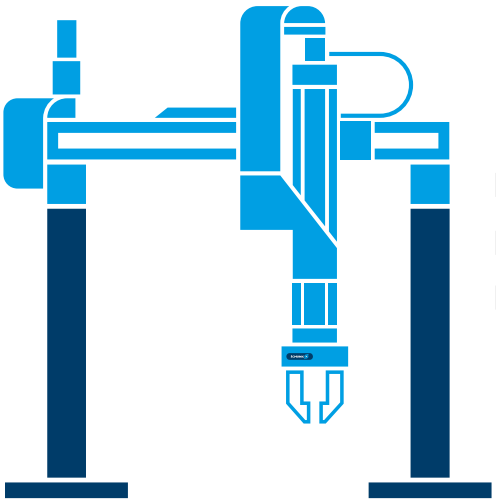
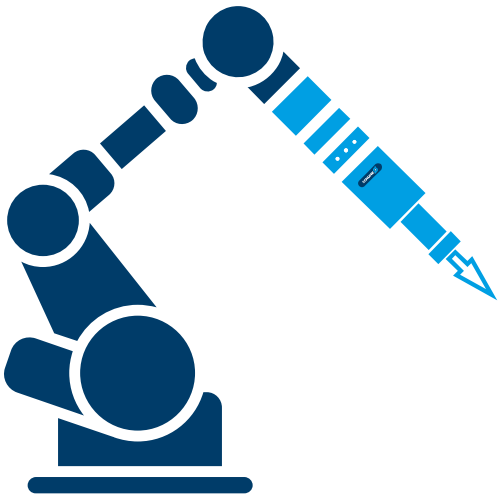
Automation with SCHUNK

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 source for 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 the 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-reliable manufacturing in automated handling processes.

Compensation units & collision protection

Force/torque sensors

Where precise results are needed, intelligent force/torque sensors are in trend and provide robots with the required sensitivity.

Force/torque sensors

Machining tools

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

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

Sheet 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

	Swivel units		Swivel head	Vane swivel unit
	SRM	**SRU-plus**	**SRH-plus**	**SFL**
				
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 vane 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	Eight 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 stroke for simple and fast start-up	Choice of end position adjustability: +3°/–3° (small) or +3°/–90° (large)	Media feed-through and drive connection via screw connection or hose-free direct connection possible	Fine adjustment of the swivel angle for sensitive adjustment of the end positions
Technical data				
Angle of rotation < 360° [°]	0 .. 180	0 .. 180	180	90 .. 180
Angle of rotation > 360° [°]				
Number of sizes	8	8	7	3
Torque [Nm]	0.45 .. 23.7	3 .. 115	3 .. 69.9	0.1 .. 3.6
Dead weight [kg]	0.252 .. 9.74	1.2 .. 26.5	2.1 .. 21.2	0.09 .. 0.71
Max. permissible mass moment of inertia [kgm²]	0.0007	32	2.6	0.005
Repeat accuracy [°]	0.03 .. 0.06	0.05	0.05	0.05
Protection class IP	40/65	67	67	52
Gripping force [N]				
Stroke per jaw [mm]				
Recommended workpiece weight [kg]				
Closing/opening time [s]				
Max. permissible finger length [mm]				
Options/Variants				
Center bore	●	●	●	
Pneumatic rotary feed-through	●	●	●	
Electric rotary feed-through	●	●	●	
Center position	●	●		
ATEX certified		●	●	
Gripping force maintenance device				
Monitoring options				
Inductive proximity switch	●	●	●	
Magnetic switch	●	●	●	●
Ambient conditions				
Clean	●	●	●	●
Easily contaminated	●	●	●	●
Extremely dirty	●	●	●	

● = fully supported

	Rotary indexing table	Swivel finger	Gripper swivel module with parallel gripper
RM-W	**RST-D**	**GFS**	**GSM-P**
			
Universal vane swivel unit with high torque up to 22 Nm for fast swivel tasks	Ring indexing unit for endless turning with a rotation angle up to 90° per cycle	Swivel finger for turning workpieces that are held by a gripper, for example, or it can also be used as a special swivel unit	Compact rotary gripping combination, consisting of a powerful rotor drive, an end-position and damping device and a 2-finger parallel gripper
For fast movement cycles		Multi-functional range of applications	For gripping and swiveling small to medium-sized workpieces in clean environments
Stop system with integrated fine adjustment of the swivel angle for sensitive adjustment of the end positions	Right, left or pendulum operation possible purely by control, absolute flexibility for your application	Integrated hydraulic end position dampers for rapid swiveling cycles	Space-saving since the rotary drive, end-position damping unit and gripper are merged in one compact module
Highest repeat accuracy due to direct drive of the rotary table with integrated rotor cylinder	Maximum damping power due to the use of hydraulic shock absorbers when using large rotary tables	End positions free from play for maximum positioning accuracy	Cost-saving since adapter plates are not needed and also due to the reduction in project planning and engineering design costs
Extremely compact design for minimal interfering contours	Large center part for simple attachment of further components	Idler unit without drive and damping as a cost-effective version of the second bearing position	Powerful for even greater masses and inertias due to the variant with hydraulic shock absorbers
90/180		90 .. 180	0 .. 180
	with cycle 22.5° .. 90°		
4	3	4	4
0.7 .. 22	3.1 .. 29.3	0.64 .. 10	0.3 .. 2.9
0.65 .. 8.3	1...8.3	0.55 .. 5	0.37 .. 1.51
0.27	0.6		
up to 0.036	0.04 .. 0.09°	0.07	0.02
40	50	54	30
			39 .. 162
			1.5 .. 10
			0.2 .. 0.61
			0.01 .. 0.05 / 0.01 .. 0.05
			64
	●		
	●		
			●
●	●		●
	●	●	●
●	●	●	●
●	●	●	

	Swivel units		
	ERM	**PRH**	**ERD**
			
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-value transducer and electric and pneumatic rotary feed-through
Advantages			
	Modular drive concept for adaptation of all common servomotors like Bosch and Siemens	Brushless DC servomotor for flexible use by controlled position, velocity, and torque	Absolute path measuring system for less programming effort and time saving when commissioning and in operation
	Easy system integration through use of a preferenced motor and already established field bus and safety technology	High torque, velocity, and precision for rapid acceleration and short cycle times with high precision	High dynamics for shorter cycle times resulting in high productivity
	Drive can be swiveled 90° for optimum adaptation to portals or robots	Complete integration of the entire control, regulating and power electronics for setting up a decentralized control system	Integrated air and electric feed-through for reliable electricity, gas and water supply of the grippers
Technische Daten			
Number of sizes	1	3	3
Torque [Nm]	75	0.75 .. 6.8	0.4 .. 1.2
Max. speed [RPM]	62.5	35 .. 117	600
Dead weight [kg]	15.5	0.75 .. 1.55	1.2 .. 1.8
Max. permissible mass moment of inertia [kgm²]	20	0.3	0.011
Repeat accuracy [°]	0.035	0.004	0.01
Gear ratio	48	30 .. 100	
Intermediate circuit/nominal voltage [V]	Motor-dependent	24	530
Nominal current [A]		1.3 .. 6.5	0.43 .. 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	65	54 .. 65	40 .. 54
Type of measuring system	Motor-dependent	Incremental	Absolute, measuring system HIPERFACE and DRIVE-CLiQ
Angle of rotation [°]	> 360°	> 360°	> 360°
Gripping force [N]/opening angle [Nm]			
Stroke/opening 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/variants			
Center bore	●	●	
Pneumatic rotary feed-through	●		●
Electric rotary feed-through			●
Brake	●		
Ambient conditions			
Clean	●	●	●
Easily contaminated	●	●	●
Extremely dirty	●	●	

● = highly suitable/fully supported * = Additional controllers available upon request

			Gruooer swivel module with parallel gripper
	ERS	**ERT**	**EGS**
			
	Electric universal rotary unit with torque motor and angle of rotation > 360° as well as optional holding brake rotary feed-through and IP54	Flat electric universal rotary unit with torque motor and angle of rotation > 360°, protection class IP40 and optional electric holding brake	Electric 2-finger parallel gripper swivel module with smoothly running base jaw guidance on roller bearings
	Integrated torque motor for high torque and flexible use by controlled position, velocity and torque	Integrated torque motor for high torque and flexible use by controlled position, velocity and torque	Control via digital I/O for easy commissioning and rapid integration into existing systems
	Large center hole for feeding through cables and hoses	Extremely flat design for minimal interfering contours and use in confined spaces	Virtually no wear parts for high machine availability and low operating costs
	Compact design for minimal interfering contours and use in confined spaces	Absolute path measuring system for less programming effort and time saving when commissioning and in operation	Low space requirement thanks to the compact merging of rotary drive and gripper
	3	4	2
	2.5 .. 10	1.4 .. 32	0.04 ..0.11
	140 .. 2300	150 .. 600	
	2.7 .. 10.9	2.4 .. 23.8	0.45 .. 1.2
	0.6	5.53	0.00018
	up to 0.01	up to 0.01	1
	560	560	24
	1.2 .. 1.8	0.96 .. 4.4	1.6
		25 .. 92	
	8	0	
	1	0	
	40	40 .. 54	30
	Incremental	Absolute, measuring systems HIPERFACE®, HIPERFACE DSL® and DRIVE-CLiQ	
	> 360°	> 360°	30 .. 270
			15 .. 140
			3 .. 6
			0 .. 0.55
			0.03 .. 0.22
			50
	Integrated	Integrated	Integrated
	External	External	Integrated
	Bosch Rexroth, Siemens*	Bosch Rexroth, Siemens*	
	●	●	
	●		
	●		
	●	●	
	●	●	●
		●	

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 varinats

Pneumatic linear axes

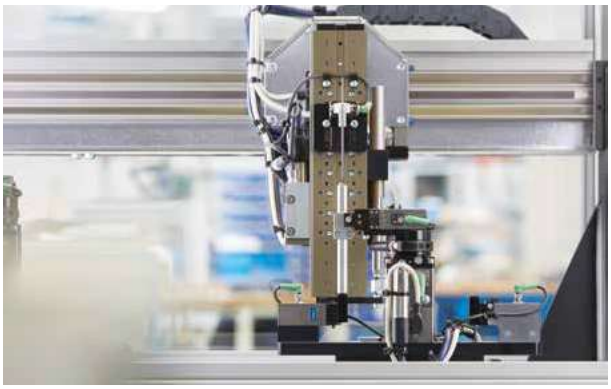
Electric linear axes

Axis systems

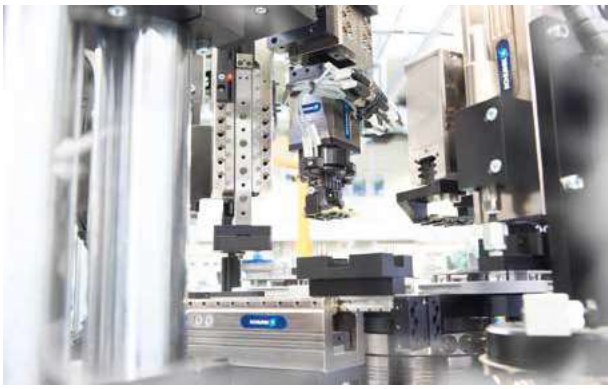
Application examples

Depaneling of circuit boards

Automatic change of grinding wheels



Assembly automation



Handling of electronic components

Handling of gears

Assembly of gears

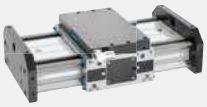
	Pneumatic linear modules	
	Universal linear module	
	LM	**KLM**
		
Description		
	Linear module with pneumatic drive and pre-loaded crossed roller bearings, free from play in prism rails	Linear module with pneumatic drive and ball bushing guide
Advantages		
	Closed slide construction for high rigidity	Double bearing of the guide shafts in the ball bushings for high load absorption and repeat accuracy < 0.015 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	4
Number of pistons	1	1
Repeat accuracy [mm]	up to 0.01	up to 0.02
Nominal stroke [mm]	0 .. 450	0 .. 300
Max. driving force [N]	753	753
Dead weight [kg]	0.44 .. 15.81	0.5 .. 13.2
Adjustable end positions	Yes	Yes
Max. end positions 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 dustproof version
Drive type		
Piston rod cylinders	●	●
Rodless cylinder		
Ambient conditions		
Clean	●	●
Easily contaminated		●
Extremely dirty		○

● = fully supported ○ = technically possible
+ = medium-sized selection ++ = large selection +++ = very large selection

	Compact slide	Stroke module	Gantry axis
	CLM	HLM	PMP
			
	Linear module with optimized length, with pneumatic drive and pre-loaded crossed roller bearings, free from play	Stroke module with optimized length, with pneumatic drive and pre-loaded crossed roller bearings, free from play	Linear axis with integrated pneumatic drive cylinder and pretensioned recirculating ball-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 serration ensures high precision and surface quality of the base jaws as well as an increased service life
	6	4	2
	1	1	1
	up to 0.01	up to 0.01	0.04
	0 .. 150	0 .. 150	0 .. 3700
	482	482	250
	0.07 .. 5.32	0.5 .. 5.64	3 .. 44.91
	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 rod lock	Optionally available with rod lock	Optionally available with bellow, several intermediate positions and cable track
	●	●	
			●
	●	●	●
			●

	Electric linear modules			
	Linear direct axes			
	Compact linear modules		Universal linear module	Stroke module
	ELP	ELB	SLD	LDK
				
Description				
	Electric linear module with direct drive and integrated controller, backlash-free, pre-loaded roller guides	Short-stroke axis with linear direct drive and cross roller guides	The dynamic, versatile axis is perfectly tailored to your application	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	Integrated motor and measuring system in the axis minimize interfering contours and space requirements	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
	Speed of retraction and extension can be adjusted in ten increments for high flexibility in the cycle time	Can be upgraded with absolute path measuring system for less programming effort and time saving when commissioning and in operation	High load ratings for high load capacity and service life	No mechanical play between the drive elements for fast response and high positioning accuracy
	For almost wear-free use and a long service life	High dynamics for shorter cycle times resulting in high productivity	High dynamics for shorter cycle times resulting in high productivity	Low vibrations and high holding force for the shortest positioning times and process stability
Technical data				
Number of sizes	3	1	2	2
Repeat accuracy [mm]	±0.01	±0.01	±0.01	±0.01
Max. useful stroke [mm]	200	125	5500	200
Max. driving force [N]	104	150	2400	500
Max. speed [m/s]	Auto-learn function	4	5	4
Max. acceleration [m/s²]	Auto-learn function	100	100	40
Type of measuring system		Absolute or incremental	Absolut or incremental	Absolute or incremental
Type of guide	Junction roller guide	Junction roller guide	Profiled rail guide	Roller guide
Variant variety	++	+++	+++	++
Required maintenance	Maintenance-free	Cleaning of the magnetic tracks, lubrication of the guide	Cleaning of the magnetic paths, lubricating the guidance	Cleaning of the magnetic tracks
Remark	Stop position axis with mechanically adjustable stop positions, optionally available with load balance	Freely programmable, optionally available with rod lock, brake or load balance	UL certification by default, freely programmable, optimal with additional slides, brake, cover strip, lubrication adapter, limit switch, reference switch or drag chain	Freely programmable, optionally available with brake, limit switch, reference switch, cable track, supported profile
Drive type				
Spindle drive				
Toothed belt drive				
Rack and pinion drive				
Direct drive (linear motor)	●	●	●	●
Motor & controller				
Motor	Integrated	Integrated	Integrated	Integrated
Drive controller	Integrated	Bosch Rexroth, Siemens*	Bosch Rexroth, Siemens*	Bosch Rexroth, Siemens*
Interfaces	Digtal I/O	Sercos III, EtherNet/IP, EtherCAT, PROFINET, PROFIBUS DP, PowerLink, CANopen	Multi-Ethernet (Sercos III, PROFINET IO, EtherNet/IP, EtherCAT), PROFIBUS	Multi-Ethernet (Sercos III, PROFINET IO, EtherNet/IP, EtherCAT), PROFIBUS
Ambient conditions				
Clean	●	●	●	●
Easily contaminated			●	

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

Universal linear modules			Flat linear module
LDN	**LDM**	**LDT**	**LDL**
			
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 triple X-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
2	2	2	2
±0.01	±0.01	±0.01	±0.01
2700	2700	2700	3800
500	1000	1500	500
4	4	4	4
40	40	40	40
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 IO, EtherNet/IP, EtherCAT), PROFIBUS	Multi-Ethernet (Sercos III, PROFINET IO, EtherNet/IP, EtherCAT), PROFIBUS	Multi-Ethernet (Sercos III, PROFINET IO, EtherNet/IP, EtherCAT), PROFIBUS	Multi-Ethernet (Sercos III, PROFINET IO, EtherNet/IP, EtherCAT), PROFIBUS
●	●	●	●

	Electric linear modules	
	Mechanical axes	
	Linear table	**Universal linear module**
	Alpha	**Beta**
		
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 belt or spindle drive for optimum drive for the application
	Extremely flat design for minimal interfering contours	Various guidance options for optimum adaptation to the application
Technical data		
Number of sizes	4	12
Repeat accuracy [mm]	±0.03	0.03 bzw. 0.08**
Max. useful stroke [mm]	2540	7720
Max. driving force [N]	18000	18000**
Max. speed [m/s]	2.5	8
Max. acceleration [m/s²]	20	60
Type of measuring system	Motor-dependent	Motor-dependent
Type of guide	Double-profiled rail guide	Double-profiled rail guide
Variant variety	++	+++
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 customer-specific motor, limit switch and reference switch	Freely programmable, optionally available with customer-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
Ambient conditions		
Clean	●	●
Easily contaminated	●	●

● = fully supported
+ = medium selection ++ = large selection +++ = extremely large selection
* = Additional controllers available upon request ** = Depending on the drive type

	Flat linear module	Universal linear module
	Delta	**Gamma**
		
	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 interfering contours	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
	5	3
	up to ±0.03**	up to ±0.05
	7700	7685
	12000**	4000
	5	5
	60	60
	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 tape	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
	PPU-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 sizes	3
Horizontal stroke in Y [mm]	0 .. 280
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 .. 35
Max. cycle time/picks per minute	110
Control	External controller
Protection class IP	40
Type of guide	Profiled rail guide
Number of possible combinations	
Variant variety	++
Motor & controller	
Motor	Integrated
Drive controller	Bosch Rexroth, Siemens*
Options/Variants	
Rod lock	●
Center position	
Integrated valve	●
Additional C-axis	●
Drive package	
Ambient conditions	
Clean	●
Easily contaminated	

● = fully supported
\+ = medium selection ++ = large selection +++ = very large selection
* = Additional controllers available upon request

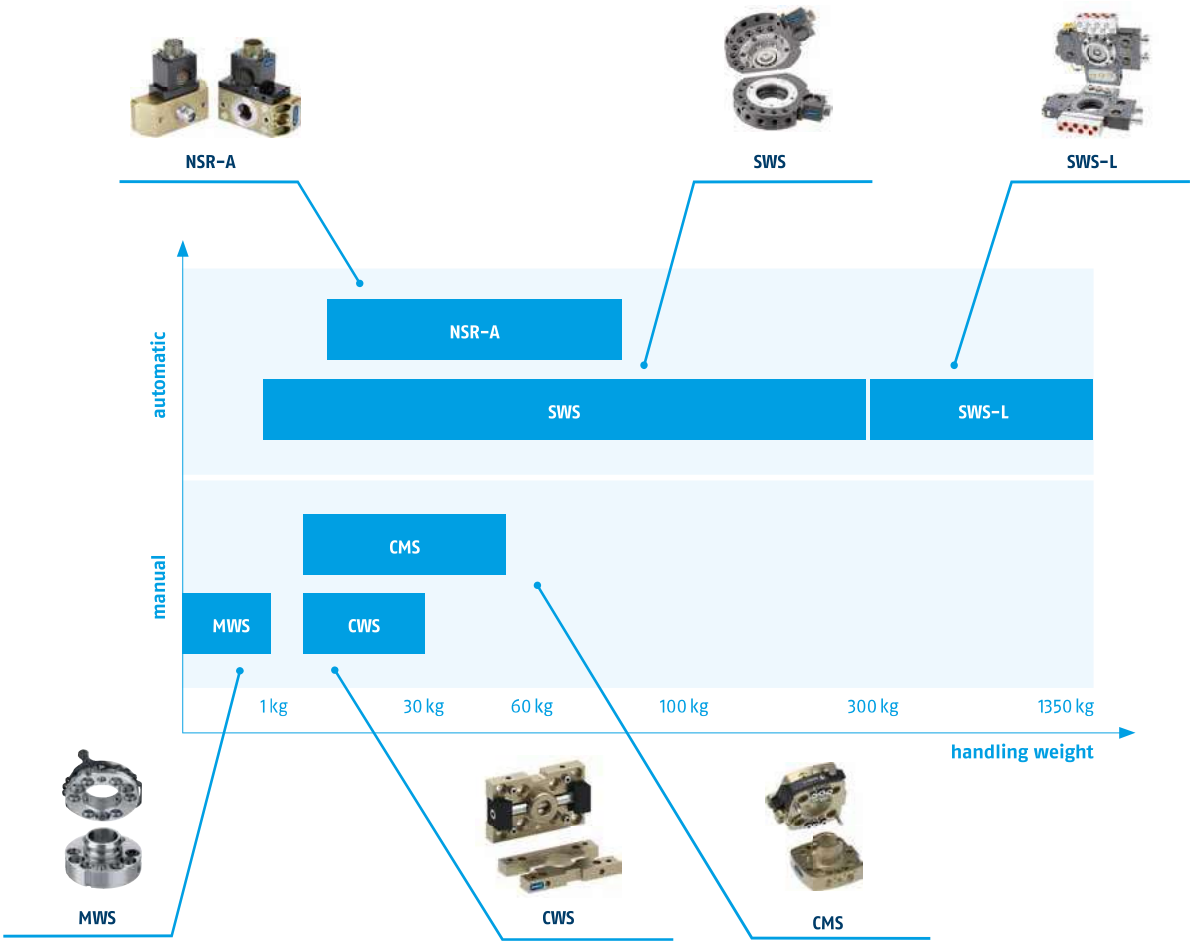
Axis systems	
Line gantry LPE	**Room gantry**
	
Line gantry with a horizontal, electric toothed belt axis, and a vertical, electric spindle axis	Room gantry with two electric toothed belt axes in a horizontal direction, and one electric spindle axis in a vertical direction
Areas of application: To easily 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
	500 .. 1500
100 .. 500	100 .. 500
0 – 20	0 – 20
	±0.08
±0.08	±0.08
±0.03	±0.03
Controller on external motor	Controller on external motor
40	40
Profiled rail guide	Profiled rail guide
90	150
+	+
Adaptable	Adaptable
Bosch Rexroth, Siemens*	Bosch Rexroth, 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 load-bearing capacity of the change system
- Suitable storage racks for all sizes

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

Manual change systems

CMS
- Compact, reliable and intuitive system for convenient manual change without tools
- Perfectly suited for 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

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, particulary 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		
	SWS	**SWS-L**	**NSR-A**
			
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 1350 kg	Pneumatic pallet change system with patented locking and 4000 Nm maximum moments
Advantages			
	Complete series with 14 sizes for optimum selection of sizes and a wide range of applications	Patented self-sustaining locking system for a reliable connection between the quick-change head and the quick-change adapter	Saved time due to automatic pallet change
	Patented self-sustaining locking system for a reliable connection between the quick-change head and the quick-change adapter	Manual emergency unlocking possible, no counter-forces from springs	Extremely compact design for space-saving changing and direct coupling on the machine table
	Manual emergency unlocking possible, no counter-forces from springs	All functional components made of hardened steel for high load-bearing capacity of the change system	Form-fit, patented locking system with self-locking and high locking force
Technical data			
Number of sizes	15	4	2
Recommended handling weight [kg]	0 .. 300	0 .. 1350	
Moment load Mxy [Nm]	2.8 .. 7170	7600 .. 13500	75 .. 600
Moment load Mz [Nm]	3.45 .. 3800	4060 .. 16200	200 .. 1600
Repeat accuracy [mm]	up to 0.01	0.01	0.02
Dead weight [kg]	0.05 .. 9.3	7.8 .. 28	0.4 .. 1.6
Screwed flange on the robot	Adapter plates/direct mounting ISO-9409	Adapter plates/direct mounting ISO-9409	Adapter plates ISO-9409
Product features			
Manual actuation			
Pneumatic actuation	●	●	●
Locking monitoring possible	●	●	●
Tool presence monitoring possible	●	●	●
Pneumatic energy transmission	●	●	●
Electric energy transmission	●	●	●
Ambient conditions			
Clean	●	●	●
Easily contaminated	●	●	●
High-temperature and stainless steel version on request	●	●	●

● = fully supported

	Manual change systems		
	CMS	**CWS**	**MWS**
			
	Convenient manual change system with integrated air feed-through, locking interrogation and comprehensive complementary portfolio	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 optimal size selection and a broad range of applications	High productivity through fast manual gripper changes, especially with small and medium-sized lot sizes	Extremely flat design for minimal interfering contours
	Integrated air feed-throughs for secure energy supply of the handling modules, and tools with pneumatic and vacuum, for radial or axial use	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
	Basic version without integrated air feed-through and sensory option available for simple and cost-sensitive applications	Series with five sizes for optimum selection of sizes and a wide range of applications	Central bore for feed-through of parts, camera, laser beams, etc.
	6	5	2
	0 .. 58	0 .. 28	0 .. 1
	22.5 .. 478	20 .. 160	0.5 .. 1
	15 .. 465	10 .. 200	0.2 .. 0.75
	0.02	0.01	0.1
	0.25 .. 4.8	0.07 .. 0.445	0.007 .. 0.016
	Direct mounting ISO-9409	Adapter plates	Adapter plates
	●	●	●
	●		
	●		
	●	●	●
	●		●
	●	●	●
	●		
	●		

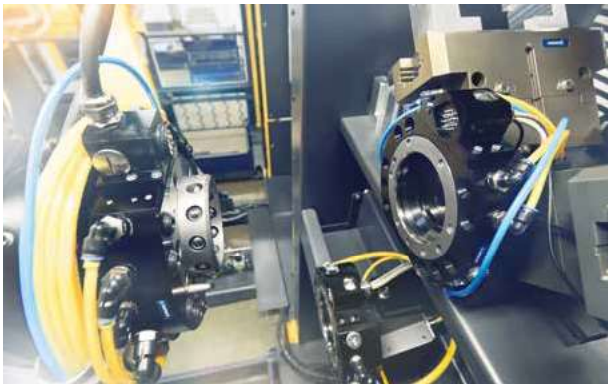
Feed-through modules

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 SWS, SWS-L, CMS 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, CMS 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

Signals

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-L 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-L with adapter plates.

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

Modules from the SWO-L-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.

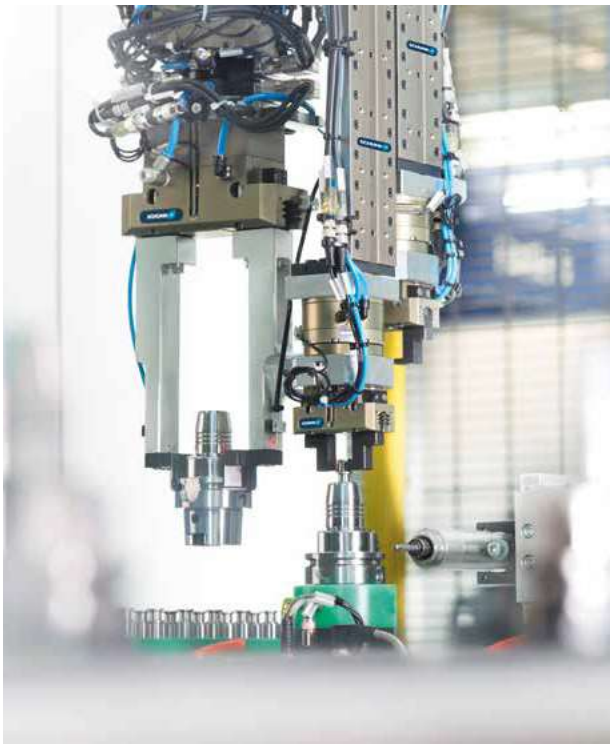
Reliable execution of electrical signals and pneumatics

- **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

Product packaging labeling



Toolholder balancing

	Rotary feed-through	Stationary rotary feed-through
	DDF 2	**DDF-SE**
		
Description		
	For feeding through electric signals and pneumatics for use on robots even when they are endlessly 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 pattern for simple assembly on most types of robots without additional adapter plates	Standardized shaft end for easy assembly of gears
	Complete series with 12 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]	0.7 .. 25	6 .. 20
Max. tensile force F_z [N]	240 .. 9000	2000 .. 4000
Max. contact force F_z [N]	2000 .. 18000	
Moments M_x, M_y [Nm]	15 .. 550	50 .. 180
Moments M_z [Nm]	10 .. 400	
Pneumatic energy transmissions	2 .. 4	4 .. 6
Electrical energy transmission	4 .. 10	6 .. 8
Dead weight [kg]	0.35 .. 14.2	3.3 .. 9
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

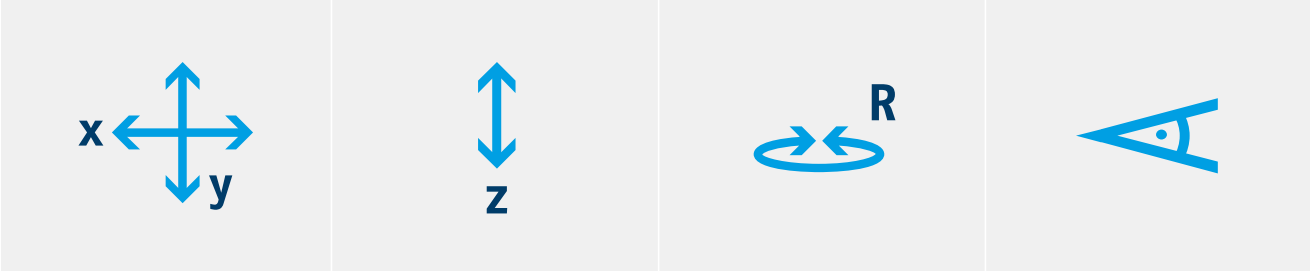
Compensation units

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

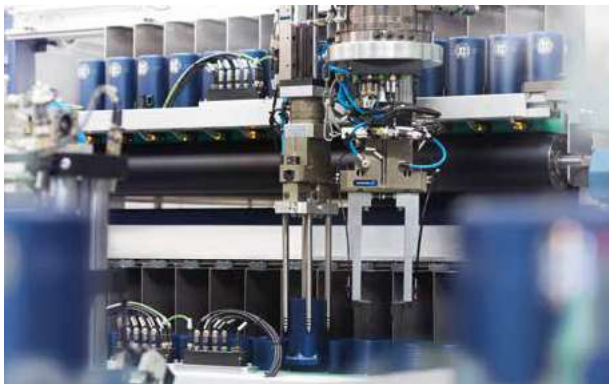
- **Seven different series –**
  optimally adapted for your application
- **Units for tolerance compensation**
  available in all six degrees of freedom
- **Centric reset for a defined position of the components**
  after the compensation process
- **Various sensor options for increased process reliability**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

Compensation in every direction



XY compensation | Z-axis compliance | Rotational compensation | Angular compensation

Application examples



Pick&Place of product packaging

Loading a lathe

Raw material handling

Handling of motor blocks

	Compensation units		
	AGE-U	**AGE-XY**	**AGE-Z 2**
	 	 	 
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 in both 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			
Number of sizes	1	3	3
Compensation stroke XY [mm]	±2.7	±2.5 .. ±4	
Compensation stroke Z	6.1		8 .. 10
Rotatory compensation [°]	±8	±12 .. ±16	
Spring force [N]			20 .. 120
Piston force Z at 6 bar in extended position [N]			500 .. 1500
Piston force Z at 6 bar in retracted position [N]			280 .. 1450
Dead weight [kg]	0.6	0.46 .. 1.5	0.55 .. 1.7
Locking force at 6 bar [N]		235 .. 580	
Horizontal payload [kg]	0 .. 5	0 .. 10	
Vertical payload [kg]		0 .. 15	0 .. 12
Repeat accuracy [mm]		0.1	0.02
Locking force F_z [N]		235 .. 580	280 .. 1500
Max. tensile force F_z [N]		300 .. 750	200 .. 500
Max. contact force F_d [N]		1700 .. 3200	800 .. 1500
Moment load capacity M_x, M_y [Nm]	6.8	16 .. 30	10 .. 30
Twist torque M_z [Nm]	3.4	3.5 .. 9	20 .. 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 proximity switch	●	●	●
Ambient conditions			
Clean	●	●	●
Easily contaminated	●		
High-temperature version on request		●	●

● = fully supported

			Tolerance compensation units
	AGE-S	**AGE-F**	**TCU**
			
	Compensation unit with XY and Z-axis compliance with up to 12 mm compensation path	Compensation unit with XY compensation and integrated spring return for a handling weight of up to 32 kg	For compensation of smaller position deviations with up to 3° maximum deflection for assembly and handling applications
	Three compensation directions in one unit, compact design for minimal heights	Spring return in three spring stiffnesses for a defined centric position at a repeat accuracy of 0.02 mm	Compensation of workpiece-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
	Centric locking for rigid switching of the unit in a defined centric position	Direct assembly of grippers means there is no need for additional adapter plates	Direct assembly of grippers means there is no need for additional adapter plates
	Pneumatic position memory for eccentric locking in deflected position	Junction roller guide for smooth compensation at low compensation forces	Compact design, low height and weight
	4	4	8
	±4 .. ±12	±1.5 .. ±5	
	10 .. 14		
			1 .. 1.5
	240 .. 1100	1.5 .. 150	
	800 .. 3000		
	2.6 .. 29.5	0.1 .. 3.1	0.1 .. 2.1
	800 .. 2700		30 .. 800
	0 .. 100	0 .. 32	
	0 .. 160		
	0.1	0.01	up to 0.02
	800 .. 2700		30 .. 800
	110 .. 2000	100 .. 2800	
	500 .. 4000	200 .. 12000	500 .. 6200
	30 .. 500	3.5 .. 50	5 .. 120
	30 .. 250	6 .. 150	15 .. 160
			±1 .. 2
			±1
			±1.2 .. 2
	●		●
	●		
	●		
	●	●	●
	●	●	●
	●		●
	●		

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 offer an effective instrument for process-reliable production, and for 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 24 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
	ISO adapter plates 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	6 .. 2000
Triggering force F_d [N]	500 .. 7000	440 .. 14000
Axial deflection [mm]	9.5 .. 12	5.1 .. 16
Angle deflection [°]	4 .. 12	8 .. 13
Rotatory deflection [°]	45 .. 360	20
Repeat accuracy [mm]	up to ±0.02	±0.025
Operating pressure range [bar]	0.5 .. 6.0	1.4 .. 6.2
Dead weight [kg]	0.4 .. 7.0	0.24 .. 11.7
Product features		
Pneumatic actuation	●	●
Built-in spring optionally available		●
Ambient conditions		
Clean	●	●
Easily contaminated		●
Humid		●

● = fully supported

Force/torque sensors

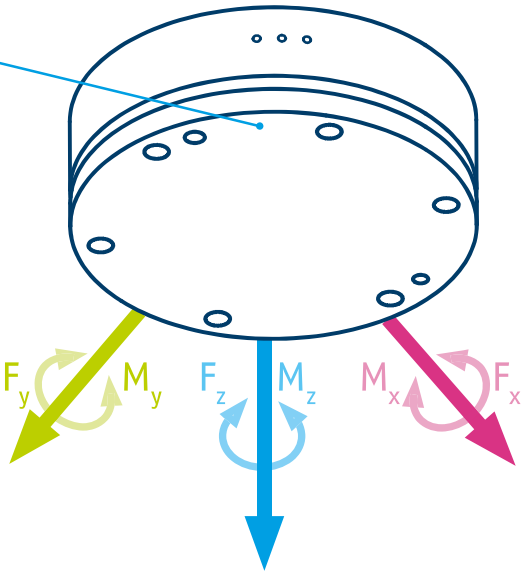
Where precise results are needed, force/torque sensors are in trend and provide robots with the required sensitivity. The sensors precisely detect the occurring process forces and transmit them to the control unit. This allows for highly precise correction of the robot path. The result are constant forces,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

Haptic measurements of vehicle components

	6-axis force/torque sensors	
	FT-AXIA	**FTN**
		
Description		
	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, inserting, and research and development	Universally applicable in robotic applications such as grinding, quality assurance, joining, haptics, medicine, and research and development
Advantages		
	Compact design due to space-saving set-up with integrated electronics	Wide range of options with up to three different ranges of measurement per size
	Up to two calibrations are available to ensure maximum flexibility in the process	Easy integration via Ethernet/IP (optional Profinet) as well as possible access via web server for easy configuration
	Plug & Work directly compatible with KUKA and Universal Robots via software module	
Technical data		
Number of sizes	3	17
Calibration	SI-75-4 .. SI-4000-300	SI-12-0.12 .. SI-40000-6000
Evaluation electronics	Integrated	NET-Box
Weight of sensor [kg]	0.3 ... 1.9	0.01 .. 47
Range of measurement F_x F_y [N]	±75 .. ± 4000	±12 .. ±40000
Range of measurement F_z [N]	± 235 .. ± 6000	±17 .. ±88000
Range of measurement M_x M_y [Nm]	± 4 .. ± 300	0.12 .. ±6000
Range of measurement M_z [Nm]	± 4 .. ± 300	0.12 .. ±6000
Resolution F_x F_y [N]	0.04 .. 1.67	0.003 .. 6.25
Resolution F_z [N]	0.04 .. 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		●
IP60		●
IP64	●	
IP65		●
IP67	●	
IP68		●

● = fully supported

	FTE	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
	14	17
	SI-12-0.12 .. SI-16000-2000	SI-12-0.12 .. SI-40000-6000
	ECAT Interface box (Nano/Mini) or integrated (from Gamma)	DAQ card (available externally)
	0.01 .. 31.8	0.01 .. 47
	±12 .. ±16000	±12 .. ±40000
	±17 .. ±32000	±17 .. ±88000
	0.12 .. ±2000	±12 .. ±6000
	0.12 .. ±2000	±12 .. ±6000
	0.003 .. 4	0.003 .. 6.25
	0.003 .. 8	0.003 .. 16.7
	0.00001 .. 0.5	0.00001 .. 1.5
	0.00001 .. 0.5	0.00001 .. 0.75
	●	●
	●	●
	●	●
	●	●

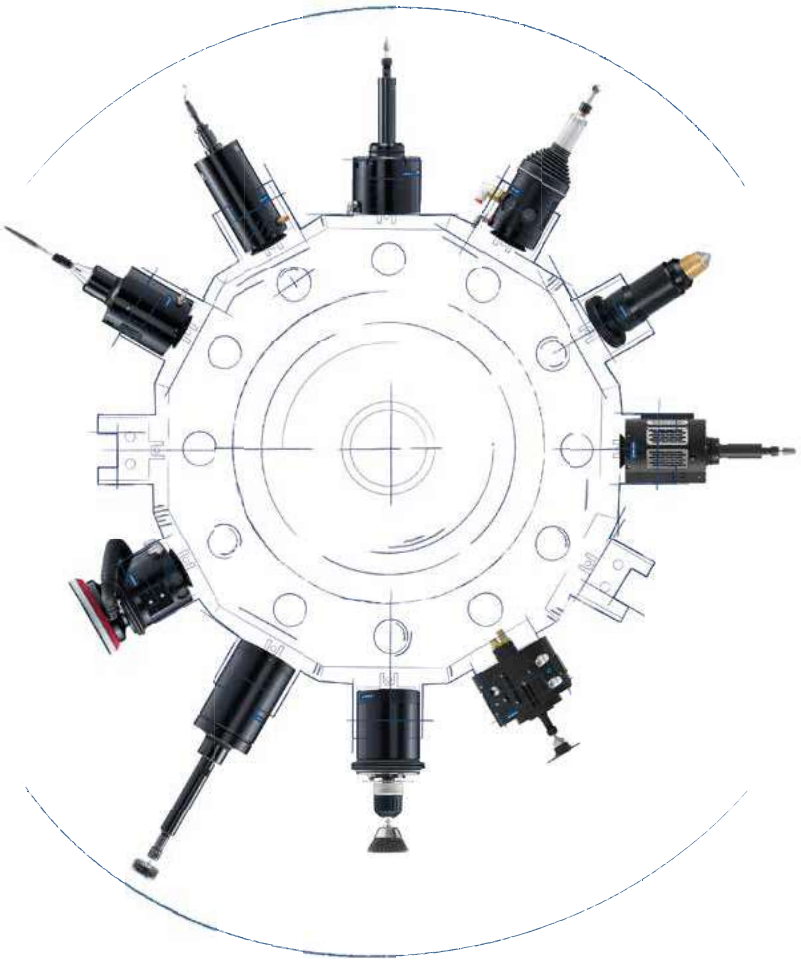
R·EMENDO Machining tools

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**

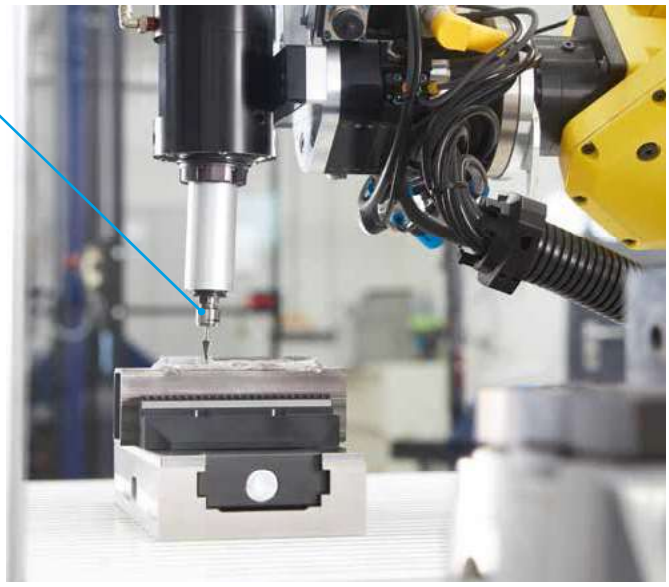
Deburring



Grinding and polishing

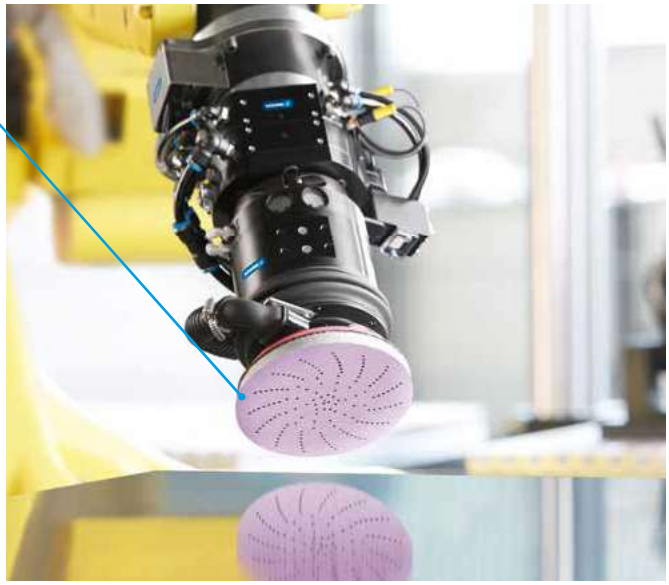
Deburring

One of the classic finishing operations in the metal-working 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.



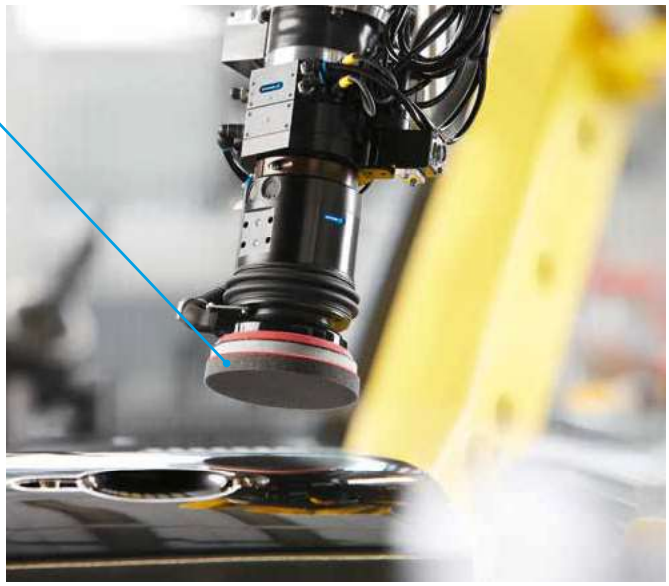
Grinding

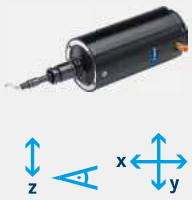
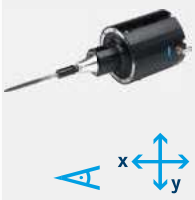
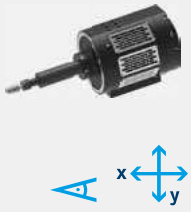
Grinding workpieces before polishing and finishing the surfaces is physically demanding and time-consuming. SCHUNK tools for automated grinding are ideally suited for uniform material removal from small and large-surface workpieces.



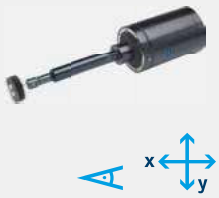
Polishing

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.



	Deburring tools		Deburring spindles		
	CDB	**CRT**	**RCV**	**RCE**	**FDB**
					
Description					
	Flexible tool for deburring with the robot and proven deburring tools with radial compensation force adjustable up to 76 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	Flexible deburring spindle for use with robots operating at up to 65,000 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	Flexible 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 stationary unit	Flexible use on robot arms or as a stationary unit	Variable speed control for the flexible machining of different workpieces with different tools and only one electric 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 piston 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
Actuation					
	Pneumatic	Pneumatic	Pneumatic	Electric	Pneumatic
Technical data					
Compensation	Axial & radial	Radial	Radial	Radial	Radial
Number of versions	2	1	2	2	7
Power [W]			250 .. 490	230 .. 710	150 .. 1040
Compensation path [mm]	Axial 8 Radial ±6	±8	±7.1 .. ±8.3	± 4.6 .. ±7.1	±5.. ±9
Min./max. compensation force [N]	Radial = 25/76 Axial = 13/67	18/62	9/54 .. 7/53	1.8/8.5 .. 24.5/80	3.1/6.7 .. 28.9/86.7
Idle speed [RPM]		12000	30000 .. 40000	13000 .. 50000	25000 .. 65000
Toolholder mounting	Blade holder for deburring tools Type B, C, D, E, F	File holders Ø 36 mm	Collet ER-11 Ø 6, 8 mm	Collet ER-11 Ø 6, 8 mm	collet Ø 36 mm
Dead weight [kg]	1.04 .. 1.09	3.08	1.71 .. 3.36	1.7 .. 5.35	1.1 .. 3.45

● = fully supported

	Polishing spindles		Orbital sander tool	Compensation unit
FDB-AC	**MFT**	**MFT-R**	**AOV**	**PCFC**
				
Flexible deburring spindle for use with robots	Flexible polishing spindle for use with robots operating at up to 5,600 RPM	Pneumatic polishing spindle with radial compensation, perfect for polishing and brushing workpieces operating at up to 5,600 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
Axially flexible spindle in compact format gets into hard-to-reach places	Flexible 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 conical cutter ensures uncomplicated use, even for sensitive tasks	Rotating piston air engine with high torque	Rotating piston air engine with high torque	Optional connection 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	3
250	390	390		
±4.1	±7.5	±7.1	12.7	12
1 .. 25	9.7 .. 45	9.4/70	Extended = 13.3/66.7 Retracted = 6.7/33.3	Extended = 85/240 Retracted = 18/49
25000	5600	5600	10000	
	Quick-action chuck up to Ø 9.5 mm	Collet DA Ø 6-8 mm	Velcro fastener Ø 125-150 mm	
0.51	3.3	4.42	2.68	3.54 .. 3.63