

## Tension/compression force transducer With integrated swivel head

**Accuracy:** 0,2%  
**Output signal:** 4...20 mA; 2-wire



### Description

Swivel heads are important machine elements with regard to rotary motions, pivoting or tilting movements. More and more in such applications forces are to be measured. Especially for that reason tectsis developed a swivel head force transducer using latest thin film technology.

Head dimensions are fixed according to DIN 648 (DIN ISO 12240-4), measure series E, internal connection thread according to measure series K. This also corresponds with the connection measures of standard pneumatic cylinders according to ISO 8139. Bearings are maintenance-free and suited for alternating load. Transducers can be treated with alternating load up to 50%.

Force transducers can be mounted on lifting cylinders directly. E.g. in this way they can be used for measuring connecting forces or detecting overloads.

Thanks to thin film technology (atomic bonding between strain gages and transducer) swivel head force transducers are very robust and long-term stable. An integrated amplifier delivers an output signal of 4...20 mA. Swivel head force transducer fulfils the regulations of EMC according to directive EN 61326.

Other geometries, nominal loads and electrical outputs can be realized on request.

### Features

- thin film implants (instead of conventional bonded foil strain gauges)
- corrosion free stainless steel
- integrated amplifier
- small temperature drift
- high long term stability
- high shock and vibration resistance
- for dynamic or static measurements
- good repeatability
- easy to install

### Measuring ranges

- Tension and compression forces  
18 / 34 / 45 kN

### Applications

- Electric, pneumatic and hydraulic lifting cylinders
- Connecting rods

**Model: F2303**

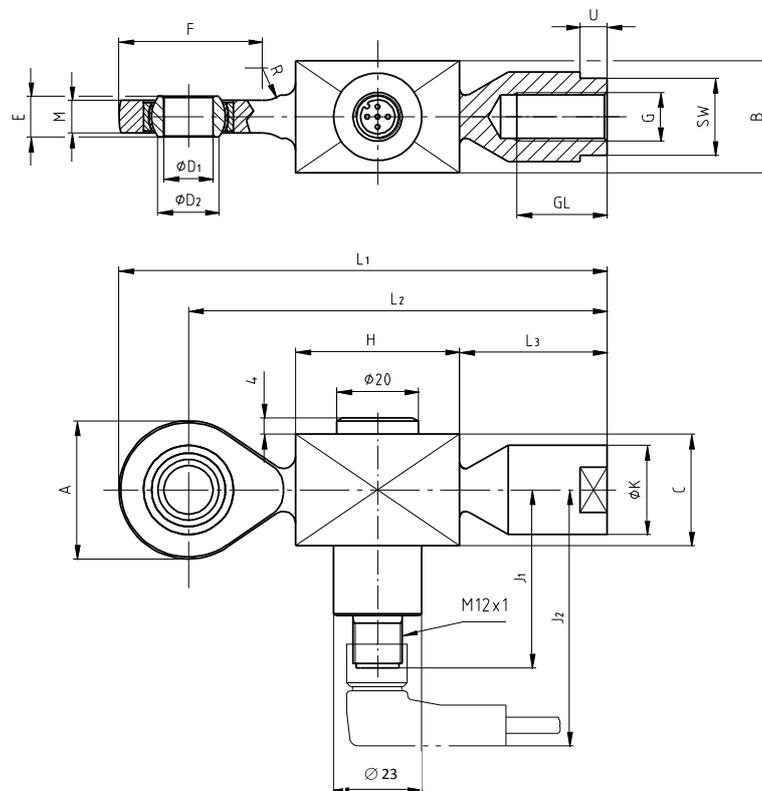
## Technical data

<b>Model</b>	<b>F2303</b>
Nominal load $F_{nom}$	18 / 34 / 45 kN
Accuracy	< 0,2 % v.E.
Limit load	150 % $F_{nom}$
Breaking load	> 300 % $F_{nom}$
Combined error	$\leq \pm 0.2$ % of F.S.
Hysteresis	$\leq \pm 0.1$ % of F.S.
Max. dynamic load	$\pm 50$ % $F_{nom}$ acc. to DIN 50100
Creep, 30 min. at $F_{nom}$	$\leq \pm 0.1$ % of F.S.
Cross sensitivity (signal with 100% nominal force with 90°)	< 5 %
Nominal deflection	< 0.1 mm
Nominal temperature range	-20 ... +80 °C
Service temperature range	-40 ... +80 °C
Storage temperature range	-40 ... +85 °C
Temperature effect - span - zero signal	$\leq \pm 0.2$ % of F.S. / 10K $\leq \pm 0.2$ % of F.S. / 10K
Vibration resistance	20g, 100h, 50...150Hz acc. to DIN EN 60068-2-6
Protection type (acc. to EN 60 529/IEC 529)	IP 67
Noise emission	acc. to EN 61326
Noise immunity	acc. to EN 61326
Electrical protection	Reverse voltage, overvoltage and short circuit protection
Analogue output - Output signal - Current consumption - Power requirement - Burden - Response time - Electrical connection	4 ... 20 mA; 2-wire Signal current 10 ... 30 V DC for current output $\leq (U_B - 6 \text{ V}) / 0,024 \text{ A}$ $\leq 1 \text{ ms}$ (within 10 % ... 90 % $F_{nom}$ ) Circular connector M 12x1, 4-pin
Material of measuring device	Stainless steel

of F.S. = full scale value Construction: stainless steel (1.4542) material

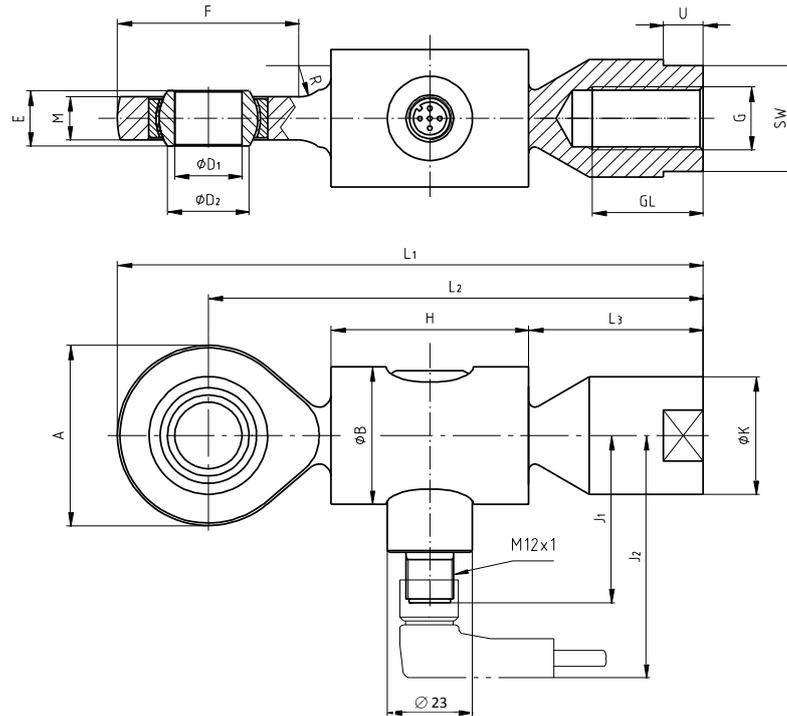
## Dimension

### Version 18 kN



Nominal load	A	B	C	$\varnothing D_{1-0,008}$	$\varnothing D_2$	E	F	G	GL	H	J <sub>1</sub>	J <sub>2</sub>	$\varnothing K$	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	M	SW	U
18 kN	34	27	27	12	15	10	35	M12x1,25	22	40	44	63	22	119	102	36	8	19	8

## Version 34 / 45 kN

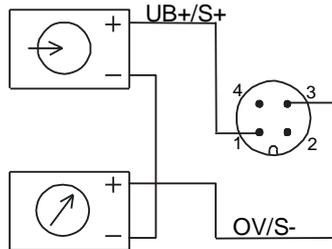


Nominal load	A	ØB	ØD <sub>1-0,008</sub>	ØD <sub>2</sub>	E	F	G	GL	H	J <sub>1</sub>	J <sub>2</sub>	ØK	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	M	SW	U
34 kN	46	35	17	20,7	14	46	M16x1,5	28	50	43	62	30	148	125	44	11	27	12
45 kN	53	54	20	24,2	16	54	M20x1,5	33	54	44	63	35	171	144,5	54	13	32	13

## Electrical connection

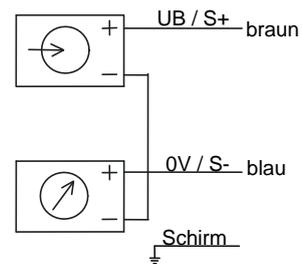
### Anlogue output 4..20mA (2-wire)

Circular connector M12x1, 4-pin



940E01

Cable output



940E03

### Pin configuration of connector M12x1 (4-pin) /

### Open cable outlet of the tecsis standard connection cable (STL 288, black)

	4...20 mA (2 – wire)	
	Pin	cable outlet
Supply: UB+	1	brown
Supply: 0V	3	blue
Signal: S+	1	brown
Signal: S-	3	blue
⊕	thread M12x1	screen

Subject of technical changes