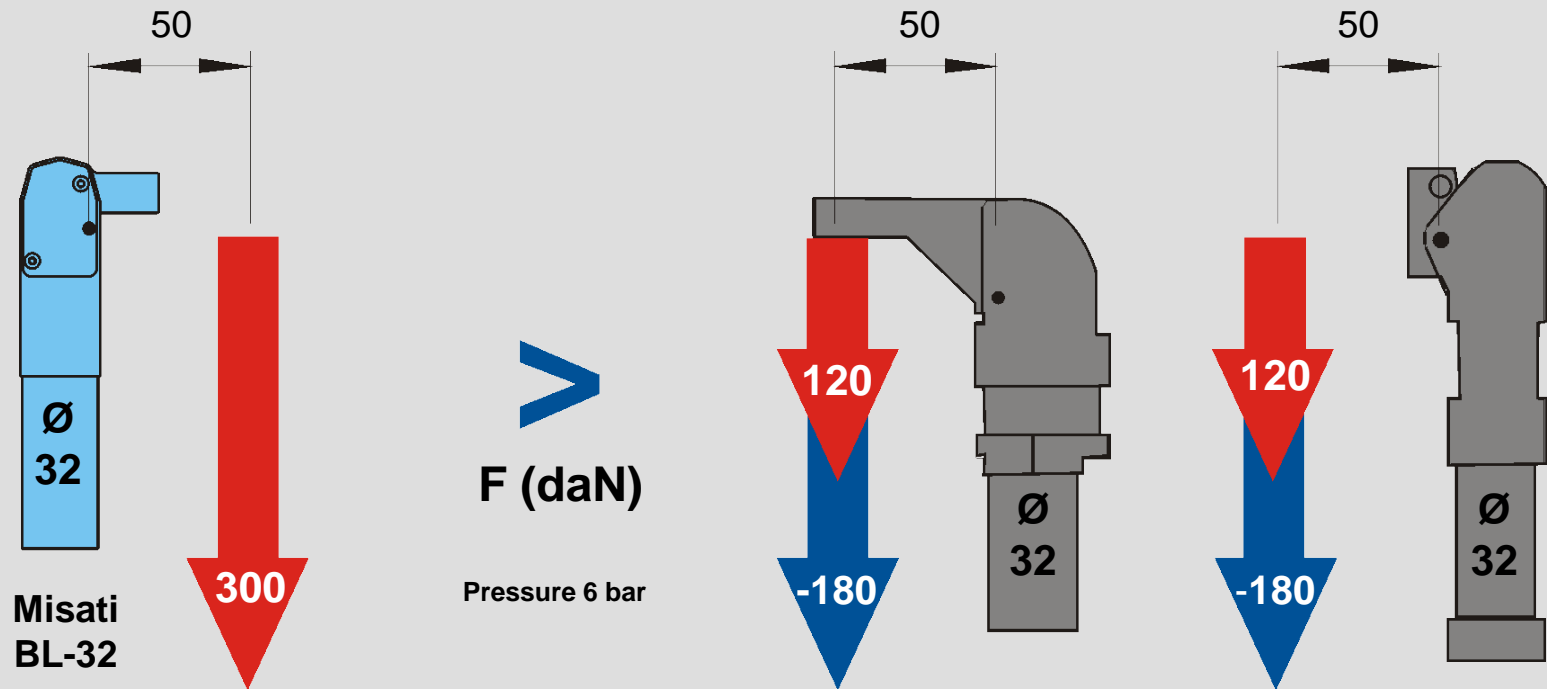


... we'll see that our clamps reach up to 247 ÷ 333 % more force than other clamps.

Smaller Misati's clamps can be used to make the same force as other manufacturer's bigger clamps, so there is a **saving in size, consumption and cost.**

If we compare clamps with the same diameter...

Other Clamps

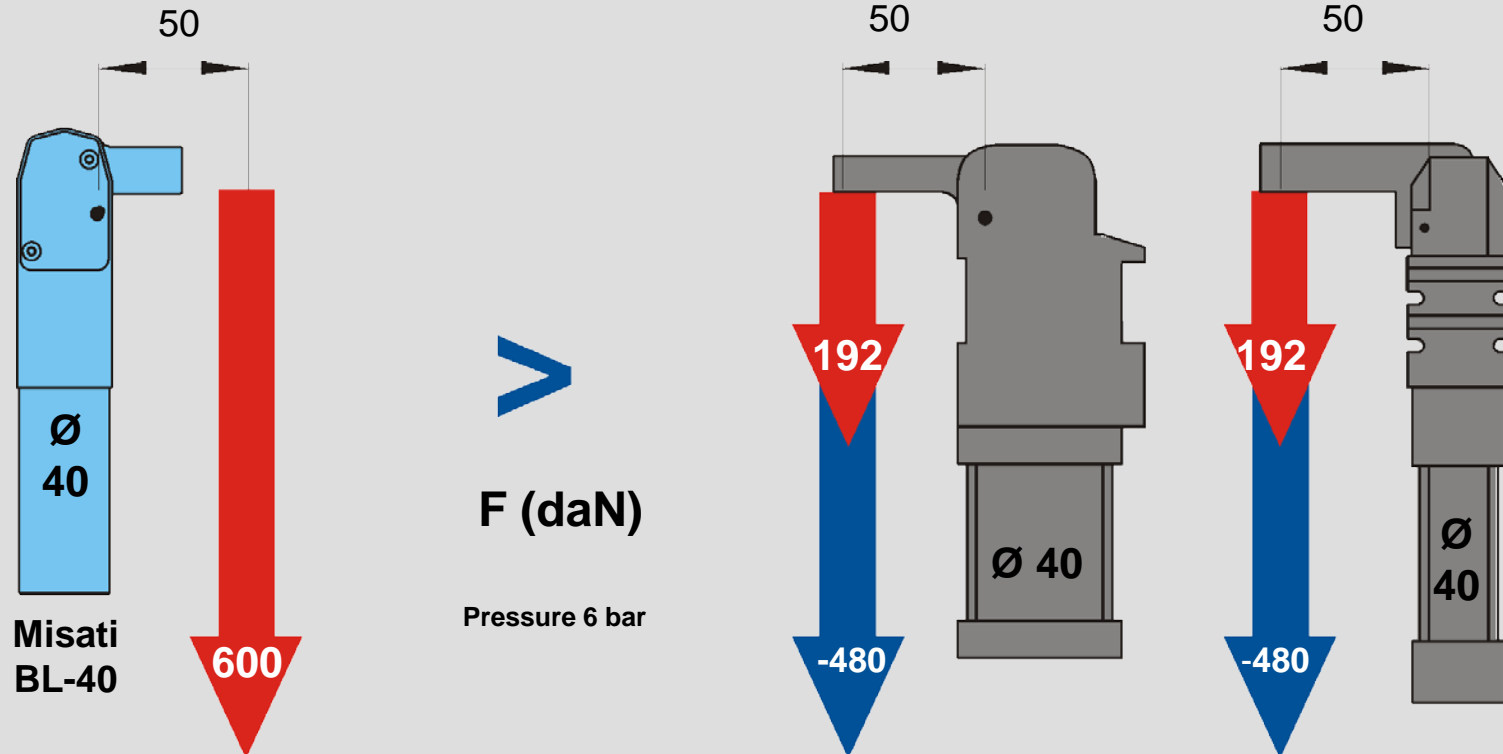


... we'll see that our clamps reach up to 247 ÷ 333 % more force than other clamps.

Smaller Misati's clamps can be used to make the same force as other manufacturer's bigger clamps, so there is a **saving** in size, consumption and cost.

If we compare clamps with the same diameter...

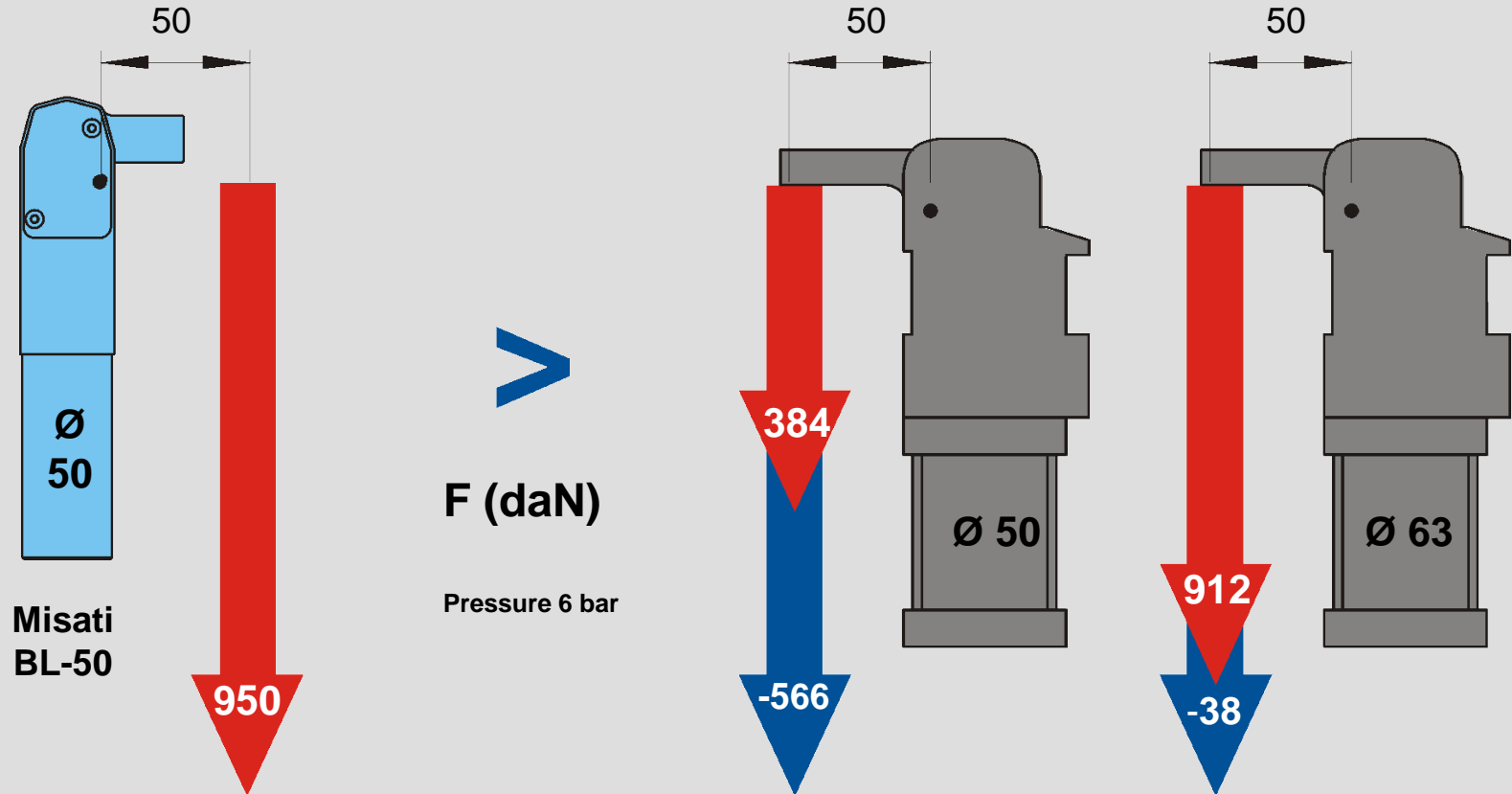
Other Clamps



... we'll see that our clamps reach up to 247 ÷ 333 % more force than other clamps.

Smaller Misati's clamps can be used to make the same force as other manufacturer's bigger clamps, so there is a **saving** in size, consumption and cost.

If we compare clamps with the same diameter...

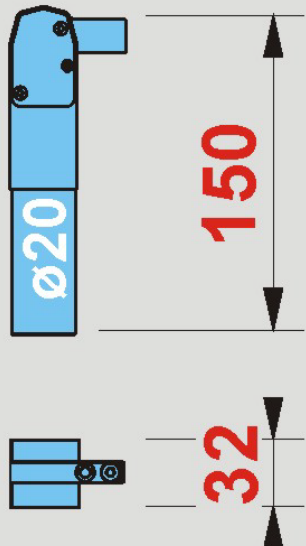


... we'll see that our clamps reach up to 247 ÷ 333 % more force than other clamps.

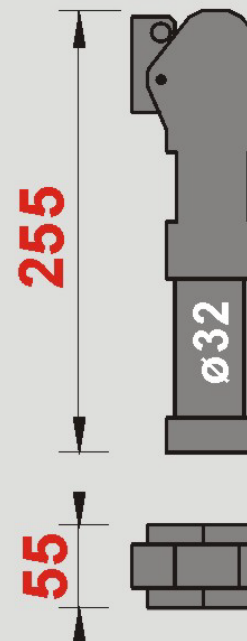
Smaller Misati's clamps can be used to make the same force as other manufacturer's bigger clamps, so there is a **saving in size, consumption and cost.**

If we compare two clamps that make the same force...

F = 120 daN



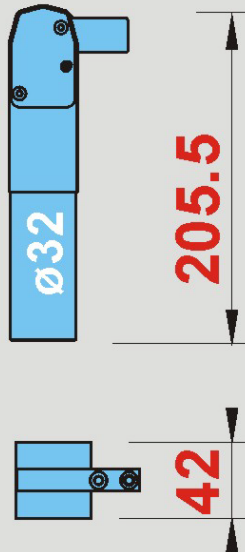
F = 120 daN



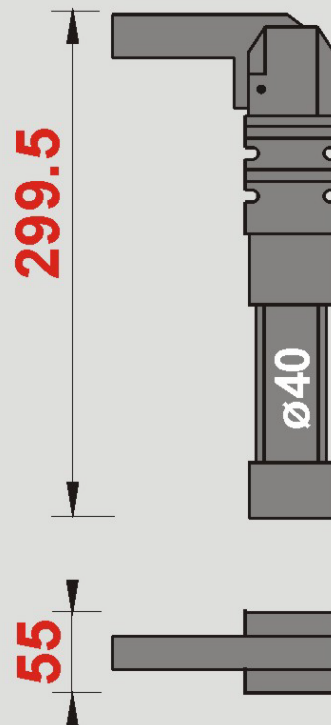
... we can notice that Misati clamps are narrower (between 16 and 42 %). With a narrower clamp, it will be easier to gain access to small areas of the tools.

If we compare two clamps that make the same force...

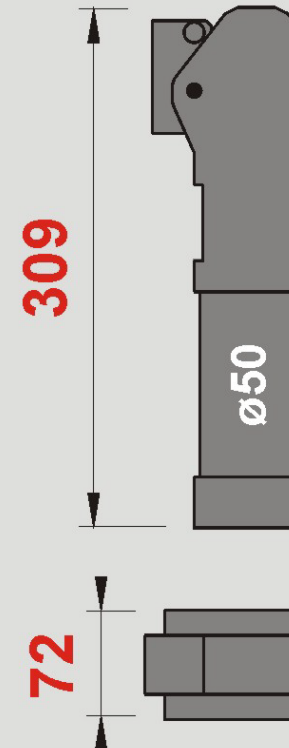
F = 300 daN



F = 120 daN



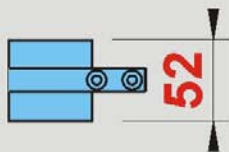
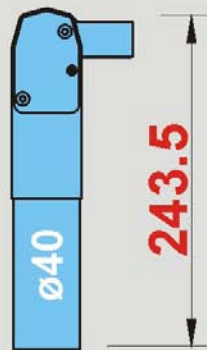
F = 360 daN



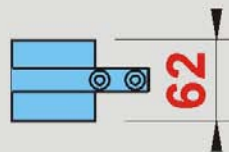
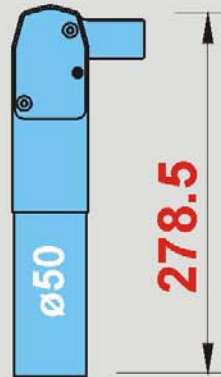
... we can notice that Misati clamps are narrower (between 16 and 42 %). With a narrower clamp, it will be easier to gain access to small areas of the tools.

If we compare two clamps that make the same force...

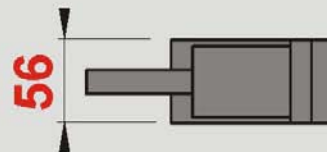
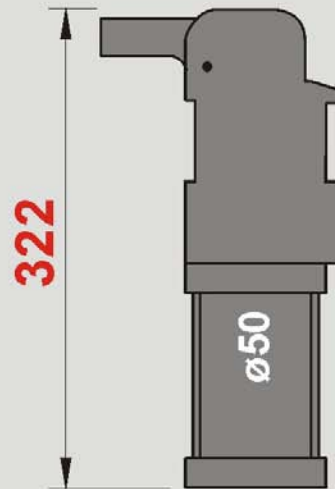
F = 600 daN



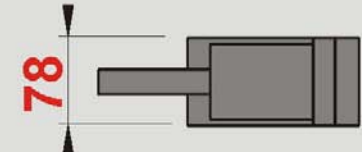
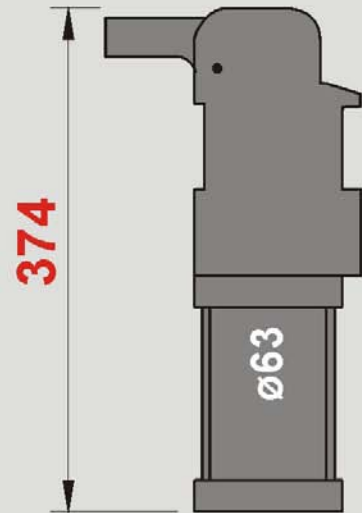
F = 950 daN



F = 380 daN

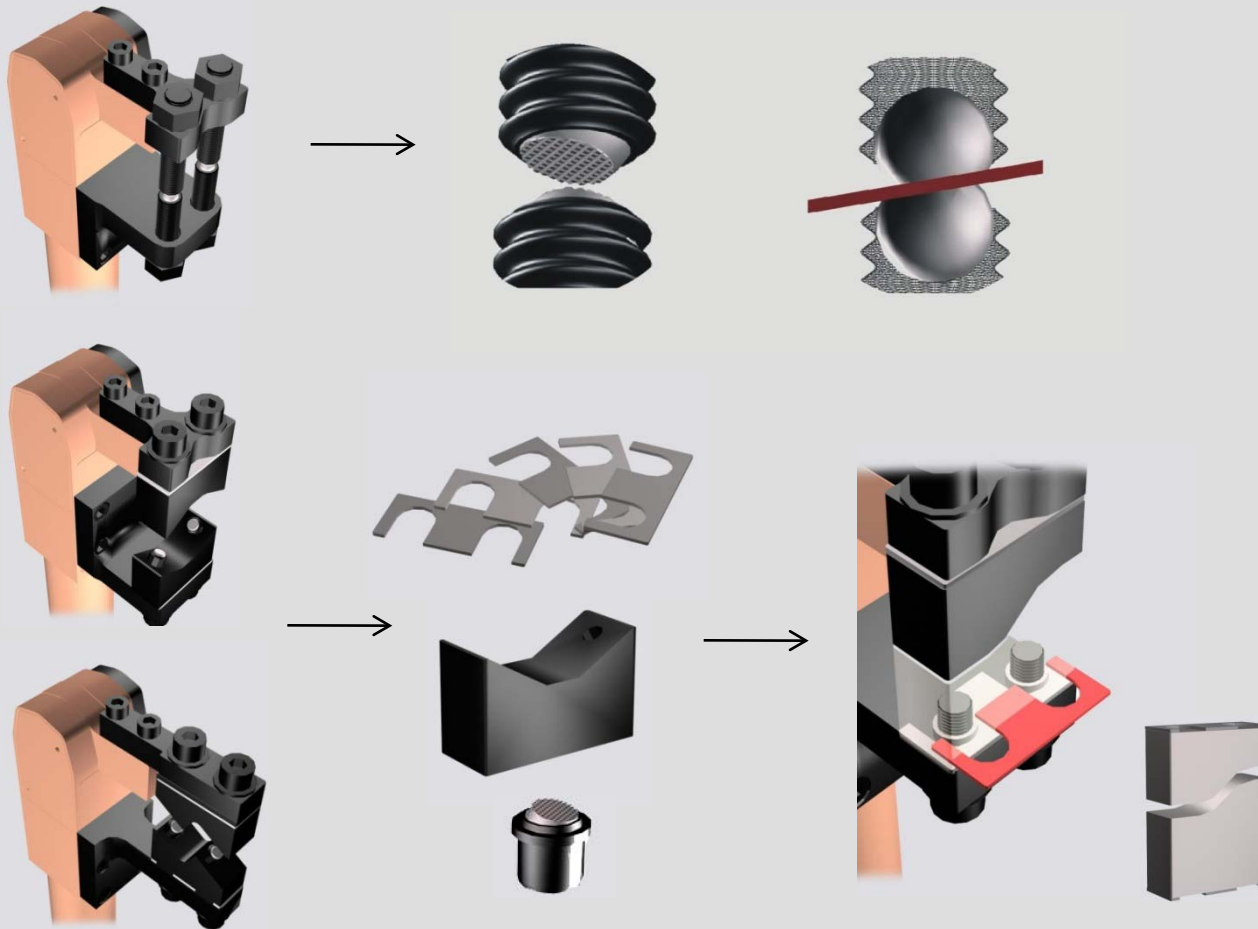


F = 912 daN

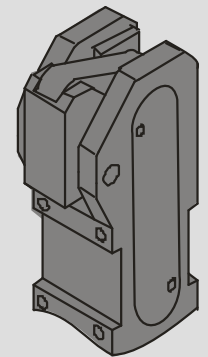
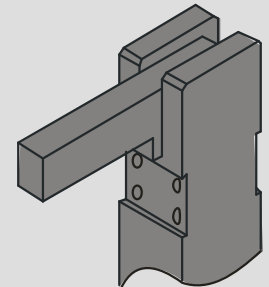


... we can notice that Misati clamps are narrower (between 16 and 42 %). With a narrower clamp, it will be easier to gain access to small areas of the tools.

3.3. Standard Gripper Fingers



Other Clamps

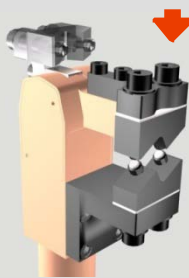
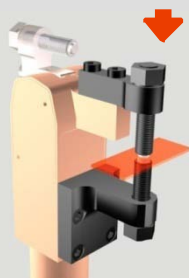
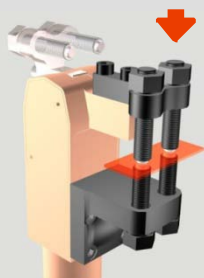


Designing and manufacturing special gripper fingers increases the total cost of the tool.

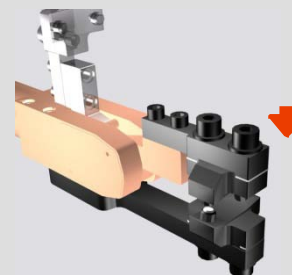
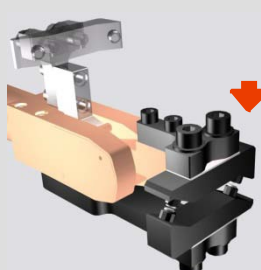
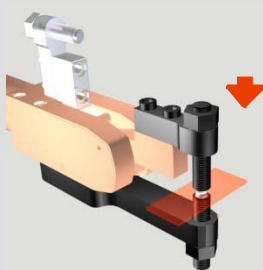
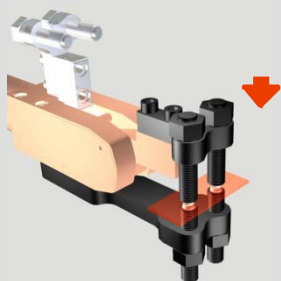
Misati offers a wide range of standard gripper fingers, so that the customer may **save up to 353 € per clamp.**

3.3. Standard Gripper Fingers

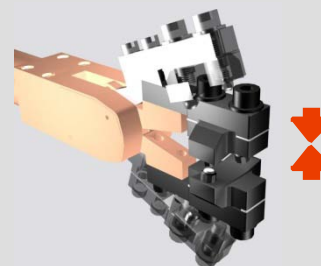
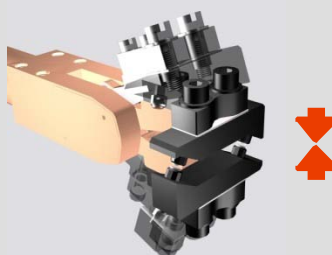
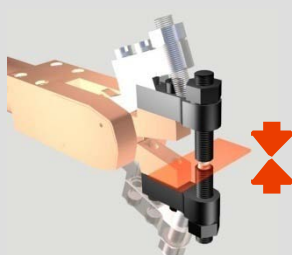
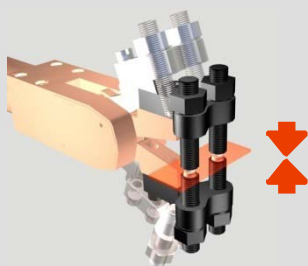
Our program of gripper fingers consists of either two or four screws with ribbed ball-&-socket joints and of moulded surfaces, which **can be combined with all our types of clamps**.



BL-20
BL-32
BL-40
BL-50



BI-20
BI-32
BI-40
BI-50



BC-20
BC-32
BC-40

Misati has a wide-ranging program of standard gripper fingers. However, you may need special gripper fingers. Misati can study your need and suggest a solution.

Our R&D Dept. will recommend the best solution for your project, **sparing you a significant amount of hours of work.**

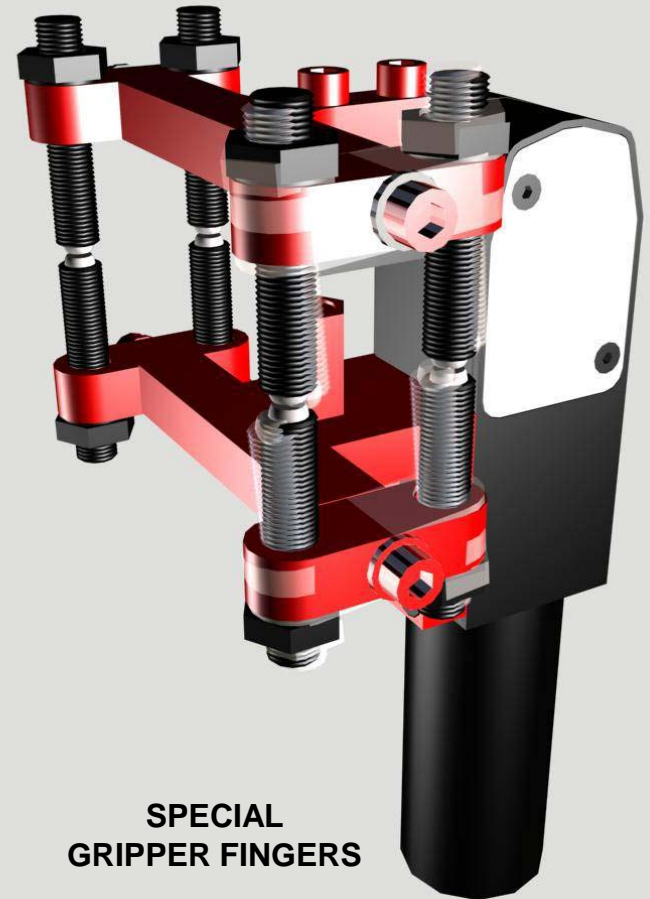


**STANDARD
GRIPPER FINGERS**

*Standard Gripper Fingers
fasten the workpiece by one or
two points.*

*In this example, the holding
force had to be the same on 4
points (on different distance
from the turning point of the
arm).*

*Our proposal consisted in a
compensation system with
rocker arm.*

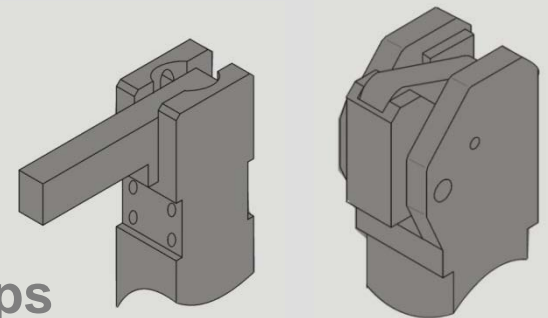


**SPECIAL
GRIPPER FINGERS**



In aggressive environments such as welding (resistance or arc), where there are sparks, we strongly recommend to use protected clamps.

With our full protective anti-spatter coating, sparks will not stick to the clamp. Any **production stoppage will be avoided** and the customer will definitely **save in maintenance**.

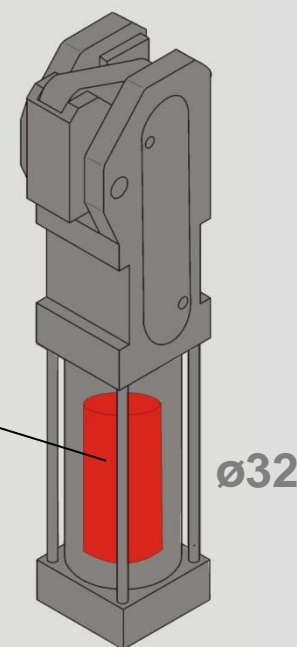


Other Clamps



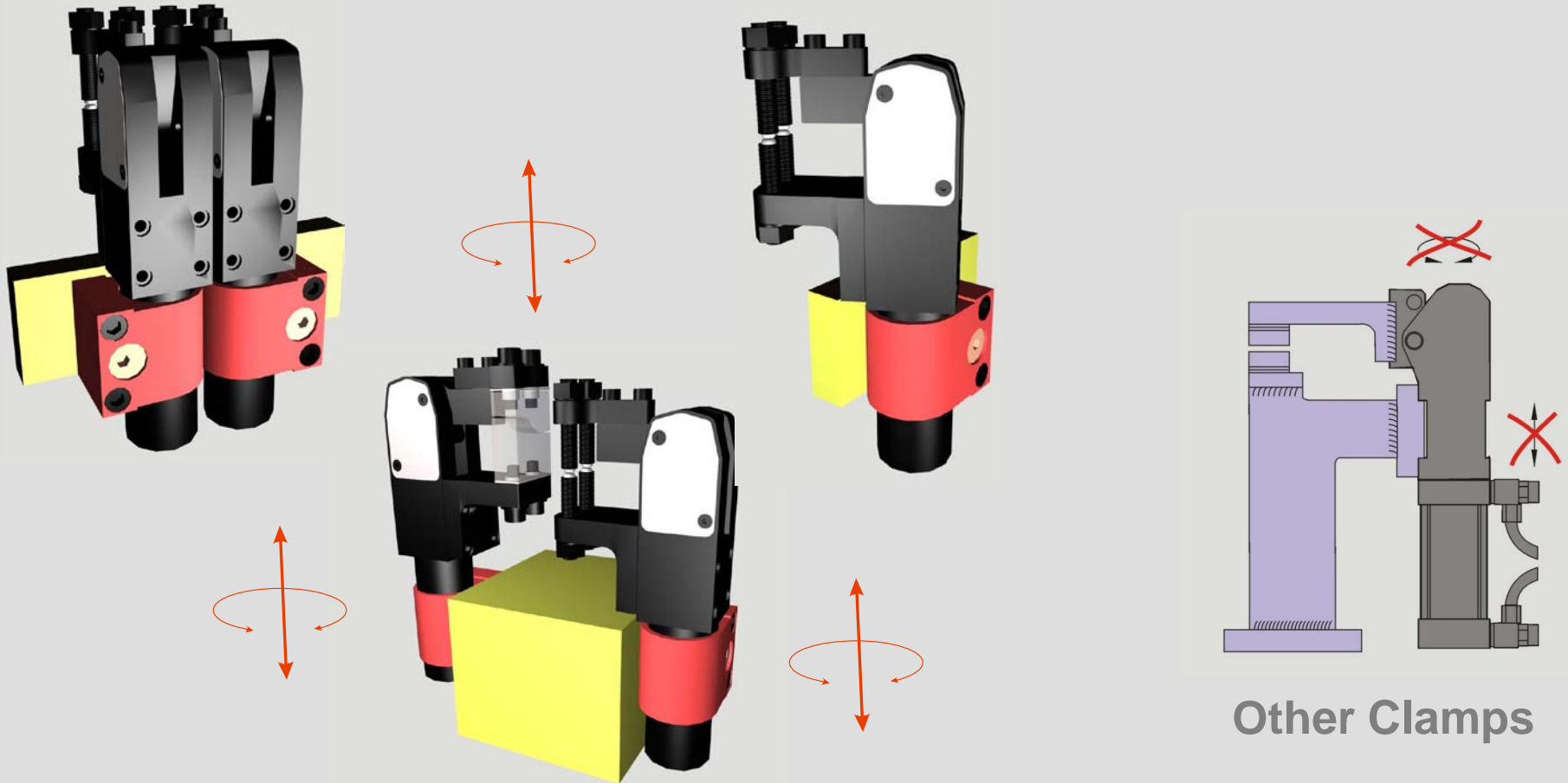
59 cm³ < **73.9** cm³

Other Clamps



The lower air consumption of our clamps mean a saving up to **130 € per year and per clamp**.
The investment made on the tool is recovered in a shorter time.

3.7. Adjusting the Fastening Clamp

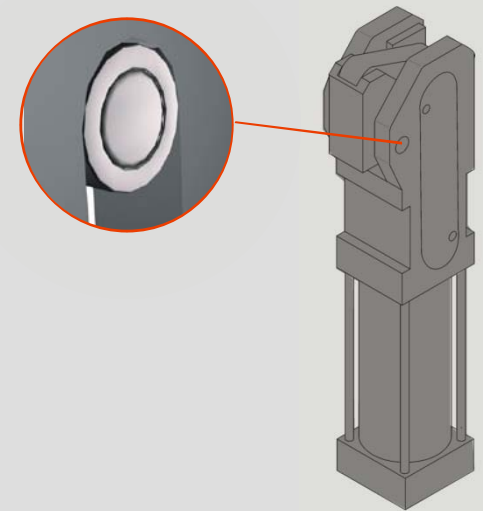


Assembling the clamp through its cylinder allows us to fasten both gripper fingers simultaneously (action-reaction), so we can adapt to the different levels of the workpiece to be fastened. **The amount of time used to adjust the tool is reduced.**

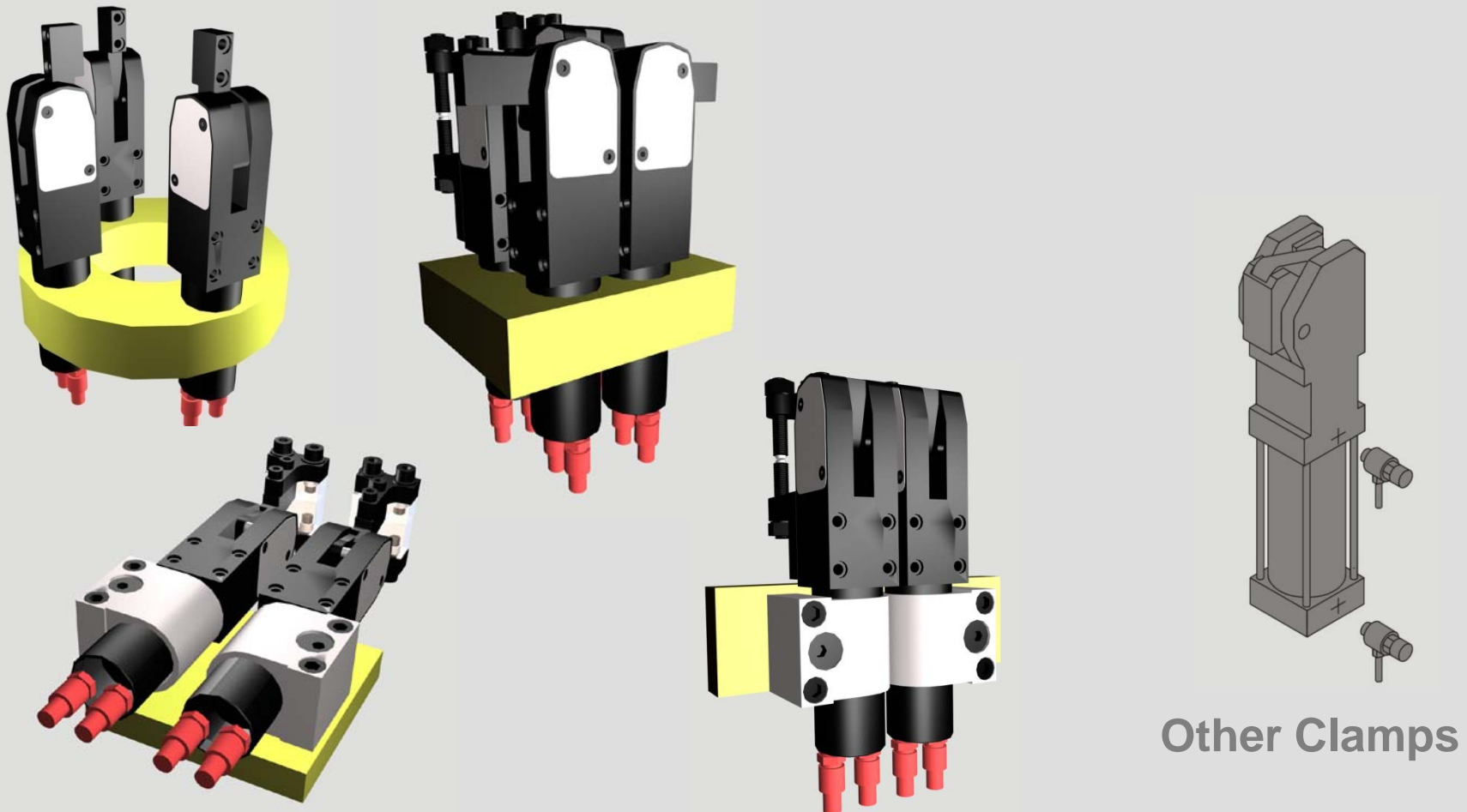


Rolling System

The force mechanism has been designed with rolling elements in order to **guarantee 20 million cycles or 7 years.**



Other Clamps

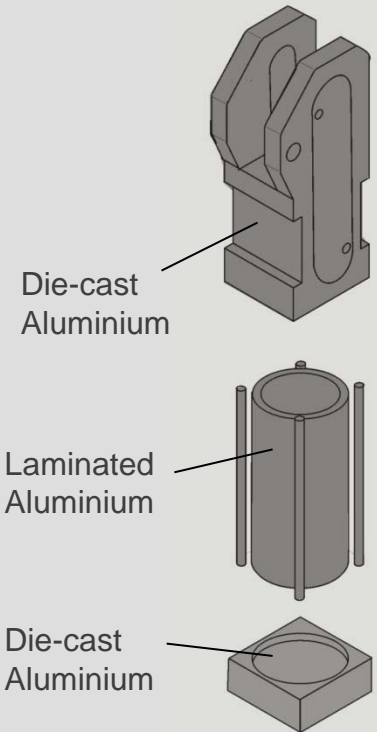


Since pneumatic connections are placed at the bottom of the clamp, they do not interfere on the working area and allow **clamps to be grouped together**.



- The pneumatic cylinder and the force mechanism assembled on a monoblock body of steel give the clamp the **maximum rigidity** to withstand aggressive environments

**MECHANIZED & TREATED
STEEL**

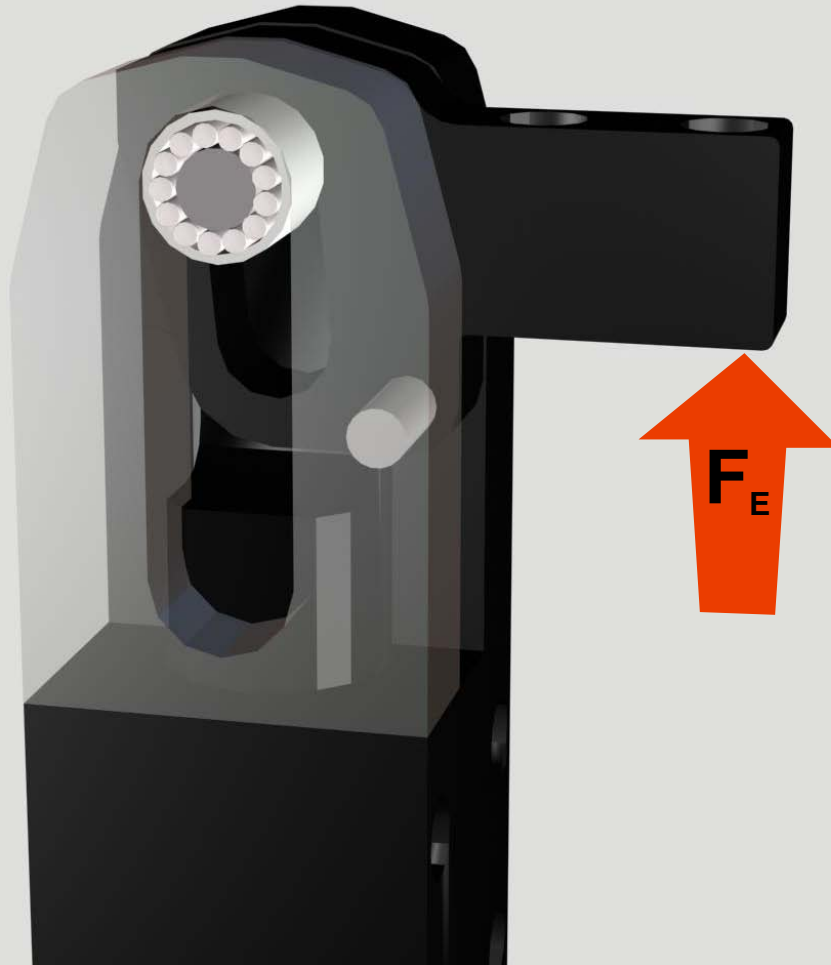


Die-cast
Aluminium

Laminated
Aluminium

Die-cast
Aluminium

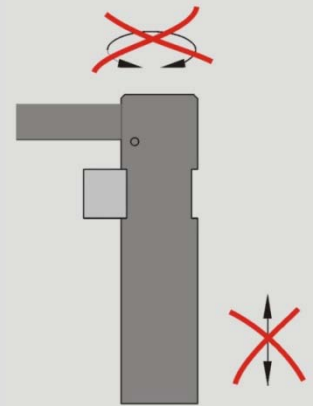
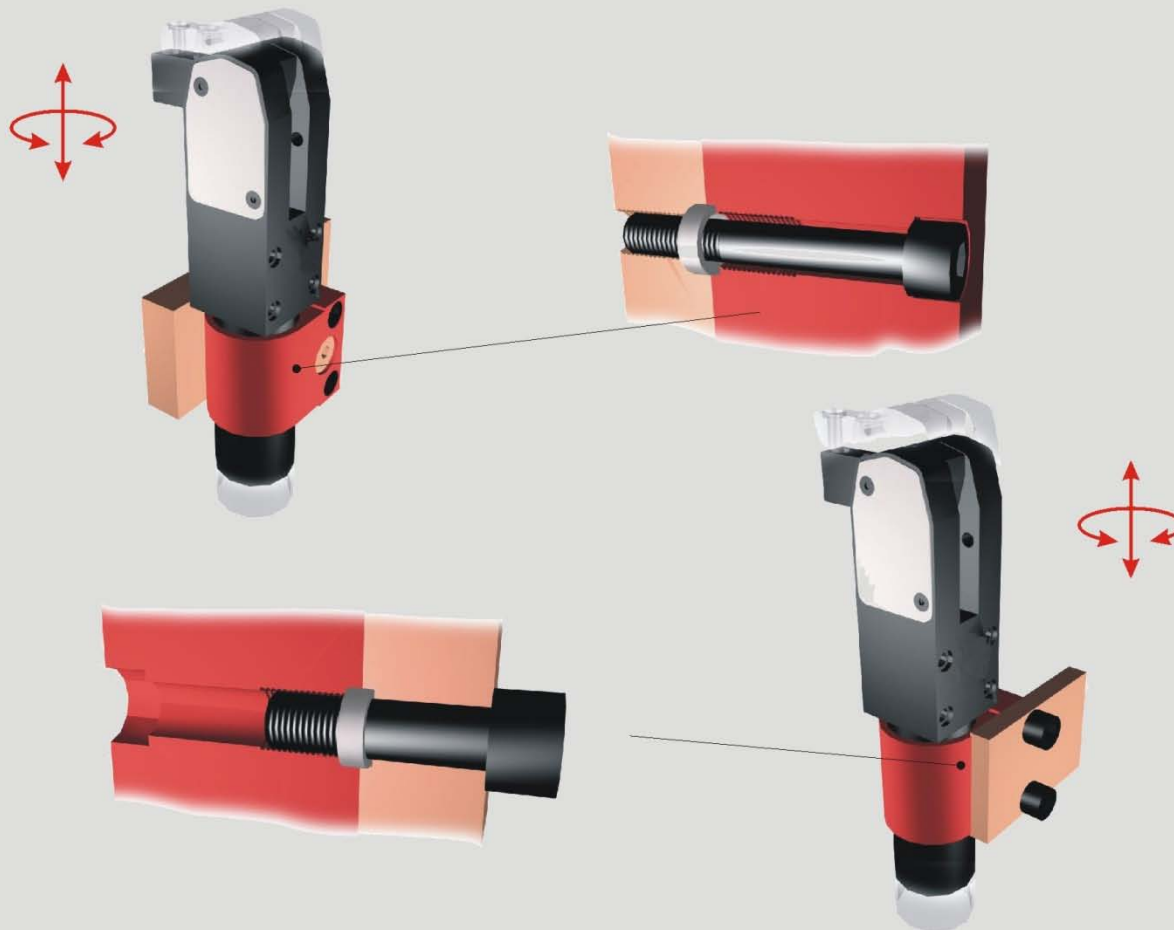
Other Clamps



Thanks to the design of the force mechanism, no external force F_E can open the movable arm when it is clamping the workpiece.

Therefore, even if air was missing, detachments of the piece that is being fastened are prevented.

3.12. Positioning the Fastening Clamp (with adjustment)



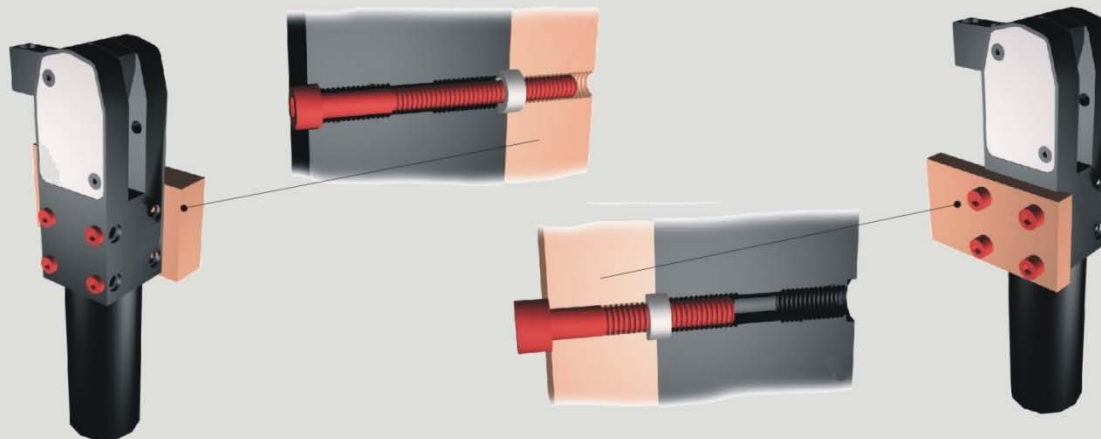
Other Clamps

The clamp can be fastened through the cylinder body in order to get an **adjustment in position and height** with regard to the clamping point.

3.12. Positioning the Fastening Clamp (fixed position)



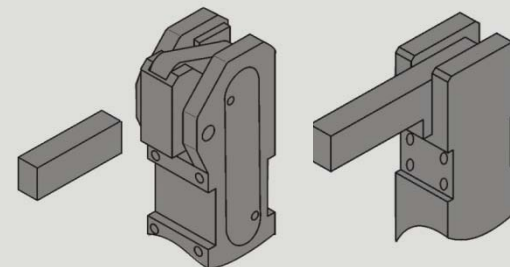
The clamp can also be fastened through the body (front or lateral) with **centring guide bushings**.
Then **the position is accurate** and it is **easy to interchange clamps**.



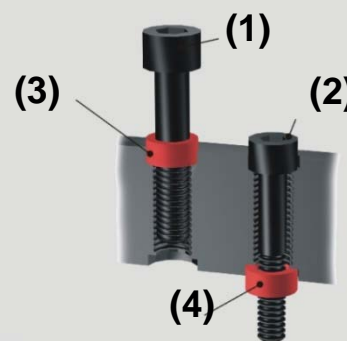
3.13. Fixing the Gripper Fingers (on the movable arm)



SPECIAL

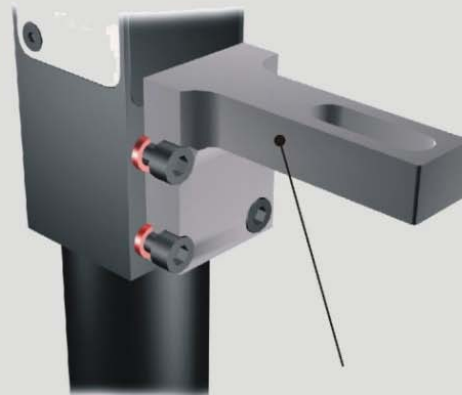


Other Clamps

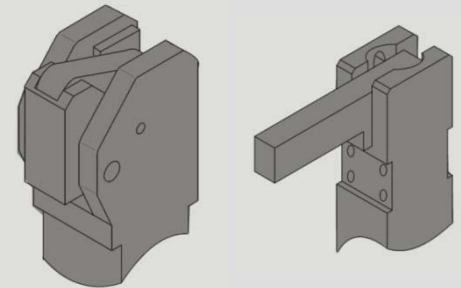


Fastening of movable gripper fingers to the arm of the clamp is made with threaded screws (1), passing screws (2) and upper (3) or lower (4) centring guide bushings. In this way, it's **easier to assemble, center and interchange gripper fingers**.

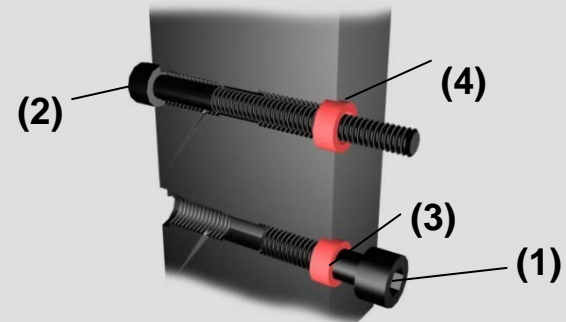
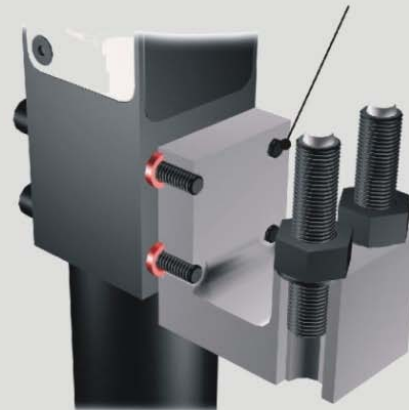
3.13. Fixing the (static) Gripper Fingers



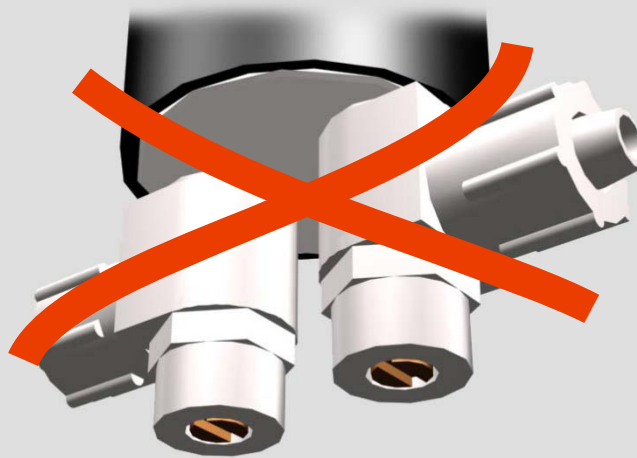
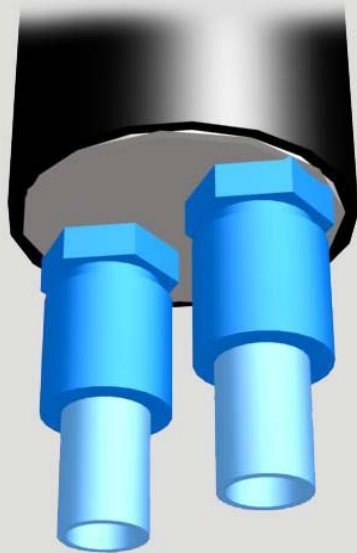
SPECIAL



Other Clamps

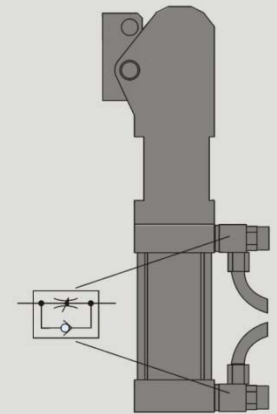


Fastening of movable gripper fingers to the arm of the clamp is made with threaded screws (1), passing screws (2) and upper (3) or lower (4) centring guide bushings. In this way, it's **easier to assemble, center and interchange gripper fingers.**

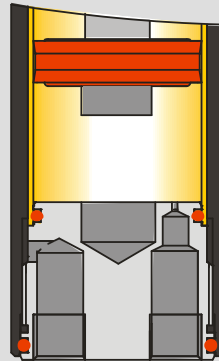


Without Flow Regulators

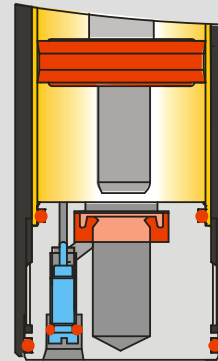
Other Clamps



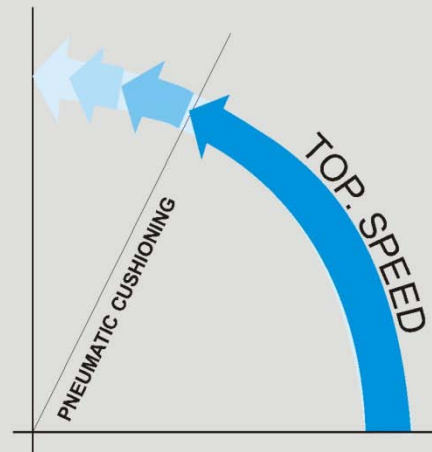
With standard gripper fingers, Misati clamps **do not need any flow regulators**:
the **cost of the pneumatic installation is reduced**.



Standard Head

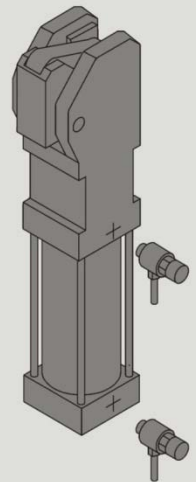


Head with Cushioning
(Optional)

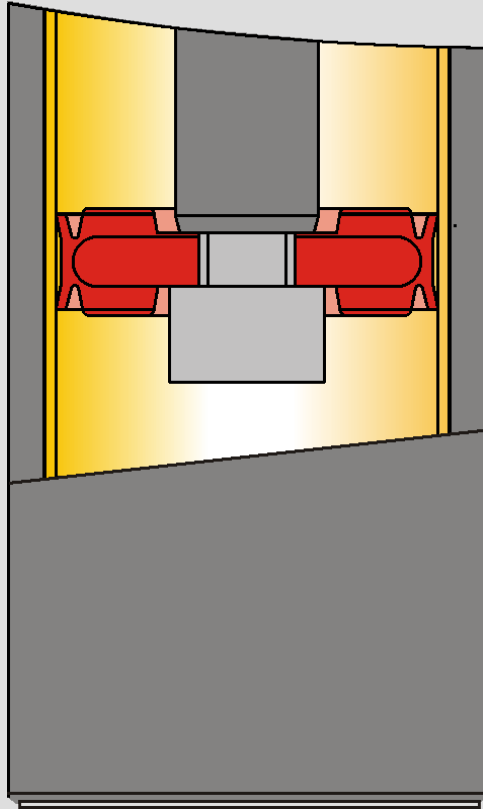


Adjustment of
Cushioning

Other Clamps

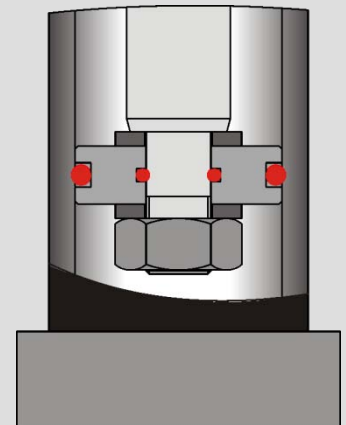


When special coupling (with an excess of mass or length) are used, Misati has prepared a pneumatic cushioning system, which works on the latest degrees when opening the arm and which **does not cause a loss of speed or productivity.**



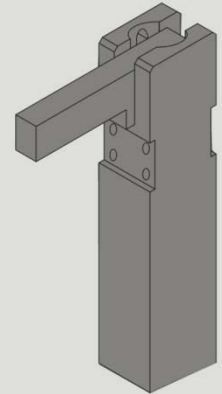
Misati clamps have a **double-lip sealing piston and a stainless cylinder bush**, which guarantee a higher air tightness, less friction and, in the long run, **less consumption of spare parts**.

Other Clamps





Other Clamps



Replacement of worn elements means a minimum repair cost: it's very **easy to dismantle** the clamp and **change the damaged part**.



We check air tightness, operation, non-reversibility and clamping force of all our miniclamps. Only when all these parameters are correct, we mark the miniclamp with number, lot and manufacturing year (traceability). Miniclamps are **guaranteed for 7 years**, which means a **saving in spare parts** and a **shorter repayment of the investment**.




Manufacturing Year

Lot Nr.

Miniclamp Nr.

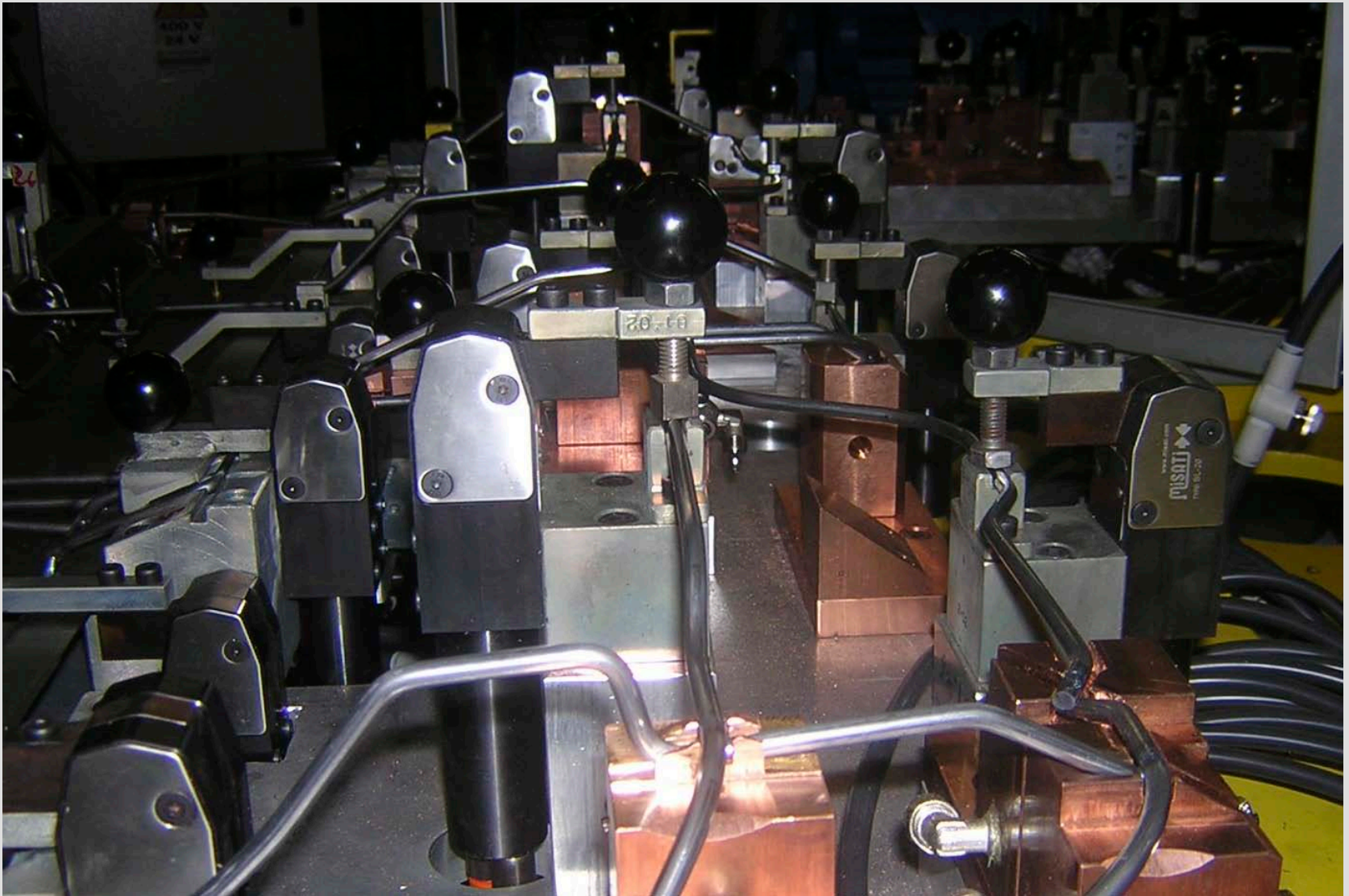
4. COMPARATIVE STUDIES



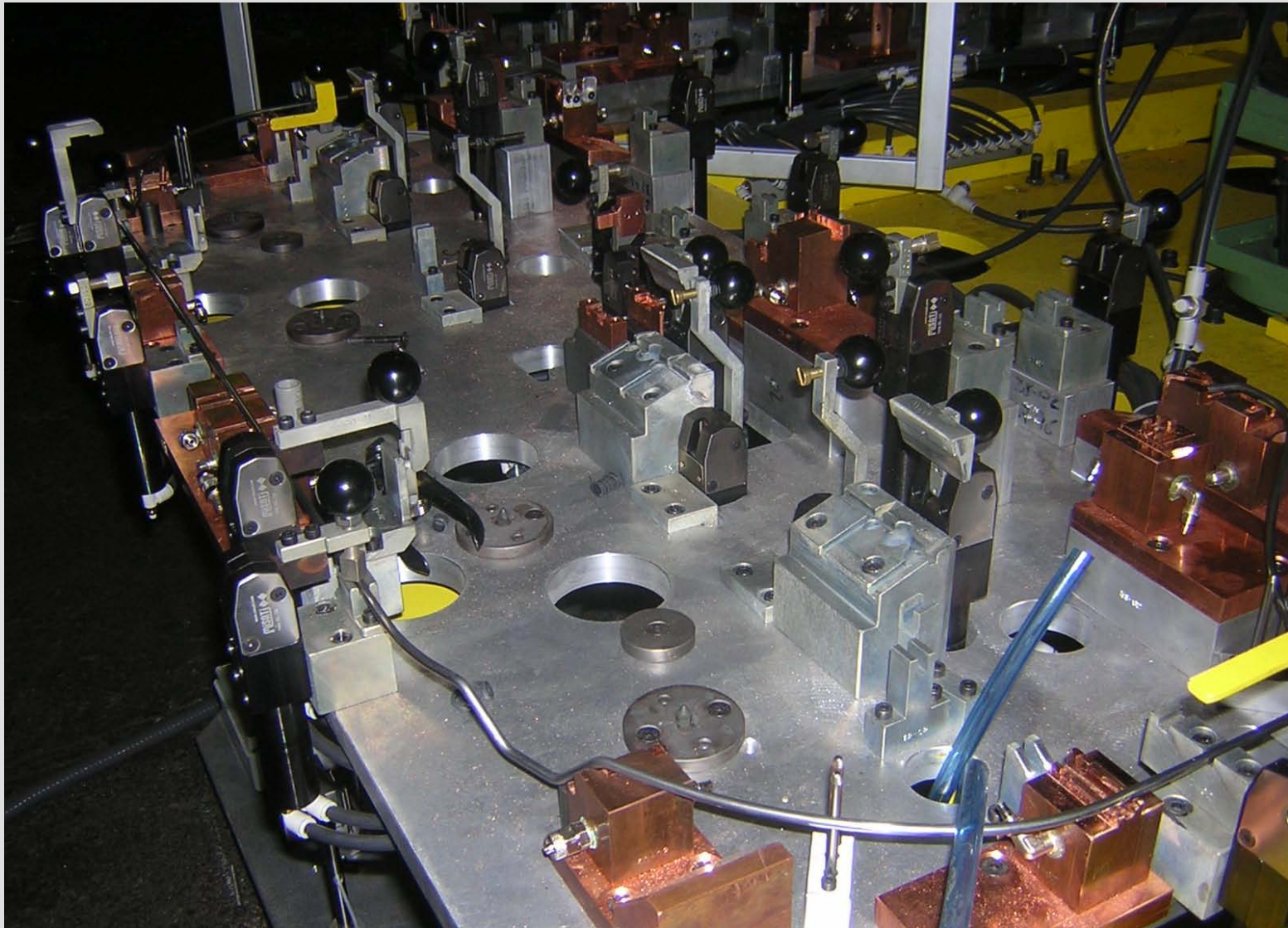
<div> <div></div> <div>MODEL</div> <div>(6bar) (r=50mm)</div> <div>CHARACTERISTICS</div> </div>	<div>  <div> Tünkers PKS 32 HT00 090 </div> </div>	<div>  <div>  BL-20 </div> </div>	COMPARATIVE ANALYSIS
HOLDING FORCE	120 daN	120 daN	Same force
REDUCED SIZE	Ø32, 55 x 255 mm	Ø20, 32 x 150mm	-41.8% Narrower
STANDARD GRIPPER FINGERS	NO	YES	Saving up to 353 € in design & construction
AIR CONSUMPTION	73.9 cm ³	16.22 cm ³	Saving of 60.82 €/year per clamp in consumption
FORCE MECHANISM	Friction	Rolling System	Prepared for 20 million cycles
MATERIAL	Aluminium	Mechanized & Treated Steel	Tougher
MONOBLOC BODY	NO	YES	Tougher
WEIGHT	1.500 Kg.	0.610 Kg.	-60%. Less weight
WELDING PROTECTION	NO	YES	Welding anti-spatter
FASTENING of GRIPPER FINGER	Welded	Screwed on + centring guides	Easy assembly & interchangeability gripper finger
ADJUSTMENT of GRIPPER FINGER	NO	Adjustable in height & position	Easy adjustment of the tool
PNEUMATIC CONNECTIONS	Lateral	Built-in	Easy adjustment & grouping
FLOW REGULATORS	SI	Not required	Saving of 6.98 €/clamp in pneumatic installation
GUARANTEE	2 años (1.5 mill./cycles)	7 años(20 mill./cycles)	Date of guarantee marked on the clamp
PRICE	€	€	Same force

This study has been based on two clamps with the same HOLDING FORCE (the most important characteristic in a fastening element).
Please, ask for a comparative study between the clamp you use and Misati's equivalent.

5. EXAMPLES OF APPLICATION



5. Examples of Application



Apart from a high-quality product, Misati also offers you:

- ✓ **Technical Advisor** in your country (see complete list in www.misati.com)

- ✓ **Engineering service** and **R&D department** for
 - Revision of our customers' projects
 - Studies, projects and special applications

- ✓ **Short delivery times**, both for miniclamps as well as for its spare parts (production plant located in Barcelona)

- ✓ **Competitive Price**