

LC-1216 Series

TENSION LOAD CELL

SET-UP MANUAL

Set-up-LC-1216-v.1.a 90.02.28 JCK

TENSION LOAD CELL

MODELS: LC-1216 - K100
LC-1216 - K200
LC-1216 - K500
LC-1216 - T001
LC-1216 - T002
LC-1216 - T005

1. Installation Reminders

The load cells depends on an even distribution of pressure along it's sensors. The LC-1205 Load Cell is very accurate, but its accuracy is dependent on careful installation. An uneven distribution of pressure will prevent the load cell from operating efficiently. The following types of errors are common, so be careful!

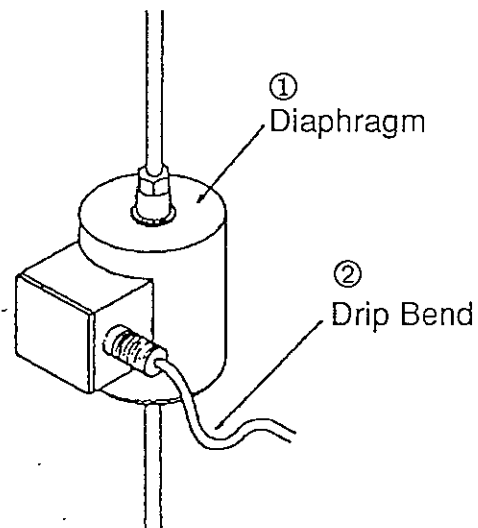
- | | |
|----------------------|---|
| 1) Lateral stress | Stress to one end of the load cell. |
| 2) Twisting | A turning, twisting pressure to the load cell caused by loose fittings. |
| 3) Moment | Buckling, or stress to both ends of the load cell which causes pressure to the middle. |
| 4) Eccentric load | Stress that is caused by pressure that is not centered correctly over or under the load cell. |
| 5) Inclination slope | The pressure on the load cell is angled and not perpendicular. |

Using Flexible Rods and/or Rod-End Bearings should diminish these effects. The longer the flexible rods, the less an influence on the load cell they will have. If the flexible rods are not long enough, or a higher accuracy is needed, use rod-end bearings (only available as options).

2. Proper Mounting

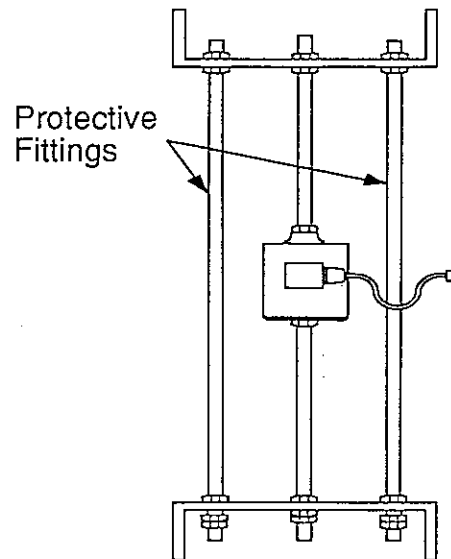
When mounting the load cell, be careful not to directly apply uneven pressure described above in section 1..

Pay close attention to the diaphragm, shown in the figure to the right. ① A diaphragm is located on both ends of the load cell and if they are damaged the load cell's accuracy will be affected. Also, give a "Drip Bend" to the cable near it's connection with the load cell. ② Install it so that the cable's empty weight will not affect the load cell's accuracy.



3. Protective Fittings

Be sure to mount Protective Fittings to ensure the load cell's safety. Also, mount a Check Rod to prevent lateral stress caused by horizontal vibrations. The Check Rod should be mounted horizontally to the centroid of your device, or close to it, so that the weighing accuracy will not be affected.



4. Precautions

- [1] Since an output signal from the load cell is only 2-30mV, it is necessary to avoid cross-talk interference. Be sure to keep the load cell and its cable 1m or more away from the motor cable or any other electrical sources. Also, remember to use all the wires of multi-core cables (for example, using only 4 core wires of a 6-core cable and leaving 2 core wires unused) to prevent them from acting as conductors.
- [2] If you are installing the load cell in a place exposed to direct sunlight or radiation heat, cover with insulating material to prevent errors caused by a temperature gradient.
- [3] When summing multiple load cells, see to it that the temperature of each load cell is always kept the same.
- [4] The Terminal of the lead wire of the Load Cell Cable can be soldered directly to the Indicator, or to the Terminal Block of the Junction Box. To make it detachable, attach a lugged terminal or a connector. If using a connector, refer to its instruction manual for directions.
- [5] Connecting an extension cable to the load cell reduces the output voltage slightly. This loss of voltage can be attributed to an increase in the Loop Resistance of the input lead wires (red and white). Every time this resistance increases 1Ω , the rated output decreases 0.28%. When it is necessary to eliminate an influence by the extension cable, re-calibrate the actual output of the load cell with the Indicator, or compensate with the Remote Sensing circuit of the Indicator, using a 6-core cable.

- [6] For maintenance work on the load cell, it is recommended to install a Junction Box between the Load Cell and Indicator. A&D's waterproof Junction Box, AD-4380, is available.
- [7] When connecting the load cell to the Indicator for grounding be sure to use a single-point grounding method. A multi-point grounding process forms a loop that results in an unstable condition that is prone to induction. Grounding should be provided independently of the power system.

5. Maintenance

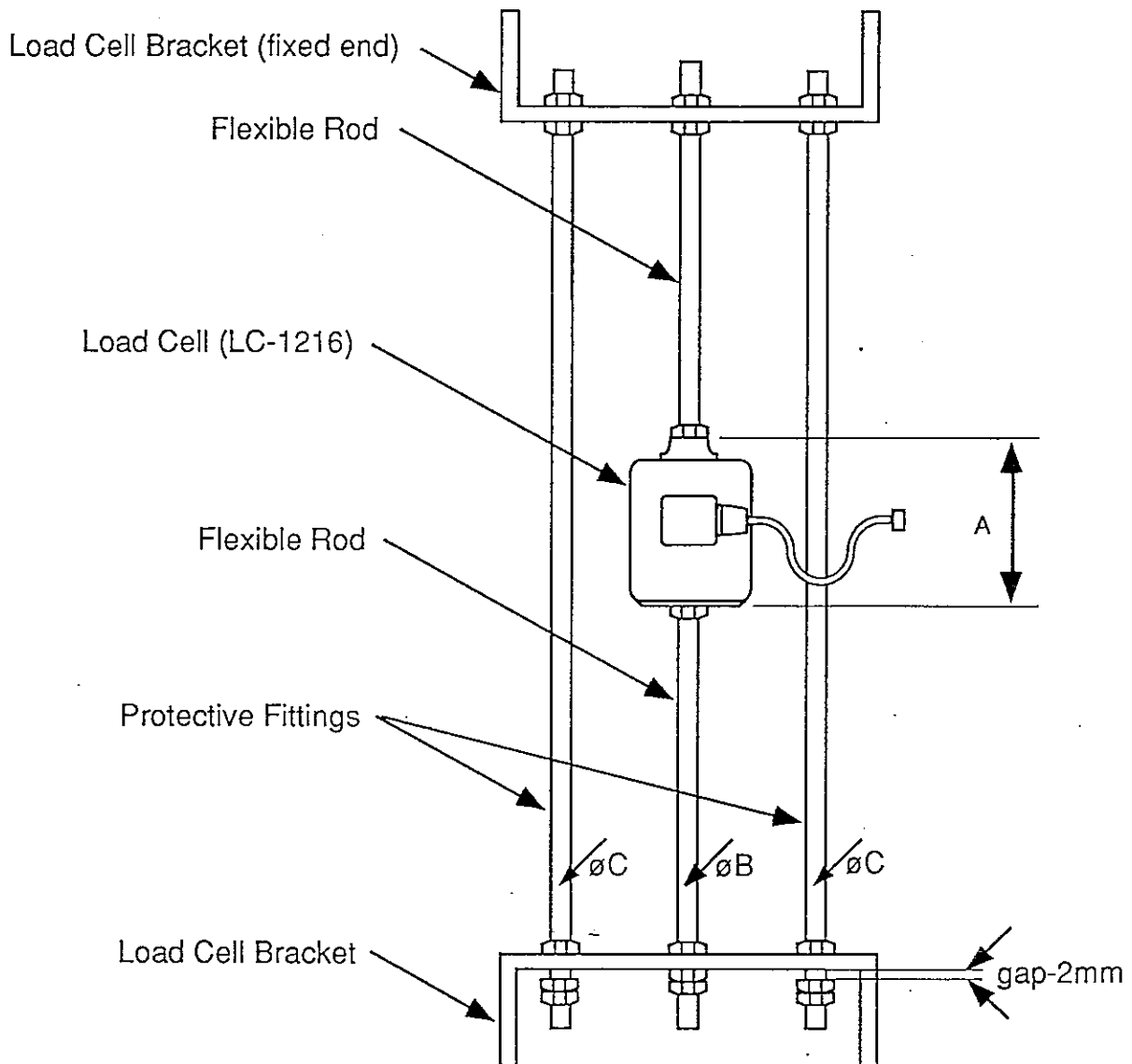
Remove dust, dirt, etc. from the load cell area when needed. Try to keep the Load Cell as clean as possible.

6. Inspection

When errors in the Load Cell occur, or it is operating unstably, follow the following procedure.

- [1] Check the power source and the Indicator's fuse.
- [2] Check the Indicator independently with its own instruction manual.
- [3] Check whether the load cell is correctly connected to the Indicator, and that the connection is tight.
- [4] Check the cable connections between the Indicator, Junction Box, Summing Box and Load Cell for any loose fittings.
- [5] With a 50V DC Megohm Meter, measure the insulation resistance between the lead wire of the same cables checked in #4 above, as well as the grounding wire. The measured values should be 100 M Ω or more each.
- [6] Disconnect the Load Cell cable from the Indicator or Junction Box, and measure the resistance between the input terminals. The measured value of the resistance between the input terminals should be about 400 Ω . Measure the resistance between the output terminals as well. The measured value should be about 350 Ω . Be sure to avoid impressing a voltage of 10V or more to the Load Cell Bridge.
- [7] With a 50V DC megohm meter, measure the insulation resistance between each lead wire and the outer drum. A measured value should be 100 M Ω or more.
- [8] With a 50V DC megohm meter, measure the insulation resistance between each terminal of the load cell and the Shield, as well as the Load Cell Proper. The measured values should be 100 M Ω or more.

Possible Installation Method (1)

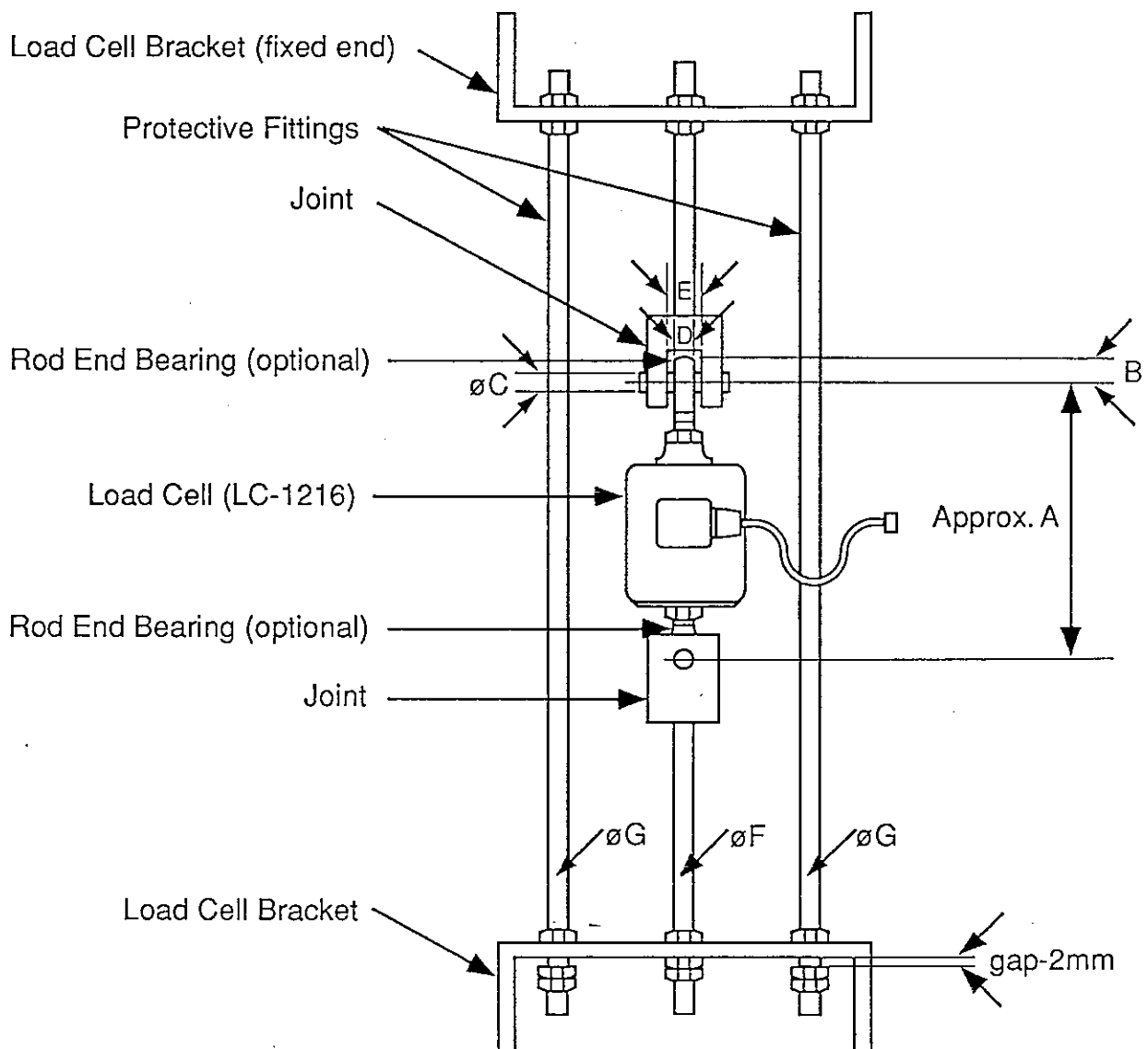


Note: When mounting the flexible rods to the load cell, at least 90% of the threaded ends should be engaged, but do NOT screw the flexible rods TIGHTLY onto the receptors.

Dimensions

LC1216 Model No.	Setscrew	A	øB	øC
K100	M6 X 1.0 X 9	100	6	6
K200 / K500	M12 X 1.75 X 10	104	12	12
T001	M12 X 1.75 X 10	150	12	18
T002	M18 X 1.5 X 13	150	18	18
T005	M24 X 2.0 X 25	180	24	24

Possible Installation Method (2)

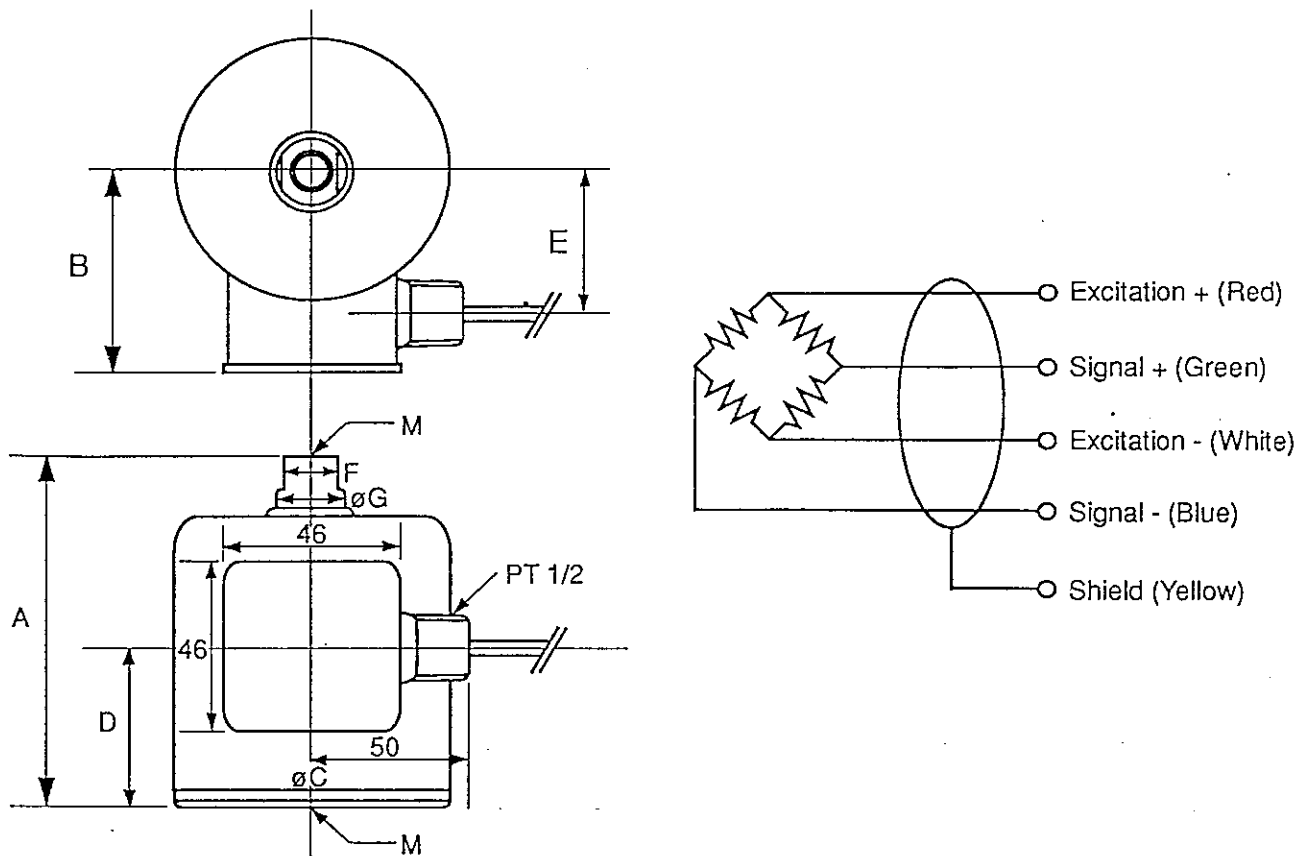


Note: When mounting the rod-end bearings to the load cell, at least 90% of the threaded ends should be engaged, but do NOT screw the rod-end bearings TIGHTLY onto the receptors. As shown above, mount the rod-end bearings at 90° angles.

Dimensions

LC1216 Model No.	Rod-End Bearing	Screw Size	Approx A	B	øC	D	E	øF	øG
K100	LCB-6	M6 X 1.0	160	10.5	6	8.75	11	6	6
K200 / K500	LCB-12	M12 X 1.75	208	17	12	13.25	16	12	12
T001	LCB-12	M12 X 1.75	254	17	12	13.25	16	12	18
T002	LCB-18	M18 X 1.5	284	21.5	18	16.3	20	18	18
T005	LCB-24-5T	M24 X 2.0	340	35	24	25.3	35	24	24

7. Specifications



Dimensions

LC1216 Model No.	A	B	øC	D	E	F	øG	M X Pitch X Depth
K100	100	62	77	50	45	16	19	M6 X 1 X 9
K200 / K500	104	62	77	50	45	16	19	M12 X 1.75 X 10
T001	150	80	102	75	63	27	31	M12 X 1.75 X 10
T002	150	80	102	75	63	27	31	M18 X 1.5 X 13
T005	180	80	102	90	63	36	41	M24 X 2 X 25

Unit: mm

Rated capacity	: 100/200/500 kgf, 1/2/5tf
Rated output	: 2 mV/V ± 0.5%
Maximum allowable overload	: 200% of R.C.
Non-linearity + hysteresis error	: ±0.05% of R.O.
Creep	: ±0.1% of R.O./h
Zero balance	: ±2% of R.O.
Recommended impressed voltage	: 12V
Resistance between input terminals	: Approximately 400 Ω
Resistance between output terminals	: 350 Ω ± 3.5 Ω
Insulation resistance	: 5,000 MΩ or more/50V DC
Temperature coefficient (zero point)	: 0.007% of R.O./°C
Temperature coefficient (span)	: 0.002% of R.O./°C type
Cable length	: ø6 x 3m (ø6 x 5m for 1t, 2t and 5t)
Temperature compensation range	: -10 to 60°C
Maximum impressed voltage	: 15V