
























Small diameter seals








































SKF small diameter radial shaft seals are the most common seals and are used for shaft diameters ranging from 3 to 203 mm (0.125 to 8 in). These seals are available in a wide range of designs and materials to meet the varying demands of different applications. See Matrix 1 for an overview.

This chapter presents the most commonly used small diameter radial shaft seals within the SKF range. Most of these seals conform to one of the designs standardized in the international or national standards, for example ISO, ASTM, DIN or JIS.

 Radial shaft seals overview
Small diameter range

Matrix 1

					Design					
					Outside diameter		Sealing lip		Auxiliary lip	
					Configuration	Material code	Configuration	Material code	A = Contacting B = Non-contacting	
R, RG Nitrile rubber V Fluoro rubber PTFE Polytetrafluoroethylene Seal types										
HMS5		HMSA10			Rubber	RG, V	Straight	RG, V	B (HMSA10)	
HMS4		HMSA7			Rubber	R, V	Straight	R, V	A (HMSA7)	
CRW1		CRWH1			Metal + Bore-Tite	–	SKF WAVE	R, V	N/A	
CRWA1		CRWAH1			Metal + Bore-Tite	–	SKF WAVE	R, V	B	
CRW5		CRWA5			Metal + Bore-Tite	–	SKF WAVE	R, V	B (CRWA5)	
CRS1		CRSH1			Metal + Bore-Tite	–	Straight	R, V	N/A	
CRSA1		CRSAH1			Metal + Bore-Tite	–	Straight	R, V	A	
RD10		RD30		RD60		Metal	–	Special	PTFE	N/A
RD11		RD70		RD71		Metal	–	Special	PTFE	A (RD11, RD71)
RDD13		RDD14		RDD15		Fluoro-plastic/ rubber	PTFE + R, V	Special	PTFE	N/A

Standard design (preferred design)	Other basic designs	Material code	Operating temperature range	
			°C	°F
 HDS7	 HDS6	R D H	-40 to +100 -40 to +100 -40 to +150	-40 to +210 -40 to +210 -40 to +300
 HDL	 HDLA	R H V	-40 to +100 -40 to +150 -40 to +200	-40 to +210 -40 to +300 -40 to +390
 SBF		R V	-40 to +100 -40 to +200	-40 to +210 -40 to +390
 HDS2	   HDS1 HDS3 HDS4	R D H V	-40 to +100 -40 to +100 -40 to +150 -40 to +200	-40 to +210 -40 to +210 -40 to +300 -40 to +390
 HDSA2	     HDSA1 HDSB2 HDSB1 HDSC2 HDSC1	R D H V	-40 to +100 -40 to +100 -40 to +150 -40 to +200	-40 to +210 -40 to +210 -40 to +300 -40 to +390
 HDSE2	   HDSE1 HDSO2 HDSO1	R D H V	-40 to +100 -40 to +100 -40 to +150 -40 to +200	-40 to +210 -40 to +210 -65 to +210 -40 to +300 -40 to +390
  HS solid HS5	 HS4	R D H V	-40 to +100 -40 to +100 -40 to +150 -40 to +200	-40 to +210 -40 to +210 -40 to +300 -40 to +390
   HS split HS8 HS5	  HS6 HS7	R D H V	-40 to +100 -40 to +100 -40 to +150 -40 to +200	-40 to +210 -40 to +210 -40 to +300 -40 to +390
  HSF solid HSF5	    HSF6 HSF7 HSF8 HSF9	R V	-40 to +100 -40 to +200	-40 to +210 -40 to +390
   HSF split HSF1 HSF5	   HSF2 HSF3 HSF4	R V	-40 to +100 -40 to +200	-40 to +210 -40 to +390



Pressure differential	Coaxiality mm (in)	Runout (Dynamic eccentricity of shaft) mm (in)	Maximum shaft surface speed m/s (ft/min)	Ease of installation	Ability to seal low viscosity lubricants and exclude water
0	1,6 (0.062)	2,4 (0.093)	25 (>5 000) depending on the operating conditions	Excellent	Highly effective exclusion of water and solid contaminants and excellent retention of grease.
0,1 (15)	2,5 (0.1)	2,4 (0.093)	24 (>4 700) 25 (>5 000) 35 (>7 000)	Good	Excellent, including retention of light oils at high surface speeds and misalignment.
0,1 (15)	1,5 (0.06)	2,4 (0.093)	25 (>5 000)	Excellent	Excellent for oil or grease retention.
0,1 (15)	1,6 (0.062)	2,4 (0.093)	25 (>5 000)	HDS2, HDS3, HDS4: Excellent HDS1: Good	Excellent for oil or grease retention.
0,1 (15)	1,6 (0.062)	2,4 (0.093)	25 (>5 000)	Excellent to good, varies with equipment design.	HDSA/B: Excellent for oil or grease retention with exclusion of light to moderate contamination. HDS C: Good grease retention, increased protection against contamination.
0,1 (15)	1,6 (0.062)	2,4 (0.093)	25 (>5 000)	HDSD2, HDSE2: Excellent HDSD1, HDSE1: Good	HDSD: Excellent for oil or grease retention and exclusion of light to moderate contamination or separation of two media. HDSE: Good grease retention, increased protection against contamination.
0,07 (11)	1,6 (0.062)	2,4 (0.093)	HS4: 15 (3 000) HS5: 13 (2 500)	HS4: Good HS5: Good	HS4: Good HS5: Good
0	1,6 (0.062)	2,4 (0.093)	HS6: 10 (2 000) HS7: 7.5 (1 500) HS8: 10 (2 000)	HS6: Fair HS7: Excellent HS8: Good	HS6, HS8: Good to excellent for oil or grease retention HS7: Good (grease only)
0,03 (5)	1,5 (0.06)	2,4 (0.093)	15 (>3 000) depending on the operating conditions	Good to excellent	Excellent
0	1,5 (0.06)	2,4 (0.093)	15 (>3 000) depending on the operating conditions	Fair to good depending on the available space for installation	Good to excellent