GPS 70, GPS 120, GPS 240
Reference Systems for Precision Production and Die-Sinking EDM
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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 with a reference system
Your advantages in production

Greater speed / Enhanced productivity / Greater flexibility

**Fixture retooling**
Faster retoothing means not only more working hours but also a higher productivity and shorter delivery times.

**Express order**
Job interruptions are no problem. Retooling in seconds provides the required level of flexibility.

Finding the right clamping system

You can find the appropriate system on the basis of your workpieces and the weight.

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

   Example:
   - Square: Up to a maximum of $120 \times 150$ mm (steel) → approx 17 kg
   - Round: Up to a maximum of $170 \times 100$ 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.

It is also possible to combine several clamping systems, with manual or automated system adapter.
GPS 70/120 Chucks

GPS 70/120 Chuck, manual
• System size: GPS 70 and GPS 120
• Application: turning, milling, drilling, grinding, die-sinking EDM, presetting and measuring station
• Repetition accuracy: 0.002 mm
• Indexing: 4 x 90°
• Clamping force: adjustable, max. 3000 N
• Clamping: spring force with self-clamping ball-lock
• Releasing: manual with Allen wrench
• Flushing: central, lateral connection
• Cleaning of Z-supports: no
• GPS pallets: no clamping spigot required
• Material: stainless steel, hardened

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

GPS 70/120 Chuck, pneumatic
• System size: GPS 70 and GPS 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 x 90°
• Clamping force: approx. 3800 N
• Clamping: spring force with self-clamping ball-lock
• Releasing: compressed air (6 bar)
• Flushing: central
• Cleaning of Z-supports: yes
• Inside pressure: connection available
• Pneumatic connection: control unit or air-gun valve
• Automatic operation: pallet presence monitoring
• GPS pallets: no clamping spigot required
• Material: stainless steel, hardened
GPS Aluminium pallet
Material: aluminium die-cast, face-turned and coined
Offers more than 30,000 clamping operations with constant precision

GPS Steel pallet, ground
Material: stainless steel, hardened and ground
Application: jigs, fixtures, adapter, gauging tool
Offers more than 100,000 clamping operations with constant precision

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

Unclamped pallet

Preclamping ~ 0.05 mm

Unclamped pallet

Preclamping ~ 0.07 mm

Unclamped pallet

Preclamping ~ 0.05 mm

Preclamping ~ 0.07 mm

Unclamped pallet
GPS 70 Clamping system for metal-cutting operations

GPS 70 Chucks

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.

GPS 70 Machining cube, manual
C 530 210

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

GPS 70 Chuck, manual
C 188 300

For turning, milling, grinding, die-sinking EDM.
- Dimensions: Ø72.4 x 57.4 mm
- Mounting: 4x M6 screws
- Releasing: manual with Allen wrench
- Flushing: lateral inlet

Facts
- Material: stainless steel, hardened
- Repetition accuracy: 0.002 mm
- Clamping force: 3,000 - 3,800 N
- Indexing accuracy: 0.005 mm
- Indexing: 4 x 90°
GPS 70 Chucks

GPS 70 Chuck, manual
C 190 000
For turning, milling, grinding, die-sinking EDM.
- Dimensions: 85 x 35 mm
- Mounting: 4x M6 screws
- Required clamping spigot: N 901 800

GPS 70 Chuck, pneumatic
C 188 720
For die-sinking EDM, turning, milling, grinding.
- Dimensions: Ø99 x 22 mm
- Mounting: 6x M6 screws (fits on flange C 188 730)
- Releasing: pneumatic, 6 bar
- Required air pressure: 6 bar
- Z-supports cleaning: yes

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

Flange for GPS 70 chuck
C 188 730
Fits on C 188 720 and C 198 700.
- Material: stainless steel, heat pre-treated
- Dimensions: Ø140 x 20 mm
- Mounting: 6x M8
- Connections:
  A = releasing/clamping
  B = Z-supports cleaning
  C = drain or over-pressure
  D = cable compartment breather
**GPS 70 Aluminium pallets**

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.

**Facts**
- Material: coined cast aluminium
- Dimensions: Ø69.5 x 16.7 ±0.01 mm
- Hole pattern: 6 holes for M6
- Flatness: 0.01 mm
- X-Y-position: coined cams
- Weight: 0.2 kg

**GPS 70 Aluminium pallet 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 Aluminium pallet C 695 040**

Workpiece or electrode holder. Prepared for automation with thread M5 for code carrier fixture, 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 Steel pallets

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.

The pallet protection ring completely protects its X, Y and Z references from shocks and contamination.

Facts
- Material: stainless steel, hardened
- Dimensions: Ø69.7 x 22 ±0.005 mm
- Surface quality: ground finish
- X/Y-centring: with springy cams, hardened, stainless
- Hole pattern: 6 holes for M6 and 2x Ø5.7 mm (prepared for pin holes), 42 mm spacing

GPS 70 Steel pallet
C 695 265

Workpiece and device holder for precision production. Prepared for automation with thread M5 for code carrier fixture, with gripper contour.
- Scope of delivery:
  pallet without protection ring, without code carrier fixture and without code carrier

GPS 70 Steel 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, aluminium
  C 960 740 code carrier fixture

GPS 70 Pallet protection ring
C 695 295

Chip protection between pallet and chuck for GPS 70 steel pallets C 695 265.
- Material: plastic
- Dimensions: Ø69.4 x 10.8 mm
- Use with code carrier: yes
GPS 120 Clamping system for metal-cutting operations

GPS 120 Chucks

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 Machining cube, manual
C 530 310
For milling, grinding, die-sinking EDM, presetting and measuring station. Suitable for the 5-sided machining of electrodes and workpieces. One side is ground square with the base surface.
- Dimensions: 136 x 136 x 80 mm
- Mounting (from the top): 12 x 120 mm, 4x M8 screws threaded holes (horizontal)
- Mounting (from the bottom): on GPS 240 pallet: 90 x 90 mm, 4x M8 screws through holes (horizontal), 120 x 40 mm, 4x M8 screws threaded holes (vertical)
- Releasing: manual with Allen wrench

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

Facts
- Material: stainless steel, hardened
- Repetition accuracy: 0.002 mm
- Clamping force: 3,000 - 3,800 N
- Indexing accuracy: 0.005 mm
- Indexing: 4 x 90°
GPS 120 Chucks

GPS 120 Chuck, pneumatic
C 188 700
For die-sinking EDM, turning, milling, grinding.
- Dimensions: Ø118 x 22 mm
- Mounting: 6x M6 screws (on flange C 188 710)
- Releasing: pneumatic, 6 bar
- Required air pressure: 6 bar
- Z-supports cleaning: yes

GPS 120 Chuck, pneumatic
C 188 770
For Automation.
- Dimensions: Ø118 x 22 mm
- Mounting: 6x M6 screws (on flange C 188 710)
- Releasing: pneumatic, 6 bar
- Required air pressure: 6 bar
- Z-supports cleaning: yes, only GPS 120

Flange for GPS 120 chuck
C 188 710
Fits on C 188 700 and C 188 770.
- Material: stainless steel, heat pre-treated
- Dimensions: Ø160 x 20 mm
- Mounting: 6x M8
- Connections:
  A = releasing/clamping
  B = Z-supports cleaning
  C = drain or over-pressure
  D = cable compartment breather

For die-sinking EDM, turning, milling, grinding.
GPS 120 Aluminium pallets

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.

Facts
- Material: coined cast aluminium
- Dimensions: Ø124x16.6 ±0.01 mm
- Hole pattern: 18 holes for M6, closed with a thin aluminium cover
- Flatness: 0.025 mm
- X-Y-position: coined cams
- Weight: 0.5 kg

GPS 120 Aluminium pallet
C 695 140

Workpiece or electrode holder. Prepared for automation with thread M5 for code carrier fixture and 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 aluminium pallet - Opening of the fixation holes

The fixation holes of the GPS 120 aluminium pallets are closed with a thin aluminium cover.

To open the required fixation holes please use one of the following technics.

Open by boring
with a borer Ø6.5 mm
from the bottom side of the pallet.

Open by punching through
with a cutting punch Ø6.5 mm and a hammer
from the top face of the pallet.
GPS 120 Steel pallets

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.

The pallet protection ring completely protects its X, Y and Z references from shocks and contamination.

Facts
- Material: stainless steel, hardened and ground
- Dimensions: Ø118 x 26 ±0.005 mm
- Surface quality: ground finish
- X/Y-centring: with springy cams, hardened, stainless
- Hole pattern: 18 holes for M6

GPS 120 Steel pallet
C 695 365
Workpiece and device holder for precision production.
- Scope of delivery:
  pallet without pallet protection ring
- Not prepared for automation

GPS 120 Steel pallet
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, aluminium
  C 960 740 code carrier fixture

GPS 120 Pallet protection ring
C 695 395
Chip protection between pallet and chuck for GPS 120 steel pallets C 695 365.
- Material: plastic
- Dimensions: Ø118 x 15.7 mm
- Use with code carrier: no
GPS 120 For automation

The chuck with medium connection is able to transfer the compressed air directly to the pallet via 4 interfaces. Fixtures and clamping elements in the automation system, amongst other things, can be operated pneumatically with the pallet C 695 150. The GPS 120 standard pallets can also be used on the system.

Facts
- Repetition accuracy: 0.002 mm
- Clamping force: 3.000 - 3.800 N
- Indexing accuracy: 0.005 mm
- Indexing: 4 x 90°

GPS 120 Chuck, pneumatic C 190 120
With medium connection fourfold.
- Material: stainless steel, hardened
- Dimensions: Ø118 x 22 mm
- Mounting: 6x M6 screws (on flange C 190 125)
- Releasing: pneumatic, 6 bar
- Z-supports cleaning: yes
- Medium connection: fourfold, pneumatic 6 bar

GPS 120 Aluminium pallet C 695 150
With medium connection fourfold. Fits on GPS 120 chuck C 190 120.
- Medium connection: compressed air, max. 6 bar
- Scope of delivery: pallet without code carrier fixture and without code carrier

Flange for GPS 120 chuck C 190 125
With medium connection fourfold. Fits on GPS 120 chuck C 190 120.
- Material: stainless steel, heat pre-treated
- Dimensions: Ø160 x 20 mm
- Mounting: 6x M8
- Connections:
  A = releasing/clamping
  B = Z-supports cleaning
  C = drain or over-pressure
  D = cable compartment breather
  E-G = medium connection
GPS 70/120 Accessories

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

**GPS 70 Inspection plug C 846 260**
For the radial alignment of the GPS 70/120 chuck.
- Material: stainless steel, hardened
- Height: 160 mm
- Construction: 2-piece, form-fitting design
- Concentricity: 0.005 mm / 150 mm

**GPS 70/120 Clamping force testing device C 846 900**
Measuring and adjusting the clamping force of manual chucks. Measuring the clamping force of pneumatic chucks.

**GPS 70 Collet chuck ER 32 C 735 110**
Insertion of collet chucks Ø2 – 20 mm.
- Material: stainless steel, hardened
- Dimensions: Ø69.7 x 78 mm
- Collet chuck key: included in delivery

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

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

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

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

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

GPS 120 Chip protection
C 695 176
Chip protection ring for GPS 120 chucks when used with GPS 70 palletizing system.
- Material: aluminium, anodized
- Dimensions: Ø120 x 13.5 mm

Code carrier, fixture
C 960 740
Fixture for code carrier 3R-863.01-10.
- The code carrier can be clicked in position
GPS 70/120 Chucks for lathe

The chucks, manual or pneumatic, are mounted with a flange which is matched to the machine.
GPS 240 Clamping system for metal-cutting operations

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 pallets 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.

Facts

- Repetition accuracy: 0.002 mm
- Indexing accuracy: 0.005 mm
- Indexing: 4 x 90°
- Clamping force: 30 000 N (with force boost 80 000 N)
- Opening pressure: 6 bar
GPS 240 Chucks automatic
- Built-up height: 52 mm
- Required air pressure: 6 bar
- Air-blast cleaning of the references
- Weight: 17 kg

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

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

GPS 240 Chuck automatic with hole Ø100 mm
C 219 400
For special applications.
- Built-up height: 58 mm
- Required air pressure: 8 bar
- Air-blast cleaning of the references
- Clamping force: 30 000 N
- Recommended actuator: C 810 830
- Weight: 17 kg

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

GPS 240 Chuck manual round with hole Ø100 mm
C 217 400
For special applications.
- Built-up height: 58 mm
- Required air pressure: 8 bar
- Clamping force: 30 000 N
- Recommended actuator: C 810 820 or C 810 710
- Weight: 17 kg
GPS 240 Chucks

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

GPS 240 Chuck automatic with medium connection
C 219 800
For manual and automatic machining operations.
- Built-up height: 52 mm
- Air connections positioned centrally on the underside
- Medium connection: 2-fold, pneumatic 6 bar
- 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 an exchange or draining station.
- Required air pressure: 6 bar
- Weight: 9.5 kg

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

GPS 240 Pallet ‘Adaption’
C 694 300
• 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 ‘Production’
C 694 400
• Construction height: 48.0 ±0.01 mm
• X/Y-centring: with coined cam
• Flatness: 0.02 mm
• Weight: 4.8 kg
• Recommended workpiece weight: 100 kg
• Supplied with C 531 500 sealing plugs

GPS 240 Pallet 300x300 mm
C 694 600
• Construction height: 48.0 ±0.01 mm
• X/Y-centring: with coined cam
• Flatness: 0.02 mm
• Weight: 7 kg
• Recommended workpiece weight: 100 kg
• Supplied with C 531 500 sealing plugs

GPS 240 Pallets
C 694 810
Ground aluminium pallet.
• Construction height: 46 ±0.01 mm
• X/Y-centring: with springy cams, hardened, stainless
• Flatness: 0.01 mm
• Weight: 7.2 kg

GPS 240 Pallet round
C 694 450
• Construction height: 48.0 ±0.01 mm
• X/Y-centring: with coined cam
• Flatness: 0.02 mm
• Weight: 4.3 kg
• Recommended workpiece weight: 100 kg
• Supplied with C 531 500 sealing plugs

GPS 240 Pallets
C 694 800
Ground aluminium pallet.
• Construction height: 46 ±0.01 mm
• X/Y-centring: with springy cams, hardened, stainless
• Flatness: 0.01 mm
• With hole: Ø100 mm
• Weight: 6.2 kg
GPS 240 Pallets

GPS 240 Pallets round
C 697 100 / C 697 110
Ground aluminium pallet.
• Construction height: 46 ±0.01 mm
• X/Y-centring: with springy cams, hardened, stainless
• Flatness: 0.01 mm
• Weight: 6.2 kg

C 697 100

C 697 110
• Hole pattern on 40 mm centres

GPS 240 Pallet round with hole Ø100 mm
C 697 800
Ground aluminium pallet.
• Construction height: 46 ±0.01 mm
• X/Y-centring: with springy cams, hardened, stainless
• Flatness: 0.01 mm
• Weight: 5.2 kg

GPS 240 Master pallet
C 846 600
The pallet has a ground reference ruler and a ground indication hole for alignment of the references.

C 694 300

GPS 240 Pallet with centric clamping vise
Example:
Spreitzer MZE 280-100 & GPS 240 pallet C 694 400

For further information please ask for catalogue "Add-On E-Shop System 3R & Spreitzer"
GPS 240 Pallets

GPS 240 Magnetic table
C 694 270
Strong magnetic plate for milling.
• Magnetic field height: 10 mm
• Holding force: 150 N/cm²
• Dimensions: 240x240x96 mm
• Weight: 27.1 kg

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

GPS 240 Pallets with integrated GPS 70/120 chuck
C 522 560 / C 522 580
Adapter pallet which can accommodate the GPS 70/120 pallets.
• Material: aluminium / steel
• Built-up height: 54 mm
• X/Y-centring: with springy cams, hardened, stainless
• Weight: 8.1 kg

GPS 70/120 System
With the adaption with integrated GPS 70/120 chuck both systems can be used.
• GPS 240 system: for bigger workpieces and devices
• GPS 70/120 system: for smaller workpieces

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 - Kits & Accessories

Pneumatic control “2/4”
C 810 800
To control two systems on the machine table with only two hoses.
2x2 functions – open/lock and presence detection.

S 818 000
- Contents:
  C 810 800 with protective cover which is adapted to suit the machine

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

3R-863.01-10
- Sets of 10 pieces

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

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

Code carrier, fixture
C 960 740
Fixture for code carrier 3R-863.01-10.
- The code carrier can be clicked into position
GPS 240 - Accessories

GPS 240 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.

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

GPS 240 Clamp strip kit for double mounting  
C 810 920  
For mounting two chucks on 300 mm centres.  
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.

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

Hand gate valve  
C 810 710  
For controlling pneumatic chucks  
C 217 100, C 217 400 and C 219 000.
**GPS 240 - Accessories**

**GPS 240 Controllers**

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

**C 810 830**  
Unit for controlling pneumatic chucks C 219 100 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)

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

**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 Accessories

GPS 240 Pallet bore for index lock
C 531 240
Rework on GPS 240 pallets for working with an index lock.
• Can be used on square GPS 240 pallets

GPS 240 Spigot for index lock
C 219 090
Spigot for GPS 240 chucks matching the reworked pallets in accordance with C 531 240.
• Suitable for square GPS 240 chucks

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

system 3R
Examples of palletized clamping devices

Solution for watch manufacturing

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 Ø45 mm graduated circle (Ø55 mm connection) and a Ø68 mm graduated circle (Ø80 mm connection).
GPS 70/120 For die-sinking EDM

GPS 70 Chuck pneumatic EDM C 188 000
Die-sinking EDM with C-axis and/or electrode changer.
• Connection: Ø80 mm
• Height: 68 mm
• Mounting: 4 M6 screws on Ø70 mm pitch circle
• Required air pressure: 6 bar
• Z-supports 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: Ø55 mm
• Height: 80 mm
• Mounting: 4 M6 screws on Ø45 mm pitch circle
• Required air pressure: 6 bar
• Z-supports 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: Ø80 mm
• Height: 68 mm
• Mounting: 4 M6 screws on Ø70 mm pitch circle
• Required air pressure: 6 bar
• Z-supports 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: Ø55 mm
• Height: 80 mm
• Mounting: 4 M6 screws on Ø45 mm pitch circle
• Required air pressure: 6 bar
• Z-supports 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 Ø6 - 50 mm

Technical Specifications

- Quick and simple insertion of round and square copper and graphite electrodes in the Ø6 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.
GPS 70/120 For die-sinking EDM

GPS 70 Shank holder 40
C 525 560
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
- Dimensions: Ø69.7 x 67.6 mm
- Flushing: central
- Design: two-piece, form-fitting
- Clamping: hydraulic
- Maintenance set: included in delivery

GPS 20 Aluminium collet shank 18
S 501 310 / S 501 320
Electrode holder used with collet 18.
- Material: zinc aluminium alloy
- Positioning accuracy after insertion: concentric
- Tube section tolerance: ± 0.1 mm
- Delivery includes: set of 10 units

GPS 20 Collets 10
S 501 xxx
For insertion of up to Ø10 mm copper and graphite electrodes in collet shank 10.
- Material: zinc aluminium alloy
- Positioning accuracy after insertion: concentric
- Tube section tolerance: ± 0.1 mm
- Delivery includes: set of 10 units

GPS 20 Collets 18
S 501 xxx
For insertion of up to Ø18 mm copper and graphite electrodes in collet shank 18.
- Material: zinc aluminium alloy
- Positioning accuracy after insertion: concentric
- Tube section tolerance: ± 0.1 mm
- Delivery includes: set of 10 pieces

GPS 20 Aluminium collet shank 10
S 501 240
Electrode holder used with collet 10.
- Material: aluminium die-cast, coined
- Insertion: press-in raw electrode with collets into collet shank
- Fits on shank holder C 525 560: for insertion of collet shank in the GPS pallet
- Delivery includes: set of 20 units

S 501 250  S 501 260
• Ø6  • 6 x 6
S 501 270  S 501 280
• Ø8  • 8 x 8
S 501 290  S 501 300
• Ø10  • 10 x 10
S 501 370
• Set with 10 pieces each size

S 501 330  S 501 340
• Ø12  • 12 x 12
S 501 350
• Ø15
S 501 360
• Ø18
S 501 380
• Set with 10 pieces each size

S 501 310  S 501 320
• Ø6  • 6 x 6
S 501 330  S 501 340
• Ø12  • 12 x 12
S 501 350
• Ø15
S 501 360
• Ø18
S 501 380
• Set with 10 pieces each size
GPS 70 Collet holder 10
S 500 041
Workpiece and electrode holder used with collets 10.
• Material: aluminium, coined
• Design: screwed two-piece construction
• Dimensions: Ø69.5 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: aluminium, coined
• Design: screwed two-piece construction
• Dimensions: Ø69.5 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: aluminium die-cast, coined
• Dimensions: Ø69.5 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: aluminium die-cast, coined
• Dimensions: Ø69.5 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 Ø30 mm copper and graphite electrodes in split collet holder 30.
• Material: aluminium die-cast
• Positioning accuracy after insertion: central
• Tube section tolerance: ± 0.1 mm
• Delivery includes: set of 10 pieces

S 501 000
• Ø20
S 501 010
• Ø25
S 501 020
• Ø30
S 501 030
• Ø20 x 15
S 501 040
• Ø25 x 20
S 501 050
• Ø30 x 25
S 501 510
• Set with 2 pairs each size
S 501 530
• Set with 10 pairs each size

GPS 70 Split collets 50
S 501 xxx
For insertion of up to Ø50 mm copper and graphite electrodes in collet holder 50.
• Material: aluminium die-cast
• Positioning accuracy after insertion: central
• Tube section tolerance: ± 0.1 mm
• Delivery includes: set of 10 pieces

S 501 060
• Ø35
S 501 070
• Ø40
S 501 080
• Ø50
S 501 090
• Ø30 x 30
S 501 100
• Ø35 x 35
S 501 110
• Ø50 x 40
S 501 120
• Ø30 x 15
S 501 130
• Ø40 x 15
S 501 140
• Ø50 x 20
S 501 520
• Set with 2 pairs each size
S 501 540
• Set with 10 pairs each size
GPS 70/120 For die-sinking EDM

GPS 70 Collet chuck ER 32
C 735 110
Insertion of collet chucks Ø2 – 20 mm.
• Material: stainless steel, hardened
• Dimensions: Ø69.7 x 78 mm
• Collet chuck key: included in delivery

Collet Set
V 005 002
For collet chuck holder C 735 110.
• Delivery includes: 18 collets ER 32, 2 to 20 mm

GPS 70 Parallel holder (brass)
C 526 020
Electrode holder for laminated electrodes.
• Dimensions: Ø69 mm
• Inside dimensions: 20 x 50 mm
• Construction: 2-piece brass holder screwed onto GPS 70 aluminium pallet

GPS 70 Square holder (brass)
C 526 010
Square electrode holder.
• Dimensions: Ø69 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
• Dimensions: Ø69.7 mm
• Built-up height: 36.5 mm
• Construction: 2-piece, form-fitting design
• Flushing: central

GPS 70 Adapter on GPS 120 pallets
C 526 160
Adaptation of GPS 70 on GPS 120 pallets.
• Material: stainless steel, hardened
• Dimensions: Ø106 mm
• Built-up height: 20 mm
• Construction: one-piece design
• Flushing: central
GPS 70/120 For die-sinking EDM

3R Macro adapter GPS 70 manual
C 188 550
Adaptation of Macro on GPS 70.
• Material: stainless steel, hardened
• Dimensions: Ø69 mm
• Built-up height: 45.5 mm
• Clamping spigot: N 901 800

GPS 70 Adapter 3R Macro manual
C 188 560
Adaptation of GPS 70 on Macro.
• Material: stainless steel, hardened
• Dimensions: Ø75 mm
• Built-up height: 60 mm

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 Ø250 mm
• Dial indicator: 0.01 mm
• Locking: mechanical

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

system 3R
GPS 70/120 For die-sinking EDM

GPS 70 Clamping spigot alignment gauge
C 695 075
Alignment of the clamping spigot (S 500 060) in the GPS 70 steel pallet in the electrode changer.
• Material: anodized aluminium

GPS 70 Collet shank seal
C 711 320
Seals for through the electrode flushing.
• Material: plastic
• Delivery includes: set of 10 units

GPS 70 Split collet holder seal
C 531 100
Seals for through the electrode flushing.
• Material: thermoplastic
• Delivery includes: set of 100 units

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

GPS 120 Clamping spigot alignment gauge
C 695 175
Alignment of the clamping spigot (S 500 060) in the GPS 120 steel pallet in the electrode changer.
• Material: anodized aluminium

GPS 70/120 Clamping spigot set automatic
S 500 060
For GPS 70/120 chucks: C 188 000 / C 188 020 / C 188 040 / C 188 060. For use with electrode changer.
• Material: steel, hardened
• Clamping spigot: N 901 700 with through-bore flushing
• Delivery includes: set of 10 units

GPS 70/120 For die-sinking EDM
GPS 240 For die-sinking EDM

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 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 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 Starter kit S 500 650
- Contents:
  - C 219 110 pneumatic chuck
  - C 810 830 actuator
  - C 694 100 pallets (2x)

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 with built-in Macro chuck C 522 520

Adapter to accept Macro pallets.
- Material: aluminium/steel
- Weight: 8.5 kg
**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.

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**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.

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**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

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Automation

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 products.

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 application areas:
• Milling – changing of workpieces and cutting tools
• 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
Automation - application examples

**WorkPartner 1+**
1 Milling machine

**WorkMaster**
1 Wire EDM machine
1 Loading station
2 Magazines
1 Drying station

**WorkMaster Linear**
2 Milling machines
10 Magazines
2 Loading stations
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