

## Needle roller thrust bearings

### Features

Axial needle roller bearings AXW consist of thrust needle roller and cage assemblies AXK and thrust bearing washers with centering sleeves. They can be used with drawn cup needle roller bearings or machined cup needle roller bearings.

The running raceways of the needle rollers and cage assembly must be hardened and ground.

## Thrust bearing washers

Thrust bearing washers are hardened and polished stampings used as shaft washers or races for use with thrust needle roller and cage assemblies AXK.

## Operating temperature

The operating temperature of thrust needle roller bearings is from  $-20\text{ }^{\circ}\text{C}$  to  $+120\text{ }^{\circ}\text{C}$ .

## Cage

There're three types of materials for thrust needle roller bearing cages, machined steel, stamped steel and glass fiber reinforced nylon.

## Thrust Needle Roller Bearings

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## Needle roller and cage thrust assemblies

Axial needle roller bearings AXW consist of thrust needle roller and cage assemblies AXK and thrust bearing washers with centering sleeves. They can be used with drawn cup needle roller bearings or machined cup needle roller bearings.

AXK series needle roller and cage thrust assemblies:

- are available for  $4 \leq d \leq 160\text{ mm}$
- can accommodate axial loads in one direction only
- can be combined with washers in the LS, AS, GS 811 or WS 811 series in applications where adjacent components cannot serve as raceways.

## Double direction bearings

Double direction bearings:

- can accommodate axial loads in both directions
- can be created by combining two needle roller and cage thrust assemblies and two bearing washers with an intermediate washer
- Depending on the design, an intermediate washer can be shaft or housing centred.

Intermediate washers must have the same hardness and surface finish as bearing washers SKF does not supply intermediate washers, but provides material specifications and dimensional data on request.

## LS series universal washers

Axial needle roller bearings AXW consist of thrust needle roller and cage assemblies AXK and thrust bearing washers with centering sleeves. They can be used with drawn cup needle roller bearings or machined cup needle roller bearings.

- are made of hardened carbon chromium bearing steel
- can be used as shaft or housing washers for needle roller thrust bearings in the AXK series
- can be used as shaft washers for bearings in the AXW series
- are available for  $6 \leq d \leq 160\text{ mm}$
- raceway surface is ground, while all other surfaces are turned
- are used for applications where accurate centring of the washers is not necessary or where low speeds are involved
- washer face opposite the side with the chamfers is the raceway surface and should face the rollers

## AS series thin universal washers

- are 1 mm thick
- are made of spring steel and hardened
- can be used as shaft or housing washers for needle roller thrust bearings in the AXK series
- can be used as shaft washers for bearings in the AXW series
- are available for  $4 \leq d \leq 160\text{ mm}$
- can be used to provide a cost-effective bearing solution, if adjacent machine components are not hardened, but have adequate stiffness and the requirements to geometrical tolerances are moderate.

Both faces of the washers are polished and can be used as raceways.

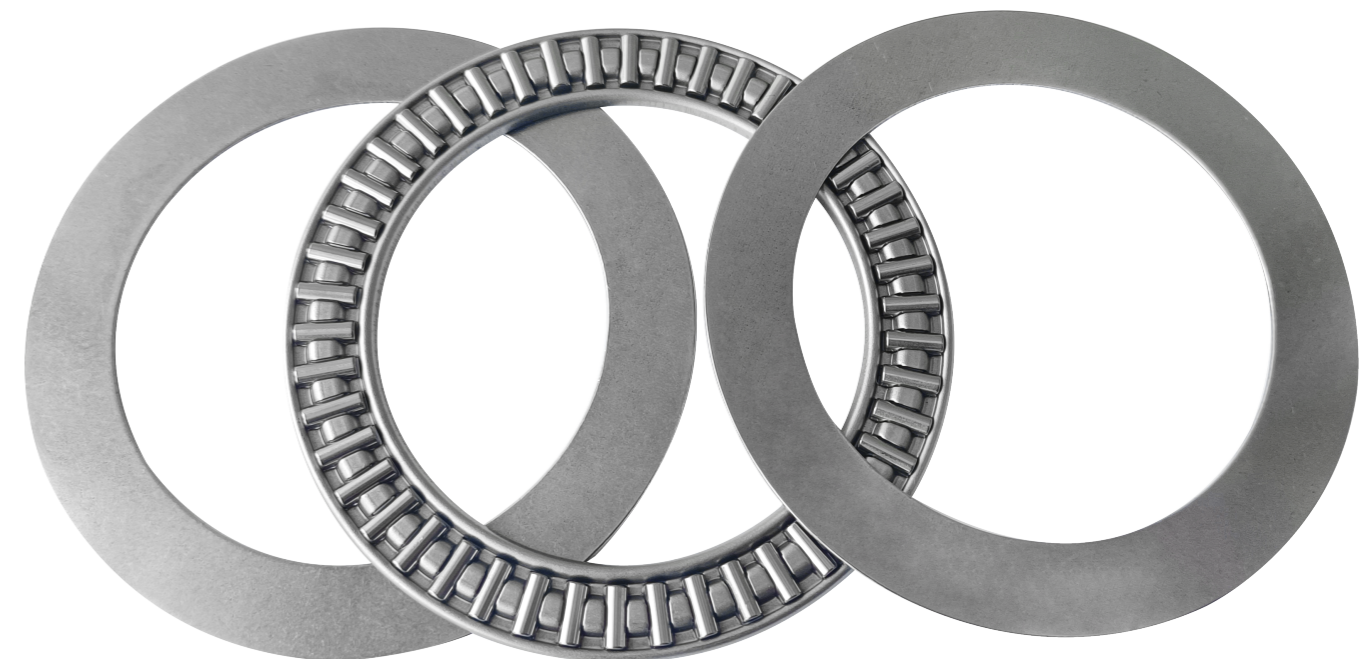
## 811 series shaft (preix WS) and housing washers (preix GS)

- are used primarily with cylindrical roller and cage thrust assemblies
- can also be combined with needle roller and cage thrust assemblies
- can be used in high-speed applications where accurate centring of the bearing washers is required

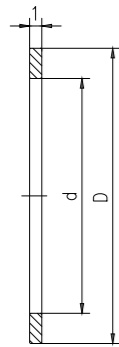
For additional information about 811 series washers, refer to Cylindrical roller thrust bearings.

## suffix for an existing design

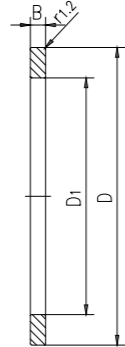
Suffix	Meaning
TN	Glass fibre reinforced PA66 cage



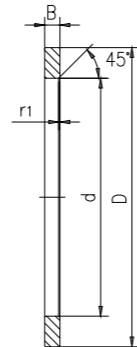
## Needle roller and cage thrust assemblies



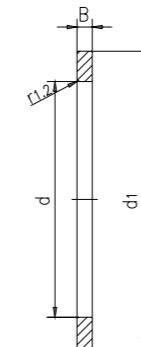
AS



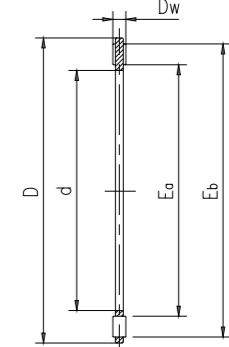
GS



LS



WS

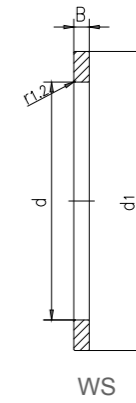
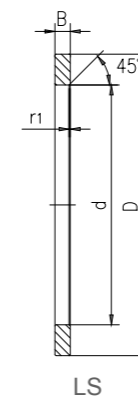
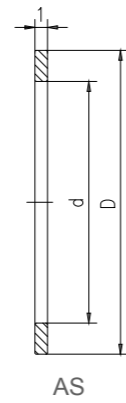
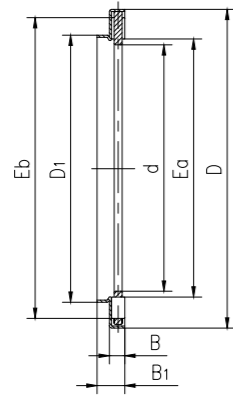


assembly

Type					Main dimensions					Dimensions				
Bearing type	Universal Gasket	Universal thin washers	Shaft rings	Seat ring	d	D	D <sub>w</sub>	E <sub>a</sub> min.	E <sub>b</sub> max.	d <sub>1</sub>	D	D <sub>1</sub>	B	r <sub>1, 2</sub> min.
AXK414TN	-	AS414	-	-	4	14	2	5	13	-	14	-	-	-
AXK515TN	-	AS515	-	-	5	15	2	6	14	-	15	-	-	-
AXK619TN	LS0619	AS619	-	-	6	19	2	7	18	-	19	-	2.75	0.3
AXK821TN	LS0821	AS821	-	-	8	21	2	9	20	-	21	-	2.75	0.3
AXK1024	LS1024	AS1024	-	-	10	24	2	12	23	-	24	-	2.75	0.3
AXK1226	LS1226	AS1226	-	-	12	26	2	14	25	-	26	-	2.75	0.3
AXK1528	LS1528	AS1528	WS81102	GS81102	15	28	2	17	27	28	28	16	2.75	0.3
AXK1730	LS1730	AS1730	WS81103	GS81103	17	30	2	19	29	30	30	18	2.75	0.3
AXK2035	LS2035	AS2035	WS81104	GS81104	20	35	2	22	34	35	35	21	2.75	0.3
AXK2542	LS2542	AS2542	WS81105	GS81105	25	42	2	29	41	42	42	26	3	0.6
AXK3047	LS3047	AS3047	WS81106	GS81106	30	47	2	34	46	47	47	32	3	0.6
AXK3552	LS3552	AS3552	WS81107	GS81107	35	52	2	39	51	52	52	37	3.5	0.6
AXK4060	LS4060	AS4060	WS81108	GS81108	40	60	3	45	58	60	60	42	3.5	0.6
AXK4565	LS4565	AS4565	WS81109	GS81109	45	65	3	50	63	65	65	47	4	0.6
AXK5070	LS5070	AS5070	WS81110	GS81110	50	70	3	55	68	70	70	52	4	0.6
5578	LS5578	AS5578	WS81111	GS81111	55	78	3	60	76	78	78	57	5	0.6
AXK6085	LS6085	AS6085	WS81112	GS81112	60	85	3	65	83	85	85	62	4.75	1
AXK6590	LS6590	AS6590	WS81113	GS81113	65	90	3	70	88	90	90	67	5.25	1
AXK7095	LS7095	AS7095	WS81114	GS81114	70	95	4	74	93	95	95	72	5.25	1
AXK75100	LS75100	AS75100	WS81115	GS81115	75	100	4	79	98	100	100	77	5.75	1
AXK80105	LS80105	AS80105	WS81116	GS81116	80	105	4	84	103	105	105	82	5.75	1
AXK85110	LS85110	AS85110	WS81117	GS81117	85	110	4	89	108	110	110	87	5.75	1
AXK90120	LS90120	AS90120	WS81118	GS81118	90	120	4	94	118	120	120	92	6.5	1
AXK100135	LS100135	AS100135	WS81120	GS81120	100	135	4	105	133	135	135	102	7	1
AXK110145	LS110145	AS110145	WS81122	GS81122	110	145	4	115	143	145	145	112	7	1
AXK120155	LS120155	AS120155	WS81124	GS81124	120	155	4	125	153	155	155	122	7	1
AXK130170	LS130170	AS130170	WS81126	GS81126	130	170	5	136	167	170	170	132	9	1
AXK140180	LS140180	AS140180	WS81128	GS81128	140	180	5	146	177	178	180	142	9.5	1
AXK150190	LS150190	AS150190	WS81130	GS81130	150	190	5	156	187	188	190	152	9.5	1
AXK160200	LS160200	AS160200	WS81132	GS81132	160	200	5	166	197	198	200	162	9.5	1

Type					Weight			Basic load rating		Fatigue load limit	Rated speed	
Bearing type	Universal Gasket	Universal thin washers	Shaft rings	Seat ring	Bearing Weight	Washers LS, WS, GS	AS	Dynamic	Static		P <sub>u</sub>	reference speed
								C	C <sub>0</sub>	r/min		
AXK414TN	-	AS414	-	-	0.7	-	1	4.3575	8.715	0.9975	7875	15750
AXK515TN	-	AS515	-	-	0.8	-	1	4.725	9.975	1.134	7035	14700
AXK619TN	LS0619	AS619	-	-	1	6	2	6.615	16.8	1.953	6300	12600
AXK821TN	LS0821	AS821	-	-	2	6	2	7.56	21	2.436	5880	11550
AXK1024	LS1024	AS1024	-	-	3	8	3	8.925	27.3	3.15	5565	10500
AXK1226	LS1226	AS1226	-	-	3	9	3	9.6075	31.5	3.6225	5250	10500
AXK1528	LS1528	AS1528	WS81102	GS81102	4	9	3	10.92	39.375	4.515	5040	9975
AXK1730	LS1730	AS1730	WS81103	GS81103	3.65	9	4	11.55	42.525	4.9875	4725	9975
AXK2035	LS2035	AS2035	WS81104	GS81104	5	13	5	12.6	49.875	5.88	4515	8925
AXK2542	LS2542	AS2542	WS81105	GS81105	7	19	7	14.07	63	7.2975	3990	7875
AXK3047	LS3047	AS3047	WS81106	GS81106	8	22	8	15.75	75.6	8.715	3780	7350
AXK3552	LS3552	AS3552	WS81107	GS81107	10	29	9	17.43	87.15	10.29	3360	6615
AXK4060	LS4060	AS4060	WS81108	GS81108	16	40	12	26.25	119.7	14.385	2940	5880
AXK4565	LS4565	AS4565	WS81109	GS81109	18	50	13	28.35	133.35	16.065	2730	5565
AXK5070	LS5070	AS5070	WS81110	GS81110	20	55	14	29.925	150.15	17.85	2520	5250
5578	LS5578	AS5578	WS81111	GS81111	28	88	18	36.225	195.3	23.52	2310	4515
AXK6085	LS6085	AS6085	WS81112	GS81112	33	97	22	39.375	243.6	29.925	2310	4515
AXK6590	LS6590	AS6590	WS81113	GS81113	35	115	24	40.95	267.75	32.55	2100	4200
AXK7095	LS7095	AS7095	WS81114	GS81114	60	123	25	51.45	267.75	32.55	1890	3780
AXK75100	LS75100	AS75100	WS81115	GS81115	61	142	27	52.5	278.25	34.125	1785	3570
AXK80105	LS80105	AS80105	WS81116	GS81116	63	151	28	53.55	294	35.7	1785	3570
AXK85110	LS85110	AS85110	WS81117	GS81117	67	159	29	54.6	304.5	37.275	1785	3570
AXK90120	LS90120	AS90120	WS81118	GS81118	86	234	39	68.775	425.25	51.45	1575	3150
AXK100135	LS100135	AS100135	WS81120	GS81120	104	350	50	80.325	588	68.775	1470	2940
AXK110145	LS110145	AS110145	WS81122	GS81122	122	385	55	85.575	651	75.6	1365	2730
AXK120155	LS120155	AS120155	WS81124	GS81124	131	415	59	90.825	714	80.325	1365	2730
AXK130170	LS130170	AS130170	WS81126	GS81126	205	663	65	117.6	871.5	97.65	1155	2310
AXK140180	LS140180	AS140180	WS81128	GS81128	219	749	79	121.8	945	101.325	1050	2100
AXK150190	LS150190	AS150190	WS81130	GS81130	232	796	84	126	997.5	107.1	1050	2100
AXK160200	LS160200	AS160200	WS81132	GS81132	246	842	89	131.25	1050	111.3	997.5	1995

## Needle roller thrust bearings with a centring lange



Type				Main dimensions							Dimensions			
Bearing type	Universal Gasket	Universal thin washers	Shaft rings	d	D	D <sub>1</sub>	B	B <sub>1</sub>	E <sub>a</sub> min.	E <sub>b</sub> max.	d	d <sub>1</sub> , D	B	r <sub>1, 2</sub> min.
AXW10	LS1024	AS1024	-	10	27	14	3.2	3	12	23	10	24	2.75	0.3
AXW12	LS1226	AS1226	-	12	29	16	3.2	3	14	25	12	26	2.75	0.3
AXW15	LS1528	AS1528	WS81102	15	31	21	3.2	3.5	17	27	15	28	2.75	0.3
AXW20	LS2035	AS2035	WS81104	20	38	26	3.2	3.5	22	34	20	35	2.75	0.3
AXW25	LS2542	AS2542	WS81105	25	45	32	3.2	4	29	41	25	42	3	0.6
AXW30	LS3047	AS3047	WS81106	30	50	37	3.2	4	34	46	30	47	3	0.6
AXW35	LS3552	AS3552	WS81107	35	55	42	3.2	4	39	51	35	52	3.5	0.60
AXW40	LS4060	AS4060	WS81108	40	63	47	4.2	4	45	58	40	60	3.5	0.60
AXW45	LS4565	AS4565	WS81109	45	68	52	4.2	4	50	63	45	65	4	0.60

Type				Weight			Basic load rating		Fatigue load limit	Rated speed	
Bearing type	Universal Gasket	Universal thin washers	Shaft rings	Bearing Weight	Washers LS, WS	AS	Dynamic	Static		P <sub>u</sub>	reference speed
							C	C <sub>0</sub>	kN		
AXW10	LS1024	AS1024	-	8.3	8	3	8.925	27.3	3.15	5565	10500
AXW12	LS1226	AS1226	-	9.1	9	3	9.6075	31.5	3.6225	5250	10500
AXW15	LS1528	AS1528	WS81102	10	9	3	10.92	39.375	4.515	5040	9975
AXW20	LS2035	AS2035	WS81104	14	13	5	12.6	49.875	5.88	4515	8925
AXW25	LS2542	AS2542	WS81105	20	19	7	14.07	63	7.2975	3990	7875
AXW30	LS3047	AS3047	WS81106	22	22	8	15.75	75.6	8.715	3780	7350
AXW35	LS3552	AS3552	WS81107	27	29.00	9	17.43	87.15	10.29	3360	6615
AXW40	LS4060	AS4060	WS81108	39	40.00	12	26.25	119.7	14.385	2940	5880
AXW45	LS4565	AS4565	WS81109	43	50.00	13	28.35	133.35	16.065	2730	5565