

Lumbar Spine Load Cell

Type M537A3A...

Triaxial

Type M537A3A... measures forces and moments of the lumbar spine in the crash test dummies E1 and E2.

- Triaxial (F_y , F_z , M_x)
- 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.

Line-up of equivalent load cells:

	Type
Kistler	M537A3A...
FTSS	IF-413
Denton	2890

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 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. Customized cable lengths and connectors with specific pin assignments are optionally available.



Technical Data

Axes		F_y	F_z	M_x
Measuring range	kN	13,5	13,5	
	N·m			550
Bridge output voltage	mV/V	1,8	1,8	3,0
Sensitivity	$\mu\text{V}/\text{V}/\text{kN}$	133	133	
	$\mu\text{V}/\text{V}/\text{N}\cdot\text{m}$			5,5
Bridge resistance	Ω	700	350	350
Ultimate load	%	150	150	150
Supply voltage	without ID module	VDC	5 ... 15	
	with ID module	VDC	9 ... 12	
Insulation resistance ¹⁾	M Ω	>90		
Operating temperature range	$^{\circ}\text{C}$	-20 ... 80		
	$^{\circ}\text{C}$	-30 ... 90		
Amplitude non-linearity	%	<1		
Hysteresis	%	<1		
Channel cross talk	%	<5		
Weight (without cable)	grams	662		

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

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Application

Type M537A3A... measures forces and moments of the lumbar spine in the crash test dummies E1 and E2.

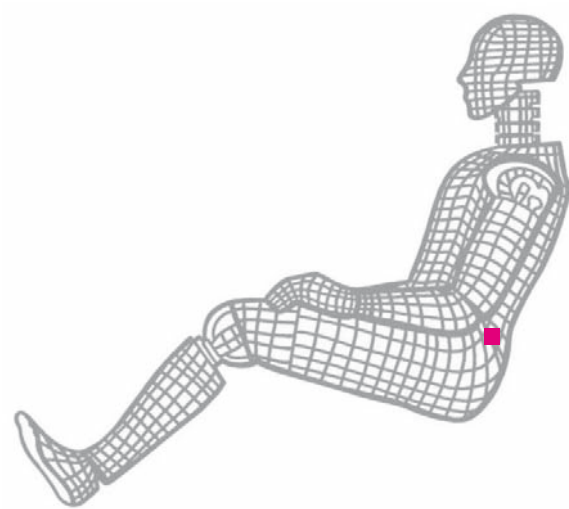


Fig. 1: Dummy application, location lumbar spine

Ordering Key

Type M537A3A

Design

Standard	IM
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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	#
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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. assignment, as per TP-600	-#

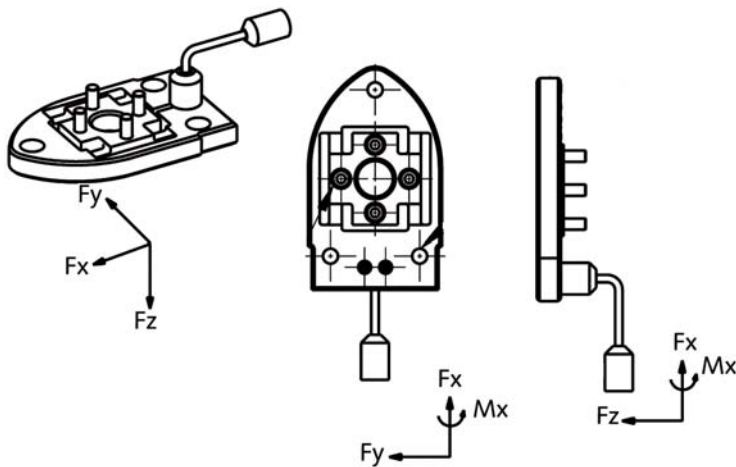


Fig. 2: Sketch

Included Accessories

- None

Optional Accessories

- Add. label with serial number, plug side
- ID module
- Add. label with ID number at sensor
- Add. shunt

Type No.

M015KABID
on request
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