

# Femur Load Cell

Type M50636A...

## Six-axial

Type M50636A... is designed to measure forces and moments in the femur of the crash test dummy Q 10 year old (QA).

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



### Description

The load cell is made of a deformation body that is affected by forces and moments. Those mechanical forces and moments create stretches and bucklings that cause a resistance change on the applied gaging members. This resistance change is measured as electrical signal in a bridge circuit.

In order to avoid linearity errors, the deformation paths are constructively held small (high rigidity). Thus a proportional behavior is realized. The load cell is available with ID module which is 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

Axial Data		$F_x$	$F_y$	$F_z$	$M_x$	$M_y$	$M_z$
Measuring range	kN	3,35	3,35	6,7			
	N·m				112	112	56
Bridge output voltage (typ.)	mV/V	1,8	1,8	2,0	3,1	3,1	2,8
Sensitivity (typ.)	$\mu\text{V}/\text{V}/\text{kN}$	520	520	300			
	$\mu\text{V}/\text{V}/\text{N}\cdot\text{m}$				25	25	47
Bridge resistance	$\Omega$	350	350	700	350	350	700
Ultimate load, static	%	150	150	150	150	150	150

### General Data

Supply voltage <sup>1)</sup>	VDC	2,5 ... 15
Insulation resistance <sup>2)</sup>	G $\Omega$	>10
Operating temperature range	$^{\circ}\text{C}$	-20 ... 80
Storage temperature range	$^{\circ}\text{C}$	-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, with cable and plug	grams	260

All specifications are typical at 25  $^{\circ}\text{C}$  and rated at 10 V sensor supply voltage, unless otherwise specified.

<sup>1)</sup> With UPS module 9 ... 12 VDC

<sup>2)</sup> All wires to load cell housing, measured with 500 VDC

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**Application**

The load cell 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.

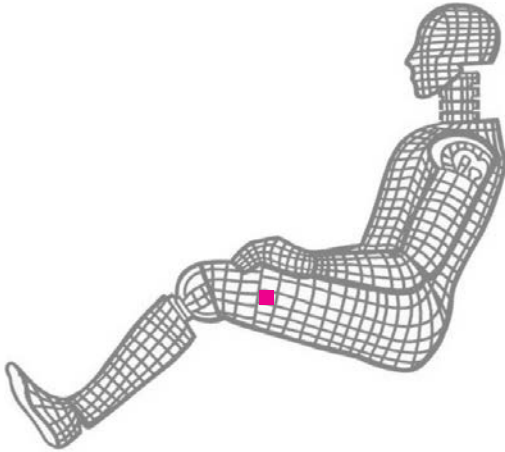


Fig. 1: Dummy application, location femur

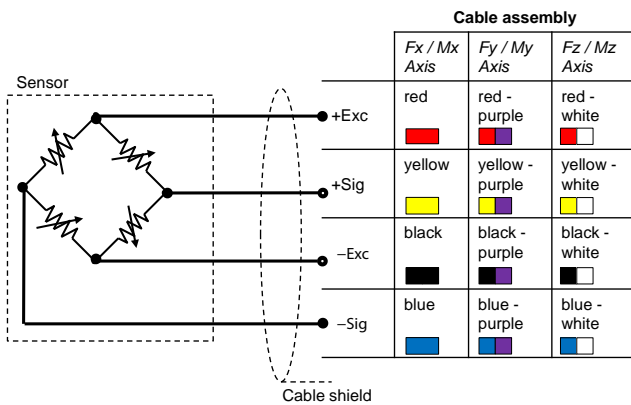


Fig. 2: Cable assembly

**Included Accessories**

- None

**Optional Accessories**

- Add. label, customized
- ID module
- Add. shunt

**Type No.**  
M015KABID  
on request  
on request

Type M50636A

**Design**

Standard	BM
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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	-#

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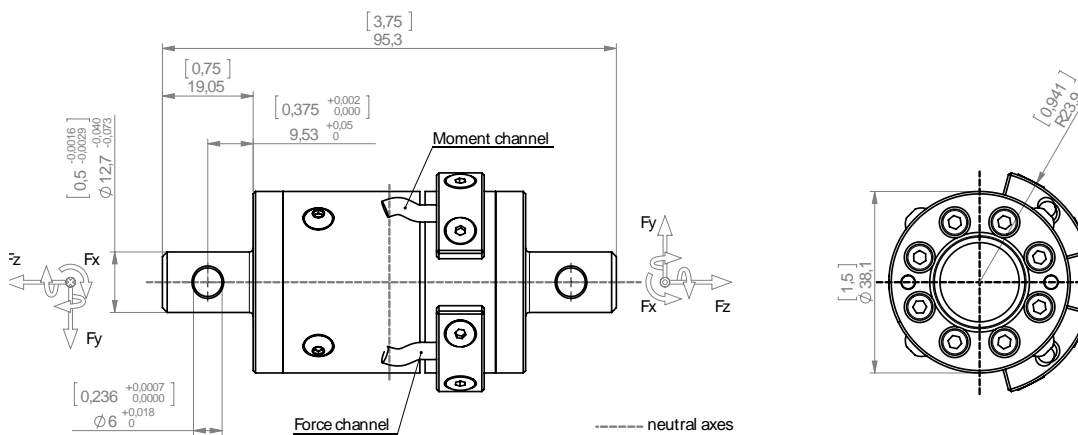


Fig. 3: Dimensions in mm

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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