Minebea intec
The true measure

Compression load cell PR 6201 and mounting kits PR 6001, PR 614x

The high-load weighing solution for silo and vessel weighing

Benefits

- Up to 520 t maximum capacity per load cell
- Easy and fault-free installation
- Robust design for long-lasting use
- Optionally available with integrated analogue output

The load cell from the PR 6201 series has been specially designed for high-load weighing of silos and tanks. Its unique construction principle, in conjunction with the FlexLock mounting kits, makes it possible to compensate for movements with a negligible effect on the weighing result.

Unrivalled reliability, robustness and stability for your silo weighing

- For unusually large and heavy silos with maximum capacities from 100 t to 520 t.
- With the FlexLock mounting kits, it is possible to compensate for movements arising from mechanical or thermal contraction or expansion of the container or the support structure.
- Thanks to the use of stainless steel and the top IP68/IP69 protection class, the cell holds its own even in adverse conditions.
- For maximum capacities of 500 kg to 200 t, a direct 4...20 mA analogue output is optionally available.

Technical specifications

Compression load cell PR 6201 (0.5 t–50 t)

Parameter	Description	Abbr.	0,5 t – 50 t	100 t – 520 t				Unit
			LA	LA	L	520 t L	N	
Accuracy class			0.25	0.5	0.5	0.5	0.06	$\%E_{max}$
Minimum dead load	Lowest limit of specified measuring range	E_{min}	0					$\%E_{max}$
Maximum capacity	Highest limit of specified measuring range	E_{max}	See Ordering information table					kg
Safe load limit	Maximum load without irreversible damage	E_{lim}	For 0,5 t…30 t: 200 For 50 t: 150	For 100 t, 200 t: 200 For 300 t: 133 For 520 t: 106				$\%E_{max}$
Destructive load	Danger of mechanical d estruction	E_d	For 0,5 t…30 t: >500 For 50 t: >300	For 100 t, 200 t: >500 For 300 t: >333 For 520 t: >192				$\%E_{max}$
Minimum LC verification Interval	Minimum verification interval, $v_{min} = E_{max}/Y$	Y	/	/				
Deadload output return	Factor for deadload output return after load (DR=1/2*E_{max}/Z)	Z Z	/ /	/ /				
Rated output	Relative output at maximum capacity (LA = 4…20 mA) For E_{max} = 50 t	C_n C_n	16 mA 16 mA	16 mA	1	2.6	1.0/ 300 t = 1.5	mV/V mV/V
Tolerance on rated output	Permissible deviation from rated output	d_c	<1.0	<1.0	<1.0	<1.0	<0.25	$\%C_n$
Zero output signal	Load cell output signal under unloaded condition	S_{min}	4 mA*	4 mA	<2.0	<2.0	<1.0	$\%C_n$
Reproducibility	Max. change in load cell output for repeated loading	ε_R	<0.02	<0.02	<0.02	<0.02	<0.01	$\%C_n$
Creep	Max. change of output signal at E_{max} for 30 min.	d_{cr}	<0.05	<0.05	<0.05	<0.2	<0.03	$\%C_n$
Non-linearity	Max. deviation from best straight line through zero	d_{Lin}	<0.25	<0.3	<0.3	<0.1	<0.05	$\%C_n$
Hysteresis	Max. difference in LC output between loading and unloading	d_{hy}	<0.25	<0.25	<0.25	<0.5	<0.06/ 100 t: <0.04	$\%C_n$
Temperature effect (TK) on S_{min}	Max. change of S_{min} in B_T	TK_{Smin}	<0.15	<0.2	<0.2	<0.2	<0.06	$\%C_n$/10 K
Temperature effect (TK) on parameter	Max. change of C in B_T	TK_C	<0.1	<0.1	<0.1	<0.1	<0.03	$\%C_n$/10 K
Input impedance	Between supply terminals	R_{LC}	/	/	650 +50	650 +50	650 ±6	Ω
Output impedance	Between supply terminals	R_O	/	/	610 ±3	610 ±3	610 ±1	Ω
Insulation impedance	Between measuring circuit and housing at 100 V_{DC}	R_{IS}	/	/	>5,000 × 10^6			Ω
Insulation voltage	Between circuit and housing (PR 62../..E only)		/	/	500			V
Recommended supply voltage	To hold the specified performance	B_u	20…28	20…28	4…24			V_{DC}
Max. supply voltage	Permissible for continuous operation without damage	U_{max}	28	28	32 (Ex versions: 25)			V_{DC}
Nominal ambient temp. range	To hold the specified performance	B_T	-10…+55	-10… +55	-10…+55			°C
Usable temperature range	Permissible for continuous operation without damage	B_{Tu}	-30…+55	-30… +55	-40…+95			°C
Storage temperature range	Without electrical and mechanical stress	B_{Ti}	-40…+70	-40… +70	-40…+95			°C
Permissible eccentricity	Permissible displacement from nominal load line	S_{ex}	For 0,5 t…10 t: 10 For 20 t…50 t: 5	10				mm
Vibration resistance	Resistance against oscillations (IEC 68-2-6 Fc)		20 g, 100 h, 10…150 Hz					
Barometric pressure influence	Influence of barometric pressure on output	PK_{Smin}	Up to 2 t: 280 3 t to 10 t: 320 From 20 t: 420	100 t: 700 200 t, 300 t, 520 t: 1,400				g/kPa
Nominal deflection	Max. elastic deformation under maximum capacity	S_{nom}	Up to 30 t ≤0.5/50 t ≤0.8	100 t: 1.0/200 t: 1.6/300 t: 2.4/520 t: 2.7				mm

Parameter	Description	Abbr.	0,5 t – 50 t	100 t – 520 t				Unit
			LA	LA	L	520 t L	N	
Material (load cell housing)	Stainless steel 1.4301 acc. DIN EN 10088-3 (conforms to 304 AISI/SAE)							
Protection class	IP66 / IP68 / IP69							
Cable	Length: E_{max} ≤10 t: 5 m, E_{max} >10 t: 12 m Diameter: 5 mm Cross section: 4×0.35 mm² Material cable sheath: TPE							
Bending radius	≥25 mm in case of fixed installation ≥75 mm in case of flexible installation							

* Zero output signal tolerance: -2 ± 2%Cn, i.e. 3.36 mA ... 4.00 mA

Mounting kits PR 6001

Maximum capacity of load cell PR 6201	Mounting kit/ accessories	Material	Description/ comments	Mounting screws (not included in delivery)	Installation height (mm)	Max. permissible horizontal force (kN)	Max. permissible lift-off force (kN)	Max. permissible eccentricity	Max. permissible vertical load without load cell	Max. permissible load for jack-up	CE approval according to EN 1090
100 t	PR 6001/02N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	Mounting disc incl. upper load disc	M16-8.8	290	/	40	±5	38 t	/	Yes
	PR 6001/32N		High-load mounting kit incl. upper load disc	M20-8.8	350	200	250			/	Yes
200 t – 300 t	PR 6001/03N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	Mounting disc incl. upper load disc	M20-8.8	385	/	50	±5	54 t	/	Yes
	PR 6001/33N		High-load mounting kit incl. upper load disc	M20-8.8	445	200	250			/	Yes

Mounting kits PR 6143

Maximum capacity of load cell PR 6201	Mounting kit/ accessories	Material	Description/ comments	Mounting screws (not included in delivery)	Installation height (mm)	Max. permissible horizontal force (kN)	Max. permissible lift-off force (kN)**	CE approval according to EN 1090
100 t	PR 6143/15N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	MiniFLEXLOCK incl. upper load disc	M20-8.8	290	150	200	Yes
200 t – 300 t	PR 6143/25N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	MiniFLEXLOCK incl. upper load disc	M20-8.8	385	150	200	Yes
520 t	PR 6143/55N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	Upper load disc and base	/	/	/	/	/

* Lower load disc only for 0.5 t–10 t, for 20 t–75 t please order base PR 6143/54S separately
** With separate threaded bolt of strength class 8.8 or A2-70

Mounting kits PR 6144

Maximum capacity of load cell PR 6201	Mounting kit/ accessories	Material	Description/ comments	Mounting screws (not included in delivery)	Installation height (mm)	Max. permissible horizontal force (kN)	Max. permissible lift-off force (kN)	Max. permissible vertical load without load cell	CE approval according to EN 1090
100 t	PR 6144/15N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	Seismic Mount incl. load cell dummy	M30-8.8	298	440	600	24 t	Yes
200 t – 300 t	PR 6144/35N			M36-8.8	385	520	880	60 t	Yes
520 t	PR 6144/55N				428	520	880	110 t	Yes

Mounting kits PR 6145

Maximum capacity of load cell PR 6201	Mounting kit/ accessories	Material	Description/ comments	Mounting screws (not included in delivery)	Installation height (mm)	CE approval according to EN 1090
100 t	PR 6145/08N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	Plate mounting kit incl. upper load disc	M16-8.8	290	Yes
200 t – 300 t	PR 6145/10N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	Plate mounting kit incl. upper load disc	M20-8.8	385	Yes

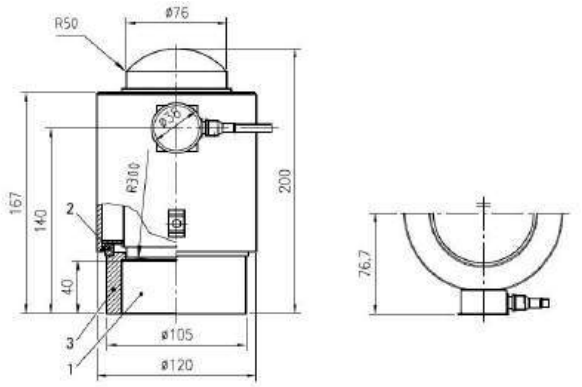
Fixed bearing PR 6101

Maximum capacity of load cell PR 6201	Fixed bearing	Material	Mounting screws (not included in delivery)	Installation height (mm)	Max. usable load	Permissible horizontal force for usable load (kN)
100 t	PR 6101/15N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	M16-8.8	290	100 t	200
					200 t	120
200 t – 300 t	PR 6101/25N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	M20-8.8	385	200 t	350
					300 t	300
					400 t	180
520 t	PR 6101/55N	Steel electrogalvanised, chromated and sealed (RoHS compliant)	M36-8.8	428	520 t	390
					550 t	340

You can find the mounting kits for PR 6201/500 kg – 50 t LA in the data sheet for the Inteco® compression load cell.

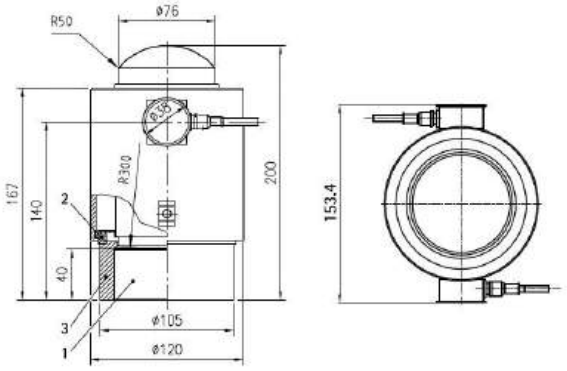
Technical diagrams

Load cells PR 6201



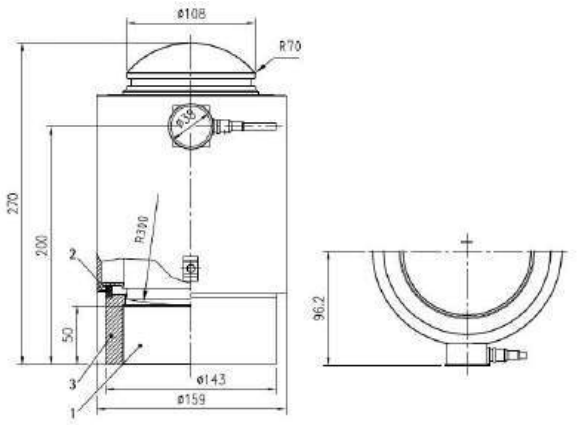
Pos.	Designation
1	Lower load disc
2	Support ring
3	Ring for lower load disc

Load cell PR 6201/15 (maximum capacity 100 t)



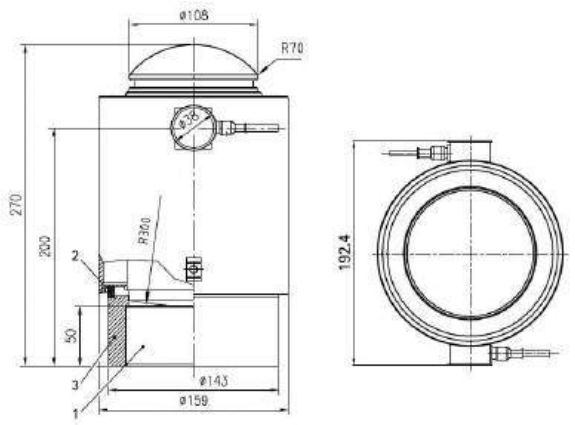
Pos.	Designation
1	Lower load disc
2	Support ring
3	Ring for lower load disc

Load cell PR 6201/15 DB (maximum capacity 100 t)



Pos.	Designation
1	Lower load disc
2	Support ring
3	Ring for lower load disc

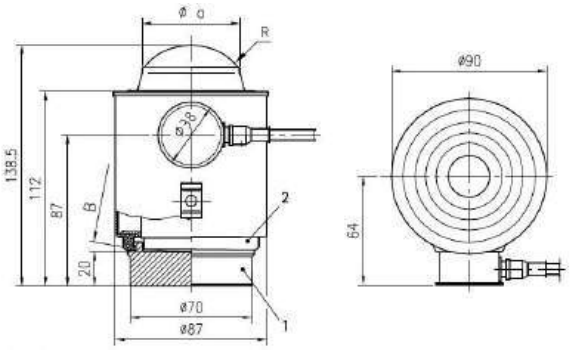
Load cell PR 6201/25 (maximum capacity 200 t),
PR 6201/35 (maximum capacity 300 t)



Pos.	Designation
1	Lower load disc
2	Support ring
3	Ring for lower load disc

Load cell PR 6201/25 DB (maximum capacity 200 t),
PR 6201/35 DB (maximum capacity 300 t)

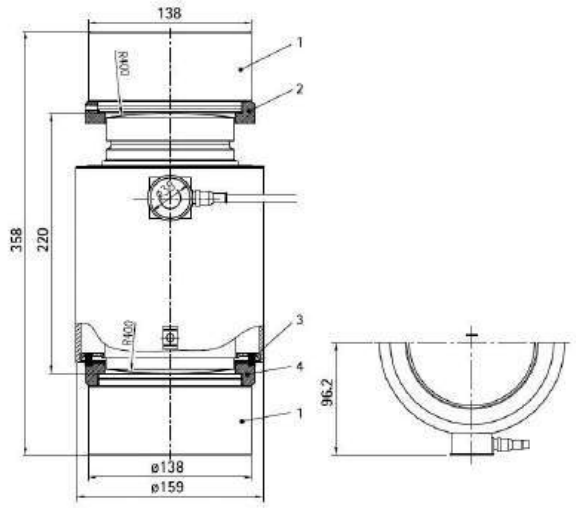
All dimensions in mm



Pos.	Designation
1	Lower load disc
2	Support ring

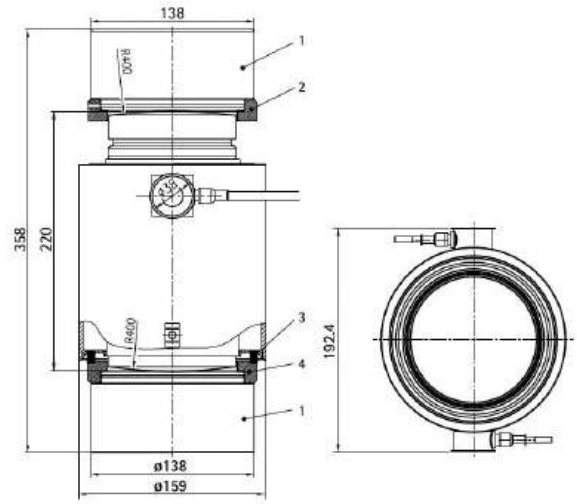
Model	Ø a	R	B
PR 6201/52 ... 23	24	15	150
PR 6201/33 ... 14	34	15	150
PR 6201/24 ... 54	56	35	220

Load cells PR 6201/52...54 (maximum capacities 500 kg...50 t)



Pos.	Designation
1	Upper/lower load disc
2	Ring for upper load disc
3	Support ring
4	Ring for lower load disc

Load cell PR 6201/520 t (maximum capacity 520 t)

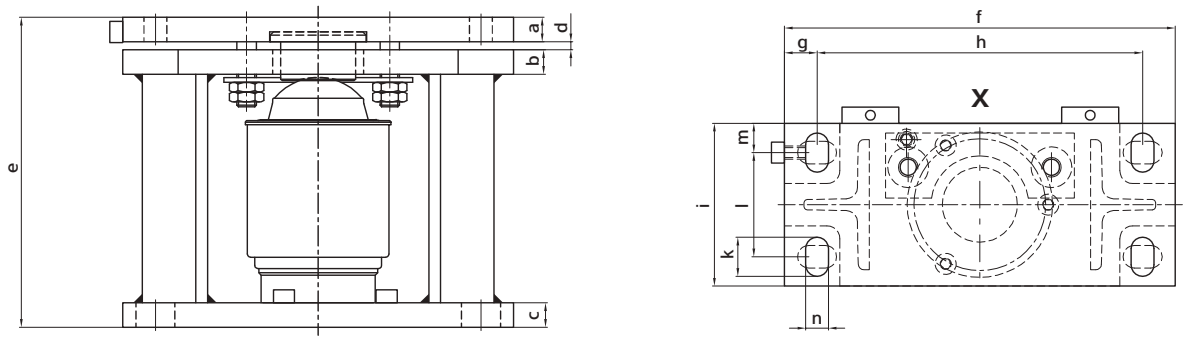


Pos.	Designation
1	Upper/lower load disc
2	Ring for upper load disc
3	Support ring
4	Ring for lower load disc

Load cell PR 6201/520 t (maximum capacity 520 t)

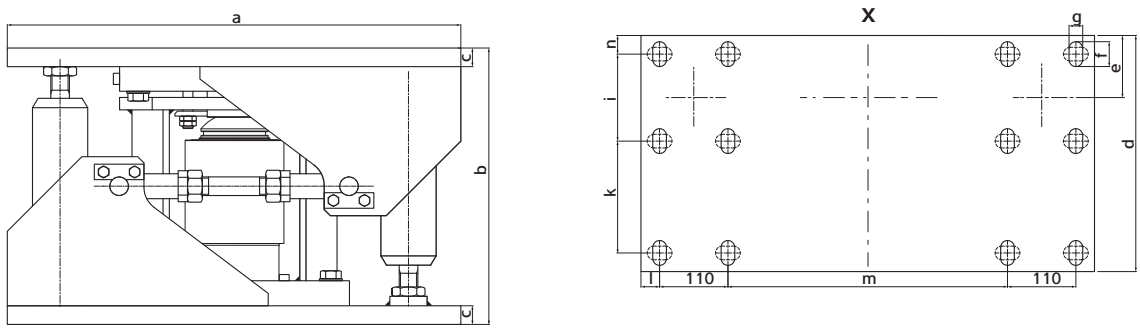
All dimensions in mm

Mounting kits PR 6001



Mounting kit	a	b	c	d	e	f	g	h	i	k	l	m	n
PR 6001/02	30	20	30	8	290	300	23	254	130	32	84	23	18
PR 6001/03	40	20	40	10	385	370	30	310	180	40	120	30	22

Mounting kits PR 6001/01N+S, PR 6001/02N, PR 6001/03N

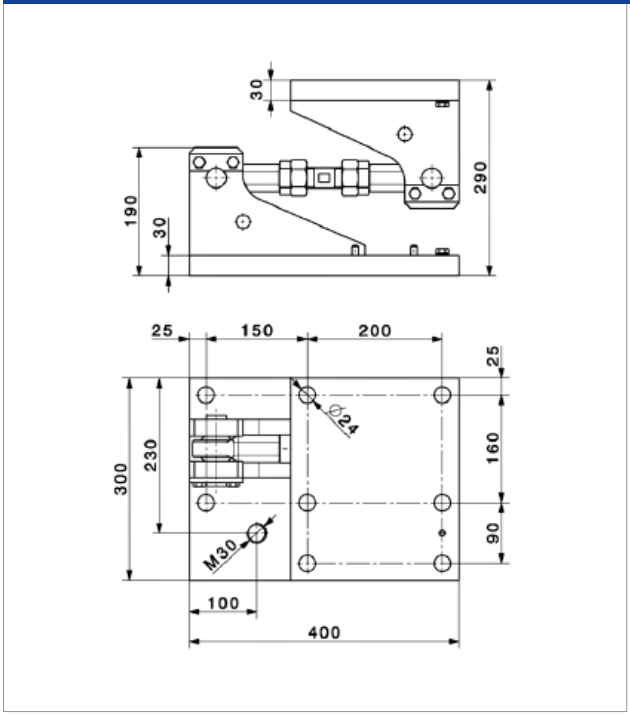


Mounting kit	a	b	c	d	e	f	g	h	i	k	l	m	n
PR 6001/32	660	350	30	340	78	40	22	30	95	180	30	380	30
PR 6001/33	730	445	30	380	100	40	22	30	140	180	30	450	30

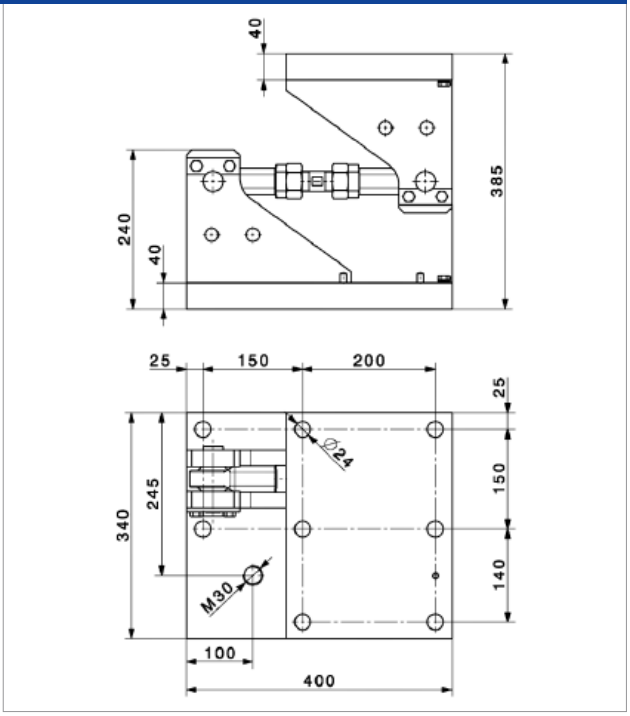
Mounting kits PR 6001/32N, PR 6001/33N

All dimensions in mm

Mounting kit PR 6143



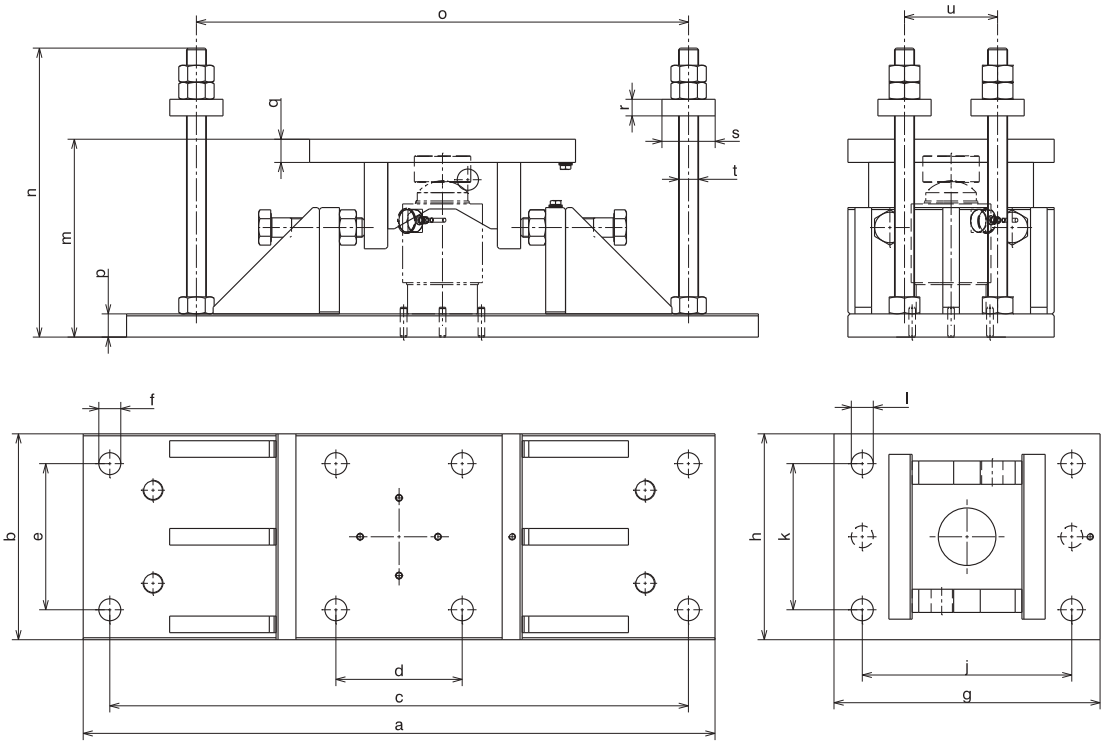
Mounting kit PR 6143/15N



Mounting kit PR 6143/25N

All dimensions in mm

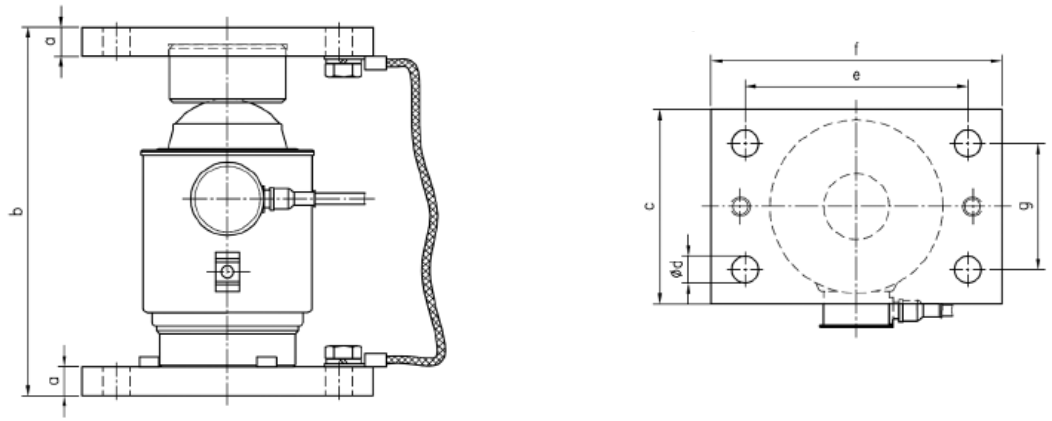
Mounting kits PR 6144



Model	a	b	c	d	e	f	g	h	j	k	l	m	n	o	p	q	r	s	t	u
PR 6144/15	950	310	870	190	220	Ø33	400	310	315	220	Ø33	298	435	740	35	35	25	Ø80	M30	140
PR 6144/35	1150	350	1070	230	260	Ø39	460	350	380	260	Ø39	387	545	920	40	40	30	Ø100	M36	150
PR 6144/55	1180	350	1100	230	260	Ø39	460	350	380	260	Ø39	428	590	970	40	40	30	Ø100	M36	150

Mounting kits PR 6144/15N, PR 6144/35N, PR 6144/55N

Mounting kits PR 6145/xx

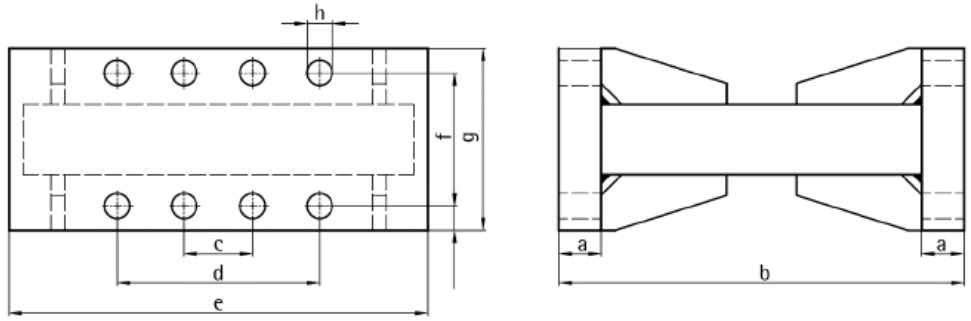


Model	a	b	c	d	e	f	g
PR 6145/08	30	290	130	18	145	180	95
PR 6145/10	40	385	180	24	185	220	135

Mounting kits PR 6145/08, PR 6145/10

All dimensions in mm

Fixed bearing PR 6101/xx



Model	a	b	c	d	e	f	g	h
PR 6101/15	30	290,0	49	145	300	95	130	18 (8×)
PR 6101/25	40	385,0	185	375	450	135	180	24 (8×)
PR 6101/55	40	428,0	90	390	500	190	280	39 (8×)

Fixed bearing PR 6101/15, PR 6101/25, PR 6101/55

Ex approval

Scope of validity:
PR 6201 (0,5 t–50 t)/PR 6201 (100 t–520 t)

Explosion protection

Certificates precision compression load cell PR 6201

Zone	Labelling	Certificate number	For
0 and 1	II 1G Ex ia IIC T6 Ga Ex ia IIC T6 Ga 0Ex ia IIC T6	BVS 16 ATEX E 005 IECEx BVS 16.0005	PR 6201/..E + ..DBE only
20 and 21	II 1D Ex ta IIIC T160 °C Da Ex ta IIIC T160 °C Da Ex ta IIIC T160 °C X	TÜV 03 ATEX 2301X IECEx TUN 17.0025X	PR 6201/..L, ..N with add-on ATEX 20/21
2	II 3G Ex nA IIC T6 Gc 2Ex nA IIC T6 X	Manufacturer's declaration	PR 6201/..L, ..N, ..LDB, ..NDB with add-on ATEX 2/22
22	II 3D Ex tc IIIC T85 °C Dc Ex tc IIIC T85 °C X	Manufacturer's declaration	PR 6201/..L, ..N, ..LDB, ..NDB with add-on ATEX 2/22
FMus	IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G Entity – 4012 101 5688 NI CL I, II, III, DIV 2, GP A, B, C, D, E, F, G NIFW – 4012 101 5688 T4A Ta= -30 °C to 70 °C; T5 Ta= -30 °C to 55 °C	FM17US0276	PR 6201/..L, ..N with add-on FM
FMca	IS CL I, II, III, DIV 1, GP A, B, C, D, E, F, G Entity – 4012 101 5688 NI CL I, II, III, DIV 2, GP A, B, C, D, E, F, G NIFW – 4012 101 5688 T4A Ta= -30 °C to 70 °C; T5 Ta= -30 °C to 55 °C	FM17CA0138	PR 6201/..L, ..N with add-on FM

All dimensions in mm

Ordering information

Compression load cell PR 6201, accuracy class (100 t + 520 t L = 0.5%)

Type	Load stage	Order number
PR 6201/15L	100 t	940526201159
PR 6201/520tL	520 t	940526201559

Compression load cell PR 6201 with analogue output (4–20 mA), accuracy class L = 0.25% (100 t + 200 t L = 0.5%)

Type	Load stage	Order number
PR 6201/52LA	500 kg	940556201529
PR 6201/13LA	1 t	940556201139
PR 6201/23LA	2 t	940556201239
PR 6201/33LA	3 t	940556201339
PR 6201/53LA	5 t	940556201539
PR 6201/14LA	10 t	940556201149
PR 6201/24LA	20 t	940556201249
PR 6201/34LA	30 t	940556201349
PR 6201/54LA	50 t	940556201549
PR 6201/15LA	100 t	940556201159
PR 6201/25LA	200 t	940556201259

High-load compression load cell PR 6201, accuracy class N = 0.06%

Type	Load stage	Order number
PR 6201/15N	100 t	940526201151
PR 6201/25N	200 t	940526201251
PR 6201/35N	300 t	940526201351

High-load compression load cell PR 6201, accuracy class N = 0.06%, Ex version (520 t L = 0.5%)

Type	Load stage	Order number
PR 6201/15NE	100 t	940566201151
PR 6201/25NE	200 t	940566201251
PR 6201/35NE	300 t	940566201351
PR 6201/520tLE	520 t	940566201559

Dual Bridge compression load cell PR 6201 OIML R60, accuracy class N = 0.06% (520 t L = 0.5%)

Type	Load stage	Order number
PR 6201/15NDB	100 t	940526201155
PR 6201/25NDB	200 t	940526201255
PR 6201/35NDB	300 t	940526201355
PR 6201/520tLDB	520 t	940526201555

Dual Bridge compression load cell PR 6201 OIML R60, accuracy class N = 0.06%, Ex version (520 t L = 0.5%)

Type	Load stage	Order number
PR 6201/15NDBE	100 t	940566201155
PR 6201/25NDBE	200 t	940566201255
PR 6201/35NDBE	300 t	940566201355
PR 6201/520tLDBE	520 t	940566201555

Mounting kit PR 6145 without constrainer

Type	Order number
PR 6145/08N	940536145081
PR 6145/10N	940536145101

MiniFLEXLOCK with integrated constrainer

Type	Order number
PR 6143/15N	940536143151
PR 6143/25N	940536143251

Load disc kit for compression load cell PR 6201

Type	Order number
PR 6143/55N	940536143551

Fixed bearing

Type	Order number
PR 6101/15N	940556101151
PR 6101/25N	940556101251
PR 6101/55N	940556101551

Compact mounting kits

Type	Order number
PR 6001/02N	940536001021
PR 6001/03N	940536001031

High-load MaxiFLEXLOCK with a permissible horizontal force of 200 kN

Type	Order number
PR 6001/32N	940536001321
PR 6001/33N	940536001331

Seismic Mount for compression load cell PR 6201

Type	Order number
PR 6144/15N	940536144151
PR 6144/35N	940536144351
PR 6144/55N	940536144551

The products and solutions presented in this data sheet make major contributions in the following sectors:

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