

Femur Load Cell

Type M506A6A...

Six-axial

Type M506A6A... is designed to measure forces and moments in the femur of the crash test dummies HF, H3, HM, and S2.

- 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 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 linearities, 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.

Line-up of equivalent load cells:

	Type
Kistler	M506A6A...
FTSS	IF-625
Denton	1914

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

Axial Data		F_x	F_y	F_z	M_x	M_y	M_z
Measuring range	kN	13,3	13,3	22,2			
	N·m				340	340	340
Bridge output voltage (typ.)	mV/V	1,7	1,7	1,4	1,5	1,5	2,3
Sensitivity (typ.)	$\mu V/V/kN$	128	128	63			
	$\mu V/V/N\cdot m$				4,4	4,4	6,8
Bridge resistance	Ω	350	350	700	350	350	700
Ultimate load, static	%	150	150	150	150	150	150

General Data

Supply voltage		
without ID modules	VDC	5 ... 15
with ID modules	VDC	9 ... 12
Insulation resistance ¹⁾	M Ω	>90
Operating temperature range	$^{\circ}C$	-20 ... 80
Storage temperature range	$^{\circ}C$	-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	998

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

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

M506A6A_000-795e-06.12

Application

Type M506A6A... is designed to measure forces and moments in the femur of the crash test dummies HF, H3, HM, and S2.

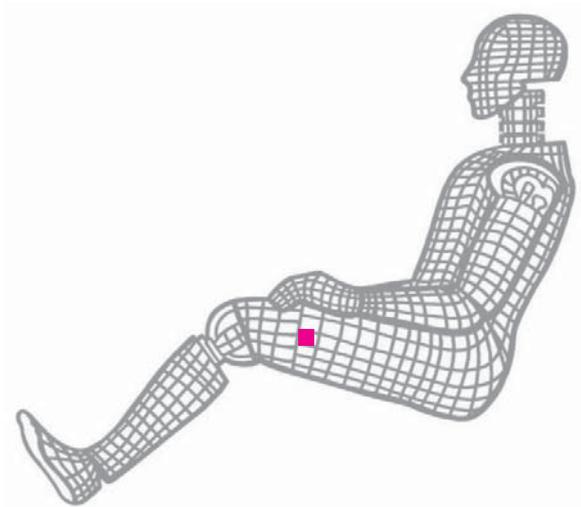


Fig. 1: Dummy application, location femur

Included Accessories

- None

Optional Accessories

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

Type No.
M015KABID
on request
on request

Ordering Key

Type M506A6A

Design

Standard	BM
----------	----

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. assignment, as per TP-600	-#

M506A6A_000-795e-06.12

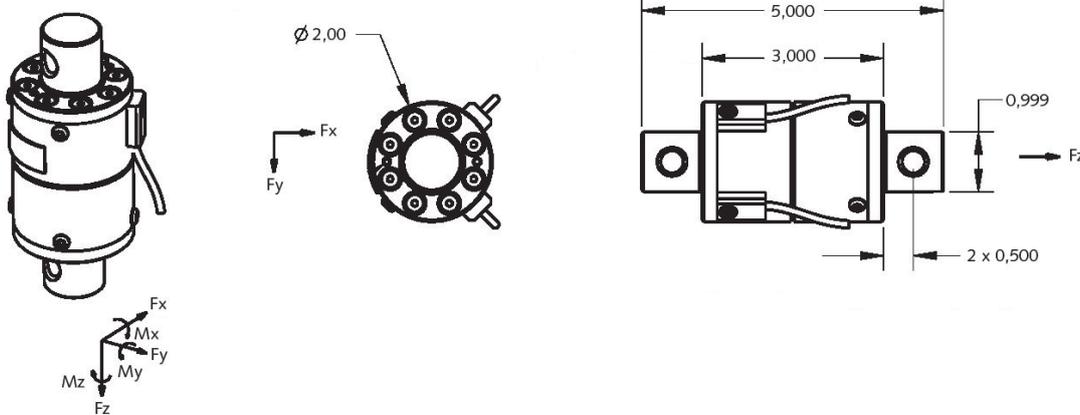


Fig. 2: Dimensions in inches and direction of action

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.

©2011 ... 2012, Kistler Group, Eulachstrasse 22, 8408 Winterthur, Switzerland
Tel. +41 52 224 11 11, Fax +41 52 224 14 14, info@kistler.com, www.kistler.com
Kistler is a registered trademark of Kistler Holding AG.