

Gripping Technology and Automation Technology

Product overview

Hand-in-hand for tomorrow



More than

11,000

Standard Components



Awards

60
95%

Apprentices & Students per Year

Retention rate

3,500 Employees



Sustainability



CoLab

Planning and implementation of industrial automation and robotics applications





9 plants

34 Subsidiaries worldwide

Represented in 50 countries

Digital Services



Visionary Leader



1945

Founded by Friedrich Schink in a garage

Cooperation Partner



Hand in hand for tomorrow

Shaping the future with innovative technologies – that is the claim of SCHUNK. To this end, the experienced automation and production specialist is pushing the further development and digitalization of its product and service portfolio in order to make industrial processes more efficient, transparent and sustainable. The family-owned company with headquarters in Lauffen/Neckar is a global leader in toolholding and workholding, gripping technology and automation technology. Approximately 3,500 employees in 9 plants and 34 directly owned subsidiaries and distribution partners in more than 50 countries throughout the world ensure an intensive market presence.

Benefit from the SCHUNK modular system with over 4,000 standard components

For any robot, for any industry, for any handling task.



SCHUNK sets standards in all industries world-wide with its components and gripper portfolio. Our robot accessories include a uniquely comprehensive standard range of modules for the mechanical, sensory, and power connection of handling devices and robots. The comprehensive range of robust and long-lasting grippers for small components and

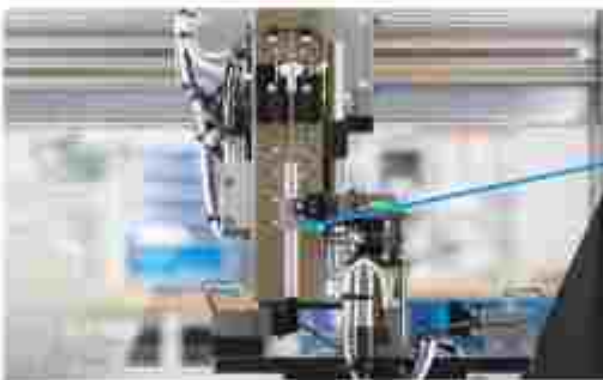
universal grippers features high product quality, precision, and numerous monitoring options. What's more, SCHUNK's handling solutions of axis system open up new perspectives for cost and benefit-optimized automation solutions from a single source.



Applications



Gripping technology



Automation technology

Content

	Page
Applications	6
E-Mobility	8
Life Science	10
Robots & cobots	12
Application kits	14
Gripping technology	16
Pneumatic grippers	18
Electric grippers	30
Adhesive grippers	34
Magnetic grippers	36
Accessories	38
Automation technology	44
Swivel units	46
Linear modules	52
Change systems & feed-through modules	62
Rotary feed-throughs	68
Compensation units & collision protection	70
Force/torque sensors	76
Machining tools	80

Applications from SCHUNK: Easily implement projects with us

No matter what challenge you are facing in your manufacturing process – with SCHUNK you have the right partner at your side. We create individual concepts for your gripping applications, handling and clamping tasks and take care of their validation in our CoLabs. Thanks to our holistic approach, you benefit from reduced interfaces, and we also take over the design and project planning of your application and thus noticeably relieve your day-to-day project work. Another advantage is our in-house production, which is characterized by a high level of vertical integration, reliable process monitoring, and complete assembly documentation.

Fast response

We ensure a speedy response to your inquiries

Customized solutions

Together with our customers, we are developing individual solutions for their applications



All-in service

You receive everything for your project reliably from one source

E-Mobility

SCHEUNK is your reliable partner for production's changesover to e-mobility.



E-Mobility

Life science

Coordinated product portfolios from SCHEUNK meet the high manufacturing standards in the life science sector.



Life science

Robots & cobots

SCHEUNK offers an extensive program of modules for mechanical, sensory and intelligent connection of handling devices, robots and cobots.



Robots & cobots

Application kits

With its MFI application kits and 20-grasping, SCHEUNK offers easy-to-integrate packages for automatic gripping, clamping and changing, as well as for gripping and placing of non-position-oriented workpieces.



Application kits

E-Mobility

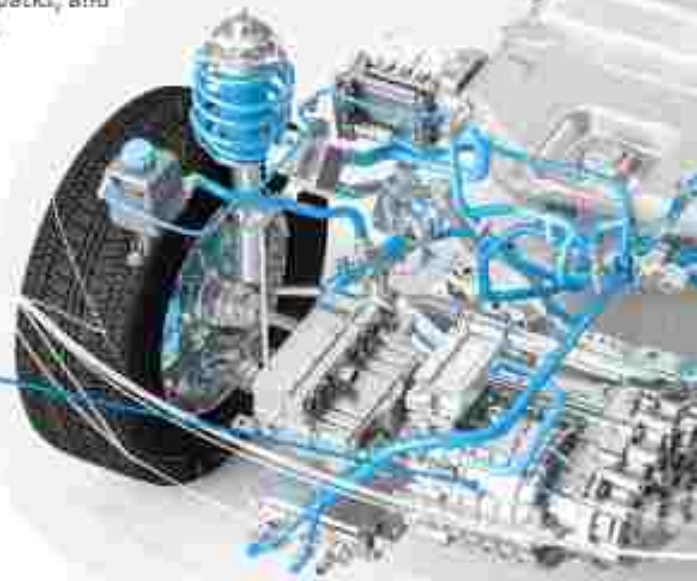
SCHUNK is your reliable partner for production's changeover to e-mobility. We are an automation specialist and competence leader for toolholding and workholding, gripping technology and automation technology and supply you with everything from axis systems to robot accessories from a single source. Through the clever combination of our standard products, we always find an individually suitable solution for you. You will benefit from our many years of engineering know-how in the industry. SCHUNK products are already known by all well-known automotive manufacturers and their suppliers. This accelerates integration into new process chains enormously and keeps you in the fast lane from the very beginning when switching to e-mobility.

Battery systems

Using batteries brings new challenges to the automotive industry. SCHUNK supports you in all aspects: Starting with cell production with requirements for cleanroom and dry room environments as well as short cycle times, then on to handling sensitive components during assembly into battery modules and packs, and all the way to final assembly in the vehicle.

Electric drives

We are at the forefront of every step in the production and assembly of e-drives. Regardless of whether it concerns the specific setting of the hairpins, the handling of the sheet metal packages or the assembly of the components to the finished e-axis – SCHUNK can support you. Thereby we take special process requirements into account, such as flexibility due to the many different hairpins, precision and dynamics for very short cycle times, and maximum reliability for a long service life of the system.





Application examples



Handling of battery round cells



Waterpin handling

Life Science

Life science brings together biotechnology, medical technology, and pharmaceuticals. This multidisciplinary collaboration leads to the development of new medical technology products, treatment methods, and medicines. The manufacturing industry plays a key role here – manufacturing uses modern processes for producing high-quality products in the sectors of medical technology, lab automation, and pharmaceuticals. Coordinated product portfolios from SCHUNK meet the strict requirements for manufacturing quality and reliability.



MedTech

Process-reliable manufacturing in medical technology

SCHUNK supplies the manufacturers of medical technology systems of the manufacturing industry of medical products and put its the focus on robustness and absolute process reliability.



Lab automation

Efficient and reliable laboratory processes

SCHUNK supplies numerous ideal components for laboratory equipment and handling systems for lab automation.



Pharma

Cleanroom-compatible performance booster

With cleanroom-compatible and customized solutions in a hygiene-friendly design, SCHUNK enables the handling of sensitive and high-quality pharmaceutical products.

Application examples



Automated handling and preparation of pharmaceuticals



Handling and holding of blood collection tubes



Exact force measurement in rehabilitation



Micro-machining for medical technology

Robots & Cobots

By using robots and cobots, companies can increase their productivity and efficiency, enhance the quality of their products, and relieve their employees at work. However, with new application scenarios and applications, new challenges are involved. To meet these demands, we work closely with leading robot manufacturers. By bundling know-how, it allows us to offer a wide range of end-of-arm solutions tailored to the specific requirements of your applications and various robot manufacturers and their models. For example, our software modules enable the smooth interaction of components and robots.



Application examples



Loading of a machine tool with a jointed-arm robot



Handling of electronic assembly groups with a SCARA robot



Pick&Place application with a Delta robot

- 1 Applications with industrial robots and cobots are available on schunk.com/robots-cobots
- 2 Gripping technology for industrial robots and cobots are available starting on page 16
- 3 Toolholding and workholding for tools and workpieces are available on schunk.com
- 4 Automation technology such as quick-change systems are available starting on page 44



Application kit MTB

Diverse automation scenarios can now be implemented in no time and with minimal effort. With its MTB application kits, SCHUNK offers easy-to-integrate packages for automated gripping, clamping and changing of workpieces. Components that are well matched to one another, down to the very last detail, merge seamlessly into the machine environment. The kits are equally suitable for automation beginners and professionals.



Easy to automate

- ➊ **Process reliability**
By means of a sealed valve box, the electronic system is protected against dust, chips, and oil.
- ➋ **Increased productivity**
This is achieved by automated removal of chips and coolant from the workpiece and clamping force block.
- ➌ **Productivity boost**
The double gripper kit enables workpiece removal and reloading of the machine in one robot cycle.

Space-saving: Single gripper kit

For an easy entry into automated machine loading. Perfect in confined spaces.



Effective: Double gripper kit

Loading and unloading in just one cycle. Optimized cycle times for increasing machine productivity.



Reliable: Clamping force block kit

The interplay between the grippers and the automated clamping force block increases productivity of the metal cutting machine.



Robot connection package for gripper and clamping force block

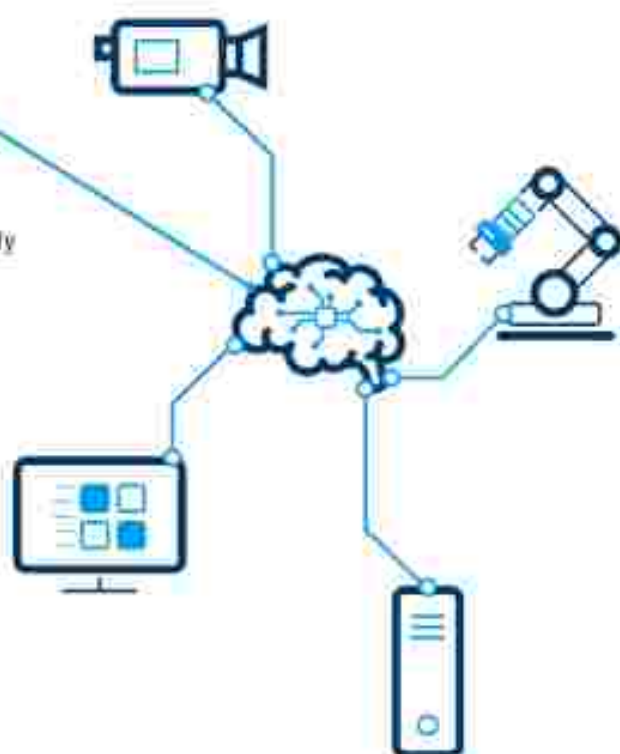
For quick and seamless integration. Available as standard for a variety of cobots from different manufacturers.

2D Grasping kit

The perfectly matched application kit for gripping and placing non-position-oriented workpieces consists of a camera system and lens, an application-specific gripping system, SCHUNK's own industrial PC (SVC), as well as a plug-in for easy integration into the robot control system. The core of the system is the AI software developed by SCHUNK, which reliably ensures recognition, even under changing light conditions.

Vision-based gripping

- ➊ **Easy teach-in of components**
No prior knowledge of image processing system programming necessary
- ➋ **Automated gripping planning**
The software can determine gripping points independently
- ➌ **Integrated collision protection**
Automated calculation of interfering contours of fingers and workpiece
- ➍ **Intelligent software**
The software adapts itself to non-optimal lighting conditions and changing backgrounds
- ➎ **Application validation**
Risk reduction and easier commissioning due to application validation in the SCHUNK Colab



Gripper variety made by SCHUNK: Your requirements are our motivation

SCHUNK offers the world's most comprehensive portfolio of grippers. Standard grippers, ready-to-install assembly groups, and customized gripping technology solutions for your handling and assembly, automation and robot end-of-arm applications. We always meet the most complicated gripping requirements, and we solve them. The result: Robust and durable gripping solutions which have ensured reliability in systems and machines all over the world for 30 years.



Grippers for Small components

Grippers for handling small, light, and sensitive workpieces



Universal grippers

Grippers for a wide range of applications



Long-stroke grippers

Grippers with long jaw stroke and high gripping force

Pneumatic grippers

Pneumatic grippers from SCHUNK have stood for high quality and reliability for many years. The force is always on your workpiece: from small to large, from round to square, for every batch size and every application environment.

Electric grippers

For the requirements of modern process flows, electric gripper solutions offer many advantages. In modern process flows, our electric grippers enjoy advantages such as application flexibility and process feedback.

Adhesive grippers

The bionically inspired ADRESS gripper technology is based on the principle of adhesion and uses intermolecularly acting Van der Waals forces to handle various workpieces.

Magnetic grippers

SCHUNK's magnetic grippers move ferromagnetic components in any position and size.

Accessories

To match the gripper range, SCHUNK offers accessories for each kind of application and handling requirement - and also in extreme conditions.



Pneumatic grippers

Electric grippers

Adhesive grippers

Magnetic grippers

Accessories

Pneumatic grippers

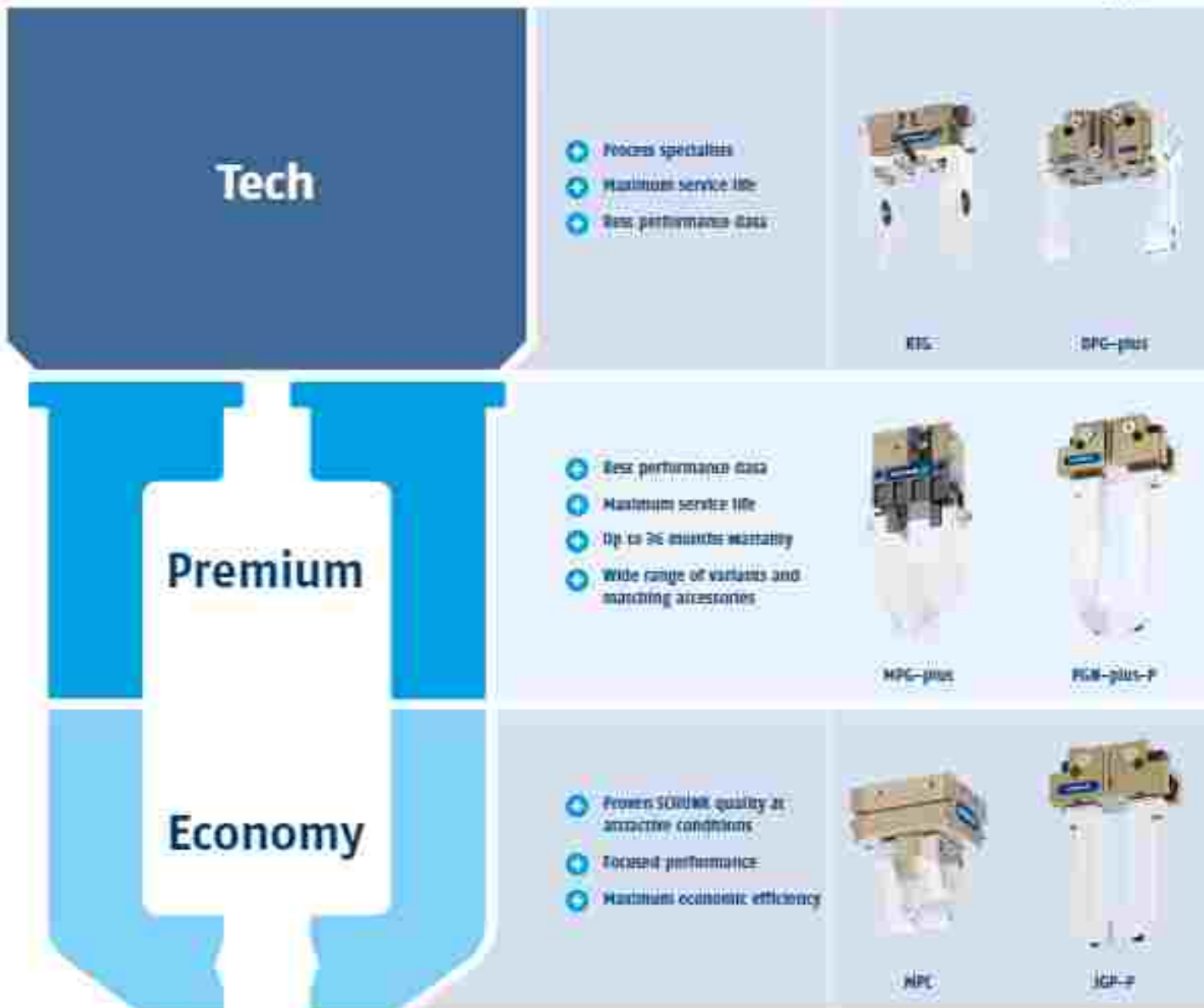
Tech

The more demanding your application, the more precise the performance of the pneumatic gripper should match the task at hand. With our Tech segment, you have a whole range of "specialists" at your disposal, such as grippers for handling O-rings, gears, or rims.

Premium

In the premium segment you will find grippers of the highest quality with a wide range of variants and options. In addition to more robust grippers, we also offer more maintenance-free gripping cycles and long service life.

Parallel gripper



Economy

In our Economy segment, the focus is not only on performance, but also on economic efficiency: You get real SCHUNK quality under attractive conditions. Optimized for all standard applications in clean environments. The grippers focus on the essential characteristics, and thus ensure efficient use in operation.

The power of our pneumatic grippers

- ✔ Proven
- ✔ Long service life
- ✔ Versatile
- ✔ High-quality

Linear grippers

Angular/rotary gripper



PSH



ORG



DPZ-plus



PZH-plus



SAP



ORG



PRL



HPI



PZH-plus



PZH-plus



SWC



PBC



JGZ



SGR

2-finger parallel gripper Pneumatic grippers

2-finger parallel gripper

Features

Gripper for small components

MPG-plus

MG

Universal gripper

PGC-plus-P

PGI-plus-P



Description

Powerful, compact gripper for small components with smooth-running roller guide of the base jaws

For small to medium-sized workpieces

Areas of application:
Assembly, testing, laboratory, pharmaceutical, food

Narrow gripper with long stroke of up to 60 mm per finger

For light to medium weight workpieces

Areas of application:
Universally applicable

Guaranteed maintenance-free universal gripper with powerful gripping force and high maximum moment

For light to heavy workpieces

Areas of application:
Universally applicable

Universal grippers with a long jaw stroke, integrated sensor system and high maximum moment

Excellent handling of a wide range of parts

Areas of application: Different applications in clean as well as dirty environments

Advantages

Maximum gripping force with oval piston drive

Flexible gripping thanks to the minimal play junction roller guide

Food-compliant lubrication

High maximum moment due to the robust T-slot guidebar

Direct power transmission and high efficiency thanks to pneumatic 3-piston drive concept

Workpiece is stamped directly using a piston-rack principle

Force handling due to robust multi-tooth guidebar

Use of long gripper fingers possible

Process reliability and extended maintenance intervals thanks to permanent lubrication

Secure, certified gripping force maintenance, GripGisafe

Flexible and process-reliable monitoring of the complete gripper stroke via IP-Link thanks to the integrated sensor system

IP 6A dirt protected as standard

Technical data

	MPG-plus	MG	PGC-plus-P	PGI-plus-P
Number of jaws	0	7	11	5
Gripping force (N)	7 ... 270	45 ... 540	180 ... 27000	145 ... 1900
Stroke per jaw (mm)	7 ... 10	10 ... 60	7 ... 45	10 ... 15
Weight (kg)	0.02 ... 0.33	0.00 ... 4.2	0.08 ... 39.8	0.40 ... 7.9
Recommended workpiece weight (kg)	0 ... 125	0 ... 2.7	0 ... 37.5	0 ... 7
Downstopping time (s)	0.01 ... 0.08 / 0.011 ... 0.08	0.02 ... 0.29 / 0.03 ... 0.25	0.02 ... 0.80 / 0.02 ... 0.8	0.03 ... 0.25 / 0.03 ... 0.25
Max. permissible finger length (mm)	80	160	400	100 ... 260
Repeat accuracy (mm)	0.07	up to 0.02	up to 0.01	0.03
Protection class IP	IP25A	60	IP6A	IP67
Construction class ISO 14644-1	6		7 (size N1 - 100)	
Sensor system	++	+	+++	+++
High number of variants	++	++	+++	+++

Application conditions

	MPG-plus	MG	PGC-plus-P	PGI-plus-P
Clean	●	●	●	●
Contaminated/dusty	○	○	●	●
Contaminated/dust and liquids			○	●
Contaminated/aggressive liquids			○	○
High-temperature range > 90 °C	●	○	●	●
Dishroom	●	○	●	○

● = very highly suitable

○ = medium-sized selection

● = highly suitable

●● = wide selection

○ = suitable in guaranteed version

●●● = very wide selection

Long-stroke grippers		Tools																																																																																																																																																																																																	
PLC	PLC	Gripper for small components	Universal gripper																																																																																																																																																																																																
PKC	PKC	PKC	PKC																																																																																																																																																																																																
																																																																																																																																																																																																			
Grippers with high maximum moments and a long jaw stroke	Customizable long-stroke gripper with high gripping force and profiled call guide	Gripper for small components with corner force	Universal center gripper with high gripping force and high maximum moments and corner force																																																																																																																																																																																																
For large workpieces and/or a wide range of parts	For very large workpieces and/or a wide range of parts	For small to medium-sized workpieces	For small to medium-sized workpieces																																																																																																																																																																																																
Areas of application: Mechanical and plant engineering, assembly and handling, automotive	Areas of application: Individually configurable for the application area	Areas of application: If workplace feeding, sensors or actuators are required	Areas of application: If workplace feeding, sensors or actuators are required																																																																																																																																																																																																
Use of long gripper fingers possible	Stroke per jaw configurable to the millimeter from 100 mm to 600 mm	Low weight for weight-optimized handling solutions	Precise handling due to robust, multi-axis guidance																																																																																																																																																																																																
Workpiece is clamped centrally using a piston-rod principle	Application-specific standard gripper variants to diverse variants and options and individual configuration	Large stroke in relation to size	Use of long gripper fingers possible																																																																																																																																																																																																
Universal and flexible gripper assembly	Integrated 10-link multi-position monitoring	Precise gripping due to base jaws guided on rolling bearings	Maximum gripping force up to 610 N with oval piston drive																																																																																																																																																																																																
<table border="1"> <tr><td>S</td><td>S</td><td>L</td><td>A</td></tr> <tr><td>500 ... 600</td><td>1850 ... 21650N</td><td>12</td><td>90 ... 610</td></tr> <tr><td>30 ... 160</td><td>100 ... 600 mm</td><td>3.5</td><td>4 ... 20</td></tr> <tr><td>1.60 ... 22.55</td><td>19.03 ... 137.2</td><td>0.08</td><td>0.28 ... 1.12</td></tr> <tr><td>2.5 ... 15.5</td><td>8.25 ... 58.25</td><td>0.07</td><td>0 ... 2.1</td></tr> <tr><td>0.11 ... 1.87/0.11 ... 2.91</td><td>0.08 ... 1.77/1.1 ... 2.7</td><td>0.05/0.05</td><td>0.07 ... 0.08/0.07 ... 0.08</td></tr> <tr><td>800</td><td>800</td><td>50</td><td>125</td></tr> <tr><td>0.02</td><td>0.02</td><td>0.02</td><td>0.01</td></tr> <tr><td>41</td><td>39</td><td>28</td><td>30</td></tr> <tr><td>..</td><td>..</td><td>..</td><td>..</td></tr> <tr><td>++</td><td>++</td><td>+</td><td>++</td></tr> <tr><td>++</td><td>+++</td><td>+</td><td>+</td></tr> </table>	S	S	L	A	500 ... 600	1850 ... 21650N	12	90 ... 610	30 ... 160	100 ... 600 mm	3.5	4 ... 20	1.60 ... 22.55	19.03 ... 137.2	0.08	0.28 ... 1.12	2.5 ... 15.5	8.25 ... 58.25	0.07	0 ... 2.1	0.11 ... 1.87/0.11 ... 2.91	0.08 ... 1.77/1.1 ... 2.7	0.05/0.05	0.07 ... 0.08/0.07 ... 0.08	800	800	50	125	0.02	0.02	0.02	0.01	41	39	28	30	++	++	+	++	++	+++	+	+	<table border="1"> <tr><td>S</td><td>S</td><td>L</td><td>A</td></tr> <tr><td>500 ... 600</td><td>1850 ... 21650N</td><td>12</td><td>90 ... 610</td></tr> <tr><td>30 ... 160</td><td>100 ... 600 mm</td><td>3.5</td><td>4 ... 20</td></tr> <tr><td>1.60 ... 22.55</td><td>19.03 ... 137.2</td><td>0.08</td><td>0.28 ... 1.12</td></tr> <tr><td>2.5 ... 15.5</td><td>8.25 ... 58.25</td><td>0.07</td><td>0 ... 2.1</td></tr> <tr><td>0.11 ... 1.87/0.11 ... 2.91</td><td>0.08 ... 1.77/1.1 ... 2.7</td><td>0.05/0.05</td><td>0.07 ... 0.08/0.07 ... 0.08</td></tr> <tr><td>800</td><td>800</td><td>50</td><td>125</td></tr> <tr><td>0.02</td><td>0.02</td><td>0.02</td><td>0.01</td></tr> <tr><td>41</td><td>39</td><td>28</td><td>30</td></tr> <tr><td>..</td><td>..</td><td>..</td><td>..</td></tr> <tr><td>++</td><td>++</td><td>+</td><td>++</td></tr> <tr><td>++</td><td>+++</td><td>+</td><td>+</td></tr> </table>	S	S	L	A	500 ... 600	1850 ... 21650N	12	90 ... 610	30 ... 160	100 ... 600 mm	3.5	4 ... 20	1.60 ... 22.55	19.03 ... 137.2	0.08	0.28 ... 1.12	2.5 ... 15.5	8.25 ... 58.25	0.07	0 ... 2.1	0.11 ... 1.87/0.11 ... 2.91	0.08 ... 1.77/1.1 ... 2.7	0.05/0.05	0.07 ... 0.08/0.07 ... 0.08	800	800	50	125	0.02	0.02	0.02	0.01	41	39	28	30	++	++	+	++	++	+++	+	+	<table border="1"> <tr><td>S</td><td>S</td><td>L</td><td>A</td></tr> <tr><td>500 ... 600</td><td>1850 ... 21650N</td><td>12</td><td>90 ... 610</td></tr> <tr><td>30 ... 160</td><td>100 ... 600 mm</td><td>3.5</td><td>4 ... 20</td></tr> <tr><td>1.60 ... 22.55</td><td>19.03 ... 137.2</td><td>0.08</td><td>0.28 ... 1.12</td></tr> <tr><td>2.5 ... 15.5</td><td>8.25 ... 58.25</td><td>0.07</td><td>0 ... 2.1</td></tr> <tr><td>0.11 ... 1.87/0.11 ... 2.91</td><td>0.08 ... 1.77/1.1 ... 2.7</td><td>0.05/0.05</td><td>0.07 ... 0.08/0.07 ... 0.08</td></tr> <tr><td>800</td><td>800</td><td>50</td><td>125</td></tr> <tr><td>0.02</td><td>0.02</td><td>0.02</td><td>0.01</td></tr> <tr><td>41</td><td>39</td><td>28</td><td>30</td></tr> <tr><td>..</td><td>..</td><td>..</td><td>..</td></tr> <tr><td>++</td><td>++</td><td>+</td><td>++</td></tr> <tr><td>++</td><td>+++</td><td>+</td><td>+</td></tr> </table>	S	S	L	A	500 ... 600	1850 ... 21650N	12	90 ... 610	30 ... 160	100 ... 600 mm	3.5	4 ... 20	1.60 ... 22.55	19.03 ... 137.2	0.08	0.28 ... 1.12	2.5 ... 15.5	8.25 ... 58.25	0.07	0 ... 2.1	0.11 ... 1.87/0.11 ... 2.91	0.08 ... 1.77/1.1 ... 2.7	0.05/0.05	0.07 ... 0.08/0.07 ... 0.08	800	800	50	125	0.02	0.02	0.02	0.01	41	39	28	30	++	++	+	++	++	+++	+	+	<table border="1"> <tr><td>S</td><td>S</td><td>L</td><td>A</td></tr> <tr><td>500 ... 600</td><td>1850 ... 21650N</td><td>12</td><td>90 ... 610</td></tr> <tr><td>30 ... 160</td><td>100 ... 600 mm</td><td>3.5</td><td>4 ... 20</td></tr> <tr><td>1.60 ... 22.55</td><td>19.03 ... 137.2</td><td>0.08</td><td>0.28 ... 1.12</td></tr> <tr><td>2.5 ... 15.5</td><td>8.25 ... 58.25</td><td>0.07</td><td>0 ... 2.1</td></tr> <tr><td>0.11 ... 1.87/0.11 ... 2.91</td><td>0.08 ... 1.77/1.1 ... 2.7</td><td>0.05/0.05</td><td>0.07 ... 0.08/0.07 ... 0.08</td></tr> <tr><td>800</td><td>800</td><td>50</td><td>125</td></tr> <tr><td>0.02</td><td>0.02</td><td>0.02</td><td>0.01</td></tr> <tr><td>41</td><td>39</td><td>28</td><td>30</td></tr> <tr><td>..</td><td>..</td><td>..</td><td>..</td></tr> <tr><td>++</td><td>++</td><td>+</td><td>++</td></tr> <tr><td>++</td><td>+++</td><td>+</td><td>+</td></tr> </table>	S	S	L	A	500 ... 600	1850 ... 21650N	12	90 ... 610	30 ... 160	100 ... 600 mm	3.5	4 ... 20	1.60 ... 22.55	19.03 ... 137.2	0.08	0.28 ... 1.12	2.5 ... 15.5	8.25 ... 58.25	0.07	0 ... 2.1	0.11 ... 1.87/0.11 ... 2.91	0.08 ... 1.77/1.1 ... 2.7	0.05/0.05	0.07 ... 0.08/0.07 ... 0.08	800	800	50	125	0.02	0.02	0.02	0.01	41	39	28	30	++	++	+	++	++	+++	+	+
S	S	L	A																																																																																																																																																																																																
500 ... 600	1850 ... 21650N	12	90 ... 610																																																																																																																																																																																																
30 ... 160	100 ... 600 mm	3.5	4 ... 20																																																																																																																																																																																																
1.60 ... 22.55	19.03 ... 137.2	0.08	0.28 ... 1.12																																																																																																																																																																																																
2.5 ... 15.5	8.25 ... 58.25	0.07	0 ... 2.1																																																																																																																																																																																																
0.11 ... 1.87/0.11 ... 2.91	0.08 ... 1.77/1.1 ... 2.7	0.05/0.05	0.07 ... 0.08/0.07 ... 0.08																																																																																																																																																																																																
800	800	50	125																																																																																																																																																																																																
0.02	0.02	0.02	0.01																																																																																																																																																																																																
41	39	28	30																																																																																																																																																																																																
..																																																																																																																																																																																																
++	++	+	++																																																																																																																																																																																																
++	+++	+	+																																																																																																																																																																																																
S	S	L	A																																																																																																																																																																																																
500 ... 600	1850 ... 21650N	12	90 ... 610																																																																																																																																																																																																
30 ... 160	100 ... 600 mm	3.5	4 ... 20																																																																																																																																																																																																
1.60 ... 22.55	19.03 ... 137.2	0.08	0.28 ... 1.12																																																																																																																																																																																																
2.5 ... 15.5	8.25 ... 58.25	0.07	0 ... 2.1																																																																																																																																																																																																
0.11 ... 1.87/0.11 ... 2.91	0.08 ... 1.77/1.1 ... 2.7	0.05/0.05	0.07 ... 0.08/0.07 ... 0.08																																																																																																																																																																																																
800	800	50	125																																																																																																																																																																																																
0.02	0.02	0.02	0.01																																																																																																																																																																																																
41	39	28	30																																																																																																																																																																																																
..																																																																																																																																																																																																
++	++	+	++																																																																																																																																																																																																
++	+++	+	+																																																																																																																																																																																																
S	S	L	A																																																																																																																																																																																																
500 ... 600	1850 ... 21650N	12	90 ... 610																																																																																																																																																																																																
30 ... 160	100 ... 600 mm	3.5	4 ... 20																																																																																																																																																																																																
1.60 ... 22.55	19.03 ... 137.2	0.08	0.28 ... 1.12																																																																																																																																																																																																
2.5 ... 15.5	8.25 ... 58.25	0.07	0 ... 2.1																																																																																																																																																																																																
0.11 ... 1.87/0.11 ... 2.91	0.08 ... 1.77/1.1 ... 2.7	0.05/0.05	0.07 ... 0.08/0.07 ... 0.08																																																																																																																																																																																																
800	800	50	125																																																																																																																																																																																																
0.02	0.02	0.02	0.01																																																																																																																																																																																																
41	39	28	30																																																																																																																																																																																																
..																																																																																																																																																																																																
++	++	+	++																																																																																																																																																																																																
++	+++	+	+																																																																																																																																																																																																
S	S	L	A																																																																																																																																																																																																
500 ... 600	1850 ... 21650N	12	90 ... 610																																																																																																																																																																																																
30 ... 160	100 ... 600 mm	3.5	4 ... 20																																																																																																																																																																																																
1.60 ... 22.55	19.03 ... 137.2	0.08	0.28 ... 1.12																																																																																																																																																																																																
2.5 ... 15.5	8.25 ... 58.25	0.07	0 ... 2.1																																																																																																																																																																																																
0.11 ... 1.87/0.11 ... 2.91	0.08 ... 1.77/1.1 ... 2.7	0.05/0.05	0.07 ... 0.08/0.07 ... 0.08																																																																																																																																																																																																
800	800	50	125																																																																																																																																																																																																
0.02	0.02	0.02	0.01																																																																																																																																																																																																
41	39	28	30																																																																																																																																																																																																
..																																																																																																																																																																																																
++	++	+	++																																																																																																																																																																																																
++	+++	+	+																																																																																																																																																																																																

Z-finger parallel gripper Pneumatic grippers

Z-finger parallel gripper

Type		Long-stroke grippers		
Universal gripper	RPC-plus	PCII	PCII	SPC
				

Description

Reliably secure universal gripper according to ISO	Grippers with high torque capacity and long jaw stroke	Gripper with long jaw stroke up to 100 mm and dirt-resistant round guides	Stable grippers with high maximum masses and long jaw stroke
For small to medium-sized workpieces	For large workpieces and/or a wide range of parts	For large workpieces	For heavy workpieces and a wide variance in parts
Areas of application: For use in harsh environments such as foundries, grinding shops or forges	Areas of application: e.g. handling of motor vehicle tires	Applications: for use in harsh environments and with a wide range of workpieces	Areas of application: Assembly, Automotive

Advantages

Precise handling of different workpieces thanks to robust multi-coast guidance	Precise handling of different workpieces thanks to robust guidance	Sealed round guidance for long strokes	Precise handling due to robust guidance
Permanently secure sealing thanks to lip seal on the outer circular guide	Use of long gripper fingers possible	Use of long gripper fingers possible	Use of long gripper fingers possible
Use of long gripper fingers possible	Optimal clamping thanks to double-piston rack-and-pinion principle	Universal and flexible gripper assembly	High efficiency due to direct drive assembly

Technical data

Number of sizes	11	4	4	1
Gripping force (N)	110 ... 11250	2200	120 ... 1160	10000
Stroke per jaw (mm)	2 ... 45	150 ... 300	14 ... 100	100
Weight (kg)	0.11 ... 5.7	18.9 ... 31.8	0.77 ... 8.05	35
Recommended workpiece weight (kg)	0 ... 66.25	0 ... 14.7	0 ... 8.8	50
Closing/opening time (s)	0.03 ... 1.1/0.03 ... 1.1	0.7 ... 1.25/0.7 ... 1.25	0.12 ... 0.4/0.12 ... 0.4	1.5/1.5
Max. permissible finger length (mm)	380	900	300	980
Regret accuracy (mm)	up to 0.01	0.02	up to 0.05	0.1
Protection class IP	67	50	67	50
Connection class ISO 14644-1	5-			
Sensor system	*	**	*	*
High number of variants	**	*	*	*

Ambient conditions

Dust	●	●	●	●
Contaminated/coarse dust	●	○	●	○
Contaminated/fine dust and liquids	●	○	●	
Contaminated/greasy liquids	○		●	
High-temperature range > 90 °C	○	●	●	
Oil mist	○		○	

● = very highly suitable ○ = highly suitable ○ = suitable in customized version
 * = medium-sized selection ** = wide selection *** = very wide selection

Quantity	Standard gripper	Universal gripper	Long-stroke gripper
MFC	SG-P	PG	PR-stroke
			
Basic gripper for small components with good price-performance ratio	Basic universal gripper with good price-performance ratio	Compact universal gripper with surface-guided hose jaws	Gripper with high maximum moments and a long jaw stroke
For small to medium-sized workpieces up to 1.85 kg	For light to medium weight workpieces	Suitable for large workpieces	For large workpieces and/or a wide range of parts
Areas of application: Simple applications in small components handling	Areas of application: Mechanical and plant engineering, assembly, handling, automotive	Areas of application: Universally applicable	Areas of application: Mechanical and plant engineering, assembly and handling
Cost-effective alternative	Cost-effective alternative	Very good guidance characteristics due to precise fit guidance	Use of long gripper fingers possible
Wide range of applications thanks to sizes	Flexible handling of different workpieces	Minimal insertions consumes despite long stroke	Workpiece is stamped centrally using a pin-in-rack principle
Single, functional gripping system all from a single source	Comprehensive sensor accessories and monitoring of the stroke position with appropriate sensor accessories	Universal and flexible gripper assembly possible	Universal and flexible gripper assembly possible
8	10	5	3
16 ... 270	130 ... 8200	140 ... 1900	620 ... 2950
2.5 ... 15	2 ... 35	2.5 ... 11.5	30 ... 100
0.05 ... 0.94	0.08 ... 17.7	0.1 ... 5.3	2.65 ... 12.8
0 ... 1.85	0 ... 35	0 ... 7.1	0 ... 13
0.02 ... 0.11/0.02 ... 0.11	0.02 ... 0.7/0.02 ... 0.7	0.02 ... 0.4/0.02 ... 0.4	0.2 ... 1.0/0.2 ... 1.2
60	300	125	250
0.02	up to 0.01	up to 0.02	0.05
20	40	40	43
+	++	+	++
+	+	+	++
●	●	●	●
	○	○	○
		●	●
		○	

3-finger centric gripper Pneumatic grippers

3-finger centric gripper

Precision

Gripper for small workpieces

Universal gripper

Long-stroke gripper

MP

PS-plus

PS-plus



Description

Small 3-finger centric gripper with base jaws guided on T-slots.

Universal 3-finger centric gripper with high gripping force and high maximum moments.

Universal 3-finger centric gripper with a long stroke and high maximum moments.

Especially suitable for small workpieces

Flexible handling of a wide range of parts

For large, sensitive workpieces

Areas of application: Universally applicable

Areas of application: can also be used in areas with special requirements such as temperature, chemical resistance, contamination

Areas of application: can also be used in areas with special requirements such as temperature, chemical resistance, contamination

Advantages

Precise gripping with high bearing load capacity thanks to T-slot guidance

Precise handling due to robust multi-tooth guidance

Sensitive gripping for deformation-free handling

Monitoring of finger positions also possible via FPS

Use of long gripper fingers possible

Precise handling due to robust multi-tooth guidance

Compact dimensions for minimum interfering contours in handling

High force transmission and synchronized gripping due to wedge-hook design

Use of long gripper fingers possible





Technical data

Number of sizes	6	11	4
Gripping force (N)	10 ... 310	255 ... 5700	375 ... 4300
Stroke per jaw (mm)	1 - 5	7 ... 45	20 ... 75
Weight (kg)	0.01 ... 0.29	0.11 ... 80	1.5 ... 11
Recommended workpiece weight (kg)	0 ... 1.15	0 ... 227	0 ... 22
Clamping range (mm)	0.02 ... 0.06/0.07 ... 0.06	0.07 ... 4.5/0.07 ... 3	0.15 ... 1.05/0.7 ... 0.85
Max. permissible finger length (mm)	45	250	400
Repeat accuracy (mm)	0.01	up to 0.01	up to 0.01
Protection class IP	40	M06A	40
Cleanroom class ISO 14644-1	5	5	5
Sensor system	-	+++	-
High number of variants	-	+++	-

Working conditions

Dust	●	●	●
Contaminated coarse dust	○	●	○
Contaminated fine dust and liquids		○	○
Contaminated aggressive liquids		○	○
High-temperature range > 90 °C		●	○
Debris		○	

● = very highly suitable ○ = suitable in customized version
+ = medium-sized selection ++ = wide selection +++ = very wide selection

Tech			Capacity
Universal grippers			Universal gripper
RFZ-plus	RFZ-plus	RFZ	RFZ
			
Robustly sized 3-finger centric gripper according to IP67	3-finger centric gripper with high gripping force and high maximum thickness and center bore	Multi-finger gripper for applications, in which two or three fingers are insufficient	Universal 3-finger centric gripper of the compact class with 3-slot guidance and best class-performance ratio
For tough or dirty workpieces	Flexible handling of a wide range of parts	E.g. for cylindrical workpieces	Flexible handling of a wide range of parts
Areas of application: wide range of applications from wet cells, grinding machines, lathes and milling machines in powder and paint spraying systems	Areas of application: When workpiece feeding, sensors, actuators or customer-side attachments are required	Areas of application: MedTech, laboratory automation, pharmaceuticals	Areas of application: Mechanical and plant engineering, assembly and handling, automotive
Precise handling of different workpieces thanks to robust multi-tooth guidance	Precise handling of different workpieces thanks to robust multi-tooth guidance	Process-reliable handling despite interfering contours	Cost-effective alternative
Permanently secure sealing thanks to lip seal on the outer circular guide	Use of long gripper fingers possible	Precise handling due to robust multi-tooth guidance	Compact dimensions and low weight for minimum interfering contours in handling
Use of long gripper fingers possible	Multi-functional range of applications due to high gripping forces	High force transmission and synchronized gripping due to wedge-hook design	Use of long gripper fingers possible
8	8	5	7
230 ... 16300	340 ... 27400	570 ... 6900	225 ... 7950
2 ... 25	2 ... 25	6 ... 16	2 ... 16
0.2 ... 20.5	0.26 ... 5.2	0.5 ... 10	0.12 ... 8
0 ... 90	0 ... 100	0 ... 74.5	0 ... 30
0.02 ... 1.8/0.02 ... 1.8	0.02 ... 2.5/0.02 ... 2.5	0.02 ... 0.15/0.02 ... 0.15	0.02 ... 0.8/0.02 ... 0.8
160	250	160	200
up to 0.02	up to 0.02	up to 0.02	up to 0.02
67	60	60	60
5			
4	44	44	44
++	+	+	+
●	●	●	●
●	●	●	●
●	○		
○	○		
●	●	○	
○			

Angular/radial grippers

Pneumatic grippers

Angular/radial grippers

Position

Gripper for small workpieces

Radial gripper

300C

PRC-plus

PRC



Description

Narrow double-acting 2-finger angular gripper

Robust 3-finger angular gripper with oval piston and bone drive

180° radial gripper with powerful 1-pin crank system and oval piston

For small to medium-sized workpieces

Flexible handling of a wide range of parts

Flexible handling of a wide range of parts

Areas of application: Areas which require a stacked, space-optimized gripper arrangement

Areas of application: Can be used in challenging environments

Areas of application: Applications that require a large gripping force with the shortest possible movement sequences at the same time

Advantages

Narrow design, allowing the grippers to be arranged in a row

Variable top jaw design, as grippers are available in jaw version, but also in finger version via intermediate jaws

Almost constant closing torque at closing angles from -5° to +1° due to kinematics

Spring-supported gripping force maintenance in the event of a pressure loss

Equipped with gripping force maintenance in the event of a pressure loss

Optimized cycle time due to innovative damping directly in the drive chain

High force transmission and synchronized gripping due to wedge-hook design

Optional stroke limitation upon opening, for confined spaces and short cycle times

Higher closing moments for longer and more stable gripper fingers due to maximum power density

Technical data

	300C	PRC-plus	PRC
Number of sizes	8	8	8
Gripping moment (Nm)	0.01 ... 9.8	3.12 ... 1025	2 ... 295
Opening angle per jaw [°]	15	15	30 ... 90
Weight (kg)	0.0025 ... 0.211	0.13 ... 13.6	0.13 ... 6.72
Recommended workpiece weight (kg)	0 ... 0.45	0 ... 23.23	0 ... 6.95
Closing/opening time (s)	0.015 ... 0.030/0.02 ... 0.06	0.06 ... 0.17/0.06 ... 0.46	0.06 ... 0.75/0.05 ... 0.92
Max. permissible finger length (mm)	62	300	240
Repeat accuracy (mm)	0.05	0.02	up to 0.05
Protection class IP	20	10	20
Construction class ISO 14644-1			
Sensor system	*	**	**
High number of variants	*	**	**

Additional features

	300C	PRC-plus	PRC
Clean	●	●	●
Contaminated/coarse dust	○	○	○
Contaminated/fine dust and liquids		○	
Contaminated/aggressive liquids		○	
High-temperature range > 90 °C	●	●	●
Use in food	○	○	○

- = very highly suitable ○ = highly suitable ○ = suitable in customized version
 * = medium-sized selection ** = wide selection *** = very wide selection

* The 300C is an angular parallel gripper, which means the values must be understood as forces [N].

Type Gripper for small workpieces		Type Gripper for small workpieces	
GAP		SCW	
			
Compact, double-acting, 3-finger angular parallel gripper for parallel G.D. gripping after yawing in the gripper. Finger up to 90 degrees per jaw.	Sealed 180° angular gripper for the use in contaminated environments.	Small, single-acting, plastic 3-finger angular gripper with spring return.	Small, single-acting, plastic 3-finger angular gripper with spring return.
For small to medium-sized workpieces.	Flexible handling of a wide range of parts.	For small to medium-sized workpieces.	For small to medium-sized workpieces.
Areas of application: Applications requiring parallel external gripping with previous yawing of the gripper fingers up to 90° per jaw.	Areas of application: Can be used in dirty environments.	Areas of application: Applications requiring corrosion resistance and anti-static properties.	Areas of application: Applications requiring corrosion resistance and anti-static properties.
Positively driven angular and parallel movements in a single functional unit.	Completely sealed gripper version.	Cost-effective alternative.	Cost-effective alternative.
Maximum positioning accuracy, 0mm to absolute centric clamping in the parallel stroke.	Opening angle adjustable from 20° to 180°.	Light and corrosion free, as housing is made from fiberglass-reinforced plastic.	Light and corrosion free, as housing is made from plastic.
High force transmission and synchronized gripping due to stable kinematics.	Equipped with gripping force maintenance in the event of a pressure loss.	High power transmission and synchronized gripping thanks to single-acting double-piston drive with lever transmission.	High power transmission and synchronized gripping thanks to single-acting 3-piston drive with lever transmission.
3	5	3	3
92 ... 430°	12 ... 183°	0,8 ... 4,95	1,35 ... 7,45
10 ... 90	10 ... 90	8	8
0,3 ... 1,33	0,5 ... 4,46	0,04 ... 0,06	0,05 ... 0,17
0 ... 1,25	0 ... 7,2	0 ... 0,8	0 ... 1,2
0,09 ... 0,35 / 0,09 ... 0,35	0,4 ... 0,30 / 0,5 ... 0,6	0,06 ... 0,38 / 0,04 ... 0,05	0,02 ... 0,07 / 0,03 ... 0,09
65	125	50	50
0,05	0,1	0,1	0,1
40	67	20	20
+	++	+	+
++	++	+	+
●	●	●	●
○	●	○	○
	●		
	●		
	●		
	●		
	●		
○	○	○	○

Special grippers

Type	Gripper with shank mounted by toolholder	
O-ring gripper	CGE-B	CGE-B with ACE



Description

	2-finger gripper for process-reliable internal and external assembly of O-rings	Universal gripper	Universal gripper with compensation unit
	For O-rings, quad-rings, etc. up to 160 mm outer diameter	Flexible handling of a wide range of parts	Flexible handling of a wide range of parts
	Areas of application: Automated assembly	Areas of application: For fully automated loading and unloading of machining centers	Areas of application: For fully automated loading and unloading of clamping devices such as vices

Advantages





	External and internal assembly with one gripper for flexibility and cost savings	Cost-effective module consisting of a universal gripper PCN-plus/P2N-plus and a shank interface	Cost-effective module consisting of a universal gripper PCN-plus/P2N-plus and a shank interface
	Reliable performance due to new mounting principle for high availability	Fast, automated gripper change from the tool rack	Fast, automated gripper change from the tool rack
	Standard assembly finger for external assembly for common ring sizes for fast commissioning	Fully automatic tool change without the use of robots or gantries	Fully automatic tool change without the use of robots or gantries

Tool system	*		
High number of variants	*	**	**

Technical limitations

Clamp	●	●	●
Contaminated/coarse dust		●	●
Contaminated/flow dust and liquids		○	○
Contaminated/aggressive liquids		○	○
High-temperature range > 90 °C		●	●
Explosion	○		

- = very highly suitable
- = highly suitable
- = suitable in customized version
- * = medium-sized selection
- ** = wide selection
- *** = very wide selection

CGR-V	CGR-M	BCC	Internal BCC gripper IGC
			
<p>Vacuum gripper BCC for spindle interfaces</p>	<p>Magnetic gripper for spindle interfaces</p>	<p>Cleaning unit for up to 80 bar operating pressure</p>	<p>Light gripper made of very resistant polyamide with closed diaphragm system</p>
<p>For flat workpieces weighing up to 4.9 kg</p>	<p>For flat, ferromagnetic workpieces</p>	<p>For machine fluid (filtered, max. particle size of 20 µm) or filtered compressed air in accordance with ISO 8573-1:2010 (7.5.5)</p>	<p>For light workpieces up to 3 kg weight such as small components, plastic components and sand cores</p>
<p>Areas of application: For fully automated loading and unloading</p>	<p>Areas of application: For fully automated loading and unloading</p>	<p>Areas of application: For cleaning of clamping devices and for automated cleaning of machine tools</p>	<p>Areas of application: Particularly suitable for highly dynamic applications with lightweight workpieces</p>
<p>Cost-effective unit for flexible automation in the machine</p>	<p>No electricity required, actuated using coating lubricant</p>	<p>Cost-effective unit for flexible automation in the machine</p>	<p>High dynamics in the application due to low weight</p>
<p>Fast, automated gripper change from the tool rack</p>	<p>Fast-effective unit for flexible automation in the machine</p>	<p>Fast, automatic cleaning for maximum machine utilization</p>	<p>A closed membrane system and internal stop protects the expansion membrane from damage</p>
<p>Fully automatic tool change without the use of robots or gantries</p>	<p>Fully automatic tool change without the use of robots or gantries</p>	<p>Increased safety for machine operators</p>	<p>A long service life ensures long-lasting economical use</p>
<p>+</p>	<p>+</p>	<p>+</p>	<p>+++</p>
<p>● ○</p>	<p>● ○</p>	<p>● ● ● ● ●</p>	<p>● ● ●</p>
<p>○</p>	<p>○</p>	<p>●</p>	<p>○</p>

Mechatronic grippers

Our range of electric parallel grippers currently comprises four product series that are optimally adapted for use in various application areas in terms of gripping force and stroke. This allows you to quickly find the right gripping solution for your application.

For the requirements of modern process flows, mechatronic gripper solutions offer many advantages

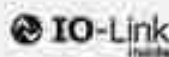
- **Flexibility:** Variety of parts, adjustment options (positioning, stroke, force, modes), future-proof thanks to new software functions that can be added at a later date
- **Connectivity:** Added value through standardized interfaces (flexible and simple networking with all relevant robot and controller manufacturers)
- **Process feedback:** For greater process stability and reliability due to integrated monitoring and analysis options
- **Independent of compressed air:** For improved availability, cleanliness and sustainability even in mobile applications



Connectivity EGK and EGU

EtherCAT

Modbus
RTU



EtherNet/IP



Communication interfaces

For easy integration, the two new mechatronic grippers EGU and EGK are equipped with a variety of communication interfaces. This allows them to be quickly and easily connected with all relevant robot and controller manufacturers.

PLC Integration

For a seamless interaction between gripper and PLC control, function modules for the programming interface of leading manufacturers are available (Allen Bradley, Beckhoff, Siemens). This means that all gripper functions can be used directly without any additional programming effort.

Robot Integration

In order to be able to integrate grippers quickly and easily into robot control systems (ABB, FANUC, UR, YASKAWA), software modules are available. These enable the use of all gripper functions without additional programming effort.

Application examples



Automated machine loading



Assembly and joining tasks



Handling of printed circuit boards



Handling of samples

2-finger-parallel grippers

Electric grippers

2-finger parallel grippers

Gripper for small components

12

12C

Universal gripper

12U



Description

2-finger gripper for small components with smooth-running base jaws guided on roller bearings

For precise small components handling with short cycle times

Areas of application: Electronics manufacturing, laboratory automation and assembly automation in rigidly mechanized production processes

Flexible 2-finger gripper for small components for maximum workplace safety with maximum process reliability

For delicate and fragile workpieces such as printed circuit boards, samples and trays

Areas of application: Flexible production processes in electronics manufacturing and laboratory automation

Flexible 2-finger universal gripper for the highest level of workplace safety with maximum robustness

Universal workpiece handling, even for large and heavy workpieces

Areas of application: Loading and unloading of machine tools, assembly and joining tasks with externally acting process forces, flexible picking and palletizing in logistics

Advantages

Compact dimensions for minimum distributing concerns in handling

Control via signal 0V for easy commissioning and rapid integration into existing systems

Control via IO-Link enables pre-positioning of the gripper finger and initialization of the gripper function as well as the adjustability of special gripping modes

Versatile and productive due to the long and freely programmable jaw stroke with stepless gripping force adjustment

Gripping force maintenance with loss detection

Always referenced in the event of both emergency stop and power failure thanks to integrated absolute encoder

Versatile and productive due to the long and freely programmable jaw stroke with stepless gripping force adjustment

Gripping force maintenance with loss detection

Always referenced in the event of both emergency stop and power failure thanks to integrated absolute encoder

Technical data

	12	12C	12U
Number of sizes	4	3	4
Gripping force [N]	1.2 ... 300	20 ... 300	1.50 ... 1000
Stroke per jaw [mm]	1 ... 10	16.5 ... 31.5	4.1 ... 80
End weight [kg]	0.11 ... 0.81	0.58 ... 1.81	1.54 ... 3.88
Max. permissible finger length [mm]	80	130	200
Nominal voltage [V]	24	24	24
Protection class IP	30	67	67
Communication interface	Signal 0V, IO-Link	PROFINET, EtherCAT, EtherCAT, IO-Link, Modbus RTU	PROFINET, EtherCAT, EtherCAT, IO-Link, Modbus RTU
Sensor system			
High number of variants	+++	+++	+++

Application conditions

	12	12C	12U
Dusty	●	●	●
Contaminated/dry dust		●	●
Contaminated/dry dust and liquids		●	●
Contaminated/aggressive liquids			●
High-temperature range > 90 °C			
Clearroom	●	●	●

● = very highly suitable
◐ = medium-sized selection

● = highly suitable
◐ = wide selection

◐ = suitable in customized version
+++ = very wide selection

Long-stroke gripper EG	Collaborating Co-ax EG-C	Casric gripper EM	Special grippers Servo-electric 5-finger gripping hand SW
			
Configurable 2-finger long-stroke gripper with a gripping force of up to 1200 N	Collaborating 2-finger gripper for small components with control via 24 V and digital IO	3-finger parallel gripper with high maximum moments due to multi-tooth guidance	The servo-electric 5-finger hand grips almost as perfectly as the human hand
For large, bulky and heavy workpieces	For small and light workpieces	For cylindrical workpieces	For a wide variety of gripping and manipulation tasks
Applications: customized, handling of crates, boxes, films, white goods and much more	Areas of application: Applications with direct collaboration between humans and robots	Areas of application: loading and unloading of machine tools	Areas of application: mobile robotics, research and development
Adaptable drive mount for flexible installation and easy integration into existing control concepts	Plug & Work: Compatible with a wide range of robots	Central electronics for easy integration into existing control concepts via PROFINET	Various gripping operations can be executed with high sensitivity thanks to the moving parts with a total of nine gears
Application-specific standard gripper thanks to diverse variants and options and individual configurations	Certified by German machinery accident insurance (DGUV)	Forming of cylindrical workpieces	Reliable grip on objects due to elastic gripping surfaces
Reduced design costs due to simple and fast design of individual long-stroke grippers via the web tool	Functional safety included due to inherent safety with current limitation	Possibility of pre-positioning for cycle time reduction due to a short working stroke	Extremely compact design due to integration of the complete control, regulator, and power electronics in wrist
4 1100 ... 12000	2 140 ... 770	3 500 ... 800	
100 ... 600	6 ... 10	8 ... 10	
E 1 ... 58.5	0.59 ... 1.18	0.98 ... 2.48	
800	80	80	
Motor-dependent 20 ... 40	24	24	
Controller-dependent	digital IO	PROFINET	
+++	++	++	+
•	•	•	•
•		•	
•		•	

Electric grippers

Gripping technology

Advanced technology

ADHESO Adhesive gripper

The ADHESO gripper technology is based on an adhesive system inspired by nature. The adhesive forces used by animals such as geckos for locomotion are now being utilized by SCHUNK for use in handling applications in the most diverse of fields.

The advantages of the ADHESO gripper technology are revolutionary

- **Low operating costs due to energy-efficient gripping** without an additional energy supply
- **Gripping without any visible residues** for sensitive workpieces
- **No particle emission**, making it suitable for clean room applications
- **Versatile in use and ideally adapted** to different ranges of applications

Material and surface

SCHUNK grippers with ADHESO gripper technology have a distinctive surface architecture made of special polymers. The result is a structure of extremely finely structured legs, which adheres residue-free to the different materials and objects. The scalability options and use of different material characteristics allows the adhesive structure to be adapted to different workpieces and surfaces. This makes grippers with ADHESO technology easy to customize for the most diverse workpieces and applications.

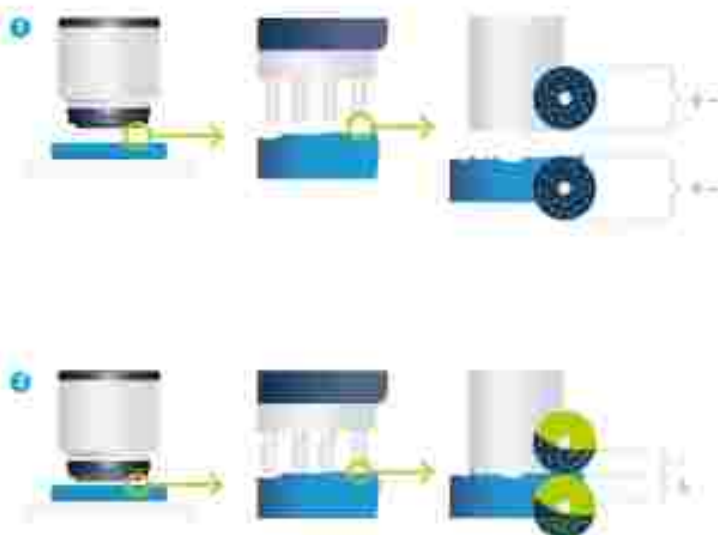


The German Federal Ministry for Economic Affairs and Climate Protection awarded the innovative ADHESO gripper technology from SCHUNK with the iKU 2022.

Principle of function

The biotic-inspired ADHESO gripper technology is based on the principle of adhesion, using intermolecularly acting Van der Waals forces for handling various workpieces and materials. Due to the high variability of the adhesive structures, grippers with ADHESO technology can be individually tailored to different applications.

- 1 Initial structure
- 2 Gripping process



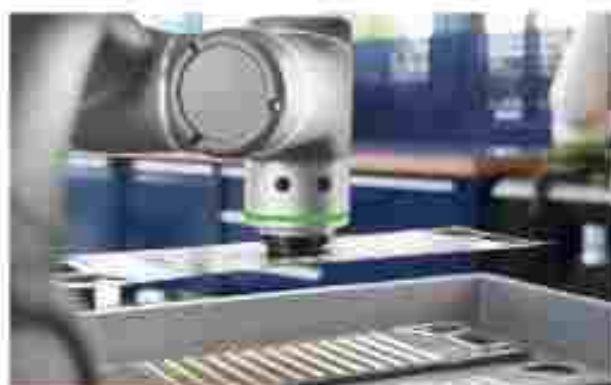
Application examples



Handling of lab samples



Handling of semiconductors



Handling of vehicle components



Handling of food

Magnetic gripper

As if by superpower, SCHUNK's magnetic grippers move ferromagnetic components in any position and size. Whatever their position – the workpieces are always gripped quickly and securely. A short pulse of current is all it takes to get the magnetic grippers ready for use. Uncomplicated, easy to handle and exceptionally strong – it's time to add the invisible force of magnetism to your production!

The advantages of magnetic gripping technology offer you real added value

- **High holding forces for reliable part handling** in compact systems
- **Actuation via 24 V voltage supply** saves energy and simplifies connection and wiring
- **Workpiece accessibility** from five sides free from interfering contours
- **Low weight for high dynamics** in challenging applications
- **Reliable maintenance of holding force** for process-reliable use even in emergency-stop scenarios

Application examples



Handling of battery round cells



Handling of steel metal



Bin picking of raw parts



Handling of metal

Electromagnetic grippers



Description

Compact electro-permanent magnetic gripper for energy-efficient handling	Compact electro-permanent magnetic gripper for energy-efficient handling with integrated electronics and feedback function
For ferromagnetic workpieces weighing up to 138 kg	For ferromagnetic workpieces weighing up to 70 kg
Areas of application: Universally applicable for a wide variety of parts	Areas of application: Universally applicable for a wide variety of parts

Advantages

Reliable part handling in compact systems due to high holding forces in very small spaces	Reliable part handling in compact systems due to high holding forces in very small spaces
Low weight for high dynamics in challenging applications	Compact design due to integrated electronics without additional controller
Reliable gripping force maintenance for process-reliable use even in emergency-stop scenarios	2:1 ratio of workpiece weights to dead weight for high dynamics in demanding applications

Technical data

Number of poles	2x	8
Stripping force (N)	700 ... 30370	530 ... 10550
Weight (kg)	1 ... 25	1 ... 8
Recommended workpiece weight (kg)	0 ... 138	0 ... 70
Closing/opening time (s)	0.1	0.2
Nominal voltage (V)	240 AC	24 DC
Nominal current (A)	2.2 ... 12.3	3.1 ... 9.8
Protection class IP	54	57
Communication interface	Controller-dependent	Digipack 00
High number of variants	***	**

Mount & control

Mount		
Controller	External	Integrated
Controller type	ECU	

Environments & materials

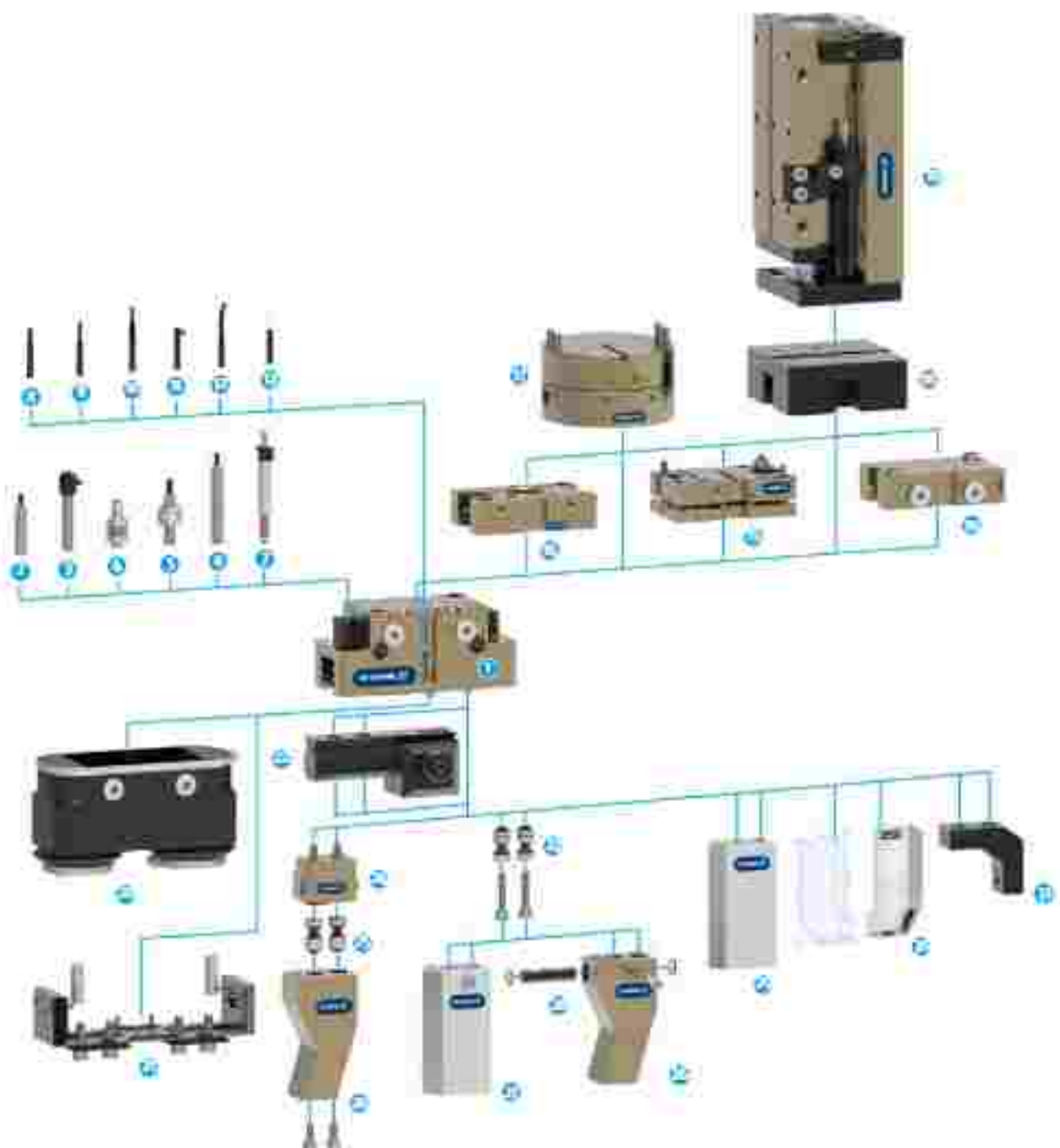
Oil	●	●
Contaminated/dry dust	●	●
Contaminated/dry dust and liquids	○	○
Contaminated/aggressive liquids		
High-temperature (temp. > 80 °C)		
Outdoor	○	○

- = very highly suitable ○ = highly suitable ○ = suitable in customized version
- = medium-sized selection ** = wide selection *** = very wide selection

Electromagnetic grippers Magnetic grippers Gripping technology Advanced technology

Accessories

SHUNK also offers suitable accessories for the extensive gripper range. The universal gripper PGN-plus-P, for example, features a large number of variants and a superior range of accessories offering everything needed for flexible use in your specific automation application. For each kind of application and handling requirement – and also under extreme conditions.



- FKM-plus-P**
 Universal 2-finger (parallel) gripper with a high gripping force and high maximum moments due to the use of a multi-touch guidance

Sensor system

- IN**
 Inductive proximity switch with shielded cable and straight cable outlet
- IN ...-SA**
 Inductive proximity switch with shielded cable and lateral cable outlet
- IN-C 80**
 Inductive proximity switch, direct plug-in
- FPS**
 Flexible position sensor for monitoring up to five different, freely selectable positions
- APS-280**
 Inductive position sensor for precise position detection of the gripper jaws with analog output
- APS-M15**
 Mechanical measuring system for accurate acquisition of the gripper jaw position with analog output
- MMS 22**
 Magnetic switch with straight cable outlet for monitoring a position
- MMS 22-P0**
 Magnetic switch with straight cable outlet for monitoring a freely programmable position
- MMS 22-P2**
 Magnetic switch with straight cable outlet for monitoring two freely programmable positions
- MMS 22-P11-B0**
 MMS 22-P11 in robust design
- MMS 22-P2-R0**
 MMS 22-P2 in robust design
- MMS 22-SA**
 Magnetic switch with lateral cable outlet for monitoring a position
- MMS 22-P11-SA**
 Magnetic switch with side cable outlet for monitoring a freely programmable position
- MMS-P**
 Magnetic switch with straight cable outlet for monitoring two freely programmable positions
- MMS-A**
 Analog magnetic switch with straight cable outlet for measuring the gripper jaw position with analog output and teach function
- MMS-R0**
 Magnetic switch with straight cable outlet for measuring the gripper jaw position with IAS-Link interface and teach function

Complementary Products

- CWS**
 Manual change system with integrated air feed-through for simple exchange of the handling components

- TDI**
 Tolerance compensation unit for compensation of small tolerances in the plate
- SDV-P-E-P**
 Pressure maintenance valve for temporary force and position maintenance
- AGE**
 Compensation unit for compensation of large tolerances along the X and Y axes
- ASG**
 Adapter plate for combining various automation components in the modular system
- ELM**
 Linear module with pneumatic drive and slope-free pre-heated junction rollers
- HSE**
 Sleeve for protection against dirt
- SAB**
 Disruptor version, retrofit kit

Finger Accessories

- 02H**
 The universal intermediate jaw allows for the fast tool-free and reliable plugging and shifting of top jaws to the gripper
- BSWS-AA**
 Adapter coupling of jaw quick-change system for fast, manual change of top jaws
- BSWS-B**
 Locking mechanism of the jaw quick-change system for fast, manual change of top jaws
- BSWS-A**
 Adapter coupling of the jaw quick-change system for adaptation to the customized fingers
- Customized fingers**
- BSWS-80H**
 Finger blank made of aluminum with interface to the jaw quick-change system
- BSWS-50H**
 Finger blank made of steel with interface to the jaw quick-change system
- BSWS-80**
 Locking mechanism for the integration of the jaw quick-change system into customized fingers
- ABW50H**
 Finger blanks made of steel or aluminum with standardized screw connection program
- FGF**
 Configurable, workpiece-specific gripper finger made of aluminum or steel
- ZBA**
 Intermediate jaws for replacement of the mounting surface

Finger accessories
Workpiece-specific gripper fingers
Top jaws blank
Jaw quick-change system
Jaw quick-change system

TKZ ALK004 1005-M-A 1005-M



Description

Workpiece-specific, configurable gripper fingers made of aluminum or steel

Blanks made of aluminum or steel for use with the customer

Jaw quick-change system consisting of a base and two adapter pins

Tool-free jaw quick-change system consisting of a base and two adapter pins

Suitable for many gripper types

Suitable for common gripper types

Handling of various workpieces

Handling of various workpieces

Areas of application: Universally applicable

Areas of application: For quick and easy creation of top jaws by adding the clamping contour

Areas of application: With highly diverse workpieces for quick jaw changes with any clamping contours

Areas of application: With highly diverse workpieces for quick jaw changes with any clamping contours

Advantages

Easy configuration of individual gripper fingers

For jaw blanks with jaw quick-change systems, there are no more inserting mounting times in the finger contour

Fast replacement of the gripper fingers thanks to the form-fit locking mechanism

The gripper can be used universally in various applications

Short delivery times for quick availability without tying up your own resources

Easy to assemble due to standardized drilling pattern

Saving time when converting applications

Tool-free jaw change via the unlocking button

No CAD program or expertise required thanks to license-free web tool

High replacement accuracy due to centering

Firm up to the maximum loadability of the base jaws

Saving time when converting applications

Low quick-change system with top jaw blank	Low quick-change system	Adjustable intermediate jaw	Complementary products Pressure maintenance valve	Protective cover
AS200-0005	ES205-000-00	ES2	520-P	ES2
				
Low quick-change system consisting of two adapter pins and a finger blank	Low quick-change system consisting of two adapter pins and locking mechanism of the customized finger	Universal intermediate jaw for fast tool-free and reliable plugging and shifting of top jaws on the gripper.	Prevents venting of the module in the event of a loss in air pressure in the supply line.	Protective cover for gripper against external influences in a dirty environment
Handling of various workpieces	Handling of various workpieces	Handling of various workpieces	This is especially useful for grippers where a mechanical grip force maintenance solution is not possible	Suitable for grippers PGM-plus-F, PGM-plus, PZK-plus, ESK and SZK
Areas of application: With highly diverse workpieces for quick jaw changes with any clamping contours	Areas of application: With highly diverse workpieces for quick jaw changes with any clamping contours	Areas of application: With highly diverse workpieces that can be covered by increasing the clamping width	Areas of application: Temporary force or position maintenance for various pneumatic actuators	Areas of application: Suitable for applications of up to IP65 if an additional sealing of the cover bottom is provided
Fast replacement of the gripper fingers thanks to the form-fit locking mechanics	Fast replacement of the gripper fingers thanks to the form-fit locking mechanics	Gripper and finger-side centering for universal and flexible assembly of the gripper	Creates operational safety when using pneumatic components	Cost-effective for economical handling
Saving time when converting applications	Saving time when converting applications	Scale guide strip, suitable for long gripper fingers	Long-term reliable application, can be retrofitted thanks to robust design	
Firm up to the maximum stability of the base jaws	Firm up to the maximum stability of the base jaws	Precise and repeatable grip	Universally applicable, as it can be combined with almost any pneumatic actuator	Space-saving due to low interfering contours

Sensors

Monitoring of
one position
1 digital switching
point

Monitoring of several
positions
2 digital switching
points



Technical data	NMS 22	NMS-PI 1	IM	EMS	NMS-PI 2
Number of sites	1	1	10	2	1
Operating principle	Magnetic	Magnetic	Inductive	Reed	Magnetic
Max. IP protection	67	67	67	67	67
Supply voltage (V DC)	24	24	24	24	24
Max. current on contact (mA)	50	50	100 ... 200	600	25
PNP version	●	●	●	●	●
NPN version	●	●	●	●	●
LED display	●	●		●	●
Min./max. ambient temperature (°C)	-10 ... 70	-10 ... 70	-25 ... 70	-5 ... 70	-10 ... 70
Close	●	●	●	●	●
Open			●		●
Connection type					
Number of wires	3	3	3	3	4
Cable version	●	●	●		●
Connector M8 version	●	●	●	●	●
Connector M12 version			●		
Working conditions					
Dust	●	●	●	●	●
Easy connection	●	●	●	●	●
Extremely dirty	●			●	

● = highly suitability supported

Cables

Cables

Sensor cable

Accessory cable



Description	Sensor cable	Accessory cable
	Optimally suited for signal transmission of SCHUNK sensor technology	Perfectly suited to supply and connect SCHUNK components
	Areas of application: For use on all SCHUNK sensors as well as components with integrated sensor technology	Areas of application: The connectors are used for every sensor, gripping, rotary and linear module, and also for numerous components in the robot accessories field
Advantages	Industrial standard plug connector Different connections possible (straight/angled) Combination with plug-in connector possible	Industrial standard plug connector Different connections possible (straight/angled) Combination with plug-in connector possible

Monitoring of the overall
stroke

5 digital switching points: 10-Link signal Analog signal



NMS-P	FPS	NMS 22 10-Link	APS-ME	APS-200	NMS-A
1	1	1	1	1	1
Magnetic	Magnetic	Magnetic	Metallic	Inductive	Magnetic
67	67	67	67	67	67
24	24	24	24	24	24
100	200	25			
•	•	•			
•		•			•
5...55	-25...70	5...55	0...60	-10...70	-5...55
•	•	•			
•		•			•
•	•	•	•	•	•
•	•	•	•	•	•

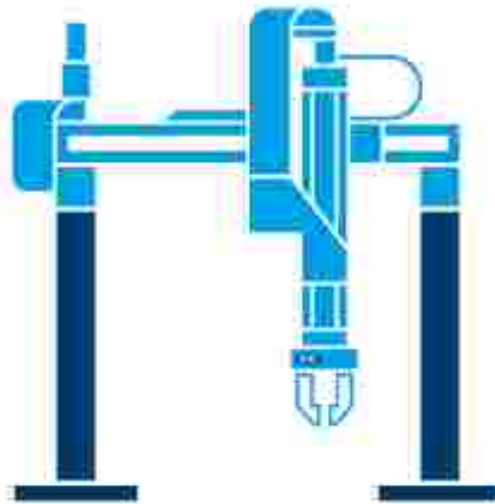
Communication cable Power/sensor cable Plug connector / Plug-in connectors



<p>Optimally suited for reliable transmission of his signals from the higher-level control system to the mechatronic SCHUNK components</p> <p>Areas of application: The connectors are used for every sensor, gripping, rotary and linear module, and also for numerous components in the robot accessories field</p> <p>Industrial standard plug connector</p> <p>Different connections possible (straight/angled)</p> <p>Available in version w/ cable stack capability</p>	<p>Perfectly suited to supply and control SCHUNK components</p> <p>Areas of application: The connectors are used for every sensor, gripping, rotary and linear module, and also for numerous components in the robot accessories field</p> <p>Industrial standard plug connector</p> <p>Different connections possible (straight/angled)</p> <p>Suitable for connection to the respective SCHUNK component</p>	<p>For the assembly of cables for sensors and actuators</p> <p>Areas of application: In connection with sensors, actuators, distributors and cables. Whenever customized cable lengths are required</p> <p>Industrial standard plug connector</p> <p>Different connections possible (straight/angled)</p> <p>Easy assembly</p>
---	--	--

Automation with SCHUNK: We can help you to master any challenge

SCHUNK offers the world's most comprehensive product portfolio for technical solutions for automated handling of workpieces. Whether pick & place units, linear modules or multi-axis systems – as a complete supplier of handling solutions, we will be happy to advise you. Application-specific automation systems provide high dynamics during short cycle times – from small parts assembly in the production of electronics to the loading and unloading of machine tools, to the handling of food products, pharmaceuticals or medical devices.



Swivel units

SCHUNK offers a unique range of swivel and rotary modules with various options.



Swivel units

Linear modules & axis systems

Whether it's a variety of linear technology from a single axis to high-speed assembly automation or an extensive axis portfolio for machine loading and unloading – SCHUNK is your partner for every type of handling process automation.



Linear modules & axis systems

Change systems & feed-through modules

In this field of automation, SCHUNK offers the most comprehensive portfolio of components for robot applications from small components to heavy load handling.



Change systems & feed-through modules

Rotary feed-throughs

SCHUNK rotary feed-throughs are the modern standard for stationary use and for automation.



Rotary feed-throughs

Compensation units & collision protection

To prevent damage to tools or workpieces, SCHUNK compensation units ensure the necessary flexibility. Moreover, monitoring modules are an effective tool for process-orientable manufacturing in automated handling processes.



Compensation units & collision protection

Force/torque sensors

When precise results are needed, intelligent force/torque sensors are in mind and provide robots with the required flexibility.



Force/torque sensors

Machining tools

Boreing, grinding and polishing – demanding tasks such as removing material or finishing workpieces can be automated quickly and easily with the help of the H-EMENDO tool.



Machining tools

Pneumatic swivel units

Swiveling and rotating are universal processes required in any industrial situation comprising automated handling of workpieces. The requirements for the components used are very high and also very specific. SCHUNK offers a unique range of swivel and rotary modules with various options.

Pneumatic swivel units from SCHUNK offer you many advantages:

- **The right product for your application**
available as standards thanks to a diverse range of series
- **Numerous options available**
e.g. integrated media and electrical feed-through and pneumatic center position!
- **Specially developed shock absorbers**
for high mass inertias and fast cycle times
- **online configurator for gripper-swivel units**
makes it easier to find the right product
- **Wide range of accessories available**

Application examples



Handling of raw and finished parts



Steel metal handling

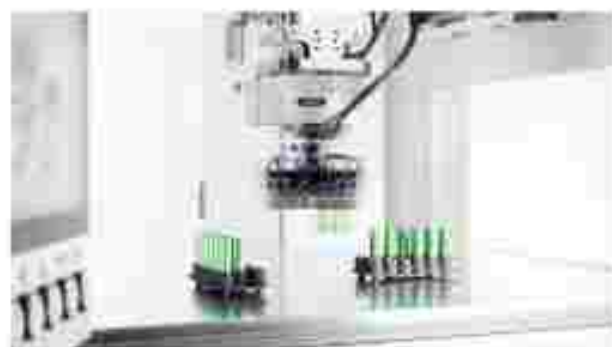
Electric swivel units

The electric swivel units from SCHUNK more than meet the high requirements for swivel and rotary movements in automation. In addition to the diverse options and the wide range of variants, the universal use of the swivel and rotary modules are perfect for custom applications of any kind.

Electric swivel units from SCHUNK offer you many advantages:

- ✦ **The right product for your application**
Available as standard thanks to series diversity
- ✦ **The possibility of any intermediate position enables great process versatility**
and optimal adaptation to the relevant application
- ✦ **Extensive consulting service**
ranging from choosing the appropriate technology to design tasks
- ✦ **Various actuation options**
facilitate easy integration into existing control concepts
- ✦ **Numerous options available,**
e.g. integrated media and electrical feed-through and integrated holding brake

Application examples



Handling of battery round cells



Handling of electronic components



Handling of finished products

Pneumatic rotary modules

Swivel units

Swivel units		Swivel head	
SRH	SRH-plus	SRH-plus	SR
			

Description			
Universal swivel unit for rotating and swiveling movements	Universal swivel unit for rotating and swiveling movements	Universal swivel head for simultaneous loading and unloading of workpieces with integrated fluid and electrical feed-through	Miniature type swivel unit for light swiveling tasks up to 180°
Usable with any swiveling movements	Usable with any swiveling movements	Recommended for loading and unloading machine tools	Multi-functional range of applications

Advantages			
Finely graded series with a steady increase in torque	Finely graded series with a steady increase in torque	Tight electrical signals can be fed through without cables	Compact design allows several modules to be mounted next to each other
Large central bore for feed-through of cables and hoses with the same unit height	Swivel angle 90° or 180° selectable, application-specific angles are available on request	Significant minimization of wear and shorter loading times due to high damping power thanks to hydraulic shock absorbers	Versatile setting of the swivel angle from 0 - 180°
Pre-adjusted shock absorber screw for simple and fast start-up	Choice of end position adjustment: +2°-2° (small) or +1°-90° (large)	Media feed-through and drive connection via screw connection or hose-fix direct connection possible	Firm adjustment of the swivel angle for sensitive adjustment of the end positions

Technical data			
Angle of rotation < 180° [°]	0 ... 180	0 ... 180	180
Angle of rotation > 180° [°]			90 ... 180
Number of sizes	8	8	7
Torque [Nm]	0.65 ... 22.7	1 ... 115	1 ... 69.9
Body weight [kg]	0.252 ... 9.74	1.2 ... 26.5	2.1 ... 21.2
Max. permissible mass moment of inertia [kgm²]	0.0007	37	2.5
Repeat accuracy [°]	0.03 ... 0.06	0.05	0.05
Protection class IP	40/65	67	67
Gripping force [N]			52
Stroke per jaw [mm]			
Recommended workpiece weight [kg]			
Continguing time [s]			
Max. permissible finger length [mm]			

Options/Features			
Lower body	●	●	●
Pneumatic rotary feed-through	●	●	●
Electric rotary feed-through	●	●	●
Home position	●	●	
ATEX certified		●	●
Gripping force maintenance device			

Monitoring options			
Inductive proximity switch	●	●	●
Magnetic switch	●	●	●

Additional features			
Clean	●	●	●
Easily contaminated	●	●	●
Extremely dirty	●	●	●

● = fully supported

Electric rotary modules

Swivel units

Swivel units



	E24	F24	E28
Description	Electric heavy-duty rotary module with adaptable servomotor, rotary angle > 360°, center bore, and optional feed-throughs	Servo-electric miniature rotary unit with angle of rotation > 360°, center bore, and precision gear	Miniature rotary unit with powerful torque motor with absolute-encoder transducer and electric and pneumatic rotary feed-through
Advantages	<p>Modular drive concept for adaptation of all common servomotors like Bosch and Siemens</p> <p>Easy system integration through use of a preferred motor and already established field bus and safety technology</p> <p>Drive can be switched 180° for optimum adaptation of portals or tubes</p>	<p>Brushless DC servomotor for flexible use by controlled position, velocity, and torque</p> <p>High torque, velocity, and precision for rapid accelerations and short cycle times with high precision</p> <p>Complete integration of the entire control, regulating and power electronics for setting up a decentralized control system</p>	<p>Absolute path measuring system for less programming effort and time saving when commissioning and in operation</p> <p>High dynamics for shorter cycle times resulting in high productivity</p> <p>Integrated air and electric feed-through for reliable electricity, gas and water supply of the grippers</p>
Technical data			
Number of sizes	1	2	2
Torque (Nm)	75	0.75 .. 6.8	0.4 .. 1.2
Max. speed (RPM)	62.5	25 .. 117	600
Lead weight (kg)	15.5	0.75 .. 1.55	1.2 .. 1.8
Max. permissible mass moment of inertia (kgm ²)	20	0.3	0.011
Repeat accuracy (°)	0.025	0.004	0.01
Clearance	48	80 .. 100	
Intermediate circumferential voltage (V)	Motor-dependent	24	520
Nominal current (A)		1.7 .. 6.5	0.42 .. 1.6
Diameter of center bore (mm)	22		
Number of electric feed-throughs	0	0	4
Number of pneumatic feed-throughs	8	0	2
Protection class (IP)	IP5	54 .. 65	40 .. 54
Type of measuring system	Motor-dependent	Incremental	Absolute, measuring system HUPFACE and DRIVE-CLIQ
Angle of rotation (°)	> 360°	> 360°	> 360°
Gripping force (clamping angle 180°)			
Stopslipping angle per jaw (mm)(°)			
Recommended workpiece weight (kg)			
Closing / opening time (s)			
Max. permissible finger length (mm)			
Motor & controller			
Motor	Adaptable	Integrated	Integrated
Controller	External	Integrated	External
Controller type	Motor-dependent		Bosch Rexroth, Siemens*
Options/features			
Center bore	•	•	
Pneumatic rotary feed-through	•		•
Electric rotary feed-through			•
Brake	•		
Features & compliance			
Drish	•	•	•
Easy commissioning	•	•	•
Extremely dirty	•	•	

• = highly successfully supported

* = Additional controllers available upon request

Gripper swivel module with parallel gripper



<p>EBG</p> <p>Electric universal rotary unit with torque motor and angle of rotation > 360° as well as optional holding brake rotary feed-through and IP54</p>	<p>EBT</p> <p>Flange electric, universal rotary unit with torque motor and angle of rotation > 360°, protection class IP40 and optional electric holding brake</p>	<p>EGS</p> <p>Electric 2-finger parallel gripper swivel module with smoothly running base jaw guidance on roller bearings</p>
<p>Integrated torque motor for high torque and flexible use by controlled position, velocity and torque</p>	<p>Integrated torque motor for high torque and flexible use by controlled position, velocity and torque</p>	<p>Control via digital I/O for easy commissioning and rapid integration into existing systems</p>
<p>Large central hole for feeding through cables and hoses</p>	<p>Extremely flat design for minimal interfering surfaces and use in confined spaces</p>	<p>Virtually no wear parts for high machine availability and low operating costs</p>
<p>Compact design for minimal mounting errors and use in confined spaces</p>	<p>Absolute position measuring system for less programming effort and time saving when commissioning and in operation</p>	<p>Low space requirement thanks to the compact design of rotary drive and gripper</p>

<p>1</p> <p>2.5 ... 10</p> <p>140 ... 2200</p> <p>1.7 ... 10.8</p> <p>0.6</p> <p>up to 0.01</p>	<p>4</p> <p>1.4 ... 32</p> <p>150 ... 600</p> <p>2.4 ... 23.8</p> <p>5.52</p> <p>up to 0.01</p>	<p>2</p> <p>0.06 ... 0.11</p>
<p>550</p> <p>1.7 ... 1.8</p>	<p>560</p> <p>4.95 ... 4.4</p> <p>25 ... 32</p>	<p>24</p> <p>1.5</p>
<p>8</p> <p>1</p>	<p>8</p> <p>8</p>	<p>20</p>
<p>90</p>	<p>40 ... 54</p>	<p>20</p>
<p>Incremental</p> <p>> 360°</p>	<p>Absolute, measuring system UPPERMILL®, UPPERFACE 85x® and 80VE-CL</p> <p>> 360°</p>	<p>10 ... 270</p> <p>15 ... 140</p> <p>3 ... 6</p> <p>0 ... 0.55</p> <p>0.03 ... 0.23</p> <p>50</p>

<p>Integrated</p> <p>External</p> <p>Boch Rexroth, Siemens*</p>	<p>Integrated</p> <p>External</p> <p>Boch Rexroth, Siemens*</p>	<p>Integrated</p> <p>Integrated</p>
---	---	-------------------------------------

<p>•</p> <p>•</p> <p>•</p> <p>•</p>	<p>•</p>	<p>•</p>
<p>•</p>	<p>•</p> <p>•</p>	<p>•</p>

Linear modules & axis systems

For positioning and motion tasks or for any other kind of automation for handling processes, SCHUNK offers the diversity of linear technology from a single source. Different types of standard modules can be combined into a complete system. A wide range of variants is available for both the drive and the guide concept.

The advantages of SCHUNK linear modules and axis systems

- **Flexible and extensive combinations** with different drive concepts
- **Over 25 years of experience in the field of linear technology**
- **Extensive axis system portfolio with more than 450 standard components;** pneumatic and electric
- **Extensive consulting service** ranging from choosing the appropriate axis technology to design tasks
- **Pre-assembled units for minimum installation effort** and immediate commissioning (incl. commissioning support)

High number of variants



Application examples



Depaneling of circuit boards



Automatic change of grinding wheels



Assembly automation



Handling of electronic components



Handling of gears



Assembly of gears

Pneumatic linear modules

Universal linear module

LM

RLM



Description

Linear module with pneumatic drive and pre-loaded crossed roller bearings, free from play in prism rails

Linear module with pneumatic drive and ball bushing guide

Advantages

Closed side construction for high rigidity

Double bearing of the guide shaft in the ball bushings for high load absorption and repeat accuracy < 0.035 mm

Shock absorbers and proximity switches integrated in the projecting surfaces for vibration-free movements and end position monitoring

Shock absorbers and proximity switches integrated in the projecting surfaces for vibration-free movements and end position monitoring

Compact dimensions for minimal interfering contours in the entire system

Heavy-duty sized guide shafts

Technical data

Number of sizes	5	6
Number of poles	1	1
Repeat accuracy (mm)	up to 0.01	up to 0.02
Nominal stroke (mm)	0 ... 450	0 ... 300
Max. driving force (N)	752	752
Load weight (kg)	0.44 ... 15.81	0.5 ... 12.2
Adjustable end positions	Yes	Yes
Max. end position adjustment per side (mm)	25	25
Type of guide	Junction roller guide	Ball bushing guide
High number of variants	+++	++
Required maintenance	hydraulic shock absorbers, lubrication of the guide, replacement of seals	hydraulic shock absorbers, lubrication of the guide, replacement of seals
Remark	Optionally available with up to two intermediate positions and with rod lock	Optionally available with up to two intermediate positions, rod lock and disproof version

Drive type

Pneumatic cylinders	●	●
Hydraulic cylinders		

Additional features

Clean	●	●
Easily contaminated		●
Interfering fit		○

● = fully supported ○ = technically possible
+ = minimum-sized selection ++ = wide selection +++ = very wide selection

Compact slide CLM	Scotch module SLM	Gravity axis PWP
----------------------	----------------------	---------------------



Linear module with optimized length, with pneumatic drive and pre-loaded crossed roller bearings, free from play	Scotch module with optimized length, with pneumatic drive and pre-loaded crossed roller bearings, free from play	Linear axis with integrated pneumatic drive cylinder and precision-machined bull-bearing guides, free from play
Crossed roller guide design and solid construction ensures high load bearing capacities and end position accuracy in all installation positions	Crossed roller guide design and solid construction ensures high load bearing capacities and end position accuracy	High moment load bearing capacity through the use of high-performance-profiled rails
Pre-loaded junction roller guides and therefore free from play	Pre-loaded junction roller guides in all installation positions, therefore free from play	High axis rigidity thanks to special extruded profile geometry
High load bearing capacity in all directions	High load bearing capacity in all directions	A ground section ensures high precision and surface quality of the base jaws as well as an increased service life
6	6	2
1	1	1
up to 0.03	up to 0.01	0.04
0 ... 150	0 ... 150	0 ... 2700
682	482	250
0.07 ... 5.72	0.5 ... 5.24	2 ... 44.98
Yes	Yes	Yes
25	25	50
Junction roller guide	Junction roller guide	Double profiled rail guide
••	•	•••
Hydraulic shock absorbers, lubrication of the guide, replacement of seals	Hydraulic shock absorbers, lubrication of the guide, replacement of seals	Hydraulic shock absorbers, lubrication of the guide, replacement of seals
Optionally available with red lock	Optionally available with red lock	Optionally available with bellows, several intermediate positions and cable track



Electric linear modules

Linear direct axes

Compact linear module LSP	Compact linear module L2M	Compact module L3M
		

Description	Electric linear module with direct drive and integrated controller, backlash-free, pre-loaded roller guides	Stroke-stroke axis with linear direct drive and cross roller guides	Compact short stroke axis with linear motor and roller guidance
-------------	---	---	---

Advantages	Control via digital I/O for easy commissioning and rapid integration into existing systems Speed of retraction and extension can be adjusted in ten increments for high flexibility in the cycle time Full almost wear-free use and a long service life	Integrated motor and measuring system in the axis minimize interfering contours and space requirements Can be upgraded with absolute path measuring system for less programming effort and time saving when commissioning and in operation High dynamics for shorter cycle times resulting in high productivity	Almost no wearing parts for long service life and reliability of the system No mechanical play between the drive elements for fast response and high positioning accuracy Low vibrations and high holding force for the shortest positioning times and process stability
------------	---	---	--

Technical data			
Number of axes	1	1	2
Repeat accuracy (mm)	±0.01	±0.01	±0.01
Max. useful stroke (mm)	200	125	200
Max. driving force (N)	104	150	100
Max. speed (m/s)	zero-learn function	4	4
Max. acceleration (m/s ²)	zero-learn function	100	60
Type of measuring system		Absolute or incremental	Absolute or incremental
Type of guide	Junction roller guide	junction roller guide	Roller guide
Variant variety	**	***	**
Required maintenance	Maintenance-free	Cleaning of the magnetic track, lubrication of the guide	Cleaning of the magnetic track
Remark	Stop position axis with mechanically adjustable stop positions, optionally available with load holding	Freely programmable, optionally available with rod lock, brake or load holding	Freely programmable, optionally available with brake, limit switch, reference switch, cable lock, supported profile

Drive type			
Spindle drive			
Trochoid belt drive			
Rack and pinion drive			
Direct drive (linear motor)	•	•	•

Motor & controller			
Motor	Integrated	Integrated	Integrated
Drive controller	Integrated	Roche Rexroth, Siemens*	Roche Rexroth, Siemens*
Interfaces	Digital I/O	Siemens H, Schenck/HP, edimCAT, PROFACT, PRO-IBAS CP, Powerlink, CANopen	Multi-Channel Buscon RT, PROFACT RT, Siemens/HP, edimCAT, PRO-IBAS

Additional functions			
Clean	•	•	•
Easily customized			

• = fully supported
 • = medium selection ** = large selection *** = very wide selection
 * = Additional controllers available upon request

Universal linear modules	LOM	LDT	Flat linear module
LOM	LOM	LDT	LDT



Universal linear axis with single X-profile, linear motor, and roller guidance	Universal linear axis with double X-profile, linear motor, and roller guidance	Universal linear axis with single I-profile, linear motor, and roller guidance	Flat linear axis with linear motor and profile rail guidance
--	--	--	--

Almost no wearing parts for long service life and reliability of the system	Almost no wearing parts for long service life and reliability of the system	Almost no wearing parts for long service life and reliability of the system	Almost no wearing parts for long service life and reliability of the system
---	---	---	---

No mechanical play between the drive elements for fast response and high positioning accuracy	No mechanical play between the drive elements for fast response and high positioning accuracy	No mechanical play between the drive elements for fast response and high positioning accuracy	No mechanical play between the drive elements for fast response and high positioning accuracy
---	---	---	---

Low vibrations and high holding force for the shortest positioning times and process stability	Low vibrations and high holding force for the shortest positioning times and process stability	Low vibrations and high holding force for the shortest positioning times and process stability	Low vibrations and high holding force for the shortest positioning times and process stability
--	--	--	--

7	7	7	7
±0.01	±0.01	±0.01	±0.01
2700	2700	2700	2000
500	1000	1500	500
4	4	4	4
60	60	60	60
Absolute or incremental	Absolute or incremental	Absolute or incremental	Absolute or incremental
Roller guide	Roller guide	Roller guide	Roller guide
***	**	**	•

Cleaning of the magnetic tracks	Cleaning of the magnetic tracks	Cleaning of the magnetic tracks	Cleaning of the magnetic tracks
---------------------------------	---------------------------------	---------------------------------	---------------------------------

Freely programmable, optionally available with brake, limit switch, reference switch, cable track, supported profile	Freely programmable, optionally available with brake, limit switch, reference switch, cable track, supported profile	Freely programmable, optionally available with brake, limit switch, reference switch, cable track, supported profile	Freely programmable, optionally available with brake, limit switch, reference switch, cable track
--	--	--	---

•	•	•	•
---	---	---	---

Integrated	Integrated	Integrated	Integrated
Bosch Rexroth, Siemens*	Bosch Rexroth*	Bosch Rexroth, Siemens*	Bosch Rexroth, Siemens*
Multi-Ethernet (Sercos III, PROFINET I/O, EtherCAT, EtherCAT, PROFIBUS)	Multi-Ethernet (Sercos III, PROFINET I/O, EtherCAT, EtherCAT, PROFIBUS)	Multi-Ethernet (Sercos III, PROFINET I/O, EtherCAT, EtherCAT, PROFIBUS)	Multi-Ethernet (Sercos III, PROFINET I/O, EtherCAT, EtherCAT, PROFIBUS)

•	•	•	•
---	---	---	---

Electric linear modules

Mechanical axes

Linear table

Axis

Universal linear module

Axis



Description

Flat linear table with spindle drive and double-profiled rail guide

Universal linear module with optional toothed belt or spindle drive and various guiding options

Advantages

Adaptable drive motor for flexible actuation and easy integration into existing control concepts

Adaptable drive motor for flexible actuation and easy integration into existing control concepts

Double-profiled rail guide for very high force and moment loads

Choice of toothed belts or spindle drive for optimum drive fit the application

Extremely flat design for minimal interfering masses

Various guidance options for optimum adaptation to the application

Technical data

Number of sizes	4	12
Linear accuracy (mm)	±0.01	0.01 base 0.08**
Max. useful stroke (mm)	3540	1720
Max. driving force (N)	10000	10000**
Max. speed (m/s)	2.5	8
Max. acceleration (m/s ²)	20	50
Type of measuring system	Motor-dependent	Motor-dependent
Type of guide	Double-profiled rail guide	Double-profiled rail guide
Load capacity	++	+++
Required maintenance	Lubrication of the guide and the spindle	Lubrication of the guide and, if necessary, the spindle. Replacement of the cover tape
Remark	Freely programmable, optionally available with custom-specific motor, limit switch and reference switch	Freely programmable, optionally available with custom-specific motor, limit switch and reference switch

Drive type

Spindle drive	●	●
Toothed belt drive		●
Rack and pinion drive		●
Direct drive (linear motor)		●

Motor & controller

Motor	Adaptable	Adaptable
Drive controller	Motor-dependent	Motor-dependent
Interfaces	Controller-dependent	Controller-dependent

Additional conditions

Clean	●	●
Easily contaminated	●	●

● = fully supported

+ = medium selection ++ = large selection +++ = extremely large selection

* = Additional conditions available upon request ** = depending on the drive type

Flat linear module	Universal linear module
--------------------	-------------------------



Flat linear module with optional toothed belt or spindle drive	Toothed belt or rack and pinion driven universal linear module with closed profile and double profiled rail guide
Extremely flat design for minimal mounting clearance	Adaptable drive motor for flexible actuation and easy integration into existing control concepts
Double-profiled rail guide for maximum rigidity and precision in the application	Choice of toothed belt or rack-and-pinion drive for optimum drive for the application
Choice of toothed belt or spindle drive for optimum drive for the application	Double-profiled rail guide for very high force and moment loads

S	E
up to ±0.02**	up to ±0.05
7700	7685
12000**	6000
S	S
GG	GG
Motor-dependent	Motor-dependent
Double-profiled rail guide	Double-profiled rail guide
***	***
Lubrication of the guide and, if necessary, the spindle. Replacement of the cover cap	Lubrication of the guide and (if necessary) the gear rack
Freely programmable, optionally available with customer-specific motor, limit switch and reference switch	Freely programmable, optionally available with customer-specific motor, limit switch and reference switch

●	
●	●
	●

Adaptable	Adaptable
Motor-dependent	Motor-dependent
Controller-dependent	Controller-dependent

●	●
●	●

Pick&Place unit

PPW-E



Description

Compact 2-axis unit for a faster, flexible running of any curve on one plane

For the rapid and precise transfer or controlled press-in operation of workpieces in high-speed assembly

Advantages

High reliability and long service life of the system, as there is no cable break due to moving motors and moving motor cables

High productivity due to low cycle time

Maximum flexibility in the application, as both axes can be controlled and regulated independently from each other

Technical data

Number of axes	2
Horizontal stroke in Y [mm]	0 ... 260
Horizontal stroke in X [mm]	
Vertical stroke [mm]	0 ... 150
Swivel angle [°]	
Nominal load [kg]	0 - 5
Repeat accuracy X-axis [mm]	
Repeat accuracy Y-axis [mm]	±0.01
Repeat accuracy Z-axis [mm]	±0.01
Repeat accuracy rotary [°]	
Dead weight [kg]	15 ... 25
Max. cycle times per minute	110
Control	Taught controller
Protection class IP	40
Type of guide	Recirculating ball guide
Number of possible combinations	
Vacuum supply	++

Motor & controller

Motor	Integrated
Drive controller	Siach Smart, Siemens*

Options/features

End lock	●
Center position	
Integrated valve	●
Additional C-axis	●
Drive package	

Installation conditions

Clamp	●
Easy connection	

- = fully supported
- = medium selection ++ = large selection +++ = very wide selection
- * = Additional controllers available upon request

Axis systems

Line gantry LPE

Boom gantry



Line gantry with a horizontal, motorized beam axis, and a vertical, electric spindle axis

Boom gantry with two electric motorized beam axes in a horizontal direction, and one electric spindle axis in a vertical direction

Areas of application: To easily conduct the most common two-dimensional handling and assembly tasks for medium-sized and heavy workpieces

Areas of application: To easily conduct the most common three-dimensional handling and assembly tasks for medium-sized and heavy workpieces

Maximum flexibility in application, freely programmable in the plane

Maximum flexibility in application, freely programmable in the plane

Optimum running smoothness due to the use of high-quality linear axes with precision profiled rail guides

Optimum running smoothness due to the use of high-quality linear axes with precision profiled rail guides

Easy and fast product selection due to pre-defined parameters

Easy and fast product selection due to pre-defined parameters

2

2

500 ... 1500

500 ... 1500

100 ... 500

100 ... 500

0 - 20

0 - 20

±0.08

±0.08

±0.02

±0.02

Constant or essential motor

Constant or essential motor

40

40

Profiled rail guide

Profiled rail guide

90

150

•

•

Adaptable

Adaptable

Boehrle Research, Siemens®

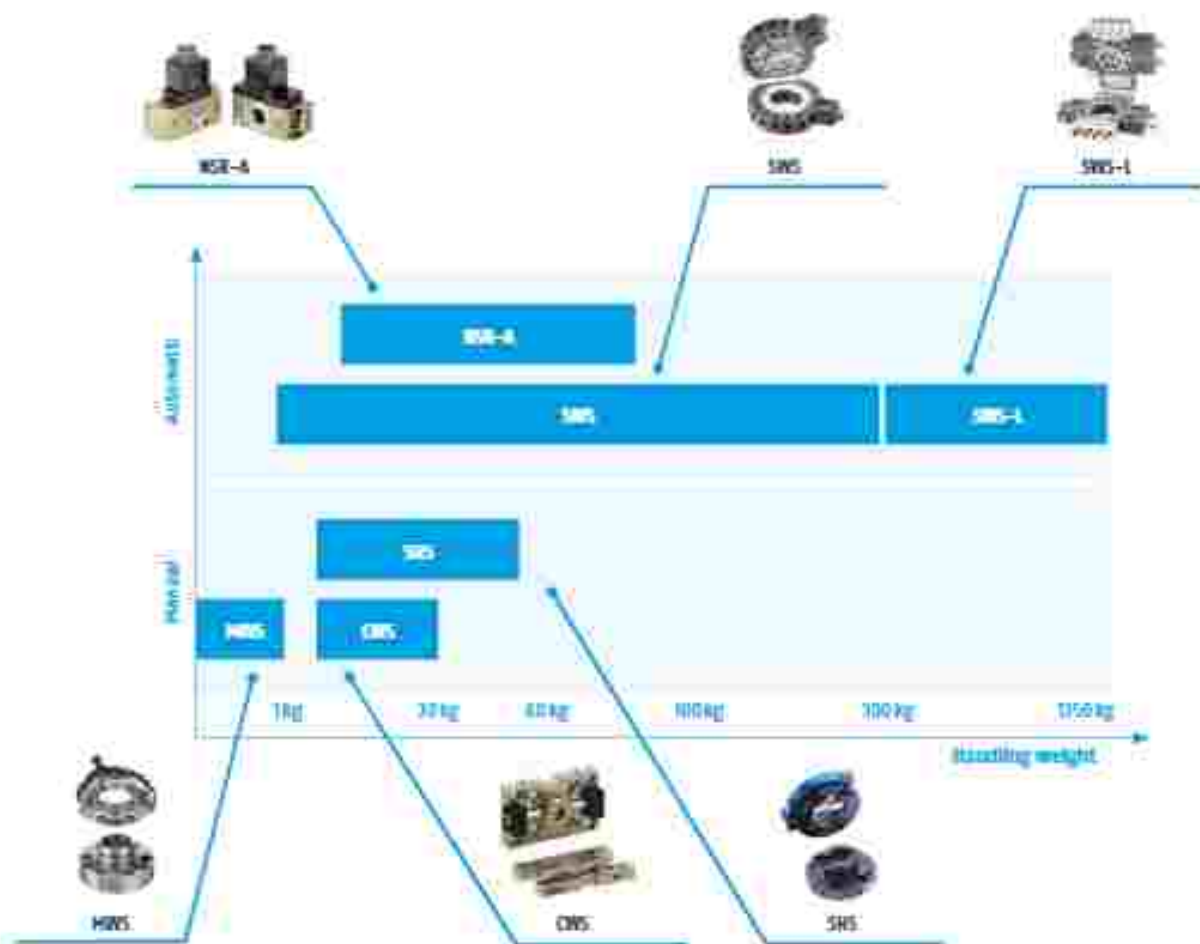
Boehrle Research, Siemens®

Change systems

By using SCHUNK change systems for robots, at their front ends, you increase the flexibility, efficiency, cycle rate and process reliability of your application. Grippers, tools, and other effectors are changed fast with the help of automatic and manual change systems. In the field of automation, SCHUNK also offers the most comprehensive portfolio of components for robot applications, from small components to heavy load handling.

Increase your productivity with SCHUNK change systems

- **Six different series** for the optimum solution to your application case
- **Maximum flexibility** due to a load range of 0 - 1350 kg
- **Proven and safe locking mechanisms** for fast and reliable tool changes
- **Extensive range of feed-through modules and accessories** for a comprehensive complete solution from a single source



Automatic change systems

SWS / SWS-L

- Patented fail-safe locking mechanism
- No-touch-locking™ for simplified teaching
- All functional components made of hardened steel for high bearing load capacity of the change system
- Suitable storage racks for all sizes

Manual Change Systems

SHS

- Compact, reliable and intuitive system for convenient manual change without tools
- Perfectly suited to flexible production of products with a large range of variants
- ISO flange pattern for simple assembly on most types of robots without additional adapter plates

KSR-A

- Pneumatic pallet change system with patented locking
- Extremely compact design for space-saving changing and direct coupling on the machine table

CWS

- Compact, manual change system with integrated air feed-throughs for the most important SCHUNK gripping and compensation modules
- Flat and weight-optimized through direct assembly of the gripper on the change system without an adapter plate

MWS

- Miniature change system – perfect for use in micro-systems technology, particularly for handling tiny components
- Extremely flat design for minimal interfering contours

Application examples



Handling of battery round cells



Automated gripper change



Automated gripper change



Automated machine loading

Quick-change systems



	QMS	QMS-1	QMS-4
Description	Pneumatic tool change system with patented locking mechanism and up to ten integrated air feed-throughs for pneumatic grippers	Pneumatic tool change system with patented locking system for heavy loads up to a handling weight of 4000 kg	Pneumatic pallet change system with patented locking and 6000 Nm maximum moments
Advantages	<p>Complete series with 14 sizes for optimum selection of sizes and a wide range of applications</p> <p>Patented self-sustaining locking system for a reliable connection between the quick-change head and the quick-change adapter</p> <p>Manual emergency unlocking possible, no counter-forces from springs</p>	<p>Patented self-sustaining locking system for a reliable connection between the quick-change head and the quick-change adapter</p> <p>Manual emergency unlocking possible, no counter-forces from springs</p> <p>All functional components made of hardened steel for high bearing load capacity of the change system</p>	<p>Saved time due to automatic pallet change</p> <p>Extremely compact design for space-saving changing and direct coupling on the machine table</p> <p>Fault-free, patented locking system with self-sealing and high locking force</p>
Technical data			
Number of sizes	15	4	2
Recommended handling weight (kg)	0 ... 300	0 ... 3350	
Moments load M _{xy} (Nm)	2.8 ... 71 (0)	7600 ... 11500	75 ... 600
Moments load M _z (Nm)	3.45 ... 3800	6000 ... 14200	200 ... 1600
Repeat accuracy (mm)	up to 0.01	0.01	0.02
Lead weight (kg)	0.05 ... 9.7	7.8 ... 28	0.4 ... 1.6
Screwed flange on the robot	Adapter plates/direct mounting ISO-9409	Adapter plate/direct mounting ISO-9409	Adapter plates ISO-9409
Product features			
Manual activation			
Pneumatic activation	●	●	●
locking monitoring possible	●	●	●
lock possible monitoring possible	●	●	●
Pneumatic energy transmission	●	●	●
Electric energy transmission	●	●	●
Assembly conditions			
Classy	●	●	●
Easily customized	●	●	●
High-temperature and summer heat version on request	●	●	●

● = fully supported

Manual change systems

SMS CMS MMS



Manual tool change system with integrated air feed-through, locking monitoring, and optional electric feed-through.

Compact, manual change system with integrated air feed-throughs for the most important SCHUNK gripping and compensation modules.

Manual tool change system with integrated air feed-through and optional electric feed-through.

Series with six sizes for optimum selection of sizes and a wide range of applications.

High productivity through fast manual gripper changes, especially with small and medium-sized fix sizes.

Extremely flat design for minimal inserting contours.

Integrated pneumatic feed-through for secure energy supply of the handling modules and tools.

Flat and weight-optimized through direct assembly of the gripper on the change system without an adapter plate.

Simple handling without additional tools; can easily be detached anytime by using the handle.

The locking inner is opened to the side, allowing the changes to be operated easily even in confined spaces.

Series with five sizes for optimum selection of sizes and a wide range of applications.

Circular type for feed-through of gases, camera, laser beams, etc.

6	5	2
0 ... 58	0 ... 28	0 ... 1
65 ... 860	70 ... 160	0.5 ... 1
75 ... 2225	10 ... 200	0.2 ... 0.75
0.02	0.01	0.1
0.2 ... 4	0.07 ... 0.445	0.027 ... 0.016
Discs mounting 80-9ices	Adapter plates	Adapter plates



Feed-through modules

Safe and reliable tool change also includes safe and reliable control and supply of the changed tools. That is why the SCHUNK SWO feed-through modules are the perfect complement to the SCHUNK SMS, SWS-I, SHS and NSR-A change systems. From simple signals to welding currents, a wide range of tools can be supplied. In addition, various modules are available for the implementation of pneumatics, fluids, vacuum and hydraulics.

Benefit from SCHUNK implementation modules

- **Perfect for easy combination**
with any size of SCHUNK change system
- **Wide range of variants**
for feeding through various electric and fluid media
- **Combination of several option modules**
for maximum flexibility of the change system
- **Minimum wear for a high number of change cycles**
and a long service life
- **Complete solution available from a single source**
with cable plugs, cable extensions and protective covers

Application examples



Use of a signal module for safe feed-through of sensor signals



Controlling electric deburring spindle RCE

Feed-through modules for change systems SWS, SHS and NSR-A

The SWO-E and SWO-F series can be easily attached to the change systems either directly or via adapter plates. Suitable modules are available for all change system sizes.

Electrical feed-through modules SWO-E

Over 50 standard modules for the implementation of



Signal



Communication



Performance



Servo signals

Fluid feed-through modules SWO-F

Over 20 standard modules for the implementation of



Pneumatics



Liquids



Vacuum



Hydraulics

Feed-through modules for the heavy load range

Special feed-through modules are also available for the SWS-t heavy-load changer series. Above all, these are characterized by the option of safe unlocking and locking, as well as larger (volume) flows. Any module in the normal series can also be used on SWS-t with adapter plates.



Modules from the SWO-t-E series for signal transmission and control of the change system



Modules from the SWO-t-F series for the passage of fluids and hydraulics

Rotary feed-throughs

With SCHUNK rotary feed-throughs, the feed-through of electrical signals and pneumatics for use in stationary applications and on robots is child's play – even with endless rotation. The rotary feed-throughs are optimally designed for the force moments occurring with the new robot generation. Particularly developed long-lasting and smoothly running seals permit the use of small and economical drives.

Reliable execution of electrical signals and pneumatics

- For robot applications and rotary indexing tables
- Rotary feed-throughs facilitate endless rotation without hoses and cables twisting around the axis.
- Combined pneumatic and electric feed-through for comprehensive supply of gripping systems and tools
- Safe energy transfer even at higher speeds thanks to slip ring contacts

Application examples



Toolholder packing



Toolholder balancing



Product packaging labeling



Description		
	For feeding through electric signals and pneumatics for use on robots even when they are industrially rotating at a maximum RPM of 120	For feeding through electric signals and pneumatics for stationary use
Advantages		
	Combined pneumatic and electric feed-through for comprehensive supply of gripping systems tools	Combined pneumatic and electric feed-through for comprehensive supply of gripping systems tools
	ISO flange permits the simple assembly on most types of robots without additional adapter pieces	Standardized shaft and the easy assembly of gears
	Complete series with 10 sizes for optimal size selection	Rotations up to 500 RPM, even at fast endless rotations of up to 500 RPM, a reliable supply of pneumatic and electrical power for your gripping system is ensured
Technical data		
Number of sizes	12	2
Recommended workpiece weight (kg)	0 ... 250	
Max. speed (RPM)	90 ... 120	300 ... 500
Continuous torque (Nm)	0.5 ... 22	4 ... 13
Starting torque (after shutdown) (Nm)	0.1 ... 25	6 ... 20
Max. static force F_s (N)	160 ... 3000	3000 ... 6000
Max. contact force F_c (N)	2000 ... 18000	
Moments M_x, M_y (Nm)	15 ... 550	50 ... 180
Moments M_z (Nm)	10 ... 600	
Pneumatic energy transmission	2 ... 6	6 ... 8
Electrical energy transmission	4 ... 10	6 ... 8
Load weight (kg)	0.25 ... 15.2	1.2 ... 6
Product features		
Continuous rotary movement	●	●
Screwed flange acc. to ISO 9409 standard	●	
Pneumatic energy transmission	●	●
Vacuum energy transmission		
Electric energy transmission	●	●
Bus transmission		

● = fully supported

Compensation units



Connecting, assembling, inserting, loading and unloading workpieces are everyday challenges of automation. To prevent damage to tools or workpieces, SCHUNK compensation units with compensation in all six degrees of freedom ensure the necessary flexibility between the robot and the tools, for example. This avoids system malfunctions caused by imprecise tolerances and increases process reliability.

More process stability with SCHUNK compensation units

- **Seven different series** – optimally adapted for your application
- **Units for tolerance compensation** available in all six degrees of freedom.
- **Centric reset for a defined position of the components** after the compensation process
- **Various sensor options for increased process reliability** and simplified commissioning
- **Customer-specific solutions** for particularly heavy workpieces or tolerance compensation in the horizontal plane, for example

Compensation in every direction



Application examples



Feeding of product packaging



Loading a lathe



Raw material handling



Handling of motor blocks

Compensation units



Description

Compensation unit with rotational and angular compensation, allowing the end effector to fully adapt to the component position

Compensation unit with XY compensation with up to 4 mm compensation stroke

Compensation unit with Z-axis compliance with up to 10 mm compensation path

Advantages

Deflection to total rotation and angle compensates for inaccuracies in component position and saves time, cost and effort through reduced robot programming effort

Robust guidance for high moment loads with minimal space requirements

Locking for rigid switching of the unit at a defined extended or retracted position

Centric reset enables a defined position for the components

Centric locking for centering the unit in a defined position

Compact design for minimum installation height

Spring-supported return of the unit, adjustable via compressed air for optimum deflection

Pneumatic position memory for eccentric locking in deflected position

Can be combined with AGE-XY without additional adapter plate

Technical data

	1	2	3
Number of sizes	1	2	3
Compensation stroke Z (mm)	±2.7	±2.5 ... ±4	
Compensation stroke X	6.3		8 ... 10
Rotary compensation [°]	±8	±12 ... ±16	
Spring force (N)			20 ... 120
Push force Z at 6 bar in retracted position (N)			500 ... 1500
Push force Z at 6 bar in extended position (N)			200 ... 350
Load weight (kg)	0.6	0.46 ... 1.5	0.55 ... 1.7
Locking force at 6 bar (N)		225 ... 580	
Horizontal payload (kg)	0 ... 5	0 ... 10	
Vertical payload (kg)		0 ... 15	0 ... 12
Repeat accuracy (mm)		0.1	0.07
Locking force F _L (N)		225 ... 580	280 ... 1500
Max. contact force F _C (N)		300 ... 750	300 ... 500
Max. contact force F _N (N)		1700 ... 3200	800 ... 1500
Moment load capacity M _x , M _y (Nm)	6.3	16 ... 30	10 ... 30
Twist torque M _t (Nm)	2.5	3.5 ... 9	70 ... 80
Angular compensation x [°]	3°		
Angular compensation y [°]	3°		
Angular compensation z [°]			

Product features

Pneumatic locking	●	●	●
Position memory		●	
Screwed flange acc. to ISO 9409 standard	●	●	●
Monitoring via position switch	●	●	●

Robust conditions

Clean	●	●	●
Easily contaminated	●		
High-temperature version on request		●	●

● = fully supported

ACE-S	ACE-F	Tolerance compensation unit T01
		
<p>Compensation unit with XY and Z-axis compliance with up to 12 mm compensation path</p>	<p>Compensation unit with XY compensation and integrated spring return for a handling weight of up to 32 kg</p>	<p>For compensation of smaller position deviations with up to 2° maximum deflection for assembly and handling applications</p>
<p>Three compensation directions in one unit, compact design for minimal heights</p>	<p>Spring return in three spring stiffnesses for a defined centric position at a repeat accuracy of 0.02 mm</p>	<p>Compensation of workplace-related tolerances and position inaccuracies reduces the risk of jamming; necessary assembly forces are reduced and wear of the workpiece and handling device is minimized</p>
<p>Centric locking for rigid switching of the units in a defined centric position</p>	<p>Direct assembly of grippers means there is no need for additional adapter plates</p>	<p>Direct assembly of grippers means there is no need for additional adapter plates</p>
<p>Pneumatic position memory for pneumatic locking in deflected position</p>	<p>Junction roller guide for smooth compensation at low compensation forces</p>	<p>Compact design, low height and weight</p>
<p>A</p> <p>34 ... ±12</p> <p>10 ... 14</p> <p>240 ... 1100</p> <p>800 ... 3000</p> <p>2.5 ... 28.5</p> <p>800 ... 2700</p> <p>0 ... 100</p> <p>0 ... 100</p> <p>0.1</p> <p>800 ... 2700</p> <p>110 ... 2000</p> <p>500 ... 6000</p> <p>10 ... 500</p> <p>10 ... 250</p>	<p>B</p> <p>±1.5 ... ±5</p> <p>1.5 ... 150</p> <p>0.1 ... 3.1</p> <p>0 ... 32</p> <p>0.01</p> <p>100 ... 2800</p> <p>200 ... 12000</p> <p>1.5 ... 50</p> <p>6 ... 150</p>	<p>C</p> <p>1 ... 2.5</p> <p>0.1 ... 2.1</p> <p>10 ... 800</p> <p>up to 0.02</p> <p>10 ... 800</p> <p>500 ... 6200</p> <p>5 ... 120</p> <p>15 ... 160</p> <p>±1 ... 1</p> <p>±1</p> <p>±1.2 ... 2</p>
<ul style="list-style-type: none"> • • • • • • • • 	<ul style="list-style-type: none"> • • • • • • • • 	<ul style="list-style-type: none"> • • • • • • • •

Compensation units & collars
T01

Application

Industrial technology

Automation technology

Collision protection

Collisions and overloads on the robot may cause damage to the tools, workpieces or the machines. In the automated handling process, the SCHUNK monitoring modules offers an effective instrument for process reliable production, and preventing expensive downtimes in production.

Process-reliable manufacturing with collision and overload sensors from SCHUNK

- **Integrated monitoring for signal transmission without delay in case of collisions** so that the robot can be stopped immediately
- **Mechanical flexibility for compensation of the robot's reaction pathway** in the event of a collision or overload
- **Triggering force and torque can be adjusted** via the operating pressure for optimum protection of your robots and components

Application examples



Pick&Place with magnetic grippers



Bin picking

Collision and overload sensors

Manual reset

Automatic reset

OPS

OPR



Description

For monitoring of robots and handling units in the event of collisions or overload conditions

For monitoring of robots and handling units in the event of collisions or overload conditions from a deflection force of 26 N

Advantages

Triggering force and torque can be adjusted via the operating pressure for optimum protection of your robots and components

Automatic reset position for faster resuming of production after a collision

Integrated monitoring for signal transmission without delay in case of collisions so that the robot can be stopped immediately

Triggering force and torque can be adjusted via the operating pressure for optimum protection of your robots and components

250 adapter pieces are optional for simple assembly on most types of robots without additional production costs

Integrated monitoring for signal transmission without delay in case of collisions so that the robot can be stopped immediately

Technical data

Number of sizes	4	7
Moments M_x, M_y [Nm]	7.5 ... 430	5 ... 2000
Triggering force F_s [N]	500 ... 7000	440 ... 14000
Axial deflection [mm]	9.5 ... 12	5.1 ... 16
Angle deflection [°]	4 ... 17	8 ... 12
Rotary deflection [°]	45 ... 240	20
Repeat accuracy [mm]	up to ± 0.02	± 0.025
Operating pressure range [bar]	0.5 ... 6.0	1.4 ... 6.2
Max. weight [kg]	0.4 ... 7.0	0.24 ... 11.7

Product features

Pneumatic actuation	●	●
Blank fit spring optionally available		●

Ambient conditions

Oil-free	●	●
Easily contaminated		●
Humid		●

● = fully supported

Force/torque sensors

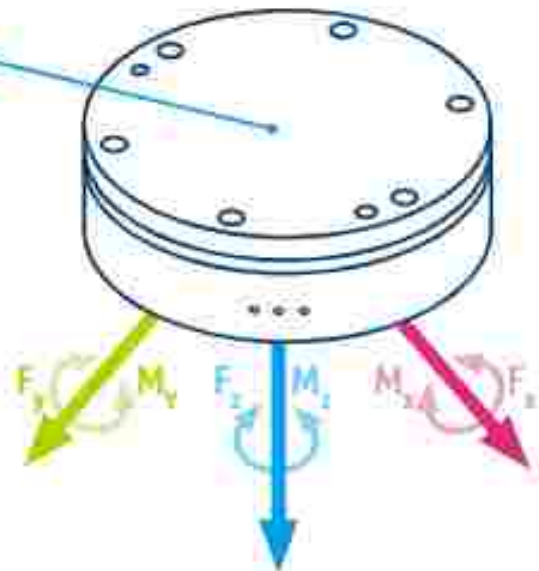
Where precise results are needed, force/torque sensors are in trend and provide robots with the required sensitivity. The sensors precisely detect the occurring process forces and transmit them to the control unit. This allows for highly precise correction of the robot path. The result are constant forces, and hence constant machining patterns.

The advantages of SCHUNK force/torque sensors

- **Rigid 6-axis force/torque sensors**
for precision measuring in all six degrees of freedom.
- **Universally applicable in robotic applications**
such as medicine, grinding, testing, inserting, and research and development
- **Silicon gauges provide a signal 75 times stronger than conventional foil gauges.**
This signal is amplified resulting in near-zero noise distortion.
- **Robust design due to a higher overload range**
for a long service life

Dimensions of forces and moments

The strain gauges (DMS) of the 6-axis force/torque sensors measure the strain applied in all six degrees of freedom (F_x , F_y , F_z , M_x , M_y and M_z). The DMS signals are amplified in the sensor.



Application examples



Automated grinding of supply air chambers for stoves



Automated grinding with the robot



Rapid measurements of vehicle components

6-axis force/torque sensors

FT-300A

FTB



Description

6-axis force/torque sensors for high-precision measuring in all six degrees of freedom

Universally applicable in robotic applications such as grinding, inserting, and research and development

6-axis force/torque sensors for high-precision measuring in all six degrees of freedom

Universally applicable in robotic applications such as grinding, quality assurance, joining, tapping, medicine, and research and development

Advantages

Compact design due to space-saving set-up with integrated electronics

Up to two calibrations are available to ensure maximum flexibility in the process

Plug & Work directly compatible with KUKA and Universal Robots via software module

Wide range of options with up to three different ranges of measurement per size

Easy integration via Ethernet/IP (optional Profnet) as well as possible access via web server for easy configuration

Technical data

Number of sizes	2	17
Calibration	SI-15-A ... SI-6000-300	SI-12-0.12 ... SI-40000-6000
Integration electronics	integrated	external
Weight of sensor [kg]	0.7 ... 1.5	0.01 ... 47
Range of measurement F_x, F_y [N]	± 75 ... ± 6000	± 12 ... ± 40000
Range of measurement F_z [N]	± 235 ... ± 6000	± 17 ... ± 60000
Range of measurement M_{xy} [Nm]	± 6 ... ± 300	0.17 ... ± 6000
Range of measurement M_z [Nm]	± 6 ... ± 300	0.17 ... ± 6000
Resolution F_x, F_y [N]	0.09 ... 1.67	0.003 ... 5.75
Resolution F_z [N]	0.36 ... 1.67	0.003 ... 16.7
Resolution M_x, M_y [Nm]	0.002 ... 0.07	0.00001 ... 1.5
Resolution M_z [Nm]	0.002 ... 0.07	0.00001 ... 0.75

IP protection class

Without IP protection		●
IP00		●
IP54	●	
IP65		●
IP67	●	
IP68		●

● = fully supported

FTC

FTD



6-axis force/torque sensors for high-precision measuring in all six degrees of freedom

6-axis force/torque sensors for high-precision measuring in all six degrees of freedom

Universally applicable in robotic applications such as grinding, quality control, joining, haptics, medicine, and research and development

Universally applicable in robotic applications such as grinding, quality control, joining, haptics, medicine, and research and development

Wide range of options with up to three different ranges of measurement per size

Wide range of options with up to three different ranges of measurement per size

Integrated electronics from size Gamma

Sensor system can be used with a wide range of DAQ cards

FTC
SI-12 0.12 ... II-10000-2000
CEI interface box (KanziMini) or integrated (from Gamma)
0.01 ... 31.8
+12 ... +10000
+17 ... +22000
0.12 ... +2000
0.12 ... +2000
0.002 ... 4
0.002 ... 8
0.00001 ... 0.5
0.00001 ... 0.5

FTD
SI-12 0.12 ... II-10000-6000
DAQ card (available externally)
0.01 ... 47
+12 ... +40000
+17 ... +88000
+12 ... +6000
+12 ... +6000
0.001 ... 5.25
0.002 ... 16.7
0.00001 ... 1.5
0.00001 ... 0.75

•

•

•

•

•

•

•

•

R·E·M·E·N·D·O Machining tools



With the new SCHUNK tools, a large range of machining steps that used to be manually performed, can now be automated. The result: Higher productivity, consistently perfect machining results, lower unit costs. Manual machining of workpieces with hand tools is also often associated with putting ergonomic strain on employees. In addition, health risks are often incurred due to fine particle emissions such as abrasive dust or chips.

Create added value with a changeover to robot-assisted machining

- Minimize health risks
- Consistent quality of the machining results
- Increased safety and ergonomic working conditions
- Reduction of the machining time
- Increase in machining capacity



Deburring

One of the classic finishing operations in the metalworking industry is the smoothing of sharp edges and the removal of burrs. However, manual deburring operations not only have low added value, they are also very monotonous and often lead to injuries. SCHUNK offers a wide range of tools for deburring with the robot – including one with a brushless electric motor.



Grinding

Grinding workpieces before polishing and finishing the surfaces is physically demanding and time-consuming. SCHUNK tools for automated grinding are ideally suited for uniform material removal from small and large-surface workpieces.



Polishing

Polishing is usually the final machining step. This gives the workpiece its finish. The contact force is decisive for the result. This should be constant and adapted to the application. With SCHUNK tools, workpieces can be automatically machined. The result: uniform surfaces for a perfect end result.





Description	Deburring tools		Deburring spindles		
	OIB	OIB	KCV	KCE	EOB
Description	Flexible tool for deburring with the robot and proven deburring tools with radial compensation force adjustable up to 25 N	Pneumatically driven file with radial compensation for machining workpieces operating at up to 12,000 strokes RPM	Pneumatic deburring tool with radial compensation for deburring workpieces operating at up to 40,000 RPM	Electric deburring spindle with radial compensation and adjustable speed of rotation for machining workpieces operating at up to 50,000 RPM	Electric deburring spindle for use with robot operating at up to 55,000 RPM
Advantages	Adjustable rigidity of the tool for flexible use and ideal results with different materials	The compensation force can be adjusted using compressed air for high-quality deburring results in any installation position	The compensation force can be adjusted using compressed air for high-quality deburring results in any installation position	Brushless electric motor for high efficiency, long service life and adjustable speed for more flexibility	Variable high-frequency spindle for maximum flexibility for chamfering, oil-free operation for increased cleanliness
	Optional tool changing system for automatic changing of different deburring tools	Flexible use on robot arms or as a secondary unit	Flexible use on robot arms or as a secondary unit	Variable speed control for the flexible machining of different workpieces with different tools and only one master deburring tool	Adjustable rigidity of the spindle via compressed air for clean chamfering in any installation position
	Use of proven deburring tools for simple automation of manual deburring processes	Use of proven files for simple automation of manual deburring processes	Rotating phase air engine with high torque for high feed rates and a reduced machining time	The rigidity of the tool can be adjusted using compressed air for high-quality deburring results in any installation position	High speeds for a high surface quality
Accessories	Pneumatic	Pneumatic	Pneumatic	Electric	Pneumatic
Technical data					
Compensation	Axial & Radial	Radial	Radial	Radial	Radial
Number of strokes	2	1	2	2	2
Power [W]			250 - 400	230 - 710	130 - 1040
Compensation path (mm)	Axial 0 Radial ±6	±8	±7.1 - ±8.7	± 6.5 - ±7.5	±5 - ±9
Min./max. compensation force [N]	Radial = 2575 Axial = 1167	1862	954 - 7157	1,878.5 - 26,510	2,116.7 - 28,486.7
Idle speed [RPM]		12000	30000 - 40000	13000 - 50000	35000 - 65000
Toolholder mounting	Blade holder for deburring tools, type K, C, D, E, F	File holders Ø 35 mm	Collet LH-11 Ø 6, 8 mm	Collet LH-11 Ø 6, 8 mm	Collet Ø 35 mm
Net weight [kg]	1.04 - 1.09	1.08	1.71 - 2.76	1.7 - 5.25	1.1 - 3.45

● = fully supported

Polishing spindles		Orbital sander tool		Compensation unit
FTB-AC	NET	NET-B	MOV	PEC
				
Flexible deburring spindle for use with robots	Flexion polishing spindle for use with robots operating at up to 5,000 RPM	Pneumatic polishing spindle with radial compensation, perfect for polishing and brushing workpieces operating at up to 5,000 RPM	Pneumatic orbital sander tool with axial compensation up to 12.7 mm for grinding and polishing workpiece surfaces	Pneumatic axial compensation unit for flexible adjustment of compensation or pressure forces
Actively flexible spindle in constant force gets into hard-to-reach places	Flexion high-frequency spindle for maximum flexibility for polishing	The rigidity of the tool can be adjusted (using compressed air) for high-quality deburring results in any installation position	Adjustable compensation by means of a double-action pneumatic cylinder for a constant contact force regardless of the orientation of the tool	Adjustable compensation by means of a double-action pneumatic cylinder for a constant contact force
Adjustable rigidity of the spindle via compressed air for clean chamfering in any installation position	Adjustable contact force of the spindle via compressed air for clean surfaces in any installation position	Flexible use on robot arms or as a stationary unit	Optional media change system for automated exchange of grinding or polishing wheels	Integrated path measuring system for monitoring and control of the process
Axial compensation with vertical cone ensures uncomplicated use, even for sensitive tasks	Rotating piston air engine with high torque	Rotating piston air engine with high torque	Optional connector for suction for reduced contamination and susceptibility to faults	Integrated weight force compensation for constant pressure forces independent of the orientation of the tool, especially in robot-guided applications
Pneumatic	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Axial	Axial	Radial	Axial	Axial
1	2	1	4	1
250	390	390		
±6.3	±7.5	±7.1	12.7	12
1 ... 25	0.7 ... 45	0.4/70	Extended = 12,000, 7 Retracted = 6,700, 2	Extended = 85/200 Retracted = 18/40
25000	5500 Quick-action chuck up to Ø 0.5 mm	5000 Collet 04 Ø 6-8 mm	10000 Velcro fastener Ø 125-150 mm	
0.55	2.3	4.47	2.68	2.54 ... 3.67

Wherever you are located – SCHUNK is close to you!



Headquarters Ludlow/Georgia
SCHUNK GmbH & Co. KG
 Spann- und Geotechnik
 Rahnstraße 106 – 108
 D-76341 Ludlow/Georgia
 Tel. +49-7143-301-0
 Fax +49-7143-913-3399
info@de.schunk.com



Plant Barchfeld-Basen
SCHUNK GmbH & Co. KG
 Spann- und Geotechnik
 Robert-Bosch-Str. 12
 D-76226 Barchfeld-Basen
 Tel. +49-7143-301-0
 Fax +49-7143-913-3399
info@de.schunk.com



Plant Merges
H.-D. SCHUNK GmbH & Co.
 Spanntechnik KG
 Luchinger Str. 23
 D-70931 Merges
 Tel. +49-7142-7004-0
 Fax +49-7142-7004-8888
customerrelations@de.schunk.com



Plant St. Georges
SCHUNK Electronic Solutions GmbH
 Am Lärnwald 17
 D-9804 St. Georges
 Tel. +49-3725-9000-0
 Fax +49-3725-9000-5050
de@schunk-stgeorges@de.schunk.com



Plant Nashville, USA
SCHUNK Inc. Inc.
 201 Eddy Hawk Drive
 Nashville, TN 37240, USA
 Tel. +1-615-527-7905
info@us.schunk.com



Plant Aadorf, Switzerland
CHISSI AG
 Schürweg 25
 CH-8205 Aadorf
 Tel. +41-52-368-16-16
 Fax +41-52-368-16-17



Plant Elmhorn, Germany
Elektrotech GmbH & Co. KG
 Maybachstr. 2
 D-76289 Elmhorn
 Member of SCHUNK Ludlow
 Phone +49-7143-9882-0
 Fax +49-7143-9882-399
info@elektrotech-scanschunk.com



Plant Casavalle, Italy
S.P.A. S.p.A.
 Via Galvani Centro 26
 IT-20042 Casavalle (BG), Italy
 Tel. +39-0363-540501
 Fax +39-0363-525011

This way to all locations

Our subsidiaries and distributor
partners are available for you.



schunk.manufacturing →

Copyright

All text drawings and product illustrations are subject to copyright and are the property of SCHUNK GmbH & Co. KG or of the corresponding licensee.

All rights reserved. In particular, any reproduction, editing, distribution (making available to third parties), translation or other usage – including excerpts – of the manual is prohibited and requires our prior written approval.

Technical changes

The data and illustrations in this catalogue are not binding and only provide an appropriate description. We reserve the right to make changes to the product delivered compared with the data and illustrations in this catalogue, e.g. in respect of technical data, design, fittings, material and external appearance.



SCHUNK GmbH & Co. KG
Spann- und Greiftechnik

Bahnhofstr. 106 - 134
D-76348 Lauffen/Neckar
Tel. +49-7143-103-2599
schunk.com

Follow us



We print sustainably.

