System 3R

Tooling

for precision machining
Design and quality by System 3R
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Macro</td>
<td>10</td>
</tr>
<tr>
<td>MacroNano</td>
<td>26</td>
</tr>
<tr>
<td>MacroMagnum</td>
<td>31</td>
</tr>
<tr>
<td>Matrix</td>
<td>40</td>
</tr>
<tr>
<td>GPS 70 &amp; 120</td>
<td>46</td>
</tr>
<tr>
<td>GPS 240</td>
<td>57</td>
</tr>
<tr>
<td>Dynafix</td>
<td>68</td>
</tr>
<tr>
<td>Delphin &amp; Delphin BIG</td>
<td>74</td>
</tr>
<tr>
<td>Accessories</td>
<td>76</td>
</tr>
<tr>
<td>Automation</td>
<td>78</td>
</tr>
<tr>
<td>Index</td>
<td>81</td>
</tr>
</tbody>
</table>

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**Care for the environment and protection of natural resources are key elements in System 3R’s operations**

- We take all necessary precautions to prevent contamination of soil, air and water.
- In our production processes, we continually improve the efficiency of our energy use.
- The products and methodologies we offer the market improve the efficiency of our customers’ use of existing resources.

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Manufactured to meet System 3R’s quality requirements, but partly or completely made in a production plant that is not covered by System 3R’s ISO9000 certificate.

Indicates that the product will normally be shipped within two weeks, provided that it is in stock when the order is placed.

3R-XXX in an article number means that the article is established on the market and has proven its quality in extensive use by customers. All 3R articles are to be regarded as standard articles and thus have a quality certificate.

Our thanks to Formverktyg i Nynäshamn AB for the loan of products used in photographs in this catalogue.
Experience always shows that measures to reduce the idle times of your machines are significantly more worthwhile than chasing seconds in the actual machining process. The solution is a stable and exact reference system. This lets you preset away from the machine and then set up the machine with minimum idle time. Quickly and precisely!

Fitting the machines with the same reference system means that electrodes and workpieces can be moved between the machines without subsequent alignment and checking – One Minute Set-up.
A reference system minimises setup times
Every minute that can be converted from internal to external setting time increases the spindle time of the machine and with it the productivity of the business.

Big earnings are within your reach
The machine generates revenue when its spindle is turning – and only then.
Work smarter, not harder.

Higher productivity, calculation example:

<table>
<thead>
<tr>
<th></th>
<th>Conventional setting-up</th>
<th>Pallet system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working time per day</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Setting-up time per day (hours)</td>
<td>-4</td>
<td>-0.5</td>
</tr>
<tr>
<td>Spindle time per day</td>
<td>=4</td>
<td>=7.5</td>
</tr>
<tr>
<td>Working days per week</td>
<td>x5</td>
<td>x5</td>
</tr>
<tr>
<td>Spindle time per week</td>
<td>= 20</td>
<td>=37.5</td>
</tr>
</tbody>
</table>

Faster payback, calculation example:

<table>
<thead>
<tr>
<th></th>
<th>Conventional setting-up</th>
<th>Pallet system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hourly invoicing (€)</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Spindle time / week (hours)</td>
<td>x20</td>
<td>x37.5</td>
</tr>
<tr>
<td>Revenue / week (€)</td>
<td>=1 000</td>
<td>=1 875</td>
</tr>
<tr>
<td>Capital cost of machine (€)</td>
<td>150 000</td>
<td>150 000</td>
</tr>
<tr>
<td>Capital cost pallet system (€)</td>
<td>0</td>
<td>+10 000</td>
</tr>
<tr>
<td>Total capital outlay (€)</td>
<td>=150 000</td>
<td>=160 000</td>
</tr>
<tr>
<td>Paybacktime (weeks)</td>
<td>150</td>
<td>85</td>
</tr>
</tbody>
</table>
### Introduction – Rough guidance to tooling

<table>
<thead>
<tr>
<th>Pallet size (mm)</th>
<th>Macro</th>
<th>MacroMagnum</th>
<th>Matrix</th>
<th>GPS 70</th>
<th>GPS 120</th>
<th>GPS 240 Square</th>
<th>Round</th>
<th>Dynafix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 52-54</td>
<td>5 kg</td>
<td>5 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 54-Ø 75</td>
<td>10 kg</td>
<td>10 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 70</td>
<td></td>
<td></td>
<td></td>
<td>10 kg</td>
<td>10 kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 110-116</td>
<td>50 kg</td>
<td>50 kg</td>
<td>50 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 120</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 142-185</td>
<td>50 kg</td>
<td>100 kg</td>
<td>100 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 220-260</td>
<td>100 kg</td>
<td>200 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 256</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 240-300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 280-400</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>250 kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Above list is only a rough guidance which may deviate between article number of pallets as well as individual application. Please check with local 3R representative for more detailed confirmation.
The lip edge of the pallet is angled to match the angle of the boss. This maximises the mating surface area between the parts, resulting in precision alignment, minimal wear and enduring precision.

The Z-references of the chuck have generously-sized surfaces to ensure the highest stability.

The Z-references are automatically air-blast cleaned, through nozzles in the Z-references of the chuck.

Turbo locking. Extra locking force is provided by air-blast cleaning air which is automatically diverted to the locking piston when the Z-references seal against each other.

Drawbar with floating bayonet fitting. No traction forces, ultimate accuracy.

The references of the pallet are created directly in the pallet and on a single plane. There are no loose parts to be installed and adjusted by the user.

The X and Y references of the chuck are made of cemented carbide.

The lip edge of the pallet is angled to match the angle of the boss. This maximises the mating surface area between the parts, resulting in precision alignment, minimal wear and enduring precision.
VDP (Vibration-Damped Palletisation)

With conventional chucks, vibrations of the workpiece caused by the dynamic forces due to the action and rotation of the cutting tool. Restrictions therefore have to be imposed on the rotation speed and feed rate of the cutting tool, to prevent instability and to achieve the necessary surface quality.

**Advantages of a damped chuck**
After intensive research into the dynamics of chuck systems, machine tool maker System 3R has developed and patented a chuck with vibration-damped palletisation (VDP). By reducing the vibrations of the workpiece and a considerable proportion of the vibrations of the cutting tool, the VDP technology improves the dynamics of the entire metal cutting process. This means that machine tools can be operated at higher speeds with greater accuracy and at the same time with less wear. Workpieces can usually be produced in a single operation within strict dimensional tolerances and with a surface quality in the micrometer range – a millionth of a metre.

+ **Higher material removal rate** improves productivity.
+ **Better surface finish reduces** the need for finishing.
+ **Less tool wear** extends the life of the cutting tools.
+ **Less vibration** in the machine spindle.
+ **Better dimensional accuracy** gives fewer rejects.
+ **Greater scope** for machining difficult materials and complex shapes.
+ **Shorter lead times** thanks to a higher material removal rate.
+ **Lower noise level** during machining.

**Example Micro Milling:**
VDP advantages: The electrode Aspect Ratio (L/Ø) was doubled with VDP.
Dimensions: Ø 0.134 mm, length 4.8 mm

... reduces cutting forces by up to 25%. Lower cutting forces gives lower power consumption and less tool wear.
... lengthens tool life tool wear by up to 30%, giving lower tool costs.
... lengthens the life of the machine spindle. Less vibration in the machine spindle extends the life of the spindle by at least 30%.
... gives shorter lead times. VDP allows machining with higher cutting data – better utilisation of the existing machine capacity. A 30 % capacity increase is within your reach.
VDP (Vibration-Damped Palletisation)

Increase your capacity with > +30%

WITH

Tool life +30%,

Cutting forces -25%

Time

Power

Conventional clamping

VDP

Less tool wear extends the life of the tools = increased revenue.

Process Stability Analysis (Swiss machine tool manufacturer)

<table>
<thead>
<tr>
<th>Cutting Speed (RPM)</th>
<th>Axial Depth of Cut (mm)</th>
<th>Increase in removal rate due to VDP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Magnum Std</td>
<td>Magnum VDP</td>
</tr>
<tr>
<td>8500</td>
<td>3.5</td>
<td>4.5</td>
</tr>
<tr>
<td>9000</td>
<td>4.0</td>
<td>9.0*</td>
</tr>
<tr>
<td>10000</td>
<td>3.0</td>
<td>9.0*</td>
</tr>
</tbody>
</table>

Depth of cut is limited by the cutting tool used for the tests and not by the VDP.

The diagram shows the effect on the oscillation amplitude when machining with the workpiece clamped conventionally and in a damped chuck.
Macro...
... reduces setting-up times.
... ensures precision and quality.
... has automatic air-blast cleaning of the references in the pneumatic chucks.
... has higher locking force in the pneumatic chucks – turbo locking.
... has references of cemented carbide or hardened ground steel.
... is suitable for automatic changing with System 3R’s automation program.

Macro
If you want to compete in the global manufacturing industry, you need to study every aspect of efficiency. It’s a matter of extracting the highest possible number of spindle-hours from each machine, every day of the week. And here, the importance of a high-class reference system can never be over-estimated. A reference system which reduces setup times to a few minutes.

Macro is such a reference system. A system that minimises the 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 users.

Among users world wide, the Macro system is a byword for precision. And with good reason, since very single Macro product is thoroughly checked before it is dispatched. But precision can be graded too. The Macro products are therefore “classified” in terms of accuracy, material and life – but always with full compatibility – as Standard, High Performance and Nano. Even so, it’s worth remembering that the accuracy of a system is determined by the product with the lowest classification.

+ Repetition accuracy:
  MacroNano – within 0.001 mm
  MacroHighPerformance – within 0.0015 mm
  MacroStandard – within 0.002 mm
+ Locking force – 6000 N
+ Fixed index positions 4x90°
+ Required air pressure, pneumatic chuck – 6±1 bar
+ Recommended tightening torque, manual chuck – 6 Nm
+ Recommended max workpiece weight – 50 kg.
**Macro – Chucks**

### Lathe chucks

<table>
<thead>
<tr>
<th>Article number</th>
<th>Drawbar</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Std</td>
<td>3R-600.22</td>
<td>3R-605.2</td>
</tr>
<tr>
<td>Manual HP</td>
<td>3R-600.20</td>
<td>3R-605.1 / 3R-605.4</td>
</tr>
<tr>
<td>Pneumatic Std</td>
<td>3R-600.1-30</td>
<td>3R-605.1 / 3R-605.4</td>
</tr>
</tbody>
</table>

### Table chucks

<table>
<thead>
<tr>
<th>Article number</th>
<th>Drawbar</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Std</td>
<td>3R-610.21-S</td>
<td>3R-605.2</td>
</tr>
<tr>
<td>Manual VDP</td>
<td>3R-600.24-V</td>
<td>3R-605.2</td>
</tr>
<tr>
<td>Manual Std</td>
<td>3R-600.28-S</td>
<td>3R-605.2</td>
</tr>
<tr>
<td>Manual Std</td>
<td>3R-600.24-S</td>
<td>3R-605.2</td>
</tr>
<tr>
<td>Pneumatic Std</td>
<td>3R-610.46-30</td>
<td>3R-605.1 / 3R-605.4</td>
</tr>
<tr>
<td>Pneumatic Std</td>
<td>3R-600.10-30</td>
<td>3R-605.1 / 3R-605.4</td>
</tr>
<tr>
<td>Pneumatic Std</td>
<td>3R-600.14-30</td>
<td>3R-605.2</td>
</tr>
<tr>
<td>Pneumatic HP</td>
<td>3R-610.19</td>
<td>3R-605.1 / 3R-605.4</td>
</tr>
<tr>
<td>Pneumatic VDP</td>
<td>3R-600.1-30V</td>
<td>3R-605.1 / 3R-605.4</td>
</tr>
<tr>
<td>Pneumatic Std</td>
<td>3R-602.81</td>
<td>3R-605.10</td>
</tr>
<tr>
<td>Pneumatic HP</td>
<td>3R-602.10-1</td>
<td>3R-605.10</td>
</tr>
</tbody>
</table>
Macro – Chucks

Manual lathe chuck, MacroStd, 3R-600.22
With setting screws for centring.
- Tightening torque 6 Nm.
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Weight 2.1 kg.

Manual chuck, MacroHP, 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
- Carbide references
- Fixed index positions 4x90°
- Tightening torque 4 Nm
- Weight 3.6 kg.

Pneumatic chuck, MacroStd, 3R-600.1-30
Pneumatic chuck for permanent mounting on the machine spindle or onto the machine table.
- Required drawbar 3R-605.1
- Fixed index positions 4x90°
- Turbo locking
- Weight 4 kg.

Manual chuck, MacroStd, 3R-600.22
With setting screws for centring.
- Tightening torque 6 Nm.
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Weight 2.1 kg.

Manual chuck, MacroHP, 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
- Carbide references
- Fixed index positions 4x90°
- Tightening torque 4 Nm
- Weight 3.6 kg.

Manucll chuck, MacroStd, 3R-610.21
Three ground faces for vertical or horizontal mounting on the machine table.
- Tightening torque 6 Nm.
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing duct
- Weight 2.2 kg.

Manual chuck, MacroStd, 3R-610.21-S
Two ground faces for vertical or horizontal mounting on the machine table.
- Tightening torque 6 Nm.
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing duct
- Weight 3.5 kg.

90842
- Required drawbar 3R-605.1, otherwise as 3R-610.21-S.

Except 90842

90842
- Required drawbar 3R-605.1, otherwise as 3R-610.21-S.

Pneumatic chuck, MacroHP, 3R-600.15-3
Pneumatic chuck for permanent mounting on the machine table.
- Drawbar 3R-605.2RS included
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Rust resistant
- Weight 0.8 kg.
**Macro – Chucks**

**Pneumatic chuck (low profile), MacroStd, 3R-600.14-30**

Pneumatic chuck for permanent mounting on the machine table.
- Required drawbar 3R-605.2
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Weight 2 kg.

**Pneumatic chuck (low profile), MacroStd, 3R-602.81RS**

Pneumatic chuck for permanent mounting on the machine table.
- Required drawbar 3R-605.10
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Weight 1 kg.

**Pneumatic chuck, MacroHP, 3R-602.81RS**

Pneumatic chuck for permanent mounting on the machine table.
- Required drawbar 3R-605.10
- Clamping force 6000 N
- Fixed index positions 4x90°
- Air-blast cleaning of Z-references
- Rust resistant
- Weight 1 kg.

**Pneumatic table chuck, VDP, 3R-602.10-V**

Pneumatic vibration-damped chuck, low-profile version.
- Required drawbar 3R-605.10
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Turbo locking.

**Pneumatic table chuck, VDP, 90716.09**

Pneumatic vibration-damped chuck.
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 6 kg.
Macro – Chucks

Pneumatic table chuck, MacroStd, 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±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 4.4 kg.

Pneumatic table chuck, VDP, 3R-600.1-30V
Pneumatic vibration-damped chuck.
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6 ±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 6 kg.

Pneumatic chuck, MacroStd, 3R-610.46-30
Pneumatic chuck for horizontal or vertical use.
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Air unit included
- Weight 4.4 kg.

Pneumatic table chuck, MacroHP, 3R-610.46-3
Pneumatic chuck for horizontal or vertical use.
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Air unit included
- References of cemented carbide
- Weight 4.4 kg.
Macro – Chucks

**Manual chuck (low profile), MacroStd, 3R-600.28-S**
Cast chuck with ground back face for mounting on the machine spindle. Also suitable in a fixture on the machine table or with adapterplate 3R-A26488.
- Tightening torque 6 Nm
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing connection
- Weight 1.1 kg.

**Manual table chuck, VDP, 3R-600.24-V**
Manual vibration-damped chuck, Ø170 mm.
- Tightening torque 6 Nm.
- Required drawbar 3R-605.2
- Building-in height 85 mm.
- Centre spacing 63 to 100 mm
- Weight 6 kg.

**Manual chuck, MacroStd, 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.
- Tightening torque 6 Nm.
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing connection
- Weight 0.7 kg.

**Manual chuck, MacroStd, 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.
- Tightening torque 6 Nm.
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing connection
- Weight 0.7 kg.

**Manual chuck, MacroStd, 3R-SP15055**
Cast chuck with ground flange for installation in fixture/plate.
- Required drawbar 3R-605.2
- Tightening torque 6 Nm
- Fixed index positions 4x90°
- Flushing connection
- Weight 0.7 kg.

**Manual chuck, MacroHP, 3R-600.24RS**
- Tightening torque 6 Nm
- Required drawbar 3R-605.2RS
- Rust-resistant
- Fixed index positions 4x90°
- Weight 0.7 kg.
**Macro – Chucks**

**Pneumatic chuck, MacroStd, 90412.1X**
Pneumatic chuck with built-on surface-mounted swivel. Intended for B-axes and similar. Air connection from the side. For further information contact System 3R.
- Required drawbar 3R-605.1
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Turbo locking.

**Pneumatic chuck, MacroHP, 90412.2X**
Pneumatic chuck with integral swivel at the rear. Intended for B-axes and similar. Air connection from the rear. For further information contact System 3R.
- Required drawbar 3R-605.1
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Turbo locking.

**Pneumatic chuck, MacroStd, 3R-SP24460**
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
- Turbo locking
- Weight 1.8 kg.

**Pneumatic built-in chuck, MacroHP, 3R-SP26771-RS**
Chuck for Macro holder. For permanent mounting on the machine spindle or fixture.
- Required drawbar 3R-605.1RS
- Clamping force 6000 N
- Required air pressure 6±1 bar
- Carbide XY-References
- Fixed index positions 4x90°
- Weight 2 kg.

**Pneumatic chuck, MacroHP, 3R-SP26771**
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
- Carbide XY-References
- Fixed index positions 4x90°
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 1.8 kg.

**Pneumatic chucks, MacroHP, 3R-SP7359**
Pneumatic chuck for building-in, for example in a fixture, dividing head or B-axis.
- Required drawbar 3R-605.1, 3R-605.4
- Required air pressure 6±1 bar
- Carbide XY-References
- Fixed index positions 4x90°
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 1.8 kg.

**3R-SP7359-RS**
- Rust-resistant version, otherwise as 3R-SP7359.
System 3R tooling for precision machining

**Pneumatic chuck, MacroStd, 3R-SP25442**
Pneumatic chuck for building-in, for example in a fixture, dividing head or B-axis.
- Required drawbar 3R-605.1, 3R-605.4
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Turbo locking
- Weight 1.8 kg.

**Hydraulic chucks**
Chucks with hydraulic locking of end mills for re-grinding or new production.

**K-40338.4**
- Ø10 mm
- Construction height 80 mm
- Rust-resistant
- Adapted for automatic changing
- Ready for code carrier
- Weight 1.3 kg.

**K-40338.3**
- Ø16 mm
- Construction height 80 mm
- Rust-resistant
- Adapted for automatic changing
- Ready for code carrier
- Weight 1.4 kg.

**Pneumatic chuck adapter, MacroMagnum-Macro, 3R-682.600-A**
MacroMagnum chuck adapter with built-in pneumatic Macro chuck for mounting in 3R-686.10-2A.
- Weight 4.5 kg.

**K-40338.5**
- Ø32 mm
- Construction height 101 mm
- Rust-resistant
- Adapted for automatic changing
- Ready for code carrier
- Weight 1.8 kg.

**K-40338.2**
- Ø25 mm
- Construction height 102.5 mm
- Rust-resistant
- Adapted for automatic changing
- Ready for code carrier
- Weight 1.7 kg.

**K-40338.1**
- Ø40 mm
- Construction height 140 mm
- Rust-resistant
- Adapted for automatic changing
- Ready for code carrier
- Weight 2.2 kg.

**Pneumatic chuck adapter, Dynafix-Macro, 90356.22**
Dynafix chuck adapter with built-in pneumatic Macro chuck for mounting in 90356.10 or 90576.05.
Macro – Pallets, holders & spacers

**Holder, pallets and ref. element, 54x54 mm**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Article number</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardened reference element 12.5 mm, HP</td>
<td>3R-651.7E-P</td>
<td>rust-resistant</td>
</tr>
<tr>
<td>Hardened reference element 12.5 mm, Std</td>
<td>3R-651.7E-XS</td>
<td></td>
</tr>
<tr>
<td>Hardened reference element 12.5 mm, Std</td>
<td>3R-651.7E-S</td>
<td>surface-treated</td>
</tr>
<tr>
<td>Hardened pallet 30 mm, HP</td>
<td>3R-651E-P</td>
<td>rust-resistant</td>
</tr>
<tr>
<td>Hardened pallet 30 mm, HP</td>
<td>3R-651.3</td>
<td>52x52 mm / 3Refix Ø10, rust-resistant</td>
</tr>
<tr>
<td>Hardened holder, HP</td>
<td>3R-651.13</td>
<td>&lt;30x30 mm</td>
</tr>
<tr>
<td>Unhardened holder</td>
<td>3R-658.4E-S</td>
<td>&lt;30x30 mm</td>
</tr>
<tr>
<td>Unhardened holder</td>
<td>3R-658.2E-S</td>
<td>&lt;30 mm</td>
</tr>
<tr>
<td>Spacer plate standard and HP</td>
<td>3R-658.1E-S</td>
<td></td>
</tr>
<tr>
<td>Collet chuck ER16, HP</td>
<td>3R-659.16-P</td>
<td>Ø0.5-10 mm, rust-resistant</td>
</tr>
<tr>
<td>Collet chuck ER20, HP</td>
<td>3R-659.20-P</td>
<td>Ø1-13 mm, rust-resistant</td>
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<tr>
<td>Collet chuck ER32, HP</td>
<td>3R-659.32-P</td>
<td>Ø2-20 mm, rust-resistant</td>
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<tr>
<td>Three-jaw chuck</td>
<td>3R-US611.4</td>
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</table>
Macro – Pallets, holders & spacers

Pallets and ref. elements, 70x70 mm

<table>
<thead>
<tr>
<th>Feature</th>
<th>Article number</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardened reference element 12.5 mm, HP</td>
<td>3R-601.7E-P</td>
<td>rust-resistant</td>
</tr>
<tr>
<td>Hardened pallet 30 mm, HP</td>
<td>3R-601.1E-P</td>
<td>rust-resistant</td>
</tr>
<tr>
<td>Hardened pallet 30 mm, HP</td>
<td>3R-601.3</td>
<td>rust-resistant. 3Refix Ø10</td>
</tr>
<tr>
<td>Unhardened pallet 14.2 mm</td>
<td>3R-608.31E</td>
<td>3Refix Ø10</td>
</tr>
<tr>
<td>Unhardened pallet, HP</td>
<td>3R-651.70-P</td>
<td>reference element 54x54 mm</td>
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<tr>
<td>Unhardened pallet, Std</td>
<td>3R-651.70-XS</td>
<td>reference element 54x54 mm</td>
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</tbody>
</table>

Ref. element, Ø75 mm

<table>
<thead>
<tr>
<th>Feature</th>
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<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardened reference element 12.5 mm standard and HP</td>
<td>3R-651.75E-P</td>
<td>rust-resistant</td>
</tr>
</tbody>
</table>

Pallets, Ø116 mm

<table>
<thead>
<tr>
<th>Feature</th>
<th>Article number</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardened pallet, HP</td>
<td>3R-601.52</td>
<td>3Refix Ø10 mm, rust-resistant</td>
</tr>
<tr>
<td>Unhardened pallet, HP</td>
<td>3R-601.116-75PA</td>
<td>With reference element Ø75 mm</td>
</tr>
<tr>
<td>Unhardened pallet</td>
<td>3R-608.51E</td>
<td>3Refix Ø10 mm</td>
</tr>
</tbody>
</table>
Macro – Pallets & holders

Pallet Ø116 mm, 3R-601.116-75PA
Unhardened pallet with reference element 3R-651.75-P.
- X, Y & Z-references hardened
- Ready for code carrier
- Ready for automation.

Accessories:
Sealing ring, High, 3R-612.116-A
Suitable for some Macro chucks with drawbar 3R-605.1*.

Sealing ring, Low, 3R-612.116-S
Suitable for some Macro chucks with drawbar 3R-605.2*.

*For more info please ask System 3R.

Pallet 70x70 mm, 3R-651.70-P
Unhardened pallet with reference element 3R-651.7-P.
- Ready for code carrier
- Ready for automation
- Weight 1 kg.

Pallet 70x70 mm, 3R-651.70-XS
Unhardened pallet with reference element 3R-651.7-XS
- X, Y & Z-references hardened
- Ready for code carrier
- Ready for automation
- Weight 1 kg.

Accessories:
Sealing ring, High, 3R-612.54-A
Suitable for some Macro chucks with drawbar 3R-605.1*.

Sealing ring, Low, 3R-612.54-S
Suitable for some Macro chucks with drawbar 3R-605.2*.

*For more info please ask System 3R.

Application example.

Pallet Ø75 mm, 3R-651.75E-P
Hardened and milled with clearance holes for eight fixing screws.
- Fixed index positions 4x90°
- Parallel-ground top and bottom faces
- Adapted for automatic changing
- Rust resistant
- Supplied in sets of 10 pcs.
- Weight per set 2.7 kg.

Pallet 54x54 mm, MacroHP, 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 8
- Weight per set 1.3 kg.

Accessories:
Sealing ring, High, 3R-612.116-A
Suitable for some Macro chucks with drawbar 3R-605.1*.

Sealing ring, Low, 3R-612.116-S
Suitable for some Macro chucks with drawbar 3R-605.2*.

*For more info please ask System 3R.
Macro – Pallets & holders

**Pallet 54x54 mm, MacroStd, 3R-651.7E-XS**
Hardened pallet for copper electrodes and workpieces.
Note: Must be mounted on the workpiece before it is locked in a chuck. For graphite electrodes spacer plate 3R-658.1E is required.
- Untreated side faces
- Adapted for automatic changing
- Supplied in sets of 8
- Weight per set 1.3 kg.

**Pallet 54x54 mm, MacroHP, 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 8
- Weight per set 3.4 kg.

**Pallet 70x70 mm, MacroHP, 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 5
- Weight per set 3 kg.

**Pallet Ø116 mm, MacroHP, 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
- Weight 1.9 kg.

**Accessories:**

**Sealing ring, High, 3R-612.116-A**
Suitable for some Macro chucks with drawbar 3R-605.1*.

**Sealing ring, Low, 3R-612.116-S**
Suitable for some Macro chucks with drawbar 3R-605.2*.

*For more info please ask System 3R.*
Macro – Accessories

**Drawbars**

3R-605.1E
- Ø20x57.1 mm with flushing holes Ø7 mm
- Supplied in sets of 10 pcs.

3R-605.1EE
- Supplied in sets of 40 pcs.

3R-605.2E
- Ø20x36.9 mm with Ø7 mm flushing hole
- Supplied in sets of 5 pcs.

3R-605.2EE
- Supplied in sets of 20 pcs.

3R-605.4E
- For round pallets adapted for automatic changing
- Ø20x57.1 without flushing hole
- Supplied in sets of 10 pcs.

3R-605.4EE
- Supplied in sets of 40 pcs.

3R-605.10
- Ø20x13 mm
- Rust resistant.

3R-605.10E
- Supplied in sets of 10 pcs.

3R-605.10EE
- Supplied in sets of 20 pcs.

**Clamping force meter, 3R-SSP059**

For pneumatic and manual chucks. Suits all chucks from MacroCombi to MacroMagnum.
- Required drawbar 3R-605.1 or similar
- Working range 1-25 kN.
- Weight 5 kg.
Control ruler, 3R-606.1
For setting angular positions and for centring Macro chucks.
- Ground hole for centring.
- Measuring length 100 mm
- Weight 1.4 kg.

Control rod, 3R-606
Check mandrel with ground C-reference for setting Macro chucks.
- Measuring length 110 mm
- Weight 2.3 kg.

Control ruler, 3R-656.1
For setting angular positions. Ground outside diameter for centring.
- Measuring length 50 mm
- Weight 0.8 kg.

Control rod, 3R-656
Check mandrel with ground C-reference for setting Macro chucks.
- Measuring length 38 mm
- Weight 1 kg.

Converter kit, 90842.01
To convert 3R-600.24-S to enable long drawbar 3R-605.1.

Converter kit, 3R-A27634
To convert 3R-600.28-S to enable long drawbar 3R-605.1.
- Extra height 18.5 mm.
Macro – Accessories

**Centring ring, 3R-612.6**
For centring 3R-600.20.

**Adapter plate, 3R-A26488**
For mounting 3R-600.28-S.

**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.

**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.

**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.

**Torque wrenches, 3R-614-04**
Mainly for MacroCombi and Ø10 3Refix mandrels.
- 4 Nm.

**3R-614-06**
For Macro chucks.
- 6 Nm.

**Allen key, 3R-333-03**
- 3 mm
- Supplied in 10 pcs.

**Allen key, 3R-333-05**
- 5 mm
- Supplied in 10 pcs.
**Macro – Accessories**

**Connection for air gun, 90815**
For manual operation of pneumatic chucks with air gun.
- Supplied in sets of 2 pcs.

**Locking ring key, 3R-605-GE**
To lift the locking ring of the drawbars.
- Supplied in sets of 2

**Labels, 3R-LL200P**
Supplied with marker pen.
- Size 12x25 mm
- Supplied in sets of 200

**Control unit, 3R-611.2**
Foot operation of pneumatic chucks.

**Control unit, 3R-611.4**
Unit for operation of pneumatic chucks. Two functions, opened/closed.

**Control unit, 3R-611.46**
Unit for hand operation of pneumatic chucks. Three functions – open/neutral/closed.

**Code carriers, 3R-863.01-10**
With pre-programmed unique identity, designed for pallet use.
- Supplied in sets of 10.

**3Refix mandrel**
Note: When positioning with 3Refix mandrels – always tighten the expanding mandrel in the R° hole first.

**3R-901-10RS**
- 3Refix Ø10 mm
- Rust-resistant
- Recommended tightening torque 4 Nm
- Weight per set 0.5 kg.

**3R-901-10E-TX**
- 3Refix Ø10 mm
- Rust-resistant
- Recommended tightening torque 4 Nm
- Weight per set 0.2 kg.

**3R-901-20RS**
- 3Refix Ø20 mm
- Rust-resistant
- Recommended tightening torque 10 Nm
- Weight per set 0.1 kg.

**3R-901-20E**
- 3Refix Ø20 mm
- Rust-resistant
- Recommended tightening torque 10 Nm
- Weight per set 1 kg.

**3R-901-20E-TX**
- 3Refix Ø20 mm
- Rust-resistant
- Recommended tightening torque 10 Nm
- Weight per set 1 kg.

**Connection for air gun, 90815**
For manual operation of pneumatic chucks with air gun.
- Supplied in sets of 2 pcs.

**Locking ring key, 3R-605-GE**
To lift the locking ring of the drawbars.
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- Weight per set 0.5 kg.

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

**3R-901-20E**
- 3Refix Ø20 mm
- Rust-resistant
- Recommended tightening torque 10 Nm
- Weight per set 1 kg.
MacroNano

... Extremely high accuracy.
... High-precision machines are linked together in the production chain, without detracting from the extreme accuracy.
... Feedback to the machine for supplementary machining after inspection is possible. This feedback is only meaningful if the pallet system is at least as accurate as the measuring machine.

Workholding for Nano Precision

Nano-precision machining requires nano-precision referencing of workpieces and tools - a real challenge even with state of the art solutions available in the market. This becomes even more challenging when the references need to be established in the shortest possible time.

MacroNano system is best described in two words as precise and quick! The MacroNano clamping system links the production chain through an ultra-precision coupling both for workpiece and tool holding.

+ Repetition accuracy – within 0,001 mm
+ Locking force – 6000 N
+ Fixed index positions 4x90°
+ Required air pressure, pneumatic chuck – 6±1 bar
+ Recommended max workpiece weight – 50 kg.
This micro structure is produced by Diamond Flycutting operations on two different machines, each equipped with a MacroNano chuck. The square in the middle of the workpiece (right picture) is produced by plane milling on 1st machine, making use of indexing feature of the MacroNano system. The pallet carrying the workpiece is then transferred to the chuck on 2nd machine to produce the micro-grooves, once again using the indexing feature. The zero reference was determined only once on the 1st machine and then carried through the whole process chain using both the indexing precision and the system precision of the MacroNano system; overall structure deviation is less than 0.5 micron.

Measurement of the cube dimensions

Measurement of groove positions

<table>
<thead>
<tr>
<th>Width (mm)</th>
<th>Length (mm)</th>
<th>Vertical dist. (mm)</th>
<th>Horizontal dist. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W₁ 0.9996</td>
<td>l₁ 0.9999</td>
<td>dᵥ₁ 0.4988</td>
<td>dₘ₁ 0.5013</td>
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<td>dᵥ₂ 0.4993</td>
<td>dₘ₂ 0.4995</td>
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<td>dᵥ₃ 0.4996</td>
<td>dₘ₃ 0.5001</td>
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<td>dₘ₆ 0.5002</td>
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<td>W₁₀ 0.9996</td>
<td>l₁₀ 0.9998</td>
<td>dᵥ₁₀ 0.4998</td>
<td>dₘ₁₀ 0.5008</td>
</tr>
</tbody>
</table>

Mean values

Overall structure deviation < 0.5 µm
MacroNano – Chucks, pallets & accessories

Pneumatic table chuck, MacroNano, 3R-600.10-3N
Chuck for mounting on the machine table.
- Fixed index positions 4x90°
- Required air pressure, pneumatic chuck – 6±1 bar
- References of cemented carbide
- Required drawbar 3R-605.1
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 4.4 kg.

Pneumatic chuck, MacroNano, 3R-600.84-3N
Chuck for building-in, for example in a fixture, dividing head or B-axis.
- Fixed index positions 4x90°
- Required air pressure, pneumatic chuck – 6±1 bar
- References of cemented carbide
- Required drawbar 3R-605.1
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 1.8 kg.

Pneumatic table chuck, MacroNano, 3R-600.86-3N
Chuck for building-in, for example in a fixture, dividing head or B-axis.
- Fixed index positions 4x90°
- Required air pressure, pneumatic chuck – 6±1 bar
- References of cemented carbide
- Required drawbar 3R-605.1
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 1.8 kg.

Pneumatic table chuck, MacroNano, 3R-610.46-3N
Chuck for mounting on the machine table with integral air unit. For horizontal and vertical use.
- Fixed index positions 4x90°
- Required air pressure, pneumatic chuck – 6±1 bar
- References of cemented carbide
- Required drawbar 3R-605.1
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 4.4 kg.
MacroNano – Pallets & accessories

**Pallet 54x54 mm, MacroNano, 3R-651.7E-N**
Hardened and precision-cast, with clearance holes for four fixing screws.
- Fixed index positions 4x90°
- Adapted for automatic changing
- Parallel-ground top and bottom face
- Rust resistant
- Supplied in sets of 8 pcs.
- Weight per set 1.2 kg.

**Pallet 54x54 mm, MacroNano, 3R-651E-N**
Hardened with clearance holes for four fixing screws.
- Fixed index positions 4x90°
- Adapted for automatic changing
- Ready for code carrier
- Rust resistant
- Supplied in sets of 8 pcs.
- Weight per set 3.4 kg.

**Pallet 70x70 mm, MacroNano, 3R-601.1E-N**
Hardened with clearance holes for four fixing screws.
- Fixed index positions 4x90°
- Adapted for automatic changing
- Ready for code carrier
- Rust resistant
- Supplied in sets of 5 pcs.
- Weight per set 3.6 kg.

**Pallet dia. 75 mm, MacroNano, 3R-651.75E-N**
Hardened and milled with clearance holes for eight fixing screws.
- Fixed index positions 4x90°
- Parallel-ground top and bottom faces
- Adapted for automatic changing
- Rust resistant
- Supplied in sets of 10 pcs.
- Weight per set 2.7 kg.

**Drawbar, 3R-605.1E**
- Ø20x57.1 mm with flushing holes Ø7 mm.
- Supplied in sets of 10 pcs.

**Check mandrel, MacroNano, 3R-606-N**
Check mandrel with ground C-reference for setting Macro chucks.
- Measuring length 110 mm.
- Weight 2.3 kg.
Locking ring key, 3R-605-GE
To lift the locking ring of the drawbars.
- Supplied in sets of 2.

Check ruler, MacroNano, 3R-606.1-N
For setting angular positions and for centring Macro chucks.
- Measuring length 100 mm.
- Weight 1.4 kg.

Air unit, 3R-611.2
Foot operation of pneumatic chucks.

Air unit, 3R-611.4
Unit for operation of pneumatic chucks. Two functions, opened/closed.

Code carriers, 3R-863.01-10
With pre-programmed unique identity, designed for use on pallets.
- Supplied in sets of 10.
Macromagnum

... allows mounting of both MacroMagnum and Macro pallets
... reduces setting-up times
... ensures precision and quality
... can handle high machining forces
... is suitable for automatic changing with System 3R’s automation program.

Macromagnum is larger variant of the patented Macro system. The high clamping force and the position of the reference surfaces far away from the chuck centre mean that Macromagnum can provide “Macro class” stability and accuracy, even in applications with high machining forces. The double references of the chucks mean that in addition to the Macromagnum pallets, the extensive range of Macro pallets can also be fixed to Macromagnum.

The difference between a pallet and a reference element

Usually the electrode blank is mounted directly on the pallet, which then carries the blank throughout the manufacturing process – from machine to machine, without subsequent alignment.

The reference elements are primarily intended to be mounted on the fixtures or vices in which the workpiece will be clamped. The reference elements are significantly thinner in order to limit the total construction height.

+ Repetition accuracy – within 0.002 mm
+ Locking force – 16 000 N
+ Fixed index positions – 4x90°
+ Required air pressure, pneumatic chuck – 6±1 bar
+ Recommended tightening torque manual chuck – Macro-pallet 4 Nm
+ Recommended tightening torque manual chuck – Macromagnum-pallet 10 Nm.
### MacroMagnum – Chucks

**Spindle chucks**

<table>
<thead>
<tr>
<th>Article number</th>
<th>Drawbar</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>3R-680.24-S</td>
<td>3R-605.2</td>
<td>low profile</td>
</tr>
<tr>
<td>3R-680.1-2</td>
<td>3R-605.1 / 3R-605.4</td>
<td>matching air unit 3R-611.46</td>
</tr>
</tbody>
</table>

**Lathe chucks**

<table>
<thead>
<tr>
<th>Article number</th>
<th>Drawbar</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>3R-680.24-S</td>
<td>3R-605.2</td>
<td>low profile</td>
</tr>
<tr>
<td>3R-680.1-2</td>
<td>3R-605.1 / 3R-605.4</td>
<td>matching air unit 3R-611.46</td>
</tr>
</tbody>
</table>

### Table chucks

<table>
<thead>
<tr>
<th>Article number</th>
<th>Drawbar</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>3R-680.24-S</td>
<td>3R-605.2</td>
<td>low profile</td>
</tr>
<tr>
<td>3R-680.24-V</td>
<td>3R-605.2</td>
<td>vibration-damped</td>
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<tr>
<td>3R-680.10-2</td>
<td>3R-605.1 / 3R-605.4</td>
<td>matching air unit 3R-611.46</td>
</tr>
<tr>
<td>3R-680.19-2</td>
<td>3R-605.1 / 3R-605.4</td>
<td>3Refix Ø20 mm, matching air unit 3R-611.46</td>
</tr>
<tr>
<td>3R-680.1-2V</td>
<td>3R-605.1 / 3R-605.4</td>
<td>vibration-damped, matching air unit 3R-611.46</td>
</tr>
<tr>
<td>90717.10</td>
<td>3R-605.1 / 3R-605.4</td>
<td>vibration-damped, matching air unit 3R-611.46</td>
</tr>
<tr>
<td>3R-680.10-2A</td>
<td>3R-605.1 / 3R-605.4</td>
<td>for chuck adapter, matching air unit 3R-611.46</td>
</tr>
</tbody>
</table>

### Built-in chucks

<table>
<thead>
<tr>
<th>Article number</th>
<th>Drawbar</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>90809.03</td>
<td>3R-605.1 / 3R-605.4</td>
<td>matching air unit 3R-611.46</td>
</tr>
<tr>
<td>3R-5P261712</td>
<td>3R-605.2</td>
<td>low profile, matching air unit 3R-611.2/3R-611.4</td>
</tr>
<tr>
<td>90419.XX</td>
<td>3R-605.1 / 3R-605.4</td>
<td>low profile, matching air unit 3R-611.2/3R-611.4</td>
</tr>
</tbody>
</table>
**MacroMagnum – Chucks**

### Manual chuck, Low profile, 3R-680.24-S
For permanent mounting on the machine spindle or table.
Note: Master pallet 3R-606.1 or 3R-686.1-HD is required at installation.
- Required drawbar 3R-605.2.
- Recommended tightening torque:
  - Macro pallet 4 Nm
  - MacroMagnum pallet 10 Nm
- Fixed index positions 4x90°
- Weight 5 kg.

### Manual table chuck, VDP, 3R-680.24-V
Manual vibration-damped table chuck.
- Required drawbar 3R-605.2
- Recommended tightening torque:
  - Macro pallet 4 Nm
  - MacroMagnum pallet 10 Nm
- Fixed index positions 4x90°
- Weight 10 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 ±1 bar
- Fixed index positions 4x90°
- Sealing ring
- Turbo-locking of MacroMagnum pallets
- Weight 9 kg.

### Pneumatic table chuck, 3R-680.10-2
Pneumatic table chuck.
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6±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, 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±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, VDP, 3R-680.1-2V
Pneumatic vibration-damped chuck.
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6 ±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 13 kg.

### Manual chuck, Low profile, 3R-680.24-S
For permanent mounting on the machine spindle or table.
Note: Master pallet 3R-606.1 or 3R-686.1-HD is required at installation.
- Required drawbar 3R-605.2.
- Recommended tightening torque:
  - Macro pallet 4 Nm
  - MacroMagnum pallet 10 Nm
- Fixed index positions 4x90°
- Weight 5 kg.

### Manual table chuck, VDP, 3R-680.24-V
Manual vibration-damped table chuck.
- Required drawbar 3R-605.2
- Recommended tightening torque:
  - Macro pallet 4 Nm
  - MacroMagnum pallet 10 Nm
- Fixed index positions 4x90°
- Weight 10 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 ±1 bar
- Fixed index positions 4x90°
- Sealing ring
- Turbo-locking of MacroMagnum pallets
- Weight 9 kg.

### Pneumatic table chuck, 3R-680.10-2
Pneumatic table chuck.
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6±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, 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±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, VDP, 3R-680.1-2V
Pneumatic vibration-damped chuck.
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6 ±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 13 kg.
MacroMagnum – Chucks & chuck adapters

**Pneumatic chuck, 3R-SP26712**
For permanent mounting on the machine table.
- Supplied with drawbar 3R-605.2
- 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 chuck, 90809.03**
Pneumatic chuck 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, 3R-680.10-2A**
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-locking
- Weight 12 kg.

**Pneumatic table chuck, 3R-680.10-3**
For permanent mounting on the machine table.
- Supplied with drawbar 3R-605.2
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Flushing duct
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo locking
- Weight 7.5 kg.

**Pneumatic table chuck, 3R-680.1-3**
For permanent mounting on the machine table.
- Supplied with drawbar 3R-605.2
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Flushing duct
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo locking
- Weight 11.5 kg.
MacroMagnum – Chuck adapters

<table>
<thead>
<tr>
<th>Chuck adapters</th>
<th>Article number</th>
<th>Drawbar</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic</td>
<td>90964</td>
<td>3R-605.1 / 3R-605.4 + 3R-605.2</td>
<td>MacroMagnum – Macro</td>
</tr>
<tr>
<td>Pneumatic</td>
<td>3R-682.600-A</td>
<td>3R-605.1 / 3R-605.4 + 3R-605.2</td>
<td>MacroMagnum – Macro</td>
</tr>
<tr>
<td>Pneumatic</td>
<td>90356.20</td>
<td>3R-605.2 / 3R-605.4</td>
<td>Dynafix – MacroMagnum</td>
</tr>
</tbody>
</table>

Pneumatic chuck adapter, MacroMagnum-Macro, 3R-682.600-A

Chuck adapter with built-in pneumatic Macro chuck for mounting in 3R-680.10-2A.
- Weight 4.5 kg

Pneumatic chuck adapter, Dynafix-MacroMagnum, 90356.20

Chuck adapter with built-in pneumatic MacroMagnum chuck for mounting in 90356.10 or similar. See Dynafix for further information.

Manual chuck adapter, MacroMagnum-Macro, 90964

From MacroMagnum into Macro system. Chuck adapter with built-in Macro chuck.
- Requires drawbar 3R-605.2 or similar.
- Solid X & Y-References
- Recommended clamping torque 6 Nm
- Permissible torque 135 Nm
- Clamping force 6000 N
- Max load 50 kg to acquire accuracy 0.002 mm
- Weight 4.3 kg.
**MacroMagnum – Pallets**

NOTE: All Macro pallets can be used in the MacroMagnum chucks

<table>
<thead>
<tr>
<th>Pallets, reference element Ø142 mm</th>
<th>Article number</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardened reference element 12.5 mm</td>
<td>3R-681.71</td>
<td>rust-resistant</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pallets Ø156 mm</th>
<th>Article number</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unhardened pallet 35 mm</td>
<td>3R-681.51-5A</td>
<td></td>
</tr>
<tr>
<td>Unhardened pallet 35 mm</td>
<td>3R-681.156-A</td>
<td>reference element Ø142 mm</td>
</tr>
<tr>
<td>Hardened pallet 35 mm</td>
<td>3R-681.51</td>
<td>3Reflux Ø10 mm</td>
</tr>
<tr>
<td>Three-jaw chuck</td>
<td>90421</td>
<td></td>
</tr>
<tr>
<td>Vice</td>
<td>90879.03</td>
<td></td>
</tr>
</tbody>
</table>

**Pallet Ø142 mm, 3R-681.71**

Hardened pallet with clearance holes for fixing screws.
Note: Must be mounted on the workpiece/fixtures before it is locked in a chuck.
- Rust-resistant
- Weight 1 kg.

**Pallet Ø156 mm, 3R-681.51-5A**

Unhardened pallet with hardened references and hole markings for eight clearance holes.
- Adapted for automatic changing
- Ready for code carrier
- Weight 4.5 kg.
**System 3R tooling for precision machining**

**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.

**Drawbars**

**3R-605.1E**
- Ø20x57.1 mm with flushing holes Ø7 mm
- Supplied in sets of 10 pcs.

**3R-605.1EE**
- Supplied in sets of 40 pcs.

**3R-605.2E**
- Ø20x36.9 mm with Ø7 mm flushing hole
- Supplied in sets of 5 pcs.

**3R-605.2EE**
- Supplied in sets of 20 pcs.

**3R-605.4E**
For round pallets adapted for automatic changing.
- Ø20x57.1 without flushing hole
- Supplied in sets of 10 pcs.

**3R-605.4EE**
- Supplied in sets of 40 pcs.
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.

Three-jaw chuck, 90421
Three-jaw chuck mounted on pallet 3R-681.51-SA.
- Adapted for automatic changing
- Ready for code carrier
- Total height 127 mm
- Weight 16 kg.

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.

User kit, 3R-688.24-S
3R-680.24-S MacroMagnum chuck, Manual, Low profile, 1 pc.
3R-681.51-SA MacroMagnum Pallet Ø156 mm, 4 pcs.
3R-605.2 Drawbar, 2 pcs.
MacroMagnum – Accessories

**Lifting device, 3R-682.7-156**
For dia. 156 mm pallets, prepared for automation only.
- Suitable for: 3R-681.51, 3R-681.51-SA and 3R-681.156-A
- Weight 1 kg.

**3Refix mandrel, 3R-901-10E-TX**
- 3Refix Ø10 mm
- Recommended tightening torque 4 Nm
- Supplied in sets of 10 pcs.
- Weight per set 0.2 kg.

Note: When positioning with 3Refix mandrels – always tighten the expanding mandrel in the R⁰ hole first.

**Control unit, 3R-611.2**
Foot operation of pneumatic chucks.

**Control unit, 3R-611.4**
Unit for operation of pneumatic chucks.
Two functions, opened/closed.

**Control unit, 3R-611.46**
Unit for hand operation of pneumatic chucks. Three functions – open/neutral/closed.

**Torque wrench, 3R-614-04**
For Ø10 mm 3Refix mandrels and manual MacroMagnum chucks.
- 4 Nm.

**Code carriers, 3R-863.01-10**
With pre-programmed unique identity, designed for pallet use.
- Supplied in sets of 10 pcs.

**Connection for air gun, 90815**
For manual operation of pneumatic chucks with air gun.
- Supplied in sets of 2 pcs.
Matrix

... reduces setting-up times
... ensures precision and quality
... has automatic air-blast cleaning of the references
... is sealed against dirt and swarf – withstands severe work environments
... has enhanced clamping force – turbo locking
... is suitable for automatic changing with System 3R’s automation program.

The Matrix system measures to reduce the downtime of your machines are significantly more worth while than chasing seconds in the actual machining process. What matters is to keep the machines running. And that’s when you need an interface that gives fast setting-up.

The Matrix system is just that kind of interface. Setting-up in parallel away from the machine while it is working and then setting up in a matter of seconds in the stationary machine. Important for long runs, but crucial for the profitability of short runs or one-piece production.

The design has been optimised for metal-cutting machining and is ideal for work involving high machining forces. The generous diameter of the drawbar means short distances between the references and the applied locking force, giving maximum stability and accuracy. The inherent properties of the Matrix system truly come into their own in tough machining applications.

As well as extreme accuracy, Matrix features low construction height, ultra-precise indexing, a drawbar with through hole. The through hole allows high/long workpieces to be sunk into the chuck for stable/rigid fixation.
System 3R tooling for precision machining

**Pneumatic chuck, Matrix 110, 3R-690.1-110**
Chuck for permanent mounting on the machine table or into a PM press.
- Fixed index positions 4x90°
- Hardened references
- Clamping force 9000 N
- Permissible torque 100 Nm
- Required drawbar 3R-695.2-110
- Required air pressure 6±1 bar
- Weight 2.5 kg.

**Pallet, Matrix 110, 3R-691.1-110**
- Fixed index positions 4x90°
- Permissible press load 25 ton
- Permissible torque 100 Nm
- Required drawbar 3R-695.2-110 or similar
- Adapted for automatic changing
- Weight 0.5 kg.
Note: Not self carrying, requires extra support.

**Drawbar, Matrix 110, 3R-695.2-110**
- Weight 0.3 kg.
Note: In automation the gripper has to grip on the pallet and not on the drawbar.

**Check ruler, Matrix 110, 3R-696.1-110**
For setting flatness and angular positions.
- Ground hole for centering.
- Ready for code carrier
- Measuring length 80 mm.
- Adapted for automatic changing
- Weight 1.6 kg.

Three-jaw chuck mounted on a pallet.
Matrix 142

Pneumatic chuck, Matrix 142, 3R-690.1-142
Chuck for permanent mounting on the machine table or into a PM press.
- Fixed index positions 4x90°
- Hardened references
- Clamping force 12000 N
- Permissible torque 300 Nm
- Required drawbar 3R-695.2-142
- Required air pressure 6±1 bar
- Weight 7 kg.

Drawbar, Matrix 142, 3R-695.2-142
- Weight 0.5 kg.
Note: In automation the gripper has to grip on the pallet and not on the drawbar.

Pallet, Matrix 142, 3R-691.1-142
- Fixed index positions 4x90°
- Permissible press load 75 ton
- Permissible torque 300 Nm
- Required drawbar 3R-695.2-142 or similar
- Adapted for automatic changing
- Weight 1.2 kg.
Note: Not self carrying, requires extra support.

Check ruler, Matrix 142, 3R-696.1-142
For setting flatness and angular positions. Ground hole for centering.
- Ready for code carrier
- Measuring length 100 mm
- Adapted for automatic changing
- Weight 3.4 kg.

Matrix application:
Pallet with special fixture for protruding workpiece in this case a “hip joint”
Matrix 185

Pneumatic chuck, Matrix 185, 3R-690.1-185
Chuck for permanent mounting on the machine table or into a PM press.
- Fixed index positions 4x90°
- Hardened references
- Clamping force 16 000 N
- Permissible torque 600 Nm
- Required drawbar 3R-695.2-185
- Required air pressure 6±1 bar
- Weight 9 kg.

Pallet, Matrix 185, 3R-691.1-185
- Fixed index positions 4x90°
- Permissible press load 100 ton
- Permissible torque 600 Nm
- Required drawbar 3R-695.2-185 or similar
- Adapted for automatic changing
- Weight 1.7 kg.

Note: Not self carrying, requires extra support.

Drawbar, Matrix 185, 3R-695.2-185
- Weight 0.8 kg.

Note: In automation the gripper has to grip on the pallet and not on the drawbar.

Check ruler, Matrix 185, 3R-696.1-185
For setting flatness and angular positions. Ground hole for centering.
- Ready for code carrier
- Measuring length 125 mm.
- Adapted for automatic changing
- Weight 5.7 kg.
Matrix 220

**Pneumatic chuck, Matrix 220, 3R-690.1-220**
Chuck for permanent mounting on the machine table or into a PM press.
- Fixed index positions 4x90°
- Hardened references
- Clamping force 18500 N
- Permissible torque 600 Nm
- Required drawbar 3R-695.2-220
- Required air pressure 6±1 bar
- Weight 11 kg.

**Pallet, Matrix 220, 3R-691.1-220**
- Fixed index positions 4x90°
- Permissible press load 150 ton
- Permissible torque 600 Nm
- Required drawbar 3R-695.2-220 or similar
- Adapted for automatic changing
- Weight 2.6 kg.

Note: Not self carrying, requires extra support.

**Drawbar, Matrix 220, 3R-695.2-220**
- Weight 1.3 kg.

Note: In automation the gripper has to grip on the pallet and not on the drawbar.

**Check ruler, Matrix 220, 3R-696.1-220**
For setting flatness and angular positions. Ground hole for centering.
- Ready for code carrier
- Measuring length 150 mm.
- Adapted for automatic changing
- Weight 7.5 kg.

Matrix application:
The pallet is turnable for machining of both sides of a optical lens.
Matrix 260 & accessories

**Pneumatic chuck, Matrix 260, 3R-690.1-260**

Chuck for permanent mounting on the machine table or into a PM press.
- Fixed index positions 4x90°
- Hardened references
- Clamping force 24000 N
- Permissible torque 600 Nm
- Required drawbar 3R-695.2-260
- Required air pressure 6±1 bar
- Weight 13 kg.

**Pallet, Matrix 260, 3R-691.1-260**

- Fixed index positions 4x90°
- Permissible press load 200 ton
- Permissible torque 600 Nm
- Required drawbar 3R-695.2-260 or similar
- Adapted for automatic changing
- Weight 3.2 kg.

Note: Not self carrying, requires extra support.

**Drawbar, Matrix 260, 3R-695.2-260**

- Weight 1.5 kg.

Note: In automation the gripper has to grip on the pallet and not on the drawbar.

**Check ruler, Matrix 260, 3R-696.1-260**

For setting flatness and angular positions. Ground hole for centering.
- Ready for code carrier
- Measuring length 200 mm.
- Adapted for automatic changing
- Weight 10 kg.

**Air unit, 3R-611.2**

Foot operation of pneumatic chucks.

**Air unit, 3R-611.4**

Unit for operation of pneumatic chucks. Two functions, opened/closed.

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

With pre-programmed unique identity, designed for pallet use.
- Supplied in sets of 10.
GPS 70 & GPS 120

... reduces setting-up times.
... ensures precision and quality.
... is sealed against dirt and swarf.
... has pallet clamping without drawbar.
... has inexpensive, lightweight pallets.
... suitable for automatic changing with System 3R’s automation program.

The machining zero point is defined by the centre of the chuck in the GPS 70 and GPS 120 system. The chucks can be mounted on the machine table of any machine tool.

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

The economical, pressure-die-cast aluminium pallets are very light, making them also suitable for manual handling. Naturally GPS 70 and GPS 120 are 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.

+ Repetition accuracy – within 0.002 mm
+ Indexing accuracy – within 0.005 mm
+ Locking force – 3 000-3 800 N
+ Fixed index positions – 4x90°
+ Required air pressure, pneumatic chuck – 6 bar
+ Recommended max workpiece weight GPS 70 – 10 kg
+ Recommended max workpiece weight GPS 120 – 20 kg
GPS 70 & GPS 120

Die-cast aluminium & steel pallets with standardised hole pattern. Minimum height in automation magazines by clamping without drawbar.

Pallet handling contour for automated pallet change by robot.

Spring loaded clamping mechanism. Releasing by air.

GPS 120 ring with references.

GPS 70 ring with references.

Hardened chuck body with prisms for X/Y centring made out of one piece for maximum stability. Indexing 4x90°.

Sealing rings for completely sealed chuck-pallet interface against dirt and swarf.

The Z-references are air blast cleaned, through nozzles in the Z-references of the chuck.
## GPS 70 – Chucks & pallets

### Chucks

<table>
<thead>
<tr>
<th>Feature</th>
<th>Article number</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual, cube</td>
<td>C 530 210</td>
<td></td>
</tr>
<tr>
<td>Manual, round</td>
<td>C 188 300</td>
<td></td>
</tr>
<tr>
<td>Pneumatic manual (automatic)</td>
<td>C 188 720</td>
<td>for manual machining operations</td>
</tr>
<tr>
<td>Pneumatic automatic/manual</td>
<td>C 198 700</td>
<td>for manual &amp; automatic machining operations</td>
</tr>
<tr>
<td>Flange</td>
<td>C 188 730</td>
<td>fits on C 188 720 &amp; C 188 700</td>
</tr>
</tbody>
</table>

### Pallets

<table>
<thead>
<tr>
<th>Feature</th>
<th>Article number</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast aluminium</td>
<td>C 695 050</td>
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</tr>
<tr>
<td>Cast aluminium</td>
<td>C 695 040</td>
<td></td>
</tr>
<tr>
<td>Steel</td>
<td>C 695 265</td>
<td></td>
</tr>
<tr>
<td>Steel</td>
<td>C 695 270</td>
<td>with pallet protection ring</td>
</tr>
<tr>
<td>Pallet protecting ring</td>
<td>C 695 295</td>
<td>fits on C 695 265</td>
</tr>
</tbody>
</table>

© Pallet with coined cams © Pallet with springy hardened cams
GPS 70 – Chucks

GPS 70 Machining cube, manual, C 530 210
For milling, grinding, die-sinking EDM, presetting and measuring station. Suitable for the 5-sided machining of electrodes and workpieces. One side is ground square with the base surface.
- Dimensions 100 x 100 x 70 mm
- Mounting (from the top) 70 x 70 mm, 4x M8 screws through holes (horizontal)
- Mounting (from the bottom) on GPS 240 pallet: 80 x 80 mm, 4x M8 screws threaded holes (horizontal), 40 x 40 mm, 4x M8 screws threaded holes (vertical)
- Releasing manual with Allen wrench.

GPS 70 Chuck, manual, C 188 300
For turning, milling, grinding, die-sinking EDM.
- Dimensions Ø72.4 x 57.4 mm
- Mounting 4x M6 screws
- Releasing manual with Allen wrench
- Flushing lateral inlet.

GPS 70 Chuck, pneumatic, C 188 720
For die-sinking EDM, turning, milling, grinding.
- Dimensions Ø72.4 x 57.4 mm
- Mounting 4x M6 screws
- Releasing pneumatic, 6 bar
- Air-blast cleaning of Z-references.

GPS 70 Chuck, pneumatic, C 198 700
For Automation.
- Dimensions Ø99 x 22 mm
- Mounting 6x M6 screws (fits on flange C 188 730)
- Releasing pneumatic, 6 bar
- Required air pressure 6 bar
- Air-blast cleaning of Z-references.

Flange for GPS 70 chuck, C 188 730
Fits on C 188 720 and C 198 700.
- Material: stainless steel, heat pre-treated
- Dimensions Ø140 x 20 mm
- Mounting 6x M8
- Connections:
  A = releasing/clamping
  B = Air-blast cleaning of Z-references
  C = drain/pallet room venting
  D = piston room venting.
GPS 70 – Pallets

GPS 70 Aluminium pallet, C 695 050
Cast aluminium pallet.
• Construction height 16.7 ±0.01 mm
• X/Y-centring with coined cam
• Weight 0.2 kg.
• Not prepared for automation.

Set of pallets, S 500 010
• C 695 050 supplied in sets of 9 pcs.

GPS 70 Aluminium pallet, C 695 040
Cast aluminium pallet.
• Construction height 16.7 ±0.01 mm
• X/Y-centring with coined cam
• Ready for code carrier fixture C 960 740
• Weight 0.2 kg.
• Prepared for automation.

Set of pallets, S 500 011
• C 695 040 supplied in sets of 9 pcs.

GPS 70 Steel pallet, C 695 265
Workpiece and device holder for precision production.
• Construction height 22 ±0.005 mm
• X/Y-centring with springy cams, hardened, stainless
• Ready for code carrier fixture C 960 740
• Weight 0.5 kg.
• Prepared for automation.

GPS 70 Steel pallet, C 695 270
Workpiece and device holder for precision production with pallet protection ring aluminium.
• Construction height 22 ±0.005 mm
• X/Y-centring with springy cams, hardened, stainless
• Ready for code carrier 3R-863.01
• Weight 0.5 kg.
• Prepared for automation.

GPS 70 Pallet protection ring, C 695 295
Chip protection between pallet and chuck for GPS 70 steel pallets C 695 265.
• Material plastic
• Dimensions Ø69.4 x 10.8 mm
• Use with code carrier.
## GPS 120 – Chucks & pallets

### Chucks

<table>
<thead>
<tr>
<th>Feature</th>
<th>Article number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual, cube</td>
<td>C 530 310</td>
</tr>
<tr>
<td>Manual, round</td>
<td>C 188 320</td>
</tr>
<tr>
<td>Pneumatic manual (automatic)</td>
<td>C 188 700</td>
</tr>
<tr>
<td>Pneumatic automatic/manual</td>
<td>C 188 770</td>
</tr>
<tr>
<td>Pneumatic automatic/manual</td>
<td>C 190 120</td>
</tr>
<tr>
<td>Flange</td>
<td>C 188 710</td>
</tr>
<tr>
<td>Flange</td>
<td>C 190 125</td>
</tr>
</tbody>
</table>

### Pallets

<table>
<thead>
<tr>
<th>Feature</th>
<th>Article number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cast aluminium</td>
<td>C 695 140</td>
</tr>
<tr>
<td>Cast aluminium</td>
<td>C 695 150</td>
</tr>
<tr>
<td>Pneumatic manual (automatic)</td>
<td>C 695 365</td>
</tr>
<tr>
<td>Pneumatic automatic/manual</td>
<td>C 695 370</td>
</tr>
<tr>
<td>Pneumatic automatic/manual</td>
<td>C 695 395</td>
</tr>
<tr>
<td>Pallet with coined cams</td>
<td></td>
</tr>
<tr>
<td>Pallet with springy hardened cams</td>
<td></td>
</tr>
</tbody>
</table>
GPS 120 – Chucks

GPS 120 Machining cube, manual, C 530 310
For turning, milling, grinding, die-sinking EDM, presetting and measuring station. Suitable for the 5-sided machining of electrodes and workpieces. One side is ground square with the base surface.
- Dimensions Ø108.4 x 57.4 mm
- Mounting (from the top) 12 x 120 mm, 4x M8 screws threaded holes [horizontal]
- Mounting (from the bottom): on GPS 240 pallet 90 x 90 mm, 4x M8 screws through holes [horizontal], 120 x 40 mm, 4x M8 screws threaded holes [vertical]
- Releasing manual with Allen wrench.

GPS 120 Chuck, manual, C 188 320
For turning, milling, grinding, die-sinking EDM.
- Dimensions Ø108.4 x 57.4 mm
- Mounting 4x M8 screws
- Releasing manual with Allen wrench
- Flushing lateral inlet.

GPS 120 Chuck, pneumatic, C 188 700
For die-sinking EDM, turning, milling, grinding.
- Dimensions Ø118 x 22 mm
- Mounting 6x M6 screws [on flange C 188 710]
- Releasing: pneumatic, 6 bar
- Required air pressure 6 bar
- Air-blast cleaning of Z-references.

GPS 120 Chuck, pneumatic, C 188 770
For Automation.
- Dimensions Ø118 x 22 mm
- Mounting 6x M6 screws [on flange C 188 710]
- Releasing pneumatic, 6 bar
- Required air pressure 6 bar
- Air-blast cleaning of Z-references.

Flange for GPS 120 chuck, C 188 710
Fits on C 188 700 and C 188 770.
- Material stainless steel, heat pre-treated
- Dimensions Ø160 x 20 mm
- Mounting 6x M8
- Connections:
  A = releasing/clamping
  B = Air-blast cleaning of Z-references
  C = drain/pallet room venting
  D = piston room venting
GPS 120 – Pallets

GPS 120 Aluminium pallet, C 695 140
Cast aluminium pallet,
- Construction height 16.6 ±0.01 mm
- X/Y-centring with coined cam
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 0.5 kg.

Set of pallets, S 500 021
- C 695 140 supplied in sets of 4 pcs.

GPS 120 Steel pallet, C 695 365
Workpiece and device holder for precision production.
- Construction height 26 ±0.005 mm
- X/Y-centring with springy cams, hardened, stainless
- Not for automatic changing
- Weight 1.6 kg.

GPS 120 Pallet protection ring, C 695 395
Chip protection between pallet and chuck for GPS 120 steel pallets C 695 365.
- Material plastic
- Dimensions Ø118 x 15.7 mm
- Not to use with code carrier.

GPS 120 Steel pallet, C 695 370
Workpiece and device holder for precision production with pallet protection ring aluminium.
- Construction height 26 ±0.005 mm
- X/Y-centring with springy cams, hardened, stainless
- Adapted for automatic changing
- Ready for code carrier 3R-863.01
- Weight 1.7 kg.
GPS 120 with medium connection

The chuck with medium connection is able to transfer the compressed air directly to the pallet via 4 interfaces.

Fixtures and clamping elements in the automation system, amongst other things, can be operated pneumatically with the pallet C 695 150.

The GPS 120 standard pallets can also be used on the system.

GPS 120 Chuck, pneumatic, C 190 120
With medium connection fourfold.
- Stainless steel, hardened
- Dimensions Ø118 x 22 mm
- Mounting 6x M6 screws (on flange C 190 125)
- Releasing pneumatic, 6 bar
- Required air pressure 6 bar
- Air-blast cleaning of Z-references.
- Medium connection fourfold, pneumatic 6 bar.

GPS 120 Aluminium pallet, C 695 150
With medium connection fourfold. Fits on GPS 120 chuck C 190 120.
- Medium connection compressed air, max. 6 bar
- Construction height 16.6 ±0.01 mm
- X/Y-centring with coined cam
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740

Flange for GPS 120 chuck, C 190 125
With medium connection fourfold. Fits on GPS 120 chuck C 190 120.
- Stainless steel, heat pre-treated
- Dimensions Ø160 x 20 mm
- Mounting 6x M8
- Connections:
  A = releasing/clamping
  B = Air-blast cleaning of Z-references
  C = drain/pallet room venting
  D = piston room venting
  E-G = medium connection.
GPS 70 & 120 – Accessories

GPS 70 Reference pallet, C 846 360
For the axial and concentric XY alignment of the GPS 70/120 chuck.
- Material: stainless steel, hardened
- Height: 47 mm
- Construction: 2-piece, form-fitting design
- Repetition accuracy of the centre bore 0.002 mm/0°
- Parallelism with system axis 0.003 mm/120 mm.
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740.

GPS 70 Inspection plug, C 846 260
For the radial alignment of the GPS 70/120 chuck.
- Material: stainless steel, hardened
- Height: 160 mm
- Construction: 2-piece, form-fitting design
- Concentricity: 0.005 mm/150 mm.
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740.

GPS 70/120 Clamping force testing device, C 846 900
For measuring and adjusting the clamping force of manual chucks and for measuring the clamping force of pneumatic chucks.

GPS 70 Spare parts set, S 230 150
For GPS 70 pneumatic chucks C 188 720 and C 198 700.
- Contains all the elements for a complete service.

GPS 70/120 Spare parts set, S 230 100
For GPS 70/120 pneumatic chucks C 188 700 and C 188 770.
- Contains all the elements for a complete service.
GPS 70 & 120 – Accessories

GPS 70/120 Pallet seal, C 531 000
Sealing of unused bores.
- Material elastomer
- Delivery includes set of 100 pieces.

Control unit, C 960 500
Manual control unit for clamping and releasing pneumatic chucks.
- Connector materials included in delivery
- Connections clamping/releasing, cleaning of Z-supports.

Code carriers, 3R-863.01
With pre-programmed unique identity, designed for GPS 70/120 pallets.

Code carrier, fixture, C 960 740
Fixture for code carrier 3R-863.01-10.
- The code carrier can be clicked into position.

GPS 120 Chip protection, C 695 176
Chip protection ring for GPS 120 chucks when used manually with GPS 70 pallets C 695 050.
- Material aluminium, anodized
- Dimensions Ø120 x 13.5 mm.
System 3R tooling for precision machining

... reduces setting-up times.
... ensures precision and quality.
... is sealed against dirt and swarf.
... has inexpensive, lightweight pallets.
... suitable for automatic changing with System 3R’s automation program.

The machining zero point is defined by the centre of the chuck in the GPS 240 system.

The system is made for universal use and can be used in all kinds of applications milling, turning, grinding, EDM and measuring.

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.

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

Their standardised hole pattern of the pressure-die-cast aluminium pallets allows the fixation of workpieces, fixtures and accessories such as vices, three-jaw chucks and magnetic tables directly on the pallet from below. This gives collision-free mounting, even with five-sided machining.

+ Repetition accuracy – within 0.002 mm
+ Indexing accuracy – within 0.005 mm
+ Locking force – 30 000 N (with force boost 80 000 N)
+ Fixed index positions – 4x90°
+ Required air pressure, pneumatic chuck – 6 bar
+ Recommended max workpiece weight – 100 kg
Die-cast aluminium pallets with standardised hole pattern or solid aluminium pallets.

The Z-references are air-blast cleaned, through nozzels in the Z-references of the chuck.

Hardened chuck body with prisms for X/Y centring made out of the piece for maximum stability. Indexing 4x90°.

Connection bloc.

Clamping mechanism with spring clamping force by springs and clamping with balls.

Seal for a completely sealed chuck-pallet interface against dirt and swarf.

Spring loaded clamping mechanism. Releasing by air.

Pallet with handles for manual pallet handling or automated pallet change by robot.

Die-cast aluminium pallets with standardised hole pattern or solid aluminium pallets.
## GPS 240 – Chucks & pallets

### Chucks square

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Feature</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 219 000</td>
<td>Pneumatic manual for manual machining operations</td>
<td>60</td>
</tr>
<tr>
<td>C 219 100</td>
<td>Pneumatic automatic/manual for manual and automatic machining operations</td>
<td>60</td>
</tr>
<tr>
<td>C 219 200</td>
<td>Pneumatic automatic/manual connection from below</td>
<td>60</td>
</tr>
<tr>
<td>C 219 600</td>
<td>Pneumatic automatic/manual built-in pneumatic Macro chuck</td>
<td>60</td>
</tr>
<tr>
<td>C 219 800</td>
<td>Pneumatic automatic/manual connection from below, medium connection</td>
<td>60</td>
</tr>
<tr>
<td>C 210 060</td>
<td>Pneumatic automatic/manual dummy chuck</td>
<td>61</td>
</tr>
</tbody>
</table>

### Chucks round

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Feature</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 217 100</td>
<td>Pneumatic manual through hole Ø54mm</td>
<td>61</td>
</tr>
</tbody>
</table>

### Pallets square

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Feature</th>
<th>Size [mm]</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 694 100</td>
<td>Cast aluminium</td>
<td>240x240</td>
<td>62</td>
</tr>
<tr>
<td>C 694 300</td>
<td>Cast aluminium</td>
<td>240x240</td>
<td>62</td>
</tr>
<tr>
<td>C 694 400</td>
<td>Cast aluminium</td>
<td>240x240</td>
<td>62</td>
</tr>
<tr>
<td>C 694 610</td>
<td>Solid aluminium</td>
<td>240x240</td>
<td>62</td>
</tr>
<tr>
<td>C 694 640</td>
<td>Solid aluminium</td>
<td>300x300</td>
<td>62</td>
</tr>
<tr>
<td>C 694 810</td>
<td>Solid aluminium</td>
<td>240x240</td>
<td>62</td>
</tr>
</tbody>
</table>

### Pallets round

<table>
<thead>
<tr>
<th>Art. No.</th>
<th>Feature</th>
<th>Ø [mm]</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 694 450</td>
<td>Cast aluminium</td>
<td>256</td>
<td>63</td>
</tr>
<tr>
<td>C 694 650</td>
<td>Solid aluminium</td>
<td>256</td>
<td>63</td>
</tr>
<tr>
<td>C 697 100</td>
<td>Solid aluminium</td>
<td>256</td>
<td>63</td>
</tr>
</tbody>
</table>

- Pallet with coined cams
- Pallet with spring-loaded pin
- Pallet with springy hardened cams

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59 System 3R tooling for precision machining
GPS 240 – Chucks

**GPS 240 Chucks**
- Built-up height 52 mm
- Required air pressure 6 bar
- Air-blast cleaning of the references
- Weight 17 kg.

**C 219 000**
For manual machining operations.
- One air connection
- Clamping force 30 000 N
- Recommended actuator C 810 820 or C 810 710.

**C 219 100**
For manual and automatic machining operations.
- 5 air connections
- Clamping force 30 000 N/80 000 N
- Recommended actuator C 810 830.

**GPS 240 Chuck automatic, C 219 200**
For manual and automatic machining operations.
- Built-up height 52 mm
- Air connections positioned centrally on the underside – prism – air-blast cleaning of Z-references – clamping/releasing – Turbo/ventilation
- Clamping force 30 000 N/80 000 N
- Weight 17 kg.

**GPS 240 Chuck automatic with medium connection, C 219 800**
For manual and automatic machining operations.
- Built-up height 52 mm
- Air connections positioned centrally on the underside – prism – air-blast cleaning of Z-references – clamping/releasing – Turbo/ventilation
- Medium connection: 2-fold, pneumatic 6 bar.
- Clamping force 30 000 N/80 000 N
- Weight 17 kg.
**GPS 240 – Chucks**

**GPS 240 Dummy chuck, C 210 060**
Dummy chuck for clamping a GPS 240 pallet on an exchange or draining station.
- Required air pressure 6 bar
- Weight 9.5 kg.

**GPS 240 Pneumatic chuck with built-in Macro chuck, C 219 600**
Pneumatic chuck with built-in Macro chuck. Intended mainly for measuring machines. The following pallets can be mounted in GPS 240 by means of C 219 600 Macro 54x54 mm and Macro 70x70 mm.
- Required air pressure 6 bar
- Recommended control unit C 810 810
- Air-blast cleaning of the references
- Weight 22 kg.

**GPS 240 Chuck manual round with hole Ø54 mm, C 217 100**
Pneumatic chuck for applications in lathes and milling machines.
- Built-up height 52 mm
- Required air pressure 6 bar
- Air-blast cleaning of Z-references
- Clamping force 30 000 N
- Recommended control unit C 810 820 or C 810 710
- Weight 16 kg.
GPS 240 – Pallets

GPS 240 Pallet EDM/Grinding, C 694 100
Cast aluminium pallet.
- Construction height 48.1 ±0.01 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 4.8 kg
- Supplied with C 531 500 sealing plugs.

S 500 090
- C 694 100 supplied in sets of 4 pcs.

S 500 100
- C 694 100 supplied in sets of 10 pcs.

GPS 240 Pallet ‘Adaption’, C 694 300
Ground cast aluminium pallet. Suitable for fixtures.
- Construction height 48.0 ±0.005 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 4.8 kg
- Supplied with C 531 500 sealing plugs.

GPS 240 Pallet ‘Production’, C 694 400
Cast aluminium pallet. Suitable for high-speed milling and arduous milling operations.
- Construction height 48.0 ±0.01 mm
- X/Y-centring with coined cam
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 4.8 kg
- Recommended workpiece weight 100 kg.
- Supplied with C 531 500 sealing plugs.

S 500 160
- C 694 400 supplied in sets of 4 pcs.

S 500 170
- C 694 400 supplied in sets of 10 pcs.

GPS 240 Pallet 240x240 mm, C 694 610
Ground solid aluminium pallet. Suitable for fixtures and accessories.
- Construction height 48.0 ±0.005 mm
- X/Y-centring with coined cam
- Prepared for automation
- Flatness 0.01 mm
- Ready for code carrier fixture C 960 740
- Weight 7.4 kg.
- Recommended workpiece weight 100 kg.

GPS 240 Pallet 300x300 mm, C 694 640
Ground solid aluminium pallet. Suitable for fixtures and accessories.
- Construction height 48.0 ±0.01 mm
- X/Y-centring with coined cam
- Flatness 0.02 mm
- Prepared for automation
- Ready for code carrier fixture C 960 740
- Weight 9 kg.
- Recommended workpiece weight 100 kg.
GPS 240 – Pallets

GPS 240 Magnetic table, C 694 260
High-precision magnetic plate for grinding work and for erode.
- Magnetic field height 5 mm
- Holding force 100 N/cm²
- Dimensions 240x240x96 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 23 kg.

GPS 240 Magnetic table, C 694 270
Strong magnetic plate for milling.
- Magnetic field height 10 mm
- Holding force 150 N/cm²
- Dimensions 240x240x96 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 27.1 kg.

GPS 240 Master pallet, C 846 600
The pallet has a ground reference ruler and a ground indication hole for alignment of the references.
- X/Y-centring: with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 7.4 kg.

GPS 240 Master pallet, C 846 610
Pallet with coined cams.

GPS 240 Pallets round, C 697 100
Ground solid aluminium pallet. Suitable for fixtures.
- Construction height 46 ±0.01 mm
- X/Y-centring: with springy cams, hardened, stainless
- Adapted for automaticchanging
- Ready for code carrier fixture C 960 740
- Weight 6.2 kg.

GPS 240 Magnetic table, C 694 650
High-precision magnetic plate for grinding work and for erode.
- Magnetic field height 5 mm
- Holding force 100 N/cm²
- Dimensions 240x240x96 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 23 kg.

GPS 240 Magnetic table, C 694 560
High-precision magnetic plate for grinding work and for erode.
- Magnetic field height 5 mm
- Holding force 100 N/cm²
- Dimensions 240x240x96 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 23 kg.

GPS 240 Pallet round, C 694 650
Ground solid aluminium pallet. Suitable for fixtures.
- Construction height 48.0 ±0.005 mm
- X/Y-centring with coined cam
- Adapted for automaticchanging
- Ready for code carrier fixture C 960 740
- Weight 6.5 kg.

GPS 240 – Pallets

GPS 240 Magnetic table, C 694 260
High-precision magnetic plate for grinding work and for erode.
- Magnetic field height 5 mm
- Holding force 100 N/cm²
- Dimensions 240x240x96 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 23 kg.

GPS 240 Magnetic table, C 694 270
Strong magnetic plate for milling.
- Magnetic field height 10 mm
- Holding force 150 N/cm²
- Dimensions 240x240x96 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 27.1 kg.

GPS 240 Master pallet, C 846 600
The pallet has a ground reference ruler and a ground indication hole for alignment of the references.
- X/Y-centring: with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 7.4 kg.

GPS 240 Master pallet, C 846 610
Pallet with coined cams.

GPS 240 Pallets round, C 697 100
Ground solid aluminium pallet. Suitable for fixtures.
- Construction height 46 ±0.01 mm
- X/Y-centring: with springy cams, hardened, stainless
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 6.2 kg.

GPS 240 – Pallets

GPS 240 Magnetic table, C 694 260
High-precision magnetic plate for grinding work and for erode.
- Magnetic field height 5 mm
- Holding force 100 N/cm²
- Dimensions 240x240x96 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 23 kg.

GPS 240 Magnetic table, C 694 270
Strong magnetic plate for milling.
- Magnetic field height 10 mm
- Holding force 150 N/cm²
- Dimensions 240x240x96 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 27.1 kg.

GPS 240 Master pallet, C 846 600
The pallet has a ground reference ruler and a ground indication hole for alignment of the references.
- X/Y-centring: with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 7.4 kg.

GPS 240 Master pallet, C 846 610
Pallet with coined cams.

GPS 240 Pallets round, C 697 100
Ground solid aluminium pallet. Suitable for fixtures.
- Construction height 46 ±0.01 mm
- X/Y-centring: with springy cams, hardened, stainless
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 6.2 kg.

GPS 240 Magnetic table, C 694 650
High-precision magnetic plate for grinding work and for erode.
- Magnetic field height 5 mm
- Holding force 100 N/cm²
- Dimensions 240x240x96 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 23 kg.

GPS 240 Magnetic table, C 694 560
High-precision magnetic plate for grinding work and for erode.
- Magnetic field height 5 mm
- Holding force 100 N/cm²
- Dimensions 240x240x96 mm
- X/Y-centring with spring-loaded pin
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 23 kg.

GPS 240 Pallet round, C 694 650
Ground solid aluminium pallet. Suitable for fixtures.
- Construction height 48.0 ±0.005 mm
- X/Y-centring with coined cam
- Adapted for automatic changing
- Ready for code carrier fixture C 960 740
- Weight 6.5 kg.
GPS 240 – Chuck adapters

**Pneumatic chuck adapter, GPS 240-GPS 120, C 522 800**

Chuck adapter with built-in pneumatic GPS 120 chuck for mounting in C 219 800.
- Built-up height 54 mm
- X/Y-centring with springy cams, hardened, stainless
- Adapted for automatic changing
- Weight 7.9 kg.

**Pneumatic chuck adapter, GPS 240-GPS 70, C 522 810**

Chuck adapter with built-in pneumatic GPS 70 chuck for mounting in C 219 800.
- Built-up height 54 mm
- X/Y-centring with springy cams, hardened, stainless
- Adapted for automatic changing
- Weight 7.9 kg.

**Pneumatic chuck adapter, GPS 240-GPS 120, C 522 820**

Chuck adapter with built-in pneumatic GPS 120 chuck for mounting in C 219 800.
- Built-up height 100 mm
- X/Y-centring with springy cams, hardened, stainless
- Adapted for automatic changing
- Weight 8.9 kg.

**Pneumatic chuck adapter, GPS 240-GPS 70, C 522 830**

Chuck adapter with built-in pneumatic GPS 70 chuck for mounting in C 219 800.
- Built-up height 100 mm
- X/Y-centring with springy cams, hardened, stainless
- Adapted for automatic changing
- Weight 8.9 kg.

**Pneumatic chuck adapter, GPS 240-Macro, C 522 520**

Chuck adapter with built-in pneumatic Macro chuck for mounting in C 219 800.
- Built-up height 80 mm
- X/Y-centring with springy cams, hardened, stainless
- Adapted for automatic changing
- Weight 8.5 kg.

**Pneumatic chuck adapter, GPS 240-MacroMagnum, C 522 540**

Chuck adapter with built-in pneumatic Macro Magnum chuck for mounting in C 219 800.
- Built-up height 80 mm
- X/Y-centring with springy cams, hardened, stainless
- Adapted for automatic changing
- Weight 11.7 kg.

**Pallet with springy cams, hardened, stainless.**
GPS 240 – Accessories

GPS 240 Controllers

C 810 820
Unit for controlling pneumatic chucks C 217 100 and C 219 000.
• 1 connection [clamping/releasing].

C 810 830
Unit for controlling pneumatic chucks C 219 100.
• 4 connections - prism - air-blast cleaning of Z-references - clamping/releasing - Turbo/ventilation.

C 810 850
Unit to control two pneumatic chucks.
• 5 connections - prism - air-blast cleaning of Z-references - clamping/releasing - Turbo/ ventilation - ventilation tube.

Hand gate valve, C 810 710
For controlling pneumatic chucks C 217 100, C 217 400 and C 219 000.

GPS 240 Sealing plugs, C 531 260
Plugs for sealing fixation screw holes on GPS 240 chucks.
• Supplied in sets of 20.

GPS 240 Spare parts set, S 220 000
Contains all elements for a normal service.
• Suitable for all square chucks, apart from C 219 400
• Recommendation: every 2 years if used manually and annually if used in the automation system.

GPS 240 Spare parts set, S 220 400
Contains all elements for a normal service.
• Suitable for C 217 100
• Recommendation, every 2 years in manual use.
GPS 240 – Accessories

Sealing, C 219 007
The chuck seal is a wear part which should be replaced every three to six months.
• Material Viton.

Sealing plugs, C 531 500
Plugs for sealing GPS 240 pallets.
• Supplied in sets of 40.

Seals, C 531 250
To seal the holes in the four clamping elements of the pallet.
• Material elastomer
• Supplied in sets of 20.

Reference protectors, C 531 210
To protect the Z-reference of the pallet.
• Supplied in sets of 20.

Code carriers, 3R-863.01
With pre-programmed unique identity, designed for GPS 240 pallets.

3R-863.01-10
• Sets of 10 pieces.

Code carrier, fixture, C 960 740
Fixture for code carrier 3R-863.01-10.
• The code carrier can be clicked into position.

System 3R tooling for precision machining
**GPS 240 – Accessories & user kits**

**GPS 240 Clamp kit, C 810 870**
- E 030 220 clamp (x4)
- E 010 144 washer M10 (x4)
- E 010 143 washer M8 (x4)
- E 000 428 Allen screw M10x45 (x4)
- E 000 354 Allen screw M8x45 (x4)
- E 040 030* T-slot nut M10x12 (x4)
- E 040 031* T-slot nut M10x14 (x4)
- E 040 032* T-slot nut M10x16 (x4)
- E 040 033* T-slot nut M10x18 (x4)
- E 040 020* T-slot nut M8x12 (x4)
- E 040 021* T-slot nut M8x14 (x4)
- E 040 022* T-slot nut M8x16 (x4)
- E 040 023* T-slot nut M8x18 (x4)

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

**GPS 240 Clamp strip kit, C 810 880**
- C 810 881 undrilled clamp strip (x2)
- E 010 144 washer M10 (x4)
- E 010 143 washer M8 (x4)
- E 000 428 Allen screw M10x45 (x4)
- E 000 354 Allen screw M8x45 (x4)
- E 040 030* T-slot nut M10x12 (x4)
- E 040 031* T-slot nut M10x14 (x4)
- E 040 032* T-slot nut M10x16 (x4)
- E 040 033* T-slot nut M10x18 (x4)
- E 040 020* T-slot nut M8x12 (x4)
- E 040 021* T-slot nut M8x14 (x4)
- E 040 022* T-slot nut M8x16 (x4)
- E 040 023* T-slot nut M8x18 (x4)

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

**GPS 240 Clamp strip kit for double mounting, C 810 920**
For mounting two chucks on 300 mm centres.
- C 810 921 undrilled spacer (x1)
- C 810 881 undrilled clamp strip (x2)
- E 010 144 washer M10 (x6)
- E 010 143 washer M8 (x6)
- E 000 428 Allen screw M10x45 (x6)
- E 000 354 Allen screw M8x45 (x6)
- E 040 030* T-slot nut M10x12 (x6)
- E 040 031* T-slot nut M10x14 (x6)
- E 040 032* T-slot nut M10x16 (x6)
- E 040 033* T-slot nut M10x18 (x6)
- E 040 020* T-slot nut M8x12 (x6)
- E 040 021* T-slot nut M8x14 (x6)
- E 040 022* T-slot nut M8x16 (x6)
- E 040 023* T-slot nut M8x18 (x6)

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

**GPS 240 Presetting station, C 810 650**
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.

**GPS 240 Starter Kit, S 500 310**
- C 219 000 Chuck
- C 810 820 Actuator
- C 694 400 Pallets Produktion (2x)

Coined pallet (for high machining forces).
Dynafix

... allows machining with optimal cutting data
... reduces setting-up times
... ensures precision and quality
... gives access to System 3R’s entire product range
... is suitable for automatic changing with System 3R’s automation program.

Dynafix permits machining with optimal cutting data, without sacrificing accuracy and quality. The easy-to-handle aluminium pallets have reference elements of high-alloy steel with directly measurable Z-references. Locking mechanism with built-in soft-landing function protects the references and simplifies handling in applications involving heavy workpieces. In addition, automatic air-blast cleaning of the Z-references and peripheral sealing make Dynafix a practical and user-friendly reference system which minimises setting-up times, increases machine capacity and provides a basis for automated production.

Dynafix as the basic means of fixing to the machine table gives unsurpassed flexibility in terms of workpiece size. Using chuck adapters provides access to practically every reference system in System 3R’s extensive produkt range. Rapid, precise pallet changing in sizes from Ø25 mm to 400 x 400 mm in the same basic mounting – manually or automatically.

+ Repetition accuracy – within 0.002 mm
+ Locking force – 60 000 N
+ Fixed index positions – 4x90°
+ Required air pressure, pneumatic chuck – 6±1 bar.

<table>
<thead>
<tr>
<th>Chucks</th>
<th>Article number</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumatic</td>
<td>3R-770-1</td>
<td></td>
</tr>
<tr>
<td>Pneumatic</td>
<td>3R-770-4</td>
<td>alignment reference</td>
</tr>
<tr>
<td>Pneumatic</td>
<td>90356.10</td>
<td>for chuck adapters, with mounting flange</td>
</tr>
<tr>
<td>Pneumatic</td>
<td>90576.05</td>
<td>for chuck adapters, without mounting flange</td>
</tr>
<tr>
<td>Pneumatic</td>
<td>3R-770-5</td>
<td>for five-axis machines</td>
</tr>
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<td>90718.04</td>
<td>vibration-damped</td>
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<tr>
<td>Pneumatic</td>
<td>3R-770.6-1</td>
<td>built-in pneumatic Macro chuck</td>
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</tbody>
</table>
Dynfix – Chucks

**Pneumatic chuck, 3R-770-1**
Pneumatic table chuck.
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- 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±1 bar
- Fixed index positions 4x90°
- 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 Ø20 mm
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Recommended actuator 3R-611.4 or 3R-611.2
- Air-blast cleaning of the Z-references
- Weight 24.5 kg.

**Pneumatic chuck, 3R-770-5**
Pneumatic table chuck for applications in five-axis machines. Air connection from below.
- Required air pressure 6 ±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Weight 23.5 kg.

**Pneumatic chuck, VDP, 90718.04**
Pneumatic vibration-damped chuck.
- Required air pressure 6 ±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
**Pneumatic chuck, D-20130**

Pneumatic chuck with through holes Ø110 mm.
- Required air pressure 6 ±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Weight 22 kg.

**Pneumatic chuck, 3R-770.6-1**

Pneumatic chuck with integrated Macro chuck. For CMM machines.
- Required air pressure 6 ±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Weight 32 kg.

**Pneumatic chuck, D-20129**

Pneumatic chuck with manual Macro Std chuck in the center.
- Required air pressure 6 ±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Weight 24.5 kg.
Dynfix – Chuck adapters

<table>
<thead>
<tr>
<th>Chuck adapters</th>
<th>Article number</th>
<th>Feature</th>
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<tbody>
<tr>
<td>Pneumatic</td>
<td>90356.22</td>
<td>Dynafix - Macro</td>
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<tr>
<td>Pneumatic</td>
<td>90356.20</td>
<td>Dynafix - MacroMagnum</td>
</tr>
</tbody>
</table>

**Pneumatic chuck adapter, Dynafix-Macro, 90356.22**

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

**Pneumatic chuck adapter, Dynafix-MacroMagnum, 90356.20**

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

System 3R tooling for precision machining

<table>
<thead>
<tr>
<th>Pallets 280x280 mm</th>
<th>Article number</th>
<th>Feature</th>
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<tbody>
<tr>
<td>Aluminium</td>
<td>3R-771.2</td>
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<td>Aluminium</td>
<td>3R-772.2</td>
<td>ground</td>
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<td>Aluminium</td>
<td>3R-DE772-T8.40</td>
<td>T-slots</td>
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<td>Aluminium</td>
<td>3R-DE772-M8</td>
<td>M8 threads</td>
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<td>3R-CH771.35</td>
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<table>
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<tr>
<th>Pallets 400x400 mm</th>
<th>Article number</th>
<th>Feature</th>
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</thead>
<tbody>
<tr>
<td>Aluminium</td>
<td>3R-774-AL</td>
<td></td>
</tr>
</tbody>
</table>

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 139 M8 threads on 20 mm centres.
- Adapted for automatic changing
- Ready for code carrier
- Weight 14.5 kg.

Pallet 400x400 mm, 3R-774-AL
Aluminium pallet.
- Ready for code carrier
- Weight 20 kg.

Pallet 350x350 mm, 3R-CH771.35
Aluminium pallet.
- Adapted for automatic changing
- Ready for code carrier
- Weight 12.1 kg.

Reference elements, 3R-771.7
Reference kit for users who want to make their own pallets or fixtures.

Master pallet, 3R-776.1-2
For alignment of the Dynafix references. With ground reference rulers, hole and surface.
- Adapted for automatic changing
- Ready for code carrier
- Weight 8 kg.
Delphin & Delphin BIG

Clamping of larger dimensions too, with Delphin

The modular design with the Delphin zero point clamping system offers you the greatest possible flexibility.

You can arrange the machine equipment as a baseplate or as a built-up solution, precisely in accordance with your requirements.

Pallets or workpieces can now be positioned and clamped with great accuracy on the Delphin clamping system.

Function of the Delphin clamping system

One special feature in relation to modular equipping of the machine tables is the option for arrangement and number of chucks. Regardless of the requirements of the application, you determine the quantity and the particular centre distance with which you wish to equip the machine table.

Our recommendation: use at least 4 chucks per workpiece or work with pallets.

The conical clamping spigots are mounted directly in the device or workpiece. Centring of the conical face of the centring and compensating clamping spigots free of play achieves maximum accuracy.

Advantages of the Delphin clamping system

+ Modular design
+ Large product portfolio
+ Uniform clamping spigots
+ Spring centring for pinpoint accuracy

Facts

Repetition accuracy: < 0.005 mm
Clamping force: 13’000N pneumatic
15’000N hydraulic
Delphin & Delphin BIG

Chucks for manual equipping:
Delphin PSP
Pneumatic, clamping force 13'000N

Delphin HSP
Hydraulic, clamping force 15'000N
Lift-off function

Chucks for automation:
Delphin PHP
Pneumatic, clamping force 13'000N
Self-cleaning and presence control

Delphin HHP / Delphin HCP
Hydraulic, clamping force 15'000N
Self-cleaning and presence control
Lift-off function.

Delphin BIG

The newest member of the Delphin family was developed specially for large workpieces.
This opens up entirely new approaches for the production of large workpieces or the manufacture of large moulds.
Because of its optimised shape, the clamping system is highly tolerant during loading of the pallets, by a crane for instance.

Delphin BIG Facts
+ Clamping force 50'000N
+ Repetition accuracy ±0.005mm
+ Lift-off function
+ Cleaning
+ Presence control
+ Suitable for automation.
Accessories

Control unit, 3R-611.2
Foot operation of pneumatic chucks.

Control unit, 3R-611.4
Unit for operation of pneumatic chucks. Two functions – open/closed.

Control unit, 3R-611.46
Unit for hand operation of pneumatic chucks. Three functions – open/neutral/closed.

Allen keys

3R-333-03
- Supplied in sets of 10 pcs.
- 3 mm.

3R-333-05
- Supplied in sets of 10 pcs.
- 5 mm.

Locking ring key, 3R-605-GE
To lift the locking ring of the drawbars.
- Supplied in sets of two.

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.

Labels, 3R-LL200P
Supplied with marker pen.
- Size 12x25 mm
- Supplied in sets of 200.
## Accessories

### Connection for air gun, 90815
Fits automatic chucks 3R-680.10-2, 3R-680.19-2 and 3R-680.1-2.
- Supplied in sets of 2.

### Code carriers, 3R-863.01-10
With pre-programmed unique identity, designed for Macro systems and Dynafix.
- Supplied in sets of 10.

### 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.
Use the order form at the end of the catalogue.

### 3Refix mandrel
Note: When positioning with 3Refix mandrels – always tighten the expanding mandrel in the R° hole first.

<table>
<thead>
<tr>
<th>3R-901-10E-TX</th>
<th>3R-901-20E</th>
</tr>
</thead>
<tbody>
<tr>
<td>3Refix Ø10 mm</td>
<td>3Refix Ø20 mm</td>
</tr>
<tr>
<td>Rust-resistant</td>
<td>Rust-resistant</td>
</tr>
<tr>
<td>Recommended tightening torque 4 Nm</td>
<td>Recommended tightening torque 10 Nm</td>
</tr>
<tr>
<td>Supplied in sets of 10 pcs.</td>
<td>Supplied in sets of 10 pcs.</td>
</tr>
<tr>
<td>Weight per set 0.2 kg.</td>
<td>Weight per set 1 kg.</td>
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</table>

<table>
<thead>
<tr>
<th>3R-901-10RS</th>
<th>3R-901-20RS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3Refix Ø10 mm</td>
<td>3Refix Ø20 mm</td>
</tr>
<tr>
<td>Rust-resistant</td>
<td>Rust-resistant</td>
</tr>
<tr>
<td>Recommended tightening torque 4 Nm</td>
<td>Recommended tightening torque 10 Nm</td>
</tr>
<tr>
<td>Weight per set 0.5 kg.</td>
<td>Weight per set 0.1 kg.</td>
</tr>
</tbody>
</table>

### Reference tables

<table>
<thead>
<tr>
<th>3R-936-60.38</th>
<th>3R-936-85.40</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = 600 mm</td>
<td>A = 850 mm</td>
</tr>
<tr>
<td>B = 380 mm</td>
<td>B = 400 mm</td>
</tr>
<tr>
<td>C = 32 mm</td>
<td>C = 32 mm</td>
</tr>
<tr>
<td>Weight 55 kg.</td>
<td>Weight 83 kg.</td>
</tr>
</tbody>
</table>


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 Transformer - 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 wire 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.
### Automation

**WorkPartner 1+ – can serve two machines**

WorkPartner 1+ is an extremely compact unit for changing pallets – on machine tables and at machine spindles in one or two machines. Its modular construction means that magazine capacity is extremely flexible and can be adapted to your company’s needs.

Typical application areas:
- Milling – changing of workpieces.
- Grinding – changing of workpieces.
- Die-sinking EDM – changing of workpieces and electrodes.
- Wire EDM – changing of workpieces.

### Transformer – a modular automation concept

Transformer is a versatile automation concept for a variety of applications in one or more milling machines and/or wire EDM machines, for instance. 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 Transformer is added.

### Automation – with six-axis Fanuc industrial robot

System 3R offer automation solutions with industrial robots, both stationary and rail versions within the Die & Mold and Precision Production sector.

Fanuc solutions covers applications in terms of ...
- transfer weight from 70-700 kg
- radial reach, up to 3 400 mm
- complexed transfer movements
- parts handling.
Order form

Company ______________________________________  Phone ______________________________________
Contact ______________________________________  Date _______________________________________

Specification of taper attachment

Taper

Type

Thread

Female thread

Male thread

Flange

Chuck 3R-

Other, please specify

Specification of 3Refix reference tables

A __________ mm
B __________ mm
C __________ mm
D __________ mm (T slots)
E __________ mm
F __________ mm
G __________ mm
H __________ mm
X __________ mm
Y __________ mm

No. of T slots _____________________________
Make of machine _________________________
Hardened/unhardened _____________________
Other information _________________________
_______________________________________________________________________________________________
_______________________________________________________________________________________________
_______________________________________________________________________________________________

Working area

A __________ mm
B __________ mm
C __________ mm
D __________ mm (T slots)
E __________ mm
F __________ mm
G __________ mm
H __________ mm
X __________ mm
Y __________ mm

No. of T slots _____________________________
Make of machine _________________________
Hardened/unhardened _____________________
Other information _________________________
_______________________________________________________________________________________________
_______________________________________________________________________________________________
_______________________________________________________________________________________________

System 3R tooling for precision machining
## Index

<table>
<thead>
<tr>
<th>Code</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>3R-333-03</td>
<td>24, 76</td>
</tr>
<tr>
<td>3R-333-05</td>
<td>24, 76</td>
</tr>
<tr>
<td>3R-600.1-30</td>
<td>12</td>
</tr>
<tr>
<td>3R-600.1-30V</td>
<td>14</td>
</tr>
<tr>
<td>3R-600.10-3</td>
<td>14</td>
</tr>
<tr>
<td>3R-600.10-3N</td>
<td>28</td>
</tr>
<tr>
<td>3R-600.10-30</td>
<td>14</td>
</tr>
<tr>
<td>3R-600.10-31</td>
<td>14</td>
</tr>
<tr>
<td>3R-600.14-30</td>
<td>13</td>
</tr>
<tr>
<td>3R-600.15-3</td>
<td>12</td>
</tr>
<tr>
<td>3R-600.20</td>
<td>12</td>
</tr>
<tr>
<td>3R-600.22</td>
<td>12</td>
</tr>
<tr>
<td>3R-600.23-S</td>
<td>15</td>
</tr>
<tr>
<td>3R-600.24-S</td>
<td>15</td>
</tr>
<tr>
<td>3R-600.24-RS</td>
<td>15</td>
</tr>
<tr>
<td>3R-600.24-V</td>
<td>15</td>
</tr>
<tr>
<td>3R-600.28-S</td>
<td>15</td>
</tr>
<tr>
<td>3R-600.84-3N</td>
<td>28</td>
</tr>
<tr>
<td>3R-600.86-3N</td>
<td>28</td>
</tr>
<tr>
<td>3R-601.1E-N</td>
<td>29</td>
</tr>
<tr>
<td>3R-601.1E-P</td>
<td>21</td>
</tr>
<tr>
<td>3R-601.1E-P</td>
<td>21</td>
</tr>
<tr>
<td>3R-601.1E-P</td>
<td>21</td>
</tr>
<tr>
<td>3R-601.52</td>
<td>21</td>
</tr>
<tr>
<td>3R-601.116-75PA</td>
<td>20</td>
</tr>
<tr>
<td>3R-602.10-1</td>
<td>13</td>
</tr>
<tr>
<td>3R-602.10-V</td>
<td>13</td>
</tr>
<tr>
<td>3R-602.81</td>
<td>13</td>
</tr>
<tr>
<td>3R-602.81-RS</td>
<td>13</td>
</tr>
<tr>
<td>3R-605.1E</td>
<td>22, 29, 37</td>
</tr>
<tr>
<td>3R-605.1E</td>
<td>22, 37</td>
</tr>
<tr>
<td>3R-605.52</td>
<td>21</td>
</tr>
<tr>
<td>3R-605.54-E</td>
<td>22, 37</td>
</tr>
<tr>
<td>3R-605.54-E</td>
<td>22, 37</td>
</tr>
<tr>
<td>3R-605.10</td>
<td>22</td>
</tr>
<tr>
<td>3R-605.2E</td>
<td>22, 37</td>
</tr>
<tr>
<td>3R-605.2EE</td>
<td>22, 37</td>
</tr>
<tr>
<td>3R-605.4E</td>
<td>22, 37</td>
</tr>
<tr>
<td>3R-605.4EE</td>
<td>22, 37</td>
</tr>
<tr>
<td>3R-605.10E</td>
<td>22</td>
</tr>
<tr>
<td>3R-606</td>
<td>23</td>
</tr>
<tr>
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<td>29</td>
</tr>
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<td>23</td>
</tr>
<tr>
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<td>30</td>
</tr>
<tr>
<td>3R-610.21</td>
<td>12</td>
</tr>
<tr>
<td>3R-610.21-S</td>
<td>12</td>
</tr>
<tr>
<td>3R-610.46-3</td>
<td>14</td>
</tr>
</tbody>
</table>

... (Continued)
### Index

| 3R-SP26771 | 16 | C 522 810 | 64 | C 960 500 | 56 |
| 3R-SP26771-RS | 16 | C 522 820 | 64 | C 960 740 | 56, 66 |
| 3R-SP7359 | 16 | C 522 830 | 64 | D-20129 | 70 |
| 3R-SP7359-RS | 16 | C 530 210 | 49 | D-20130 | 70 |
| 3R-SP26712 | 34 | C 530 310 | 52 | K-40338.1 | 17 |
| 3R-TXXXX | 24, 76 | C 531 000 | 56 | K-40338.2 | 17 |
| 90027 | 24 | C 531 210 | 66 | K-40338.3 | 17 |
| 90027.03 | 38 | C 531 250 | 66 | K-40338.4 | 17 |
| 90356.10 | 69 | C 531 260 | 65 | K-40338.5 | 17 |
| 90356.20 | 35, 59, 71 | C 531 500 | 66 | K-40339.1 | 17 |
| 90356.22 | 17, 59, 71 | C 694 100 | 62 | S 500 021 | 53 |
| 90412.1X | 16 | C 694 260 | 63 | S 220 000 | 65 |
| 90412.2X | 16 | C 694 270 | 63 | S 220 400 | 65 |
| 90421 | 38 | C 694 300 | 62 | S 230 100 | 55 |
| 90443 | 38 | C 694 400 | 62 | S 230 150 | 55 |
| 90576.05 | 69 | C 694 450 | 63 | S 500 090 | 62 |
| 90716.09 | 13 | C 694 610 | 62 | S 500 010 | 50 |
| 90718.04 | 69 | C 694 640 | 62 | S 500 011 | 50 |
| 90724 | 34 | C 694 650 | 63 | S 500 100 | 62 |
| 90793 | 17, 35 | C 694 810 | 62 | S 500 160 | 62 |
| 90809.03 | 34 | C 695 000 | 50 | S 500 170 | 62 |
| 90815 | 25, 39, 77 | C 695 040 | 50 | S 500 310 | 67 |
| 9842.01 | 23 | C 695 050 | 50 | |
| 90964 | 35 | C 695 140 | 53 | |
| C 188 300 | 49 | C 695 150 | 54 | |
| C 188 320 | 52 | C 695 176 | 56 | |
| C 188 700 | 52 | C 695 265 | 50 | |
| C 188 710 | 52 | C 695 270 | 50 | |
| C 188 720 | 49 | C 695 295 | 50 | |
| C 188 730 | 49 | C 695 365 | 53 | |
| C 188 770 | 52 | C 695 370 | 53 | |
| C 198 700 | 49 | C 695 395 | 53 | |
| C 190 120 | 54 | C 697 100 | 63 | |
| C 190 125 | 54 | C 810 650 | 67 | |
| C 210 060 | 61 | C 810 710 | 65 | |
| C 217 100 | 61 | C 810 820 | 65 | |
| C 219 000 | 60 | C 810 830 | 65 | |
| C 219 007 | 66 | C 810 850 | 65 | |
| C 219 100 | 60 | C 810 870 | 67 | |
| C 219 200 | 60 | C 810 880 | 67 | |
| C 219 600 | 61 | C 810 920 | 67 | |
| C 219 800 | 60 | C 846 260 | 55 | |
| C 522 520 | 64 | C 846 360 | 55 | |
| C 522 540 | 64 | C 846 900 | 55 | |
| C 522 800 | 64 | C 846 600 | 63 | |

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