

psl[®] thin-section bearings.

Brief Overview of Production Program



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thyssenkrupp

What are thin-section bearings?

thyssenkrupp rothe erde Slovakia thin-section bearings, also known as slim bearings, are precision-engineered bearings with extremely thin cross-sections. They are specialized bearings designed for applications where space is limited and weight requirements are stringent.

These bearings are designed to operate in space-constrained applications where conventional bearings cannot fit, offering significant advantages in weight reduction, space savings, and overall system performance.

Thin-section bearings feature a unique thin-walled structure that allows them to provide high performance and high precision even when the space and weight restrictions are required.

Thin-section bearings can meet highly demanding and specific requirements. They are often used in applications such as aerospace, medical systems, semiconductor manufacturing, robotics, astronomy instrumentation and machine tools.



Slim Bearings

Characteristics

- ⇒ Specialized bearings designed for applications where space is limited and weight requirements are stringent and where conventional bearings cannot fit.
- ⇒ Small cross-sections relative to diameters which allows to offer smaller design envelope and lower mass, while achieving high rigidity and running accuracy.
- ⇒ Bearings dedicated for light and medium duty with slow and incremental movement. Their thin cross-section design allows the bearings to be installed into less dimensioned structures.
- ⇒ Available in three configurations as angular contact ball bearings (Type A), deep groove ball bearings (Type C) and four-point contact ball bearings (Type X). Each of these designs is available in various series. The series correspond to constant cross-section size with matched ball size.
- ⇒ Designs with extremely small, predominantly square cross-sections. Within each series, the cross-section remains constant even in the case of larger shaft and housing bore diameters. The bearings are therefore also described as constant section (CS) bearings. This feature distinguishes thin-section bearings from the conventional bearings that are described in standardized ISO series.
- ⇒ In this way, a larger cross-section can be selected in a graduated manner and, thus, a bearing with high load-carrying capacity can be used without the need to increase the shaft diameter. Thin-section bearings can be used to achieve extremely light and compact designs.
- ⇒ Thin cross-section which enables weight savings on larger diameter sizes.

psl® thin-section bearings

Excellence in customized bearing production

thyssenkrupp rothe erde Slovakia, a.s. Považská Bystrica is a renowned bearing manufacturer. Our trademark psl® is globally recognised as a mark of quality and reliability among customers in various industrial sectors.

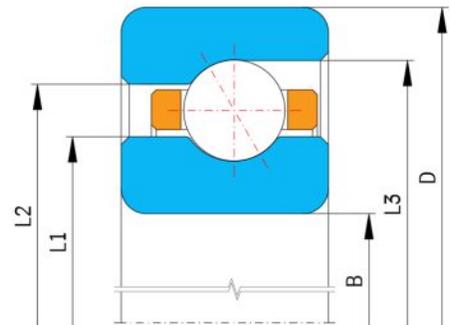
We are a major producer of standard and special bearings. Our products have proven their reliability for over 75 years in a wide range of applications and throughout our long successful history, we have kept pushing the boundaries of possibility.

psl[®] thin-section bearings Angular contact (Type A)



Main Characteristics

The Type A, angular contact ball bearing is designed to be used in applications with high axial loads in one direction. This bearing also works well in radial or combined radial-thrust applications. The Type A bearing should never be used alone to support moment loads or reversing axial loading.



Dimensional series: ½"; ball ¼"

B (Bore) inch	D (Outside dia.) inch	Land diameters			Load ratings (capacities)				weight [lbs]	Bearing designation
					Dynamic		Static			
		L1 inch	L2 inch	L3 inch	Radial lbs	Thrust lbs	Radial lbs	Thrust lbs		
8	9	8.37	8.63	8.734	2,626	6,514	6,715	19,380	1.5	PSLKD080ARO
9	10	9.37	9.63	9.732	2,778	7,014	7,501	21,661	1.7	PSLKD090ARO
10	11	10.37	10.63	10.732	2,938	7,500	8,293	23,942	1.9	PSLKD100ARO
11	12	11.37	11.63	11.73	3,070	7,961	9,082	26,222	2.1	PSLKD110ARO
12	13	12.37	12.63	12.728	3,213	8,424	9,870	28,501	2.2	PSLKD120ARO
14	15	14.37	14.63	14.724	3,462	9,291	11,451	33,061	2.6	PSLKD140ARO
16	17	16.37	16.63	16.718	3,741	10,131	13,030	37,620	2.9	PSLKD160ARO
18	19	18.37	18.63	18.712	4,006	10,932	14,611	42,180	3.3	PSLKD180ARO
20	21	20.37	20.63	20.705	4,258	11,711	16,190	46,741	3.7	PSLKD200ARO
21	22	21.37	21.63	21.7	4,334	12,087	16,981	49,022	3.8	PSLKD210ARO

Dimensional series: ¾"; ball 3/8"

B (Bore) inch	D (Outside dia.) inch	Land diameters			Load ratings (capacities)				weight [lbs]	Bearing designation
					Dynamic		Static			
		L1 inch	L2 inch	L3 inch	Radial lbs	Thrust lbs	Radial lbs	Thrust lbs		
8	9.5	8.555	8.945	9.11	5,052	12,670	11,731	33,862	3.6	PSLKF080ARO
9	10.5	9.555	9.945	10.108	5,380	13,700	13,190	38,090	4.0	PSLKF090ARO
10	11.5	10.555	10.945	11.106	5,633	14,531	14,420	41,620	4.4	PSLKF100ARO
11	12.5	11.555	11.945	12.106	5,943	15,503	15,881	45,851	4.8	PSLKF110ARO
12	13.5	12.555	12.945	13.104	6,205	16,292	17,100	49,381	5.2	PSLKF120ARO
14	15.5	14.555	14.945	15.102	6,769	17,951	19,791	57,141	5.8	PSLKF140ARO
16	17.5	16.555	16.945	17.098	7,299	19,542	22,481	64,890	6.8	PSLKF160ARO
18	19.5	18.555	18.945	19.096	7,852	21,211	25,411	73,361	7.7	PSLKF180ARO
20	21.5	20.555	20.945	21.092	8,329	22,682	28,101	81,121	8.5	PSLKF200ARO

Dimensional series: 1"; ball 1/2"

B (Bore) inch	D (Outside dia.) inch	Land diameters			Load ratings (capacities)				weight [lbs]	Bearing designation
					Dynamic		Static			
		L1 inch	L2 inch	L3 inch	Radial lbs	Thrust lbs	Radial lbs	Thrust lbs		
8	10	8.742	9.258	9.485	8,454	20,181	17,063	49,250	6.5	PSLKG080ARO
9	11	9.742	10.258	10.485	8,924	21,644	18,961	54,722	7.2	PSLKG090ARO
10	12	10.742	11.258	11.483	9,370	23,062	20,852	60,191	8.0	PSLKG100ARO
11	13	11.742	12.258	12.481	9,807	24,443	22,751	65,661	8.7	PSLKG110ARO
12	14	12.742	13.258	13.481	10,215	25,784	24,640	71,142	9.5	PSLKG120ARO
14	16	14.742	15.258	15.478	10,977	28,361	28,430	82,081	10.9	PSLKG140ARO
16	18	16.742	17.258	17.474	11,728	30,832	32,221	93,021	12.4	PSLKG160ARO
18	20	18.742	19.258	19.472	12,433	33,201	36,020	104,001	13.8	PSLKG180ARO
20	22	20.742	21.258	21.468	13,175	35,491	39,811	114,901	15.2	PSLKG200ARO
22	24	22.742	23.258	23.468	13,688	37,712	43,600	125,857	16.6	PSLKG220ARO

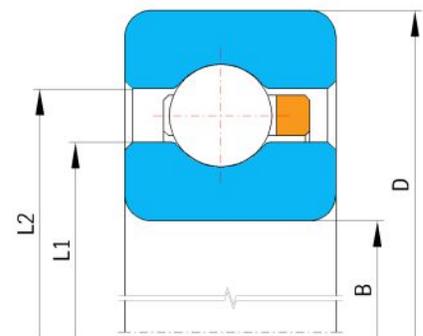
psl[®] thin-section bearings

Radial contact (Type C)



Main Characteristics

The Type C, radial contact ball bearing is designed with deep ball grooves to withstand high radial loads. Although this bearing is used primarily in applications with radial loads, it can withstand moderate reversing axial loads.



Dimensional series: ½"; ball ¼"

B (Bore) inch	D (Outside dia.) inch	Land Diameters		Load Ratings [lbs]		Aprox. Weight [lbs]	Bearing Designation
				Radial			
				Dynamic	Static		
8	9	8.37	8.63	2,510	5,811	1.5	PSLKD080CPO
9	10	9.37	9.63	2,662	6,501	1.7	PSLKD090CPO
10	11	10.37	10.63	2,798	7,181	1.9	PSLKD100CPO
11	12	11.37	11.63	2,937	7,871	2.1	PSLKD110CPO
12	13	12.37	12.63	3,084	8,553	2.3	PSLKD120CPO
14	15	14.37	14.63	3,319	9,921	2.7	PSLKD140CPO
16	17	16.37	16.63	3,576	11,291	3.1	PSLKD160CPO
18	19	18.37	18.63	3,826	12,651	3.5	PSLKD180CPO
20	21	20.37	20.63	4,066	14,020	3.9	PSLKD200CPO
21	22	21.37	21.63	4,136	14,706	4	PSLKD210CPO

Dimensional series: ¾"; ball 3/8"

B (Bore) inch	D (Outside dia.) inch	Land Diameters		Load Ratings [lbs]		Aprox. Weight [lbs]	Bearing Designation
				Radial			
				Dynamic	Static		
8	9.5	8.555	8.945	4,730	9,882	3.5	PSLKF080CPO
9	10.5	9.555	9.945	5,009	11,001	3.9	PSLKF090CPO
10	11.5	10.555	10.945	5,272	12,133	4.3	PSLKF100CPO
11	12.5	11.555	11.945	5,558	13,260	4.8	PSLKF110CPO
12	13.5	12.555	12.945	5,832	14,390	5.2	PSLKF120CPO
14	15.5	14.555	14.945	6,351	16,650	6	PSLKF140CPO
16	17.5	16.555	16.945	6,847	18,901	7.1	PSLKF160CPO
18	19.5	18.555	18.945	7,312	21,161	7.9	PSLKF180CPO
20	21.5	20.555	20.945	7,758	23,420	8.9	PSLKF200CPO

Dimensional series: 1"; ball 1/2"

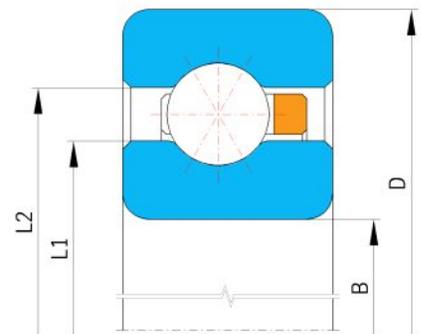
B (Bore) inch	D (Outside dia.) inch	Land Diameters		Load Ratings [lbs]		Aprox. Weight [lbs]	Bearing Designation
				Radial			
				Dynamic	Static		
8	10	8.742	9.258	8,076	14,771	6.5	PSLKG080CPO
9	11	9.742	10.258	8,538	16,421	7.2	PSLKG090CPO
10	12	10.742	11.258	8,957	18,063	7.9	PSLKG100CPO
11	13	11.742	12.258	9,362	19,701	8.6	PSLKG110CPO
12	14	12.742	13.258	9,759	21,342	9.3	PSLKG120CPO
14	16	14.742	15.258	10,510	24,621	10.8	PSLKG140CPO
16	18	16.742	17.258	11,216	27,911	12.3	PSLKG160CPO
18	20	18.742	19.258	11,899	31,191	13.7	PSLKG180CPO
20	22	20.742	21.258	12,603	34,470	15.8	PSLKG200CPO
22	24	22.742	23.258	13,033	37,757	16.8	PSLKG220CPO

psl[®] thin-section bearings 4-point contact (Type X)



Main Characteristics

The Type X, or 4-point contact, ball bearing is ideal for moment loading. Type X bearings are designed with gothic arch raceways creating 4 contact points between the balls and the raceways. This design is excellent for moment loading and reversing axial loading. The Type X bearing can be used for other light loading conditions, but is not recommended in place of the Type C or Type A bearing for pure radial or axial loads.



Dimensional series: 1/2"; ball 1/4"

B (Bore) inch	D (Outside dia.) inch	Land Diameters		Load Ratings (capacities)						Weight [lbs]	Bearing Designation
				Dynamic			Static				
		L1 inch	L2 inch	Radial lbs	Thrust lbs	Moment in-lbs	Radial lbs	Thrust lbs	Moment in-lbs		
8	9	8.37	8.63	2,942	5,637	10,144	5,811	14,541	24,711	1.5	PSLKD080XP0
9	10	9.37	9.63	3,150	5,998	12,129	6,501	16,252	30,870	1.7	PSLKD090XP0
10	11	10.37	10.63	3,343	6,355	14,246	7,181	17,961	37,710	1.9	PSLKD100XP0
11	12	11.37	11.63	3,531	6,657	16,489	7,871	19,671	45,232	2.1	PSLKD110XP0
12	13	12.37	12.63	3,713	6,994	18,852	8,553	21,380	53,441	2.3	PSLKD120XP0
14	15	14.37	14.63	4,058	7,671	23,920	9,921	24,801	71,911	2.7	PSLKD140XP0
16	17	16.37	16.63	4,384	8,361	29,417	11,291	28,220	93,111	3.1	PSLKD160XP0
18	19	18.37	18.63	4,688	9,030	35,312	12,651	31,641	117,001	3.5	PSLKD180XP0
20	21	20.37	20.63	4,980	9,671	41,585	14,020	35,060	143,701	3.9	PSLKD200XP0
21	22	21.37	21.63	5,121	9,981	44,854	14,710	36,770	158,101	4	PSLKD210XP0

Dimensional series: 3/4"; ball 3/8"

B (Bore) inch	D (Outside dia.) inch	Land Diameters		Load Ratings (capacities)						Weight [lbs]	Bearing Designation
				Dynamic			Static				
		L1 inch	L2 inch	Radial lbs	Thrust lbs	Moment in-lbs	Radial lbs	Thrust lbs	Moment in-lbs		
8	9.5	8.555	8.945	5,724	10,570	20,291	9,882	24,691	43,200	3.5	PSLKF080XP0
9	10.5	9.555	9.945	6,101	11,231	24,110	11,001	27,511	53,643	3.9	PSLKF090XP0
10	11.5	10.555	10.945	6,466	11,883	28,177	12,133	30,333	65,212	4.3	PSLKF100XP0
11	12.5	11.555	11.945	6,816	12,493	32,474	13,260	33,153	77,911	4.8	PSLKF110XP0
12	13.5	12.555	12.945	7,151	13,191	36,989	14,390	35,972	91,732	5.2	PSLKF120XP0
14	15.5	14.555	14.945	7,787	14,530	46,664	16,650	41,620	122,801	6	PSLKF140XP0
16	17.5	16.555	16.945	8,392	15,821	57,134	18,901	47,261	158,301	7.1	PSLKF160XP0
18	19.5	18.555	18.945	8,959	17,061	68,346	21,161	52,901	198,401	7.9	PSLKF180XP0
20	21.5	20.555	20.945	9,502	18,251	80,262	23,420	58,550	243,001	8.9	PSLKF200XP0

Dimensional series: 1"; ball 1/2"

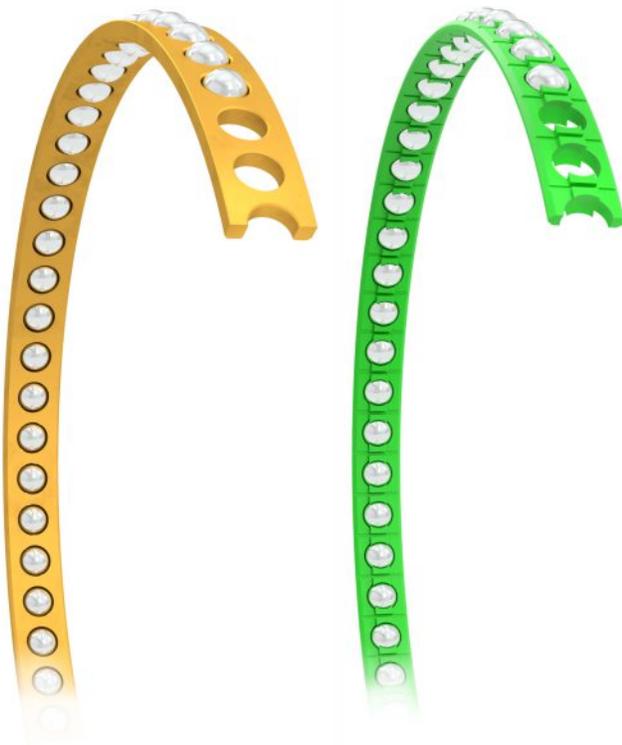
B (Bore) inch	D (Outside dia.) inch	Land Diameters		Load Ratings (capacities)						Weight [lbs]	Bearing Designation
				Dynamic			Static				
		L1 inch	L2 inch	Radial lbs	Thrust lbs	Moment in-lbs	Radial lbs	Thrust lbs	Moment in-lbs		
8	10	8.742	9.258	9,476	17,845	34,491	14,771	36,941	66,481	6.5	PSLKG080XP0
9	11	9.742	10.258	10,067	18,923	40,739	16,421	41,041	82,081	7.2	PSLKG090XP0
10	12	10.742	11.258	10,640	19,958	47,376	18,063	45,143	99,322	7.9	PSLKG100XP0
11	13	11.742	12.258	11,185	20,963	54,372	19,701	49,252	118,201	8.6	PSLKG110XP0
12	14	12.742	13.258	11,714	21,914	61,735	21,342	53,352	138,702	9.3	PSLKG120XP0
14	16	14.742	15.258	12,724	23,707	77,448	24,621	61,560	184,701	10.8	PSLKG140XP0
16	18	16.742	17.258	13,677	25,471	94,426	27,911	69,771	237,201	12.3	PSLKG160XP0
18	20	18.742	19.258	14,578	27,411	112,562	31,191	77,980	296,301	13.7	PSLKG180XP0
20	22	20.742	21.258	15,436	29,301	131,860	34,470	86,181	362,001	15.8	PSLKG200XP0
22	24	22.742	23.258	16,256	31,131	152,231	37,760	94,392	434,201	17.3	PSLKG220XP0

psl[®] thin-section bearings

Cage types

Pocket cage

design used in Type A
(Assembly of the cage with balls into races)

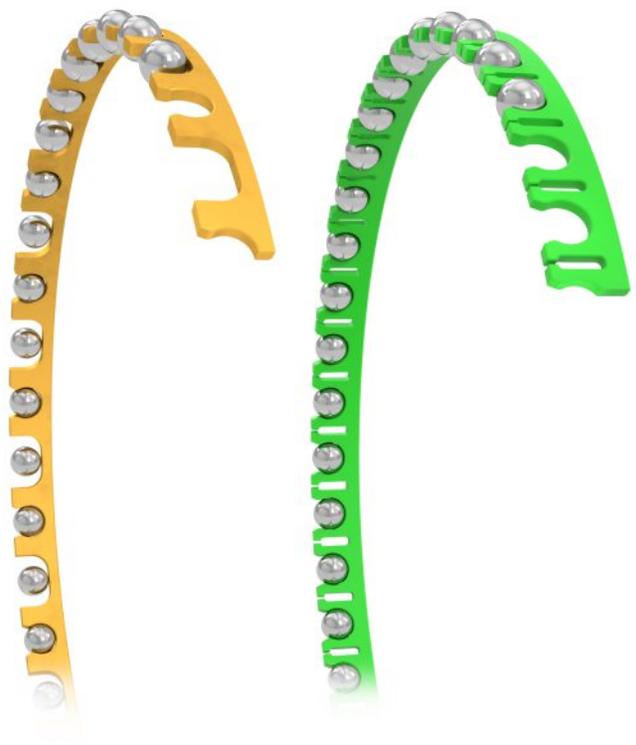


Advantages of plastic cage

- ⇒ Cost sensitive
- ⇒ Lightweight
- ⇒ Higher speeds
- ⇒ Noise reduction

Snap-in cage

design used in Type C and Type X
(Conrad assembly of the races and balls)



Advantages of brass cage

- ⇒ Higher precision applications
- ⇒ Higher loads
- ⇒ Higher temperatures
- ⇒ Chemical and corrosive resistance

psi® thin-section bearings

Applications



Medical system - X-ray scanners, computed tomography (CT), ultrasound, echocardiography, PET scanners, diagnostic equipment, fluoroscopy, surgery robots, surgery tables

Industrial machinery - robots, rotary systems, optical scanners, projectors, spinning machines, handling equipment, rotary tables

Tracking systems - radars, cameras, sonars, satellites, radio telescope

Renewable energy

Decarbon Technologies

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