

# SK-02 SERIES

## CABLE FORCE TRANSDUCER

### FEATURES

- Suitable for cable diameters of 8 mm to 36 mm
- Sealed force sensor with 350Ω strain gauges
- Specially designed for retrofitting in existing crane equipment
- Brass supports allow smooth mechanical cable guidance
- IP66 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. Easy installation does not require the hoist to be dismantled nor modified. The SK-02 sensor family covers a large range of cables from 8 to 36 mm in diameter and loads of 8 k·N (~800 kg) to 150 k·N (~15 tons). Together with a load conditioner (LMU Series) and a digital display (AN Series, GAD Series), Magtrol SK-02 Cable Sensors constitute a 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 (Magtrol LMU Series) easily coupled with a digital display (AN Series, GAD Series)

### OPERATING PRINCIPLE

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.

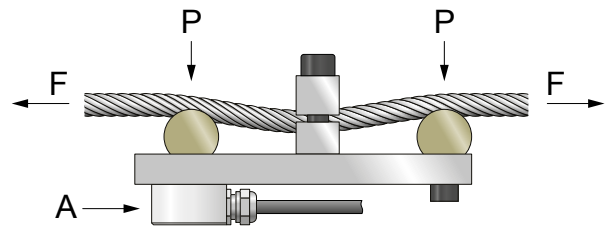


Fig.2 : Operating principle

**SPECIFICATIONS**

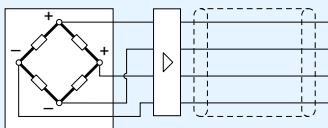
**MECHANICAL CHARACTERISTICS**

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 k-N	15 k-N	14 k-N	26 k-N	-	-	-	-
12 mm - 16 mm	15 k-N	30 k-N	26 k-N	50 k-N	-	-	-	-
17 mm - 22 mm	30 k-N	50 k-N	50 k-N	95 k-N	-	-	-	-
23 mm - 28 mm	-	-	-	-	50 k-N	80 k-N	-	-
29 mm - 36 mm	-	-	-	-	-	-	80 k-N	150 k-N

**ENVIRONMENT**

Operating temperature	-40° C to 80° C
Storage Temperature	-55° C to 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 V - 10 V
Connection cable	Shielded Cable K-414; lenght 8m
Wiring colors (according to DIN)	 <ul style="list-style-type: none"> <li>Supply + : red</li> <li>Supply - : blue</li> <li>Signal + : white</li> <li>Signal - : green</li> </ul>

a) Loads are valid for standard crane cables with 180 kg/mm<sup>2</sup> galvanized steel wire. Specifications may differ with other types of cables.

**MOUNTING**

Tightening torque for fixing screws: 30 N·m

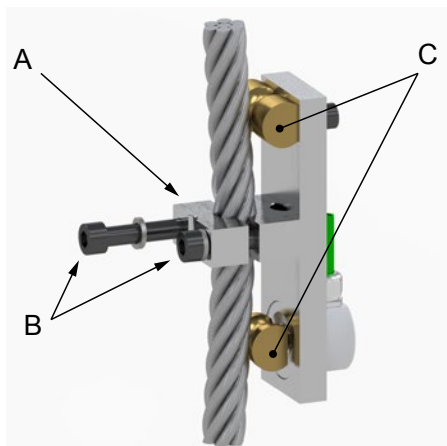
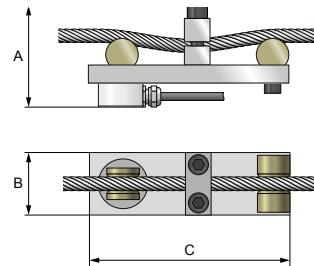


Fig.3 : Mounting of sensor

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**



MODEL	Ø CABLE	UNITS	A	B	C
SK-02 - T	ø8 - 22	mm	86 - 96 <sup>a)</sup>	50	160
SK-02 - P		in	3.386 - 3.78 <sup>a)</sup>	1.969	6.299
SK-02 - C	ø23 - 28	mm	105	60	200
		in	4.134	2.362	7.874
SK-02 - G	ø29 - 36	mm	133	90	220
		in	5.236	3.543	8.661

a) Depending on the clamp configuration

**NOTE:** Original dimensions are in Metric units. Dimensions converted to English units have been rounded up to 3 decimal places.

SYSTEM CONFIGURATION OPTIONS

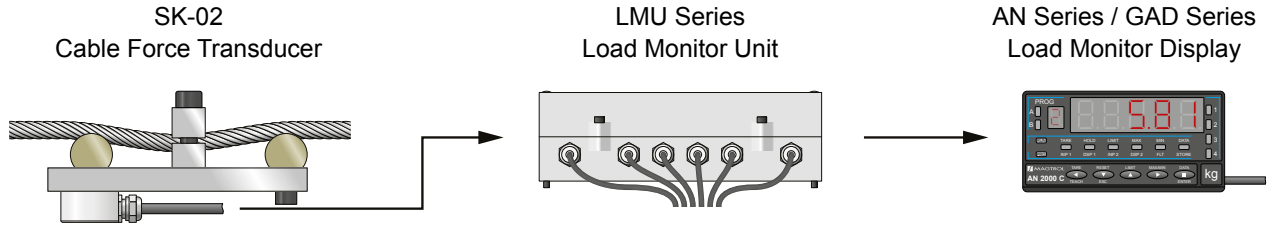
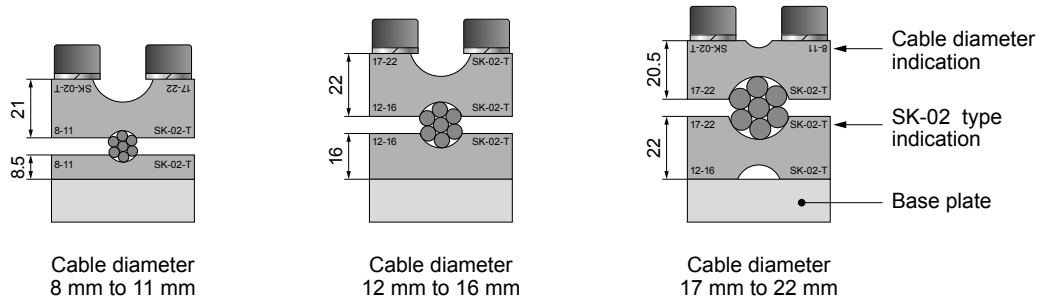


Fig.4 : SK-02 system configuration options

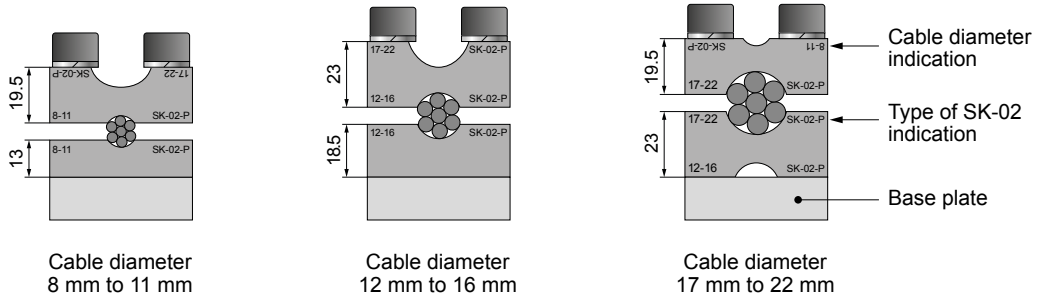
CLAMP CONFIGURATION

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



ORDERING INFORMATION

MODEL NUMBER	SK - 02 -	-
<p>T : <math>\varnothing</math> cable 8-22 mm (8-50 kN)                  P : <math>\varnothing</math> cable 8-22 mm (14-95 kN)                  C : <math>\varnothing</math> cable 23-28 mm (50-80 kN)                  G : <math>\varnothing</math> cable 29-36 mm (80-150 kN)</p>		

Example: SK-02 Cable Force Transducer for a wire  $\varnothing$ 18 mm, with 60 k-N tension, would be ordered as: SK-02-P