

# Ионекс

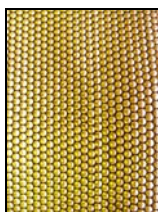
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[www.ionexedm.ru](http://www.ionexedm.ru)

Reference systems for electrode manufacture  
and die-sinking EDM.  
The standard range.



# Ионекс

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## FOCUSING ON THE WHOLE...

There's no doubt that competition in the manufacturing industry is getting keener. The trend towards smaller runs with more variations means that the choice of supplier depends increasingly on the total lead time – from order to delivery. Always provided that the quality offered is the same.

## ... FOR GREATER COMPETITIVENESS

So what really matters is to focus on the complete picture. Look at total throughput time instead of the individual process time of the various operations.

The company that can offer the quickest delivery of small batches of customer-specific products with good quality will win out. Your profitability will increasingly be determined by your ability to minimise the dead time in the machines and to have efficient flows of material and information in the workshop.

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 when the time comes. In fact, this is an indispensable requirement for ensuring your competitiveness.

With System 3R reference systems, you radically increase the capacity of your machines. Setting-up times are minimised and – just as important – you're laying a firm foundation for a later step towards automated production.

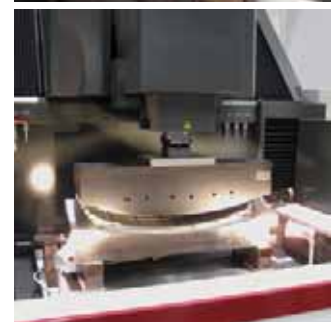
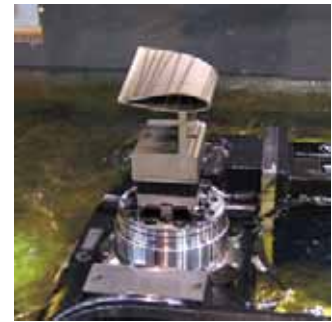
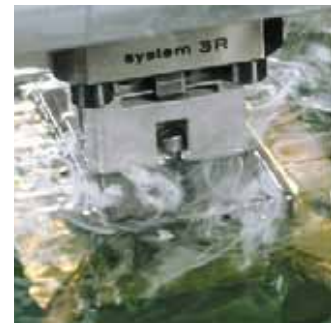
You get a system that you can build on, bit by bit. Always flexible. Always reliable. Absolutely stable and exact.

## WORK SMARTER!

In addition, there's no longer any need for skilled operators to waste time on tricky and time-consuming alignments. Instead they're free to do far more stimulating work, where their professional skill and creativity really comes into its own.

Other advantages: downstream machining time is shorter, because accuracy becomes greater. The number of rejected workpieces is reduced, meaning less raw material to be stored.

In other words, with System 3R's reference systems, production takes place in a more sensible and more economical way. It's simply a matter of working smarter. And helping you work smarter is what we at System 3R are in business to do.



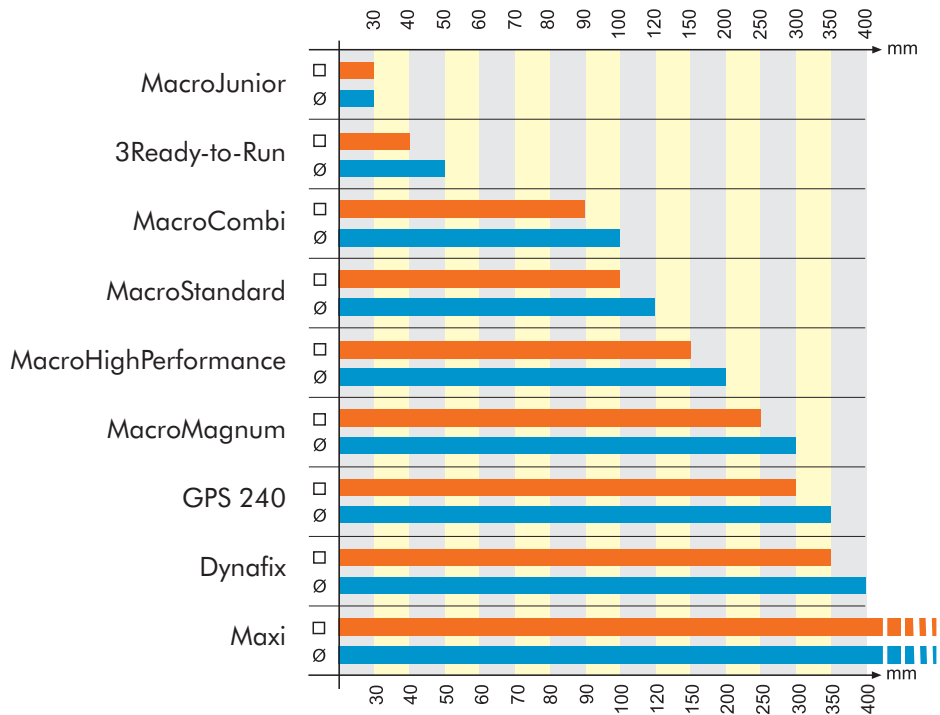
## FROM SMALL TO LARGE

The engineering industry is complex. Every company is unique in terms of type of production, machinery, capacity etc.

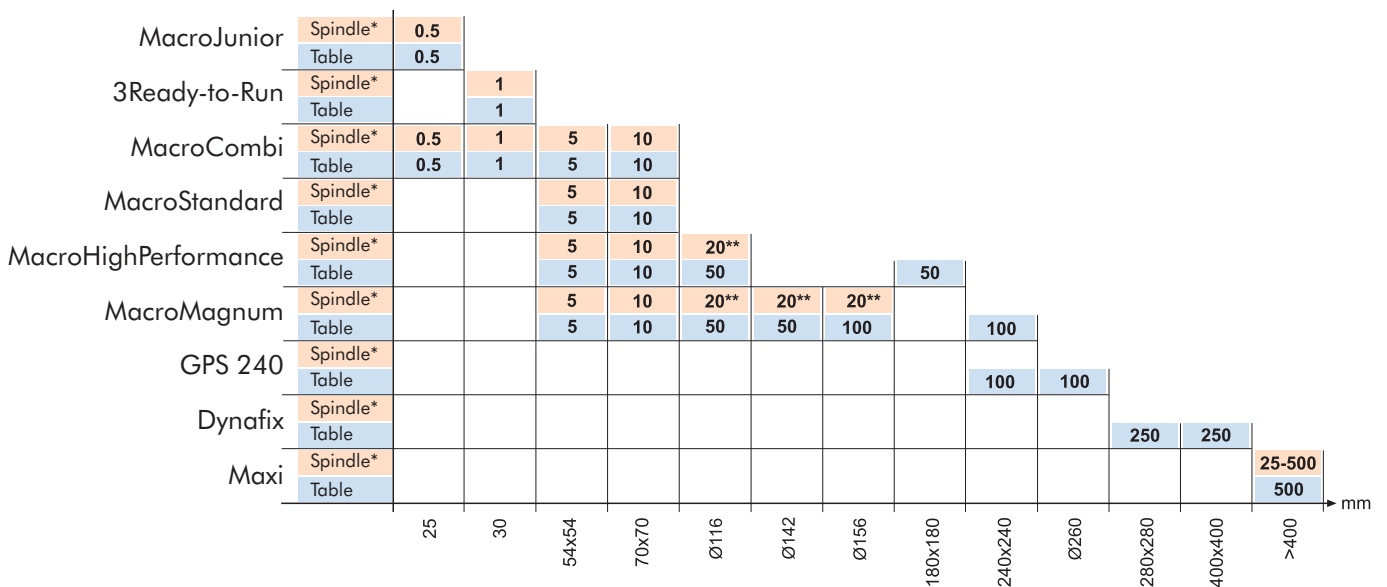
To satisfy all these different requirements, System 3R has developed reference systems of exceptional flexibility.

For every size of pallet there is a "recommended" maximum workpiece size. However, this should only be regarded as a guide, since the size of the workpiece relative to the pallet depends above all on the material and the type of machining.

Maximum size of workpiece or electrode, square or round / mm



Maximum weight of workpiece or electrode, spindle chuck or table chuck / kg



\* Die-sinking EDM spindle

\*\* With automatic changing

# CONTENTS

|   |         |
|---|---------|
| <b>MacroJunior</b> .....  | page 6  |
| MacroJunior – chucks and chuck adapters .....                         | page 7  |
| MacroJunior – holders and accessories .....                           | page 9  |
| <b>MacroStandard</b> .....  | page 13 |
| MacroStandard – chucks and chuck adapters and rotating spindles ..... | page 14 |
| MacroStandard – holders and user kits and accessories .....           | page 19 |
| <b>MacroHighPerformance</b> .....                                     | page 22 |
| MacroHighPerformance – chucks and chuck adapters .....                | page 23 |
| MacroHighPerformance – holders and accessories .....                  | page 28 |
| <b>MacroCombi</b> .....   | page 34 |
| MacroCombi – chucks and chuck adapters .....                          | page 35 |
| MacroCombi – holder and user kit and accessories .....                | page 39 |
| <b>MacroMagnum</b> .....  | page 41 |
| MacroMagnum – chucks and chuck adapters .....                         | page 42 |
| MacroMagnum – pallets and accessories .....                           | page 45 |
| <b>GPS240</b> .....   | page 48 |
| GPS240 – chucks .....   | page 49 |
| GPS240 – pallets and user kits and accessories .....                  | page 50 |
| <b>Dynafix</b> .....  | page 56 |
| Dynafix – chucks and chuck adapters .....                             | page 57 |
| Dynafix – pallets and accessories .....                               | page 59 |
| <b>Maxi</b> .....   | page 61 |
| Maxi – chucks and chuck adapters .....                                | page 61 |
| Maxi – pallets and accessories .....                                  | page 64 |
| <b>Mini</b> .....   | page 65 |
| Mini – chucks and chuck adapters and rotating spindles .....          | page 65 |
| Mini – electrode holders and accessories .....                        | page 68 |
| <b>3Refix</b> .....   | page 71 |
| <b>Automation</b> .....   | page 74 |
| <b>C-axes</b> .....   | page 76 |
| <b>Accessories</b> .....  | page 77 |
| <b>Index</b> .....  | page 81 |



Stock item, subject to availability.





## A REFERENCE SYSTEM TAILORED

for modern EDM technology with automatic electrode changing and unmanned production.

The patented and compact MacroJunior system is intended mainly for small electrodes. Unlike other Macro systems, in MacroJunior the chuck, not the electrode holder, has positioning tongues. A design which means that the electrode holders can be supplied at a very attractive price.

The design with three reference points in the X-, Y- and Z-directions means that, despite any tolerance variations in the holder, the coupling repeats very accurately when it is locked with its screw connection.

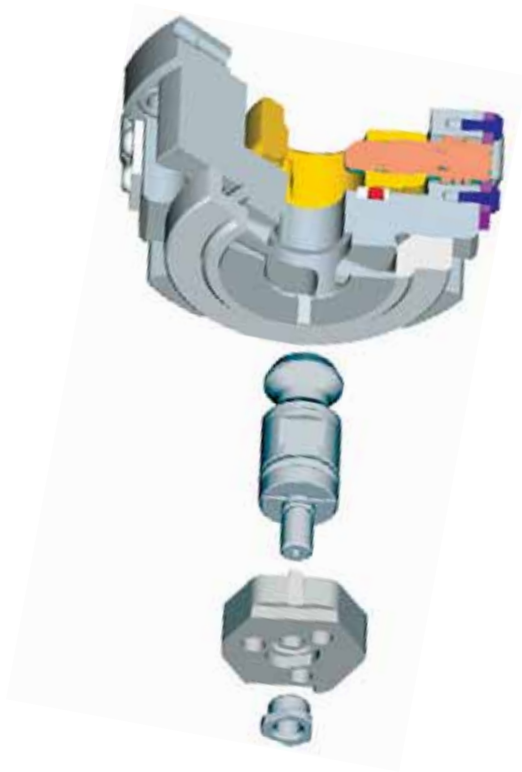
Tests and calculations done by independent researchers and institutes have established that MacroJunior, despite its small size, offers greater torsional rigidity than other significantly larger and costlier systems on the market.

MacroJunior – small, but big enough for most electrodes.

*More compact than any other system*

*Inexpensive electrode holders for good economy*

*Movable drawbar eliminates bending forces*



**FACTS**

- Repetition accuracy  
0.002 mm
- Recommended tightening torque, manual chucks,  
4 Nm.
- Permitted torque for 25 mm holder  
10 Nm
- Permitted torque for 30 mm holder  
25 Nm
- Maximum flushing pressure  
15 bar\*
- Clamping force  
5 000 N

*\*Manual chucks with axial locking screw: 1 bar.*



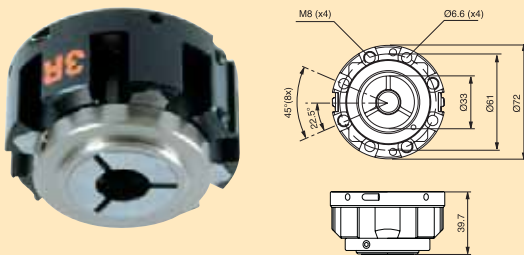
## OVERVIEW OF CHUCKS AND CHUCK ADAPTERS

| MacroJunior – spindle chucks  |                |                            | PAGE |
|-------------------------------|----------------|----------------------------|------|
| MANUAL                        | 3R-400.34      |                            | 7    |
| MANUAL                        | 3R-400.24-11   |                            | 7    |
| PNEUMATIC AUTOMATIC / MANUAL  | 3R-410.1-M     |                            | 8    |
| MacroJunior – lathe chuck     |                |                            |      |
| MANUAL                        | 3R-400.32      |                            | 8    |
| MacroJunior – table chucks    |                |                            |      |
| MANUAL                        | 3R-400.34      |                            | 7    |
| MANUAL                        | 3R-410.31-5    | HP                         | 8    |
| MacroJunior – built-in chucks |                |                            |      |
| MANUAL                        | 3R-400.34      |                            | 7    |
| MANUAL                        | 3R-SP19143     | RUST-RESISTANT             | 8    |
| PNEUMATIC AUTOMATIC / MANUAL  | 3R-410.1-M     |                            | 8    |
| MacroJunior – chuck adapters  |                |                            |      |
| MANUAL                        | 3R-467.9-1     | 90°                        | 8    |
| MANUAL GATE CHUCK             | 3R-US90-400    |                            | 8    |
| MANUAL                        | 3R-446.11      | MACRO → MACROJUNIOR        | 17   |
| MANUAL                        | 3R-466.4033    | MACRO → MACROJUNIOR        | 17   |
| MANUAL                        | 3R-466.4033-S  | MACRO → MACROJUNIOR        | 17   |
| MANUAL                        | 3R-466.4033-XS | MACRO → MACROJUNIOR        | 17   |
| MANUAL                        | 3R-406.9       | MACRO → MACROJUNIOR 90°    | 17   |
| MANUAL                        | 3R-466.10033   | MACRO → MACROJUNIOR 100 mm | 17   |
| MANUAL                        | 3R-466.15033   | MACRO → MACROJUNIOR 150 mm | 17   |
| MANUAL                        | 3R-443AEC      | MINI → MACROJUNIOR 65 mm   | 66   |
| MANUAL                        | 3R-463/5033    | MINI → MACROJUNIOR 50 mm   | 67   |

### ✓ Manual chuck 3R-400.34

For mounting in the machine spindle by means of 3R-A11489, or on the machine table by means of 3R-A19724 or alternatively 3R-A21944, or in a fixture.

- Required drawbar 3R-405.11
- Fixed index positions 3x120°
- Weight 1.2 kg

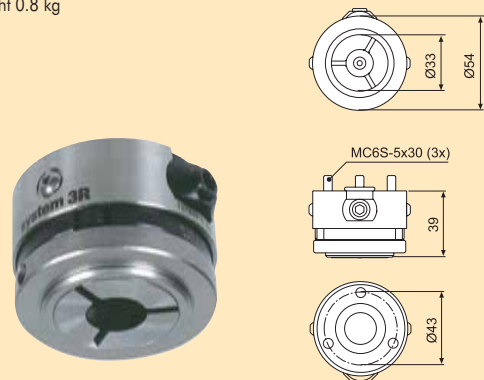


### ✓ Manual chuck 3R-400.24-11

For mounting on machine spindle with 3R-SP15275.

*Note: Adapter plate 3R-A15275 is manufactured to order.*

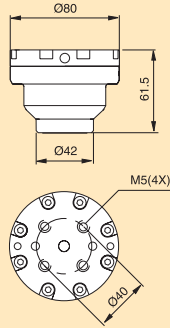
- Required drawbar 3R-405.11
- Fixed index positions 3x120°
- Weight 0.8 kg



**Pneumatic chuck  
3R-410.1-M**

For mounting on the machine spindle or in a fixture on the machine table.

- Required drawbar 3R-405.11
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $3 \times 120^\circ$
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 1.5 kg

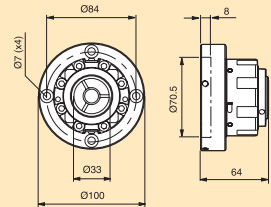


**Manual lathe chuck  
3R-400.32**

For mounting on a lathe taper.

*Note: When ordering a lathe taper, use the order form at the end of the catalogue.*

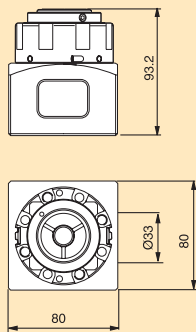
- Required drawbar 3R-405.11
- Fixed index positions  $3 \times 120^\circ$
- Weight 2.3 kg



**Manual chuck  
3R-410.31-5**

Chuck in High Performance version. Five ground surfaces for vertical or horizontal mounting on the machine table.

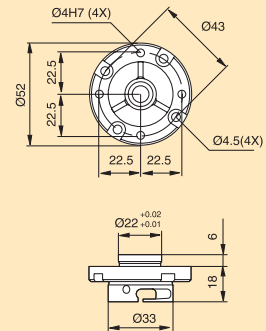
- Required drawbar 3R-405.11
- Fixed index positions  $3 \times 120^\circ$
- Weight 3.5 kg



**Manual chuck  
3R-SP19143**

Stainless steel chuck with ground flange  $\text{Ø}22 \times 6$  mm for mounting in a fixture or the WEDM system. Axial locking screw with channel for flushing through the electrode.

- Fixed index positions  $3 \times 120^\circ$
- Weight 0.8 kg

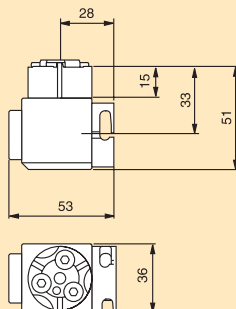


**Manual chuck adapter  
3R-467.9-1**

For horizontal mounting of MacroJunior holders. Screw locking.

*Note: For EDM machining only.*

- Fixed index positions  $3 \times 120^\circ$
- Weight 0.6 kg



**Gate chuck  
3R-US90-400**

Fixed indexing positions at 0, 30, 45, 60 and 90 degrees. Other angles are set with a sine rule.



## OVERVIEW OF HOLDERS

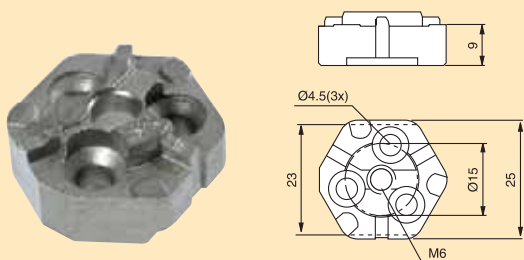
| MacroJunior – holders                    |               | PAGE |
|--|---------------|------|
| Ø25 mm                                   | 3R-491E       | 9    |
| Ø25 mm WITHOUT GRIPPER STOP              | 3R-491E-MONDO | 9    |
| Ø25 mm PARALLEL-GROUND                   | 3R-491E-HP    | 9    |
| Ø26 mm PARALLEL-GROUND / JOURNAL Ø8.8 mm | 3R-461-8.8-HP | 10   |
| Ø28 mm TAPP Ø10 mm                       | 3R-461.1E-GA  | 9    |
| Ø28 mm CONE                              | 3R-465.1E-A   | 10   |
| ELECTRODES Ø0.1-2 mm                     | 3R-469-10     | 10   |
| ELECTRODES Ø0.5-10 mm                    | 3R-469-16     | 10   |
| ELECTRODES Ø1-4 mm                       | 3R-465-VE     | 10   |
| ELECTRODES Ø4-8 mm                       | 3R-465-LE     | 10   |
| 3READY-TO-RUN                            | 3R-494-XXX    | 11   |

### ✓ Holders 25 mm 3R-491E

For copper or graphite electrodes.

*NOTE: The electrode is installed with screw and adhesive assembly, or alternatively brazing.*

- Adapted for automatic changing
- Supplied in sets of 30



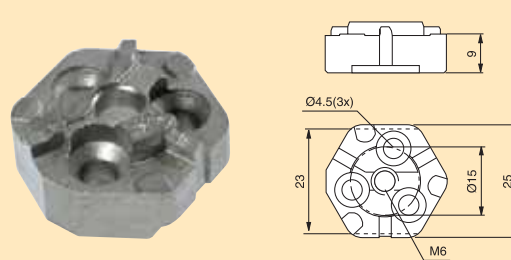
### ✓ Holders 25 mm 3R-491E-Mondo

For copper or graphite electrodes.

*NOTE: The electrode is installed with screw and adhesive assembly, or alternatively brazing.*

*NOTE: The holder does not have a gripper stop.*

- Adapted for automatic changing
- Supplied in sets of 30

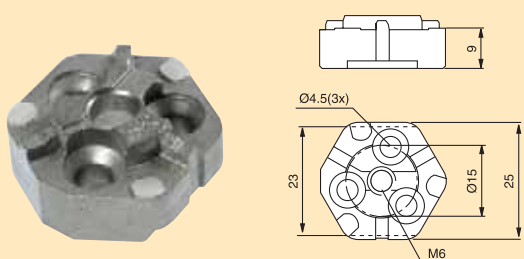


### ✓ Ground holder 25 mm 3R-491E-HP

Top and bottom faces parallel-ground to within 0.002 mm.

*NOTE: The electrode is installed with screw and adhesive assembly, or alternatively brazing.*

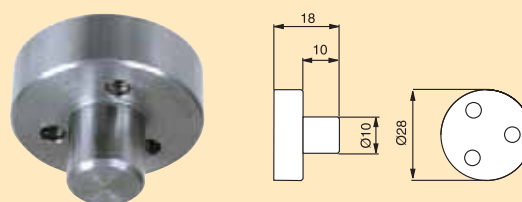
- Adapted for automatic changing
- Supplied in sets of 30



### ✓ Holder with journal 3R-461.1E-GA

Journal Ø10x10 mm. Intended mainly for graphite electrodes. To be mounted on 3R-491E with three M4 screws and adhesive.

- Supplied in sets of 30

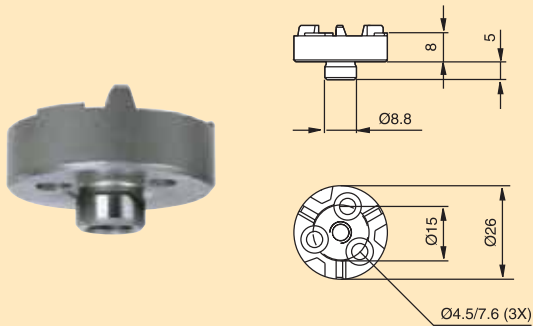





**Holder 25 mm  
3R-461-8.8-HP**

Upper and lower faces ground parallel within 0.002 mm.  
Locating pin  $\varnothing 8.8$  mm (0/0.05 mm).

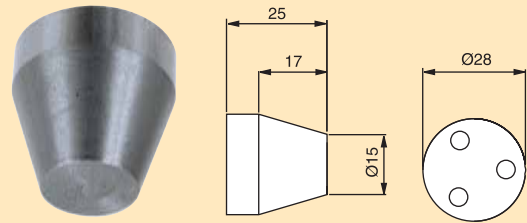
- Not intended for automatic changing
- Supplied singly



 **Holder with taper  
3R-465.1E-A**

The taper is machined suitably for attaching very small electrodes. To be mounted on 3R-491E with three screws MFT 4x12.

- Supplied in sets of 30



**Collet chucks**

**3R-469-10**

- ETS10
- Electrode sizes 0.1-2 mm
- Building-in height 43 mm
- Weight 0.1 kg



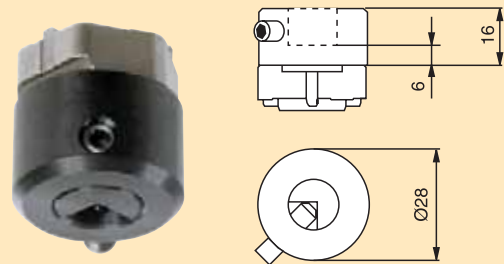
**3R-469-16**

- ER16
- Electrode sizes 0,5-10 mm
- Building-in height 50 mm
- Weight 0.2 kg

**Holder  
3R-465-VE**

For small electrodes  $\varnothing 1-4$  mm, maximum height 30 mm.

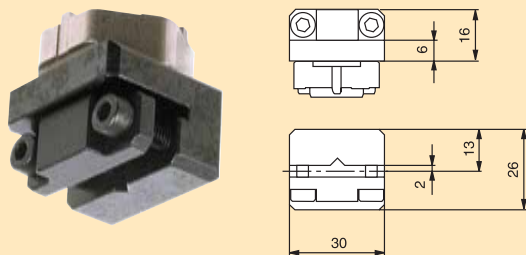
- Supplied in sets of five



**Holder  
3R-465-LE**

For round electrodes  $\varnothing 4-8$  mm or square  $< 8 \times 18$  mm, and with maximum height 30 mm.

- Supplied in sets of five



**✓ 3Ready-to-Run  
3R-494-XXX**

The stock range is matched to local preferences and ways of working. This applies to electrode materials, different grades of graphite and copper, and to dimensions. Contact your local 3R representative for further information.

The Vällingby factory can supply holders with factory-mounted copper blanks in sets of ten, as shown in the table.

| Article number  | Dimensions               |
|-----------------|--------------------------|
| 3R-494-D10x50   | Round blank Ø10x50 mm    |
| 3R-494-D12x50   | Round blank Ø12x50 mm    |
| 3R-494-D16x50   | Round blank Ø16x50 mm    |
| 3R-494-D22x50   | Round blank Ø22x50 mm    |
| 3R-494-D26x50   | Round blank Ø26x50 mm    |
| 3R-494-D32x50   | Round blank Ø32x50 mm    |
| 3R-494-D40x50   | Round blank Ø40x50 mm    |
| 3R-494-D50x50   | Round blank Ø50x50 mm    |
| 3R-494-S12x50   | Square blank 12x12x50 mm |
| 3R-494-S22x50   | Square blank 22x22x50 mm |
| 3R-494-S26x50   | Square blank 26x26x50 mm |
| 3R-494-S32x50   | Square blank 32x32x50 mm |
| 3R-494-S40x50   | Square blank 40x40x50 mm |
| 3R-494-32x22x50 | Square blank 32x22x50 mm |
| 3R-494-40x22x50 | Square blank 40x22x50 mm |

**✓ Drawbar  
3R-405.11E**

Drawbar Ø15 mm to mount MacroJunior holders in chucks 3R-400.XX and 3R-460.XX.

- Supplied in sets of ten



**✓ Check rulers  
3R-406.11**

For setting angular positions and for centring.

- Measuring length 60 mm



**✓ Check mandrel  
3R-406.23**

Check mandrel with ground C-reference.

- Measuring length 50 mm
- Weight 0.6 kg



**Microscope  
3R-4.450**

- Magnification x25
- Field of view Ø4 mm
- Weight 0.6 kg



**Fixed measuring probes**

**3R-US400.3**

For machines with measurement cycle function.

- Measuring ball Ø3 mm
- Overall length 103 mm
- Weight 0.6 kg



**3R-US400.5**

For machines with measurement cycle function.

- Measuring ball Ø5 mm
- Overall length 103 mm
- Weight 0.6 kg

**✓ Plate 5.5 mm  
3R-SP19270**

Used in combination with 3R-491E when electrode blanks are mounted with adhesive and screw. Permits mounting in MacroCombi chucks.

- Supplied in sets of 30



**Plate 10 mm  
3R-SP19269**

Used in combination with 3R-491E when soldering round (<50 mm) or square (<40 mm) copper blanks. Permits mounting in MacroCombi chucks.

- Supplied in sets of 30





**Self-tapping TORX screws  
3R-PI4.5x14E**

For mounting electrode blanks.

- Length 14 mm
- Supplied in sets of 100



**Self-tapping TORX screws  
3R-PI4.5x20E**

For mounting electrode blanks.

- Length 20 mm
- Supplied in sets of 100



**TORX screwdriver  
3R-333-T20**



**TORX screws M4  
3R-MFT4x12E**

For mounting electrode blanks.

- Length 12 mm
- Supplied in sets of 100, including a TORX screwdriver



**Soldering kit  
3R-404-25**

For soldering electrode blanks on 3R-491E.

- Supplied with flux.
- Supplied in sets of 100



**Cassette insert  
3R-650/8-JR**

For storing MacroJunior holders in 3R-650/8x5 and 3R-150/5.

- Supplied in sets of eight



**Ring with code carrier  
3R-863.25-10**

With pre-programmed unique identity, designed for MacroJunior 25 mm.

- Supplied in sets of 10



**Ring with code carrier  
3R-863.30-10**

With pre-programmed unique identity, designed for 3Ready-to-Run.

- Supplied in sets of 10



**QUICK, SIMPLE TOOLING-UP!**

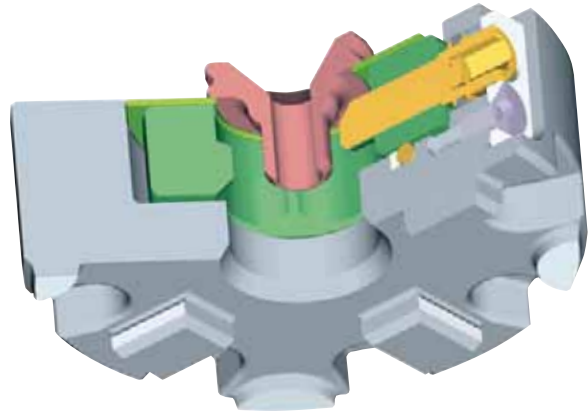
The machines generate revenue when they are producing – and only then. So it’s a matter of exploiting the available production resources and avoiding non-productive machine time. So for EDM machining, work preparation and setting-up are highly or even crucially important for the return on the capital outlay represented by the EDM machine.

The patented Macro systems are universal reference systems that offer endless permutations. They let you move electrodes and workpieces between machines without subsequent setting-up. Quick and precise!

The modular system design enables you to start on a small scale and then systematically build up at a rate to suit the user’s specific requirements. This may later apply to manual or CNC machining operations, system solutions for machine spindle or machine table, series or one-off production.

MacroStandard may be a fully satisfactory option for users who do not always need the extreme features offered by MacroHighPerformance, ie ultra-durable cemented carbide reference surfaces and high corrosion resistance.

In line with System 3R’s policy on system compatibility, MacroStandard is fully compatible with other Macro products.



*The economical choice*

*New, larger Z-references on the manual chucks*

*Compatible with other Macro systems*

**FACTS**

Repetition accuracy  
0.002 mm

Recommended tightening torque, manual chucks:  
6 Nm.

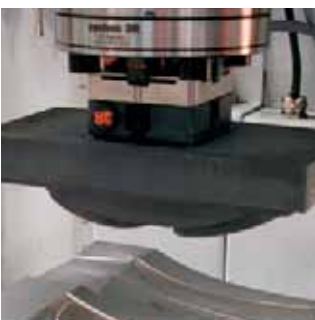
Maximum flushing pressure  
15 bar

Clamping force  
6 000 N



## OVERVIEW OF CHUCKS AND CHUCK ADAPTERS AND ROTATING SPINDLES

| MacroStandard – spindle chucks    |                |                                   | PAGE |
|-----------------------------------|----------------|-----------------------------------|------|
| MANUAL                            | 3R-600.23-S    | MOUNTING FLANGE                   | 15   |
| MANUAL                            | 3R-600.24-S    | GROUND REAR FACE                  | 15   |
| MANUAL                            | 3R-600.25      | C-AXIS                            | 15   |
| MacroStandard – lathe chuck       |                |                                   |      |
| MANUAL                            | 3R-600.22      |                                   | 15   |
| MacroStandard – table chucks      |                |                                   |      |
| MANUAL                            | 3R-610.21      | HORIZONTAL AND VERTICAL           | 15   |
| MANUAL                            | 90842          | HORIZONTAL AND VERTICAL           | 15   |
| MANUAL                            | 3R-610.4       | HORIZONTAL AND VERTICAL AND INDEX | 16   |
| MANUAL                            | 90716.05       | VIBRATION-DAMPED                  | 16   |
| MANUAL                            | 3R-600.23-S    | MOUNTING FLANGE                   | 15   |
| MANUAL                            | 3R-600.24-S    | GROUND REAR FACE                  | 15   |
| MacroStandard – built-in chucks   |                |                                   |      |
| MANUAL                            | 3R-600.23-S    | MOUNTING FLANGE                   | 15   |
| MANUAL                            | 3R-600.24-S    | GROUND REAR FACE                  | 15   |
| MANUAL                            | 3R-SP15055     | GROUND FLANGE                     | 16   |
| MacroStandard – chuck adapters    |                |                                   |      |
| MANUAL                            | 3R-652.2       | 100 mm                            | 16   |
| MANUAL                            | 3R-652.9       | 90°                               | 16   |
| MANUAL                            | 3R-653-S       | MACRO → MINI                      | 16   |
| MANUAL                            | 3R-446.11      | MACRO → MACROJUNIOR               | 17   |
| MANUAL                            | 3R-466.4033    | MACRO → MACROJUNIOR               | 17   |
| MANUAL                            | 3R-466.4033-S  | MACRO → MACROJUNIOR               | 17   |
| MANUAL                            | 3R-466-4033-XS | MACRO → MACROJUNIOR               | 17   |
| MANUAL                            | 3R-406.9       | MACRO → MACROJUNIOR 90°           | 17   |
| MANUAL                            | 3R-466.10033   | MACRO → MACROJUNIOR 100 mm        | 17   |
| MANUAL                            | 3R-466.15033   | MACRO → MACROJUNIOR 150 mm        | 17   |
| MANUAL                            | 3R-607.21      | MAXI → MACRO                      | 62   |
| MANUAL                            | 3R-607.31      | MAXI → MACRO C-AXEL               | 62   |
| MacroStandard – rotating spindles |                |                                   |      |
| VERTICAL                          | 3R-6.321-HS    | TUBULAR ELECTRODES                | 18   |
| VERTICAL                          | 3R-6.600-VS    |                                   | 18   |
| VERTICAL & HORIZONTAL             | 3R-6.600-VHS   |                                   | 18   |
| VERTICAL                          | 3R-6.300-EHS16 | COLLETS                           | 18   |

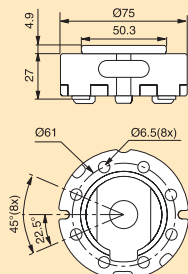




**Manual chuck  
3R-600.23-S**

Cast chuck with mounting flange for mounting on the machine spindle or in a fixture, alternatively 3R-A19724, on the machine table.

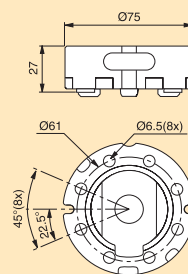
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing connection
- Weight 1 kg



**Manual chuck  
3R-600.24-S**

Cast chuck with ground back face for mounting on the machine spindle with 3R-A11489 or in a fixture on the machine table.

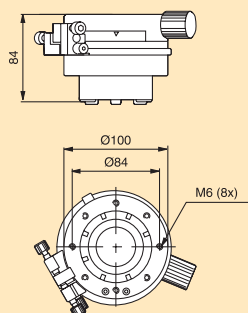
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing connection
- Weight 1 kg



**Manual C-axis  
3R-600.25**

For mounting on machine spindle with 3R-A3620.

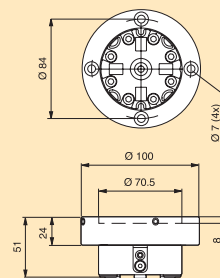
- Required drawbar 3R-605.2
- Fixed index positions 8x45°
- Vernier scale
- Flushing connection
- Weight 4.3 kg



**Manual lathe chuck  
3R-600.22**

With setting screws for centring

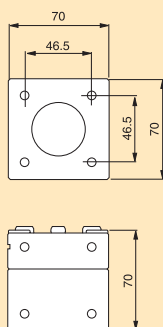
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Weight 2.1 kg



**Manual chuck  
3R-610.21**

Three ground faces for vertical or horizontal mounting on the machine table.

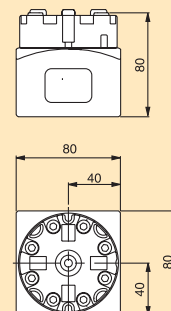
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing duct
- Weight 2.2 kg



**Manual chuck  
90842**

Two ground faces for vertical or horizontal mounting on the machine table.

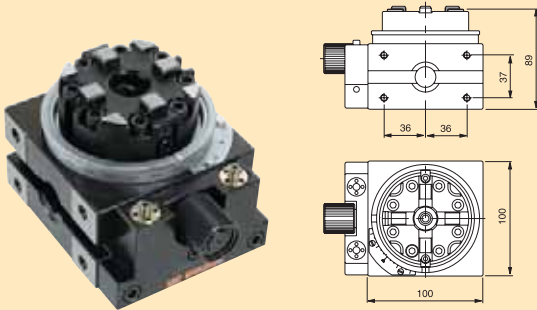
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing duct
- Weight 3.5 kg



**Manual 3R block  
3R-610.4**

For vertical or horizontal mounting on the machine table.

- Required drawbar 3R-605.2
- Fixed index positions 24x15°
- Vernier scale
- Weight 5.5 kg



**Manual chuck  
90716.05**

Manual vibration-damped chuck, Ø170 mm.

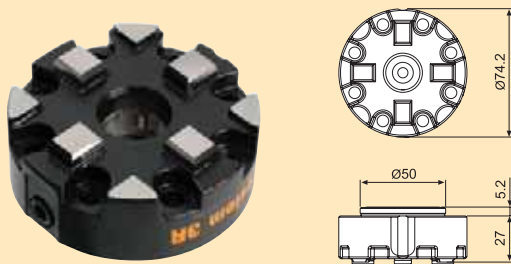
- Required drawbar 3R-605.2
- Building-in height 85 mm.
- Centre spacing 63 to 100 mm



**Manual chuck  
3R-SP15055**

Cast chuck with ground flange for installation in fixture/plate.

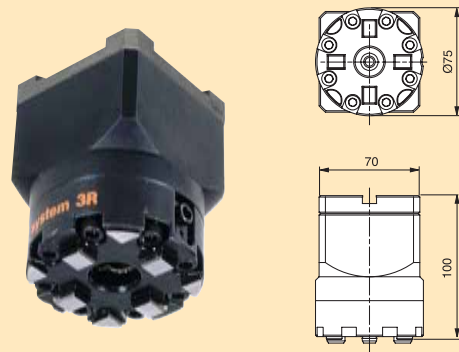
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing connection
- Weight 1 kg



**Manual chuck adapter  
3R-652.2**

100 mm extension.

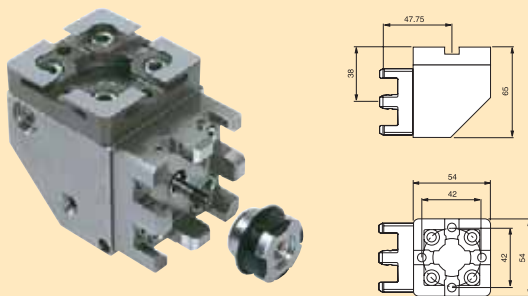
- Required drawbar 3R-605.2
- Weight 2.5 kg



**✓ Manual chuck adapter 90°  
3R-652.9**

For horizontal mounting of Macro holders. Supplied with draw dowel for screw locking.

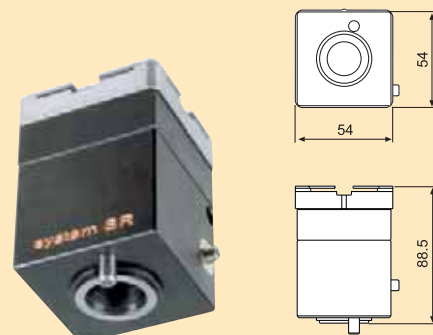
- Rust-resistant
- Weight 2.4 kg



**✓ Manual chuck adapter  
3R-653-S**

For mounting Mini holders in the Macro system.

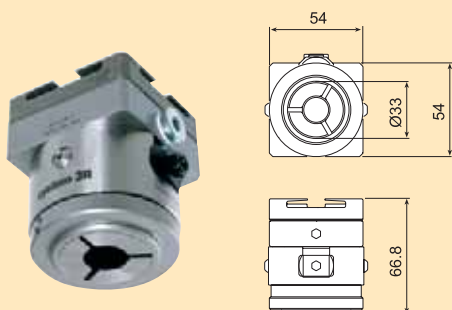
- MacroStandard coupling
- Can be changed automatically
- Weight 1.3 kg



**Manual chuck adapter  
3R-446.11**

For mounting in the Macro system. Side locking of the MacroJunior holder. Duct for flushing through the electrode.

- Precision-cast Macro reference element
- Adapted for automatic changing
- Required drawbar 3R-405.11
- Fixed index positions 3x120°
- Weight 1 kg



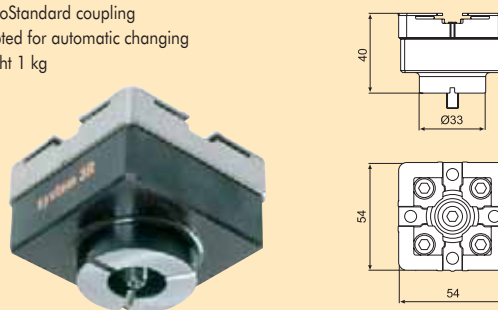
**Manual chuck adapter  
3R-466.4033-S**

For mounting in the Macro system. Axial locking screw with channel for flushing through the electrode.

*Note: The electrode must remain mounted in the chuck adapter during the entire process – electrode production and EDM machining – since the Macro system is the reference system in this adapter.*

*Note: Only for 3Ready-to-Run electrode holders.*

- MacroStandard coupling
- Adapted for automatic changing
- Weight 1 kg

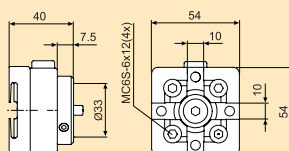


**Manual chuck adapters**

For mounting in the Macro system. Axial locking screw with channel for flushing through the electrode.

**3R-466.4033**

- Precision-cast Macro reference element
- Adapted for automatic changing
- Fixed index positions 3x120°
- Weight 1.1 kg



**3R-466.4033-S**

*Note: For EDM machining only.*

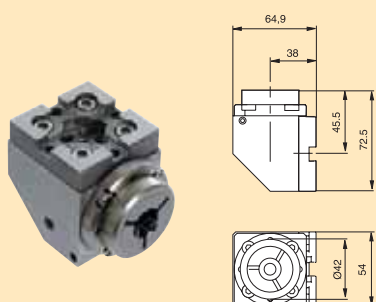
- Adapted for automatic changing
- Fixed index positions 3x120°
- Weight 1 kg



**Manual chuck adapter  
3R-406.9**

For horizontal mounting of MacroJunior holders in the Macro system. Screw locking.

- Adapted for automatic changing
- Rust-resistant
- Fixed index positions 3x120°
- Weight 1.2 kg



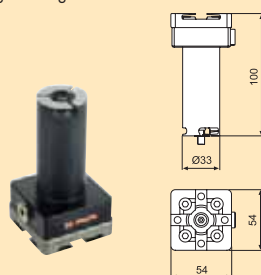
**Manual chuck adapters**

For mounting in the Macro system. Axial locking screw with channel for flushing through the electrode.

*Note: For EDM machining only.*

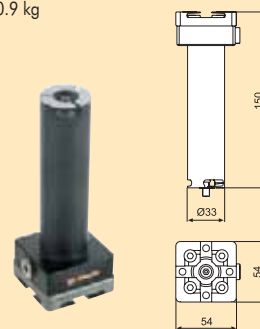
**3R-466.10033**

- Adapted for automatic changing
- Fixed index positions 3x120°
- Weight 0.5 kg



**3R-466.15033**

- Adapted for automatic changing
- Fixed index positions 3x120°
- Weight 0.9 kg

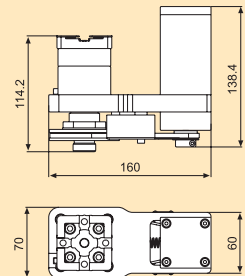




### Rotating spindle 3R-6.321-HS

Electrical spindle for round electrodes.

- Supplied with collet chuck set 3R-ER16E
- Electrode sizes Ø0.5-10 mm
- Speed range 200-2000 rev/min
- Recommended maximum flushing pressure 15 bar
- Weight 4.9 kg



### Rotating spindles

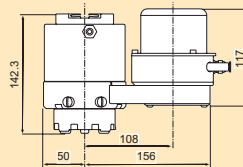
For mounting in a Macro chuck. Flushing via flushing connection

- Control unit included
- Required drawbar 3R-605.2, but 3R-605.2RS in wire EDM machines
- Rust-resistant
- Immersible
- Maximum electrode weight 5 kg
- Maximal flushing pressure through the chuck: 40 bar
- Weight 9.5 kg

#### 3R-6.600-VS

For vertical mounting in EDM machines.

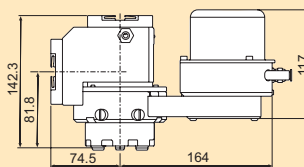
- Speed range 60-2000 rev/min



#### 3R-6.600-VHS

For vertical mounting in die-sinking EDM machines and horizontal mounting in wire EDM machines.

- Speed range 60-1500 rev/min



Rust-resistant and immersible

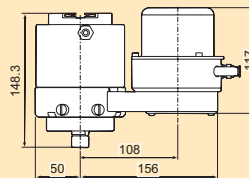
Compact design



### Roterande spindel 3R-6.300-EHS16

For clamping in a vertical Macro chuck. Flushing via flushing connection.

- Control unit included
- Drawbar depends on chosen chuck
- Rust-resistant
- Immersible
- Speed range 60-2000 rev/min
- Maximum flushing pressure 40 bar
- Weight 10 kg



#### Recommended collet sets

| Make      | Collet set    | Size (mm) | Nut M19x10             |
|-----------|---------------|-----------|------------------------|
| Balzer    | EHS16         | Ø0.09-3   | Integral               |
| Regofix   | ER16, ER16-UP | Ø0.5-10   | ERM16, ERMC16, ER16 MS |
| Tecnopinz | ETS16         | Ø1.25-10  | ETS16,2                |

Vertical or horizontal mounting

High precision

## OVERVIEW OF HOLDERS

| MacroStandard – holder 54x54mm          |              |                 | PAGE |
|---|--------------|-----------------|------|
| HARDENED PALLET 12,5 mm                 | 3R-651.7E-XS |                 | 19   |
| HARDENED PALETT 12,5 mm                 | 3R-651.7E-S  | SURFACE-TREATED | 19   |
| SPACER PLATE                            | 3R-658.1E-S  |                 | 19   |
| UNHARDENED HOLDER FOR ELECTRODES <30 mm | 3R-658.2E-S  |                 | 19   |
| UNHARDENED HOLDER FOR ELECTRODES <30 mm | 3R-658.4E-S  |                 | 20   |

NOTE: In addition, all MacroHighPerformance pallets can be mounted in MacroStandard

Macro 54x54 mm  
 Macro 70x70 mm  
 Macro Ø116 mm  
 Macro 180x180 mm

### Pallet, 54x54 mm

Hardened pallet for copper electrodes and workpieces.

Note: Must be mounted on the copper blank/workpiece before it is locked in a chuck.

Note: For graphite electrodes, spacer plate 3R-658.1E-S is required.



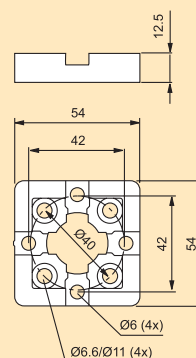
#### 3R-651.7E-S

- Nickel-plated side faces
- Adapted for automatic changing
- Supplied in sets of eight
- Weight 1.3 kg



#### 3R-651.7E-XS

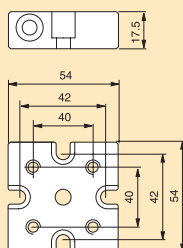
- Untreated side faces
- Adapted for automatic changing
- Supplied in sets of eight
- Weight 1.3 kg



#### Spacer plate 54x54 mm 3R-658.1E-S

For graphite electrodes or copper electrodes/workpieces with a rough mounting surface. To be mounted on 3R-651.7E-S or 3R-651.7E-XS.

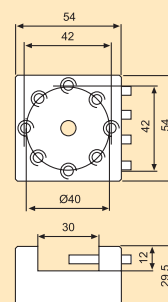
- Ready for code carrier
- Supplied in sets of eight
- Weight per set 2.5 kg



#### Holder 54x54 mm 3R-658.2E-S

Unhardened holder for flat electrodes with maximum width 30 mm. To be mounted on 3R-651.7E-S or 3R-651.7E-XS.

- Ready for code carrier
- Flushing duct
- Supplied in sets of eight
- Weight per set 3.5 kg

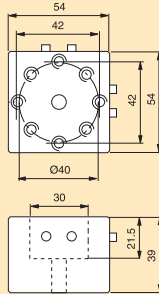




**✓ Holder 54x54 mm  
3R-658.4E-S**

Unhardened holder for square or round electrodes, max 30 mm. To be mounted on 3R-651.7E-S or 3R-651.7E-XS.

- Ready for code carrier
- Flushing duct
- Supplied in sets of eight
- Weight per set 5.5 kg



**✓ User kit  
3R-628.31-S**

|             |                       |     |
|-------------|-----------------------|-----|
| 3R-605.1    | Drawbar, long         | x4  |
| 3R-605.2    | Drawbar, short        | x2  |
| 3R-610.21-S | Manual table chuck    | x1  |
| 3R-651.7-S  | Pallet, 54x54 mm      | x12 |
| 3R-656.1    | Check ruler           | x1  |
| 3R-658.1-S  | Spacer plate 54x54 mm | x2  |
| 3R-658.4-S  | Holder 54x54 mm       | x4  |
| 3R-658.2-S  | Holder 54x54 mm       | x4  |



**User kit  
3R-628.41-S**



|              |                                 |     |
|--------------|---------------------------------|-----|
| 3R-465.1-A   | Holder with MacroJunior taper   | x4  |
| 3R-461.1-GA  | Holder with MacroJunior journal | x2  |
| 3R-466.4033  | Chuck adapter Macro/MacroJunior | x1  |
| 3R-466.10033 | Chuck adapter Macro/MacroJunior | x1  |
| 3R-491       | Holder 25 mm MacroJunior        | x10 |
| 3R-605.1     | Drawbar, long                   | x4  |
| 3R-605.2     | Drawbar, short                  | x2  |
| 3R-610.21-S  | Manual table chuck              | x1  |
| 3R-651.7-S   | Pallet, 54x54 mm                | x8  |
| 3R-656.1     | Check ruler                     | x1  |
| 3R-658.1-S   | Spacer plate 54x54 mm           | x2  |
| 3R-658.4-S   | Holder 54x54 mm                 | x2  |
| 3R-658.2-S   | Holder 54x54 mm                 | x2  |
|              | Screw MTF4x12                   | x90 |
|              | Screw wrench                    | x1  |

**Drawbars**

**✓ 3R-605.2E**

- Ø20x36.9 mm with flushing holes Ø7 mm
- Supplied in sets of five



**✓ 3R-605.2RS**

- Ø20x36.9 mm with flushing holes Ø7 mm
- Rust-resistant
- Supplied singly
- To be used together with 3R-6.600-VX



**✓ Check ruler  
3R-656.1**

For setting angular positions. Ground outside diameter for centring.

- Measuring length 50 mm
- Weight 0.8 kg



**Fixed measuring probes**

For machines with measurement cycle function.

**3R-US600.3**

- Measuring ball Ø3 mm
- Weight 0.6 kg

**3R-US600.5**

- Measuring ball Ø5 mm
- Weight 0.6 kg



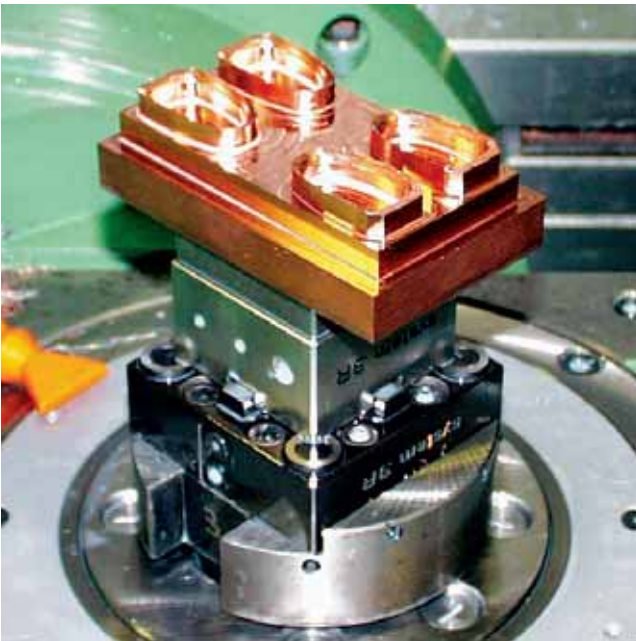
**Splash guard  
90027.01**

Fits MacroStandard chucks with drawbar 3R-605.2.



**Adapter  
90134**

For upgrading electrodes on Hirschmann 50 holders to the Macro system.



**Adapter  
3R-600-A02**

Gives access to the Macro system on machines fitted with SNT.



**Adapter  
3R-600-A03**

Gives access to the Macro system on machines fitted with YB.



**Conversion kit  
90131**

For upgrading electrodes on ITS holders to the Macro system.

- Required electrode holder 3R-651.7E-S



**IF YOU WANT TO COMPETE**

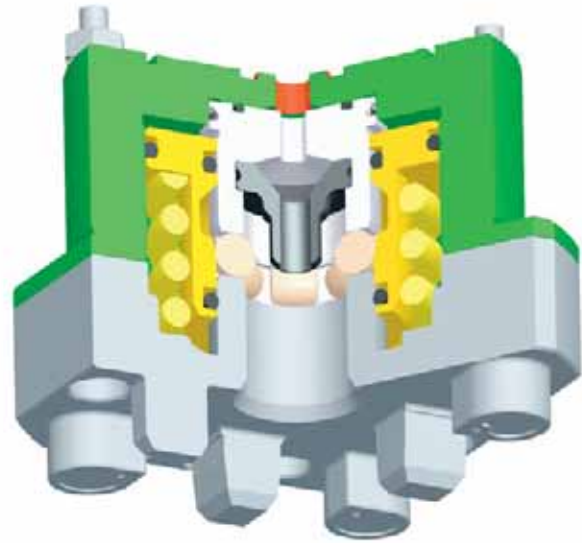
in the global manufacturing industry, you need to study every aspect of efficiency. What matters is to extract the greatest possible number of machine-hours from every machine, every single day.

In the moulding tool sector it is simply a matter of upgrading the operation from toolmaking to tool production with minimised lead times. And here the importance of a high-class reference system can never be overestimated. A reference system that cuts setting-up times from hours to a few minutes – One Minute Setup.

MacroHighPerformance is that kind of reference system. A system that minimises throughput time, and which, thanks to its accuracy, practically eliminates rejects. A system that increases flexibility and profitability. A system that increases competitiveness and ensures the success of its user.

The patent-protected Macro systems are the only ones in the world with these features:

- All chucks have ground-in fixed references.
- All holders have ground-in flexible references.
- All chucks and holders have all their references in a single piece.
- All references are in the same plane.



**FACTS**

Repetition accuracy  
0.002 mm

Recommended tightening  
torque, manual chck, 4 Nm.

Maximum flushing pressure  
15 bar

Clamping force  
6 000 N

*Reduces setting-up times*

*Automatic air-blast cleaning*

*References of cemented carbide, alternatively of hardened ground steel*

*Locking with helical springs*

*Turbo locking – enhanced clamping force*

## OVERVIEW OF CHUCKS AND CHUCK ADAPTERS

| MacroHighPerformance – spindle chucks  |              |                                    | PAGE |
|--|--------------|------------------------------------|------|
| MANUAL                                 | 3R-600.20    |                                    | 24   |
| PNEUMATIC MANUAL                       | 3R-600.1     |                                    | 24   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-600.83    | MACHINE-ADAPTED / CEMENTED CARBIDE | 24   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-600.83-10 | MACHINE-ADAPTED                    | 24   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-600.84-1  | MACHINE-ADAPTED / CEMENTED CARBIDE | 24   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-600.84-30 | MACHINE-ADAPTED                    | 24   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-600.86    | MACHINE-ADAPTED / CEMENTED CARBIDE | 25   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-600.86-1  | MACHINE-ADAPTED / CEMENTED CARBIDE | 25   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-600.86-2  | MACHINE-ADAPTED / CEMENTED CARBIDE | 25   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-600.86-30 | MACHINE-ADAPTED                    | 25   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-600.EX8   | MACHINE-ADAPTED                    | 25   |
| MacroHighPerformance – lathe chuck     |              |                                    |      |
| MANUAL                                 | 3R-600.20    |                                    | 24   |
| MacroHighPerformance – table chucks    |              |                                    |      |
| PNEUMATIC MANUAL                       | 3R-610.46    |                                    | 26   |
| PNEUMATIC MANUAL                       | 3R-600.10-30 |                                    | 26   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-600.19    | 3REFIX                             | 26   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-610.19    | HORIZONTAL, VERTICAL AND 3REFIX    | 26   |
| PNEUMATIC AUTOMATIC / MANUAL           | 90716.09     | VIBRATION-DAMPED                   | 26   |
| PNEUMATIC AUTOMATIC / MANUAL           | 90716.10     | VIBRATION-DAMPED / LOW             | 26   |
| PNEUMATIC AUTOMATIC / MANUAL           | 90716.12     | VIBRATION-DAMPED                   | 27   |
| MacroHighPerformance – built-in chucks |              |                                    |      |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-SP7359    |                                    | 27   |
| PNEUMATIC AUTOMATIC / MANUAL           | 3R-SP7359-RS | RUST-RESISTANT                     | 27   |
| MacroHighPerformance – chuck adapters  |              |                                    |      |
| MANUAL                                 | 3R-603.9     | MACRO → MINI 90°                   | 27   |
| MANUAL                                 | 3R-653       | MACRO → MINI                       | 27   |
| MANUAL GATE CHUCK                      | 3R-US90-600  |                                    | 27   |
| PNEUMATIC MANUAL                       | 3R-607.1     | MAXI → MACRO                       | 62   |
| PNEUMATIC AUTOMATIC / MANUAL           | 90356.22     | DYNAFIX → MACRO                    | 58   |

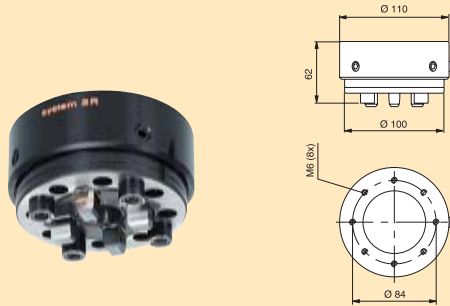




**Manual chuck  
3R-600.20**

For mounting on the machine spindle with 3R-A3620 or on a lathe taper with centring ring 3R-612.6.

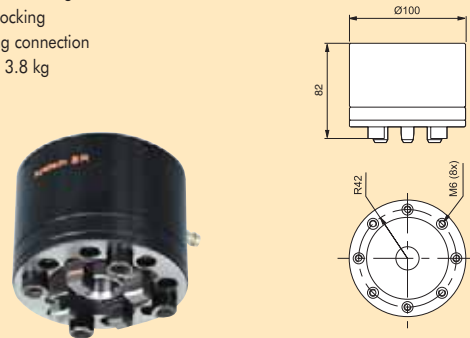
- Required drawbar 3R-605.1 or 3R-605.4
- Fixed index positions 4x90°
- Weight 3.6 kg



**Pneumatic chuck  
3R-600.1**

Pneumatic chuck for mounting on machine spindle with 3R-A3620. Opening/locking and air-blast cleaning through air connection on side of chuck.

- Required drawbar 3R-605.1
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of Z-references
- Turbo locking
- Flushing connection
- Weight 3.8 kg



**Machine-adapted pneumatic chucks**

Pneumatic chucks for mounting directly on the machine spindle.

*Note: When ordering state machine make and type.*

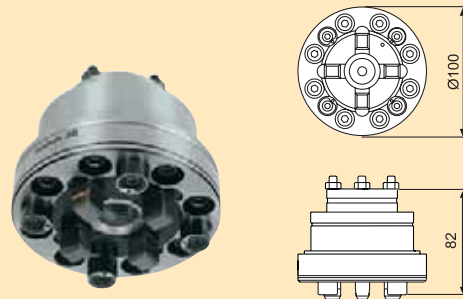
- Four M6 clearance holes, Ø 45 mm.
- Required drawbar 3R-605.1.
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.7 kg

**3R-600.83**

*Note: X/Y-references in cemented carbide, Z-references in hardened and ground steel.*

**3R-600.83-10**

*Note: X/Y/Z references in hardened and ground steel.*

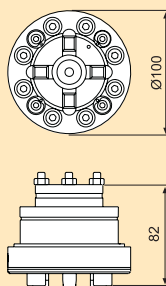


**Machine-adapted pneumatic chucks**

Pneumatic chucks for mounting directly on the machine spindle.

*Note: When ordering state machine make and type.*

- Four M6 clearance holes, Ø 45 mm.
- Required drawbar 3R-605.1
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Flushing connection
- Turbo locking
- Weight 2.7 kg



**3R-600.84-1**

*Note: X/Y-references in cemented carbide, Z-references in hardened and ground steel.*



**3R-600.84-30**

*Note: X/Y/Z references of hardened and ground steel, larger Z-references.*







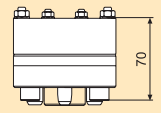
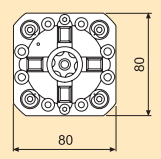
**Machine-adapted pneumatic chuck  
3R-600.86**

Pneumatic chuck for mounting directly on the machine spindle.

*Note: When ordering state machine make and type.*

*Note: X/Y-references in cemented carbide, Z-references in hardened and ground steel.*

- Four M6 clearance holes, 67x20 mm and four M5 clearance holes, 63x26 mm
- Required drawbar 3R-605.1.
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.2 kg



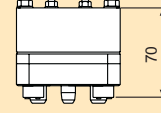
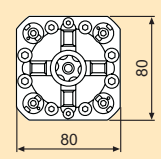
**Machine-adapted pneumatic chuck  
3R-600.86-1**

Pneumatic chuck for mounting directly on the machine spindle.

*Note: When ordering state machine make and type.*

*Note: X/Y-references in cemented carbide, Z-references in hardened and ground steel*

- Four M6 clearance holes, 67x20 mm and four M5 clearance holes, 63x26 mm
- Required drawbar 3R-605.1
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.2 kg

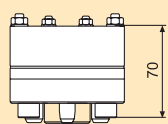
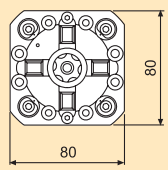


**Machine-adapted pneumatic chucks**

Pneumatic chucks for mounting directly on the machine spindle.

*Note: When ordering state machine make and type.*

- Four M6 clearance holes, 67x20 mm and four M5 clearance holes, 63x26 mm
- Required drawbar 3R-605.1
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Flushing connection
- Turbo locking
- Weight 2.2 kg



**3R-600.86-2**

*Note: X/Y-references in cemented carbide, Z-references in hardened and ground steel.*



**3R-600.86-30**

*Note: X/Y/Z references of hardened and ground steel, larger Z-references.*



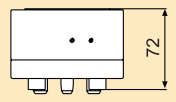
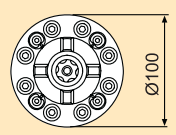
**Machine-adapted pneumatic chuck  
3R-600.EX8**

Pneumatic chuck for mounting directly on the machine spindle.

*Note: When ordering state machine make and type.*

*Note: X/Y/Z references in hardened and ground steel.*

- Four M6 clearance holes,  $\varnothing 41$  mm.
- Required drawbar 3R-605.1
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Turbo locking
- Flushing connection
- Weight 2.2 kg

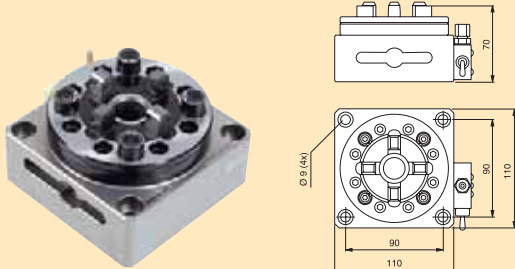




### Pneumatic table chuck 3R-610.46

Pneumatic chuck with integral air unit.

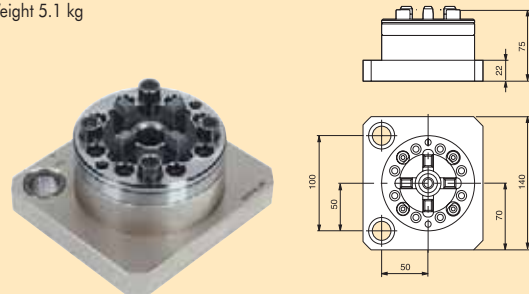
- Required drawbar 3R-605.1 or 3R-605.4
- References of cemented carbide
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 4.4 kg



### Pneumatic table chuck 3R-600.19

Pneumatic chuck with 3Refix holes for mounting on the machine table.

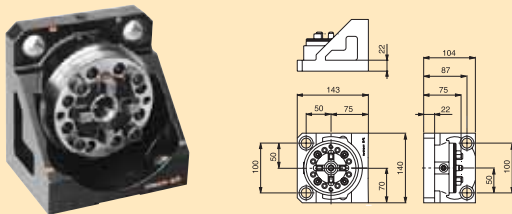
- 3Refix  $\varnothing 20$  mm
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 5.1 kg



### Pneumatic table chuck 3R-610.19

Pneumatic chuck for vertical or horizontal mounting on the machine table.

- 3Refix  $\varnothing 20$  mm
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 8.3 kg



### Pneumatic table chuck 3R-600.10-30

Pneumatic chuck locked/opened with air gun.

- Required drawbar 3R-605.1 or 3R-605.4
- All references of hardened and ground steel
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 4.4 kg



### Pneumatic table chuck 90716.09

Pneumatic vibration-damped chuck.

- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Turbo locking



### Pneumatic table chuck 90716.10

Pneumatic vibration-damped chuck, low-profile version.

- Required drawbar 3R-605.10
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Turbo locking



**Pneumatic table chuck  
90716.12**

Pneumatic vibration-damped chuck.

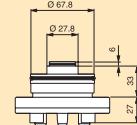
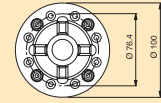
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight ??? kg



**Automatic chuck  
3R-SP7359**

Pneumatic chuck for building-in, for example in a fixture, dividing head or B-axis.

- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 1.8 kg



**3R-SP7359-RS**

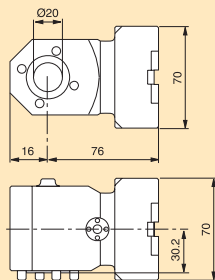
- Rust-resistant version, otherwise as 3R-SP7359



**Manual chuck adapter  
3R-603.9**

For horizontal mounting of Mini holders in the Macro system.

- Rust-resistant
- Flushing connection
- Weight 1.9 kg



**Manual chuck adapter  
3R-653**

For mounting Mini holders in the Macro system.

- MacroHP coupling
- Can be changed automatically
- Rust-resistant
- Weight 1.3 kg



**Gate chuck  
3R-US90-600**

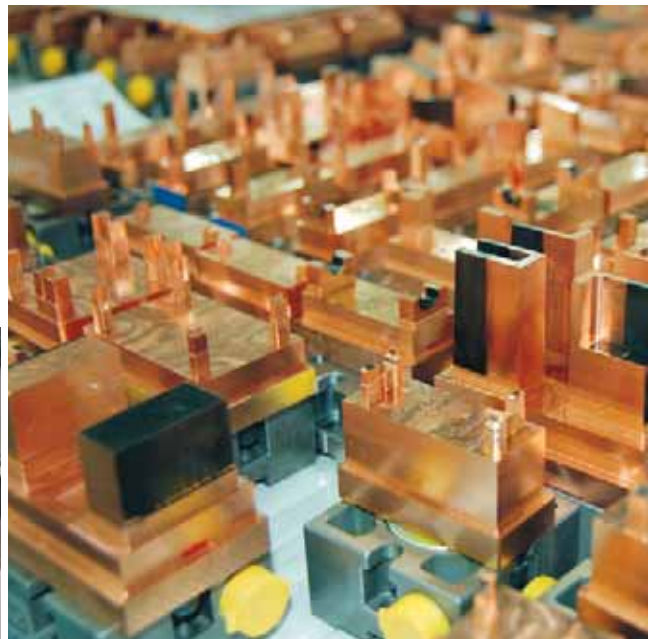
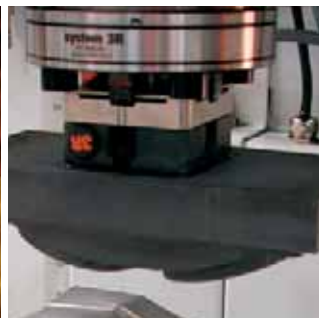
Fixed indexing positions at 0, 30, 45, 60 and 90 degrees. Other angles are set with a sine rule.



## OVERVIEW OF HOLDERS

| MacroHighPerformance – holder 54x54 mm    |                 |                   | PAGE |
|---|-----------------|-------------------|------|
| HARDENED PALETT 12.5 mm                   | 3R-651.7E-P     |                   | 29   |
| HARDENED PALETT 30 mm                     | 3R-651E-P       |                   | 29   |
| HARDENED PALETT 30 mm                     | 3R-651.3        | 52x52 mm, 3REFIX  | 29   |
| UNHARDENED PALETT                         | 3R-658.31E      | 52x52 mm, 3REFIX  | 29   |
| HARDENED / UNHARDENED JOURNAL Ø30 mm      | 3R.651.105E     |                   | 29   |
| HARDENED HOLDER FOR ELECTRODES <30 mm     | 3R-651.13       |                   | 29   |
| THREE-JAW CHUCK 0-3 mm                    | 3R-US611.4      |                   | 30   |
| COLLET CHUCK ER16                         | 3R-659.16-P     |                   | 30   |
| COLLET CHUCK ER20                         | 3R-659.20-P     |                   | 30   |
| COLLET CHUCK ER32                         | 3R-659.32-P     |                   | 30   |
| MacroHighPerformance – pallets 70x70 mm   |                 |                   |      |
| UNHARDENED PALETT                         | 3R-608.31E      | 3REFIX            | 30   |
| HARDENED PALETT 12.5 mm                   | 3R-601.7E-P     |                   | 30   |
| HARDENED PALETT 30 mm                     | 3R-601.1E-P     |                   | 30   |
| HARDENED PALETT 30 mm                     | 3R-601.3        | 3REFIX            | 30   |
| MacroHighPerformance – pallets Ø116 mm    |                 |                   |      |
| UNHARDENED PALETT                         | 3R-608.51E      | 3REFIX            | 31   |
| HARDENED PALETT                           | 3R-601.116-P    | NOT AUTO-CHANGING | 31   |
| HARDENED PALETT                           | 3R-601.116-PA   |                   | 31   |
| HARDENED PALETT                           | 3R-601.52       | 3REFIX            | 31   |
| MacroHighPerformance – pallets 180x180 mm |                 |                   |      |
| ALUMINIUM, M6 THREADS                     | 3R-601-1818-M6M | NOT AUTO-CHANGING | 31   |
| ALUMINIUM. M6 THREADS                     | 3R-601-1818-M6A |                   | 31   |
| ALUMINIUM. T-SLOT                         | 3R-601-1818-T8M | NOT AUTO-CHANGING | 31   |
| ALUMINIUM. T-SLOT                         | 3R-601-1818-T8A |                   | 31   |

NOTE: In addition, all MacroStandard pallets can be mounted in MacroHighPerformance.



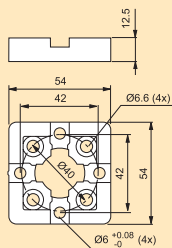


**✓ Pallet 54x54 mm  
3R-651.7E-P**

Hardened and precision-cast, with clearance holes for four fixing screws.

*Note: Must be mounted on the workpiece/fixture before it is locked in a chuck.*

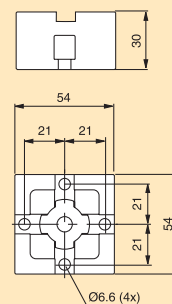
- Adapted for automatic changing
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Rust-resistant
- Supplied in sets of eight
- Weight per set 1.3 kg



**✓ Pallet 54x54 mm  
3R-651E-P**

Hardened, with clearance holes for four fixing screws.

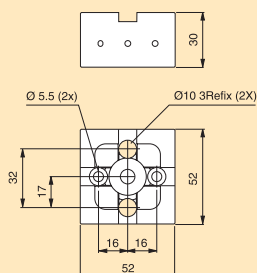
- Adapted for automatic changing
- Ready for code carrier
- Fixed index positions 4x90°
- Rust-resistant
- Flushing duct
- Supplied in sets of eight
- Weight per set 3.4 kg



**✓ Palett 52x52 mm  
3R-651.3**

Hardened, with 3Refix holes, flushing connection and clearance holes for two fixing screws.

- 3Refix Ø10 mm
- Adapted for automatic changing
- Ready for code carrier
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Rust-resistant
- Flushing duct
- Weight 0.5 kg



**✓ Pallet 52x52 mm  
3R-658.31E**

Unhardened with 3Refix holes and two M5 threads. Designed to be mounted on 3R-651.3.

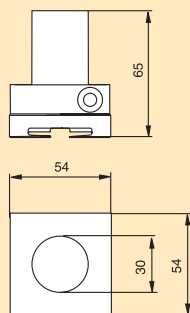
- 3Refix Ø10 mm
- Supplied in sets of ten
- Building-in height 14.4 mm
- Weight 2.2 kg



**Holder 54x54 mm  
3R-651.105E**

Hardened holder with unhardened electrode mounting part.

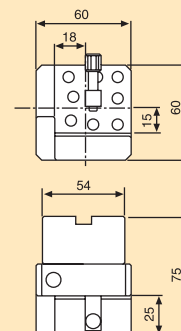
- Adapted for automatic changing
- Ready for code carrier
- Fixed index positions 4x90°
- Supplied in sets of eight
- Weight per set 7 kg



**✓ Holder  
3R-651.13**

Hardened holder for square electrodes max 30 mm.

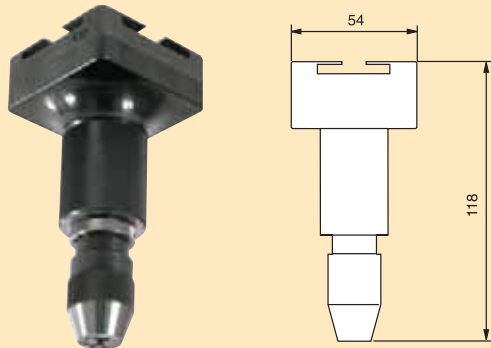
- Adapted for automatic changing
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Flushing connection
- Weight 1.2 kg





### Three-jaw chuck 3R-US611.4

For 0-3 mm electrodes.



### Collet chucks

#### ✓ 3R-659.16-P

- For collets ER16
- Electrode size 0.5-10 mm
- Flushing duct
- Building-in height 62 mm
- Weight 0.8 kg

#### ✓ 3R-659.32-P

- For collets ER32
- Electrode size 2-20 mm
- Flushing duct
- Building-in height 94 mm
- Weight 1.2 kg

#### ✓ 3R-659.20-P

- For collets ER20
- Electrode size 1-13 mm
- Flushing duct
- Building-in height 69 mm
- Weight 1.2 kg



#### ✓ Pallet 70x70 mm 3R-608.31E

Unhardened with 3Refix holes and four M6 threads. Designed to be mounted on 3R-601.3 or 3R-601.52.

- 3Refix  $\varnothing 10$  mm
- Supplied in sets of ten
- Building-in height 14.2 mm
- Weight 4.4 kg

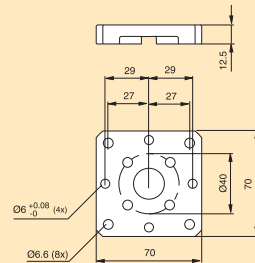
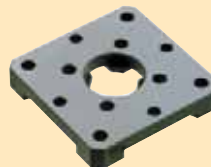


#### ✓ Pallet 70x70 mm 3R-601.7E-P

Hardened and precision-cast, with clearance holes for four fixing screws.

*Note: Must be mounted on the workpiece/fixture before it is locked in a chuck.*

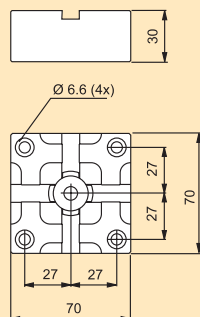
- Adapted for automatic changing
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Rust-resistant
- Supplied in sets of five
- Weight per set 3 kg



#### ✓ Palett 70x70 mm 3R-601.1E-P

Hardened, with clearance holes for four fixing screws.

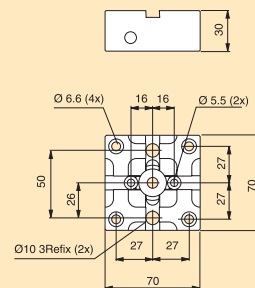
- Adapted for automatic changing
- Ready for code carrier
- Fixed index positions 4x90°
- Rust-resistant
- Flushing duct
- Supplied in sets of five
- Weight per set 3.2 kg



#### ✓ Palett 70x70 mm 3R-601.3

Hardened with 3Refix holes, flushing connection and clearance holes for six fixing screws.

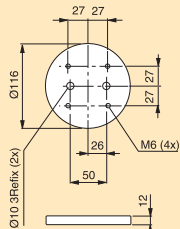
- 3Refix  $\varnothing 10$  mm
- Adapted for automatic changing
- Ready for code carrier
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Rust-resistant
- Flushing duct
- Weight 1 kg



**✓ Pallet Ø116 mm  
3R-608.51E**

Unhardened with 3Refix holes and four M6 threads.  
Designed to be mounted on 3R-601.3 or 3R-601.52.

- 3Refix Ø10 mm
- Supplied in sets of ten
- Weight 10 kg

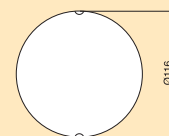


**✓ Pallets Ø116 mm**

Unhardened pallets with precision-cast clutch parts type 3R-601.7E-P.

**3R-601.116-P**

- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Weight 1.8 kg



**3R-601.116-PA**

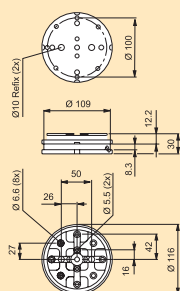
- Adapted for automatic changing
- Ready for code carrier
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Weight 1.8 kg



**✓ Pallet Ø116 mm  
3R-601.52**

Hardened, with 3Refix holes and clearance holes for ten fixing screws.

- 3Refix Ø10 mm
- Adapted for automatic changing
- Ready for code carrier
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Rust-resistant
- Flushing duct
- Weight 1.9 kg

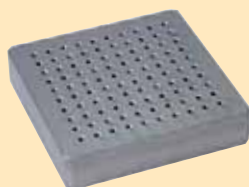


**Pallets 180x180 mm**

Anodized aluminium pallets with M6 threads.

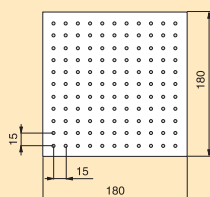
**3R-601-1818-M6A**

- Mounted on pallet 3R-601.116-PA
- Building-in height 70 mm
- Adapted for automatic changing
- Ready for code carrier
- Weight 5.5 kg



**3R-601-1818-M6M**

- Mounted on pallet 3R-601.7E-P
- Building-in height 53 mm
- Weight 4 kg

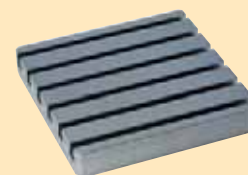


**Pallets 180x180 mm**

Anodized aluminium pallets with T-slots.

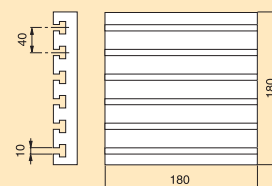
**3R-601-1818-T8A**

- Mounted on pallet 3R-601.116-PA
- Building-in height 70 mm
- Adapted for automatic changing
- Ready for code carrier
- Weight 5.5 kg



**3R-601-1818-T8M**

- Mounted on pallet 3R-601.7E-P
- Building-in height 53 mm
- Weight 5.5 kg



**Drawbars**



**3R-605.1E**

- Ø20x57.1 mm with flushing holes Ø7 mm
- Supplied in sets of ten



**3R-605.2E**

- Ø20x36.9 mm with Ø7 mm flushing hole
- Supplied in sets of five



**3R-605.10**

- Ø20x13 mm
- Supplied singly



**3R-605.14E**

- Ø20x57 mm with flushing holes Ø7 mm
- Supplied in sets of ten
- Intended for MacroCombi automatic electrode changers



**3R-605.4E**

- For round pallets adapted for automatic changing
- Ø20x57.1 mm without flushing hole
- Supplied in sets of 10



**Check ruler  
3R-606.1**

For setting angular positions and for centring Macro chucks.

- Measuring length 100 mm
- Weight 1.4 kg



**Check mandrel  
3R-606**

Check mandrel with ground C-reference for setting Macro chucks.

- Measuring length 110 mm
- Weight 2.3 kg



**Measuring probes**

Measuring probes with Renishaw measuring head for machines with measurement cycle function.



**3R-656.31-3P**

- Measuring ball Ø3 mm
- Weight 0.6 kg



**3R-656.31-5P**

- Measuring ball Ø5 mm
- Weight 0.6 kg

**Microscope  
3R-4.650**

With transformer (110/220V) for integral lighting.

- Magnification x25
- Field of view Ø6 mm
- Weight 0.8 kg



**Indicating spindle  
3R-656.2-P**

- For measuring centre holes
- Dial indicator required
- Weight 0.6 kg



**Centring ring  
3R-612.6**

For centring 3R-600.20.



**Sealing ring  
3R-612.116**

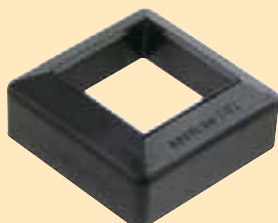
Steel ring for absolute sealing of pallets 3R-601.52, 3R-601.116-P, 3R-601.116-PA, 3R-601-1818-M6A, 3R-601-1818-M6M, 3R-601-1818-T8A and 3R-601-1818-T8M against MacroHP chucks.





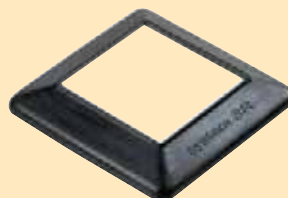
**Splash guard  
3R-RU52L**

Rubber guards for pallets  
52x52 and 54x54 mm.  
• Height 33 mm



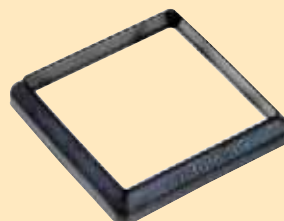
**Splash guard  
3R-RU52**

Rubber splash guard for  
pallets 52x52 mm and  
54x54 mm.  
• Height 13 mm



**Splash guard  
3R-RU70**

Rubber splash guard for  
pallets 70x70 mm.  
• Height 13 mm



**Splash guard  
90027**

Splash guard for Macro chucks with long drawbar. Can also  
be used as a cover for unused chucks.

*Note: Does not work with sealing ring 3R-612.116.*



**Chip guard 54x54 mm  
D-20117.2**

Splash and debris guard for automatic Macro chucks  
Ø100 mm.

- For pallets 52x52 and 54x54 mm
- Adapted for automatic changing



**Chip guard 70x70 mm  
D-20117.1**

Splash and debris guard for automatic Macro chucks  
Ø100 mm.

- For pallets 70x70 mm
- Adapted for automatic changing



**Chip guard  
U-50167.55**

Aluminium guard for MacroHP chucks with automatic  
changing with WorkPal.



## THE BEST OF TWO WORLDS

MacroCombi – a unique tool for electrode production and EDM machining. MacroCombi combines the best of two worlds. Two perfect systems in one.

Both small and large electrodes can be mounted in the same chuck. Two systems. One chuck. No adapters. Always with fixed references you can rely on.

The same chuck for the Macro holder with its immovable stability and precision, and for the small, cost-effective MacroJunior holder. No tricky, time-consuming re-setting. Maximum flexibility! System 3R offers a complete range of combination chucks. Whatever chucks and accessories you need for your operations, we can provide them. Everything to ensure that you get the highest possible yield from your business, and that you always have access to a system that can tackle the tasks you need it to do.

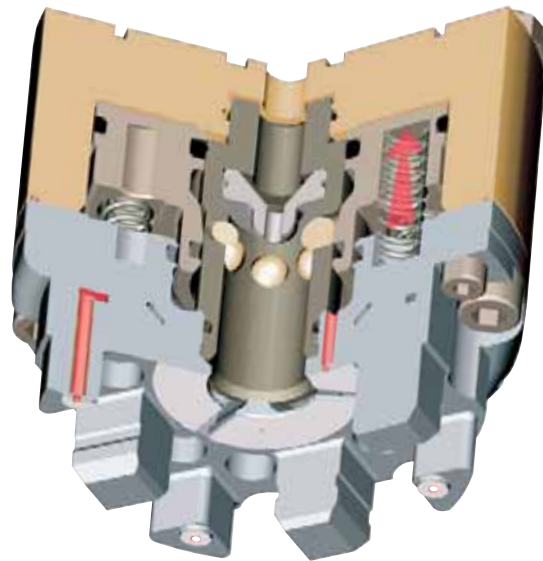
There are no limitations. Only possibilities.

One chuck, two systems, no adapters.

Turbo locking boosts the clamping force

No bending forces. Locking mechanism separate from the references.

Automatic air-blast cleaning.



### FACTS

- Repetition accuracy  
0.002 mm
- Recommended tightening torque, manual chucks:  
4 Nm
- Permitted torque, 25 mm holders  
10 Nm
- Permitted torque, 30 mm holders  
25 Nm
- Maximum flushing pressure  
15 bar
- Clamping force  
5 000 N





## OVERVIEW OF CHUCKS AND CHUCK ADAPTERS

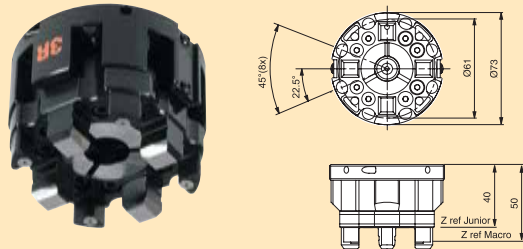
| MacroCombi – spindle chucks  |               |                                | PAGE |
|------------------------------|---------------|--------------------------------|------|
| MANUAL                       | 3R-460.34     |                                | 36   |
| MANUAL                       | 3R-460.35     | C-AXIS                         | 36   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-460.1-1    |                                | 36   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-460.83-1   | MACHINE-ADAPTED                | 36   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-460.86-1   | MACHINE-ADAPTED                | 36   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-460.86-2   | MACHINE-ADAPTED                | 36   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-460.86-2.9 | MACHINE-ADAPTED / 90°          | 37   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-460.87-1   | MACHINE-ADAPTED / LONG         | 37   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-460.EX8-1  | MACHINE-ADAPTED                | 37   |
| MacroCombi – lathe chuck     |               |                                |      |
| MANUAL                       | 3R-460.32     |                                | 37   |
| MacroCombi – table chucks    |               |                                |      |
| MANUAL                       | 3R-460.31-5   | HORIZONTAL AND VERTICAL AND HP | 37   |
| MANUAL                       | 3R-460.34     |                                | 36   |
| MANUAL                       | 3R-460.37     |                                | 37   |
| MANUAL                       | 3R-460.45     | VERNIER SCALE, THREE AXES      | 38   |
| PNEUMATIC MANUAL             | 3R-460.46     |                                | 38   |
| MacroCombi – built-in chucks |               |                                |      |
| MANUAL                       | 3R-460.34     |                                | 36   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-SP18286    |                                | 38   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-SP19047    |                                | 38   |
| MacroCombi – chuck adapters  |               |                                |      |
| PNEUMATIC AUTOMATIC / MANUAL | 90356.21      | DYNAFIX → MACROCOMBI           | 58   |
| MANUAL                       | 3R-467.34     | MAXI → MACROCOMBI              | 62   |
| MANUAL                       | 3R-467.35     | MAXI → MACROCOMBI C-AXIS       | 63   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-467.1-1    | MAXI → MACROCOMBI              | 63   |
| MANUAL                       | D-40011       | MINI → MACROCOMBI              | 67   |



**Manual chuck  
3R-460.34**

For mounting in the machine spindle by means of 3R-A11489, or on the machine table by means of 3R-A19724 or alternatively 3R-A21944, or in a fixture.

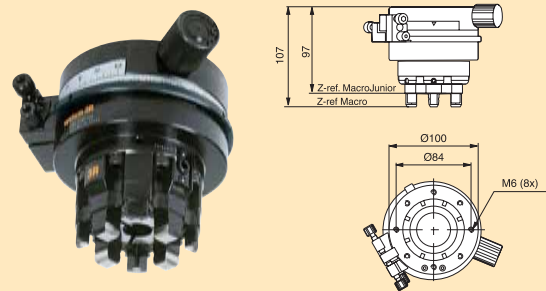
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Weight 0.8 kg



**Manual C-axis  
3R-460.35**

For mounting on machine spindle with 3R-A3620.

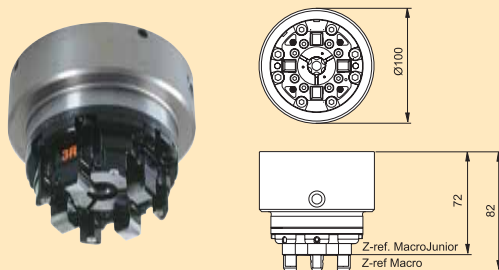
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Fixed index positions 8x45° and 3x120°
- Vernier scale
- Weight 4.3 kg



**Pneumatic chuck  
3R-460.1-1**

Pneumatic chuck for mounting on machine spindle with 3R-A3620.

- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 2.5 kg

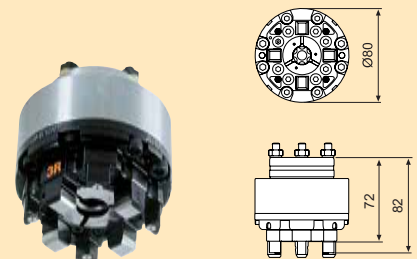


**Machine-adapted pneumatic chuck  
3R-460.83-1**

Pneumatic chuck for mounting directly on the machine spindle. All X/Y/Z references in hardened and ground steel.

Note: When ordering state machine make and type.

- Four M6 clearance holes, Ø 45 mm
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.5 kg

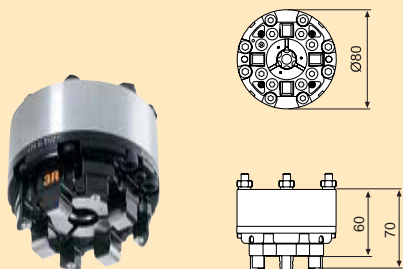


**Machine-adapted pneumatic chuck  
3R-460.86-1**

Pneumatic chuck for mounting directly on the machine spindle. All X/Y/Z references in hardened and ground steel.

Note: When ordering state machine make and type.

- Four M6 clearance holes, Ø45 mm and four M5 clearance holes, 62x26 mm
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.5 kg

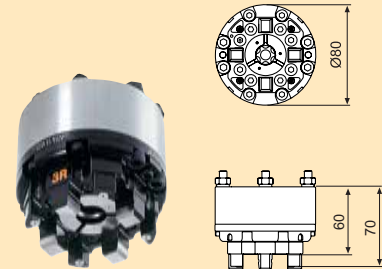


**Machine-adapted pneumatic chuck  
3R-460.86-2**

Pneumatic chuck for mounting directly on the machine spindle. All X/Y/Z references in hardened and ground steel.

Note: When ordering state machine make and type.

- Four M6 clearance holes, Ø45 mm and four M5 clearance holes, 62x26 mm
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.5 kg

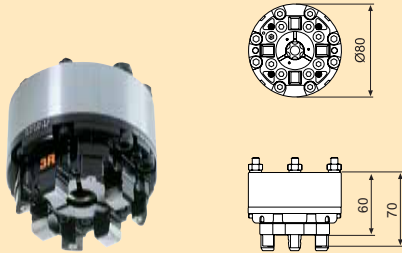


**Machine-adapted pneumatic chuck  
3R-460.86-2.9**

Pneumatic chuck for mounting directly on the machine spindle. MacroJunior references offset 90°. All X/Y/Z references in hardened and ground steel.

*Note: When ordering state machine make and type.*

- Four M6 clearance holes, Ø45 mm and four M5 clearance holes, 62x26 mm
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.5 kg

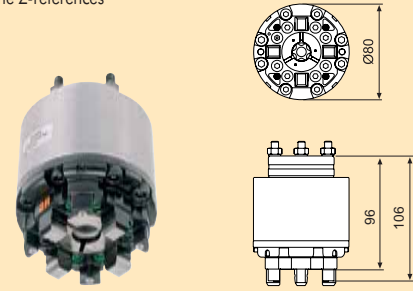


**Machine-adapted pneumatic chuck  
3R-460.87-1**

Long pneumatic chuck (+24 mm) for mounting directly on the machine spindle. All X/Y/Z references in hardened and ground steel.

*Note: When ordering state machine make and type.*

- Four M6 clearance holes, Ø 45 mm
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.5 kg

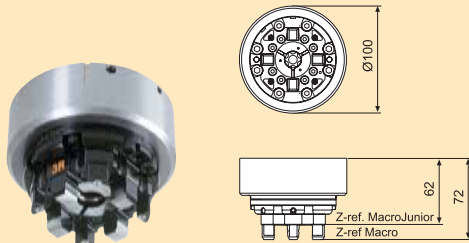


**Machine-adapted pneumatic chuck  
3R-460.EX8-1**

Pneumatic chuck for mounting directly on the machine spindle. All X/Y/Z references in hardened and ground steel.

*Note: When ordering state machine make and type.*

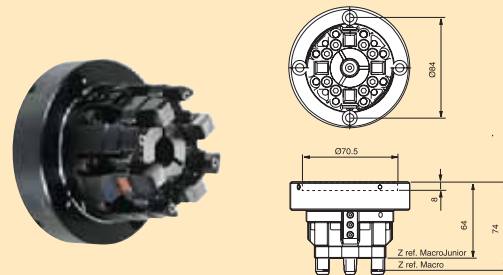
- Four M6 clearance holes, Ø45 mm and four M5 clearance holes, 62x26 mm
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.5 kg



**Manual lathe chuck  
3R-460.32**

For mounting on a lathe taper

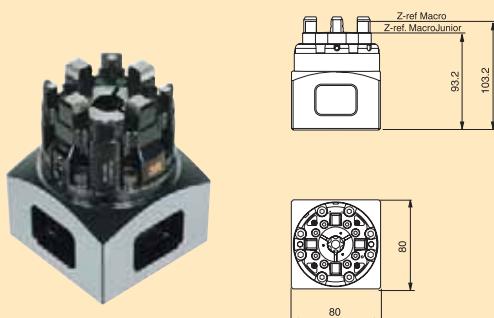
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Weight 2.5 kg



**Manual chuck  
3R-460.31-5**

Chuck in HighPerformance version. Five ground surfaces for vertical or horizontal mounting on the machine table.

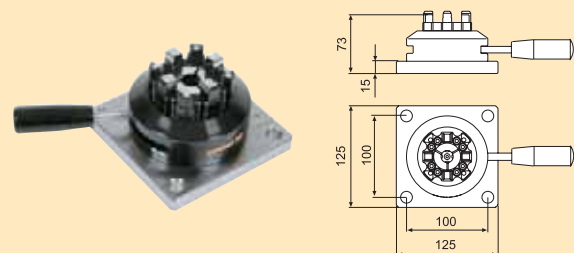
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Weight 3.5 kg



**Manual chuck  
3R-460.37**

The locking mechanism is operated by a removable handle.

- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Weight 4.5 kg



**Dividing head  
3R-460.45**

Three adjustable axes.

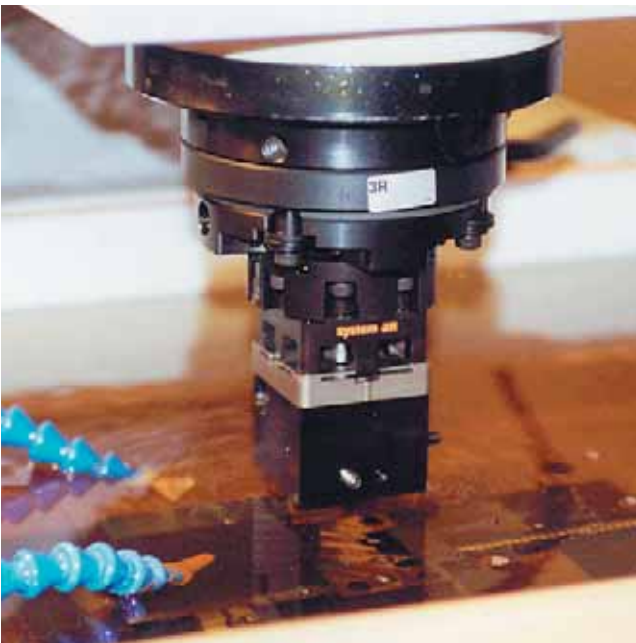
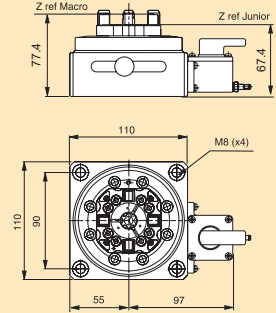
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Fixed index positions in the first axis 24x15°
- Fixed index positions in the other axes 2x90°
- Vernier scale
- Weight 20 kg



**Pneumatic table chuck  
3R-460.46**

Pneumatic chuck with integral air unit.

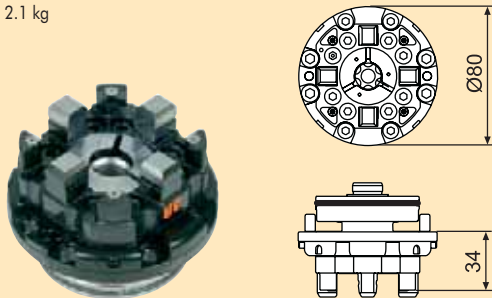
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 4.4 kg



**Pneumatic chuck  
3R-SP18286**

Pneumatic chuck for building-in, for example in a fixture, dividing head or B-axis.

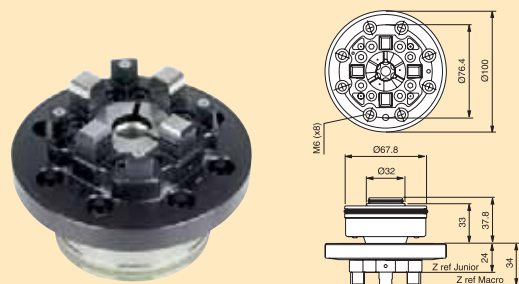
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 2.1 kg



**Pneumatic chuck  
3R-SP19047**

Pneumatic chuck for building-in, for example in a fixture, dividing head or B-axis.

- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 2.1 kg



**OVERVIEW OF HOLDERS**

| MacroJunior – holders                          |               |                  | PAGE |
|--|---------------|------------------|------|
| Ø25 mm   | 3R-491E       |                  | 9    |
| Ø25 mm WITHOUT GRIPPER STOP                    | 3R-491E-MONDO |                  | 9    |
| Ø25 mm PARALLEL-GROUND                         | 3R-491E-HP    |                  | 9    |
| Ø26 mm PARALLEL-GROUND / JOURNAL Ø8.8 mm       | 3R-461-8.8-HP |                  | 10   |
| Ø28 mm JOURNAL Ø10 mm                          | 3R-461.1E-GA  |                  | 9    |
| Ø28 mm CONE                                    | 3R-465.1E-A   |                  | 10   |
| ELECTRODES Ø0.1-2 mm                           | 3R-469-10     |                  | 10   |
| ELECTRODES Ø0.5-10 mm                          | 3R-469-16     |                  | 10   |
| ELECTRODES Ø1-4 mm                             | 3R-465-VE     |                  | 10   |
| ELECTRODES Ø4-8 mm                             | 3R-465-LE     |                  | 10   |
| 3READY-TO-RUN                                  | 3R-494-XXX    |                  | 11   |
| <b>MacroStandard – holder 54x54 mm</b>         |               |                  |      |
| HARDENED PALLET 12.5 mm                        | 3R-651.7E-XS  |                  | 19   |
| HARDENED PALLET 12.5 mm                        | 3R-651.7E-S   | SURFACE-TREATED  | 19   |
| SPACER PLATE                                   | 3R-658.1E-S   |                  | 19   |
| UNHARDENED HOLDER FOR ELECTRODES <30 mm        | 3R-658.2E-S   |                  | 19   |
| UNHARDENED HOLDER FOR ELECTRODES <30 mm        | 3R-658.4E-S   |                  | 20   |
| <b>MacroHighPerformance – holder 54x54 mm</b>  |               |                  |      |
| HARDENED PALLET 12.5 mm                        | 3R-651.7E-P   |                  | 29   |
| HARDENED PALLET 30 mm                          | 3R-651E-P     |                  | 29   |
| HARDENED PALLET 30 mm                          | 3R-651.3      | 52x52 mm, 3REFIX | 29   |
| UNHARDENED PALLET                              | 3R-658.31E    | 52x52 mm, 3REFIX | 29   |
| HARDENED / UNHARDENED JOURNAL Ø30 mm           | 3R-651.105E   |                  | 29   |
| HARDENED HOLDER FOR ELECTRODES <30 mm          | 3R-651.13     |                  | 29   |
| THREE-JAW CHUCK 0-3 mm                         | 3R-US611.4    |                  | 30   |
| COLLET CHUCK ER16                              | 3R-659.16-P   |                  | 30   |
| COLLET CHUCK ER20                              | 3R-659.20-P   |                  | 30   |
| COLLET CHUCK ER32                              | 3R-659.32-P   |                  | 30   |
| <b>MacroHighPerformance – pallets 70x70 mm</b> |               |                  |      |
| UNHARDENED PALLET                              | 3R-608.31E    | 3REFIX           | 30   |
| HARDENED PALLET 12.5 mm                        | 3R-601.7E-P   |                  | 30   |
| HARDENED PALLET 30 mm                          | 3R-601.1E-P   |                  | 30   |
| HARDENED PALLET 30 mm                          | 3R-601.3      | 3REFIX           | 30   |



**✓ User kit  
3R-468.31-S**

|             |                                    |      |
|-------------|------------------------------------|------|
| 3R-405.11   | Drawbar, MacroJunior               | x5   |
| 3R-405.16   | Drawbar, Macro                     | x5   |
| 3R-460.31-5 | Manual table chuck                 | x1   |
| 3R-465-L    | Holder, MacroJunior                | x2   |
| 3R-465-V    | Holder, MacroJunior                | x2   |
| 3R-491      | Holder, MacroJunior                | x30  |
| 3R-651.7-S  | Pallet Macro 54x54 mm              | x6   |
| 3R-656.1    | Check ruler                        | x1   |
| 3R-658.1-S  | Intermediate plate, Macro 54x54 mm | x2   |
| 3R-658.2-S  | Holder, Macro 54x54 mm             | x2   |
| 3R-658.4-S  | Holder, Macro 54x54 mm             | x2   |
| 3R-333-T20  | Screwdriver, TORX                  | x1   |
| 3R-PI4.5x14 | TORX screw                         | x100 |
| 3R-414-04   | Torque wrench, 4 Nm                | x1   |



**✓ Sealing ring  
3R-SP19764**

Rubber ring, used for debris protection/sealing for the MacroJunior references in electrode manufacturing on Macro holders in MacroCombi chucks.



**✓ Drawbar  
3R-405.11E**

Drawbar Ø15 mm to mount MacroJunior holders in chucks 3R-400. XX and 3R-460-XX.  
• Supplied in sets of ten



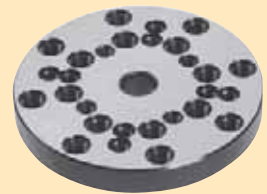
**✓ Drawbar  
3R-405.16E**

Drawbar Ø15 mm to mount Macro holders in chucks 3R-460-XX.  
• Supplied in sets of ten



**Adapter plate  
D-40001.20**

For mounting 3R-460.34 in systems of other makes.



**Splash guard  
90027.02**

Intended for MacroCombi chucks. Can also be used as a cover for unused chucks.



**Adapter  
90376**

Gives access to MacroCombi on machines fitted with SNT.

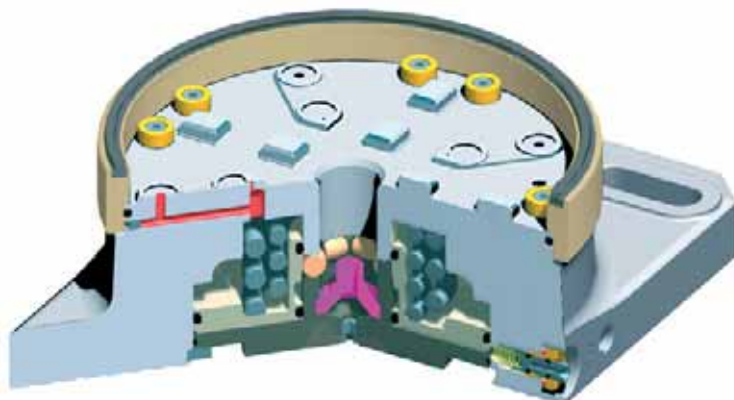


## RAPID CHANGES

in today's consumption patterns must be met with manufacturing methods which give profitability even with short runs.

Shorter runs mean frequent setting-up, so that setting-up times are becoming increasingly significant in terms of the financial results. Every minute of setting-up time that can be converted to active machining time means lower costs. So – minimised setting-up times lead to higher productivity, greater flexibility and therefore increased profitability.

MacroMagnum is a further development of the patented Macro system. The powerful clamping force and the position of the reference surfaces far away from the chuck centre provide a stability and accuracy that are ideal for applications with powerful machining forces.



A seal protects the references from fouling

Double Z-references for different pallet sizes

Double X/Y references of cemented carbide

Coarse guiding protects the references

Automatic air-blast cleaning

Turbo locking

## FACTS

Repetition accuracy:  
0.002 mm

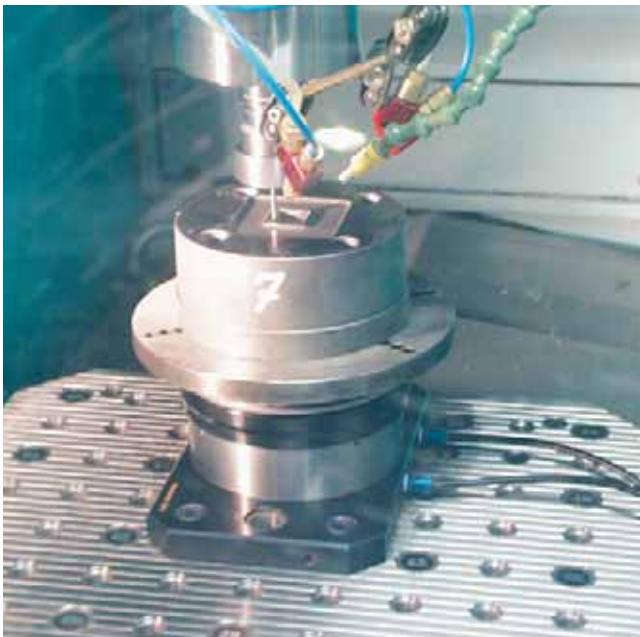
Recommended tightening torque, manual chucks:  
Macro pallets 5 Nm  
MacroMagnum pallets 12 Nm

Clamping force:  
16 000 N



**OVERVIEW OF CHUCKS AND CHUCK ADAPTERS**

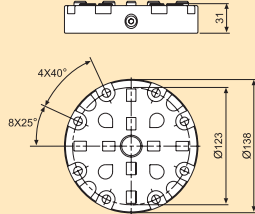
|                                     |             |                       | PAGE |
|-------------------------------------|-------------|-----------------------|------|
| <b>MacroMagnum – spindle chucks</b> |             |                       |      |
| MANUAL                              | 90809.01    |                       | 43   |
| PNEUMATIC AUTOMATIC / MANUAL        | 3R-680.1-2  |                       | 43   |
| <b>MacroMagnum – lathe chuck</b>    |             |                       |      |
| PNEUMATIC AUTOMATIC / MANUAL        | 3R-680.1-2  |                       | 43   |
| <b>MacroMagnum – table chucks</b>   |             |                       |      |
| MANUAL                              | 90809.01    |                       | 43   |
| MANUAL                              | 90717.06    | VIBRATION-DAMPED      | 43   |
| PNEUMATIC AUTOMATIC / MANUAL        | 3R-680.10-2 |                       | 43   |
| PNEUMATIC AUTOMATIC / MANUAL        | 3R-680.19-2 | 3REFIX                | 43   |
| PNEUMATIC AUTOMATIC / MANUAL        | 90717.05    | VIBRATION-DAMPED      | 43   |
| PNEUMATIC AUTOMATIC / MANUAL        | 90724       | FOR CHUCK ADAPTER     | 44   |
| <b>MacroMagnum – built-in chuck</b> |             |                       |      |
| PNEUMATIC AUTOMATIC / MANUAL        | 3R-SP22201  |                       | 44   |
| PNEUMATIC AUTOMATIC / MANUAL        | 90809.03    |                       | 44   |
| <b>MacroMagnum – chuck adapters</b> |             |                       |      |
| PNEUMATIC AUTOMATIC / MANUAL        | 90793       | MACROMAGNUM → MACRO   | 44   |
| PNEUMATIC AUTOMATIC / MANUAL        | 90356.20    | DYNAFIX → MACROMAGNUM | 58   |



### Manual chuck 90809.01

Manual chuck for machine spindle or machine table.

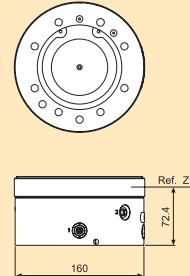
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Weight 5 kg



### ✓ Pneumatic chuck 3R-680.1-2

Pneumatic chuck for machine spindles and lathes. Opened/locked by an air gun against a valve on the side, or alternatively on the back, of the chuck.

- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure  $6 \pm 1$  bar.
- Fixed index positions 4x90°
- Sealing ring
- Turbo-locking of MacroMagnum pallets
- Weight 9 kg.



### Manual table chuck 90717.06

Manual vibration-damped table chuck.

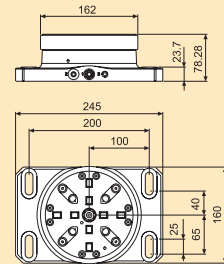
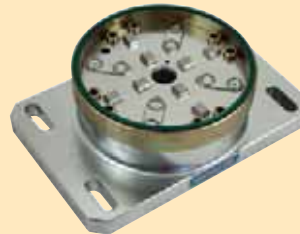
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Weight 10 kg



### ✓ Automatic chuck 3R-680.10-2

Pneumatic table chuck.

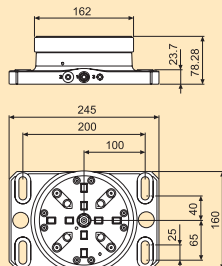
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo-locking of MacroMagnum pallets
- Weight 12 kg



### Automatic chuck 3R-680.19-2

Pneumatic table chuck with 3Refix-holes.

- 3Refix Ø20 mm
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo-locking of MacroMagnum pallets
- Weight 12 kg



### Pneumatic table chuck 90717.05

Pneumatic vibration-damped chuck.

- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 13 kg



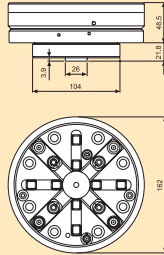




**Pneumatic chuck  
3R-SP22201**

Pneumatic chuck for building-in, for example in a fixture, dividing head or B-axis.

- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of Z-references
- Sealing ring
- Turbo-locking of MacroMagnum pallets
- Weight 5 kg



**Pneumatic chuck  
90809.03**

Pneumatic chuck with coarse guiding of the pallet. Intended for permanent building-in.

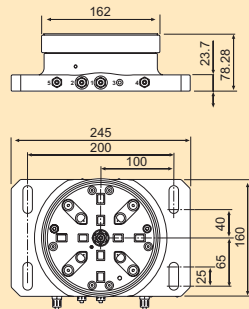
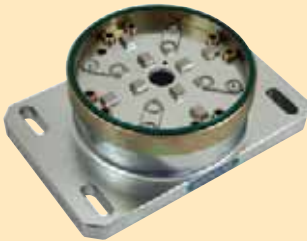
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Flushing duct
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo locking
- Weight 5 kg



**Pneumatic table chuck  
90724**

Pneumatic table chuck for chuck adapter.

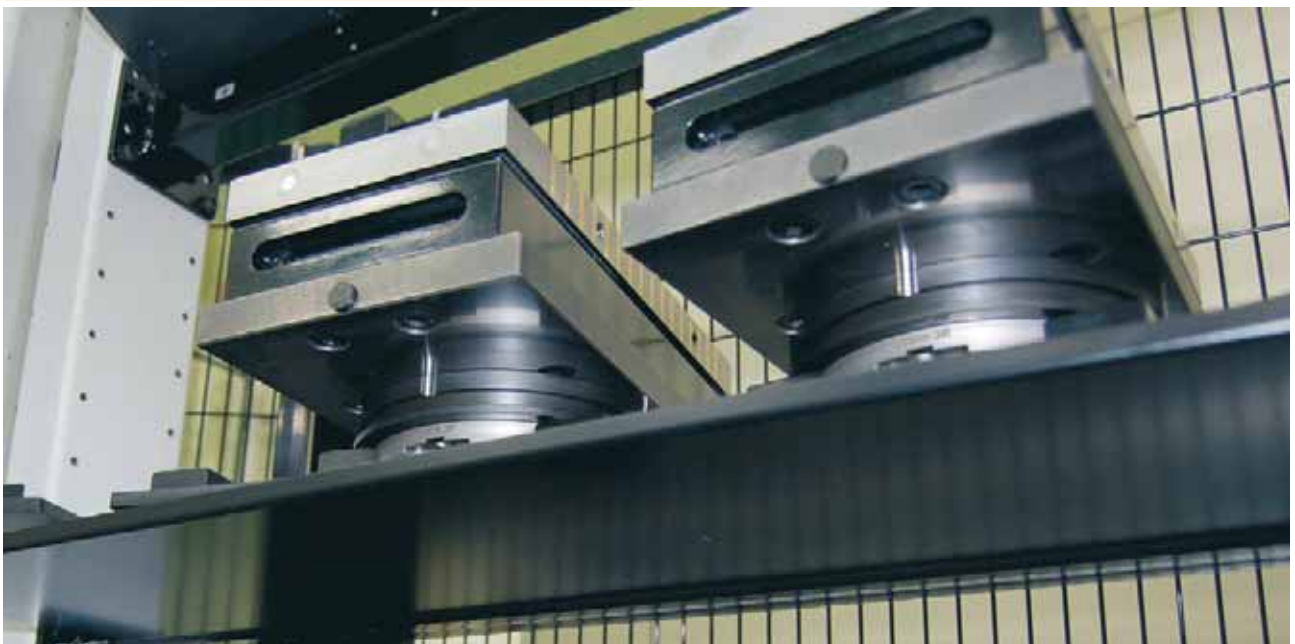
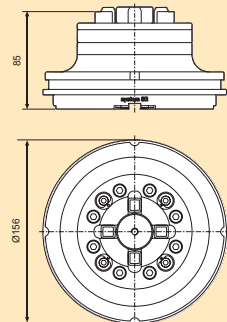
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of Z-references on chuck and chuck adapter
- Sealing ring
- Turbo-lockings
- Weight 12 kg



**Chuck adapter  
90793**

Chuck adapter with built-in pneumatic Macro chuck for mounting in 90724.

- Weight 4.5 kg





## OVERVIEW OF PALLETS

| MacroMagnum – pallet Ø142 mm     |                 |                   | PAGE |
|----------------------------------|-----------------|-------------------|------|
| HARDENED PALLET                  | 3R-681.71       |                   | 45   |
| MacroMagnum – pallets Ø156 mm    |                 |                   |      |
| UNHARDENED PALLET 35 mm          | 3R-681.51-SA    |                   | 45   |
| UNHARDENED PALLET 35.3 mm        | 3R-681.156-A    |                   | 46   |
| HARDENED PALLET                  | 3R-681.51       |                   | 46   |
| MacroMagnum – pallets 240x240 mm |                 |                   |      |
| ALUMINIUM. M6-THREADS            | 3R-681-2424-M6M | NOT AUTO-CHANGING | 46   |
| ALUMINIUM. M6-THREADS            | 3R-681-2424-M6A |                   | 46   |
| ALUMINIUM. T-SLOTS               | 3R-681-2424-T8M | NOT AUTO-CHANGING | 46   |
| ALUMINIUM. T-SLOTS               | 3R-681-2424-T8A |                   | 46   |

NOTE: In addition, all Macro pallets can be mounted in MacroMagnum.

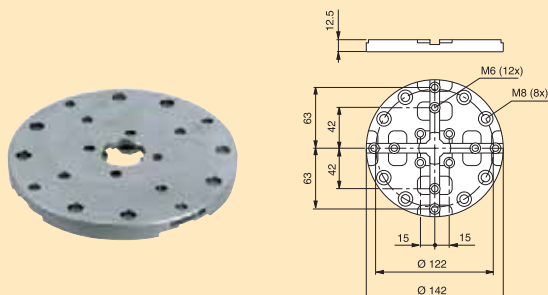
Macro 54x54 mm  
 Macro 70x70 mm  
 Macro Ø116 mm  
 Macro 180x180 mm

### ✓ Pallet Ø142 mm 3R-681.71

Hardened pallet with clearance holes for fixing screws.

Note: Must be mounted on the workpiece/fixture before it is locked in a chuck.

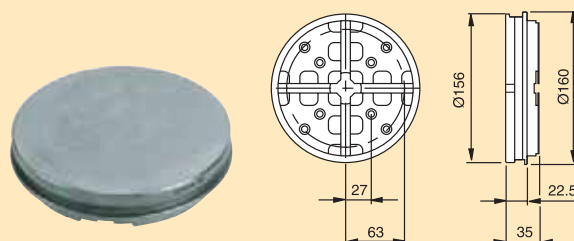
- Rust-resistant
- Weight 1 kg



### ✓ Pallet Ø156 mm 3R-681.51-SA

Unhardened pallet with hardened references and hole markings for eight clearance holes.

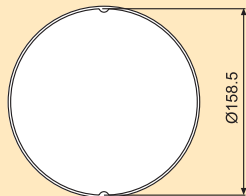
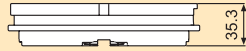
- Adapted for automatic changing
- Ready for code carrier
- Weight 4.5 kg



**✓ Pallet Ø156 mm  
3R-681.156-A**

Unhardened pallet with hardened reference element type 3R-681.71.

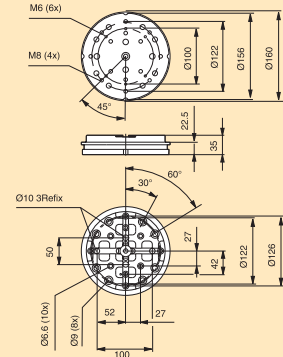
- Adapted for automatic changing
- Ready for code carrier
- Weight 4.5 kg



**✓ Pallet Ø156 mm  
3R-681.51**

Hardened pallet with threads and clearance holes for eight and ten fixing screws.

- 3Refix Ø10 mm
- Adapted for automatic changing
- Ready for code carrier
- Rust-resistant
- Flushing connection
- Weight 5 kg

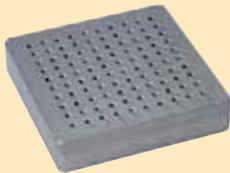


**Pallets 240x240 mm**

Anodized aluminium pallets with M6 threads.

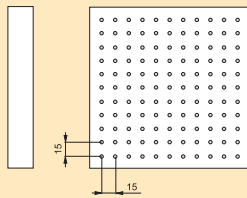
**3R-681-2424-M6A**

- Mounted on pallet 3R-681.51
- Adapted for automatic changing
- Ready for code carrier
- Building-in height 75 mm
- Weight 11 kg



**3R-681-2424-M6M**

- Mounted on pallet 3R-681.71
- Building-in height 53 mm
- Weight 7.5 kg

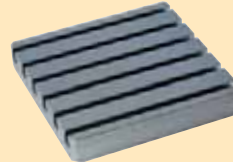


**Pallets 240x240 mm**

Anodized aluminium pallets with T-slots.

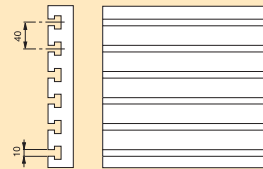
**3R-681-2424-T8A**

- Mounted on pallet 3R-681.51
- Adapted for automatic changing
- Ready for code carrier
- Building-in height 75 mm
- Weight 11 kg



**3R-681-2424-T8M**

- Mounted on pallet 3R-681.71
- Building-in height 53 mm
- Weight 7.5 kg



**Drawbars**

**✓ 3R-605.1E**

- Ø20x57.1 mm with flushing holes Ø7 mm
- Supplied in sets of ten



**3R-605.4E**

For round pallets adapted for automatic changing


- Ø20x57.1 mm without flushing holes
- Supplied in sets of 10



**✓ 3R-605.2E**

- Ø20x36.9 mm with Ø7 mm flushing hole
- Supplied in sets of five



 **Check ruler**  
**3R-686.1-HD**

Check ruler for setting flatness and angular positions.  
Ground hole for centring.

- Adapted for automatic changing
- Ready for code carrier
- Measuring length 130 mm
- Weight 6 kg



**Splash guard**  
**90027.03**

Intended for MacroMagnum chucks. Can also be used as a cover for unused chucks.



**Chip guard**  
**90443**

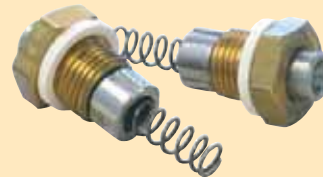
For Macro pallets 52x52, 54x54 and 70x70 in MacroMagnum chucks. For sealing we recommend 3R-RU52L or 3R-RU70 respectively in combination with the debris guard.




**Connection for air gun**  
**90815**

For manual operation of pneumatic chucks with air gun.

- Supplied in sets of two



 **Control unit**  
**3R-611.46**

Unit for hand operation of pneumatic chucks. Three functions – open/neutral/closed.



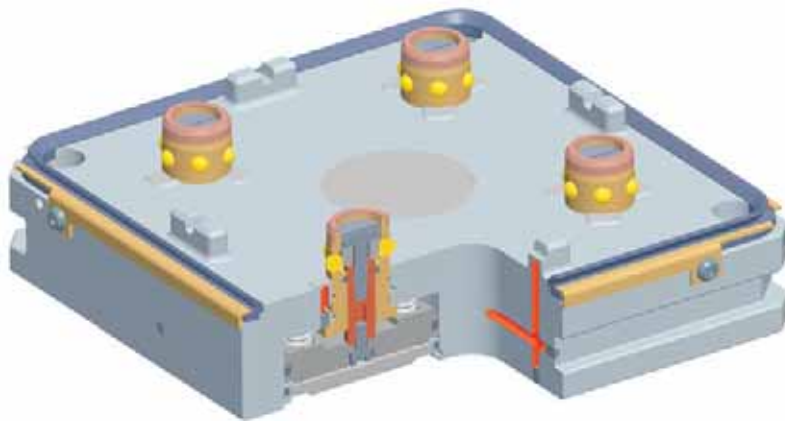
## THE MACHINING ZERO POINT IS DEFINED

by the centre of the chuck in the GPS 240 system. The chuck can be mounted on the machine table of any machine tool.

The standardised hole pattern allows clamping from below of workpieces, fixtures and accessories such as vices, three-jaw chucks and magnetic tables. This gives collision-free mounting, even with five-sided machining.

The economical, pressure-die-cast aluminium pallets are very light, making them especially suitable for manual handling. Naturally the GPS 240 is also suitable for automatic changing.

The chuck seal prevents dirt penetrating between the chuck and the pallet. This simplifies maintenance and lengthens the life of the components. A lifting mechanism which operates on locking/opening protects the references when loading heavy workpieces.



Seal protects the reference surfaces from dirt

High locking force

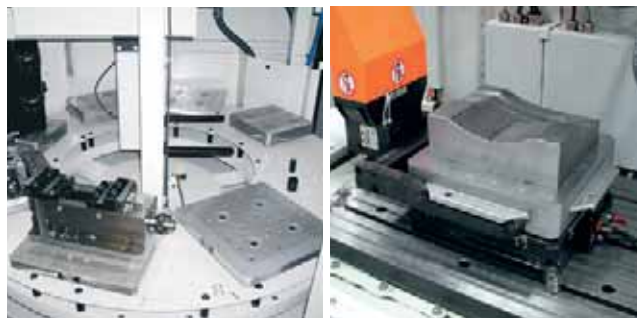
Inexpensive, lightweight pallets

## FACTS

Repetition accuracy:  
0.002 mm

Clamping force:  
30000 N  
(with force boost, 80000 N)

Indexing accuracy:  
0.005 mm



A lifting mechanism protects the references when loading heavy workpieces

## OVERVIEW OF CHUCKS

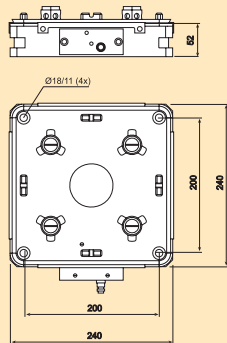
| GPS240 – table chucks        |          |                      | PAGE |
|------------------------------|----------|----------------------|------|
| PNEUMATIC AUTOMATIC / MANUAL | C219 110 |                      | 49   |
| PNEUMATIC AUTOMATIC / MANUAL | C219 600 | BUILT-IN MACRO       | 49   |
| PNEUMATIC AUTOMATIC / MANUAL | C217 100 | THROUGH HOLES Ø54 mm | 49   |
| GPS240 – lathe chuck         |          |                      |      |
| PNEUMATIC AUTOMATIC / MANUAL | C217 100 | THROUGH HOLES Ø54 mm | 49   |



### GPS 240 Pneumatic chuck C219 110

Pneumatic table chuck, mainly intended for applications in die-sinking EDM machines.

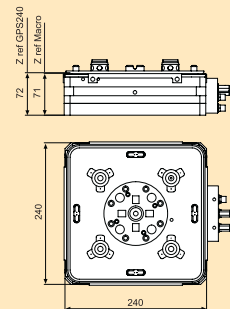
- Required air pressure 6 bar
- Recommended actuator C810 830
- Air-blast cleaning of the references
- Weight 16 kg



### GPS 240 Pneumatic chuck C219 600

Pneumatic chuck with built-in Macro chuck. Intended mainly for measuring machines.

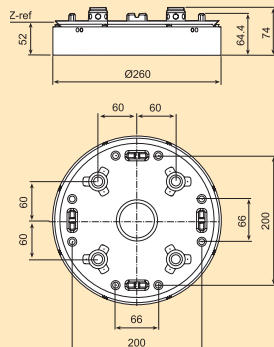
- Required air pressure 6 bar
- Recommended actuator C810 830
- Air-blast cleaning of the references
- Weight 22 kg



### GPS 240 Pneumatic chuck C217 100

Pneumatic chuck, intended mainly for applications in lathes and milling machines.

- Required air pressure 6 bar
- Recommended control unit C810 820
- Air-blast cleaning of the references
- Weight 16 kg





## OVERVIEW OF PALLETS

| GPS240 – pallets 240 x240 mm |          |                         | PAGE |
|------------------------------|----------|-------------------------|------|
| ALUMINIUM                    | C694 100 |                         | 51   |
| ALUMINIUM                    | S500 090 | SET OF 4xC694 100       | 51   |
| ALUMINIUM                    | S500 100 | SET OF 10xC694 100      | 51   |
| ALUMINIUM                    | C694 170 | PREPARED FOR AUTOMATION | 51   |
| ALUMINIUM                    | S500 091 | SET OF 4xC694 170       | 51   |
| ALUMINIUM                    | S500 101 | SET OF 10xC694 170      | 51   |
| ALUMINIUM                    | C694 175 | READY FOR AUTOMATION    | 51   |
| ALUMINIUM                    | S500 092 | SET OF 4xC694 175       | 51   |
| ALUMINIUM                    | S500 102 | SET OF 10xC694 175      | 51   |
| ALUMINIUM GROUND             | C694 300 |                         | 51   |
| ALUMINIUM GROUND             | C694 370 | PREPARED FOR AUTOMATION | 51   |
| ALUMINIUM GROUND             | C694 375 | READY FOR AUTOMATION    | 51   |
| GPS240 – pallets Ø260 mm     |          |                         |      |
| ALUMINIUM                    | C697 000 |                         | 52   |
| ALUMINIUM                    | C697 010 | MOUNTING HOLES CC 40 mm | 52   |

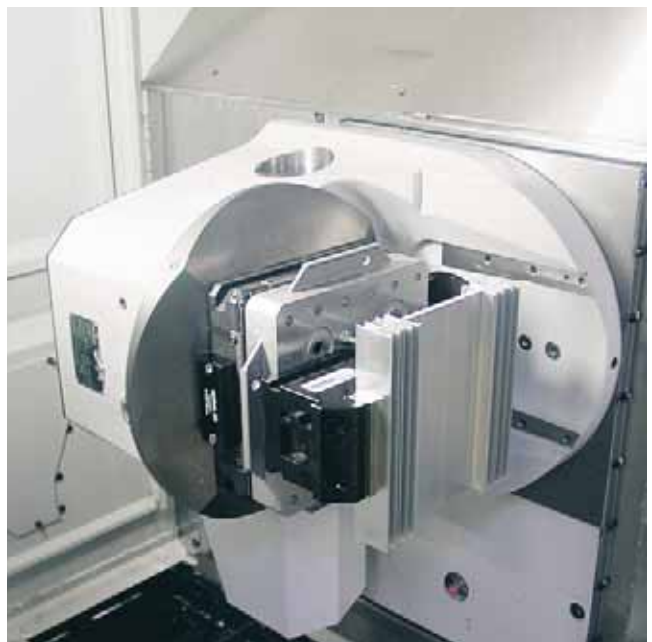
NOTE: In addition, the following pallets can be mounted in GPS240 by means of C219 600.

Macro 54x54 mm

Macro 70x70 mm

⚡ Coined pallet for high machining forces

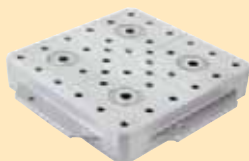
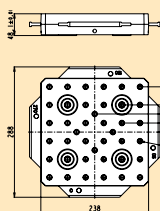
⊙ Pallet with spring-loaded pin



**GPS 240 Palett EDM/Grinding  
C694 100**

Cast aluminium pallet for EDM and grinding.

- Construction height 48.1 ±0.01 mm
- X/Y-centring with spring-loaded pin
- Flatness 0.02 mm
- Weight 4 kg
- Recommended workpiece weight 100 kg
- Supplied with sealing plugs C531 500



**S500 090**

- C694 100, Set of four

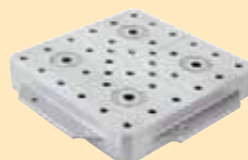
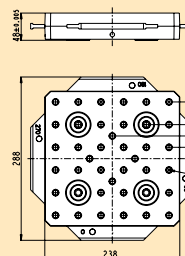
**S500 100**

- C694 100, Set of ten

**GPS 240 Palett Adaptation  
C694 300**

Ground cast aluminium pallet for fixtures and accessories.

- Construction height 48.0 ±0.005 mm
- X/Y-centring with spring-loaded pin
- Flatness 0.01 mm
- Weight 4 kg
- Recommended workpiece weight 100 kg
- Supplied with sealing plugs C531 500



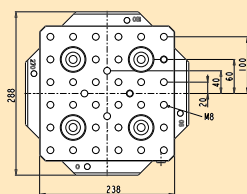
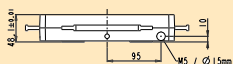
**GPS 240 Palett EDM/Grinding  
Prepared for automation  
C694 170**

Cast aluminium pallet for EDM and grinding.

Prepared for automation.

Supplied with code carrier mounting, but without code carrier.

- Construction height 48.1 ±0.01 mm
- X/Y-centring with spring-loaded pin
- Flatness 0.02 mm
- Weight 4 kg
- Recommended workpiece weight 100 kg
- Supplied with sealing plugs C531 500 and code carrier mounting C960 770



**S500 091**

- C694 170, set of four

**S500 101**

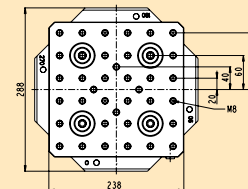
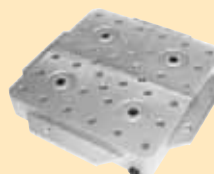
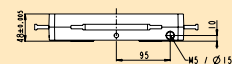
- C694 170, set of ten

**GPS 240 Palett Adaptation  
Prepared for automation  
C694 370**

Ground cast aluminium pallet for fixtures and accessories.

Prepared for automation. Supplied with code carrier mounting, but without code carrier.

- Construction height 48.0 ±0.005 mm
- X/Y-centring with spring-loaded pin
- Flatness 0.01 mm
- Weight 4 kg
- Recommended workpiece weight 100 kg
- Supplied with sealing plugs C531 500 and code carrier mounting C960 770



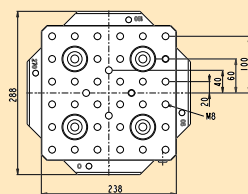
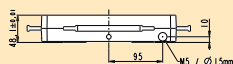
**GPS 240 Palett EDM/Grinding  
Ready for use of automation  
C694 175**

Cast aluminium pallet for EDM and grinding.

Ready for automation.

Supplied complete with code carrier.

- Construction height 48.1 ±0.01 mm
- X/Y-centring with spring-loaded pin
- Flatness 0.02 mm
- Weight 4 kg
- Recommended workpiece weight 100 kg
- Supplied with sealing plugs C531 500, code carrier mounting C960 770 and code carrier 3R-863.01



**S500 092**

- C694 175, set of four

**S500 102**

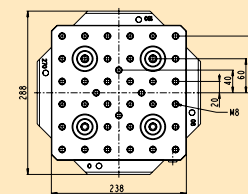
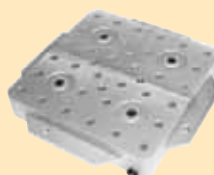
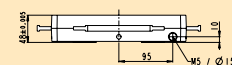
- C694 175, set of ten

**GPS 240 Palett Adaptation  
Ready for use of automation  
C694 375**

Ground cast aluminium pallet for fixtures and accessories.

Ready for automation. Supplied complete with code carrier.

- Construction height 48.0 ±0.005 mm
- X/Y-centring with spring-loaded pin
- Flatness 0.01 mm
- Weight 4 kg
- Recommended workpiece weight 100 kg
- Supplied with sealing plugs C531 500, code carrier mounting C960 770 and code carrier 3R-863.01.

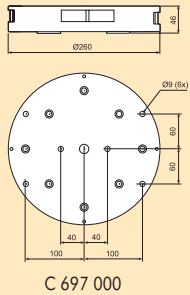




**GPS 240 Pallets round  
C697 100**

Round coined aluminium pallet. Mounting holes as shown on the drawing.

- Construction height 46.1 ±0.01 mm
- Flatness 0.01 mm
- Weight 6 kg



**C697 110**

Hole pattern on 40 mm centres, otherwise according to C697 100.

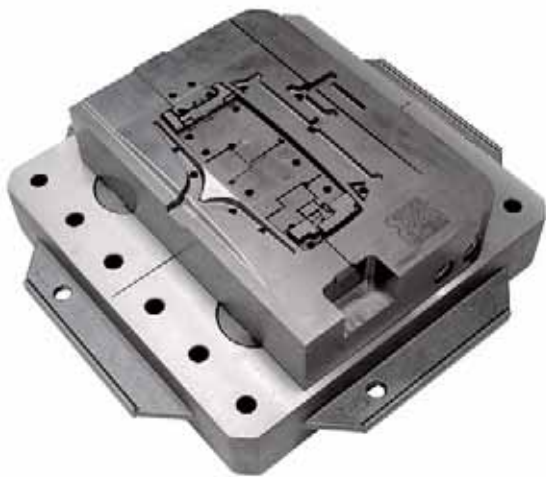


**GPS 240 Pallets with vice  
C585 400**

Vice for workpieces <80 mm.  
• XY-centring with spring-loaded pin

**C585 600**

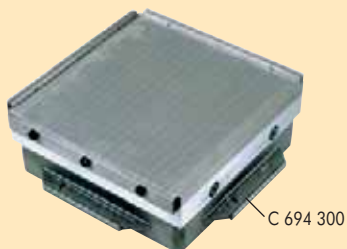
Vice for workpieces <120 mm.  
• XY-centring with spring-loaded pin



**GPS 240 Magnetic table  
C694 270**

Adapted for milling. Two independent magnetic fields can be set individually.

- Magnetic field 6 mm
- Clamping force 120 N/cm<sup>2</sup>
- 240x240 mm
- Weight 21.5 kg



**GPS 240 Master pallet  
C846 600**

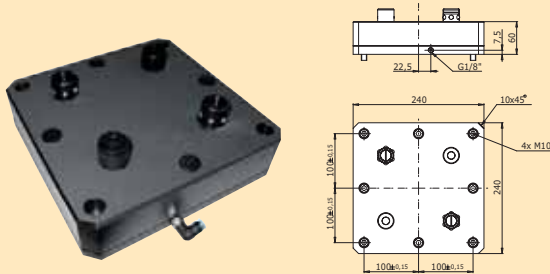
The pallet has a ground reference ruler and a ground indication hole for alignment of chucks..



### GPS 240 Dummy chuck C210 060

Dummy chuck for locking a pallet in a draining station.

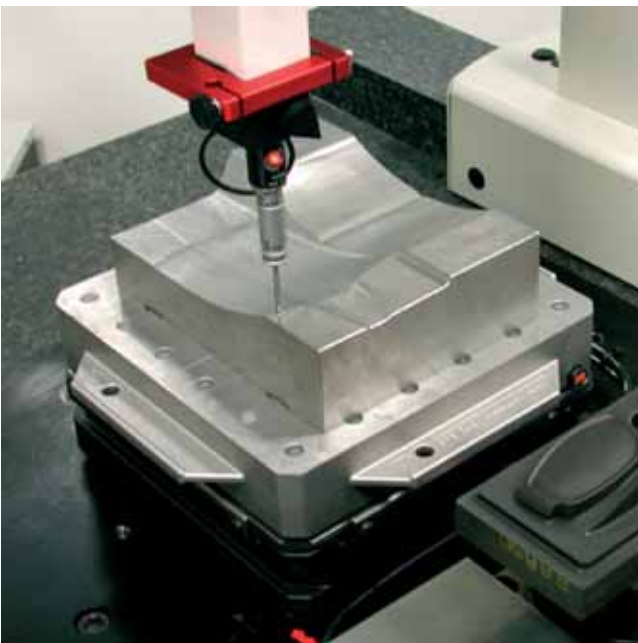
- Required air pressure 6 bar
- Weight 9.5 kg



### Draining station C210 050

Drains out swarf and liquid when the dummy chuck is tipped.

- Supplied without dummy chuck
- Dimensions 820x605x1310 mm
- Weight 80 kg



### Presetting station C810 650

For alignment of workpieces on GPS 240 pallets.

- Parallelism 0.005 mm
- Required air pressure 6 ± 1 bar.
- Supplied with dial indicator, dial indicator holder and actuator.



### Controllers



#### C810 820

Controller for pneumatic chuck C217 100.

- One connection to open/lock



#### C810 830

Controller for pneumatic chuck C219 110.

- Four connections - X/Y-locating - air-blast cleaning of Z - open/lock - turbo/venting



#### C810 850

- Five connections - X/Y-locating - air-blast cleaning of Z - open/lock - turbo/venting - evacuation hose





**✓ Clamp kit  
C810 870**

Contents

- E030 220 clamp (x4)
- E010 144 washer M10 (x4)
- E010 143 washer M8 (x4)
- E000 428 Allen screw M10x45 (x4)
- E000 354 Allen screw M8x45 (x4)
- E040 030\* T-slot nut M10x12 (x4)
- E040 031\* T-slot nut M10x14 (x4)
- E040 032\* T-slot nut M10x16 (x4)
- E040 033\* T-slot nut M10x18 (x4)
- E040 020\* T-slot nut M8x12 (x4)
- E040 021\* T-slot nut M8x14 (x4)
- E040 022\* T-slot nut M8x16 (x4)
- E040 023\* T-slot nut M8x18 (x4)



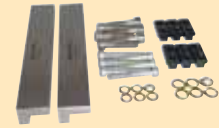
\* When ordering, state the required dimension of the T-slot nut.

**✓ Clamp strip kit  
C810 880**

Note: The holes in the clamp strips are drilled in accordance with the customer's requirements stated when ordering.

Contents

- C810 881 clamp strip (x2)
- E010 144 washer M10 (x4)
- E010 143 washer M8 (x4)
- E000 428 Allen screw M10x45 (x4)
- E000 354 Allen screw M8x45 (x4)
- E040 030\* T-slot nut M10x12 (x4)
- E040 031\* T-slot nut M10x14 (x4)
- E040 032\* T-slot nut M10x16 (x4)
- E040 033\* T-slot nut M10x18 (x4)
- E040 020\* T-slot nut M8x12 (x4)
- E040 021\* T-slot nut M8x14 (x4)
- E040 022\* T-slot nut M8x16 (x4)
- E040 023\* T-slot nut M8x18 (x4)



\* When ordering, state the required dimension of the T-slot nut.

**✓ Clamp strip kit for double mounting  
C810 920**

For mounting two chucks on 300 mm centres.

Note: The holes in the clamp strips are drilled in accordance with the customer's requirements stated when ordering.

Contents

- C810 921 undrilled spacer (x1)
- C810 881 clamp strip (x2)
- E010 144 washer M10 (x6)
- E010 143 washer M8 (x6)
- E000 428 Allen screw M10x45 (x6)
- E000 354 Allen screw M8x45 (x6)
- E040 030\* T-slot nut M10x12 (x6)
- E040 031\* T-slot nut M10x14 (x6)
- E040 032\* T-slot nut M10x16 (x6)
- E040 033\* T-slot nut M10x18 (x6)
- E040 020\* T-slot nut M8x12 (x6)
- E040 021\* T-slot nut M8x14 (x6)
- E040 022\* T-slot nut M8x16 (x6)
- E040 023\* T-slot nut M8x18 (x6)



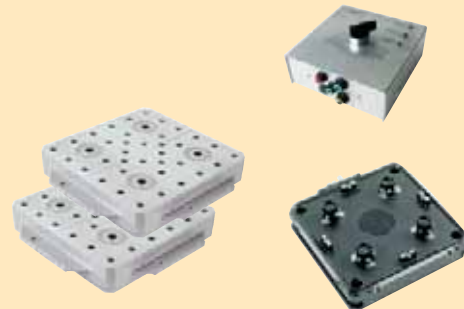
\* When ordering, state the required dimension of the T-slot nut.

**✓ GPS 240 Starter kit  
S500 650**

With a permanent compressed air supply a clamping force of 80000 N can be obtained.

Contents

- C219 110 pneumatic chuck
- C810 830 actuator
- C694 100 pallet (x2)



**✓ Code carrier fixture with assembled code carrier  
C960 800**

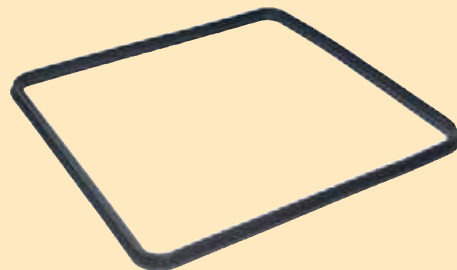
Complete unit with code carrier 3R-863.01 and code carrier mounting C960 770.



**✓ Sealing  
C219 007**

The chuck seal is a wear part which should be replaced once a year.

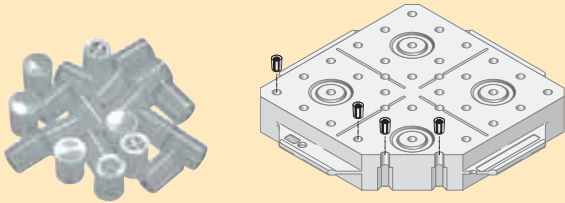
- Material: Viton
- Supplied singly





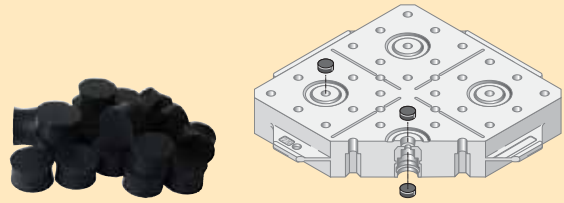
**✓ Sealing plugs  
C531 500**

Plugs for sealing GPS 240 pallets.  
• Supplied in sets of 40



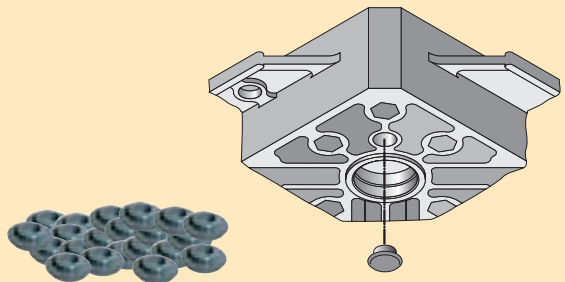
**✓ Seals  
C531 250**

To seal the holes in the four clamping elements of the pallet.  
• Material: elastomer  
• Supplied in sets of 20



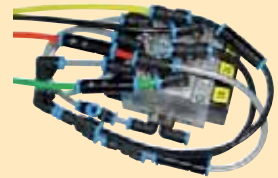
**✓ Reference protectors  
C531 210**

To protect the Z-reference of the pallet.  
• Supplied only in sets of 20 (E020 897)



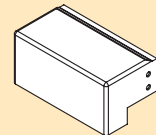
**✓ Pneumatic control "2/4"  
C810 800**

To control two systems on the machine table with only two hoses. 2x2 functions – open/lock and prexence detection.



**✓ S818 000**

With protective cover which is adapted to suit the machine.



**Hand valve  
C810 710**

For operating C217 000.



**Lifting grip  
C810 960**

Lifting gear for handling 240x240 mm pallets.  
Vikt 2.9 kg

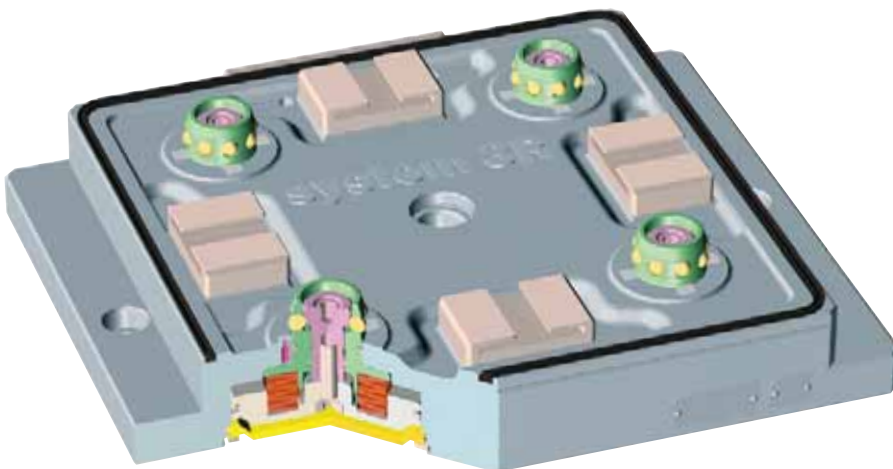


## FIXED REFERENCES ON THE MACHINE TABLE

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.



*Peripheral sealing  
– tolerates  
severe working  
environments*

*Easy-to-handle  
aluminium pallets*

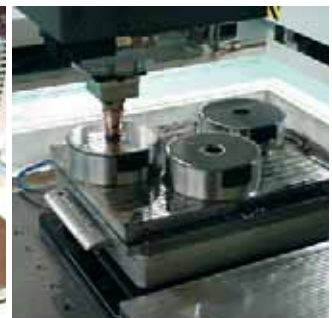
*Automatic air-  
blast cleaning*

*Directly  
measurable  
Z-references*

### FACTS

Repetition accuracy  
0.002 mm

Clamping force  
60 000 N



## OVERVIEW OF CHUCKS AND CHUCK ADAPTERS

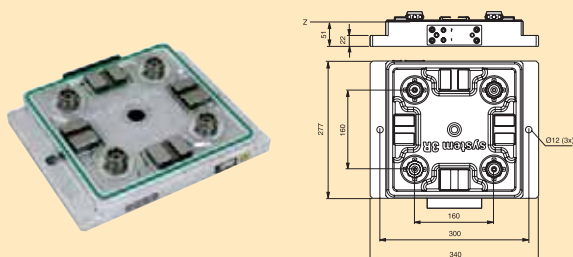
| Dynafix – table chucks       |             |                        | PAGE |
|------------------------------|-------------|------------------------|------|
| PNEUMATIC AUTOMATIC / MANUAL | 3R-770-1    |                        | 57   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-770-4    | ALIGNMENT REFERENCE    | 57   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-770.19-1 | 3REFIX                 | 57   |
| PNEUMATIC AUTOMATIC / MANUAL | 90356.10    | FOR CHUCK ADAPTERS     | 57   |
| PNEUMATIC AUTOMATIC / MANUAL | 90576.05    | FOR CHUCK ADAPTERS     | 57   |
| PNEUMATIC AUTOMATIC / MANUAL | 3R-770-5    | FOR FIVE-AXIS MACHINES | 58   |
| PNEUMATIC AUTOMATIC / MANUAL | 90718.04    | VIBRATION-DAMPED       | 58   |
| PNEUMATIC AUTOMATIC / MANUAL | D-20130     | WITH CLEARANCE HOLES   | 58   |

| Dynafix – chuck adapters     |          |                       | PAGE |
|------------------------------|----------|-----------------------|------|
| PNEUMATIC AUTOMATIC / MANUAL | 90356.22 | DYNAFIX → MACRO       | 58   |
| PNEUMATIC AUTOMATIC / MANUAL | 90356.20 | DYNAFIX → MACROMAGNUM | 58   |
| PNEUMATIC AUTOMATIC / MANUAL | 90356.21 | DYNAFIX → MACROCOMBI  | 58   |

### Pneumatic chuck 3R-770-1

Pneumatic table chuck.

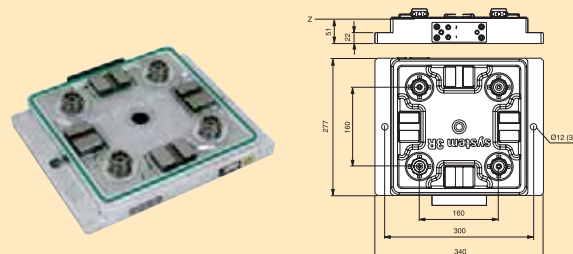
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Recommended actuator 3R-611.4 or 3R-611.2.
- Air-blast cleaning of the Z-references
- Weight 24.5 kg



### Pneumatic chuck 3R-770-4

Pneumatic table chuck with ground-in reference for alignment.

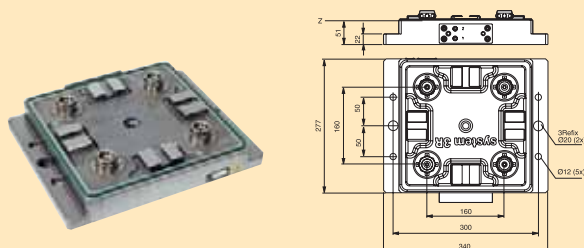
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Recommended actuator 3R-611.4 or 3R-611.2
- Air-blast cleaning of the Z-references
- Weight 24.5 kg



### Pneumatic chuck 3R-770.19-1

Pneumatic table chuck with 3Refix-holes.

- 3Refix  $\varnothing 20$  mm
- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Recommended actuator 3R-611.4 or 3R-611.2
- Air-blast cleaning of the Z-references
- Weight 24.5 kg



### Pneumatic chuck

Pneumatic chucks with extra connections for automatic chuck adapters.

*Note: Requires two control units.*

- Required air pressure  $6 \pm 1$  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

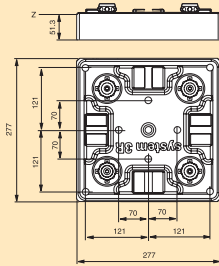




**Pneumatic chuck  
3R-770-5**

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

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



**Pneumatic chuck  
90718.04**

Pneumatic vibration-damped chuck.

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



**Pneumatic chuck  
D-20130**

Pneumatic chuck with through holes  $\varnothing 110$  mm.

- Required air pressure  $6 \pm 1$  bar
- Fixed index positions  $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Weight 32 kg



**Chuck adapter  
90356.22**

Chuck adapter with built-in pneumatic Macro chuck for mounting in 90356.10 or 90576.05.



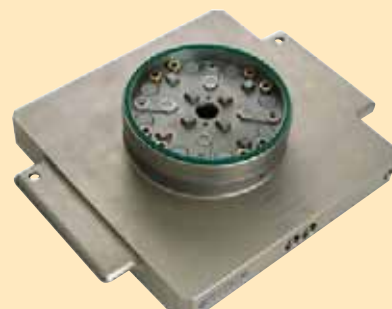
**Chuck adapter  
90356.21**

Chuck adapter with built-in pneumatic MacroCombi chuck for mounting in 90356.10 or 90576.05.



**Chuck adapter  
90356.20**

Chuck adapter with built-in pneumatic MacroMagnum chuck for mounting in 90356.10 or 90576.05.



## OVERVIEW OF PALLETS

### Dynafix – pallets 280x280 mm

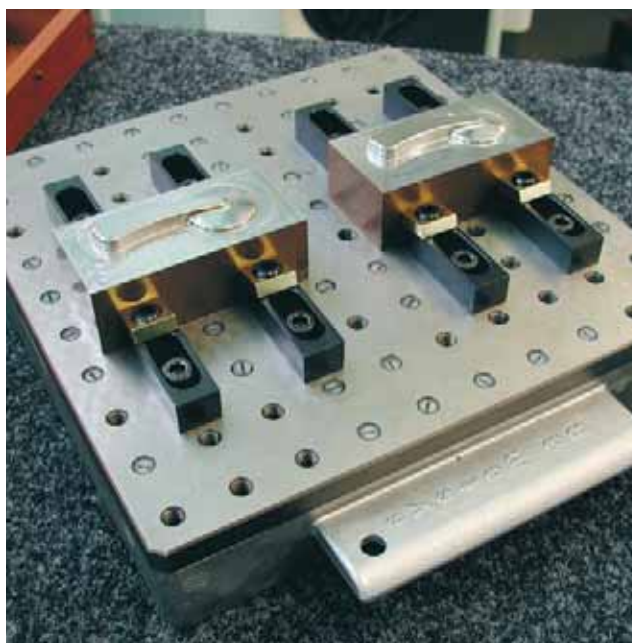
|                     |                | PAGE |
|---------------------|----------------|------|
| ALUMINIUM           | 3R-771.2       | 59   |
| ALUMINIUM. GROUND   | 3R-772.2       | 59   |
| ALUMINIUM. T-SLOTS  | 3R-DE772-T8.40 | 60   |
| HARDENED M8 THREADS | 3R-DE772-M8.28 | 60   |
| MAGNETIC TABLE      | 3R-772.1-MT    | 60   |

### Dynafix – pallet 400x400 mm

|           |           |    |
|-----------|-----------|----|
| ALUMINIUM | 3R-774-AL | 60 |
|-----------|-----------|----|

NOTE: In addition, the following pallets can be mounted in Dynafix by means of chuck adapters

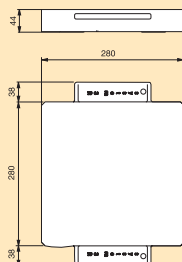
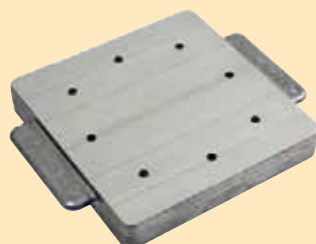
MacroJunior Ø25 mm  
 MacroJunior 3Ready-to-Run  
 Macro 54x54 mm  
 Macro 70x70 mm  
 Macro Ø116 mm  
 Macro 180x180 mm  
 MacroMagnum Ø142 mm  
 MacroMagnum Ø156 mm  
 MacroMagnum 240x240 mm



#### Pallet 280x280 mm 3R-771.2

Milled aluminium pallet

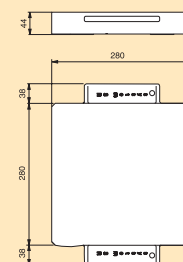
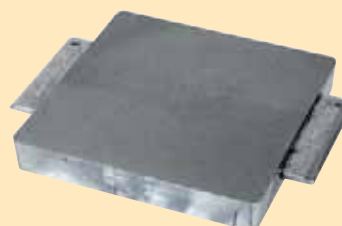
- Adapted for automatic changing
- Ready for code carrier
- Flatness 0.04 mm
- Thickness tolerance +0.5/-0 mm
- Weight 6 kg



#### Pallet 280x280 mm 3R-772.2

Ground aluminium pallet

- Adapted for automatic changing
- Ready for code carrier
- Flatness 0.005 mm
- Thickness tolerance -0,1 / -0.14 mm
- Weight 6 kg

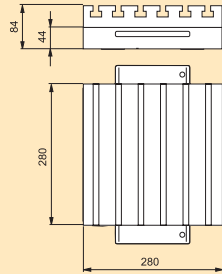
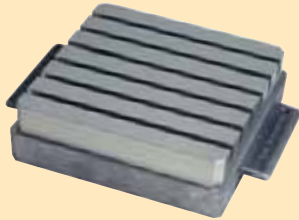




**Pallet 280x280 mm  
3R-DE772-T8.40**

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

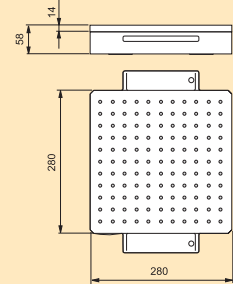
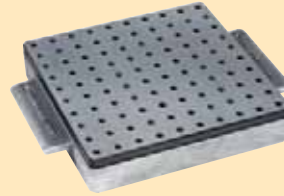
- Adapted for automatic changing
- Ready for code carrier
- Weight 14 kg



**Pallet 280x280 mm  
3R-DE772-M8.28**

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

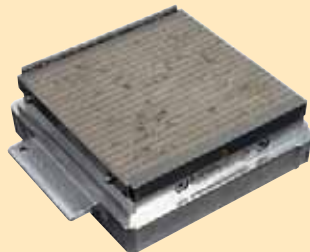
- Adapted for automatic changing
- Ready for code carrier
- Weight 14.5 kg



**Magnetic table  
3R-772.1-MT**

Mainly intended for applications in EDM machines. Two independent magnetic fields can be set individually. Low magnetic field, 3 mm, allows machining of very thin workpieces.

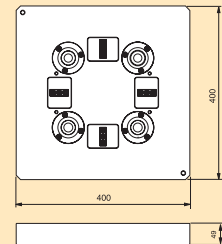
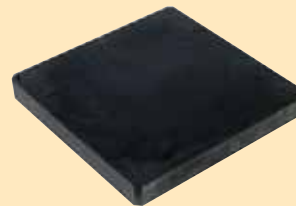
- Supplied mounted on 3R-772.1.
- Adapted for automatic changing
- Ready for code carrier
- Clamping force 121 N/cm<sup>2</sup> (JIS standard).
- Pole pitch 13 mm
- Weight 26 kg



**Pallet 400x400 mm  
3R-774-AL**

Aluminium pallet.

- Ready for code carrier
- Weight 20 kg



**Reference elements  
3R-771.7**

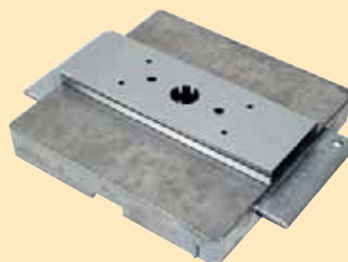
Reference kit for users who want to make their own pallets or fixtures.



**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



**Lifting grip  
U-20344**

Lifting gear for handling Dynafix pallets 280x280 mm.



**A PARTICULARLY ROBUST,**

uncomplicated and user-friendly system for heavy electrodes and workpieces – Maxi. The chucks are of the dovetail type with three references for rapid and simple mounting of accessories.

**FACTS**

Repetition accuracy  
0.01 mm

Recommended max weight  
of workpiece/electrode  
500 kg

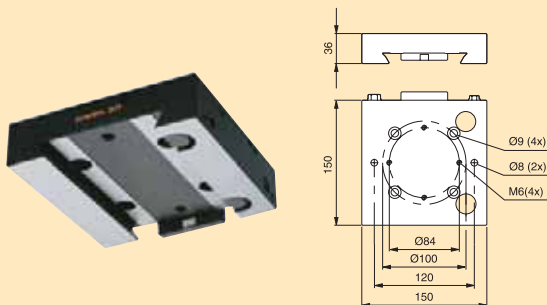
**OVERVIEW CHUCKS AND CHUCK ADAPTERS**

|                              |             |                          | PAGE |
|------------------------------|-------------|--------------------------|------|
| <b>Maxi – spindle chucks</b> |             |                          |      |
| MANUAL                       | 3R-27.2     |                          | 61   |
| MANUAL                       | 3R-27.4     | C-AXIS                   | 61   |
| MANUAL                       | 3R-27.2-4   | MACHINE-ADAPTED          | 62   |
| MANUAL                       | 3R-SP5674-1 | MACHINE-ADAPTED          | 62   |
| <b>Maxi – table chucks</b>   |             |                          |      |
| MANUAL                       | 3R-27.2     |                          | 61   |
| <b>Maxi – chuck adapters</b> |             |                          |      |
| MANUAL                       | 3R-607.21   | MAXI → MACRO             | 62   |
| MANUAL                       | 3R-607.31   | MAXI → MACRO C-AXIS      | 62   |
| PNEUMATIC MANUAL             | 3R-607.1    | MAXI → MACRO             | 62   |
| MANUAL                       | 3R-467.34   | MAXI → MACROCOMBI        | 62   |
| MANUAL                       | 3R-467.35   | MAXI → MACROCOMBI C-AXIS | 63   |
| PNEUMATIC MANUAL / MANUAL    | 3R-467.1-1  | MAXI → MACROCOMBI        | 63   |

**Manual chuck  
3R-27.2**

For mounting on the machine spindle or on a machine table.

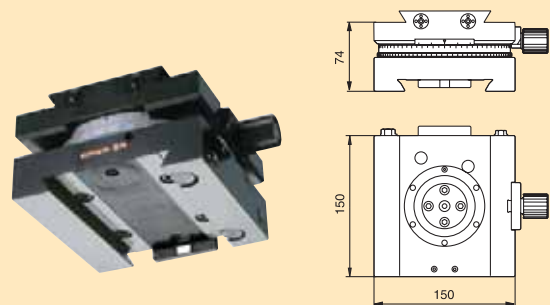
- Immersible
- Maximum electrode weight 500 kg
- Mechanical locking
- Weight 5 kg



**Manual C-axis  
3R-27.4**

For mounting in 3R-27.2.

- Fixed index positions 24x15°
- Vernier scale
- Maximum electrode weight 50 kg
- Mechanical locking
- Weight 11 kg



**Manual chuck  
3R-27.2-4**

Intended mainly for AGIE machines with Macro as the basic mounting in the machine spindle.

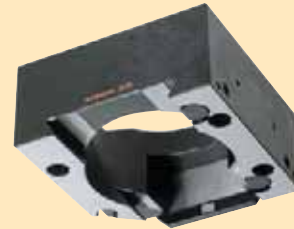
- Immersible
- Maximum electrode weight 500 kg
- Mechanical locking
- Weight 5 kg



**Manual chuck  
3R-SP5674-1**

Intended mainly for Charmilles machines with Macro as the basic mounting in the machine spindle.

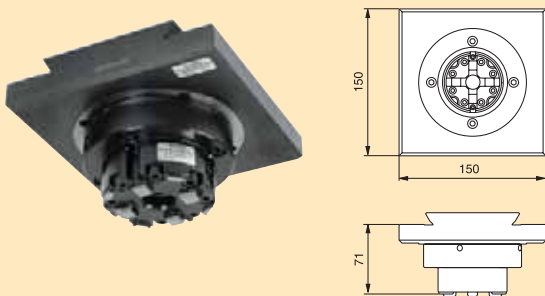
- Immersible
- Maximum electrode weight 500 kg
- Mechanical locking
- Weight 5 kg



**Manual chuck adapter  
3R-607.21**

For mounting of Macro holders in the Maxi system.

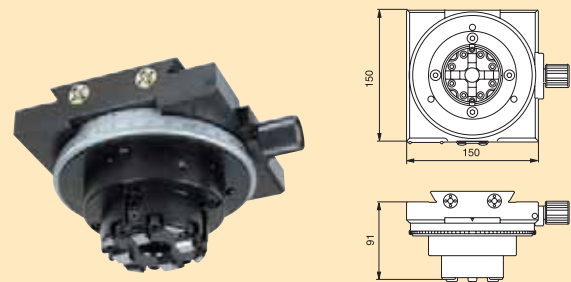
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Maximum electrode weight 50 kg
- Flushing connection
- Weight 6.7 kg



**Manual C-axis  
3R-607.31**

For mounting of Macro holders in the Maxi system.

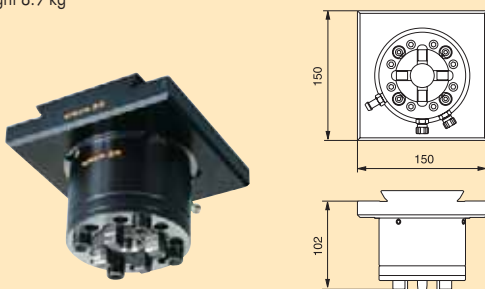
- Required drawbar 3R-605.2
- Fixed index positions 24x15°
- Vernier scale
- Maximum electrode weight 50 kg
- Flushing connection
- Weight 9.5 kg



**Pneumatic chuck adapter  
3R-607.1**

Pneumatic chuck for mounting Macro holders in the Maxi system.

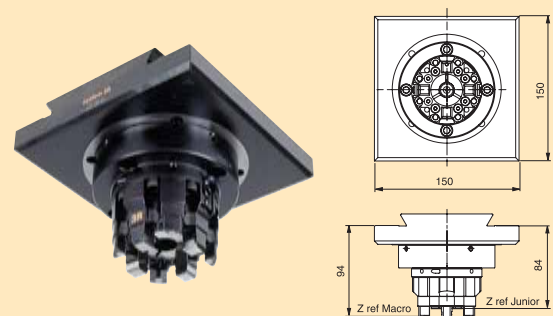
- Required drawbar 3R-605.1
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of Z-references
- Turbo locking
- Maximum electrode weight 80 kg
- Weight 8.9 kg



**Manual chuck adapter  
3R-467.34**

For mounting MacroJunior and Macro holders in the Maxi system.

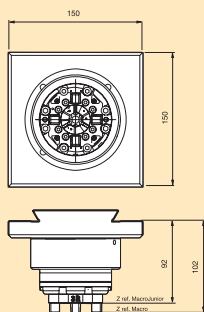
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Weight 7 kg



### Pneumatic chuck adapter 3R-467.1-1

For mounting MacroJunior and Macro holders in the Maxi system.

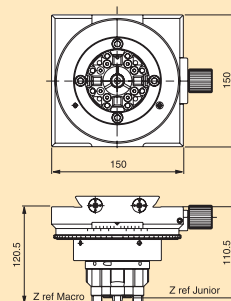
- Adapted for automatic electrode changing
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure  $6 \pm 1$  bar
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 6.5 kg



### Manual chuck adapter 3R-467.35

Chuck adapter with C-axis for mounting MacroJunior and Macro holders in the Maxi system.

- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Fixed index positions  $24 \times 15^\circ$
- Vernier scale
- Weight 10 kg



## OVERVIEW OF PALLETS

| Maxi – pallets        |         |        | PAGE |
|-----------------------|---------|--------|------|
| UNHARDENED 150x90 mm  | 3R-29   |        | 64   |
| UNHARDENED 150x150 mm | 3R-29.1 |        | 64   |
| UNHARDENED 150x150 mm | 3R-29.2 |        | 64   |
| UNHARDENED 150x150 mm | 3R-29.3 | 3REFIX | 64   |

NOTE: In addition, the following pallets can be mounted in Maxi by means of chuck adapters

- MacroJunior Ø25 mm
- MacroJunior 3Ready-to-Run
- Macro 54x54 mm
- Macro 70x70 mm
- Macro Ø116 mm
- Macro 180x180 mm

**✓ Pallet 150x150 mm  
3R-29.1**

- Unhardened
- Flushing connection
- Flushing duct
- Weight 4.4 kg

**✓ Pallet 150x150 mm  
3R-29.2**

Pallet with 16 clearance holes for M6 screws and eight M6 threads.

- Hardened
- Weight 4.6 kg

**Pallet 150x150 mm  
3R-29.3**

Pallet with four clearance holes for M6 screws and 3Refix holes.

- 3Refix Ø10 mm
- Hardened
- Flushing connection
- Flushing duct
- Weight 4.6 kg

**Pallet 150x90 mm  
3R-29**

- Unhardened
- Weight 1.2 kg

**Hydraulic unit  
3R-SP4490**

For hydraulic locking of Maxi chucks.



**THE WORLD'S MOST WIDELY USED**

electrode holder system is still the Mini system. The extensive product program ensures rapid and exact mounting of the electrode holders in hydraulic quick-change chucks.

The Mini system is a "Reverse Reference System", in which the chuck adapts itself to the electrode holder, which is why all electrode holders must be exactly alike – in diameter, roundness, straightness and hardness – to meet the accuracy requirements.

This high change accuracy is achieved thanks to the two annular chambers of the hydraulic system, which expand uniformly and provide symmetrical locking against the fixed Z reference with angular location.

**FACTS**

Repetition accuracy  
0.002 mm

Max flushing pressure  
75 bar

Clamping force  
4 000 N

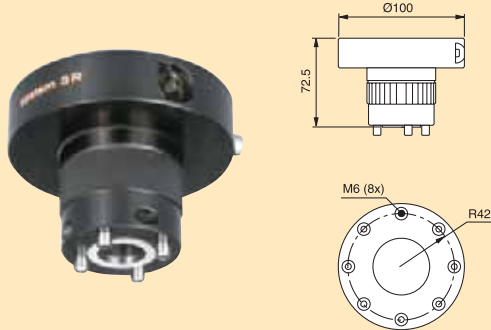
**OVERVIEW OF CHUCKS AND CHUCK ADAPTERS AND ROTATING SPINDLES**

|                                 |                |                          | PAGE |
|---------------------------------|----------------|--------------------------|------|
| <b>Mini – spindle chucks</b>    |                |                          |      |
| MANUAL                          | 3R-321.5       |                          | 66   |
| MANUAL                          | 3R-321.65      | C-AXIS                   | 66   |
| <b>Mini – lathe chuck</b>       |                |                          |      |
| MANUAL                          | 3R-321.2-4x90° |                          | 66   |
| <b>Mini – table chucks</b>      |                |                          |      |
| MANUAL                          | 3R-321.46      |                          | 66   |
| MANUAL                          | 3R-321.4       | VERNIER SCALE            | 66   |
| <b>Mini – chuck adapters</b>    |                |                          |      |
| MANUAL                          | 3R-443AEC      | MINI → MACROJUNIOR 65 mm | 66   |
| MANUAL                          | 3R-463/5033    | MINI → MACROJUNIOR 50 mm | 67   |
| MANUAL                          | D-40011        | MINI → MACROCOMBI        | 67   |
| MANUAL                          | 3R-603.9       | MACRO → MINI 90°         | 27   |
| MANUAL                          | 3R-653         | MACRO → MINI             | 27   |
| MANUAL                          | 3R-653-S       | MACRO → MINI             | 16   |
| <b>Mini – rotating spindles</b> |                |                          |      |
| VERTICAL AND HORIZONTAL         | 3R-1.6S        |                          | 67   |
| VERTICAL                        | 3R-1.321-HS    | TUBULAR ELECTRODES       | 67   |

**Manual chuck  
3R-321.5**

Hydraulic chuck for mounting on machine spindle with 3R-A3620.

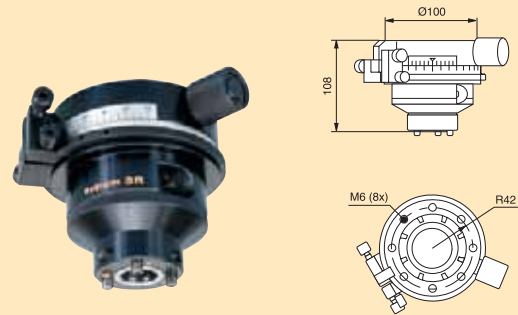
- Fixed index positions 4x90°
- Flushing connection
- Weight 1.8 kg



**Manual C-axis  
3R-321.65**

Hydraulic chuck for mounting on machine spindle with 3R-A3620.

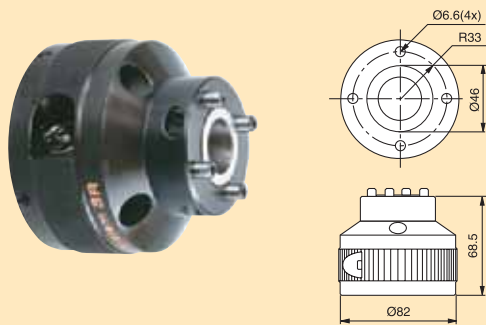
- Fixed index positions 24x15°
- Vernier scale
- Flushing connection
- Weight 3.6 kg



**Manual lathe chuck  
3R-321.2-4x90°**

Hydraulic chuck with set screws, for mounting on a lathe taper.

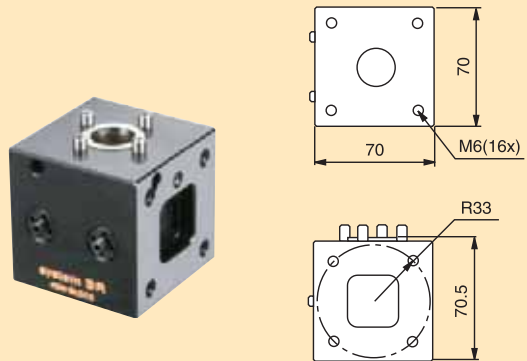
- Fixed index positions 4x90°
- Weight 1 kg



**MiniBlock  
3R-321.46**

Manual hydraulic chuck for vertical or horizontal mounting on the machine table.

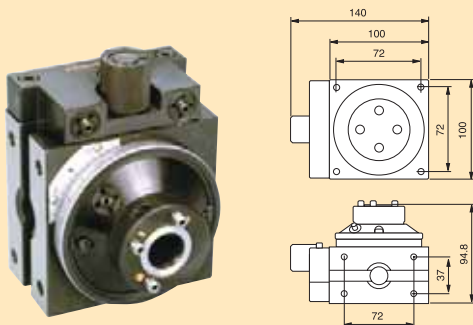
- Fixed index positions 4x90°
- Weight 2.3 kg



**3R block  
3R-321.4**

Manual hydraulic chuck for vertical or horizontal mounting on the machine table.

- Fixed index positions 72x5°
- Vernier scale
- Weight 5.4 kg

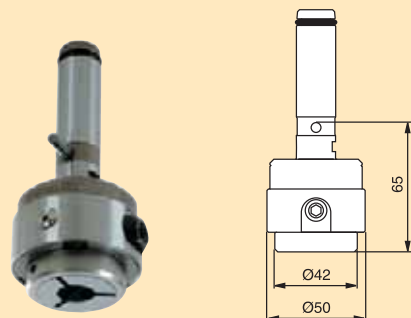


**Manual chuck adapter  
3R-443AEC**

For mounting MacroJunior holders in the Mini system. Channel for flushing through the electrode..

*Note: For EDM machining only.*

- Adapted for automatic changing
- Required drawbar 3R-405.21RS
- Fixed index positions 3x120°
- Weight 0.8 kg

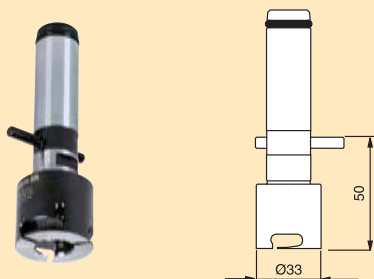


**Manual chuck adapter  
3R-463/5033**

For mounting MacroJunior holders in the Mini system.  
Axial locking screw with channel for flushing through the electrode.

*Note: For EDM machining only.*

- Adapted for automatic changing
- Fixed index positions 3x120°
- Weight 0.8 kg

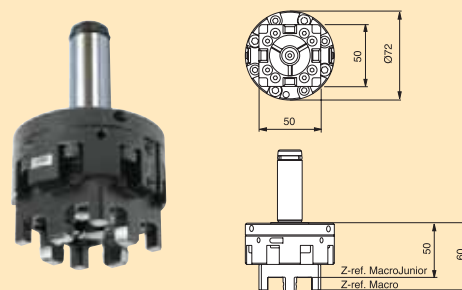


**Manual chuck adapter  
D-40011**

For mounting MacroJunior holders in the Mini system.

*Note: Must be permanently mounted in the Mini system*

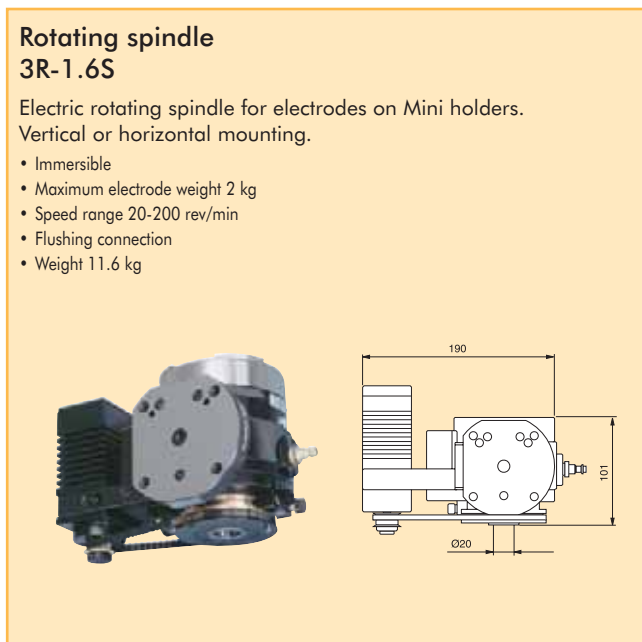
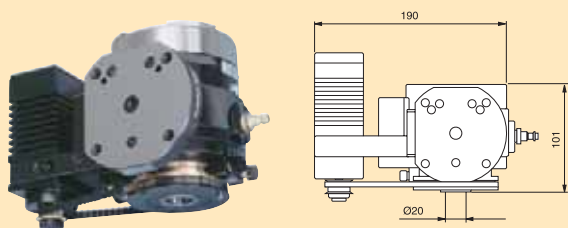
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Weight 1.2 kg



**Rotating spindle  
3R-1.6S**

Electric rotating spindle for electrodes on Mini holders.  
Vertical or horizontal mounting.

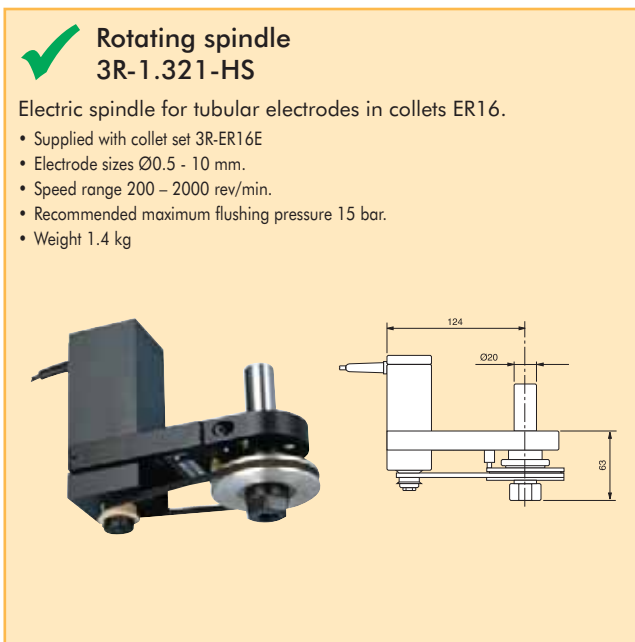
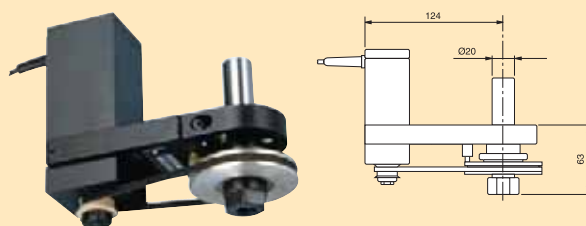
- Immersible
- Maximum electrode weight 2 kg
- Speed range 20-200 rev/min
- Flushing connection
- Weight 11.6 kg



**Rotating spindle  
3R-1.321-HS**

Electric spindle for tubular electrodes in collets ER16.

- Supplied with collet set 3R-ER16E
- Electrode sizes Ø0.5 - 10 mm.
- Speed range 200 - 2000 rev/min.
- Recommended maximum flushing pressure 15 bar.
- Weight 1.4 kg



## OVERVIEW OF ELECTRODE HOLDERS

### Mini – electrode holders

|                         |            |                       | PAGE |
|-------------------------|------------|-----------------------|------|
| ELECTRODE HOLDER Ø20 mm | 3R-322/25S | 25 mm                 | 68   |
| ELECTRODE HOLDER Ø20 mm | 3R-322/50S | 50 mm                 | 68   |
| ELECTRODE HOLDER Ø20 mm | 3R-322/50E | 50 mm. AUTO-CHANGING  | 68   |
| ELECTRODE HOLDER Ø20 mm | 3R-322/100 | 100 mm. AUTO-CHANGING | 68   |
| ELECTRODE HOLDER        | 3R-310EE   | FLANGE Ø50 mm         | 68   |
| ELECTRODE HOLDER        | 3R-13.321  | SQUARE ELECTRODES     | 68   |
| THREE-JAW CHUCK         | 3R-311.4   | Ø0.1-3 mm             | 69   |
| COLLET CHUCK            | 3R-311.2   | < Ø13 mm              | 69   |
| COLLET CHUCK            | 3R-311.3   | < Ø10 mm              | 69   |

NOTE: In addition, the following pallets can be mounted in Mini by means of chuck adapters

MacroJunior Ø25 mm

MacroJunior 3Ready-to-Run

Macro 54x54 mm

Macro 70x70 mm

#### Electrode holder Ø20 mm

Holder with hardened reference part and unhardened electrode mounting part.



##### 3R-322/25S

- Electrode mounting part 25 mm
- Flushing duct
- Supplied in sets of 30
- Weight per set 7 kg



##### 3R-322/50E

- Adapted for automatic changing
- Electrode mounting part 50 mm
- Flushing duct
- Supplied in sets of 30
- Weight per set 7.7 kg



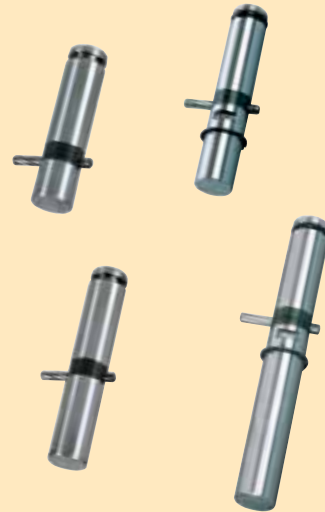
##### 3R-322/50S

- Electrode mounting part 50 mm
- Flushing duct
- Supplied in sets of 30
- Weight per set 7.7 kg



##### 3R-322/100

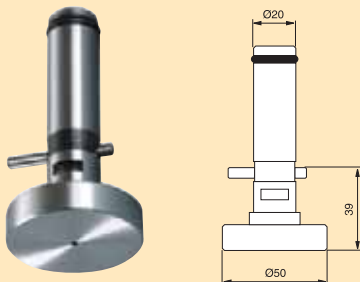
- Adapted for automatic changing
- Electrode mounting part 100 mm
- Flushing duct
- Supplied in sets of 10
- Weight per set 3.8 kg



#### Electrode holder 3R-310EE

Holder with hardened reference part Ø20 mm and unhardened flange Ø50 mm.

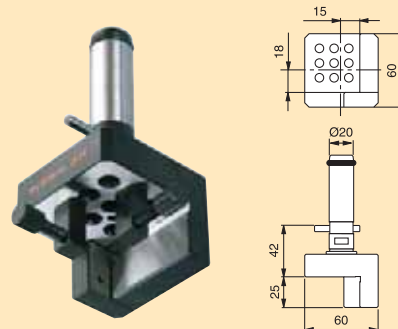
- Adapted for automatic changing
- Electrode mounting part 39 mm
- Flushing duct
- Supplied in sets of 10
- Weight per set 4 kg



#### Electrode holder 3R-13.321

Holder with hardened reference part Ø20 mm for mounting square and flat electrodes.

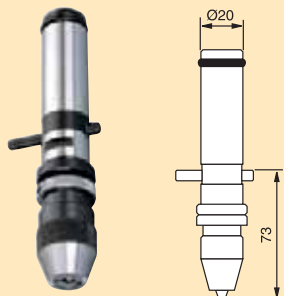
- Adapted for automatic changing
- Flushing duct
- Weight 1 kg



✓ **Three-jaw chuck  
3R-311.4**

Chuck Ø20 mm for Ø0.1-3 mm electrodes.

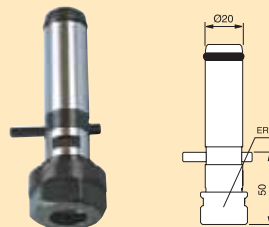
- Adapted for automatic changing
- Weight 0.3 kg



✓ **Collet chuck ER20  
3R-311.2**

Chuck Ø20 mm for collets ER20 with electrodes < Ø13 mm.

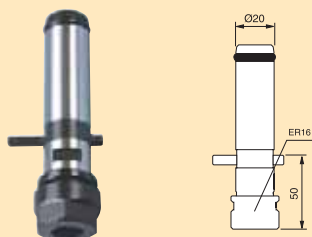
- Adapted for automatic changing
- Weight 0.2 kg



✓ **Collet chuck ER16  
3R-311.3**

Chuck Ø20 mm for collets ER16 with electrodes < Ø10 mm.

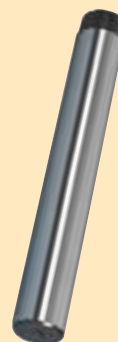
- Adapted for automatic changing
- Weight 0.2 kg



✓ **Check mandrel  
3R-23**

Ground C-reference.

- Measuring length 100 mm
- Weight 0.6 kg



✓ **Check ruler  
3R-314.2**

For setting angular positions.

- Measuring length 96 mm
- Weight 0.4 kg



✓ **Indicating spindle  
3R-3.321-2**

For measuring centre holes.

- Dial indicator required
- Weight 0.4 kg





**Microscope  
3R-4.321**

With transformer (110/220V) for integral lighting.

- Magnification x25
- Field of view Ø6 mm
- Weight 0.6 kg



**Scriber  
3R-5.321**

Used in conjunction with the microscope.

- Weight 0.4 kg




**Clip  
3R-301**

For angular fixing of Mini holders.


- Supplied in sets of ten



 **Soldering kit  
3R-403**

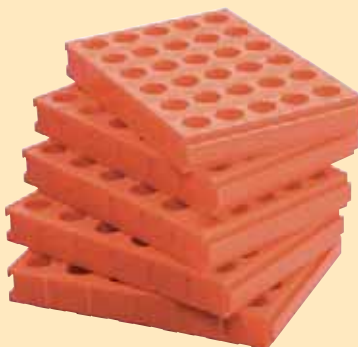
For soldering electrode blanks on Mini holders. Supplied with flux.



 **Electrode cassette  
3R-150/5**

For Mini holder x30.

- Supplied in sets of five



**Adapter plate  
3R-601.6**

For mounting (for example) rotating spindles in the Macro system.

- MacroHP coupling
- Rust-resistant



## INCREASED PRODUCTIVITY

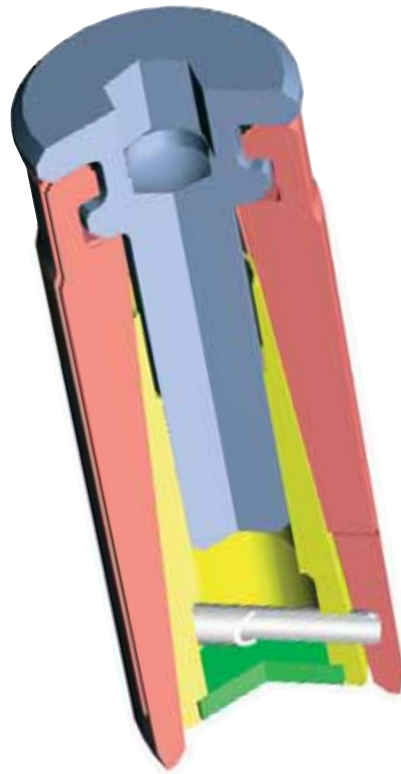
need not mean heavy investments in new machines.

3Refix is remarkably simple way to lay a solid foundation from which to view the future with confidence – tool up without indication and cut your production costs!

3Refix technology is based on a modular hole pattern with 100x100 mm pitch and 20 mm diameter reference holes. The reference tables have clearly-marked reference holes – A<sup>1</sup>, A<sup>2</sup>, B<sup>1</sup>, B<sup>2</sup> etc – and every accessory has two 20 mm diameter holes, which pick up the references from the table. The R<sup>0</sup>-hole gives the X/Y-position and the R<sup>1</sup>-hole gives the angle relative to the axes of the machine. This makes it possible to set up the workpiece without the need for alignment and gauging afterwards. So 3Refix accessories provide an unmistakable and fixed position with known references.

The accessories in the 3Refix range usually have a reference height of 30 mm, among other things to allow machining straight through the workpiece. The design also allows a flush pot to be pushed in under the workpiece during EDM machining. The full effect of 3Refix technology is attained by consistent application with general systemization and standardization of all machine tables and accessories. System 3R can supply reference tables for practically all types and sizes of machines – reference tables that give a distinct interface between machine table and auxiliary tool.

With the aid of 3Refix you can very quickly change the set-up of the machine from one machining operation to another in a few simple operations – One Minute Set-up!



*Gives a definite position with fixed references*

*Minimal investment, cutting production costs*

*Fast setup with just a few simple manual actions*

*The expanding mandrel minimises wear in the reference holes.*

## FACTS

Repetition accuracy  
0.005 mm

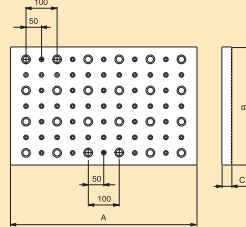
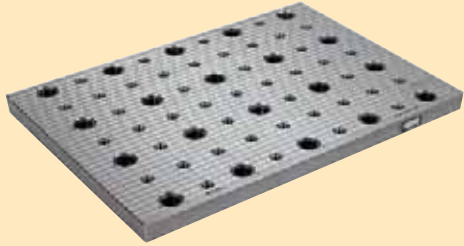


**Reference tables**

Reference tables of structurally-stable toughened steel (270-320 HB).  
 Hardened bushes in dead-end holes for 3Refix mandrels Ø20 mm at 100x100 mm modular spacing, as well as M12 tapped mounting holes with 50x50 mm modular spacing.

Note: Customised reference tables can be made to order.

Note: Hardened reference tables (650-700 HB) can be made to order.



**3R-936-60.38**

A = 600 mm  
 B = 380 mm  
 C = 32 mm  
 Weight 55 kg



**3R-936-85.40**

A = 850 mm  
 B = 400 mm  
 C = 32 mm  
 Weight 83 kg

**3Refix mandrel**

Note: When positioning with 3Refix mandrels –always tighten the expanding mandrel in the R<sup>0</sup> hole first.



**3R-901-10E**

- 3Refix Ø10 mm
- Recommended tightening torque 4 Nm
- Supplied in sets of ten
- Weight per set 0.2 kg



**3R-901-20E**

- 3Refix Ø20 mm
- Recommended tightening torque 10 Nm
- Supplied in sets of ten
- Weight per set 1 kg

**3R-901-10RS**

- 3Refix Ø10 mm
- Rust-resistant
- Recommended tightening torque 4 Nm
- Supplied singly
- Weight per set 0.5 kg

**3R-901-20RS**

- 3Refix Ø20 mm
- Rust-resistant
- Recommended tightening torque 10 Nm
- Supplied singly
- Weight per set 0.1 kg



**Slotted bushes**

**3R-903-XX.XX**

Bushes of hardened spring steel 54 HRC. Bore 20 mm, height 20 mm. Supplied in pairs.



Outside diameter mm

|                |       |
|----------------|-------|
| 3R-903-20.235  | 23.5  |
| 3R-903-20.24   | 24    |
| 3R-903-20.25   | 25    |
| 3R-903-20.254  | 25.4  |
| 3R-903-20.256  | 25.6  |
| 3R-903-20.26   | 26    |
| 3R-903-20.275  | 27.5  |
| 3R-903-20.28   | 28    |
| 3R-903-20.295  | 29.5  |
| 3R-903-20.30   | 30    |
| 3R-903-20.315  | 31.5  |
| 3R-903-20.3175 | 31.75 |
| 3R-903-20.32   | 32    |
| 3R-903-20.34   | 34    |
| 3R-903-20.36   | 36    |
| 3R-903-20.38   | 38    |
| 3R-903-20.381  | 38.1  |
| 3R-903-20.40   | 40    |
| 3R-903-20.414  | 41.4  |
| 3R-903-20.42   | 42    |
| 3R-903-20.4445 | 44.45 |

### Bushings

Hardened steel, 60 HRC, for mounting in existing fixtures.



|                       | 3R-902-10E | 3R-902-19.7E |
|-----------------------|------------|--------------|
| Bore / mm.            | 10H7       | 19.7         |
| Outside diameter / mm | 15h6       | 28h6         |
| Height / mm           | 12         | 20           |
| Supplied in sets of   | 30         | 10           |

|                       | 3R-902-20.0E | 3R-902-20.3E |
|-----------------------|--------------|--------------|
| Bore / mm.            | 20H6         | 20H6         |
| Outside diameter / mm | 28h6         | 28.3         |
| Height / mm           | 20           | 20           |
| Supplied in sets of   | 10           | 10           |



### Plastic plug 3R-915-20E

Plug to protect Ø20 mm hole from dirt

- Supplied in sets of fifty



### Plastic screw 3R-915-M12E

To protect M12 holes with protective countersinking from dirt.

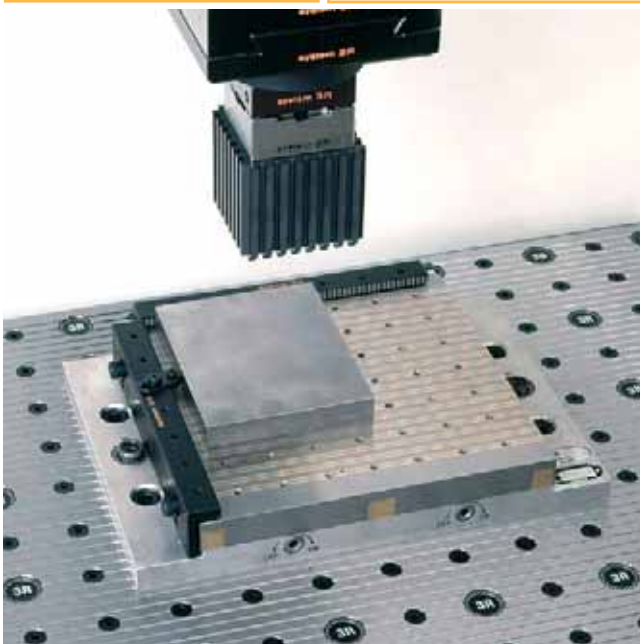
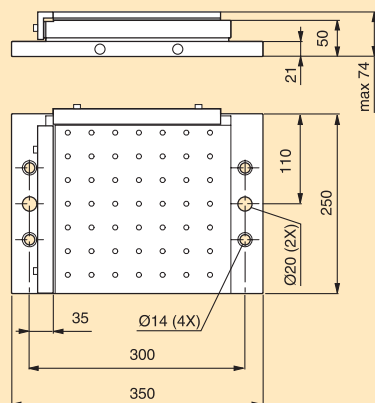
- Supplied in sets of fifty



### Magnetic table 3R-909-MT

Magnetic table with two individually-set magnetic fields. Low magnetic field, 3 mm, allows machining of very thin workpieces. Two 3Refix holes give quick, simple positioning on reference tables. The workpiece is positioned against reference rulers. For non-right-angled workpieces there is a movable stop with point contact. The table has 49 M6 holes for flushing to the workpiece or for connection to a vacuum pump.

- Maximum working range 230x220 mm
- Clamping force 121 N/cm<sup>2</sup> (JIS-norm)
- Pole pitch 13 mm
- Weight 20 kg



## UTILISE EVERY HOUR OF THE DAY AND NIGHT!

An automatic production cell can generate revenue round the clock, seven days a week. Why be satisfied with 40 productive machine-hours a week when the same machine can achieve over 100 additional hours a week? Use every hour of the day and night for production!

WorkPal, WorkPartner and WorkMaster – three “aces” which boost your productivity and sharpen your competitiveness.

And not least – they bring faster payback on the investments you made.



## WORKPAL COMPACT SERVO – MODEST DEMANDS, MAJOR BENEFITS

WorkPal Compact Servo is a simple step into the world of automation. It's an easy-to-use, user-friendly pallet changer for automatic changing of pallets in milling and/or EDM machines, for example.

A sliding door gives maximum access to the magazine, making it easier to manage the pallets. The extremely compact unit is simple to install. And what's more, WorkPal Compact Servo only needs minimal floor space.





## WORKPARTNER – CAN SERVE TWO MACHINES

A compact unit for pallet changing, both on the machine table and in the machine spindle. WorkPartner is intended for applications in wire and die-sinking EDM machines or milling machines.

Front loading makes it extremely user-friendly – open the doors and fill the magazines on the inside of the doors. In addition, the lower magazine shelf pulls out to make pallets and workpieces even easier to handle.

WorkPartner – capable of serving two machines at the same time. These could be machines of the same type and make, or machines with different machining technologies and of different makes.



## WORKMASTER – A MODULAR AUTOMATION CONCEPT

WorkMaster is a flexible automation concept for applications in one or more milling and/or EDM machines, for example. And changing can be done both in the machine spindle and on the machine table.

The changer unit is completely self-contained and can be adapted to “tailor-made” automation solutions with several types of magazine, as well as a number of options. One, two or three machines in the same production cell.

One clear advantage is the “open architecture” of the system. The customer chooses the machine (or machines) suited to the particular requirements of the business, and a WorkMaster is added.



See separate publications for further information about WorkPal, WorkPartner, WorkMaster and about WorkShopManager, System 3R's production control software.

## TO MEET THE REQUIREMENTS FOR FLEXIBILITY

and accuracy, System 3R has developed a range of C-axes for the Mini-, Macro-, MacroCombi- and Maxi systems.

The range includes products for building-in as well as for building-on.

The C-axes are primarily intended for indexing and for machine-synchronised movements, such as machining of threads and spirals, but they can also be used when machining with a rotating electrode.

Note that System 3R C-axes are supplied only in collaboration with the relevant machine manufacturer. For further information contact your local 3R representative.

MacroCombi build-on 3R-814-CC4.XX

MacroCombi build-in 3R-814-CC3.XX

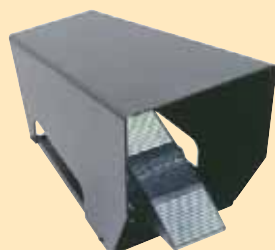
Macro build-in 3R-816-C3.XX

Macro build-on 3R-816-C4.XX



✓ **Control unit  
3R-611.2**

Foot operation of pneumatic chucks.



✓ **Actuator  
3R-611.4**

Unit for operation of pneumatic chucks. Two functions – open/closed.



✓ **Actuator  
3R-611.46**

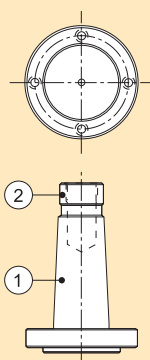
Unit for operation of pneumatic chucks. Three functions – open/neutral/closed.



**Lathe taper  
3R-TXXXX**

Taper attachment for mounting chucks in taper spindles.

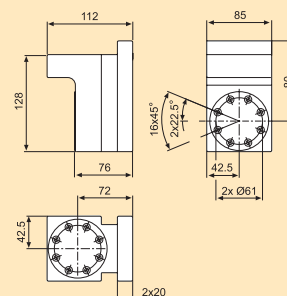
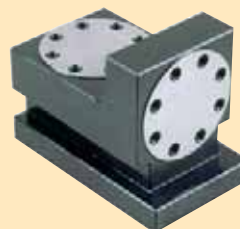
*Note: Manufactured on request. State machine type, taper (1), drawbar thread (2) and which 3R chuck is to be mounted. Use the order form at the end of the catalogue.*



**Angle shelf  
3R-A21944**

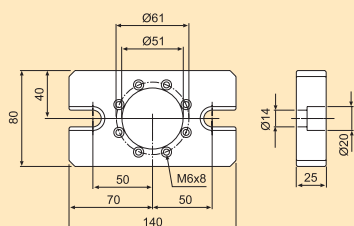
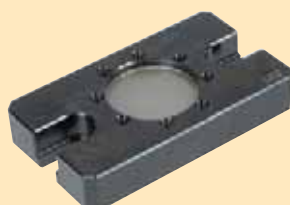
For vertical or horizontal mounting of 3R-400.34, 3R-460.34 and 3R-600.24-S on the machine table.

*Note: Chuck to be ordered separately.*



**Adapter plate  
3R-A19724**

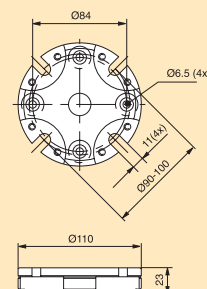
For mounting of 3R-400.34, 3R-460.34 and 3R-600.23 on machine table. Supplied with fixing screws for chuck and table.



**Adapter plate  
3R-A3620**

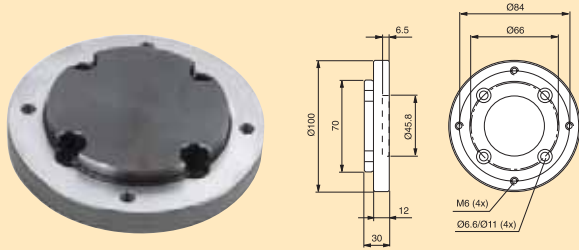
Adapter plate with eight adjusting screws for mounting spindle chucks. Supplied with fixing screws.

- M10 for 90 mm pitch circle
- M6 for 96 mm pitch circle
- M8 for 100 mm pitch circle



**Adapter plate  
3R-A11897**

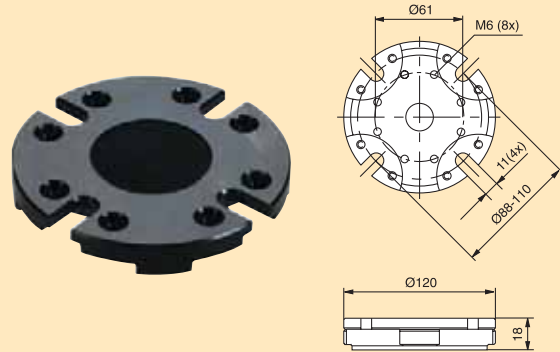
For mounting 3R-400.32, 3R-460.32 and 3R-600.22 on a taper attachment with flange diameter 45.5 mm.



**✓ Adapter plate  
3R-A11489**

For mounting of 3R-400.34, 3R-460.34 and 3R-600.24-S. Supplied with insulation plate and fixing screws.

- Flushing connection



**Torque wrenches**

**3R-414-02**

- Allen screw 3 and 5 mm
- 2 Nm

**✓ 3R-414-04**

- Allen screw 3 and 5 mm
- 4 Nm

**✓ 3R-414-06**

- Allen screw 3 and 5 mm
- 6 Nm



**Torque wrenches**

**✓ 3R-914-04**

- 4 Nm

**3R-914-06**

- 6 Nm

**✓ 3R-914-07**

- 7,8 Nm

**3R-914-10**

- 10 Nm



**Allen keys**

**✓ 3R-333-03**

- 3 mm



**✓ 3R-333-05**

- 5 mm



**Collet chucks**

**ETS10  
3R-AG410**

|              |              |
|--------------|--------------|
| Collet chuck | Ø0.2 mm      |
| Collet chuck | Ø0.3 mm      |
| Collet chuck | Ø0.4 mm      |
| Collet chuck | Ø0.5 mm      |
| Collet chuck | Ø0.6 mm      |
| Collet chuck | Ø0.7-0.6 mm  |
| Collet chuck | Ø0.8-0.7 mm  |
| Collet chuck | Ø0.9-0.8 mm  |
| Collet chuck | Ø1-0.9 mm    |
| Collet chuck | Ø1.25-1 mm   |
| Collet chuck | Ø1.5-1.25 mm |
| Collet chuck | Ø1.75-1.5 mm |
| Collet chuck | Ø2-1.75 mm   |



**Collet chucks  
3R-ER16E**

|              |           |
|--------------|-----------|
| Collet chuck | Ø1-0,5 mm |
| Collet chuck | Ø2-1 mm   |
| Collet chuck | Ø3-2 mm   |
| Collet chuck | Ø4-3 mm   |
| Collet chuck | Ø5-4 mm   |
| Collet chuck | Ø6-5 mm   |
| Collet chuck | Ø7-6 mm   |
| Collet chuck | Ø8-7 mm   |
| Collet chuck | Ø9-8 mm   |
| Collet chuck | Ø10-9 mm  |



### Collet chucks 3R-ER20E

|              |           |
|--------------|-----------|
| Collet chuck | Ø2-1 mm   |
| Collet chuck | Ø3-2 mm   |
| Collet chuck | Ø4-3 mm   |
| Collet chuck | Ø5-4 mm   |
| Collet chuck | Ø6-5 mm   |
| Collet chuck | Ø7-6 mm   |
| Collet chuck | Ø8-7 mm   |
| Collet chuck | Ø9-8 mm   |
| Collet chuck | Ø10-9 mm  |
| Collet chuck | Ø11-10 mm |
| Collet chuck | Ø12-11 mm |
| Collet chuck | Ø13-12 mm |



### Collet chucks 3R-ER32E

|              |           |
|--------------|-----------|
| Collet chuck | Ø3-2 mm   |
| Collet chuck | Ø4-3 mm   |
| Collet chuck | Ø5-4 mm   |
| Collet chuck | Ø6-5 mm   |
| Collet chuck | Ø7-6 mm   |
| Collet chuck | Ø8-7 mm   |
| Collet chuck | Ø9-8 mm   |
| Collet chuck | Ø10-9 mm  |
| Collet chuck | Ø11-10 mm |
| Collet chuck | Ø12-11 mm |
| Collet chuck | Ø13-12 mm |
| Collet chuck | Ø14-13 mm |
| Collet chuck | Ø15-14 mm |
| Collet chuck | Ø16-15 mm |
| Collet chuck | Ø17-16 mm |
| Collet chuck | Ø18-17 mm |
| Collet chuck | Ø19-18 mm |
| Collet chuck | Ø20-19 mm |



### ✓ Locking ring key 3R-605-GE

To lift the locking ring of the drawbars.

- Supplied in sets of two



### ✓ Electrode cassette 3R-650/8x5

For eight electrodes 52x52 and 54x54 mm.

- Supplied in sets of five



### Flushing adapter 3R-103

For 3R-601.3, 3R-601.52, 3R-603, 3R-603.9 and 3R-651.13.



### Flushing adapter 3R-612.1

For 3R-310.35, 3R-651.3 and 3R-653.9.



### Spacer plate U-40266

For mounting of small electrodes in 3R-608.32, 3R-658.2E-S and 3R-658.4E-S.

Supplied in sets of:

- 1 mm x10
- 2 mm x10
- 3 mm x10
- 5 mm x10



### ✓ Nipple 3R-SP20753

Nipple for manual operation by air gun of pneumatic chucks with R1/8" connecting thread.



### ✓ Labels 3R-LS288P

Supplied with marker pen.

- Size 6x19 mm
- Supplied in sets of 288



### ✓ Labels 3R-LL200P

Supplied with marker pen.

- Size 12x25 mm
- Supplied in sets of 200



### ✓ Magazine fork MacroJunior 3R-418-XX

For linear changers or similar. Also fits Macro holders with drawbar 3R-605.14E.







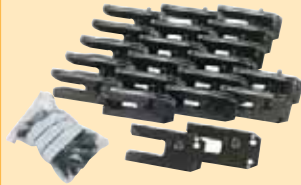
**Magazine fork Macro 3R-618.1**

For linear changers or similar.



**Magazine fork Macro 3R-618.43**

For rotary changers in Roboform 200 / 400 / 2000 / 4000.



**Conversion kit 3R-SP10323**

For upgrading the magazine fork in Roboform 200 / 400 / 2000 / 4000 with rotary changer to the Macro system.



**Magazine forks Macro and MacroJunior 3R-418.43**

For rotary changers in Roboform 200 / 400 / 2000 / 4000



**Conversion kit 3R-618.42**

For upgrading Roboform 200 / 400 / 2000 / 4000 with rotary changer to the Macro system.



**Conversion kit 3R-418.42-1**

For upgrading gripper jaws in Roboform 200 / 400 / 2000 / 4000 with rotary changer to the Macro and MacroJunior system.



**Code carriers 3R-863.01-10**

With pre-programmed unique identity, designed for Macro systems and Dynafix.

- Supplied in sets of 10



**Code carrier 3R-863.01-10M**

With a pre-programmed unique identity, adapted for the Macro systems and Dynafix.

- Supplied in sets of 10



**Code carrier spacer D-40106**

For mounting code carrier 3R-863.01-10M on pallets.



|                      |    |                     |        |                       |            |
|----------------------|----|---------------------|--------|-----------------------|------------|
| 3R-1.6S.....         | 67 | 3R-404-25 .....     | 12     | 3R-467.35.....        | 63         |
| 3R-1.321-HS .....    | 67 | 3R-405.11E.....     | 11, 40 | 3R-468.31-S.....      | 40         |
| 3R-3.321-2 .....     | 69 | 3R-405.16E.....     | 40     | 3R-469-10 .....       | 10         |
| 3R-4.321.....        | 70 | 3R-406.9.....       | 17     | 3R-469-16 .....       | 10         |
| 3R-4.450.....        | 11 | 3R-406.11.....      | 11     | 3R-491E.....          | 9          |
| 3R-4.650.....        | 32 | 3R-406.23.....      | 11     | 3R-491E-HP .....      | 9          |
| 3R-5.321.....        | 70 | 3R-410.1-M .....    | 8      | 3R-491E-Mondo .....   | 9          |
| 3R-6.300-EHS16 ..... | 18 | 3R-410.31-5 .....   | 8      | 3R-494-XXX .....      | 11         |
| 3R-6.321-HS .....    | 18 | 3R-414-02 .....     | 78     | 3R-600.1.....         | 24         |
| 3R-6.600-VHS .....   | 18 | 3R-414-04 .....     | 78     | 3R-600.10-30 .....    | 26         |
| 3R-6.600-VS.....     | 18 | 3R-414-06 .....     | 78     | 3R-600.19.....        | 26         |
| 3R-13.321.....       | 68 | 3R-418.42-1 .....   | 80     | 3R-600.20.....        | 24         |
| 3R-23.....           | 69 | 3R-418.43.....      | 80     | 3R-600.22.....        | 15         |
| 3R-27.2.....         | 61 | 3R-418-XX.....      | 79     | 3R-600.23-S.....      | 15         |
| 3R-27.2-4 .....      | 62 | 3R-443AEC .....     | 66     | 3R.600.24-S.....      | 15         |
| 3R-27.4.....         | 61 | 3R-446.11.....      | 17     | 3R-600.25.....        | 15         |
| 3R-29.....           | 64 | 3R-460.1-1 .....    | 36     | 3R-600.83.....        | 24         |
| 3R-29.1.....         | 64 | 3R-460.4.....       | 45     | 3R-600.83-10 .....    | 24         |
| 3R-29.2.....         | 64 | 3R-460.31-5 .....   | 37     | 3R-600.84-1 .....     | 24         |
| 3R-29.3.....         | 64 | 3R-460.32.....      | 37     | 3R-600.84-30 .....    | 24         |
| 3R-29.31.....        | 66 | 3R-460.34.....      | 36     | 3R-600.86.....        | 25         |
| 3R-103.....          | 79 | 3R-460.35.....      | 36     | 3R-600.86-1 .....     | 25         |
| 3R-150/5 .....       | 70 | 3R-460.37.....      | 37     | 3R-600.86-2 .....     | 25         |
| 3R-301.....          | 70 | 3R-460.45.....      | 38     | 3R-600.86-30 .....    | 25         |
| 3R-310EE .....       | 68 | 3R-460.46.....      | 38     | 3R-600-A02 .....      | 21         |
| 3R-311.2.....        | 69 | 3R-460.83-1 .....   | 36     | 3R-600-A03 .....      | 21         |
| 3R-311.3.....        | 69 | 3R-460.86-1 .....   | 36     | 3R-600.EX8 .....      | 25         |
| 3R-311.4.....        | 69 | 3R-460.86-2 .....   | 36     | 3R-601.1E-P.....      | 30         |
| 3R-314.2.....        | 69 | 3R-460.86-2.9 ..... | 37     | 3R-601.3.....         | 30         |
| 3R-321.2-4x90° ..... | 66 | 3R-460.87-1 .....   | 37     | 3R-601.6.....         | 70         |
| 3R-321.4.....        | 66 | 3R-460.EX8-1 .....  | 37     | 3R-601.7E-P.....      | 30         |
| 3R-321.5.....        | 66 | 3R-461.1E-GA.....   | 9      | 3R-601.52.....        | 31         |
| 3R-321.46.....       | 66 | 3R-461-8.8-HP.....  | 10     | 3R-601.116-P.....     | 31         |
| 3R-321.65.....       | 66 | 3R-463/5033 .....   | 67     | 3R-601.116-PA.....    | 31         |
| 3R-322/25S .....     | 68 | 3R-465.1E-A .....   | 10     | 3R-601-1818-M6A.....  | 31         |
| 3R-322/50E .....     | 68 | 3R-465-LE.....      | 10     | 3R-601-1818-M6M ..... | 31         |
| 3R-322/50S .....     | 68 | 3R-465-VE.....      | 10     | 3R-601-1818-T8A.....  | 31         |
| 3R-322/100 .....     | 68 | 3R-466.4033.....    | 17     | 3R-601-1818-T8M.....  | 31         |
| 3R-333-03 .....      | 78 | 3R-466.4033-S.....  | 17     | 3R-603.9.....         | 27         |
| 3R-333-05 .....      | 78 | 3R-466.4033-XS..... | 17     | 3R-605.1E.....        | 32, 46     |
| 3R-333-T20.....      | 12 | 3R-466.10033.....   | 17     | 3R-605.2E.....        | 20, 32, 46 |
| 3R-400.24-11 .....   | 7  | 3R-466.15033.....   | 17     | 3R-605.2RS.....       | 20         |
| 3R-400.32.....       | 8  | 3R-467.1-1 .....    | 63     | 3R-605.4E.....        | 32, 46     |
| 3R-400.34.....       | 7  | 3R-467.9-1 .....    | 8      | 3R-605.10.....        | 32         |
| 3R-403.....          | 70 | 3R-467.34.....      | 62     | 3R-605.14E.....       | 32         |

|                    |        |                       |    |                    |    |
|--------------------|--------|-----------------------|----|--------------------|----|
| 3R-605-GE.....     | 79     | 3R-659.20-P.....      | 30 | 3R-914-06 .....    | 78 |
| 3R-606.....        | 32     | 3R-659.32-P.....      | 30 | 3R-914-07 .....    | 77 |
| 3R-606.1.....      | 32     | 3R-680.1-2 .....      | 43 | 3R-914-10 .....    | 78 |
| 3R-607.1.....      | 62     | 3R-680.10-2 .....     | 43 | 3R-915-20E.....    | 73 |
| 3R-607.21.....     | 62     | 3R-680.19-2 .....     | 43 | 3R-915-M12E.....   | 73 |
| 3R-607.31.....     | 62     | 3R-681.51.....        | 46 | 3R-936-60.38 ..... | 72 |
| 3R-608.31E.....    | 30     | 3R-681.51-SA .....    | 45 | 3R-936-85.40 ..... | 72 |
| 3R-608.51E.....    | 31     | 3R-681.71.....        | 45 | 3R-A3620 .....     | 77 |
| 3R-610.4.....      | 16     | 3R-681.156-A.....     | 46 | 3R-A11489 .....    | 78 |
| 3R-610.19.....     | 26     | 3R-681-2424-M6A.....  | 46 | 3R-A11897 .....    | 78 |
| 3R-610.21.....     | 15     | 3R-681-2424-M6M ..... | 46 | 3R-A19724 .....    | 77 |
| 3R-610.46.....     | 26     | 3R-681-2424-T8A.....  | 46 | 3R-A21944 .....    | 77 |
| 3R-611.2.....      | 77     | 3R-681-2424-T8M.....  | 46 | 3R-AG410.....      | 78 |
| 3R-611.4.....      | 77     | 3R-686.1-HD .....     | 47 | 3R-ER16E .....     | 78 |
| 3R-611.46.....     | 47, 77 | 3R-770-1 .....        | 57 | 3R-ER20E .....     | 79 |
| 3R-612.1.....      | 79     | 3R-770-4 .....        | 57 | 3R-ER32E .....     | 79 |
| 3R-612.6.....      | 32     | 3R-770-5 .....        | 58 | 3R-LL200P.....     | 79 |
| 3R-612.116.....    | 32     | 3R-770-19-1 .....     | 57 | 3R-LS288P.....     | 79 |
| 3R-618.1.....      | 80     | 3R-771.2.....         | 59 | 3R-MFT4x12E.....   | 12 |
| 3R-618.42.....     | 80     | 3R-771.7.....         | 60 | 3R-PI4.5x14E.....  | 12 |
| 3R-618.43.....     | 80     | 3R-772.2.....         | 59 | 3R-PI4.5x20E.....  | 12 |
| 3R-628.31-S.....   | 20     | 3R-772.1-MT.....      | 60 | 3R-RU52 .....      | 33 |
| 3R-628.41-S.....   | 20     | 3R-DE772-M8.28 .....  | 60 | 3R-RU52L.....      | 33 |
| 3R-650/8x5.....    | 79     | 3R-DE772-T8.40.....   | 60 | 3R-RU70 .....      | 33 |
| 3R-650/8-JR.....   | 12     | 3R-774-AL.....        | 60 | 3R-SP4490.....     | 64 |
| 3R-651E-P.....     | 29     | 3R-776.1.....         | 60 | 3R-SP5674-1 .....  | 62 |
| 3R-651.3.....      | 29     | 3R-814-CC4.XX.....    | 76 | 3R-SP7359 .....    | 27 |
| 3R-651.7E-P.....   | 29     | 3R-814-CC3.XX.....    | 76 | 3R-SP7359-RS ..... | 27 |
| 3R-651.7E-S.....   | 19     | 3R-816-C3.XX .....    | 76 | 3R-SP10323 .....   | 80 |
| 3R-651.7E-XS ..... | 19     | 3R-816-C4.XX .....    | 76 | 3R-SP15055 .....   | 16 |
| 3R-651.13.....     | 29     | 3R-863.01-10 .....    | 80 | 3R-SP18286 .....   | 38 |
| 3R-651.105E.....   | 29     | 3R-863.01-10M .....   | 80 | 3R-SP19047 .....   | 38 |
| 3R-652.2.....      | 16     | 3R-863.25-10 .....    | 12 | 3R-SP19143 .....   | 8  |
| 3R-652.9.....      | 16     | 3R-863.30-10 .....    | 12 | 3R-SP19269.....    | 11 |
| 3R-653.....        | 27     | 3R-901-10E.....       | 72 | 3R-SP19270.....    | 11 |
| 3R-653-S.....      | 16     | 3R-901-10RS.....      | 72 | 3R-SP19631 .....   | 48 |
| 3R-656.1.....      | 20     | 3R-901-20E.....       | 72 | 3R-SP19764 .....   | 40 |
| 3R-656.2-P.....    | 32     | 3R-901-20RS.....      | 72 | 3R-SP20753 .....   | 79 |
| 3R-656.31-3P.....  | 32     | 3R-902-10E.....       | 73 | 3R-SP22201 .....   | 44 |
| 3R-656.31-5P.....  | 32     | 3R-902-19.7E.....     | 73 | 3R-TXXX.....       | 77 |
| 3R-658.1E-S.....   | 19     | 3R-902-20.0E.....     | 73 | 3R-US90-400 .....  | 8  |
| 3R-658.2E-S.....   | 19     | 3R-902-20.3E.....     | 73 | 3R-US90-600 .....  | 27 |
| 3R-658.4E-S.....   | 20     | 3R-903-XX.XX .....    | 72 | 3R-US400.3 .....   | 11 |
| 3R-658.31E.....    | 29     | 3R-909-MT.....        | 73 | 3R-US400.5 .....   | 11 |
| 3R-659.16-P.....   | 30     | 3R-914-04 .....       | 78 | 3R-US600.3 .....   | 21 |

|                  |    |                 |    |
|------------------|----|-----------------|----|
| 3R-US600.5 ..... | 21 | C694 370 .....  | 51 |
| 3R-US611.4 ..... | 30 | C694 375 .....  | 51 |
| 90027.....       | 33 | C697 100.....   | 52 |
| 90027.01.....    | 21 | C697 110.....   | 52 |
| 90027.02.....    | 40 | C810 650.....   | 53 |
| 90027.03.....    | 47 | C810 710.....   | 55 |
| 90131.....       | 21 | C810 800.....   | 55 |
| 90134.....       | 21 | C810 820.....   | 53 |
| 90356.05.....    | 57 | C810 830.....   | 53 |
| 90356.10.....    | 57 | C810 850.....   | 53 |
| 90356.20.....    | 58 | C810 870.....   | 54 |
| 90356.21.....    | 58 | C810 880.....   | 54 |
| 90356.22.....    | 58 | C810 920.....   | 54 |
| 90376.....       | 40 | C810 960.....   | 55 |
| 90443.....       | 47 | C818 000.....   | 55 |
| 90576.05.....    | 57 | C846 600.....   | 52 |
| 90716.05.....    | 16 | C960 800.....   | 54 |
| 90716.09.....    | 26 | D-20117.1.....  | 33 |
| 90716.10.....    | 26 | D-20117.2.....  | 33 |
| 90716.12.....    | 27 | D-20130.....    | 58 |
| 90717.05.....    | 43 | D-40001.20..... | 40 |
| 90717.06.....    | 43 | D-40011.....    | 67 |
| 90718.04.....    | 58 | D-40106.....    | 80 |
| 90724.....       | 44 | S500 090.....   | 51 |
| 90793.....       | 44 | S500 091.....   | 51 |
| 90809.01.....    | 43 | S500 092.....   | 51 |
| 90809.03.....    | 44 | S500 100.....   | 51 |
| 90815.....       | 47 | S500 101.....   | 51 |
| 90842.....       | 15 | S500 102.....   | 51 |
| C210 050.....    | 53 | S500 650.....   | 54 |
| C210 060.....    | 53 | U-20344.....    | 60 |
| C217 100.....    | 49 | U-40266.....    | 79 |
| C219 007.....    | 54 | U-50167.55..... | 33 |
| C219 110.....    | 49 |                 |    |
| C219 600.....    | 49 |                 |    |
| C531 210.....    | 55 |                 |    |
| C531 250.....    | 55 |                 |    |
| C531 500.....    | 55 |                 |    |
| C585 400.....    | 52 |                 |    |
| C585 600.....    | 52 |                 |    |
| C694 100.....    | 51 |                 |    |
| C694 170.....    | 51 |                 |    |
| C694 175.....    | 51 |                 |    |
| C694 270.....    | 52 |                 |    |
| C694 300.....    | 51 |                 |    |