

SK-02 SERIES

CABLE FORCE TRANSDUCER

FEATURES

- Suitable for cable diameters: $\varnothing 8 \dots 36$ mm
- Sealed force sensor with 350Ω strain gauges
- Specially designed for retrofitting in existing crane equipment
- Brass supports allow smooth mechanical cable guidance
- IP 66 protection class
- Stainless steel construction
- Quick and easy installation
- Easy to mount directly on fixed point of cable
- Reliable and economical



Fig. 1: SK-02 | Cable Force Transducer

DESCRIPTION

The SK-02 cable sensor is a low cost load cell specially designed to measure the tension force on hoisting rope. Its installation is very easy and do not require the hoist to be dismantled nor modified. The SK-02 sensor family covers a large range of cables diameter $\varnothing 8 \dots 36$ mm corresponding to lifting loads $8 \dots 150$ kN ($\sim 800 \dots 15000$ kg). Together with a load conditioner (LMU Series) and a digital display (AN Series, GAD Series), Magtrol SK-02 cable sensors constitute an complete measuring system for visualizing and continuously monitoring loads and detecting overloads.

APPLICATIONS

The SK-02 cable sensor is recommended for measuring load and overload to ensure the safety of industrial lifting installations, overhead cranes, winches and hoists. It is perfectly suitable for implementation on existing lifting systems in order to upgrade in compliance with actual safety standards without heavy modification. It is recommend to be used with a load conditioners (LMU Series) easily coupled with a digital display (AN Series, GAD Series)

OPERATING PRINCIPLES

Once installed, the SK-02 sensor creates a slight deflection on the cable. When the cable is subjected to tension load (F), the geometric deformation is acting as lateral forces (P) which are measured by the force sensor (A). After measurement and conversion, the corresponding signal represents the actual load applied to the cable.

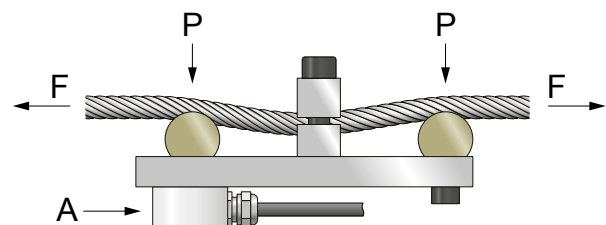


Fig. 2: Operating principles

SPECIFICATIONS

MECHANICAL CHARACTERISTICS¹

MODEL	SK-02 T		SK-02 P		SK-02 C		SK-02 G	
Cable diameter	Min. Nominal Load	Max. Nominal Load	Min. Nominal Load	Max. Nominal Load	Min. Nominal Load	Max. Nominal Load	Min. Nominal Load	Max. Nominal Load
8 mm - 11 mm	8 kN	15 kN	14 kN	26 kN	-	-	-	-
12 mm - 16 mm	15 kN	30 kN	26 kN	50 kN	-	-	-	-
17 mm - 22 mm	30 kN	50 kN	50 kN	95 kN	-	-	-	-
23 mm - 28 mm	-	-	-	-	50 kN	80 kN	-	-
29 mm - 36 mm	-	-	-	-	-	-	80 kN	150 kN

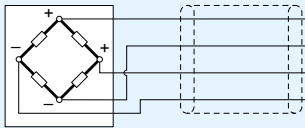
ENVIRONMENT

Operating temperature	-40° C ... 80° C
Storage Temperature	-55° C ... 100° C
Material	Stainless steel / Brass
Protection Class	IP66

ELECTRICAL CHARACTERISTICS

Nominal Sensitivity	1 mV/V - 2 mV/V for 1/5 of the overload at rupture (depending on cable diameter)
Strain gauge impedance	350 Ω
Supply Voltage	5 ... 10 V
Connection cable	Shielded Cable K-414; lenght 8 m

Wiring colors (according to DIN)



- Supply + : red
- Supply - : blue
- Signal + : white
- Signal - : green

a) Loads are valid for standard crane cables with 180 kg/mm² galvanized steel wire. Specifications may differ with other types of cables.

MOUNTING

Tightening torque for fixing screws (B): 30 N·m

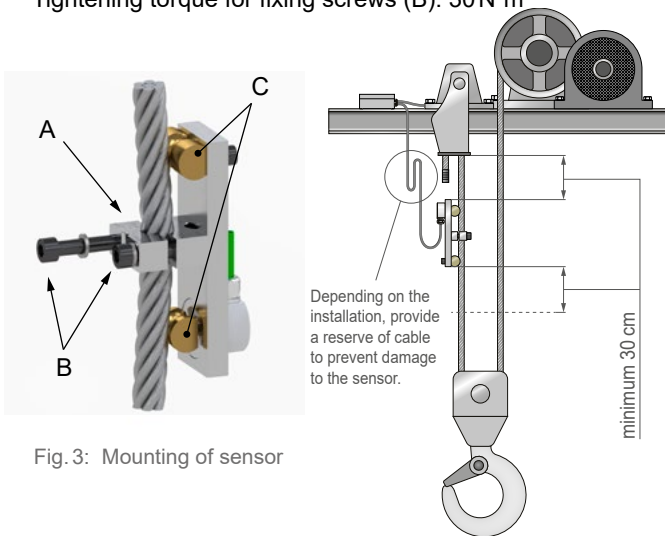
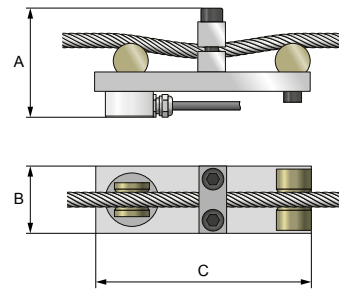


Fig. 3: Mounting of sensor

The SK-02 sensor is fixed to the cable by means of a mounting clamp (A) and two screws (B). After tightening, the cable will be slightly deflected and relying on the two brass supports (C) with rounded contact surfaces.

DIMENSIONS



NOTE: Original dimensions are in Metric units. Dimensions converted to English units have been rounded up to 2 decimal places.

MODELS	∅ Cable	units	A	B	C	Weight
SK-02 - T	∅8 - 22	mm	86 - 96 ^{a)}	50	160	2.2 kg
SK-02 - P		in	3.39 - 3.78 ^{a)}	1.97	6.30	4.85 lb
SK-02 - C	∅23 - 28	mm	105	60	200	2.5 kg
		in	4.13	2.36	7.87	5.51 lb
SK-02 - G	∅29 - 36	mm	133	90	220	5.4 kg
		in	5.27	3.54	8.66	11.9 lb

a) Depending on the clamp configuration

DATASHEET

SYSTEM CONFIGURATION OPTIONS

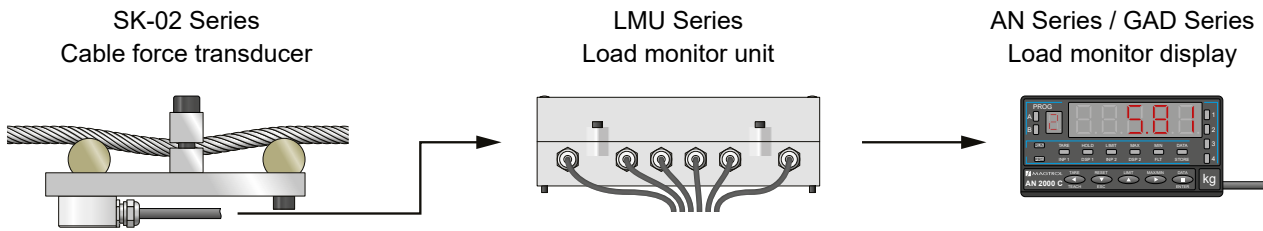
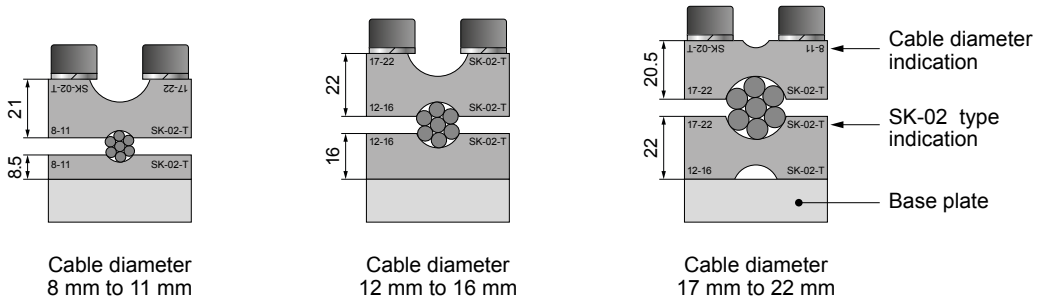


Fig.4: SK-02 system configuration and option

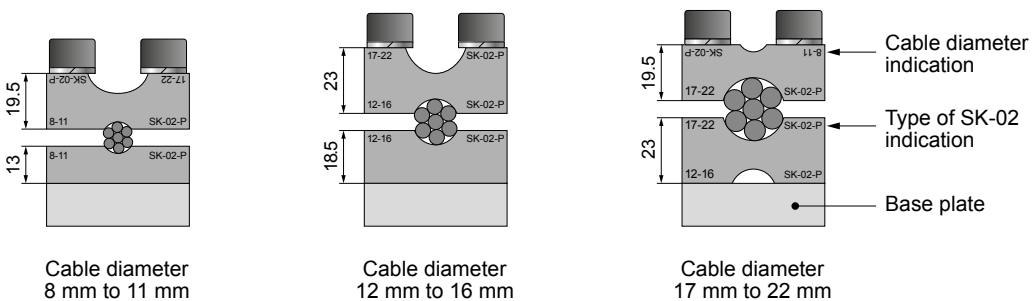
CLAMP CONFIGURATION

Clamp positions are based on the cable diameter. For example, if the cable diameter is between 12 mm and 16 mm, the clamps must be mounted according to the middle drawing.

SK-02-T CONFIGURATION *



SK-02-P CONFIGURATION *



* The models SK-02-T and SK-02-P are always delivered with all flanges (4 pieces). It is thus possible to mount these products with cables of ø8 - 22 mm.

ORDERING INFORMATIONS

ORDERING NUMBER	SK - 02 -
T : ø cable 8-22 mm (8-50 kN) P : ø cable 8-22 mm (14-95 kN) C : ø cable 23-28 mm (50-80 kN) G : ø cable 29-36 mm (80-150 kN)	

Example: SK-02 Cable Force Transducer for a wire ø18 mm, with 60 kN tension, would be ordered as: SK-02-P