

SKF® roller screws



The SKF Group

The SKF Group is an international industrial corporation of AB SKF Sweden, founded in 1907, operating in 130 countries. The company has some 45000 employees and more than 80 manufacturing facilities throughout the world.

Its international network is supported by nearly 20000 distributors and retailers. SKF is world leader in the rolling bearing business.

Bearing, seals and special steels are SKF's main product areas. In addition, they also manufacture and sell other industrial precision components and products.

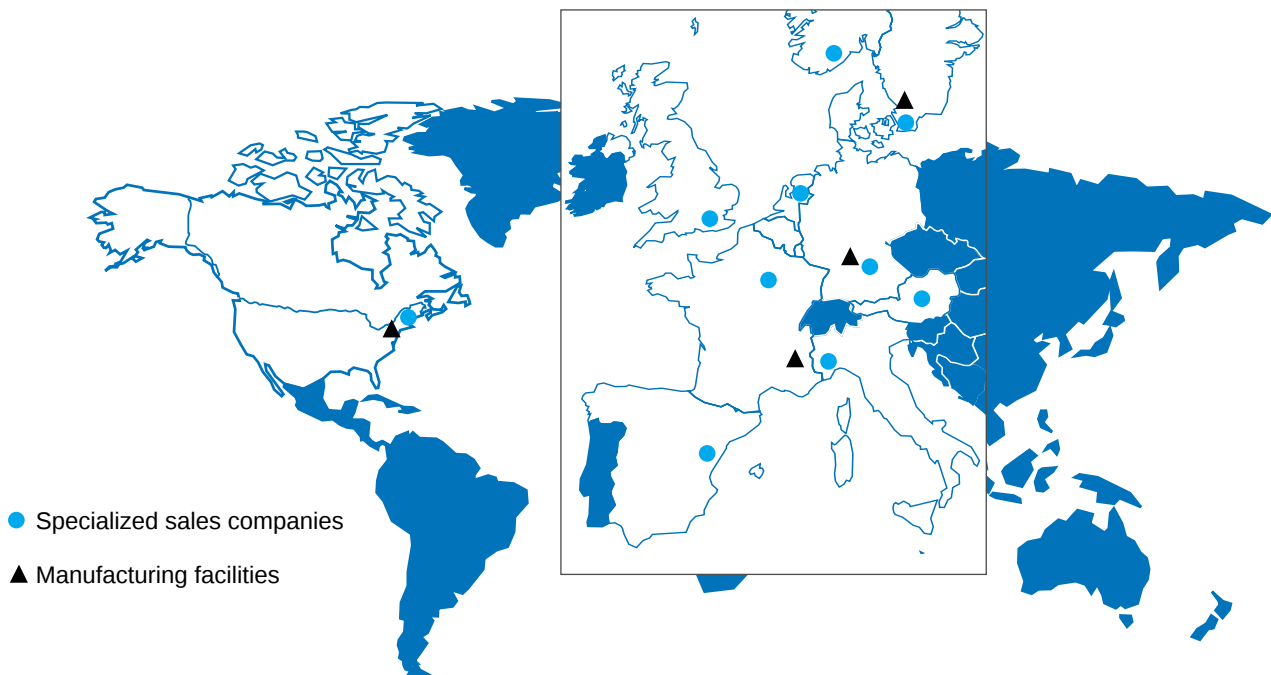
SKF Linear Motion

One of these industrial precision products assortment is manufactured and sold by the SKF Linear Motion Division.

This unit has some 700 employees and 3 product lines. One of the division's strengths is its ability to serve the market through its organization based on specialized Sales Companies located in Europe and North America ; however product availability and product application support is provided world-wide by the SKF international network.

The Linear Motion product range covers :

- high efficiency screws
- linear guiding systems
- electromechanical actuators.



Catalogue n° 4351/7E
June 2002

Printed in France

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The right is reserved to make changes necessitated by technological developments.

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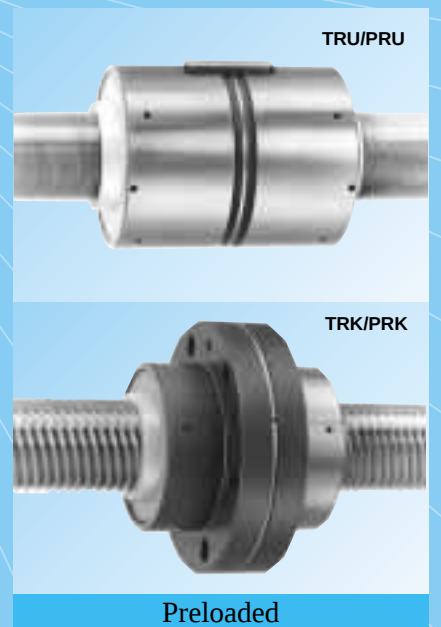
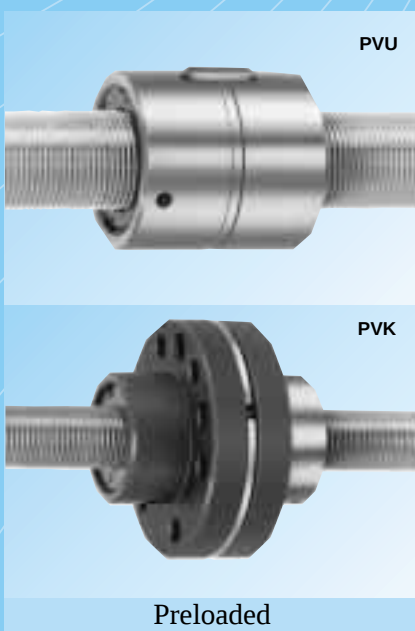
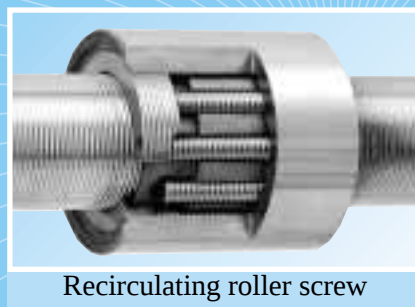
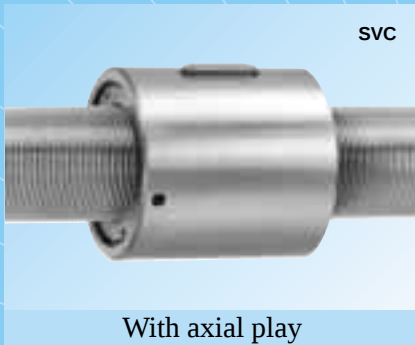
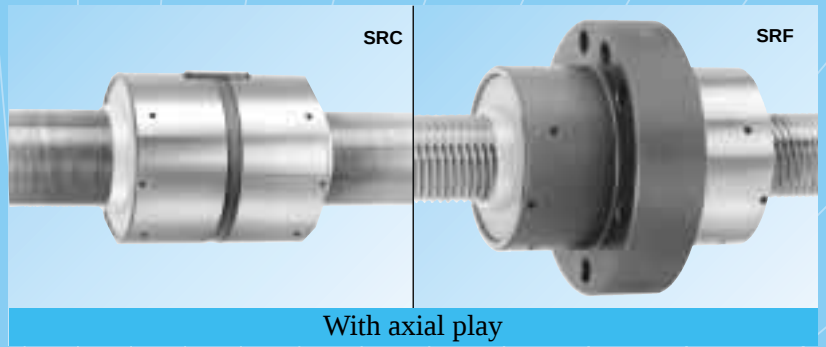
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Service range

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Planetary roller screws : technical data and dimensions

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Recirculating roller screws : technical data and dimensions

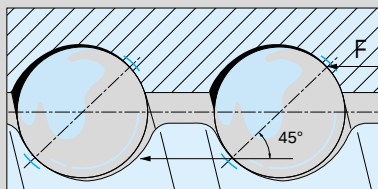
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Comparing roller screws to ball screws

The load carrying capacity of a rolling screw depends practically on the surfaces at the points of contact :

- their diameter
- the number of contacts
- their hardness
- their surface finish
- the precision of the contacts to assure load sharing between them.

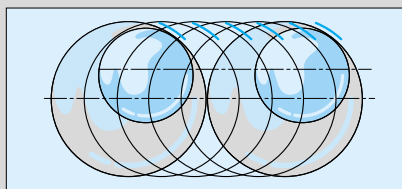
Ball screws



In ball screws, the load is transmitted from the nut to the shaft through the balls engaged in the groove.

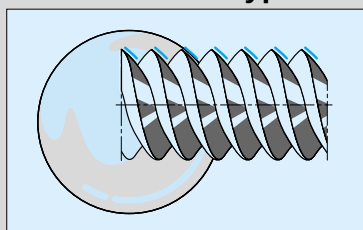
In a single start ball screw, the ball diameter is limited to approximately 70 % of the lead : there is only a single helix of balls in a nut of given length so the number of contacts is small.

Roller screws

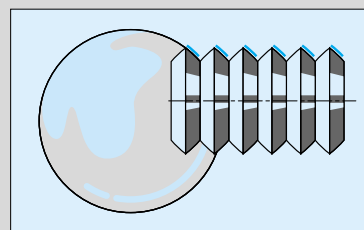


In roller screws, the load is transmitted from the nut to the shaft through the barrelled surfaces of all the engaged rollers. The diameter of the contact surface is substantially increased as is the number of points of contact.

2 types of roller screws



Planetary roller screw
Threaded rollers are the basis of
« SR / BR / TR / PR » planetary roller screws.



Recirculating roller screw
Grooved rollers are the basis of
« SV / BV / PV » recirculating roller screws.

Contact surfaces

=	Diameter	↗
=	Number	↗
=	Hardness	=
=	Surface finish	=
=	Precision	=
=	Load rating	↗

BENEFITS
HIGH LOAD RATINGS

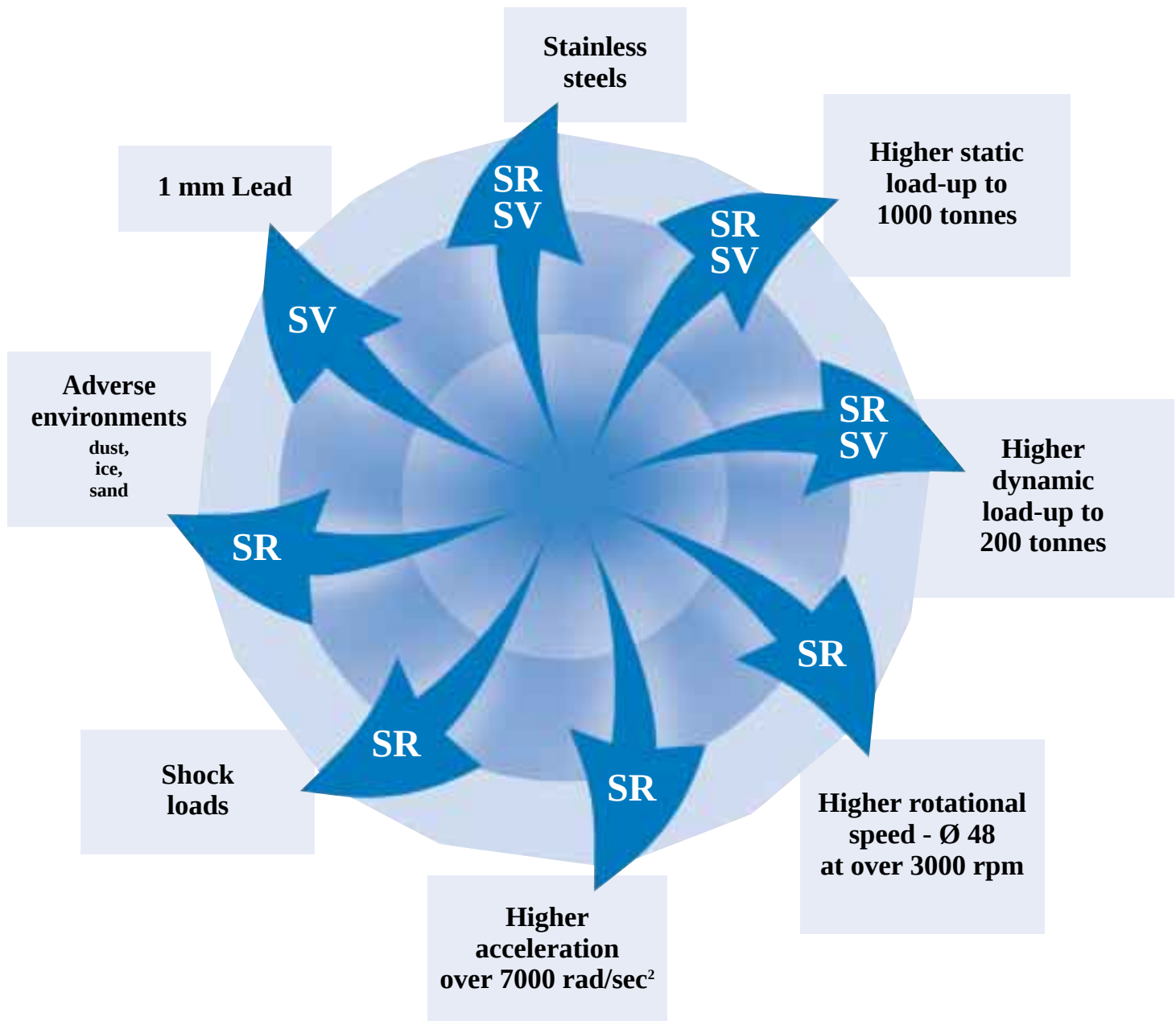
LOW
COST OF USE

Extended
life

Minimum
maintenance
costs

More reliable
operation

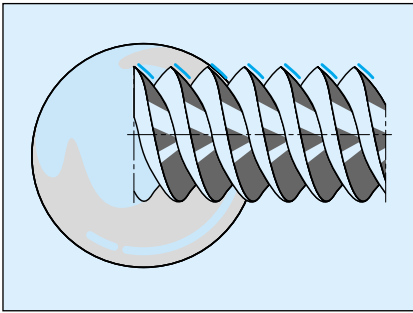
Break out from the limitations of ball screw performance



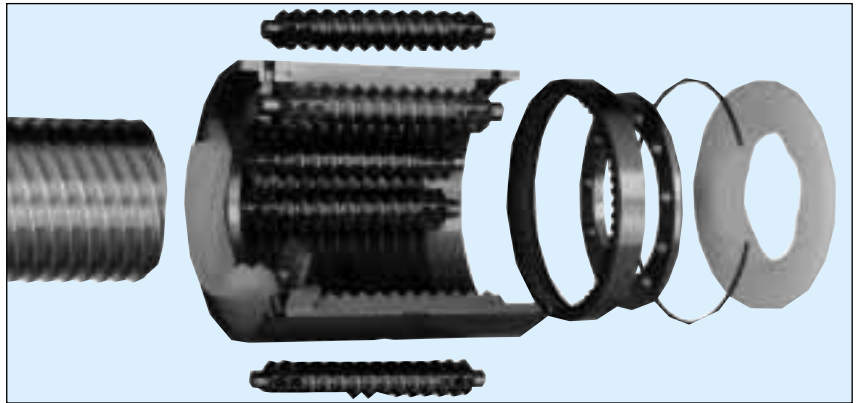
The 10 reasons for using roller screws

- High load ratings (SR-SV)
- Very high rotational speed (SR)
- High acceleration and deceleration rates (SR)
- Long life at high cycling rates (SR)
- High reliability (SR-SV)
- Resistance to hostile surroundings (SR)
- Ability to survive shock loads (SR)
- Small displacements with very good repeatability (SV)
- Rotating the nut when speed becomes critical (SR)
- Frequently removing the nut from the screw shaft (SR-most SV)

The principle of planetary roller screws



Threaded rollers are the basis of SR/BR/TR/PR planetary roller screws.



The specific qualities of SKF planetary roller screws

Many strong contact surfaces	High load carrying capacity	Long life
No recirculation	No weak points in the nut High rotation speed	Less fatigue Robust & shock resistant
Guided rollers	No loss in preload torque when changing direction	Smooth running
Timing mechanism	Exceptional reliability	Ability to work with ice, dirt or poor lubrication
Adaptable tooling	Non standard and left hand leads available	Tailor-made

All parts made "in house", special steels possible

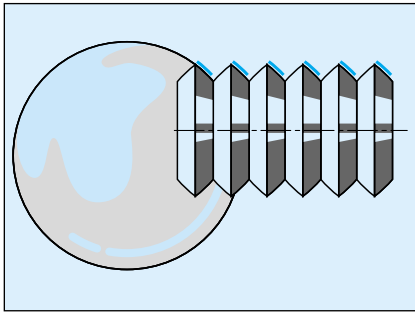
Typical applications

The capacity to carry heavy loads for thousands of hours in the most arduous conditions makes SR/BR/TR/PR planetary roller screws suitable for the most demanding applications. The robust nut can withstand shock loads and the timing mechanism ensures reliability even in harsh environments and at high accelerations ; the long lead and the symmetrical design of the nut permit high linear speeds.

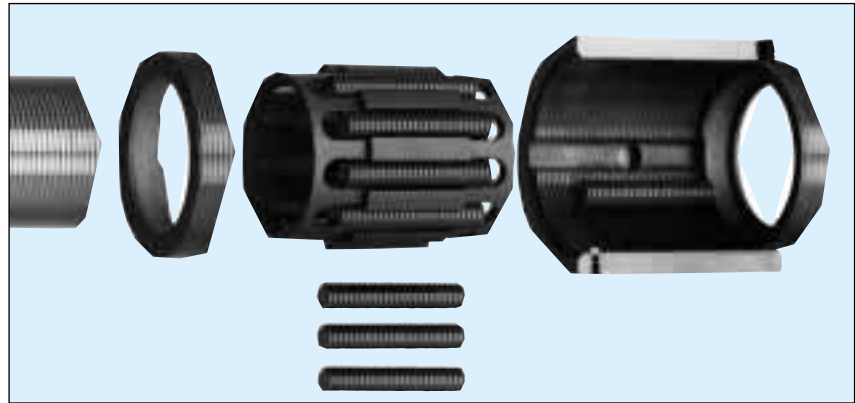
Examples :

- Machine tools.
- The steel industry.
- The tyre industry.
- Automatic handling.
- Military aircraft, tanks, rocket launchers, radar, ships and submarines.
- The nuclear industry.

The principle of recirculating roller screws



Grooved rollers are the basis of SV/BV/PV recirculating roller screws.



The specific qualities of SKF recirculating roller screws

Very small leads (1mm)	Fine resolution	Minimum drive torque	High mechanical advantage
No miniature parts	Simple	Robust	Reliable
Many strong contact points	Heavy load carrying capacity	High rigidity	Long life

All parts made "in house", special steels possible

Typical applications

Ultimate positioning accuracy can be obtained using the fine lead of SV/BV/PV recirculating roller screws. Their great mechanical advantage minimizes input torque and increases resolution. They can simplify a complete transmission and improve its rigidity. They are often used in applications of advancing technology where reliable optimum performance is vital.

Examples :

- Grinding machines
- Laboratory equipment.
- Hospital equipment.
- Paper making
- The printing industry
- Telescopes
- Satellites

Recommendations for selection

Only basic selection parameters are included. To make the very best selection of a roller screw, the designer should specify such critical parameters as the load spectrum, the linear or rotational speed, the rates of acceleration and deceleration, the cycle rate, the environment, the required life, the lead accuracy, the stiffness, and any special requirement. If in doubt, please consult an SKF specialist before placing an order.

Basic dynamic load rating (C_a)

The dynamic rating is used to compute the fatigue life of roller screws. It is the axial load constant in magnitude and direction, and acting centrally under which the nominal life (as defined by ISO) reaches one million revolutions.

Nominal fatigue life L_{10}

The nominal life of a roller screw is the number of revolutions (or the number of operating hours at a given constant speed) which the roller screw is capable of enduring before the first sign of fatigue (flaking, spalling) occurs on one of the rolling surfaces (screw, nut or roller thread or groove).

It is however evident from both laboratory tests and practical experience that seemingly identical roller screws operating under identical conditions have different lives, hence the notion of **nominal life**. It is, in accordance with ISO definition, the life achieved or exceeded by 90% of a sufficiently large group of apparently identical roller screws, working in identical conditions (alignment, axial and centrally applied load, speed, acceleration, lubrication, temperature and cleanliness).

Service life

It is the actual life achieved by a specific roller screw before it fails. Failure is not only by fatigue (flaking or spalling) ; but also by inadequate

lubrication end wear ; wear of the recirculation system, corrosion, contamination, and, more generally, by loss of the functional characteristics required by the application. Experience acquired with similar applications will help to select the proper screw to obtain the required service life. Also, one must take into account structural requirements such as the strength of screw ends and nut attachments, due to the loads applied on the elements in service.

Equivalent dynamic loads

The loads acting on the screw can be calculated according to the laws of mechanics if the external forces (e.g. power transmission, work, rotary and linear inertia forces) are known or can be calculated. It is necessary to calculate the equivalent dynamic load : this load is defined as that hypothetical load, constant in magnitude and direction, acting axially and centrally on the screw which, if applied, would have the same influence on the screw life as the actual loads to which the screw is subjected. Radial and moment loads must be taken by linear bearing systems. It is extremely important to resolve these problems **at the earliest conceptual stage**. These forces are detrimental to the life and the expected performance of the screw.

Fluctuating load

When the load fluctuates during the working cycle, it is necessary to calculate the equivalent dynamic load :

this load is defined as that hypothetical load, constant in magnitude and direction, acting axially and centrally on the screw which, if applied, would have the same influence on the screw life as the actual loads to which the screw is subjected. Additional loads due, for example to misalignment, uneven loading, shocks, and so on, must be taken in account. Their influence on the nominal life of the screw is generally taken care of, consult SKF for advice.

Static load carrying capacity (C_{0a})

Roller screws should be selected on the basis of the basic static load rating C_{0a} instead of on life when they are submitted to continuous or intermittent shock loads, while stationary or rotating at very low speed for short duration. The permissible load is determined by the permanent deformation caused by the load acting at the contact points. It is defined by ISO standards as the purely axially and centrally applied static load which will create, by calculation, a total (rolling element + thread surface) permanent deformation equal to .0001 of the diameter of curvature of the rolling element.

The roller screw must be selected by its basic static load rating which must be, at least, equal to the product of the maximum axial static load applied and a safety factor " s_0 ". The safety factor is selected in relation with past experience of similar applications and requirements of running smoothness and noise level (1).

(1) SKF can help you to define this value in relation with the actual conditions of service.

Critical rotating speed for screw shafts

The shaft is equated to a cylinder the diameter of which is the root diameter of the thread. The formulas use a parameter the value of which is dictated by the mounting of the screw shaft (whether it is simply supported or fixed). As a rule the nut is not considered as a support of the screw shaft. Because of the potential inaccuracies in the mounting of the screw assembly, a safety factor of .80 is applied to the calculated critical speeds.

Calculations which consider the nut as a support of the shaft, or reduce the safety factor, require practical tests and possibly an optimization of the design (1).

Permissible speed limit

The permissible speed limit is that speed which a screw cannot reliably exceed at any time. It is generally the limiting speed of the recirculation system in the nut. It is expressed as the product of the rpm and the diameter of the screw shaft (in mm). The speed limits quoted in this catalogue are the **maximum speed that may be applied through very short periods** and in optimized running conditions of alignment, light external load and preload with monitored lubrication. Running a screw continuously at the permissible speed limit may lead to a reduction of the calculated life of the nut mechanism.



High speed associated with high load requires a large input torque and yields a relatively short nominal life (1). In the case of high acceleration and deceleration, it is recommended to either work under a nominal external load or to apply a light preload to the nut to avoid internal sliding during reversal. The value of the preload of screws submitted to high acceleration is that preload which ensures

the rolling elements do not slide (1). Too high a preload will create unacceptable increases of the internal temperature.

The **lubrication** of screws rotating at high speed must be properly considered in quantity and quality. The volume, spread and frequency of the application of the lubricant (oil or grease) must be properly selected and monitored. At high speed the lubricant spread on the surface of the screw shaft may be thrown off by centrifugal forces. It is important to monitor this phenomenon during the first run at high speed and possibly adapt the frequency of re-lubrication or the flow of lubricant, or select a lubricant with a higher viscosity. Monitoring the steady temperature reached by the nut permits the frequency of re-lubrication or the oil flow rate to be optimized.

Oil lubrication

A centralised recirculating oil system is ideal because it continuously changes the oil in the nut with cooled filtered oil from the reservoir. This system is prescribed when the temperature is likely to affect the positioning accuracy. The flow of oil can be regulated to optimise film thickness and removal of heat.

Selection of oil

Mineral oil normally used to lubricate other rotating parts such as bearings and gears may be used for the screw. The viscosity of the oil is defined by the speed, running temperature and load. The oil should have a viscosity of 100 ISO at the running temperature. An increase in viscosity or speed will increase the running temperature. At low speed (< 10 rpm) the viscosity should be 200 ISO at the running temperature. Under heavy load an EP additive to improve the film strength is recommended. Corrosion resistant and stabilizing additives may also be used to advantage.

Grease lubrication

Where oil lubrication is not practicable, the grease recommended for the support bearings of the screw may also be used for the screw.

After a few full strokes the grease will be spread evenly over the useful threaded length of the screw shaft, which will also help to protect the screw against corrosion. However the grease is open to the air. To prevent dirt which may fall on it from entering the nut, wipers should be mounted in each end of the nut. Also the grease on the screw shaft will age more quickly than that in the screw support bearings so more frequent regreasing is needed, especially in a dirty environment. If the screw cannot be dismounted and cleaned before regreasing it is necessary to thoroughly clean the old grease from the screw shaft. This can be done with a spatula and then with a clean fluff proof cloth. To clean even more a cloth wetted with a solvent such as white spirit may be used. We do not advise using brushes to remove old or spread new grease (risk of bristles coming out). Apply also the new grease through the nut to push out the old from inside the nut.

The grease type is defined above all by the operating temperature, environment and load on the screw.

Speed, starting torque and chemical compatibility may also be taken into consideration.

Normally bearing greases of NLGI consistency 2 are used. A grease which is too hard at low temperature may restrict rotation or one which is too soft at high temperature may run off.

Selection of grease

Lithium base greases are generally suitable for use from -30°C to +110°C. A few can be used to +150°C. Lithium base greases are virtually insoluble in water and very work

(1) SKF can help you to define this value in relation with the actual conditions of service.

stable. However they absorb large quantities of water when worked to extremes. Other soaps are advised in the presence of much water. At low speed or heavy load lithium base greases with EP additive are recommended as they adhere well to the rolling surfaces and are insoluble in water. As a rule EP greases are recommended for medium and large sized screws.

Lubrication interval

The lubrication interval depends on the working cycle of the screw and whether the lubricant is polluted during use. General advice is difficult but the following will help you to define the interval. On start up check the grease quality regularly, for instance every month.

If the viscosity of the grease sample has increased, it needs replacing. If the grease sample is darker than new it may indicate oxidation or the presence of metallic particles. If it is discoloured, it is probably mixed with water.

It is helpful to take samples not only from the part of the screw where running has occurred but also from unused parts of the screw where the grease acts as corrosion preventer.

Quantity of lubricant

• Oil

We advise a quantity of 5 → 25 cm³/h in shots of 0,1 cm³ as an order of magnitude depending on the size of the screw and its running conditions.

• Grease

The total volume of grease needed for a new roller screw is the sum of the quantities needed for the screw shaft and the nut.

The volume of grease necessary for the screw shaft Z_s can be estimated from this formula

$$Z_s = 4,4 \times 10^{-4} d_o l_1$$

This quantity of grease should be spread over the whole threaded length of the shaft. The volume of grease for the nut Z_n is one third of the free volume in the nut. The quantity Z_n is given in the dimension tables : it should be injected through the lubrication hole while turning the shaft.

Before applying load the nut should be run twice along the complete stroke to ensure grease is evenly spread.

Relubrication, see also 'Grease lubrication'

In the case of the existing grease being polluted, remove as much of it as possible and apply the same quantity as when first lubricated. If the existing grease is clean add a volume Z_n into the nut.

Efficiency and back-driving

The performance of a screw is mainly dependant on the geometry of the contact surfaces and their finish as well as the helix angle of the thread. It is, also, dependant on the working conditions of the screw (load, speed, lubrication, preload, alignment, etc...). The «**direct efficiency**» is used to define the input torque required to transform the rotation of one member into the translation of the other. Conversely, the «**indirect efficiency**» is used to define the axial load required to transform the translation of one member into the rotation of the other one. It is used, also, to define the braking torque required to prevent that rotation.

It is safe to consider that these screws are reversible or back-driveable under almost all circumstances. It is therefore necessary to design a brake mechanism if backdriving is to be avoided (gear reducers or brake).

Preload torque : Internally preloaded screws exhibit a torque due to this preload. This persists even when they are not externally loaded. Preload torque is measured at 50 rpm when assembly is lubricated with ISO grade 64 oil.

Starting torque :

This is defined as the torque needed to overcome the following to start rotation :

a) the total inertia of all moving parts accelerated by the energy source (including rotation and linear movement).

b) the internal friction of the screw/nut assembly, bearing and associated guiding devices.

In general, torque to overcome inertia (a) is greater than friction torque (b).

The coefficient of friction of the high efficiency screw when starting μ_s is estimated at up to double the dynamic coefficient μ , under normal conditions of use.

Axial play and preload

Preloaded nuts are subject to much less elastic deformation than non-preloaded nuts. Therefore they should be used whenever the accuracy of positioning under load is important.

Preload is that force applied to a set of two half nuts to either press them together or push them apart with the purpose of eliminating backlash or increasing the rigidity or stiffness of the assembly. The preload is defined by the value of the preload torque (see under that heading in the previous paragraph). The torque depends on the type of nut and on the mode of preload (elastic or rigid).

Static axial stiffness of a complete assembly

It is the ratio of the external axial load applied on the system and the axial displacement of the face of the nut in relation with the fixed (anchored) end of the screw shaft. The inverse of the **rigidity of the total system** is equal to the sum of all the inverses of the rigidity of each of the components (screw shaft, nut as mounted on the shaft, supporting bearing, supporting housings, etc...). Because of this, the rigidity of the total system is always less than the smallest individual rigidity.

Nut rigidity

When a preload is applied to a split nut, firstly, the internal play is eliminated, then, the Hertzian elastic deformation increases as the preload applied so that the overall rigidity increases. The theoretical deformation does not take into account machining inaccuracies, actual sharing of the load between the different contact surfaces, the elasticity of the nut and of the screw shaft. The practical stiffness values given in the catalogue are lower than the theoretical values for this reason. They are determined by SKF based on the value of the selected basic preload and an external load equal to twice this preload.

Elastic deformation of screw shaft

This deformation is proportional to its length and inversely proportional to the square of the root diameter. According to the relative importance of the screw deformation (see rigidity of the total system), too large an increase in the preload of the nut and supporting bearings yields a limited increase of rigidity and notably increases the preload torque and therefore the running temperature. Consequently, the preload stated in the catalogue for each dimension is optimum and should not be increased.

Screw shaft buckling

The column loading of the screw shaft must be checked when it is submitted to compression loading (whether dynamically or statically). The maximum permissible compressive load is calculated using the Euler formulas. It is then multiplied by a safety factor of 3 to 5, depending on the application.

The type of end mounting of the shaft is critical to select the proper coefficients to be used in the Euler formulas.

When the screw shaft comprises a single diameter, the root diameter is used for the calculation. When the screw comprises different sections with various diameters, calculations become more complex (1).

Manufacturing precision

Generally speaking, the precision indication given in the designation defines the lead precision : see page 13. - Lead precision according to ISO (ex. G1 - G5...).

Parameters other than lead precision correspond to our internal standards (generally based on ISO «class 5»).

If you require special tolerances (for example class 1 or 3) please specify when requesting a quotation or ordering.

Materials and heat treatments

Standard screw shafts are machined from 42 CrMo4 steel which is surface hardened by induction.

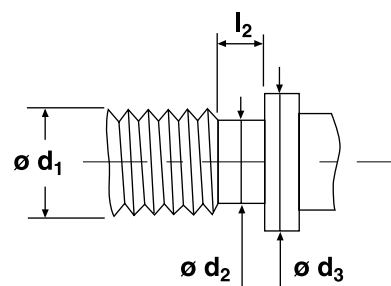
Standard nuts are machined in 100Cr6 steel which is through hardened.

Hardness of the contact surfaces is 56-60 HRC.

Most assemblies made of stainless material have a surface hardness in the range 42 to 58 HRC : the load rating of the catalogue therefore must be derated (1).

Shaft Design

It is possible to deliver roller screws with **one** end larger than the outside diameter, d_1 of the shaft. To grind the thread efficiently an undercut at root diameter d_2 and length l_2 is needed.



When $d_3 \leq 1,3 d_1$

SR/BR/TR/PR

$P_h \leq 8 \text{ mm},$
 $P_h > 8 \text{ mm},$

$l_2 \geq 10 \text{ mm}$
 $l_2 \geq 1,4 P_h$

SV/BV/PV

$P_h = 1$

+ 40 x 2, 50 x 2, 63 x 2
 All others

$l_2 \geq 9 \text{ mm}$
 $l_2 \geq 14 \text{ mm}$

Working environment

Our products have not been developed for use in an explosive atmosphere, consequently we cannot take any responsibility for their use in this field.

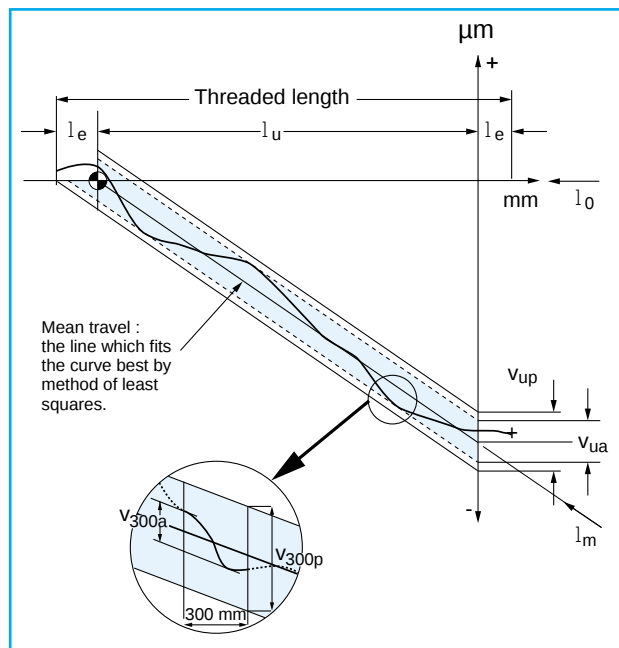
NOTE : 42 CrMo4, an AFNOR reference is similar to AISI 4140; 100Cr6 is similar to AISI 52100.

(1) SKF can help you to define this value in relation with the actual conditions of service.

Lead precision according to ISO

Lead precision is measured at 20°C on the useful stroke l_u , which is the threaded length decreased, at each end, by the length l_e equal to the screw shaft diameter.

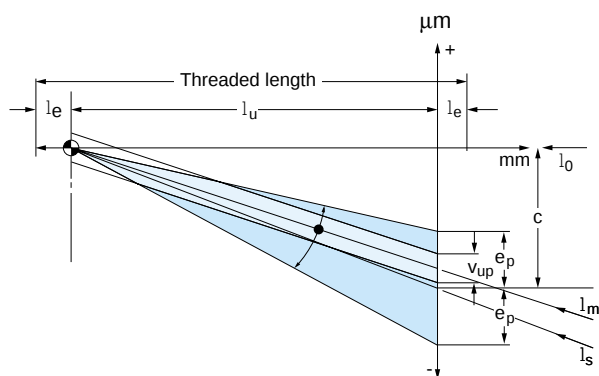
	G1		G3		G5	
V_{300p} , μm	6		12		23	
l_u mm	e_p μm	v_{up} μm	e_p μm	v_{up} μm	e_p μm	v_{up} μm
0 - 315	6	6	12	12	23	23
(315) - 400	7	6	13	12	25	25
(400) - 500	8	7	15	13	27	26
(500) - 630	9	7	16	14	32	29
(630) - 800	10	8	18	16	36	31
(800) - 1000	11	9	21	17	40	34
(1000) - 1250	13	10	24	19	47	39
(1250) - 1600	15	11	29	22	55	44
(1600) - 2000			35	25	65	51
(2000) - 2500			41	29	78	59
(2500) - 3150					96	69
(3150) - 4000					115	82



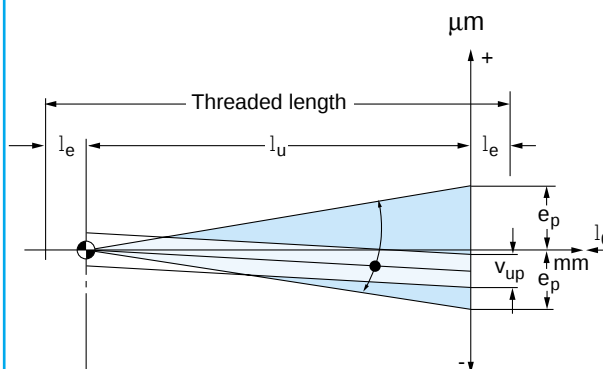
- l_u = useful travel
- l_e = excess travel (no lead precision required)
- l_o = nominal travel
- l_s = specified travel
- c = travel compensation (difference between l_s and l_o to be defined by the customer, for instance to compensate an expansion)
- e_p = tolerance over the specified travel

- V = travel variation (or permissible band width)
- V_{300p} = maximum permitted travel variation over 300 mm
- V_{up} = maximum permitted travel variation over the useful travel l_u
- V_{300a} = measured travel variation over 300 mm
- V_{ua} = measured travel variation over the useful travel

Case with value of c specified by the customer.



Cas with $c = 0$ = standard version in case of no value given by the customer.



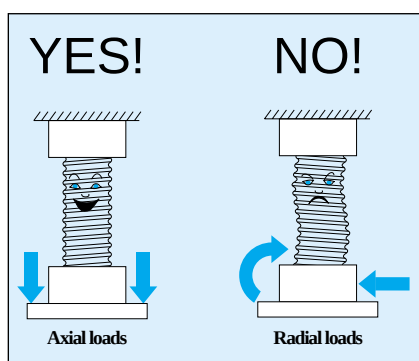
Recommended assembly procedure

Roller screws are precision components and should be handled with care to avoid shocks. When stored out of the shipping crate they must lie on wooden or plastic vee blocks and should not be allowed to sag.

Screw assemblies are shipped, wrapped in a heavy gauge plastic tube which protects them from foreign material and possible pollution. They should stay wrapped until they are used.

Radial and moment loads

Any radial or moment load on the nut will overload some of the contact surfaces, thus significantly reducing its life.



Alignment

SKF linear guidance components should be used to ensure correct alignment and avoid non-axial loading. The parallelism of the screw shaft with the guiding devices must be checked. If external linear guidance prove impractical, we suggest mounting the nut on trunnions or gimbals and the screw shaft in self-aligning bearings.

Mounting the screw in tension helps align it properly and eliminates bucking.

Lubrication

Good lubrication is essential for the proper functioning of the screw and for its long term reliability (1). Before shipping, the screw is coated with a protective fluid that dries to a film. ***This protective film is not a lubricant.***

Depending on the selected lubricant, it may be necessary to remove this film before applying the lubricant (there may be a risk of non-compatibility).

If this operation is performed in a potentially polluted atmosphere it is highly recommended to proceed with a thorough cleaning of the assembly.

Designing the screw shaft ends

Generally speaking, when the ends of the screw shaft are specified by the customer's engineering personnel, it is their responsibility to check the strength of these ends. Roller screws can be supplied with one end bigger than the diameter of the threaded portion. The core strength of such an end may be affected by large reductions of diameter. When this concept of a large end is used, a minimum length at root diameter is needed between the end of the thread and the face of the larger diameter. This minimum length is 5 mm for recirculating roller screws (SV), and 1.5 times the lead of thread for the planetary design (SR).

Starting-up the screw

After the assembly has been cleaned, mounted and lubricated, it is recommended that the nut is allowed to make several full strokes at low speed ; to check the proper positioning of the limit switches or reversing mechanism before applying the full load and the full speed.

Operating temperature

Screws made from standard steel (see page 12) and operating under normal loads can sustain temperatures in the range minus 20°- plus 110° Celsius.

Between 110° Celsius and 130° Celsius, SKF must be notified so that it adapts the annealing procedure and checks that the application can be successful with a hardness below the standard minimum value (see page 12).

Above 130° Celsius, steels adapted to the temperature of the application should be selected.

Consult SKF for advice.

NOTE :

Operating at high temperature will lower the hardness of the steel, alter the accuracy of the thread and may increase the oxidability of the materials.

(1) SKF can help you to define this value in relation with the actual conditions of service.

Preload adjustment

Cylindrical nuts

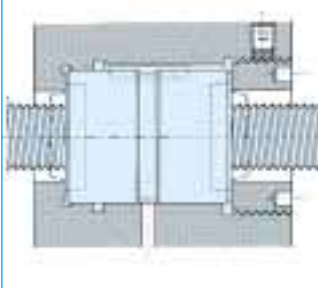
In the case of cylindrical nuts (types TRU and PRU for planetary roller screws - type PVU for recirculating roller screws), the threaded housing stoppers must be tightened to the values shown into tables 1 and 2 below.

These torques can also be used when using nuts with play (SRC - SVC).

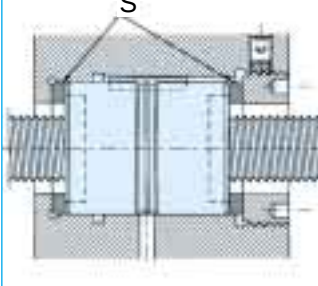
d ₀	SRC / BRC / TRU / PRU		
	Housing stopper thread mm	Tightening torque mN	Squeeze load N
8	30 x 1.0	20	2700
12	35 x 1.0	35	4100
15	40 x 1.0	45	4600
21	50 x 1.0	65	5500
25	60 x 1.0	80	5500
30	70 x 1.5	100	5900
39	90 x 1.5	140	6400
44	88 x 1.5	160	7600
48	110 x 1.5	180	6800
60	130 x 2.0	230	7400
64	125 x 2.0	250	8300
75	158 x 2.0	310	8200
80	148 x 2.0	340	9600
99	215 x 2.5	440	8500
120	230 x 2.5	550	9950
150	340 x 2.5	730	8950

Table 1

SRC/BRC



TRU/PRU S

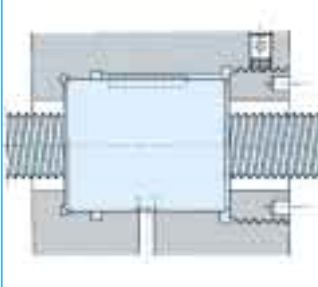


The standard nut is through hardened to 56 → 60 HRC : under some load conditions it is necessary to use hardened & ground spacers (S) to avoid bedding of the nut into the housing & stopper resulting in loss of preload and rigidity.

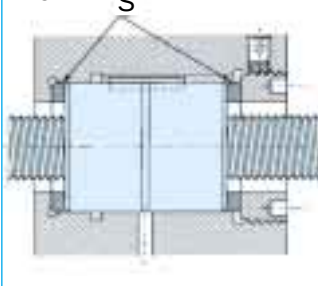
d ₁	SVC / BVC / PVU		
	Housing stopper thread mm	Tightening torque mN	Squeeze load N
8	25 x 1	20	3250
10	27 x 1	27	4000
12	30 x 1	35	4800
16	35 x 1	48	5600
20	40 x 1	62	6400
25	47 x 1	82	7200
32	60 x 1	110	7600
40	75 x 1.5	145	8000
50	87 x 1.5	190	9000
63	108 x 2	250	9600
80	146 x 2	335	9500
100	185 x 2.5	440	9900
125	230 x 2.5	580	10000

Table 2

SVC/BVC



PVU S



Flanged nuts

For flanged nuts (types TRK and PRK for planetary roller screws - type PVK for recirculating roller screws), fixing bolts must be tightened according to table 3.

d ₀	TRK / PRK / PVK		
	Number of screws	Screw size	Tightening torque mN
8	6	M4	3
10	6	M4	3
12	6	M4	3
15	6	M5	6
16	6	M4	3
20	6	M5	6
21	6	M5	6
25 (T/PRK)	6	M6	10
25 (PVK)	6	M5	6
30	6	M8	25
32	6	M6	10
36	6	M8	25
39	6	M10	50
40	6	M8	25
44	6	M10	50
48	6	M12	80
50	6	M10	50
56	6	M12	80
60	6	M16	200
63	6	M12	80
64	6	M16	200
80	8	M16	200
100	12	M16	200
125	12	M18	270

Table 3

Preload torque tolerances

For each roller screw, preloaded for optimum rigidity, a range of value of preload torque, T_{pr} is given in the technical data. The customer is free to choose any value in this range : if no value is specified on the order the mean value will be taken.

A. Tolerance of preload torque for screws with $\varnothing < 11^\circ$

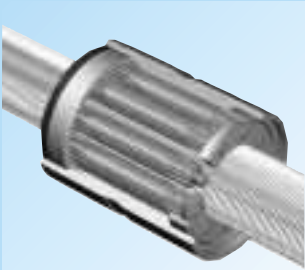
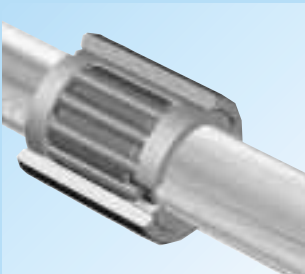
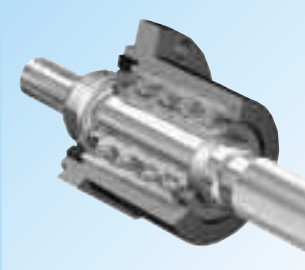
	$l_1/d_0 \leq 40$ and $l_1 \leq 4000$			$l_1/d_0 \leq 60$ and $l_1 \leq 4000$		
Tpr	G1	G3	G5	G1	G3	G5
Nm	±%					
≤ 0,2	35	40	50	40	50	60
(0,2) - 0,6	25	30	35	30	35	40
(0,6) - 1,0	20	25	30	25	30	35
(1,0) - 2,5	15	20	25	20	25	30
(2,5) - 6,3	10	15	20	15	20	25
(6,3) - 10,0	10	10	15	15	15	20

B. Tolerance of preload torque for screws with $\varnothing \geq 11^\circ$

	$l_1 \leq 2000$		$2000 \leq l_1 \leq 4000$	
Tpr	G3	G5	G3	G5
Nm	±%			
0 - 10,0	70	80	80	90

Planetary roller screws preloaded for optimum rigidity with $\varnothing \geq 11^\circ$ are not available in G1 lead precision.

“Service” Range

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 SKF Planetary roller screws • Standard nuts 18 • BRC range 19-20	
 SKF Recirculating roller screws • Standard nuts 18 • BVC range 19-21	
 SKF Flanged thrust bearing units	22

Optimum performance at minimum cost and short delivery

SKF offers linear motion systems including roller screws and thrust bearing units with short delivery time.
Contact us.

Service Range Standard nuts SRC - SVC

► Planetary roller screw, SRC

d ₀	P _h	N	C _a	C _{oa}	S _{ap}	Dimensions
15	5	5	21,2	36,3	0,02	See pages 26 ► 29
21	5	5	41,3	68,3	0,02	
30	5	5	75,2	148,6	0,02	
39	5	5	105,6	224,1	0,02	
39	10	10	124,8	225,8	0,04	
48	10	5	189,3	395,9	0,04	

Nuts with axial play. Backlash elimination with oversize rollers as an option*. Available on short delivery.

► Recirculating roller screw, SVC

d ₀	P _h	N	C _a	C _{oa}	S _{ap}	Dimensions
20	1	1	18,5	36,6	0,02	See pages 46 ► 47
25	1	1	32,9	68,4	0,02	
32	1	1	64,3	159,2	0,02	
50	1	1	189,8	544,3	0,02	
50	2	2	98,1	249,4	0,04	

Nuts with axial play. Backlash elimination with oversize rollers as an option*. Available on short delivery.

* as an option under following conditions :

► $\frac{\text{total length}}{d_0} \leq 30$

► $\frac{\text{threaded length}}{d_0} \leq 15$

Service Range BR - BV

Advantages

1. Machined ends to customer drawing

Only **2 weeks** to machine the ends from premachined stocked units :

- ▶ suitable for the SKF thrust bearing unit with threaded length defined by you, and a second end if required.
- ▶ completely to your drawing.

Note Premachined shafts can also be delivered for machining by the customer (coated with Quakers rust inhibitor).

2. Maximum speed

For screw assembly BR + FLRBU or BV + FLRBU, the maximum speed is defined by the product $n \times d_1$

$$\begin{aligned} n \times d_1 &< 20\,000 \text{ for BV} \\ &< 140\,000 \text{ for BR} \end{aligned}$$

3. High load capacity and no play

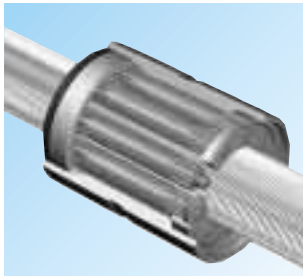
The load capacity of a one piece cylindrical nut and no play !
Roller screw nuts are preloaded with oversize rollers
(no loss of load capacity as with “split” nuts).

4. Lead precision

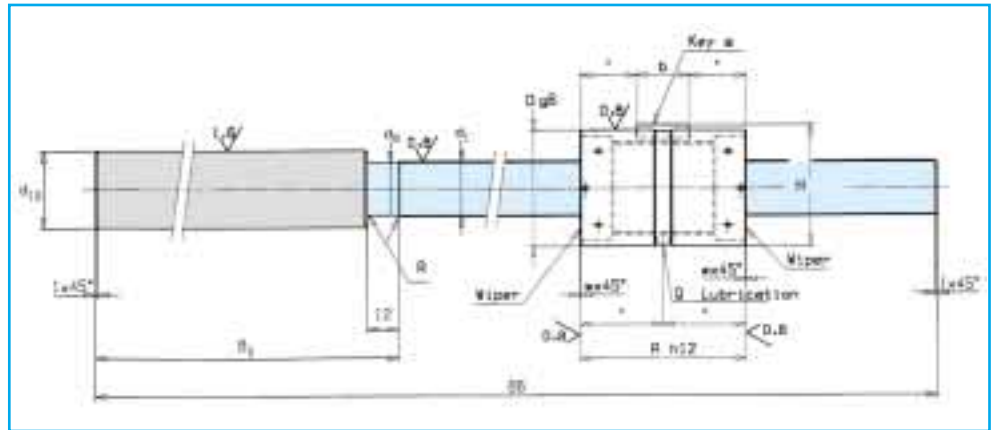
Available in G5 according to ISO standard.

5. Ready for use

Roller screw and thrust bearing are delivered greased with SKF LGEP2 (temperature range -20°C / +120°C).

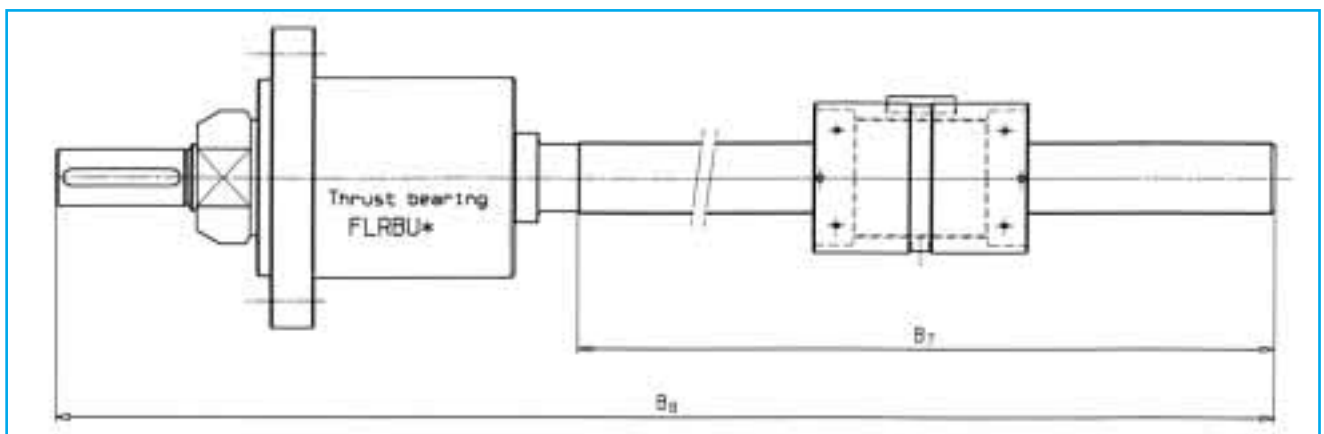


Planetary roller screw



	Basic axial load rating		Maximum preload torque *	Minimum nut stiffness	Screw dimensions						Nut dimensions						
Designation	C _a kN	C _{oa} kN	T _{pr} Nm	R _{nr} N/μm	d ₁	d ₈	d ₁₀	B ₅	B ₆	R	D	A	w	a	b	H	Q
BRC 15x5-R5	21.2	36.3	0.10	150	15.4	14.4	25	115	400	1.2	35	50	0.5	4	16	36.5	5
BRC 21x5-R5	41.3	68.3	0.30	200	21.4	20.4	30	158	550	1.2	45	64	0.5	5	20	47	5
BRC 30x5-R5	75.2	148.6	0.60	300	30.4	29.4	50	213	800	2	64	85	0.5	6	32	66.5	5
BRC 39x5-R5	105.6	224.1	1.10	400	39.4	38.4	50	213	1000	2	80	100	1	8	40	83	7

“BR” roller screw + thrust bearing assembly



Screw designation	Thrust bearing designation	B ₇	B ₈
BRC 15x5-R5	FLRBU2	285	398
BRC 21x5-R5	FLRBU3	392	548
BRC 30x5-R5	FLRBU5	587	798
BRC 39x5-R5	FLRBU5	787	998



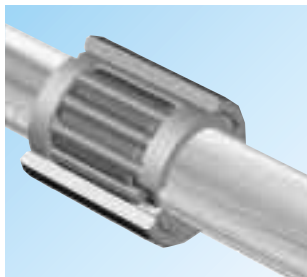
End which can be machined to customer requirements



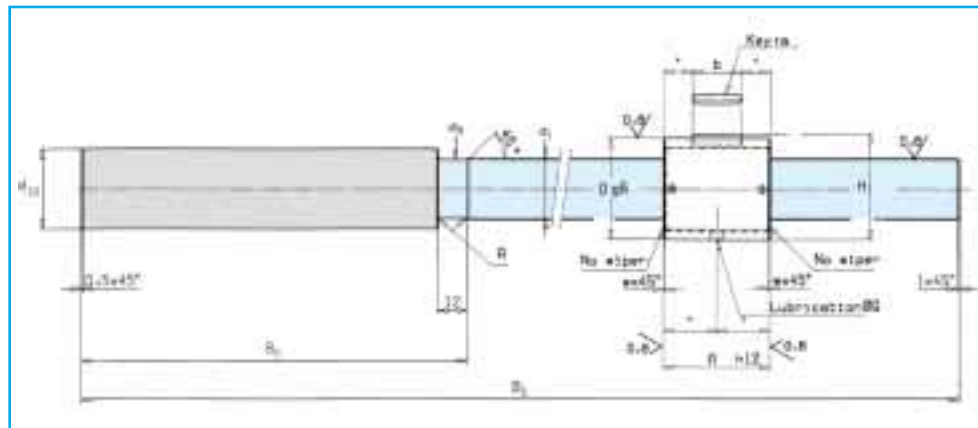
Maximum threaded length : can be cut & machined to customer requirements

N.B. : Nut and thrust bearing unit cannot be modified

* Preload torque measured at 50rpm

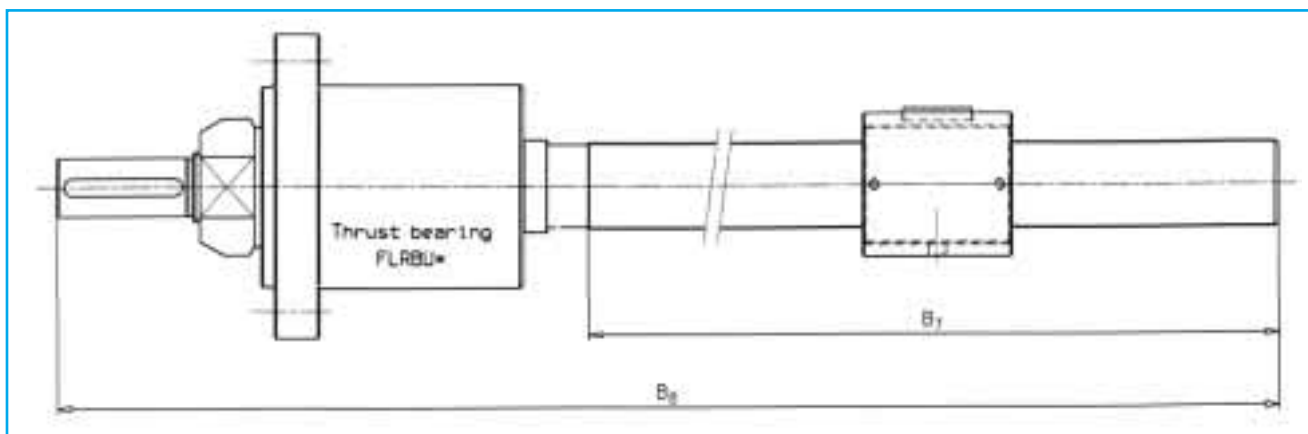


Recirculating roller screw



Designation	Basic axial load rating		Maximum preload torque *	Minimum nut stiffness	Screw dimensions						Nut dimensions						
	C_a kN	C_{oa} kN	T_{pr} Nm	R_{nr} N/ μ m	d_1	d_8	d_{10}	B_5	B_6	R	D	A	w	a	b	H	Q
BVC 20x1-R1	18.5	36.6	0.20	200	20	19.1	28	116	400	1.2	34	37	0.5	3	16	35.2	5
BVC 25x1-R1	32.9	68.4	0.30	250	25	24.1	33	159	500	1.2	42	44	0.5	4	20	43.5	5
BVC 32x1-R1	64.3	159.2	0.40	300	32	31.1	40	179	500	1.2	54	57	1	4	25	55.5	5

“BV” roller screw + thrust bearing assembly



Screw designation	Thrust bearing designation	B_7	B_8
BVC 20x1-R1	FLRBU2	284	397
BVC 25x1-R1	FLRBU3	341	497
BVC 32x1-R1	FLRBU4	321	497



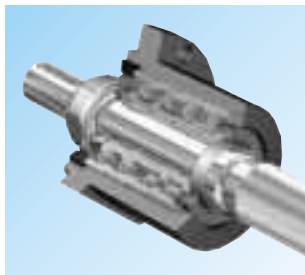
End which can be machined to customer requirements



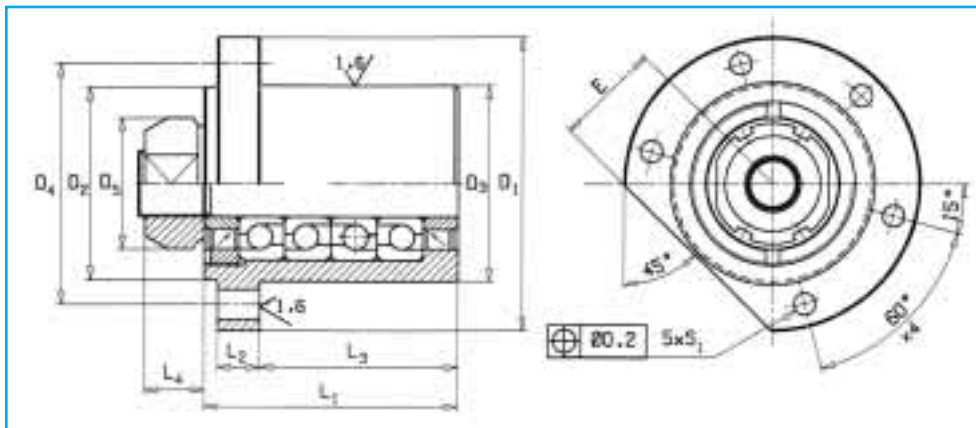
Maximum threaded length : can be cut & machined to customer requirements

N.B. : Nut and thrust bearing unit cannot be modified

* Preload torque measured at 50rpm

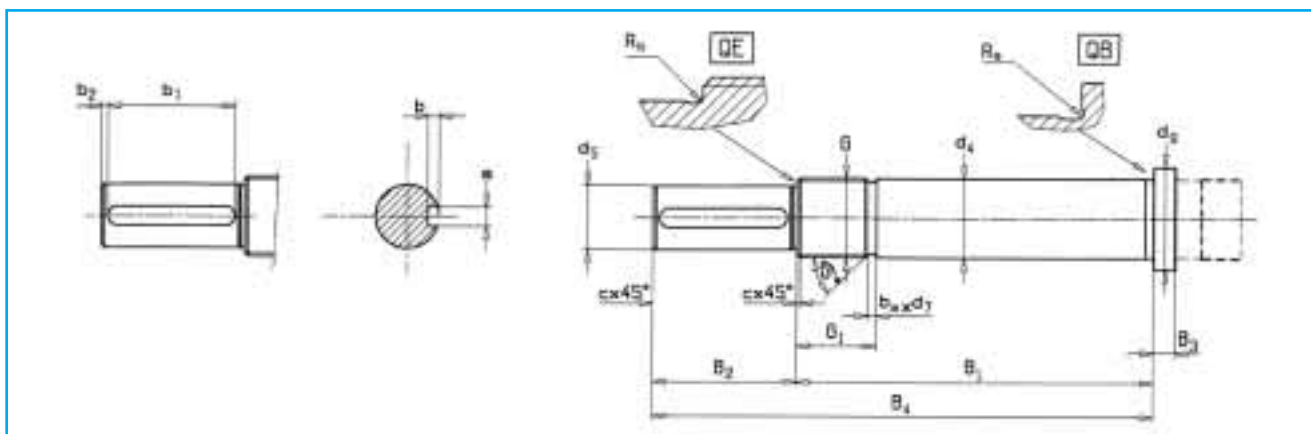


Flanged thrust bearing unit



Flanged bearing unit designation	40° angular contact ball bearing							Lock nut				
	Basic axial load rating		Number of bearings	Bearings designation	Maximum preload torque *	Axial rigidity	Tilt rigidity	High precision KMT nut				
	C _a kN	C _{0a} kN						Designation	Hook spanner	Tightening torque Nm	Grub screws	
					Nm	N/μm	Nm/mrad				Size	Max tightening torque, Nm
FLRBU2	27.9	31.9	2	7303 BEGBP	0.25	190	51	KMT 3	HN 4	15	M6	8
FLRBU3	40.1	63.8	4	7204 BEGBP	0.25	400	140	KMT 4	HN 5	18	M6	8
FLRBU4	74.2	119.2	4	7305 BEGBP	1.1	450	160	KMT 5	HN 5	25	M6	8
FLRBU5	109.4	188.4	4	7307 BEGBP	1.1	600	715	KMT 7	HN 7	42	M6	8
FLRBU6	208.8	392.3	4	7310 BEGBP	1.5	750	1000	KMT 10	HN 10	70	M6	8

Flanged bearing unit designation	L ₁	L ₂	L ₃	L ₄	D ₁	D ₂	D ₃ h7	D ₄	D ₅	S ₁ H13	Fixing screws	E
FLRBU2	46	10	32	18	90	62	60	76	37	6.6	M6 x 25	32
FLRBU3	77	13	60	18	90	59	60	74	40	9	M8 x 25	32
FLRBU4	89	16	68	20	120	80	80	100	44	11	M10 x 30	44
FLRBU5	110	20	82	22	140	99	100	120	54	13	M12 x 40	54
FLRBU6	140	25	98.5	25	171	130	130	152	75	13	M12 x 40	67

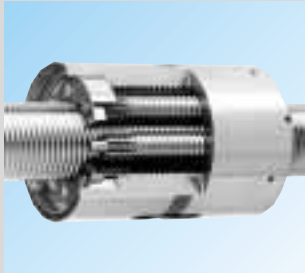


Thrust bearing units	d ₄ h6	d ₅ h7	d ₉	B ₁ js12	B ₂	B ₄ js12	B ₃	G 6g	G ₁	c	b _a	d ₇ h11	R _a	R _b	a N9	b +0.100 0	b ₁ +0.5 0	b ₂
FLRBU2	17	15	23	66	30	96	5	M17 x 1	22	0.5	1.5	15.5	0.6	0.6	5	3	25	2
FLRBU3	20	17	27	97	40	137	7	M20 x 1	22	0.5	1.5	18.5	0.6	0.6	5	3	35	2
FLRBU4	25	20	34	112	45	157	7	M25 x 1.5	25	0.5	2.3	22.8	0.6	0.6	6	3.5	40	2.5
FLRBU5	35	30	45	134	55	189	10	M35 x 1.5	26	1	2.3	32.8	0.6	0.6	8	4	45	2.5
FLRBU6	50	40	68	168	65	233	12	M50 x 1.5	31	1	2.3	47.8	0.6	0.6	12	5	55	4

* Preload torque measured at 50rpm

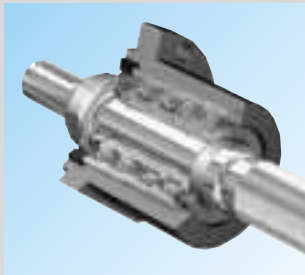
Standard Range

Page



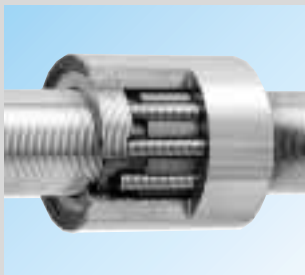
Planetary roller screws : technical data and dimensions

Cylindrical nuts with axial play, SRC	24
Flanged nuts with axial play, SRF	30
Cylindrical nuts preloaded, TRU/PRU	34
Flanged nuts preloaded, TRK/PRK	38



Flanged thrust bearing units, FLRBU	42
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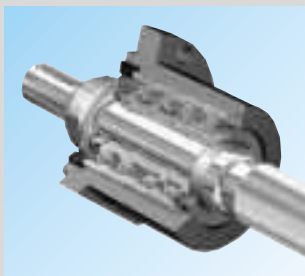
Sizes marked with the symbol ■ are available on short delivery.



Recirculating roller screws : technical data and dimensions

Cylindrical nuts with axial play, SVC	44
Cylindrical nuts preloaded, PVU	48
Flanged nuts preloaded, PVK	50

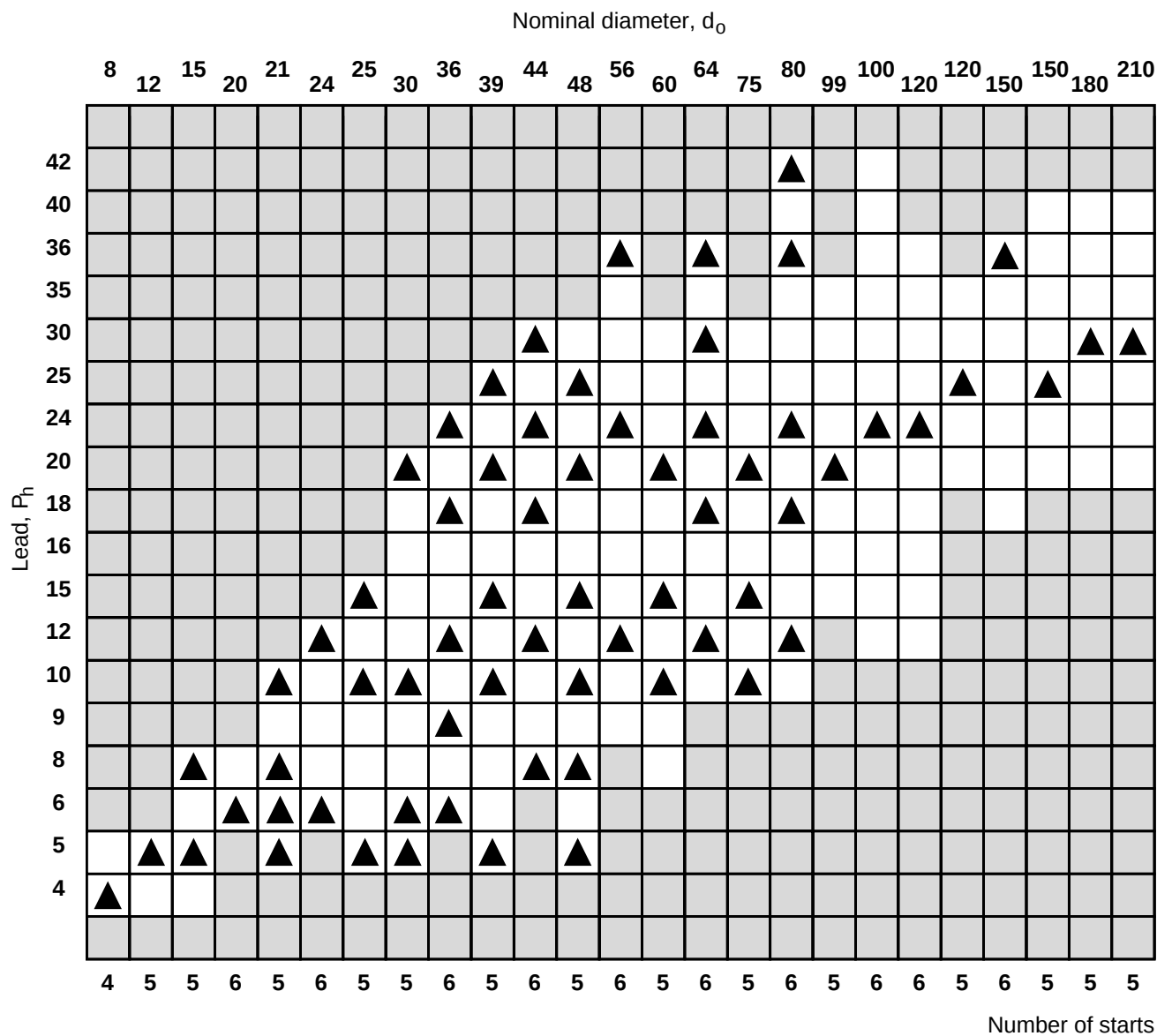
Sizes marked with the symbol ■ are available on short delivery.



Flanged thrust bearing unit, FLRBU	52
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Standard Range

The full range of “SR” planetary roller screws



▲ Standard program
Right hand lead

□ Manufacturing
possibilities
on request

SKF planetary roller screws

The robust screw for long life in tough conditions has these advantages

- ★ Very high load carrying capacity
- ★ Very long life
- ★ High rotational speed and long lead permit linear speed up to 60 metres/minute
- ★ Planetary timing mechanism permits high acceleration ($> 7000 \text{ rad/sec}^2$)
- ★ Robust design to withstand shock loads
- ★ Choice of 3 classes of lead precision
- ★ Planetary timing mechanism ensures correct functioning even in adverse environments such as ice, dirt or poor lubrication
- ★ Special and left hand leads easily available
- ★ Special steels available
- ★ Special surface treatments and lubrication available
- ★ Nut removal without losing rolling elements
- ★ Cylindrical and flanged nuts, with play or preloaded
- ★ Built in wipers available in all cases.

○ Backlash elimination with oversize rollers :

as an option under following conditions :

- $\frac{\text{total length}}{d_0} \leq 30$
- $\frac{\text{threaded length}}{d_0} \leq 15$

Cylindrical nut with axial play



Flanged nut with axial play



Preloaded cylindrical nut



Preloaded flanged nut

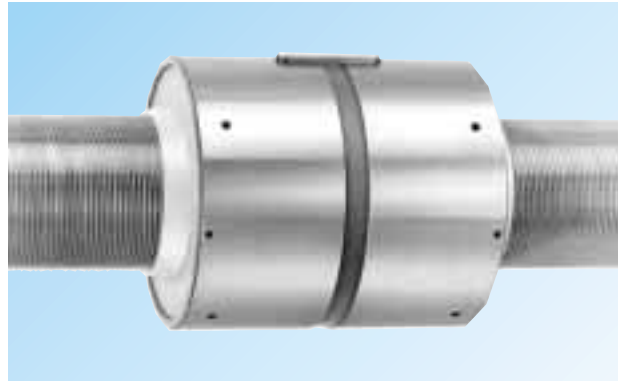


Planetary roller screws

Cylindrical nuts with axial play, SRC

Backlash elimination with oversize rollers ○ as an option

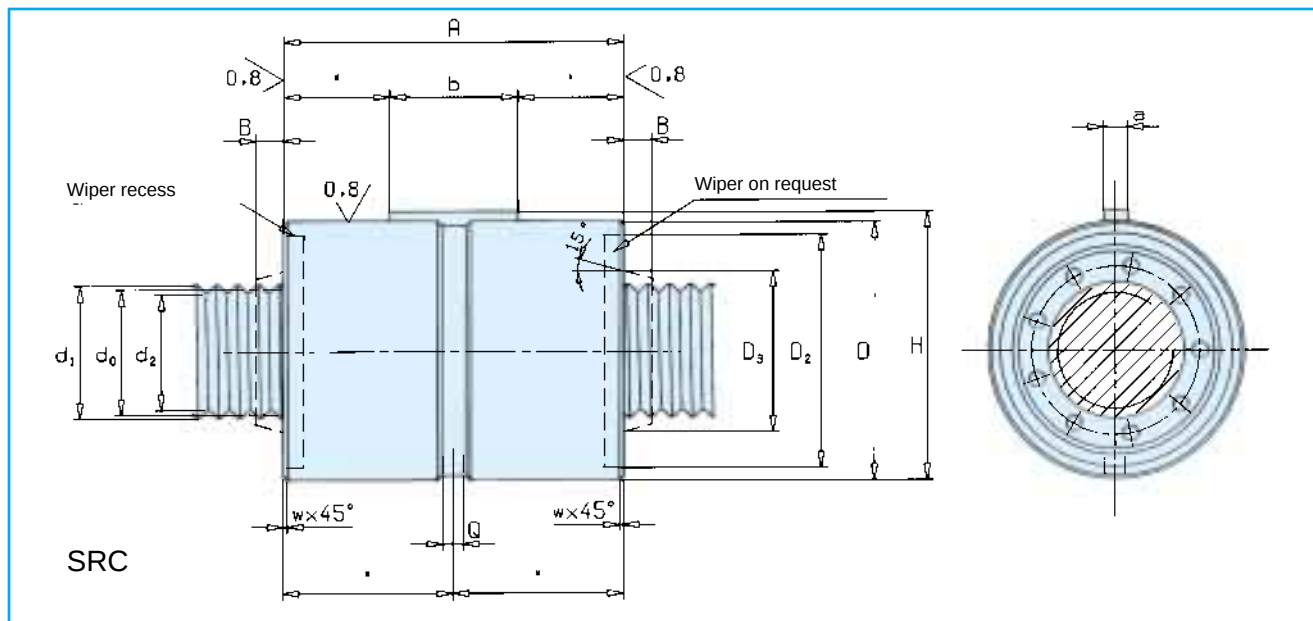
d₀ 8 → 44 mm



	d ₀	P _h	N	l _{tp}	Ø	C _a	C _{oa}	s _{ap}	m _n	m _s	I _s	I _{nn}	I _{ns}	Z _n	Designation	
	mm	mm	—	mm	°	kN	kN	mm	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³		
○	8	4	4	500	9,04	9,19	16,3	0,02	0,1	0,4	3,2	11,4	0,1	0,91	SRC	8x4
○	12	5	5	750	7,55	14,5	22,3	0,02	0,2	0,9	16,0	22,9	0,4	1,43	SRC	12x5
■	15	5	5	975	6,06	21,2	36,3	0,02	0,2	1,4	39,0	45,2	1,2	2,29	SRC	15x5
○	15	8	5	975	9,71	22,4	33,9	0,02	0,2	1,4	39,0	45,2	1,2	2,29	SRC	15x8
○	20	6	6	1300	5,45	21,9	37,4	0,02	0,3	2,3	123,3	71,8	2,5	2,47	SRC	20x6
■	21	5	5	1400	4,33	41,3	68,3	0,02	0,4	2,7	149,9	141,2	6,5	5,03	SRC	21x5
○	21	6	5	1400	5,20	41,6	64,7	0,02	0,4	2,7	149,9	141,2	6,5	5,03	SRC	21x6
○	21	8	5	1400	6,95	44,5	65,0	0,02	0,4	2,7	149,9	141,2	6,5	5,03	SRC	21x8
○	21	10	5	1400	8,62	48,4	69,2	0,04	0,4	2,7	149,9	141,2	6,5	5,03	SRC	21x10
○	24	6	6	1600	4,55	34,6	54,3	0,02	0,5	3,6	255,7	173,2	6,3	4,24	SRC	24x6
○	24	12	6	1600	9,04	39,0	52,0	0,04	0,5	3,6	255,7	173,2	6,3	4,24	SRC	24x12
○	25	5	5	1650	3,64	51,7	90,2	0,02	0,7	3,9	301,0	321,9	14,3	10,2	SRC	25x5
○	25	10	5	1650	7,26	59,4	87,8	0,04	0,7	3,9	301,0	321,9	14,3	10,2	SRC	25x10
○	25	15	5	1650	10,81	64,7	88,7	0,07	0,7	3,9	301,0	321,9	14,3	10,2	SRC	25x15
■	30	5	5	2000	3,04	75,2	148,6	0,02	1,2	5,6	624,2	762,4	36,2	13,7	SRC	30x5
○	30	6	5	2000	3,63	77,6	146,1	0,02	1,2	5,6	624,2	762,4	36,2	13,7	SRC	30x6
○	30	10	5	2000	6,06	86,9	145,3	0,04	1,2	5,6	624,2	762,4	36,2	13,7	SRC	30x10
○	30	20	5	2000	11,98	100,8	147,7	0,07	1,2	5,6	624,2	761,9	35,9	13,7	SRC	30x20
○	36	6	6	2400	3,04	74,0	149,5	0,02	1,2	8,0	129E1	922,8	45,7	13,4	SRC	36x6
○	36	9	6	2400	4,55	79,7	145,0	0,02	1,2	8,0	129E1	922,8	45,7	13,4	SRC	36x9
○	36	12	6	2400	6,06	87,2	150,9	0,04	1,2	8,0	129E1	873,1	45,7	13,4	SRC	36x12
○	36	18	6	2400	9,04	93,3	147,1	0,07	1,2	8,0	192E1	873,1	45,7	13,4	SRC	36x18
○	36	24	6	2400	11,98	101,1	153,7	0,07	1,2	8,0	129E1	873,1	45,7	13,4	SRC	36x24
■	39	5	5	2650	2,34	105,6	224,1	0,02	2,1	9,4	178E1	203E1	124,4	27,9	SRC	39x5
■	39	10	5	2650	4,67	124,8	225,8	0,04	2,1	9,4	178E1	203E1	124,4	27,9	SRC	39x10
○	39	15	5	2650	6,98	137,1	227,4	0,07	2,1	9,4	178E1	203E1	123,6	27,9	SRC	39x15
○	39	20	5	2650	9,27	141,3	217,4	0,07	2,1	9,4	178E1	203E1	123,6	27,9	SRC	39x20
○	39	25	5	2650	11,53	142,9	207,5	0,07	2,1	9,4	178E1	203E1	123,6	27,9	SRC	39x25
○	44	8	6	3000	3,30	109,2	226,3	0,04	1,7	11,9	289E1	173E1	119,2	22,8	SRC	44x8
○	44	12	6	3000	4,96	117,5	219,1	0,04	1,7	11,9	289E1	173E1	119,2	22,8	SRC	44x12
○	44	18	6	3000	7,42	129,0	220,8	0,07	1,7	11,9	289E1	173E1	118,3	22,8	SRC	44x18
○	44	24	6	3000	9,85	137,2	222,5	0,07	1,7	11,9	289E1	173E1	118,3	22,8	SRC	44x24
○	44	30	6	3000	12,24	135,6	205,4	0,07	1,7	11,9	289E1	173E1	118,3	22,8	SRC	44x30

Designation : page 61 - Symbols : page 60

■ available on short delivery



Designation	d ₀	d ₁	d ₂	D	A	w	a	b	H	Q	B	D ₂	D ₃
				g6/H7	h12		h9						
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
SRC 8x4	8	8,4	7,3	25	44	0,5	4	12	26,5	5	3	21	13
SRC 12x5	12	12,4	11,3	30	44	0,5	4	12	31,5	5	3	25	17
SRC 15x5	15	15,4	14,3	35	50	0,5	4	16	36,5	5	3	30	20
SRC 15x8	15	15,5	14	35	50	0,5	4	16	36,5	5	3	30	20
SRC 20x6	20	20,4	19,3	40	50	0,5	4	16	41,5	5	4	35	25
SRC 21x5	21	21,4	20,3	45	64	0,5	5	20	47	5	4	40,5	26
SRC 21x6	21	21,4	20,3	45	64	0,5	5	20	47	5	4	40,5	26
SRC 21x8	21	21,5	20	45	64	0,5	5	20	47	5	4	40,5	26
SRC 21x10	21	21,8	19,7	45	64	0,5	5	20	47	5	4	40,5	26
SRC 24x6	24	24,4	23,3	48	58	0,5	5	20	50	5	6	42	31
SRC 24x12	24	24,8	22,7	48	58	0,5	5	20	50	5	6	42	31
SRC 25x5	25	25,4	24,3	53	78	0,5	6	25	55,5	5	6	47	32
SRC 25x10	25	25,8	23,7	53	78	0,5	6	25	55,5	5	6	47	32
SRC 25x15	25	26,2	23,1	53	78	0,5	6	25	55,5	5	6	47	32
SRC 30x5	30	30,4	29,3	64	85	0,5	6	32	66,5	5	7	58	38
SRC 30x6	30	30,4	29,3	64	85	0,5	6	32	66,5	5	7	58	38
SRC 30x10	30	30,8	28,7	64	85	0,5	6	32	66,5	5	7	58	38
SRC 30x20	30	31,5	27,5	64	85	0,5	6	32	66,5	5	7	58	38
SRC 36x6	36	36,4	35,3	68	80	0,5	5	25	70	5	8	62	45
SRC 36x9	36	36,5	35,1	68	80	0,5	5	25	70	5	8	62	45
SRC 36x12	36	36,8	34,7	68	80	0,5	5	25	70	5	8	62	45
SRC 36x18	36	37,2	34,1	68	80	0,5	5	25	70	5	8	62	45
SRC 36x24	36	37,5	33,5	68	80	0,5	5	25	70	5	8	62	45
SRC 39x5	39	39,4	38,3	80	100	1	8	40	83	7	8	73	50
SRC 39x10	39	39,8	37,7	80	100	1	8	40	83	7	8	73	50
SRC 39x15	39	40,2	37,1	80	100	1	8	40	83	7	8	73	50
SRC 39x20	39	40,5	36,5	80	100	1	8	40	83	7	8	73	50
SRC 39x25	39	40,9	35,9	80	100	1	8	40	83	7	8	73	50
SRC 44x8	44	44,4	43,2	80	90	0,5	6	32	82,5	7	8	74	56
SRC 44x12	44	44,8	42,7	80	90	0,5	6	32	82,5	7	8	74	56
SRC 44x18	44	45,2	42,1	80	90	0,5	6	32	82,5	7	8	74	56
SRC 44x24	44	45,5	41,5	80	90	0,5	6	32	82,5	7	8	74	56
SRC 44x30	44	45,9	40,9	80	90	0,5	6	32	82,5	7	8	74	56

Planetary roller screws

Cylindrical nuts with axial play, SRC

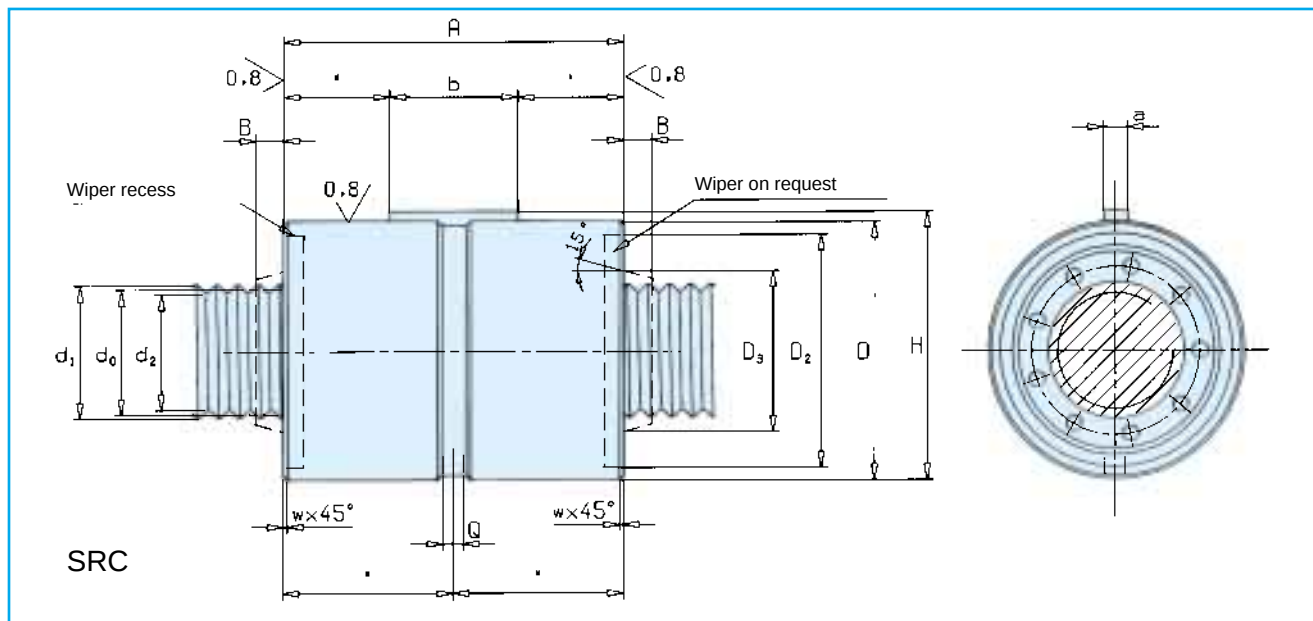
Backlash elimination with oversize rollers as an option

d₀ 48 → 210 mm

	d ₀	P _h	N	l _{tp}	Ø	C _a	C _{oa}	s _{ap}	m _n	m _s	I _s	I _{nn}	I _{ns}	Z _n	Designation	
	mm	mm	–	mm	°	kN	kN	mm	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³		
	48	5	5	3300	1,90	161,9	401,3	0,02	4,2	14,2	409E1	652E1	370,8	54,0	SRC	48x5
	48	8	5	3300	3,03	178,6	392,2	0,04	4,2	14,2	409E1	652E1	370,8	54,0	SRC	48x8
	48	10	5	3300	3,79	189,3	395,9	0,04	4,2	14,2	409E1	652E1	370,8	54,0	SRC	48x10
	48	15	5	3300	5,68	210,7	405,3	0,07	4,2	14,2	409E1	652E1	370,8	54,0	SRC	48x15
	48	20	5	3300	7,55	217,2	385,2	0,07	4,2	14,2	409E1	652E1	370,8	54,0	SRC	48x20
	48	25	5	3300	9,41	236,1	409,2	0,07	4,2	14,2	409E1	652E1	369,6	54,0	SRC	48x25
	56	12	6	4000	3,90	173,5	360,9	0,04	3,2	19,3	758E1	500E1	385,3	46,2	SRC	56x12
	56	24	6	4000	7,77	198,0	349,3	0,07	3,2	19,3	758E1	500E1	383,1	46,2	SRC	56x24
	56	36	6	4000	11,56	215,4	353,5	0,07	3,2	19,3	758E1	500E1	383,1	46,2	SRC	56x36
	60	10	5	4250	3,04	276,8	649,7	0,04	7,3	22,2	999E1	165E2	110E1	103	SRC	60x10
	60	15	5	4250	4,55	305,0	652,2	0,07	7,3	22,2	999E1	165E2	110E1	103	SRC	60x15
	60	20	5	4250	6,06	326,2	654,7	0,07	7,3	22,2	999E1	164E2	110E1	103	SRC	60x20
	64	12	6	4600	3,42	242,3	636,1	0,04	5,4	25,3	129E2	106E2	984,3	46,2	SRC	64x12
	64	18	6	4600	5,12	258,9	604,6	0,07	5,2	25,3	129E2	105E2	914,0	54,0	SRC	64x18
	64	24	6	4600	6,81	268,9	574,7	0,07	5,2	25,3	129E2	105E2	911,2	54,0	SRC	64x24
	64	30	6	4600	8,49	262,8	516,5	0,07	4,9	25,3	129E2	103E2	771,0	69,4	SRC	64x30
	64	36	6	4600	10,15	262,1	491,2	0,07	4,9	25,3	129E2	103E2	771,0	69,4	SRC	64x36
	75	10	5	5500	2,43	412,7	1239	0,04	14,6	34,7	244E2	469E2	415E1	143	SRC	75x10
	75	15	5	5500	3,64	458,9	1243	0,07	14,6	34,7	244E2	469E2	415E1	143	SRC	75x15
	75	20	5	5500	4,85	485,2	1247	0,07	14,6	34,7	244E2	469E2	415E1	143	SRC	75x20
	80	12	6	6000	2,73	335,4	969,3	0,04	8,9	39,5	316E2	260E2	272E1	103	SRC	80x12
	80	18	6	6000	4,10	372,8	973,0	0,07	8,9	39,5	316E2	260E2	272E1	103	SRC	80x18
	80	24	6	6000	5,45	401,2	976,7	0,07	8,9	39,5	316E2	260E2	271E1	103	SRC	80x24
	80	36	6	6000	8,15	375,5	832,6	0,07	8,9	39,5	316E2	252E2	229E1	132	SRC	80x36
	80	42	6	6000	9,49	360,9	777,5	0,07	8,9	39,5	316E2	252E2	229E1	132	SRC	80x42
	99	20	5	7500	3,68	784,2	2575	0,07	36,2	60,4	740E2	207E3	175E2	342	SRC	99x20
	100	24	6	8000	4,37	556,1	1522	0,07	19,6	61,7	771E2	962E2	836E1	200	SRC	100x24
	120	24	6	8000	3,64	775,8	2523	0,07	38,0	88,8	160E3	278E3	224E2	363	SRC	120x24
	120	25	5	8000	3,79	955,9	3365	0,07	55,5	88,8	160E3	453E3	409E2	545	SRC	120x25
	150	36	6	8000	4,37	980,9	3423	0,07	79,8	138,7	390E3	959E3	676E2	719	SRC	150x36
	150	25	5	8000	3,04	1354	5680	0,07	155,7	138,7	390E3	232E4	146E3	1227	SRC	150x25
	180	30	5	8000	3,04	1664	7558	0,07	397,8	199,8	809E3	105E5	392E3	2573	SRC	180x30
	210	30	5	8000	2,60	1946	9479	0,07	542,7	271,9	150E4	188E5	757E3	3771	SRC	210x30

Designation : page 61 - Symbols : page 60

 available on short delivery



Designation	d ₀	d ₁	d ₂	D	A	w	a	b	H	Q	B	D ₂	D ₃
				g6/H7	h12		h9						
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
SRC 48x5	48	48,4	47,3	100	127	1	8	45	103	7	9	90	60
SRC 48x8	48	48,6	47,1	100	127	1	8	45	103	7	8	90	60
SRC 48x10	48	48,8	46,7	100	127	1	8	45	103	7	9	90	60
SRC 48x15	48	49,2	46,1	100	127	1	8	45	103	7	9	90	60
SRC 48x20	48	49,5	45,5	100	127	1	8	45	103	7	9	90	60
SRC 48x25	48	49,9	44,9	100	127	1	8	45	103	7	9	90	60
SRC 56x12	56	56,8	54,7	100	112	1	8	40	103	7	9	93	66
SRC 56x24	56	57,5	53,5	100	112	1	8	40	103	7	9	93	66
SRC 56x36	56	58,3	52,3	100	112	1	8	40	103	7	9	93	66
SRC 60x10	60	60,8	58,7	122	152	1	10	45	125	10,5	9	110	71
SRC 60x15	60	61,2	58,1	122	152	1	10	45	125	10,5	9	110	71
SRC 60x20	60	61,5	57,5	122	152	1	10	45	125	10,5	9	110	71
SRC 64x12	64	64,8	62,7	115	129	1	8	45	118	7	11	106	75
SRC 64x18	64	65,2	62,1	115	129	1	8	45	118	7	11	106	75
SRC 64x24	64	65,5	61,5	115	129	1	8	45	118	7	11	106	75
SRC 64x30	64	65,9	60,9	115	129	1	8	45	118	7	11	106	75
SRC 64x36	64	66,3	60,3	115	129	1	8	45	118	7	11	106	75
SRC 75x10	75	75,8	73,7	150	191	1	10	63	153	10,5	10	136	87
SRC 75x15	75	76,2	73,1	150	191	1	10	63	153	10,5	10	136	87
SRC 75x20	75	76,5	72,5	150	191	1	10	63	153	10,5	10	136	87
SRC 80x12	80	80,8	78,7	140	156	1	10	63	143	10,5	12	132	92
SRC 80x18	80	81,2	78,1	140	156	1	10	63	143	10,5	12	132	92
SRC 80x24	80	81,5	77,5	140	156	1	10	63	143	10,5	12	132	92
SRC 80x36	80	82,3	76,3	140	156	1	10	63	143	10,5	12	132	92
SRC 80x42	80	82,7	75,7	140	156	1	10	63	143	10,5	12	132	92
SRC 99x20	99	100,5	96,5	200	260	1,5	16	100	204	15	12	180	112
SRC 100x24	100	101,5	97,5	180	195	1,5	10	63	183	10,5	12	162	116
SRC 120x24	120	121,5	117,5	220	240	2	16	100	224	15	12	196	136
SRC 120x25	120	121,9	116,9	240	280	1,5	16	100	244	15	12	220	180
SRC 150x36	150	152,3	146,3	280	305	2	16	100	284	15	13	250	200
SRC 150x25	150	151,9	146,9	320	400	3	32	160	327	15	13	280	230
SRC 180x30	180	182,3	176,3	420	515	3	32	160	427	20	13	340	250
SRC 210x30	210	212,3	206,3	480	550	3	40	200	489	20	20	385	280

Planetary roller screws

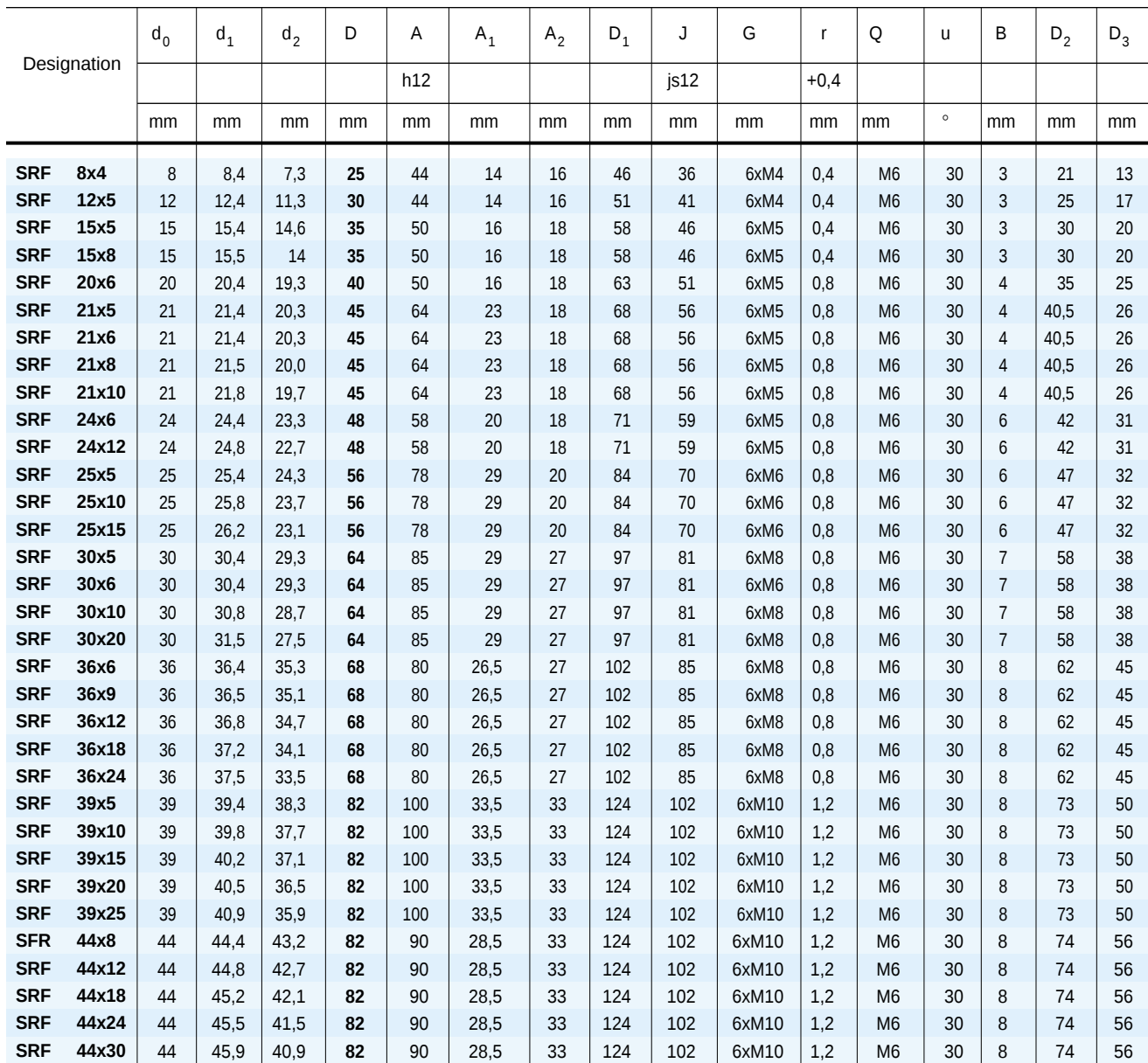
Flanged nuts with axial play, SRF

d_0 8 → 44 mm



d_0	P_h	N	l_{tp}	$\emptyset$	C_a	C_{oa}	s_{ap}	m_n	m_s	I_s	I_{nn}	I_{ns}	Z_n	Designation	
mm	mm	—	mm	°	kN	kN	mm	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³		
8	4	4	500	9,04	9,19	16,3	0,02	0,3	0,4	3,2	66,4	0,1	0,91	SRF	8x4
12	5	5	750	7,55	14,5	22,3	0,02	0,3	0,9	16,0	106,0	0,4	1,43	SRF	12x5
15	5	5	975	6,06	21,2	36,3	0,02	0,5	1,4	39,0	201,6	1,2	2,29	SRF	15x5
15	8	5	975	9,71	22,4	33,9	0,02	0,5	1,4	39,0	201,6	1,2	2,29	SRF	15x8
20	6	6	1300	5,45	21,9	37,4	0,02	0,5	2,3	123,3	289,5	2,5	2,47	SRF	20x6
21	5	5	1400	4,33	41,3	68,3	0,02	0,7	2,7	149,9	436,6	6,5	5,03	SRF	21x5
21	6	5	1400	5,20	41,6	64,7	0,02	0,7	2,7	149,9	436,6	6,5	5,03	SRF	21x6
21	8	5	1400	6,95	44,5	65,0	0,02	0,7	2,7	149,9	436,6	6,5	5,03	SRF	21x8
21	10	5	1400	8,62	48,4	69,2	0,04	0,7	2,7	149,9	436,6	6,5	5,03	SRF	21x10
24	6	6	1600	4,55	34,6	54,3	0,02	0,8	3,6	255,7	524,2	6,3	4,24	SRF	24x6
24	12	6	1600	9,04	39,0	52,0	0,04	0,8	3,6	255,7	524,2	6,3	4,24	SRF	24x12
25	5	5	1650	3,64	51,7	90,2	0,02	1,4	3,9	301,0	120E1	14,3	10,2	SRF	25x5
25	10	5	1650	7,26	59,4	87,8	0,04	1,4	3,9	301,0	120E1	14,3	10,2	SRF	25x10
25	15	5	1650	10,81	64,7	88,7	0,07	1,4	3,9	301,0	120E1	14,3	10,2	SRF	25x15
30	5	5	2000	3,04	75,2	148,6	0,02	2,1	5,6	624,2	268E1	36,2	13,7	SRF	30x5
30	6	5	2000	3,63	77,6	146,1	0,02	2,1	5,6	624,2	268E1	36,2	13,7	SRF	30x6
30	10	5	2000	6,06	86,9	145,3	0,04	2,1	5,6	624,2	268E1	36,2	13,7	SRF	30x10
30	20	5	2000	11,98	100,8	147,7	0,07	2,1	5,6	624,2	268E1	35,9	13,7	SRF	30x20
36	6	6	2400	3,04	74,0	149,5	0,02	2,2	8,0	129E1	317E1	45,7	13,4	SRF	36x6
36	9	6	2400	4,55	79,7	145,0	0,02	2,2	8,0	129E1	317E1	45,7	13,4	SRF	36x9
36	12	6	2400	6,06	87,2	150,9	0,04	2,1	8,0	129E1	312E1	45,7	13,4	SRF	36x12
36	18	6	2400	9,04	93,3	147,1	0,07	2,1	8,0	192E1	312E1	45,7	13,4	SRF	36x18
36	24	6	2400	11,98	101,1	153,7	0,07	2,1	8,0	129E1	312E1	45,7	13,4	SRF	36x24
39	5	5	2650	2,34	105,6	224,1	0,02	4,0	9,4	178E1	836E1	124,4	27,9	SRF	39x5
39	10	5	2650	4,67	124,8	225,8	0,04	4,0	9,4	178E1	836E1	124,4	27,9	SRF	39x10
39	15	5	2650	6,98	137,1	227,4	0,07	4,0	9,4	178E1	836E1	123,6	27,9	SRF	39x15
39	20	5	2650	9,27	141,3	217,4	0,07	4,0	9,4	178E1	836E1	123,6	27,9	SRF	39x20
39	25	5	2650	11,53	142,9	207,5	0,07	4,0	9,4	178E1	836E1	123,6	27,9	SRF	39x25
44	8	6	3000	3,30	109,2	226,3	0,02	3,6	11,9	289E1	803E1	119,2	22,8	SRF	44x8
44	12	6	3000	4,96	117,5	219,1	0,04	3,6	11,9	289E1	803E1	119,2	22,8	SRF	44x12
44	18	6	3000	7,42	129,0	220,8	0,07	3,6	11,9	289E1	803E1	118,3	22,8	SRF	44x18
44	24	6	3000	9,85	137,2	222,5	0,07	3,6	11,9	289E1	803E1	118,3	22,8	SRF	44x24
44	30	6	3000	12,24	135,6	205,4	0,07	3,6	11,9	289E1	803E1	118,3	22,8	SRF	44x30

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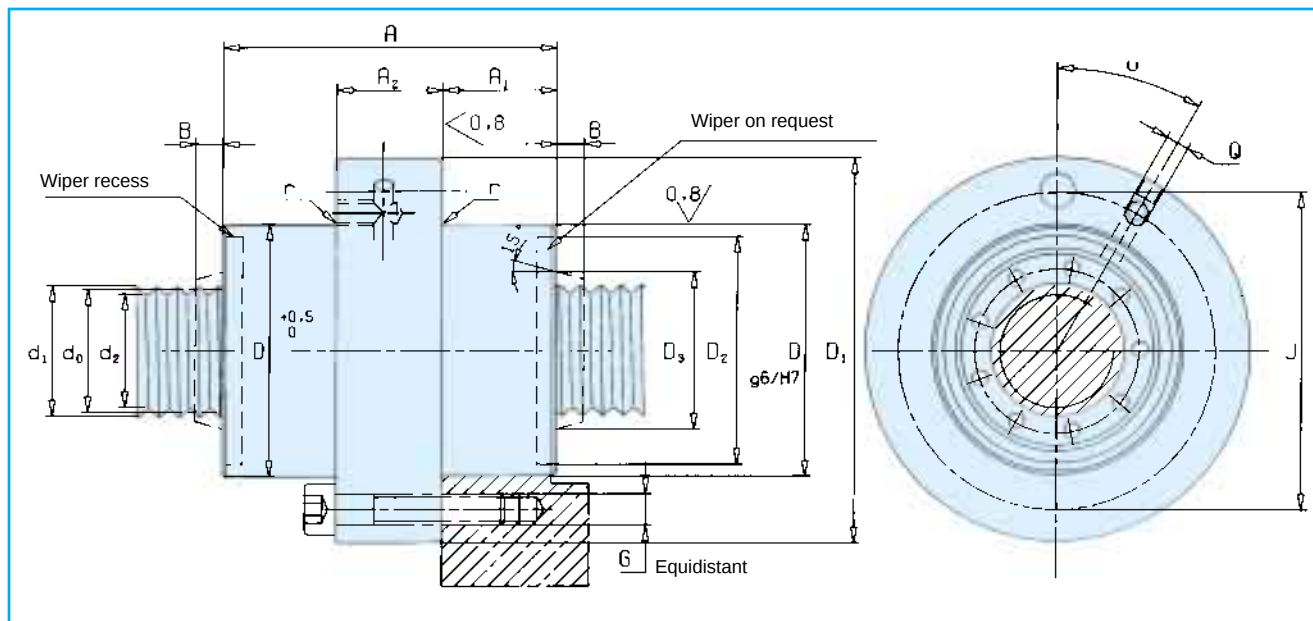
Planetary roller screws

Flanged nuts with axial play, SRF

d₀ 48 → 210 mm

d ₀	P _h	N	I _{tp}	Ø	C _a	C _{oa}	s _{ap}	m _n	m _s	I _s	I _{nn}	I _{ns}	Z _n	Designation	
mm	mm	—	mm	°	kN	kN	mm	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³		
48	5	5	3300	1,90	161,9	401,3	0,02	7,7	14,2	409E1	230E2	370,8	54,0	SRF	48x5
48	8	5	3300	3,03	178,6	392,2	0,04	4,2	14,2	409E1	230E2	370,8	54,0	SRF	48x8
48	10	5	3300	3,79	189,3	395,9	0,04	7,7	14,2	409E1	230E2	370,8	54,0	SRF	48x10
48	15	5	3300	5,68	210,7	405,3	0,07	7,7	14,2	409E1	230E2	370,8	54,0	SRF	48x15
48	20	5	3300	7,55	217,2	385,2	0,07	7,7	14,2	409E1	230E2	370,8	54,0	SRF	48x20
48	25	5	3300	9,41	236,1	409,2	0,07	6,9	14,2	409E1	191E2	369,6	54,0	SRF	48x25
56	12	6	4000	3,90	173,5	360,9	0,04	6,5	19,3	758E1	213E2	385,3	46,2	SRF	56x12
56	24	6	4000	7,77	198,0	349,3	0,07	6,5	19,3	758E1	213E2	383,1	46,2	SRF	56x24
56	36	6	4000	11,56	215,4	353,5	0,07	6,5	19,3	758E1	213E2	383,1	46,2	SRF	56x36
60	10	5	4250	3,04	276,8	649,7	0,04	12,1	22,2	999E1	528E2	110E1	103	SRF	60x10
60	15	5	4250	4,55	305,0	652,2	0,07	12,1	22,2	999E1	528E2	110E1	103	SRF	60x15
60	20	5	4250	6,06	326,2	654,7	0,07	12,1	22,2	999E1	528E2	110E1	103	SRF	60x20
64	12	6	4600	3,42	242,3	636,1	0,04	11,3	25,3	129E2	502E2	984,3	46,2	SRF	64x12
64	18	6	4600	5,12	258,9	604,6	0,07	11,2	25,3	129E2	501E2	914,0	54,0	SRF	64x18
64	24	6	4600	6,81	268,9	574,7	0,07	11,2	25,3	129E2	501E2	911,2	54,0	SRF	64x24
64	30	6	4600	8,49	262,8	516,5	0,07	10,9	25,3	129E2	499E2	771,0	69,4	SRF	64x30
64	36	6	4600	10,15	262,1	491,2	0,07	10,9	25,3	129E2	499E2	771,0	69,4	SRF	64x36
75	10	5	5500	2,43	412,7	1239	0,04	20,6	34,7	244E2	114E3	415E1	143	SRF	75x10
75	15	5	5500	3,64	458,9	1243	0,07	20,6	34,7	244E2	114E3	415E1	143	SRF	75x15
75	20	5	5500	4,85	485,2	1247	0,07	20,6	34,7	244E2	114E3	415E1	143	SRF	75x20
80	12	6	6000	2,73	335,4	969,3	0,04	17,7	39,5	316E2	108E3	272E1	103	SRF	80x12
80	18	6	6000	4,10	372,8	973,0	0,07	17,7	39,5	316E2	108E3	272E1	103	SRF	80x18
80	24	6	6000	5,45	401,2	976,7	0,07	17,7	39,5	316E2	108E3	271E1	103	SRF	80x24
80	36	6	6000	8,15	375,5	832,6	0,07	17,7	39,5	316E2	108E3	229E1	132	SRF	80x36
80	42	6	6000	9,49	360,9	777,5	0,07	17,7	39,5	316E2	108E3	229E1	132	SRF	80x42
99	20	5	7500	3,68	784,2	2575	0,07	48,3	60,4	740E2	449E3	175E2	342	SRF	99x20
100	24	6	8000	4,37	556,1	1522	0,07	29,7	61,7	771E2	259E3	836E1	200	SRF	100x24
120	24	6	8000	3,64	775,8	2523	0,07	51,1	88,8	160E3	598E3	224E2	363	SRF	120x24
120	25	5	8000	3,79	955,9	3365	0,07	89,0	88,8	160E3	129E4	409E2	545	SRF	120x25
150	36	6	8000	4,37	980,9	3423	0,07	103,3	138,7	390E3	190E4	676E2	719	SRF	150x36
150	25	5	8000	3,04	1354	5680	0,07	182,2	138,7	390E3	388E4	146E3	1227	SRF	150x25
180	30	5	8000	3,04	1664	7558	0,07	436,6	199,8	809E3	145E5	392E3	2573	SRF	180x30
210	30	5	8000	2,60	1946	9479	0,07	597,5	271,9	150E4	266E5	757E3	3771	SRF	210x30

Designation : page 61 - Symbols : page 60



Designation	d ₀	d ₁	d ₂	D	A	A ₁	A ₂	D ₁	J	G	r	Q	u	B	D ₂	D ₃
					h12				js12		+0,4					
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm	mm	mm
SRF 48x5	48	48,4	47,3	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
SRF 48x8	48	48,6	47,1	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
SRF 48x10	48	48,8	46,7	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
SRF 48x15	48	49,2	46,1	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
SRF 48x20	48	49,5	45,5	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
SRF 48x25	48	49,9	44,9	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
SRF 56x12	56	56,8	54,7	105	112	37,5	37	150	127	6xM12	1,2	M8x1	30	9	93	66
SRF 56x24	56	57,5	53,5	105	112	37,5	37	150	127	6xM12	1,2	M8x1	30	9	93	66
SRF 56x36	56	58,3	52,3	105	112	37,5	37	150	127	6xM12	1,2	M8x1	30	9	93	66
SRF 60x10	60	60,8	58,7	122	152	53,5	45	180	150	6xM16	1,6	M8x1	30	9	110	71
SRF 60x15	60	61,2	58,1	122	152	53,5	45	180	150	6xM16	1,6	M8x1	30	9	110	71
SRF 60x20	60	61,5	57,5	122	152	53,5	45	180	150	6xM16	1,6	M8x1	30	9	110	71
SRF 64x12	64	64,8	62,7	120	129	42	45	180	150	6xM16	1,6	M8x1	30	11	106	75
SRF 64x18	64	65,2	62,1	120	129	42	45	180	150	6xM16	1,6	M8x1	30	11	106	75
SRF 64x24	64	65,5	61,5	120	129	42	45	180	150	6xM16	1,6	M8x1	30	11	106	75
SRF 64x30	64	65,9	60,9	120	129	42	45	180	150	6xM16	1,6	M8x1	30	11	106	75
SRF 64x36	64	66,3	60,3	120	129	42	45	180	150	6xM16	1,6	M8x1	30	11	106	75
SRF 75x10	75	75,8	73,7	150	191	73	45	210	180	8xM16	1,6	M8x1	22°30	10	136	87
SRF 75x15	75	76,2	73,1	150	191	73	45	210	180	8xM16	1,6	M8x1	22°30	10	136	87
SRF 75x20	75	76,5	72,5	150	191	73	45	210	180	8xM16	1,6	M8x1	22°30	10	136	87
SRF 80x12	80	80,8	78,7	150	156	55,5	45	210	180	8xM16	1,6	M8x1	22°30	12	132	92
SRF 80x18	80	81,2	78,1	150	156	55,5	45	210	180	8xM16	1,6	M8x1	22°30	12	132	92
SRF 80x24	80	81,5	77,5	150	156	55,5	45	210	180	8xM16	1,6	M8x1	22°30	12	132	92
SRF 80x36	80	82,3	76,3	150	156	55,5	45	210	180	8xM16	1,6	M8x1	22°30	12	132	92
SRF 80x42	80	82,7	75,7	150	156	55,5	45	210	180	8xM16	1,6	M8x1	22°30	12	132	92
SRF 99x20	99	100,5	96,5	200	260	102,5	55	275	245	12xM16	2,4	M8x1	15	12	180	112
SRF 100x24	100	101,5	97,5	180	195	72,5	50	255	220	12xM16	2,4	M8x1	15	12	162	116
SRF 120x24	120	121,5	117,5	220	240	92,5	55	295	260	12xM16	2,4	M8x1	15	12	196	136
SRF 120x25	120	121,9	116,9	260	280	112,5	55	340	305	12xM16	2,4	M12	15	12	220	180
SRF 150x36	150	152,3	146,3	280	305	Consult SKF								13	250	200
SRF 150x25	150	151,9	146,9	320	400									13	280	230
SRF 180x30	180	182,3	176,3	420	515									13	340	250
SRF 210x30	210	212,3	206,3	480	550									20	385	280

Planetary roller screws

Preloaded cylindrical nuts, TRU for backlash elimination

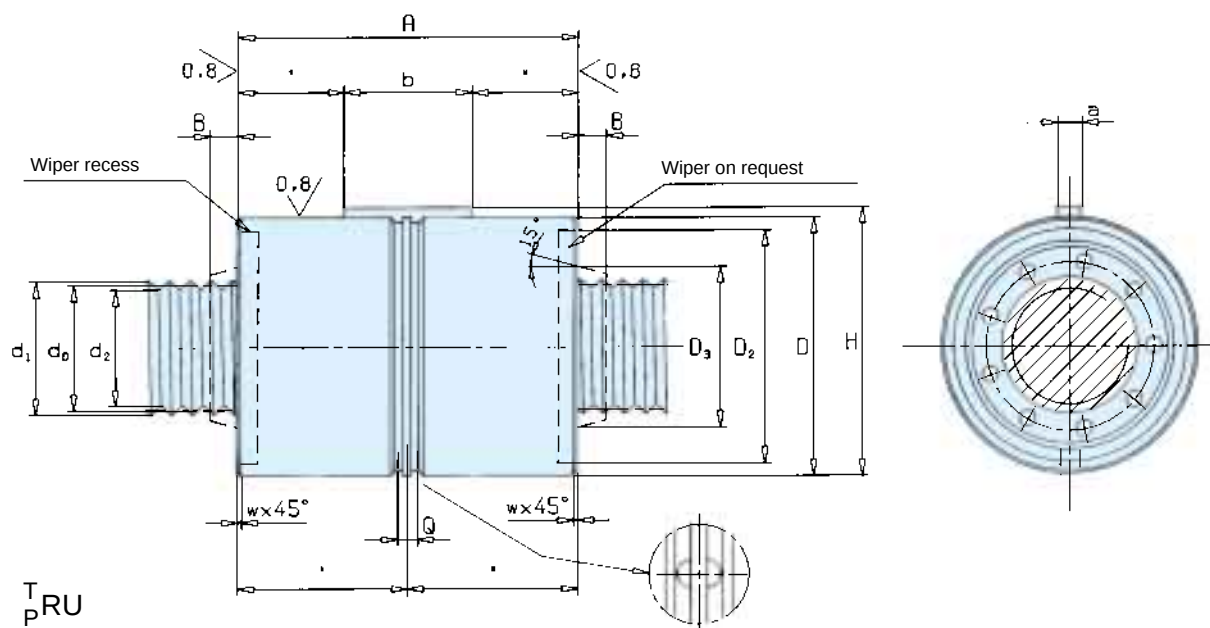
PRU for optimum rigidity

d_o 8 → 36 mm



							TRU	PRU										
d _o	P _h	N	l _{tp}	Ø	C _a	C _{oa}	T _{pe}	R _{ng}	R _{nr}	T _{pr}	F _{pr}	m _n	m _s	I _s	I _{nn}	I _{ns}	Z _n	
mm	mm	–	mm	°	kN	kN	Nm	N/μm	N/μm	Nm	N	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³	
8	4	4	400	9,04	5,06	8,16	0,07	110	150	0,06 - 0,13	236	0,1	0,4	3,2	11,4	0,1	0,91	
12	5	5	600	7,55	7,98	11,1	0,13	180	240	0,12 - 0,25	570	0,2	0,9	16,0	22,9	0,4	1,43	
15	5	5	750	6,06	11,7	18,2	0,19	290	380	0,18 - 0,36	932	0,2	1,4	39,0	45,2	1,2	2,29	
15	8	5	750	9,71	12,4	16,9	0,19	242	315	0,18 - 0,36	954	0,2	1,4	39,0	45,2	1,2	2,29	
20	6	6	1050	5,45	12,1	18,7	0,30	290	380	0,26 - 0,58	1305	0,3	2,3	123,3	71,8	2,5	2,47	
21	5	5	1100	4,33	22,8	34,2	0,33	400	520	0,31 - 0,63	1341	0,4	2,7	149,9	141,2	6,5	5,03	
21	6	5	1100	5,20	22,9	32,3	0,33	359	467	0,31 - 0,63	1394	0,4	2,7	149,9	141,2	6,5	5,03	
21	8	5	1100	6,95	24,5	32,5	0,33	311	404	0,31 - 0,63	1354	0,4	2,7	149,9	141,2	6,5	5,03	
21	10	5	1100	8,62	26,7	34,6	0,33	200	260	0,31 - 0,63	557	0,4	2,7	149,9	141,2	6,5	5,03	
24	6	6	1250	4,55	19,0	27,2	0,41	370	490	0,39 - 0,78	1597	0,5	3,6	255,7	173,2	6,3	4,24	
24	12	6	1250	9,04	21,5	26,0	0,41	150	200	0,39 - 0,78	541	0,5	3,6	255,7	173,2	6,3	4,24	
25	5	5	1300	3,64	28,5	45,1	0,44	460	600	0,42 - 0,84	1577	0,7	3,9	301,0	321,9	14,3	10,2	
25	10	5	1300	7,26	32,7	43,9	0,44	290	380	0,42 - 0,84	1008	0,7	3,9	301,0	321,9	14,3	10,2	
25	15	5	1300	10,81	35,6	44,3	0,44	180	230	0,42 - 0,84	426	0,7	3,9	301,0	321,9	14,3	10,2	
30	5	5	1600	3,04	41,4	74,3	0,59	620	810	0,57 - 1,13	1844	1,2	5,6	624,2	762,4	36,2	13,7	
30	6	5	1600	3,63	42,8	73,0	0,59	561	729	0,57 - 1,13	1780	1,2	5,6	624,2	762,4	36,2	13,7	
30	10	5	1600	6,06	47,9	72,6	0,59	420	550	0,57 - 1,13	1472	1,2	5,6	624,2	762,4	36,2	13,7	
30	20	5	1600	11,98	55,5	73,9	0,59	190	260	0,85 - 1,41	555	1,2	5,6	624,2	761,9	35,9	13,7	
36	6	6	1900	3,04	40,7	74,7	0,80	770	1000	0,77 - 1,53	2334	1,2	8,0	129E1	22,8	45,7	13,4	
36	9	6	1900	4,55	43,9	72,5	0,80	530	689	0,77 - 1,53	1960	1,2	8,0	129E1	922,8	45,7	13,4	
36	12	6	1900	6,06	48,0	75,5	0,80	510	660	0,77 - 1,53	1820	1,2	8,0	129E1	873,1	45,7	13,4	
36	18	6	1900	9,04	51,5	73,5	0,80	260	330	0,77 - 1,53	707	1,2	8,0	192E1	873,1	45,7	13,4	
36	24	6	1900	11,98	55,7	76,8	0,80	240	310	1,15 - 1,91	649	1,2	8,0	129E1	873,1	45,7	13,4	

Designation : page 61 - Symbols : page 60



Designation	d ₀	d ₁	d ₂	D	A	w	a	b	H	Q	B	D ₂	D ₃
				g6/H7	h12		h9						
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
T _P RU 8x4	8	8,4	7,3	25	44	0,5	4	12	26,5	5	3	21	13
T _P RU 12x5	12	12,4	11,3	30	44	0,5	4	12	31,5	5	3	25	17
T _P RU 15x5	15	15,4	14,3	35	50	0,5	4	16	36,5	5	3	30	20
T _P RU 15x8	15	15,5	14	35	50	0,5	4	16	36,5	5	3	30	20
T _P RU 20x6	20	20,4	19,3	40	50	0,5	4	16	41,5	5	4	35	25
T _P RU 21x5	21	21,4	20,3	45	64	0,5	5	20	47	5	4	40,5	26
T _P RU 21x6	21	21,4	20,3	45	64	0,5	5	20	47	5	4	40,5	26
T _P RU 21x8	21	21,5	20	45	64	0,5	5	20	47	5	4	40,5	26
T _P RU 21x10	21	21,8	19,7	45	64	0,5	5	20	47	5	4	40,5	26
T _P RU 24x6	24	24,4	23,3	48	58	0,5	5	20	50	5	6	42	31
T _P RU 24x12	24	24,8	22,7	48	58	0,5	5	20	50	5	6	42	31
T _P RU 25x5	25	25,4	24,3	53	78	0,5	6	25	55,5	5	6	47	32
T _P RU 25x10	25	25,8	23,7	53	78	0,5	6	25	55,5	5	6	47	32
T _P RU 25x15	25	26,2	23,1	53	78	0,5	6	25	55,5	5	6	47	32
T _P RU 30x5	30	30,4	29,3	64	85	0,5	6	32	66,5	5	7	58	38
T _P RU 30x6	30	30,4	29,3	64	85	0,5	6	32	66,5	5	7	58	38
T _P RU 30x10	30	30,8	28,7	64	85	0,5	6	32	66,5	5	7	58	38
T _P RU 30x20	30	31,5	27,5	64	85	0,5	6	32	66,5	5	7	58	38
T _P RU 36x6	36	36,4	35,3	68	80	0,5	5	25	70	5	8	62	45
T _P RU 36x9	36	36,5	35,1	68	80	0,5	5	25	70	5	8	62	45
T _P RU 36x12	36	36,8	34,7	68	80	0,5	5	25	70	5	8	62	45
T _P RU 36x18	36	37,2	34,1	68	80	0,5	5	25	70	5	8	62	45
T _P RU 36x24	36	37,5	33,5	68	80	0,5	5	25	70	5	8	62	45

Planetary roller screws

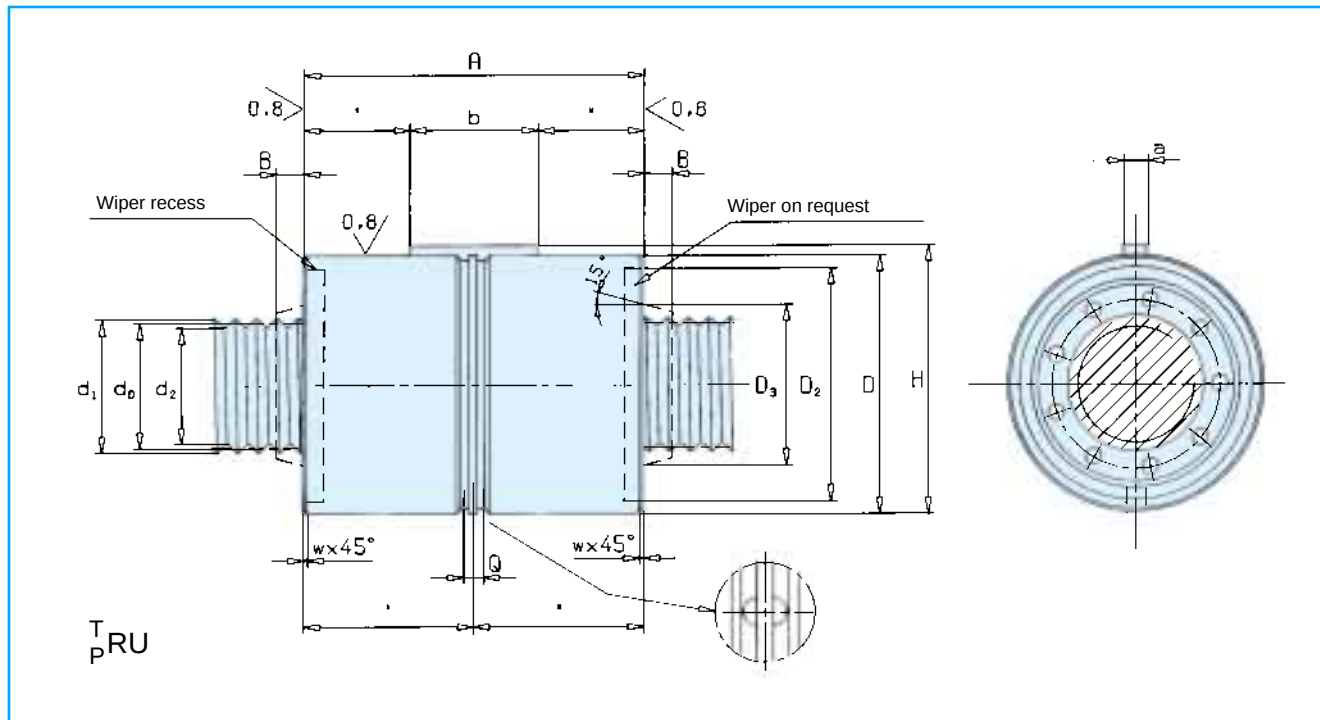
Preloaded cylindrical nuts, TRU for backlash elimination

PRU for optimum rigidity

d_0 39 → 64 mm

							TRU	PRU										
d _o	P _h	N	l _{tp}	∅	C _a	C _{oa}	T _{pe}	R _{ng}	R _{nr}	T _{pr}	F _{pr}	m _n	m _s	I _s	I _{nn}	I _{ns}	Z _n	
mm	mm	–	mm	°	kN	kN	Nm	N/μm	N/μm	Nm	N	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³	
39	5	5	2100	2,34	58,2	112,1	0,92	750	980	0,88 - 1,75	2288	2,1	9,4	178E1	203E1	124,4	27,9	
39	10	5	2100	4,67	68,7	112,9	0,92	500	650	0,88 - 1,75	1965	2,1	9,4	178E1	203E1	124,4	27,9	
39	15	5	2100	6,98	75,5	113,7	0,92	390	510	0,88 - 1,75	1465	2,1	9,4	178E1	203E1	123,6	27,9	
39	20	5	2100	9,27	77,8	108,7	0,92	220	290	0,88 - 1,75	694	2,1	9,4	178E1	203E1	123,6	27,9	
39	25	5	2100	11,53	78,7	103,8	0,92	210	280	1,31 - 2,19	697	2,1	9,4	178E1	203E1	123,6	27,9	
44	8	6	2400	3,30	60,2	113,2	1,12	688	895	1,07 - 2,14	2432	1,7	11,9	289E1	173E1	119,2	22,8	
44	12	6	2400	4,96	64,7	109,5	1,12	610	800	1,07 - 2,14	2297	1,7	11,9	289E1	173E1	119,2	22,8	
44	18	6	2400	7,42	71,0	110,4	1,12	430	550	1,07 - 2,14	1497	1,7	11,9	289E1	173E1	118,3	22,8	
44	24	6	2400	9,85	75,6	111,2	1,12	290	380	1,07 - 2,14	725	1,7	11,9	289E1	173E1	118,3	22,8	
44	30	6	2400	12,24	74,7	102,7	1,12	190	250	1,60 - 2,68	727	1,7	11,9	289E1	173E1	118,3	22,8	
48	5	5	2600	1,90	89,2	200,6	1,30	1080	1410	1,24 - 2,47	2698	4,2	14,2	409E1	652E1	370,8	54,0	
48	8	5	2600	3,03	98,4	196,0	1,30	889	1156	1,24 - 2,47	2583	4,2	14,2	409E1	652E1	370,8	54,0	
48	10	5	2600	3,79	104,3	198,0	1,30	760	980	1,24 - 2,47	2405	4,2	14,2	409E1	652E1	370,8	54,0	
48	15	5	2600	5,68	116,1	202,7	1,30	600	780	1,24 - 2,47	2072	4,2	14,2	409E1	652E1	370,8	54,0	
48	20	5	2600	7,55	119,7	192,7	1,30	460	600	1,24 - 2,47	1423	4,2	14,2	409E1	652E1	370,8	54,0	
48	25	5	2600	9,41	130,0	204,6	1,30	320	480	1,24 - 2,47	782	4,2	14,2	409E1	652E1	369,6	54,0	
56	12	6	3100	3,90	95,6	180,5	1,68	810	1060	1,60 - 3,19	2952	3,2	19,3	758E1	500E1	385,3	46,2	
56	24	6	3100	7,77	109,1	174,7	1,68	410	530	1,60 - 3,19	1579	3,2	19,3	758E1	500E1	383,1	46,2	
56	36	6	3100	11,56	118,7	176,8	1,68	290	370	2,39 - 3,99	910	3,2	19,3	758E1	500E1	383,1	46,2	
60	10	5	3400	3,04	152,5	324,9	1,88	1030	1340	1,79 - 3,58	2913	7,3	22,2	999E1	165E2	110E1	103	
60	15	5	3400	4,55	168,0	326,2	1,88	830	1080	1,79 - 3,58	2635	7,3	22,2	999E1	165E2	110E1	103	
60	20	5	3400	6,06	179,8	327,4	1,88	700	910	1,79 - 3,58	2326	7,3	22,2	999E1	164E2	110E1	103	
64	12	6	3650	3,42	135,4	318,0	2,09	930	1200	1,99 - 3,98	3328	5,4	25,3	129E2	106E2	984,3	46,2	
64	18	6	3650	5,12	144,6	302,4	2,09	790	1030	1,99 - 3,98	2900	5,2	25,3	129E2	105E2	914,0	54,0	
64	24	6	3650	6,81	150,3	287,4	2,09	640	840	1,99 - 3,98	2318	5,2	25,3	129E2	105E2	911,2	54,0	
64	30	6	3650	8,49	146,8	258,3	2,09	440	570	1,99 - 3,98	1292	4,9	25,3	129E2	103E2	771,0	69,4	
64	36	6	3650	10,15	146,4	245,6	2,09	350	450	1,99 - 3,98	892	4,9	25,3	129E2	103E2	771,0	69,4	

Designation : page 61 - Symbols : page 60



Designation	d_0	d_1	d_2	D	A	w	a	b	H	Q	B	D_2	D_3
				g6/H7	h12		h9						
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
T_{pRU} 39x 5	39	39,4	38,3	80	100	1	8	40	83	7	8	73	50
T_{pRU} 39x10	39	39,8	37,7	80	100	1	8	40	83	7	8	37	50
T_{pRU} 39x15	39	40,2	37,1	80	100	1	8	40	83	7	8	73	50
T_{pRU} 39x20	39	40,5	36,5	80	100	1	8	40	83	7	8	73	50
T_{pRU} 39x25	39	40,9	35,9	80	100	1	8	40	83	7	8	73	50
T_{pRU} 44x8	44	44,4	43,2	80	90	0,5	6	32	82,5	7	8	74	56
T_{pRU} 44x12	44	44,8	42,7	80	90	0,5	6	32	82,5	7	8	74	56
T_{pRU} 44x18	44	45,2	42,1	80	90	0,5	6	32	82,5	7	8	74	56
T_{pRU} 44x24	44	45,5	41,5	80	90	0,5	6	32	82,5	7	8	74	56
T_{pRU} 44x30	44	45,9	40,9	80	90	0,5	6	32	82,5	7	8	74	56
T_{pRU} 48x5	48	48,4	47,3	100	127	1	8	45	103	7	9	90	60
T_{pRU} 48x8	48	48,6	47,1	100	127	1	8	45	103	7	9	90	60
T_{pRU} 48x10	48	48,8	46,7	100	127	1	8	45	103	7	9	90	60
T_{pRU} 48x15	48	49,2	46,1	100	127	1	8	45	103	7	9	90	60
T_{pRU} 48x20	48	49,5	45,5	100	127	1	8	45	103	7	9	90	60
T_{pRU} 48x25	48	49,9	44,9	100	127	1	8	45	103	7	9	90	60
T_{pRU} 56x12	56	56,8	54,7	100	112	1	8	40	103	7	9	93	66
T_{pRU} 56x24	56	57,5	53,5	100	112	1	8	40	103	7	9	93	66
T_{pRU} 56x36	56	58,3	52,3	100	112	1	8	40	103	7	9	93	66
T_{pRU} 60x10	60	60,8	58,7	122	152	1	10	45	125	10,5	9	110	71
T_{pRU} 60x15	60	61,2	58,1	122	152	1	10	45	125	10,5	9	110	71
T_{pRU} 60x20	60	61,5	57,5	122	152	1	10	45	125	10,5	9	110	71
T_{pRU} 64x12	64	64,8	62,7	115	129	1	8	45	118	7	11	106	75
T_{pRU} 64x18	64	65,2	62,1	115	129	1	8	45	118	7	11	106	75
T_{pRU} 64x24	64	65,5	61,5	115	129	1	8	45	118	7	11	106	75
T_{pRU} 64x30	64	65,9	60,9	115	129	1	8	45	118	7	11	106	75
T_{pRU} 64x36	64	66,3	60,3	115	129	1	8	45	118	7	11	106	75

Planetary roller screws

Preloaded flanged nuts, TRK for backlash elimination

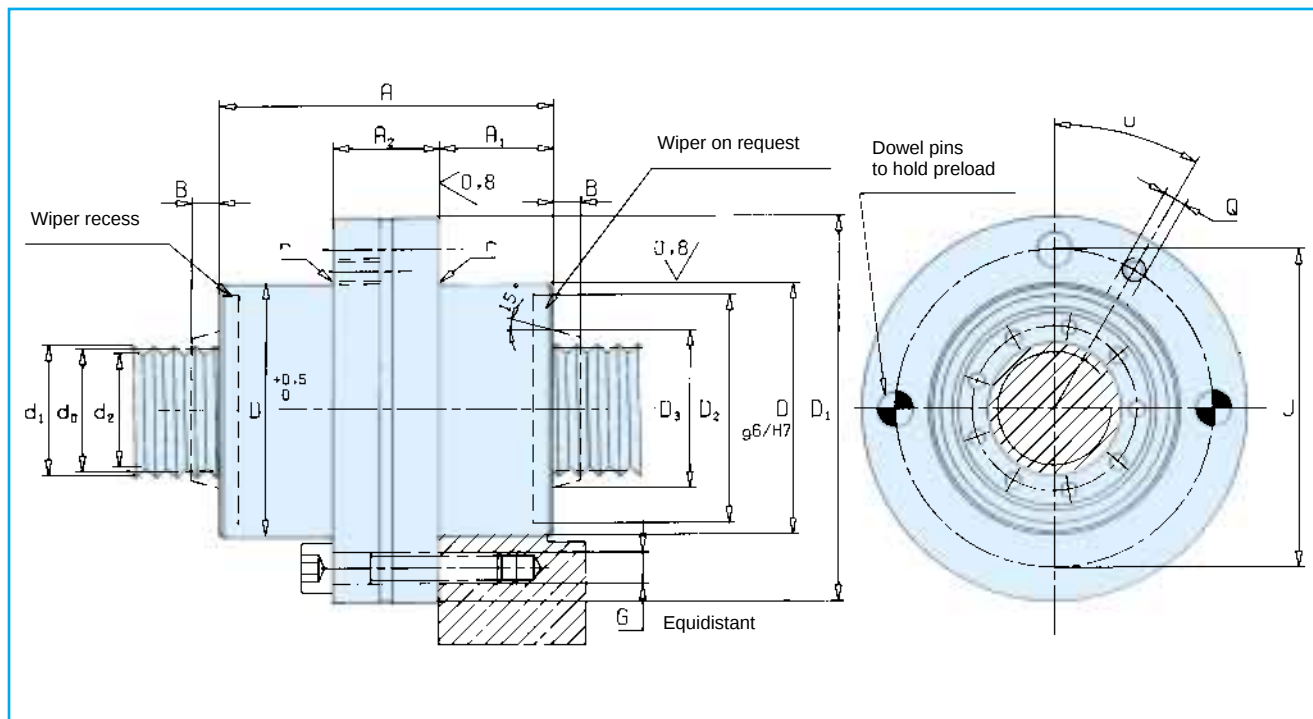
PRK for optimum rigidity

d₀ 8 → 39 mm



							TRK	PRK										
d ₀	P _h	N	l _{tp}	Ø	C _a	C _{oa}	T _{pe}	R _{ng}	R _{nr}	T _{pr}	F _{pr}	m _n	m _s	I _s	I _{nn}	I _{ns}	Z _n	
mm	mm	–	mm	°	kN	kN	Nm	N/µm	N/µm	Nm	N	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³	
8	4	4	400	9,04	5,06	8,16	0,07	110	150	0,06 - 0,13	236	0,3	0,4	3,2	66,4	0,1	0,91	
12	5	5	600	7,55	7,98	11,1	0,13	180	240	0,12 - 0,25	570	0,3	0,9	16,0	106,0	0,4	1,43	
15	5	5	750	6,06	11,7	18,2	0,19	290	380	0,18 - 0,36	932	0,5	1,4	39,0	201,6	1,2	2,29	
15	8	5	750	9,71	12,4	16,9	0,19	242	315	0,18 - 0,36	954	0,5	1,4	39,0	201,6	1,2	2,29	
20	6	6	1050	5,45	12,1	18,7	0,30	290	380	0,26 - 0,58	1305	0,5	2,3	123,3	289,5	2,5	2,47	
21	5	5	1100	4,33	22,8	34,2	0,33	400	520	0,31 - 0,63	1341	0,7	2,7	149,9	436,6	6,5	5,03	
21	6	5	1100	5,20	22,9	32,3	0,33	359	467	0,31 - 0,63	1394	0,7	2,7	149,9	436,6	6,5	5,03	
21	8	5	1100	6,95	24,5	32,5	0,33	311	404	0,31 - 0,63	1354	0,7	2,7	149,9	436,6	6,5	5,03	
21	10	5	1100	8,62	26,7	34,6	0,33	200	260	0,31 - 0,63	557	0,7	2,7	149,9	436,6	6,5	5,03	
24	6	6	1250	4,55	19,0	27,2	0,41	370	490	0,39 - 0,78	1597	0,8	3,6	255,7	524,2	6,3	4,24	
24	12	6	1250	9,04	21,5	26,0	0,41	150	200	0,39 - 0,78	541	0,8	3,6	255,7	524,2	6,3	4,24	
25	5	5	1300	3,64	28,5	45,1	0,44	460	600	0,42 - 0,84	1577	1,4	3,9	301,0	120E1	14,3	10,2	
25	10	5	1300	7,26	32,7	43,9	0,44	290	380	0,42 - 0,84	1008	1,4	3,9	301,0	120E1	14,3	10,2	
25	15	5	1300	10,81	35,6	44,3	0,44	180	230	0,42 - 0,84	426	1,4	3,9	301,0	120E1	14,3	10,2	
30	5	5	1600	3,04	41,4	74,3	0,59	620	810	0,57 - 1,13	1844	2,1	5,6	624,2	268E1	36,2	13,7	
30	6	5	1600	3,63	42,8	73	0,59	561	729	0,57 - 1,13	1780	2,1	5,6	624,2	268E1	36,2	13,7	
30	10	5	1600	6,06	47,9	72,6	0,59	420	550	0,57 - 1,13	1472	2,1	5,6	624,2	268E1	36,2	13,7	
30	20	5	1600	11,98	55,5	73,9	0,59	190	260	0,85 - 1,41	555	2,1	5,6	624,2	268E1	35,9	13,7	
36	6	6	1900	3,04	40,7	74,7	0,80	770	1000	0,77 - 1,53	2334	2,1	8,0	129E1	317E1	45,7	13,4	
36	9	5	1900	4,55	43,9	72,5	0,80	530	689	0,77 - 1,53	1960	2,1	8,0	129E1	317E1	45,7	13,4	
36	12	6	1900	6,06	48,0	75,6	0,80	510	660	0,77 - 1,53	1820	2,1	8,0	129E1	312E1	45,7	13,4	
36	18	6	1900	9,04	51,5	73,5	0,80	260	330	0,77 - 1,53	707	2,1	8,0	192E1	312E1	45,7	13,4	
36	24	6	1900	11,98	55,7	76,8	0,80	240	310	1,15 - 1,91	649	2,1	8,0	129E1	312E1	45,7	13,4	
39	5	5	2100	2,34	58,2	112,1	0,92	750	980	0,88 - 1,75	2288	4,0	9,4	178E1	836E1	124,4	27,9	
39	10	5	2100	4,67	68,7	112,9	0,92	500	650	0,88 - 1,75	1965	4,0	9,4	178E1	836E1	124,4	27,9	
39	15	5	2100	6,98	75,5	113,7	0,92	390	510	0,88 - 1,75	1465	4,0	9,4	178E1	836E1	123,6	27,9	
39	20	5	2100	9,27	77,8	108,7	0,92	220	290	0,88 - 1,75	694	4,0	9,4	178E1	836E1	123,6	27,9	
39	25	5	2100	11,53	78,7	103,8	0,92	210	280	1,31 - 2,19	697	4,0	9,4	178E1	836E1	123,6	27,9	

Designation : page 61 - Symbols : page 60



Designation	d ₀	d ₁	d ₂	D	A	A ₁	A ₂	D ₁	J	G	r	Q	u	B	D ₂	D ₃
					h12				js12		+0,4					
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm	mm	mm
TRK 8x4	8	8,4	7,3	25	44	14	16	46	36	6xM4	0,4	M6	30	3	21	13
TRK 12x5	12	12,4	11,3	30	44	14	16	51	41	6xM4	0,4	M6	30	3	25	17
TRK 15x5	15	15,4	14,3	35	50	16	18	58	46	6xM5	0,4	M6	30	3	30	20
TRK 15x8	15	15,5	14	35	50	16	18	58	46	6xM5	0,4	M6	30	3	30	20
TRK 20x6	20	20,4	19,3	40	50	16	18	63	51	6xM5	0,8	M6	30	4	35	25
TRK 21x5	21	21,4	20,3	45	64	23	18	68	56	6xM5	0,8	M6	30	4	40,5	26
TRK 21x6	21	21	21,4	45	64	23	18	68	56	6xM5	0,8	M6	30	4	40,5	26
TRK 21x8	21	21	21,5	45	64	23	18	68	56	6xM5	0,8	M6	30	4	40,5	26
TRK 21x10	21	21,8	19,7	45	64	23	18	68	56	6xM5	0,8	M6	30	4	40,5	26
TRK 24x6	24	24,4	23,3	48	58	20	18	71	59	6xM5	0,8	M6	30	6	42	31
TRK 24x12	24	24,8	22,7	48	58	20	18	71	59	6xM5	0,8	M6	30	6	42	31
TRK 25x5	25	25,4	24,3	56	78	29	20	84	70	6xM6	0,8	M6	30	6	47	32
TRK 25x10	25	25,8	23,7	56	78	29	20	84	70	6xM6	0,8	M6	30	6	47	32
TRK 25x15	25	26,2	23,1	56	78	29	20	84	70	6xM6	0,8	M6	30	6	47	32
TRK 30x5	30	30,4	29,3	64	85	29	27	98	81	6xM8	0,8	M6	30	7	58	38
TRK 30x6	30	30,8	29,3	64	85	29	27	98	81	6xM8	0,8	M6	30	7	58	38
TRK 30x10	30	31,8	28,7	64	85	29	27	98	81	6xM8	0,8	M6	30	7	58	38
TRK 30x20	30	31,5	27,5	64	85	29	27	98	81	6xM8	0,8	M6	30	7	58	38
TRK 36x6	36	36,4	35,3	68	80	26,5	27	102	85	6xM8	0,8	M6	30	8	62	45
TRK 36x9	36	36,5	35,1	68	80	26,5	27	102	85	6xM8	0,8	M6	30	8	62	45
TRK 36x12	36	36,8	34,7	68	80	26,5	27	102	85	6xM8	0,8	M6	30	8	62	45
TRK 36x18	36	37,2	34,1	68	80	26,5	27	102	85	6xM8	0,8	M6	30	8	62	45
TRK 36x24	36	37,5	33,5	68	80	26,5	27	102	85	6xM8	0,8	M6	30	8	62	45
TRK 39x5	39	39,4	38,3	82	100	33,5	33	124	102	6xM10	1,2	M6	30	8	73	50
TRK 39x10	39	39,8	37,7	82	100	33,5	33	124	102	6xM10	1,2	M6	30	8	73	50
TRK 39x15	39	40,2	37,1	82	100	33,5	33	124	102	6xM10	1,2	M6	30	8	73	50
TRK 39x20	39	40,5	36,5	82	100	33,5	33	124	102	6xM10	1,2	M6	30	8	73	50
TRK 39x25	39	40,9	35,9	82	100	33,5	33	124	102	6xM10	1,2	M6	30	8	73	50

Planetary roller screws

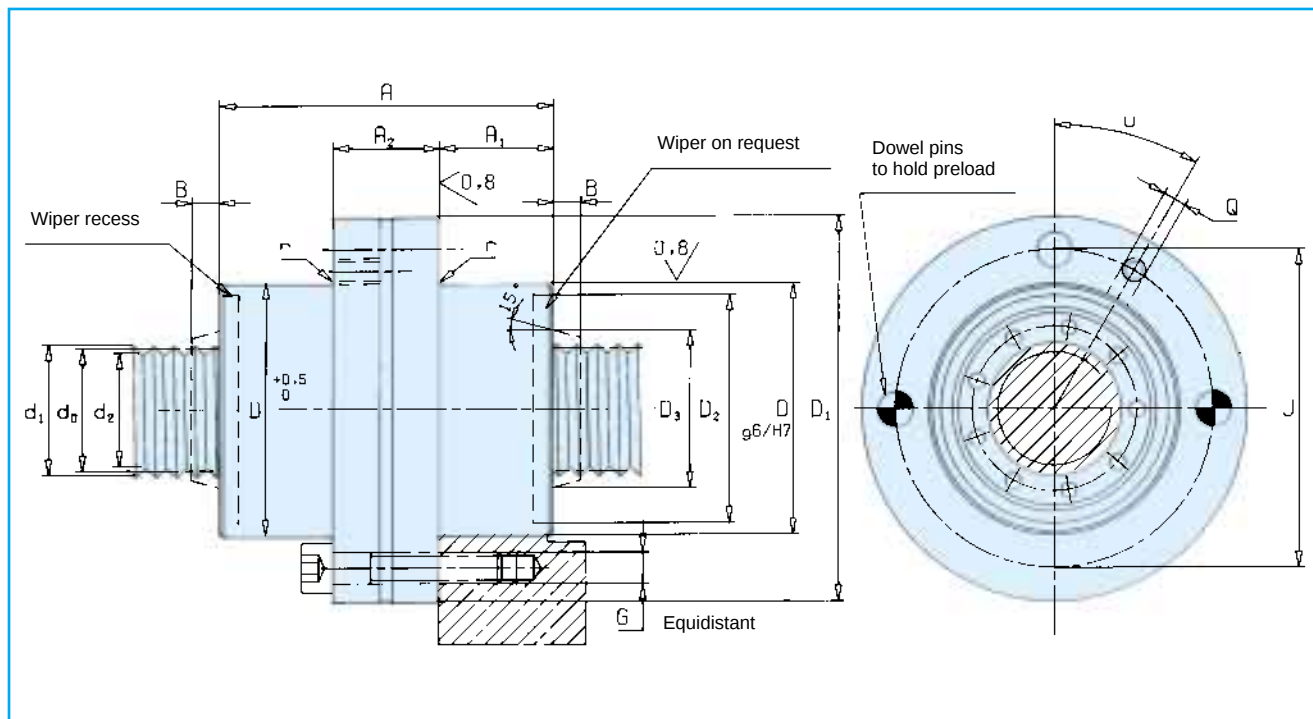
Preloaded flanged nuts, TRK for backlash elimination

PRK for optimum rigidity

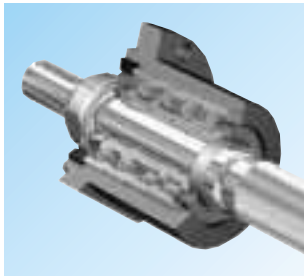
d₀ 44 → 64 mm

							TRK	PRK									
d ₀	P _h	N	l _{tp}	Ø	C _a	C _{oa}	T _{pe}	R _{ng}	R _{nr}	T _{pr}	F _{pr}	m _n	m _s	I _s	I _{nn}	I _{ns}	Z _n
mm	mm	–	mm	°	kN	kN	Nm	N/µm	N/µm	Nm	N	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³
44	8	6	2400	3,30	60,2	113,2	1,12	761	989	1,07 - 2,14	3445	3,6	11,9	289E1	802E1	119,2	22,81
44	12	6	2400	4,96	64,7	109,5	1,12	610	800	1,07 - 2,14	2297	3,6	11,9	289E1	802E1	119,2	22,81
44	18	6	2400	7,42	71,0	110,4	1,12	430	550	1,07 - 2,14	1497	3,6	11,9	289E1	802E1	118,3	22,81
44	24	6	2400	9,85	75,6	111,2	1,12	290	380	1,07 - 2,14	725	3,6	11,9	289E1	802E1	118,3	22,81
44	30	6	2400	12,24	74,7	102,7	1,12	190	250	1,60 - 2,68	724	3,6	11,9	289E1	802E1	118,3	22,81
48	5	5	2600	1,90	89,2	200,6	1,30	1080	1410	1,24 - 2,47	2698	7,7	14,2	409E1	230E2	370,8	53,95
48	8	8	2600	3,03	98,4	196,0	1,30	889	1156	1,24 - 2,47	2583	7,7	14,2	409E1	230E2	370,8	53,95
48	10	5	2600	3,79	104,3	198,0	1,30	760	980	1,24 - 2,47	2405	7,7	14,2	409E1	230E2	370,8	53,95
48	15	5	2600	5,68	116,1	202,7	1,30	600	780	1,24 - 2,47	2072	7,7	14,2	409E1	230E2	370,8	53,95
48	20	5	2600	7,55	119,7	192,7	1,30	460	600	1,24 - 2,47	1423	7,7	14,2	409E1	230E2	370,8	53,95
48	25	5	2600	9,41	130,0	204,6	1,30	320	420	1,24 - 2,47	782	7,7	14,2	409E1	230E2	369,6	53,95
56	12	6	3100	3,90	95,6	180,5	1,68	810	1060	1,60 - 3,19	2952	6,5	19,3	758E1	213E2	385,3	46,18
56	24	6	3100	7,77	109,1	174,7	1,68	410	530	1,60 - 3,19	1579	6,5	19,3	758E1	213E2	383,1	46,18
56	36	6	3100	11,56	118,7	176,8	1,68	290	370	2,39 - 3,99	910	6,5	19,3	758E1	213E2	383,1	46,18
60	10	5	3400	3,04	152,5	324,9	1,88	1030	1340	1,79 - 3,58	2913	12,1	22,2	999E1	528E2	110E1	102,6
60	15	5	3400	4,55	168,0	326,2	1,88	830	1080	1,79 - 3,58	2635	12,1	22,2	999E1	528E2	110E1	102,6
60	20	5	3400	6,06	179,8	327,4	1,88	700	910	1,79 - 3,58	2326	12,1	22,2	999E1	528E2	110E1	102,6
64	12	6	3650	3,42	135,4	318,0	2,09	930	1200	1,99 - 3,98	3328	11,3	25,3	129E2	502E2	984,3	46,24
64	18	6	3650	5,12	144,6	302,4	2,09	790	1030	1,99 - 3,98	2900	11,3	25,3	129E2	502E2	914,0	46,24
64	24	6	3650	6,81	150,3	287,4	2,09	640	840	1,99 - 3,98	2318	11,3	25,3	129E2	502E2	911,2	46,24
64	30	6	3650	8,49	146,8	258,3	2,09	440	570	1,99 - 3,98	1292	11,3	25,3	129E2	502E2	771,0	46,24
64	36	6	3650	10,15	146,4	245,6	2,09	350	450	1,99 - 3,98	892	11,3	25,3	129E2	502E2	771,0	46,24

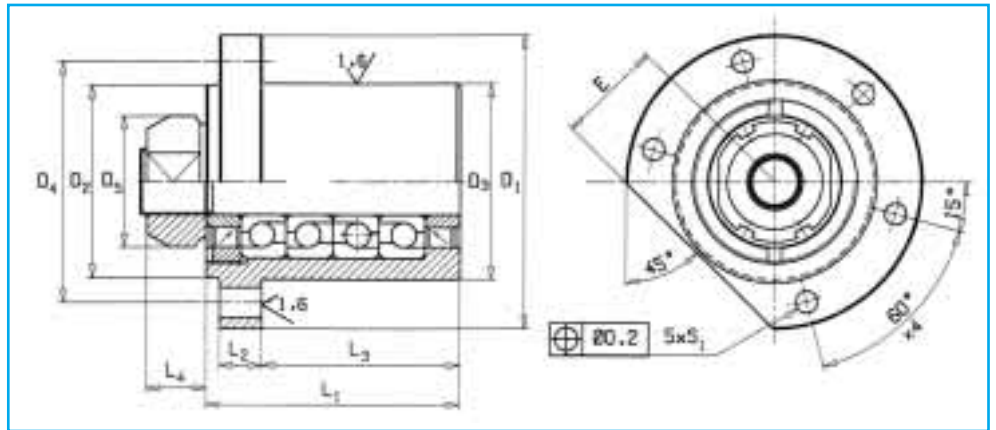
Designation : page 61 - Symbols : page 60



Designation	d_0	d_1	d_2	D	A	A_1	A_2	D_1	J	G	r	Q	u	B	D_2	D_3
					h12				js12		+0,4					
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm	mm	mm
T _P RK 44x8	44	44,4	43,2	82	90	28,5	33	124	102	6xM10	1,2	M6	30	8	74	56
T _P RK 44x12	44	44,8	42,7	82	90	28,5	33	124	102	6xM10	1,2	M6	30	8	74	56
T _P RK 44x18	44	45,2	42,1	82	90	28,5	33	124	102	6xM10	1,2	M6	30	8	74	56
T _P RK 44x24	44	45,5	41,5	82	90	28,5	33	124	102	6xM10	1,2	M6	30	8	74	56
T _P RK 44x30	44	45,9	40,9	82	90	28,5	33	124	102	6xM10	1,2	M6	30	8	74	56
T _P RK 48x5	48	48,4	47,3	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
T _P RK 48x8	48	48,6	47,1	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
T _P RK 48x10	48	48,8	46,7	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
T _P RK 48x15	48	49,2	46,1	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
T _P RK 48x20	48	49,5	45,5	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
T _P RK 48x25	48	49,9	44,9	105	127	45	37	150	127	6xM12	1,2	M8x1	30	9	90	60
T _P RK 56x12	56	56,8	54,7	105	112	37,5	37	150	127	6xM12	1,2	M8x1	30	9	93	66
T _P RK 56x24	56	57,5	53,5	105	112	37,5	37	150	127	6xM12	1,2	M8x1	30	9	93	66
T _P RK 56x36	56	58,3	52,3	105	112	37,5	37	150	127	6xM12	1,2	M8x1	30	9	93	66
T _P RK 60x10	60	60,8	58,7	122	152	53,5	45	180	150	6xM16	1,6	M8x1	30	9	110	71
T _P RK 60x15	60	61,2	58,1	122	152	53,5	45	180	150	6xM16	1,6	M8x1	30	9	110	71
T _P RK 60x20	60	61,5	57,5	122	152	53,5	45	180	150	6xM16	1,6	M8x1	30	9	110	71
T _P RK 64x12	64	64,8	62,7	120	129	42	45	180	150	6xM16	1,6	M8x1	30	11	106	75
T _P RK 64x18	64	65,2	62,1	120	129	42	45	180	150	6xM16	1,6	M8x1	30	11	106	75
T _P RK 64x24	64	65,5	61,5	120	129	42	45	180	150	6xM16	1,6	M8x1	30	11	106	75
T _P RK 64x30	64	65,9	60,9	120	129	42	45	180	150	6xM16	1,6	M8x1	30	11	106	75
T _P RK 64x36	64	66,3	60,3	120	129	42	45	180	150	6xM16	1,6	M8x1	30	11	106	75

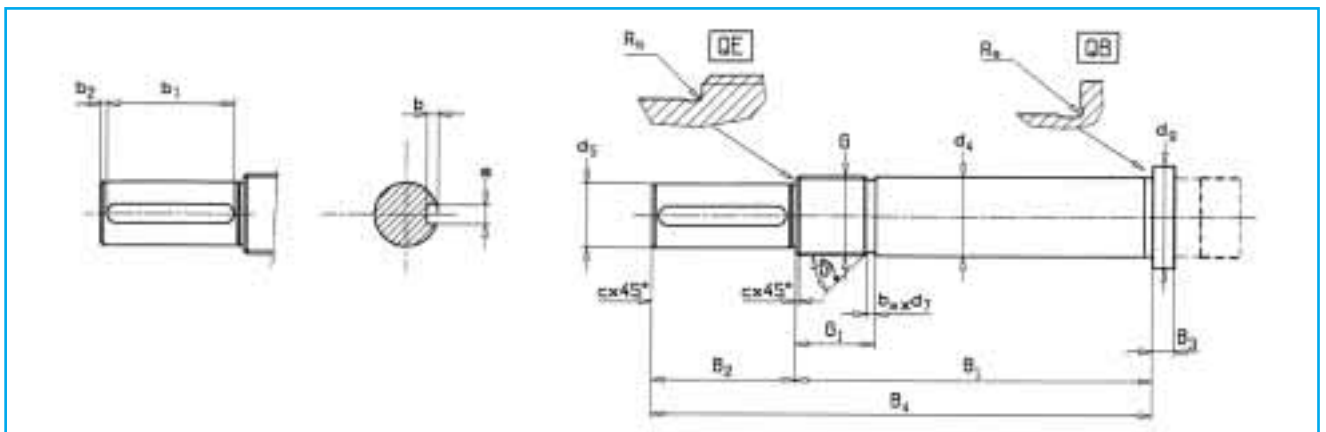


Flanged thrust bearing unit



Flanged bearing unit designation	40° angular contact ball bearing							Lock nut				
	Basic axial load rating		Number of bearings	Bearings designation	Maximum preload torque *	Axial rigidity	Tilt rigidity	High precision KMT nut				
	C _a kN	C _{0a} kN						Designation	Hook spanner	Tightening torque Nm	Grub screws	
					Nm	N/μm	Nm/mrad				Size	Max tightening torque, Nm
FLRBU2	27.9	31.9	2	7303 BEGBP	0.25	190	51	KMT 3	HN 4	15	M6	8
FLRBU3	40.1	63.8	4	7204 BEGBP	0.25	400	140	KMT 4	HN 5	18	M6	8
FLRBU4	74.2	119.2	4	7305 BEGBP	1.1	450	160	KMT 5	HN 5	25	M6	8
FLRBU5	109.4	188.4	4	7307 BEGBP	1.1	600	715	KMT 7	HN 7	42	M6	8
FLRBU6	208.8	392.3	4	7310 BEGBP	1.5	750	1000	KMT 10	HN 10	70	M6	8

Flanged bearing unit designation	L ₁	L ₂	L ₃	L ₄	D ₁	D ₂	D ₃ h7	D ₄	D ₅	S ₁ H13	Fixing screws	E
FLRBU2	46	10	32	18	90	62	60	76	37	6.6	M6 x 25	32
FLRBU3	77	13	60	18	90	59	60	74	40	9	M8 x 25	32
FLRBU4	89	16	68	20	120	80	80	100	44	11	M10 x 30	44
FLRBU5	110	20	82	22	140	99	100	120	54	13	M12 x 40	54
FLRBU6	140	25	98.5	25	171	130	130	152	75	13	M12 x 40	67



Thrust bearing units	d ₄ h6	d ₅ h7	d ₉	B ₁ js12	B ₂	B ₄ js12	B ₃	G 6g	G ₁	c	b _a	d ₇ h11	R _a	R _b	a N9	b +0.100 0	b ₁ +0.5 0	b ₂
FLRBU2	17	15	23	66	30	96	5	M17 x 1	22	0.5	1.5	15.5	0.6	0.6	5	3	25	2
FLRBU3	20	17	27	97	40	137	7	M20 x 1	22	0.5	1.5	18.5	0.6	0.6	5	3	35	2
FLRBU4	25	20	34	112	45	157	7	M25 x 1.5	25	0.5	2.3	22.8	0.6	0.6	6	3.5	40	2.5
FLRBU5	35	30	45	134	55	189	10	M35 x 1.5	26	1	2.3	32.8	0.6	0.6	8	4	45	2.5
FLRBU6	50	40	68	168	65	233	12	M50 x 1.5	31	1	2.3	47.8	0.6	0.6	12	5	55	4

* Preload torque measured at 50rpm

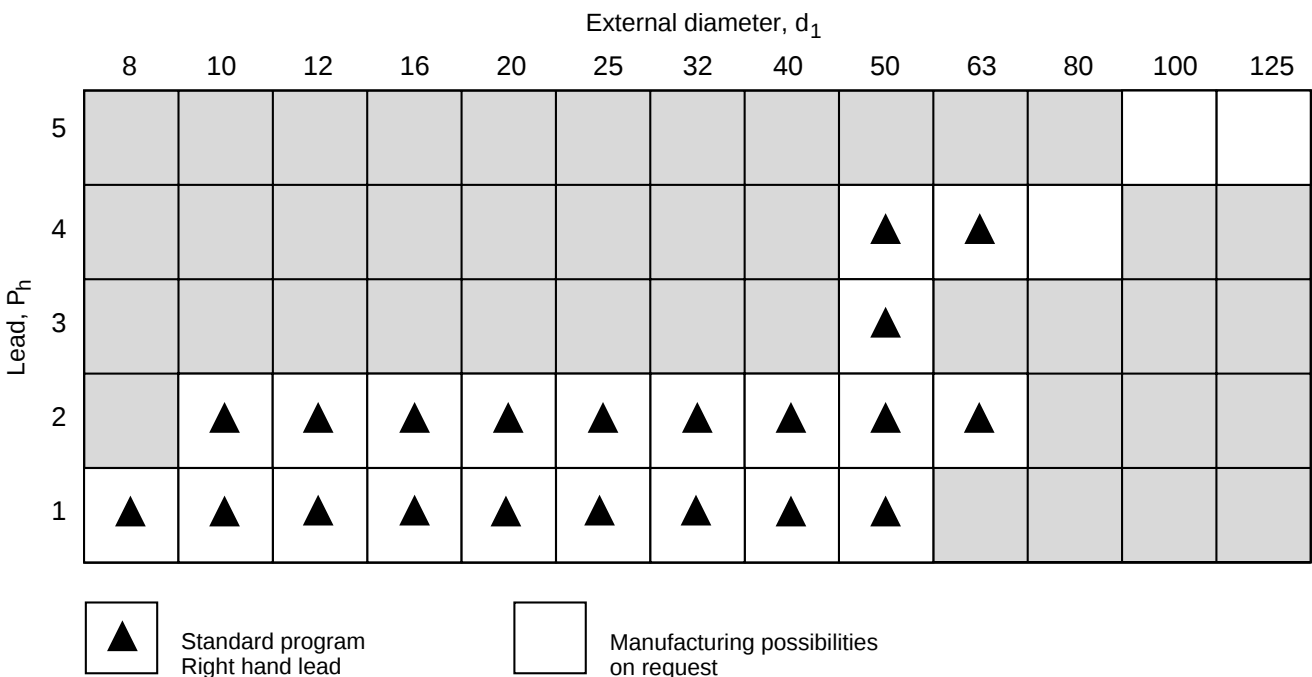
Flanged thrust bearing units

SKF “FLRBU” flanged thrust bearing units can be fitted on the screw shafts in the table below :

Flanged thrust bearing	Suitable for SRC & SRF	Suitable for PRU & PRK
FLRBU2	SR 15 x 5 - R5 SR 15 x 8 - R5 SR 20 x 6 - R6	PR 20 x 6 - R6 PR 21 x 5 - R5 – PR 21 x 6 - R5 – PR 21 x 8 - R5 PR 21 x 10 - R5 PR 24 x 6 - R6 – PR 24 x 12 - R6
FLRBU3	SR 21 x 5 - R5 – SR 21 x 6 - R5 – SR 21 x 8 - R5 SR 21 x 10 - R5 SR 24 x 6 - R6 – SR 24 x 12 - R6	PR 25 x 5 - R5 – PR 25 x 10 - R5 – PR 25 x 15 - R5 PR 30 x 5 - R5 – PR 30 x 6 - R5 PR 36 x 6 - R6
FLRBU4	SR 25 x 5 - R5 SR 25 x 10 - R5 SR 25 x 15 - R5	PR 30 x 10 - R5 – PR 30 x 20 - R5 PR 36 x 9 - R6 – PR 36 x 12 - R6 – PR 36 x 18 - R6 PR 36 x 24 - R6 PR 39 x 5 - R5 – PR 39 x 10 - R5 – PR 39 x 15 - R5 PR 44 x 12 - R6 – PR 44 x 18 - R6 – PR 44 x 24 - R6 PR 44 x 30 - R6
FLRBU5	SR 30 x 5 - R5 – SR 30 x 6 - R5 – SR 30 x 10 - R5 SR 30 x 20 - R5 SR 36 x 6 - R6 – SR 36 x 9 - R6 – SR 36 x 12 - R6 SR 36 x 18 - R6 – SR 36 x 24 - R6 SR 39 x 5 - R5 SR 44 x 8 - R6	PR 39 x 20 - R5 – PR 39 x 25 - R5 PR 48 x 5 - R5 – PR 48 x 8 - R5 – PR 48 x 10 - R5 PR 56 x 12 - R6 – PR 56 x 24 - R6
FLRBU6	SR 39 x 10 - R5 – SR 39 x 15 - R5 SR 39 x 20 - R5 – SR 39 x 25 - R5 SR 44 x 12 - R6 – SR 44 x 18 - R6 SR 44 x 24 - R6 – SR 44 x 30 - R6 SR 48 x 5 - R5 – SR 48 x 10 - R5 SR 48 x 15 - R5 SR 56 x 12 - R6 – SR 56 x 18 - R6 SR 56 x 24 - R6 – SR 56 x 30 - R6	PR 60 x 10 - R5 – PR 60 x 15 - R5 PR 60 x 20 - R5 – PR 60 x 25 - R5 PR 60 x 30 - R5 PR 64 x 12 - R6 – PR 64 x 18 - R6 PR 64 x 24 - R6 – PR 64 x 30 - R6 PR 64 x 36 - R6 PR 80 x 12 - R6 PR 80 x 18 - R6

Standard Range

The full range of “SV” recirculating roller screws



SKF recirculating roller screws

The fine screw for ultimate positioning accuracy has these advantages

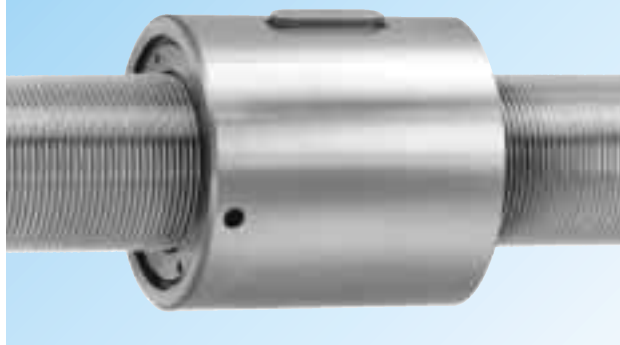
- ★ 1 mm lead on screws from 8 - 50 mm diameter
- ★ Fine resolution
- ★ Choice of 3 classes of lead precision
- ★ Minimum input torque because of their great mechanical advantage
- ★ Simplification of transmissions to improve their performance
- ★ High load capacity
- ★ Long life
- ★ High rigidity and reliability (no miniaturised parts)
- ★ Special surface treatments and lubrication available
- ★ Cylindrical nuts with play or preloaded
- ★ Preloaded flanged nuts

○ Backlash elimination with oversize rollers :

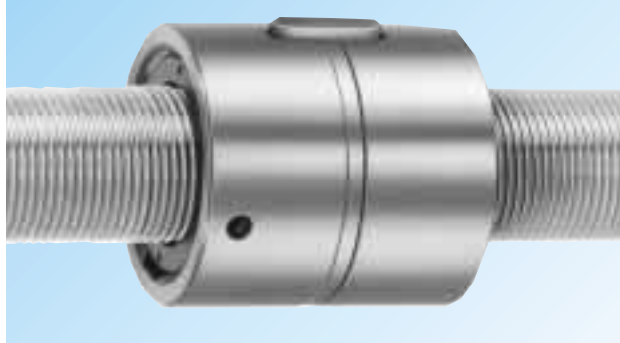
as an option under following conditions :

- $\frac{\text{total length}}{d_1} \leq 30$
- $\frac{\text{threaded length}}{d_1} \leq 15$

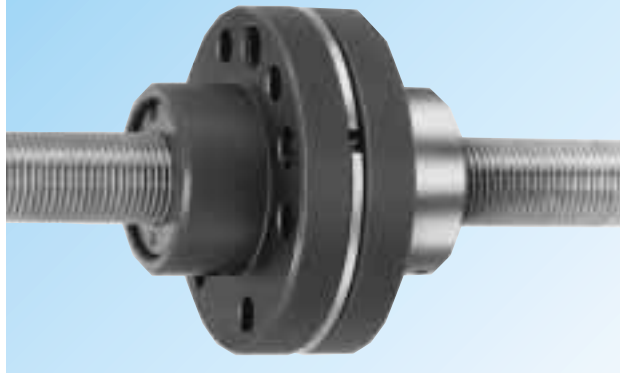
Cylindrical nut with axial play



Preloaded cylindrical nut



Preloaded flanged nut

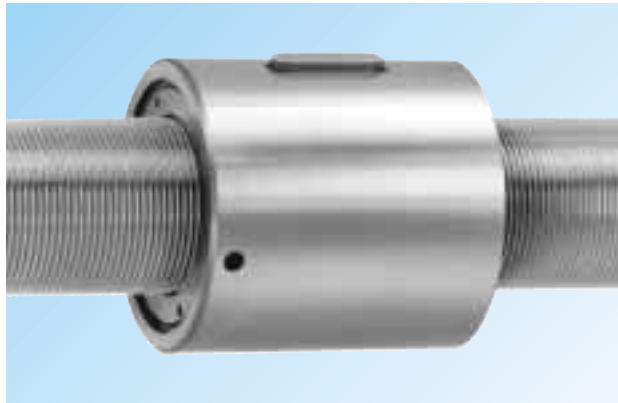


Recirculating roller screws

Cylindrical nuts with axial play, SVC

Nuts without wiper recesses

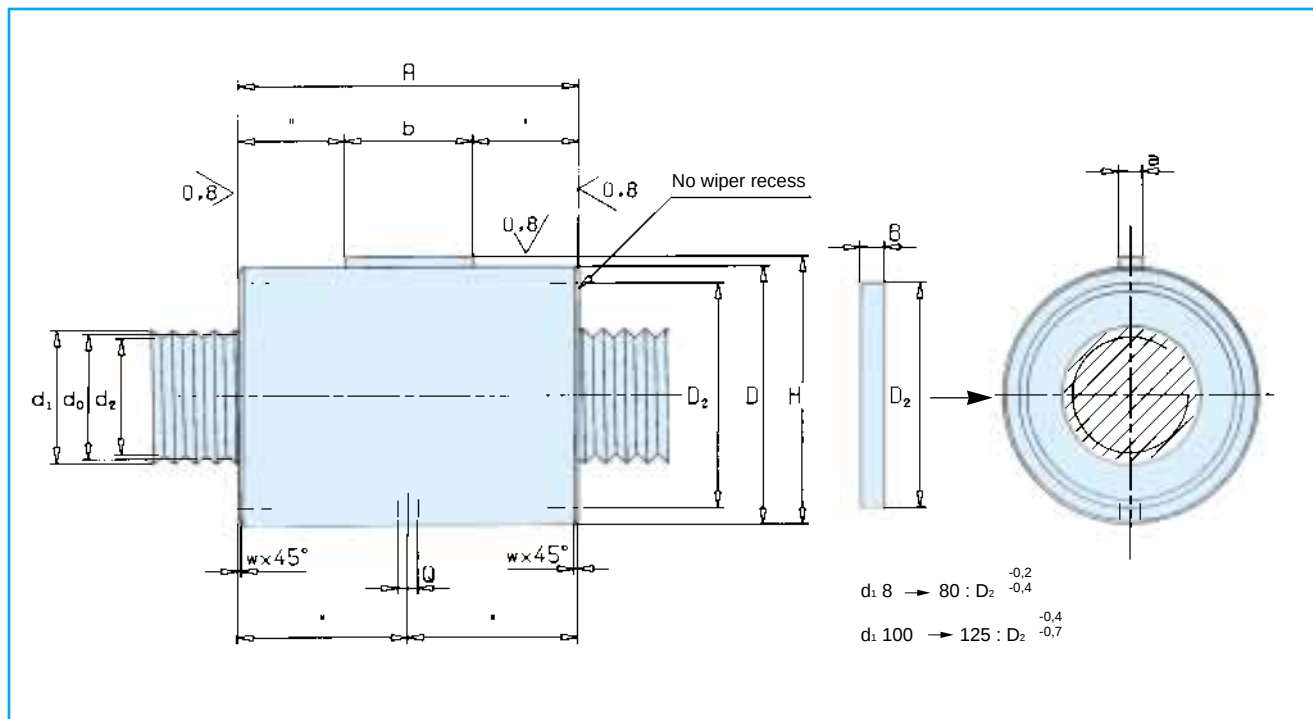
Backlash elimination with oversize rollers as an option



	d_1	P_h	N	l_{tp}	$\emptyset$	C_a	C_{oa}	s_{ap}	m_n	m_s	I_s	I_{nn}	I_{ns}	Z_n	Designation	
	mm	mm	—	mm	°	kN	kN	mm	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³		
	8	1	1	500	2,28	8,40	11,0	0,02	0,1	0,36	2,6	3,6	0,1	0,72	SVC	8x1
	10	1	1	650	1,82	8,90	11,4	0,02	0,1	0,57	6,7	5,0	0,1	0,95	SVC	10x1
	10	2	2	650	3,64	8,90	11,4	0,02	0,1	0,57	6,7	5,0	0,1	0,95	SVC	10x2
	12	1	1	750	1,52	10,3	14,0	0,02	0,1	0,84	14,2	6,7	0,1	1,08	SVC	12x1
	12	2	2	750	3,04	10,3	14,0	0,02	0,1	0,84	14,2	6,7	0,1	1,08	SVC	12x2
	16	1	1	1050	1,14	11,5	16,8	0,02	0,1	1,51	46,2	14,0	0,3	1,43	SVC	16x1
	16	2	2	1050	2,28	11,5	16,8	0,02	0,1	1,51	46,2	14,0	0,3	1,43	SVC	16x2
	20	1	1	1300	0,91	18,5	36,6	0,02	0,2	2,38	114,9	29,8	0,8	1,90	SVC	20x1
	20	2	2	1300	1,82	18,5	36,6	0,02	0,2	2,38	114,9	29,8	0,8	1,90	SVC	20x2
	25	1	1	1650	0,73	32,9	68,4	0,02	0,3	3,75	284,5	79,3	2,5	3,57	SVC	25x1
	25	2	2	1650	1,46	32,9	68,4	0,02	0,3	3,75	284,5	79,3	2,5	3,57	SVC	25x2
	32	1	1	2150	0,57	64,3	159,2	0,02	0,6	6,18	773,3	280,2	9,1	6,92	SVC	32x1
	32	2	2	2150	1,14	64,3	159,2	0,02	0,6	6,18	773,3	280,2	9,1	6,92	SVC	32x 2
	40	1	1	2700	0,46	79,1	231,6	0,02	1,2	9,69	190E1	878,7	18,8	9,57	SVC	40x1
	40	2	1	2700	0,91	49,9	117,2	0,04	1,2	9,52	184E1	950,6	20,0	13,6	SVC	40x2
	50	1	1	3500	0,36	189,8	544,3	0,02	2,0	14,98	455E1	219E1	76,0	24,9	SVC	50x1
	50	2	1	3500	0,73	98,1	249,4	0,04	2,0	14,98	455E1	219E1	68,6	24,4	SVC	50x2
	50	3	2	3500	1,09	153,0	443,3	0,04	2,0	14,98	455E1	219E1	88,1	24,0	SVC	50x3
	50	4	2	3500	1,46	98,1	249,4	0,04	2,0	14,98	455E1	219E1	68,6	24,4	SVC	50x4
	63	2	1	4500	0,58	185,8	533,5	0,04	3,8	23,93	116E2	646E1	230,0	44,3	SVC	63x2
	63	4	2	4500	1,16	185,8	533,5	0,04	3,8	23,93	116E2	646E1	230,0	44,3	SVC	63x4
	80	4	1	6000	0,91	324,9	887,7	0,07	12,5	38,09	294E2	389E2	129E1	166	SVC	80x4
	100	5	1	8000	0,91	468,5	1376,3	0,07	22,8	59,51	718E2	108E3	400E1	308	SVC	100x5
	125	5	1	8000	0,73	756	2770	0,07	46,1	93,66	178E3	342E3	118E2	520	SVC	125x5

Designation : page 61 - Symbols : page 60

 available on short delivery



Designation	d_0	d_1	d_2	D	A	w	a	b	H	Q	D_2	B
				g6/H7	h12		h9					
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
SVC 8x1	7,7	8	7,1	20	31	0,2	2	12	20,8	5	16,5	4
SVC 10x1	9,7	10	9,1	22	31	0,2	2	12	22,8	5	18,5	4
SVC 10x2	9,7	10	9,1	22	31	0,2	2	12	22,8	5	18,5	4
SVC 12x1	11,7	12	11,1	24	31	0,2	2	12	24,8	5	20,5	4
SVC 12x2	11,7	12	11,1	24	31	0,2	2	12	24,8	5	20,5	4
SVC 16x1	15,7	16	15,1	29	31	0,5	3	12	30,2	5	25	4
SVC 16x2	15,7	16	15,1	29	31	0,5	3	12	30,2	5	25	4
SVC 20x1	19,7	20	19,1	34	37	0,5	3	16	35,2	5	28,5	4
SVC 20x2	19,7	20	19,1	34	37	0,5	3	16	35,2	5	28,5	4
SVC 25x1	24,7	25	24,1	42	44	0,5	4	20	43,5	5	36	5
SVC 25x2	24,7	25	24,1	42	44	0,5	4	20	43,5	5	36	5
SVC 32x1	31,7	32	31,1	54	57	1	4	25	55,5	5	45	5
SVC 32x2	31,7	32	31,1	54	57	1	4	25	55,5	5	45	5
SVC 40x1	39,7	40	39,1	68	63	1	5	32	70	5	55	5
SVC 40x2	39,3	40	38,2	68	72	1	5	32	70	5	57	5
SVC 50x1	49,7	50	49,1	82	85	1	6	32	84,5	8	70	7
SVC 50x2	49,3	50	48,7	82	85	1	6	32	84,5	8	70	7
SVC 50x3	49,5	50	48,6	82	92	1,5	6	35	84,5	8	70	7
SVC 50x4	49,3	50	48,2	82	85	1	6	32	84,5	8	70	7
SVC 63x2	62,3	63	61,2	103	104	1	6	40	105,5	8	94	7
SVC 63x4	62,3	63	61,2	103	104	1	6	40	105,5	8	94	7
SVC 80x4	78,6	80	76,4	141	175	1,5	8	63	144	10	120	10
SVC 100x5	98,3	100	95,5	175	205	2	10	80	178	10	150	15
SVC 125x5	123,3	125	120,5	220	250	3	12	100	223	12	185	15

Recirculating roller screws

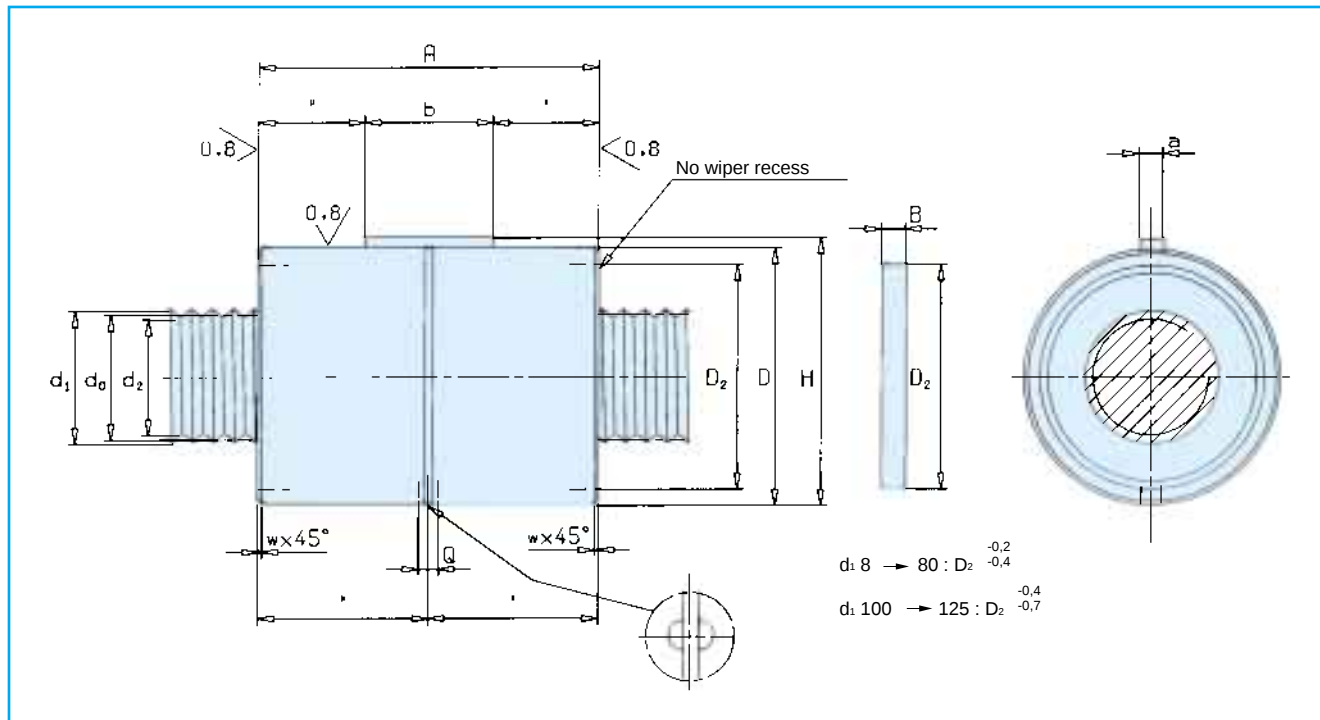
Preloaded cylindrical nuts, PVU

Nuts without wiper recesses



d_1	P_h	N	l_{tp}	$\emptyset$	C_a	C_{oa}	R_{ng}	R_{nr}	T_{pr}	F_{pr}	m_n	m_s	I_s	I_{nn}	I_{ns}	Z_n
mm	mm	—	mm	°	kN	kN	N/μm	N/μm	Nm	N	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³
8	1	1	400	2,28	4,80	5,50	140	190	0,02 - 0,08	770	0,1	0,36	2,6	3,6	0,1	0,72
10	1	1	500	1,82	5,10	5,70	138	185	0,03 - 0,10	820	0,1	0,57	6,7	5,0	0,1	0,95
10	2	2	500	3,64	5,10	5,70	138	185	0,03 - 0,10	820	0,1	0,57	6,7	5,0	0,1	0,95
12	1	1	600	1,52	5,90	7,00	159	215	0,05 - 0,15	940	0,1	0,84	14,2	6,7	0,1	1,08
12	2	2	600	3,04	5,90	7,00	159	215	0,05 - 0,15	940	0,1	0,84	14,2	6,7	0,1	1,08
16	1	1	825	1,14	6,60	8,40	182	245	0,10 - 0,20	1060	0,1	1,51	46,2	14,0	0,3	1,43
16	2	2	825	2,28	6,60	8,40	182	245	0,10 - 0,20	1060	0,1	1,51	46,2	14,0	0,3	1,43
20	1	1	1050	0,91	10,6	18,3	362	490	0,18 - 0,32	1430	0,2	2,38	114,9	29,8	0,8	1,90
20	2	2	1050	1,82	10,6	18,3	362	490	0,20 - 0,35	1430	0,2	2,38	114,9	29,8	0,8	1,90
25	1	1	1300	0,73	18,9	34,2	469	635	0,35 - 0,65	2270	0,3	3,75	284,5	79,3	2,5	3,57
25	2	2	1300	1,46	18,9	34,2	469	635	0,40 - 0,70	2270	0,3	3,75	284,5	79,3	2,5	3,57
32	1	1	1700	0,57	36,9	79,6	736	995	0,50 - 0,95	2510	0,6	6,18	773,3	280,2	9,1	6,92
32	2	2	1700	1,14	36,9	79,6	721	975	0,50 - 0,95	2320	0,6	6,18	773,3	280,2	9,1	6,92
40	1	1	2150	0,46	45,4	115,8	1034	1395	0,70 - 1,40	2840	1,2	9,69	190E1	878,7	18,8	9,57
40	2	1	2150	0,91	28,7	58,6	618	835	0,70 - 1,40	2710	1,2	9,52	184E1	950,6	20,0	13,6
50	1	1	2800	0,36	109,0	272,2	1100	1430	1,20 - 2,50	3900	2,0	14,98	455E1	219E1	76,0	24,4
50	2	1	2800	0,73	56,3	124,7	803	1045	1,20 - 2,50	3660	2,0	14,98	455E1	219E1	68,6	24,4
50	3	2	2800	1,09	88,0	221,7	1000	1300	1,20 - 2,50	3600	2,0	14,98	455E1	219E1	81,1	24,4
50	4	2	2800	1,46	56,3	124,7	803	1045	1,20 - 2,50	3660	2,0	14,98	455E1	219E1	68,6	24,4
63	2	1	3600	0,58	106,7	266,8	1177	1530	1,80 - 3,20	4540	3,8	23,93	116E2	646E1	230,0	44,3
63	4	2	3600	1,16	106,7	266,8	1177	1530	2,00 - 3,50	4540	3,8	23,93	116E2	646E1	230,0	44,3
80	4	1	4000	0,91	186,6	443,9	1280	1665	3,00 - 5,50	5410	12,5	38,09	294E2	389E2	129E1	166
100	5	1	4000	0,91	269,1	688,2	1323	1720	4,50 - 7,50	5920	22,8	59,51	718E2	108E3	400E1	308
125	5	1	4000	0,73	434	1385	2027	2635	7,00 - 10,00	6510	46,1	93,66	179E3	342E3	118E2	520

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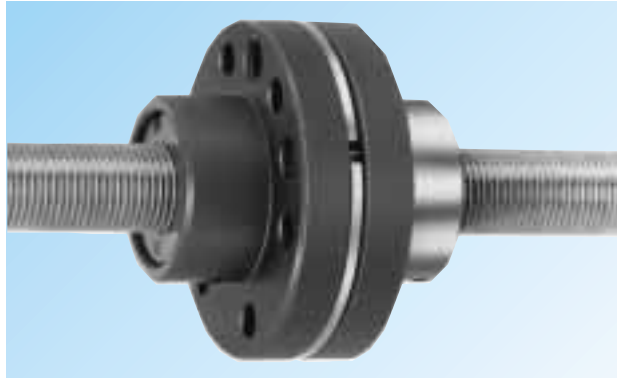


Designation	d_0	d_1	d_2	D	A	w	a	b	H	Q	D_2	B
				g6/H7	h12		h9					
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
PVU 8x1	7,7	8	7,1	20	31	0,2	2	12	20,8	5	16,5	4
PVU 10x1	9,7	10	9,1	22	31	0,2	2	12	22,8	5	18,5	4
PVU 10x2	9,7	10	9,1	22	31	0,2	2	12	22,8	5	18,5	4
PVU 12x1	11,7	12	11,1	24	31	0,2	2	12	24,8	5	20,5	4
PVU 12x2	11,7	12	11,1	24	31	0,2	2	12	24,8	5	20,5	4
PVU 16x1	15,7	16	15,1	29	31	0,5	3	12	30,2	5	25	4
PVU 16x2	15,7	16	15,1	29	31	0,5	3	12	30,2	5	25	4
PVU 20x1	19,7	20	19,1	34	37	0,5	3	16	35,2	5	28,5	4
PVU 20x2	19,7	20	19,1	34	37	0,5	3	16	35,2	5	28,5	4
PVU 25x1	24,7	25	24,1	42	44	0,5	4	20	43,5	5	36	5
PVU 25x2	24,7	25	24,1	42	44	0,5	4	20	43,5	5	36	5
PVU 32x1	31,7	32	31,1	54	57	1	4	25	55,5	5	45	5
PVU 32x2	31,7	32	31,1	54	57	1	4	25	55,5	5	45	5
PVU 40x1	39,7	40	39,1	68	63	1	5	32	70	5	55	5
PVU 40x2	39,3	40	38,2	68	72	1	5	32	70	5	57	5
PVU 50x1	49,7	50	49,1	82	85	1	6	32	84,5	8	70	7
PVU 50x2	49,3	50	48,7	82	85	1	6	32	84,5	8	70	7
PVU 50x3	49,5	50	48,6	82	92	1,5	6	35	84,5	8	70	7
PVU 50x4	49,3	50	48,2	82	85	1	6	32	84,5	8	70	7
PVU 63x2	62,3	63	61,2	103	104	1	6	40	105,5	8	94	7
PVU 63x4	62,3	63	61,2	103	104	1	6	40	105,5	8	94	7
PVU 80x4	78,6	80	76,4	141	175	1,5	8	63	144	10	120	10
PVU 100x5	98,3	100	95,5	175	205	2	10	80	178	10	150	15
PVU 125x5	123,3	125	120,5	220	250	3	12	100	223	12	185	15

Recirculating roller screws

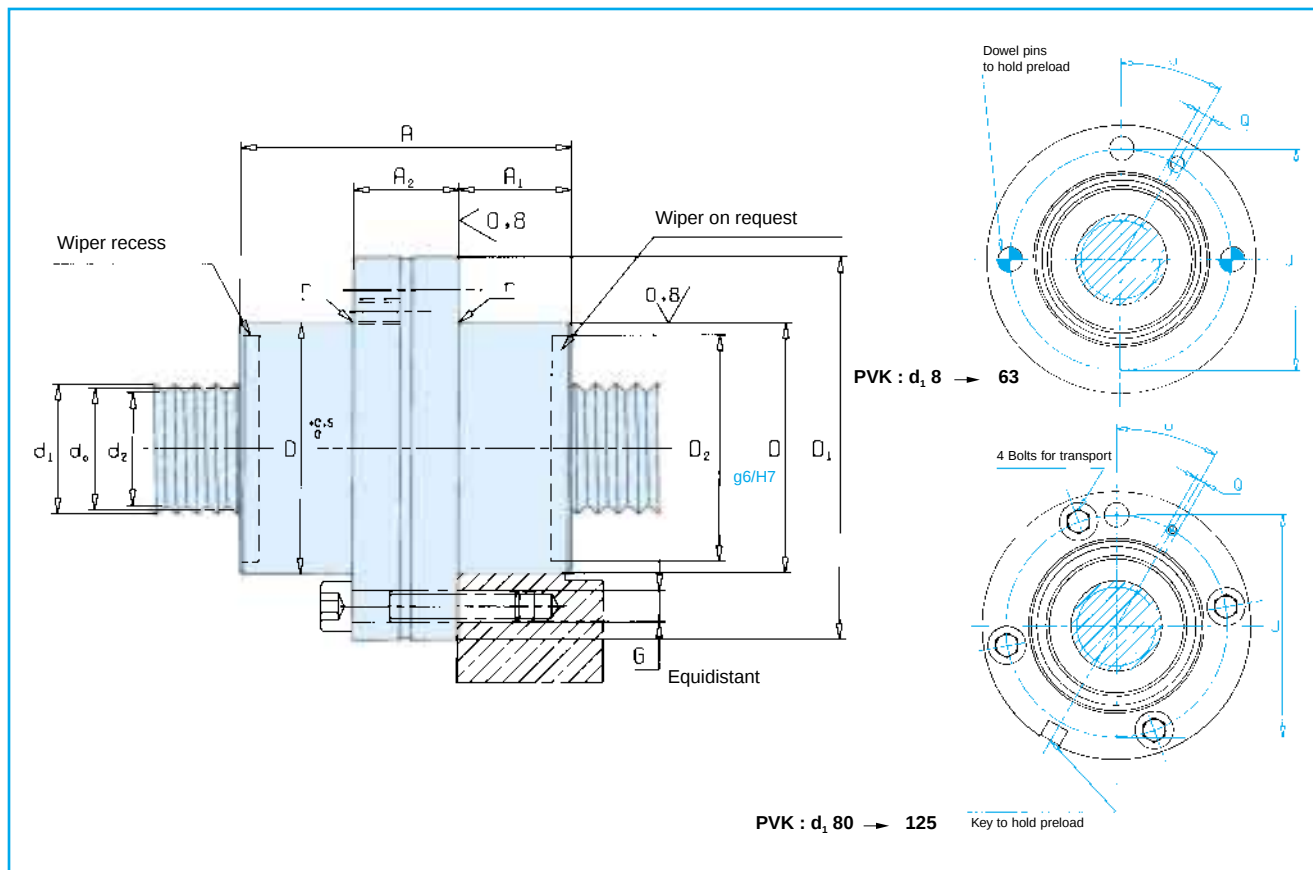
Preloaded flanged nuts , PVK

Nuts with wiper recesses

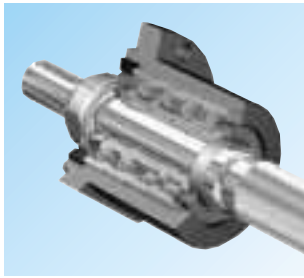


d_1	P_h	N	l_{tp}	$\emptyset$	C_a	C_{oa}	R_{ng}	R_{nr}	T_{pr}	F_{pr}	m_n	m_s	I_s	I_{nn}	I_{ns}	Z_n
mm	mm	—	mm	°	kN	kN	N/μm	N/μm	Nm	N	kg	kg/m	kgmm ² /m	kgmm ²	kgmm ²	cm ³
8	1	1	400	2,28	4,80	5,50	190	255	0,02 - 0,08	770	0,2	0,36	2,6	47,9	0,1	0,72
10	1	1	500	1,82	5,10	5,70	185	250	0,03 - 0,10	820	0,2	0,57	6,7	47,0	0,1	0,95
10	2	2	500	3,64	5,10	5,70	185	250	0,03 - 0,10	820	0,2	0,57	6,7	47,0	0,1	0,95
12	1	1	600	1,52	5,90	7,00	215	290	0,05 - 0,15	940	0,2	0,84	14,2	63,5	0,1	1,08
12	2	2	600	3,04	5,90	7,00	215	290	0,05 - 0,15	940	0,2	0,84	14,2	63,5	0,1	1,08
16	1	1	825	1,14	6,60	8,40	245	330	0,10 - 0,20	1060	0,3	1,51	46,2	100,3	0,3	1,43
16	2	2	825	2,28	6,60	8,40	245	330	0,10 - 0,20	1060	0,3	1,51	46,2	100,3	0,3	1,43
20	1	1	1050	0,91	10,6	18,3	490	660	0,18 - 0,32	1430	0,4	2,38	114,9	191,9	0,8	1,90
20	2	2	1050	1,82	10,6	18,3	490	660	0,20 - 0,35	1430	0,4	2,38	114,9	191,9	0,8	1,90
25	1	1	1300	0,73	18,9	34,2	635	855	0,35 - 0,65	2270	0,6	3,75	284,5	415,8	2,5	3,57
25	2	2	1300	1,46	18,9	34,2	635	855	0,40 - 0,70	2270	0,6	3,75	284,5	415,8	2,5	3,57
32	1	1	1700	0,57	36,9	79,6	995	1345	0,50 - 0,95	2510	1,2	6,18	773,3	111E1	9,1	6,92
32	2	2	1700	1,14	36,9	79,6	975	1315	0,50 - 0,95	2320	1,2	6,18	773,3	111E1	9,1	6,92
40	1	1	2150	0,46	45,4	115,8	1395	1885	0,70 - 1,40	2840	2,1	9,69	190E1	312E1	18,8	9,57
40	2	1	2150	0,91	28,7	58,6	835	1125	0,70 - 1,40	2710	2,2	9,52	184E1	320E1	20,0	13,6
50	1	1	2800	0,36	109,0	272,2	1430	1930	1,20 - 2,50	3900	3,7	14,98	455E1	819E1	76,0	24,4
50	2	1	2800	0,73	56,3	124,7	1045	1410	1,20 - 2,50	3660	3,7	14,98	455E1	819E1	68,6	24,4
50	3	2	2800	1,09	88,0	221,7	1300	1755	1,20 - 2,50	3600	3,7	14,98	455E1	805E1	81,1	24,4
50	4	2	2800	1,46	56,3	124,7	1045	1410	1,20 - 2,50	3660	3,7	14,98	455E1	819E1	68,6	24,4
63	2	1	3600	0,58	106,7	266,8	1530	2065	1,80 - 3,20	4540	6,4	23,93	116E2	201E2	230,0	44,3
63	4	2	3600	1,16	106,7	266,8	1530	2065	2,00 - 3,50	4540	6,4	23,93	116E2	201E2	230,0	44,3
80	4	1	4000	0,91	186,6	443,9	1665	2250	3,00 - 5,50	5410	17,8	38,09	294E2	926E2	129E1	166
100	5	1	4000	0,91	269,1	688,2	1720	2320	4,50 - 7,50	5920	33,1	59,51	718E2	256E3	400E1	308
125	5	1	4000	0,73	434	1385	2635	3555	7,00 - 10,00	6510	62,3	93,66	179E3	733E3	118E2	520

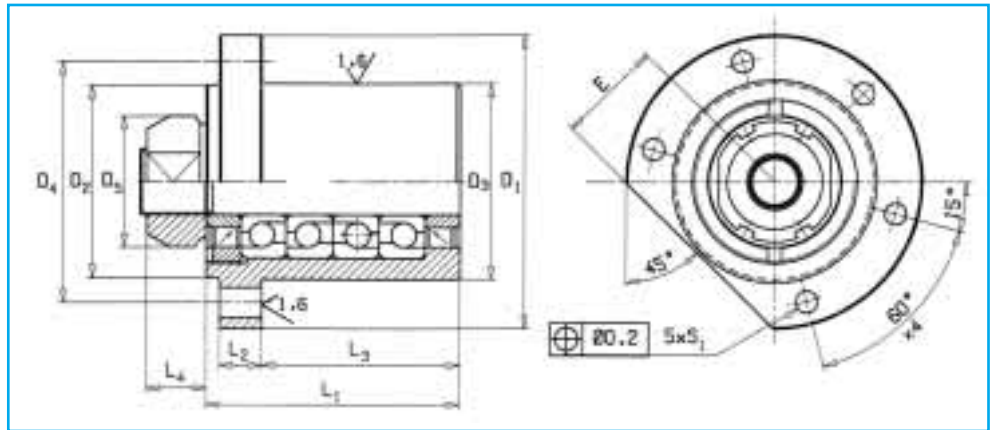
Designation : page 61 - Symbols : page 60



Designation	d ₀	d ₁	d ₂	D	A	A ₁	A ₂	D ₁	J	G	r	Q	u	D ₂
					h12				js12		+0,4			
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	°	mm
PVK 8 x 1	7,7	8	7,1	22	40	12	16	43	33	6xM4	0,4	M6	30	16,5
PVK 10 x 1	9,7	10	9,1	22	40	12	16	43	33	6xM4	0,4	M6	30	18,5
PVK 10 x 2	9,7	10	9,1	22	40	12	16	43	33	6xM4	0,4	M6	30	18,5
PVK 12 x 1	11,7	12	11,1	25	40	12	16	46	36	6xM4	0,4	M6	30	20,5
PVK 12 x 2	11,7	12	11,1	25	40	12	16	46	36	6xM4	0,4	M6	30	20,5
PVK 16 x 1	15,7	16	15,1	30	40	12	16	51	41	6xM4	0,4	M6	30	25
PVK 16 x 2	15,7	16	15,1	30	40	12	16	51	41	6xM4	0,4	M6	30	25
PVK 20 x 1	19,7	20	19,1	35	45	13,5	18	58	46	6xM5	0,8	M6	30	28,5
PVK 20 x 2	19,7	20	19,1	35	45	13,5	18	58	46	6xM5	0,8	M6	30	28,5
PVK 25 x 1	24,7	25	24,1	45	54	18	18	68	56	6xM5	0,8	M6	30	36
PVK 25 x 2	24,7	25	24,1	45	54	18	18	68	56	6xM5	0,8	M6	30	36
PVK 32 x 1	31,7	32	31,1	56	67	23,5	20	84	70	6xM6	0,8	M6	30	45
PVK 32 x 2	31,7	32	31,1	56	67	23,5	20	84	70	6xM6	0,8	M6	30	45
PVK 40 x 1	39,7	40	39,1	68	75	24	27	102	85	6xM8	0,8	M6	30	57
PVK 40 x 2	39,3	40	38,2	68	84	28,5	27	102	85	6xM8	0,8	M6	30	57
PVK 50 x 1	49,7	50	49,1	82	101	34	33	124	102	6xM10	1,2	M6	30	70
PVK 50 x 2	49,3	50	48,7	82	101	34	33	124	102	6xM10	1,2	M6	30	70
PVK 50 x 3	49,5	50	48,6	82	108	37,5	33	124	102	6xM10	1,2	M6	30	70
PVK 50 x 4	49,3	50	48,2	82	101	34	33	124	102	6xM10	1,2	M6	30	70
PVK 63 x 2	62,3	63	61,2	105	120	43,5	33	150	127	6xM12	1,2	M8x1	30	94
PVK 63 x 4	62,3	63	61,2	105	120	43,5	33	150	127	6xM12	1,2	M8x1	30	94
PVK 80 x 4	78,6	80	76,4	140	197	76	45	200	170	8xM16	1,6	M8x1	22°30	120
PVK 100 x 5	98,3	100	95,5	180	237	93,5	50	240	210	12xM16	2,4	M8x1	15	150
PVK 125 x 5	123,3	125	120,5	220	282	113,5	55	310	270	12xM18	2,4	M8x1	15	185

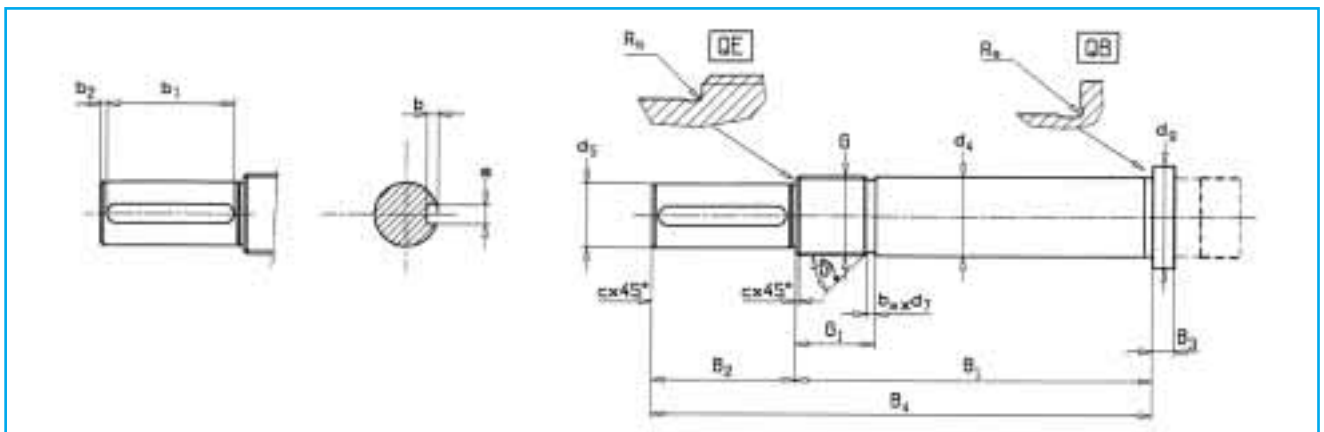


Flanged thrust bearing unit



Flanged bearing unit designation	40° angular contact ball bearing							Lock nut				
	Basic axial load rating		Number of bearings	Bearings designation	Maximum preload torque *	Axial rigidity	Tilt rigidity	High precision KMT nut				
	C _a kN	C _{0a} kN						Designation	Hook spanner	Tightening torque Nm	Grub screws	
					Nm	N/μm	Nm/mrad				Size	Max tightening torque, Nm
FLRBU2	27.9	31.9	2	7303 BEGBP	0.25	190	51	KMT 3	HN 4	15	M6	8
FLRBU3	40.1	63.8	4	7204 BEGBP	0.25	400	140	KMT 4	HN 5	18	M6	8
FLRBU4	74.2	119.2	4	7305 BEGBP	1.1	450	160	KMT 5	HN 5	25	M6	8
FLRBU5	109.4	188.4	4	7307 BEGBP	1.1	600	715	KMT 7	HN 7	42	M6	8
FLRBU6	208.8	392.3	4	7310 BEGBP	1.5	750	1000	KMT 10	HN 10	70	M6	8

Flanged bearing unit designation	L ₁	L ₂	L ₃	L ₄	D ₁	D ₂	D ₃ h7	D ₄	D ₅	S ₁ H13	Fixing screws	E
FLRBU2	46	10	32	18	90	62	60	76	37	6.6	M6 x 25	32
FLRBU3	77	13	60	18	90	59	60	74	40	9	M8 x 25	32
FLRBU4	89	16	68	20	120	80	80	100	44	11	M10 x 30	44
FLRBU5	110	20	82	22	140	99	100	120	54	13	M12 x 40	54
FLRBU6	140	25	98.5	25	171	130	130	152	75	13	M12 x 40	67



Thrust bearing units	d ₄ h6	d ₅ h7	d ₉	B ₁ js12	B ₂	B ₄ js12	B ₃	G 6g	G ₁	c	b _a	d ₇ h11	R _a	R _b	a N9	b +0.100 0	b ₁ +0.5 0	b ₂
FLRBU2	17	15	23	66	30	96	5	M17 x 1	22	0.5	1.5	15.5	0.6	0.6	5	3	25	2
FLRBU3	20	17	27	97	40	137	7	M20 x 1	22	0.5	1.5	18.5	0.6	0.6	5	3	35	2
FLRBU4	25	20	34	112	45	157	7	M25 x 1.5	25	0.5	2.3	22.8	0.6	0.6	6	3.5	40	2.5
FLRBU5	35	30	45	134	55	189	10	M35 x 1.5	26	1	2.3	32.8	0.6	0.6	8	4	45	2.5
FLRBU6	50	40	68	168	65	233	12	M50 x 1.5	31	1	2.3	47.8	0.6	0.6	12	5	55	4

* Preload torque measured at 50rpm

Flanged thrust bearing units

SKF "FLRBU" flanged thrust bearing units can be fitted on the screw shafts in the table below :

Flanged thrust bearing	Suitable for SVC	Suitable for PVU & PVK
FLRBU2	SV 16 X 1 - R1 – SV 16 X 2 - R2 SV 20 X 1 - R1 and SV 20 x 2 - R2	PV 16 x 1 - R1 – PV 16 x 2 - R2 PV 20 x 1 - R1 – PV 20 x 2 - R2 PV 25 x 1 - R1 – PV 25 x 2 - R2
FLRBU3	SV 25 x 1 - R1 – SV 25 x 2 - R2	PV 32 x 1 - R1 – PV 32 x 2 - R2 PV 40 x 2 - R1
FLRBU4	SV 32 x 1 - R1 – SV 32 x 2 - R2 SV 40 x 2 - R1	PV 40 x 1 - R1 PV 50 x 2 - R1 – PV 50 x 4 - R2
FLRBU5	SV 40 x 1 - R1 SV 50 x 2 - R1 – SV 50 x 4 - R2	PV 50 x 1 - R1 – PV 50 x 3 - R2 PV 63 x 2 - R1 – PV 63 x 4 - R2
FLRBU6	SV 50 x 1 - R1 – SV 50 x 3 - R2 SV 63 x 2 - R1 – SV 63 x 4 - R2	PV 80 x 4 - R1

“Ultra Power” range

The SKF® “ Ultra Power ” range is designed for heavy loads and long life

High load capacities

The internal design has been optimized to obtain ultimate static and dynamic capacities (maximum 60% more than the standard range). Load capacity is independent of lead. This range can be loaded up to 80 % of dynamic capacity, except for HRP/HRC 60 which is 50%. The maximum load should not be applied on the nut mounting bolts but on the flange.

Short strokes/oscillations

As in all roller screws, there is no contact between the rollers and no recirculation device.

This means that with short strokes and rapid changes of direction, there is no possibility of wear between rolling elements and consequent jamming. Therefore reliability is optimum

Axial play

Assemblies are available with an axial play less than 0,1 mm. Preload is not available.

Lead precision

Standard lead precision is G5.

Speed - Environment

Due to the planetary roller screw design with no recirculation, a maximum $N \times d_n$ value of 140.000 is permitted, with low noise level. Because there is no recirculation, and the motion of the rollers is controlled at all times by the planetary gears, the screw is almost insensitive to pollution.

Wipers

Standard version includes wipers (WPR in the designation). Screws can be delivered without wipers on request (NOWPR).

Lubrication

Because of the heavy loads and high duty, special care must be made in the choice of lubricant. Please contact SKF for advice.

Applications

The “Ultra Power Range” offers the power of hydraulic actuators combined with the precision and flexibility of electric control, for example :

- injection molding machines for plastic and rubber
- presses
- broaching machines
- the steel industry including casting & rolling
- friction welding
- hydro-electric plants
- actuators.



Designation

HRC : cylindrical nut

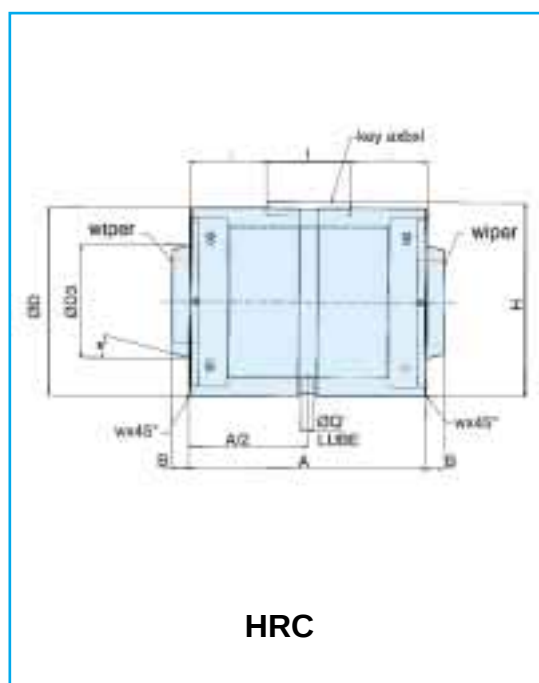
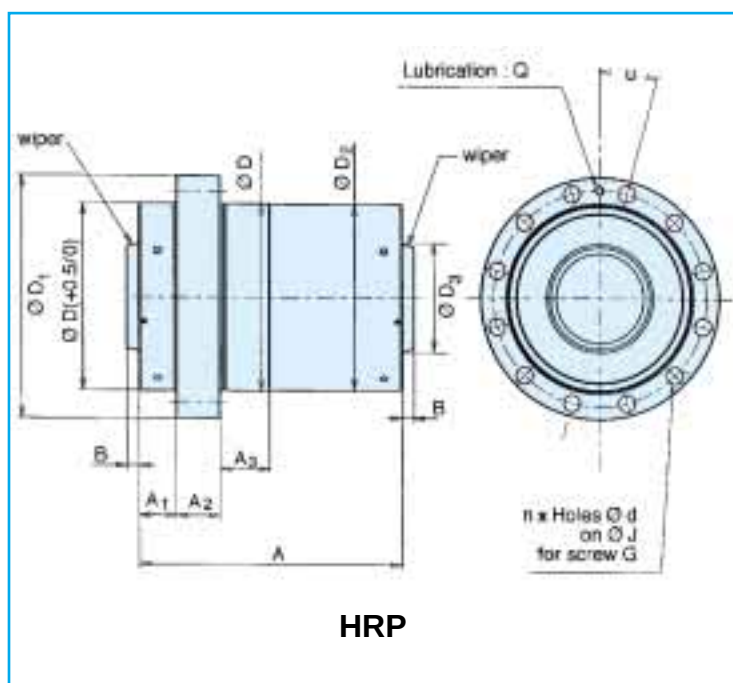
HRP : nut with non-central flange

HRF : nut with central flange

® SKF is a registered trademark of SKF.

Designation	Nominal diameter	Lead						Dynamic load	Static load	Screw shaft		
	d_0	15	20	25	30	35	40	Ca	Coa	Max length ltp	Root $\varnothing d_2$	Outside $\varnothing d_1$
	mm	mm	mm	mm	mm	mm	mm	kN	kN	mm	mm	mm
HRP/HRC/HRF60	60	•	•	•	•			495	1206	4250	57,3	62,3
HRP/HRC/HRF75	75	•	•	•	•			643	1855	5500	72,3	77,3
HRP/HRC/HRF87	87	•	•	•	•			816	2645	6000	84,3	89,3
HRP/HRC/HRF99	99	•	•	•	•	•		985	3503	7500	95,8	101,7
HRP/HRC/HRF112,5	112,5	•	•	•	•	•		1140	4327	7500	109,4	115,2
HRP/HRC/HRF120	120	•	•	•	•	•	•	1192	4635	8000	116,4	123
HRP/HRC/HRF135	135	•	•	•	•	•	•	1421	6028	8000	131,4	138
HRP/HRC/HRF150	150	•	•	•	•	•	•	1600	7182	8000	146,4	153
HRP/HRC/HRF180	180	•	•	•	•	•	•	2235	11939	8000	176,4	183

Nota : Roller screw right hand unless specified
If there is a flange on the shaft, please contact SKF.



					Nut							Flange							
Designation	w x 45°	axb xl	H	Q'	D ₃	D	A	A ₁	A ₃	B	Zn	D ₁	A ₂	Q	u	N	d	J	G
				mm	mm	g6		mm	mm	mm	cm ³	mm	mm	mm	°	n	mm	js12	
HRP/HRC/HRF60	1	10x8x56	125	11	71	122	171	25	40	9	90	166	30	M8x1	22,5	8	13,5	146	M12
HRP/HRC/HRF75	1	10x8x63	153	11	87	150	213	30	40	10	170	195	35	M8x1	15	12	13,5	174	M12
HRP/HRC/HRF87	1.5	12x8x100	178	12	103	175	245	35	40	12	270	220	40	M8x1	15	12	13,5	200	M12
HRP/HRC/HRF99	1.5	16x10x100	204	15	112	200	280	40	40	12	400	245	50	M8x1	15	12	13,5	224	M12
HRP/HRC/HRF112,5	1.5	16x10x100	234	15	140	230	300	50	40	12	550	286	50	M12x1,75	15	12	18	260	M16
HRP/HRC/HRF120	1.5	16x10x100	244	15	180	240	330	50	60	12	700	296	55	M12x1,75	15	12	18	270	M16
HRP/HRC/HRF135	2	28x16x120	286	15	180	280	370	60	80	11,5	980	345	60	M12x1,75	15	12	20	315	M18
HRP/HRC/HRF150	3	32x18x160	327	15	230	320	412	65	80	12,5	1350	385	70	M12x1,75	15	12	20	355	M18
HRP/HRC/HRF180	3	32x18x160	407	20	250	390	522	96	100	15	2500	470	90	M12x1,75	15	12	24	433	M22

Nota : Flanges to customer design on request.

Electro-mechanical cylinders

They are designed for long life, high acceleration and high force applications. The cylinders use brushless servomotor technology, with an in-line direct drive as standard.

SKF high performance electro-mechanical cylinders using planetary roller screws are expanding the limits of linear actuators.

The high performance Electro-Mechanical cylinders consist of an SKF planetary roller screw directly driven through a coupling by a brushless motor.



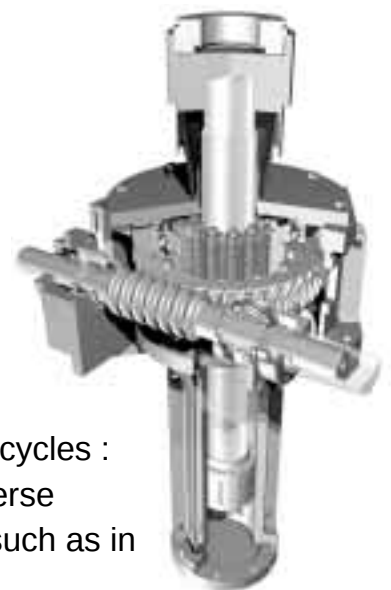
The roller screw converts rotary motion into linear movement.

The new standard for high performance motion

Cylinders for heavy loads



Compact Electro-Mechanical cylinders (CEMC) are designed to deliver the combination of a dynamic flexible actuation packaged with powerful performance.



High loads and heavy working cycles : long life in adverse environments such as in steel industry.

SKF high efficiency screws are available from :

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17-21 Stamford Road
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Calculation formulas

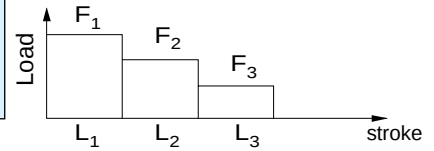
1. Dynamic load rating
(N) and
Basic life rating

$$L_{10} = \left(\frac{C_a}{F_m} \right)^3 \text{ or } C_{\text{req}} = F_m (L_{10})^{1/3}_{\text{req}}$$

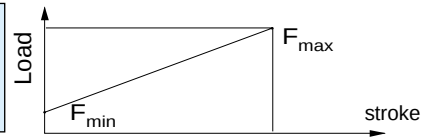
L_{10} = life (million of revolutions)
 C_a = basic dynamic load rating
 C_{req} = required dynamic load rating
 F_m = cubic mean load (N)

2. Cubic mean load
(N)

$$F_m = \frac{(F_1^3 L_1 + F_2^3 L_2 + F_3^3 L_3 + \dots)^{1/3}}{(L_1 + L_2 + L_3 + \dots)^{1/3}}$$



$$F_m = \frac{F_{\min} + 2F_{\max}}{3}$$



3. Critical speed of screw shaft
(no safety factor)
(rpm)
(a factor of 0,8 is generally
recommended)

$$n_{\text{cr}} = 490 \cdot 10^5 \cdot \frac{f_1 d_1}{l^2}$$

d_1 = outside diameter of the shaft (mm)
 l = free length, or distance between
the two support bearings
(see page 11)
 f_1 = 0,9 ●●● fixed, free
 3,8 ●●● fixed, supported
 5,6 ●●● fixed, fixed

4. Speed limit of the mechanism
(maxi speed applied through
very short periods)

$$n \times d_0 < 20\,000 \text{ for SV/PV} \\ < 140\,000 \text{ for SR/TR/PR}$$

n = revolutions per minute
 d_0 = screw shaft nominal diameter

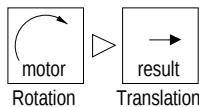
5. Buckling strength with a safety
factor : 3
(N)

$$F_c = \frac{34000 \cdot f_3 \cdot d_2^4}{l^2}$$

d_2 = root diameter (mm)
 l = free length, or distance between
the two support bearings
(see page 11)
 f_3 = mounting correction factor
 0,25 ●●● fixed, free
 1 ●●● supported, supported
 2 ●●● fixed, supported
 4 ●●● fixed, fixed

6. Theoretical efficiency

- direct
(η)



$$\eta = \frac{1}{1 + \frac{\pi d_0}{P_h} \mu}$$

$\mu = 0,010$ for $\varnothing \leq 7^\circ$

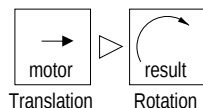
$\mu = 0,007 \cdot \varnothing - 0,04$ for $\varnothing > 7^\circ$

$\varnothing$ = helix angle

d_0 = nominal diameter of screw shaft

P_h = lead (mm)

- indirect
(η')



$$\eta' = 2 - \frac{1}{\eta}$$

7. Practical efficiency
(η_p)

$$\eta_p = \eta \cdot 0,9$$

The value 0,9 used is an average value
between the practical efficiency of a new
screw and that of a properly run in
screw. It should be used for industrial
applications in all normal working
conditions. For extreme cases, call us.

Calculation formulas

8. Input torque in a steady state
(Nm)

$$T = \frac{F \cdot P_h}{2000 \cdot \pi \cdot \eta_p}$$

F = maximum load of the cycle (N)

9. Power required in a steady state
(W)

$$P = \frac{F \cdot n \cdot P_h}{60000 \cdot \eta_p}$$

n = revolutions per minute

10. Preload torque
(Nm)

$$T_{pr} = \frac{F_{pr} \cdot P_h}{1000 \cdot \pi} \left(\frac{1}{\eta_p} - 1 \right)$$

F_{pr} = preload force between a nut and the shaft

11. Restraining torque
(Nm)

$$T_B = \frac{F \cdot P_h \cdot \eta'}{2000 \cdot \pi}$$

F = load

For safety, we can use the theoretical indirect efficiency

12. Nominal motor torque when accelerating
(Nm)

For a horizontal screw

$$T_t = T_f + T_{pr} + \frac{P_h [F + m_L \cdot \mu_f \cdot g]}{2000 \cdot \pi \cdot \eta_p} + \dot{\omega} \Sigma I$$

For a vertical screw

$$T_t = T_f + T_{pr} + \frac{P_h [F + m_L \cdot g]}{2000 \cdot \pi \cdot \eta_p} + \dot{\omega} \Sigma I$$

T_f = torque from friction in support bearings

T_{pr} = preload torque

μ_f = coefficient of friction

η_p = real direct efficiency

$\dot{\omega}$ = angular acceleration

13. Nominal braking torque when decelerating
(Nm)

For a horizontal screw

$$T'_t = T_f + T_{pr} + \frac{P_h \cdot \eta' \cdot [F + m_L \cdot \mu_f \cdot g]}{2000 \cdot \pi} + \dot{\omega} \Sigma I$$

For a vertical screw

$$T_t = T_f + T_{pr} + \frac{P_h \cdot \eta' \cdot [F + m_L \cdot g]}{200 \cdot \pi} + \dot{\omega} \Sigma I$$

$$\Sigma I = I_M + I_L + I_S \cdot l \cdot 10^{-9}$$

$$I_L = m_L \left(\frac{P_h}{2 \pi} \right)^2 10^{-6}$$

η' = theoretical direct efficiency

C_{req}	N	Required load rating		c	μm	Travel compensation - the difference between the specified travel and the nominal travel. Its value is always defined by the customer : if not specified it will be assumed to be zero. (The specified travel can also be defined by the specified lead multiplied by the number of revolutions).
C_a	kN	The dynamic load rating (L_{10} life) is such that 90 % of a sufficiently large sample of identical screws can be expected to attain or exceed 1 million revolutions under this constant centrally acting pure axial load without fatigue (flaking).		d_o	mm	Nominal
				d_1	mm	Outside
				d_2	mm	Root
C_{oa}	kN	The static load rating is that axial constant centrally acting load which produces a total permanent deformation of one raceway and roller of 0,0001 of the diameter of the curved surface of the roller.		d_b	mm	Bore
				e_p	μm	Tolerance of actual mean travel, l_m relative to specified travel l_s
F	N	Axial load		f	-	Factors
F_c	N	Compression load		g	m/s^2	Acceleration of gravity : 9,8
F_m	N	Constant mean axial load		l	mm	Length
F_{pr}	N	The preload force between a nut half (or nut) and the shaft		l_o	mm	Nominal travel - the nominal lead multiplied by the number of revolutions
F_q	N	The squeeze load applied to two nut halves (or nuts) by the housing or fixing bolts		l_1	mm	Threaded length
H_v	-	Vickers hardness		l_e	mm	Excess travel - at each end of the threaded length a distance l_e is subtracted to leave l_u the useful travel. The specified lead precision does not apply to the lengths l_e .
I	kgm^2	Inertia				$l_u = l_1 - 2 l_e$
I_L	kgm^2	Inertia of load		l_m	mm	Actual mean travel. The curve is the result of measurements at 20°C of the screw shaft. l_m is the line which fits the curve by the method of least squares
I_M	kgm^2	Inertia of motor				
I_{nn}	kgm^2	Inertia of nut when turning nut		l_s	mm	Specified travel
I_{ns}	kgm^2	Inertia of rollers when turning shaft		l_{tp}	mm	Maximum total length
I_s	kgmm^2/m	Inertia of screw shaft per metre		l_u	mm	Useful travel - the length of thread which is subject to the specified lead precision
L	10^6 revs	Life		m	kg	Mass
L_{10}	10^6 revs	Basic life rating, millions of revolutions		m_L	kg	Mass of the load
L_{10h}	hours	Basic life rating, operating hours		m_n	kg	Mass of the nut
M	μm	Maximum difference between mean travels of screws in a matched set		m_s	kg/m	Mass of the screw shaft per metre
N	-	Number of thread starts on the screw shaft		n	rpm	Rotational speed
P	watts	Power		n_{cr}	rpm	Critical speed
P_h	mm	Lead		n_p	rpm	Maximum permissible speed
R	$\text{N}/\mu\text{m}$	Rigidity		s_{ap}	mm	Maximum axial play
R_n	$\text{N}/\mu\text{m}$	Nut rigidity	including deflection of : • the nut body • rollers/nut contact • rollers/screw shaft contact • length of screw shaft in contact with rollers	t	μm	Manufacturing tolerance
R_{ng}	$\text{N}/\mu\text{m}$	Minimum guaranteed nut rigidity		v	μm	Travel variation - the bandwidth or the distance between the two straight lines parallel to the actual mean travel which enclose the curve
R_{nr}	$\text{N}/\mu\text{m}$	Reference nut rigidity		v_{300}	μm	The bandwidth over any 300 mm section of the useful travel. v_{300a} and v_{300p} are actual and permissible values
				v_u	μm	The bandwidth over the useful travel. v_{ua} and v_{up} are actual and permissible values
R_s	$\text{N}/\mu\text{m}$	Screw shaft rigidity		δ	μm	Deflection
R_t	$\text{N}/\mu\text{m}$	Total rigidity		$\varnothing$	°	Helix angle of the screw shaft thread
T	Nm	Torque		λ	°	Friction angle
T_B	Nm	Brake torque		μ	-	Coefficient of friction
T_{dt}	Nm	Total torque at constant speed		μ_{st}	-	Coefficient of friction when starting
T_f	Nm	Torque from friction in support bearings, motor, seals, etc		μ_f	-	Coefficient of friction for bearing
T_{pe}	Nm	Torque for play elimination		σ	Mpa	Nominal axial stress
T_{pr}	Nm	Preload torque		σ_p	Mpa	Real axial stress
T_{st}	Nm	Starting torque		σ_t	Mpa	Total stress
T_t	Nm	Total torque		τ	Mpa	Nominal shear stress
U	mm	Stroke length	life calculation	τ_p	Mpa	Real shear stress
V	hr^{-1}	Strokes per hour		η	-	Theoretical direct efficiency
W	hr/day	Hours per day		η'	-	Theoretical indirect efficiency
X	days/year	Days per year		η_p	-	Real direct efficiency
Y	years	Years		η'_p	-	Real indirect efficiency
Z_s	cc	Grease quantity for screw shaft		θ	°	Angle of twist
Z_n	cc	Grease quantity for nut		$\dot{\omega}$	rad/s^2	Angular acceleration
				Ω	$\text{mm} \times \text{rpm}$	Speed quotient, $n_p \times d_o$

Play or preload ?

- S Axial play (standard range)
- H Axial play (Ultra Power range)
- B Preload by rollers to eliminate backlash
- T Nut preloaded for backlash elimination
- P Nut preloaded for optimum rigidity

Product

- R Planetary roller screw
- V Recirculating roller screw

Nut type

- C Cylindrical nut with axial play
- F Nut with central flange and axial play
- P Nut with non-central flange and axial play
- U Preloaded cylindrical nut
- K Preloaded nut with central flange

Nominal diameter + leads, mm

Hand

- R Right
- L Left

Threaded length, Total length, mm

Lead precision, G1 - G3 - G5

Nut orientation (this only applies to flanged nuts SRF, SRP, TRK, PRK, PRP, PVK, PVP, HRP, HRF)

- for cylindrical nut
- S g6 side of nut towards Shorter machined end
- L g6 side of nut towards Longer machined end

Shaft ends

- Z to customer's drawing

Wipers

- WPR Wipers in the nut :
mounted for SR,
delivered separately
for SVC
- NOWPR Without wipers
- X Nut without wiper
recesses
(non standard SR only)

S R F 39 X 5 R 425/590 G5 L Z WPR



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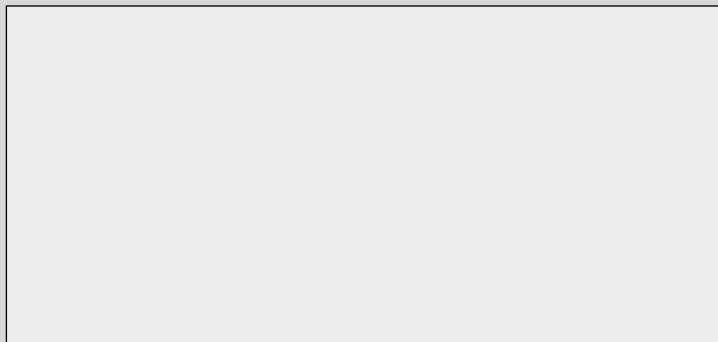
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