

# Complete Freewheels FRS and FRSG

for bolting to the face  
with sprags



## Application as

- ▶ Backstop
- ▶ Overrunning Clutch
- ▶ Indexing Freewheel

## Features

Complete Freewheels FRS and FRSG are sealed sprag freewheels with ball bearings and ready for installation.

The freewheels FRS are supplied oil-filled.

The freewheels FRSG are supplied grease filled.

Maximum torques up to 55 000 lb-ft.

Bores up to 7 inch. Standard bores in inch dimension are available from stock. Metric bores on request.

## Application example

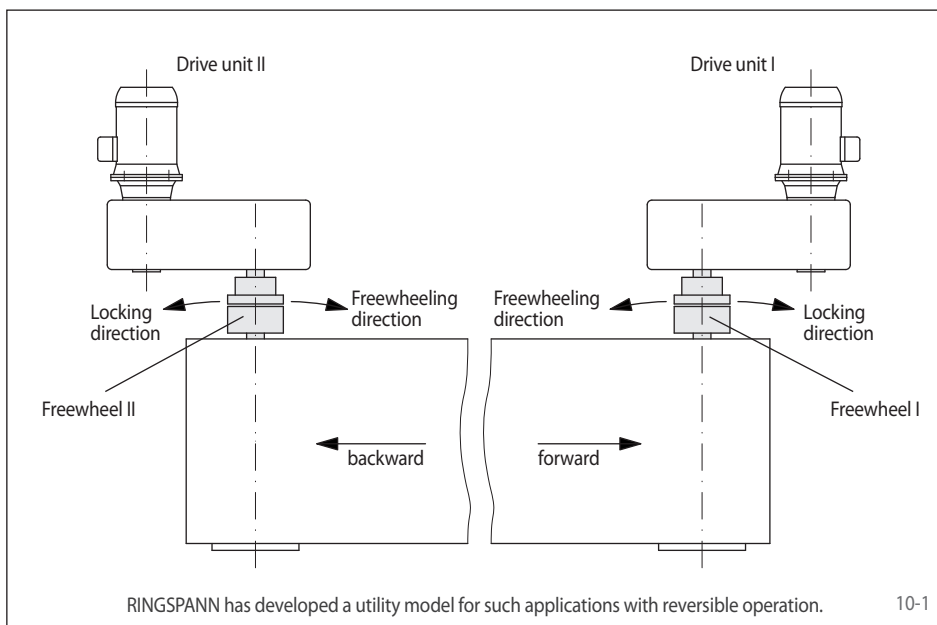
Complete Freewheels FRS 600 in both drive units of a transport system with a conveyor belt that moves both forward and backward (reversible operation). In order to ensure that the conveyor belt is moved under tension, forward movement is driven by drive unit I, reverse movement by drive unit II. The freewheels automatically disengage the respective non working drive, eliminating the need for expensive external clutches or brakes.

For forward movement, drive unit II is started in freewheeling direction of freewheel II; freewheel II is in freewheeling operation and disengages drive unit II from the conveyor belt. Afterwards drive unit I is started in the locking direction of the freewheel I; freewheel I is in driving operation and the conveyor belt is moved forward by drive unit I. The speed of drive unit I is lower than that of drive unit II. Thus freewheel II remains in freewheeling operation and drive unit II is not improperly engaged.

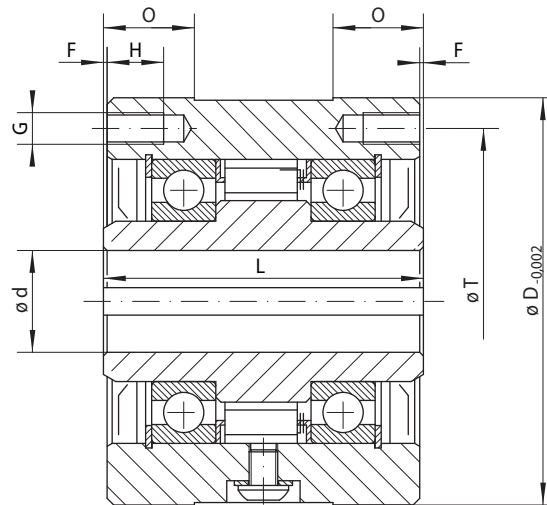
For reverse movement, the drive units are started in reverse order and direction of rotation at the corresponding speeds.

The mentioned application for a reversing conveyor requires speed control for both of the drives.

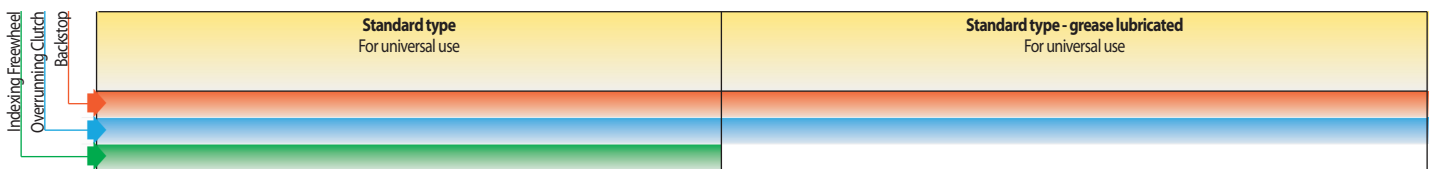
Conveyors operating in the same direction can use clutches in conjunction with the two drives.



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Freewheel Size	Maximum torque M <sub>M</sub> lb-ft	Nominal torque M <sub>N</sub> lb-ft	Max. speed		Freewheel Size	Maximum torque M <sub>M</sub> lb-ft	Nominal torque M <sub>N</sub> lb-ft	Max. speed	
			inner ring freewheels/ overruns rpm	outer ring freewheels/ overruns rpm				inner ring freewheels/ overruns rpm	outer ring freewheels/ overruns rpm
FRS 300	420	210	2500	2600	FRSG 300	420	210	3600	3600
FRS 400	670	335	1900	2100	FRSG 400	670	335	3600	3600
FRS 500	1600	800	1400	1900	FRSG 500	1600	800	3600	3600
FRS 550	3050	1525	1175	1600	FRSG 550	3050	1525	3600	3600
FRS 600	3900	1950	1100	1500	FRSG 600	3900	1950	3600	3600
FRS 650	5400	2700	900	1250	FRSG 650	5400	2700	3600	3600
FRS 700	11050	5525	790	1150	FRSG 700	11050	5525	1800	1800
FRS 750	18700	9350	790	1150	FRSG 750	18700	9350	1800	1800
FRS 775	17000	8500	750	1050	FRSG 775	17000	8500	1800	1800
FRS 800	22200	11100	700	950	FRSG 800	22200	11100	1800	1800
FRS 900	33600	16800	700	950	FRSG 900	33600	16800	1200	1200
FRS 1000	55000	27500	630	800	FRSG 1000	55000	27500	1200	1200

See page 9 for determination of selection torque.

Freewheel Size	Bore d								max. inch	D inch	F inch	G Thread	L inch	H inch	O inch	T inch	Z*	Weight lbs
	Standard bores inch																	
FR ... 300	0.500	0.650	0.750						0.750	3.000	0.063	0.250-28	2.500	0.375	0.750	2.625	4	3.5
FR ... 400	0.500	0.625	0.750	0.875	1.000	1.125			1.125	3.500	0.032	0.312-24	2.750	0.500	0.750	2.875	4	6.0
FR ... 500	0.875	1.000	1.125	1.250	1.312				1.312	4.250	0.063	0.312-24	3.500	0.625	1.000	3.625	4	10.0
FR ... 550	1.250	1.312	1.500	1.625					1.625	4.750	0.063	0.312-24	3.250	0.540	0.750	4.250	6	12.0
FR ... 600	1.250	1.375	1.438	1.500	1.625	1.688	1.750	1.938	2.000	5.375	0.063	0.312-24	3.750	0.625	1.000	4.750	6	19.0
FR ... 650	1.938	2.000	2.250	2.438	2.500				2.500	6.500	0.063	0.375-24	3.500	0.750	1.000	5.750	8	24.0
FR ... 700	1.938	2.000	2.250	2.438	2.500	2.750	2.938		2.938	7.125	0.063	0.375-24	5.000	0.750	1.000	6.250	8**	42.0
FR ... 750	2.438	2.500	2.938	3.000	3.250	3.438			3.438	8.750	0.063	0.500-20	6.000	0.875	1.250	7.000	8**	83.0
FR ... 775	2.750	2.938	3.000	3.250	3.438	3.500	3.750		3.750	9.750	0.063	0.500-20	6.000	0.875	1.250	8.500	8	96.0
FR ... 800	3.000	3.250	3.438	3.500	3.750	3.937	4.000	4.250	4.500	10.000	0.063	0.500-20	6.000	0.875	1.250	8.937	8	102.0
FR ... 900	4.000	4.438	4.500	4.938	5.000	5.438			5.438	12.000	0.063	0.625-18	6.375	1.000	1.375	9.750	10	156.0
FR ... 1000	5.750	5.938	6.000	6.750	6.875	7.000			7.000	15.000	0.063	0.625-18	6.625	1.000	1.375	11.750	12	250.0

\* Z = Number of tapped holes G on pitch circle T.

\*\* Six holes are equally spaced 60° apart with two additional holes located 30° from the six equally spaced holes and 180° apart.

Keyway dimensions upon request by customers.

## Mounting

The customer attachment part is centered on the external diameter D and then bolted on to the face.

The recommended tolerance of the shaft is + 0 / - 0.001 inch and the tolerance of the pilot diameter D of the attachment part is - 0 / + 0.002 inch.

## Labyrinth Seals

Labyrinth seals are available to provide additional protection for harsh environments.

# Complete Freewheels FRX and FRZ

for bolting to the face  
with sprag lift-off X or lift-off Z



## Application as

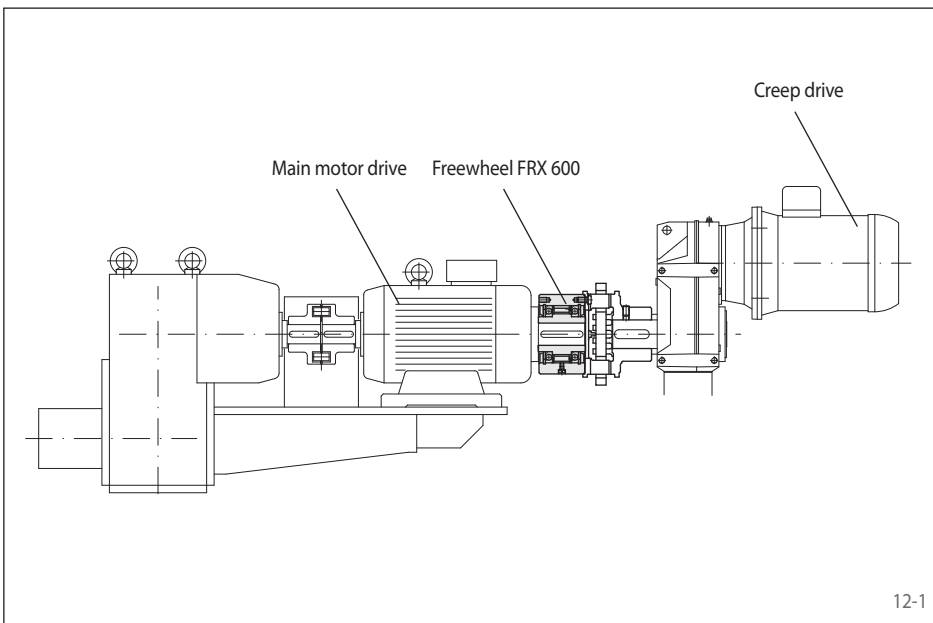
- ▶ Backstop
- ▶ Overrunning Clutch

## Features

Complete Freewheels FRX and FRZ are sealed sprag freewheels with ball bearings and sprag lift-off X or sprag lift-off Z.

Maximum torques up to 30000 lb-ft.

Bores up to 5.438 inch. Standard bores in inch dimension are available from stock. Metric bores on request.

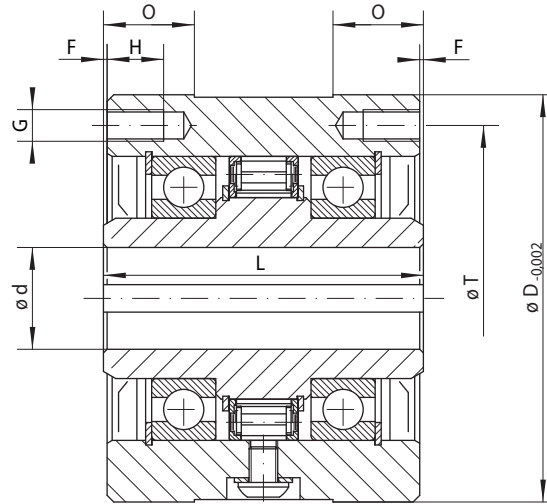


## Application example

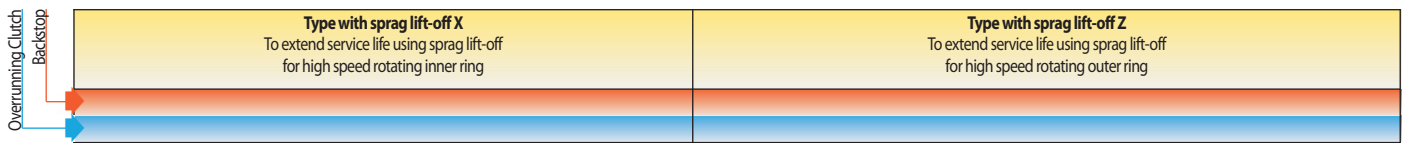
Complete Freewheel FRX 600 as an overrunning clutch in the drive unit of a conveyor belt system with additional creep drive. The freewheel with shaft coupling is installed between the main motor and the creep drive. When the creep drive operates, the freewheel is in driving operation and drives the belt at low speed. During normal operation (freewheeling operation), the main motor drives and the inner ring overruns and the creep drive is automatically disengaged. With this high speed, sprag lift-off X is used; the sprags work in freewheeling operation without contact and are wear-free.

# Complete Freewheels FRX and FRZ

for bolting to the face  
with sprag lift-off X or lift-off Z



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Freewheel Size	Maximum torque $M_M$ lb-ft	Nominal torque $M_N$ lb-ft	Sprag lift-off at inner ring speed rpm	Max. speed		Freewheel Size	Max. torque $M_M$ lb-ft	Nominal torque $M_N$ lb-ft	Sprag lift-off at outer ring speed rpm	Max. speed	
				inner ring freewheels/overruns rpm	outer ring drives rpm					outer ring freewheels/overruns rpm	inner ring drives rpm
FRX 400	250	125	860	4000	340	FRZ 400	560	280	800	2600	320
FRX 500	850	425	750	4000	300	FRZ 500	1070	535	1400	2050	560
FRX 550	1500	750	700	4000	280	FRZ 550	2760	1380	1550	1800	620
FRX 600	2000	1000	670	4000	265	FRZ 600	3530	1765	1450	1650	580
FRX 650	3500	1750	610	3100	240	FRZ 650	5000	2500	1300	1400	520
FRX 700	8100	4050	350	2600	140	FRZ 700	10500	5250	1160	1200	465
FRX 750	14600	7300	320	2400	125	FRZ 750	17500	8750	1160	1200	465
FRX 775	14800	7400	320	2100	125	FRZ 775	15000	6500	950	1050	380
FRX 800	29000	14500	250	1800	100	FRZ 800	17400	8700	880	975	350
FRX 900	30000	15000	250	650	100	FRZ 900	26000	13000	720	925	288

See page 9 for determination of selection torque.

Freewheel Size	Bore d						max. inch	D inch	F inch	G Thread	L inch	H inch	O inch	T inch	Z**	Weight lbs		
	Standard bores inch																	
FR ... 400	0.500	0.625	0.750	0.875	1.000*	1.125*	1.125	3.500	0.032	0.312-24	2.750	0.500	0.750	2.875	4	6.0		
FR ... 500	0.875	1.000	1.125	1.250	1.312		1.312	4.250	0.063	0.312-24	3.500	0.625	1.000	3.625	4	10.0		
FR ... 550	1.250	1.312	1.500	1.625			1.625	4.750	0.063	0.312-24	3.250	0.540	0.750	4.250	6	12.0		
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FR ... 750	2.438	2.500	2.938	3.000	3.250	3.438		3.438	8.750	0.063	0.500-20	6.000	0.875	1.250	7.000	8***	83.0	
FR ... 775	2.750	2.938	3.000	3.250	3.438	3.500	3.750		3.750	9.750	0.063	0.500-20	6.000	0.875	1.250	8.500	8	96.0
FR ... 800	3.000	3.250	3.438	3.500	3.750	3.937	4.000	4.250	4.500	10.000	0.063	0.500-20	6.000	0.875	1.250	8.937	8	102.0
FR ... 900	4.000	4.438	4.500	4.938	5.000	5.438			5.438	12.000	0.063	0.625-18	6.375	1.000	1.375	9.750	10	156.0

\* Not available for FRX. Max bore 0.875 inch.

\*\* Z = Number of tapped holes G on pitch circle T.

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Keyway dimensions upon request by customers.

## Mounting

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The recommended tolerance of the shaft is + 0 / - 0.001 inch and the tolerance of the pilot diameter D of the attachment part is - 0 / + 0.002 inch.

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