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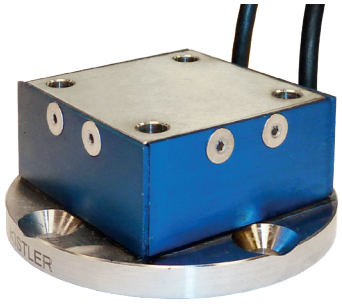
Universal Neck Load Cell

Type M55646A...

Six-axial

Type M55646A... is designed to measure forces and moments in the upper neck and/or in the lower neck of the crash test dummy Q 10 year old (QA).

- Six-axial (F_x, F_y, F_z, M_x, M_y, M_z)
- UPS module available
- Low linearity errors and hysteresis errors
- Kistler system cabling
- Polarities according to SAE J211/1



Description

The load cell is made of elements on which forces are transmitted. The mechanical deformation element, applied with strain gage, serves for mechanical electrical deformation. The effectiveness of the load cell resembles the behavior of a spiral spring. The forces to be measured create mechanical stretches and buckling in the gaging member. In order to avoid linearity errors, the deformation paths are constructively held small (high rigidity). Thus a proportional behavior is realized. The force and moment proportional resistance variations are measured by a Wheatstone-type bridge circuit.

The load cell is available with UPS modules. Customized cable lengths and connectors with specific pin assignments are optionally available. When the load cell is applied to the location lower neck, polarities of the axes Fx and Mx must be changed to conform to SAE J211/1.

Technical data

Axial data		**F_x**	**F_y**	**F_z**	**M_x**	**M_y**	**M_z**
Measuring range	kN	13.3	13.3	17.8			
	N·m				450	450	240
Bridge output voltage (typ.)	mV/V	2.4	2.4	1.3	2.5	2.5	2.4
Sensitivity (typ.)	µV/V/kN	180	180	75			
	µV/V/N·m				5.6	5.6	10
Bridge resistance	Ω	350	350	700	350	350	350[1)]
Ultimate load, static	%	150	150	150	150	150	150

General Data		
Supply voltage[2)]	VDC	2.5 ... 15
Insulation resistance[3)]	GΩ	>10
Operating temperature range	°C	–20 ... 80
Storage temperature range	°C	–30 ... 90
Amplitude non-linearity (typ.)	%	<1
Hysteresis (typ.)	%	<1
Channel cross talk	%	<5
Bridge zero output (typ. / max.)	mV/V	0.01 / 0.03
Weight (without cable)	grams	250

All specifications are typical at 25 °C and rated at 10 V sensor supply voltage, unless otherwise specified.

1) Up to serial number 0004616643 (up to year of construction 2015) the bridge resistance of the load cells is 700 Ω in M_z. Please mind the first calibration!
2) With UPS module 9 ... 12 VDC
3) All wires to load cell housing, measured with 10 VDC

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Application

Type M55646A... is directly assembled at the designated location in the dummy and provides important information about the loads on the human body occurring during a crash test.

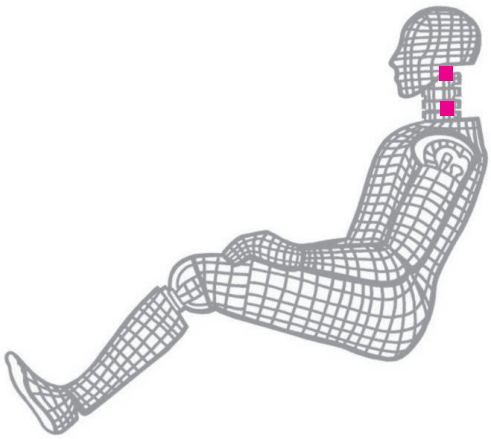

Fig. 1: Dummy application, locations upper neck & lower neck

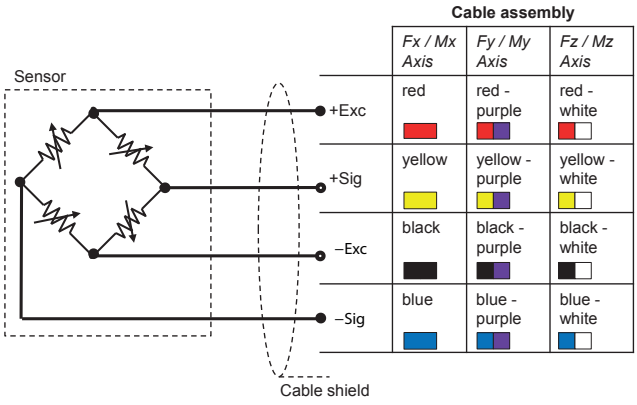

Fig. 2: Cable assembly

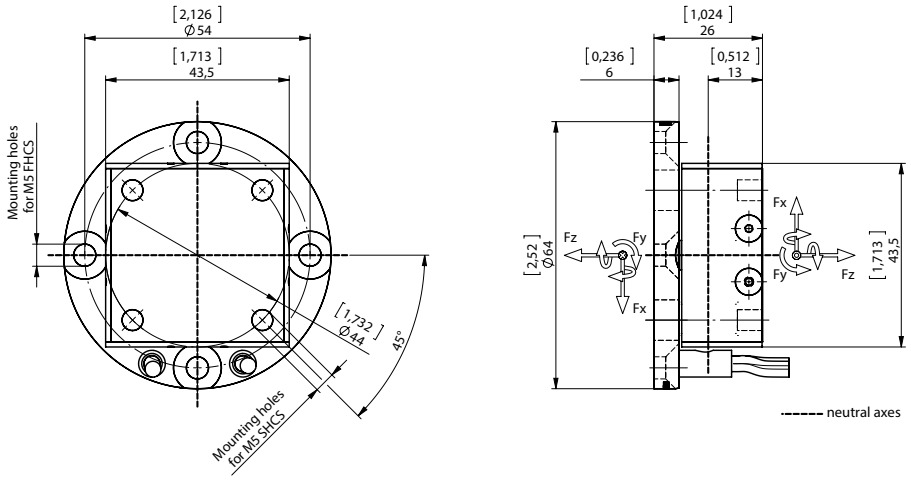

Fig. 3: Dimensions in mm

Included accessories

- None

Optional accessories	Type no.
• Add. label with serial number, plug side	M015KABID
• UPS module	on request
• Add. label with ID number at sensor	M015KABID
• Add. shunt	on request

Ordering key

Type M55646A ☐☐☐☐☐☐

Design

Standard	**UM**

Cable length before electronics

0 cm	**00**
<10 cm (digit x 1 cm)	**C#**
10 cm ... 9.9 m (digit x 10 cm)	**##**
10 m ... 90 m (digit x 10 m)	**D#**

Additional electronics

Sensor detail, as per type declaration force-moment TP-650-2	**#**

Cable length after electronics

0 cm	**00**
<10 cm (digit x 1 cm)	**C#**
10 cm ... 9.9 m (digit x 10 cm)	**##**
10 m ... 90 m (digit x 10 m)	**D#**

Connector

Conn. type, as per TP-600	**#-**
Conn. type assignment, as per TP-600	**-#**

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