MacroJunior & MacroCombi

MacroCombi profitability in tool manufacturing is determined largely by the extent to which machine downtime can be minimised. A reference system which allows presetting away from the machine – followed by super-rapid tooling-up in the machine when the time comes – is a highly efficient way of working. MacroCombi is such a reference system.

The MacroCombi system offers extreme flexibility both in electrode production and in die-sinking EDM. Small and large electrodes in the same chuck – without adapter elements!

The MacroCombi chucks accept two completely different types of electrode holder. Both Macro with its immovable stability and precision, and MacroJunior with its highly economical holders. The limitations are few, the possibilities many.

+ Clamping force – 5000 N
+ Fixed index positions Macro 4x90° and MacroJunior 3x120°
+ Required air pressure, pneumatic chuck – 6±1 bar
+ Recommended tightening torque, manual chuck – 4 Nm

... gives extreme flexibility
... one chuck, two systems
... reduces setting-up times.
... ensures precision and quality
... is suitable for automatic changing with System 3R’s automation program.
# MacroJunior & MacroCombi – Chucks

### Spindle chucks

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Drawbar</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual</td>
<td>3R-400.34</td>
<td>3R-405.11</td>
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<tr>
<td>Pneumatic</td>
<td>3R-460.83-2</td>
<td>3R-405.16 / 3R-405.11</td>
<td>machine-adapted</td>
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<tr>
<td>Pneumatic</td>
<td>3R-460.86-2</td>
<td>3R-405.16 / 3R-405.11</td>
<td>machine-adapted</td>
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<tr>
<td>Manual</td>
<td>3R-400.24-11</td>
<td>3R-405.11</td>
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### Lathe chuck

<table>
<thead>
<tr>
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<tr>
<td>Manual</td>
<td>3R-460.32</td>
<td>3R-405.16/3R-405.11</td>
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### Table chucks

<table>
<thead>
<tr>
<th>Type</th>
<th>Article number</th>
<th>Drawbar</th>
<th>Feature</th>
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<tr>
<td>Manual</td>
<td>3R-460.31-5</td>
<td>3R-405.16 / 3R-405.11</td>
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<td>Manual</td>
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<td>3R-405.16 / 3R-405.11</td>
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<td>Manual</td>
<td>3R-460.37</td>
<td>3R-405.16 / 3R-405.11</td>
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<td>3R-405.16 / 3R-405.11</td>
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<td>3R-400.24-11</td>
<td>3R-405.11</td>
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<td>3R-405.16 / 3R-405.11</td>
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<td>3R-SP18286</td>
<td>3R-405.16 / 3R-405.11</td>
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<td>Pneumatic</td>
<td>3R-SP19047</td>
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<tr>
<td>Manual</td>
<td>3R-SP19143</td>
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### Built-in chucks

<table>
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<th>Drawbar</th>
<th>Feature</th>
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<td>3R-405.11</td>
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<td>3R-405.16 / 3R-405.11</td>
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<tr>
<td>Pneumatic</td>
<td>3R-SP18286</td>
<td>3R-405.16 / 3R-405.11</td>
<td></td>
</tr>
<tr>
<td>Pneumatic</td>
<td>3R-SP19047</td>
<td>3R-405.16 / 3R-405.11</td>
<td></td>
</tr>
<tr>
<td>Manual</td>
<td>3R-SP19143</td>
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<td></td>
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</tbody>
</table>
MacroJunior – Chucks

**Manual chuck, MacroJunior, 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 1.6 kg.

**Pneumatic chuck, MacroJunior, 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±1 bar
- Fixed index positions 3x120°
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 1.5 kg.

**Manual chuck, MacroJunior, 3R-400.24-11**
For mounting on machine spindle.
- Required drawbar 3R-405.11
- Fixed index positions 3x120°
- Weight 0.8 kg.

**Manual chuck, MacroJunior, 3R-SP19143**
Stainless steel chuck with ground flange Ø22x6 mm for mounting in a fixture or the WEDM system. Axial locking screw with channel for flushing through the electrode.
- Fixed index positions 3x120°
- Weight 0.8 kg.

**Manual chuck, MacroJunior, 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 3x120°
- Weight 3.5 kg.
MacroCombi – Chucks

Manual chuck, MacroCombi, 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 1.8 kg

Pneumatic chuck, MacroCombi, 3R-460.83-2
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 67x20 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 2.1 kg

Pneumatic chuck, MacroCombi, 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 67x20 mm and four M5 clearance holes, 63x26 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 1.9 kg
### Manual lathe chuck, MacroCombi, 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 2.0 kg.

### Manual chuck, MacroCombi, 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.

### Manual chuck, MacroCombi, 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.

### Pneumatic chuck, MacroCombi, 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, MacroCombi, 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 1.1 kg.

### Pneumatic chuck, MacroCombi, 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.
MacroJunior – Chuck adapter

**Manual chuck adapter 90°, Junior-Junior, 3R-467.9-1**

For horizontal mounting of MacroJunior holders. Screw locking.

Note: For EDM machining only.

- Fixed index positions 3x120°
- Weight 0.6 kg.

![Image of chuck adapter](image)

MacroJunior – Pallets & Holders

**Holders**

<table>
<thead>
<tr>
<th>Article number</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>3R-491E</td>
<td>Sintered pallet Ø25 mm</td>
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<tr>
<td>3R-491E-HP</td>
<td>MacroJunior</td>
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<tr>
<td>3R-461-8.8-HP</td>
<td>parallel ground</td>
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<tr>
<td>3R-465.1E-A</td>
<td>Holder Ø28 mm MacroJunior</td>
</tr>
<tr>
<td>3R-469-10</td>
<td>parallel-ground. Journal Ø8.8 mm</td>
</tr>
<tr>
<td>3R-469-16</td>
<td>Collet chuck ER16, MacroJunior</td>
</tr>
<tr>
<td>3R-469-16</td>
<td>Ø0.5-10 mm</td>
</tr>
<tr>
<td>3R-465-LE</td>
<td>Holder, MacroJunior</td>
</tr>
<tr>
<td></td>
<td>Ø4-8 or Ø8-18 mm</td>
</tr>
</tbody>
</table>

![Diagram of holders and chuck adapter](image)
MacroJunior – Pallets & Holders

Pallet 25 mm, MacroJunior, 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.

Ground pallet 25 mm, MacroJunior, 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 MFT4x12 screws and adhesive.
• Supplied in sets of 30.

Plate 5.5 mm, 3R-SP19270
Used in combination with 3R-491E when electrode blanks are mounted with adhesive and screws*. Permits mounting in MacroCombi chucks.
• Supplied in sets of 30
• *Accessory 3R-PI4.5x25E.

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
• Accessory 3R-MFT4x16E.

Except 3R-SP19269
MacroJunior – Holders

**Holder 25 mm, MacroJunior, 3R-461-8.8-HP**
Upper and lower faces ground parallel within 0.002 mm. Locating pin Ø8.8 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 MFT4x12.
- Supplied in sets of 30.

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**Collet chucks, MacroJunior**

**3R-469-10**
- For collets ETS10
- Electrode sizes 0.1-2 mm
- Building-in height 47 mm
- Weight 0.1 kg.

**3R-469-16**
- For collets ER16
- Electrode sizes 0.5-10 mm
- Building-in height 59.5 mm
- Weight 0.2 kg.

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**Holder, MacroJunior, 3R-465-LE**
For round electrodes Ø4-8 mm or square <8x18 mm, and with maximum height 30 mm.
- Supplied in sets of 5.
**3Ready-to-Run, 3R-494-XXX**
Blanks mounted on MacroJunior holders for the manufacture of electrodes. 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.

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

**Check ruler, 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.

**Drawbar, 3R-405.11E**  Drawbar Ø15 mm to mount MacroJunior holders in chucks 3R-400.XX and 3R-460.XX.
- Supplied in sets of 10.

**Drawbar, 3R-405.16E**  Drawbar Ø15 mm to mount Macro holders in chucks 3R-460-XX.
- Supplied in sets of 10.

**Fixed measuring probes**

**3R-US400.3**  For machines with measurement cycle function.
- Measuring ball Ø3 mm
- Overall length 102 mm
- Weight 0.3 kg.

**3R-US400.5**  For machines with measurement cycle function.
- Measuring ball Ø5 mm
- Overall length 103 mm
- Weight 0.3 kg.
MacroJunior & MacroCombi – Accessories

**TORX screwdriver, 3R-333-T20**
For screws 3R-PI4.5x20E and 3R-PI4.5x25E.

**Torque wrench, 3R-614-04**
For manual MacroJunior and MacroCombi chucks. Also for 3Refix mandrels Ø10 mm, 3R-901-10E.
- 4 Nm.

**TORX screws M4, 3R-MFT4x12E**
For mounting electrode blanks.
- Length 12 mm
- Supplied in sets of 100, including a TORX screwdriver.

**Self tapping TORX-screws, 3R-PI4.5x20E**
For mounting electrode blanks.
- Length 20 mm
- Supplied in sets of 100.

**Self tapping TORX-screws, 3R-PI4.5x25E**
For mounting electrode blanks.
- Length 25 mm
- Supplied in sets of 100.

**Soldering kit, 3R-404-25**
For soldering electrode blanks on 3R-491E or 3R-SP19269.
- 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 8.
MacroJunior & MacroCombi – Kit & accessories

User kit, 3R-468.31-S

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<th>Item Code</th>
<th>Description</th>
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<tr>
<td>3R-405.11</td>
<td>Drawbar, MacroJunior</td>
<td>x5</td>
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<tr>
<td>3R-405.16</td>
<td>Drawbar, Macro</td>
<td>x5</td>
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<td>3R-460.31-S</td>
<td>Manual table chuck, Macro</td>
<td>x1</td>
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<td>3R-465-L</td>
<td>Holder, MacroJunior</td>
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<td>3R-465-V</td>
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<td>3R-491</td>
<td>Holder, MacroJunior</td>
<td>x30</td>
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<td>3R-651.7-S</td>
<td>Reference element, 54x54 mm, Macro</td>
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<td>Check ruler, Macro</td>
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<tr>
<td>3R-658.1-S</td>
<td>Intermediate plate, 54x54 mm, Macro</td>
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<td>3R-658.2-S</td>
<td>Holder, 54x54 mm, Macro</td>
<td>x2</td>
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<tr>
<td>3R-658.4-S</td>
<td>Holder, 54x54 mm, Macro</td>
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<tr>
<td>3R-333-T20</td>
<td>Screwdriver, TORX</td>
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<tr>
<td>3R-PI4.5x20</td>
<td>TORX screw</td>
<td>100</td>
</tr>
<tr>
<td>3R-614-04</td>
<td>Torque wrench, 4 Nm</td>
<td>x1</td>
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</tbody>
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Splash guard, 90027.02
Intended for MacroCombi chucks. Can also be used as a cover for unused chucks.

Ring with code carrier, 3R-863.25-10
With pre-programmed unique identity, designed for MacroJunior 25 mm, 3R-491E.
• Supplied in sets of 10.

Clamping force meter kit, 3R-SSP115-BASE
For both pneumatic and manual chucks. This stand alone unit in combination with individual drawbars or drawbar kits, able to cover MacroJunior, Macro, MacroMagnum and Dynafix.
Note: Require drawbars with bayonet interface similar to 3R-605.1.
• Add-on kit for use in MacroJunior, 3R-SSP115-JUN
• Operating temp. +10 to +40° C
• Gauge size Ø90x47 mm
• Working range 1-22 kN
• Deviation ± 0.1 kN.
• Weight:
  Display 0.34 kg.
  Gauge 1.3 kg.

Add-on kit, 3R-SSP115-Jun
Add-on kit for 3R-SSP115-BASE.
MacroJunior & MacroCombi – Accessories

Lathe taper, 3R-TXXX
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. Intended for milling
Note: Chuck to be ordered separately.

Adapter plate, 3R-A19724
For mounting of 3R-400.34, 3R-460.34 and 3R-600.24-S on machine table. Supplied with fixing screws for chuck and table.

Air unit, 3R-611.46
Unit for operation of pneumatic chucks. Three positions – open/neutral/closed.