ENG

Load cells

INSTALLING INSTRUCTIONS

Contents

Warnings

The present manual is for device fitters and operators. It provides indications on the intended use of the device, technical specifications and instructions for installation, adjustment and use.
This manual is an integral part of the device and must be kept until the device is decommissioned. It reflects the technical state of the device at the time of its sale.
The plant builder may include the present manual in the documentation for plant use.
Re S.p.A. reserves the right to update its production and/or manuals without updating products already sold and previous manuals.
Since the device forms part of a plant, the plant builder is responsible for ensuring that all parts comply with the laws in force in the country in which it is installed.
The device must be fitted and adjusted by qualified technical personnel.
It may be moved manually.

Information about device recovery

The device bears a clear, visible and indelible indication allowing identification of the manufacturer and the separate collection symbol (symbol on side).
This symbol, showing a wheelie bin with a cross through it, unequivocally indicates that the device was released after 13.08.2005 and that it must be subject to separate collection.

- In European Union member states

  The device falls within the electrical and electronic equipment category, which must be disposed of not amongst undifferentiated urban waste, but through separate collection. Therefore, at the end of the device's lifetime, it must be disposed of in conformity with the European standards adopted in the member state in which it was installed.

  WEEE (Waste Electrical and Electronic Equipment) may be intended for individual, collective or mixed collection and recovery systems at designated centres (for more information contact the relevant local authorities) or may be returned to the distributor when a new item of equipment is purchased. This eliminates or reduces potentially negative effects on the environment deriving from improper use of the equipment or parts of it.
  For correct waste management, the relevant authorities promote the reduction of final waste disposal by means of re-use, recycling and other forms of recovery to obtain raw materials from waste.

  In the event of illegal disposal of WEEE, offenders will be punished in accordance with the sanctions established by the member state in which it was installed.

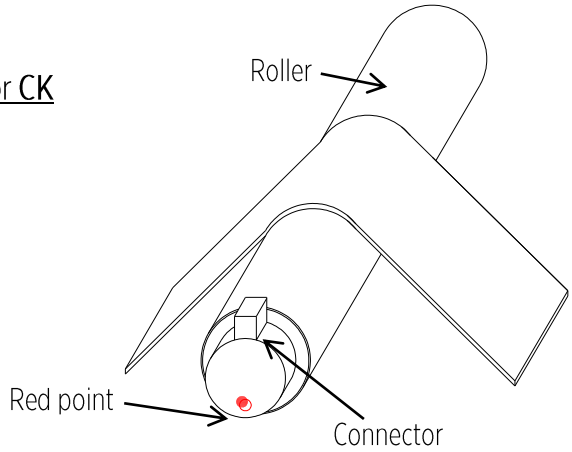
- In non-EU countries

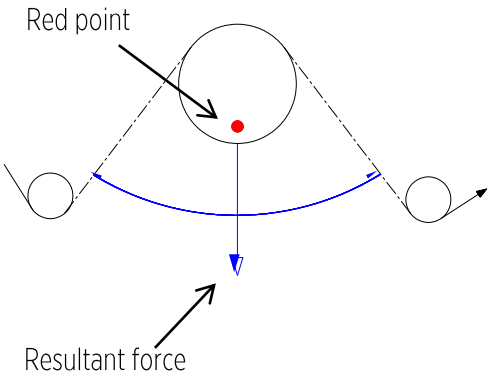
  Recovery and final disposal of the device must be carried out in conformity with the standards in force in the country in which it was installed. It may be advisable to take into account the information provided regarding European Union member states.

Mounting

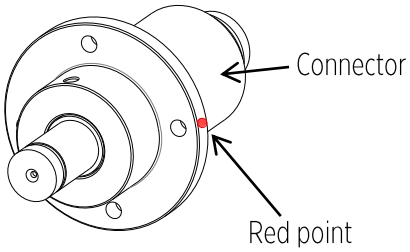
The load cells must be mounted in such a way that the red point is precisely in the direction of the resultant force that was defined during analysis of the application.
For a general idea of the mounting position, the following diagrams illustrate a desirable position for the red point relative to the material infeed and outfeed angles on the roller.

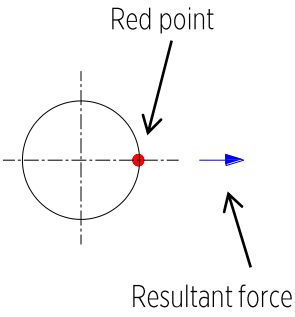
Load cell mod. CF or CK
(except CF.65)



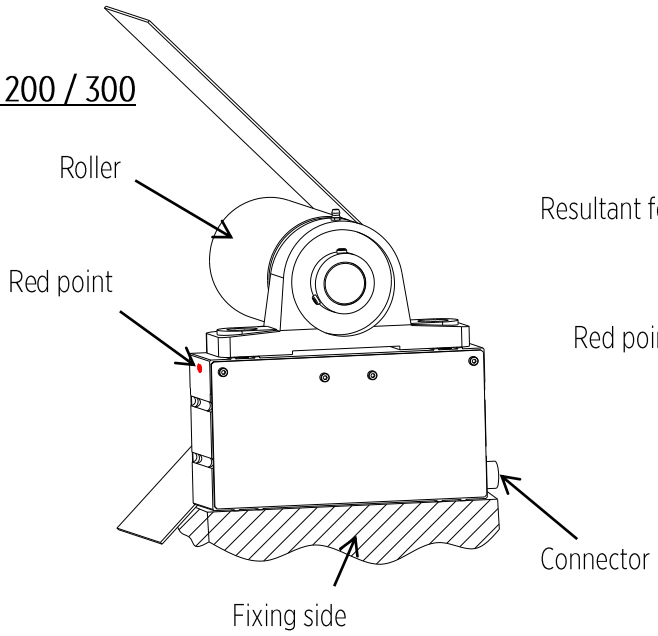


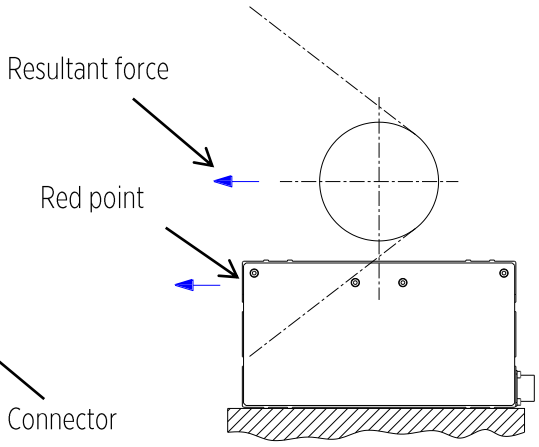
Load cell mod. CF.65



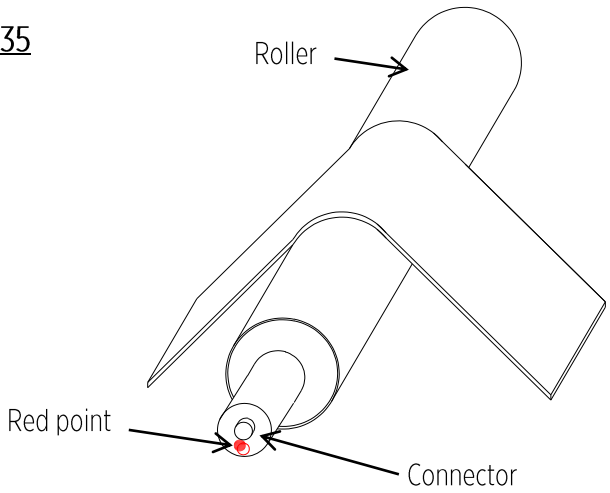


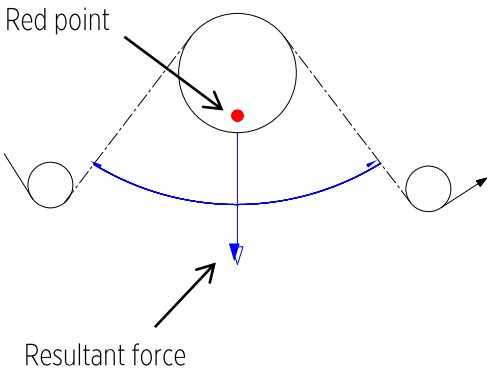
Load cell mod. CB.80 / 200 / 300



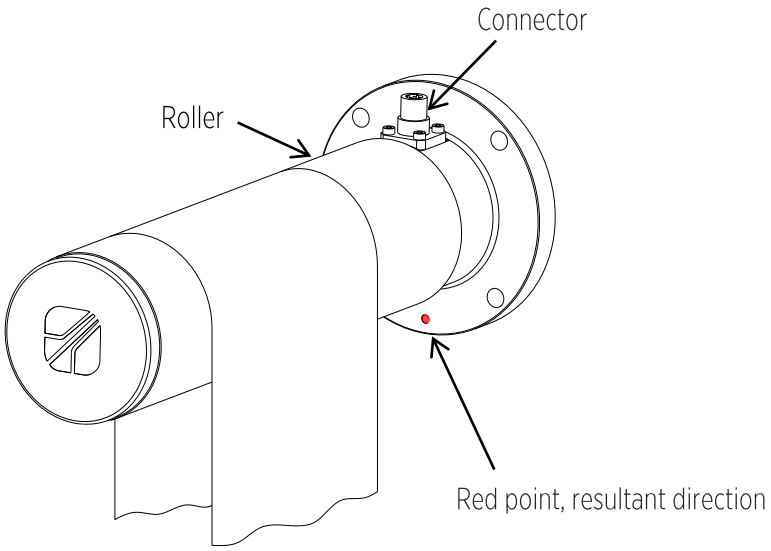


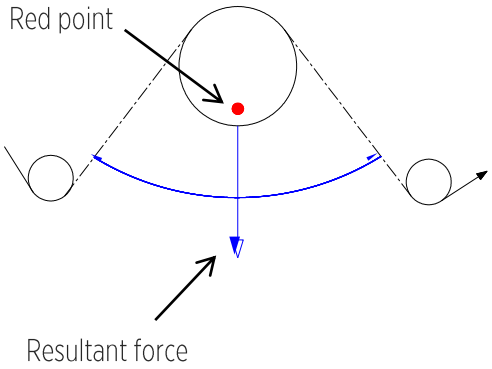
Load cell mod. CP.35





Load cell mod. CPF (no amplifier)

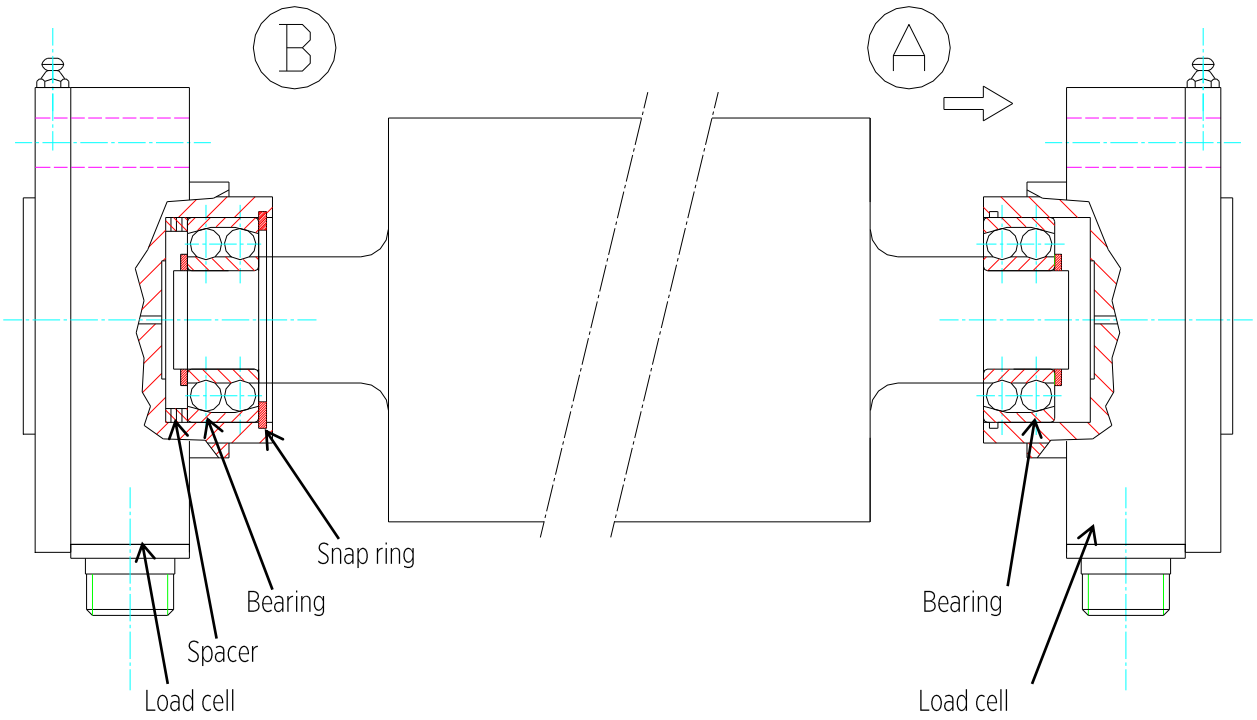




Mounting with rollers – (Mod. CK - CF)

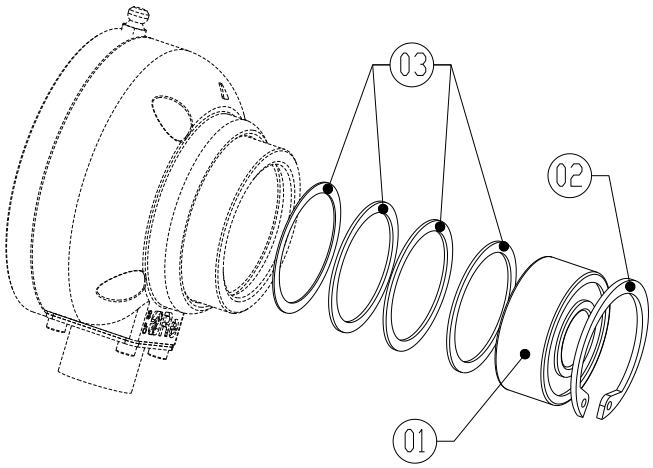
(except CF.65)

- Use a dead roller (without internal bearings).
- A dynamic and static balancing of the roller is necessary.
- Avoid machine vibrations: they could affect the load cell's reading.
- Use self-aligning ball or roller bearings provided in Re's mounting kit.
- The bearing must be locked at one end (B) and free at the other end (A), to allow for roller thermal expansion.



Mounting kit for CF load cell

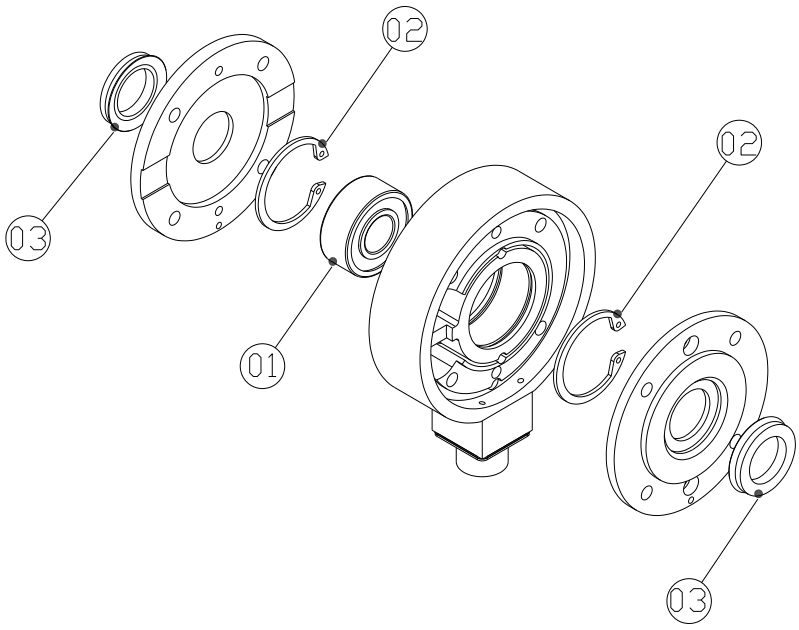
The flange mounted load cells, CF model, are installed onto the ends of the tension measuring roll. Mounting kit data are shown in the table below. The spacer rings needed to mount the CF cells vary according to the type of cell used.



Load cell		Self-aligning bearing (pos. 01)		Snap ring (pos. 02)		Spacer ring (pos. 03)		
Type	Mounting kit code	Type	Code	Type	Code	Q.ty	Type	Code
CF85.XX.35 2RS	06A76002	2202-2RS (15x35x14)	M1604002	UNI7437-35 I	10073035	1	RAM 35/05	M1211004
						5	RAM 35/1	10058184
CF85.XX.40 2RS	06A76003	2203-2RS (17x40x16)	42000016	UNI7437-40 I	10073040	1	RAM 40/05	M1211005
						3	RAM 40/1	M1211003
CF85.XX.35	41000100	1202 (15x35x11)	42000011	UNI7437-35 I	10073035	7	RAM 35/05	M1211004
						5	RAM 35/1	10058184
CF85.XX.40	41000101	1203 (17x40x12)	42000015	UNI7437-40 I	10073040	5	RAM 40/05	M1211005
						5	RAM 40/1	M1211003
CF120.XX.47 2RS	06A76004	2204-2RS (20x47x18)	M1604001	UNI7437-47 I	10073047	1	RAM 47/05	M1211006
						5	RAM 47/1	10058167
CF120.XX.52 2RS	06A76005	2205-2RS (25x52x18)	42000025	UNI7437-52 I	10073052	1	RAM 52/05	M1211007
						5	RAM 52/1	10058168
CF120.XX.47	41000103	1204 (20x47x14)	42000019	UNI7437-47 I	10073047	5	RAM 47/05	M1211006
						7	RAM 47/1	10058167
CF120.XX.52	41000104	1205 (25x52x15)	42000023	UNI7437-52 I	10073052	7	RAM 52/05	M1211007
						5	RAM 52/1	10058168

Mounting kit for CK load cell

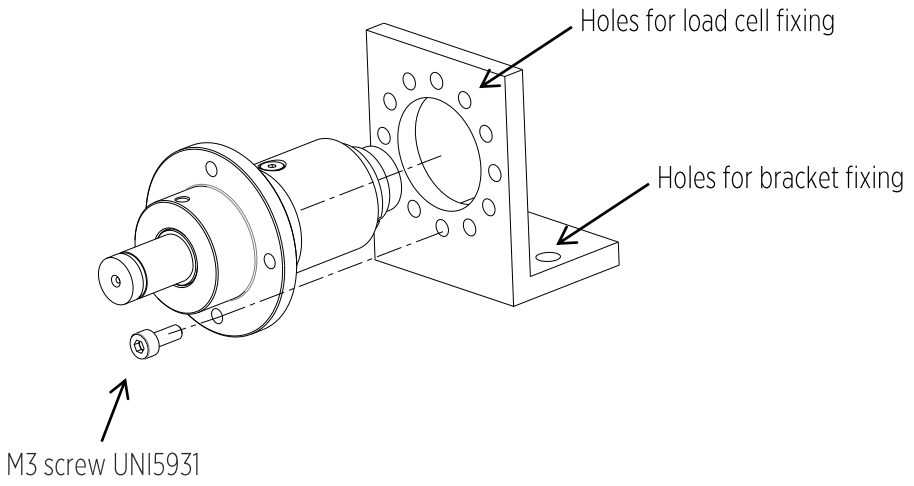
CK load cells can be used for through shaft assembly applications. Mounting kit data are indicated in the table below.

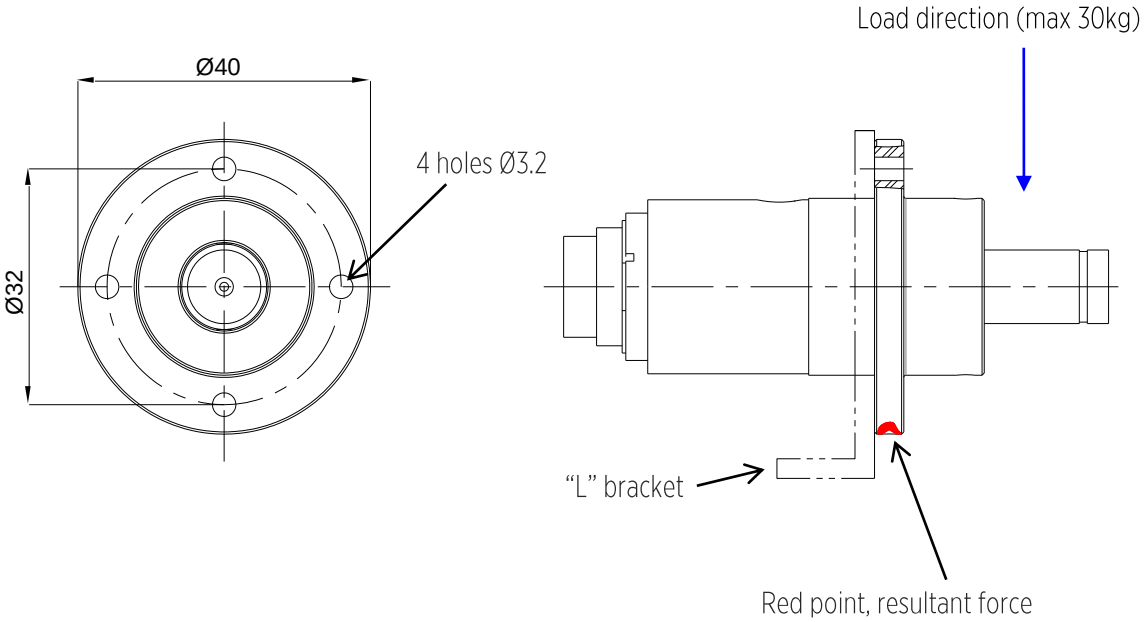


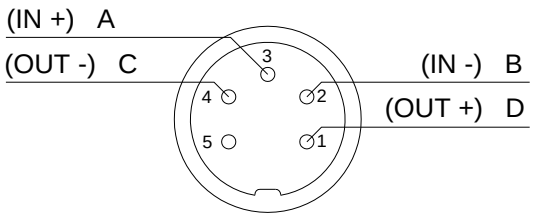
Load cell		Self-aligning bearing (pos. 01)		Snap ring (pos. 02)		Retaining ring (pos. 03)	
Type	Mounting kit code	Type	Code	Type	Code	Type	Code
CK100.XX.12 2RS	---	2201-2RS (12x32x14)	42000009	UNI 7437– 32 I	10073032	VA 16	20023016
CK105.XX.17 2RS	41000114	2203 2RS (17x40x16)	42000016	UNI 7437– 40 I	10073040	VA 22	20023022
CK125.XX.25 2RS	41000112	2205 2RS (25x52x18)	42000025	UNI 7437– 52 I	10073052	VA 30	20023030
CK175.XX.35 2RS	41000105	2207 2RS (35x72x23)	42000032	UNI 7437- 72 I	10073072	VA 45	20023045
CK175.XX.40 2RS	41000106	2208 2RS (40x80x23)	42000037	UNI 7437- 80 I	10070080	VA 50	20023050
CK225.XX.50 2RS	---	2210 2RS (50x90x23)	42000045	UNI 7437- 90 I	10073090	VA 55	M0210003
CK265.XX.65	41000115	1313 (65x140x33)	42000064	UNI 7437- 140 I	10073140	VA 80	20023080
CK265.XX.80	---	2216 (80x140x33)	M1604004	UNI 7437- 140 I	10073140	VA 95	M0210002

Mounting with bracket (Mod. CF.65)

In order to install the CF.65 load cells on the machine, you can use a "L" fixing bracket if it is necessary (see the following drawing, as example): the load cell must be fixed by 4 screws type M3; the bracket must be secured to the machine framework.

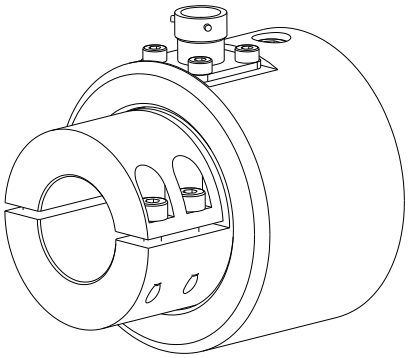


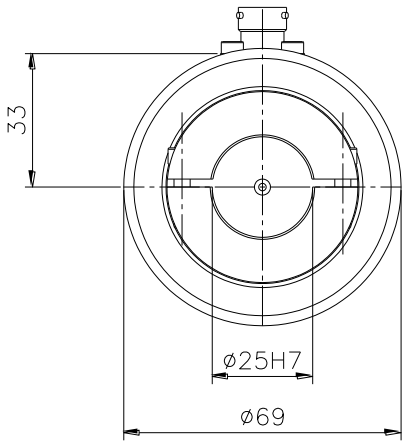


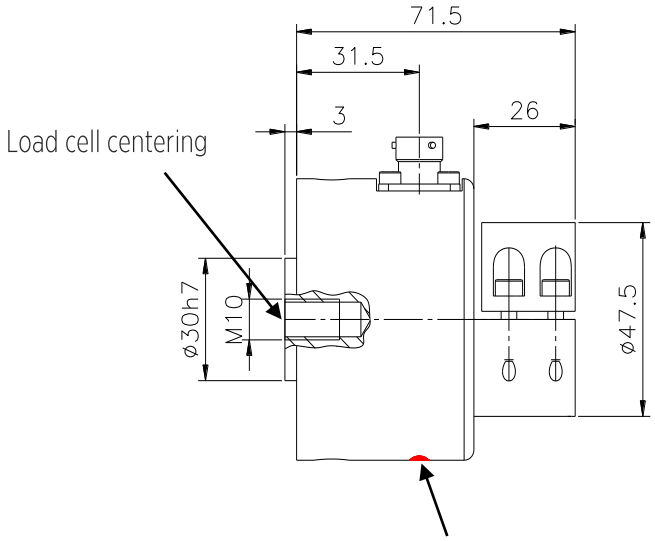


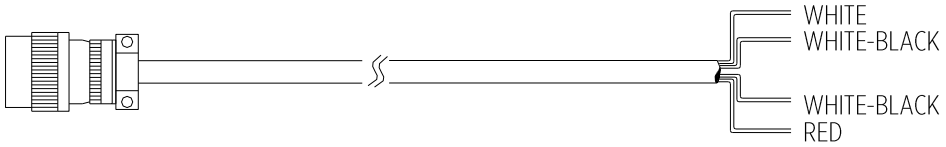
Front view of the connector

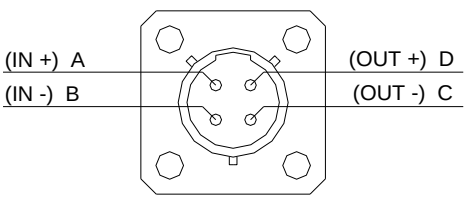
Mounting mod. CF.70









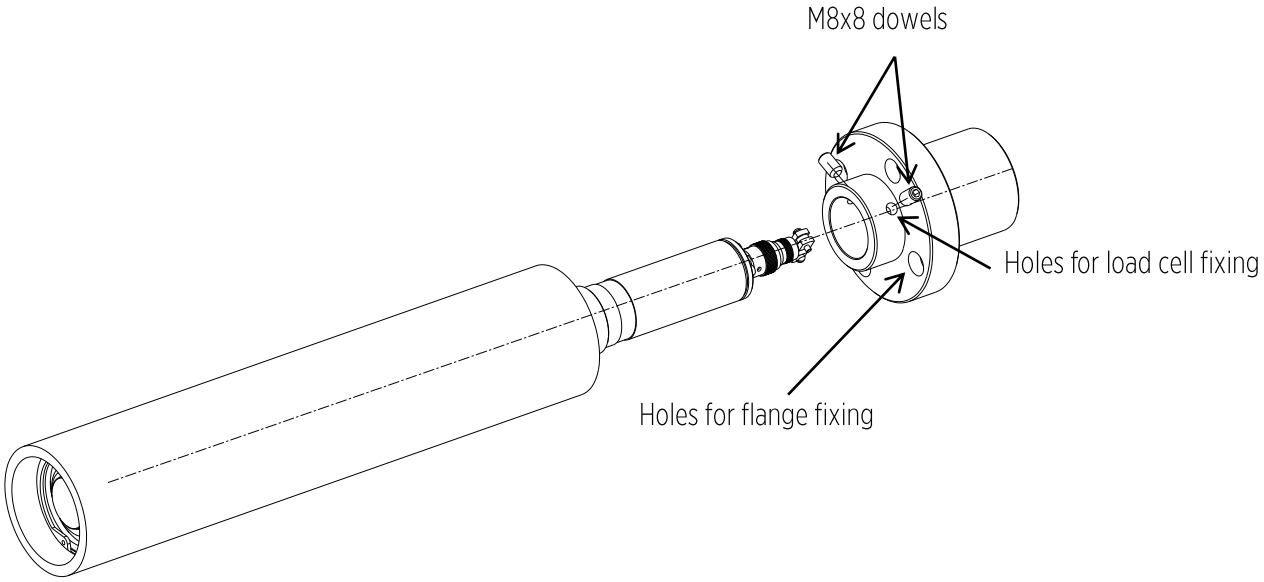


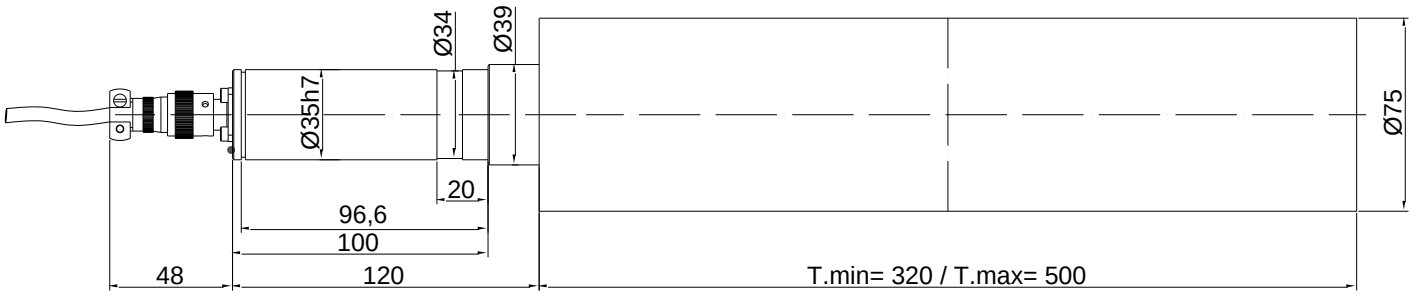
Front view

Connector 4P	Wires colour	Description
PIN A	White	A
PIN B	White- Black	B
PIN C	White- Black	C
PIN D	Red	D

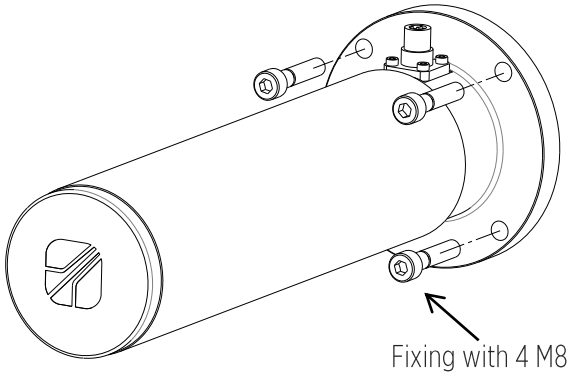
Mounting with flange (Mod. CP.35)

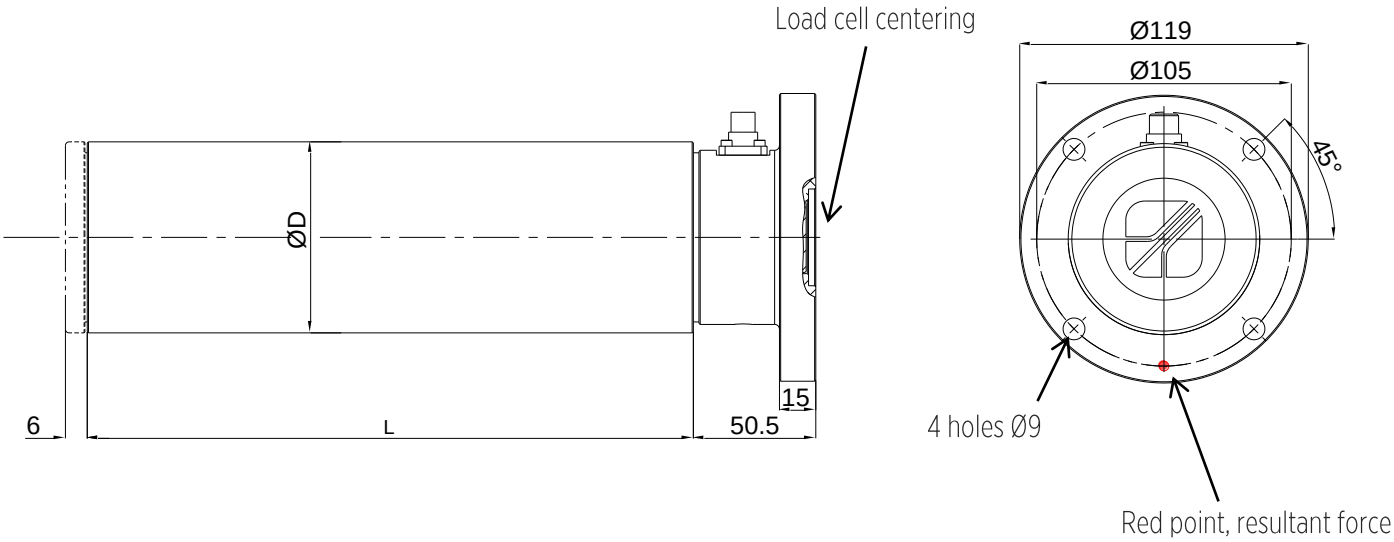
In order to install the CP.35 load cells on the machine, you can use a flange (see the following drawing): the load cell must be fixed by 2 dowels type M8x8; the flange must be secured to the machine framework.

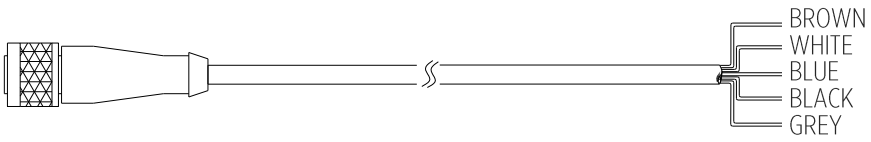


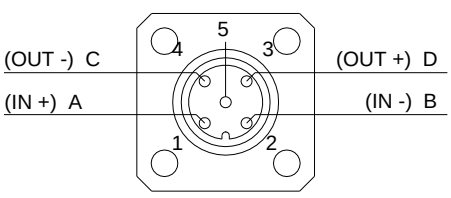


Mounting mod. CPF, no amplifier









Front view

Connector 5P	Wires colour	Description
PIN 1	Brown	A
PIN 2	White	B
PIN 3	Blue	D
PIN 4	Black	C
PIN 5	Grey	N.C.

Installing

<u>Important!</u> To ensure that the load cells are correctly installed, we strongly recommend that you implement the electrical connections as indicated in the following section and consult the electrical connection diagrams contained in the user's manual of the adjustment system you have.

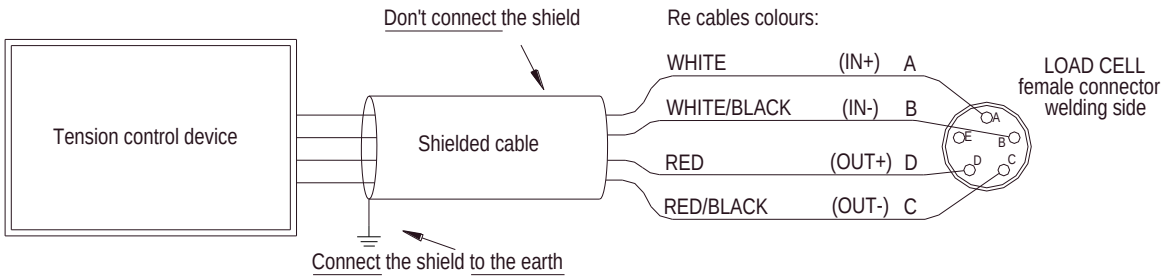
It's also very important to follow the instructions about connection cables written below:

- if you have mV output load cells, the maximum cable length is 10 meters [32.8 feet] (there is no limit for the cable length of mA output cells);
- the cell's cable entrance in the electrical panel must be independent;
- the cell's cable must be directly connected to the instrument terminal board; don't use other terminal boards as support for the connection;
- use earthed metal cable trunking;
- avoid external sources of interferences (e.g. motors, inverter, etc...);
- if the wiring harness is carried out by the customer, use a shielded cable and earth it in the opposite side of the cell.

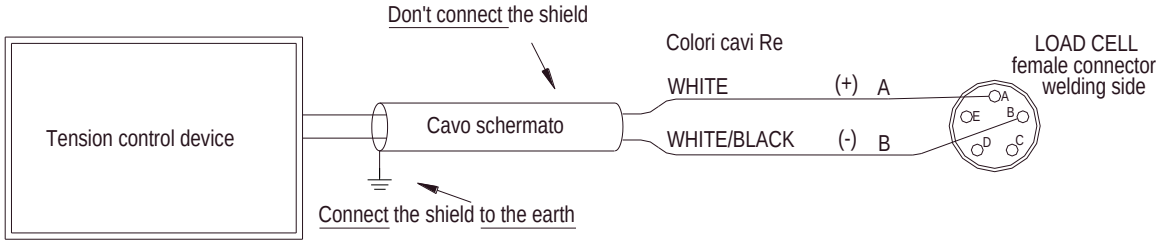
To guarantee the cell's life and the correct functioning, avoid acidic work environments, vapours, high temperatures and placement on corona treatments (special load cells can be provided for this kind of applications on customer request).

Electrical connections

Load cells with output in mV

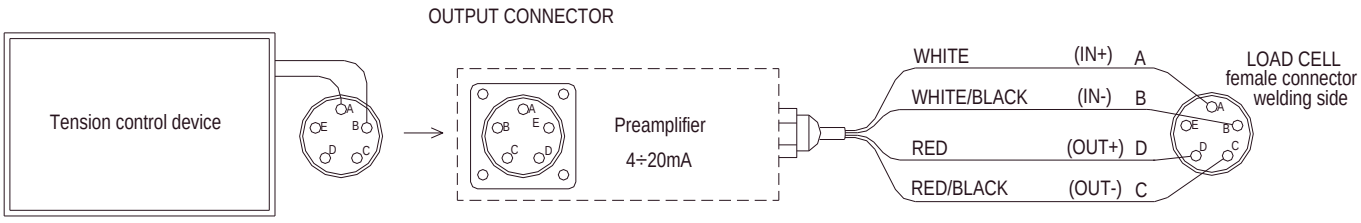


Load cells with integrated 4÷20mA preamplifier (cod. 0107001)

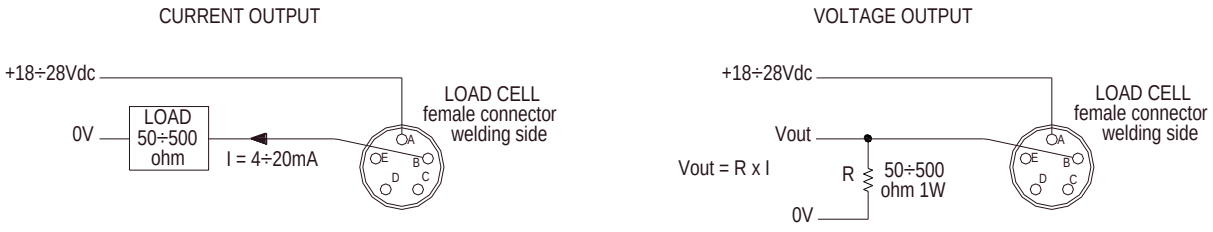


Warning! Re load cells provide a 4÷20mA signal. If you have a roll that pushes in the opposite direction to the red point, the output will go to the negative saturation (about 3.5mA): to prevent this negative saturation, pins C and D or D and E must be closed together. By closing pins C and D You restore 20% of the nominal load of the cell (i.e. with a 50kg load cell, 10kg of roll will be restored), by closing pins D and E You restore 40% of the nominal load of the cell.

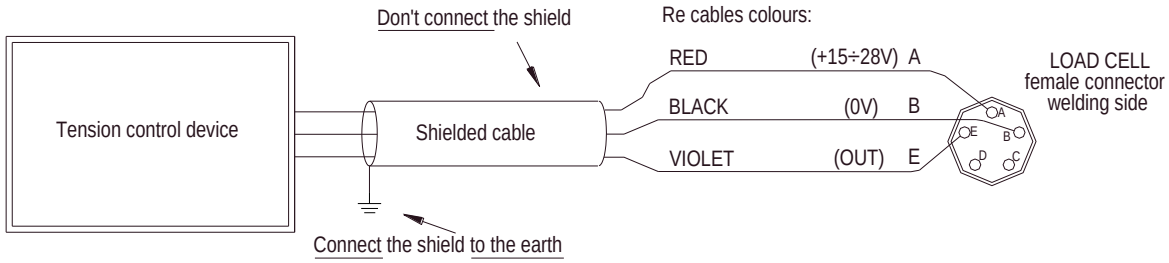
Load cells with output in mV to the 4÷20mA preamplifier (cod. 0107001)



Load cells with output in mA for use without Re devices

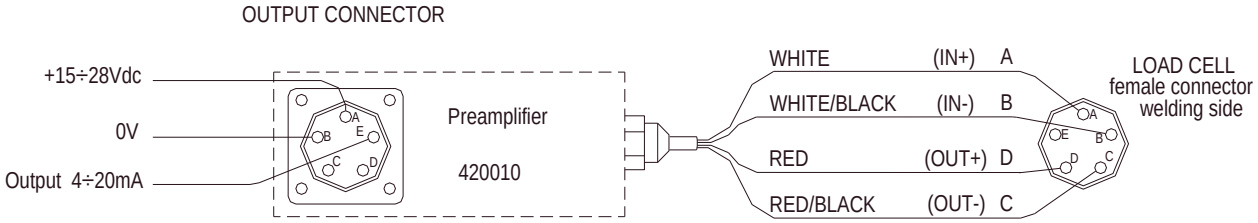


Load cells with integrated EVO preamplifiers



Warning! Re load cells provide a 4÷20mA signal. If you have a roll that pushes in the opposite direction to the red point, the output will go to the negative saturation: to prevent this negative saturation, pins B and C or B and D must be closed together. By closing pins B and C You restore 20% of the nominal load of the cell (i.e. with a 50kg load cell, 10kg of roll will be restored), by closing pins B and D You restore 40% of the nominal load of the cell.

Load cells with output in mV to the 420010mA preamplifier (cod. 5H01004)

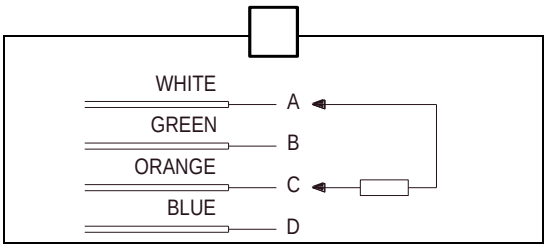


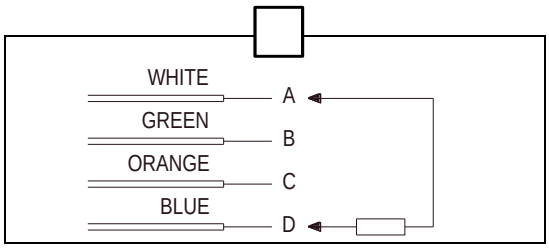
HT load cells

Serial number _____

Balancing resistor value _____Ω

Connect the balancing resistor as indicated in the diagram marked by the cross.





Optionals Accessories

As indicated in the table, we can furnish **connectors** or **cables in several lengths with attached connectors.**
Optionally, every load cell can be provided with **preamplifier** included, for 4-20mA output signal, except for CK load cells for which the preamplifier is separated (standard preamplifier, code 0107001 or EVO preamplifier).
In addition, **mounting kits** (see previous sections), **flanges** and **bases** for mounting are available.

Description	Code
Straight connector	E0304011
Connector 90°	E0304012
Cable 5 meters with straight connector	06X63001
Cable 5 meters with connector 90°	06X63003
Cable 10 meters with straight connector	06X63002
Cable 10 meters with connector 90°	06X63004
Custom length cable with straight connector	06X63008
Custom length cable with connector 90°	06X63009

Technical characteristics

Precision class	0,50%
Principle of measurement	strain gages full bridge
Bridge resistance	350 OHM
Total error	< 0,05% end scale value
Non-repeatability	< 0,05% end scale value
Histeresis	< 0,05% end scale value
Non-linearity	< 0,05% end scale value
Max. overload	300%
Sensitivity (out voltage)	
normal	1,6mV/V
max. (at mechanical stop)	20mV/V totals
nominal supply tension	10V
max. supply tension	15V
Isolation resistance	>10 GOHM
Temperature range for standard models	+10 / +50°C
Temperature range for HT models	+10 / +150°C
Elastic element material	aluminium/steel
Electrical connections	5 x 0,22 mm^2
Protection class	IP40

Troubleshooting

(For applications with Re devices)

This section describes the possible problems you could have in the applications with load cells and Re tension control devices.

After installing load cells and the control device, two mandatory operations are the functions of cell zero calibration and cell gain calibration, as indicated in the user's manual of the control device; if the calibrations are not successful, see the following instructions.

➔ Problem: The cell zeroing calibration is not successful.

Possible causes	Remedies
▪ The cells are not connected or the connections are not correct	▪ Check the electrical connections as indicated in the previous sections
▪ A positive load charges the cells (in the direction to the red point); e.g. the roller pushes heavily	▪ Change the red point angle to lighten the load on the cell; if this is not possible, insert a resistor between pins B and C of the cell (resistor value: between 500K and 100K. - use the higher value and reduce it till the calibration terminates correctly)
▪ A negative load charges the cells (in the opposite direction to the red point); e.g. the roller pushes heavily	▪ Change the red point angle to lighten the load on the cell; if this is not possible, insert a resistor between pins A and C of the cell (resistor value: between 500K and 100K. - use the higher value and reduce it till the calibration terminates correctly)

➔ Problem: The calibration of cell gain is not successful.

Possible causes	Remedies
▪ The value set in the function of setting the calibration weight (see user's manual of the control device) is different to the known weight, or the load read by the cell is less than the set value	▪ Decrease the set value in the function of setting the calibration weight
▪ The value set in the function of setting the calibration weight (see user's manual of the control device) is different from the known weight or the load read by the cell is more than the set value	▪ Increase the set value in the function of setting the calibration weight

Guarantee

Re S.p.A. guarantees this device against all defects relative to the materials and manufacturing for a period of 12 months from the date of delivery.
Should your device develop operating faults during the guarantee period, please contact the Company's agent in your country, or, if this is not possible, contact Re S.p.A. directly.
The guarantee includes spare parts and labour. It does not include shipment costs for device delivery or recall.
The guarantee is invalidated by:

- improper use of the device
- incorrect installation
- faulty electrical connections or power supply
- lack of maintenance
- changes or work involving non-original components or carried out by persons without Re S.p.A authorisation
- complete or partial failure to observe the instructions
- exceptional events.

At the end of the guarantee period, support will be provided by the support network, which will carry out repairs at the current rates.

Revision history

No. revision	*Date*	*Changes*
12/17	29/12/2017	Added CF.70 load cell model

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