

Internal Freewheels FXN

for press fit on the outer ring
with sprag lift-off X



Application as

- ▶ Backstop
- ▶ Overrunning Clutch

For application as backstop in installations with high speeds in freewheeling operation.

For application as overrunning clutch in installations with low speeds in driving operation.

Features

Internal Freewheels FXN are sprag freewheels without bearing support and with sprag lift-off X.

The sprag lift-off X ensures a wear-free freewheeling operation when the inner ring rotates at high speed.

The outer ring is pressed into the customer housing. This makes compact, space-saving fitting solutions possible.

Nominal torques up to 20 500 Nm. The torque is transmitted on the outer ring by press fit.

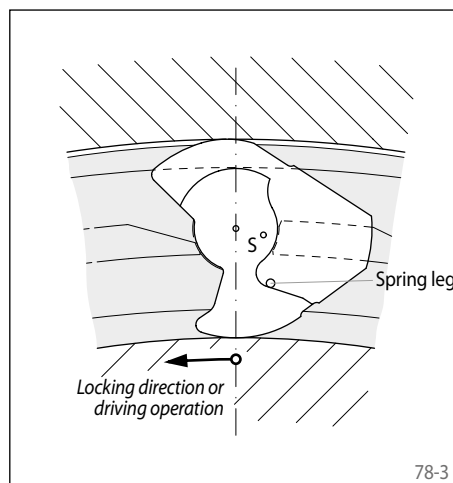
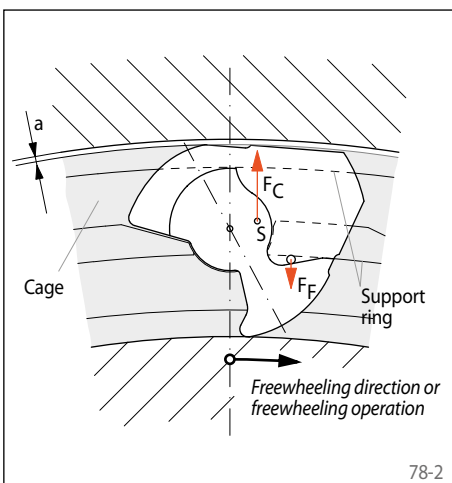
Bores up to 130 mm. A multitude of standardized bore diameters are available with short delivery times.

Sprag lift-off X

Internal Freewheels FXN are equipped with sprag lift-off X. The sprag lift-off X is used for backstops and overrunning clutches, provided that in freewheeling operation the inner ring is rotating at high speed and providing with overrunning clutches that the driving operation is conducted at low speed. In freewheeling operation, the centrifugal force F_C causes the sprag to lift off from the outer track. In this operating state, the freewheel works wear-free, i.e. with unlimited service life.

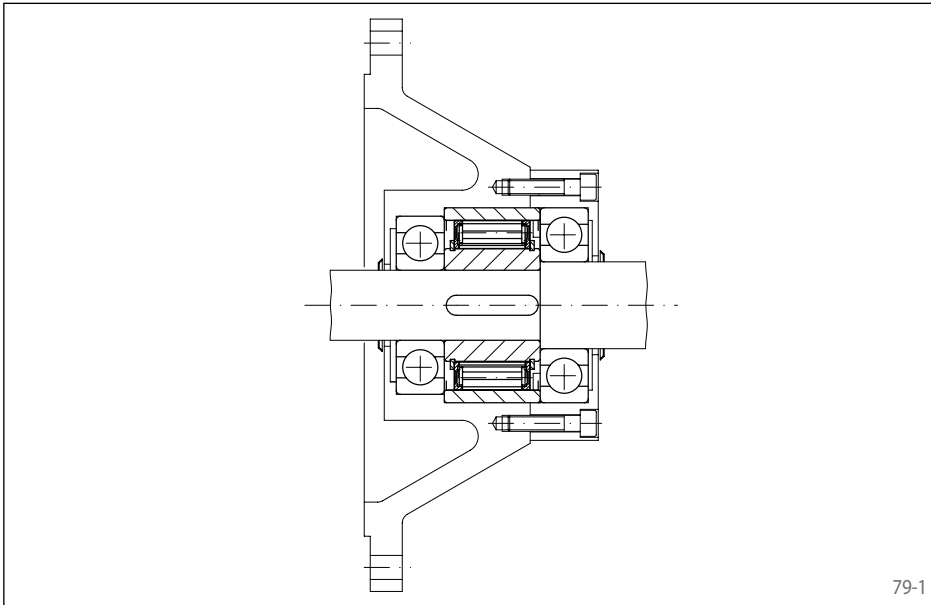
Figure 78-2 shows a freewheel with sprag lift-off X in freewheeling operation. The sprags, which are supported in a cage connected with the inner ring, rotate with the inner ring. The centrifugal force F_C that is applied in the center of gravity S of the sprag turns the sprag counter-clockwise and rests against the support ring of the cage. This results in the gap a between the sprag and the outer track; the freewheel works without contact. If the inner ring speed decreases to such an extent that the effect of

the centrifugal force on the sprag is less than that of the spring force F_F , the sprag again rests on the outer ring and the freewheel is ready to lock (figure 78-3). If used as an overrunning clutch, the driving speed must not exceed 40% of the lift-off speed.



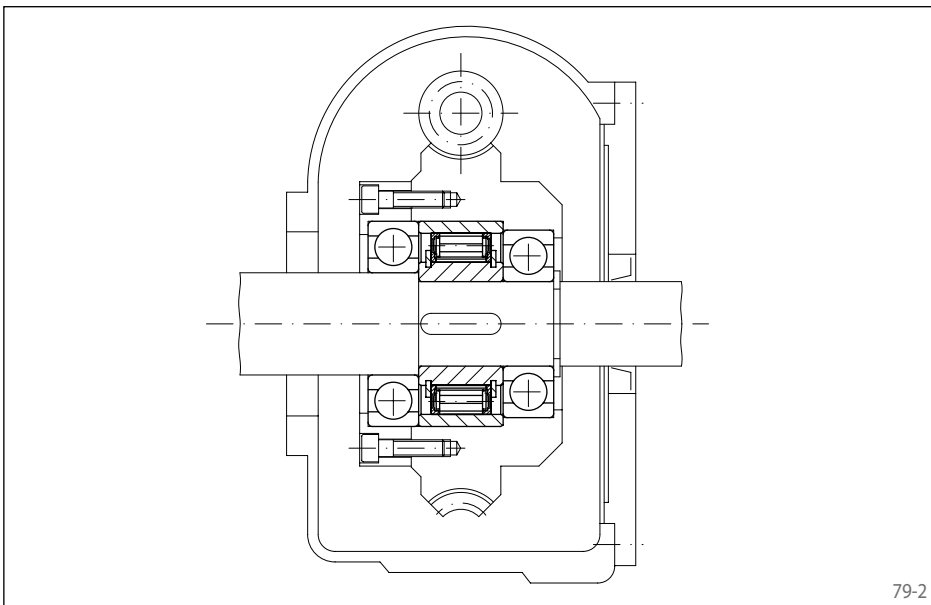
Internal Freewheels FXN

for press fit on the outer ring
with sprag lift-off X



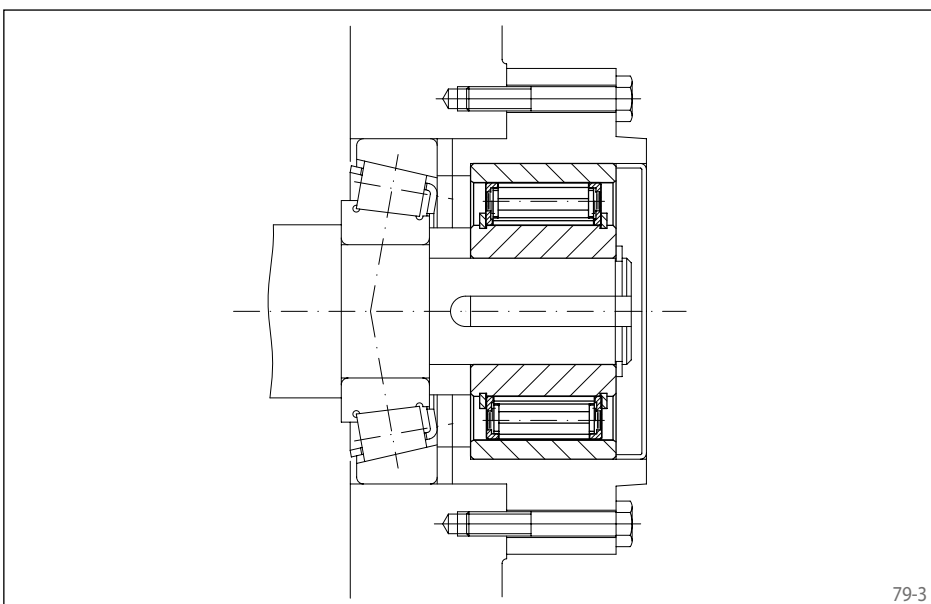
Application example

Internal Freewheel FXN 38 - 17/70 NX as a backstop, arranged in a housing adapter to attach to an electric motor. The thin outer ring that is pressed into the housing enables a space-efficient fitting solution. Due to the high shaft speeds in normal operation (freewheeling operation), the sprag lift-off X ensures a contactless and hence wear-free continuous operation.



Application example

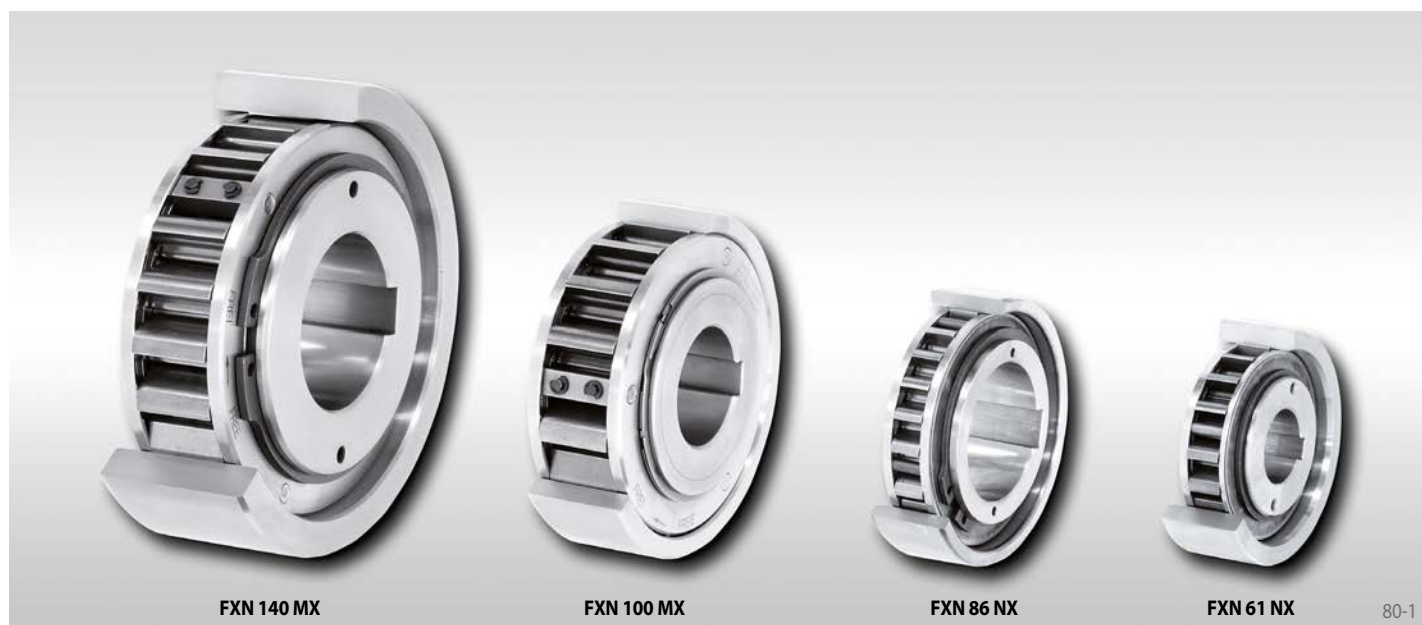
Internal Freewheel FXN 66 - 25/100 NX as an overrunning clutch in the creep drive of a textile machine. The freewheel installation is compactly solved by means of the thin outer ring that is pressed into the worm wheel. During set-up, the machine is driven by the worm gear and the freewheel that is working in driving operation. In normal operation (freewheeling operation), the inner ring that is located on the high speed main drive shaft overruns and automatically disengages the creep drive. With the high overrunning speed of the inner ring, the type with sprag lift-off X is used; the sprags work in freewheeling operation without contact and hence are wear-free.



Application example

Internal Freewheel FXN 85 - 40/140 MX as a backstop fitted to the end of the first intermediate shaft of a spur gearbox in the drive of an inclined conveyor belt. In the case of a motor stop the conveyor belt must be held securely so that the conveyor goods do not pull the belt backwards and possibly cause serious damage. Due to the high shaft speeds in normal operation (freewheeling operation), the sprag lift-off X ensures a contactless and hence wear-free continuous operation.

for press fit on the outer ring
with sprag lift-off X



		Type with sprag lift-off X	
		For extended service life using sprag lift-off at high speed rotating inner ring	
Backstop	→		
Overrunning Clutch	→		

Freewheel Size	Type	Torque nominal teórico	Nominal torque at existing run out T.I.R.						Sprag lift-off at inner ring speed	Max. speed	
		 0 A	 0,1 A	 0,2 A	 0,3 A	 0,4 A	 0,5 A	Inner ring freewheels/ overruns		Outer ring drives	
		Nm	Nm	Nm	Nm	Nm	Nm				min ⁻¹
FXN 31 - 17/60	NX	110	110	105	100			890	5000	356	
FXN 31 - 17/62	NX	110	110	105	100			890	5000	356	
FXN 38 - 17/70	NX	180	170	160	150			860	5000	224	
FXN 46 - 25/80	NX	460	450	440	430			820	5000	328	
FXN 51 - 25/85	NX	560	550	540	530			750	5000	300	
FXN 56 - 25/90	NX	660	650	640	630			730	5000	292	
FXN 61 - 19/95	NX	520	500	480	460			750	5000	300	
FXN 61 - 19/106	NX	520	500	480	460			750	5000	300	
FXN 66 - 25/100	NX	950	930	910	890			700	5000	280	
FXN 66 - 25/110	NX	950	930	910	890			700	5000	280	
FXN 76 - 25/115	NX	1200	1170	1140	1110			670	5000	268	
FXN 76 - 25/120	NX	1200	1170	1140	1110			670	5000	268	
FXN 86 - 25/125	NX	1600	1550	1500	1450			630	5000	252	
FXN 86 - 25/130	NX	1600	1550	1500	1450			630	5000	252	
FXN 101 - 25/140	NX	2100	2050	2000	1950			610	5000	244	
FXN 101 - 25/150	NX	2100	2050	2000	1950			610	5000	244	
FXN 85 - 40/140	MX	2500	2500	2450	2450	2450	2450	430	6000	172	
FXN 85 - 40/150	MX	2500	2500	2450	2450	2450	2450	430	6000	172	
FXN 100 - 40/160	MX	3700	3600	3600	3500	3500	3500	400	4500	160	
FXN 105 - 50/165	MX	5200	5200	5100	5000	5000	5000	380	4500	152	
FXN 120 - 50/198	MX	7700	7600	7500	7300	7300	7300	320	4000	128	
FXN 140 - 50/215	MX	10100	10000	9800	9600	9500	9500	320	3000	128	
FXN 170 - 63/258	MX	20500	20500	20000	19500	19000	19000	250	2700	100	

The maximum transmissible torque is 2 times the specified nominal torque. See page 14 for determination of selection torque.
The theoretical nominal torque applies only for ideal concentricity between the inner and outer ring. In practice, the concentricity is affected by the bearing play and centering errors of the neighbouring parts.
Then the nominal torques specified in the table apply, whilst taking into consideration the existing run out (T.I.R.).
Higher speeds upon request.

Mounting

Internal Freewheels FXN are without bearing support. Concentric alignment of inner and outer ring must be provided by the customer. The permissible run out (T.I.R.) must be observed.

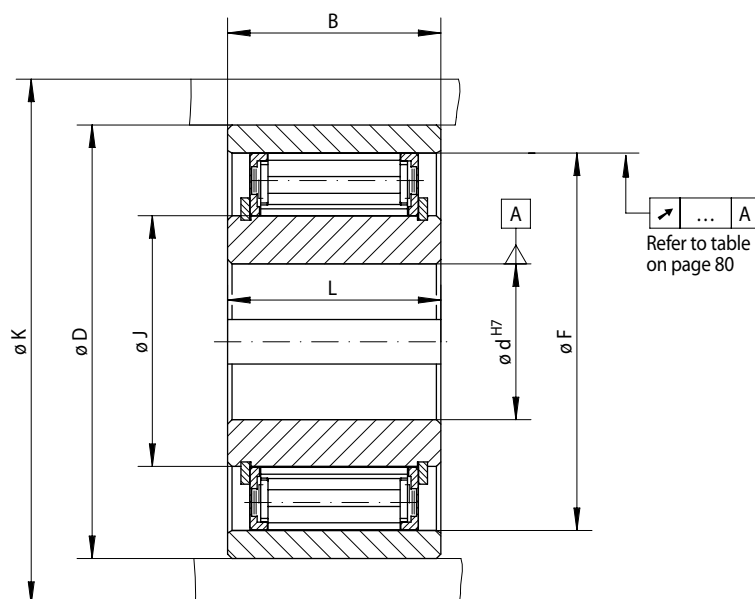
The torque is transmitted on the outer ring by press fit. In order to transmit the torques specified in the table, the outer ring must be

accommodated in a housing with an external diameter K. The housing is made of steel or grey cast iron in minimum quality GG-20. When using other housing materials or smaller external diameters, we urge you to contact us regarding the transmissible torque.

The tolerance of the housing bore is specified in the table under dimension D.

The tolerance of the shaft must be ISO h6 or j6.

for press fit on the outer ring
with sprag lift-off X



81-1

Freewheel Size	Type	Bore d			B	D	F	J	K	L	Weight
		Standard	mm	max. mm							
FXN 31 - 17/60	NX	20*		20*	25	60 P6	55	31	85	24	0,3
FXN 31 - 17/62	NX	20*		20*	25	62 P6	55	31	85	24	0,4
FXN 38 - 17/70	NX	25*		25*	25	70 P6	62	38	90	24	0,4
FXN 46 - 25/80	NX	30		30	35	80 P6	70	46	95	35	0,8
FXN 51 - 25/85	NX	35		36	35	85 P6	75	51	105	35	0,8
FXN 56 - 25/90	NX	35	40	40	35	90 P6	80	56	110	35	0,9
FXN 61 - 19/95	NX	35	40	45*	26	95 P6	85	61	120	25	0,8
FXN 61 - 19/106	NX	35	40	45*	25	106 H7	85	61	120	25	1,2
FXN 66 - 25/100	NX	40	45	48	30	100 P6	90	66	132	35	1,1
FXN 66 - 25/110	NX	40	45	48	40	110 P6	90	66	132	35	1,8
FXN 76 - 25/115	NX	50	55	60*	40	115 P6	100	76	140	35	1,7
FXN 76 - 25/120	NX	50	55	60*	32	120 J6	100	76	140	35	1,8
FXN 86 - 25/125	NX	50	60	70*	40	125 P6	110	86	150	40	2,3
FXN 86 - 25/130	NX	50	60	70*	40	130 P6	110	86	150	40	2,6
FXN 101 - 25/140	NX	75		80*	45	140 P6	125	101	175	50	3,1
FXN 101 - 25/150	NX	75		80*	45	150 P6	125	101	175	50	3,6
FXN 85 - 40/140	MX	60		65	45	140 P6	125	85	175	60	3,2
FXN 85 - 40/150	MX	60		65	45	150 P6	125	85	175	60	4,2
FXN 100 - 40/160	MX	70		80*	50	160 P6	140	100	190	60	5,1
FXN 105 - 50/165	MX	80		85	62	165 P6	145	105	195	62	5,8
FXN 120 - 50/198	MX	80		95	70	198 H6	160	120	210	70	8,6
FXN 140 - 50/215	MX	90		110	69	215 J6	180	140	245	70	14,0
FXN 170 - 63/258	MX	100		130	80	258 H6	210	170	290	80	21,0

Keyway according to DIN 6885, page 1 • Tolerance of keyway width JS10.

* Keyway according to DIN 6885, page 3 • Tolerance of keyway width JS10.

Lubrication

At speeds in excess of the sprag lift-off speed, no special lubrication is required; the freewheel functions maintenance-free.

When operating below the sprag lift-off speed, an oil lubrication of the specified quality must be provided.

Example for ordering

Freewheel size FXN 61-19/95, type with sprag lift-off X and 35 mm bore:

- FXN 61-19/95 NX, d = 35 mm