

Superior Clamping and Gripping



SCHUNK Rotary Modules

Product Overview





Superior Clamping and Gripping

Jens Lehmann stands for precise gripping, and 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









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 SCHUNK grippers, 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 2,500 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

G. Sauce Oc

SCHUNK Rotary and Swivel Units. Cutting-edge technology for rotary Movements.

With its rotary module product range, SCHUNK offers a complete range of compact rotary and swivel units for every handling task and for quick and easy integration. Hose-free media feed-throughs ensure process reliability and minimize interfering contours.

The monitoring options using sensors and wide range of mounting options for all modules can improve the flexibility of any automated production line. This high technology "Made in Germany" is only possible through our constant innovation.

Strong arguments in favor of SCHUNK rotary modules:

- Pneumatic and electric modules
- Over 600 components
- · Quick and easy integration
- · Locking intermediate position
- · Steplessly adjustable end positions





Pneumatic Rotary Modules

Suitable for universal use in normal, clean or slightly dirty environments, or even in clean rooms. Suitable for assembly automation and the handling of both small components and heavy loads.

- · Short swiveling times of min. 0.16 seconds
- End position adjustability 0° to 183°



Electric Rotary Modules

Process-reliable electric rotary modules with or without a rotary feed-through.

- · Freely adjustable angle of rotation
- Configurable and adjustable process parameters, such as speed and torque



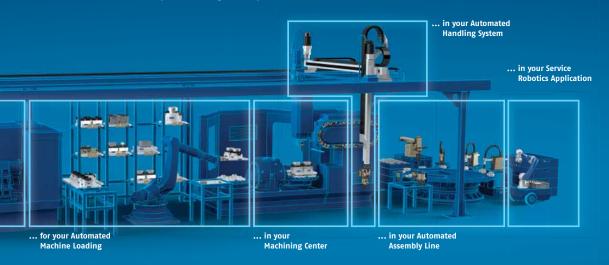
SRU-plus



ERS with DDF

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

With superior components, find potentials in your machine, where you would least expect them. SCHUNK Synergy – the perfectly harmonized interplay between clamping technology and gripping systems – turns our customers into productivity champions.





Sensor Systems and Accessories

With around 150 sensor variants and a wide range of high-quality accessory components, SCHUNK offers the greatest variety on the market.

- · Sense positions
- Monitor workpieces
- · Minimize energy consumption



Customized Rotary Modules

More than 5,000 customized solutions implemented

- Special designs for extreme environments
- · For optimal production automation and robot equipment





SCHUNK Rotary Modules. Pioneering Technology and Performance. For every Application – pneumatic or electric.

Pneumatic SCHUNK Rotary Modules

We offer a comprehensive portfolio of pneumatic rotary modules distinguished by high product quality and precision, with extensive accessories and query systems. The dimensions of the optimally differentiated series cover the full range of swiveling applications.

Pneumatics

Pneumatic SCHUNK rotary modules are characterized by their easy commissioning, high torques, high mass moment of inertia, short swiveling times and long service life.



Mechatronic SCHUNK Rotary Modules

Alternative - Adaptable - Intelligent

Mechatronics³ is the strategy that has made SCHUNK the first manufacturer to bundle together a comprehensive portfolio of electric rotary modules. Its three pillars – Alternative, Adaptable and Intelligent – combine to form a unique modular system. This brings together our decades of experience in the field of pneumatics and our pioneering success in the field of mechatronics, and offers proven, efficient automation solutions for almost any mechatronic requirement.

Mechatronics

Alternative Solution of the Property of the Pr

Profit from the 3 main features of our leading modular system:

Alternative

Like-for-like pneumatic replacements with no change in power.

Familiar pneumatics functions can be replicated with 100% accuracy using SCHUNK mechatronic components.

Adaptable

Driven by conventional servomotors.A motor adapter allows you to connect

conventional servomotors to your SCHUNK components.

Intelligent

Fully integrated motor and control technology.

The controller is either integrated into the SCHUNK component to save space or installed in the control cabinet.



	Rotor	Rotary Actuators	
	SFL	RM-W	SRU-mini
	SCHUNK D	COMB	
Technical data			
Angle of rotation < 360° [°]	90 180	90/180	0180
Angle of rotation > 360° [°]			
Number of sizes	3	4	4
Torque [Nm]	0.1 3.6	0.7 22	0.16 1.15
Weight [kg]	0.09 0.71	0.65 8.3	0.15 0.65
Max. permissible mass moment of inertia [kgm²]	0.0005	0.27	0.01
Repeat accuracy [°]	0.05	0.036 0.046	0.07
Protection class IP	52	40	65
Description	Rotary actuator with a high torque for easy rotation tasks up to 180°	Rotor with high torque for fast rotation tasks	Light and fast flat rotary actuator with multiple options such as fluid feed-through, hydraulic damping, hydraulic-elastomer damping and a pneumatic center position
Options/Versions			
Center bore			•
Pneumatic rotary feed-through			•
Electrical rotary feed-through			
Center position			•
ATEX-certified			
Monitoring options			
Inductive proximity switches		•	
Magnetic switches	•		•
Field of application			
	The optimal solution for easy rotation tasks	For fast movement cycles	For fast movement cycles
Ambient conditions			
Clean	•	•	•
Slightly dirty	•	•	•
Extremely dirty			

⁼ fully supported

		Swivel Heads	Swivel Heads		
RM-F	SRU-plus	SRH-plus	SKE		
		400			
0190	0180	180	90		
6	0	7	4		
0.051.9	8 3 115	3 69.9	0.4 9		
0.046 1.6	1.2 26.5	2.1 21.2	0.4 9		
0.040 1.0	32	2.6	0.15 1.95		
0.025	52	2.0			
0.082 0.15	0.05	0.05	0.03		
40	67	67	30		
Light and fast rotary actuat	or Universal unit for pneumatic and turning movements	swivel SRH-plus universal swivel fast loading and unloadin with integrated fluid and feed-through	g tasks, drive		
•	•	•			
	•	•			
	•	•			
•	•				
	•	•			
•	•	•	•		
•	•	•			
For fast movement cycles	For universal use with any s	 Recommended for loading unloading machine tools 	ng and • For light external loads		
	movement	unioaunig macinie tools			
•	•	•	•		
		•	•		
•		•			
	•	•			

Rotary Finger	Rotary Indexing Tables	Lifting/Rotary Unit
GFS GFS	RST-D	DRL
00 100		001400
90 180	22.5	90/180
	22.5 90	
4	3	2
0.64 10	3.1 29.3	2.26 3.7
0.55 5	1 8.3	2.7 5
	0.6	0.03
0.07	0.04 0.09	±0.01 (Z)/0.02 (rot.)
54	50	
Rotary finger for turning workpieces that are held by a gripper or can also be used as a special rotary actuator	Ring indexing unit for endless turning with a rotation angle up to 90° per cycle	Compact lifting/rotary unit consisting of a powerful short-stroke cylinder and a rack and pinion swivel actuator
	•	
		•
•		•
For universal use	For fast movement cycles	 For quick conversion and simultaneous rotation of workpieces in high-speed assembly lines.
•	•	•
•	•	

SRU-plus Universal Swivel Unit

Sturdy. Quick. Powerful.

Universal pneumatic unit for rotary and turning movements in both clean and dirty areas.



Your benefits:

- Clearly graduated series with uniform torque increase – the correct size is available for delivery for many applications.
- Angle of rotation either 90° or 180°, complete freedom in choice of angle of rotation; special angles available on request
- Choice of end position adjustability: +3°/-3° (small) or +3°/-90° (large)
- Choice of pneumatic or locked center position; locked center positions can be unlocked under load. The two types of center position always allow further rotation in either direction.
- Fluid feed-through suitable for gases, liquids, and vacuum - no need for troublesome hoses

- Electrical rotary feed-through for continuous fail-safe feed-through of sensor and actuator signals; bus feed-through available on request
- Choice of electronic magnetic switches or inductive proximity switches for absolute variability in position sensing
- Replaceable screw-in guide sleeves (bushing) allow easy maintenance and quick replacement after millions of cycles.
- Series extends downwards with SRU miniseries for a broad range of applications



www.gb.schunk.com/SRU-plus

Control Concepts for SCHUNK Components

MECHATRONIK³

Standard mechatronic SCHUNK components offer the greatest flexibility when it comes to connecting customized control concepts.

A variety of designs are available, depending on your requirements:

- Direct pneumatic set and actuators
- 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

	Optionally available from SCHUNK:			
Customer controller	Communication interface**	Drive controller	Standard cable set	Transducer interface*
	D 1/0			
The controller serves	Profibus	SCHUNK	Power cable	HIPERFACE
as the interface with the application and is	CAN	SIEMENS	Sensor cable	SSI
specified by the customer. SIEMENS	ProfiNet	Rexroth	I/O cable	DRIVE-CLIQ
Rexroth	Ether CAT	BECKHOFF		EnDat 2.2
BECKHOFF	DeviceNet	B&R		
B&R	SERCOS Interfaces	Schneider Electric		
Schneider Electric	EtherNet/IP	Lenze		HIPERFACE
Lenze		More on request		SSI
More on request				
	Profibus CAN	Modular SCHUNK components with integrated drive and drive controller		
			an)	

^{*} Dependent on drive ** Dependent on drive controller

Control Concepts for SCHUNK Components

MECHATRONIK³

Matching cables also optionally available. A variety of transducer and fieldbus interfaces make the concepts compatible with any controller.



Drive

Mechatronic SCHUNK components





Direct pneumatic set and actuators

I**ternative** ke-for-like pneumatic placements with no nange in power.

Standard servomotors

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

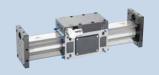






Adaptable Driven by conventional

Modular SCHUNK components with integrated drive and external drive controller

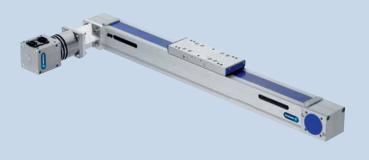








Intelligent Controller external, motor integrated





Intelligent
Motor and controller fully integrated

	Rotary Actuators			
	Adaptable	Intelligent		
	ERM	PR 2	PRH	
	2609			
	360°, turns endlessly			
Technical data				
Number of sizes	1	3	3	
Torque [Nm]	75	3.6 88	0.75 6.8	
Speed [rpm]	62.5	25 78	35 117	
Weight [kg]	15.5	1.7 5.6	0.75 1.55	
Max. permissible mass moment of inertia [kgm²]	20	9.5	0.3	
Repeat accuracy [°]	0.035	0.03 0.08	0.004	
Gear ratio	48	51 161	30 100	
Intermediate circuit voltage [V]	Motor-dependent	24	24	
Current [A]		4.4 10	1.3 6.5	
Diameter of center bore	22			
Number of electrical feed-throughs	0	0	0	
Number of pneumatic feed-throughs	8	0	0	
Protection class IP	65	40	54 65	
Measuring system type	Motor-dependent	Incremental	Incremental	
Description	Electric rotary module with adapt- able servomotor, angle of rotation > 360°, center bore and optional feed-throughs	Servo-electric rotary actuator with angle of rotation > 360°, precision gear and integrated electronics	Servo-electric miniature rotary actua- tor with angle of rotation > 360°, center bore and precision gear	
Motor & Controller				
Motor	Adaptable	Integrated	Integrated	
Controller	External	Integrated	Integrated	
Controller type	Motor-dependent			
Options/Versions				
Center bore	•		•	
Pneumatic rotary feed-through	•			
Electrical rotary feed-through				
Brake	•	•		
Field of application				
	 Universal, incredibly versatile rotary module Suitable for use as a component in a handling or positioning system 	 Universal-use, highly versatile rotary actuator As a component in a handling or positioning system As an axis for light-weight arms in industrial or service robotics 	Universal-use, highly versatile rotary actuator	
Ambient conditions				
Clean	•	•	•	
Slightly dirty	•	•	•	
Extremely dirty	•		•	

⁼ fully supported

Drives

ERD	ERS	PDU 2
3	3	3
0.4 1.2	2.5 10	3.6 88
600	200 2300	2578
1.2 1.8	2.710.9	1.75.6
0.0012	0.6	
0.01	0.01 0.04	0.03 0.08
		51 161
560	48/560	24
0.43 1.6	1.2 6.3	15
4	8	0
2	1	0
40 54	40 54	40
Absolute (Hiperface)	Incremental	Incremental
Powerful torque motor with absolute-value transduc- er and electric and pneumatic rotary feed-throughs	Electric rotary actuator with torque motor and angle of rotation > 360° in optional protection class IP54 plus optional rotary feed-through and holding brake	Servo-electric drive with angle of rotation > 360°, precision gear and integrated electronics
Integrated	Integrated	Integrated
External	External	Integrated
Bosch/Siemens	Bosch/Siemens	
	•	
•	•	
•	•	
	•	•
For all applications with unusual requirements in terms of repeat accuracy, speed of rotation, acceleration and service life	 Universal-use, highly versatile rotary actuator For applications with unusual requirements in terms of maximum mass moment of inertia, compactness and reliability As a component in a handling or positioning system 	Servo drive for linear, rotary or CNC axes Axis motor for measuring and testing technology applications
•	•	•
•	•	•

	2-Axis Modules
PSM 2	PW
3 0.15 0.9	2 12 23/2 12
0.15 0.9 1570 4320	12 23/2 12
1.5 3.9	1.8/3.4
0.2	0.03 0.08
	121 161/101 121
24	24
0	0
0 40	0 40
Incremental	Incremental
Servo-electric drive with angle of rotation > 360° and integrated electronics	Servo-electric rotary pan-tilt actua- tor with precision gear and inte- grated electronics
Integrated	Integrated
Integrated	Integrated
Servo drive for linear, rotary or CNC axes Axis motor for measuring and testing technology applications	 Universal-use, highly versatile rotary pan-tilt actuator As a component in a handling or positioning system for cameras or laser scanners Can be used as a robot wrist module
•	•

ERS Rotary Module with DDF Rotary Feed-through

Compact, dynamic and uniquely versatile

The SCHUNK ERS electric rotary module offers the option of a pneumatic and electrical rotary feed-through. This module is driven by a torque motor with a quill and features a rotary feed-through, making it one of the most compact electric rotary modules with an integrated pneumatic and electrical feed-through on the market. As standard, the rotary feed-through has more than eight signal feed-throughs and a pneumatic air duct.



Your benefits:

- Extremely low-profile design
- · Dynamically stable and torsion-proof
- Pneumatic and electrical feed-throughs
- Endless turning at up to 250 rpm
- Standard transducer interface
- Protection class IP54 optional
- Great process versatility due to free choice of 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 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 high-performance drives to the SCHUNK mechatronic product range. All the control and power electronics are fully integrated into the modules. This saves an external controller and minimizes the cabling expenditure and error susceptibility.



112



PR 2



P3M 2

Your benefits:

- Uniform control concept and standard connecting elements
- · Service interface: USB
- Profibus or CAN bus fieldbus interfaces
- Harmonic Drive® gears reduction levels per size (PR 2/PDU 2)
- · 4-LED status display
- Brushless DC servomotor
- Integrated holding brake
- · 2 digital inputs
- Angle of rotation > 360° for a variety of applications
- The integration of the control and power electronics means there is no need for additional external controllers or additional cabling



www.gb.schunk.com/high-performance-rotary-modules

	Position Mmonitoring				
	MMS	MMS MMS-PI 1 IN RMS			
Switching behavior					
1 digital point	•	•	•	•	
Ambient conditions					
Clean	•	•	•	•	
Slightly dirty	•	•	•	•	
Extremely dirty				•	
Technical data					
Number of sizes	3	1	11	2	
Working Principle	Magnetic	Magnetic	Inductive	Reed	
IP protection class	67	67	67	67	
Supply voltage [V DC]	24	24	24	24	
Supply current [mA]	< 200	< 50	< 200	< 10	
PNP version	•	•	•	•	
NPN version	•	•	•	•	
LED display	•	•	•	•	
Measurement switching distance [mm]	Not adjustable	Not adjustable	1 2.5	Not adjustable	
Closer	•	•	•	•	
0pener			•		
Connection type					
Number of wires	3	3	3	3	
Cable version	•	•	•	•	
Connection plug M8 version	•	•	•	•	
Connection plug M12 version	•				

= fully supported

SST Sensor Tester

Flexible. Productive. Simple.

The SST sensor tester enables the rapid testing and adjustment of inductive sensors, magnetic switches and reed contacts. The necessary power is supplied by a 9 V compound battery. Used for sensor testing and adjustment of the switching point (sensor calibration)



Your benefits:

- Visual and acoustic signaling makes functional checks and adjustment easy
- For 2 and 3-conductor DC technology, enabling the connection of reed contacts, capacitive and inductive sensors
- Tests possible without dismantling sensors for short waiting times
- Connections for M8 and M12 or open cable ends possible, suitable for all SCHUNK sensors
- PNP and NPN sensors can be tested
- Operating voltage with 9 V compound battery for portable use
- Automatic shut-off to increase battery life

SCHUNK Rotary Module Accessories

Sensor Systems

MMS PI1 Programmable Magnetic Switch

Programmable. Precise. Easy assembly.

Magnetic switches are used for monitoring the status of automation components. When the component approaches the magnet, a signal is triggered when a certain threshold is crossed. No contact is required.

Magnetic switches from SCHUNK detect magnetic fields without contact or wear, and are resistant to vibration, dust, and humidity. Magnetic switches are installed in slots, and thus do not create any additional interfering contours.

IN Inductive Proximity Switch

Reliable. Contactless. Easy assembly.

Inductive proximity switches are used to scan the current status of automation components. SCHUNK supplies them in two versions: IN (sensor with 30 cm molded cable and cable connector) and INK (sensor with 2 m supply cable and wire strands for connecting).

Inductive sensors detect metals without contact, and are resistant to vibration, dust and water.





Your benefits:

- Individual switching point no interfering contours. The magnetic switch can be fully inserted, so there are no interfering contours caused by protruding sensors
- Programming in a matter of seconds due to non-contact adjustment of the switching points and hysteresis
- Adjustable hysteresis for precise position monitoring even at very low strokes
- Ideal for confined spaces due to wired teaching (optional)
- Version with LED display for checking the switching condition directly at the sensor
- Version with plug connector for fast and easy extension cable replacement
- Highly flexible PUR cable for a long service life and resistance against many chemicals
- Installed in the sensor slot to save space and allow easy and fast assembly

Your benefits:

- Bracket mounting for easy and fast attachment
- Version with LED display for checking the switching condition directly at the sensor
- Version with plug connector for fast and easy extension cable replacement
- Highly flexible PUR cable for a long service life and resistance against many chemicals
- Proximity switch can be installed flush to reduce interfering contours in the application



All inclusive!

Customized SCHUNK Gripping Systems. Profit from our Experience.

SCHUNK has implemented more than 12,000 solutions, a figure that speaks for itself.

Consistent and comprehensive project management is an important part of the SCHUNK philosophy.

Our approach is systematic and tailored to your individual project – each step is traceable and documented.

At SCHUNK, our analysis of complex processes and holistic approach to our customers' parts and products allows us to develop effective, customized gripping systems.

Maximum precision is required in order to present automation processes visually – so we use the latest work technology, from 2D and 3D presentations to 3D simulation. Our components and configurations carry the decisive performance potential that can make your process chain more efficient. We unlock this potential. And you benefit from every last drop.

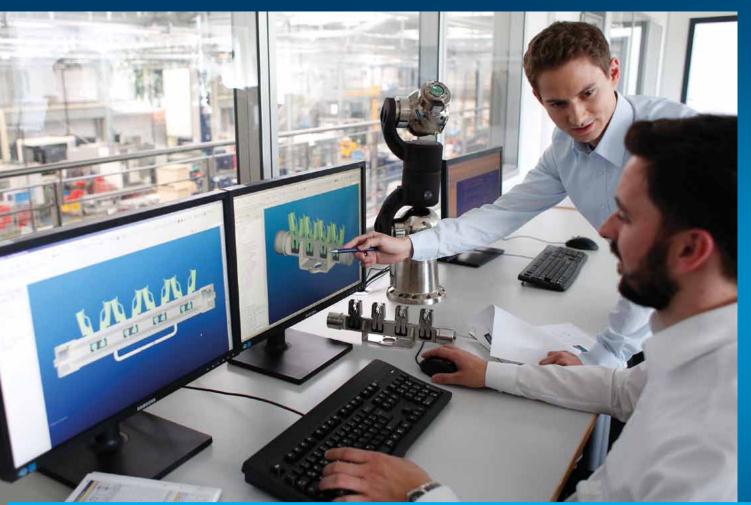
Advice

Project planning

Engineering

Implementation

Service



It will pay off for you!

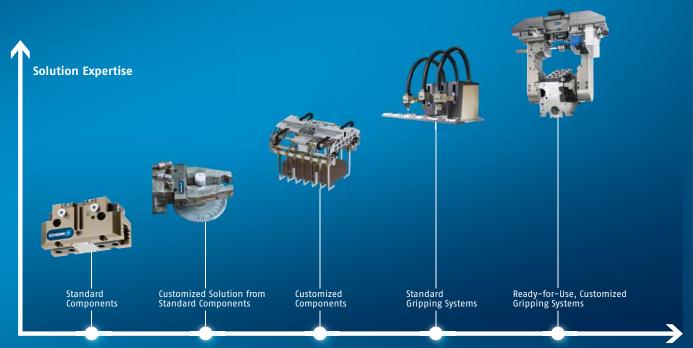
From standard Components to Customized Gripping Systems.

1 personal contact for your single-source solution.

In order to allow smooth communication, a personal contact is made available to you from the start of the project until its completion. Your contact acts as the liaison between you and those involved in the project, and ensures that information is exchanged smoothly. From planning to continued support after the conclusion of the project, SCHUNK ensures that your project will be handled cooperatively and efficiently.

Your Advantage

- Over 30 years of experience with gripping systems
- Over 12,000 gripping systems implemented for a wide range of industries
- Modular kit with perfectly coordinated standard components
- · Perfect fit due to standardized interfaces
- · Shorter project lead times due to standardized systems
- Reliable implementation processes and planning security without extra project costs
- · Functional assemblies fitted on request or ready for use
- Time savings due to the perfect solution electric or pneumatic – from a single source



Customer Value

Customized SCHUNK Solutions

Rotary Modules





Connecting Rod Handling

Automotive Industry

Task

To save costs using multiple handling of connecting rod parts during production.

SCHUNK solution

A custom-developed connecting rod gripper based on a SCHUNK PGN-plus pneumatic universal gripper with special gripper fingers is mounted on a SCHUNK ERM rotary module. Due to the rotary module with adaptable drive, this solution can use the same drive as the axis system. This creates a universal drive concept.

Automated Handling

Automotive Industry

Task

To move connecting rods using a transfer system.

SCHUNK solution

8 SCHUNK lifting/rotary and gripper units are mounted on a horizontal SCHUNK linear axis with 8 slides to move the workpieces on in a cycle.

SCHUNK products



ERM Rotary Module



PGN-plus Universal Gripper

SCHUNK products



SRU-plus Swivel Unit



X-axis (horizontal) 2 x B140-ZSS toothed-belt Axis, Linear Module



PZN-plus Centric Gripper



Z-axis (vertical) 8 x SLE 32-125 pneumatic Lifting Unit, Linear Module Lifting Unit





Handling of Motor Blocks

Metal Cutting Industry

Tasl

To find an efficient and reliable means of transporting aluminum motor block blanks.

SCHUNK solution

Using a SCHUNK PGN-plus 380 2-finger heavy-load gripper combined with a SCHUNK SRU-plus rotary module to reliably transport aluminum motor block blanks.

SCHUNK products



SRU-plusSwivel Unit



Universal Gripper

Handling of Worm Gear Shafts

Metal Cutting Industry

Task

To remove worm gear shafts in a machining center and store them temporarily before they are machined further.

SCHUNK solution

A customized SCHUNK gripping system solution comprising two PGN-plus pneumatic, 2-finger, parallel grippers mounted on a SCHUNK SRH-plus rotary actuator, which take it in turns to take a ground, finished part from a clamping device and replace it with a blank. Finished parts are placed on a pallet; blanks are picked up from the pallet.

SCHUNK products



SRH-plus Swivel Head



PGN-plus Universal Gripper



X-axis (horizontal) 2 x B140-ZSS toothed-belt Axis, 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



Initial operation

- 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!



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