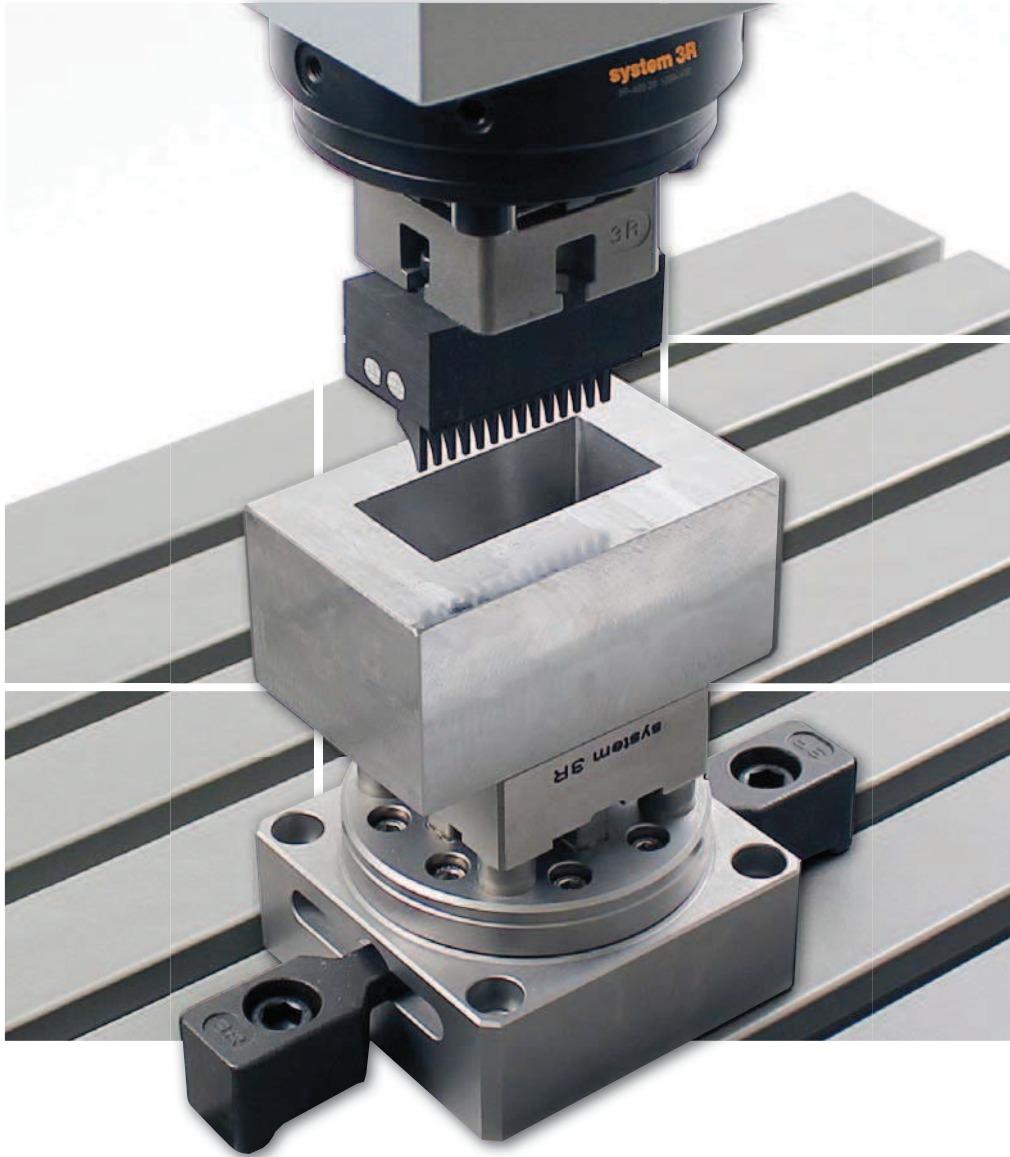
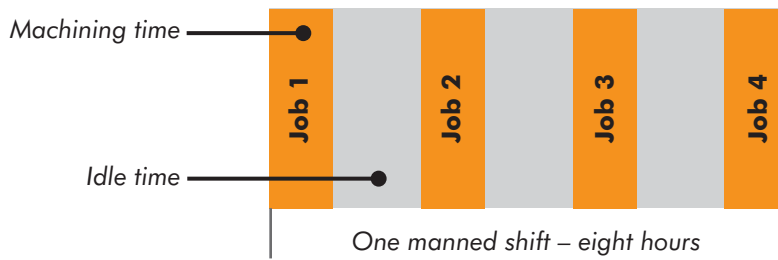


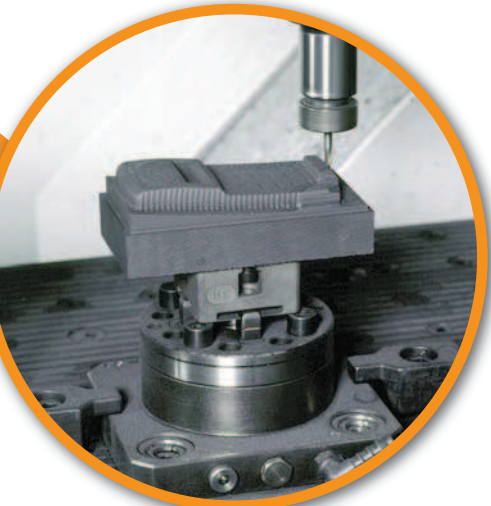
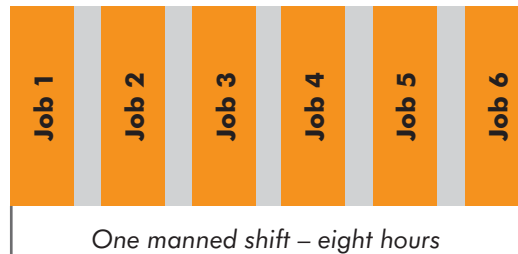
Reference systems for electrode manufacturing & EDMing



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

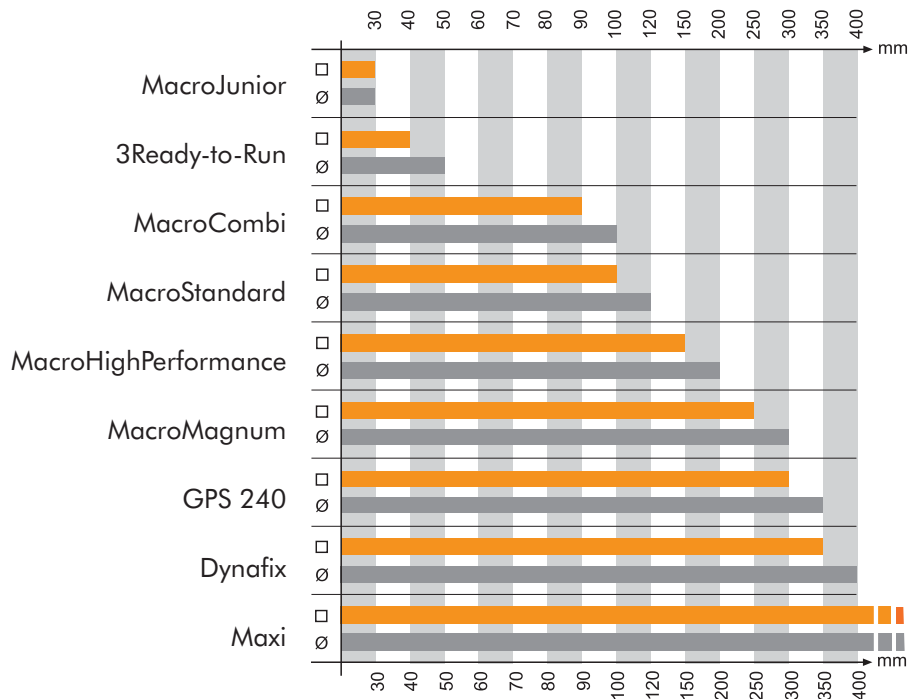
The engineering industry is complex. Every company is unique in terms of type of production, machinery, capacity etc.

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

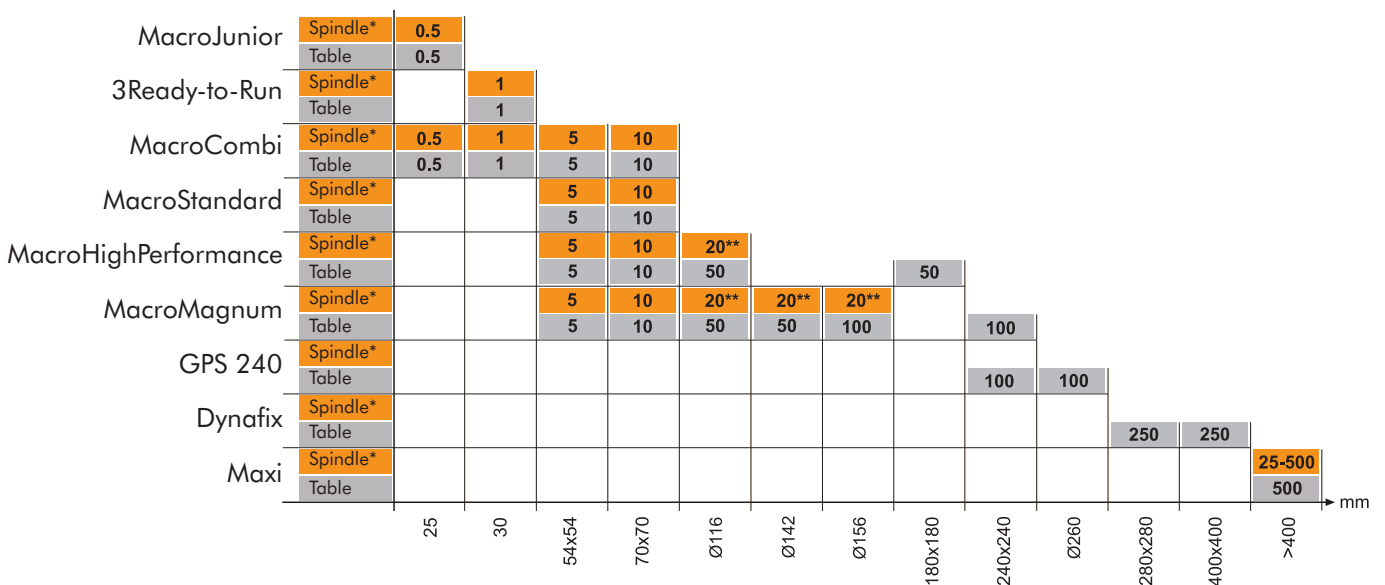
For every size of pallet there is a "recommended"

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

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

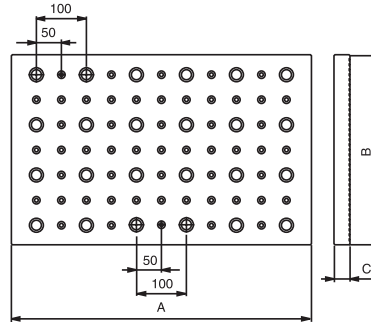
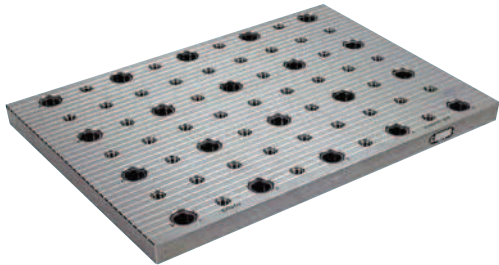
Reference tables

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 R° hole first.

3R-901-10E

- 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

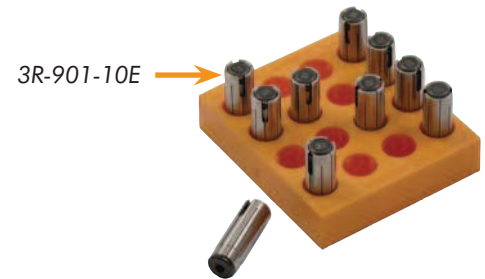
3R-901-20E

- 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

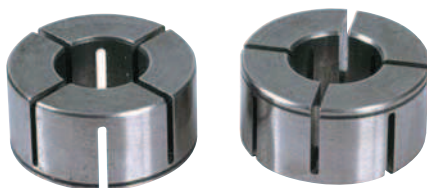


Slotted bushes

3R-903-XX.XX

Bushes of hardened spring steel 54 HRC.

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



Art. No.

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

Outside diameter (mm)

3Refix

Bushings

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



3R-902-10E

Bore / mm.	10H7
Outside diameter / mm	15h6
Height / mm	12
Supplied in sets of	30

3R-902-19.7E

Bore / mm.	19.7
Outside diameter / mm	28h6
Height / mm	20
Supplied in sets of	10

3R-902-20.0E

Bore / mm.	20H6
Outside diameter / mm	28h6
Height / mm	20
Supplied in sets of	10

3R-902-20.3E

Bore / mm.	20H6
Outside diameter / mm	28.3
Height / mm	20
Supplied in sets of	10



Plastic plug 3R-915-20E

Plug to protect Ø20 mm hole from dirt
• Supplied in sets of 50 pcs.



Plastic screw 3R-915-M12E

To protect M12 holes with protective countersinking from dirt.
• Supplied in sets of 50 pcs.



Torque wrench 3R-614-04

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

- 4 Nm



Torque wrench 3R-914-10

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

- 10 Nm

