



EKS



EGS



ERS

Overview of electric swivel units

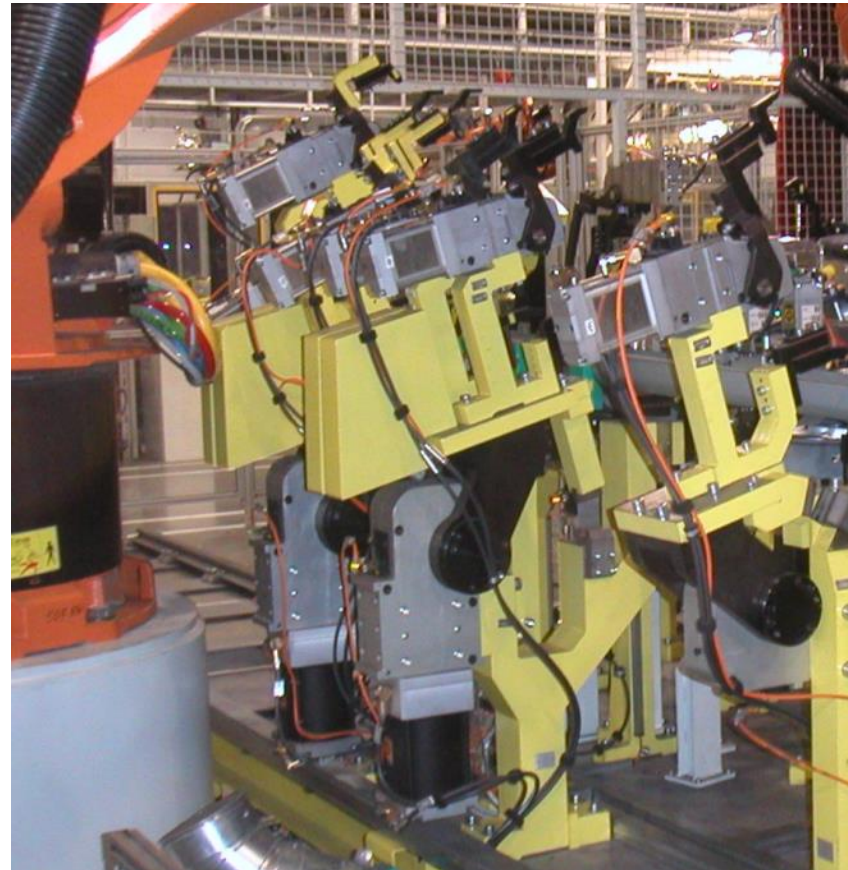
2018

Requirement: move 20 – 100kg!

- In automation, swivel units are used to position heavy loads such as complete clamping modules, fixture elements or welding guns with total weights of more than 50kg

Pneumatics have their limits

- Tools system according to toggle-locked clamp design principle
- High-volume compressed air cylinders tend to vibrate with heavy loads and short cycle times
- Critical situation in case of emergency stop due to the compressed air in the cylinder chambers
- Negative energy footprint due to high air consumption



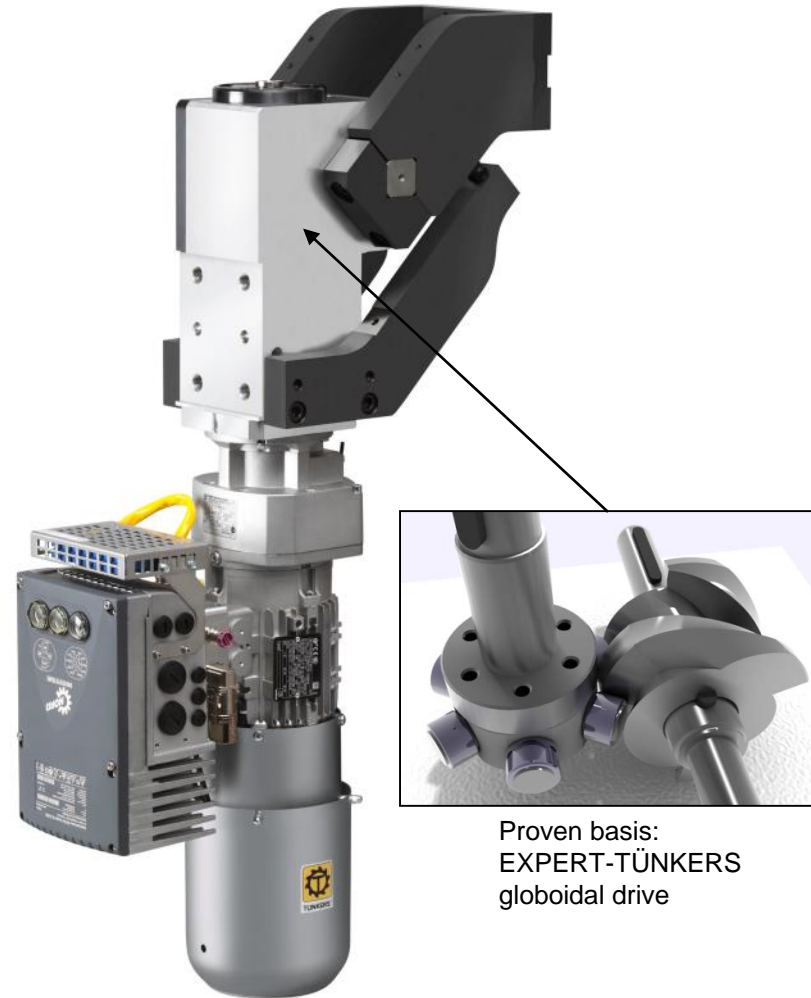


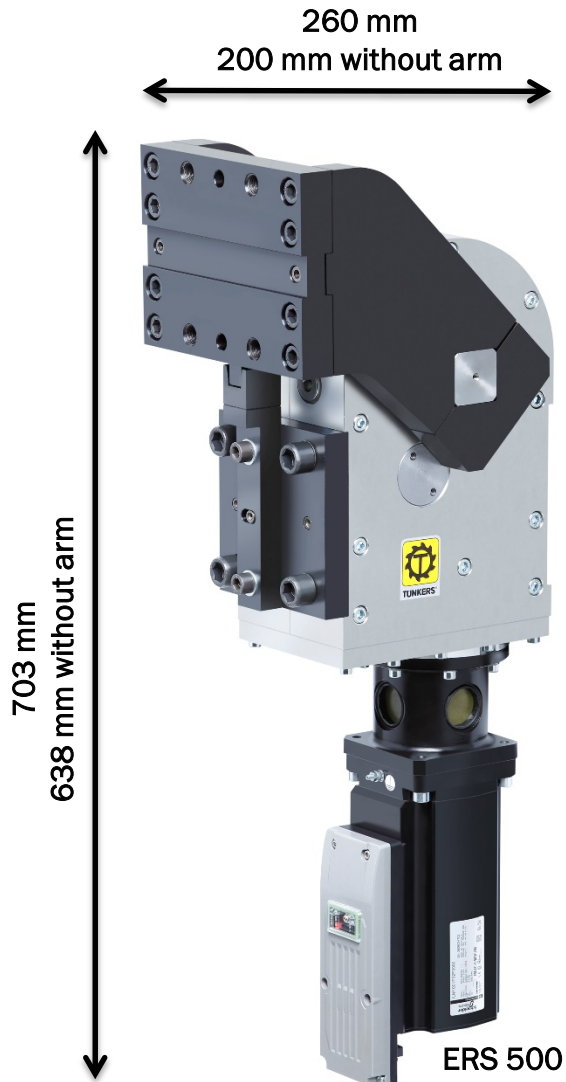
➤ Features:

- Mechanical system compatible with pneumatic series KS
- Toggle-locked mechanism with over-centre lock function
- High-quality axial and radial needle bearings
- Electric motor with hollow shaft drive and ball screw
- AC motor 400 V. Mechanical brake as “end position stop“ and for emergency stop function

➤ Features:

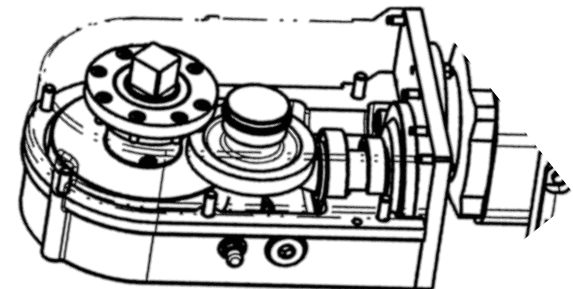
- Based on EXPERT-TÜNKERS expertise with regard to rotary tables and small drives
- Transmission of swivel motion with globoidal drive
- Eccentric bearing of the shaft for high-precision bearing of the drive
- Compact design with dimensions compatible with the TÜNKERS pneumatic series
- High emergency stop resistance
- AC or servo motor 400 V with one or two mechanical brakes.





➤ Features:

- Electric swivel unit in compact design
- Mechanical connections compatible with pneumatic series
- Drive torque 500 Nm
- Freely positioned opening angle 10-135° in max. 3 seconds (360° possible)
- Safe operation with STO
- Centralized control unit with field distributor and hybrid line
- 400V servo drive with plug-in storage card



- Improved cycle time vs. pneumatic system thanks to adjustable moving speed
- Allows for freely positioned end positions as well as intermediate positions
- Positioning with referencing thanks to absolute encoder at the motor
- Speed feedback with combination encoder for highly precise positioning with constant torque until standstill
- Compact design thanks to added converter with integrated field bus interface
→ no control cabinet required
- Simple connection with power and bus plug
- Safe stop (STO) integrated in the converter
- To be used with all common bus systems (Profibus, Profinet, etc.)
- Simple implementation with software modules
- Easy service with plug-in converter and plug-in storage module containing the parameters

Comparison pneumatic vs. Electric swivel unit

KS vs. ERS

135° opening angle	P	E	Pneumatic swivel KS 200.5 BH		Electric swivel ERS 500 M03	
			1 unit	100 units	1 unit	100 units
Energieverbrauch			[l]	[l]	[kWh]	[kWh]
Energieverbrauch (l bzw. kWh) (Zyklus) / Energy Consumption (l or kWh) (cycle)			82,00	8200,00	0,00083	0,0833
Energieverbrauch (0,13 kWh/m³) / Energy consumption (0,13 kWh/m³)	0,13		[kWh]	[kWh]	[kWh]	[kWh]
pro 1,5 Jahr (375 Tage) / per 1,5 year (375 days):	375		4.086	408.572	312,38	31.238
Im Projekt (8 Jahre) / during the project term (8 years):	8		21.790	2.179.048	1.666	166.600
CO2-Emission (600 g/kWh) / CO2-emission (600 g/kWh)	600		[kg]	[kg]	[kg]	[kg]
pro 1,5 Jahr (375 Tage) / per 1,5 year (375 days):	375		2.451	245.143	187,4	18.743
Im Projekt (8 Jahre) / during the project term (8 years):	8		13.074	1.307.429	1.000	99.960
Betriebskosten (1,43 ct/m³ – 11 ct/kWh)	1,43	11	[€]	[€]	[€]	[€]
pro 1,5 Jahr (375 Tage) / per 1,5 year (375 days):	375		449,43 €	44.942,88 €	34,36 €	3.436,13 €
Im Projekt (x Jahre) / during the project term (x years):	8		2.396,95 €	239.695,33 €	183,26 €	18.326,00 €
Betriebsmittelkosten / equipment cost			[€]	[€]	[€]	[€]
Invest Spanner / cost clamp			8.022,00 €	802.200,00 €	7.433,76 €	743.376,00 €
Invest Ventilinsel - Schaltschrank für Schwenker / cost valve island - cartridge for swivel unit			499,00 €	49.900,00 €	471,00 €	47.100,00 €
Gesamte Investition			8.521,00 €	852.100,00 €	7.904,76 €	790.476,00 €
Summe Betriebskosten (1,5 Jahre) + Betriebsmittelkosten Sum operational costs (1,5 years) + equipment costs			8.970,43 €	897.042,88 €	7.939,12 €	793.912,13 €
Summe Betriebskosten (x Jahre) + Betriebsmittelkosten Sum operational costs (x years) + equipment costs			10.917,95 €	1.091.795,33 €	8.088,02 €	808.802,00 €

CO2
Emission

Operating
costs

Investment
(List price)

Total
costs

EKS	EGS	ERS
<ul style="list-style-type: none"> - Hollow shaft motor • Motor brake + Toggle-locked • Opening angle max. 135° - Only positioned in end position • Torque max. 450Nm - Fixed motor type + Compatible with KS series + Swivel arms compatible with KS series - To be discontinued 	<ul style="list-style-type: none"> + Servo drive + Motor brake (also double) • Globoidal drive + Opening angle > 360° + Freely positioned + Torque max. 500 Nm + 5 motors available, expandable + Motor exchangeable - Assembly position must be clarified 	<ul style="list-style-type: none"> + Servo drive • Motor brake + Wheel set drive + Opening angle > 360° + Freely positioned + Torque max. 500 Nm + Three motors available, expandable + Motor exchangeable + Independent assembly position + Compact + Low price + Rotating axis in the centre <p>→ Tünkers tip</p>

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