

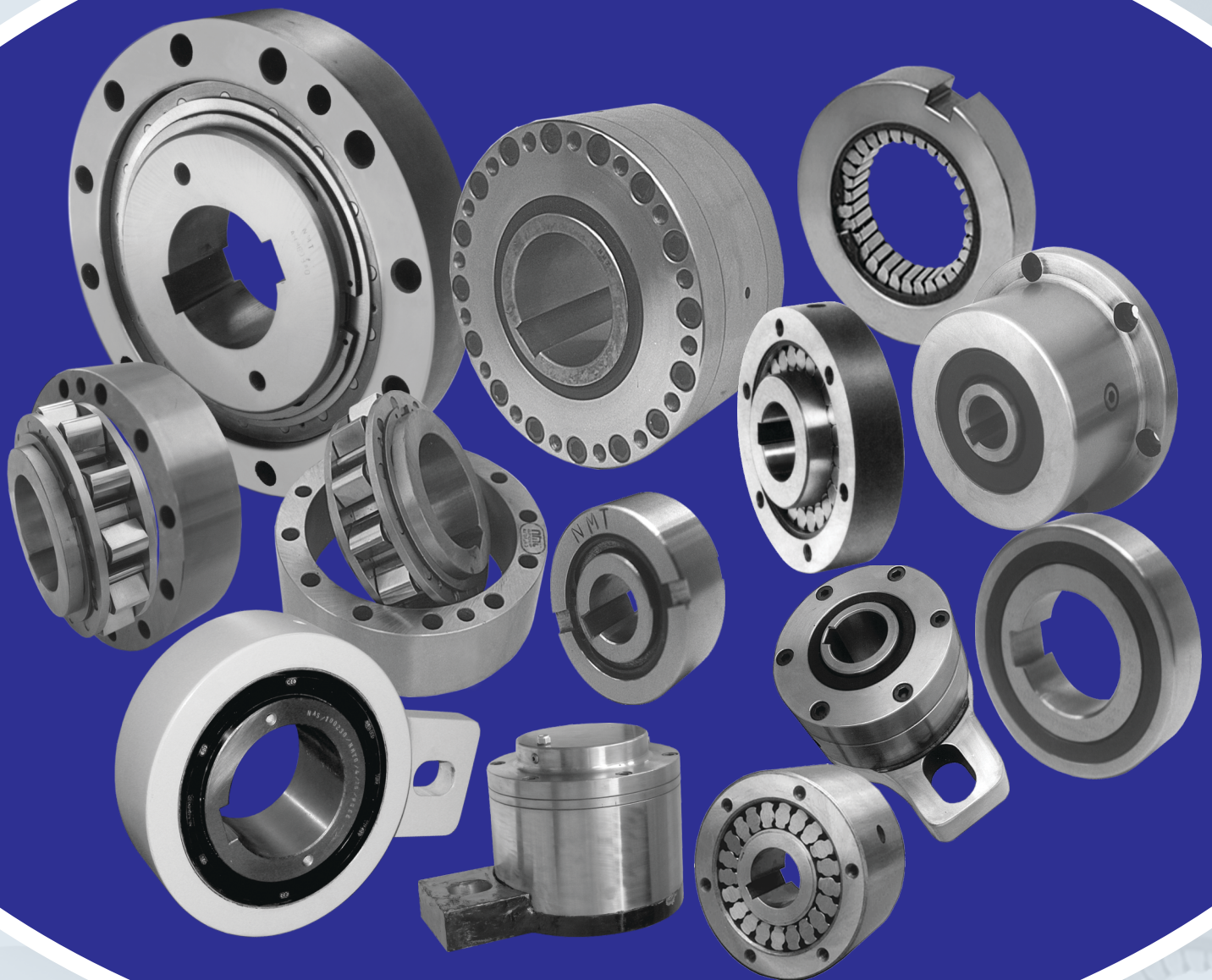
**PARTNER FOR
DELIVERING EXCELLENCE**



VERSION : 2022-23-00
N-DD-FWC-07

NMTG

FREEWHEEL (ONE WAY) CLUTCHES - SPRAG, Roller & CLS TYPE



NMTG MECHTRANS TECHNIQUES PVT. LTD.

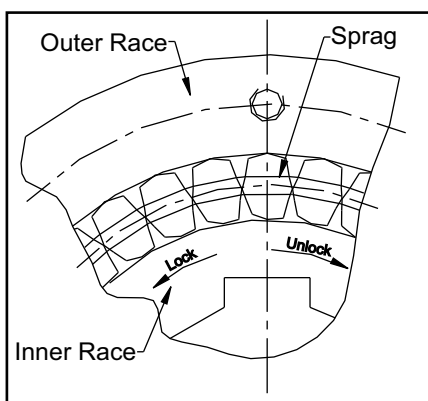
An ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 & CE Certified Co

CONTENTS

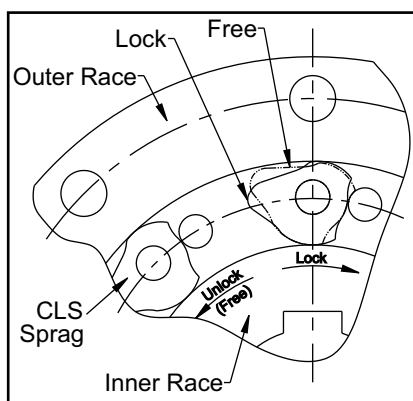
Sr. No.	Description	Page No.
1)	Introduction of Freewheel One Way Clutch	03
2)	Function of Freewheel clutch	04
3)	Application	05
4)	Selection Procedure	06
5)	Mounting Instruction	08
6)	Lubrication & Maintenance	09
Sprag Type Freewheel one way clutches		
7)	NBO H1H1	10
8)	NBO H1H2 & NBO H2H3	12
9)	NSB	14
10)	NO	16
11)	NSO	18
12)	NZ	20
13)	NB	22
14)	NDF	25
15)	NSc	28
16)	NAS & NAR	30
17)	NDC	33
18)	NSC	35
19)	NRHD	37
Roller Type Freewheel one way clutches		
20)	NR C1C2 & NR C2C3	41
21)	NR C1C4, C1C5 & C6C7	43
22)	NR C1C8C9 / NFRC	45
23)	NDS	47
24)	NLD	49
25)	NED	51
26)	NN	53
27)	NMD	55
28)	NRSC	57
Centrifugal Lift off Type Sprag – Freewheel one way clutches / Holdback/Backstop		
29)	NHB	59
30)	NXN	61
31)	NHBU E1E2 & E2E3	63

Freewheel (One way) Clutch

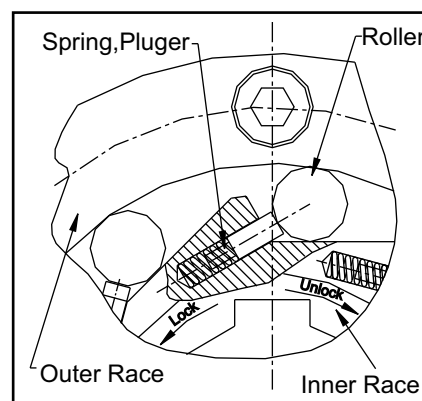
A freewheel -one way- clutch, constructed with a specially formed sprags (retained with a spring) OR with roller ramps. When any one race of the unit rotates in one direction, the sprags get automatic released (because of change the contact point due to specially formed sprag) and the unit becomes free (wheel) and when the same race is rotated in the opposite direction, other race locked positively, as sprags generate wedging effect and the Unit transmit torque in the same direction of rotation. Freewheel clutch in roller-ramp system, roller(s) positively lock one race to transmit torque in one direction of rotation & makes totally free (released) in the opposite direction of rotation. These freewheel clutches, often provide the simplest and effective solutions for many applications, comparatively to clutches based on the ratchet and pawl type. Extensive range of (sprag, contact free - CLS sprag and roller ramp) clutches - a wide selection options for unidirectional drive - freewheel (one way) clutches.



Sprag Clutch



Centrifugal Lift off Sprag Clutch

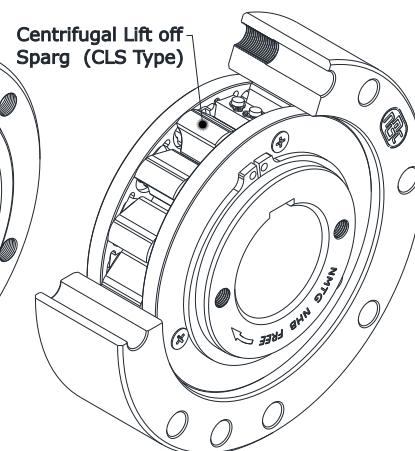
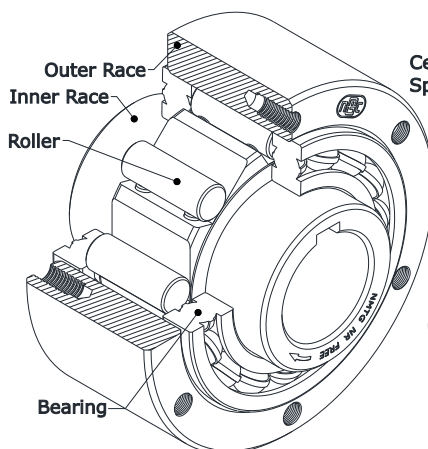
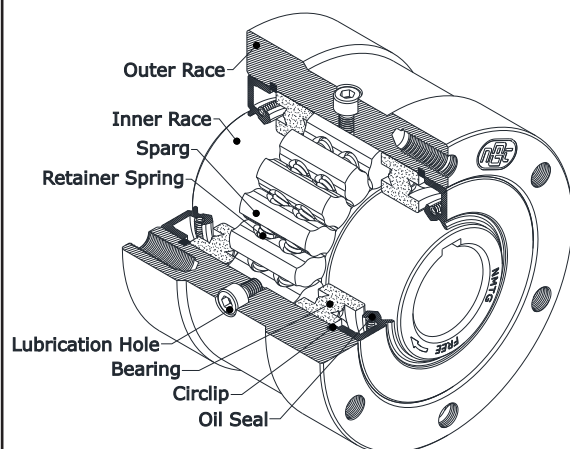


Roller Clutch

Freewheel (One way) Clutch - Sprag, Roller & CLS Type

➔ **Function :**

NMTG freewheel one-way clutch is designed to transmit torque in one direction and overrunning (Freewheeling) in opposite direction. As the contacts between wedging elements (Roller, Sprag, CLS Cam/Sprag, etc.) with inner race & outer race, these generate clamping forces. NMTG all freewheel one-way clutch designs utilize the same principles of operation.

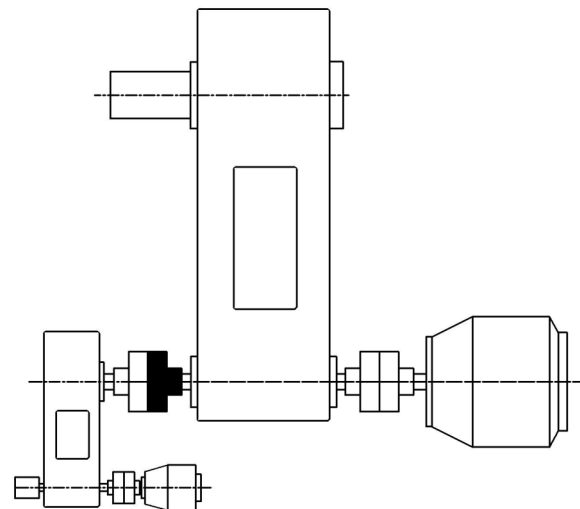
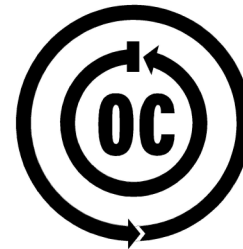


Clutches are used for three basic **functions** of transmission **Backstopping, Overrunning** and **Indexing (Feeding)**.

Overrunning:

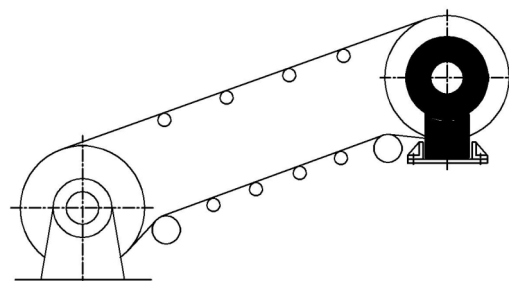
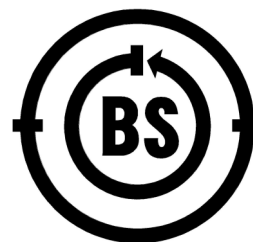
Clutch disengages automatically when the driven member rotates faster than the driving member. The Highest Overrunning speed is possible if Outer race Overruns, This ensures the best performance, reduce heat generation & wear which leads to increase freewheel life.

Overrunning function allows during drive of any race in any one direction of rotation, the other race drive faster than the same race, in the same direction of rotation OR keep continue to rotate, if the input drive is stopped. The input drive can be reversed; if there will be no drive to the output. Overrunning occurs when two or more motors can be used to drive the same machine, including through the same shaft. The overrunning function allows the secondary drive to remain stationary during faster speed operation.



Backstopping / Holdback:

Backstopping function prevents reverse rotation when in put drive is discontinued or power supply failure to in put drive (otherwise would cause damage to the equipment / machinery). This function simply achieved by anchoring one race of the clutch so that the other race is free to rotate in one (required) direction but is immediately locked in reverse direction. Normally, outer race or outer race flange or torque arm of the roller clutch is fixed to the stationary part - equipment frame and inner race fitted on to the drive shaft-rotating freely.

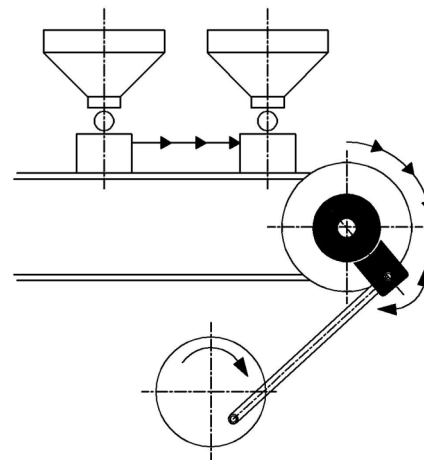
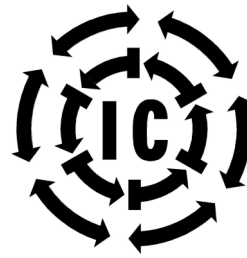


Indexing:

Indexing function allows the conversion of reciprocating motion applied to the driving race of the clutch into unidirectional intermittent (rotational) motion of the driven race.

Used for packaging machines and sheet steel in presses. The intermittent movement can also be used for obtaining slow rotational speeds for products such as inking rollers.

In this application the clutch is often called "**Indexing / Feeding**" clutch.



➔ Application :

- ✓ Gear Drives
- ✓ Heat Treatment Furnaces
- ✓ Air Cleaning Plants
- ✓ Multi-State Conveyors
- ✓ Motors
- ✓ Two speed Drives (Dual drives)
- ✓ Power Plants
- ✓ Pumps & Compressor
- ✓ Cranes & Hoists
- ✓ Inclined Conveyor
- ✓ Bucket Elevator
- ✓ Fans
- ✓ Agricultural Machinery
- ✓ Machine Tools
- ✓ Food Processing Machines
- ✓ Packaging Machines
- ✓ Printing Machines
- ✓ Fish Net Machines
- ✓ Speed Reducer
- ✓ Textile Machinery
- ✓ Wire winding Machinery
- ✓ Dry Cleaning Machinery

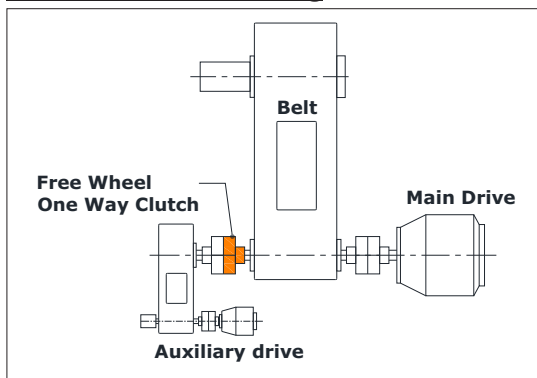
Selection Procedure

- 1) Calculate the torque of the Clutch.

$$\text{Torque (Nm)} : \frac{\text{Input Power (kw)} \times 9550}{\text{Speed of Shaft (RPM)}}$$

- 2) Determine the mode operation (Overrunning, Indexing, Backstopping).
- 3) Determine the service factor (Refer the table).
- 4) Calculate the design torque (Torque x Service Factor).
- 5) Bore size and installation method.
- 6) Determine the max. overrunning speed and cycle time of operation.
- 7) Calculate the static torque reverse motion from the maximum load expected and multiply it by the service factor (Back - stopping).
- 8) Select nearest equal / higher side torque referring catalogue table torque and specify the name of model & bore size.
- 9) *Specify direction of inner race drive.
*Please consult NMTG for proper selection.
*This is required for your fitment purpose.

Function :- Overrunning



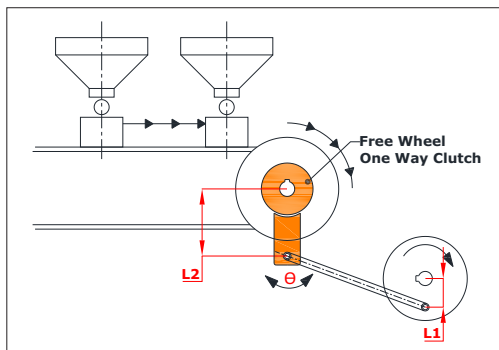
- A) Calculated the Torque on the Clutch according to the following formula:

$$\text{Torque (Nm)} : \frac{\text{Input Power (kw)} \times 9550}{\text{(N) Speed of Shaft(RPM)}} \times \text{S.F}$$

T : Loaded Torque on Clutch (Nm)
 kw: Input Power (kw)
 N : Speed of Clutch Shaft Rotation (RPM)
 S.F : Service Factor - (Refer Page No. - 7)

- Also Select Clutch by considering following:
 - 1) Design torque requirement and service factor.
 - 2) Maximum overrunning speed.
 - 3) Bore and installation method.

Function :- Indexing



A) When detailed load condition is to be calculated, apply Formula (1) and when it is not, apply Formula (2) and check the torque on the clutch.

B) Select the clutch by:

- 1) Design Torque Requirement
- 2) Maximum Indexing Cycles N
- 3) Feeding Angle θ
- 4) $N \times \theta$
- 5) Bore size and Installation Method.

Formula (1) :

$$\text{Torque } T_{Nm} : \frac{J \times \theta \times N^2}{10380} + T_B$$

T : Loaded Torque on Clutch (Nm)

J : Inertia of Load (kgf.m²) on Clutch Shaft

θ : Feeding Angle (deg) on Clutch Shaft

N : Indexing Cycles per minute (c/min.)

T_B : Brake Torque calculated on Clutch Shaft (Nm)

Formula (2) :

$$\text{Torque } T_{Nm} : \frac{9550 \times kw}{n} \times S.F$$

T : Loaded torque on Clutch (Nm)

kw : Transmitted Power (kw)

n : Speed of Crank Shaft (r/min):

S.F : Service Factor - (Refer Page No. 7)

Service Factor

INDEXING		
Speed	Degree/Load cycle	Service Factor
> 150 strokes/min	-	3
> 100 strokes/min	> 90°	2.5
< 100 strokes/min	> 90°	2

OVERRUNNING						
Driving Machine		Working condition				High starting torque. High load torque variations.
		Starting torque not higher than normal smooth	Starting torque up to 2 times running torque. Moderate load variations.	Starting torque 2 to 3 times running torque. Load variation.	Starting torque 2 to 3 times running torque. Load variation.	
DC - motor		1.3	1.5	1.8	1.8	-
AC - motor with soft start or hydraulic		1.3	1.5	1.8	1.8	-
Asynchronous motor with direct start	Speed reduction between motor & freewheel < 20	-	2.5	3	3	4
	Speed reduction between motor & freewheel > 20	-	1.5	2.5	2.5	3.5

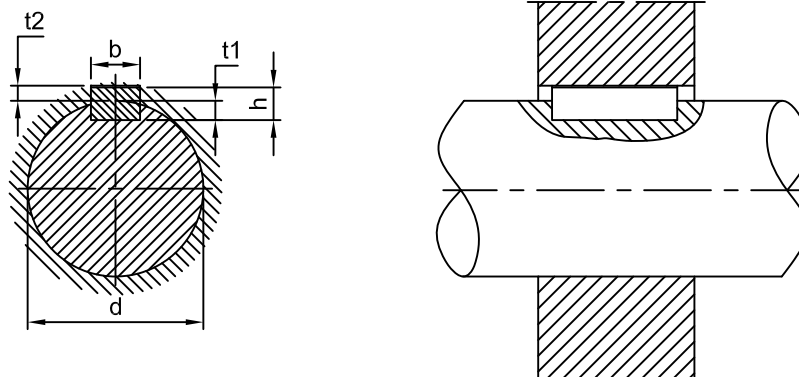
BACKSTOPPING						
Driving Machine	Driven Machine				Other machines	
	Elastic conveyer belts with risk of	Pump drives with more than 5	Pump drives with more than 5 meters Shaft	Fans	No overloads	Dynamic overloads
Motors with hydraulic coupling	1.3	1.6	1.6	0.5	1	1.5
Asynchronous motors with direct start	1.6	1.6	1.6	0.5	1	1.5
Steam or Gas turbine	-	1.6	1.6	0.5	1	1.5
Internal combustion engine	1.6	1.6	1.6	0.5	1	1.5

Note : These values do not cover a motor start in the wrong direction.

◆ Mounting Instruction:

✎ Key Assemblies :

For Installation of Freewheel, Inner race is connected by a key to shaft,
 Bore tolerance is H7 with keyway tolerance Js9. Recommended Shaft tolerance is h6/j6,
 For better Accuracy & Adjustment of key, keyway must be as per Standard as per below.



Bore size		DIN 6885/1							DIN 6885/3									
Above	Upto	Width b	Tol. on b JS9	Depth h	Shaft keyway depth t1	Tol. On t1	Hub keyway depth t2	Tol. On t2	Width b	Tol. on b JS9	Depth h	Shaft keyway depth t1	Tol. On t1	Hub keyway depth t2				
6	8	2	± 0.0125	2	1.2	+0.1 0	1	+0.1 0										
8	10	3		3	1.8		1.4											
10	12	4		4	2.5		1.8											
12	17	5	± 0.0150	5	3	+0.1 0	2.3	+0.1 0	5	± 0.0150	3	1.9	+0.1 0	1.2				
17	22	6		6	3.5		2.8		6		4	2.5		1.6				
22	30	8	± 0.0180	7	4	+0.2 0	3.3	+0.2 0	8	± 0.0180	5	3.1	+0.2 0	2				
30	38	10		8	5		3.3		10		6	3.7		2.4				
38	44	12	± 0.0215	8	5	+0.2 0	3.3	+0.2 0	12	± 0.0215	6	3.9	+0.2 0	2.2				
44	50	14		9	5.5		3.8		14		6	4		2.1				
50	58	16		10	6		4.3		16		7	4.7		2.4				
58	65	18	± 0.0260	11	7	+0.2 0	4.4	+0.2 0	18	± 0.0260	7	4.8	+0.2 0	2.3				
65	75	20		12	7.5		4.9		20		8	5.4		2.7				
75	85	22	± 0.0260	14	9	+0.3 0	5.4	+0.3 0	22	± 0.0260	9	6	+0.3 0	3.1				
85	95	25		14	9		5.4		25		9	6.2		2.9				
95	110	28	± 0.0310	16	10	+0.3 0	6.4	+0.3 0	28	± 0.0310	10	6.9	+0.3 0	3.2				
110	130	32		18	11		7.4		32		11	7.6		3.5				
130	150	36		20	12		8.4		36		12	8.3		3.8				
150	170	40	± 0.0370	22	13	+0.3 0	9.4	+0.3 0		± 0.0370			+0.3 0					
170	200	45		25	15		10.4											
200	230	50	± 0.0435	28	17	+0.3 0	11.4	+0.3 0		± 0.0435			+0.3 0					
230	260	56		32	2		12.4											
260	290	63		32	20		12.4											
290	330	70	± 0.0435	36	22	+0.3 0	14.4	+0.3 0		± 0.0435			+0.3 0					
330	380	80		40	25		15.4											
380	440	90	± 0.0435	45	28	+0.3 0	17.4	+0.3 0		± 0.0435			+0.3 0					
440	500	100		50	31		19.5											

✎ Bolt Assemblies :

In FWC Clutch, Torque is transmitted through bolts.
 So, Bolt quality & Tightening torque for mounting & torque transmission are as follows:

Thread	Tightening Torque	Strength Standard
	Nm	
M5	8	10.9
M6	14	
M8	34	
M10	68	
M12	118	
M16	290	
M20	550	
M24	950	
M30	1900	

Lubrication And Maintenance :

Oil	Operating -20°C to +20°C Ambient -40°C to -15°C	Operating +10°C to +50°C Ambient -15°C to +15°C	Operating +40°C to +70°C Ambient +15°C to +30°C	Operating +50°C to +85°C Ambient +30°C to +50°C	Grease
DIN ISO 3448 mm2/s	10	22	46	100	
KLUBER	ISOFLEX PDP 38	ISOFLEX PDP 48	LAMORA HLP 46	LAMORA 100	POLYLUB WH2 Klübersynth BM 44-42
MOBIL	VELOCITE No 6	VELOCITE No 10	MOBIL DTE 798	MOBIL DTE OIL HEAVY	POLYREX EM
BP	ENERGOL CS10	ENERGOL CS22	ENERGOLCS 46 ENERGOLRC – R 46	ENERGOLCS 100 ENERGOLRC 100	ENERGREASE LS2
CASTROL	-	-	AIRCOL PD 46	AIRCOL PD 100	SPHEEROL MP 2
ARAL	SUMOROL CM10	SUMOROL CM22	SUMUROL CM 46 MOTANOL HE 46	DEGOL CL 100 T MOTANOL HE 100	ARALUB HL2
ESSO	SPINESSO 10	SPINESSO 22	TERESSTIC T46	NUTO 100	UNIREX N2
FUCHS	RENOLIN MR3	RENOLIN DTA22	RENOLIN DTA46	RENOLIN MR30	RENOLIT LZR2
SHELL	MORLINA 10	MORLINA 22	MORLINA 46	MORLINA 100	ALVANIA RL2
TOTAL	AZZOLA ZS10	AZZOLA ZS22	AZZOLA ZS46	AZZOLA ZS100	MULTIS 2

Oil

The oil lubricated freewheel(one way) clutches are delivered lubricated with a VG 32 oil viscosity if they are completely sealed.

For horizontal mounting application, the correct oil level is 1/3 of the internal clutch height if not specified. For Vertical mounting application advise to contact us.

Don't use Oil which contains molybdenum disulphide or similar additives. Suitable lubricants are mentioned in above table. Table is for guidance only in case any query to contact us.

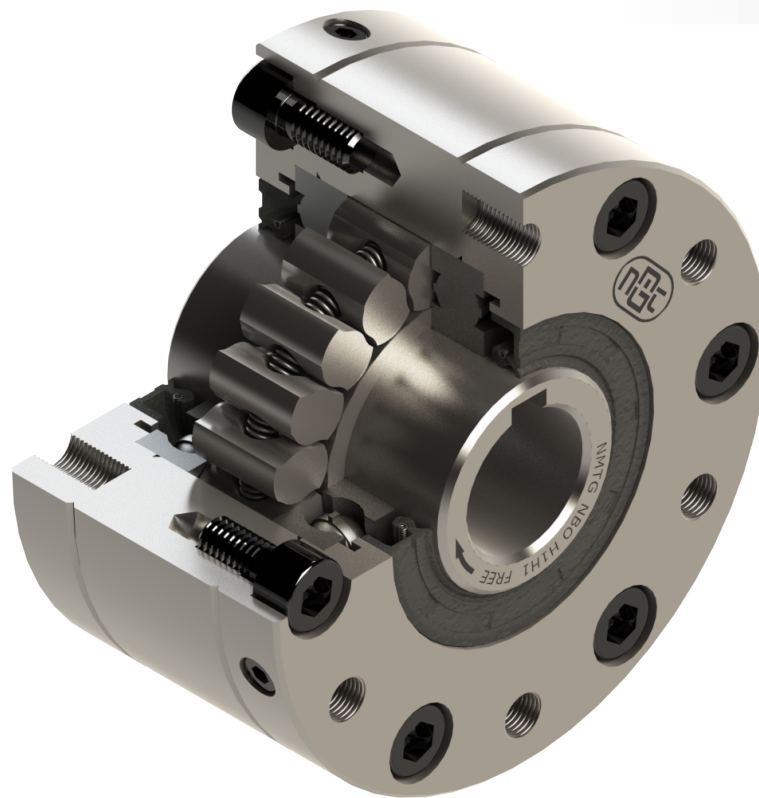
Initially change the oil after 10 hours of operation. Afterwards change lubricant every 2000 hours and every 1000 hours in a dirty environment. Oil level and oil condition as well as rotating seals should be checked regularly. For working temperatures below -40°C and above +100°C, please contact us.

Grease

Generally grease is used for long maintenance free life, Ready for both horizontal or vertical mounting application. We recommend to remove, clean, inspect and re-grease after two years of operation.

Freewheel One way clutch / Backstop Clutch

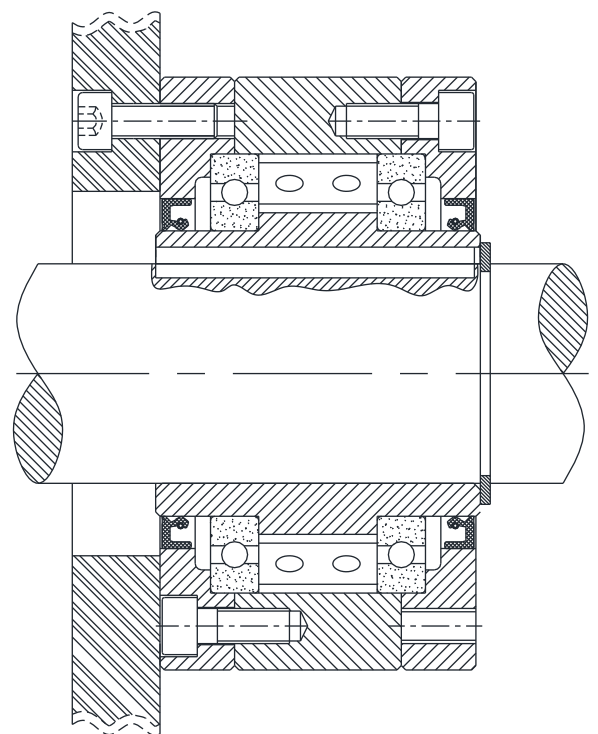
NBO H1H1

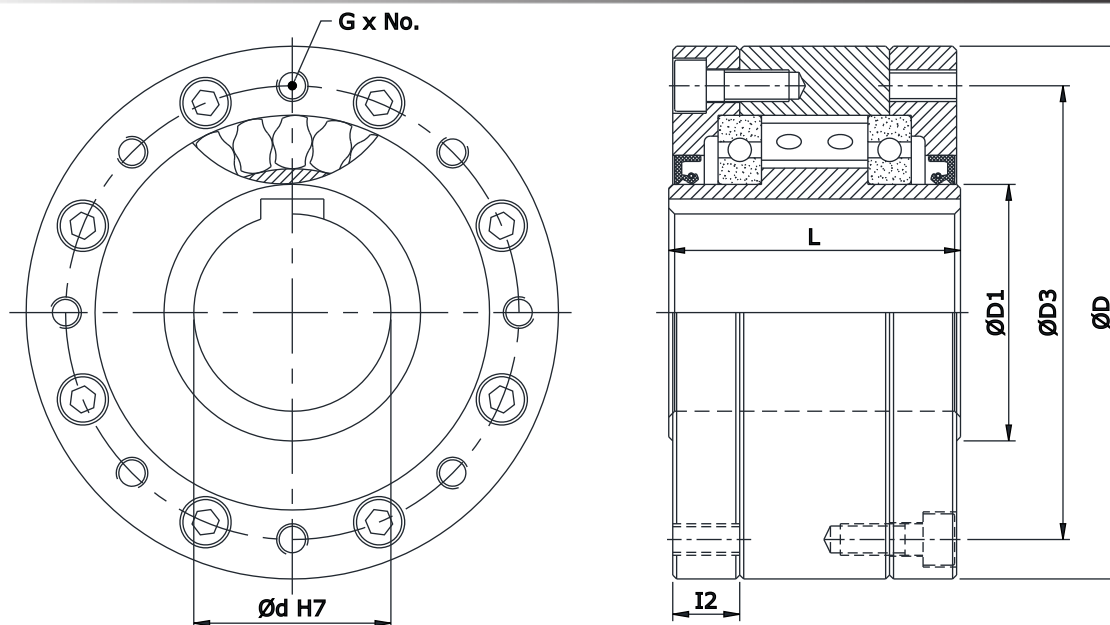


❖ Features :

- This type of Freewheels are Sealed & Fitted with Ball bearings & Oil seals.
- This type of clutch have both side H1 as End Cover.
- Outer race end faces have Tapped Holes for attachment of items such as Coupling, Sprocket, Pulley, etc.
- Oil lubricated suitable for Overrunning, backstopping and medium Duty indexing (up to 150 indexes/minute).
- Grease lubrication is available where high inner race overrunning speeds are required or maintenance is difficult.
- Requires Oil / Grease Lubrication.
- Bore range: up to 300 mm.
- Transmitting torque: 160000 Nm.

◆ Mounting Example:





NBO H1H1

Model	Bore d		Max. Overrunning		Nominal Torque (Tn) Nm	D mm	L mm	D1 mm	D3 mm	I2 mm	G x No.	Weight Kg
	Standard mm	Max. mm	Inner RPM	Outer RPM								
NBO 37	20	22*	2500	2600	200	85	48	30	70	11.5	M6 x 4	1.6
NBO 44	25*	25*	1900	2200	320	95	50	35	80	11.5	M6 x 6	2.3
NBO 57	30	32*	1400	1750	630	112	65	45	95	13.5	M6 x 6	3.7
NBO 72	40	42*	1120	1600	1250	132	74	55	115	15.5	M8 x 8	5.9
NBO 82	50*	50*	1025	1450	1800	145	75	65	125	14	M8 x 8	7.0
NBO 107	60	65*	880	1250	2500	170	90	80	150	17	M10 x 10	12.9
NBO 127	70	75*	800	1150	5000	204	112	95	180	21	M10 x 10	20.7
NBO 140	90	95*	750	1100	10000	254	150	120	225	30	M16 x 10	51.7
NBO 200	120	120	630	900	20000	320	160	160	288	29	M16 x 12	75.5
NBO 270	140	150	510	750	40000	420	212	200	370	53	M20 x 12	185
NBO 340	180	240	460	630	80000	497	265	300	450	66	M20 x 18	294
NBO 440	220	300	400	550	160000	627	315	380	560	78	M24 x 18	550

Notes :

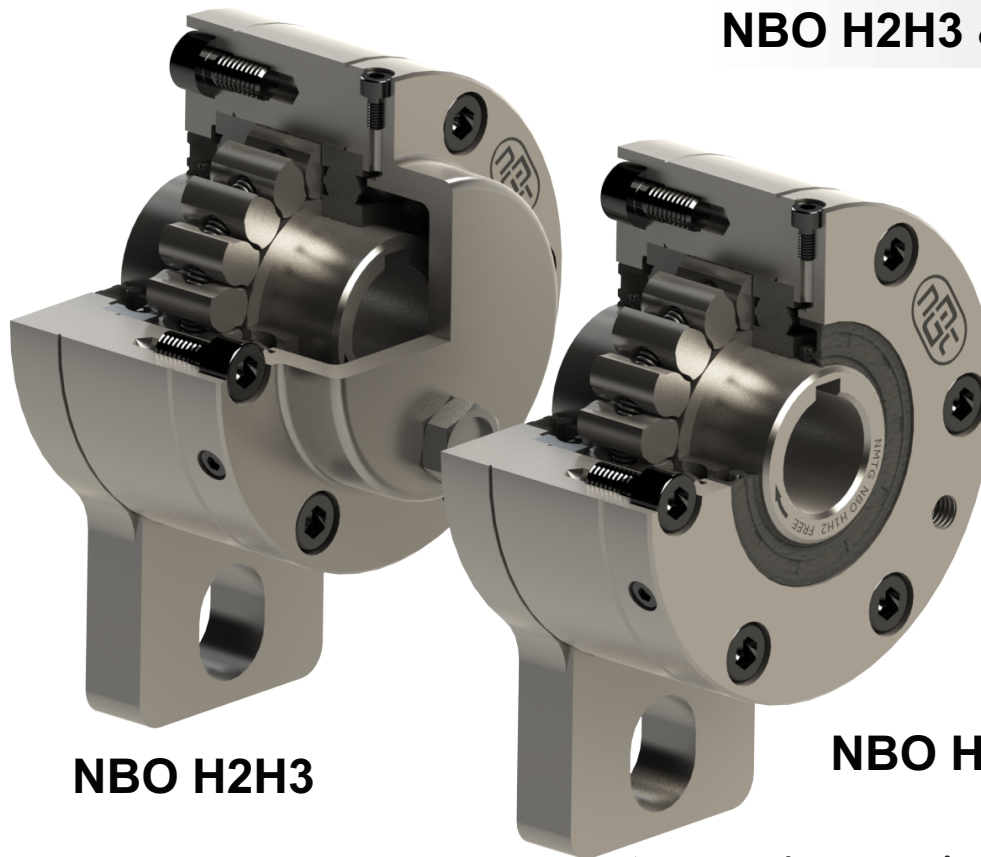
- 1) Function : Overrunning, Backstopping, Indexing
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6/j6

- 5) *Sizes are with Keyway to DIN 6885 - P3.
- 6) Other sizes on request.
- 7) All dimensions are in mm.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia.:
- **NBO H1H1 37 - 20**

**External Holdback / Backstop Clutch
NBO H2H3 & H1H2**



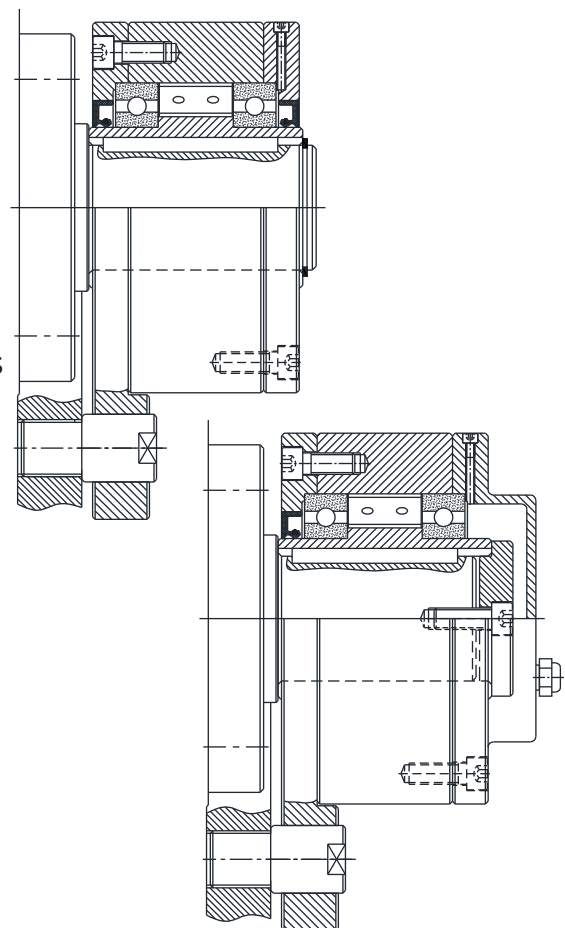
NBO H2H3

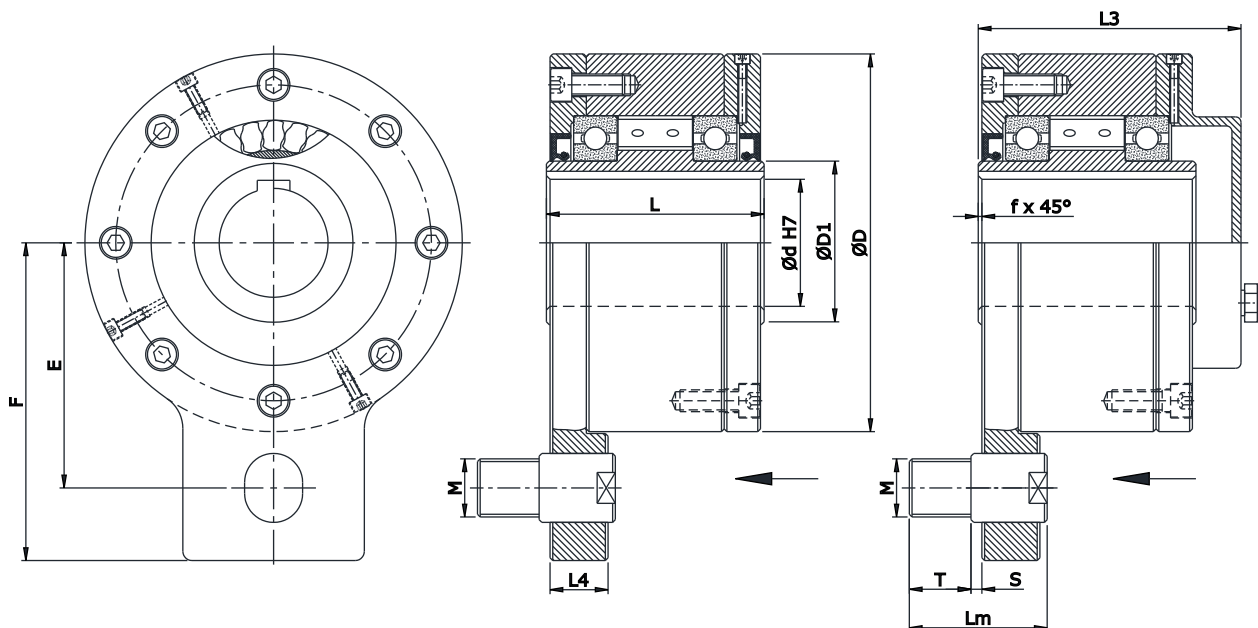
NBO H1H2

❖ **Features:**

- This type of Freewheel Clutch is designed by means of Oil sealing & ball bearings supported.
- This type of Combinations are used as Backstops, in which H2 Cover act as Lever arm & H1 as End Cover.
- H2 Cover also called as Torque arm which has an integrated Stop bolt which must go into a slot in a fixed part of Machine.
- This type of Combinations are arranged on through shafts or shaft ends.
- If H3 type C-cover is used then sealant must be provided to the keyway to avoid loss of lubrication through it.
- Requires Oil / Grease Lubrication.
- Bore range: up to 300 mm.
- Transmitting torque: 160000 Nm.

◆ **Mounting Example:**





NBO H1H2

NBO H2H3

Model	Bore d		Max. Overrunning		Nominal Torque (Tn) Nm	D mm	D1 mm	F mm	E mm	L mm	L4 mm	Lm mm	L3 mm	S mm	T mm	M	f mm	Weight (approx.)	
	Std. mm	Max. mm	Inner RPM	Outer RPM														H1H2 kg	H2H3 kg
NBO 37	20	22*	2500	2600	200	85	30	84	62	48	18	46	73	5	20	M16	1	1.9	2.5
NBO 44	25*	25*	1900	2200	320	95	35	92	68	50	18	56	77	5	25	M20 x 2	1	2.5	3.4
NBO 57	30	32*	1400	1750	630	112	45	102	76	65	25	56	93	6	25	M20 x 2	1	4.1	5.1
NBO 72	40	42*	1120	1600	1250	132	55	120	90	74	25	62	103	6	30	M24 x 2	1.5	6.4	7.8
NBO 82	50*	50*	1025	1450	1800	145	65	135	102	75	25	75	104	6	35	M30 x 2	1.5	7.7	9.4
NBO 107	60	65*	880	1250	2500	170	80	145	112	90	30	75	123	6	35	M30 x 2	2	13.8	16.1
NBO 127	70	75*	800	1150	5000	204	95	185	145	112	35	105	146	6	50	M40 x 2	2.5	22.5	26.6
NBO 140	90	95*	750	1100	10000	254	120	230	180	150	45	135	185	8	60	M52 x 2	3	55.5	58.4
NBO 200	120	120	630	900	20000	320	160	268	205	160	60	140	198	8	65	M60 x 2	3	81	88
NBO 270	140	150	510	750	40000	420	200	375	300	212	75	165	240	8	75	M72 x 2	4	201	207
NBO 340	180	240	460	630	80000	497	300	425	340	265	90	165	335	8	75	M72 x 2	4	316	350
NBO 440	220	300	400	550	160000	627	380	520	420	315	110	200	400	8	75	M72 x 2	5	587	655

Notes :

- 1) Function : Overrunning, Backstopping, Indexing
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6/j6

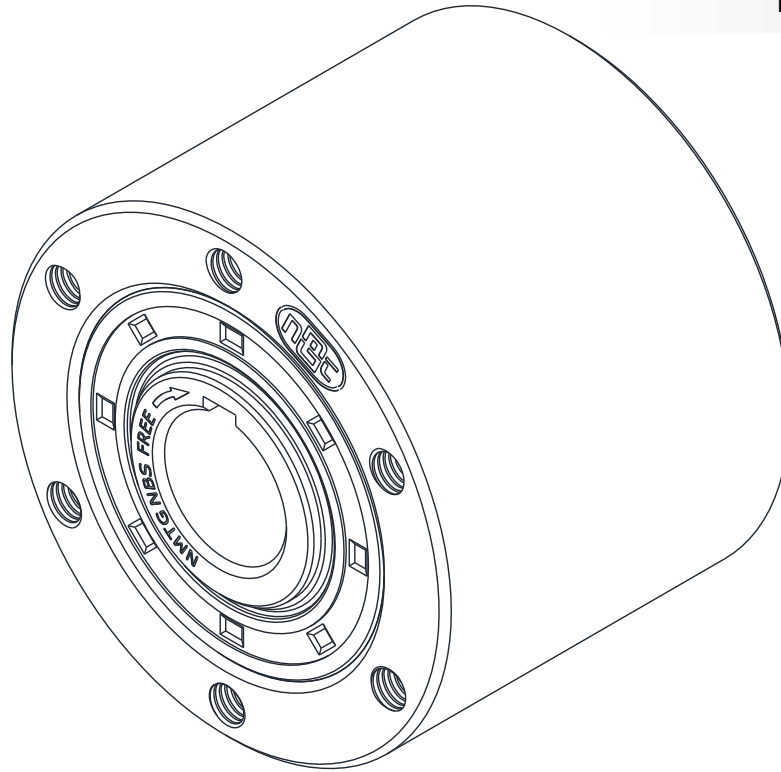
- 5) *Sizes are with Keyway to DIN 6885 - P3.
- 6) Other sizes on request.
- 7) All dimensions are in mm.
- 8) We manufacturing in inch series also.
- 9) Hold pin is in Customer's scope.

Ordering Example :

- When ordering please specify bore dia. with direction of Rotation of Inner race freewheeling seen from Arrow, CW for Clockwise & CCW for Anti-clockwise.
- **NBO H1H2 37 - 20**
- **NBO H2H3 37 - 20**

Dimensions/Design subject to modifications without any prior intimation.

Freewheel One way clutch / Backstop Clutch Model NBS



❖ Function:

➤ Backstopping.

In backstop applications, the Freewheel one way clutch are used to prevent reverse rotation of drive shafts, when input drive is discontinued or power supply failure to input drive. Backstop clutch use to prevent damage caused by power supply failure.

❖ Features:

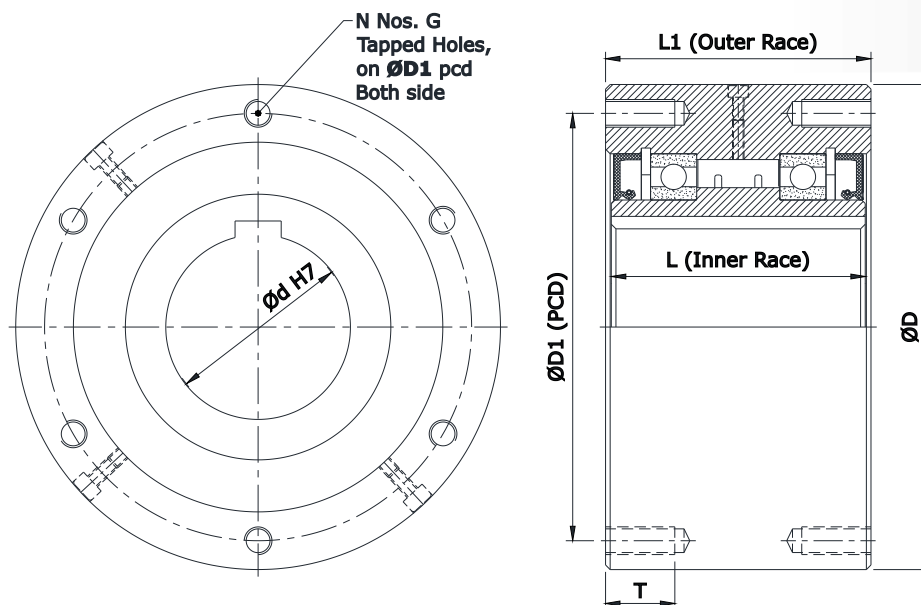
- 1) NBS model is Sprag type Freewheel one way clutch with sealing & integrated bearing supports.
- 2) This type of Freewheel one way clutch are designed to provide inner race overrunning capability in one direction of rotation, and engage the outer race when reverse rotation.
- 3) Outer race end faces have Tapped Holes for attachment of items such as Torque/Lever Arm, Coupling, Sprocket, Pulley, etc.
- 4) This type of freewheels are supplied with grease lubrication and ready for installation.
- 5) Bore range: up to 270 mm.
- 6) Nom. Transmitting torque: 123000 Nm.

❖ Application:

- Inclined Conveyors
- Bucket Elevators
- Pumps
- General Industrial Applications

Freewheel One way clutch / Backstop Clutch

Model NBS



Model	Max Bore Dia d (H7) (mm)	Nom. Torque Capacity (Tn) (Nm)	Max. Overrunning Inner Race (RPM)	D (mm)	L (mm)	L1 (mm)	D1 (PCD) (mm)	N x G No. of Tapped Holes x Size x Pitch	T (mm)	Weight (kg)
NBS 30	30	295	525	90	64	64	80	4 x M6 x 1p	13	2.2
NBS 50	50	785	510	125	67	67	110	4 x M8 x 1.25p	16	4.6
NBS 65	65	1579	475	160	85	90	140	6 x M10 x 1.5p	20	12.9
NBS 75	75	2458	450	170	85	90	150	6 x M10 x 1.5p	20	14.5
NBS 85	85	5880	425	210	110	115	185	6 x M12 x 1.75p	30	27.1
NBS 95	95	7840	400	230	110	115	200	6 x M14 x 2p	30	32.1
NBS 110	110	10800	375	270	110	115	220	6 x M16 x 2p	30	38.5
NBS 135	135	15700	350	320	130	135	280	8 x M16 x 2p	30	76.0
NBS 160	160	24590	310	360	130	135	315	10 x M20 x 2.5p	40	98.0
NBS 200	200	37280	270	430	145	150	380	8 x M22 x 2.5p	40	166.8
NBS 220	220	49010	240	500	230	235	420	16 x M20 x 2.5p	40	301
NBS 250	250	88210	170	600	290	295	530	16 x M24 x 3p	50	579.1
NBS 270	270	123000	150	650	290	295	575	16 x M24 x 3p	50	620.0

Notes :

- 1) Function : Backstopping
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6

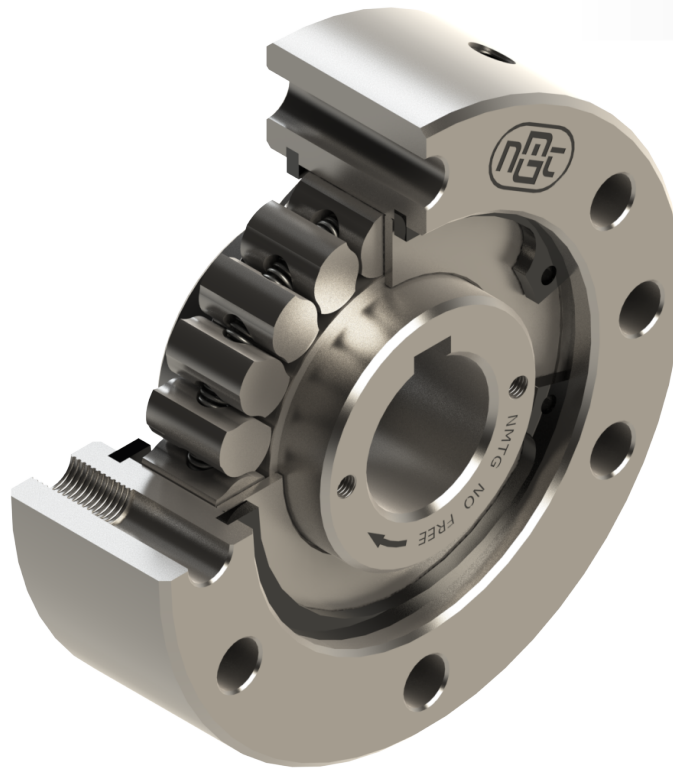
- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.

Ordering Example :

- When ordering please specify bore dia.
- **NBS 110 - 110 mm (Bore Dia.)**

Holdback / Backstop Clutch

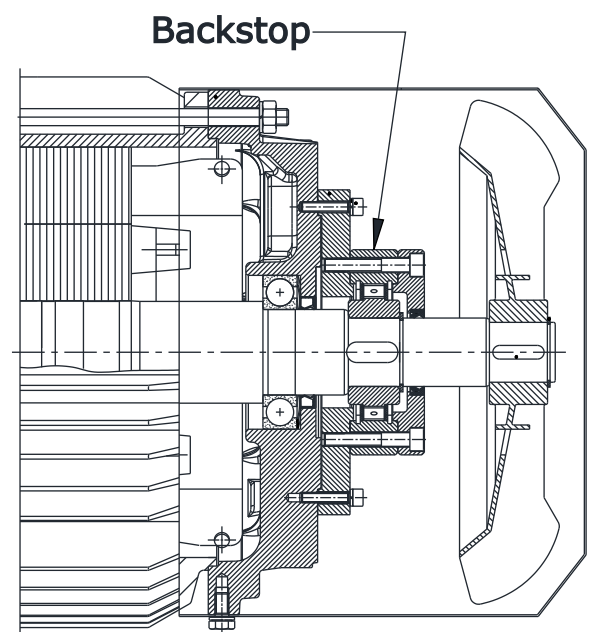
NO Model

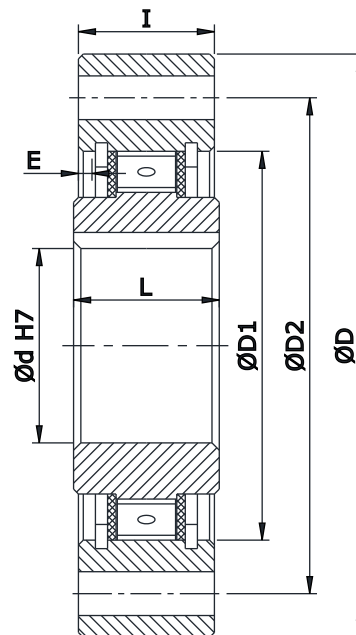
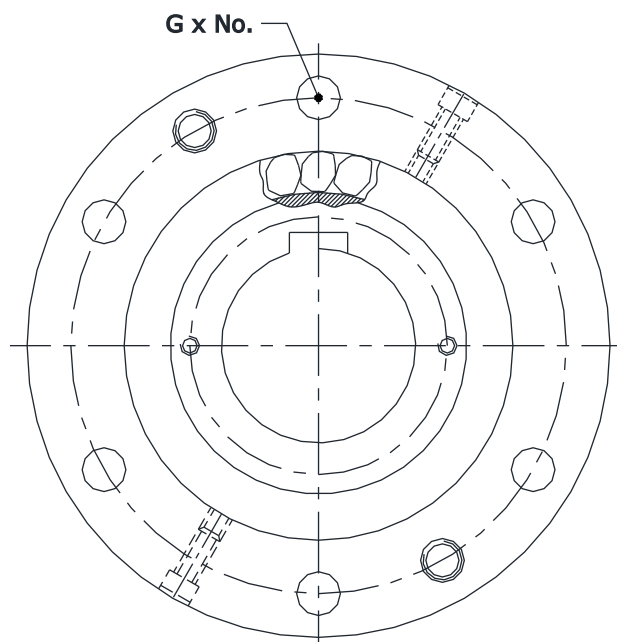


❖ **Features :**

- This type of Freewheels are does not have their own bearing Support.
- Bearing are required to support axial and radial loads. Lubrication and sealing must also be provided by the installation.
- The fit for centering of the outer race must be to H7 tolerance.
- Outer race end faces have Tapped Holes for attachment of items such as Spigot Cover, Coupling, Sprocket, Pulley, etc. with Outside diameter of outer race provided location to ensure Concentricity.
- Grease lubrication is available where high inner race overrunning speeds are required or maintenance is difficult.
- Bore range: up to 70 mm.
- Transmitting torque: Nm.

◆ **Mounting Example:**





Model	Bore d		Nominal Torque (Tn) Nm	D mm	D1 mm	D2 mm	L mm	I mm	E mm	G x No.	Weight Kg
	Standard mm	Max. mm									
NO 20	15	20	120	68	47	56	28	26	2.5	5.5 x 4	0.5
NO 25	20	25	220	85	55	70	28	26	2.5	6.8 x 6	0.7
NO 30	25	30	310	95	62	80	28	26	2.5	6.8 x 8	0.9
NO 35	30	35	540	100	68	85	28	26	2.5	6.8 x 8	1.0
NO 40	35	40	630	110	75	90	30	28	3.0	9.0 x 6	1.4
NO 45	40	45	870	120	80	102	30	28	3.0	9.0 x 6	1.4
NO 50	45	50	1050	125	90	108	32	30	3.0	9.0 x 6	1.7
NO 55	50	55	1230	135	95	115	32	30	3.0	11 x 6	2.0
NO 65	55	60	1670	140	100	120	35	33	3.5	11 x 6	2.3
NO 75	60	70	2070	150	110	132	35	33	3.5	11 x 6	2.4

Notes :

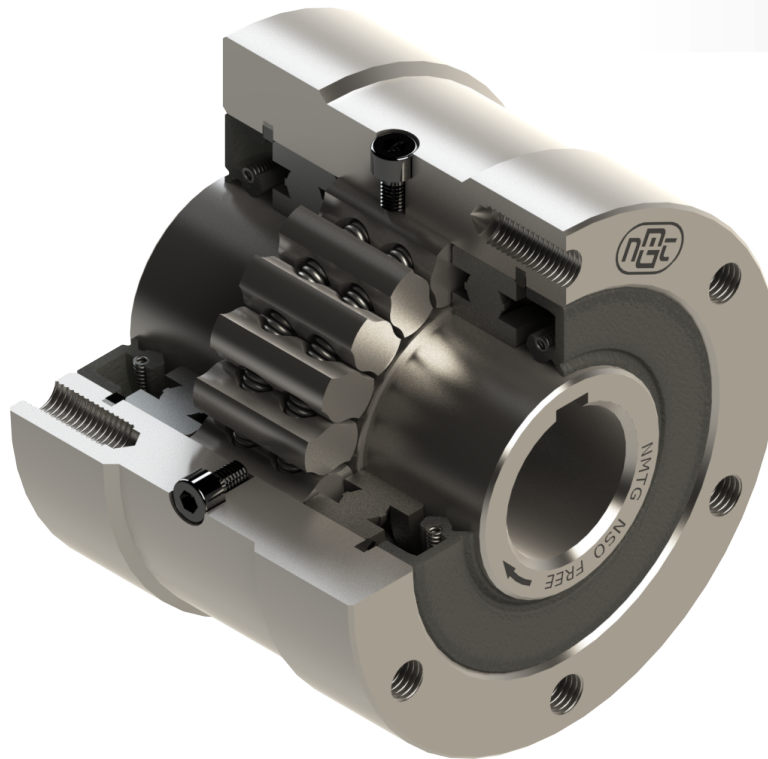
- 1) Function : Overrunning, Backstopping.
- 2) $T_{max} = 2 \times T_n$.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6.

- 5) Other sizes on request.
- 6) All dimensions are in mm.

Ordering Example :

- When ordering please specify bore dia.:
- **NO 25 - 20**

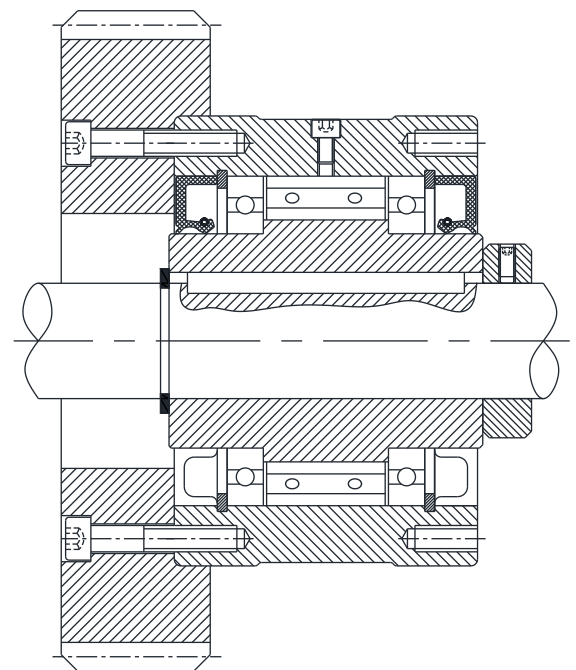
**Freewheel One way clutch / Overrunning Clutch
NSO**

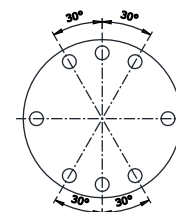
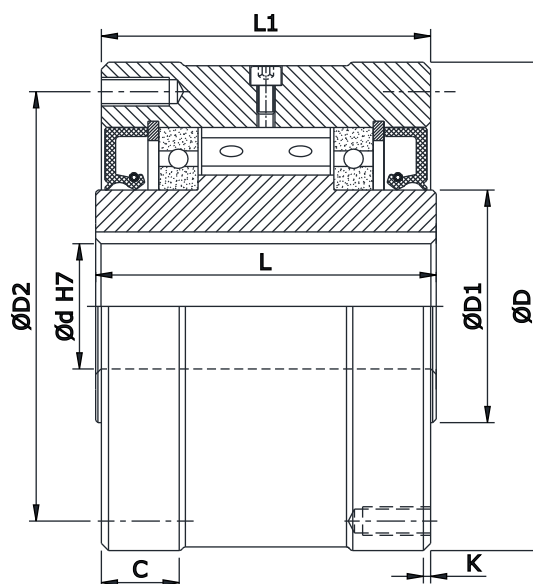
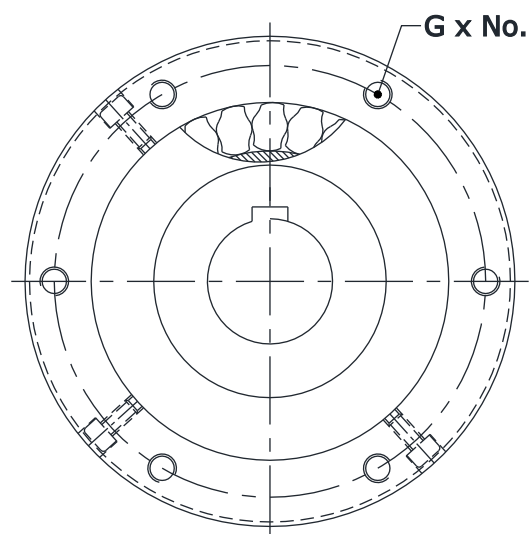


❖ **Features :**

- This type of Freewheels are Sealed & Fitted with Ball bearings & Oil seals.
- Outer race end faces have Tapped Holes for attachment of items such as Coupling, Sprocket, Pulley, etc. with Outside diameter of outer race provided location to ensure Concentricity.
- Oil lubricated suitable for Overrunning, backstopping and medium Duty indexing (up to 150 indexes/minute).
- Grease lubrication is available where high inner race overrunning speeds are required or maintenance is difficult.
- Bore range: up to 180 mm.
- Transmitting torque: 36600 Nm.

◆ **Mounting Example:**





##Hole spacing - NSO700 & 750
All other clutches holes equally spaced.

Model	Max Bore Dia d (H7)	Torque Capacity	Max. Overrunning		L	D (max)	D (min)	L1	C	D1	D2	Number of Holes	G Thread	Depth	K	Weight
	mm (in)	(Tn) Nm (lb ft)	Inner RPM	Outer RPM												
NSO 300	20 (0.750)	379 (275)	3000	900	63.50 (2.50)	76.200 (3.000)	76.150 (2.998)	60.45 (2.38)	-	30	66.670 (2.625)	4@90	M6 (0.250)	12.7 (0.500)	1.5 (0.06)	1.6 (3.5)
NSO 400	22 (0.875)	407 (300)	2800	850	69.85 (2.75)	88.9 (3.500)	88.849 (3.498)	68.28 (2.69)	12.70 (0.50)	30	73.025 (2.875)	4@90	M8 (0.3125)	16 (0.625)	1.5 (0.06)	2.7 (6)
NSO 500	32 (1.312)	1585 (1168)	2500	800	88.90 (3.50)	107.950 (4.250)	107.899 (4.248)	85.73 (3.38)	15.88 (0.63)	45	92.075 (3.625)	4@90	M8 (0.3125)	19 (0.750)	1.5 (0.06)	4.8 (10.5)
NSO 600	50 (2.000)	3100 (2285)	2200	750	95.25 (3.75)	136.525 (5.375)	136.474 (5.373)	92.03 (3.63)	19.05 (0.75)	65	120.650 (4.750)	6@60	M8 (0.3125)	19 (0.750)	1.5 (0.06)	8.6 (19)
NSO 700	70 (2.937)	6900 (5086)	1600	450	127 (5.00)	180.975 (7.125)	180.924 (7.123)	123.83 (4.88)	25.40 (1)	90	158.750 (6.250)	8##	M10 (0.375)	19 (0.750)	1.5 (0.06)	19 (42)
NSO 750	80 (3.250)	9660 (7120)	1000	650	152.40 (6.00)	222.250 (8.750)	222.200 (8.748)	149.22 (5.88)	31.75 (1.25)	110	177.800 (7)	8##	M12 (0.5)	25.4 (1)	1.5 (0.06)	38 (83)
NSO 800	110 (4.250)	17940 (13223)	850	525	152.40 (6.00)	254 (10)	253.95 (9.998)	149.22 (5.88)	31.75 (1.25)	140	227.01 (8.940)	8@45	M12 (0.5)	25.4 (1)	1.5 (0.06)	46 (102)
NSO 900	130 (5.437)	24400 (18000)	700	500	161.90 (6.38)	304.800 (12)	307.72 (11.997)	158.75 (6.25)	34.93 (1.38)	160	247.650 (9.750)	10@36	M16 (0.625)	31.75 (1.25)	1.5 (0.06)	71 (156)
NSO 1000	160 (6.438)	33900 (24987)	500	375	177.80 (7.00)	381 (15)	380.92 (14.997)	171.45 (6.75)	34.93 (1.38)	200	298.450 (11.750)	12@30	M16 (0.625)	31.75 (1.25)	1.5 (0.06)	115 (253)
NSO 1027	180 (7.000)	36600 (27000)	500	375	168.30 (6.63)	381 (15)	380.92 (14.997)	165.10 (6.50)	34.93 (1.38)	220	298.45 (11.750)	12@30	M16 (0.625)	25.4 (1)	1.5 (0.06)	114 (250)

Notes :

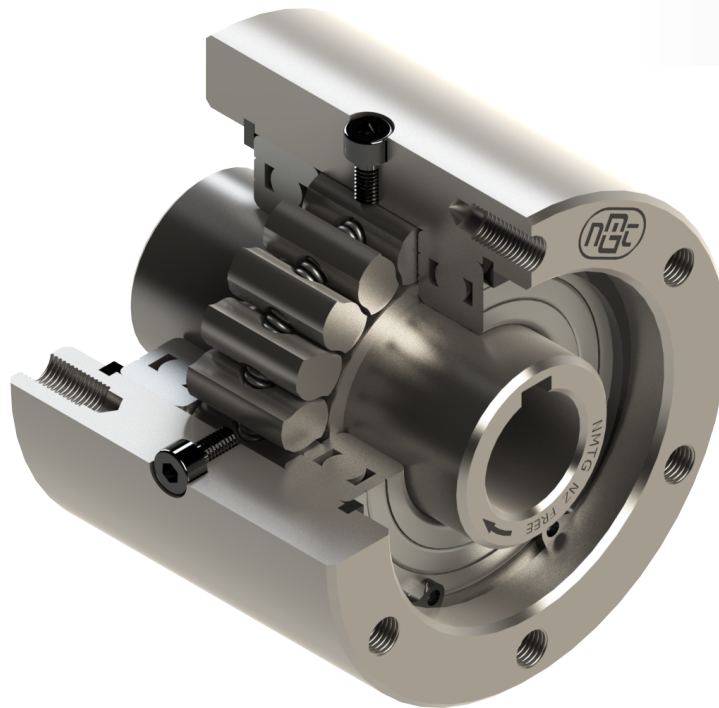
- 1) Function : Overrunning, Backstopping, Indexing
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6

- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.

Ordering Example :

- When ordering please specify bore dia.
- NSO 300 - 20

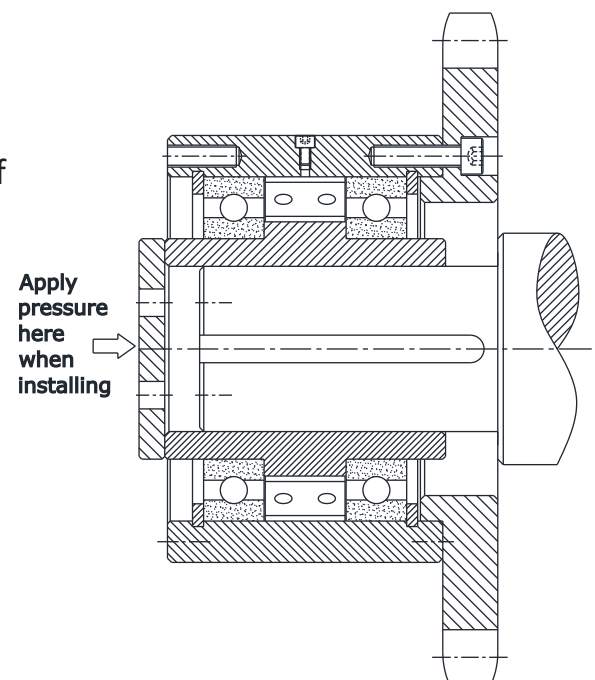
Freewheel One way clutch / Overrunning Clutch NZ Model

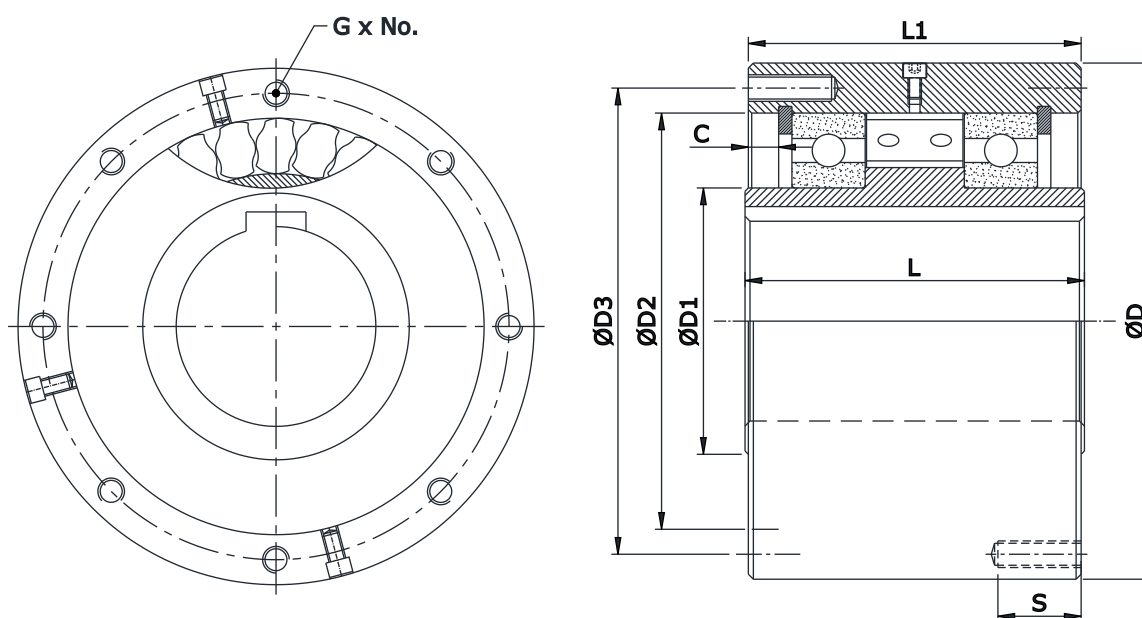


❖ Features:

- This type of Clutch is shielded by shield bearings on both ends.
- For attaching Gears, sprockets, etc, insert Hubs with f7 Tolerance along inner surface of Outer race & screw the bolts into Tapped Holes.
- External Thrust load should be supported by other devices, Not by Freewheel Clutch.
- Requires Grease Lubrication.
- Bore range: up to 70 mm.
- Transmitting torque: 3040 Nm.

◆ Mounting Example:





Model	Torque capacity (Tn) (Nm)	Max. Overrunning Inner Outer (RPM)	Bore size Dia. Keyway (H7) mm	D(h7) mm	D3 mm	D2 mm	D1 mm	L mm	L1 mm	C mm	S mm	G x No.	Weight kg		
NZ 15	186	2200	900	15	5 x 2.3	68	58	47	25	62	60	5.5	10	M5 x 6	1.4
NZ 17	215	2000	800	17	5 x 2.3	75	64	52	28	66	64	6.3	10	M5 x 6	1.8
NZ 20	323	1900	700	20	6 x 2.8	80	68	55	30	67	65	7.6	12	M6 x 6	2
NZ 30-22	735	1800	500	22	6 x 2.8	100	88	75	45	82	80	8.9	16	M8 x 6	3.7
NZ 30-25	735	1800	500	25	8 x 3.3	100	88	75	45	82	80	8.9	16	M8 x 6	3.7
NZ 30	735	1800	500	30	10 x 3.3	100	88	75	45	82	80	8.9	16	M8 x 6	3.7
NZ 35	1080	1700	300	35	10 x 3.3	110	95	80	50	87	85	8.7	16	M8 x 6	4.8
NZ 45-40	1620	1700	300	40	12 x 3.3	125	110	95	60	92	90	8.4	16	M8 x 8	6.2
NZ 45	1620	1700	300	45	14 x 3.8	125	110	95	60	92	90	8.4	16	M8 x 8	6.2
NZ 60-50	2110	1600	250	50	14 x 3.8	155	140	125	80	102	100	9.1	16	M8 x 8	10.2
NZ 60-55	2110	1600	250	55	16 x 4.3	155	140	125	80	102	100	9.1	16	M8 x 8	10.2
NZ 60	2110	1600	250	60	18 x 4.4	155	140	125	80	102	100	9.1	16	M8 x 8	10.2
NZ 70-65	3040	1300	250	65	18 x 4.4	175	162	145	95	105	103	8.6	16	M8 x 8	13.2
NZ 70	3040	1300	250	70	20 x 4.9	175	162	145	95	105	103	8.6	16	M8 x 8	13.2

Notes :

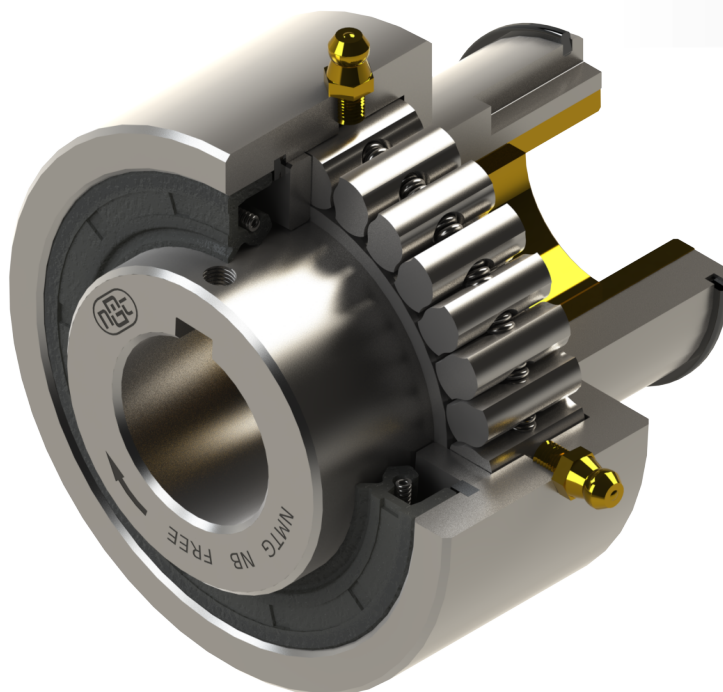
- 1) Function : Overrunning, Backstopping, Indexing
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h7.

- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in mm.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia.
- NZ 15 - 15

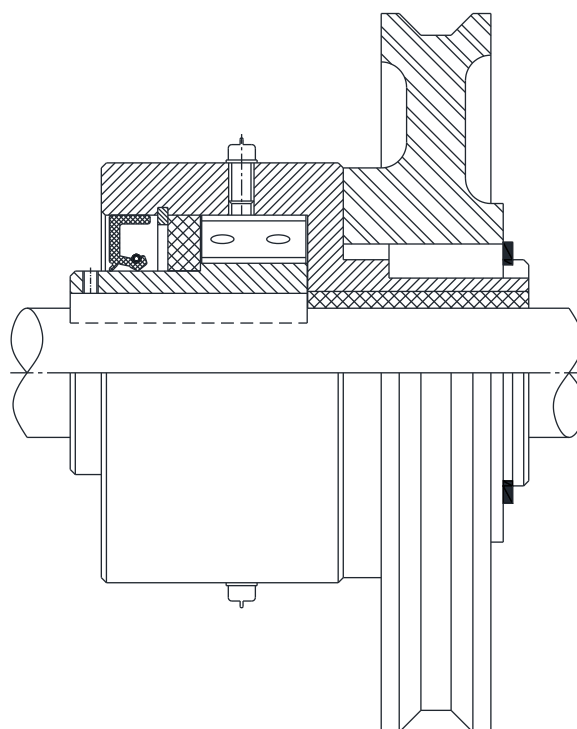
**Freewheel One way clutch / Backstop Clutch
NB Model**

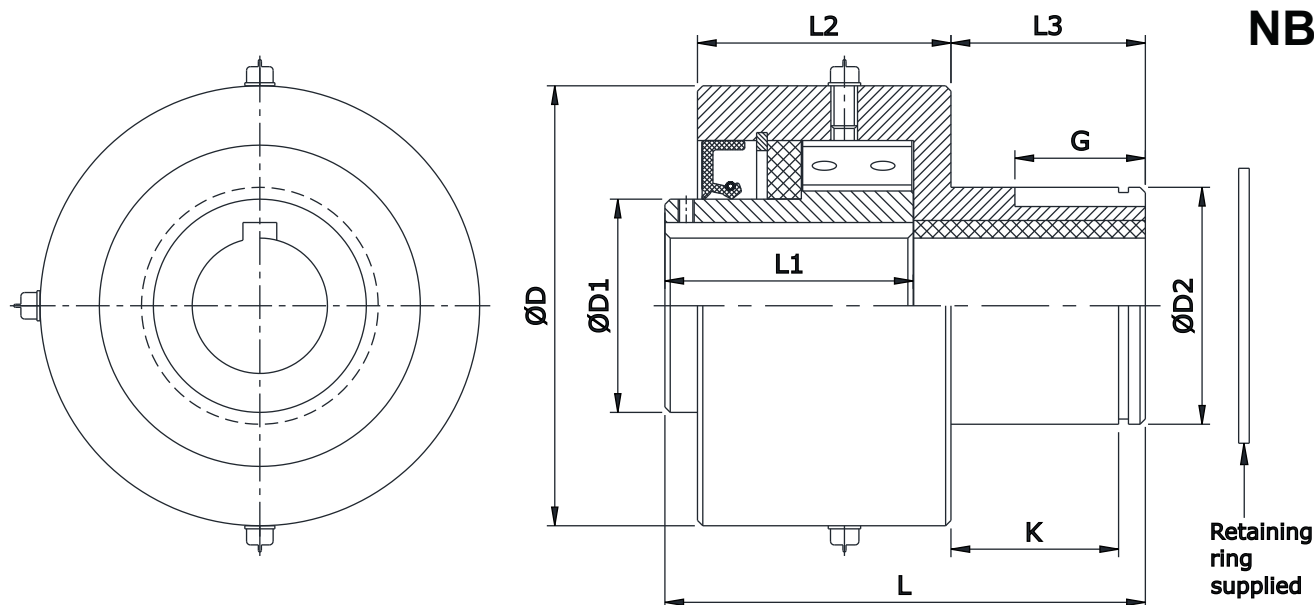


❖ **Features:**

- This type of Clutch is supplied with extended Spigot at one side to allow direct mounting of Customer connecting parts.
- A sleeve inside the extended spigot give greater support, thus adding Strength.
- Requires Grease Lubrication
- Bore range: up to 50 mm
- Transmitting torque: 2170 Nm

◆ **Mounting Example:**





Model	L mm (in)	D mm (in)	D2 (max) mm (in)	D2 (min) mm (in)	L2 mm (in)	D1 mm	L3 mm (in)	G mm (in)	L1 mm (in)	K (min) mm (in)	Hub Keyway Size mm (in)
NB 3	47.62 (1.88)	47.00 (1.85)	22.23 (0.875)	22.20 (0.874)	19.81 (0.78)	20.00	20.64 (0.81)	12.70 (0.50)	23.80 (0.94)	16.74 (0.66)	3.175 x 1.58 (1/8 x 1/16)
NB 5	69.85 (2.75)	50.80 (2.00)	31.75 (1.250)	31.72 (1.249)	31.75 (1.25)	25.00	25.40 (1.00)	14.27 (0.56)	41.27 (1.63)	21.13 (0.83)	4.762 x 2.38 (3/16 x 3/32)
NB 6	80.95 (3.19)	73.03 (2.88)	34.93 (1.375)	34.90 (1.374)	39.67 (1.56)	35.00	33.32 (1.31)	23.80 (0.94)	42.85 (1.69)	29.13 (1.15)	4.76 x 2.38 (3/16 x 3/32)
NB 8	90.22 (3.55)	82.55 (3.25)	44.45 (1.750)	44.42 (1.749)	47.60 (1.87)	40.00	36.50 (1.44)	24.50 (0.96)	47.62 (1.88)	31.47 (1.24)	6.35 x 3.175 (1/4 x 1/8)

Model	Bore dia.		Torque Capacity (Tn) Nm (lb-ft)	Overrunning		Weight Kg (lb)
	d (H7) mm	d (H7) inch		Inner Race RPM	Outer Race RPM	
NB 3	10	0.375 0.500	54 (40)	1950	900	0.28 (0.62)
NB 5	16	0.500 0.625	115 (85)	1950	900	0.6 (1.32)
NB 6	18	0.750	372 (275)	1950	750	1.36 (3.00)
NB 8	25	0.875 1.000	542 (400)	1650	600	1.93 (4.25)

Notes :

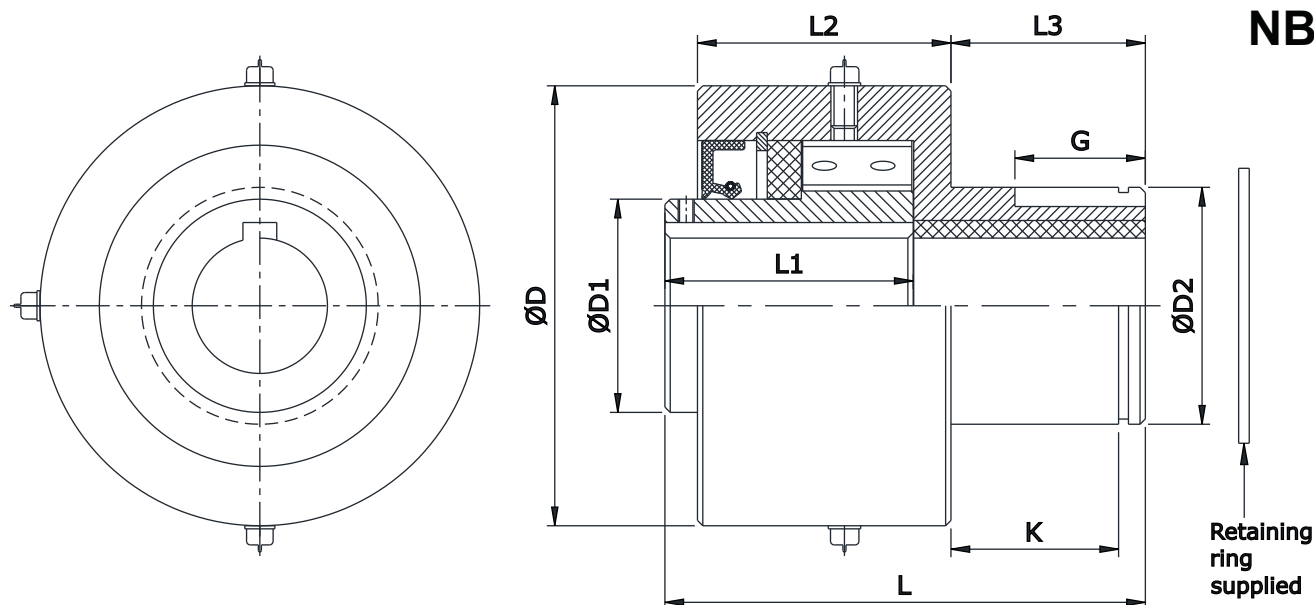
- 1) Function : Overrunning, Backstopping, Indexing
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6

- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.

Ordering Example :

- When ordering please specify bore dia.
- NB 3 - 10

Dimensions/Design subject to modifications without any prior intimation.



Model	L mm (in)	D mm (in)	D2 (max) mm (in)	D2 (min) mm (in)	L2 mm (in)	D1 mm	L3 mm (in)	G mm (in)	L1 mm (in)	K (min) mm (in)	Hub Keyway Size mm (in)
NB 10	88.90 (3.50)	95.25 (3.75)	57.15 (2.250)	57.12 (2.249)	44.45 (1.75)	55.00	36.50 (1.44)	23.80 (0.94)	46.02 (1.81)	32.11 (1.26)	7.938 x 3.96 (5/16 x 5/32)
NB 12	98.42 (3.87)	112.71 (4.44)	63.50 (2.500)	63.47 (2.499)	52.40 (2.06)	60.00	36.50 (1.44)	30.15 (1.19)	53.97 (2.13)	30.61 (1.21)	9.525 x 4.763 (3/8 x 3/16)
NB 14	111.18 (4.38)	139.70 (5.50)	73.03 (2.875)	73.00 (2.874)	55.56 (2.19)	75.00	44.45 (1.75)	34.14 (1.34)	57.15 (2.25)	39.34 (1.55)	11.113 x 5.555 (7/16 x 7/32)
NB 16	111.18 (4.38)	139.70 (5.50)	82.55 (3.250)	85.52 (3.249)	55.56 (2.19)	75.00	44.45 (1.75)	36.50 (1.44)	57.15 (2.25)	39.67 (1.56)	11.113 x 5.555 (7/16 x 7/32)

Model	Bore dia.		Torque Capacity (Tn) Nm (lb-ft)	Overrunning		Weight Kg (lb)
	d (H7) mm	d (H7) inch		Inner Race RPM	Outer Race RPM	
NB 10	30 32	1.125 1.250	881 (650)	1250	350	2.44 (5.38)
NB 12	28 38	1.375 1.500	1760 (1300)	1150	350	3.91 (8.62)
NB 14	38 45	1.625 1.750	1970 (1450)	950	250	6.32 (13.90)
NB 16	50	1.875 2.000	2170 (1600)	950	250	6.35 (14.00)

Notes :

- 1) Function : Overrunning, Backstopping, Indexing
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6

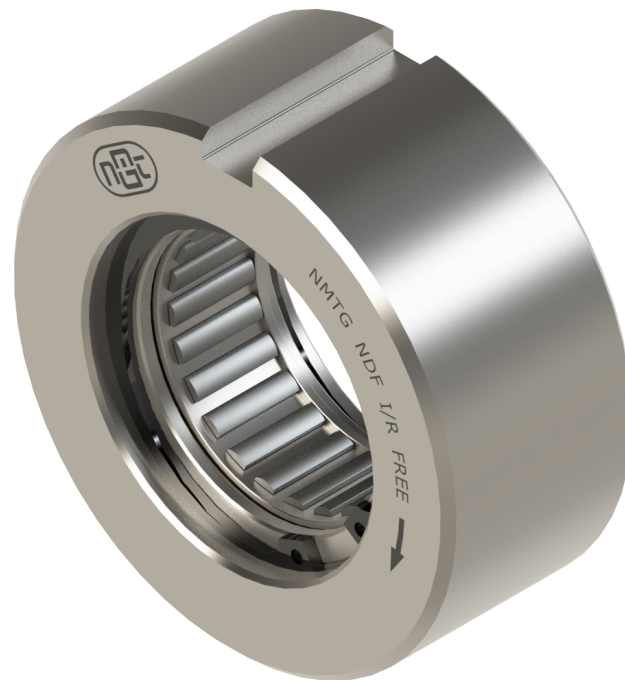
- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.

Ordering Example :

- When ordering please specify bore dia.
- NB 3 - 10

Dimensions/Design subject to modifications without any prior intimation.

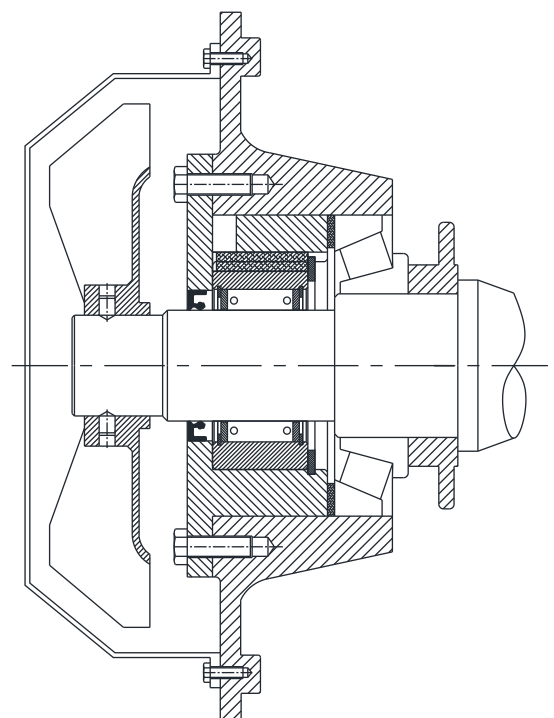
Freewheel One way clutch / Backstop Clutch NDF Model

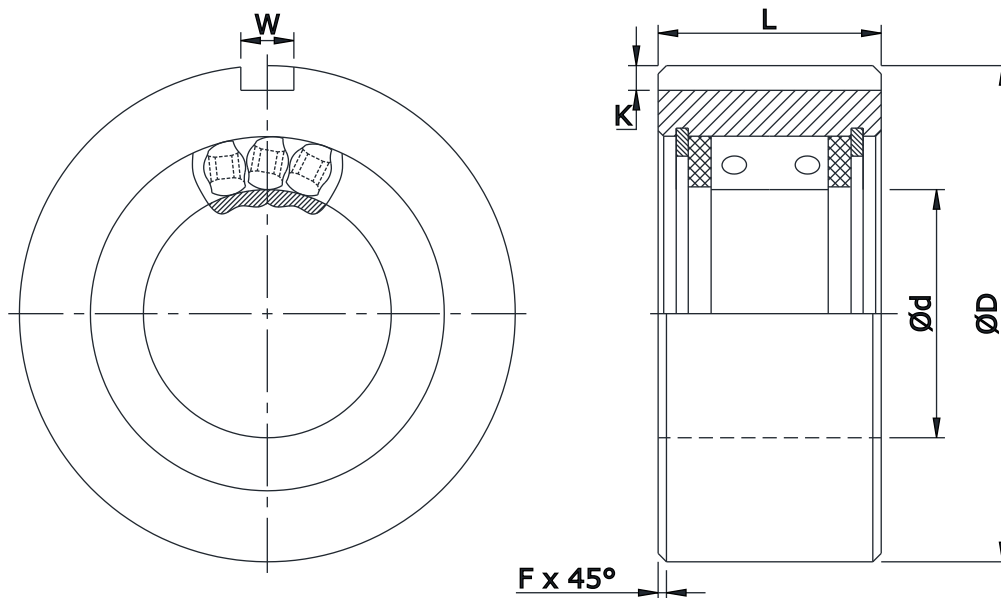


❖ Features:

- NDF Series Clutches are direct mounting Sprag clutches specially designed for backstop application where Compact space (dimensions) are required. This Clutches are directly mounted on Shaft.
- This type is particularly suitable for use in equipment (gear units) where good concentricity between Shaft & Housing is required.
- Requires Oil Lubrication.
- For using this type of Clutch, Shaft must be carburized: To an Effective depth of 1.2/1.5 mm grinding.
- Hardened to 60 HRC & Surface finish (Ra) 0.3 to 0.5 micron, Taper not to exceed 8 micron per inch (25.4 mm).
- Concentricity: Shaft to be supported in bearings such that Shaft & Housing are concentric within 0.05 mm TIR.
- Bore range: up to 101.6 mm.
- Transmitting torque: 3417 Nm.

◆ Mounting Example:





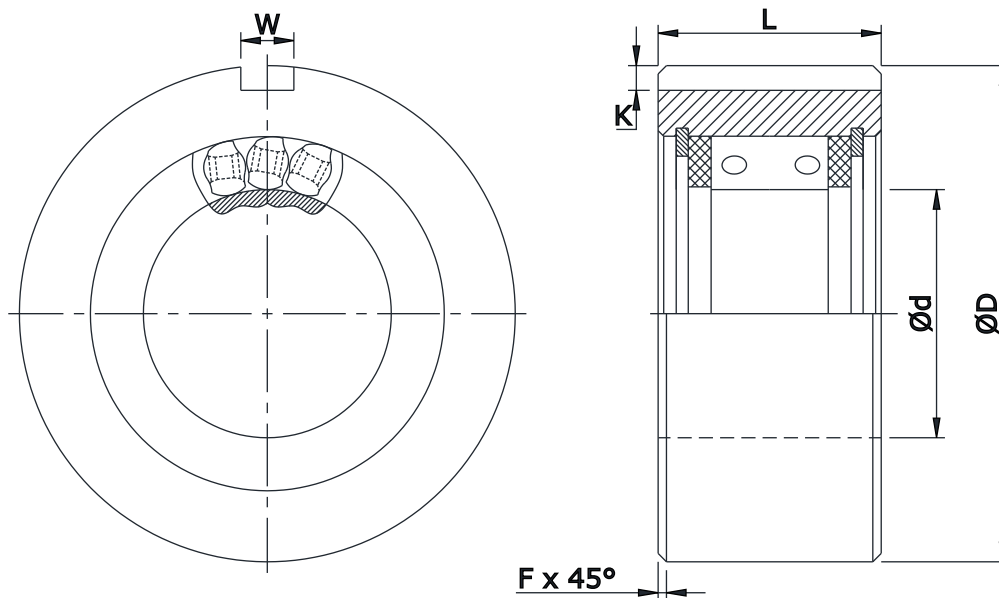
Model	Max Shaft Dia d mm (in)	Min Shaft Dia d mm (in)	Torque Capacity (Tn) Nm	Max. Overrunning Speed of Shaft RPM	D (max) mm (in)	D (min) mm (in)	L (max) mm (in)	L (min) mm (in)	W x K mm (in)	F x 45 (in)	Weight Kg lbs
NDF 16	16.510 (0.650)	16.485 (0.6495)	51 (38)	2400	39.992 (1.575)	39.967 (1.574)	25.654 (1.010)	25.146 (0.990)	6.35 x 3.175 (0.250 x 0.125)	(0.03)	0.18 (0.40)
NDF 18	18.753 (0.7383)	18.740 (0.7378)	68 (50)	2400	46.965 (1.849)	46.939 (1.848)	22.479 (0.885)	21.971 (0.865)	6.35 x 3.175 (0.250 x 0.125)	(0.03)	0.23 (0.51)
NDF 24	24.653 (0.9706)	24.628 (0.9696)	203 (150)	1800	61.963 (2.4395)	61.938 (2.4385)	28.829 (1.135)	28.321 (1.115)	6.35 x 3.175 (0.250 x 0.125)	(0.03)	0.48 (1.06)
NDF 28	28.791 (1.1335)	28.766 (1.1325)	158 (117)	1800	61.963 (2.4395)	61.938 (2.4385)	25.654 (1.010)	25.146 (0.990)	6.35 x 3.175 (0.250 x 0.125)	(0.03)	0.37 (0.81)
NDF 28H	28.791 (1.1335)	28.766 (1.1325)	339 (250)	1800	71.963 (2.8332)	71.938 (2.8322)	32.004 (1.260)	31.496 (1.240)	6.35 x 3.175 (0.250 x 0.125)	(0.03)	0.73 (1.61)
NDF 31	31.750 (1.250)	31.725 (1.249)	143 (105)	1800	67.132 (2.643)	67.107 (2.642)	28.194 (1.110)	27.686 (1.090)	6.35 x 3.175 (0.250 x 0.125)	(0.062)	0.43 (0.95)
NDF 32	32.931 (1.2965)	32.906 (1.2955)	452 (333)	1800	79.972 (3.1485)	79.934 (3.147)	35.179 (1.385)	34.671 (1.365)	9.525 x 4.75 (0.375 x 0.187)	(0.03)	0.92 (2.02)
NDF 35	35.001 (1.378)	34.976 (1.377)	678 (500)	1800	79.985 (3.149)	79.959 (3.148)	41.529 (1.635)	41.021 (1.615)	9.525 x 4.75 (0.375 x 0.187)	(0.03)	1.18 (2.60)
NDF 38	38.100 (1.500)	38.075 (1.499)	314 (232)	1800	84.099 (3.311)	84.074 (3.310)	32.004 (1.260)	31.496 (1.240)	9.525 x 4.75 (0.375 x 0.187)	(0.094)	0.85 (1.87)
NDF 39	39.141 (1.541)	39.116 (1.540)	904 (667)	1800	89.967 (3.542)	89.941 (3.541)	41.529 (1.635)	41.021 (1.615)	9.525 x 4.75 (0.375 x 0.187)	(0.03)	1.37 (3.01)
NDF 44	44.450 (1.750)	44.425 (1.749)	427 (315)	1500	93.243 (3.671)	93.218 (3.670)	32.004 (1.260)	31.496 (1.240)	9.525 x 4.75 (0.375 x 0.187)	(0.094)	1.05 (2.31)

Notes :

- 1) Function : Backstopping
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Other sizes on request.
- 5) Shaft dia. is to be controlled within h6/j6

Ordering Example :

- When ordering please specify bore dia.
- **NDF 30 - 31.75**



Model	Max Shaft Dia d mm (in)	Min Shaft Dia d mm (in)	Torque Capacity (Tn) Nm	Max. Overrunning Speed of Shaft RPM	D (max) mm (in)	D (min) mm (in)	L (max) mm (in)	L (min) mm (in)	W x K mm (in)	F x 45 (in)	Weight Kg lbs
NDF 50	50.800 (2.000)	50.775 (1.999)	601 (443)	1400	112.547 (4.431)	112.522 (4.430)	35.179 (1.385)	34.671 (1.365)	12.7 x 6.35 (0.500 x 0.250)	(0.094)	1.87 (4.11)
NDF 51	51.961 (2.0457)	51.935 (2.0447)	1582 (1167)	1200	120.650 (4.750)	120.625 (4.749)	44.700 (1.760)	44.200 (1.740)	12.7 x 6.35 (0.500 x 0.250)	(0.03)	2.81 (6.18)
NDF 57	57.150 (2.250)	57.125 (2.249)	739 (545)	1200	122.453 (4.821)	122.428 (4.820)	35.179 (1.385)	34.671 (1.365)	12.7 x 6.35 (0.500 x 0.250)	(0.094)	2.18 (4.80)
NDF 63	63.500 (2.500)	63.47 (2.499)	832 (614)	1000	111.15 (4.376)	111.13 (4.375)	44.700 (1.760)	44.200 (1.740)	12.7 x 6.35 (0.500 x 0.250)	(0.094)	1.87 (4.11)
NDF 69	69.850 (2.750)	69.82 (2.749)	966 (712)	1000	124.74 (4.911)	124.71 (4.910)	46.230 (1.820)	45.720 (1.800)	12.7 x 6.35 (0.500 x 0.250)	(0.025)	1.90 (4.18)
NDF 76	76.200 (3.000)	76.175 (2.999)	1092 (805)	900	132.105 (5.201)	132.080 (5.200)	46.228 (1.820)	45.720 (1.800)	12.7 x 6.35 (0.500 x 0.250)	(0.025)	2.55 (5.61)
NDF 82	82.550 (3.250)	82.525 (3.249)	1677 (1237)	850	146.710 (5.776)	146.685 (5.775)	51.054 (2.010)	50.546 (1.990)	12.7 x 6.35 (0.500 x 0.250)	(0.025)	3.80 (8.40)
NDF 88	88.900 (3.500)	88.875 (3.499)	2262 (1668)	800	166.675 (6.562)	166.649 (6.561)	51.054 (2.010)	50.546 (1.990)	15.875 x 7.925 (0.625 x 0.312)	(0.025)	5.30 (11.70)
NDF 95	95.250 (3.750)	95.225 (3.749)	3086 (2276)	750	172.237 (6.781)	172.212 (6.780)	60.579 (2.385)	60.071 (2.365)	15.875 x 7.925 (0.625 x 0.312)	(0.025)	6.52 (14.30)
NDF 101	101.600 (4.000)	101.575 (3.999)	3417 (2520)	750	181.889 (7.161)	181.864 (7.160)	60.579 (2.385)	60.071 (2.365)	15.875 x 7.925 (0.625 x 0.312)	(0.025)	7.26 (16)

Notes :

- 1) Function : Backstopping
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Other sizes on request.
- 5) Shaft dia. is to be controlled within h6/j6

Ordering Example :

- When ordering please specify bore dia.
- NDF 50 - 50.8

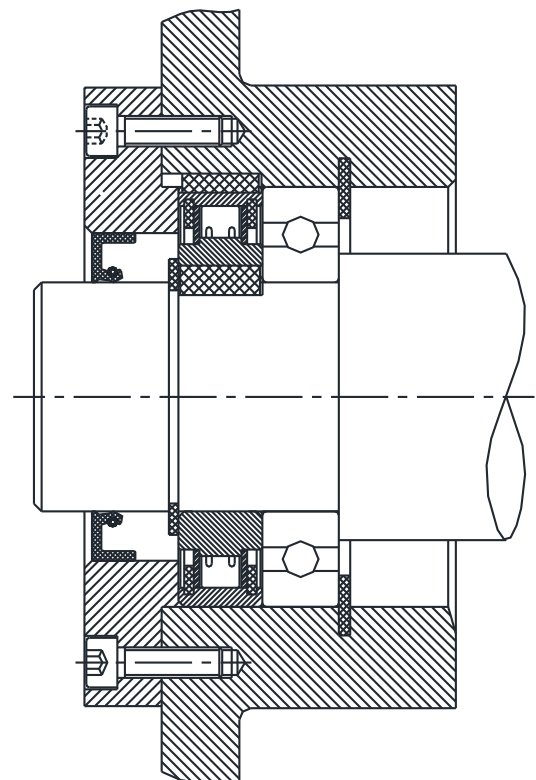
Freewheel One way clutch / Backstop Clutch Ncs Model

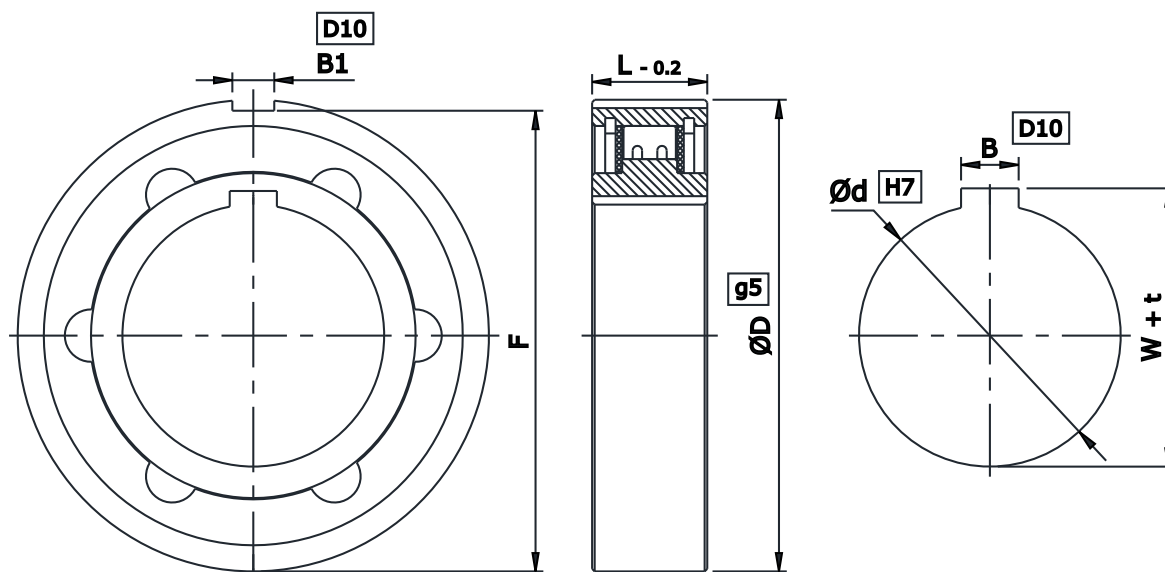


◆ Mounting Example:

❖ Features:

- This type of Clutch is designed for Press fit Installation into the Housing through Outer race.
- Internal diameter of Housing should be H7.
- Mount (Install) Clutch with bearing to avoid Radial force, because this Clutch does not have any Bearing support.
- Keyways should be made in outer surface of Clutch for proper Installation.
- Make sure that Housing has enough Strength to withstand pressure required for the fitting Installation of Clutch.
- The Freewheel One-way Clutch Requires Oil Lubrication in Housing arrangement. Lubrication & Sealing must be provide in Installation.
- Bore range: up to 80 mm.
- Transmitting torque: 1400 Nm.





d (H7) mm	Nom. Torque Nm	D mm	L mm	Keyway Dimension of Outer Race		Keyway Dimension of Inner Race		
				B1 mm	F mm	B mm	W mm	t mm
25	82	62	17	5	60.1 -0.2	5	27.3	0.2
30	75	72	18	6	68.5 -0.2	6	32.8	0.2
30	80	90	18	8	88 -0.2	8	33.3	0.2
35	270	100	22	10	96 -0.2	10	38.3	0.2
40	50	68	16	5	66.1 -0.2	5	41.2	0.3
40	228	90	21	8	86.9 -0.2	8	42	0.2
40	228	90	23	6	86.4 -0.2	6	42.8	0.2
40	228	90	24	8	88 -0.2	12	43.3	0.2
40	348	110	28	12	106.5 -0.2	12	43.3	0.2
40	348	110	32	8	106.9 -0.1	12	43.3	0.2
45	150	75	17	5	73.1 -0.2	5	46.2	0.2
45	700	130	29	8	126 -0.2	8	48.3	0.2
50	270	110	28	12	106.5 -0.2	12	53.3	0.2
50	700	130	30	10	125 -0.2	14	53.8	0.2
55	100	90	18	5	88.1 -0.2	5	56.2	0.3
55	700	120	33	16	114 -0.1	16	59.3	0.2
55	1000	140	37	10	136 -0.2	16	59.3	0.2
60	270	110	22	8	106.9 -0.2	8	62	0.2
65	270	100	25	8	96.9 -0.1	8	67	0.3
65	270	100	30	8	96.9 -0.1	8	67	0.3
65	270	110	22	8	106.9 -0.2	8	67	0.2
65	300	120	25	8	102.24 -0.1	8	67	0.3
65	800	140	33	18	133 -0.2	18	69.4	0.2
65	1400	160	33	10	156 -0.2	10	67.4	0.2
70	1200	150	34	20	142.5 -0.2	20	74.9	0.2
80	840	140	30	22	136.9 -0.1	22	83.1	0.2

Notes :

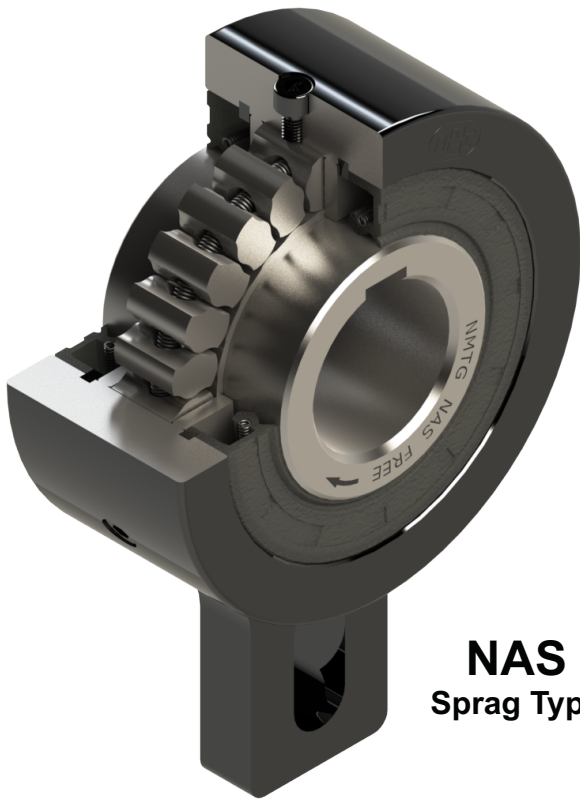
- 1) Function : Overrunning, Backstopping.
- 2) $T_{max} = 2 \times T_n$.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6/j6

Ordering Example :

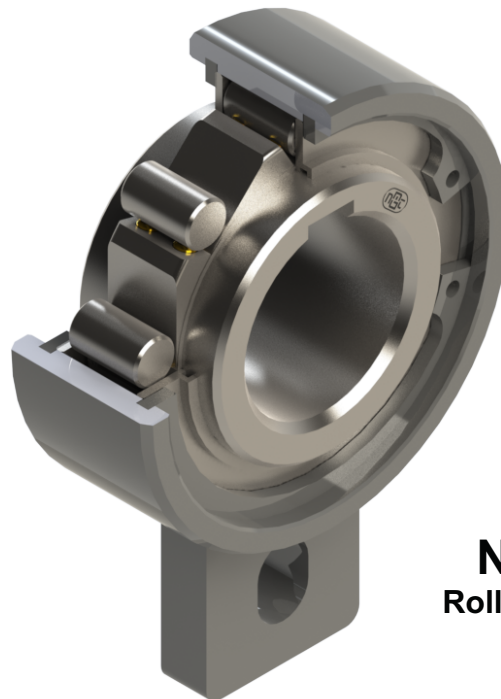
- When ordering please specify bore dia.
- **NCs - 50 x 110 x 28**

Dimensions/Design subject to modifications without any prior intimation.

**External Holdback / Backstop Clutch
NAS & NAR**



NAS
Sprag Type

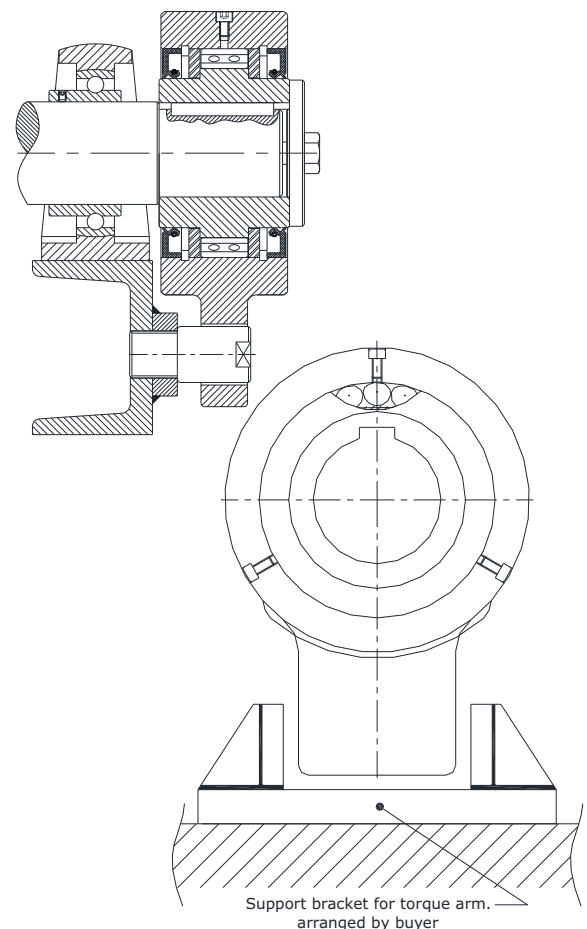


NAR
Roller Type

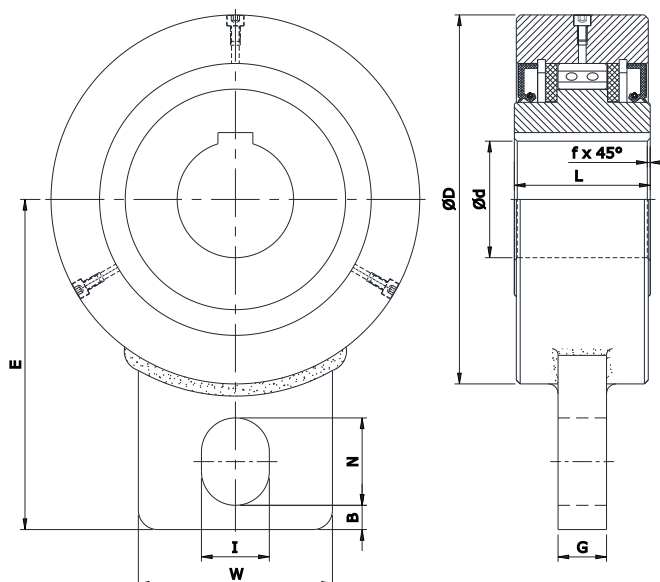
❖ **Features:**

- 1) NMTG NAS Model is Sprag type & NAR model is Roller type Free Wheel One-way clutch.
- 2) This type of Freewheel Clutch is without bearing type with Lever arm for Backstopping, So External Bearing Support must be required for Axial & Radial Loads.
- 3) Torque is transmitted to the inner race via a key and the outer race via the torque arm. Shaft tolerance must be h6.
- 4) The Backstop clutch should be fixed to the machine body by placing Support Bracket on either side of the torque arm or by using a pin or bolt in the slot. Note that a clearance of 1% of slot width is needed between torque arm and brackets or slot and pin. If a bolt is used instead of a pin it must not apply any axial loads to the torque arm.
- 5) This type of Freewheel Clutch is used in Inclined Conveyor, Bucket Elevator, etc. which are used in Outside Location (in very Dusty Environment).
- 6) Requires Grease Lubrication
- 7) Bore range : up to 95 mm
- 8) Transmitting torque : 8500 Nm

◆ **Mounting Example:**



NAS Sprag Type



Model	d (H7) Over upto mm		Torque (Tn) Nm	Max. Overrunning Inner RPM	D mm	L mm	E mm	W mm	G mm	B mm	N mm	I mm	f mm	Weight kg
NAS 25	15	25	460	450	83	35	90	40	12	5	35	15	0.8	1.4
NAS 35	20	35	606	400	106	48	113	40	15	10.5	35	18	1	2.4
NAS 40	25	40	2000	320	118	54	110	40	15	8	35	15	1	4
NAS 45	40	55	1295	300	132	52	125	60	15	10	35	18	1	4.4
NAS 50/70	40	70	3000	280	155	54	140	80	20	10	47	18	1	7
NAS 60	60	70	2550	250	161	54	140	70	15	10	35	18	2	6.4
NAS 65	50	70	5000	250	185	75	175	100	25	20	45	35	2	15
NAS 80	80	90	4875	200	190	70	165	70	20	15	45	25	2	9.8
NAS 90	70	90	5700	150	260	90	220	120	25	10	47	18	3	31.4
NAS.s 60	50	60	1050	250	170	65	145	100	25	10	40	32	1.5	12
NAS .s 70	50	75	5000	250	190	70	170	100	25	12.5	45	35	2	15.5
NAS.s 75	50	75	7500	250	190	85	170	100	25	12.5	45	35	2	17.7
NAS.s3 95	60	95	8500	250	210	100	207	110	30	23.5	57	50	3	23.5

Notes :

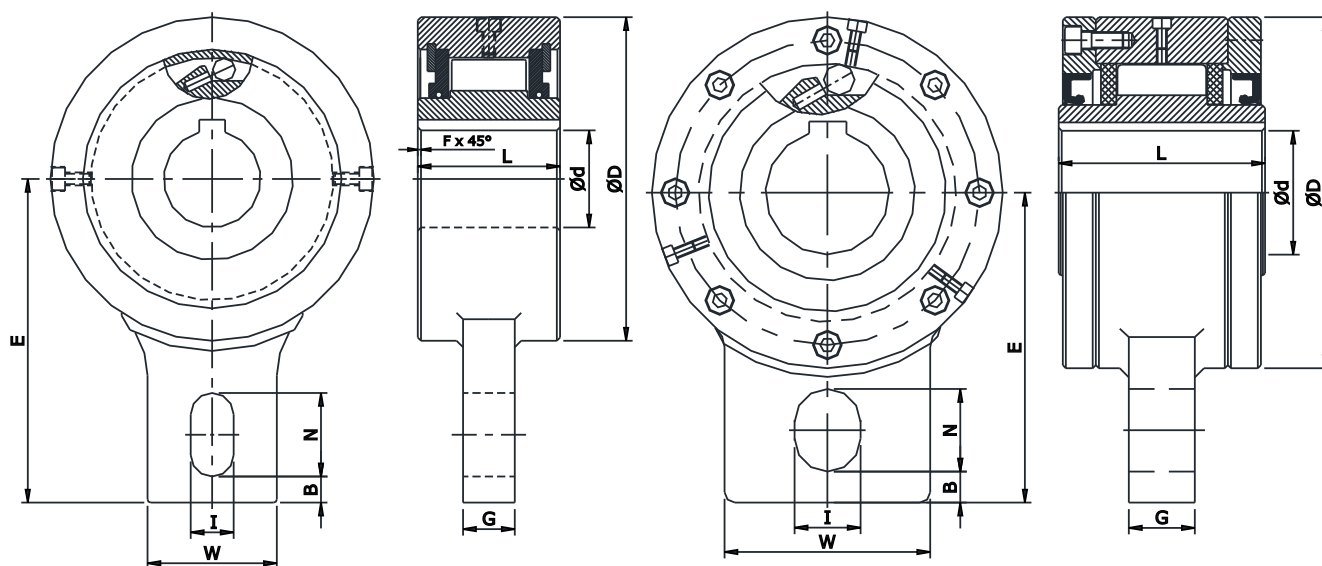
- 1) Function : Backstopping
- 2) T_{max} = 2 x T_n.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6.

- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in mm.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia.
- NAS 25 - 20 mm Bore

NAR Roller Type



NAR 25 to NAR 120

NAR.s 60 & NAR.s 70

Model	d (H7) Over upto mm		Torque (Tn) Nm	Max. Overrunning Inner RPM	D mm	L mm	E mm	W mm	G mm	B mm	N mm	I mm	f mm	Weight kg
NAR 25	20	25	265	450	83	35	90	40	12	5	35	15	0.8	1.3
NAR 40	30	40	1200	320	118	54	110	40	15	8	35	15	1	3.3
NAR 70	45	70	2150	280	155	54	140	80	20	10	47	18	1	5
NAR 80	50	80	2900	200	190	64	155	80	20	10	40	20	1.5	8.7
NAR 110	90	110	7125	150	260	90	220	120	25	-	-	-	3	22.5
NAR 120	100	120	11000	130	300	110	260	140	30	-	-	-	3	42
NAR.s 60	40	60	1557	230	170	100	150	100	32	15	40	32	-	19
NAR.s 70	40	70	2350	200	190	115	175	100	32	19	42	32	-	24

Notes :

- 1) Function : Backstopping
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6.

- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in mm.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia.
- **NAR 25 - 20 mm Bore**

Dimensions/Design subject to modifications without any prior intimation.

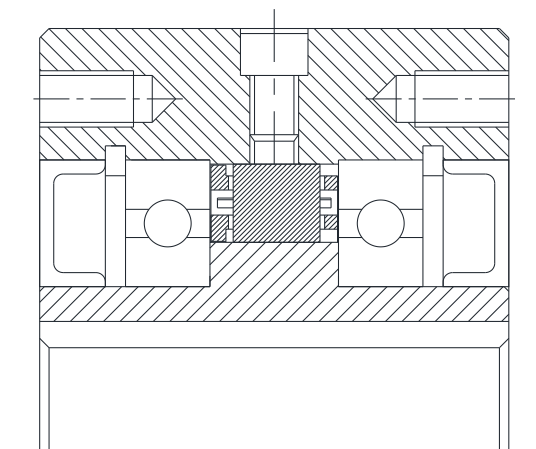
Sprag Type Freewheel Cage Assembly NDC Model



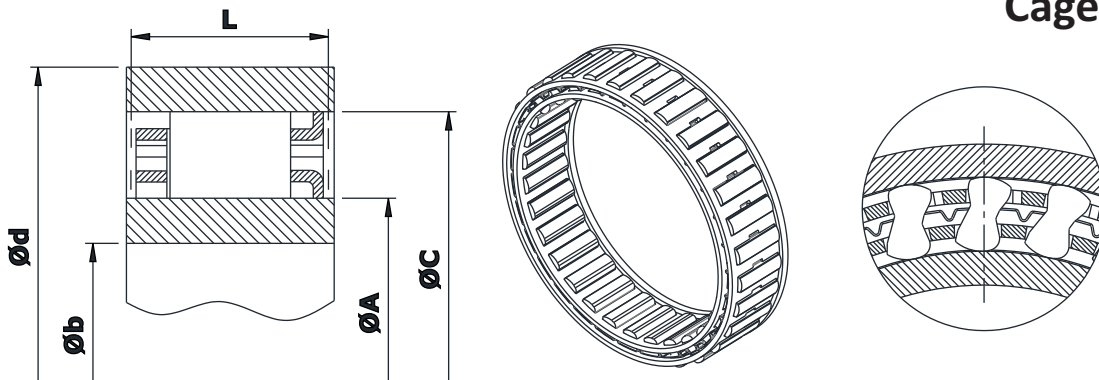
❖ Features:

- This NDC type Cage assembly is without Inner or Outer races.
- NDC type cage assembly must be installed in a Design providing races, bearing support for axial & radial loads, Lubrication & Sealing.
- Required Oil or Grease both type of Lubrications.
- Alternatively, races can be made in case hardened steel shafts, or housings, to the specification below.
- Surface Hardness of Finished part - 60 to 62 HRC for minimum 0.6 mm depth.
- Core hardness to be 35 to 45 HRC, Surface roughness not to exceed $0.8 \mu\text{m}$, Maximum taper between races - 0.007 mm for 25 mm width.

◆ Mounting Example:



NDC Cage Assembly



Size	Nominal Torque Nm	Overrunning Speed RPM		$\phi A + 0.008$ $- 0.005$ mm	$\phi C \pm 0.013$ mm	Sprag size mm	L min. mm	ϕd min. mm	ϕb max. mm	No. of Clips	No. of Sprags	Weight kg
		Ninner max.	Nouter max.									
NDC 2222G	63	8600	4300	22.225	38.885	8.33 ± 0.075	10.0	50	15	-	12	0.030
NDC 2776	119	6900	3400	27.762	44.422	8.33 ± 0.075	13.5	58	18	-	14	0.055
NDC 3034	124	6300	3100	30.340	47.000	8.33 ± 0.075	13.5	62	20	-	14	0.060
NDC 3175(C)	159	6000	3000	31.750	48.410	8.33 ± 0.075	13.5	63	21	3	16	0.060
NDC 3809A	275	5000	2500	38.092	54.752	8.33 ± 0.075	16.0	71	25	-	18	0.085
NDC 4127(C)	224	4600	2300	41.275	57.935	8.33 ± 0.075	13.5	75	27	3	18	0.090
NDC 4445A	363	4300	2100	44.450	61.110	8.33 ± 0.075	16.0	79	29	-	20	0.095
NDC 4972(C)	306	3800	1900	49.721	66.381	8.33 ± 0.075	13.5	86	33	4	22	0.100
NDC 5476A	525	3500	1700	54.765	71.425	8.33 ± 0.075	16.0	92	36	-	24	0.110
NDC 5476A (C)	525	3500	1700	54.765	71.425	8.33 ± 0.075	16.0	92	36	4	24	0.130
NDC 5476B (C)	769	3500	1700	54.765	71.425	8.33 ± 0.075	21.0	92	36	4	24	0.180
NDC 5476C (C)	990	3500	1700	54.765	71.425	8.33 ± 0.075	25.4	92	36	4	24	0.200
NDC 5776A	604	3300	1600	57.760	74.420	8.33 ± 0.075	16.0	98	38	-	26	0.110
NDC 6334B	806	3000	1500	63.340	80.000	8.33 ± 0.075	21.0	104	42	-	26	0.175
NDC 7221(C)	675	2600	1300	72.217	88.877	8.33 ± 0.075	13.5	115	48	5	30	0.140
NDC 7221B	1279	2600	1300	72.217	88.877	8.33 ± 0.075	21.0	115	48	-	30	0.185
NDC 7221B (C)	1279	2600	1300	72.217	88.877	8.33 ± 0.075	21.0	115	48	5	30	0.210
NDC 7969C (C)	2038	2400	1200	79.698	96.358	8.33 ± 0.075	25.4	124	53	5	34	0.280
NDC 8334C	2055	2300	1100	83.340	100.000	8.33 ± 0.075	25.4	132	55	-	34	0.270
NDC 8729A	1250	2200	1100	87.290	103.960	8.33 ± 0.075	16.0	134	58	-	34	0.165
NDC 10323A (C)	1612	1800	900	103.231**	119.891	8.33 ± 0.075	16.0	155	68	5	40	0.205
NDC 12334C	4800	1500	750	123.340**	140.000	8.33 ± 0.075	25.4	184	80	-	50	0.400

Notes :

- 1) Function : Overrunning, Indexing, Backstopping
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.

- 4) Other sizes on request.
- 5) All dimensions are in mm.
- 6) We manufacturing in inch series also.
- 7) ** Extension of Tolerance to ± 0.013 permissible.

Ordering Example :

➤ NDC 2222

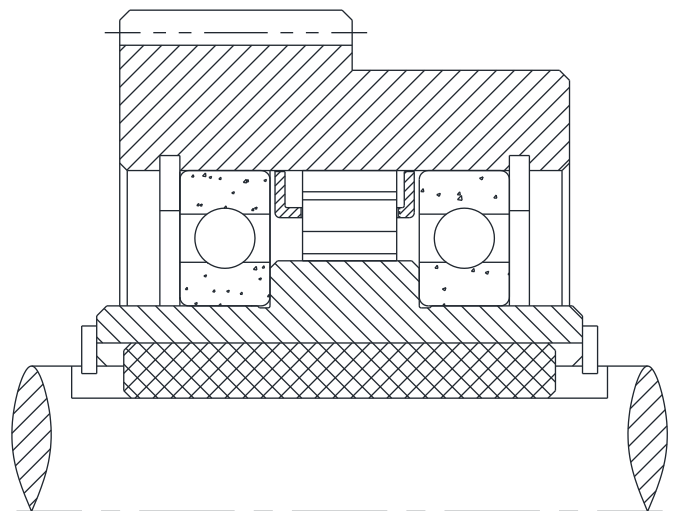
Sprag Type Freewheel Cage Assembly NSC Model



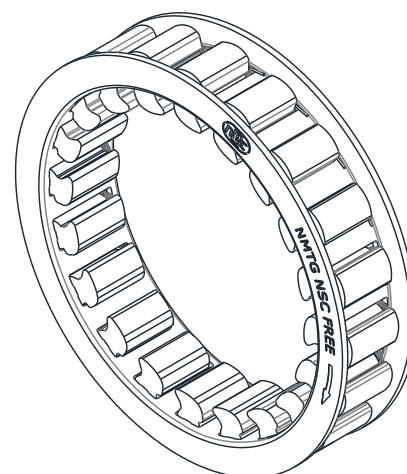
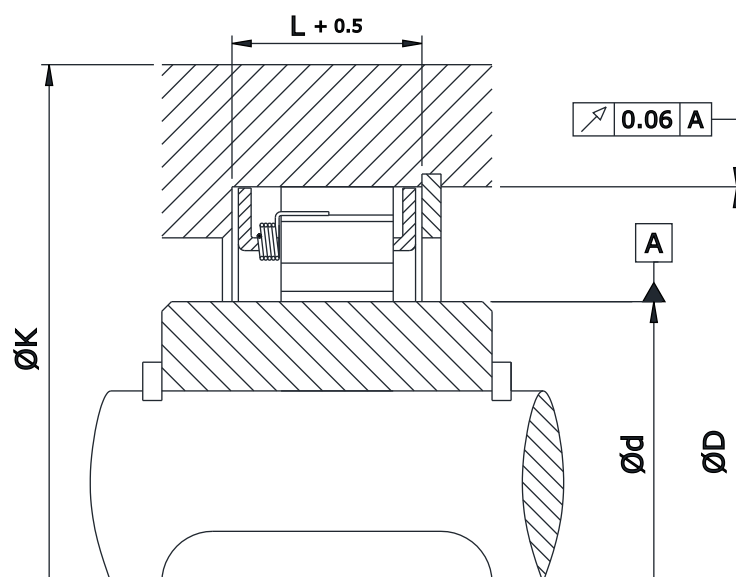
❖ Features:

- NSC cage freewheels are sprag type freewheels. NSC assembly to be installed between Inner and Outer races of customer arrangement.
- NSC cage assembly must be installed in a Design providing races, bearing support for axial & radial loads, lubrication & sealing.
- Depending on operating data, oil or grease lubrication must be provided in mounting arrangement.
- Inner race and Outer race or Housing is in Customer scope. It must be Case Hardening Steel material with Hardness 60 ± 3 .
- Case hardening depth Minimum 1.5 mm must be used, Surface roughness in between $1.6\ \mu\text{m}$ to $6.3\ \mu\text{m}$ of Both Races.

◆ Mounting Example:



NSC Cage Assembly



Model	Nominal Torque (Tn) Nm	$\varnothing d$ -0.03 -0.01 mm	$\varnothing D \pm 0.01$ mm	L mm	$\varnothing K$ mm	No. of Sprag	Weight kg
NSC 37D	275	37	55	14.5	75	14	0.06
NSC 44D	505	44	62	14.5	90	20	0.08
NSC 50H	685	50	68	18.5	90	20	0.10
NSC 57H	955	57	75	18.5	105	24	0.13
NSC 72F	2110	72	90	23.5	135	32	0.23
NSC 82C	2310	82	100	25	140	36	0.26
NSC 107C	3320	107	125	25	170	48	0.35
NSC 127C	4930	127	145	25	210	56	0.40

Notes :

- 1) Function : Backstopping, Overrunning, Indexing
- 2) $T_{max} = 2 \times T_n$.
- 3) Ready to fit, Oil & Grease lubrication required in Customer arrangement.

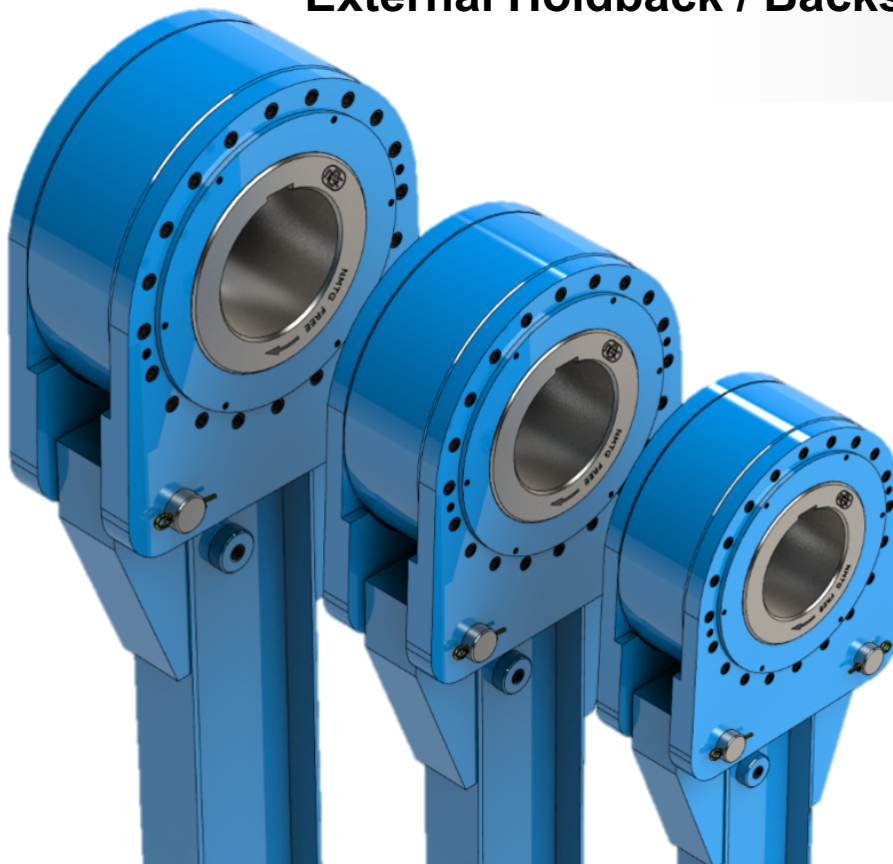
- 4) Other sizes on request.
- 5) All dimensions are in mm.

Ordering Example :

- When ordering please specify cage assembly model.
- **Example: NSC 44D**

External Holdback / Backstop Clutch

NRHD



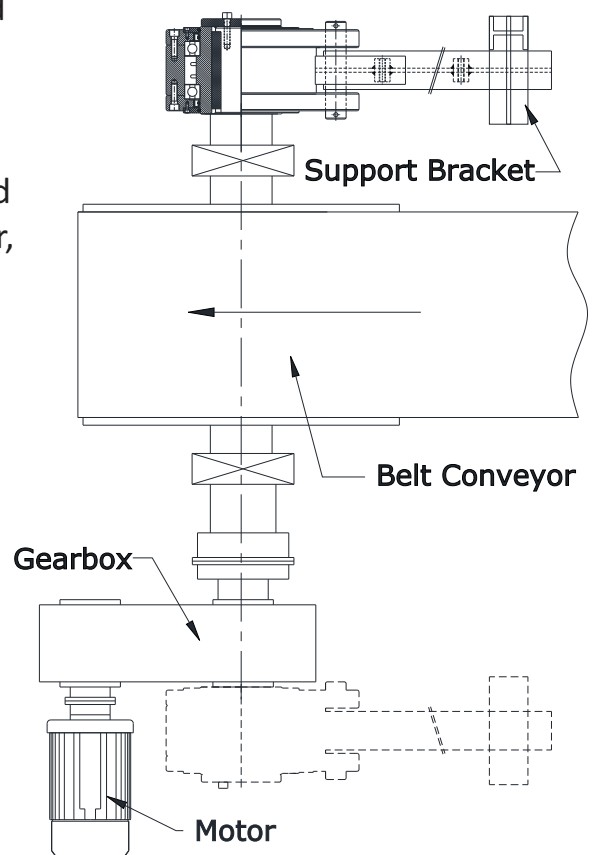
❖ Features:

- This type of Freewheel Clutches are Supplied with Lever arm & Sprag with Ball bearings support.
- This type of Freewheel Clutches are designed for use in Low speed Inclined Conveyor, Elevator, etc.
- Requires Oil / Grease Lubrication.
- Bore range: up to 356 mm.
- Transmitting torque: 505700 Nm.

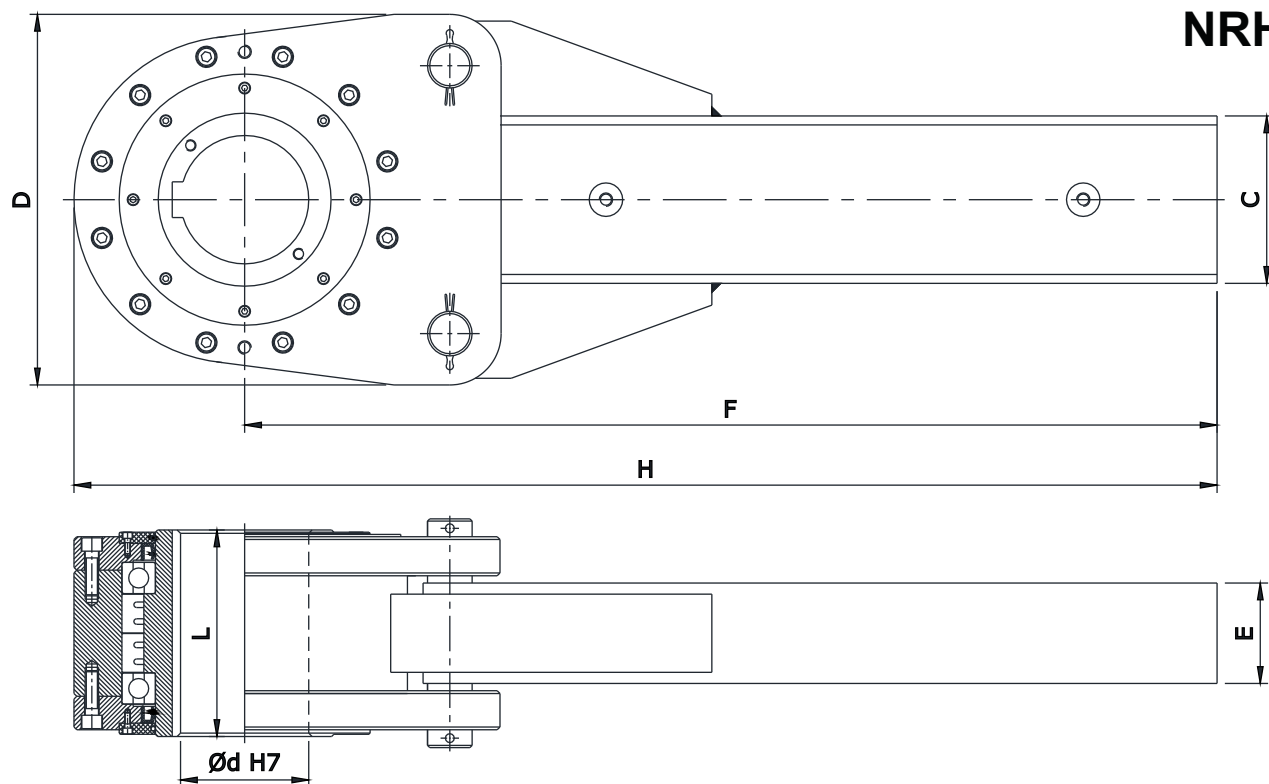
❖ Mounting:

- The back driving torque is supported by the Lever arm. The positioning of the lever arm can be adjusted at any angle. The lever arm must not be clamped into position. It must have 12.7 mm play in the axial and in the radial direction.

◆ Mounting Example:



NRHD



Model	Max. Over Running Speed Inner Race (RPM)	Nominal Torque (Tn) Nm	Max. Shaft Dia. (d) mm	D mm	C mm	E mm	H mm	L mm	F mm	Weight Kg
NRHD 700	620	5700	85	205	125	70	915	155	813	70
NRHD 775	540	10750	95	250	125	70	1090	195	965	158
NRHD 800	460	16850	115	270	150	75	1100	205	965	185
NRHD 900	400	25200	138	320	150	75	1380	205	1220	245
NRHD 950	360	31200	178	360	200	100	1755	205	1575	270
NRHD 1000	360	40500	178	430	200	100	2045	225	1830	255
NRHD 1100	360	61500	178	430	200	100	2045	255	1830	360
NRHD 1200	250	125000	229	560	250	125	2260	285	1980	595
NRHD 1300	220	149200	254	620	300	140	2415	305	2105	760
NRHD 1400	200	190000	305	770	450	150	2725	330	2390	1106
NRHD 1450	200	257500	305	770	450	150	2725	380	2390	1145
NRHD 1500	200	393200	305	790	450	150	2748	450	2390	1115
NRHD 1600	140	505700	356	830	500	180	3133	490	2745	1545

Notes :

- 1) Function : Backstopping
- 2) $T_{max} = 2 \times T_n$.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6/j6

- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in mm.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia.
- Example: NRHD 700 - 85 mm Bore Dia.

Hold back / Backstopping Selection Procedure (For Heavy Duty Application):

A : Belt Conveyor (for Short Inclined Yard Conveyor):

1) Calculate the Power to move an Empty Belt & Idlers

$$P1 = 0.06 \times f \times w \times v \times \frac{\ell + \ell_0}{367} \text{ (kW)}$$

2) Calculate the Power to move a loaded Belt horizontally

$$P2 = f \times qt \times \frac{\ell + \ell_0}{367} \text{ (kW)}$$

3) Calculate Power to move the load vertically

$$P3 = \frac{h \times qt}{367} \text{ (kW)}$$

4) Calculate the Back-stop Power

$$Pr = P3 - 0.7 (P1 + P2) \text{ (kW)}$$

5) Calculate the Back-stop Torque

$$T = \frac{9550 \times Pr}{n} \times S.F$$

6) Select the proper Clutch which satisfies the Calculated Back-stop torque

Note:

f = Friction Coefficient of Roller : 0.03 (normally used)

w = Weight of moving parts of conveyor on unload condition (kg/m)

T = Torque (Nm)

V = Velocity of conveyor (m/min.)

qt = Max. load (tons/hour)

h = Total lift (m)

ℓ = Horizontal distance between head pulley and tail pulley (m)

ℓ₀ = Modificant coefficient for **ℓ** : 49 m (Normally used)

n = Shaft revolution per minute where clutch is mounted (RPM)

B : Bucket Elevator:

1) Calculate backstop torque

$$T \text{ (Nm)} = \frac{9.8 (H+D) \times Qt \times D \times 1000}{120 \times V} \times S.F$$

2) Select the Proper Clutch which satisfies the Calculated Back-stop torque

Note:

H = Total Lift (m)

D = Pitch Circle Diameter of head Sprocket (m)

Qt = Possible maximum load (tons/hour)

V = Velocity of conveyor (m/min)

SF = Service Factor (Refer Page No. - 7)

Use the values from the table below.						
Width of Belt (mm)	400	450	500	600	750	900
Estimated weight (kg/m)	22.4	28	30	35.5	53	63
Width of Belt (mm)	1050	1200	1400	1600	1800	2000
Estimated weight (kg/m)	80	90	112	125	150	160

C : Belt Conveyor (for Long Long Yard Conveyor):

$$T = \frac{7020 \times H}{n} \times s.f$$

$$T = \frac{9550 \times kW}{n} \times s.f$$

Note:

kW = Electric power

H = Horse Power

s.f = Service factor

Hold back / Backstopping Selection Procedure (For Heavy Duty Application):

Service Factor:

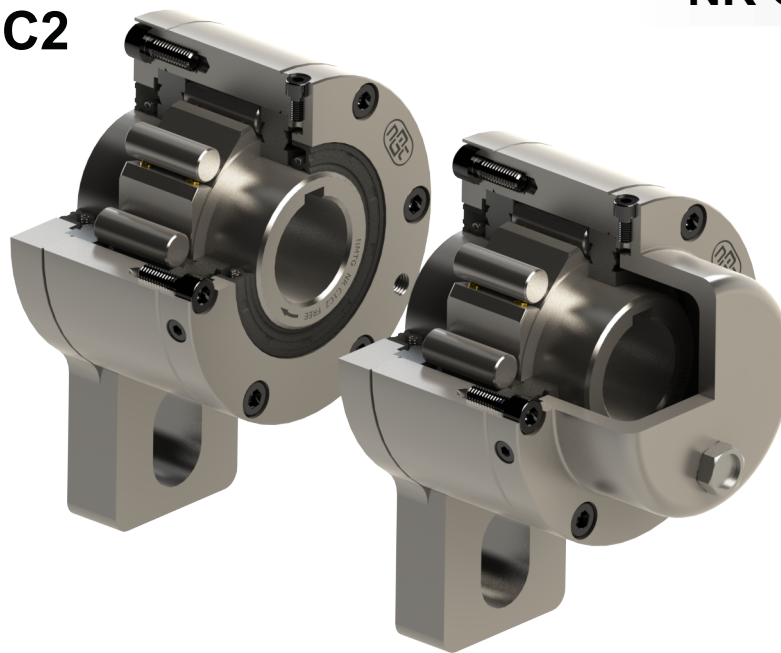
Motor Stalled Torque	
Maximum Stalled Torque or Breakdown torque % of Normal Motor Rating	Service Factor
175%	1.3
200%	1.3
250%	1.67
300%	2

Fatigue Loading	
Service Condition	Service Factor
For backstopping 3 - 10 times per day	1.5
For backstopping over 10 times per day	2

External Holdback / Backstop Clutch

NR C1C2 & C2C3

NR C1C2

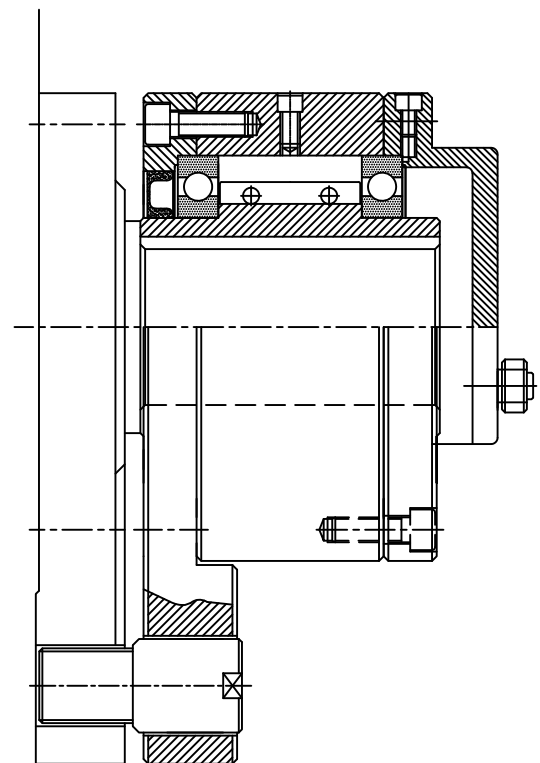


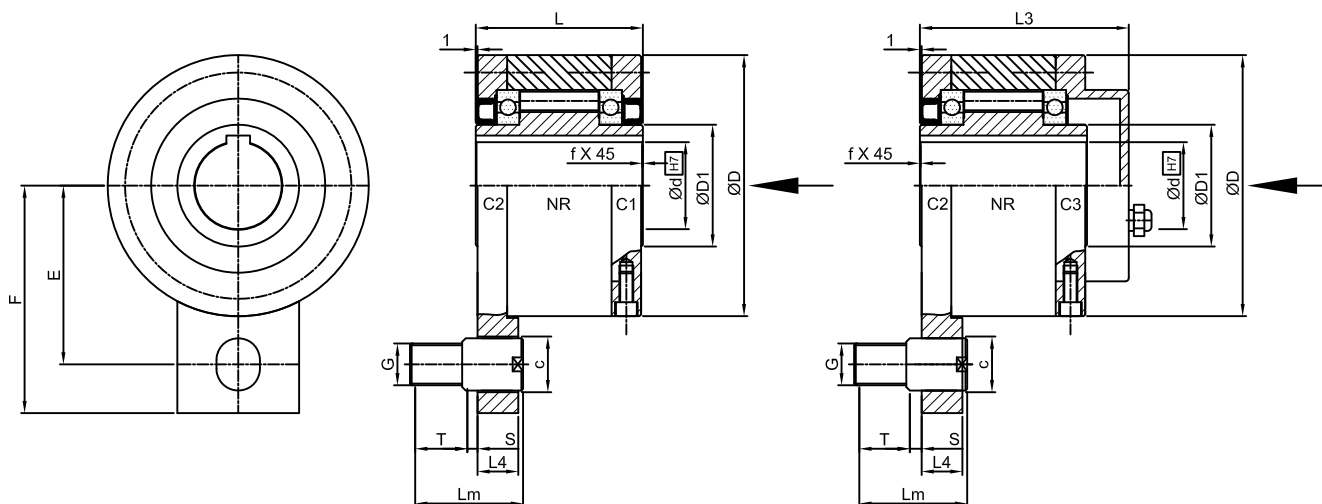
NR C2C3

◆ Features :

- Trapped rollers Freewheels NR C1C2 & C2C3 models are Self centered by means of Oil Sealing & pairs of ball bearing supported. So, unit is Self sealed designed.
- Requires Oil lubrication.
- Component mounted onto the outside diameter of Outer race should be bored to H7 tolerance & Shaft tolerance must be h6/j6.
- This type of Combinations are used as Backstops, in which C2 covers are act as Lever Arm & C1,C3 covers are used as close unit. C2 cover also called as Torque arm which has an integrated Stop bolt which must go into a slot in a fixed part of machine.
- This type of Combinations are arranged on through shafts or shaft ends.
- If C3 type End cover is used then sealant must be provided to the keyway to avoid loss of Lubrication through it. Oil feeling is been carried out after the freewheel has been installed.
- Bore range : up to 150 mm
- Transmitting torque : 70000 Nm

◆ Mounting Example:





NR C1C2

NR C2C3

d (H7)	Max. Torque	Max. Overrunning Inner RPM	D (h7)	D1	F	E	L	L3	Lm	L4	S	T	G	f	Weight
mm	Nm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	kg
12	55	3100	62	20	59	44	42	64	40	13	5	15	M12	0.5	1.4
15	125	2800	68	25	62	47	52	78	40	13	5	15	M12	0.8	1.8
20	181	2400	75	30	72	54	57	82	46	15	5	20	M16	0.8	2.3
25	288	1600	90	40	84	62	60	85	46	18	5	20	M16	1	3.4
30	500	1300	100	45	92	68	68	95	56	18	5	25	M20 x 2	1	4.5
35	725	1200	110	50	102	76	74	102	56	25	6	25	M20 x 2	1	5.6
40	1025	850	125	55	112	85	86	115	62	25	6	30	M24 x 2	1.5	8.5
45	1125	740	130	60	120	90	86	115	62	25	6	30	M24 x 2	1.5	8.9
50	2125	580	150	70	135	102	94	123	75	25	6	35	M30 x 2	1.5	12.8
55	2625	550	160	75	142	108	104	138	75	30	6	35	M30 x 2	2	16.2
60	3500	530	170	80	145	112	114	147	75	30	6	35	M30 x 2	2	19.3
70	5750	500	190	90	175	135	134	168	100	35	6	45	M36 x 2	2.5	23.5
80	8500	480	210	105	185	145	144	178	105	35	6	50	M40 x 2	2.5	32
90	14500	420	230	120	205	155	158	192	120	45	7	55	M48 x 2	3	47.2
100	20000	310	270	140	230	180	182	217	135	45	8	60	M52 x 2	3	76
130	31250	220	310	160	268	205	212	250	140	60	8	65	M60 x 2	3	110
150	70000	170	400	200	325	255	246	286	165	60	8	75	M72 x 2	4	214

Notes :

- 1) Function : Overrunning, Backstopping, Indexing
- 2) $T_{max} = 2 \times T_n$.
- 3) The maximum Overrunning speeds are for Oil lubrication only.
- 4) Shaft dia. is to be controlled within h6/j6.

- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in m.m.
- 8) We manufacturing in inch series also.

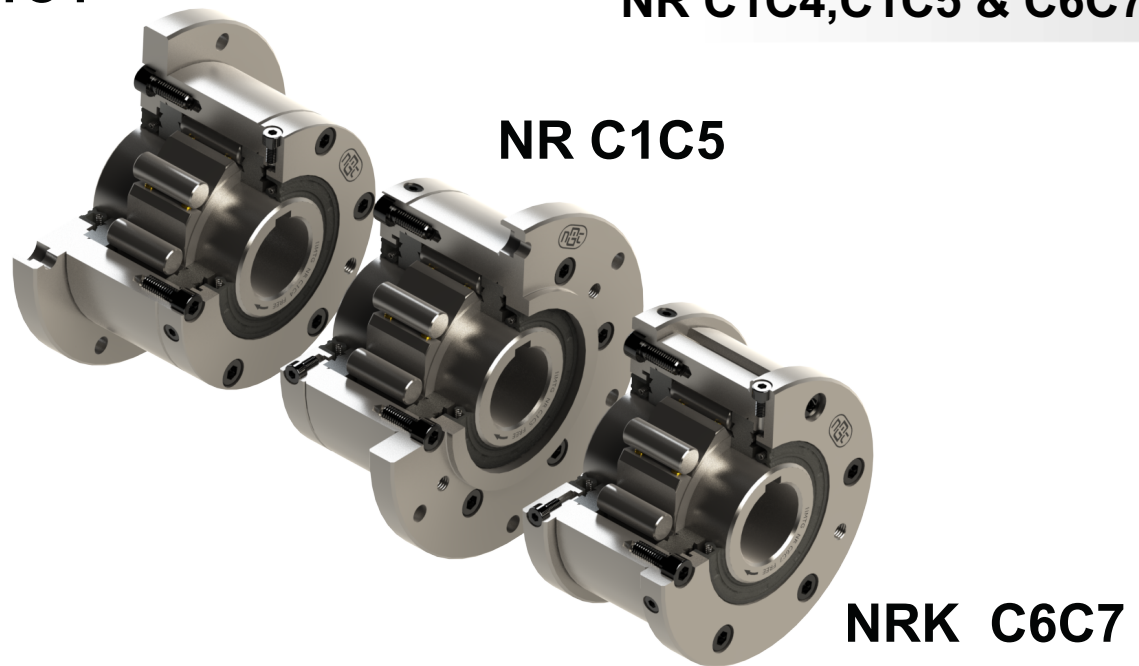
Ordering Example :

➤ When ordering please specify bore dia. with direction of Rotation of inner race freewheeling seen from Arrow, CW for Clockwise & CCW for Anti-clockwise.

➤ **NR C1C2 50 - 50 CW**

Dimensions/Design subject to modifications without any prior intimation.

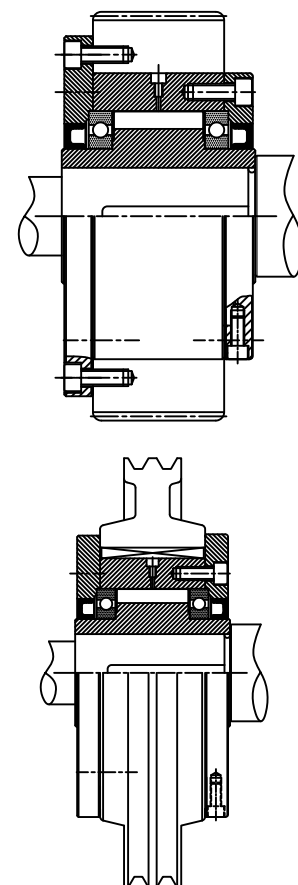
Freewheel One way clutch / Overrunning Clutch
NR C1C4 **NR C1C4,C1C5 & C6C7**

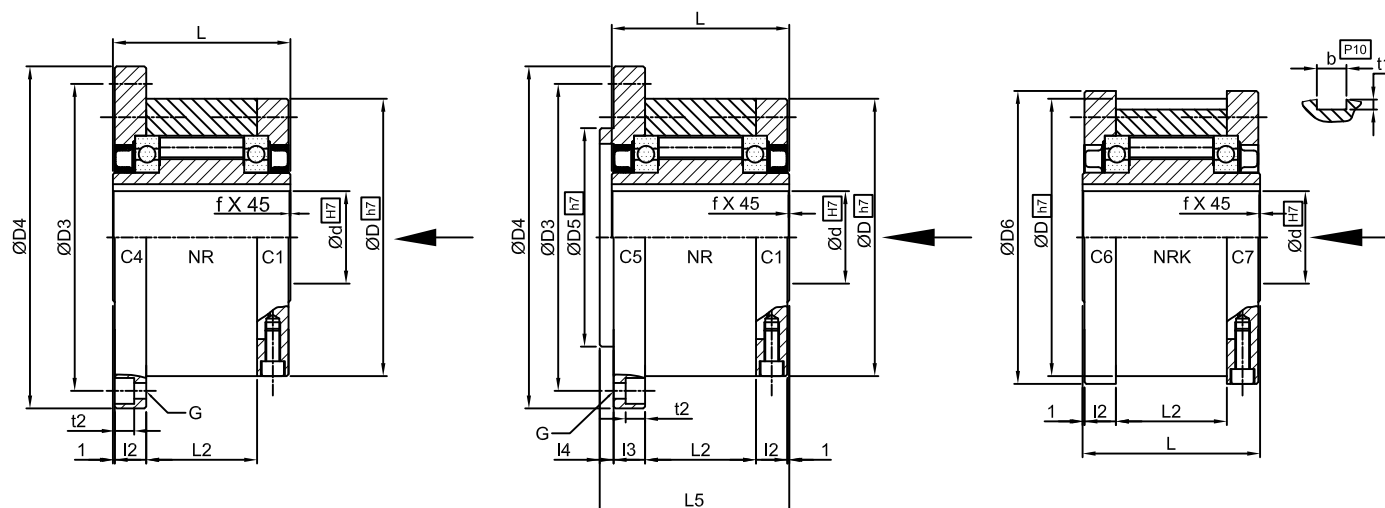


◆ **Features :**

- Trapped rollers Freewheels NR C1C4 & C1C5 models are Self centered by means of Oil Sealing & pairs of ball bearing supported So, unit is Self sealed designed.
- Requires Oil lubrication.
- Component mounted onto the outside diameter of Outer race should be bored to H7 tolerance & Shaft tolerance must be h6/j6.
- This type of Combinations are used as Overrunning & Indexing, in which C1 covers are act as close unit, C4 covers as a flange type cover & C5 as a Spigot type flange cover.
- Bore range : up to 150 mm
- Transmitting torque : 70000 Nm

◆ **Mounting Example:**





NR C1C4

NR C1C5

NRK C6C7

d (H7) mm	Max. Torque Nm	Max. Overrunning Inner RPM	Max. Overrunning Outer RPM	D (H7) Nm	D4 mm	D3 Nm	D5 (h7) mm	D6 Nm	L mm	L2 Nm	L5 mm	I2 Nm	I3 mm	I4 Nm	t2 mm	t1 Nm	b ^{P10} mm	G x No.	f mm	Weight kg
12	55	3100	4700	62	85	72	42	70	42	20	44	10	10	3	5.7	2.5	4	5.5 x 3	0.5	1.2
15	125	2800	4400	68	92	78	47	76	52	28	54	11	11	3	5.7	3	5	5.5 x 3	0.8	1.6
20	181	2400	4100	75	98	85	55	84	57	34	59	10.5	10.5	3	5.7	3.5	6	5.5 x 4	0.8	1.9
25	288	1600	3800	90	118	104	68	99	60	35	62	11.5	11.5	3	6.8	4	8	6.6 x 4	1	2.9
30	500	1300	2800	100	128	114	75	109	68	43	70	11.5	11.5	3	6.8	4	8	6.6 x 6	1	3.9
35	725	1200	2600	110	140	124	80	119	74	45	76	13.5	13	3.5	6.8	5	10	6.6 x 6	1	4.9
40	1025	850	2300	125	160	142	90	135	86	53	88	15.5	15	3.5	9	5	12	9 x 6	1.5	7.5
45	1125	740	2200	130	165	146	95	140	86	53	88	15.5	15	3.5	9	5.5	14	9 x 8	1.5	7.8
50	2125	580	1950	150	185	166	110	160	94	64	96	14	13	4	9	5.5	14	9 x 8	1.5	10.8
55	2625	550	1800	160	204	182	115	170	104	66	106	18	17	4	11	6	16	11 x 8	2	14
60	3500	530	1700	170	214	192	125	182	114	78	116	17	16	4	11	7	18	11 x 10	2	16.8
70	5750	500	1600	190	234	212	140	202	134	95	136	18.5	17.5	4	11	7.5	20	11 x 10	2.5	20.8
80	8500	480	1500	210	254	232	160	222	144	100	146	21	20	4	11	9	22	11 x 10	2.5	27
90	14500	420	1300	230	278	254	180	242	158	115	160	20.5	19	4.5	13	9	25	14 x 10	3	40
100	20000	310	1100	270	335	305	210	282	182	120	184	30	28	5	17.5	10	28	18 x 10	3	67
130	31250	220	900	310	380	345	240	322	212	152	214	29	27	5	17.5	11	32	18 x 12	3	94
150	70000	170	700	400	485	445	310	415	246	180	248	32	30	5	21.5	12	36	22 x 12	4	187

Notes :

- 1) Function : Overrunning, Backstopping, Indexing
- 2) T_{max} = 2 x T_n.
- 3) The maximum Overrunning speeds are for Oil lubrication only.
- 4) Shaft dia. is to be controlled within h6/j6.

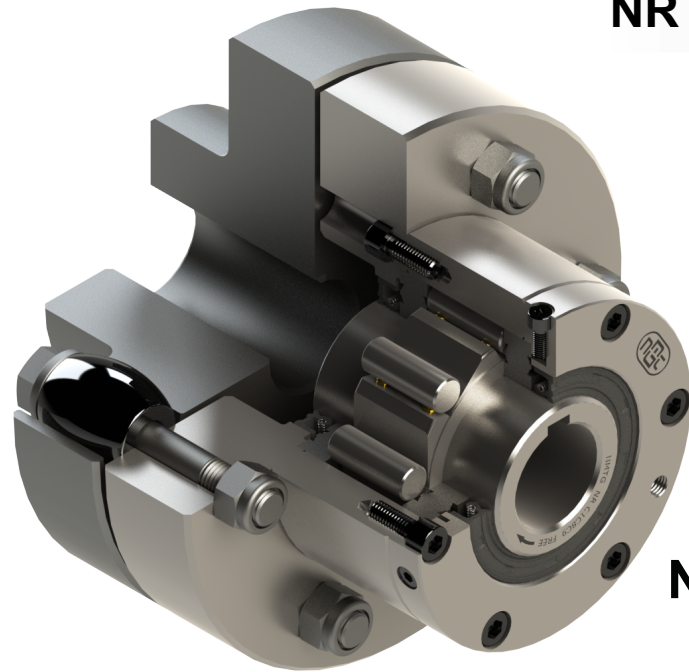
- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in m.m.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia. with direction of Rotation of inner race freewheeling seen from Arrow, CW for Clockwise & CCW for Anti-clockwise.
- **NR C1C4 50 - 50 CW**

Dimensions/Design subject to modifications without any prior intimation.

**Freewheel One way clutch / Overrunning Clutch
NR C1C8C9 / NFRC**

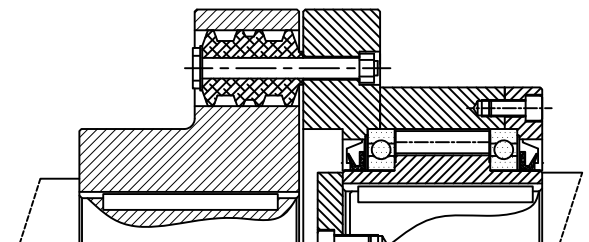


NR C1C8C9

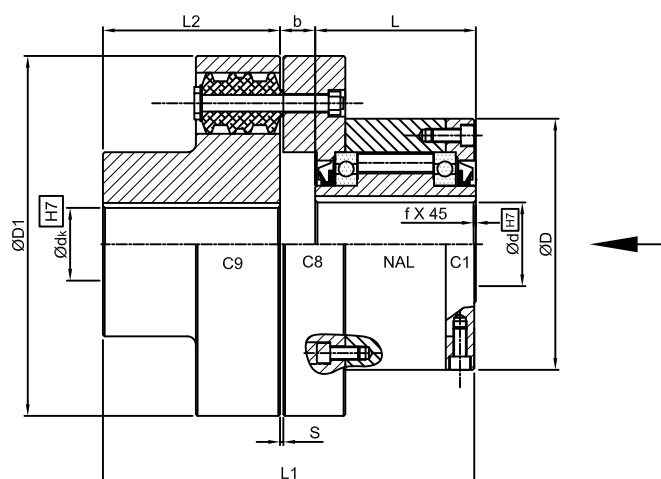
◆ **Features :**

- Trapped rollers Freewheels NR C1C8C9 is Self centered by means of V-Sealing & pairs of ball bearing supported So, unit is Self sealed designed.
- Requires Oil lubrication.
- Component mounted onto the outside diameter of Outer race should be bored to H7 tolerance & Shaft tolerance must be h6/j6.
- C1 cover is used to close the unit.
- This type of Combination is used as Overrunning. In this design, freewheel is connected to flexible Coupling(C9) for inline mounting. This type of Coupling is a high performance coupling used to damp torsional vibration & to accept misalignment without access bearing load.
- Bore range : up to 250 mm
- Transmitting torque : 250000 Nm

◆ **Mounting Example:**



Dimensions/Design subject to modifications without any prior intimation.



NR C1C8C9

d (H7)	Max. Torque	Max. Overrunning Inner Outer RPM	d _k (H7)	D	D1	L	L2	L1	b	s	f	Weight
mm	Nm		mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
12	55	2500 6000	12 - 25	62	97	42	35	90	13	3	0.5	3
15	122	1900 6000	16 - 30	68	112	52	40	110	18	3	0.8	4.4
20	122	1600 5600	16 - 30	75	112	57	40	114.5	17.5	3	0.8	4.6
25	288	1400 4500	20 - 40	90	130	60	50	127.5	17.5	3	1	6.4
30	500	1300 4100	20 - 50	100	160	68	60	148	20	2	1	11
35	725	1100 3800	25 - 65	110	190	74	75	168	19	2	1	17
40	1025	950 3400	25 - 65	125	190	86	75	178	17	2	1.5	19
45	1050	900 3200	25 - 65	130	190	86	75	178	17	2	1.5	19
50	1750	850 2800	30 - 75	150	225	92	90	207	25	2.5	1.5	31
55	2625	720 2650	35 - 90	160	270	104	100	233.5	29.5	3	2	47
60	2750	680 2450	35 - 90	170	270	114	100	244	30	3	2	49
70	5750	580 2150	45 - 110	190	340	134	140	312.5	38.5	3	2.5	90
80	8500	480 1900	55 - 125	210	380	144	160	340	36	3	2.5	107
90	13750	380 1700	65 - 140	230	440	158	180	388	50	3.5	3	170
100	20000	350 1450	75 - 160	270	500	182	200	422.5	40.5	3.5	3	230
120	30000	250 1250	85 - 180	310	560	202	220	471	49	4	3	330
150	43750	180 980	95 - 200	400	640	246	250	543	47	4	4	500
200	97500	120 750	125 - 250	520	880	326	320	700.5	54.5	4.5	5	965
250	250000	100 620	160 - 320	610	1160	396	400	868	72	5	5	1725

Notes :

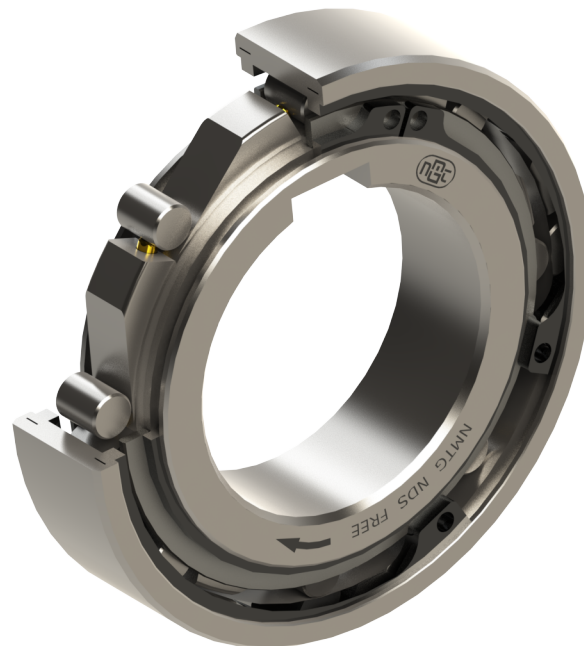
- 1) Function : Overrunning, Backstopping, Indexing
- 2) $T_{max} = 2 \times T_n$.
- 3) The maximum Overrunning speeds are for Oil lubrication only.
- 4) Shaft dia. is to be controlled within h6/j6.
- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in m.m.
- 8) We manufacturing in inch series also.

Ordering Example :

➤ When ordering please specify bore dia. with direction of Rotation of inner race freewheeling seen from Arrow, CW for Clockwise & CCW for Anti-clockwise.

➤ **NR C1C8C9 50 - 50 CW**

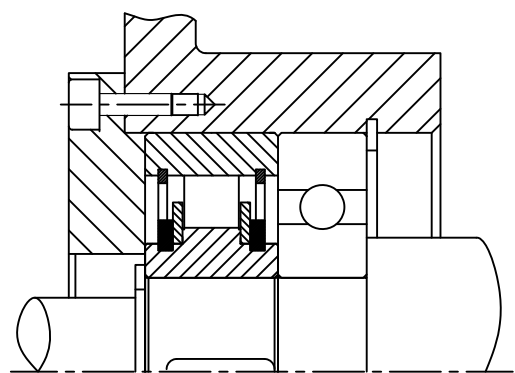
**Freewheel One way clutch
NDS Model**

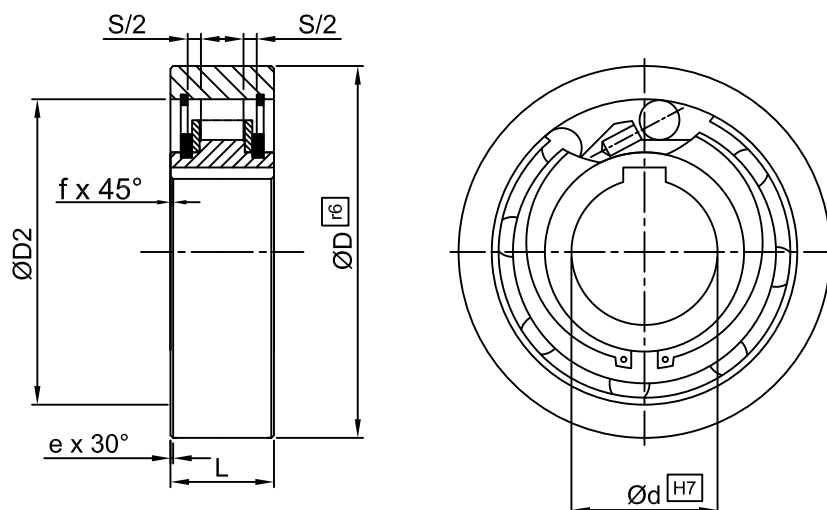


◆ **Features :**

- Trapped rollers Freewheels NLD model is non-bearing supported, So bearings are required to support axial & radial loads.
- Lubrication & Sealing must be provided for Installation.
- Inner race is keyed to shaft, expect 6mm bore.
- Outer race has positive r6 Tolerance to give a press fit in H7 Housing. Outer Housing must be strong enough to not expand after assembly.
- This Design can accept an axial misalignment of inner & outer race of $\pm S/2$.
- Bore range : up to 80 mm
- Transmitting torque : 1063 Nm

◆ **Mounting Example:**





NDS

d (H7) mm	Max. Torque Nm	Max. Overrunning Inner Outer RPM	D (r6) mm	D2 mm	L mm	S mm	e mm	f mm	Weight kg
6	2.1	5000 7500	19	15.8	6	0.3	0.6	0.3	0.01
8	3.8	4300 6500	24	20	8	1.3	0.6	0.6	0.02
10	6.8	3500 5200	30	25.9	9	1.3	0.6	0.6	0.03
12	13	3200 4800	32	28	10	1.3	0.6	0.6	0.04
15	14	2800 4300	35	31	11	1.4	0.6	0.6	0.05
20	40	2200 3300	47	40	14	2.4	0.8	0.8	0.12
25	56	1900 2900	52	45.9	15	2.4	0.8	0.8	0.14
30	90	1600 2400	62	55	16	2.4	0.8	1	0.22
35	143	1300 2000	72	64	17	2.5	0.8	1	0.31
40	185	1200 1800	80	72	18	2.5	0.8	1	0.39
45	218	1000 1600	85	77	19	2.5	1.2	1	0.44
50	230	950 1500	90	82	20	2.5	1.2	1	0.49
55	308	800 1300	100	90	21	2.5	1.2	1	0.66
60	508	700 1100	110	100	22	2.5	1.2	1.5	0.81
80	1063	600 900	140	128	26	2.5	1.2	1.5	1.41

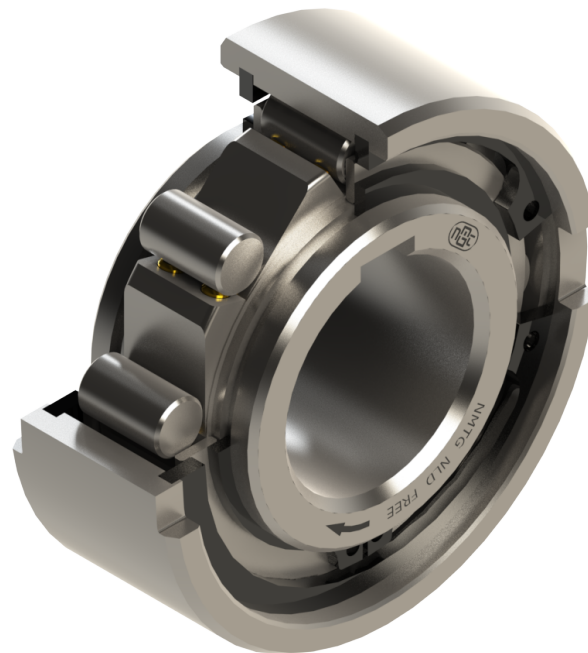
Notes :

- 1) Function : Overrunning ing
- 2) $T_{max} = 2 \times T_n$.
- 3) The maximum Overrunning speeds are for Oil lubrication only.
- 4) Shaft dia. is to be controlled within h6/j6.
- 5) NDS 6 without keyway
NDS 8 to NDS 12 keyway to DIN 6885 - 1
Other sizes as per DIN 6885 - 3.
- 6) Other sizes on request.
- 7) All dimensions are in m.m.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia.
- **NDS 50 - 50**

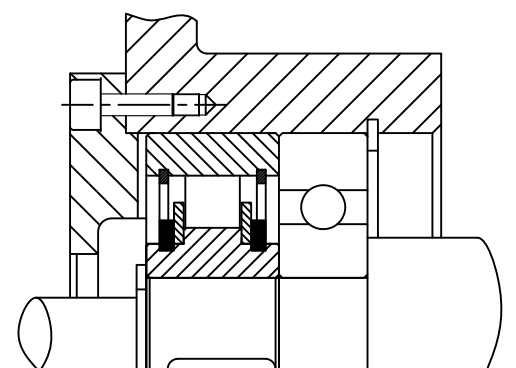
**Freewheel One way clutch
NLD Model**

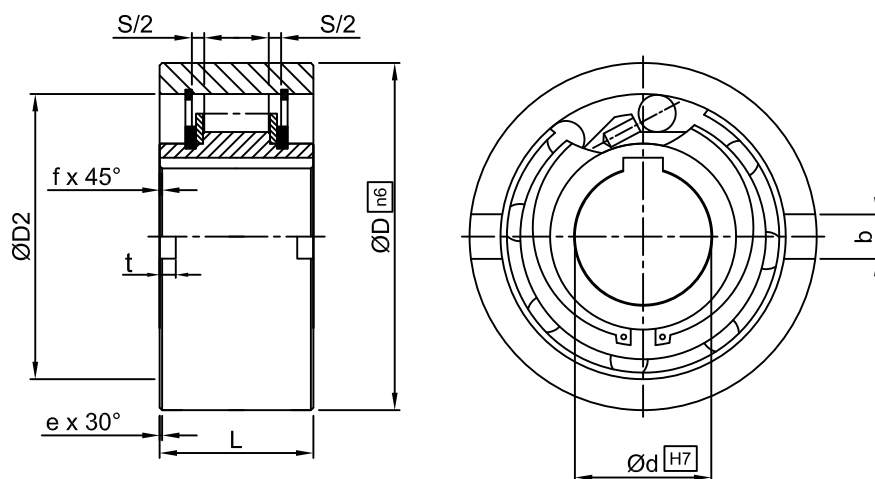


◆ **Features :**

- Trapped rollers Freewheels NLD model is non-bearing supported, So bearings are required to support axial & radial loads.
- Lubrication & Sealing must be provided for Installation.
- Outer race has positive n6 Tolerance to give a press fit in H7 Housing. Additional notches are provided in outer race for positive Torque Transmission.
- If Housing is to K6 Tolerance, use of notches is not necessary, but Outer Housing must be strong enough to not expand after assembly.
- This Design can accept an axial misalignment of inner & outer race of $\pm S/2$.
- Bore range : up to 200 mm
- Transmitting torque : 44500 Nm

◆ **Mounting Example:**





NLD

d (H7) mm	Max. Torque Nm	Max. Overrunning Inner Outer RPM	D (n6) mm	D2 mm	L mm	S mm	e mm	b mm	t mm	f mm	Weight kg
8	12	3300 5000	35	28	13	2.4	0.6	4	1.4	0.3	0.07
12	12	3300 5000	35	28	13	2.4	0.6	4	1.4	0.3	0.06
15	30	2400 3600	42	37	18	2.4	0.8	5	1.8	0.3	0.11
17	49	2300 3400	47	40	19	2.4	1.2	5	2.3	0.8	0.15
20	78	2100 3100	52	42	21	2.4	1.2	6	2.3	0.8	0.19
25	125	1700 2600	62	51	24	2.4	1.2	8	2.8	0.8	0.38
30	255	1400 2200	72	60	27	2.4	1.8	10	2.5	1	0.54
35	383	1200 1900	80	70	31	2.4	1.8	12	3.5	1	0.74
40	538	1100 1700	90	78	33	2.5	1.8	12	4.1	1	0.92
45	780	1000 1600	100	85	36	2.5	1.8	14	4.6	1	1.31
50	1013	850 1350	110	92	40	2.5	1.8	14	5.6	1	1.74
60	1825	750 1050	130	110	46	3.6	2.6	18	5.5	1.5	2.77
70	2300	600 950	150	125	51	3.6	2.6	20	6.9	1.5	4.16
80	3275	550 850	170	140	58	3.6	2.6	20	7.5	1.5	6.09
90	5325	500 750	190	160	64	3.6	2.6	20	8	2	8.2
100	7250	450 680	215	175	73	3.6	2.6	24	8.5	2	12.6
120	13500	370 550	260	215	86	3.6	2.6	28	10	2.5	22
150	26625	300 460	320	260	108	3.6	3.6	32	12	2.5	42
200	44500	230 350	420	350	138	7.6	3.6	45	16	3	93

Notes :

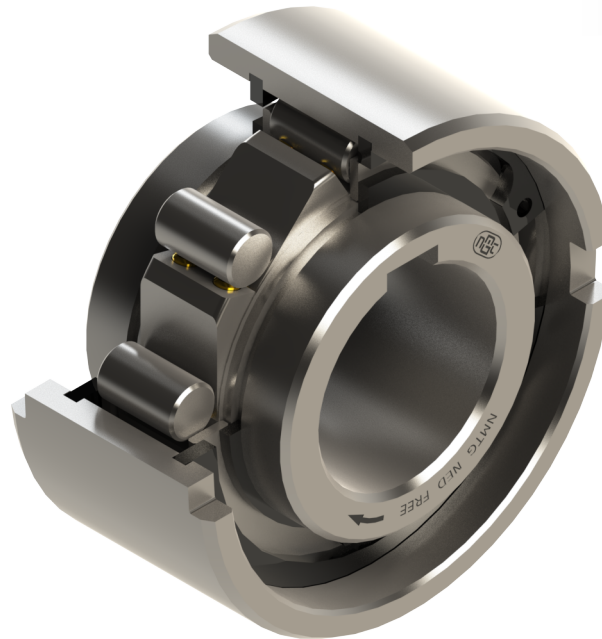
- 1) Function : Overrunning ing
- 2) $T_{max} = 2 \times T_n$.
- 3) The maximum Overrunning speeds are for Oil lubrication only.
- 4) Shaft dia. is to be controlled within h6/j6.

- 5) NLD 8 to NLD 12, NLD 200 keyway to DIN 6885 - 1
Other sizes as per DIN 6885 - 3.
- 6) Other sizes on request.
- 7) All dimensions are in m.m.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia.
- **NLD 50 - 50**

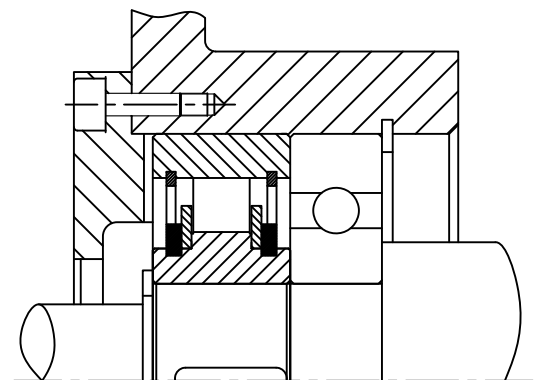
**Freewheel One way clutch
NED Model**

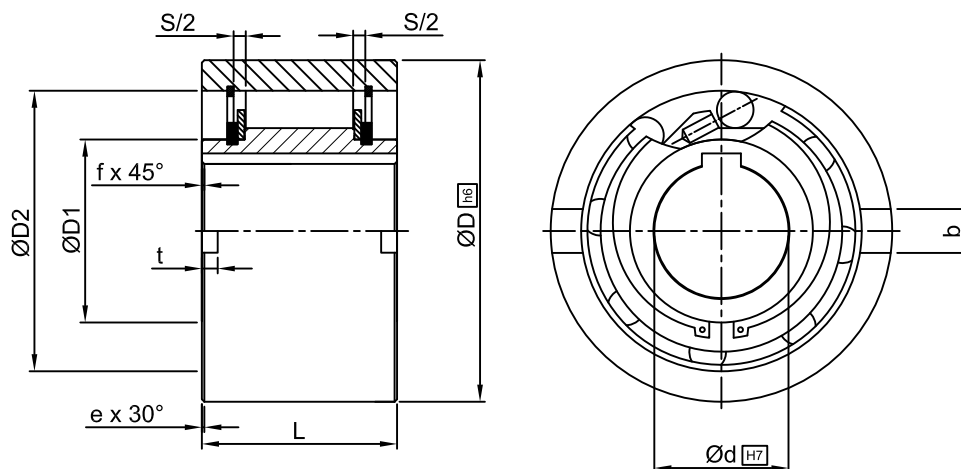


◆ **Features :**

- Trapped rollers Freewheels NLD model is non-bearing supported, So bearings are required to support axial & radial loads.
- Lubrication & Sealing must be provided for Installation.
- Inner race is keyed to shaft & Outer race has h6 Tolerance & should be fitted in Housing with a K7 Tolerance. Additional notches are provided in outer race for positive Torque Transmission.
- If Housing is to R6 Tolerance, use of notches is not necessary, but Outer Housing must be strong enough to not expand after assembly.
- This Design can accept an axial misalignment of inner & outer race of $\pm S/2$.
- Bore range : up to 70 mm
- Transmitting torque : 5813 Nm

◆ **Mounting Example:**





NED

d (H7)	Max. Torque	Max. Overrunning Inner	Max. Overrunning Outer	D (h6)	D1	D2	L	S	e	b	t	f	Weight
mm	Nm	RPM		mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
12	17	3100	6000	37	20	28	20	4.5	0.8	6	3	0.5	0.11
15	55	2300	5400	47	26	37	30	4.5	1.2	7	3.5	0.8	0.30
20	146	2000	3600	62	35	50	34	5.5	1.2	8	3.5	0.8	0.55
25	285	1700	2600	80	45	68	37	6.5	1.8	9	4	1	0.98
30	500	1500	2100	90	50	75	44	6.2	1.8	12	5	1	1.50
35	720	1300	1950	100	55	80	48	3.8	1.8	13	6	1	2
40	1030	1200	1700	110	60	90	56	3.8	1.8	15	7	1.5	2.80
45	1125	1050	1600	120	65	95	56	3.8	2.6	16	7	1.5	3.30
50	2150	950	1300	130	75	110	63	5.8	2.6	17	8	1.5	4.20
55	2675	850	1200	140	82	115	67	3.8	2.6	18	9	2	5.20
60	3500	800	1100	150	90	125	78	7.6	2.6	18	9	2	6.80
70	5813	650	900	170	100	140	95	7.6	2.6	20	9	2.5	10.5

Notes :

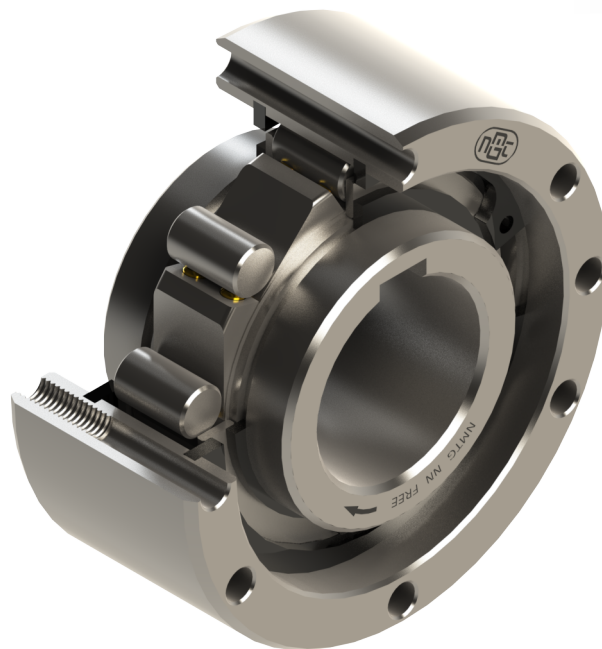
- 1) Function : Overrunning
- 2) $T_{max} = 2 \times T_n$.
- 3) The maximum Overrunning speeds are for Oil lubrication only.
- 4) Shaft dia. is to be controlled within h6/j6.

- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in m.m.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia.
- **NED 50 - 50**

Freewheel One way clutch / Backstop Clutch NN Model

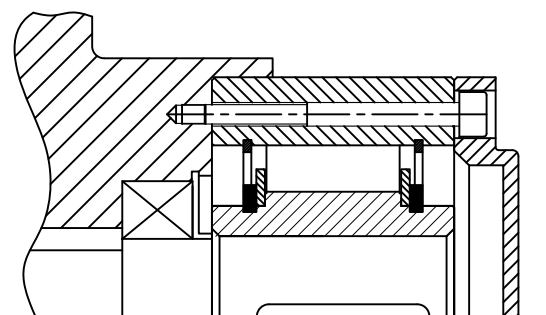


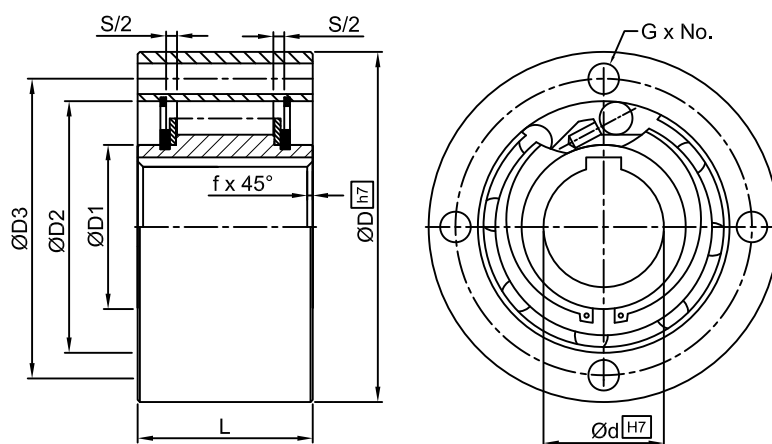
NN

◆ Features :

- Trapped rollers Freewheels NN model is non-bearing supported, So bearings are required to support axial & radial loads.
- Lubrication & Sealing must be provided for Installation.
- Standard Lubrication is Oil.
- Inner race is keyed to shaft & Outer race should be fitted in Housing with a H7 Tolerance.
- Connection of Outer race is through Bolts of grade 10.9 or better.
- This Design can accept an axial misalignment of inner & outer race of $\pm S/2$.
- Bore range : up to 250 mm
- Transmitting torque : 225000 Nm

◆ Mounting Example:





NN

d (H7)	Max. Torque	Max. Overrunning Inner Outer RPM	D (h7)	D1	D2	D3	L	S	G x No.	f	Weight
mm	Nm		mm	mm	mm	mm	mm	mm		mm	kg
12	17	3100 6200	47	20	28	38	20	4.5	5.5 x 3	0.5	0.21
15	55	2300 5600	55	26	37	45	30	4.5	5.5 x 3	0.8	0.44
20	146	2000 4800	68	35	50	58	34	5.5	5.5 x 4	0.8	0.70
25	285	1700 4000	90	45	68	78	37	6.5	5.5 x 6	1	1.30
30	500	1500 3400	100	50	75	87	44	6.5	6.6 x 6	1	2
35	720	1300 2800	110	55	80	96	48	6.5	6.6 x 6	1	2.60
40	1030	1200 2500	125	60	90	108	56	7.6	9 x 6	1.5	3.90
45	1125	1050 2200	130	65	95	112	56	7.6	9 x 8	1.5	4
50	2150	950 2050	150	75	110	132	63	7.6	9 x 8	1.5	6
55	2675	850 1950	160	82	115	138	67	7.6	11 x 8	2	7.20
60	3500	800 1800	170	90	125	150	78	7.6	11 x 10	2	9.20
70	5813	650 1700	190	100	140	165	95	7.6	11 x 10	2.5	11.80
80	6250	500 1500	210	115	160	185	100	7.6	11 x 10	2.5	15.60
90	10750	400 1300	230	130	180	206	115	7.6	14 x 10	3	24.70
100	15000	350 1150	270	150	210	240	120	7.6	18 x 10	3	35.80
120	25000	230 900	310	180	240	278	140	9.6	18 x 12	4	54.30
150	57500	160 600	400	230	310	360	180	9.6	22 x 12	4	116
200	135000	125 460	520	260	400	460	240	10.6	26 x 18	5	267
250	225000	100 380	610	320	480	545	300	10.6	33 x 20	5	461

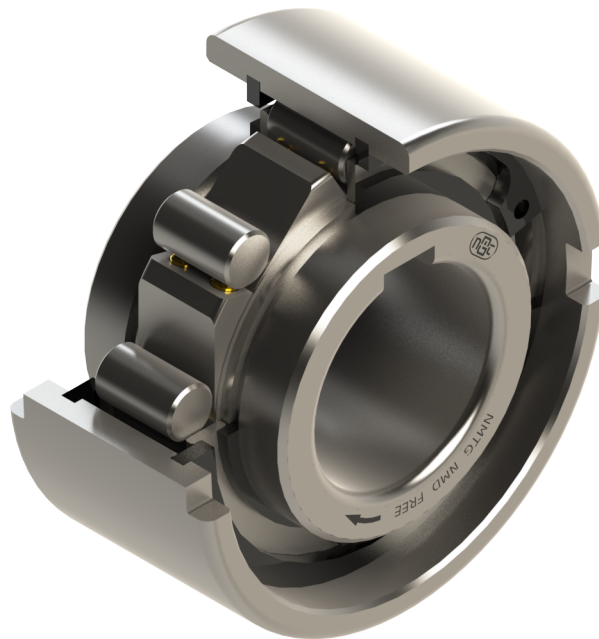
Notes :

- 1) Function : Overrunning
- 2) $T_{max} = 2 \times T_n$.
- 3) The maximum Overrunning speeds are for Oil lubrication only.
- 4) Shaft dia. is to be controlled within h6/j6.
- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in m.m.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia.
- **NN 50 - 50**

**Freewheel One way clutch
NMD Model**

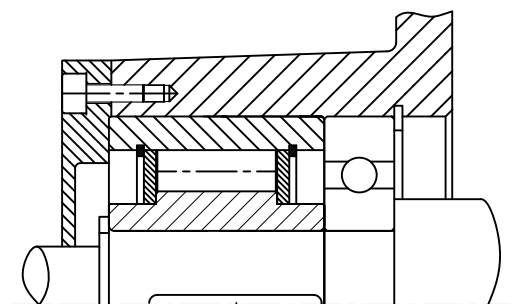


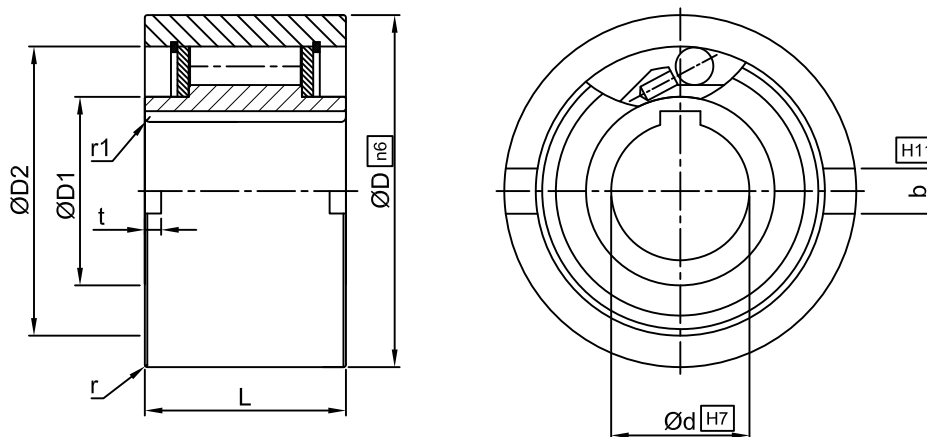
NMD

◆ **Features :**

- Trapped rollers Freewheels NMD model is non-bearing supported, So bearings are required to support axial & radial loads.
- Lubrication & Sealing must be provided for Installation.
- Standard Lubrication is Oil.
- Inner race is keyed to shaft & Outer race has a positive n6 Tolerance to give a press fit in Housing with a H7 Tolerance. Additional side notches are provided for positive Torque Transmission.
- If the Housing Tolerance is to K6, use of notches is not necessary, but the Housing must be strong enough to not expand after Assembly.
- Bore range : up to 150 mm
- Transmitting torque : 44375 Nm

◆ **Mounting Example:**





NMD

d (H7)	Max. Torque	Max. Overrunning Inner	Max. Overrunning Outer	D (n6)	D1	D2	L	r	r1	b	t	Weight
mm	Nm	RPM		mm	mm	mm	mm	mm	mm	mm	mm	kg
8	20	5000	6000	37	20	30	20	1	1.5	6	3	0.1
12	20	5000	6000	37	20	30	20	1	1.5	6	3	0.1
15	78	4500	5400	47	26	37	30	1.5	1.5	7	3.5	0.3
20	188	3000	3600	62	37	52	36	2	2	8	3.5	0.6
25	250	2200	2600	80	49	68	40	2.5	2	9	4	1.1
30	500	1800	2100	90	52.5	75	48	2.5	2	12	5	1.6
35	663	1600	1950	100	58	80	53	2.5	2.5	13	6	2.3
40	1100	1250	1700	110	62	90	63	3	2.5	15	7	3.1
45	1500	1100	1500	120	69	95	63	3	2.5	16	7	3.7
50	2375	850	1300	130	82	110	80	3.5	3	17	8.5	5.4
55	2500	800	1200	140	83	115	80	3.5	3	18	9	6.1
60	4250	700	1100	150	93.5	125	95	3.5	3.5	18	9	8.5
70	5875	620	900	170	106	140	110	3.5	3.5	20	9	13
80	10000	550	800	190	122	160	125	4	3.5	20	9	18
90	17250	480	700	215	133	180	140	4	4	24	11.5	25.3
100	19625	400	600	260	157	210	150	4	4	28	14.5	42.1
130	34750	300	480	300	188	240	180	5	5	32	17	65
150	44375	250	400	320	205	260	180	5	5	32	17	95

Notes :

- 1) Function : Overrunning
- 2) $T_{max} = 2 \times T_n$.
- 3) The maximum Overrunning speeds are for Oil lubrication only.
- 4) Shaft dia. is to be controlled within h6/j6.

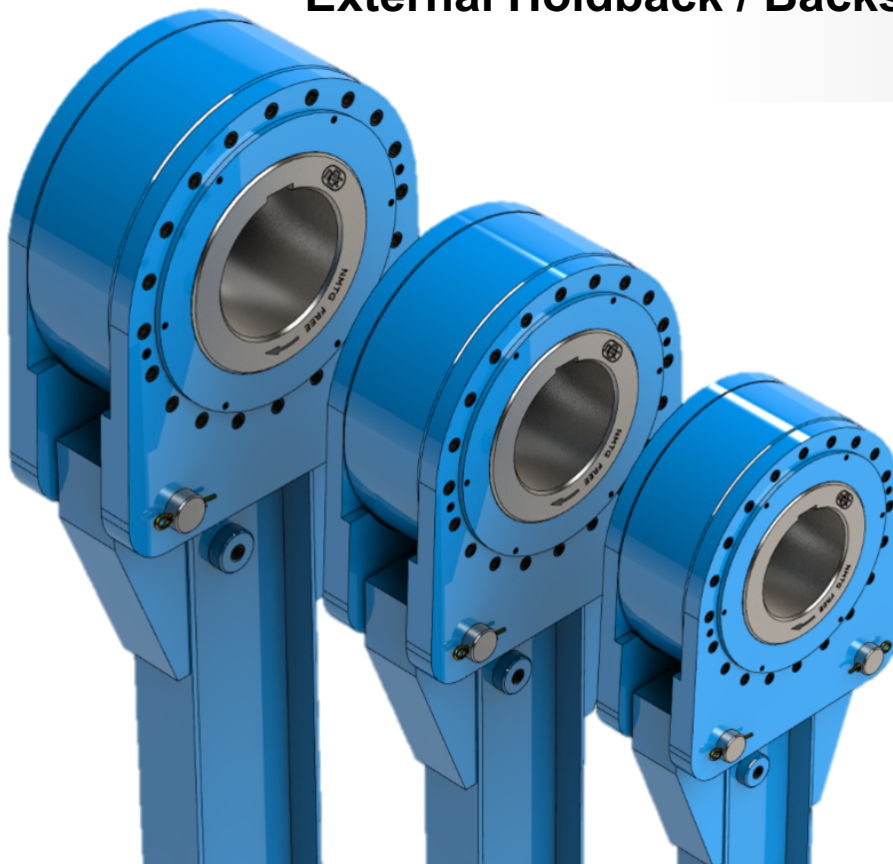
- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in m.m.
- 8) We manufacturing in inch series also.

Ordering Example :

- When ordering please specify bore dia.
- **NMD 50 - 50**

External Holdback / Backstop Clutch

NRSC



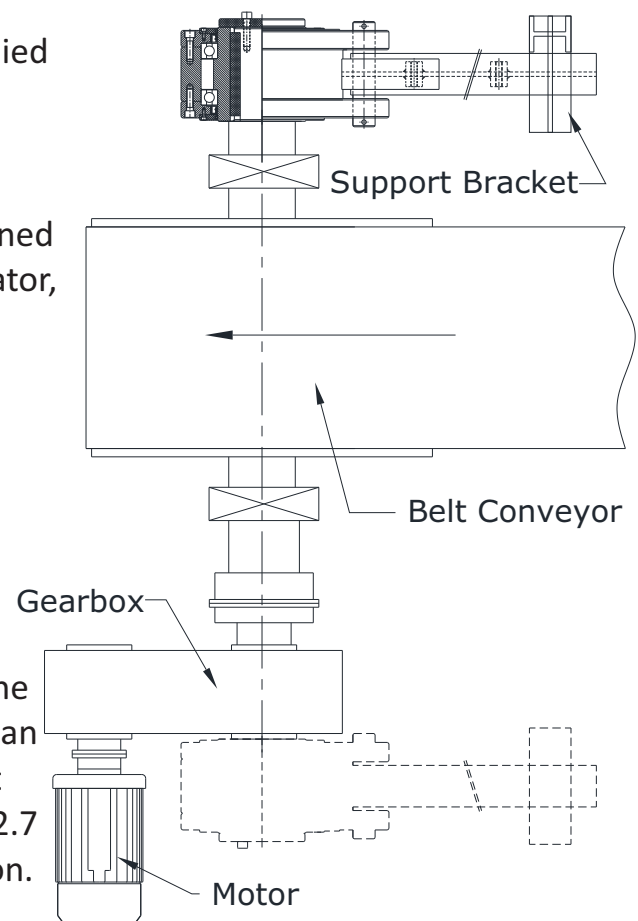
❖ Features:

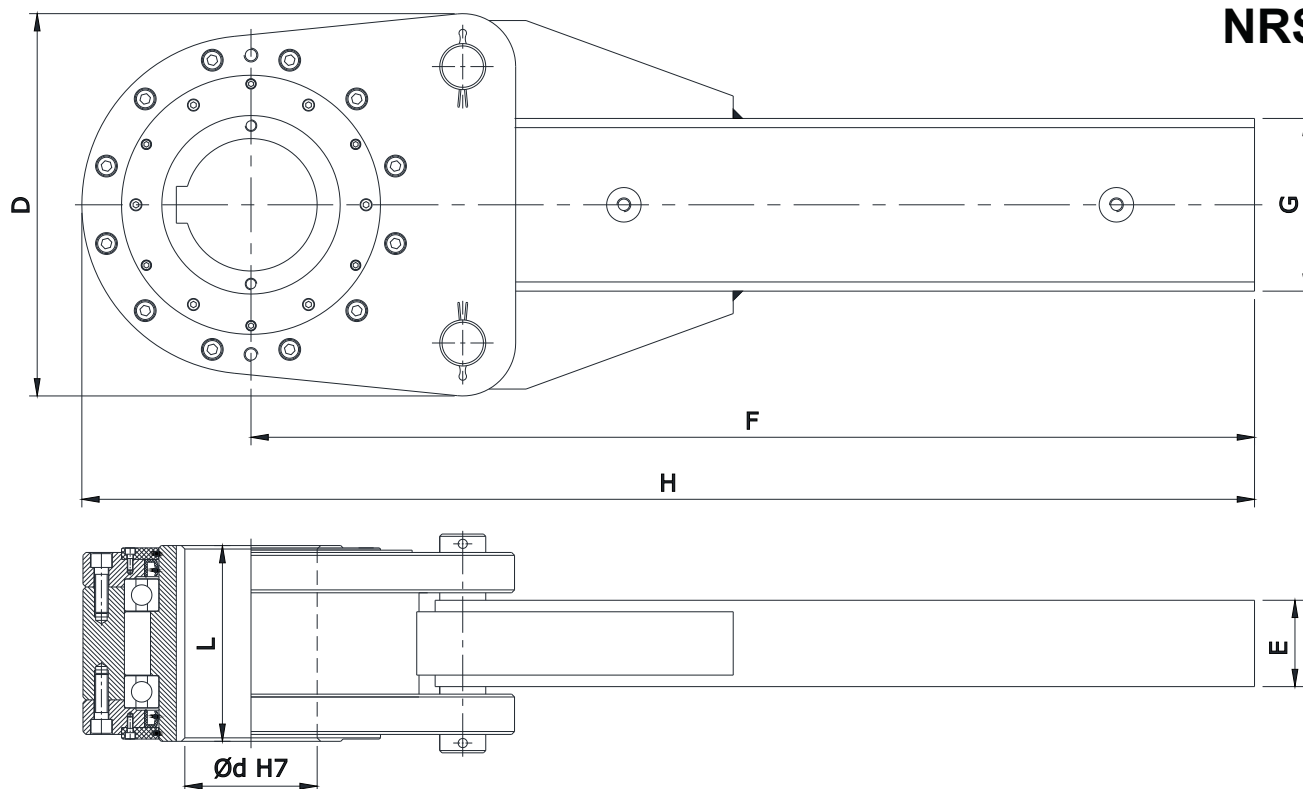
- This type of Freewheel Clutches are Supplied with Lever arm & Roller with Ball bearings support.
- This type of Freewheel Clutches are designed for use in Low speed Inclined Conveyor, Elevator, etc.
- Requires Grease Lubrication.
- Bore range: up to 300 mm.
- Transmitting torque: 215500 Nm.

❖ Mounting:

- The back driving torque is supported by the Lever arm. The positioning of the lever arm can be adjusted at any angle. The lever arm must not be clamped into position. It must have 12.7 mm play in the axial and in the radial direction.

◆ Mounting Example:





Model	Max. Over Running Speed Inner Race (RPM)	Nominal Torque (Tn) Nm	Max. Shaft Dia (d) mm	D mm	G mm	E mm	H mm	L mm	F mm	Weight (Approx.) Kg
NRSC 775	300	9250	100	280	125	70	1045	160	920	85
NRSC 800	250	14000	115	332	150	75	1420	170	1274	224
NRSC 900	180	21000	140	380	150	75	1600	185	1430	173
NRSC 1000	150	37690	165	425	200	100	1875	220	1685	248
NRSC 1100	135	60300	180	480	200	100	2053	230	1830	349
NRSC 1150	120	76890	200	546	250	125	2250	255	2000	468
NRSC 1200	105	106500	230	580	300	140	2360	280	2090	575
NRSC 1300	90	161000	280	660	400	140	2550	320	2242	805
NRSC 1400	80	216600	300	760	450	150	2760	350	2400	1230

Notes :

- 1) Function : Backstopping
- 2) $T_{max} = 2 \times T_n$.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6/j6

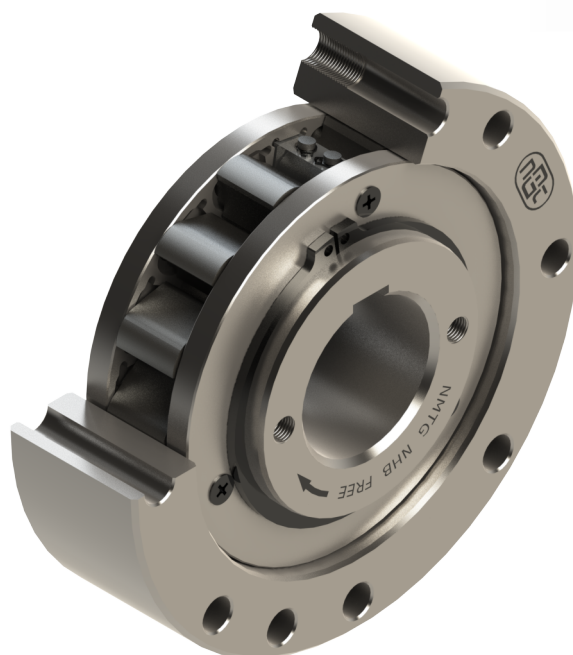
- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in mm.
- 8) We manufacturing in inch series also.

Ordering Example :








- When ordering please specify bore dia.
- NRSC 900 - 120 mm

Holdback / Backstop Clutch

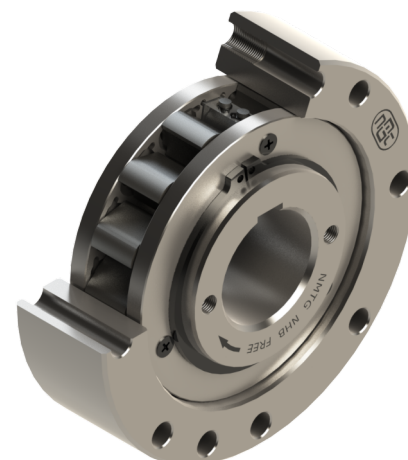
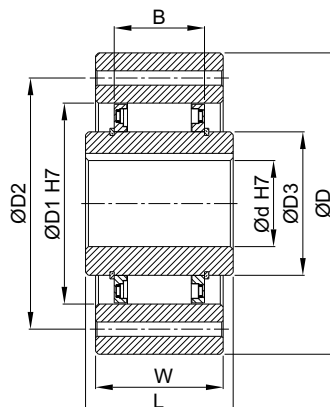
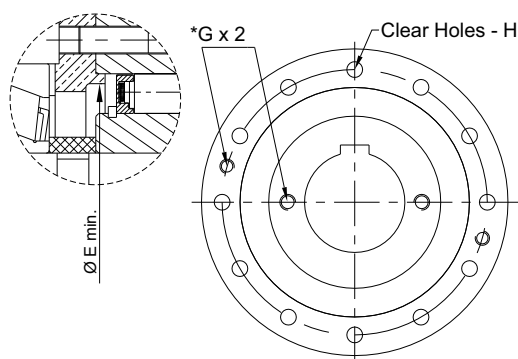
NHB Model



Performance criteria

NMTG Code No	 0.0 K	 0.1 K	 0.2 K	 0.3 K	 0.4 K	 0.5 K	 0.8 K	Lift off speed Rpm	Max. speed Rpm
	Torque Nm	Nm	Nm	Nm	Nm	Nm	Nm		
NHB20H	105	105	100	100	-	-	-	890	5000
NHB20	180	170	160	150	-	-	-	860	5000
NHB20H1	220	212	200	-	-	-	-	860	5000
NHB25	455	445	435	430	-	-	-	820	5000
NHB30	480	470	420	-	-	-	-	750	5000
NHB35H	555	545	535	525	-	-	-	750	5000
NHB35	655	645	635	625	-	-	-	730	5000
NHB40H	515	495	475	455	-	-	-	750	5000
NHB40	800	780	700	-	-	-	-	720	5000
NHB45	800	780	700	-	-	-	-	700	5000
NHB45H	940	920	900	880	-	-	-	700	5000
NHB50H	1190	1160	1130	1100	-	-	-	670	5000
NHB50	1585	1535	1485	1440	-	-	-	630	5000
NHB50H1	1500	1350	1200	-	-	-	-	630	5000
NHB60	2475	2475	2425	2425	2425	2425	-	430	6000
NHB60H	2080	2030	1980	-	-	-	-	610	5000
NHB70	3665	3565	3565	3465	3465	3465	-	400	4500
NHB80	7625	7525	7425	7230	7230	7230	-	320	4000
NHB90	7200	7000	6800	6000	5600	4800	-	320	3500
NHB95H	10000	9900	9700	9500	9400	9400	-	320	3000
NHB95	8700	8500	7900	6700	5500	5400	-	320	3000
NHB100	15000	14000	12900	14000	13000	12000	-	250	2700
NHB120H	20300	20300	19800	19300	18800	18800	-	250	2700
NHB120	20000	19000	16000	15000	14000	13000	-	250	2700
NHB140	30700	30200	29700	26240	22770	20300	-	240	2100
NHB155	31000	30500	30000	29000	26000	24000	-	220	3000
NHB185	36140	35640	35150	35150	34650	34150	33660	220	3000
NHB185H	31500	30500	30000	29000	26000	24000	19500	220	3000
NHB185H1	80190	79700	79200	78700	77700	76700	76200	220	3000
NHB185H2	58400	57900	57900	56930	56430	55940	55440	220	2500
NHB185H3	50000	49000	47000	45500	44000	42000	33000	190	2500
NHB185H4	116330	115340	114840	113360	112370	111380	110390	210	1300
NHB205	44060	43560	43560	43070	42570	42080	41090	200	2500
NHB230	64350	63860	63360	62870	61880	61380	59400	200	2500
NHB230H	94050	94050	93560	92570	91580	90590	83660	205	2500
NHB235	68000	67000	61500	61000	56000	50000	44000	195	1100
NHB240	75240	74250	73760	73260	72270	71780	69300	195	2500
NHB240H	110880	109890	109400	108400	106920	105930	98010	195	2100
NHB250	80190	79700	79200	78700	77720	77220	64850	195	2000
NHB280	154440	153450	152460	150980	142560	133160	106920	180	1800
NHB410	192555	191570	190080	188100	186610	177700	143550	170	1500

6 Product Specifications- NHB



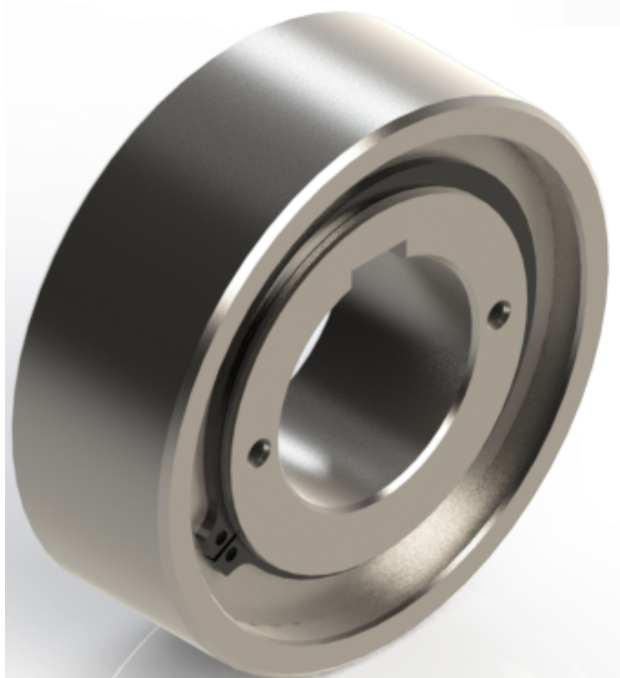
* G-Tapped Holes for removal

NMTG Code No	dH7 mm	D mm	L mm	W mm	E min mm	D1 mm	D2 mm	D3 mm	B mm	H		Weight Kg
										Nos	Dia mm	
NHB20H*	20	85	24	25	41	55	70	31	17	6	6.8	0.8
NHB20*	25	90	24	25	48	62	75	38	17	6	6.8	0.9
NHB20H1	20	90	35	35	54	66	78	42	25	6	6.8	1.5
NHB25	30	95	35	35	56	70	82	46	25	6	6.8	1.3
NHB30	30	100	35	35	62	75	87	51	25	6	6.8	1.7
NHB35H	35	105	35	35	62	75	90	51	25	6	6.8	1.7
NHB35	40	110	35	35	66	80	96	56	25	8	6.8	1.8
NHB40H	45	120	25	27	74	85	105	61	19	6	9	1.8
NHB40*	45	125	35	35	82	90	108	66	25	8	9	2.7
NHB45	45	130	35	35	85	95	112	71	25	8	9	2.9
NHB45H*	48	132	35	35	82	90	115	66	25	8	9	2.95
NHB50H	55	140	35	35	92	100	125	76	25	8	9	3.1
NHB50	65	150	40	40	102	110	132	86	25	8	9	4.2
NHB50H1*	48	155	55	45	92	105	135	65	35	8	11	4.45
NHB60	65	175	60	50	102	125	155	85	40	8	11	7.4
NHB60H	75	175	50	50	117	125	155	101	25	8	11	6.9
NHB70	75	190	60	50	130	140	165	100	40	12	11	8.8
NHB80	90	210	70	60	150	160	185	120	50	12	11	12.7
NHB90	90	230	80	70	170	180	206	140	50	12	13	17.4
NHB95H	110	245	70	70	170	180	218	140	50	12	13	19.8
NHB95	110	245	80	70	170	180	218	140	50	12	13	20.3
NHB100	110	270	90	80	200	210	240	170	63	12	18	33
NHB120H	130	290	80	80	200	210	258	170	63	12	18	33
NHB120	130	290	90	80	200	210	258	170	63	12	18	34.4
NHB140	155	310	80	80	230	240	278	200	63	12	18	35
NHB155	155	322	90	80	230	240	278	200	63	12	18	36
NHB185	185	400	90	80	280	310	360	240	63	12	22	60
NHB185H	185	412	90	80	280	310	360	240	63	12	22	61.6
NHB185H1	185	412	160	160	280	310	360	240	140	24	22	116
NHB185H2	185	420	120	125	280	310	370	240	96	16	26	95
NHB185H3	185	422	120	120	280	310	370	240	83	18	22	92
NHB185H4	185	425	240	240	280	310	370	240	192	24	26	190
NHB205	205	430	105	80	300	330	380	260	63	16	22	75
NHB230	230	460	105	80	330	360	410	290	70	16	22	90
NHB230H	230	460	120	110	330	360	410	290	96	16	22	91
NHB235	240	480	120	120	330	360	410	290	83	16	26	109
NHB240	240	497	110	125	360	380	450	310	70	24	22	135
NHB240H	240	497	120	125	360	380	450	310	96	24	22	145
NHB250	250	490	105	80	360	390	440	320	70	16	26	105
NHB280	280	540	125	120	400	430	500	360	100	24	26	170
NHB410	300	630	125	120	460	480	560	410	100	24	26	245

- Note:** (1) * sizes are with Key Way to DIN 6885 - P3.
 (2) Max. Speed of Inner Race is the Overrunning Speed of Hold Back.
 (3) On request, only mounting / fitting dimensions can be made to suit customer's specific requirements.
 (4) Other sizes can be supplied on demand.

Holdback / Backstop Clutch

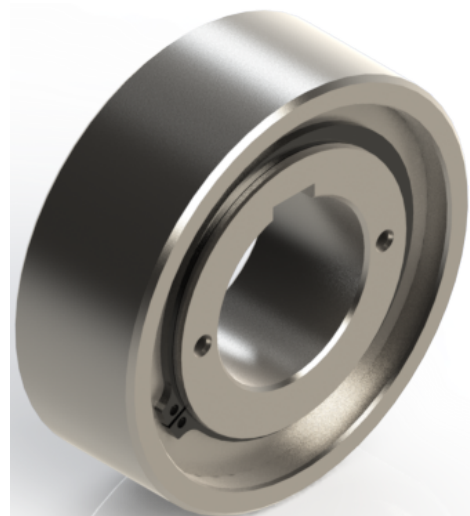
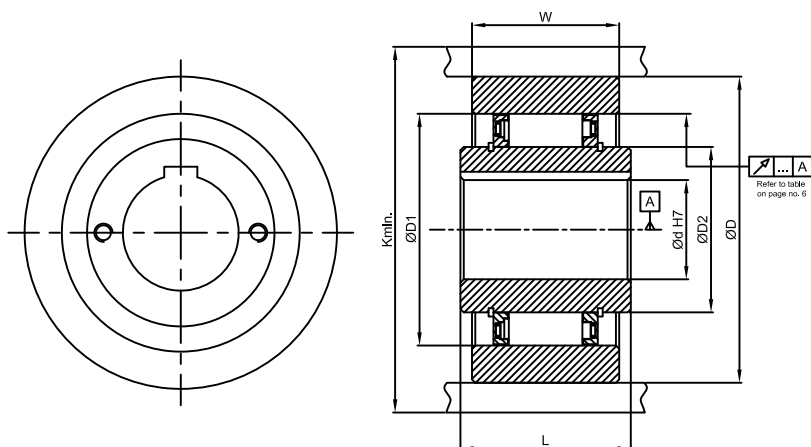
NXN Model



Performance criteria

NMTG Code No	↗ 0.0 A	↗ 0.1 A	↗ 0.2 A	↗ 0.3 A	↗ 0.4 A	↗ 0.5 A	Lift off speed Rpm	Max. speed Rpm
	Torque Nm	Nm	Nm	Nm	Nm	Nm		
NXN31	110	110	105	100	-	-	890	5000
NXN31H	110	110	105	100	-	-	890	5000
NXN38	180	170	160	150	-	-	860	5000
NXN46	460	450	440	430	-	-	820	5000
NXN51	560	550	540	530	-	-	750	5000
NXN56	660	650	640	630	-	-	730	5000
NXN61	520	500	480	460	-	-	750	5000
NXN61H	520	500	480	460	-	-	750	5000
NXN66	950	930	910	890	-	-	700	5000
NXN66H	950	930	910	890	-	-	700	5000
NXN76	1200	1170	1140	1110	-	-	670	5000
NXN76H	1200	1170	1140	1110	-	-	670	5000
NXN86	1600	1550	1500	1450	-	-	630	5000
NXN86H	1600	1550	1500	1450	-	-	630	5000
NXN101	2100	2050	2000	1950	-	-	610	5000
NXN101H	2100	2050	2000	1950	-	-	610	5000
NXN85	2500	2500	2450	2450	2450	2450	430	6000
NXN85H	2500	2500	2450	2450	2450	2450	430	6000
NXN100	3700	3600	3600	3500	3500	3500	400	4500
NXN105	5200	5200	5100	5000	5000	5000	380	4500
NXN120	7700	7600	7500	7300	7300	7300	320	4000
NXN140	10100	10000	9800	9600	9500	9500	320	3000
NXN170	20500	20500	20 000	19 500	19 000	19 000	250	2700

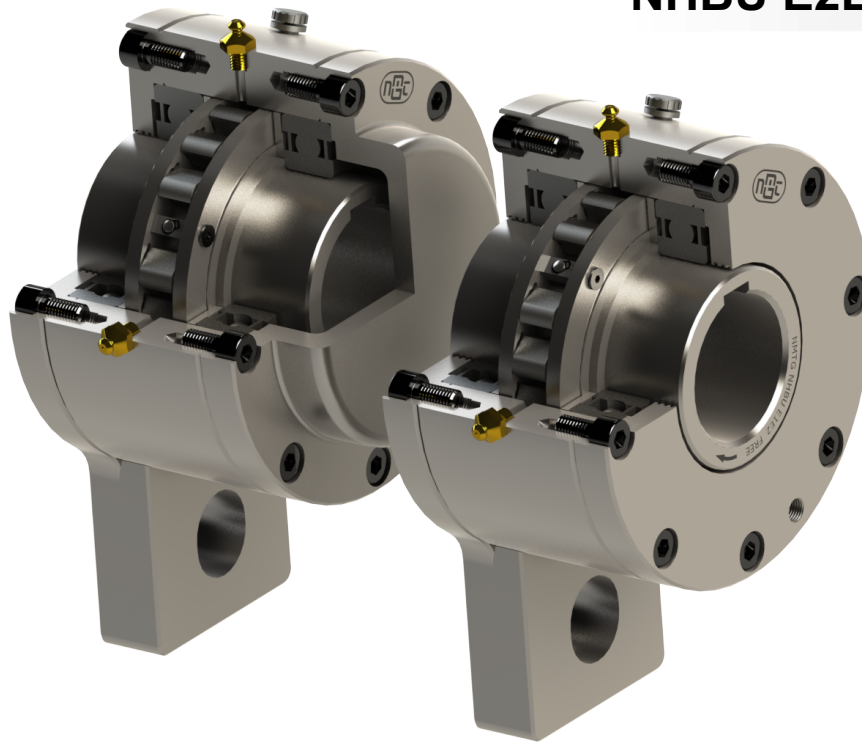
Product Specifications- NXN



NMTG Code No	dH7 mm	D mm	L mm	W mm	D1 mm	D2 mm	K min. mm	Weight kg
NXN31	20*	60 P6	24	25	55	31	85	0.3
NXN31H	20*	62 P6	24	25	55	31	85	0.4
NXN38	25*	70 P6	24	25	62	38	90	0.4
NXN46	30	80 P6	35	35	70	46	95	0.8
NXN51	36	85 P6	35	35	75	51	105	0.8
NXN56	40	90 P6	35	35	80	56	110	0.9
NXN61	45*	95 P6	25	26	85	61	120	0.8
NXN61H	45*	106 H7	25	25	85	61	120	1.2
NXN66	48	100 P6	35	30	90	66	132	1.1
NXN66H	48	110 P6	35	40	90	66	132	1.8
NXN76	60*	115 P6	35	40	100	76	140	1.7
NXN76H	60*	120 J6	35	32	100	76	140	1.8
NXN86	70	125 P6	40	40	110	86	150	2.3
NXN86H	70	130 P6	40	40	110	86	150	2.6
NXN101	80*	140 P6	50	45	125	101	175	3.1
NXN101H	80*	150 P6	50	45	125	101	175	3.6
NXN85	65	140 P6	60	45	125	85	175	3.2
NXN85H	65	150 P6	60	45	125	85	175	4.2
NXN100	80*	160 P6	60	50	140	100	190	5.1
NXN105	85	165 P6	62	62	145	105	195	5.8
NXN120	95	198 H6	70	70	160	120	210	8.6
NXN140	110	215 J6	70	69	180	140	245	14
NXN170	130	258 H6	80	80	210	170	290	21

- Note:** (1) * sizes are with Key Way to DIN 6885 - P3.
 (2) Max. Speed of Inner Race is the Overrunning Speed of Hold Back.
 (3) On request, only mounting / fitting dimensions can be made to suit customer's specific requirements.
 (4) Other sizes can be supplied on demand.

External Holdback / Backstop Clutch NHBU E2E3 & E1E2



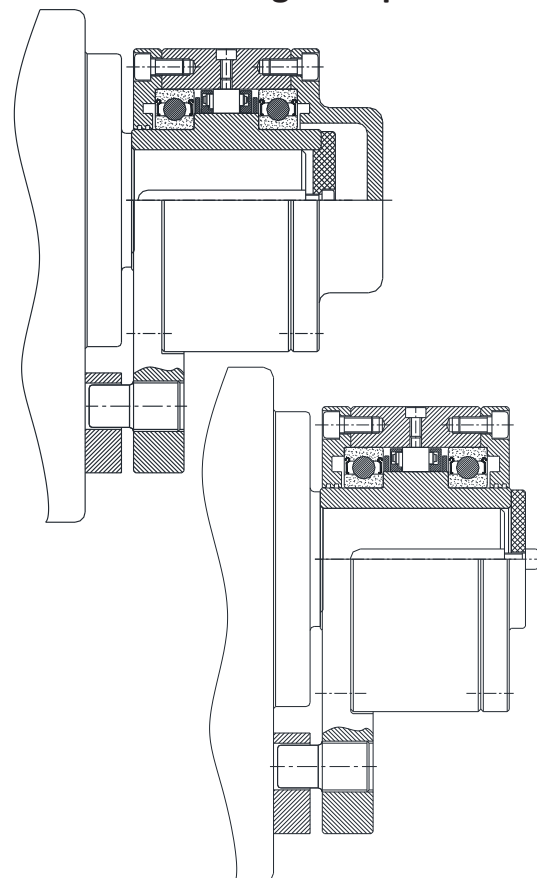
NHBU E2E3

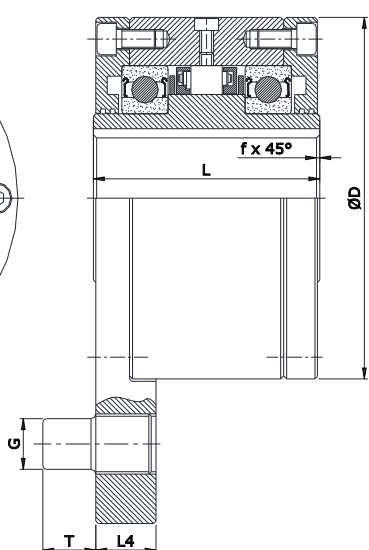
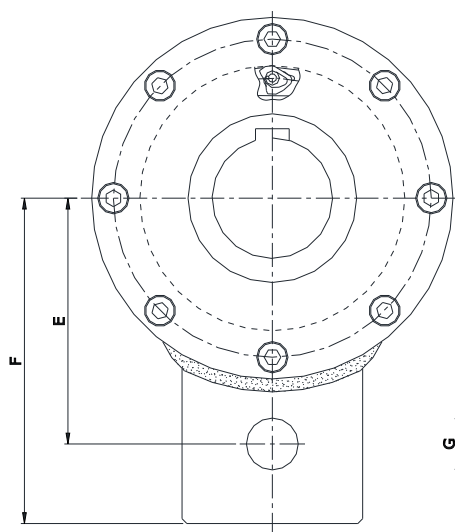
NHBU E1E2

❖ **Features:**

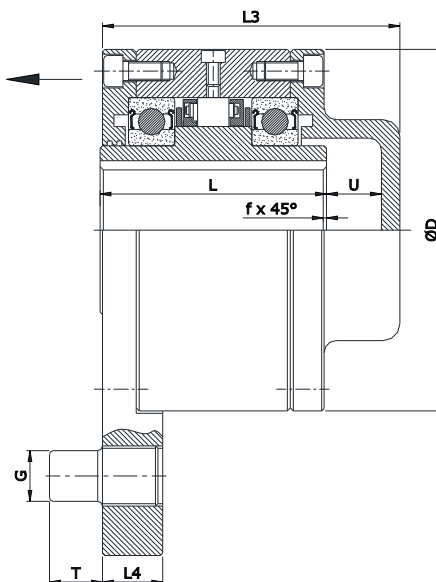
- This type of Freewheel Clutches are designed with ball bearings to be assembled with customer connecting parts
- Requires grease Lubrication
- This type of Combinations are used as Backstopping in which E2 cover as a Torque arm / Lever arm which has an integrated Stop bolt which must go into a slot in a fixed part of machine.
- If E3 type C - cover is used then sealant must be provided to the keyway to avoid loss of Lubrication through it.
- This type of combinations are arranged on through shafts or shaft ends.
- Bore range : up to 150 mm
- Transmitting torque : 33908 Nm

◆ **Mounting Example:**





NHBU E1E2



NHBU E2E3

Model	Bore (d)		Inner race Overrunning		Nominal torque Nm	D (h7) mm	E mm	F mm	L mm	U mm	L3 mm	L4 mm	T mm	G mm	f mm	Weight of	
	max. mm	Min. RPM	Max. RPM	E1+E2 Kg												E1+E3 Kg	
NHBU 30 E1 + E2 / E3	30	750	5000	607	100	68	92	81	10	97	19	14	16	1.0	4.2	4.5	
NHBU 35 E1 + E2 / E3	35	730	5000	686	110	76	102	81	12	102	22	18	20	1.0	5	5.3	
NHBU 40 E1 + E2 / E3	40	720	5000	980	125	85	112	93	12	112	22	18	20	1.3	7	7.4	
NHBU 45 E1 + E2 / E3	45	700	5000	1078	130	90	120	93	15	115	25	22	25	1.3	7.7	8.1	
NHBU 50 E1 + E2 / E3	50	630	5000	1715	150	102	135	95	12	114	25	22	25	1.3	11	11.5	
NHBU 55 E1 + E2 / E3	55	630	5000	1960	160	108	142	104	15	126	30	25	32	1.5	14	15.6	
NHBU 60 E1 + E2 / E3	60	430	6000	3479	170	112	145	120	15	143	30	25	32	1.5	17.2	18	
NHBU 70 E1 + E2 / E3	70	400	4500	4735	190	135	175	134	22.5	164.5	35	30	38	1.8	24.5	25.5	
NHBU 80 E1 + E2 / E3	80	320	4000	6517	210	145	185	144	16	168	35	30	38	1.8	31.9	32.9	
NHBU 90 E1 + E2 / E3	90	320	3500	8526	230	155	205	158	27	192	45	40	50	2.0	41.1	43.4	
NHBU 100 E1 + E2 / E3	100	250	2700	14210	270	180	230	186	28	221	45	40	50	2.0	65	67	
NHBU 130 E1 + E2 / E3	130	240	2100	20384	310	205	268	212	30	250	60	55	68	2.5	94	97	
NHBU 150 E1 + E2 / E3	150	220	3000	33908	400	255	325	246	32	286	60	55	68	2.5	190	193	

Notes :

- 1) Function : Overrunning, Backstopping
- 2) Tmax = 2 x Tn.
- 3) Oil / Grease filled, ready to fit.
- 4) Shaft dia. is to be controlled within h6/j6

- 5) Keyway as per DIN 6885 - 1.
- 6) Other sizes on request.
- 7) All dimensions are in mm.
- 8) We manufacturing in inch series also.
- 9) Dimensions/Design subject to modifications.
- 10) Hold pin is in Customer's scope.

Ordering Example :

- When ordering please specify bore dia. with direction of Rotation of Inner race freewheeling seen from Arrow, CW for Clockwise & CCW for Anti-clockwise.
- When ordering please specify bore dia.:
- **NHBU 35 E1E2 - 20**
- **NHBU 35 E2E3 - 20**

Dimensions/Design subject to modifications without any prior intimation.

NMTG is an engineering set up situated at Naroda, GIDC, Ahmedabad, Gujarat, since last two and half decades and engaged in manufacturing of high precision products in modern CNC environment. These products are mainly used for the purpose of drive transmission and are available in wide range of sizes and applications. Depending upon specific applications there are four varieties of products namely (1) Free Wheel – one way – Clutches used as Hold Back / Back-stop, Overrunning Clutch and Indexing Clutch (2) Keyless Transmission Elements (3) Tensioner Nut & Bolts and (4) Cam follower / Track Rollers.

Keyless Transmission Elements: These are available in mainly two varieties (1) Locking Assembly and (2) Shrink Disks and are offered in different types. These are versatile in nature, can withstand high fatigue stresses under alternating tensional stresses. These are most suitable and economical for fixing on shaft or on hub or between shaft and hub offering easy mounting and removal, wear free operation, perfect alignment and adjustable also. For mounting no key way is necessary in shaft and hub as they are shrunk fit and thus minimizes notch effect. Widely used for drive applications like Shaft mounted gear arrangement, Gear Wheels, Chain Sprocket, Lever, Cams, Break Drums and at many other places.

Tensioner Nuts & Bolts: These units offer great benefit in application where ordinary hexagonal nuts on stud or bolt require very high tightening force for full tightening. For this unit very low tightening force (torque) is required for each clamping screws provided, with the help of standard torque wrench, to achieve the same or better results. Hence they are widely used for general mechanical fitment in heavy and medium duty equipment. Loosening under full load conditions is eliminated as there is no play between male and female threads of multiple Tensioner Bolts and Nuts assembly. However, standard torque Wrench has to be used for tightening purpose.

Cam Followers / Stud type Track Rollers: Standard as well as eccentric designs of Stud and Cage Guide are available ready to fit condition for applications like heavy loads and medium speeds.

All NMTG Products are versatile in nature, offer great economy in use hence extensively used in almost all industries and thus rule the market.

DISTRIBUTED BY



chainanddrives.com.au
support@chainanddrives.com.au