

FPC ITALIA Mechanical Bearings



DESIGN, BUILD, MAINTAIN



Bearings are a major component of structures, and their function means that they play a decisive role in the operation of those structures. As such, bearings must be designed, manufactured and installed by specialists.

As a major player in the field of construction, FPC ITALIA has developed a wide range of bearings. FPC ITALIA designs and provides the right solution to meet its customers' needs for every type of structure.

FPC ITALIA bearings are manufactured in house, CE marked and are officially approved in many countries.

Areas of use

Bearings are most commonly used to provide the connection between the piers and deck of a bridge. FPC ITALIA bearings can also be used in a number of other areas, such as stadiums, pipelines and all types of buildings.

Contents

3	Design
4	The different types of bearing
6	Algapot PN, PNU, PNM pot bearings
10	Algasferon CS, CSU, CSM spherical bearings
17	Fastening systems

Our primary concern: ensuring everyone's safety



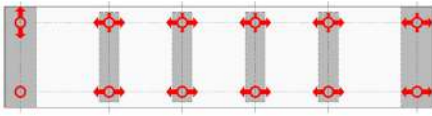
Our "Sustainable technology" signature expresses our commitment to offering our customers sustainable solutions that respect the environment, and to providing our employees with an environment where safety, risk management and innovation are a constant state of mind.

Managing safety on our sites is therefore our primary duty towards our employees worldwide, whatever the local regulations.

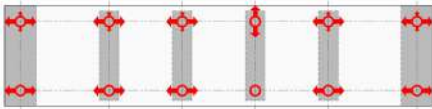
We are fully committed to the goal of "Zero Lost Time Injuries"; our rules, our "non-negotiables" and our in-house tools ensure that this commitment will become reality.

DESIGN

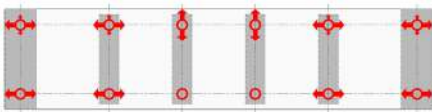
Excellent knowledge of how structures operate is vital in identifying the most appropriate types of bearing. The diagrams below show the most common bearing layouts underneath a bridge deck. Because every structure is different, the designer must choose the most appropriate solution depending on the constraints imposed.



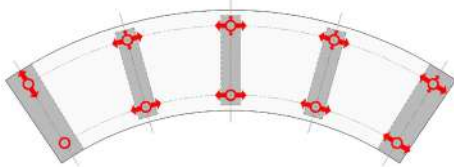
Fixed abutment:
This layout absorbs significant longitudinal loads (braking, for example).



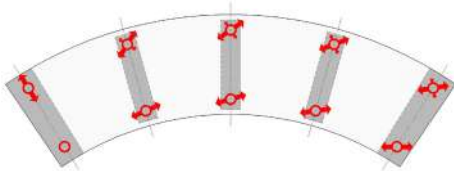
Fixed pier:
This layout distributes the movements of the deck in order to balance the movement of joints on either side.



Two fixed piers:
There is significant distribution of longitudinal horizontal loads. The piers contribute to the absorption of dynamic loads (earthquakes, emergency braking by a train, etc.).



Curved structure, bearings at a tangent to the direction of movement:
The joints work parallel to the axis of the structure.

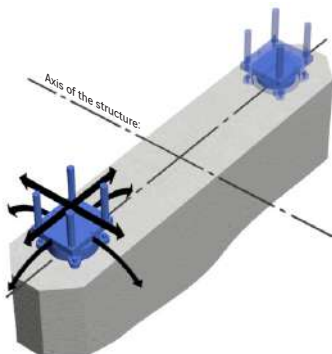


Curved structure, guided sliding bearings facing towards the fixed point:
The joints work at an angle to the structure. Only the lateral operating loads are exerted on guided bearings.

FPC Italia bearings are designed to ensure that loads are transferred between the superstructure and its supports, and to enable movement and rotation. Each range is therefore broken down into three types of bearing:

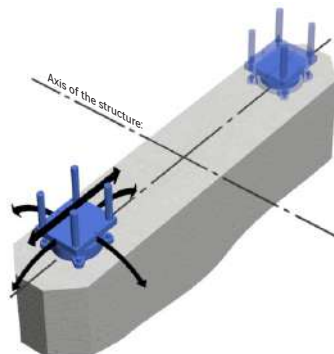
Free bearings

These transfer the vertical loads and allow all translational and rotational movements of the superstructure.



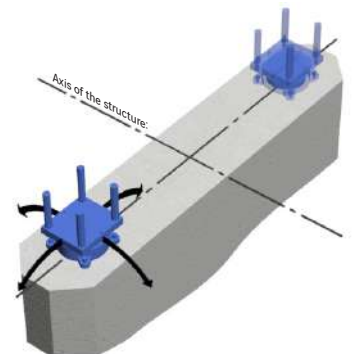
Guided bearings

These transfer the vertical loads and the horizontal loads in one direction. Translation in the perpendicular direction is allowed, as is rotation.



Fixed bearings

These transfer all vertical and horizontal loads, while allowing rotation of the superstructure.

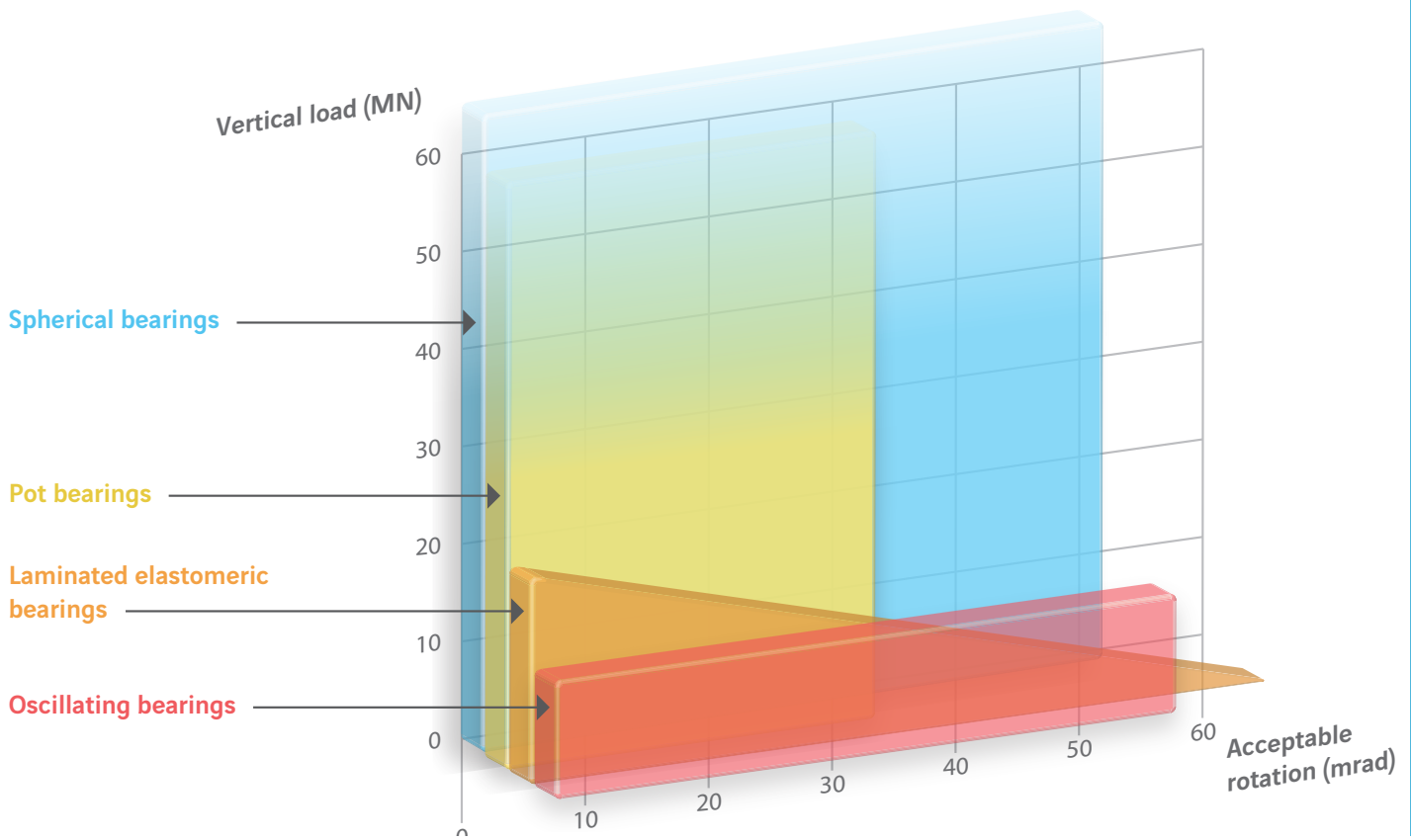


Friction must be taken into account in the directions in which translational movement is allowed, in accordance with the code applied (generally 3%).

THE DIFFERENT TYPES OF BEARING

Bearings are split into four main families, each of which meets different criteria. These are:

- Elastomeric bearings
- Pot bearings
- Spherical bearings
- Special bearings



Selection criteria:

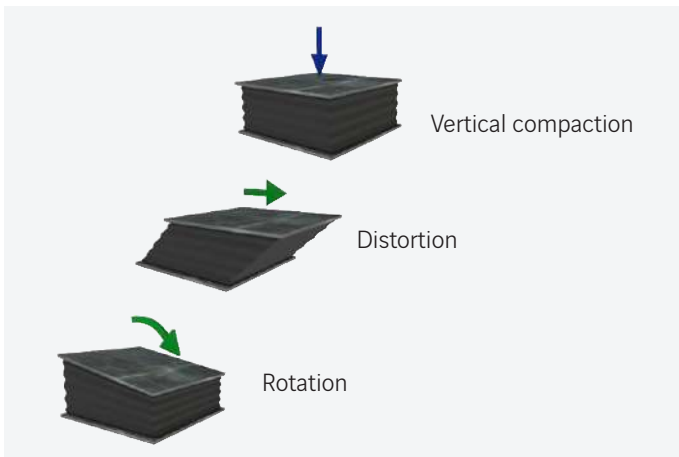
One of the selection criteria for bearings is the vertical load applied and the acceptable concomitant rotation.

The other selection criteria mainly derive from the functions that the bearing must perform, such as:

- Blocking rotation in a given direction;
- The intensity of the horizontal loads;
- How aggressive the environment is (type of environment);
- Ease of maintenance;
- Earthquake input (zone);
- Space constraints;
- Durability.

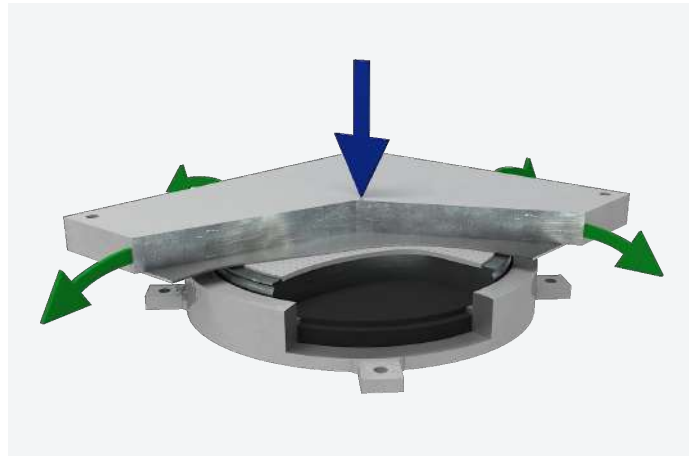
Type of bearing	Vertical load	Horizontal load	Longitudinal movement	Transverse movement	Rotation
Elastomeric	●●●○	●●●○	●●●○	●●●○	●●●●
Pot	●●●●	●●●○	●●●●	●●●●	●●●○
Spherical	●●●●	●●●○	●●●●	●●●●	●●●●
Oscillating linear	●●●○	●●●○	●●●●	●●●●	●●●●
Shear key	-	●●●●	●●●●	-	●●●○
Shear pin	-	●●●●	-	-	●○○○
Pad	●●●○	●●●○	●●●●	●●●●	●●●●

ELASTOMERIC BEARINGS



Elastomeric bearings are used for vertical loads generally less than 18,000 kN. The deformation capacity of the bearing determines the acceptable movements. The permissible load decreases as the movements increase. These bearings are made up of a series of elastomeric layers and steel plates.

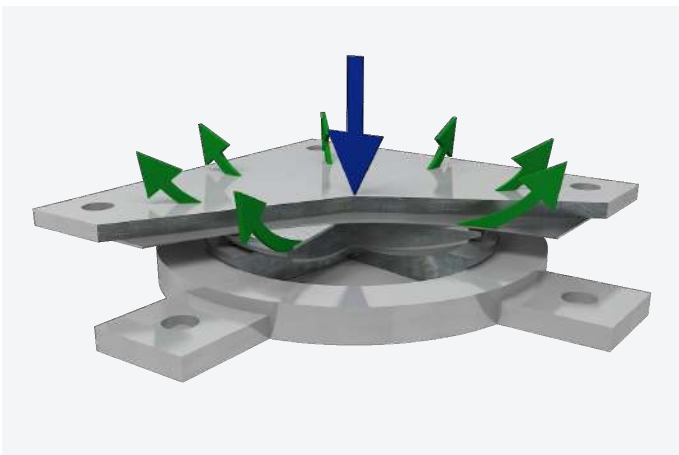
POT BEARINGS



Pot bearings are used to take up very large vertical loads.

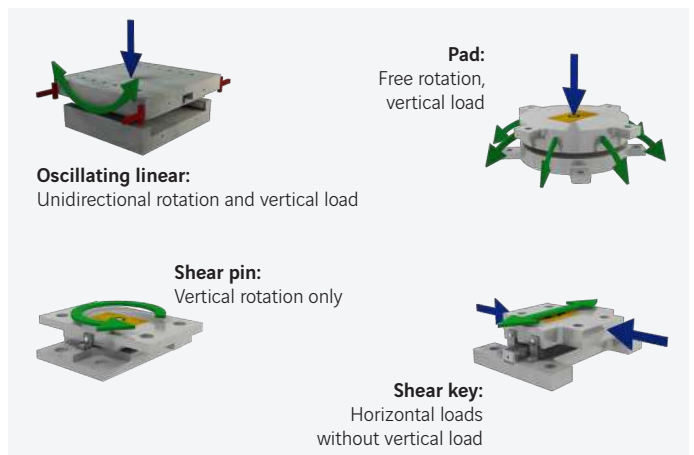
They are made up of an elastomeric disc confined between a steel pot and a circular piston, and can withstand much greater loads than a conventional elastomeric bearing. The deformation of the elastomer defines the rotation capacity of the bearing (up to 20 mrad).

SPHERICAL BEARINGS



Spherical bearings can withstand both large vertical loads and significant rotation (up to 50 mrad). They do not contain any elastomeric components, and rotation takes place on a spherical face, by contact between a sliding material and a chrome steel surface.

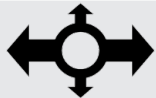


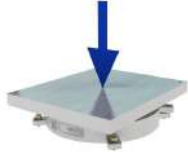
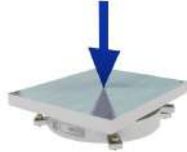
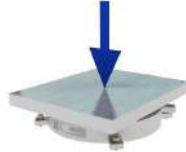
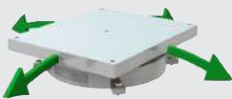

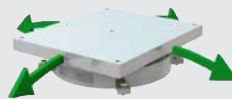

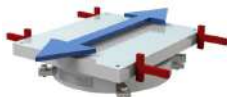
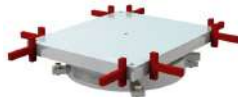
SPECIAL BEARINGS



Special bearings do not contain any elastomeric components. All of the functions are provided by steel/steel contact or sliding surfaces. There are several types of special bearing (see above).

ALGAPOT STEEL POT BEARINGS

There are three types of bearing, distinguished by the movements required:

Type	Free sliding bearing	Guided sliding bearing	Fixed bearing
	PNM	PNU	PN
Symbol			
Vertical load			
Rotation	 Up to 20 mrad	 Up to 20 mrad	 Up to 20 mrad
Movement Horizontal	 Multidirectional	 Unidirectional	 Blocked

Design basis

The structure of the bearings is designed on the basis of the following parameters:

- Vertical load;
- Acceptable movement;
- Acceptable rotation;
- Exposure temperature;
- Acceptable stress on the supports;
- Horizontal load.

The design can be produced in accordance with various standards, the most common of which are:

- EN 1337 (European Standard);
- BS 5400 (British Standard);
- AASHTO LRFD 2012 (US Standard);
- AS 5100 (Australian Standard).

Designation

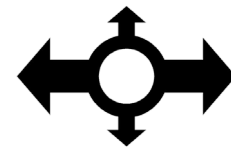
The designation of ALGAPOT bearings identifies their main characteristics.

PNM Free sliding bearing	20,000 Vertical load at ULS in kN	/	250 Total acceptable longitudinal movement in mm	/	20 Total acceptable transverse movement in mm
PNU Transverse guided bearing		/	20 Total acceptable transverse movement in mm	-	800 Longitudinal load at ULS in kN
PNU Longitudinal guided bearing		/	50 Total acceptable longitudinal movement in mm	-	800 Transversal load at ULS in kN
PN Fixed bearing		-	900 Horizontal load at ULS in kN (resultant of x/y*)	-	900 Horizontal load at ULS in kN

This gives the following designations, for example:

- PNM 20.000/250/40
- PNU 20.000/20-800
- PNU 20.000/50-800
- PN 20.000-900-900

*x: longitudinal axis
y: transverse axis



ALGAPOT PNM POT BEARINGS

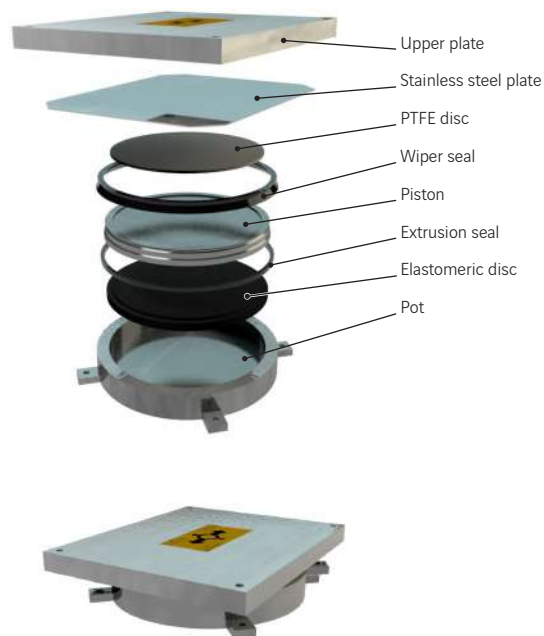
This free sliding pot bearing is made up of a pot, an elastomeric disc and a piston covered with a PTFE plate on which the upper plate can slide freely. The pot is fixed to the support (pier, abutment, column, etc.) and the upper plate is fixed to the superstructure.

This model is designed to permit horizontal movements, without any constraint other than the internal stresses.

Bearings with $\pm 50\text{mm}$ longitudinal and $\pm 20\text{mm}$ transverse movement

	EN				BS				AASHTO				AS			
	ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H
PNM 500 / 100 / 40	160	330	260	88	150	315	230	81	180	350	265	86.5	155	295	230	81.5
PNM 1,000 / 100 / 40	210	350	305	90	225	335	275	81	240	410	325	86.5	230	335	280	86.5
PNM 1,500 / 100 / 40	265	370	335	100	280	365	310	95	280	455	370	93.5	295	370	315	100.5
PNM 2,000 / 100 / 40	320	400	365	105	330	395	340	95	325	495	410	93.5	345	405	350	110.5
PNM 3,000 / 100 / 40	400	450	415	124	405	445	405	109	405	560	475	104.5	425	460	425	124.5
PNM 4,000 / 100 / 40	460	490	465	138	465	490	470	113	480	615	530	112.5	490	510	490	133.5
PNM 5,000 / 100 / 40	515	525	520	147	520	530	525	123	540	670	585	124.5	545	550	550	142.5
PNM 6,000 / 100 / 40	565	570	570	156	570	575	575	127	600	715	630	137.5	600	600	600	156.5
PNM 8,000 / 100 / 40	655	655	655	175	660	660	660	147	700	785	730	161.5	690	695	695	171.5
PNM 10,000 / 100 / 40	730	730	730	189.2	735	740	740	155	795	870	820	173	775	775	775	190.5
PNM 12,000 / 100 / 40	800	805	805	213.2	805	810	810	164	875	940	895	201	845	845	845	204.5
PNM 14,000 / 100 / 40	865	865	865	222.2	870	875	875	188	955	1,000	970	203	920	920	920	223.5
PNM 16,000 / 100 / 40	935	930	930	228.2	930	935	935	193	1,025	1,060	1,040	216	980	980	980	234
PNM 18,000 / 100 / 40	980	985	985	235.5	990	990	990	207	1,090	1,110	1,100	223	1,060	1,040	1,040	242
PNM 20,000 / 100 / 40	1,050	1,040	1,040	255.5	1,040	1,045	1,045	208	1,155	1,165	1,165	235	1,120	1,100	1,100	251
PNM 24,000 / 100 / 40	1,160	1,140	1,140	267.5	1,140	1,145	1,145	227	1,270	1,275	1,275	261	1,235	1,205	1,205	267
PNM 28,000 / 100 / 40	1,255	1,230	1,230	285.5	1,230	1,235	1,235	243	1,375	1,375	1,375	274	1,330	1,300	1,300	290
PNM 30,000 / 100 / 40	1,285	1,270	1,270	291.5	1,275	1,280	1,280	243	1,425	1,425	1,425	279	1,380	1,345	1,345	293
PNM 35,000 / 100 / 40	1,400	1,375	1,375	295.5	1,375	1,380	1,380	260	1,535	1,535	1,535	301	1,480	1,450	1,450	314
PNM 45,000 / 100 / 40	1,595	1,555	1,555	337.7	1,560	1,565	1,565	291	1,745	1,745	1,745	341	1,695	1,645	1,645	347

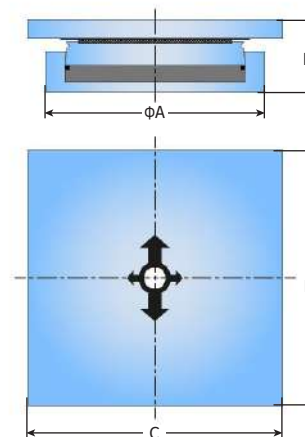
Dimensions in mm



Bearings with $\pm 200\text{mm}$ longitudinal and $\pm 20\text{mm}$ transverse movement

	EN				BS				AASHTO				AS			
	ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H
PNM 500 / 400 / 40	160	630	260	90	150	615	230	80	180	650	265	86.5	155	595	230	81.5
PNM 1,000 / 400 / 40	210	650	305	94	225	635	275	80	240	710	325	90.5	230	635	280	90.5
PNM 1,500 / 400 / 40	265	670	335	104	280	665	310	94	280	755	370	97.5	295	670	315	99.5
PNM 2,000 / 400 / 40	320	700	365	104	330	695	340	99	325	795	410	97.5	345	705	350	109.5
PNM 3,000 / 400 / 40	400	750	415	128	405	745	405	108	405	860	475	113.5	425	760	425	123.5
PNM 4,000 / 400 / 40	460	790	465	137	465	790	470	112	480	915	530	117.5	490	810	490	132.5
PNM 5,000 / 400 / 40	515	825	520	146	520	830	525	122	540	970	585	134.5	545	850	550	142.5
PNM 6,000 / 400 / 40	565	855	570	155	570	860	575	126	600	1,015	630	137.5	600	885	600	156.5
PNM 8,000 / 400 / 40	655	930	655	175	660	920	660	147	700	1,085	730	161.5	690	950	695	167.5
PNM 10,000 / 400 / 40	730	990	730	189.2	735	975	740	155	795	1,170	820	173	775	1,005	775	191.5
PNM 12,000 / 400 / 40	800	1,005	805	213.2	805	1,020	810	164	875	1,240	895	200	845	1,055	845	205.5
PNM 14,000 / 400 / 40	865	1,075	865	222.2	870	1,065	875	188	955	1,300	970	202	920	1,105	920	224.5
PNM 16,000 / 400 / 40	935	1,140	930	228.2	930	1,105	935	193	1,025	1,360	1,040	215	980	1,150	980	234
PNM 18,000 / 400 / 40	980	1,170	985	235.5	990	1,145	990	207	1,090	1,410	1,100	222	1,060	1,190	1,040	242
PNM 20,000 / 400 / 40	1,050	1,170	1,040	255.5	1,040	1,180	1,045	208	1,155	1,465	1,165	234	1,120	1,230	1,100	250
PNM 24,000 / 400 / 40	1,160	1,275	1,140	266.5	1,140	1,250	1,145	226	1,270	1,555	1,275	261	1,235	1,300	1,205	267
PNM 28,000 / 400 / 40	1,255	1,355	1,230	280.5	1,230	1,310	1,235	243	1,375	1,645	1,375	274	1,330	1,370	1,300	290
PNM 30,000 / 400 / 40	1,285	1,400	1,270	291.5	1,275	1,340	1,280	243	1,425	1,685	1,425	279	1,380	1,400	1,345	293
PNM 35,000 / 400 / 40	1,400	1,520	1,375	295.5	1,375	1,410	1,380	260	1,535	1,780	1,535	301	1,480	1,475	1,450	314
PNM 45,000 / 400 / 40	1,595	1,640	1,555	337.7	1,560	1,565	1,565	291	1,745	1,960	1,745	340	1,695	1,645	1,645	347

Dimensions in mm



All of these bearings are designed with the following parameters:
 Rotation = 10 mrad
 Strength of concrete underneath bearing = min. 30 MPa
 Strength of concrete above bearing = min. 30 MPa

Bearings with larger loads or strokes, or with different bearing conditions, can be designed on request.

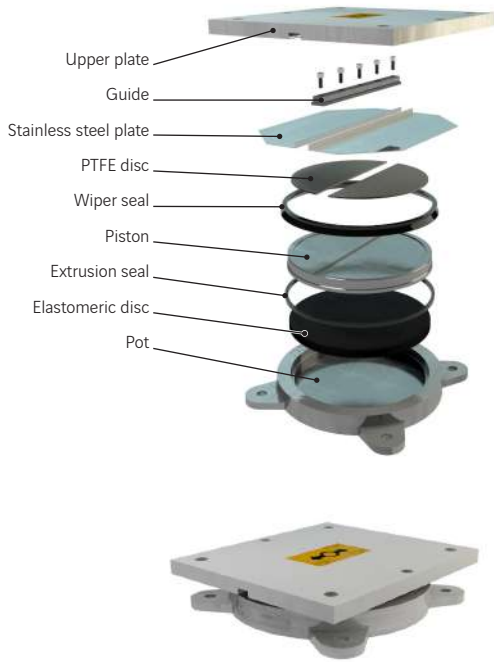


ALGAPOT PNU POT BEARINGS

This type of guided sliding pot bearing is designed like a free sliding bearing, but with a guide. The guide is secured to the piston, and slots into a groove in the upper sliding plate. In some cases, guidance can be provided by lateral guides.

This bearing model accepts horizontal movement along the axis of the guide and horizontal loads in the perpendicular direction.

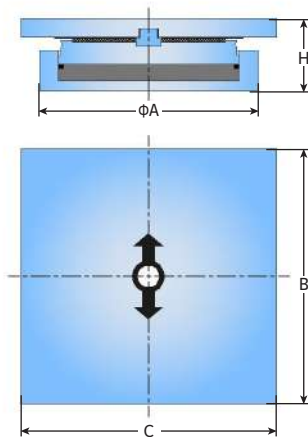
Bearings with horizontal load = 10% of vertical load and ±50mm movement



		EN				BS				AASHTO				AS			
		ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H
PNU	500 / 100 - 50	160	350	215	91	155	335	225	81	180	375	245	87.5	155	325	225	81.5
PNU	1,000 / 100 - 100	215	380	260	95	225	370	270	81	240	435	305	88.5	235	375	275	86.5
PNU	1,500 / 100 - 150	275	410	295	95	285	405	305	90	280	475	345	93.5	300	415	315	95.5
PNU	2,000 / 100 - 200	330	440	335	105	330	435	340	90	330	515	385	97.5	350	445	355	100.5
PNU	3,000 / 100 - 300	410	515	410	124	410	495	415	104	415	575	445	109.5	435	525	435	119.5
PNU	4,000 / 100 - 400	470	570	475	132	470	550	475	114	485	630	515	112.5	500	580	500	128.5
PNU	5,000 / 100 - 500	525	615	530	145	525	615	530	122	555	695	580	124.5	555	635	560	141.5
PNU	6,000 / 100 - 600	575	655	580	163	580	675	580	126	615	735	640	131.5	610	685	615	150.5
PNU	8,000 / 100 - 800	665	720	670	195	670	760	670	137	720	810	745	158	735	795	710	161.5
PNU	10,000 / 100 - 1,000	740	755	745	210.2	745	825	750	160	815	885	840	165	820	865	795	180.5
PNU	12,000 / 100 - 1,200	815	840	820	228.2	835	905	820	163	895	945	920	184	895	930	870	199.5
PNU	14,000 / 100 - 1,400	880	910	885	242.2	895	960	885	177	975	1,020	990	191	960	980	935	218
PNU	16,000 / 100 - 1,600	940	965	945	260.2	955	1,015	945	186	1,045	1,070	1,060	207	1,045	1,065	1,005	228
PNU	18,000 / 100 - 1,800	995	1,000	1,000	273.5	1,020	1,075	1,005	197	1,105	1,125	1,125	214	1,115	1,120	1,065	242
PNU	20,000 / 100 - 2,000	1,050	1,065	1,060	280.5	1,085	1,130	1,060	204	1,170	1,185	1,185	225	1,185	1,180	1,125	246
PNU	24,000 / 100 - 2,400	1,150	1,155	1,155	300.5	1,175	1,210	1,160	225	1,290	1,300	1,300	243	1,305	1,285	1,230	267
PNU	28,000 / 100 - 2,800	1,245	1,250	1,250	320.5	1,260	1,285	1,250	243	1,400	1,400	1,400	261	1,405	1,370	1,330	290
PNU	30,000 / 100 - 3,000	1,285	1,290	1,290	313.5	1,320	1,345	1,295	246	1,450	1,450	1,450	270	1,455	1,415	1,375	303
PNU	35,000 / 100 - 3,500	1,580	1,570	1,420	320.5	1,430	1,435	1,400	270	1,570	1,565	1,565	287	1,565	1,505	1,485	319
PNU	45,000 / 100 - 4,500	1,670	1,620	1,590	353.7	1,635	1,620	1,585	286	1,775	1,775	1,775	323	1,760	1,680	1,680	360

Dimensions in mm

Bearings with horizontal load = 30% of vertical load and ±200mm movement



		EN				BS				AASHTO				AS			
		ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H
PNU	500 / 400 - 150	160	655	225	89	165	635	225	85	180	690	260	91.5	170	640	240	85.5
PNU	1,000 / 400 - 300	230	710	275	101	240	690	270	86	250	745	315	99.5	255	695	295	90.5
PNU	1,500 / 400 - 450	300	730	320	105	295	745	315	93	300	790	360	99.5	325	740	340	103.5
PNU	2,000 / 400 - 600	355	765	370	118	340	750	360	102	345	850	395	106.5	380	785	380	107.5
PNU	3,000 / 400 - 900	445	840	445	130	430	805	435	109	420	920	475	127.5	460	855	465	125.5
PNU	4,000 / 400 - 1,200	530	910	515	137	485	860	500	128	480	950	550	140.5	555	900	540	143.5
PNU	5,000 / 400 - 1,500	600	970	575	150	555	910	555	136	540	1,005	620	153.5	620	950	600	165.5
PNU	6,000 / 400 - 1,800	660	1,010	625	152	595	950	610	158	595	1,060	680	156.5	685	1,000	655	173.5
PNU	8,000 / 400 - 2,400	775	1,095	720	177.2	685	1,010	705	191	700	1,160	795	180	775	1,060	755	203.5
PNU	10,000 / 400 - 3,000	880	1,175	805	204.2	770	1,075	785	197	800	1,210	885	206	880	1,140	840	223
PNU	12,000 / 400 - 3,600	960	1,230	880	216.2	835	1,135	860	225	870	1,315	970	224	995	1,240	925	230
PNU	14,000 / 400 - 4,200	1,040	1,300	950	235.5	905	1,175	930	252	945	1,355	1,130	237	1,065	1,295	1,000	258
PNU	16,000 / 400 - 4,800	1,115	1,355	1,020	254.5	970	1,220	990	269	1,025	1,445	1,185	245	1,140	1,355	1,130	267
PNU	18,000 / 400 - 5,400	1,180	1,410	1,075	267.5	1,040	1,280	1,055	273	1,085	1,450	1,285	267	1,230	1,430	1,185	272
PNU	20,000 / 400 - 6,000	1,245	1,460	1,140	291.5	1,110	1,340	1,115	286	1,150	1,540	1,335	284	1,295	1,475	1,275	295
PNU	24,000 / 400 - 7,200	1,365	1,540	1,255	316.5	1,270	1,485	1,245	286	1,255	1,610	1,400	329	1,430	1,585	1,335	322
PNU	28,000 / 400 - 8,400	1,475	1,630	1,345	346.5	1,360	1,560	1,340	303	1,375	1,740	1,505	331	1,545	1,675	1,440	340
PNU	30,000 / 400 - 9,000	1,545	1,680	1,410	347	1,415	1,605	1,400	325	1,425	1,750	1,530	352	1,585	1,705	1,465	367
PNU	35,000 / 400 - 10,500	1,665	1,775	1,500	374.5	1,515	1,680	1,465	354	1,550	1,850	1,655	384	1,725	1,820	1,585	384
PNU	45,000 / 400 - 13,500	1,900	1,935	1,700	424	1,730	1,850	1,665	404.5	1,785	2,090	1,875	419	1,960	1,995	1,795	436

Dimensions in mm

Bearings with larger loads or strokes, or with different bearing conditions, can be designed on request.

All of these bearings are designed with the following parameters:
 Rotation = 10 mrad
 Strength of concrete underneath bearing = min. 30 MPa
 Strength of concrete above bearing = min. 30 MPa

ALGAPOT PN BEARINGS



Fixed pot bearings are made up of a pot, an elastomeric disc and a piston. The pot is fixed to the support and the piston is fixed to the superstructure.

This model does not allow any horizontal movement. It therefore transfers the loads from the superstructure to its support in all directions.

Bearings with horizontal load = 10% of vertical load

		EN			BS			AASHTO			AS		
		ΦA	ΦD	H	ΦA	ΦD	H	ΦA	ΦD	H	ΦA	ΦD	H
PN	500 - 50 - 50	160	160	54	155	155	54	180	180	59	155	155	54
PN	1,000 - 100 - 100	210	210	54	230	230	54	240	240	60	235	235	64
PN	1,500 - 150 - 150	275	275	68	280	280	63	280	280	65	300	300	68
PN	2,000 - 200 - 200	325	325	78	330	330	66	325	325	69	350	350	78
PN	3,000 - 300 - 300	405	405	82	410	410	67	410	410	81	430	430	82
PN	4,000 - 400 - 400	470	470	85	470	470	67	485	485	95	510	510	86
PN	5,000 - 500 - 500	525	525	98	530	530	70	550	550	112	575	575	90
PN	6,000 - 600 - 600	580	580	98	590	590	70	610	610	113	640	640	92
PN	8,000 - 800 - 800	675	675	113	685	685	76	715	715	141	730	730	110
PN	10,000 - 1,000 - 1,000	760	760	126	765	765	80	810	810	154	810	810	125
PN	12,000 - 1,200 - 1,200	825	825	140	825	825	98	895	895	162	885	885	138
PN	14,000 - 1,400 - 1,400	915	915	148	895	895	102	970	970	180	980	980	147
PN	16,000 - 1,600 - 1,600	985	985	150	970	970	106	1,045	1,045	180	1,040	1,040	151
PN	18,000 - 1,800 - 1,800	1,050	1,050	153	1,015	1,015	112	1,110	1,110	197	1,130	1,130	152
PN	20,000 - 2,000 - 2,000	1,110	1,110	161	1,070	1,070	119	1,175	1,175	213	1,190	1,190	160
PN	24,000 - 2,400 - 2,400	1,225	1,225	172	1,185	1,185	122	1,295	1,295	235	1,310	1,310	171
PN	28,000 - 2,800 - 2,800	1,315	1,315	192	1,265	1,265	138	1,395	1,395	263	1,410	1,410	186
PN	30,000 - 3,000 - 3,000	1,365	1,365	195	1,315	1,315	140	1,445	1,445	264	1,465	1,465	189
PN	35,000 - 3,500 - 3,500	1,490	1,490	211	1,430	1,430	142	1,560	1,560	286	1,575	1,575	210
PN	45,000 - 4,500 - 4,500	1,685	1,685	237	1,620	1,620	168	1,770	1,770	322	1,795	1,795	233

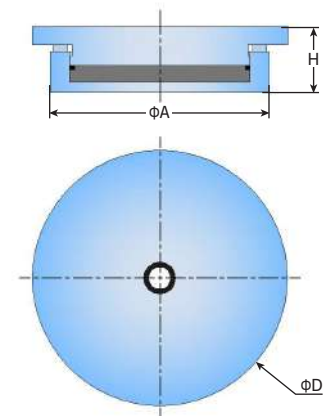
Dimensions in mm



Bearings with horizontal load = 30% of vertical load

		EN			BS			AASHTO			AS		
		ΦA	ΦD	H	ΦA	ΦD	H	ΦA	ΦD	H	ΦA	ΦD	H
PN	500 - 150 - 150	160	160	53	160	160	59	180	180	59	165	165	54
PN	1,000 - 300 - 300	220	220	60	235	235	59	250	250	60	255	255	54
PN	1,500 - 450 - 450	295	295	64	290	290	67	300	300	65	315	315	67
PN	2,000 - 600 - 600	350	350	72	335	335	68	345	345	69	375	375	71
PN	3,000 - 900 - 900	440	440	84	415	415	78	415	415	81	475	475	84
PN	4,000 - 1,200 - 1,200	525	525	92	480	480	87	480	480	94	560	560	92
PN	5,000 - 1,500 - 1,500	590	590	109	545	545	95	535	535	111	630	630	108
PN	6,000 - 1,800 - 1,800	660	660	110	590	590	108	595	595	114	705	705	116
PN	8,000 - 2,400 - 2,400	770	770	127	695	695	123	690	690	134	800	800	138
PN	10,000 - 3,000 - 3,000	870	870	145	765	765	142	775	775	161	905	905	152
PN	12,000 - 3,600 - 3,600	955	955	157	835	835	160	845	845	169	1,025	1,025	161
PN	14,000 - 4,200 - 4,200	1,050	1,050	167	905	905	178	920	920	187	1,100	1,100	175
PN	16,000 - 4,800 - 4,800	1,120	1,120	181	980	980	186	990	990	205	1,190	1,190	180
PN	18,000 - 5,400 - 5,400	1,200	1,200	186	1,030	1,030	194	1,075	1,075	206	1,275	1,275	194
PN	20,000 - 6,000 - 6,000	1,270	1,270	203	1,100	1,100	196	1,125	1,125	231	1,350	1,350	198
PN	24,000 - 7,200 - 7,200	1,400	1,400	210	1,245	1,245	197	1,250	1,250	257	1,485	1,485	215
PN	28,000 - 8,400 - 8,400	1,530	1,530	226	1,355	1,355	201	1,365	1,365	271	1,605	1,605	235
PN	30,000 - 9,000 - 9,000	1,590	1,590	239	1,415	1,415	204	1,415	1,415	291	1,665	1,665	238
PN	35,000 - 10,500 - 10,500	1,710	1,710	260	1,540	1,540	206	1,545	1,545	295	1,805	1,805	255
PN	45,000 - 13,500 - 13,500	1,955	1,955	282	1,800	1,800	209	1,780	1,780	340	2,045	2,045	283

Dimensions in mm



All of these bearings are designed with the following parameters:
 Rotation = 10 mrad
 Strength of concrete underneath bearing = min. 30 MPa
 Strength of concrete above bearing = min. 30 MPa

Bearings with larger loads or strokes, or with different bearing conditions, can be designed on request.

ALGA SPHERICAL BEARINGS

There are three types of bearing, distinguished by their movement capacity:

Type	Free sliding bearing	Guided sliding bearing	Fixed bearing
	CSM	CSU	CS
Symbol			
Vertical load			
Rotation	 Up to 50 mrad	 Up to 50 mrad	 Up to 50 mrad
Movement Horizontal	 Multidirectional	 Unidirectional	 Blocked

Design basis

The structure of the bearings is designed on the basis of the following parameters:

- Vertical load;
- Acceptable movement;
- Acceptable rotation;
- Exposure temperatures;
- Acceptable stresses on the supports;
- Horizontal load.

The design can be produced in accordance with various standards, the most common of which are EN 1337 and AASHTO LRFD.

Isoslide®, for compact, stronger bearings

Sliding surfaces conventionally formed by stainless steel/PTFE or chrome steel/PTFE contact accept limited stresses. FPC ITALIA therefore now offers a new material known as Isoslide® to replace the PTFE. Isoslide® accepts higher stresses, in most cases making it possible to reduce the bearing dimensions. The tables on the following pages show the two sliding material options available for ALGASFERON bearings. Isoslide® is also five times more wear resistant than PTFE, which is particularly beneficial for applications involving frequent, repetitive movements.

Designation

The designation of ALGASFERON bearings identifies their main characteristics.

CSM Free sliding bearing	20,000 Vertical load at ULS in kN	/	250 Total acceptable longitudinal movement in mm	/	40 Total acceptable transverse movement in mm
CSU Transverse guided bearing		/	800 Vertical load at ULS in kN	-	40 Total acceptable transverse movement in mm
CSU Longitudinal guided bearing		/	800 Transverse load at ULS in kN	-	40 Total acceptable longitudinal movement in mm
CS Fixed bearing		-	900 Horizontal load at ULS in kN (resultant of x/y*)	-	900 Horizontal load at ULS in kN

This gives the following designations, for example:

With PTFE

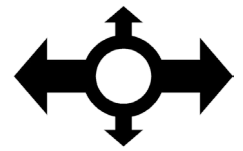
- CSM 20,000/250/40
- CSU 20,000/40-800
- CS 20,000-900-900

With Isoslide®

- ALGASFERON ISO CSM 20,000/250/40
- ALGASFERON ISO CSU 20,000/40-800
- ALGASFERON ISO CS 20,000-900-900

*x: longitudinal axis
y: transverse axis

ALGASFERON CSM SPHERICAL BEARINGS



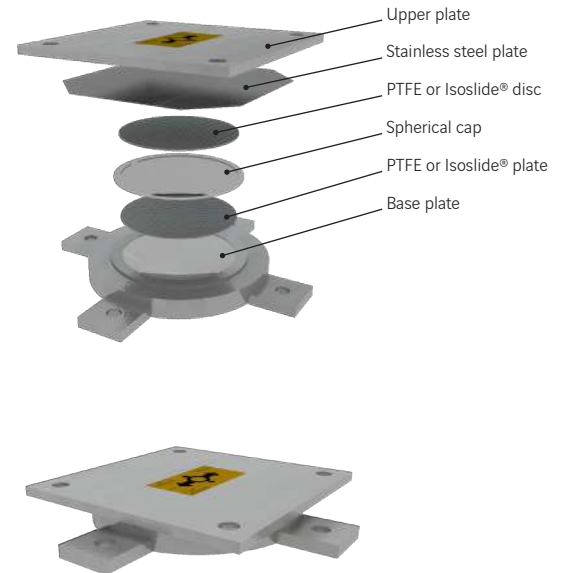
This free sliding spherical bearing is made up of a base plate, a chrome-plated spherical cap and a PTFE or Isoglide® plate, on which the upper plate can slide freely. The base plate is fixed to the support (pier, abutment, column, etc.) and the upper plate is fixed to the superstructure.

This model is designed to permit horizontal movements, without any resistance other than the internal friction.

Bearings with $\pm 50\text{mm}$ longitudinal and $\pm 20\text{mm}$ transverse movement

	PTFE								Isoglide®							
	EN				AASHTO				EN				AASHTO			
	ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H
CSM 500 / 100 / 40	175	300	200	75	195	320	220	75	165	290	190	85	165	290	190	80
CSM 1,000 / 100 / 40	220	350	250	85	250	380	280	80	170	290	200	90	170	290	200	90
CSM 1,500 / 100 / 40	250	380	280	85	295	430	330	90	195	320	220	90	195	320	220	90
CSM 2,000 / 100 / 40	280	420	320	95	330	470	370	90	215	340	240	90	215	340	240	90
CSM 2,500 / 100 / 40	305	440	340	95	360	510	410	100	235	370	270	90	235	370	270	90
CSM 3,000 / 100 / 40	330	470	370	100	385	530	430	105	250	380	280	100	255	380	280	95
CSM 4,000 / 100 / 40	370	520	420	115	435	590	490	110	285	420	320	100	295	420	320	105
CSM 5,000 / 100 / 40	420	570	470	120	480	640	540	110	320	460	370	105	330	450	360	105
CSM 6,000 / 100 / 40	460	610	510	130	520	680	580	125	340	480	390	115	360	480	390	115
CSM 8,000 / 100 / 40	540	690	590	135	590	760	660	140	400	530	450	120	415	530	450	120
CSM 10,000 / 100 / 40	610	760	660	145	655	840	740	155	450	570	510	135	465	570	500	135
CSM 12,000 / 100 / 40	675	820	720	155	710	900	800	155	500	610	550	145	510	610	540	140
CSM 16,000 / 100 / 40	785	930	830	175	810	1,010	910	175	585	680	635	150	590	680	630	160
CSM 20,000 / 100 / 40	880	1,030	930	190	895	1,100	1,000	190	660	740	710	165	660	740	700	170
CSM 24,000 / 100 / 40	970	1,120	1,020	205	975	1,190	1,090	205	725	790	780	175	725	790	770	175
CSM 28,000 / 100 / 40	1,055	1,200	1,100	225	1,045	1,270	1,170	210	790	850	840	195	775	850	830	195
CSM 30,000 / 100 / 40	1,090	1,240	1,140	250	1,080	1,310	1,210	220	820	870	870	200	805	870	860	205
CSM 35,000 / 100 / 40	1,180	1,330	1,230	250	1,165	1,410	1,310	240	890	940	940	200	875	940	940	215
CSM 40,000 / 100 / 40	1,265	1,420	1,320	270	1,240	1,490	1,390	255	955	1,010	1,010	220	935	1,010	1,000	230
CSM 45,000 / 100 / 40	1,345	1,500	1,400	275	1,310	1,570	1,470	255	1,015	1,070	1,070	220	995	1,070	1,060	250
CSM 50,000 / 100 / 40	1,420	1,570	1,470	290	1,380	1,650	1,550	265	1,070	1,130	1,130	245	1,055	1,130	1,130	265

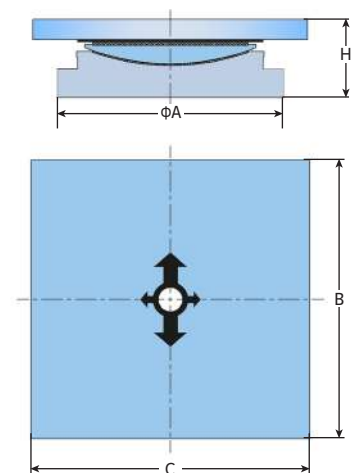
Dimensions in mm



Bearings with $\pm 200\text{mm}$ longitudinal and $\pm 20\text{mm}$ transverse movement

	PTFE								Isoglide®							
	EN				AASHTO				EN				AASHTO			
	ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H	ΦA	B	C	H
CSM 500 / 400 / 40	175	600	200	85	195	620	220	75	165	590	190	95	165	590	190	85
CSM 1,000 / 400 / 40	220	650	250	95	250	680	280	85	170	590	200	100	170	590	200	85
CSM 1,500 / 400 / 40	250	680	280	95	295	730	330	90	195	620	220	100	195	620	220	90
CSM 2,000 / 400 / 40	280	720	320	105	330	770	370	95	215	640	240	100	215	640	240	90
CSM 2,500 / 400 / 40	305	740	340	105	360	810	410	100	235	670	270	100	235	670	270	90
CSM 3,000 / 400 / 40	330	770	370	110	385	830	430	110	250	680	280	105	255	680	280	95
CSM 4,000 / 400 / 40	370	820	420	120	435	890	490	115	280	720	320	105	295	720	320	105
CSM 5,000 / 400 / 40	420	870	470	130	480	940	540	120	315	750	360	115	330	750	350	105
CSM 6,000 / 400 / 40	460	910	510	135	520	980	580	135	340	780	390	120	360	780	385	115
CSM 8,000 / 400 / 40	540	990	590	145	590	1,060	660	140	400	830	450	125	415	830	445	130
CSM 10,000 / 400 / 40	610	1,060	660	155	655	1,140	740	150	450	870	505	135	465	870	500	145
CSM 12,000 / 400 / 40	675	1,120	720	165	710	1,200	800	160	500	910	550	145	510	910	540	145
CSM 16,000 / 400 / 40	785	1,230	830	185	810	1,310	910	175	585	980	635	150	590	980	630	160
CSM 20,000 / 400 / 40	880	1,330	930	200	895	1,400	1,000	195	660	1,040	710	165	660	1,040	700	170
CSM 24,000 / 400 / 40	970	1,420	1,020	220	975	1,490	1,090	195	725	1,090	780	175	725	1,090	770	175
CSM 28,000 / 400 / 40	1,055	1,500	1,100	235	1,045	1,570	1,170	210	790	1,150	840	195	775	1,150	830	195
CSM 30,000 / 400 / 40	1,090	1,540	1,140	255	1,080	1,610	1,210	225	820	1,170	870	200	805	1,170	860	205
CSM 35,000 / 400 / 40	1,180	1,630	1,230	260	1,165	1,710	1,310	225	890	1,240	940	200	875	1,240	925	225
CSM 40,000 / 400 / 40	1,265	1,720	1,320	275	1,240	1,790	1,390	240	955	1,310	1,010	220	935	1,310	990	240
CSM 45,000 / 400 / 40	1,345	1,800	1,400	285	1,310	1,870	1,470	260	1,015	1,370	1,070	220	995	1,370	1,050	240
CSM 50,000 / 400 / 40	1,420	1,870	1,470	290	1,380	1,950	1,550	270	1,070	1,430	1,130	235	1,055	1,430	1,105	245

Dimensions in mm



The PTFE versions of the bearings above are designed with the following parameters:

Rotation = 30 mrad

Strength of concrete underneath bearing = min. 30 MPa

Strength of concrete above bearing = min. 30 MPa

The Isoglide® versions of the bearings above are designed with the following parameters:

Rotation = 30 mrad

Strength of concrete underneath bearing = min. 50 MPa

Strength of concrete above bearing = min. 50 MPa

Bearings with larger loads or strokes, or with different bearing conditions, can be designed on request.



ALGASFERON CSU SPHERICAL BEARINGS

The spherical bearing is designed like a free sliding bearing, but with a guide. The guide is generally secure to the upper sliding plate, and abuts against the edges of the base plate.

This bearing model accepts horizontal movement along the axis of the guide and horizontal loads in the perpendicular direction.

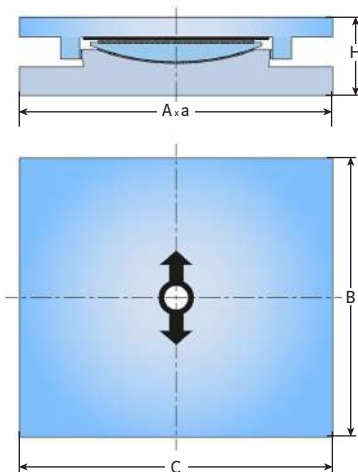
Bearings with horizontal load = 10% of vertical load and ±50mm movement



		PTFE										Isoslide®									
		EN					AASHTO					EN					AASHTO				
		A	a	B	C	H	A	a	B	C	H	A	a	B	C	H	A	a	B	C	H
CSU 500 / 100 - 50		175	185	300	315	110	195	204	320	335	110	165	165	280	295	115	165	170	280	300	120
CSU 1,000 / 100 - 100		220	240	350	370	115	250	274	380	405	115	170	180	290	310	120	170	175	290	305	120
CSU 1,500 / 100 - 150		250	275	380	415	125	295	334	430	475	120	195	205	330	345	125	195	204	320	345	120
CSU 2,000 / 100 - 200		280	310	420	450	125	330	374	470	525	140	215	235	340	385	125	215	239	340	390	125
CSU 2,500 / 100 - 250		305	345	440	495	130	360	414	510	575	140	235	260	370	410	130	235	269	370	420	130
CSU 3,000 / 100 - 300		330	380	470	540	135	385	444	530	615	140	250	275	380	435	135	255	274	380	435	135
CSU 4,000 / 100 - 400		380	425	520	595	145	445	504	590	675	145	285	305	410	475	135	295	304	410	485	140
CSU 5,000 / 100 - 500		430	470	560	640	155	480	559	640	740	150	315	345	440	515	150	330	344	440	515	140
CSU 6,000 / 100 - 600		475	510	590	690	160	520	609	680	790	160	350	365	470	545	155	360	369	470	550	145
CSU 8,000 / 100 - 800		555	595	670	775	180	590	694	760	895	170	410	415	530	585	155	415	419	530	600	155
CSU 10,000 / 100 - 1,000		625	655	720	845	185	650	769	830	960	175	470	465	620	655	170	470	464	620	655	165
CSU 12,000 / 100 - 1,200		690	715	780	905	185	710	844	900	1,045	195	570	515	720	705	185	560	514	710	705	185
CSU 16,000 / 100 - 1,600		805	815	870	1,035	215	810	964	1,010	1,185	220	600	600	720	820	210	590	589	720	810	195
CSU 20,000 / 100 - 2,000		905	915	960	1,135	230	895	1,069	1,100	1,300	235	700	675	850	895	215	700	659	850	880	205
CSU 24,000 / 100 - 2,400		995	1,020	1,050	1,250	245	975	1,169	1,190	1,400	240	810	745	950	980	235	800	719	950	970	235
CSU 28,000 / 100 - 2,800		1,075	1,110	1,140	1,350	260	1,050	1,264	1,280	1,505	245	810	810	950	1,070	245	800	779	950	1,030	235
CSU 30,000 / 100 - 3,000		1,115	1,140	1,170	1,400	270	1,085	1,289	1,310	1,560	260	850	840	1,000	1,100	260	850	809	1,000	1,070	250
CSU 35,000 / 100 - 3,500		1,210	1,240	1,270	1,500	275	1,175	1,399	1,410	1,660	265	990	910	1,140	1,170	270	990	879	1,140	1,140	260
CSU 40,000 / 100 - 4,000		1,300	1,340	1,350	1,630	290	1,260	1,494	1,490	1,775	290	1,000	975	1,150	1,265	275	1,000	944	1,150	1,245	275
CSU 45,000 / 100 - 4,500		1,400	1,440	1,440	1,740	315	1,340	1,579	1,570	1,880	305	1,070	1,035	1,220	1,335	295	1,060	1,004	1,210	1,305	285
CSU 50,000 / 100 - 5,000		1,455	1,520	1,510	1,830	320	1,410	1,669	1,650	1,980	320	1,170	1,095	1,320	1,405	310	1,170	1,059	1,320	1,370	310

Dimensions in mm

Bearings with horizontal load = 30% of vertical load and ±200mm movement



		PTFE										Isoglide®									
		EN					AASHTO					EN					AASHTO				
		A	a	B	C	H	A	a	B	C	H	A	a	B	C	H	A	a	B	C	H
CSU 500 / 150 - 400		175	185	600	315	125	195	204	620	335	125	165	165	590	325	130	165	169	590	310	135
CSU 1,000 / 300 - 400		220	240	650	390	135	250	274	680	425	130	170	185	600	345	135	170	179	600	340	135
CSU 1,500 / 450 - 400		250	275	680	425	135	295	334	730	485	140	210	205	660	365	135	210	209	660	370	135
CSU 2,000 / 600 - 400		290	310	730	470	140	330	374	770	535	150	280	235	730	395	140	280	239	730	400	135
CSU 2,500 / 750 - 400		360	345	810	505	145	360	414	810	585	160	350	260	800	420	145	350	269	800	440	150
CSU 3,000 / 900 - 400		420	380	870	560	155	440	444	890	625	160	420	275	870	455	155	425	274	870	445	150
CSU 4,000 / 1,200 - 400		490	430	940	680	170	510	504	950	685	175	500	310	950	500	165	480	309	930	490	165
CSU 5,000 / 1,500 - 400		530	470	980	680	180	530	559	980	770	180	530	355	980	565	185	555	344	980	545	175
CSU 6,000 / 1,800 - 400		630	510	1,080	720	185	630	609	1,080	820	185	630	390	1,080	600	185	665	369	1,080	580	175
CSU 8,000 / 2,400 - 400		750	590	1,200	820	210	850	694	1,300	905	205	850	450	1,300	660	200	850	434	1,290	645	190
CSU 10,000 / 3,000 - 400		840	670	1,290	900	220	900	759	1,350	990	220	850	505	1,300	745	210	850	489	1,300	730	215
CSU 12,000 / 3,600 - 400		1,010	740	1,460	980	235	1,010	834	1,460	1,085	240	850	565	1,300	815	240	850	544	1,300	795	240
CSU 16,000 / 4,800 - 400		1,130	860	1,580	1,120	265	1,120	954	1,570	1,215	270	1,120	660	1,570	920	270	1,140	639	1,570	900	270
CSU 20,000 / 6,000 - 400		1,210	970	1,660	1,270	290	1,210	1,049	1,660	1,350	295	1,200	740	1,650	1,060	295	1,200	714	1,650	1,025	295
CSU 24,000 / 7,200 - 400		1,280	1,060	1,730	1,380	315	1,280	1,149	1,730	1,480	320	1,300	805	1,750	1,135	300	1,300	779	1,750	1,110	295
CSU 28,000 / 8,400 - 400		1,370	1,160	1,820	1,520	340	1,360	1,234	1,810	1,585	325	1,320	880	1,770	1,230	320	1,320	844	1,770	1,195	320
CSU 30,000 / 9,000 - 400		1,400	1,190	1,850	1,550	340	1,405	1,269	1,850	1,630	350	1,400	900	1,850	1,250	320	1,400	874	1,850	1,225	320
CSU 35,000 / 10,500 - 400		1,510	1,290	1,960	1,670	365	1,520	1,379	1,960	1,760	375	1,510	980	1,960	1,350	345	1,510	944	1,960	1,315	350
CSU 40,000 / 12,000 - 400		1,750	1,380	2,220	1,790	395	1,570	1,464	2,000	1,865	400	1,570	1,050	2,020	1,460	375	1,570	1,014	2,020	1,425	375
CSU 45,000 / 13,500 - 400		1,750	1,470	2,200	1,880	395	1,775	1,554	2,200	1,965	405	1,620	1,120	2,070	1,560	400	1,620	1,079	2,070	1,530	405
CSU 50,000 / 15,000 - 400		1,920	1,570	2,370	1,990	420	1,790	1,644	2,210	2,075	435	1,750	1,180	2,200	1,620	405	1,750	1,139	2,200	1,580	420

Dimensions in mm

Bearings with larger loads or strokes, or with different bearing conditions, can be designed on request.

The PTFE versions of the bearings above are designed with the following parameters:

Rotation = 30 mrad
Strength of concrete underneath bearing = min. 30 MPa
Strength of concrete above bearing = min. 30 MPa

The Isoslide® versions of the bearings above are designed with the following parameters:

Rotation = 30 mrad
Strength of concrete underneath bearing = min. 50 MPa
Strength of concrete above bearing = min. 50 MPa

ALGASFERON CS SPHERICAL BEARINGS



Fixed spherical bearings are made up of a base plate, a chrome-plated spherical cap, a PTFE or Isoslide® plate and an upper plate. The base plate is fixed to the support and the upper plate is fixed to the superstructure.

This model does not allow any horizontal movement. It therefore transfers the loads from the superstructure to its support in all directions.

Bearings with horizontal load = 10% of vertical load

	PTFE						Isoslide®					
	EN			AASHTO			EN			AASHTO		
	ΦA	ΦD	H	ΦA	ΦD	H	ΦA	ΦD	H	ΦA	ΦD	H
CS 500 - 50 - 50	225	225	85	235	235	95	225	225	90	215	215	95
CS 1,000 - 100 - 100	275	275	95	305	305	95	235	235	90	230	230	105
CS 1,500 - 150 - 150	310	310	100	355	355	105	260	260	100	265	265	105
CS 2,000 - 200 - 200	335	335	110	395	395	115	275	275	105	285	285	105
CS 2,500 - 250 - 250	370	370	120	440	440	125	290	290	120	315	315	105
CS 3,000 - 300 - 300	405	405	125	470	470	125	310	310	120	335	335	125
CS 4,000 - 400 - 400	450	450	140	530	530	140	355	355	130	370	370	140
CS 5,000 - 500 - 500	505	505	150	585	585	150	385	385	145	410	410	140
CS 6,000 - 600 - 600	565	565	150	635	635	165	420	420	145	440	440	140
CS 8,000 - 800 - 800	635	635	170	730	730	190	485	485	160	500	500	165
CS 10,000 - 1,000 - 1,000	710	710	190	815	815	200	540	540	170	550	550	165
CS 12,000 - 1,200 - 1,200	775	775	200	890	890	215	590	590	175	595	595	175
CS 16,000 - 1,600 - 1,600	910	910	215	1,030	1,030	240	680	680	195	680	680	210
CS 20,000 - 2,000 - 2,000	1,000	1,000	240	1,145	1,145	245	760	760	220	750	750	220
CS 24,000 - 2,400 - 2,400	1,100	1,100	255	1,245	1,245	270	835	835	240	835	835	235
CS 28,000 - 2,800 - 2,800	1,185	1,185	275	1,350	1,350	295	900	900	250	910	910	255
CS 30,000 - 3,000 - 3,000	1,225	1,225	280	1,395	1,395	295	935	935	250	925	925	265
CS 35,000 - 3,500 - 3,500	1,320	1,320	295	1,500	1,500	320	1,000	1,000	270	1,000	1,000	280
CS 40,000 - 4,000 - 4,000	1,415	1,415	315	1,610	1,610	350	1,075	1,075	285	1,065	1,065	305
CS 45,000 - 4,500 - 4,500	1,500	1,500	350	1,705	1,705	365	1,135	1,135	305	1,130	1,130	315

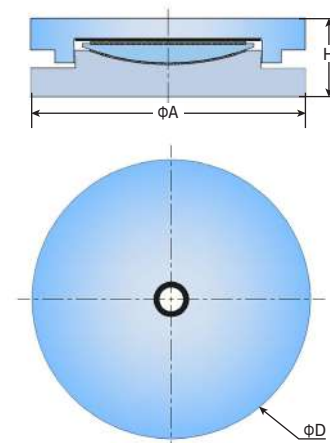
Dimensions in mm



Bearings with horizontal load = 30% of vertical load

	PTFE						Isoslide®					
	EN			AASHTO			EN			AASHTO		
	ΦA	ΦD	H	ΦA	ΦD	H	ΦA	ΦD	H	ΦA	ΦD	H
CS 500 - 150 - 150	225	225	100	255	255	95	235	235	95	230	230	95
CS 1,000 - 300 - 300	285	285	120	330	330	115	255	255	110	255	255	125
CS 1,500 - 450 - 450	345	345	135	380	380	130	270	270	125	295	295	135
CS 2,000 - 600 - 600	395	395	150	430	430	130	310	310	140	320	320	140
CS 2,500 - 750 - 750	435	435	160	480	480	150	340	340	140	350	350	140
CS 3,000 - 900 - 900	475	475	165	515	515	155	370	370	150	380	380	155
CS 4,000 - 1,200 - 1,200	540	540	175	580	580	170	420	420	155	420	420	165
CS 5,000 - 1,500 - 1,500	605	605	195	640	640	175	465	465	180	465	465	175
CS 6,000 - 1,800 - 1,800	665	665	205	695	695	200	510	510	180	500	500	190
CS 8,000 - 2,400 - 2,400	765	765	220	800	800	220	580	580	190	565	565	205
CS 10,000 - 3,000 - 3,000	855	855	245	895	895	235	650	650	215	630	630	230
CS 12,000 - 3,600 - 3,600	930	930	270	980	980	255	705	705	235	683	683	245
CS 16,000 - 4,800 - 4,800	1,070	1,070	285	1,130	1,130	295	860	860	270	785	785	275
CS 20,000 - 6,000 - 6,000	1,195	1,195	320	1,260	1,260	310	920	920	295	910	910	310
CS 24,000 - 7,200 - 7,200	1,315	1,315	355	1,375	1,375	345	985	985	320	980	980	320
CS 28,000 - 8,400 - 8,400	1,420	1,420	375	1,485	1,485	370	1,090	1,090	335	1,050	1,050	360
CS 30,000 - 9,000 - 9,000	1,475	1,475	375	1,540	1,540	375	1,105	1,105	365	1,085	1,085	375
CS 35,000 - 10,500 - 10,500	1,590	1,590	415	1,655	1,655	405	1,190	1,190	400	1,190	1,190	405
CS 40,000 - 12,000 - 12,000	1,695	1,695	450	1,770	1,770	425	1,325	1,325	410	1,285	1,285	430
CS 45,000 - 13,500 - 13,500	1,790	1,790	480	1,875	1,875	460	1,420	1,420	435	1,365	1,365	455
CS 50,000 - 15,000 - 15,000	1,910	1,910	480	1,985	1,985	465	1,670	1,670	450	1,440	1,440	480

Dimensions in mm



The PTFE versions of the bearings above are designed with the following parameters:

Rotation = 30 mrad

Strength of concrete underneath bearing = min. 30 MPa

Strength of concrete above bearing = min. 30 MPa

The Isoslide® versions of the bearings above are designed with the following parameters:

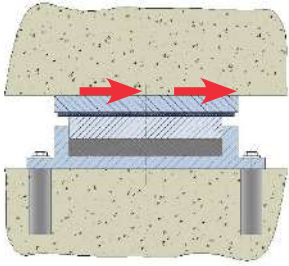
Rotation = 30 mrad

Strength of concrete underneath bearing = min. 50 MPa

Strength of concrete above bearing = min. 50 MPa

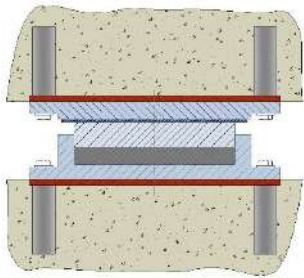
Bearings with larger loads or strokes, or with different bearing conditions, can be designed on request.

FASTENING SYSTEMS



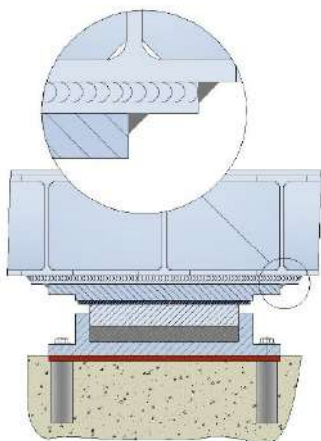
Friction

Horizontal loads are transferred between the superstructure and the bearing by contact between the two surfaces. The design takes into account the vertical load and the friction coefficient of the contact zone. This system does not withstand uplift force.



Distribution plate

Distribution plates (generally embedded in the concrete) can be inserted between the structure and the bearing. They make it easier to remove the bearing, and in some cases make it possible to reduce the bearing dimensions.

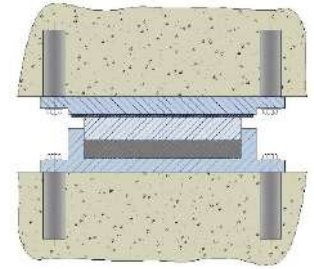


Welding

In some cases (for example on incrementally launched bridges), the precise location of the bearing relative to the structure is not known in advance. The solution of welding the bearing to the superstructure (metal deck) or to an embedded distribution plate (concrete deck) is then implemented. Special measures are taken to protect the weld from corrosion.

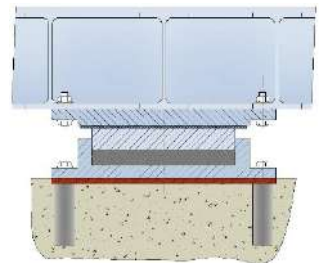
Anchors

Anchors are used to secure the bearing to the structure for significant vertical and/or horizontal loads.



Bolts

Bolts are generally used for fastening to a metal structure; these are designed to withstand any tensile stress and the horizontal load.



The different types of anchor



Welded studs



Dowel bushing



Dowel bushing with collar



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