

Portfolio Expansion Mechatronic Grippers



EZU Mechatronic 3-finger centric gripper

2024-09-02
Benjamin Schell

Hand in hand for tomorrow

EZU – Mechatronic 3-finger centric gripper

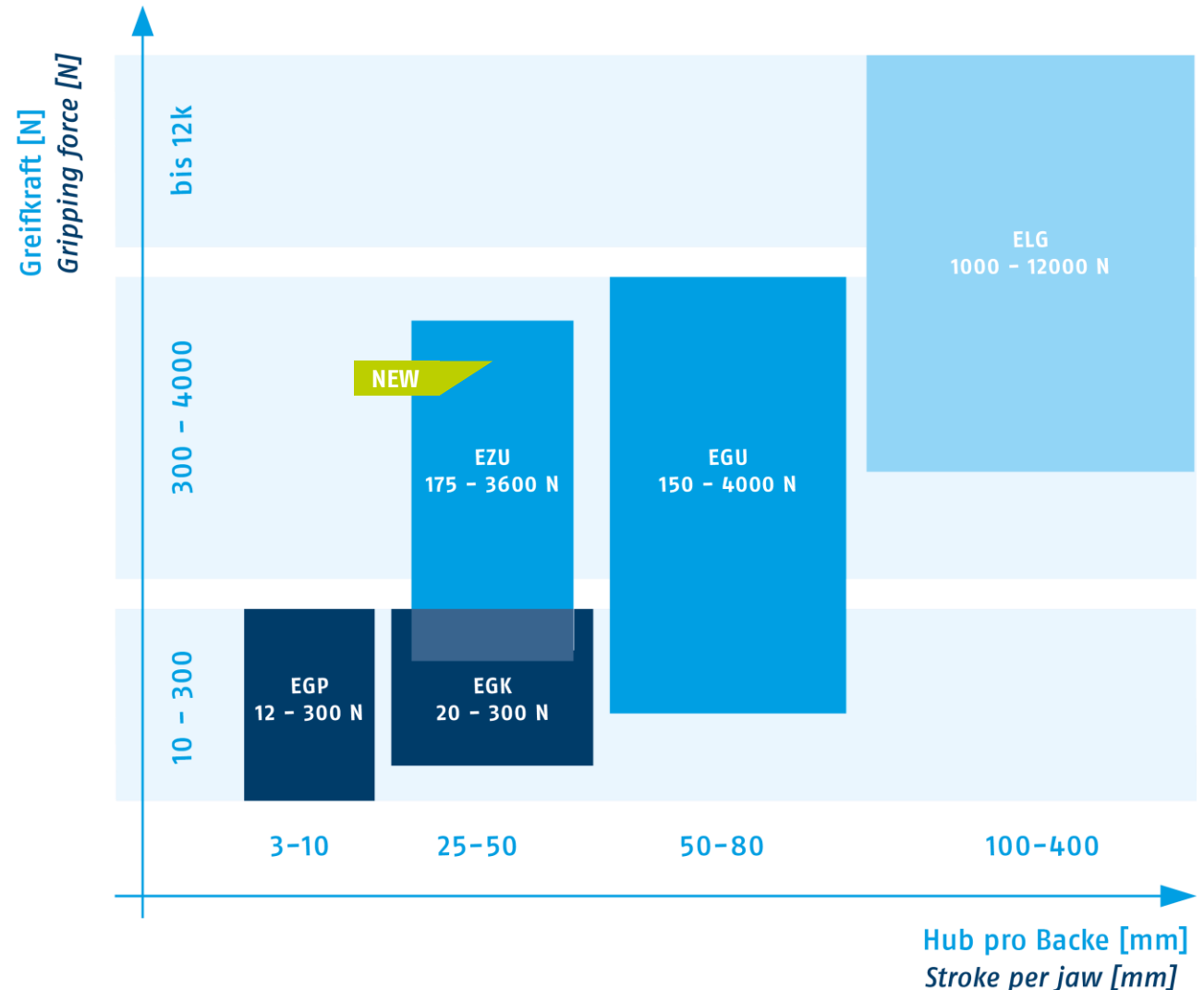


NEW

First public presentation at IMTS (09.09) in Chicago and AMB (10.09) in Stuttgart
Official sales launch on November 7, 2024!

Portfolio Mechatronic Grippers

- **Lean Portfolio** with a few series that are optimally matched to **specific applications** in terms of gripping force and stroke
- Focus on **economic efficiency**, leveraging of **synergy effects**, focus on **core requirements** of target applications
- A high level of **standardization** and a **common electronics and software platform** to **reduce our costs** and ensure the same **user experience** (EGU, EZU, EGK, EGP2, ...)
- Special grippers: Co-act EGP-C, EMH, EGM, SVH
- R&D projects: EGP2 (ongoing), PGN+E successor (not started)



EZU is 100% based on the EGU

What is identical?

- External dimensions of the basic housing, screw connection (note that EZU is slightly higher and longer screws are needed), electrical interface, communication interfaces, functionality, ecosystem of digital tools & services (plugins, function blocks and software)

Where are the differences to the EGU?

- Guide housing, finger interface, technical data (especially stroke, gripping forces are similar)
- Only three sizes instead of four

Advantages from a customers perspective

- The recognition value creates trust, the use between different sizes or variants is easier, existing adapter designs can be reused, the possible field of applications gets larger

Advantages for SCHUNK

- Shorter time-to-market, cost effects through multiple use of parts such as motor, brake, encoder, electronics, etc.



Target applications



Flexible workpiece automation

In workpiece automation, raw parts are taken out of an external storage unit, and loaded into the machine tool's clamping device with the help of a handling device. After machining, the finished and semi-finished part can be removed from the clamping device and stored in the storage unit.

Added value EGU und EZU:

- Handling a high workpiece variance
- Long unattended machine running times can be achieved.
- Fast loading and unloading times thanks to automation that is perfectly adapted to the workpiece and the process.
- Can also be used in unfavorable ambient conditions.

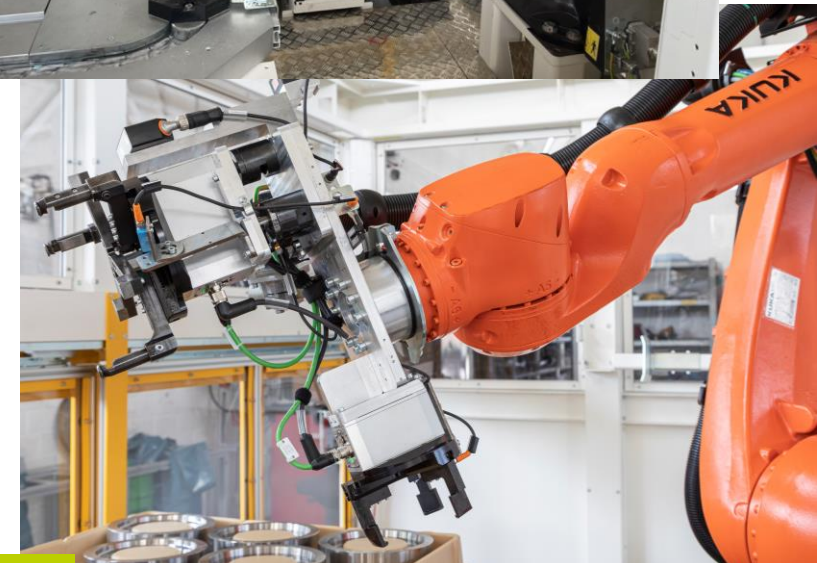
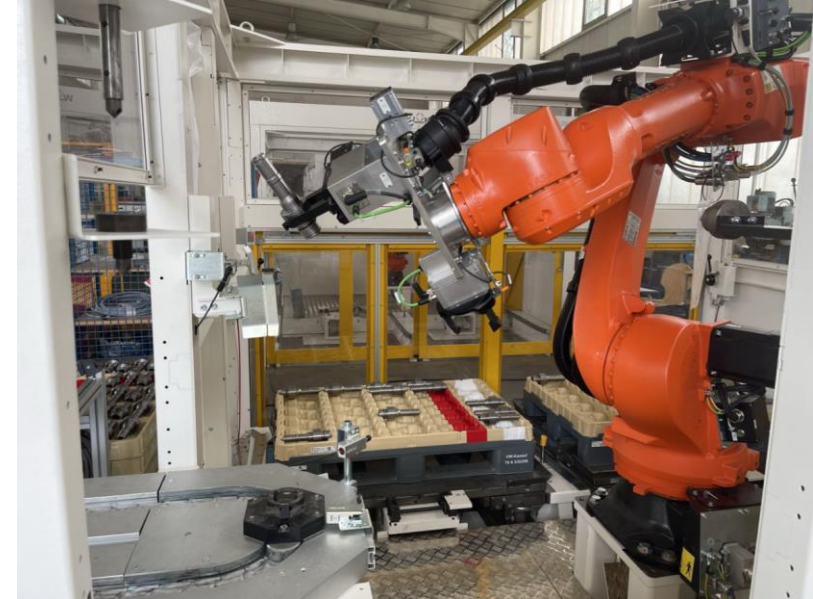


Production and assembly of drivetrains

The drive train of a vehicle lies at the heart of its performance and mobility. It comprises the interaction of various components such as the motor, transmission, drive shafts and differential, which control the transmission and distribution of power. The requirements for drive trains are diverse and range from efficiency and reliability to meeting new challenges in the field of electromobility.

Added value EGU und EZU:

- Reliable handling of shafts and gears in the manufacturing and assembly process
- Fulfillment of the highest process stability requirements
- Flexible adaptation to the production process (settings, parameters)
- Independence from compressed air (trend within automotive/e-mobility)



Introduction EZU



EZU – Mechatronic 3-finger centric gripper

Overview of series



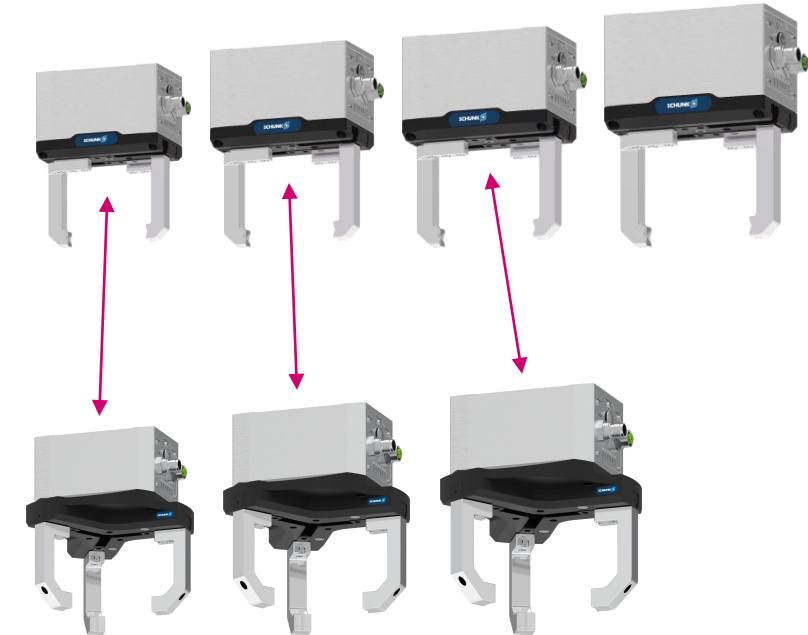
	EZU 30	EZU 35	EZU 40
Force	175 bis 700 N	390 bis 1560 N	900 bis 3600 N
Stroke per jaw	30 mm	35 mm	40 mm
Mass	2,3 kg	4,5 kg	7,5 kg

- + Flexible workpiece handling** Cylindrical workpieces of different sizes can be handled efficiently thanks to the extensively adjustable, freely programmable jaw stroke
- + Particularly reliable** The risk of workpiece loss is minimized thanks to the integrated gripping force maintenance with loss detection
- + High availability** The integrated absolute encoder ensures permanent referencing, even in the event of an emergency stop or power failure
- + Increased efficiency** No start-up distance is required for gripping, which simplifies handling and speeds up the overall process
- + High fault tolerance** The drive train ensures reliable centering of the workpiece and a constantly high gripping force even in the event of horizontal positioning errors of the workpiece or robot
- + High robustness** The sealed design with the proven sliding guide makes the gripper resistant to harsh operating conditions
- + Easy integration** The integration effort is significantly reduced thanks to a wide range of communication interfaces, PLC function blocks and robot plug-ins compatible with leading manufacturers

Overview of series and comparison with EGU

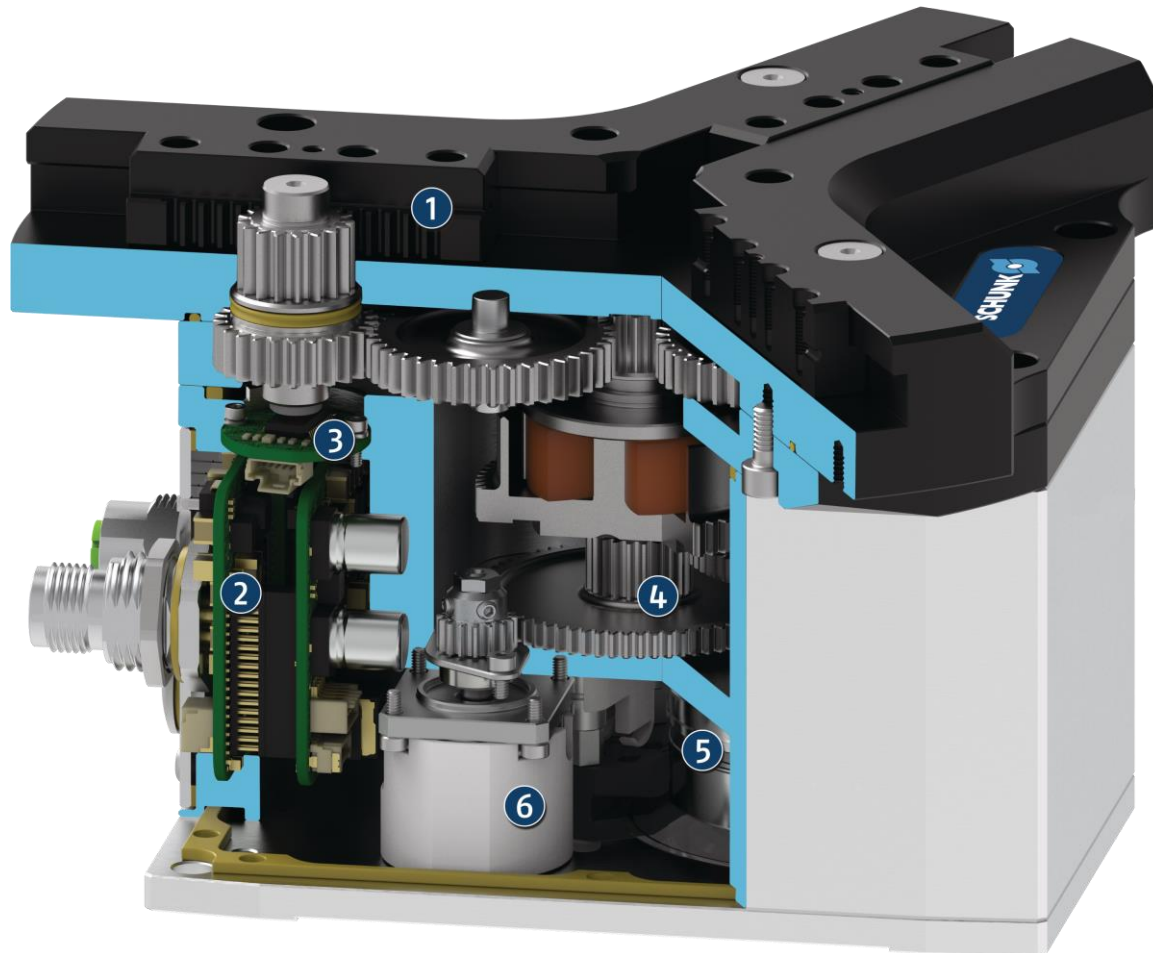
	EGU 50	EGU 60	EGU 70	EGU 80
Force	150 to 600 N	325 to 1300 N	650 to 1950 N	1000 to 4000 N
Stroke per jaw	50 mm	60 mm	70 mm	80 mm
Mass	1,49 kg	2,90 kg	4,52 kg	7,72 kg

	EZU 30	EZU 35	EZU 40
Force	175 bis 700 N	390 bis 1560 N	900 bis 3600 N
Stroke per jaw	30 mm	35 mm	40 mm
Mass	2,3 kg	4,5 kg	7,5 kg



- Stroke influences size (diameter) and weight >>> Reason for less stroke
- Maximum gripping force only achievable with StrongGrip functionality (200%, comparable to EGU)
- Exclusion of EZU 4, as we exceed the acceptance limit for the gripper weight. But: Technically feasible, if required.
- Pricing: +1400 € to comparable EGU variant

Mechanical design



- ① **Sturdy and resistant T-slot guidance**
for large finger lengths, external forces and moments.
Optionally available as dust-tight version.
- ② **Fully integrated and sealed control and power electronics**
with status LEDs and M12 plug connectors for connecting the
voltage supply and communication.
- ③ **High-resolution, output-side absolute encoder**
for precise positioning of the gripper jaws with permanent
absolute position feedback.
- ④ **Sealed drive train with spur gear and pinion/rack principle**
for a nearly constant acting gripping force over the entire
finger length, without a minimum start up distance.
- ⑤ **Brushless flat motor**
for limited space and high torques due to external rotor.
- ⑥ **Electromagnetic brake** with additional mechanism for
maintaining gripping force and position during standstill or
power failure.

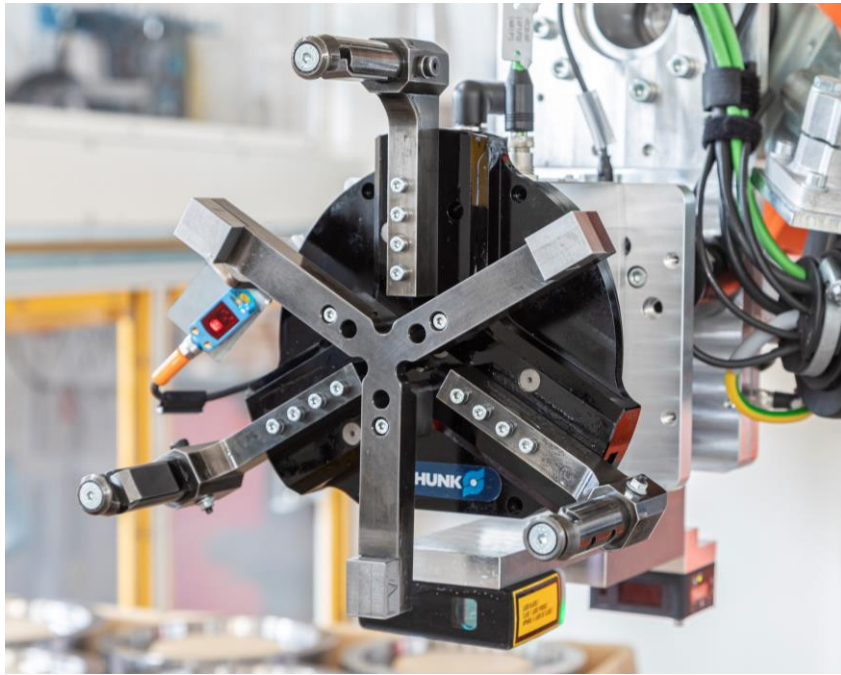
Increased IP rating with dust-tight design

- prevents the ingress of dust and liquids into the guide area of the base jaw and the rack and pinion principle
- Suitable for use in particularly harsh environmental conditions, e.g. in grinding applications
- Protection class IP 64: dust-tight and splash-proof
- Basic protection of the electronics IP 67: Dust-tight, protected against temporary submersion



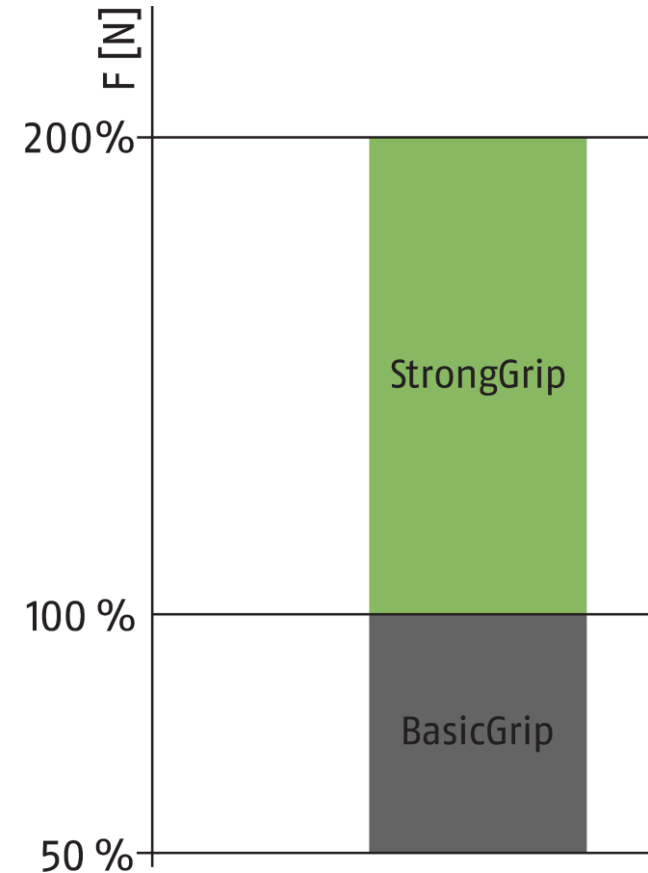
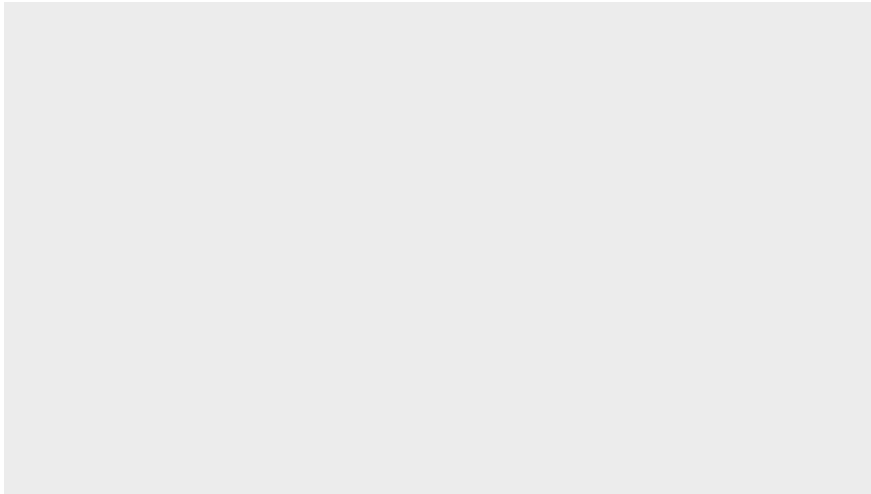
Fastening option for additional attachment

- Additional threads and fits (3x) in the guide housing for application-specific attachments
- Example: A pressure element can be fitted to press on the workpiece.



Available gripping modes: BasicGrip und StrongGrip

- **BasicGrip (up to 100% gripping force):**
The gripping speed is automatically optimized to the selected gripping force setting, permanent re-gripping is possible
- **StrongGrip (from 101% to 200% gripping force):**
Maximum gripping force is generated and stored by the gripping force maintenance; permanent re-gripping possible within an adjustable time window (≤ 2 seconds)
- **StrongGrip** requires a short pause time between two gripping cycles



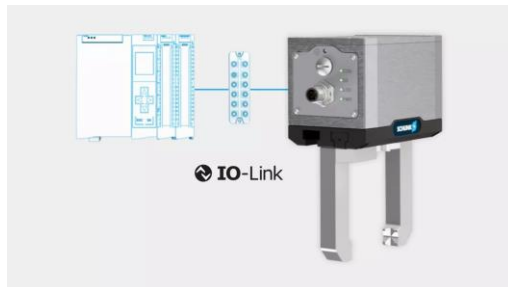
Connectivity

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

USP



Industrial Ethernet enables direct integration into the control environment of leading PLC manufacturers on the market – without additional gateways.



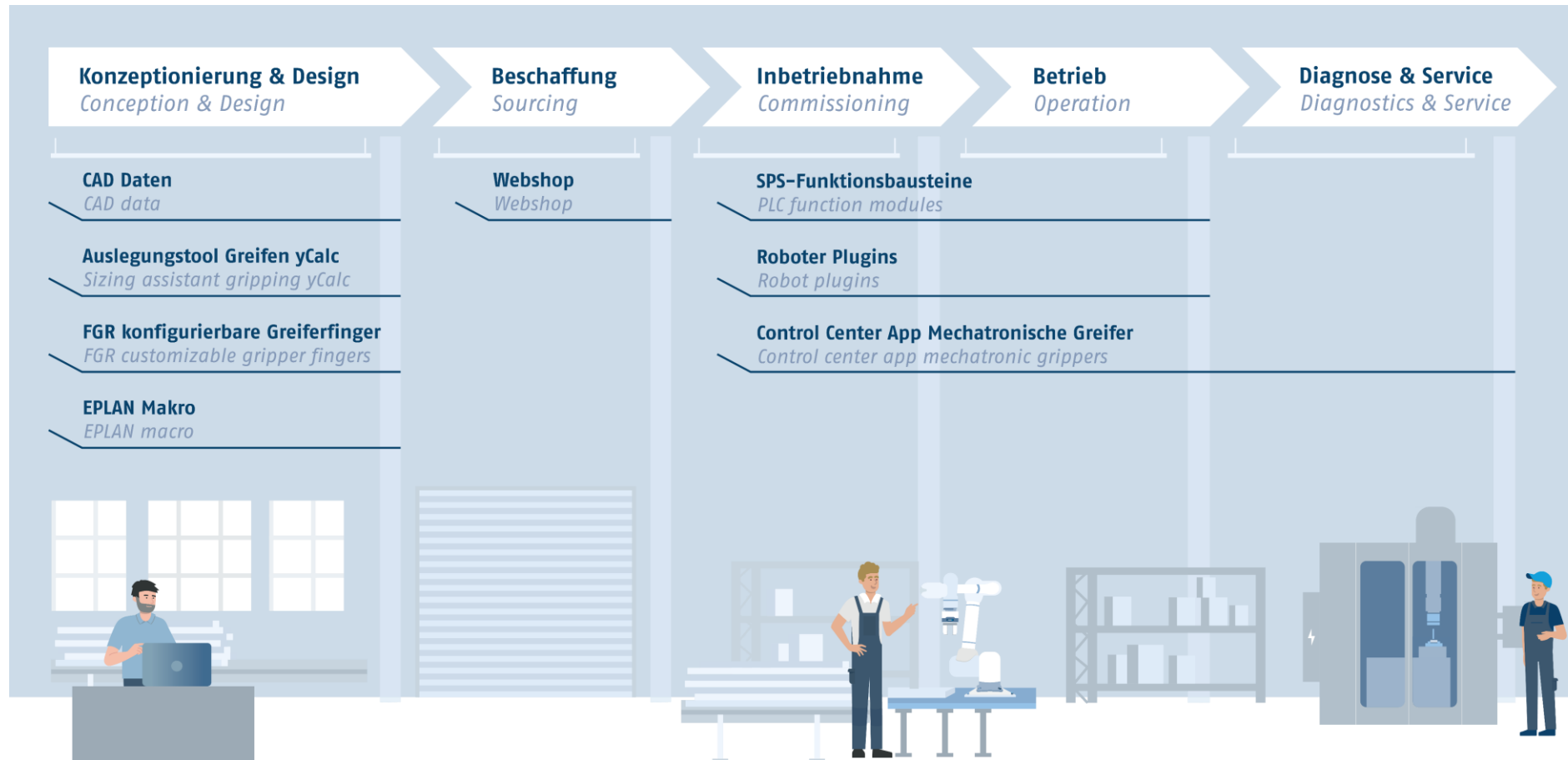
IO-Link is independent and offers flexibility in connecting to other networks.



With the **Modbus RTU serial interface**, the gripper can be connected to the tool flange of leading robot manufacturers without external cable routing.

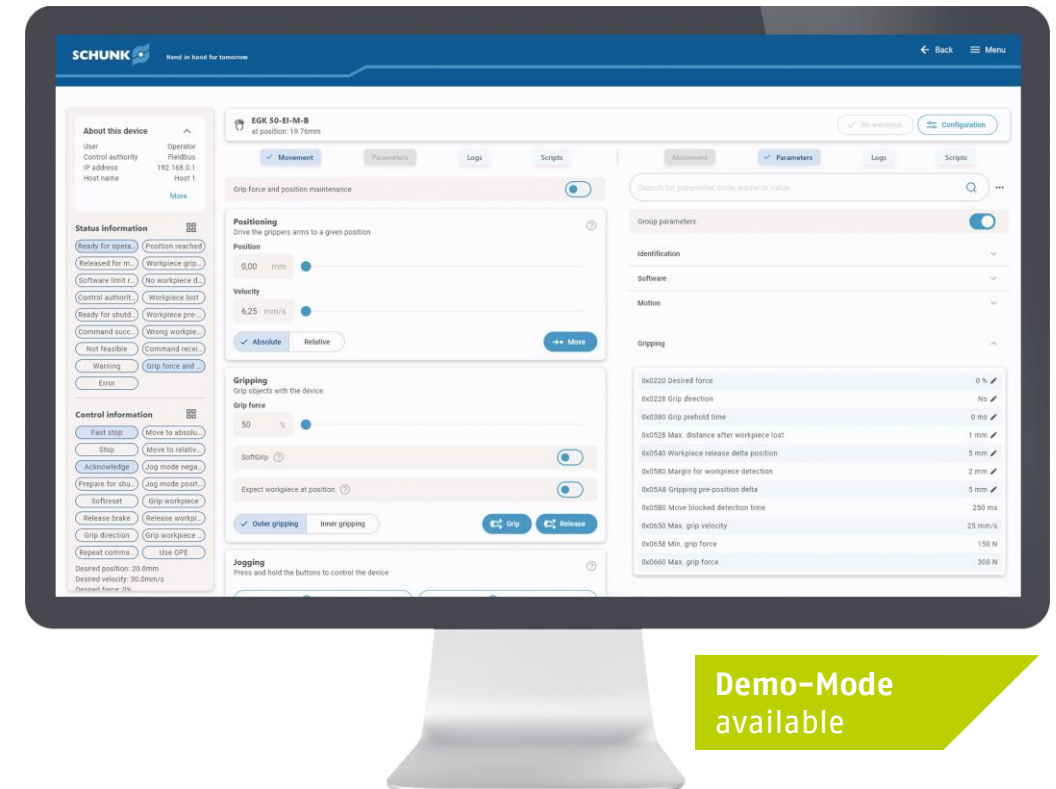
Digital tools and services

SCHUNK offers a wide range of digital tools and services for mechatronic grippers with the aim of providing the greatest possible support throughout the machine life cycle.



App „Mechatronic Grippers“ in the SCHUNK Control Center

- Simplifies commissioning, operation, diagnostics and service thanks to an extensive catalog of functions
- Control grippers directly and perform application validation without the need for a PLC
- Functions: Network configuration, gripper diagnostics, firmware update, parameter adjustment and backup and bus monitor
- Connection via the network interface of the PC (Windows 10 & 11, today only grippers with Industrial Ethernet)



Get it @ www.schunk.com/downloads-software
or SCHUNK Software Center (internal)

PLC integration via function blocks

- Seamless interaction between gripper and PLC controller
- Available for leading PLC manufacturers
- Reduces programming effort to a minimum

SIEMENS

TIA Portal V17 for PROFINET and IO-Link

 **Allen-Bradley**

Studio 5000 Logix Designer
for EtherNet/IP and IO-Link

BECKHOFF

TwinCAT 3 for EtherCAT and IO-Link



Get it @ www.schunk.com/downloads-software

EZU – Mechatronic 3-finger centric gripper

Robot integration via plugins

- Seamless interaction between gripper and robot
- Available for leading robot manufacturers
- Reduces programming effort to a minimum



E-Series via Modbus RTU (tool port)
([Link YouTube Video](#))



CRX-Series via Modbus RTU (tool port)
([Link YouTube Video](#))



YRC1000micro & Smart Pendant via EtherNet/IP
([Link YouTube Video](#))



OmniCore C30 via EtherNet/IP
([Link YouTube Video](#))



Get it @ www.schunk.com/downloads-software

Accessories



Power and communication cable for Industrial Ethernet and IO-Link

in 5 and 10 meter lengths, suitable for drag chain or robot applications with torsion, with angled or straight connectors (identical to EGU)



Single and double gripper ISO adapter

from ISO 31.5 to ISO 80, available for specific sizes according to reasonable configuration weight, made of aluminum, blow-off nozzle for double gripper, cable guide for double gripper (specific for EZU due to height/screw length)



Robot-specific cable sets

for direct connection or external cabling, for single or double gripper configuration



Intermediate jaws

Converts EZU interface to PZN+ interface and opens PZN+ accessories catalog



Configurable gripper fingers

can be configured in a very short time via a license-free and browser-based web tool in combination with the intermediate jaw



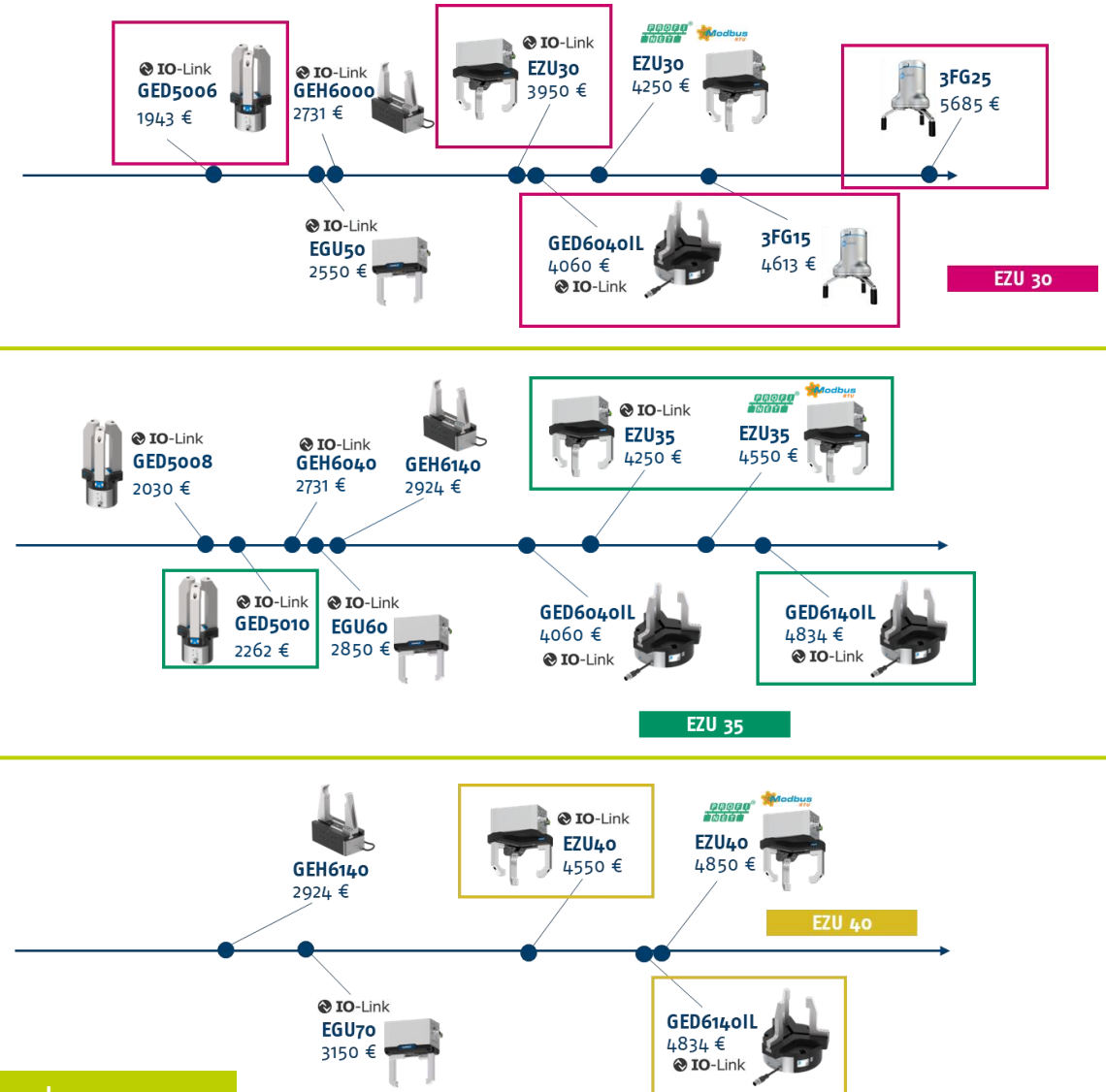
Finger quick-change system BSWS, BSWS-M and BSWS-R

in combination with the intermediate jaw

Pricing (based on the german market)

	EZU 30	EZU 35	EZU 40
Force	175 to 700 N	390 to 1560 N	900 to 3600 N
Stroke per jaw	30 mm	35 mm	40 mm
IO-Link	3950 €	4250 €	4550 €
Industrial Ethernet	4250 €	4550 €	4850 €
Modbus RTU	4250 €	4550 €	4850 €
without brake	- 100 €		
with dust-cover	+ 375 €		
Intermediate jaw ZBA (Set)	360 €	420 €	460 €

Discount structure identical to EGU/EGK



- for internal use only -

Further procedure EZN

With IMTS start on September 9, (Go-Live EZU on schunk.com) the EZN will become a legacy product and will be removed from visibility.

The ECM controller has already been discontinued with EOS as of June 30, 2025.



	EZN 64	EZN 100	EZU 30
Gripping Force [N]	500	800	700 N
Stroke per jaw[mm]	6	10	30mm
Price [€]	1.850	2.190	4250 (PROFINET)
Mass [kg]	0,98	2,3	2,3
Gripping force maintenance	-	-	Gripping force and position maintenance
Guide	Multi-tooth-guide		T-slot-guide
Dimensions X x Y x Z [mm]	70,5 x 133,5	110,5 x 147,5	
Communication interfaces	ECM-Controller with PROFINET Preis: 1.430€		IO-Link, Profinet, Modbus RTU, EtherNet I/P, EtherCat

Competitive environment EZU



EZU – Mechatronic 3-finger centric gripper

Market overview of electric centric grippers





Zimmer
GED6000LL
(long stroke)



Robotiq
Hand-E C10



OnRobot 3FG15
& 3FG25

Main competition EZU

Partial competition EZU

Zimmer GED5000LL
(short stroke)



– CONFIDENTIAL, for internal use only –



RCP2-GR3LS
3-Finger-Gripper

- Gripping force: max. 18 N
- Stroke: max. 19°
- 24v Stepper motor



RCP2-GR3LM
3-Finger-Gripper

- Gripping force: max. 51 N
- Stroke: max. 19°
- 24v Stepper motor



RCP2-GR3SS
3-Finger-Gripper

- Gripping force: max. 22 N
- Stroke: max. 10 mm
- 24v Stepper motor



RCP2-GR3SM
3-Finger-Gripper

- Gripping force: max. 102 N
- Stroke: max. 14 mm
- 24v Stepper motor

IAI RCP2



钩舵机器人
JODELL ROBOTICS



DH-ROBOTICS
CG-Series

RCG90-065



Gimatic MPTM



SMC LEHS

S Type (3 fingers)

Can hold round workpieces.

Series LEHS			
Size	Stroke/ diameter [mm]	Gripping force [N]	
		Basic	Compact
10	4	2.2 to 5.5	1.4 to 3.5
20	6	9 to 22	7 to 17
32	8	36 to 90	—
40	12	52 to 130	—



MPTM1606



MPTM2508



MPTM3210

	◆ FORCE (N)	◆ STROKE (mm)	◆ WEIGHT (g)
MPTM1606	57	3x3	183
MPTM2508	124	3x4	430
MPTM3210	220	3x5	693

No competition in terms of target applications and performance

Zimmer GED6000IL vs. EZU IL



EZU – Mechatronic 3-finger centric gripper

ZIMMER GED6000IL – Overview

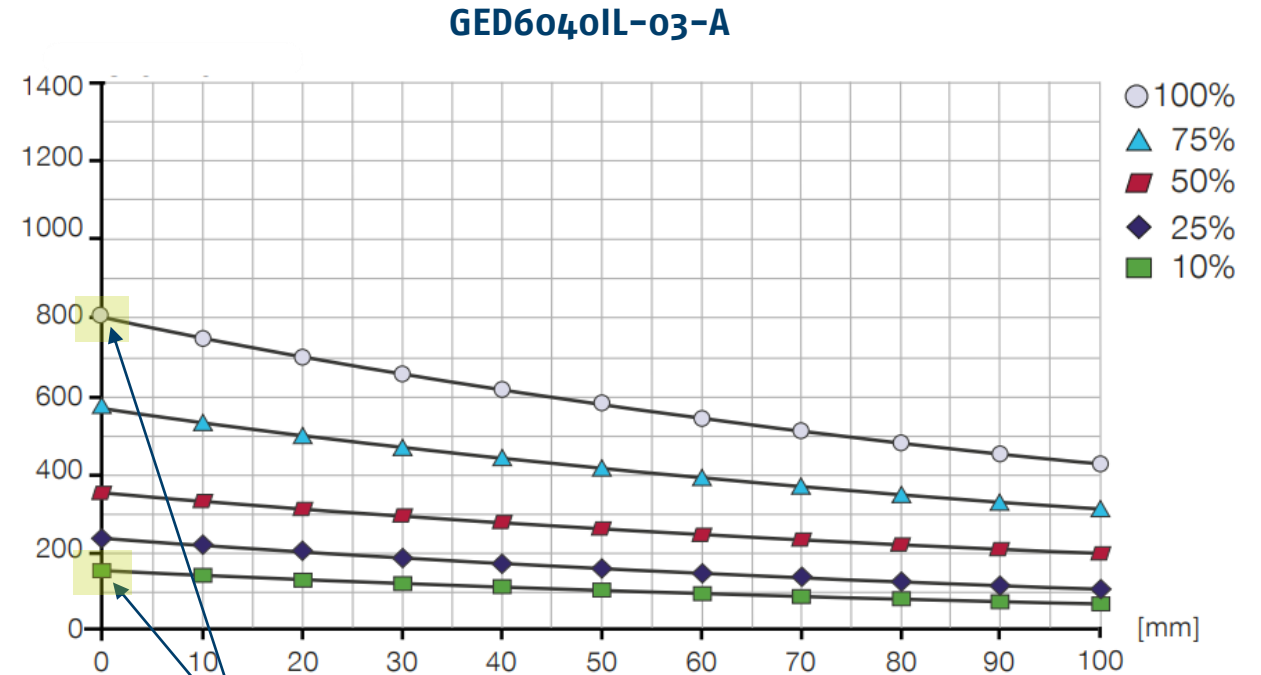


- Three sizes, including two “power versions” and one “soft version”
- 40 mm stroke in all sizes
- Integrated controller
- Control via IO-Link
- Pig-tail instead of fixed connector
- Mechanical self-locking (force version only)
- Start-up distance required
- Referencing required

	GED6040IL-03-A	GED6040IL-31-A	GED6140IL-03-A
Force (data sheet value)	150 – 800 N	15 – 165 N	210 – 1700 N
Stroke per jaw	40 mm	40 mm	40 mm
Mass	2,8 kg	2,8 kg	4,9 kg
List price GER	4060 €	4060 €	4834 €
IP-rating	54 (protection against dust, protection against splashing water from all sides)		

ZIMMER GED6000IL – Gripping force over finger length

- Zimmer specifies the gripping forces at 0 mm finger height, which does not seem practical from the customer's point of view
- There is a significant drop in gripping force over the length of the finger, so that at 100 mm, for example, only just over 400 N is available
- It can be assumed that the drop in gripping force over the finger length of the EZU will be significantly flatter (final gripping force diagrams are still pending)



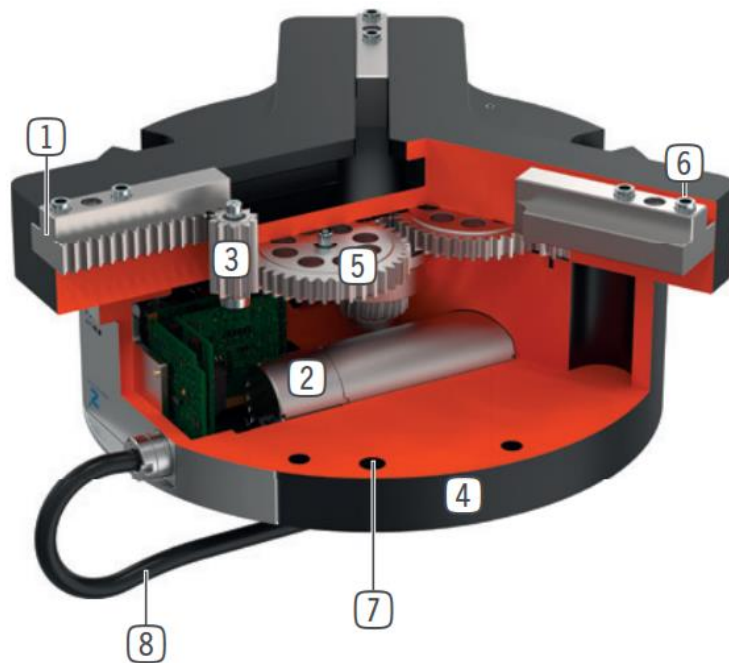
Data sheet values

max. 800 N

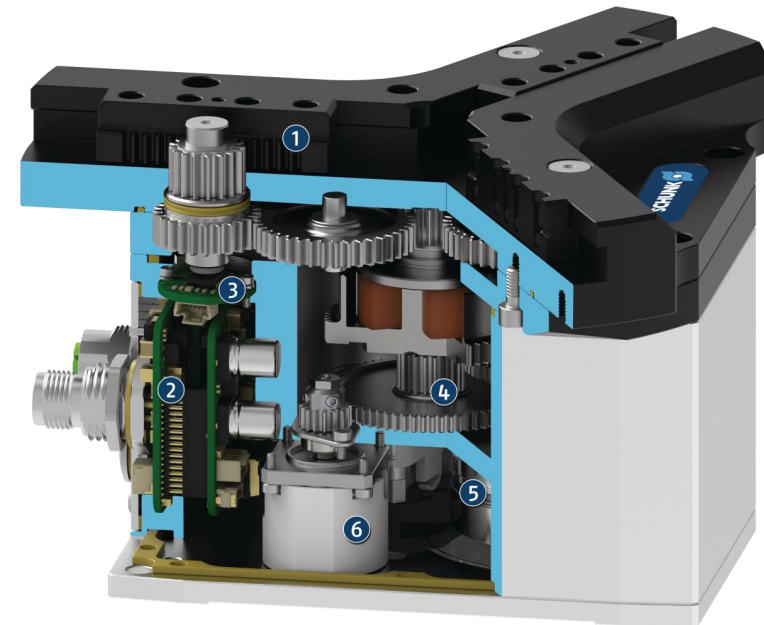
min. 150 N

ZIMMER GED6000IL – Drivetrain comparison

ZIMMER
Worm gear



SCHUNK
Spur gear

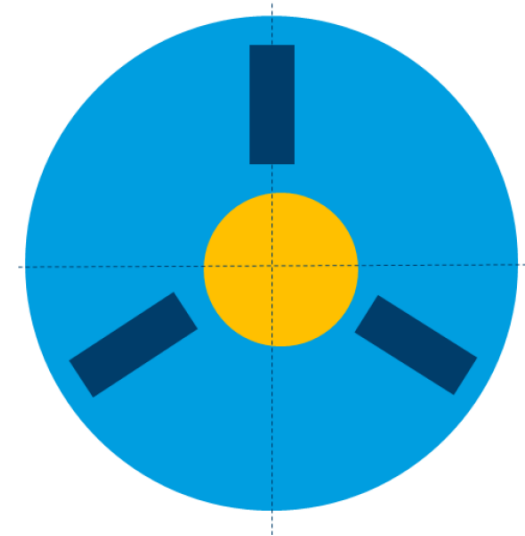


ZIMMER GED6000IL – Drivetrain comparison

Worm gear (ZIMMER)	Spur gear (SCHUNK)	Rating
Kinetic energy (peak) determines the gripping force, re-gripping is not possible	Motor torque determines the gripping force, almost independent of kinetic energy, re-gripping possible	• The spur gear ensures reliable operation • If the workpieces are positioned inaccurately or if the workpiece rearranges itself again after gripping (out of a clamping device), the worm gearbox may experience a significant loss of gripping force.
Self-locking (Inherent gripping force maintenance)	No self-locking) (gripping force and position maintenance by additional components like brake and elastic element)	• The need for additional components results in a higher weight and installation space for the spur gearbox, which results in an open flank for SCHUNK
Start-up distance necessary (GED6040 = 4 mm / GED6140 = 2 mm)	No start-up distance necessary	• A minimum start-up distance complicates the gripping process (interfering contours, cycle time, stroke loss)

ZIMMER GED6000IL – Inaccurately positioned workpieces

- If the workpiece or robot is not positioned horizontally in the center of the gripper, Zimmer experiences a significant drop in gripping force
- The kinetic energy is slowed down by the workpiece, the desired gripping force cannot be generated



	GED 6040IL-03-A			EZU30		
Positioning error	Measured force	Data sheet value at 20 mm finger length	Deviation to data sheet	Measured force	Data sheet value at 20 mm finger length	Deviation to data sheet
0,01mm	679N	700N	3,1%	745N	750N	0,7%
0,2mm	118N	700N	83,1%	580N	750N	22,6%

ZIMMER GED6000IL – Comparison on Technology & Features

Technology & Feature	ZIMMER GED6000IL	EZU	Rating
Allgemein	BLDC-Motor with integrated electronics via 24 V DC	BLDC-Motor with integrated electronics via 24 V DC	GED and EZU comparable
Communication interfaces	IO-Link, digital I/O (over external Gateway SCM), Modbus RTU (only in combination with Match tool changer)	IO-Link, Industrial Ethernet (PROFINET; EtherCAT, EtherNet/IP), Modbus RTU	- SCHUNK Industrial Ethernet: Real added value in terms of seamless integration, no need for additional hardware, fast response time - ZIMMER SCM: Translation of the IO-Link protocol into digital I/O, no positioning, limitation of functionality, many inputs and outputs required on the control side - ZIMMER Modbus RTU: tool changer always required for UR or FANUC
Functionality	Free positioning, gripping force adjustment, workpiece loss detection (depending on force profile)	Free positioning, gripping force adjustment, re-gripping, workpiece loss detection (active up to 100% BasicGrip, passive from 101% StrongGrip)	- GED and EZU comparable - EZU: can re-grip, which can be essential depending on the application
Referencing	Homing required	No homing required	EZU: permanent referencing independent of emergency stop or power failure, which ensures continuous operation
IP-Rating	IP54 (Electronics) Guide „open“	IP67 (Electronics) Guide „open“ or IP64 (Guide with dust tight cover)	SCHUNK offers the better IP protection concept. Especially with regard to electronics protection and the additional option of sealing the guide.
Warranty	5 mio. cycles	5 mio. cycles (BasicGrip) 3 mio. cycles (StrongGrip)	- GED and EZU comparable - EZU: StrongGrip higher gripping force, but lower warranty
Commissioning software	GuideZ (can only be used via universal gateway SCM)	SCHUNK Control Center – App Mechatronic Grippers	- Functionality comparable - GuideZ can be only used with gateway SCM
Robot Compatibility	ABB, Denso, Yaskawa, Hanwha, Techman, Universal Robots, FANUC (mostly via universal gateway SCM)	Universal Robots, FANUC, ABB, Yaskawa (seamless, without additional gateways)	- GED supports more robots, although some of these do not have a high market share (Denso, Hanwha, ..) - Gateway or tool changer always required; some functional limitations due to connection via digital I/O
PLC Compatibility	Siemens, Beckhoff	Siemens, Beckhoff, Allen Bradley	EZU supports an additional manufacturer, also by seamless integration without the need for an IO-Link master

EZU – Mechatronic 3-finger centric gripper

Comparability



	Force	Stroke per jaw
EZU 30-IL-M-B	175 – 700 N	30 mm
EZU 35-IL-M-B	390 – 1560 N	35 mm
EZU 40-IL-M-B	900 – 3600 N	40 mm



	Force	Stroke per jaw
GED6040IL-03-A	800 N	40 mm
GED6140IL-03-A	210 – 1700 N	40 mm

Soft version (-31) not rated

- Cluster A
- Cluster B
- *Cluster C

*From a technical perspective, the comparison between EZU 40 and GED6140 makes only limited technical sense, but it is included for completeness.

EZU – Mechatronic 3-finger centric gripper

GED6040IL-03-A vs. EZU30 IL-M-B

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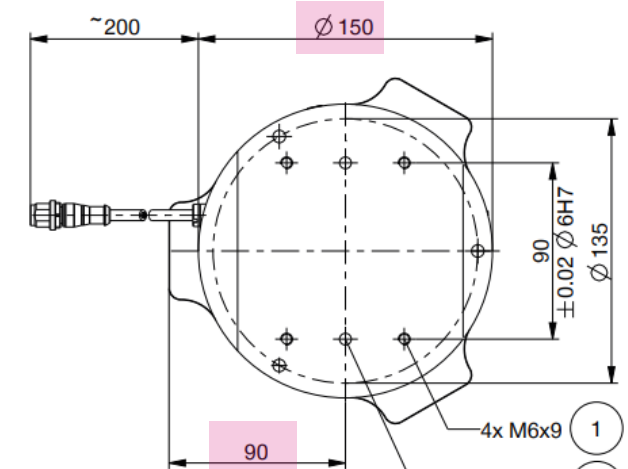
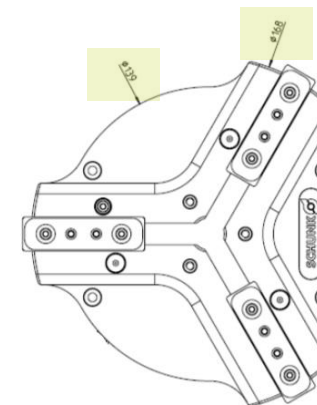
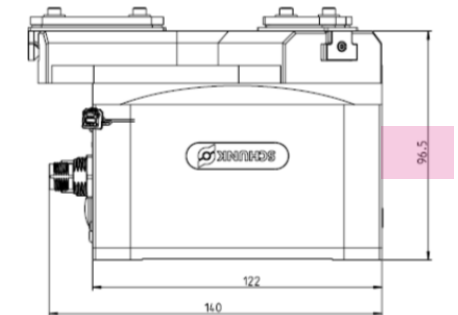
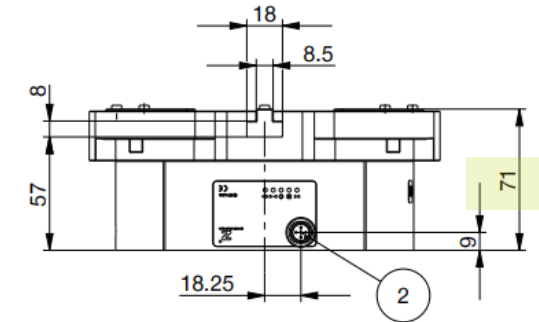
Better

Worse



Product	Stroke per jaw	Gripping force (datasheet)	Gripping force (P = 25 mm)	Mass	Max. finger length	Max. finger weight	Finger load Mx, My, Mz, Fz	Price
	mm	N	N	kg	mm	kg	Nm / N	EUR
EZU30IL	30	175-700	700	2,3	80	0,4	32, 35, 32, 800	3.950,00
GED6040IL-03-A	40	150-800	690	2,8	100	0,3	25, 25, 25, 500	4.060,00

- Comparable gripping force (better over finger length EZU)
- ZIMMER offers more stroke per jaw (+10 mm)
- EZU's mass is lower (- 0.5 kg)
- ZIMMER allows longer fingers (+20 mm)
- SCHUNK allows heavier fingers (+0.1 kg)
- SCHUNK guide more robust (see table)
- SCHUNK gripper higher than Zimmer (+25.5mm)
- SCHUNK XY gripper more compact than Zimmer (-12mm in diameter)
- SCHUNK slightly cheaper (-90 €)



ATTENTION: Representation not true to scale!

EZU – Mechatronic 3-finger centric gripper

GED6140IL-03-A vs. EZU35 IL-M-B

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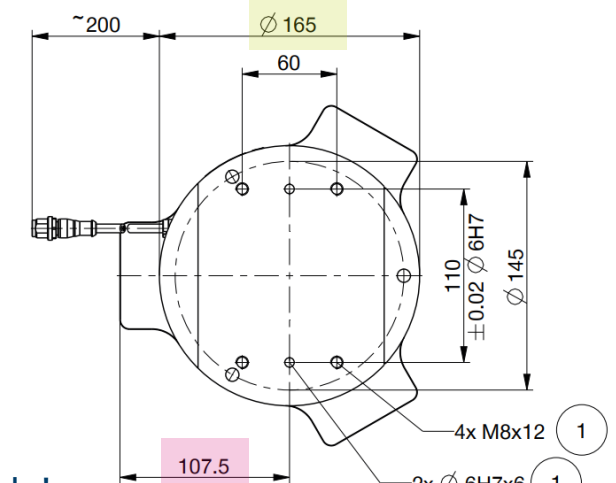
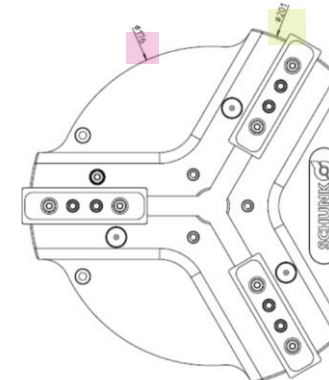
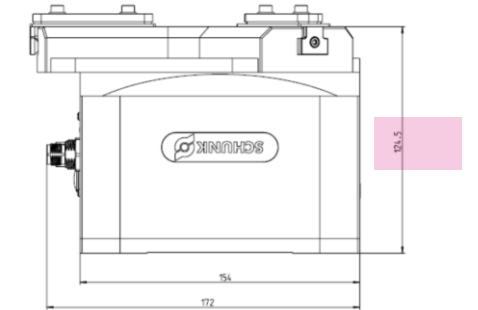
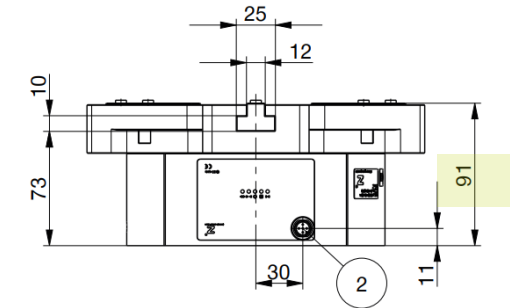
Better

Worse



Product	Stroke per jaw	Gripping force (datasheet)	Gripping force (P = 25 mm)	Mass	Max. finger length	Max. finger weight	Finger load Mx, My, Mz, Fz	Price
	mm	N	N	kg	mm	kg	Nm / N	EUR
EZU35IL	35	390-1560	1560	4,5	125	0,8	48, 75, 43, 1200	4.250,00
GED6140IL-03-A	40	210-1700	1480	4,9	160	1,0	60, 80, 70, 1500	4.834,00

- Comparable gripping force (better over finger length EZU)
- ZIMMER offers more stroke per jaw (+5 mm)
- EZU's mass is lower (- 0.4 kg)
- ZIMMER allows longer fingers (+35 mm)
- ZIMMER allows heavier fingers (+0.2 kg)
- ZIMMER guide more robust (see table)
- SCHUNK gripper higher than Zimmer (+33.5mm)
- SCHUNK XY gripper more compact than Zimmer (-14mm in diameter)
- SCHUNK price significantly more attractive (-584 €)



ATTENTION: Representation not true to scale!

EZU – Mechatronic 3-finger centric gripper

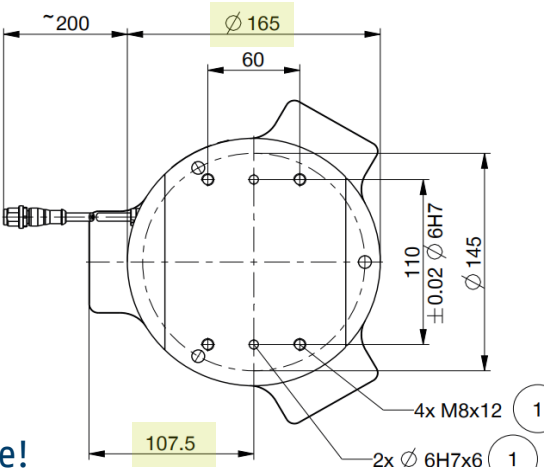
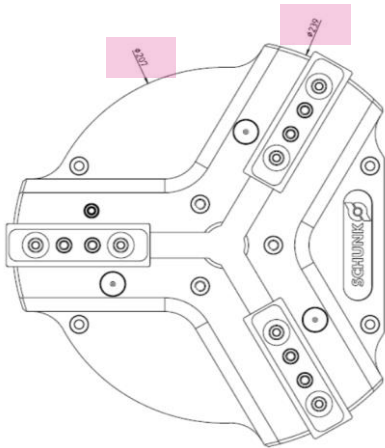
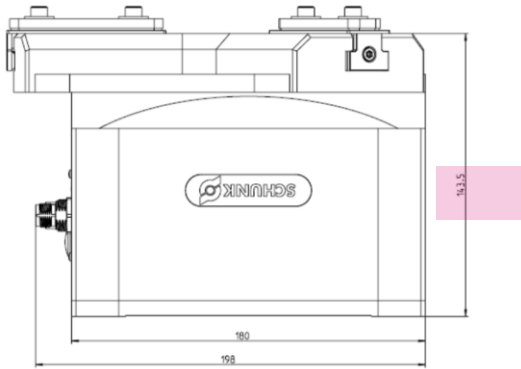
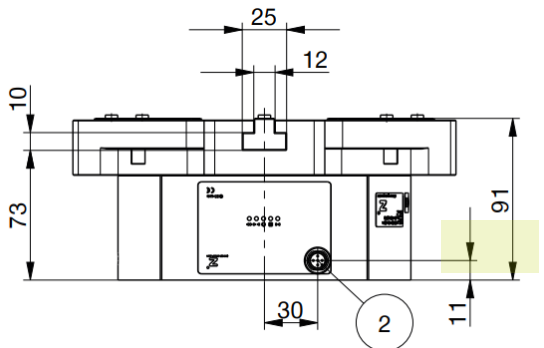
GED6140IL-03-A vs. EZU40 IL-M-B

Description:
Better
Worse



Product	Stroke per jaw	Gripping force (datasheet)	Gripping force (P = 25 mm)	Mass	Max. finger length	Max. finger weight	Finger load Mx, My, Mz, Fz	Price
	mm	N		kg	mm	kg	Nm / N	EUR
EZU40IL	40	900-3600	3600	7,5	160	1,4	65, 105, 80, 1600	4.550,00
GED6140IL-03-A	40	210-1700	1400	4,9	160	1,0	60, 80, 70, 1500	4.834,00

- The comparison between EZU40 and GED6140 only makes limited sense, as the EZU 40 is in a different performance class
- SCHUNK gripping force significantly higher (+2200 N)
- Stroke identical
- SCHUNK cheaper (-284 €)



ATTENTION: Representation not true to scale!

Summary: EZU IO-Link vs. GED 6000 IO-Link

- ✓ **The drive train of the EZU ensures a more stable production process compared to the GED**
 - ✓ In the event of horizontal positioning inaccuracies of the workpiece or the robot, the drive train ensures a constantly high gripping force and centers the workpiece, which enables a versatile and fault-tolerant use
 - ✓ In applications in which a gripped workpiece can still move afterwards, for example when removing from the constraint of a power clamp, a stable process can be guaranteed by reliable re-gripping
 - ✓ The full gripping force is provided without any start-up distance, which simplifies handling and speeds up the process
 - ✓ The gripping force is more constant over the finger length, allowing the maximum potential of the gripper to be better utilized
- ✓ **Relevant features help to differentiate us from above ZIMMER**
 - ✓ An integrated absolute encoder guarantees permanent referencing, regardless of emergency stop or power failure, ensuring continuous operation
 - ✓ The large selection of communication interfaces, PLC function blocks and robot plug-ins, which are compatible with the leading manufacturers, reduces the integration effort to a minimum, especially for the field of communication interfaces, SCHUNK can offer a unique selection
 - ✓ The connection is made without any gateways (SCM) or the need for a change system (e.g. Match for UR and FANUC CRX).
 - ✓ Better IP protection concept, more attractive pricing, smaller dimensions in XY
- × **Open flanks for SCHUNK**
 - × Zimmer always offers more stroke for comparable sizes (5–10 mm per jaw), but the start-up distance limits this again
 - × Zimmer scores above all with a lower overall height, which can be critical depending on the application (25 – 33 mm)

OnRobot 3FG15/25 vs. EZU 30



OnRobot 3FG15 & 3FG25 – Overview

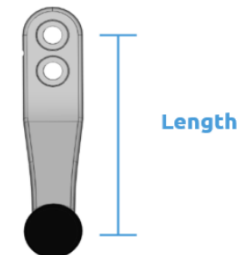
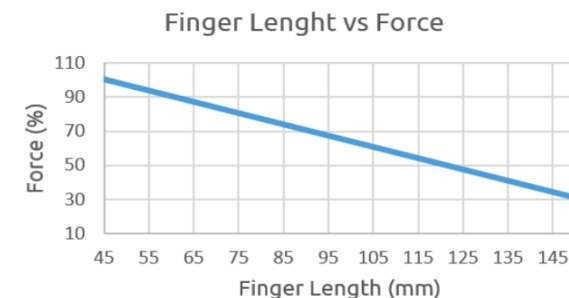
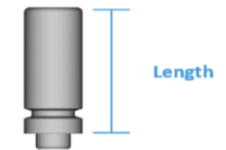
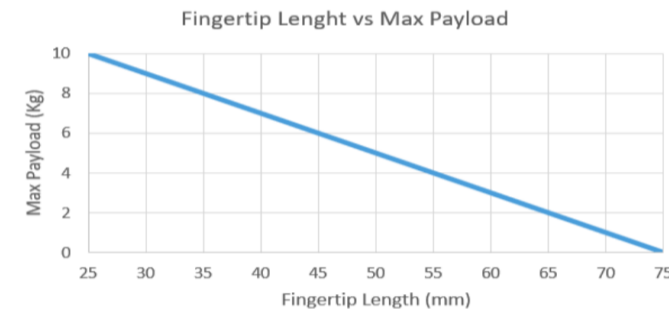
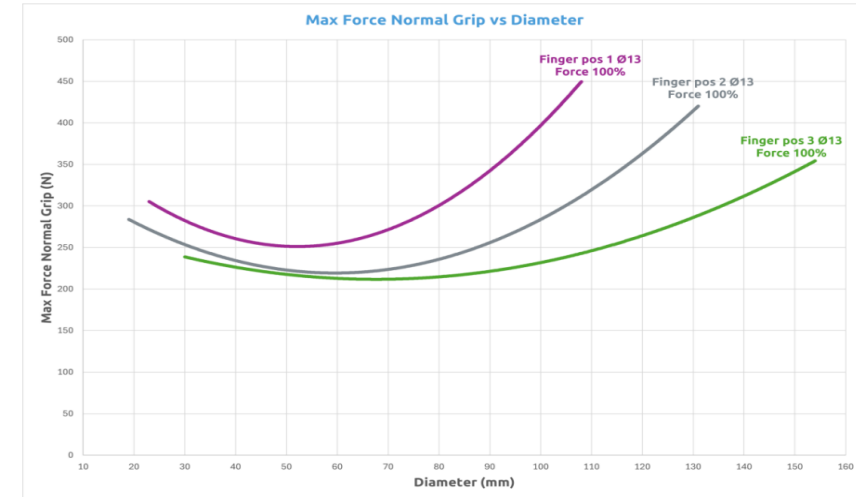


- Two sizes, differentiation by stroke and force
- Focus on collaborative applications, used mainly with cobots (no certification as collaborative gripper)
- Integrated controller with control via Modbus RTU (connection via tool flange, e.g. with Universal Robots or FANUC CRX, only when one gripper mounted)
- Compute Box: External gateway with EtherNet/IP (external cable routing, connection to the robot controller, from two mounted grippers, for robots that do not offer Modbus on the flange: ABB, KUKA, Yaskawa, ...)
- Fingers and clamping inserts included in the scope of delivery
- Integrated gripping force maintenance
- Rotation of the workpiece during gripping due to gripper kinematics (rotating fingers)

	3FG15	3FG25
Force (data sheet value)	10 – 240	50 – 450
Stroke per jaw (converted)	54 mm	61 mm
Mass	1,15 kg	1,6 kg
List price GER	4613 €	5685 €
IP-rating	67 (dust-tight, protection against temporary submersion)	

OnRobot 3FG15 & 3FG25 – Gripping force

- The gripping force is highly depending on the angle of rotation (workpiece diameter)
- At the smallest angle (diameter >110 mm), gripping forces of up to 450 N can be applied
- At the largest angle (diameter 50 mm), the forces are reduced by approx. 200 N
- A longer finger length or projection results in a reduced gripping force (projection is required for large diameters)
- A minimum start-up distance is required for gripping, which makes the use less flexible (3 mm for 3FG25, 4 mm for 3FG15)
- Max. Gripping force can only be achieved if the workpiece diameter is known (Grip vs. Flexible Grip)



OnRobot 3FG15 & 3FG25 – Available Stroke

- The gripping diameter specified in the catalog refers to the min. and max. scenario of the fingers and inserts included in the scope of delivery
- To achieve the specified gripping diameter, both the finger position and the insert must be changed manually
- The actual available gripping diameter depends heavily on the finger design or use of the fingers and inserts
- Nevertheless, OnRobot offers significantly more stroke compared to SCHUNK

	3FG15	3FG25
Stroke per jaw (converted)	54 mm	61 mm

Beispiel 3FG15

148 mm Gesamthub?

Grip Diameter*	External 	4 0.16	-	152 5.98	[mm] [inch]
	Internal 	35 1.38	-	176 6.93	[mm] [inch]

Gripping Diameter

The different configurations of the delivered finger and fingertips allow to achieve a wide range of diameters.

Finger Position	Fingertip (mm)	External Gripping range (mm)	Internal Gripping range (mm)
1	Ø10	10 - 117	35 - 135
	Ø13	7 - 114	38 - 138
	Ø16.5	4 - 111	41 - 140
2	Ø10	26 - 134	49 - 153
	Ø13	23 - 131	52 - 156
	Ø16.5	20 - 128	55 - 158
3	Ø10	44 - 152	65 - 172
	Ø13	41 - 149	68 - 174
	Ø16.5	38 - 146	71 - 176

OnRobot 3FG15 & 3FG25 – Comparison Technology & Features

Technology & Features	3FG15 / 3FG25	EZU	Rating
Communication interfaces	Modbus RTU, Compute Box (external Gateway with EtherNet/IP)	Modbus RTU, Industrial Ethernet (PROFINET; EtherCAT, EtherNet/IP), IO-Link	3FG: Communication interfaces are strongly oriented towards the cobot market, Modbus RTU mainly for FANUC CRX and UR, most manufacturers can only be operated in combination with an external compute box - Industrial Ethernet: Added value in terms of seamless integration, no need for additional hardware, response time - SCHUNK connection always without gateway
Functionality	Free positioning, gripping force adjustment, workpiece loss detection	Free positioning, gripping force adjustment, re-gripping (permanent), workpiece loss detection (active up to 100% BasicGrip, passive from 101% StrongGrip)	SCHUNK/OnRobot comparable
Referencing	Referencing necessary	No referencing necessary	An integrated absolute encoder in the EZU guarantees permanent referencing, regardless of emergency stop or power failure, which ensures continuous operation
IP-Rating	IP67 (entire gripper)	IP67 (Electronics) IP64 (Guide with dust-tight protection)	OnRobot offers the better IP protection concept. Sealing on the finger side can be achieved particularly well thanks to the rotary kinematics.
Warranty	12 months (Lifetime data of 30.000 hours)	24 months or 5 mio. cycles (BasicGrip) 3 mio. cycles (StrongGrip)	- SCHUNK offers a longer warranty period - The service life in hours is limited in meaning and is not further explained by OnRobot
Robot Compatibility	ABB, Denso, Doosan, Epson, Fanuc, Hanwha, Jaka, Kawasaki, KUKA, Nachi, Omron, TM Universal Robots Yaskawa (mainly via Compute Box)	Universal Robots, FANUC, ABB, Yaskawa (seamless, without any additional gateways)	- OnRobot supports significantly more robots, although some of these do not have a high market share (Denso, Hanwha, Kawasaki, ..) - External gateway required in most cases
PLC Compatibility	Keine	Siemens, Beckhoff, Allen Bradley	- OnRobot focuses exclusively on robot integration. - Control via a PLC is only possible in a difficult way.

EZU – Mechatronic 3-finger centric gripper

Comparability



	Force	Stroke per jaw	List Price (GER)
EZU 30-IL-M-B	175 – 700 N	30 mm	4250 €
EZU 35-IL-M-B	390 – 1560 N	35 mm	4550 €
EZU 40-IL-M-B	900 – 3600 N	40 mm	4850 €



	Force	Stroke per jaw	List Price (GER)
3FG15	10 – 240 N	54 mm	4615 €*
3FG25	50 – 450 N	61 mm	5685 €*

*with fingers but without adapter

Cluster A

EZU – Mechatronic 3-finger centric gripper

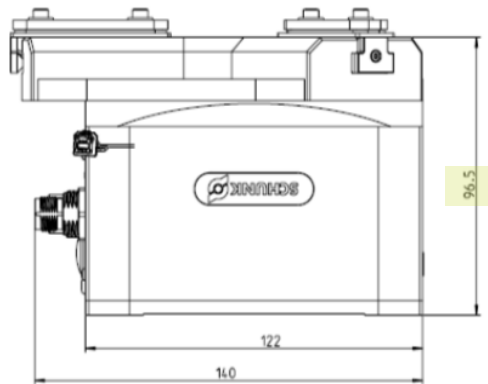
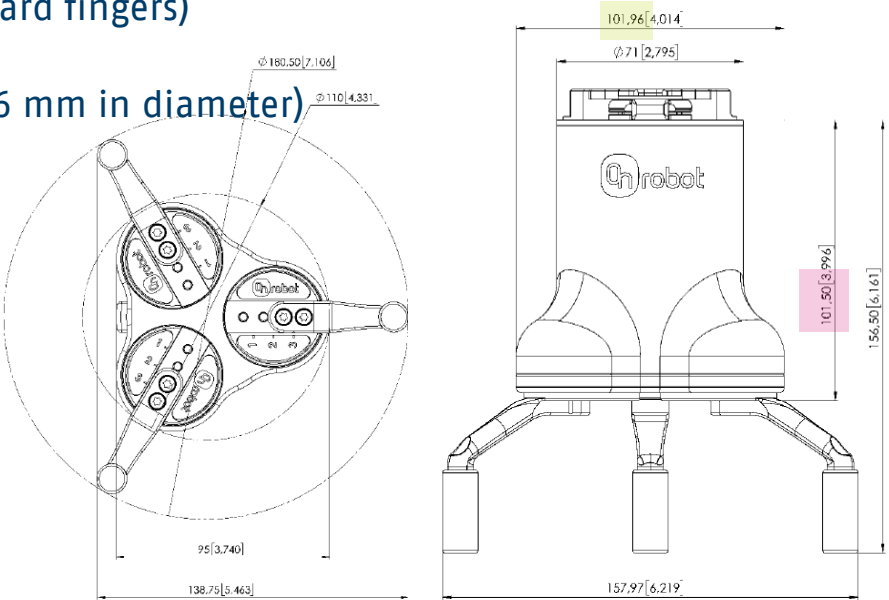
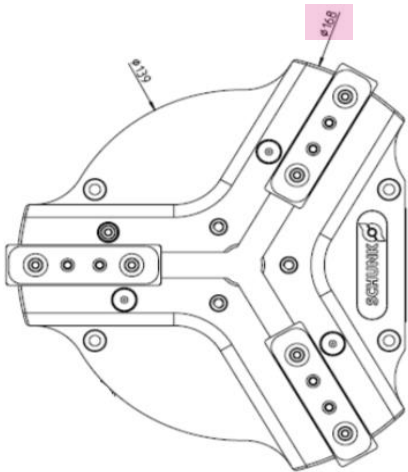
3FG15 vs. EZU 30-MB-M-B

Description:
Better
Worse



Product	Stroke per jaw mm	Gripping force (datasheet) N	Mass kg	Max. finger length mm	Max. finger weight kg	Finger load Mx, My, Mz, Fz Nm / N	List price GER EUR
EZU 30-MB-B	30	175-700	2,3	80	0,4	32, 35, 32, 800	4.250,00 (without Finger)
3FG15	54	10-240	1,15	Not specified	Not specified	Not specified	4.613,00 (with Finger)

- SCHUNK offers more gripping force (+460 N)
- OnRobot offers more stroke (+24 mm)
- OnRobot's mass is lower (– 1.15 kg)
- SCHUNK price better (but OnRobot comes with standard fingers)
- SCHUNK gripper lower than OnRobot (–5mm)
- OnRobot gripper XY more compact than SCHUNK (–66 mm in diameter)



ATTENTION: Representation not true to scale!

EZU – Mechatronic 3-finger centric gripper

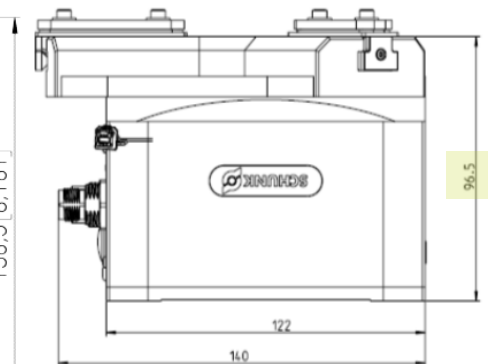
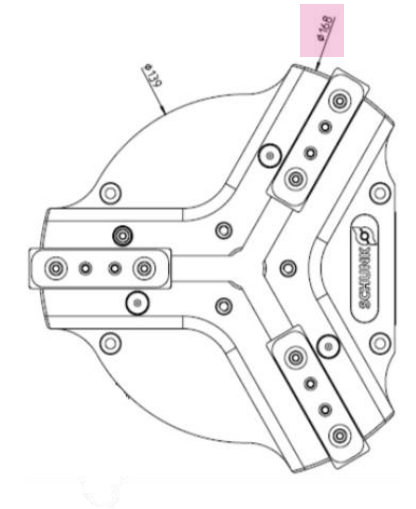
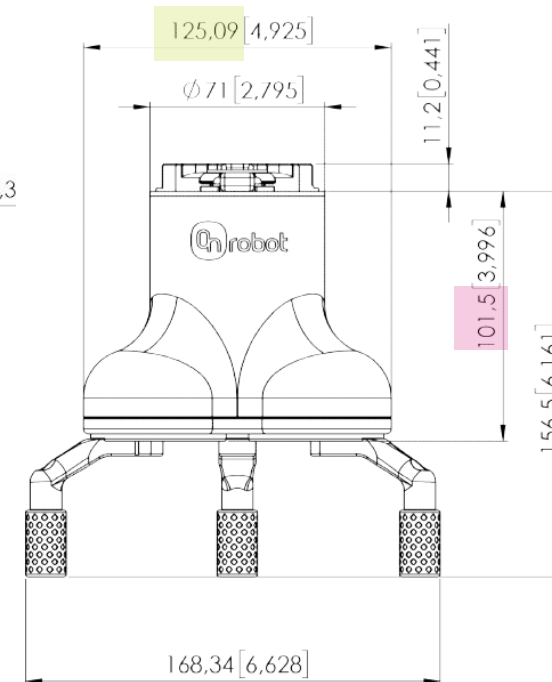
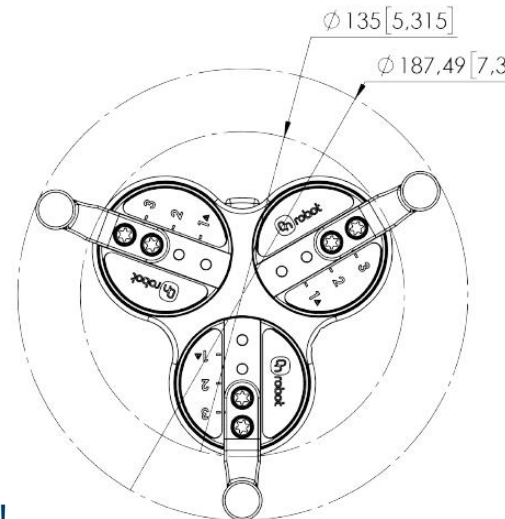
3FG25 vs. EZU 30-MB-M-B

Description:
Better
Worse



Product	Stroke per jaw mm	Gripping force (datasheet) N	Mass kg	Max. finger length mm	Max. finger weight kg	Finger load Mx, My, Mz, Fz Nm / N	List price GER EUR
EZU 30-MB-B	30	175-700	2,3	80	0,4	32, 35, 32, 800	4.250,00 (without Finger)
3FG25	61	450	1,6	Not specified	Not specified	Not specified	5.685,00 (with Finger)

- SCHUNK offers more gripping force (+250 N)
- OnRobot offers more stroke (+31 mm)
- OnRobot's mass is lower (-0.7 kg)
- SCHUNK price better (but OnRobot comes with standard fingers)
- SCHUNK gripper lower than OnRobot (-5mm)
- OnRobot gripper XY more compact than SCHUNK (-43 mm in diameter)



ATTENTION: Representation not true to scale!

Summary: EZU 30 Modbus vs. 3FG15/25

- ✓ **EZU offers more gripping force overall, which is dependent on significantly fewer influencing factors**
 - The full gripping force is provided without any start-up distance, which simplifies handling and speeds up the process
 - The gripping force is almost constant over the finger length, allowing the maximum potential of the gripper to be utilized
 - The gripping force is generated independently of the projection in the stroke direction, it is independent of the workpiece diameter or travel range
- ✓ **Relevant features help to differentiate us from OnRobot**
 - An integrated absolute encoder guarantees permanent referencing, regardless of emergency stop or power failure, which ensures continuous operation
 - Robots are always used without external gateways. Even when implementing double grippers.
 - We are strong in industrial applications; the number of available communication interfaces is significantly higher and integration into PLC control systems is simple. A field that OnRobot does not push at all.
- ✓ **Experience from the field shows that OnRobot grippers are weak in terms of durability and robustness**
 - The EZU offers the durability and robustness required by the industry
 - This plays a particularly relevant role in the application field of machine tool automation
- × **Open flanks for SCHUNK**
 - OnRobot grippers are slimmer and have a lower mass
 - OnRobot grippers offer a larger stroke and therefore more flexibility when handling parts
 - OnRobot supports a significantly higher number of robot manufacturers
 - OnRobot offers an attractive design (rounded) and scores with a large dealer network
 - OnRobot is a serious competitor, especially in the cobot market, in which we are regularly confronted

Robotiq Hand-E C10 vs. EZU 30



EZU – Mechatronic 3-finger centric gripper

Robotiq Hand-E C10 – Overview



- One size (counterpart to 2-finger hand-E)
- Focus on use with cobots (no certification as a collaborative gripper)
- Integrated controller with control via Modbus RTU (connection via tool flange, e.g. for universal robots, single grippers and double grippers)
- I/O coupling mode for simple control via digital I/O (4 predefined poses, function limitation) – for robots without Modbus RTU on the flange (Doosan, Techman, Aubo, ..)
- Referencing (calibration) required
- Additional features: gripping force maintenance, re-gripping possible, object recognition
- Price includes adapter to UR incl. cable and finger
- 5 million cycles warranty

	Hand-E C10
Force (data sheet value)	175 N * 3 = 525 N
Stroke per jaw	20 mm
Mass	1,5 kg
List price GER	4491 €
IP-rating	67 (dust-tight, protection against temporary submersion)

Recently introduced, detailed comparison pending

EZU – Mechatronic 3-finger centric gripper

Comparability



	Force	Stroke per jaw	List Price (GER)
EZU 30-MB-M-B	175 – 700 N	30 mm	4250 €
EZU 35-MB-M-B	390 – 1560 N	35 mm	4550 €
EZU 40-MB-M-B	900 – 3600 N	40 mm	4850 €



	Force	Stroke per jaw	List Price (GER)
C10	525	30	4491 €*

*with finger and adapter

Cluster A

Hand-E C10 vs. EZU 30-MB-M-B

Product	Stroke per jaw	Gripping force (datasheet)	Mass	Max. finger length	Max. finger weight	Finger load Mx, My, Mz, Fz	List price GER
	mm	N	kg	mm	kg	Nm / N	EUR
EZU30 MB-M-B	30	175-700	2,3	80	0,4	32, 35, 32, 800	4.250,00 (ohne Finger und Adapter)
HAND-E C10	20	525	1,5	Keine Angabe	Keine Angabe	Keine Angabe	4.491,00 (inkl. Finger und Adapter)

- SCHUNK offers more gripping force (+175 N)
- SCHUNK offers more stroke (+10 mm)
- Robotiq's own mass is lower (-0.8 kg)
- Base price SCHUNK better (but Robotiq has standard fingers and adapter included)
- Comparison of dimensions -> tbd

Preliminary result – detailed investigation pending

Summary: EZU 30 Modbus vs. Hand-E C10

- ✓ EZU offers more gripping force and more stroke than Robotiq
- ✓ Relevant features that help us to differentiate from Robotiq
 - An integrated absolute encoder guarantees permanent referencing, regardless of emergency stop or power failure, which ensures continuous operation
 - We are strong in industrial applications, the number of available communication interfaces is significantly higher and integration into PLC control systems is simple. A field that Robotiq does not push at all.
- × Open flanks for SCHUNK
 - Robotiq grippers are slimmer and have a lower mass
 - Robotiq offers an appealing design (rounded) and scores with a large dealer network
 - Robotiq is a serious competitor, especially in the cobot market, in which we are regularly confronted

Preliminary result – detailed investigation pending

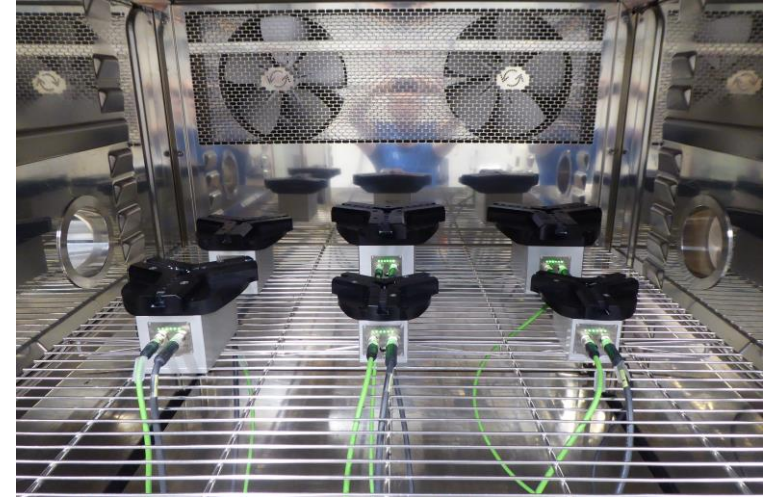
Status quo and next steps



Project status quo

Actual topics:

- Durability test
- Determination of technical data (gripping forces, diagrams, etc.)
- Series handover, building up stock for sales
- Assembly of grippers for trade fairs and CoLabs
- Launch preparation



Timeline 2024

13. August: Pre-Booking started

2. September: SCHUNK-on-Air Part 2 (final information)

8. September: Go-Live Web (Landingpage mechatronics + series, no single versions)

9./10. September: First public communication at the IMTS in Chicago and AMB in Stuttgart (trade fair demo machine tool loading with EGU/EZU, new products brochure, digital flyer, animation)

7. Oktober: Datasheets and documentation via STB available

25. Oktober: Final technical approval by R&D

05. November: Sales Release (start of pre-booking gripper shipment)

07. November: Further communication (Website, Social Media, Presse, Print Flyer, YouTube, Robot Ecosystems)

Pre-Booking

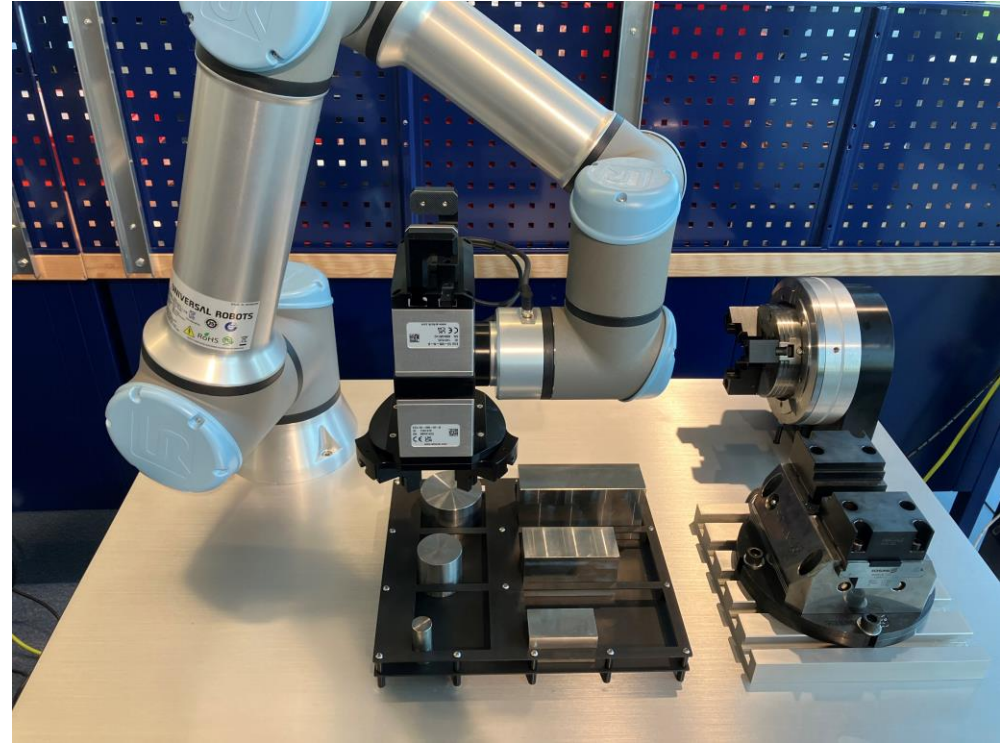
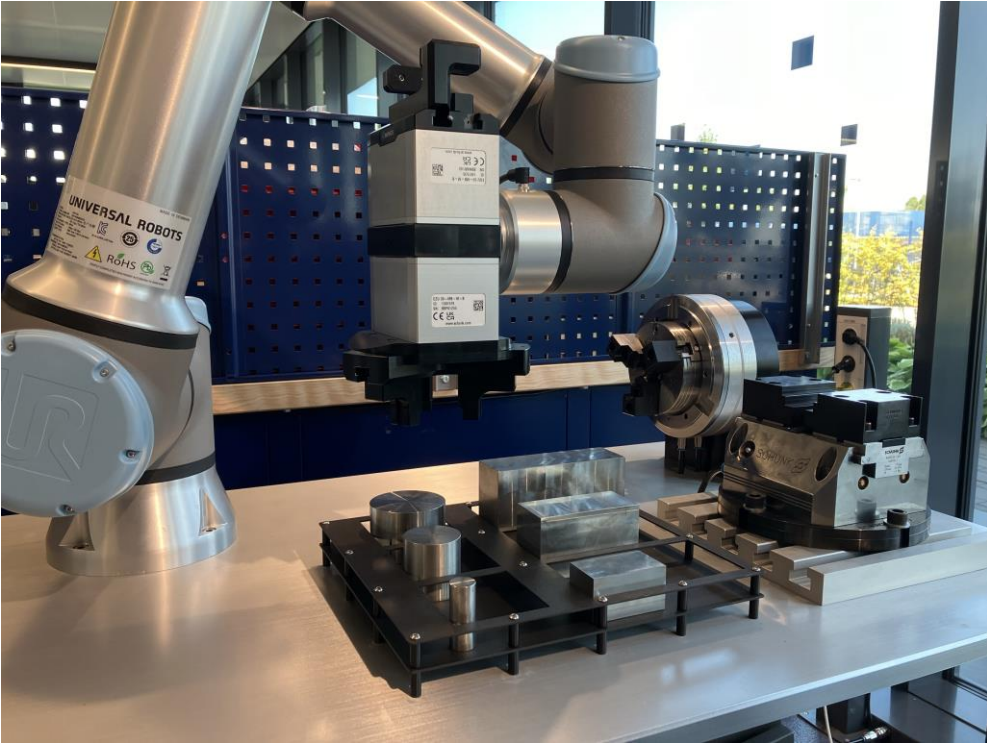
We are ready to write quotations and enter orders.

Delivery is subject to availability from the time of sales release.

If you have any questions, please contact the project team.

EZU – Mechatronic 3-finger centric gripper

Demo @ AMB



Ansprechpartner bei Fragen

Product Sales



**Oliver
Herbrik**

Marketing



**Laura
Neuburger**

Product Management



**Benjamin
Schell**



**Marlon
Schaaf**



Hand in hand for tomorrow