MOTION & CONTROL
NSK

Extra-Capacity Sealed-Clean™ Roll Neck Bearings

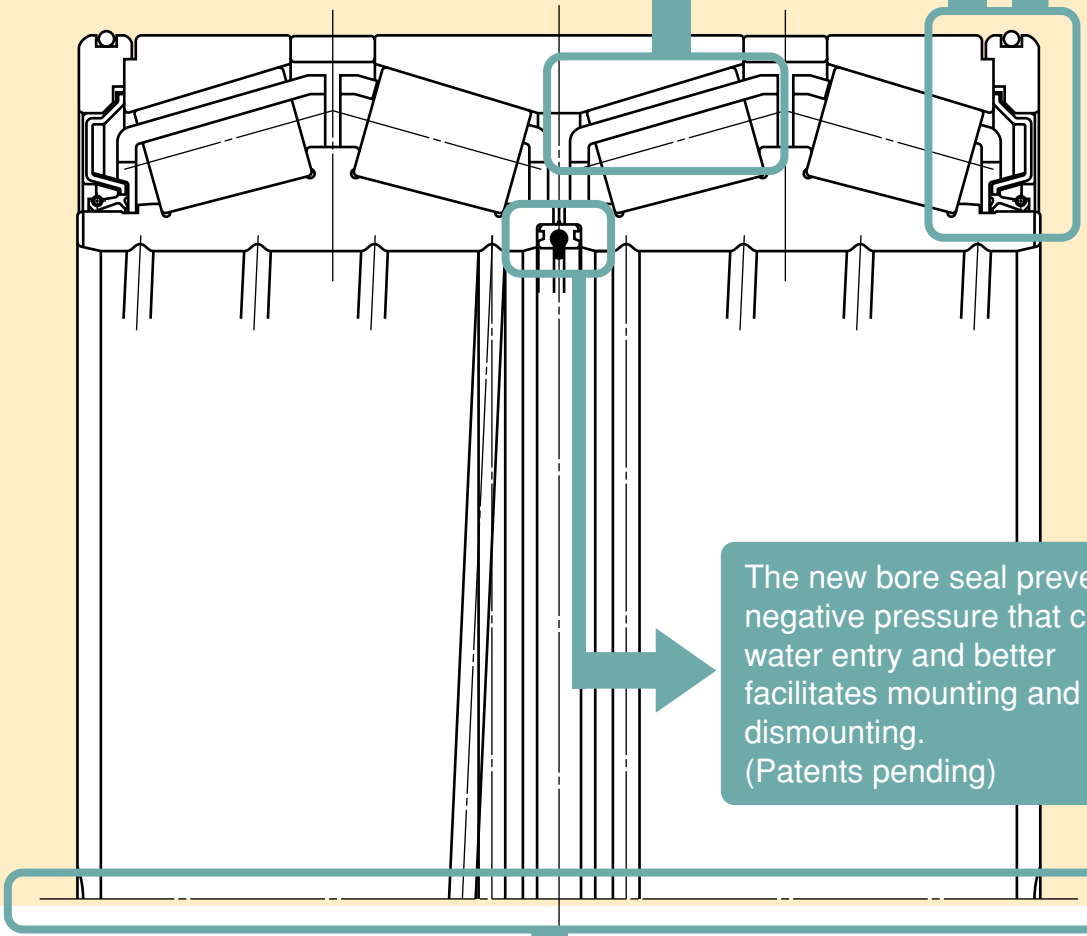
- Increased load capacity
- Easier handling
- Greater durability in severe lubrication conditions

New!

NSK, the first in the world with sealed roll neck bearings, delivers again with Extra-Capacity Sealed-Clean™ Bearings for roll necks.

Load capacity is increased because the new cage and thinner seal create space for more and larger rollers.
(Patents pending)

The new seal and its holder make handling easier and minimize seal damage.
(Patents pending)



The new bore seal prevents negative pressure that causes water entry and better facilitates mounting and dismounting.
(Patents pending)

Super-TF steel gives longer life in severe lubrication conditions.
(Patented in Japan and overseas)

Long Life and Easy Handling

Increased Load Capacity with More and Larger Rollers

Bearing No.	Bearing Size	Basic Dynamic Load Rating, kN	
		New Extra-Capacity Series	Conventional
STF254KVS3551E	ϕ254 × ϕ358.775 × 269.875	2510 (+15%)	2180
STF276KVS3951E	ϕ276.225 × ϕ393.7 × 269.875	2750 (+20%)	2290
STF343KVS4551E	ϕ343.052 × ϕ457.098 × 254	2830 (+29%)	2200
STF482KVS6151E	ϕ482.6 × ϕ615.95 × 330.2	4900 (+34%)	3650

Longer Life in Severe Lubrication Conditions with Super-TF Steel

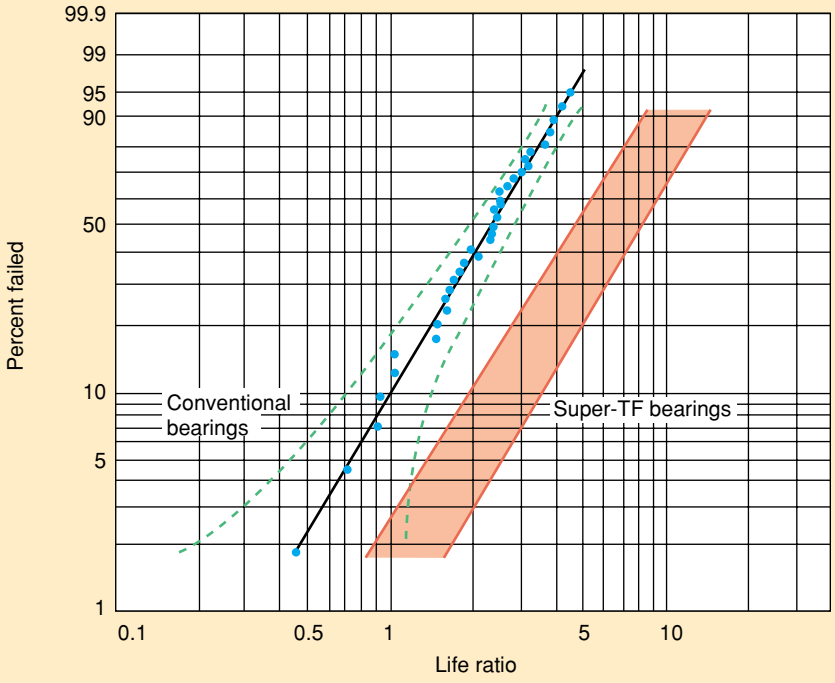


Figure 1 Field data on Super-TF bearings

New Bore Seal

■ Prevention of negative pressure that causes water entry
■ Easier mounting and dismounting

Negative pressure develops inside sealed roll neck bearings because of internal temperature changes brought about by changing rotating speeds. This negative pressure causes water to more readily enter the bearing, leading to lubricant deterioration and reduced bearing life. In response, NSK has developed a new bore seal. Located in a position relatively free from coolant water, the new seal allows the bearing to "breath" and thus eliminates the build-up of negative pressure.

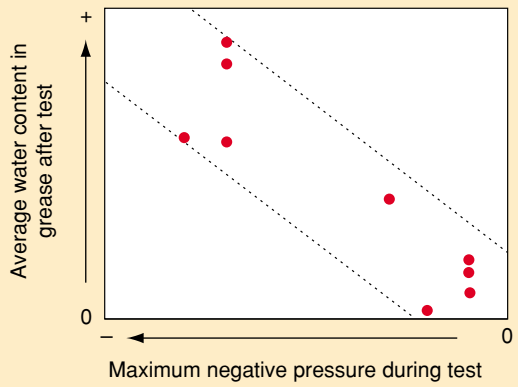


Figure 2 Maximum negative pressure and water entry

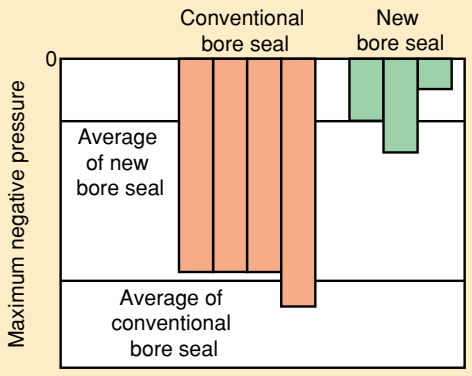


Figure 3 Seal and maximum negative pressure

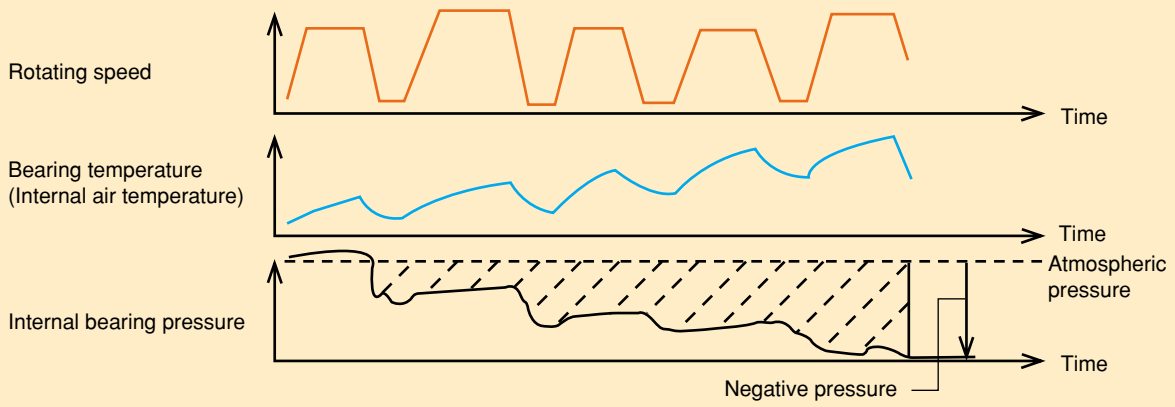


Figure 4 Representation of internal negative pressure during sealed-clean roll neck bearing operation

The flexible structure of the new seal makes installation and removal easy.

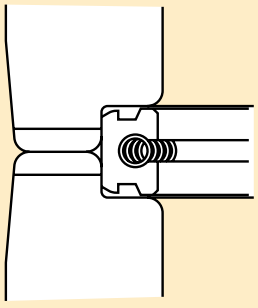


Figure 5 New bore seal

The new seal is easily installed and removed.

New Main Seal and Holder

NSK has developed a new main seal and holder that are easily installed and removed. With the size of the bore of the seal holder reduced, more space is provided for the lifting jig.

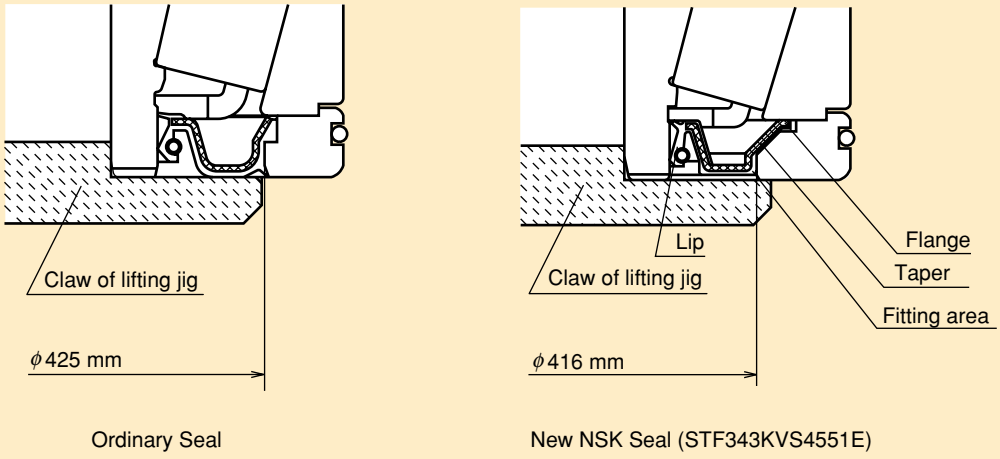


Figure 6 Seal Comparison (Typical cold mill roll neck bearing)

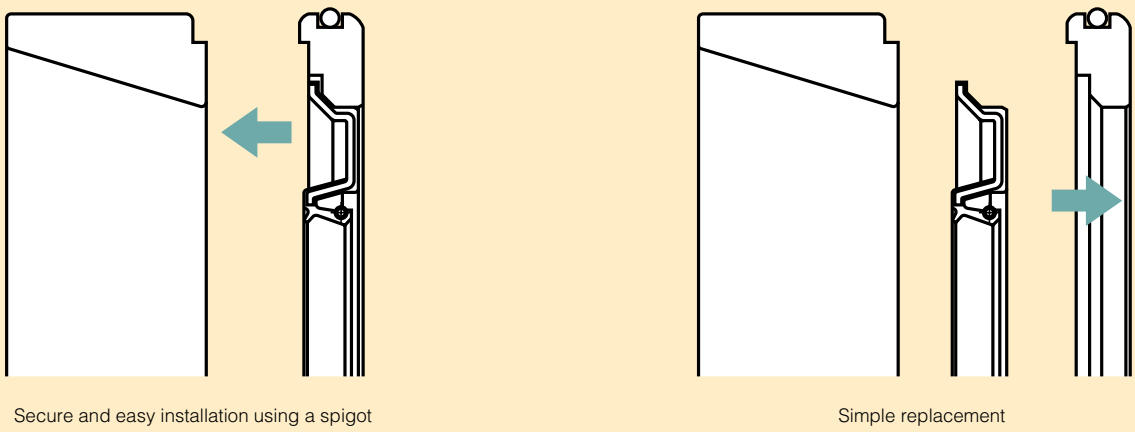


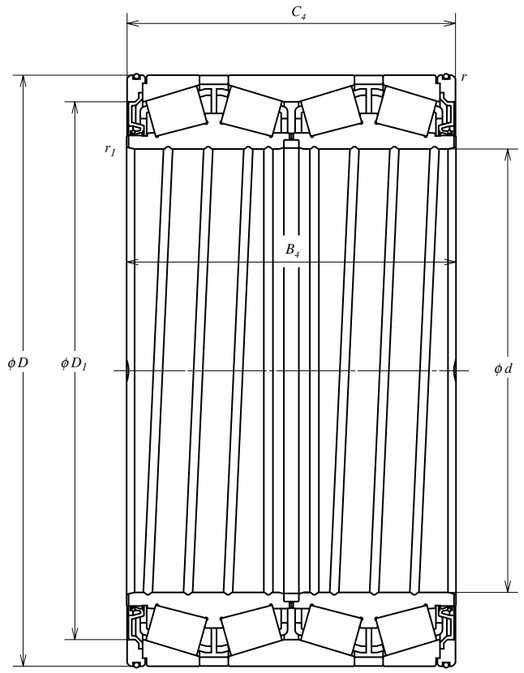
Figure 7 New main seal and seal holder

Bearing Table

KVS TYPE

Boundary Dimensions (mm/inch)							Basic Load Ratings (kN)		Bearing Numbers	Constant	Axial Load Factors	
d	D	B_4	C_4	D_1	r_1 min	r min	C_r	C_{0r}		e	Y_2	Y_3
170	240	175	175	216	2.4	2.5	1010	2000	STF170KVS2401E	0.32	3.2	2.1
220	340	303.5	303.5	296	3	3	2910	5950	STF220KVS3401E	0.33	3.0	2.0
241.478 9.5070	349.148 13.7460	228.600 9.0000	228.600 9.0000	313	1.5	3.3	2020	4150	*STF241KVS3451E	0.35	2.9	1.9
244.475 9.6250	327.025 12.8750	193.680 7.6252	193.680 7.6252	296	1.5	3	1450	3300	*STF244KVS3251E	0.40	2.5	1.7
254.000 10.0000	358.775 14.1250	269.875 10.6250	269.875 10.6250	320	1.5	3.3	2510	5650	*STF254KVS3551E	0.33	3.1	2.1
266.700 10.5000	355.600 14.0000	230.188 9.0625	228.600 9.0000	324	1.5	3.3	1920	4500	*STF266KVS3551E	0.35	2.9	1.9
276.225 10.8750	393.700 15.5000	269.875 10.6250	269.875 10.6250	352	1.5	6.4	2750	6050	*STF276KVS3951E	0.38	2.7	1.8
279.400 11.0000	393.700 15.5000	269.875 10.6250	269.875 10.6250	352	1.5	6.4	2750	6050	*STF279KVS3951E	0.38	2.7	1.8
304.648 11.9940	438.048 17.2460	280.990 11.0626	279.400 11.0000	387	3.3	3.3	3100	6750	*STF304KVS4351E	0.45	2.2	1.5
304.800 12.0000	419.100 16.5000	269.875 10.6250	269.875 10.6250	380	1.5	6.4	2860	6550	*STF304KVS4151E	0.33	3.0	2.0
304.902 12.0040	412.648 16.2460	266.700 10.50000	266.700 10.50000	374	3.3	3.3	2710	6350	*STF304KVS4152E	0.33	3.0	2.0
343.052 13.5060	457.098 17.9960	254.000 10.0000	254.000 10.0000	416	1.5	3.3	2830	6700	*STF343KVS4551E	0.45	2.2	1.5
355.600 14.0000	482.600 19.0000	265.112 10.4375	269.875 10.6250	435	1.5	3.3	3100	7350	*STF355KVS4851E	0.47	2.1	1.4
406.400 16.0000	546.100 21.5000	288.925 11.3750	288.925 11.3750	495	1.5	6.4	3950	9450	*STF406KVS5451E	0.48	2.1	1.4
430.000 16.9291	575.000 22.6378	380.000 14.9606	380.000 14.9606	524	1.5	5	5400	14200	*STF430KVS5751E	0.33	3.0	2.0
450	595	368	368	543	4	5	5300	14100	STF450KVS5901E	0.33	3.0	2.0
457.200 18.0000	596.900 23.5000	276.225 10.8750	279.400 11.0000	546	1.5	3.3	4000	9850	*STF457KVS5951E	0.47	2.1	1.4
482.600 19.0000	615.950 24.2500	330.200 13.0000	330.200 13.0000	573	4.3	6.4	4900	13500	*STF482KVS6151E	0.33	3.1	2.1
509.948 20.0767	654.924 25.7844	377.000 14.8425	379.000 14.9213	597	1.5	5	5750	17100	*STF509KVS6551E	0.41	2.4	1.6

Note: Bearing numbers with an asterisk (*) are inch design.



Dynamic Equivalent Load

$P = XF_r + YF_a$

$F_a/F_r \leq e$		$F_a/F_r > e$	
X	Y	X	Y
1	Y_3	0.67	Y_2

Static Equivalent Load

$P_0 = F_r + Y_0F_a$

Where $Y_0 \fallingdotseq Y_3$

The values of e, Y_2, and Y_3 are given in the table.