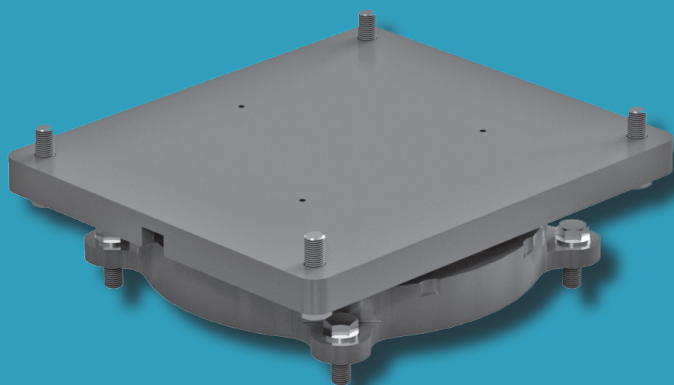


POT BEARINGS

KE

EN1337-5



Description

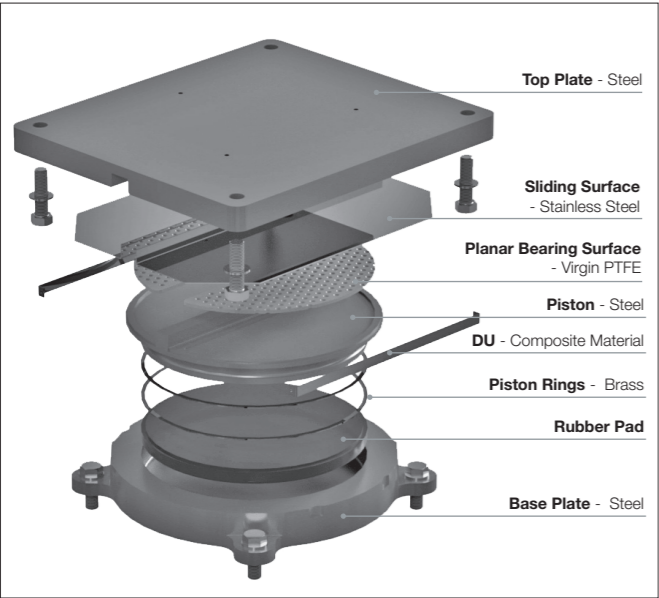
KE series is a range of structural bearings which meets the full requirements of BS EN1337 Parts 1, 2, and 5, and those of the British Department of Transport. They are manufactured to international quality standards. The standard range comprises multi-axis rotation bearings in Fixed, Constrained and Free configurations to support loads up to 46000 kN.

Bearing Types

The KE range of bearings are available in three forms: -

- 30KE** Fixed
- 31KE** Guided - Free to move in one horizontal direction
- 22KE** Free to move in any horizontal direction

Typical 31KE Details - Exploded View



Attachment

Fixing holes are provided in the top and base members of the bearings. This enables a variety of fixing methods to be used. Standard fixings are designed to ensure the bearings can be removed as simply as possible. See page 10.

Support and Installation

Important - See pages 11 - 13 for Installation and Maintenance.

Concrete Stress

Where suitable reinforcement of the concrete has been provided the allowable concrete stress is dependent on the relative dimensions of the bearing/structure interface, the total support area and the characteristic strength of the concrete. The stress on the structure should therefore be checked to ensure that it is acceptable.

Design Loads

The designation of loadings varies depending on the design code applicable. The tables show the capabilities determined in accordance with BS EN 1337.

Rotation

Maximum rotation on all our pot bearings range from 0.015 radians for KE0050 to KE1000, and 0.0125 radians for KE1200 to KE3000 respectively.

Translations

The dimensions for the 31KE (Constrained) and 22KE (Free) bearings are shown in the tables for the following movements -

Longitudinal

- 31KE 100mm total
- 22KE 100mm total

Transverse

- 31KE NIL (see page 6)
- 22KE 40mm total

Additional movements either in longitudinal or transverse directions, depending on bearing type whether it is restraint sliding or free sliding, top plate dimensions will increase accordingly. We will be pleased to advise.

N.B. 31KE bearings should not be used where movement is required at right angles to the constraints.

The required movements should be specified in the part number as described below.

The clearance between the constraints must not be used to accommodate any structural movement.

Designation of Part No.

The part number of a bearing is simply built up as below -

Examples:

Type	Maximum Working Load (kN)	Movement		Fixings	
		Longitudinal	Transverse	Top	Base
		(mm)	(mm)		
a 30KE	5000			S	S
b 31KE	5000	100		B	S
c 22KE	5000	100	40	N	B

e.g. For

- a** above the full part number would be **30KE 500/SS**
- b** above the full part number would be **31KE 500/100/BS**
- c** above the full part number would be **22KE 500/100/40/NB**

Suffix Letters

By adding a two letter suffix to the bearing part number the type of fixing may be designated -
First letter - Top plate fixing
Second letter - Base plate fixing

N - No fixings

B - Bolts and washers only

S - Bolts, washers & sockets

e.g. /BS signifies -

B (top plate fixing) Bolts & washers

S (base plate fixing) Bolts, washers & sockets

N.B. If standard KE series fixings are not used, care should be taken to ensure that bolts can be fitted without dismantling the bearing.

'c' denotes a free KE series pot bearing of -

Working load capacity: 5000kN maximum

Movement: Longitudinal - 100mm total

Transverse - 40mm total

Fixing method: No fixings in top plate.

Bolts in base plate.

Fig. 1 KE Pot Bearing - Guided

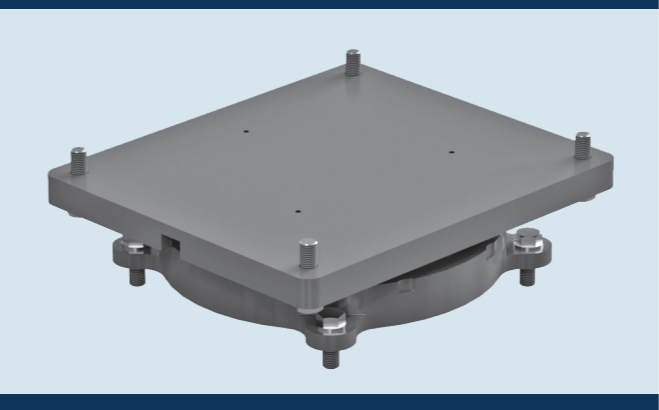


Fig. 2 KE Pot Bearing - Free

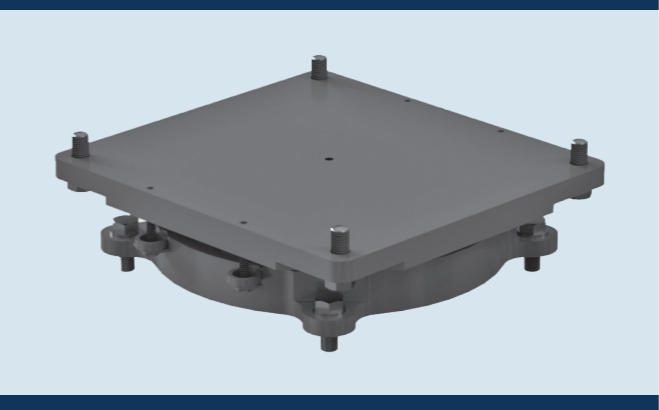
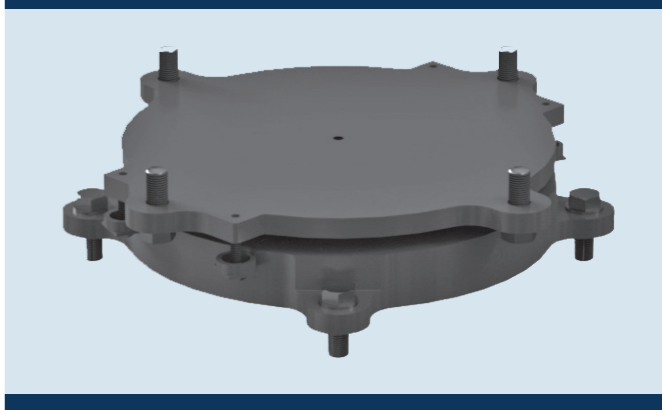


Fig. 3 KE Pot Bearing - Fixed



KE - Series

Bearing Design Loads

Bearings should be selected to suit the appropriate design code. The maximum vertical and horizontal loads shown in the tables may be taken in combination.

Horizontal Loading

The 30KE fixed bearing will resist a horizontal force acting in any direction.
In order for the bearing to support the maximum horizontal loads stated in the tables, a minimum concurrent vertical load as shown in the table must co-exist.
Where higher horizontal load capacities are required, special bearings can be offered for such requirements.
We will be pleased to advise.

30KE - Fixed Pot Bearing

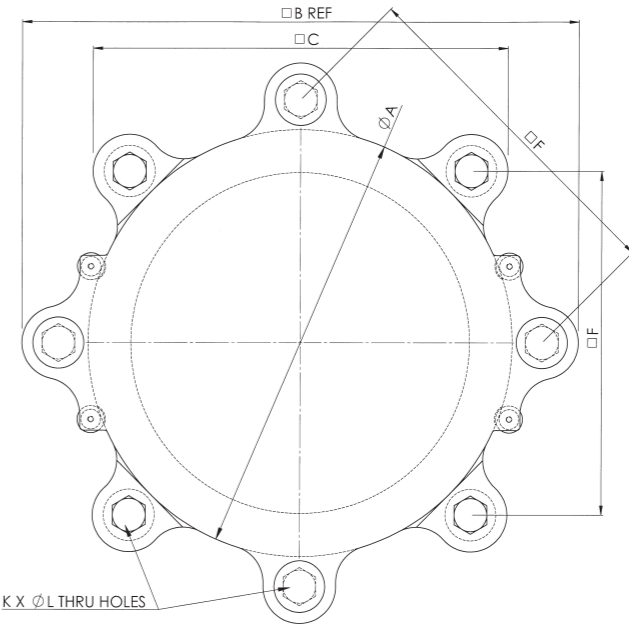
Concrete Stress

Where suitable reinforcement of the concrete has been provided the allowable concrete stress is dependent on the relative dimensions of the bearing/structure interface, the total support area, and the characteristic strength of the concrete. The stress on the structure should therefore be checked to ensure that it is acceptable.

Bearing No.	Serviceability Limit State Loads				Ultimate Limit State Loads			Rotation (Radians)
	Maximum Vertical (kN)	Permanent (kN)	Minimum Vertical (kN)	Horizontal (kN)	Maximum Vertical (kN)	Minimum Vertical (kN)	Horizontal (kN)	
30KE0050	653	490	182	102	816	293	136	0.015
30KE0075	940	705	242	146	1175	431	195	0.015
30KE0100	1279	959	317	195	1599	589	260	0.015
30KE0130	1602	1201	408	254	2002	751	338	0.015
30KE0160	2037	1528	492	307	2546	943	409	0.015
30KE0200	2524	1893	594	380	3155	1179	507	0.015
30KE0250	3158	2369	722	473	3948	1477	630	0.015
30KE0300	3758	2819	869	560	4698	1767	747	0.015
30KE0350	4411	3308	990	648	5514	2064	864	0.015
30KE0400	4995	3746	1127	736	6244	2361	981	0.015
30KE0450	5614	4211	1276	819	7018	2628	1092	0.015
30KE0500	6270	4703	1415	902	7838	2945	1202	0.015
30KE0550	6822	5116	1555	985	8527	3208	1313	0.015
30KE0600	7396	5547	1662	1063	9245	3460	1417	0.015
30KE0700	8773	6580	1958	1219	10966	4148	1625	0.015
30KE0800	9925	7444	2211	1365	12406	4695	1820	0.015
30KE0900	11148	8361	2425	1506	13935	5257	2008	0.015
30KE1000	12442	9331	2632	1638	15552	5783	2184	0.015
30KE1200	14826	11119	2969	1886	18532	6715	2515	0.0125
30KE1400	17418	13064	3259	2106	21773	7860	2808	0.0125
30KE1600	19738	14804	3511	2301	24673	8808	3068	0.0125
30KE1800	22203	16652	3754	2471	27754	9814	3295	0.0125
30KE2000	24813	18610	3963	2613	31016	10840	3484	0.0125
30KE2250	27851	20888	4196	2754	34814	11963	3672	0.0125
30KE2500	30000	23299	4221	2852	38831	13105	3802	0.0125
30KE3000	37030	27772	4245	2925	46287	16322	3900	0.0125

KE - Series

30KE - Fixed Pot Bearing



Bearing No.	Installation Dimensions (mm)														Bearing Weight (kg) WT
	A	B	C	F	G	H	J	K	L	M	N	O	P		
30KE0050	190	267	200	160	12	12	66	4	14	30	30	35	110	13	
30KE0075	219	295	220	180	12	12	69	4	14	35	35	35	110	17	
30KE0100	258	355	265	215	16	16	76	4	18	40	40	40	140	27	
30KE0130	293	390	290	240	16	16	80	4	18	40	40	40	140	36	
30KE0160	332	428	317	267	16	16	82	4	18	40	40	40	140	46	
30KE0200	371	488	362	302	20	20	89	4	22	50	50	50	170	64	
30KE0250	419	536	396	336	20	20	92	4	22	50	50	50	170	82	
30KE0300	461	597	442	372	24	24	100	4	26	60	60	55	200	108	
30KE0350	502	638	471	401	24	24	107	4	26	60	60	55	200	137	
30KE0400	534	670	494	424	24	24	111	4	26	60	60	55	200	160	
30KE0450	568	740	549	459	30	30	119	4	32	70	70	70	240	196	
30KE0500	600	771	571	481	30	30	122	4	32	75	75	70	240	224	
30KE0550	632	803	594	504	30	30	124	4	32	75	75	70	240	246	
30KE0600	660	832	614	524	30	30	125	4	32	80	80	70	240	270	
30KE0700	709	880	648	558	30	30	133	4	32	80	80	70	240	337	
30KE0800	752	948	699	599	36	36	145	4	38	90	90	80	300	412	
30KE0900	808	1004	739	639	36	36	151	4	38	90	90	80	300	482	
30KE1000	852	1048	770	670	36	36	155	4	38	100	100	80	300	560	
30KE1200	933	1164	858	738	42	42	166	4	44	110	110	105	360	727	
30KE1400	1008	1239	911	791	42	42	173	4	44	110	110	105	360	873	
30KE1600	1070	1301	955	835	42	42	178	4	44	120	120	105	360	1007	
30KE1800	1130	1396	1028	888	48	48	191	4	50	120	120	120	410	1211	
30KE2000	1186	1453	1068	928	48	48	197	4	50	120	120	120	410	1369	
30KE2250	1250	1517	1113	973	48	48	204	4	50	120	120	120	410	1558	
30KE2500	1312	1579	1157	1017	48	48	209	4	50	120	120	120	410	1781	
30KE3000	1426	1692	1237	1097	48	48	218	4	50	120	120	120	410	2123	

Note: M = Length of base screw, N = Length of top screw, O = Diameter of top/base socket (mm), P = Length of top/base socket (mm)

KE - Series

Bearing Design Loads

Bearings should be selected to suit the appropriate design code. The maximum vertical and horizontal loads shown in the tables may be taken in combination.

Horizontal Loading

The 31KE guided bearing will resist a horizontal force acting at right angles to the main direction of movement. In order for the bearing to support the maximum horizontal loads stated in the tables, a minimum concurrent vertical load as shown in the table must co-exist. Where higher horizontal load capacities are required, special bearings can be offered for such requirements. We will be pleased to advise.

31KE - Sliding Pot Bearing

Transverse Movement

31KE bearings are designed to accommodate movement in one direction only. Movement transverse to the constraint is nominally zero. In practice the transverse movement is 1mm maximum. Standard 31KE bearings should not be used where movement is required at right angles to the constraint. Special bearings can be offered for such requirements.

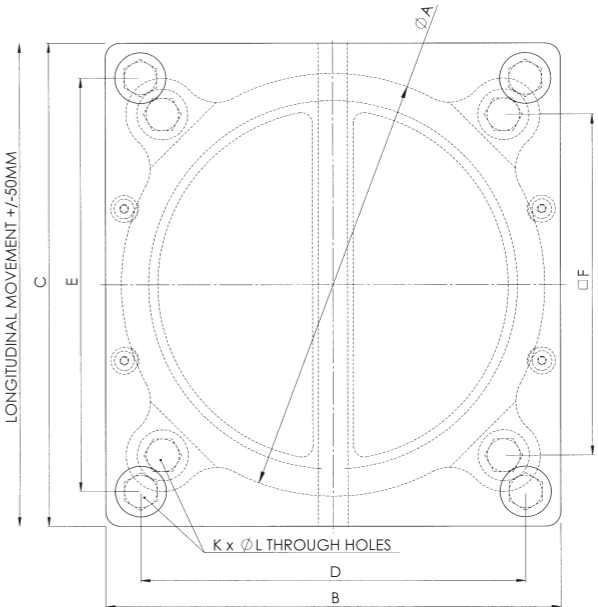
Concrete Stress

Where suitable reinforcement of the concrete has been provided the allowable concrete stress is dependent on the relative dimensions of the bearing/structure interface, the total support area, and the characteristic strength of the concrete. The stress on the structure should therefore be checked to ensure that it is acceptable.

Bearing Part No.	Serviceability Limit State Loads				Ultimate Limit State Loads			Rotation (Radians)
	Maximum Vertical (kN)	Permanent (kN)	Minimum Vertical (kN)	Horizontal (kN)	Maximum Vertical (kN)	Minimum Vertical (kN)	Horizontal (kN)	
31KE0050	653	490	297	102	816	293	136	0.015
31KE0075	940	705	424	146	1175	431	195	0.015
31KE0100	1279	959	566	195	1599	589	260	0.015
31KE0130	1602	1201	720	254	2002	751	338	0.015
31KE0160	2037	1528	894	307	2546	943	409	0.015
31KE0200	2524	1893	1112	380	3155	1179	507	0.015
31KE0250	3158	2369	1391	473	3948	1477	630	0.015
31KE0300	3758	2819	1656	560	4698	1767	747	0.015
31KE0350	4411	3308	1929	648	5514	2064	864	0.015
31KE0400	4995	3746	2200	736	6244	2361	981	0.015
31KE0450	5614	4211	2446	819	7018	2628	1092	0.015
31KE0500	6270	4703	2732	902	7838	2945	1202	0.015
31KE0550	6822	5116	2982	985	8527	3208	1313	0.015
31KE0600	7396	5547	3207	1063	9245	3460	1417	0.015
31KE0700	8773	6580	3808	1219	10966	4148	1625	0.015
31KE0800	9925	7444	4298	1365	12406	4695	1820	0.015
31KE0900	11148	8361	4791	1506	13935	5257	2008	0.015
31KE1000	12442	9331	5242	1638	15552	5783	2184	0.015
31KE1200	14826	11119	6060	1886	18532	6715	2515	0.0125
31KE1400	17418	13064	7043	2106	21773	7860	2808	0.0125
31KE1600	19738	14804	7869	2301	24673	8808	3068	0.0125
31KE1800	22203	16652	8727	2471	27754	9814	3295	0.0125
31KE2000	24813	18610	9575	2613	31016	10840	3484	0.0125
31KE2250	27851	20888	10506	2754	34814	11963	3672	0.0125
31KE2500	30000	23299	11441	2852	38831	13105	3802	0.0125
31KE3000	37030	27772	12934	2925	46287	16322	3900	0.0125

KE - Series

31KE - Sliding Pot Bearing



Bearing No.	Installation Dimensions (mm)																Bearing Weight (kg)
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	WT	
31KE0050	190	230	350	188	308	160	12	32	104	4	14	30	50	35	110	28	
31KE0075	219	250	380	208	338	180	12	32	106	4	14	30	50	35	110	35	
31KE0100	258	290	405	236	351	215	16	32	108	4	18	40	55	40	140	47	
31KE0130	293	325	430	271	376	240	16	33	113	4	18	40	60	40	140	60	
31KE0160	332	365	460	311	406	267	16	34	114	4	18	40	60	40	140	76	
31KE0200	371	405	485	339	419	302	20	35	118	4	22	50	65	50	170	96	
31KE0250	419	460	530	394	464	336	20	37	123	4	22	50	65	50	170	126	
31KE0300	461	505	560	427	482	372	24	38	128	4	26	60	80	55	200	155	
31KE0350	502	545	585	467	507	401	24	39	136	4	26	60	80	55	200	191	
31KE0400	534	575	610	497	532	424	24	40	141	4	26	60	80	55	200	220	
31KE0450	568	610	635	514	539	459	30	41	144	4	32	80	90	70	240	252	
31KE0500	600	640	660	544	564	481	30	42	148	4	32	80	90	70	240	286	
31KE0550	632	675	675	579	579	504	30	43	151	4	32	80	90	70	240	319	
31KE0600	660	700	700	604	604	524	30	43	152	4	32	80	90	70	240	347	
31KE0700	709	750	750	654	654	558	30	44	161	4	32	80	90	70	240	422	
31KE0800	752	795	795	681	681	599	36	46	169	4	38	90	100	80	300	501	
31KE0900	808	860	860	746	746	639	36	52	181	4	38	90	110	80	300	633	
31KE1000	852	905	905	791	791	670	36	54	187	4	38	90	110	80	300	728	
31KE1200	933	985	985	853	853	738	42	61	199	4	44	110	120	105	360	940	
31KE1400	1008	1060	1060	928	928	791	42	67	212	4	44	110	130	105	360	1171	
31KE1600	1070	1120	1120	988	988	835	42	71	221	4	44	110	130	105	360	1376	
31KE1800	1130	1180	1180	1030	1030	888	48	76	233	4	50	120	150	120	410	1624	
31KE2000	1186	1240	1240	1090	1090	928	48	77	240	4	50	120	150	120	410	1834	
31KE2250	1250	1300	1300	1150	1150	973	48	80	250	4	50	120	150	120	410	2107	
31KE2500	1312	1365	1365	1215	1215	1017	48	82	257	4	50	120	150	120	410	2379	
31KE3000	1426	1480	1480	1330	1330	1097	48	87	271	4	50	120	160	120	410	2951	

Note: M = Length of base screw, N = Length of top screw, O = Diameter of top/base socket (mm), P = Length of top/base socket (mm)

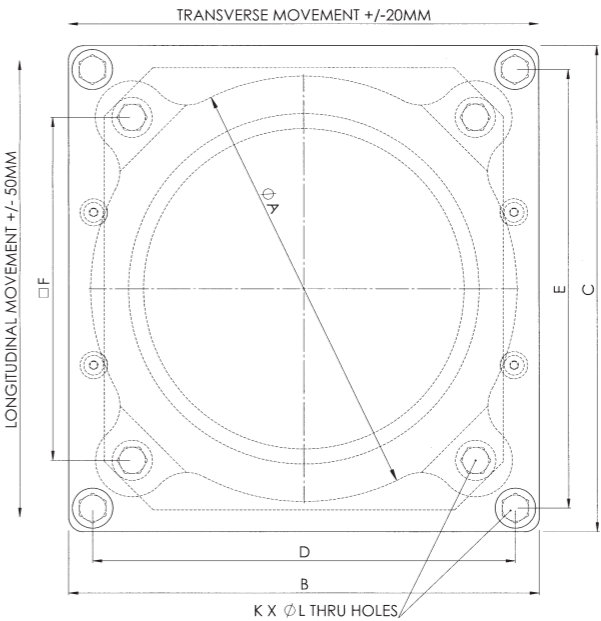
Bearing Design Loads

Bearings should be selected to suit the appropriate design code. If in doubt seek our advice.

Concrete Stress

Where suitable reinforcement of the concrete has been provided the allowable concrete stress is dependent on the relative dimensions of the bearing/structure interface, the total support area, and the characteristic strength of the concrete. The stress on the structure should therefore be checked to ensure that it is acceptable.

Bearing Part No.	Serviceability Limit State Loads			Ultimate Limit State Loads		Rotation (Radians)
	Maximum Vertical (kN)	Permanent (kN)	Minimum Vertical (kN)	Maximum Vertical (kN)	Minimum Vertical (kN)	
22KE0050	612	408	198	816	247	0.015
22KE0075	881	588	214	1175	267	0.015
22KE0100	1199	800	289	1599	361	0.015
22KE0130	1502	1001	366	2002	458	0.015
22KE0160	1910	1273	467	2546	584	0.015
22KE0200	2366	1578	574	3155	717	0.015
22KE0250	2961	1974	709	3948	887	0.015
22KE0300	3524	2349	837	4698	1046	0.015
22KE0350	4136	2757	970	5514	1213	0.015
22KE0400	4683	3122	1085	6244	1356	0.015
22KE0450	5264	3509	1201	7018	1501	0.015
22KE0500	5879	3919	1338	7838	1672	0.015
22KE0550	6395	4264	1452	8527	1815	0.015
22KE0600	6934	4623	1569	9245	1961	0.015
22KE0700	8225	5483	1858	10966	2322	0.015
22KE0800	9305	6203	2097	12406	2621	0.015
22KE0900	10451	6968	2351	13935	2939	0.015
22KE1000	11664	7776	2619	15552	3274	0.015
22KE1200	13899	9266	3049	18532	3811	0.0125
22KE1400	16330	10887	3550	21773	4438	0.0125
22KE1600	18505	12337	4019	24673	5023	0.0125
22KE1800	20816	13877	4505	27754	5631	0.0125
22KE2000	23262	15508	5030	31016	6288	0.0125
22KE2250	26111	17407	5624	34814	7030	0.0125
22KE2500	29123	19416	6264	38831	7830	0.0125
22KE3000	34715	23144	7434	46287	9293	0.0125



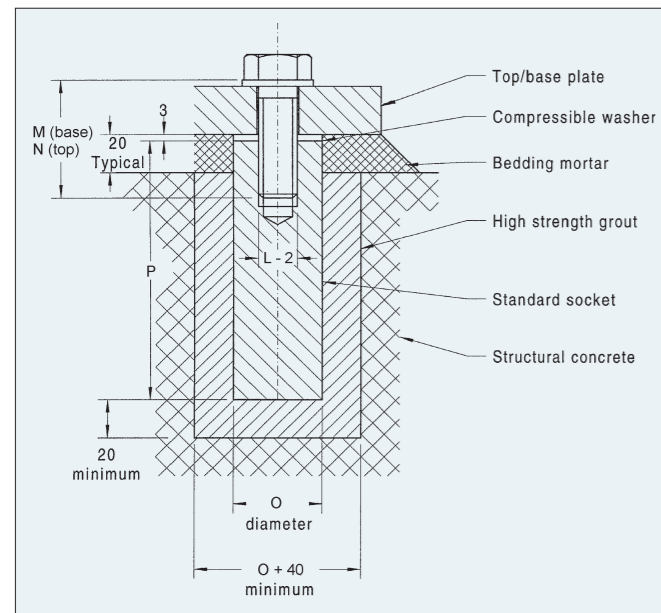
Bearing No.	Installation Dimensions (mm)																Bearing Weight (kg)
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	WT	
22KE0050	190	247	307	212	272	160	12	16	74	4	14	30	35	35	110	19	
22KE0075	219	274	334	239	299	180	12	18	79	4	14	30	40	35	110	26	
22KE0100	258	302	362	257	317	215	16	20	84	4	18	40	45	40	140	36	
22KE0130	293	330	390	285	345	240	16	24	92	4	18	40	50	40	140	50	
22KE0160	332	364	416	319	371	267	16	28	98	4	18	40	50	40	140	67	
22KE0200	371	400	445	345	390	302	20	31	104	4	22	50	60	50	170	87	
22KE0250	419	446	480	391	425	336	20	35	111	4	22	50	65	50	170	117	
22KE0300	461	490	518	425	453	372	24	38	118	4	26	60	70	55	200	149	
22KE0350	502	529	550	464	485	401	24	41	128	4	26	60	80	55	200	190	
22KE0400	534	559	578	494	513	424	24	42	133	4	26	60	80	55	200	219	
22KE0450	568	591	608	511	528	459	30	43	136	4	32	70	90	70	240	252	
22KE0500	600	621	633	541	553	481	30	45	141	4	32	70	90	70	240	289	
22KE0550	632	651	653	571	573	504	30	49	147	4	32	70	90	70	240	333	
22KE0600	660	677	677	597	597	524	30	51	150	4	32	70	100	70	240	369	
22KE0700	709	723	723	643	643	558	30	52	160	4	32	70	100	70	240	444	
22KE0800	752	763	763	668	668	599	36	54	168	4	38	90	110	80	300	523	
22KE0900	808	816	816	721	721	639	36	61	181	4	38	90	110	80	300	654	
22KE1000	852	857	857	762	762	670	36	63	187	4	38	90	120	80	300	749	
22KE1200	933	944	944	834	834	738	42	69	198	4	44	100	130	105	360	963	
22KE1400	1008	1014	1014	904	904	791	42	72	208	4	44	100	130	105	360	1166	
22KE1600	1070	1072	1072	962	962	835	42	76	217	4	44	100	140	105	360	1367	
22KE1800	1130	1129	1129	1004	1004	888	48	78	226	4	50	120	150	120	410	1578	
22KE2000	1186	1181	1181	1056	1056	928	48	80	234	4	50	120	150	120	410	1786	
22KE2250	1250	1241	1241	1116	1116	973	48	81	242	4	50	120	150	120	410	2030	
22KE2500	1312	1300	1300	1175	1175	1017	48	83	249	4	50	120	150	120	410	2287	
22KE3000	1426	1407	1407	1282	1282	1097	48	87	262	4	50	120	160	120	410	2813	

Note: M = Length of base screw, N = Length of top screw, O = Diameter of top/base socket (mm), P = Length of top/base socket (mm)

KE - Series

Standard KE Bearing Fixings

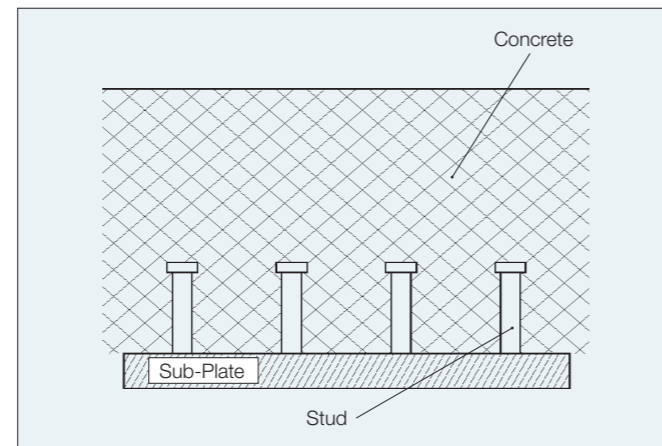
KE Series Fixings - With Socket



Notations To Dimensional References For Bearing Diagrams

- A** - Base plate square dimension - length or breadth of base plate (square dimension - mm)
- B** - Width of top plate (mm)
- C** - Length of top plate (mm)
- D** - Transverse width between the fixings on top plate (mm)
- E** - Longitudinal length between the fixings on top plate (mm)
- F** - Longitudinal / transverse distance between the fixings on base plate (square dimension - mm)
- G** - Lug thickness of base plate (mm)
- H** - Lug thickness of top plate (mm)
- J** - Overall height of the nominal bearing (mm)
- K** - Hole diameter of the fixings on top and base plate
- L** - No. of fixings on top and base plate
- M** - Length and breadth of base sub plate (square dimension - mm)
- N** - Thickness of base or top sub plate (mm)
- O** - Diameter of top/base socket (mm)
- P** - Length of top/base socket (mm)

KE Series Fixings - With Studs



With steel to steel connections bolting or welding of Ekspan sub-plates is possible.

HANDLING, STORAGE, INSTALLATION & MAINTENANCE

Installation

CONSIDER THE EFFECTS IF BEARINGS ARE NOT CORRECTLY INSTALLED

Our structural bearings are manufactured to close tolerances by skilled technicians working in clean conditions. To obtain the requisite performance from bearings it is imperative that they are properly handled at the work site and installed with the same care as when they were assembled in the factory. The following notes will assist those responsible for specifying and supervising the installation of structural bearings.

Please note that Ekspan are able to provide installation and supervision.

Bearings must be installed with precision to meet the bridge and bearing design criteria.

Storage

Our structural bearings are protected from contamination under normal working conditions by an efficient sealing system. Care should be taken in storage to prevent contamination and damage to the working surfaces.

Handling

Robust transportation devices are fitted to all bearings to ensure that the components are maintained in their correct relative positions before and during installation. The devices are normally finished in red paint. Unless special devices have been specified, they should not be used for slinging or suspending the bearings beneath beams.

Due to unpredictable conditions, which may occur during transportation or handling on site, the alignment and presetting (if applicable) of the assembled bearing should be checked against the drawing. Do not endeavour to rectify any discrepancies on site. The bearing should either be returned to Ekspan or, where practical, an Ekspan engineer should be called in to inspect and reassemble. Bearings too heavy to be lifted by hand should be properly slung using lifting equipment.



GOOD INSTALLATION



Mechanical guide bearing and upper adaptor plate correctly installed.
All bearing interfacing surfaces are horizontal.
All surfaces are free from contaminants.

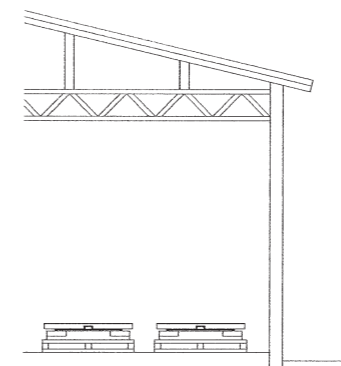


BAD INSTALLATION

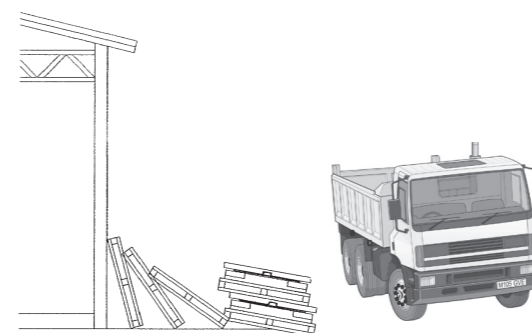


No tapered plate installed inducing additional rotations over maximum allowable.
Incorrect fixings utilised.
Welding completed with bearing in situ.
Dirt and debris in and around bearing slide area.

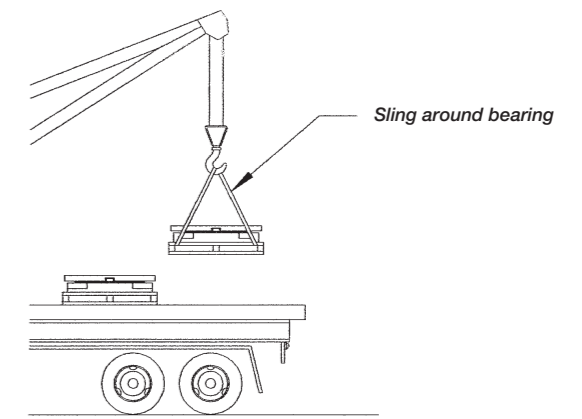
CORRECT



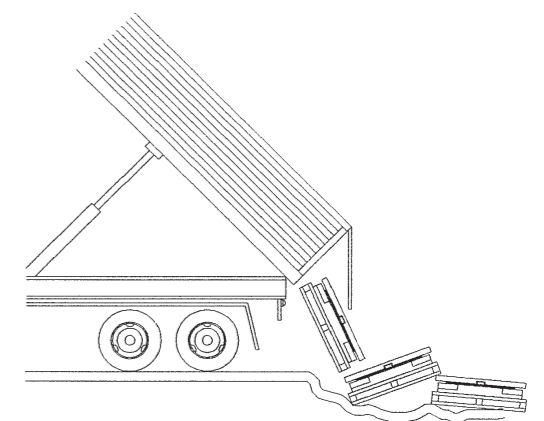
INCORRECT



CORRECT



INCORRECT



HANDLING, STORAGE, INSTALLATION & MAINTENANCE

Presetting

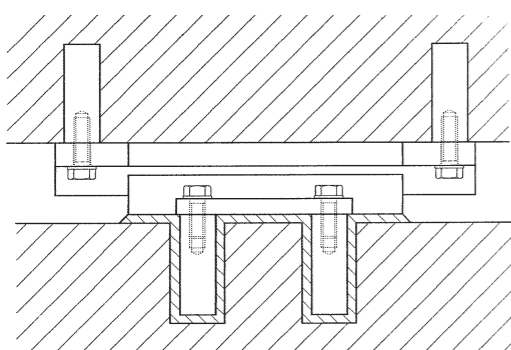
If bearings are required to be preset eg where once only large movements may occur during stressing operations, this should be specified as a requirement and should only be carried out in our works prior to despatch. Do not attempt this operation on site.

Bedding

Bearings must be supported on a flat rigid bed. Steel spreader plates must be machined flat and smooth to mate exactly with the bearings' upper and lower faces. Bearings may also be bedded on epoxy or cement mortar or by dry packing. Whichever system is preferred for the particular structure it is of extreme importance that the final bedding is free from high or hard spots, shrinkage, voids, etc.

Unless there is a specific design requirement, the planar surfaces must be installed in a horizontal plane. The correct installation of bearings is vital for the bearing performance. Costly repairs become necessary all too often due to inadequate specification or poor site supervision. The bearings should not be loaded until the bedding mortar has cured.

Fixing bearings to concrete using permanent anchor plates

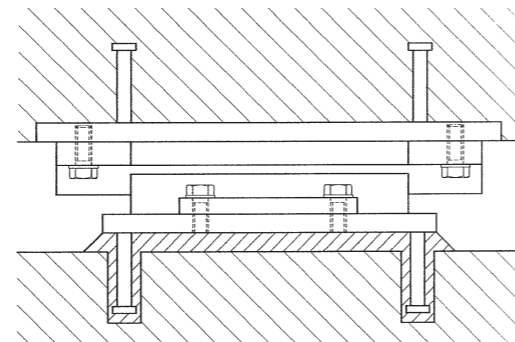


Cast-In-Situ Structures

Care must be taken to ensure that the bearings are not damaged by the formwork or contaminated by concrete seepage. The interface between the top plate and the formwork should be protected and sealed.

Owing to the loading effects of a wet concrete mass, the top plates should be propped to prevent rotation and plate distortion.

Fixing cast-in-situ structures ensure that the bearing working surfaces are protected and supported to prevent distortion and rotation.



Bearing Removability

Where possible, bearings should be fixed in such a manner as to facilitate removal. Our bearings have generally been designed with this in mind. However, when selecting the bearing type preferred, the removability feature should be highlighted in your enquiry.

Removal of Transport Brackets

These brackets, normally painted red should only be removed once the bearing is properly installed and ready for operation.

Bearing Installation Check List

DO -

1. Handle carefully and where necessary with adequate craneage.
2. Store in a clean dry place.
3. Ensure that the bearings are installed in the correct location and orientation.
4. Ensure that the bearings are installed on a flat rigid bed before the design loads are applied.
5. Ensure that the fixings are uniformly tightened.
6. Complete any site coatings and make good paint damaged during handling and installation.
7. Protect working surfaces during the placing of in-situ concrete.
8. Keep the bearings and surrounding areas clean.
9. Remove any temporary transit clamps etc. before the bearings are required to operate.
10. Take special care to support top plates when casting in-situ concrete.

HANDLING, STORAGE, INSTALLATION & MAINTENANCE

DO NOT -

1. Dismantle the bearing on site.
2. Leave bearings uncovered.
3. Attempt to modify without our approval.
4. Install without qualified supervision.

Site Coating

Care should be taken to ensure that working surfaces are not damaged in any site coating operation. After installation damaged coatings must be repaired irrespective of any call for site coatings. Exposed fixing bolts should be protected after final tightening. Any tapped holes exposed after removal of transportation brackets etc. (coloured red) should be sealed with self-vulcanizing silicone sealant.

Routine Maintenance of Bearings

1. Immediately following installation bearings shall be inspected to ensure that all aspects of 'Installation of bearings' have been adhered to and bearings shall subsequently be re-inspected not less frequently than every two years after their installation.
2. Paint and /or other specified protective coatings must be maintained in good and efficient condition and free from scratches or chips. Any areas of the protective coating showing damage or distress must be rectified.
3. Areas surrounding the bearings must be kept clean and dry and free from the adverse effects of external influences such as airborne debris or water/salt (for example emanating from leaking joints).
4. The wearing surfaces of the bearing must be checked to ensure that they are continuing to operate efficiently.
5. Fixing bolts must be checked for tightness.
6. Any bedding material showing signs of distress or ineffectiveness must be replaced and the reason for its failure investigated and corrected.
7. Routine inspections shall include a check that translational and rotational capacities of the bearing have not been exceeded and show no sign of being likely to exceed the requirements specified at the design stage.

KE - Series

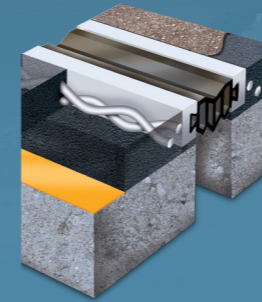
KE Pot Bearings

- 1.01** The bearings should be designed in accordance with EN1337 and be constructed from steel grade EN100025 S355 J2.
(HIGH QUALITY STEEL GOOD LOADING CAPACITIES)
- 1.02** Bearings should be designed to allow for combination load effects.
- 1.03** The sliding surface of the bearing must be fully welded to the top plate of the bearing. This prevents crevice corrosion de-lamination of the stainless steel ensuring bearing longevity. The stainless steel sliding surface should be in accordance with EN 10088-2 1.4401 + 2B or 1.4404 + 2B. Surface treatment roughness Ry5i shall not exceed 1 µm in accordance with EN ISO 4287, and the hardness shall be in the range 150 HV1 to 220 HV1, according to EN ISO 6507-2. Paint will be applied to overlap the welded area of the sliding surface so as to protect the area from the risk of corrosion.
(REDUCES CORROSION IN UNLOADED AREAS WHICH IS THE CAUSE OF MOST BEARING FAILURES)
- 1.04** PTFE bearing surfaces shall be Virgin material with a dimpled surface and lubricated with silicon grease in accordance with EN1337-2. The PTFE shall be retained in the bearing by a machined recess.
(FRICTION IS AT A MINIMUM, LIFE IS EXTENSIVE AND THE PTFE CANNOT "CREEP")
- 1.05** Guide sliding surfaces should also be fully welded and mirror polished. The wear surface of the guide shall be a mechanically restrained high load resistant material DU(B) in accordance with EN1337-2.
(THE LIFE OF BEARINGS IS EXTENDED WITH USE OF GOOD WEAR MATERIALS)
- 1.06** Pot bearing pistons are machined with a tightly controlled tolerance between the pot and the piston.
(REDUCE EDGE PRESSURE EFFECTS ON RUBBER)
- 1.07** The rubber pad in a pot bearing is to have a minimum of 2 brass rings, which should be sized to meet and fit tight to the pot wall. EN1337-5
(THIS IS KEY TO ENSURE THAT THE RUBBER IS RETAINED IN THE POT - IF NOT THEN THE RUBBER MAY EXTRUDE UNDER LOAD)
- 1.08** The rubber pad shall meet EN 1337-5 and be natural rubber or polychloroprene rubber in accordance with ISO 6446. It will be preformed with a recess on the top surface which allows the retaining rings to finish flush with the rubber.
(THIS MEANS THAT WHEN THE BEARING IS LOADED THERE ARE NO AIR GAPS TO CLOSE ENSURING THAT DATUMS ARE MAINTAINED)
- 1.09** The rubber pad shall fit in the pot without need for deflection. Corners should be moulded in such a way as to ensure that the pad fits to the machined pot base.
(THIS ALSO REDUCES AIR ENTRAPMENT)
- 1.10** The outer surfaces of the bearing will be blasted to SA 2½ and have the contract specified paint system applied.
- 1.11** Bearings to be supplied with Ekspan plates. Bearings will be supplied with base and top sockets.

USL Ekspan advise that the specification clauses above demonstrate good practice to ensure good quality bearings.

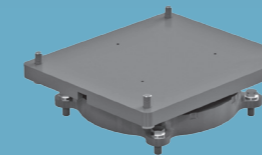
Sample Quality Bearing Specification Clauses

USL EKSPAN - PRODUCT RANGE



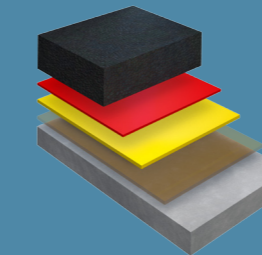
EXPANSION JOINTS - CD 357

Uniflex - Buried	T-MAT - Mat	Open Type Joint - Rail Joint
BP1 - Buried	Britflex BEJ - Modular	Britflex UCP - Footbridge Joint
FEBA - Flexible Plug	Britflex MEJS - Modular	Finger Joint
Britflex NJ - Nosing	LJ - Longitudinal Joint	Roller Shutter Joint
EC & EW - Joint Seal	ES - Joint Seal	
Transflex & Transflex HM - Mat	Aqueduct/Immersed Joint	



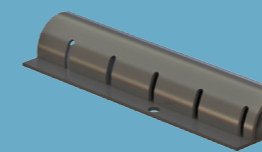
STRUCTURAL BEARINGS

EKE - Elastomeric (EN1337-3)	D - Linear Rocker (BS5400-9)	EKR - Rubber Pad & Strip
KE - Pot (EN1337-5)	F - Restraint & Guide (BS5400-9)	EQF - Sliding Bearing
DE - Linear Rocker (EN1337-6)	G - Spherical (BS5400-9)	Bespoke Bearings
GE - Spherical (EN1337-7)	J - Roller (BS5400-9)	
FE - Restraint & Guide (EN1337-8)	K - Pot (BS5400-9)	
EA - Sliding Bearing	Link Bearing (BS5400-9)	



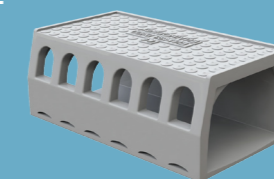
STRUCTURAL WATERPROOFING - CD 358

Pitchmastic PmB Polyurethane (Pu) Waterproofing System	Britdex CPM Tredseal Combined Waterproofing and Anti Skid Surfacing (MMA)
Britdex MDP Methyl Methacrylate (MMA) Waterproofing System	Uradeck BC Combined Waterproofing and Anti Skid Surfacing (Pu)



SUB-SURFACE BRIDGE DRAINAGE

Ekspan 325 Channel
Ekspan 302 System
ES Seal System
DriDeck



SURFACE BRIDGE DRAINAGE

Envirodeck

GROUP BRANDS



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E&OE

Issue 01 - June 2020



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