



# Machine tooling technology

Zero-Point Clamping System

- SPN

THE KNOW-HOW FACTORY

**THE KNOW-HOW FACTORY**

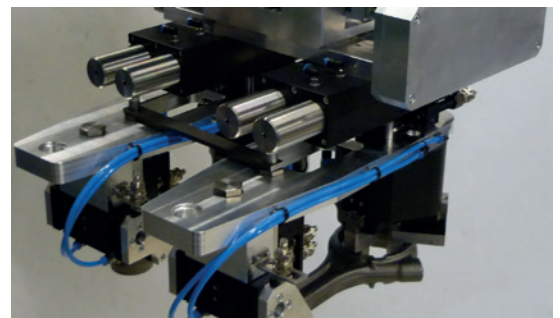
# ZIMMER GROUP COMMITTED TO OUR CUSTOMERS

**WE HAVE SUCCEEDED FOR YEARS BY OFFERING OUR CUSTOMERS INNOVATIVE AND INDIVIDUALIZED SOLUTIONS. ZIMMER HAS GROWN CONTINUOUSLY AND TODAY WE HAVE REACHED A NEW MILESTONE: THE ESTABLISHMENT OF THE KNOW-HOW FACTORY. IS THERE A SECRET TO OUR SUCCESS?**

**Foundation.** Excellent products and services have always been the foundation of our company's growth. Zimmer is a source of ingenious solutions and important technical innovations. This is why customers with high expectations for technology frequently find their way to us. When things get tricky, Zimmer Group is in its best form.

**Style.** We have an interdisciplinary approach to everything we do, resulting in refined process solutions in six technology fields. This applies not just to development but to production. Zimmer Group serves all industries and stands ready to resolve even the most unique and highly individualized problems. Worldwide.

**Motivation.** Customer orientation is perhaps the most important factor of our success. We are a service provider in the complete sense of the word. With Zimmer Group, our customers have a single, centralized contact for all of their needs. We approach each customer's situation with a high level of competence and a broad range of possible solutions.



# TECHNOLOGIES



## HANDLING TECHNOLOGY

MORE THAN 30 YEARS OF EXPERIENCE AND INDUSTRY KNOWLEDGE: OUR PNEUMATIC, HYDRAULIC AND ELECTRICAL HANDLING COMPONENTS AND SYSTEMS ARE GLOBAL LEADERS.

**Components.** More than 2,000 standardized grippers, swivel units, robotic accessories and much more. We offer a complete selection of technologically superior products that are ready for rapid delivery.

**Semi-standard.** Our modular approach to design enables custom configurations and high rates of innovation for process automation.



## DAMPING TECHNOLOGY

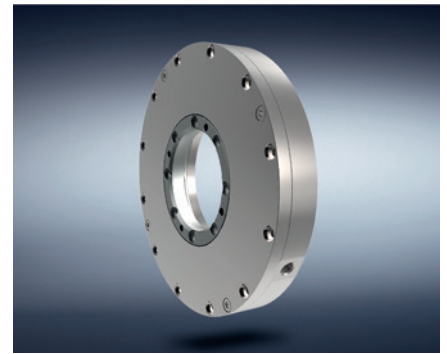
INDUSTRIAL DAMPING TECHNOLOGY AND SOFT CLOSE PRODUCTS EXEMPLIFY THE INNOVATION AND PIONEERING SPIRIT OF THE KNOW-HOW FACTORY.

### Industrial damping technology.

Whether standard or customized solutions, our products stand for the highest cycle rates and maximum energy absorption with minimal space requirements.

**Soft Close.** Development and mass production of pneumatic and fluid dampers with extraordinary quality and rapid delivery.

**OEM and direct.** Whether they need components, returning mechanisms or complete production lines – we are the trusted partner of many prestigious customers.



## LINEAR TECHNOLOGY

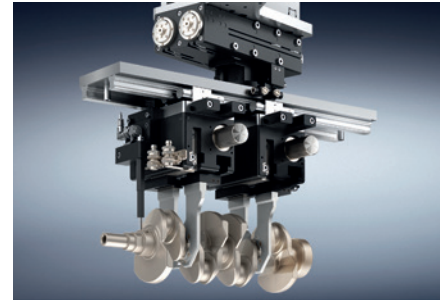
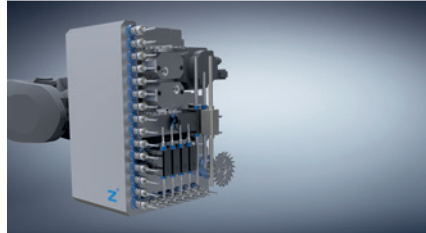
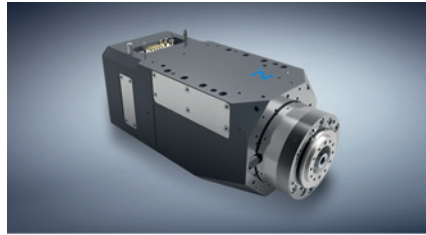
WE DEVELOP LINEAR COMPONENTS AND SYSTEMS THAT ARE INDIVIDUALLY ADAPTED TO OUR CUSTOMERS' NEEDS.

### Clamping and braking elements.

We offer you more than 4,000 types for profiled and round rails as well as for a variety of guide systems from all manufacturers. It makes no difference whether you prefer manual, pneumatic, electric or hydraulic drive.

**Flexibility.** Our clamping and braking elements ensure that movable components such as Z-axes or machining tables maintain a fixed position and that machines and systems come to a stop as quickly as possible in an emergency.





## PROCESS TECHNOLOGY

MAXIMUM EFFICIENCY IS ESSENTIAL FOR SYSTEMS AND COMPONENTS USED IN PROCESS TECHNOLOGY. HIGH-LEVEL CUSTOM SOLUTIONS ARE OUR TRADEMARK.

**A rich reservoir of experience.** Our know-how ranges from the development of materials, processes and tools through product design to production of series products.

**Deep production capabilities.** The Zimmer Group pairs these capabilities with flexibility, quality and precision, even when making custom products.

**Series production.** We manufacture demanding products out of metal (MIM), elastomers and plastics with flexibility and speed.

## MACHINE TECHNOLOGY

ZIMMER GROUP DEVELOPS INNOVATIVE METAL, WOOD AND COMPOSITE MATERIAL PROCESSING TOOL SYSTEMS FOR ALL INDUSTRIES. NUMEROUS CUSTOMERS CHOOSE US AS THEIR SYSTEMS AND INNOVATION PARTNER.

**Knowledge and experience.** Industry knowledge and a decades-long development partnership in exchangeable assemblies, tool interfaces and systems make us bound for new challenges around the world.

**Components.** We deliver numerous standard components from stock and develop innovative, customized systems for OEM and end customers – far beyond the metal and wood processing industries.

**Variety.** Whether you have machining centers, lathes or flexible production cells, the power tools, holders, assemblies and drilling heads of Zimmer Group are ready for action.

## SYSTEM TECHNOLOGY

ZIMMER GROUP IS ONE OF THE LEADING SPECIALISTS IN THE DEVELOPMENT OF CUSTOMIZED SYSTEM SOLUTIONS WORLDWIDE.

**Customized.** A team made up of more than 20 experienced designers and project engineers develop and produce customized solutions for special tasks in close collaboration with end customers and system integrators. It doesn't matter if it is a simple gripper and handling solution or a complex system solution.

**Solutions.** These system solutions are used in many industries, from mechanical engineering to the automotive and supplier industries to plastics engineering and consumer goods industries, all the way to foundries. The Know-how Factory helps countless companies to thrive competitively by increasing automation efficiency.

# SPN ZERO-POINT CLAMPING SYSTEM

## ORDER INFORMATION

### STRUCTURE OF THE ORDER NUMBER

Example:

**SP** **N** **110** - **EL** **07** - **6** **0** - **A** - **00**

▶ **Clamping system**

**P** Pneumatic

▶ **Characteristics**

**N** Zero point clamping system

▶ **Size**

Diameter [mm]

▶ **Article**

**EL** Element

**PS** Clamping plate

**BZ** Centering pin

**BE** Retention pin

**BS** Sword pin

▶ **Pull-in force**

in kN

▶ **Pressure**

In bar

▶ **Positioning check**

**0** without positioning check

**1** with positioning check

▶ **Change index**

▶ **Special variant**

# SPN ZERO-POINT CLAMPING SYSTEM

## ADVANTAGES

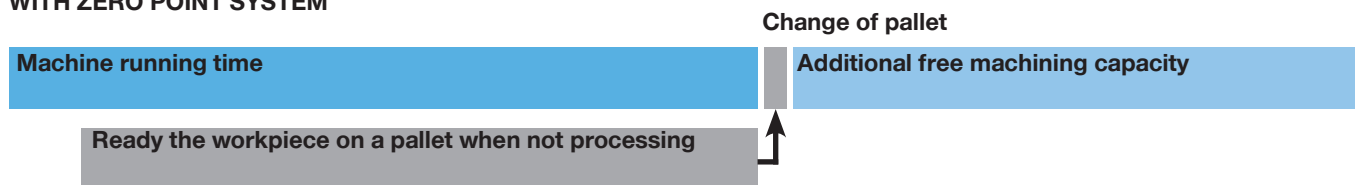
### ► Increased Productivity

By automating processes the Zimmer zero point clamping system dramatically increases productivity of processes that required precision. Machine set-up times are reduced by up to 92%, and cleaning and maintenance of the system is minimal. The option to link processes, one after the other, in a single workpiece clamping system, in various machining cells and equipped with identical clamping system geometries, allows previously unrealized synergies. The workpiece carrier with the Zimmer zero point clamping system accompanies the workpiece all the way through the production process, thus ensuring the ultimate in precision and cost efficiency.

### WITHOUT ZERO POINT SYSTEM



### WITH ZERO POINT SYSTEM



### ► Highest repeatability and precision

The Zimmer zero point clamping system offers due to its market approved construction a repeating accuracy of 0,005mm. By its high pull-in force and the consequent use of hardened tool steel a highly precise and torsion resistant base stabilizes fragile and vibration susceptible workpieces in addition.

### ► Improved process safety

The zero point clamping system eliminates mistakes during milling, lathing, wire and sinker EDM, flat and cylindrical grinding, drilling, laser cutting and measuring. The maintenance free construction also contributes to the unmatched process safety of the system.

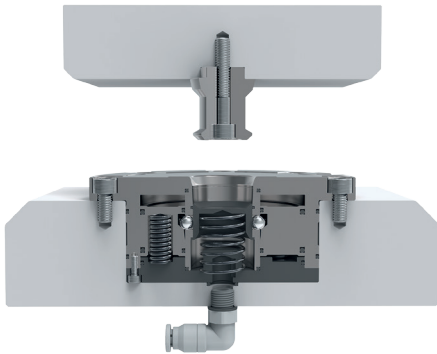
### ► Exactly the right system for your production

An optional available air-flow system provides an integrated contact monitoring and cleaning function. The pin receivers opens only when a component is drawn in and closes automatically during decoupling again. Thus the Zimmer zero point clamping system represents the maximum in terms of freedom from maintenance and insensitivity to contamination. The zero point clamping system offers the option of fully automated or partly automated loading and unloading of manufacturing cells. So the system contributes significantly to the reduction of process times.

# SPN ZERO-POINT CLAMPING SYSTEM

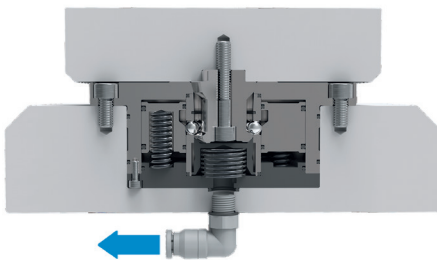
## FUNCTIONAL DESCRIPTION

### ▶ SEALED



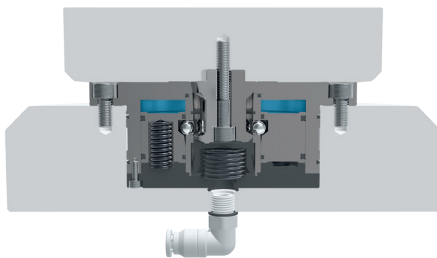
- ▶ No pin in the clamping element
- ▶ Locking piston protects the clamping mechanism to prevent the ingress of dirt or liquids
- ▶ No energy consumption

### ▶ CLAMPED



- ▶ Pin clamped in the clamping element
- ▶ Form fit interlock
- ▶ No energy consumption in the clamped state

### ▶ RELIEVED



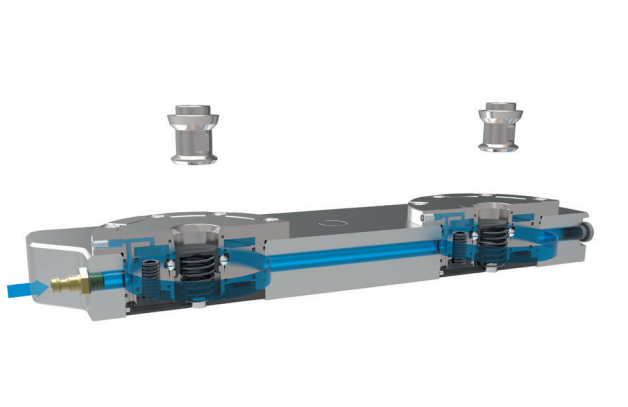
- ▶ Pin relieved in the clamping element
- ▶ Clamping element pressurized
- ▶ Clamping mechanism opened



# SPN ZERO-POINT CLAMPING SYSTEM

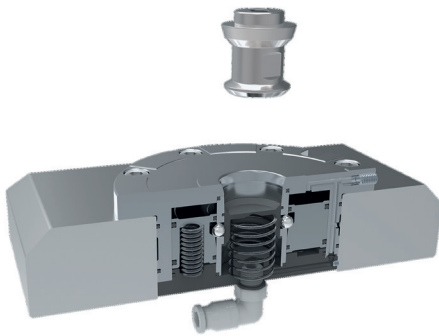
## CONNECTION OPTION

### ▶ HOSE-LESS CONNECTION



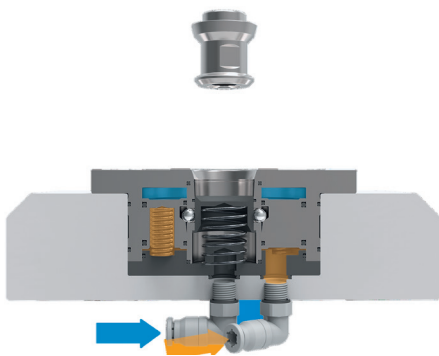
- ▶ The clamping system is supplied with compressed air through an integrated channel

### ▶ HOSE CONNECTION



- ▶ The clamping element is supplied with compressed air by means of a pneumatic fitting and a pneumatic hose.

### ▶ PLUS CONNECTION



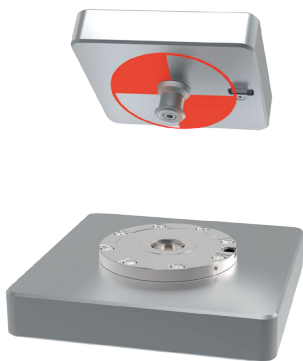
- ▶ Clamping force can be increased significantly if an additional PLUS connection is connected to the clamping system
- ▶ The PLUS connection must be pressurized with compressed air during the clamping process.

# SPN ZERO-POINT CLAMPING SYSTEM

## PIN ARRANGEMENT

### ► CONFIGURATIONS

In order to best redirect the forces of the device to be clamped, the displayed arrangement of pins is recommended. This arrangement makes it possible to compensate for geometry errors that emerge from production tolerances or thermal expansion:



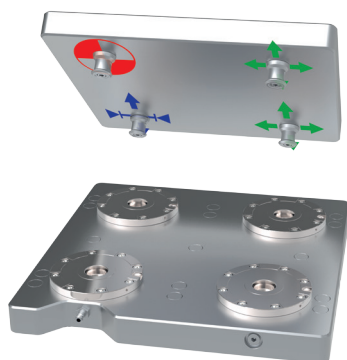
#### Configuration with a zero-point clamping system

The centering pin gets the position in all three X, Y and Z directions of the Cartesian coordinate system. As a result, it forms the zero point for the device to be secured in place.



#### Configuration with two zero-point clamping systems

The sword pin can compensate for a change in length in one direction while absorbing the forces in the other two directions. It must be positioned so that it can support the moments applied around the centering pin in the Z direction.



#### Configuration with four or more zero-point clamping systems

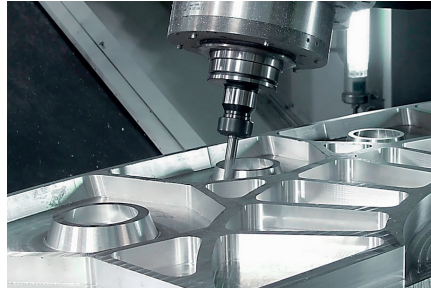
The retention pin can only absorb forces in the Z direction. It compensates for changes in length in the X and Y direction.

# SPN ZERO-POINT CLAMPING SYSTEM APPLICATIONS

## ▶ TYPICAL



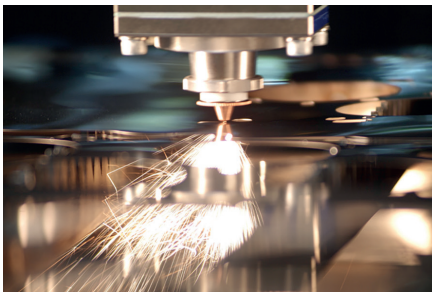
▶ Drilling



▶ Milling



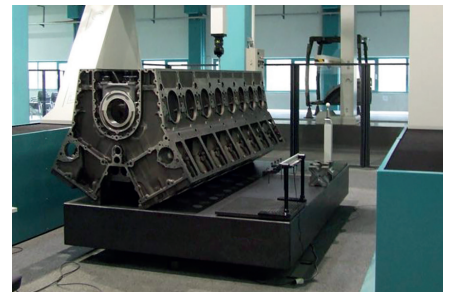
▶ Honing



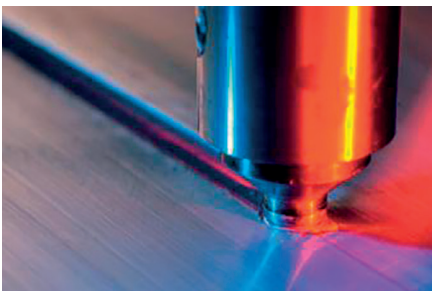
▶ Laser cutting



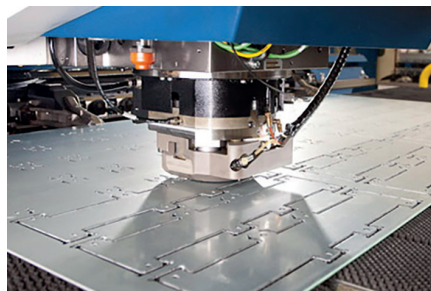
▶ Laser welding



▶ Measuring



▶ Friction stir welding

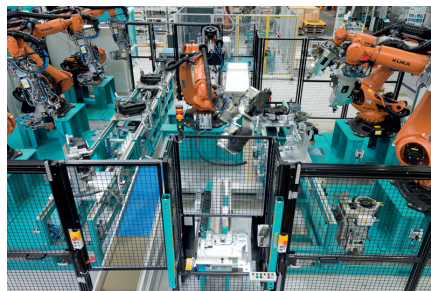


▶ Stamping

## ▶ ATYPICAL

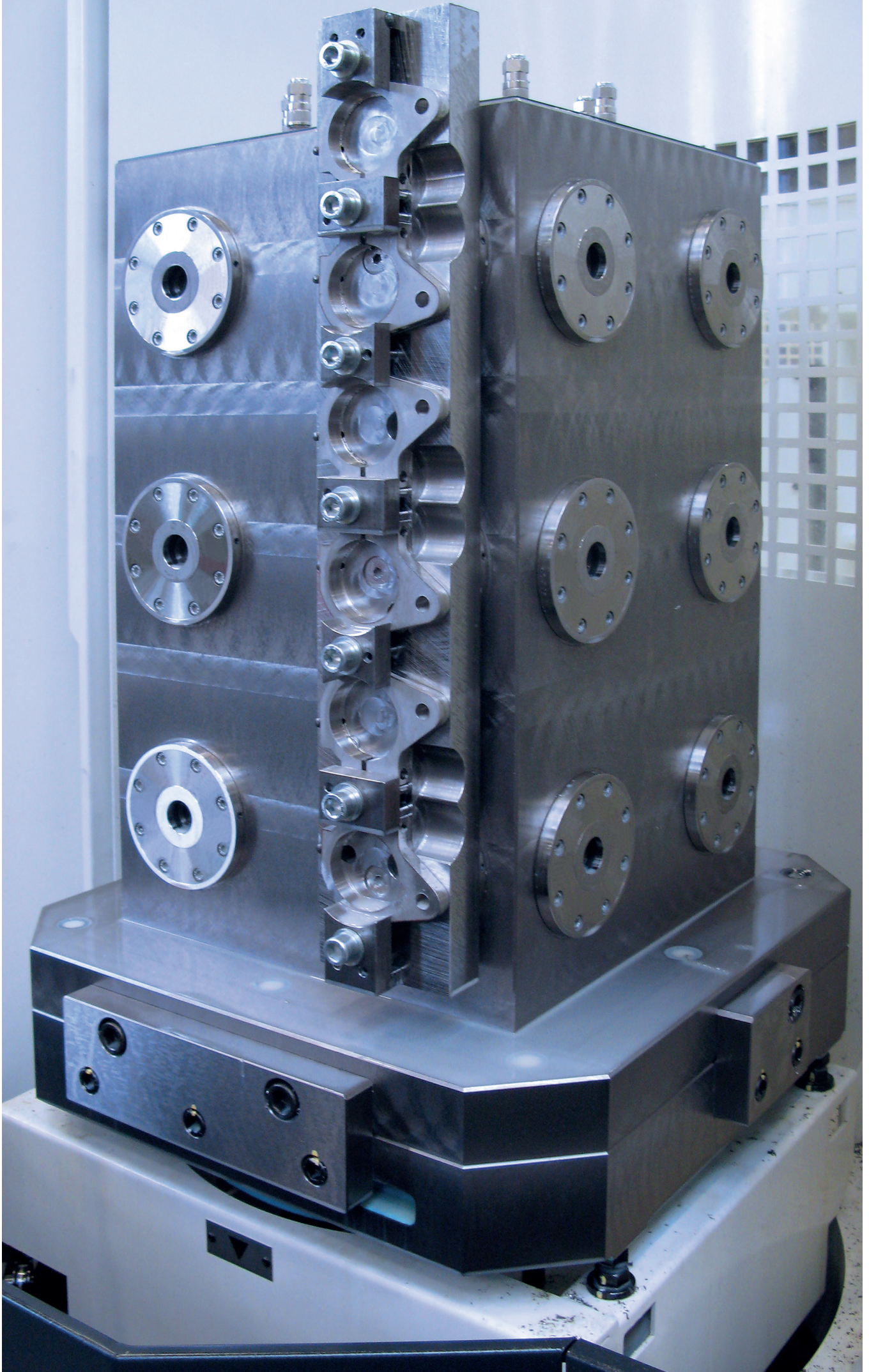


▶ Transport aircraft



▶ Robotics



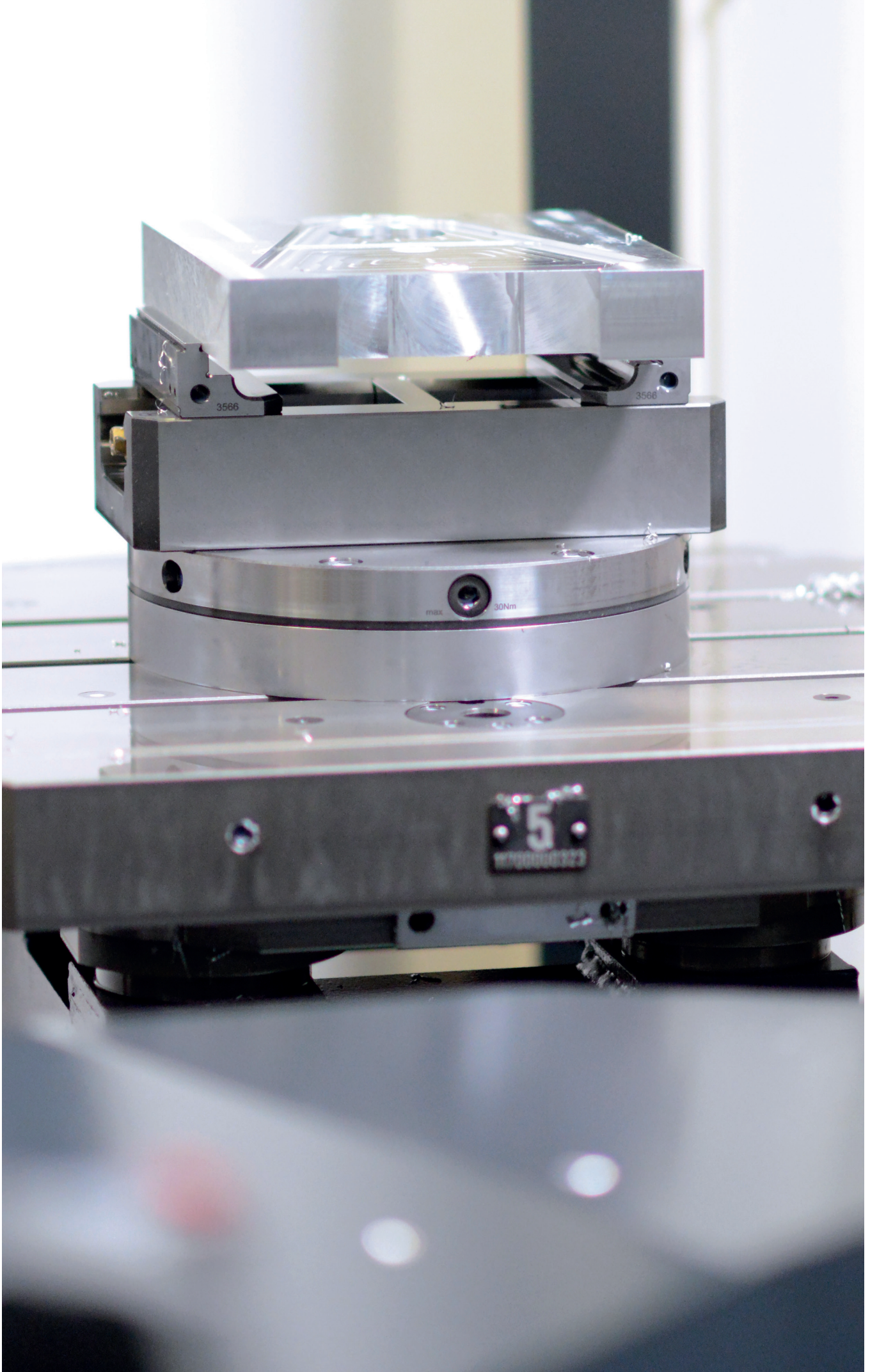




# SPN ZERO-POINT CLAMPING SYSTEM

## IN OVERVIEW

Products	Operating pressure min. [bar]	Clamping force [kN]	Clamping force with PLUS connection [kN]	Rotation prevention	Contact monitoring	Flat-surface cleaning	Page
SPN060EL	4 / 6	2,5 / 4	4,5 / 7,5	●			16
SPN060EL with contact monitoring	4 / 6	2,5 / 4	4,5 / 7,5	●	●	●	18
SPN060 - Pin							20
SPN060PS02 - Clamping plate	4 / 6						21
SPN060PS04 - Clamping plate	4 / 6						22
SPN060PS06 - Clamping plate	4 / 6						23
SPN110EL	4 / 6	4 / 7	10 / 15	●			24
SPN110EL with contact monitoring	4 / 6	4 / 7	10 / 15	●	●	●	26
SPN110 - Pin							28
SPN110PS02 - Clamping plate	4 / 6						29
SPN110PS04 - Clamping plate	4 / 6						30
SPN110PS06 - Clamping plate	4 / 6						31
SPN138EL	4 / 6	9 / 18	22,5 / 42	●			32
SPN138EL with contact monitoring	4 / 6	9 / 18	22,5 / 42	●	●	●	34
SPN138 - Pin							36
SPN138PS02 - Clamping plate	4 / 6						37
SPN138PS04 - Clamping plate	4 / 6						38
SPN138PS06 - Clamping plate	4 / 6						39
SPN195EL	4 / 6	20 / 30	50 / 80	●			40
SPN195EL with contact monitoring	4 / 6	20 / 30	50 / 80	●	●	●	42
SPN195 - Pin							44
SPN195PS02 - Clamping plate	4 / 6						45
SPN195PS04 - Clamping plate	4 / 6						46
SPN195PS06 - Clamping plate	4 / 6						47



# SPN ZERO-POINT CLAMPING SYSTEM

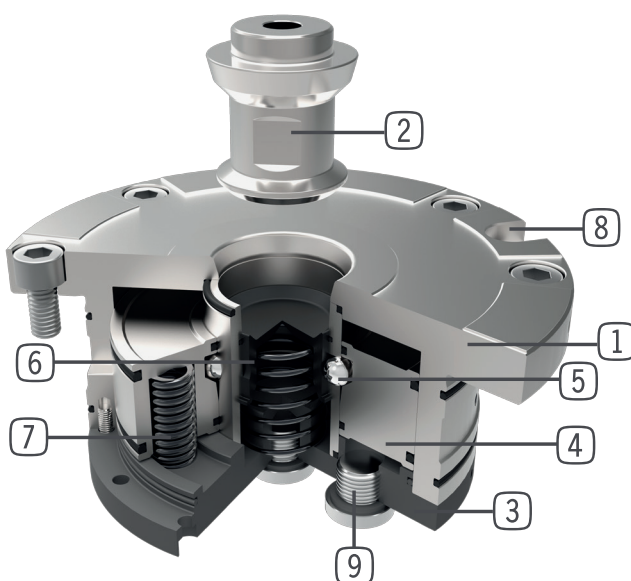
## SERIES SPN

### ▶ PRODUCT ADVANTAGES



- ▶ **Patented locking piston**
- ▶ **Rustproof finish throughout the series**  
The housing parts are made of stainless steel – contact parts are hardened and thus wear-free
- ▶ **Built-in rotation prevention included in this series**  
A drive pin can be inserted into the clamping module to counteract torque in the direction of the plunger axis.
- ▶ **Easy insertion of the clamping pins due to optimum, conical lead-in chamfers**  
Burring is prevented  
The pin will be centered automatically even if positioned at a slant
- ▶ **Integrated cleaning air – optional**

### ▶ TECHNICAL DETAILS



- ① Housing
- ② Centering pin
- ③ Cover
- ④ Clamp dog
- ⑤ Locking balls
- ⑥ Locking pistons
- ⑦ Locking springs
- ⑧ Torque support
- ⑨ PLUS connection



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN060EL

### ▶ PRODUCT ADVANTAGES



- ▶ Pre-positioning 16mm before reaching end position
- ▶ Automatic centering and pull-in already 1mm before reaching end position
- ▶ Resistant against contamination
- ▶ Mechanical locked in clamping position
- ▶ Low operating pressure of 4/6bar
- ▶ Maintenance free

### ▶ EQUIPMENT FEATURES



Pneumatic



Stainless steel



Form fit



Pins compatible with reference system



PLUS connection



Low height



Hose-less supply



Repeatability



Torque support



Hardened



Automatic sealing plug

### ▶ INCLUDED IN DELIVERY



O-ring  
46x1  
**COR0460100**

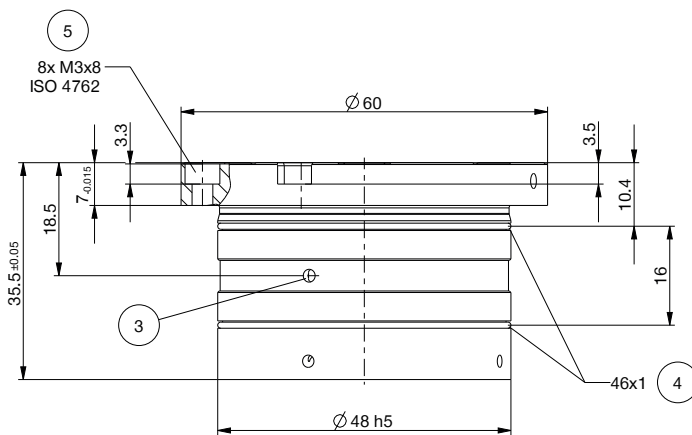


Mounting screw  
M3x8  
**C091203004M**

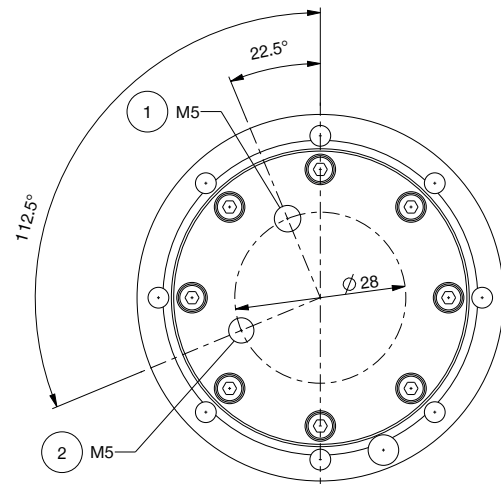
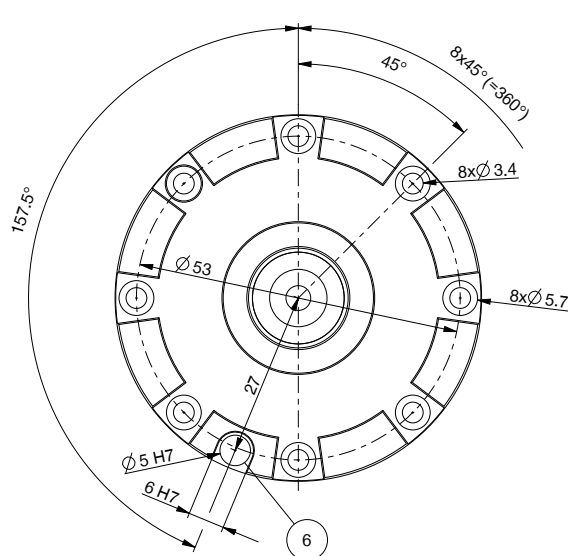


## ► TECHNICAL DATA

Order no.	► Technical Data	
	SPN060EL04-60-A-00	SPN060EL02-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	M8 (12.9)	M8 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	4	2.5
Pull-in force with PLUS connection [kN]	7.5	4.5
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel	Hardened stainless steel
Weight [kg]	0.47	0.47



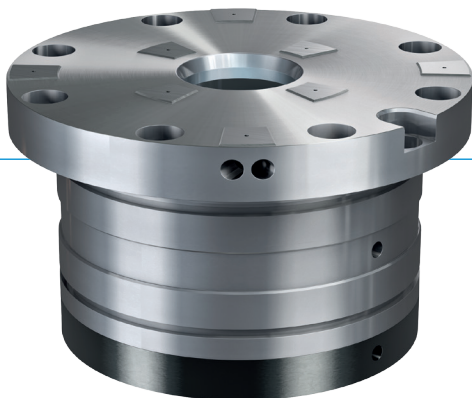
- ① Air connection
- ② Plus connection
- ③ Side air connection
- ④ O-Ring
- ⑤ Clamping element mounting screw
- ⑥ Rotation prevention



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN060EL WITH CONTACT MONITORING

### ▶ PRODUCT ADVANTAGES



- ▶ Integrated contact monitoring & Cleaning of supporting area function
- ▶ Contact monitoring by flow meter or dynamic air speed indicator possible
- ▶ Resistant against contamination
- ▶ Mechanical locked in clamping position
- ▶ Low operating pressure of 4/6bar
- ▶ Maintenance free

### ▶ EQUIPMENT FEATURES



Pneumatic



Form fit



PLUS connection



Hose-less supply



Torque support



Automatic sealing plug



Stainless steel



Pins compatible with reference system



Low height



Repeatability



Hardened



Flat-surface cleaning / contact monitoring

### ▶ INCLUDED IN DELIVERY



O-ring  
46x1

**COR0460100**

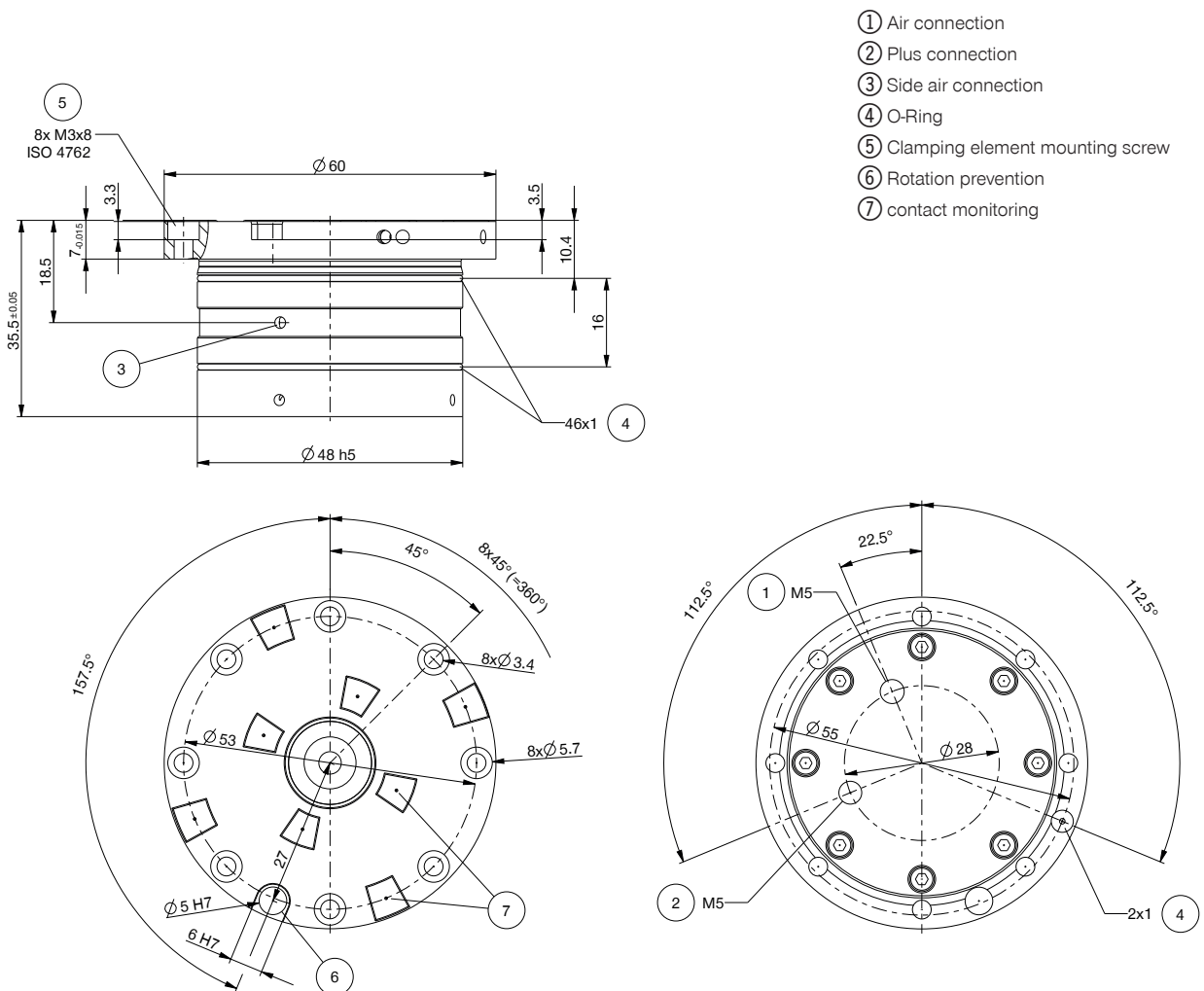


Mounting screw  
M3x8

**C091203004M**

## ▶ TECHNICAL DATA

Order no.	▶ Technical Data	
	SPN060EL04-61-A-00	SPN060EL02-41-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	M8 (12.9)	M8 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	4	2.5
Pull-in force with PLUS connection [kN]	7.5	4.5
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	Yes	Yes
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	Yes	Yes
Material	Hardened stainless steel	Hardened stainless steel
Weight [kg]	0.46	0.46



# SPN ZERO-POINT CLAMPING SYSTEM

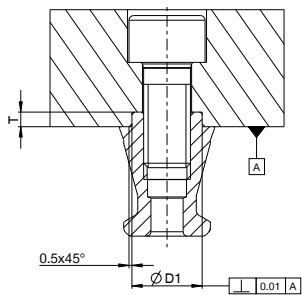
## SPN060 - PIN

### ► TECHNICAL DRAWINGS

Order no.	► Technical Data		
	SPN060BZ08-00-A-00	SPN060BE08-00-A-00	SPN060BS08-00-A-00
Ød1 [mm]	12 k6	12 k6	12 k6
Ød2 [mm]	16.3	16.3	16.3
Ød3 [mm]	14.8	14.8	14.8
Ød4 [mm]	5.5	5.5	5.5
SW [mm]	12	12	12
M *	M8	M8	M8
a [mm]	2.5	2.5	2.5
g [mm]	11.5	11.5	11.5
l [mm]	18.7	18.7	18.7
ØD1 [mm]	12 H7	12 H7	12 H7
T [mm]	2.5+0.5	2.5+0.5	2.5+0.5

\*ISO 4762

Holding force max. [kN] M6=18, M8=33, M10=53, M12=77, M16=145, M20=227



SPN060BZ08-00-A-00

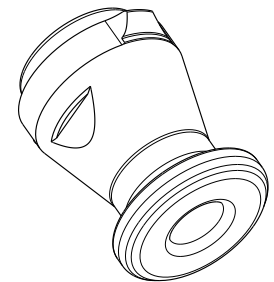
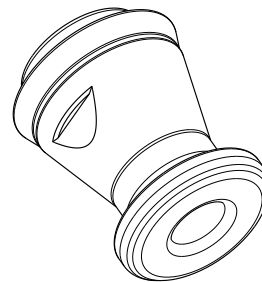
Centering pin

SPN060BE08-00-A-00

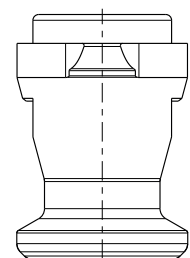
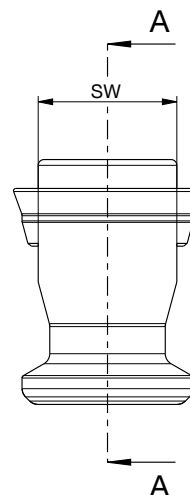
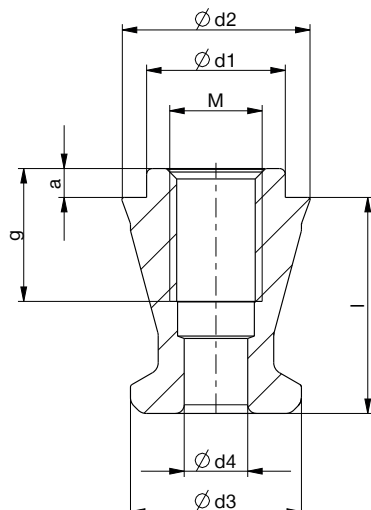
Retention pin

SPN060BS08-00-A-00

Sword pin



A-A

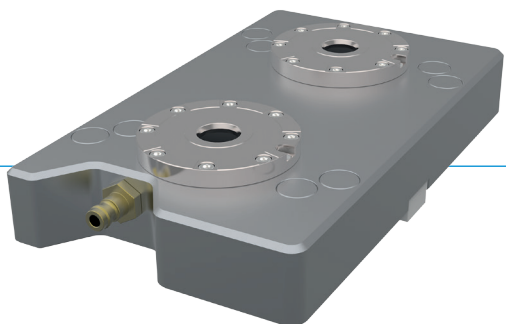




# SPN ZERO-POINT CLAMPING SYSTEM

## SPN060PS02 - CLAMPING PLATE

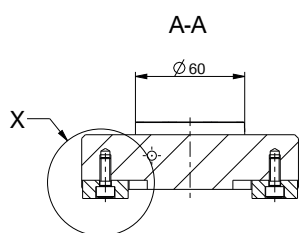
### ► 2-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

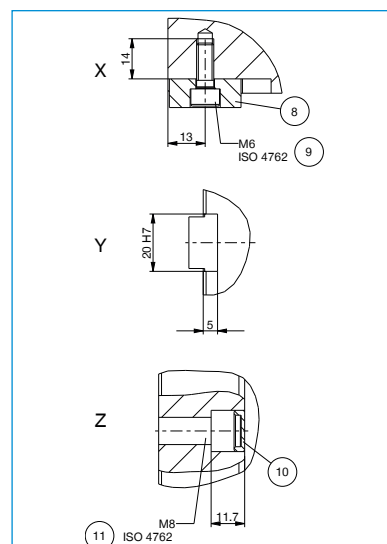
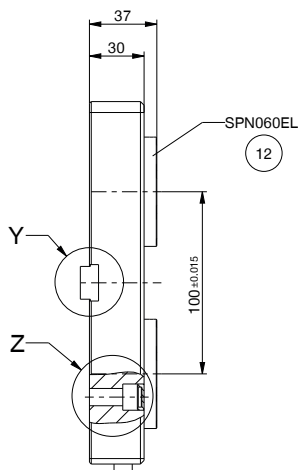
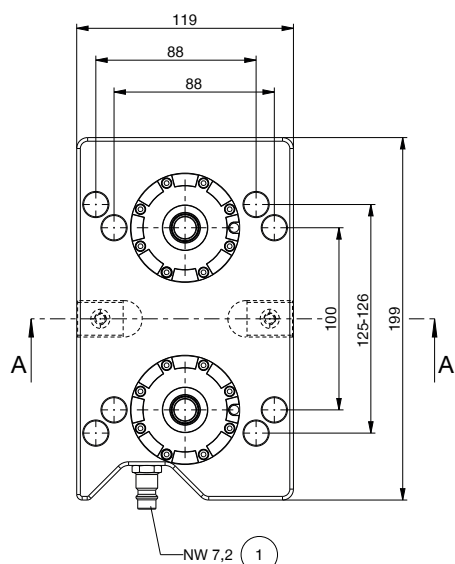
#### ► Technical Data

Order no.	SPN060PS02-60-A-00	SPN060PS02-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	2xM8 (12.9)	2xM8 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	2x4	2x2.5
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	5.2	5.2



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

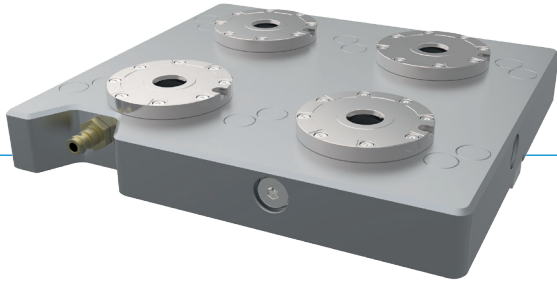
\*Not included in delivery



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN060PS04 - CLAMPING PLATE

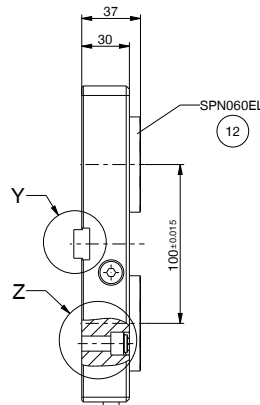
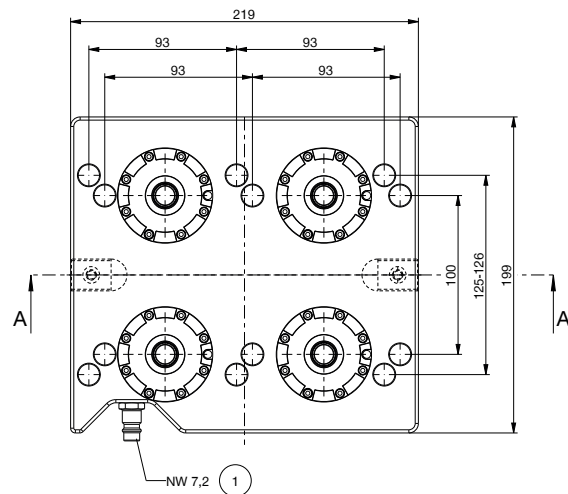
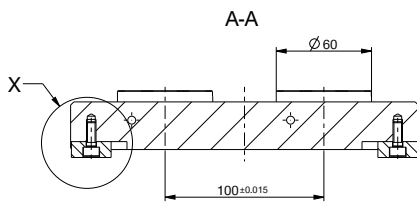
### ► 4-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

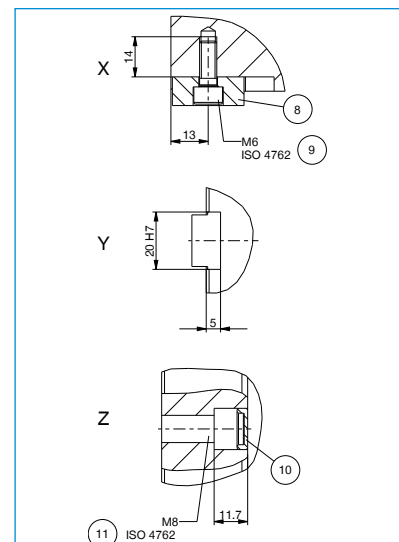
#### ► Technical Data

Order no.	SPN060PS04-60-A-00	SPN060PS04-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	4xM8 (12.9)	4xM8 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	4x4	4x2.5
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	9.8	9.8



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

\*Not included in delivery



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN060PS06 - CLAMPING PLATE

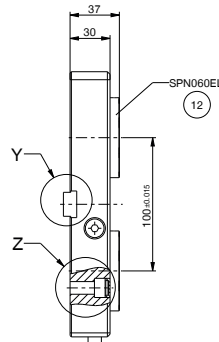
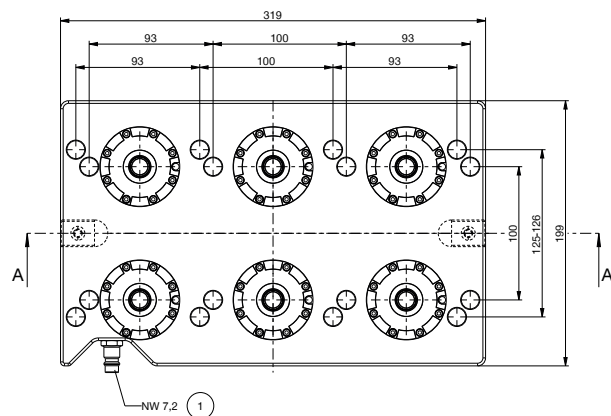
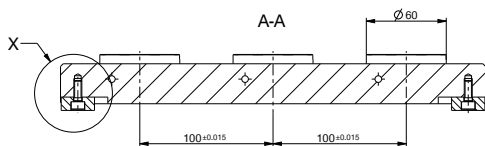
### ► 6-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

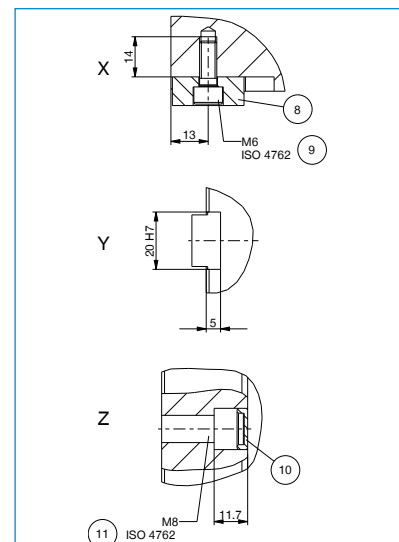
#### ► Technical Data

Order no.	SPN060PS06-60-A-00	SPN060PS06-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	6xM8 (12.9)	6xM8 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	6x4	6x2.5
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	14.4	14.4



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

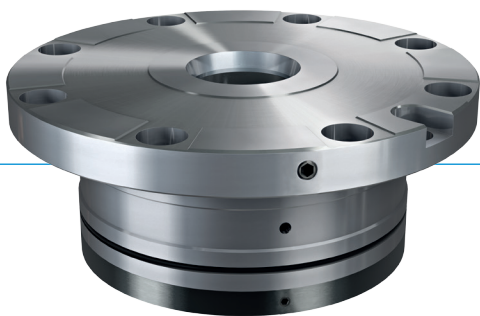
\*Not included in delivery



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN110EL

### ▶ PRODUCT ADVANTAGES



- ▶ Pre-positioning 24mm before reaching end position
- ▶ Automatic centering and pull-in already 2mm before reaching end position
- ▶ Resistant against contamination
- ▶ Mechanical locked in clamping position
- ▶ Low operating pressure of 4/6bar
- ▶ Maintenance free

### ▶ EQUIPMENT FEATURES



Pneumatic



Stainless steel



Form fit



Pins compatible with reference system



PLUS connection



Low height



Hose-less supply



Repeatability



Torque support



Hardened



Automatic sealing plug

### ▶ INCLUDED IN DELIVERY



O-ring  
77x1.5

**COR0770150**

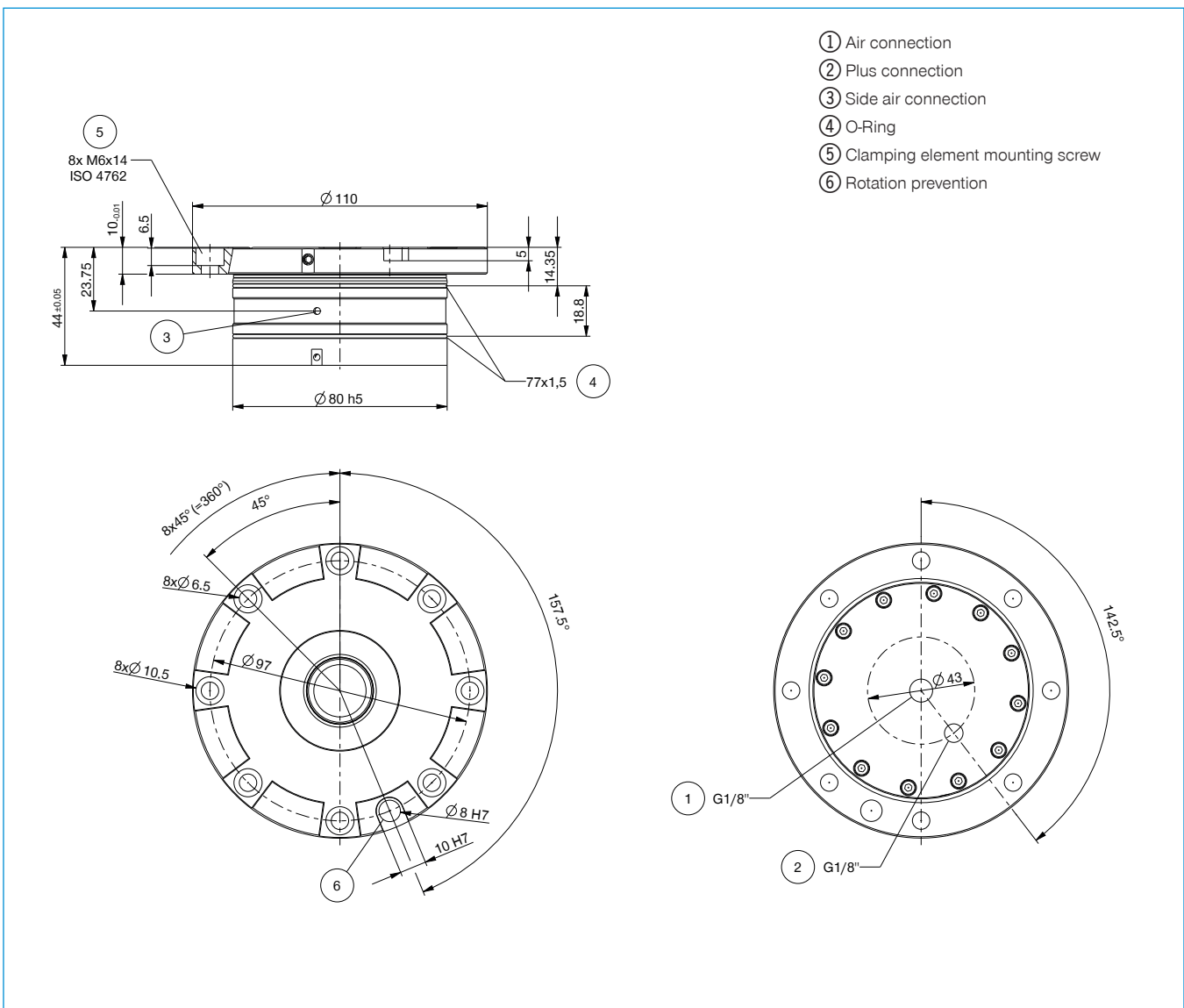


Mounting screw  
M6x14

**C0912060144D**

## ► TECHNICAL DATA

Order no.	► Technical Data	
	SPN110EL07-60-A-00	SPN110EL04-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	M8/M10 (12.9)	M8/M10 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	7	4
Pull-in force with PLUS connection [kN]	15	10
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel	Hardened stainless steel
Weight [kg]	1.64	1.64

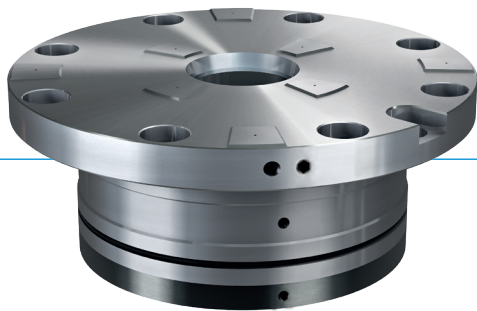




# SPN ZERO-POINT CLAMPING SYSTEM

## SPN110EL WITH CONTACT MONITORING

### ▶ PRODUCT ADVANTAGES



- ▶ Integrated contact monitoring & Cleaning of supporting area function
- ▶ Contact monitoring by flow meter or dynamic air speed indicator possible
- ▶ Resistant against contamination
- ▶ Mechanical locked in clamping position
- ▶ Low operating pressure of 4/6bar
- ▶ Maintenance free

### ▶ EQUIPMENT FEATURES



Pneumatic



Form fit



PLUS connection



Hose-less supply



Torque support



Automatic sealing plug



Stainless steel



Pins compatible with reference system



Low height



Repeatability



Hardened



Flat-surface cleaning / contact monitoring

### ▶ INCLUDED IN DELIVERY



O-ring  
77x1.5

**COR0770150**

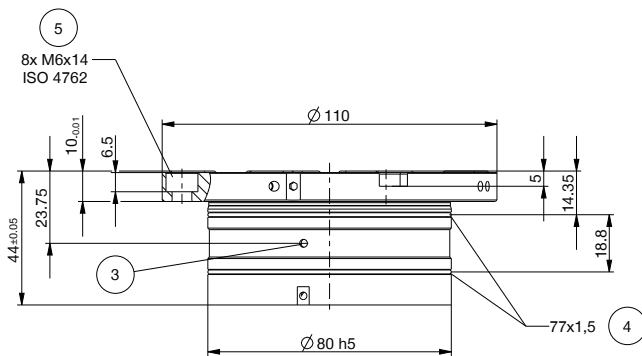


Mounting screw  
M6x14

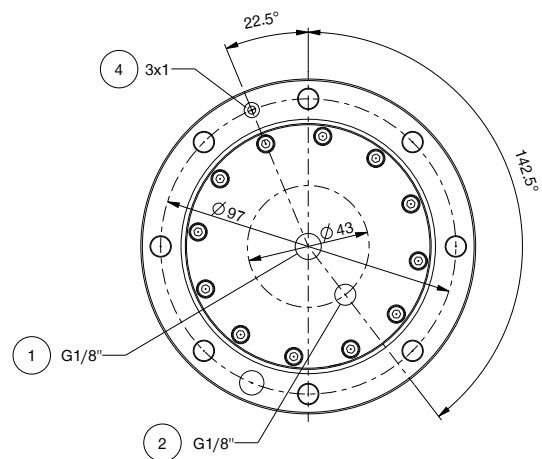
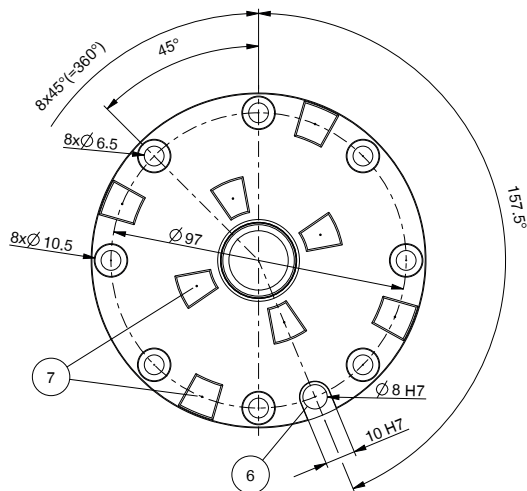
**C0912060144D**

## ► TECHNICAL DATA

Order no.	► Technical Data	
	SPN110EL07-61-A-00	SPN110EL04-41-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	M8/M10 (12.9)	M8/M10 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	7	4
Pull-in force with PLUS connection [kN]	15	10
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	Yes	Yes
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	Yes	Yes
Material	Hardened stainless steel	Hardened stainless steel
Weight [kg]	1.60	1.60



- ① Air connection
- ② Plus connection
- ③ Side air connection
- ④ O-Ring
- ⑤ Clamping element mounting screw
- ⑥ Rotation prevention
- ⑦ contact monitoring



# SPN ZERO-POINT CLAMPING SYSTEM

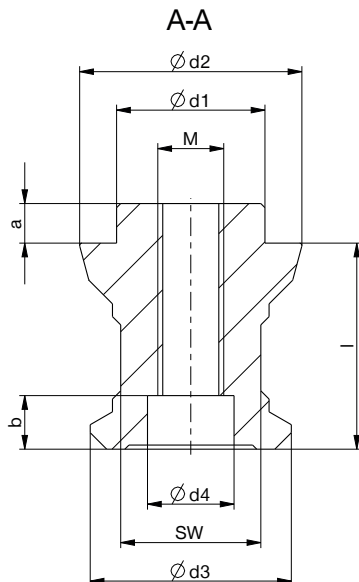
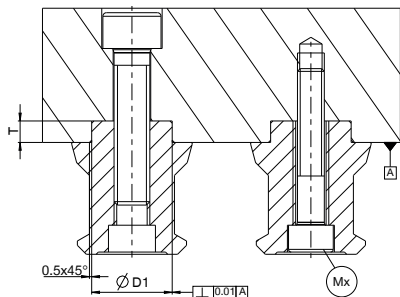
## SPN110 - PIN

### ► TECHNICAL DRAWINGS

Order no.	► Technical Data					
	SPN110BZ08-00-A-00	SPN110BE08-00-A-00	SPN110BS08-00-A-00	SPN110BZ10-00-A-00	SPN110BE10-00-A-00	SPN110BS10-00-A-00
Ød1 [mm]	18 k6	18 k6	18 k6	18 k6	18 k6	18 k6
Ød2 [mm]	27	27	27	27	27	27
Ød3 [mm]	24.4	24.4	24.4	24.4	24.4	24.4
Ød4 [mm]	10.5	10.5	10.5	13.5	13.5	13.5
SW [mm]	17	17	17	17	17	17
M *	M8	M8	M8	M10	M10	M10
Mx *	M6	M6	M6	M8	M8	M8
a [mm]	4.8	4.8	4.8	4.8	4.8	4.8
b [mm]	6.5	6.5	6.5	8.5	8.5	8.5
l [mm]	25	25	25	25	25	25
ØD1 [mm]	18 H7	18 H7	18 H7	18 H7	18 H7	18 H7
T [mm]	4.8+0.5	4.8+0.5	4.8+0.5	4.8+0.5	4.8+0.5	4.8+0.5

\*ISO 4762

Holding force max. [kN] M6=18, M8=33, M10=53, M12=77, M16=145, M20=227



SPN110BZ08-00-A-00  
Centering pin

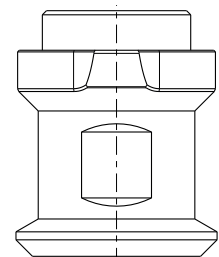
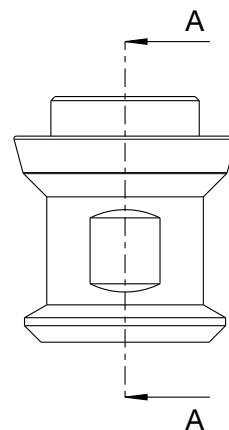
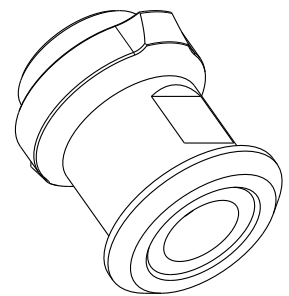
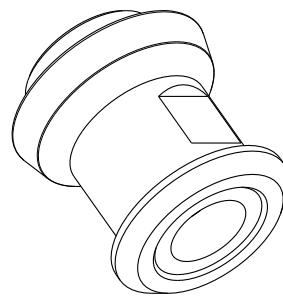
SPN110BE08-00-A-00  
Retention pin

SPN110BZ10-00-A-00  
Centering pin

SPN110BE10-00-A-00  
Retention pin

SPN110BS08-00-A-00  
Sword pin

SPN110BS10-00-A-00  
Sword pin



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN110PS02 - CLAMPING PLATE

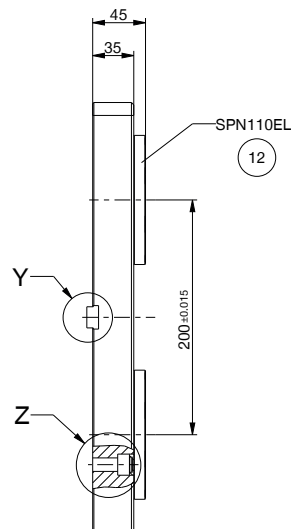
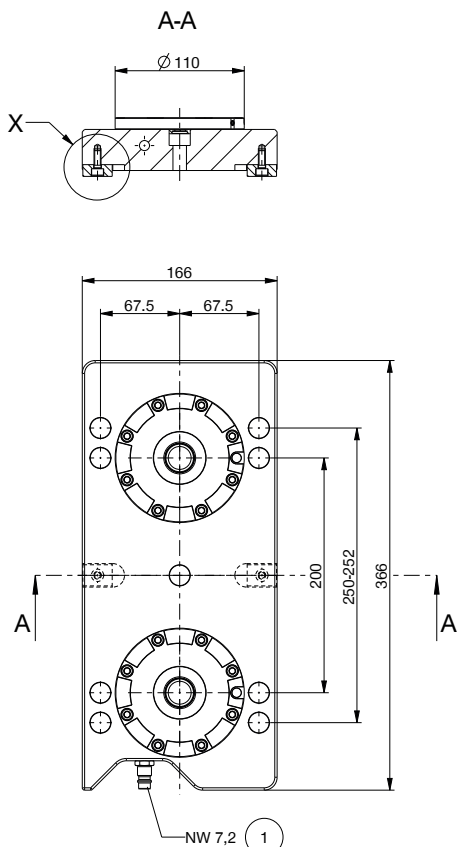
### ► 2-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

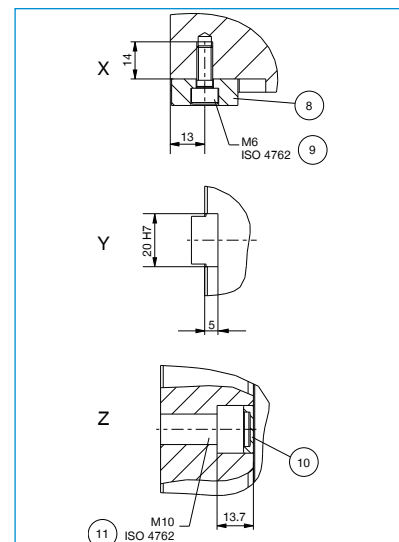
### ► Technical Data

Order no.	SPN110PS02-60-A-00	SPN110PS02-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	2xM8/M10 (12.9)	2xM8/M10 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	2x7	2x4
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	16.3	16.3



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

\*Not included in delivery

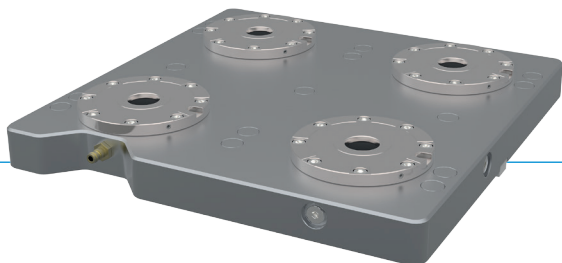




# SPN ZERO-POINT CLAMPING SYSTEM

## SPN110PS04 - CLAMPING PLATE

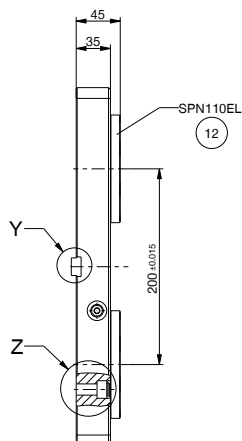
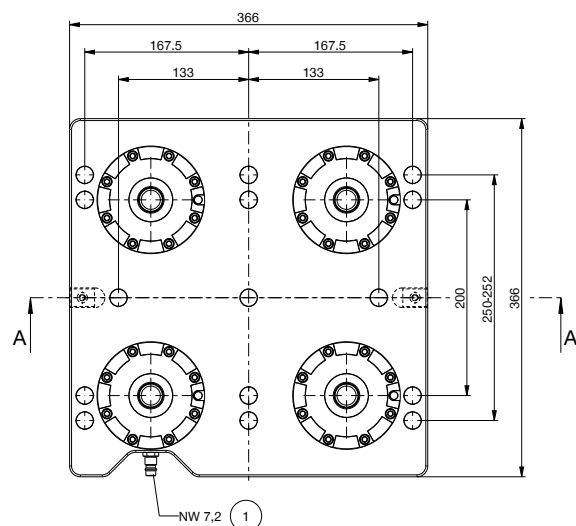
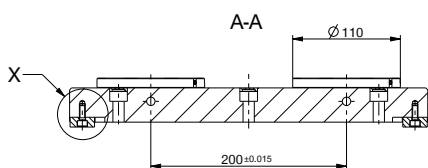
### ► 4-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

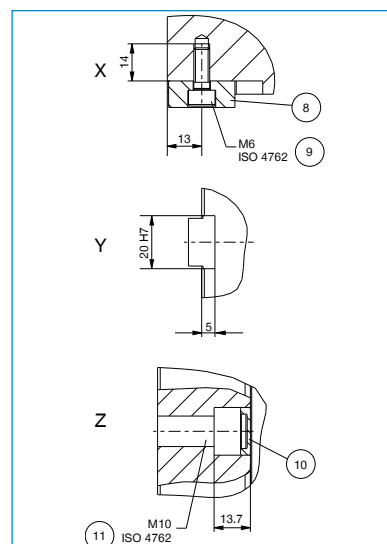
#### ► Technical Data

Order no.	SPN110PS04-60-A-00	SPN110PS04-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	4xM8/M10 (12.9)	4xM8/M10 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	4x7	4x4
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	36.5	36.5



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

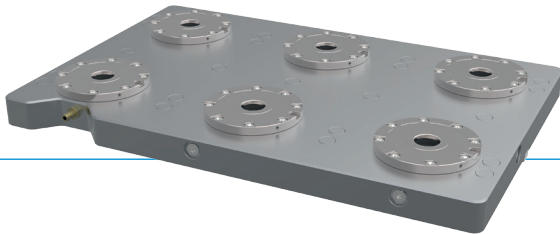
\*Not included in delivery



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN110PS06 - CLAMPING PLATE

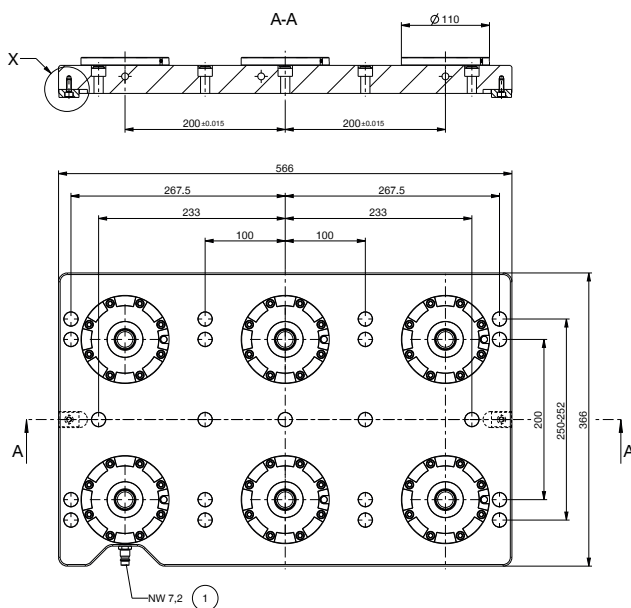
### ► 6-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

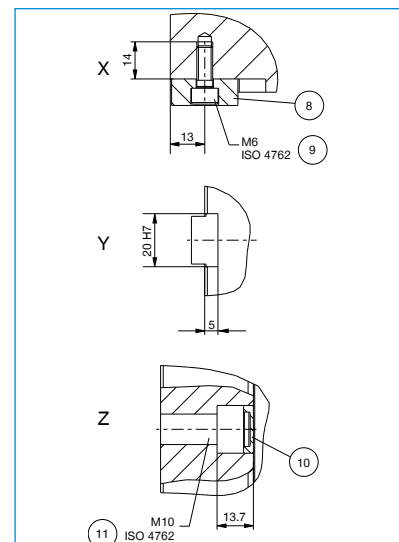
#### ► Technical Data

Order no.	SPN110PS06-60-A-00	SPN110PS06-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	6xM8/M10 (12.9)	6xM8/M10 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	6x7	6x4
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	56.7	56.7



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

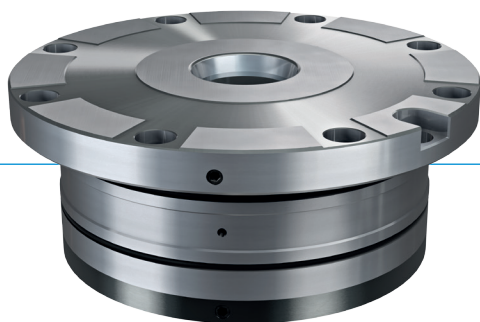
\*Not included in delivery



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN138EL

### ▶ PRODUCT ADVANTAGES



- ▶ Pre-positioning 24mm before reaching end position
- ▶ Automatic centering and pull-in already 2mm before reaching end position
- ▶ Resistant against contamination
- ▶ Mechanical locked in clamping position
- ▶ Low operating pressure of 4/6bar
- ▶ Maintenance free

### ▶ EQUIPMENT FEATURES



Pneumatic



Stainless steel



Form fit



Pins compatible with reference system



PLUS connection



Low height



Hose-less supply



Repeatability



Torque support



Hardened



Automatic sealing plug

### ▶ INCLUDED IN DELIVERY



O-ring  
108x2

**COR1080200**

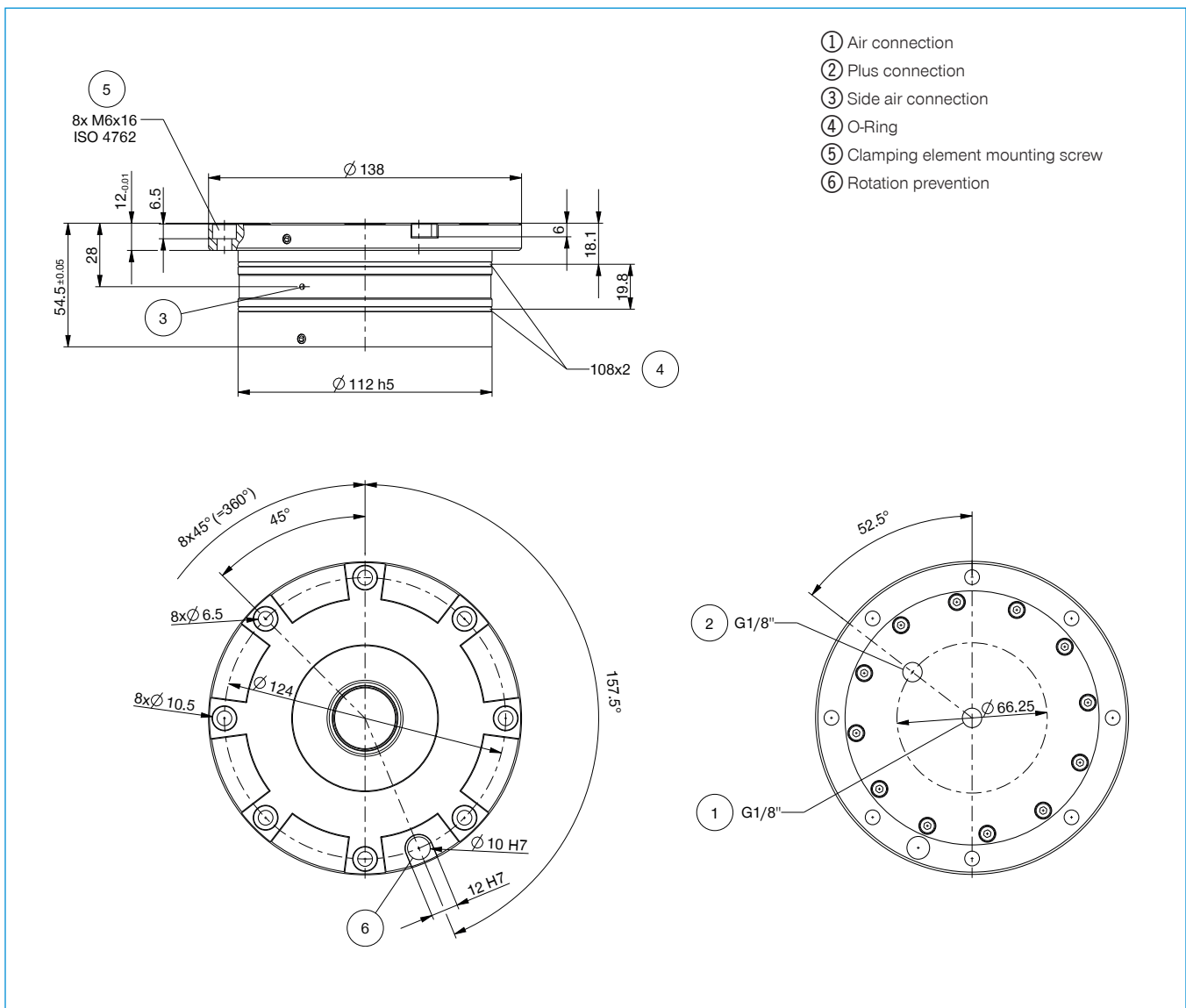


Mounting screw  
M6x16

**C0912060164D**

## ▶ TECHNICAL DATA

Order no.	▶ Technical Data	
	SPN138EL18-60-A-00	SPN138EL09-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	M12/M16 (12.9)	M12/M16 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	18	9
Pull-in force with PLUS connection [kN]	42	22.5
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel	Hardened stainless steel
Weight [kg]	3.66	3.66

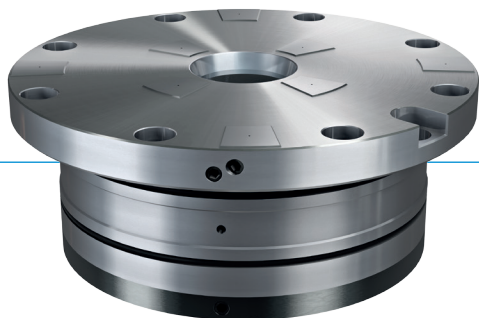




# SPN ZERO-POINT CLAMPING SYSTEM

## SPN138EL WITH CONTACT MONITORING

### ▶ PRODUCT ADVANTAGES



- ▶ Integrated contact monitoring & Cleaning of supporting area function
- ▶ Contact monitoring by flow meter or dynamic air speed indicator possible
- ▶ Resistant against contamination
- ▶ Mechanical locked in clamping position
- ▶ Low operating pressure of 4/6bar
- ▶ Maintenance free

### ▶ EQUIPMENT FEATURES



Pneumatic



Form fit



PLUS connection



Hose-less supply



Torque support



Automatic sealing plug



Stainless steel



Pins compatible with reference system



Low height



Repeatability



Hardened



Flat-surface cleaning / contact monitoring

### ▶ INCLUDED IN DELIVERY



O-ring  
108x2

**COR1080200**

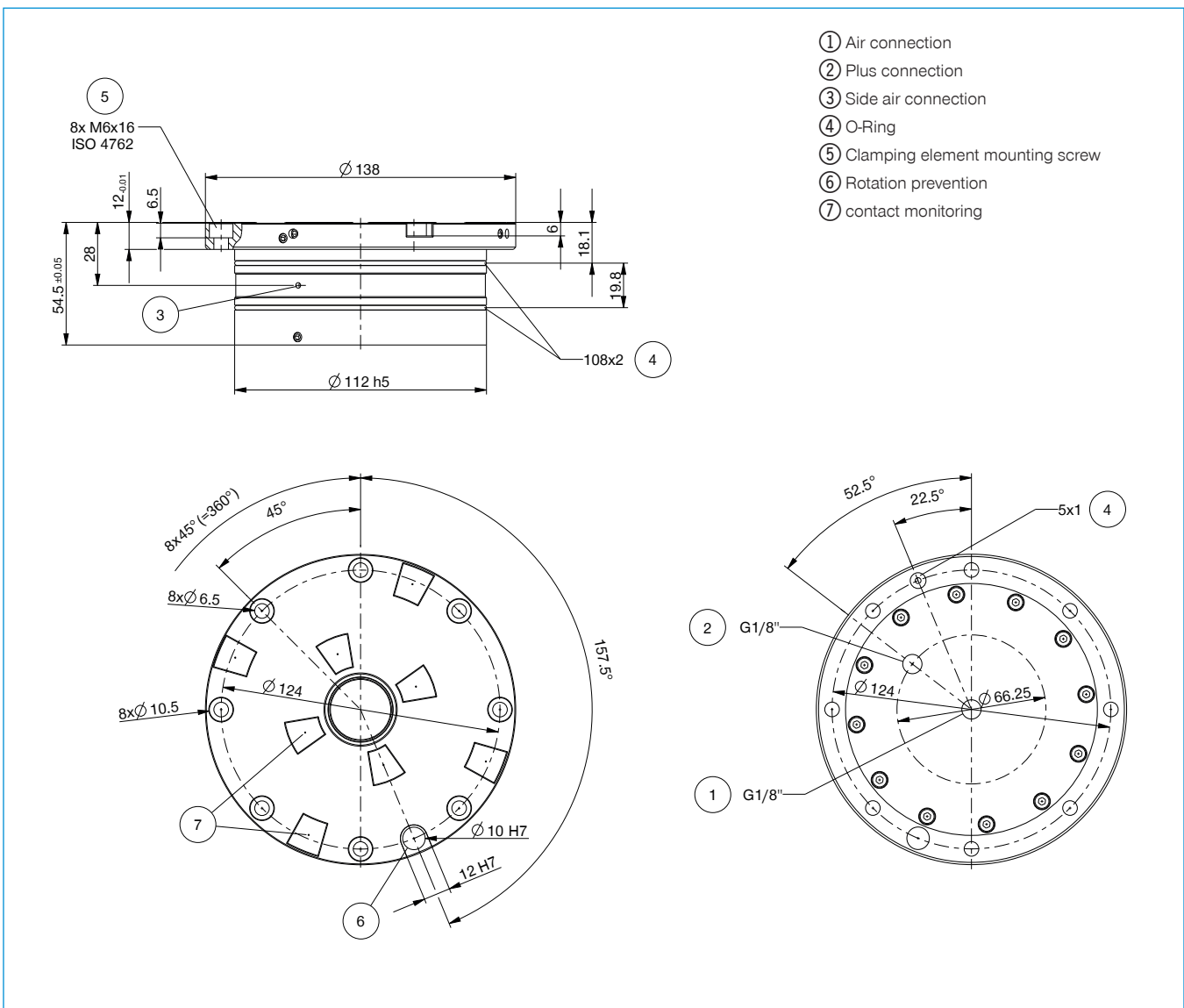


Mounting screw  
M6x16

**C0912060164D**

## TECHNICAL DATA

Order no.	Technical Data	
	SPN138EL18-61-A-00	SPN138EL09-41-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	M12/M16 (12.9)	M12/M16 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	18	9
Pull-in force with PLUS connection [kN]	42	22.5
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	Yes	Yes
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	Yes	Yes
Material	Hardened stainless steel	Hardened stainless steel
Weight [kg]	3.60	3.60



# SPN ZERO-POINT CLAMPING SYSTEM

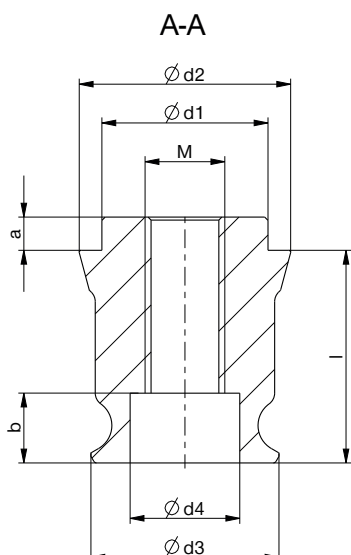
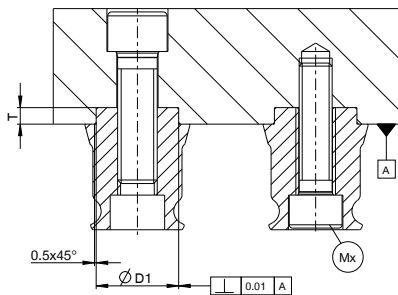
## SPN138 - PIN

### ► TECHNICAL DRAWINGS

Order no.	► Technical Data					
	SPN138BZ12-00-A-00	SPN138BE12-00-A-00	SPN138BS12-00-A-00	SPN138BZ16-00-A-00	SPN138BE16-00-A-00	SPN138BS16-00-A-00
Ød1 [mm]	25 k6	25 k6	25 k6	25 k6	25 k6	25 k6
Ød2 [mm]	31.8	31.8	31.8	31.8	31.8	31.8
Ød3 [mm]	28.3	28.3	28.3	28.3	28.3	28.3
Ød4 [mm]	16.5	16.5	16.5	16.5	16.5	16.5
SW [mm]	24	24	24	24	24	24
M *	M12	M12	M12	M16	M16	M16
Mx *	M10	M10	M10			
a [mm]	5	5	5	5	5	5
b [mm]	10.5	10.5	10.5	10.5	10.5	10.5
l [mm]	32	32	32	32	32	32
ØD1 [mm]	25 H7	25 H7	25 H7	25 H7	25 H7	25 H7
T [mm]	5+0.5	5+0.5	5+0.5	5+0.5	5+0.5	5+0.5

\*ISO 4762

Holding force max. [kN] M6=18, M8=33, M10=53, M12=77, M16=145, M20=227



SPN138BZ12-00-A-00  
Centering pin

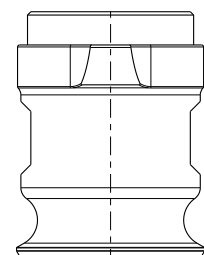
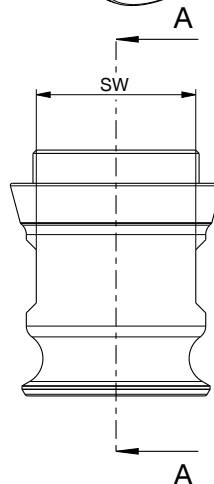
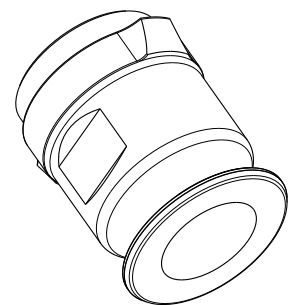
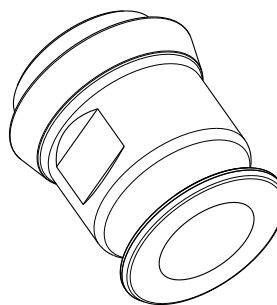
SPN138BE12-00-A-00  
Retention pin

SPN138BZ16-00-A-00  
Centering pin

SPN138BE16-00-A-00  
Retention pin

SPN138BS12-00-A-00  
Sword pin

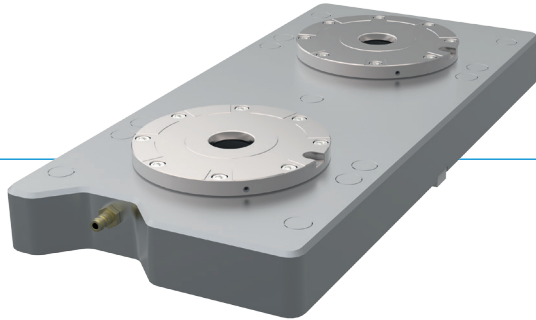
SPN138BS16-00-A-00  
Sword pin



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN138PS02 - CLAMPING PLATE

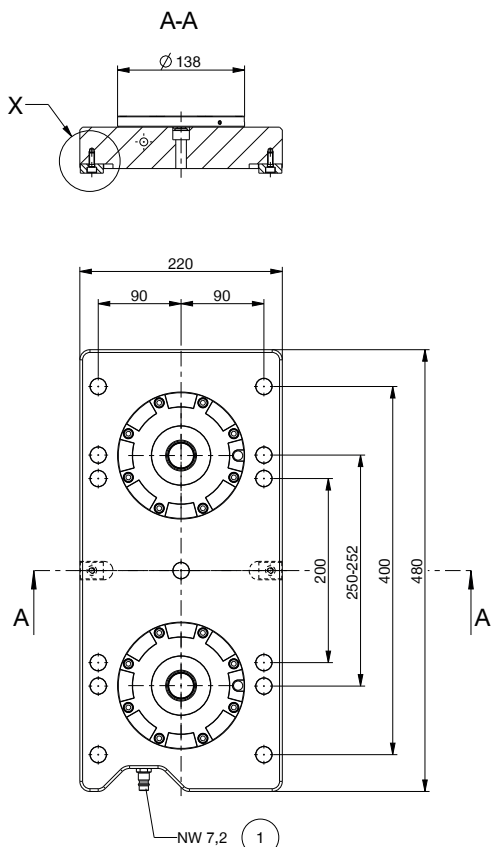
### ► 2-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

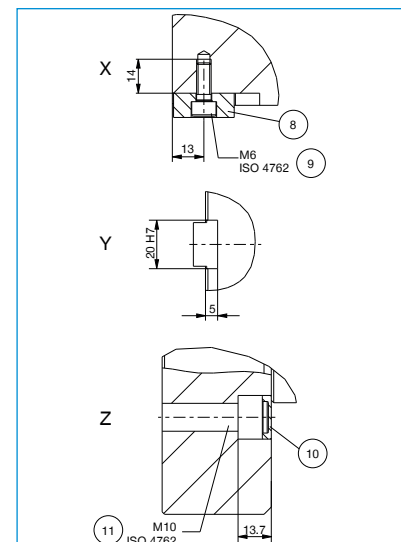
#### ► Technical Data

Order no.	SPN138PS02-60-A-00	SPN138PS02-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	2xM12/M16 (12.9)	2xM12/M16 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	2x18	2x9
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	36.4	36.4



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

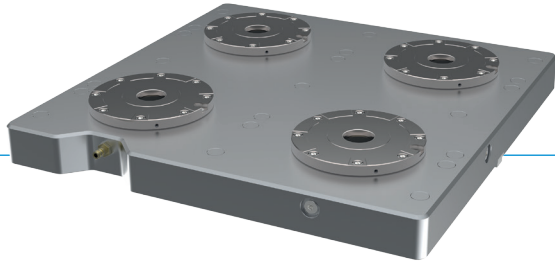
\*Not included in delivery



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN138PS04 - CLAMPING PLATE

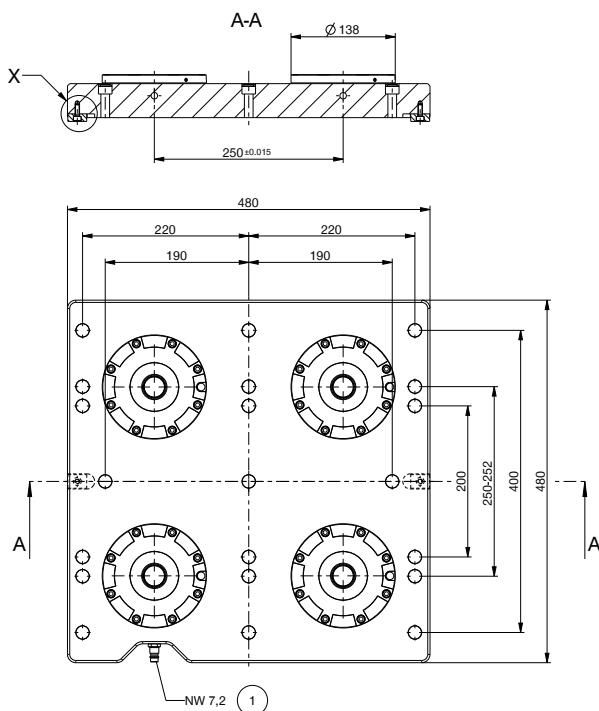
### ► 4-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

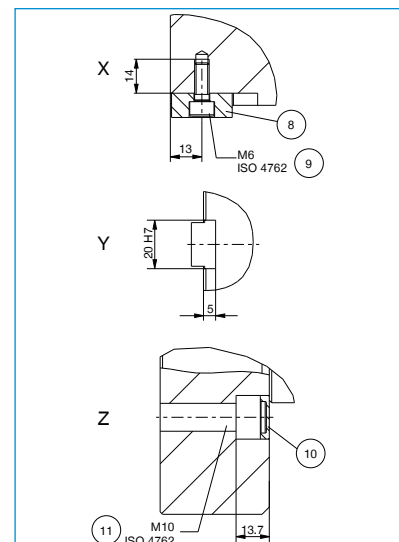
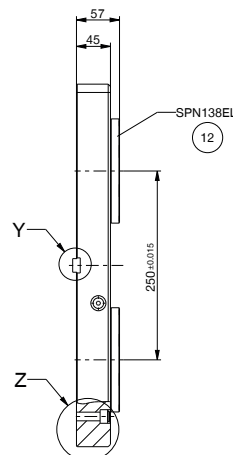
#### ► Technical Data

Order no.	SPN138PS04-60-A-00	SPN138PS04-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	4xM12/M16 (12.9)	4xM12/M16 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	4x18	4x9
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	80.2	80.2



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

\*Not included in delivery

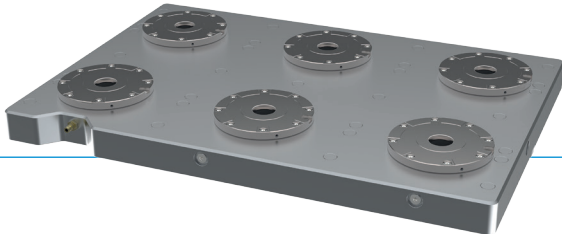




# SPN ZERO-POINT CLAMPING SYSTEM

## SPN138PS06 - CLAMPING PLATE

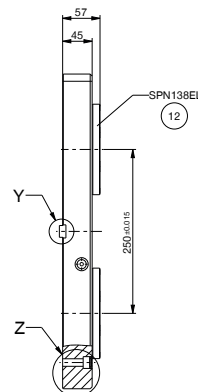
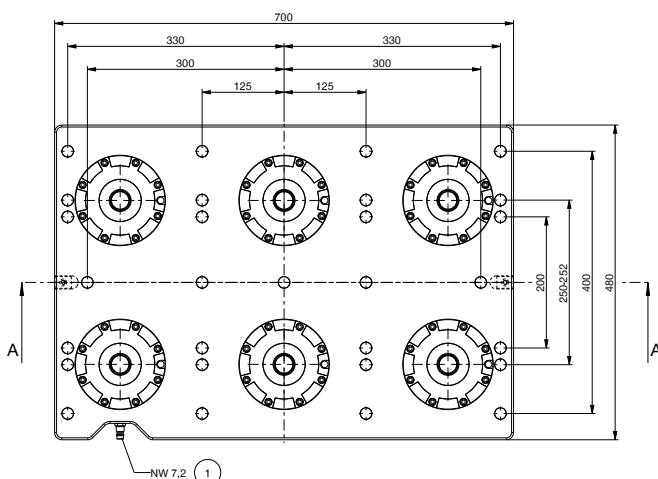
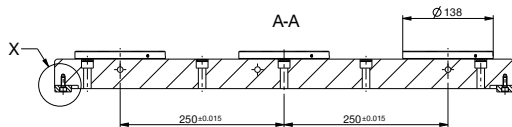
### ► 6-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

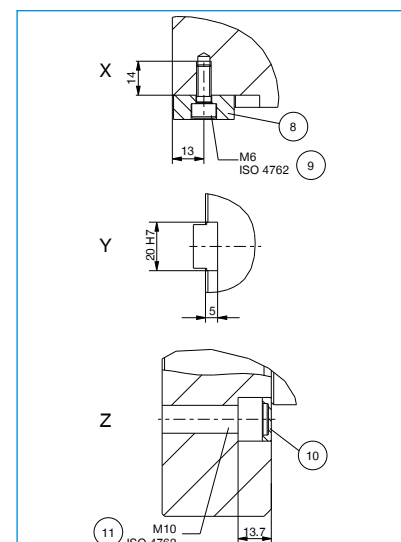
#### ► Technical Data

Order no.	SPN138PS06-60-A-00	SPN138PS06-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	6xM12/M16 (12.9)	6xM12/M16 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	6x18	6x9
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	117.4	117.4



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

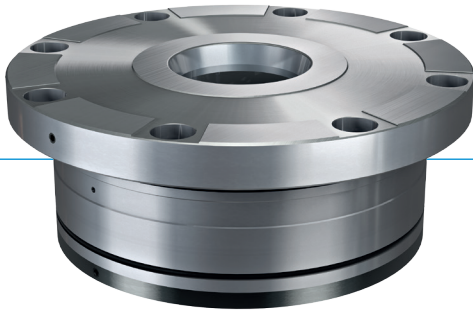
\* Not included in delivery



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN195EL

### ▶ PRODUCT ADVANTAGES



**SPN195EL is the ideal ZPS for your heavy duty machinery. It has been designed with the main focus on being immune against angel error while inserting of large-scale parts.**

- ▶ Resistant against contamination (patent sealing piston)
- ▶ Pre-positioning 48mm before reaching end position
- ▶ Automatic centering and pull-in already 4mm before reaching end position
- ▶ No-sensitive against staining
- ▶ Mechanical locked in clamping position
- ▶ Low operating pressure of 4/6bar
- ▶ Maintenance free

### ▶ EQUIPMENT FEATURES



Pneumatic



Stainless steel



Form fit



Pins compatible with reference system



PLUS connection



Low height



Hose-less supply



Repeatability



Torque support



Hardened



Automatic sealing plug

### ▶ INCLUDED IN DELIVERY



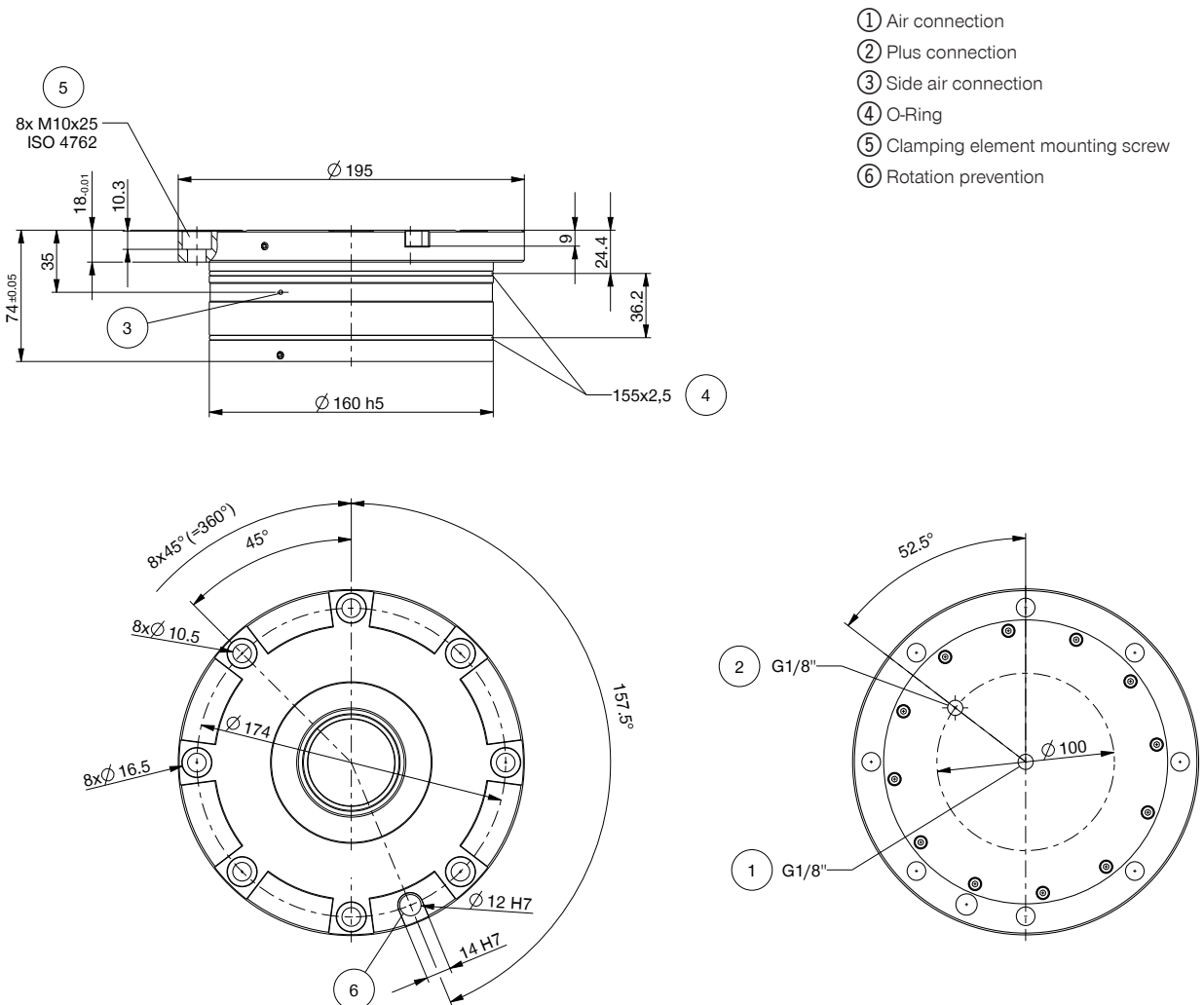
O-ring  
155x2.5  
**COR1550250**



Mounting screw  
M10x25  
**C0912100254D**

## TECHNICAL DATA

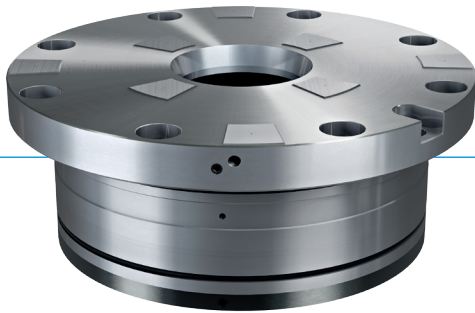
Order no.	Technical Data	
	SPN195EL30-60-A-00	SPN195EL20-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	M20 (12.9)	M20 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	30	20
Pull-in force with PLUS connection [kN]	80	50
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel	Hardened stainless steel
Weight [kg]	9.85	9.85



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN195EL WITH CONTACT MONITORING

### ▶ PRODUCT ADVANTAGES



- ▶ Integrated contact monitoring & Cleaning of supporting area function
- ▶ Contact monitoring by flow meter or dynamic air speed indicator possible
- ▶ Resistant against contamination
- ▶ Mechanical locked in clamping position
- ▶ Low operating pressure of 4/6bar
- ▶ Maintenance free

### ▶ EQUIPMENT FEATURES



Pneumatic



Form fit



PLUS connection



Hose-less supply



Torque support



Automatic sealing plug



Stainless steel



Pins compatible with reference system



Low height



Repeatability



Hardened



Flat-surface cleaning / contact monitoring

### ▶ INCLUDED IN DELIVERY



O-ring  
155x2.5

**COR1550250**

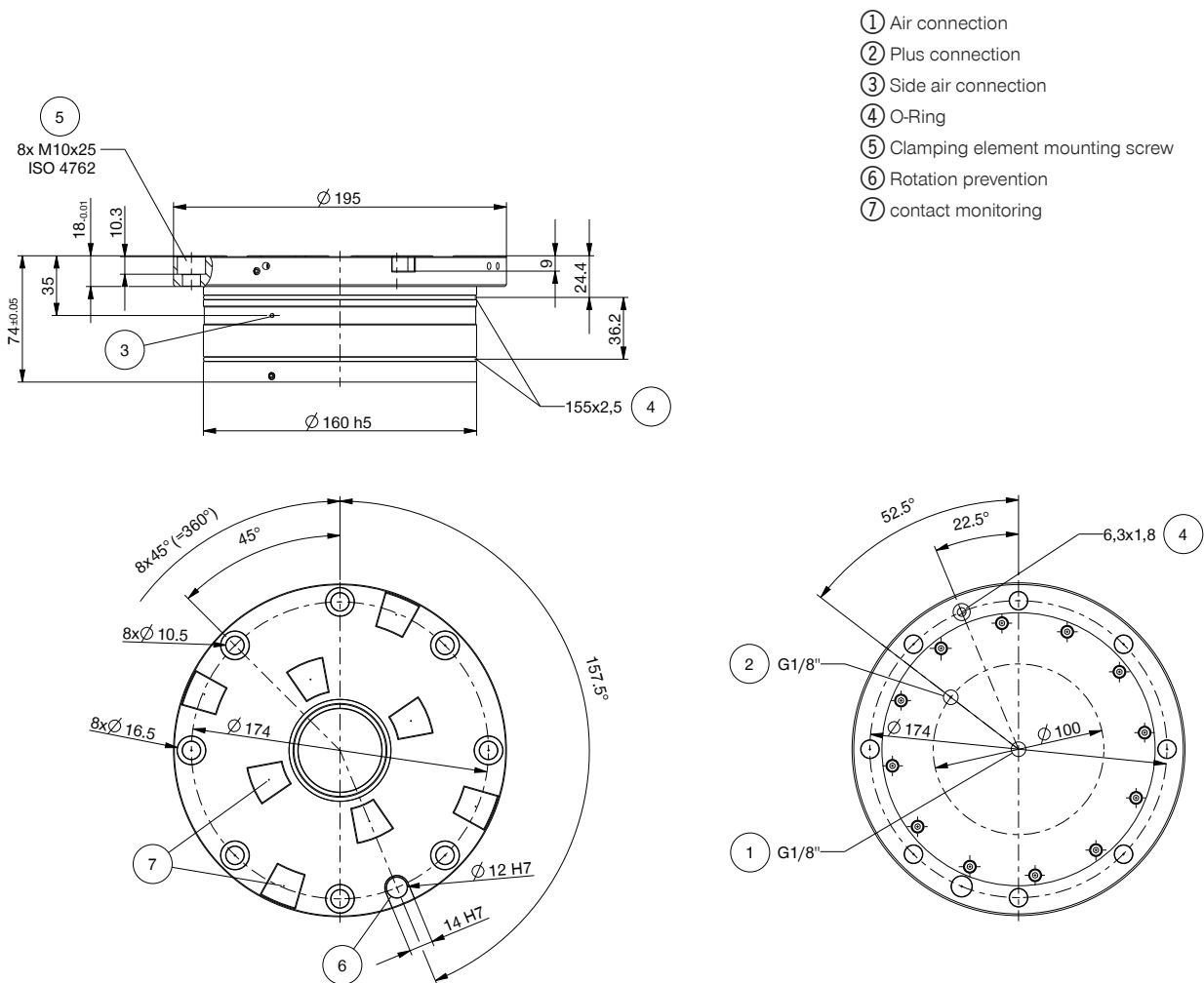


Mounting screw  
M10x25

**C0912100254D**

## ► TECHNICAL DATA

Order no.	► Technical Data	
	SPN195EL30-61-A-00	SPN195EL20-41-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	M20 (12.9)	M20 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	30	20
Pull-in force with PLUS connection [kN]	80	50
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	Yes	Yes
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	Yes	Yes
Material	Hardened stainless steel	Hardened stainless steel
Weight [kg]	9.70	9.70





# SPN ZERO-POINT CLAMPING SYSTEM

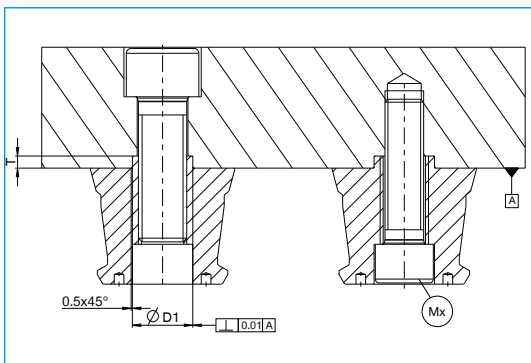
## SPN195 - PIN

### ► TECHNICAL DRAWINGS

Order no.	► Technical Data		
	SPN195BZ20-00-A-00	SPN195BE20-00-A-00	SPN195BS20-00-A-00
Ød1 [mm]	30 k6	30 k6	30 k6
Ød2 [mm]	59.7	59.7	59.7
Ød3 [mm]	54	54	54
Ød4 [mm]	25	25	25
Ød5 [mm]	4	4	4
s [mm]	36	36	36
t [mm]	4	4	4
M	M20	M20	M20
Mx *	M16	M16	M16
a [mm]	5	5	5
b [mm]	16.5	16.5	16.5
l [mm]	48	48	48
ØD1 [mm]	30 H7	30 H7	30 H7
T [mm]	5+0.5	5+0.5	5+0.5

\*ISO 4762

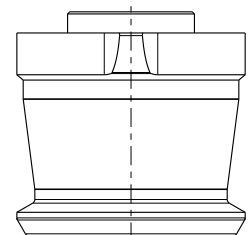
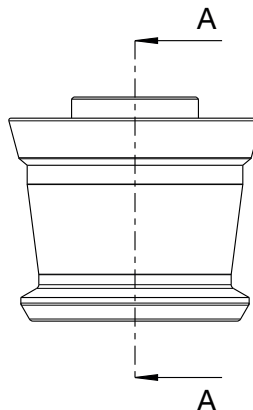
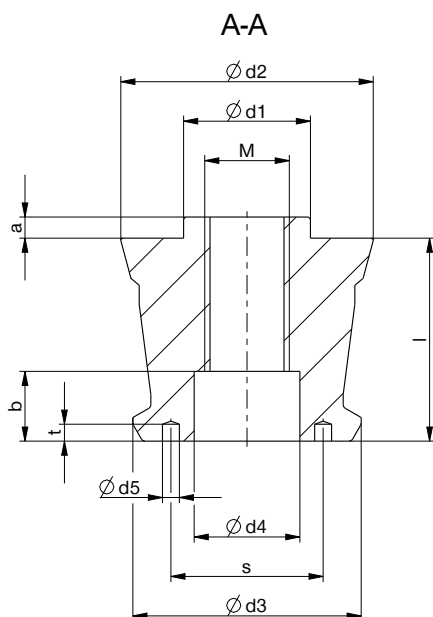
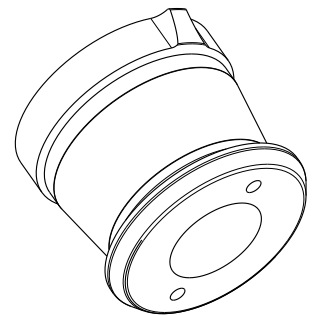
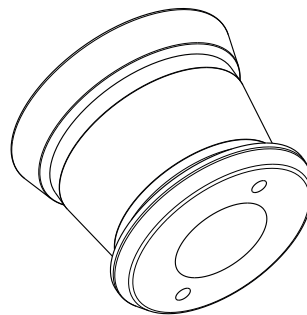
Holding force max. [kN] M6=18, M8=33, M10=53, M12=77, M16=145, M20=227



SPN195BZ20-00-A-00  
Centering pin

SPN195BE20-00-A-00  
Retention pin

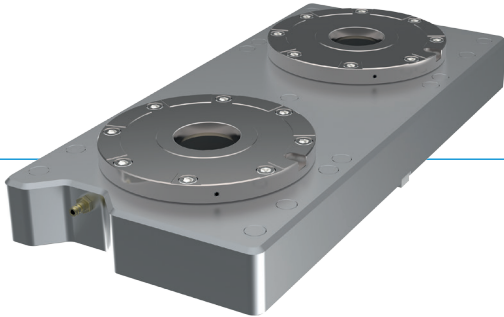
SPN195BS20-00-A-00  
Sword pin



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN195PS02 - CLAMPING PLATE

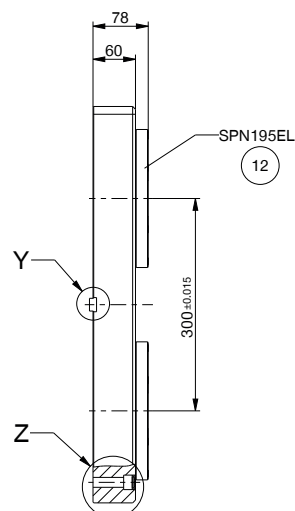
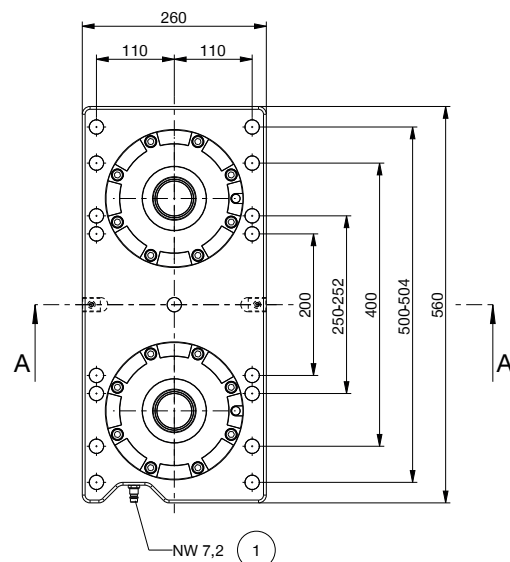
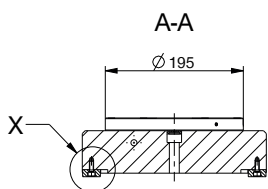
### ► 2-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

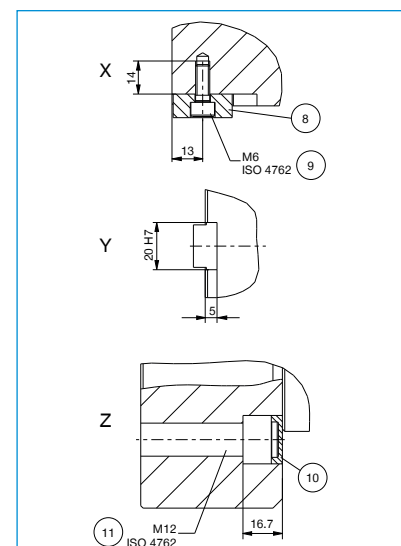
#### ► Technical Data

Order no.	SPN195PS02-60-A-00	SPN195PS02-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	2xM20 (12.9)	2xM20 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	2x30	2x20
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	67.5	67.5



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

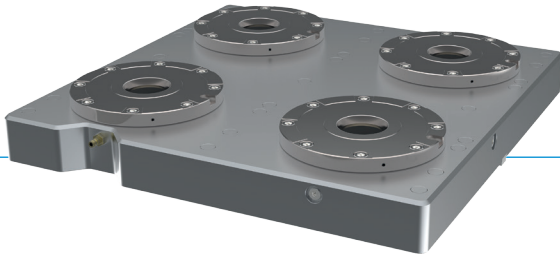
\*Not included in delivery



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN195PS04 - CLAMPING PLATE

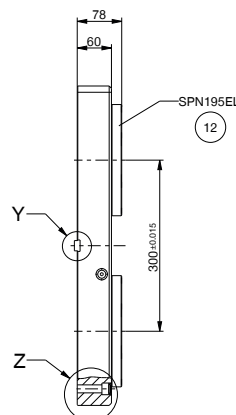
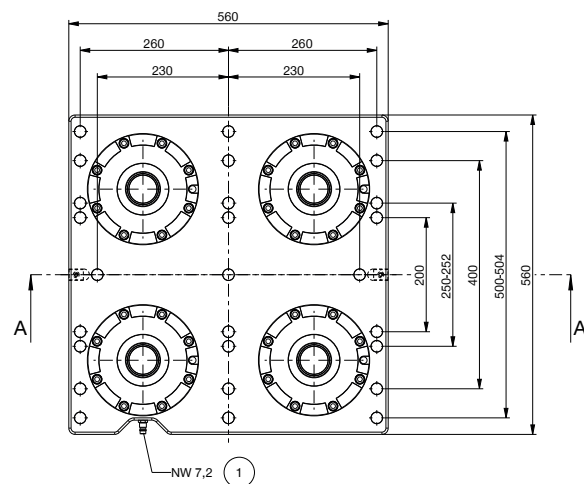
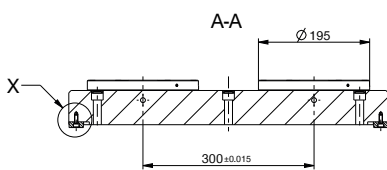
### ► 4-FOLD



- Compact design with optimized design height
- System assembly with high precision
- Integrated air supply/distribution

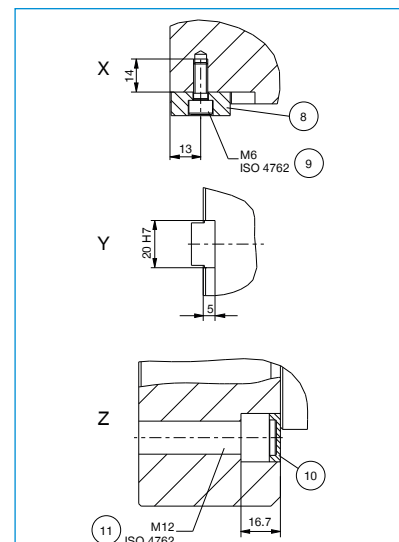
#### ► Technical Data

Order no.	SPN195PS04-60-A-00	SPN195PS04-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	4xM20 (12.9)	4xM20 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	4x30	4x20
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	146.7	146.7



- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

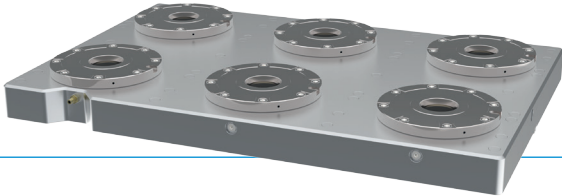
\*Not included in delivery



# SPN ZERO-POINT CLAMPING SYSTEM

## SPN195PS06 - CLAMPING PLATE

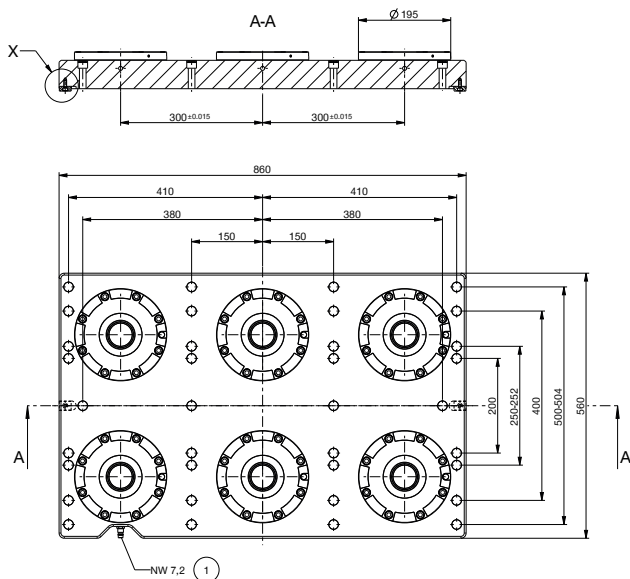
### ▶ 6-FOLD



- ▶ Compact design with optimized design height
- ▶ System assembly with high precision
- ▶ Integrated air supply/distribution

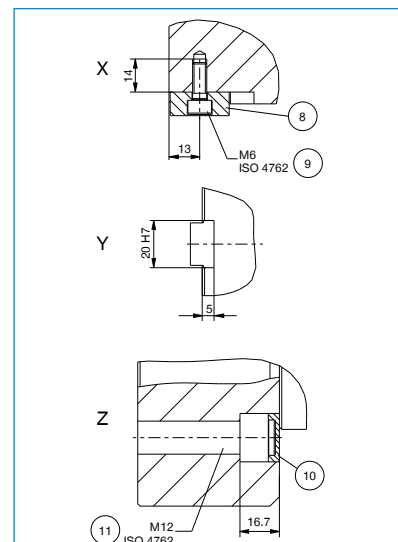
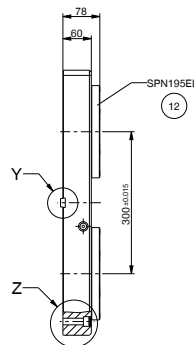
#### ▶ Technical Data

Order no.	SPN195PS06-60-A-00	SPN195PS06-40-A-00
Operation mode	Pneumatic	Pneumatic
Holding force max.	6xM20 (12.9)	6xM20 (12.9)
Operating pressure [bar]	6 ... 7	4 ... 7
Retraction force [kN]	6x30	6x20
Operating temperature [°C]	-10 ... +70	-10 ... +70
Rotation prevention	Yes	Yes
Contact monitoring	No	No
Repetition accuracy [mm]	0.005	0.005
Flat-surface cleaning	No	No
Material	Hardened stainless steel/steel	Hardened stainless steel/steel
Weight [kg]	226.0	226.0

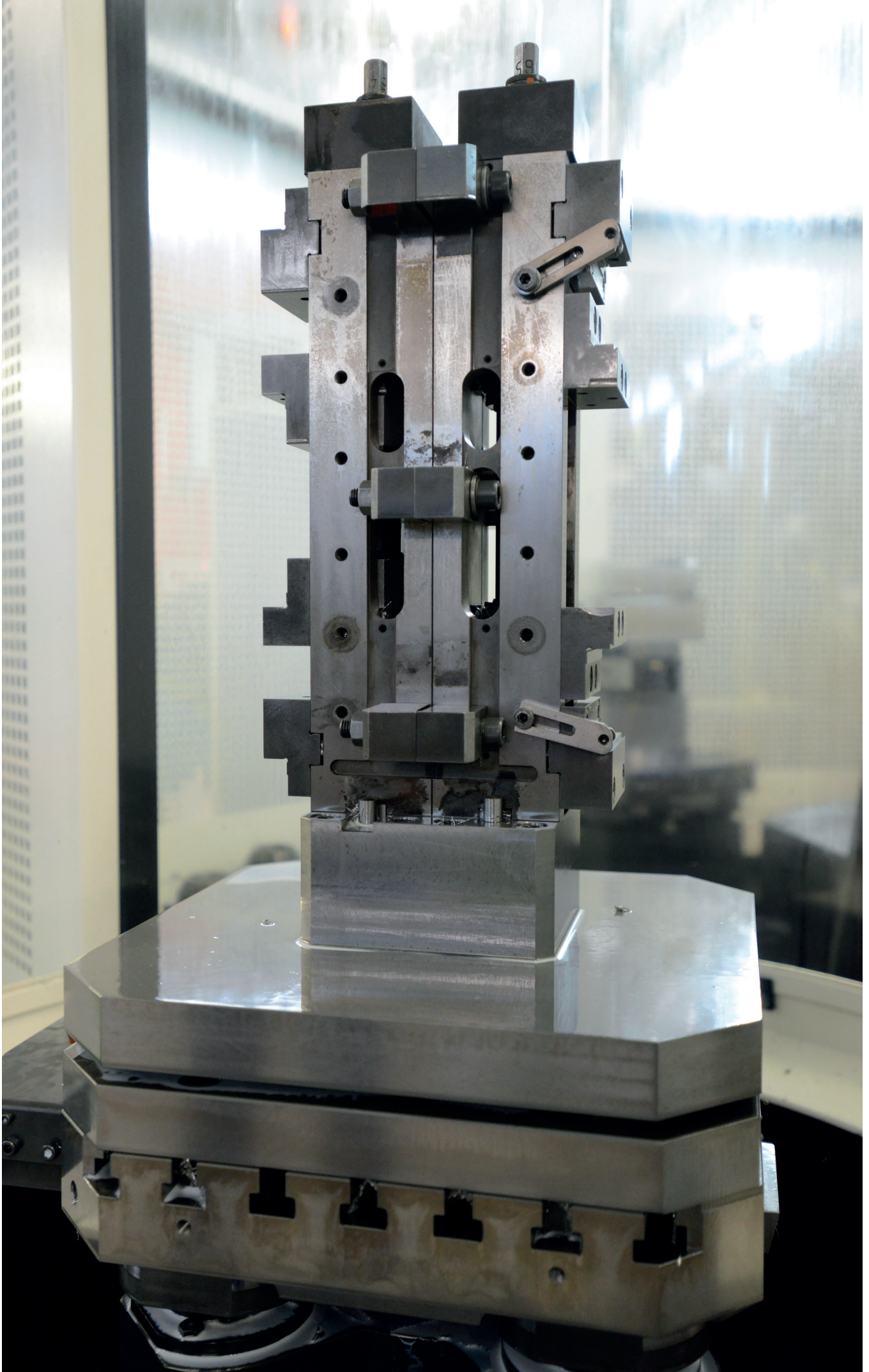


- ① Air connection
- ⑧ T-slot nut\*
- ⑨ T-slot nut mounting screw\*
- ⑩ Sealing cap
- ⑪ Clamping plate mounting screw\*
- ⑫ Clamping element

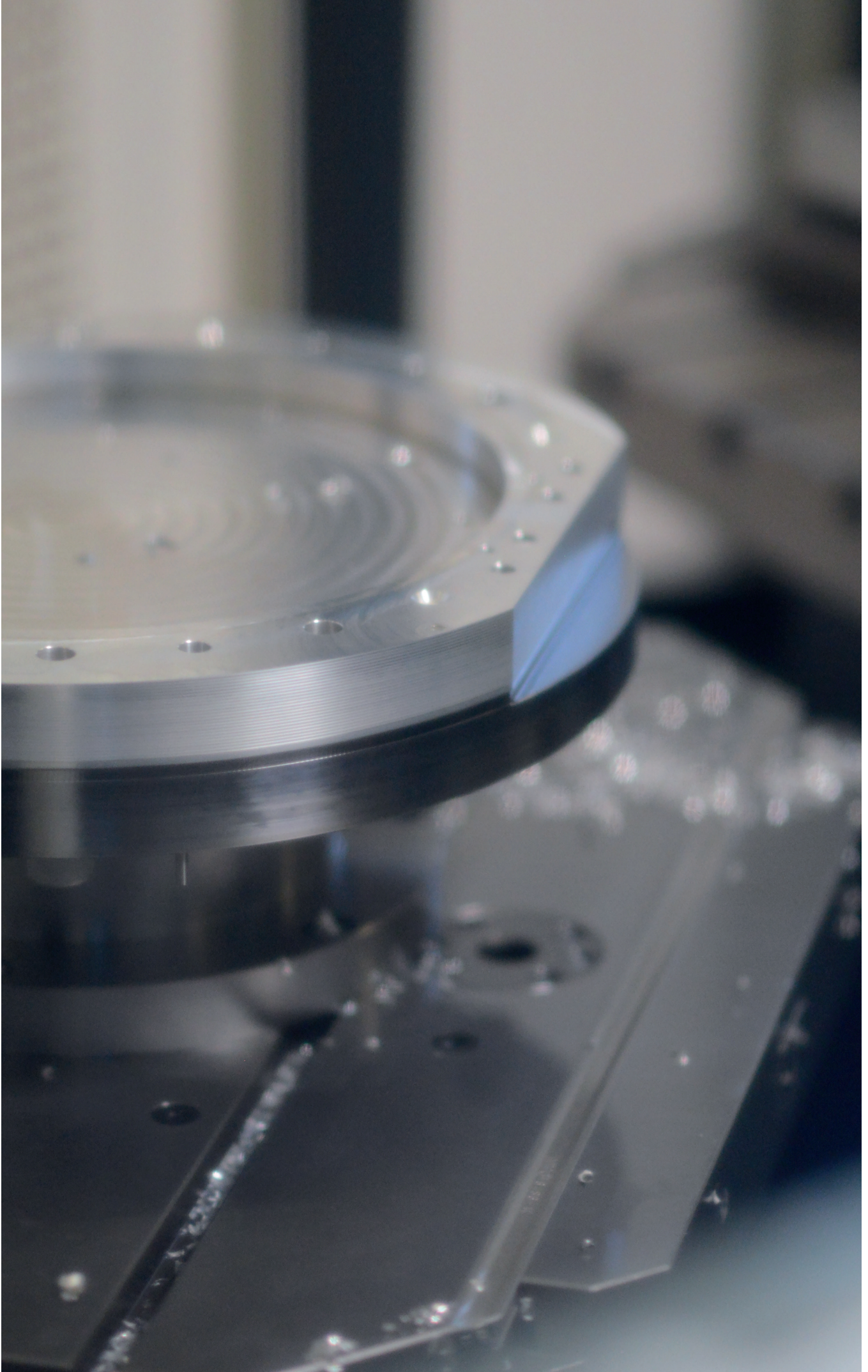
\*Not included in delivery











# SPN ZERO-POINT CLAMPING SYSTEM

## FAQ

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### ▶ **Can clamping pins be integrated directly into the workpiece?**

The clamping pins can be integrated directly into the workpiece using the Zimmer zero-point clamping system to clamp the workpiece with precision, repeatability and cost efficiency. This approach makes it possible to perform complete 5-side machining in one workpiece clamping setup.

### ▶ **Why are there different clamping pins available?**

The various clamping pins ensure the desired precision clamping behavior in different three-dimensional axes. The centering pin defines the reference point for the workpiece and provides precision in the X, Y and Z direction. The sword pin provides precision in the X or Y and Z direction and the clamping pin clamps only in the Z direction.

### ▶ **Do the zero-point clamping systems feature temperature compensation?**

The Zimmer zero-point clamping systems can be implemented to provide temperature compensation if you only use sword pins. (see page 10)

### ▶ **Which distance tolerances should be observed for in-house production?**

Zimmer recommends a distance tolerance of +/- 0.015 mm for clamping pins and zero-point clamping systems.

### ▶ **What is a “PLUS connection”? How does a PLUS connection work?**

Zimmer zero-point clamping systems come standard with an additional pneumatic connection. This connection can be used to increase the clamping force significantly.

### ▶ **How does the contact monitoring work?**

The contact monitoring makes it possible to check whether the workpiece or clamping pallet is laying flat on the surface of the zero-point clamping system by using a connected flowmeter or Pitot tube.

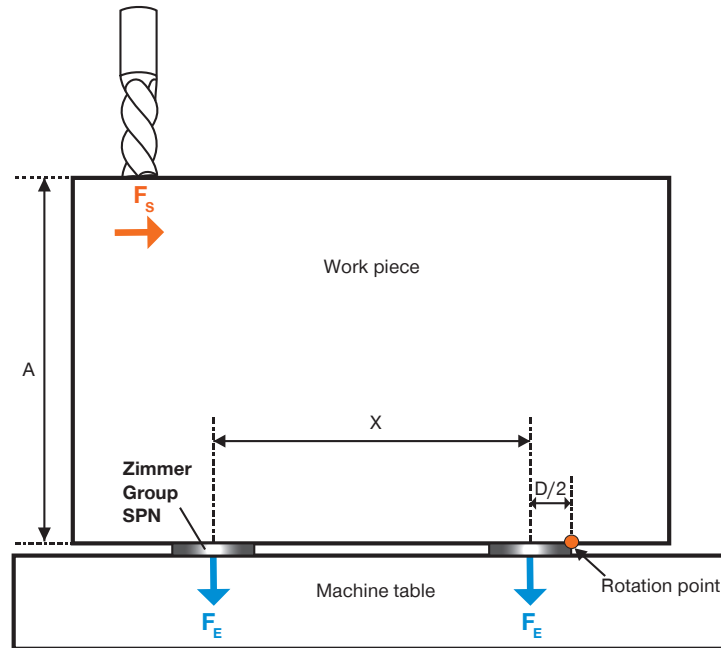
### ▶ **How are the clamping force and the holding force of a zero-point clamping system defined?**

The clamping force describes the force that is used for clamping the pin and for form fit clamping in the zero-point clamping system. The holding force of the zero-point clamping system is limited by the maximum permitted pulling force of the pin mounting screw.

### ▶ **How is the repeatability defined?**

Repeatability defines the tolerance zone within which the reference points defined on the workpiece can be clamped, released and clamped again. On Zimmer zero-point clamping systems, this repeatability is less than or equal to 0.005 mm.

# SPN ZERO-POINT CLAMPING SYSTEM CALCULATION EXAMPLE



## ► CALCULATION EXAMPLE

### FORMULAS

#### ► Layout:

4 clamping elements (assumed to be D110)

$X = 200 \text{ mm}$

$A = 350 \text{ mm}$

$F_{\text{Cut}} = 5 \text{ kN}$  (cutting force)

Safety  $V = 2$

$\sum M=0$  (total of all moments = zero)

$2[\text{safety}2] * F_{\text{Cut}} * A - 2[4\text{elements}] * (F_c * (X + D/2) + F_c * D/2) = 0$

$- F_c = 2 * F_{\text{Cut}} * A / (2X + 2D)$

$F_c = 2 * 5 \text{ kN} * 350 \text{ mm} / (2 * 200 \text{ mm} + 2 * 110 \text{ mm})$

$F_c = 5.6 \text{ kN}$

#### ► Selection of clamping elements:

**SPN110EL07-60-A-00 clamping force = 7 kN**

# CHECKLIST

## SPN ZERO-POINT CLAMPING SYSTEM

Customer number	<input type="text"/>	Phone number	<input type="text"/>
Company	<input type="text"/>	Fax number	<input type="text"/>
Contact	<input type="text"/>	E-mail	<input type="text"/>
Mr. <input type="checkbox"/> Ms. <input type="checkbox"/>	<input type="text"/>	<b>Article</b>	<input type="text"/>
<b>Sales database</b>		Desired price	<input type="text"/>
Processed by	<input type="text"/>	Other	<input type="text"/>
Desired delivery date	<input type="text"/>	Date	<input type="text"/>
Amount	<input type="text"/>	Pot. amount (annually)	<input type="text"/>

### Area or application

Clamping device  Milling  Drilling  Measuring  Other   
 Rotate  Rubbing  Laser processing

Process force  N Compressed air system  bar  
 Insertion force necessary  N Lever arm between process force and clamping system  mm  
 Holding force necessary  N Number of plannes clamping system per clamping device  piece

Alignment  Sketch  3D Model  Other

Environment Temperature min.  °C max.  °C  
 Chips  Dirt  Oil / Fat  Cool lubrication Other

Number of clamping cycles per hour  cycles

Handling  Manual  Automatic

Additional functions  Flat-surface cleaning / positioning check

Notes/comments



# USAGE NOTE

## GENERAL

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The contents of this catalog are not legally binding and are intended solely for informational purposes. Any final agreement will be in the form of a written order confirmation from ZIMMER GMBH, which occurs only subject to the respective current General Terms and Conditions of Sale and Delivery of ZIMMER GMBH. These can be found online at [www.zimmer-group.com](http://www.zimmer-group.com).

All of the products listed in this catalog are designed for their intended use, e.g. machines for automation. The recognized technical regulations for safety and professional work must be followed for use and installation. Furthermore, the respective laws, guidelines from TÜV, guidelines from the respective trade association and VDE stipulations shall apply.

The technical data listed in this catalog must be observed by the user. The conditions of use may not fall below or exceed the specified data. If information is missing, it cannot be assumed that there are no upper or lower limits or no limitations for specific use cases. Consultation is required in these cases.

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### TECHNICAL DATA AND FIGURES

The technical data and figures have been compiled with great care and to the best of our knowledge. We cannot guarantee that the information is up to date, correct or complete.

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### STANDARDS

Zimmer Group has a quality management system certified in accordance with ISO 9001:2008. Zimmer Group has an environmental management system certified in accordance with ISO 14001:2004.



# USAGE NOTE

## INDIVIDUAL

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### **DECLARATION OF INCORPORATION IN TERMS OF THE EC DIRECTIVE 2006/42/EC ON MACHINERY (ANNEX II 1 B)**

We hereby declare that our elements meet the following basic requirements of the Machinery Directive 2006/42/EC as an incomplete machine

No.1.1.2., No.1.1.3., No.1.1.5., No.1.3.2, No. 1.3.4, No. 1.3.7, No.1.5.3, No.1.5.4, No.1.5.8., No.1.6.4, No.1.7.1, No.1.7.3, No.1.7.4.

We also declare that the specific technical documents were produced in accordance with Annex VII Part B of this Directive. We undertake to provide the market supervisory bodies with electronic versions of the incomplete machine's special documents via our documentation department should they have reason to request them.

The incomplete machine may only be commissioned if the machine or system in which the incomplete machine is to be installed has been determined to satisfy the conditions of the Machinery Directive 2006/42/EC and the EC Declaration of Conformity has been produced in accordance with Annex II A.