

BANDED ELASTOMERIC BEARINGS TYPE C

- CE marking
- Large displacement
- Rigid connection to structures

ELASTOMERIC BEARINGS

Technical data sheet reference no.: FT En C V 3 1 1



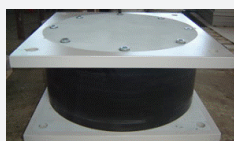
FREYSSINET
SUSTAINABLE TECHNOLOGY

DESCRIPTION

A banded bearing is a connection between a structure and its support. Its purpose is to transmit normal loads and allow displacement through distortion of the elastomer and rotation through differential settlement.

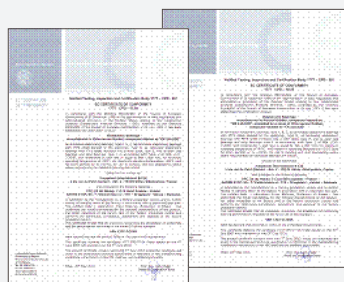
A banded bearing is an elastomeric block reinforced with metal bands bonded by vulcanising during manufacture.

The stresses imposed by structures often require the installation of bearings.



Freyssinet has developed a full range of bearings with Type C anchor plates.

Type C banded bearings can be made from neoprene or natural rubber with a neoprene belt to European Standard EN 1337-3. Freyssinet holds CE markings **CE** No. 1777-CPD-0704 and No. 1777-CPD-0705 respectively.



Certificates of Conformity
CE marking
Rubber bearings

Freyssinet's range of bearings is based on many years of experience in the field of structural accessories and construction.

OPERATING PRINCIPLE

Type C bearings are used where there are facilities available to attach the bearings to the structure or if the horizontal loads to be transmitted are high relative to the vertical loads. In this case, the bearings must be connected to the structures mechanically and must therefore be fitted with external bands bonded to the elastomeric blocks in the bearings.



Dynamic distortion
test



Bearings being installed

STRUCTURAL CONNECTIONS

TYPE C1

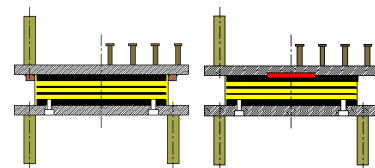
Chequered plates ensure adhesion to concrete structures.



Type C1 bearings

TYPE C2

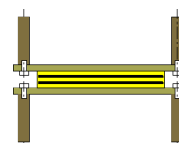
The bearings are generally connected to structures by metal lugs attached to metal plates connected in turn to the structures using either studs or embedded sleeves. Alternatively, the lugs can be replaced with retaining bolts or a shear disc. In this case only the sleeve option will be selected.



Type C2 bearings

TYPE C3

In this case the outer plates protrude beyond the bearing. They are connected directly by sleeves inserted into the structure using removable bolts.



AREA OF APPLICATION

Type C bearings are used for temperatures between -40°C (-25°C for the neoprene version) and +50°C. They can withstand momentary temperatures of 70°C without affecting their durability.

COMPOSITION

Two thick metal bands are bonded to the surface of the elastomeric block during manufacture of the banded elastomeric bearings.

These bands, the thickness of which varies with the plan dimensions of the bearing, are, as required:

- Chequered and the same size as the bearing (Type C1)
- Smooth and the same size as the bearing (Type C2)
- Smooth and protruding (Type C3)

CORROSION PROTECTION

All external bearing bands are protected against corrosion by:

- An ACQPA C4ANV type epoxy resin and polyurethane based protection system or,
- Zinc-aluminium metal spraying + epoxy polyurethane paint system.

These two protection systems comply with EN 1337-9.



Metal spraying

CE MARKING

Like standard bearings, Type C banded elastomeric bearings are also covered by CE marking in accordance with EN 1337-3.

INSTALLATION

Installation quality is a vital condition for correct operation and long service life.

Arrangements should be made at the design stage to provide enough space around bearings so that they can be monitored and replaced if necessary.

Type C2 and C3 bearings can absorb upward vertical forces under certain conditions.

This uplift force must be limited to 1 N/mm² of the bearing plane surface.

In this case these bearings will be equipped with specially adapted and designed bushings.

QUALITY

The entire design and manufacturing process is covered by ISO 9001/2000 quality certification.

TYPE	F _{uls}	α	δl	a x b	Te	Type C1		Type C2		Type C3			
						Ts	T	Ts	T	Ts	T	a ₁ x b ₁	Ød
	kN	m rad	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
RECTANGULAR BEARINGS	121	33 40	8 12	100 x 150	16 24	7/10	39 50	15	49 60	15	49 60	180 x 150	M12
	132	33 40	8 12	100 x 200	16 24	7/10	39 50	15	49 60	15	49 60	180 x 200	M12
	468	21 29 37	8 12 16	150 x 200	16 24 32	7/10	39 50 61	15	49 60 71	15	49 60 71	230 x 200	M12
	549	21 29 37	8 12 16	150 x 250	16 24 32	7/10	39 50 61	15	49 60 71	15	49 60 71	230 x 250	M12
	576	21 29 37	8 12 16	150 x 300	16 24 32	7/10	39 50 61	15	49 60 71	15	49 60 71	230 x 300	M12
	1079	8 10 15 16	12 16 20 24	200 x 250	24 32 40 48	7/10	50 61 72 83	15	60 71 82 93	15	60 71 82 93	280 x 250	M12
	1,272	8 10 15 16	12 16 20 24	200 x 300	24 32 40 48	7/10	50 61 72 83	15	60 71 82 93	15	60 71 82 93	280 x 300	M12
	1,300	8 10 15 16	12 16 20 24	200 x 350	24 32 40 48	7/10	50 61 72 83	15	60 71 82 93	15	60 71 82 93	280 x 350	M12
	1,332	8 10 15 16	12 16 20 24	200 x 400	24 32 40 48	7/10	50 61 72 83	15	60 71 82 93	15	60 71 82 93	280 x 400	M12
	1,399	7 10 12 15 17	12 16 20 24 28	250 x 300	24 32 40 48 56	7/10	50 61 72 83 94	15	60 71 82 93 104	15	60 71 82 93 104	330 x 400	M12
	1,743	8 10 13 16	18 24 30 36	300 x 400	36 48 60 72	7/10	64 80 96 112	20	84 100 116 132	20	84 100 116 132	380 x 400	M12
	2,124	7 10 12 15 17	12 16 20 24 28	250 x 400	24 32 40 48 56	7/10	50 61 72 83 94	15	60 71 82 93 104	15	60 71 82 93 104	330 x 400	M12
	2,403	8 10 13 16	18 24 30 36	300 x 500	36 48 60 72	7/10	64 80 96 112	20	84 100 116 132	20	84 100 116 132	380 x 500	M12
	3,082	8 10 13 16	18 24 30 36	300 x 600	36 48 60 72	7/10	64 80 96 112	20	84 100 116 132	20	84 100 116 132	380 x 600	M12
	3,123	11 15 19 23	18 24 30 36	350 x 450	36 48 60 72	7/10	64 80 96 112	20	84 100 116 132	20	84 100 116 132	450 x 450	M16
	3,957	15 19 23 26 30	24 30 36 42 48	400 x 500	48 60 72 84 96	7/10	80 96 112 128 144	20	100 116 132 148 164	20	100 116 132 148 164	500 x 500	M16

F: Permissible vertical load at ULS

δl: Permissible displacement

α: Permissible rotation

T: Total thickness of bearing

a x b: Plan dimensions of bearing

Te: Total elastomer thickness

Ts: External band thickness

The a₁ x b₁ protruding external bands for Type C3 bearings can be secured using 4 bolts Ød – HR 10.9.

The values in the tables are given for information only. Depending on vertical and horizontal loads concomitant to displacement and rotation, the stresses applied to the bearings must be verified in accordance with EN 1377-3.

BANDED ELASTOMERIC BEARINGS

TYPE C



FREYSSINET
SUSTAINABLE TECHNOLOGY

TYPE	F_{uls}	α	δl	$a \times b$	T_e	Type C1		Type C2		Type C3			
						T_s	T	T_s	T	T_s	T	$a_1 \times b_1$	$\varnothing d$
	kN	m rad	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
RECTANGULAR BEARINGS	5,156	10	24	400 x 600	48	7/10	80	20	100	20	100	500 x 600	M16
		13	30		60		96		116		116		
		15	36		72		112		132		132		
		18	42		84		128		148		148		
		21	48		96		144		164		164		
	6,309	10	24	450 x 600	48	7/10	80	20	100	20	100	550 x 600	M16
		13	30		60		96		116		116		
		15	36		72		112		132		132		
		18	42		84		128		148		148		
		20	48		96		144		164		164		
	7,517	10	24	500 x 600	48	7/10	80	20	100	20	100	620 x 600	M20
		12	30		60		96		116		116		
		15	36		72		112		132		132		
		18	42		84		128		148		148		
		20	48		96		144		164		164		
	8,253	15	32	600 x 600	64	7/10	99	20	119	20	119	720 x 600	M20
		19	40		80		120		140		140		
		23	48		96		141		161		161		
		27	56		112		162		182		182		
		31	64		128		183		203		203		
	9,307	13	32	600 x 700	64	7/10	99	20	119	20	119	720 x 700	M20
		16	40		80		120		140		140		
		20	48		96		141		161		161		
		23	56		112		162		182		182		
		27	64		128		183		203		203		
	12,491	30	72	700 x 700	144	7/10	204	20	224	20	224	850 x 700	M24
		12	32		64		99		119		119		
		15	40		80		120		140		140		
		18	48		96		141		161		161		
		22	56		112		162		182		182		
	13,628	25	64	800 x 800	128	7/10	183	20	203	20	203	980 x 800	M30
		28	72		144		204		224		224		
		31	80		160		225		245		245		
		16	40		80		115		135		135		
		20	50		100		140		160		160		
	15,283	23	60	700 x 800	120	7/10	165	20	185	20	185	850 x 800	M24
		27	70		140		190		210		210		
		31	80		160		215		235		235		
		35	90		180		240		260		260		
		39	100		200		265		285		285		
	17,673	9	32	900 x 900	64	7/10	99	20	119	20	119	1080 x 900	M30
		12	40		80		120		140		140		
		14	48		96		141		161		161		
		16	56		112		162		182		182		
		19	64		128		183		203		203		
		21	72		144		204		224		224		
		24	80		160		225		245		245		
		14	40		80		115		135		135		
		18	50		100		140		160		160		
		21	60		120		165		185		185		
		25	70		140		190		210		210		
		29	80		160		215		235		235		
		32	90		180		240		260		260		
		36	100		200		265		285		285		
		40	110		220		290		310		310		

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TYPE C



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TYPE	F_{uls}	α	δl	a x b	T_e	Type C1		Type C2		Type C3			
						T_s	T	T_s	T	T_s	T	$a_1 \times b_1$	$\varnothing d$
						mm	mm	mm	mm	mm	mm	mm	
CIRCULAR BEARINGS	544	12	8	dia. 200	16	7/10	39	15	49	15	79	200 x 200	M12
		19	12		24		50		60		90		
		25	16		32		61		71		101		
	1,103	12	8	dia. 250	16	7/10	39	15	49	15	79	250 x 250	M12
		19	12		24		50		60		90		
		25	16		32		61		71		101		
	2,008	7	12	dia. 300	24	7/10	50	15	60	15	90	300 x 300	M12
		9	16		32		61		71		101		
		11	20		40		72		82		112		
		13	24		48		83		93		123		
	2,755	7	12	dia. 350	24	7/10	50	15	60	15	90	350 x 350	M12
		10	16		32		61		71		101		
		12	20		40		72		82		112		
		15	24		48		83		93		123		
	2,908	17	28	dia. 400	56	7/10	94	20	104	20	134	400 x 400	M12
		11	18		36		64		84		124		
		15	24		48		80		100		140		
		18	30		60		96		116		156		
	4,520	22	36	dia. 450	72	7/10	112	20	132	20	172	450 x 450	M16
		7	18		36		64		84		124		
		9	24		48		80		100		140		
		11	30		60		96		116		156		
	5,611	14	36	dia. 500	72	7/10	112	20	132	20	172	500 x 500	M16
		7	18		36		64		84		124		
		10	24		48		80		100		140		
		12	30		60		96		116		156		
	6,819	15	36	dia. 550	72	7/10	112	20	132	20	172	550 x 550	M16
		18	42		84		128		148		188		
		20	48		96		144		164		204		
		10	24		48		80		100		140		
	8,146	12	30	dia. 600	60	7/10	96	20	116	20	156	600 x 600	M20
		15	36		72		112		132		172		
		18	42		84		128		148		188		
		20	48		96		144		164		204		
	9,811	12	32	dia. 700	64	7/10	99	20	119	20	159	700 x 700	M20
		15	40		80		120		140		180		
		18	48		96		141		161		201		
		22	56		112		162		182		222		
		25	64		128		183		203		243		
		28	72		144		204		224		264		
	10,703	31	80	dia. 800	160	7/10	225	20	245	20	285	800 x 800	M24
		16	40		80		115		135		175		
		20	50		100		140		160		200		
		23	60		120		165		185		225		
		27	70		140		190		210		250		
		31	80		160		215		235		275		
	13,880	35	90	dia. 900	180	7/10	240	20	260	20	300	900 x 900	M30
		39	100		200		265		285		325		
		14	40		80		115		135		175		
		18	50		100		140		160		200		
		21	60		120		165		185		225		
		25	70		140		190		210		250		
		29	80		160		215		235		275		
		32	90		180		240		260		300		
		36	100		200		265		285		325		
		40	110		220		290		310		350		

PRODUCTION AND DISTRIBUTION

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