

System 3R

Tooling

for Additive Manufacturing



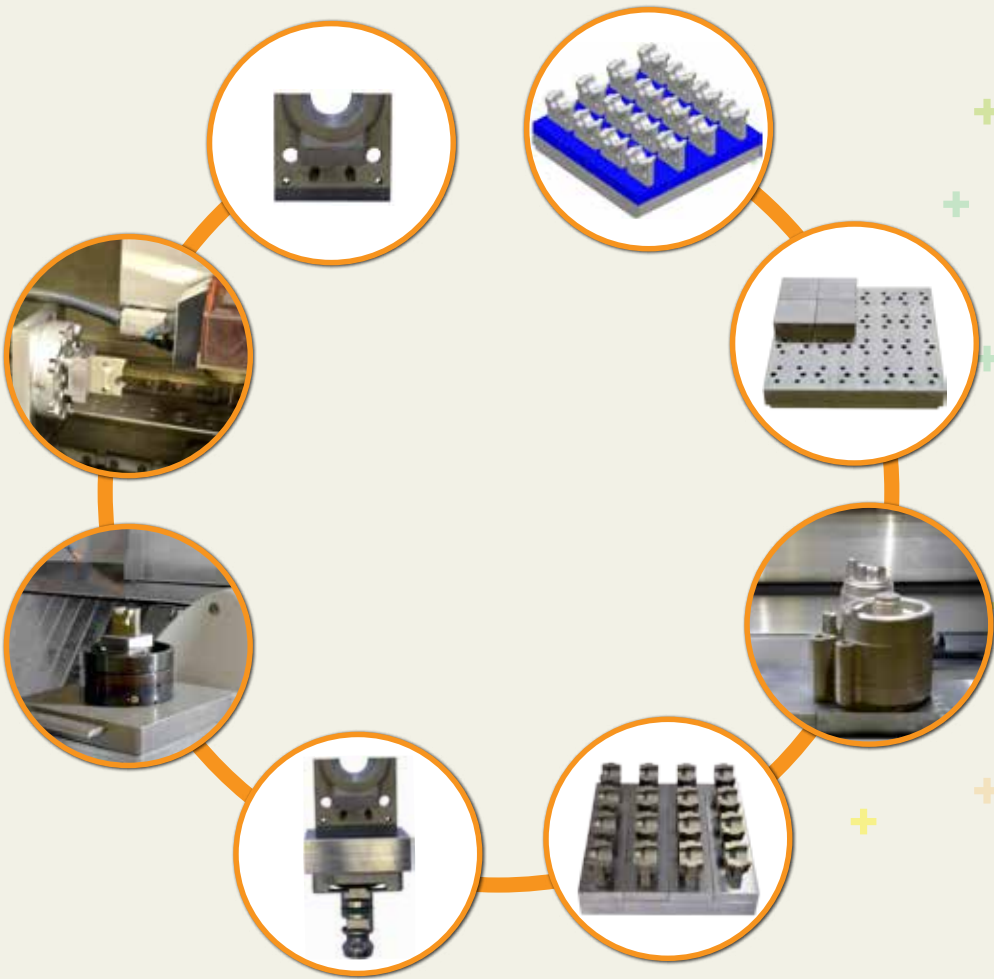
GF Machining Solutions: all about you

When all you need is everything, it's good to know that there is one company that you can count on to deliver complete solutions and services. From world-class electrical discharge machines (EDM), Laser texturing and Additive Manufacturing through to first-class Milling and Spindles, Tooling, Automation and software systems – all backed by unrivalled customer service and support – we, through our AgieCharmilles, Microlution, Mikron Mill, Liechti, Step-Tec and System 3R technologies, help you raise your game and increase your competitive edge.

Design and quality by System 3R

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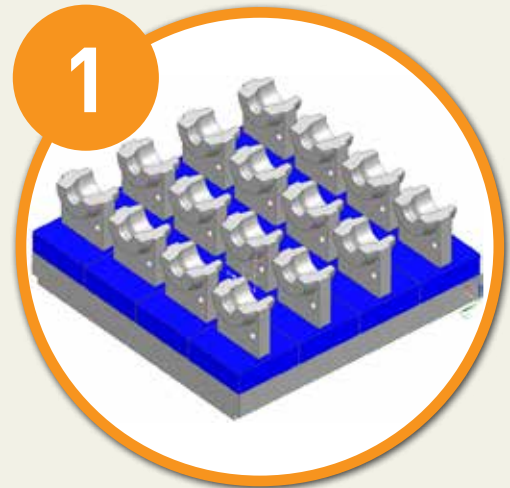
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Additive Manufacturing Process

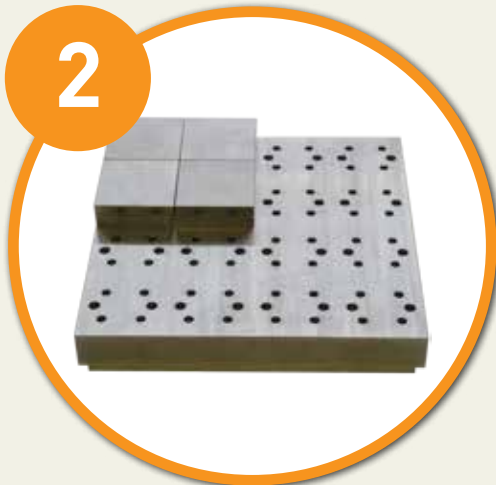
Experience always shows that measures to reduce the idle times of your machines are significantly more worthwhile than chasing seconds in the actual machining process. The solution is a stable and exact reference system. This lets you preset away from the machine and then set up the machine with minimum idle time.'

Quickly and precisely!



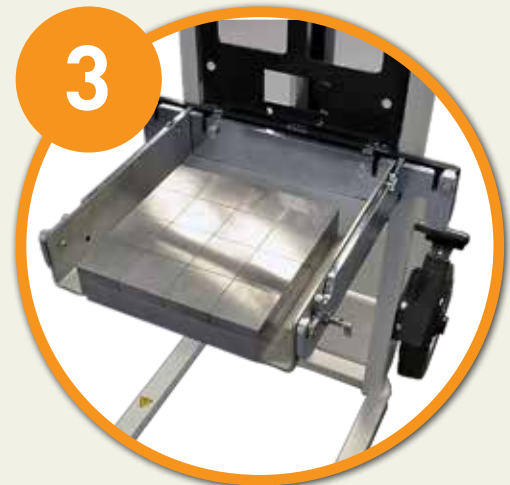
3D Design

Job preparation and transfer of the job to the AM-machine.



Prepare MiniPal and MasterPal

Prepare the MasterPal and MiniPal outside of the machine. Mount the right size and number of MiniPal onto a MasterPal or use a DirectBase.



Load the AM machine

Load the AM tooling into the AM-machine.



3D Print on MiniPal

The desired parts are printed inside the AM machine on the MiniPal or DirectBase.



Unload

Unload finished job and separate the MiniPal from the MasterPal.



Heat Treatment

Heat treatment of the workpiece inclusive MiniPal or DirectBase for stress release and optional hardening.



MiniPal are referenced

The MiniPal is referenced on the Macro Reference Element for post process.



Machining processing

The workpiece is post processed on a milling, EDM, laser texturing machine for a better surface and high precision.



Cutting process

Separation of the 3D part from the MiniPal with a WEDM machine or saw.



Use System 3R Tooling when post processing your parts, offering a minimum of set-up time and highest possible accuracy.

Fitting the machines with the same reference system means that workpieces can be moved between the machines without subsequent alignment and checking – **One Minute Set-up.**

with MacroMagnum



3R MiniPal 126,
Stainless, S 360 100, 4 pcs.



3R MiniPal 63,
Stainless, S 360 000, 16 pcs.



3R DirectBase 252,
MacroMagnum 4/16
S 370 030



3R MasterPal 252,
MacroMagnum 4/16,
C 370 040



Reference element,
MacroMagnum, 91063.01



Drawbar, 91063.05



Table chuck,
MacroMagnum

with Delphin



3R MiniPal 126,
Stainless, S 360 100, 4 pcs.



3R MiniPal 63
Stainless, S 360 000, 16 pcs.



DirectBase DelphinCompact HT,
includes indexing pin



MasterPal DelphinCompact HT,
includes indexing pin



Drawbar



DelphinCompact,
C 282 040

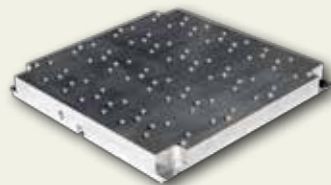
with EOS M 290



3R MiniPal 126,
Stainless, S 360 100, 4 pcs.



3R MiniPal 63,
Stainless, S 360 000, 16 pcs.

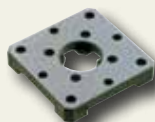


3R MasterPal, EOS M 290 4/16,
C 370 010

Post Process



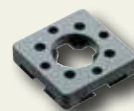
3R MiniPal 126,
Stainless, 4 pcs.



Reference element,
Macro 70x70, 91063.03



3R MiniPal 63,
Stainless, 16 pcs.



Reference element,
Macro 54x54, 91063.02



Drawbar



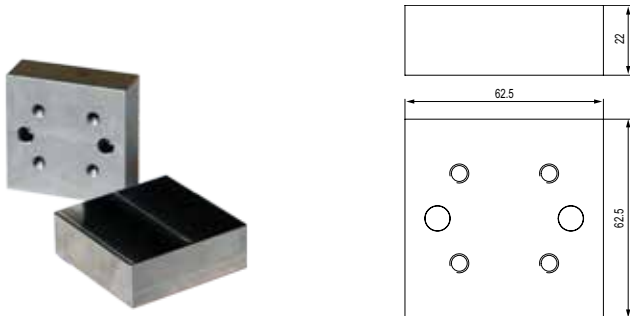
Table chuck, Macro

Consumables – Stainless steel & Aluminium & Titanium

3R MiniPal 63, Stainless, S 360 000*

Unhardened with 3Refix holes and four M6 threads.
Designed to be mounted on 91063.02.

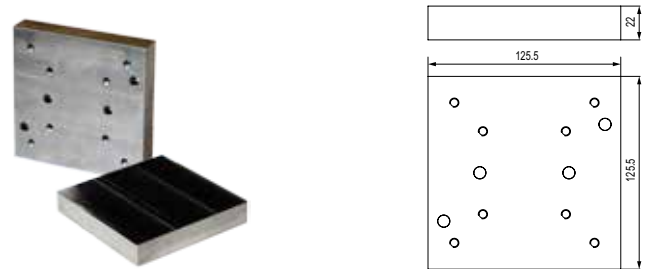
- Stainless steel
- Includes 70 x M6 screws.
- Supplied in set of 16.



3R MiniPal 126, Stainless, S 360 100*

Unhardened with 3Refix holes and four M6 threads.
Designed to be mounted on 91063.03.

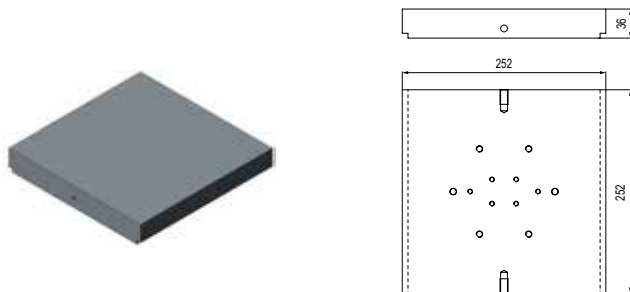
- Stainless steel
- Includes 20 x M6 screws.
- Supplied in set of 4



3R DirectBase 252, MacroMagnum, S 370 030*

Designed to be mounted on 91063.01.

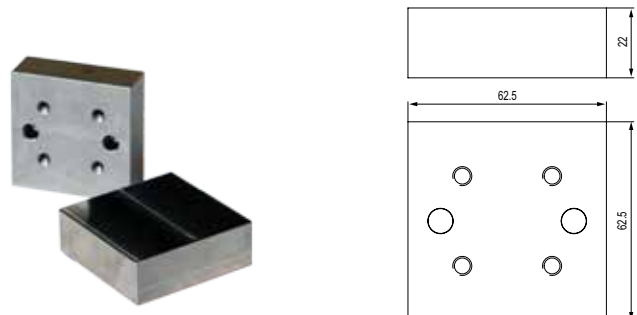
- Stainless steel
- 3RefixAM holes Ø8 mm
- 2 x M10 for eyebolt.
- Suitable AM S 290 Tooling.
- Includes 20 x M8 and 30 x M6 screws.
- Supplied in set of 5.



3R MiniPal 63, Aluminium, S 360 010**

Unhardened with 3Refix holes and four M6 threads.
Designed to be mounted on 91063.02.

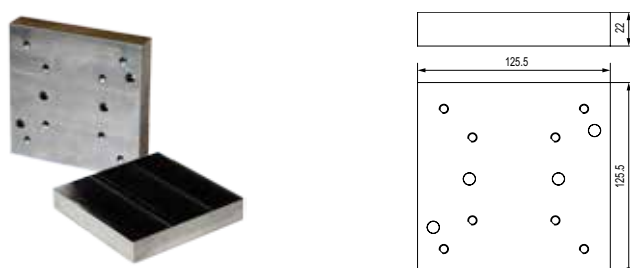
- Aluminum
- Includes 70 x M6 screws.
- Supplied in set of 16



3R MiniPal 126, Aluminium, S 360 110**

Unhardened with 3Refix holes and four M6 threads.
Designed to be mounted on 91063.03.

- Aluminum
- Includes 20 x M6 screws.
- Supplied in set of 4



* Suitable for powders: StainlessSteel CX, MaragingSteel MS1, Stainless Steel 17-4PH, StainlessSteel GP1, StainlessSteel PH1 & StainlessSteel 316L.

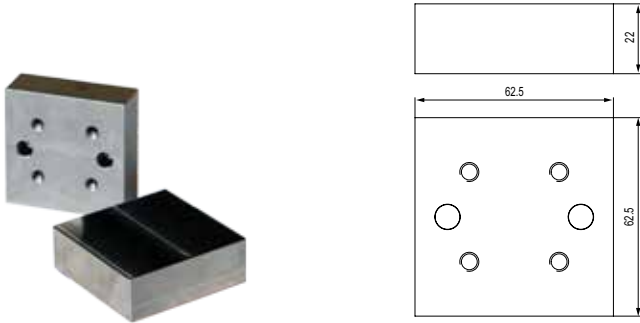
** Suitable for powders: Aluminium AlSi10Mg & Aluminium AlSi10Mg/200°C

Consumables – Stainless steel & Aluminium & Titanium

3R MiniPal 63, Titanium, S 360 030*

Unhardened with 3Refix holes and four M6 threads.
Designed to be mounted on 91063.02.

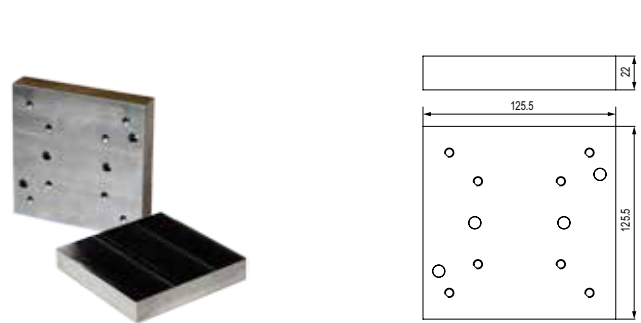
- Titanium
- Includes 70 x M6 screws.
- Supplied in set of 16



3R MiniPal 126, Titanium, S 360 130*

Unhardened with 3Refix holes and four M6 threads.
Designed to be mounted on 91063.03.

- Titanium
- Includes 20 x M6 screws.
- Supplied in set of 4



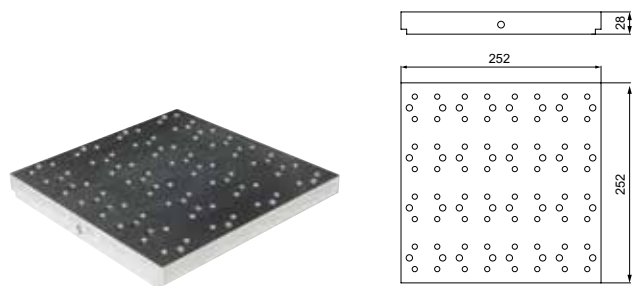
* Suitable for powders: Titanium Ti64, Titanium Ti64Li & Titanium TiCP

MasterPal

3R MasterPal 252, MacroMagnum 4/16, C 370 040

Designed to be mounted on 91063.01.

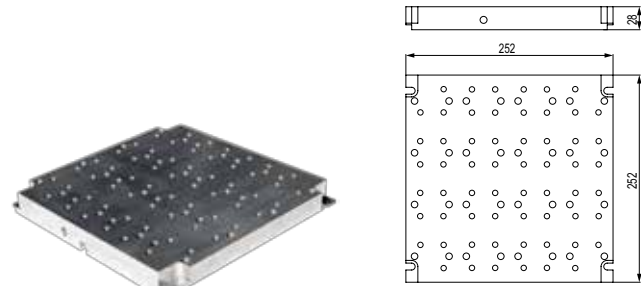
- Stainless steel
- 3RefixAM holes Ø8 mm
- 2 x M10 thread for eyebolt.
- Suitable AM S 290 Tooling.
- Includes 4 x M8 and 6 x M6 screws.



3R MasterPal, EOS M 290 4/16, C 370 010

Designed to be mounted on EOS M 290.

- Stainless steel
- 3RefixAM holes Ø8 mm
- 2 x M10 thread for eyebolt.

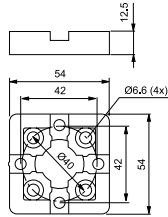


Reference elements & Drawbars

Reference Element 54x54, Macro, 91063.02

Reference element for WEDMing, EDMing, milling and grinding.

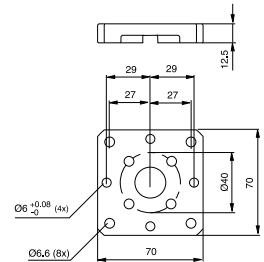
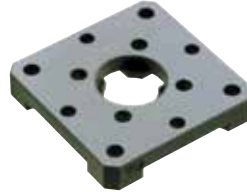
- 3RefixAM holes Ø8 mm
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Stainless steel
- Untreated side faces
- Supplied in set of 16
- Weight per set 2.6 kg.



Reference Element 70x70, Macro, 91063.03

Reference element for WEDMing, EDMing, milling and grinding.

- 3RefixAM holes Ø8 mm
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Stainless steel
- Supplied in set of 4
- Weight per set 2.5 kg.

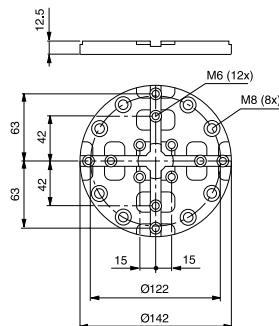


Reference Element Ø142, MacroMagnum, 91063.01

Reference element for WEDMing, EDMing, milling and grinding. Hardened reference element with clearance holes for fixing screws.

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

- 3RefixAM holes Ø8 mm
- Stainless steel
- Weight 1 kg.



3RefixAM, S 370 600

A special shaped and easy to handle 3RefixAM tool allows a quick referencing of AM tooling in a powder environment. One Minute Set up!

- Gives a fixed position with fixed references
- Minimal investment, cutting the setup time costs
- Fast manual setup without additional actions
- Special, powder insensitive, square shape for powder environment.
- Supplied in set of 2.



Drawbar, MacroMagnum & Macro, 3R-605.1RS

Drawbar for WEDMing, EDMing, milling and grinding.

- Temperature resistant up to **80°C**
- Ø20x57.1 mm with flushing holes Ø7 mm
- Supplied 1 pc.



Drawbar HT, MacroMagnum & Macro, 91063.05

Drawbar for WEDMing, EDMing, milling and grinding.

- Temperature resistant up to **120°C**
- Ø20x57.1 mm with flushing holes Ø7 mm
- Stainless steel
- Supplied 1 pc.



Drawbars – Additive Manufacturing

Drawbar, MacroMagnum & Macro, 3R-605.2RS

Drawbar for WEDMing, EDMing, milling and grinding.

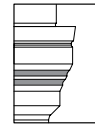
- Ø20x36.9 mm with flushing holes Ø7 mm
- Rust-resistant
- Supplied 1 pc.



Drawbar HT, Delphin, Centring on 2 Axes, C 282 040

Drawbar for AMing, WEDMing, EDMing, milling and grinding.
Fixed in pallet

- Temperature resistant up to 230°C
- Ø28x55 mm
- Stainless steel
- Supplied 1 pc.

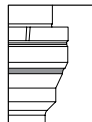


2 notches

Drawbar HT, Delphin, Centring on 1 Axes, C 282 140

Drawbar for AMing, WEDMing, EDMing, milling and grinding.
Fixed in pallet

- Temperature resistant up to 230°C
- Ø28x55 mm
- Stainless steel
- Supplied 1 pc.

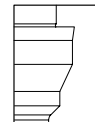


1 notch

Drawbar HT, Delphin, without Centring, C 282 240

Drawbar for AMing, WEDMing, EDMing, milling and grinding.
Fixed in pallet

- Temperature resistant up to 230°C
- Ø28x55 mm
- Stainless steel
- Supplied 1 pc.



without notch

Indexing Pins, Delphin, S 814 010

For customer installation in DelphinCompact MasterPal or DirectBase.

- Material: Steel, hardened
- Dimensions: Ø7 x 20 mm
- High precision
- Supplied in set of 4.

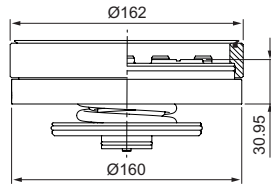


Chucks – Additive Manufacturing

Pneumatic built-in chuck, MacroMagnum, 90809.03

Pneumatic chuck with coarse guiding of the pallet. Intended for permanent building-in for AMing, WEDMing, EDMing, milling and grinding.

- Temperature resistant up to **120°C**
- Required drawbar 91063.05 or 3R-605.1RS
- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Flushing duct
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo locking
- Weight 5 kg.



Built-in chuck, DelphinCompact HT, C 250 020

For simple installation in the machine table for AMing.

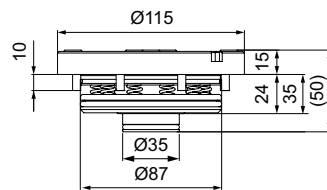
- Temperature resistant up to **230°C**
- Required drawbar C 282 040, C 282 140, C 282 240
- Required air pressure 6 ± 1 bar
- Air-blast cleaning of the Z-references
- Turbo locking
- Stainless steel.



Index built-in chuck, DelphinCompact HT, C 250 070

For simple installation in the machine table for AMing.

- Temperature resistant up to **230°C**
- Required drawbar C 282 040
- Required air pressure 6 ± 1 bar
- Fixed index position
- Air-blast cleaning of the Z-references
- Turbo locking
- Stainless steel.

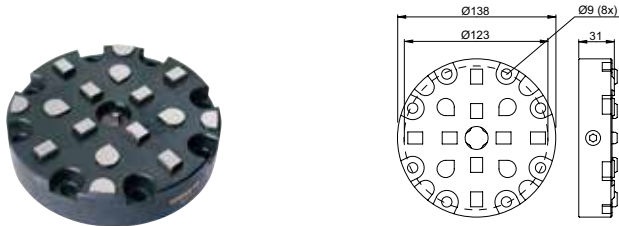


Chucks – Post processing

Chuck, MacroMagnum, 90809.02

Manual chuck for WEDMing, EDMing, milling and grinding.

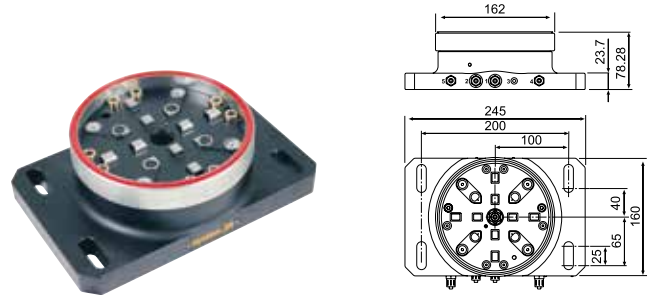
- Required drawbar 3R-605.2RS or similar
- Fixed index positions 4x90°
- Stainless steel
- Weight 5 kg.



Pneumatic table chuck, MacroMagnum, 3R-680.10-2

Pneumatic table chuck for milling and grinding.

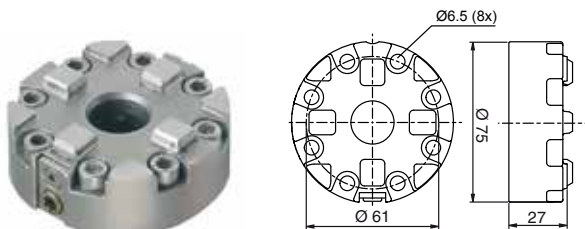
- Required drawbar 91063.05 or 3R-605.1RS
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo-locking
- Weight 12 kg.



Manual chuck, Macro, 3R-600.24RS

Manual chuck for WEDMing, EDMing, milling and grinding.

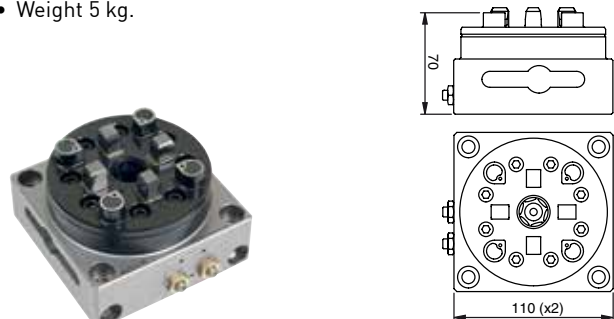
- Required drawbar 3R-605.2RS or similar
- Stainless steel
- Weight 0.7 kg.



Pneumatic built-up chuck, Macro, with flange, 3R-600.10-30

Pneumatic table chuck for EDMing, milling and grinding.

- Required drawbar 91063.05 or 3R-605.1RS
- Required air pressure 6 ±1 bar
- Fixed index positions 4x90°
- Flushing duct
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo locking
- 2 x Push-in fitting for Ø6 tube
- Weight 5 kg.



Chucks – Post processing

Built-in chuck, DelphinCompact, C 250 000

Pneumatic chuck for WEDMing, EDMing, milling and grinding. For simple installation in the machine table or in a base plate.

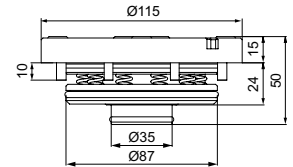
- Required drawbar C282040, C282140, C282240
- Required air pressure 6 ± 1 bar
- Air-blast cleaning of the Z-references
- Turbo locking
- Stainless steel.



Index built-in chuck, DelphinCompact, C 250 050

Pneumatic chuck for WEDMing, EDMing, milling and grinding. For simple installation in the machine table or in a base plate.

- Required drawbar C282040
- Required air pressure 6 ± 1 bar
- Fixed index position
- Air-blast cleaning of the Z-references
- Turbo locking
- Stainless steel



Built-up chuck with flange, DelphinCompact C 250 310

Pneumatic chuck for WEDMing, EDMing, milling and grinding. For installation on a machine table.

- Required drawbar C282040, C282140, C282240
- Required air pressure 6 ± 1 bar
- Air-blast cleaning of the Z-references
- Turbo locking
- Stainless steel.



Index built-up chuck, DelphinCompact, with flange, C 250 350

Pneumatic chuck for WEDMing, EDMing, milling and grinding. For installation on a machine table.

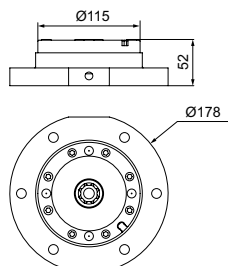
- Required drawbar C282040
- Required air pressure 6 ± 1 bar
- Fixed index position
- Air-blast cleaning of the Z-references
- Turbo locking
- Stainless steel.



Index built-up chuck, DelphinCompact, with flange & Hole Pattern, C 370 560

Pneumatic chuck for WEDMing, EDMing, milling and grinding. For installation on a machine table.

- Required drawbar C282040
- Required air pressure 6 ± 1 bar
- Fixed index position
- Air-blast cleaning of the Z-references
- Turbo locking
- Stainless steel.



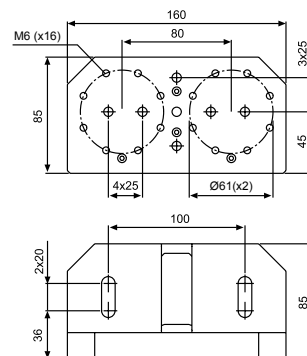
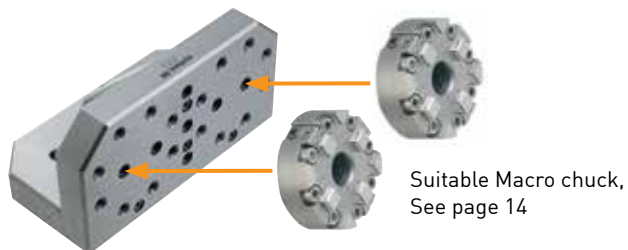
Angle plate

Angle plate, Macro, 3R-201.5

Designed to be mounted with two Macro chucks 3R-600.24RS.

Designed for MiniPal smaller than 63 x 63 mm.

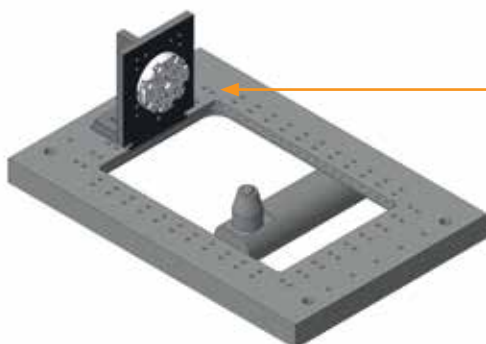
- Stainless steel
- Mounting screws included
- Weight 4.2 kg.



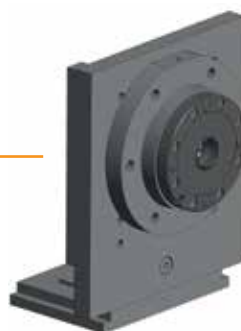
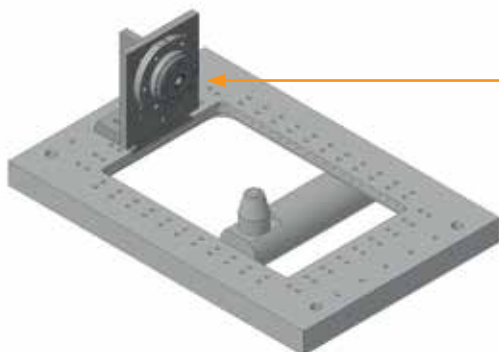
Angle Plate, Macro/MacroMagnum & Delphin

Customer specific: Depend on machine, tooling, and workpiece size.

Note: only on request.



Manual chuck built-up, MacroMagnum, with
flange, 90809.02

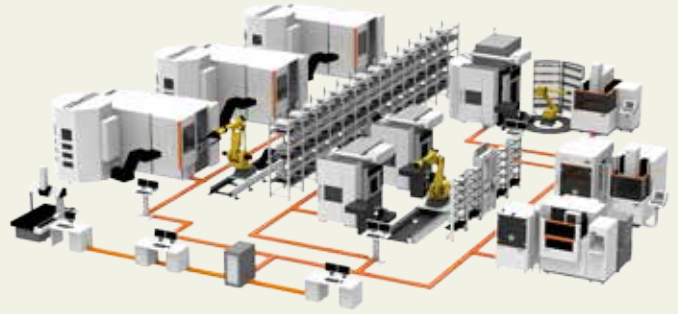


Chuck built-up, DelphinCompact, with flange,
C 370 560

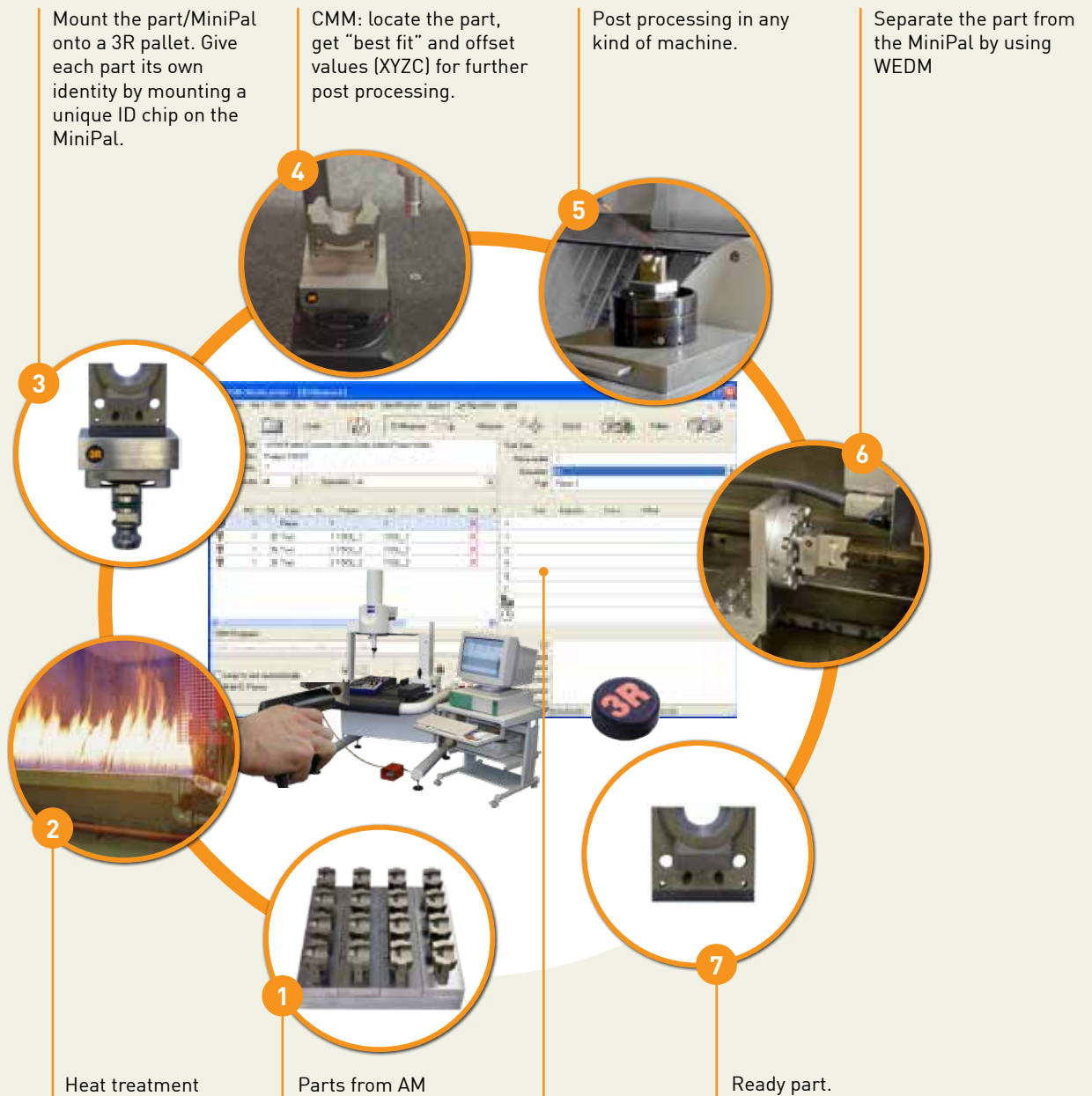
Cell Manager Light

Use System 3R Tooling when post processing your parts, offering a minimum of set-up time and highest possible accuracy.

Add Cell Manager Light – Optimize, simplify and secure the post processing of your parts after Additive Manufacturing.



Cell Manager Light is the first step into a seamless integration of automation 24/7



A wide range of Tooling and Automation products from a single source



Tooling Catalogues

- + Tooling – for electrode manufacturing and EDMing
- + Tooling – for wire EDMing
- + Tooling – for Parts production
- + Tooling, Dolphin modular Clamping System



Automation Catalogues

- + WorkPal 1
- + WorkPartner 1+
- + Fanuc, six-axis robot
- + WSM – WorkShopManager

For your own copy please contact your System 3R representative.

GF Machining Solutions – A complete solution provider

GF Machining Solutions is a leading provider to the tool and mold making industry and to manufacturers of precision components.

- + Based in Switzerland, globally active with 50 sites worldwide
- + At your service with more than 3,000 employees
- + We are a premium brand in these core businesses: EDM, Milling and spindles, Laser, Tooling, Automation & Customer Services.



Die-sinking EDM



Spindle



Laser



Hole-drilling EDM



Milling



Wire-cutting EDM



Automation



Customer Services



Tooling

Automation

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 1+ and Fanuc - three "aces" which boost your productivity and sharpen your competitiveness.

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



WorkPal

– modest demands, major benefits



WorkPartner 1+

– can serve two machines



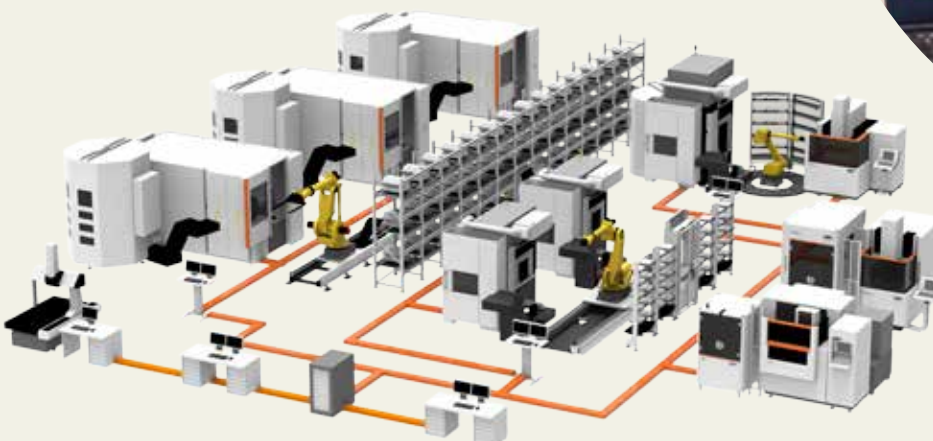
Automation – with six-axis Fanuc industrial robot

WSM – WorkShopManager

User-friendly Cell Management Software

Master workshop complexity and manage all control processes with our software. For manually controlled and automated processes.

- + Simplify the preparation of jobs
- + Easily execute the jobs in manual or automated machines
- + Monitor the process, change priorities and get utilization statistics
- + ID chip management to ensure highest process security.



Optimize the uptime of your equipment with our Customer Services

- + Ensuring productivity.
- + Reducing running costs and wasted parts.
- + Maximizing the return on your System 3R investments.
- + Extending the product lifetime of your System 3R equipment while maintaining optimum precision.
- + Ensuring robot cell safety satisfies present machine directives.

System 3R's Customer Services is uniquely positioned to help you maximize the availability, value, precision and productivity of your System 3R equipment. Our cost-effective, customer-centric and expert services put your success at the center, ramp up your productivity and ensure predictable, uninterrupted uptime. System 3R's service engineers are your expert partners for a wide range of success-triggering services.

For more info ask your local System 3R dealer.

For contact details, please refer to:
www.system3r.com.

