SDVD
Split Plummer Block Housings for Conveyor Pulleys

SKF SDVD Housings

Specifically designed & developed for conveyor pulleys in Australian mining, minerals processing and bulk materials handling.

Split plummer block housings in the small (500 series) and medium (3100 series), with shaft diameters up to 300 mm are commonly used in the general mining and mineral processing industries.

Application duties can vary from moderate to severe, with a high focus on contamination exclusion and greasing effectiveness. End users typically require a high level of standardization and interchangeabililty. High performance and reliable operation are also standard prerequisites. Spherical Roller Bearings with integral seals (SSRB) are commonly specified. Taconite housing seals are mandated almost exclusively.

For pulley designers and manufacturers, the objective is to have readily available, cost effective products with minimised overall width. This allows for pulley design optimization and cost benefits, along with ease of installation.

SKF SDVD 500 series and SDVD 3100 series housings, with Sealed SKF Explorer spherical roller bearings are a perfect choice for this industry segment. All housings are 4 bolt mount, spheroidal graphite (ductile) cast iron material, with bolt-on closed end covers.

SDVD housings are designed specifically for the demands of the coal sector and similar industries. The width of the housings and seals has been minimised, allowing them to be fitted to exisiting pulleys designed for the same bearing series. Housing seals are a bolt-on (unsplit) TKV Taconite style seal with axial labyrinth and V-ring.

For larger pulleys (shaft diameters above 300 mm), SDJD 3100 series housings with TK_B Taconite seals (bolt on style) are the appropriate choice.

Interface dimensions (mounting bolt pattern, shaft center height, base footprint) are fully compatible with the market standard FSSN(D) 5 series and SD(D) 31 series.

Design features and manufacturing specifications for SDVD housing assemblies are tailored to provide the optimum balance of:
- User-friendliness
- High performance
- Cost of ownership

Market

Application duties in coal and other mining industries vary from moderate to severe.
- High focus on contamination exclusion and greasing effecttiveness

End users require
- High performance
- Reliable operation
- Ease of maintenance
- Cost-effective products which enable
  - Standardization
  - Interchangeability
  - Low cost of ownership

Pulley designers and manufacturers require:
- Readily available product
- Cost-effective products
- Minimized overall housing assembly width
  - Optimization of pulley design
  - Cost reduction benefits
- Simplicity of installation

Industry

SKF SDVD housings are designed specifically for the demands of the coal sector and similar industries.

Housing Assemblies
- Have minimized width
- Can be fitted to any exisiting pullleys using the same basic bearing series

Housings
- 4-bolt mount base
- Manufactured in SG iron for robustness
- Bolt-on closed end covers

Housing Seals
- Bolt-on (unspilt) TKV taconite style
- With axial labyrinth and V-ring

SKF SDVD Series Housings
- Incorporate SKF Sealed Explorer Spherical Roller Bearings (SSRB), the perfect choice for this industry segment
- Conventional unsealed SRBs are also fully compatible

Optimised Design

Summary of benefits for conveyor pulley application

- Universally applicable due to minimised assembly width; SDVD housings can be retrofitted to all existing pulleys which use the same basic bearing housing size series.
- Optimised design and reduced cost for new pulleys, due to minimised assembly width.
- Simple installation (initial assembly and rebuilds in the field)
- Easy and accurate pulley alignment and maintenance; SDVD design facilitates bearing changes in-situ.
- Delivers high performance, high reliability and long service life for bearings.

Table of contents

SDVD Housing Design features

- Non-symmetrical design: minimized width at inboard (pulley drum) side.
- Seal carrier recessed into housing body: minimized assembly width.
- Bearing seat form optimized for longest service life and minimum vibration levels.
- Seal carrier mounting opening diameter maximized:
  - Minimum pulley lift required to change bearings in-situ, if required.
  - SKF hydraulic nut can be used with bearing already inside housing (valid for SDVD 31 series)
  - Allows accurate and reliable mounting if changing bearing in-situ.
- Centre line markings on base to assist pulley installation and alignment in both planes.
- Spot faced positions for vibration sensors (horizontal, vertical and axial positions).
- Base and cap with unique match mark to eliminate risk of mixing components.

TKV Sealing

For bearing arrangements which must operate under very arduous conditions such as those encountered in mining, taconite seals are recommended, as direct grease supply enhances the sealing effect and extends the serviceability of the seals.

The TKV taconite seal is based on the same well-proven concept as the SKF TK heavy duty taconite seals but is designed specifically to be part of the SDVD housing system, creating a narrow assembly.

The labyrinth accommodates axial movement of the shaft relative to the housing and angular misalignment of up to approximately 0.5°.

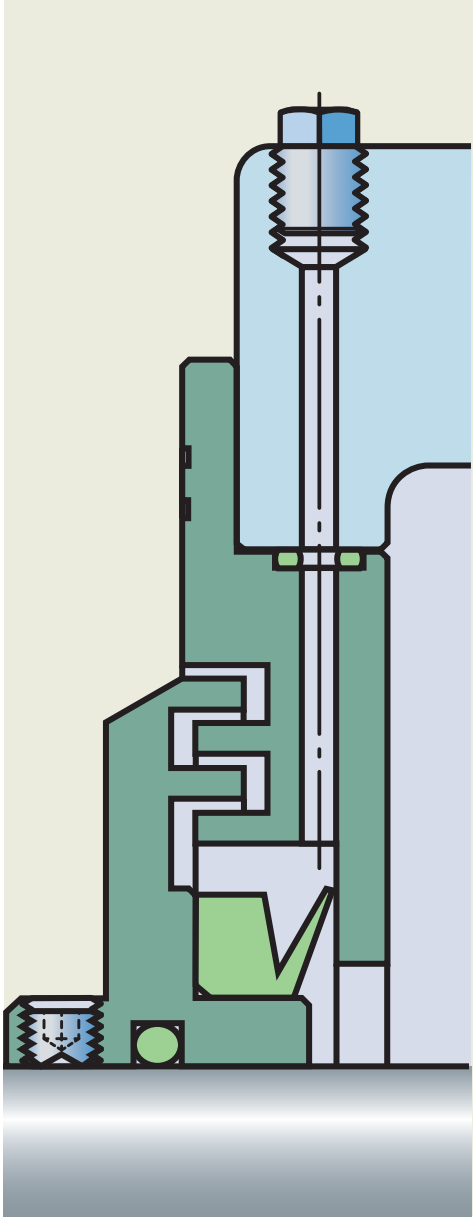
Grease is supplied to the labyrinths via pre-tapped entry points on each side of the housing cap.

A V-ring seal mounted on the rotating labyrinth ring runs against the non-rotating part of the seal, which is bolted to the side of the housing. The V-ring assists the grease purge passage out through the labyrinth, as well as acting as another barrier preventing contamination from penetrating to the bearing.

The permissible operating temperature range for the nitrile V-ring is between –40 and +100 °C *(–40 to +210 °F)*. This can be improved by substituting a V-ring manufactured from an alternative material, e.g. FKM (Viton).

TKV taconite seals are supplied individually. For housings used on through shafts, it is necessary to order two seals.

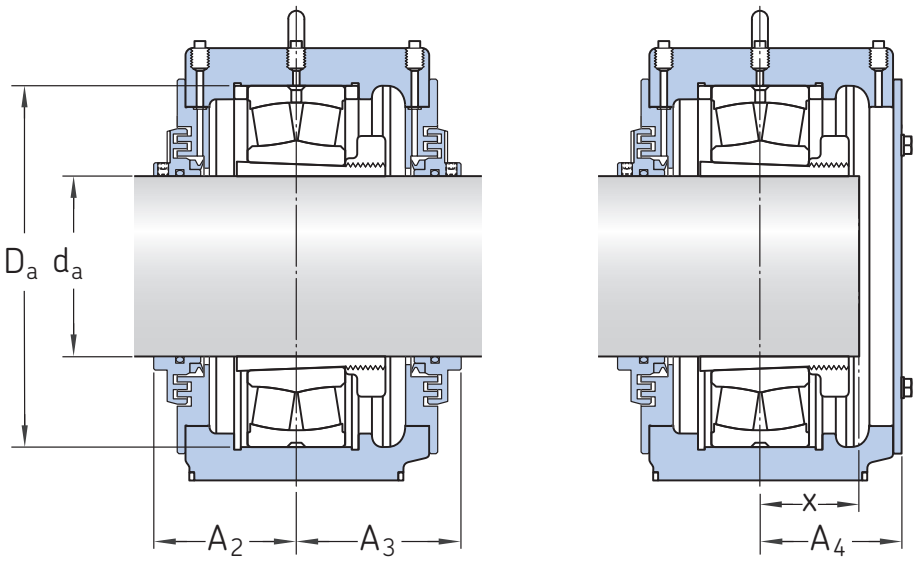
The seal is identified by the designation prefix TKV followed by the size identification e.g. TKV 517 or TKV 34.



TKV Taconite Seal Design Features

Optimum Bearing Performance

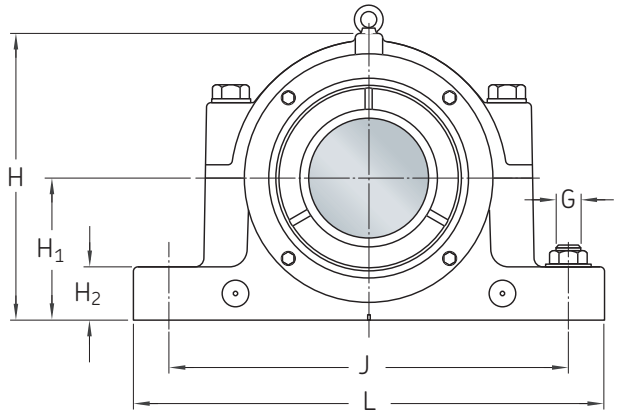
- Axial labyrinth configuration
  - Flinger effect from rotating labyrinth part.
  - Rubbing seal element can't damage shaft.
  - High quality V-ring runs on unspilt counter face.
  - Easy and precise installation (labyrinth gap setting)
  - Positive location on shaft (set screws)
  - Static sealing on shaft (O-ring)
- Labyrinth clearances optimised
  - Sealing performance
  - Misalignment capability
  - Axial displacement capability
- Grease inlet on housing cap
  - Robust attachment
  - No access limitations (safety)
  - Assembly width minimised

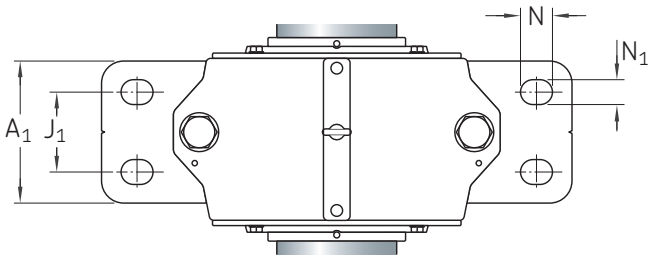


Shaft diameter	Housing	Appropriate parts						
		Bearing [1]	Adapter sleeve	Locating ring [2]	Seals	End cover	Width incl. seals	
d_a							A_2	A_3
mm	–	–					mm	
60	**SDVD 513**	BS2-2213-2RSK/VT143 22213 EK	H 2313 E/V21 H 313/PC	FRB 6.5/120 FRB 10/120	TKV 513	ETV 132/118/4	75	84.5
65	**SDVD 515**	BS2-2215-2RSK/VT143 22215 EK	H 315 E H 315/PC	FRB 9/130 FRB 12.5/130	TKV 515	ETV 140/125/4	75	84.5
70	**SDVD 516**	BS2-2216-2RSK/VT143 22216 EK	H 316 E H 316/PC	FRB 9/140 FRB 12.5/140	TKV 516	ETV 146/134/4	77	90
75	**SDVD 517**	BS2-2217-2RSK/VT143 22217 EK	H 317 E H 317/PC	FRB 8.5/150 FRB 12.5/150	TKV 517	ETV 160/144/4	77	90
80	**SDVD 518**	BS2-2218-2RSK/VT143 22218 EK	H 2318 E/L73 H 318/PC	FRB 8.5/160 FRB 12.5/160	TKV 518	ETV 168/152/4	79	92
90	**SDVD 520**	BS2-2220-2RS5K/VT143 22220 EK	H 2320 E/V21 H 320/PC	FRB 7.5/180 FRB 12/180	TKV 520	ETV 194/176/4	78	97
100	**SDVD 522**	BS2-2222-2RS5K/VT143 22222 EK	H 2322 E/V21 H 322/PC	FRB 8.5/200 FRB 13.5/200	TKV 522	ETV 208/188/4	88.5	108
110	**SDVD 524**	BS2-2224-2RS5K/VT143 22224 EK	H 2324 E/V21 H 3124/PC	FRB 8.5/215 FRB 14/215	TKV 524	ETV 226/206/4	94	115
115	**SDVD 526**	BS2-2226-2CS5K/VT143 22226 EK	H 2326 L/V21 H 3126/PC	FRB 7.5/230 FRB 13/230	TKV 526	ETV 236/216/4	99.5	114.5
125	**SDVD 528**	22228-2CS5K/VT143 22228 CCK/W33	H 3128 L H 3128/PC	FRB 10/250 FRB 10/250	TKV 528	ETV 260/240/4	101.5	114.5
135	**SDVD 530**	22230-2CS5K/VT143 22230 CCK/W33	H 3130 H 3130/PC	FRB 10/270 FRB 10/270	TKV 530	ETV 280/256/4	106.5	120.5
140	**SDVD 532**	22232-2CS5K/VT143 22232 CCK/W33	OH 3132 H H 3132/PC	FRB 10/290 FRB 10/290	TKV 532	ETV 300/280/4	108	124

[1] Optional sealed & unsealed spherical roller bearing designations, with corresponding adapter sleeve designations for each.

[2] 2 Locating Rings are required for locating bearing only.

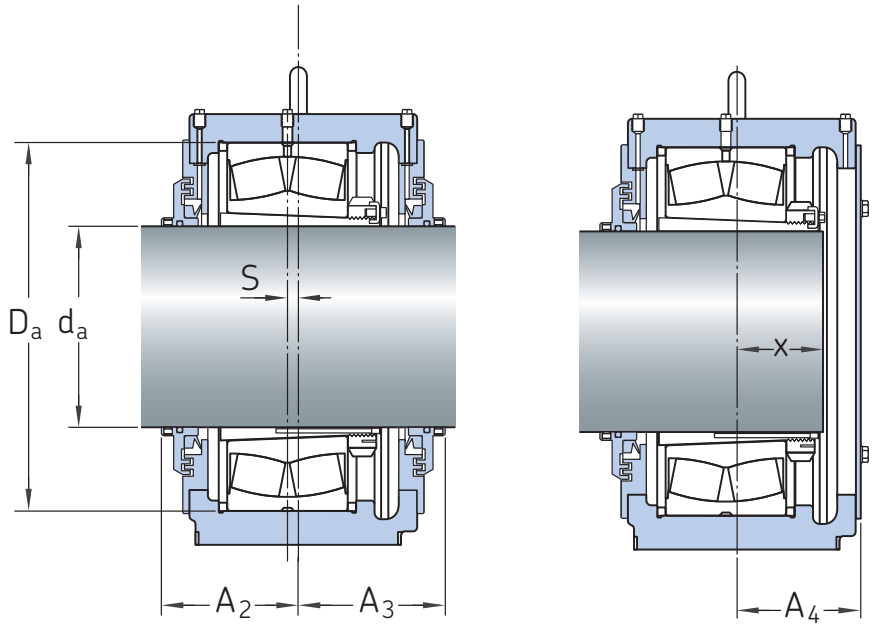




Shaft diameter	Dimensions													Eye bolt	Mass	
d_a	A_4	A_1	D_a	H	H_1	H_2	J	J_1	L	N	N_1	G	X	BSP Thread	Housing [3]	Assembly [4]
mm	mm													-	kg	
60	76	80	120	157	80	30	230	40	280	24	16	M12	36	-	11	13
65	76	80	130	157	80	30	230	40	280	24	16	M12	38	-	10	12.5
70	82	90	140	185	95	32	260	50	320	28	20	M16	41	-	15	18
75	82	90	150	185	95	32	260	50	320	28	20	M16	44	-	14	18
80	84	100	160	195	100	35	290	50	345	28	20	M16	49	-	16	20.5
90	90	110	180	218	112	40	320	60	380	28	20	M16	56	1/4"	22	28.5
100	100	120	200	240	125	45	350	70	410	28	20	M16	61	1/4"	27	36
110	105	120	215	270	140	45	350	70	410	28	20	M16	66	1/4"	31	42
115	105	130	230	290	150	50	380	70	445	32	24	M20	69	1/4"	39	53
125	105	150	250	302	150	50	420	80	500	36	28	M24	70	1/4"	48	65.5
135	110	160	270	323	160	60	450	90	530	36	28	M24	74	1/4"	54	77
140	115	160	290	344	170	60	470	90	550	36	28	M24	85	1/4"	59	88.5

[3] Housing + Seals (Max).

[4] Assembly mass also includes bearing, sleeves and 2 housing seals.

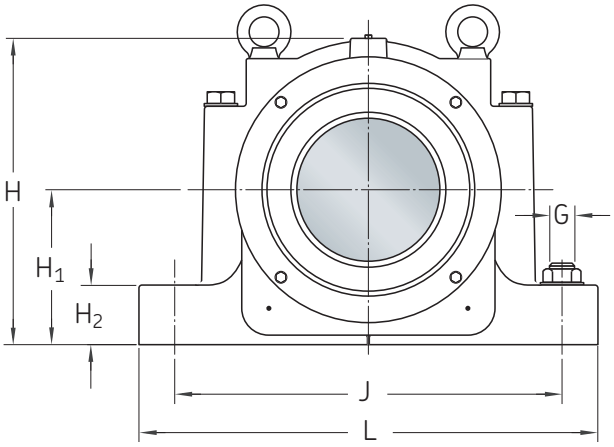


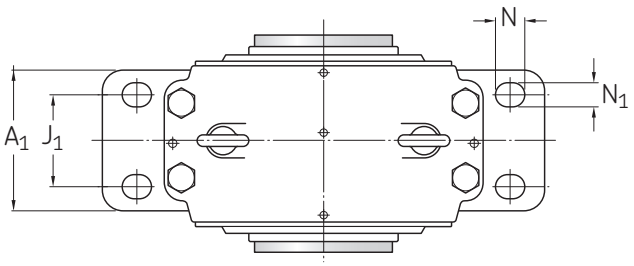
Shaft diameter	Housing	Appropriate parts						
		Bearing [1]	Adapter sleeve[2]	Locating ring[3]	Seals	End cover	Width incl. seals	
d_a							A_2	A_3
mm	–	–					mm	
150	**SDVD 3134**	23134-2CS5K/VT143 23134 CCK/W33	OH 3134 HE OH 3134 H/PC	FRB 10/280	TKV 34	ETV 290/265/4	133	133
160	**SDVD 3136**	23136-2CS5K/VT143 23136 CCK/W33	OH 3136 HL OH 3136 H/PC	FRB 10/300	TKV 36	ETV 310/285/4	138	138
170	**SDVD 3138**	23138-2CS5K/VT143 23138 CCK/W33	OH 3138 H OH 3138 H/PC	FRB 10/320	TKV 38	ETV 330/305/4	138	146
180	**SDVD 3140**	23140-2CS5K/VT143 23140 CCK/W33	OH 3140 H OH 3140 H/PC	FRB 10/340	TKV 40	ETV 346/315/4	142	152
200	**SDVD 3144**	23144-2CS5K/VT143 23144 CCK/W33	OH 3144 HTL OH 3144 H/PC	FRB 10/370	TKV 44	ETV 376/345/4	151	161
220	**SDVD 3148**	23148-2CS5K/VT143 23148 CCK/W33	OH 3148 HTL OH 3148 H/PC	FRB 10/400	TKV 48	ETV 406/375/4	155	170
240	**SDVD 3152**	23152-2CS5K/VT143 23152 CCK/W33	OH 3152 HTL OH 3152 H/PC	FRB 10/440	TKV 52	ETV 446/415/4	165	176
260	**SDVD 3156**	23156-2CS5K/VT143 23156 CCK/W33	OH 3156 HTL OH 3156 H/PC	FRB 10/460	TKV 56	ETV 466/435/4	173	185
280	**SDVD 3160**	23160-2CS5K/VT143 23160 CCK/W33	OH 3160 HE OH 3160 H/PC	FRB 10/500	TKV 60	ETV 506/475/4	183	189
300	**SDVD 3164**	23164-2CS5K/VT143 23164 CCK/W33	OH 3164 H OH 3164 H/PC	FRB 10/540	TKV 64	ETV 546/515/4	191	201

1) Optional sealed & unsealed spherical roller bearing designations, with corresponding adapter sleeve designations for each.

2) Adapter sleeves listed are suitable for oil injection, standard sleeves without provision for oil injection can also be used.

3) 2 Locating Rings are required for locating bearing only.





Shaft diameter	Dimensions															Eye bolt	Mass	
d_a	A_4	A_1	D_a	H	H_1	H_2	J	J_1	L	N	N_1	G	S	X_{min}	X_{max}	acc. To DIN 580	Housing [4]	Assembly [5]
mm	mm															-	kg	
150	115	174	280	335	170	70	430	100	510	34	28	M24	14	64	85	M16	72	102
160	120	184	300	352	180	75	450	110	530	34	28	M24	15	68	91	M16	81	116
170	130	200	320	375	190	80	480	120	560	34	28	M24	10	78	99	M20	99	114
180	135	206	340	410	210	85	510	130	610	42	35	M30	10	83	105	M20	121	175
200	140	220	370	435	220	90	540	140	640	42	35	M30	12	88	111	M20	136	203
220	150	230	400	475	240	95	600	150	700	42	35	M30	12	94	121	M20	169	249
240	160	245	440	514	260	100	650	160	770	50	42	M36	13	103	127	M24	205	310
260	165	250	460	550	280	105	670	160	790	50	42	M36	16	103	133	M24	234	348
280	170	288	500	590	300	110	710	190	830	50	42	M36	22	116	138	M24	284	434
300	180	300	540	625	320	115	750	200	880	50	42	M36	23	126	150	M24	322	507

[4] Housing + Seals (Max).

[5] Assembly mass includes housing body, seals, bearing and sleeve.

SDVD housing technical details

Load carrying ability

Split plummer block housings are intended primarily for loads acting perpendicularly toward the support surface or within a moderate angle. If the housing is supported over its entire base and the loads are purely perpendicular, loads are limited only by the bearing.

If loads act in other directions, or if the housing is not supported over its entire base, be sure that the magnitude of the load is within limits for the housing, the cap bolts and the attachment bolts.

SDVD housings are suitable to accommodate load magnitudes typically applied to standard mining conveyor pulleys. In case of extreme loading conditions, please contact SKF for advice.

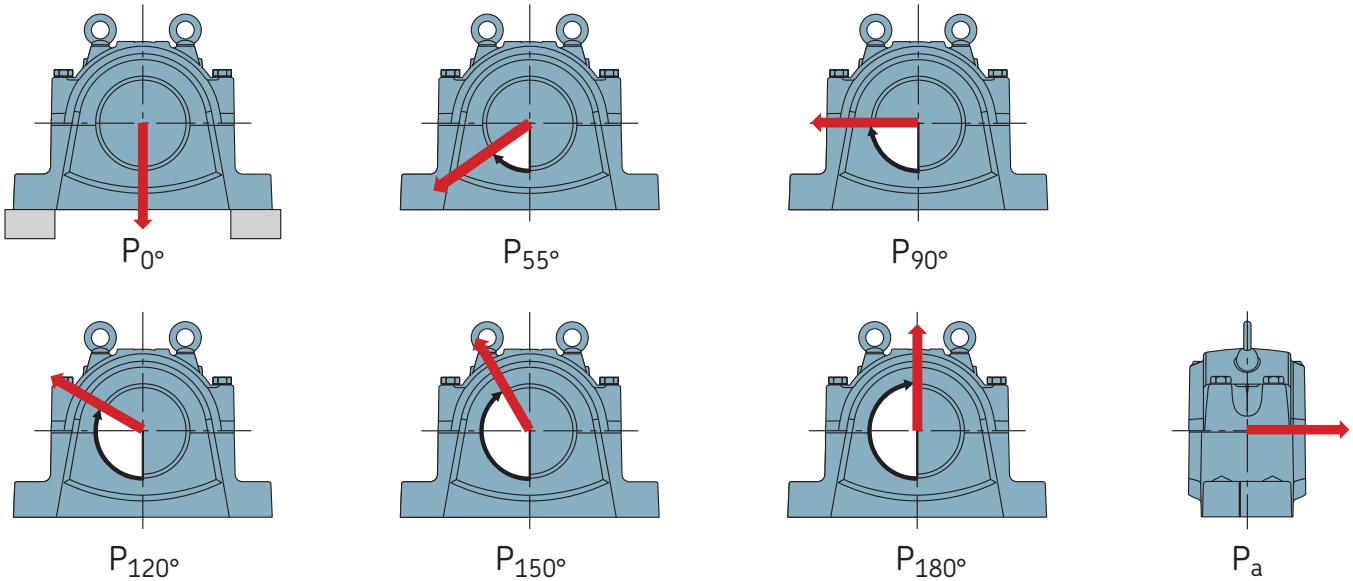
Additional housing support

When the housing is subjected to loads acting parallel to the support surface, i.e. when loads act at angles between 55° and 120°, or when the axial loads are greater than 5% of $P_{180°}$, the housing should be pinned to the support surface or a stop should be provided to counter the lateral load. The dowel pins or stops should be sufficiently strong to accommodate the loads acting parallel to the support surface.

Load carrying ability of the cap bolts

SDVD housings are supplied with cap bolts of class 8.8 or higher. When the cap bolts are tensioned according to specification (table 2) the safe working loads for the housing can be fully exploited.

Load direction definitions



Note: Images are for representation only and do not represent the actual housing profile.

Bolt tightening torque recommendations

In typical applications, class 8.8 or higher hexagon head bolts in accordance with ISO 4014 together with washers are used for attachment of the housing to the support structure.

SKF SDVD housings can withstand loads resulting from tightening the attachment bolts to the torque values recommended by bolt manufacturers **(→ table 2)**. The torque values are valid for oiled, but otherwise untreated, thread surfaces.

SKF cannot guarantee that tightening bolts to the recommended value will provide sufficient anchoring in all circumstances. If necessary provide dowels or stops to ensure sufficient support for expected loads.

Bolt torques can be increased for loads up though the cap, or for abnormal application load conditions.

Table 2

Standard bolt torque recommendation for SDVD housings in typical conveyor duty

Shaft Size	Housing	Cap Bolts		Attachment Bolts		Seal/End Cover Bolts	
$d_{ø}$		Size	N_m	Size	N_m	Size	N_m
mm							
60	SDVD 513	M12	80	M12	80	M6	9
65	SDVD 515	M12	80	M12	80	M6	9
70	SDVD 516	M12	80	M16	200	M6	9
75	SDVD 517	M12	80	M16	200	M6	9
80	SDVD 518	M16	150	M16	200	M6	9
90	SDVD 520	M20	200	M16	200	M6	9
100	SDVD 522	M20	200	M16	200	M8	22
110	SDVD 524	M20	200	M16	200	M8	22
115	SDVD 526	M24	350	M20	385	M8	22
125	SDVD 528	M24	350	M24	665	M8	22
135	SDVD 530	M24	350	M24	665	M8	22
140	SDVD 532	M24	350	M24	665	M8	22
150	SDVD 3134	M24	350	M24	665	M10	44
160	SDVD 3136	M24	350	M24	665	M10	44
170	SDVD 3138	M24	350	M24	665	M10	44
180	SDVD 3140	M24	350	M30	1310	M10	44
200	SDVD 3144	M24	350	M30	1310	M10	44
220	SDVD 3148	M30	400	M30	1310	M10	44
240	SDVD 3152	M30	400	M36	2280	M10	44
260	SDVD 3156	M30	400	M36	2280	M10	44
280	SDVD 3160	M30	400	M36	2280	M10	44
300	SDVD 3164	M30	400	M36	2280	M10	44

Seal kit consumables

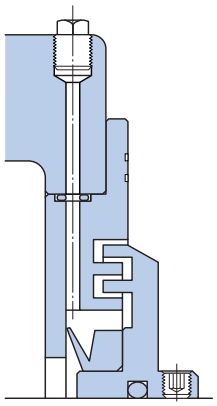


Table 3

SDVD TKV Seal Kit Consumables

Housing	Appropriate parts				
	Seal Kit	V-Ring	O-Ring	Quad Ring	Grub Screw (3 per seal)
–	–				
SDVD 513	TKV 513	65 VA R	OR 60 x ø4mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M6 x 1P x 8LG. ISO 4029
SDVD 515	TKV 515	70 VA R	OR 65 x ø4mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M6 x 1P x 8LG. ISO 4029
SDVD 516	TKV 516	75 VA R	OR 70 x ø4mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M6 x 1P x 8LG. ISO 4029
SDVD 517	TKV 517	80 VA R	OR 75 x ø4mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M6 x 1P x 8LG. ISO 4029
SDVD 518	TKV 518	85 VA R	OR 80 x ø4mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M6 x 1P x 8LG. ISO 4029
SDVD 520	TKV 520	95 VA R	OR 90 x ø5mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M6 x 1P x 8LG. ISO 4029
SDVD 522	TKV 522	110 VA R	OR 100 x ø5mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M8 x 1.25P x 10LG. ISO 4029
SDVD 524	TKV 524	120 VA R	OR 110 x ø5mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M8 x 1.25P x 10LG. ISO 4029
SDVD 526	TKV 526	120 VA R	OR 115 x ø5mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M8 x 1.25P x 10LG. ISO 4029
SDVD 528	TKV 528	140 VA R	OR 125 x ø5mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M8 x 1.25P x 10LG. ISO 4029
SDVD 530	TKV 530	150 VA R	OR 135 x ø5mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M8 x 1.25P x 10LG. ISO 4029
SDVD 532	TKV 532	150 VA R	OR 140 x ø5mm	3/16"ID x 3/8"OD x 3/32"CS. ISO 3601	M8 x 1.25P x 10LG. ISO 4029
SDVD 3134	TKV 34	160 VA R	OR 150 x ø6.5mm	1/4" ID x 1/2" OD x 1/8" CS ISO 3601	M10 x 10LG. ISO 4029
SDVD 3136	TKV 36	170 VA R	OR 160 x ø6.5mm	1/4" ID x 1/2" OD x 1/8" CS ISO 3601	M10 x 10LG. ISO 4029
SDVD 3138	TKV 38	180 VA R	OR 170 x ø6.5mm	1/4" ID x 1/2" OD x 1/8" CS ISO 3601	M10 x 10LG. ISO 4029
SDVD 3140	TKV 40	190 VA R	OR 180 x ø6.5mm	1/4" ID x 1/2" OD x 1/8" CS ISO 3601	M10 x 10LG. ISO 4029
SDVD 3144	TKV 44	220 VA R	OR 200 x ø6.5mm	1/4" ID x 1/2" OD x 1/8" CS ISO 3601	M10 x 10LG. ISO 4029
SDVD 3148	TKV 48	250 VA R	OR 220 x ø6.5mm	1/4" ID x 1/2" OD x 1/8" CS ISO 3601	M10 x 10LG. ISO 4029
SDVD 3152	TKV 52	275 VA R	OR 240 x ø6.5mm	1/4" ID x 1/2" OD x 1/8" CS ISO 3601	M10 x 10LG. ISO 4029
SDVD 3156	TKV 56	300 VA R	OR 260 x ø6.5mm	1/4" ID x 1/2" OD x 1/8" CS ISO 3601	M10 x 10LG. ISO 4029
SDVD 3160	TKV 60	325 VA R	OR 280 x ø6.5mm	1/4" ID x 1/2" OD x 1/8" CS ISO 3601	M10 x 10LG. ISO 4029
SDVD 3164	TKV 64	350 VA R	OR 300 x ø6.5mm	1/4" ID x 1/2" OD x 1/8" CS ISO 3601	M10 x 10LG. ISO 4029

Closed housing assemblies for shaft ends

Housings mounted at the end of a shaft are typically fitted with a closed end cover.

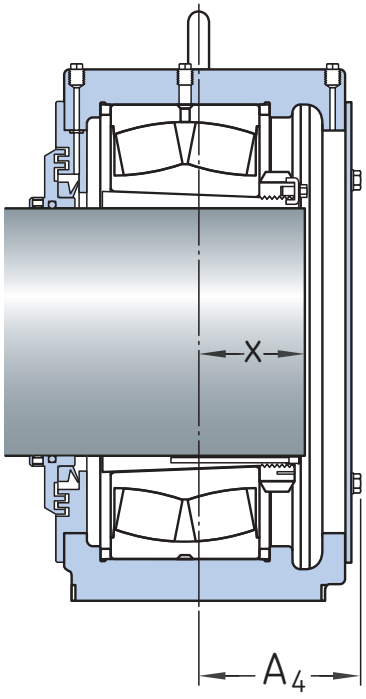
The covers are bolted onto the side of the housing. A flange sealant is recommended to be applied between these surfaces for improved contamination exclusion.

Details of the permissible length of the shaft end for "closed" assemblies can be found in table 5 for SDVD 500 series and table 4 for SDVD 3100 series.

The end covers are made from mild steel plate and are supplied with 4 screws & washers.

The standard end cover for SDVD housing is identified by the designation prefix ETV followed a series of numbers representing OD/screw PCD/no. of screws.

e.g. ETV 290/265/4 is suitable for the SDVD 3134 housing.



Locating Rings

The width of the bearing seat in SDVD housings accommodates locating (fixed) or non-locating (floating) bearing assemblies.

The locating bearing, which secures the shaft axially in both directions, must have locating (fixing) rings installed in the housing at both sides of the bearing outer ring.

The non-locating bearing is left free to to move axially in the housing to accommodate thermal expansion of the shaft.

Locating rings are identified by the designation prefix FRB followed by figures indicating the width/outside diameter in millimeters.

e.g. FRB 10/280.

Table 4

Recommended shaft length for end of shaft mounting for SDVD 3100 series housings

Housing	Bearing	Dimensions		
		X_{min}	X_{max} [1]	A_4
-	-	mm		
SDVD 3134	23134	64	85	115
SDVD 3136	23136	68	91	120
SDVD 3138	23138	78	99	130
SDVD 3140	23140	83	105	135
SDVD 3144	23144	88	111	140
SDVD 3148	23148	94	121	150
SDVD 3152	23152	103	127	160
SDVD 3156	23156	103	133	165
SDVD 3160	23160	116	138	170
SDVD 3164	23164	126	150	180

[1] X_{max} ensures clearance between shaft and housing end-cover when non-locating "floating" bearing is fully axially displaced.

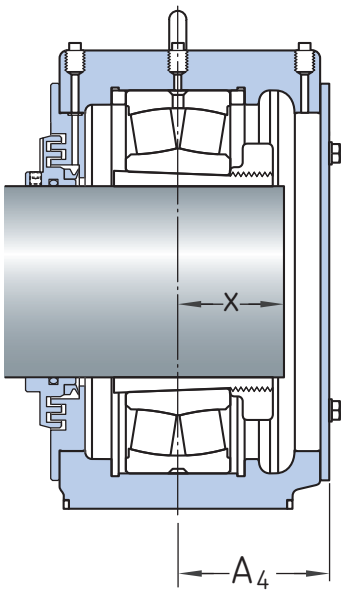


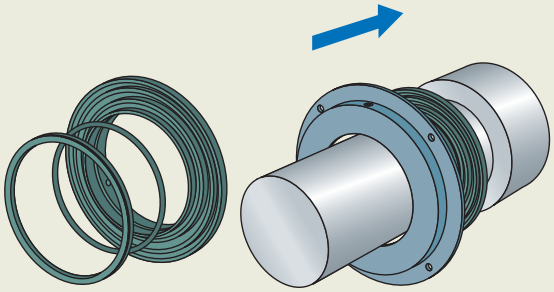
Table 5

Recommended minimum shaft length for end of shaft mounting for SDVD 500 series housings

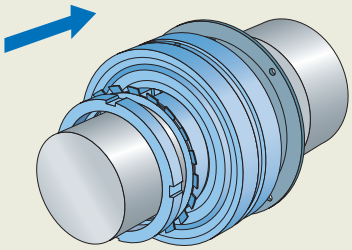
Housing	Bearing	Dimensions	
		X	A_4
-	-	mm	
SDVD 513	BS2-2213-2RSK/VT143	36	76
	22213 EK	33	
SDVD 515	BS2-2215-2RSK/VT143	38	76
	22215 EK	35	
SDVD 516	BS2-2216-2RSK/VT143	41	82
	22216 EK	38	
SDVD 517	BS2-2217-2RSK/VT143	44	82
	22217 EK	40	
SDVD 518	BS2-2218-2RSK/VT143	49	84
	22218 EK	45	
SDVD 520	BS2-2220-2RS5K/VT143	56	90
	22220 EK	51	
SDVD 522	BS2-2222-2RS5K/VT143	61	100
	22222 EK	56	
SDVD 524	BS2-2224-2RS5K/VT143	66	105
	22224 EK	60	
SDVD 526	BS2-2226-2CS5K/VT143	69	105
	22226 EK	63	
SDVD 528	22228-2CS5K/VT143	70	105
	22228 CCK/W33	68	
SDVD 530	22230-2CS5K/VT143	74	110
	22230 CCK/W33	74	
SDVD 532	22232-2CS5K/VT143	85	115
	22232 CCK/W33	85	

SDVD Simplified Assembly Instructions

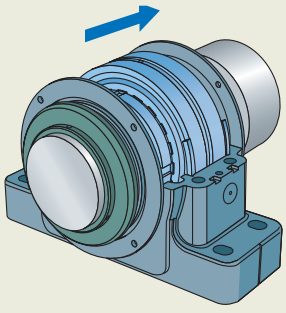
Step 1



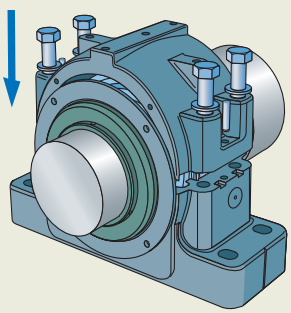
Step 2



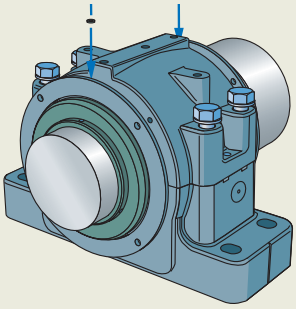
Step 3



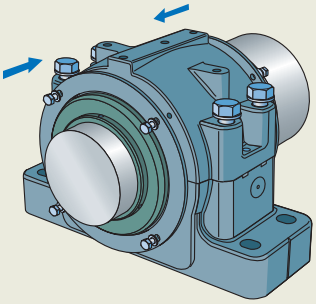
Step 4



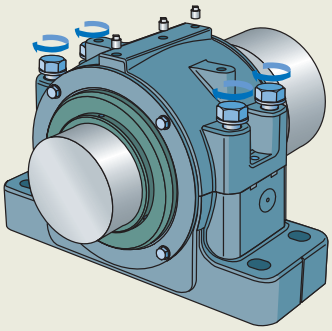
Step 5



Step 6

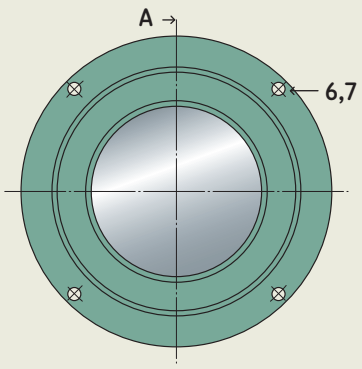


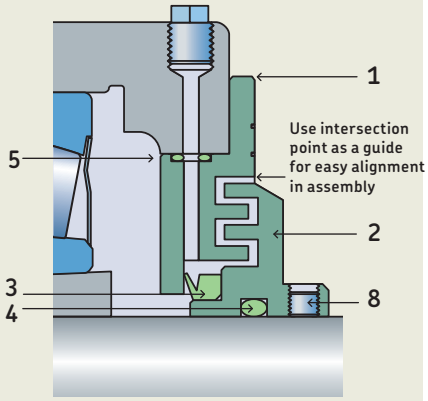
Step 7



TKV Seal Arrangement Details

Det	Qty	Description
8	3	Grub Screw-Cup Point
7	4	Plain Washer
6	4	Hex Head Bolt
5	2	Quad Ring
4	1	O-Ring
3	1	V-Ring
2	1	Labyrinth Seal
1	1	Seal Carrier





Labyrinth nominal axial clearance is 3.0-3.5 mm when set

SDVD Detailed Assembly Instructions

Before beginning installation ensure all components are in good condition and ensure grease supply ducts in the housing cap and seal carriers (1) are clean and free from obstruction.

1. Assemble the inboard seal components onto the shaft.

a. Grease and fit the O-ring (4) and V-ring (3) onto the outboard labyrinth seal (2).

b. Slide the labyrinth seal (2) past its final position. N.B. do not tighten grub screws (8) at this stage.

c. Slide the seal carrier (1) along the shaft into position.

2. Mount the bearing and adapter sleeve onto the shaft as per standard procedure (see skf.com/mount for further information).

Fill the bearing with grease (only valid for bearings without integral seals).

Lower the shaft with the bearing and seals into the housing base. Position the shaft system or housing axially so that the bearing is centered in the housing.

For "fixed" bearings only, insert one fixing ring on either side of the bearing outer ring.

Fill the housing cavity with grease. The correct amount can be found in table 6.

3. For "open" housing assemblies with seals at both sides:

a. Move the outboard seal carrier (1) into position.

b. Grease & fit the O-ring (4) and V-ring (3) onto the out board labyrinth seal (2).

c. Slide the outboard labyrinth seal along the shaft, but do not position into its final location and do not tighten grub screws.

4. Apply a thin bead of Loctite 510 along the housing base split line. Do not use an excessive amount, to avoid seepage into the bearing seat.

Place the housing cap over the bearing onto the housing base, then tighten the cap bolts to required torque values.

5. Grease and fit the rubber quad ring(5) into the recess in the seal carrier (1).

Apply a bead of Loctite 510 around the housing side faces, including around the seal carrier mounting surface.

6. Slide the seal carrier(s) into position and bolt them to the housing face(s) using 4 off M10 hex head screws (6) and washers (7)

N.B. ensure the quad rings (5) are positioned towards the top of the housing cap, so that the grease inlet ducts are aligned. Take care that Quad rings are not damaged or dislodged during insertion of the carriers into the housing body.

For "closed" housing assemblies, attach the end cover to the outboard side face of the housing using 4 off M10 hex head screws (6) & washers (7). (Apply sealant to the mounting faces.)

Fill the labyrinths with grease and then position the labyrinth seals (2) using the corner of the chamfer on the OD to axially align it with the face of the seal carriers (1) and to provide the appropriate seal clearance. Axial clearance in the labyrinth = 3–3.5 mm nominal depending on size.

Tighten the 3 off grubs screws (8) in the labyrinth seal rings. Torque each screw to 8-15Nm (depending on size).

7. Align the housing to within the misalignment tolerance (refer to page 21). Secure the hold down bolts to the recommended torque value.

Ensure appropriate grease fittings are installed at each of the 3 grease inlet ports on the housing cap.
Note that ports adjacent to closed end covers should be plugged if a bearing with integral seals is used.
To ensure grease ports are unobstructed,pump grease into the housing cap ports until grease purges through the labyrinths.

Align the housings in position of final installation.

Lubrication

SDVD housings with TKV seals are intended for grease lubrication. The lubricant should be selected based on the operating conditions of the bearing. For additional information about lubricant selection, refer to the product information available online at skf.com.

Initial grease fill

If no other requirements exist, the free space in the bearing itself should be completely filled with grease and the free space in the housing should be filled to between 20 to 80% of its volume depending on the specific application.

For highly contaminated environments and slow speeds, to ensure best protection against contaminants use the SKF three-barrier solution (with Sealed Spherical Roller Bearing). In that case, fill the housing to 70–80% of the free space.

In other applications with conventional (unsealed) bearings or frequent grease supply requirement a 40% grease fill is recommended when bearings have to be relubricated from the side, while a 20% grease fill is used when bearings are relubricated via the outer ring.

For additional information, contact the SKF application engineering service.

Quantities for various housing grease fills are listed in table 6.

For TKV seal initial grease fill refer to tables in appendix.

Relubrication

SDVD plummer block housings enable relubrication of the incorporated bearings and seals (fig. following page):

- SDVD housings are supplied with 3 holes in the cap drilled and tapped for 1/4" BSP * grease fittings. The holes are fitted with steel plugs and optional grease nipples are provided loose.
- The central grease hole supplies the central lubrication groove of the bearing.
- 2 grease holes on either side of the bearing are positioned for seal purging.
- If a larger grease fitting or other equipment has to be used, adapters can be sourced separately.

* 1/8" BSP for housing sizes SDVD 513 to SDVD 520

Initial grease fill (cm^3 or grams)

Table 6

SDVD housing recommended initial grease fill for housing installation

Housing	Initial fill		
	20%	40%	80%
SDVD 513	95	190	380
SDVD 515	95	190	380
SDVD 516	130	260	520
SDVD 517	135	265	530
SDVD 518	150	300	600
SDVD 520	190	380	760
SDVD 522	230	460	920
SDVD 524	315	625	1250
SDVD 526	365	730	1460
SDVD 528	465	930	1860
SDVD 530	610	1220	2440
SDVD 532	680	1360	2720
SDVD 3134	550	1100	2200
SDVD 3136	675	1350	2700
SDVD 3138	775	1550	3100
SDVD 3140	875	1750	3500
SDVD 3144	1100	2200	4400
SDVD 3148	1475	2950	5900
SDVD 3152	1800	3600	7200
SDVD 3156	2175	4350	8700
SDVD 3160	2250	4500	9000
SDVD 3164	3350	6700	13400

Eye Bolts

For SDVD housings in the size range 520-532 a single lifting eye bolt is provided, which can be fitted into the central relubrication threaded hole in the housing cap, if required.

During installation, after the housing cap has been positioned the eye bolt should be removed and replaced with a grease nipple or fitting for a lubrication system.

Relubrication for SDVD housings

Figure 1: Lubrication locations for SDVD housings.

Associated components design considerations

Shaft

SDVD housings are designed for use with bearings fitted with SKF adapter sleeves. The sleeve seat on the shaft should be machined to tolerance class h9 or better. The radial runout should be within IT5/2 for tolerance class h9 .

The seal counterfaces should be machined to tolerance class h9 or better and the cylindricity should be to tolerance grade IT5.

At the sleeve and seal positions, the shaft surface should have a roughness Ra ≤ 3,2 µm (*125 µin.*).

Housing Support Surface

To maximize bearing service life and prevent deformation of the housing bore, SKF recommends that the flatness of the housing support surface is to tolerance grade IT7 in accordance with ISO 1101. The surface should be finished to a roughness Ra ≤ 12,5 µm (*500 µin.*).

Alignment

For optimum operation for both the bearing and the seal, housing assemblies should be aligned. The tolerance for the alignment, using labyrinth seal clearances as indicator, can be found in table 7.

The SDVD housing seals, TKV, include a bolt on stationary component and rotating component.

1) The taconite seal rotating and stationary parts should be aligned. The outer flat surface of the stationary component should be in line with the corner of the rotating component as shown in Figure 2. When the corner of the rotating labyrinth component is perfectly aligned with the face of the stationary component (carrier) around the entire circumference, then the bearing assembly is properly aligned. Tolerances in table 7 for alignment are based on a target maximum misalignment of +/- 0.1 degrees in the bearing assembly. The seal's maximum allowable misalignment is 0.5 degrees.

2) The maximum total variation (Vx max) around the circumference of the axial offset distance 'X' should be no more than the values shown in table 1. E.g. the maximum variation for SDVD 518 should be no more than 0.27 mm in the axial direction.

3) The nominal radial labyrinth gap is value 'Y' shown in table 1.

4) The maximum total variation (Vy max) around the circumference of the radial labyrinth gap 'Y' should be no more than the values shown in table 1.
E.g. the maximum variation for SDVD 518 should be no more than 0.29 mm.

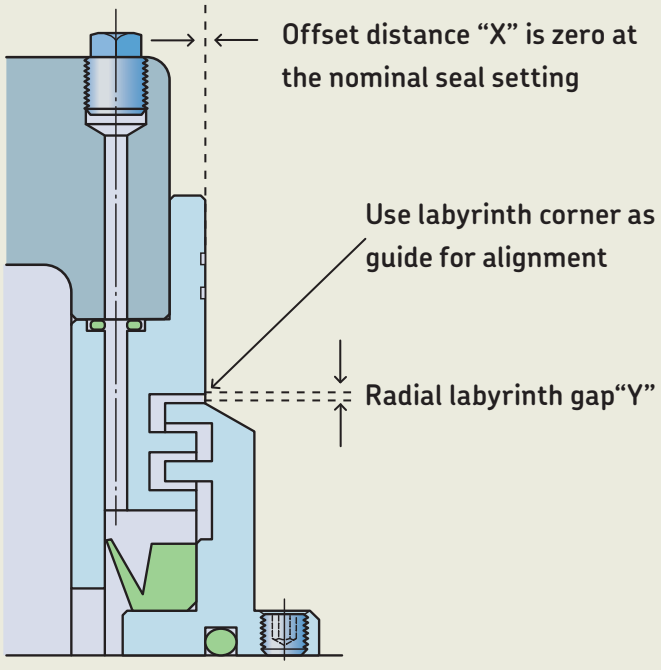


Figure 2: Alignment guidance using TKV seal labyrinth gaps

Table 7

TKV seal alignment tolerances

Housing	Shaft diameter			
	d_a	V_x	$Y_{nominal}$	V_y
-	mm	max	mm	max
SDVD 513	60	0.22	1.5	0.24
SDVD 515	65	0.23	1.5	0.25
SDVD 516	70	0.25	1.5	0.26
SDVD 517	75	0.26	1.5	0.27
SDVD 518	80	0.27	1.5	0.29
SDVD 520	90	0.30	1.5	0.33
SDVD 522	100	0.32	1.5	0.36
SDVD 524	110	0.33	1.5	0.38
SDVD 526	115	0.35	1.5	0.39
SDVD 528	125	0.37	1.5	0.41
SDVD 530	135	0.39	1.5	0.44
SDVD 532	140	0.40	1.5	0.46
SDVD 3134	150	0.45	2	0.43
SDVD 3136	160	0.47	2	0.45
SDVD 3138	170	0.49	2	0.48
SDVD 3140	180	0.52	2	0.52
SDVD 3144	200	0.55	2	0.54
SDVD 3148	220	0.59	2	0.57
SDVD 3152	240	0.62	2	0.59
SDVD 3156	260	0.66	2	0.59
SDVD 3160	280	0.69	2	0.64
SDVD 3164	300	0.73	2	0.68

Ordering information

For SDVD housings, each of the following items must be ordered separately:
- housing
- seal kits (1 per closed housing, 2 per open housing)
- end cover (1 per closed housing)
- locating rings (2 per fixed bearing)
- bearing
- adapter sleeve

Order example

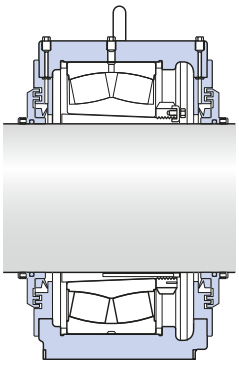
Two plummer block housings with taconite seals are required for two 23138-2CS5K/VT143 Sealed Spherical Roller Bearings on adapter sleeves. One housing will accommodate the non-locating bearing at the end of the shaft. The other housing will accommodate the locating bearing and a through shaft.

The following items should be ordered:

Example
- 2 housings SDVD 3138
- 3 seal kits TKV 38 (each pack contains one seal assembly)
- 1 end cover ETV 330/305/4
- 2 locating rings FRB 10/320
- 2 bearings 23138-2CS5K/VT143
- 2 adapter sleeves OH 3138 H

Appendix: SDVD 500 series installation data for Conveyor Pulleys

Shaft Size	Housing								
		Sealed Bearing Open Bearing	Locating Ring (2 x per located housing)	Bearing Weight	SDVD Housing Weight	Bearing Grease additional fill for Sealed bearings[2]	Housing grease fill 80% or 40% [1]	TKV Seal Grease Volume	Adapter sleeve with lock nut and locking device
$d_{Ø}$									
mm	–	–	mm	kg	kg	g	g	g/seal	
60	**SDVD 513**	BS2-2213-2RSK / VT143 22213 EK	FRB 6.5/120 FRB 10/120	1.6 1.55	11 11	17 –	380 190	25 25	H 2313 E/V21 H 313
65	**SDVD 515**	BS2-2215-2RSK / VT143 22215 EK	FRB 9/130 FRB 12.5/130	2.1 1.7	10 10	20 –	380 190	27 27	H 315 E H 315
70	**SDVD 516**	BS2-2216-2RSK / VT143 22216 EK	FRB 9/140 FRB 12.5/140	2.4 2.1	15 15	25 –	520 260	29 29	H 316 E H 316
75	**SDVD 517**	BS2-2217-2RSK / VT143 22217 EK	FRB 8.5/150 FRB 12.5/150	3.0 2.7	14 14	30 –	530 265	30 30	H 317 E H 317
80	**SDVD 518**	BS2-2218-2RSK / VT143 22218 EK	FRB 8.5/160 FRB 12.5/160	3.7 3.4	16 16	40 –	600 300	32 32	H 2318 E / L73 H 318
90	**SDVD 520**	BS2-2220-2RS5K / VT143 22220 EK	FRB 7.5/180 FRB 12/180	5.5 4.9	22 22	65 –	760 380	59 59	H 2320 E/V21 H 320
100	**SDVD 522**	BS2-2222-2RS5K / VT143 22222 EK	FRB 8.5/200 FRB 13.5/200	7.6 7.0	27 27	85 –	920 460	65 65	H 2322 E/V21 H 322
110	**SDVD 524**	BS2-2224-2RS5K / VT143 22224 EK	FRB 8.5/215 FRB 14/215	9.8 8.7	31 31	100 –	1250 625	71 71	H 2324 E/V21 H 3124
115	**SDVD 526**	BS2-2226-2CS5K/ VT143 22226 EK	FRB 7.5/230 FRB 13/230	11.0 11.0	39 39	135 –	1460 730	75 75	H 2326 L/V21 H 3126
125	**SDVD 528**	22228-2CS5K/ VT143 22228 CCK / W33	FRB 10/250 FRB 10/250	14.0 14.0	48 48	140 –	1860 930	80 80	H 3128 L H 3128
135	**SDVD 530**	22230-2CS5K / VT143 22230 CCK / W33	FRB 10/270 FRB 10/270	18.0 18.0	54 54	170 –	2440 1220	85 85	H 3130 H 3130
140	**SDVD 532**	22232-2CS5K / VT143 22232 CCK / W33	FRB 10/290 FRB 10/290	22.5 22.5	59 59	270 –	2720 1360	88 88	OH 3132 H H 3132



Lubrication guidelines for conveyors

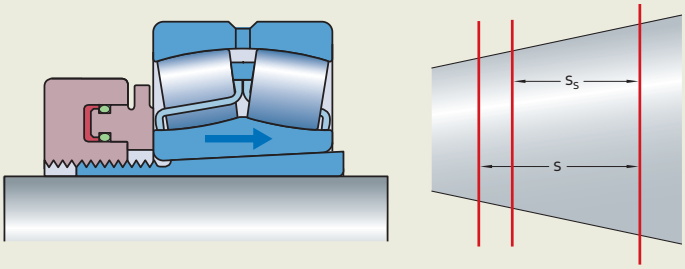
[1] Housing free space:
For Sealed Bearings the housing should be filled to at least 80% of free space during assembly with grease.

For Open Bearings the housing should be filled to typ 40% of free space during assembly with grease.

The grease should have an NLGI Grade 2 or 3.

[2] Sealed bearings:
If bearing is to have an additional grease fill the appropriate quantity of SKF LGEP2 should be applied through the bearing central lubrication groove.

		Preferred Installation Method				Housing Bolt Torques[3]					
Hook / Impact Spanner	Hydraulic Nut	Start Position Hydraulic pressure MP_a	Axial drive-up from starting position S_s		Tightening Angle	Cap Bolts		Attachment Bolts		Seal/End Cover Bolts	
			min	max	α °	size	N_m	size	N_m	size	N_m
HN 13/SNL	HMV 13 E	1.39	0.41	0.48	120	M12	80	M12	80	M6	9
HN 13/SNL	HMV 13 E	1.16	0.41	0.48	120	M12	80	M12	80	M6	9
HN 15/SNL	HMV 15 E	1.03	0.45	0.53	130	M12	80	M12	80	M6	9
HN 15/SNL	HMV 15 E	0.87	0.45	0.53	135	M12	80	M12	80	M6	9
HN 16/SNL	HMV 16 E	1.19	0.48	0.56	135	M12	80	M16	200	M6	9
HN 16/SNL	HMV 16 E	1.01	0.48	0.56	140	M12	80	M16	200	M6	9
HN 17/SNL	HMV 17 E	1.38	0.5	0.58	145	M12	80	M16	200	M6	9
HN 17/SNL	HMV 17 E	1.16	0.5	0.58	145	M12	80	M16	200	M6	9
HN 18/SNL	HMV 18 E	1.41	0.54	0.61	150	M16	150	M16	200	M6	9
HN 18/SNL	HMV 18 E	1.2	0.54	0.61	150	M16	150	M16	200	M6	9
HN 20/SNL	HMV 20 E	1.7	0.58	0.65	160	M20	200	M16	200	M6	9
HN 20/SNL	HMV 20 E	1.46	0.58	0.65	160	M20	200	M16	200	M6	9
HN 22/SNL	HMV 22 E	2.01	0.64	0.72	170	M20	200	M16	200	M8	22
HN 22/SNL	HMV 22 E	1.73	0.64	0.72	175	M20	200	M16	200	M8	22
TMFN 23-30	HMV 24 E	2.13	0.68	0.75	185	M20	200	M16	200	M8	22
TMFN 23-30	HMV 24 E	1.84	0.68	0.75	185	M20	200	M16	200	M8	22
TMFN 23-30	HMV 26 E	2.24	0.74	0.81	195	M24	350	M20	385	M8	22
TMFN 23-30	HMV 26 E	1.96	0.74	0.81	195	M24	350	M20	385	M8	22
TMFN 23-30	HMV 28 E	2.35	0.79	0.86	205	M24	350	M24	665	M8	22
TMFN 23-30	HMV 28 E	2.33	0.79	0.86	205	M24	350	M24	665	M8	22
TMFN 30-40	HMV 30 E	2.52	0.85	0.92	220	M24	350	M24	665	M8	22
TMFN 30-40	HMV 30 E	2.49	0.85	0.92	220	M24	350	M24	665	M8	22
TMFN 30-40	HMV 32 E	2.6	0.9	0.97	155	M24	350	M24	665	M8	22
TMFN 30-40	HMV 32 E	2.57	0.9	0.97	155	M24	350	M24	665	M8	22



Note: SKF Drive-up data is only valid when using SKF bearings, sleeves and hydraulic nuts.

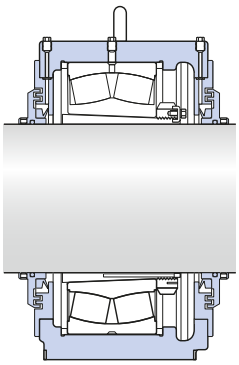
Further installation data on SKF sealed spherical roller bearings available at www.skf.com

Every care has taken to ensure the accurancy of the informations contained in this publication but no liabilty can be accepted for any loss or damage whether direct, indirect or consequential arising out of the information contained herein.

[3] Torque values for grade 8.8 bolts.

Appendix: SKF SDVD 3100 series installation data for Conveyor Pulleys

Shaft Size	Housing								
		Sealed Bearing Open Bearing	Offset (s)	Housing Locating Ring FRB	Bearing Weight	SDVD Housing Weight	Bearing Grease additional fill for Sealed bearings[2]	Housing grease fill 80% or 40%[1]	TKV Seal Grease Volume
$d_{ø}$									
mm	–	–	mm	mm	kg	kg	g	g	g/seal
150	**SDVD 3134**	23134-2CS5K/VT143 23134 CCK/W33	14 14	2x10/280 2x10/280	22 22	73 73	210 -	2 200 1 100	125 125
160	**SDVD 3136**	23136-2CS5K/VT143 23136 CCK/W33	15 15	2x10/300 2x10/300	28 28	81 81	260 -	2 700 1 350	135 135
170	**SDVD 3138**	23138-2CS5K/VT143 23138 CCK/W33	10 10	2x10/320 2x10/320	35 35	99 99	290 -	3 100 1 550	140 140
180	**SDVD 3140**	23140-2CS5K/VT143 23140 CCK/W33	10 10	2x10/340 2x10/340	43 43	121 121	365 -	3 500 1 750	165 165
200	**SDVD 3144**	23144-2CS5K/VT143 23144 CCK/W33	12 12	2x10/370 2x10/370	54 54	136 136	450 -	4 400 2 200	170 170
220	**SDVD 3148**	23148-2CS5K/VT143 23148 CCK/W33	12 12	2x10/400 2x10/400	67 67	169 169	570 -	5 900 2 950	190 190
240	**SDVD 3152**	23152-2CS5K/VT143 23152 CCK/W33	13 13	2x10/440 2x10/440	91 91	205 205	870 -	7 200 3 600	205 205
260	**SDVD 3156**	23156-2CS5K/VT143 23156 CCK/W33	16 16	2x10/460 2x10/460	97 97	234 234	940 -	8 700 4 350	215 215
280	**SDVD 3160**	23160-2CS5K/VT143 23160 CCK/W33	22 22	2x10/500 2x10/500	125 125	284 284	1110 -	9 000 4 500	235 235
300	**SDVD 3164**	23164-2CS5K/VT143 23164 CCK/W33	23 23	2x10/540 2x10/540	165 165	322 322	1360 -	13 400 6 700	245 245



Lubrication guidelines for conveyors

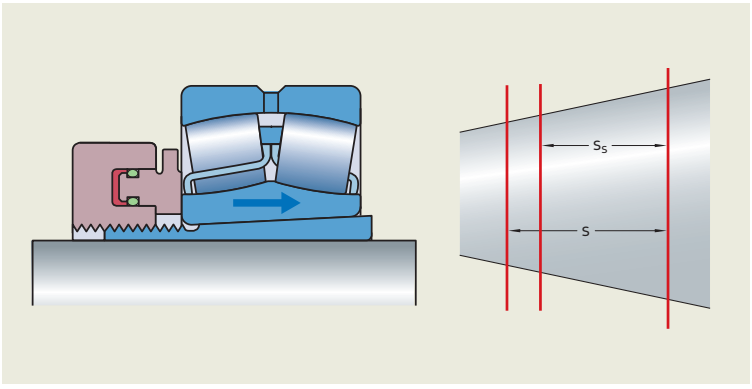
1) Housing free space:
For Sealed Bearings the housing should be filled to at least 80% of free space during assembly with grease.

For Open Bearings the housing should be filled to typ 40% of free space during assembly with grease.

The grease should have an NLGI Grade 2 or 3.

2) Sealed bearings:
If bearing is to have an additional grease fill the appropriate quantity of SKF LGEP2 should be applied through the bearing central lubrication groove.

			Preferred Installation Method			Housing bolt torques[3]				
Adapter Sleeve with lock nut and locking device	Hook / Impact Spanner	Hydraulic Nut	Start Position Hydraulic pressure MP_a	Axial drive-up from starting position S_s		Cap Bolts		Attachment Bolts		Seal/ End Cover Bolts M10
				min	max	size	N_m	size	N_m	N_m
OH 3134 HE	TMFN 30-40	HMV 34 E	2.18	0.93	1.0	M24	350	M24	665	44
OH 3134 H	TMFN 30-40	HMV 34 E	2.14	0.93	1.0	M24	350	M24	665	44
OH 3136 HL	TMFN 30-40	HMV 36 E	2.35	0.97	1.04	M24	350	M24	665	44
OH 3136 H	TMFN 30-40	HMV 36 E	2.31	0.97	1.04	M24	350	M24	665	44
OH 3138 H	TMFN 30-40	HMV 38 E	2.54	1.04	1.11	M24	350	M24	665	44
OH 3138 H	TMFN 30-40	HMV 38 E	2.5	1.04	1.11	M24	350	M24	665	44
OH 3140 H	TMFN 30-40	HMV 40 E	2.64	1.08	1.15	M24	350	M30	1310	44
OH 3140 H	TMFN 30-40	HMV 40 E	2.6	1.08	1.15	M24	350	M30	1310	44
OH 3144 HTL	TMFN 40-52	HMV 44 E	2.76	1.18	1.25	M24	350	M30	1310	44
OH 3144 H	TMFN 40-52	HMV 44 E	2.71	1.18	1.25	M24	350	M30	1310	44
OH 3148 HTL	TMFN 40-52	HMV 48 E	2.66	1.28	1.35	M30	400	M30	1310	44
OH 3138 H	TMFN 40-52	HMV 48 E	2.61	1.28	1.35	M30	400	M30	1310	44
OH 3152 HTL	TMFN 40-52	HMV 52 E	2.92	1.38	1.45	M30	400	M36	2280	44
OH 3152 H	TMFN 40-52	HMV 52 E	2.88	1.38	1.45	M30	400	M36	2280	44
OH 3156 HTL	TMFN 52-64	HMV 56 E	2.63	1.47	1.54	M30	400	M36	2280	44
OH 3156 H	TMFN 52-64	HMV 56 E	2.6	1.47	1.54	M30	400	M36	2280	44
OH 3160 HE	TMFN 52-64	HMV 60 E	2.86	1.57	1.64	M30	400	M36	2280	44
OH 3160 H	TMFN 52-64	HMV 60 E	2.82	1.57	1.64	M30	400	M36	2280	44
OH 3164 H	TMFN 52-64	HMV 64 E	3.14	1.68	1.76	M30	400	M36	2280	44
OH 3164 H	TMFN 52-64	HMV 64 E	3.09	1.68	1.76	M30	400	M36	2280	44



Note: SKF Drive-up data is only valid when using SKF bearings, sleeves and hydraulic nuts.

Further installation data on SKF sealed spherical roller bearings available at www.skf.com

Every care has taken to ensure the accurancy of the informations contained in this publication but no liabilty can be accepted for any loss or damage whether direct, indirect or consequential arising out of the information contained herein.

[3] Torque values for grade 8.8 bolts.

skf.com

PUB BU/P1 19414/4 EN.AU · September 2023