



Superior Clamping and Gripping



MECHATRONIK³

Product Overview



Superior Clamping and Gripping

Jens Lehmann stands for precise gripping, and concentrated, safe holding. As a brand ambassador of the SCHUNK team, the No. 1 goalkeeper represents our global competence leadership for clamping technology and gripping systems. The top performance of SCHUNK and Jens Lehmann are characterized by dynamics, precision, and reliability.

For more information visit our website:
www.gb.schunk.com/Lehmann

J. Lehmann
Jens Lehmann





Henrik A. Schunk, Kristina I. Schunk, brand ambassador Jens Lehmann, and Heinz-Dieter Schunk

Top Performance in the Team

SCHUNK is the world's No. 1 for clamping technology and gripping systems – from the smallest parallel gripper to the largest chuck jaw program.

In order to boost efficiency, SCHUNK customers have bought more than 2,000,000 precision toolholders, 1,000,000 gripping modules, and 100,000 lathe chucks and stationary workholding systems so far.

This makes us proud and motivates us to attain new top performances.

As a competence leader, we recognize and develop standards with a large potential for the future, which will drive the rapid progress in many industries.

Our customers profit from the expert knowledge, the experience, and the team spirit of more than 2,300 employees in our innovative family-owned company.

The Schunk family wishes you improved end results with our quality products.



Heinz-Dieter Schunk



Henrik A. Schunk

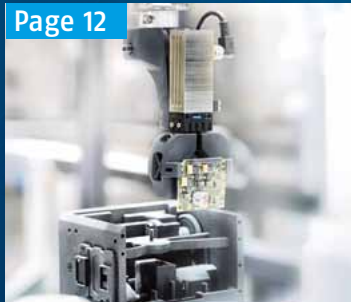
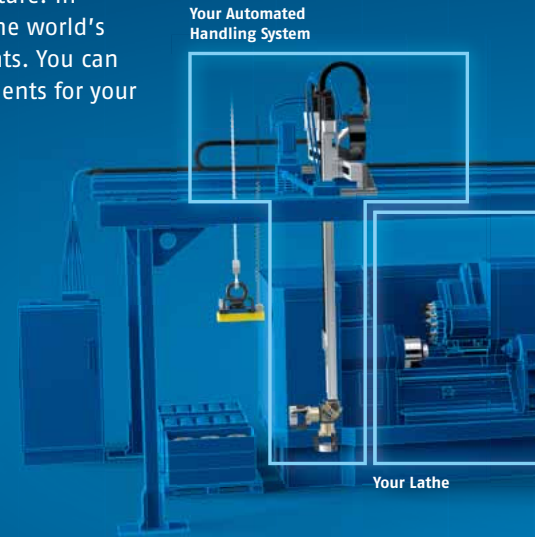


Kristina I. Schunk

Grip the future with SCHUNK! More than 300 standard electric components to choose from.

As the competence leader for clamping technology and gripping systems we recognize and shape standards for the future. In the area of mechatronic products, SCHUNK is one of the world's leading manufacturers of standard electric components. You can choose from more than 300 standard electric components for your customized electric automation solution.

You will be convinced by the diversity of our electric products!



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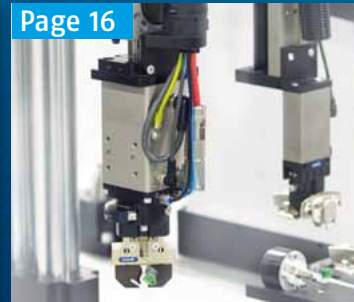
SCHUNK grippers

SCHUNK offers the largest program of electric grippers.

- Freely adjustable positions
- Flexibly adjustable gripping forces



EGP



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Rotary modules and rotary feed-throughs

Electric rotary modules or rotary feed-throughs for reliable performance.

- Freely adjustable angles of rotation
- Configurable and adjustable process parameters such as speed and torque



ERS



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Linear modules

SCHUNK linear modules can be used for high-precision handling tasks.

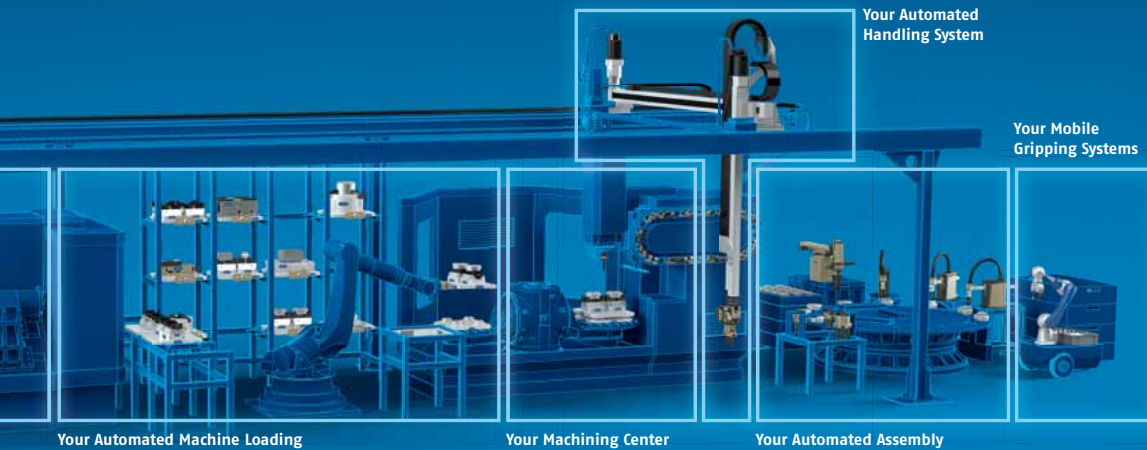
- Freely adjustable strokes
- Absolute position measurement
- Configurable and adjustable process parameters such as speed, stroke and acceleration



ELB

It's time to use your machine's full potential!

With superior components, find potentials in your machine where you would never expect to find them. SCHUNK Synergy – the perfectly harmonized interplay of clamping technology and gripping systems turns our customers into productivity champions.



Your Automated Machine Loading

Your Machining Center

Your Automated Assembly

Your Automated Handling System

Your Mobile Gripping Systems



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Changing systems

High-precision changing systems for flexible use.

- Fast, safe changing on robots and gantries
- Maximum flexibility in production automation

Sensor systems

SCHUNK offers 150 sensor variants – the largest variety on the market.

- Measure forces exactly
- Determine positions
- Monitor workpieces

Mobile gripping systems

The field of service robotics is developing at an incredible speed.

- Mobile gripping systems for human-machine interaction
- Flexibility due to use of electric SCHUNK lightweight robots and compatible end effectors

Gripping system solutions

More than 10,000 gripping system solutions implemented in different industries.

- Certainty in selecting components for electric gripping system solutions
- Combination of all single functions for your optimal production automation and robot equipment!



SWS



FTN

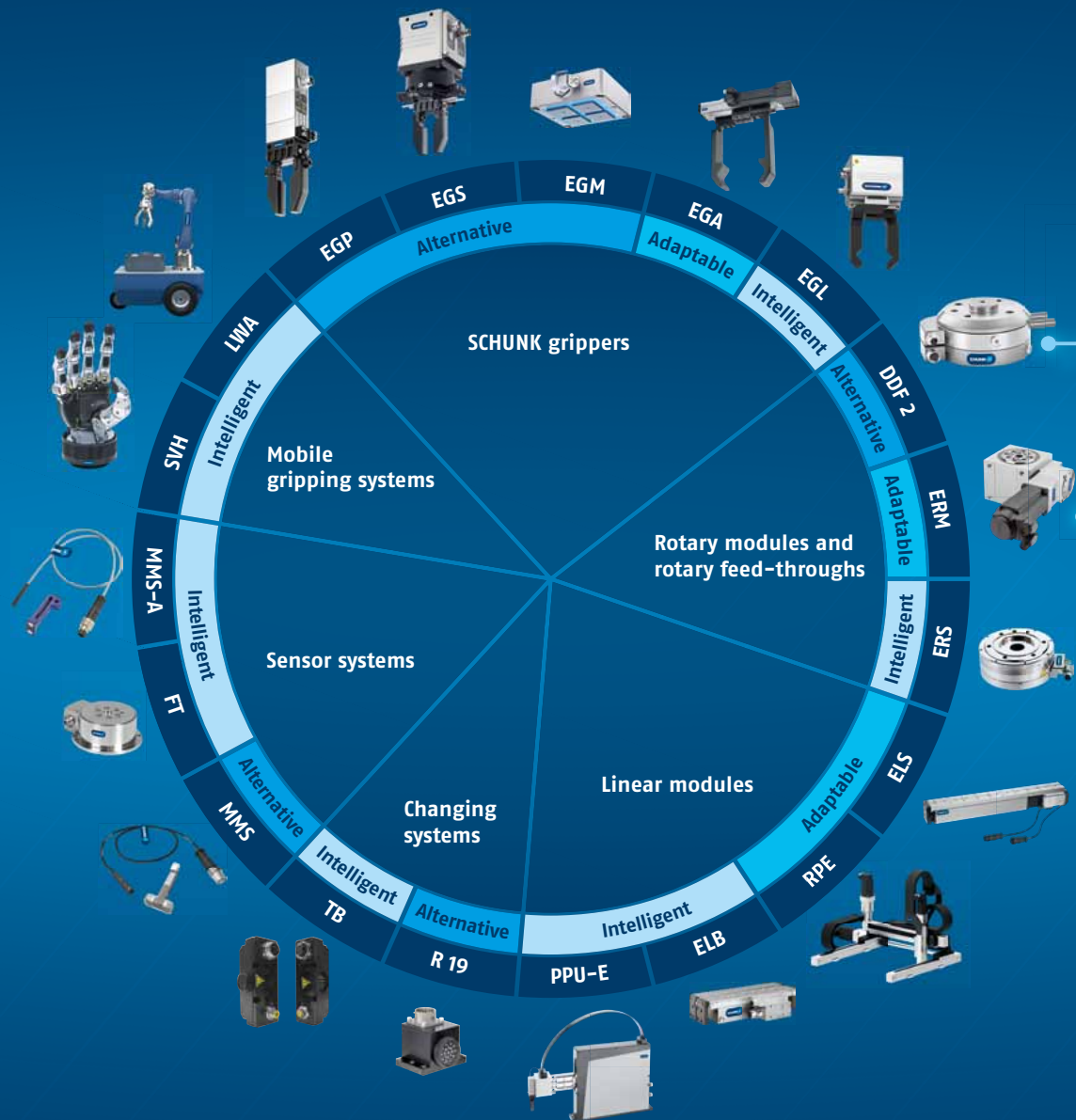


LWA 4P

More than 300 standard electric Components for Process Reliability in customized Automation Solutions.

SCHUNK offers the world's most extensive portfolio of standard electric components for mechatronic handling and automation solutions from a single source. Take advantage of the unique modular system, which represents our decades of experience with pneumatic gripping systems and our pioneering successes in mechatronics.

With SCHUNK you can design process applications to be more flexible and more efficient.



MECHATRONIK³

Alternative – Adaptable – Intelligent

One Strategy – 3 Characteristics

Mechatronik³ is the strategy pursued by SCHUNK as the first manufacturer to bundle an extensive mechatronic product portfolio. The three characteristics **Alternative**, **Adaptable** and **Intelligent** combine to create a unique modular system. This system combines our decades of experience in pneumatics with pioneering successes in mechatronics to offer advanced and efficient solutions for virtually every mechatronic requirement for automation solutions.

Take advantage of the leading modular system with the 3 characteristics:

Alternative

Replace pneumatics 1:1 while maintaining the same performance.

Common pneumatic functions can be achieved 1:1 with SCHUNK mechatronic components.

Adaptable

Drive via standard servo motors available on the market.

Standard servo motors can be connected to the SCHUNK component by means of a motor adapter.

Intelligent

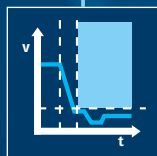
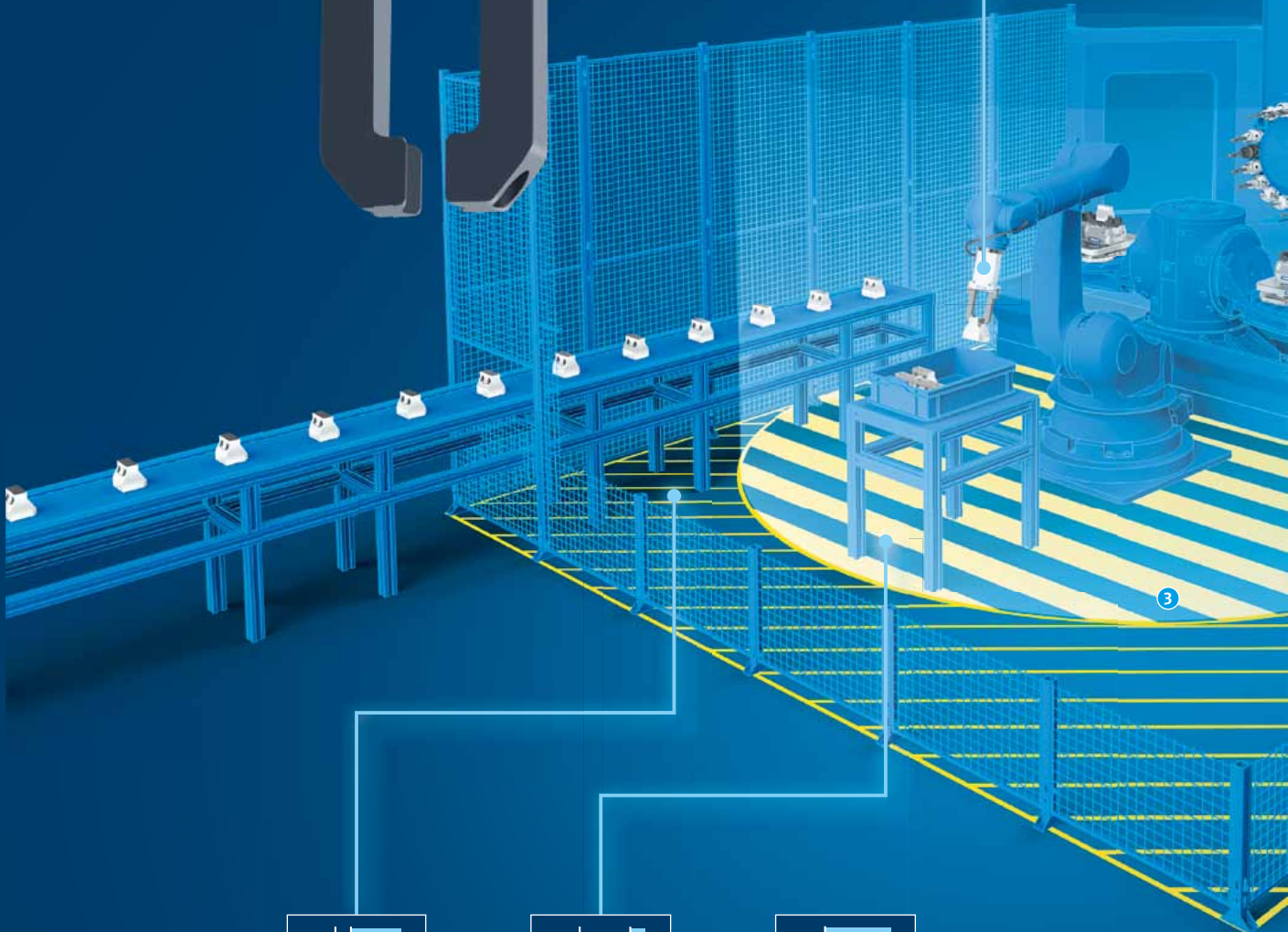
Motor and control technology are completely integrated.

The controller is either integrated compactly in the SCHUNK component or it is installed in the control cabinet.

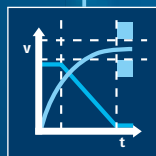




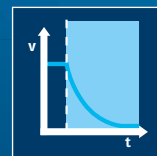
SCHUNK
EGN Safety Gripping System



SLS
Safe
Limited Speed



SOS
Safe
Operating Stop



STO
Safe
Torque Off

- ① Normal Operation
- ② Protection Zone 1
- ③ Protection Zone 2

World Premiere! The first certified Safety Gripping System.

A universal Actuator Concept for safe Human / Machine Collaboration.

SCHUNK closes the gap in the safety concept of your complete system with a unique, standardized safety component.

In contrast to other solutions on the market, the **DGUV-certified SCHUNK EGN and EZN** safety gripping systems continue to be powered even during emergency-stop operation and safely and actively maintain their gripping force. The workpiece remains securely held.

The incredible advantages for you:

- Safety according to **EN ISO 13849**
- Definition of **graduated protection zones**
- **Prevents** complete **emergency shut-off** of the production process
- Safe **limited speed** and **safe operating stop**
- Gripper switches back to the regular operating mode **without delay** after protection zone release
- **No restarting** of the system is required
- **Performance Level d / SIL 3** in combination with the SCHUNK ECM controller and the SCHUNK safety module
- Safety functionality can be **retrofitted** in existing EGN and EZN applications



②

①



SCHUNK
Safety gripping systems
MM Award 2014

Control Concepts for SCHUNK Components

MECHATRONIK³

SCHUNK standard mechatronic components offer maximum flexibility in connecting to individual customer control concepts.

Depending on the requirement you have the choice between **several** versions:

- **Direct pneumatic replacement** and **control**
- Modular SCHUNK components with **external drive** and **external drive controller**
- Modular SCHUNK components with **integrated drive** and **external drive controller**
- Modular SCHUNK components with **integrated drive** and **drive controller**

Customer controller	Optionally available from SCHUNK:			
	Communication interface**	Drive controller	Standard cable set	Sensor interface*
<p>The controller is the interface to the application and is specified by the customer.</p> <p>SIEMENS</p> <p>Rexroth</p> <p>BECKHOFF</p> <p>B&R</p> <p>Schneider Electric</p> <p>Lenze</p> <p>Others on request</p>	D I/O			
	Profibus	SCHUNK	Power cable	HIPERFACE
	CAN	SIEMENS	Sensor cable	SSI
	ProfiNet	Rexroth	I/O cable	DRIVE-CLIQ
	Ether CAT	BECKHOFF		EnDat 2.2
	DeviceNet	B&R		
	SERCOS Interfaces	Schneider Electric		
	EtherNet / IP	Lenze		HIPERFACE
		Others on request		SSI
		Profibus	Modular SCHUNK components with integrated drive and drive controller	
	CAN			



* Drive dependent ** Drive controller dependent

Control Concepts for SCHUNK Components

MECHATRONIK³

Compatible cables are optionally available. Different sensor and field bus interfaces make the concepts compatible with every controller.

**Alternative
Adaptable
Intelligent**
MECHATRONIK³

Drive SCHUNK mechatronic components

Direct
pneumatic replacement
and control

Alternative
Replace pneumatics 1:1
while maintaining the
same performance.

Standard
servo motors





Modular SCHUNK components
with **external** drive and
external drive controller

Adaptable
Drive via standard motors available
on the market.





Modular SCHUNK components
with **integrated** drive
and **external** drive controller

Intelligent
External controller, integrated motor

Intelligent
Motor and controller are completely
integrated

	2-Finger Parallel Grippers			
	Alternative	Adaptable		Intelligent
	EGP	LEG	EGA	MEG
	 <p>INDUSTRIE PREIS 2012</p> <p>The fastest electric small component gripper on the market</p>	 <p>The multi-talented system in package handling</p>	 <p>Compact long-stroke gripper</p>	
Technical data				
Number of sizes	4	3	2	3
Gripping force [N]	7 .. 215	1050 .. 1500	500 .. 1300	40 .. 140
Stroke / jaw [mm]	3 .. 10	101 .. 281	30 .. 100	6 .. 10
Closing time / stroke [s]	0.03 .. 0.5	–	–	0.3 .. 0.62
Max. workpiece weight [kg]	0.035 .. 1.05	15.75 .. 22.5	2.6 .. 6.5	0.3 .. 0.85
Weight [kg]	0.1 .. 0.51	5.4 .. 11.4	1.8 .. 11.8	0.47 .. 1.42
Voltage [V]	24 DC	Motor-dependent	Motor-dependent	24 DC
Current [A]	0.14 .. 0.3	Motor-dependent	Motor-dependent	0.6 .. 1.3
IP protection class	30	41	40	30
Type of guidance	Junction roller guides	Profiled rail	Profiled rail	Junction roller guides
Type of measuring system	–	Motor-dependent	Motor-dependent	–
Description	Electric 2-finger parallel gripper with smooth-running roller bearing guidance in the base jaw	Lightweight long-stroke gripper for flexible and highly dynamic handling of different components	Electric 2-finger parallel gripper with adaptable servo motor	Electric 2-finger parallel gripper with smooth-running roller bearing guidance in the base jaw
Motor & controller				
Motor	Integrated	Adaptable	Adaptable	Integrated
Controller	Integrated	External	External	External
Controller type	–	Motor-dependent	Motor-dependent	MEG-C
Area of application				
	Gripping and movement of small to medium-sized workpieces with flexible force and high speed in low-contamination environment, e.g. assembly, testing, labs, pharmaceutical applications	For highly flexible gripping of diverse geometries and types of parts. The servo-electric drives allow exact determination of the gripping position and gripping force. Suitable for clean work environments	Gripping and movement of medium-sized workpieces with flexible force and high speed in clean and contaminated environments	Gripping and movement of small to medium-sized workpieces with flexible force, stroke or speed
Ambient conditions				
Clean	●	●	●	●
Slightly contaminated		●	●	
Heavily contaminated			●	

PG	EGL	WSG	PEH	EGN
				
With gripping force regulation	Powerhouse for handling and assembly	Control via EtherNet TCP/IP		First certified safety gripping system
1	1	4	3	3
200	600	20 .. 80	750 .. 1800	400 .. 1000
34	49	34 .. 105	60 .. 100	8 .. 16
0.5	–	0.5 .. 1.0	1 .. 1.5	1.1 .. 1.5
1	3	0.4 .. 0.5	3.75 .. 9	2.1 .. 5.4
1.4	1.8	0.55 .. 1.2	5.4 .. 14.8	0.84 .. 3
24 DC	24 DC	24 DC	24 DC	24 DC
1.4	–	0.9	2.4 .. 9	1 .. 3.4
20	30 (gripper), 67 (electronics)	40	41	41
Profiled rail	Profiled rail	Profiled rail	Profiled rail	SCHUNK multi-tooth guidance
Incremental	Incremental	Incremental	Incremental	Resolver
Servo-electric 2-finger parallel gripper with sensitive gripping force control and large stroke	Servo-electric 2-finger parallel gripper with sensitive gripping force control and large stroke	Servo-electric 2-finger parallel gripper with sensitive gripping force control and large stroke	Servo-electric 2-finger parallel gripper with large jaw stroke for large parts and / or diverse parts spectrum	Servo-electric 2-finger parallel gripper with high gripping force and high maximum moment due to multi-tooth guidance
Integrated	Integrated	Integrated	Integrated	Integrated
Integrated	Integrated	Integrated	Integrated	External
–	–	–	–	ECM
Universal, highly flexible gripper for large diversity of parts and sensitive components in clean work environment	Sensitive and precise gripping of sensitive workpieces is possible. Flexible workpiece handling is possible also in contaminated environments	Universal, highly flexible gripper for large diversity of parts and sensitive components in clean work environment	Universal, highly flexible gripper for large diversity of parts in clean to slightly contaminated work environment	Optimal standard solution for many areas of application; flexible use due to controllable gripping force, position and speed
•	•	•	•	•
•	•		•	•
	•			•

3-Finger Centric Grippers	Electromagnetic Grippers		Rotary Gripping Unit
EZN	Alternative		
EZN	EGM-B	EGM-M	EGS
 <p>First certified safety gripping system</p>		 <p>Maximum holding power in minimum space</p>	 <p>The world's most compact electric rotary gripping unit</p>
2	8	6	1
500 .. 800	1800 .. 17700	900 .. 24750	30
6 .. 10	–	–	3
1.1 .. 1.5	0.3	0.3	0.05 (grip), 0.18 (turn)
2.5 .. 4	4 .. 118	4 .. 75	0.15
0.98 .. 2.3	1 .. 25	1 .. 5	0.55
24 DC	400 AC	400 AC	24 DC
2 .. 3	2.3 .. 32	2.3 .. 32	–
40	54	54	40
SCHUNK multi-tooth guidance	–	–	Junction roller guides
Resolver	–	–	–
Servo-electric 3-finger centric gripper with high gripping force and high maximum moment due to multi-tooth guidance	Electric permanent magnet gripper for energy-efficient handling of ferromagnetic workpieces	Electric permanent magnet gripper for energy-efficient handling of ferromagnetic workpieces	Electric 2-finger parallel rotary gripper module with smooth-running roller bearing guidance in the base jaw
Integrated	–	–	Integrated
External	External	External	Integrated
ECM	ECG	ECG	–
Optimal standard solution for many areas of application; flexible use due to controllable gripping force, position and speed	Universal compact gripper for large diversity of parts in clean to slightly contaminated work environment	Universal compact gripper for large diversity of parts in clean to slightly contaminated work environment	Gripping and movement of small to medium-sized workpieces with flexible force and high speed in low-contamination environment, such as assembly, testing, labs, pharmaceutical applications
•	•	•	•
•	•	•	
•			

EGL 90 2-Finger Parallel Gripper

Intelligent powerhouse for handling and assembly.

The electric SCHUNK EGL 90 2-finger parallel gripper, with variable gripping force between 50 and 600 N, is one of the most powerful and flexible mechatronic grippers on the market. Since the finger position, closing speed and gripping force are freely programmable within a maximum stroke of 48 mm per finger, diverse workpieces with a weight of up to 3 kg can be handled with precision in force-fit gripping.



Benefits:

- **Variable gripping force between 50 and 600 N**
- **Freely programmable finger position, closing speed, and gripping force**
- **Pre-positionable gripper fingers**
- **Completely integrated control and power electronics**
- **Mobile use** possible
- Standard interfaces **Profibus DP** and **CAN bus**
- Service interface with **USB port**
- **Brushless 24 V DC motors**



www.gb.schunk.com/EGL

EGS Rotary Gripping Unit

The world's most compact electric rotary gripping unit.

The SCHUNK EGS electric rotary gripping unit is the first such unit to successfully unite electric gripping and turning in a compact design in a single housing. The affordable, low-maintenance standard component paves the way for highly efficient pneumatic-free systems. Coupling of the gripping and rotation gear, patented by SCHUNK, allows continuous rotation without an electric feed-through.



Benefits:




- **Small dimensions** of 58 mm x 45 mm x 89 mm
- **Backlash-free pre-loaded junction roller guides** for **high-precision gripping** and virtually **constant gripping forces** over the entire finger length
- **Swiveling time 0.18 s/180°**
- **Gripping time 0.05 s/stroke**
- **Gripping force amounts to 30 N**
- Freely definable **angle of rotation** between **40° and 320°**
- **Torque of 0.04 Nm**
- **Brushless 24 V DC motors**
- **4 digital inputs** (open gripper, close gripper, rotate left, rotate right)



www.gb.schunk.com/EGS



SCHUNK Rotary Modules

MECHATRONIK³

	Rotary Units			
	Adaptable		Intelligent	
	ERM	PR 2	PRH	
				
	360° endlessly turning			
Technical data				
Number of sizes	1	3	3	
Torque [Nm]	75	3.6 .. 88	0.75 .. 6.8	
Speed [rpm]	60	25 .. 78	35 .. 117	
Dead weight [kg]	21.5	1.7 .. 5.6	0.75 .. 1.55	
Max. load inertia [kgm ²]	20	0.14 .. 9.5	0.005 .. 0.3	
Repeat accuracy [°]	0.035	0.03 .. 0.08	0.004	
Gear ratio	48	51 .. 161	30 .. 100	
Voltage [V]	Motor-dependent	24 DC	24 DC	
Current [A]	–	15	1.3 .. 6.5	
Center bore diameter	22	–	–	
Number of electric feed-throughs	0	0	0	
Number of pneumatic feed-throughs	8	0	0	
IP protection class	65	40	54 .. 65	
Type of measuring system	Motor-dependent	Incremental	Incremental	
Description	Electric rotary module with adaptable servo motor, angle of rotation > 360°, center bore and optional feed-throughs	Servo-electric rotary unit with angle of rotation > 360°, precision gears and integrated electronics	Servo-electric miniature rotary unit with angle of rotation > 360°, center bore and precision gears	
Motor & controller				
Motor	Adaptable	Integrated	Integrated	
Controller	External	Integrated	Integrated	
Controller type	Motor-dependent	–	–	
Area of application				
	Universal, highly flexible rotary module for use in clean and contaminated environments as a handling or positioning system component	Universal, highly flexible rotary module for use in clean and slightly contaminated environments as a handling or positioning system component or as an axis module of lightweight arms in industrial or service robotics	Universal, highly flexible rotary unit for clean or highly contaminated work environments	
Ambient conditions				
Clean	●	●	●	
Slightly contaminated	●	●	●	
Heavily contaminated	●		●	

Drives

ERD	ERS	PDU 2
	 The most compact electric rotary unit	
3	3	3
0.4 .. 1.2	1.75 .. 10	3.6 .. 88
600	200 .. 2300	25 .. 78
1.2 .. 1.8	2.7 .. 10.9	1.7 .. 5.6
0.0005 .. 0.0012	0.05 .. 0.6	–
0.01	0.01 .. 0.04	0.03 .. 0.08
–	–	51 .. 161
560 AC	560 AC	24 DC
0.43 .. 1.6	1.2 .. 6.3	15
–	–	–
4	8	0
2	1	0
40 .. 54	40 .. 54	40
Absolute (Hiperface)	Incremental	Incremental
High torque motor with absolute-value transducer and electric pneumatic rotary feed-through	Electric rotary unit with torque motor and angle of rotation > 360° in optional IP54 protection with optional rotary feed-through and holding brake	Servo-electric drive with angle of rotation > 360°, precision gears and integrated electronics
Integrated	Integrated	Integrated
External	External	Integrated
Bosch/Siemens	Bosch/Siemens	–
For all applications with unusual requirements for repeat accuracy, speed of rotation, acceleration and service life	Universal, highly flexible rotary unit for applications with unusual requirements for the maximum achievable mass moment of inertia, compactness and reliability. Suitable for clean and contaminated environments as a handling or positioning system component	Servo drive for linear, rotary or CNC axes; direct drive motor for applications in measuring and testing technology
•	•	•
•	•	•

2-Axis Modules	
PSM 2	PW
	
3	2
0.15 .. 0.9	12 .. 23 / 2 .. 12
1570 .. 4320	–
1.5 .. 3.9	1.8 / 3.4
–	–
0.2	0.004 / 0.004
–	121 .. 161 / 101 .. 121
24 DC	24 DC
–	–
–	–
0	0
0	0
40	–
Incremental	Incremental
Servo-electric drive with angle of rotation > 360° and integrated electronics	Servo-electric rotary pan-tilt actuator with precision gears and integrated electronics
Integrated	Integrated
Integrated	Integrated
–	–
Servo drive for linear, rotary or CNC axes; direct drive motor for applications in measuring and testing technology	Universal, highly flexible rotary pan-tilt actuator for use in clean and slightly contaminated environments as a handling or positioning system component for cameras, laser scanners or as a wrist module on robots
•	•
•	•

Rotary Module ERS with rotary Feed-through DDF

Compact, dynamic and uniquely flexible.

The SCHUNK ERS electric rotary module offers an optional pneumatic and electric rotary feed-through. The module, driven by a hollow shaft torque motor and equipped with the rotary feed-through DDF, is the most compact electric rotary module with an integrated pneumatic and electric feed-through. The standard version of the DDF features eight signal feed-throughs and one pneumatic air duct.



Benefits:

- **Extremely flat** design
- **Dynamic, stable and torsionally rigid**
- **Pneumatic** and **electric** feed-throughs
- **Endless turning** up to **250 rpm**
- Standard sensor interface
- **Protection class IP54** optional
- Highly flexible processes due to **configurable intermediate positions**
- **Easy system integration**
- **High acceleration** and **short cycle times** due to **high torque**



www.gb.schunk.com/ERS_with_DDF

PR 2, PDU 2, and PSM 2 electric high-performance Rotary Modules.

Compact powerhouses with integrated intelligence.

The SCHUNK PR 2, PDU 2, and PSM 2 high-performance rotary modules add three especially compact and powerful drives to the SCHUNK mechatronic product range. All regulating and power electronics have also been fully integrated into the new modules. This eliminates the need for an external controller, minimizes cabling, and reduces susceptibility to errors.



PDU 2



PR 2



PSM 2

Benefits:

- **Integrated control concept** and standard connecting elements
- **Service interface: USB host, USB device**
- **Fieldbus: Profibus or CAN bus**
- **Harmonic-Drive® gears** with three reduction levels per size (PR 2 / PDU 2)
- **4 LED status displays**
- **Brushless DC servo motor**
- **Integrated** holding brake
- **2 digital inputs**
- **Rotating angle > 360°** for a variety of applications
- **The integration of the regulating and power electronics** saves the need for additional external controllers and additional cabling
- **Simple** and **integrated** monitoring by sensor signals



www.gb.schunk.com/high-performance_rotary_modules

SCHUNK Rotary Feed-throughs

MECHATRONIK³

	Protection class IP65		
	Alternative		
	DDF 2 electrical	DDF 2	DDF-I
			
		Turns continuously	Transmission of bus signals
Product features			
Continuous rotary movement	●	●	●
Screwed flange according to ISO-9409 standard	●	●	●
Pneumatic energy transmission		●	●
Vacuum energy transmission			●
Electrical energy transmission	●	●	●
Bus transmission			●
Technical data			
Sizes [correspond to ISO-9409]	031 .. 160	031 .. 160	040 .. 063
Recommended workpiece weight [kg]	8 .. 250	8 .. 250	20
Max. speed [rpm]	70 .. 120	70 .. 120	120
Continuous torque [Nm]	0.8 .. 22	0.8 .. 22	0.7
Starting torque [after shutdown] [Nm]	13 .. 25	1.3 .. 25	2
Forces F_z [N]	1000 .. 9000	1000 .. 9000	2000
Moments M_x, M_y [Nm]	15 .. 600	15 .. 600	60
Moments M_z [Nm]	10 .. 400	10 .. 400	60
Pneumatic energy transmissions	–	2 .. 4	1
Electrical energy transmission	4 .. 10	4 .. 10	2 (Profibus)
Weight [kg]	0.35 .. 6.2	0.5 .. 14.2	1.9
Advantages / Your benefit			
	Minimal height, since there are no pneumatic feed-throughs	Three varieties to choose from Option 1: for the feed-through of pneumatic and electrical signals Option 2: for the feed-through of pneumatics Option 3: for the feed-through of electrical signals	Standardized connection for Profibus allows for easy connection of your control unit, valve clusters, electric grippers etc.
Combined pneumatic and electrical feed-through		●	●
ISO flange pattern , simple assembly on most types of robot without additional adapter plates	●	●	●
Ambient conditions			
	Feed-throughs for reliable electric feed-through for robot applications with endless rotation	Rotary feed-through for reliable pneumatic and electrical feed-through in the event of robot applications with continuous rotary movements	With built-in bus technology for a larger number of signal transmissions in the event of robot applications with continuous rotary movements
Ambient conditions			
Clean	●	●	●
Slightly dirty	●	●	●

Stationary Rotary Feed-throughs

DDF-SE



SCHUNK DDF 2 Rotary Feed-Through

More powerful. More versatile. More energy-efficient.

The DDF 2 is the latest standard for state-of-the-art robot and assembly applications. It guarantees highest process reliability even with 360° continuous rotary movements. SCHUNK offers the DDF 2 in two versions: for the feed-through of pneumatic or electrical signals or for the combined version. A significantly increased load allows the use of a steel shaft for transmitting dynamic forces and moments. Due to a specially developed seal, the DDF 2 ensures a long service life and energy efficiency since the use of smaller drives is possible.



Benefits:

- **85% longer service life** due to newly developed seals
- **50% greater moment load** due to transmission of the dynamic forces and moments via a steel shaft
- **20% greater load capacity**
- Newly developed, **more smoothly running** and especially **durable seals** produce a smaller starting and continuous torque, which allows use of smaller, i.e. more economical drives
- Depending on the size, **two and four pneumatic feed-throughs** are standard or between **four and ten electrical transmissions** for signals 1 A / 60 V
- **Allows for 360° continuous rotation**
- Complete series with **14 sizes** for optimal size selection
- **Electrical connector contacts** enable rapid and easy replacement in the event of cable breakage at the robot arm or gripper
- **Protection class IP65**



www.gb.schunk.com/DDF2

80 .. 120

-

300 .. 500

4 .. 13

5 .. 20

2000 .. 4000

60 .. 250

60 .. 250

4 .. 6

6 .. 8



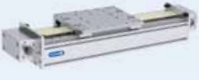

3.3 .. 9

Standardized shaft end for easy assembly of gears

Up to 500 rpm

Your gripping system is always safely supplied with pneumatic and electronics, even in case of fast, endless rotations up to 500 rpm

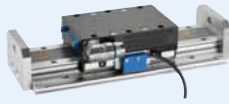
Ideally suited for use on rotary indexing tables and for stationary applications






	Linear Modules			
	Adaptable			
	Linear Axis Alpha	Linear Axis Beta	Linear Axis Gamma	Linear Axis Delta
				
		12 profile sizes	more than 100 kg payload horizontal	
Drive type				
Spindle drive	●	●		●
Toothed belt drive		●	●	●
Rack and pinion drive		●	●	
Direct drive (linear motor)				
Technical data				
Number of sizes	4	12	4	5
Repeat accuracy [mm]	0.03	0.03 or 0.08***	0.03 or 0.08***	0.03 or 0.08***
Max. useful stroke [mm]	2540	7770	11520	7340
Max. driving force [N]	18000	18000***	10000***	12000***
Max. speed [m/s]	2	5	5	5
Max. acceleration [m/s ²]	20	60	60	60
Measuring system type	Motor-dependent	Motor-dependent	Motor-dependent	Motor-dependent
Guidance type	Double-profiled rail guide	Double-profiled rail guide	Double-profiled rail guide	Double-profiled rail guide
Required maintenance	Lubrication of the guide and the spindle	Lubrication of the guide and (if necessary) the spindle, replacement of the cover strip	Lubrication of the guide and (if necessary) the gear rack	Lubrication of the guide and (if necessary) the spindle, replacement of the cover strip
Remark	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	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
Motor & Controller				
Motor	Adaptable**	Adaptable*	Adaptable*	Adaptable*
Drive controller	Motor-dependent	Motor-dependent	Motor-dependent	Motor-dependent
Interfaces	Controller-dependent	Controller-dependent	Controller-dependent	Controller-dependent
Field of application				
	<ul style="list-style-type: none"> • Exceptionally flat design for table assembly • For demanding requirements with respect to precision and driving force 	<ul style="list-style-type: none"> • For universal use • Spindle drive for demanding requirements with respect to precision and driving force • Toothed belt drive for high dynamic requirements with long stroke 	<ul style="list-style-type: none"> • With closed profile for high requirements with respect to rigidity • With rack and pinion drive for precise applications and long strokes • Toothed belt drive for dynamic applications 	<ul style="list-style-type: none"> • Flat design for high loads • For universal use • Spindle drive for demanding requirements with respect to precision with high driving force • Toothed belt drive for high dynamic requirements with long stroke
Ambient conditions				
clean	●	●	●	●
slightly dirty	●	●	●	●

* Preferred motors: Bosch-Rexroth, Siemens, SCHUNK

** More on request

*** Depending on drive type

Intelligent					
Linear Axis ELS	Linear Axis LDN	Linear Axis LDM	Linear Axis LDT	Linear Axis LDF	
					
	max. 25 kg payload horizontal	max. 40 kg payload horizontal	max. 50 kg payload horizontal	max. 66 mm high	
•					
	•	•	•	•	
2	2	2	2	2	
0.03	0.01	0.01	0.01	0.01	
260	2800	2800	2800	3800	
150	500	1000	1500	500	
1	4	4	4	4	
25	40	40	40	40	
Motor-dependent	Absolute	Absolute	Absolute	Absolute	
Profiled rail guide	Roller guide	Roller guide	Roller guide	Roller guide	
Lubrication of the guide and the spindle	Cleaning the magnetic tracks	Cleaning the magnetic tracks	Cleaning the magnetic tracks	Cleaning the magnetic tracks	
Freely programmable, also available standard-equipped with Bosch-Rexroth motor	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, supported profile	
Adaptable*	Integrated	Integrated	Integrated	Integrated	
Motor-dependent	Bosch-Rexroth**	Bosch-Rexroth**	Bosch-Rexroth**	Bosch-Rexroth**	
Controller-dependent	Sercos III, Multi-EtherNet (Sercos III, ProfiNet IO, EtherNet / IP, EtherCat), Profibus	Sercos III, Multi-EtherNet (Sercos III, ProfiNet IO, EtherNet / IP, EtherCat), Profibus	Sercos III, Multi-EtherNet (Sercos III, ProfiNet IO, EtherNet / IP, EtherCat), Profibus	Sercos III, Multi-EtherNet (Sercos III, ProfiNet IO, EtherNet / IP, EtherCat), Profibus	
• Cantilever axis • For short strokes • For demanding requirements with respect to precision and driving force	• For universal use • Linear motor axis with simple X-profile • For applications with high requirements with respect to dynamism • For rapid and precise movement or controlled pressing-in of workpieces in high-speed assembly	• For universal use • Linear motor axis with couple X-profile • For medium loads with very high dynamic and precise requirements • For rapid and precise movement or controlled pressing-in of workpieces in high-speed assembly	• For universal use • Linear motor axis with couple X-profile • For medium loads with very high dynamic and precise requirements • For rapid and precise movement or controlled pressing-in of workpieces in high-speed assembly	• Flat linear motor axis • For applications with very high dynamic and precise requirements • For rapid and precise movement or controlled pressing-in of workpieces in high-speed assembly	
•	•	•	•	•	
•	•	•	•	•	

Stroke Module LDK	Stroke Module LDH	Linear Axis ELM	Linear Axis EPM	Linear Axis ELB
				 100 ms⁻² acceleration
•	•	•	•	•
2	1	2	2	1
0.01	0.01	0.05	0.2	0.01
400	200	260	1380	125
500	100	160	580	150
4	4	1.5	2.3	4
40	40	40	40	100
Absolute	Absolute	Hall-effect sensor	Hall-effect sensor	Absolute
Roller guide	Roller guide	Profiled rail guide	Double-profiled rail guide	Junction roller guide
Cleaning the magnetic tracks	Cleaning the magnetic tracks	Cleaning the magnetic tracks, lubrication of the guide	Cleaning the magnetic tracks, lubrication of the guide	Cleaning the magnetic tracks, lubrication of the guide
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 rod lock	Freely programmable, optionally available with rod lock, cable track	Freely programmable, optionally available with level control, brake
Integrated	Integrated	Integrated	Integrated	Integrated
Bosch-Rexroth**	Bosch-Rexroth**	Linmot	Linmot	Bosch-Rexroth**
Sercos III, Multi-EtherNet (Sercos III, ProfiNet IO, EtherNet / IP, EtherCat), Profibus	Sercos III, Multi-EtherNet (Sercos III, ProfiNet IO, EtherNet / IP, EtherCat), Profibus	Sercos III, EtherNet / IP, EtherCAT, ProfiNet, Profibus DP, PowerLink, CANopen	Sercos III, EtherNet / IP, EtherCAT, ProfiNet, Profibus DP, PowerLink, CANopen	Sercos III, EtherNet / IP, EtherCAT, ProfiNet, Profibus DP, PowerLink, CANopen
<ul style="list-style-type: none"> • Compact, lightweight short-stroke module • For small loads • For exceptionally dynamic positionings 	<ul style="list-style-type: none"> • Compact, lightweight short-stroke module • For small loads • For exceptionally dynamic movements in the Z-axis 	<ul style="list-style-type: none"> • Very compact, simple short-stroke module • For small loads • For exceptionally dynamic positionings 	<ul style="list-style-type: none"> • For average requirements with respect to dynamics and precision 	<ul style="list-style-type: none"> • Compact and lightweight short-stroke module • For small loads • For extremely dynamic positioning
•	•	•	•	•
•	•	•	•	•

Beta Linear Module

Linear Axes with adaptive Drive.

The range includes 12 sizes. Depending on use, it is possible to choose between roller guide and profiled rail guide. The Beta series is outstanding for its economical axis applications with high requirements with respect to dynamics and smooth running. Even long stroke lengths can be implemented with this drive system.



Benefits:

- **12 profile sizes**
- **3 drive systems** (spindle / belt / gear rack)
- **2 guide systems**
- **100% modular** design for high availability
- **20 years of experience** with linear systems
- **100% flexible actuation** through adaptable motors



www.gb.schunk.com/beta

Linear Module ELB

The compact short-stroke axis for dynamic assembly applications.

The SCHUNK ELB linear module was specially designed for fast and dynamic strokes. As a combination of a powerful linear motor drive and an especially smooth-running, pre-loaded junction roller guide, the module is extremely compact, rigid and dynamic; it positions comparatively high loads with an excellent repeat accuracy of 0.01 mm.



Benefits:

- **< 0.01 mm Repeat accuracy**
- **Incremental or absolute stroke measuring system**
- The controllers are available with standard interfaces, such as **Sercos III, ProfiNet IO, EtherNet / IP, EtherCat, Profibus, Sercos 2**



www.gb.schunk.com/elb

Accessories for spindle, belt, and rack and pinion driven linear modules

Servo motors

With the Alpha, Beta, Gamma, Delta and ELS linear axes with adaptable drive, receive from SCHUNK on request an already completed configuration with servo motors that is designed in accordance with your specific application and technical requirements. We recommend using servo motors from Bosch Rexroth, Siemens or SCHUNK.

We are happy to supply the required IndraDrive series controller from Bosch-Rexroth or the SINAMICS series from Siemens – depending on the servo motors used – along with your shipment. Of course, you have the option of attaching any other servo motor yourself to the linear axes listed.






Bosch-Rexroth AC servo motor



Siemens compact servo motor







Compact SCHUNK servo drive Type PDU 2 with precision gears and integrated controller




	Line and Room Gantries		
	Adaptable		
	Line Gantry LPE	Room Gantry RPE	Customer-specific Room Gantry
			
Drive type			
Spindle drive	●	●	
Toothed belt drive	●	●	●
Direct drive (linear motor)			
Technical data			
Number of sizes	2	2	Flexible
Repeat accuracy per axis [mm]	-	-	-
Max. horizontal stroke [mm]	1500	1500 x 1500	1800 x 1300
Rotating angle [°]	-	-	-
Max. vertical stroke [mm]	500	500	800
Max. useful load [kg]	10 .. 20	10 .. 20	25
Max. picks per minute*	-	-	-
Max. speed [m/s]	1/0.25	1/0.25	3/3
Max. acceleration [m/s ²]	5/2	5/2	10/15
Measuring system type	-	-	-
Adjustable end positions	Freely programmable	Freely programmable	Freely programmable
Guidance type (horizontal / vertical)	Profiled rail guide / Profiled rail guide	Profiled rail guide / Profiled rail guide	Profiled rail guide / Profiled rail guide
Required maintenance	Lubrication of the guide and (if necessary) the spindle, replacement of the cover tape	Lubrication of the guide and (if necessary) the spindle, replacement of the cover tape	Lubrication of the guide and (if necessary) the spindle, replacement of the cover tape
Remark	Freely programmable, with cable track, completely mounted, alternately without drive or with Bosch-Rexroth drives, optionally available with pillar assembly system	Freely programmable, with cable track, completely mounted, optionally available without drive or with Bosch-Rexroth drives	Freely programmable, with cable track, drives and control units, specific gripping systems in accordance with customer specifications, completely mounted
Actuation			
	Drive controllers: Bosch-Rexroth* Interfaces: Sercos III, Multi-EtherNet (Sercos III, ProfiNet IO, EtherNet / IP, EtherCat), Profibus	Drive controllers: Bosch-Rexroth* Interfaces: Sercos III, Multi-EtherNet (Sercos III, ProfiNet IO, EtherNet / IP, EtherCat), Profibus	Drive controllers: Bosch-Rexroth* Interfaces: Sercos III, Multi-EtherNet (Sercos III, ProfiNet IO, EtherNet / IP, EtherCat), Profibus
Modular system			
	Combination of three individual components from the SCHUNK modular assembly components	Combination of three individual components from the SCHUNK modular assembly components	Customer-specific axis solution, combined using various modular assembly components
Field of application			
	<ul style="list-style-type: none"> • For simple applications • For approaching any number of points in the plane • Optimal for applications with standard requirements with respect to dynamics 	<ul style="list-style-type: none"> • For simple applications • For approaching any number of points in the plane • Optimal for applications with standard requirements with respect to dynamics 	<ul style="list-style-type: none"> • Very rigid design • For high accelerations and process speeds • Space-saving arrangement above the machine
Ambient conditions			
clean	●	●	●
slightly dirty	●	●	●
extremely dirty			●

* For 145 mm horizontal stroke, 45 mm vertical stroke, 1 kg payload, with 2 x 50 ms gripping time

** For 210 mm horizontal stroke, 60 mm vertical



Pick & Place Units						
Intelligent						
Customer-specific Room Gantry	Modular Pick & Place Unit ELM / ELM	Modular Pick & Place Unit LDN / LDK	Pick & Place Unit PPU-E			
						
	70 picks per minute*	85 picks per minute*	110 picks per minute*			
●	●	●	●			
–	Versatile	Versatile	1.3			
–	0.05	0.01	0.01			
195 x 515	260	500	150	270	280	
–	–	–	–	–	–	
100	260	400	60	100	150	
2	5	6	1.5	3	5	
–	70*	85*	100*	110*	80**	
4/9	1.5	4	4			
23/55	40	40	100			
–	Hall-effect sensor	Incremental or absolute	Incremental or absolute			
Freely programmable	–	–	–			
Roller guide / Roller guide	Profiled rail guide	Roller guide	Profiled rail guide			
Cleaning the magnetic tracks	Cleaning the magnetic tracks, lubrication of the guide	Cleaning the magnetic tracks	Cleaning the magnetic tracks, lubrication of the guide			
Freely programmable, with cable track, assembly system, control units, grippers and change system, completely mounted, total cycle time 1.1 s	Freely programmable, optionally available with rod lock	Freely programmable, optionally available with brake	Freely programmable, optionally available with rod lock or spring-loaded compensation, with flat hybrid cable			
Drive controllers: Bosch-Rexroth* Interfaces: Sercos III, Multi-EtherNet (Sercos III, ProfiNet I/O, EtherNet / IP, EtherCat), Profibus	Drive controller: Linmot Interfaces: Sercos III, EtherNet / IP, EtherCAT, ProfiNet, ProfibusDP, PowerLink, CANopen	Drive controller: Bosch-Rexroth*** Interfaces: Sercos III, Multi-EtherNet (Sercos III, ProfiNet I/O, EtherNet / IP, EtherCat), Profibus	Controllers: Bosch-Rexroth, Siemens*** Interfaces: Sercos III, Multi-EtherNet (Sercos III, ProfiNet I/O, EtherNet / IP, EtherCat), Profibus			
Special axis solution, combined using various standard components and modified standard components, e.g. carbon fiber axis (RCC)	Combination of two electronic individual components from the SCHUNK modular assembly components	Combination of two electronic individual components from the SCHUNK modular assembly components	Fully integrated in the SCHUNK modular system			
<ul style="list-style-type: none"> Extremely lightweight construction For very high accelerations and high precision Optimized for high-speed applications 	<ul style="list-style-type: none"> Very compact For applications with high requirements with respect to flexibility and dynamics 	<ul style="list-style-type: none"> For applications with very high requirements with respect to precision, flexibility and dynamics 	<ul style="list-style-type: none"> Extremely compact 2-axis unit Flexible travel along curves in the plane of any sort For rapid and precise transferring For controlled pressing-in of workpieces in high-speed assembly 			
●	●	●	●			
●	●	●	●			

stroke, 3 kg payload, with 2 x 50 ms gripping time *** More on request

	Manual Change Systems		
	Alternative		Intelligent
	MWS	FWS	HWS
			
Product features			
Manual actuation	●	●	●
Pneumatic actuation	●		
Piston stroke monitoring possible			
Tool presence monitoring possible*			
Pneumatic energy transmission	●		●
Electrical energy transmission	●	●	●
Technical data			
Sizes	20 .. 30	115	040 .. 125
Recommended workpiece weight [kg]	0.5 .. 0.8	10	8 .. 54
Moment load M_{xy} [Nm]	1.5 .. 2.7	40	150 .. 960
Moment load M_z [Nm]	0.5 .. 2.7	100	120 .. 750
Repeat accuracy [mm]	0.01	0.01	0.01
Weight [kg]	0.016 .. 0.03	0.2 (head) and 0.1 (adapter)	0.22 .. 3.92
Screwed flange on the robot	Adapter plates	Adapter plates / Direct assembly ISO-9409	Adapter plates / Direct assembly ISO-9409
Advantages / Your benefit			
	<p>Extremely low-profile design for a minimum of interfering contours.</p> <p>Built-in feed-throughs for six pneumatic or electrical signals</p>	<p>Extremely low-profile design for a minimum of interfering contours.</p> <p>Built-in feed-throughs for electrical supply and signals</p>	<p>Integrated pneumatic feed-throughs for reliable electricity, gas and water supply of the handling modules and tools.</p> <p>Simple handling without additional tools; can easily be detached anytime by hand</p>
Ambient conditions			
Clean	●	●	●
Slightly dirty			●
High-temperature and stainless steel version on request			●

* Tool presence monitoring optionally available only with SWS-110 and SWS-300.

Automated Quick-Change Systems

SWS	SWS-L
	
•	•
•	•
•	•
•	•
•	•
•	•
001 .. 300	210 .. 1510
1 .. 450	270 .. 4080
3 .. 9870	8100 .. 48900
3.45 .. 8460	6900 .. 41700
0.01	0.01
0.25 .. 19.1	7.7 .. 103
Adapter plates / Direct assembly ISO-9409	Adapter plates / Direct assembly ISO-9409
Patented self-locking locking system for a reliable connection between the quick-change head and the quick-change adapter.	
Suitable storage racks for all sizes: Standardized storage modules available for any size	
•	•
•	•
•	•

SCHUNK SWS Quick-Change Systems

Fast effector change for high flexibility in production, handling and assembly.

When changing grippers, tools and other effectors, an automatic quick-change system (as robot accessory) can clearly reduce manual work or even entirely replace it. While manually re-equipping a pneumatic effector takes ten to thirty minutes, a quick-change system reduces this time down to ten to thirty seconds, while the mere locking and unlocking only takes milliseconds.

Quick-change head
SWK

Quick-change adapter
SWA



Benefits:

- **1.4 kg to 4,080 kg** payload possible
- **Patented** self-locking locking system
- **No-Touch locking™** Reliable locking without the need to touch for the SWS, even if SWK and SWA do not contact.
- **Complete series** with 21 sizes
- All functional components made of **hardened steel** for a **high bearing load capacity** of the change system
- **Transmission possibility** for electric, pneumatic and fluid media



www.gb.schunk.com/sws

Optional Modules

Broad range of electronic and fluid modules for various energy transmission options.



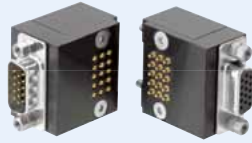
See page 30 / 31

SCHUNK optional electric Modules for Quick-Change Systems

MECHATRONIK³

A wide range of additional optional modules available on request

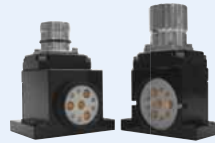
Electronic Modules for SWS and SWS-L



	B15		R19		MT8	
Module designation	B15	E2A	E3A	E10	A15	E20
Electrical data	3 A / 50 VAC	3 A / 50 VAC	3 A / 50 VAC	3 A / 50 VAC	3 A / 50 VAC	3 A / 50 VAC
Number of pin contacts	15	20	30	10	15	20
Compatible with SWS sizes	005	005	005	005 .. 011	011	011
Tool coding for SWA	-	-	-	-	-	-
Module designation	K14	K19	K21	K26	KG19	KM14
Electrical data	3 A / 50 VDC	2 A / 50 VDC	6 A / 50 VDC	5 A / 50 VDC	4 A / 50 VDC	12 x 5 A / 250 VAC 2 x 13 A / 250 VAC
Number of pin contacts	14	19	21	26	19	14
Compatible with SWS sizes	020, 021, 060	020, 021, 060	020, 021, 060	020, 021, 060	020, 021, 060	020 .. 060
Tool coding for SWA	0 - 9	-	0 - 9	-	-	-
Module designation	G10	G14	G17	G19	G21	G26
Electrical data	3 A / 250 VAC	3 A / 250 VAC	3 A / 250 VAC	5 A / 250 VAC	3 A / 250 VAC	3 A / 250 VAC
Number of pin contacts	10	14	17	19	21	26
Compatible with SWS sizes	040 .. 300	040 .. 300	040 .. 300	040 .. 300	040 .. 300	040 .. 300
Tool coding for SWA	0 .. 99	0 .. 9	-	-	0 .. 9	-
Module designation	GF19	MT8	MT9	MT14	PG0	R10
Electrical data	3 A / 250 V	20 A / 500 VAC	28 A / 500 VAC	13 A / 500 VAC	600 A / 800 VAC	5 A / 250 VAC
Number of pin contacts	19	8	9	14	1	10
Compatible with SWS sizes	040 .. 300	040 .. 300	040 .. 300	040 .. 300	040 .. 300	040 .. 300
Tool coding for SWA	-	-	-	-	-	0 .. 99
Module designation	R14	R17	R19	R21	R26	R32
Electrical data	5 A / 250 VAC	3 A / 250 VAC	5 A / 250 VAC	3 A / 250 VAC	3 A / 250 VAC	3 A / 250 VAC
Number of pin contacts	14	17	19	21	26	32
Compatible with SWS sizes	040 .. 300	040 .. 300	040 .. 300	040 .. 300	040 .. 300	040 .. 300
Tool coding for SWA	0 .. 9	0 .. 99	-	0 .. 9	-	-
Module designation	RF19	S10	S14	S19	S21	S26
Electrical data	3 A / 250 V	5 A / 250 VAC	5 A / 250 VAC	5 A / 250 VAC	3 A / 250 VAC	3 A / 250 VAC
Number of pin contacts	19	10	14	19	21	26
Compatible with SWS sizes	040 .. 300	040 .. 300	040 .. 300	040 .. 300	040 .. 300	040 .. 300
Tool coding for SWA	-	0 .. 99	0 .. 9	-	-	-
Module designation	SF19	T10	T14	T19	TB	TD
Electrical data	3 A / 250 V	5 A / 250 VAC	5 A / 250 VAC	5 A / 250 VAC	Profibus 4 A / 24 VAC	DeviceNet 5 A / 24 VAC
Number of pin contacts	19	10	14	19	10	10
Compatible with SWS sizes	040 .. 300	040 .. 300	040 .. 300	040 .. 300	040 .. 300	040 .. 300
Module designation	TE	X7B	X7C	X7D		
Electrical data	EtherNet 5 A / 48 VAC	Coax 75 Ohm BNC	Coax, 3 A / 2000 VAC, 30 kHz	Coax 5 A / 500 VAC		
Number of pin contacts	10	1	1	1		
Compatible with SWS sizes	040 .. 300	040 .. 300	040 .. 300	040 .. 300		

A wide range of additional optional modules available on request

Pneumatic, fluid, and hydraulic modules for SWS from size 040 – 300 and for SWS-L from size 210 – 1210







	TB			REP 10		PGO	
Module designation	P05	P12A	P14	P238	P18	P38A	P186
Pneumatics	●	●	●	●	●	●	●
Vacuum	●	●	●	●	●	●	●
Number of media feed-throughs	10	2	2	2	4	4	6
Connections	M5	G1/2	G1/4	G3/8	G1/8	G3/8 axial	G1/8
Maximum pressure [bar]	8	8	8	8	8	8	8





Module designation	P186A	FG2	FG4	FHG4	V34	VF1	V200A	V200
Pneumatics	●	●	●					
Vacuum	●				●	●	●	●
Fluid		●	●					
Hydraulics				●				
Self-sealing		●	●	●				
Number of media feed-throughs	6	2	4	1	1	1	1	1
Connections	G1/8 axial	G3/8	G3/8	G1/4	G3/4	1	2	2
Compatible with SWS sizes	040 – 300	040 – 300	040 – 300	040 – 300	040 – 300	040 – 300	040 – 300	040 – 300
Maximum pressure [bar]	8	8	8	8				

Accessories for all electronic modules



Designation	KAS-19B-0				KAS-19B-90			
	KAS-19B-0	KAS-19B-90	KAS-26B-0	KAS-26B-90	KAS-19G-0	KAS-19G-90	KAS-26G-0	KAS-26G-90
Number of pin contacts	19	19	26	26	19	19	26	26
Electrical data	5 A / 250 VAC	5 A / 250 VAC	3 A / 250 VAC	3 A / 250 VAC	5 A / 250 VAC	5 A / 250 VAC	3 A / 250 VAC	3 A / 250 VAC
Version	Straight	At an angle	Straight	At an angle	Straight	At an angle	Straight	At an angle
Compatible with electronic modules	K19, K14, KG19, R19, R14, R10, G19, G14, G10, S19, S14, S10	K19, K14, KG19, R19, R14, R10, G19, G14, G10, S19, S14, S10	K26, K21, R26, R21, R17, G26, G21, G17, S26, S21	K26, K21, R26, R21, R17, G26, G21, G17, S26, S21	MT14, M19, T19, T14, T10, SA2, SA3, SA4, VB2, VB3, VB4	MT14, M19, T19, T14, T10, SA2, SA3, SA4, VB2, VB3, VB5	SA2, VA2	SA2, VA3

	Monitor Positions				
	Alternative				
	MMS-PI 1/2	IN	RMS	FPS	
					
Switching behavior					
1-point digital	●	●	●		
2-point digital	●				
5-point digital				●	
Analog					
Ambient conditions					
Clean	●	●	●	●	
Slightly contaminated	●	●	●	●	
Heavily contaminated			●		
Technical data					
Number of sizes	6	11	2	6	
Working principle	Magnetic	Inductive	Reed	Magnetic	
Max. IP protection	67	67	67	67	
Supply voltage [V DC]	24	24	24	24	
Supply current [mA]	< 50	< 200	< 10	< 10	
PNP version	●	●	●	●	
NPN version	●	●	●		
LED display	●		●		
Measurement sensing distance [mm]	not adjustable	1 .. 2.5	not adjustable	not adjustable	
Closer	●	●	●	●	
Opener		●	●		
Connection type					
Number of wires	4	3	3	7	
Cable version	●	●	●	●	
M8 plug – version	●	●	●		
M12 plug – version	●	●	●		

				Monitor Workpiece
Intelligent				
APS-M1	APS-280	MMS-A	OAS	
				
				•
•	•	•	•	
•	•	•	•	
•		•		
1	1	1	11	
Mechanical	Inductive	Magnetic	Visual	
67	67	67	67	
24	24	24	24	
< 150	< 200	< 50	< 180	•
not adjustable	0.5 .. 2	not adjustable	10 .. 200	•
				•
3	3	3	3	•
•	•	•	•	
	•	•		
		•		

FTN FTD IP protection class
Without IP protection
Technical data
Sizes
Calibration
Electronic processor
Weight of sensor [kg]
Range of measurement $F_x F_y$ [N]
Range of measurement F_z [N]
Range of measurement $M_x M_y$ [Nm]
Range of measurement M_z [Nm]
Resolution $F_x F_y$ [N]
Resolution F_z [N]
Resolution $M_x M_y$ [Nm]
Resolution M_z [Nm]
Advantages / Your benefit
Sizes with different ranges of measurement
High measured-value resolution and fast data transmission for nearly real-time control
Robust version , high overload range for a long life span
Rotation and translation of the coordinate systems in all three planes
Easy operation , minimized start-up time
Field of application
Ambient conditions (sensor)
Clean
Slightly dirty
Extremely dirty
Humid

Measuring Forces and Moments

Intelligent

FTN	FTD	FTS	FTM	FMS
				
•	•	•	IP52	IP67
NANO-17 .. OMEGA-331	NANO-17 .. OMEGA-331	NANO-17 .. OMEGA-331	75 .. 115	ZBA50-380 / ZBP50-380
SI-12-0.12 .. SI-40000-6000	SI-12-0.12 .. SI-40000-6000	SI-12-0.12 .. SI-40000-6000	–	–
Net box	DAQ card	Stand-alone controller	Integrated	External
0.09 .. 47	0.09 .. 47	0.09 .. 47	0.7 .. 1.0	0.02 .. 1.84
±12 .. ±40000	±12 .. ±40000	±12 .. ±40000	±300 .. ±580	±145 .. ±5150 (only F _x)
± 17 .. ±88000	± 17 .. ±88000	±17 .. ±88000	±300 .. ±1160	
±0.12 .. ±6000	±0.12 .. ±6000	±0.12 .. ±6000	±15 .. ±20	
±0.12 .. ±6000	±0.12 .. ±6000	±0.12 .. ±6000	±15 .. ±20	
1/120 .. 1/320	1/120 .. 1/320	1/160	3/1000 .. 0.25/1000	
1/60 .. 1/320	1/60 .. 1/320	1/130 .. 1/160	3/1000 .. 0.25/1000	3/100 .. 5/100 (only F _x)
1/64 .. 3/2000	1/64 .. 3/2000	1/32 .. 3/1000	0.1/1000 .. 1/188	
1/64 .. 3/4000	1/64 .. 3/4000	1/32 .. 3/2000	0.1/1000 .. 1/376	
FTN sensor Evaluation via EtherNet, DeviceNet, optional ProfiNet	FTD sensor Evaluation via DAQ card (PCI, USB)	FTS sensor Evaluation via analog voltage (0–10 V or DIO)	FTM sensor Integration via quick- change to SCHUNK lightweight robot	FTM sensor for direct integration in all grippers with PGN-plus finger interface
16	16	16	2	10
•	•	•	•	
•	•	•	•	•
•	•	•	•	
•	•	•	•	•
Universally applicable in robot applications such as haptics, medicine, grinding, testing, joining as well as research and development.		Universally applicable in robot applications such as haptics, medicine, grinding, testing, joining as well as research and development.	The integrated changing system facilitates mounting of the modules for example between the lightweight arm flange and the end effector	Universal for use in gripping force measurement
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•

6-Axis Force Torque Sensors

Flexible in use and very precise.

The SCHUNK 6-Axes-Force-Moment Sensors measure 6 components of forces and moments (F_x , F_y , F_z , M_x , M_y , M_z). Thereby the FT sensors operate with silicon strain gauges, which ensure an excellent interference immunity. The following interfaces are available for every unit size: **FTN (EtherNet, DeviceNet optional with ProfiNet)**, **FTD (PCI, USB)**, **(analog voltage 0 - 10 V, DIO)**.



Features

The **SCHUNK FT sensors** provide a variety of powerful functions:

- **Tool transformations:**
translate and / or rotate the FT reference frame.
- **Demo software:**
allows configuration and basic data logging capabilities.
- **Biasing:**
provides a convenient way to offset tool weight.
- **Threshold detection:**
Generates an output code if the determined threshold is exceeded (FTN and FTS).
- **Integral temperature compensation:**
Insures accuracy over a wide temperature range.
- **Overload protection:**
SCHUNK FT sensors are extremely rugged and durable. All transducer models can withstand up to 40 times higher overload.
- **High signal-to-noise ratio:**
silicon gages provide a signal 75 times stronger than conventional foil gages. This signal is amplified resulting in near-zero noise distortion.
- **IP protection:**
SCHUNK FT sensors are optionally available in IP60, 65, or 68 protected version.



www.gb.schunk.com/ft_sensoren

	Gripper Hands	
	Intelligent	
	SVH Servo-electric 5-Finger Gripper Hand	SDH Servo-electric 3-Finger Gripper Hand
	 <p>The first ready-for-series 5-Finger Hand</p>	 <p>Industrial gripper hand with fingertip sensation.</p>
Technical data		
Overall length [mm]	242.5	248.8
Hand width [mm]	92	120.2
Max. finger width [mm]	19.6	46.4
Finger length [mm]	102.7	155
Finger spacing [mm]	25	66
Ratio to human hand	1:1	1.4:1
Number of drives	9	7
Number of fingers	5	3
Degrees of freedom	20	7
Dead weight [kg]	1.3	1.95
IP class [IP]		54
Power supply [V DC]	24	24
Rated current [A]		2
Max. current when gripping [A]	3	5
CAN		●
RS232		●
RS485	●	
EtherNet TCP / IP		●
Ambient conditions		
Clean	●	●
Slightly dirty		●
Tactile sensor system		
Tactile sensor system		●

	Lightweight Robot	
	Intelligent	
	LWA 4P Powerball Lightweight Arm	LWA 4D Dextrous Lightweight Arm
	 	
	<p>2014</p>   <p>LWA 4P for mains or battery operation</p>	
	<p>A lightweight arm with the world's best compact performance.</p> <p>The modular design allows flexibility.</p>	
Technical data		
Number of axes	6	
Max. payload [kg]	6	
Repeat accuracy [mm]	±0.15	
Position feedback	Pseudo-absolute position measuring	
Drives	Brushless servomotors with permanent magnet brake	
Pan-tilt unit flange	Flat tool changer with free lines and power supply	
Installation direction	Any	
Dead weight [kg]	15	
IP class [IP]	40	
Power supply	24 V DC / avg. 3 A / max. 14 A	
Interface	CANopen (CiA DS402:IEC61800-7-201)	
Axes	Speed with nominal load	Range
Axis 1	72°/s	±170°
Axis 2	72°/s	±170°
Axis 3	72°/s	±155.5°
Axis 4	72°/s	±170°
Axis 5	72°/s	±170°
Axis 6	72°/s	±170°
Axis 7		±170°
Grippers	WSG 50, PG-plus 70, MEG, SDH 2, 5-Finger-Hand	
Changer	FWS 115	
Robot control system	ROS node (ROS.org) or KEBA CP 242/A (KEBA.com)	

All inclusive!

SCHUNK customized electric Gripping Systems. Take Advantage of our Experience.

More than **10,000**
solutions implemented
speak for themselves.

Consistent and comprehensive project management is an important part of the SCHUNK philosophy. Our approach is systematic and individually adapted to your project; each step is traceable and documented.

The analysis of complex processes and the comprehensive analysis of components and products of our customers leads SCHUNK to develop effective and customized gripping systems.

The visualization of automated processes requires maximum precision – we use state-of-the-art technology for 2D and 3D visualizations and 3D simulations. Our components and configurations contain decisive performance potential for the cost effectiveness of your process chain. We exhaust this potential entirely for your benefit.



It will pay off!

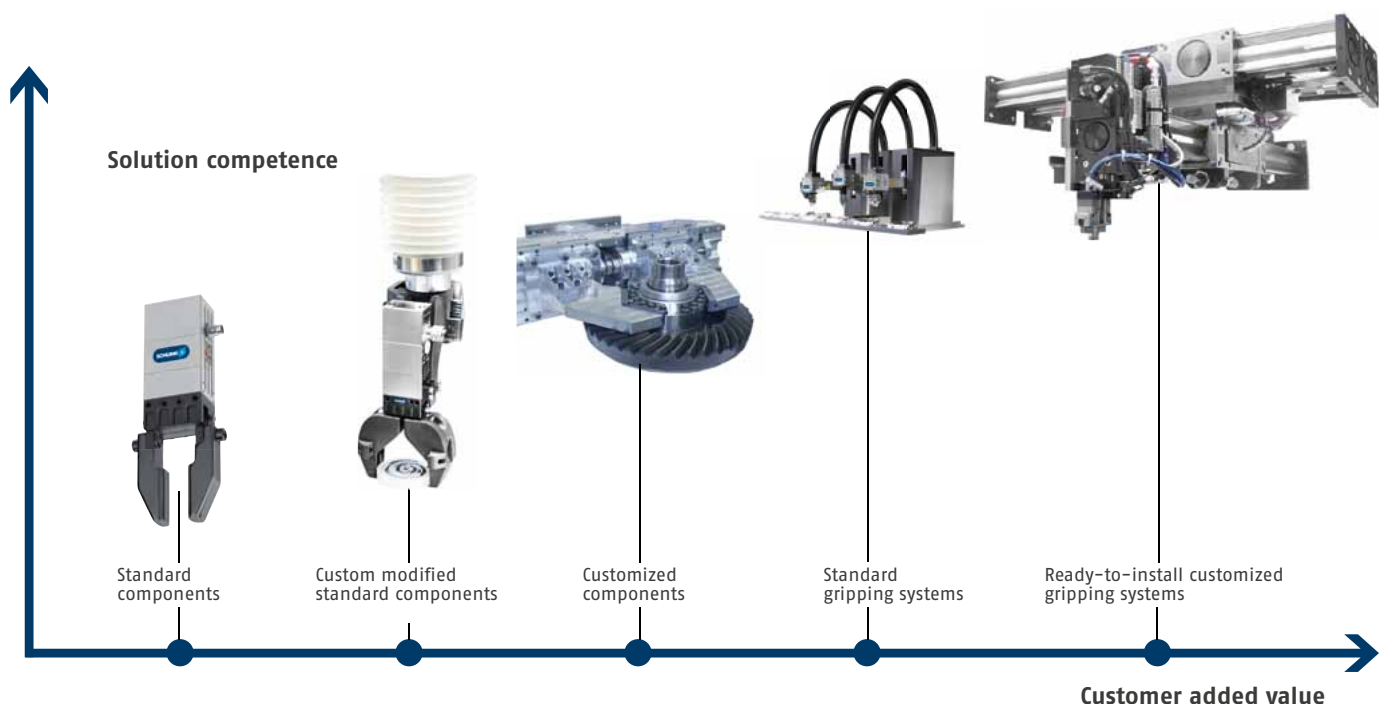
SCHUNK customized electric Gripping Systems. For your Workpiece, your Handling and your Industry.

1 personal contact for your solution from one single source.

For smooth communication a personal contact person is available to you throughout the entire project. As the interface between you and the people involved in the project, this contact ensures the effective exchange of information. From planning through continued support after completion of the project – SCHUNK guarantees a cooperative and efficient project flow.

Your advantage

- More than 30 years of experience with gripping systems
- More than 10,000 gripping systems implemented for diverse industries
- Modular system with optimally compatible standard components
- An absolutely exact fit due to standard interfaces
- Shorter project cycle times due to standardized systems
- Reliable process implementation and planning security without additional project costs
- Functional assemblies mounted or ready for use on request
- Time savings due to a perfect solution from a single source



Alternative, Adaptable, and Intelligent

SCHUNK Mechatronik³ is the strategy used by SCHUNK to present the most extensive mechatronic portfolio worldwide. Decades of experience in the implementation of customized mechatronic application solutions give you the certainty of receiving the most optimal and suitable mechatronic product for your solution. SCHUNK offers advanced and efficient solutions for virtually every application.

Machining Industry

Handling and assembly



Task

Economic automation of an intralogistic process from separation of parts (bin picking) to loading of the machine.

SCHUNK solution

Two SCHUNK LWA 4P lightweight arms execute handling of the components, transport of the products and bin picking. They function as mobile gripping systems in the respective area, without a higher level controller. A 3D camera system is used for identification of the parts. The first LWA 4P is mounted so it can move on a linear module and uses a SCHUNK electric parallel gripper PG-plus 70 for bin picking. The second mobile gripping system, in a mobile track-based solution, takes care of the machine loading. It provides the empty bins to fill, receives the full bins in the transfer station and transports them via an elevator to load the machine. The two mobile gripping systems interact only by identifying bins on their placing positions.

Packaging Industry

High-speed handling of packages



Task

Different small packages for sweets must be positioned by means of a high-speed solution.

SCHUNK solution

A flex picker with a SCHUNK electric small component gripper EGP picks up the packages from a magazine and places them on a SCHUNK electric linear module LDN. After transport, the flex picker stacks the packages, then changes to a SCHUNK pneumatic miniature gripper MPG-plus and repeats the cycle.

SCHUNK products



PG-plus 70
Intelligent electric gripper



LWA 4P
Lightweight arm



FWS
Changing system

SCHUNK products



EGP
Electric small component gripper



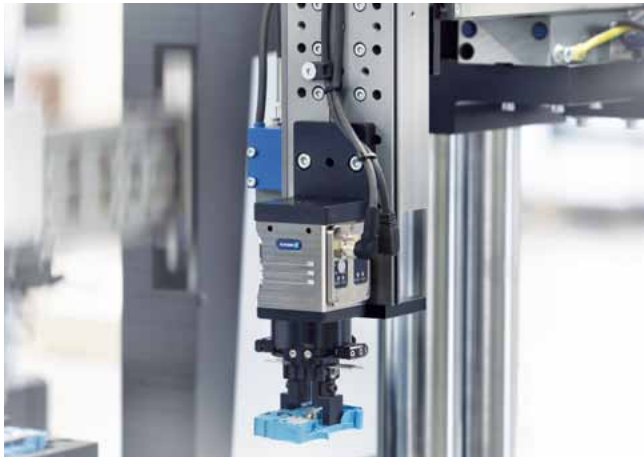
ERD
Miniature rotary module



DDF 2
Rotary feed-through

Plastics Industry

High-speed assembly with Pick & Place systems



Task

In the assembly process the workpiece must be fed quickly and reliably to the workpiece carrier in the linear transfer system. The workpieces must be transferred very quickly and some of them must be turned.

SCHUNK solution

For this high-speed application, in view of the required cycle time and adjustable gripping force, a SCHUNK Pick & Place unit is used with up to 110 picks per minute. The electric rotary gripper unit EGS is perfect for the requirement of gripping and turning the workpiece in a confined space. The SCHUNK electric linear module ELB is ideal for the linear movement.

SCHUNK products



EGS
Electric rotary gripping unit



PPU-E
SCHUNK pick & place unit



ELB
Linear module

Electrical Industry

Equipping and assembly of electronic components



Task

High-speed positioning and turning of electronic components in electronics assembly.

SCHUNK solution

The solution uses a SCHUNK RST-D indexing rotary table with a 90° pulse, a SCHUNK universal rotary unit SRU-mini with 180° turning and a SCHUNK electric miniature rotary module ERD, which can be programmed for endless turning.

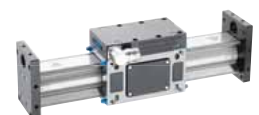
SCHUNK products



SWS
Quick-change system



EGP
Electric small component gripper



LDN
Linear module

SCHUNK Service



Competent and skilled personnel ensure optimal availability of your SCHUNK products and make sure that their value will be maintained.

Your advantage:

- Fast supply of original spare parts
- Reduction of down-times
- The complete spectrum of components from one source
- Quality and availability that can only be guaranteed by the original manufacturer
- 12-month warranty



Commissioning

- Professional assembly
- Fast and trouble-free



Inspection

- Inspection is carried out by skilled service engineers
- Avoiding unplanned failures of workholding and toolholding equipment



Maintenance

- Regular maintenance carried out by skilled service engineers
- Increasing and ensuring the availability of your workholding and toolholding equipment



Repairs

- Short down-times due to fast intervention of the SCHUNK service engineers
- Spare parts and accessories

Training

- Fast and practical training
- Efficient use of your SCHUNK products by training of the operating personnel
- The basis for proper machining of workpieces
- Ensures longevity of your SCHUNK products

Individual service – for better results

- Hotline to our inside technical consultants weekdays from 7 a.m. to 6 p.m.
- Project-oriented and on-site technical advice at your location
- Training on innovations and SCHUNK products – across the world in our local subsidiaries

Online service – for a fast overview

All information in digital form, clearly structured and up-to-date on our website at www.schunk.com

- List of contact persons
- Online product search based on product descriptions
- Product news and trends
- Data sheets
- Order forms for easy and convenient ordering
- Free download area for pages from our product catalogs and technical data, for software and calculation programs for your gripping and rotary modules
- Free 2-D / 3-D CAD design models, provided in a wide range of different CAD formats – for easy integration into your design!



No. 1

for precise gripping and
concentrated, safe holding



J. Lehmann

Jens Lehmann, German goalkeeper legend,
brand ambassador of SCHUNK, the family-
owned company since 2012, represents precise
gripping and concentrated, safe holding.
www.gb.schunk.com/Lehmann

852 minutes without a
goal against him in the
Champions League

681 minutes without a goal
against him in the national team

2 intercepted penalties
in the 2006 World Cup

1 headed goal as a goalie

0 defeats English Soccer Champion

and

More than **2,000,000**
sold precision toolholders

About **1,000,000**
delivered gripping modules

More than **100,000**
lathe chucks and stationary
workholding systems are in use
worldwide

More than **16,000,000**
sold standard chuck jaws

More than **75,000**
implemented hydraulic expansion
customer-specific solutions

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