GPS 70, GPS 120, GPS 240
Reference Systems for Precision Production
and Die-Sinking EDM
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HOW TO USE THIS CATALOGUE

1. What are the maximum dimensions of the workpieces that you want to machine?

Example:
Square: Up to a maximum of □ 120 x 150 mm (steel) ➞ approx 17 kg
Round: Up to a maximum of Ø 170 x 100 mm (steel) ➞ approx 17.8 kg

2. On the basis of 1, look for the suitable system size in the following table.
Example:
The GPS 120 system is the most likely for consideration.

3. Based on the maximum weight of the workpiece, define the suitable size for the pallet/reference element.
Example:
Max. weight < 20 kg gives a GPS 120 reference system.
Preconditions for efficient, economical and flexible production

Every production plant uses clamping elements, jigs, fixtures, reference pallet systems and many other facilities to be able to clamp the range of workpieces machined efficiently and economically.

The GPS clamping system allows the machine table to be equipped individually with position-determining chucks. It thus allows the complete work area to be used and offers substantial advantages in relation to reducing setting times and enhanced flexibility thanks to substitution of preset workpieces. Consequently, it opens up entirely new options for manual and automated workpiece change.

- Maximisation of machine runtimes by reduction in setting times by up to 90%
- Setting outside of the machine
- Standardisation of clamping systems
- Optimisation of production technology and product quality
- Unmanned production by automation
- Modernisation of existing machines by retrofitting
What do car racing and GPS have in common?

**RACING TACTICS**

**HIGH-TECH RACING CAR**

- **Pit stops**
  - A race can be won or lost in the pits!

- **Conversion of devices**
  - Faster conversions mean not only more working time and higher productivity but also faster delivery times.

**WORK SCHEDULING**

**HIGH-TECH CHUCKS**

<table>
<thead>
<tr>
<th>Pit stops</th>
<th>Conversion of devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>A race can be won or lost in the pits!</td>
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</tr>
</tbody>
</table>

**SPEED**

- ... and the car is ready to drive again!
- ... and the machine is ready to earn more money again!

**ENHANCED PRODUCTIVITY**

- Racing situations
  - The planned racing tactics must be adapted quickly and flexibly to any racing situation.

- Express order

**FLEXIBILITY**

**VICTORY!**

- Every victory brings the title of world champion closer!

**BUSINESS SUCCESS!**

- Our know-how for the success of our customers!
**GPS CHUCK, MANUAL**

- **System size:** GPS 70 and 120
- **Application:** turning, milling, drilling, grinding, die-sinking EDM, set-up and presetting station
- **Repetition accuracy:** 0.002 mm
- **Indexing:** $4 \times 90^\circ$
- **Clamping force:** adjustable, max. 3000 N
- **Clamping:** spring force with self-clamping ball-lock
- **Clamping/Releasing:** manual
- **Flushing:** central, lateral connection
- **GPS pallets:** no clamping spigot required
- **Material:** stainless steel, hardened

**GPS CHUCK, PNEUMATIC EDM**

- **System size:** GPS 70 and 120
- **Application:** cNC die-sinking EDM machines
- **Repetition accuracy:** 0.002 mm
- **Indexing:** $4 \times 90^\circ$
- **Clamping force:** approx. 3000 N
- **Clamping:** spring force with self-clamping ball-lock
- **Releasing:** with compressed air (6 bar)
- **Flushing:** central
- **Cleaning of Z-supports:** automatic
- **Operation:** pallet presence monitoring
- **GPS pallets:** with clamping spigot for use in electrode changer
- **Material:** steel, hardened

**GPS CHUCK, PNEUMATIC**

- **System size:** GPS 70 and 120
- **Application:** manual and automatic palletizing of machine tables for metal-cutting and die-sinking EDM applications as well as for rotary axis
- **Repetition accuracy:** 0.002 mm
- **Indexing:** $4 \times 90^\circ$
- **Clamping force:** approx. 3000 N
- **Clamping:** spring force with self-clamping ball-lock
- **Releasing:** with compressed air (6 bar)
- **Cleaning of Z-supports:** automatic
- **Operation:** pallet presence monitoring
- **GPS pallets:** with clamping spigot for use in electrode changer
- **Material:** stainless steel, hardened
**GPS PALLET, ALUMINIUM**
Material: aluminium die-cast, face-turned and calibrated

Clamped pallet
The axial spring of the centring cams assures optimal system accuracy and provides a reliable transmission of substantial machining forces.

Unclamped pallet
Offers more than 30,000 clamping operations with constant precision.

**GPS PALLET, STEEL, GROUND**
Material: stainless steel, hardened and ground

Clamped pallet
The axial spring of the centring cams assures optimal system accuracy and provides a reliable transmission of substantial machining forces.

Unclamped pallet
Offers more than 100,000 clamping operations with constant precision.
GPS 70 CHUCKS FOR METAL-CUTTING OPERATIONS

The GPS 70 chucks are suitable for clamping applications on drilling, milling and grinding machines, machining centres and measuring machines and for a variety of applications in precision mechanics as well as in tool and die making. The GPS 70 chucks are mounted to the machine table.

**Facts**
- Material: stainless steel, hardened / flange: stainless steel, heat pre-treated
- Repetition accuracy: 0,002 mm
- Clamping force: 3.000 - 3.800 N
- Indexing accuracy: 0,005 mm
- Indexing: 4 x 90°

**GPS 70 Chuck, manual C 188 300**
For turning, milling, grinding, die-sinking EDM.
- Dimension: ø 72 x 57.4 mm
- Mounting: 4x M6 screws
- Clamping/releasing: manual
- Flushing: lateral inlet

**GPS 70 Machine, manual C 530 210**
For milling, grinding, die-sinking EDM. Suitable for the 5-sided machining of electrodes and workpieces. One side is ground square with the base surface.
- Dimension: 100 x 100 x 70 mm
- Mounting (from the top): 70 x 70 mm, 4x MB screws through holes (horizontal)
- Mounting (from the bottom): on GPS 240 pallet, 80 x 80 mm, 4x MB screws threaded holes (horizontal), 40 x 40 mm, 4x MB screws threaded holes (vertical)
- Clamping/releasing: manual

**GPS 70 Machining cube, manual C 190 000**
For turning, milling, grinding, die-sinking EDM.
- Dimension: 85 x 35 mm
- Mounting: 4x M6 screws
- Required clamping spigot: S 500 062

**GPS 70 Clamping unit, pneumatic C 188 720**
For die-sinking EDM, turning, milling, grinding.
- Dimension: ø 99 x 22 mm
- Mounting: 6x M6 screws (on flange C 188 730)
- Clamping/releasing: pneumatic
- Air pressure: 6 bar
- Z-support cleaning: yes

**Flange for GPS 70 clamping unit C 188 730**
Fits on C 188 720.
- Dimension: ø 140 x 20 mm
- Mounting: 6x M8
- Connections:
  A = releasing/clamping
  B = Z-support cleaning
  C = drain or over-pressure
GPS 70 PALLETS, ALUMINIUM
Using this pallet with its standardized hole pattern, any type of workpiece or any device can be attached from below, thus permitting collision-free 5-way machining. Its well thought out pallet design completely protects its X, Y and Z references from shocks and contamination. The pallets are prepared for the use in automation.

Facts
- Material: coined cast aluminium
- Dimensions: ø 69.5 x 16.7 ±0.01 mm
- Hole pattern for M6 screws
- Flatness: 0.01 mm
- X-Y-position: coined cams
- Weight: 0.2 kg

GPS 70 Pallet, aluminium
C 695 050
Workpiece or electrode holder.
- Not prepared for automation

Set of pallets
S 500 010
- Set of 9x C 695 050

GPS 70 Pallet, aluminium
C 695 040
Workpiece or electrode holder. Prepared for automation with thread M5 for code carrier, with gripper contour.
- Scope of delivery: pallet without code carrier fixture and without code carrier

Set of pallets
S 500 011
- Set of 9x C 695 040

GPS 70 Pallet, aluminium
C 695 045
Workpiece or electrode holder. Ready for use for automation with assembled code carrier and gripper contour.
- Scope of delivery: pallet with C 960 740 code carrier fixture and 3R-863.01 code carrier

Set of pallets
S 500 012
- Set of 9x C 695 045
**GPS 70 PALLET, STEEL**

Using this pallet with its standardized hole pattern, any type of workpiece or any device can be attached from below, thus permitting collision-free 5-way machining. Its well thought out pallet design completely protects its X, Y and Z references from shocks and contamination. The pallets are prepared for the use in automation.

**Facts**

- Material: Stainless steel, hardened
- Dimensions: ø 69.7 x 22 ±0.005 mm
- Surface quality: Ground finish
- Hole pattern: 6x ø 6.5 mm on ø 40 mm pitch circle
  2x ø 5.7 mm (prepared for pin holes)
- 42 mm spacing

**GPS 70 Pallet, steel**

C 695 265

Workpiece and device holder for precision production. Prepared for automation with thread M5 for code carrier, with gripper contour.

- Scope of delivery: pallet

C 695 270

Workpiece and device holder for precision production. Prepared for automation with protection ring, code carrier fixture and gripper contour, without code carrier.

- Scope of delivery:
  - C 695 265 pallet
  - C 695 272 pallet protection ring
  - C 960 740 code carrier fixture

C 695 275

Workpiece and device holder for precision production. Prepared for automation with protection ring, code carrier fixture and gripper contour, with code carrier.

- Scope of delivery:
  - C 695 265 pallet
  - C 695 272 pallet protection ring
  - C 960 740 code carrier fixture
  - 3R-863.01 code carrier
**Control unit**

*C 960 500*

Manual control unit for clamping and releasing chucks C 188 700 and C 188 720.

- Connector materials: included in delivery

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**GPS 70 Clamping force testing device**

*C 546 900*

Measurement and adjustment of clamping force for manual chucks.

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**GPS 70 Reference pallet**

*C 846 360*

For the axial XY alignment of the GPS chuck.

- Material: stainless steel, hardened
- Height: 47 mm
- Construction: 2-piece, form-fitting design
- Positioning accuracy of the centre bore: 0.002 mm/0°
- Parallelism with system axis: 0.003 / 120 mm

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**GPS 70 Inspection plug**

*C 846 260*

For the axial and radial alignment of the GPS chuck with Z.

- Material: stainless steel, hardened
- Height: 160 mm
- Concentricity: 0.005 mm at 150 mm
- Construction: 2-piece, form-fitting design

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**GPS 70/120 Pallet seal**

*C 531 000*

Sealing of unused bores.

- Material: elastomer
- Delivery includes: set of 100 pieces

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**GPS70 Collet chuck ER 32**

*C 735 110*

Insertion of collet chucks ø 2 – 20 mm.

- Material: stainless steel, hardened
- Dimension: ø 69.7 x 59 mm
- Collet chuck key: included in delivery
GPS 120 CHUCKS FOR METAL-CUTTING OPERATIONS

The GPS 120 chucks are suitable for clamping applications on drilling, milling and grinding machines, machining centres and measuring machines and for a variety of applications in precision mechanics as well as in tool and die making. The GPS 120 chucks are mounted to the machine table.

**GPS 120 Chuck, manual C 188 320**

For turning, milling, grinding, die-sinking EDM.

- Dimension: ø 108 x 57.4 mm
- Mounting: 4x M8 screws
- Clamping/releasing: manual
- Flushing: lateral inlet

**GPS 120 Machining cube, manual C 530 310**

For milling, grinding, die-sinking EDM. Suitable for the 5-sided machining of electrodes and workpieces. One side is ground square with the base surface.

- Dimension: 136 x 136 x 80 mm
- Mounting (from the top): 12x120 mm, 4x M8 screws threaded holes (horizontal)
- Mounting (from the bottom): on GPS 240 pallet; 90x90 mm, 4x M8 screws through holes (horizontal), 120x40 mm, 4x M8 screws threaded holes (vertical)
- Clamping/releasing: manual

**GPS 120 Clamping unit, pneumatic C 188 710**

For die-sinking EDM, turning, milling, grinding.

- Dimension: ø 118 x 22 mm
- Mounting: ø 6 screws (on flange C 188 710)
- Clamping/releasing: pneumatic
- Air pressure: 6 bar
- Z-support cleaning: yes

**Flange for GPS 120 clamping unit C 188 710**

Fits on C 188 700.

- Dimension: ø 160 x 20 mm
- Mounting: ø 6 M8
- Connections:
  - A = releasing/clamping
  - B = Z-support cleaning
  - C = drain or over-pressure

**Facts**

- Material: stainless steel, hardened/ flange: stainless steel, heat pre-treated
- Repetition accuracy: 0.002 mm
- Clamping force: 3.000 - 3.800 N
- Indexing accuracy: 0.005 mm
- Indexing: 4 x 90°
GPS 120 PALLETs, ALUMINIUM

Using this pallet with its standardized hole pattern, any type of workpiece or any device can be attached from below, thus permitting collision-free 5-way machining. Its well thought out pallet design completely protects its X, Y and Z references from shocks and contamination. The pallets are prepared for the use in automation.

**Facts**
- Material: coined cast aluminium
- Dimensions: ø 124x16,6 ±0,01 mm
- Hole pattern for M6 screws
- Flatness: 0.025 mm
- XY-position: coined cams
- Weight: 0.5 kg

**GPS 120 Pallet, aluminium C 695 100**
Workpiece or electrode holder.
- Not prepared for automation

**Set of pallets**
- S 500 020
  - Set of 4x C 695 100

**GPS 120 Pallet, aluminium C 695 140**
Workpiece or electrode holder. Prepared for automation with thread M5 for code carrier, with gripper contour.
- Scope of delivery: pallet without code carrier fixture and without code carrier

**Set of pallets**
- S 500 021
  - Set of 4x C 695 140

**GPS 120 Pallet, aluminium C 695 145**
Workpiece or electrode holder. Ready for use for automation with assembled code carrier and gripper contour.
- Scope of delivery: pallet with C 960 740 code carrier fixture and 3R-863.01 code carrier

**Set of pallets**
- S 500 022
  - Set of 4x C 695 145

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GPs 120 FOR METAL-CUTTING OPERATIONS
GPS 120 Pallet, steel, GROUND

Using this pallet with its standardized hole pattern, any type of workpiece or any device can be attached from below, thus permitting collision-free 5-way machining. Its well thought out pallet design completely protects its X, Y and Z references from shocks and contamination.

The pallets are prepared for the use in automation.

Facts

- Material: stainless steel, hardened and ground
- Dimensions: ø 118 x 26 ±0.005 mm
- Surface quality: ground finish
- Hole pattern: 18 holes for M6

GPS 120 Pallet, steel

**C 695 365**

Workpiece and device holder for precision production.

- Scope of delivery: pallet

GPS 120 Pallet, steel

**C 695 370**

Workpiece and device holder for precision production. Prepared for automation with protection ring, code carrier fixture and gripper contour, without code carrier.

- Scope of delivery: C 695 365 pallet
  - C 695 372 pallet protection ring
  - C 960 740 code carrier fixture

GPS 120 Pallet, steel

**C 695 375**

Workpiece and device holder for precision production. Prepared for automation with protection ring, code carrier fixture and gripper contour, with code carrier.

- Scope of delivery: C 695 365 pallet
  - C 695 372 pallet protection ring
  - C 960 740 code carrier fixture
  - 3R-863.01 code carrier
GPS 70/120 Pallet seal
C 531 000
Sealing of unused bores.
- Material: elastomer
- Delivery includes: set of 100 pieces

GPS 120 Chip protection
C 695 176
Chip protection ring for GPS 120 chucks when used with GPS 70 palletizing system.
- Material: aluminum, anodized
- Dimension: ø 120 x 13,5 mm

Control unit
C 960 500
Manual control unit for clamping and releasing chucks C 188 700 and C 188 720.
- Connector materials: included in delivery

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

Code carrier, fixture
C 960 740
Fixture for code carrier 3R-863.01-10.

3R-863.01-10
Sets of 10 pieces.
GPS 70/120 CHUCKS FOR LATHE

- GPS 70/ GPS 120 Palletizing system
- Adapter on request
- Chuck C 188 300
- Chuck C 188 320

GPS 120 FOR METAL-CUTTING OPERATIONS
GPS 240 CLAMPING SYSTEM
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 allows clamping from below of workpieces, fixtures and accessories such as vices, three-jaw chucks and magnetic tables. This gives collision-free mounting, even with five-sided machining. The economical, pressure-die-cast aluminium pallets are very light, making them especially 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.

GPS 240 Chucks automatic
• Building-in height: 52 mm
• Required air pressure: 6 bar
• Air-blast cleaning of the references
• Weight: 17 kg

C 219 000
For manual machining operations.
• One air connection
• Clamping force: 30,000 N
• Recommended actuator: C 810 820 or C 810 720

C 219 100
For manual and automatic machining operations.
• 4 air connections
• Clamping force: 30,000 N/80,000 N
• Recommended actuator: C 810 830

GPS 240 Chuck automatic with hole Ø100 mm
C 219 400
For special applications.
• Building-in height: 58 mm
• Required air pressure: 8 bar
• Air-blast cleaning of the references
• Weight: 17 kg
• Clamping force: 30,000 N
• Recommended actuator: C 810 830
GPS 240 Chuck round with hole Ø54 mm
C 217 100
Pneumatic chuck, intended mainly for applications in lathes and milling machines.
- Required air pressure: 6 bar
- Air-blast cleaning of the references
- Clamping force: 30,000 N
- Weight: 16 kg
- Recommended control unit: C 810 820 or C 810 720

GPS 240 Chuck round with hole Ø100 mm
C 217 400
For special applications.
- Building-in height: 58 mm
- Required air pressure: 8 bar
- Air-blast cleaning of the references
- Clamping force: 30,000 N
- Weight: 16 kg
- Recommended control unit: C 810 820 or C 810 720

GPS 240 Pneumatic chuck
C 219 200
For manual and automatic machining operations.
- Air connections positioned centrally on the underside, for applications on a rotating table (- prism / - Z-cleaning / - clamping/releasing / - Turbo/ventilation)
- Clamping force: 30,000 N/80,000 N

GPS 240 Pneumatic chuck with built-in Macro chuck
C 219 600
Pneumatic chuck with built-in Macro chuck.
Intended mainly for measuring machines.
- Required air pressure: 6 bar
- Recommended control unit: C 810 830
- Air-blast cleaning of the references
- Weight: 22 kg

GPS 240 Dummy chuck
C 210 060
Dummy chuck for clamping a GPS 240 pallet on a tipping station.
- Required air pressure: 6 bar
- Weight: 9.5 kg

GPS 240 Chuck for carriage on request
Central feed for both chucks possible. The machine table should have 4 connections, 2x for GPS 240 / 2x for chuck on pallet.
GPS 240 Pallet precision production
C 694 400

Milled, coined cast aluminium pallet. Suitable for high-speed milling and demanding milling operations.

- Construction height: 48.0 ± 0.005 mm
- X/Y-centring with spring-loaded pin
- Flatness: 0.02 mm
- Weight: 4 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 531 500 sealing plugs

S 500 160
- Set of 4x C 694 400

S 500 170
- Set of 10x C 694 400

GPS 240 Pallet precision production
C 694 470

Milled, coined cast aluminium pallet with assembled code carrier fixture, without code carrier.

- Construction height: 48.0 ± 0.01 mm
- X/Y-centring with coined cam
- Flatness: 0.02 mm
- Weight: 4 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 531 500 sealing plugs and C 960 740 code carrier fixture (without code carrier)

S 500 161
- Set of 4x C 694 470

S 500 171
- Set of 10x C 694 470

GPS 240 Pallet precision production
C 694 400

Milled, coined cast aluminium pallet with assembled code carrier.

- Construction height: 48.0 ± 0.01 mm
- X/Y-centring with coined cam
- Flatness: 0.02 mm
- Weight: 4 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 531 500 sealing plugs, C 960 740 code carrier fixture and 3R-863.01 code carrier

S 500 162
- Set of 4x C 694 475

S 500 172
- Set of 10x C 694 475

GPS 240 Pallet adaptation
C 694 300

Ground cast aluminium pallet suitable for fixtures and accessories.

- Construction height: 48.0 ± 0.005 mm
- X/Y-centring with spring-loaded pin
- Flatness: 0.01 mm
- Weight: 4 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 531 500 sealing plugs

GPS 240 Pallet adaptation
C 694 370

Ground cast aluminium pallet with assembled code carrier fixture, without code carrier.

- Construction height: 48.0 ± 0.005 mm
- X/Y-centring with spring-loaded pin
- Flatness: 0.01 mm
- Weight: 4 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 531 500 sealing plugs and C 960 740 code carrier fixture (without code carrier)

GPS 240 Pallet adaptation
C 694 375

Ground cast aluminium pallet with assembled code carrier.

- Construction height: 48.0 ± 0.005 mm
- X/Y-centring with coined cam
- Flatness: 0.02 mm
- Weight: 4 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 531 500 sealing plugs, C 960 740 code carrier fixture and 3R-863.01 code carrier

S 500 161
- Set of 4x C 694 470

S 500 171
- Set of 10x C 694 470

coined pallet (for high machining forces)
pallet with spring-loaded pin

system 3R
**GPS 240 Pallet round**

**C 694 450**

Milled, coined cast aluminium pallet. Suitable for high-speed milling and demanding turning and milling operations.

- Construction height: 46.0 ± 0.01 mm
- X/Y-centring with coined cam
- Flatness: 0.02 mm
- Weight: 6 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 531 500 sealing plugs

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**GPS 240 Pallet round with hole Ø 100 mm**

**C 694 800**

Made of aluminium with hole Ø100 mm.

- Construction height: 46 ± 0.005 mm
- X/Y-centring with coined cam, hardened, stainless
- Flatness: 0.01 mm
- Weight: 6 kg

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**GPS 240 Pallets round**

**C 697 100**

Made of aluminium.

- Construction height: 46.1 ± 0.01 mm
- X/Y-centring with coined cam, hardened, stainless
- Flatness: 0.01 mm
- Weight: 6 kg

**C 697 110**

Hole pattern on 40 mm centres, otherwise according to C 697 000.

---

**GPS 240 Pallet round with hole Ø 100 mm**

**C 697 800**

Made of aluminium with hole Ø100 mm.

- Construction height: 46 ± 0.01 mm
- X/Y-centring with coined cam, hardened, stainless
- Flatness: 0.01 mm
- Weight: 5.2 kg

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**GPS 240 Pallet round ready for use of automation**

**C 694 465**

Milled, coined cast aluminium pallet. Suitable for high-speed milling and demanding turning and milling operations.

- Construction height: 46.0 ± 0.01 mm
- X/Y-centring with coined cam
- Flatness: 0.02 mm
- Weight: 4 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 531 500 sealing plugs, C 660 740 code carrier fixture and 3R-863.01 code carrier

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**GPS 240 Pallet round with hole Ø 100 mm**

Made of aluminium with hole Ø100 mm.

- Construction height: 46 ± 0.01 mm
- X/Y-centring with coined cam, hardened, stainless
- Flatness: 0.01 mm
- Weight: 6 kg

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**coined pallet (for high machining forces)**

**pallet with spring-loaded pin**
GPS 240 Pallet 300x300 mm
C 694 600
Milled, coined cast aluminium pallet. Suitable for high-speed milling and demanding milling operations.
- Construction height: 48.0 ±0.01 mm
- X/Y-centring with coined cam
- Flatness: 0.02 mm
- Weight: 6 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 331 500 sealing plugs

GPS 240 Pallet 300x300 mm
prepared for automation
C 694 670
Milled, coined cast aluminium pallet with assembled code carrier fixture, without code carrier.
- Construction height: 48.0 ±0.01 mm
- X/Y-centring with coined cam
- Flatness: 0.02 mm
- Weight: 6 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 331 500 sealing plugs and C 960 740 code carrier fixture (without code carrier)
- Same gripper as for 240x240 mm pallets

GPS 240 Pallets with vice for grinding and EDM
C 585 400
Vice for workpieces <80 mm.
C 585 600
Vice for workpieces <120 mm.

GPS 240 Magnetic tables
C 694 270
Adapted for milling. Two independent magnetic fields can be set individually.
- Magnetic field height: 6 mm
- Magnetic holding force: 120 N/cm²
- Pole: 4 mm
- Pole distance: 11 mm
- Dimensions: 240 x 240 x 94 mm
- Weight: 21.5 kg

System 3R
GPS 240 Pallet with integrated GPS 120/70 chuck C 522 560
Adapter pallet which can accommodate the smaller GPS 120/70 pallets with Ø 120/70 mm.
- Material: aluminum / steel
- Height Z-Z: 54 mm
- References stainless steel, hardened
- Weight: 8.1 kg

GPS 240 Starter kit S 500 310
Contents:
- C 219 000 pneumatic chuck
- C 810 820 actuator
- C 694 400 coined pallet (2x)

Lifting grip C 810 960
Lifting gear for handling GPS 240 pallets 240x240 mm.
- Weight: 2.9 kg

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

Controllers

C 810 820
Unit for controlling pneumatic chucks C 217 100 and C 219 000.
- 1 connection (clamping/releasing)

C 810 830
Unit for controlling pneumatic chucks C 219 100 and C 219 600.
- 4 connections (- prism / - Z-cleaning / - clamping/releasing / - Turbo/ventilation)

C 810 850
Unit to control two pneumatic chucks.
- 5 connections
  (- prism / - Z-cleaning / - clamping/releasing / - Turbo/ventilation / - ventilation tube)

Sealing C 219 007
The chuck seal is a wear part which should be replaced every three to six months.
- Material: Viton
- Supplied singly

Master pallet C 846 600
The pallet has a ground reference ruler and a ground indication hole for alignment of the references.
Clamp kit  
**C 810 870**

Contents:
- 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.

Clamp strip kit  
**C 810 880**

Contents:
- 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.

Clamp strip kit for double mounting  
**C 810 920**

For mounting two chucks on 300 mm centres.

Contents:
- 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.

Pneumatic control “2/4”  
**C 810 800**

To control two systems on the machine table with only two hoses (IN).

2x2 functions – opening/cleaning and presence monitoring.

Seals  
**C 531 500**

Plugs for sealing GPS 240 pallets.

- Supplied in sets of 40

Seals  
**C 531 250**

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

- Material: elastomer
- Supplied in sets of 20

Reference protectors  
**C 531 210**

To protect the Z-reference of the pallet.

- Supplied in sets of 20

Hand gate valve  
**C 810 720**

For controlling pneumatic chucks C 217 100 and C 219 000.

Sealing plugs  
**C 531 500**

Plugs for sealing GPS 240 pallets.

System 3R
Solution for watch manufacturing
GPS 70 pallet with COCN collet

Application examples

Centric clamping devices
GPS 70/120 CHUCKS FOR DIE-SINKING EDM WITH C-AXIS AND/OR ELECTRODE CHANGER

- The GPS 70/120 chucks are integrated into the quill.
- Flushing and pneumatic actuation takes place through the quill centre.
- The GPS palletizing system is clamped in the GPS 70/120 chucks with clamping spigots S 500 060. The mounting of the clamping spigots on the GPS 70/120 steel pallets requires the clamping spigot set-up gauge C 695 075 or C 695 175.
- The GPS 20 palletizing system can be adapted to the GPS 70/120 chucks with the GPS 70 shank holder 40 (C 525 560).
- The GPS 70/120 chucks are available with a ø 45 mm graduated circle (ø 55 mm connection) and ø 68 mm graduated circle (ø 80 mm connection).
GPS 70 Chuck, pneumatic EDM
C 188 000
Die-sinking EDM with C-axis and/or electrode changer.
• Connection: ø 80 mm
• Height: 68 mm
• Mounting: 4 M6 screws on ø 70 mm pitch circle
• Air pressure: 6 bar
• Z-support cleaning: yes
• Flushing: central
• Clamping spigot set-up gauge: included in delivery

GPS 70 Chuck, pneumatic EDM
C 188 040
Die-sinking EDM with C-axis and/or electrode changer.
• Connection: ø 55 mm
• Height: 80 mm
• Mounting: 4 M6 screws on ø 45 mm pitch circle
• Air pressure: 6 bar
• Z-support cleaning: yes
• Flushing: central
• Clamping spigot set-up gauge: included in delivery

GPS 120 Chuck, pneumatic EDM
C 188 020
Die-sinking EDM with C-axis and/or electrode changer.
• Connection: ø 80 mm
• Height: 68 mm
• Mounting: 4 M6 screws on ø 70 mm pitch circle
• Air pressure: 6 bar
• Z-support cleaning: yes
• Flushing: central
• Clamping spigot set-up gauge: included in delivery

GPS 120 Chuck, pneumatic EDM
C 188 060
Die-sinking EDM with C-axis and/or electrode changer.
• Connection: ø 55 mm
• Height: 80 mm
• Mounting: 4 M6 screws on ø 70 mm pitch circle
• Air pressure: 6 bar
• Z-support cleaning: yes
• Flushing: central
• Clamping spigot set-up gauge: included in delivery
GPS PRESS-IN SYSTEM FOR THE MANUFACTURE OF ELECTRODES AND WORKPIECES

With the GPS palletizing system you save up to 90% of unproductive set-up time.

The split collets 2 surrounding the raw electrode 1 offer the unique advantage that during the insertion into the cup-shaped split collet holder 3 they positively adapt to it thus providing even and concentric holding of the raw electrode in the holder.

... and this is how it’s done:

1. Cut the standard electrode section to the desired length
2. Burr raw electrode with hand grinder
3. Insert raw electrode in suitable collet or split collet and introduce into collet or split collet holder
4. Put complete split collet holder or collet shank onto arbour-press spacer and press in with (300 to 700 kg) force

In less than two minutes a concentrically palletized electrode will be ready which will withstand all conceivable machining forces.

Graphite/Copper Electrode ø 6 - 50 mm

GPS 20 Press-Shell 10
GPS 20 Press-Shell 18
GPS 20 Press-Shell 30
GPS 20 Press-Shell 50

GPS 20 Press-Shell Holder
GPS 70 Press-Shell Holder
GPS 70 Press-Shell Holder

C 876 110

Technical Specifications

- Quick and simple insertion of round and square copper and graphite electrodes in the ø 6 to 50 mm range.
- 25 collets and split collets for standard electrode sections (tolerance: +/- 0.1 mm).
- No screwing, soldering, gluing or drilling.
- All split collets and collets are supplied with matching seals.
- The GPS palletizing system ensures an exact micro-millimetre chuck to chuck repeatability.
- Supplied with a convenient, stackable tray for storing finished electrodes.
- The electrode is stored on the holder – ready to be used again.
The GPS 20 palletizing system can be adapted to the GPS 70/120 chucks with the GPS 70 shank holder 40.

- Material: stainless steel, hardened
- Dimension: ø 69.7 x 67.6 mm
- Flushing: central
- Design: two-piece, form-fitting
- Clamping: hydraulic
- Maintenance set: included in delivery

For insertion of up to ø 10 mm copper and graphite electrodes in collet shank 10.

- Material: zinc aluminum alloy
- Positioning accuracy after insertion: concentric
- Tube section tolerance: ± 0.1 mm
- Delivery includes: set of 10 units

For insertion of up to ø 18 mm copper and graphite electrodes in collet shank 18.

- Material: zinc aluminum alloy
- Positioning accuracy after insertion: concentric
- Tube section tolerance: ± 0.1 mm
- Delivery includes: set of 10 pieces
### GPS 70 Collet holder 10
**S 500 041**

Workpiece and electrode holder used with collets 10.

- **Material:** aluminum, coined
- **Design:** screwed two-piece construction
- **Dimension:** ø 69.5 x 54.7 mm
- **Delivery includes:** set of 9 units

### GPS 70 Collet holder 18
**S 500 051**

Workpiece and electrode holder used with GPS 20 collets 18.

- **Material:** aluminum, coined
- **Design:** screwed two-piece construction
- **Dimension:** ø 69,5 x 54,7 mm
- **Delivery includes:** set of 9 units

### GPS 20 Split collet holder 30
**S 500 040**

Workpiece and electrode holder used with GPS 70 split collets 30.

- **Material:** aluminum die-cast, coined
- **Dimension:** ø 69,5 mm
- **Height:** approx. 62 mm (incl. split collets)
- **Construction:** screwed 2-piece design
- **Delivery includes:** set of 9 units

### GPS 70 Split collet holder 50
**S 500 050**

Workpiece and electrode holder used with GPS 70 split collets 50.

- **Material:** aluminum die-cast, coined
- **Dimension:** ø 69,5 mm
- **Height:** approx. 72 mm (incl. split collets)
- **Construction:** screwed 2-piece design
- **Delivery includes:** set of 9 units

### GPS 70 Split collets 30
**S 501 xxx**

For insertion of up to ø 30 mm copper and graphite electrodes in split collet holder 30.

- **Material:** aluminum die-cast
- **Positioning accuracy after insertion:** central
- **Tube section tolerance:** ± 0.1 mm
- **Delivery includes:** set of 10 pieces

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<td>ø 30</td>
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### GPS 70 Split collets 50
**S 501 xxx**

For insertion of up to ø 50 mm copper and graphite electrodes in collet holder 50.

- **Material:** aluminum die-cast
- **Positioning accuracy after insertion:** central
- **Tube section tolerance:** ± 0.1 mm
- **Delivery includes:** set of 10 pieces

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### S 501 060
**S 501 060**

- **Set with 2 pairs each size**

### S 501 070
**S 501 070**

- **Set with 2 pairs each size**

### S 501 080
**S 501 080**

- **Set with 10 pairs each size**

### S 501 090
**S 501 090**

- **Set with 10 pairs each size**

### S 501 100
**S 501 100**

- **Set with 10 pairs each size**

### S 501 110
**S 501 110**

- **Set with 10 pairs each size**

### S 501 120
**S 501 120**

- **Set with 10 pairs each size**

### S 501 130
**S 501 130**

- **Set with 10 pairs each size**

### S 501 140
**S 501 140**

- **Set with 10 pairs each size**

### S 501 510
**S 501 510**

- **Set with 2 pairs each size**

### S 501 530
**S 501 530**

- **Set with 10 pairs each size**

### S 501 540
**S 501 540**

- **Set with 10 pairs each size**
GPS 20 Shank
S 500 080
For small electrodes.
- Fits on: C 525 560
- Material: aluminium die-cast, coined
- Hole pattern: M5 and / or cemented joint
- Delivery includes: set of 60 pieces

GPS 70 Collet chuck ER 32
C 735 110
Insertion of collet chucks ø 2 – 20 mm.
- Material: stainless steel, hardened
- Dimension: ø 69.7 x 59 mm
- Collet chuck key: included in delivery

GPS 70 Square holder (brass)
C 526 010
Square electrode holder.
- Outside dia.: 69.5 mm
- Height: 50.7 mm
- Inside dimensions: 26 x 26 mm square
- Design: 2-piece brass holder screwed onto GPS 70 aluminium pallet

GPS 20 Shank pallet
S 500 070
For the palletizing of electrodes.
- Fits on: C 525 560
- Material: aluminium die-cast, coined
- Hole pattern: for M5 screws
- Supporting surface: 24 x 36 mm
- Delivery includes: set of 20 pieces

Collets / Seals
For collet chuck holder C 735 110.

Collet Set
V 005 002
- Delivery includes: 18 collets ER 32, 2 to 20 mm

Seal Set
V 005 008
- Delivery includes: 18 seals ER 32, 2 to 20 mm

GPS 70 Parallel holder (brass)
C 526 020
Electrode holder for laminated electrodes.
- Outside dia.: 69.5 mm
- Height: 50.7 mm
- Inside dimensions: 20 x 70 mm
- Construction: 2-piece brass holder screwed onto GPS 70 aluminium pallet

GPS 70 Shank pallet
S 500 070
For the palletizing of electrodes.
- Fits on: C 525 560
- Material: aluminium die-cast, coined
- Hole pattern: for M5 screws
- Supporting surface: 24 x 36 mm
- Delivery includes: set of 20 pieces

Collets / Seals
For collet chuck holder C 735 110.

Collet Set
V 005 002
- Delivery includes: 18 collets ER 32, 2 to 20 mm

Seal Set
V 005 008
- Delivery includes: 18 seals ER 32, 2 to 20 mm

GPS 70 Parallel holder (brass)
C 526 020
Electrode holder for laminated electrodes.
- Outside dia.: 69.5 mm
- Height: 50.7 mm
- Inside dimensions: 20 x 70 mm
- Construction: 2-piece brass holder screwed onto GPS 70 aluminium pallet

GPS 70 Square holder (brass)
C 526 010
Square electrode holder.
- Outside dia.: 69.5 mm
- Height: 50.7 mm
- Inside dimensions: 26 x 26 mm square
- Design: 2-piece brass holder screwed onto GPS 70 aluminium pallet
GPS 70 Adapter ITS 50
C 526 060
Adaptation of GPS 70 on ITS 50.
- Material: stainless steel, hardened
- Dimension: ø 69.7 mm
- Height: overall: 50 mm, Z-supports: 36.5 mm
- Construction: 2-piece, form-fitting design
- Flushing: central

GPS 70/120 Adapter
C 526 160
Adaptation of GPS 70 on GPS 120.
- Material: stainless steel, hardened
- Dimension: ø 106 x 26 mm
- Construction: one-piece design
- Flushing: central

3R Macro adapter GPS 70 manual
C 188 550
Adaptation of Macro on GPS 70.
- Material: stainless steel, hardened
- Clamping spiget: N 901 800

GPS 70 Adapter 3R Macro manual
C 188 560
Adaptation of GPS 70 on Macro.
- Material: stainless steel, hardened

GPS 70 Renishaw probe
C 810 530
Automatic measuring of workpieces on CNC die-sinking EDM.
- Height: 130 mm
- Tracer ball: 5 mm
- Overtravel protection: 3-dimensional (Z = 5 mm, XY = 15 mm)

GPS 70 Dial indicator holder, swivel type
C 810 170
Alignment of workpieces on machines with or without C-axis.
- Measuring range: up to ø 250 mm
- Dial indicator: 0.01 mm
- Locking: mechanical

system 3R
**Hydraulic maintenance unit for shank holder**

C 525 165

Filling of hydraulic system of GPS shank holder with grease when clamping force weakens.

- Instructions: see maintenance instructions

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**GPS 70 Arbour press spacer**

C 876 110

Support for pressing the raw electrode into the GPS 20 collet shank 10/18 and into the GPS 70 split collet holder 30 and 50.

- Material: pOM

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**GPS 70 Collet shank seal**

C 711 320

Seals for through the electrode flushing.

- Material: plastic
- Delivery includes: set of 10 units

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**GPS 70 Split collet holder seal**

C 531 100

Seals for through the electrode flushing.

- Material: thermoplastic
- Delivery includes: set of 100 units

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**Clamping spigot set automatic**

S 500 060

For GPS 70/120 chucks: c 188000 / C 188020 / C 188040 / C 188060. For use with electrode changer.

- Material: steel, hardened
- Clamping screw: M10 x 55 mm screw, with through-bore flushing
- Delivery includes: set of 10 units

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**GPS 70 Clamping spigot alignment gauge**

C 695 075

Alignment of the clamping spigot (S 500060) in the GPS 70 steel pallet in the electrode changer.

- Material: anodized aluminium

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**GPS 120 Clamping spigot alignment gauge**

C 695 175

Alignment of the clamping spigot (S 500060) in the GPS 120 steel pallet in the electrode changer.

- Material: anodized aluminium
GPS 240 CLAMPING SYSTEM

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 allows clamping from below of workpieces, fixtures and accessories such as vices, three-jaw chucks and magnetic tables. This gives collision-free mounting, even with five-sided machining.

The economical, pressure-die-cast aluminium pallets are very light, making them especially 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.

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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 810 830
- Air-blast cleaning of the references
- Weight: 17 kg

---

GPS 240 Pallet EDM / grinding
C 694 100

Cast aluminium pallet.

- Construction height: 48.1 ±0.01 mm
- X/Y-centring with spring-loaded pin
- Flatness: 0.02 mm
- Weight: 4 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 Pallet EDM / grinding
Prepared for automation
C 694 170

Cast aluminium pallet with assembled code carrier fixture, without code carrier.

- Construction height: 48.1 ±0.01 mm
- X/Y-centring with spring-loaded pin
- Flatness: 0.02 mm
- Weight: 4 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 531 500 sealing plugs and C 960 740 code carrier fixture (without code carrier)

S 500 091
- Set of 4x C 694 170

S 500 101
- Set of 10x C 694 170

---

GPS 240 Pallet EDM / grinding
Ready for use of automation
C 694 175

Cast aluminium pallet with assembled code carrier.

- Construction height: 48.1 ±0.01 mm
- X/Y-centring with spring-loaded pin
- Flatness: 0.02 mm
- Weight: 4 kg
- Recommended workpiece weight: 100 kg
- Supplied with C 531 500 sealing plugs, C 960 740 code carrier fixture and 3R-863.01 code carrier

S 500 092
- Set of 4x C 694 175

S 500 102
- Set of 10x C 694 175

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GPS 240 Starter kit
S 500 650

With a permanent compressed air supply a clamping force of 80 000 N can be obtained.

Contents:
C 219 110 pneumatic chuck
C 810 830 actuator
C 694 100 pallets (2x)
GPS 240 Magnetic tables
C 694 270
Adapted for milling. Two independent magnetic fields can be set individually.
- Magnetic field height: 6 mm
- Magnetic holding force: 120 N/cm²
- Pole: 4 mm
- Pole distance: 11 mm
- Dimensions: 240 x 240 x 94 mm
- Weight: 21.5 kg

Draining station
C 210 050
Drains out dielectric fluid when the dummy chuck is tipped.
- Supplied without dummy chuck
- Dimensions: 820 x 605 x 310 mm
- Weight: 80 kg

coined pallet (for high machining forces)  pallet with spring-loaded pin
UTILISE EVERY HOUR OF THE TWENTY-FOUR!
Conservative thinking is a major obstacle to increased productivity. It’s a matter of daring to break with accustomed patterns of thinking. Having the courage to question your own methods. From there, it’s just a short step to action.
System 3R’s automation programs give increased productivity and make you more competitive. And not least – they bring faster payback on the investments you made.
Be master of your own future – not a victim of circumstances.

WORKPAL
is a pallet changer – with minimal floor space requirements – intended for automatic changing of pallets in a chuck on the work table of the machine.
The design with a sliding door over one whole side gives maximum access to the magazine, making it easier to load and take out the pallets.

WORKPARTNER
is a compact unit for pallet changing – both on the machine table and in the machine spindle – on machine tools.
The magazines are made up of a number of modules, making it possible to adapt the magazines to the specific needs of every user.
Generous door make it easy to load and remove the magazines.
With its enhanced magazine capacity, WorkPartner 2+ is especially well suited to serving more than one machine.
WORKMASTER

is a flexible modular automation system consisting of a changer unit which changes large and small pallets between the magazines and up to four machines in the same production cell.

The changer unit, which is completely self-contained, can be combined with several types of magazine, as well as a number of options for "tailor-made" automation solutions, whether machines of the same make or machines with different machining technologies are involved.

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.

WORKMASTER LINEAR

is an automation concept that gives extreme flexibility. With the changer unit mounted on rails, it can serve a larger number of machines, while creating more space for magazines and peripheral equipment.

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.

SYSTEM 3R HAS STARTED

collaboration with other players in the field of automation, meaning that we can now offer automation solutions with industrial robots, both stationary and rail-borne.

The automation solutions may be appropriate for changing parts that are not palletised, and when WorkMaster’s capacity is insufficient in terms of transfer weight, stroke or number of moving axes.
WorkPartner application example
Milling machine  x1
EDM machine    x1

WorkMaster application example
Milling machine  x3
Loading station  x1
Rack magazine   x4

WorkMaster Linear application example
Milling machine  x4
Rack magazine   x10
Loading station x1
Washing station x1
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