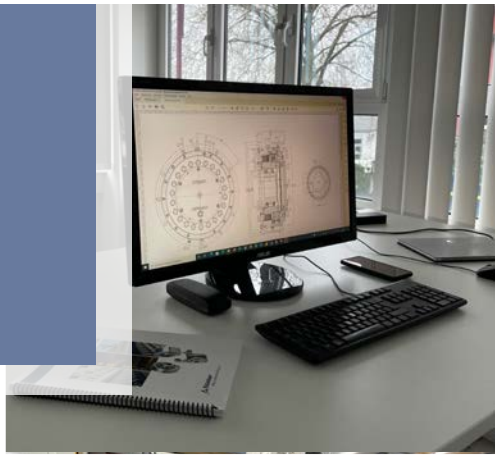
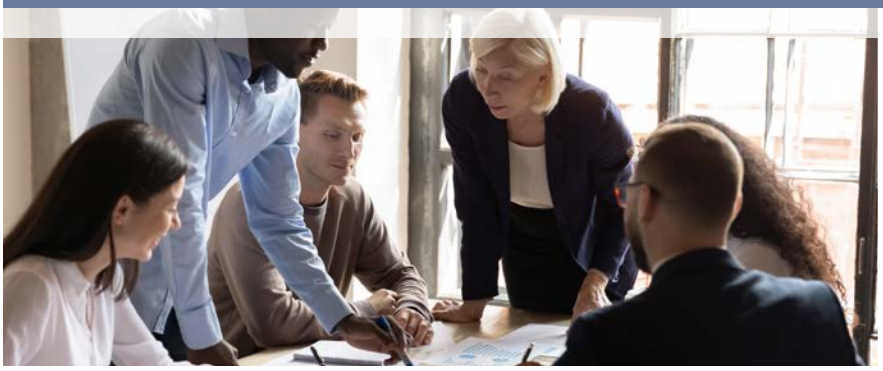
MANY CUSTOMERS PUT THEIR TRUST IN STIEBER.





STIEBER

Stieber was founded in Munich in 1937 and is now a medium-sized company employing 140 people at its locations in Heidelberg and Garching near Munich.

Our core business activity is the design and production of drive elements for mechanical engineering systems. Our major strength is the development and production of overrunning clutches and backstops, which transmit torque by means of friction.

Stieber can reflect on numerous innovative developments during the course of the company's history innovations that have made it the European market leader. Stieber proved its technical ability once again during the development and design of the largest backstop in the world, for example. This and other backstops are being successfully used even under the toughest of conditions.

Stieber, part of the Regal Rexnord is – together with its sister companies Formsprag and Marland in the USA – the world's market leader for overrunning clutches and backstops.

Our extensive world-wide service network including more than 1000 stocking distributors and technical centres ensures we are always close to the customers.

Our company philosophy is total customer satisfaction. To achieve this, our processes undergo continual refinement.

Stieber has been certified according to DIN EN ISO 9001 since 1997 and according to ISO 14001 (environment management system) since the year 2000. In addition, an internal monitoring process ensures that quality, timeliness and costs are always to the fore.

REGAL REXNORD

Regal Rexnord is a leading multinational designer, producer and marketer of a wide range of mechanical power transmission products. We sell our products in over 70 countries throughout the world. Our products are frequently used in critical applications, such as brakes for elevators, wheelchairs and forklifts, and in high-volume manufacturing processes, where the reliability and accuracy of our products are critical in both avoiding costly down time and enhancing the overall efficiency of manufacturing operations.

Visit us on the web

WWW.STIEBERCLUTCH.COM

Conveyor Belts
Coal Crushing Equipment
Pumps
Rolling Mills
Seed Drilling Machines
Rotary Furnaces
Silos
Ventilators
Forming Machines
Print Machinery
Engine Test Benches
Car Washing Systems
Ball Presses
Roller Costers
Textile Machines
High-Voltage Switchgear
Fitness Equipment
Winches
Clay Pigeon Traps
Automotive Industry
Aerospace
Power Station Technology

Contents

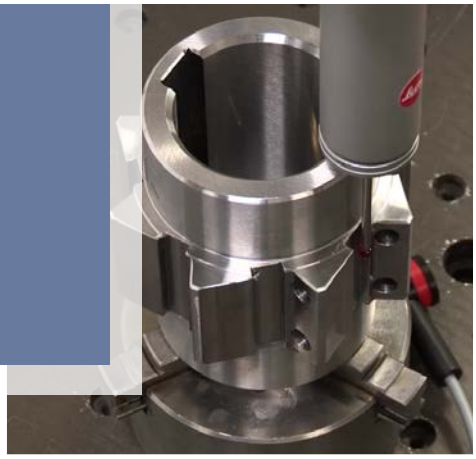
Overrunning Clutches and Backstops

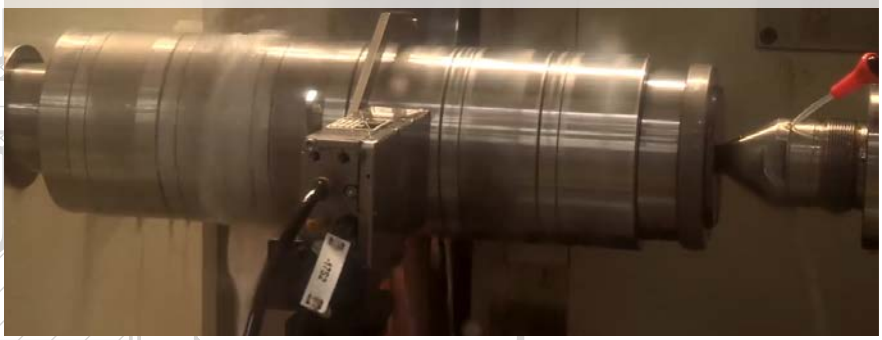
ALPHABETICAL LIST PAGE 87

IMPRINT

Published by:
© Stieber GmbH
Hatschekstraße 36
69126 Heidelberg
Germany

STIEBER: COMPETENCE IS OUR STRENGTH.





INNOVATIVE: DEVELOPMENT

Throughout it's long history Stieber has been familiar with all types of freewheel designs such as roller and sprag variants and consistently led the way in developing new designs and technologies. We have an unmatched ability in the field of overrunning clutches, built on the long experience of our team of qualified engineers and always seeking the best answers in design and manufacture. Alongside a continuous program of product development unique solutions have been found over the years including:

- Encased overrunning clutches lubricated and cooled by internal oil circulation without the need for a pump.
- Overrunning clutches that may be disengaged either manually or pneumatically.
- Irreversible locks. A novel adaptation of the freewheel principle

and more than 4,000 special designs developed for specific customer requirements. We can supply anything from 0.8 to 1.7 million Nm so you can be sure of finding the best solution, whatever the application.

ACCURATE: PRODUCTION

Standard products and customer-specific items are produced according to the latest techniques and quality requirements in our two manufacturing plants. Our skilled and experienced workforce take every care to deliver to you a reliable, quality product. Our commitment to continuous improvement ensures that our systems and processes are constantly under review. Over the past few years this has led to a 30% time saving in manufacture, for example. The assembly and warehouse departments control stock and material flow using a Kanban system to ensure the correct availability of standard parts and on-time delivery to you the customer. If you buy your freewheels from Stieber you can be sure of the best in quality and reliability for you and your customers guaranteed.

TRADEMARK: QUALITY

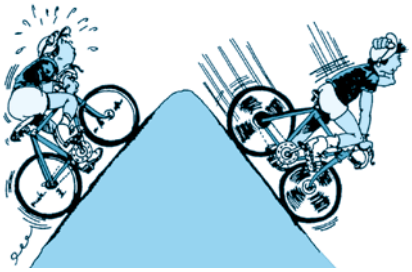
Total quality is assured both by meeting prescribed product performance specifications and thanks to the reliability of manufacturing methods and process workflows including integrated tests. The key technical data of Stieber products are either calculated using FVA* methods and/or verified on our test benches.

We have test machines with a torque capacity of up to 700.000 Nm. During idling, units with a bore up to 600 mm can be tested at speeds of up to 1.500 rpm. The modern equipment in our quality department allows us to carry out all the necessary tests ourselves.

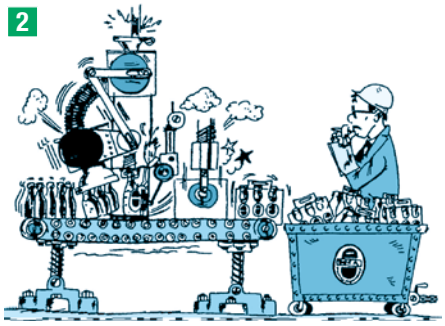
* Power Transmission Research Association

THE PRINCIPLE: THE RIGHT ANSWER – EVERYTIME.

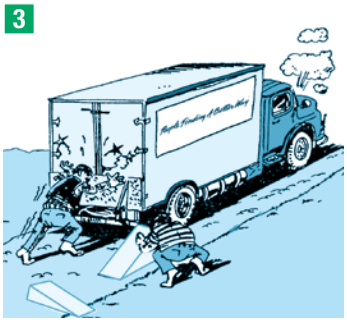
1



2



3



1 OVERRUNNING CLUTCH
The freewheel disengages automatically when the driven member rotates faster than the driving member.

2 INDEXING CLUTCH
The freewheel allows the conversion of reciprocating motion into a discontinuous rotational movement.

3 BACKSTOP
The freewheel allows rotation in one direction only. It overruns continuously during operation. The freewheel prevents reverse rotation if the drive is disconnected.

Overrunning clutches are directional couplings, which means they are engaged and disengaged automatically, depending on the relative direction of rotation of the driving and driven sides. Practical applications of this principle:

1 OVERRUNNING CLUTCH
for multiple-machine drives or to separate the inertia of masses of a driven machine from the driving machine after it has been switched off.

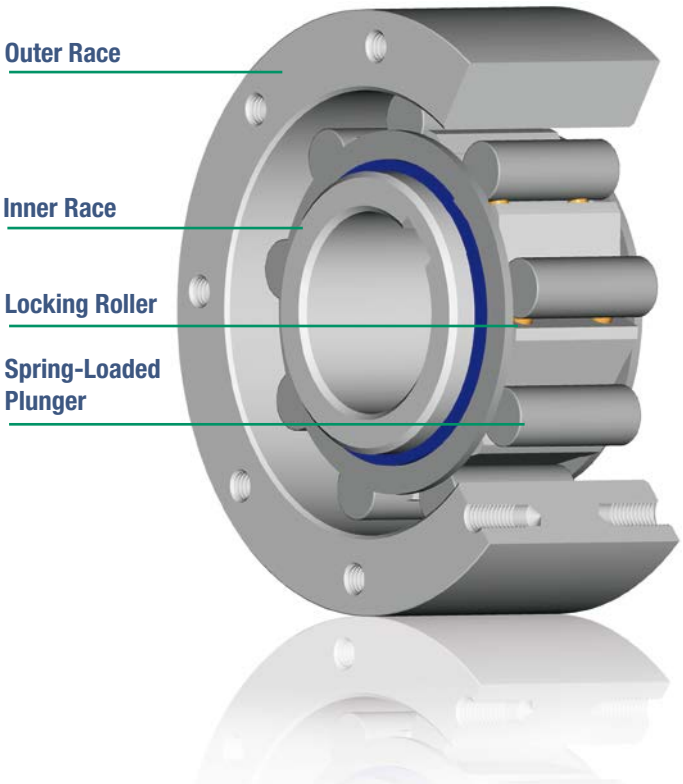
2 INDEXING CLUTCH
which turns a shaft step by step, thus achieving indexed material feed or a variable speed.

3 BACKSTOP
to prevent a machine shaft turning backwards. In this case the overrunning clutch acts as a brake.

BASIC FORMS: ALWAYS A PERFECT SOLUTION.

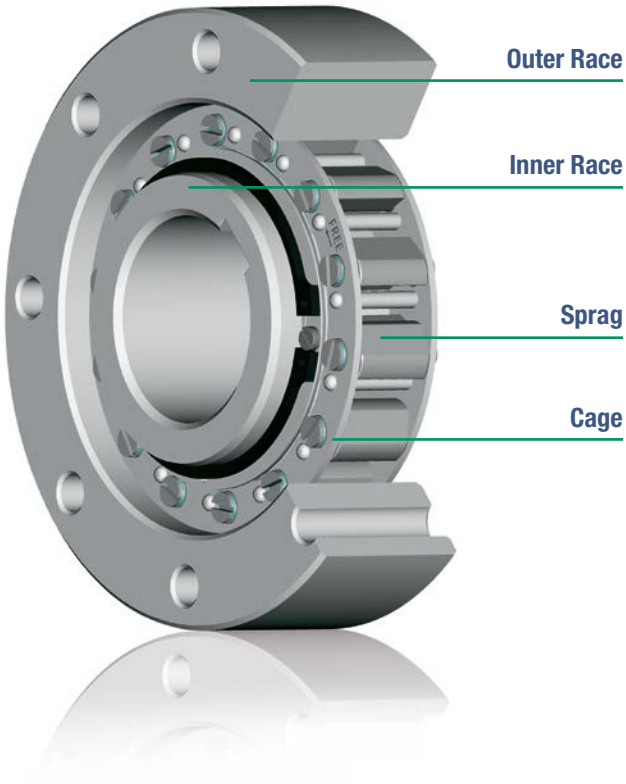
To achieve the functions described overleaf, so-called locking elements are positioned between an outer and an inner race which effect engaging and disengaging. These locking elements are of two basic designs:

ROLLER CLUTCH
Mainly used as overrunning and indexing clutches.



- Rugged
- Versatile
- High indexing accuracy
- High performance overrunning clutch

SPRAG CLUTCH
Most suitable as backstops, and mostly the contact-free versions.



- High overrunning speed
- High torque capacity
- High eccentricity tolerances
- Accepts any lubricant

We offer our freewheels in different versions either without bearing support (built-in) or with bearing support (self-contained). (see selection table page 10)

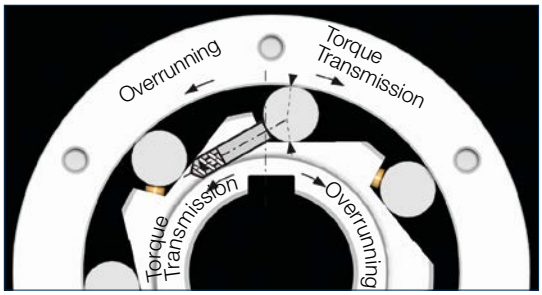
DESIGN: MANY VERSIONS – ONE QUALITY.

ROLLER FREEWHEELS

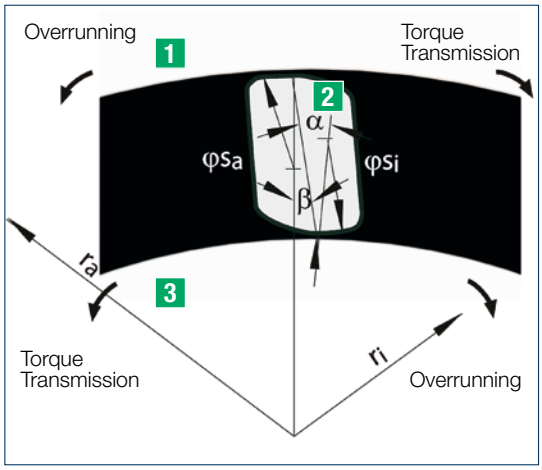
These freewheels feature a cylindrical outer race and an inner race consisting of ramps on which rollers are located. Springs and plungers ensure a permanent contact between the different elements for an instant torque transmission. This rugged, reliable versatile design can be used as an overrunning clutch, indexing clutch or backstop.

Note: the highest overrunning speed is possible if the outer race is overrunning. For this reason it is particularly adapted to high speed overrunning clutch application for dual drivers.

This design is recommended for use as an indexing clutch. To maximise accuracy, specify »V« type, fitted with stronger springs.



1 Outer race 2 Sprag 3 Inner race



SPRAG FREEWHEELS

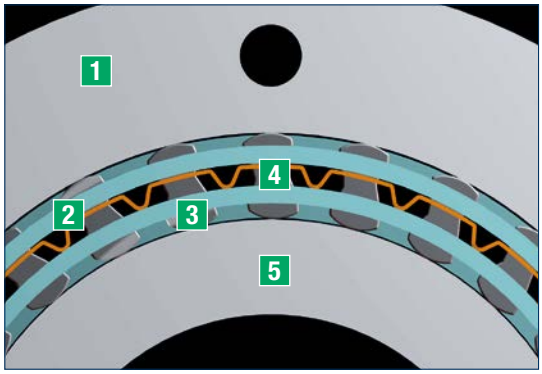
In this type of freewheel, the two races are cylindrical. The sprags, fitted in a cage, feature an active profile that ensures engagemant or disengagement according to the relative motion of the races.

It is possible to adapt the design of sprags and cage to get significantly different characteristics from one model to another. For example, models which have permanent contact or are contact free during overrunning, are available.

DC DESIGN

This model features a large number of sprags controlled by two concentric cages. The transmitted torque is high compared to the required space. Sprags are synchronised by the double cage design, and individually energized by a special spring.

1 Outer race 2 Cage 3 Spring 4 Sprag 5 Inner race



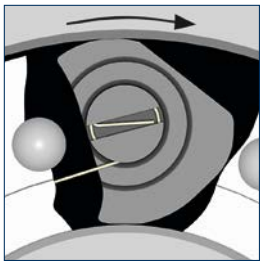
RSCI, RIZ DESIGN

Sprags in this design, are fitted into a cage connected to the overrunning member. The sprag configuration is such that its center of gravity is offset to its rotation axis.

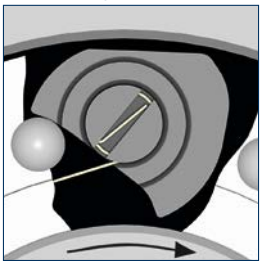
Centrifugal force creates a lift off moment against an engaging spring. When the centrifugal force moment is greater than that of the spring, the sprag tilts over to a contact free position.

The clamping geometry allows this type of freewheel to accept significant eccentricity tolerances and to work with all the current lubricants used in power transmissions.

Torque transmission



Overrunning



STIEBER SOLUTIONS: ALWAYS THE RIGHT CHOICE.

Unit selection is initially determined by the type of application: OC Overrunning clutch, IC Indexing clutch, BS Backstop. Different technical information is required for each one of them. Mounting details and lubrication requirements finally determine the unit selected.

The information required for each type of application is as follows:

OVERRUNNING CLUTCH

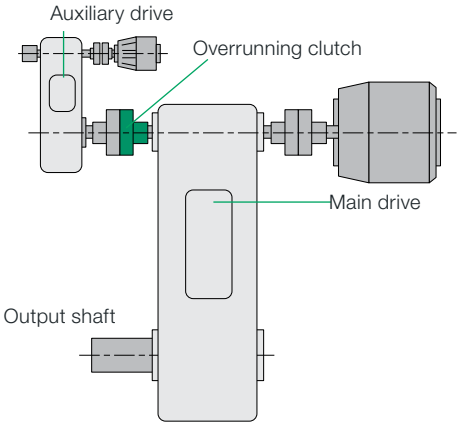
- Type of motor
- Nm start/Nm nominal of E-motors
- Internal combustion engines, please consult Stieber
- Nominal driving torque
- Range of driving speed
- Inertia „J“ of the driven masses
- Range of overrunning speed
- Number of start during service life
- Shaft diameter

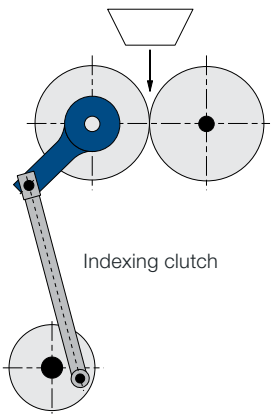
INDEXING CLUTCH

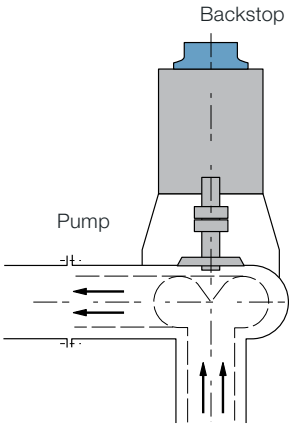
- Number of cycles/min
- Index angle
- Nominal torque
- Inertia „J“ of the driven masses
- Accelerations of the driving member
- Number of indexes during service life
- Shaft diameter

BACKSTOP

- Static reverse torque
- Maximum dynamic reverse torque due to elasticity of the locked parts (elastic belts, shafts more than 3 meters long)
- Range of overrunning speed
- Number of torque applications during service life
- Shaft diameter







THE SELECTION PROCEDURE: WE ADVISE, YOU DECIDE.

If we have the data described on the previous page, Stieber can make the most accurate selection.
If all of the information is not available, or if you want to make a selection yourself, the following service factor procedure may be used.

Note: The following method and the service factors used are only a guide based on experience and cannot cover all situations. We cannot accept responsibility for incorrect selection resulting from the use of these tables.

STEP 1 TORQUE SELECTION

The first step is to calculate the catalogue torque (T_{KN}) of the unit to be chosen. This torque is derived from the application nominal torque (T_{appl}) multiplied by a service factor (S.F.) depending on the function of the freewheel and working conditions.

Nominal torque of the application:

$$T_{appl}\,(Nm) = \frac{9550 \times P\,(kW)}{n\,(min^{-1})}$$

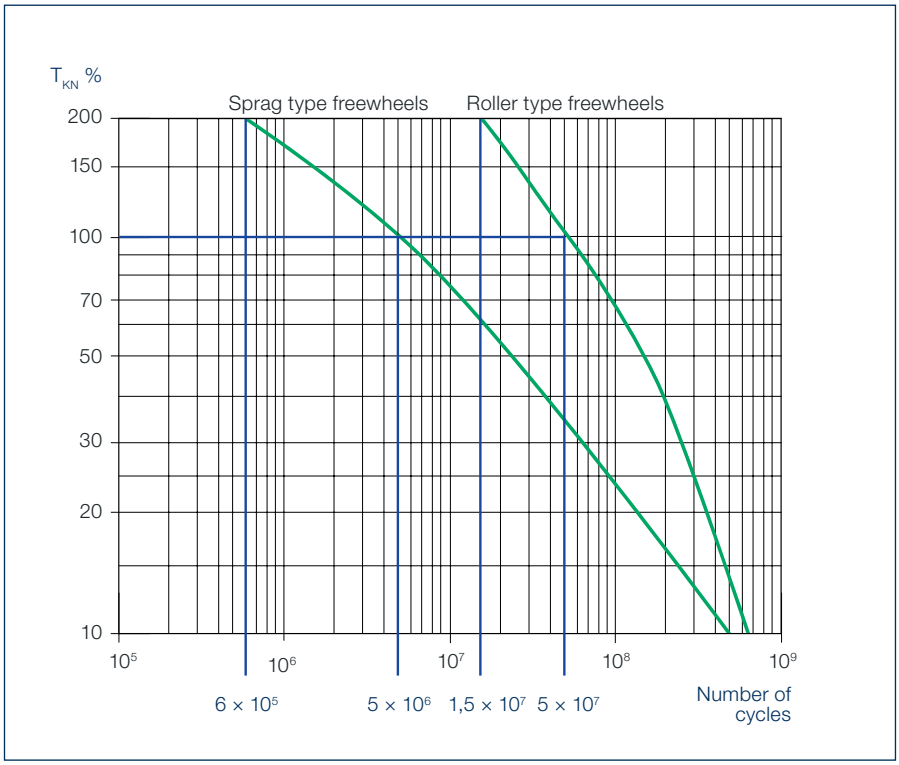
The catalogue torque will be:

$$T_{KN} \geq T_{appl} \times SF$$

Service factor (SF) can be read from the selection tables on page 8.

Note: All the units shown in this catalog can support a maximum torque equal to 2 times the catalogue torque T_{KN} indicated in the respective data tables.

The following curve may be used as a guide to determine the relationship between torque transmitted and the number of cycles (applications of this torque) the unit would withstand in its life time. Average values are shown.



SERVICE FACTORS.

APPLICATION INDEXING

Indexing speed	Type of freewheel	
	Roller type	Sprag type
Over 150 strokes/min	3.0	4.0
Angle > 90° | Over 100 strokes/min	2.5	4.0
Angle > 90° | Less than 100 strokes/min	2.0	3.5

APPLICATION BACKSTOP

Driving machine	Driven machine				
	Elastic conveyor belts with risk of jam	Pump drives with more than 5 metres shaft	Fans	Other machines	
				No overloads	Dynamic overloads
Motors with hydraulic couplings	1.3	1.6	0.5	1.0	1.5
Asynchronous motors with direct start[1]	1.6	1.6	0.5	1.0	1.5
Steam or gas turbine	—	1.6	0.5	1.0	1.5
Internal combustion engine	1.6	1.6	0.5	1.0	1.5

1) These values do not cover a motor start in the wrong direction.

APPLICATION OVERRUNNING

Driving machine		Working conditions			
		Starting torque not higher than nominal Smooth drive.	Starting torque up to 2 times running torque. Moderate load variations.	Starting torque 2 to 3 times running torque. Load variations.	High starting torque. High load torque variations.
DC - motor. AC - motor with soft start or hydraulic coupling		1.3	1.5	1.8	—
Asynchronous motor with direct start	Speed reduction between motor & freewheel < 20	—	2.5	3.0	4.0
	Speed reduction between motor & freewheel > 20	—	1.5	2.5	3.5
Steam or gas turbine		1.3	1.5	—	—
Internal combustion Eninge	Petrol 4 cyl.or Diesel < 6 cyl.	4.0	5.0	Contact Stieber.	—
	Diesel N 6 cyl.	5.0	6.0	Contact Stieber.	—

STEP 2 MODEL SELECTION

When the catalogue torque is known, the model will be selected from the following criteria:

- Built-in or self-contained design
- Driving and overrunning speed limits
- Dimensions
- Lubrication and maintenance

Please refer to the selection table page 10 for a guide to selection. The product range is presented in this order:

SELF-CONTAINED BALL BEARING UNITS (CSK RANGE)

General purpose, economical units for light applications. Grease lubricated, maintenance free. With or without key(s) mounting to shaft and housing.

BUILT-IN UNITS

Made of inner- and outer race and clamping elements (sprags, rollers). Bearing support and lubrication must be provided.

SELF-CONTAINED UNITS

- Low speed, grease lubricated, maintenance free (RSBW, AV series).
- Medium overrunning speed inner race. High overrunning speed outer race. Roller types, oil lubricated (AL, GFR series).
- High overrunning speed inner race. Medium overrunning speed outer race. Sprag types, oil or grease lubricated (SMZ, FS, FSO series).
- High speed, high power, for continuous duty encased overrunning clutches (AL..G, CEUS.., BC..MA series).

CENTRIFUGAL LIFT OFF SPRAG TYPES

Special overrunning clutches and backstops contact free during overrunning. Please be aware of the speeds permissible in driving and overrunning modes.

- Built-in units: Low lubrication requirement. Accept a large range of lubricants (RSCI series).
- Self-contained units: Grease lubricated, long life and maintenance free (RIZ series).

Selection Table

Types	Applications groups	Type of support	OC	IC	BS
CSK	Integral bearing/ freewheel based on series 62 and 60	Bearing support	○	○	○
CSK..2RS			●	●	●
CSK..P. CSK..PP			○	○	○
CSK..P-2RS			●	●	●
ASK			○	○	○
AS (NSS)	Built-in freewheels: Must be integrated in a housing that provides bearing support and lubrication. Low to medium torque and speeds.	No bearing support	●	●	●
ASNU (NFS)			○	○	○
AE			●	●	●
AA			○	○	○
NF			●	●	●
DC			○	○	○
DC Races			●	●	●
NFR		Bearing support	○	○	○
RSBW	Self-contained clutches: Sealed, with integral lubrication. From small to high torques, low to max speeds. Applications in all types of industry.	Bearing support			○
AV				●	●
GFR-GFRN			○	○	○
GFR..F1F2/F2F7			●	●	●
GFRN..F5F6			○	○	○
GFR..F2F3					●
GFR..F3F4					○
AL/ALP			●	●	●
AL..F2D2			○	○	○
AL..F4D2			●	●	●
ALP..F7D7			○	○	○
AL..KEED2			●		
SMZ			○	○	○
FSO 300-700			●	●	●
FSO 750-1027			○	○	○
AL..G			●		
CEUS			○		
BC MA					○
RDBR-E					○
RSCI 20-130	Centrifugally lift off sprags: Wear free above a given speed. High speeds with little lubrication demand. Specifically designed for: gear reducers, motors, pumps, ventilators, turbines.	No bearing support	●		○
RSCI 180-300			●		○
RSXM			●		○
RSRV					○
RSRT					○
RDBK					○
RDBK-H					○
RIZ-RINZ		Bearing support	●		○
RIZ..G1G2/G2G7			●		○
RINZ..G5G5			●		○
RIZ..G2G3					○
RIZ..G3G4					○
RIZ..ELG2			●		

OC = Overrunning Clutch | IC = Indexing Clutch | BS = Backstop | ● = Special Working Conditions

Selection Table

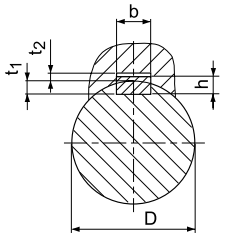
		Bore range-diameter	Torque range	Overruning Speed inner race	Overrunning Speed outer race	Lubrication	Page
		mm	Nm				
		8–40	2,5–325	H	H	GREASE	14
		8–40	2,5–325				14
		12–40	9,3–325				16
		12–40	9,3–325				16
		40–60	72–250				18
		6–80	2,1–1 063	M	H	OIL	20
		8–200	12–44 500				22
		12–70	17–5813				24
		12–250	17–225000				26
		8–150	20–44 375				28
		15–80	63–4 875	H	M		30
							32
		8–130	20–34 750	M	H		34
		20–90	375–4 875	S	not possible	GREASE	36
		20–120	265–11 000				38
		12–150	55–70 000	M	H	OIL	40
		12–150	55–70 000				42
		12–150	55–70 000				42
		12–150	55–70 000		not possible		44
		12–150	55–70 000				44
		12–250	55–287 500		H		46
		12–250	55–287 500				48
		12–250	55–287 500				50
		12–250	55–287 500				50
		12–250	55–250 000				52
		20–70	300–4 300	H	H	OIL GREASE	56
		12–82	379–6 900				56
		57–177	9660–36 612				58
		38–160	500–70 000	not possible	H	OIL	60
		40–180	680–81 350				62
		165–600	36 000–1 626 000	S	not possible		64
		150–320	50000–330000				66
		20–130	212–15 750	H	not possible	OIL GREASE	68
		180–300	31 500–250 000				70
		20–70	100–1950				72
		50–190	1400–30 000				74
		50–190	1400–30 000				74
		60-300	5500-180 000				76
		60-300	5500-180 000				76
		30–130	375–23 000	H	not possible	GREASE	78
		30–130	375–23 000				80
		30–130	375–23 000				80
		30–130	375–23 000				82
		30–130	375–23 000				82
		30–130	375–23 000				84

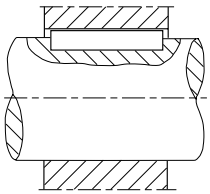
H = high speed | M = middle speed | S = low speed

MOUNTING INSTRUCTIONS: SO THAT IT FITS.

KEY ASSEMBLIES

For all freewheel inner races connected to shaft by a key, our standard bore tolerance is H7, with keyway to JS10. If no other indication we recommend a shaft tolerance of h6 or j6. For maximum indexing accuracy, adjusted keys should be machined to give no clearance.





Bore size	DIN 6885* I Sheet 1				DIN 6885* I Sheet 3			
	$b^{JS\,10}$	h	t_1	t_2	$b^{JS\,10}$	h	t_1	t_2
> 6–8	2 ± 0.020	2	1.2 + 0.1	1 + 0.3				
> 8–10	3 ± 0.020	3	1.8 + 0.1	1.4 + 0.3				
> 10–12	4 ± 0.024	4	2.5 + 0.1	1.8 + 0.3				
> 12–17	5 ± 0.024	5	3 + 0.1	2.3 + 0.3	5 ± 0.024	3	1.9 + 0.1	1.2 + 0.3
> 17–22	6 ± 0.024	6	3.5 + 0.1	2.8 + 0.3	6 ± 0.024	4	2.5 + 0.1	1.6 + 0.3
> 22–30	8 ± 0.029	7	4 + 0.2	3.3 + 0.4	8 ± 0.029	5	3.1 + 0.1	2 + 0.3
> 30–38	10 ± 0.029	8	5 + 0.2	3.3 + 0.4	10 ± 0.029	6	3.7 + 0.2	2.4 + 0.3
> 38–44	12 ± 0.035	8	5 + 0.2	3.3 + 0.4	12 ± 0.035	6	3.9 + 0.2	2.2 + 0.3
> 44–50	14 ± 0.035	9	5.5 + 0.2	3.8 + 0.4	14 ± 0.035	6	4 + 0.2	2.1 + 0.3
> 50–58	16 ± 0.035	10	6 + 0.2	4.3 + 0.4	16 ± 0.035	7	4.7 + 0.2	2.4 + 0.3
> 58–65	18 ± 0.035	11	7 + 0.2	4.4 + 0.4	18 ± 0.035	7	4.8 + 0.2	2.3 + 0.3
> 65–75	20 ± 0.042	12	7.5 + 0.2	4.9 + 0.4	20 ± 0.042	8	5.4 + 0.2	2.7 + 0.3
> 75–85	22 ± 0.042	14	9 + 0.2	5.4 + 0.4	22 ± 0.042	9	6 + 0.2	3.1 + 0.4
> 85–95	25 ± 0.042	14	9 + 0.2	5.4 + 0.4	25 ± 0.042	9	6.2 + 0.2	2.9 + 0.4
> 95–110	28 ± 0.042	16	10 + 0.2	6.4 + 0.4	28 ± 0.042	10	6.9 + 0.2	3.2 + 0.4
> 110–130	32 ± 0.050	18	11 + 0.3	7.4 + 0.4	32 ± 0.050	11	7.6 + 0.2	3.5 + 0.4
> 130–150	36 ± 0.050	20	12 + 0.3	8.4 + 0.4	36 ± 0.050	12	8.3 + 0.2	3.8 + 0.4
> 150–170	40 ± 0.050	22	13 + 0.3	9.4 + 0.4				
> 170–200	45 ± 0.050	25	15 + 0.3	10.4 + 0.4				
> 200–230	50 ± 0.050	28	17 + 0.3	11.4 + 0.4				
> 230–260	56 ± 0.060	32	20 + 0.3	12.4 + 0.4				
> 260–290	63 ± 0.060	32	20 + 0.3	12.4 + 0.4				
> 290–330	70 ± 0.060	36	22 + 0.3	14.4 + 0.4				

*) Keyway tolerances for hardened parts are not given in DIN6885.

PRESS FIT ASSEMBLIES

Shaft and bore tolerances are specified on the pages for each type where press fitting is appropriate.

As with standard bearings, suitable tooling must be used for press fitting such that no axial load is transmitted through the inner part of the freewheel during assembly.

BOLT ASSEMBLIES

In freewheel technology torque is often transmitted through bolts. Experience has shown that it is a practical and reliable way since freewheels transmit torque in only one direction.

Bolt quality and tightening torques to use are as follows:

Thread	Strength standard			
	8.8		10.9	
	Type	[Nm]	Type	[Nm]
M5	RSCI	6	AA, AL, FSO, GFR, HPI, RIZ	8
M6		10		14
M8		25		34
M10		48		68
M12		84		118
M16		206		290
M20		402		550
M24		696		950
M30		1420		1900

RUN-OUT

Permitted run-out tolerances for the mounting of non self supported roller freewheels AA, AE, AS, ASNU, KI and NF (see table on the bottom right).

In order to maintain these limits, ball bearings with standard clearance must be installed adjacent to the freewheel. The permitted run-out for sprag type freewheels DC, RSCI and S200 are given in their respective tables.

Bores-diameter [mm]	AA, AE, AS, ASNU, KI, NF	
	Runout TIR	Squareness TIR
4–8	0.020	0.02
10–17	0.035	0.03
20–50	0.060	0.03
55–100	0.100	0.03
110–150	0.160	0.03

LUBRICATION & MAINTENANCE: NOW LET'S LOOK AFTER IT.

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 +25°C to +60°C Ambient +5°C to +25°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	32	46	100	
ARAL	SUMOROL CM10	SUMOROL CM22	SUMOROL CM 32 MOTANOL HE 32	SUMUROL CM 46 MOTANOL HE 46	DEGOL CL 100 T MOTANOL HE 100	ARALUB HL2
bp	ENERGOL CS10	ENERGOL CS22	ENERGOL CS 32 ENERGOL RC-R-32	ENERGOL CS 46 ENERGOL RC-R 46	ENERGOL CS 100 ENERGOL RC 100	ENERGREASE LS2
Castrol	–	–	AIRCOL PD 32	AIRCOL PD 46	AIRCOL PD 100	SPHEEROL MP 2
Esso	SPINESSO 10	SPINESSO 22	TERESSTIC T 32	TERESSTIC T46	NUTO 100	UNIREX N2
FUCHS	RENOLIN MR3	RENOLIN MR5	RENOLIN MR 10	RENOLIN MR15	RENOLIN MR30	RENOLIT LZR2
KLÜBER LUBRICATION	ISOFLEX PDP 38	ISOFLEX PDP 48	LAMORA HLP 32	LAMORA HLP 46	LAMORA 100	POLYLUB WH2 Klübersynth BM 44–42
Mobil	VELOCITE No 6	VELOCITE No 10	MOBIL DTE 732	MOBIL DTE 798	MOBIL DTE OIL HEAVY	POLYREX EM
Shell	MORLINA S2 BL 10	MORLINA S2 BL 22	MORLINA S2 B 32	MORLINA S2 B 46	MORLINA S2 B 100	GADUS S2 V100 2
TOTAL	AZZOLA ZS10	AZZOLA ZS22	AZZOLA ZS 32	AZZOLA ZS46	AZZOLA ZS100	MULTIS 2

Alternatively we strongly recommend the use of multigrade oil SAE 10W-40 at working temperature between 0°C and +80°C.

OIL

The oil lubricated freewheels from this catalog are delivered lubricated with a VG 32 oil viscosity if they are sealed, self-contained units (except ALP..F7D7, GFRN.. F5F6 and GFR..F3F4).

Other freewheels are delivered without lubricant, other than a protection against corrosion. Before putting a unit into operation, it is necessary to remove the anti corrosive fluid and to fill the unit with appropriate oil.

Generally, for a horizontally mounted unit, the correct oil level is 1/3 of the internal clutch height unless specified. (For vertically mounted units please contact us). Correct lubricants to use are given in the lubrication chart.

Oils including graphite, molybdenum and EP additives should be avoided. This chart is for guidance only. In the case of low or high overrunning speeds, or limiting temperatures, please contact our technical department.

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. If grease lubrication is the only option for one of these types, we recommend you contact our technical department for approval.

GREASE

A number of models have been designed specially for grease lubrication as standard (see page 10–11).
In this case, the unit will always be delivered lubricated, ready for mounting either in horizontal or vertical position. The grease used is a long life type, with high thermal and chemical stability.

Unless specified, no maintenance is required. To increase the service life of units we recommend to remove, clean, inspect and re-grease them after two years of operation.

Note: Unlike all other designs, sprag types RSCI and DC version-N can work with all the current lubricants used in power transmissions.