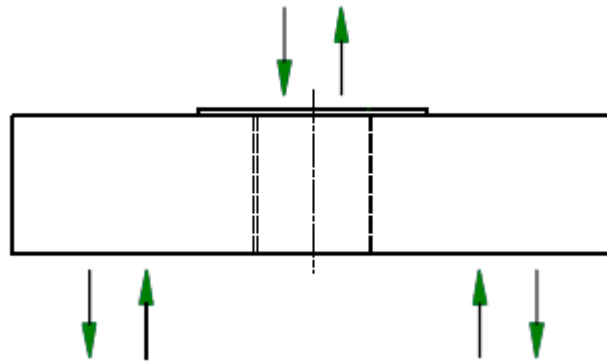


Compression and Tension Force Sensor for Material Testing Machines

K- 11

- Measuring range 0.5 ... 2000 kN
- For compression force and tension force
- High accuracy
- Long-term stability
- For material testing machines
- Rostbeständiger Edelstahl ~ Stainless steel
- Schutzart IP60 ~ Level of protection IP60

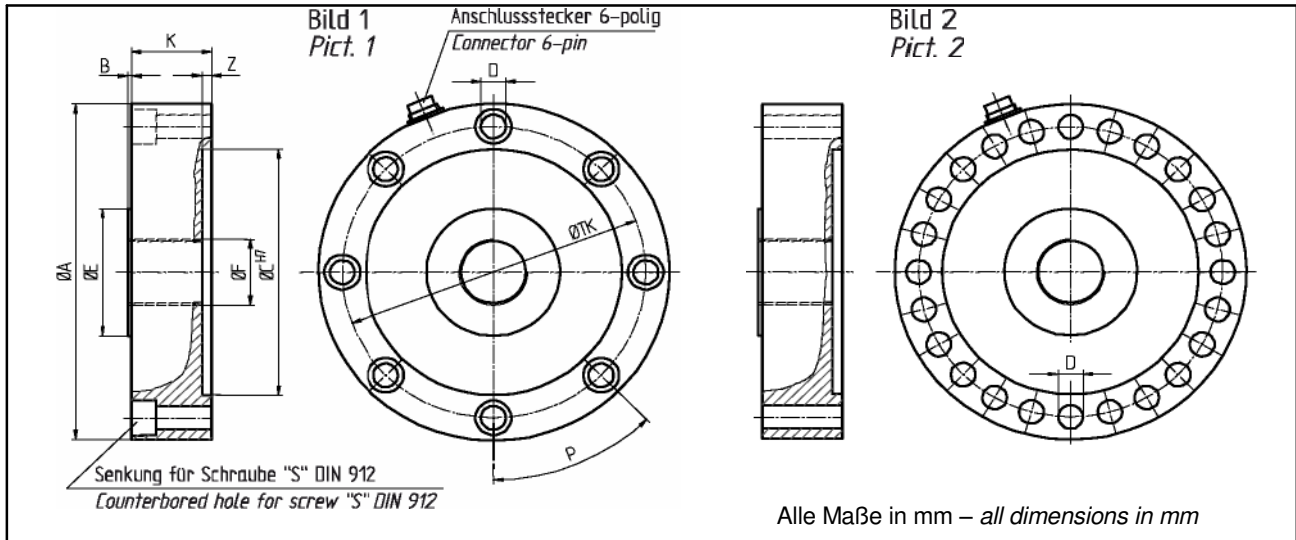


Connection	
Supply (-)	Pin 1
Supply (+)	Pin 2
Shield	Pin 3
Signal (+)	Pin 4
Signal (-)	Pin 5
Calibration control (option)	Pin 6

Technical modification to reserve

Dimensions

K-11



Meas. range [kN]	Ø A	B	Ø C	Ø D	Ø E	Ø F	K	Ø TK	P	S für for	Z	Bild Pict.	Tightening torque [N.m]
0,5/1/2/5/10	90	2	60	6,6	25	M12	32	75	4 x 90°	M6	2	1	0,8
20 / 50	150	2	105	11	55	M24 x 2	38	130	8 x 45°	M10	2	1	40
100 / 200	185	2	135	13	70	M36 x 3	42	160	8 x 45°	M12	3	1	70
500	240	2	160	17	90	M45 x 3	60	200	12 x 30°	M16	3	1	160
1000	295	5	200	21	130	M80 x 4	95	250	12 x 30°	M20	4	2	610
2000	390	3	270	26	190	M120 x 4	117	330	24 x 15°	M24	4	2	1050

SPECIFICATIONS

Type	K-11			
Accuracy class compression force or tension force	S%	0,05	0,2	0,5
Accuracy class compression force and tension force	S%	0,1	0,4	1,0
Service load	S%	130		
Limit load	S%	150		
Ultimate load	S%	>300		
Max. dynamic load (DIN 50 100)	S%	80		
Position feedback	mm	<0,12		
Bridge resistance	Ω	350		
Insulation resistance	Ω	>2*10 ⁹		
Supply voltage	V	2 ... 12		
Max. supply voltage	V	15		
Sensitivity (S)	mV/V	2,00		
Tolerance of sensitivity	S%	<±0,1		
Temp. coeff. of sensitivity	S%/10K	0,05	0,07	0,12
Temp. coeff. of zero signal	S%/10K	0,03	0,05	0,10
Reference temperature	°C	+23		
Nominal temperature range	°C	0 ... +60		
Service temperature range	°C	-10 ... +70		
Storage temperature range	°C	-30 ... +95		
Repeatability	S%	0,03	0,08	0,15
Rel. Creep	S%/30min	<±0,03	<±0,08	<±0,15
Material	Rostbeständiger Edelstahl - Stainless steel			
Level of protection (DIN EN 60529)	IP60			
Electrical connection	6-polig Serie 723 - 6-pin series 723			

Options/ Accessories

Calibration control	S%	100
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6-wire connection

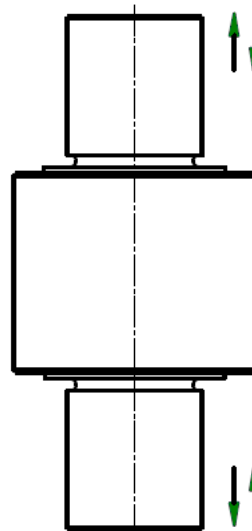
Rod end type EM data sheet no. 080374

Thrust piece type E2 data sheet no. 080374

Tension and Compression Force Sensor

K-12

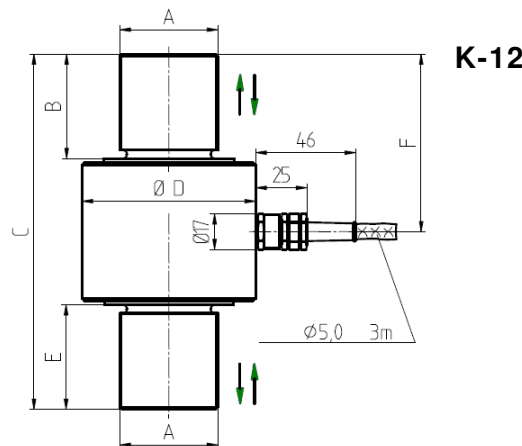
- Measuring range 0.5 ... 1000 kN
- For tension force and compression force
- Stainless steel
- Level of protection IP67



Connection	
Supply (-)	Green
Supply (+)	Brown
Signal (+)	Yellow
Signal (-)	White
Calibration control (option)	Grey
Shield	Shield

Technical modification to reserve

Dimensions



All dimensions in mm

	A	B	C	D	E	F
Measuring range [kN]						
0,5 / 1 / 2 / 5 / 10	M12	24	79	50	20	37
20 / 50	M20 x 1,5	25	90	59	25	45
100	M36 x 3	45	135	64	45	67,5
200	M45 x 3	50	170	80	50	85
500	M60 x 4	80	240	90	80	120
1000	M100 x 3	110	300	130	110	150

SPECIFICATIONS

Type	K-12	
Accuracy class tension force or compression force	S%	0,1
Accuracy class tension force and compression force	S%	0,25
Service load	S%	130
Limit load	S%	150
Ultimate load	S%	>300
Max. dyn. load (DIN 50 100)	S%	70
Lateral force resistance	S%	50
Position feedback	mm	<0,1
Bridge resistance	:	350
Insulation resistance	:	>2*10 ⁹
Supply voltage	V	2 ... 12
Max. supply voltage	V	15
Sensitivity (S)	mV/V	1,00
Tolerance of sensitivity	S%	<±0,1
Temp. coeff. of sensitivity	S%/10K	0,07
Temp. coeff. of zero signal	S%/10K	0,25
Reference temperature	°C	+23
Nominal temperature range	°C	-10 ... +70
Service temperature range	°C	-30 ... +80
Storage temperature range	°C	-50 ... +95
Repeatability	S%	0,08
Rel. creep	S%/30min	<±0,06
Material	Stainless steel	
Level of protection (DIN EN 60529)	IP67	
Electrical connection	3 m, free soldered ends	

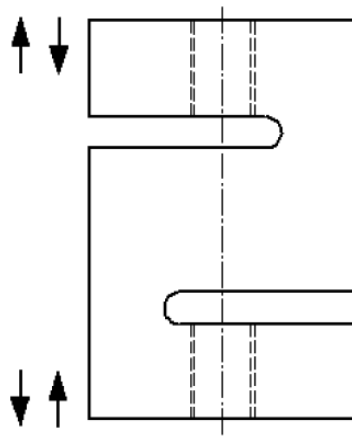
Accessory

Kontrolle - Calibration control	S%	100
6-wire connection		

Tension and Compression Force Sensor

K-25

- Measuring range 0.02 ... 50 kN
- For tension force and compression force
- High accuracy
- Low cost type
- Level of protection IP67 (IP60)

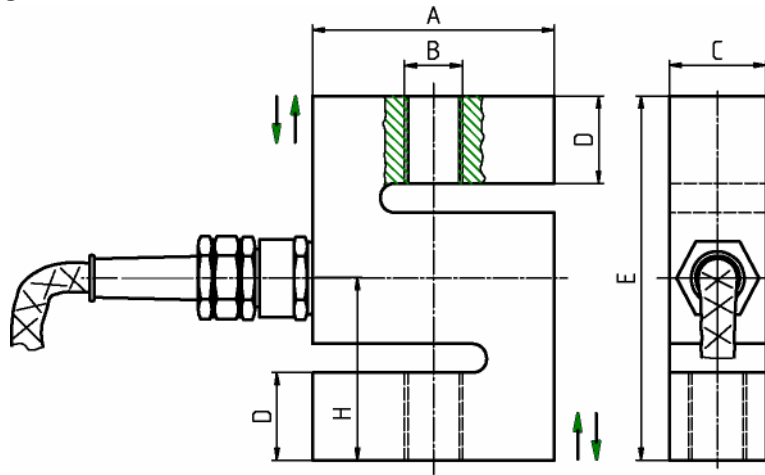


Connection	
Supply (-)	Green
Supply (+)	Brown
Signal (+)	Yellow
Signal (-)	White
Calibration control (option)	Grey
Shield	Shield

Technical modification to reserve

Dimensions

K-25



All dimensions in mm

Measuring range [kN]	A	B	C	D	E	H
0,02 / 0,05 / 0,1 / 0,2 / 0,5 / 1 / 2 / 5 / 10 ¹⁾	50	M 12	20	18	75	37,5
20 / 50	65	M24 x 2	39,5	22	85	42,5

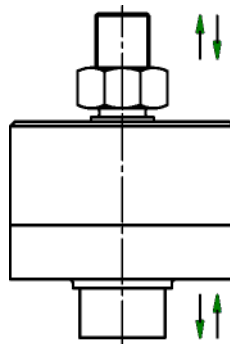
SPECIFICATIONS

Typ - Type	K-25			
Measuring range	kN	0,02	0,05 ... 1	2 ... 50
	kg	2	5 ... 100	200 ... 5000
Sensitivity (S)	mV/V	1,00	2,00	
Accuracy class tension force or compression force	S%	0,1		
Accuracy class tension force and compression force	S%	0,2		
Service load	S%	130		
Limit load	S%	150		
Ultimate load	S%	>300		
Max. dyn. load (DIN 50 100)	S%	70		
Lateral force resistance	S%	50		
Position feedback	mm	<0,25		
Bridge resistance	\ddot{u}	350		
Insulation resistance	\ddot{u}	>2*10 ⁹		
Supply voltage	V	2 ... 12		
Max. supply voltage	V	15		
Tolerance of sensitivity	S%	<±0,1		
Temp. coeff. of sensitivity	S%/10K	<±0,12		
Temp. coeff. of zero signal	S%/10K	<±0,04		
Reference temperature	°C	+23		
Nominal temperature range	°C	0 ... +60	-10 ... +70	
Service temperature range	°C	-10 ... +70	-30 ... +80	
Storage temperature range	°C	-30 ... +95	-50 ... +95	
Repeatability	S%	0,08		
Rel. creep	S%/30min	<±0,06		
Material		Aluminum		Stainless steel
Level of protection (DIN EN 60529)		IP60		IP67
Electrical connection		3 m, free soldered ends		
Calibration control	S%	100		
6-wire connection				
Options/ Accessory				
¹⁾ Overload protection		Tension force and compression force		
Rod end type EM data sheet no. 080374				

Tension and Compression Force Sensor

K - 1427

- Measuring range 0.5 ... 200 kN
- For tension force and compression force
- Stainless steel
- Level of protection IP67

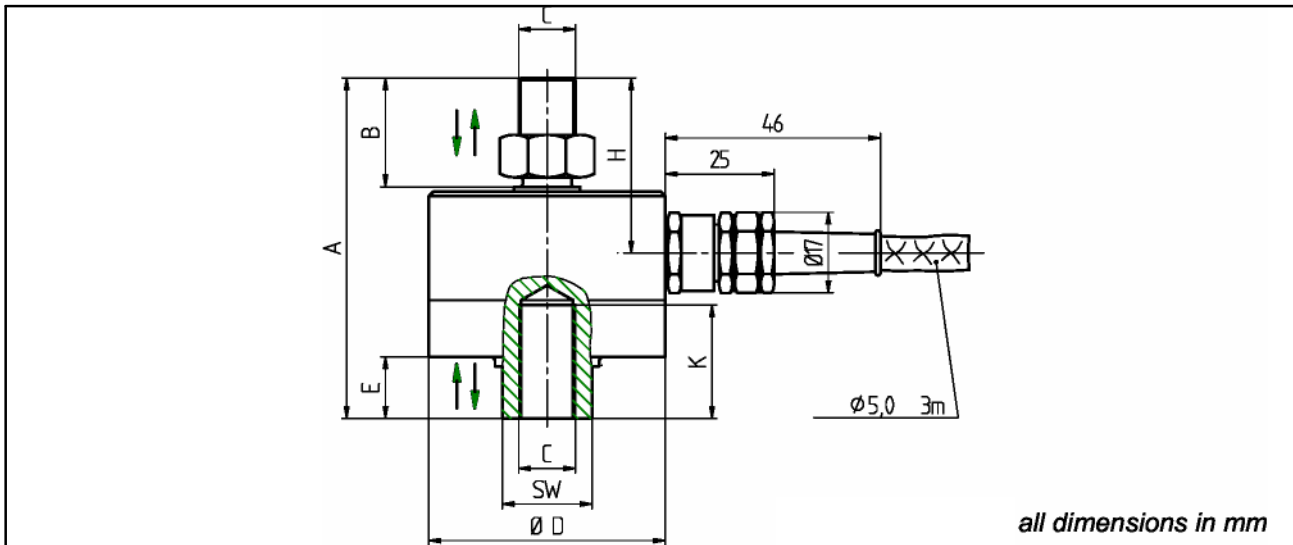


Connection	
Supply (-)	Green
Supply (+)	Brown
Signal (+)	Yellow
Signal (-)	White
Calibration control (option)	Grey
Shield	Shield

Technical modification to reserve

Dimensions

K-1427



	A	B	C	Ø D	SW	E	K	H
Measuring range [kN]								
0,5 / 1 / 2 / 5 / 10	72	24	M12	50	19	13	24	37
20	112	38	M20 x 1,5	90	30	15	38	54
50	142,5	47	M24 x 2	100	36	19	45	72
100	197	67	M36 x 3	135	60	29	65	99
200	232	85	M45 x 3	155	70	32	80	118

SPECIFICATIONS

Type		K-1427
Accuracy class tension force or compression force	S%	0,1
Accuracy class tension force and compression force	S%	0,25
Service load	S%	130
Limit load	S%	150
Ultimate load	S%	>300
Max. dyn. load (DIN 50 100)	S%	70
Lateral force resistance	S%	50
Position feedback	mm	<0,1
Bridge resistance	:	350
Insulation resistance	:	>2*10 ⁹
Supply voltage	V	2 ... 12
Max. supply voltage	V	15
Sensitivity (S)	mV/V	2,00 [~10 kN; 1,00]
Tolerance of sensitivity	S%	<±0,1
Temp. coeff. of sensitivity	S%/10K	0,07
Temp. coeff. of zero signal	S%/10K	0,25
Reference temperature	°C	+23
Nominal temperature range	°C	-10 ... +70
Service temperature range	°C	-30 ... +80
Storage temperature range	°C	-50 ... +95
Repeatability	S%	0,08
Rel. creep	S%/30min	<±0,06
Material		<i>Stainless steel</i>
Level of protection (DIN EN 60529)		IP67
Electrical connection		3 m, free soldered ends

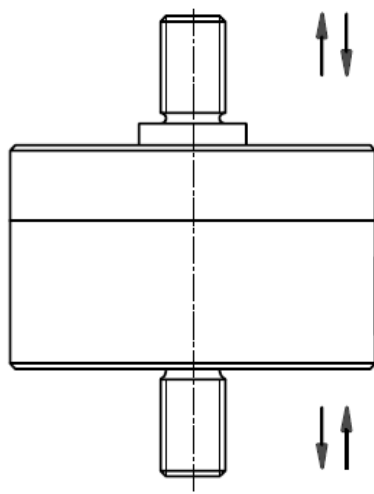
Options/ Accessory

Calibration control	S%	100
6-wire connection		

Tension and Compression Force Sensor

K - 1563

- Measuring ranges 100 ... 2000 N
- For tension force and compression force
- Stainless steel
- Level of protection IP67

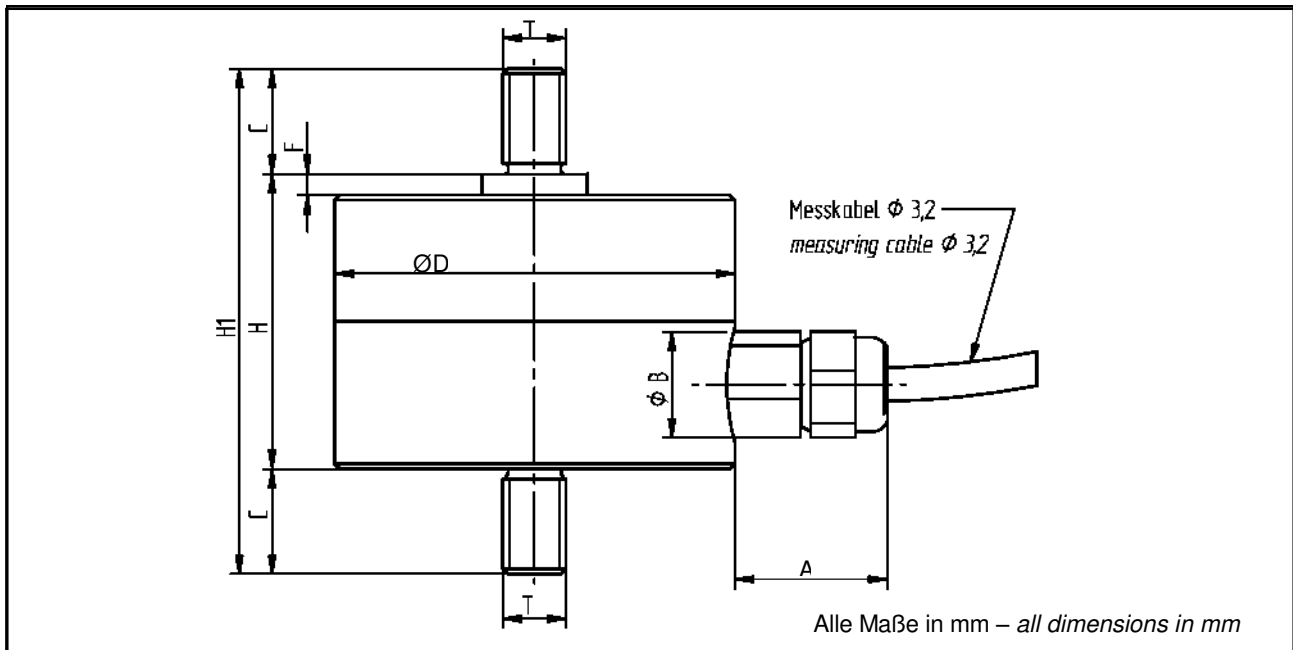


Connection	
Supply (-)	Green
Supply (+)	Brown
Signal (+)	Yellow
Signal (-)	White
Calibration control (option)	Grey
Shield	Shield

Technical modification to reserve

Dimensions

K-1563



Measuring range [N]	A	Ø B	C	Ø D	F	H	H ₁	T
100 / 200 / 500	10	10	6,4	25	2	21	33,8	M5
1000	10	10	8	32	2	23	39	M6
2000	14	10	10	38	2	28	48	M6

SPECIFICATIONS

Type	K-1563	
Accuracy class tension force or compression force	S%	0,15
Accuracy class tension force and compression force	S%	0,3
Service load	S%	130
Limit load	S%	150
Ultimate load	S%	>300
Max. dynamic load (DIN 50 100)	S%	70
Lateral force resistance	S%	50
Position feedback	mm	<0,1
Bridge resistance	Ω	350
Insulation resistance	Ω	>2*10 ⁹
Supply voltage	V	2 ... 12
Max. supply voltage	V	15
Sensitivity (S)	mV/V	2,00 [~200 N; 1,00]
Tolerance of sensitivity	S%	<±5
Temp. coeff. of sensitivity	S%/10K	0,05
Temp. coeff. of zero signal	S%/10K	0,05
Reference temperature	°C	+23
Nominal temperature range	°C	-10 ... +70
Service temperature range	°C	-30 ... +80
Storage temperature range	°C	-50 ... +95
Repeatability	S%	0,1
Rel. creep	S%/30min	<±0,2
Material	Stainless steel	
Level of protection (DIN EN 60529)	IP67	
Electrical connection	3 m, free soldered ends	

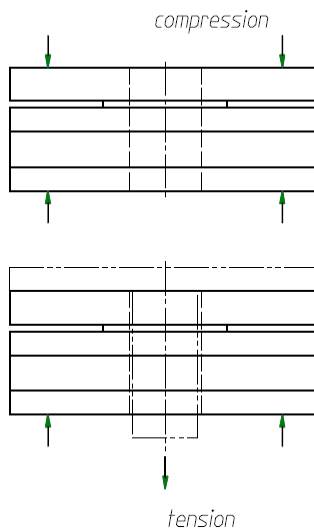
Option/ Accessory

Calibration control	S%	100
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Dual-Range-Force Sensor for Tension and Compression

K- 1882

- Dual-range sensor
- For tension force and compression force
- Stainless steel
- Short installation height
- Level of protection IP60

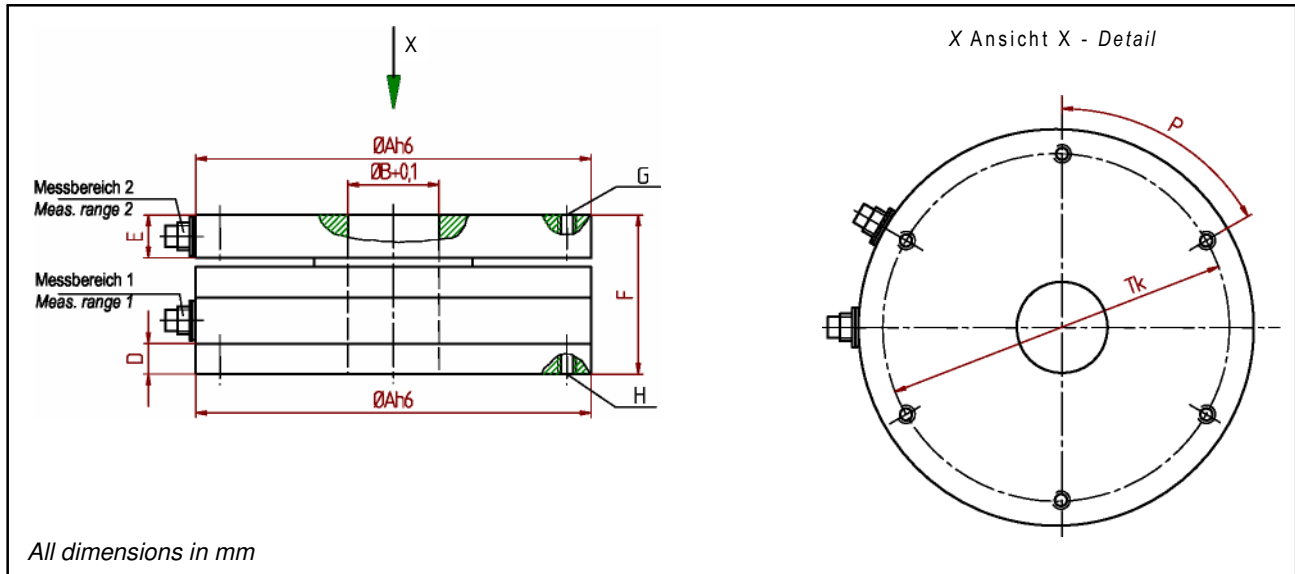


Connection	
Supply (-)	Pin 1
Supply (+)	Pin 2
Shield	Pin 3
Signal (+)	Pin 4
Signal (-)	Pin 5
Calibration control (option)	Pin 6
Not connected	Pin 7

Technical modification to reserve

Dimensions

K-1882



All dimensions in mm

Meas. range [kN]	A	B	D	E	F	G	H	P	TK
0 ... 1 / 1 ... 10		130	30	10	14	52	6 x M6, 10 depth	6°	114
0 ... 15 / 15 ... 150		188	30	17	26	87	12 x M10, 18 depth	30°	161

SPECIFICATIONS

Type	K-1882		
Measuring range 1	kN	0 ... 1	0 ... 15
Measuring range 2	kN	1 ... 10	15 ... 150
Accuracy class tension force or compression force	S%	0,2	
Accuracy class tension force and compression force	S%	0,4	
Service load	kN	10	150
Limit load	kN	15	170
Ultimate load	kN	18	250
Max. dyn. load (DIN 50 100)	S%	70	
Position feedback	mm	<0,4	
Bridge resistance	Ω	350	
Insulation resistance	Ω	>2*10 ⁹	
Supply voltage	V	2 ... 12	
Max. supply voltage	V	15	
Sensitivity (S)	mV/V	1,00	
Tolerance of sensitivity	S%	<±0,5	
Temp. coeff. of sensitivity	S%/10K	±0,2	
Temp. coeff. of zero signal	S%/10K	±0,2	
Reference temperature	°C	+23	
Nominal temperature range	°C	0 ... +60	
Service temperature range	°C	-10 ... +70	
Storage temperature range	°C	-30 ... +95	
Repeatability	S%	0,1	
Rel. creep	S%/30min	<±0,1	
Material	Stainless steel		
Level of protection (DIN EN 60529)	IP60		
Electrical connection	7-pin series 712		

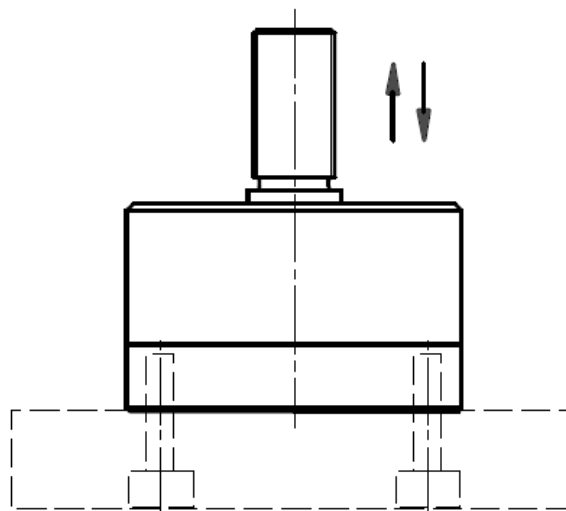
Options

Calibration control	S%	100
6-wire connection		

Tension and Compression Force Sensor

K- 2145

- Measuring range 0.5 ... 200 kN
- For tension force and compression force
- Stainless steel
- Level of protection IP67

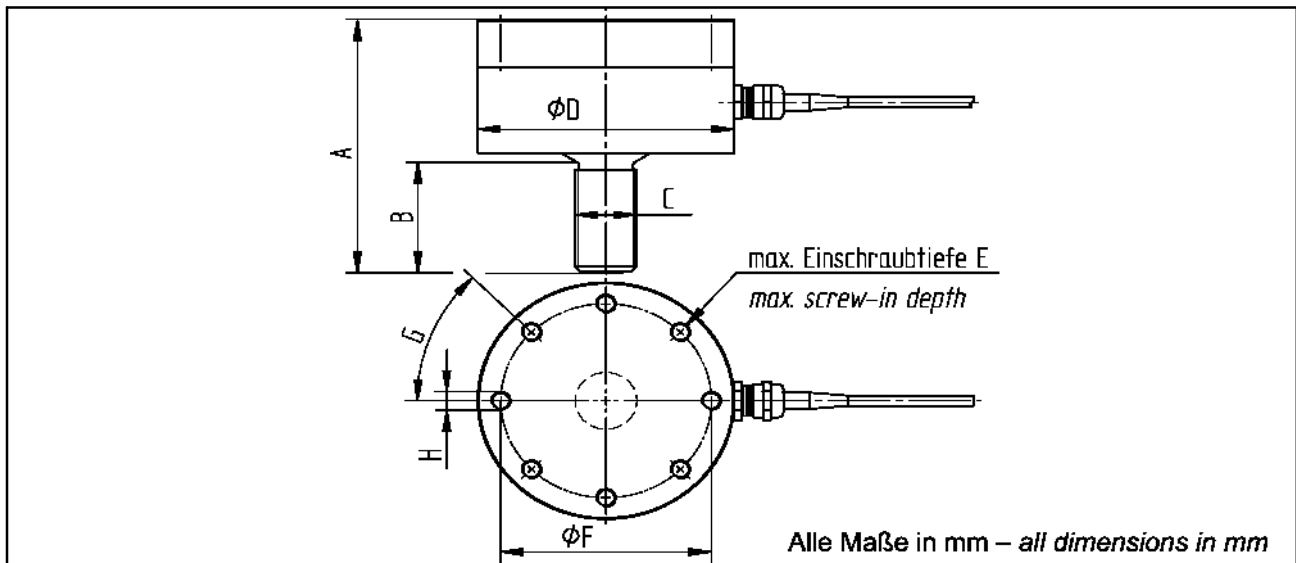


Connection	
Supply (-)	Green
Supply (+)	Brown
Signal (+)	Yellow
Signal (-)	White
Calibration control (option)	Grey
Shield	Shield

Technical modification to reserve

Dimensions

K-2145



	A	B	C	Ø D	E	Ø F	G	H
Measuring range [kN]								
0,5 / 1 / 2 / 5 / 10	57	24	M12	50	8	40	4x90°	M5
20	82	38	M20 x 1,5	90	14	70	6x60°	M8
50	107	47	M24 x 2	100	14	82	8x45°	M8
100	144	67	M36 x 3	135	18	110	8x45°	M10
200	170	85	M45 x 3	155	18	135	8x45°	M10

SPECIFICATIONS

Type	K-2145	
Accuracy class tension force or compression force	S%	0,1
Accuracy class tension force and compression force	S%	0,25
Service load	S%	130
Limit load	S%	150
Ultimate load	S%	>300
Max. dyn. load (DIN 50 100)	S%	70
Lateral force resistance	S%	50
Position feedback	mm	<0,1
Bridge resistance	:	350
Insulation resistance	:	>2*10 ⁹
Supply voltage	V	2 ... 12
Max. supply voltage	V	15
Sensitivity (S)	mV/V	2,00 [-10 kN; 1,00]
Tolerance of sensitivity	S%	<±0,1
Temp. coeff. of sensitivity	S%/10K	0,07
Temp. coeff. of zero signal	S%/10K	0,25
Reference temperature	°C	+23
Nominal temperature range	°C	-10 ... +70
Service temperature range	°C	-30 ... +80
Storage temperature range	°C	-50 ... +95
Repeatability	S%	0,08
Rel. creep	S%/30min	<±0,06
Material	Stainless steel	
Level of protection (DIN EN 60529)	IP67	
Electrical connection	3 m, free soldered ends	

Options/ Accessory

Kontrolle - Calibration control	S%	100
6-wire connection		
Rod end type EF data sheet no. 080374		

Model 1415 Column Compression Load Cells

Features

- singleball-endedcanisterconstruction
- capacityrangefrom0.5to500t
- accuracyupto0.05%fs
- mildsteelconstructionwithnickelplatedtreatment
- IP 67environmentprotectiongrade
- suppliedwithcompressionnut

Applications

- truckscapes
- trackscapes
- tankandhopperscales



compression nut

Description

Based on BCM's advanced strain gauge technology, model 1415 load cell is canister type load cell designed to measure compression loads. The singleball-endedconstructionallowstheinclinationoftheloadreceptorfromtheloadaxis.

Model 1415 compression load cells have very wide load capacities from 0.5 t to 500 t, posses optional accuracies of 0.05~0.2%fs(fs=fullscale).

1415 load cells are made from mild steel and are rugged in design. Thanks to BCM's leading technology in sealing, these load cells can have high environmental protection grade of IP 67. These load cells are widely used in truck scales, track,tankandhopperscales.

Dimensions

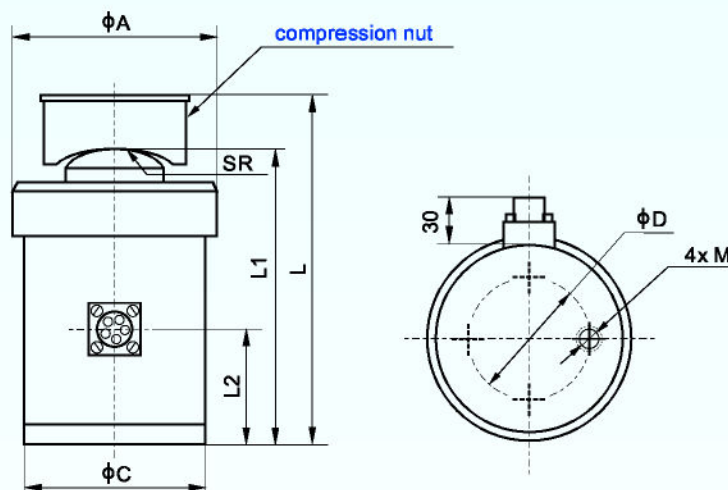


Table1:

capacity (t)	L	L1	L2	SR	C	D	M	cable length (m)
0.5, 0.7, 1, 2	108	88	33	15	60	38	4xM6	6
3, 5, 7	123	97	45	15	60	38	4xM6	6
10	159	108	50	15	60	40	4xM8	8
20	159	120	56	15	75	56	4xM8	8
30	228	130	61	30	75	56	4xM8	8
50, 70	228	178	70	80	118	90	4xM10	8
100	228	178	70	60	125	90	4xM10	12
200, 300	310	255	125	200	183	110	4xM16	12
500	310	255	125	200	193	120	4xM24	12

Model 1415 Column Compression Load Cells

TechnicalData

parameters	units	specifications		
capacity	t	0.5,0.7,1,2,3,5,7,10,2030,50,70100,200,300,500		
safeloadlimit	%fs	150		
ultimateoverload	%fs	200		
outputsensitivity@fullscale	mV/V	1.0~2.0		
zerounbalance	%fso	±1		
non-linearity	%fs	± 0.05	± 0.1	± 0.2
hysteresis	%fs	± 0.03	± 0.1	± 0.2
repeatability	%fs	±0.01	±0.05	±0.1
creeperror(30min.)	%fs	±0.03	±0.1	±0.2
excitation(supplyvoltage)	Vdc	10(recommended),6,...,15		
max.excitationvoltage	Vdc	16		
inputresistance	Ω	560 ±30(standard), 1100 ±30		
outputresistance	Ω	500±3(standard), 1000 ±5		
insulationresistance	MΩ	≥ 5000@50 Vdc		
storagetemp.range	°C	-40~+80		
operatingtemp.range	°C	-20~+65		
compensatedtemp.range	°C	-10~+60		
temp.coef ficientofZERO	%fs/°C	± 0.003	± 0.005	
temp.coef ficientofSP AN	%fs/°C	±0.003	±0.005	
loadcellbodymaterial		mildsteel		
sealing		potted		
mechanicalinterface		refertothedimensionsonthedatasheets*		
electricalinterface		Φ6.2mm,6-conductorshieldedcable,PVCjacket ,length**(standard)		
		Φ5.7mm,4-conductorshieldedcable,PVCjacket ,length**		
environment protection		IP 66 (standard), IP 67		
unitweight	kg			

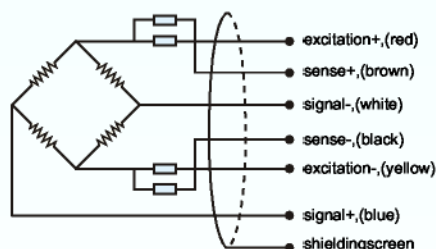
The listed specifications are subject to change without prior notice.

*: 1415 load cells are supplied with the compression nut.

** : Refer to the dimensions (table 1) for the value of cable length.

This value can also be a customized value.

Electrical connections



Model 1415 Column Compression Load Cells

Ordering Information

position(pos.)1:model									
1415:made from mild steel									
pos.2:capacities									
0.5t	1t	10t	100t						
0.7t	2t	20t	200t						
	3t	30t	300t						
	5t	50t	500t						
	7t	70t							
pos.3:output sensitivity									
1mV/V, ..., 2mV/V (to be confirmed in case of order)									
pos.4:non-linearity or accuracy class									
0.05%fs (cap. ≤ 20t)									
0.1%fs (cap. ≤ 70t)									
0.2%fs (cap. > 70t)									
pos.5:bridge resistance									
500 Ω (Rin= 565 Ω, Rout= 500Ω) ,standard									
1000 Ω (Rin= 1100 Ω, Rout= 1000Ω)									
pos.6:threads									
4xMd (for valued, refer to the dimensions on data sheets)									
pos.7:electrical interface									
cable, code= diameter(Φ)/number of conductors/cable jacket/cable length									
6.2/6/PVC/L = Φ6.2mm, 6-conductor shielded, PVC, length=L *m (standard)									
5.7/4/PVC/L= Φ5.7mm, 4-conductor shielded, PVC, length=L *m									
pos.8:environment protection									
IP66									
IP67									
pos.9:accessories for installation									
NA**. In case of "NA", pos. 9 can be omitted.									
topPlate									
bottomPlate									
pos.10:customized spec' s									
When any customized spec' sare required, the customer need to add "C" as the last parameter in the ordering code, and specifies the wished spec' son his order clearly .									
The customized spec' s need to be confirmed in advance by BCM' s sales representative.									
Code "C" can be omitted if no customized spec' sar are required.									
pos.1	pos.2	pos.3	pos.4	pos.5	pos.6	pos.7	pos.8	pos.9	pos.10

*:Refer to "Technical Data" for standard cable length. This value can also be a customized value.

** :NA =not available or not applicable

example: 1415-10t-1mV/V-0.05%fs-1000Ω-4xM8-6.2/6/PVC/8-IP66-topPlate-C

Model 1416 Column Compression Load Cells

Features

- rockercanisterconstruction, self-restoringalignment
- capacityrangefrom10to50t
- accuracyof0.05%fs
- mildsteelconstructionwithnickelplatedtreatment
- IP 67environmentprotectiongrade

Applications

- trucksscales
- vesselweighingscales
- tankandhopperscales



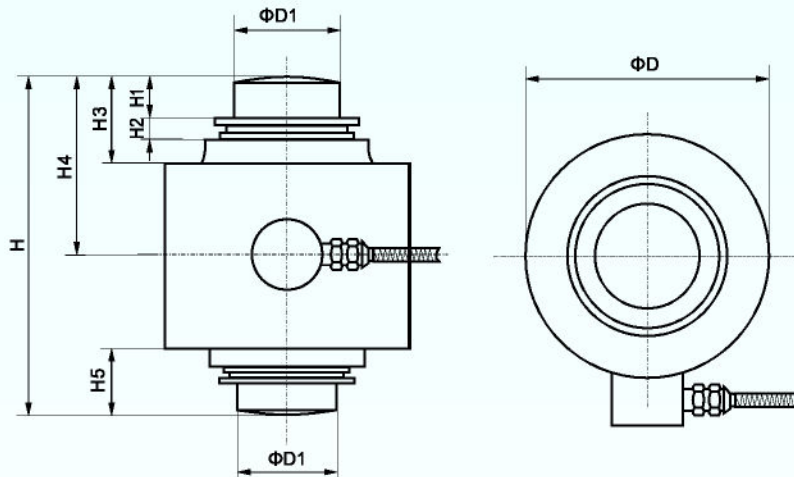
Description

Model 1416 compression load cell is rocker load cell designed to measure compression loads. These load cells feature self-correction to the load core, fast dynamic reaction, excellent long-term stability.

The capacity of 1416 load cells spans from 10t to 50t. The measuring accuracy is 0.05 %fs (fs=full scale).

1416 load cells are made of mild steel with nickel plated treatment. Thanks to BCM's leading technology in sealing, these load cells can have environment protection grade of IP 67. 1416 load cells are widely used in applications such as truck scales, vessel weighing scales and hopper scales.

Dimensions



capacity(t)	H	H1	H2	H3	H4	H5	D1	D
10,2 0	89	11	6	23	44	17	28	65
30	140	13	6.5	28	70	26	39	81
50	178	17	8.5	34	89	32	44	99

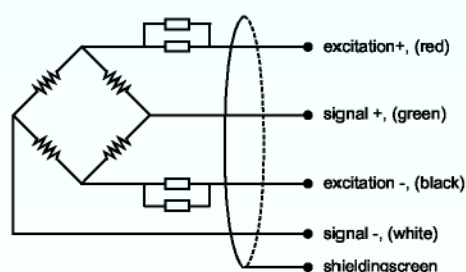
Model1416 ColumnCompressionLoadCells

TechnicalData

parameters	units	specifications
capacity	t	10,20,30,50
safeloadlimit	%fs	150
ultimateoverload	%fs	200
outputsensitivityatfs	mV/V	2.0±0.04
zerounbalance	%fso	±5
non-linearity	%fs	± 0.05
hysteresis	%fs	± 0.03
repeatability	%fs	±0.02
creeperror(30min.)	%fs	±0.02
excitation(supplyvoltage)	Vdc	10
max.excitationvoltage	Vdc	15
inputresistance	Ω	1150 ±50(standard), 750 ±10
outputresistance	Ω	1000±5(standard), 700 ±10
insulationresistance	MΩ	≥5000@50Vdc
storagetemp.range	°C	-40~+80
operatingtemp.range	°C	-30~+80
compensatedtemp.range	°C	-10~+55
temp.coef ficientofspan	%fs/°C	± 0.002
temp.coef ficientofzero	%fs/°C	± 0.003
loadcellbodymaterial		mild steel, nickel plated surface treatment
sealing		potted
mechanicalinterface		refertothedimensionsonthedatasheets
electricalinterface		Φ6.2mm,4-conductorshielded cable,PVC, 6m(8mforcap.=50t)
environmentprotection		IP66(standard),IP 67
unitweight	kg	~6(cap.<50t),~8(cap.=50t)

The listed specifications are subject to change without prior notice.

Electricalconnections



Model1416 ColumnCompressionLoadCells

OrderingInformation

position(pos.)1:model									
1416:madefrommildsteel									
pos.2:capacities									
10t 20t 30t 50t									
pos.3:outputsensitivity									
2mV/V									
pos.4:non-linearityoraccuracyclass									
0.05%fs									
pos.5:bridgeresistance									
1000 Ω(Rin= 1150±50 Ω,Rout= 1000±5Ω),standard 700 Ω(Rin= 750±10 Ω,Rout= 700±10Ω)									
pos.6:threads									
NA*. Incaseof"NA",pos.6canbeomitted.									
pos.7:electricalinterface									
cable.code= diameter(Φ)/numberofconductors/cablejacket/cablelength 6.2/4/PVC/L = Φ6.2mm,4-conductorsshielded,PVC,length=6 **m									
pos.8:environmentprotection									
IP66(standard) IP67									
pos.9:accessoriesforinstallation									
NA.Incaseof"NA",pos.9canbeomitted. loadButton bottomPlate									
pos.10:customizedspec' s									
Whenanycustomizedspec' sare required,thecustomerneedstoadd "C"asthelastparameterinthe orderingcode,andspecifiesthe wishedspec' sonhisorderclearly . Thecustomizedspec' sneedstobe confirmedinadvancebyBCM' ssales representative. Code"C"canbeomittedifno customizedspec' sarerequired.									
pos.1	pos.2	pos.3	pos.4	pos.5	pos.6	pos.7	pos.8	pos.9	pos.10

*:NA =notavailableornotapplicable

**:.Ifcap.=50t,cablelength=8m. Thisvaluecanalsobeacustomizedvalue.

example: 1416-10t-2mV/V-0.05%fs-1000Ω-6.2/4/PVC/6-IP66-bottomPlate-C

Model 1191

Miniature Compression Load Cells

Features

- low profile
- capacity range from 0.1 kN to 20 kN
- 17-4PH stainless steel construction
- IP 67

Applications

- flat mounting weighing systems

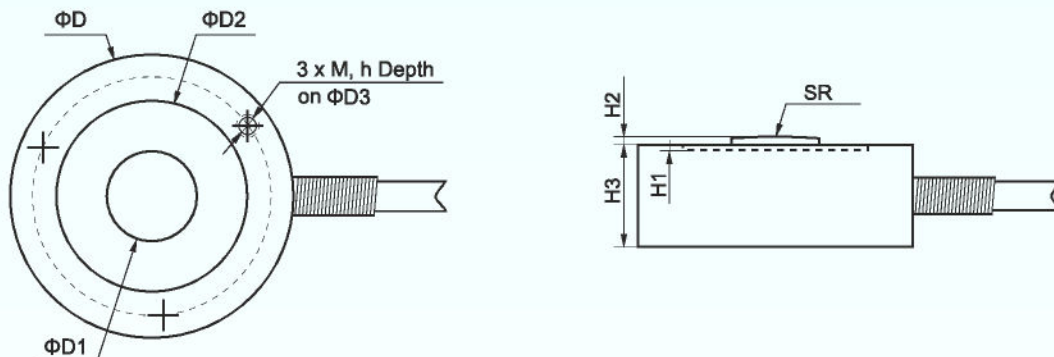


Description

1191 miniature compression load cells are made of BCM advanced strain gauge technology. These load cells are designed for applications in a space limited area.

The capacities of 1191 load cells start from 0.1 kN to 20 kN. The measuring accuracy is 1 %fs (fs = full scale, 0.5%fs accuracy is available on request). These load cells are made from 17-4PH stainless steel, and thanks to BCM's leading technology in sealing, 1191 load cells can be sealed to have environment protection level of IP 67.

Dimensions:



force range (kN)	D1	D2	D3	D	M	h	H1	H2	H3	SR
0.1, 0.2, 0.3, 0.5, 0.7	2.8	15	18	25	M2.5	thru	0.5	1.3	7.7	SR40
1, 2, 3, 5, 7	8	18.5	24	31.3	M2.5	6	0.5	1.3	8.5	SR50
10, 20	12	25.4	32	37.7	M3	8	0.7	1.7	14	SR60

Model 1191

Miniature Compression Load Cells

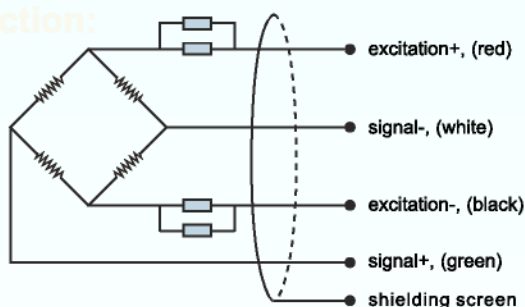
Technical Data

parameters	units	specifications
capacity	kN	0.1, 0.2, 0.3, 0.5, 0.7, 1, 2, 3, 5, 7, 10, 20
safe load limit	%fs	120
ultimate overload	%fs	150
output sensitivity at fs	mV/V	1 ± 0.1 (cap.=0.1 kN), 1.5 ± 0.1 (cap. > 0.1 kN)
zero unbalance	%fso	± 2
non-linearity	%fs	± 1 (standard), ± 0.5
hysteresis	%fs	± 1
repeatability	%fs	± 0.2
creep error (30 min.)	%fs	± 0.5
excitation (supply voltage)	Vdc	10
max. excitation voltage	Vdc	15
input resistance	Ω	1000 ± 100 (standard), 410 ± 10
output resistance	Ω	1000 ± 30 (standard), 350 ± 10
insulation resistance	MΩ	≥ 5000@50 Vdc
storage temp. range	°C	-35 ~ +80
operating temp. range	°C	-20 ~ +65
compensated temp. range	°C	-10 ~ +40
temp. coefficient of span	%fs/°C	± 0.01
temp. coefficient of zero	%fs/°C	± 0.02
load cell body material		17-4PH stainless steel
sealing		potted
mechanical interface		refer to the dimensions on the datasheets
electrical interface		χ 3.5 mm, 4-conductor shielded, PVC jacket, 1.5 m cable length
environment protection		IP 66 (standard), IP 67
unit weight	g	~ 60

The listed specifications are subject to change without prior notice.

Electrical connection:

Electrical connection:



Model 1191

Miniature Compression Load Cells

Ordering Information

position (pos.) 1: model									
1191: made from 17-4PH stainless steel									
pos. 2: capacities									
0.1 kN 1 kN 10 kN									
0.2 kN 2 kN 20 kN									
0.3 kN 3 kN									
0.5 kN 5 kN									
0.7 kN 7 kN									
pos. 3: output sensitivity									
1 mV/V (cap=0.1 kN)									
1.5 mV/V (other capacities)									
pos. 4: non-linearity or accuracy class									
0.5 %fs									
1 %fs (standard)									
pos. 5: bridge resistance									
1000 Ω (Rin = 1000±100 Ω, Rout = 1000±30 Ω)									
350 Ω (Rin = 410±10 Ω, Rout = 350±10 Ω)									
pos. 6: threads									
3xMd (for value d, refer to the dimensions on datasheets)									
pos. 7: electrical interface									
cable, code = diameter(Φ)/number of conductors/cable jacket/cable length									
3.5/4/PVC/L = Φ3.5 mm, 4-conductor shielded, PVC, length = 1.5" m									
pos. 8: environment protection									
IP 66 (standard)									
IP 67									
pos. 9: accessories for installation									
NA**. In case of "NA", pos.9 can be omitted.									
pos. 10: customized spec's									
When any customized spec's are required, the customer needs to add "C" as the last parameter in the ordering code, and specifies the wished spec's on his order clearly.									
The customized spec's needs to be confirmed in advance by BCM's sales representative.									
Code "C" can be omitted if no customized spec's are required.									
pos.1	pos. 2	pos. 3	pos. 4	pos. 5	pos. 6	pos. 7	pos. 8	pos. 9	pos. 10

*: This value can also be a customized value.

** : NA = not available or not applicable

example: 1191-10kN-1.5mV/V-1%fs-1000Ω-3xM3-3.5/4/PVC/1.5-IP66-C

Model 1291

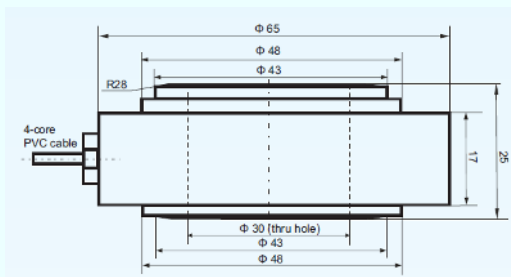
Cylindrical Compression Load Cell



Features:

- made from 17-4PH stainless st
- low profile
- light weight (N. W . = 360 g)
- high capacity up to 10 t
- fully laser weld to IP 68 protectio

Dimensions:



Description:

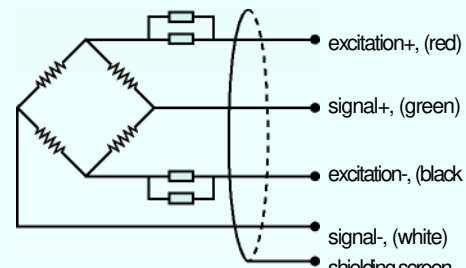
BCM 1291 load cells are designed for compressive force measurements where the space is limited. These load cells are especially suitable for measuring bolt compressive forces.

Model 1291 offers a low profile design for high capacity applications. It is made of 17-4PH stainless steel. The fully

laser welded structure makes these load cells possessing a high protection level of IP 68.

The capacity range of 1291 covers from 2t to 10 t with the measuring accuracy up to 0.1%fso (fso = full scale output). OIML class is also available on request for legal for trade applications.














Electrical connection



Specifications:

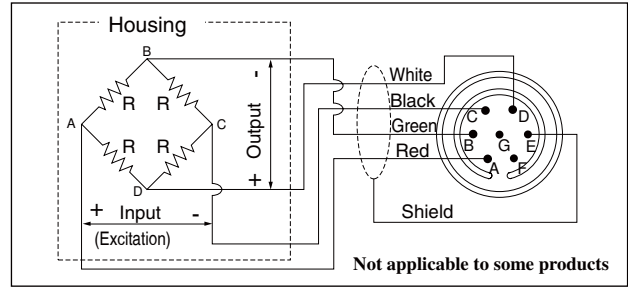
parameters	units	specifications		
capacity	t	2, 5, 10		
safe overload	%FS	120		
ultimate overload	%FS	150		
excitation voltage	Vdc	5 ~ 12		
maximum excitation	Vdc	18		
output sensitivity	mV/V	1.0 ~ 2.0		
zero unbalance	%FSO	± 1		
combined error	OIML standard	G1	G2	G3
	%FSO	0.1	0.2	0.3
creep	%FSO/30 min.	± 0.05		
input resistance	Ω	700 ± 10		
output resistance	Ω	700 ± 7		
insulation resistance	MΩ	~ 5000 @ 50 Vdc		
operating temperature range	°C	-35 ~ +65		
compensated temperature range	°C	-10 ~ +40		
temperature coefficient of SPAN	%FSO/°C	± 0.001	± 0.002	± 0.003
temperature coef ficient of ZERO	%FSO/°C	± 0.001	± 0.002	± 0.003
electrical interface	cable	4-core shielded PVC cable		
		cable length: 5 m (other length available on request)		

The listed specifications are subject to change without prior notice.

LOAD CELLS			
<p>CLS-NA/CLS-NB Pam E-701</p>  <p>Compression, Miniature 2N ~ 10kN</p>	<p>CLB-NA Pam E-701</p>  <p>Low range, Compression 50 ~ 200N</p>	<p>CLA-NA Pam E-701</p>  <p>Compression 500N ~ 20kN</p>	<p>CLG-NB Pam E-701</p>  <p>Compression, Low profile 10 ~ 200kN</p>
<p>CLP-NB/CLP-NB-D Pam E-701</p>  <p>Compression 10kN ~ 10MN (CLP-NB) Dual outputs 30kN ~ 5MN (CLP-NB-D)</p>	<p>CLU-NA/CLU-NA-D Pam E-701</p>  <p>Compression 10kN ~ 1MN (CLU-NA) Dual outputs 100kN ~ 1MN (CLU-NA-D)</p>	<p>CLM-NB Pam E-701</p>  <p>Compression, High performance 10kN ~ 2MN</p>	<p>CLJ-NA Pam E-701</p>  <p>Compression, High performance Remote sensing available 5 ~ 30kN</p>
<p>CLJ-NB Pam E-701</p>  <p>Compression, High performance Remote sensing available 10kN ~ 10MN</p>	<p>CLF-NA Pam E-701</p>  <p>Compression, Low profile 500kN ~ 10MN</p>	<p>CLL-NA/CLH-NA Pam E-701</p>  <p>Compression, Flat face 500kN ~ 1 MN (CLL-NA) 1 ~ 2MN (CLH-NA)</p>	<p>CLR-NAH</p>  <p>High temperature use 500N ~ 200kN Temperature range -10 ~ +160:</p>
<p>KCE-NA Pam E-701 Pam E-720</p>  <p>Compression, Center-hole 500kN ~ 2MN</p>	<p>KCM-NA Pam E-701 Pam E-720</p>  <p>Compression, Center-hole 10kN ~ 5MN</p>	<p>CLC-NA Pam E-701 Pam E-720</p>  <p>Compression, Center-hole 50kN ~ 5MN</p>	<p>KCG-NA</p>  <p>Compression, Center-hole 200kN Strand force measurement</p>
<p>KCC-NA Pam E-701 Pam E-720</p>  <p>Compression, Center-hole 200kN ~ 1MN</p>	<p>TCLB-NA Pam E-701</p>  <p>Tension/Compression 50 ~ 200N</p>	<p>TCLA-NB</p>  <p>Tension/Compression 500N ~ 20kN</p>	<p>TCLK-NA Pam E-701</p>  <p>Tension/Compression 5 ~ 50kN</p>
<p>TCLZ-NA Pam E-701</p>  <p>Tension/Compression, High performance 10N ~ 10kN</p>	<p>TCLM-NB Pam E-701</p>  <p>Tension/Compression, High performance 10 ~ 200kN</p>	<p>TCLY-NA</p>  <p>Tension/Compression, High precision 300kN ~ 2MN</p>	<p>TCLP-NB/TCLP-NB-D Pam E-701</p>  <p>Tension/Compression 10kN ~ 2MN (TCLP-NB) Tension/Compression, Dual outputs 20kN ~</p>

LOAD CELLS

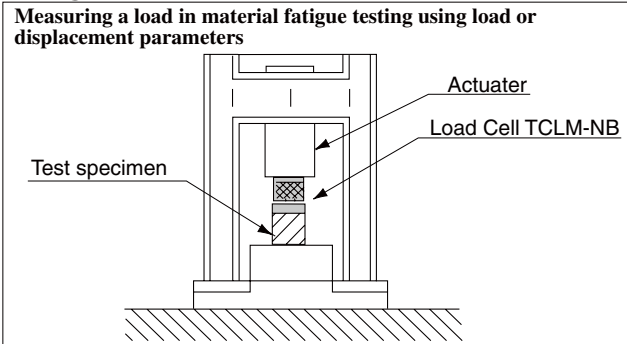
TML load cells are used to convert force and load to electrical signals. The detecting element for force and load is a strain gauge that TML developed especially for load cells. With our extensive field-proven record and experience applied to structures and materials in all load cell areas, our cells have earned widespread trust as high-precision products offering excellent consistency and durability. Our line includes a number of compression, tension and tension/compression universal models with high to low capacities. Since our load cells are so widely used, we also offer all types of products related to load cells that allow customers to choose exactly what they need for their particular purpose. In addition to load cells, we also carry a line of products for measuring torque, such as torque transducers for socket wrenches, etc.



HOW TO USE

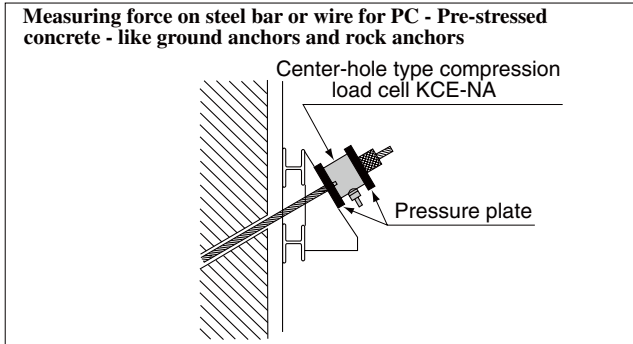
Fatigue test

Measuring a load in material fatigue testing using load or displacement parameters



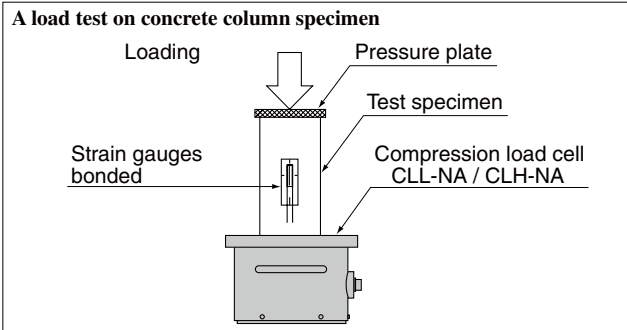
Ground and Rock anchors

Measuring force on steel bar or wire for PC - Pre-stressed concrete - like ground anchors and rock anchors



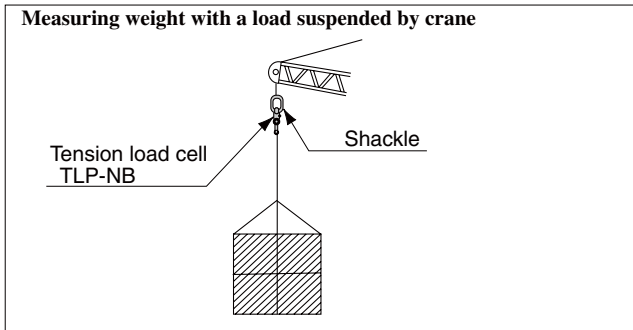
Loading test

A load test on concrete column specimen



Suspension force

Measuring weight with a load suspended by crane



Load Cell Selection

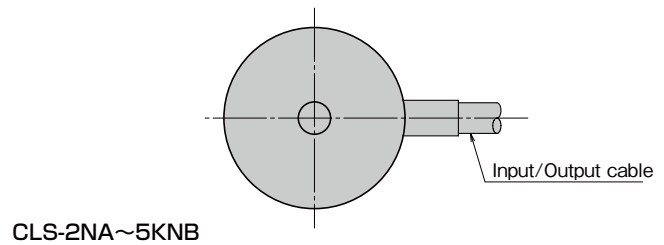
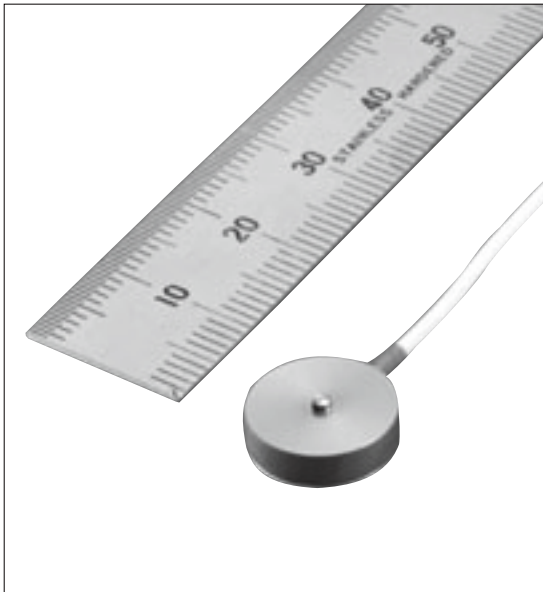
★ marked for dual output models

Type	Capacity	N										kN										MN					Page	
		2	5	10	20	50	100	200	500	1	2	5	10	20	30	50	100	200	300	500	750	1	1.5	2	3	5		10
Compression	CLS-NA	●	●	●	●	●	●																					5
	CLS-NB							●	●	●	●	●																5
	CLB-NA					●	●	●																				6
	CLA-NA								●	●	●	●	●															6
	CLG-NB											●	●	●	●	●	●	●	●	●	●							7
	CLP-NB											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	8-9
	CLP-NB-D★											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	10-11
	CLU-NA											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	12
	CLU-NA-D★											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	13
	CLM-NB											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	14
	CLJ-NA											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	15
	CLJ-NB											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	16-17
	KCE-NA																						●	●	●	●	●	18
	KCM-NA																						●	●	●	●	●	19
	KCC-NA																						●	●	●	●	●	20
	CLC-NA																						●	●	●	●	●	21
	CLF-NA																						●	●	●	●	●	22
CLL-NA																						●	●	●	●	●	23	
CLH-NA																						●	●	●	●	●	23	
Tension/ Compression universal	TCLB-NA					●	●	●																			24	
	TCLA-NB								●	●	●	●	●	●	●	●	●	●	●	●	●							
	TCLK-NA										●	●	●	●	●	●	●	●	●	●	●							26
	TCLZ-NA																						●	●	●	●	●	27
	TCLY-NA																						●	●	●	●	●	28
	TCLM-NB											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	29
	TCLP-NB											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	30-31
	TCLP-NB-D★											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	32-33
	TCLU-NA											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	34
	TCLU-NA-D★											●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	34
Tension	TCLN-NA										●	●	●	●	●	●	●	●	●	●	●						35	
	TLJ-NA																					●	●	●	●	●	35	
	TLP-NB																					●	●	●	●	●	36	
	TLP-NB-D★																					●	●	●	●	●	37	

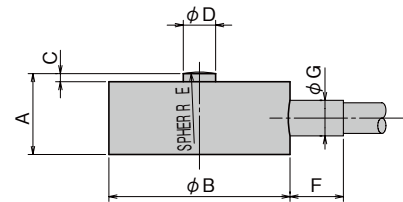
LOAD CELLS

CLS-NA/CLS-NB Compression Load Cell

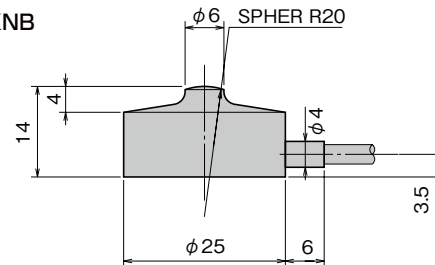
2N~10kN



CLS-2NA~5KNB



CLS-10KNB



The CLS-NA and CLS-NB Load Cells are ultracompact load cells with capacities ranging from 2N to 10kN. They are widely used for measuring load distribution or loads in structural mockup testing and as a sensor for industrial machinery.

Protection ratings : IP 53 equivalent
IP 41 equivalent <CLS-2NA , CLS-5NA>

Dimensions

Type	A	B	C	D	E	F	G	Weight (g)
CLS-2NA	4	12	0.7	1.5	2	4	1.8	1
CLS-5NA	4	12	0.7	1.5	2	4	1.8	1
CLS-10NA	4	12	0.7	1.5	2	4	1.8	3
CLS-20NA	4	12	0.7	1.5	2	4	1.8	3
CLS-50NA	4	12	0.7	1.5	2	4	1.8	3
CLS-100NA	4	12	0.7	1.5	2	4	1.8	3
CLS-200NB	9	20	1	2.5	8	6	4	12
CLS-500NB	9	20	1	2.5	8	6	4	12
CLS-1KNB	9	20	1	2.5	8	6	4	12
CLS-2KNB	10	20	1.5	3	8	6	4	12
CLS-5KNB	12.5	25	2	4	10	6	4	40
CLS-10KNB	As per the figure							40

Specifications

Type	CLS-2NA	CLS-5NA	CLS-10NA	CLS-20NA	CLS-50NA	CLS-100NA	CLS-200NB	CLS-500NB	CLS-1KNB	CLS-2KNB	CLS-5KNB	CLS-10KNB
Capacity	2N	5N	20N	20N	50N	100N	200N	500N	1kN	2kN	5kN	10kN
Rated Output	1mV/V (2000 × 10 ⁻⁶ strain) ± 20%						1.5mV/V (3000 × 10 ⁻⁶ strain) ± 10%					
Non-linearity	0.1%RO		0.5%RO									
Hysteresis	0.1%RO		0.5%RO									
Temperature effect on zero	0.2%RO/°C		0.1%RO/°C									
Temperature effect on span	0.05%/°C											
Compensated temperature range	-10~+60°C											
Temperature range	-10~+60°C											
Over load	150%											
Ultimate overload rating	300%		500%				300%					
Input/output resistance	350Ω ± 2%						350Ω ± 1%					
Recommended exciting voltage	Less than 2V											
Allowable exciting voltage	5V											
Zero balance	200%RO		150%RO				100%RO					

Input/Output cable : CLS-NA : φ 1.3mm 0.03mm² 4-core shielded vinyl cable 2m
CLS-NB : φ 3mm 0.05mm² 4-core shielded chloroprene cable 2m

LOAD CELLS

CLB-NA Compression Load Cell

50~200N



The CLB-NA Load Cell is a low-capacity, compression type load cell. An internal structure with fixed frame for strain generation ensures high precision measurement.

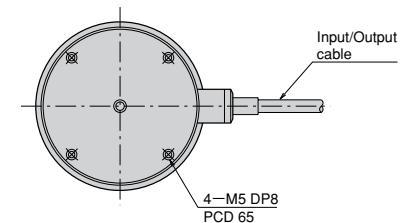
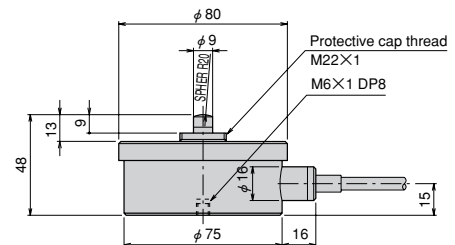
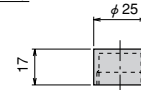
Protection ratings : CLB-50NA IP 40 equivalent
CLB-100NA/-200NA IP 42 equivalent

Specifications

Type	CLB-50NA	CLB-100NA	CLB-200NA
Capacity	50N	100N	200N
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±0.5%		
Non-linearity	0.1%RO		
Hysteresis	0.1%RO		
Temperature effect on zero	0.01%RO/°C		
Temperature effect on span	0.01%/°C		
Compensated temperature range	-10~+60°C		
Temperature range	-20~+70°C		
Over load	150%		
Input/output resistance	350Ω ±2%		
Recommended exciting voltage	Less than 6V		
Allowable exciting voltage	15V		
Zero balance	5%RO		
Weight	0.45kg		0.9kg

Input/Output cable : φ6mm 0.35mm² 4-core shielded chloroprene cable 5m

Protective cap



Fitting accessory

Type	Spherical Cap FA	Mounting Flange FB
CLB-50NA~200NA	FA-20	FB-002-65

CLA-NA Compression Load Cell

500N~20kN



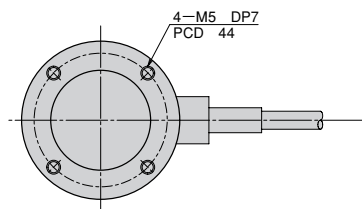
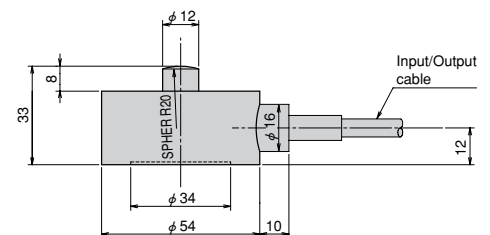
The CLA-NA Load Cell has a diaphragm type strain sensing element. It is compact, easy to operate and can be used to take consistent measurement.

Protection ratings : IP 67 equivalent

Specifications

Type	CLA-500NA	CLA-1KNA	CLA-2KNA	CLA-5KNA	CLA-10KNA	CLA-20KNA
Capacity	500N	1kN	2kN	5kN	10kN	20kN
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±0.5%					
Non-linearity	0.2%RO					
Hysteresis	0.1%RO					
Temperature effect on zero	0.01%RO/°C					
Temperature effect on span	0.01%/°C					
Compensated temperature range	-10~+60°C					
Temperature range	-20~+70°C					
Over load	150%					
Input/output resistance	350Ω ±2%					
Recommended exciting voltage	Less than 6V					
Allowable exciting voltage	15V					
Zero balance	5%RO					
Weight			0.36kg			0.38kg

Input/Output cable : φ6mm 0.35mm² 4-core shielded chloroprene cable 5m

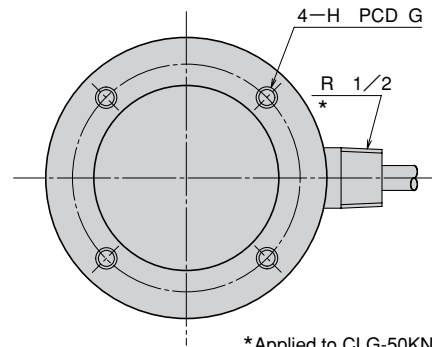
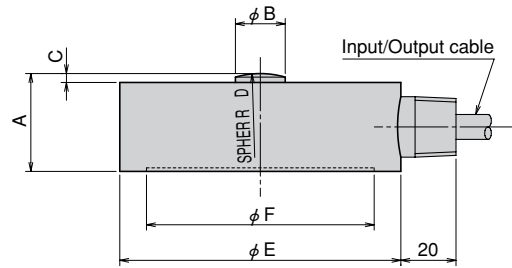


Fitting accessory

Type	Spherical Cap FA	Mounting Flange FB	Slide Support FC
CLA-500NA~20KNA	FA-20	FB-2-44	FC-2-20

CLG-NB Compression Load Cell

10~200kN



The CLG-NB Load Cell is a high precision load cell in a thin, hermetically sealed package. It is widely used in tight spaces and as a system sensor for industrial machinery.

Protection ratings : IP 67 equivalent

Dimensions

Type	A	B	C	D	E	F	G	H
CLG-10KNB	25	12	3	60	84	59	70	M5 DP 8
CLG-20KNB	25	12	3	60	84	59	70	M5 DP 8
CLG-50KNB	35	18	3	60	102	67	82	M8 DP10
CLG-100KNB	40	22	5	80	117	71	90	M8 DP10
CLG-200KNB	50	28	7	100	127	77	100	M8 DP10

Specifications

Type	CLG-10KNB	CLG-20KNB	CLG-50KNB	CLG-100KNB	CLG-200KNB
Capacity	10kN	20kN	50kN	100kN	200kN
Rated Output	2mV/V (4000×10 ⁻⁶ strain) ±0.5%				
Non-linearity	0.2%RO				
Hysteresis	0.2%RO				
Temperature effect on zero	0.01%RO/°C				
Temperature effect on span	0.005%/°C				
Compensated temperature range	-10~+60°C				
Temperature range	-20~+70°C				
Over load	150%				
Input/output resistance	350Ω±1%				
Recommended exciting voltage	Less than 6V				
Allowable exciting voltage	15V				
Zero balance	5%RO				
Weight	0.9kg	0.9kg	1.8kg	2.6kg	3.8kg

Input/Output cable : CLG-10KNB/-20KNB : φ 6mm 0.35mm² 4-core shielded chloroprene cable 5m
 CLG-50KNB~200KNB : φ 9mm 0.5mm² 4-core shielded chloroprene cable 5m

Fitting accessory

Type	Spherical Cap FA	Mounting Flange FB	Slide Support FC
CLG-10KNB/-20KNB	FA-60	FB-2-70	FC-5-60
CLG-50KNB	FA-60	FB-5-82	FC-5-60
CLG-100NB	FA-80	FB-10-90	FC-20-80
CLG-200NB	FA-100	FB-20-100	FC-20-100

LOAD CELLS

CLP-NB Compression Load Cell

10kN~10MN



The CLP-NB Load Cell has a column type strain sensing element. With a full line of products with capacities ranging from 10kN to 10MN, customers can select a model for any load level.

Protection ratings : IP 65 equivalent

Specifications

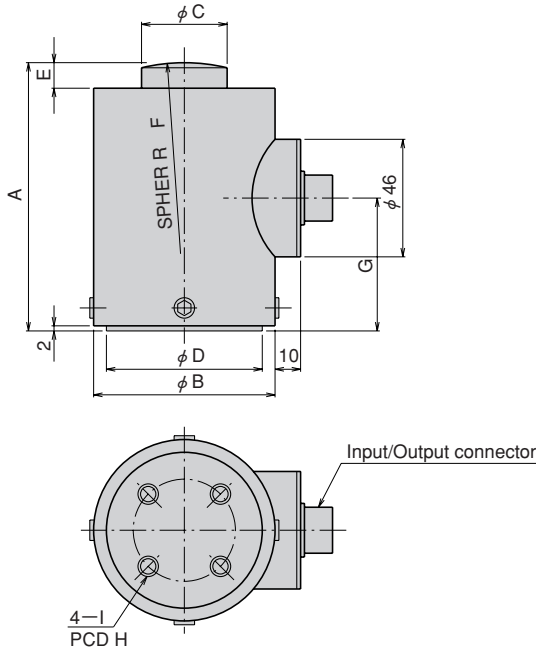
Type	CLP-10KNB	CLP-20KNB	CLP-30KNB	CLP-50KNB	CLP-100KNB	CLP-200KNB	CLP-300KNB	CLP-500KNB	CLP-1MNB	CLP-2MNB	CLP-3MNB	CLP-5MNB	CLP-10MNB
Capacity	10kN	20kN	30kN	50kN	100kN	200kN	300kN	500kN	1MN	2MN	3MN	5MN	10MN
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±0.2%												
Non-linearity	0.1%RO											0.2%RO	
Hysteresis	0.1%RO												
Temperature effect on zero	0.01%RO/°C												
Temperature effect on span	0.005%/°C												
Compensated temperature range	-10~+60°C												
Temperature range	-20~+70°C												
Over load	150%												
Input/output resistance	350Ω ±1%												
Recommended exciting voltage	Less than 10V												
Allowable exciting voltage	20V												
Zero balance	5%RO												
Weight	1.1kg	1.1kg	1.1kg	1.1kg	1.2kg	2.0kg	4.2kg	4.6kg	10kg	24kg	33kg	70kg	190kg

Supplied cable : CT9-4N10/WP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)

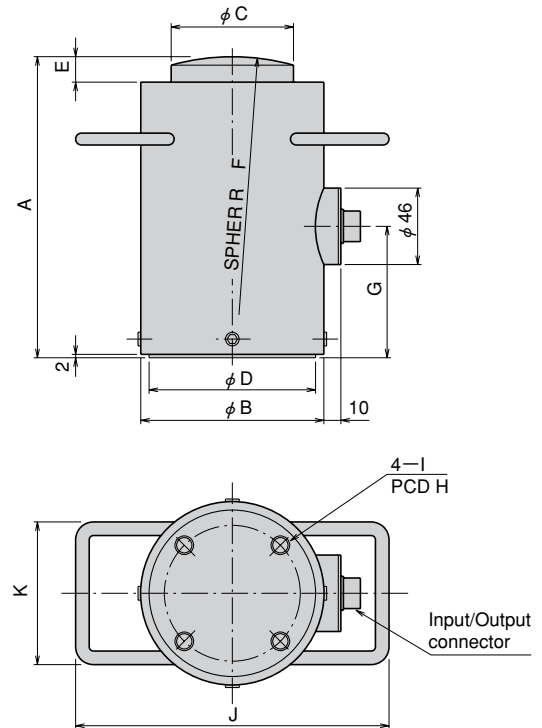
Fitting accessory

Type	Spherical Cap FA	Mounting Flange FB	Slide Support FC
CLP-10KNB~-50KNB	FA-60	FB-10-30	FC-5-60
CLP-100KNB	FA-80	FB-10-30	FC-20-80
CLP-200KNB	FA-100	FB-20-40	FC-20-100
CLP-300KNB/-500KNB	FA-140	FB-50-60	FC-50-140
CLP-1MNB	FA-160	FB-100-80	—
CLP-2MNB	FA-250	FB-200-100	—
CLP-3MNB	FA-360	FB-300-120	—
CLP-5MNB	FA-360B	FB-500-140	—
CLP-10MNB	FA-720	FB-1000-200	—

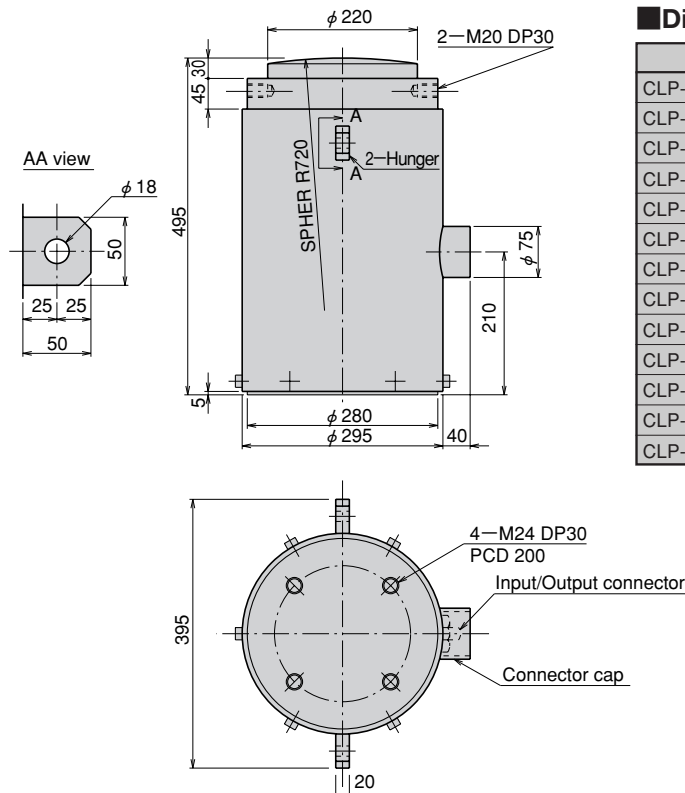
CLP-10~500KNB



CLP-1~5MNB



CLP-10MNB



Dimensions

Type	A	B	C	D	E	F	G	H	I	J	K
CLP-10KNB	80	60	22	50	8	60	40	30	M 8 DP10	—	—
CLP-20KNB	80	60	22	50	8	60	40	30	M 8 DP10	—	—
CLP-30KNB	80	60	22	50	8	60	40	30	M 8 DP10	—	—
CLP-50KNB	80	60	22	50	8	60	40	30	M 8 DP10	—	—
CLP-100KNB	80	60	24	50	8	80	40	30	M 8 DP10	—	—
CLP-200KNB	105	70	34	60	10	100	52	40	M 8 DP10	—	—
CLP-300KNB	145	90	50	80	15	140	72	60	M 8 DP15	—	—
CLP-500KNB	145	90	50	80	15	140	72	60	M 8 DP15	—	—
CLP-1MNB	180	110	74	100	15	160	80	80	M12 DP15	186	86
CLP-2MNB	230	140	100	130	15	250	100	100	M16 DP18	240	120
CLP-3MNB	275	160	120	150	15	360	135	120	M16 DP18	260	120
CLP-5MNB	345	200	155	185	20	360	165	140	M20 DP25	300	120
CLP-10MNB	As per the figures										

LOAD CELLS

CLP-NB-D Compression Load Cell

30kN~5MN



The CLP-NB-D Load Cell is a CLP-NB type load cell with two isolated I/O ports. One Input/Output cable can be connected to an analog measuring instrument and the other to a digital measuring instrument at the same time with no chance of interference between the two instruments.

Protection ratings : IP 65 equivalent

Specifications

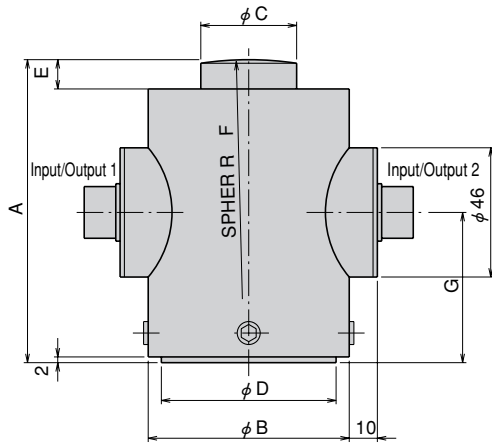
Type	CLP-30KNB-D	CLP-50KNB-D	CLP-100KNB-D	CLP-200KNB-D	CLP-300KNB-D	CLP-500KNB-D	CLP-1MNB-D	CLP-2MNB-D	CLP-3MNB-D	CLP-5MNB-D
Capacity	30kN	50kN	100kN	200kN	300kN	500kN	1MN	2MN	3MN	5MN
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±0.2%									
Non-linearity	0.1%RO									0.2%RO
Hysteresis	0.1%RO									
Temperature effect on zero	0.01%RO/°C									
Temperature effect on span	0.005%/°C									
Compensated temperature range	-10~+60°C									
Temperature range	-20~+70°C									
Over load	150%									
Input/output resistance	350Ω±1%									
Recommended exciting voltage	Less than 10V									
Allowable exciting voltage	20V									
Zero balance	5%RO									
Weight	1.3kg	1.3kg	1.4kg	2.2kg	4.4kg	4.8kg	10kg	24kg	33kg	70kg

Supplied cable : CT9-4N10/WP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)

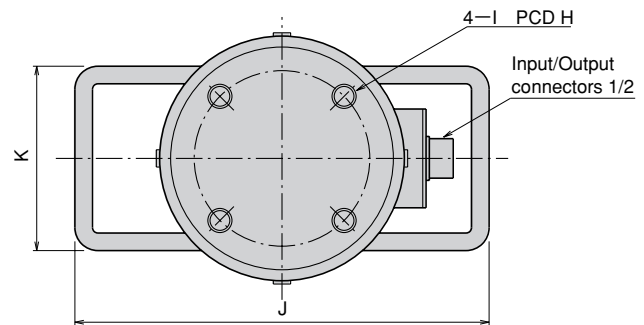
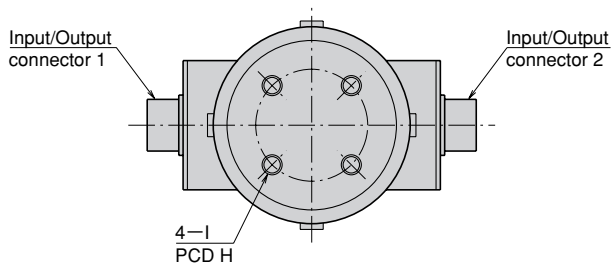
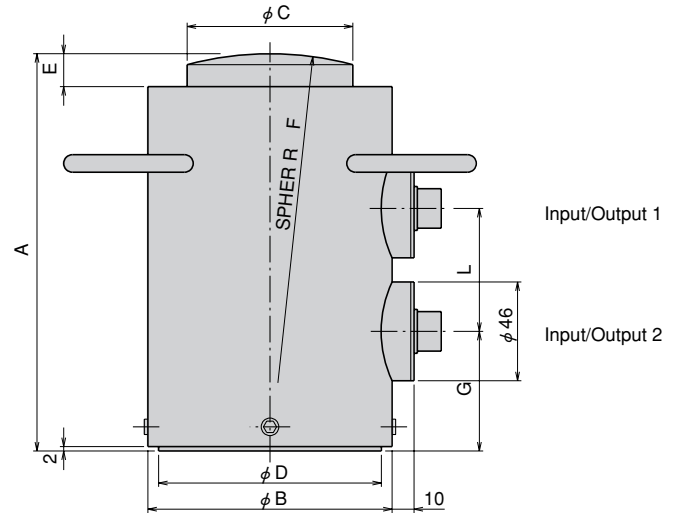
Fitting accessory

Type	Spherical Cap FA	Mounting Flange FB	Slide Support FC
CLP-30KNB-D/-50KNB-D	FA-60	FB-10-30	FC-5-60
CLP-100KNB-D	FA-80	FB-10-30	FC-20-80
CLP-200KNB-D	FA-100	FB-20-40	FC-20-100
CLP-300KNB-D/-500KNB-D	FA-140	FB-50-60	FC-50-140
CLP-1MNB-D	FA-160	FB-100-80	—
CLP-2MNB-D	FA-250	FB-200-100	—
CLP-3MNB-D	FA-360	FB-300-120	—
CLP-5MNB-D	FA-360B	FB-500-140	—

CLP-30~500KNB-D



CLP-1~5MNB-D



Dimensions

Type	A	B	C	D	E	F	G	H	I	J	K	L
CLP-30KNB-D	80	60	22	50	8	60	40	30	M8 DP10	—	—	—
CLP-50KNB-D	80	60	22	50	8	60	40	30	M8 DP10	—	—	—
CLP-100KNB-D	80	60	24	50	8	80	40	30	M8 DP10	—	—	—
CLP-200KNB-D	105	70	34	60	10	100	52	40	M8 DP10	—	—	—
CLP-300KNB-D	145	90	50	80	15	140	72	60	M8 DP15	—	—	—
CLP-500KNB-D	145	90	50	80	15	140	72	60	M8 DP15	—	—	—
CLP-1MNB-D	180	110	74	100	15	160	54	80	M12 DP15	186	86	56
CLP-2MNB-D	230	140	100	130	15	250	59	100	M16 DP18	240	120	56
CLP-3MNB-D	275	160	120	150	15	360	85	120	M16 DP18	260	120	60
CLP-5MNB-D	345	200	155	185	20	360	105	140	M20 DP25	300	120	60

LOAD CELLS

CLU-NA Compression Load Cell

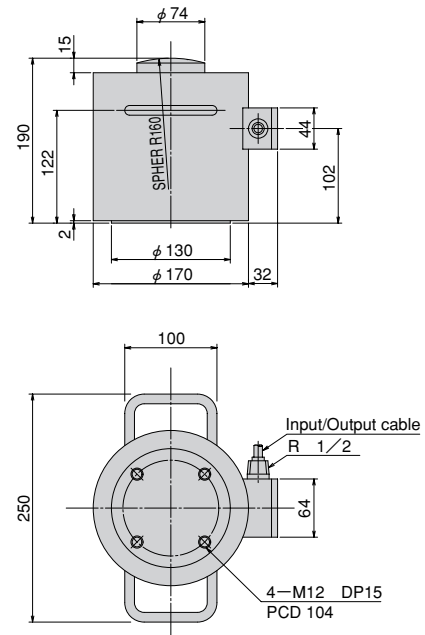
10kN~1MN



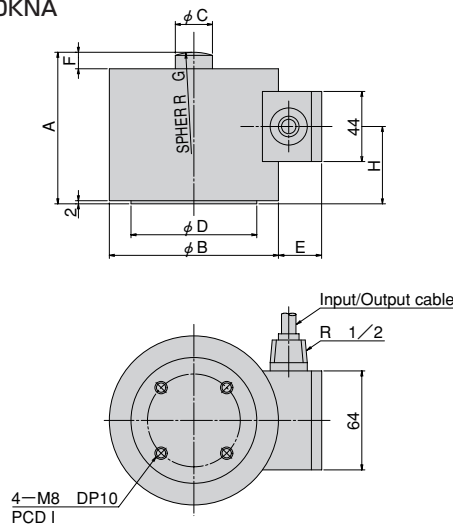
The CLU-NA Load Cell is an inert-gas encased load cell in a hermetically sealed package. The strain sensing element has a simple structure that enables highly precise and consistent measurements over long periods of time.

Protection ratings : IP 65 equivalent

CLU-1MNA



CLU-10~500KNA



Specifications

Type	CLU-10KNA	CLU-20KNA	CLU-50KNA	CLU-100KNA	CLU-200KNA	CLU-500KNA	CLU-1MNA
Capacity	10kN	20kN	50kN	100kN	200kN	500kN	1MN
Rated Output	2mV/V (4000×10 ⁻⁶ strain) ±0.2%						
Non-linearity	0.15%RO						
Hysteresis	0.05%RO						
Temperature effect on zero	0.005%RO/°C						
Temperature effect on span	0.005%/°C						
Compensated temperature range	-10~+60°C						
Temperature range	-30~+80°C						
Over load	150%						
Input/output resistance	350Ω ±1%						
Recommended exciting voltage	Less than 10V						
Allowable exciting voltage	20V						
Zero balance	5%RO						
Weight	2.2kg	2.2kg	2.2kg	3.2kg	4.3kg	11kg	15kg

Input/Output cable : φ9mm 0.5mm² 4-core shielded chloroprene cable 5m

Dimensions

Type	A	B	C	D	E	F	G	H	I
CLU-10KNA	84	92	22	68	28	10	60	38	54
CLU-20KNA	84	92	22	68	28	10	60	38	54
CLU-50KNA	84	92	22	68	28	10	60	38	54
CLU-100KNA	96	108	24	80	28	10	80	49	60
CLU-200KNA	114	118	34	90	29	12	100	57	70
CLU-500KNA	158	160	50	120	31	15	140	82	100
CLU-1MNA	As per the figures								

Fitting accessory

Type	Spherical Cap FA	Mounting Flange FB	Slide Support FC
CLU-10KNA~50KNA	FA-60	FB-5-54	FC-5-60
CLU-100KNA	FA-80	FB-10-60	FC-20-80
CLU-200KNA	FA-100	FB-20-70	FC-20-100
CLU-500KNA	FA-140	FB-50-100	FC-50-140
CLU-1MNB	FA-160	FB-100-104	—

CLU-NA-D Compression Load Cell

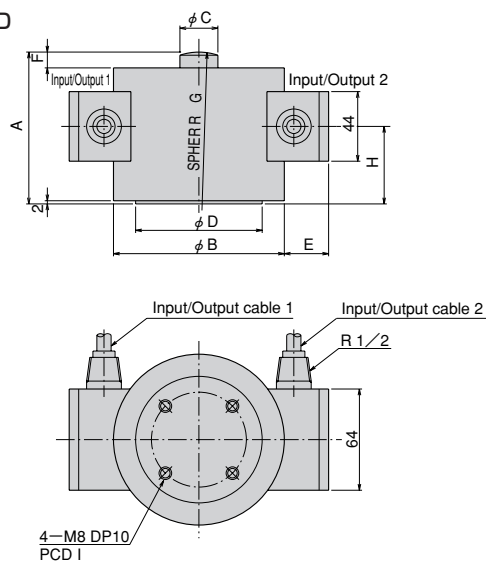
100kN~1MN



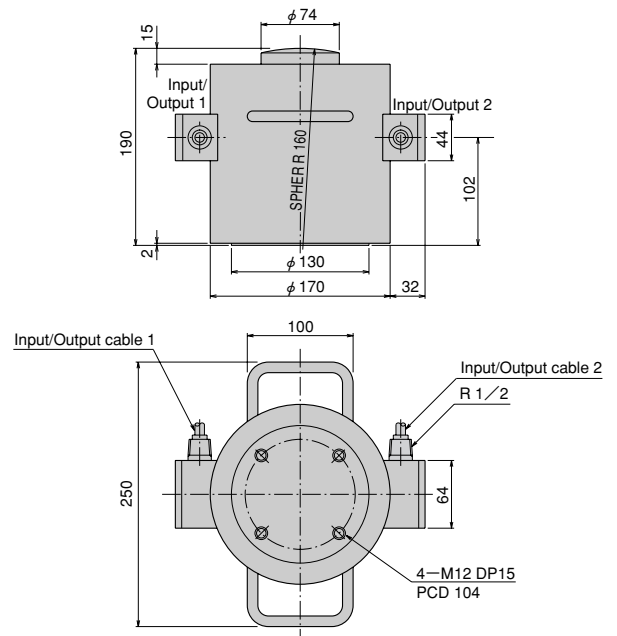
The CLU-NA-D Load Cell is a CLU-NA type load cell with two isolated I/O ports. One Input/Output cable can be connected to an analog measuring instrument and the other to a digital measuring instrument at the same time with no chance of interference between the two instruments.

Protection ratings : IP 65 equivalent

CLU-100~500KNA-D



CLU-1MNA-D



Specifications

Type	CLU-100KNA-D	CLU-200KNA-D	CLU-500KNA-D	CLU-1MNA-D
Capacity	100kN	200kN	500kN	1MN
Rated Output	2mV/V (4000×10 ⁻⁶ strain) ±0.2%			
Non-linearity	0.15%RO			
Hysteresis	0.05%RO			
Temperature effect on zero	0.005%RO/°C			
Temperature effect on span	0.005%/°C			
Compensated temperature range	-10~+60°C			
Temperature range	-30~+80°C			
Over load	150%			
Input/output resistance	350Ω±1%			
Recommended exciting voltage	Less than 10V			
Allowable exciting voltage	20V			
Zero balance	5%RO			
Weight	3.5kg	4.6kg	11kg	16kg

Input/Output cable : φ 9mm 0.5mm² 4-core shielded chloroprene cable 5m

Dimensions

Type	A	B	C	D	E	F	G	H	I
CLU-100KNA-D	96	108	24	80	28	10	80	49	60
CLU-200KNA-D	114	118	34	90	29	12	100	57	70
CLU-500KNA-D	158	160	50	120	31	15	140	82	100
CLU-1MNA-D	As per the figures								

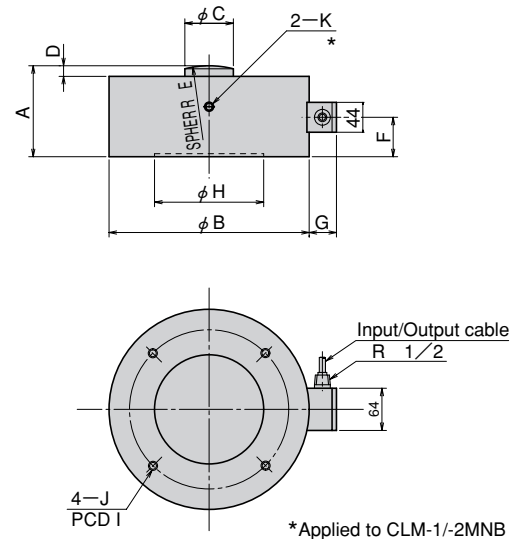
Fitting accessory

Type	Spherical Cap FA	Mounting Flange FB	Slide Support FC
CLU-100KNA-D	FA-80	FB-10-60	FC-20-80
CLU-200KNA-D	FA-100	FB-20-70	FC-20-100
CLU-500KNA-D	FA-140	FB-50-100	FC-50-140
CLU-1MNA-D	FA-160	FB-100-104	—

LOAD CELLS

CLM-NB Compression Load Cell

10kN~2MN



Dimensions

Type	A	B	C	D	E	F	G	H	I	J	K
CLM-10KNB	60	98	22	5	60	27.5	31	64	80	M8 DP10	—
CLM-20KNB	60	98	22	5	60	27.5	31	64	80	M8 DP10	—
CLM-50KNB	60	98	22	5	60	27.5	31	64	80	M8 DP10	—
CLM-100KNB	70	118	24	5	80	32.5	34	68	90	M8 DP10	—
CLM-200KNB	90	157	34	10	100	40	37	86	120	M8 DP15	—
CLM-500KNB	110	187	50	10	140	50	38	110	150	M8 DP15	—
CLM-1MNB	135	300	74	15	160	60	40	166	240	M12 DP15	M12 DP22
CLM-2MNB	170	400	100	15	250	77.5	40	214	320	M16 DP20	M16 DP27

The CLM-NB Load Cell is an inert-gas encased load cell in a hermetically sealed package. It offers high precision, high output characteristics and excellent consistency because it uses a shear beam for the strain sensing element. This model is widely used in applications like test equipment.

Protection ratings : IP 65 equivalent

Specifications

Type	CLM-10KNB	CLM-20KNB	CLM-50KNB	CLM-100KNB	CLM-200KNB	CLM-500KNB	CLM-1MNB	CLM-2MNB
Capacity	10kN	20kN	50kN	100kN	200kN	500kN	1MN	2MN
Rated Output	2.5mV/V (5000×10 ⁻⁶ strain) ±0.2%							
Non-linearity	0.03%RO							
Hysteresis	0.03%RO							
Temperature effect on zero	0.002%RO/°C							
Temperature effect on span	0.002%/°C							
Compensated temperature range	-10~+60°C							
Temperature range	-30~+80°C							
Over load	150%							
Input/output resistance	350Ω ±1%							
Recommended exciting voltage	Less than 10V							
Allowable exciting voltage	20V							
Zero balance	5%RO							
Weight	2.5kg	2.5kg	3kg	5kg	11kg	18kg	60kg	130kg

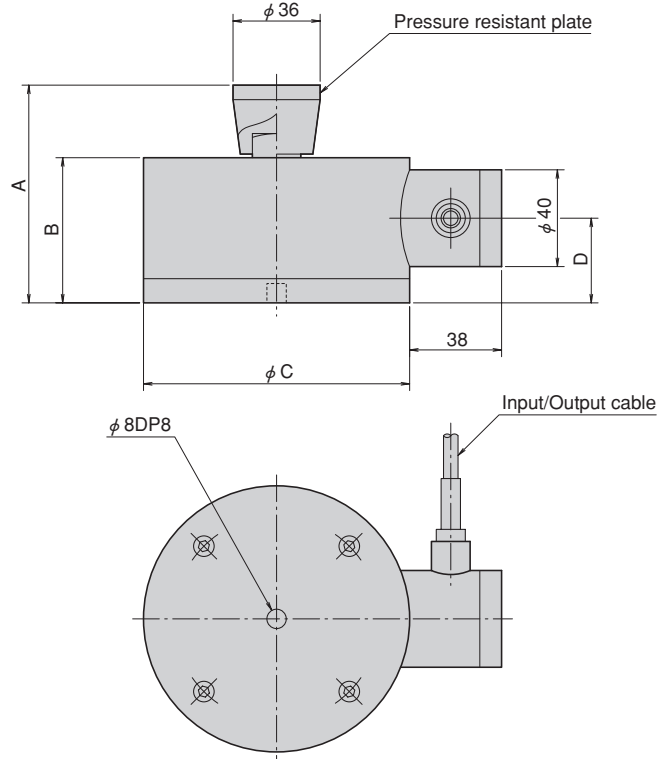
Input/Output cable : φ 9mm 0.5mm² 4-core shielded chloroprene cable 5m

Fitting accessory

Type	Spherical Cap FA	Mounting Flange FB	Slide Support FC
CLM-10KNB~-50KNB	FA-60	FB-5-80	FC-5-60
CLM-100KNB	FA-80	FB-10-90	FC-20-80
CLM-200KNB	FA-100	FB-20-120	FC-20-100
CLM-500KNB	FA-140	FB-50-150	FC-50-140
CLM-1MNB	FA-160	FB-100-240	—
CLM-2MNB	FA-250	FB-200-320	—

CLJ-NA Compression Load Cell

5~30kN



The CLJ-NA Load Cell is designed considering JIS B 7728 "Load calibration devices for verifying material testing machine" and is the most suitable for verification of single axis compression testing machine. Calibration in accordance with JIS B 7728 is available at extra cost.

Protection ratings : IP 65 equivalent

■ Dimensions

Type	A	B	C	D
CLJ-5KNA	90	60	110	35
CLJ-10KNA	90	60	110	35
CLJ-20KNA	90	60	110	35
CLJ-30KNA	95	65	125	40

■ Specifications

Type	CLJ-5KNA	CLJ-10KNA	CLJ-20KNA	CLJ-30KNA
Capacity	5kN	10kN	20kN	30kN
Rated Output	2mV/V (4000×10 ⁻⁶ strain) or over			
Non-linearity	0.05%RO			
Hysteresis	0.05%RO			
Temperature effect on zero	0.005%RO/°C			
Temperature effect on span	0.005%/°C			
Compensated temperature range	-10~+60°C			
Temperature range	-30~+80°C			
Over load	150%			
Ultimate overload rating	300%			
Input/output resistance	350 Ω ±2%			
Recommended exciting voltage	Less than 6V			
Allowable exciting voltage	15V			
Zero balance	5%RO			
Weight	4kg	4kg	4kg	6kg

Input/Output cable : φ 6mm 0.08mm² 6-core shielded polyurethane cable 5m (Remote sensing compatible)

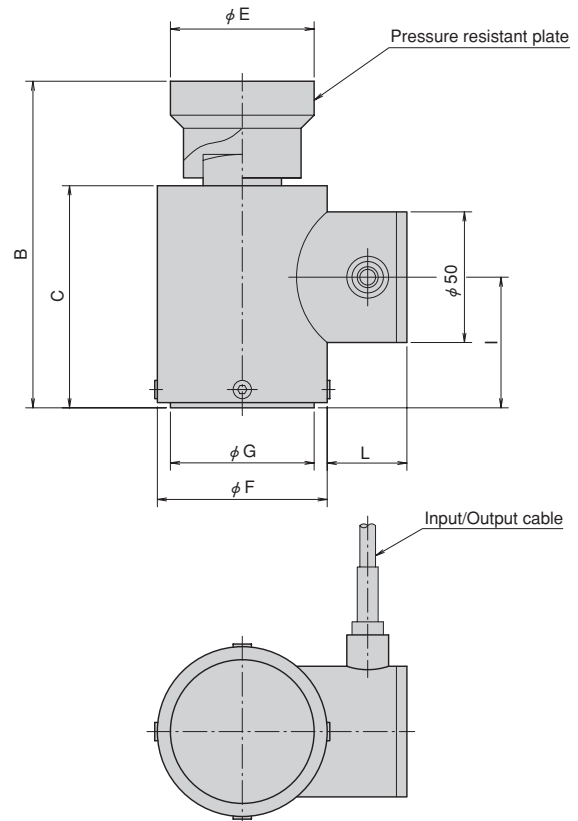
LOAD CELLS

CLJ-NB Compression Load Cell

10kN~10MN



CLJ-10~200KNB



The CLJ-NB Load Cell is designed considering JIS B 7728 "Load calibration devices for verifying material testing machine" and is the most suitable for verification of single axis compression testing machine. Calibration in accordance with JIS B 7728 is available at extra cost.

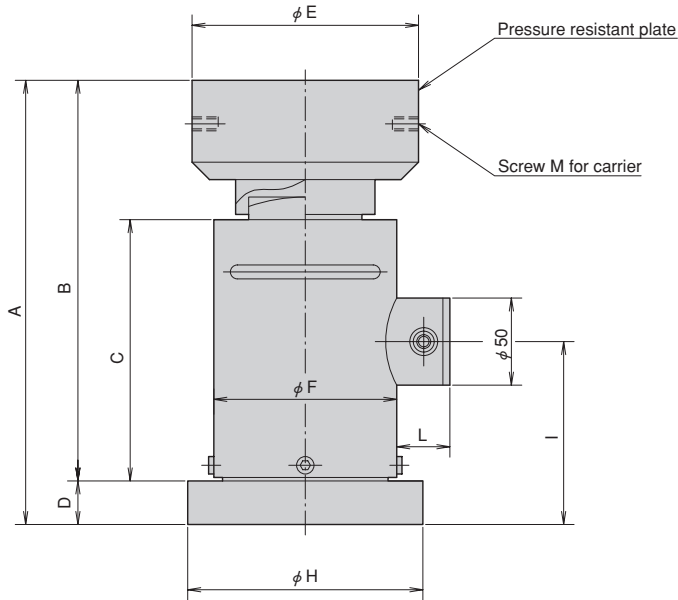
Protection ratings : IP 67 equivalent

Specifications

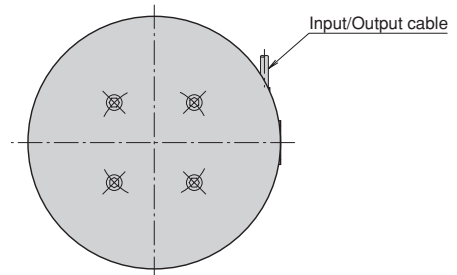
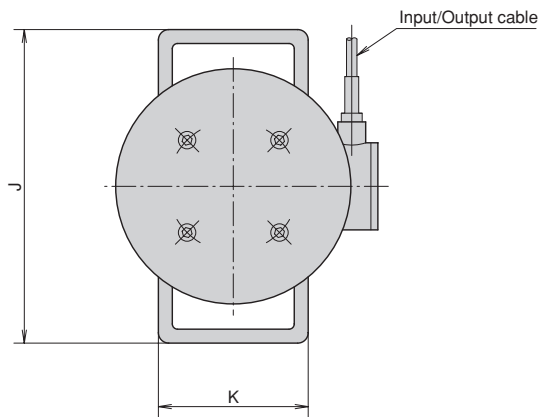
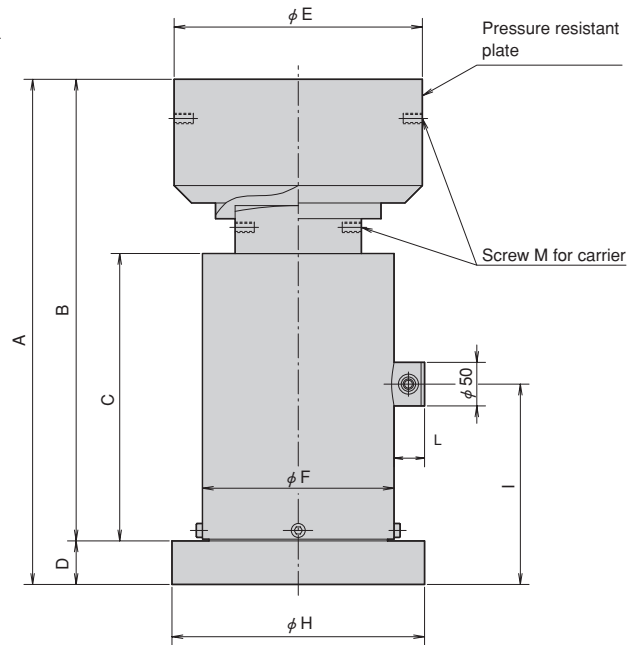
Type	CLJ-10KNB	CLJ-20KNB	CLJ-30KNB	CLJ-50KNB	CLJ-100KNB	CLJ-200KNB	CLJ-300KNB	CLJ-500KNB	CLJ-1MNB	CLJ-2MNB	CLJ-3MNB	CLJ-5MNB	CLJ-10MNB
Capacity	10kN	20kN	30kN	50kN	100kN	200kN	300kN	500kN	1MN	2MN	3MN	5MN	10MN
Rated Output	2mV/V (4000×10 ⁻⁶ strain) or over												
Non-linearity	0.05%RO												
Hysteresis	0.05%RO												
Temperature effect on zero	0.005%RO/°C												
Temperature effect on span	0.005%/°C												
Compensated temperature range	-10~+60°C												
Temperature range	-20~+70°C												
Over load	150%												
Ultimate overload rating	300%												
Input/output resistance	350Ω ±2%												
Recommended exciting voltage	Less than 10V												
Allowable exciting voltage	20V												
Zero balance	5%RO												
Weight	2kg	2kg	2kg	2kg	2kg	2.5kg	5kg	7kg	20kg	45kg	85kg	175kg	470kg

Input/Output cable : CLJ-10KNB~-500KNB : ϕ 6mm 0.08mm² 6-core shielded polyurethane cable 5m (Remote sensing compatible)
 CLJ-1MNB~-10MNB : ϕ 9mm 0.3mm² 6-core shielded vinyl cable 5m (Remote sensing compatible)

CLJ-300KNB~3MNB



CLJ-5MNB/-10MNB

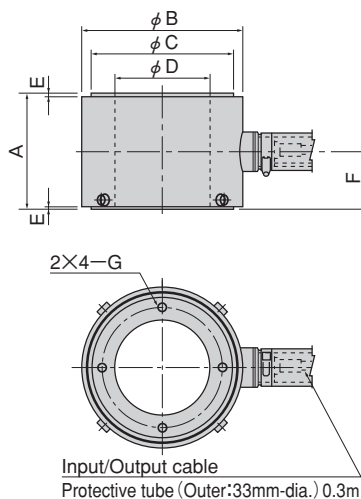


Dimensions

Type	A	B	C	D	E	F	G	H	I	J	K	L	M
CLJ-10KNB	—	110	73	—	40	60	50	—	41	—	—	31	—
CLJ-20KNB	—	110	73	—	40	60	50	—	41	—	—	31	—
CLJ-30KNB	—	110	73	—	40	60	50	—	41	—	—	31	—
CLJ-50KNB	—	110	73	—	40	60	50	—	41	—	—	31	—
CLJ-100KNB	—	110	73	—	40	60	50	—	41	—	—	31	—
CLJ-200KNB	—	125	85	—	55	65	55	—	50	—	—	31	—
CLJ-300KNB	175	160	105	15	80	75	—	80	75	—	—	31	—
CLJ-500KNB	195	180	120	15	90	85	—	95	80	—	—	31	—
CLJ-1MNB	255	230	150	25	130	105	—	135	105	180	86	35	2-M8 DP15
CLJ-2MNB	340	305	200	35	180	130	—	185	145	230	120	35	2-M10 DP18
CLJ-3MNB	420	370	240	50	225	155	—	225	190	255	120	35	2-M12 DP22
CLJ-5MNB	580	530	330	50	285	220	—	290	230	—	—	35	4-M12 DP22
CLJ-10MNB	790	710	425	80	410	270	—	410	325	—	—	35	4-M20 DP30

LOAD CELLS

KCE-NA Center-hole type Compression Load Cell 500kN~2MN



The KCE-NA Load Cell is a center-hole-type load cell designed to use in tension measurement of anchoring strand. It can deliver stable measurement performance under somewhat eccentric load. An extra model with built-in temperature sensor is available.

Protection ratings : IP 67 equivalent

Dimensions

Type	A	B	C	D	E	F	G
KCE-500KNA	77.5	130	113	82	2	39	M8 DP10 PCD 98
KCE-1MNA	109	150	134	90	2	54.5	M10 DP12 PCD112
KCE-1.5MNA	115	185	160	110	4	57.5	M12 DP15 PCD136
KCE-2MNA	155	215	188	140	5	77.5	M12 DP15 PCD164

Specifications

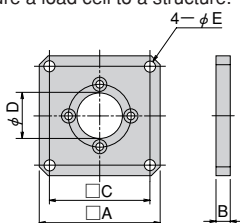
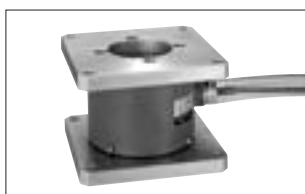
Type	KCE-500KNA	KCE-1MNA	KCE-1.5MNA	KCE-2MNA
Capacity	500kN	1MN	1.5MN	2MN
Rated Output	1.25mV/V (2500×10 ⁻⁶ strain) ±10%			
Non-linearity	0.5%RO			
Hysteresis	0.5%RO			
Temperature effect on zero	0.1%RO/°C			
Temperature effect on span	0.05%/°C			
Compensated temperature range	-10~+60°C			
Temperature range	-20~+70°C			
Over load	120%			
Input/output resistance	350Ω ±1%			
Recommended exciting voltage	Less than 10V			
Allowable exciting voltage	20V			
Zero balance	5%RO			
Weight	4kg	8.5kg	12.2kg	21kg

Input/output cable : φ9mm 0.5mm² 4-core shielded chloroprene cable 5m

Accessory

●FLANGE KCEF-11

This flange is a pressure plate used to secure a load cell to a structure.

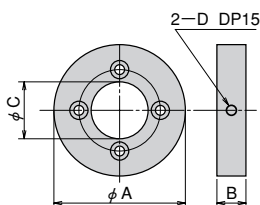


Dimensions

Type	Applicable Load Cell	A	B	C	D	E	Weight (kg)
KCEF-11-50	KCE-500KNA	180	20	150	82	12.5	4.1
KCEF-11-100	KCE-1MNA	200	20	170	90	12.5	5.1
KCEF-11-150	KCE-1.5MNA	220	35	190	110	12.5	10.4
KCEF-11-200	KCE-2MNA	250	35	220	140	12.5	13

●FLANGE KCEF-12

This flange is a pressure plate used to consistently measure eccentric loads although with limitations.



Dimensions

Type	Applicable Load Cell	A	B	C	D	Weight (kg)
KCEF-12-50	KCE-500KNA	156	26	82	M 8	2.8
KCEF-12-100	KCE-1MNA	176	35	90	M10	4.9
KCEF-12-150	KCE-1.5MNA	206	43	110	M10	7.9
KCEF-12-200	KCE-2MNA	236	47	140	M12	10

LOAD CELLS

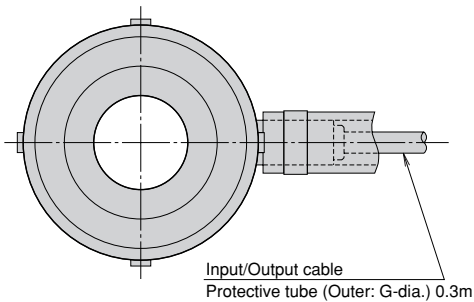
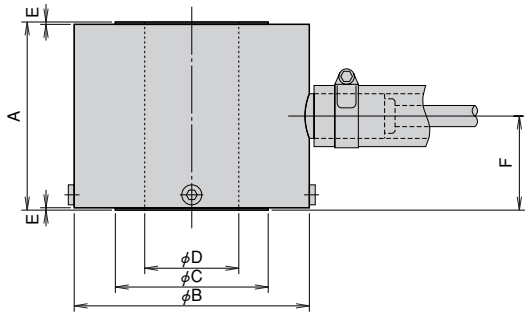
KCM-NA Center-hole type Compression Load Cell 50kN~5MN



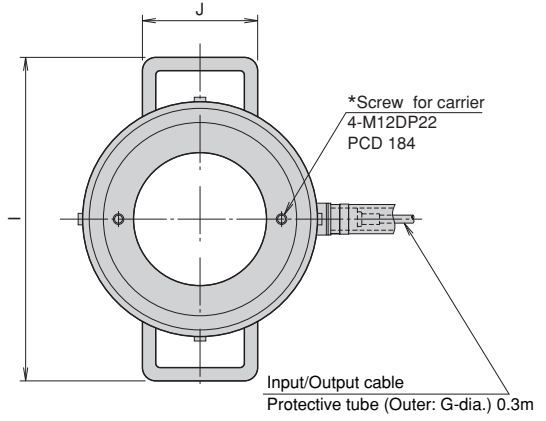
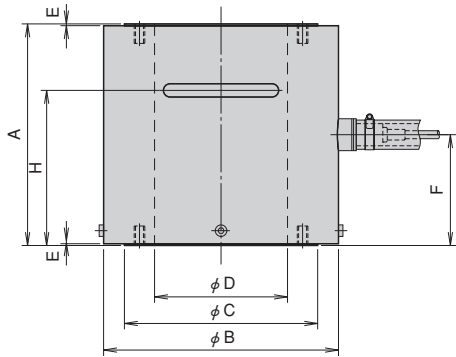
The KCM-NA Load Cell is a center-hole-type load cell with a strain gauge mounted on a cylindrical strain sensing element. It is used to measure prestress or tension force on ground anchors, pullout testing and measuring axial force on tie rods. The model is especially well suited for measuring on site.

Protection ratings : IP 67 equivalent

KCM-50KNA~1MNA



KCM-2~5MNA



Specifications

Type	KCM-50KNA	KCM-100KNA	KCM-200KNA	KCM-300KNA	KCM-500KNA	KCM-1MNA	KCM-2MNA	KCM-3MNA	KCM-5MNA
Capacity	50kN	100kN	200kN	300kN	500kN	1MN	2MN	3MN	5MN
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±10%								
Non-linearity	0.5%RO						1%RO		
Hysteresis	0.5%RO						1%RO		
Temperature effect on zero	0.1%RO/°C								
Temperature effect on span	0.05%/°C								
Compensated temperature range	-10~+60°C								
Temperature range	-20~+70°C								
Over load	150%								
Input/output resistance	350Ω ±1%								
Recommended exciting voltage	Less than 10V								
Allowable exciting voltage	20V								
Zero balance	5%RO								
Weight	0.8kg	1.1kg	1.4kg	2.0kg	2.8kg	6.2kg	16kg	29kg	55kg

Input/output cable : φ 9mm 0.5mm² 4-core shielded chloroprene cable 5m

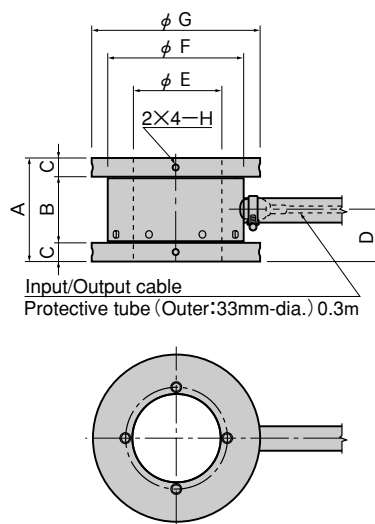
*Applied to KCM-5MNA

Dimensions

Type	A	B	C	D	E	F	G	H	I	J
KCM-50KNA	50	50	22	15	1	29	26	-	-	-
KCM-100KNA	60	60	30	20	1	33	26	-	-	-
KCM-200KNA	70	70	44	30	1	35	26	-	-	-
KCM-300KNA	80	85	53	35	1	40	26	-	-	-
KCM-500KNA	80	100	65	40	1	40	26	-	-	-
KCM-1MNA	120	130	94	60	2	60	33	-	-	-
KCM-2MNA	160	170	135	90	2	80	33	110	234	124
KCM-3MNA	195	205	169	115	2	97.5	33	130	285	124
KCM-5MNA	250	265	218	150	2	125	33	175	365	130

LOAD CELLS

KCC-NA Center-hole type Compression Load Cell 200kN~1MN



■ Dimensions

Type	A	B	C	D	E	F	G	H
KCC-200KNA	108	68	20	54	90	145	190	—
KCC-500KNA	140	90	25	70	120	185	230	M8 DP20
KCC-1MNA	183	123	30	92	140	220	250	M12 DP20

The KCC-NA Load Cell is a center-hole-type load cell with flanges. The large diameter of its center hole makes this load cell suitable for use in almost all anchoring methods. It can deliver stable measurement performance under a relatively high eccentric load.

Protection ratings : IP 67 equivalent

■ Specifications

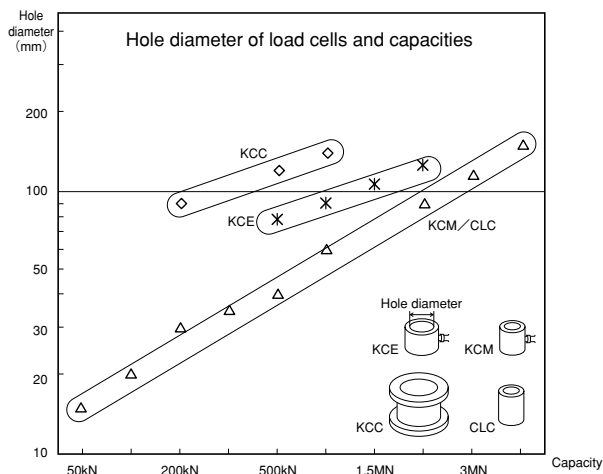
Type	KCC-200KNA	KCC-500KNA	KCC-1MNA
Capacity	200kN	500kN	1MN
Rated Output	1mV/V (2000×10 ⁻⁶ strain) ±10%		
Non-linearity	1%RO		
Hysteresis	1%RO		
Temperature effect on zero	0.1%RO/°C		
Temperature effect on span	0.05%/°C		
Compensated temperature range	-10~+60°C		
Temperature range	-20~+70°C		
Over load	120%		
Input/output resistance	350Ω ±1%		
Recommended exciting voltage	Less than 10V		
Allowable exciting voltage	20V		
Zero balance	5%RO		
Weight	13kg	20kg	32kg

Input/output cable : φ9mm 0.5mm² 4-core shielded chloroprene cable 5m

Hole diameter vs. capacity and type

Type	Capacity									
	50kN	100kN	200kN	300kN	500kN	1MN	1.5MN	2MN	3MN	5MN
KCC-NA			90		120	140				
KCE-NA					82	90	110	140		
KCM-NA	15	20	30	35	40	60		90	115	150
CLC-NA	15	20	30	35	40	60		90	115	150

Hole diameter in mm

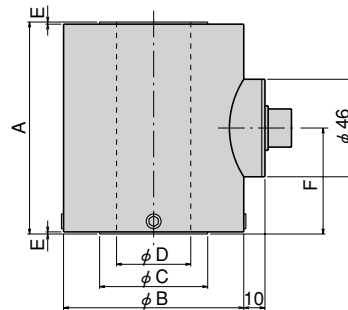


CLC-NA Center-hole type Compression Load Cell

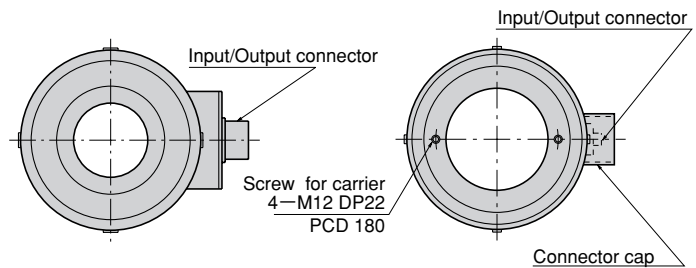
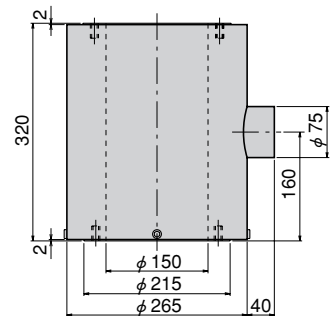
50kN~5MN



CLC-50KNA~3MNA



CLC-5MNA



The CLC-NA Load Cell is a center-hole-type load cell with a strain gauge mounted on a cylindrical strain sensing element. It is used to conduct pullout tests on anchors or laboratory experiments.

Protection ratings : IP 65 equivalent

Dimensions

Type	A	B	C	D	E	F
CLC-50KNA	60	50	21	15	1	30
CLC-100KNA	70	60	29	20	1	35
CLC-200KNA	90	70	42	30	1	45
CLC-300KNA	100	85	51	35	1	50
CLC-500KNA	100	100	62	40	1	50
CLC-1MNA	150	130	90	60	2	75
CLC-2MNA	200	170	132	90	2	100
CLC-3MNA	250	205	164	115	2	125
CLC-5MNA	As per the figure					

Specifications

Type	CLC-50KNA	CLC-100KNA	CLC-200KNA	CLC-300KNA	CLC-500KNA	CLC-1MNA	CLC-2MNA	CLC-3MNA	CLC-5MNA
Capacity	50kN	100kN	200kN	300kN	500kN	1MN	2MN	3MN	5MN
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±0.5%								
Non-linearity	0.3%RO				0.5%RO				
Hysteresis	0.3%RO				0.5%RO				
Temperature effect on zero	0.01%RO/°C								
Temperature effect on span	0.005%/°C								
Compensated temperature range	-10~+60°C								
Temperature range	-20~+70°C								
Over load	150%								
Input/output resistance	350Ω ±1%								
Recommended exciting voltage	Less than 10V								
Allowable exciting voltage	20V								
Zero balance	5%RO								
Weight	1kg	2kg	2kg	3kg	4kg	8kg	19kg	34kg	67kg

Supplied cable : CT9-4N10/WP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)

LOAD CELLS

CLF-NA Compression Load Cell

500kN~2MN



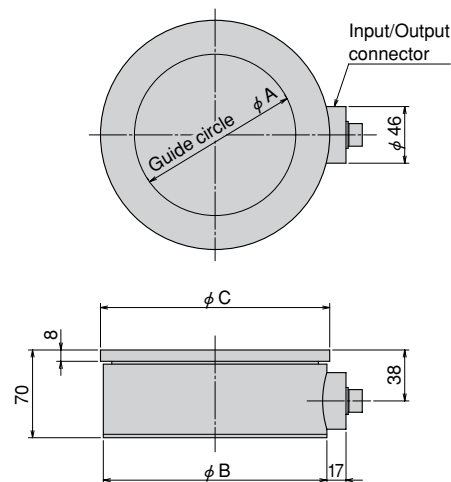
The CLF-NA Load Cell is a thin load cell with a flat load bearing surface. It is widely used as a load sensor for industrial machinery, especially when measuring loads on rolling machines or measuring compression force on presses.

Protection ratings : IP 65 equivalent

Specifications

Type	CLF-500KNA	CLF-1MNA	CLF-1.5MNA	CLF-2MNA
Capacity	500kN	1MN	1.5MN	2MN
Rated Output	2mV/V (4000×10 ⁻⁶ strain) ±0.5%			
Non-linearity	0.3%RO			
Hysteresis	0.2%RO			
Temperature effect on zero	0.01%RO/°C			
Temperature effect on span	0.005%/°C			
Compensated temperature range	-10~+60°C			
Temperature range	-20~+70°C			
Over load	150%			
Input/output resistance	350 Ω ±5%			
Recommended exciting voltage	Less than 10V			
Allowable exciting voltage	20V			
Zero balance	5%RO			
Weight	6kg	8kg	10kg	13kg

Supplied cable : CT9-4N10/WP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)



● Force should be applied uniformly to the surface including guide circle.

Dimensions

Type	A	B	C
CLF-500KNA	95	140	145
CLF-1MNA	130	180	185
CLF-1.5MNA	150	200	205
CLF-2MNA	170	220	225

CLF-NA Compression Load Cell

3~10MN



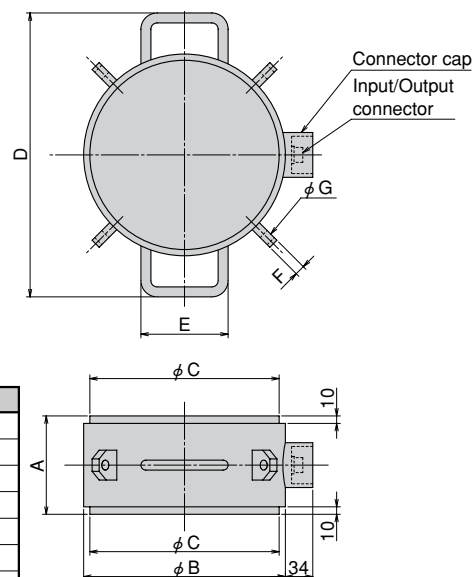
The CLF-NA Load Cell is a thin load cell with a flat load bearing surface. It is widely used as a load sensor for industrial machinery, especially when measuring loads on rolling machines or measuring compression force on presses.

Protection ratings : IP 65 equivalent

Specifications

Type	CLF-3MNA	CLF-5MNA	CLF-10MNA
Capacity	3MN	5MN	10MN
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±0.5%		
Non-linearity	0.3%RO		
Hysteresis	0.2%RO		
Temperature effect on zero	0.01%RO/°C		
Temperature effect on span	0.005%/°C		
Compensated temperature range	-10~+60°C		
Temperature range	-20~+70°C		
Over load	150%		
Input/output resistance	350 Ω ±5%		
Recommended exciting voltage	Less than 10V		
Allowable exciting voltage	20V		
Zero balance	5%RO		
Weight	40kg	66kg	150kg

Supplied cable : CT9-4N10/WP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)



● Force should be applied uniformly to the surface including guide circle.

Dimensions

Type	A	B	C	D	E	F	G
CLF-3MNA	125	255	240	355	110	13	11
CLF-5MNA	135	320	300	430	120	16	13
CLF-10MNA	170	415	390	555	130	27	22

CLL-NA/CLH-NA Compression Load Cell

500kN~2MN



The CLL-NA and CLH-NA load cells with a flat loading platform are used to conduct loading tests on cylindrical concrete specimens. A cylindrical concrete specimen can be directly set on the surface of the loading platform. Guide markings are shown on the loading platform so that each specimen different in size can be placed in alignment with each appropriate guide marking.

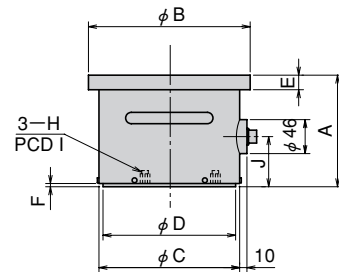
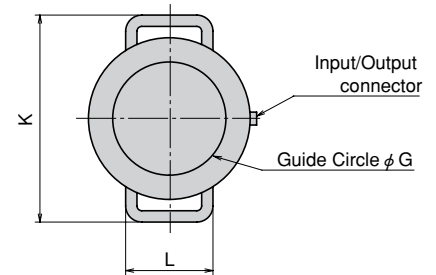
The CLL-NA is designed to test a cylindrical test specimen made of generally used concrete, while CLH-NA is designed mainly to test a cylindrical test specimen made of high-strength concrete. By using this load cell together with the compressometer, it is possible to measure load and strain simultaneously. Although both have handles, other models, CLL-500KNA and CLH-1MNA, do not have handles.

Protection ratings : IP 65 equivalent

CLL-NA Specifications

Type	CLL-500KNA	CLL-750KNA	CLL-1MNA
Applicable specimen	φ 10×20cm	φ 12.5×25cm	φ 15×30cm
Capacity	500kN	750kN	1MN
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±0.5%		
Non-linearity	0.2%RO		
Hysteresis	0.2%RO		
Temperature effect on zero	0.01%RO/°C		
Temperature effect on span	0.01%/°C		
Compensated temperature range	-10~+60°C		
Temperature range	-20~+70°C		
Over load	150%		
Input/output resistance	350Ω ±5%		
Recommended exciting voltage	Less than 10V		
Zero balance	5%RO		
Allowable exciting voltage	20V		
Weight	9kg	12kg	22kg

Supplied cable : CT9-4N10/WP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)



CLH-NA Specifications

Type	CLH-1MNA	CLH-1.5MNA	CLH-2MNA
Applicable specimen	φ 10×20cm	φ 12.5×25cm	φ 15×30cm
Capacity	1MN	1.5MN	2MN
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±0.5%		
Non-linearity	0.2%RO		
Hysteresis	0.2%RO		
Temperature effect on zero	0.01%RO/°C		
Temperature effect on span	0.01%/°C		
Compensated temperature range	-10~+60°C		
Temperature range	-20~+70°C		
Over load	150%		
Input/output resistance	350Ω ±5%		
Recommended exciting voltage	Less than 10V		
Zero balance	5%RO		
Allowable exciting voltage	20V		
Weight	10kg	14kg	26kg

Supplied cable : CT9-4N10/WP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)

Combination with Compressometer

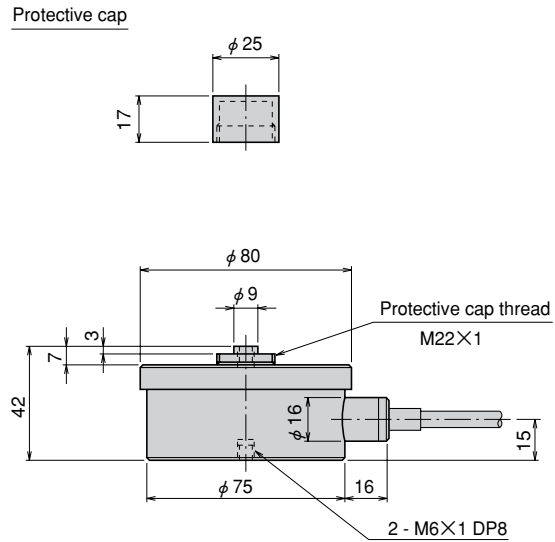


Dimensions

Type	A	B	C	D	E	F	G	H	I	J	K	L
CLL-500KNA	115	160	140	130	25	1	102	M10DP10	80	45	—	—
CLH-1MNA												
CLL-750KNA	137	195	170	160	25	2	127	M10DP12	96	55	254	114
CLH-1.5MNA												
CLL-1MNA	155	220	190	180	25	2	153	M12DP15	124	65	280	120
CLH-2MNA												

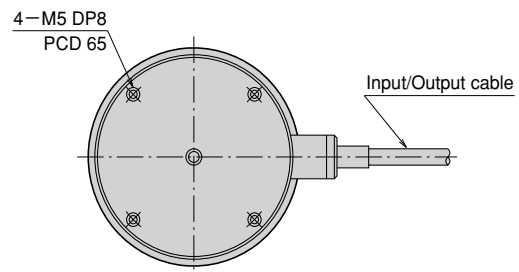
LOAD CELLS

TCLB-NA Tension/Compression Universal Load Cell 50~200N



The TCLB-NA Tension/Compression Universal Load Cell is a low capacity load cell. It can be used for high precision measurement because the internal structure uses both ends fixation beam for the strain sensing element.

Protection ratings :
 TCLB-50NA IP 40 equivalent
 TCLB-100NA/200NA IP 42 equivalent



Specifications

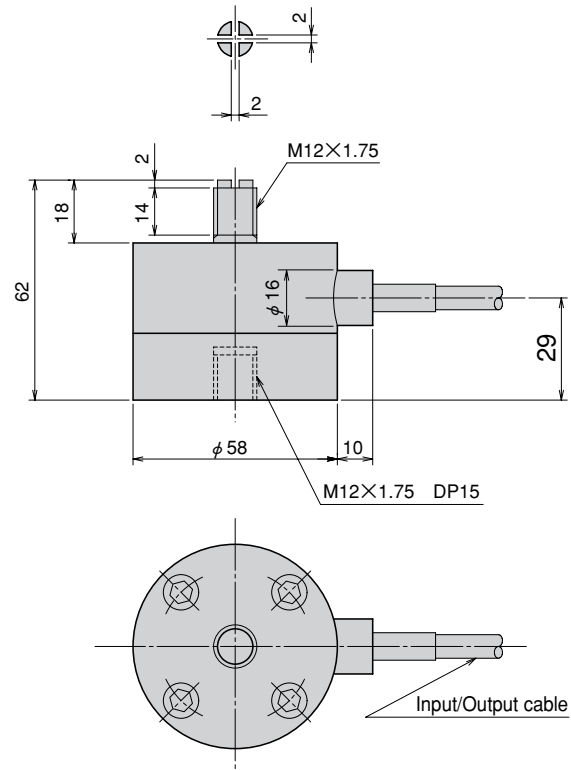
Type	TCLB-50NA	TCLB-100NA	TCLB-200NA
Capacity	50N	100N	200N
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±0.5%		
Non-linearity	0.1%RO		
Hysteresis	0.1%RO		
Temperature effect on zero	0.01%RO/°C		
Temperature effect on span	0.01%/°C		
Compensated temperature range	-10~+60°C		
Temperature range	-20~+70°C		
Over load	150%		
Input/output resistance	350Ω ±2%		
Recommended exciting voltage	Less than 6V		
Allowable exciting voltage	15V		
Zero balance	5%RO		
Weight	0.45kg		0.9kg

Input/Output cable : φ 6mm 0.35mm² 4-core shielded chloroprene cable 5m

Fitting accessory

Type	Spherical Cap FA	Mounting Flange FB	Rotary attachment FD	Rod End FE	Load Button FG
TCLB-50NA ~ 200NA	FA-20	FB-002-65	FD-002	FE-002A	FG-002

TCLA-NA Tension/Compression Universal Load Cell 500N~5kN



The TCLA-NA Tension/Compression Universal Load Cell is a load cell that can be used for consistent measurement because it is hermetically sealed and has a strain sensing element with a simple internal structure.

Protection ratings : IP 67 equivalent

Specifications

Type	TCLA-500NA	TCLA-1KNA	TCLA-2KNA	TCLA-5KNA
Capacity	500N	1kN	2kN	5kN
Rated Output	1.5mV/V (3000×10 ⁻⁶ strain) ±2%			
Non-linearity	0.3%RO	0.2%RO		
Hysteresis	0.1%RO			
Temperature effect on zero	0.01%RO/°C			
Temperature effect on span	0.01%/°C			
Compensated temperature range	-10~+60°C			
Temperature range	-20~+70°C			
Over load	150%			
Input/output resistance	350Ω±2%			
Recommended exciting voltage	Less than 6V			
Allowable exciting voltage	15V			
Zero balance	5%RO			
Weight	1.0kg			

Input/Output cable : φ 6mm 0.35mm² 4-core shielded chloroprene cable 5m

Fitting accessory

Type	Rotary attachment FD	Rod End FE
TCLA-500NA ~ 5KNA	FD-05B	FE-05A/FE-05B

LOAD CELLS

TCLK-NA Tension/Compression Universal Load Cell

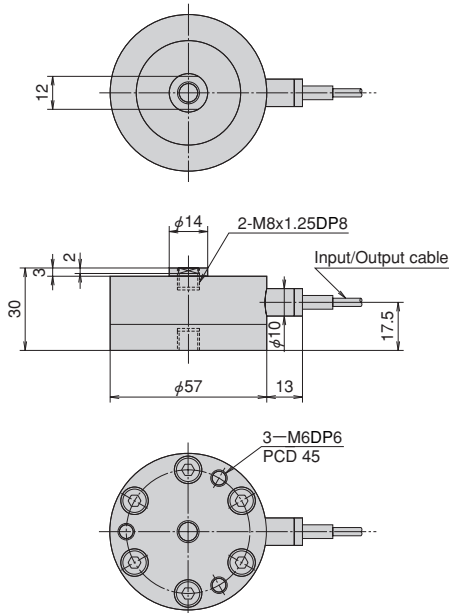
5~50kN



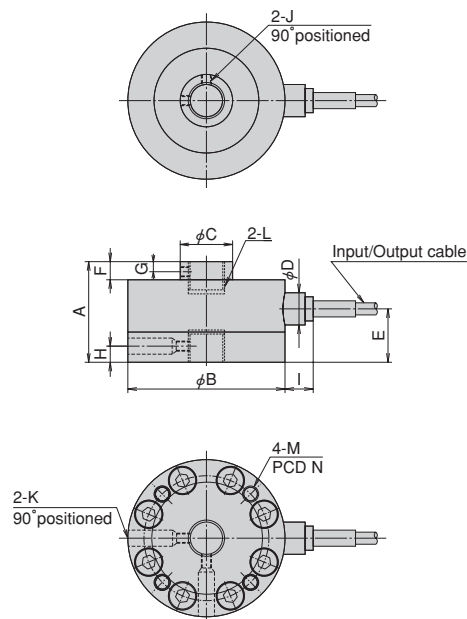
The TCLK-NA Tension/Compression Universal Load Cell has a low profile construction that serves to save installation space.

Protection ratings : IP 67 equivalent

TCLK-5KNA



TCLK-10~50KNA



Specifications

Type	TCLK-5KNA	TCLK-10KNA	TCLK-20KNA	TCLK-50KNA
Capacity	5kN	10kN	20kN	50kN
Rated Output	2mV/V (4000×10 ⁻⁶ strain) ±1%			
Non-linearity	0.1%RO			
Hysteresis	0.1%RO			
Temperature effect on zero	0.01%RO/°C			
Temperature effect on span	0.01%/°C			
Compensated temperature range	-10~+60°C			
Temperature range	-20~+70°C			
Over load	150%			
Input/output resistance	350 Ω ±2%			
Recommended exciting voltage	Less than 6V			
Allowable exciting voltage	15V			
Zero balance	5%RO			
Weight	0.45kg	0.8kg	1.3kg	2.6kg

Input/Output cable : TCLK-5KNA : φ3mm 0.05mm² 4-core shielded chloroprene cable 5m
 TCLK-10KNA ~ 50KNA : φ6mm 0.35mm² 4-core shielded chloroprene cable 5m

Fitting accessory

Type	Spherical Cap FA	Rod End FE	Load Button FG
TCLK-5KNA	FA-20	FE-05C	FG-05B
TCLK-10KNA	FA-60	FE-1A	FG-1
TCLK-20KNA	FA-80	FE-2A	FG-2
TCLK-50KNA	FA-100	FE-5A	FG-5

Dimensions

Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N
TCLK-5KNA	As per the figure													
TCLK-10KNA	40	68	20	16	22	6	3	6	14	M3	M4 φ6mm DP22	M12×1.75 DP13	M6 DP8	55
TCLK-20KNA	50	78	26	16	26.5	9	5	8	14	M5	M5 φ8mm DP22	M18×1.5 DP16	M8 DP10	62
TCLK-50KNA	62	100	33	16	31	9	5	10	14	M5	M5 φ8mm DP22	M24×2 DP20	M8 DP10	80

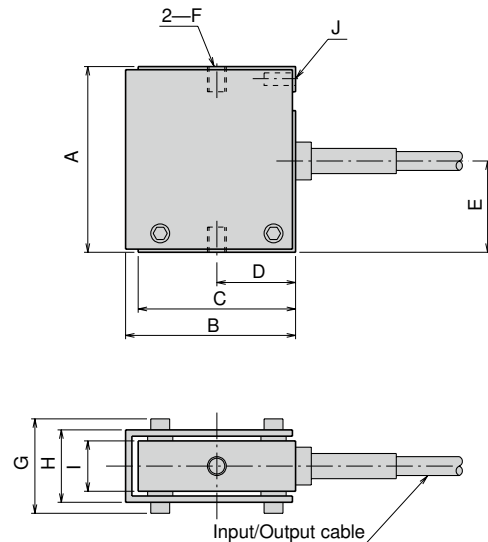
LOAD CELLS

TCLZ-NA Tension/Compression Universal Load Cell 10N~10kN



The TCLZ-NA Tension/Compression Universal Load Cell is a high precision load cell that is compact and light weight. With its beam type internal structure, it is widely used as a sensor for controlling industrial machinery.

Protection ratings : IP 41 equivalent



■ Dimensions

Type	A	B	C	D	E	F	G	H	I	J
TCLZ-10NA	59	84	80	40	29.5	M6×1 DP8	28	21	14	Ø4mm DP10
TCLZ-20NA	59	84	80	40	29.5	M6×1 DP8	28	21	14	Ø4mm DP10
TCLZ-50NA	59	54	50	25	29.5	M6×1 DP8	30	23	16	Ø4mm DP10
TCLZ-100NA	59	54	50	25	29.5	M6×1 DP8	30	23	16	Ø4mm DP10
TCLZ-200NA	59	54	50	25	29.5	M6×1 DP8	30	23	16	Ø4mm DP10
TCLZ-500NA	67	54	50	25	33.5	M12×1.75 DP12	34	27	20	Ø6mm DP12
TCLZ-1KNA	67	54	50	25	33.5	M12×1.75 DP12	34	27	20	Ø6mm DP12
TCLZ-2KNA	67	54	50	25	33.5	M12×1.75 DP12	34	27	20	Ø6mm DP12
TCLZ-5KNA	75	60	56	28	37.5	M12×1.75 DP14	34	27	20	Ø6mm DP12
TCLZ-10KNA	75	60	56	28	37.5	M12×1.75 DP14	34	27	20	Ø6mm DP12

■ Specifications

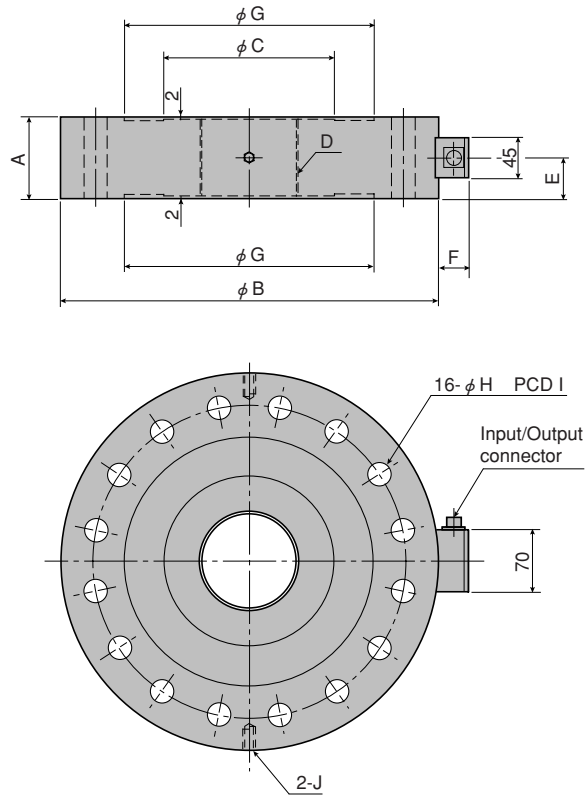
Type	TCLZ -10NA <small>NEW</small>	TCLZ -20NA <small>NEW</small>	TCLZ -50NA	TCLZ -100NA	TCLZ -200NA	TCLZ -500NA	TCLZ -1KNA	TCLZ -2KNA	TCLZ -5KNA	TCLZ -10KNA
Capacity	10N	20N	50N	100N	200N	500N	1kN	2kN	5kN	10kN
Rated Output	1mV/V (2000×10 ⁻⁶ strain) ± 0.5%		1.5mV/V (3000×10 ⁻⁶ strain) ± 0.5%			2mV/V (4000×10 ⁻⁶ strain) ± 0.5%				
Non-linearity	0.05% RO					0.03% RO				0.05% RO
Hysteresis	0.05% RO					0.03% RO				0.05% RO
Temperature effect on zero	0.01% RO/°C					0.005% RO/°C				
Temperature effect on span						0.005%/°C				
Compensated temperature range						-10 ~ +60°C				
Temperature range						-20 ~ +70°C				
Over load						150%				
Input/output resistance	350Ω±2%		350Ω±1%							
Recommended exciting voltage						Less than 6V				
Allowable exciting voltage						15V				
Zero balance						5%RO				
Input/Output cable	Φ3mm 0.05mm ² 4-core shielded chloroprene cable 5m		Φ6mm 0.35mm ² 4-core shielded chloroprene cable 5m							
Weight	0.2kg	0.2kg	0.1kg	0.1kg	0.1kg	0.4kg	0.4kg	0.4kg	0.6kg	0.6kg

■ Fitting accessory

Type	Rotary attachment FD	Rod End FE	Eye Bolt FF	Load Button FG	Shackle FH
TCLZ-10NA~200NA	FD-002	FE-002A	—	FG-002	—
TCLZ-500NA~5KNA	FD-05A	FE-05A	FF-1	FG-05	FH-1B
TCLZ-10KNA	FD-1	FE-1A	FF-1	FG-05	FH-1B

LOAD CELLS

TCLY-NA Tension/Compression Universal Load Cell 300kN~2MN



The TCLY-NA is a Tension/Compression Universal Load Cell with low-profile construction and high-capacity. It offers high precision, high output characteristics and an excellent stability because it uses a shear beam for the strain sensing element. This model is widely used in applications like one-axis loading test machine.

Protection ratings : IP40 equivalent

■ Dimensions

Type	A	B	C	D	E	F	G	H	I	J
TCLY-300kNA	70	295	120	M65X3	35	33	198	17	245	M12DP12
TCLY-500kNA	75	320	140	M85x3	37.5	33	220	22	270	M12DP22
TCLY-1MNA	90	420	190	M110x3	45	34	278	26	350	M12DP22
TCLY-1.5MNA	100	470	230	M140x4	50	34	318	32	395	M16DP27
TCLY-2MNA	110	500	250	M160x4	55	34.5	338	38	420	M20DP30

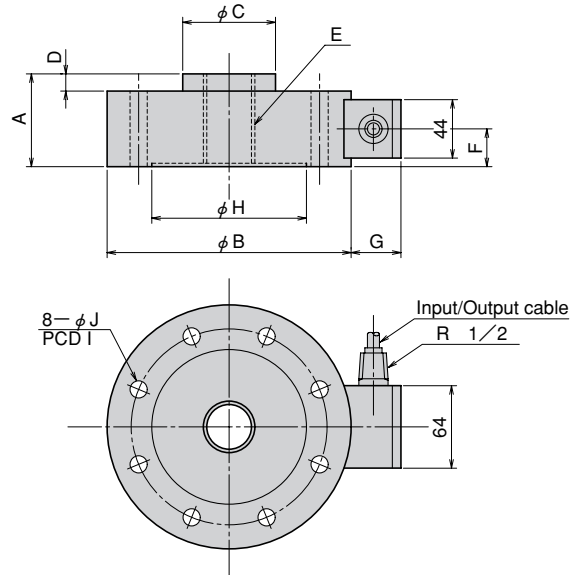
■ Specifications

Type	TCLY-300kNA	TCLY-500kNA	TCLY-1MNA	TCLY-1.5MNA	TCLY-2MNA
Capacity	300kN	500kN	1MN	1.5MN	2MN
Rated Output	2mV/V (4000 x 10 ⁻⁶ strain) ±0.5%				
Non-linearity	0.2%RO				
Hysteresis	0.2%RO			0.5%RO	
Temperature effect on zero	0.01%RO/°C				
Temperature effect on span	0.005%/°C				
Compensated temperature range	0 ~ +40°C				
Temperature range	-10 ~ +60°C				
Over load	150%				
Ultimate overload rating	300%				
Input/output resistance	700Ω±1%				
Recommended exciting voltage	Less than 10V				
Allowable exciting voltage	20V				
Zero balance	5%RO				
Weight	35 kg	40 kg	80 kg	100 kg	125 kg

Input/Output cable : CT9-4N10/NP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)

LOAD CELLS

TCLM-NB Tension/Compression Universal Load Cell 10~200kN



The TCLM-NB Tension/Compression Universal Load Cell is an inert-gas encased load cell in a hermetically sealed package. It offers high precision, high output characteristics and excellent stability because it uses a shear beam for the strain sensing element. The model is widely used in applications like test equipment.

Protection ratings : IP 65 equivalent

■ Dimensions

Type	A	B	C	D	E	F	G	H	I	J
TCLM-10KNB	60	118	26	8	M12×1.75	26	37	68	90	8.5
TCLM-20KNB	60	118	26	8	M18×1.5	26	37	68	90	8.5
TCLM-50KNB	60	127	32	8	M24×2	26	37	76	100	8.5
TCLM-100KNB	70	187	70	12	M39×2	29	38	116	150	13
TCLM-200KNB	85	226	94	12	M50×2	37	38	146	185	17

■ Specifications

Type	TCLM-10KNB	TCLM-20KNB	TCLM-50KNB	TCLM-100KNB	TCLM-200KNB
Capacity	10kN	20kN	50kN	100kN	200kN
Rated Output	2.5mV/V (5000×10 ⁻⁶ strain) ±0.5%				
Non-linearity	0.05%RO				
Hysteresis	0.05%RO				
Temperature effect on zero	0.002%RO/°C				
Temperature effect on span	0.002%/°C				
Compensated temperature range	-10~+60°C				
Temperature range	-30~+80°C				
Over load	150%				
Input/output resistance	350Ω ±1%				
Recommended exciting voltage	Less than 10V				
Allowable exciting voltage	20V				
Zero balance	5%RO				
Weight	4kg	4kg	6kg	10kg	17kg

Input/Output cable : φ 9mm 0.5mm² 4-core shielded chloroprene cable 5m

■ Fitting accessory

Type	Spherical Cap FA	Mounting Flange FB	Rotary Attachment FD	Rod End FE	Eye Bolt FF	Load Button FG	Shackle FH
TCLM-10KNB	FA-60	FB-1M	FD-1	FE-1A	FF-1	FG-1	FH-1B
TCLM-20KNB	FA-80	FB-2M	FD-2	FE-2A	FF-2	FG-2	FH-2B
TCLM-50KNB	FA-100	FB-5M	FD-5	FE-5A	FF-5	FG-5	FH-5B
TCLM-100KNB	FA-140	FB-10M	FD-10	FE-10A	FF-10	FG-10	FH-10B
TCLM-200KNB	FA-140	FB-20M	FD-20	FE-20A	FF-20B	FG-20	FH-20B

LOAD CELLS

TCLP-NB Tension/Compression Universal Load Cell 10kN~2MN



The TCLP-NB Tension/Compression Universal Load Cell is a load cell widely used in applications such as measuring crane and jack loads because it offers excellent consistency.

Protection ratings : IP 65 equivalent

Specifications

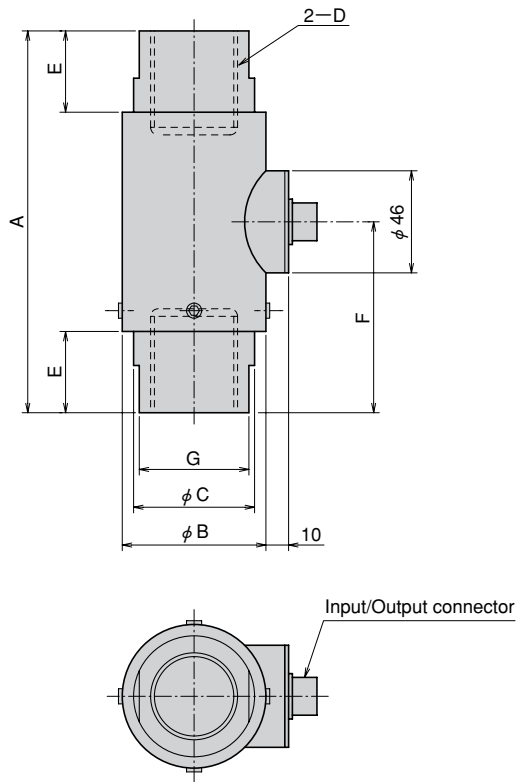
Type	TCLP-10KNB	TCLP-20KNB	TCLP-30KNB	TCLP-50KNB	TCLP-100KNB	TCLP-200KNB	TCLP-300KNB	TCLP-500KNB	TCLP-1MNB	TCLP-1.5MNB	TCLP-2MNB
Capacity	10kN	20kN	30kN	50kN	100kN	200kN	300kN	500kN	1MN	1.5MN	2MN
Rated Output	1mV/V (2000×10 ⁻⁶ strain) ±0.5%										
Non-linearity	0.1%RO									0.3%RO	
Hysteresis	0.1%RO									0.3%RO	
Temperature effect on zero	0.01%RO/°C										
Temperature effect on span	0.005%/°C										
Compensated temperature range	-10~+60°C										
Temperature range	-20~+70°C										
Over load	200%										
Input/output resistance	350Ω ±1%										
Recommended exciting voltage	Less than 10V										
Allowable exciting voltage	20V										
Zero balance	5%RO										
Weight	1.5kg	1.5kg	2kg	2kg	2.5kg	5kg	8kg	15kg	50kg	85kg	110kg

Supplied cable : CT9-4N10/WP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)

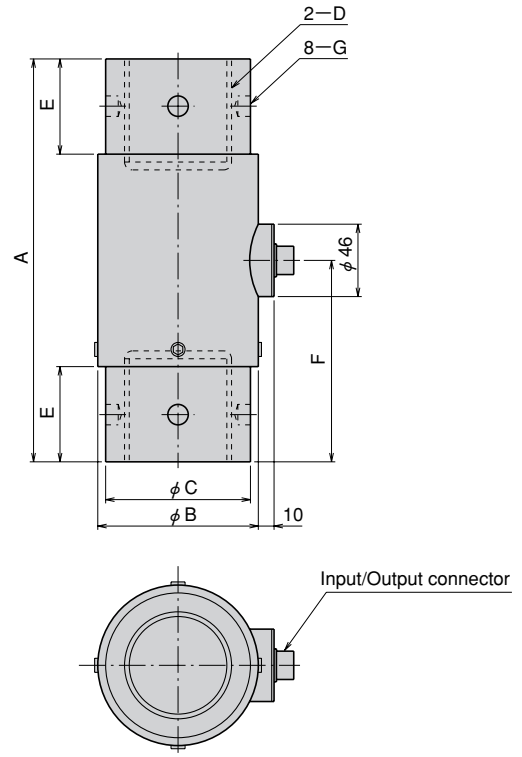
Fitting accessory

Type	Spherical Cap FA	Rotary Attachment FD	Rod End FE	Eye Bolt FF	Load Button FG	Shackle FH
TCLP-10KNB	FA-60	FD-1	FE-1A	FF-1	FG-1	FH-1B
TCLP-20KNB	FA-80	FD-2	FE-2A	FF-2	FG-2	FH-2B
TCLP-30KNB/-50KNB	FA-100	FD-5	FE-5A	FF-5	FG-5	FH-5B
TCLP-100KNB	FA-140	FD-10	FE-10A	FF-10	FG-10	FH-10B
TCLP-200KNB	FA-140	FD-20	FE-20A	FF-20B	FG-20	FH-20B

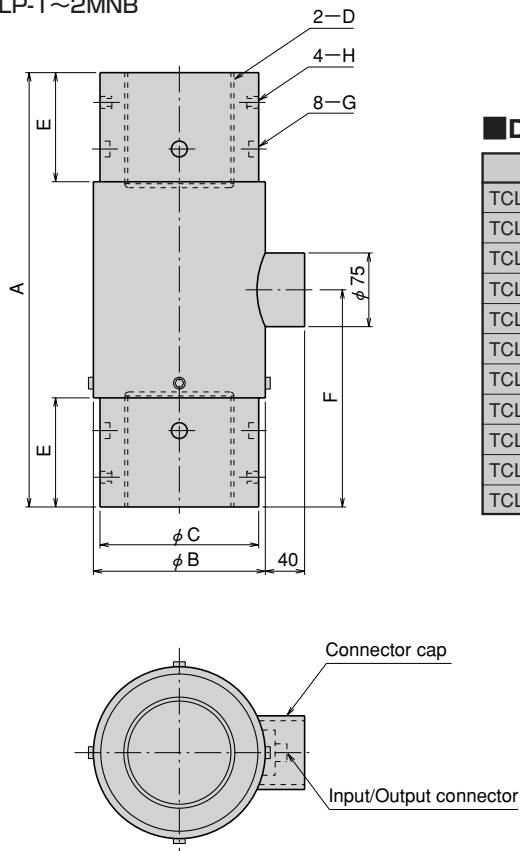
TCLP-10~200KNB



TCLP-300/500KNB



TCLP-1~2MNB



■ Dimensions

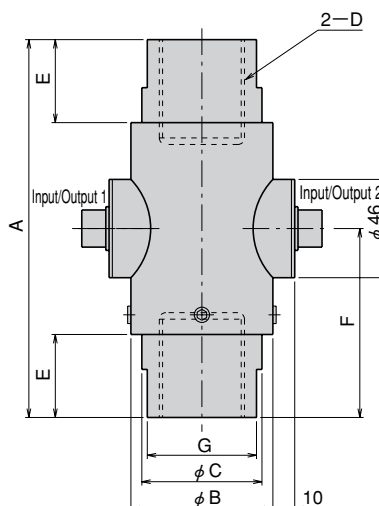
Type	A	B	C	D	E	F	G	H
TCLP-10KNB	100	55	45	M12×1.75 DP15	15	53	36	—
TCLP-20KNB	110	60	50	M18×1.5 DP20	20	58	46	—
TCLP-30KNB	125	60	50	M24×2 DP30	20	63	46	—
TCLP-50KNB	125	60	50	M24×2 DP30	20	63	46	—
TCLP-100KNB	175	65	55	M39×2 DP45	37.5	87.5	50	—
TCLP-200KNB	255	80	70	M50×2 DP65	65	127.5	65	—
TCLP-300KNB	255	100	90	M65×3 DP65	60	127.5	phi 13 DP8	—
TCLP-500KNB	330	130	120	M85×3 DP85	80	165	phi 15 DP10	—
TCLP-1MNB	440	175	160	M110×3 DP110	108	220	phi 15 DP10	M12 DP12
TCLP-1.5MNB	530	215	200	M140×4 DP140	155	265	phi 20 DP10	M16 DP20
TCLP-2MNB	605	245	230	M160×4 DP160	194	302.5	phi 20 DP10	M20 DP25

LOAD CELLS

TCLP-NB-D Tension/Compression Universal Load Cell 20kN~2MN

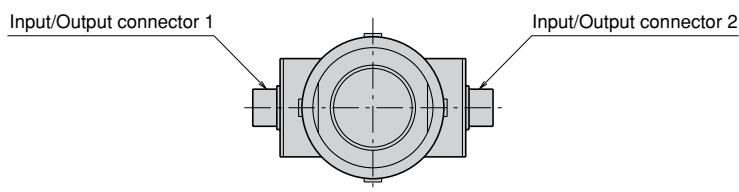


TCLP-20~200KNB-D



The TCLP-NB-D Load Cell is a TCLP-NB Tension/Compression universal load cell with two isolated I/O ports. One Input/Output cable can be connected to an analog measuring instrument and the other to a digital measuring instrument at the same time with no chance of interference between the two instruments.

Protection ratings : IP 65 equivalent



Specifications

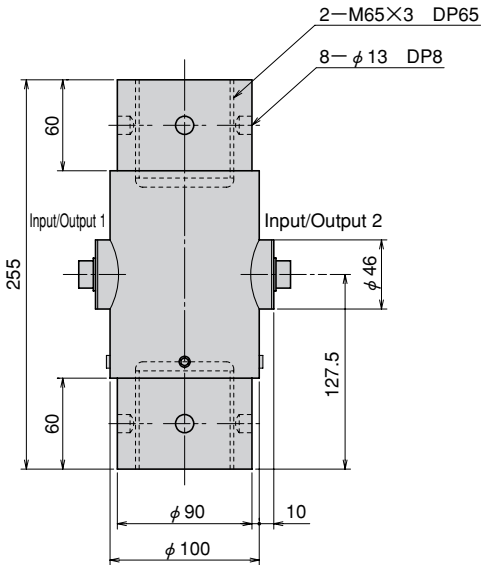
Type	TCLP-20KNB-D	TCLP-30KNB-D	TCLP-50KNB-D	TCLP-100KNB-D	TCLP-200KNB-D	TCLP-300KNB-D	TCLP-500KNB-D	TCLP-1MNB-D	TCLP-1.5MNB-D	TCLP-2MNB-D
Capacity	20kN	30kN	50kN	100kN	200kN	300kN	500kN	1MN	1.5MN	2MN
Rated Output	1mV/V (2000×10 ⁻⁶ strain) ±0.5%									
Non-linearity	0.1%RO								0.3%RO	
Hysteresis	0.1%RO								0.3%RO	
Temperature effect on zero	0.01%RO/°C									
Temperature effect on span	0.005%/°C									
Compensated temperature range	-10~+60°C									
Temperature range	-20~+70°C									
Over load	200%									
Input/output resistance	350Ω ±1%									
Recommended exciting voltage	Less than 10V									
Allowable exciting voltage	20V									
Zero balance	5%RO									
Weight	2kg	2kg	2kg	2.5kg	6kg	8kg	15kg	50kg	85kg	110kg

Supplied cable : CT9-4N10/WP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)

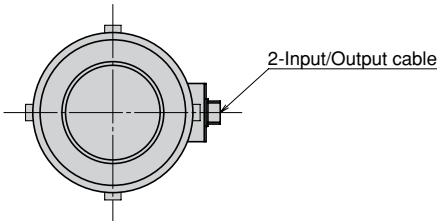
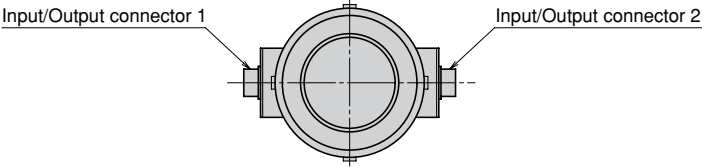
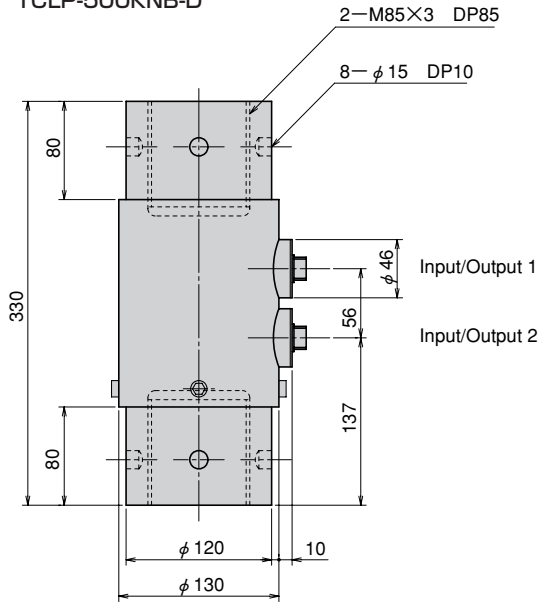
Fitting accessory

Type	Spherical Cap FA	Rotary Attachment FD	Rod End FE	Eye Bolt FF	Load Button FG	Shackle FH
TCLP-20KNB-D	FA-80	FD-2	FE-2A	FF-2	FG-2	FH-2B
TCLP-30KNB-D/-50KNB-D	FA-100	FD-5	FE-5A	FF-5	FG-5	FH-5B
TCLP-100KNB-D	FA-140	FD-10	FE-10A	FF-10	FG-10	FH-10B
TCLP-200KNB-D	FA-140	FD-20	FE-20A	FF-20B	FG-20	FH-20B

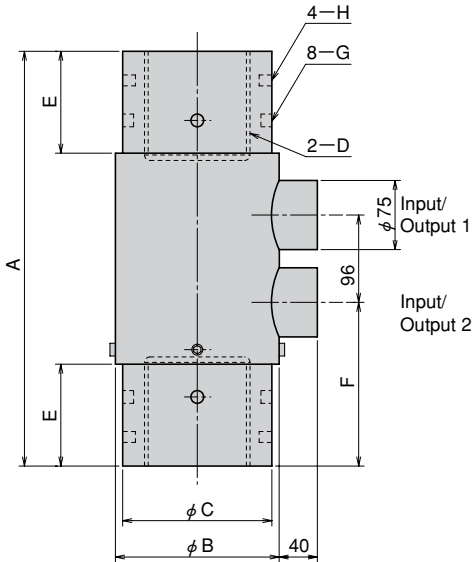
TCLP-300KNB-D



TCLP-500KNB-D

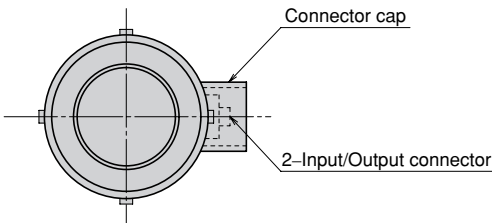


TCLP-1~2MNB-D



■ Dimensions

Type	A	B	C	D	E	F	G	H
TCLP-20KNB-D	110	60	50	M18 X 1.5 DP20	20	58	46	—
TCLP-30KNB-D	125	60	50	M24 x 2 DP30	20	63	46	—
TCLP-50KNB-D	125	60	50	M24 x 2 DP30	20	63	46	—
TCLP-100KNB-D	175	65	55	M39 x 2 DP45	37.5	87.5	50	—
TCLP-200KNB-D	255	80	70	M50 x 2 DP65	65	127.5	65	—
TCLP-300KNB-D	As per the figure							—
TCLP-500KNB-D	As per the figure							—
TCLP-1MNB-D	440	175	160	M110 x 3 DP110	108	172	$\phi 15$ DP10	M12 DP12
TCLP-1.5MNB-D	530	215	200	M140 x 4 DP140	155	217	$\phi 20$ DP10	M16 DP20
TCLP-2MNB-D	605	245	230	M160 x 4 DP160	194	254.5	$\phi 20$ DP10	M20 DP25



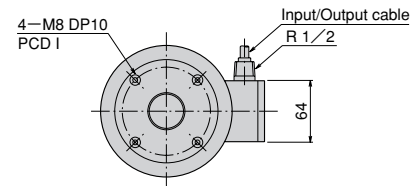
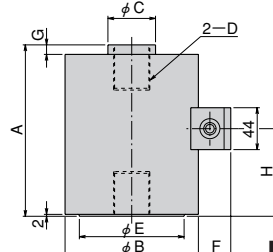
LOAD CELLS

TCLU-NA Tension/Compression Universal Load Cell 10~200kN



The TCLU-NA Tension/Compression Universal Load Cell is an inert-gas enclosed load cell in a hermetically sealed package. It can take highly precise and consistent measurements over long periods of time, and is used primarily in applications such as measuring crane and jack loads.

Protection ratings : IP 65 equivalent



Specifications

Type	TCLU-10KNA	TCLU-20KNA	TCLU-50KNA	TCLU-100KNA	TCLU-200KNA
Capacity	10kN	20kN	50kN	100kN	200kN
Rated Output	2mV/V (4000×10 ⁻⁶ strain) ±0.5%				
Non-linearity	0.15%RO				
Hysteresis	0.05%RO				
Temperature effect on zero	0.005%RO/°C				
Temperature effect on span	0.005%/°C				
Compensated temperature range	-10~+60°C				
Temperature range	-30~+80°C				
Over load	150%				
Input/output resistance	350 Ω ±1%				
Recommended exciting voltage	Less than 10V				
Allowable exciting voltage	20V				
Zero balance	5%RO				
Weight	4kg	4kg	4kg	11kg	18kg

Input/Output cable : φ 9mm 0.5mm² 4-core shielded chloroprene cable 5m

Dimensions

Type	A	B	C	D	E	F	G	H	I
TCLU-10KNA	101	88	20	M12 X 1.75 DP15	70	28	8	49	58
TCLU-20KNA	111	100	26	M18X1.5 DP20	80	27	8	55	66
TCLU-50KNA	131	100	32	M24 X 2 DP30	80	27	8	65	66
TCLU-100KNA	181	138	50	M39 x 2 DP45	110	33	10	92	94
TCLU-200KNA	255	176	64	M50 x 2 DP65	150	34	12	130	130

Fitting accessory

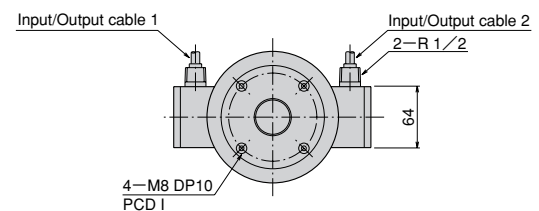
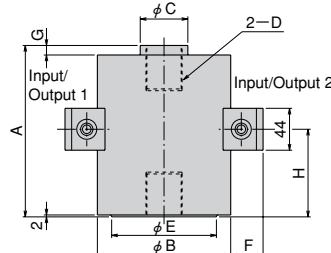
Type	Spherical Cap FA	Rotary Attachment FD	Rod End FE	Eye Bolt FF	Load Button FG	Shackle FH
TCLU-10KNA	FA-60	FD-1	FE-1A	FF-1	FG-1	FH-1B
TCLU-20KNA	FA-80	FD-2	FE-2A	FF-2	FG-2	FH-2B
TCLU-50KNA	FA-100	FD-5	FE-5A	FF-5	FG-5	FH-5B
TCLU-100KNA	FA-140	FD-10	FE-10A	FF-10	FG-10	FH-10B
TCLU-200KNA	FA-140	FD-20	FE-20A	FF-20B	FG-20	FH-20B

TCLU-NA-D Tension/Compression Universal Load Cell 100/200kN



The TCLU-NA-D Tension/Compression Universal Load Cell is a TCLU-NA load cell with two isolated I/O ports. One Input/Output cable can be connected to an analog measuring instrument and the other to a digital measuring instrument at the same time with no chance of interference between the two instruments.

Protection ratings : IP 65 equivalent



Specifications

Type	TCLU-100KNA-D	TCLU-200KNA-D
Capacity	100kN	200kN
Rated Output	2mV/V (4000×10 ⁻⁶ strain) ±0.5%	
Non-linearity	0.15%RO	
Hysteresis	0.05%RO	
Temperature effect on zero	0.005%RO/°C	
Temperature effect on span	0.005%/°C	
Compensated temperature range	-10~+60°C	
Temperature range	-30~+80°C	
Over load	150%	
Input/output resistance	350 Ω ±1%	
Recommended exciting voltage	Less than 10V	
Allowable exciting voltage	20V	
Zero balance	5%RO	
Weight	11kg	18kg

Input/Output cable : φ 9mm 0.5mm² 4-core shielded chloroprene cable 5m

Dimensions

Type	A	B	C	D	E	F	G	H	I
TCLU-100KNA-D	181	138	50	M39 x 2 DP45	110	33	10	92	94
TCLU-200KNA-D	255	176	64	M50 x 2 DP65	150	34	12	130	130

Fitting accessory

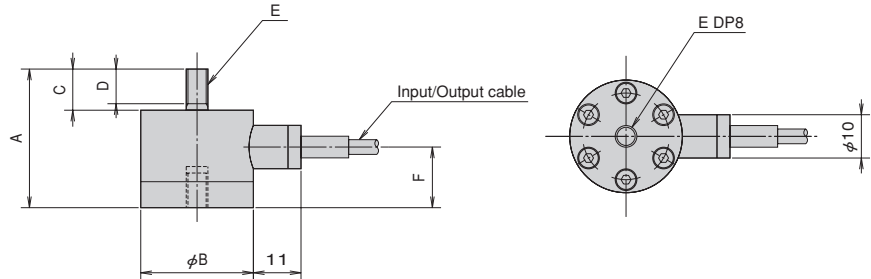
Type	Spherical Cap FA	Rotary Attachment FD	Rod End FE	Eye Bolt FF	Load Button FG	Shackle FH
TCLU-100KNA	FA-140	FD-10	FE-10A	FF-10	FG-10	FH-10B
TCLU-200KNA	FA-140	FD-20	FE-20A	FF-20B	FG-20	FH-20B

TCLN-NA Tension/Compression Universal Load Cell 500N~5kN



Compared with TML ordinary Tension/Compression Universal Load Cells, the TCLN-NA is very small and light model. The Input/Output cable is as thin as 3mm in diameter for easiness to handle.

Protection ratings : IP 67 equivalent



Specifications

Type	TCLN-500NA	TCLN-1KNA	TCLN-2KNA	TCLN-5KNA
Capacity	500N	1kN	2kN	5kN
Rated Output	1mV/V (2000×10 ⁻⁶ strain) ±20%			
Non-linearity	0.5%RO			
Hysteresis	0.1%RO			
Temperature effect on zero	0.05%RO/°C			
Temperature effect on span	0.05%/°C			
Compensated temperature range	-10~+60°C			
Temperature range	-20~+70°C			
Over load	150%			
Input/output resistance	350Ω ±2%			
Recommended exciting voltage	Less than 6V			
Allowable exciting voltage	15V			
Zero balance	10%RO			
Weight	80g	80g	80g	140g

Input/Output cable : φ 3mm 0.05mm² 4-core shielded chloroprene cable 5m

Dimensions

Type	A	B	C	D	E	F
TCLN-500NA	32	26	9.5	8	M5 x 0.8	14
TCLN-1KNA	32	26	9.5	8	M5 x 0.8	14
TCLN-2KNA	32	26	9.5	8	M5 x 0.8	14
TCLN-5KNA	42	32	14	12	M8 x 1.25	15

Fitting accessory

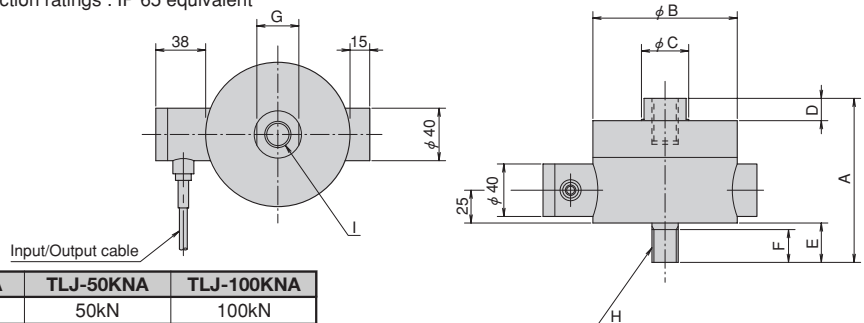
Type	Rod End FE
TCLN-500NA ~ -2KNA	FE-002C / FE-002D
TCLN-5KNA	FE-05C / FE-05D

TLJ-NA Tension Load Cell 10~100kN



The TLJ-NA Tension Load Cell is designed considering JIS B 7728 "Load calibration devices for verifying material testing machine" and is the most suitable for verification of single axis tension testing machine. Calibration in accordance with JIS B 7728 is available at extra cost.

Protection ratings : IP 65 equivalent



Specifications

Type	TLJ-10KNA	TLJ-20KNA	TLJ-50KNA	TLJ-100KNA
Capacity	10kN	20kN	50kN	100kN
Rated Output	2mV/V (4000×10 ⁻⁶ strain) or over			
Non-linearity	0.03%RO			
Hysteresis	0.03%RO			
Temperature effect on zero	0.005%RO/°C			
Temperature effect on span	0.005%/°C			
Compensated temperature range	-10~+60°C			
Temperature range	-30~+80°C			
Over load	120%			
Ultimate overload rating	200%			
Input/output resistance	350Ω ±2%			
Recommended exciting voltage	Less than 6V			
Allowable exciting voltage	15V			
Zero balance	5%RO			
Weight	5.3kg	5.3kg	6.9kg	10kg

Input/Output cable : φ 6mm 0.08mm² 6-core shielded polyurethane cable 5m Remote sensing compatible)

Dimensions

Type	A	B	C	D	E	F	G	H	I
TLJ-10KNA	125	110	36	17	30	25	32	M20x1.5	M20 x 1.5 DP35
TLJ-20KNA	125	110	36	17	30	25	32	M20x1.5	M20 x 1.5 DP35
TLJ-50KNA	132	125	36	17	35	30	32	M20x1.5	M20 x 1.5 DP35
TLJ-100KNA	142	145	42	17	40	34	36	M24 x 2	M24 x 2 DP35

Fitting accessory

Type	Rod End FE
TLJ-10KNA ~ -50KNA	FE-5C / FE-5D
TLJ-100KNA	FE-5A / FE-5B

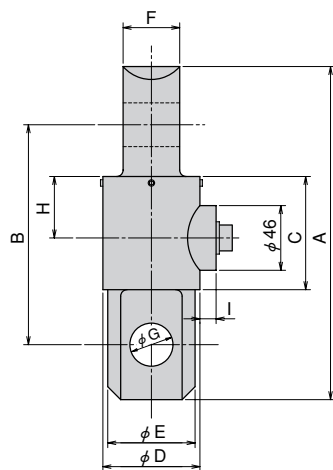
LOAD CELLS

TLP-NB Tension Load Cell

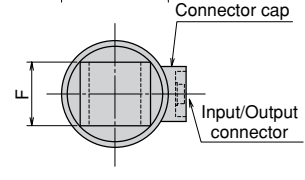
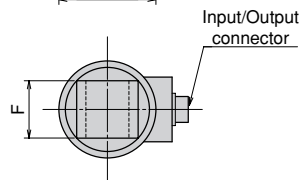
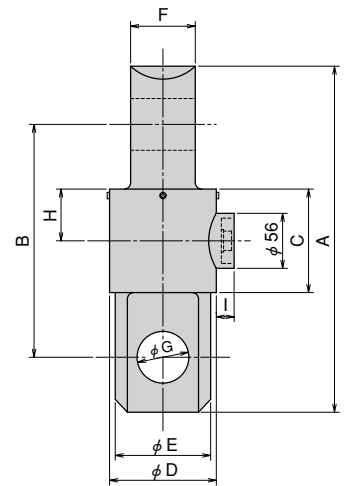
10kN~1MN



TLP-10~50KNB



TLP-100KNB~1MNB



The TLP-NB Tension Load Cell is a tension-only load cell that is used primarily in applications such as measuring tension on wire rope or loads suspended from cranes. Eyebolts integrated into the main unit facilitate mounting simply by attaching shackles.

Protection ratings : IP 65 equivalent

Dimensions

Type	A	B	C	D	E	F	G	H	I
TLP-10KNB	140	110	69	50	32	20	18	39	10
TLP-20KNB	164	122	71	50	40	25	22	40	10
TLP-30KNB	179	127	63	60	50	30	27	34	10
TLP-50KNB	234	168	80	70	60	40	37	44	10
TLP-100KNB	292	200	86	95	85	56	49	47	35
TLP-200KNB	358	244	108	112	100	68	54	56	35
TLP-300KNB	428	288	128	135	120	75	64	64	35
TLP-500KNB	508	342	148	160	145	98	75	74	35
TLP-1MNB	690	450	210	210	195	130	102	105	35

Fitting accessory

Type	Shackle FH
TLP-10KNB	FH-1B
TLP-20KNB	FH-2B
TLP-30KNB	FH-3B
TLP-50KNB	FH-5B
TLP-100KNB	FH-10B
TLP-200KNB	FH-20B
TLP-300KNB	FH-30B
TLP-500KNB	FH-50B
TLP-1MNB	FH-100B

Specifications

Type	TLP-10KNB	TLP-20KNB	TLP-30KNB	TLP-50KNB	TLP-100KNB	TLP-200KNB	TLP-300KNB	TLP-500KNB	TLP-1MNB
Capacity	10kN	20kN	30kN	50kN	100kN	200kN	300kN	500kN	1MN
Rated Output	1mV/V (2000×10 ⁻⁶ strain) ±0.5%								
Non-linearity	0.1%RO								
Hysteresis	0.1%RO								
Temperature effect on zero	0.01%RO/°C								
Temperature effect on span	0.005%/°C								
Compensated temperature range	-10~+60°C								
Temperature range	-20~+70°C								
Over load	200%								
Input/output resistance	350Ω±1%								
Recommended exciting voltage	Less than 10V								
Allowable exciting voltage	20V								
Zero balance	5%RO								
Weight	1kg	1.5kg	2kg	4kg	8kg	14kg	24kg	38kg	110kg

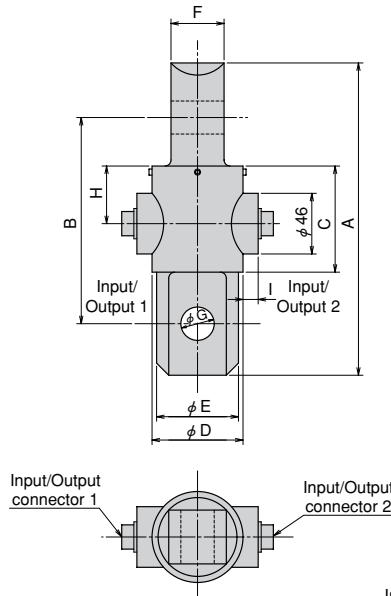
Supplied cable : CT9-4N10/WP-STB (φ9mm 0.5mm² 4-core shielded chloroprene cable 10m)

TLP-NB-D Tension Load Cell

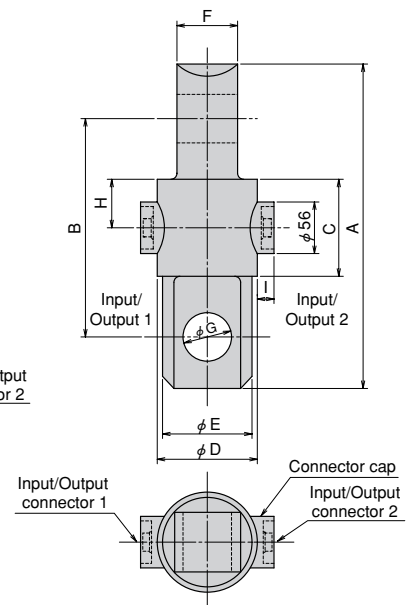
20kN~1MN



TLP-20~50KNB-D



TLP-100KNB-D~1MNB-D



The TLP-NB-D Tension Load Cell is a TLP-NB type tension load cell with two isolated I/O ports. One Input/Output cable can be connected to an analog measuring instrument and the other to a digital measuring instrument at the same time with no chance of interference between the two instruments.

Protection ratings : IP 65 equivalent

Dimensions

Type	A	B	C	D	E	F	G	H	I
TLP-20KNB-D	164	122	71	50	40	25	22	40	10
TLP-30KNB-D	179	127	63	60	50	30	27	34	10
TLP-50KNB-D	234	168	80	70	60	40	37	44	10
TLP-100KNB-D	292	200	86	95	85	56	49	47	35
TLP-200KNB-D	358	244	108	112	100	68	54	56	35
TLP-300KNB-D	428	288	128	135	120	75	64	64	35
TLP-500KNB-D	508	342	148	160	145	98	75	74	35
TLP-1MNB-D	690	450	210	210	195	130	102	105	35

Fitting accessory

Type	Shackle FH
TLP-20KNB-D	FH-2B
TLP-30KNB-D	FH-3B
TLP-50KNB-D	FH-5B
TLP-100KNB-D	FH-10B
TLP-200KNB-D	FH-20B
TLP-300KNB-D	FH-30B
TLP-500KNB-D	FH-50B
TLP-1MNB-D	FH-100B

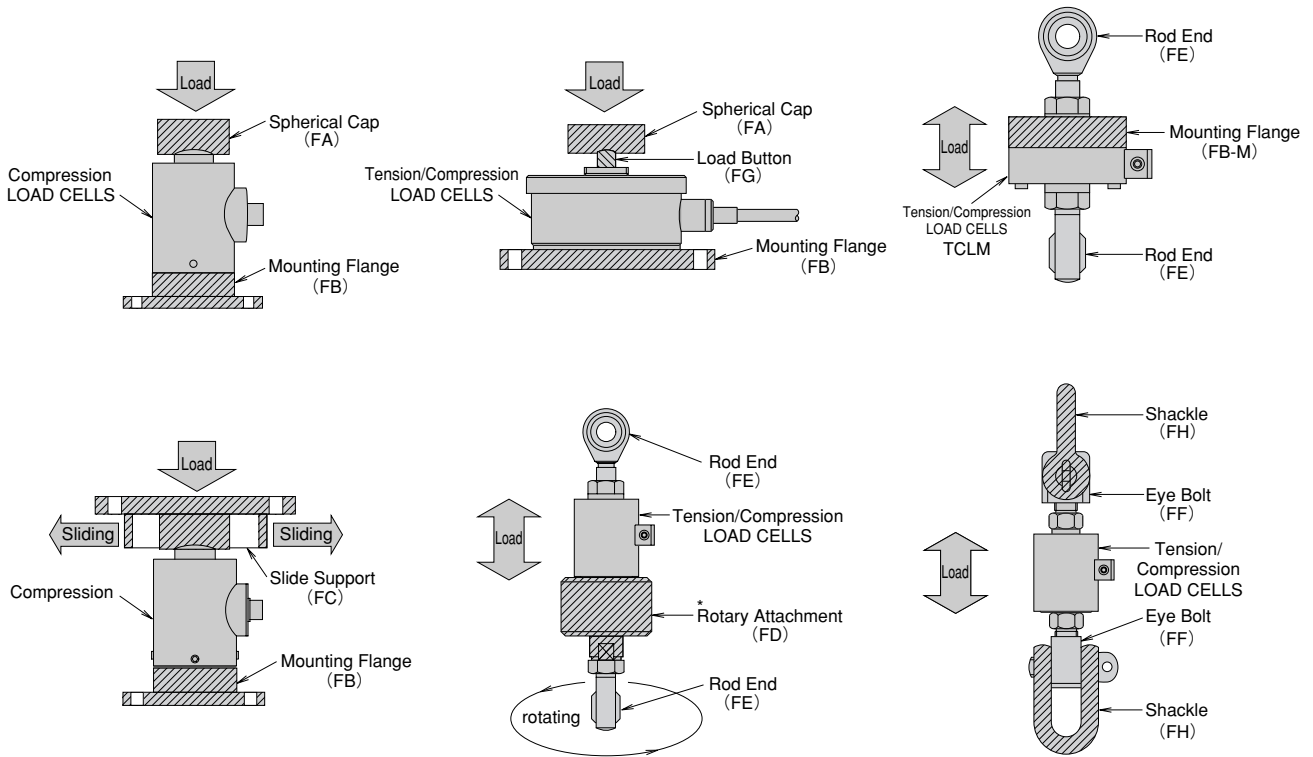
Specifications

Type	TLP-20KNB-D	TLP-30KNB-D	TLP-50KNB-D	TLP-100KNB-D	TLP-200KNB-D	TLP-300KNB-D	TLP-500KNB-D	TLP-1MNB-D
Capacity	20kN	30kN	50kN	100kN	200kN	300kN	500kN	1MN
Rated Output	1mV/V (2000×10 ⁻⁶ strain) ±0.5%							
Non-linearity	0.1%RO							
Hysteresis	0.1%RO							
Temperature effect on zero	0.01%RO/°C							
Temperature effect on span	0.005%/°C							
Compensated temperature range	-10~+60°C							
Temperature range	-20~+70°C							
Over load	200%							
Input/output resistance	350Ω±1%							
Recommended exciting voltage	Less than 10V							
Allowable exciting voltage	20V							
Zero balance	5%RO							
Weight	1.5kg	2kg	4kg	8kg	14kg	24kg	38kg	110kg

Supplied cable : CT9-4N10/WP-STB (φ 9mm 0.5mm² 4-core shielded chloroprene cable 10m)

LOAD CELLS

LOAD CELL ACCESSORIES



*Rotary Attachment (FD) is designed for use with tension load cells only.

	LOAD CELLS	ACCESSORY		
		Spherical Cap FA	Mounting Flange FB	Slide Support FC
Compression	CLB-50NA~200NA	FA-20	FB-002-65	—
	CLA-500NA~20KNA	FA-20	FB-2-44	FC-2-20
	CLP-10、20KNB	FA-60	FB-10-30	FC-5-60
	-30、50KNB (-D)	FA-60	FB-10-30	FC-5-60
	-100KNB (-D)	FA-80	FB-10-30	FC-20-80
	-200KNB (-D)	FA-100	FB-20-40	FC-20-100
	-300、500KNB (-D)	FA-140	FB-50-60	FC-50-140
	-1MNB (-D)	FA-160	FB-100-80	—
	-2MNB (-D)	FA-250	FB-200-100	—
	-3MNB (-D)	FA-360	FB-300-120	—
	-5MNB (-D)	FA-360B	FB-500-140	—
	-10MNB	FA-720	FB-1000-200	—
	CLG-10、20KNB	FA-60	FB-2-70	FC-5-60
	-50KNB	FA-60	FB-5-82	FC-5-60
	-100KNB	FA-80	FB-10-90	FC-20-80
	-200KNB	FA-100	FB-20-100	FC-20-100
	CLM-10KNB~50KNB	FA-60	FB-5-80	FC-5-60
	-100KNB	FA-80	FB-10-90	FC-20-80
	-200KNB	FA-100	FB-20-120	FC-20-100
	-500KNB	FA-140	FB-50-150	FC-50-140
	-1MNB	FA-160	FB-100-240	—
	-2MNB	FA-250	FB-200-320	—
	CLU-10KNA~50KNA	FA-60	FB-5-54	FC-5-60
	-100KNA (-D)	FA-80	FB-10-60	FC-20-80
	-200KNA (-D)	FA-100	FB-20-70	FC-20-100
	-500KNA (-D)	FA-140	FB-50-100	FC-50-140
	-1MNA (-D)	FA-160	FB-100-104	—

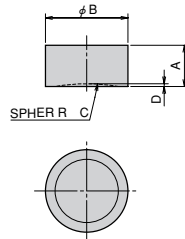
LOAD CELLS

Load Cell accessories

	LOAD CELLS	ACCESSORY								
		Spherical Cap FA	Mounting Flange FB	Slide Support FC	Rotary Attachment FD	Rod End FE	Eye Bolt FF	Load Button FG	Shackle FH	
Tension / Compression	TCLN-500NA~2KNA	—	—	—	—	FE-002C/-002D	—	—	—	
	-5KNA	—	—	—	—	FE-05C/-05D	—	—	—	
	TCLB-50NA~200NA	FA-20	FB-002-65	—	FD-002	FE-002A	—	FG-002	—	
	TCLA-500NA~5KNA	—	—	—	FD-05B	FE-05A/-05B	—	—	—	
	TCLP-10KNB	FA-60	—	—	FD-1	FE-1A	FF-1	FG-1	FH-1B	
	-20KNB (-D)	FA-80	—	—	FD-2	FE-2A	FF-2	FG-2	FH-2B	
	-30、50KNB (-D)	FA-100	—	—	FD-5	FE-5A	FF-5	FG-5	FH-5B	
	-100KNB (-D)	FA-140	—	—	FD-10	FE-10A	FF-10	FG-10	FH-10B	
	-200KNB (-D)	FA-140	—	—	FD-20	FE-20A	FF-20B	FG-20	FH-20B	
	TCLK-5KNA	FA-20	—	—	—	FE-05C	—	FG-05B	—	
	-10KNA	FA-60	—	—	—	FE-1A	—	FG-1	—	
	-20KNA	FA-80	—	—	—	FE-2A	—	FG-2	—	
	-50KNA	FA-100	—	—	—	FE-5A	—	FG-5	—	
	TCLZ-50NA~200NA	FA-20	—	—	FD-002	FE-002A	—	FG-002	—	
	-500NA~5KNA	FA-20	—	—	FD-05A	FE-05A	FF-1	FG-05	FH-1B	
	-10KNA	FA-20	—	—	FD-1	FE-1A	FF-1	FG-05	FH-1B	
	TCLU-10KNA	FA-60	—	—	FD-1	FE-1A	FF-1	FG-1	FH-1B	
	-20KNA	FA-80	—	—	FD-2	FE-2A	FF-2	FG-2	FH-2B	
	-50KNA	FA-100	—	—	FD-5	FE-5A	FF-5	FG-5	FH-5B	
	-100KNA (-D)	FA-140	—	—	FD-10	FE-10A	FF-10	FG-10	FH-10B	
	-200KNA (-D)	FA-140	—	—	FD-20	FE-20A	FF-20B	FG-20	FH-20B	
	TCLM-10KNB	FA-60	FB-1M	—	FD-1	FE-1A	FF-1	FG-1	FH-1B	
	-20KNB	FA-80	FB-2M	—	FD-2	FE-2A	FF-2	FG-2	FH-2B	
	-50KNB	FA-100	FB-5M	—	FD-5	FE-5A	FF-5	FG-5	FH-5B	
	-100KNB	FA-140	FB-10M	—	FD-10	FE-10A	FF-10	FG-10	FH-10B	
	-200KNB	FA-140	FB-20M	—	FD-20	FE-20A	FF-20B	FG-20	FH-20B	
	Tension	TLP-10KNB	—	—	—	—	—	—	—	FH-1B
		-20KNB (-D)	—	—	—	—	—	—	—	FH-2B
-30KNB (-D)		—	—	—	—	—	—	—	FH-3B	
-50KNB (-D)		—	—	—	—	—	—	—	FH-5B	
-100KNB (-D)		—	—	—	—	—	—	—	FH-10B	
-200KNB (-D)		—	—	—	—	—	—	—	FH-20B	
-300KNB (-D)		—	—	—	—	—	—	—	FH-30B	
-500KNB (-D)		—	—	—	—	—	—	—	FH-50B	
-1MNB (-D)		—	—	—	—	—	—	—	FH-100B	
TLJ-10KNA~50KNA		—	—	—	—	FE-5A/-5B	—	—	—	
-100KNA		—	—	—	—	FE-5C/-5D	—	—	—	

FA SPHERICAL CAP

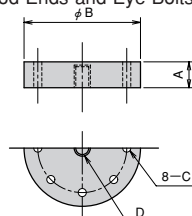
The FA Spherical Cap is mounted to the top of a compression load cell for accurate transmission of compression loads.



Type	A	B	C	D	Weight (kg)
FA-20	15	38	20	2	0.15
FA-60	25	58	60	1	0.5
FA-80	25	58	80	1	0.5
FA-100	30	58	100	1.5	0.6
FA-140	40	78	140	3.5	1.5
FA-160	40	98	160	4	2.5
FA-250	45	128	250	5	4
FA-360	50	148	360	6	6
FA-360B	60	196	360	10	13
FA-720	110	280	720	10	54

FB-M MOUNTING FLANGE

The FB-M Mounting Flange is used to mount Rod Ends and Eye Bolts to TCLM-NB type load cells.



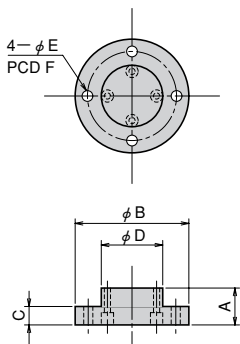
Type	A	B	C	D	Weight (kg)
FB-1M	20	118	M 8 PCD 90	M12 X1.75DP15	1.5
FB-2M	25	118	M 8 PCD 90	M18 X1.5 DP20	2
FB-5M	35	127	M 8 PCD 100	M24 X2 DP30	3
FB-10M	50	187	M12 PCD 150	M39 X2 DP45	10
FB-20M	70	226	M16 PCD 185	M50 X2 DP60	21

LOAD CELLS

LOAD CELL ACCESSORIES

FB MOUNTING FLANGE

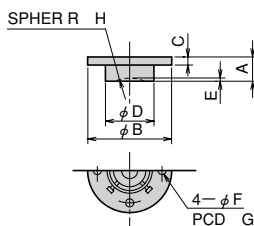
The FB Mounting Flange is used when the mounting area for a compression load cell is unstable or when load cells can not be secured from the bottom.



Type	A	B	C	D	E	F	Weight (kg)
FB-002-65	12	108	9	75	7	94	0.7
FB-2-44	20	98	10	54	9	76	0.7
FB-2-70	12	124	9	84	9	108	0.95
FB-5-54	25	138	10	92	11	114	2
FB-5-80	25	148	13	98	11	124	2.5
FB-5-82	20	150	14	102	11	130	2
FB-10-30	25	108	10	60	11	84	0.9
FB-10-60	30	158	10	108	11	134	3
FB-10-90	25	168	13	118	11	144	3
FB-20-40	30	118	10	70	11	94	1.5
FB-20-70	30	168	10	118	11	142	3
FB-20-100	30	178	15	127	11	158	4
FB-20-120	35	208	13	158	11	184	7
FB-50-60	40	138	15	90	11	114	3
FB-50-100	40	218	15	160	14	190	8
FB-50-150	40	248	15	187	14	220	11
FB-100-80	50	158	20	110	14	134	5
FB-100-104	50	228	20	170	14	200	11
FB-100-240	50	360	20	300	14	335	33
FB-200-100	60	208	25	140	18	172	10
FB-200-320	60	470	25	400	18	440	70
FB-300-120	60	228	25	160	18	192	13
FB-500-140	70	277	30	200	22	236	22
FB-1000-200	100	400	40	295	26	350	73

FC SLIDE SUPPORT

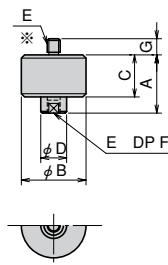
The FC Slide Support can be used to eliminate lateral loads from compression load cells for high precision measurements.



Type	A	B	C	D	E	F	G	H	sliding area	Weight (kg)
FC-2-20	27	98	10	56	2	9	76	20	±6mm	0.75
FC-5-60	40	128	13	84	1	11	106	60	±8mm	2
FC-20-80	45	168	13	118	1	11	140	80	±10mm	4
FC-20-100	45	168	13	118	1.5	11	140	100	±10mm	4
FC-50-140	55	218	18	164	3.5	13	190	140	±15mm	10

FD ROTARY ATTACHMENT

The FD Rotary Attachment ensures smooth load transmission by eliminating torsion during tension load measurements.

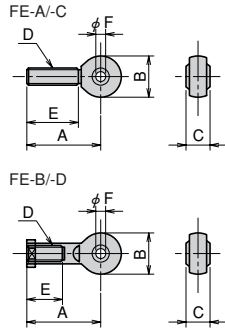


Type	A	B	C	D	E	F	G	Weight (kg)
FD-002	54	58	39	20	M 6×1	12	7	0.8
FD-05A	54	58	39	20	M12×1.75	15	13	0.8
FD-05B	54	58	39	20	M12×1.75	15	15	0.8
FD-1	54	88	39	20	M12×1.75	15	13	2
FD-2	67	100	50	26	M18×1.5	20	18	3
FD-5	87	100	71	32	M24×2	30	28	4
FD-10	112	138	93	50	M39×2	45	43	11
FD-20	150	176	122	65	M50×2	65	60	23

※FD-05B M12×P1.75 DP15 Female screw

FE ROD END

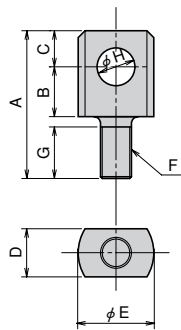
The FE Rod End is ideal when a tension/compression universal load cell is used to measure tension loads on machinery and structures.



Type	A	B	C	D	E	F	Weight (kg)
FE-002A	36	18	9	M 6×1	22	6	0.02
FE-002C	39.5	20.5	11	M 5×0.8	16	5	0.035
FE-002D	35	20.5	11	M 5×0.8	19	5	0.04
FE-05A	54	30	16	M12×1.75	33	12	0.1
FE-05B	50	30	16	M12×1.75	24	12	0.1
FE-05C	46	23	11	M 8×1.25	29	8	0.04
FE-05D	41	23	11	M 8×1.25	22	8	0.05
FE-1A	62	34	16	M12×1.75	37	12	0.15
FE-2A	79.5	43	20	M18×1.5	46	18	0.3
FE-5A	105	70	35	M24×2	59	25	1
FE-5B	105	70	35	M24×2	54	25	1.2
FE-5C	83	45	22	M20×1.5	50	20	0.3
FE-5D	76	45	22	M20×1.5	41	20	0.33
FE-10A	173	100	43	M39×2	80	40	4
FE-20A	231	120	53	M50×2	105	50	7

FF EYE BOLT

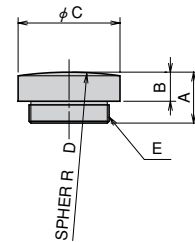
The FF Eye Bolt is used when tension/compression universal load cells are used to measure tension. It can be used with FH Shackle.



Type	A	B	C	D	E	F	G	H	Weight (kg)
FF-1	65	25	15	22	35	M12×1.75	21	18	0.2
FF-2	86	30	21	27	45	M18×1.5	30	22	0.5
FF-5	128	45	33	43	70	M24×2	44	37	1.5
FF-10	166	55	46	58	95	M39×2	57	49	4
FF-20B	207	53	57	68	100	M50×2	85	54	6

FG LOAD BUTTON

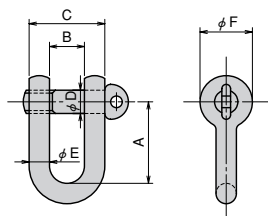
The FG Load Button is used when tension/compression universal load cells are used to measure compression.



Type	A	B	C	D	E	Weight (kg)
FG-002	10	6	9	20	M 6×1	4
FG-05B	15	8	14	20	M 8×1.25	12
FG-05	18	10	16	20	M12×1.75	20
FG-1	20	10	20	60	M12×1.75	30
FG-2	20	10	26	80	M18×1.5	55
FG-5	22	12	32	100	M24×2	100
FG-10	25	15	50	140	M39×2	300
FG-20	30	20	64	140	M50×2	600








FH SHACKLE

The FH Shackle is used with tension load cells in instances such as measuring wire tension.







Type	A	B	C	D	E	F	Weight (kg)
FH-1B	56	24	52	17	14	36	0.4
FH-2B	72	29	65	21	18	45	0.85
FH-3B	88	34	78	26	22	55	1.5
FH-5B	120	45	105	36	30	75	5
FH-10B	160	60	140	48	40	100	11
FH-20B	171	73	165	50	46	110	13
FH-30B	201	83	183	58	50	127	20
FH-50B	239	105	235	70	65	153	40
FH-100B	314	134	314	96	90	203	100





Standard tension and compression load cells

Model	Sensors	Measuring Ranges
8524	 <p>Tension and Compression Load Cell compact, uncomplicated, universally applicable, easy integration into existing structures, for static, quasi-static and dynamic tensile and compressive forces, stainless steel</p>	500 N ... 200 kN
8526	 <p>Compression Load Cell compact, robust, high performance, for restricted spaces, for static and dynamic measurements, welded construction, protection class IP 64, stainless steel</p>	100 ... 200 kN
8523 8531	 <p>Tension and Compression Load Cell compact, robust, easy handling, for static and dynamic measurements, high-strength aluminium, exceptional low price</p>	20 ... 5000 N
8532	 <p>Low-Cost Compression Load Cell with IN-LINE Amplifier Linearity < 1 % F.S., normalized output signal 0 ... 10 V, stainless steel sensor, compact design, customer-specific versions possible from 20 pieces up</p>	500 N ... 20 kN
8451	 <p>Load Cell for Manually Operated Presses simple mounting on press stamps, compact and very robust construction, hermetically sealed model, suitable for all standard manual presses with stamp borings of 10H⁷ resp. 20H⁷, adaptation to right and left handed users possible</p>	500 N ... 100 kN
85081 85082 85083	 <p>Tension Load Cells</p>	0,5 ... 1000 kN
8532 9186	 <p>Low Cost Measuring Chain for Simple Load Measurement with Load Cell and Digital Display</p>	from 0 ... 500 N up to 0 ... 20 kN



Miniature compression load cells

	Model	Sensors	Measuring Ranges
	8402	Miniature Load Cell very compact, small dimensions, robust, sturdy, <u>reliable</u> , universal, made of stainless steel	1 kN ... 100 kN
	8415	Miniature Load Cell very compact, small dimensions, robust, for static and dynamic measurement in very restricted structures, made of stainless steel, low-priced	200 ... 5000 N
	8416	Ultra-Miniature Load Cell very compact, small dimensions, robust, for static and dynamic measurement in very restricted structures, made of stainless steel	20 N ... 5 kN
	8438	Miniature Ring Load Cell compact, flat disc design, small diameter, low overall height, completely welded body, central <u>clearance</u> hole, stainless steel	5 N ... 200 kN
	8435	Tension and Compression Load Cell compact, small dimensions, accurate, low-priced, easy assembling into existing structures, for static and dynamic measurements, stainless steel	200 ... 5000 N
	8413 8414	Subminiature Load Cell very compact, very small dimensions, for small measurement ranges, high frequencies of resonance, stainless steel, overload protection	2,5 N ... 5000 N

Miniature tension and compression load cells

Model	Sensors	Measuring Ranges
 8435	Tension and Compression Load Cell compact, small dimensions, accurate, low-priced, easy assembling into existing structures, for static and dynamic measurements, stainless steel	200 ... 5000 N
 8431 8432	Precision Tension and Compression Load Cell small dimensions, highly accurate, non-sensitive to disturbances, simple introduction of force, <u>minimum</u> lateral sensitivity, for tension and compression, overload stop	2,5 N ... 100 kN
 8417	Subminiature Tension and Compression Load Cell small dimensions, robust, quick and easy assembling, stainless steel	100 N ... 5 kN
 8411	Subminiature Load Cell	2,5 N ... 5000 N

High precision load cells

Model	Sensors	Measuring Ranges
 8527	High Precision Compression Load Cell linearity <0.05 % F.S. sensitivity 1.5 mV/V protection class IP 65 overload	500 N ... 100 kN
 85041 85043 85073 85075	High Precision Load Cell	20 N ... 2 MN