POT BEARINGS

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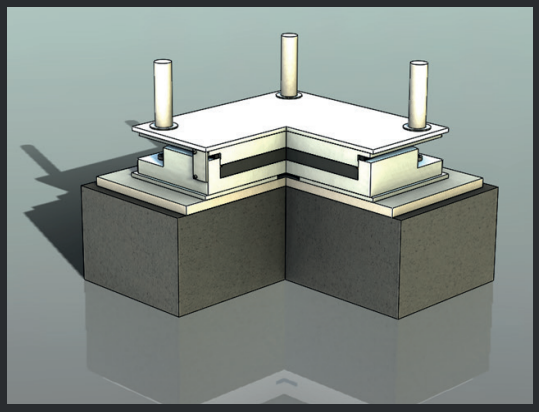
ERGOFLON DISC

POT BEARINGS

SOMMA "ERGOFLON DISC" devices are spherical hinged confined elastomeric disc structural bearings, which allow rotations up to +/- 0.02 rad around any horizontal axis, through the deformation of the fixed elastomeric disc into a steel base.

The bearing devices are designed in order to perform a constraint as hinges (fixed type) or one way roller (monodirectional) or two-way roller (multidirectional type). The connection to the structure can be made, depending on the nature and extent of the actions, by mechanical anchorage or by gluing with resin.

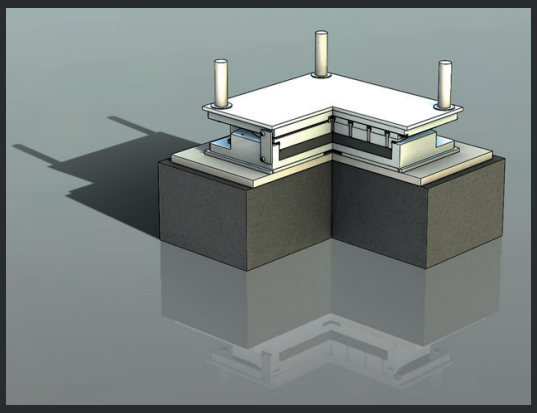


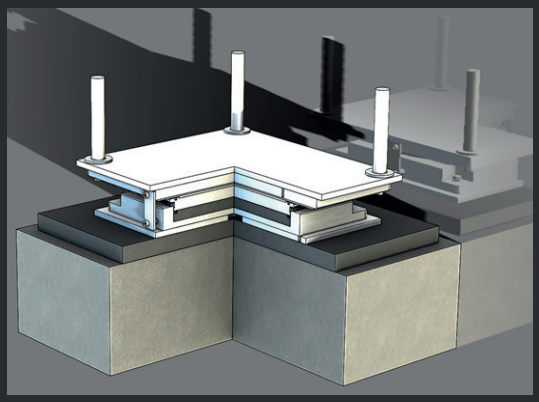
01 **POT Fixed**

- VERTICAL LOAD √
- HORIZONTAL LOAD √
- ROTATION √

02 **POT Unidirectional**

- VERTICAL LOAD √
- ROTATION √
- DISPLACEMENT | monodirectional √

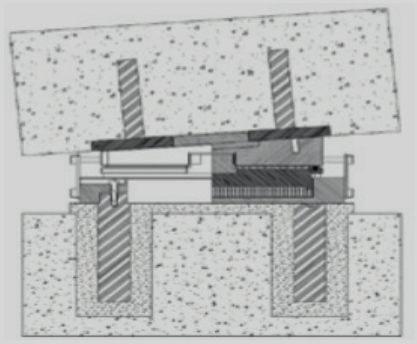


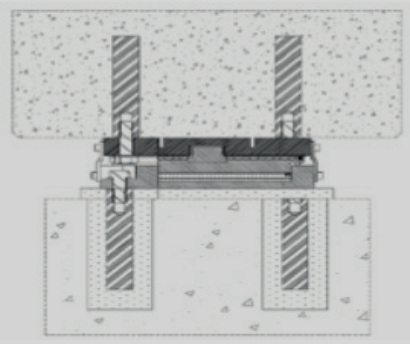


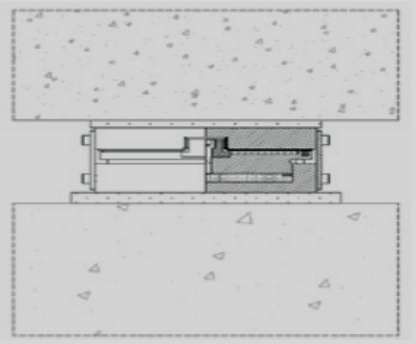
03 **POT Multidirectional**

- VERTICAL LOAD √
- ROTATION √
- DISPLACEMENT | multidirectional √

CE * The ERGOFLON DISC bearing devices are endowed with CE mark according to EN 1337 or comply to AASHTO LRFD norms







All connections and interfaces to the structure can be designed and adapted according to the necessity of the customer.

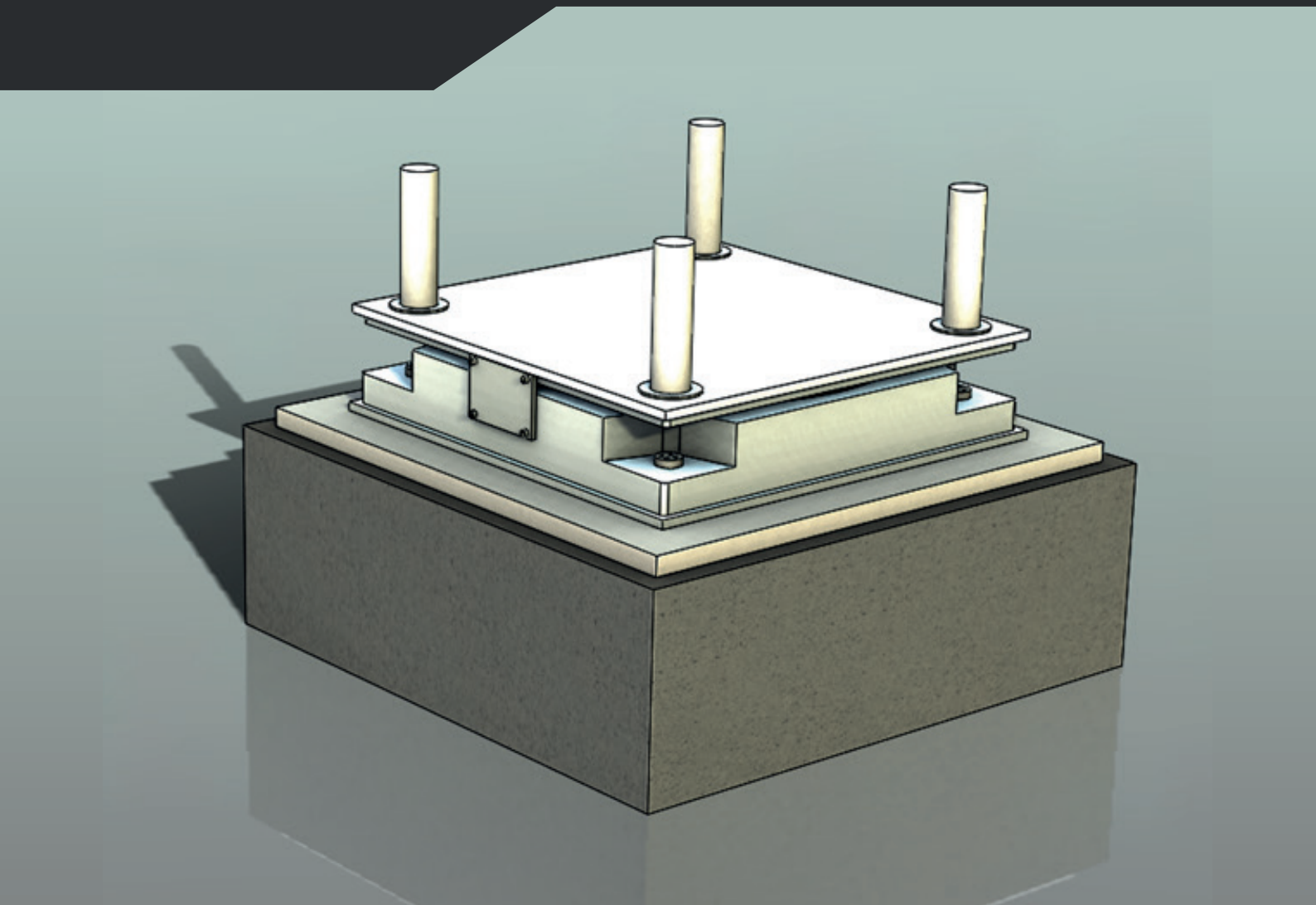
FIXED POT BEARING DEVICE

The Ergoflon Disc EDF fixed pot bearing device is composed by a steel base-plate on which are laid an elastomeric disc and the lower part of the piston, composed by the contact face.

The piston is subjected to mechanical processing on the top to make the seat of the upper anchor pin.

The fixed bearing device has the following features:

- To resist vertical load (only compressive force);
- To transmit the horizontal loads along the two main directions;
- To allow rotations around the two main axis;
- To not allow any displacement;

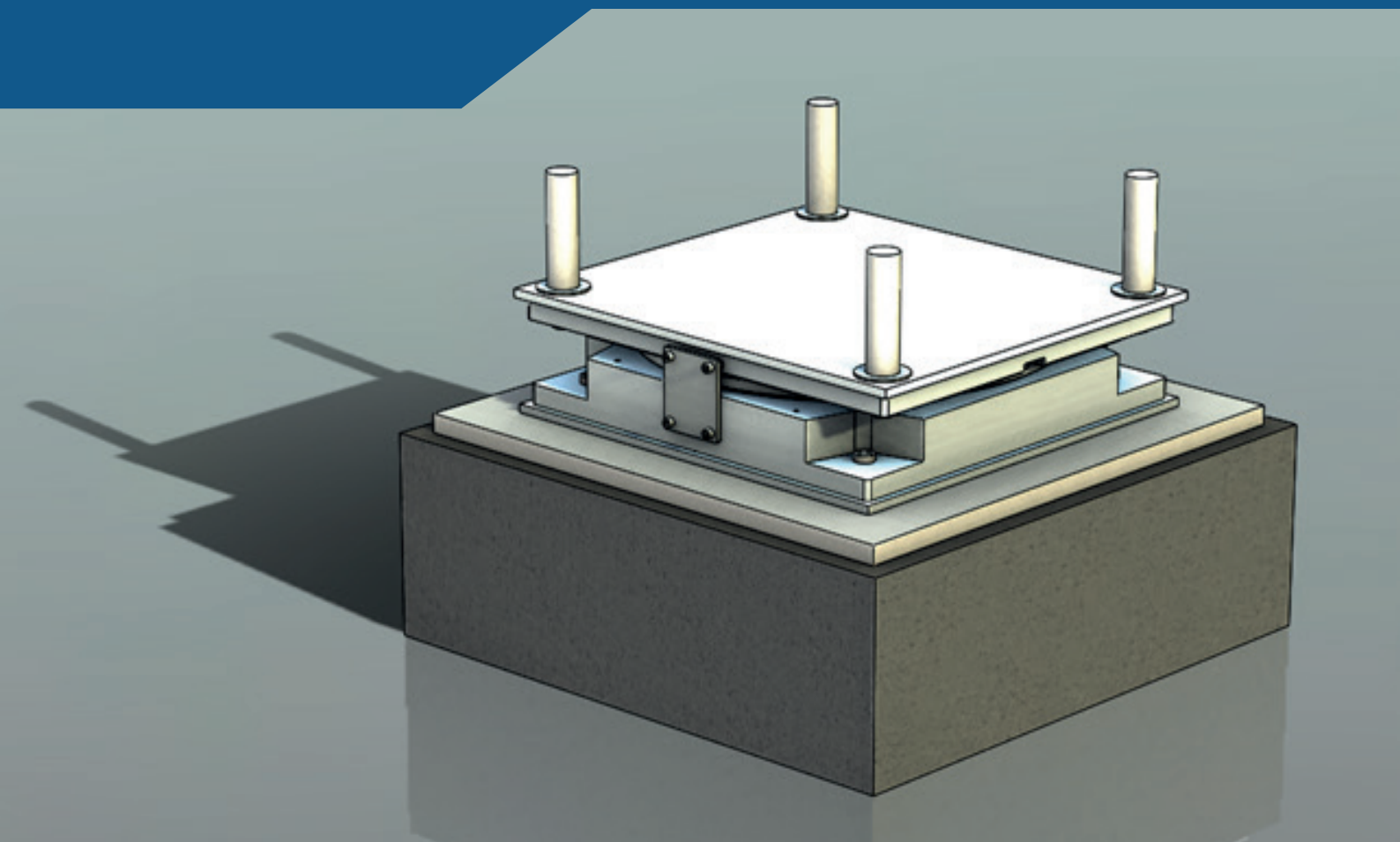


UNIDIRECTIONAL POT BEARING DEVICE

The **Ergoflon disc (EDT or EDL) unidirectional pot bearing device** is performed modifyng the fixed device, in order to insert a sliding guide. The top of the piston is subject to processing, in order to perform the seats for two PTFE sheets, shaped as half-moons, and to perform the recess of the key, fixed by nuts. The bottom of the sliding plate is processed in order to perform the guide on which the key will slide; the inferior surface is coated by a mirror-polished stainless steel plate. Two sliding skids composed by composite material are attached to the sides of the key. According to the direction of the key, the bearing device will be guided in longitudinal direction (EDL) or in transversal direction (EDT).

The unidirectional bearing device has the following features:

- To resist vertical load (only compressive force);
- To transmit the loads perpendicular to the direction of the displacement (transversal load for EDL type and longitudinal loads for EDT);
- To allow rotations around the two main axis;
- To allow displacements in the direction of the sliding guide (longitudinal displacement for EDL type and transversal displacement for EDT).

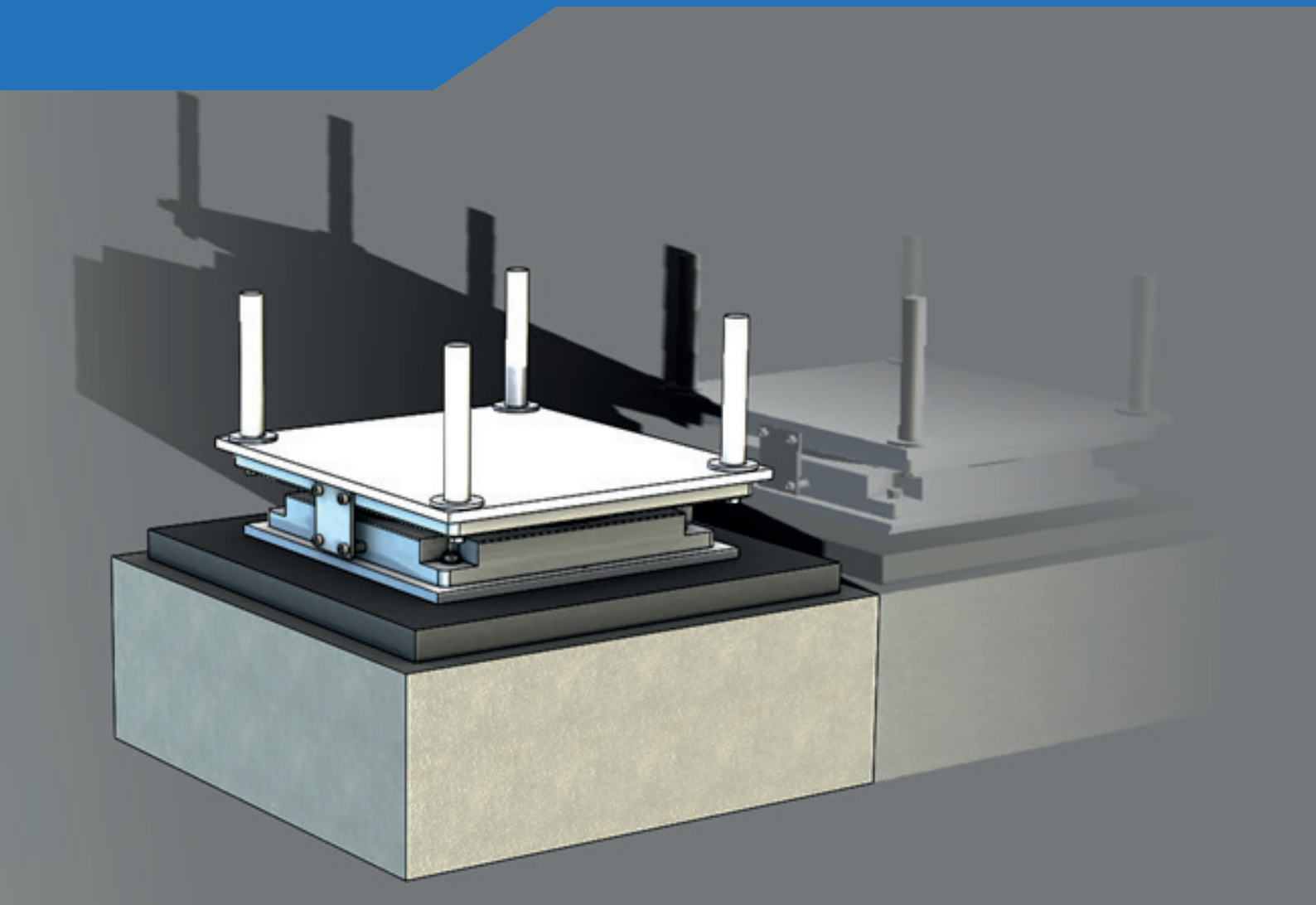


MULTI DIRECTIONAL POT BEARING DEVICE

The Ergoflon disc EDM multidirectional pot bearing device is performed modifying the fixed bearing in order to insert a sliding surface. The piston is performed on the top in order to create the seat for a circular plate made by PTFE. The sliding plate is covered on the bottom surface by a mirror-polished stainless steel plate.

The multidirectional bearing devices, doesn't trasmit any horizontal load, thus it doesn't need of any mechanical anchorage and has the following features:

- To resist vertical load (only compressive force);
- Do not transmit any horizontal force;
- To allow rotations around the two main axis;
- To allow displacements along the two main directions.



SPECIAL BEARING DEVICES

The **ERGOFLON DISC** pot bearings can be integrated by other devices capable of giving the bearing particular features that the standard configuration does not allow. Some of the most common examples are:

• The request to resist a tensile load: since the bearing device is made with a simple overlapping of components, it is essential to add “anti-lifting” elements that transfer the tensile load while allowing the bearing to rotate and / or move;

• The request to block the displacement in dynamic conditions: it can be obtained adding to unidirectional or multidirectional bearing device, a dynamic coupling device (shock transmitter unit STU); in this way the bearing maintains its sliding capacity for slow actions (e.g. thermal expansion, viscosity, shrinkage), but reacts with a force to a dynamic action (earthquake);

• The request to give an elastic response: it is possible to give a horizontally deformable behavior with an elastic response to the bearing by inserting elastomeric elements interposed between the piston and the basement.

THE ADVANTAGES OF THE ERGOFLON DISC POT BEARINGS

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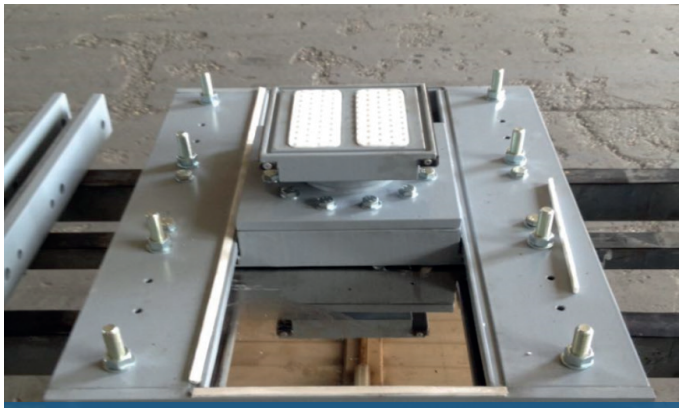
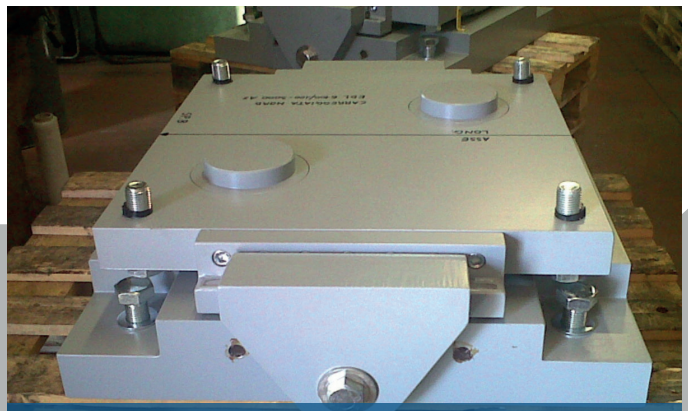
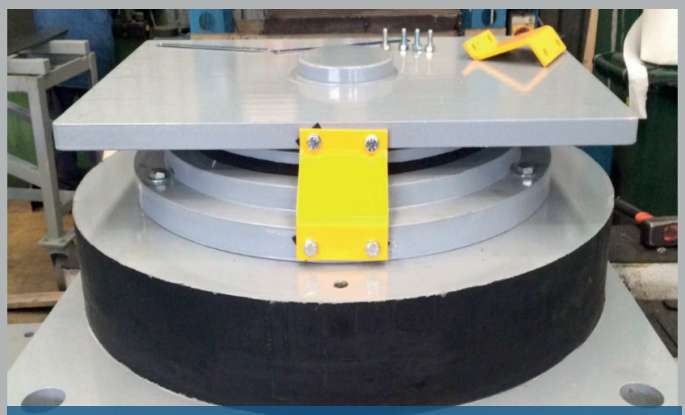
- Excellent compromise between quality and cost
- Long durability of the structural components
- Ease of installation
- Protection of structural components
- Ease to replace
- High load capacities
- High resistance to extreme temperatures



SPECIAL POT BEARING WITH ANTILIFTING



SPECIAL POT BEARING WITH ANTILIFTING

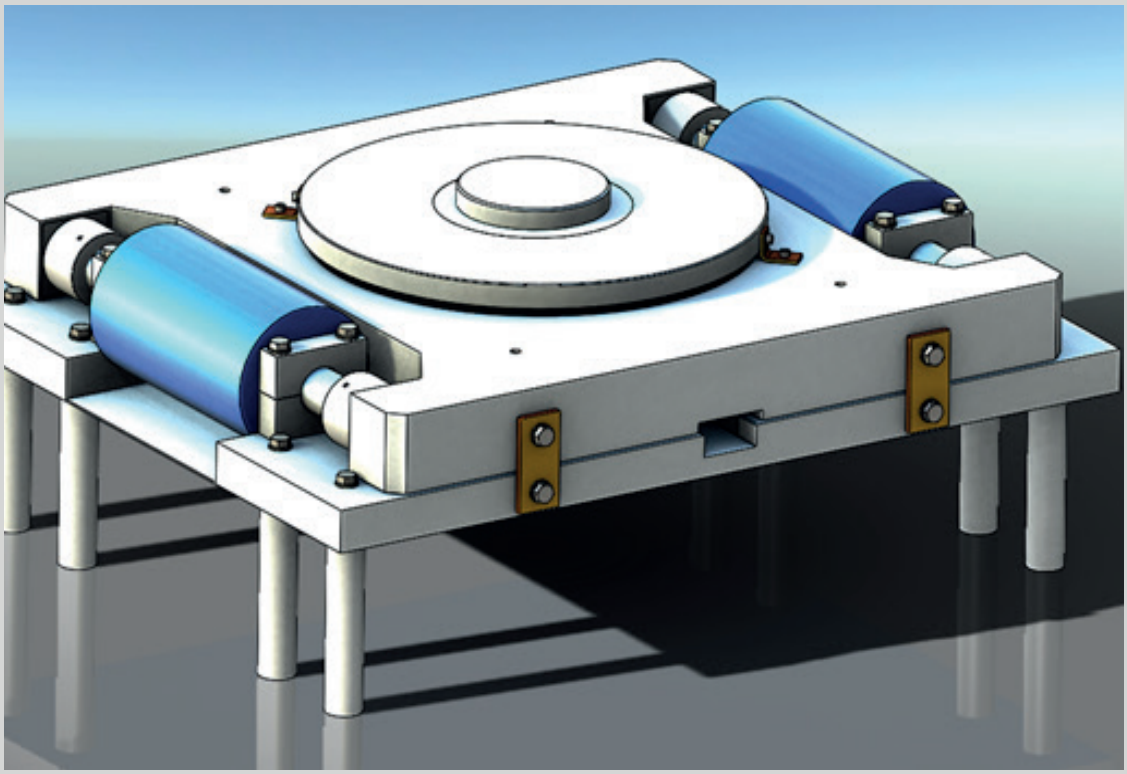


POT BEARING WITH ELASTIC RESPONSE

POT BEARING WITH STU

SPECIAL BEARING **DEVICES**

SPECIAL BEARING **DEVICES**



MATERIALS

ELEMENT	MATERIAL	STANDARD
ELASTOMERIC PAD	NATURAL RUBBER 50 Sh A3	EN 1337 / ASTM
POT	S355J2 / S355J0W	EN 10025
PISTON	S355J2 / S355J0W	EN 10025
SLIDING SURFACE	X5CrNiMo17-12 / AISI 304 / AISI 316	EN 10088 / AISI
HORIZONTAL SLIDING SURFACE	PTFE	EN 1337 / ASTM
VERTICAL SLIDING SURFACE	CM1	EN 1337
SLIDING PLATE	S355J2 / S355J0W	EN 10025
DIRECTIONAL GUIDE	S355J2 / S355J0W	EN 10025
ANCHORS	C45Bon. / 39NiCrMo3	EN 10083

The bearings can be designed complying to the European standard EN1337 or alternatively to other national or international standards (i.e. AASHTO)

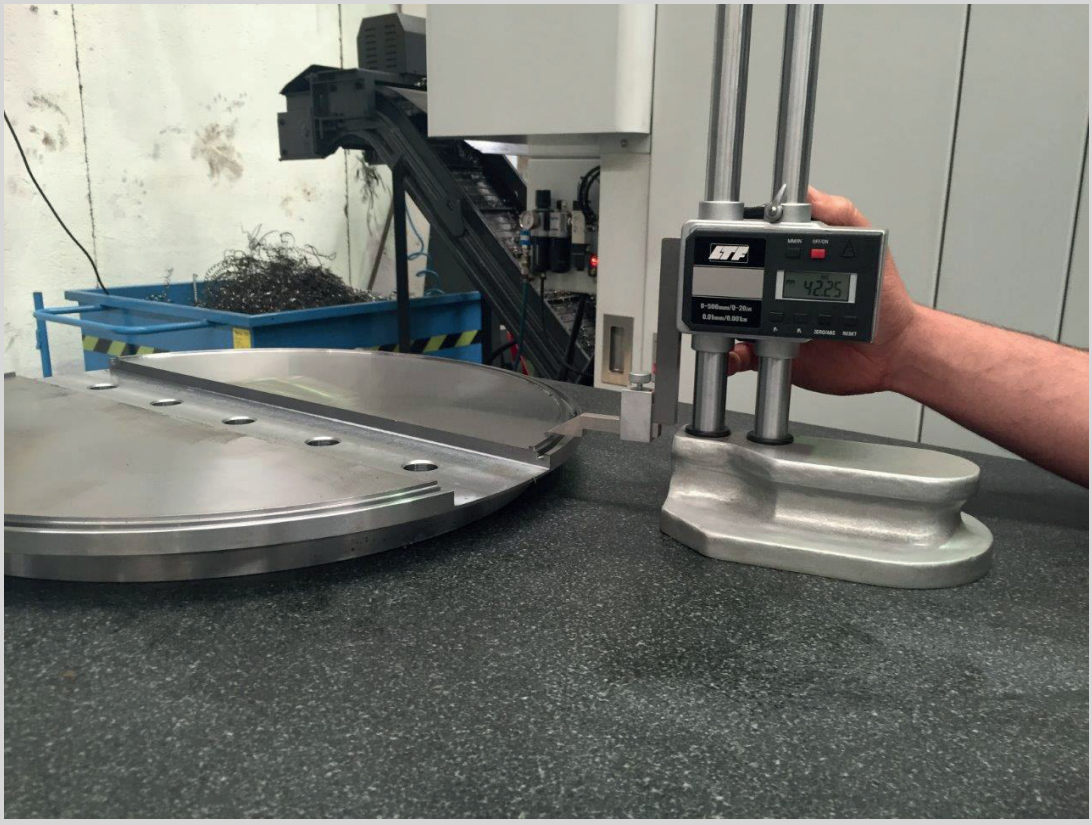
IDENTIFICATION LABEL

SOMMA	CE	DISPOSITIVE TYPE	YEAR	JOB	NSD x max SLU	V x max SLU	Disp x (mm)
		DISPOSITIVE CODE	ORDER	SERIAL NUMBER	RANK	V y max SLU	Disp y (mm)
2204-CPR-0367.1.m-2013							

KEY TO **LABEL**

- **EDF:** Fixed ERGOFLON bearing.
- **EDL:** Longitudinal ERGOFLON bearing.
- **EDT:** Transversal ERGOFLON bearing.
- **EDM:** Multidirectional ERGOFLON bearing.
- **EDF 1000-200:** Fixed ERGOFLON bearing with 1000 kN of vertical load – 200 kN of horizontal force.
- **EDL 7000/300-1000:** Longitudinal ERGOFLON bearing with 7000 kN of vertical load with longitudinal movement ± 150 mm and horizontal transversal force 1000 kN.
- **EDT 7000-1000/80:** Bearing ERGOFLON Uni-Transversal with 7000 kN of vertical load, ± 40 mm of transversal displacement and 1000 kN of horizontal longitudinal load.
- **EDM 3000/300/300:** Multidirectional ERGOFLON bearing with 3000 kN of vertical load, ± 150 mm longitudinal and transversal displacement.

POT BEARINGS



POT BEARINGS

San Leonardo Bridge-
A1 Highway, Italy

The components exposed to atmospheric agents are protected with C5 H anticorrosive treatment compliant with ISO 12944-5, made with Sa 2.5 white metal sandblasting and two-component high-thickness grey epoxy coating.

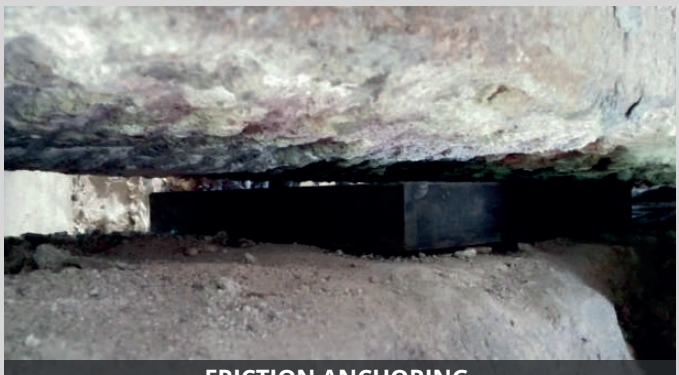
On request, depending on the atmospheric agents acting on the device, it is possible to apply different protective treatments.

CORROSION PROTECTION

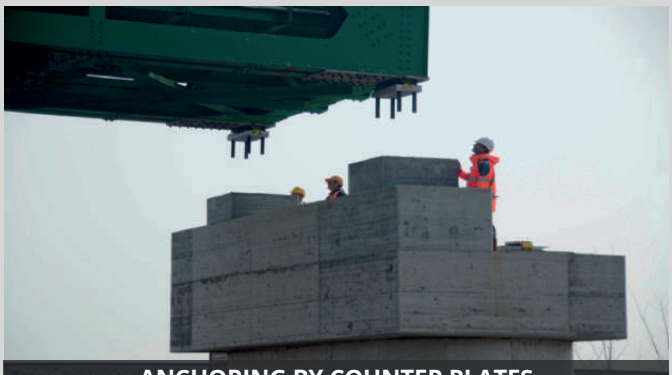
ANCHORING SYSTEMS

Different types of anchorages to the structure can be designed and provided:

Friction: through the loads transferred by contact between the bearing and the structure.
Mechanical anchorage: system used to connect the device to the structure, above and below, when the horizontal loads are significant and in any case in a seismic area. They can be made with long anchor bolts, bolts or pins.
Masonry plates: if necessary, SOMMA designs and supplies steel masonry plates.



FRICTION ANCHORING



ANCHORING BY COUNTER PLATES

QUALITY ENSURANCE

SOMMA is CE certified according to **EN1337** for the design and production of bearing devices and operates according to ISO 9001:2015 quality system. The entire design and production process is carried out according to the requirements of EN 1337.

Independent third parties carry out regular inspections to verify the compliance to the regulations.

For production according to EN 1337, SOMMA attach the declaration of Constancy of Performance to the delivery of the devices.

POT BEARING DEVICES

EDF _H10%

				ANCHOR			PISTON	PIN			
CODE	N [kN]	V [kN]	LxL [mm]	N.	F_z [mm]	I_z [mm]	D' [mm]	F_p [mm]	s_p [mm]	H_{tot} [mm]	W [kg]
EDF 500-50	500	50	190	4	30	130	180	60	17	63	19
EDF 1000-100	1000	100	240	4	30	170	240	60	17	63	28
EDF 1500-150	1500	150	275	4	30	205	275	60	17	65	34
EDF 2000-200	2000	150	320	4	30	250	310	60	17	74	50
EDF 2500-250	2500	250	330	4	30	260	330	60	17	75	54
EDF 3000-300	3000	300	380	4	30	310	360	60	17	79	72
EDF 3500-350	3500	350	410	4	30	340	390	80	17	81	84
EDF 4000-400	4000	400	450	4	30	380	420	80	17	87	106
EDF 4500-450	4500	450	460	4	30	390	430	80	17	87	111
EDF 5000-500	5000	500	500	4	30	430	460	80	17	91	136
EDF 6000-600	6000	600	550	4	60	410	500	80	17	94	187
EDF 7000-700	7000	700	600	4	60	460	540	120	17	98	227
EDF 8000-800	8000	800	640	4	60	500	580	120	17	103	265
EDF 9000-900	9000	900	670	4	60	530	600	120	17	105	289
EDF 10000-1000	10000	1000	700	4	60	560	630	120	20	110	332
EDF 12000-1200	12000	1200	770	4	60	630	680	160	20	120	434
EDF 14000-1400	14000	1400	840	4	60	700	740	160	20	122	510
EDF 16000-1600	16000	1600	900	4	60	760	790	160	22	128	605
EDF 18000-1800	18000	1800	960	4	60	820	830	200	22	134	713
EDF 20000-2000	20000	2000	1020	4	60	880	880	200	22	140	833
EDF 25000-2500	25000	2500	1145	4	100	905	1000	250	27	152	1227
EDF 30000-3000	30000	3000	1265	4	100	1025	1100	300	27	162	1559
EDF 40000-4000	40000	4000	1450	4	120	1165	1260	300	32	174	2245

KEY LABEL

N: Number of anchors.
V: Vertical load in USL condition.
LxL: Plane dimension.
F_z: Diameter of the anchors.
I_z: Distance between the anchors.
D': Diameter of the piston.

F_p: Diameter of the pin.
s_p: Height of the pin.
H_{tot}: Total height of the bearing.
W: Weight of the bearing.

These dimensions of the bearings are available for a lower surface in concrete C28/35.
Rotation ±0,01°.

POT BEARING DEVICES

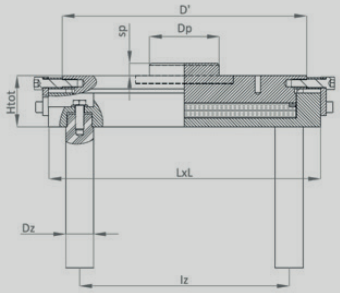
EDF _H30%

				ANCHOR			PISTON	PIN			
CODE	N [kN]	V [kN]	LxL [mm]	N.	F_z [mm]	I_z [mm]	D' [mm]	F_p [mm]	s_p [mm]	H_{tot} [mm]	W [kg]
EDF 500-150	500	150	190	4	30	130	190	60	17	63	19
EDF 1000-300	1000	300	260	4	30	190	250	60	17	65	31
EDF 1500-450	1500	450	310	4	30	240	280	80	19	69	44
EDF 2000-600	2000	600	370	4	60	230	310	80	19	80	93
EDF 2500-750	2500	750	390	4	60	250	340	120	19	84	106
EDF 3000-900	3000	900	425	4	60	285	370	120	19	86	121
EDF 3500-1050	3500	1050	465	4	60	325	400	160	22	91	149
EDF 4000-1200	4000	1200	525	4	60	385	460	160	22	92	178
EDF 4500-1350	4500	1350	575	4	60	435	480	160	22	88	201
EDF 5000-1500	5000	1500	610	4	60	470	510	160	22	88	220
EDF 6000-1800	6000	1800	670	4	60	530	550	200	22	93	275
EDF 7000-2100	7000	2100	720	4	60	580	600	200	24	99	331
EDF 8000-2400	8000	2400	770	4	100	530	640	250	27	104	494
EDF 9000-2700	9000	2700	810	4	100	570	660	250	27	106	533
EDF 10000-3000	10000	3000	870	4	100	630	700	250	27	111	619
EDF 12000-3600	12000	3600	950	4	100	710	760	250	32	124	791
EDF 14000-4200	14000	4200	1040	4	100	800	830	250	36	128	939
EDF 16000-4800	16000	4800	1100	4	100	860	860	300	36	130	1052
EDF 18000-5600	18000	5400	1165	4	100	925	925	300	40	140	1243
EDF 20000-6000	20000	6000	1230	4	140	895	970	300	45	146	1636
EDF 25000-6600	25000	6600	1340	4	140	1005	1000	350	45	162	2064
EDF 30000-7200	30000	7200	1450	4	140	1115	1100	350	50	163	2320
EDF 40000-8600	40000	8600	1590	4	160	1210	1280	400	50	179	3165

KEY LABEL

N: Number of anchors.
V: Vertical load in USL condition.
LxL: Plane dimension.
F_z: Diameter of the anchors.
I_z: Distance between the anchors.
D': Diameter of the piston.

F_p: Diameter of the pin.
s_p: Height of the pin.
H_{tot}: Total height of the bearing.
W: Weight of the bearing.



These dimensions of the bearings are available for a lower surface in concrete C28/35.
Rotation ±0,01°.

POT BEARING DEVICES

AVAILABLE FOR BOTH LONGITUDINAL AND TRANSVERSAL GUIDED BEARINGS.

EDU_H10%

				ANCHOR			SLIDING PLATE		PIN			
CODE	N [kN]	V [kN]	LxL [mm]	N.	F_z [mm]	I_z [mm]	A [mm]	B [mm]	F_p [mm]	s_p [mm]	H_{tot} [mm]	W [kg]
EDU 500/100-50	500	50	190	4	30	130	200	340	60	17	94	33
EDU 1000/100-100	1000	100	240	4	30	170	245	385	60	17	94	47
EDU 1500/100-150	1500	150	275	4	30	205	280	420	60	17	96	59
EDU 2000/100-200	2000	200	320	4	30	250	310	450	60	17	105	79
EDU 2500/100-250	2500	250	330	4	30	260	335	475	60	17	106	88
EDU 3000/100-300	3000	300	380	4	30	310	365	505	60	17	111	112
EDU 3500/100-350	3500	350	410	4	30	340	390	520	80	17	112	127
EDU 4000/100-400	4000	400	450	4	30	380	420	550	80	17	120	157
EDU 4500/100-450	4500	450	460	4	30	390	430	560	80	17	120	166
EDU 5000/100-500	5000	500	500	4	30	430	460	580	80	17	125	199
EDU 6000/100-600	6000	600	550	4	60	410	500	630	80	17	130	267
EDU 7000/100-700	7000	700	600	4	60	460	540	660	120	17	135	318
EDU 8000/100-800	8000	800	640	4	60	500	580	690	120	17	143	377
EDU 9000/100-900	9000	900	670	4	60	530	600	710	120	17	145	409
EDU 10000/100-1000	10000	1000	700	4	60	560	630	740	120	20	152	471
EDU 12000/100-1200	12000	1200	770	4	60	630	680	790	160	20	165	605
EDU 14000/100-1400	14000	1400	840	4	60	700	740	830	160	20	170	721
EDU 16000/100-1600	16000	1600	900	4	60	760	790	890	160	22	181	873
EDU 18000/100-1800	18000	1800	960	4	60	820	830	925	200	22	188	1010
EDU 20000/100-2000	20000	2000	1020	4	60	880	880	960	200	22	198	1186
EDU 25000/100-2500	25000	2500	1145	4	100	905	1000	1050	250	27	217	1721
EDU 30000/100-3000	30000	3000	1265	4	100	1025	1100	1120	300	27	234	2204
EDU 40000/100-4000	40000	4000	1450	4	120	1165	1260	1260	300	32	256	3186

KEY LABEL

N: Number of anchors.
V: Vertical load in USL condition.
LxL: Plane dimension.
F_z: Diameter of the anchors.
I_z: Distance between the anchors.
AxB: Dimensions of the sliding plate.
F_p: Diameter of the pin.
s_p: Height of the pin.
H_{tot}: Total height of the bearing.
W: Weight of the bearing.

These dimensions of the bearings are available for a lower surface in concrete C28/35. Displacement ± 50 mm. Rotation ±0,01°.

POT BEARING DEVICES

AVAILABLE FOR BOTH LONGITUDINAL AND TRANSVERSAL GUIDED BEARINGS.

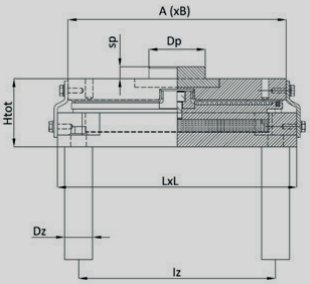
EDU_H30%

				ANCHOR			PISTON		PIN			
CODE	**N** [kN]	**V** [kN]	**LxL** [mm]	**N.**	**F_z** [mm]	**I_z** [mm]	**A** [mm]	**B** [mm]	**F_p** [mm]	**s_p** [mm]	**H_{tot}** [mm]	**W** [kg]
EDU 500/100-50	500	150	190	4	30	130	200	360	60	17	94	36
EDU 1000/100-300	1000	300	260	4	30	190	270	410	60	17	96	55
EDU 1500/100-450	1500	450	310	4	60	240	315	455	80	19	105	81
EDU 2000/100-600	2000	600	370	4	60	230	350	490	80	19	121	143
EDU 2500/100-750	2500	750	390	4	60	250	385	560	120	19	127	173
EDU 3000/100-900	3000	900	425	4	60	285	410	590	120	19	130	196
EDU 3500/100-1050	3500	1050	465	4	60	325	435	615	160	22	140	241
EDU 4000/100-1200	4000	1200	525	4	60	385	460	650	160	22	142	282
EDU 4500/100-1350	4500	1350	575	4	60	435	480	670	160	22	142	323
EDU 5000/100-1500	5000	1500	610	4	60	470	515	700	160	22	145	364
EDU 6000/100-600	6000	1800	670	4	60	530	555	740	200	22	154	451
EDU 7000/100-2100	7000	2100	720	4	60	580	600	790	200	24	162	542
EDU 8000/100-2100	8000	2400	770	4	100	530	640	830	250	27	176	757
EDU 9000/100-2700	9000	2700	810	4	100	570	660	850	250	27	175	804
EDU 10000/100-3000	10000	3000	870	4	100	630	700	890	250	27	186	949
EDU 12000/100-3600	12000	3600	950	4	100	710	740	930	250	32	211	1214
EDU 14000/100-4200	14000	4200	1040	4	100	800	830	1020	250	36	222	1508
EDU 16000/100-4800	16000	4800	1100	4	100	860	860	1050	300	40	229	1692
EDU 18000/100-5400	18000	5400	1165	4	100	925	925	1115	300	45	246	2030
EDU 20000/100-6000	20000	6000	1230	4	140	895	970	1160	300	45	262	2578
EDU 25000/100-6600	25000	6600	1340	4	140	1005	1015	1190	350	45	289	3161
EDU 30000/100-7200	30000	7200	1450	4	140	1115	1100	1290	350	50	290	3633
EDU 40000/100-8600	40000	8600	1590	4	180	1160	1280	1470	400	50	308	5135

KEY LABEL

N: Number of anchors.
V: Vertical load in USL condition.
LxL: Plane dimension.
F_z: Diameter of the anchors.
I_z: Distance between the anchors.
AxB: Dimensions of the sliding plate.
F_p: Diameter of the pin.

s_p: Height of the pin.
H_{tot}: Total height of the bearing.
W: Weight of the bearing.



These dimensions of the bearings are available for a lower surface in concrete C28/35.
Displacement ± 50 mm. Rotation ±0,01°.

POT BEARING DEVICES
ERGOFLON DISC - MULTIDIRECTIONAL

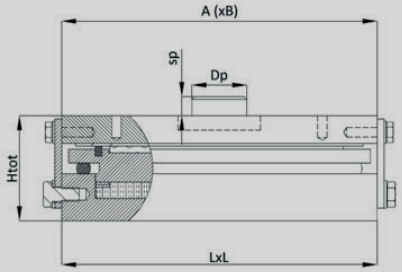
EDM

			SLIDING PLATE		PIN		
CODE	**N** [kN]	**A** [mm]	**B** [mm]	**F_p** [mm]	**s_p** [mm]	**H_{tot}** [mm]	**W** [kg]
EDM 500/100/50	500	255	305	59,9	17	79	20
EDM 1000/100/50	1000	285	335	59,9	17	80	27
EDM 1500/100/50	1500	320	370	59,9	17	82	36
EDM 2000/100/50	2000	345	395	59,9	17	88	47
EDM 2500/100/50	2500	370	420	59,9	17	96	61
EDM 3000/100/50	3000	390	440	59,9	17	102	74
EDM 3500/100/50	3500	410	460	59,9	17	104	86
EDM 4000/100/50	4000	430	480	59,9	17	109	101
EDM 4500/100/50	4500	465	515	59,9	17	113	124
EDM 5000/100/50	5000	470	520	59,9	17	114	127
EDM 6000/100/50	6000	510	560	59,9	17	122	167
EDM 7000/100/50	7000	540	590	59,9	17	127	196
EDM 8000/100/50	8000	580	630	59,9	17	132	237
EDM 9000/100/50	9000	615	665	59,9	17	138	282
EDM 10000/100/50	10000	635	685	59,9	17	145	315
EDM 12000/100/50	12000	680	730	59,9	17	155	397
EDM 14000/100/50	14000	750	800	59,9	17	164	509
EDM 16000/100/50	16000	780	830	79,9	17	172	588
EDM 18000/100/50	18000	835	885	79,9	17	175	686
EDM 20000/100/50	20000	870	920	79,9	17	183	783
EDM 25000/100/50	25000	980	1030	79,9	25	200	1098
EDM 30000/100/50	30000	1100	1150	79,9	25	210	1411
EDM 40000/100/50	40000	1260	1310	79,9	32	231	2072

KEY LABEL

N: Number of anchors.
V: Vertical load in USL condition.
AxB: Dimensions of the sliding plate.
F_p: Diameter of the pin.

s_p: Height of the pin.
H_{tot}: Total height of the bearing.
W: Weight of the bearing.



These dimensions of the bearings are available for a lower surface in concrete C28/35.
Longitudinal displacement ± 50 mm, Transversal displacement ± 25 mm and rotation ± 0,01°.

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