



TECHSTONE

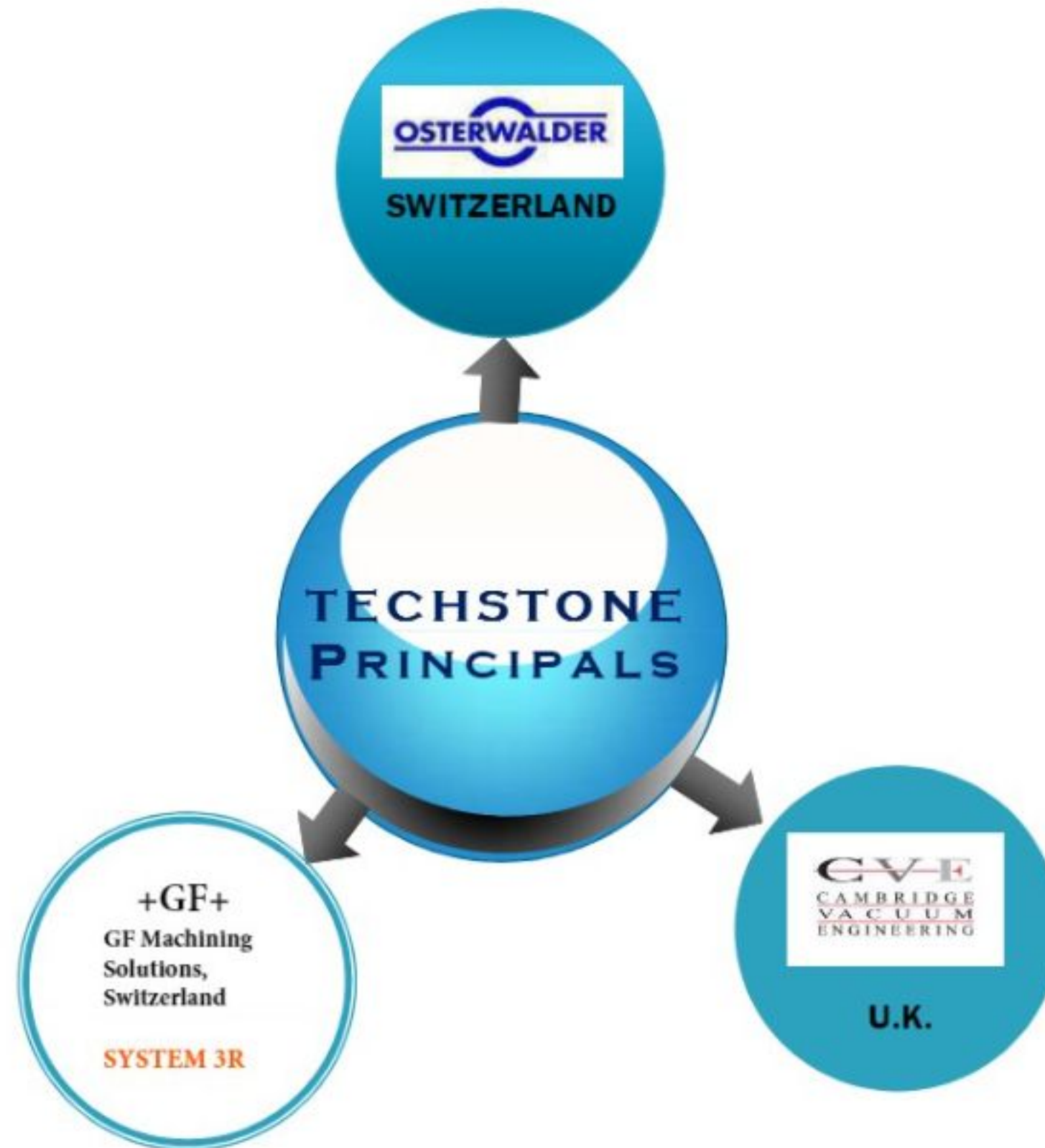
DEDICATED TO YOUR SUCCESS

TECHSTONE TECHNOLOGIES PRIVATE LIMITED

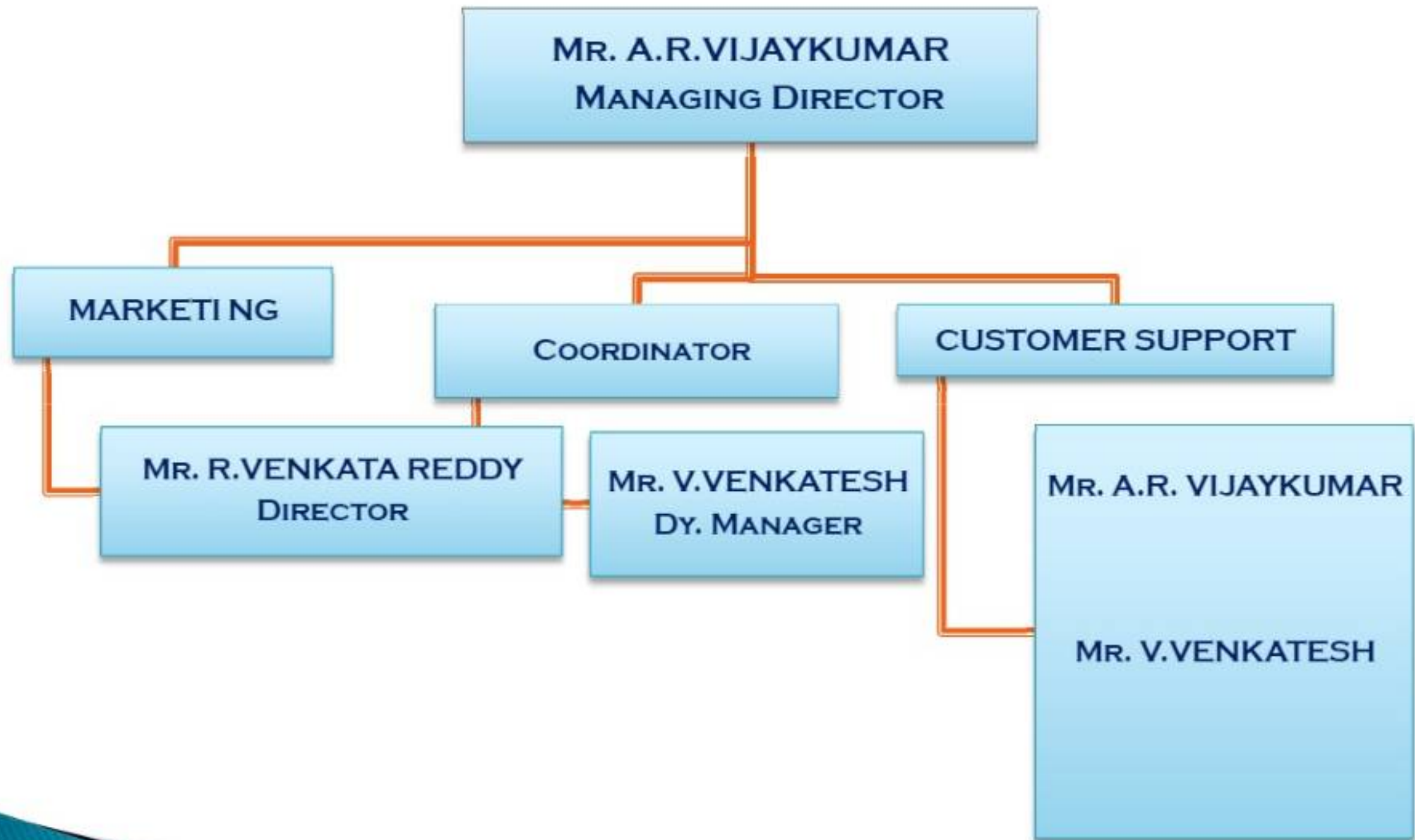
No.400, Ground Floor, 14th Cross, 2nd Block, Begur Road,
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TECHSTONE TECHNOLOGIES PRIVATE LIMITED BANGALORE

DEDICATED TO YOUR SUCCESS



OUR COMPANY



VACUUM FURNACES / ELECTRON BEAM WELDING

CVE
CAMBRIDGE
VACUUM
ENGINEERING



POWDER COMPACTING PRESSES

OSTERWALDER



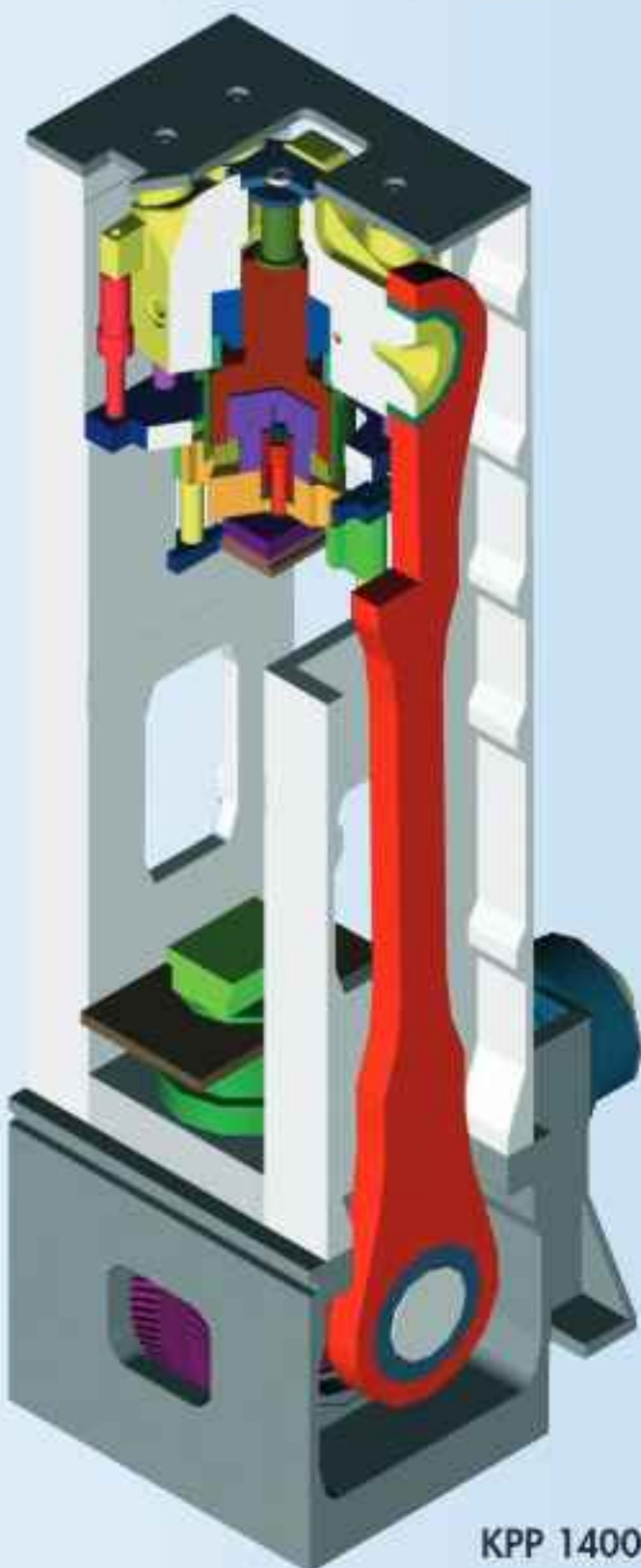


**Mechanical-Hydraulic Powder Presses
Type KPP**

Mechanical-Hydraulic Powder Presses Type KPP

The KPP-series has been developed to combine the productivity and energy efficiency of a mechanical press with the flexibility and the capabilities of a hydraulic press.

Base frame, upper part of the press as well as press frame are made of spheroidal graphite iron and thus guarantee maximum stability.



KPP 1400

The presses operate in the withdrawal principle. The top ram is driven mechanically by a double eccentric shaft via connecting rods. All other axes including die, top punch hold down device, filling shoe, core rod and additional axes, are closed loop controlled CNC-axes and hydraulically driven.

Unlike on conventional mechanical presses the frame is not exposed to tensile loadings during compaction. The integrated high precision guides ensure highest geometry accuracy and thereby an optimum guide of the top ram.

Gearbox

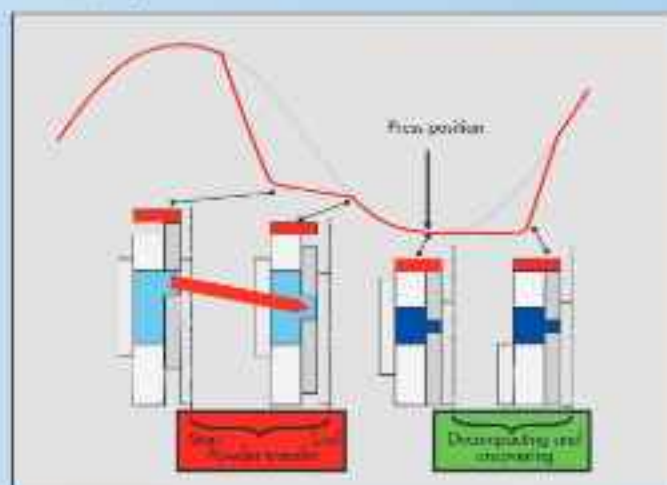
The double eccentric shaft is driven via a variable asynchronous motor. The motor accelerates the flywheel through a toothed belt. A combined hydraulic clutch brake unit with slip-monitoring provides a perfect drive, accurate gear changing times as well as a highly reliable and safe brake function. The complete drive unit is located in the base frame of the press.

Hydraulic Power Unit

The hydraulic axes are driven by a state-of-the-art hydraulic accumulator system. The manifold blocks are mounted as near as possible to the cylinders.

Multifunctional Top Punch Hold Down

Freely programmable



The closed loop controlled hold down device fulfills the following functions:

After the filling process the tooling is closed by running down the top ram and lowering the top punch hold down at the same time. Subsequently the powder transfer is performed via top punch hold down device and the axes of the multiplate die set. This sequence corresponds to that of a fully hydraulic press. It can be executed with or without precompaction.

After the top ram has reached the press position, the top punch hold down is activated. The demoulding process can be executed relating to force or to position.

Easy Programming and Operation

The three programming levels PRP, CAP and FRP ensure easy and fast programming. The parameters entered into the PRP and CAP levels are used to calculate a complete press sequence, which is displayed in the FRP. The press sequence can be optimized on all three levels.



PRP

(Part Related Programming)

The part dimensions are directly entered in PRP.



CAP

(Computer Assisted Programming)

Process parameters are defined on CAP level. Integrated optimization programs assist the operator in bringing the part to size and density after a few strokes.



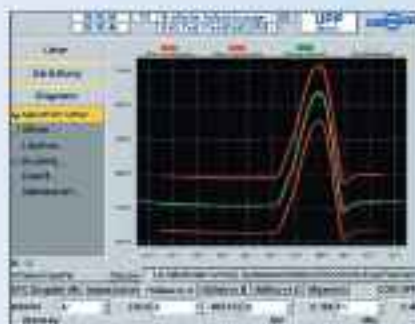
FRP

(Free Programming)

In free programming almost any movement can be programmed with the highest level of safety for the tools and the press.

Production- and Quality Monitoring

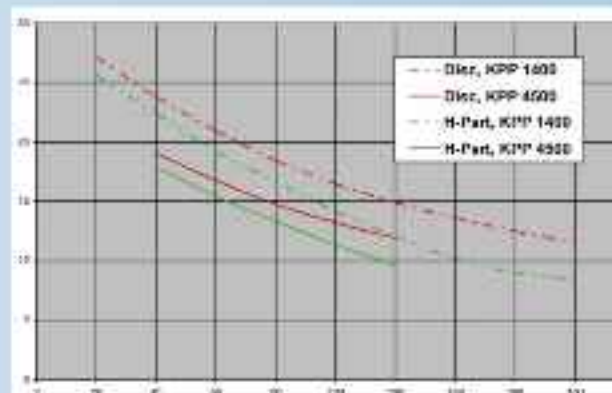
A continuous force- and position monitoring of all axes guarantees maximal process security. The visualisation is numerical or graphical.



- Dynamic force measurement
- Tool protection
- Force monitoring
- Oscilloscope
- SPC (Statistic Process Control)
- Internal or external data storage

Productivity

Compaction trials have proven that the presses of the KPP series do not only feature highest productivity but also exceptional part quality. The Osterwalder angle/time management optimizes the timing sequence and allows maximum filling time.



Energy Efficiency

The extremely low energy consumption of the KPP presses cannot be met by any fully hydraulic system.

Mechanical-Hydraulic Powder Presses Type KPP

Quality

- Positioning accuracy $\pm 0,01\text{mm}$
- Repetition accuracy $\pm 0,01\text{mm}$

Productivity

- High stroke rates due to mechanical main drive

Energy Consumption

- The hybrid drive concept results in minimal energy consumption

Key Features

- Three-level programming (PRP, CAP and FRP)
- Powder transfer with closed loop top punch hold down
- Compensation of punch deflection
- Automatic filling height correction
- Contour filling
- High reliability

Press series		KPP 630	KPP 1400	KPP 2500	KPP 4500
Forces					
Pressing force top ram max. (m)	kN	630	1400	2500	4500
Withdrawal force max. (die) (h)	kN	400	1050	2000	2600
Counter force in press position max. (die) (h)	kN	400	1300	2000	2900
Force lower core rod up/down	kN	35/15	65/40	65/40	65/40
Force top punch hold down in pressing direction	kN	70	90	120	450
Strokes					
Stroke top ram (m)	mm	200	218	218	218
Compact height adjustment (h)	mm	80	80	80	80
Filling height	mm	180	180	180	120
Stroke die	mm	180	180	180	120
Stroke lower core rod (h)	mm	150	150	150	150
Stroke filling shoe (h)	mm	320	320	320	320
Stroke top punch hold down (h)	mm	100	100	100	100
Positioning accuracy					
Minimum programmable increment	mm	0,001	0,001	0,001	0,001
Repetition accuracy	mm	+0,01	+0,01	+0,01	+0,01
Positioning accuracy filling shoe	mm	< 0,1	< 0,1	< 0,1	< 0,1
General information					
Stroke rate	H/min	6-35	6-30	5-22	5-18
Electric power (without additional aux)	kW	43	64,5	97,5	157,5
Opening for die set	mm	Depending on the number of pressing levels			
total height	mm	Depending on the height of the multiplaten die set			
total weight (incl. multiplaten die set)	kg	11 000	27 000	42 000	70 000

Remarks: h – hydraulic, m – mechanical

Dimensions, technical data and design are subject to change

The Osterwalder product range:

- Hydraulic powder presses of the CA-NC II series with a pressing force of 120 up to 1200 kN
- Hydraulic powder presses of the UPP series with a pressing force of 1400 kN up to 10 000 kN

Our service program offers:

- Engineering
- Application consulting
- Commissioning
- Training
- After-sales service
- Inspections

Together we will reach your goal!

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OUR MISSION

YOUR ADVANTAGE

- ✓ Cost Effect Solutions
- ✓ Local and Global network
- ✓ EXCEL Standard of Services

OUR FOCUS

- ✓ Value Engineering
- ✓ Product Support / Customer Satisfaction
- ✓ Enhance Marketing Coverage

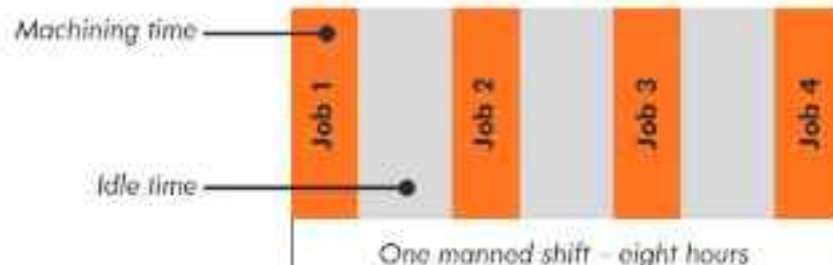


Reference systems for metal cutting, Die-sinking & Wire EDMs

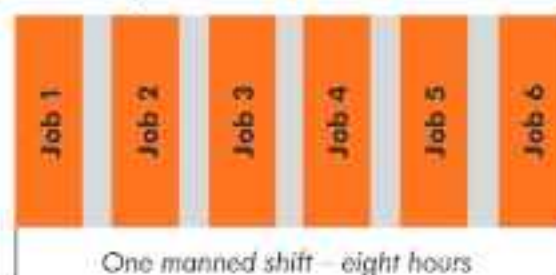


**ONE
SOURCE**
*productivity
solutions*

Conventional setting-up



Pallet system



Higher productivity, calculation example:

	Conventional setting-up	Pallet system
Working time per day	8	8
Setting-up time per day (hours)	4	0.5
Spindle time per day	=4	=7.5
Working days per week	x5	x5
Spindle time per week	= 20	= 37.5

Faster payback, calculation example:

	Conventional setting-up	Pallet system
Hourly invoicing (€)	50	50
Spindle time / week (hours)	x20	x37.5
Revenue / week (€)	= 1 000	= 1 875
Capital cost of machine (€)	150 000	150 000
Capital cost pallet system (€)	0	+10 000
Total capital outlay (€)	= 150 000	= 160 000
Paybacktime (weeks)	150	85



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.

Manual chuck Ø100 3R-600.28-S

Cast chuck with ground back face for mounting in a fixture or on 3R-SGA26400.

- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Weight 1.1 kg



Adapter plate 3R-SGA26488

For mounting of 3R-600.28-S on machine table. Supplied with fixing screws for chuck and table.



3R-SGA26675 is an adapter plate for Macro Ø100 mm chuck to enable attachment to

- The hole-pattern suit chucks:
- 3R-600.28-S
 - 3R-600.14-30 (no flushing)
 - 3R-602.81 (no flushing) (chuck with hole-pattern Ø84 mm)



Manual chuck 3R-610.21-S

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

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



Automatic table chuck 3R-SG610.46

Pneumatic chuck with integral air unit.

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



Pallet 54x54 mm, MacroStd

Hardened pallet for copper electrodes and workpieces.

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

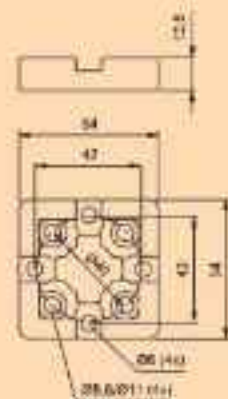
Note: For graphite electrodes, spacer plate 3R-658.1E-S is required.

3R-651.7E-S

- Nickel-plated side faces
- Adapted for automatic changing
- Supplied in sets of 8
- Weight per set 1.3 kg

3R-651.7E-XS

- Untreated side faces
- Adapted for automatic changing
- Supplied in sets of 8
- Weight per set 1.3 kg



Control rod 3R-656

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

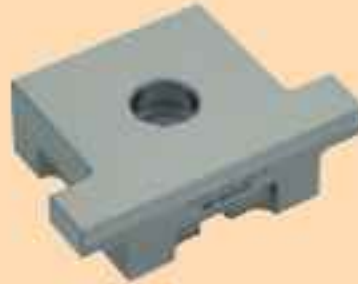
- Measuring length 36 mm
- Weight 1 kg



Control ruler 3R-606.1

For setting angular positions and
for centring Macro chucks.

- 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



Collet chucks

3R-659.16-P

- For collets ER16
- Electrode size 0.5-10 mm
- Flushing duct
- Built-in height 57 mm
- Weight 0.8 kg

3R-659.20-P

- For collets ER20
- Electrode size 1-13 mm
- Flushing duct
- Built-in height 62 mm
- Weight 1.2 kg

3R-659.32-P

- For collets ER32
- Electrode size 2-20 mm
- Flushing duct
- Built-in height 82 mm
- Weight 1.2 kg



Collet set 3R-SGER16

Collet chuck	Ø1-0.5 mm
Collet chuck	Ø2-1 mm
Collet chuck	Ø3-2 mm
Collet chuck	Ø4-3 mm
Collet chuck	Ø5-4 mm
Collet chuck	Ø6-5 mm
Collet chuck	Ø7-6 mm
Collet chuck	Ø8-7 mm
Collet chuck	Ø9-8 mm
Collet chuck	Ø10-9 mm
Collet chuck	Ø11-10 mm
Collet chuck	Ø12-11 mm
Collet chuck	Ø13-12 mm



Collet set 3R-SGER20

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



Collet set 3R-SGER32

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



Measuring probes

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

- Max ball deflection:
X-Axis $\pm 10^\circ$
Y-Axis $\pm 10^\circ$
Z-Axis ± 3 mm

3R-656.31-3P

- Building-in height 112 mm
- Measuring ball Ø3 mm
- Weight 0.6 kg

3R-656.31-5P

- Building-in height 112 mm
- Measuring ball Ø5 mm
- Weight 0.6 kg



Measuring probe 3R-JP656.21-SP03

Measuring probe with measuring head for machines
with measurement cycle function.

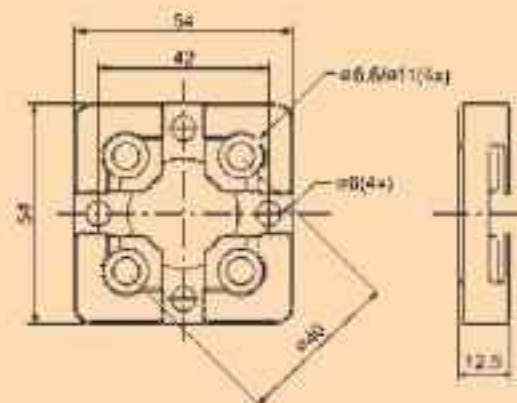
- Building-in height 130 mm
- Measuring ball Ø3 mm
- Stiff probe
- Weight 0.6 kg



Reference element 54 x 54 mm LX-651.7E-P

Precision cast with clearance holes for 4 fixing screws.

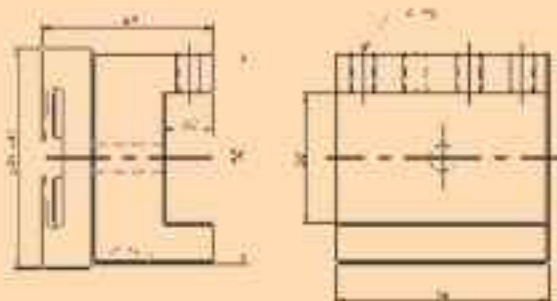
- Adapted for automatic changing
- Fixed index position 4 x 90°
- Supplied in sets of 10
- Weight per set: 1.6kg
- LX-651.7E-P-500 (sets of 500)
- LX-651.7E-P-1000 (sets of 1000)
- LX-651.7E-P-2000 (sets of 2000)



Slot holder mounted with reference element LX-678.2E-S

Stainless steel holder for flat electrodes with maximum width 30 mm.

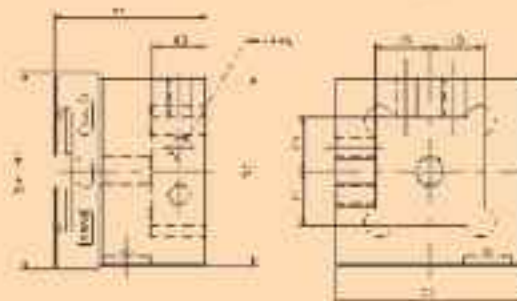
- Ready for code carrier
- Supplied in sets of 10
- Weight per set: 4.5kg
- LX-678.2E-S-500 (sets of 500)



Box holder mounted with reference element LX-678.4E-S

Stainless steel holder for square or round electrodes, maximum 28 mm.

- Ready for code carrier
- Supplied in sets of 10
- Weight per set: 5.1kg
- LX-678.4E-S-500 (sets of 500)



Long drawbar LX-605.1E

To be used with automatic Macro chuck. Supplied in sets of 10.
Weight per set: 1.0kg



Short drawbar LX-605.2E

To be used with manual Macro chucks. Supplied in sets of 10.
Weight per set: 0.7kg

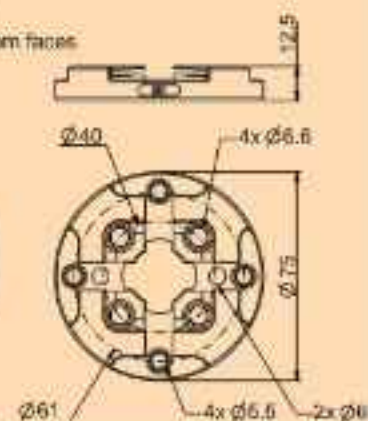


Reference element (Rust Resistant) LX-651.75E-P

Cast and hardened reference element Ø75x12.5 mm with 8 clearance holes for fixing screws.

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

- Fixed index positions 4x90°
- Parallel-ground top and bottom faces
- Supplied in sets of 10
- Weight per set 2.4 kg



Pre-set in three axes

Mounting Heads



Pre-set in three axes with System 3Rs levelling adapter. This can be done with an accuracy of thousandths of a millimetre!

The simple, directly measurable references of the levelling adapter mean that presetting can be done on an ordinary surface plate, using one of System 3R's presetting stones.

Preset away from the machine. Lift the preset "package" into place – levelling adapter, holder and workpiece – fix with a few simple manual operations and start the machine. Simple, quick and precise.



Presetting stone 3R-228U

Mounting stone with bushings and holes for mounting chuck/reference elements. Use together with existing measuring machine or surface plate and a dial indicator.

- Dimensions 300x200x100 mm



Presetting kit, Econo 3R-228E & 3R-228EI

Mounting stone with bushings and holes for mounting chuck/reference elements. Use together with existing measuring machine or surface plate.

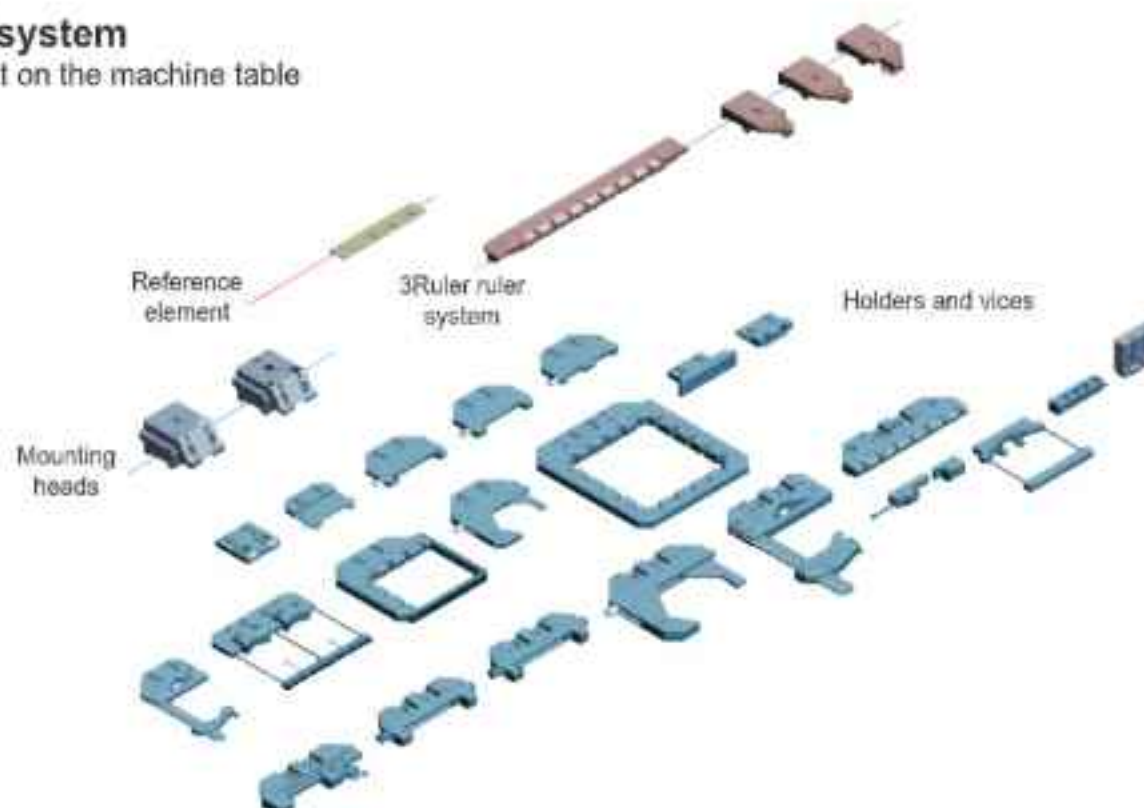
Note: 3R-228EI delivers with dial indicator measuring inch.

- Dimensions 300x200x100 mm
- Presetting stone
- Measuring stand
- Dial indicator (measures in mm)



The WEDM system

Basic equipment on the machine table

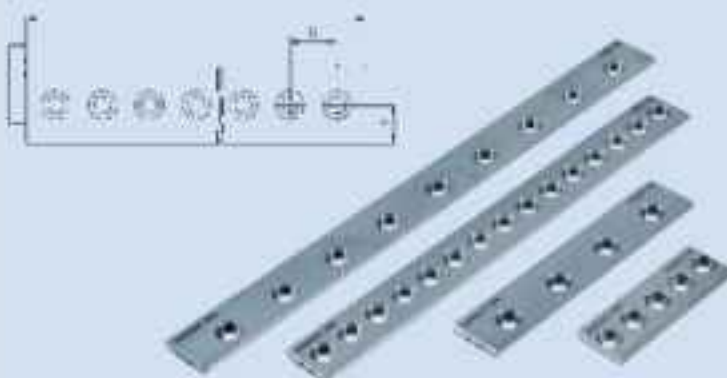


Reference element WEDM 3R-200.XJ.X

Reference elements for machines with zero-line table. The length (L), hole spacing (C) and hole edge spacing (B) of the hardened reference elements are matched to the machine in question.

Note: When ordering, state machine make and type.

- Supplied with end stops



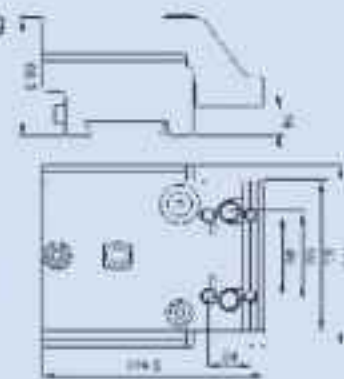
Levelling adapter, WEDM 3R-272HP

For manual mounting of SuperVice, a holder or a fixture in the WEDM system.

Note: All holders including HP can be fixed.

Note: Also fits the ICS system if the clamping jaw (17850-00) is changed.

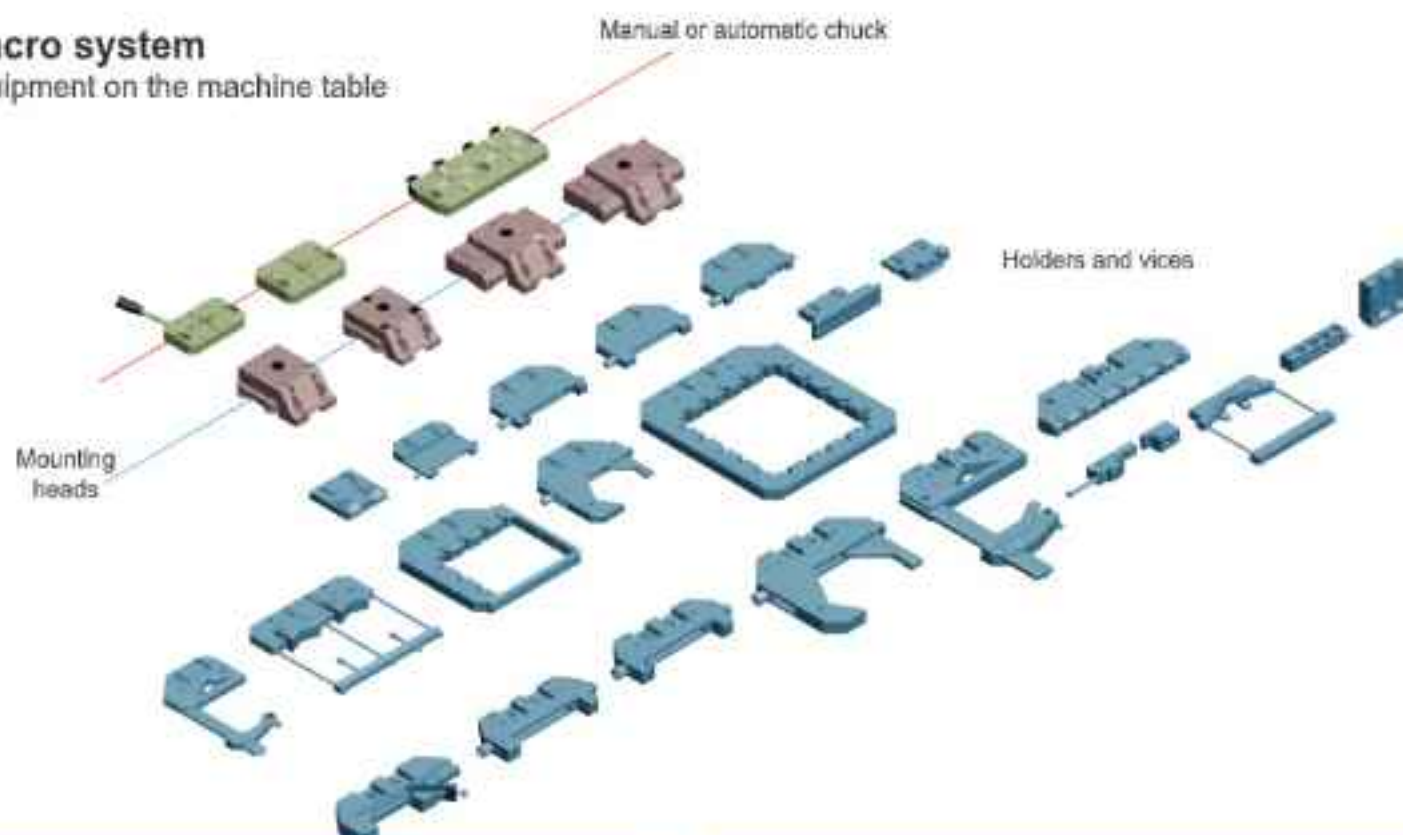
- Adjustable in three axes
- Supplied without drawbar
- Recommended maximum load 12 kg
- Weight 1.4 kg



Alignment of 3R reference elements in relation to the machine's X/Y motions takes place by indexing on, for example, the surface R.

The Macro system

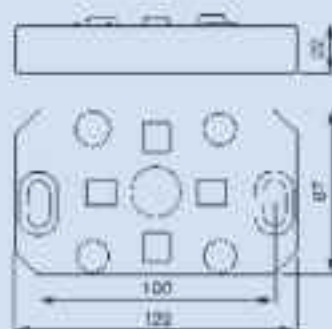
Basic equipment on the machine table



Manual chuck for Macro 3R-602.27

Manual chuck with lever for Macro holder. Horizontal mounting on the machine table. Supplied with drawbar 3R-605.27RS.

- Clamping force 6000 N
- Built-in latch function
- Fixed index positions 4x90°
- Weight 1.1 kg

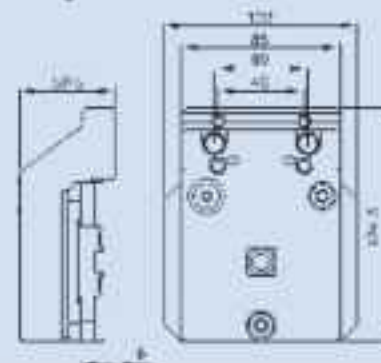


Levelling adapter, Macro 3R-262HP

For mounting SuperVice, a holder or a fixture in the Macro system.

Note: All holders including HP can be fixed.

- Adjustable in three axes
- Adapted for automatic changing
- Supplied without drawbar
- Ready for code carrier
- Recommended maximum load 15 kg
- Weight 2.4 kg



SuperVice 3R-292.1

For clamping rectangular workpieces up to 77 mm.

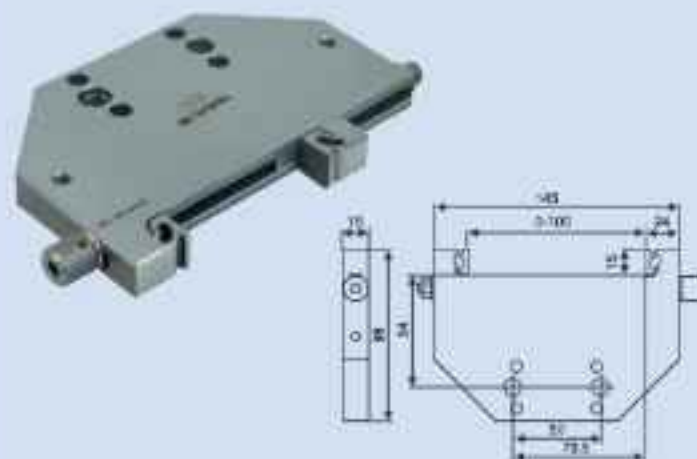
- Tightening torque 4 Nm
- Weight 0.6 kg



SuperVice 3R-292.3

Workpieces <100 mm.

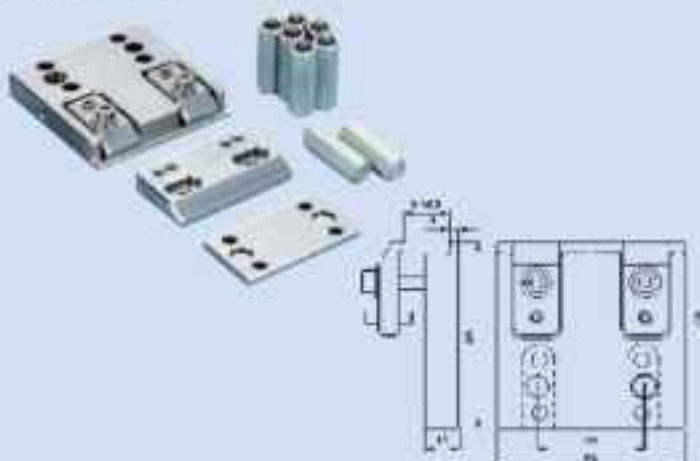
- Recommended maximum workpiece weight 7 kg
- Recommended tightening torque 7 Nm
- Weight 1.1 kg



Vice 3R-294.3

For vertical clamping of workpieces up to 100 mm.

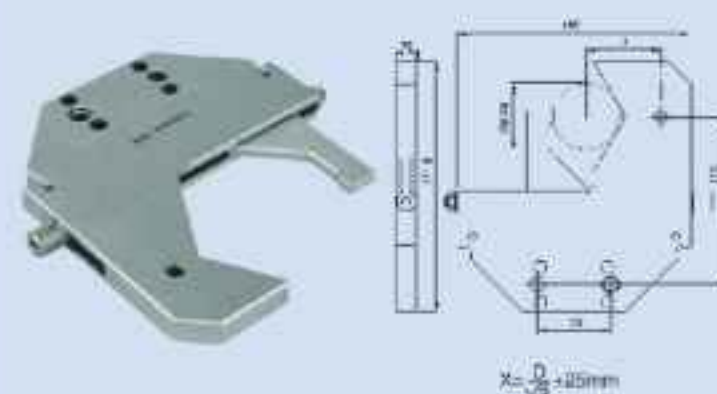
- Recommended maximum workpiece weight 7 kg
- Recommended tightening torque 7 Nm
- Weight 0.7 kg



SuperVice 3R-293.3

Vice for horizontal clamping of round workpieces 8-90 mm.

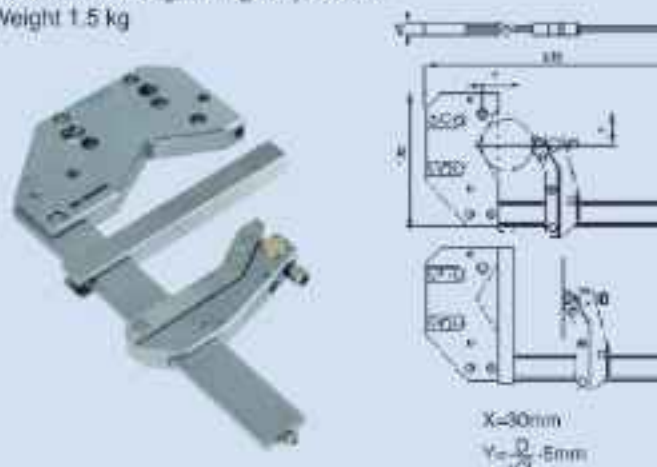
- Recommended maximum workpiece weight 7 kg
- Recommended tightening torque 7 Nm
- Weight 1.7 kg



Universal holder 3R-293.33

Holder for round workpieces 8-100 mm, or rectangular workpieces up to 100 mm.

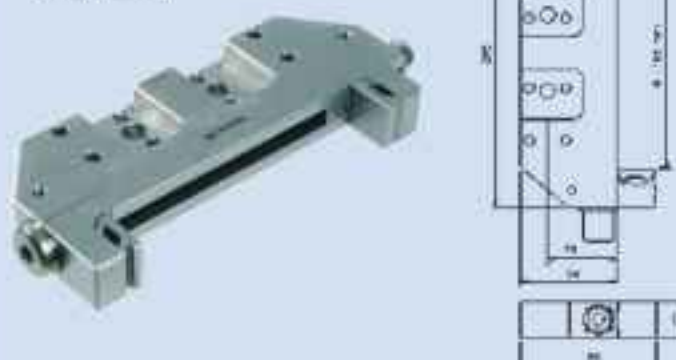
- Recommended maximum workpiece weight 7 kg
- Recommended tightening torque 3 Nm
- Weight 1.5 kg

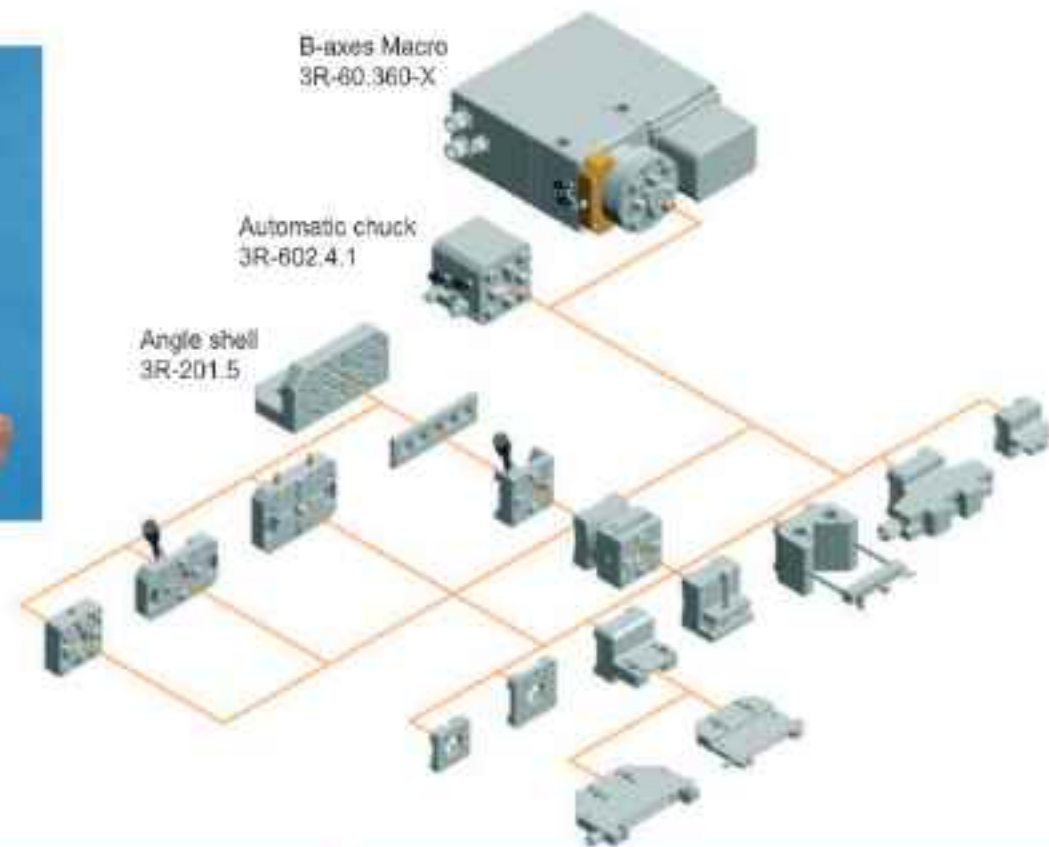


SuperVice Magnum 3R-292.6HP

Vice for horizontal clamping of rectangular workpieces < 155 mm.

- Note: Mounts on HP, Magnum or MacroTwin leveling adapter.*
- Recommended maximum workpiece weight 12 kg
 - Recommended tightening torque 15 Nm
 - Weight 2.8 kg





Macro swivelling element, wire EDM 3R-203.66

3R-203.66 is a swivelling element with a manual Macro chuck and mechanical locking of the set position. Vernier scale for quick setting in 0.1-degree steps. Use with sine ruler 3R-216.6 and gauge block for precise angle setting.

- Maximum hanging load 8 Nm
- Stainless steel body
- Engraved hard-metal XY-references for minimum wear
- Height 74.5 mm
- Diameter 75.5 mm
- Weight 2 kg
- Delivered with 5 mm Allen key
- Drawbar 3R-605.2RS (built separately)

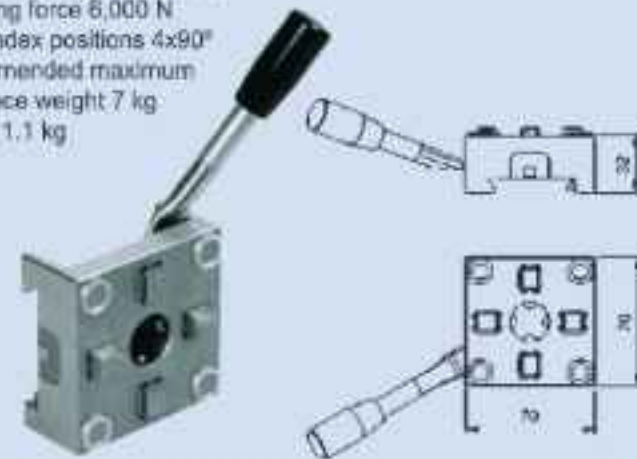


Manual chuck, Macro 3R-602.27-1

Chuck adapter with lever for Macro holder in the WEDM system. Supplied with drawbar.

Note: When mounting on the reference element, the two clamping jaws must be tightened with the same torque, 4 Nm.

- Required drawbar 3R-605.27
- Clamping force 6,000 N
- Fixed index positions 4x90°
- Recommended maximum workpiece weight 7 kg
- Weight 1.1 kg



Torque wrenches

3R-SG914-03

- Torque 3 Nm

3R-SG914-04

- Torque 4 Nm

3R-SG914-06

- Torque 6 Nm

3R-SG914-07

- Torque 7 Nm

3R-SG914-10L

- Torque 8 Nm

3R-SG914-10

- Torque 10 Nm

3R-SG914-15

- Torque 15 Nm



Torque wrenches

3R-614-04

- Torque 4 Nm

3R-614-06

- Torque 6 Nm



Small Part Clamps with ICS Zeroline



C 668 060
Clamping support 155



C 458 250
ICS guide adapter



C 450 000 + C 450 040
ICS levelling head + adapter A



C 665 700 / C 665 720
ICS Zeroline adapter A/B



C 170 xxx
ICS guide rail

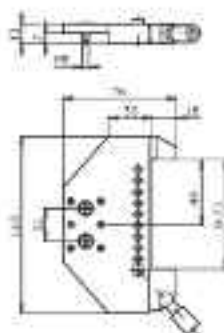


C 458 200
ICS levelling head

ICS Mecavice A (0-75) C 577 250

Workpiece holder with guide for horizontal parallel clamping.

- Functional height 13 mm
- Clamping range 0 – 75 mm
- Maximum workpiece weight 1 kg
- Maximum workpiece dimensions 75 x 75 x 20 mm
- Weight 0.5 kg



ICS Double clamp A (5/80) C 550 670

Clamp for holding thin plates with support lips at zero height. A 4 mm thin shim can be inserted between the adaptation faces for collision free clamping.

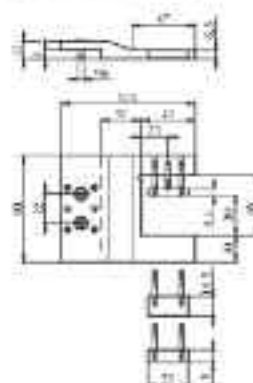
- Clamping range 0 – 5 mm
- Maximum workpiece weight 1 kg - overhung clamping
- Weight 0.4 kg



ICS Side clamp A (20-40) C 577 200

Collateral clamping of rectangular or square small workpieces from 20 to 40 mm width.

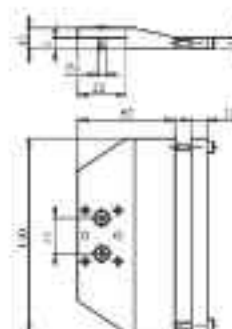
- Functional height 6.5 mm
- Clamping range 20 – 40 mm
- Maximum workpiece weight 0.5 kg
- Weight 0.5 kg



ICS Flange A (7/120) C 641 900

Support for the lateral mounting of workpiece.

- Functional height 7 mm
- Maximum workpiece weight 1 kg
- Maximum workpiece dimensions width 100 mm max
- Weight 0.5 kg



The 3Ruler ruler system

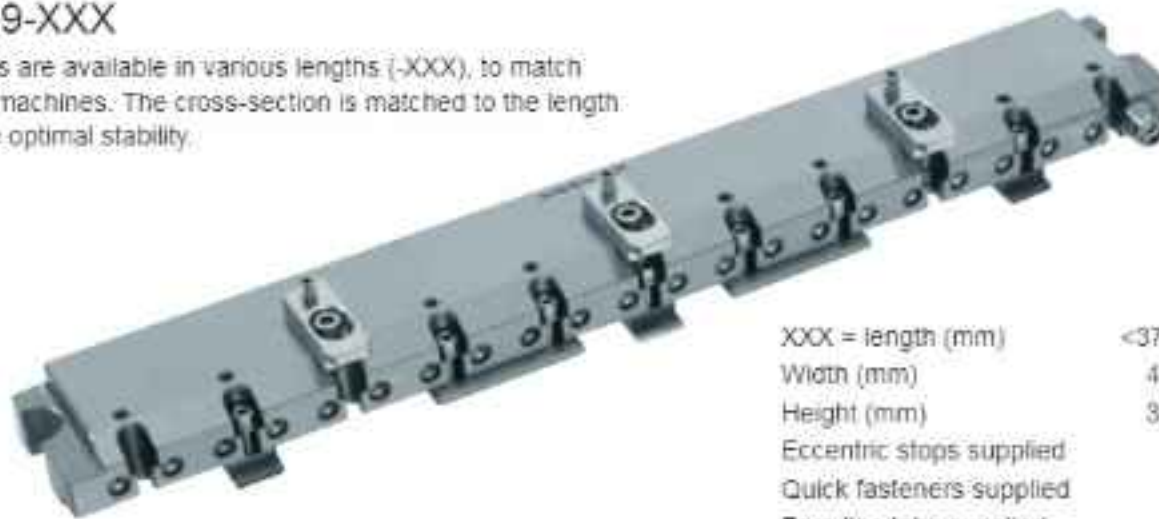
The 3Ruler ruler system has been developed for clamping medium-sized and large workpieces in machines with a parallel or U-shaped machine table, as well as for machines with a frame table. The rulers, which have built-in height adjustment, are used singly or in pairs.

With the aid of 3Ruler, rectangular or round workpieces, lightweight or heavy, large or small, are located on the machine zero line, without risk of collision. A comprehensive range of accessories gives an unsurpassed range of applications.

- Machine-adapted ruler lengths
- Repeatable accuracy with the aid of reference elements
- Stable mounting of large workpieces
- A broad range of accessories gives great flexibility

3Ruler 3R-239-XXX

The rulers are available in various lengths (-XXX), to match different machines. The cross-section is matched to the length to ensure optimal stability.



XXX = length (mm)	<370	371-595	596-950	>950
Width (mm)	45	60	86	86
Height (mm)	30	30	36	36
Eccentric stops supplied	1	1	1	1
Quick fasteners supplied	2	2	2	2
Zero line tabs supplied	2	2	3	5
5 mm tabs supplied	2	2	2	3
Clamps supplied	2	2	3	5

See also the 3Ruler guides for your machine on – www.system3R.com

3Ruler, double-sided 3R-239-XXX-D

Double-sided rulers are available in various lengths (-XXX), to match different machines. The cross-section is matched to the length to ensure optimal stability. With these rulers, accessories can be clamped on both sides of the ruler.

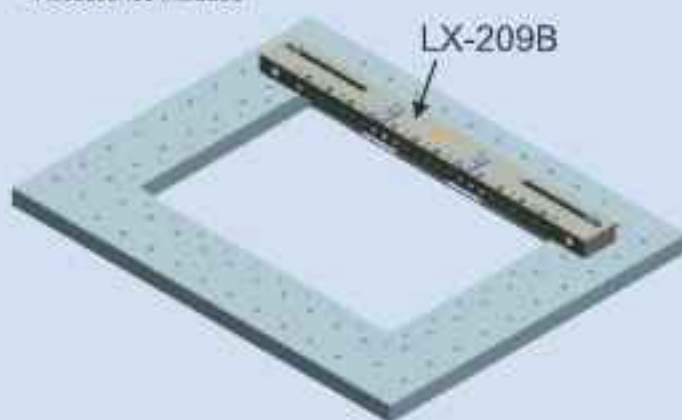


XXX = length (mm)	< 370	371-595	596-950	> 950
Width (mm)	45	60	86	86
Height mm	30	30	36	36
Eccentric stops supplied	2	2	2	2
Quick fasteners supplied	2	2	2	2
Zero line tabs supplied	4	4	6	10
5 mm tabs supplied	4	4	4	6
Clamps supplied	4	4	6	10



LX-209-610.1 Single ruler

- Length 610 mm
- Accessories included

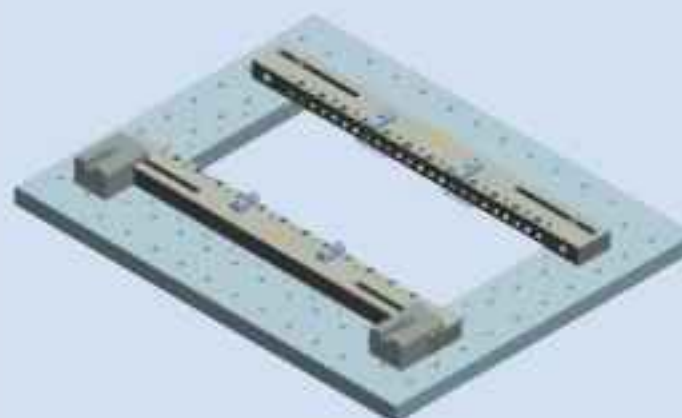


The new Locx ruler kits from System 3R has been developed for clamping medium-sized and large work pieces in machines with a parallel or U-shaped machine table, as well as for machines with a frame table. The rulers can be used in single or in pairs.

With the System 3R Locx ruler, work pieces can be located on the machine zero line, without risk of collision. A comprehensive range of accessories enables a wide range of applications.

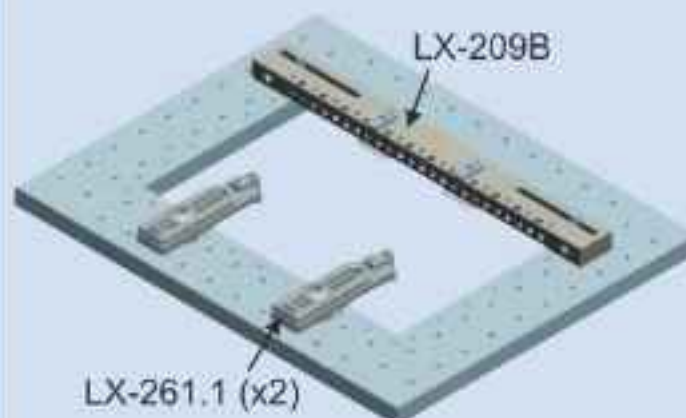
LX-209-610.2

Two rulers and two flexible clamps



LX-209-610.3

Single ruler and two sliding supports



The new Locx 2D WEDM Set from System 3R

is designed for holding small to medium sized work pieces in WEDM machines. The most frequent application of the Locx 2D Set are collision-free machining of plates with parallel ground outer faces of different sizes.

The Locx guide adapter enables to position any work piece hold by the Locx vice LX-577350 along the Locx reference element, in the work area of the WEDM machine.

The horizontal adjustment of the work piece is done by the adjusting screws in the Locx ICS vice and can be made on the Locx presetting stones or directly on the machine table. With the 2 adjusting screws on the backside of the Locx guide adapter a final radial adjustment of the work piece can be made.



Locx WEDM - 2D Set - LX - 151000

LX-151000 set consist of:

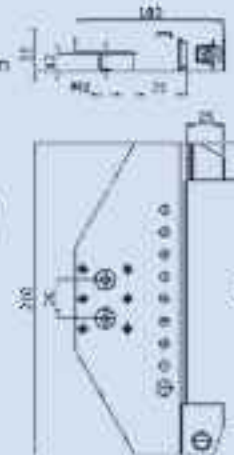
- LX-577350 Locx Vice (x1)
- LX-456360 Locx Guide Adapter (x1)
- LX-200.24J-2 Locx Reference Element (x1)



Locx WEDM vice 15-150 LX-577350

Workpiece holder with guide for horizontal parallel clamping.

- Functional height 22 mm
- Clamping range 15 – 150 mm
- Maximum workpiece weight 4 kg
- Maximum dimensions 150 x 120 x 22 mm
- Weight 1.6 kg



Locx Reference Element LX-200.24J.2

Reference element for WEDM machines with zeroline tables.

- Length 245 mm
- Hole spacing 50 mm / 5 x M8
- Weight 0.8 kg



Locx guide adapter LX-456360

Adapter with Locx adaptation for the use on Locx reference elements.

- 70 x 120 x 30 mm
- Weight 1.3 kg



Delphin Overview

Delphin	HCP	HSP/HHP	PSF/PHP	BIG
Workpiece weight recommended	<1000 kg	<2000 kg	<2000 kg	<10'000 kg
Centre distance recommended	100 - 200 mm	200 - 400 mm	200 - 400 mm	400 - 1000 mm
Clamping force	15 KN	15 KN	13 KN	50 KN
Holding force	60 KN	60 KN	60 KN	200 KN
Presence control	yes	no / yes	no / yes	yes
Lift-off function	yes, 1 mm	yes, 2 mm	no	yes, 2 mm
Releasing	hydraulic 30-70 bar	hydraulic 30-70 bar	pneumatic 6 bar	hydraulic 40-60 bar
Clamping	mechanical	mechanical	mechanical	hydraulic 30 bar, mechanical



Delphin HSP

The hydraulic system
for manual equipping



Delphin HHP

The hydraulic system,
suitable for automation



Delphin PSP

The pneumatic system
for manual equipping



Delphin PHP

The pneumatic system,
suitable for automation



Delphin HCP

The compact hydraulic system,
suitable for automation



Delphin BIG

The hydraulic system for large part
manufacturing, suitable for automation



Delphin Baseplates



Delphin baseplates

The universal Delphin plates

- Baseplate with hydraulic (HSP) or pneumatic (PSP) chucks
- Delphin Take 4 = 4 PSP or 4 HSP chucks
- Delphin Take 6 = 6 PSP or 6 HSP chucks
- Centre distance 250 mm
- Universal hole pattern for table mounting
- Attractive price!

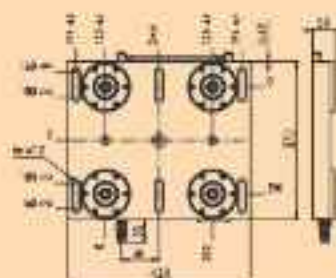


Specifications

- Material: steel, heat pre-treated and ground
- Centre distance 250 mm
- Defined hole pattern suitable for all machines
- Central bore for quick positioning
- Milled edge for quick positioning

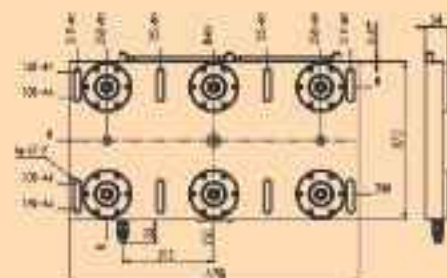
Take 4 - hydraulic C 265 400

- 4x HSP chucks



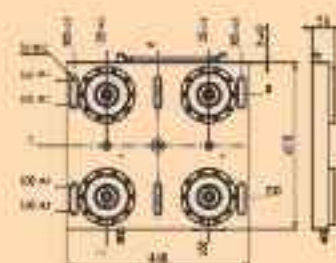
Take 6 - hydraulic C 265 600

- 6x HSP chucks



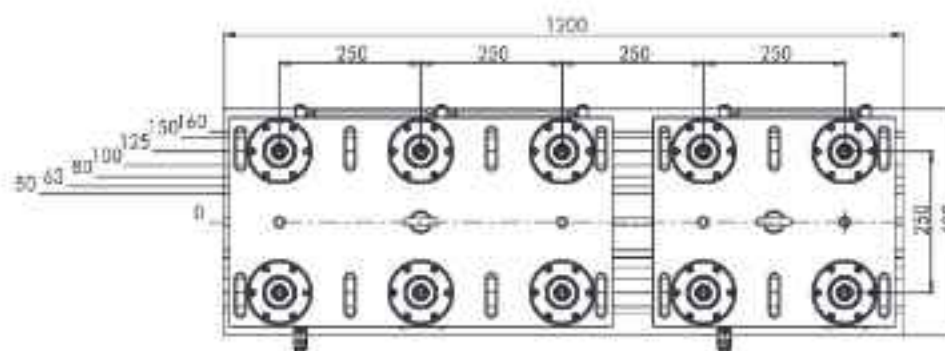
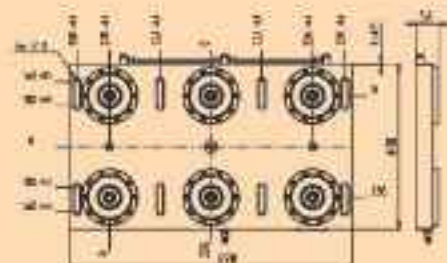
Take 4 - pneumatic C 242 400

- 4x PSP chucks



Take 6 - pneumatic C 242 600

- 6x PSP chucks



Set with 2 clamping spigots
S 812 000

1 x C 282 000 (centring on 2 axes)
1 x C 282 100 (centring on 1 axis)



Set with 4 clamping spigots
S 812 100

1 x C 282 000 (centring on 2 axes)
1 x C 282 100 (centring on 1 axis)
2 x C 282 200 (without centring)



Set with 6 clamping spigots
S 812 200

1 x C 282 000 (centring on 2 axes)
1 x C 282 100 (centring on 1 axis)
4 x C 282 200 (without centring)



Chuck protection cover

Chip protection full-coverage.
Required clamping spigot:
C 282 000 (not in scope of delivery).
Material: aluminium, anodised

C 266 040

for HSP
ø 139 x 20 mm

C 286 040

for PSP
ø 159,5 x 20 mm



Spigot hole protection cover
C 286 060

Chip protection for chuck, seals
the centre bore and the Z-support
of chuck remains usable.
Material: plastic
Dimensions: ø 28 x 32 mm
M8 for dismounting



Pallets with clamping spigots

Material: ground tool steel,
Centre distance: 250 mm

Pallet for 2 chucks

C 282 600

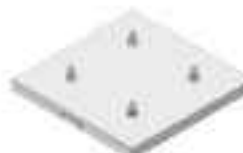
246 x 40 x 496 mm
with 2 clamping
spigots



Pallet for 4 chucks

C 282 620

496 x 40 x 496 mm
with 4 clamping
spigots



Hydraulic hand pump

for HSP baseplates

C 287 120

Oil tank: 0,4 l
Pressure: max. 50 bar
Volume: 4,6 cm³
Weight: 3,5 kg



Air control unit
for PSP baseplates
C 810 720

Without function for Z cleaning.
Air pressure: 8 bar max.
Medium: dry, filtered compressed
air in accordance with ISO 8573-1,
Class 3.4.3 or better



Machine table fixing sets

Set with the necessary number of
screws, washer and T-nuts for
Take 4 or Take 6 baseplates.
Specify T-slot width with order.

for Take 4

C 289 180

for Take 6

C 289 190



Seal set for slotted holes

Set with the necessary number of seals
for the slotted holes of the
Take 4 or Take 6 baseplates.

for Take 4

S 820 040

for Take 6

S 820 060



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

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



WorkPal Compact Servo – modest demands, major benefits

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

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

WorkPartner 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.



WorkMaster – a modular automation concept

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

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

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



WorkMaster Linear – the flexible Solution

WorkMaster Linear is an automation concept that gives extreme flexibility. By placing WorkMaster on rails, the changer unit can be made to serve a large number of machines, and at the same time more space is created for magazines and peripherals.

Several designs of magazine are available. The basic variants are modular racks or rotating magazines, where the shelves are matched to the pallet systems in System 3R's wide range of products.

Typical fields of application are:

- milling – changing of workpiece and cutting tool
- grinding – changing of workpieces
- die-sinking EDM – changing of workpieces and electrodes
- wire EDM – changing of workpieces

WorkShopManager

- Preparation – Order Creation, Operation lists & Identify
- CellManager – Manually loaded machines, robot loaded machines, Automatic electrode selection, Cutting tool monitoring & Robot manager
- Execution – Batch Builder, Batch ID, Magazine positions, Transfer of NC programs
- Monitoring

See separate publications for further information about WorkPal, WorkPartner, WorkMaster, WorkMaster Linear, Automation with six-axis industrial robots and WorkShopManager.



Index	3R-200 XJ X	8	3R-SGER32	5
	3R-203 66	11	C 170 XXX	12
	3R-228E	7	C 242 400	18
	3R-228EI	7	C 242 600	18
	3R-228U	7	C 265 400	18
	3R-239-XXX	13	C 265 600	18
	3R-239-XXX-D	13	C 266 040	19
	3R-262HP	9	C 282 600	19
	3R-272HP	8	C 282 620	19
	3R-292 1	10	C 286 040	19
	3R-292 3	10	C 286 060	19
	3R-292 6HP	10	C 287 120	19
	3R-293 3	10	C 289 180	19
	3R-293 33	10	C 289 190	19
	3R-294 3	10	C 456 250	12
	3R-600 28-S	4	C 458 000	12
	3R-602 27	9	C 458 040	12
	3R-602 27-1	11	C 458 200	12
	3R-606	5	C 550 670	12
	3R-606 1	5	C 577 200	12
	3R-610 21-S	4	C 577 250	12
	3R-614-04	11	C 641 900	12
	3R-614-06	11	C 665 700	12
	3R-651 7E-S	4	C 665 720	12
	3R-651 7E-XS	4	C 666 060	12
	3R-656	5	C 810 720	19
	3R-656 31-3P	5	LX-151000	15
	3R-656 31-5P	5	LX-200 24J-2	15
	3R-659 16-P	5	LX-209-610 1	14
	3R-659 20-P	5	LX-209-610 2	14
	3R-659 32-P	5	LX-209-610 3	14
	3R-JP656 21-SP03	5	LX-456360	15
	3R-SG610 46	4	LX-577350	15
	3R-SG914-03	11	LX-605 1E	6
	3R-SG914-04	11	LX-605 2E	6
	3R-SG914-06	11	LX-651 75E-P	6
	3R-SG914-07	11	LX-651 7E-P	6
	3R-SG914-10	11	LX-678 2E-S	6
	3R-SG914-10L	11	LX-678 4E-S	6
	3R-SG914-15	11	S 812 000	19
	3R-SGA26488	4	S 812 100	19
	3R-SGA26675	4	S 812 200	19
	3R-SGER16	5	S 820 040	19
	3R-SGER20	5	S 820 060	19

System 3R

Tooling

for electrode manufacturing & EDMing



**Design and
quality by
System 3R**

Contents

Introduction.....	page 4
MacroJunior & MacroCombi.....	page 10
MacroStandard & MacroHighPerformance.....	page 22
MacroNano.....	page 50
MacroMagnum.....	page 55
Matrix.....	page 64
GPS 240.....	page 70
Dynafix.....	page 79
Maxi.....	page 85
Mini.....	page 87
3Refix.....	page 94
Accessories.....	page 97
Automation.....	page 99
Index.....	page 102



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.

 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.**

**1
Minute
Set-up**

Conventional setting-up



Pallet system



Higher productivity, calculation example:

	Conventional setting-up	Pallet system
Working time per day	8	8
Setting-up time per day (hours)	-4	-0.5
Spindle time per day	=4	=7.5
Working days per week	x5	x5
Spindle time per week	= 20	=37.5

Faster payback, calculation example:

	Conventional setting-up	Pallet system
Hourly invoicing (€)	50	50
Spindle time / week (hours)	x20	x37.5
Revenue / week (€)	=1 000	=1 875
Capital cost of machine (€)	150 000	150 000
Capital cost pallet system (€)	0	+10 000
Total capital outlay (€)	=150 000	=160 000
Paybacktime (weeks)	150	85



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.

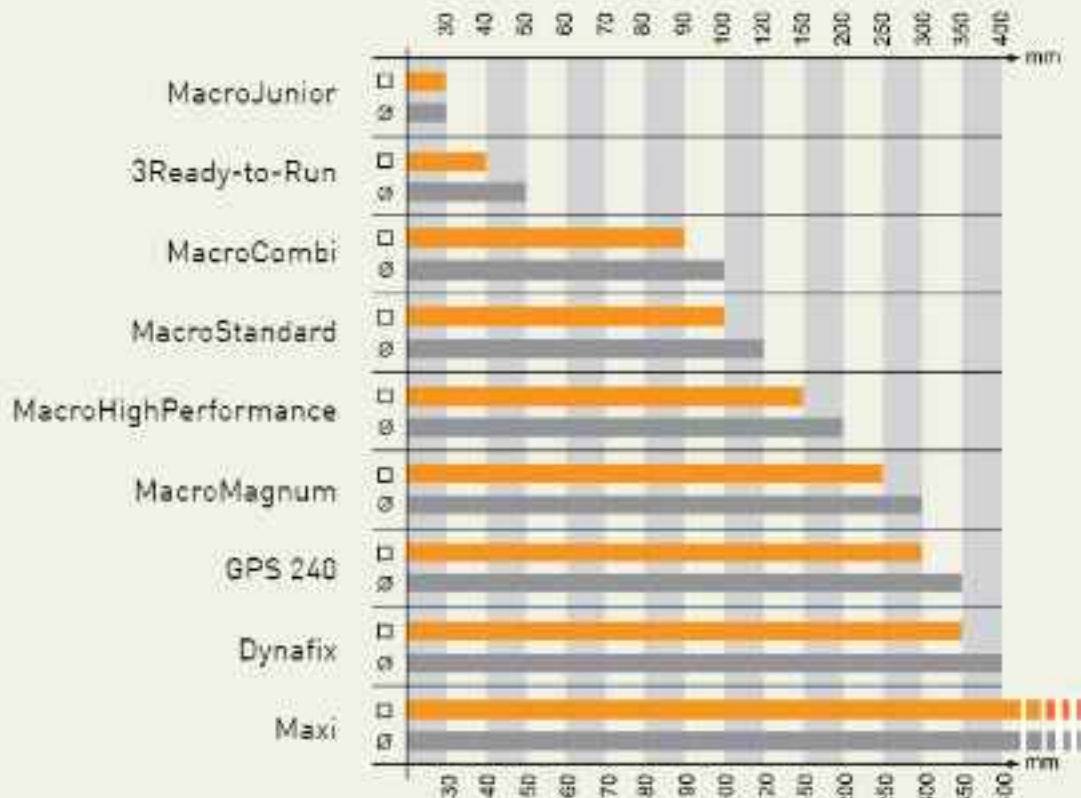
From small to large

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

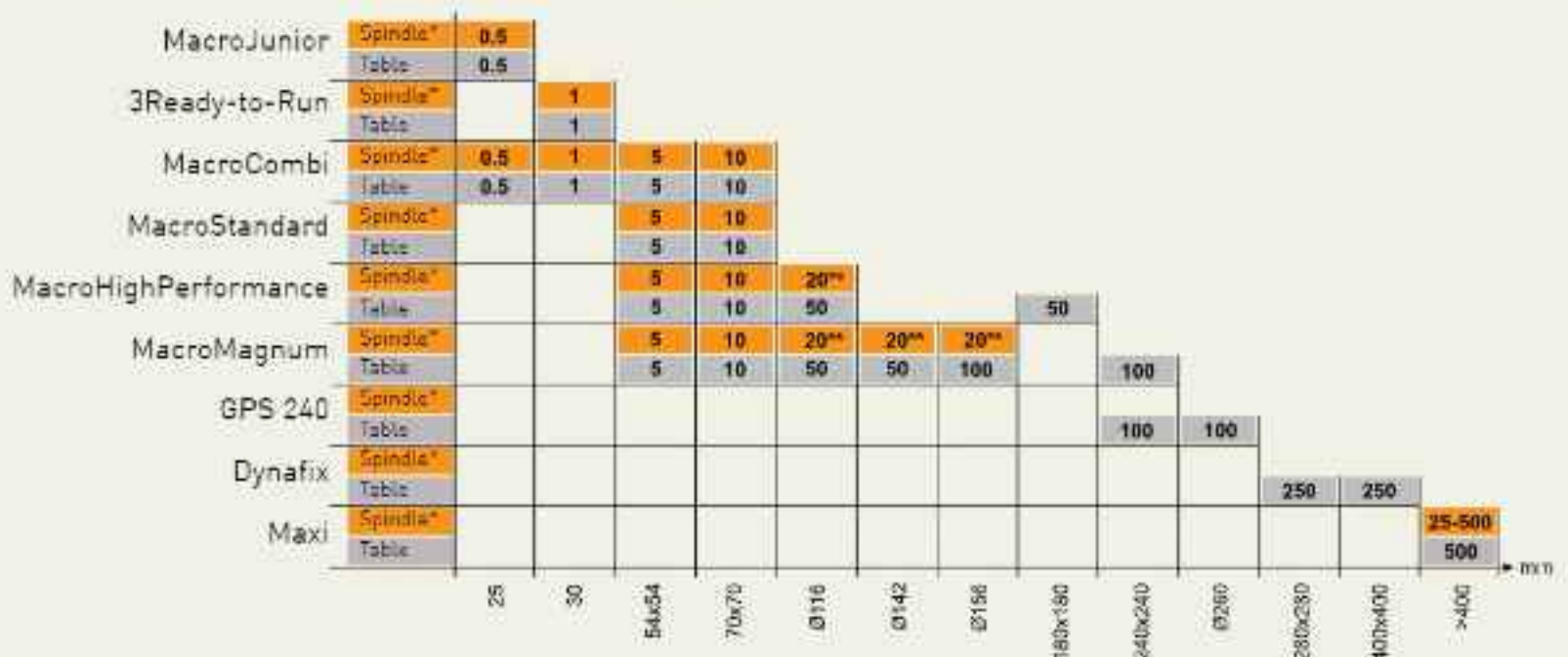
To satisfy all these different requirements, System 3R has developed reference systems of exceptional flexibility.

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

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



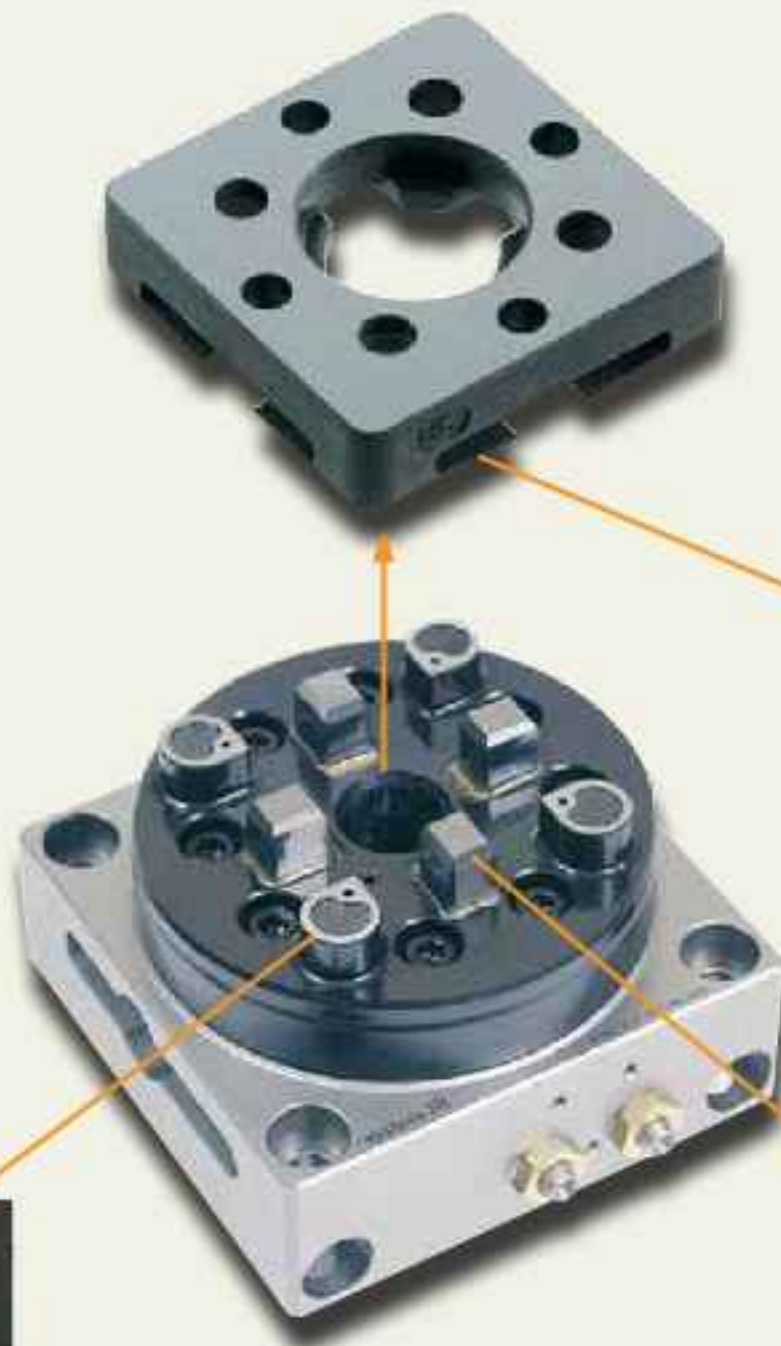
Maximum weight of workpiece or electrode, spindle chuck or table chuck / kg



* Die-sinking EDM spindle

** With automatic changing

Macro



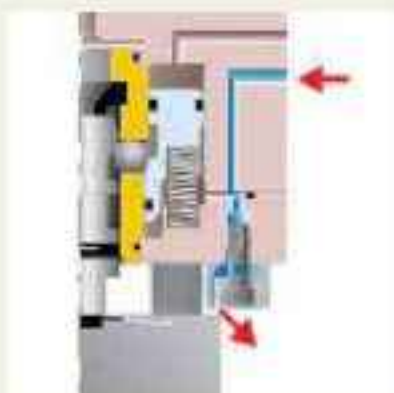
The references of the pallet are created directly in the pallet and on a single plane. There are no loose parts to be installed and adjusted by the user.



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



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



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 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)

- ... 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.

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.

VDP®



Example Micro Milling:

VDP advantages: The electrode Aspect Ratio $l / \varnothing$ was doubled with VDP.

Dimensions: $\varnothing \varnothing 134$ mm, length 48 mm

VDP (Vibration-Damped Palletisation)

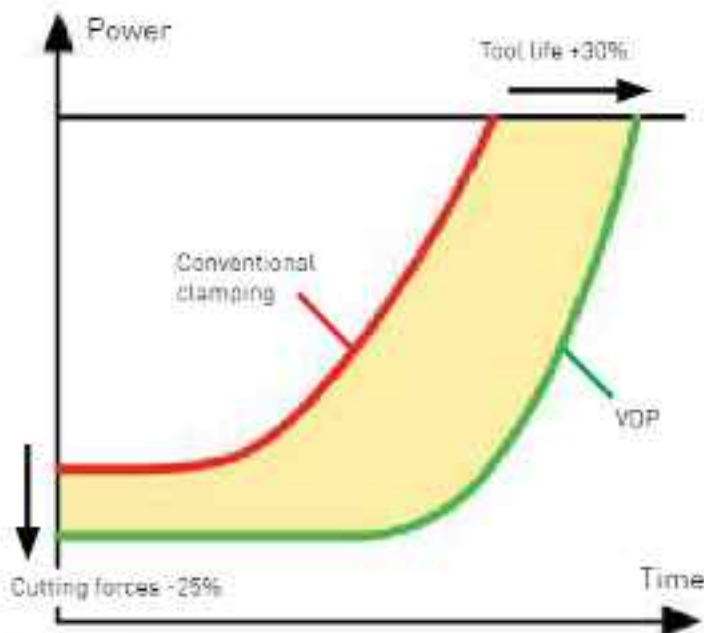
Increase your capacity with > +30%



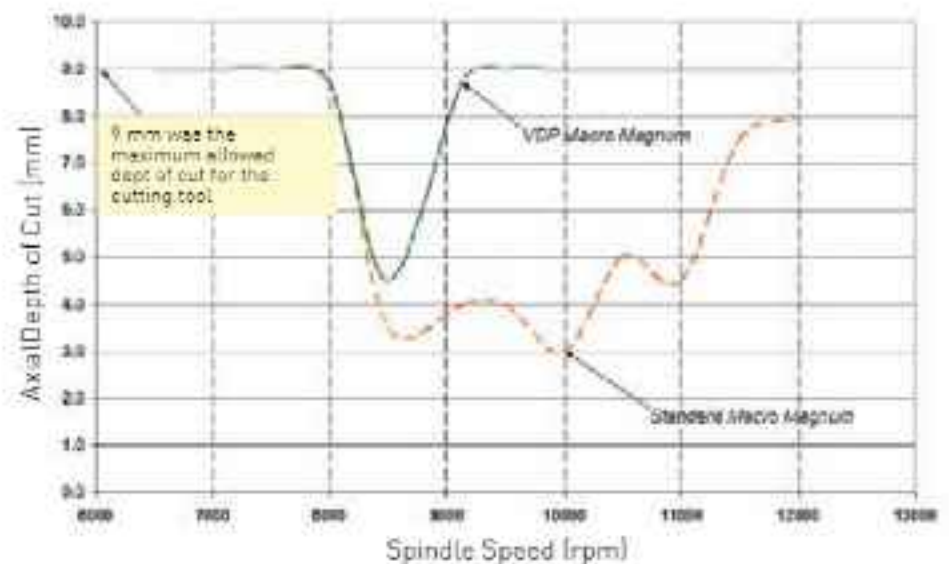
WITH



WITHOUT



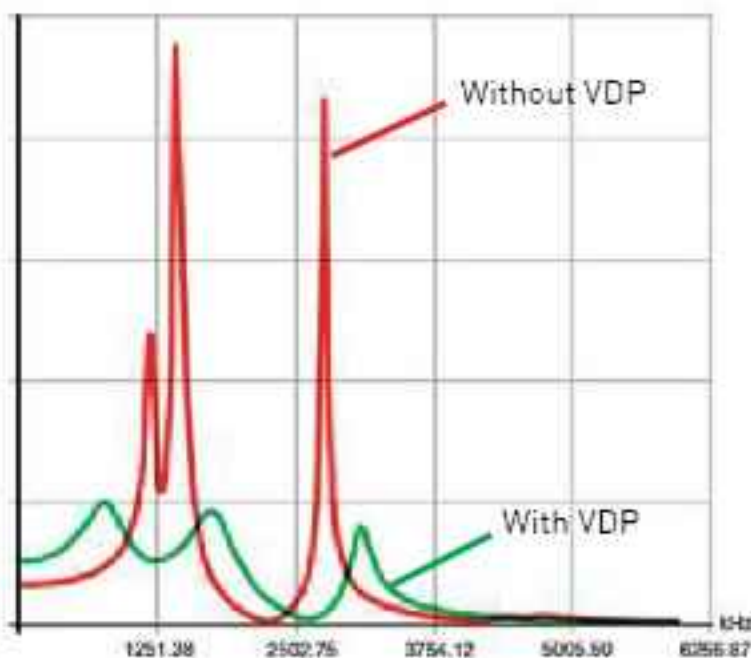
Less tool wear extends the life of the tools = increased revenue



Process Stability Analysis (Swiss machine tool manufacturer)

Cutting Speed [RPM]	Axial Depth of Cut [mm]		Increase in removal rate due to VDP [%]
	Magnum Std	Magnum VDP	
8500	3.5	4.5	28.6
9000	4.0	9.0*	125
10000	3.0	9.0*	200

*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.

MacroJunior & MacroCombi

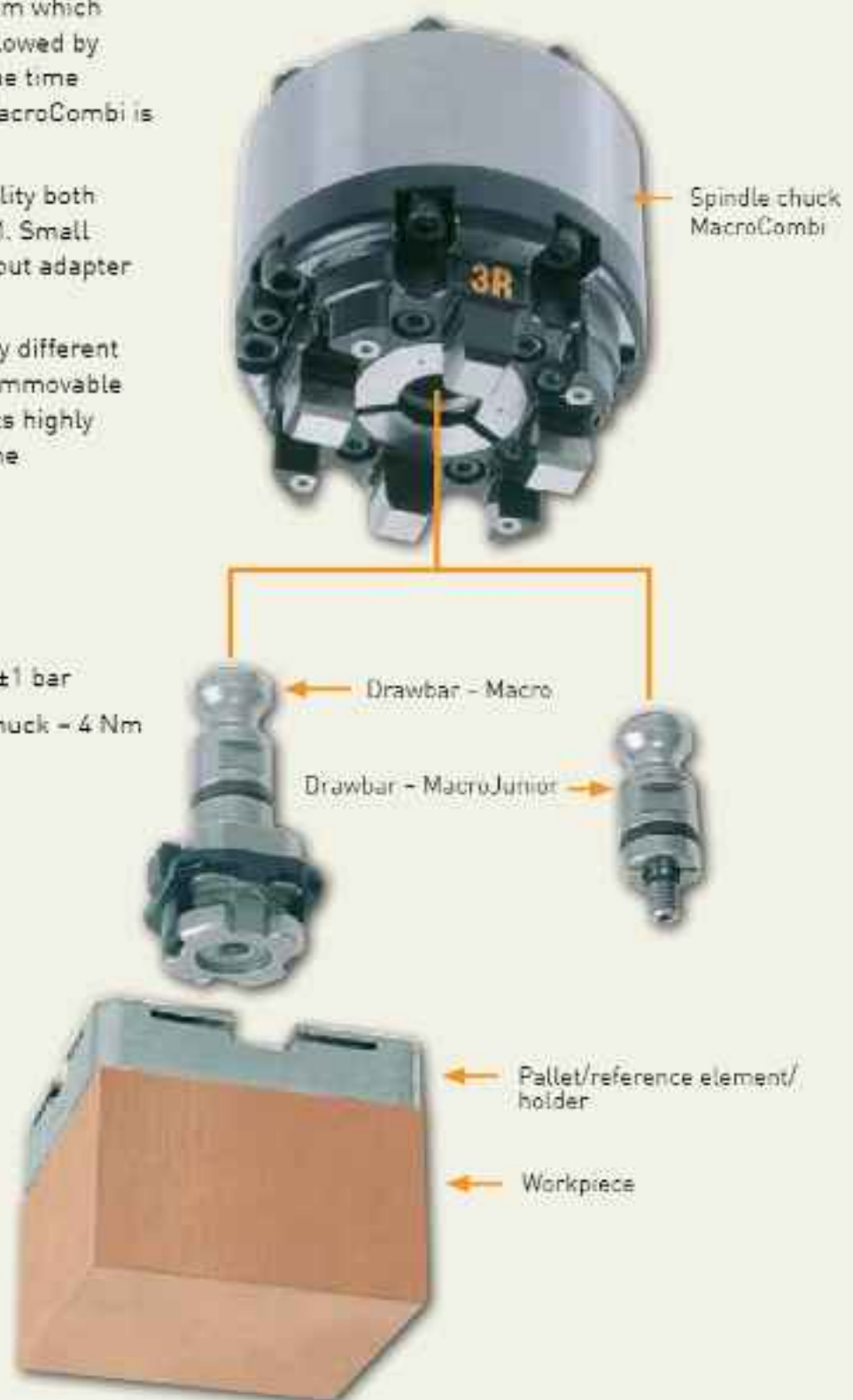
- ... gives extreme flexibility
- ... one chuck, two systems
- ... reduces setting-up times
- ... ensures precision and quality
- ... is suitable for automatic changing with System 3R's automation program.

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

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

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

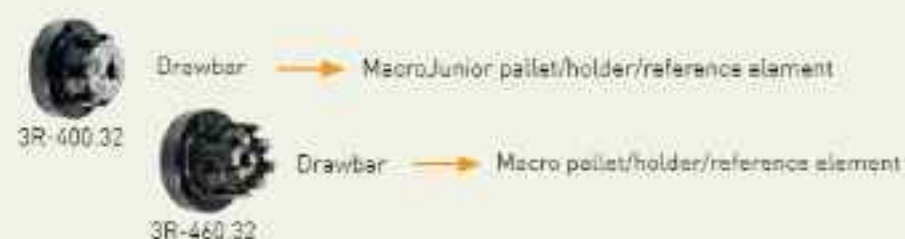
- + Clamping force – 5000 N
- + Fixed index positions 4x90°
- + Required air pressure, pneumatic chuck – 6 ± 1 bar
- + Recommended tightening torque, manual chuck – 4 Nm



MacroJunior & MacroCombi – Chucks



Spindle chucks	Article number	Drawbar	Feature
Manual	3R-400.34	3R-405.11	
Pneumatic	3R-460.1-1	3R-405.16 / 3R-405.11	
Pneumatic	3R-460.83-2	3R-405.16 / 3R-405.11	machine-adapted
Pneumatic	3R-460.86-2	3R-405.16 / 3R-405.11	machine-adapted
Pneumatic	3R-460.86-2.9	3R-405.16 / 3R-405.11	machine-adapted 90°
Pneumatic	3R-460.EX8-1	3R-405.16 / 3R-405.11	machine-adapted
Manual	3R-400.24-11	3R-405.11	



Lathe chuck	Article number	Drawbar	Feature
Manual	3R-400.32	3R-405.11	
Manual	3R-460.32	3R-405.16/3R-405.11	



Table chucks	Article number	Drawbar	Feature
Manual	3R-460.31-5	3R-405.16 / 3R-405.11	horizontal and vertical
Manual	3R-460.34	3R-405.16 / 3R-405.11	
Manual	3R-460.37	3R-405.16 / 3R-405.11	
Pneumatic	3R-460.46	3R-405.16 / 3R-405.11	
Manual	3R-400.34	3R-405.11	

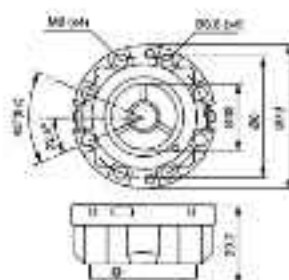
Built-in chucks	Article number	Drawbar	Feature
Manual	3R-400.24-11	3R-405.11	
Manual	3R-400.34	3R-405.11	
Manual	3R-460.34	3R-405.16/3R-405.11	
Pneumatic	3R-SP18286	3R-405.16 / 3R-405.11	
Pneumatic	3R-SP19047	3R-405.16 / 3R-405.11	
Manual	3R-SP19143		

MacroJunior – Chucks

Manual chuck, MacroJunior, 3R-400.34

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

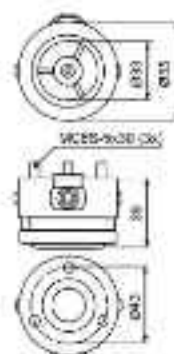
- Required drawbar 3R-405.11
- Fixed index positions 3x120°
- Weight 1.6 kg.



Manual chuck, MacroJunior, 3R-400.24-11

For mounting on machine spindle.

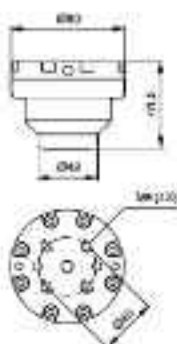
- Required drawbar 3R-405.11
- Fixed index positions 3x120°
- Weight 0.8 kg.



Pneumatic chuck, MacroJunior, 3R-410.1-M

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

- Required drawbar 3R-405.11
- Required air pressure 6.11 bar
- Fixed index positions 3x120°
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 1.5 kg.

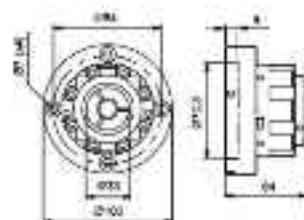


Manual lathe chuck, MacroJunior, 3R-400.32

For mounting on a lathe taper.

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

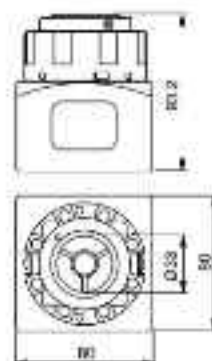
- Required drawbar 3R-405.11
- Fixed index positions 3x120°
- Weight 1.8 kg.



Manual chuck, MacroJunior, 3R-410.31-5

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

- Required drawbar 3R-405.11
- Fixed index positions 3x120°
- Weight 3.5 kg.



Manual chuck, MacroJunior, 3R-SP19143

Stainless steel chuck with ground flange Ø22x6 mm for mounting in a fixture or the WEDM system. Axial locking screw with channel for flushing through the electrode.

- Fixed index positions 3x120°
- Weight 0.8 kg.

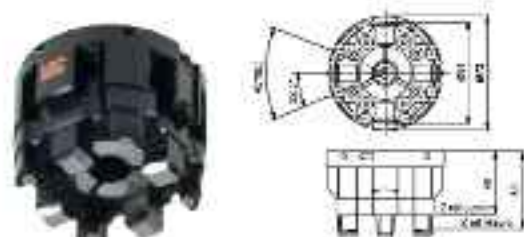


MacroCombi – Chucks

Manual chuck, MacroCombi, 3R-460.34

For mounting in the machine spindle by means of 3R-A11489, or on the machine table by means of 3R-A19724 or alternatively 3R-A71944, or in a fixture

- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Weight 1.8 kg

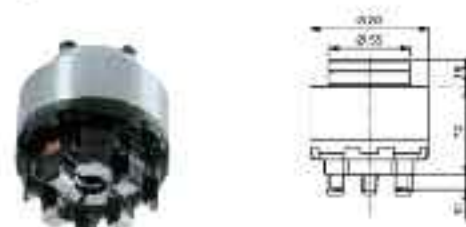


Pneumatic chuck, MacroCombi, 3R-460.83-2

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

Note: When ordering state machine make and type.

- Four M6 clearance holes 67x20 mm
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.1 kg



Pneumatic chuck, MacroCombi, 3R-460.1-1

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

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

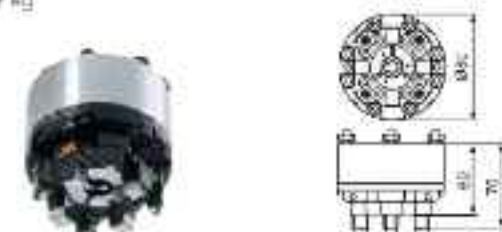


Pneumatic chuck, MacroCombi, 3R-460.86-2

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

Note: When ordering state machine make and type.

- Four M6 clearance holes, 67x20 mm and four M5 clearance holes, 63x26 mm
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 1.9 kg



MacroCombi – Chucks

Pneumatic chuck, MacroCombi, 3R-460.86-2.9

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

Note: When ordering state machine make and type.

- Four M6 clearance holes, 67x20 mm and four M5 clearance holes, 63x24 mm
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 1.7 kg.



Pneumatic chuck, MacroCombi, 3R-460.EX8-1

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

Note: When ordering state machine make and type.

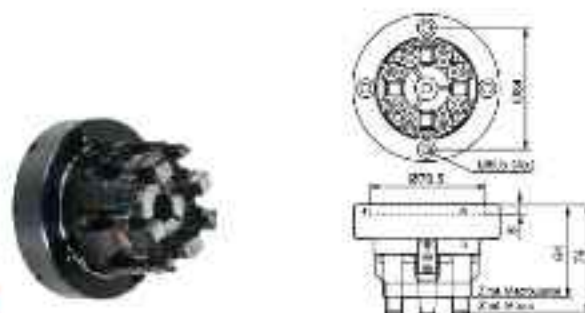
- Six M6 clearance holes, Ø41 mm
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6±1 bar
- Air-blast cleaning of the Z-references
- Flushing connection
- Weight 2.5 kg.



Manual lathe chuck, MacroCombi, 3R-460.32

For mounting on a lathe taper.

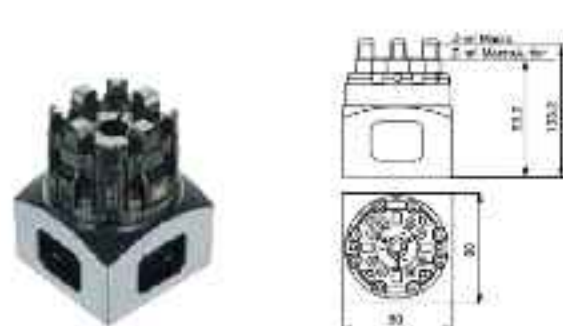
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Weight 2.0 kg.



Manual chuck, MacroCombi, 3R-460.31-5

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

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



Manual chuck, MacroCombi, 3R-460.37

The locking mechanism is operated by a removable handle.

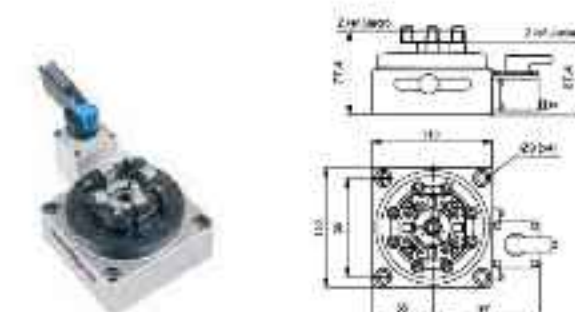
- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Weight 4.5 kg.



Pneumatic chuck, MacroCombi, 3R-460.46

Pneumatic chuck with integral air unit.

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

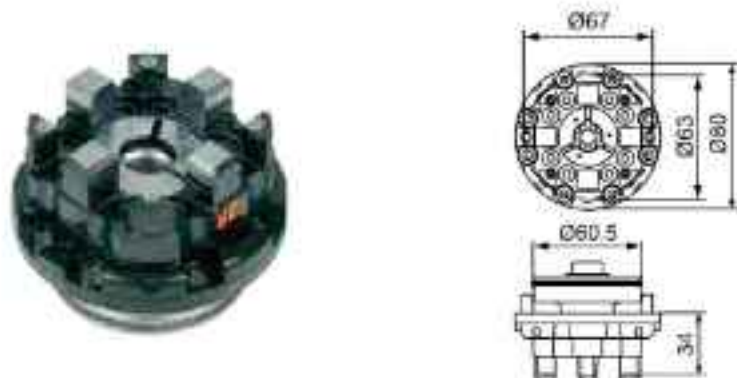


MacroCombi – Chucks

Pneumatic chuck, MacroCombi, 3R-SP18286

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

- Required drawbar for Macro holder 3R-405.16
- Required drawbar for MacroJunior holder 3R-405.11
- Required air pressure 6 ± 1 bar
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 1.1 kg



Pneumatic chuck, MacroCombi, 3R-SP19047

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

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



MacroJunior – Pallets & Holders



Holders

Holders	Article number	Feature
Sintered pallet Ø25 mm MacroJunior	3R-491E	
Sintered pallet Ø25 mm MacroJunior	3R-491E-HP	parallel ground
Holder Ø26 mm MacroJunior	3R-461-8.8-HP	parallel-ground. Journal Ø8.8 mm
Holder Ø28 mm MacroJunior	3R-461.1E-GA	journal Ø10x10 mm
Holder Ø28 mm MacroJunior	3R-465.1E-A	taper
Collet chuck ETS10, MacroJunior	3R-469-10	Ø0.1-10 mm
Collet chuck ER16, MacroJunior	3R-469-16	Ø0.5-10 mm
Holder, MacroJunior	3R-465-LE	Ø4-8 or <8x18 mm

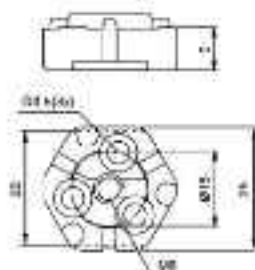
MacroJunior – Chuck adapter, Pallets & Holders

Pallet 25 mm, MacroJunior, 3R-491E

For copper or graphite electrodes.

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

- Adapted for automatic changing
- Supplied in sets of 30.



Ground pallet 25 mm, MacroJunior, 3R-491E-HP

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

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

- Adapted for automatic changing
- Supplied in sets of 30.



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

For horizontal mounting of MacroJunior holders. Screw locking.

Note: For EDM machining only.

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



Holder with journal, 3R-461.1E-GA

Journal $\varnothing 10 \times 10$ mm. Intended mainly for graphite electrodes. To be mounted on 3R-491E with three MFT4x12 screws and adhesive.

- Supplied in sets of 30.

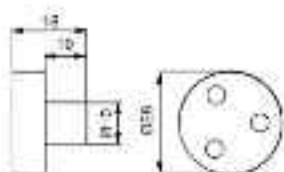


Plate 5.5 mm, 3R-SP19270

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

- Supplied in sets of 30.
- *Accessory 3R-PI4.5x25E.



Except 3R-SP19269

Plate 10 mm, 3R-SP19269

Used in combination with 3R-491E when soldering round (± 50 mm) or square (± 60 mm) copper blanks. Permits mounting in MacroCombi chucks.

- Supplied in sets of 30.
- Accessory 3R-MFT4x16E.

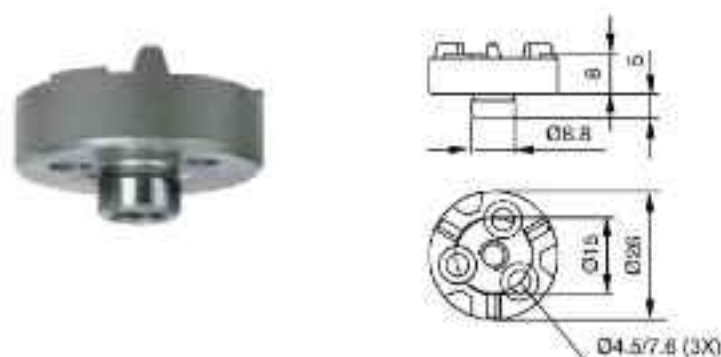


MacroJunior – Holders

Holder 25 mm, MacroJunior, 3R-461-8.8-HP

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

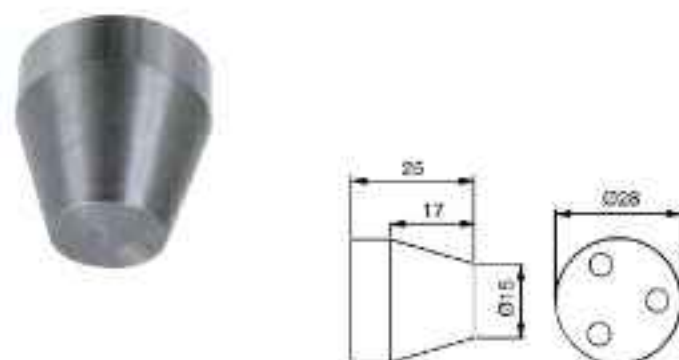
- Not intended for automatic changing
- Supplied singly.



Holder with taper, 3R-465.1E-A

The taper is machined suitably for attaching very small electrodes. To be mounted on 3R-491E with three screws MFT4x12.

- Supplied in sets of 30.



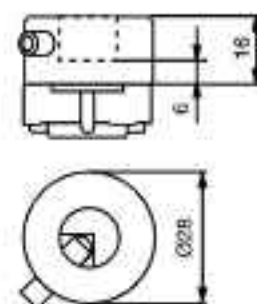
Collet chucks, MacroJunior

3R-469-10

- For collets ETS10
- Electrode sizes 0.1-2 mm
- Building-in height 47 mm
- Weight 0.1 kg.

3R-469-16

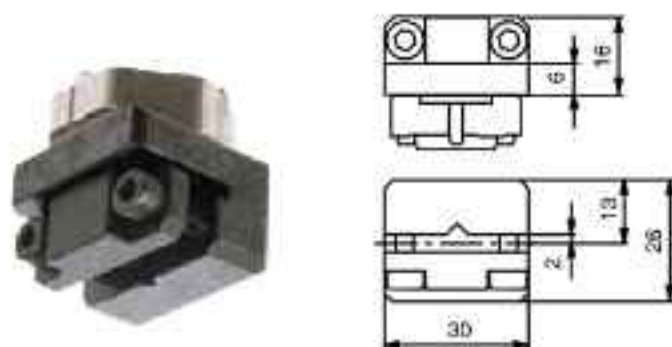
- For collet ER16
- Electrode sizes 0.5-10 mm
- Building-in height 59.5 mm
- Weight 0.2 kg.



Holder, MacroJunior, 3R-465-LE

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

- Supplied in sets of 5.



MacroJunior & MacroCombi – Accessories

3Ready-to-Run, 3R-494-XXX

Blanks mounted on MacroJunior holders for the manufacture of electrodes. The stock range is matched to local preferences and ways of working. This applies to electrode materials, different grades of graphite and copper, and to dimensions. Contact your local 3R representative for further information.

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



Article number

3R-494-D10x50
3R-494-D12x50
3R-494-D16x50
3R-494-D22x50
3R-494-D26x50
3R-494-D32x50
3R-494-D40x50
3R-494-D50x50
3R-494-S12x50
3R-494-S22x50
3R-494-S26x50
3R-494-S32x50
3R-494-S40x50
3R-494-S2x22x50
3R-494-S4x22x50

Dimensions

Round blank Ø10x50 mm
Round blank Ø12x50 mm
Round blank Ø16x50 mm
Round blank Ø22x50 mm
Round blank Ø26x50 mm
Round blank Ø32x50 mm
Round blank Ø40x50 mm
Round blank Ø50x50 mm
Square blank 12x12x50 mm
Square blank 22x22x50 mm
Square blank 26x26x50 mm
Square blank 32x32x50 mm
Square blank 40x40x50 mm
Square blank 32x22x50 mm
Square blank 40x22x50 mm

Drawbar, 3R-405.11E

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

- Supplied in sets of 10.



Check ruler, 3R-406.11

For setting angular positions and for centring.

- Measuring length 60 mm.



Check mandrel, 3R-406.23

Check mandrel with ground circumference.

- Measuring length 50 mm.
- Weight 0.6 kg.



Drawbar, 3R-405.16E

Drawbar Ø15 mm to mount Macro holders in chucks 3R-440.XX.

- Supplied in sets of 10.



Fixed measuring probes

3R-US400.3

For machines with measurement cycle function.

- Measuring ball Ø3 mm.
- Overall length 102 mm.
- Weight 0.3 kg.



3R-US400.5

For machines with measurement cycle function.

- Measuring ball Ø5 mm.
- Overall length 103 mm.
- Weight 0.3 kg.



MacroJunior & MacroCombi – Accessories

TORX screwdriver, 3R-333-T20

For screws 3R-PI4.5x20E and 3R-PI4.5x25E.



Torque wrench, 3R-614-04

For manual MacroJunior and MacroCombi chucks. Also for 3Refix mandrels Ø10 mm, 3R-901-10E.

- 4 Nm.



TORX screws M4, 3R-MFT4x12E

For mounting electrode blanks.

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



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

For mounting electrode blanks.

- Length 20 mm
- Supplied in sets of 100.



Self tapping TORX-screws, 3R-PI4.5x25E

For mounting electrode blanks.

- Length 25 mm
- Supplied in sets of 100.



Soldering kit, 3R-404-25

For soldering electrode blanks on 3R-491E or 3R-SP19269.

- Supplied with flux.
- Supplied in sets of 100.



Cassette insert, 3R-650/8-JR

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

- Supplied in sets of 8.



MacroJunior & MacroCombi – Kit & accessories

User kit, 3R-468.31-S

3R-405.11	Drawbar, MacroJunior	x5
3R-405.16	Drawbar, Macro	x5
3R-460.31-5	Manual table chuck	x1
3R-465-L	Holder, MacroJunior	x2
3R-465-V	Holder, MacroJunior	x2
3R-491	Holder, MacroJunior	x30
3R-651.7-5	Pallet Macro 54x54 mm	x6
3R-656.1	Check ruler	x1
3R-658.1-5	Intermediate plate, Macro 54x54 mm	x2
3R-658.2-5	Holder, Macro 54x54 mm	x2
3R-658.4-5	Holder, Macro 54x54 mm	x2
3R-333-T20	Screwdriver, TORX	x1
3R-PI4.5x20	TORX screw	x100
3R-614-04	Torque wrench, 4 Nm	x1



Microscope, 3R-4.450

- Centering location
- Magnification x25
- Field of view Ø4 mm
- Weight 0.6 kg.



Splash guard, 90027.02

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



Ring with code carrier, 3R-863.25-10

With pre-programmed unique identity, designed for MacroJunior 25 mm, 3R-491E.

- Supplied in sets of 10.



Ring with code carrier, 3R-863.30-10

With pre-programmed unique identity, designed for 3Ready-to-Run, 3R-494-XX.XX

- Supplied in sets of 10.



MacroJunior & MacroCombi – Accessories

Lathe taper, 3R-TXXXX

Taper attachment for mounting chucks in taper spindles

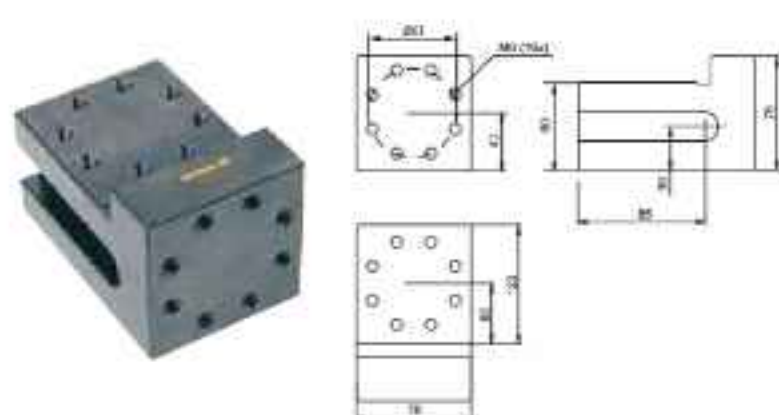
Note: Manufactured on request. State machine type, taper [1], drawbar thread [2] and which 3R chuck is to be mounted. Use the order form at the end of the catalogue.



Angle shelf, 3R-A21944

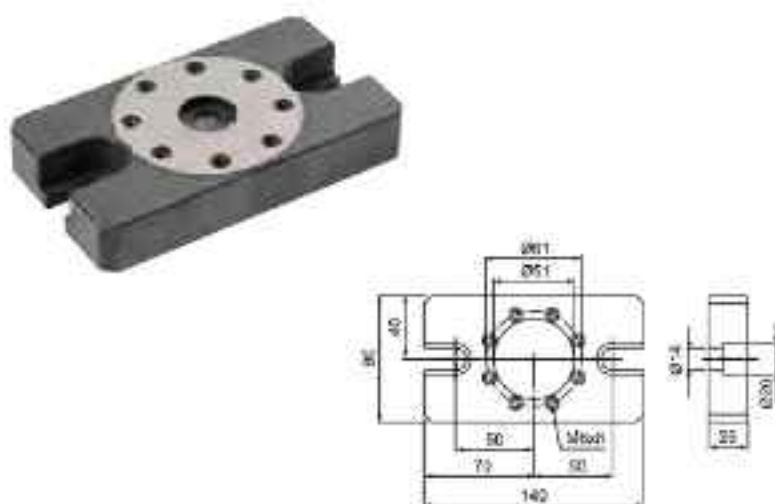
For vertical or horizontal mounting of 3R-400.34, 3R-460.34 and 3R-600.24-S on the machine table. Intended for milling

Note: Chuck to be ordered separately.



Adapter plate, 3R-A19724

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



Air unit, 3R-611.46

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



MacroStd & MacroHP

Macro...

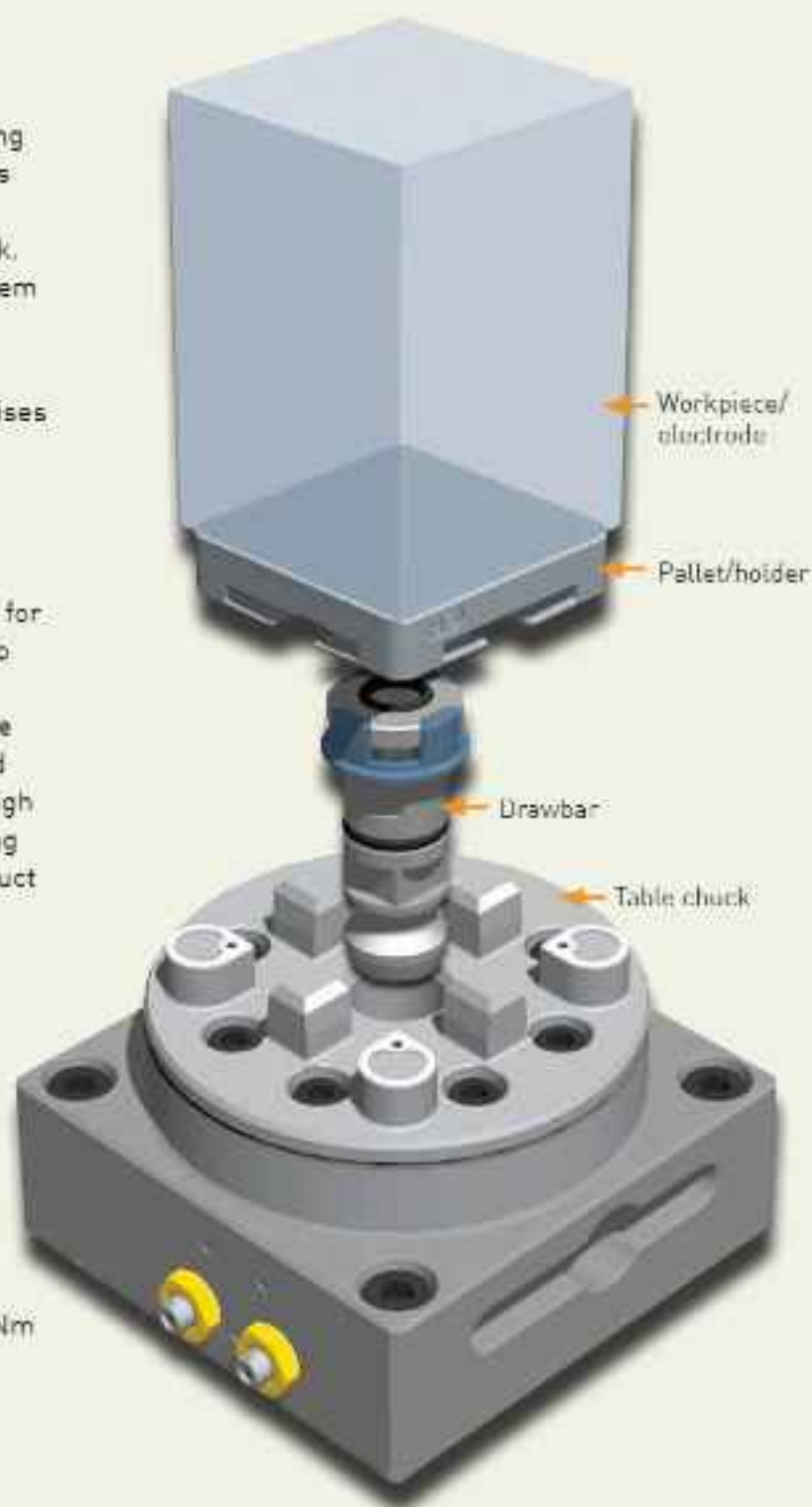
- ... reduces setting-up times.
- ... ensures precision and quality.
- ... has automatic air-blast cleaning of the references in the pneumatic chucks.
- ... has higher locking force in the pneumatic chucks – turbo locking.
- ... has references of cemented carbide or hardened ground steel.
- ... is suitable 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

Chucks	Article number	Drawbar	Feature
Manual Std	3R-600.24-S	3R-605.2	ground rear face
Manual Std	3R-600.28-S	3R-605.2	ground rear face
Pneumatic Std	3R-600.84-30	3R-605.1	machine-adapted
Pneumatic Std	3R-600.86-30	3R-605.1	machine-adapted
Pneumatic Std	3R-600.EX8	3R-605.1	machine-adapted



Chucks	Article number	Drawbar	Feature
Manual Std	3R-600.23-S	3R-605.2	Mounting flange, 6 Nm, Ø75 mm
Manual Std	3R-600.24-S	3R-605.2	Ground back face, 6 Nm, Ø75 mm
Pneumatic HP	3R-600.15-3	3R-605.2	Rust-resistant, Ø 56 mm
Manual HP	3R-600.24-4RS	3R-605.2	Rust-resistant, Ø 70 mm
Manual HP	3R-600.24RS	3R-605.1 / 3R-605.4	Rust-resistant, Ø75 mm
Pneumatic Std	90412.1X	3R-605.1 / 3R-605.4	with swivel, low speed
Pneumatic HP	90412.2X	3R-605.1 / 3R-605.4	with swivel, low speed
Pneumatic Std	3R-SP24460	3R-605.1 / 3R-605.4	
Pneumatic HP	3R-SP26771-RS	3R-605.1 / 3R-605.4	rust-resistant

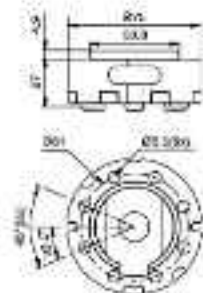


Macro – Chucks

Manual chuck, MacroStd, 3R-600.23-S

Cast chuck with mounting flange for mounting on the machine spindle or in a fixture.

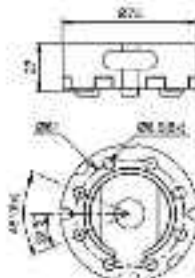
- Tightening torque 6 Nm
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing connection
- Weight 0.7 kg.



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.

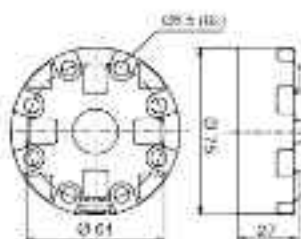
- Tightening torque 6 Nm
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing connection
- Weight 0.7 kg.



Manual chuck, MacroHP, 3R-600.24RS

Manual chuck designed for permanent mounting.

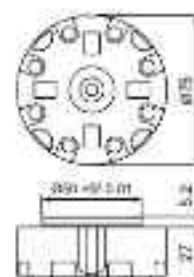
- Tightening torque 6 Nm
- Required drawbar 3R-605.2RS
- Clamping force 6000 N
- Fixed index positions 4x90°
- Rust resistant
- Weight 0.7 kg.



Manual chuck, MacroStd, 3R-SP15055

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

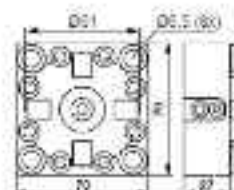
- Required drawbar 3R-605.2
- Tightening torque 6 Nm
- Fixed index positions 4x90°
- Flushing connection
- Weight 0.7 kg.



Manual chuck, MacroHP, 3R-600.24-4RS

Chuck for Macro holder. Mounts on a suitable fixture.

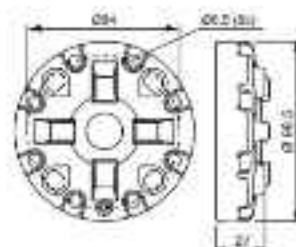
- Required drawbar 3R-605.2RS
- Fixed index positions 4x90°
- Grinded front edge
- Tightening torque 6 Nm
- Rust resistant
- Weight 1 kg.



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-A26498.

- Tightening torque 6 Nm
- Required drawbar 3R-605.2
- Fixed index positions 4x90°
- Flushing connection
- Weight 1.1 kg.

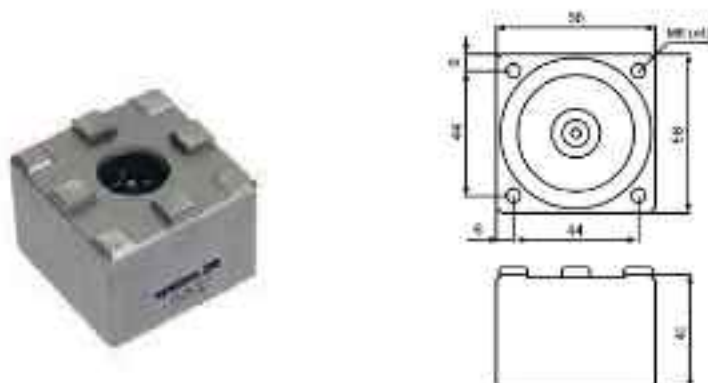


Macro – Chucks

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 $4 \times 90^\circ$
- Rust resistant
- Weight 0.8 kg



Pneumatic chuck, MacroStd, 90412.1X

Pneumatic added-on chuck with swivel surrounding unit.

- For low RPM
- Machine adapted



Pneumatic chuck, MacroHP, 90412.2X

Pneumatic built-in chuck with swivel in the back.

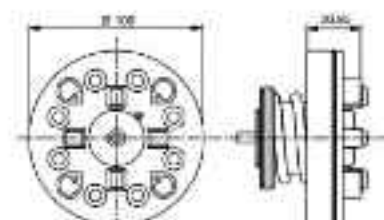
- For high RPM
- Machine adapted



Pneumatic chuck, MacroStd, 3R-SP24460

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

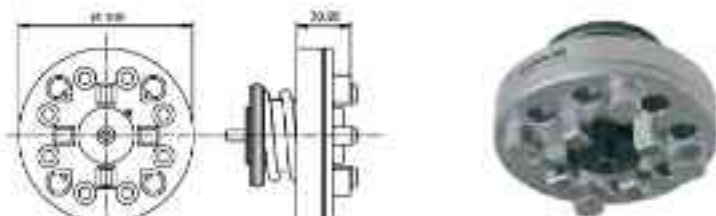
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Air-blast cleaning of Z-references
- Turbo locking
- Weight 1.8 kg



Pneumatic chuck, MacroHP, 3R-SP26771-RS

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

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



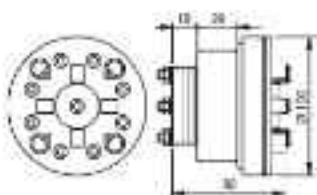
Macro – Chucks



Pneumatic chuck, MacroHP, 3R-600.84-3

Pneumatic chuck for permanent mounting on the machine spindle.

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

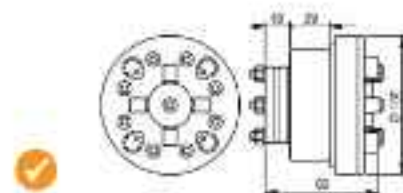


Machine-adapted pneumatic chuck, MacroStd, 3R-600.84-30

Pneumatic chuck for mounting directly on the machine spindle.

Note: X/Y/Z references of hardened and ground steel, larger Z-references. Note: When ordering state machine make and type.

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

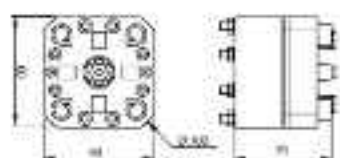


Macro – Chucks

Pneumatic chuck, MacroHP, 3R-600.86-3

Pneumatic chuck for permanent mounting on the machine spindle.

- Required drawbar 3R-605.1
- Required air pressure 6±1 bar
- Air-blast cleaning of 7 references
- Turbo-locking
- Fixed index positions 4x90°
- Carade XY-References
- Weight 4 kg

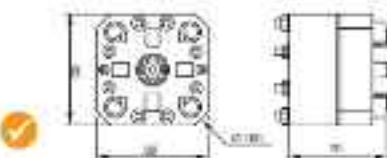


Machine-adapted pneumatic chuck, MacroStd, 3R-600.86-30

Pneumatic chuck for mounting directly on the machine spindle.

Note: When ordering state machine make and type. Note: X/Y/Z references of hardened and ground steel, larger Z-references.

- Four M6 clearance holes, 67x20 mm and four M5 clearance holes, 63x26 mm
- Required drawbar 3R-605.1
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Flushing connection
- Turbo-locking
- Weight 2.2 kg



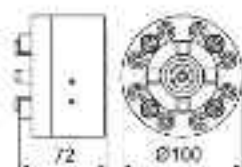
Machine-adapted pneumatic chuck, MacroStd, 3R-600.EX8

Pneumatic chuck for mounting directly on the machine spindle.

Note: When ordering state machine make and type.

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

- Six M6 clearance holes, Ø 41 mm
- Required drawbar 3R-605.1
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Turbo-locking
- Flushing connection
- Weight 2.2 kg



Macro – Chucks

Lathe chucks	Article number	Drawbar	Feature
Manual Std	3R-600.22	3R-605.2	Mounting flange
Manual HP	3R-600.20	3R-605.1 / 3R-605.4	Carbide references, 4 Nm
Pneumatic Std	3R-600.1-30	3R-605.1 / 3R-605.4	



Table chucks	Article number	Drawbar	Feature
Manual Std	3R-610.21-S	3R-605.2	horizontal and vertical, 6 Nm
Manual VDP	3R-600.24-V	3R-605.2	vibration-damped, 6 Nm, Ø75 mm
Manual Std	3R-600.28-S	3R-605.2	low profile, 6 Nm, Ø100 mm
Manual Std	3R-600.24-S	3R-605.2	6 Nm, Ø75 mm
Pneumatic Std	3R-610.46-30	3R-605.1 / 3R-605.4	horizontal and vertical
Pneumatic Std	3R-600.10-30	3R-605.1 / 3R-605.4	
Pneumatic Std	3R-600.14-30	3R-605.2	low profile
Pneumatic HP	3R-610.19	3R-605.1 / 3R-605.4	horizontal and vertical, 3Rfix Ø20
Pneumatic VDP	3R-600.1-30V	3R-605.1 / 3R-605.4	vibration-damped
Pneumatic Std	3R-602.81	3R-605.10	low profile
Pneumatic HP	3R-602.10-1	3R-605.10	rust-resistant



Macro – Chucks

Manual lathe chuck, MacroStd, 3R-600.22

With setting screws for contrast

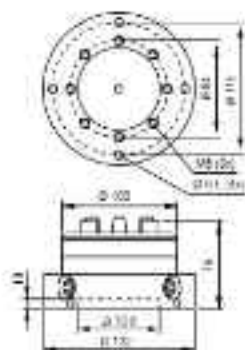
- Required drawbar 3R-605 2
- Tightening torque 6 Nm
- Fixed index positions 4x90°
- Weight 2.1 kg



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



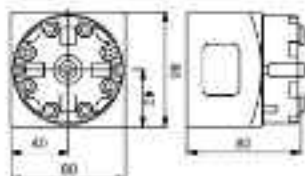
Manual chuck, MacroStd, 3R-610.21-S

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

- Required drawbar 3R-605.2
- Tightening torque 6 Nm
- Fixed index positions 4x90°
- Flushing duct
- Weight 3.5 kg

90842

- Required drawing 3R 605.1, otherwise in 3R 610.21.5

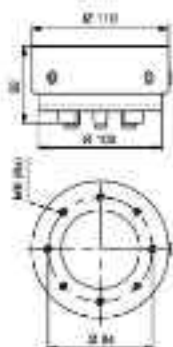


Expend 70842

Manual chuck, MacroHP, 3R-600,20

For mounting on the machine spindle with 3R-612.23 or on a lathe taper with centring ring 3R-612.6

- Required drawbar 3R-605.1 or 3R-605.4
- Fixed index positions 4x90°
- Tightening torque 4 Nm
- Carbide references
- Weight 3.6 kg



Manual chuck, MacroStd, 3R-610.21

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

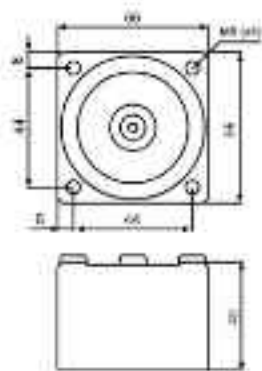
- Required drawbar 3R-605.2
- Tightening torque 6 Nm
- Fixed index positions 4x90°
- Flushing duct
- Weight 2.2 kg



Pneumatic chuck, MacroHP, 3R-600.15-3

Pneumatic chuck for permanent mounting on the machine table.

- Drawbar 3R-6DS 2RS included
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Rust resistant
- Weight 0.8 kg

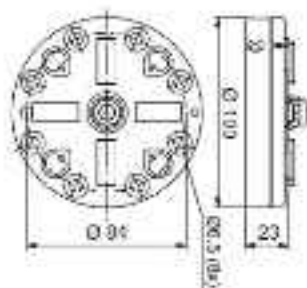


Macro – Chucks

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

Pneumatic chuck for permanent mounting on the machine table.

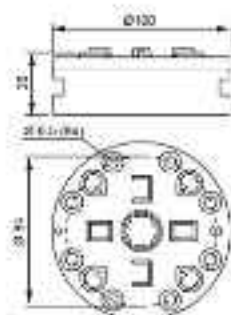
- Required drawbar 3R-605.10
- Required air pressure 6±1 bar
- Fixed index positions 4x90°
- Weight 1 kg



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

Pneumatic chuck for permanent mounting on the machine table.

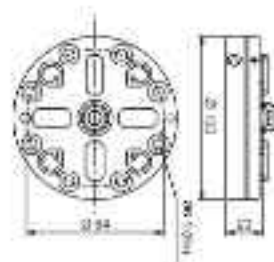
- Required drawbar 3R-50S.2
- Required air pressure 6+1 bar
- Fixed index positions 4x90°
- Weight 2 kg



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

Pneumatic chuck for permanent mounting on the machine table

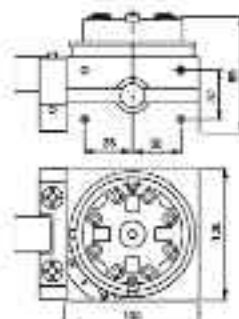
- Required drawbar 3R-605.10
- Clamping force: 6800 N
- Fixed index positions 4x90°
- Air-blast cleaning of Z-references
- Rust resistant
- Weight 1 kg



Manual 3R block, MacroStd, 3R-610.4

For vertical or horizontal mounting on the machine table:

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

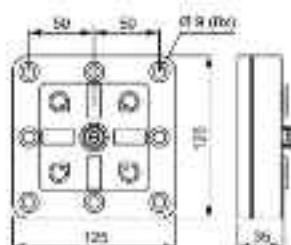


Pneumatic table chuck, VDP, 3R-602.10-V

Presumably: withstand, sharpened chuck, low profile version

- Required drawbar 3R-605.10
- Required air pressure 6 ± 1 bar
- Fixed index position 4x90°
- Air-blast cleaning of the Z-references
- Turbo locking

vd15

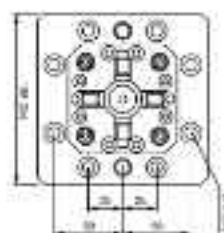
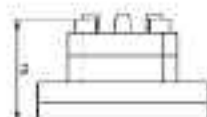


Pneumatic table chuck. VDP. 90716.09

Pneumatic vibration-damped chuck

- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure ± 7 bar
- Fixed index position $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Turbo locking
- Weight 6 kg

VDP®



Macro – Chucks

Pneumatic chuck, MacroHP, 3R-600.10-3

Pneumatic chuck locked/opened with air gun.

- 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
- Carbide XY-References
- Turbo locking
- Weight 1 x 1 kg



Pneumatic chuck, MacroHP, 3R-600.10-3RS

Pneumatic chuck locked/opened with air gun.

- Required drawbar 3R-605 1RS
- Required air pressure 6.1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Carbide XY-References
- Turbo locking
- Rapid retract
- Weight 6.4 kg



Pneumatic table chuck. MacroStd. 3R-600.10-30

Pneumatic chuck locked/opened with air thru

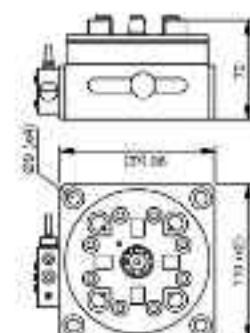
- Required drawbar 3R-605 1 or 3R-605 A
- All references of hardened and ground steel
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Turbine locking
- Weight 6.4 kg



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 position 4x90°
- Air unit included
- Weight 6.6 kg

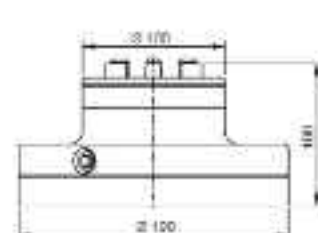


Pneumatic table chuck, VDP, 3R-600, 1-30V

Pneumatic wear (thin, disrupted crack)

- 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

VDI®

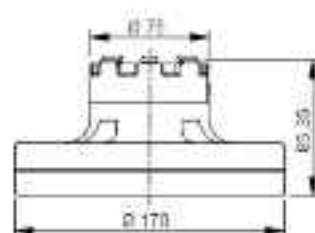


Manual table chuck, VDP, 3R-600,24-V

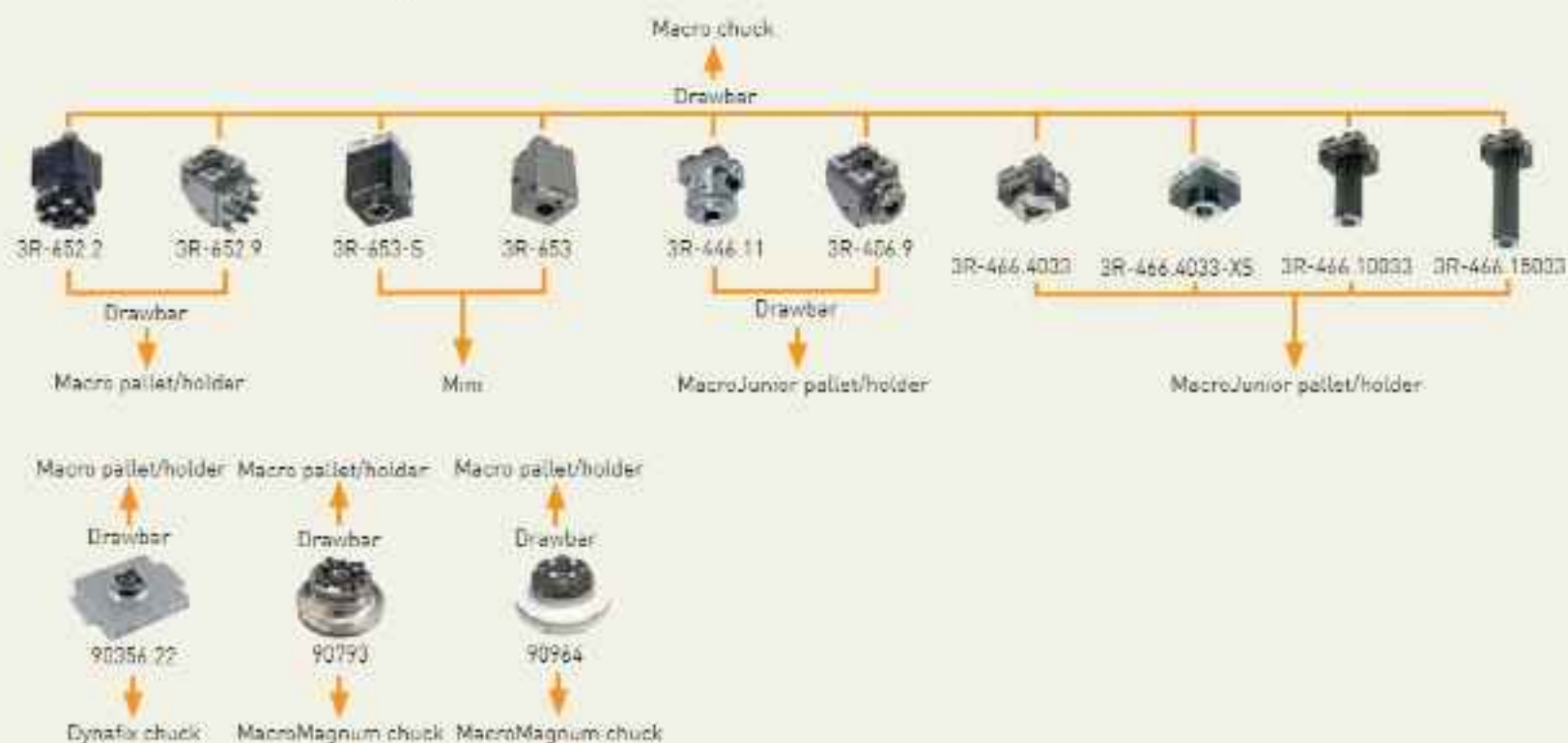
Manual vibration-damped chuck, Ø170 mm.

- Required drawbar 3R-805.2
- Tightening torque 6 Nm
- Building-in height 85 mm
- Centre spacing 63 to 180 mm
- Weight 6 kg

VDP



Macro – Chuck adapters

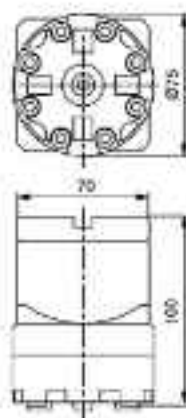


Chuck adapters	Article number	Drawbar	Feature
Manual	3R-652.2	3R-605.2	100 mm
Manual	3R-652.9	-	90°. Locking screw with M6 drawpin
Manual	3R-653-S	-	Macro ► Mini
Manual	3R-446.11	3R-406.11	Macro ► MacroJunior
Manual	3R-466.4033	-	Macro ► MacroJunior locking screw
Manual	3R-466.4033-S	-	Macro ► MacroJunior locking screw
Manual	3R-406.9	-	Macro ► MacroJunior 90°. locking screw
Manual	3R-466.10033	-	Macro ► MacroJunior 100 mm. locking screw
Manual	3R-466.15033	-	Macro ► MacroJunior 150 mm. locking screw
Manual	3R-653	-	Macro ► Mini, rust-resistant
Pneumatic	90356.22	3R-605.1 / 3R-605.4	Dynafix ► Macro
Pneumatic	90793	3R-605.1 / 3R-605.4	MacroMagnum ► Macro
Manual	90964	3R-605.2	MacroMagnum ► Macro

Manual chuck adapter, Macro-Macro, 3R-652.2

Distance adapter to extend the machine spindle. Mechanical clamping from the side.

- Solid X & Y-references
- Height 100 mm
- Adapted for automatic changing
- Flushing duct
- Recommended clamping torque 6 Nm
- Permissible torque: 135 Nm
- Required drawbar 3R-605.2
- Weight 4.5 kg.



Manual chuck adapter, Macro-Macro, 90476.01

Distance adapter to extend the machine spindle. Mechanical clamping from the side.

- Solid X & Y-references
- Height 200 mm
- Adapted for automatic changing
- Flushing duct
- Recommended clamping torque 6 Nm
- Permissible torque: 135 Nm
- Required drawbar 3R-605.2
- Weight 8 kg.



Macro – Chuck adapters

Manual chuck adapter, Macro-Macro, 90476.02

Distance adapter to extend the machine spindle. Mechanical clamping from the side.

- Solid X & Y-references
- Height 250 mm
- Adapted for automatic changing
- Flushing duct
- Recommended clamping torque 6 Nm
- Permissible torque 135 Nm
- Required drawbar 3R-605.2
- Weight 9 kg



Manual chuck adapter 90°, Macro-Macro, 3R-652.9

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

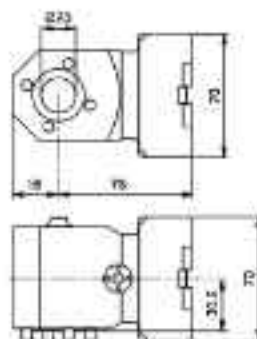
- Rust-resistant
- Weight 2.4 kg.



Manual chuck adapter 90°, Macro-Mini, 3R-603.9

For horizontal mounting of Mini holders in the Macro-system.

- Rust-resistant
- Flushing connection
- Weight 1.9 kg.



Manual chuck adapter, Macro-Mini, 3R-653-S

For mounting Mini holders in the Macro-system.

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



Manual chuck adapter, Macro-Mini, 3R-653

For mounting Mini holders in the Macro system.

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



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.



Macro – Chuck adapters

Manual chuck adapter, Macro-MacroJunior, 3R-446.11

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

- Precision-cast Macro reference element
- Adapted for automatic changing
- Required drawbar 3R-405.11
- Fixed index positions 3x120°
- Weight 1.3 kg



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



Manual chuck adapter 90°, Macro-MacroJunior, 3R-406.9

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

- Adapted for automatic changing
- Rust-resistant
- Fixed index positions 3x120°
- Weight 2.4 kg

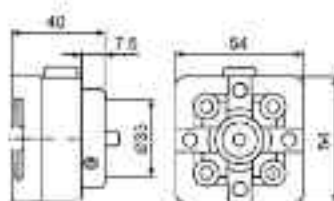


Manual chuck adapters, Macro-MacroJunior

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

3R-466.4033

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



3R-466.4033-5

Note: For EDM machining only.

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



Macro – Chuck adapters & Rotating spindles

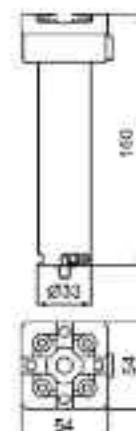
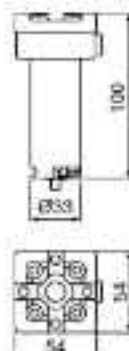
Manual chuck adapters, Macro-MacroJunior

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

Note: For EDM machining only.

3R-466.10033

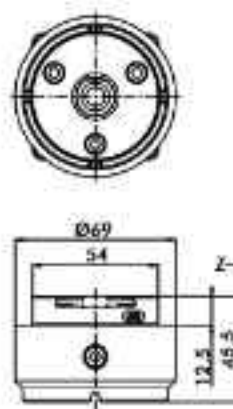
- Adapted for automatic changing
- Height 100 mm
- Fixed index positions 3x120°
- Weight 0.8 kg.



Manual chuck adapter, Macro-GPS 70, C 188 550

Adaption of Macro on GPS 70.

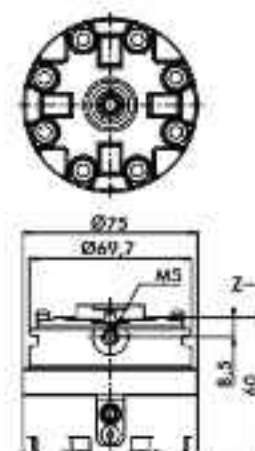
- Built-up height 45.5 mm
- Tightening torque 2.8 Nm
- Required drawbar N 901 800
- Weight 1 kg.



Manual chuck adapter, GPS 70-Macro, C 188 560

Adaption of GPS 70 on Macro.

- Built-up height 60 mm
- Required drawbar 3R-605.2
- Weight 1.9 kg.



Rotating spindles	Article number	Drawbar	Feature
Vertical standard	3R-6.321-HS	-	collets
Vertical standard	3R-6.600-VS	3R-605.2	rust-resistant
Vertical and horizontal standard	3R-6.600-VHS	3R-605.2	rust-resistant
Vertical standard	3R-6.300-EHS16	-	collets, ER-16, rust-resistant

Macro – Rotating spindles



Rotating spindle, 3R-6.321-HS

Electrical spindle for round electrodes

- Supplied with collet chuck set 3R-ER16E
- Electrode sizes Ø0.5-10 mm
- Speed range 200-2000 rev/min
- Recommended maximum flushing pressure 40 bar
- Weight 4.9 kg



Rotating spindles

For mounting in a Macro chuck. Flushing via flushing connection

- Control unit included
- Required drawbar 3R-605,2, but 3R-605,2R5 in wire EDM machines
- Rust-resistant
- Immersible
- Maximum electrode weight 5 kg
- Maximal flushing pressure through the chuck: 40 bar
- Weight 9.5 kg

3R-6.600-VS

For vertical mounting in EDM machines

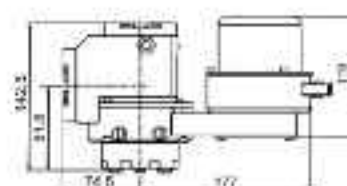
- Speed range 60-2000 rev/min



3R-6.600-VHS

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

- Speed range 60-1500 rev/min



Rotating spindles, 3R-6.300-EHS16

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

- Control unit included
- Drawbar depends on chosen chuck
- Rust-resistant
- Immersible
- Speed range 60-2000 rev/min
- Maximum flushing pressure 80 bar
- Weight 10 kg



Recommended collet sets

Make	Collet set	Size (mm)	Nut M19x1
Bulzer	ETS16	Ø0.09-3	Integral
Regifix	ER16, ER16-UP	Ø0.5-10	ERM16, ERM16, ER16 MS
Technipinz	ETS16	Ø1.25-10	ETS16,2



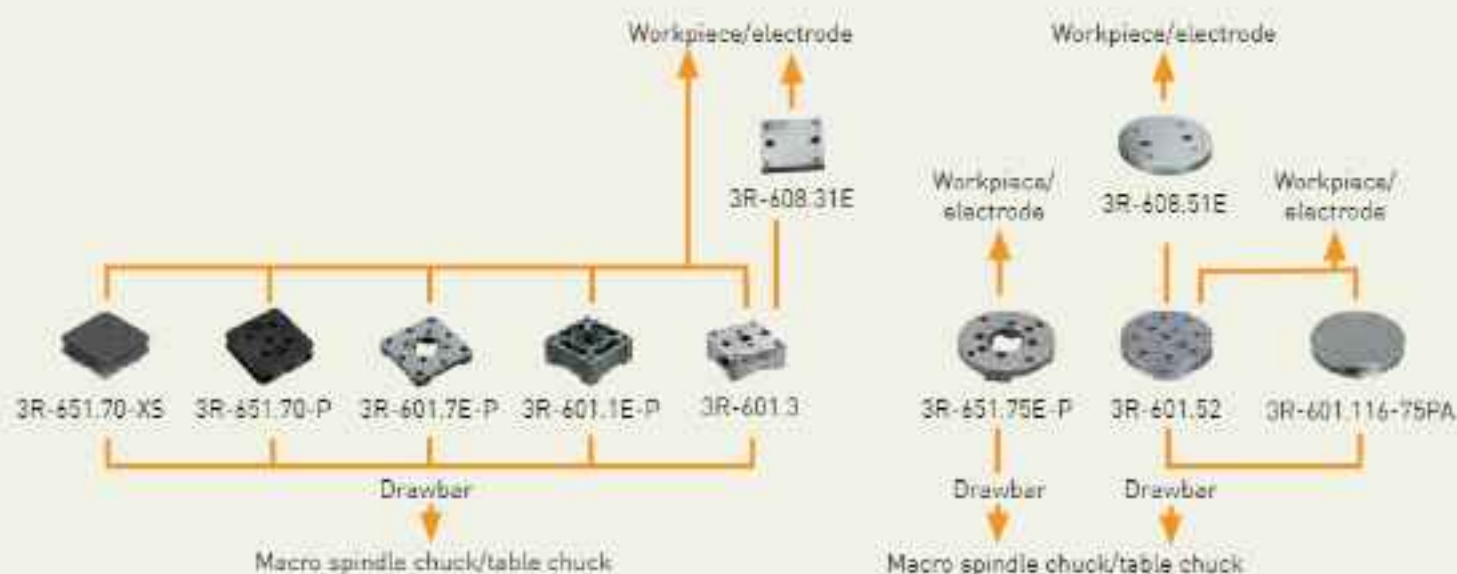
Macro – Pallets, holders & reference elements



Holder, pallets and ref. element, 54x54 mm	Article number	Feature
Hardened reference element 12.5 mm, HP	3R-651.7E-P	rust-resistant
Hardened reference element 12.5 mm, Std	3R-651.7E-XS	
Hardened reference element 12.5 mm, Std	3R-651.7E-S	surface-treated
Hardened pallet 30 mm, HP	3R-651E-P	rust-resistant
Hardened pallet 30 mm, HP	3R-651.3	52x52 mm / 3Rrefix Ø10, rust-resistant
Unhardened pallet 14.4 mm	3R-658.31E	52x52 mm / 3Rrefix Ø10
Hardened holder, HP	3R-651.12	<30x30 mm
Unhardened holder	3R-658.4E-S	<30x30 mm
Unhardened holder	3R-658.2E-S	<38 mm
Spacer plate, Std and HP	3R-658.1E-S	
Collet chuck ER16, HP	3R-659.16-P	Ø0.5-10 mm, rust-resistant
Collet chuck ER20, HP	3R-659.20-P	Ø1-13 mm, rust-resistant
Collet chuck ER32, HP	3R-659.32-P	Ø2-20 mm, rust-resistant
Three-jaw chuck	3R-US611.4	



Macro – Pallets, holders & spacers



Pallets and ref. elements, 70x70 mm

	Article number	Feature
Hardened reference element 12.5 mm, HP	3R-601.7E-P	rust-resistant
Hardened pallet 30 mm, HP	3R-601.1E-P	rust-resistant
Hardened pallet 30 mm, HP	3R-601.3	rust-resistant, 3Rrefix Ø10
Unhardened pallet 14.2 mm	3R-608.31E	3Rrefix Ø10
Unhardened pallet, HP	3R-651.70-P	reference element 54x54 mm
Unhardened pallet, Std	3R-651.70-XS	reference element 54x54 mm

Ref.element, Ø75 mm

Hardened reference element 12.5 mm standard and HP	3R-651.75E-P	rust-resistant
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Pallets, Ø116 mm

	Article number	Feature
Hardened pallet, HP	3R-601.52	3Rrefix Ø10 mm, rust-resistant
Unhardened pallet, HP	3R-601.116-75PA	With reference element Ø75 mm
Unhardened pallet	3R-608.51E	3Rrefix Ø10 mm



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

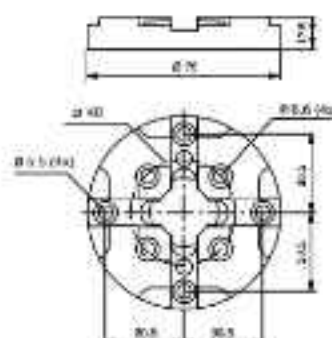


Application example.

Pallet, Ø75 mm, 3R-651.75E-P

Hardened and milled with clearance holes for eight fixing screws.

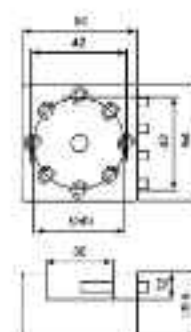
- Fixed index positions 4x90°
- Parallel-ground top and bottom faces
- Adapted for automatic changing
- Rust resistant
- Supplied in sets of 10 pcs.
- Weight per set 2.7 kg.



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

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

- Ready for code carrier
- Flushing duct
- Supplied in sets of 8
- Weight per set 3.5 kg.

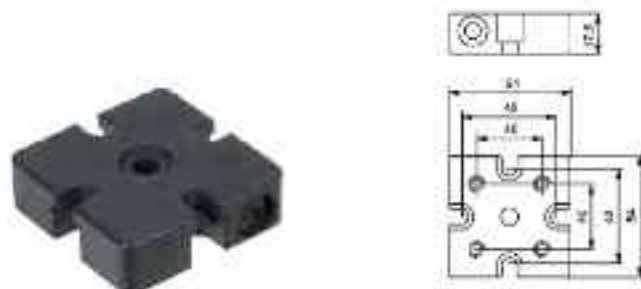


Macro – Pallets, holders & spacers

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

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

- Ready for code carrier
- Supplied in sets of 8
- Weight per set 2.5 kg.



Holder, 54x54 mm, 3R-658.4E-S

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

- Ready for code carrier
- Flushing duct
- Supplied in sets of 8
- Weight per set 5.5 kg.



Pallet 54x54 mm, MacroStd

Hardened pallet for copper electrodes and workpieces.

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

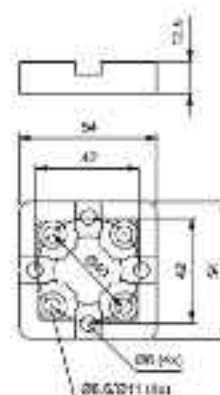
Note: For graphite electrodes, spacer plate 3R-658.1E-S is required.

3R-651.7E-S

- Nickel-plated side faces
- Adapted for automatic changing
- Supplied in sets of 8
- Weight per set 1.3 kg.

3R-651.7E-XS

- Untreated side faces
- Adapted for automatic changing
- Supplied in sets of 8
- Weight per set 1.3 kg.

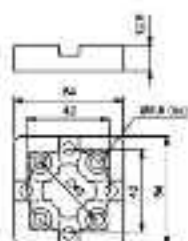


Pallet, 54x54 mm, MacroHP, 3R-651.7E-P

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.



Macro – Pallets & holders

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, 52x52 mm, 3R-658.31E

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

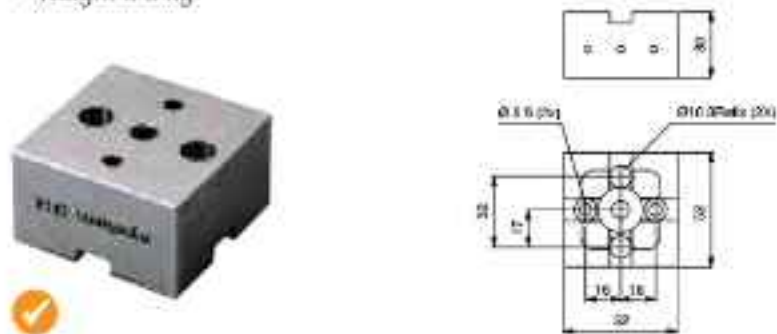
- 3Refix Ø10 mm
- Building-in height 14.4 mm
- Supplied in sets of 10
- Weight per set 2.2 kg



Pallet, 52x52 mm, MacroHP, 3R-651.3

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

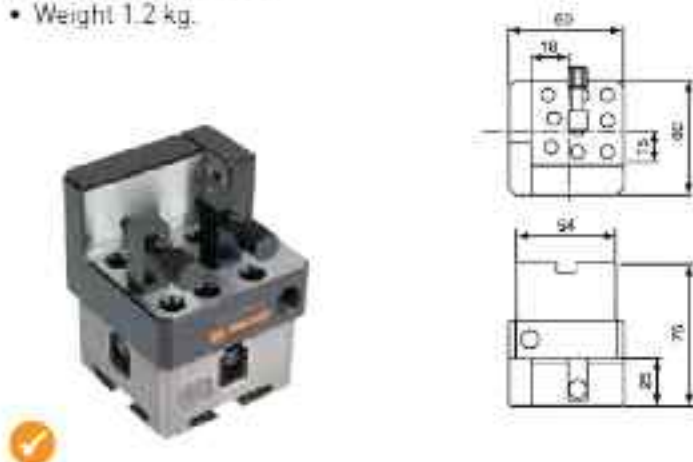
- 3Refix Ø10 mm
- Adapted for automatic changing
- Ready for code carrier
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Rust-resistant
- Flushing duct
- Weight 0.5 kg



Holder, MacroHP, 3R-651.13

Hardened holder for square electrodes max 30 mm.

- Max. workpiece 32x28 mm
- Adapted for automatic changing
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Flushing connection
- Weight 1.2 kg



Three-jaw chuck, 3R-US611.4

For 0-3 mm electrodes.

- Weight 0.8 kg



Macro – Pallets & holders

Collet chucks, MacroHP

3R-659.16-P

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

3R-659.32-P

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

3R-659.20-P

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



Gate chuck, 3R-US90-601

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

- Weight 1.1 kg



Pallet, 70x70 mm, 3R-608.31E

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

- 3Refix Ø10 mm
- Building-in height 14.2 mm
- Supplied in sets of 10
- Weight per set 4.6 kg

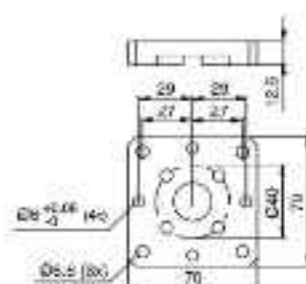


Pallet, 70x70 mm, MacroHP, 3R-601.7E-P

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



Macro – Pallets & user kits

Pallet, 70x70 mm, MacroHP, 3R-601.1E-P

Hardened, with clearance holes for four fixing screws.

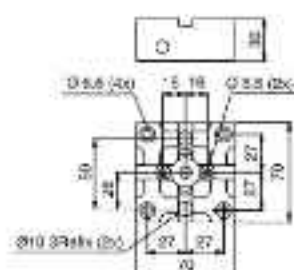
- Adapted for automatic changing
- Ready for code carrier
- Fixed index positions 4x90°
- Rust-resistant
- Flushing duct
- Supplied in sets of 5
- Weight per set 3.2 kg



Pallet, 70x70 mm, MacroHP, 3R-601.3

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

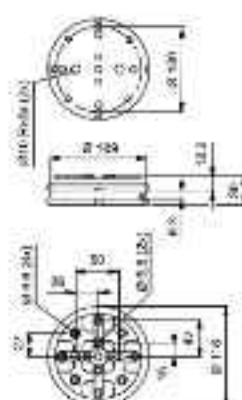
- 3Relix Ø10 mm
- Adapted for automatic changing
- Ready for code carrier
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Rust-resistant
- Flushing duct
- Weight 1 kg



Pallet, Ø116 mm, MacroHP, 3R-601.52

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

- 3Relix 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*

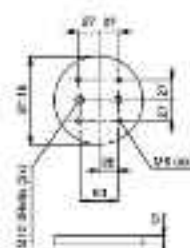


*For more info please ask System 3R

Pallet, Ø116 mm, 3R-608.51E

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

- 3Relix Ø10 mm
- Supplied in sets of 10
- Weight per set 10 kg



User kit, 3R-628.31-S

3R-605.1	Drawbar, long	x4
3R-605.2	Drawbar, short	x2
3R-610.21-S	Manual table chuck	x1
3R-651.7-S	Pallet, 54x54 mm	x12
3R-656.1	Check ruler	x1
3R-658.1-S	Spacer plate 54x54 mm	x2
3R-658.4-S	Holder 54x54 mm	x4
3R-658.7-S	Holder 54x54 mm	x4



Macro – User kits & accessories

User kit, 3R-628.41-S



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



Drawbars

3R-605.1E

- Ø20x57.1 mm with flushing holes Ø7 mm
- Supplied in sets of 10 pcs.

3R-605.1EE

- Supplied in sets of 40 pcs.



3R-605.2RS

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



3R-605.14E

- Ø20x57 mm with flushing holes Ø7 mm
- Supplied in sets of 10 pcs.
- Intended for MacroCombi automatic electrode changers



Drawbars

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-605.10

- Ø20x13 mm
- Rust-resistant
- Supplied 1 pc.

3R-605.10E

- Supplied in sets of 10 pcs.

3R-605.10EE

- 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.



Macro – Accessories

Control ruler, 3R-606.1

For setting angular positions and for centring Macro chucks.

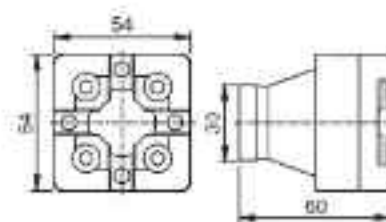
- Ground hole for centring
- Measuring length 100 mm
- Weight 1.4 kg



Control ruler, 3R-656.1

For setting angular positions. Ground outside diameter for centring.

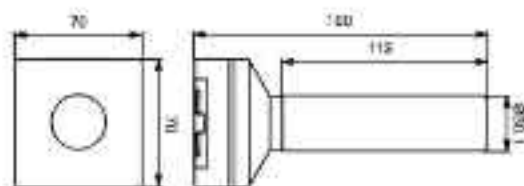
- Measuring length 50 mm
- Weight 0.8 kg



Control rod, 3R-606

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

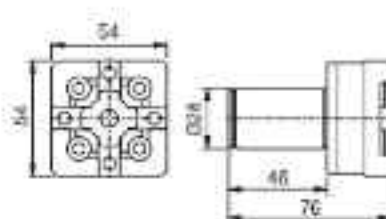
- Measuring length 110 mm
- Weight 2.3 kg



Control rod, 3R-656

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

- Measuring length 38 mm
- Weight 1 kg



Measuring probes

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

- Max ball deflection:
X-Axis $\pm 10^\circ$
Y-Axis $\pm 10^\circ$
Z-Axis ± 3 mm

3R-656.31-3P

- Building-in height 112 mm
- Measuring ball $\varnothing 3$ mm
- Weight 0.6 kg

3R-656.31-5P

- Building-in height 112 mm
- Measuring ball $\varnothing 5$ mm
- Weight 0.6 kg



Measuring probe, 3R-656.21-SP03

Measuring probe with measuring head for machines with measurement cycle function.

- Building-in height 130 mm
- Measuring ball $\varnothing 3$ mm
- Stiff probe
- Weight 0.8 kg



Macro – Accessories

Microscope, 3R-4.650

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

- Magnification x25
- Centering location
- Field of view Ø6 mm
- Weight 0.8 kg.



Indicating spindle, 3R-656.2-P

For measuring centre holes.

- Dial indicator required
- Weight 0.6 kg.



Centring ring, 3R-612.6

For centring 3R-600.20.



Splash guard, 3R-RU52L

Rubber guards for pallets 52x52 and 54x54 mm.

- Height 33 mm.



Splash guard, 3R-RU52

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

- Height 13 mm.



Splash guard, 3R-RU70

Rubber splash guard for pallets 70x70 mm.

- Height 13 mm.



Splash guard, 90027

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

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



Splash guard, 90027.01

Fits MacroStandard chucks with drawbar 3R-605.2.



Macro – Accessories

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.



Torque wrenches, 3R-614-04

Mainly for MacroCombi and Ø10 3Refix mandrels.

- 4 Nm.

3R-614-06

For Macro chucks.

- 6 Nm.



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.



Locking ring key, 3R-605-GE

To lift the locking ring of the drawbars.

- Supplied in sets of 2.



Code carriers, 3R-863.01-10

With pre-programmed unique identity, designed for pallet use.

- Supplied in sets of 10.



Sealing ring, High, 3R-612.70-A

For reference element 70x70 mm. Suitable for some Macro chucks*.



Sealing ring, Low, 3R-612.70-S

For reference element 70x70 mm. Suitable for some Macro chucks*.



Sealing ring, Low, 3R-612.75-S

For reference element Ø75 mm. Suitable for some Macro chucks*.



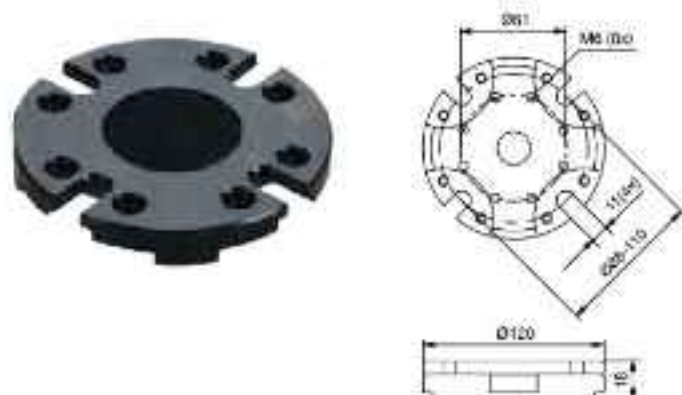
*For more info please ask System 3R

Macro – Accessories

Adapter plate, 3R-A11489

For mounting of 3R-400.34, 3R-460.34 and 3R-600.24-S

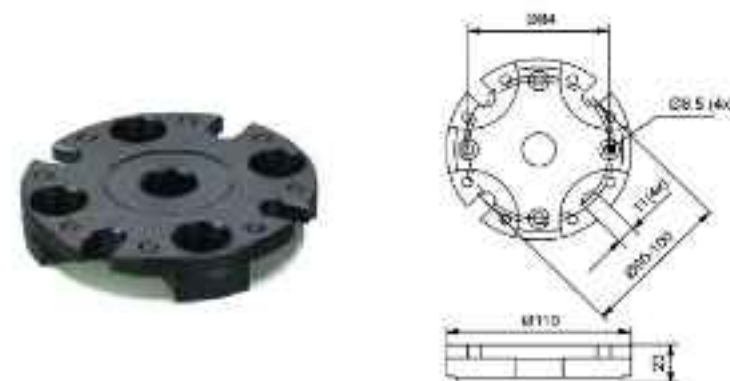
- Supplied with insulation plate and fixing screws
- Flushing connection.



Adapter plate, 3R-A3620

Adapter plate with eight adjusting screws for mounting spindle chucks.

- Supplied with fixing screws
- M10 for 90 mm pitch circle
- M6 for 96 mm pitch circle
- M8 for 100 mm pitch circle



Lathe taper, 3R-TXXXX

Taper attachment for mounting chucks in taper spindles

Note: Manufactured on request. State machine type, taper (1), drawbar thread (2) and which 3R chuck is to be mounted

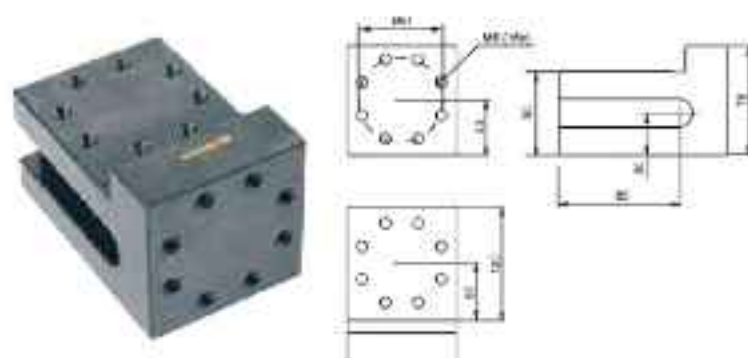
Use the order form at the end of the catalogue.



Angle shelf, 3R-A21944

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

Note: Chuck to be ordered separately.

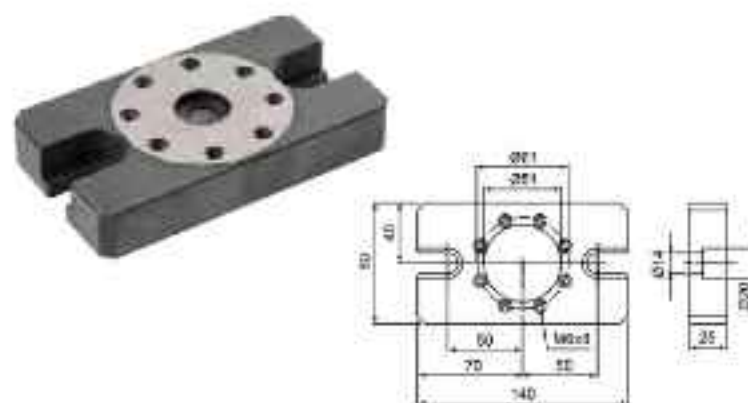


Adapter plate, 3R-A19724

For mounting of 3R 400.34, 3R 460.34 and 3R 600.24:S on machine table

Note: Chuck to be ordered separately

- Supplied with fixing screws for chuck and table



Macro – Accessories

Electrode cassette, 3R-650/8x5

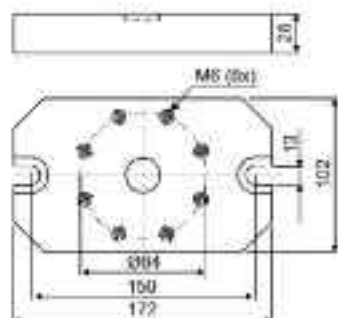
For eight electrodes 52x52 and 54x54 mm

- Supplied in sets of 5.



Adapter plate, 3R-A26488

For mounting 3R-600.28-S.



3Refix mandrel, 3R-901-10E-TX

- 3Refix Ø10 mm
- Recommended tightening torque 4 Nm
- Supplied in sets of 10
- Weight per set 0.2 kg.

Note: When positioning with 3Refix-mandrels –always tighten the expanding mandrel in the R² hole first.



Converter kit, 90842.01

To convert 3R-600.24-S to enable long drawbar 3R-605.1.



MacroNano

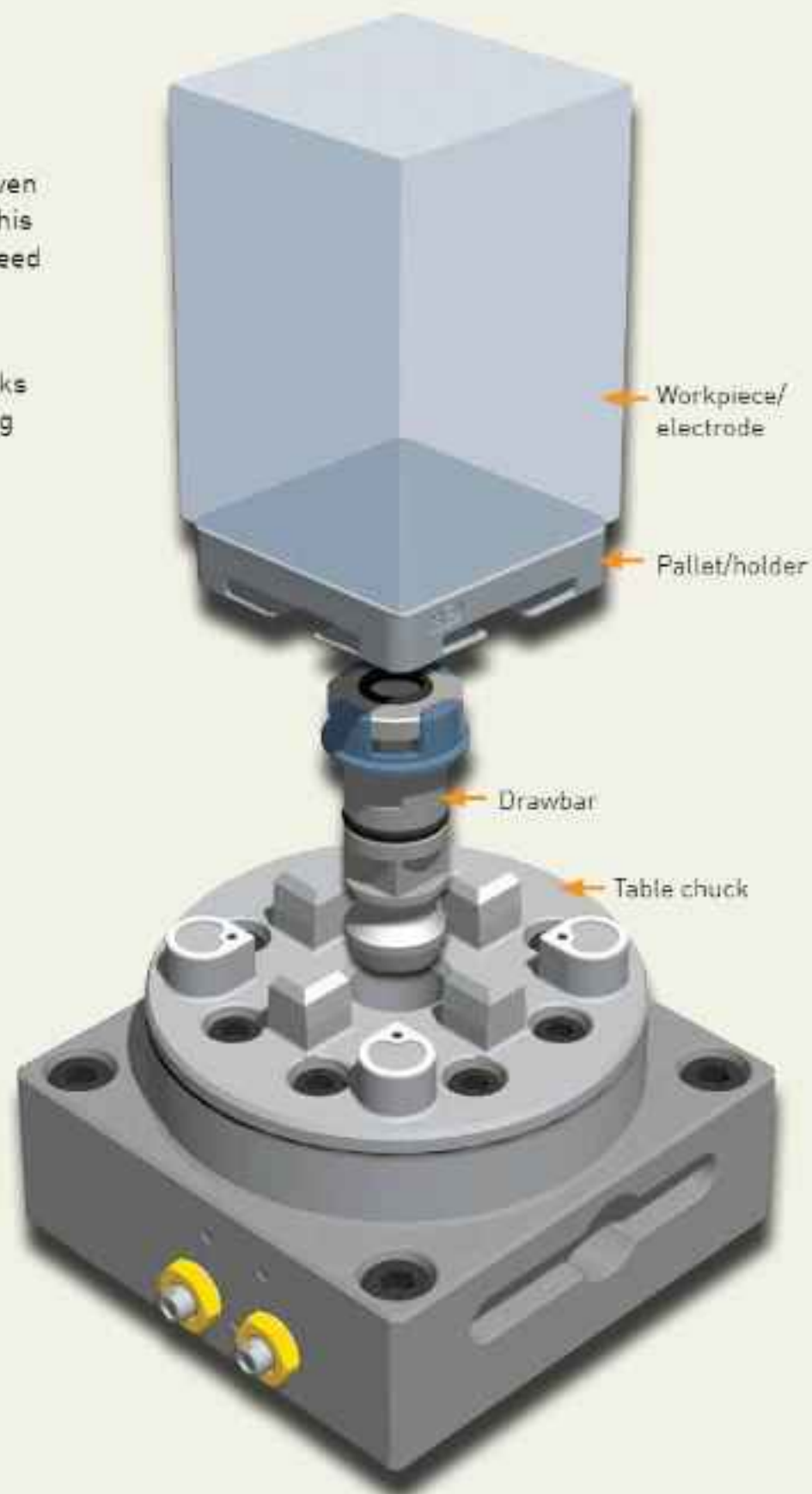
- ... Extremely high accuracy.
- ... High-precision machines are linked together in the production chain, without detracting from the extreme accuracy.
- ... Feedback to the machine for supplementary machining after inspection is possible. This feedback is only meaningful if the pallet system is at least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

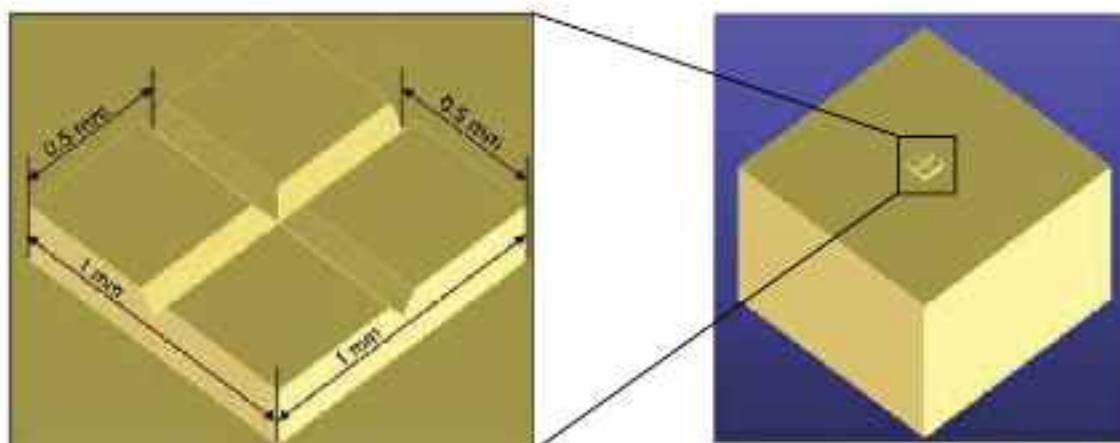
- + Repetition accuracy – within 0,001 mm
- + Locking force – 6000 N
- + Fixed index positions – 4x90°
- + Required air pressure, pneumatic chuck – 6±1 bar
- + Recommended max workpiece weight – 50 kg.



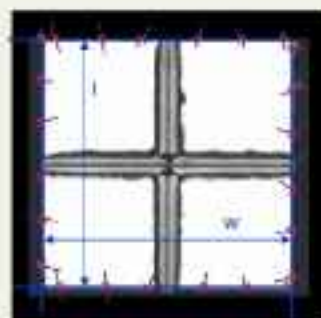
MacroNano

Application example: Microstructuring with Diamond Machining

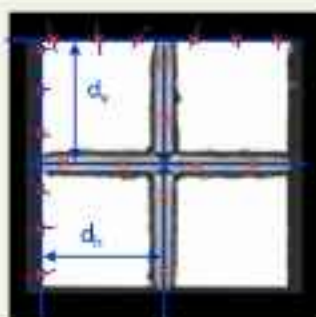
Micro features produced with nano precision



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 microns.



Measurement of the cube dimensions



Measurement of groove positions

	Width (mm)	Length (mm)	Vertical dist. (mm)	Horizontal dist. (mm)
W_1	0,9996	L_1 0,9999	d_{v1} 0,4988	d_{h1} 0,5013
W_2	0,9996	L_2 0,9999	d_{v2} 0,4993	d_{h2} 0,4995
W_3	0,9996	L_3 0,9999	d_{v3} 0,4996	d_{h3} 0,5001
W_4	0,9997	L_4 0,9999	d_{v4} 0,4991	d_{h4} 0,4995
W_5	0,9996	L_5 0,9998	d_{v5} 0,5010	d_{h5} 0,5001
W_6	0,9996	L_6 0,9998	d_{v6} 0,5007	d_{h6} 0,5002
W_7	0,9997	L_7 0,9999	d_{v7} 0,4996	d_{h7} 0,5012
W_8	0,9996	L_8 0,9999	d_{v8} 0,4992	d_{h8} 0,5009
W_9	0,9997	L_9 0,9999	d_{v9} 0,4996	d_{h9} 0,5009
W_{10}	0,9996	L_{10} 0,9998	d_{v10} 0,4998	d_{h10} 0,5008
W	0,9996	L 0,9999	d_v 0,4997	d_h 0,5004

Mean values

Overall structure deviation < 0,5 μ m



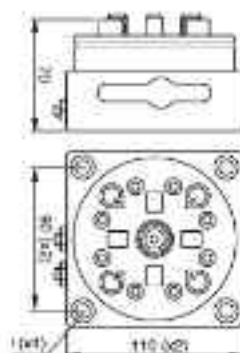
MacroNano – Chucks, pallets & accessories



Pneumatic table chuck, MacroNano, 3R-600.10-3N

Chuck for mounting on the machine table.

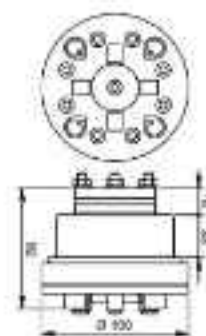
- Fixed index positions 4x90°
- Required air pressure, pneumatic chuck – 6±1 bar
- References of cemented carbide
- Required drawbar 3R-605.1
- Air-blast cleaning of Z-references
- Turbo-locking
- Weight 4.4 kg



Pneumatic chuck, MacroNano, 3R-600.84-3N

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

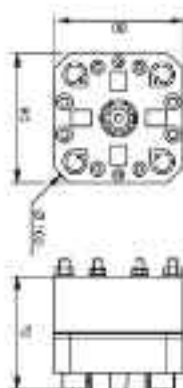
- Fixed index positions 4x90°
- Required air pressure, pneumatic chuck – 6±1 bar
- References of cemented carbide
- Required drawbar 3R-605.1
- Air-blast cleaning of Z-references
- Turbo-locking
- Weight 1.8 kg



Pneumatic chuck, MacroNano, 3R-600.86-3N

Chuck for building in, for example in a fixture

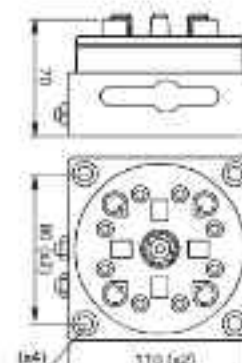
- Fixed index positions 4x90°
- Required air pressure, pneumatic chuck – 6±1 bar
- References of cemented carbide
- Required drawbar 3R-605.1
- Air-blast cleaning of Z-references
- Turbo-locking
- Weight 1.8 kg



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

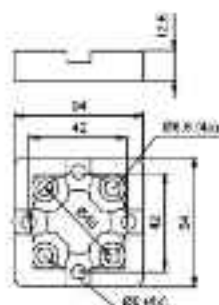


MacroNano – Pallets & accessories

Pallet 54x54 mm, MacroNano, 3R-651.7E-N

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

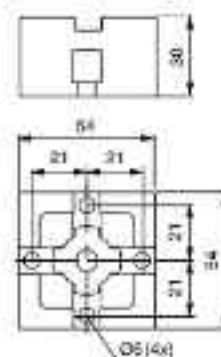
- Fixed index positions 4x90°
- Adapted for automatic changing
- Parallel-ground top and bottom face
- Rust resistant
- Supplied in sets of 8 pcs.
- Weight per set 1.2 kg



Pallet 54x54 mm, MacroNano, 3R-651E-N

Hardened with clearance holes for four fixing screws:

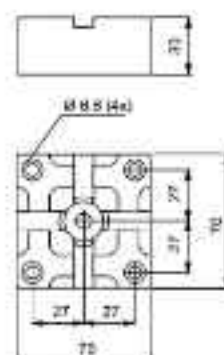
- Fixed index positions 4x90°
- Adapted for automatic changing
- Ready for code carrier
- Rust resistant
- Supplied in sets of 8 pcs.
- Weight per set 3.4 kg



Pallet 70x70 mm, MacroNano, 3R-601.1E-N

Hardened with clearance holes for four fixing screws.

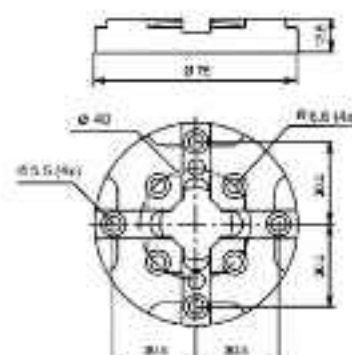
- Fixed index positions 4x90°
- Adapted for automatic changing
- Ready for code carrier
- Rust resistant
- Supplied in sets of 5 pcs.
- Weight per set 3.6 kg



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

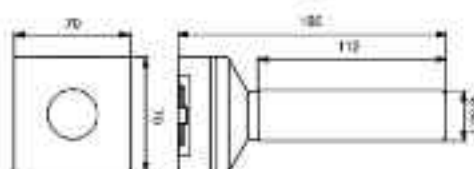
- Ø20x57.1 mm with flushing holes Ø7 mm.
- Supplied in sets of 10 pcs.



Check mandrel, MacroNano, 3R-606-N

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

- Measuring length 110 mm.
- Weight 2.3 kg

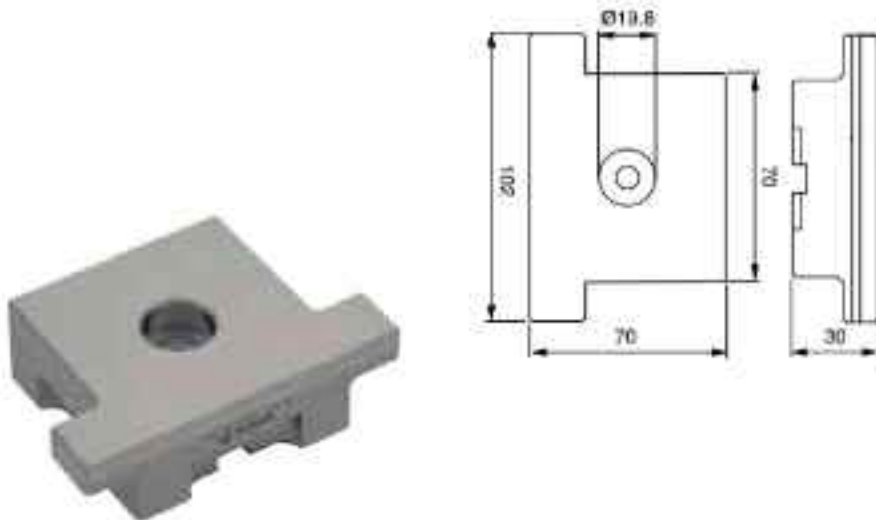


MacroNano – Accessories

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.



Locking ring key, 3R-605-GE

To lift the locking ring of the drawbars.

- Supplied in sets of 2.



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.





Spindle chucks	Article number	Drawbar	Features
Manual	3R-680.24-5	3R-605.2	low profile
Pneumatic	3R-680.1-2	3R-605.1 / 3R-605.4	matching air unit 3R-611.46
Lathe chucks			
Manual	3R-680.24-5	3R-605.2	low profile, fits 90809.01-10
Pneumatic	3R-680.1-2	3R-605.1 / 3R-605.4	matching air unit 3R-611.46



Table chucks	Article number	Drawbar	Feature
Manual	3R-680.24-S	3R-605.2	low profile
Manual	3R-680.24-V	3R-605.2	vibration-damped
Pneumatic	3R-680.10-2	3R-605.1 / 3R-605.4	matching air unit 3R-611.46
Pneumatic	3R-680.10-3	3R-605.2	low profile, matching air unit 3R-611.2/3R-611.6
Pneumatic	3R-680.19-2	3R-605.1 / 3R-605.4	3Relis Ø20 mm, matching air unit 3R-611.46
Pneumatic	3R-680.1-2V	3R-605.1 / 3R-605.4	vibration-damped, matching air unit 3R-611.46
Pneumatic	90717.10	3R-605.1 / 3R-605.4	vibration-damped, matching air unit 3R-611.46
Pneumatic	3R-680.10-2A	3R-605.1 / 3R-605.4	for chuck adapter, matching air unit 3R-611.46

Built-in chucks	Article number	Drawbar	Feature
Pneumatic	90809.03	3R-605.1 / 3R-605.4	matching air unit 3R-611.46
Pneumatic	3R-SP26712	3R-605.2	low profile, matching air unit 3R-611.2/3R-611.6
Pneumatic	90419.XX	3R-605.1 / 3R-605.4	



MacroMagnum – Chucks

Manual chuck, Low profile, 3R-680.24-5

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



Pneumatic chuck, 3R-680.1-2

Pneumatic chuck for machine spindles and tables. 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

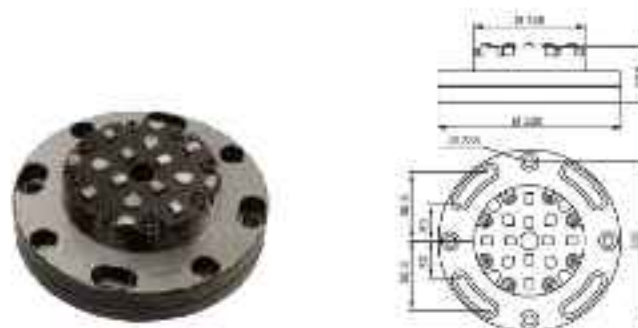


Manual table chuck, VDP, 3R-680.24-V

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

VDP



Pneumatic table chuck, 3R-680.10-2

Pneumatic table chuck

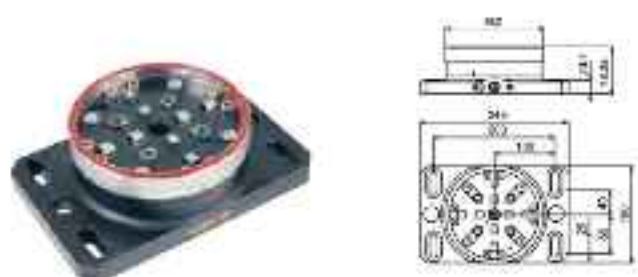
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6 ± 1 bar
- Fixed index positions 4x90°
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo-locking of MacroMagnum pallets
- Weight 12 kg



Pneumatic table chuck, 3R-680.19-2

Pneumatic table chuck with 3Relix holes

- 3Relix 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 17 kg

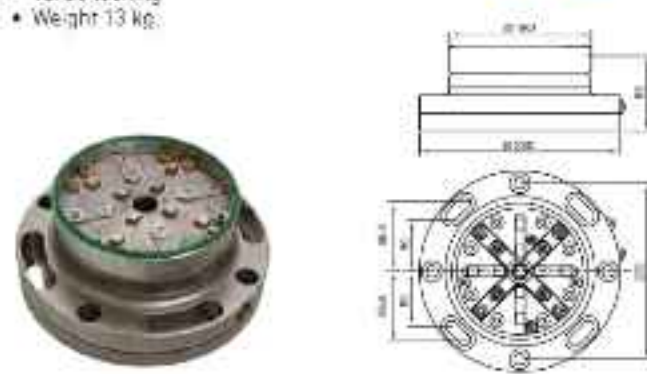


Pneumatic table chuck, VDP, 3R-680.1-2V

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

VDP

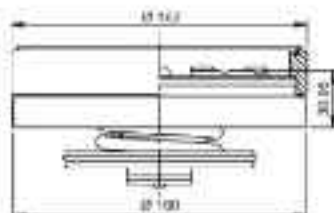


MacroMagnum – Chucks & chuck adapters

Pneumatic chuck, 90809.03

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

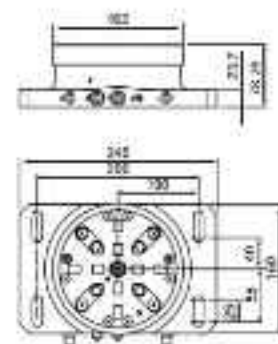
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Flushing duct
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo locking
- Weight 5 kg



Pneumatic table chuck, 3R-680.10-2A

Pneumatic table chuck for chuck adapter:

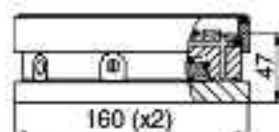
- Required drawbar 3R-605.1 or 3R-605.4
- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Air-blast cleaning of Z-references on chuck and chuck adapter
- Sealing ring
- Turbo-locking
- Weight 12 kg



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 $4 \times 90^\circ$
- Flushing duct
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo locking
- Weight 7.5 kg



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 $4 \times 90^\circ$
- Flushing duct
- Air-blast cleaning of the Z-references
- Sealing ring
- Turbo locking
- Weight 5 kg



Chuck adapters	Article number	Drawbar	Feature
Pneumatic	90964	3R-605.1 / 3R-605.4 + 3R-605.2	MacroMagnum ► Macro
Pneumatic	3R-682.600-A	3R-605.1 / 3R-605.4 + 3R-605.2	MacroMagnum ► Macro
Pneumatic	3R-682.400-A	3R-605.1 / 3R-605.4 + 3R-605.11	MacroMagnum ► MacroJunior
Pneumatic	90056.20	3R-605.2 / 3R-605.4	Dynafix ► MacroMagnum

MacroMagnum – Chuck adapters

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

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

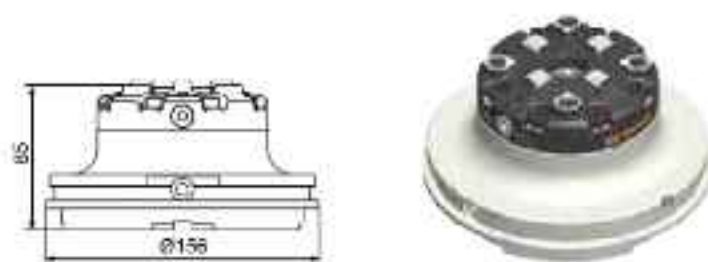
- Weight 4.5 kg



Manual chuck adapter, MacroMagnum-Macro, 90964

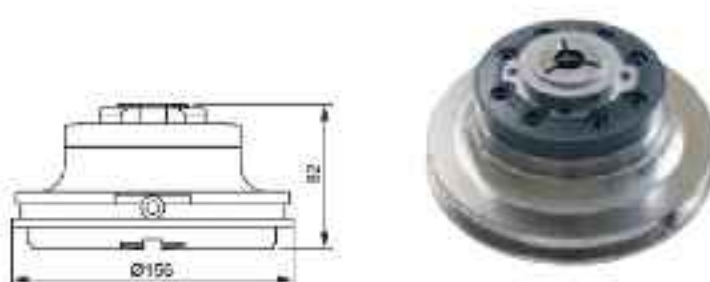
From MacroMagnum into Macro system. Chuck adapter with built-in Macro chuck.

- 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



Pneumatic chuck adapter, MacroMagnum-MacroJunior, 3R-682.400-A

Chuck adapter with built-in pneumatic MacroJunior chuck for mounting in 3R-680.10-2A.



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.



MacroMagnum – Pallets



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

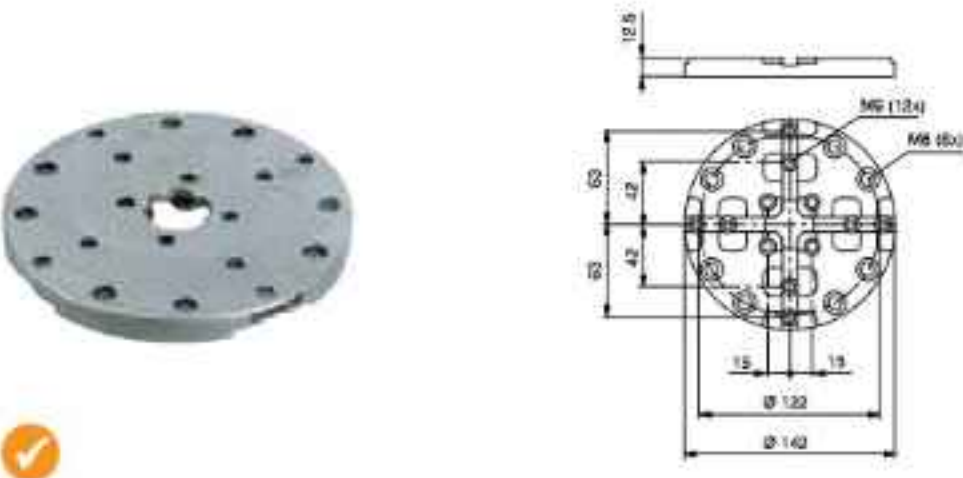
Pallets, reference element Ø142 mm	Article number	Feature
Hardened reference element 12.5 mm	3R-681.71	rust-resistant

Pallets Ø156 mm	Article number	Feature
Unhardened pallet 35 mm	3R-681.51-SA	
Unhardened pallet 35 mm	3R-681.156-A	reference element Ø142 mm
Hardened pallet 35 mm	3R-681.51	3Refix Ø10 mm
Three-jaw chuck	90421	
Vice	90879.03	

Pallet Ø142 mm, 3R-681.71

Hardened pallet with clearance holes for fixing screws.
Note: Must be mounted on the workpiece/fixture before it is locked in a chuck.

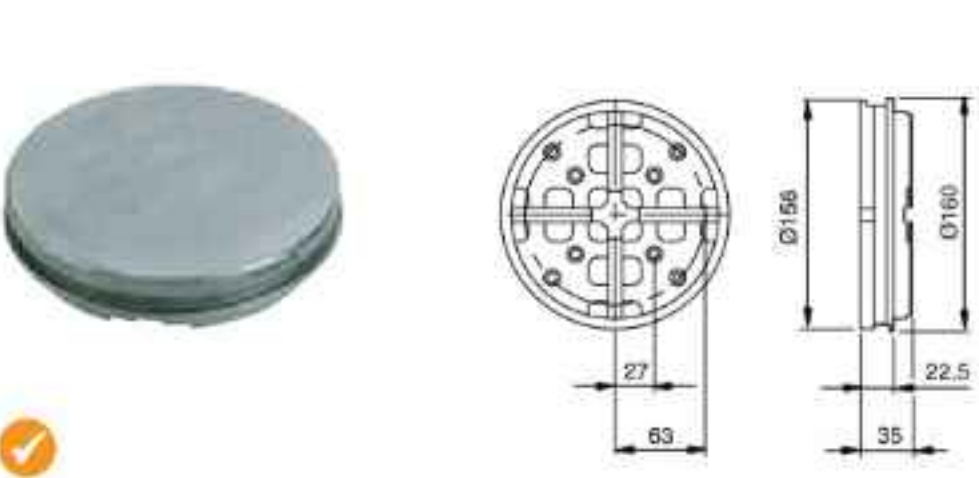
- Rust-resistant
- Weight 1 kg.



Pallet Ø156 mm, 3R-681.51-SA

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

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

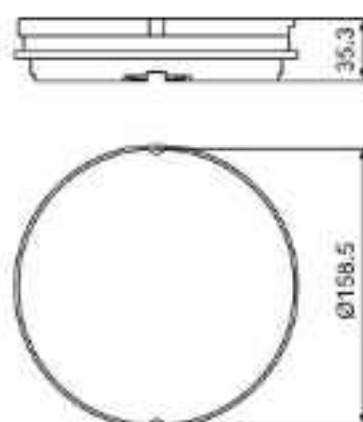


MacroMagnum – Pallets & accessories

Pallet Ø156 mm, 3R-681.156-A

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

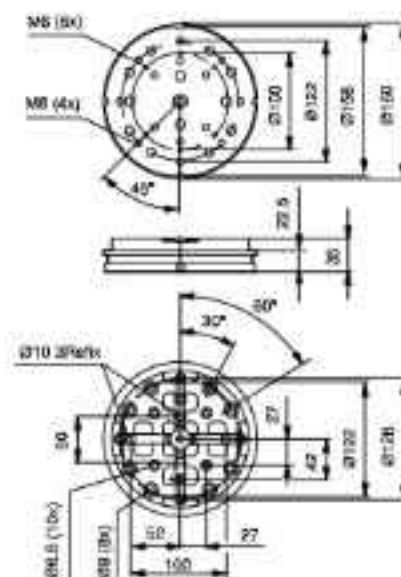
- Adapted for automatic changing
- Ready for code carrier
- Weight 4.5 kg.



Pallet Ø156 mm, 3R-681.51

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

- 3Rfix 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.



MacroMagnum – Accessories

Check ruler, 3R-686.1-HD

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

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



Splash guard, 90027.03

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



Chip guard, 90443

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



Connection for air gun, 90815

For manual operation of pneumatic chucks with air gun.

- Supplied in sets of 2 pcs.



Code carriers, 3R-863.01-10

With pre-programmed unique identity, designed for pallet use.

- Supplied in sets of 10 pcs.



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.



MacroMagnum – Accessories

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 R⁶ hole first.



Torque wrench, 3R-614-04

For Ø10 mm 3Refix mandrels and manual MacroMagnum chucks.

- 4 Nm



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.



Air unit, 3R-611.46

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



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.



Prepared for automatic chuck adapter.



Inlets on side & underneath.



Spherical rolls.



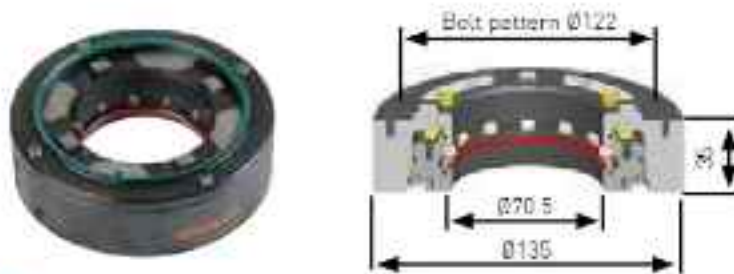
Pre-alignment studs.

Matrix 110

Pneumatic chuck, Matrix 110, 3R-690.1-110

Chuck for permanent mounting on the machine table or into a PM press.

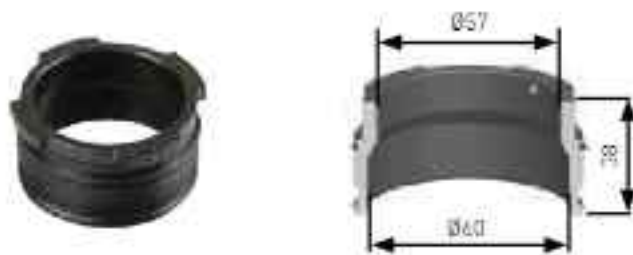
- Fixed index positions 4x90°
- Hardened references
- Clamping force 9000 N
- Permissible torque 100 Nm
- Required drawbar 3R-695.2-110
- Required air pressure: -6 ± 1 bar
- Weight 2.5 kg.



Drawbar, Matrix 110, 3R-695.2-110

- Weight 0.3 kg.

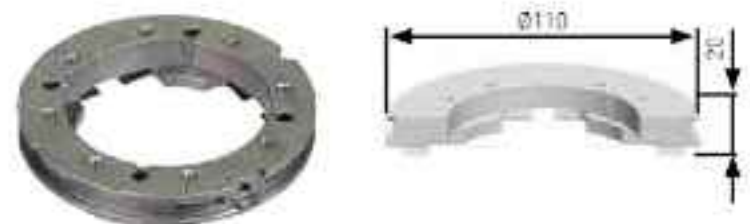
Note: In automation the gripper has to grip on the pallet and not on the drawbar.



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.



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.



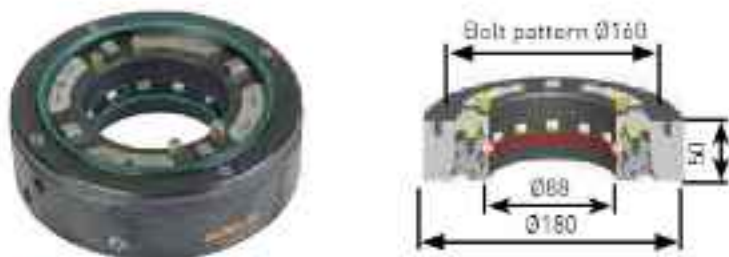
Three-jaw chuck mounted on a pallet

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

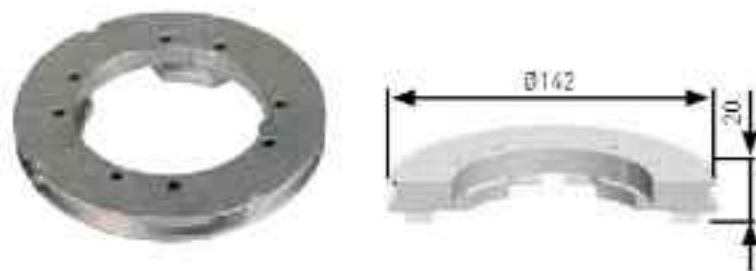
Note: In automation the gripper has to grip on the pallet and not on the drawbar.



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



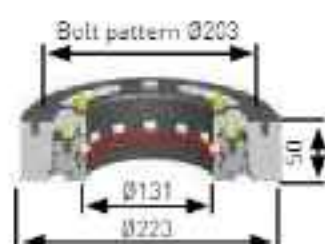
Matrix application:
Pallet with special fixture for
protruding workpiece in this case a "hip joint"

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.

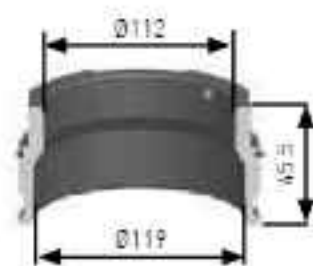
Note: Not self carrying, requires extra support.



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

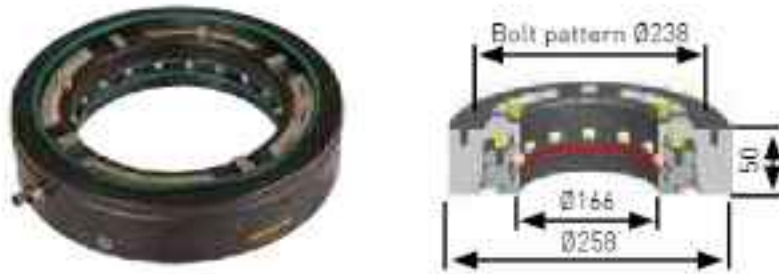


Matrix 220

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



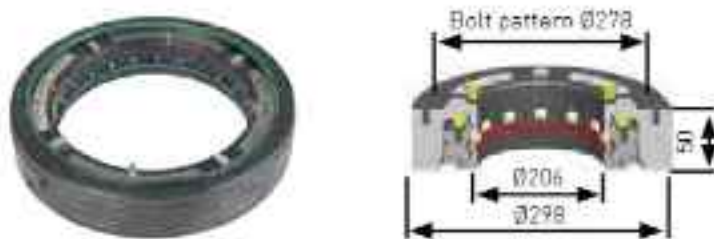
Matrix application:
The pallet is turnable for machining of both sides of a optical lens.

Matrix 260 & accessories

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

Chuck for permanent mounting on the machine table or into a PM press.

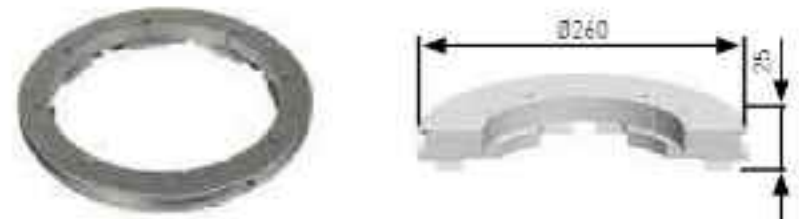
- Fixed index positions 4x90°
- Hardened references
- Clamping force 24000 N
- Permissible torque 600 Nm
- Required drawbar 3R-695.2-260
- Required air pressure, - 6±1 bar
- Weight 13 kg



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

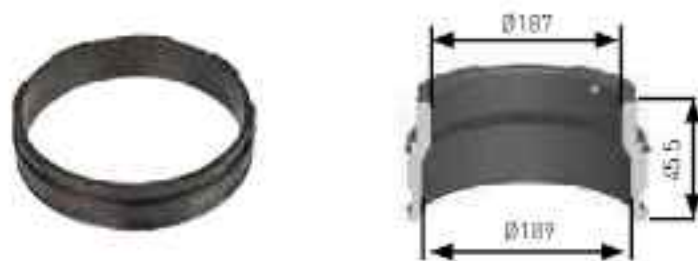
Note: Not self carrying, requires extra support.



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 240

- ... 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.

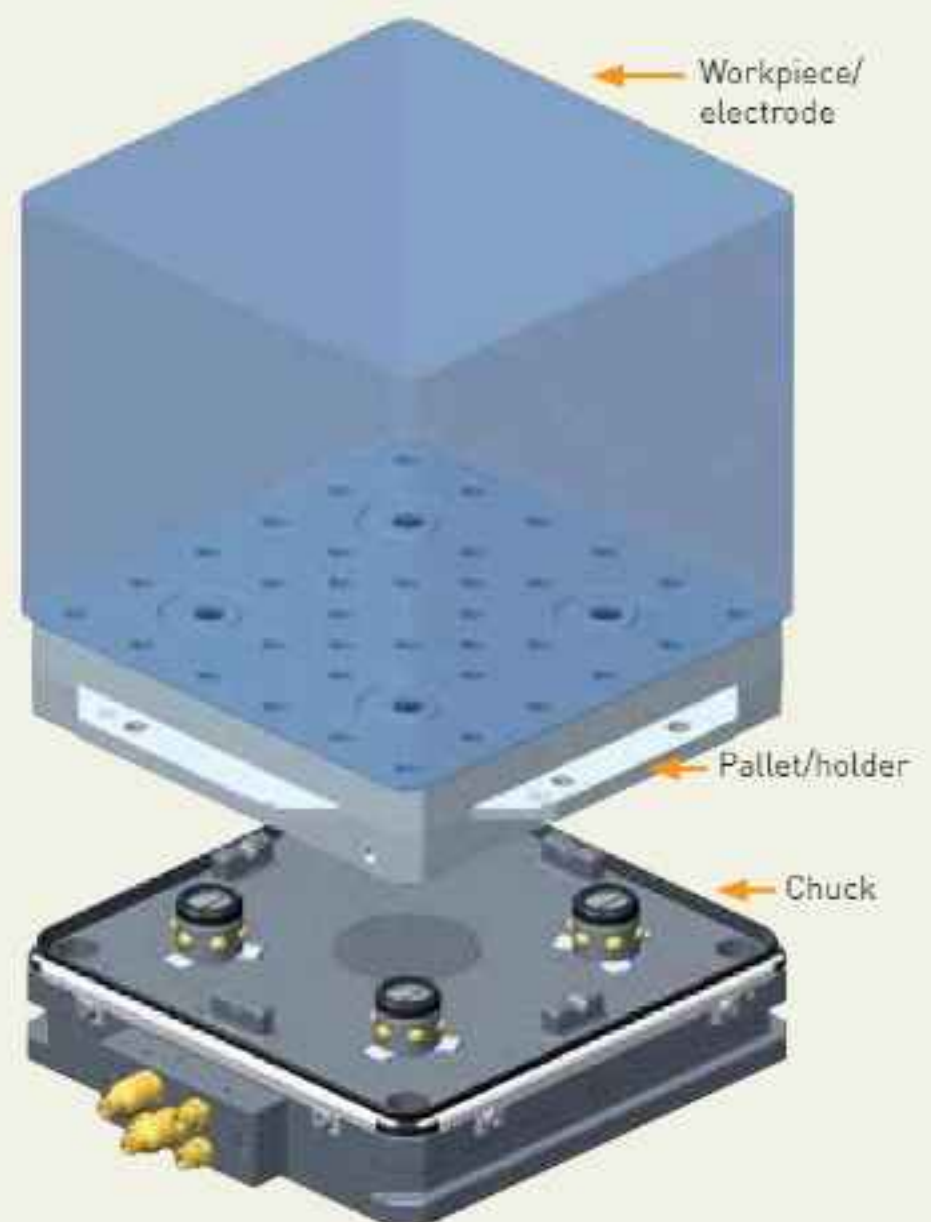
The machining zero point is defined by the centre of the chuck in the GPS 240 system. The chuck can be mounted on the machine table of any machine tool.

The standardised hole pattern of the pallet allows the fixation of workpieces, fixtures and accessories such as vices, three-jaw chucks and magnetic tables 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 the GPS 240 is also suitable for automatic changing.

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

- + 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 – 100kg.



GPS 240

Die-cast aluminium pallets with standardised hole pattern or solid aluminium pallets.



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



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

A lifting mechanism which operates on clamping /releasing protects the references when loading heavy workpieces.



Spring loaded clamping mechanism. Releasing by air.

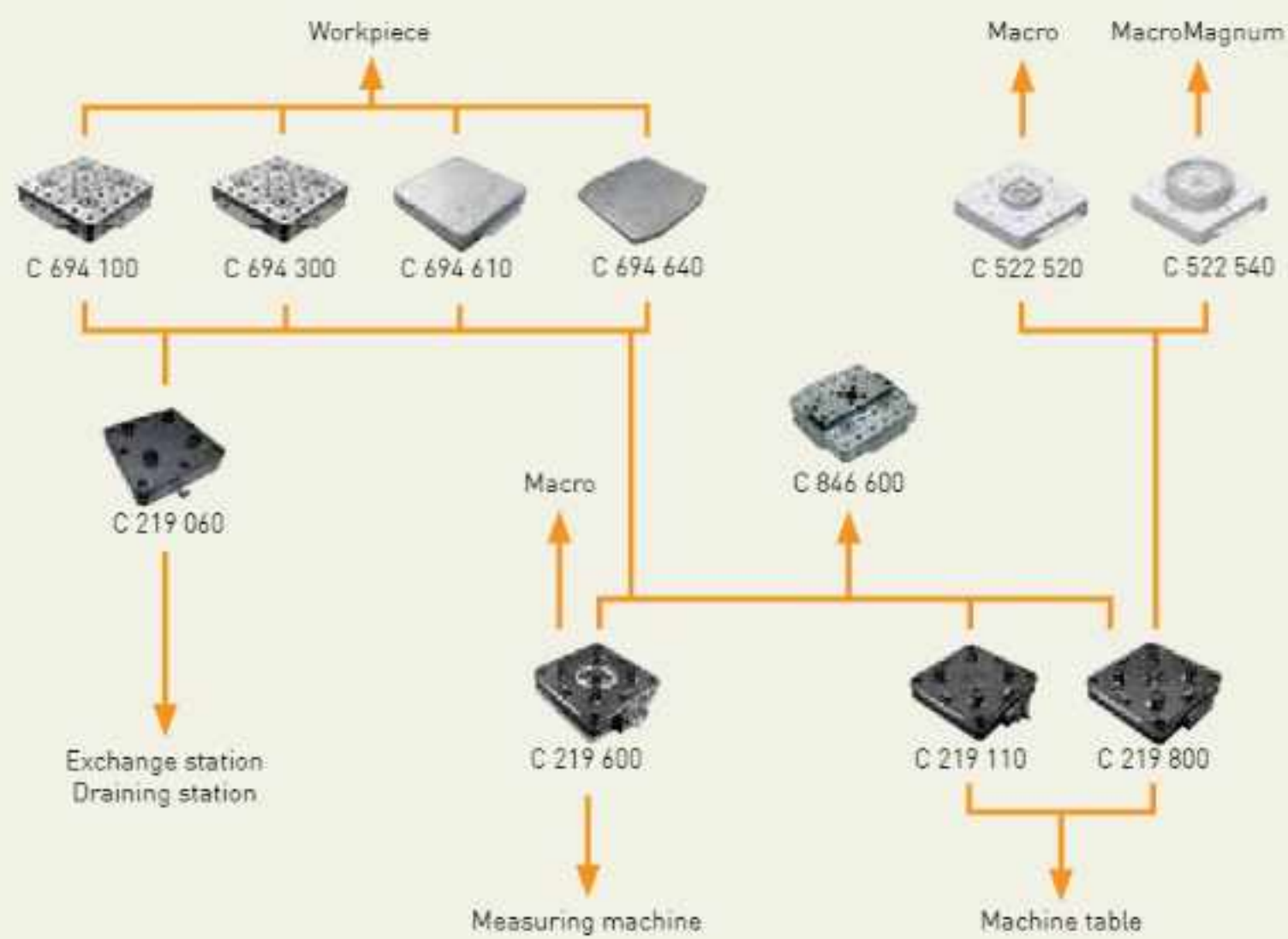


Hardened chuck body with prisms for X/Y centring made out of one piece for maximum stability. Indexing 4 x 90°.

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

Connection bloc.

GPS 240 – Chucks



Chucks, square		Article number	Feature
Pneumatic automatic/manual		C 219 110	for manual & automatic machining operations
Pneumatic automatic/manual		C 219 600	built-in pneumatic Macro chuck
Pneumatic automatic/manual		C 219 800	connection from below, medium connection
Pneumatic automatic/manual		C 210 060	dummy chuck

Pallets, square		Article number	Feature	Size [mm]
Cast aluminium	⊙	C 694 100		240x240
Cast aluminium	⊙	S 694 300	ground	240x240
Solid aluminium	///	S 694 610	ground	240x240
Solid aluminium	///	C 694 640	ground	300x300

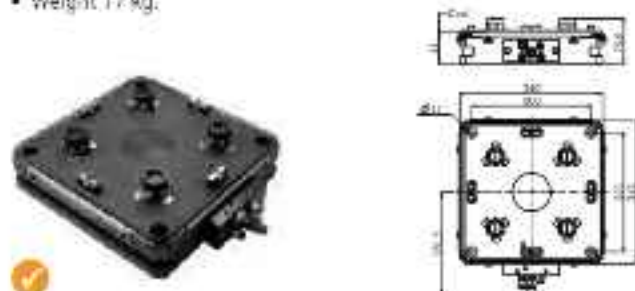
/// Pallet with coined cams. ⊙ Pallet with spring-loaded pin.

GPS 240 – Chucks

GPS 240 Chuck automatic, C 219 110

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

- Required air pressure 6 bar
- 5 air connections
- Repetition accuracy 0.002 mm
- Indexing accuracy 0.005 mm
- Clamping force 30 000 N/80 000 N
- Recommended control unit C 910 830
- Air-blast cleaning of the references
- Weight 17 kg.



GPS 240 Chuck automatic with medium connection, C 219 800

For manual and automatic machining operations:

- Rilling-in height 52 mm
- Air connections positioned centrally on the underside - prism - Z clamping clamping/releasing Turbo/ventilation
- Medium connection 2-fold
- Clamping force 30 000 N/80 000 N
- Weight 17 kg.



GPS 240 Dummy chuck, C 210 060

Dummy chuck for clamping a GPS 240 pallet on a 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 64x64 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 – Pallets

GPS 240 Pallet 'EDM/Grinding', C 694 100

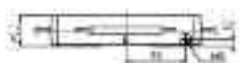
Ground aluminium pallet

- Construction height 48.1 ± 0.01 mm
- X/Y-centring with spring-loaded pin
- Flatness 0.02 mm
- Weight 4.8 kg
- Recommended workpiece weight 100 kg
- Supplied with C 531 500 sealing plugs



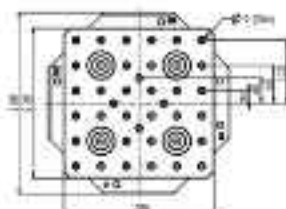
S 500 090

- Set of 4x C 694 100



S 500 100

- Set of 10x C 694 100

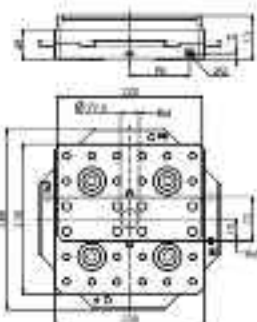


GPS 240 Master pallet, C 846 600

This pallet has a ground reference ruler and a ground indication hole for alignment of the references



C 694 100

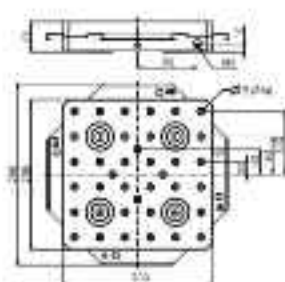


GPS 240 Pallet 'Adaption', C 694 300

Ground solid aluminium pallet

Suitable for fixtures and accessories.
Prepared for automation.

- Construction height 48.0 ± 0.005 mm
- X/Y-centring with spring-loaded pin
- Flatness 0.01 mm
- Weight 4.8 kg
- Recommended workpiece weight 100 kg
- Supplied with C 531 500 sealing plugs

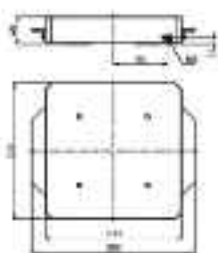


GPS 240 Pallet 240x240 mm, C 694 610

Ground solid aluminium pallet

Suitable for fixtures and accessories.
Prepared for automation.

- Construction height 48 ± 0.005 mm
- X/Y-centring with coined cam
- Flatness 0.01 mm
- Weight 7.4 kg
- Recommended workpiece weight 100 kg

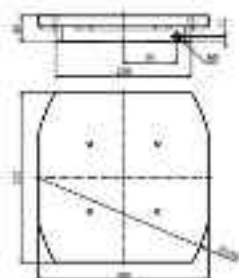


GPS 240 Pallet 300x300 mm, C 694 640

Ground solid aluminium pallet

Suitable for fixtures and accessories.
Prepared for automation.

- Construction height 48 ± 0.01 mm
- X/Y-centring with coined cam
- Flatness 0.02 mm
- Weight 9 kg
- Recommended workpiece weight 100 kg



GPS 240 – Accessories

GPS 240 Pallets with vice

C 585 400

Vice for workpieces >80 mm.

- X/Y-centring, with spring-loaded pin

C 585 600

Vice for workpieces >120 mm.

- X/Y-centring, with spring-loaded pin



C 585 400



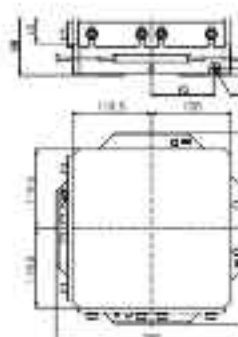
GPS 240 Magnetic table, C 694 260

High-precision magnetic plate for grinding work and for erode.

- Magnetic field height 5 mm
- Holding force 100 N/cm²
- Dimensions 240x240x88 mm
- Weight 23 kg



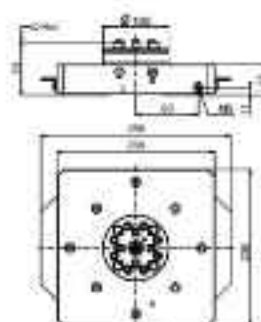
C 694 260



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

Chuck adapter with built-in pneumatic Macro chuck for mounting in C 219 800.

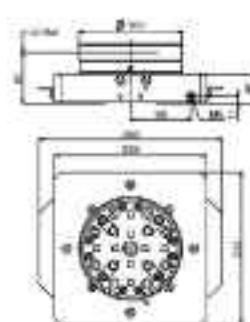
- Built-up height 80 mm
- X/Y-centring with springy cams, hardened, stainless
- Adapted for automatic changing
- Weight 8.5 kg



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



GPS 240 – Accessories

GPS 240 Controllers

C 810 830

Unit for controlling pneumatic chucks C 219 110.

- 4 connections – X/Y-locating – air-blast cleaning of Z – open/lock – turbo/ventilation.



C 810 850

Unit to control two pneumatic chucks.

- 5 connections – X/Y-locating – air-blast cleaning of Z – open/lock – turbo/ventilation – ventilation tube.



C 810 810

Unit for controlling pneumatic chucks C 219 600.

- 6 connections – X/Y-locating – air-blast cleaning of Z – clamping/releasing – turbo/venting – Macro clamping/releasing – Macro air-blast cleaning of Z / turbo



GPS 240 Spare parts set, S 220 000

Contains all elements for a normal service.

- Suitable for all square chucks
- Recommendation: every 2 years if used manually and annually if used in the automation system.



GPS 240 Chuck seal, C 219 007

The chuck seal is a wear part which should be replaced every three to six months.

- Material Viton
- Supplied singly



GPS 240 Spare parts set, S 531 260

Plugs for sealing fixation screw holes on GPS 240 chucks.

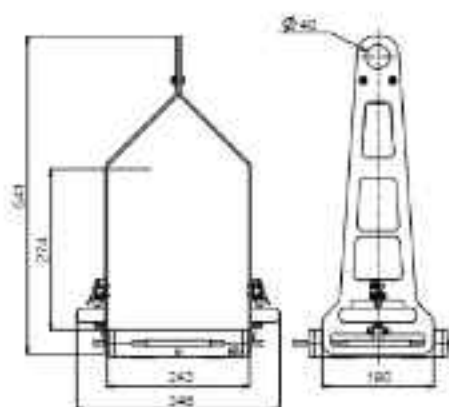
- Suitable for square chucks
- Supplied in sets of 20



GPS 240 Lifting grip, C 810 960

Lifting gear for handling GPS 240 pallets 240x240 mm.

- Weight 2.9 kg.



GPS 240 – Accessories

GPS 240 Seals, C 531 250

To seal the holes in the four clamping elements of the pallet.

- Material elastomer
- Supplied in sets of 20.



GPS 240 Reference protectors, C 531 210

To protect the Z-reference of the pallet.

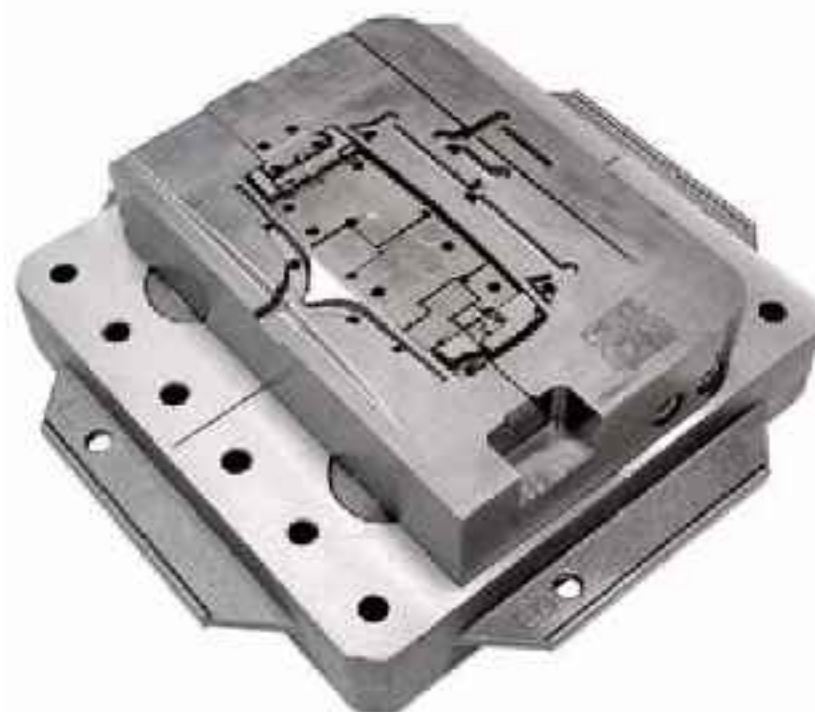
- Supplied in sets of 20.



GPS 240 Sealing plugs, C 531 500

Plugs for sealing GPS 240 pallets.

- Supplied in sets of 40.



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.



GPS 240 – 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 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 Starter kit, S 500 650

U 219 110 pneumatic chuck
C 810 830 actuator
C 894 100 pallets (2x)



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 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



Dynafix

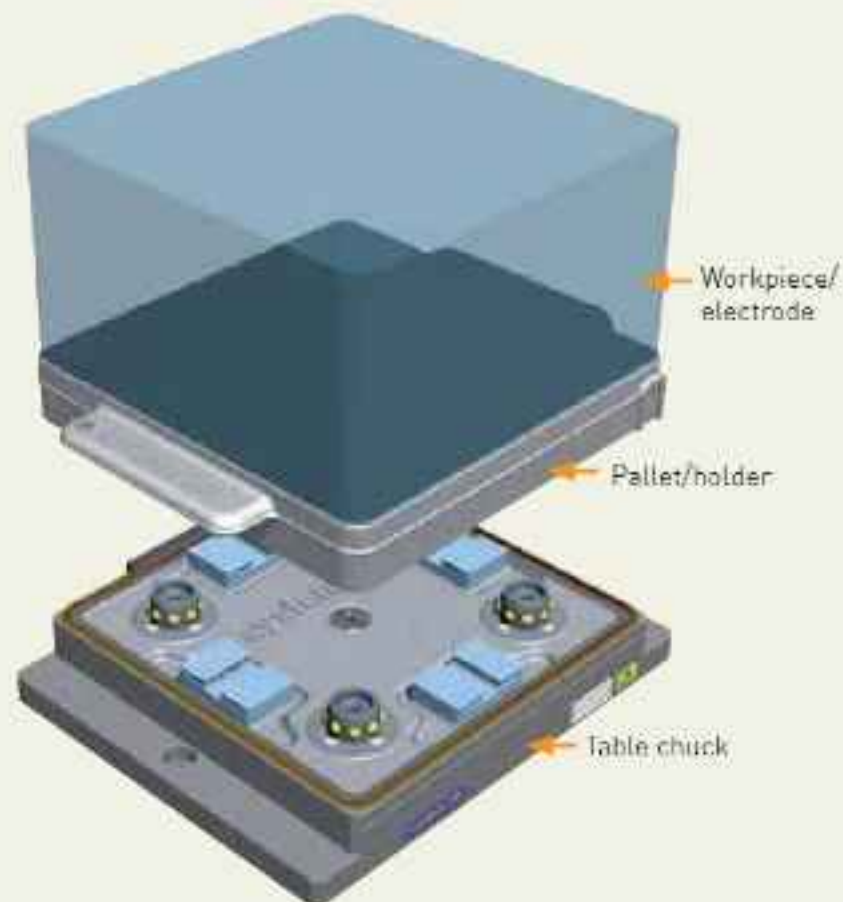
- ... allows machining with optimal cutting data
- ... reduces setting-up times
- ... ensures precision and quality
- ... gives access to System 3R's entire product range
- ... is suitable for automatic changing with System 3R's automation program.

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 product 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.



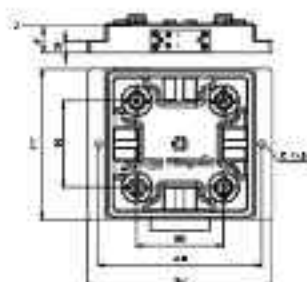
Chucks	Article number	Feature
Pneumatic	3R-770-1	
Pneumatic	3R-770-4	alignment reference
Pneumatic	90356.10	for chuck adapters, with mounting flange
Pneumatic	90576.05	for chuck adapters, without mounting flange
Pneumatic	3R-770-5	for five-axis machines
Pneumatic	90718.04	vibration-damped
Pneumatic	3R-770.6-1	built-in pneumatic Macro chuck

Dynfix – Chucks

Pneumatic chuck, 3R-770-1

Pneumatic table chuck.

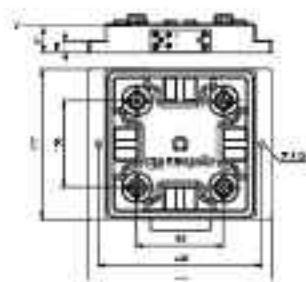
- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Recommended actuator 3R-611.4 or 3R-611.2
- Air-blast cleaning of the Z-references
- Weight 24.5 kg



Pneumatic chuck, 3R-770-4

Pneumatic table chuck with ground-in reference for alignment.

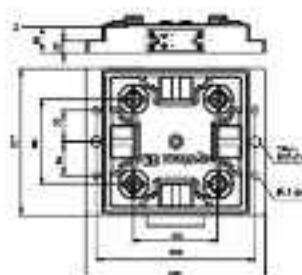
- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Recommended actuator 3R-611.4 or 3R-611.2
- Air-blast cleaning of the Z-references
- Weight 24.5 kg



Pneumatic chuck, 3R-770.19-1

Pneumatic table chuck with 3Refix-holes.

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



Pneumatic chuck

Pneumatic chucks with extra connections for automatic chuck adapters.

Note: Requires two control units.

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

90356.10

With fixing lugs.

- Weight 24.5 kg

90576.05

Without fixing lugs.

- Weight 23.5 kg



Pneumatic chuck, 3R-770-5

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

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

VDP



Dynfix – Chucks



Pneumatic chuck, D-20130

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

- Required air pressure 6 ± 1 bar
- Fixed index positions $4 \times 90^\circ$
- Air-blast cleaning of the Z-references
- Weight 22 kg



Pneumatic chuck, 3R-770.46-1

Pneumatic chuck with integrated MacroCombi chuck. For CMM machines.

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



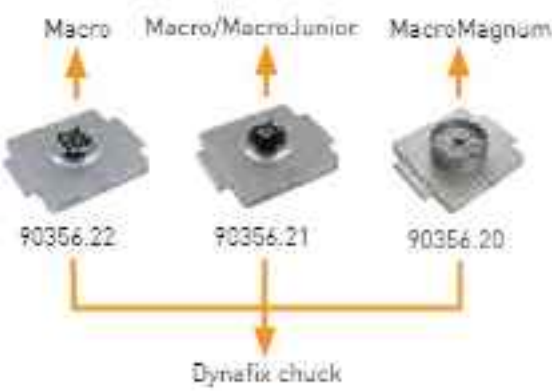
Pneumatic chuck, D-20129

Pneumatic chuck with manual Macro Std chuck in the center.

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



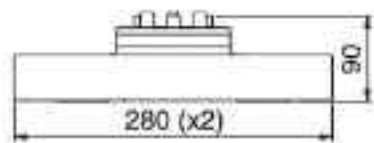
Dynfix – Chuck adapters



Chuck adapters	Article number	Feature
Pneumatic	90356.22	Dynafix ► Macro
Pneumatic	90356.21	Dynafix ► MacroCombi
Pneumatic	90356.20	Dynafix ► MacroMagnum

Pneumatic chuck adapter, Dynafix-Macro, 90356.22

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



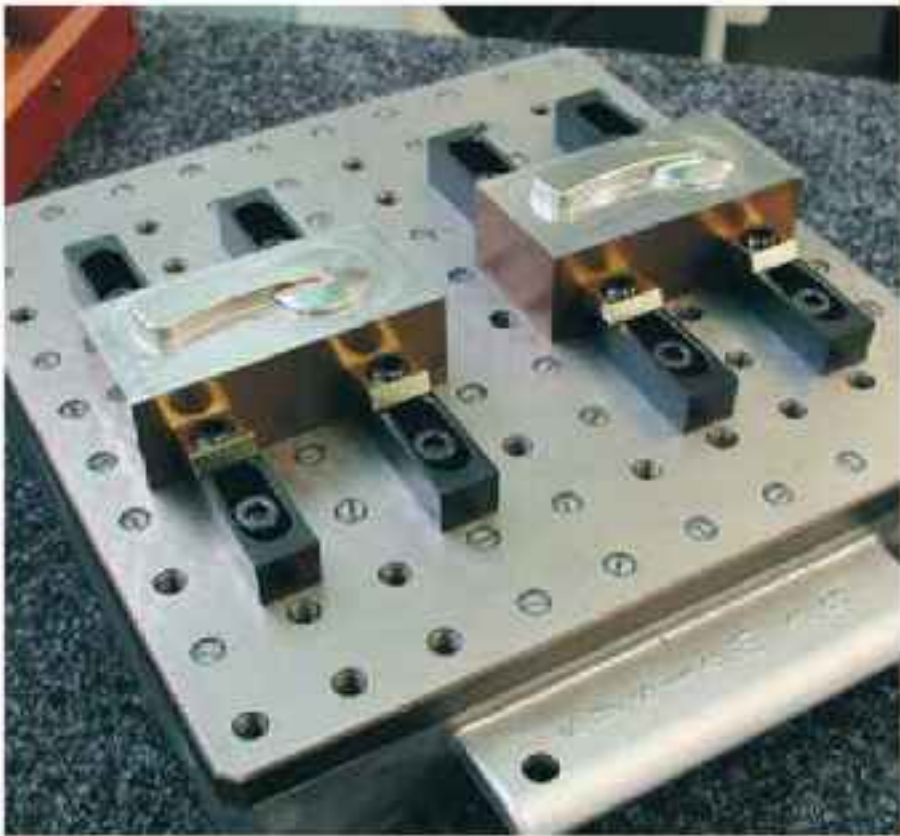
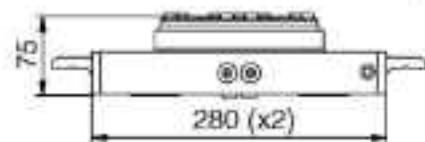
Pneumatic chuck adapter, Dynafix-MacroCombi, 90356.21

Chuck adapter with built-in pneumatic MacroCombi 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



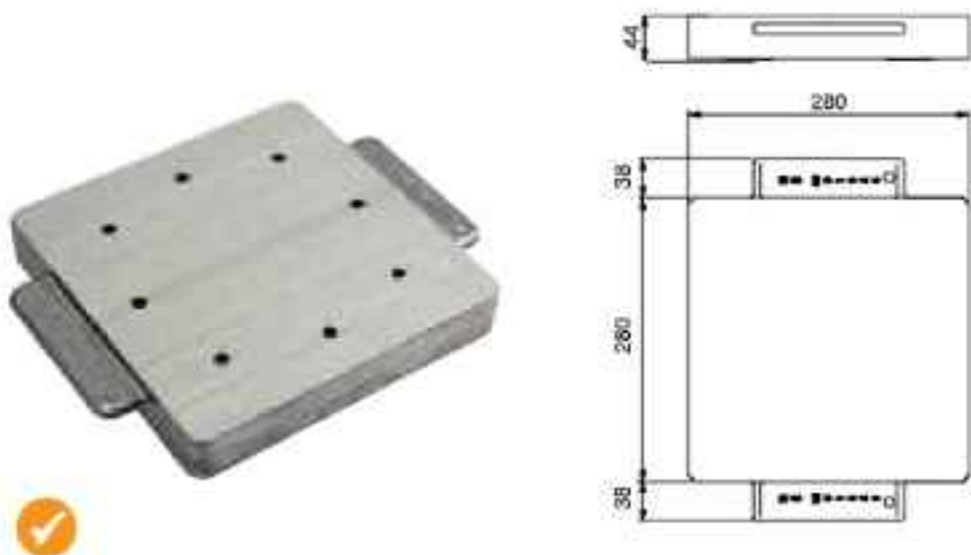
Pallets 280x280 mm	Article number	Feature
Aluminium	3R-771.2	
Aluminium	3R-772.2	ground
Aluminium	3R-DE772-T8.40	T-slots
Aluminium	3R-DE772-M8	M8 threads
Aluminium	3R-CH771.35	

Pallets 400x400 mm	Article number	Feature
Aluminium	3R-774-AL	
Steel	3R-774	

Pallet 280x280 mm, 3R-771.2

Milled aluminium pallet.

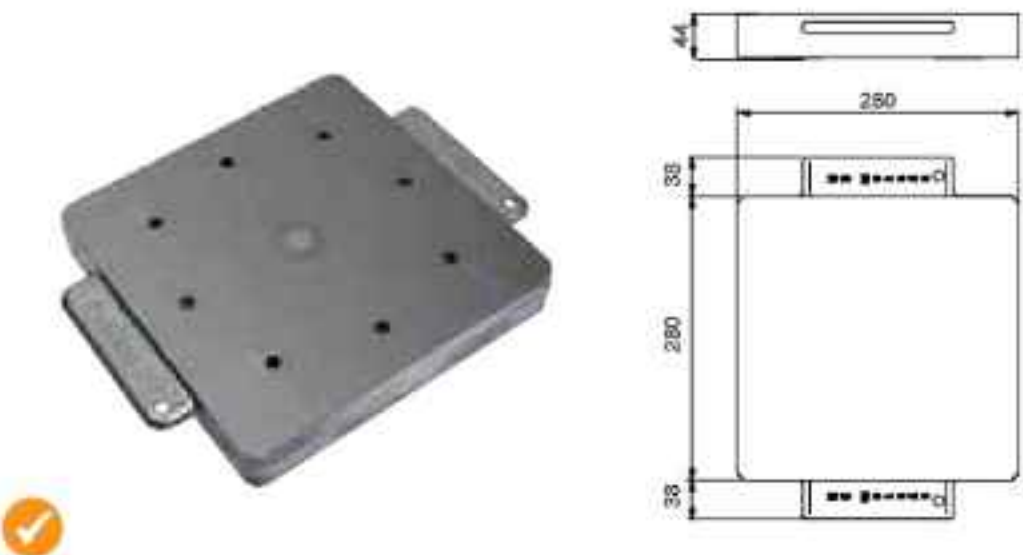
- Adapted for automatic changing
- Ready for code carrier
- Flatness 0.04 mm
- Thickness tolerance +0.5/-0 mm
- Weight 6 kg.



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.

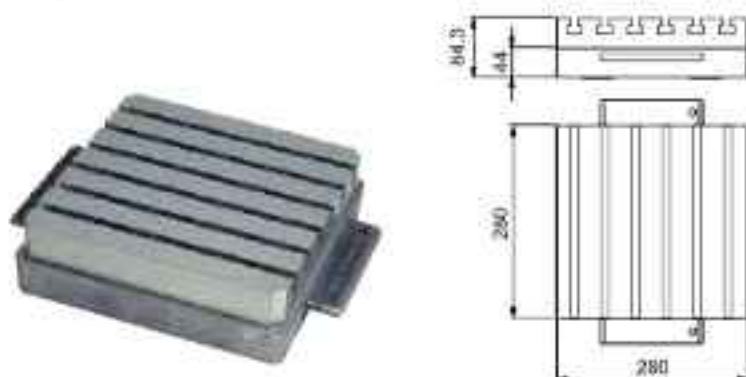


Dynafix – Pallets & Accessories

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 400x400 mm, 3R-774-AL

Aluminium pallet.

- Ready for code carrier
- Weight 20 kg.



Reference elements, 3R-771.7

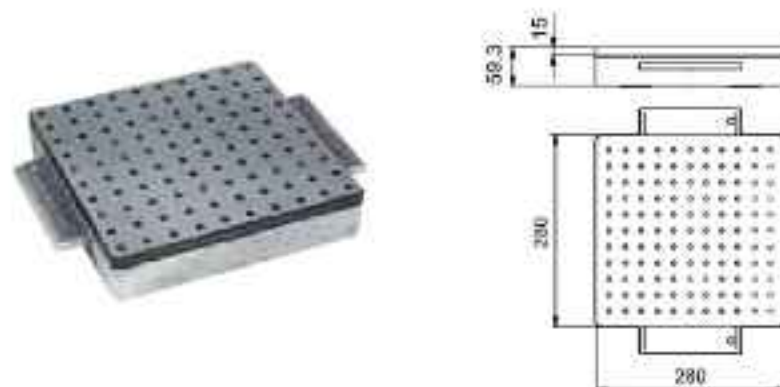
Reference kit for users who want to make their own pallets or fixtures.



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

Hardened steel pallet with 139 M8 threads on 20 mm centres.

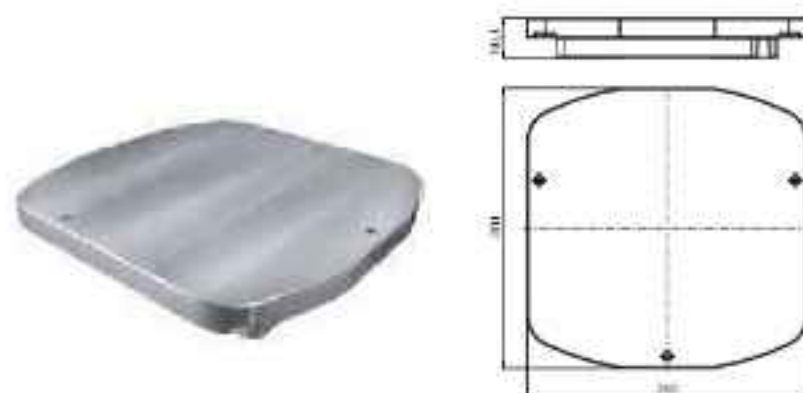
- Adapted for automatic changing
- Ready for code carrier
- Weight 14.5 kg.



Pallet 350x350 mm, 3R-CH771.35

Aluminium pallet.

- Adapted for automatic changing
- Ready for code carrier
- Weight 12.1 kg



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



Maxi

- ... reduces setting-up times.
- ... is user-friendly.
- ... gives access to a large part of System 3R's product range.

Maxi an especially robust, uncomplicated and user-friendly system for larger and heavier electrodes and workpieces. The chucks are of the fishtail type with three references for rapid mounting of the accessories with a single two-handed operation.

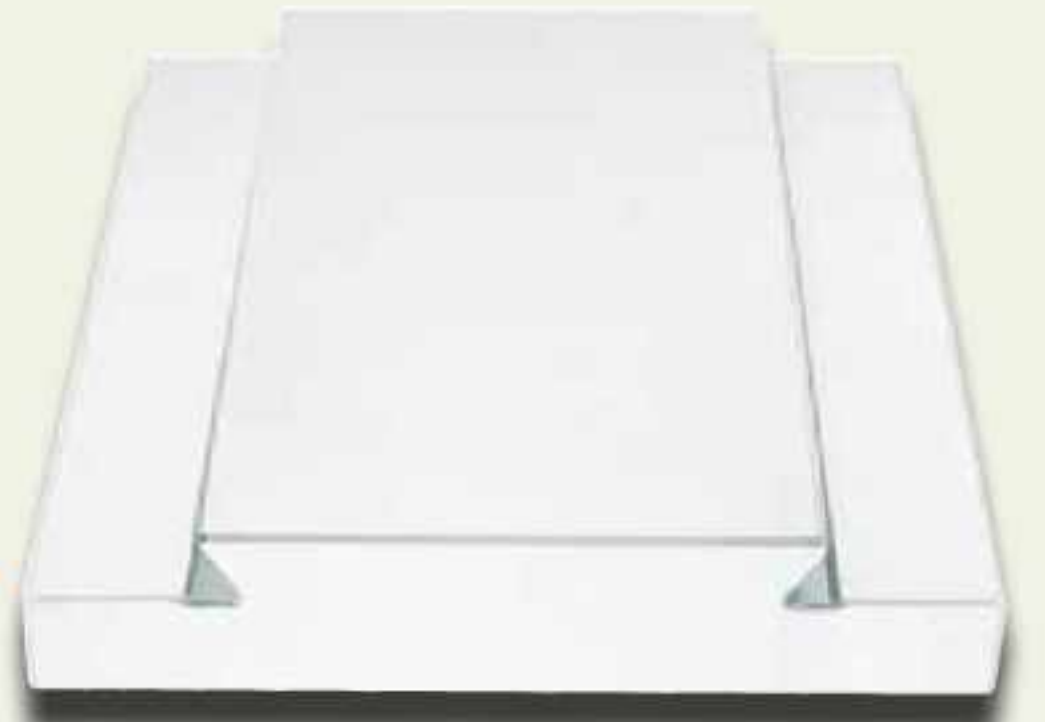
Chuck adapters – with Maxi as the basic mounting on the machine table – also give access to the Mini, MacroJunior and Macro systems.

- + Repetition accuracy within – 0.01 mm.
- + Recommended maximum weight – 500 kg.

Chuck →



Holder/pallet →

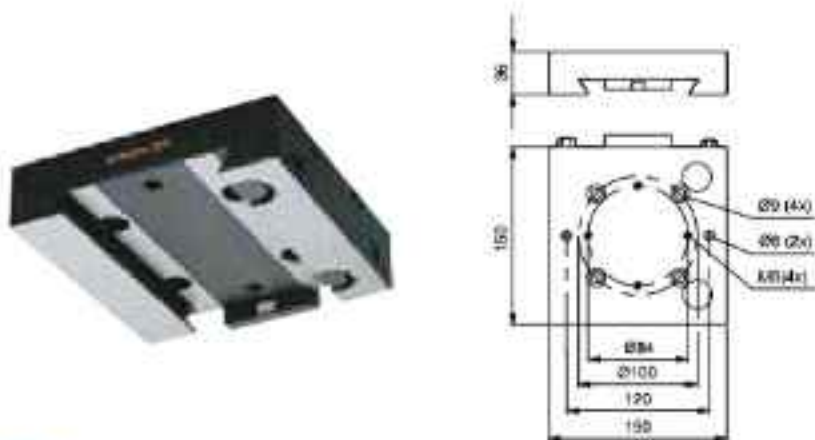


Maxi – Chuck & pallet

Manual chuck, 3R-27.2

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

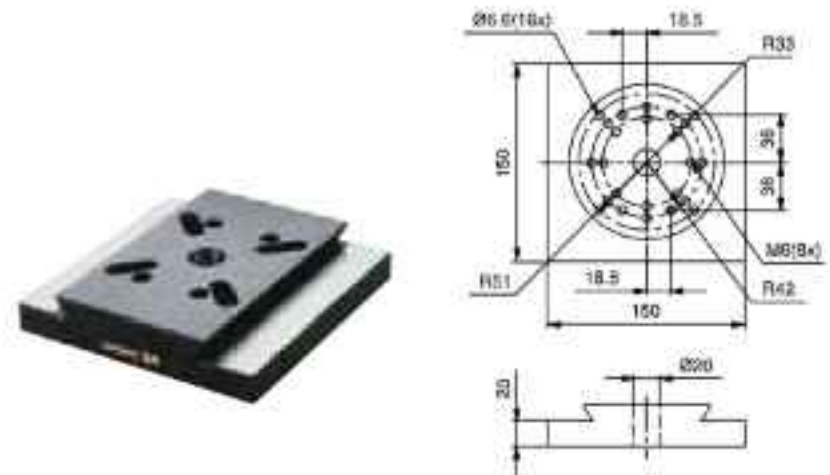
- Immersible
- Maximum electrode weight 500 kg
- Mechanical locking
- Weight 5 kg.



Pallet 150x150 mm, 3R-29.2

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

- Hardened
- Weight 4.6 kg.



Mini

- ... reduces setting-up times.
- ... gives rapid and precise mounting.
- ... is suitable for automatic changing with System 3R's automation program.

Mini

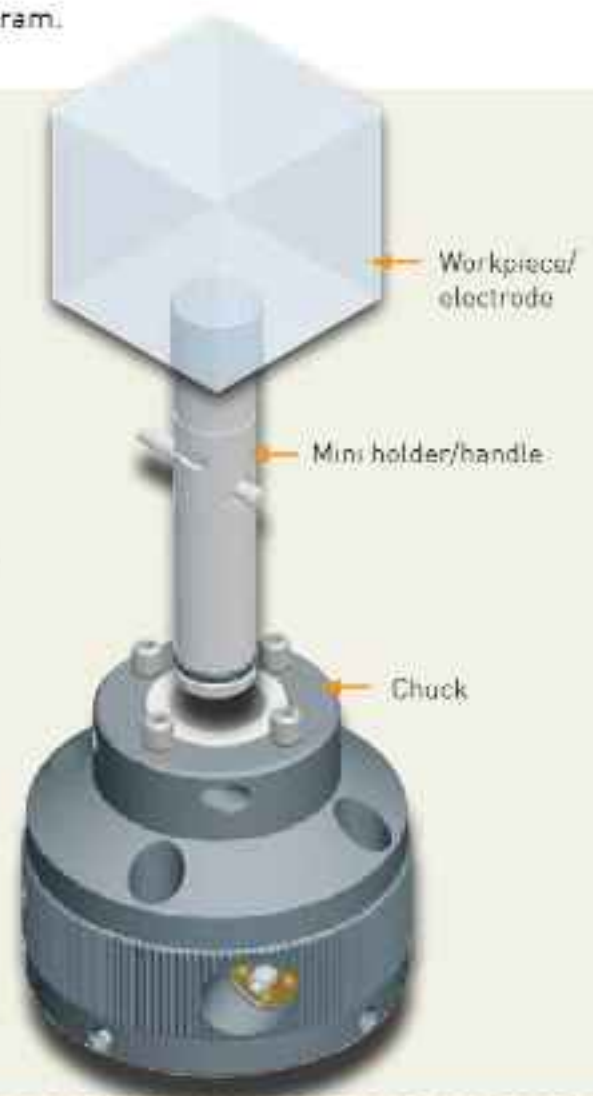
The ancestor of the reference systems! The introduction of the Mini system in the early 1970s created the basis for efficient electrode production and spark-erosion machining. Electrodes could now be produced mounted on inexpensive holders. Subsequent alignment of the electrodes in the spark-erosion machine was eliminated. The Mini system introduced the precision and flexibility that had until then been absent from spark erosion technology.

The Mini system provides rapid and exact mounting of the electrode holders in hydraulic quick-change chucks. This high change accuracy is achieved thanks to the two chambers of the hydraulic system, which expand uniformly and provide symmetrical locking against the fixed Z reference with angular location.

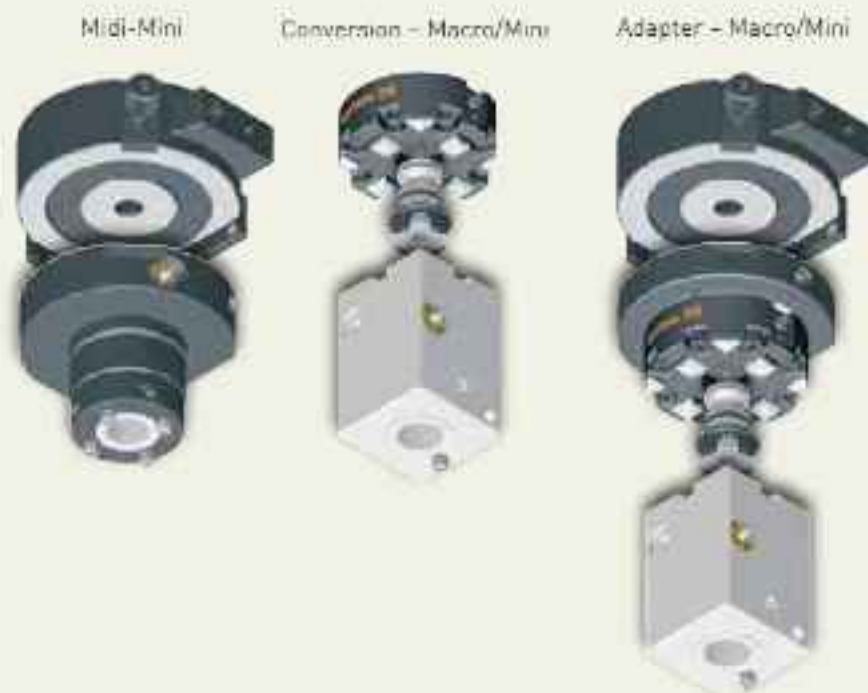
The Mini system is a "Reverse Reference System", in which the chuck adapts itself to the electrode holder, which is why all electrode holders must be exactly alike – in diameter, roundness, straightness and hardness – to meet the accuracy requirements.

Even today, the Mini system is probably the most widespread reference system in the world.

+ Clamping force – 4000 N.



Upgrade options:

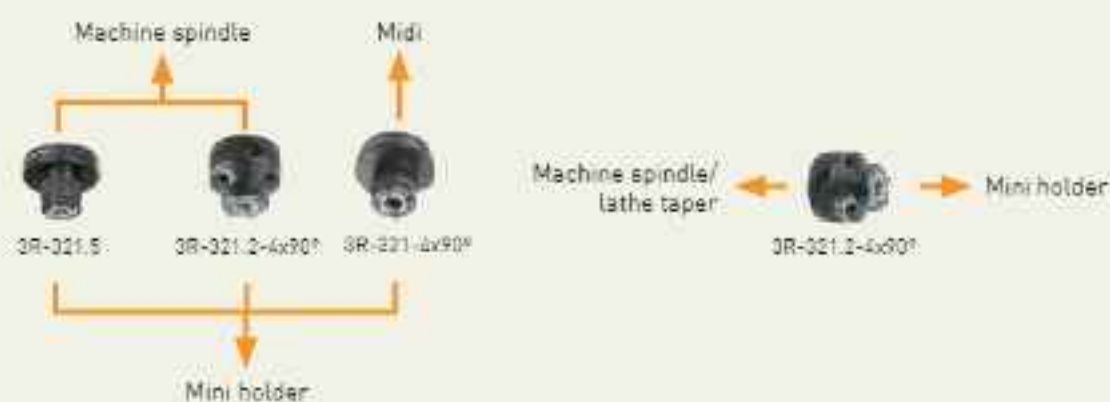


What distinguishes the original from a pirate copy:



Note: Warranty undertakings only apply if genuine System 3R parts have been used.

Mini – Chucks



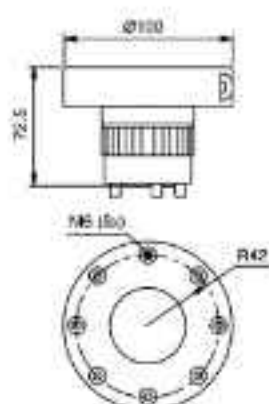
Spindle chucks	Article number	Feature
Manual	3R-321.5	Midi ► Mini
Manual	3R-321.2-4x90°	
Manual	3R-321-4x90°	

Lathe chuck	Article number	Feature
Manual	3R-321.2-4x90°	

Manual chuck, 3R-321.5

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

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



Manual chuck adapter, Midi-Mini, 3R-321-4x90°

Hydraulic chuck for mounting on machine spindle with Midi system.

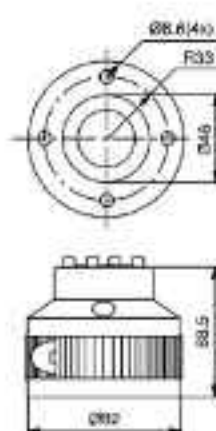
- Fixed index positions 4x90°
- Flushing connection
- Weight 1.3 kg.



Manual lathe chuck, 3R-321.2-4x90°

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

- Fixed index positions 4x90°
- Weight 1.3 kg.



Mini – Table chucks, chuck adapters & rotating spindles

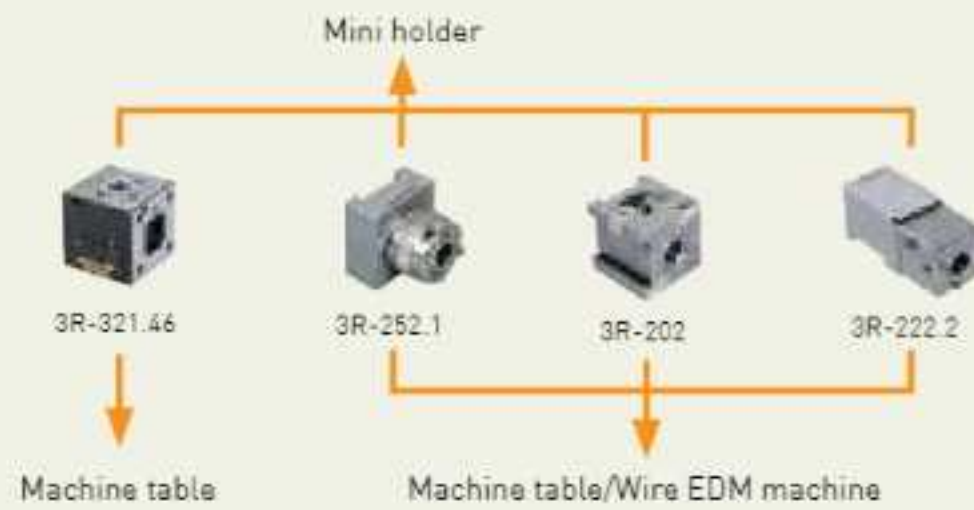


Table chucks	Article number	Feature
Manual	3R-321.46	vertical and horizontal
Manual wire EDM	3R-252.1	stainless steel
Manual wire EDM	3R-202	stainless steel. Vertical and horizontal
Manual wire EDM	3R-222.2	stainless steel



Chuck adapters	Article number	Feature
Manual	3R-463/5033	Mini ► MacroJunior 50 mm
Manual	3R-603.9	Macro ► Mini 90°, rust-resistant
Manual	3R-653	Macro ► Mini, rust-resistant
Manual	3R-653-S	Macro ► Mini



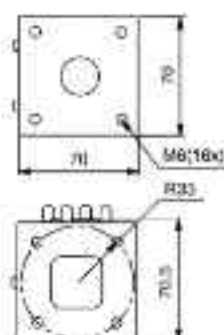
Rotating spindles	Article number	Feature
Vertical and horizontal	3R-1.6S	
Vertical	3R-1.321-HS	tubular electrodes

Mini – Table chucks, chuck adapters & rotating spindles

MiniBlock, 3R-321.46

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

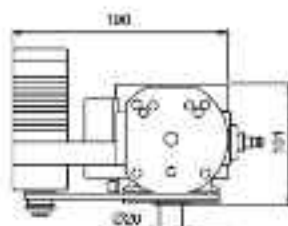
- Fixed index positions 4x90°
- Weight 2.3 kg.



Rotating spindle, 3R-1.65

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

- Immersible
- Maximum electrode weight 2 kg.
- Speed range 20 - 2000 rev/min
- Recommended maximum flushing pressure 2 bar.
- Weight 11.6 kg.



Manual chuck adapter, Mini-MacroJunior, 3R-463/5033

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

Note: For EDM machining only.

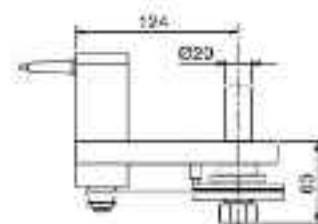
- Adapted for automatic changing
- Fixed index positions 3x120°
- Weight 0.8 kg.



Rotating spindle, 3R-1.321-HS

Electric spindle for tubular electrodes in collets ER16.

- Supplied with collet set 3R-ER16E
- Electrode sizes Ø0.5 - 10 mm
- Speed range 200 - 2000 rev/min
- Recommended maximum flushing pressure 40 bar.
- Weight 1.4 kg.



Mini – Electrode holders



Electrode holder	Article number	Feature
Electrode holder Ø20 mm	3R-322/25E	25 mm
Electrode holder Ø20 mm	3R-322/50S	50 mm
Electrode holder Ø20 mm	3R-322/50E	50 mm, automatic changing
Electrode holder Ø20 mm	3R-322/100	100 mm, automatic changing
Electrode holder	3R-310EE	flange Ø50 mm
Electrode holder	3R-13.321	square electrodes
Three-jaw chuck	3R-311.4	Ø0.1 - 3 mm
Collet chuck	3R-311.2	Ø13 mm, ER20
Collet chuck	3R-311.3	Ø10 mm, ER 16

Electrode holder Ø20 mm

Holder with hardened reference part and unhardened electrode mounting part.

3R-322/25S

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

3R-322/50S

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

3R-322/50E

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

3R-322/100

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

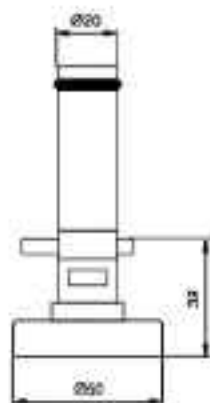


Mini – Electrode holders & Accessories

Electrode holder, 3R-310EE

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

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



Electrode holder, 3R-13.321

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

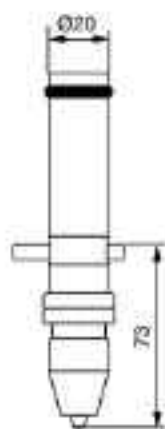
- Max. workpiece: 32x28 mm
- Adapted for automatic changing
- Flushing duct
- Weight 1 kg.



Three-jaw chuck, 3R-311.4

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

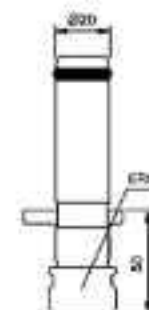
- Adapted for automatic changing
- Weight 0.3 kg



Collet chuck ER20, 3R-311.2

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

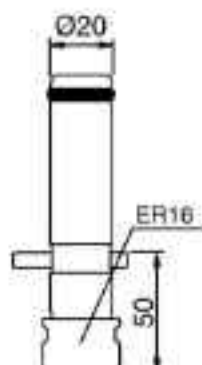
- Adapted for automatic changing
- Weight 0.2 kg



Collet chuck ER16, 3R-311.3

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

- Adapted for automatic changing
- Weight 0.2 kg



Check mandrel, 3R-23

Ground C-reference.

- Measuring length 100 mm
- Weight 0.6 kg.



Mini – Accessories

Check ruler, 3R-314.2

For setting angular positions.

- Measuring length 96 mm
- Weight 0.4 kg.



Indicating spindle, 3R-3.321-2

For measuring centre holes.

- Dial indicator required
- Weight 0.4 kg.



Microscope, 3R-4.321

With transformer [110/220V] for integral lighting.

- Magnification x25
- Centering location
- Field of view Ø6 mm
- Weight 0.6 kg.



Clip, 3R-301

For angular fixing of Mini holders.

- Supplied in sets of 10 pcs.



Soldering kit, 3R-403

For soldering electrode blanks on Mini holders.

- Supplied with flux.



Electrode cassette, 3R-150/5

For Mini holder x30.

- Supplied in sets of 5 pcs.



Adapter plate, 3R-601.6

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

- MacroHP coupling
- Rust-resistant.



3Refix

- ... gives a definite position with fixed references.
- ... minimal investment, cutting production costs
- ... fast setup with just a few simple manual actions
- ... the expanding mandrel minimises wear in the reference holes.

Increased productivity

need not mean heavy investments in new machines.

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

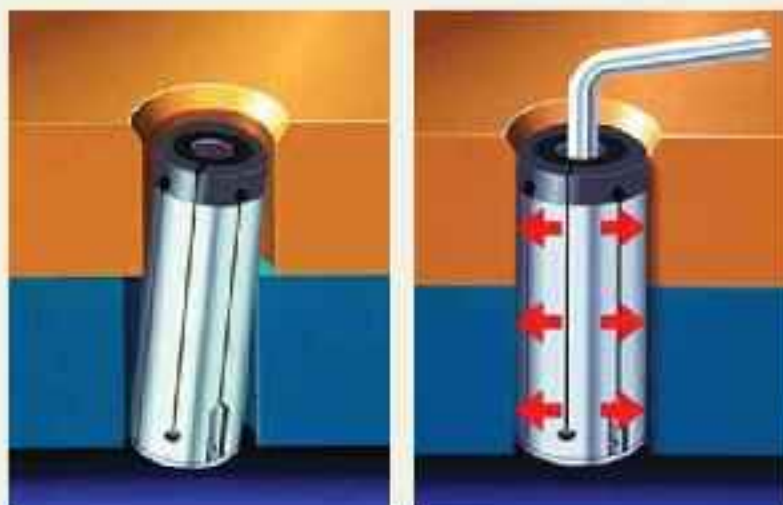
3Refix technology is based on a modular hole pattern with 100x100 mm pitch and 20 mm diameter reference holes. The reference tables have clearly-marked reference holes – A1, A2, B1, B2 etc – and every accessory has two 20 mm diameter holes, which pick up the references from the table. The R0-hole gives the X/Y-position and the R1-hole gives the angle relative to the axes of the machine. This makes it possible to set up the workpiece without the need for alignment and gauging afterwards. So 3Refix accessories provide an unmistakable and fixed position with known references.

The accessories in the 3Refix range usually have a reference height of 30 mm, among other things to allow machining straight through the workpiece. The design also allows a flush pot to be pushed in under the workpiece during EDM machining.

The full effect of 3Refix technology is attained by consistent application with general systemization and standardization of all machine tables and accessories. System 3R can supply reference tables for practically all types and sizes of machines – reference tables that give a distinct interface between machine table and auxiliary tool.

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

+ Repetition accuracy 0.005 mm.



3Refix expanding mandrels (2 pcs) determines the position. First 3Refix mandrel is to determine X/Y-position and the second to determine the angle.

3Refix

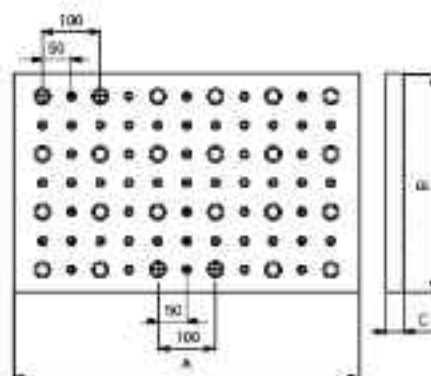
Reference tables

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.



3R-936-60.38

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

3R-936-85.40

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

3Refix mandrel

Note: When positioning with 3Refix mandrels – always tighten the expanding mandrel in the R² hole first.

3R-901-10E-TX

- 3Refix Ø10 mm
- Recommended tightening torque 4 Nm
- Supplied in sets of 10 pcs.
- Weight per set 0.2 kg



3R-901-10RS

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

3R-901-20E

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



3R-901-20RS

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

3R-901-10E-TX



3R-901-20E



Slotted bushes, 3R-903-XX.XX

Bushes of hardened spring steel 56 HRC.

- Bore 20 mm, height 20 mm
- Supplied in 2 pcs.
- Weight per set 0.1 kg



Art. No.

Outside diameter (mm)

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

3Refix

Bushings

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



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

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



Plastic plug, 3R-915-20E

Plug to protect Ø20 mm hole from dirt

- Supplied in sets of 50 pcs.



Torque wrench, 3R-614-04

For Ø10 mm 3Refix mandrels (3R-901-10E).

- 4 Nm.



Plastic screw, 3R-915-M12E

To protect M12 holes with protective countersinking from dirt.

- Supplied in sets of 50 pcs.



Torque wrench, 3R-914-10

For Ø20 mm 3Refix mandrels (3R-901-20E).

- 10 Nm.



Accessories

Allen key, 3R-333-03

- 3 mm
- Supplied in 10 pcs.



Allen key, 3R-333-05

- 5 mm
- Supplied in 10 pcs.



Collets ETS10, 3R-AG410

Intended for MacroJunior.

Collet	Ø0.2-0.1 mm
Collet	Ø0.3-0.2 mm
Collet	Ø0.4-0.3 mm
Collet	Ø0.5-0.4 mm
Collet	Ø0.6-0.5 mm
Collet	Ø0.7-0.6 mm
Collet	Ø0.8-0.7 mm
Collet	Ø0.9-0.8 mm
Collet	Ø1-0.9 mm
Collet	Ø1.25-1 mm
Collet	Ø1.5-1.25 mm
Collet	Ø1.75-1.5 mm
Collet	Ø2-1.75 mm.



Collets, 3R-ER16E

Intended for Macro & MacroJunior.

Collet	Ø1-0.5 mm
Collet	Ø2-1 mm
Collet	Ø3-2 mm
Collet	Ø4-3 mm
Collet	Ø5-4 mm
Collet	Ø6-5 mm
Collet	Ø7-6 mm
Collet	Ø8-7 mm
Collet	Ø9-8 mm
Collet	Ø10-9 mm



Collets, 3R-ER20E

Intended for Macro.

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



Collets, 3R-ER32E

Intended for Macro.

Collet	Ø3-2 mm
Collet	Ø4-3 mm
Collet	Ø5-4 mm
Collet	Ø6-5 mm
Collet	Ø7-6 mm
Collet	Ø8-7 mm
Collet	Ø9-8 mm
Collet	Ø10-9 mm.

Collet	Ø11-10 mm
Collet	Ø12-11 mm
Collet	Ø13-12 mm
Collet	Ø14-13 mm
Collet	Ø15-14 mm
Collet	Ø16-15 mm
Collet	Ø17-16 mm
Collet	Ø18-17 mm
Collet	Ø19-18 mm
Collet	Ø20-19 mm.



Accessories

Flushing adapter, 3R-103

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



Spacer plate, U-40266

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

Supplied in sets of:

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



Nipple, 3R-SP20753

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



Labels, 3R-LS288P

Supplied with marker pen.

- Size 6x19 mm
- Supplied in sets of 288 pcs.



Labels, 3R-LL200P

Supplied with marker pen.

- Size 12x25 mm
- Supplied in sets of 200 pcs.



Code carriers, 3R-863.01-10

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

- Supplied in sets of 10 pcs.



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, Transformer & Fanuc - four "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



TEAM RESPONSIBILITIES

TECHSTONE TECHNOLOGIES PRIVATE LTD.

MARKETING & SALES

MR. R .VENKATA REDDY
(GENERAL MANAGER)

MR. V. VENKATESH
MANAGER

CUSTOMER SUPPORT

MR. A.R. VIJAY KUMAR
(GENERAL MANAGER)

MR V.VENKATESH

System 3R

Tooling

for wire EDMing



**Design and
quality by
System 3R**

Contents

Basic equipment, WEDM	page 6
Basic equipment, Macro	page 8
Mounting heads	page 15
Holders and vices for mounting in mounting heads	page 20
Chuck adapters	page 27
Holders for mounting in chuck adapters	page 31
Adapter elements	page 35
3Ruler ruler system	page 37
EconoRuler System	page 42
3P three-point mounting	page 46
Presetting and inspection	page 47
Rotating spindles and accessories	page 50
System Matrix for wire EDMing	page 51
3R Zeroline – Starter set	page 52
ICS Zeroline – Small part holders	page 53
Unimatic clamping elements	page 56
Frame systems	page 59
Accessories	page 60
Automation	page 61
Index	page 64

Dimensions and weights stated in the product boxes are not normative unless this is expressly stated.

 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.

Note: All wire EDM articles in this catalogue are made of rust resistant material.





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.





Three steps to success

The route to rational production in wire EDM machines can be summarised in three steps – Mounting, Reference system and Automation.



1. Mounting

First of all, the workpiece needs to be positioned and secured in the working area of the machine, preferably on the zero line, and with the risk of collision with the machine's wire guides reduced to a minimum. And so firmly that it can handle the high flushing pressures of modern machines.



2. Reference system

Once the problem of effective mounting of the workpiece in the machine has been solved, the next step is to minimise downtimes when retooling the machine.

Technical developments of the machines in recent years have resulted in significantly higher material removal rates. But you won't benefit from this potential if the machine is idle for lengthy, troublesome retooling. So the aim must be to minimise retooling times with the machine idle.

With a reference system you can prepare and preset the workpiece away from the machine, then lift it in and secure it in the machine – quickly and precisely – with minimised downtime and consequent better utilisation of machine capacity.



3. Automation

With a reference system and a pneumatic chuck on the machine table, you have laid a firm foundation for the crucial step towards maximised machine utilisation – automation.

Add a pallet changer to your machine and you have created an automated production cell. A cell that can generate revenue 24 hours a day, weekdays and weekends, all year round!

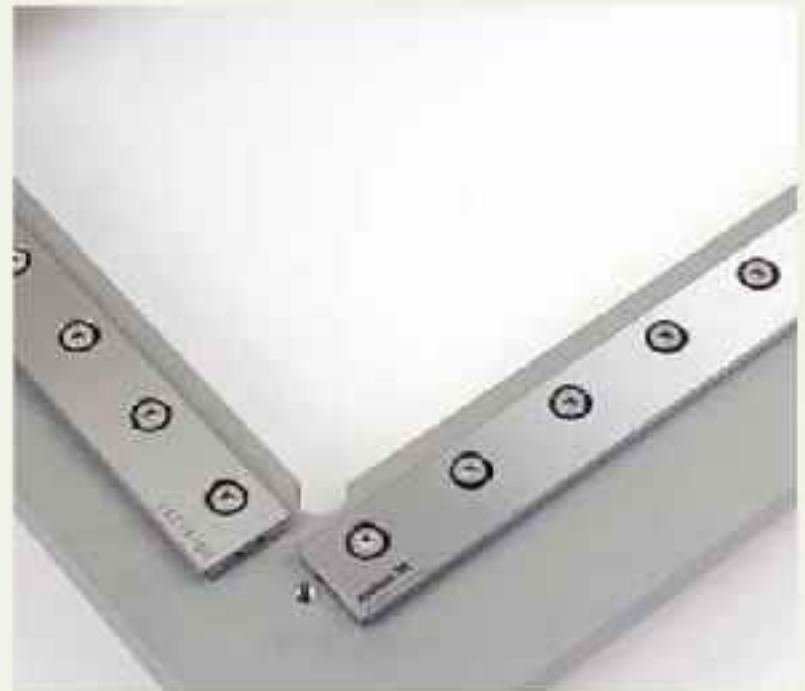


Basic equipment – WEDM

WEDM positions the workpiece within the working area of the machine and on the machine's zero line. Whether the workpiece is rectangular or round, small or large, thin or thick, tall or short, it is clamped with minimal risk of collision. There are infinitely many possible combinations in the product range, the only limitation being the user's imagination.

Without doubt, System 3R offers the most comprehensive product range on the market. What's more, it also leads in terms of number of installations – world wide.

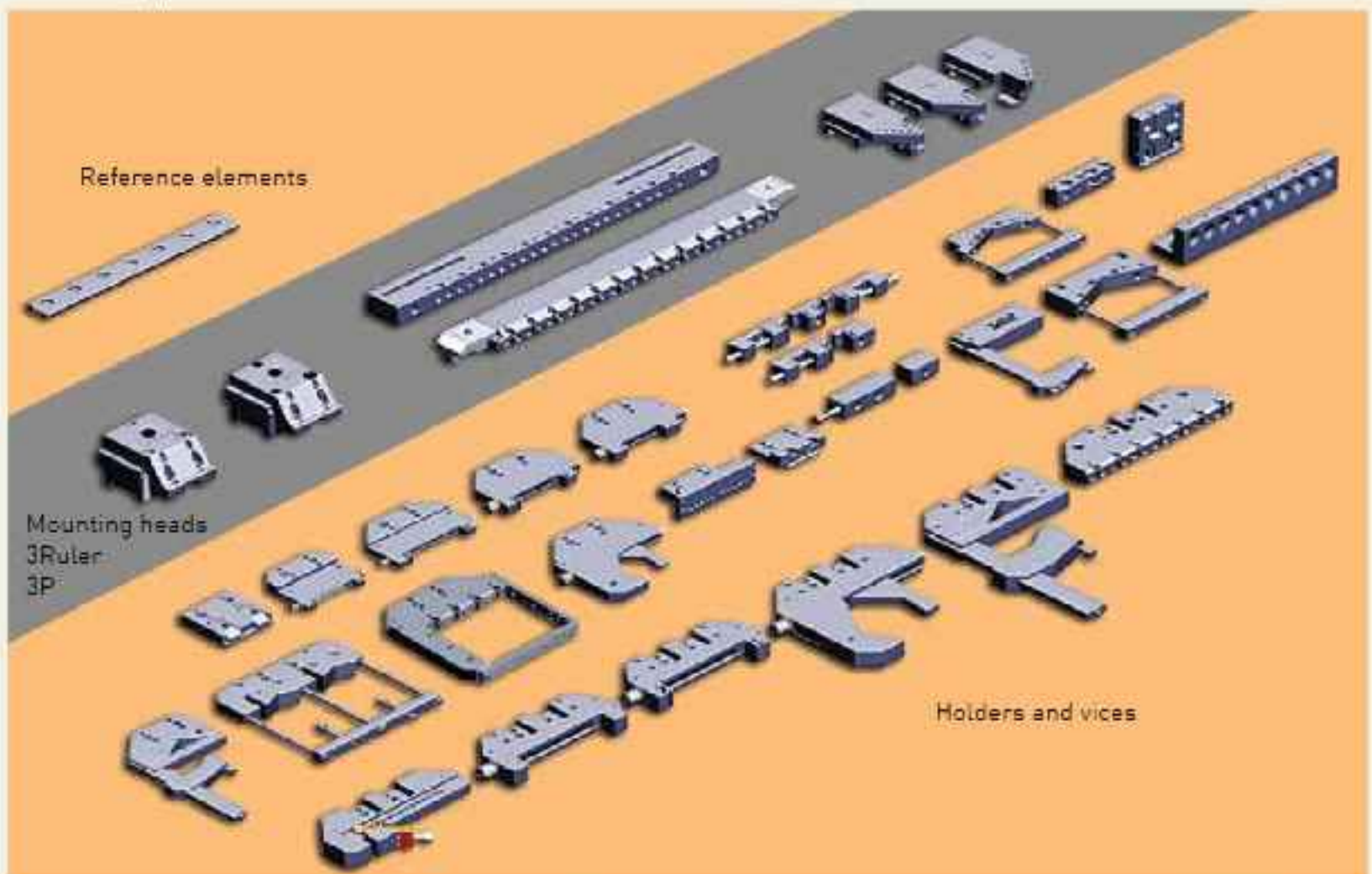
- + Exceptional flexibility
- + Accurately ground-in references
- + Repeatable accuracy
- + Double-sided parallel references
- + Fits all machine tables with 25 or 50 mm pitch.



Machine table with reference elements.

Overview of the WEDM system

Basic equipment on the machine table:



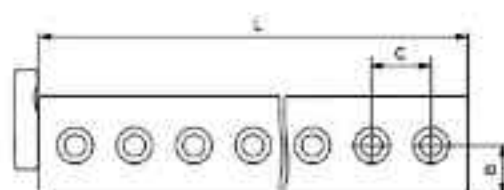
Basic equipment – WEDM

Reference element WEDM, 3R-200.XJ-X

Reference elements for machines with zero-line table. The length (L), hole spacing (C) and hole edge spacing (B) of the hardened reference elements are matched to the machine in question.

Note: When ordering, state machine mark and type.

- Supplied with end stops.

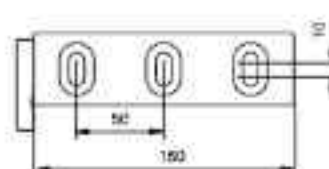


See also the reference element guides for your machine on – www.system3R.com

Reference element WEDM, 3R-200.1J-U

Universal 150 mm reference element, with oval holes, for all machines that have M8 holes in the machine table, 30 to 40 mm from the edge of the table.

- Weight 0.4 kg.



Reference stop, 3R-225

Can be moved infinitely along the entire reference element.

- Weight 0.4 kg.



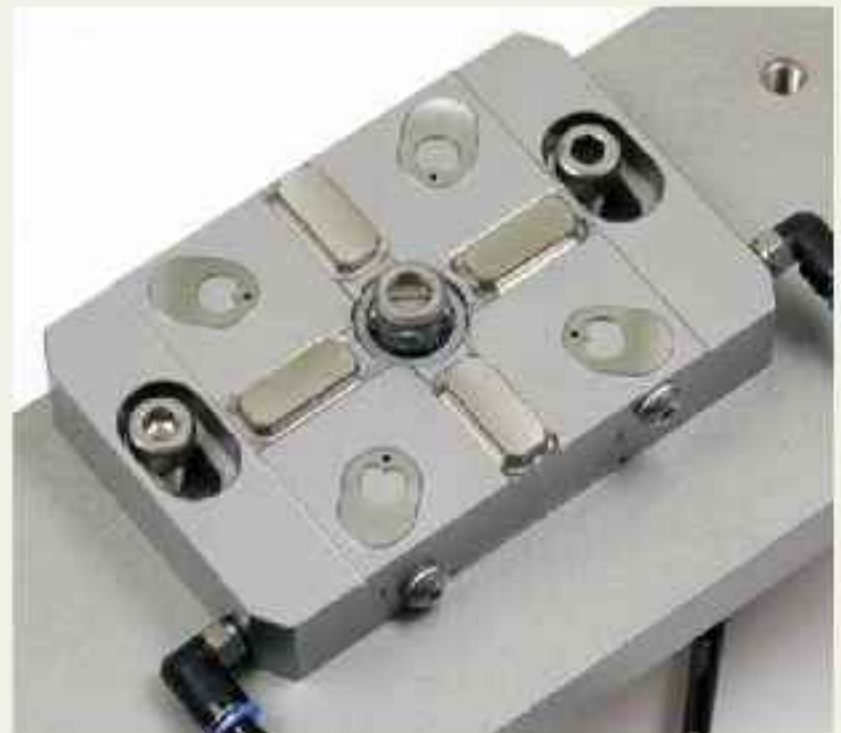
Basic equipment – Macro

With a Macro chuck as basic equipment on the machine table, you can interconnect all your machines to create a single system. Move the workpiece from the wire EDM machine to the grinding machine or the die-sinking machine without subsequent alignment – quickly and precisely.

If you choose a pneumatic Macro chuck, you can operate round-the-clock production if you wish.

- + Allows fully automated production
- + Links all your machines together
- + Z-references with automatic air-blast cleaning
- + X and Y references of cemented carbide
- + Repetition accuracy 0.002 mm
- + Turbo locking – enhanced clamping force.

Note: The pneumatic chucks require an air pressure of 6 ± 1 bar.



Recommendations for loading in Macro chucks

Table chucks with horizontal mounting of the workpiece

Article number	Max torque	Capacity (X=150 mm)
3R-600.24RS	6 Nm	4 kg
3R-600.24-4RS	8 Nm	5 kg
3R-602.10	22.5 Nm	15 kg
3R-602.10-1	30 Nm	20 kg
3R-602.12-1	45 Nm	30 kg
3R-602.26	30 Nm	20 kg
3R-602.27	30 Nm	20 kg
3R-602.27-1	18 Nm	12 kg
3R-602.81RS	30 Nm	20 kg

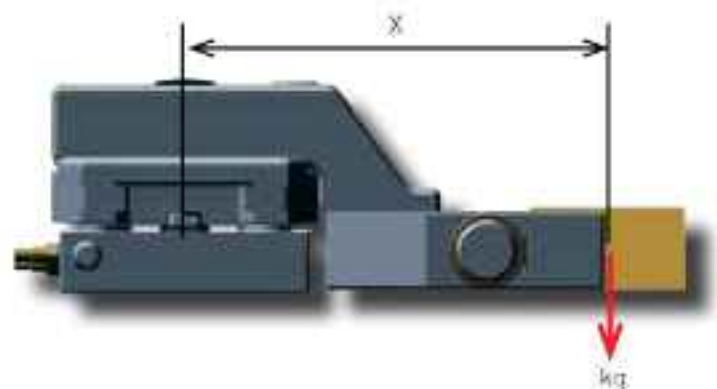
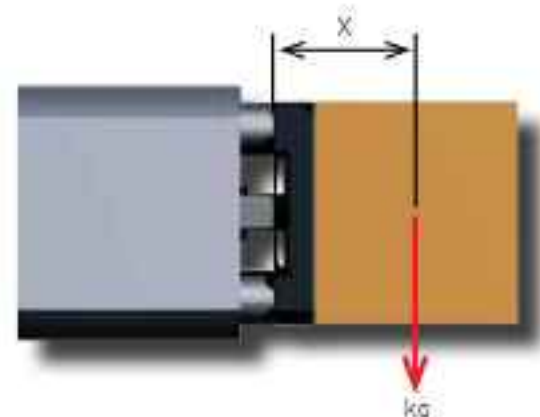


Table chucks with vertical mounting of the workpiece

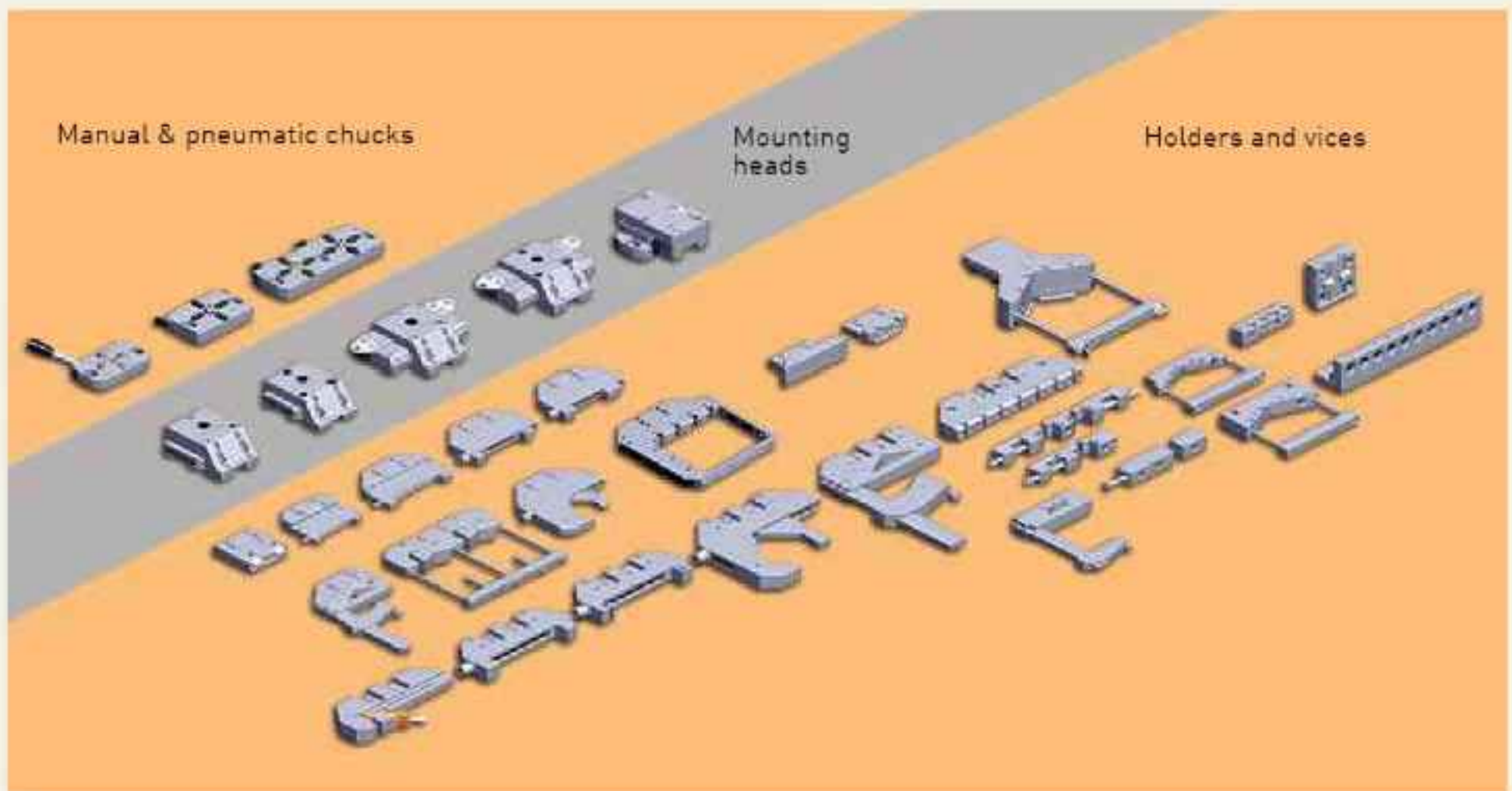
Article number	Max torque	Capacity (X=100 mm)
3R-600.24RS	6 Nm	6 kg
3R-600.24-4RS	8 Nm	7-8 kg
3R-602.4.1	8 Nm	7-8 kg
3R-602.27-1	8 Nm	7-8 kg
3R-60.360-X	8 Nm	7-8 kg



Basic equipment – Macro

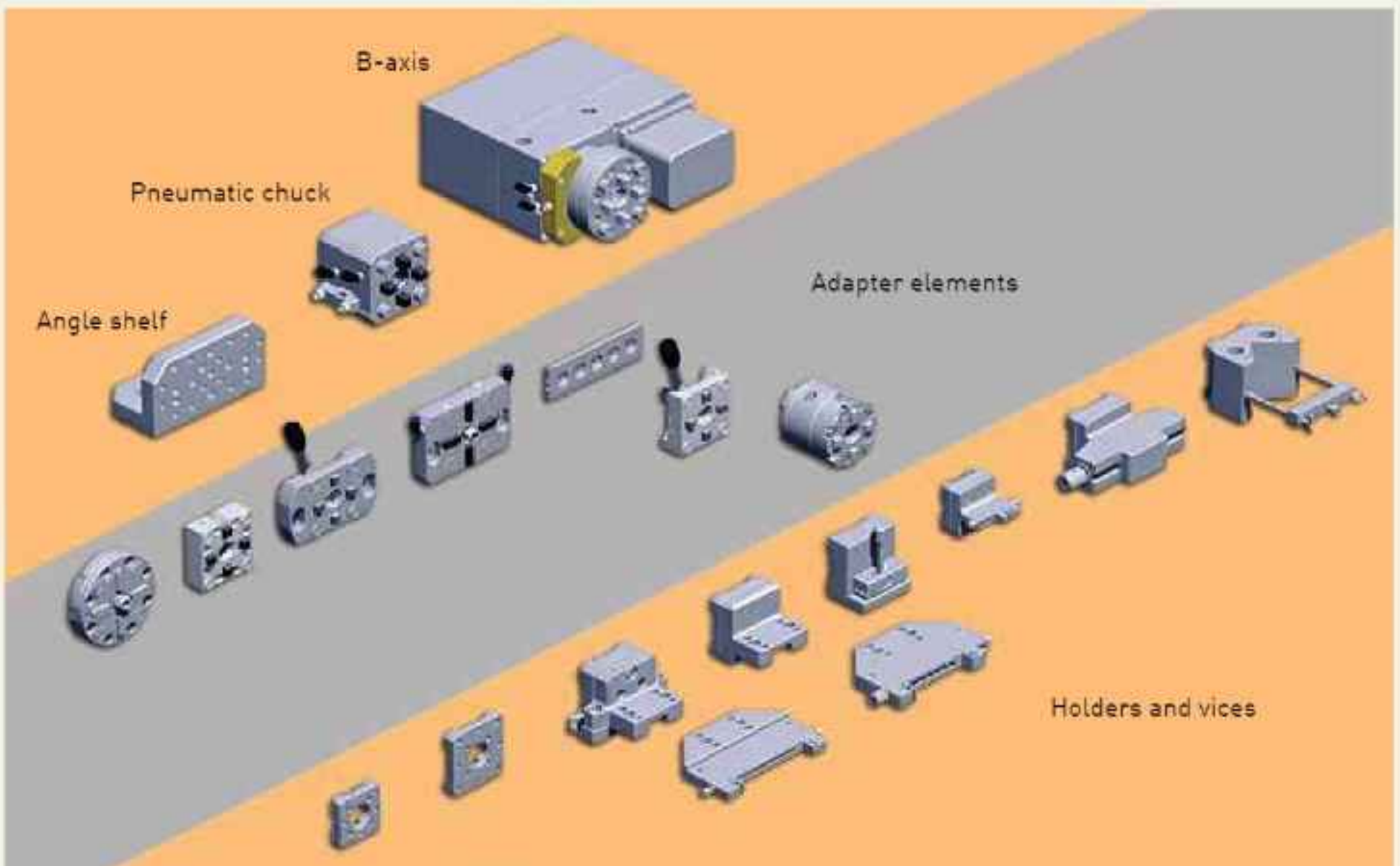
Overview of the Macro system with horizontal mounting

Basic equipment on the machine table



Overview of the Macro system with vertical mounting

Basic equipment on the machine table

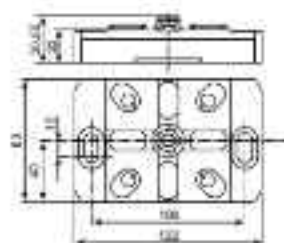


Basic equipment – Macro

Pneumatic chuck, Macro, 3R-602.10-1

Pneumatic chuck for Macro holders.

- Clamping force 6.7 kN
- Fixed index positions 4x90°
- Supplied with drawbar 3R-605.10
- Air-blast cleaning of Z-references
- Protective cover.
- Weight 1.0 kg.

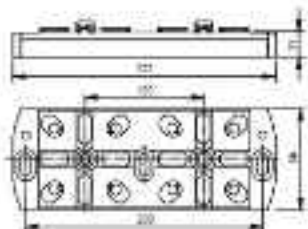


Pneumatic chuck, MacroTwin, 3R-602.12-1

Pneumatic chuck for Macro or MacroTwin. Horizontal mounting on the machine table.

Note: On automatic changing with WorkPal – MacroTwin holders only

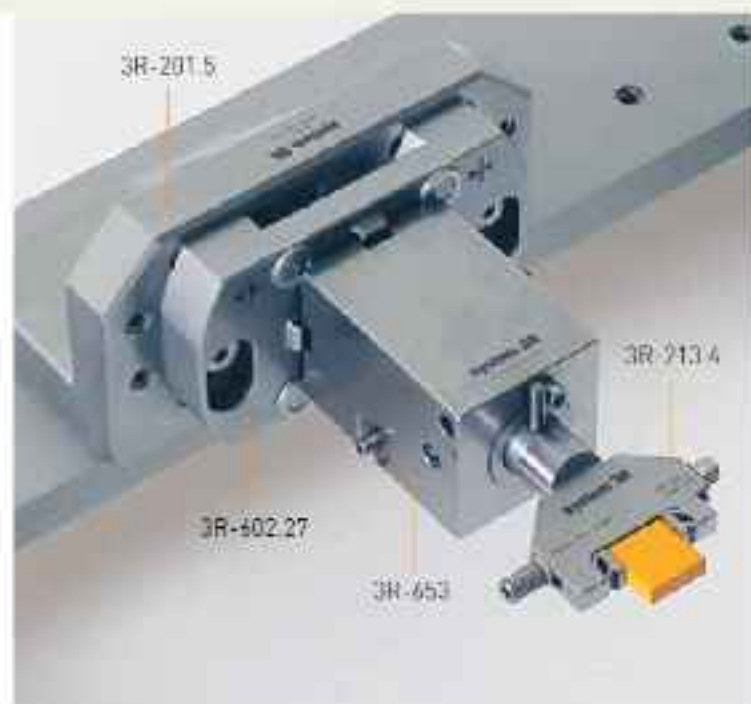
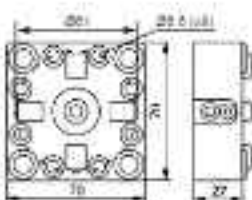
- Clamping force 2x6.7 kN
- Fixed index positions 4x90°
- Supplied with drawbars 3R-605.10
- Air-blast cleaning of the Z-references
- Protective covers
- Weight 1.5 kg.



Manual chuck, Macro, 3R-600.24-4RS

Manual chuck for Macro holder. Mounts on a suitable fixture.

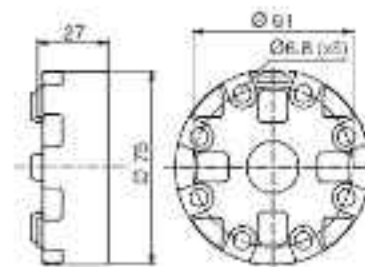
- Clamping force 6 kN
- Fixed index positions 4x90°
- Required drawbar 3R-605.2RS
- Tightening torque 6 Nm
- Ground front edge
- Weight 1 kg



Manual chuck, Macro, 3R-600.24RS

Manual chuck for Macro holder. Designed for permanent mounting.

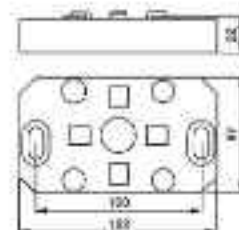
- Clamping force 6 kN
- Fixed index positions 4x90°
- Required drawbar 3R-605.2RS
- Tightening torque 6 Nm
- Weight 0.7 kg.



Manual chuck, Macro, 3R-602.27

Manual chuck with lever for Macro holder.

- Clamping force 6 kN
- Fixed index positions 4x90°
- Supplied with drawbar 3R-605.27RS
- Built-in latch function
- Weight 1.1 kg.

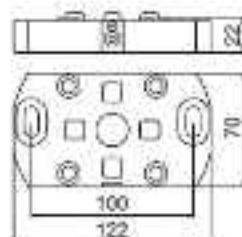


Basic equipment – Macro

Manual chuck, Macro, 3R-602.26

Manual chuck for Macro holder

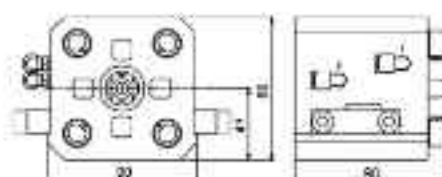
- Clamping force 6 kN
- Fixed index positions 4x90°
- Supplied with drawbar 3R-605.26
- Tightening torque 6 Nm
- Weight 1.1 kg



Pneumatic chuck, Macro, 3R-602.4.1

Pneumatic chuck for Macro holder

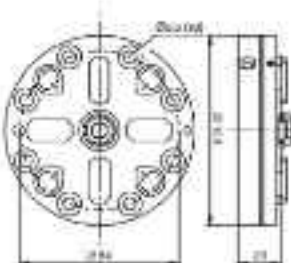
- Clamping force 6 kN
- Fixed index positions 4x90°
- Required drawbar 3R-605.1RS
- Air-blast cleaning of Z-references
- Weight 4.1 kg



Pneumatic chuck, Macro, 3R-602.81RS

Pneumatic chuck, low-profile, for Macro holder

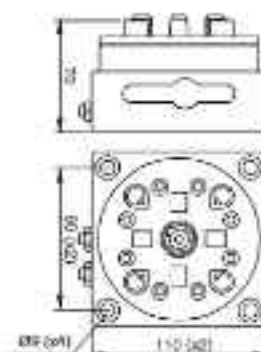
- Clamping force 6 kN
- Fixed index positions 4x90°
- Required drawbar 3R-605.10
- Air-blast cleaning of Z-references
- Weight 4.1 kg



Pneumatic chuck, MacroHP, 3R-600.10-3RS

Pneumatic chuck locked/opened with air gun

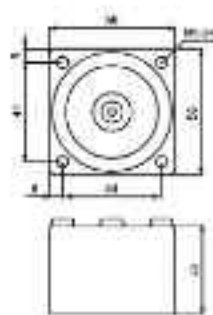
- Clamping force 6 kN
- Fixed index positions 4x90°
- Required drawbar 3R-605.1RS
- Air-blast cleaning of the Z-references
- Carbide XY-References
- Weight 4.4 kg



Pneumatic chuck, Macro, 3R-600.15-3

Pneumatic chuck for permanent mounting on the machine table.

- Clamping force 4.5 kN
- Fixed index positions 4x90°
- Supplied with drawbar 3R-605.2RS
- Weight 0.8 kg



Pneumatic built-in chuck, Macro, 3R-SP26771-RS

Chuck for Macro holder. For permanent mounting on the machine spindle or fixture.

- Clamping force 6 kN
- Fixed index positions 4x90°
- Required drawbar 3R-605.1RS
- Weight 2 kg



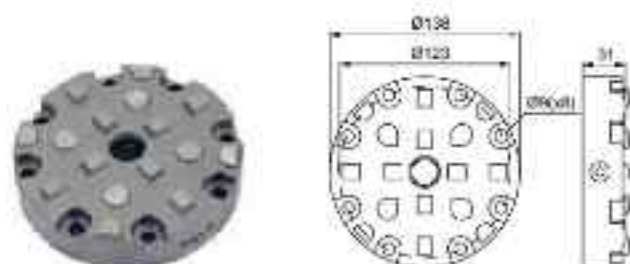
Basic equipment – Macro

Manual chuck, MacroMagnum, 90809.02

Chuck for MacroMagnum holder. For permanent mounting on the machine spindle or table.

Note: Master 3R-606.1 or 3R-686.1-HD required at installation.

- Clamping force – Macro at 5 kN; 6 kN, MacroMagnum at 12 kN; 16 kN
- Fixed index positions 4x90°
- Required drawbar 3R-605.2RS
- Tightening torque Macro 4 Nm, MacroMagnum 10 Nm
- Weight 5 kg



Angle Tool, Macro, D-30215

Angle tool, Macro with vernier scale -90° to 0 to +90°

Note: Macro chuck is required on the machine table for clamping.

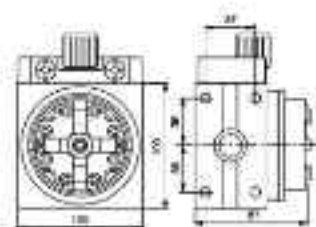
- Clamping force 6 kN
- Required drawbar 3R-605.2RS
- Tightening torque 6 Nm
- Weight 3.5 kg



3R-block, Macro, 3R-217-1

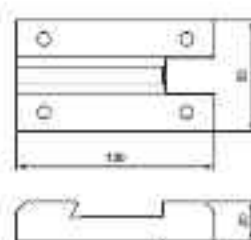
Manual Macro chuck. For vertical or horizontal mounting on the machine table, or alternatively the WEDM system with the aid of 3R-SP6435.

- Clamping force 6 kN
- Fixed index positions 24x15°
- Required drawbar 3R-605.2RS
- Tightening torque 6 Nm
- Vernier scale
- Weight 5.4 kg



Adapter, 3R-SP6435

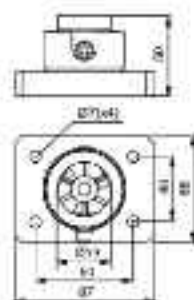
Adapter element for mounting 3R-217-1 in the WEDM system.



Manual chuck, MacroJunior, 3R-402.1

Chuck for MacroJunior holder. Can be mounted on 3R-237.2, 3R-292.66HP, 3R-294, the 3Ruler system, or on Macro element 54x54.

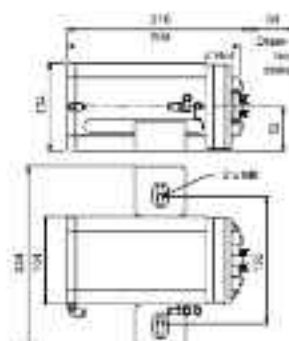
- Clamping force 4 kN
- Fixed index positions 3x120°
- Required drawbar 3R-405.21RS
- Tightening torque 4 Nm
- Weight 1.2 kg



Automatic indexing chuck, Macro, D-30206

Pneumatic built-in chucks for Macro holders. Can also be used in milling and grinding operations without high cutting forces.

- Automatic index positions 4x90°
- Submergeable
- Clamps 3R-A239 included.
- Suitable control unit D-30206-01 (not included)
- Weight 16 kg



Basic equipment – Macro

B-axis, Macro

Compact Rotary Indexing Tables with pneumatic Macro chuck. Indexing 0-360° with smallest step 0.001°. Air connections for open/close, as well as turbo-locking/air blast cleaning.

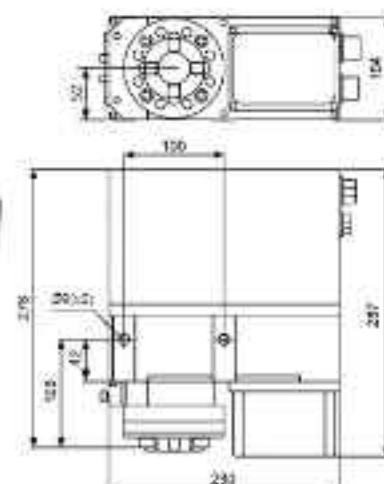
- Required drawbar 3R-605.1RS
- Indexing accuracy $\pm 0.003^\circ$ without correction
- Speed range 0-18 rev/min
- Automatic air blast cleaning of the Z references
- Weight 18 kg.

Machine-adapted B-axis, 3R-60.360X

Note: The units are controlled by the machine. The mark and type of the machine must therefore be stated when ordering.

Neutral B-axis, 3R-60.360SA

Supplied with a separate control unit.



Spere part kit brushes, 3R-SSP100 (same for all B-axis).

Drawbars

3R-605.1RS

- Drawbar $\varnothing 20 \times 57.1$ mm with flushing hole $\varnothing 7$ mm



3R-605.27RS

- Drawbar $\varnothing 20 \times 27$ mm



3R-605.10

- Drawbar $\varnothing 20 \times 13$ mm



3R-605.10E

- Drawbar $\varnothing 20 \times 13$ mm
- Supplied i sets of 10.

3R-605.10EE

- Drawbar $\varnothing 20 \times 13$ mm
- Supplied i sets of 20.

3R-605.2RS

- Drawbar $\varnothing 20 \times 36.9$ mm with flushing hole $\varnothing 7$ mm



3R-605.26

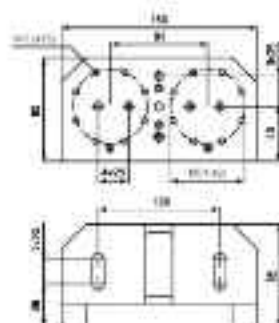
- Drawbar $\varnothing 20 \times 32$ mm



Angle shelf, 3R-201.5

Mounts directly on the machine table. For vertical mounting of a Macro chuck or short reference element in the machine.

- Weight 4.2 kg.



Basic equipment – Macro

Spare parts kit, 3R-SSP012

Spare parts kit including instructions for 3R-602.10-1 or 3R-602.12-1 (Twin chuck, use 2 pcs. 3R-SSP012).



There are several spare part kits available, please ask.



Air unit, 3R-611.46

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



Locking ring key, 3R-605-GE

To lift the drawbar locking ring.

- Supplied in sets of 2.



Air unit, 3R-611.60

Unit for operating pneumatic chucks in B-axes. Two functions
– open/closed with four seconds delay for air-blast cleaning.



Air unit, 3R-611.4

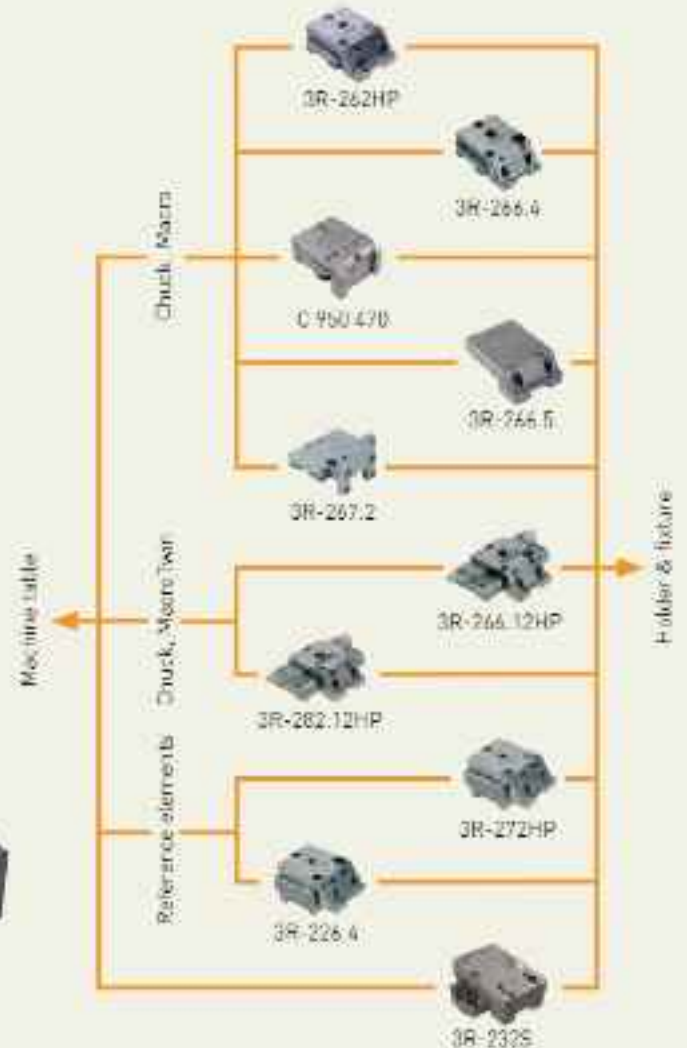
Unit for operation of pneumatic chucks.
Two positions – open/closed.



Mounting heads

Rapid setup is essential if you want to benefit from the material removal capacity and the accuracy offered by modern machines. However, faster machines with increased flushing pressure cause resonance and vibration. So in order to fully utilise the capability of the machines it is necessary to have stable tools and workpiece mountings.

- + Setup done in seconds
- + Gives maximum workpiece precision
- + Utilises the machine capacity
- + More stable than any other system
- + Minimal vibration
- + Minimises resonance



Pre-set in three axes



Pre-set in three axes with System 3Rs levelling adapter. This can be done with an accuracy of thousandths of a millimetre!

The simple, directly measurable references of the levelling adapter mean that presetting can be done on an ordinary surface plate, using one of System 3R's presetting stones.



Preset away from the machine. Lift the preset "package" into place – levelling adapter, holder and workpiece – fix with a few simple manual operations and start the machine.

Simple, quick and precise.

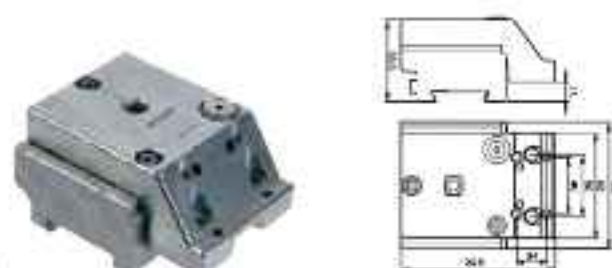
Mounting heads

Levelling adapter, WEDM, 3R-272HP

For manual mounting of SuperVice, a holder or a fixture in the WEDM system

Note: All holders including HP can be mounted. Also fits the ICS system if the clamping jaw (17850-00) is changed:

- Adjustable in three axes
- Recommended maximum load 15 kg
- Weight 1.4 kg.

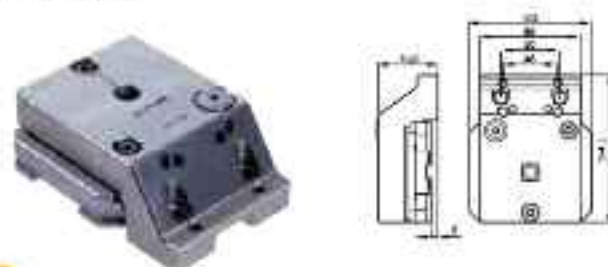


Levelling adapter, Macro, 3R-262HP

For mounting SuperVice, a holder or a fixture in the Macro system

Note: All holders including HP can be mounted

- Adjustable in three axes
- Recommended maximum load 15 kg
- Required drawbar 3R-605.10
- Adapted for automatic changing
- Ready for code carrier
- Weight 2.4 kg.



Fixed mounting head, WEDM, 3R-226.4

For manual mounting of SuperVice, a holder or a fixture in the WEDM system

Note: All holders including HP can be mounted. Also fits the ICS system if the clamping jaw (17850-00) is changed:

- Recommended maximum load 15 kg
- Weight 1.4 kg.



Fixed mounting head, Macro, 3R-266.4

For manual mounting of SuperVice, a holder or a fixture in the Macro system

Note: All holders including HP can be mounted

- Recommended maximum load 15 kg
- Required drawbar 3R-605.10
- Adapted for automatic changing
- Ready for code carrier
- Weight 1.4 kg.

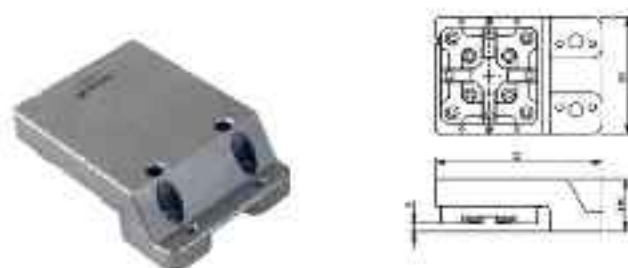


Fixed mounting head, Macro, 3R-266.5

For mounting SuperVice, a holder or a fixture in the Macro system

Note: All holders including HP can be mounted

- Recommended maximum load 15 kg
- Required drawbar 3R-605.10
- Adapted to automatic changing with 3R-WPT
- Ready for code carrier
- Weight 2.4 kg.



Levelling adapter, Magnum MacroTwin, 3R-282.12HP

For mounting Magnum holders in the MacroTwin system

Note: All holders including HP can be mounted

- Adjustable in three axes
- Recommended maximum load 15 kg
- Supplied with drawbars 3R-605.10 x2
- Adapted to automatic changing with 3R-WT2-5
- Ready for code carrier
- Weight 3.1 kg.



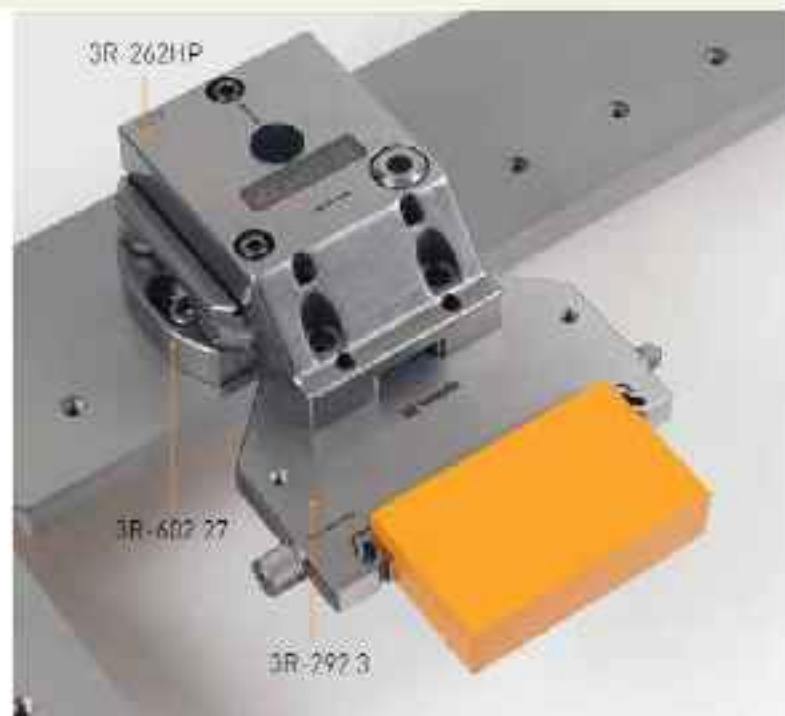
Mounting heads

Fixed mounting head, Magnum MacroTwin, 3R-266.12HP

For manual mounting of Magnum holders in the MacroTwin system

Note: All holders including HP can be mounted.

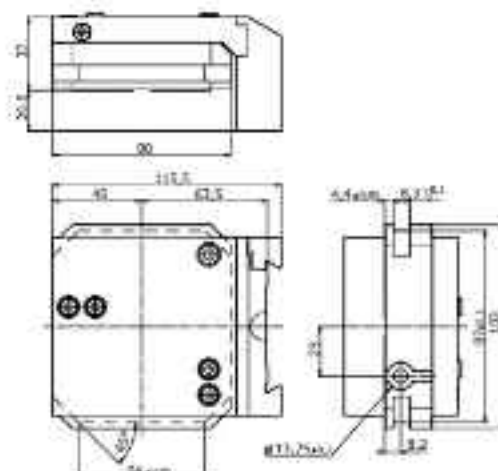
- Recommended maximum load 15 kg
- Supplied with drawbar 3R-605.10 x2
- Can be adapted to automatic changing with 3R-W12-S
- Ready for code carrier
- Weight 3.1 kg.



UniMacro Adjusting pallet, C 950 470

For manual mounting of Unimatic holders and Unimatic clamping elements in the Macro system. Adjusting pallet with dovetail guide adaptation.

- Adjustment range ± 0.2 mm for all three axes
- Functional height 59 mm, Unimatic pallet placed onto Macro chuck
- Ready for code carrier
- Weight 2.7 kg.

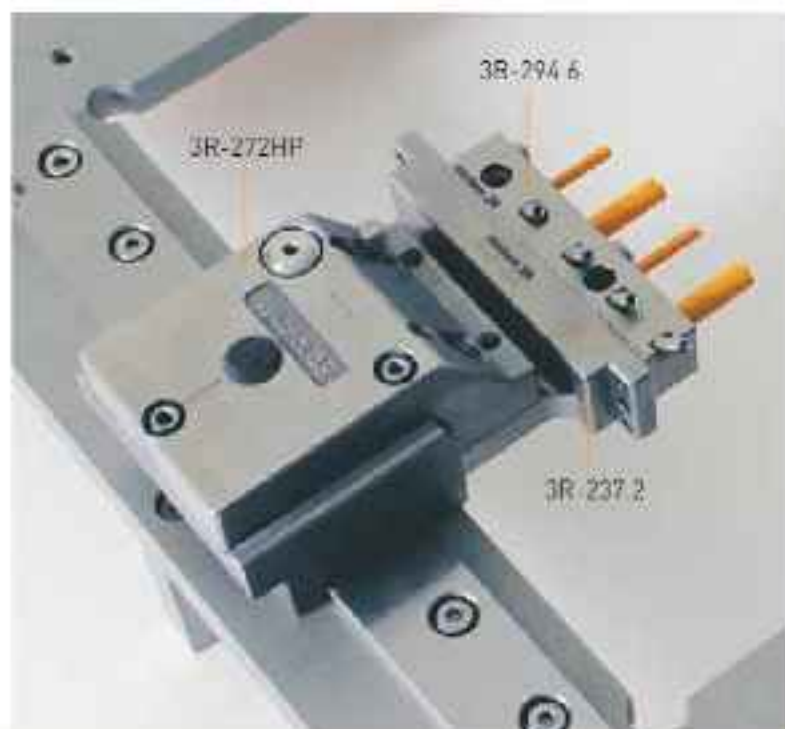


Levelling adapter, 3R-232S

For mounting SuperVice, a holder or a fixture directly on the machine table.

Note: All holders including HP can be mounted.

- Recommended maximum load 15 kg
- Adjustable in three axes when clamped in the machine.
- Weight 3.8 kg.

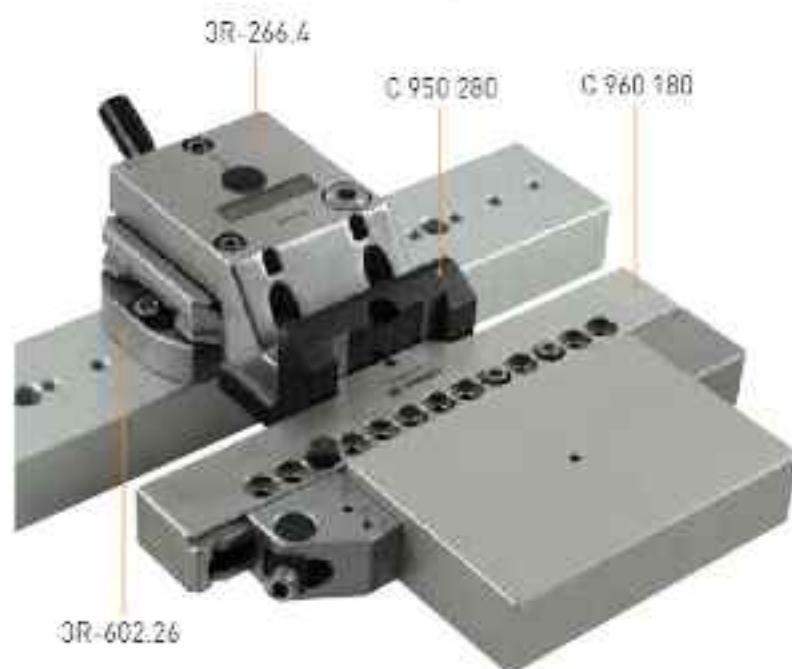


Mounting heads



Adapter, C 950 280

For mounting Unimatic holders in WEDM, Macro and MacroTwin mounting heads.



Mounting heads – User kits

User kit, 3R-242HP

3R-225	Reference stop	x1
3R-272HP	Levelling adapter HP	x1
3R-292.3	SuperVice <100 mm	x1
3R-293.3	SuperVice Ø8-90 mm	x1
3R-294.3	Vice <100 mm	x1
3R-914.07	Torque wrench, 7Nm	x1
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1



User kit, 3R-242.82HP

3R-239.1	Ruler vice	x1
3R-272HP	Levelling adapter HP	x1
3R-292.68HP	Magnum Holder HP	x1



User kit, 3R-242S-1

3R-232S	Levelling adapter	x1
3R-292.6S	Universal holder	x1
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1



User kit, 3R-242S-2

3R-232S	Levelling adapter	x1
3R-292.6S	SuperVice Magnum	x1
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1



User kit, 3R-242S-3

3R-232S	Levelling adapter	x1
3R-293.33	Universal holder	x1
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1



User kit, 3R-242S-4

3R-602.26	Manual chuck	x1
3R-262HP	Levelling adapter Macro	x1
3R-292.6S	SuperVice Magnum	x1
3R-605.26	Drawbar	x1
3R-333-05	Allen key, 5 mm	x1
45600-N03	Allen key, 3 mm	x1
45600-N041	Allen key, 6 mm	x1



Holders and vices for mounting in mounting heads

Supervice solves setting-up problems for the most frequently occurring sizes of workpiece – small to medium-sized.

The high repetition accuracy not only allows presetting and fast setup; it also provides a solid foundation for rational series production. The springback is minimal and resonance damping is significant. Add this together and you have a very firm grip on production. SuperVice delivers more than others dare to promise.

- + The low profile gives clearance from the upper and lower wire guides
- + High clamping force,

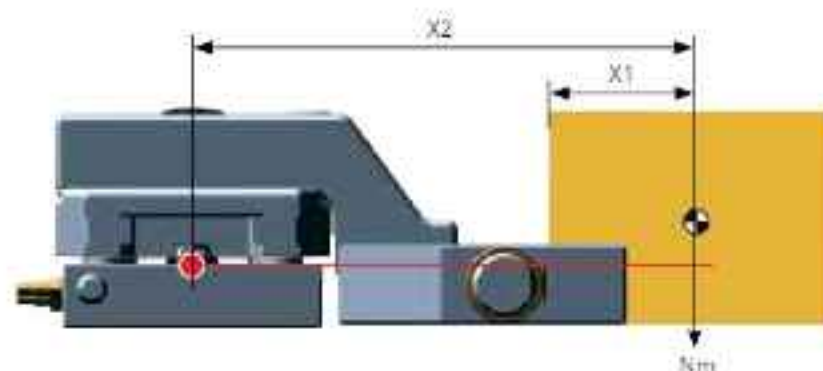


The unique, patented asymmetric design of the locking jaws gives extremely high locking force and enhances the contact between the workpiece and the reference surface at the same time.



Article number	X1 Recommended maximum torque	Maximum workpiece weight X1* = 50 mm	Maximum workpiece weight X1* = 100 mm	X2 Torque generated in chuck coupling
3R-292.1	3.0 Nm	6 kg	3.0 kg	10.8 Nm
3R-292.2	3.5 Nm	7 kg	3.5 kg	12.4 Nm
3R-292.3	8.0 Nm	16 kg	8.0 kg	28.6 Nm
3R-292.3D	8.0 Nm	16 kg	8.0 kg	28.6 Nm
3R-292.3D*	8.0 Nm	16 kg	8.0 kg	28.6 Nm
3R-292.31	5.5 Nm	11 kg	5.5 kg	20.0 Nm
3R-292.6HP	20.0 Nm	40 kg	20.0 kg	63.0 Nm
3R-292.61HP	13.0 Nm	26 kg	13.0 kg	39.6 Nm
3R-292.6S	9.0 Nm	18 kg	9.0 kg	30.4 Nm
3R-294.1	2.5 Nm	5 kg	2.5 kg	9.3 Nm
3R-294.2	5.0 Nm	10 kg	5.0 kg	18.8 Nm
3R-294.3	6.0 Nm	12 kg	6.0 kg	20.4 Nm

*Centre of gravity of the workpiece with X mm overhang



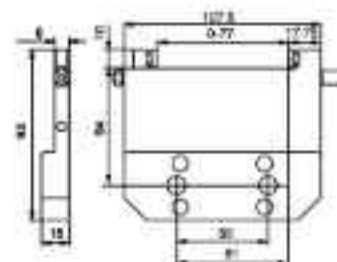
Holders and vices for mounting in mounting heads



SuperVice, 3R-292.1

For clamping rectangular workpieces up to 77 mm.

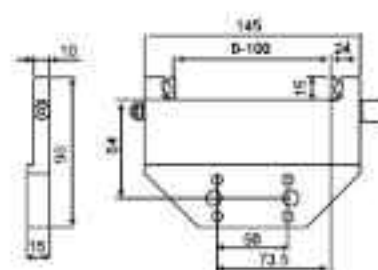
- Tightening torque 4 Nm
- Weight 0.6 kg.



SuperVice, 3R-292.2

For clamping rectangular workpieces up to 100 mm.

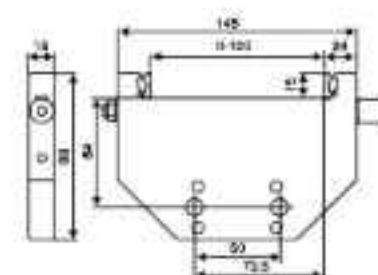
- Tightening torque 3 Nm
- Weight 0.9 kg.



SuperVice, 3R-292.3

For clamping rectangular workpieces up to 100 mm.

- Tightening torque 7 Nm
- Weight 1.1 kg.

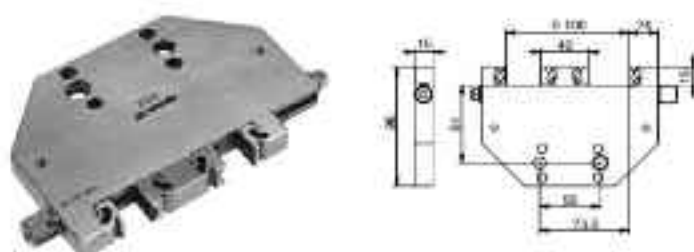


Holders and vices for mounting in mounting heads

SuperVice, Double, 3R-292.3D

For collision-free clamping of both rectangular and round workpieces (14-45 mm and $\varnothing$ 3-15 mm respectively). Total clamping range, 60 mm (to be split between two workpieces). Alternatively, dismount the double jaw and use as a regular 3R-292.3 vice for rectangular workpieces (0-100 mm).

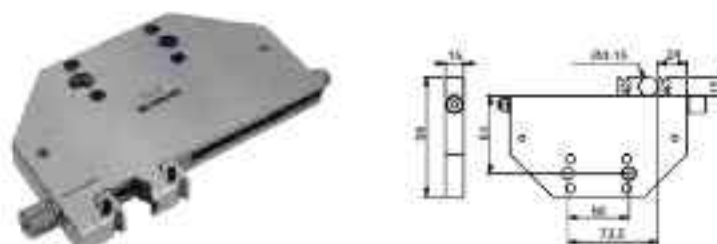
- Tightening torque 7 Nm
- Weight 1.2 kg.



SuperVice, Prism, 3R-292.3P

For vertical or horizontal collision-free clamping of round workpieces ($\varnothing$ 3-15 mm). Alternatively, rotate the movable jaw and use as a regular 3R-292.3 vice for rectangular workpieces (0-100 mm).

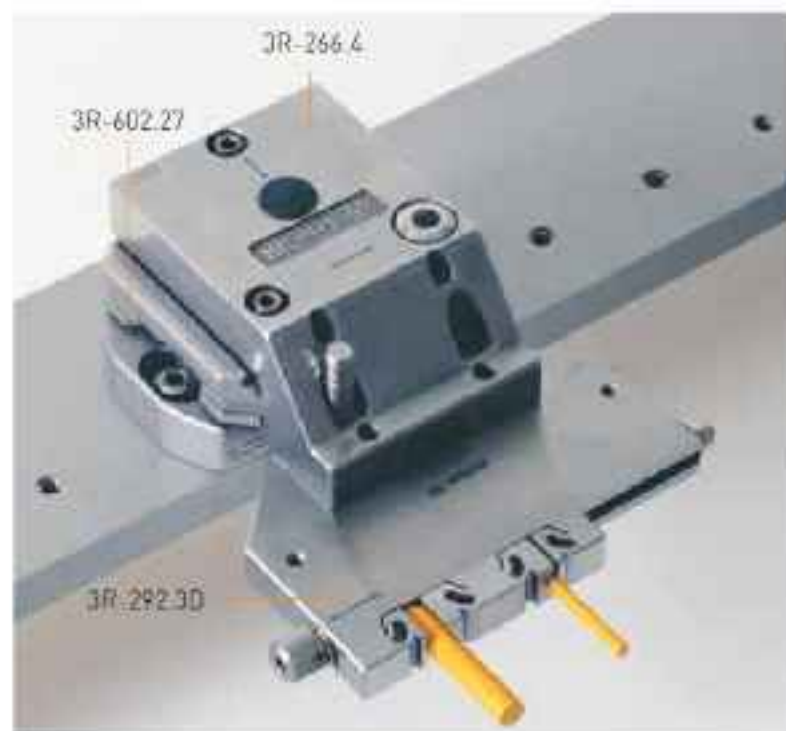
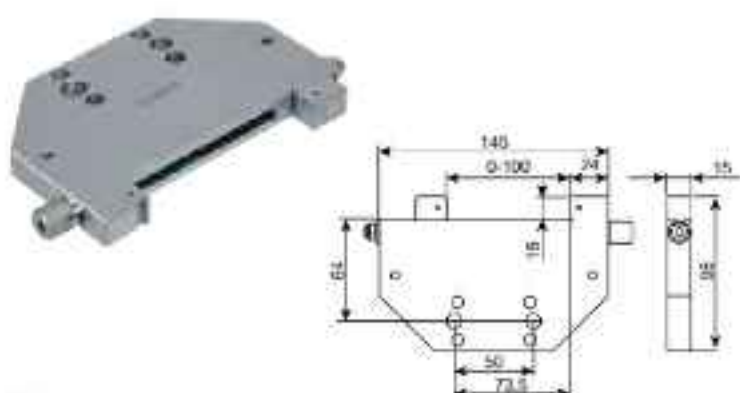
- Tightening torque 7 Nm
- Weight 1.1 kg.



SuperVice, 3R-292.31

Vice with solid jaws for clamping rectangular workpieces up to 100 mm.

- Tightening torque 8 Nm
- Weight 1.1 kg.

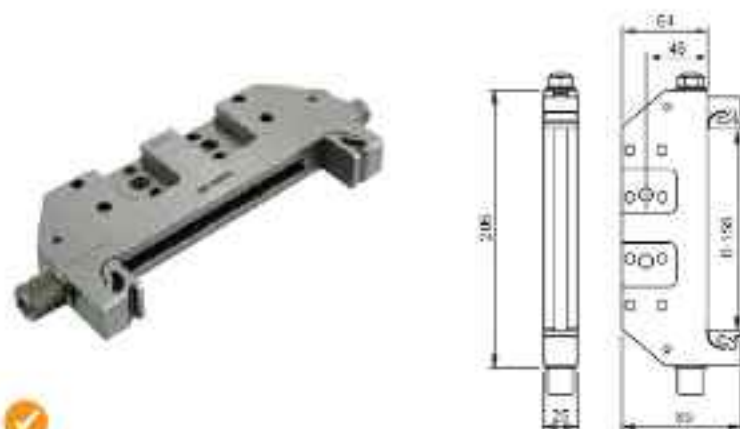


SuperVice, Magnum , 3R-292.6HP

Vice for clamping rectangular workpieces up to 155 mm.

Note: Mounts on HP, Magnum or MacroTwin levelling adapter.

- Tightening torque 15 Nm
- Weight 2.8 kg.



SuperVice, Magnum, 3R-292.61HP

Vice with solid jaws for clamping rectangular workpieces up to 150 mm.

Note: Mounts on HP, Magnum or MacroTwin levelling adapter.

- Tightening torque 15 Nm
- Weight 2.8 kg.



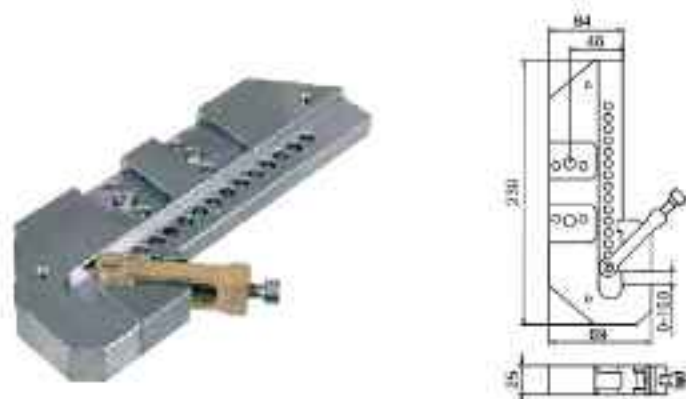
Holders and vices for mounting in mounting heads

SuperVice, Magnum, 3R-292.6S

Vice for clamping rectangular workpieces up to 150 mm.

Note: Mounts on HP; Magnum or MacroTwin levelling adapter.

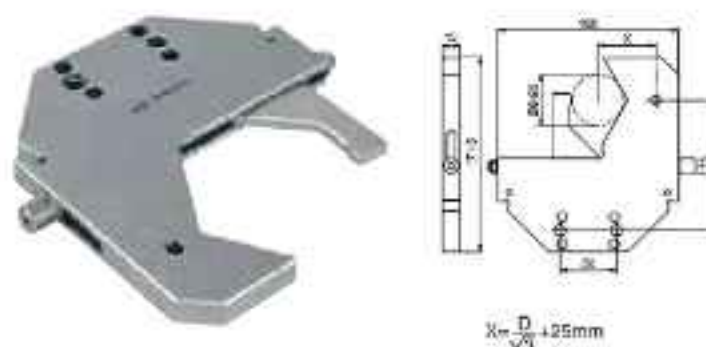
- Tightening torque 10 Nm
- Weight 2.7 kg



SuperVice, 3R-293.3

Vice for clamping round workpieces 8-90 mm.

- Tightening torque 8 Nm
- Recommended maximum workpiece weight 7 kg
- Weight 1.7 kg

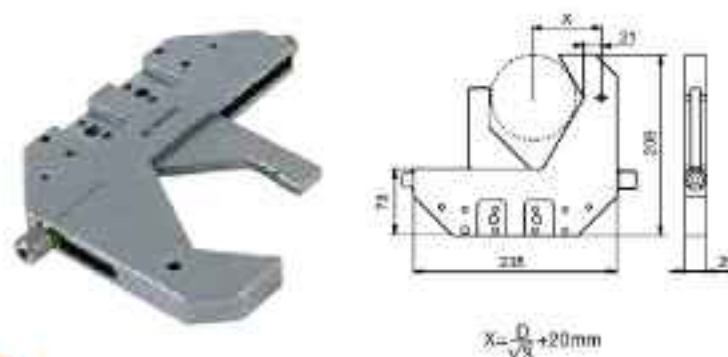


SuperVice, Magnum, 3R-293.6HP

Vice for clamping round workpieces 15-165 mm.

Note: Mounts on HP, Magnum or MacroTwin levelling adapter.

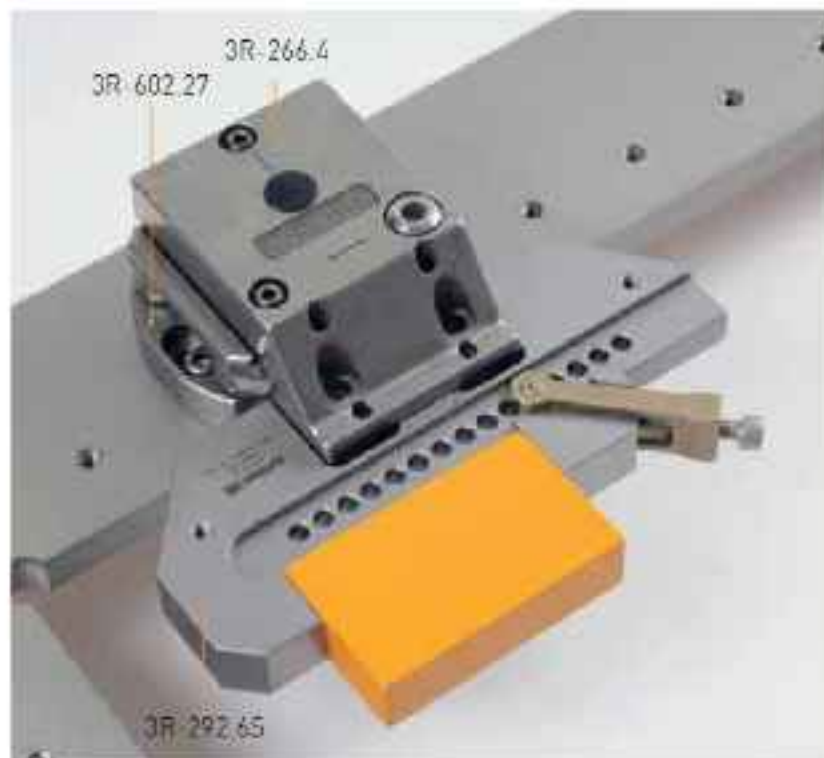
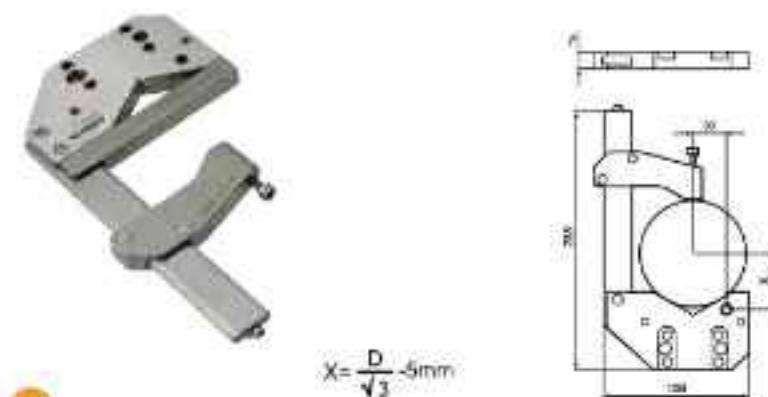
- Tightening torque 10 Nm
- Recommended maximum workpiece weight 12 kg
- Weight 4.5 kg



Universal holder, 3R-293.33

Holder for round workpieces 8-100 mm, or rectangular workpieces up to 100 mm.

- Tightening torque 3 Nm
- Recommended maximum workpiece weight 7 kg
- Weight 1.5 kg



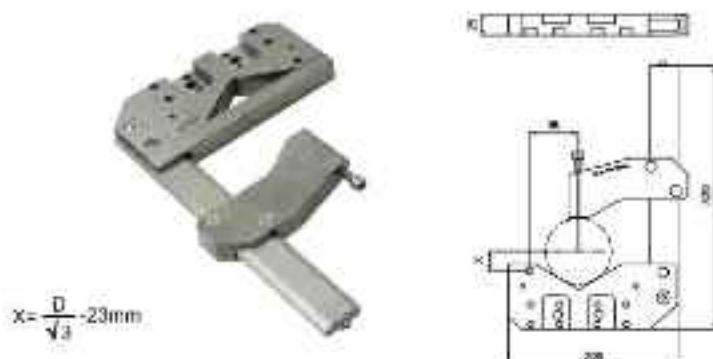
Holders and vices for mounting in mounting heads

Universal holder, Magnum, 3R-293.66HP

For round workpieces 15 - 150 mm diameter, or rectangular workpieces up to 150 mm.

Note: Mounts on HP, Magnum or MacroTwin mounting head.

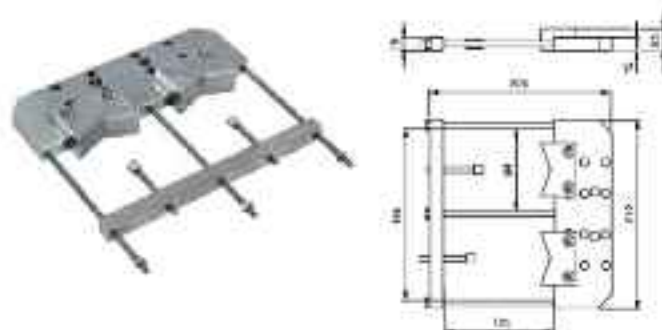
- Tightening torque 6 Nm
- Recommended maximum workpiece weight 12 kg
- Weight 4.2 kg



Universal holder, 3R-292.3S

Holder for round workpieces up to 90 mm, or rectangular workpieces 100x90 mm.

- Tightening torque 4 Nm
- Recommended maximum workpiece weight 7 kg
- Weight 2.3 kg

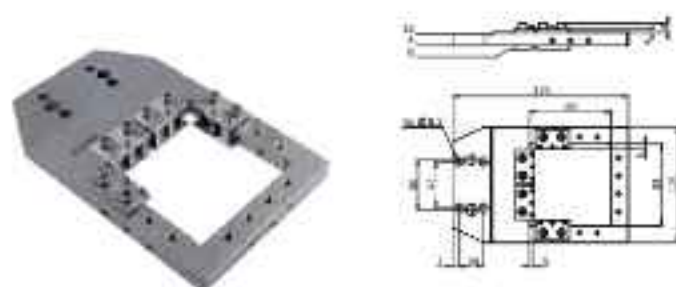


Clamping frame, C 619 680

Carrier for flat round or cubic workpieces up to 80x80 mm.

Note: Mounts on HP, Magnum or MacroTwin levelling adapter.

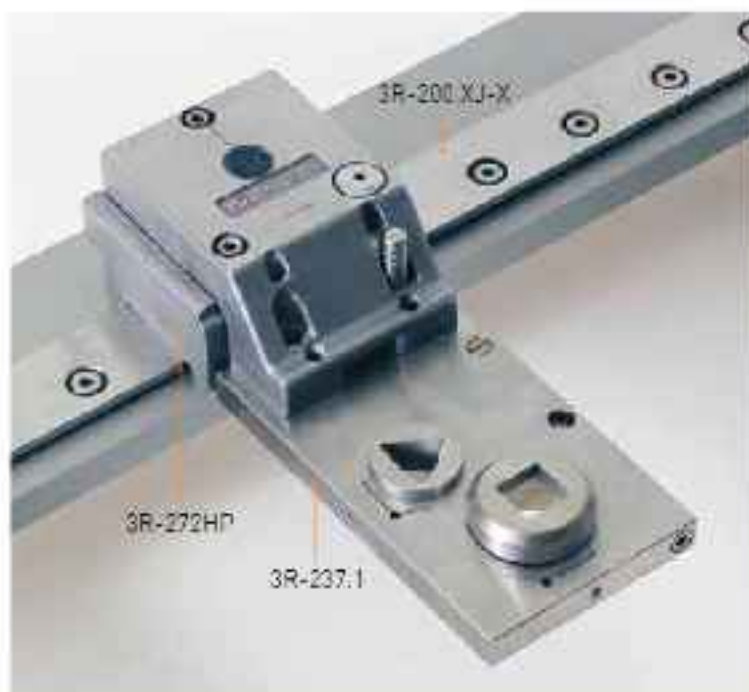
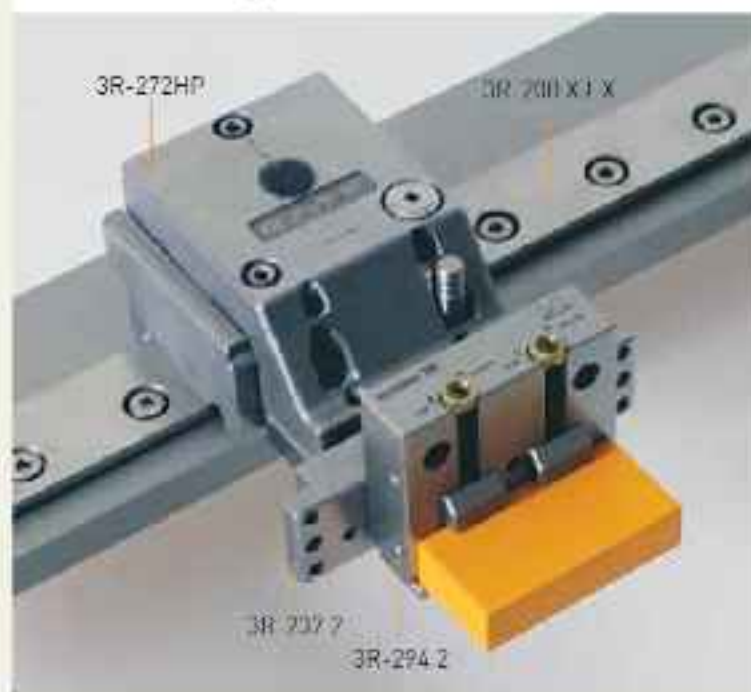
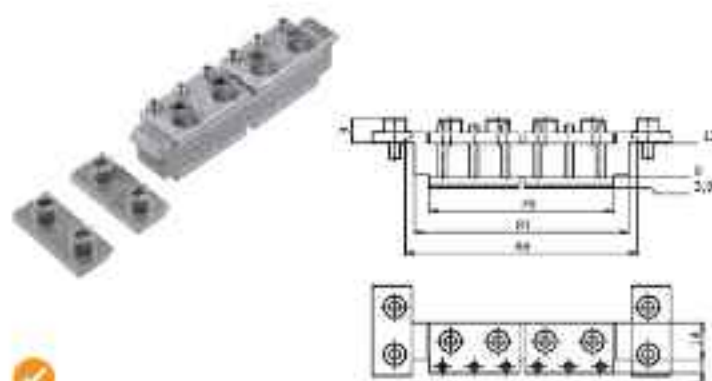
- Functional height 13 mm
- Clamping range round or cubic up to 80 mm / maximum workpiece height 12 mm
- Maximum workpiece weight 1.5 kg
- Maximum workpiece dimensions Ø 80 mm or 80x80 mm
- Weight 0.9 kg



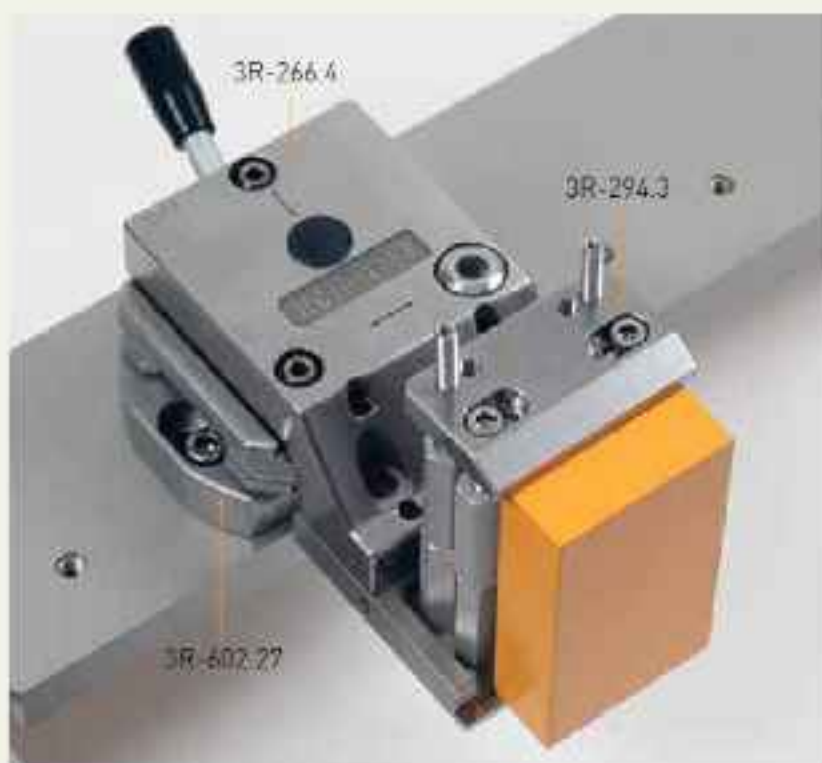
Clamping bar to clamping frame, C 619 670

Clamping bar to use with ICS clamping frame C 619 680.

- Dimensions 68 x 20 x 26 mm
- Overall height 26 mm (incl. support lips and clamping lips)
- Weight 0.25 kg



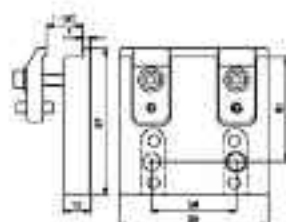
Holders and vices for mounting in mounting heads



Vice, 3R-294.3

For clamping workpieces up to 100 mm.

- Tightening torque 7 Nm
- Weight 0.7 kg.



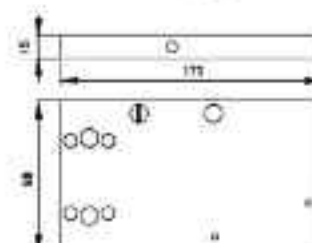
Holder, 3R-237.1

Stainless steel hardened "do-it-yourself" holder. With start hole for wire EDM of the required shape for clamping one or more workpieces.

- Recommended maximum weight 7 kg
- Weight 1.2 kg.



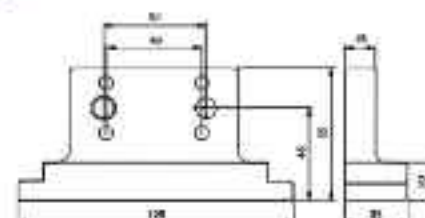
Application example.



Holder, 3R-237.2

For fixture, workpiece or 3R-239.2, 3R-239.3, 3R-294.1, 3R-294.2, 3R-294.6 and 3R-402.1.

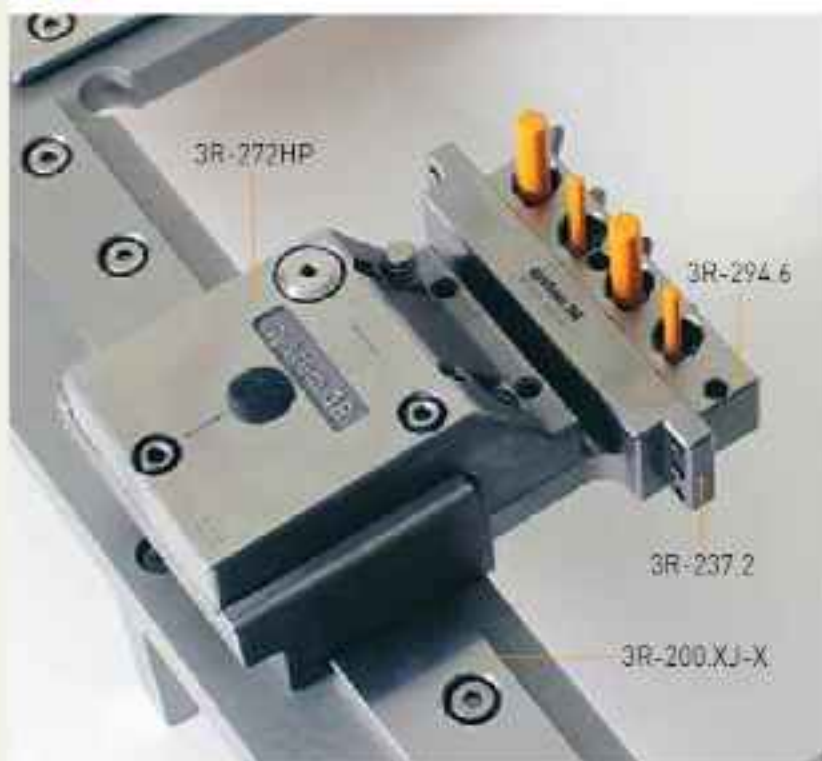
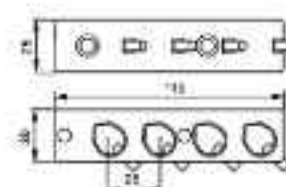
- Weight 0.6 kg.



Multiple holder, 3R-294.6

For mounting four workpieces Ø5-13 mm at the same time. Mounts on 3R-237.2, 3R-294, 3R-292 66HP or a ruler in the 3Ruler system.

- Tightening torque 3 Nm
- Weight 0.6 kg.



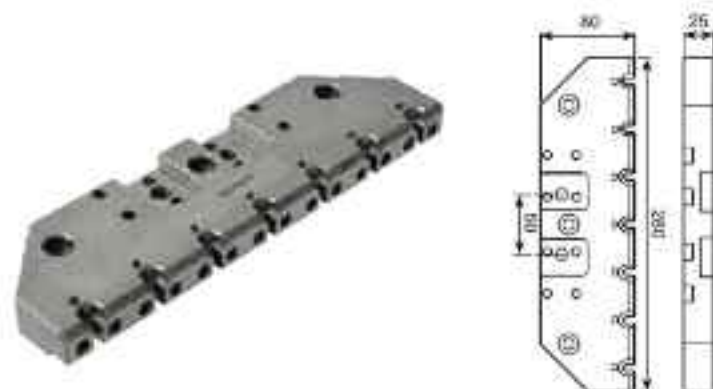
Holders and vices for mounting in mounting heads

Holder, Magnum, 3R-292.66HP

Can be supplemented with 3Ruler accessories.

Note: Mounts on an HP mounting head.

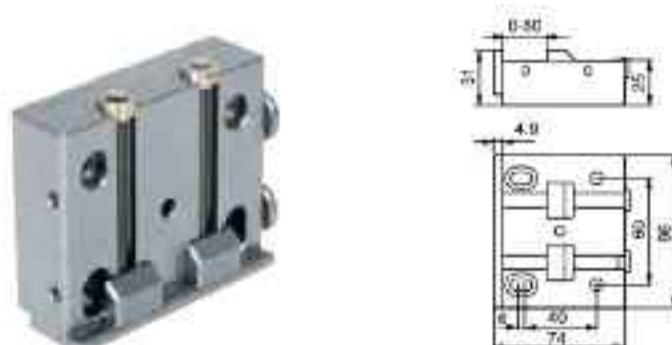
- Weight 3 kg



Vice, 3R-294.2

For clamping workpieces up to 50 mm. Mounts on 3R-237.2, 3R-294, 3R-292.66HP or a ruler in the 3Ruler system or Macropallet 54x54 mm.

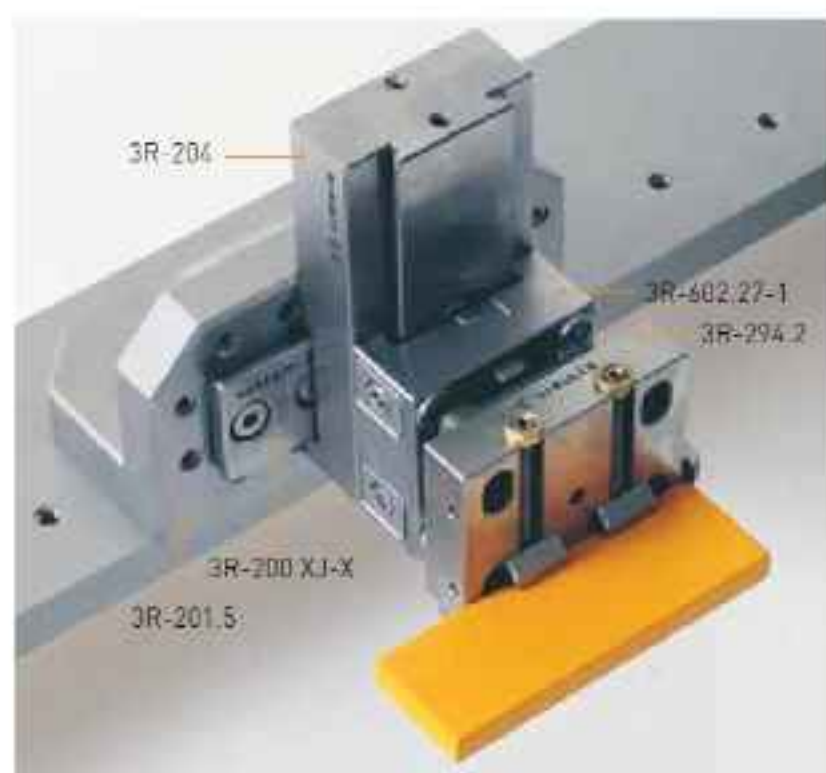
- Tightening torque 3 Nm
- Weight 1.2 kg



Adapter, 3R-294

For mounting 3R-294.1, 3R-294.2 and 3R-294.6 on a levelling adapter.

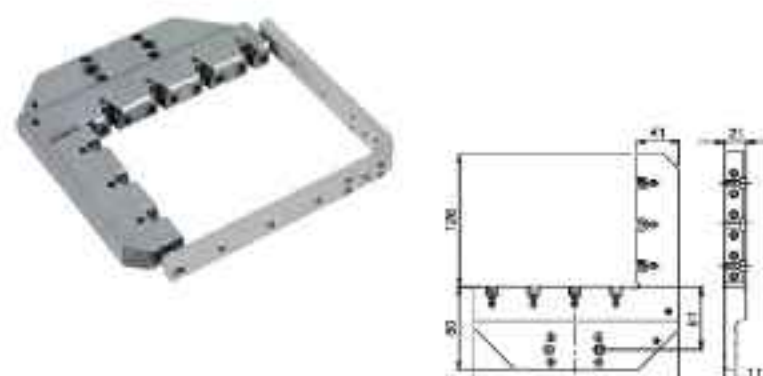
- Weight 0.6 kg



Angled holder, 3R-292.23

For clamping a workpiece or fixture on a mounting head. Can be supplemented with 3Ruler accessories.

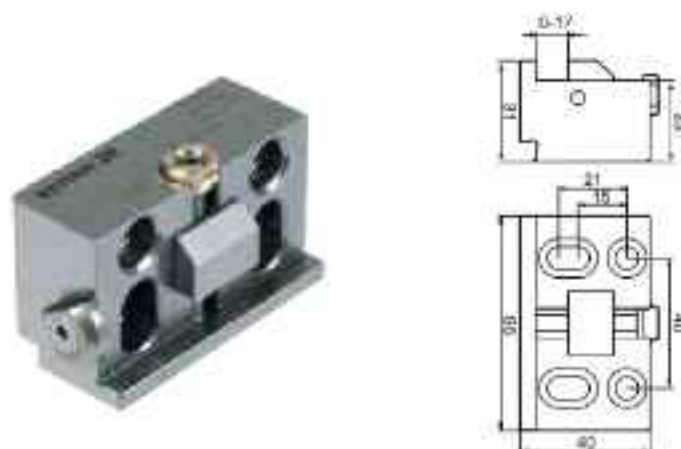
- Weight 3 kg



Vice, 3R-294.1

For clamping workpieces up to 17 mm. Mounts on 3R-237.2, 3R-294, 3R-292.66HP or rulers in the 3Ruler system.

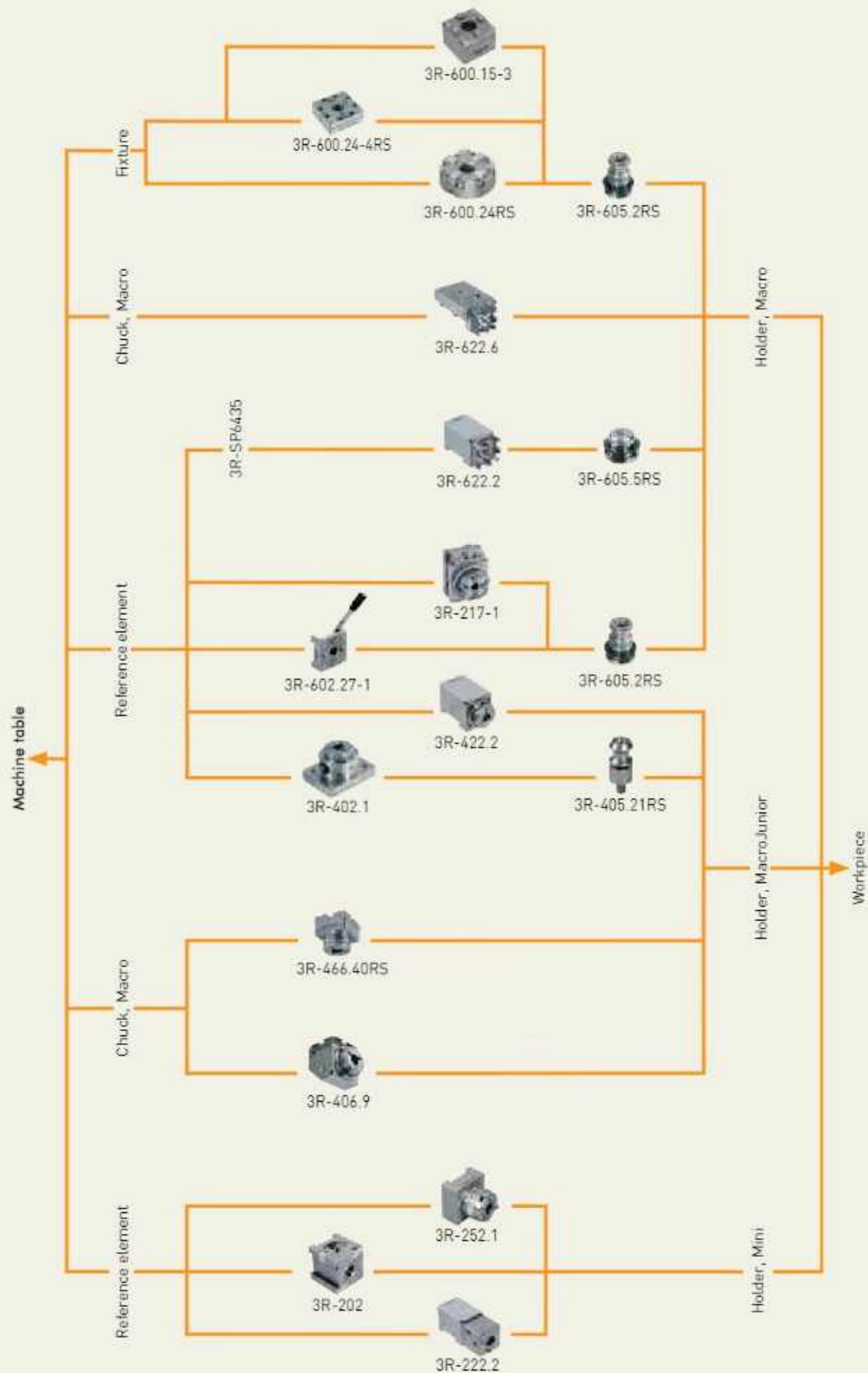
- Tightening torque 3 Nm
- Weight 0.5 kg



Chuck adapters

A wide range of chuck adapters for clamping workpieces on pallets in the Macro, MacroJunior and Mini systems. An ever-growing field of application is the manufacture of precision parts for the medical industry; another is the manufacture of electrodes for die-sinking EDM.

The chuck adapters can interconnect all your machines to form a single system.



Chuck adapters

Manual chuck, Macro, 3R-600.24-4RS

Chuck for Macro holder. Mounts on a suitable fixture.

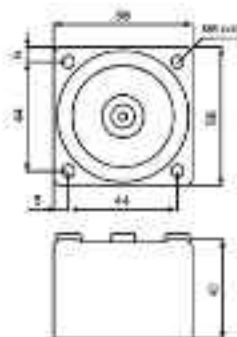
- Tightening torque 6 Nm
- Clamping force 6 kN
- Fixed index positions 4x90°
- Required drawbar 3R-605.2RS
- Ground front edge
- Weight 1 kg



Pneumatic chuck, Macro, 3R-600.15-3

Pneumatic chuck for permanent mounting on the machine table

- Clamping force 4.5 kN
- Fixed index positions 4x90°
- Supplied with drawbar 3R-605.2RS
- Weight 0.8 kg



Manual chuck, Macro, 3R-622.2

Chuck adapter for Macro holders in the WEIM system

- Tightening torque 7 Nm
- Clamping force 6 kN
- Fixed index positions 4x90°
- Supplied with drawbar 3R-605.5RS
- Weight 1,9 kg.

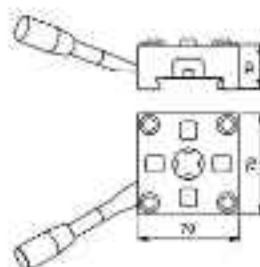


Manual chuck, Macro, 3R-602.27-1

Chuck adapter with lever for Macro holder in the WEDM system

Note: When mounted on the reference element, the two clamping jaws must be tightened with the same torque, 4 Nm.

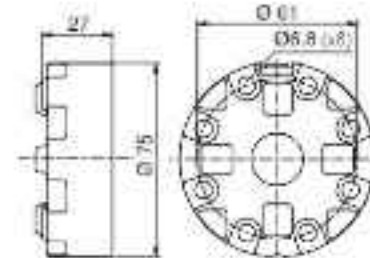
- Clamping force 6 kN
- Fixed index positions 4x90°
- Supplied with drawbar 3R-605.27RS
- Weight 1.1 kg



Manual chuck, Macro, 3R-600.24RS

Manual chuck for Macro holder.
Designed for permanent mounting.

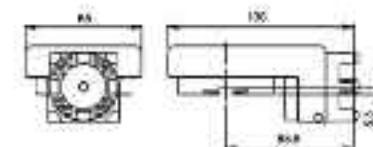
- Tightening torque 6 Nm
- Clamping force 6 kN
- Fixed index positions 4x90°
- Required drawbar 3R-605 2RS
- Weight 0.7 kg



Manual chuck, Macro , 3R-622.6

Chuck adapter for mounting Macro holders; 90° in the Macro system.

- Tightening torque 5 Nm
- Clamping force 6 kN
- Fixed index positions 4x90°
- Supplied with drawbar 3R-405.5RS
- Ready for code carrier holder 3R-U3063B
- Can be adapted to automatic changing with 3R-WP1
- Weight 2.3 kg

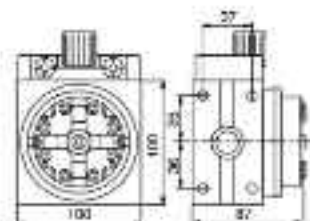


Chuck adapters

3R-block, Macro, 3R-217-1

Manual Macro chuck. For vertical or horizontal mounting on the machine table, or alternatively the WEDM system with the aid of 3R-3P6435.

- Tightening torque 6 Nm
- Clamping force 6 kN
- Fixed index positions 24x15°
- Required drawbar 3R-605.2RS
- Vernier scale
- Weight 5.4 kg



Manual chuck adapter 90°, Macro-Macro, 3R-652.9

For horizontal mounting of Macro holders.

- Tightening torque 6 Nm
- Clamping force 6 kN
- Fixed index positions 4x90°
- Supplied with drawbar 3R-605.5RS
- Weight 2.4 kg



Manual chuck, MacroJunior, 3R-422.2

Chuck adapter with axial locking screw for MacroJunior holders in the WEDM system.

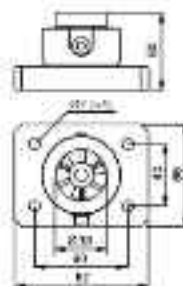
- Tightening torque 7 Nm
- Clamping force 6 kN
- Fixed index positions 3x120°
- Weight 1.8 kg



Manual chuck, MacroJunior, 3R-402.1

Chuck for MacroJunior holder. Can be mounted on 3R-237.2, 3R-292.66HP, 3R-294, the 3Ruler system, or on Macro clamping 56x56.

- Tightening torque 4 Nm
- Clamping force 4 kN
- Fixed index positions 3x120°
- Required drawbar 3R-405.21RS
- Weight 1.2 kg



Manual chuck adapter, MacroJunior, 3R-466.40RS

Chuck adapter, stainless steel, for MacroJunior holders in the Macro system. Axial locking screw.

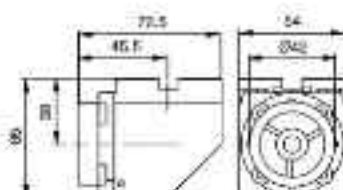
- Tightening torque 6 Nm
- Clamping force 6 kN
- Fixed index positions 3x120° and 4x90°
- Weight 1.4 kg



Manual chuck adapter, MacroJunior, 3R-406.9

For horizontal mounting of MacroJunior holder in the Macro system. Axial locking screw.

- Tightening torque 6 Nm
- Clamping force 6 kN
- Fixed index positions 3x120°
- Adapted for automatic changing
- Weight 1.2 kg

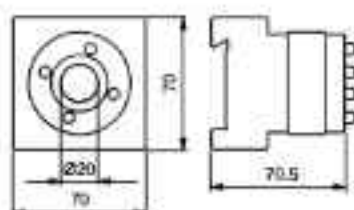


Chuck adapters

Manual chuck adapter, Mini, 3R-252.1

Chuck adapter with dual hydraulic chambers for Mini holders in the WEDM-system.

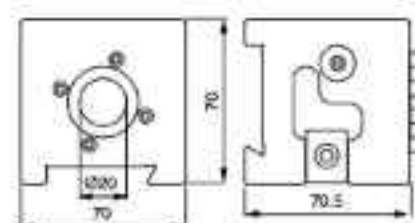
- Fixed index positions 4x90°
- Weight 1.6 kg.



MiniBlock, 3R-202

Manual chuck with dual hydraulic chambers for Mini holders. Vertical or horizontal mounting in the WEDM system.

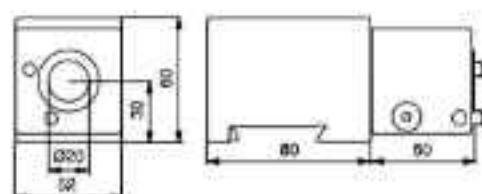
- Fixed index positions 4x90°
- Weight 1.9 kg.



Manual chuck adapter, Mini, 3R-222.2

Chuck adapter with dual hydraulic chambers for Mini holders in the WEDM-system.

- Fixed index positions 2x90°
- Weight 2.5 kg.



Locking ring key, 3R-605-GE

To lift the drawbar locking ring.

- Supplied in sets of 2.



Drawbars

3R-405.21RS

- Drawbar Ø15x24 mm.



3R-605.5RS

- Drawbar Ø20x19 mm.



3R-605.2RS

- Drawbar Ø20x36.9 mm with flushing hole Ø7 mm.



3R-605.27RS

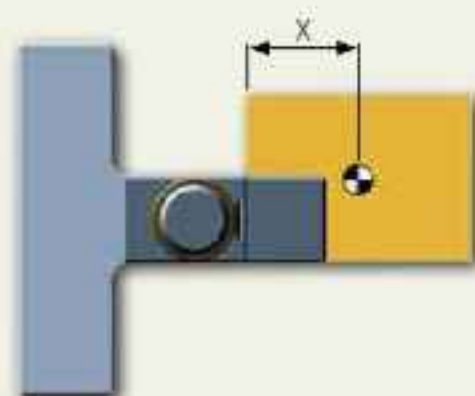
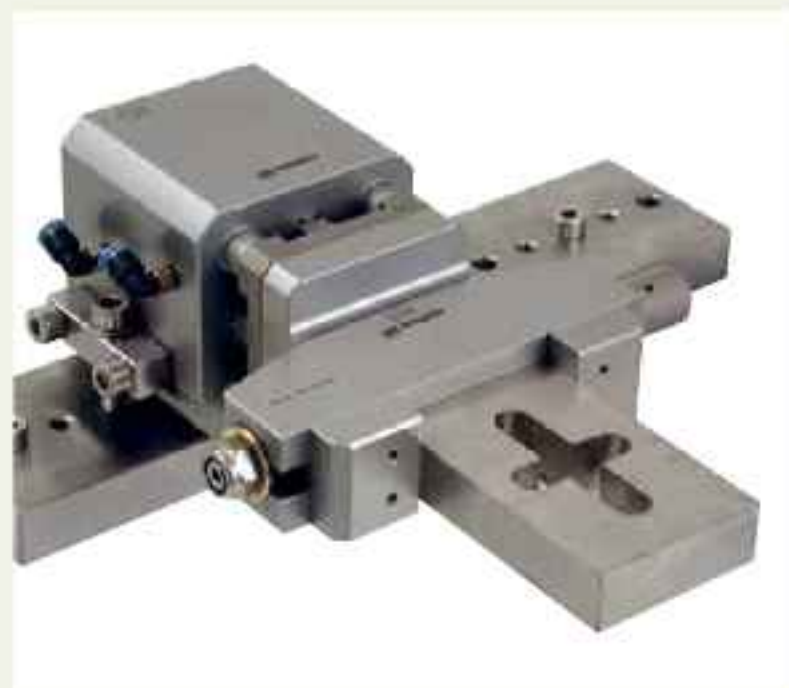
- Drawbar Ø20x27 mm.



Holders for mounting in chuck adapters

The holders have been adapted for modern machines with high flushing pressure. These holders are mainly intended for clamping small to medium-sized workpieces on the zero line of the machine.

An example is the manufacture of electrodes for die-sinking EDM. The electrode is manufactured on its holder in the wire EDM machine. The electrode on its holder is then ready for immediate use in the die-sinking EDM machine, without intervening mounting operations and adjustments.



Article number	Recommended maximum torque	Maximum workpiece weight $X^* = 50 \text{ mm}$	Maximum workpiece weight $X^* = 100 \text{ mm}$
3R-613.4	3.0 Nm	6 kg	3.0 kg
3R-232.8	12.5 Nm	25 kg	12.5 kg
3R-613.6	12.5 Nm	25 kg	12.5 kg
3R-213.4	3.0 Nm	6 kg	3.0 kg

*Centre of gravity of the workpiece with X mm overhang.

Pallet 54x54 mm, Macro, 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.

- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Supplied in sets of 8
- Weight per set 1.2 kg



Pallet 70x70 mm, Macro, 3R-601.7E-P

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

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

- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Supplied in sets of 5
- Weight per set 3 kg

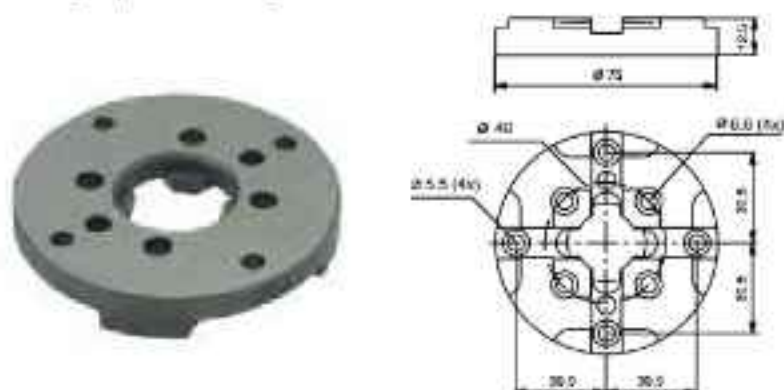


Holders for mounting in chuck adapters

Pallet Ø 75 mm, Macro, 3R-651.75E-P

Hardened X, Y & Z-references. Clearance holes for fixing screws.
 Note: Must be mounted on the workpiece/fixture before it is locked in a chuck.

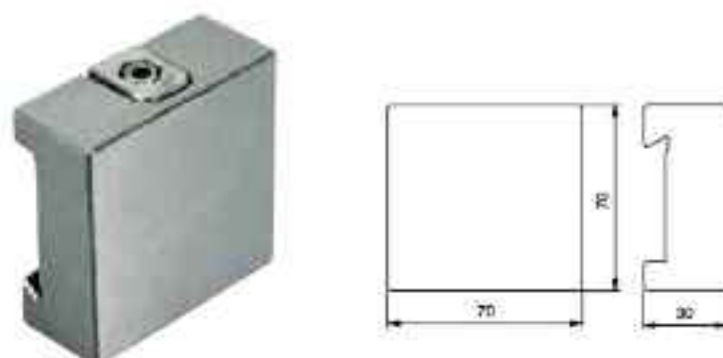
- Parallel-ground top and bottom faces
- Fixed index positions 4x90°
- Supplied in sets of 10
- Weight per set 3.0 kg.



Pallet WEDM, 3R-205.2

Unhardened holder for mounting in the WEDM system.

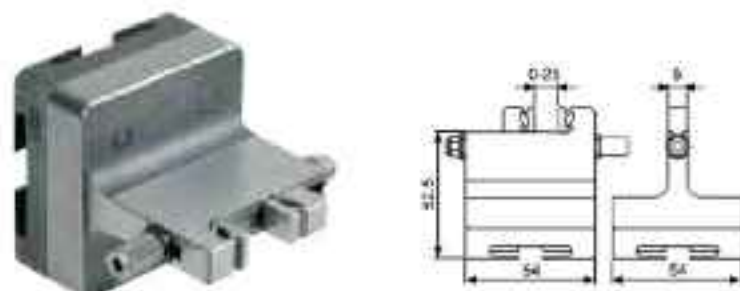
- Recommended maximum workpiece weight 7 kg
- Weight 1 kg.



SuperVice, Macro, 3R-613.4

Vice for mounting rectangular workpieces 0-25 mm in the Macro system.

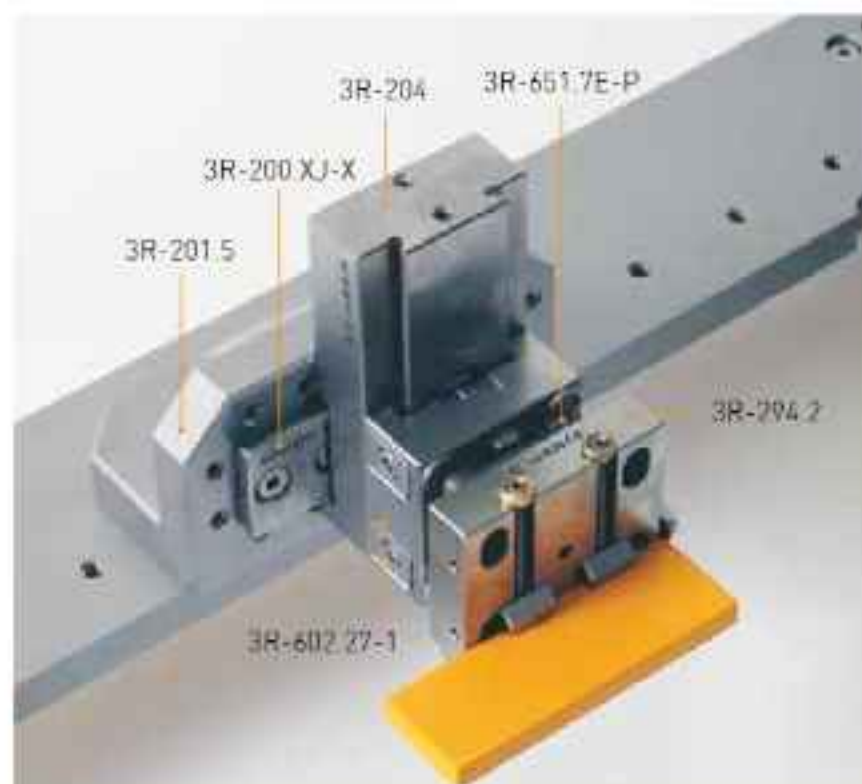
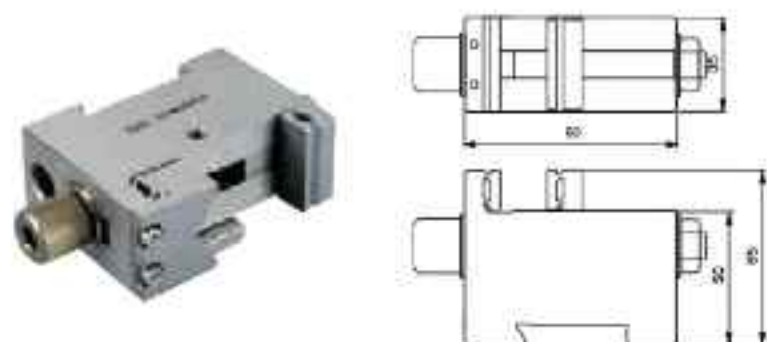
- Tightening torque 3 Nm
- Weight 0.6 kg



SuperVice WEDM, 3R-232.8

Vice for mounting rectangular (<60 mm) and round (8-45 mm) workpieces in the WEDM system.

- Tightening torque 15 Nm
- Weight 1.5 kg.



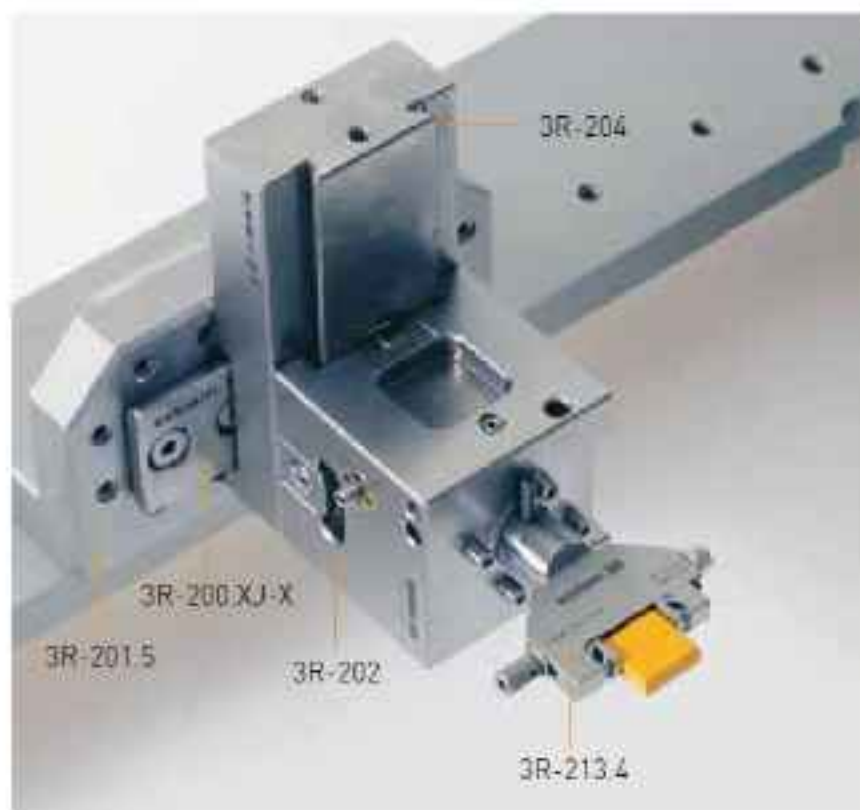
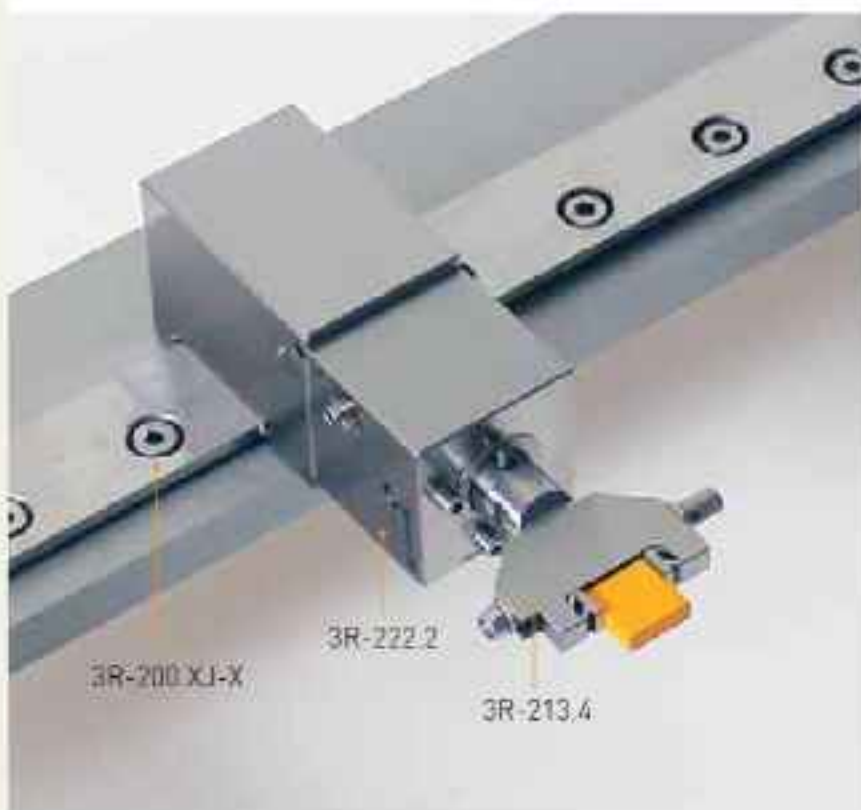
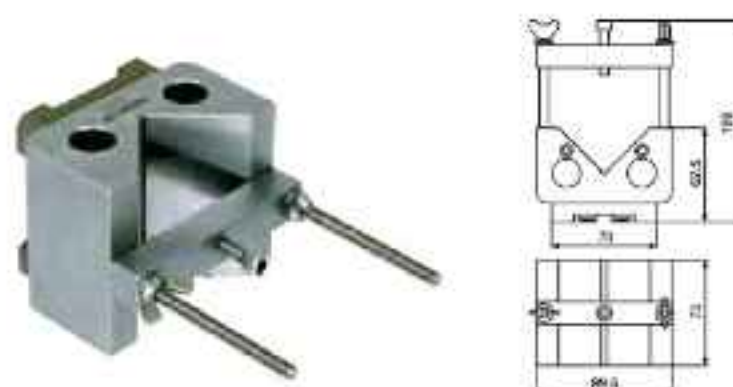
Vice for mounting rectangular workpieces 0-80 mm in the Macro system. Movable jaws for centred mounting. Can be supplemented with insert 16115-00 for mounting round workpieces 15-55 mm.

- Tightening torque 15 Nm
- Weight 2.4 kg.



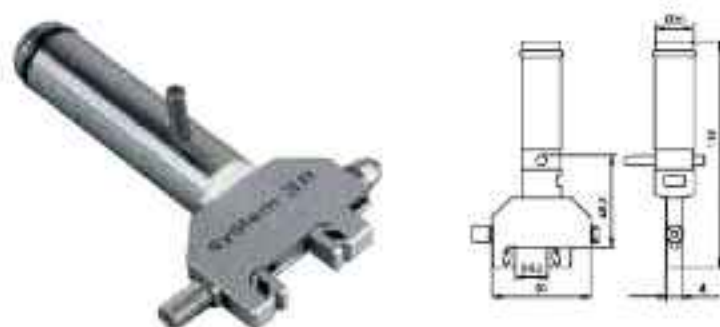
For clamping round workpieces 8-70 mm, or rectangular workpieces 10-52 mm in the Macro system.

- Recommended maximum workpiece weight 8 kg
- Weight 2 kg.



Vice for mounting rectangular workpieces up to 25 mm in the Mini system.

- Tightening torque 3 Nm
- Weight 0.4 kg



Electrode holder for the Mini system with 50 mm long unhardened electrode mounting part.

- Adapted for automatic changing
- Hardened reference part
- Flushing duct
- Supplied in sets of 30
- Weight per set 7.7 kg.



Holders for mounting in chuck adapters

Collet chucks

3R-659.16-P

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

3R-659.32-P

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

3R-659.20-P

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



3Ready-to-Run, 3R-494-XXX

Blanks mounted on Macroflunar holders for the manufacture of electrodes. The stock range is matched to local preferences and ways of working. This applies to electrode materials, different grades of graphite and copper, and to dimensions. Contact your local 3R representative for further information.

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

Article number

3R-494-D10x50
3R-494-D12x50
3R-494-D16x50
3R-494-D22x50
3R-494-D26x50
3R-494-D32x50
3R-494-D40x50
3R-494-D50x50
3R-494-S12x50
3R-494-S22x50
3R-494-S26x50
3R-494-S32x50
3R-494-S40x50
3R-494-S2x22x50
3R-494-40x22x50

Dimensions

Round blank Ø10x50 mm
Round blank Ø12x50 mm
Round blank Ø16x50 mm
Round blank Ø22x50 mm
Round blank Ø26x50 mm
Round blank Ø32x50 mm
Round blank Ø40x50 mm
Round blank Ø50x50 mm
Square blank 12x12x50 mm
Square blank 22x22x50 mm
Square blank 26x26x50 mm
Square blank 32x32x50 mm
Square blank 40x40x50 mm
Square blank 32x22x50 mm
Square blank 40x22x50 mm



Collet chucks

D-30220-01

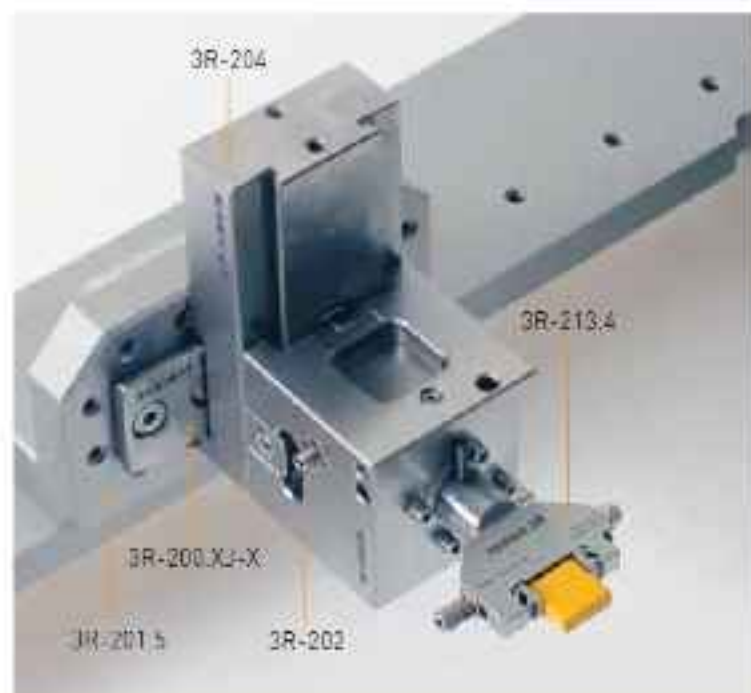
- For collets ER16
- Workpiece size 0.5-10 mm
- Flushing duct
- Building-in height 57 mm
- Weight 1 kg.

D-30220-02

- For collets ER32
- Workpiece size 2-20 mm
- Flushing duct
- Building-in height 82 mm
- Weight 1.4 kg.

D-30220

- For collets ER20
- Workpiece size 1-13 mm
- Flushing duct
- Building-in height 62 mm
- Weight 1.4 kg.



Adapter elements

Adapter elements allow machining of complex geometries, even if the machine is not the very latest model. The range includes products for swivelling or height adjustment, as well as plain spacer elements.

Adapter 90°, WEDM, 3R-201J

Basic element for 3D accessories.

- Fits on all System 3R basic element
- Tightening torque 7 Nm
- Weight 2.7 kg.

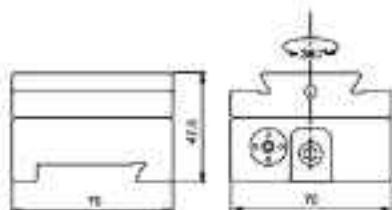


Swivelling element 360°, WEDM, 3R-203

Hydraulic locking of set position.

Note: For angle setting, 3R-216 is recommended.

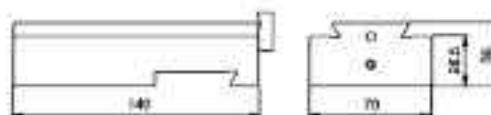
- Can be mounted on 3R-204 or directly on 3R-201J
- Tightening torque 7 Nm
- Weight 1.5 kg.



Height adapter, WEDM, 3R-204

Can be turned upwards or downwards when mounting on 3R-201J.

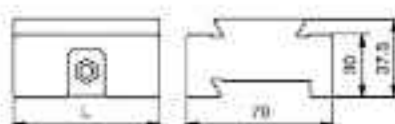
- Height adjustment ± 65 mm
- Tightening torque 7 Nm
- Weight 1.9 kg.



Spacer element 30 mm, WEDM

Used where vertical or horizontal displacement of workpiece or accessory is necessary.

- Tightening torque 7 Nm.

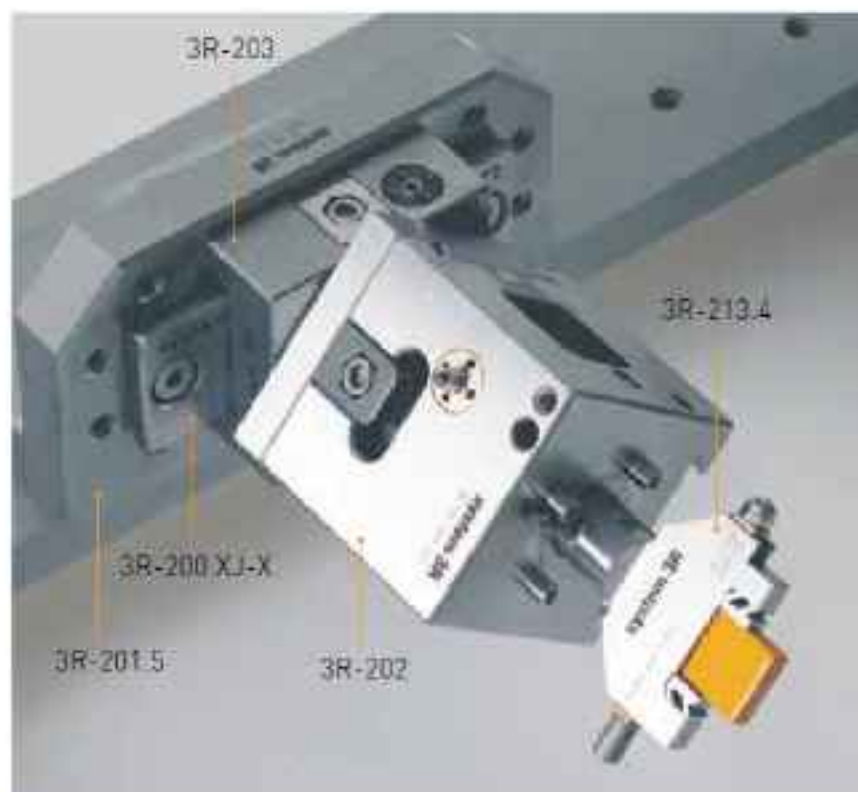


3R-223

- Length 70 mm.

3R-223.3

- Length 140 mm.



Adapter elements

Swivelling element 360°, Macro, 3R-203.66

Swivelling element with manual Macro chuck to be mounted onto a Macro chuck. Mechanical locking of the set position. Vernier scale for quick setting in 0.1-degree steps.

Note: For angle setting sine ruler 3R-216.6 and gauge block are recommended.

- Maximal hanging torque 8 Nm
- Required drawbar 3R-605.2RS
- Weight 2 kg.



Swivelling element 360°, 90937

Swivelling element with manual Macro chuck to be mounted onto leveling heads. Mechanical locking of the set position. Vernier scale for quick setting in 0.1-degree steps.

Note: For angle setting sine ruler 3R-216.6 and gauge block are recommended.

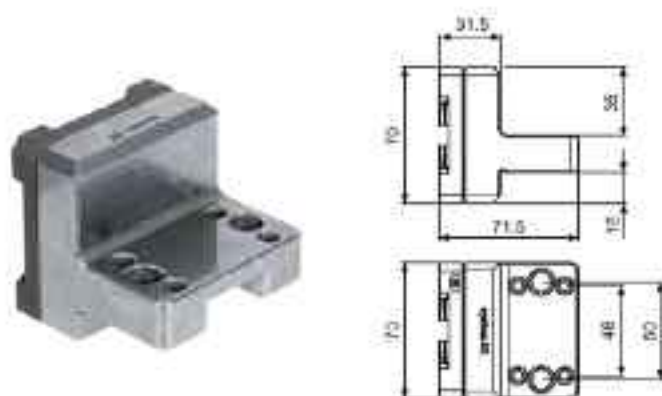
- Maximal hanging torque 0 Nm
- Required drawbar 3R-605.2RS
- Weight 3.1 kg.



Vertical fixed adapter, Macro, 3R-226.6

For horizontal clamping SuperVice and holders in vertical Macro chucks.

- Weight 1.4 kg



Vertical levelling adapter, Macro, 3R-262.6

For horizontal mounting of SuperVice and holders in vertical Macro chucks.

- Adjustable in three axes
- Weight 1.5 kg



User kit, 3R-243.2-1

3R-201J	Adapter 90°	x1
3R-204	Height adapter	x1
3R-602.27-1	Manual chuck for Macro	x1
3R-605.27RS	Drawbar	x1
3R-333-05	Allen key, 5 mm	x1

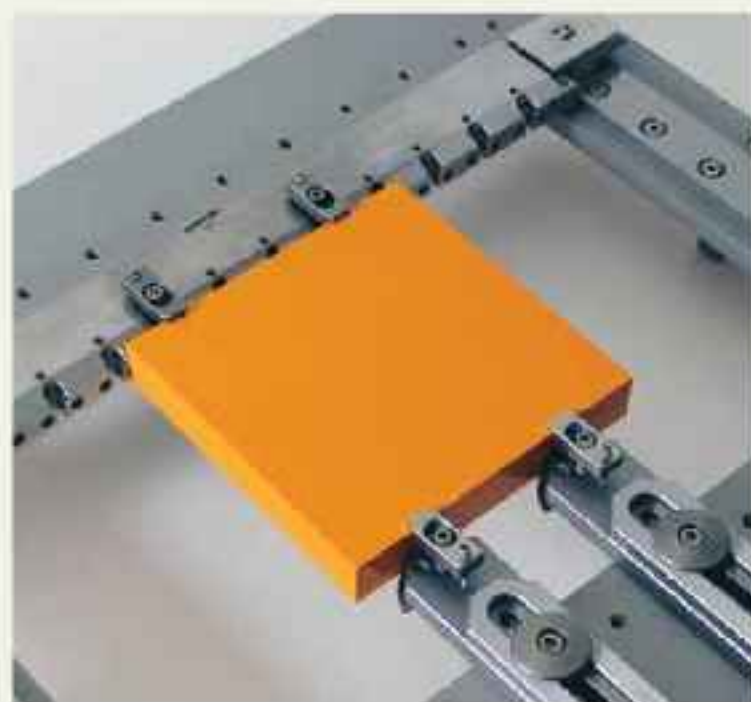


The 3Ruler ruler system

The 3Ruler ruler system has been developed for clamping medium-sized and large workpieces in machines with a parallel or U-shaped machine table, as well as for machines with a frame table. The rulers, which have built-in height adjustment, are used singly or in pairs.

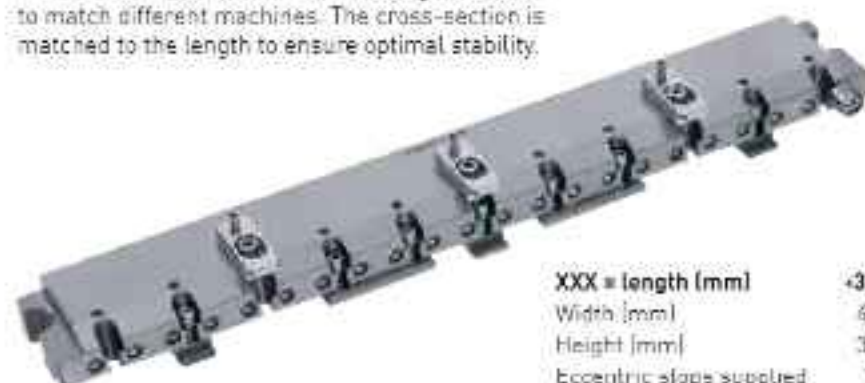
With the aid of 3Ruler, rectangular or round workpieces, lightweight or heavy, large or small, are located on the machine zero line, without risk of collision. A comprehensive range of accessories gives an unsurpassed range of applications.

- + Machine-adapted ruler lengths
- + Repeatable accuracy with the aid of reference elements
- + Stable mounting of large workpieces
- + A broad range of accessories gives great flexibility



3Ruler, 3R-239-XXX

The rulers are available in various lengths (-XXX), to match different machines. The cross-section is matched to the length to ensure optimal stability.



XXX = length (mm)	<370	371-544	545-645	646-950	951-1600
Width (mm)	45	60	60 or 86*	86	86
Height (mm)	30	30	36	36	50
Eccentric stops supplied	1	1	1	1	1
Quick fasteners supplied	2	2	2	2	2
Zero line tabs supplied	2	2	2 or 3*	3	5*
5 mm tabs supplied	2	2	2	2	3*
Clamps supplied	2	2	2 or 3*	3	5*

*Always ask. See also the 3Ruler guides for your machine on - www.system3R.com

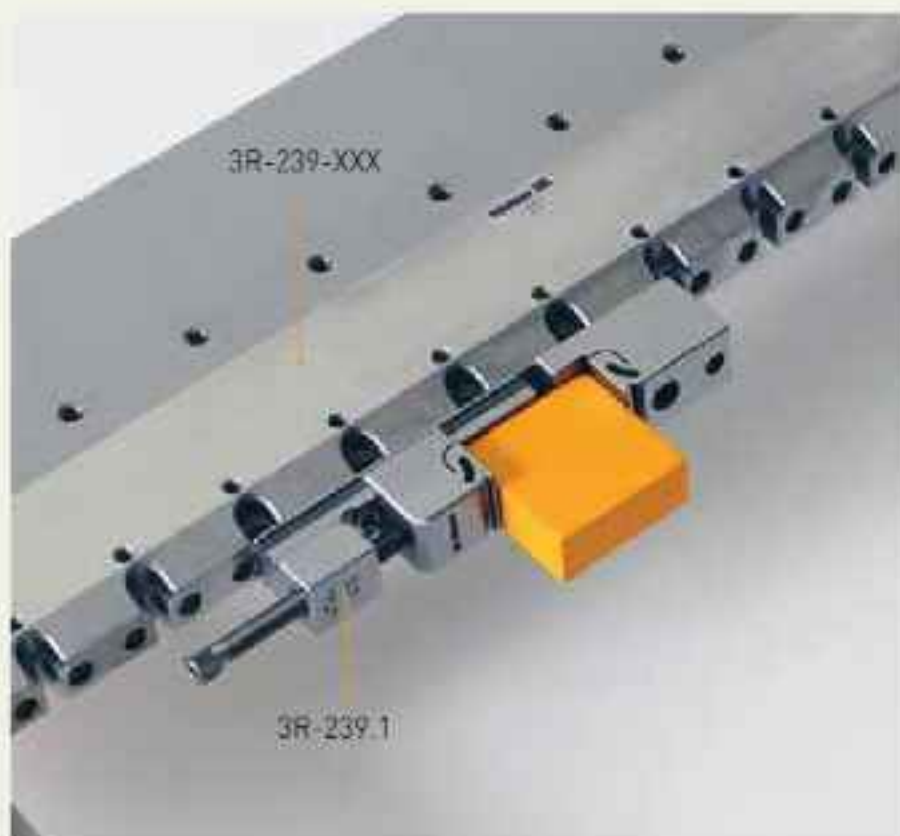
3Ruler, double-sided, 3R-239-XXX-D

Double-sided rulers are available in various lengths (-XXX), to match different machines. The cross-section is matched to the length to ensure optimal stability. With these rulers, accessories can be clamped on both sides of the ruler.



XXX = length (mm)	< 370	371-595	596-950	> 951
Width (mm)	45	60	86	86
Height (mm)	30	30	36	56
Eccentric stops supplied	2	2	2	2
Quick fasteners supplied	2	2	2	2
Zero line tabs supplied	4	4	6	10
5 mm tabs supplied	4	4	4	6
Clamps supplied	4	4	6	10

The 3Ruler ruler system



Ruler vice, 3R-239.1

Movable jaws of SuperVice design provide a wide clamping range for rectangular workpieces. Detachable Z-support tabs ensure simple setting-up.

- Recommended maximum workpiece weight with one vice: 15 kg
- Recommended maximum workpiece weight with two vices: 200 kg
- Tightening torque 8 Nm
- Weight 0.7 kg.



Low-profile holder, 3R-239.2

For clamping thin workpieces.

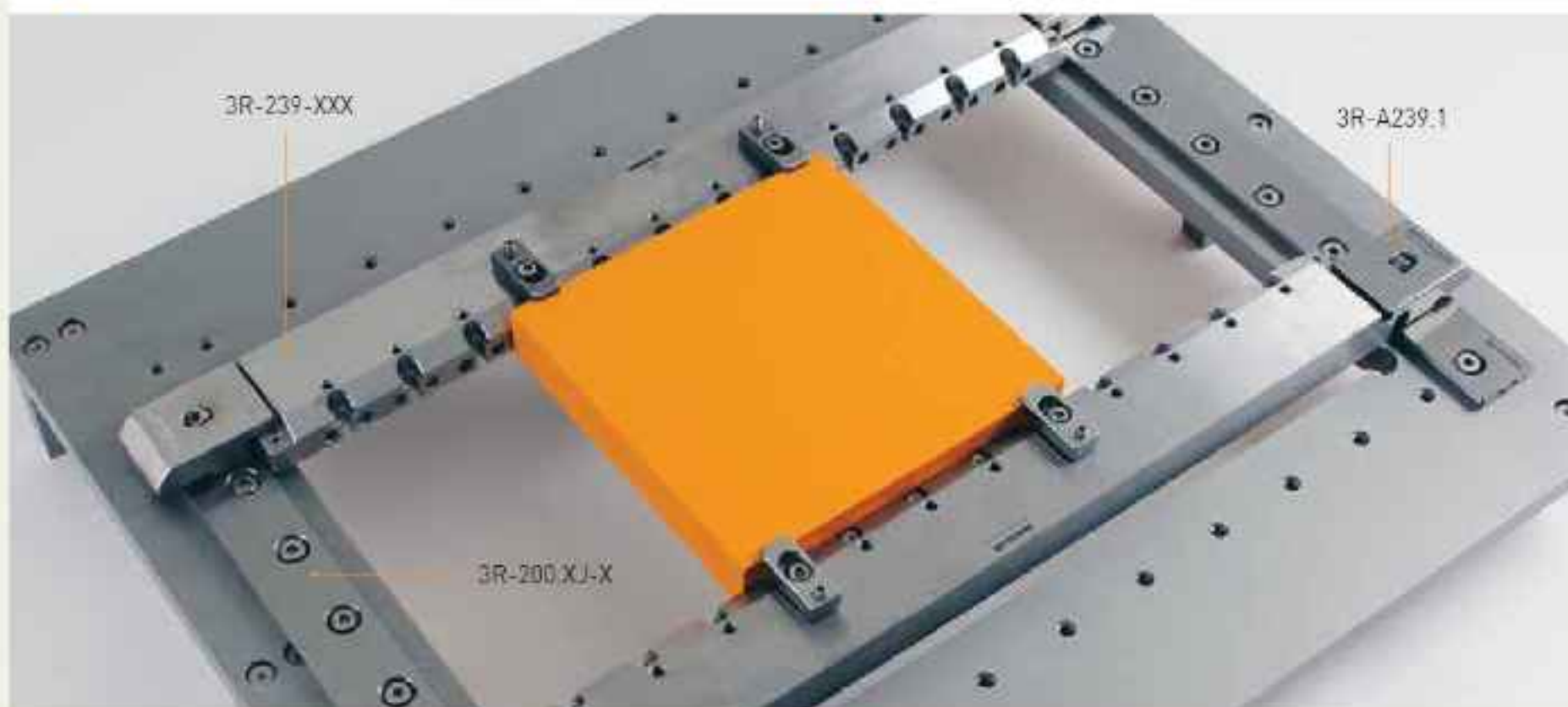
- Clamping range 0-27 mm
- Supplied in sets of 4
- Weight per set 0.6 kg.



Vee holder, 3R-239.3

For clamping round workpieces. To be mounted on ruler or holder 3R-237.2, 3R-292.66HP or 3R-239-XXX.

- Clamping range $\varnothing 25$ -300 mm
- Weight 0.9 kg.



The 3Ruler ruler system

Double ruler vice , 3R-239.11

Movable jaws for mounting two rectangular workpieces at the same time. Detachable Z-support tabs ensure simple setting-up.

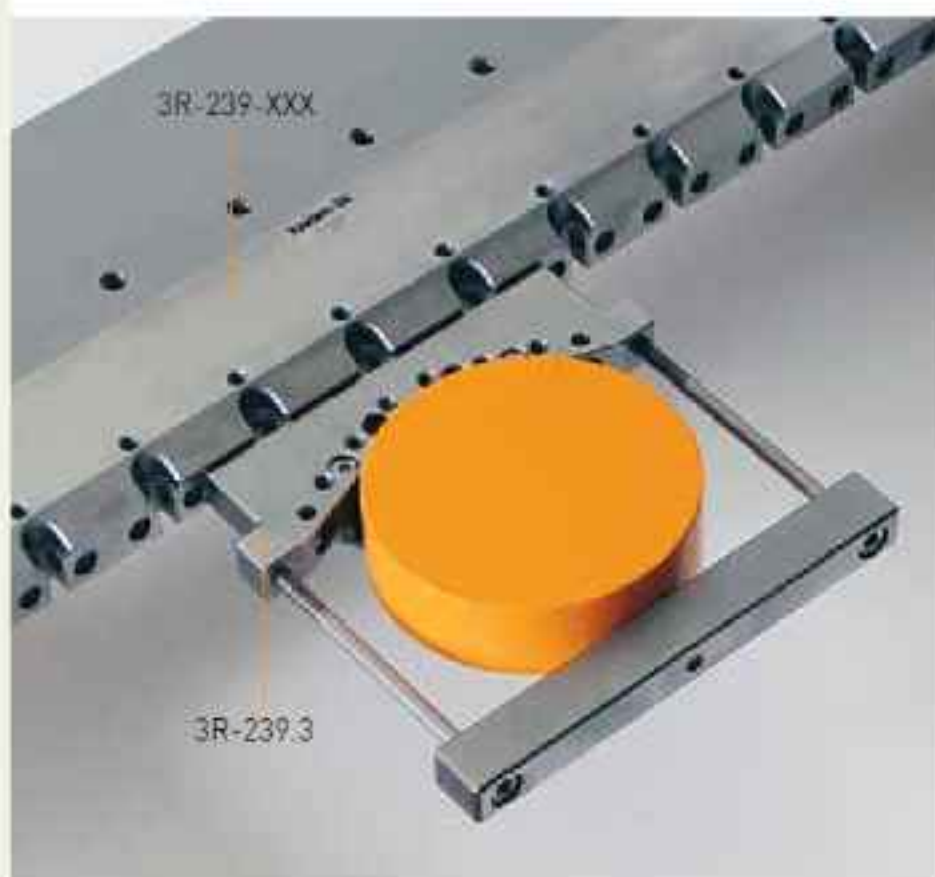
- Recommended maximum workpiece weight 7 kg
- Tightening torque 8 Nm
- Weight 1 kg.



Reference stop , 3R-225.2

For positioning 3Ruler anywhere on the reference elements. The stops have adjusting screws for accurate alignment.

- Tightening torque 7 Nm
- Supplied in sets of 2
- Weight per set 0.6 kg.



3Ruler kit, 3R-239.20

Kit for clamping rectangular, round or thin workpieces.

3R-239.1	Ruler vice	x1
3R-239.2	Low-profile holder	x1
3R-239.3	Vee holder	x1
3R-914-10L	Torque wrench, 8 Nm	x1
3R-333-03	Allen key, 3 mm	x1
45600-N039	Allen key, 4 mm	x1

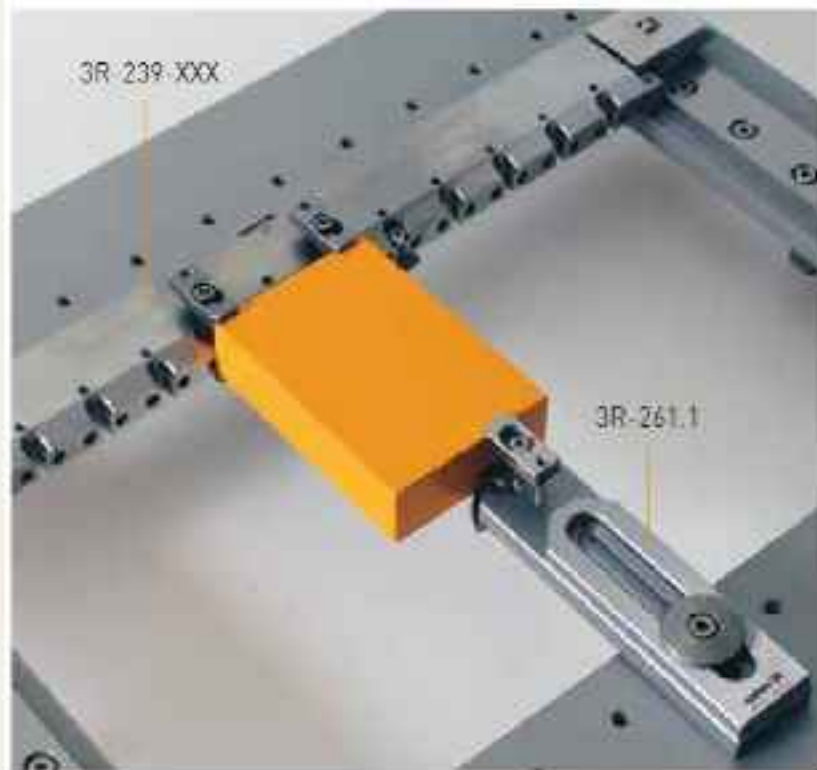
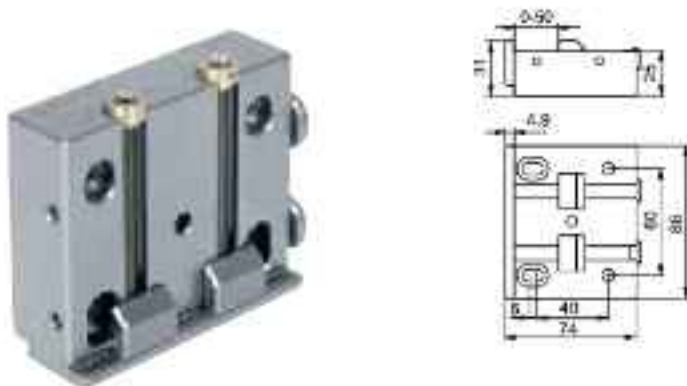


The 3Ruler ruler system

Vice, 3R-294.2

Mounts on 3R-237.2, 3R-292.66HP, 3R-294, a ruler in the 3Ruler system or Macropallet 54x54.

- Clamping range 0-50 mm
- Recommended maximum workpiece weight 5 kg
- Tightening torque 3 Nm
- Weight 1.2 kg.



Support, 3R-261.1

For mounting directly on the machine table

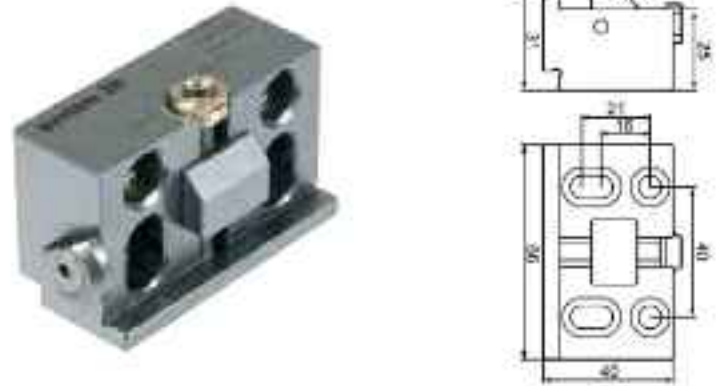
- Adjustable length 35-135 mm
- Includes 5 mm spacer for collision free set-up
- Recommended maximum workpiece weight 20 kg
- Weight 1.5 kg



Vice, 3R-294.1

Mounts on 3R-237 2, 3R-292 12, 3R-292 66HP, 3R-294 or a ruler in the 3Ruler system.

- Clamping range 0-17 mm
- Recommended maximum workpiece weight 2.5 kg
- Tightening torque 3 Nm
- Weight 0.5 kg.



Multiple holder, 3R-294.6

For mounting of four workpieces Ø5-13 mm at the same time. Mounts on 3R-237.2, 3R-292.66HP, 3R-294 or a ruler in the 3Ruler system.

- Tightening torque 3 Nm
- Weight 0.6 kg

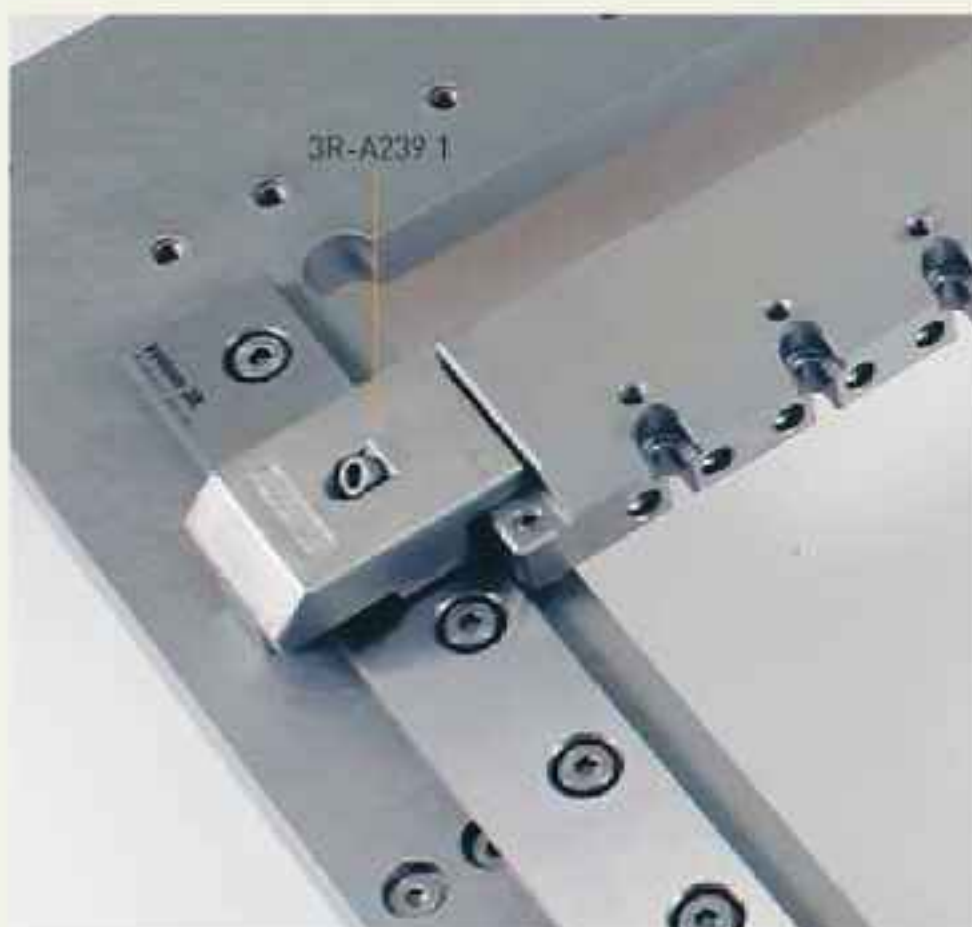


Zero-line support tab 5 mm, 3R-239.25

- Recommended maximum workpiece weight per tap 50 kg
- Supplied in sets of 2



The 3Ruler ruler system



Clamps, 3R-A239.1

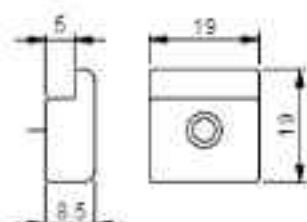
Clamps for clamping rulers on reference elements.

- Supplied in sets of 2.



Zero-line support tab 5 mm, 3R-239.22

- Recommended maximum workpiece weight per tab 50 kg
- Supplied in sets of 2.



Miniclamps, 3R-239.24

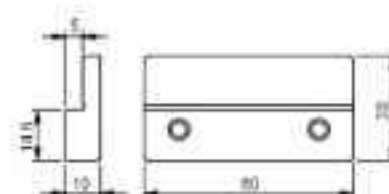
For clamping thin workpieces. To be fitted together with zero-line support tab.

- Recommended maximum workpiece weight per stop 1 kg
- Supplied in sets of 2.



Zero-line support tab 5 mm, 3R-239.26

- Recommended maximum workpiece weight per tab 50 kg
- Supplied in sets of 2.



Clamps, 3R-A239

Clamps of aluminium for mounting a ruler directly on the machine table without reference elements.

- Supplied in sets of 2
- Weight per set 0.3 kg

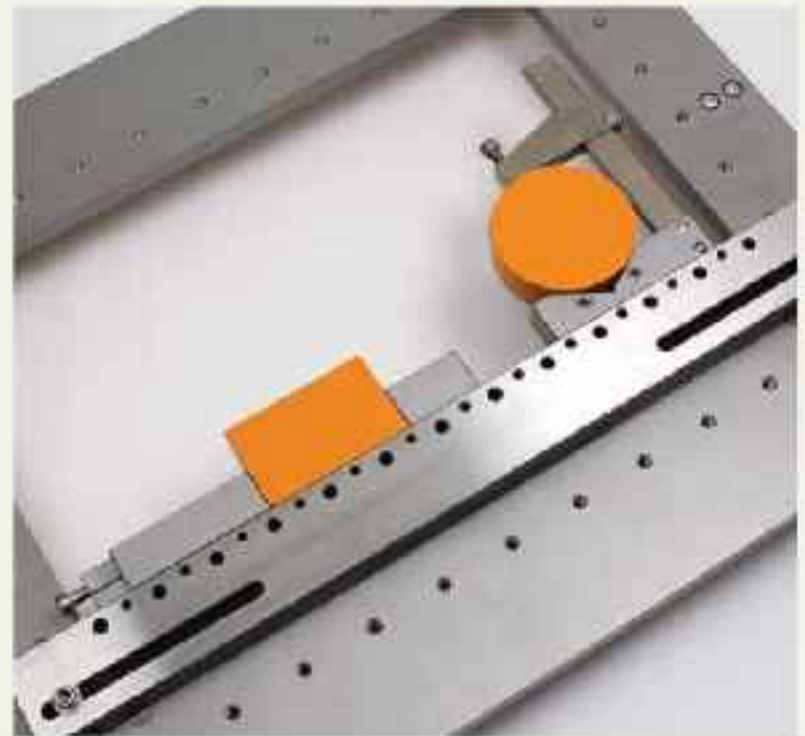


The EconoRuler system

The EconoRuler have been developed for clamping medium-sized and large work pieces in machines with a parallel or U-shaped machine table, as well as in machines with a frame table.

A comprehensive range of accessories enables a wide variety of applications.

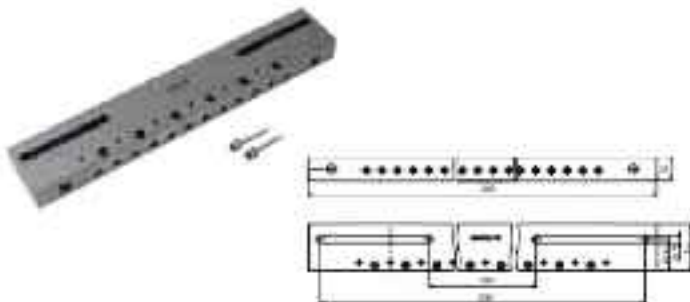
- + Robust design
- + Flexible – use the rulers in pair or alone, depending on your set-up
- + Highest cutting rates – locate the work piece on the machine zero line
- + Collision free set-up – use spacers under the rulers
- + Fitting wide range of machine tables
- + Enables usage of various work piece sizes.



EconoRuler, 3R-209-350

Universal ruler for mounting directly on the machine table.
Fits machine tables with hole pitch 160-330 mm.

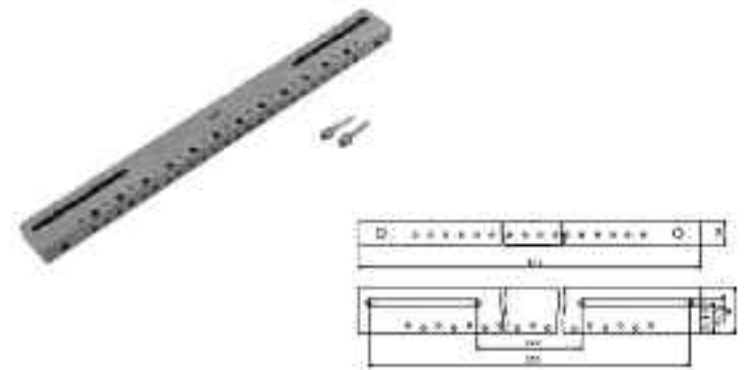
- Dimensions: 350x60x30 mm
- Clamping range: 160-330 mm



EconoRuler, 3R-209-610

Universal ruler for mounting directly on the machine table.
Fits machine tables with hole pitch 300-580 mm.

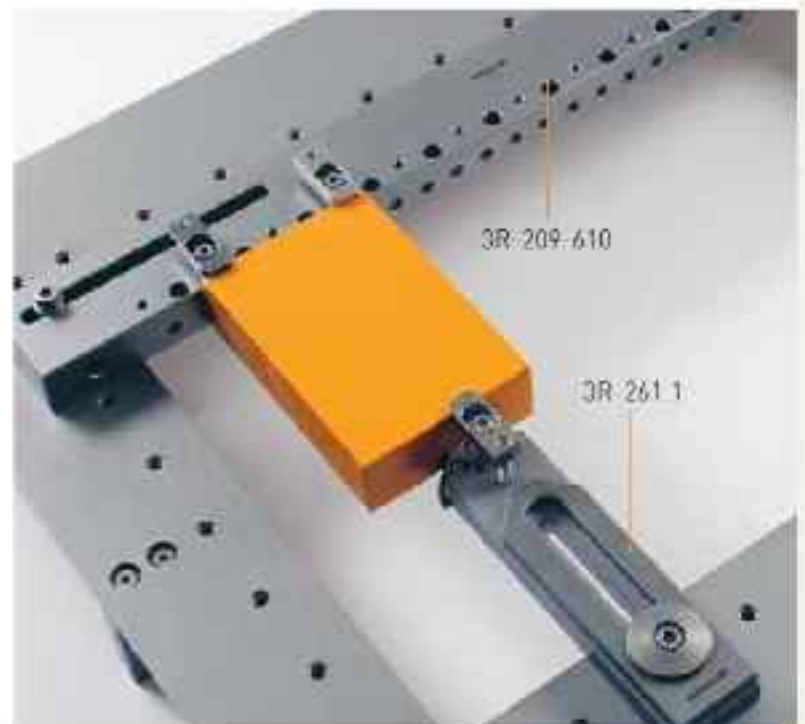
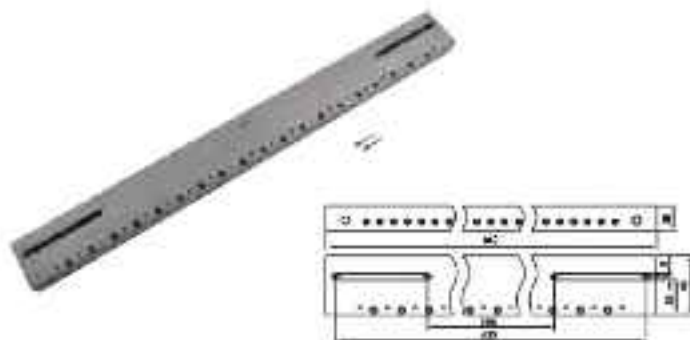
- Dimensions: 610x60x30 mm
- Clamping range: 300-580 mm



EconoRuler, 3R-209-860

Universal ruler for mounting directly on the machine table.
Fits machine tables with hole pitch 565-830 mm.

- Dimensions: 860x86x36 mm
- Clamping range: 565-830 mm



EconoRuler kits

EconoRuler kit

Kit for clamping rectangular workpieces.



3R-209-350.1

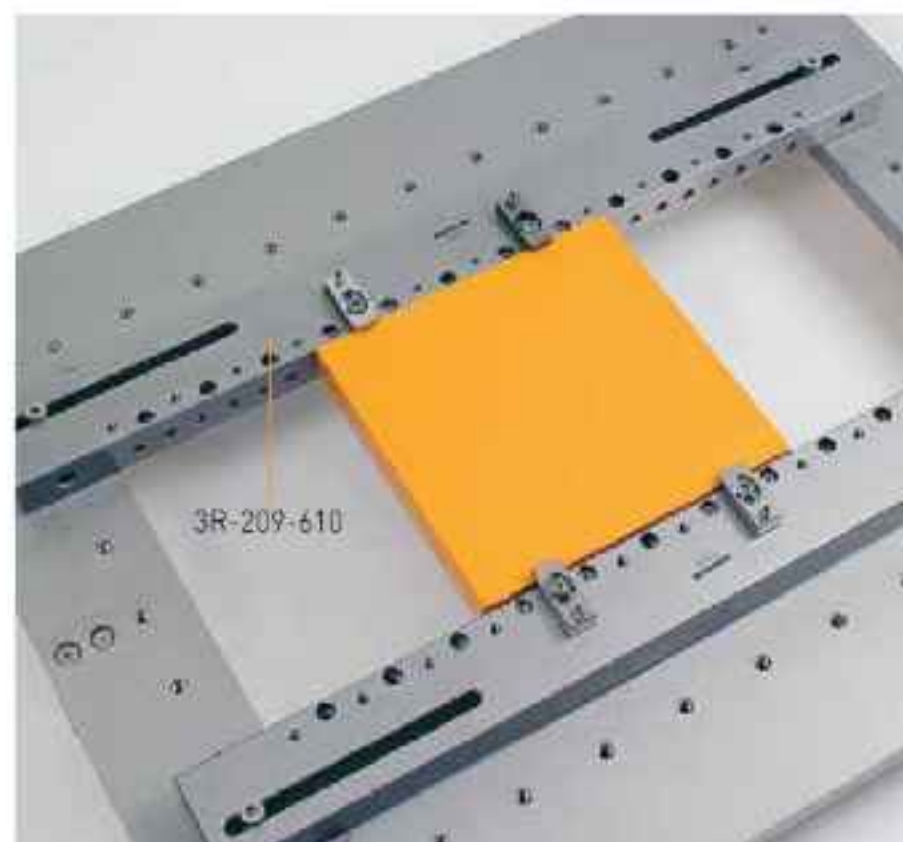
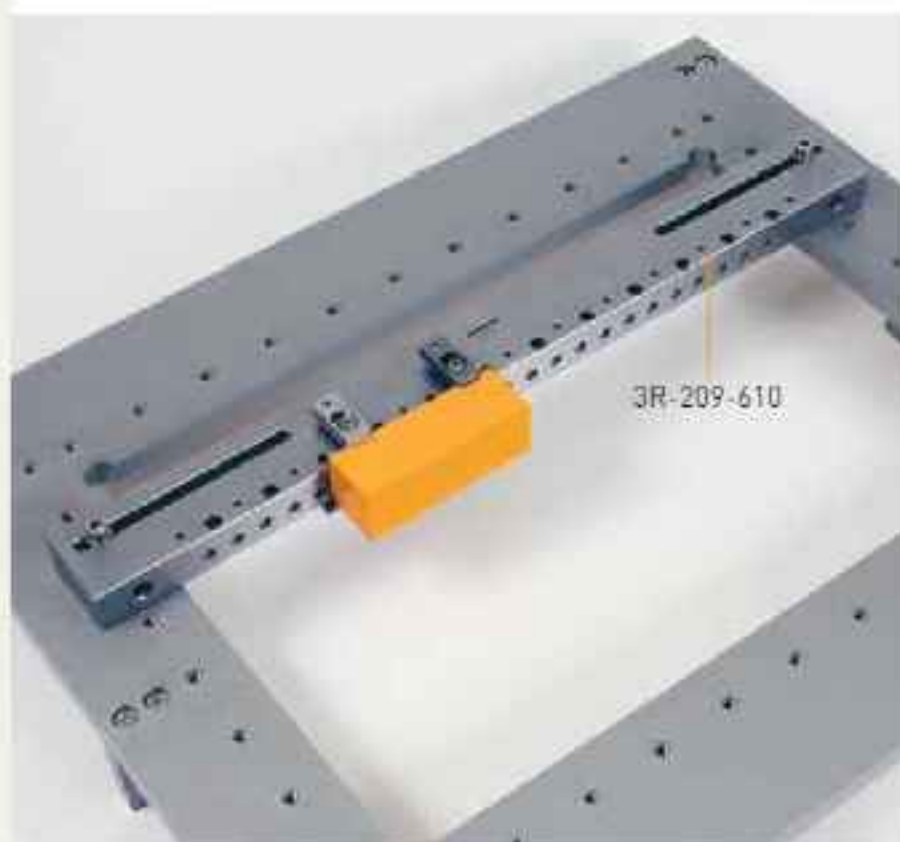
3R-209-350	Ruler, 350 mm	x1
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
+ Accessories		

3R-209-610.1

3R-209-610	Ruler, 610 mm	x1
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
+ Accessories		

3R-209-860.1

3R-209-860	Ruler, 860 mm	x1
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
+ Accessories		



EconoRuler kit

Kit for clamping rectangular workpieces.



3R-209-350.2

3R-209-350	Ruler, 350 mm	x2
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
3R-A209	Clamps	x2
+ Accessories		

3R-209-610.2

3R-209-610	Ruler, 610 mm	x2
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
3R-A209	Clamps	x2
+ Accessories		

3R-209-860.2

3R-209-860	Ruler, 860 mm	x2
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
3R-A209	Clamps	x2
+ Accessories		

EconoRuler kits

EconoRuler kit

Kit for clamping rectangular workpieces.



3R-209-350.3

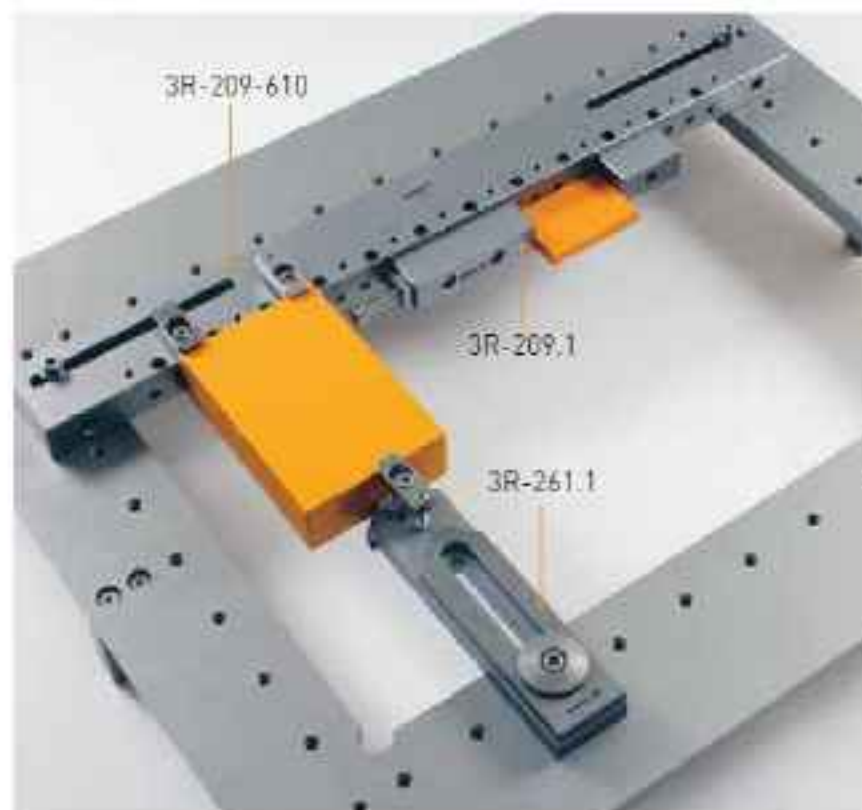
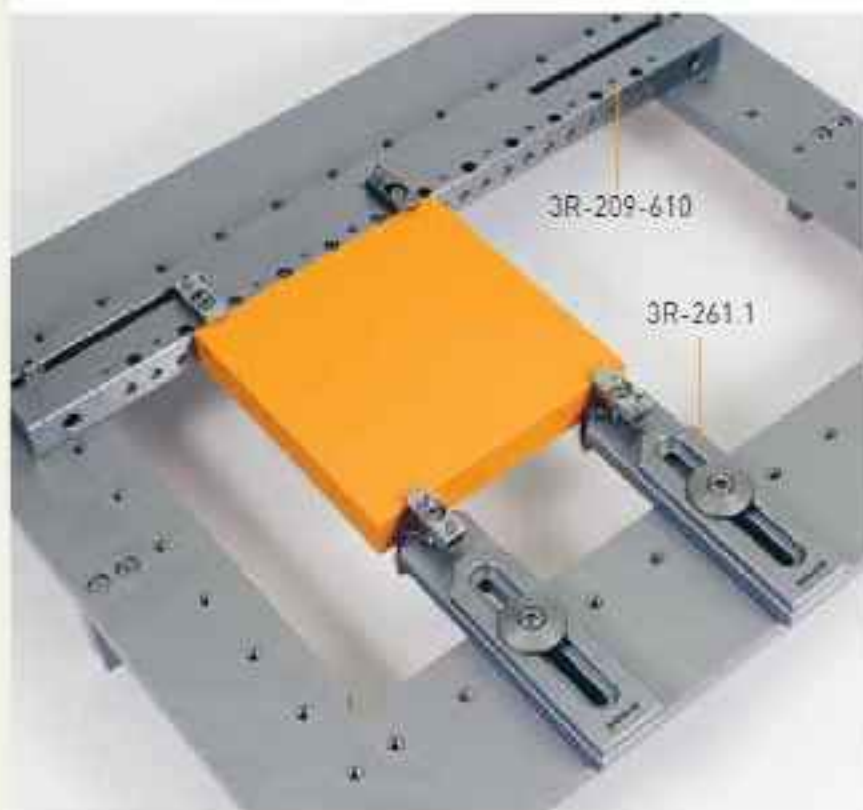
3R-209-350	Ruler, 350 mm	x1
3R-261.1	Support	x2
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
+ Accessories		

3R-209-610.3

3R-209-610	Ruler, 610 mm	x1
3R-261.1	Support	x2
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
+ Accessories		

3R-209-860.3

3R-209-860	Ruler, 860 mm	x1
3R-261.1	Support	x2
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
+ Accessories		



EconoRuler kit

Kit for clamping rectangular workpieces.



3R-209-350.4

3R-209-350	Ruler, 350 mm	x1
3R-261.1	Support	x1
3R-209.1	Ruler vice, Econo	x1
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
+ Accessories		

3R-209-610.4

3R-209-610	Ruler, 610 mm	x1
3R-261.1	Support	x1
3R-209.1	Ruler vice, Econo	x1
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
+ Accessories		

3R-209-860.4

3R-209-860	Ruler, 860 mm	x1
3R-261.1	Support	x1
3R-209.1	Ruler vice, Econo	x1
3R-333-03	Allen key, 3 mm	x1
3R-333-05	Allen key, 5 mm	x1
+ Accessories		

EconoRuler accessories

Support, 3R-261.1

For mounting directly on the machine table.

- Adjustable length 35-135 mm
- Recommended maximum workpiece weight 20 kg
- Includes 5 mm spacer for collision free set-up
- Weight 1.5 kg



Ruler vice, Econo, 3R-209.1

Movable jaws of SuperVice design provide a wide clamping range for rectangular workpieces. Detachable Z-support tabs ensure simple setting-up.

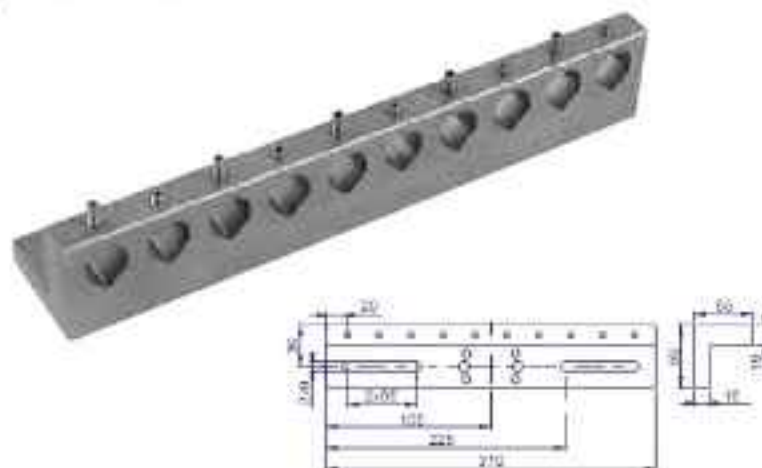
- Recommended maximum workpiece weight with one vice: 15 kg
- Recommended maximum workpiece weight with two vices: 700 kg
- Tightening torque 8 Nm
- Weight 0.7 kg



Multiple holder, Econo, D-30214

Multiple holder for ten workpieces Ø2-20 mm at the same time. Mount direct on table or with a levelling head

- C-C = 30 mm
- Squareness 0,1 mm/100 mm
- Weight 3.1 kg



Vee holder, Econo, 3R-209.3

For clamping round workpieces. To be mounted on EconoRuler.

- Clamping range: Ø25-130 mm
- Weight 0.9 kg



Clamps, 3R-A209

Clamps of aluminium for mounting EconoRuler.

- Supplied in sets of 2.



Universal holder, Econo, 3R-209.33

For clamping round workpieces. To be mounted on EconoRuler.

- Clamping range Ø 15-110 mm or 120 x 120 mm
- Weight 1,5 kg

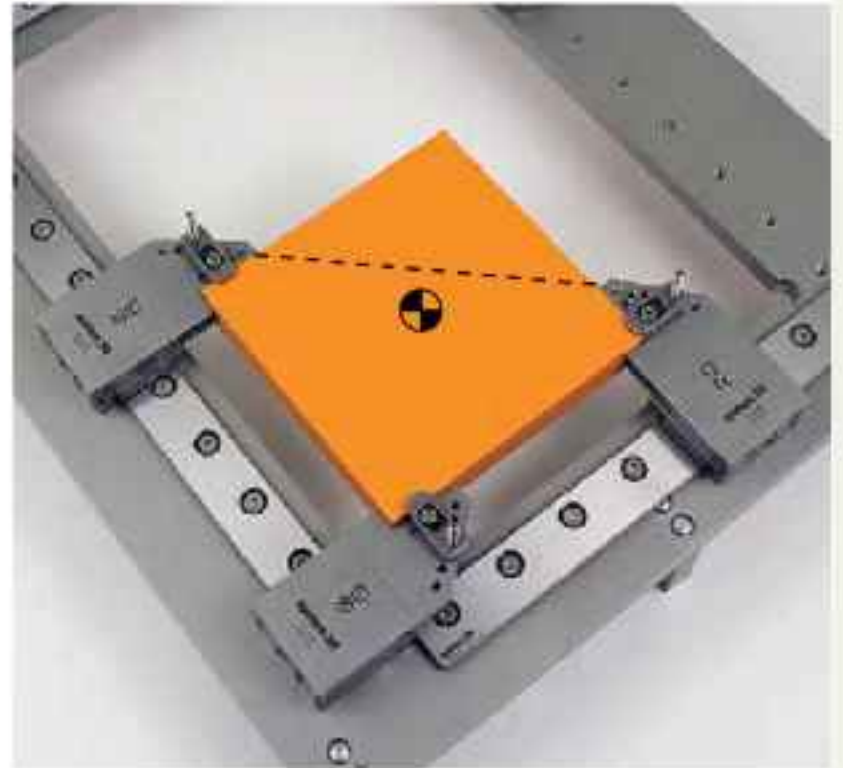
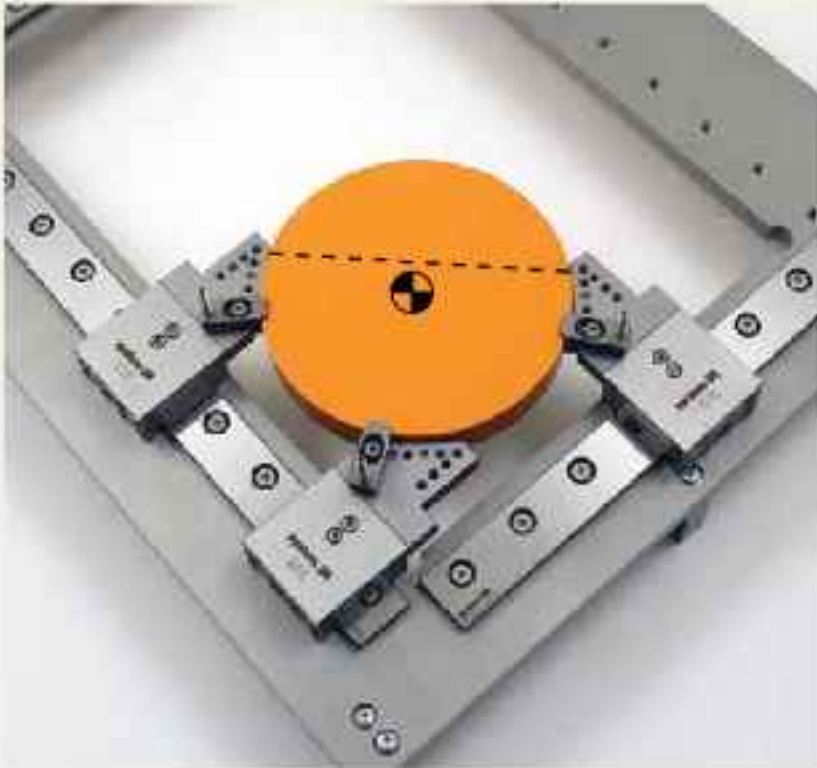
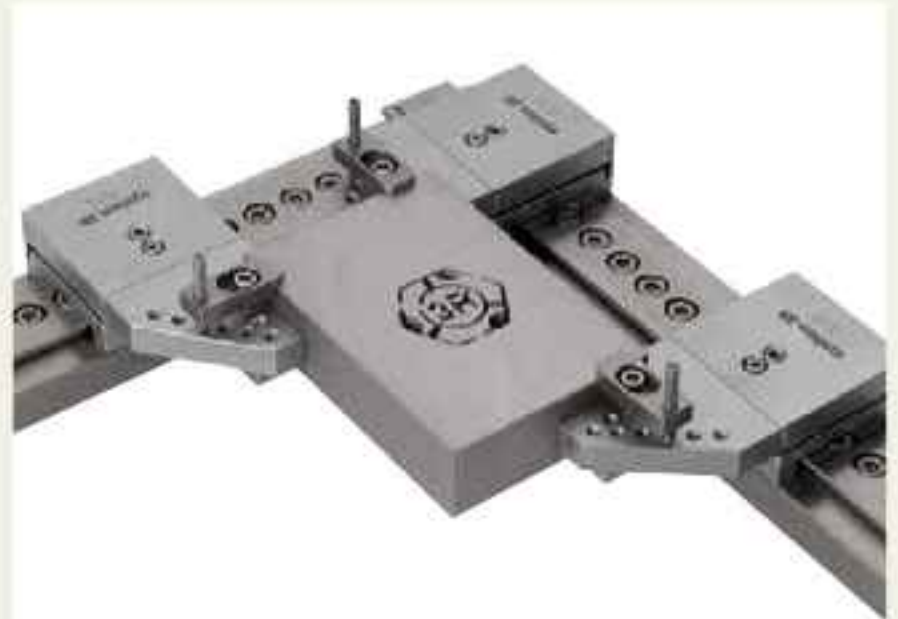


3P Three-point system

Minimal risk of collision with three-point clamping. 3P is equally well suited to rectangular or round workpieces. Clamping takes only a few seconds.

3P has been developed for medium-sized and large workpieces in wire-EDM machines with an L-shaped or U-shaped machine table, as well as in machines with a frame table. The holders are matched to the size of the workpiece by sliding them along the reference element. The holders can be adjusted vertically.

- + Can be aligned in the machine
- + Gives great flexibility
- + Excellent value for money
- + Easy cleaning
- + Mounting on or above the zero line of the machine.



Holder set, 3R-2185

Set of three holders and fixing parts

- Tightening torque 7 Nm
- Reversible jaws
- Holder length 70/23.5 mm
- Recommended maximum workpiece weight 60 kg
- Weight per set 3 kg



Presetting & inspection

Make efficient use of machine time.

Machine can be used either for active machining or for non-productive setting-up operations on an idle machine.

You can optimise machine capacity by presetting away from the machine in a presetting station, while the machine is actively working on another workpiece.

So – preset away from the machine, lift in the preset package, secure it with a few simple manual operations, press the start button and the wire EDM machine is working again – One Minute Set-up.

System 3R's presetting stations are constructed on a modular system, where the customer chooses a suitable packet of prepared "measuring stones", for which the customer chooses the necessary chuck/reference elements in order to match the installation on the wire EDM machine table, as well as a pneumatic control unit if required.



Pneumatic chuck for Macro
3R-602.10-1

Manual chuck for Macro
3R-602.27

Reference element
3R-200.13-U

Pneumatic chuck for MacroTwin
3R-602.12-1

Presetting stone
3R-228U

Presetting station
3R-228-1

Actuator
3R-611.4



Presetting & inspection

Presetting stone, 3R-228J

Stone with three ground faces, a reference element and a clearance stone. Together with a surface plate and a dial indicator, 3R-228J is an excellent presetting tool for a modest outlay.

- Dimensions 150x110x80 mm
- Weight 5.4 kg



Presetting stone, 3R-228U

Mounting stone with bushings and holes for mounting chuck/reference elements. Use together with existing measuring machine or surface plate and a dial indicator.

- Dimensions 300x200x100 mm.



Presetting station, 3R-228.1

Surface plate with reference stops, a mounting stone with bushings and holes for mounting a chuck/reference element and through holes for mounting on the surface plate, and a check stone. A dial indicator is required.

- Dimensions 500x300 mm.



Presetting kit, Econo, 3R-228E & 3R-228EI

Mounting stone with bushings and holes for mounting chuck/reference elements. Use together with existing measuring machine or surface plate.

Note: 3R-228EI delivers with dial indicator measuring inch.

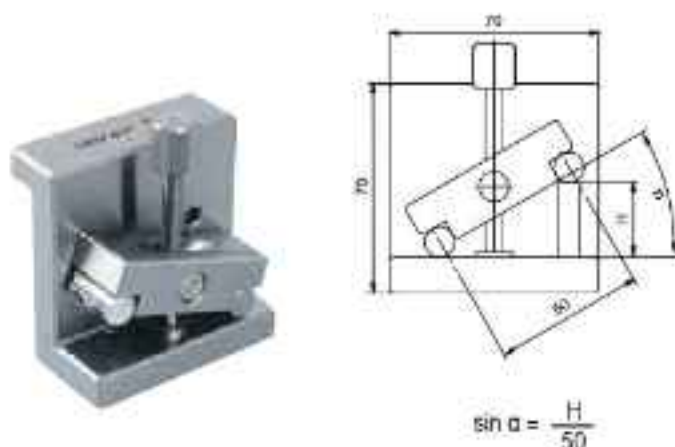
- Dimensions 300x200x100 mm
- Presetting stone
- Measuring stand
- Dial indicator (measures in mm)



Sine ruler, 3R-216

With magnetic attachments for setting angles on swivelling elements. Angles are set with gauge blocks.

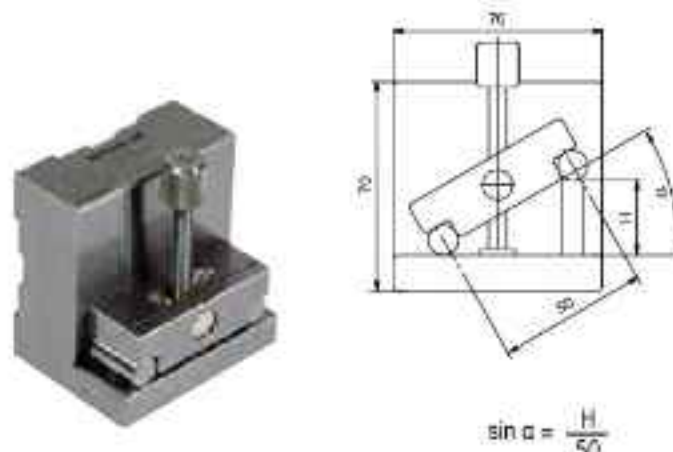
- Measuring length 50 mm
- Weight 1.2 kg



Sine ruler, Macro, 3R-216.6

For setting angles on swivelling elements. Angles are set with gauge blocks.

- Measuring length 50 mm
- Weight 1.4 kg

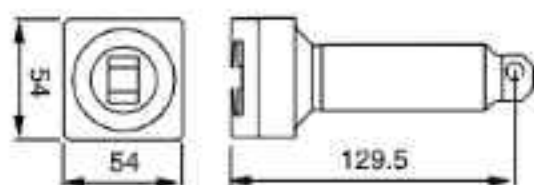


Presetting & inspection

Master, 3R-606.2

Master for determining the position of vertical Macro chucks. Cylinder ground to the Macro references. Supplied with engraved dimensions in the X-, Y- and Z-directions.

- Drawbar not included.



Master, 3R-206.10

Master for horizontal Macro chucks. One long side ground to the Macro references. Supplied with engraved dimensions in the X-, Y- and Z-directions.

- Drawbar not included.
- For automatic changing, 3R-WP1 must be added.



Air unit, 3R-611.4

Unit for operation of pneumatic chucks.

Two positions – open/closed.



Air unit, 3R-611.46

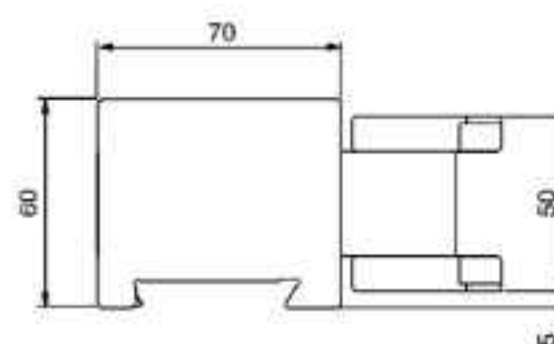
Unit for operation of pneumatic chucks. Three functions – open/neutral/closed.



Wire alignment unit, 3R-220.3

Unit with double-insulated reference contacts for wire alignment.

- Tightening torque 7 Nm
- For Mitsubishi machines
- Four wires in the cable
- Weight 2.2 kg.



Rotating spindles & accessories

Really small parts that are difficult to produce in lathes or grinders can usefully be wire-EDMed using a rotating spindle on the machine table.

Rotating spindle, 3R-6.600-VHS

For clamping in a horizontal Macro chuck. Flushing via the spindle or an external flushing connection.

- Control unit included
- Required drawbar 3R-605.2RS
- Immersible
- Speed range 60-1500 rev/min
- Maximum workpiece weight 2 kg
- Maximum flushing pressure through the chuck 15 bar
- Maximum external flushing pressure 40 bar
- Weight 9.5 kg.



Rotating spindle, 3R-6.300-EHS16

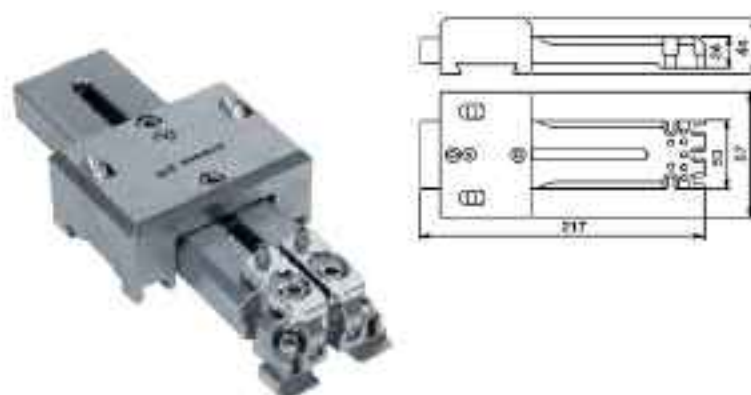
For clamping in a vertical Macro chuck. Flushing via the spindle or an external flushing connection. Recommended collets – Balzer EHS16, Regofix ER16 or Tecnopinz ETS16.

- Control unit included
- Drawbar depends on chosen chuck
- Immersible
- Speed range 60-2000 rev/min
- Maximum flushing pressure through the chuck 15 bar
- Maximum external flushing pressure 80 bar
- Weight 10 kg.



Adjustable support WEDM, 3R-261

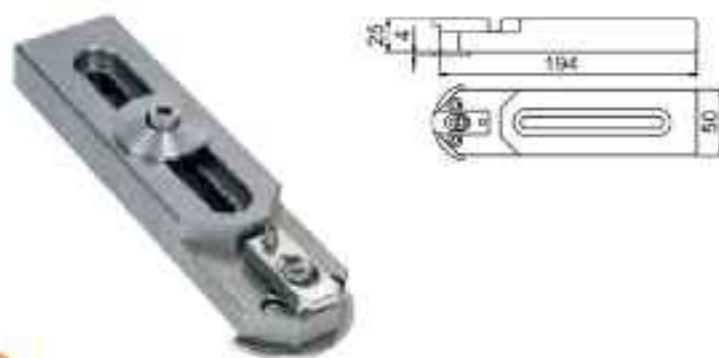
- Adjustable length 38-138 mm
- Adjustable height 0-0.2 mm
- Recommended maximum workpiece weight 20 kg.



Support, 3R-261.1

For mounting directly on the machine table.

- Adjustable length 35-135 mm
- Includes 5 mm spacer for collision free set-up
- Recommended maximum workpiece weight 20 kg
- Weight 1.5 kg.



System Matrix for wire EDMing

Extreme accuracy, Matrix features low construction height, ultra-precise indexing, a drawbar with a big through hole. The through hole allows high/long workpieces to be sunk into the chuck stable/rigid fixation.

Four sizes available in rust resistant material:

Matrix 110

Matrix 142

Matrix 185

Matrix 220

For more info ask your local
System 3R dealer.



Example of produced detail



Example of produced detail



3R Zeroline – Starter set

The Starter-Set 3R Zeroline Mini with clamping support 300 and clamping support 180 is appropriate as basic equipment for manual operation on all WEDM machines with Zeroline table. The manual clamping system with exchangeable support lips allows also collision free clamping.

The clamping supports are quick installed on each Zeroline machine table. The starter set is expandable with all System 3R standard and HP vices and workpiece holding elements, anytime.



Set 3R Zeroline Mini, S 151 500

consisting of:

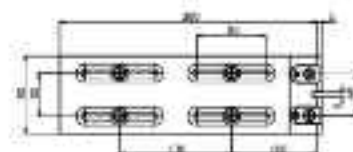
C 666 020	Clamping support 300	x1
C 666 050	Clamping support 180	x1
C 666 052	Support lips "+5"	x2
N 150 000	Support lips "+4"	x4
C 666 022	Support lips "0"	x4
S-150-350	Set screws/prolongations M8	x1
N 153 010	Bushings M8 (inkl. screws)	x6
E 100 007	Set hexagon Allen wrench	x1
Set packed in case		



3R Zeroline clamping support 300, C 666 020

Clamping support for the direct installation on WEDM machine table

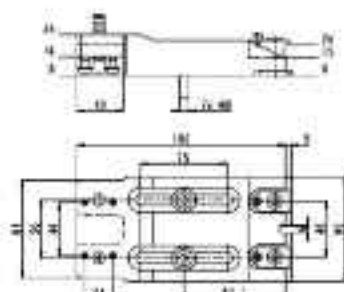
- Support lips "+4" and "+0"
- Recommended maximum workpiece weight 50 kg in application as support element
- Weight 5.3 kg



3R Zeroline clamping support, C 666 050

Clamping support for the direct installation on WEDM machine table.

- Support lips "+5", "+4" and "0"
- 3R interface for the installation of standard and HP holders and vices
- Recommended maximum workpiece weight 50 kg in application as support element
- Weight 3.2 kg



C 666 050

3R-292.6HP



ICS Zeroline – Small part holders

Application: Small parts up to 3 kg
 Adaptation height: 7 mm
 Height of the clamping element: 13 mm
 Mounting: 2 screws M5
 spacing 22 mm
 tightening torques 5 Nm

Adaptation to:
 ICS: All elements with ICS A adaptation
 Unimatic: C 950 120 or via C 950 510
 on C 950 150 / C 950 170

ICS Zeroline adapter A/B, C 665 700 / C 665 720

For mounting directly on the machine table.

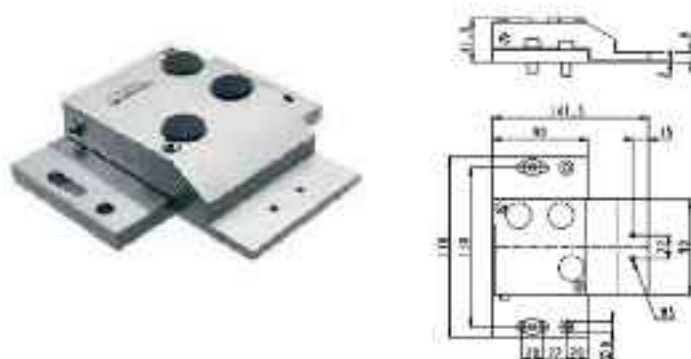
- Suitable on each wire EDM machine
- Fast and simple mounting / dismantling
- Adapters have ground stop faces to align parallel to the axis
- Adjustment of the workpiece using the ICS A (and B) interface of the clamping elements



ICS Levelling head, C 458 200

For mounting directly on the machine table.

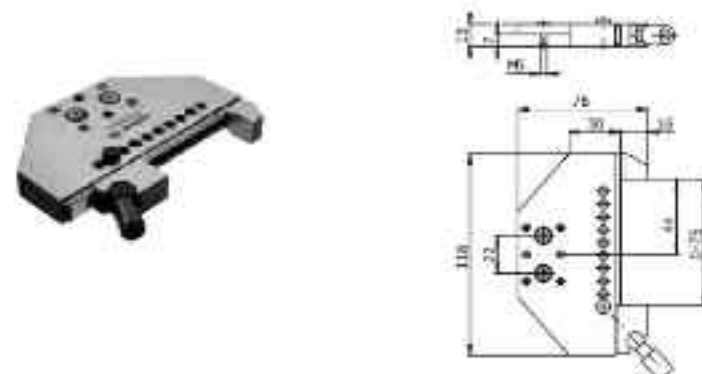
- Adequate levelling function with wide setting range ± 1 mm in all three axis
- Fast and simple mounting, suitable on each wire EDM machine
- Is suited very well for small workpieces



ICS Mecavice A (0-75), C 577 250

Workpiece holder with guide for horizontal parallel clamping.

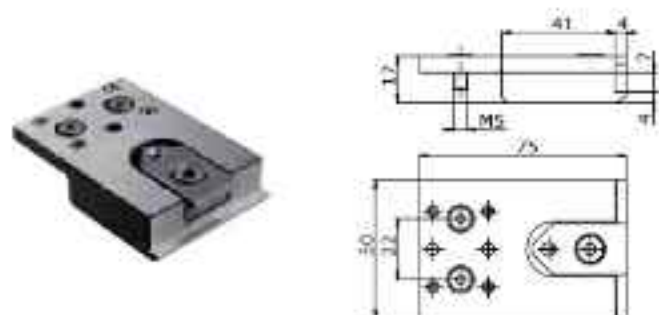
- Functional height 13 mm
- Clamping range 0 - 75 mm
- Maximum workpiece weight 1 kg
- Maximum workpiece dimensions 75 x 75 x 20 mm
- Weight 0,5 kg



ICS Clamping head A (7/50), C 550 650

The main application of the ICS clamp is fixing workpieces of different dimensions in position from two sides.

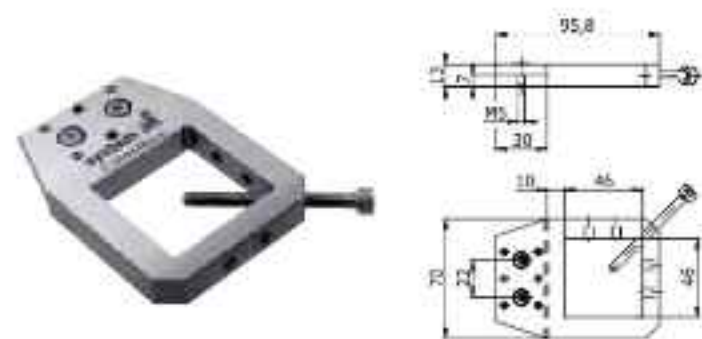
- Clamping range 0 - 10 mm
- Maximum workpiece weight 3 kg - not for overhung clamping!
- Weight 0,3 kg



ICS V-block A 45/45, C 599 450

Workpiece carrier for round and cubic parts.

- Functional height 13 mm
- Clamping range round or cubic up to 45 mm
- Maximum workpiece weight 3 kg
- Maximum workpiece dimensions $\varnothing 45$ mm or 45 x 45 mm
- Weight 0,4 kg

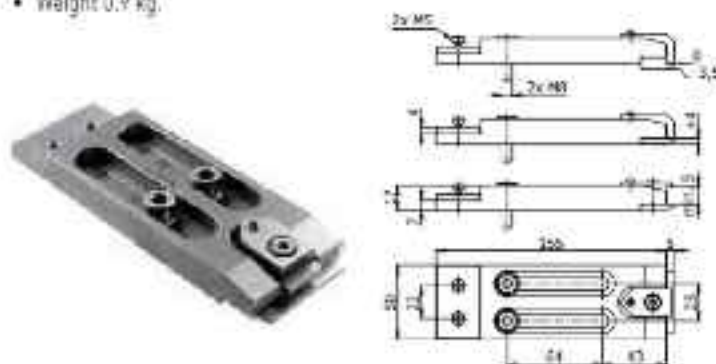


ICS Zeroline – Small part holders

ICS Zeroline clamping support 155, C 666 060

Clamping support for the direct installation on WEDM machine table.

- Support lips $\pm 4^\circ$ and $\pm 1^\circ$
- ICS adaptation A for the installation of ICS clamps & holders
- Recommended maximum workpiece weight 3 kg in application as support element
- Weight 0.9 kg.



ICS Zeroline clamp 90, C 552 630

Clamping support for the direct installation on WEDM machine table.

- Functional height: clamping of workpiece on $Z = 0$
- Recommended maximum workpiece weight 20 kg in application as support element
- Weight 0.25 kg.



ICS Double clamp A (5/80), C 550 670

Clamp for holding thin plates with support lips at zero height. A 4 mm thin shim can be inserted between the adaptation faces for collision free clamping.

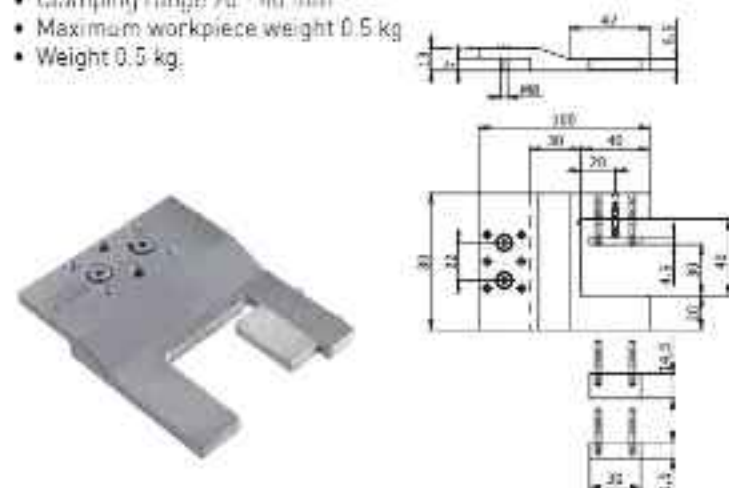
- Clamping range 0 - 5 mm
- Maximum workpiece weight 1 kg - overhung clamping
- Weight 0.4 kg.



ICS Side clamp A (20-40), C 577 200

Collateral clamping of rectangular or square small workpieces from 20 to 40 mm width.

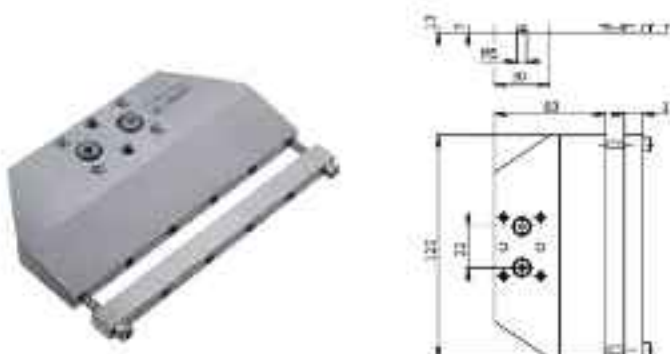
- Functional height 6.5 mm
- Clamping range 20 - 40 mm
- Maximum workpiece weight 0.5 kg
- Weight 0.5 kg.



ICS Flange A (7/120), C 641 900

Support for the lateral mounting of workpiece.

- Functional height 7 mm
- Maximum workpiece weight 1 kg
- Maximum workpiece dimensions width 100 mm max.
- Weight 0.5 kg.

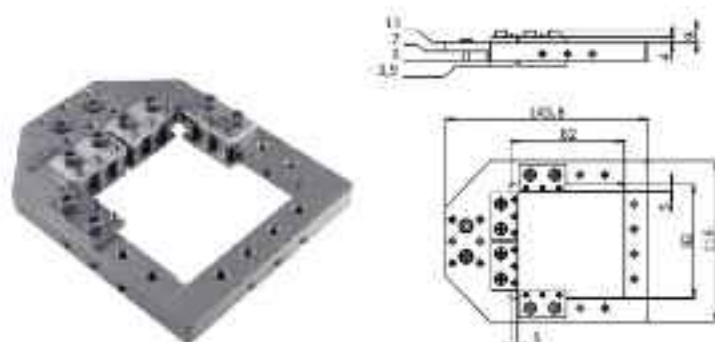


ICS Zeroline – Small part holders & Unimatic adapters

ICS Clamping frame A, C 619 660

Carrier for flat round or cubic workpieces up to 80x80 mm

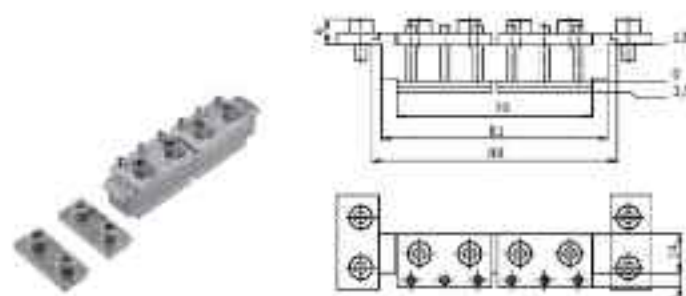
- Functional height 13 mm
- Clamping range round or cubic up to 80 mm / maximum workpiece height 12 mm
- Maximum workpiece weight 1.5 kg
- Maximum workpiece dimensions $\varnothing$ 80 mm or 80x80 mm
- Weight 0.9 kg



ICS Clamping bar to clamping frame A, C 619 670

Clamping bar to use with ICS-clamping frame A C 619 660

- Dimensions 88 x 20 x 26 mm
- Overall height 26 mm (incl. support lips and clamping lips)
- Weight 0.25 kg



Unimatic Adapter manual with adjusting function, C 950 090

Zeroline table adapter manual with adjusting function, for all Unimatic clamping elements

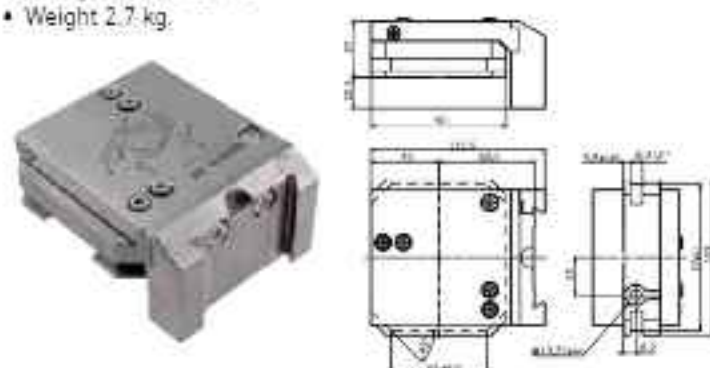
- Functional height 45 mm
- Adjustment range ± 0.2 mm for all three axes
- Weight 3.8 kg



UniMacro Adjusting pallet, C 950 470

For manual mounting of Unimatic holders and Unimatic clamping elements in the Macro system. Adjusting pallet with dovetail guide adaptation

- Adjustment range ± 0.2 mm for all three axes
- Functional height 59 mm, Unimatic pallet placed onto Macro chuck
- Ready for code carrier
- Weight 2.7 kg



Adapter, C 950 280

For mounting Unimatic holders in WEDM, Macro and MacroTwin mounting heads



Unimatic clamping elements

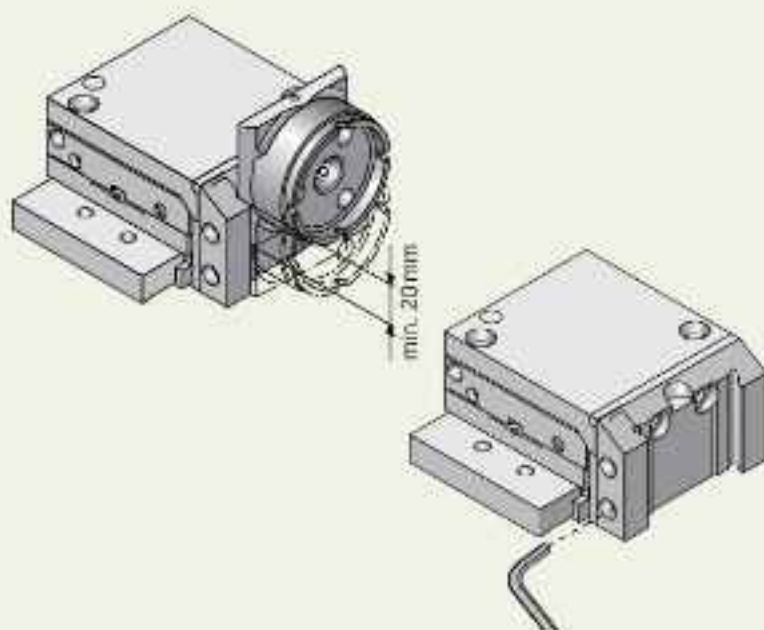
The Unimatic clamping elements are vertically adjustable in the dovetail guide. It is important that the slides of the clamping elements always engage at least 20 mm in the guide.

The Clamping Elements are clamped by means of the two M5 screws at the side. Very little clamping force is required for achieving a very stable connection.

Tightening torque: max. 5 Nm

Important:

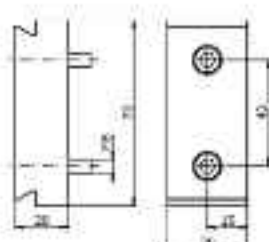
Clamp with both screws only when the slide has engaged over the entire length of the guide.



Unimatic Flange 30/70, C 960 010

Support for the lateral mounting of workpiece.

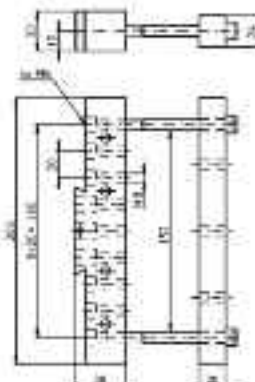
- Functional height 30 mm
- Maximum workpiece weight 12 kg
- Maximum workpiece dimensions 150 x 100 x 100 mm
- Weight 0.3 kg



Unimatic Flange 30/200, C 960 050

Support for the lateral mounting of workpiece.

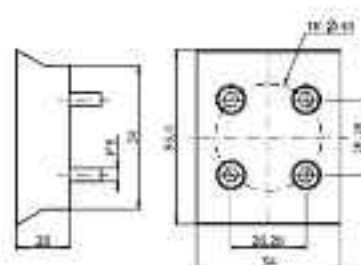
- Functional height 30 mm
- Maximum workpiece weight 15 kg
- Maximum workpiece dimensions 100 x 170 x 150 mm
- Weight 1.5 kg



Unimatic Flange 54/54, C 960 030

Support for the lateral mounting of workpiece.

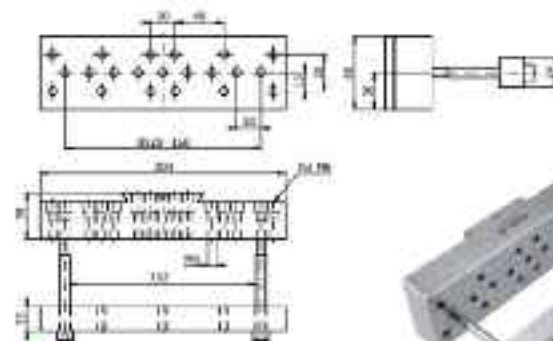
- Functional height 54 mm
- Maximum workpiece weight 15 kg
- Maximum workpiece dimensions 150 x 120 x 100 mm
- Weight 0.3 kg



Unimatic Flange 60/200, C 960 060

Support for the lateral mounting of workpiece.

- Functional height 60 mm
- Maximum workpiece weight 20 kg
- Maximum workpiece dimensions 100 x 130 x 200 mm
- Weight 2.9 kg

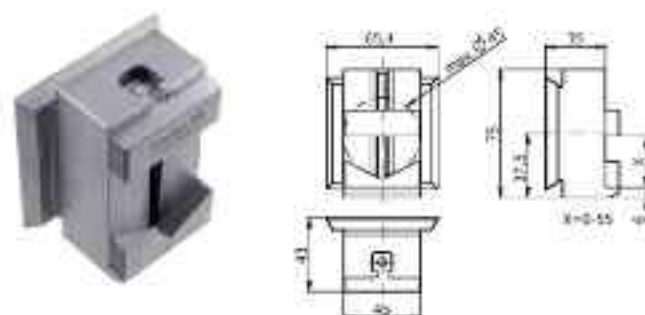


Unimatic clamping elements

Unimatic Vice index 0-55 , C 960 100

Workpiece carrier, 90° indexing, for parallel clamping of round and square parts.

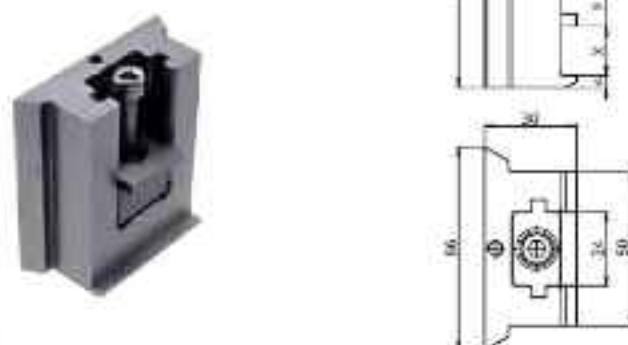
- Functional height 55 mm
- Clamping range square Ø – 55 mm / round Ø10 – 45 mm
- Maximum workpiece weight 4 kg
- Weight 0.9 kg.



Unimatic Vice 20-60, C 960 120

Workpiece carrier with guide for vertical parallel clamping:

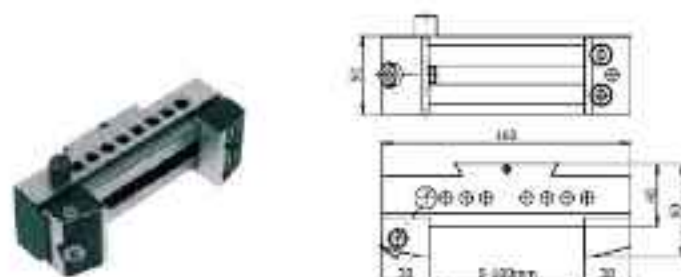
- Functional height 60 mm
- Clamping range 20 – 60 mm
- Maximum workpiece weight 6 kg
- Maximum workpiece dimensions 60 x 100 x 120 mm
- Weight 0.8 kg



Unimatic Vice 0-100, C 960 160

Workpiece holder with guide for horizontal parallel clamping

- Functional height 50 mm
- Clamping range 0 - 100 mm
- Maximum workpiece weight 12 kg
- Maximum workpiece dimensions 100 x 120 x 130 mm
- Weight 2.0 kg



Unimatic Vice 10-30 . C 960 110

Workpiece carrier with guide for vertical parallel clamping

- Functional height 30 mm
- Clamping range 10 – 30 mm
- Maximum workpiece weight 3 kg
- Maximum workpiece dimensions 30 x 100 x 120 mm
- Weight 0.5 kg



Unimatic Vice 40-100, C 960 130

Workpiece carrier with guide for vertical parallel clamping

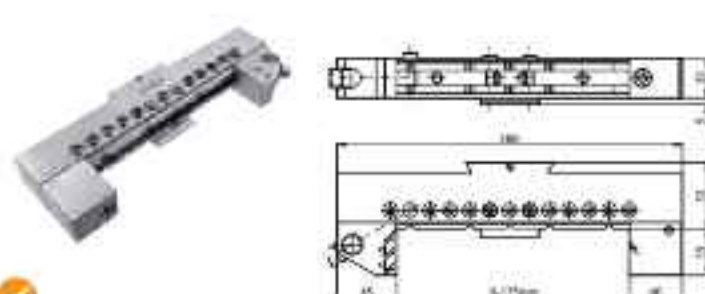
- Functional height 100 mm
- Clamping range 40 – 100 mm
- Maximum workpiece weight 9 kg
- Maximum workpiece dimensions 100 x 100 x 120 mm
- Weight 1.2 kg



Unimatic Vice 0-175, C 960 180

Workpiece holder with guide for horizontal parallel clamping

- Functional height 30 mm
- Clamping range 0 – 175 mm
- Maximum workpiece weight 10 kg
- Maximum workpiece dimensions 100 x 120 x 160 mm
- Weight 2,4 kg

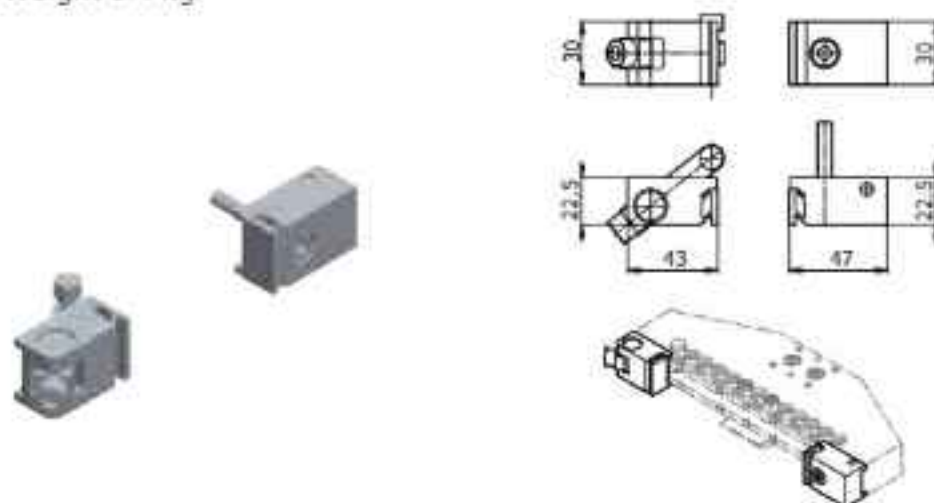


Unimatic clamping elements & System adapters

Vice jaw set, S 150 100

Jaw set for Mecavice B and Unimatic Vice with guide for horizontal parallel clamping

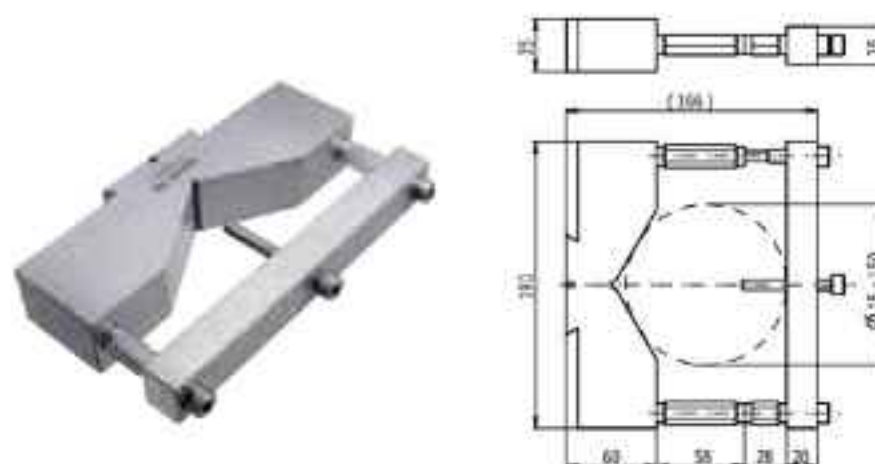
- Functional height 30 mm
- Clamping depth jaw 18 mm
- Maximum workpiece weight 5 kg
- Weight 0.4 kg



Unimatic V-block Ø15-150, C 960 260

Workpiece holder for round parts.

- Functional height 35 mm
- Clamping range Ø 15 – 150 mm
- Maximum workpiece weight 15 kg
- Maximum workpiece dimensions Ø 150 x 100 mm
- Weight 1.8 kg



System adapter

allows the user to employ the total diversity and strengths of all System 3R clamping elements on his machine and tooling configurations.

Unimatic Adapter A, B or C

Adapter for ICS clamping elements, with Unimatic dovetail slide.

C 950 510

- ICS A
- Weight 0.3 kg

C 950 530

- ICS B
- Weight 0.4 kg

C 950 550

- ICS C
- Weight 0.6 kg



Adapters

For mounting ICS holders in WEDM, Macro and MacroTwin mounting heads.

C 457 940

- ICS A

C 457 960

- ICS B

C 457 980

- ICS C



Frames

Frames are large palletising systems adapted to the WEDM machine table dimensions. Frames are available for Macro WEDM.

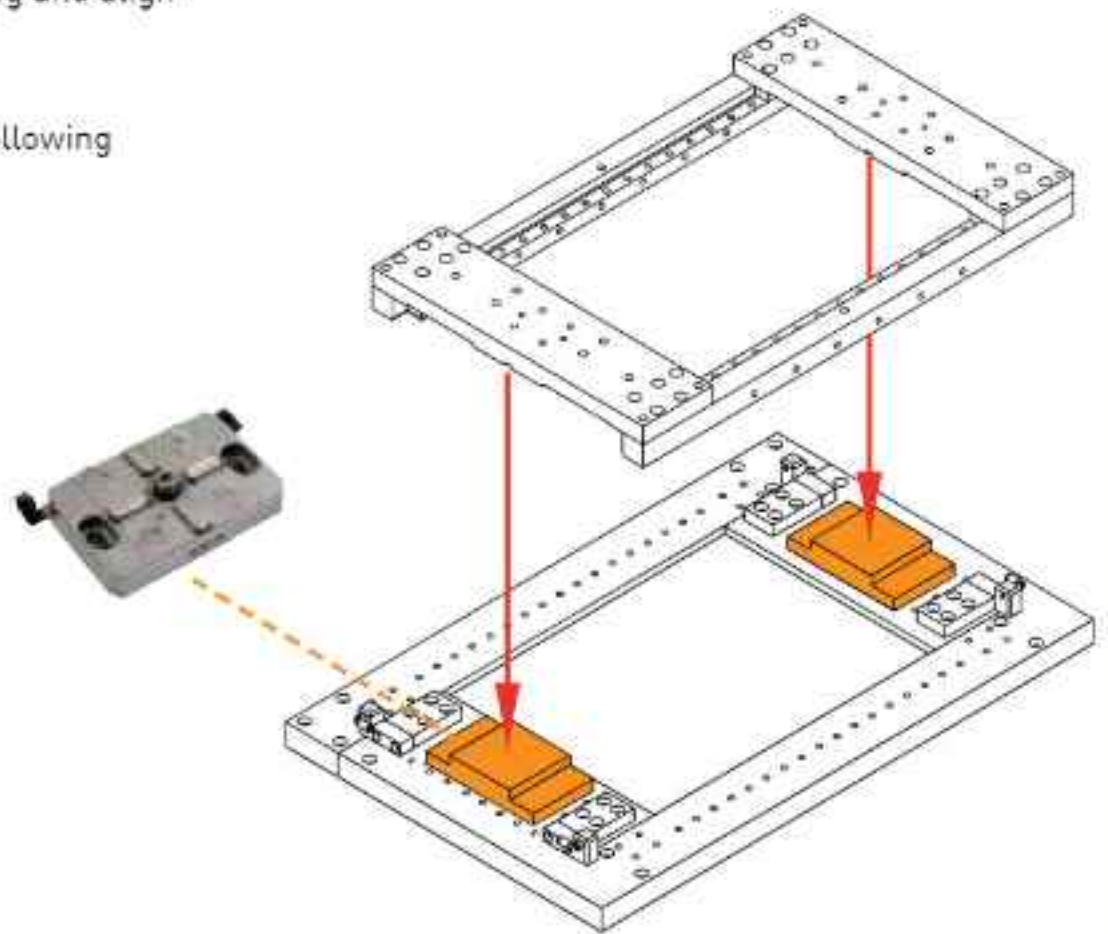
Frames

The rugged design enables large workpieces to be clamped and changed in the WEDM machine with repeatable accuracy. Adjusting/designing the clamping bars to the specific workpieces significantly reduces the clamping and alignment effort.

Components

The basic frame equipment comprises the following components:

- + Machine equipment
- + Pneumatic control
- + Frame
- + Clamping bars.



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 Compact Servo, WorkPartner 1+, Transformer and Fanuc - four "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.



➤ **Mr. A.R. VIJAY KUMAR – GENERAL MANAGER, CUSTOMER SUPPORT**

Instrumentation Engineer – 34 Years of Experience

Machine Building SPM, Die & Mould maintenance, Service of CNC High

Speed Milling, EDM, Wirecut EDM, Robots, Mechanical / Electric Powder

Compacting Presses & Torque Analyse Equipments, SYSTEM 3R Work holding Devices

Trained extensively in reputed manufacturers in Far East,

Europe and UK. Thorough knowledge on Indian

Industries, on site installations & Customer Support



TECHSTONE TEAM

▶ **Mr. VENKATA REDDY RUDRAPPA – GENERAL MANAGER , MARKETING & SALES**

Graduate with over 23 years of experience in Industrial Marketing & Sales.

SYSTEM 3R EDM / WEDM / Milling Machines with Toolings / Powder Compact Presses

Trained extensively in Far East and Europe.

Trained in Reputed Manufacturer Support Base Frequently.

- ▶ Trained in Setting up Work Partners (ROBOTS) with
SYSTEM 3R Work holding and Tooling devices.



TECHSTONE TEAM

➤ **Mr. V.VENKATESH – Dy. Manager, CUSTOMER SUPPORT & MARKETING**

Electronics Engineer with 22 Years of Experience

Maintenance, Service of CNC High Speed Milling, EDM, Wire cut EDM, Robots,
Mechanical Presses, Powder Compacting Presses, Metrology Equipments, Building
SPM's for Variety of applications

Trained extensively in reputed manufacturers in Far East, EUROPE & UK

Thorough knowledge on Indian Industries, On Site installations & Customer Support



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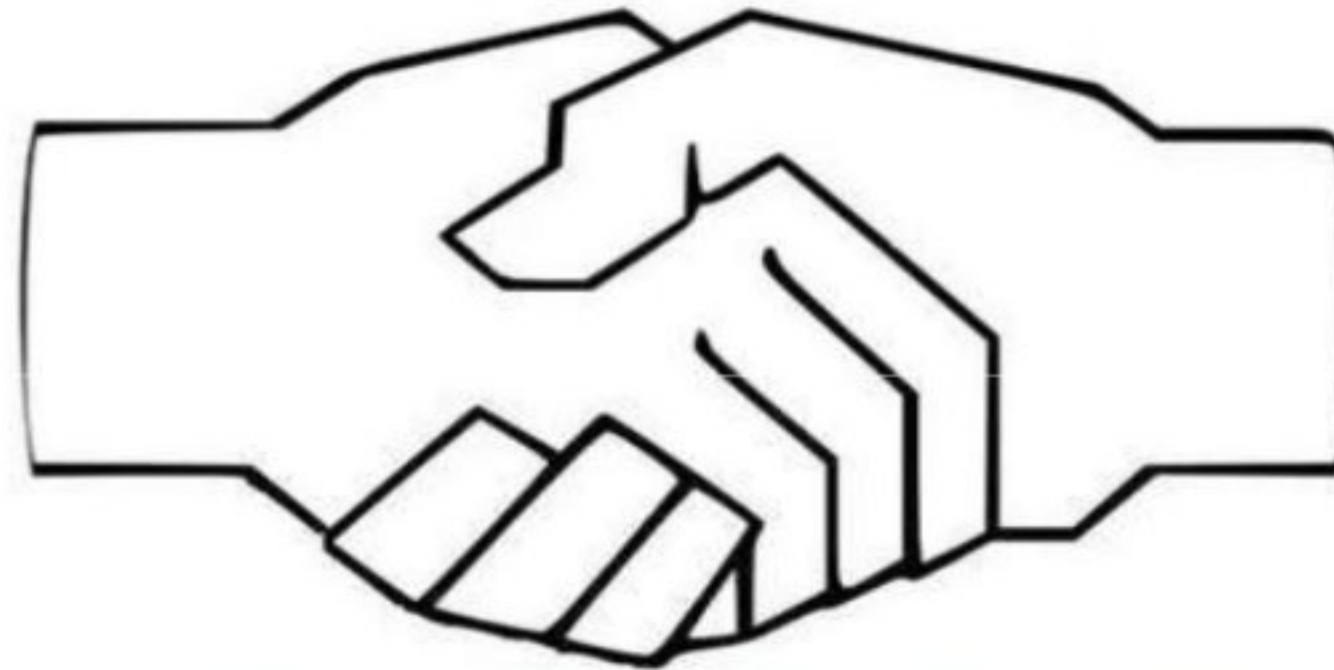
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THANK YOU FOR YOUR VALUABLE TIME



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