

NMB
MINEBEA CO.,LTD.

Object Type CCP1- -Z, TCP1- -Z
UCG1- -Z


OPERATION MANUAL


(For The Pressure-proof &Explosion-proof Type Load Cells)

Read this operation manual with care before using this product .
Be sure to observe the important points mentioned in this manual . Keep this manual in custody near by in such a way that you may refer thereto anytime , if required .

The symbols used in this manual are as follows and have the following meanings .

Matters which you must not do absolutely or pay full attention to or keep in mind are marked with the following symbols . Read the sentences marked with these symbols without fall .

	NOTE : If this rule is not complied with , a trouble of injury or accident will be , caused , resulting in endangering human body . What is explained here must not be done absolutely .
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	This shows an important point or limitation when carrying out operation or doing work . Be sure to read without fall in order to avoid doing in a wrong way .
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1 . Preface

Thank you very much for your purchase of Minebea type load cell .
To begin with , check whether or not the delivered load cell has been damaged in transit or its type is correct as specified . If found defective , be sure to contact the agent from which you purchased this product or sales office . Refer to the catalogue or specification for the details of specification of the respective types .

2 . Outline

The pressure-proof & explosion-proof type load cell is a pressure-proof & explosion-proof construction type load cell meeting the requirements of the GUIDELINE FOR PLANT ELECTRIC FACILITY EXPLOSIONPROOFNESS(Gas,steam,explosion-proofness 1979)edited by Industrial Safety Research Institute of Labour Ministry of the Japanese Government. It is a load cell which can be used in the hazardous area of explosive gas atmospheres specified in the guideline.

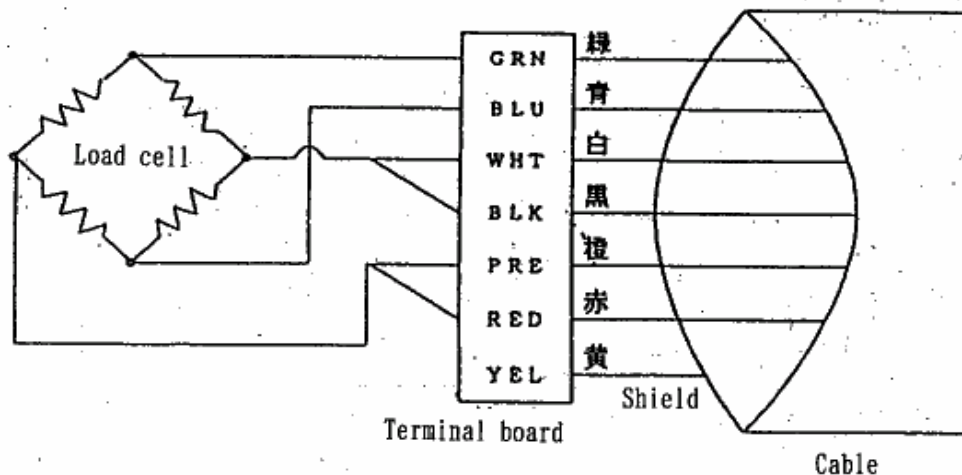
<p>NOTE</p> <p></p>	<ul style="list-style-type: none"> · In case of static loads , use the load cell within the range of rated capacities. In case of dynamic loads , use it less than 70% of the rated capacity. · Do not apply a voltage exceeding the max .applying voltage to the input terminal . · Fit this load cell with hexagonal (holed) bolts . The bolt sizes to be used are mentioned in the catalogue and specification . Select bolts higher than strength class10.9 of JIS B 1051. · Under such circumstances that screws tend to loosen , be sure to retighten them periodically or provide detent if required . · When fitting it to medical machines or apparatuses involving human life , be sure to provide a protective circuit in preparation for functional failure of load cell. · If used under special operating circumstances , be sure to consult with us once before starting use . · Please handle with great caution, since this is a heavy subject.
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- 3 . Pressure-proof & explosion-proof
- 3 - 1 Pressure-proof & explosion-proof construction
Pressure-proof & explosion-proof construction means a construction designed in such a way that there is no possibility of igniting the outside explosive gas,with the vessel withstanding the pressure in case explosive gas has exploded inside a totally enclosed vessel.
- 3 - 2 Symbols of explosion-proof construction etc.
- | Kind of explosion-proof construction | Symbol |
|---|--------|
| · Pressure-proof & explosion-proof construction | d |
| · Class of pressure proofness | 2 |
| · Ignition class | G 4 |
- 3 - 3 Standard environmental condition of explosion-proof electric facilities
- | | |
|-----------------------|---------------------|
| · Above seal level | Less than 1 0 0 0 m |
| · Ambient temperature | - 1 0 to 4 0 |
| · Relative humidity | 4 5 % to 8 5 % |
- 3 - 4 Hazardous areas where used
- * CLASS 1 AREA
Area where there is a possibility of generating a hazardous atmosphere at normal condition.
- * CLASS 2 AREA
Area where there is a possibility of generating a hazardous atmosphere at abnormal condition.
- 3 - 5 Limit of rising of temperature at operating environment
7 0 (but, on the assumption that the ambient temp. 4 0)
- 3 - 6 Connection of cables
- | | |
|----------------------|--|
| · Special cable | CAB - 5 0 1 (External dia. 1 0 , 6 -core shield cable)
(manufactured by our company) |
| · Connection method | To be fixed with the specified pressure terminal screws on the terminal board in the load cell terminal box. |
| · Cable lead-in type | Pressure proof packing type |
- 3 - 7 Connection method of cables to the terminal box
- 1) Loosen 6-M4 hex holed bolts of the cover of the terminal box.
 - 2) Putting the gland nut, lock nut, gland washer and packing in the specified cable as illustrated in Fig.1, put it in the cable lead hole.
 - 3) If the lead wire of cable becomes long enough to be the cabling in the terminal board, tighten the gland nut.
 - 4) Tightening the gland nut, when the cable has been fixed completely, tighten the lock nut.
 - 5) Then, tighten, using cable gland 2-M3 hex holed bolt.
 - 6) Provide wiring according to English letters on the terminal board according to (3-9. Electric Wiring Diagram). (Specified pressure terminals are used)
 - 7) After wiring, be sure to tighten the screws on the terminal board.
 - 8) Check and confirm that there is no mistake made in wiring.
 - 9) Fitting an o-ring to the cover of terminal box, be sure to tighten 6-M4 hex holed bolt completely.
- 3 - 8 Cautions for explosion-proofness
- 1) The upper surface of load cell is a thin diaphragm. If this part is damaged, performance of load cell will become defective or trouble, be caused, resulting in requiring full attention to be paid there.
 - 2) AS for fitting and removal of lock, be sure to use a tool best suited for the screws.
 - 3) Be sure not to lose or miss the screws, washers etc. which have been taken off.



- 4) When the cover of terminal box is fitted, put an o-ring therein and tighten it.
- 5) As for cabling, be sure to use an electric conduit for protecting the cable against damage.

3 - 9 Electric connection diagram



	INPUT		OUTPUT		SHIELD
	(+)	(-)	(+)	(-)	
COLOR CLASSIFICATION	RED ORANGE	WHITE BLACK	GREEN BLUE	BLUE GREEN	YELLOW

FIG.1

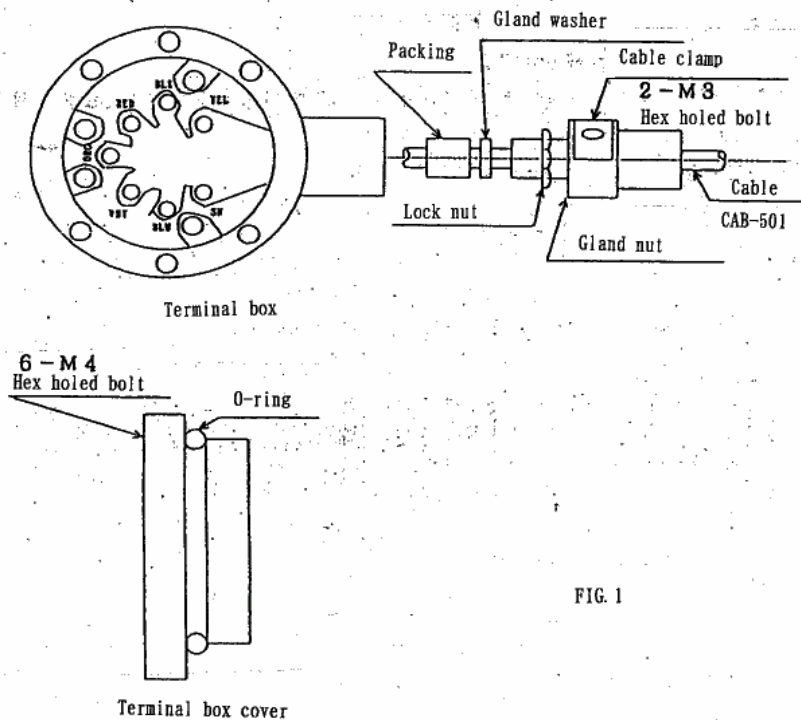


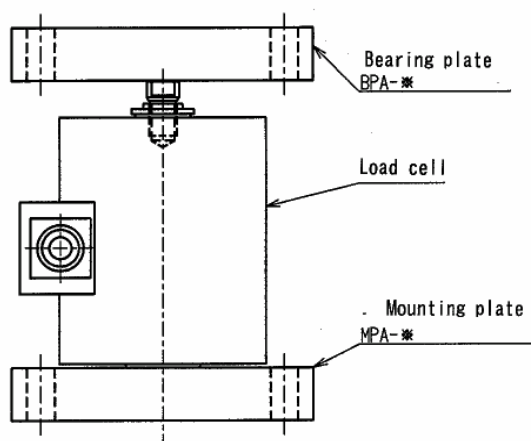
FIG. 1

4. Fitting method

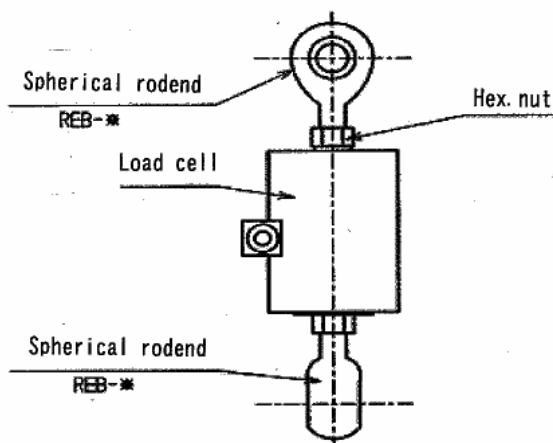
Using hexagonal bolts (holed) , fit the load cell as illustrated hereunder .
 Use spring washers for prevention of loosening .
 Select fitting bolts higher than strength class 10.9 of JIS B 1051 .
 If stainless steel bolts are used , use bolts of strength class 80 of JIS B1054 .
 As for the fitting length of screws , it shall be longer than the nominal diameter of screw .The pedestal must have full rigidity and flat, higher than 25s in surface finish .
 Fit it in such a way that no dust or foreign matter is not held between .
 The bolt sizes to be used shall be those mentioned in the catalogue and specification .
 The proper tightening torques shall be adopted , referring to the following table .

NOMINAL DIA .OF BOLT	PROPER TIGHTENING TORQUE(N-m)	
	(N·m)	(kgf·cm)
6	13.7	140
8	33.3	340
10	65.7	670
12	115	1170
16	279	2850
18	382	3900
20	539	5500
22	686	7000
24	784	8000

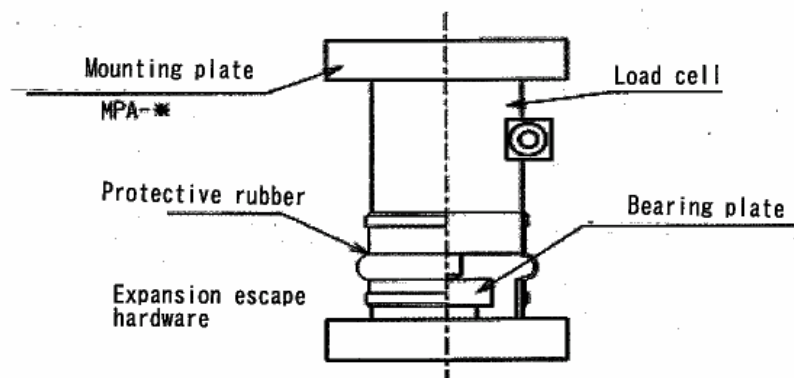
Compression



Tension



Expansion escape hardware



Accessories

Mounting plate , bearing plate , expansion escape hardware and spherical rod ends etc , are available at separate prices .



5 . Important points for use

In case of static loads , use it within the range of rated capacities .

In case of dynamic loads , use it less than 70% of rated capacities .

If there should be an impact load or vibration , a dynamic load calculated by multiplying static load by acceleration will act on the load cell .

Therefore , take a measure to prevent the value calculated by taking into consideration acceleration from exceeding the rated capacity of load cell .

If there is a possibility that an overload will act on load cell , provide a safety device against damage .

The installing place must have full strength .

Use it in an ambient temperature within the range temperature compensation range .

Be sure to avoid a rapid change in temperature and direct heat .

Checking protecting class , use it in such an environmental condition free from formation of dew .

Under such circumstances where electric and magnetic fields are very strong , noise is generated sometimes .Therefore , avoid using it at such circumstances .

Do not bend the cable lead hole extremely or pull strongly . When carrying it from place to place , do not hold the cable to suspend the load cell .

Under vibrating circumstances , fix the cord in the vicinity of cable lead hole and provide a means for prevention of vibration thereto .

Under such circumstances where screws tend to be loosened , retighten periodically and provide a detent means thereto , if required .

When fitting it to medical treatment machines and other apparatuses involving human life , be sure to provide a protective circuit thereto , in preparation for functional failure of load cell .

Do not disassemble the load cell .

Do not drop any thing on the load cell or give a shock thereto .

When discarded , dispose of it , taking into full consideration the environmental condition .

When discarded , dispose of it , taking into full consideration the environmental condition .

Please handle with great caution, since this is a heavy subject.

6 . Troubl shooting

If an overload exceeding the allowable value is applied or if an overload other than center load is applied , be sure to make calibration again in order to check whether it can be used normally .If indication is unstable or abnormal , check whether or not connection with gauge is made correctly and reliably or the important matters in use in item 2 sre used properly .

Check whether or not the input/output resistance is within the range of specified values with a tester etc .

Check whether or not the insulation resistance of load cell body and core wires of cord is within the specified range of values .

Check whether or not the output (zero balance) without load is within the range of specified valus .

If the values of the abovementioned measurement are abnormal , be sure to contact our company at once .

If there should be an unknown point in connection method etc ., contact our company .

Understand the text of the this manual is subject to change without notice .