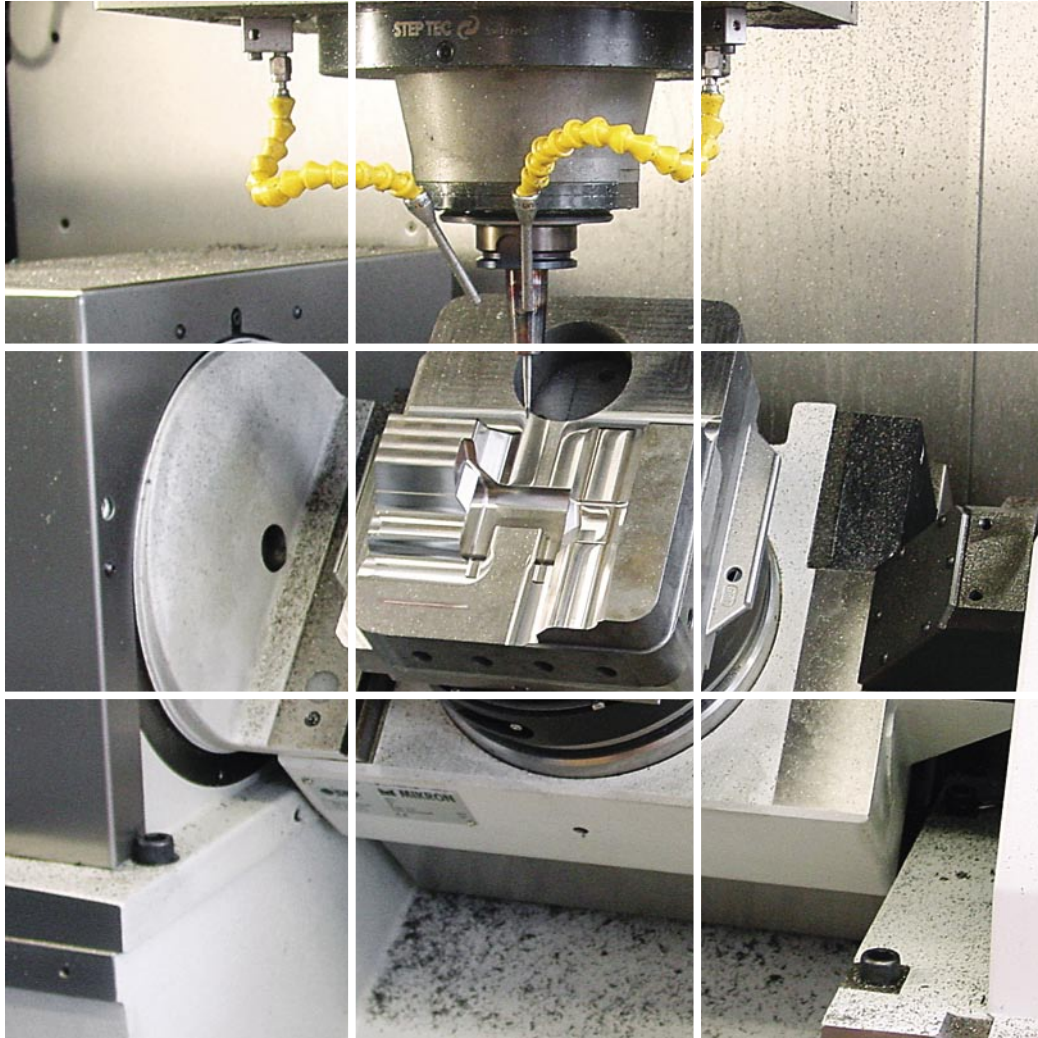


Reference systems for precision machining.
The standard range.



FOCUS ON THE COMPLETE PICTURE FOR GREATER COMPETITIVENESS

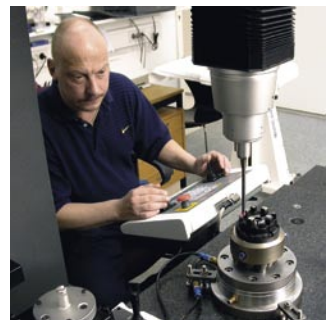
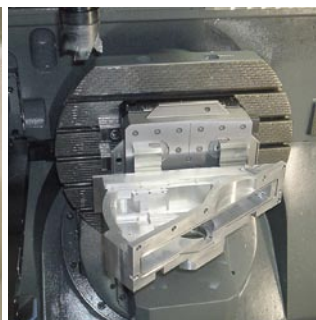
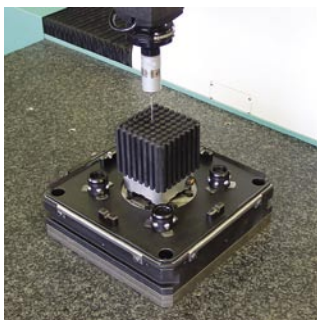
It is a well-known fact that competition in the manufacturing industry is constantly growing. The trend towards shorter runs and more variations means that the total time from order to delivery is the crucial factor in the choice of a supplier. And it is not only the process time in the various machines that counts here. Profitability is determined increasingly by the ability to minimise dead time in the machines and to have efficient flows of material and information in the workshop.

So what really matters is to focus on the complete picture. Total throughput time instead of individual process time! The company that can offer the quickest delivery of small batches of customer-specific products will win out in future competition situations.

The solution is a stable and exact reference system. This lets you preset away from the machine and then set up the machine in seconds. In fact, this is an essential requirement for modern production.

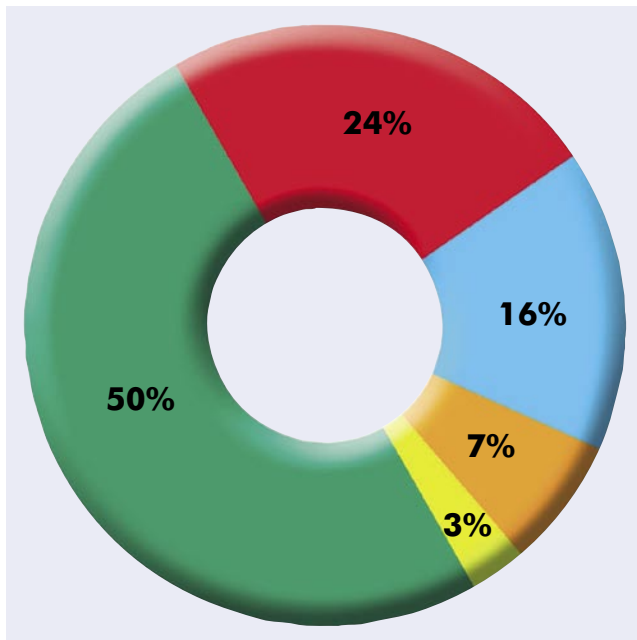
With System 3R reference systems, you radically increase the capacity of your machinery. Partly by minimising setting-up times. And partly because the reference systems are compatible with every machine in your workshop. And – not the least important point – it's only a short step to automation.

You get a reference system that you can build on steadily, bit by bit. Always flexible. Always reliable. Absolutely stable and exact.



EVER TOUGHER DEMANDS ON THE ENGINEERING INDUSTRY

- Shorter delivery times
- Smaller series sizes
- Increased accuracy
- Global competition
- Pressure on prices



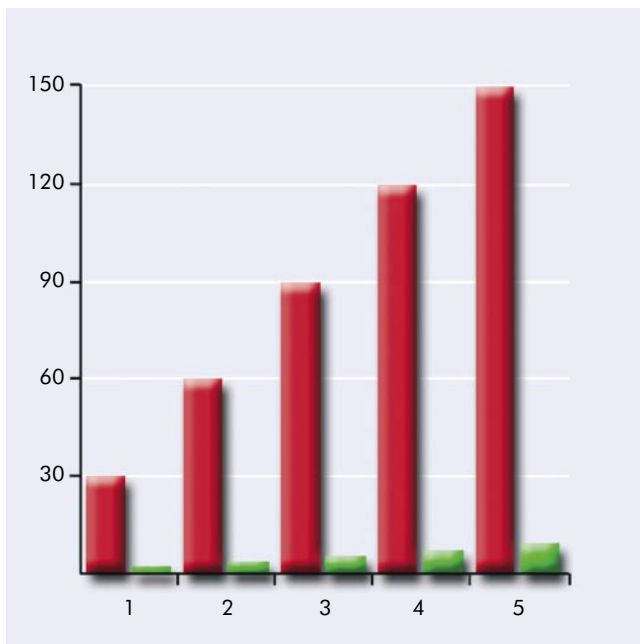
IN THE MANUFACTURING INDUSTRY, MACHINE TIME usually breaks down as follows:

- Machining 50%
- Setting up the fixture 24%
- Changing workpieces 16%
- Changing tools 7%
- Other 3%

INTERNATIONAL PRODUCTIVITY STUDIES

show that measures to reduce machine downtimes are significantly more profitable than chasing fractions of seconds in the actual machining process.





A REFERENCE SYSTEM CUTS SETTING-UP TIMES DRAMATICALLY

Example:

Three setups per day and machine

Without palletisation:

$3 \times 30 \text{ minutes} = 90 \text{ minutes per day}$

With palletisation:

$3 \times 2 \text{ minutes} = 6 \text{ minutes per day}$

Saving per machine and day = 84 minutes

■ Tooling-up without palletisation
■ Tooling-up with palletisation

BIG EARNINGS ARE WITHIN YOUR REACH.

If the preconditions are 200 working days with an hourly cost of €60:

Three setups per day and machine

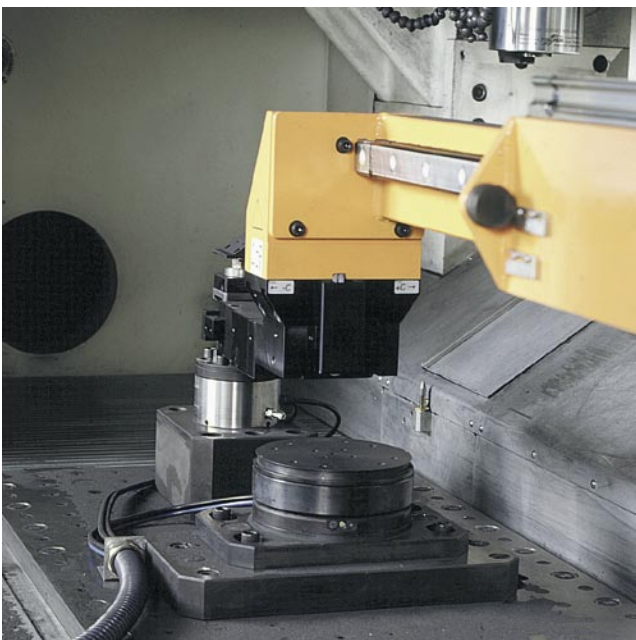
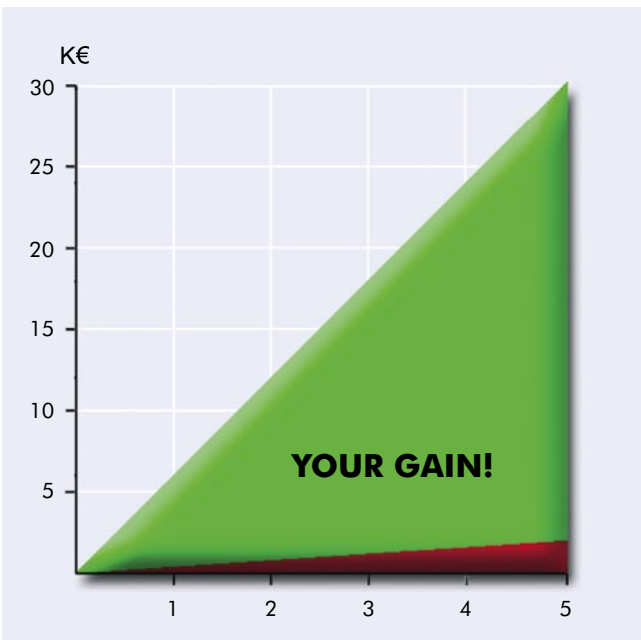
Cost without palletisation:

$3 \times 30 \text{ minutes} = 1.5 \text{ hours} \times 200 \times 60 = \text{€}18000$

Cost with palletisation:

$3 \times 2 \text{ minutes} = 0.1 \text{ hours} \times 200 \times 60 = \text{€}1200$

Saving per machine and year
 $= \text{€}18000 - \text{€}1200 = \text{€}16800$



MANUAL PALLETISATION LAYS A SOLID FOUNDATION for possible later automated production.

- Increased utilisation of existing machine capacity
- Unmanned production overnight and at weekends
- Lower production costs
- Fewer rejects
- Shorter depreciation time.

THIS IS HOW YOU CAN USE THE CATALOGUE

1

What are the maximum dimensions of the workpieces you will be machining?

Examples:

Square workpiece, steel, 200 x 200 x 150 mm (weight about 47 kg)

Round workpiece Ø250 x 150 mm (weight about 57 kg)

2

Go to the table and find a system which has pallets for workpieces as in the example.

Example:

MacroMagnum, GPS 240 and Dynafix are suitable pallet systems

Maximum workpiece dimensions □ x height mm Ø x height mm	Reference system							
	Macro		Macro Magnum		GPS 240		Dynafix	
	□	Ø	□	Ø	□	Ø	□	Ø
50								
100								
150								
200								
250								
300								
350								
400								

3

Go to the next table and find the system that has the most suitable pallet size and capacity with respect to weight.

Example:

GPS 240 has suitable pallet sizes which can handle the weight in the example.

4

Choose the chuck that meets your particular requirements.

Example:

Chapter GPS 240, sub-section chucks.

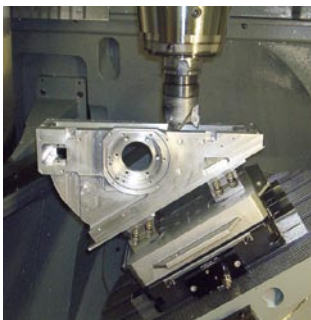
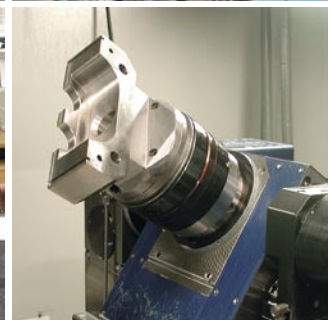
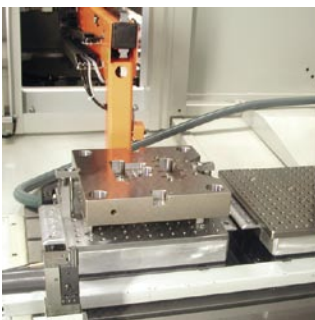
5

When ordering a chuck and pallet – don't forget to order any accessories you may need.

Example:

Controller, sealing plugs, reference protectors or clamp kit.

Pallet size [mm]	Reference system / max workpiece weight kg			
	Macro	Macro Magnum	GPS 240	Dynafix
54 x 54	5 kg	5 kg		
70 x 70	10 kg	10 kg		
Ø75	10 kg	10 kg		
Ø116	50 kg	50 kg		
Ø142		50 kg		
Ø156		100 kg		
180 x 180	50 kg			
240 x 240		100 kg	100 kg	
Ø260			100 kg	
280 x 280				250 kg
400 x 400				250 kg

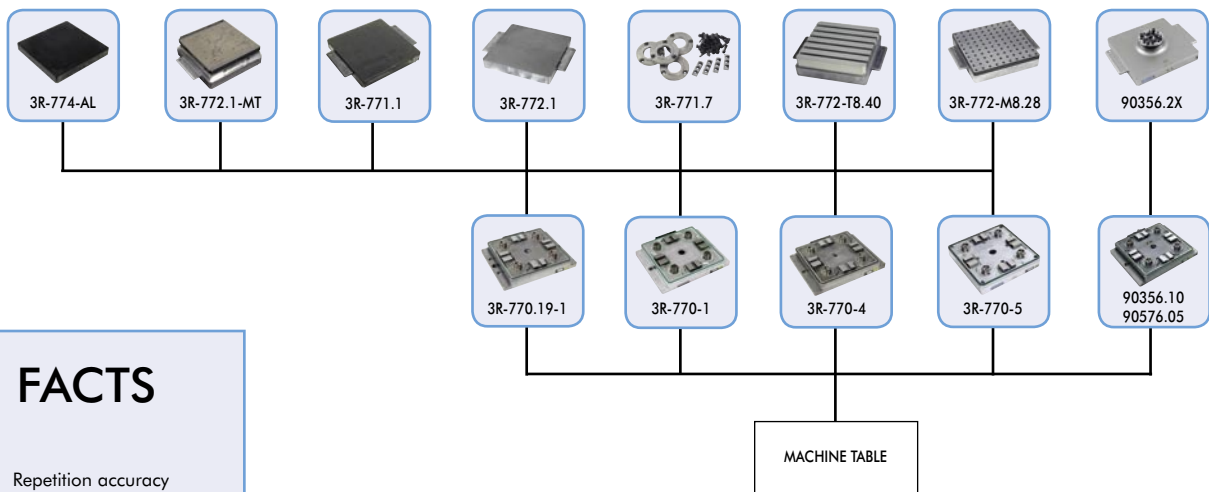
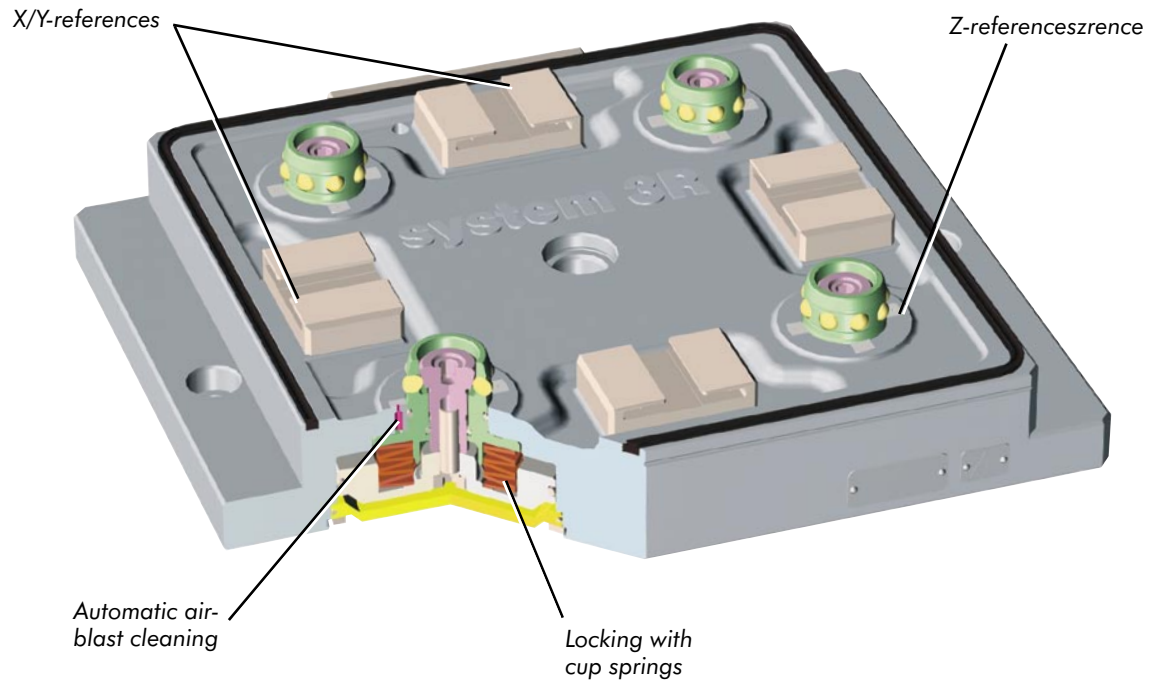


FIXED REFERENCES ON THE MACHINE

TABLE give increased productivity. Dynafix provides your machines with the fixed references traditional machine tables do not have. A practical and user-friendly reference system which minimises setting-up times, increases machine capacity and makes automated production possible.

Dynafix is suitable for use in tough environments, with automatic air-blast cleaning of the Z-references and peripheral sealing.

The easily-handled aluminium pallets have reference elements of hardened, high-alloy steel. Directly measurable Z-references. No projecting drawbars. Locking mechanism with built-in soft landing function.



FACTS

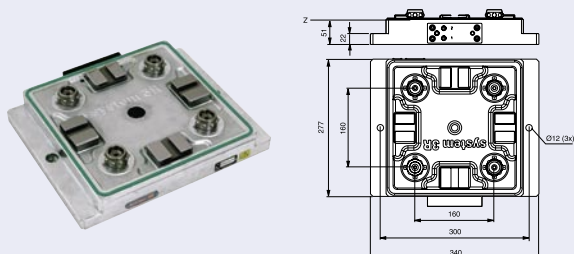
Repetition accuracy
0.002 mm

Clamping force
60 000 N

Automatic chuck 3R-770-1

Pneumatic table chuck.

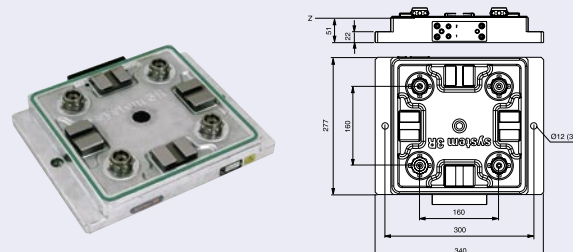
- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Recommended actuator 3R-611.41 or 3R-611.2.
- Air-blast cleaning of the Z-references
- Weight 24.5 kg



Automatic chuck 3R-770-4

Pneumatic table chuck with ground-in reference for alignment.

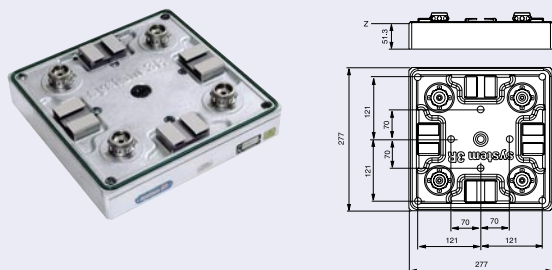
- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Recommended actuator 3R-611.41 or 3R-611.2
- Air-blast cleaning of the Z-references
- Weight 24.5 kg



Automatic chuck 3R-770-5

Pneumatic table chuck for applications in five-axis machines. Air connection from below.

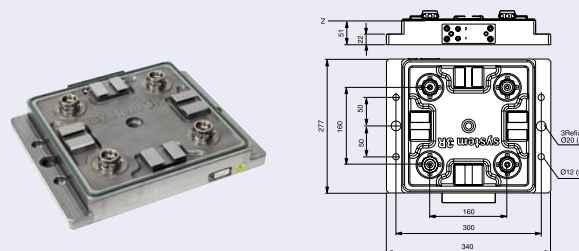
- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Weight 24.5 kg



Automatic chuck 3R-770.19-1

Pneumatic table chuck with 3Refix-holes.

- 3Refix $\varnothing 20$ mm
- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Recommended actuator 3R-611.41 or 3R-611.2
- Air-blast cleaning of the Z-references
- Weight 24.5 kg



Automatic chucks

Pneumatic chucks with extra connections for automatic chuck adapters.

Note: Requires two control units.

- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Air-blast cleaning of the Z-references

90356.10

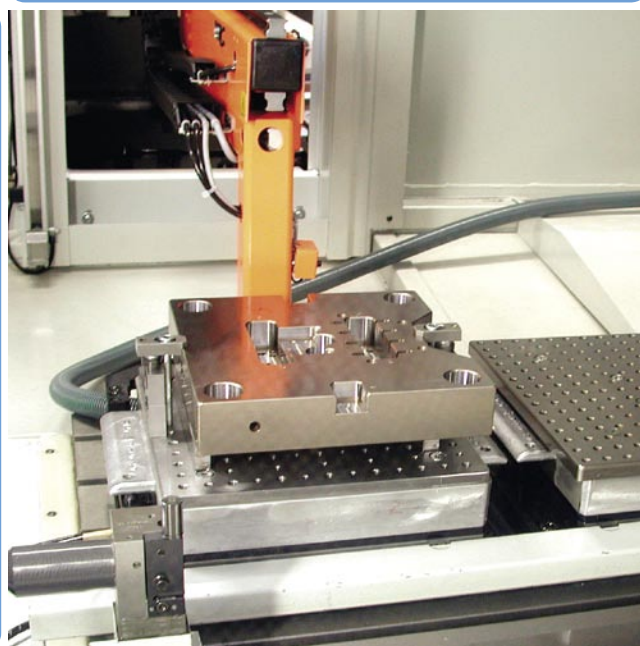
With fixing lugs.

- Weight 27 kg

90576.05

Without fixing lugs.

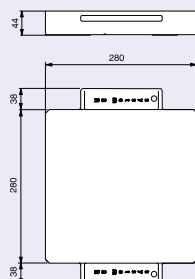
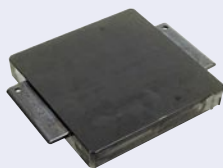
- Weight 23.5 kg



Pallet 280x280 mm 3R-771.1

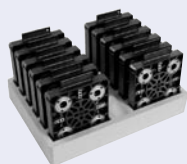
Anodised aluminium pallet.

- Adapted for automatic changing
- Ready for code carrier
- Flatness 0.04 mm
- Thickness tolerance $+0.5/-0$ mm
- Weight 6 kg



3R-771.1E

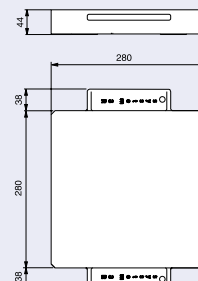
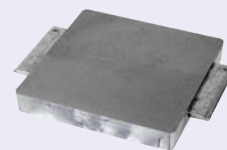
Set of twelve.



Pallet 280x280 mm 3R-772.1

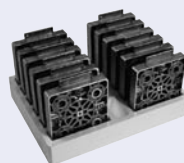
Ground aluminium pallet

- Adapted for automatic changing
- Ready for code carrier
- Flatness 0.005 mm
- Thickness tolerance ± 0.02 mm
- Weight 6 kg



3R-772.1E

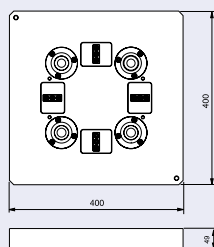
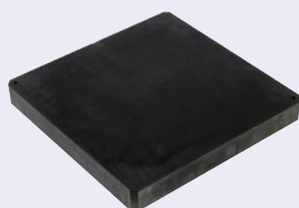
Set of twelve.



Pallet 400x400 mm 3R-774-AL

Aluminium pallet.

- Ready for code carrier
- Weight 30 kg



Chuck adapters 90356.2X

Dynafix pallets can be supplied with built-in automatic chucks from the Macro, MacroCombi- or MacroMagnum ranges for mounting in 90356.10 or 90576.05. For further information contact System 3R.

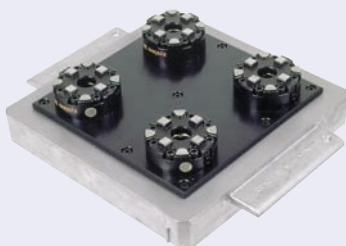
- Adapted for automatic changing.
- Ready for code carrier
- Required air pressure 6 ± 1 bar
- Air-blast cleaning of the Z-references



Multi-pallet 90360

Pallet with four manual Macro chucks.

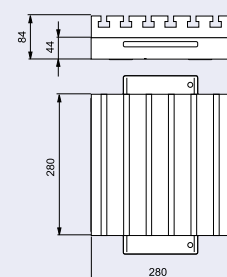
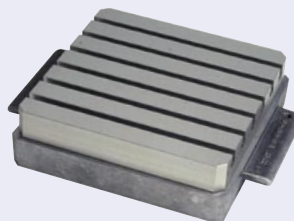
- Adapted for automatic changing
- Ready for code carrier
- Weight 13 kg



Pallet 280x280 mm 3R-772-T8.40

Anodized aluminium pallet with six T-slots for M8 on 40 mm centres.

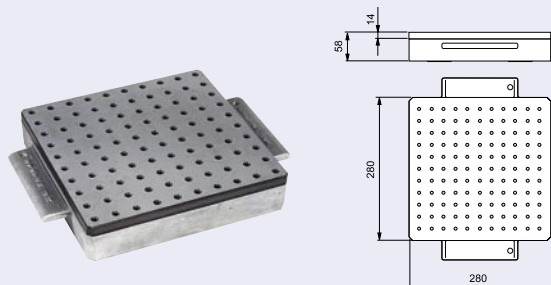
- Adapted for automatic changing
- Ready for code carrier
- Weight 14 kg



Pallet 280x280 mm 3R-772-M8.28

Hardened steel pallet with 100 M8 threads on 28 mm centres.

- Adapted for automatic changing
- Ready for code carrier
- Weight 14.5 kg



Reference elements 3R-771.7

Reference kit for users who want to make their own pallets or fixtures.



Master pallet 3R-776.1

With a ground reference ruler and a ground indication hole for alignment of the Dynafix references.

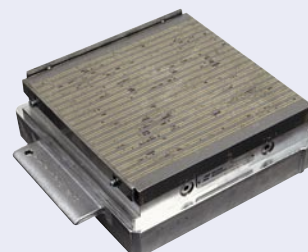
- Adapted for automatic changing
- Ready for code carrier
- Weight 10.5 kg



Magnetic table 3R-772.1-MT

Two independent magnetic fields can be set individually. Low magnetic field, 3 mm, allows machining of very thin workpieces.

- Supplied mounted on 3R-772.1.
- Adapted for automatic changing
- Ready for code carrier
- Clamping force 121 N/cm² (JIS standard).
- Pole pitch 13 mm
- Weight 26 kg



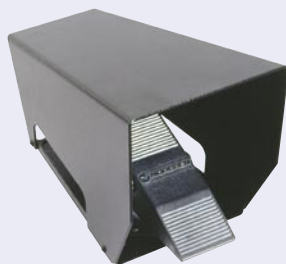
Actuator 3R-611.1

Unit for manual operation of pneumatic chucks.



Actuator 3R-611.2

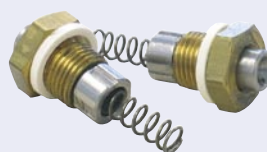
Unit for foot operation of pneumatic chucks.



Connection for air gun. 90815

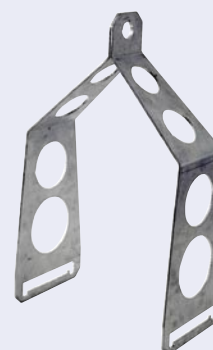
Fits automatic chucks 3R-770-1 and 3R-770-4.

- Supplied in sets of two.



Lifting grip U-20344

Lifting gear for handling Dynafix pallets 280x280 mm.



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