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KISTLER
measure. analyze. innovate.

Femoral Neck Load Cell

Type M53903A...

Triaxial

Type M53903A... is designed to measure forces in the femur and femur neck of the crash test dummy WorldSID.

- Triaxial (F_x, F_y, F_z)
- 350/700 Ω measuring bridge
- ID module available
- Low linearity error and hysteresis error
- 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.

Line-up of equivalent load cells:

	Type
Kistler	M53903A...
Denton	W50-71080

In order to avoid linearity errors, the deformation paths are constructively held small (high stiffness). 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 ID modules, either a UPS module (Universal Parameter Memory) or a Dallas module can be chosen for this functionality. These modules are integrated in an external housing in the wiring or in the connector. Customized cable lengths and connectors with specific pin assignments are optionally available.

Technical Data

Axes		F_x	F_y	F_z
Measuring range	kN	10	25	10
Bridge output voltage (typ.)	mV/V	1,65	2	1,65
Sensitivity (typ.)	µV/V/kN	165	80	165
Bridge resistance	Ω	350	700	350
Ultimate load, static	%	150	150	150
Supply voltage				
without ID module	VDC	5 ... 15		
with ID module	VDC	9 ... 12		
Insulation resistance[1)]	MΩ	>90		
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	0,02/0,03		
Weight (without cable)	grams	238		

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

1) All wires to screen (GND), measured with 10 VDC

M53903A_000-976e-12.11

This information corresponds to the current state of knowledge. Kistler reserves the right to make technical changes. Liability for consequential damage resulting from the use of Kistler products is excluded.

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Application

Type M53903A... is designed to measure forces in the femur and femur neck of the crash test dummy WorldSID.

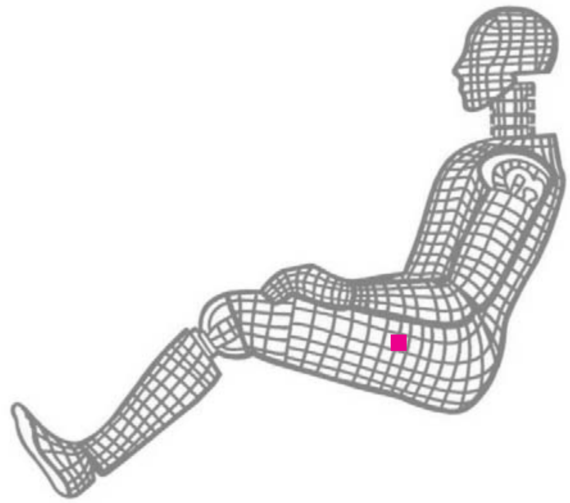

Fig. 1: Dummy application, location femur and femur neck

Ordering Key

Type M53903A ☐ ☐ ☐ ☐ ☐

Design

Standard	2M

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	-#

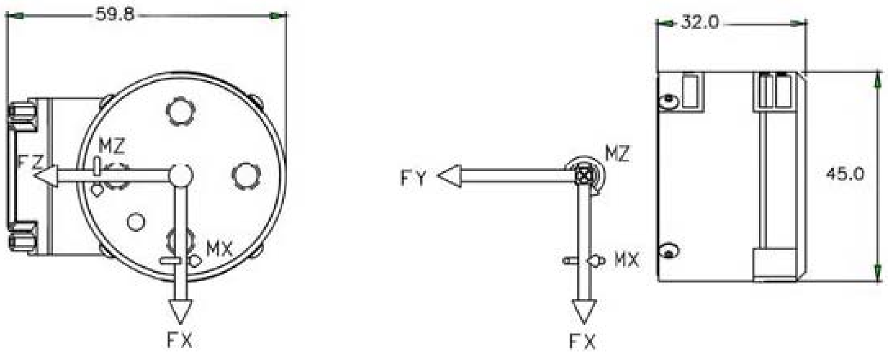

Fig. 2: Dimensions in mm

Included Accessories

- None

Optional Accessories

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

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