SKF Maintenance and Lubrication Products

Extending the Bearing Life Cycle

Mounting & dismounting

Instruments

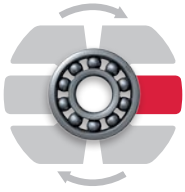
Lubrication

The SKF Bearing Life Cycle

Help your bearing achieve its maximum service life

Every bearing has a pre-calculated service life. However, research has shown that, for various reasons, not every bearing achieves it. Important stages which have a major impact on a bearing service life can be recognised during the bearing's lifecycle. These stages are mounting, lubrication, alignment, basic condition monitoring and dismounting.

The stages in a bearing life cycle are extremely important for achieving the maximum service life of the bearing. By applying the right maintenance practices and using the correct tools, you can considerably extend your bearing's service life and increase plant productivity and efficiency.



Mounting

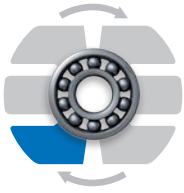
Includes mechanical fitting tools, induction heaters and hydraulic equipment

Mounting is one of the critical stages of the bearing's lifecycle. If the bearing is not mounted properly using the correct method and tools, the bearing's service lifetime will be reduced. Individual applications may require mechanical, heat or hydraulic mounting methods for correct and efficient bearing mounting. Selecting the correct mounting technique for your application will help you extend your bearing's service life and reduce costs resulting from premature bearing failure, as well as potential damage to the application.

Lubrication

Includes bearing greases, manual and automatic lubricators and lubrication accessories

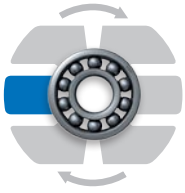
Correct bearing lubrication is an essential step in reaching the bearing's service lifetime. It is important to select grease suitable for the bearing's application, and to apply the correct quantity before commissioning the bearing. During operation, the bearing will require periodic relubrication. The right quantity of the right grease applied at the right intervals is essential to achieving optimum bearing performance and maximum service life. Using manual relubrication methods is common practice; however, continuous relubrication offers many advantages. Continuous relubrication can be performed by using automatic lubricators, which provide a more consistent, correct and contamination-free grease supply.



Alignment

Includes shaft and belt alignment tools and machinery shims

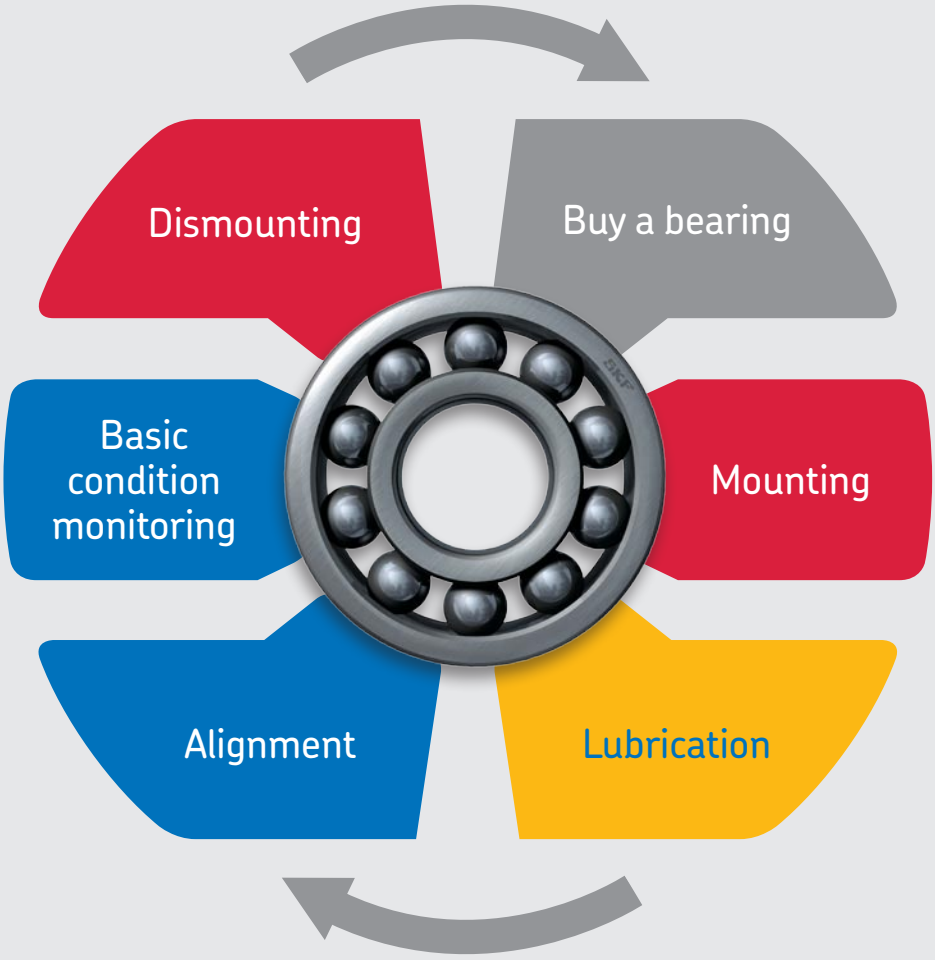
After the bearing has been mounted in an application such as a motor connected to a pump, the application should be aligned. If the application is not properly aligned, the misalignment can cause the bearing to suffer additional load, friction and vibration. These can accelerate fatigue and reduce the bearing's, as well as other machine components, service life. Furthermore, increased vibration and friction can significantly increase energy consumption and the risk of premature failures.

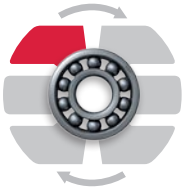


Basic condition monitoring

Includes temperature, sound, visual inspection, speed, electrical discharge and vibration measuring instruments

During operation, it is important to regularly inspect the condition of the bearing by performing basic condition monitoring measurements. These regular inspections will allow the detection of potential problems and help to prevent unexpected machine stops. Consequently, the machine maintenance can be planned to suit the production schedule, increasing the plant's productivity and efficiency.





Dismounting

Includes pullers, both mechanical and hydraulic, induction heaters and hydraulic equipment

At some point, the bearing will reach the end of its service life and will have to be replaced. Although the bearing may not be used again, it is extremely important to dismount it correctly so that the service life of the replacement bearing is not compromised. Firstly, the use of proper dismounting methods tools will help prevent damage to other machine components, such as the shaft and housing, which are often re-used. Secondly, incorrect dismounting techniques can be hazardous to maintenance personnel.

Inside this catalogue, you will find SKF's complete range of maintenance products which can help you get the maximum service life from your bearings. For more information about SKF maintenance products or to order any of these products, please contact your local SKF authorised distributor or SKF sales company. On the Internet, SKF can be found at www.skf.com. SKF Maintenance Products can be found at www.mapro.skf.com.

Prevent over 60% of premature bearing failures

16% Poor fitting

Around 16% of all premature bearing failures are caused by poor fitting (usually brute force...) and maintenance personnel being unaware of the availability of the correct fitting tools. Individual installations may require mechanical, hydraulic or heat application methods for correct and efficient mounting or dismounting. SKF offers a complete range of tools and equipment to make these tasks easier, quicker and more cost effective, backed up by a wealth of service engineering know-how. Professional fitting, using specialised tools and techniques, is another positive step towards achieving maximum machine uptime.

36% Poor lubrication

Although 'sealed-for-life' bearings can be fitted and forgotten, some 36% of premature bearing failures are caused by incorrect specification and inadequate application of the lubricant. Inevitably, any bearing deprived of proper lubrication will fail long before its normal service life. Because bearings are usually the least accessible components of machinery, neglected lubrication frequently compounds the problem. Wherever manual maintenance is not feasible, fully automatic lubrication systems can be specified by SKF for optimum lubrication. Effective lubrication and using only recommended SKF greases, tools and techniques helps to significantly reduce downtime.

14% Contamination

A bearing is a precision component that will not operate efficiently unless both the bearing and its lubricants are isolated from contamination. And, since sealed-for-life bearings in ready-greased variants account for only a small proportion of all bearings in use, at least 14% of all premature bearing failures are attributed to contamination problems. SKF has an unrivalled bearing manufacturing and design capability and can tailor sealing solutions for the most arduous operating environments.

34% Fatigue

Whenever machines are overloaded, incorrectly serviced or neglected, bearings suffer from the consequences, resulting in 34% of all premature bearing failures. Sudden or unexpected failure can be avoided, since neglected or overstressed bearings emit 'early warning' signals which can be detected and interpreted using SKF condition monitoring equipment. The SKF range includes hand-held instruments, hard-wired systems and data management software for periodic or continuous monitoring of key operating parameters.

SKF methods and tools

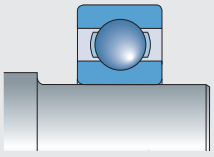
Bearing arrangements

Mounting tools

Dismounting tools

Mechanical | Hydraulic | Oil injection | Heaters

Cylindrical seating

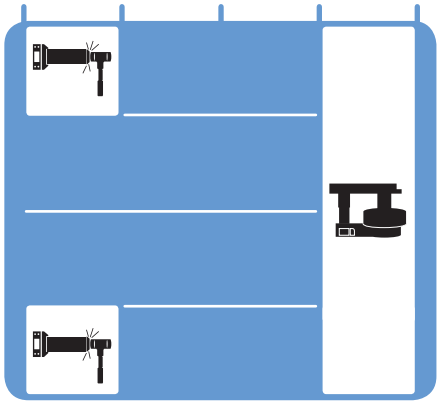


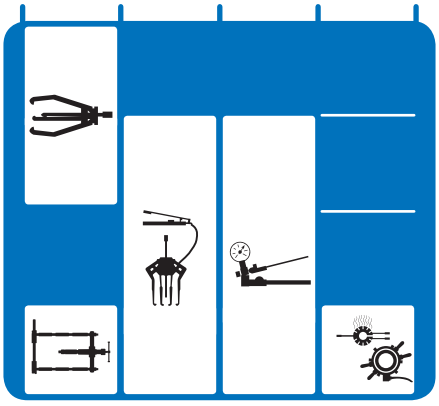
Small bearings

Medium bearings

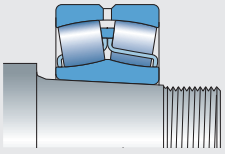
Large bearings

Cylindrical roller bearing types NU, NJ, NUP, all sizes





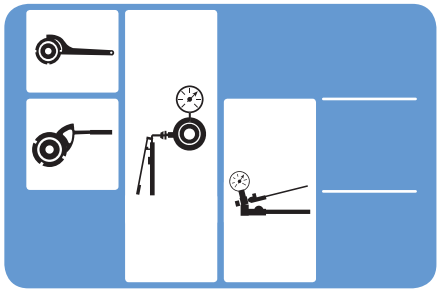
Tapered seating

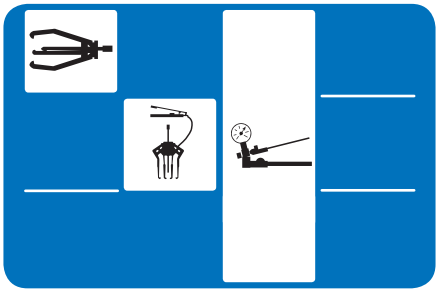


Small bearings

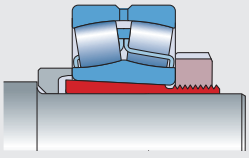
Medium bearings

Large bearings





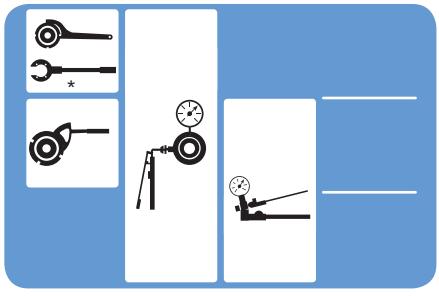
Adapter sleeve

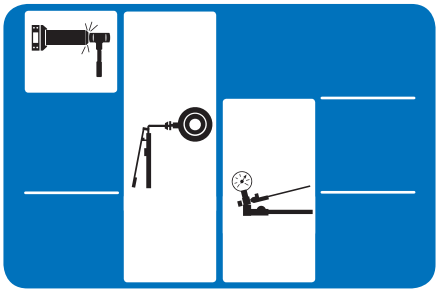


Small bearings

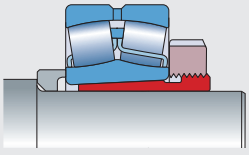
Medium bearings

Large bearings





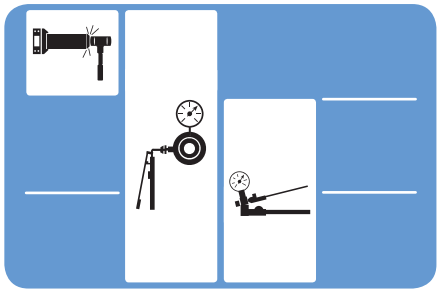
Withdrawal sleeve

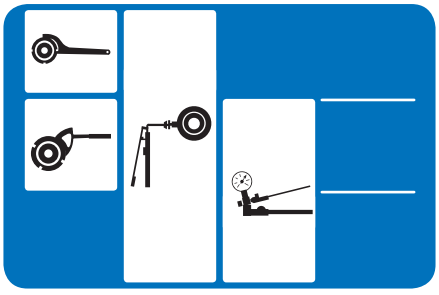


Small bearings

Medium bearings

Large bearings





Small bearings: bore diameter <80 mm / Medium bearings: bore diameter 80–200 mm / Large bearings: bore diameter >200 mm / * Only for self-aligning ball bearings.

Jaw puller
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Aluminium ring EAZ heater
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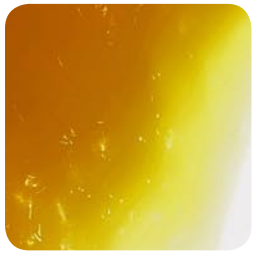
Mechanical tools

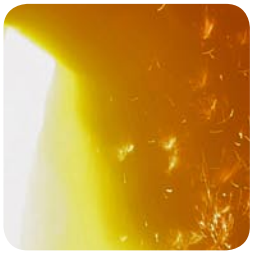
Heating tools

Hydraulic tools

Mounting & dismounting

Induction heaters





Pullers

SKF Oil Injection Method

Hook spanners

Mounting and dismounting

Mounting

Around 16% of all premature bearing failures are a result of poor fitting or using incorrect mounting techniques. Individual applications may require mechanical, heat or hydraulic mounting methods for correct and efficient bearing mounting. Selecting the correct mounting technique for your application will help you extend your bearing's service life and reduce costs resulting from premature bearing failure, as well as potential damage to the application.

Mounting bearings in a cold condition

Small and medium size bearings are generally cold mounted. Traditionally, the bearing is mounted using a hammer and a length of old pipe. This practice can cause forces to be transmitted through the rolling elements, resulting in damage to the raceways. SKF's fitting tool helps prevent bearing damage by applying the forces to the bearing ring with the interference fit.

Mounting bearings using heat

Oil baths are often used for heating bearings prior to mounting. However, this method can contaminate the bearing, resulting in premature bearing failure. Today, induction heating is the most common technique for heating bearings since it allows a high degree of controllability, efficiency and safety. SKF has set the standards for the development of induction heaters for bearing applications. SKF bearing induction heaters are equipped with many features, which help prevent bearing damage during heating.

Mounting bearings using hydraulic techniques

SKF has pioneered the use of hydraulic techniques, such as the SKF Oil Injection Method and the SKF Drive-up Method, for mounting bearings. These techniques have helped to simplify bearing arrangements and facilitate correct and easy mounting. SKF has also developed a comprehensive range of tools and equipment to put these hydraulic techniques into effect.

Dismounting

When dismounting bearings, care must be taken not to damage other machine components, such as the shaft or housing, as damage can compromise the machine's efficiency and lifetime. Bearings are sometimes dismounted to maintain or replace other components of the machine. These bearings are often re-used. Selecting the correct dismounting methods and tools is then essential in reducing the risk of personal injuries and reducing the risk of damaging the bearing, thus allowing it to be used again. Individual applications may require mechanical, heat or hydraulic dismounting methods and tools to allow safe, correct and efficient bearing dismounting.

Mechanical dismounting

Choosing the right puller for the job is critical. The puller type, and its maximum withdrawal capacity are crucial for completing any dismounting job safely and easily. Puller overload can result in breakage of the puller's arms and/or beam and therefore should be avoided. This breakage can damage the bearing or shaft and can cause personal injury. In general, it is recommended to use a three-arm puller rather than a two-arm puller as the three-arm puller is more stable. Whenever possible, apply the withdrawal force to the ring with the interference fit. SKF offers a complete range of easy-to-use mechanical, hydraulic and hydraulically-assisted bearing pullers for use in many bearing applications.

Dismounting using heat

The inner rings of cylindrical roller bearings generally have a tight interference fit, which requires high forces to dismount. In such cases, using a puller can cause damage to the shaft and ring, which can be hazardous to the operator. Using heating equipment facilitates easy and quick dismounting while reducing the risk of damage to the ring and shaft. SKF offers a range of heating equipment, which includes aluminium heating rings as well as adjustable and fixed induction heaters, for dismounting cylindrical roller bearing inner rings.

Dismounting bearings using hydraulic techniques

The SKF hydraulic techniques are often the preferred method for dismounting larger bearings as well as other components. These techniques, which employ hydraulic pumps, nuts and oil injectors, allow the application of substantial forces to dismount bearings or other components.

Online mounting and dismounting instructions

At skf.com/mount, SKF offers a unique web-based, free of charge information service for the mounting and dismounting of SKF bearings and bearing housings in 13 languages.

This service provides step-by-step instructions for mounting and dismounting. The system also provides information on proper tools and lubricants. With this free internet service, SKF's expertise is at your fingertips around the clock worldwide.



Mechanical mounting

Helps prevent premature bearing failures

SKF Bearing Fitting Tool Kit TMFT 36

Poor fitting, usually using brute force, accounts for 16% of premature bearing failures. The SKF Bearing Fitting Tool Kit TMFT 36 is designed for quick and precise mounting of bearings, while minimising the risk of bearing damage.

The right combination of impact ring and sleeve allows effective transmission of mounting force to the bearing ring with the interference fit, minimising the risk of damaging the bearing's raceways or rolling elements. The kit contains 36 impact rings, 3 impact sleeves and a dead-blow hammer packed in a lightweight carrying case. In addition to mounting bearings, the SKF TMFT 36 is also suitable for mounting other components such as bushings, seals and pulleys.

- 36 impact rings in different sizes facilitate the mounting of more than 400 different bearings
- Facilitates correct mounting on shaft, housing and blind applications
- The diameter of the impact ring precisely fits the inner and outer diameter of the bearing
- Small diameter of the impact area on top of the sleeve allows effective transmission and distribution of mounting force
- Impact rings and sleeves are made of high-impact resistant material for longevity
- Click connection between impact ring and sleeve provides stability and durability
- The impact rings are suitable for use under a press
- Impact rings are marked for clear visual identification of the ring's size and easy selection
- Even surface of the impact sleeve's body provides excellent grip
- The nylon double-side head of the dead-blow hammer helps to prevent damaging the components
- The rubber handgrip of the dead-blow hammer provides excellent grip

Technical data

Designation	TMFT 36
Impact rings	
Bore diameter	10–55 mm *(0.39–2.1 in.)*
Outer diameter	26–120 mm *(1.02–4.7 in.)*
Sleeves	
Maximum shaft diameter	Sleeve A: 220 mm *(8.7 in.)* Sleeve B: 220 mm *(8.7 in.)* Sleeve C: 225 mm *(8.9 in.)*
Hammer	TMFT 36-H, weight 0,9 kg *(2.0 lb)*

Dimensions of the case	525 × 420 × 130 mm *(20.7 × 16.5 × 5.1 in.)*
Number of rings	36
Number of sleeves	3
Weight (including carrying case)	4 kg *(8.8 lb)*

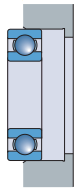
SKF TMFT 36 is suitable for SKF Bearing series

									
60.. **62..** **63..** **64..** **63/..** **62/..** **16..** **98..**	**622..** **623..** **630..**	**12..** **13..** **22..** **23..**	**72..** **73..**	**32..** **33..** **52..** **53 ..**	**213..** **223..** **222..** **BS2-22..**	**10..** **3..** **2..** **22..** **23..**	**30..** **31..** **32..** **33..**	**C22..** **C40..** **C60..**	**42..** **43..**
6001 - 6011 6200 – 6211 629 6300 – 6311 6403 – 6409 62/22 62/28 63/22 63/28 16002 – 16011 16100 – 16101 98203 - 98206	62200 – 62211 62300 – 62311 63000 - 63010	1200 – 1211 129 1301 – 1311 2200 – 2211 2301 – 2311	7200 – 7211 7301 - 7311	3200 – 3211 3302 – 3311 5200 – 5211 5302 – 5311	21305 – 21311 22205/20 22205 – 22211 22308 – 22311 B52-2206 – B52-2211	1005 – 1011 202 – 211 2203 – 2211 303 – 311 2304 - 2311	30203 – 30211 30302 – 30311 31305 - 31311 32004 – 32011 32008/38 32205 – 32211 32303 – 32311 32307/37 33205 – 33211 33010 – 33011 358X JLM 104948 JM 205149	C 2205 – C 2211 C 4010 C 6006	4200 – 4211 4301 - 4311

Interference fits on cylindrical shafts

Most bearings are fitted to their shaft or housing with one component having an interference fit. For determining the correct fit, refer to the SKF General Catalogue, the SKF Maintenance Handbook or consult an SKF application engineer.

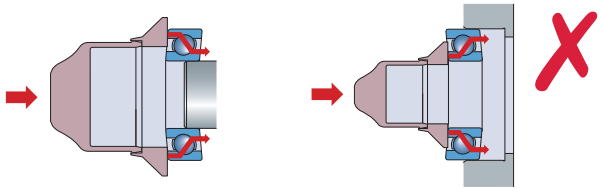
Shaft interference fit



Housing interference fit

Incorrect mounting

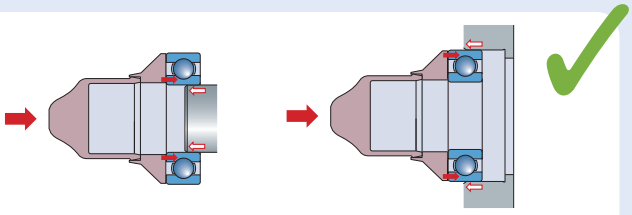
When bearings are mounted cold, care must be taken to ensure the drive-up forces are applied to the ring with the interference fit. Damage to the bearing resulting in a failure can occur if the mounting force is transmitted through the rolling elements causing damage to the raceways.



Uneven distribution of forces can result in raceway damage

Correct mounting

The correct way to minimise raceway damage is to use specifically designed tools from SKF, such as the Bearing Fitting Tool Kit TMFT 36 and Comi Kit TMMK 10-35. These tools allow drive-up forces to be applied effectively and evenly to the component with the interference fit, avoiding raceway damage.



With the correct tools, raceway damage is avoided

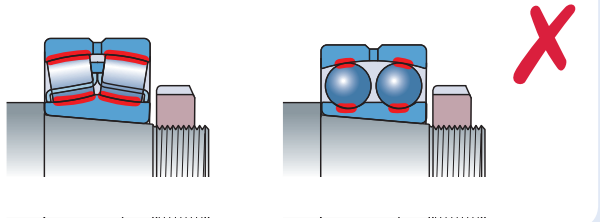
Spanners and sockets

Interference fits on tapered shafts

Bearings mounted on tapered seatings achieve their interference fit by being driven up the tapered shaft. Care should be taken to ensure the bearing is not driven up too far, as all the internal clearance may be removed and damage to the bearing is possible.

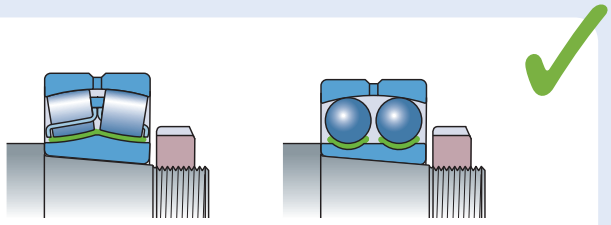
Incorrect mounting

Bearing driven up too far and all clearance removed; damage possible.

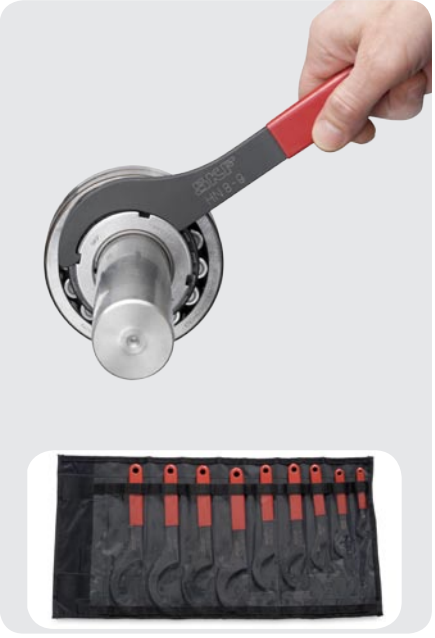


Correct mounting

Bearing driven up the correct distance and the right clearance is achieved.



The comprehensive range of SKF spanner and sockets are used to tighten and loosen many types and sizes of bearing lock nuts, for bearings mounted directly on a shaft or on sleeves.



Exact spanner radius reduces the risk of nut damage

SKF Hook Spanners HN series

- Minimises the risk of shaft and nut damage
- Plastic handle is oil, grease and dirt resistant to provide a better grip
- The plastic handle minimises direct metal to skin contact, reducing the risk of corrosion in the handle area
- Spanner designation is laser-engraved allowing for easy identification and selection
- Available as a set: SKF HN 4-16/SET containing 9 spanners for lock nut sizes 4 up to 16

Contents SKF HN 4-16/SET

HN 4	HN 8-9	HN 14
HN 5-6	HN 10-11	HN 15
HN 7	HN 12-13	HN 16

Selection chart – HN series

Designation	Suitable for the following series of SKF lock nuts						
	KM	N	AN	KMK	KMFE	KMT	DIN 1804 (M)
HN 0	0	0		0			M6×0,75, M8×1
HN 1	1	1		1			
HN 2-3	2, 3	2, 3		2, 3		0	M10×1, M12×1,5
HN 4	4	4		4	4	1, 2	M14×1,5, M16×1,5
HN 5-6	5, 6	5, 6		5, 6	5, 6	3, 4, 5	M22×1,5, M24×1,5, M26×1,5
HN 7	7	7		7	7	6, 7	M28×1,5, M30×1,5, M32×1,5, M35×1,5
HN 8-9	8, 9	8, 9		8, 9	8, 9	8	M38×1,5, M40×1,5, M42×1,5
HN 10-11	10, 11	10, 11		10, 11	10, 11	9, 10	M45×1,5, M48×1,5, M50×1,5
HN 12-13	12, 13	12, 13		12, 13	12, 13	11, 12	M52×1,5, M55×1,5, M58×1,5, M60×1,5
HN 14	14		14	14	14		
HN 15	15		15	15	15	13, 14	M62×1,5, M65×1,5, M68×1,5, M70×1,5
HN 16	16		16	16	16	15	
HN 17	17		17	17	17	16	M72×1,5, M75×1,5,
HN 18-20	18, 19, 20		18, 19, 20	18, 19, 20	18, 19, 20	17, 18, 19	M80×2, M85×2, M90×2
HN 21-22	21, 22		21, 22		21, 22	20, 22	M95×2, M100×2

Technical data – HN series

Designation	Spanner design DIN 1810	Outer diameter lock nut	
	mm	mm	*in.*
HN 0		16–20	*0.6–0.8*
HN 1	Ø20–Ø22	20–22	*0.8–0.9*
HN 2-3	Ø25–Ø28	25–28	*1.0–1.1*
HN 4	Ø30–Ø32	30–32	*1.2–1.3*
HN 5-6		38–45	*1.5–1.8*
HN 7	Ø52–Ø55	52–55	*2.0–2.2*
HN 8-9		58–65	*2.3–2.6*
HN 10-11	Ø68–Ø75	68–75	*2.7–3.0*

Designation	Spanner design DIN 1810	Outer diameter lock nut	
	mm	mm	*in.*
HN 12-13	Ø80–Ø90	80–90	*3.1–3.5*
HN 14		92	*3.6*
HN 15	Ø95–Ø100	95–100	*3.7–3.9*
HN 16		105	*4.1*
HN 17	Ø110–Ø115	110–115	*4.3–4.5*
HN 18-20	Ø120–Ø130	120–130	*4.7–5.1*
HN 21-22	Ø135–Ø145	135–145	*5.3–5.7*

Four sizes for tightening or loosening up to 24 nut sizes

SKF Adjustable Hook Spanners HNA series

- One hook spanner covers several nut sizes, making it suitable for use with many applications
- Economic solution: 4 hook spanners cover a wide range of nut sizes
- Laser engraved designation, which represents the range of nut sizes covered by each spanner, allows easy selection of the correct spanner
- Versatile: suitable for a wide selection of lock nuts
- Minimises the risk of shaft and nut damage

Selection chart and technical data – HNA series

Designation	Outer diameter lock nut		Suitable for the following series of SKF lock nuts						
	mm	*in.*	KM	KML	N	AN	KMK	KMFE	KMT
HNA 1-4	20–35	*0.8–1.4*	1–4		2–4		0–4	4	0–2
HNA 5-8	35–60	*1.4–2.4*	5–8		5–8		5–8	5–8	3–7
HNA 9-13	60–90	*2.4–3.5*	9–13		9–13		9–13	9–13	8–12
HNA 14-24	90–150	*3.5–6.1*	14–24	24–26		14–24	14–20	14–24	13–24

Easy and quick bearing mounting and dismounting in SNL housings

SKF Hook Spanners HN ../SNL series

- Unique design allows the SKF HN ../SNL series to be used inside SKF SNL and SNH bearing housings
- Suitable for tightening and loosening a wide selection of lock nuts, facilitating their use in a wide range of housing and shaft applications
- The large contact area of the spanner around the nut provides excellent grip and force transmission
- Exact fit reduces the risk of shaft, nut and housing damage

Selection chart and technical data

Designation	Outer diameter lock nut		Suitable for SKF housings	Suitable for the following series of SKF lock nuts							
	mm	*in.*	SNL	KM	KML	N	AN	KMK	KMFE	KMFE L	KMT*
HN 5/SNL	38	*1.50*	505, 506–605	5		5		5	5		4, 5
HN 6/SNL	45	*1.77*	506–605, 507–606	6		6		6	6		6
HN 7/SNL	52	*2.05*	507–606, 508–607	7		7		7	7		7
HN 8/SNL	58	*2.28*	508–607, 510–608	8		8		8	8		
HN 9/SNL	65	*2.56*	509, 511–609	9		9		9	9		8
HN 10/SNL	70	*2.76*	510–608, 512–610	10		10		10	10		9
HN 11/SNL	75	*2.95*	511–609, 513–611	11		11		11	11		10
HN 12/SNL	80	*3.15*	512–610, 515–612	12		12		12	12		
HN 13/SNL	85	*3.35*	513–611, 516–613	13		13		13	13		11, 12,
HN 15/SNL	98	*3.86*	515–612, 518–615	15			15	15	15		13, 14
HN 16/SNL	105	*4.13*	516–613, 519–616	16			16	16	16		15
HN 17/SNL	110	*4.33*	517, 520–617	17			17	17	17		16
HN 18/SNL	120	*4.72*	518–615	18			18	18	18		17
HN 19/SNL	125	*4.92*	519–616, 522–619	19			19	19	19		18
HN 20/SNL	130	*5.12*	520–617, 524–620	20			20	20	20		19, 20
HN 22/SNL	145	*5.71*	522–619	22	24		22		22		22
HN 24/SNL	155	*6.10*	524–620	24, 25	26		24		24, 25		24
HN 26/SNL	165	*6.50*	526	26, 27	28				26	26	26, 28
HN 28/SNL	180	*7.09*	528	28, 29	30, 32		28		28	28	30
HN 30/SNL	195	*7.68*	530	30, 31	34		30		-		32, 34
HN 32/SNL	210	*8.27*	532	32, 33, 34	36, 38				30		36

* Not recommended for use in combination with SNL/SNH housing

Easy mounting and dismounting without nut damage

SKF Axial Lock Nut Sockets TMFS series

- Requires less space around the bearing arrangement than hook spanners
- Inch connections for power tools or torque wrenches
- SKF TMFS fits nuts of series KM, KMK (metric) and KMF
- Special versions are available on request

Selection chart and technical data

Designation	Suitable for nuts of series			Dimensions						Connection
	KM, KMK	KMFE	DIN 1804 (M)	Outer diameter lock nut		Outer diameter socket		Effective height		
				mm	*in.*	mm	*in.*	mm	*in.*	*in.*
TMFS 0	0		M8×1	18	*0.7*	22,0	*0.9*	45	*1.8*	⅜
TMFS 1	1			22	*0.9*	28,0	*1.1*	45	*1.8*	⅜
TMFS 2	2		M10×1	25	*1.0*	33,0	*1.3*	61	*2.4*	½
TMFS 3	3		M12×1,5, M14×1,5	28	*1.1*	36,0	*1.4*	61	*2.4*	½
TMFS 4	4	4	M16×1,5, M18×1,5, M20×1,5	32	*1.3*	38,0	*1.5*	58	*2.3*	½
TMFS 5	5	5	M22×1,5, M24×1,5	38	*1.5*	46,0	*1.8*	58	*2.3*	½
TMFS 6	6	6	M26×1,5, M28×1,5, M30×1,5	45	*1.8*	53,0	*2.1*	58	*2.3*	½
TMFS 7	7	7	M32×1,5, M35×1,5	52	*2.0*	60,0	*2.4*	58	*2.3*	½
TMFS 8	8	8	M38×1,5, M40×1,5, M42×1,5	58	*2.3*	68,0	*2.7*	58	*2.3*	½
TMFS 9	9	9	M45×1,5	65	*2.6*	73,5	*2.9*	63	*2.5*	¾
TMFS 10	10	10		70	*2.8*	78,5	*3.1*	63	*2.5*	¾
TMFS 11	11	11	M48×1,5, M50×1,5	75	*3.0*	83,5	*3.3*	63	*2.5*	¾
TMFS 12	12	12	M52×1,5, M55×1,5	80	*3.1*	88,5	*3.5*	63	*2.5*	¾
TMFS 13	13	13	M58×1,5, M60×1,5	85	*3.3*	94,0	*3.7*	63	*2.5*	¾
TMFS 14	14	14	M62×1,5, M65×1,5	92	*3.6*	103,0	*4.1*	80	*3.2*	*1*
TMFS 15	15	15	M68×1,5, M70×1,5	98	*3.9*	109,0	*4.3*	80	*3.2*	*1*
TMFS 16	16	16		105	*4.1*	116,0	*4.6*	80	*3.2*	*1*
TMFS 17	17	17	M72×1,5, M75×1,5	110	*4.3*	121,0	*4.8*	80	*3.2*	*1*
TMFS 18	18	18		120	*4.7*	131,0	*5.2*	80	*3.2*	*1*
TMFS 19	19	19	M85×2	125	*4.9*	137,0	*5.5*	80	*3.2*	*1*
TMFS 20	20	20	M90×2	130	*5.1*	143,0	*5.7*	80	*3.2*	*1*

High impact forces without nut damage

SKF Impact Spanners TMFN series

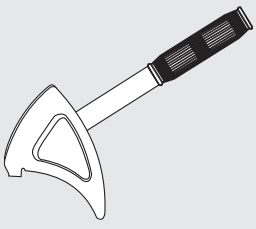
- Helps avoid shaft and nut damage
- Safe and user friendly
- Impact applied effectively to the nut
- Suitable for a wide selection of lock nuts
- Special wide impact face
- To be used in combination with a hammer

Selection chart

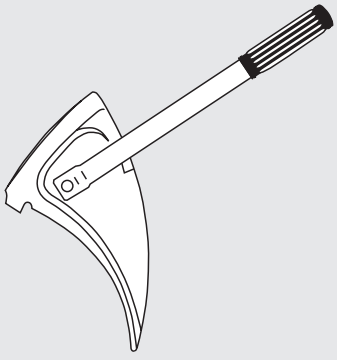
Designation	Suitable for adapter sleeves		Suitable for nuts of series						
	H 23, H 31, H 32	H 30, H 39	KM	KML	HM T	HM	KMFE	KMT	DIN 1804 (M)
TMFN 23-30	24–30	26–32	23–30	26–32	–	–	23–28 26L–28L	24–30	M105×2, M105×2, M110×2, M115×2, M120×2, M125×2, M130×3, M140×3, M150×3, M160×3
TMFN 30-40	30–40	34–40	32–38	34–40	–	–	30–40	32–40	M170x3, M180x3, M190x3, M200x3
TMFN 40-52	40–48	44–52	40	–	42T–50T	3044–3052	–	40, 44, 48	–
TMFN 52-64	52–64	56–68	–	–	52T–56T	3056–3068	–	–	–
TMFN 64-80	64–80	68–88	–	–	–	3168–3088	–	–	–
TMFN 80-500	80–500	88–530	–	–	–	3184–30/500	–	–	–
TMFN 500-600	500–600	530–630	–	–	–	31/500–30/630	–	–	–
TMFN 600-750	600–750	670–800	–	–	–	31/600–31/800	–	–	–

Technical data

Designation	Lock nut outer diameter	
	mm	*in.*
TMFN 23-30	150–220	*5.9–8.7*
TMFN 30-40	195–270	*7.7–10.6*
TMFN 40-52	250–320	*9.8–12.6*
TMFN 52-64	330–400	*12.6–15.7*
TMFN 64-80	420–520	*15.7–20.5*
TMFN 80-500	540–620	*21.3–24.8*
TMFN 500-600	630–730	*24.8–29.5*
TMFN 600-750	750–950	*29.5–37.4*



Design of TMFN 23-30 and TMFN 30-40



Design of other sizes TMFN impact spanners

For achieving the correct radial clearance

SKF Bearing Lock Nut Spanner TMHN 7 series

The SKF TMHN 7 set of lock nut spanners is especially designed for mounting self-aligning ball bearings as well as small spherical roller and CARB toroidal roller bearings on tapered seatings. Using the SKF TMHN 7, minimises the risk of over-tightening of the lock nut, which can remove the bearing's radial clearance resulting in bearing damage.

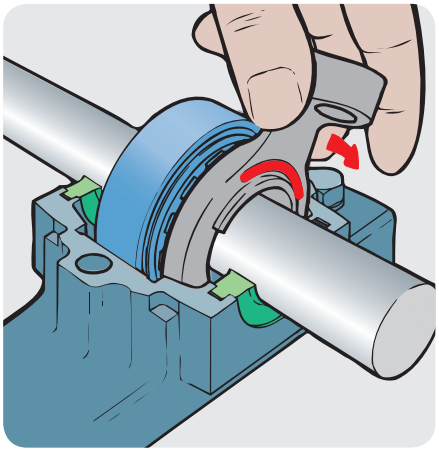
- 7 different-sized spanners to fit nut sizes 5 to 11
- Each spanner is clearly marked with correct tightening angle and protractor
- 4 grip points on each spanner provide a better and safer grip on the nut
- Reduced risk of damaging bearing by over-tightening
- Suitable for use with lock nuts of the KM series either on shaft or in SNL housings

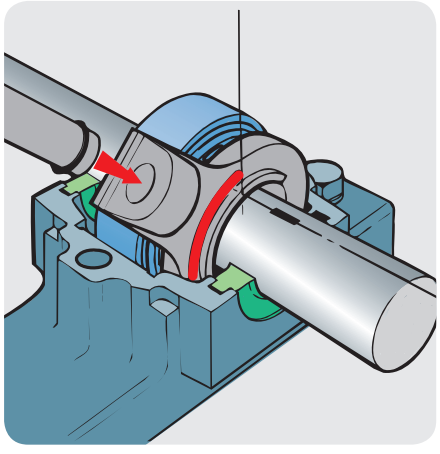
TMHN 7 is suitable for use with:

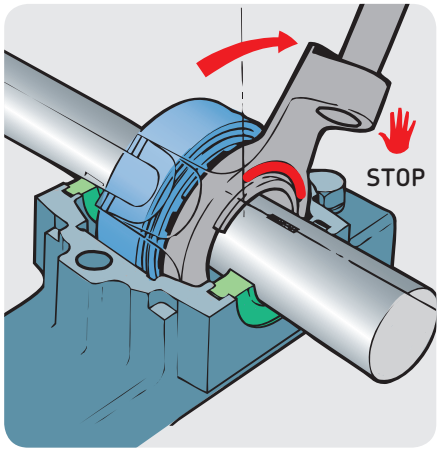
Bearing designation
1205 EK–1211 EK
1306 EK–1311 EK
2205 EK–2211 EK
2306 K
2307 EK–2309 EK
2310 K–2311 K

Technical data

Designation	TMHN 7
Dimensions of case (w × d × h)	340 × 250 × 80 mm *(13.4 × 9.8 × 3.1 in.)*
Weight	2,2 kg *(4.7 lb)*







Mounting and dismounting

Multi-purpose kit for quick and easy mounting and dismounting

SKF Combi Kit TMMK 10-35

The SKF TMMK 10-35 is designed for quick and precise mounting of bearings with bore diameters from 10 to 35 mm and for dismounting deep groove ball bearings from shafts, housings and blind housings from the same range.

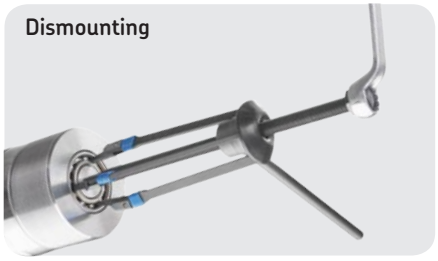
For mounting, a multipurpose fitting tool is included which is suitable for mounting bearings as well as bushings, seal rings, belt pulleys and other similar products.

For dismounting of deep groove ball bearings from blind housings and shafts, the SKF TMMK 10-35 contains a unique three-armed puller. When dismounting deep groove ball bearings from housings, a combination of this puller, sliding hammer and support rings enables easy removal of the bearings.

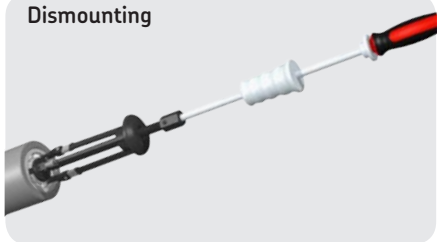
- A complete kit of different sizes of puller arms and spindles facilitates the dismounting of a wide variety of different SKF deep groove ball bearings
- The correct combination of a tough and lightweight impact ring and sleeve reduces the risk of bearing damage as the impact force is not transmitted through the rolling elements
- The dead-blow hammer is designed for maximum impact, while the puller claws are specially designed to provide a good grip and allow for high dismounting forces

Mounting

Dismounting



Dismounting



Suitability chart

SKF TMMK 10–35 is suitable for dismounting the following SKF deep groove ball bearings

60.. series	62.. series	63.. series	64.. series	16... series
6000–6017	6200–6211	6300–6307	6403	16002–16003
	62/22	63/22		16011
	62/28	63/28		

Technical data

Designation	TMMK 10–35
Number of impact rings	24
Number of sleeves	2
Impact rings bore diameter	10–35 mm *(0.39–2.1 in.)*
Impact rings outer diameter	26–80 mm *(1.0–4.7 in.)*
Dead-blow hammer	TMFT 36-H
Shaft support rings (diameter)	10, 12, 15, 17, 20, 22, 25, 28, 30 and 35 mm
Effective puller arm length	3 × puller arm A1 – 135 mm *(5.3 in.)* 3 × puller arm A2 – 135 mm *(5.3 in.)* 3 × puller arm A3 – 137 mm *(5.4 in.)* 3 × puller arm A4 – 162 mm *(6.4 in.)* 3 × puller arm A5 – 167 mm *(6.6 in.)*
Dimensions of case	525 × 420 × 130 mm *(20.7 × 16.5 × 5.1 in.)*
Weight	7,6 kg *(16.8 lb)*

Dismounting

Selection chart – SKF external pullers

	Designation	Width of grip		Effective arm length	
		mm	*in.*	mm	*in.*
 22	**SKF Standard Jaw Pullers**				
	TMMP 2x65	15–65	*0.6–2.6*	60	*2.4*
	TMMP 2x170	25–170	*1.0–6.7*	135	*5.3*
	TMMP 3x185	40–185	*1.6–7.3*	135	*5.3*
	TMMP 3x230	40–230	*1.6–9.0*	210	*8.3*
	TMMP 3x300	45–300	*1.8–11.8*	240	*9.4*
 25	**SKF Reversible Jaw Pullers**				
	TMMR 40F	23–48	*0.9–1.9*	65	*2.6*
	TMMR 60F	23–68	*0.9–2.7*	80	*3.2*
	TMMR 80F	41–83	*1.6–3.3*	94	*3.7*
	TMMR 120F	41–124	*1.6–4.8*	120	*4.7*
	TMMR 160F	68–164	*2.7–6.5*	130	*5.1*
	TMMR 200F	67–204	*2.6–8.0*	155	*6.1*
	TMMR 250F	74–254	*2.9–10.0*	178	*7*
	TMMR 350F	74–354	*2.9–14.0*	233	*9.2*
 22	**SKF Heavy Duty Jaw Pullers**				
	TMMP 6	50–127	*2.0–5.0*	120*	*4.7**
	TMMP 10	100–223	*3.9–8.7*	207*	*8.2**
	TMMP 15	140–326	*5.5–12.8*	340*	*13.4**
 20	**Mechanical pullers SKF EasyPull**				
	TMMA 60	36–150	*1.4–5.9*	150	*5.9*
	TMMA 80	52–200	*2.0–7.8*	200	*7.8*
	TMMA 120	75–250	*3.0–9.8*	250	*9.8*
	Hydraulic pullers SKF EasyPull				
	TMMA 75H + .../SET	52–200	*2.0–7.8*	200	*7.8*
	TMMA 100H + .../SET	75–250	*3.0–9.8*	250	*9.8*
 24, 26	**SKF Hydraulic Jaw Puller Kit**				
	TMHP 10E	75–280	*3.0–11.0*	110–200	*4.3–7.9*
	SKF Hydraulic Puller Kit				
	TMHC 110E	50–170	*1.9–6.7*	70–120	*2.8–4.7*
 23	**SKF Hydraulically Assisted Heavy Duty Jaw Pullers**				
	TMHP 15/260	195–386	*7.7–15.2*	264	*10.4*
	TMHP 30/170	290–500	*11.4–19.7*	170	*6.7*
	TMHP 30/350	290–500	*11.4–19.7*	350	*13.7*
	TMHP 30/600	290–500	*11.4–19.7*	600	*23.6*
	TMHP 50/140	310–506	*12.2–19.9*	140	*5.5*
	TMHP 50/320	310–506	*12.2–19.9*	320	*12.6*
	TMHP 50/570	310–506	*12.2–19.9*	570	*22.4*

* Other arm length options are available

SKF EasyPull

Equipped with spring-operated arms and a solid design, the patented SKF EasyPull is one of the most user-friendly and safe tools on the market. Ergonomically designed, the spring-operated arms enable the user to position the puller behind the component with just one movement. The SKF EasyPull is available in mechanical and hydraulically assisted versions, as well as complete kits with a tri-section pulling plate and a puller protection blanket.

Safe and simple bearing dismounting

Mechanical pullers TMMA series

- Sturdy design allows dismounting of components even in the tightest application in a safe manner
- The unique red rings spring-operated opening mechanism allows the SKF EasyPull to be placed behind the component with one movement of the hands
- Self-locking arms help prevent the risk of puller slipping under load
- Double hexagonal heads allow easier application of withdrawal force
- Self-centring capability and nosepiece help avoid damage to shaft
- Efficient use of time due to quick dismounting
- Available in three sizes with a withdrawal force of 60, 80 or 120 kN *(6.7, 9.0 or 13.5 US ton)*, enabling easy selection
- TMHS series hydraulic force generators are available as an accessory for the 80 and 120 kN versions

Quick and virtually effortless bearing dismounting

Hydraulic pullers TMMA ..H series

- Ready-to-use, integrated hydraulic cylinder, pump and puller – thus it is assembly-free and it is not necessary to purchase separate parts
- Safety valve prevents spindles and pullers from being overloaded if excessive force is applied
- The spring-loaded centre point on the hydraulic spindle allows easy centring of the puller on the shaft without damaging the shaft
- The TMMA 100H has a maximum withdrawal force of 100 kN *(11.2 US ton)* and a long stroke of 80 mm *(3.1 in.)*, which facilitates most dismounting jobs in just one operation
- For dismounting jobs requiring less force, SKF offers a 75 kN *(8.4 US ton)* version, the hydraulic EasyPull TMMA 75H with a maximum stroke of 75 mm *(3 in.)*
- Supplied with extension pieces and one nosepiece

Technical data

Designation	TMMA 60	TMMA 80	TMMA 120	TMMA 75H	TMMA 100H
Width of grip external, minimum	36 mm *(1.4 in.)*	52 mm *(2.0 in.)*	75 mm *(3.0 in.)*	52 mm *(2 in.)*	75 mm *(3 in.)*
Width of grip external, maximum	150 mm *(5.9 in.)*	200 mm *(7.8 in.)*	250 mm *(9.8 in.)*	200 *(7.8 in.)*	250 *(9.8 in.)*
Effective arm length	150 mm *(5.9 in.)*	200 mm *(7.8 in.)*	250 mm *(9.8 in.)*	200 mm *(7.8 in.)*	250 mm *(9.8 in.)*
Maximum withdrawal force	60 kN *(6.7 US ton)*	80 kN *(9.0 US ton)*	120 kN *(13.5 US ton)*	75 kN *(8.4 US ton)*	100 kN *(11.2 US ton)*
Claw height	7,5 mm *(0.30 in.)*	9,8 mm *(0.39 in.)*	13,8 mm *(0.54 in.)*	9,8 mm *(0.39 in.)*	13,8 mm *(0.54 in.)*
Hydraulic spindle	–	–	–	TMHS 75	TMHS 100
Adapter: possible to upgrade to hydraulic version	–	TMMS 75	TMMS 100	–	–
Total weight	4,0 kg *(8.8 lb)*	5,7 kg *(12.6 lb)*	10,6 kg *(23.4 lb)*	7,2 kg *(15.9 lb)*	13,2 kg *(29 lb)*

A complete bearing dismounting solution

Hydraulic puller sets TMMA ..H /SET series

- A set consisting of a hydraulically assisted SKF EasyPull together with a tri-section pulling plate, TMMS series, and a puller protection blanket facilitate an easy, safe and virtually damage-free dismounting
- Especially suitable for dismounting spherical roller and CARB toroidal roller bearings, and other components such as pulleys and flywheels
- A puller protection blanket, TMMX series, made of a strong transparent material allows the user to visually follow the dismounting procedure. While dismounting, the blanket helps to protect from flying fragments of bearings or other components, thereby enhancing user safety
- A sturdy custom-made storage case with room for all parts minimises the risk of loosing or damaging the set's components

Technical data

Designation	TMMA 75H/SET	TMMA 100H/SET
Puller	TMMA 75H	TMMA 100H
Tri-section pulling plate	TMMS 100	TMMS 160
Puller protection blanket	TMMX 280	TMMX 350
Dimensions of case	610 × 260 × 260 mm *(24 × 10 × 10 in.)*	680 × 320 × 270 mm *(27 × 13 × 11 in.)*
Total weight	15,3 kg *(33.7 lb)*	31,6 kg *(70 lb)*

SKF Jaw pullers

One of the most common ways to dismount small to medium size bearings is to use a basic mechanical puller. Using an SKF puller helps to safeguard against damage to the bearing or to the bearing seating during dismounting. SKF Jaw pullers allow for easy and safe puller operation.

Versatile two and three arm mechanical pullers

SKF Standard Jaw Pullers TMMP series

- Range of five different jaw pullers with two or three arms
- Maximum nominal span from 65 to 300 mm *(2.6 to 11.8 in.)*
- Cone system for automatic centring and secure positioning of arms
- Strong springs keep arms apart for easy operation
- Hardened, high quality carbon steel

Powerful self-centring mechanical pullers

SKF Heavy Duty Jaw Pullers TMMP series

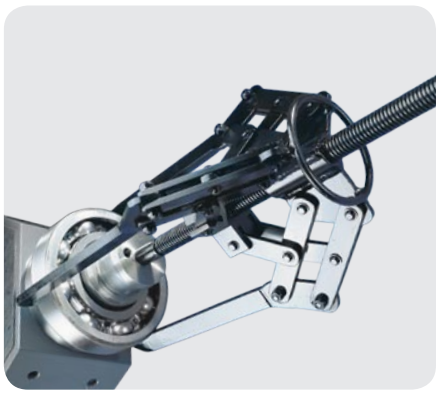
- Fast, efficient and smooth handling
- Unique pantograph system gives exceptional grip and helps counteract misalignment during operation
- Three arm jaw pullers with a maximum withdrawal force of 60 to 150 kN *(6.7 to 17.0 US ton)* suitable for medium to large size bearings
- Blackened, high quality steel for corrosion resistance
- Other arm length options are available

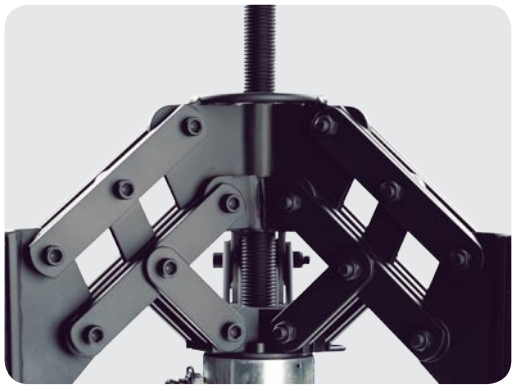
Technical data – SKF Standard Jaw Pullers

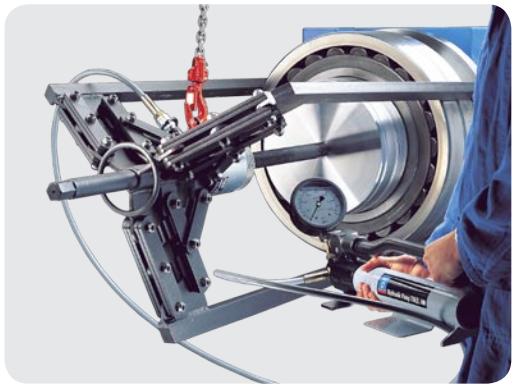
Designation	TMMP 2x65	TMMP 2x170	TMMP 3x185	TMMP 3x230	TMMP 3x300
No. of arms	2	2	3	3	3
Width of grip	15–65 mm *(0.6–2.6 in.)*	25–170 mm *(1.0–6.7 in.)*	40–185 mm *(1.6–7.3 in.)*	40–230 mm *(1.6–9.1 in.)*	45–300 mm *(1.8–11.8 in.)*
Effective length of arms	60 mm *(2.4 in.)*	135 mm *(5.3 in.)*	135 mm *(5.3 in.)*	210 mm *(8.3 in.)*	240 mm *(9.4 in.)*
Claw height	8 mm *(0.31 in.)*	9 mm *(0.35 in.)*	9 mm *(0.35 in.)*	9 mm *(0.35 in.)*	11 mm *(0.43 in.)*
Maximum withdrawal force	6,0 kN *(0.7 US ton)*	18,0 kN *(2 US ton)*	24,0 kN *(2.7 US ton)*	34,0 kN *(3.8 US ton)*	50,0 kN *(5.6 US ton)*
Weight	0,5 kg *(1.2 lb)*	2,1 kg *(4.7 lb)*	2,9 kg *(6.4 lb)*	5,8 kg *(13 lb)*	8,6 kg *(19 lb)*

Technical data – SKF Heavy Duty Jaw Pullers

Designation	TMMP 6	TMMP 10	TMMP 15
Width of grip	50–127 mm *(2.0–5.0 in.)*	100–223 mm *(3.9–8.7 in.)*	140–326 mm *(5.5–12.8 in.)*
Effective length of arms	120 mm *(4.7 in.)*	207 mm *(8.2 in.)*	340 mm *(13.4 in.)*
Claw height	15 mm *(0.59 in.)*	20 mm *(0.78 in.)*	30 mm *(1.18 in.)*
Maximum withdrawal force	60 kN *(6.7 US ton)*	100 kN *(11.2 US ton)*	150 kN *(17 US ton)*
Weight	4,0 kg *(8.8 lb)*	8,5 kg *(19 lb)*	21,5 kg *(46 lb)*
Effective length optional arms			
TMMP ..-1	included	included	260 mm *(10.2 in.)*
TMMP ..-2	220 mm *(8.6 in.)*	350 mm *(13.8 in.)*	included
TMMP ..-3	370 mm *(14.5 in.)*	460 mm *(18.1 in.)*	435 mm *(17.1 in.)*
TMMP ..-4	470 mm *(18.5 in.)*	710 mm *(27.9 in.)*	685 mm *(27.0 in.)*







Powerful self-centring hydraulic pullers

SKF Hydraulically Assisted Heavy Duty Jaw Pullers TMHP series

- High forces can be easily applied as the puller is self-centring
- The combination of a spindle and hydraulic cylinder allows the working length to be easily adjusted
- Unique pantograph system gives exceptional grip and helps counteract misalignment during operation
- Equipped with a lifting handle and eye bolt, facilitates easy handling
- Maximum withdrawal force of 150, 300 or 500 kN *(17, 34 or 56 US ton)*
- Supplied with SKF Hydraulic Pump TMJL 100

Technical data

Designation*	TMHP 15/260	TMHP 30/170	TMHP 30/350	TMHP 30/600	TMHP 50/140	TMHP 50/320	TMHP 50/570
Width of grip	195–386 mm *(7.7–15.2 in.)*	290–500 mm *(11.4–19.7 in.)*	290–500 mm *(11.4–19.7 in.)*	290–500 mm *(11.4–19.7 in.)*	310–506 mm *(12.2–19.9 in.)*	310–506 mm *(12.2–19.9 in.)*	310–506 mm *(12.2–19.9 in.)*
Effective length of arms	264 mm *(10.4 in.)*	170 mm *(6.7 in.)*	350 mm *(13.7 in.)*	600 mm *(23.6 in.)*	140 mm *(5.5 in.)*	320 mm *(12.6 in.)*	570 mm *(22.4 in.)*
Claw height	30 mm *(1.2 in.)*	35 mm *(1.4 in.)*	35 mm *(1.4 in.)*	35 mm *(1.4 in.)*	40 mm *(1.6 in.)*	40 mm *(1.6 in.)*	40 mm *(1.6 in.)*
Stroke	100 mm *(3.9 in.)*	50 mm *(2 in.)*	50 mm *(2 in.)*	50 mm *(2 in.)*	40 mm *(1.6 in.)*	40 mm *(1.6 in.)*	40 mm *(1.6 in.)*
Maximum working pressure hydraulic cylinder	80 MPa *(11 600 psi)*	80 MPa *(11 600 psi)*	80 MPa *(11 600 psi)*	80 MPa *(11 600 psi)*	80 MPa *(11 600 psi)*	80 MPa *(11 600 psi)*	80 MPa *(11 600 psi)*
Maximum withdrawal force	150 kN *(17 US ton)*	300 kN *(34 US ton)*	300 kN *(34 US ton)*	300 kN *(34 US ton)*	500 kN *(56 US ton)*	500 kN *(56 US ton)*	500 kN *(56 US ton)*
Weight	34 kg *(75 lb)*	45 kg *(99 lb)*	47 kg *(104 lb)*	56 kg *(123 lb)*	47 kg *(104 lb)*	54 kg *(119 lb)*	56 kg *(132 lb)*
Effective length optional arms							
TMHP ..-1	included	included	170 mm *(6.7 in.)*	170 mm *(6.7 in.)*	included	140 mm *(5.5 in.)*	140 mm *(5.5 in.)*
TMHP ..-2	344 mm *(14.2 in.)*	350 mm *(13.7 in.)*	included	350 mm *(13.7 in.)*	320 mm *(12.6 in.)*	included	320 mm *(12.6 in.)*
TMHP ..-3	439 mm *(17.3 in.)*	600 mm *(23.6 in.)*	600 mm *(23.6 in.)*	included	570 mm *(22.4 in.)*	570 mm *(22.4 in.)*	included
TMHP ..-4	689 mm *(27.1 in.)*	–	–	–	–	–	–

*Also available without hydraulic pump TMJL 100. Please add suffix 'X' to designation when ordering without pump (e.g. TMHP 30/170X)

Effortless bearing dismounting up to 100 kN

SKF Hydraulic Jaw Puller Kit TMHP 10E

- A versatile kit with three different arm lengths is suitable for a wide range of applications
- Hydraulic spindle facilitates effortless dismounting
- Self-locking arms minimise the risk of the puller slipping from the application when under load
- The spring-loaded centre point of the hydraulic spindle allows easy puller centring
- The hydraulic spindle is equipped with a safety valve, which minimises the risk of puller overload
- High load rating of 100 kN *(11.2 US ton)* makes the puller suitable for a variety of dismounting jobs
- A hydraulic spindle stroke of 80 mm *(3.1 in.)* helps facilitate dismounting in one operation
- Supplied with hydraulic spindle extension pieces to allow quick adaptation to pulling length

Technical data

Designation	TMHP 10E
Contents	1 × arm–assembly stand 3 × arms, 110 mm *(4.3 in.)* 3 × arms, 160 mm *(6.3 in.)* 3 × arms, 200 mm *(7.9 in.)* 1 × hydraulic spindle TMHS 100 3 × extension pieces for hydraulic spindle; 50, 100, 150 mm *(2, 4, 6 in.)* 1 × nosepiece with centre point for hydraulic spindle
Maximum stroke	80 mm *(3.1 in.)*
Threading hydraulic cylinder	1 1/2-16 UN
Nominal working force	100 kN *(11.2 US ton)*
Carrying case dimensions	578 × 410 × 70 mm *(23 × 16 × 2.8 in.)*
Weight	14,5 kg *(32 lb)*

Arm set 1 (3 × TMHP10E-10)		
Effective arms length	110 mm	*(4.3 in.)*
Width of grip	75–170 mm	*(3,0–6.7 in.)*
Claw height	7 mm	*(0.28 in.)*
Arm set 2 (3 × TMHP10E-11)		
Effective arms length	160 mm	*(6.3 in.)*
Width of grip	80–250 mm	*(3.1–9.8 in.)*
Claw height	7 mm	*(0.28 in.)*
Arm set 3 (3 × TMHP10E-12)		
Effective arms length	200 mm	*(7.8 in.)*
Width of grip	110–280 mm	*(4.3–11 in.)*
Claw height	7 mm	*(0.28 in.)*

External pull

Internal pull

Combined internal and external puller

SKF Reversible Jaw Puller TMMR F series

The multi-purpose SKF Reversible Jaw Pullers are suitable for internal and external pulling of bearings and other components, with equal strength. The range of eight pullers can accommodate a wide range of bearing types and sizes. With self-locking arms, the pulling width is easily adjusted and automatically fixed without the need of arm locking bolts. To improve ease of use, the beam is equipped with a hexagonal head allowing it to be easily rotated during dismounting.

- An essential item for every workshop
- Versatile puller allows both internal and external pulling
- Self-locking arms for easy adjustment of width of grip
- Special safety neck helps reduce the risk of overloading the puller, enhancing user safety
- Hexagonal head on beam enables rotation of puller and bearing outer ring during dismounting, improving ease of use
- Wide gripping range from 23 mm *(0.9 in.)* internal to 350 mm *(13.8 in.)* external, enables many bearings to be dismounted
- The SKF Reversible Jaw Pullers are also available as a complete set of eight pullers on a workshop stand, SKF TMMR 8

Selection chart and technical data

Designation		TMMR 40F	TMMR 60F	TMMR 80F	TMMR 120F	TMMR 160F	TMMR 200F	TMMR 250F	TMMR 350F
Width of grip External pull	mm	23–48	23–68	41–83	41–124	68–164	67–204	74–254	74–354
	in.	*0.9–1.9*	*0.9–2.7*	*1.6–3.3*	*1.6–4.8*	*2.7–6.5*	*2.6–8.0*	*2.9–10.0*	*2.9–14.0*
Width of grip Internal pull	mm	59–67	62–87	93–97	93–138	114–162	114–204	132–252	135–352
	in.	*2.3–2.6*	*2.4–3.4*	*3.7–3.8*	*3.7–5.4*	*4.5–6.4*	*4.5–8.0*	*5.2–9.9*	*5.3–13.8*
Effective arm length	mm	65	80	94	120	130	155	178	233
	in.	*2.6*	*3.2*	*3.7*	*4.7*	*5.1*	*6.1*	*7*	*9.2*
Claw height	mm	4	4	7	7	9	9	10	10
	in.	*0.16*	*0.16*	*0.28*	*0.28*	*0.36*	*0.36*	*0.4*	*0.4*
Maximum withdrawal force	kN	15	15	30	30	40	40	50	50
	US ton	*1.7*	*1.7*	*3.4*	*3.4*	*4.5*	*4.5*	*5.6*	*5.6*

SKF Strong Back Pullers

Easy bearing dismounting even in the tightest spaces

SKF Strong Back Pullers TMBS E series

The SKF TMBS E strong back pullers facilitate dismounting of bearings in applications where the use of traditional jaw pullers is restricted due to lack of space or where the application demands a long reach.

- Special separator design allows the puller to be easily inserted between the bearing and the shoulder on the shaft
- The spring-loaded centre point of the hydraulic spindle allows easy puller centring
- The firm grip behind the bearing's inner ring reduces the force required to dismount the bearing
- The hydraulic spindle is equipped with a safety valve, which minimises the risk of puller overload
- A hydraulic spindle stroke of 80 mm *(3.1 in.)* helps facilitate dismounting in one operation
- SKF TMBS 50E is equipped with a mechanical spindle for force generation
- SKF TMBS 100E and the SKF TMBS 150E are equipped with a hydraulic spindle, which allows for easy application of force up to 100 kN *(11.2 US ton)*
- Supplied with hydraulic spindle extension pieces to allow quick adaptation to pulling length
- SKF TMBS 100E and SKF TMBS 150E are supplied with extension rods to allow quick adaptation to pulling lengths upto 816 mm *(32.1 in.)*

Selection chart

Designation	Shaft diameter		Maximum bearing outer diameter		Maximum reach	
	mm	*in.*	mm	*in.*	mm	*in.*
TMBS 50E	7–50	*0.3–1.9*	85	*3.3*	110	*4.3*
TMBS 100E	20–100	*0.8–3.9*	160	*6.3*	120–816	*4.7–32.1*
TMBS 150E	35–150	*1.4–5.9*	215	*8.5*	120–816	*4.7–32.1*
TMHC 110E	20–100	*0.8–3.9*	160	*6.3*	120–245	*4.7–9.6*

Powerful combination of a jaw and strong back puller

SKF Hydraulic Puller Kit TMHC 110E

- SKF TMHC 110E hydraulic puller kit combines a jaw puller and a strong back puller
- A versatile puller kit facilitates safe and easy dismounting in a variety of applications
- Hydraulic spindle facilitates easy and quick dismounting
- High load rating of 100 kN *(11.2 US ton)*
- The strong back puller includes two different arm lengths for maximum reach of 120 mm *(4.7 in.)*
- The jaw puller can be assembled as a three-arm or two-arm puller depending on the space and demands of the application
- The firm grip of the strong back puller behind the bearing's inner ring reduces the force required to dismount the bearing
- Supplied with extension rods to allow quick adaptation to pulling lengths upto 245 mm *(9.6 in.)*

Technical data – TMBS E series



Designation	TMBS 50E	TMBS 100E	TMBS 150E
Contents	1 × separator set 1 × mechanical spindle 1 × beam 2 × main rods	1 × separator set 2 × main rods 2 × extension rods, 125 mm *(4.9 in.)* 4 × extension rods, 285 mm *(11.2 in.)* 1 × beam 1 × hydraulic spindle TMHS 100 2 × extension pieces for hydraulic spindle; 50, 100 mm *(2.0, 3.9 in.)* 1 × nosepiece with centre point for hydraulic spindle	1 × separator set 2 × main rods 2 × extension rods, 125 mm *(4.9 in.)* 4 × extension rods, 285 mm *(11.2 in.)* 1 × beam 1 × hydraulic spindle TMHS 100 2 × extension pieces for hydraulic spindle; 50, 100 mm *(2.0, 3.9 in.)* 1 × nosepiece with centre point for hydraulic spindle
Maximum stroke	–	80 mm *(3.1 in.)*	80 mm *(3.1 in.)*
Nominal working force	30 kN *(3.4 US ton)*	100 kN *(11.2 US ton)*	100 kN *(11.2 US ton)*
Maximum reach	110 mm *(4.3 in.)*	120–816 mm *(4.7–31.1 in.)*	120–816 mm *(4.7–31.1 in.)*
Shaft diameter range	7–50 mm *(0.3–2 in.)*	20–100 mm *(0.8–4 in.)*	35–150 mm *(1.4–6 in.)*
Threading hydraulic cylinder	–	1 1/2-16 UN	1 1/2-16 UN
Carrying case dimensions	295 × 190 × 55 mm *(11.6 × 7.5 × 2 in.)*	580 × 410 × 70 mm *(23 × 16 × 2.8 in.)*	580 × 410 × 70 mm *(23 × 16 × 2.8 in.)*
Weight	1,8 kg *(4 lb)*	13,5 kg *(29.8 lb)*	17 kg *(37.5 lb)*

Technical data – TMHC 110E

Designation	TMHC 110E
Contents	1 × arm–assembly stand 3 × arms, 60 mm *(2.4 in.)* 3 × arms, 120 mm *(4.7 in.)* 1 × separator set 1 × beam 2 × main rods 2 × extension rods, 125 mm *(4.9 in.)* 1 × hydraulic spindle TMHS 100 2 × extension pieces for hydraulic spindle; 50, 100 mm *(2.0, 3.9 in.)* 1 × nosepiece with centre point for hydraulic spindle
Maximum stroke	80 mm *(3.1 in.)*
Nominal working force	100 kN *(11.2 US ton)*
Threading hydraulic cylinder	1 1/2-16 UN
Carrying case dimensions	580 × 410 × 70 mm *(23 × 16 × 2.8 in.)*
Weight	13,5 kg *(29.8 lb)*

Arms set 1 (3 × TMHP10E-9)		
Effective arms length	60 mm	*(2.4 in.)*
Width of grip	50–110 mm	*(2–4.3 in.)*
Claw height	6 mm	
Arms set 2 (3 × TMHP10E-10)		
Effective arms length	120 mm	*(4.7 in)*
Width of grip	75–170 mm	*(3.0–6.7 in.)*
Claw height	7 mm	
Strong back puller		
Maximum reach	120–245 mm	*(4.7–9.6 in.)*
Shaft diameter range	20–100 mm	*(0.8–4 in.)*

SKF Blind housing pullers

Selection chart – SKF Blind pullers

Designation	Bearing bore diameter (d)	Effective arm length
TMMD 100	10–100 mm *(0.4–3.9 in.)*	135–170 mm *(5.3–6.7 in.)*
TMBP 20E	30–160 mm *(1.2–6.3 in.)*	547 mm *(21.5 in.)*

The SKF Deep Groove Ball Bearing Puller Kit TMMD 100 allows quick and easy dismounting of SKF Deep Groove Ball Bearings with an interference fit on both rings.

The SKF Blind Housing Puller Kit TMBP 20E is an adapter type puller for dismounting deep groove ball bearings in blind housings with shaft dimensions between 30 mm and 160 mm *(1.18–6.3 in.)*. The use of extension rods allows a long reach of up to 547 mm *(21.5 in.)*.

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Removes bearing without dismantling machinery

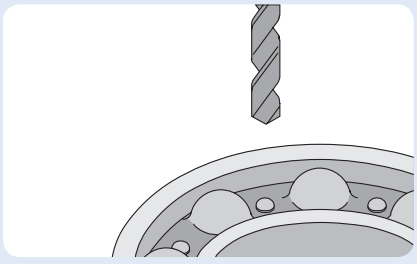
SKF Blind Housing Puller Kit TMBP 20E

- Allows a wide of range of deep groove ball bearings to be dismounted
- Ball adapters designed for a long service life
- Spanner stop function on spindle for easy and safe handling
- Self-locking nose piece helps minimise damage to shaft, and improves puller stability

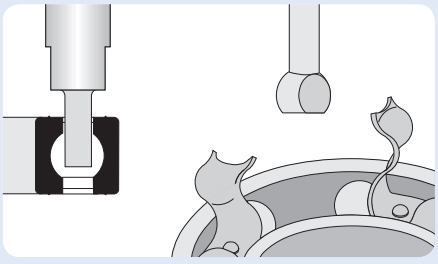
Suitability chart

SKF TMBP 20E is suitable for dismounting the following deep groove ball bearings

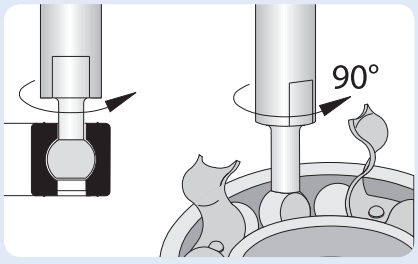
60.. series	62.. series	63.. series	64.. series	16... series
6021–6032	6213–6230	6309–6320	6406–6418	16026–16032



Remove seal and open selected section of ball cage. Clean the swarf out.



Insert appropriate bearing adapter and rotate it 90° ensuring positive grip within the bearing race.



Insert the second adapter into prepared area diametrically opposed.

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Easy dismounting of bearings in blind housings

SKF Deep Groove Ball Bearing Puller Kit TMMD 100

The puller is suitable for use in both blind housings and shaft applications. The SKF TMMD 100 is suitable for dismounting up to 71 different SKF deep groove ball bearings, with shaft diameters ranging between 10 and 100 mm *(0.4–3.9 in.)*.

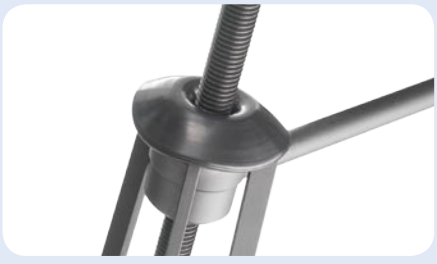
- The claws are designed to precisely fit in the bearing's raceway, providing a good grip, thereby allowing high dismounting forces
- Each puller arm is fitted with a spring for easy installation
- The claw has been designed to allow easy insertion
- The hexagon head of the spindle is designed to prevent the spanner sliding down the spindle during dismounting
- The puller can also be used to remove sealed bearings from blind housings, after the seal has been removed

Suitability chart

The SKF TMMD 100 suits the following bearing series and sizes:

Bearing designation	Shaft diameter	
6000–6020	10–100 mm	*(0.4–3.9 in.)*
6200–6218	10–90 mm	*(0.4–3.5 in.)*
6300–6313	10–65 mm	*(0.4–2.6 in.)*
6403–6410	17–50 mm	*(0.7–2.0 in.)*
62/22, 62/28, 63/22, 63/28	22, 28, 22, 28 mm	*(0.9, 1.1, 0.9, 1.1 in.)*
16002, 16003, 16011	15, 17, 55 mm	*(0.6, 0.7, 2.2 in.)*
16100, 16101	10, 12 mm	*(0.4, 0.5 in.)*

Bearing selection chart included



The rubber cap allows easy and quick attachment of the arms to the spindle. It also prevents the puller arms from detaching from the spindle during operation

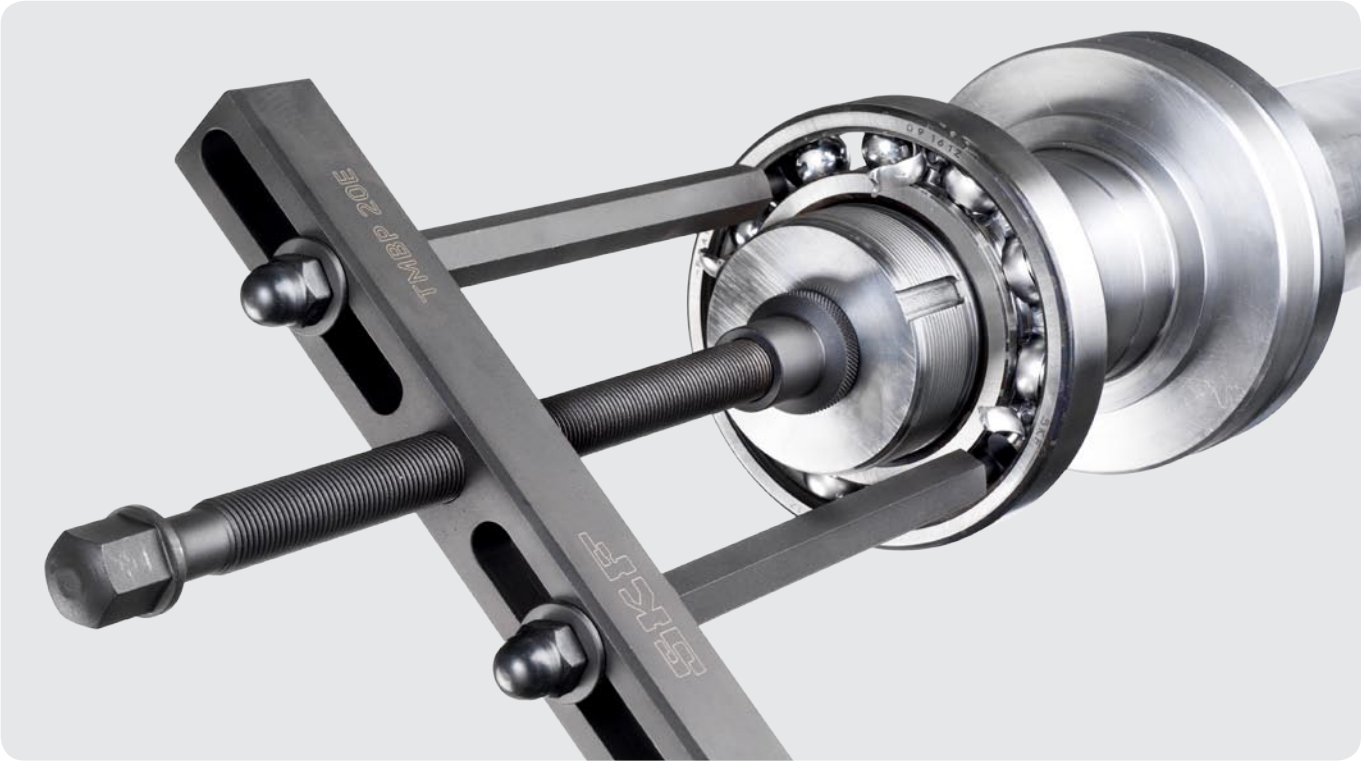
The springs enable easy insertion

Technical data – SKF Blind Housing Puller Kit

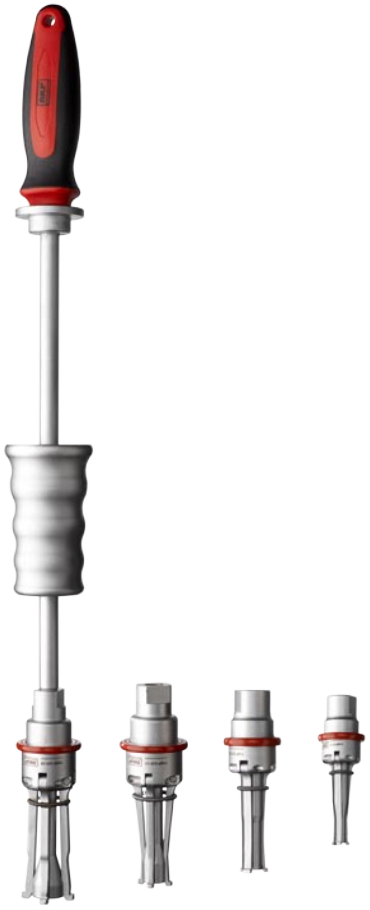
Designation	TMBP 20E
Kit contents	6 adapters sizes (2 pcs each) 2 main rods (with nut support rings and nuts) 4 extension rods Spindle Spindle nose piece Beam
Effective arm length	147–547 mm *(5.8–21.5 in.)*
Maximum pulling force	55 kN *(6.2 US ton)*
Dimensions of case	395 × 300 × 105 mm *(15.5 × 11.8 × 4.1 in.)*
Weight	7,5 kg *(16.5 lb)*

Technical data SKF – Deep Groove Ball Bearing Puller Kit

Designation	TMMD 100
Kit contents	3 × puller arm A1–135 mm *(5.3 in.)* 3 × puller arm A2–135 mm *(5.3 in.)* 3 × puller arm A3–137 mm *(5.4 in.)* 3 × puller arm A4–162 mm *(6.4 in.)* 3 × puller arm A5–167 mm *(6.6 in.)* 3 × puller arm A6–170 mm *(6.7 in.)* 2 × spindle and nut 1 × handle
Effective arm length	135–170 mm *(5.3–5.7 in.)*
Dimensions of case	395 × 300 × 105 mm *(15.5 × 11.8 × 4.1 in.)*
Weight	3,8 kg *(8.4 lb)*



Internal pullers



Fast and easy bearing dismounting from housings

SKF Internal Bearing Puller Kits TMIP series

The SKF TMIP kits are specially designed for dismounting bearings from housings where the fit is on the outer ring.

The combination of unique spring-loaded extractors and an ergonomically designed sliding hammer help enable a safe, fast and easy removal of the bearing. Unlike other internal bearing pullers, the extractors can be correctly positioned in just one quick action.

- Unique design saves dismounting time
- Easy removal of bearings from housings
- Designed to suit a wide range of bearing bore diameters; the selection of extractors is easy
- Puller constructed for optimum strength and durability
- Spring loaded extractors allow quick and easy fitting of the extractor to the inner ring
- Claw design provides a strong and secure grip behind the inner ring, allowing a high puller force to be applied
- Ergonomic sliding hammer enhances user safety
- SKF design, patent pending

Technical data – extractors

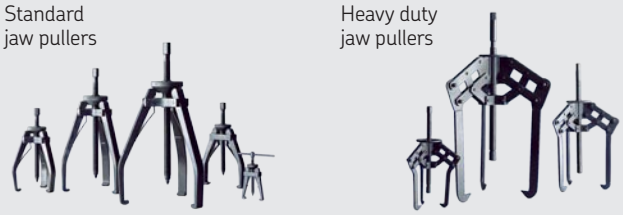
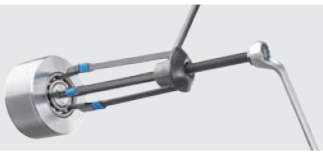
Extractor size	Bearing bore diameter		Maximum bearing width		Space behind bearing		Housing depth	
	mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*
TMIP 7–28								
TMIP E7–9	7–9	*0.28–0.35*	10	*0.39*	6	*0.24*	39	*1.5*
TMIP E10–12	10–12	*0.39–0.47*	11	*0.43*	6	*0.24*	45	*1.8*
TMIP E15–17	15–17	*0.59–0.67*	18	*0.71*	7,5	*0.29*	55	*2.2*
TMIP E20–28	20–28	*0.79–1.1*	24	*0.94*	10	*0.4*	60	*2.4*
TMIP 30–60								
TMIP E30–40	30–40	*1.2–1.6*	>35	*1.38*	11,5	*0.45*	97	*3.8*
TMIP E45–60	45–60	*1.8–2.4*	>64	*2.52*	15	*0.6*	102	*4.0*

Technical data

Designation	TMIP 7–28	TMIP 30–60
Bearing bore diameter	7–28 mm (*0.28–1.1 in.*)	30–60 mm (*1.2–2.4 in.*)
Total sliding hammer length	412 mm (*16.2 in.*)	557 mm (*21.9 in.*)
Carrying cse dimensions (w × d × h)	395 × 300 × 105 mm (*15.5 × 11.8 × 4.1 in.*)	395 × 300 × 105 mm (*15.5 × 11.8 × 4.1 in.*)
Weight	3,3 kg (*7.3 lb*)	5,4 kg (*11.9 lb*)

Puller accessory selection guide

A range of accessories has been developed to further facilitate the ease of use of the SKF puller range.

		Puller series
22		**TMMP series** Standard jaw pullers **TMMP series** Heavy duty jaw pullers
25		**TMMR F series** Reversible jaw pullers
20		**TMMA series** SKF EasyPull
24, 26		**TMHC 110E** Hydraulic Puller kit **TMHP 10E** Hydraulic Puller kit **TMBS E series** Strong back pullers
23		**TMHP series** Hydraulically - assisted heavy duty jaw pullers
28, 29		**TMMD 100/TMBP 20E** Blind housing puller kits

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Designation	Puller Protection Blankets TMMX series	Force Generators Advanced Hydraulic Spindle TMHS series	Tri-section Pulling Plates TMMS series
TMMP 2x65	–	–	–
TMMP 2x170	TMMX 280	–	–
TMMP 3x185	TMMX 210*	–	TMMS 50* TMMS 100
TMMP 3x230	TMMX 210 TMMX 280*	–	TMMS 50* TMMS 100
TMMP 3x300	TMMX 280 TMMX 350*	–	TMMS 50 TMMS 100* TMMS 160
TMMP 6	TMMX 210	–	TMMS 50*
TMMP 10	TMMX 280	–	TMMS 100*
TMMP 15	TMMX 280 TMMX 350	–	TMMS 100* TMMS 160*
TMMR 40F	–	–	–
TMMR 60F	–	–	–
TMMR 80F	–	–	–
TMMR 120F	TMMX 210	–	–
TMMR 160F	TMMX 210 TMMX 280	–	–
TMMR 200F	TMMX 280*	–	–
TMMR 250F	TMMX 350*	–	–
TMMR 350F	–	–	–
TMMA 60	TMMX 210* TMMX 280	–	TMMS 50*
TMMA 80	TMMX 210 TMMX 280* TMMX 350	TMHS 75	TMMS 50* TMMS 100*
TMMA 120	TMMX 280 TMMX 350*	TMHS 100	TMMS 50 TMMS 100* TMMS 160*
TMMA 75H	TMMX 210 TMMX 380* TMMX 350	TMHS 75 **	TMMS 50* TMMS 100*
TMMA 100H	TMMX 280 TMMX 350*	TMHS 100 **	TMMS 50 TMMS 100* TMMS 160*
TMMA 75H/SET	TMMX 280 **	TMHS 75 **	TMMS 50* TMMS 100*
TMMA 100H/SET	TMMX 350 **	TMHS 100 **	TMMS160 **
TMHC 110E	TMMX 210 TMMX 280* TMMX 350	TMHS 100 **	
TMHP 10E	TMMX 210 TMMX 280* TMMX 350	TMHS 100 **	TMMS 50* TMMS 100* TMMS 160
TMBS 50E	TMMX 210	–	–
TMBS 100E	TMMX 210* TMMX 280	TMHS 100 **	–
TMBS 150E	TMMX 280* TMMX 350	TMHS 100 **	–
TMHP 15/260	–	–	TMMS 160 TMMS 260
TMHP 30/170	–	–	TMMS 260* TMMS 380
TMHP 30/350	–	–	TMMS 260* TMMS 380
TMHP 30/600	–	–	TMMS 260* TMMS 380
TMHP 50/140	–	–	TMMS 260 TMMS 380*
TMHP 50/320	–	–	TMMS 260 TMMS 380*
TMHP 50/570	–	–	TMMS 260 TMMS 380*
TMHP 15/260X	–	–	TMMS 160 TMMS 260
TMHP 30/170X	–	–	TMMS 260* TMMS 380
TMHP 30/350X	–	–	TMMS 260* TMMS 380
TMHP 30/600X	–	–	TMMS 260* TMMS 380
TMHP 50/140X	–	–	TMMS 260 TMMS 380*
TMHP 50/320X	–	–	TMMS 260 TMMS 380*
TMHP 50/570X	–	–	TMMS 260 TMMS 380*
TMMD 100	TMMX 210*	–	–
TMBP 20E	TMMX 210 TMMX 280*	–	–

* recommended / ** accessory included with puller

TMHS 75

TMHS 100

Effortless withdrawal force generation

Advanced Hydraulic Spindles TMHS 75 and TMHS 100

The SKF TMHS 75 and TMHS 100 generate a high pulling force with very little effort compared to the standard mechanical spindles. They significantly reduce the time needed to dismount a bearing or other component.

- Integrated hydraulic cylinder, pump and spindle – no separate pump is required
- Safety valve helps prevent overloading the spindle and the puller in case excessive force is applied
- Long stroke helps enable dismounting in one operation
- Spring-loaded nosepiece centre point allows easy puller centring minimising shaft centre point damage
- Hand lever with ergonomic grip can be rotated 360°
- Extension pieces included

TMHS 75:

- Maximum withdrawal force of 75 kN *(8.4 US ton)*
- Stroke length of 75 mm *(30 in.)*
- Suitable for use with pullers with a 1 1/4-12 UN thread

TMHS 100:

- Maximum withdrawal force of 100 kN *(11.2 US ton)*
- Stroke length of 80 mm *(3.1 in.)*
- Suitable for use with pullers with a 1 1/2-16 UN thread

Technical data

Designation	TMHS 75	TMHS 100
Contents	1 × hydraulic spindle 2 × extension pieces; 50 and 100 mm *(2.0 and 3.9 in.)* 1 × nosepiece	1 × hydraulic spindle 3 × extension pieces; 50, 100 and 150 mm *(2.0, 3.9 and 5.9 in.)* 1 × nosepiece
Maximum withdrawal force	75 kN *(8.4 US ton)*	100 kN *(11.2 US ton)*
Piston stroke	75 mm *(3.0 in.)*	80 mm *(3.1 in.)*
Body thread	1 1/4-12 UN	1 1/2-16 UN
Nose piece diameter	35 mm *(1.4 in.)*	30 mm *(1.2 in.)*
Maximum reach	229 mm *(9.0 in.)*	390 mm *(15.4 in.)*
Weight	2,7 kg *(6.0 lb)*	4,5 kg *(10.0 lb)*

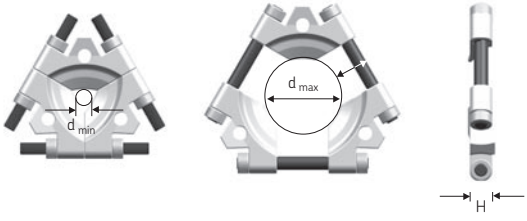
Efficient and correct dismounting

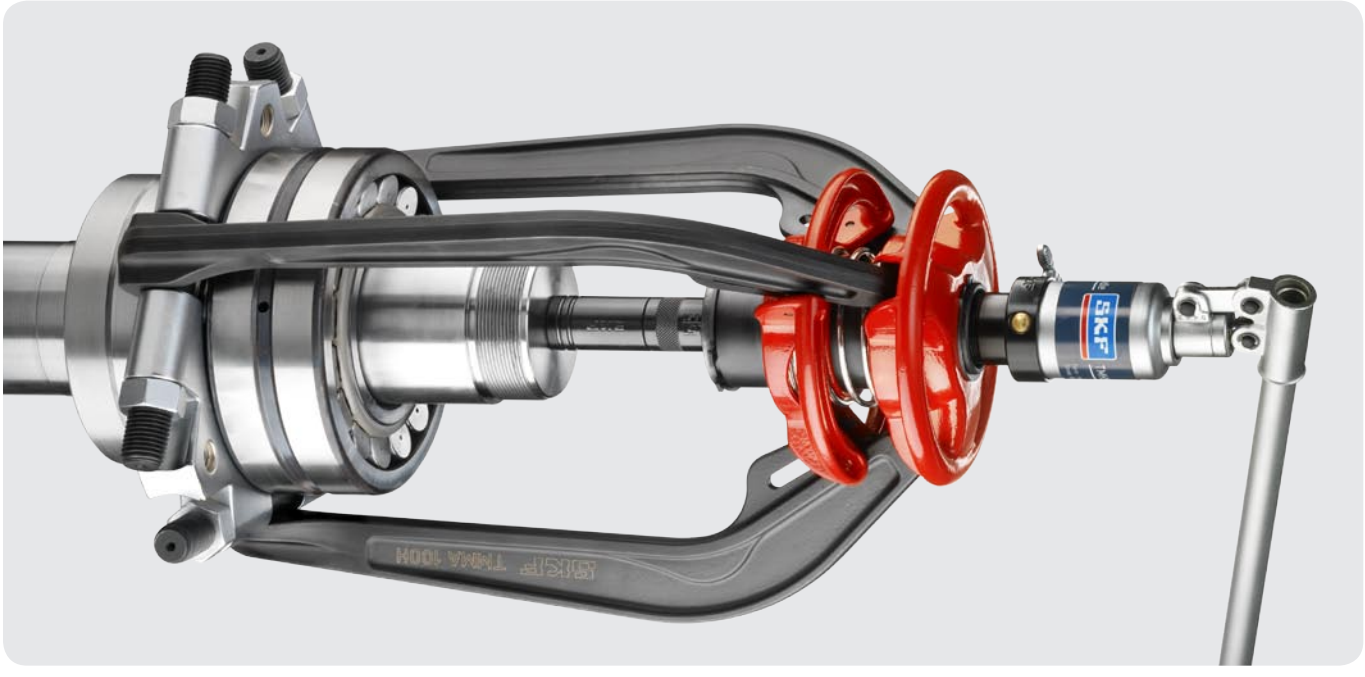
SKF Tri-section Pulling Plates TMMS series

- The SKF TMMS series consists of five different sizes of tri-section pulling plates suitable for shafts with diameters ranging from 50 to 380 mm *(2 to 15 in.)*
- Suitable for use in combination with three-armed pullers
- The plates grip behind the bearing inner ring, helping to ensure that the pulling forces are only transmitted through the inner ring and not through the outer ring or the rolling elements; thereby minimising the risk of bearing damage
- The tri-section construction allows an even dismounting force distribution, preventing bearing locking and/or tilting on the shaft, especially in the case of spherical roller and CARB toroidal roller bearings
- Special wedge shape design allows the plates to be easily inserted between the bearing and the shoulder on the shaft

Dimensions

Designation	d_{min}		d_{max}		A		H	
	mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*
TMMS 50	12	*0.5*	50	*2.0*	20–30	*0.8–1.2*	15	*0.6*
TMMS 100	26	*1.0*	100	*3.9*	30–55	*1.4–2.2*	25	*1.0*
TMMS 160	50	*2.0*	160	*6.3*	45–73	*1.8–2.9*	30	*1.2*
TMMS 260	90	*3.6*	260	*10.2*	70–114	*2.8–4.5*	42	*1.7*
TMMS 380	140	*5.5*	380	*15.0*	81–142	*3.2–5.6*	58	*2.3*





For additional user safety during dismounting

SKF Puller Protection Blankets TMMX series

- The SKF TMMX series are designed to offer additional user safety, while dismounting bearings or other components
- After the puller has been positioned, the blanket is simply wrapped around the puller and application
- The tough, transparent plastic allows the user to monitor the component and the puller during operation
- Especially designed to fit SKF TMMA series pullers, they are also suitable for use in combination with many other pullers

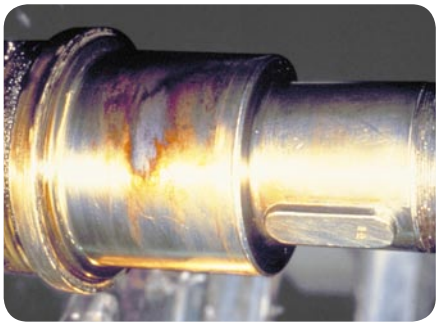
Dimensions

Designation	Recommended maximum diameter		Length		Width	
	mm	*in.*	mm	*in.*	mm	*in.*
TMMX 210	210	*8.3*	750	*29.5*	420	*16.5*
TMMX 280	280	*11.0*	970	*38.2*	480	*18.9*
TMMX 350	350	*13.8*	1 200	*47.2*	580	*22.8*

SKF Anti-fretting Agent LGAF 3E

SKF LGAF 3E is a greasy, smooth paste to prevent fretting corrosion caused by very slight oscillations or by vibrations, that can make dismounting much more difficult.

- Suitable for bearings and metal surfaces in loose fit arrangements, such as vibrating screens, truck and car wheel bearings
- Reduces fretting corrosion thereby enabling easier dismounting of bearings
- Assists with easier removal of general industrial components in a wide range of applications such as nuts, bolts, flanges, studs, bearings, guide pins, couplings, jack screws, lathe centres, push rods, and spline shafts



Technical data

Designation	LGAF 3E/0.5
Specific gravity	1,19
Colour	White–beige
Base oil type	Mineral and synthetic
Thickener	Lithium soap
Operating temperature range	–25 to +150 °C *(–13 to +302 °F)*
Base oil viscosity: 40 °C, mm²/s	17,5
Available pack sizes	0,5 kg can

SKF Anti Corrosive Agent LHRP 2

SKF LHRP 2 provides excellent long-term corrosion protection to ferrous and non-ferrous surfaces. When applied, it creates a stable rust protection film on the surface of the metal.

- Effective rust protection, even in high humidity environments
- The thixotropic, non dripping, nature creates a stable protective film
- The residual films can be easily cleaned by slight mechanical agitation or heat
- Does not adhere to most packaging papers
- Most bearings do not need to be cleaned before applying SKF grease*

* Note: Film needs to be removed before applying SKF LGET 2 grease.

Technical data

Designation	LHRP 2/5
Specific gravity	0,835
Colour	Hazy brown
Base oil type	Mineral
Flash point	>62 °C (>144 °F)
Pour point	<4 °C (<39 °F)
NSF approval	Not applicable
Available pack sizes	5 l can

Provides protection and excellent grip

SKF Special Working Gloves TMBA G11W

The SKF TMBA G11W gloves are designed for general-purpose industrial maintenance work. The palms are coated with non-flammable dots providing excellent grip.

- Tear resistant
- Flexible and comfortable
- Lint free
- Non allergenic
- Tested and certified according to EN 388 (mechanical risks)

Technical data

Designation	TMBA G11W
Size	9
Colour	White/blue
Pack size	1 pair

Heating tools

Mounting

It's a fact.

Incorrect mounting methods account for up to 16% of premature bearing failures

To reduce the risk of incorrect mounting, SKF helped pioneer the use of portable induction heaters for bearing mounting applications in the 1970's. Since that time, there have been many advances in technology and SKF has been at the forefront in developing safer, more efficient and user-friendly bearing induction heaters.

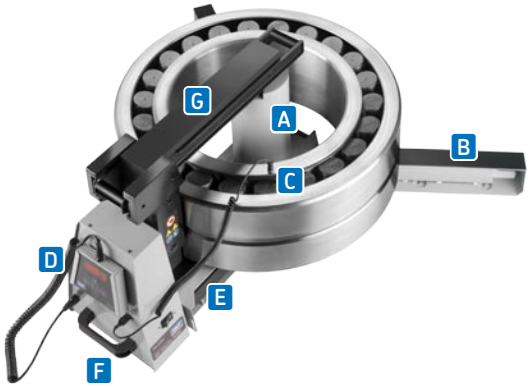
SKF induction heaters are probably the best performing heaters available. Their unique design typically consumes just 50% of the electrical power needed by most competitors' bearing induction heaters to heat a bearing.

As a result, by using an SKF induction heater, the total cost of ownership is often significantly lower. Ergonomics and safety are also an important consideration for operators. SKF induction heaters are equipped with design features that make them easy to use and safe. Bearing support arms reduce the risk of the bearing toppling during heating, and ergonomically designed yokes help reduce operator fatigue. In addition, the unique remote control enables the operator to control the heater at a safe distance from the hot bearing, enhancing operator safety.

Features and benefits

The comprehensive SKF induction header range can be used for efficiently heating bearings and workpieces, both large and small. Their innovative design offers significant advantages to both owners and operators:

- Advanced power electronics, with accurate electric current control, helps control the temperature rate increase
- Two step power setting option (50% / 100%), enables small bearings to be heated safely and at a lower power consumption
- For heating components other than bearings, all heaters are equipped with a heating time mode
- Thermal overheating protection reduces the risk of damage to the induction coil and the electronics, enhancing reliability and safety
- Automatic demagnetisation reduces the risk of ferrous debris contamination after heating
- Available in different voltage variants, to suit most operating voltages worldwide
- Supplied with heat-resistant gloves for improved operator safety
- Comprehensive 3 year warranty



A Induction coil located outside the heater's housing enables a shorter heating time and lower energy consumption
B Foldable bearing support arms allow larger diameter bearings to be heated, and reduce the risk of the bearing toppling during heating
C Magnetic temperature probe, combined with a temperature mode pre-set at 110 °C *(230 °F)*, helps prevent bearing overheating
D Unique SKF remote control, with operating display and control panel, makes the heater easy and safe to use
E Internal yoke storage, for smaller yoke(s), reduces the risk of yoke damage or loss
F Integrated carrying handles allow for easy movement of the heater in the workshop
G Sliding or swivel arm allows for easy and quick bearing replacement, reducing operator fatigue (not for TIH 030m)

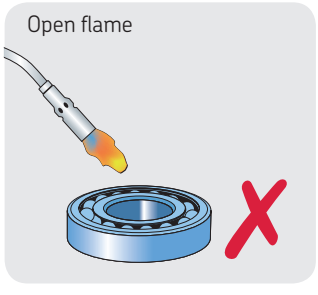
Induction heating has many advantages over other bearing heating methods

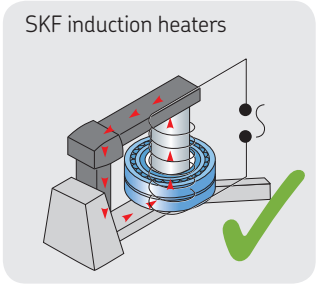
The use of an open flame to heat a bearing is not only inefficient and uncontrolled, but often leads to bearing damage. This method should not be used.

Oil baths are sometimes used to heat bearings. Oil baths often take a long time to reach the required temperature and can be difficult to control the actual bearing temperature. The energy consumption of an oil bath is also significantly greater than using an induction heater. The risk of contaminating the bearing due to dirty oil is significant and can lead to premature bearing failure. Handling hot, oily and slippery bearings present significant hazards to the operator and great care must be taken to avoid potential injuries.

Ovens and hot plates are often used for batch heating of small bearings and this is an acceptable technique. However, for larger bearings, the use of ovens and hotplates is generally quite inefficient and time consuming and can present the operator with significant handling hazards.

Induction heaters are the modern, efficient and safe way to heat bearings. In operation, they are generally faster, cleaner, more controllable, and easier to use than other heating methods.





Induction heaters

TMBH 1

Portable induction heater weighing only 4,5 kg

- Portable, lightweight, high efficiency heater for bearings with an inner diameter ranging from 20 to 100 mm *(0.8 to 4 in.)*, and a maximum weight of 5 kg *(11 lb)*
- Equipped with temperature and time control and automatic demagnetisation
- Supplied in a carrying case
- Wide operating voltage: 100–240 V/50–60 Hz

TIH 030m

Small induction heater with a 40 kg bearing heating capacity

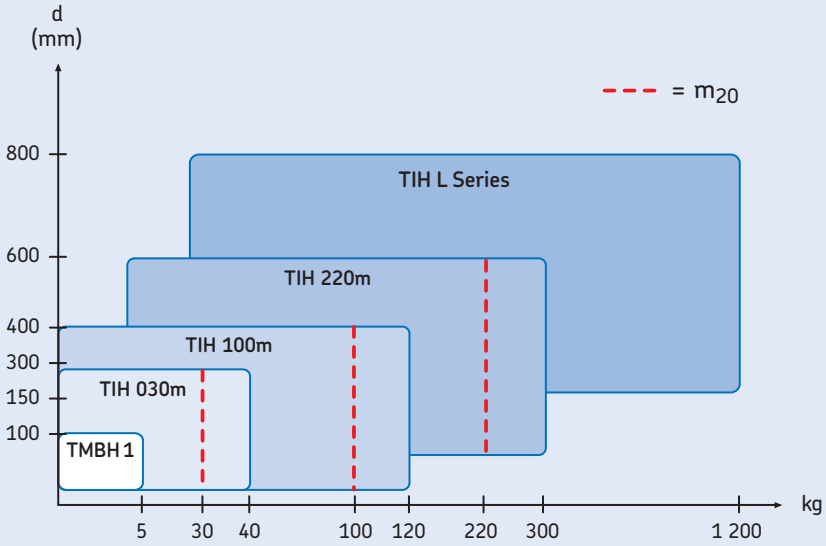
- Compact lightweight design; just 21 kg *(46 lb)*, facilitating portability
- Capable of heating a 28 kg *(62 lb)* bearing in just 20 minutes
- Supplied standard with three yokes, allowing bearings with a bore diameter from 20 mm *(0.8 in.)* up to a maximum weight of 40 kg *(90 lb)* to be heated
- Available in two versions: 230 V/50–60 Hz and 100–110 V/50–60 Hz

TIH 100m

Medium induction heater with a 120 kg bearing heating capacity

- Capable of heating a 97 kg *(215 lb)* bearing in less than 20 minutes
- Supplied standard with three yokes, allowing bearings with a bore diameter from 20 mm *(0.8 in.)* up to a maximum weight of 120 kg *(265 lb)* to be heated
- Swivel arm for large size yoke
- Available in two versions: 230 V/50–60 Hz and 400–460 V/50–60 Hz

SKF induction heater range



The comprehensive range of SKF induction heaters is suitable for most bearing heating applications. The chart gives general information on the application range.

The SKF m_{20} concept represents the weight (kg) of the heaviest SKF spherical roller bearing of series 231 which can be heated from 20 to 110 °C *(68 to 230 °F)* in 20 minutes. This defines the heater's power output instead of its power consumption. Unlike other bearing heaters, there is a clear indication on how long it takes to heat a bearing, rather than just the maximum bearing weight possible.

TIH 220m

Large induction heater with a 300 kg bearing heating capacity

- Capable of heating a 220 kg *(480 lb)* bearing in just 20 minutes
- Supplied standard with two yokes, allowing bearings with a bore diameter from 60 mm *(2.3 in.)* up to a maximum weight of 300 kg *(660 lb)* to be heated
- Sliding arm for large size yoke
- Available in two versions: 230 V/50–60 Hz and 400–460 V/50–60 Hz

TIH L series

Extra large induction heater with a 1 200 kg bearing heating capacity

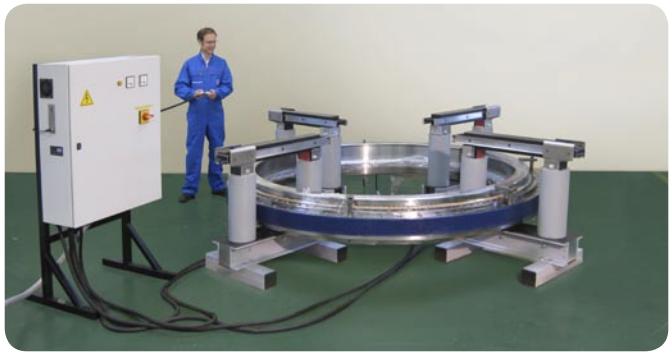
- Using just 20 KVA of electrical power, the TIH L series can heat large bearings up to 1 200 kg *(2 600 lb)*
- Bearings and work pieces can be heated vertically or horizontally
- Compact design allows the TIH L series heaters to be easily transported by forklift
- Available in two versions: 230 V/50–60 Hz and 400–460 V/50–60 Hz
- Available with two different operating areas

A unique and flexible heating solution for very large bearings and workpieces

Multi-core induction heaters, TIH MC series

The SKF multi-core induction heaters are energy efficient, custom-made heating solutions. Compared to other heating methods, they often can significantly save heating time. The TIH MC series are similar to the standard TIH range, with a few key differences and additional features:

- Flexible design, consisting of a number of induction heating cores and coils controlled by a single control and power cabinet
- Suitable for heating large thin section workpieces, such as slewing rings and railway wheel tyres
- Heating capacities of several tonnes are possible, depending on application
- Enables a more even temperature gradient across the whole circumference. This is especially important for components sensitive to uneven induction heating
- Unique design allows for custom-made solutions to be quickly and economically produced
- SKF can configure the type of TIH MC series heater required, depending on the application. For additional information, contact your SKF authorized distributor



Technical data





Designation	TMBH 1	TIH 030m	TIH 100m	TIH 220m	TIH L44 TIH L77
Max. workpiece weight	5 kg *(11 lb)*	40 kg *(88 lb)*	120 kg *(264 lb)*	300 kg *(662 lb)*	1 200 kg *(2 600 lb)*
Bore diameter range	20–100 mm *(0.8–4 in.)*	20–300 mm *(0.8–11.8 in.)*	20–400 mm *(0.8–15.7 in.)*	60–600 mm *(2.3–23.6 in.)*	100–800 mm *(3.9–31.5 in.)*
Operating area (w × h)	52 × 52 mm *(2 × 2 in.)*	100 × 135 mm *(3.9 × 5.3 in.)*	155 × 205 mm *(6.1 × 8 in.)*	250 × 255 mm *(9.8 × 10 in.)*	TIH L44: 425 × 492 mm *(16.7 × 19.4 in.)* TIH L77: 725 × 792 mm *(28.4 × 31.2 in.)*
Coil diameter	N/A	95 mm *(3.7 in.)*	110 mm *(4.3 in.)*	140 mm *(5.5 in.)*	175 mm *(6.8 in.)*
Standard yokes (included) to suit bearing/workpiece minimum bore diameter	20 mm *(0.8 in.)*	65 mm *(2,6 in.)* 40 mm *(1.6 in.)* 20 mm *(0.8 in.)*	80 mm *(3.1 in.)* 40 mm *(1.6 in.)* 20 mm *(0.8 in.)*	100 mm *(3.9 in.)* 60 mm *(2.3 in.)*	150 mm *(5.9 in.)*
SKF m_{20}* performance	N/A	28 kg *(61.7 lb)*	97 kg *(213 lb)*	220 kg *(480 lb)*	N/A
Max. power consumption	350 Watt	2,0 kVA	3,6 kVA (230 V) 4,0–4,6 kVA (400–460 V)	10,0–11,5 kVA (400–460 V)	20–24 kVA (200–240 V)
Voltage** 100–240 V/50–60 Hz 200–240 V/50–60 Hz 400–460 V/50–60 Hz	 TMBH 1 – –	 TIH 030m/110 V TIH 030m/230 V	 TIH 100m/230 V TIH 100m/MV	 – TIH 220m/LV TIH 220m/MV	 – TIH L../LV TIH L../MV
Temperature control	0 to 200 °C *(32 to 392 °F)*	20 to 250 °C *(68 to 482 °F)*	20 to 250 °C *(68 to 482 °F)*	20 to 250 °C *(68 to 482 °F)*	20 to 250 °C *(68 to 482 °F)*
Time control (minutes)	0–60	0–60	0–60	0–60	0–120
Demagnetisation according to SKF norms	N/A	<2 A/cm	<2 A/cm	<2 A/cm	<2A/cm
Max. temperature	200 °C *(392 °F)*	400 °C *(750 °F)*	400 °C *(750 °F)*	400 °C *(750 °F)*	400 °C *(750 °F)*
Dimensions (w × d × h)	330 × 150 × 150 mm *(13 × 5.9 × 5.9 in.)* Clamp: 115 × 115 × 31 mm *(4.5 × 4.5 × 1.2 in.)*	460 × 200 × 260 mm *(18.1 × 7.9 × 10.2 in.)*	570 × 230 × 350 mm *(22.4 × 9 × 13.7 in.)*	750 × 290 × 440 mm *(29.5 × 11.4 × 17.3 in.)*	TIH L44: 1 200 × 600 × 850 mm *(47.3 × 23.6 × 33.5 in.)* TIH L77: 1 320 × 600 × 1 150 mm *(52 × 23.6 × 45.3 in.)*
Total weight (incl. yokes)	4,5 kg *(10 lb)*	20,9 kg *(46 lb)*	42 kg *(92 lb)*	86 kg *(189 lb)*	TIH L44: 324 kg *(714 lb)* TIH L77: 415 kg *(915 lb)*

* SKF m_{20} performance represents the weight (kg) of the heaviest SKF spherical roller bearing of series 231, which can be heated from 20 to 110 °C *(68 to 230 °F)* in 20 minutes.
** Some special voltage versions are available for specific countries. For additional information, contact your SKF authorized distributor.

Thermostat controlled bearing heating

SKF Electric Hot Plate 729659 C

The SKF 729659 C is a heating device especially designed for pre-heating batches of small bearings prior to mounting.

The temperature of the plate can be adjusted to provide temperatures between 50 and 200 °C *(120 and 390 °F)*. The flat heating surface ensures even bearing heating and the cover helps retain heat and keep contaminants out.

Technical data

Designation	**729659 C** **729659 C/110V**
Voltage	729659 C 230 V (50/60 Hz) 729659 C/110 V 115 V (50/60 Hz)
Power	1 000 W
Temperature range	50–200 °C *(120–390 °F)*
Plate dimensions (l × w)	380 × 178 mm *(15 × 7 in.)*
Height of cover	50 mm *(2 in.)*
Overall dimensions (l × w × h)	390 × 240 × 140 mm *(15.4 × 9.5 × 5.5 in.)*
Weight	4,7 kg *(10 lb)*

Dismounting

SKF's range of heating equipment enables quick and safe dismounting of cylindrical roller bearing inner rings and covers a wide range of applications. Aluminium heating rings TMBR series are designed for dismounting inner rings of small and medium-size cylindrical roller bearings. Adjustable and fixed induction heaters EAZ series are suitable for frequent dismounting of various sizes of cylindrical roller bearing inner rings.

For regular dismounting of cylindrical roller bearings

SKF Aluminium Heating Rings TMBR series

The aluminium heating rings are designed for dismounting inner rings of cylindrical roller bearings.

They are available for all bearing sizes of the NU, NJ and NUP series. These series are bearings without flanges or with only one flange on the inner ring. The rings are available as standard for the following bearing sizes: 204 to 252, 304 to 340, 406 to 430.

- Simple and easy-to-use
- Avoids shaft and bearing inner ring damage

Technical data

Designation	**TMBR Bearing designation**; (e.g. TMBR NU216E)
Material	Aluminium
Maximum temperature	300 °C *(572 °F)*

For frequent dismounting of cylindrical roller bearings

SKF Adjustable Induction Heaters EAZ series

The SKF EAZ 80/130 and EAZ 130/170 are used for frequent dismounting of cylindrical bearing inner rings. Where inner rings are removed infrequently, aluminium heating rings, SKF TMBR series, are also available. For larger cylindrical inner rings normally found in steel mill applications, SKF can supply special EAZ induction heaters.

- Covers most cylindrical bearings 65 to 130 mm *(2.5 to 5.1 in.)* bore diameter
- Wide range of power supplies
- 1 year warranty
- Avoids shaft and bearing inner ring damage
- Fast and reliable bearing removal
- Up to n6 interference fit

Bearing selection chart (All E–types bearings included)

Designation	For bearings NJ-NUP					
EAZ 80/130	213–220	313–319	412–417	1014–1022	2213–2220	2313–2319
EAZ 130/170	222–228	321–324	419–422	1024–1030	2222–2228	2322–2324
	For bearings NU					
EAZ 80/130	213–221	313–320	412–418	1014–1022	2213–2220	2313–2320
EAZ 130/170	222–228	321–326	419–424	1024–1030	2222–2228	2322–2326

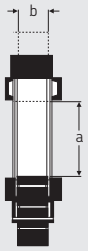
Ordering designations

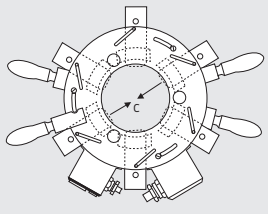
Designation	Power supply	Current
EAZ 80/130A	2 × 230 V/50 Hz	40 A
EAZ 80/130B	2 × 400 V/50 Hz	45 A
EAZ 80/130C	2 × 460 V/60 Hz	25 A
EAZ 80/130D	2 × 415 V/50 Hz	35 A
EAZ 130/170A	2 × 230 V/50 Hz	60 A
EAZ 130/170B	2 × 400 V/50 Hz	45 A

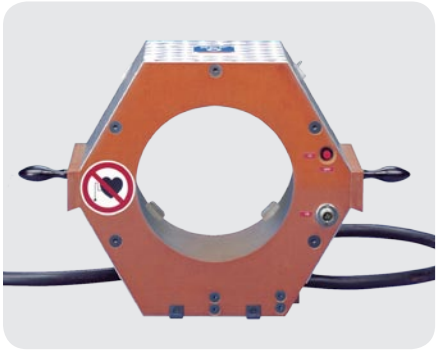
Designation	Power supply	Current
EAZ 130/170D	3 × 230 V/50 Hz	43 A
EAZ 130/170E	3 × 400 V/50 Hz	35 A
EAZ 130/170F	3 × 460 V/60 Hz	23 A
EAZ 130/170G	3 × 420 V/60 Hz	30 A
EAZ 130/170H	3 × 415 V/50 Hz	30 A

Dimensions

Designation		EAZ 80/130	EAZ 130/170
Connection cable		5 m *(16 ft)*	5 m *(16 ft)*
Dimensions	a	134 mm *(5.3 in.)*	180 mm *(7.1 in.)*
	b	50 mm *(2.0 in.)*	50 mm *(2.0 in.)*
	c	80 ... 132 mm *(3.1... 5.2 in.)*	130 ... 172 mm *(5.1 ... 6.8 in.)*
Weight		28 kg (62 lb)	35 kg (77 lb)







Quick roll changes with bearing removal in 3 minutes

SKF Fixed Induction Heaters EAZ series

In light section mills and wire rod mills, four-row cylindrical roller bearings are usually used to take up the roll separating forces. The inner rings of these bearings are mounted with an interference fit on the roll necks. Because of the rapid wear, heavy loads and severe contamination, the rolls must be frequently replaced. This inevitably involves dismounting the inner rings and remounting them onto new rolls.

Three minutes are enough

Using the SKF EAZ heaters, inner rings are heated evenly while the roll neck remains cold. The ring, together with the induction heater, can then be easily withdrawn from the neck. Even with relatively large rings, this complete operation takes not more than two to three minutes.

- Reduced time to remove bearings
- Increased production time
- Available in different voltage versions
- Bearings can be reused
- Control cabinet is to be ordered separately
- Custom made versions are available to suit particular bearings

SKF Fixed Induction Heaters EAZ series - Voltage classification

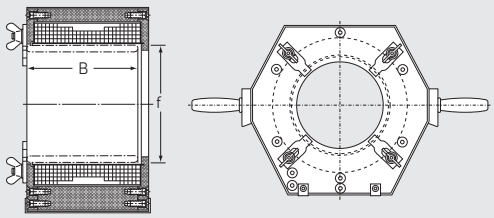
Each heater is available in three different voltage versions as follows:

LV	Low	190 to 230 V
MV	Medium	400 to 480 V
HV	High	500 to 575 V

Please add the corresponding class as a suffix to the designation when ordering (e.g. EAZ 166 HV).

Dimensions

Designation	B	f	Designation	B	f	Designation	B	f
	mm	mm		mm	mm		mm	mm
EAZ 166	166	155	EAZ 202	202	168	EAZ 265	265	180
EAZ 169	169	156	EAZ 212	212	200	EAZ 270	270	220
EAZ 174	174	156	EAZ 222-2	222	200	EAZ 292	292	220
EAZ 179	179	168	EAZ 226	226	192	EAZ 308	308	275
EAZ 180	180	130	EAZ 244	244	225	EAZ 312	312	220
EAZ 181	181	165	EAZ 246	246	192	EAZ 332	332	300
EAZ 190	190	130	EAZ 260	260	206	EAZ 378	378	350



Accessories

Get a safe grip on handling bearings

SKF Bearing Handling Tool TMMH series

The SKF Bearing Handling Tool will help avoid problems associated with handling medium and large size bearings, weighing up to 500 kg *(1 100 lb)*. When applied to a bearing, the resultant assembly can then be lifted and vertically positioned, safely, easily and quickly.

Technical data

Designation	TMMH 300/500	TMMH 500/700
Bearing outer diameter D	300–500 mm *(12–20 in.)*	500–700 mm *(20–28 in.)*
Max. lifting weight	500 kg *(1 100 lb)*	500 kg *(1 100 lb)*
Weight	6,3 kg *(14 lb)*	6,3 kg *(14 lb)*

Place the bearing handling tool around the bearing while it is still in a horizontal position.

- One tool suitable for many bearing types and sizes
- Tightly fits around the outer ring
- The two anti-rotation plates fix the inner ring and the rolling elements, preventing them from swivelling during lifting

Lift the combination of the bearing and bearing handling tool using a crane.

- The bearing can be lifted from its horizontal position, safely and easily
- The tightly secured bearing is prevented from falling, minimising injury to the operator or damage to itself
- Full surface contact during lifting prevents damage to the bearing, which can be caused by one-point grip or lifting hooks

Turn the combination to vertical position for placement on the shaft.

- Fixing the inner ring allows easy placement on the shaft and helps prevent damage to the ring or the rolling elements
- Easy and simple, one operator can complete the job

The bearing is placed on the shaft during mounting.

- The job is safely, easily and quickly done
- Time-savings compared to conventional handling methods can be more than 50%

Technical data

Designation	TMBA G11
Material	Hytex
Inner lining	Cotton
Size	9
Colour	White
Maximum temperature	150 °C *(302 °F)*
Pack size	1 pair

For safe handling of heated components up to 150 °C (302 °F)

SKF Heat Resistant Gloves TMBA G11

The SKF TMBA G11 are specially designed for the handling of heated bearings.

- Lint free
- Heat resistant up to 150 °C *(302 °F)*
- Cut resistant
- Tested and certified for mechanical risks (EN 388) and thermal risks (EN 407)

Technical data

Designation	TMBA G11ET
Material	Kevlar
Inner lining	Cotton
Size	10 (EN 420 size)
Colour	Yellow
Maximum temperature	500 °C *(932 °F)*
Pack size	1 pair

For safe handling of heated components up to 500 °C (932 °F)

SKF Extreme Temperature Gloves TMBA G11ET

The SKF TMBA G11ET are especially designed for the safe handling of heated bearings or other components for prolonged periods.

- Withstands extreme temperatures of up to 500 °C *(932 °F)* unless in the presence of hot liquid or steam
- Allows the safe handling of heated components
- High-degree of non-flammability reduces the risk of burning
- Extremely tough Kevlar gloves with high cut, abrasion, puncture and tear resistance for increased safety
- Lint free
- Tested and certified for mechanical risks (EN 388) and thermal risks (EN 407)

Technical data

Designation	TMBA G11H
Material	Kevlar
Inner lining	Nitrile
Size	10
Colour	Blue
Maximum temperature	250 °C *(482 °F)*
Pack size	1 pair

For safe handling of oily and heated components up to 250 °C (482 °F)

SKF Heat and Oil Resistant Gloves TMBA G11H

The SKF TMBA G11H are specially designed for the handling of hot and oily bearings.

- Offers a high degree of heat, cut, oil and water resistance
- Melt and burn resistant
- Maximum temperature: 250 °C *(482 °F)*
- Cut resistant
- Lint free
- Suitable for submerging in liquids with a temperature up to 120 °C *(248 °F)* (e.g. hot oil bath)
- Remains heat resistant when wet
- Tested and certified for mechanical risks (EN 388) and thermal risks (EN 407)

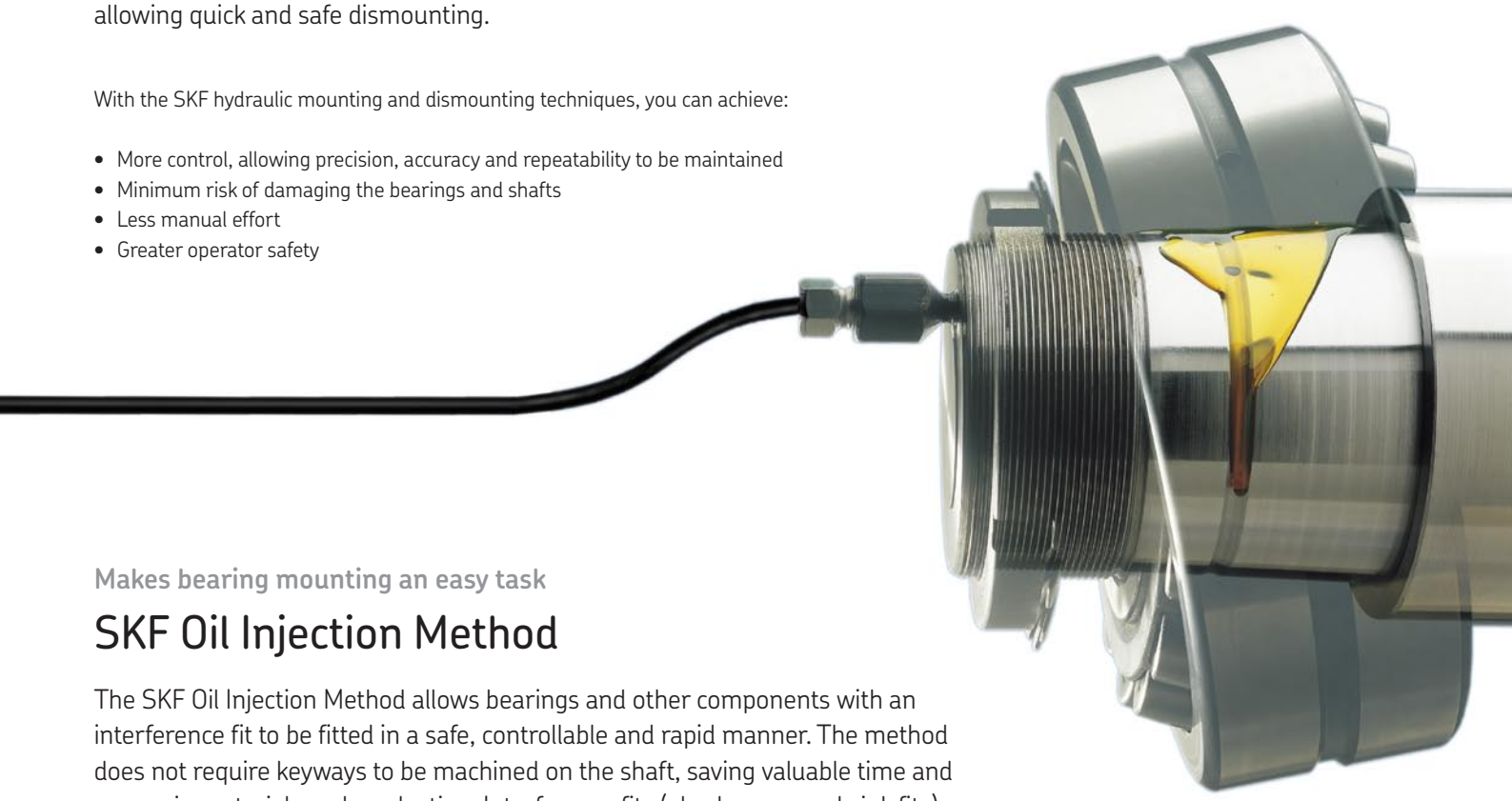
Mounting and dismounting bearings using hydraulic techniques

SKF invented hydraulic techniques for mounting bearings in the 1940s. Since then, the SKF hydraulic methods have been further developed to become the preferred mounting methods for larger bearings as well as other components.

These techniques have helped to simplify bearing arrangements and facilitate correct and easy mounting. Using SKF hydraulic techniques for bearing dismounting reduces the risk of damaging the bearing or its seating. Additionally, greater withdrawal forces can be applied with less effort and maximum control, allowing quick and safe dismounting.

With the SKF hydraulic mounting and dismounting techniques, you can achieve:

- More control, allowing precision, accuracy and repeatability to be maintained
- Minimum risk of damaging the bearings and shafts
- Less manual effort
- Greater operator safety



Makes bearing mounting an easy task

SKF Oil Injection Method

The SKF Oil Injection Method allows bearings and other components with an interference fit to be fitted in a safe, controllable and rapid manner. The method does not require keyways to be machined on the shaft, saving valuable time and money in materials and production. Interference fits (also known as shrink fits) have long been recognised for their reliability in transmitting large torsional loads. Very often, interference fits offer the only solution when connecting hubs to shafts with intermittent or fluctuating loads.

Easy, quick and effortless bearing dismounting

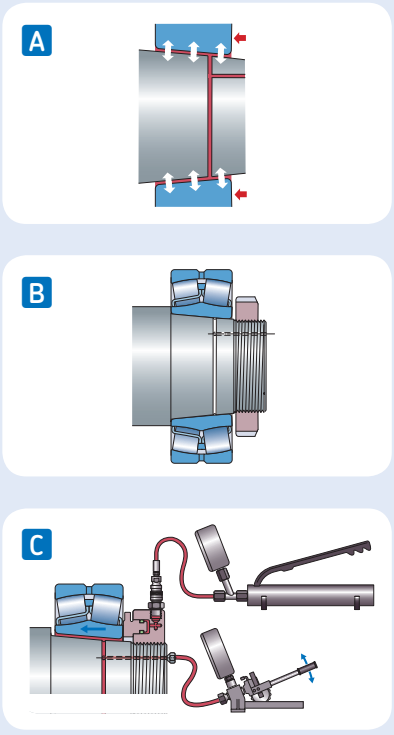
When using the SKF Oil Injection Method, the mating surfaces are separated by a thin film of oil injected under high pressure, thereby virtually eliminating the friction between them. The method is versatile as it can be used for dismounting bearings and other components mounted on either cylindrical or tapered seatings. When dismounting bearings mounted on cylindrical seatings, the injected oil can reduce the required pulling forces by up to 90%. Subsequently, the physical effort required when using a puller to remove the bearing from its seating is significantly reduced.

When using the SKF Oil Injection Method to dismount bearings mounted on tapered seatings, the interference fit is completely overcome by the injected oil. The bearing is then ejected from the seating with great force, making the use of a puller unnecessary. In this case, a stop-nut must be used to control the ejection of the bearing. The SKF Oil Injection Method, which is used for many bearing applications, can also be used in other applications, such as:

- Couplings
- Gear wheels
- Railway wheels
- Propellers
- Built-up crankshafts

Mounting

Tapered shafts



A The concept

Injecting oil between two tapered surfaces creates a thin oil film, which reduces the friction between them, thereby significantly reducing the mounting force required. The thin oil film also minimises the risk of metallic contact when mounting, reducing the risk of component damage.

B The preparation

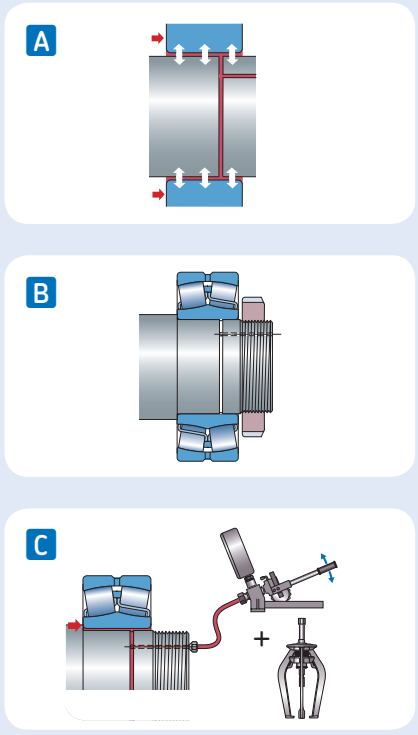
During manufacture, the shafts are prepared with oil ducts and grooves. For technical information on how to prepare the shafts, consult an SKF application engineer.

C The action

Bearings are mounted by pushing them up the shaft with the aid of an SKF HMV .. E nut. The force to mount the bearing is reduced if oil is injected between the shaft and the bearing. This is often done with larger size bearings.

Dismounting

Cylindrical shafts



A The concept

By injecting oil of a certain viscosity between two shrink fitted surfaces, the mating surfaces will become separated by a thin oil film. The dismounting force required is thus greatly reduced. The thin oil film also minimises the risk of metallic contact when dismounting, reducing the risk of component damage.

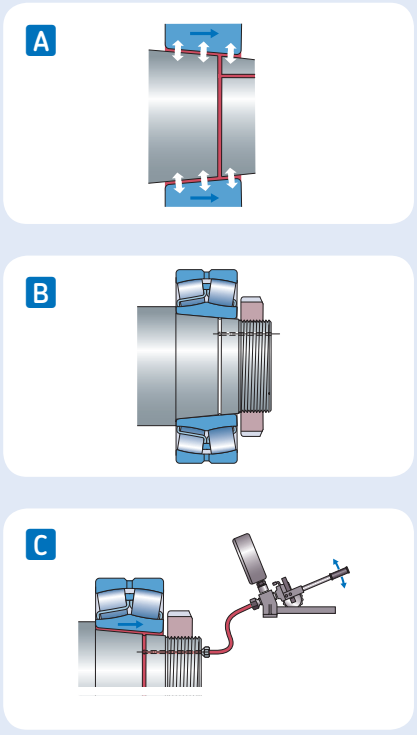
B The preparation

During manufacture, the shafts are prepared with oil ducts and grooves. For technical information on how to prepare the shafts, consult an SKF application engineer.

C The action

Dismounting the bearing is made easier by pumping oil under pressure between the mating surfaces. Once the oil pressure has built up, the component can be removed from the shaft with a minimum of effort.

Tapered shafts



A The concept

Injecting the oil between two tapered surfaces will create a reaction force which could be quite substantial as the oil will also act as a "hydraulic cylinder" which can push the outer component off.

B The preparation

During manufacture, the shafts are prepared with oil ducts and grooves. For technical information on how to prepare the shafts, consult an SKF application engineer.

C The action

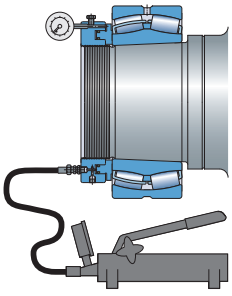
Bearings are dismounted by injecting oil between the mating surfaces and when sufficient pressure is reached, the bearing will be pushed off. A nut is required to keep the bearing from sliding off the shaft.

SKF Drive-up Method

Accurate axial drive-up of spherical roller and CARB toroidal roller bearings

The SKF Drive-up Method is a well-proven method, unique to SKF, of accurately achieving the adjustment of spherical roller and CARB toroidal roller bearings mounted on tapered seatings. The correct fit is achieved by controlling the axial drive-up of the bearing from a predetermined position. The method incorporates the use of an SKF HMV ..E hydraulic nut fitted with a dial indicator, and a high accuracy digital pressure gauge, mounted on the selected pump. Special hydraulic pressure tables have been developed, providing the required pressures, for each bearing type. This enables accurate positioning of the bearing at the starting point from where the axial drive-up is measured.

- Reduces the use of feeler gauges
- Greatly reduces the time to mount spherical roller and CARB toroidal roller bearings
- A reliable and accurate method of adjustment
- The only suitable way to mount sealed spherical roller and CARB bearings



The SKF Drive-up Method

Products for the SKF Drive-up Method

Designation	Description
HMV ..E (e.g. HMV 54E)	Metric thread hydraulic nut
HMVC ..E (e.g. HMVC 54E)	Inch thread hydraulic nut
HMV ..E/A101 (e.g. HMV 54E/A101)	Unthreaded hydraulic nut
729124 SRB (for nuts ≤ HMV 54E)	Pump with digital gauge (MPa/psi)
TMJL 100SRB (for nuts ≤ HMV 92E)	Pump with digital gauge (MPa/psi)
TMJL 50SRB (all sizes HMV ..E nuts)	Pump with digital gauge (MPa/psi)
TMJG 100D	Digital gauge only (MPa/psi)
TMCD 10R	Horizontal dial indicator (0–10 mm)
TMCD 5P	Vertical dial indicator (0–5 mm)
TMCD 1/2R	Horizontal dial indicator (0–0.5 in.)

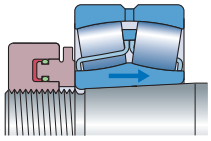
Technical data – Hydraulic pumps

Designation	729124 SRB	TMJL 100SRB	TMJL 50SRB
Max. pressure	100 MPa *(14 500 psi)*	100 MPa *(14 500 psi)*	50 MPa *(7 250 psi)*
Volume/stroke	0,5 cm³ *(0.03 in.³)*	1,0 cm³ *(0.06 in.³)*	3,5 cm³ *(0.21 in.³)*
Oil container capacity	250 cm³ *(15 in.³)*	800 cm³ *(48 in.³)*	2 700 cm³ *(165 in.³)*
Digital pressure gauge unit	MPa/psi	MPa/psi	MPa/psi

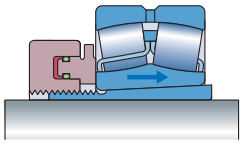
NOTE: All above pumps are supplied complete with digital pressure gauge, high pressure hose and quick connect coupling.

Step by step procedure

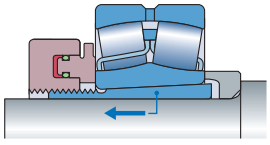
One sliding surface



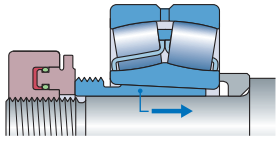
One sliding surface



Two sliding surfaces



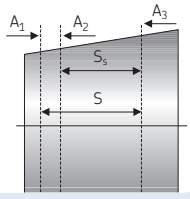
Two sliding surfaces



1. Determine whether one or two surfaces slide during mounting; see figures.
2. Lightly oil all mating surfaces with a thin oil, e.g. SKF LHMF 300, and carefully place the bearing on the shaft.
3. Drive the bearing up to the starting position by applying the required hydraulic nut pressure. Monitor the pressure using the gauge on the selected pump. SKF Hydraulic Pump 729124 SRB is suitable for SKF Hydraulic Nuts ≤ HMV 54E. SKF TMJL 100SRB is suitable for SKF Hydraulic Nuts ≤ HMV 92E while SKF TMJL 50SRB is suitable for nuts ≤ HMV 200E. As an alternative, the SKF Digital Pressure Gauge TMJG 100D can be screwed directly into the hydraulic nut.
4. Drive the bearing up the taper by the required distance S_s. The axial drive-up is best monitored by a dial indicator. The SKF Hydraulic Nut HMV ..E is prepared for dial indicators. Normally, the bearing is now mounted with a suitable interference on the shaft and a suitable residual clearance.

The required hydraulic nut pressure and axial drive-up value, for many operating conditions, can be found at skf.com/mount.

A_1 Zero position
A_2 Starting position
A_3 Final position



Patent protected

For use with previous generation of SKF HMV(C) hydraulic nuts

SKF Hydraulic Nut Drive-up Adapter HMVA 42/200

The SKF Drive-up Method is the preferred method for mounting SKF spherical roller and CARB toroidal roller bearings on tapered seatings. An adapter, used in conjunction with an SKF Dial Indicator, the adapter allows the previous generation of SKF HMV nuts to be used with the SKF Drive-up Method.

The adapter can be used with nuts from size SKF HMV(C) 42 to HMV(C) 200. The adapter is not required for the current generation of SKF HMV(C) ..E nuts.

- One adapter suits the previous generation nuts from SKF HMV(C) 42 up to 200
- Rugged construction
- Easy to attach to the SKF HMV nut using strong magnets
- Used in conjunction with SKF dial indicators

Hydraulic nuts

Easy application of high drive-up forces

Hydraulic Nuts HMV ..E series

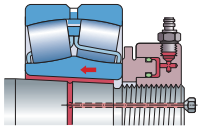
Mounting bearings on tapered seatings can be a difficult and time-consuming job. Using an SKF Hydraulic Nut facilitates easy and quick application of the high drive-up forces required for mounting bearings. Dismounting bearings mounted on either adapter or withdrawal sleeves is also often a difficult and time-consuming job. These problems can be reduced with the use of an SKF Hydraulic Nut. Oil is pumped into the nut and the piston is pushed out with a force, which is sufficient to free the sleeve. All SKF HMV ..E nuts are supplied with a quick connection coupling to fit the SKF hydraulic pumps.

- Wide size range, covering shaft diameters from 50 to 1 000 mm as standard
- Full range of inch threads available, series HMVC ..E from 1.967 up to 37.410 in.
- Quick connection coupling can be fitted on the face or side of the nut, allowing the nut to be used in areas where space is limited
- A spare set of piston seals and maintenance kit is supplied as standard
- To assist nut threading, a tube of lubricant is supplied with all nuts of size HMV(C) 54E and larger
- To facilitate easy nut threading, all nuts from size HMV(C) 54E are equipped with two tommy bars and four mating holes on their front face
- Nuts from size HMV(C) 94E are equipped with eyebolts, allowing easy handling
- Nuts from size HMV(C) 94E have the starting position of the thread indicated, facilitating easy matching of thread positions on both the nut and mating thread
- Special threads and sizes available on request

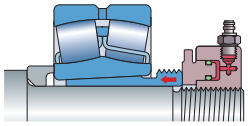
Technical data – HMV E series (metric)

Designation	HMV E
Thread form	
HMV 10E – HMV 40E	ISO 965/111-1980 tolerance class 6H
HMV 41E – HMV 200E	ISO 2901-1977 tolerance class 7H
Mounting fluid	LHMF 300
Recommended pumps	
HMV 10E – HMV 54E	729124/TMJL 100/728619 E/TMJL 50
HMV 56E – HMV 92E	TMJL 100/728619 E/TMJL 50
HMV 94E – HMV 200E	728619 E/TMJL 50
Quick connection nipple	729832 A (included)
Other types available	
Inch series nuts	HMVC E series
Nuts without threads	HMV...E/A101

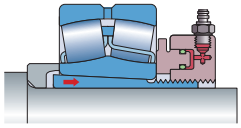
Mounting



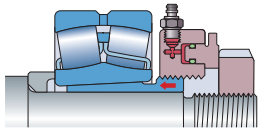
HMV ..E nut for driving the bearing onto a tapered seating.



HMV ..E nut screwed onto the shaft for driving in a withdrawal sleeve.

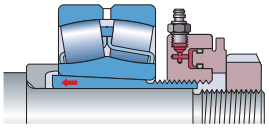


HMV ..E nut for driving the bearing onto an adapter sleeve.

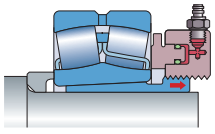


HMV ..E nut and special stop nut for driving in a withdrawal sleeve.

Dismounting



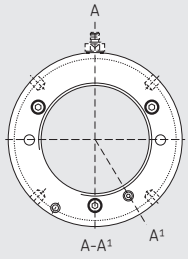
HMV ..E nut and stop ring in position to press an adapter sleeve free.

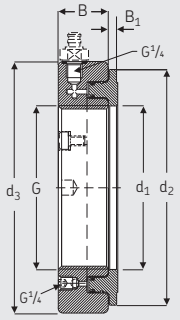


HMV ..E nut used to free a withdrawal sleeve.

Ordering details and dimensions – HMV E series (metric)

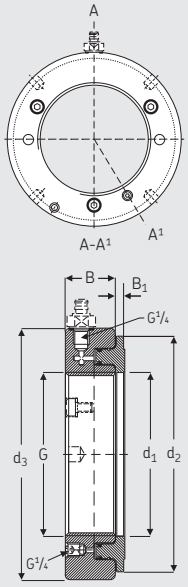
Designation	G thread	d_1 mm	d_2 mm	d_3 mm	B mm	B_1 mm	Permitted piston displacement mm	Piston area mm^2	Weight kg
HMV 10E	M50×1,5	50,5	104	114	38	4	5	2 900	2,70
HMV 11E	M55×2	55,5	109	120	38	4	5	3 150	2,75
HMV 12E	M60×2	60,5	115	125	38	5	5	3 300	2,80
HMV 13E	M65×2	65,5	121	130	38	5	5	3 600	3,00
HMV 14E	M70×2	70,5	127	135	38	5	5	3 800	3,20
HMV 15E	M75×2	75,5	132	140	38	5	5	4 000	3,40
HMV 16E	M80×2	80,5	137	146	38	5	5	4 200	3,70
HMV 17E	M85×2	85,5	142	150	38	5	5	4 400	3,75
HMV 18E	M90×2	90,5	147	156	38	5	5	4 700	4,00
HMV 19E	M95×2	95,5	153	162	38	5	5	4 900	4,30
HMV 20E	M100×2	100,5	158	166	38	6	5	5 100	4,40
HMV 21E	M105×2	105,5	163	172	38	6	5	5 300	4,65
HMV 22E	M110×2	110,5	169	178	38	6	5	5 600	4,95
HMV 23E	M115×2	115,5	174	182	38	6	5	5 800	5,00
HMV 24E	M120×2	120,5	179	188	38	6	5	6 000	5,25
HMV 25E	M125×2	125,5	184	192	38	6	5	6 200	5,35
HMV 26E	M130×2	130,5	190	198	38	6	5	6 400	5,65
HMV 27E	M135×2	135,5	195	204	38	6	5	6 600	5,90
HMV 28E	M140×2	140,5	200	208	38	7	5	6 800	6,00
HMV 29E	M145×2	145,5	206	214	39	7	5	7 300	6,50
HMV 30E	M150×2	150,5	211	220	39	7	5	7 500	6,60
HMV 31E	M155×3	155,5	218	226	39	7	5	8 100	6,95
HMV 32E	M160×3	160,5	224	232	40	7	6	8 600	7,60
HMV 33E	M165×3	165,5	229	238	40	7	6	8 900	7,90





Ordering details and dimensions – HMV E series (metric)

Designation	G thread	d_1 mm	d_2 mm	d_3 mm	B mm	B_1 mm	Permitted piston displacement mm	Piston area mm^2	Weight kg
HMV 34E	M170×3	170,5	235	244	41	7	6	9 400	8,40
HMV 36E	M180×3	180,5	247	256	41	7	6	10 300	9,15
HMV 38E	M190×3	191	259	270	42	8	7	11 500	10,5
HMV 40E	M200×3	201	271	282	43	8	8	12 500	11,5
HMV 41E	Tr205×4	207	276	288	43	8	8	12 800	12,0
HMV 42E	Tr210×4	212	282	294	44	8	9	13 400	12,5
HMV 43E	Tr215×4	217	287	300	44	8	9	13 700	13,0
HMV 44E	Tr220×4	222	293	306	44	8	9	14 400	13,5
HMV 45E	Tr225×4	227	300	312	45	8	9	15 200	14,5
HMV 46E	Tr230×4	232	305	318	45	8	9	15 500	14,5
HMV 47E	Tr235×4	237	311	326	46	8	10	16 200	16,0
HMV 48E	Tr240×4	242	316	330	46	9	10	16 500	16,0
HMV 50E	Tr250×4	252	329	342	46	9	10	17 600	17,5
HMV 52E	Tr260×4	262	341	356	47	9	11	18 800	19,0
HMV 54E	Tr270×4	272	352	368	48	9	12	19 800	20,5
HMV 56E	Tr280×4	282	363	380	49	9	12	21 100	22,0
HMV 58E	Tr290×4	292	375	390	49	9	13	22 400	22,5
HMV 60E	Tr300×4	302	386	404	51	10	14	23 600	25,5
HMV 62E	Tr310×5	312	397	416	52	10	14	24 900	27,0
HMV 64E	Tr320×5	322	409	428	53	10	14	26 300	29,5
HMV 66E	Tr330×5	332	419	438	53	10	14	27 000	30,0
HMV 68E	Tr340×5	342	430	450	54	10	14	28 400	31,5
HMV 69E	Tr345×5	347	436	456	54	10	14	29 400	32,5
HMV 70E	Tr350×5	352	442	464	56	10	14	29 900	35,0
HMV 72E	Tr360×5	362	455	472	56	10	15	31 300	35,5
HMV 73E	Tr365×5	367	460	482	57	11	15	31 700	38,5
HMV 74E	Tr370×5	372	466	486	57	11	16	32 800	39,0
HMV 76E	Tr380×5	382	476	498	58	11	16	33 500	40,5
HMV 77E	Tr385×5	387	483	504	58	11	16	34 700	41,0
HMV 80E	Tr400×5	402	499	522	60	11	17	36 700	45,5
HMV 82E	Tr410×5	412	510	534	61	11	17	38 300	48,0
HMV 84E	Tr420×5	422	522	546	61	11	17	40 000	50,0
HMV 86E	Tr430×5	432	532	556	62	11	17	40 800	52,5
HMV 88E	Tr440×5	442	543	566	62	12	17	42 500	54,0
HMV 90E	Tr450×5	452	554	580	64	12	17	44 100	57,5
HMV 92E	Tr460×5	462	565	590	64	12	17	45 100	60,0
HMV 94E	Tr470×5	472	576	602	65	12	18	46 900	62,0
HMV 96E	Tr480×5	482	587	612	65	12	19	48 600	63,0
HMV 98E	Tr490×5	492	597	624	66	12	19	49 500	66,0
HMV 100E	Tr500×5	502	609	636	67	12	19	51 500	70,0
HMV 102E	Tr510×6	512	624	648	68	12	20	53 300	74,0
HMV 104E	Tr520×6	522	634	658	68	13	20	54 300	75,0
HMV 106E	Tr530×6	532	645	670	69	13	21	56 200	79,0
HMV 108E	Tr540×6	542	657	682	69	13	21	58 200	81,0
HMV 110E	Tr550×6	552	667	693	70	13	21	59 200	84,0
HMV 112E	Tr560×6	562	678	704	71	13	22	61 200	88,0
HMV 114E	Tr570×6	572	689	716	72	13	23	63 200	91,0
HMV 116E	Tr580×6	582	699	726	72	13	23	64 200	94,0
HMV 120E	Tr600×6	602	721	748	73	13	23	67 300	100
HMV 126E	Tr630×6	632	754	782	74	14	23	72 900	110
HMV 130E	Tr650×6	652	775	804	75	14	23	76 200	115
HMV 134E	Tr670×6	672	796	826	76	14	24	79 500	120
HMV 138E	Tr690×6	692	819	848	77	14	25	84 200	127
HMV 142E	Tr710×7	712	840	870	78	15	25	87 700	135
HMV 150E	Tr750×7	752	883	912	79	15	25	95 200	146
HMV 160E	Tr800×7	802	936	965	80	16	25	103 900	161
HMV 170E	Tr850×7	852	990	1 020	83	16	26	114 600	181
HMV 180E	Tr900×7	902	1 043	1 075	86	17	30	124 100	205
HMV 190E	Tr950×8	952	1 097	1 126	86	17	30	135 700	218
HMV 200E	Tr1000×8	1 002	1 150	1 180	88	17	34	145 800	239

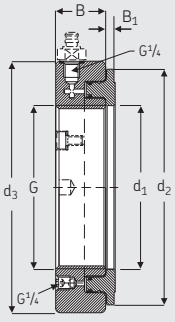


Technical data – HMVC E series (inch)

Designation	HMVC E
Thread form HMVC 10E – HMVC 64E HMVC 68E – HMVC 190E	 American National Form Threads Class 3 ACME General Purpose Threads Class 3 G
Mounting fluid	LHMF 300
Recommended pumps HMVC 10E – HMVC 52E HMVC 56E – HMVC 92E HMVC 94E – HMVC 190E	 729124 / TMJL 100 / 728619 E / TMJL 50 TMJL 100 / 728619 E / TMJL 50 728619 E / TMJL 50
Quick connection nipple	729832 A (included)
Other types available	
Inch series nuts	HMVC E series
Nuts without threads	HMV...E/A101

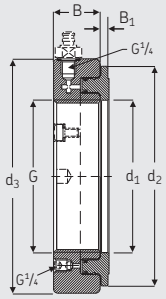
Ordering details and dimensions – HMVC E series (inch)

Designation	G	Pitch diameter	Threads	d_1	d_2	d_3	B	B_1	Permitted piston displacement	Piston area	Weight
	in.	in.	–	in.	in.	in.	in.	in.	in.	in.²	lb
HMVC 10E	1.967	1.9309	18	2.0	4.1	4.5	1.5	0.16	0.20	4.5	6.0
HMVC 11E	2.157	2.1209	18	2.2	4.3	4.7	1.5	0.16	0.20	4.9	6.1
HMVC 12E	2.360	2.3239	18	2.4	4.5	4.9	1.5	0.20	0.20	5.1	6.2
HMVC 13E	2.548	2.5119	18	2.6	4.8	5.1	1.5	0.20	0.20	5.6	6.6
HMVC 14E	2.751	2.7149	18	2.8	5.0	5.3	1.5	0.20	0.20	5.9	7.1
HMVC 15E	2.933	2.8789	12	3.0	5.2	5.5	1.5	0.20	0.20	6.2	7.5
HMVC 16E	3.137	3.0829	12	3.2	5.4	5.7	1.5	0.20	0.20	6.5	8.2
HMVC 17E	3.340	3.2859	12	3.4	5.6	5.9	1.5	0.20	0.20	6.8	8.3
HMVC 18E	3.527	3.4729	12	3.6	5.8	6.1	1.5	0.20	0.20	7.3	8.8
HMVC 19E	3.730	3.6759	12	3.8	6.0	6.4	1.5	0.20	0.20	7.6	9.5
HMVC 20E	3.918	3.8639	12	4.0	6.2	6.5	1.5	0.24	0.20	7.9	9.7
HMVC 21E	4.122	4.0679	12	4.2	6.4	6.8	1.5	0.24	0.20	8.2	10.3
HMVC 22E	4.325	4.2709	12	4.4	6.7	7.0	1.5	0.24	0.20	8.7	10.9
HMVC 24E	4.716	4.6619	12	4.7	7.0	7.4	1.5	0.24	0.20	9.3	11.6
HMVC 26E	5.106	5.0519	12	5.1	7.5	7.8	1.5	0.24	0.20	9.9	12.5
HMVC 28E	5.497	5.4429	12	5.5	7.9	8.2	1.5	0.28	0.20	10.5	13.2
HMVC 30E	5.888	5.8339	12	5.9	8.3	8.7	1.5	0.28	0.20	11.6	14.6
HMVC 32E	6.284	6.2028	8	6.3	8.8	9.1	1.6	0.28	0.24	13.3	16.8
HMVC 34E	6.659	6.5778	8	6.7	9.3	9.6	1.6	0.28	0.24	14.6	18.5
HMVC 36E	7.066	6.9848	8	7.1	9.7	10.1	1.6	0.28	0.24	16.0	20.2
HMVC 38E	7.472	7.3908	8	7.5	10.2	10.6	1.7	0.31	0.28	17.8	23.1
HMVC 40E	7.847	7.7658	8	7.9	10.7	11.1	1.7	0.31	0.31	19.4	25.4
HMVC 44E	8.628	8.5468	8	8.7	11.5	12.0	1.7	0.31	0.35	22.3	29.8
HMVC 46E	9.125	9.0440	8	9.1	12.0	12.5	1.8	0.31	0.35	24.0	31.9
HMVC 48E	9.442	9.3337	6	9.5	12.4	13.0	1.8	0.35	0.39	25.6	35.3
HMVC 52E	10.192	10.0837	6	10.3	13.4	14.0	1.9	0.35	0.43	29.1	41.9
HMVC 56E	11.004	10.8957	6	11.1	14.3	15.0	1.9	0.35	0.47	32.7	48.5
HMVC 60E	11.785	11.6767	6	11.9	15.2	15.9	2.0	0.39	0.55	36.6	56.2
HMVC 64E	12.562	12.4537	6	12.7	16.1	16.9	2.1	0.39	0.55	40.8	65.0
HMVC 68E	13.339	13.2190	5	13.5	16.9	17.7	2.1	0.39	0.55	44.0	69.4
HMVC 72E	14.170	14.0500	5	14.3	17.9	18.6	2.2	0.39	0.59	48.5	78.3
HMVC 76E	14.957	14.8370	5	15.0	18.7	19.6	2.3	0.43	0.63	51.9	89.3
HMVC 80E	15.745	15.6250	5	15.8	19.6	20.6	2.4	0.43	0.67	56.9	100
HMVC 84E	16.532	16.4120	5	16.6	20.6	21.5	2.4	0.43	0.67	62.0	110
HMVC 88E	17.319	17.1990	5	17.4	21.4	22.3	2.4	0.47	0.67	65.9	119
HMVC 92E	18.107	17.9870	5	18.2	22.2	23.3	2.5	0.47	0.67	69.9	132
HMVC 96E	18.894	18.7740	5	19.0	23.1	24.1	2.6	0.47	0.75	75.3	139
HMVC 100E	19.682	19.5620	5	19.8	24.0	25.0	2.6	0.47	0.75	79.8	154



Ordering details and dimensions – HMVC E series

Designation	G	Pitch diameter	Threads	d_1	d_2	d_3	B	B_1	Permitted piston displacement	Piston area	Weight
	in.	in.	–	in.	in.	in.	in.	in.	in.	in.²	lb
HMVC 106E	20.867	20.7220	4	20.9	25.4	26.4	2.7	0.51	0.83	87.1	174
HMVC 112E	22.048	21.9030	4	22.1	26.7	27.7	2.8	0.51	0.87	94.9	194
HMVC 120E	23.623	23.4780	4	23.7	28.4	29.4	2.9	0.51	0.91	104.3	220
HMVC 126E	24.804	24.6590	4	24.9	29.7	30.8	2.9	0.55	0.91	113.0	243
HMVC 134E	26.379	26.2340	4	26.5	31.3	32.5	3.0	0.55	0.94	123.2	265
HMVC 142E	27.961	27.7740	3	28.0	33.1	34.3	3.1	0.59	0.98	135.9	298
HMVC 150E	29.536	29.3490	3	29.6	34.8	35.9	3.1	0.59	0.98	147.6	322
HMVC 160E	31.504	31.3170	3	31.6	36.9	38.0	3.1	0.63	0.98	161.0	355
HMVC 170E	33.473	33.2860	3	33.5	39.0	40.2	3.3	0.63	1.02	177.6	399
HMVC 180E	35.441	35.2540	3	35.5	41.1	42.3	3.4	0.67	1.18	192.4	452
HMVC 190E	37.410	37.2230	3	37.5	43.2	44.3	3.4	0.67	1.18	210.3	481

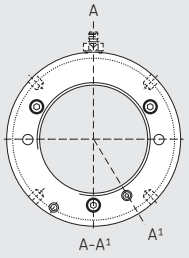


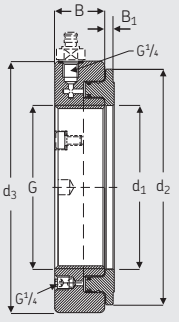
Technical data – HMV E/A101 series (unthreaded)

Designation	HMV E/A101
Mounting fluid	LHMF 300
Recommended pumps	
HMV 10E/A101 – HMV 52E/A101	729124 / TMJL 100 / 728619 E / TMJL 50
HMV 54E/A101 – HMV 92E/A101	TMJL 100 / 728619 E / TMJL 50
HMV 94E/A101 – HMV 200E/A101	728619 E/ TMJL 50
Quick connection nipple	729832 A (included)

Ordering details and dimensions – HMV E/A101 series (unthreaded)

Designation	Bore diameter G		Designation	Bore diameter G		Designation	Bore diameter G	
	mm	*in.*		mm	*in.*		mm	*in.*
HMV 10E/A101	46,7	*1.84*	HMV 41E/A101	200,2	*7.88*	HMV 86E/A101	424,7	*16.72*
HMV 11E/A101	51,1	*2.01*	HMV 42E/A101	205,2	*8.08*	HMV 88E/A101	434,7	*17.11*
HMV 12E/A101	56,1	*2.21*	HMV 43E/A101	210,2	*8.28*	HMV 90E/A101	444,7	*17.51*
HMV 13E/A101	61,1	*2.41*	HMV 44E/A101	215,2	*8.47*	HMV 92E/A101	454,7	*17.90*
HMV 14E/A101	66,1	*2.60*	HMV 45E/A101	220,2	*8.67*	HMV 94E/A101	464,7	*18.30*
HMV 15E/A101	71,1	*2.80*	HMV 46E/A101	225,2	*8.87*	HMV 96E/A101	474,7	*18.69*
HMV 16E/A101	76,1	*3.00*	HMV 47E/A101	230,2	*9.06*	HMV 98E/A101	484,7	*19.08*
HMV 17E/A101	81,1	*3.19*	HMV 48E/A101	235,2	*9.26*	HMV 100E/A101	494,7	*19.48*
HMV 18E/A101	86,1	*3.39*	HMV 50E/A101	245,2	*9.65*	HMV 102E/A101	503,7	*19.83*
HMV 19E/A101	91,1	*3.59*	HMV 52E/A101	255,2	*10.05*	HMV 104E/A101	513,7	*20.22*
HMV 20E/A101	96,1	*3.78*	HMV 54E/A101	265,2	*10.44*	HMV 106E/A101	523,7	*20.62*
HMV 21E/A101	101,1	*3.98*	HMV 56E/A101	275,2	*10.83*	HMV 108E/A101	533,7	*21.01*
HMV 22E/A101	106,1	*4.18*	HMV 58E/A101	285,2	*11.23*	HMV 110E/A101	543,7	*21.41*
HMV 23E/A101	111,1	*4.37*	HMV 60E/A101	295,2	*11.62*	HMV 112E/A101	553,7	*21.80*
HMV 24E/A101	116,1	*4.57*	HMV 62E/A101	304,7	*12.00*	HMV 114E/A101	563,7	*22.19*
HMV 25E/A101	121,1	*4.77*	HMV 64E/A101	314,7	*12.39*	HMV 116E/A101	573,7	*22.59*
HMV 26E/A101	126,1	*4.96*	HMV 66E/A101	324,7	*12.78*	HMV 120E/A101	593,7	*23.37*
HMV 27E/A101	131,1	*5.16*	HMV 68E/A101	334,7	*13.18*	HMV 126E/A101	623,7	*24.56*
HMV 28E/A101	136,1	*5.36*	HMV 69E/A101	339,7	*13.37*	HMV 130E/A101	643,7	*25.34*
HMV 29E/A101	141,1	*5.56*	HMV 70E/A101	344,7	*13.57*	HMV 134E/A101	663,7	*26.13*
HMV 30E/A101	146,1	*5.75*	HMV 72E/A101	354,7	*13.96*	HMV 138E/A101	683,7	*26.92*
HMV 31E/A101	149,8	*5.90*	HMV 73E/A101	359,7	*14.16*	HMV 142E/A101	702,7	*27.67*
HMV 32E/A101	154,8	*6.09*	HMV 74E/A101	364,7	*14.36*	HMV 150E/A101	742,7	*29.24*
HMV 33E/A101	159,8	*6.29*	HMV 76E/A101	374,7	*14.75*	HMV 160E/A101	792,7	*31.21*
HMV 34E/A101	164,8	*6.49*	HMV 77E/A101	379,7	*14.95*	HMV 170E/A101	842,7	*33.18*
HMV 36E/A101	174,8	*6.88*	HMV 80E/A101	394,7	*15.54*	HMV 180E/A101	892,7	*35.15*
HMV 38E/A101	184,8	*7.28*	HMV 82E/A101	404,7	*15.93*	HMV 190E/A101	941,7	*37.07*
HMV 40E/A101	194,8	*7.67*	HMV 84E/A101	414,7	*16.33*	HMV 200E/A101	991,7	*39.04*





Hydraulic pump and oil injector selection guide

Max. working pressure	Pump	Type	Oil container capacity	Connection nipple	Application examples
30 MPa *(4 350 psi)*	**THAP 030**	Air-driven pump	Separate container	G 3/4	SKF OK Coupling hydraulic chamber
50 MPa *(7 250 psi)*	**TMJL 50**	Hand operated pump	2 700 cm³ *(165 in.³)*	G 1/4	All HMV ..E (dismounting with sleeves only) SKF OK Coupling hydraulic chamber
100 MPa *(14 500 psi)*	**729124**	Hand operated pump	250 cm³ *(15 in.³)*	G 1/4	≤ HMV 54E (dismounting with sleeves only) Oil injection for small bearings
	TMJL 100	Hand operated pump	800 cm³ *(48 in.³)*	G 1/4	≤ HMV 92E (dismounting with sleeves only) Oil injection for medium bearings
150 MPa *(21 750 psi)*	**THAP 150**	Air-driven pump	Separate container	G 3/4	Bolt tensioners, propellers Oil injection for large bearing seatings
	728619 E	Hand operated pump	2 550 cm³ *(155 in.³)*	G 1/4	All HMV ..E nuts (dismounting with sleeves only) Oil injection for bearing seatings
300 MPa *(43 500 psi)*	**THAP 300E**	Air-driven oil injector	Separate container	G 3/4	OK Couplings Large pressure joints Oil injection for bearing seatings
	226400	Hand operated oil injector	200 cm³ *(12.2 in.³)*	G 3/4	OK Couplings Adapter / withdrawal sleeves Oil injection for bearing seatings Pressure joints
	729101 B	Oil injection kit	200 cm³ *(12.2 in.³)*	Several	OK Couplings Adapter / withdrawal sleeves Oil injection for bearing seatings Pressure joints Complete kit / set suitable for many applications
	TMJE 300	Oil injection set	200 cm³ *(12.2 in.³)*	Several	Adapter / withdrawal sleeves Oil injection for bearing seatings Pressure joints Complete kit / set suitable for many applications
	226270	Screw injector	5,5 cm³ *(0.33 in.³)*	G 3/8	Machine tool applications shaft diameter ≤100 mm
400 MPa *(58 000 psi)*	**THAP 400E**	Air-driven oil injector	Separate container	G 3/4	OK Couplings Large pressure joints Oil injection for bearing seatings
	226400/ 400 MPa	Hand operated oil injector	200 cm³ *(12.2 in.³)*	G 3/4	OK Couplings Adapter / withdrawal sleeves Oil injection for bearing seatings Pressure joints
	729101 E	Oil injection kit	200 cm³ *(12.2 in.³)*	G 1/4	COK Couplings Adapter / withdrawal sleeves Oil injection for bearing seatings Pressure joints Complete kit / set suitable for many applications
	TMJE 400	Oil injection set	200 cm³ *(12.2 in.³)*	G 1/4	Adapter / withdrawal sleeves Oil injection for bearing seatings Pressure joints Complete kit / set suitable for many applications

* The interference fit and application size may mean that a pump / injector with a higher pressure and/or container volume is required.

729124
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TMJL 100
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TMJL 50
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728619 E
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226400 series
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226270
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729101 series
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TMJE 300 and 400 series
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THAP series
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Hydraulic pumps

50 MPa *(7 250 psi)*

SKF Hydraulic Pump TMJL 50

The SKF TMJL 50 is mainly intended for larger SKF Hydraulic Nuts and SKF OK Coupling hydraulic chambers, but is also suitable for applications where a maximum pressure of 50 MPa *(7 250 psi)* is required.

- Large oil container capacity 2 700 cm³ *(165 in.³)*
- Over pressure valve and connection port for a pressure gauge
- Packed in a sturdy protective case

Applications

- SKF OK Coupling hydraulic chambers
- All sizes SKF Hydraulic Nuts
- All other oil injection applications where the maximum pressure is 50 MPa *(7 250 psi)*

100 MPa *(14 500 psi)*

SKF Hydraulic Pump 729124

The SKF 729124 is mainly intended for SKF Hydraulic Nuts (≤ HMV 54E) to mount bearings or components where a maximum pressure of 100 MPa *(14 500 psi)* is required.

- Oil container capacity 250 cm³ *(15 in.³)*
- Fitted with a pressure gauge
- Packed in a sturdy protective case

Applications

- SKF Hydraulic Nuts ≤ HMV 54E
- All other oil injection applications where the maximum pressure is 100 MPa *(14 500 psi)*
- For applications where space does not permit the use of a quick connect coupling and nipple, such as AOH sleeves, a special pump design is available (SKF 729124 A)

Technical data

Designation	TMJL 50	729124	TMJL 100	728619 E
Maximum pressure	50 MPa *(7 250 psi)*	100 MPa *(14 500 psi)*	100 MPa *(14 500 psi)*	150 MPa *(21 750 psi)*
Oil container capacity	2 700 cm³ *(165 in.³)*	250 cm³ *(15 in.³)*	800 cm³ *(48 in.³)*	2 550 cm³ *(155 in.³)*
Volume/stroke	3,5 cm³ *(0.21 in.³)*	0,5 cm³ *(0.03 in.³)*	1,0 cm³ *(0.06 in.³)*	1st stage: 20 cm³ below 2,5 MPa *(1.2 in.³ below 362 psi)* 2nd stage: 1 cm³ above 2,5 MPa *(0.06 in.³ above 362 psi)*
Length of pressure hose fitted with quick connection coupling	3 000 mm *(118 in.)*	1 500 mm *(59 in.)*	3 000 mm *(118 in.)*	3 000 mm *(118 in.)*
Connection nipple (included)	G¼ quick connection	G¼ quick connection	G¼ quick connection	G¼ quick connection
Weight	12 kg *(26 lb)*	3,5 kg *(8 lb)*	13 kg *(29 lb)*	11,4 kg *(25 lb)*

All SKF Hydraulic Pumps are filled with SKF Mounting Fluid and are supplied with an extra litre of fluid.

Large oil container 100 MPa *(14 500 psi)*

SKF Hydraulic Pump TMJL 100

The SKF TMJL 100 pump is mainly intended for use with hydraulic nuts (≤ HMV 92E) to mount bearings or components where a maximum pressure of 100 MPa *(14 500 psi)* is required.

- Oil container capacity 800 cm³ *(48 in.³)*
- Fitted with a pressure gauge
- Packed in a sturdy protective case

Applications

- SKF Hydraulic Nuts ≤ HMV 92E
- All other oil injection applications where the maximum pressure is 100 MPa *(14 500 psi)*
- Suitable with SKF Hydraulic Assisted Pullers TMHP series

150 MPa *(21 750 psi)*

SKF Hydraulic Pump 728619 E

The SKF 728619 E is a two-stage pump suitable for use with SKF Supergrip Bolts and to mount bearings or components where a maximum pressure of 150 MPa *(21 750 psi)* is required.

- Oil container capacity 2 550 cm³ *(155 in.³)*
- Two stage pressure pumping
- Fitted with a pressure gauge
- Packed in a sturdy protective case

Applications

- SKF Supergrip Bolts
- All other oil injection applications where the maximum pressure is 150 MPa *(21 750 psi)*
- All sizes SKF Hydraulic Nuts

SKF Mounting Fluid LHMF 300 and SKF Dismounting Fluid LHDF 900

SKF mounting and dismounting fluids are suitable for use with SKF hydraulic equipment, including hydraulic pumps, HMV ..E nuts and oil injection tools in mounting and dismounting jobs. All SKF Hydraulic Pumps are filled with SKF Mounting Fluid LHMF 300 and are supplied with an extra litre of fluid.

For more information, see page 69

Oil Injectors

300 MPa *(43 500 psi)*

SKF Screw Injector 226270

The SKF 226270 is mainly used within the machine tool industry for mounting bearings and components using the SKF Oil Injection Method.

SKF Valve nipple 226272 can be used to retain the oil pressure while the injector is refilled.

- Suitable for components with a shaft diameter up to 100 mm *(4 in.)*
- Oil container capacity 5,5 cm³ *(0.33 in.³)*

300 and 400 MPa *(43 500 and 58 000 psi)*

SKF Oil Injector 226400 series

The 226400 series are suitable for various uses when applying the SKF Oil Injection Method. The injector is supplied with an oil reservoir in a compact carrying case.

For applications where 400 MPa *(58 000 psi)* is required, a special model is available: SKF 226400/400 MPa. The injector can also be mounted directly onto the work piece or connected to an adapter block to make it a floor standing model, making it easy to connect pressure gauges and high-pressure pipes.

- Easy to operate
- Compact carrying case
- Oil container capacity 200 cm³ *(12.2 in.³)*
- Large range of accessories available, including:
  - Adapter block
  - Pressure gauges
  - High pressure pipes
  - Connecting nipples

Technical data

Designation	226270	226400 729101 B	226400/400MPa 729101 E	TMJE 300	TMJE 400
Maximum pressure	300 MPa *(43 500 psi)*	300 MPa *(43 500 psi)*	400 MPa *(58 000 psi)*	300 MPa *(43 500 psi)*	400 MPa *(58 000 psi)*
Handle force at maximum pressure	–	–	–	300 N *(67.5 lbf)*	400 N *(90 lbf)*
Volume /stroke	–	0,23 cm³ *(0.014 in.³)*	0,23 cm³ *(0.014 in.³)*	0,23 cm³ *(0.014 in.³)*	0,23 cm³ *(0.014 in.³)*
Oil container capacity	5,5 cm³ *(0.33 in.³)*	200 cm³ *(12.2 in.³)*	200 cm³ *(12.2 in.³)*	200 cm³ *(12.2 in.³)*	200 cm³ *(12.2 in.³)*
Connecting threads	G 3/8	G 3/4	G 3/4	–	–
Suitable shaft diameters	100 mm *(4 in.)*	–	–	–	–
Valve nipple (optional)	226272	–	–	–	–
Weight	0,8 kg *(1.8 lb)*	2,2 kg *(5 lb)*	2,2 kg *(5 lb)*	8 kg *(18 lb)*	8 kg *(18 lb)*

300 and 400 MPa *(43 500 and 58 000 psi)*

SKF Oil Injection Kits 729101 series

The oil injection kits contain the SKF Oil Injector 226400 complete with high pressure pipe, pressure gauge, adapter block and a range of connection nipples, all packed together in a sturdy plastic carrying case.

- Complete high-pressure kits, including oil injector, pressure gauge, 2,0 m high-pressure pipe and a range of connection nipples
- Oil container capacity 200 cm^3 *(12.2 $in.^3$)*

300 and 400 MPa *(43 500 and 58 000 psi)*

SKF Oil Injection Sets TMJE 300 and 400 series

The SKF TMJE 300 and 400 sets are used for mounting of pressure joints of all sizes and applications such as rolling bearings, couplings, gears, pulleys, flywheels and SKF OK couplings.

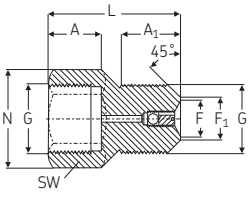
- Complete high-pressure set with integral pressure gauge, oil reservoir and 2,0 m high-pressure pipe and a range of connection nipples
- Can be dismounted and used directly on the application
- Oil container capacity 200 cm^3 *(12.2 $in.^3$)*

Contents list

Designation	729101 B	729101 E	TMJE 300	TMJE 400
Oil injector	226400	226400/400 MPa	TMJE 300-1	TMJE 400-1
Adapter block	226402	226402	–	–
Pressure gauge	1077589	1077589/2	1077589	1077589/2
High pressure pipe (G 3/4–1/4)	227957 A	227957 A/400 MPa	227957 A	227957 A/400 MPa
Connection nipple (G 1/4–1/8)	1014357 A	–	1014357 A	–
Connection nipple (G 1/4–1/2)	1016402E	1016402E	1016402E	1016402E
Connection nipple (G 1/4–3/4)	228027E	228027E	228027E	228027E
Plug	–	–	729944E	729944E
Mounting fluid	–	–	LHMF 300/1	LHMF 300/1
Carrying case	Yes	Yes	Yes	Yes

Valve nipple

Designation	Dimensions														Width across flats	
	G	A		A_1		F		F_1		L		N			
		mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*
226272	G 3/8	15	*0.59*	17	*0.67*	9	*0.35*	10	*0.39*	40	*1.57*	25,4	*1.00*	22	*0.87*
226273	G 3/4	20	*0.79*	22	*0.87*	14	*0.55*	15	*0.59*	50	*1.97*	36,9	*1.45*	32	*1.26*



Air-driven hydraulic pumps and injectors

30, 150, 300 and 400 MPa *(4 350, 21 750, 43 500 and 58 000 psi)*

SKF Air-driven Hydraulic Pumps and Oil Injectors, THAP series

The THAP pumps and injectors are available in four different pressure versions. They can be used for mounting OK Couplings, large pressure joints such as bearings, flywheels, couplings and railway wheels. The pumps consist of a high-pressure hydraulic pump or oil injectors driven by an air piston. The units are supplied in a sturdy case including oil suction and return hoses with quick connect couplings. The pumps can also be supplied in complete sets, which consists of pump, pressure gauge, adapter block, high-pressure pipe and connection nipples.

- Time savings compared to hand operated pumps
- Portable
- Continuous supply of oil
- Sturdy storage boxes
- Low, medium and high pressure units

Applications

- SKF OK Couplings
- Mounting bearings
- Mounting ship propellers, rudder pintles, railway wheels and other similar applications

THAP

THAP SET

Technical data

Designation	THAP 030		THAP 150		THAP 300E		THAP 400E	
Nominal hydraulic pressure	30 MPa	*(4 350 psi)*	150 MPa	*(21 750 psi)*	300 MPa	*(43 500 psi)*	400 MPa	*(58 000 psi)*
Maximum air pressure	0,7 MPa	*(101.5 psi)*	0,7 MPa	*(101.5 psi)*	0,7 MPa	*(101.5 psi)*	0,7 MPa	*(101.5 psi)*
Volume/ stroke	6,63 cm^3	*(0.40 $in.^3$)*	1,09 cm^3	*(0.06 $in.^3$)*	0,84 cm^3	*(0.05 $in.^3$)*	0,65 cm^3	*(0.039 $in.^3$)*
Oil outlet	G 3/4		G 3/4		G 3/4		G 3/4	
Length	380 mm	*(15 in.)*	330 mm	*(13.0 in.)*	405 mm	*(16 in.)*	405 mm	*(16 in.)*
Height	190 mm	*(7.5 in.)*	190 mm	*(7.5 in.)*	202 mm	*(8 in.)*	202 mm	*(8 in.)*
Width	120 mm	*(4.7 in.)*	120 mm	*(4.7 in.)*	171 mm	*(6.7 in.)*	171 mm	*(6.7 in.)*
Weight	21 kg	*(46.2 lb)*	19 kg	*(41.8 lb)*	24,5 kg	*(54 lb)*	13 kg	*(28.6 lb)*

Also available as complete set in carrying case

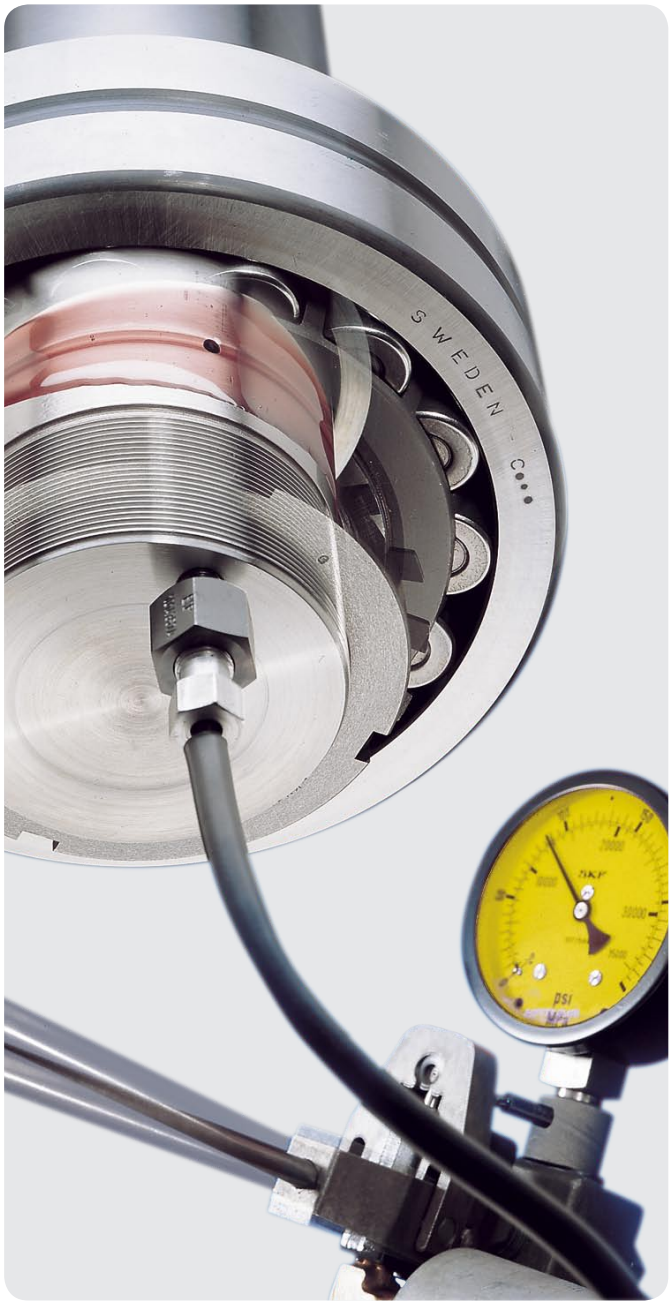
THAP 030/SET	Consisting of pump, high pressure hose and connecting nipples.
THAP 150/SET	Consisting of pump, pressure gauge, adapter block, high pressure hose and connecting nipples.
THAP 300E/SET	Consisting of oil injector, pressure gauge, high pressure pipe.
THAP 400E/SET	Consisting of oil injector, pressure gauge, high pressure pipe.

100 to 400 MPa *(14 500 to 58 000 psi)*

SKF Pressure Gauges

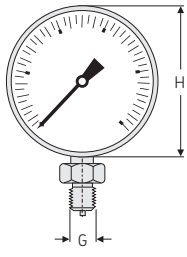
SKF Pressure Gauges are designed to fit SKF Hydraulic Pumps and SKF Oil Injectors. The gauges are all liquid filled and/or equipped with a restriction screw in order to absorb any sudden pressure drop thereby preventing damage. Safety glass and blowout discs are standard for all gauges and all have dual scales (MPa/psi).

- Covers pressures of 100 to 400 MPa *(14 500 to 58 000 psi)*
- Protection against sudden pressure drops
- Safety glass and blow out discs on all gauges
- Stainless steel case
- Dual scales MPa/psi
- Easy to read, high visibility yellow gauge faces



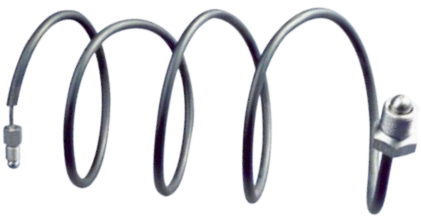
Technical data

Designation	Pressure range		Diameter (H)		Connection thread	Weight		Accuracy
	MPa	*psi*	mm	*in.*		kg	*lb*	% of full scale
1077587	0–100	*0–14 500*	100	*3.94*	G1/2	0,80	*1.8*	1
1077587/2	0–100	*0–14 500*	63	*2.48*	G1/4	0,25	*0.6*	1,6
TMJG 100D*	0–100	*0–15 000*	76	*3.00*	G1/4	0,21	*0.5*	<0,2
1077589	0–300	*0–43 500*	100	*3.94*	G1/2	0,80	*1.8*	1
1077589/2	0–400	*0–58 000*	100	*3.94*	G1/2	0,80	*1.8*	1



* Digital pressure gauge

Accessories



Maximum working pressure 300 MPa *(43 500 psi)*

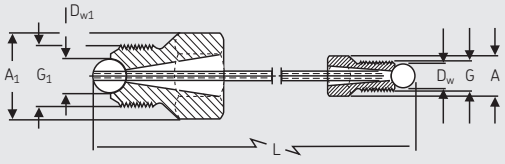
SKF High-pressure Pipes

The range of SKF High-pressure Pipes covers most applications where there is a requirement to transfer oil at high pressure. They consist of a steel pipe with a steel ball fitted to both ends. Two swivelling connection nipples press these balls against the seating of the connecting hole and seal against oil leakage.

- Wide range of pipes
- All pipes are pressure tested to 100 MPa *(14 500 psi)* over recommended working pressure
- Special lengths up to 4 000 mm *(157 in.)* and variants can be made on request

Technical data

Maximum working pressure	300 MPa *(43 500 psi)*
Test pressure	400 MPa *(58 000 psi)*
Test quantity	100%
Outer pipe diameter	4 mm *(0.16 in.)*
Inner pipe diameter	2 mm *(0.08 in.)*
Pipe lengths	Between 300 mm *(12 in.)* and 4 000 mm *(157 in.)* can be ordered e.g. 227957A/3000 3000 mm long)



Designation	Dimensions												Weight	
	G_1	G	A		A_1		D_w		D_{w1}		L			
			mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*	kg	*lb*
721740 A	G 3/4	G 1/8	11,5	*0.45*	36,9	*1.45*	7,94	*0.31*	15,88	*0.63*	1 000	*39*	0,3	*0.7*
227957 A*	G 3/4	G 1/4	17,3	*0.68*	36,9	*1.45*	11,11	*0.44*	15,88	*0.63*	2 000	*78*	0,4	*0.9*
227958 A*	G 3/4	G 3/4	36,9	*1.45*	36,9	*1.45*	15,88	*0.63*	15,88	*0.63*	2 000	*78*	0,6	*1.3*
1020612 A**	G 1/4	G 1/4	17,3	*0.68*	17,3	*0.68*	11,11	*0.44*	11,11	*0.44*	1 000	*39*	0,5	*1.1*
728017 A	G 1/4	G 1/4	17,3	*0.68*	17,3	*0.68*	11,11	*0.44*	7,94	*0.31*	300	*12*	0,2	*0.4*
727213 A***	G 1/4	G 1/4	17,3	*0.68*	17,3	*0.68*	7,94	*0.31*	7,94	*0.31*	300	*12*	0,2	*0.4*
729123 A	G 3/4	G 1/4	17,3	*0.68*	36,9	*1.45*	7,94	*0.31*	15,88	*0.63*	300	*12*	0,3	*0.7*

* These pipes are also available in a 400 MPa execution. Designations are 227957 A/400MP and 227958 A/400MP. Outer diameter of the pipe is 6 mm *(0.24 in.)*
** Maximum working pressure 400 MPa *(58 000 psi)*. Test pressure 500 MPa *(72 500 psi)* Outer diameter of the pipe 6 mm *(0.24 in.)*.
*** The high pressure pipe 727213 A is designed to fit small OK–couplings. This pipe is not suitable for normal oil injection connection holes.

Safety note:

For safety reasons, these high-pressure pipes have a maximum recommended service life. All SKF high pressure pipes are hard-marked with the year in which their recommended service life expires; e.g. RECOMMENDED SERVICE LIFE EXPIRES 2015.

All flexible pressure hoses are subject to ageing and, after a number of years, the performance deteriorates. All SKF flexible pressure hoses are hard marked with the year in which their life expires, e.g. LIFE EXPIRES 2015.

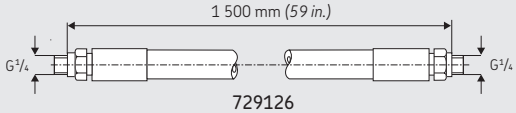
Maximum working pressure up to 150 MPa *(21 750 psi)*

SKF Flexible High-pressure Hoses

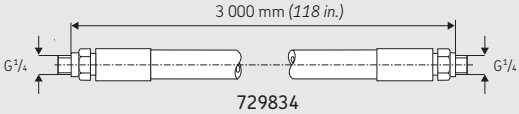
The SKF flexible pressure hoses are designed to be used together with the quick connect coupling SKF 729831 A and nipple SKF 729832 A on the range of SKF Hydraulic Pumps.

Technical data

Designation	Bore diameter		Outside diameter		Maximum working pressure		Minimum burst pressure		Minimum bending radius		End fittings	Working temperature		Length		Weight	
	mm	*in.*	mm	*in.*	MPa	*psi*	MPa	*psi*	mm	*in.*		°C	*°F*	mm	*in.*	kg	*lb*
729126	4,0	*0.16*	10	*0.39*	100	*14 500*	300	*43 500*	65	*2.6*	G¼	–30/80	*–22/176*	1 500	*59*	0,4	*0.9*
729834	5,0	*0.20*	11	*0.43*	150	*21 750*	450	*65 250*	150	*5.9*	G¼	–30/80	*–22/176*	3 000	*118*	0,9	*2.0*



729126



729834

For accurate bearing clearance measurement

SKF Feeler Gauges 729865 series

As an alternative to the SKF Drive-up method SKF Feeler Gauges can be used to measure the internal clearance when adjusting spherical roller bearings. Two types are available, one with 13 blades of 100 mm *(4 in.)* length and the other with 29 blades of 200 mm *(8 in.)* length.

- Highly accurate measurement
- 729865 A is supplied with protective plastic cover
- 729865 B is supplied with protective steel cage

Technical data

Designation	Blade length		Blade thickness					
	mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*
729865 A	100	*4.0*	0,03 0,04 0,05 0,06 0,07	*0.0012* *0.0016* *0.0020* *0.0024* *0.0028*	0,08 0,09 0,10 0,12	*0.0031* *0.0035* *0.0039* *0.0047*	0,14 0,15 0,20 0,30	*0.0055* *0.0059* *0.0079* *0.0118*
729865 B	200	*8.0*	0,05 0,09 0,10 0,11 0,12 0,13 0,14 0,15 0,16 0,17	*0.0020* *0.0035* *0.0039* *0.0043* *0.0047* *0.0051* *0.0055* *0.0059* *0.0063* *0.0067*	0,18 0,19 0,20 0,25 0,30 0,35 0,40 0,45 0,50 0,55	*0.0071* *0.0075* *0.0079* *0.0098* *0.0118* *0.0138* *0.0157* *0.0177* *0.0197* *0.0216*	0,60 0,65 0,70 0,75 0,80 0,85 0,90 0,95 1,00	*0.0236* *0.0256* *0.0276* *0.0295* *0.0315* *0.0335* *0.0354* *0.0374* *0.0394*

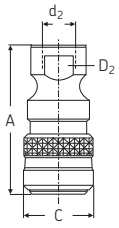
For easy pressure hose connection

SKF Quick Connecting Coupling and Nipples

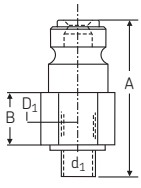
One coupling and two different nipples are available to connect SKF Hydraulic Pumps to the work piece. When nipples with other thread types are required, select an additional SKF nipple from the range to make the connection. SKF Nipple 729832 A is supplied standard with all SKF Hydraulic Nuts HMV ..E series.

Technical data

Designation	Thread	Dimensions						Maximum pressure	
	d_2	D_2		C		A			
Coupling		mm	*in.*	mm	*in.*	mm	*in.*	MPa	*psi*
729831 A	G¼	24	*0.94*	27	*1.06*	58	*2.28*	150	*21 750*
	d_1	D_1		B		A			
Nipples		mm	*in.*	mm	*in.*	mm	*in.*	MPa	*psi*
729832 A	G¼	22	*0.87*	14	*0.55*	46	*1.81*	150	*21 750*
729100	G⅛	17	*0.67*	14	*0.55*	43	*1.69*	100	*14 500*



729831 A



729832 A
729100

Up to 400 MPa *(58 000 psi)*

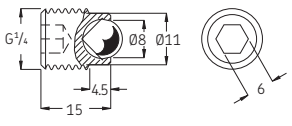
Plugs for oil ducts and vent holes

SKF plugs have been designed to seal off oil connections at a maximum pressure of 400 MPa *(58 000 psi)*.

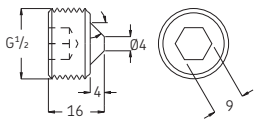
Technical data

Designation	Thread	Length	
		mm	*in.*
233950 E	G¼	15	*0.59*
729944 E	G½	17	*0.67*
1030816 E	G¾	23	*0.90*

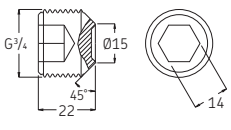
Maximum working pressure 400 MPa *(58 000 psi)*



Plug 233950 E



Plug 729944 E

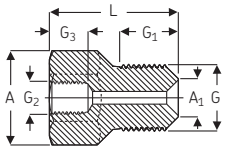


Plug 1030816 E

SKF Connection Nipples

SKF provides a wide range of connection nipples covering many different thread combinations and sizes. They are used as adapters to enable pipes and hoses to be connected to different thread sizes.

Technical data – Nipples with metric and G pipe threads



Designation	G	G_2	Max. working pressure		Dimensions A		A_1		G_1		G_3		L		Width across flats
			Mpa	*Psi*	mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*	mm
1077456	M8	M6	300	*43 500*	11	*0.43*	5	*0.20*	15	*0.59*	9	*0.35*	33	*1.30*	10
1077455	G1/8	M6	300	*43 500*	11	*0.43*	7	*0.28*	15	*0.59*	9	*0.35*	33	*1.30*	10
1014357 A	G1/8	G1/4	300	*43 500*	25,4	*1.00*	7	*0.28*	15	*0.59*	15	*0.59*	43	*1.69*	22
1009030 B	G1/8	G3/8	300	*43 500*	25,4	*1.00*	7	*0.28*	15	*0.59*	15	*0.59*	42	*1.65*	22
1019950	G1/8	G1/2	300	*43 500*	36,9	*1.45*	7	*0.28*	15	*0.59*	14	*0.55*	50	*1.97*	32
1018219 E	G1/4	G3/8	400	*58 000*	25,4	*1.00*	9,5	*0.37*	17	*0.67*	15	*0.59*	45	*1.77*	22
1009030 E	G1/4	G3/4	400	*58 000*	36,9	*1.45*	9,5	*0.37*	17	*0.67*	20	*0.79*	54	*2.13*	32
1012783 E	G3/8	G1/4	400	*58 000*	25,4	*1.00*	10	*0.39*	17	*0.67*	15	*0.59*	43	*1.96*	22
1008593 E	G3/8	G3/4	400	*58 000*	36,9	*1.45*	10	*0.39*	17	*0.67*	20	*0.79*	53	*2.09*	32
1016402 E	G1/2	G1/4	400	*58 000*	25,4	*1.00*	14	*0.55*	20	*0.79*	15	*0.59*	43	*1.96*	22
729146	G1/2	G3/4	300	*43 500*	36,9	*1.45*	–	–	17	*0.67*	20	*0.79*	50	*1.97*	32
228027 E	G3/4	G1/4	400	*58 000*	36,9	*1.45*	15	*0.59*	22	*0.87*	15	*0.59*	50	*1.97*	32

Technical data – Nipples with NPT tapered threads

Designation	G	G_2	Max. working pressure		Dimensions A		G_1		G_3		L		Width across flats
			Mpa	*Psi*	mm	*in.*	mm	*in.*	mm	*in.*	mm	*in.*	mm
729654	NPT1/4"	G1/4	300	*43 500*	25,4	*1.00*	15	*0.59*	15	*0.59*	42	*1.65*	22
729655	NPT3/8"	G1/4	300	*43 500*	25,4	*1.00*	15	*0.59*	15	*0.59*	40	*1.57*	22
729106	G1/4	NPT3/8"	300	*43 500*	36,9	*1.45*	17	*0.67*	15	*0.59*	50	*1.97*	32
729656	NPT3/4"	G1/4	300	*43 500*	36,9	*1.45*	20	*0.79*	15	*0.59*	45	*1.77*	32

Maximum working pressure 300 MPa (*43 500 psi*)

Catering for difficult connection applications

SKF Extension Pipes with Connecting Nipples

M4 extension pipe with connection nipple

Used to extend a high-pressure pipe with a G1/4 nipple (e.g. SKF 227957 A) when the connection hole has an M4 thread. The extension pipe and connection nipple should be ordered as separate items.

M6 extension pipe with connection nipple

Used to extend a high-pressure pipe with a G1/4 nipple (e.g. SKF 227957 A) when the connection hole has a M6 thread. The extension pipe and connection nipple should be ordered as separate items.

Valve nipple with extension pipe

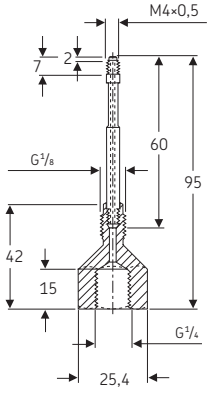
This combination is intended to be used between an oil pressure joint and an oil injector (SKF 226271) when a thin wall thickness of the pressure joint prevents the connection of the injector directly to the joint. The valve nipple is used to retain the pressurized oil while the injector is refilled. The extension pipe and connection nipple should be ordered as separate items.

Extension pipe

This unit is used for connection to components with a thin wall thickness, such as sleeves with oil injection preparations. It is normally used in combination with high-pressure pipes such as SKF 227957 A.

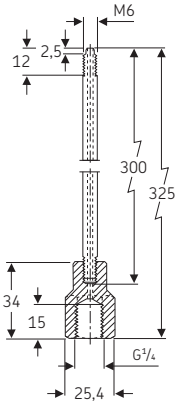
Technical data

M4 extension pipe with connection nipple



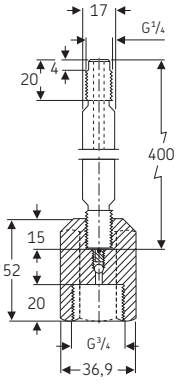
Designation	Max. pressure
pipe 234064	50 MPa *(7 250 psi)*
nipple 234063	50 MPa *(7 250 psi)*

M6 extension pipe with connection nipple



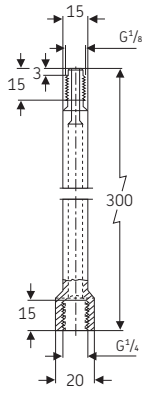
Designation	Max. pressure
pipe 1077453	200 MPa *(29 000 psi)*
nipple 1077454	200 MPa *(29 000 psi)*

Valve nipple with extension pipe



Designation	Max. pressure
pipe 227964	300 MPa *(43 500 psi)*
nipple 227963	300 MPa *(43 500 psi)*

Extension pipe



Designation	Max. pressure
227965	300 MPa *(43 500 psi)*

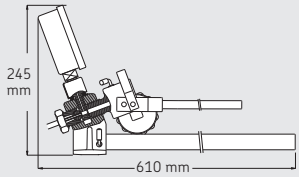
Normally used in combination with high pressure pipe eg. 227957 A

SKF Adapter Block 226402

The adapter block SKF 226402 consists of a cast steel block to which a pressure gauge and high-pressure pipe can be connected. It comes with a floor support and a 90 degree connection nipple for the oil reservoir.

Technical data

Designation	226402
Maximum pressure	400 MPa *(58 000 psi)*
Pressure gauge connection	G 1/2
Pressure pipe connection	G 3/4
Weight	2,65 kg *(6 lb)*



For bearing mounting

SKF Mounting Fluid LHMF 300

SKF Mounting Fluid is suitable for use with SKF hydraulic equipment, including hydraulic pumps, HMV ..E nuts and oil injection tools. SKF LHMF 300 contains anti-corrosives which are non-aggressive to seal materials such as nitrile rubber, perbunan, leather and chrome leather, PTFE, and so on.

For bearing dismounting

SKF Dismounting Fluid LHDF 900

SKF Dismounting Fluid is suitable for use with SKF hydraulic equipment, including hydraulic pumps and oil injection tools. SKF LHDF 900 contains anti-corrosives which are non-aggressive to seal materials such as nitrile rubber, perbunan, leather and chrome leather, PTFE, and so on.

Technical data

Designation	LHDF 900/pack size	LHMF 300/pack size
Specific gravity	0,885	0,882
Flash point	202 °C *(395 °F)*	200 °C *(390 °F)*
Pour point	–28 °C *(–18 °F)*	–30 °C *(–22 °F)*
Viscosity at 20 °C *(68 °F)*	910 mm²/s	300 mm²/s
Viscosity at 40 °C *(104 °F)*	330 mm²/s	116 mm²/s
Viscosity at 100 °C *(212 °F)*	43 mm²/s	17,5 mm²/s
Viscosity index	180	160
Available pack size	5 and 205 litre	1, 5, 205 litre

Also available from SKF

Mounting bearings made easy

SKF Adapter and withdrawal sleeves for oil injection

These SKF sleeves facilitate the use of the SKF Oil Injection Method.

The larger sleeves have oil supply ducts and distribution grooves, enabling the user to inject oil between the sleeve and bearing bore and between the sleeve and the shaft. This oil reduces friction and force necessary for mounting, particularly when mounting in a dry state.

- Reduces the risk of damage to shaft and sleeve
- Reduces time to mount and dismount bearings
- A full range of pumps, nipples and pipes are available
- SKF sleeves also help make bearing dismounting easier

For more information, please refer to the SKF General Catalogue, the SKF Maintenance Handbook or consult an SKF application engineer.

The tool to monitor the mounting of SensorMount bearings

SensorMount indicator TMEM 1500

The SKF TMEM 1500 provides a direct reading of the fit of a “SensorMount” bearing mounted on a tapered seating.

The TMEM 1500 is only compatible with SKF bearings, which are fitted with the SensorMount sensor. These bearings from SKF have the designation suffixes ZE, ZEB, or ZEV, e.g. ZE 241/500 ECAK30/W33. The SensorMount Indicator provides a numeric value, which guides the user in achieving a reliable bearing fit. SKF bearings fitted with the SensorMount system can also be mounted on adapter sleeves, withdrawal sleeves and hollow shafts. The material composition of the shaft has no effect on the proper operation of the SensorMount system.

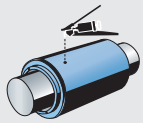
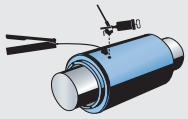
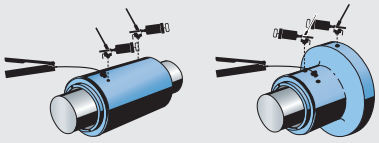
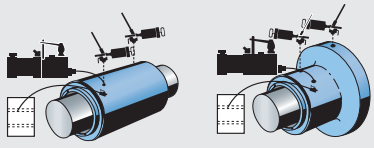
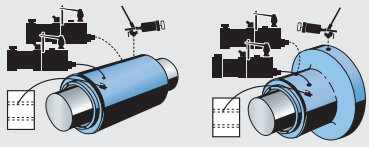
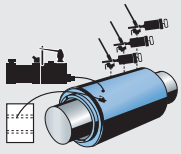
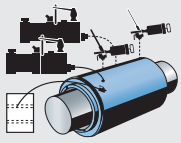
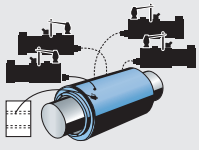
What you see is what you get; directly indicates the real reduction in internal bearing clearance.

- Easy to use
- Fast
- Reliable
- Simplifies the mounting process:
  - No calculations needed
  - Makes feeler gauges obsolete
  - Minimises the risk of human errors

Technical data

Designation	TMEM 1500
Range of measurement	0 to 1,500 o/oo
Power supply	9 V alkaline battery, type IEC 6LR61
Battery life	8 hours, continuous use
Display	4-digit LCD with fixed decimal
Operating temperature range	–10 to +50 °C *(14 to 122 °F)*
Accuracy	±1%, ±2 digits
IP rating	IP 40
Weight	250 g *(8.75 oz.)*
Size	157 × 84 × 30 mm *(6.1 × 3.3 × 1.8 in.)*

OK Coupling mounting and dismounting kits

Coupling size	Designation	Contents	Weight	Application
OKC 25–OKC 90	**TMHK 35**	1 × TMJE 300-1 Oil injector set 1 × 729944 E Plug 1 × 227958 A Pressure pipe (for OKC 80 and 90) 1 × 729123A/2000 Pressure pipe (for OKC 25–75) Tools and storage case	13,8 kg *(30.4 lb)*	
OKC 100–OKC 170 OKCS 178–OKCS 360	**TMHK 36**	1 × 226400 Injector with spares 1 × TMJL 50 Hydraulic pump Tools and storage case	19 kg *(41.8 lb)*	
OKC 180–OKC 250 OKF 100–OKF 300 * = for use with OKF couplings	**TMHK 37**	2 × 226400 Injector with spares 1 × 226402* Adapter block 1 × 227958 A* High pressure pipe 1 × TMJL 50 Hydraulic pump Tools and storage case	28,1 kg *(61.8 lb)*	
OKC 180–OKC 490 OKF 300–OKF 700 Shipboard or infrequent use	**TMHK 38**	1 × THAP 030/SET Air-driven pump set 1 × 729147 A Return hose 2 × 226400 Injector with spares	32,1 kg *(70.6 lb)*	
OKC 180–OKC 490 OKF 300–OKF 700 Shipyard or frequent use	**TMHK 38S**	1 × THAP 030/SET Air-driven pump set 1 × 729147 A Return hose 1 × THAP 300E Air-driven oil injector 1 × 226400 Injector with spares	78,2 kg *(172.3 lb)*	
OKC 500–OKC 600 Shipboard or infrequent use	**TMHK 39**	1 × THAP 030/SET Air-driven pump 1 × 729147 A Return hose 3 × 226400 Injector with spares	35,1 kg *(77.2 lb)*	
OKC 500 and larger Shipboard or infrequent use	**TMHK 40**	1 × THAP 030/SET Air-driven pump 1 × THAP 300E Air-driven pump 1 × 729147 A Return hose 2 × 226400 Injector with spares	80,2 kg *(176.7 lb)*	
OKC 500 and larger Shipyard or frequent use	**TMHK 41**	1 × THAP 030/SET Air-driven pump 3 × THAP 300E Air-driven oil injector 1 × 729147 A Return hose	132,7 kg *(293.3 lb)*	

Alignment

Basic condition monitoring

Instruments

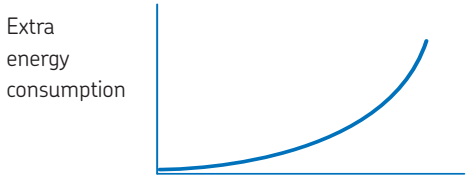
Alignment

Accurate shaft alignment really matters

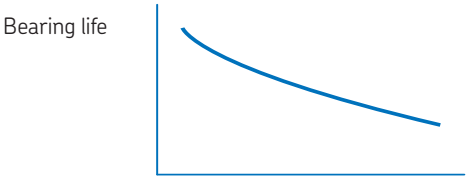
Reduce machinery breakdowns and increase your uptime

It's a fact. Shaft misalignment is responsible for up to 50% of all costs related to rotating machinery breakdowns. Accurately aligning shafts can prevent a large number of machinery breakdowns and reduce unplanned downtime that results in a loss of production. In today's challenging environment of reducing costs and optimising assets, the necessity of accurate shaft alignment is now greater than ever.

Reducing misalignment saves energy



Reducing misalignment increases bearing life



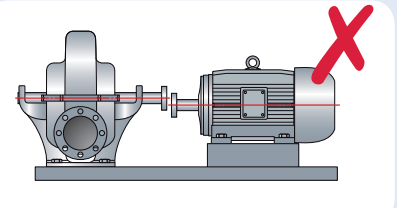
What is shaft misalignment?

Machines need to be aligned in both the horizontal and vertical plane. The misalignment can be caused by both parallel or angular misalignment.

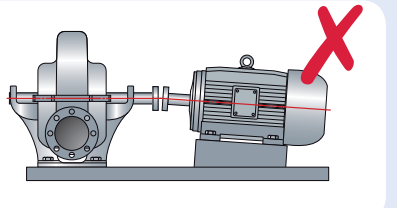
The possible consequences of shaft misalignment are serious to any company's bottom line and include:

- Increased friction and thereby energy consumption
- Premature bearing and seal failure
- Premature shaft and coupling failure
- Excessive seal lubricant leakage
- Failure of coupling and foundation bolts
- Increased vibration and noise

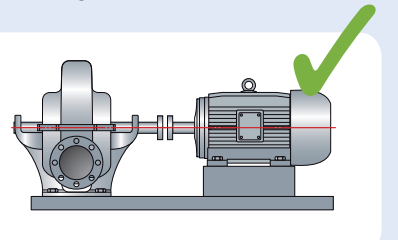
Parallel misalignment (or offset)



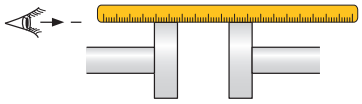
Angular misalignment



Correct alignment

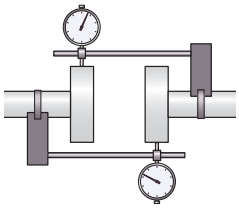


Straight edge



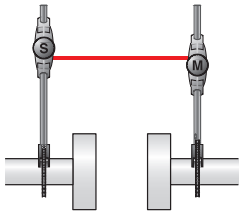
Accuracy	– –
Speed	+ +
Ease of use	+ +

Dial indicators



Accuracy	+ +
Speed	– –
Ease of use	– –

Laser shaft alignment



Accuracy	+ +
Speed	+
Ease of use	+

What methods can be used to align shafts?

In general, it's clear that laser alignment systems are quicker and easier to use than dial indicators, have better accuracy and don't require special skills to get accurate results virtually every time.

Which type of laser alignment system should be considered?

Before purchasing a system, identify the applications where it is to be used and make a list of requirements. Buying an expensive system that can accommodate virtually every need can be a costly mistake, as the technicians need to be skilled in using it. The majority of alignment tasks consist of such things as a horizontally placed electric motor with a pump or fan with a single coupling. For such tasks, the technician needs a system that is quick and easy to use and doesn't need a long set up time.

What can SKF offer?

SKF has developed, after extensive consultation with users, a range of affordable, easy to use shaft alignment tools that are suitable for a majority of alignment tasks.

The quick, easy and affordable laser shaft alignment tool

SKF Shaft Alignment Tool TKSA 20

The SKF TKSA 20 is an easy–to–use laser shaft alignment tool, that requires no special training to operate. Compared to traditional dial indicator methods, the shaft alignment process is greatly simplified, as no additional calculations are required to make the necessary adjustments.

- Alignment actions displayed: clear “real–time” coupling and feet values, given during the alignment process, makes alignment corrections quick and easy
- Soft foot check: “soft foot” function checks whether the machine is standing evenly on all feet, an essential check for good shaft alignment
- Easy pre-alignment: for machines that are grossly misaligned, the laser lines and scales enable rapid pre-alignment
- Fast measuring unit positioning: measuring units are positioned fast and easy, by using the built-in spirit levels
- Global use: language-free, simple three-step process and user selectable measurement units (mm or inch) facilitate use globally
- Easy for inexperienced users: quick start guide allows virtually any technician to quickly become familiar with the process.
  Full instructions in many languages, instructional video and alignment report forms supplied on a CD
- The attractively priced TKSA 20 pays for itself in a short time

Also available from SKF

TKSA 60
Shaft alignment tool

79

TKSA 80
Shaft alignment tool

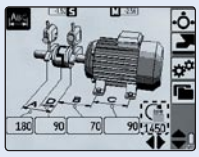
The intuitive laser shaft alignment tool allows results to be stored and shared

SKF Shaft Alignment Tool TKSA 40

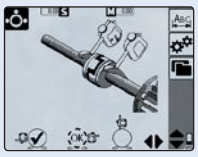
The SKF TKSA 40's operation is intuitive, thanks to its animated graphical interface. Not only is it quick and easy to use, but alignment results can be stored and shared via a PC using a USB cable. Compared to traditional methods, the shaft alignment process is greatly simplified; just follow the instructions on the screen to make a perfect alignment.

- Intuitive: Animated graphical interface on a 4 inch back-lit screen and alphanumeric key functions simplify the whole process
- Alignment actions displayed: Clear "real–time" coupling and feet values, given during the alignment process, makes alignment corrections quick and easy
- Built-in alignment recommendation: Pre-defined and user definable tolerance tables greatly simplify assessment of the alignment
- Alignment data sharing: Alignment settings and results can be stored to the tool's internal memory and downloaded to a PC via USB cable. Files are easily shared with others without the need of special software
- Soft foot check: "Soft foot" function checks whether the machine is standing evenly on all feet, an essential check for good shaft alignment
- Easy pre-alignment: For machines that are grossly misaligned, the laser lines and scales enable rapid pre-alignment
- Fast measuring unit positioning: Measuring units are positioned fast and easy, by using the built-in spirit levels
- Global use: Language-free menus and user selectable measurement units (mm or inch) facilitate use globally
- Easy for all users: A quick start guide and intuitive menus allows virtually any technician to quickly be familiar with the process. Full instructions in many languages are supplied on a CD

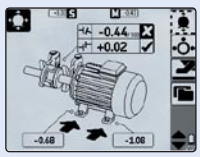
Intuitive graphical interface



Entering dimensions



Screen guided instructions



Live adjustment values

Technical data

Designation	TKSA 20	TKSA 40
Applications	Horizontal single coupling alignment Soft foot check	Horizontal single coupling alignment, soft foot check, tolerance check, storage of results
Measuring units:		
Type of laser	Laser diode Class 2	Laser diode Class 2
Distance between measuring units	Maximum: 850 mm *(2.8 ft)* Minimum: 70 mm *(2.7 in.)*	Maximum: 1 000 mm *(39.4 in.)* Minimum: 70 mm *(2.7 in.)*
Type of detectors	Single-axis PSD, 8,5 × 0,9 mm *(0.3 × 0.04 in.)*	Single axis PSD, 8,5 × 0,9 mm *(0.3 × 0.04 in.)*
Cable length	1,6 m *(5.2 ft)*	1,6 m *(5.2 ft)*
Dimensions	87 × 79 × 39 mm *(3.4 × 3.1 × 1.5 in.)*	87 × 79 × 39 mm *(3.4 × 3.1 × 1.5 in.)*
Weight	210 g *(7.3 oz)*	210 g *(7.3 oz)*
Display unit:		
Display type	LCD 35 × 48 mm *(1.4 × 1.9 in.)*	100 mm *(4 in.)* monochrome backlit screen
Screen protection	–	Hard plastic
Battery type	2 × 1,5 V Alkaline type LR14	3 × 1,5 V Alkaline type LR14
Operating time	20 hours continuous	20 hours continuous
Displayed resolution	0,01 mm *(0.1 mil in inch mode)*	0,01 mm *(0.1 mil in inch mode)*
Dimensions	215 × 83 × 38 mm *(8.4 × 3.2 × 1.4 in.)*	210 × 110 × 50 mm *(8.3 × 4.3 × 2 in.)*
Weight	300 g *(10.5 oz)*	650 g *(22.9 oz)*
Complete system:		
Contents	Display unit (batteries included) 2 measuring units with spirit levels 2 mechanical shaft fixtures 2 locking chains with tightening pin Measuring tape Quick start guide CD with instructions for use, instructional video and alignment reports on CD Calibration certificate valid for 2 years Carrying case	Display unit (batteries included) 2 measuring units with spirit levels 2 mechanical shaft fixtures 2 locking chains with tightening pin Measuring tape USB cable Quick start guide Calibration certificate valid for 2 years CD with instructions for use and instructional video Carrying case
PC download	–	Plug in to PC by USB socket
Memory	–	100 alignments
Soft foot check	Yes	Yes
Alignment tolerance check	No	Yes
User editable tolerances	No	Yes
Shaft diameter range – Chain included for shaft diameters – Optional chain for shaft diameters	30–500 mm *(1.2–19.7 in.)* 30–150 mm *(1.2–5.9 in.)* 150–500 mm *(5.9–19.7 in.)*	30–500 mm *(1.2–19.7 in.)* 30–150 mm *(1.2–5.9 in.)* 150–500 mm *(5.9–19.7 in.)*
Accuracy of system	<2% ±0,01 mm	<2% ±0,01 mm
Temperature range	0–40 °C *(32–104 °F)*	0–40 °C *(32–104 °F)*
Operating humidity	<90%	<90%
Carrying case dimensions	390 × 310 × 147 mm *(15.3 × 12.2 × 5.7 in.)*	390 × 310 × 192 mm *(15.4 × 12.2 × 7.6 in.)*
Total weight (incl. case)	3,6 kg *(7.9 lb)*	4,9 kg *(10.8 lb)*

Also available from SKF

SKF Shaft Alignment Tool TKSA 60

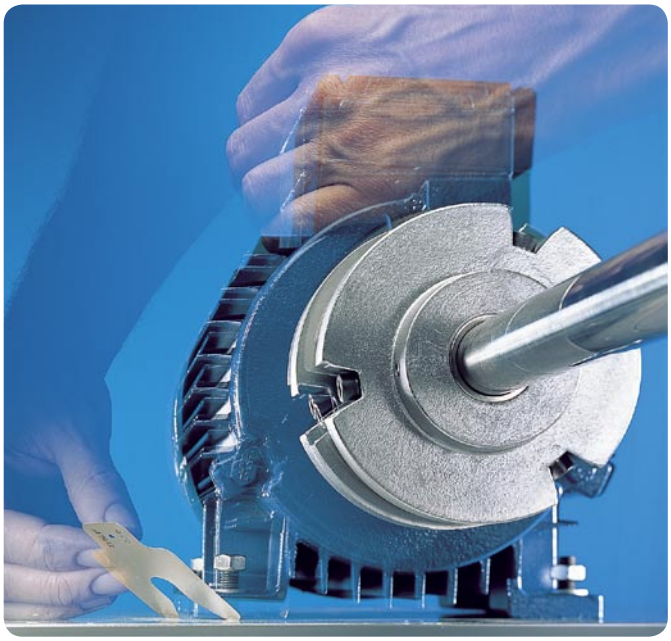
The wireless laser shaft alignment tool with a complete built-in alignment process. The TKSA 60 is an extremely rugged laser shaft alignment tool for use in harsh environments.

- Accommodates up to 10 m between measuring units through built-in wireless technology
- Energy Efficiency Indicator shows the estimated energy wasted due to shaft misalignment
- Easy misalignment correction with live correction values and directions shown on screen
- Typical applications: horizontal alignment, manual or laser soft foot check, alignment target and chocking arrangement

SKF Shaft Alignment Tool TKSA 80

The advanced laser shaft alignment tool to increase your alignment knowledge. The TKSA 80 is an advanced laser shaft alignment tool with a 7 inch touch screen.

- Boosts user confidence and alignment knowledge through/with a built-in complete alignment process
- Enhances alignment speed by using an extensive database to store information on the equipment being aligned
- Energy Efficiency Indicator shows the estimated energy wasted due to shaft misalignment
- Typical applications: horizontal and vertical alignment, manual or laser soft foot check, machine train alignment of up to five machines

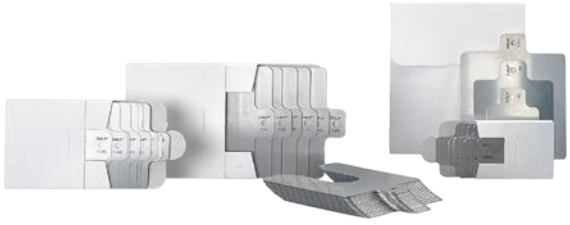


For accurate vertical machinery alignment

SKF Machinery Shims TMAS series

Accurate machine adjustment is an essential element of any alignment process. SKF single slot pre-cut shims are available in five different dimensions and in ten different thicknesses.

- Made of high quality stainless steel, allowing re-use
- Easy to fit and to remove
- Close tolerances for accurate alignment
- Thickness clearly marked on each shim
- Fully de-burred
- Pre-cut shims are supplied in packs of 10 and complete kits are also available



TMAS 360

TMAS 340

TMAS 510

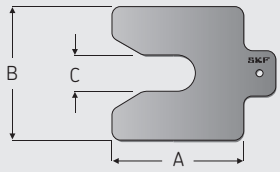
TMAS 720

TMAS 340									
Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00
Size (mm)	**Quantities:**								
100 × 100	20	20	20	20	20	20	20	20	10
125 × 125	20	20	20	20	20	20	20	20	10
TMAS 360									
Thickness (mm)	0,05	0,10	0,25	0,50	1,00	2,00			
Size (mm)	**Quantities:**								
50 × 50	20	20	20	20	20	20			
75 × 75	20	20	20	20	20	20			
100 × 100	20	20	20	20	20	20			
TMAS 510									
Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00
Size (mm)	**Quantities:**								
50 × 50	20	20	20	20	20	20	20	20	10
75 × 75	20	20	20	20	20	20	20	20	10
100 × 100	20	20	20	20	20	20	20	20	10
TMAS 720									
Thickness (mm)	0,05	0,10	0,20	0,25	0,40	0,50	0,70	1,00	2,00
Size (mm)	**Quantities:**								
50 × 50	20	20	20	20	20	20	20	20	20
75 × 75	20	20	20	20	20	20	20	20	20
100 × 100	20	20	20	20	20	20	20	20	20
125 × 125	20	20	20	20	20	20	20	20	20

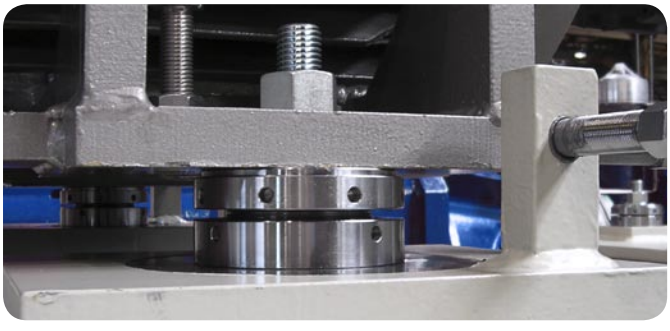
Technical data – TMAS series

Designation	Number of shims per set	A mm	B mm	C mm	Thickness mm
TMAS 50-005	10	50	50	13	0,05
TMAS 50-010	10	50	50	13	0,10
TMAS 50-020	10	50	50	13	0,20
TMAS 50-025	10	50	50	13	0,25
TMAS 50-040	10	50	50	13	0,40
TMAS 50-050	10	50	50	13	0,50
TMAS 50-070	10	50	50	13	0,70
TMAS 50-100	10	50	50	13	1,00
TMAS 50-200	10	50	50	13	2,00
TMAS 50-300	10	50	50	13	3,00
TMAS 100-005	10	100	100	32	0,05
TMAS 100-010	10	100	100	32	0,10
TMAS 100-020	10	100	100	32	0,20
TMAS 100-025	10	100	100	32	0,25
TMAS 100-040	10	100	100	32	0,40
TMAS 100-050	10	100	100	32	0,50
TMAS 100-070	10	100	100	32	0,70
TMAS 100-100	10	100	100	32	1,00
TMAS 100-200	10	100	100	32	2,00
TMAS 100-300	10	100	100	32	3,00
TMAS 200-005	10	200	200	55	0,05
TMAS 200-010	10	200	200	55	0,10
TMAS 200-020	10	200	200	55	0,20
TMAS 200-025	10	200	200	55	0,25
TMAS 200-040	10	200	200	55	0,40
TMAS 200-050	10	200	200	55	0,50
TMAS 200-070	10	200	200	55	0,70
TMAS 200-100	10	200	200	55	1,00
TMAS 200-200	10	200	200	55	2,00
TMAS 200-300	10	200	200	55	3,00

Designation	Number of shims per set	A mm	B mm	C mm	Thickness mm
TMAS 75-005	10	75	75	21	0,05
TMAS 75-010	10	75	75	21	0,10
TMAS 75-020	10	75	75	21	0,20
TMAS 75-025	10	75	75	21	0,25
TMAS 75-040	10	75	75	21	0,40
TMAS 75-050	10	75	75	21	0,50
TMAS 75-070	10	75	75	21	0,70
TMAS 75-100	10	75	75	21	1,00
TMAS 75-200	10	75	75	21	2,00
TMAS 75-300	10	75	75	21	3,00
TMAS 125-005	10	125	125	45	0,05
TMAS 125-010	10	125	125	45	0,10
TMAS 125-020	10	125	125	45	0,20
TMAS 125-025	10	125	125	45	0,25
TMAS 125-040	10	125	125	45	0,40
TMAS 125-050	10	125	125	45	0,50
TMAS 125-070	10	125	125	45	0,70
TMAS 125-100	10	125	125	45	1,00
TMAS 125-200	10	125	125	45	2,00
TMAS 125-300	10	125	125	45	3,00



Also available from SKF



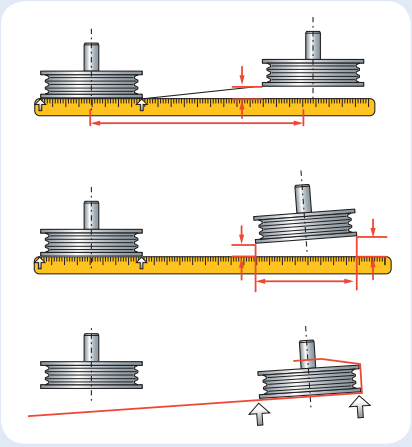
The universal adjustable chock

SKF Vibracon

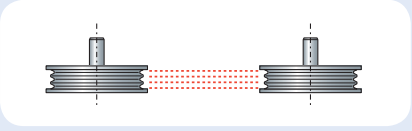
SKF Vibracon elements are machinery mounting chocks that are easily and accurately adjusted.

The elements accommodate the angular difference between machine and the mounting base without expensive machining of the base or the extra work of installing epoxy resin chocks. The self-leveling capability, combined with the height adjustment feature, eliminates the possibility of a soft foot in the production line through the life cycle of the machinery. For additional information, please refer to our publication 6686 EN, or online at: skfmachinesupport.com

Belt alignment



Measuring parallel and angular misalignment using a straight edge or a piece of string



Correct alignment means that the grooves of the pulleys are aligned

One of the common reasons for unplanned downtime of belt-driven machinery is pulley misalignment. Pulley misalignment can increase wear on pulleys and belts as well as increasing the noise and vibration level, that can result in unplanned machinery downtime. Another side effect of increased vibration is premature bearing failure. This too can cause unplanned machinery downtime.

Traditional belt alignment methods

These methods are usually visual in combination with a straight edge and/or length of string. Although quick to perform, they are often inaccurate.

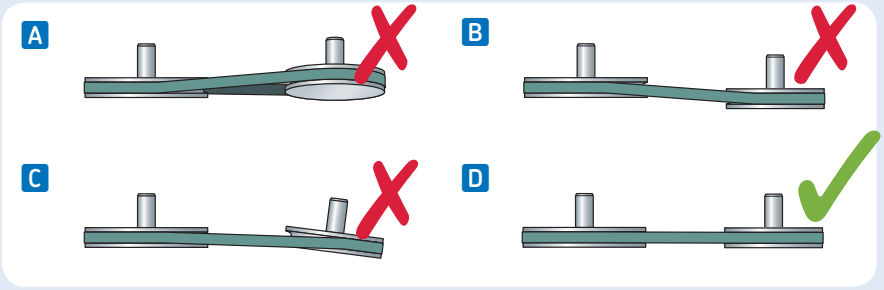
Laser belt alignment methods

Using a laser belt alignment tool is quicker and more accurate than traditional methods. Belt alignment tools can either align the pulley faces or the pulley grooves. The most accurate option is to align where it counts most, in the grooves of the pulley.

Accurate pulley and belt alignment can help you:

- Increase bearing life
- Increase machinery uptime, efficiency and productivity
- Reduce wear on pulleys and belts
- Reduce friction and thereby energy consumption
- Reduce noise and vibration
- Reduce costs of replacing components and machinery downtime

A Vertical angle misalignment
B Parallel misalignment
C Horizontal angle misalignment
D Correct alignment



Quick and accurate belt alignment

SKF Belt Alignment Tool TMEB 2

The SKF TMEB 2 aligns the pulleys in the grooves. With only two components, a laser-emitting unit and a receiver unit, the tool is easy and fast to attach with V-guides and powerful magnets. The three-dimensional target area on the receiver unit allows the easy detection of misalignment and shows if it is horizontal, vertical, parallel or a combination of misalignments. The operator can then easily make the appropriate adjustments.

- Easy-to-use, requires no special training to operate
- No trial and error: the laser position indicates the nature of misalignment allowing easy and accurate adjustment
- Powerful magnets allow fast and easy attachment
- Three-dimensional target area simplifies the alignment process
- Facilitates simultaneous adjustment of tension and alignment
- V-guides facilitate the alignment of a wide range of V-belt pulleys
- A maximum operating distance of 6 meters *(20 ft)*
- Special side adaptor allowing alignment of multi-ribbed and timing belt pulleys as well as chain sprockets is available as accessory

Also available from SKF

SKF Belt Tension System

SKF Belt Frequency Meter

For additional information, please refer to our publications 6804 EN (6702 EN) and 6479 EN or online at: www.skfptp.com

Technical data

Designation	TMEB 2
Content	1 laser unit 1 receiver unit 4 set of V guides Carrying case
Housing material	Extruded aluminium
Type of laser	Diode laser, Class 2
Measurement distance	50 mm to 6 000 mm *(2 in. to 20 ft)*
Fixture	Magnetic
Measurement accuracy angular	Better than 0,2°
Measurement accuracy linear	Better than 0,5 mm
Dimensions laser unit	70 × 74 × 61 mm *(2.8 × 2.9 × 2.4 in.)*
Dimensions receiver unit	96 × 74 × 61 mm *(3.8 × 2.9 × 2.4 in.)*
Battery type	2 × 1,5 V AAA Alkaline type IEC LR03 batteries in laser unit
Battery lifetime	20 hours continuous operation
Weight laser unit	320 g *(11.3 oz)*
Weight receiver unit	270 g *(9.5 oz)*
Calibration certificate	Valid for two years

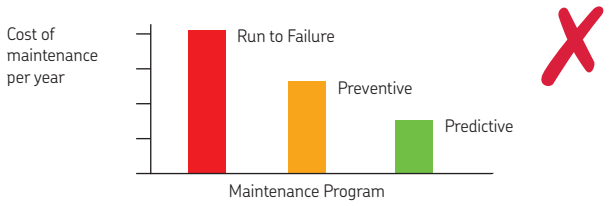
Basic condition monitoring

Basic condition monitoring is essential for achieving maximum bearing service life

To help ensure long bearing service life, it is important to determine the condition of machinery and bearings while in operation. Good predictive maintenance will help reduce machine downtime and decrease overall maintenance costs.

To help you achieve the maximum service life from your bearings, SKF has developed a wide range of instruments for analysing the critical environmental conditions which have an impact on bearing and machine performance.

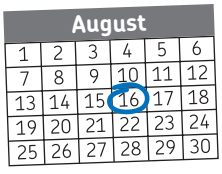
Maintenance concepts



Maintenance cost comparisons.

Run to failure

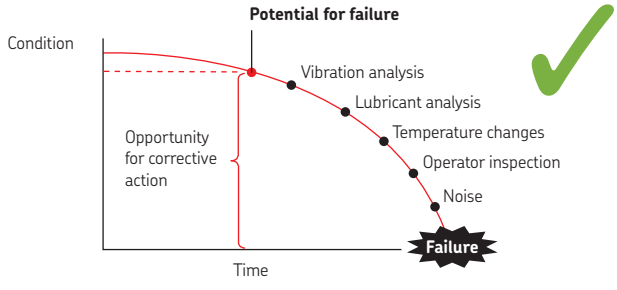
Run to failure occurs when repair action is not taken until a problem results in machine failure. Run to failure problems often cause costly secondary damage along with unplanned downtime and maintenance costs.



Preventive maintenance is similar to the regular service of a car. Often, unnecessary maintenance is performed.

Preventive maintenance

Preventive maintenance implies that a machine, or parts of a machine, are overhauled on a regular basis regardless of the condition of the parts. While preferable to run to failure maintenance, preventive maintenance is costly because of excessive downtime from unnecessary overhauls and the cost of replacing good parts along with worn parts.



Condition based maintenance means repairs are only carried out when required.

Predictive maintenance

Condition monitoring/predictive maintenance is the process of determining the condition of machinery while in operation. This enables the repair of problem components prior to failure. Condition monitoring not only helps plant personnel reduce the possibility of catastrophic failure, but also allows them to order parts in advance, schedule manpower, and plan other repairs during the downtime. With condition monitoring, machinery analysis takes two overlapping forms: predictive and diagnostic.

SKF has developed a comprehensive range of basic condition monitoring tools suitable for Operator Driven Reliability (ODR) and maintenance technicians. Under ODR, some maintenance practices are owned, managed, and performed by operators. Often, the operators are the best persons equipped for basic inspection activities, as they know their part of the plant very well. They are often sensitive to minor changes in sounds and vibrations that may not be apparent to someone lacking their front-line experience.

Subsequently, minor defects can be corrected quickly, as the operator can undertake simple adjustment and repair tasks.

Maintenance technicians also have need for basic condition monitoring tools. If, for example, abnormal vibrations are detected or if an operator reports an abnormal running condition, then the technician can often use some basic condition monitoring tools to detect the root cause for further evaluation.

SKF basic condition monitoring tools can be used to check a number of properties:

Temperature

Since the dawn of the industrial age, operators and technicians know that abnormal temperatures often indicate that something is wrong with the machine. Such instruments as thermometers and thermal imagers can help find and then measure these hotspots, allowing further analysis to be conducted.

Speed

Machines are usually designed to run at a given speed. If the speed is too slow or too fast, then the overall process can be compromised. Using a hand-held tachometer enables a quick and easy assessment of the machine's running speed.

Visual

Visual inspection of a machine's condition can sometimes be difficult when it's running or when there is a need to inspect the machine internally. A stroboscope can be used to visually freeze the motion of a machine to allow such things as fan blades, couplings and belt drives to be inspected while running.

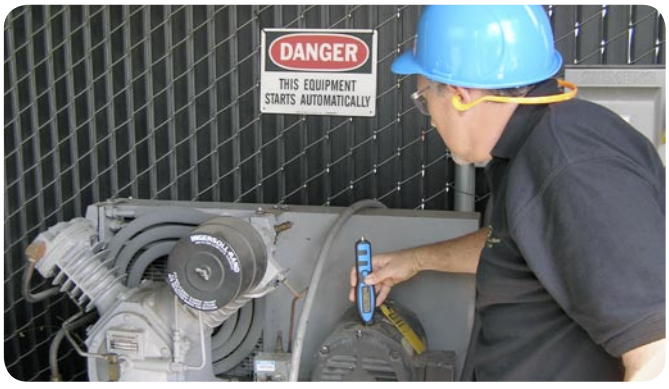
To inspect the internal parts of a machine often requires disassembly. By using an endoscope, it is possible to access the area of interest with minimal disassembly, saving time and money.

Sound

Abnormal sounds from machines often indicate that something is wrong. A stethoscope can be used to help pinpoint the source of the sound and can aid the technician in identifying the problem. Leaks in compressed air systems are costly, not only in energy costs but also due to extra costs in air compressor maintenance. Ultrasonic leak detectors can help detect leaks efficiently, allowing the necessary repairs to be made. Excessive noise can cause worker fatigue, increased accidents and loss of hearing. A sound pressure meter can measure the sound level, allowing corrective measures to be made.

Electrical discharge currents

Electrical discharges are a result of motor shaft voltages discharging to earth through the bearing, causing electrical erosion, lubricant degradation and ultimately bearing failure. An electrical discharge detector can help detect the presence of electrical discharge currents, allowing remedial action to be taken.



Vibration

Abnormal vibrations are often the first indication of a potential machine failure. These vibrations can be caused by such conditions as unbalance, misalignment, looseness of parts, rolling element bearing and gear damage. Vibration analysis instruments and systems, can help detect many serious problems at an early stage, allowing remedial work to be undertaken in a timely manner.

Lubricant condition

To maintain the optimum condition of rolling element bearings, it is essential that the lubricant is in good condition. Checking the oil or grease condition at regular intervals can reduce downtime and greatly prolong the life of rolling element bearings.

Thermometers

Accurate temperature measurement of general equipment

SKF General-purpose Thermometer Pen TMTP 200

The SKF TMTP 200 is a user-friendly, durable pocket size thermometer. Its sturdy flexible probe tip provides effective surface contact for accurate temperature measurement.

Since no maintenance engineer should work without one, the thermometer pen is supplied with a handy pouch with a belt clip for protection and portability.

- Compact, ergonomic design
- Wide measurement range, from –40 to +200 °C *(–40 to +392 °F)*
- Temperature reading selection in °C or °F
- Flexible probe tip for better surface contact, providing high measuring accuracy
- Dust tight and water resistant, rated IP 65
- Maximum temperature function allows temperature peak hold
- Auto power off function
- Ultra low power consumption

Technical data

Designation	TMTP 200
Temperature range	–40 to +200 °C *(–40 to +392 °F)*
Accuracy electronics	≤0,5 °C *(≤0.9 °F)*
Display resolution	1 °C/°F
Probe	Integrated K–Type
Display indications	Temperature, °C or °F, maximum temperature, out of range, defective probe, low battery
Battery	3 × AAA Alkaline type IEC LR03
Average battery lifetime	4 000 hours
Switch off	Button or automatic after 5 minutes
Ingress protection level	IP 65
Drop resistance	1 m *(39.4 in.)*
Dimensions	163 × 50 × 21 mm *(6.4 × 2 × 0.8 in.)*
Weight	95 g *(0.2 lb)*

SKF Infrared thermometers

Infrared thermometers are portable, lightweight instruments for safely measuring temperature at a distance. They are extremely user-friendly; simply aim and pull the trigger and the temperature is shown on the display. These robust instruments are equipped with a back-lit display and laser sighting. They are fitted with a bright LED illuminator to allow the application object to be seen even in poorly lit environments.

TKTL 10

An infrared thermometer that's an essential tool for every technician

- Wide measurement range from –60 to +625 °C *(–76 to +1 157 °F)*; allows temperature measurements of many industrial applications
- Distance-to-spot ratio of 16:1; allows accurate temperature readings at a distance
- Fixed emissivity of 0,95; suitable for many applications
- Maximum temperature always shown; helps identify the real hotspots
- Auto shut off feature; helps optimise battery life

TKTL 20

An infrared and contact thermometer offering versatile temperature measurement options

- Infrared temperature measurement range from –60 to +625 °C *(–76 to +1 157 °F)*
- Contact temperature measurement range from –64 to +1 400 °C *(–83 to +1 999 °F)*
- Distance-to-spot ratio of 16:1; allows accurate temperature readings at a distance
- User selectable variable emissivity between 0,1 and 1,0; allows most surface temperatures to be measured
- Supplied with temperature probe TMDT 2-30 (max. 900 °C / *1 652 °F*); suitable for many direct contact applications
- Can be used with any SKF temperature probe
- User selectable, multiple temperature measurement modes including: maximum, minimum, average, differential and probe/infrared dual display, scan function
- User selectable high and low alarm levels with audible warning signal
- Mode dependant auto shut off feature optimises battery life
- Supplied in a sturdy carrying case

When used in non-contact mode, the thermometer senses the thermal energy radiated from an object with an infrared detector. When pointed at an object, the infrared detector collects energy, producing a signal that the microprocessor translates as a reading on the backlit display.

As the trigger is squeezed, the object temperature is continuously measured by the infrared detector. This allows for fast and accurate realtime readings.

TKTL 30

An infrared and contact temperature thermometer with a wide measurement range and dual laser sighting

- Wide infrared temperature measurement range from –60 to +1 000 °C *(–76 to +1 832 °F)*
- Contact temperature measurement range from –64 to +1 400 °C *(–83 to +1 999 °F)*
- Dual laser sighting feature defines the diameter of the area being measured; helps the user to precisely pin-point the temperature measurement area
- Distance-to-spot ratio of 50:1; allows accurate temperature readings at long distances or for measuring temperatures of small areas
- User selectable variable emissivity between 0,1 and 1,0; allows most surface temperatures to be measured
- Supplied with temperature probe TMDT 2-30 (max. 900 °C/ *1 652 °F*); suitable for many direct contact applications
- Can be used with any SKF temperature probe
- User selectable, multiple temperature measurement modes including: maximum, minimum, average, differential and probe/ infrared dual display, scan function
- User selectable high and level alarm levels with audible warning signal
- Mode dependant auto shut off feature optimises battery life
- Supplied in a sturdy carrying case

Technical data



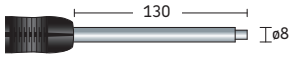
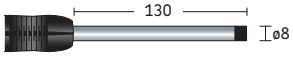
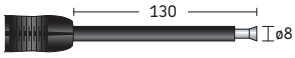
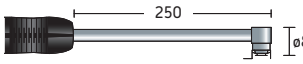
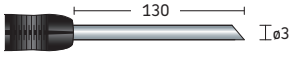
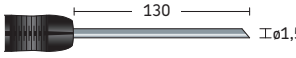
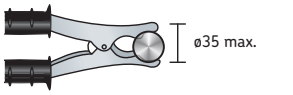
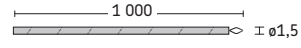
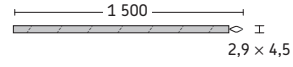
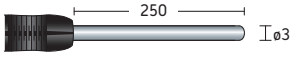
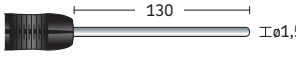
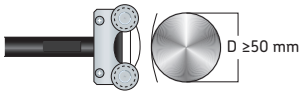
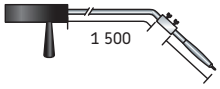
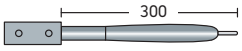
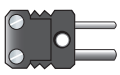
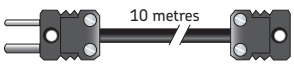
Designation	TKTL 10	TKTL 20	TKTL 30
Temperature range using infrared	–60 to +625 °C *(–76 to +1 157 °F)*	–60 to +625 °C *(–76 to +1 157 °F)*	–60 to +1 000 °C *(–76 to +1 832 °F)*
Temperature range using probe	–	–64 to +1 400 °C *(–83 to +1 999 °F)*	–64 to +1 400 °C *(–83 to +1 999 °F)*
Probe supplied	–	TMDT 2-30, suitable for use up to 900 °C *(1 650 °F)*	TMDT 2-30, suitable for use up to 900 °C *(1 650 °F)*
Environmental limits	Operation 0 to 50 °C *(32 to 122 °F)* 10 to 95% relative humidity	Operation 0 to 50 °C *(32 to 122 °F)* 10 to 95% relative humidity	Operation 0 to 50 °C *(32 to 122 °F)* 10 to 95% relative humidity
	Storage –20 to +65 °C *(–4 to +149 °F)* 10 to 95% relative humidity	Storage –20 to +65 °C *(–4 to +149 °F)* 10 to 95% relative humidity	Storage –20 to +65 °C *(–4 to +149 °F)* 10 to 95% relative humidity
Full range accuracy	T_{obj} = 0 to 625 °C ±2% of reading or 2 °C *(4 °F)* whichever is greater	T_{obj} = 0 to 635 °C ±2% of reading or 2 °C *(4 °F)* whichever is greater	±2% of reading or 2 °C *(4 °F)* whichever is greater
Response time (90%)	<1 000 ms	<1 000 ms	<1 000 ms
LCD display resolution	0,1 °C/F from –9,9 to ~199,9 otherwise 1 °C/F	0,1 °C/F from –9,9 to ~199,9 otherwise 1 °C/F	0,1 °C/F from –9,9 to ~199,9 otherwise 1 °C/F
Distance to spot size	16:1	16:1	50:1
Spectral response	8–14 µm	8–14 µm	8–14 µm
Emissivity	Pre-set 0,95	0,1–1,0	0,1–1,0
User selectable backlit display	No, permanently on	On/Off	On/Off
User selectable laser pointer	No, permanently on	On/Off	On/Off
Measurement modes	Max temperature	Max, min, average, differential, probe/IR dual temperature modes	Max, min, average, differential, probe/IR dual temperature modes
Alarm modes	–	High and low level alarm level with warning bleep	High and low level alarm level with warning bleep
Laser	Class 2	Class 2	Class 2
Dimensions	195 × 70 × 48 mm *(7.7 × 2.7 × 1.9 in.)*	195 × 70 × 48 mm *(7.7 × 2.7 × 1.9 in.)*	203 × 197 × 47 mm *(8.0 × 7.7 × 1.8 in.)*
Packaging	Carton box	Sturdy carrying case	Sturdy carrying case
Case dimensions	–	340 × 200 × 65 mm *(13.4 × 7.9 × 2.6 in.)*	340 × 200 × 65 mm *(13.4 × 7.9 × 2.6 in.)*
Weight	230 g *(0.5 lb)*	Total (incl. case): 940 g *(2.07 lb)* TKTL 20: 230 g *(0.50 lb)*	Total (incl. case): 1 080 g *(2.38 lb)* TKTL 30: 370 g *(0.815 lb)*
Battery	2 × AAA Alkaline type IEC LR03	2 × AAA Alkaline type IEC LR03	2 × AAA Alkaline type IEC LR03
Battery lifetime	18 hours	180 hours with laser and backlight off	140 hours with laser and backlight off Otherwise 18 hours
Switch off	Automatic after 15 s after trigger is released	IR mode automatic after 60 s after trigger is released *(60 min. can be manually selected)* Probe mode automatic after 12 min.	IR mode automatic after 60 s after trigger is released *(60 min. can be manually selected)* Probe mode automatic after 12 min.

Technical data – Thermocouple probes

Probe type	K–type thermocouple (NiCr/NiAl) acc. IEC 584 Class 1
Accuracy	±1,5 °C *(2.7 °F)* up to 375 °C *(707 °F)* ±0,4% of reading above 375 °C *(707 °F)*
Handle	110 mm *(4.3 in.)* long
Cable	1 000 mm *(39.4 in.)* spiral cable (excl. TMDT 2-31, -38, -39, 41)
Plug	K–type mini–plug (1 260-K)

SKF K-type Thermocouple Probes TMDT 2 series

For use with SKF Infrared Thermometers TKTL 20 and TKTL 30

Dimensions (mm)	Designation	Description	Max. temp	Response time
	TMDT 2-30	**Standard surface probe** For hard surfaces such as bearings, bearing housings, engine blocks, oven shields, etc.	900 °C *(1 650 °F)*	2,3 s
	TMDT 2-43	**Heavy duty surface probe** Same as TMDT 2-30, but with a silicon encapsulated tip for heavy duty applications.	300 °C *(570 °F)*	3,0 s
	TMDT 2-32	**Insulated surface probe** For hard surfaces where electrical wiring might cause short circuiting, e.g. electric motors, transformers, etc.	200 °C *(390 °F)*	2,3 s
	TMDT 2-33	**Right angle surface probe** For hard surfaces in heavy-duty applications, e.g. machine components, engines, etc.	450 °C *(840 °F)*	8,0 s
	TMDT 2-31	**Magnetic surface probe** For hard, magnetic surfaces; the integral heat sink design and low mass minimise thermal inertia and provide an accurate temperature measurement.	240 °C *(460 °F)*	7,0 s
	TMDT 2-35	**Probe with sharp tip** Can be easily inserted into semi-solid materials like food-stuffs, meat, plastic, asphalt, deep-frozen products, etc.	600 °C *(1 110 °F)*	12,0 s
	TMDT 2-35/1.5	**Probe with sharp tip** Same as TMDT 2-35 but with thinner shank and faster response time for insertion into soft solids.	600 °C *(1 110 °F)*	6,0 s
	TMDT 2-36	**Pipe clamp probe** For temperature measuring on pipes, cables, etc. Diameter up to ø 35 mm *(1.4 in.)*.	200 °C *(390 °F)*	8,0 s
	TMDT 2-38	**Wire probe** Thin, lightweight, very fast response, fibreglass insulated.	300 °C *(570 °F)*	5,0 s
	TMDT 2-39	**High temperature wire probe** Thin, light weight, very fast response, ceramic insulation.	1 350 °C *(2 460 °F)*	6,0 s
	TMDT 2-34	**Gas and liquid probe** Flexible shank made of stainless steel for liquids, oils, acids, etc. and for use with high temperatures, e.g. open fire (not for molten metals).	1 100 °C *(2 010 °F)*	12,0 s
	TMDT 2-34/1.5	**Gas and liquid probe** Same as TMDT 2-34 but with thin shank and faster response time. Very flexible, especially suitable for measuring temperature of gases.	900 °C *(1 650 °F)*	6,0 s
	TMDT 2-40	**Rotating probe** For moving or rotating smooth surfaces. Four roller bearings provide suitable contact with the surfaces. Max. velocity 500 m/min.	200 °C *(390 °F)*	0,6 s
	TMDT 2-41	**Non-ferrous foundry probe** Holder including dip-element for molten, non-ferrous metals. Highly resistant to corrosion and oxidation at high temperatures.	1 260 °C *(2 300 °F)*	30,0 s
	TMDT 2-41A	**Dip-element** Replacement dip-element for TMDT 2-41.	1 260 °C *(2 300 °F)*	30,0 s
	TMDT 2-42	**Ambient temperature probe** For measurement of ambient temperature.		
	TMDT 2-37	**Extension cable** For use with all K-type probes. Special lengths are available on request.		

All probes can be used with the SKF digital thermometers TKTL 20 and TKTL 30 without recalibration.

Digital camera with extensive thermal imaging capabilities

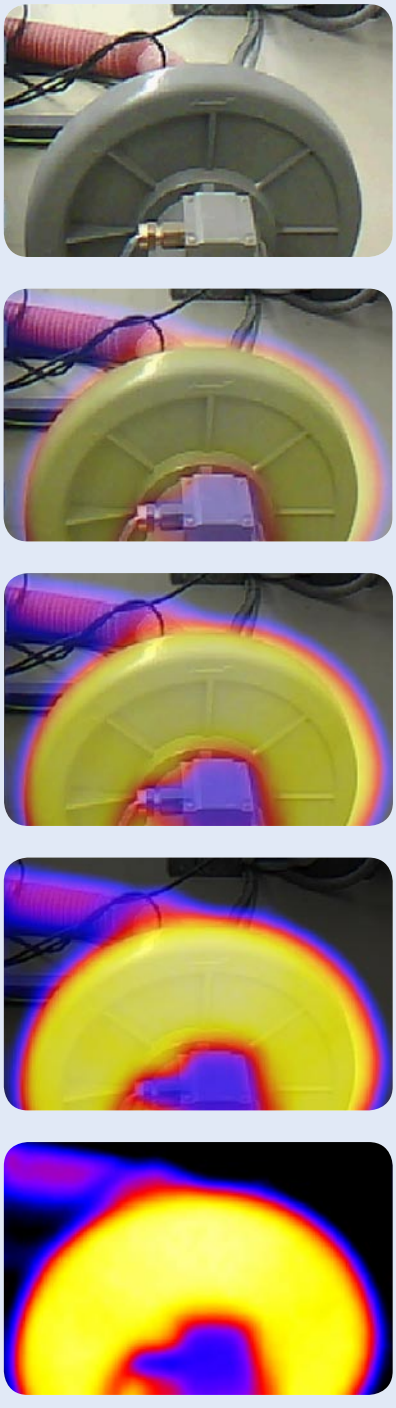
SKF Thermal Camera TKTI 10

The SKF TKTI 10 is an extremely user-friendly camera designed especially for use by maintenance technicians to visualize troublesome hotspots quickly and easily. This unique thermal camera requires no special training and by simply pointing at the application, hotspots are rapidly identified. Moreover, the images can be stored and analysed using the advanced thermal imaging capabilities. The camera captures both digital and thermal images, these images can be blended allowing you to easily interpret and analyse the scene. Powerful PC software for analysis and report-writing is supplied as standard, enabling you to perform comprehensive image analysis and produce professional reports.

- Compact ergonomic design and lightweight
- Captures and displays both digital and thermal images
- Blend function allows a mixture of digital and thermal images for ease of interpretation
- Picture in Picture display shows a visible image with a central thermal image
- Non-contact measurement technique enables measurements to be made safely on running equipment
- Laser pointer pinpoints the centre of the imaged area
- Wide temperature measurement range from –10 to +350 °C *(14 to 660 °F)* suitable for most applications, especially Predictive Maintenance programmes
- Audible and visual alarms, for high and low temperature levels, can be easily set
- Images can be voice and/or text annotated. Very useful when viewing later as situation details pertinent to the image can be recorded
- Isotherms, temperature gradients, area analysis and two user-selectable cursors can be displayed on the camera screen, allowing advanced scene analysis
- 8 different selectable colour pallets for ease of viewing
- Convenient temperature measurement in °C and °F
- Bright, backlit, 3.5 in. screen with clear sharp image resolution in landscape format for ease of viewing
- Rechargeable integrated Lithium-ion battery with 6 hour running time
- Large image storage capacity, up to 1 000 radiometric and visual images
- Up to 1 000 sequential thermal and visual images can be taken automatically
- Menus in many languages
- Advanced thermal image processing and report-writing software supplied
- IP 54 suitable for industrial environments
- Removable handle

Technical data

Designation	TKTI 10
Performance	
Temperature range	–10 to +350 °C *(14 to 660 °F)*
Field of view (FOV)	20° × 20°
Spectral response	8 to 14 µm
Sensitivity	~0,3 °C at 30 °C
Thermal detector/ visual camera	47 × 47 pixel array (interpolated to 180 × 180) /2 Mega pixel digital camera
Emissivity correction	User selectable 0,1 to 1,0 in steps of 0,01 Emissivity table of common surfaces built-in with reflected ambient temperature compensation
Accuracy	The greater of ±2 °C or ±2% of reading in °C
Frame rate	8 Hz
Focal range	0,5 m *(19 in.)* to infinity
Image storage	Up to 2 000 images on Micro SD card supplied
Display	3.5 in. colour LCD with LED backlight 8 colour palettes Mixed thermal and visual images
Laser pointer	built in Class 2 laser
Imager power supply	
Battery	Lithium-ion field rechargeable
Operation time	Up to 6 hours continuous operation
AC operation	AC adaptor supplied
Mechanical & environment	
Temperature operating	–5 to +45 °C *(23 to 113 °F)*
Humidity	10 to 90% non condensing
Storage range	–20 to +60 °C *(–4 to +140 °F)*
Ingress protection level	IP 54
Dimensions	210 × 120 × 90 mm *(8.3 × 4.8 × 3.5 in.)*
Weight	0,70 kg *(1.5 lb)*
Software	Advanced imager analysis and report writing software
Computer requirements	PC with minimum of: 300 MHz processor, MS Windows XP. 128 MB RAM, 16 bit colour graphics with 1024 × 768 pixels capability
Kit contents	Thermal camera, removable handle, Micro SD card (2 GB), USB connection cable, Universal AC Adaptor (UK, USA, European & Australian plugs), carrying case, CD containing IFU and software, Quick start guide (English)

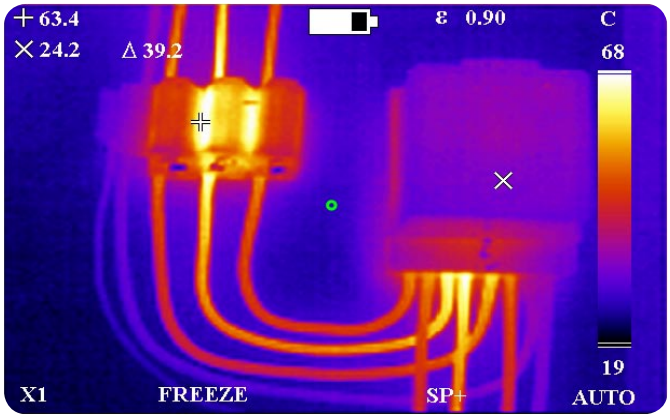


Blend function allows a mixture of digital and thermal images for ease of interpretation

Comprehensive high resolution thermal imaging package, with dual temperature function

SKF Advanced Thermal Imager TMTI 2DTS

The SKF TMTI 2DTS is a user-friendly thermal imager, producing high quality images from invisible infrared radiation. The high resolution (160 × 120 / 19 200 pixels) images are displayed on a large backlit 3.5 in. screen, for ease of viewing. Powerful PC and reportwriting software is supplied as standard (MS Windows 2000 or later required), which help enable the user to perform comprehensive data analysis and enhancement of the images.

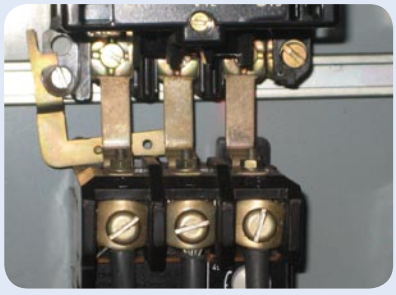


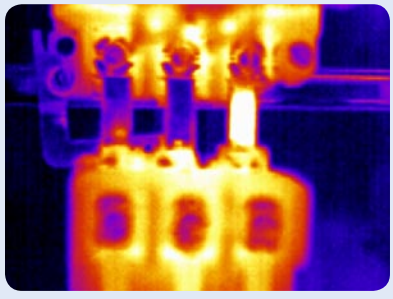
Advanced temperature measurement features are built into the SKF TMTI 2DTS such as, automatic hot spot and cold spot finder, Maximum/Minimum temperature view of an area and temperature difference display of two user defined spots. Suitable for industrial environments, the SKF TMTI 2DTS is supplied in a heavy duty case with software, rechargeable battery, battery charger, rubber protection sleeve, high temperature range filter and a SD memory card for image storage. Compact ergonomic design and lightweight helps make the SKF TMTI 2DTS suitable for use in most industrial applications.

- Easy to navigate menu makes the SKF TMTI 2DTS a user-friendly instrument and helps facilitate ease of use
- Non-contact measurement technique enables measurements to be made safely on running equipment
- Wide temperature measurement range from –10 to +500 °C is ideal for Predictive Maintenance applications
- User selectable emissivity correction from 0,2 to 1,0 with reflective ambient temperature correction, helps make the SKF TMTI 2DTS suitable for almost any application
- Convenient temperature measurement in K, °C and °F eliminates the necessity to convert temperature reading
- Laser pointer pinpoints the area of interest. Easy to associate the hot spot on the screen with the target in the field
- 4 different selectable colour pallets (ironbow, rainbow, high contrast rainbow and greyscale) for ease of viewing
- 20° × 15° field of view easily enables the application to be seen
- Large thermal image storage capacity, up to 1 000 images (in radiometric format) can be stored on the SD card provided. Easy for data collection and subsequent reporting
- Up to 10 live images per minute can be displayed on a PC
- Rubber protection sleeve helps protect the imager from damage

Technical data

Designation	TMTI 2DTS
Performance	
Field of view (FOV)	20° × 15°
Focus	Manual
Minimum focus	30 cm *(11,8 in.)*
Spectral response	8 to 14 µm
Thermal sensitivity	150 mK (0,15 °C) at 25 °C scene
Temperature detector	160 × 120 pixels un–cooled microbolometer
Measurement	
Temperature range	–10 to +500 °C *(14 to 982 °F)*
Radiometry	Two movable temperature measurement cursors
Temperature difference measurement	
Emissivity correction	User selectable 0,2 to 1,0 in steps of 0,01 with reflected ambient temperature compensation
Accuracy	
–10/250 °C:	The greater of ±2 °C *(±3.6 °F)* or 2%
200/500 °C:	With filter attached. The greater of ±15 °C or 5% of reading in °C
Display	3.5 in. colour LCD with LED backlight 4 colour palettes: ironbow, rainbow, HC (high contrast) rainbow and greyscale
Image storage	
Number	Up to 4 000 images on SD card supplied
Medium	SD card (2 GB maximum)
Laser pointer	A built in Class 2 laser is supplied to highlight the central measurement area
Imager power supply	
Battery	Lithium-ion field rechargeable, replaceable batteries
Operation time	6 hours continuous operation
AC operation	AC adaptor supplied
Mechanical	
Housing	Impact resistant plastic
Dimensions	230 × 120 × 110 mm *(9 × 4.7 × 4.3 in.)*
Weight	0,75 kg including battery *(1.6 lb)*
Mounting options	Handheld & tripod mounting
Interfaces	USB type B
Environment	
Temperature operating range	–15 to +45 °C *(5 to 113 °F)*
Humidity	10 to 90% non-condensing
Temperature storage range	–20 to +70 °C *(–4 to 158 °F)*
Kit contents	TMTI 2DTS advanced thermal imager, rechargeable battery, 12 V power supply, rubber protection sleeve, high temperature range filter, 2 GB SD card and case, USB card reader and cable, lens cap, regional plug adapters, CD ROM (instructions for use, PC software and report writer), wrist strap, carrying case





The SKF TMTI 2DTS unit is used to inspect cable connections. The temperature of one of the cable connections is significantly higher than the others. This could indicate potential problems and should be further investigated.

Pinpoint accuracy combined with measurement versatility

SKF Multi–functional Laser / Contact Tachometer TMRT 1

The SKF TMRT 1 is a user–friendly and accurate tachometer utilising laser or contact for measuring rotational and linear speed. Equipped with a laser and contact adaptor, it offers excellent speed measurement versatility in five different modes.

- The user can select the following to measure:
  - rpm, rps, m, ft or yds per minute or second,
  - length or revolution counting, or
  - time interval
- Wide speed range and the various measurement modes make the SKF TMRT 1 suitable for measuring speed in many applications
- Large angular range of ±80° to target facilitates easy measuring in areas where straight–line access is difficult
- The laser optical system allows easy and quick measurements at a safe distance from rotating machinery
- The large inverting LCD display facilitates easy reading, even when pointing the unit down into the machinery
- Compact design; one–hand operated instrument
- Supplied in carrying case for protection and portability
- The TMRT 1 can also be equipped with a remote laser sensor, which is optionally available

Technical data

Designation	TMRT 1
Display	Inverting LCD Vertical 5 digit display
Display functions	180° Inverting
Rotational speed range	Optical mode: 3–99,999 r/min. (or equivalent in r/s) Contact mode: Max. 50 000 r/min. for 10 s (or equivalent in r/s)
Linear speed range	0,30–1 500,0 m/min. or yd/min. (4 500 ft/min.) or equivalent in seconds
Measurement modes	
Optical	r/min. and r/s (also Count and Time)
Via contact adaptor	r/min., r/s, m/min., m/s, yd/min., yd/s, ft/min., ft/s
Count	total revolutions, metres, feet, yards
Measure time	interval in seconds between pulses (reciprocal rate)
Speed capture feature	Minimum, maximum and average rate
Laser optical range	50–2 000 mm *(1.9–78.7 in.)*
Angle of operation	±80°

Light source	Class 2 laser
Accuracy speed modes only	0,01%, ±1 digit
Resolution range features	Fully auto ranging up to 0,001 digit or ±1 digit fixed, user selectable
On target indicator	Yes
Low battery indicator	Yes
Memory features	Last reading held for 1 minute. Program settings retained in memory after power off
Auto switch off	After 1 minute
Contact adaptor	Included complete with rpm cone and removable metric wheel assembly
Battery type	4 × AAA Alkaline type IEC LR03
Unit dimensions	213 × 40 × 39 mm *(8.3 × 1.5 × 1.5 in.)*
Unit weight	170 g *(5.9 oz)*
Carrying case dimensions	238 × 49 × 102 mm *(9.3 × 1.9 × 4.0 in.)*
Total weight (incl. case)	355 g *(12.5 oz)*
Optional accessories	TMRT 1-56: Laser remote sensor TMRT 1-60: Bracket

Unique, reliable and safe method to detect electrical discharges in electric motor bearings

SKF Electrical Discharge Detector Pen TKED 1

The SKF TKED 1 (EDD Pen) is a simple to use hand-held instrument for detecting electrical discharges in electric motor bearings. Electrical discharges are a result of motor shaft voltages discharging to earth through the bearing, causing electrical erosion, lubricant degradation and ultimately bearing failure.

* Patent applied for

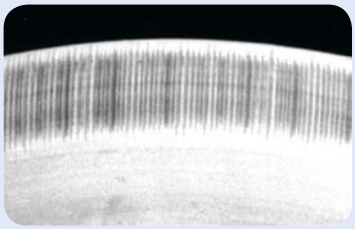
Electric motors are more vulnerable to suffer electrical erosion in bearings when controlled by a Variable Frequency Drive. When incorporated into a predictive maintenance programme, the EDD Pen can help detect bearings more susceptible to failure, and to a significant degree, prevent unplanned machine downtime.

- Unique remote solution allows operation at a distance from the motors. This helps protect the user from touching machinery in motion
- SKF developed technology: patent applied for
- No special training required
- Capable of detecting electrical discharges on a time base of 10 seconds, 30 seconds or infinite
- LED backlit screen, allows use in dark environments
- IP 55 can be used in most industrial environments
- Supplied standard with batteries, a spare antenna and language-free instructions for use in a carrying case

Technical data

Designation	TKED 1
Power supply	4,5 V 3 × AAA Alkaline type IEC LR03
Time control:	
– pre-sets	10 or 30 seconds
– default	indefinite
Operational and storage temperature	0 to 50 °C *(32 to 122 °F)* –20 to +70 °C *(–4 to +158 °F)*
Ingress protection level	IP 55
Display	LCD counter range: 0 to 99 999 discharges. User selectable backlight and low battery warning
Case dimensions (w × d × h)	255 × 210 × 60 mm *(10 × 8.3 × 2.3 in.)*
Total case and contents weight	0,4 kg *(0.88 lb)*

Lubricant degradation caused by electrical discharge currents



Fluting marks characteristic of electrical erosion in bearings

Easy, cost effective inspection in a flash

SKF Stroboscopes TKRS series

The SKF Stroboscopes TKRS 10 and TKRS 20 are portable, compact, easy-to-use stroboscopes that enable the motion of rotating or reciprocating machinery to appear frozen. They allow such applications as fan blades, couplings, gear wheels, machine tool spindles and belt drives to be inspected while running. TKRS stroboscopes are useful for ODR programmes and are an essential instrument for maintenance technicians.

The TKRS series have the following features:

- Ergonomic controls enable the flash rate to be set in a matter of seconds
- Phase shift mode enables the viewing of the object of interest to be rotated to the correct position for viewing; especially useful for gear wheels and fan blade inspection
- For ease of use for extended periods; they are equipped with a tripod mounting thread
- Supplied in a sturdy carrying case with universal charger

TKRS 10

- Flash rates of up to 12 500 flashes per minute cover a wide range of applications
- Easy to read LCD display
- Xenon flashtube source lasts for at least 100 million flashes
- Supplied with an extra flashtube to minimise unit downtime
- Rechargeable power pack alllows up to 2,5 hours of use between charging

TKRS 20

- Low energy consuming LED light source lets the rechargeable power pack to typically operate for at least twelve hours
- Bright and powerful flash gives a good target illumination at a distance, with a focused viewing area, and is ideal for outdoor use
- Flash rates of up to 300 000 flashes per minute cover most high speed applications. For routine inspections, the powerful lamp mode is useful
- A remote laser sensor is included enabling the flash rate to be easily triggered, and also enables the stroboscope to be used as a tachometer
- Easy to read LCD display shows user settings, and enables the ten user programmable flash rate memories to be quickly recalled
- Using the optional cable TKRS C1, the TKRS 20 can be connected to a SKF Microlog

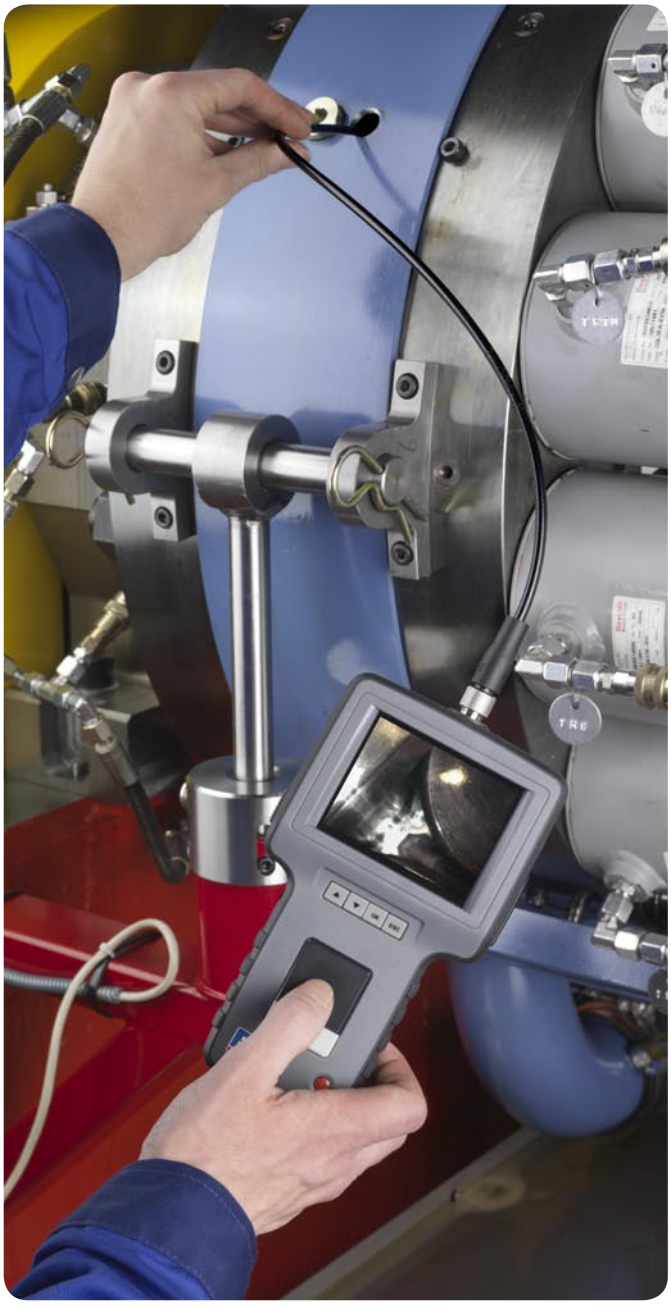
Technical data

Designation	TKRS 10	TKRS 20
Flash rate range	40 to 12 500 flashes per minute (f/min.)	30 to 300 000 flashes per minute (f/min.)
Optical sensor flash rate range	Not applicable	30 to 100 000 f/min.
Flash rate accuracy	±0,5 f/min. or ±0,01% of reading, whichever is greater	±1 f/min. or ±0,01% of reading, whichever is greater
Flash setting and display resolution	100 to 9 999 f/min.; 0,1 f/min., 10 000 to 12 500 f/min.; 1 f/min.	30 to 9 999 f/min.; 0,1 f/min., 10 000 to 300 000 f/min.; 1 f/min.
Tachometer range	40 to 59 000 r/min.	30 to 300 000 r/min.
Tachometer accuracy	±0,5 r/min. or ±0,01% of reading, whichever is greater	±0,5 r/min. or ±0,01% of reading, whichever is greater
Flash source	Xenon tube: 10 W	LED
Flash duration	9–15 µs	0,1°–5°
Light power	154 mJ per flash	1 600 lux at 6 000 f/min. at 0,2 m *(8 in.)*
Power pack type	NiMH, rechargeable and removable	NiMH, rechargeable and removable
Power pack charge time	2–4 hours	2–4 hours
Run time per charge	2,5 hours at 1 600 f/min., 1,25 hours at 3 200 f/min.	12 hours typical usage 6 hours with optical sensor
Battery charger AC input	100–240 V AC, 50/60 Hz	100–240 V AC, 50/60 Hz
Display	8 character by 2 line LCD, alphanumeric	8 character by 2 line LCD, alphanumeric
Display update	continuous	continuous
Controls	Power, ×2, ×1/2, phase shift, external trigger	Power, ×2, ×1/2, phase shift, external trigger, pulse length and memory
External trigger input	0–5 V TTL type via stereo phono jack	0–5 V TTL type via stereo phono jack
EXTL. trigger to flash delay	5 µs maximum	5 µs maximum
Clock output 0–5 V TTL	Type signal via stereo phono jack	Type signal via stereo phono jack
Weight	650 g *(1 lb, 7 oz.)*	600 g *(1 lb, 5 oz.)*
Operating temperature	10 to 40 °C *(50 to 104 °F)*	10 to 40 °C *(50 to 104 °F)*
Storage temperature	–20 to +45 °C *(–4 to +113 °F)*	–20 to +45 °C *(–4 to +113 °F)*

Fast and easy inspection with video function

SKF Endoscope TKES 1S

The SKF TKES 1S is a compact handheld instrument that allows the user to view applications in restricted spaces. The display unit with a 3.5 in. TFT LCD screen has the capacity of viewing, storing and reviewing still and video images. Images can also be displayed directly on a monitor or stored and transferred to a PC for viewing later.



The flexible insertion tube uses a miniature camera, equipped with powerful variable LED lighting, to provide the screen image. The SKF TKES 1S, which can be used as a first line inspection tool, saves time and money by reducing the need to disassemble items for inspection. This compact, palm-sized endoscope allows true portability.

- Easy to assemble and use, no special training required
- High quality optics gives an excellent full screen image and good resolution
- The 3.5 in. TFT monitor, protected by tempered glass, allows for easy viewing of photos and videos
- Fully flexible 1 metre *(39.4 in.)* insertion tube with a small tip diameter of 5,5 mm for easy access to most applications
- The 1 GB SD memory card provided can store up to 30 000 photos or 4–5 hours of video
- Photos and videos can be transferred to PC using the USB cable provided. No special software required
- Built-in step-less adjustable LED lighting helps prevent under and over illumination of target
- Water-resistant flexible tube can be used in applications where moisture is present
- 67° field of view offers an excellent viewing angle
- Supplied with right-angle side view adapter
- Multilingual menu on display unit
- Supplied complete with all necessary cables, universal mains charger and carrying case

Technical data

Designation	TKES 1S
Insertion tube and light source	
Image sensor	CMOS Image Sensor
Resolution (H × V) – dynamic – static	 320 × 240 pixels 640 × 480 pixels
Size tip (insertion tube) diameter	5,5 mm *(0.22 in.)*
Tube length	1 m *(39.4 in.)*
Field of View (FOV)	67°
Depth of Field (DOF)	1,5–10 cm *(0.6–4 in.)*
Light source	4 white LED (0–275 Lux/4 cm)
Probe working temperature	–20 to +70 °C *(–5 to +158 °F)*
Ingress protection level	IP 57
Display unit	
Power	5 V DC
Display	3.5" TFT LCD Monitor 320 × 240 pixels
Interface	Mini USB 1.1 / AV out / AV in
Battery (not user serviceable)	Rechargeable Li-polymer battery (3,7 V) Typically 4 hours operation after a 2 hour charge.
Video out format	NTSC and PAL
Recording medium	1 GB SD card storage supplied capacity ~30 000 photos, or 4–5 hours video (SD cards up to 2 GB can be used)
Still image/video recording format	JPEG (640 × 480 pixels) ASF (320 × 240 pixels)
Temperature range working charging	 –20 to 60 °C *(–4 to +140 °F)* 0 to 40 °C *(32 to 104 °F)*
Functions	Snapshot, video recording, picture and video review on LCD screen, TV Out, transfer of picture and video from SD card to PC
Weights and dimensions (complete case)	2,8 kg *(6.2 lb)* 44 × 32 × 8 cm *(17.4 × 12.5 × 3.2 in.)*

Photos and videos can be transferred to PC using the USB cable provided.

Easily pinpoints bearing and machine noise

SKF Electronic Stethoscope TMST 3

The SKF TMST 3 is a high quality instrument enabling the determination of troublesome machine parts by the detection of machine noises. TMST 3 includes a headset, two different length probes (70 and 220 mm) and a pre-recorded audio CD demonstrating the most common encountered troublesome machine noises, all supplied complete in a sturdy carrying case.

- User friendly and easy to operate, no special training required
- Lightweight ergonomic design makes it easy to operate with one hand
- Excellent sound quality helps to reliably identify the possible cause of the noise
- Excellent quality headset for optimum sound quality even in very high-noise environments
- Pre-recorded demonstration CD and output for analogue recording help facilitate analysis and comparison
- Supplied with two probes, 70 and 220 mm *(2.8 and 8.7 in.)* long
- Adjustable digital volume control up to 32 levels to reach desired volume

Technical data

Designation	TMST 3
Frequency range	30 Hz–15kHz
Operating temperature	–10 to +45 °C *(14 to 113 °F)*
Output volume	Adjustable in 32 levels
Led indicator	Power on Sound volume Battery low
Maximum recorder output	250 mV
Headset	48 ohm (with ear defender)
Auto switch off	Yes, after 2 min.

Battery	4 × AAA Alkaline type IEC LR03 (included)
Battery lifetime	30 hours (continuous use)
Dimensions handset	220 × 40 × 40 mm *(8.6 × 1.6 × 1.6 in.)*
Probe length	70 and 220 mm *(2.8 and 8.7 in.)*
Weight	
Total weight	1 560 g *(3.4 lb)*
Instrument	162 g *(0.35 lb)*
Headset	250 g *(0.55 lb)*

Easy noise level measurement

SKF Sound Pressure Meter TMSP 1

The SKF TMSP 1 is a high quality, handheld instrument for measuring the sound level in decibels. The environmental noise is picked up by the microphone and then processed by the handset. The noise can be monitored both quantitatively and qualitatively.

The SKF Sound Pressure Meter is supplied in a carrying case complete with windshield, calibration screwdriver, jack for external outputs and an alkaline battery.

- User friendly and easy to operate, no special training required
- dBA and dBC scale weightings for both general sound level and low frequency noise measurements
- Fast and slow time weighting enables either normal measurements or the average level of fluctuating noise
- Four different measurement scales to suit almost all situations
- User selectable backlight for use in environments with poor lighting
- Four digit LCD panel with both digital and bar graph display
- Max and min function for peak measurements and alarm function to indicate when the noise level is too low or too high
- Tripod mounting thread for use when the instrument must remain in the same position for a prolonged period

Technical data

Designation	TMSP 1
Frequency range	31,5 Hz to 8 KHz
Measuring level range	30 to 130 dB
Display	LCD
Digital display	4 digits, Resolution: 0,1 dB, Display update: 0,5 s
Analogue display	50 segments bar-graph Resolution: 1 dB Display update: 100 ms
Time weighting	Fast (125 ms), Slow (1 s)
Level ranges	Lo = 30~80 dB, Med = 50~100 dB, Hi = 80~130 dB, Auto = 30~130 dB
Accuracy	±1,5 dB (ref 94 dB at 1 KHz)
Conformity	Fulfills IEC651 type 2, ANSI S1.4 type 2 for sound level meters

Dynamic range	50 dB
Power supply	9 V Alkaline type IEC 6LR61
Power life	50 hours (with alkaline battery)
Operation temperature	0 to 40 °C *(32 to 104 °F)*
Operation humidity	10 to 90% relative humidity
Operation altitude	Up to 2 000 m *(6 560 ft)* above sea level
Dimensions	275 × 64 × 30 mm *(10.8 × 2.5 × 1.2 in.)*
Case dimensions	310 × 165 × 73 mm *(12.2 × 6.5 × 2.8 in.)*
Weight	285 g *(0.76 lb)* including battery
Total weight (incl.case)	730 g *(1.95 lb)*

Quick and easy detection of air leaks

SKF Ultrasonic Leak Detector TMSU 1

The SKF TMSU 1 is a high quality, user-friendly instrument enabling the detection of air leaks by means of ultrasound. Leaks are caused by fluid flowing from a high pressure environment to a low pressure environment, creating turbulence.

The turbulence generates high frequency sounds (so called ultrasound) that can be detected by SKF TMSU 1. The operator simply guides the instrument to the loudest point, which helps locate the leak location.

SKF TMSU 1 also includes a headset, rubber nozzle and batteries, supplied complete in a sturdy carrying case.

- Lightweight compact design makes it easy to operate with one hand
- User friendly, no special training required
- By identifying air leaks and fixing them, energy consumption is significantly reduced
- The flexible tube allows access to confined spaces
- The headset provides high sound quality even in very high-noise environments, and also helps to protect the ears
- Wide operating temperature

Technical data

Designation	TMSU 1
Amplification	7 levels: 20, 30, 40, 50, 60, 70 and 80 dB
Ultrasound sensor	19 mm *(0.75 in.)* diameter central frequency of 40 kHz
Detected frequencies	38,4 kHz, ±2 kHz *(–3 dB)*
Power	Two alkaline AA batteries, 1,5 V. Rechargeable batteries can also be used
Battery life	Typically 20 hours
Dimensions	Body: 170 × 42 × 31 mm *(6.70 × 1.65 × 1.22 in.)* Flexible tube length: 400 mm *(15.75 in.)*
Weight	0,4 kg *(0.9 lb)* incl. batteries
Operating temperature range	–10 to +50 °C *(14 to 122 °F)*

Note: The SKF TMSU 1 is not ATEX approved

Analysis power without complexity

SKF MicroVibe P kit CMVL 3860-ML

Assess machine condition easily and analyse problems quickly with this versatile and easy-to-use pocket tool. The economical vibration module fits in a Pocket PC's compact flash card slot (CF Type II).

The SKF MicroVibe P collects and displays overall vibration readings and automatically provides expert judgment of the measured velocity and overall enveloped acceleration levels, enabling immediate, accurate and reliable assessment of machine or bearing condition.

Pocket PC not included

Furthermore, the SKF MicroVibe P comes with analysis capabilities, including cursor position readout with display zoom to optimize your analysis power. In addition, it automatically tabulates and displays the highest vibration peaks from a spectrum, making it easy to quickly identify signals indicative of specific machine problems, like misalignment, imbalance, or bearing faults.

The MicroVibe P CMVL 3860-ML features

- Pocket PC platform with user–friendly Windows Mobile Operating System
- Displays overall vibration, time–waveform, FFT spectrum analysis and early indication of bearing degradation
- Ideal for small route data collection
- Stores and recalls up to 2 000 overall vibration signals, 1 000 FFT spectrums and 200 time waveform for more focused analysis and trending
- Enables Pocket PC users to upload overall scalar and spectral data to PC for trending and further analysis with included data management software

Easy detection of high frequency sounds

Inspector 400 Ultrasonic Probe CMIN 400-K

The Inspector 400 Ultrasonic Probe senses high frequency sounds produced by operating equipment, as well as leaks and electrical discharges. It electronically translates these signals by a heterodyning process, making them audible, so that a user can hear these sounds through a headset and see them as intensity increments on a meter.

- Detects pressure and vacuum leaks, including compressed air
- Checks steam traps and valves quickly and accurately
- Detects arcing, tracking and corona in electric apparatus
- Tests bearings, pumps, motors and compressors
- Frequency response: 20–100 kHz (centred at 38–42 kHz)
- Indicator: 10-segment LED bar graph (red)

For additional information, please refer to our publication 10549 EN.

Machine monitoring, made simple

SKF Machine Condition Advisor CMAS 100-SL

Both novice users and experts can easily, quickly, and accurately check the condition of rotating equipment throughout their facility. Equipping your maintenance and operation personnel with this rugged, ergonomic and easy-to-use instrument can hekp to provide early warning of potential machine problems before a costly failure occurs.

Multiple measurements with a single device

The SKF Machine Condition Advisor provides an overall "velocity" vibration reading that measures vibration signals from the machine caused by rotational and structural problems such as unbalance, misalignment and looseness and automatically compares them to pre-programmed ISO guidelines. An "alert" or "danger" alarm displays when measurements exceed those guidelines. Simultaneously, an "enveloped acceleration" measurement in the higher frequencies is taken.

Elevated readings are caused by rolling element bearing or gear mesh problems and compared to established bearing vibration guidelines to verify conformity or indicate potential bearing damage. The SKF Machine Condition Advisor also measures temperature using an infrared sensor to indicate uncharacteristic heat.

This approach provides accurate and reliable data upon which to base maintenance decisions and promotes early detection, confirmation and accurate trending of bearing and machinery problems.

- Measuring velocity, enveloped acceleration, and temperature simultaneously saves time
- Assess vibration in industrial non–reciprocating machinery
- Lightweight, compact, and ergonomically designed, the SKF Machine Condition Advisor fits neatly at the belt line, in a pocket or a tool kit
- Exceptionally durable, the unit is rated IP 54 for use in industrial environments
- Quick and easy to set up and use, measurements are shown on a bright display viewable in low light to direct sunlight. Free on-line training is also available at SKF @ptitude Exchange
- Alert and danger prompts provide increased diagnostic confidence
- Efficient, economical, and environmentally friendly, the rechargeable SKF Machine Condition Advisor operates 10 hours on a single charge
- Flexible enough to work with standard constant current 100 mV/g accelerometers, an optional external sensor can be used for hard-to-reach locations and for more repeatable and accurate measurement results
- Features English, French, German, Portuguese, Spanish and Swedish for user convenience

For more information, please refer to our publication 10549 EN.

Technical data

Vibration pick-up	Internal: Integrated piezoelectric acceleration External: Accepts a standard 100 mV/g constant current accelerometer
Measurements	
Velocity	Range: 0,7 to 65,0 mm/s (RMS) 0.04 to 3.60 in./s (equivalent Peak) meets ISO 10816 Frequency: 10 to 1 000 Hz, meets ISO 2954
Enveloped Acceleration	Range: 0,2 to 50 gE Frequency: Band 3 (500 to 10 000 Hz)
Temperature	Range: –20 to +200 °C *(–4 to +392 °F)* Infrared temperature accuracy: ±2 °C *(±3.6 °F)* Distance: Short range, max. 10 cm *(4 in.)* from target
Operating temperature range	In use: –10 to +60 °C *(14 to 140 °F)* While charging: 0 to 40 °C *(32 to 104 °F)*
Storage temperature	Less than one month: –20 to +45 °C *(–4 to +113 °F)* More than one month but less than six months: –20 to +35 °C *(–4 to +95 °F)*

Humidity	95% relative humidity, non-condensing
Ingress Protection	IP 54
Approvals	CE (Certified Engineering)
Drop test	2 m *(6.6 ft.)*
Weight	125 g *(4.4 oz.)*
Dimensions	200 × 47 × 25 mm *(7.9 × 1.85 × 1 in.)*
Battery capacity	550 mAh
Battery life	10 hours before charging (approx. 1 000 measurements) With external sensor: Up to 55% less battery life
External sensor power	24 V DC at 3,5 mA
Charger specifications	Universal AC/DC wall plug-in Input: 90 to 264 V AC, 47 to 60 Hz Output: 5 V DC regulated 3 to 4 hours for a full charge

Also available from SKF

SKF basic condition monitoring tools offer an easy way to begin using machine data to improve your overall equipment effectiveness. Basic kits are available, combining popular tools in one convenient package.

Multi-parameter measurements for electric motors

SKF Electric motor assessment kit CMAK 200-SL

A fitting bundle of two measurement devices for electric motors and other industrial assets. The SKF CMAK 200-SL makes the evaluation of electric motor bearings and general machine health simple.

- Inspect and assess electric motor machine condition
- Measures velocity, enveloped acceleration and temperature on electric motors and other operating equipment
- Safely detect electrical discharges in electrical motors
- The instruments are packaged in a light, black nylon carrying case
- Ideal for novice and expert users

The CMAK 200-SL kit includes:

- SKF Electrical Discharge Detector Pen TKED 1
- SKF Machine Condition Advisor CMAS 100-SL

Checking of bearing and lubrication condition, made simple

SKF Bearing Assessment Kit CMAK 300-SL

The SKF CMAK 300-SL makes the evaluation of bearing condition a simple task for maintenance, operations, reliability and vibration analysis departments.

- Check bearing and lubrication condition
- Inspect and assess overall machine condition
- Measures velocity, enveloped acceleration and temperature
- Shows changes in oil condition effected by water content, fuel contamination, metallic content and oxidation
- The instruments are packaged in a light, durable aluminum carrying case for industrial environments

The CMAK 300-SL kit includes:

- SKF Machine Condition Advisor CMAS 100-SL
- SKF Infrared Thermometer CMSS 3000-SL
- SKF Oil Condition Monitor TMEH 1

Check bearing and machine condition quickly and easily

SKF Basic Condition Monitoring Kit CMAK 400-ML

An essential collection of measurement tools for all industrial manufacturing plants. The SKF CMAK 400-ML makes machine health monitoring a simple task for maintenance, operations, reliability, and vibration analysis departments.

- Inspect and assess overall machine condition
- Measure vibration, temperature, high frequency sound and enveloped acceleration in operating equipment, like bearings, pumps, motors, compressors, etc.
- The instruments are packaged in a light, durable aluminum carrying case for industrial environments
- Ideal for novice and expert users

The CMAK 400-ML kit includes:

- SKF Machine Condition Advisor CMAS 100-SL
- SKF External sensor kit for the SKF Machine Condition Advisor CMAC 105
- SKF Infrared Thermometer CMSS 3000-SL
- SKF Inspector 400 Ultrasonic Probe CMIN 400-K

SKF Machine Condition Advisor CMAS 100-SL

The SKF Machine Condition Advisor simultaneously measures machine vibration signals and temperature to indicate machine health and bearing condition.

SKF External sensor kit for the SKF Machine Condition Advisor CMAC 105

The external vibration sensor with magnet provides convenience for hard-to-reach surfaces and more repeatable and accurate measurements.

SKF Infrared Thermometer CMSS 3000-SL

The heavy duty SKF Infrared Thermometer is a dual laser sighted, non-contact instrument for long range application.

SKF Inspector 400 Ultrasonic Probe CMIN 400-K

The SKF Inspector 400 Ultrasonic Probe senses high frequency sounds produced by operating equipment, leaks, and electrical discharges and makes them audible. The SKF Basic condition monitoring kit features all of the accessories from the from the SKF Inspector 400 Ultrasonic Probe kit.

SKF Electrical Discharge Detector Pen TKED 1

The SKF Electrical Discharge Detector Pen is a simple to use hand-held instrument and provides a unique, reliable and safe way to detect electrical discharges in electric motor bearings.

SKF Oil Condition Monitor TMEH 1

The SKF Oil Condition Monitor indicates the degradation and contamination level of oil, and detects increased mechanical wear and loss of the oil's lubricating properties.

Lubricants

Automatic lubrication

Manual lubrication

Lubrication management tools

Lubrication

Lubricants

Lubrication management tools

Automatic lubricators

Manual lubrication tools

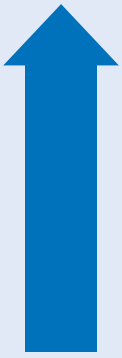
Lubrication software

Lubrication

Poor lubrication accounts for more than 36% of premature bearing failures

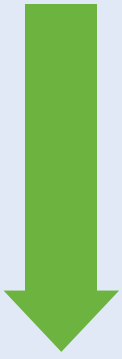
Include contamination, and this number rises to well above 50%. The importance of proper lubrication and cleanliness is self-evident in the determination of bearing life.

Benefits of proper lubrication



Increase

- Productivity
- Reliability
- Availability and durability
- Machine uptime
- Service intervals
- Safety
- Health
- Sustainability



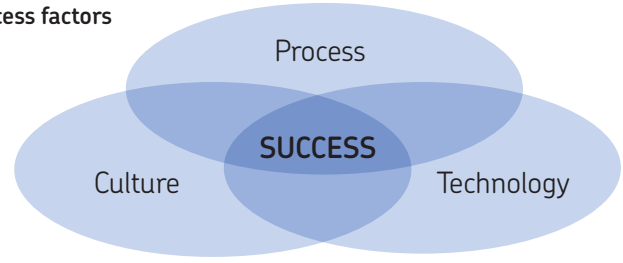
Reduce

- Energy consumption due to friction
- Heat generation due to friction
- Wear due to friction
- Noise due to friction
- Downtime
- Operating expenses
- Product contamination
- Maintenance and repair costs
- Lubricant consumption
- Corrosion

The SKF approach

The Asset Management (AM) concept has become stronger in recent years. Leading companies are adopting it, striving to maximise availability, efficiency, and improving the quality of their assets while minimising costs. Lubrication is a key element in maintenance management, and is thus a key aspect of the total AM concept.

Success factors



Three factors influence the success of the AM process:

Culture: Organisational culture and commitment by management to ensure, proper training, human resources, etc.

Process: A constant review and improvement of all required processes like asset registration, key performance indicators, updates, etc.

Technology: Willingness to invest in new relevant technology is a key to success. The willingness of the workforce to use it is just as important.

To assist organisations through this complex process, SKF has developed the asset efficiency optimization (AEO) process. This management process has been designed to help achieve maximum efficiency and effectiveness in activities focussing on the productivity and business goals set for the facility. These goals include production, environmental and safety objectives. The process is comprised of four key elements: maintenance strategy, work identification, work control and work execution. Additional information about asset management is available online at www.aptitudeexchange.com.

Lubrication management

Just as asset management takes maintenance to a higher level, a lubrication management approach allows lubrication to be seen from a wider point of view. This new approach helps to effectively increase machine reliability at a lower overall cost.

These are the main elements that need to be considered when implementing a lubrication management plan.

Application identification and data collection

All the relevant information from every lubrication point has to be collected. Data like type of bearing, seal material, etc., are crucial when making decisions.

Lubricant selection and optimisation

A better lubricant leads to longer relubrication intervals and higher performance. This extends the component's life cycle and leads to less labour, inventory and risk of contamination.

Execution, procedures and KPIs*

Lubrication tasks can be risky for both the technician and the machine. Proper procedures and methods minimise this risk. KPIs allow the overall efficiency of the plan to be measured.

Training and constant improvement

Proper knowledge enables lubrication technicians to carry-out and manage the lubrication plan. Ideas for improvement will be developed from KPI analyses, training and market updates.

Lubricants analyses

Lubricant analyses can provide useful information to anticipate possible risks and thereby prevent failures.

Storage, handling and contamination control

Cleanliness is often underestimated. Refilling a grease gun or transferring oil can lead to a high risk of contamination. The use of proper tools minimise this risk.

* KPI: Key Performance Indicator

SKF lubricants

SKF lubricants offer major competitive advantages:

- Designed and tested to outperform under real conditions
- Product data include specific test results enabling a better selection
- Strict quality control of every production batch help ensure consistent performance
- Quality control allows SKF to offer a five–year shelf-life* from the date of production

Production processes and raw materials vastly influence grease properties and performance. It is virtually impossible to select or compare greases based only on their composition. Therefore, performance tests are needed to provide crucial information. In over 100 years, SKF has accrued vast knowledge about the interaction of lubricants, materials and surfaces.

SKF Engineering and Research Centre in the Netherlands

This knowledge has led SKF, in many cases, to set industry standards in bearing lubricant testing. Emcor, ROF, ROF+, V2F, R2F and Bequiet are just some of the multiple tests developed by SKF to assess the performance of lubricants under bearing operating conditions. Many of them are widely used by lubricant manufacturers worldwide.

* SKF LGFP 2 food grade grease offers a two-year shelf-life from the date of production

SKF lubricant selection

Selecting a grease can be a delicate process. SKF has developed several tools in order to facilitate the selection of the most suitable lubricant. The wide range of tools available includes those from easy-to-use application driven tables to advanced software allowing for grease selection based upon detailed working conditions.

The basic bearing grease selection chart provides you with quick suggestions on the most commonly used greases in typical applications.

Basic bearing grease selection

Generally use if:

Speed = M, Temperature = M and Load = M	LGMT 2	General purpose

Unless:

Expected bearing temperature continuously >100 °C *(210 °F)*	LGHP 2	High temperature
Expected bearing temperature continuously >150 °C *(300 °F)*, demands for radiation resistance	LGET 2	Extremely high temperature
Low ambient –50 °C *(–60 °F)*, expected bearing temperature <50 °C *(120 °F)*	LGLT 2	Low temperature
Shock loads, heavy loads, frequent start-up / shut-down	LGEP 2	High load
Food processing industry	LGFP 2	Food processing
Biodegradable, demands for low toxicity	LGGB 2	Biodegradable

Note: – For areas with relatively high ambient temperatures, use LGMT 3 instead of LGMT 2
– For special operating conditions, refer to the SKF bearing grease selection chart

With additional information like speed, temperature, and load conditions, LubeSelect for SKF greases is the easiest way to select the right grease. For additional information, visit www.aptitudeexchange.com. Additionally, the SKF bearing grease selection chart provides you with a complete overview of SKF greases. The chart includes the main selection parameters, such as temperature, speed and load, as well as basic additional performance information.

Bearing operating parameters

Temperature

L	= Low	<50 °C	*(120 °F)*
M	= Medium	50 to 100 °C	*(120 to 230 °F)*
H	= High	>100 °C	*(210 °F)*
EH	= Extremely high	>150 °C	*(300 °F)*

Load

VH	= Very high	C/P <2
H	= High	C/P ~4
M	= Medium	C/P ~8
L	= Low	C/P ≥15

C/P = Load ratio **C** = basic dynamic load rating, kN
P = equivalent dynamic bearing load, kN

Speed		**for ball bearings**
EH	= Extremely high	n d_m over 700 000
VH	= Very high	n d_m up to 700 000
H	= High	n d_m up to 500 000
M	= Medium	n d_m up to 300 000
L	= Low	n d_m below 100 000

Speed		**for roller bearings SRB/TRB/CARB**	**CRB**
H	= High	n d_m over 210 000	n d_m over 270 000
M	= Medium	n d_m up to 210 000	n d_m up to 270 000
L	= Low	n d_m up to 75 000	n d_m up to 75 000
VL	= Very low	n d_m below 30 000	n d_m below 30 000

n d_m = rotational speed, r/min x 0,5 (D+d), mm

SKF bearing grease selection chart

Grease	Description	Application examples	Temperature range [1] LTL	HTPL	Temp.	Speed
LGMT 2	General purpose industrial and automotive	Automotive wheel bearings Conveyors and fans Small electric motors	–30 °C (–20 °F)	120 °C (250 °F)	M	M
LGMT 3	General purpose industrial and automotive	Bearings with d>100 mm Vertical shaft or outer bearing ring rotation Car, truck and trailer wheel bearings	–30 °C (–20 °F)	120 °C (250 °F)	M	M
LGEP 2	Extreme pressure	Forming and press section of paper mills Work roll bearings in steel industry Heavy machinery, vibrating screens	–20 °C (–5 °F)	110 °C (230 °F)	M	L to M
LGWA 2	Wide temperature [4], extreme pressure	Wheel bearings in cars, trailers and trucks Washing machines Electric motors	–30 °C (–20 °F)	140 °C (285 °F)	M to H	L to M
LGFP 2	Food compatible	Food processing equipment Wrapping machines Bottling machines	–20 °C (–5 °F)	110 °C (230 °F)	M	M
LGGB 2	Biodegradable, low toxicity [3]	Agricultural and forestry equipment Construction and earthmoving equipment Water treatment and irrigation	–40 °C (–40 °F)	90 °C (195 °F)	L to M	L to M
LGBB 2	Wind turbine blade and yaw bearing grease	Wind turbine blade and yaw slewing bearings	–40 °C (–40 °F)	120 °C (250 °F)	L to M	VL
LGLT 2	Low temperature, extremely high speed	Textile and machine tool spindles Small electric motors and robots Printing cylinders	–50 °C (–60 °F)	110 °C (230 °F)	L to M	M to EH
LGWM 1	Extreme pressure, low temperature	Main shaft of wind turbines Centralised lubrication systems Spherical roller thrust bearing applications	–30 °C (–20 °F)	110 °C (230 °F)	L to M	L to M
LGWM 2	High load, wide temperature	Main shaft of wind turbines Heavy duty off road or marine applications Snow exposed applications	–40 °C (–40 °F)	110 °C (230 °F)	L to M	L to M
LGEM 2	High viscosity plus solid lubricants	Jaw crushers Construction machinery Vibrating machinery	–20 °C (–5 °F)	120 °C (250 °F)	M	VL
LGEV 2	Extremely high viscosity with solid lubricants	Trunnion bearings Support and thrust rollers on rotary kilns and dryers Slewing ring bearings	–10 °C (15 °F)	120 °C (250 °F)	M	VL
LGHB 2	EP high viscosity, high temperature [5]	Steel on steel plain bearings Dryer section of paper mills Work roll bearings and continuous casting in steel industry Sealed spherical roller bearings up to 150 °C (302 °F)	–20 °C (–5 °F)	150 °C (300 °F)	M to H	VL to M
LGHP 2	High performance polyurea grease	Electric motors Fans, even at high speed High speed ball bearings at medium and high temperatures	–40 °C (–40 °F)	150 °C (300 °F)	M to H	M to H
LGET 2	Extreme temperature	Bakery equipment (ovens) Wafer baking machines Textile dryers	–40 °C (–40 °F)	260 °C (500 °F)	VH	L to M

1) LTL = Low Temperature Limit
HTPL = High Temperature Performance Limit
2) mm^2/s at 40 °C (105 °F) = cSt.
3) LGGB 2 can withstand peak temperatures of 120 °C (250 °F)
4) LGWA 2 can withstand peak temperatures of 220 °C (430 °F)
5) LGHB 2 can withstand peak temperatures of 200 °C (390 °F)

Load	Thickener / Base Oil	NLGI	Base oil viscosity [2]	Vertical shaft	Fast outer ring rotation	Oscillating movements	Severe Vibrations	Shock load or frequent start up	Rust inhibiting properties	
L to M	Lithium soap / mineral oil	2	110	●			+		+	Wide applications greases
L to M	Lithium soap / mineral oil	3	120	+	●		+		●	Wide applications greases
H	Lithium soap / mineral oil	2	200	●		●	+	+	+	Wide applications greases
L to H	Lithium complex soap / mineral oil	2	185	●	●	●	●	+	+	Wide applications greases
L to M	Aluminium complex / medical white oil	2	130	●					+	Special requirements
M to H	Lithium-calcium soap / synthetic ester oil	2	110	●		+	+	+	●	Special requirements
M to H	Lithium complex soap / synthetic PAO oil	2	68			+	+	+	+	Special requirements
L	Lithium soap / synthetic PAO oil	2	18	●				●	●	Low temperatures
H	Lithium soap / mineral oil	1	200			+		+	+	Low temperatures
L to H	Complex calcium sulphonate / synthetic PAO oil / mineral oil	2	80	●	●	+	+	+	+	High loads
H to VH	Lithium soap / mineral oil	2	500	●		+	+	+	+	High loads
H to VH	Lithium-calcium soap / mineral oil	2	1020	●		+	+	+	+	High loads
L to VH	Complex calcium sulphonate / mineral oil	2	400	●	+	+	+	+	+	High loads
L to M	Di-urea / mineral oil	2 το 3	96	+			●	●	+	High temperatures
H to VH	PTFE / synthetic fluorinated polyether oil	2	400	●	+	+	●	●	●	High temperatures

● = Suitable + = Recommended

Bearing grease

LGMT 2

SKF General Purpose Industrial and Automotive Bearing Grease

SKF LGMT 2 is mineral oil based, lithium soap thickened grease with excellent thermal stability within its operating temperature range. This premium quality, general purpose grease is suitable for a wide range of industrial and automotive applications.

- Excellent oxidation stability
- Good mechanical stability
- Excellent water resistance and rust inhibiting properties

Typical applications:

- Agricultural equipment
- Automotive wheel bearings
- Conveyors
- Small electric motors
- Industrial fans

Technical data

Designation	LGMT 2/(pack size)
DIN 51825 code	K2K-30
NLGI consistency class	2
Soap type	Lithium
Colour	Red brown
Base oil type	Mineral
Operating temperature range	–30 to +120 °C *(–20 to +250 °F)*
Dropping point DIN ISO 2176	>180 °C *(>355 °F)*
Base oil viscosity	
40 °C, mm²/s	110
100 °C, mm²/s	11
Penetration DIN ISO 2137:	
60 strokes, 10^{-1} mm	265–295
100 000 strokes, 10^{-1} mm	+50 max. (325 max.)
Mechanical stability	
Roll stability, 50 hrs at 80 °C, 10^{-1} mm	+50 max.
V2F test	'M'

Corrosion protection	
Emcor:	
– standard ISO 11007	0–0
– water washout test	0–0
– salt water test (100% seawater)	0–1*
Water resistance	
DIN 51 807/1, 3 hrs at 90 °C	1 max.
Oil separation	
DIN 51 817, 7 days at 40 °C, static, %	1–6
Lubrication ability	
R2F, running test B at 120 °C	Pass
Copper corrosion	
DIN 51 811, 110 °C	2 max. at 130 °C *(265 °F)*
Available pack sizes	35, 200 g tube 420 ml cartridge 1, 5, 18, 50, 180 kg

* Typival value

LGMT 3

SKF General Purpose Industrial and Automotive Bearing Grease

SKF LGMT 3 is mineral oil based, lithium soap thickened grease. This premium quality, general purpose grease is suitable for a wide range of industrial and automotive applications requiring stiff grease.

- Excellent rust inhibiting properties
- High oxidation stability within its recommended temperature range

Typical applications:

- Bearings >100 mm *(3.9 in.)* shaft size
- Outer bearing ring rotation
- Vertical shaft applications
- Continuous high ambient temperatures >35 °C *(95 °F)*
- Propeller shafts
- Agricultural equipment
- Car, truck and trailer wheel bearings
- Large electric motors

Technical data

Designation	LGMT 3/(pack size)
DIN 51825 code	K3K-30
NLGI consistency class	3
Soap type	Lithium
Colour	Amber
Base oil type	Mineral
Operating temperature range	–30 to +120 °C *(–20 to +250 °F)*
Dropping point DIN ISO 2176	>180 °C *(>355 °F)*
Base oil viscosity	
40 °C, mm^2/s	120–130
100 °C, mm^2/s	12
Penetration DIN ISO 2137	
60 strokes, 10^{-1} mm	220–250
100 000 strokes, 10^{-1} mm	280 max.
Mechanical stability	
Roll stability, 50 hrs at 80 °C, 10^{-1} mm	295 max.
V2F test	'M'
Corrosion protection	
Emcor: – standard ISO 11007	0–0
– water washout test	0–0
Water resistance	
DIN 51 807/1, 3 hrs at 90 °C	2 max.
Oil separation	
DIN 51 817, 7 days at 40 °C, static, %	1–3
Lubrication ability	
R2F, running test B at 120 °C	Pass
Copper corrosion	
DIN 51 811, 110 °C	2 max. at 130 °C *(265 °F)*
Rolling bearing grease life	
R0F test	1 000 min. at 130 °C
L_{50} life at 10 000 r/min., hrs	*(265 °F)*
Available pack sizes	420 ml cartridge 0,5, 1, 5, 18, 50, 180 kg

LGEP 2

SKF High Load, Extreme Pressure Bearing Grease

SKF LGEP 2 is mineral oil based, lithium soap thickened grease with extreme pressure additives. This grease provides good lubrication in general applications subjected to harsh conditions and vibrations.

- Excellent mechanical stability
- Extremely good corrosion inhibiting properties
- Excellent EP performance

Typical applications:

- Pulp and paper making machines
- Jaw crushers
- Traction motors for rail vehicles
- Dam gates
- Work roll bearings in steel industry
- Heavy machinery, vibrating screens
- Crane wheels, sheaves

Technical data

Designation	LGEP 2/(pack size)
DIN 51825 code	KP2G-20
NLGI consistency class	2
Soap type	Lithium
Colour	Light brown
Base oil type	Mineral
Operating temperature range	–20 to +110 °C *(–5 to +230 °F)*
Dropping point DIN ISO 2176	>180 °C *(>355 °F)*
Base oil viscosity: 40 °C, mm^2/s 100 °C, mm^2/s	 200 16
Penetration DIN ISO 2137: 60 strokes, 10^{-1} mm 100 000 strokes, 10^{-1} mm	 265–295 +50 max. (325 max.)
Mechanical stability: Roll stability, 50 hrs at 80 °C, 10^{-1} mm V2F test	 +50 max. 'M'
Corrosion protection: Emcor: – standard ISO 11007 – water washout test – salt water test (100% seawater)	 0–0 0–0 1–1*
Water resistance DIN 51 807/1, 3 hrs at 90 °C	 1 max.
Oil separation DIN 51 817, 7 days at 40 °C, static, %	 2–5
Lubrication ability R2F, running test B at 120 °C	 Pass
Copper corrosion DIN 51 811, 110 °C	 2 max.
EP performance Wear scar DIN 51350/5, 1 400 N, mm 4–ball test, welding load DIN 51350/4	 1,4 max 2 800 min.
Fretting corrosion ASTM D4170 (mg)	 5,7*
Available pack sizes	420 ml cartridge 1, 5, 18, 50, 180 kg

* Typical value

LGWA 2

SKF High Load, Extreme Pressure, Wide Temperature Range Bearing Grease

SKF LGWA 2 is a premium quality mineral oil based, lithium complex grease with extreme pressure (EP) performance. LGWA 2 is recommended for general industrial and automotive applications, when loads or temperatures exceed the range of general purpose greases.

- Excellent lubrication at peak temperatures up to 220 °C *(430 °F)* for short periods
- Protection of wheel bearings operating under severe conditions
- Effective lubrication in wet conditions
- Good water and corrosion resistance
- Excellent lubrication under high loads and low speeds

Typical applications:

- Wheel bearings in cars, trailers and trucks
- Washing machines
- Fan and electric motors

Technical data

Designation	LGWA 2/(pack size)
DIN 51825 code	KP2N-30
NLGI consistency class	2
Soap type	Lithium complex
Colour	Amber
Base oil type	Mineral
Operating temperature range	–30 to +140 °C *(–20 to +285 °F)*
Dropping point DIN ISO 2176	>250 °C *(>480 °F)*
Base oil viscosity	
40 °C, mm^2/s	185
100 °C, mm^2/s	15
Penetration DIN ISO 2137	
60 strokes, 10^{-1} mm	265–295
100 000 strokes, 10^{-1} mm	+50 max. *(325 max.)*
Mechanical stability	
Roll stability, 50 hrs at 80 °C, 10^{-1} mm	+50 max. change
V2F test	'M'
Corrosion protection	
Emcor: – standard ISO 11007	0–0
– water washout test	0–0*
Water resistance	
DIN 51 807/1, 3 hrs at 90 °C	1 max.
Oil separation	
DIN 51 817, 7 days at 40 °C, static, %	1–5
Lubrication ability	
R2F, running test B at 120 °C	Pass at 100 °C *(210 °F)*
Copper corrosion	
DIN 51 811, 110 °C	2 max.
EP performance	
Wear scar DIN 51350/5, 1 400 N, mm	1,6 max.
4–ball test, welding load DIN 51350/4	2 600 min.
Available pack sizes	35, 200 g tube 420 ml cartridge 1, 5, 50, 180 kg SKF SYSTEM 24 (LAGD/LAGE)

LGFP 2

SKF Food Compatible Bearing Grease

SKF LGFP 2 is a clean, non-toxic bearing grease, which is based on medical white oil using an aluminium complex soap. This grease is formulated using only FDA* listed ingredients and is authorised by the NSF** for category H1*** service. SKF LGFP 2 is halal and kosher certified.

- Compliance with all existing laws concerning on food protection
- High resistance to water
- Excellent grease life
- Excellent corrosion resistance
- An essentially neutral pH value

Typical applications:

- Bakery equipment
- Food processing equipment
- Multi-pack cassette bearings
- Wrapping machines
- Conveyor bearings
- Bottling machines

* FDA: U.S. Food and Drug Administration
** NSF: U.S. National Sanitation Foundation
*** H1: Incidental contact with food

Technical data

Designation	LGFP 2/(pack size)
DIN 51825 code	K2G-20
NLGI consistency class	2
Soap type	Aluminium complex
Colour	Transparent
Base oil type	Medical
Operating temperature range	–20 to +110 °C *(–5 to +230 °F)*
Dropping point DIN ISO 2176	>250 °C *(>480 °F)*
Base oil viscosity 40 °C, mm^2/s 100 °C, mm^2/s	 130 7,3
Penetration DIN ISO 2137 60 strokes, 10^{-1} mm 100 000 strokes, 10^{-1} mm	 265–295 +30 max.

Corrosion protection Emcor: – standard ISO 11007	 0–0
Water resistance DIN 51 807/1, 3 hrs at 90 °C	 1 max.
Oil separation DIN 51 817, 7 days at 40 °C, static, %	 1–5
Rolling bearing grease life ROF test L_{50} life at 10 000 r/min., hrs	 1 000 at 110 °C *(230 °F)*
EP performance 4–ball test, welding load DIN 51350/4	 1 100 min.
Available pack sizes	420 ml cartridge 1, 18, 180 kg SKF SYSTEM 24 (LAGD/LAGE)

LGGB 2

SKF Biodegradable Bearing Grease

SKF LGGB 2 is a biodegradable, low toxicity, synthetic ester oil based grease, using a lithium-calcium thickener. Its special formulation makes it most suitable for applications where environmental contamination is a concern.

- Compliance with current regulations on toxicity and biodegradability
- Good performance in applications with steel-on-steel spherical plain bearings, ball bearings and roller bearings
- Good low temperature start-up performance
- Good corrosion inhibiting properties
- Suitable for medium to high loads

Typical applications:

- Agricultural and forestry equipment
- Construction and earthmoving equipment
- Mining and conveying equipment
- Water treatment and irrigation
- Locks, dams, bridges
- Linkages, rod ends

Technical data

Designation	LGGB 2/(pack size)
DIN 51825 code	KPE 2K-40
NLGI consistency class	2
Soap type	Lithium/calcium
Colour	Off white
Base oil type	Synthetic ester
Operating temperature range	–40 to +120 °C *(–40 to +250 °F)*
Dropping point DIN ISO 2176	>170 °C *(>340 °F)*
Base oil viscosity	
40 °C, mm^2/s	110
100 °C, mm^2/s	13
Penetration DIN ISO 2137	
60 strokes, 10^{-1} mm	265–295
100 000 strokes, 10^{-1} mm	+50 max. (325 max.)
Mechanical stability	
Roll stability, 50 hrs at 80 °C, 10^{-1} mm	+70 max. (350 max.)
Corrosion protection	
Emcor: – standard ISO 11007	0–0
Water resistance	
DIN 51 807/1, 3 hrs at 90 °C	0 max.
Oil separation	
DIN 51 817, 7 days at 40 °C, static, %	0,3–3
Lubrication ability	
R2F, running test B at 120 °C	Pass at 100 °C *(210 °F)**
Rolling bearing grease life	
ROF test L_{50} life at 10 000 r/min., hrs	>300 at 120 °C *(250 °F)*
EP performance	
Wear scar DIN 51350/5, 1 400 N, mm	1,8 max.
4–ball test, welding load DIN 51350/4	2 600 min.
Available pack sizes	420 ml cartridge 5, 18, 180 kg SKF SYSTEM 24 (LAGD)

* Typical value

LGBB 2

SKF Wind Turbine Blade and Yaw Bearing Grease

SKF LGBB 2 is a lithium complex/synthetic PAO oil based grease specially designed for extreme conditions involving very low speeds, high loads, low temperatures and oscillating conditions. This grease provides proper lubrication whether the turbine is operating or in stand-still mode, installed onshore, offshore, or in cold climate areas.

- Excellent false brinelling protection
- Excellent performance under high loads
- Excellent performance at low temperature starting torque
- Good pumpability down to low temperatures
- Excellent water resistance
- Excellent corrosion protection
- High thermal and mechanical stability

Typical applications:

- Wind turbine blade and yaw bearing applications

Technical data

Designation	LGBB 2/(pack size)
DIN 51825 code	KP2G-40
NLGI consistency class	2
Soap type	Lithium complex
Colour	Yellow
Base oil type	Synthetic (PAO)
Operating temperature range	–40 to +120 °C *(–40 to +250 °F)*
Dropping point DIN ISO 2176	>200 *(390 °F)*
Base oil viscosity 40 °C, mm^2/s	 68
Penetration DIN ISO 2137 60 strokes, 10^{-1} mm 100 000 strokes, 10^{-1} mm	 265–295 +50 max.
Mechanical stability Roll stability, 50h at 80 °C, 10^{-1} mm	 +50 max.
Corrosion protection Emcor: – Standard ISO 11007 – Salt water test (100% sea water)	 0–0 0–1*
Water resistance DIN 51 807/1, 3 hours at 90 °C	 1 max.
Oil separation DIN 51817, 7 days at 40 °C, static, %	 4 max, 2.5*
Copper corrosion DIN 51 811, 120 °C	 1 max.
EP performances Wear scar DIN 51350/5, 1400 N, mm 4-ball test, welding load DIN 51350/4, N	 0.4 * 5 500 *
Rolling bearing lubrication ability Fe8, DIN 51819, 80 kN, 80 °C, C/P 1.8, 500 h	 pass
False brinellng resistance ASTM D4170 FAFNIR test, mg	 0–1.0
Avalaible packsizes	420 ml cartridge 5, 18, 180 kg

* Typical value

LGLT 2

SKF Low Temperature, Extremely High Speed Bearing Grease

SKF LGLT 2 is a fully synthetic oil based grease using lithium soap. Its unique thickener technology and low viscosity oil (PAO) provide excellent lubrication performances at low temperatures –50 °C *(–60 °F)* and extremely high speeds (n d_m values of $1,6 \times 10^6$ can be reached).

- Low friction torque
- Quiet running
- Extremely good oxidation stability and resistance to water

Typical applications:

- Textile spinning spindles
- Machine tool spindles
- Instruments and control equipment
- Small electric motors used in medical and dental equipment
- In-line skates
- Printing cylinders
- Robots

Technical data

Designation	LGLT 2/(pack size)
DIN 51825 code	K2G-50
NLGI consistency class	2
Soap type	Lithium
Colour	Beige
Base oil type	PAO
Operating temperature range	–50 to +110 °C *(–60 to +230 °F)*
Dropping point DIN ISO 2176	>180 °C *(>355 °F)*
Base oil viscosity	
40 °C, mm^2/s	18
100 °C, mm^2/s	4,5
Penetration DIN ISO 2137	
60 strokes, 10^{-1} mm	265–295
100 000 strokes, 10^{-1} mm	+50 max.
Mechanical stability	
Roll stability, 50 hrs at 80 °C, 10^{-1} mm	380 max.
Corrosion protection	
Emcor: – standard ISO 11007	0–1
Water resistance	
DIN 51 807/1, 3 hrs at 90 °C	1 max.
Oil separation	
DIN 51 817, 7 days at 40 °C, static, %	<4
Copper corrosion	
DIN 51 811, 110 °C	1 max. 100 °C *(210 °F)*
Rolling bearing grease life	
ROF test	>1 000,
L_{50} life at 10 000 r/min., hrs	20 000 r/min. at 100 °C *(210 °F)*
EP performance	
4–ball test, welding load DIN 51350/4	2 000 min.
Available pack sizes	180 g tube 1, 25, 180 kg

LGWM 1

SKF Extreme Pressure Low Temperature Bearing Grease

SKF LGWM 1 is a low consistency mineral oil based grease, using a lithium soap and containing extreme pressure additives. It is extremely suitable for the lubrication of bearings operating under both radial and axial loads.

- Good oil film formation at low temperatures down to –30 °C *(–20 °F)*
- Good pumpability down to low temperatures
- Good corrosion protection
- Good water resistance

Typical applications:

- Wind turbine main shafts
- Screw conveyors
- Centralised lubrication systems
- Spherical roller thrust bearing applications

Technical data

Designation	LGWM 1/(pack size)
DIN 51825 code	KP1G-30
NLGI consistency class	1
Soap type	Lithium
Colour	Brown
Base oil type	Mineral
Operating temperature range	–30 to +110 °C *(–20 to +230 °F)*
Dropping point DIN ISO 2176	>170 °C *(>340 °F)*
Base oil viscosity 40 °C, mm^2/s 100 °C, mm^2/s	 200 16
Penetration DIN ISO 2137 60 strokes, 10^{-1} mm 100 000 strokes, 10^{-1} mm	 310–340 +50 max.
Corrosion protection: Emcor: – standard ISO 11007 – water washout test	 0–0 0–0
Water resistance DIN 51 807/1, 3 hrs at 90 °C	 1 max.
Oil separation DIN 51 817, 7 days at 40 °C, static, %	 8–13
Copper corrosion DIN 51 811, 110 °C	 2 max. at 90 °C *(>195 °F)*
EP performance Wear scar DIN 51350/5, 1 400 N, mm 4–ball test, welding load DIN 51350/4	 1,8 max. 3 200 min.*
Fretting corrosion ASTM D4170 (mg)	 5,5*
Available pack sizes	420 ml cartridge 5, 50, 180 kg

* Typical value

LGWM 2

SKF High Load, Wide Temperature Bearing Grease

SKF LGWM 2 is a synthetic-mineral oil based grease using the latest complex calcium sulphonate thickener technology. It is suitable for applications subjected to high loads, wet environments and fluctuating temperatures.

- Excellent corrosion protection
- Excellent mechanical stability
- Excellent high load lubricating capacity
- Good false brinelling protection
- Good pumpability down to low temperatures

Typical applications:

- Wind turbine mains shafts
- Heavy duty off road applications
- Snow exposed applications
- Marine and offshore applications
- Spherical roller thrust bearing applications

Technical data

Designation	LGWM 2/(pack size)
DIN 51825 code	KP2G-40
NLGI consistency class	1–2
Soap type	Complex calcium sulphonate
Colour	Yellow
Base oil type	Synthetic (PAO)/ Mineral
Operating temperature range	–40 to +110 °C *(–40 to +230 °F)*
Dropping point DIN ISO 2176	> 300 °C *(>570 °F)*
Base oil viscosity	
40 °C, mm^2/s	80
100 °C, mm^2/s	8,6
Penetration DIN ISO 2137	
60 strokes, 10^{-1} mm	280–310
100 000 strokes, 10^{-1} mm	+30 max
Mechanical stability	
ASTM D1831, 100h at 80 °C, 10^{-1} mm	+2*
ASTM D1831, 100h at 80 °C + 20% H20, 10^{-1} mm	-9*
Corrosion protection	
Emcor: – standard ISO 11007	0–0
– water washout test	0–0
– salt water test (100% seawater)	0–0
Water resistance DIN 51 807/1, 3 hrs at 90 °C	1 max.
Oil separation DIN 51 817, 7 days at 40 °C, static, %	3 max.
Lubrication ability R2F, Cold chamber test (+20 °C to –30 °C)	Pass
Copper corrosion DIN 51 811, 110 °C	1 max.
Rolling bearing grease life ROF test	
L_{50} life at 10 000 r/min., hrs	1 824* at 110°C
EP performance	
Wear scar DIN 51350/5, 1 400 N, mm	1,5 max.
4–ball test, welding load DIN 51350/4	4 600 N
Fretting corrosion	
ASTM D4170 FAFNIR test at +25 °C, mg	5,2*
ASTM D4170 FAFNIR test at –20 °C, mg	1,1*
Available pack sizes	420 ml cartridge 5, 18, 50, 180 kg SKF SYSTEM 24 (LAGD/LAGE)

* Typical value

LGEM 2

SKF High Viscosity Bearing Grease with Solid Lubricants

SKF LGEM 2 is a high viscosity, mineral oil based grease using a lithium soap. Its content of molybdenum disulphide and graphite provides extra protection for harsh applications subjected to high loads, heavy vibrations and slow rotations.

- High oxidation stability
- Molybdenum disulphide and graphite provide lubrication even if the oil film breaks down

Typical applications:

- Rolling element bearings running at low speed and very high loads
- Jaw crushers
- Track laying machines
- Lift mast wheels
- Building machines such as mechanical rams, crane arms and crane hooks

Technical data

Designation	LGEM 2/(pack size)
DIN 51825 code	KPF2K-20
NLGI consistency class	2
Soap type	Lithium
Colour	Black
Base oil type	Mineral white oil
Operating temperature range	–20 to +120 °C *(–5 to +250 °F)*
Dropping point DIN ISO 2176	>180 °C *(>355 °F)*
Base oil viscosity 40 °C, mm²/s 100 °C, mm²/s	 500 32
Penetration DIN ISO 2137 60 strokes, 10^{-1} mm 100 000 strokes, 10^{-1} mm	 265–295 325 max.
Mechanical stability Roll stability, 50 hrs at 80 °C, 10^{-1} mm V2F test	 345 max. 'M'

Corrosion protection Emcor: – standard ISO 11007 – water washout test	 0–0 0–0
Water resistance DIN 51 807/1, 3 hrs at 90 °C	 1 max.
Oil separation DIN 51 817, 7 days at 40 °C, static, %	 1–5
Lubrication ability R2F, running test B at 120 °C	 Pass at 100 °C *(210 °F)*
Copper corrosion DIN 51 811, 110 °C	 2 max.
EP performance Wear scar DIN 51350/5, 1 400 N, mm 4–ball test, welding load DIN 51350/4	 1,4 max. 3 000 min.
Available pack sizes	420 ml cartridge 5, 18, 180 kg SKF SYSTEM 24 (LAGD/LAGE)

LGEV 2

SKF Extremely High Viscosity Bearing Grease with Solid Lubricants

SKF LGEV 2 is a mineral oil based grease, using a lithium-calcium soap. Its high content of molybdenum disulphide and graphite, in conjunction with an extremely high viscosity oil, provide outstanding protection under the harshest conditions involving high loads, slow rotations and severe vibrations.

- Extremely suitable for lubricating large sized spherical roller bearings subject to high loads and slow rotations, a situation where microslip is likely to occur
- Extremely mechanically stable providing good water resistance and corrosion protection

Typical applications:

- Trunnion bearings on rotating drums
- Support and thrust rollers on rotary kilns and dryers
- Bucket wheel excavators
- Slewing ring bearings
- High pressure roller mills
- Crushers

Technical data

Designation	LGEV 2/(pack size)
DIN 51825 code	KPF2K-10
NLGI consistency class	2
Soap type	Lithium/calcium
Colour	Black
Base oil type	Mineral
Operating temperature range	–10 to +120 °C *(15 to 250 °F)*
Dropping point DIN ISO 2176	>180 °C *(>355 °F)*
Base oil viscosity	
40 °C, mm^2/s	1 020
100 °C, mm^2/s	58
Penetration DIN ISO 2137	
60 strokes, 10^{-1} mm	265–295
100 000 strokes, 10^{-1} mm	325 max.
Mechanical stability	
Roll stability, 72 hrs at 100 °C, 10^{-1} mm	+50 max.
V2F test	'M'

Corrosion protection	
Emcor: – standard ISO 11007	0–0
– water washout test	0–0*
– salt water test (100% seawater)	0–0*
Water resistance	
DIN 51 807/1,	
3 hrs at 90 °C	1 max.
Oil separation	
DIN 51 817,	
7 days at 40 °C, static, %	1–5
Copper corrosion	
DIN 51 811, 110 °C	1 max 100 °C *(210 °F)*
EP performance	
Wear scar DIN 51350/5, 1 400 N, mm	1,2 max.
4–ball test, welding load DIN 51350/4	3 000 min.
Available pack sizes	35 g tube 420 ml cartridge 5, 18, 50, 180 kg

* Typical value

LGHB 2

SKF High Load, High Temperature, High Viscosity Bearing Grease

SKF LGHB 2 is a high viscosity, mineral oil based grease, using the latest complex calcium-sulphonate soap technology. Formulated to withstand high temperatures and extreme loads, it is suitable for a wide range of applications, especially in the cement, mining and metals segments. This grease contains no additives and the extreme pressure properties arise from the soap structure.

- Excellent anti-oxidation and anti-corrosion properties
- Excellent performance in applications running at high loads
- Withstands peak temperatures of 200 °C *(390 °F)*

Typical applications:

- Steel on steel plain bearings
- Pulp and paper making machines
- Asphalt vibrating screens
- Continuous casting machines
- Sealed spherical roller bearings operating up to 150 °C *(300 °F)*
- Work roll bearings in steel industry
- Mast rollers of fork lift trucks

Technical data

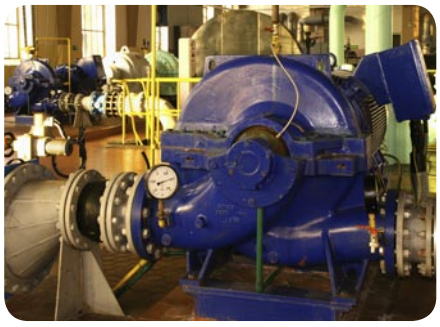
Designation	LGHB 2/(pack size)
DIN 51825 code	KP2N-20
NLGI consistency class	2
Soap type	Complex calcium sulphonate
Colour	Brown
Base oil type	Mineral
Operating temperature range	–20 to +150 °C *(–5 to +300 °F)*
Dropping point DIN ISO 2176	>220 °C *(>430 °F)*
Base oil viscosity	
40 °C, mm²/s	400–450
100 °C, mm²/s	26,5
Penetration DIN ISO 2137	
60 strokes, 10^{-1} mm	265–295
100 000 strokes, 10^{-1} mm	–20 to +50 (325 max.)
Mechanical stability	
Roll stability, 72 hrs at 100 °C, 10^{-1} mm	–20 to +50 change
V2F test	'M'
Corrosion protection	
Emcor: – standard ISO 11007	0–0
– water washout test	0–0
– salt water test (100% seawater)	0–0*
Water resistance	
DIN 51 807/1,	
3 hrs at 90 °C	1 max.
Oil separation	
DIN 51 817,	
7 days at 40 °C, static, %	1–3 at 60 °C *(140 °F)*
Lubrication ability	
R2F,	
running test B at 120 °C	Pass at 140 °C *(285 °F)*
Copper corrosion	
DIN 51 811, 110 °C	2 max. 150 °C *(300 °F)*
Rolling bearing grease life	
R0F test	
L_{50} life at 10 000 r/min., hrs	>1 000 at 130 °C *(265 °F)*
EP performance	
Wear scar DIN 51350/5, 1 400 N, mm	0,86*.
4–ball test, welding load DIN 51350/4	4 800 N*
Fretting corrosion	
ASTM D4170 (mg)	0*
Available pack sizes	420 ml cartridge 5, 18, 50, 180 kg SKF SYSTEM 24 (LAGD/LAGE)

* Typical value

LGHP 2

SKF High Performance, High Temperature Bearing Grease

SKF LGHP 2 is a premium quality mineral oil based grease, using a modern Polyurea (di-urea) thickener. It is suitable for electric motors and similar applications.



- Extremely long life at high temperatures
- Wide temperature range
- Excellent corrosion protection
- High thermal and mechanical stability
- Good start-up performance at low temperatures
- Compatibility with common polyurea and lithium thickened greases
- Low noise properties

Typical applications:

- Electric motors: Small, medium and large
- Industrial fans, including high speed fans
- Water pumps
- Rolling bearings in textile, paper processing and drying machines
- Applications with medium and high speed ball (and roller) bearings operating at medium and high temperatures
- Clutch release bearings
- Vertical shaft applications
- Kiln trucks and rollers

Technical data

Designation	LGHP 2/(pack size)
DIN 51825 code	K2N-40
NLGI consistency class	2–3
Soap type	Di–urea
Colour	Blue
Base oil type	Mineral
Operating temperature range	–40 to +150 °C *(–40 to +300 °F)*
Dropping point DIN ISO 2176	>240 °C *(>465 °F)*
Base oil viscosity	
40 °C, mm^2/s	96
100 °C, mm^2/s	10,5
Penetration DIN ISO 2137	
60 strokes, 10^{-1} mm	245–275
100 000 strokes, 10^{-1} mm	365 max.
Mechanical stability	
Roll stability, 50 hrs at 80 °C, 10^{-1} mm	365 max.
Corrosion protection	
Emcor: – standard ISO 11007	0–0
– water washout test	0–0
– salt water test (100% seawater)	0–0

Water resistance DIN 51 807/1, 3 hrs at 90 °C	1 max.
Oil separation DIN 51 817, 7 days at 40 °C, static, %	1–5
Lubrication ability R2F, running test B at 120 °C	Pass
Copper corrosion DIN 51 811, 110 °C	1 max. at 150 °C *(300 °F)*
Rolling bearing grease life R0F test L_{50} life at 10 000 r/min., hrs	1 000 min. at 150 °C *(300 °F)*
Fretting corrosion ASTM D4170 (mg)	7*
Available pack sizes	420 ml cartridge 1, 5, 18, 50, 180 kg SKF SYSTEM 24 (LAGD/LAGE)

* Typical value

LGET 2

SKF Extreme Temperature, Extreme Condition Bearing Grease

SKF LGET 2 is a synthetic fluorinated oil based grease, using a PTFE thickener. It is especially suitable for applications at extremely high temperatures from 200 °C *(390 °F)* up to 260 °C *(500 °F)*.

- Long life in aggressive environments such as very reactive areas with a presence of high purity gaseous oxygen and hexane
- Excellent oxidation resistance
- Good corrosion resistance
- Excellent water and steam resistance

Typical applications:

- Bakery equipment (ovens)
- Kiln truck wheels
- Load rollers in copying machines
- Wafer baking machines
- Textile dryers
- Film stretching tenders
- Electric motors running at extreme temperatures
- Emergency / hot fans
- Vacuum pumps

Important note:
LGET 2 is a fluorinated grease and is not compatible with other greases, oils and preservatives. Therefore, very thorough cleaning of bearings and systems is essential before applying fresh grease (except when reapplying LGET 2).

Technical data

Designation	LGET 2/(pack size)
DIN 51825 code	KFK2U-40
NLGI consistency class	2
Soap type	PTFE
Colour	Whitish cream
Base oil type	Synthetic (fluorinated polyether)
Operating temperature range	–40 to +260 °C *(–40 to +500 °F)*
Dropping point DIN ISO 2176	>300 °C *(>570 °F)*
Base oil viscosity	
40 °C, mm^2/s	400
100 °C, mm^2/s	38
Penetration DIN ISO 2137	
60 strokes, 10^{-1} mm	265–295
Mechanical stability	
Roll stability, 50 hrs at 80 °C, 10^{-1} mm	±30 max. 130 °C *(265 °F)*
Corrosion protection	
Emcor: – standard ISO 11007	1–1
Water resistance	
DIN 51 807/1, 3 hrs at 90 °C	0 max.
Oil separation	
DIN 51 817, 7 days at 40 °C, static, %	13 max. 30 hrs at 200 °C *(390 °F)*
Copper corrosion	
DIN 51 811, 110 °C	1
Rolling bearing grease life	
ROF test	>700, 5 600 r/min.*
L_{50} life at 10 000 r/min., hrs	at 220 °C *(430 °F)*
EP performance	
4–ball test, welding load DIN 51350/4	8 000 min.
Available pack sizes	50 g *(25 ml)* syringe 1 kg

* Typical value

SKF Chain Oil

Designed to fulfill the requirements of most industrial chain applications

SKF LHMT 68 is ideal for medium temperatures and dusty environments like those of cement and material handling industries, where a high penetration and light film are required.

SKF LHHT 265 synthetic oil is ideal for high load and/or high temperature conditions, like those found in the pulp and paper and textile industries. It doesn't form any residue at high temperatures and it is neutral towards seals and polymers.

SKF LHFP 150 synthetic oil is formulated for the food and pharmaceutical industries. It is approved by NSF* as H1**. It also has excellent performance at low temperatures.

The SKF Chain oils are available in 5 litre *(1.32 gallon)* cans, and as an oil fill for the SKF SYSTEM 24 single point automatic lubricator. SKF LHFP 150 is also available in 400 ml *(13.52 oz.)* aerosol cans.

- Increase chain life
- Increase re-lubrication interval
- Reduce oil consumption
- Reduce energy consumption

Typical applications

- Conveyor chains
- Drive chains
- Lift chains

Technical data*

Designation	LHMT 68	LHHT 265	LHFP 150
Description	Medium temperature oil	High temperature oil	Food compatible (NSF H1) oil
Specific gravity	0.85	0.91	0.85
Colour	Yellowish brown	Yellow orange	Colourless
Base oil type	Mineral	Synthetic ester	Synthetic ester
Operating temperature range	–15 to +90 °C *(5 to 195 °F)*	Up to 250 °C *(480 °F)*	–30 to +120 °C *(–20 to +250 °F)*
Base oil viscosity: 40 °C *(104 °F)*, mm²/s 100 °C *(212 °F)*, mm²/s	 ISO VG 68 approx. 9	 approx. 265 approx. 30	 ISO VG 150 approx. 19
Flash point	>200 °C *(390 °F)*	approx. 260 °C *(500 °F)*	>200 °C *(390 °F)*
Pour point	≤15 °C *(5 °F)*	n/a	≤30 °C *(–20 °F)*
NSF approval	n/a	n/a	H1 (No: 136858)

* NSF: U.S. National Sanitation Foundation ** H1: Incidental contact with food

Ordering details

Chain oil		LHMT 68	LHHT 265	LHFP 150	–
Description		Medium temperature oil	High temperature oil	Food compatible, NSF H1 approved oil	Empty unit suitable for oil filling only
Can 5 liter		LHMT 68/5	LHHT 265/5	LHFP 150/5	–
Aerosol 400 ml		–	–	LHFP 150/0.4	–
SKF SYSTEM 24					
LAGD series	Unit 60 ml Unit 125 ml	LAGD 60/HMT68** LAGD 125/HMT68**	– LAGD 125/HHT26**	– LAGD 125/FHF15**/***	– LAGD 125/FU**/***
LAGE series	Complete unit 122 ml Complete unit 250 ml Refill set 122 ml Refill set 250 ml	LAGE 125/HMT68 LAGE 250/HMT68 LHMT 68/EML125 LHMT 68/EML250	LAGE 125/HHT26 LAGE 250/HHT26 LHHT 265/EML12 LHHT 265/EML25	LAGE 125/HFP15 LAGE 250/HFP15 LHFP 150/EML12 LHFP 150/EML25	– – – –

* For technical data of SKF SYSTEM 24 see page 145 and 147 ** Includes non-return valve *** Not available in USA and Canada

Special lubricants

LESA 2

Grease developed for SKF Energy Efficient spherical roller bearings

SKF LESA 2 grease combines a fully synthetic polyalphaolefine (PAO) base oil with a unique lithium soap thickener. This premium quality, low friction grease has been specially developed for SKF Energy Efficient spherical roller bearings.

- Low friction torque
- Helps to minimise energy losses due to friction
- Quiet running
- Extremely good oxidation stability and resistance to water

Technical data

Designation	LESA 2/(pack size)
DIN 51825 code	KP2G-50
NLGI consistency class	2
Soap type	Lithium
Colour	Beige
Base oil type	PAO
Temperature range	–50 to +110 °C *(–60 to +230 °F)*
Dropping point DIN ISO 2176	180 min. (356 min.)
Base oil viscosity 40 °C, mm^2/s 100 °C, mm^2/s	 18 4,5
Penetration DIN ISO 2137 60 strokes, 10^{-1} mm 100 000 strokes, 10^{-1} mm	 265–295 +50 max. (325 max.)
Mechanical stability Roll stability, 50 hrs at 80 °C, $^{-1}$ mm	 380 max.
Corrosion protection Emcor: – standard ISO 11007	 0–1
Water resistance DIN 51 807/1, 3 hrs at 90 °C	 1 max.
Oil separation DIN 51 817, 7 days at 40 °C, static, %	 <4
Copper corrosion DIN 51 811, 110 °C	 1 max. 100 °C *(210 °F)*
Rolling bearing grease life ROF test L_{50} life at 10 000 r/min, hrs	 >1 000, 20 000 r/min.
EP performance 4-ball test, welding load DIN 51350/4	 2 000 min.
Available packsizes	420 ml cartridge 1, 5, 18 kg can

LDTS 1

SKF Dry Film Lubricant

SKF Dry Film Lubricant LDTS 1 is specially developed for automatic lubrication of plastic flat top chain conveyors in the beverage processing industry. It adheres very well to all treated surfaces and has outstanding properties. The lubricant consists of synthetic oil and is doped with PTFE solid lubricant. LDTS 1 is NSF* H1** certified for use where incidental contact with food cannot be excluded.

- Cost savings by eliminating high volume of water and soluble lubricant
- Improved operator safety by reducing slip hazards
- Quality of packaging is maintained by elimination of moisture
- Reduced risk of product contamination minimising microbiological growth
- Enhanced line efficiency by avoiding replacement costs and associated unplanned production stops
- Reduced cleaning costs

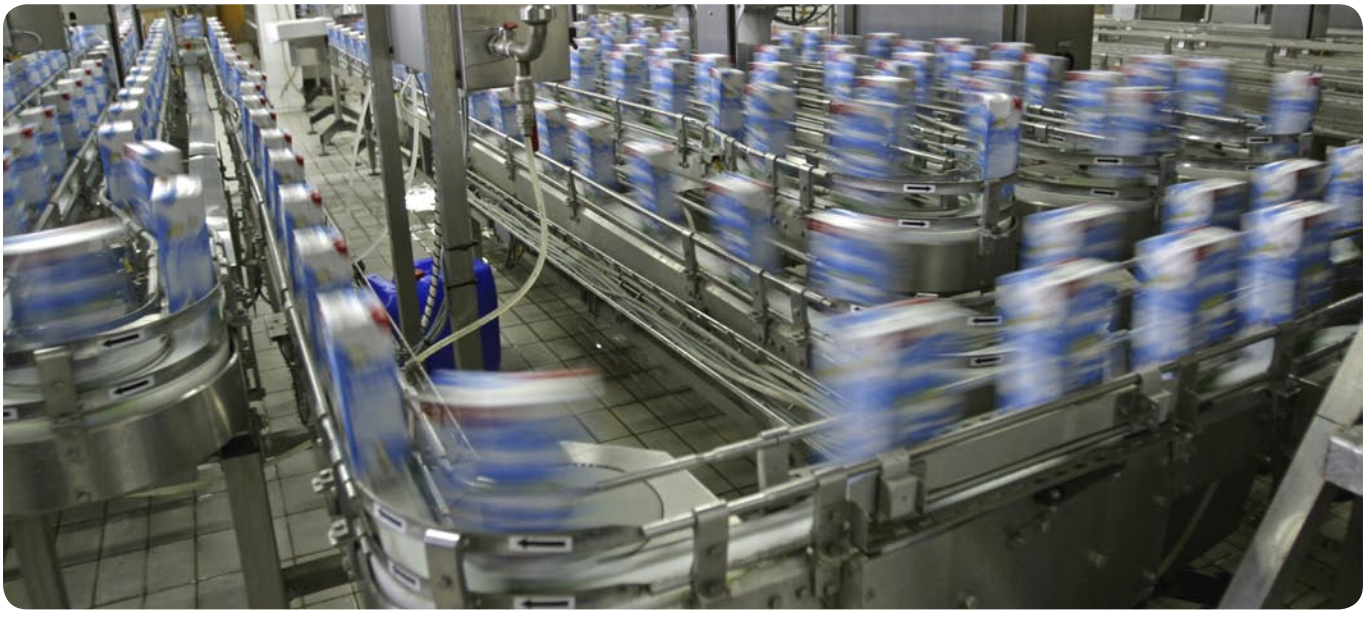
Typical applications:

- Conveyors in bottling lines using PET, carton, glass or can packages

* NSF: U.S. National Sanitation Foundation
** H1: Incidental contact with Food

Technical data

Designation	LDTS 1
Composition	Mineral oils, hydrocarbons, additives, PTFE
Colour	White
Operating temperature range	–5 to +60 °C (*25 to 140 °F*)
Viscosity at 40 °C (*104 °F*)	ca. 11 mm^2/s
Pour point	<0 °C
Density 20 °C (*70 °F*)	ca. 843 kg/m^3
Flash point of the preparation	ca. 100 °C (*210 °F*)
Flash point after evaporation of the solvent	>170 °C (*340 °F*)
NSF registration	H1 (registration no: 139739)
Available pack size	5 l can



Technical data

Understanding grease technical data

Some basic knowledge is required to understand the technical data so that you can select the proper grease. This is an excerpt of the main terms mentioned in SKF grease technical data.

Consistency

A measure of the stiffness of a grease. A proper consistency must ensure that the grease stays in the bearing without generating too much friction. It is classified according to a scale developed by the NLGI (National Lubricating Grease Institute). The softer the grease, the lower the number. Grease for bearings are typically NLGI 1, 2 or 3. The test measures how deep a cone falls into a grease sample in tenths of mm.

Classification of greases by NLGI consistency number

NLGI number	ASTM worked penetration (10^{-1} mm)	Appearance at room temperature
000	445–475	very fluid
00	400–430	fluid
0	355–385	semi-fluid
1	310–340	very soft
2	265–295	soft
3	220–250	medium hard
4	175–205	hard
5	130–160	very hard
6	85–115	extremely hard

Temperature range

Comprehends the suitable working range of the grease. It goes between the low temperature limit (LTL) and the high temperature performance limit (HTPL). LTL is defined as the lowest temperature at which the grease will allow the bearing to be started up without difficulty. Below this limit, starvation will occur and cause a failure. Above HTPL, the grease will degrade in an uncontrolled way so that grease life cannot be determined accurately.

Dropping point

Temperature at which a grease sample, when heated, will begin to flow through an opening according to DIN ISO 2176. It is important to understand that this point is considered to have limited significance for performance of the grease as it is always far above HTPL.

Viscosity

A measure of a fluid's resistance to flow. For lubricants, a proper viscosity must guarantee an adequate separation between surfaces without causing too much friction. According to ISO standards, it is measured at 40 °C *(105 °F)*, as viscosity changes with temperature. Values at 100 °C *(210 °F)* allow calculation of the viscosity index, e.g. how much the viscosity will decrease when temperature rises.

Mechanical stability

The consistency of bearing greases should not significantly change during its working life. Three main tests are normally used to analyse this behaviour:

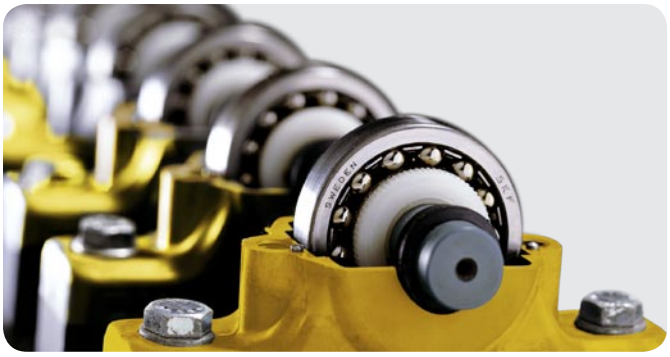
- Prolonged penetration
  The grease sample is subjected to 100 000 strokes in a device called a grease worker. Then, the penetration is measured. The difference against penetration at 60 strokes is reported as the change in 10^{-1} mm.

- Roll stability
  A grease sample is placed in a cylinder with a roller inside. The cylinder is then rotated for 72 or 100 hours at 80 or 100 °C *(175 or 210 °F)* (the standard test demands just 2 hours at room temperature). At the end of the test period, once the cylinder has cooled to room temperature, the penetration of the grease is measured and the change in consistency is reported in 10^{-1} mm.

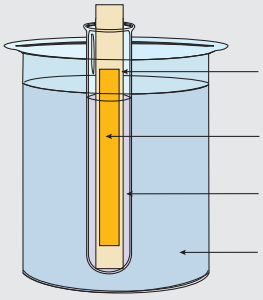
- V2F test
  A railway axlebox is subjected to vibration shocks of 1 Hz from a bouncing hammer producing an acceleration level between 12–15 g. After 72 hours at 500 r/min., the grease leaked from the housing through the labyrinth seal is collected in a tray. If it weighs less than 50 g, a rating of 'm' is granted, otherwise it is rated as 'fail'. Afterwards, the test is continued for another 72 hours at 1 000 r/min. If less than 150 grams of grease leaked after completion of both tests, then a rating of 'M' is given.

Roll stability test rig

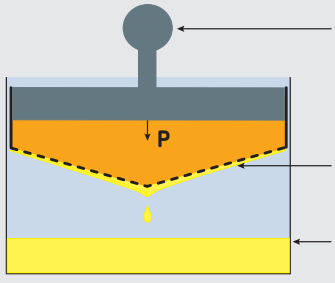
V2F grease test rig



Emcor grease test rig



Water resistance test



Oil separation test

Corrosion protection

Corrosive environments demand special properties for rolling bearing greases. During the Emcor test, bearings are lubricated with a mixture of grease and distilled water. At the end of the test, a value between 0 (no corrosion) and 5 (very severe corrosion) is given. Salt water, instead of distilled water or continuous water flow (washout test), can be used to make the test more severe.

Water resistance

A glass strip is coated with the candidate grease, which is placed into a water-filled test tube. The test tube is immersed in a water bath for three hours at a specified test temperature. The change in the grease is visually evaluated and reported as a value between 0 (no change) and 3 (major change) along with the test temperature.

Oil separation

Lubricating greases release oil when stored for long periods of time or when used in bearings as a function of temperature. The degree of oil separation will depend upon the thickener, base oil and manufacturing method. In the test, a cup is filled with a given quantity of grease (and is weighed before the test) and a 100 gram weight is placed on top of the grease. The complete unit is placed into an oven at 40 °C *(105 °F)* for one week. At the end of the week, the amount of oil which has leaked through the sieve, is weighed and reported as a percentage of weight loss.

R2F grease test rig

ROF+ grease test rig

Lubrication ability

The R2F test assesses the high temperature performance and lubricating ability of a grease. A shaft with two spherical roller bearings in their respective housings is driven by an electric motor. The bearings are run under load, the speed may be varied and heat can be applied. The test method is carried out under two different conditions after which the wear of the rollers and the cage is measured. Test A is conducted at ambient temperature and a "pass" rating means that the grease can be used to lubricate large bearings at normal operating temperatures and also in low vibrating applications. Test B runs at 120 °C *(250 °F)* and a "pass" rating indicates suitability for large bearings at high temperatures.

Copper corrosion

Lubricating greases should protect copper alloys used in bearings from corrosive attack while in service. To assess these properties, a copper strip is immersed in the grease sample and placed in an oven. The strip is then cleaned and the degradation is observed. The result is rated by a numerical system and a rating above 2 indicates poor protection.

Rolling bearing grease life

The ROF and ROF+ tests determine the grease life and its high temperature performance limit (HTPL). Ten deep groove ball bearings are fitted into five housings and filled with a given quantity of grease. The test is undertaken at a pre-determined speed and temperature. Axial and radial loads are applied and the bearings run to failure. The time to failure is recorded in hours and a Weibull life calculation is made to establish the grease life. This information can then be used to determine re-lubrication intervals in an application.

Extreme pressure (EP) performance

The 4-ball weld load test rig uses three steel balls held in a cup. A fourth ball is rotated against the three balls at a given speed. A starting load is applied and increased at pre-determined intervals until the rotating ball seizes and welds to the stationary balls. Values above 2 600 N are typically expected in EP grease. Under the 4-ball wear scar test, SKF applies 1 400 N (standard test uses 400 N) on the fourth ball during 1 minute. The wear on the three balls is measured and values below 2 mm are considered as appropriate values for EP greases.

Fretting corrosion

Vibrating or oscillating conditions are typical causes for fretting corrosion. Under the FAFNIR test, two thrust ball bearings are loaded and subjected to oscillation. The wear on each bearing is then measured. A wear below 7 mg indicates good fretting protection.

Thickener compatibility chart

	Lithium	Calcium	Sodium	Lithium complex	Calcium complex	Sodium complex	Barium complex	Aluminium complex	Clay (Bentonite)	Common polyurea*	Calcium sulphonate complex
Lithium	+	●	–	+	–	●	●	–	●	●	+
Calcium	●	+	●	+	–	●	●	–	●	●	+
Sodium	–	●	+	●	●	+	+	–	●	●	–
Lithium complex	+	+	●	+	+	●	●	+	–	–	+
Calcium complex	–	–	●	+	+	●	–	●	●	+	+
Sodium complex	●	●	+	●	●	+	+	–	–	●	●
Barium complex	●	●	+	●	–	+	+	+	●	●	●
Aluminium complex	–	–	–	+	●	–	+	+	–	●	–
Clay (Bentonite)	●	●	●	–	●	–	●	–	+	●	–
Common polyurea*	●	●	●	–	+	●	●	●	●	+	+
Calcium sulphonate complex	+	+	–	+	+	●	●	–	–	+	+

+ = Compatible
● = Test required
– = Incompatible

* SKF high performance, high temperature bearing grease LGHP 2 is not a common polyurea type grease. It is a di-urea bearing grease, which has successfully been tested for compatibility with lithium and lithium complex thickened greases i.e. LGHP 2 is compatible with such greases.

Base oil compatibility chart

	Mineral/PAO	Ester	Polyglycol	Silicone: Methyl	Silicone: Phenyl	Polyphenylether	PFPE
Mineral oil / PAO	+	+	–	–	+	●	–
Ester	+	+	+	–	+	●	–
Polyglycol	–	+	+	–	–	–	–
Silicone: methyl	–	–	–	+	+	–	–
Silicone: phenyl	+	+	–	+	+	+	–
Polyphenyl-ether	●	●	–	–	+	+	–
PFPE	–	–	–	–	–	–	+

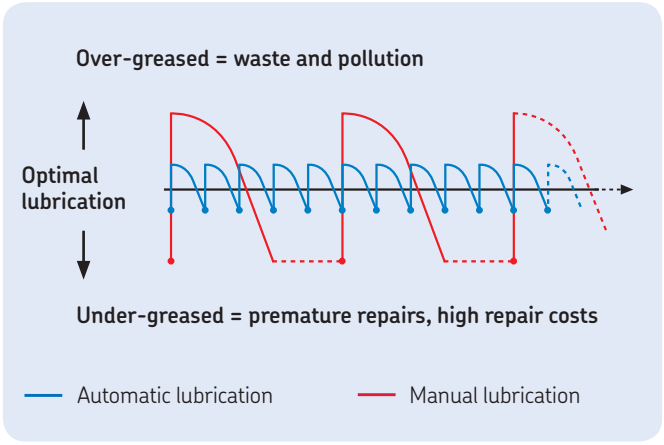
+ = Compatible ● = Test required – = Incompatible

Automatic lubrication

Improve cleanliness, accuracy, safety and reliability

Performing manual relubrication tasks can be a major challenge for lubrication technicians if the appropriate tools, practices and knowledge are not employed. Reliability can also be affected by under- or over-greasing and contamination. Automatic lubrication provides small quantities of clean lubricant on a regular basis, thus improving bearing performance. Additional benefits include increased safety and time savings for lubrication technicians.

Main benefits of automatic lubrication



Minimisation of:

- Grease consumption
- Spillage
- Contamination risk
- Human errors
- Failures

Optimisation of:

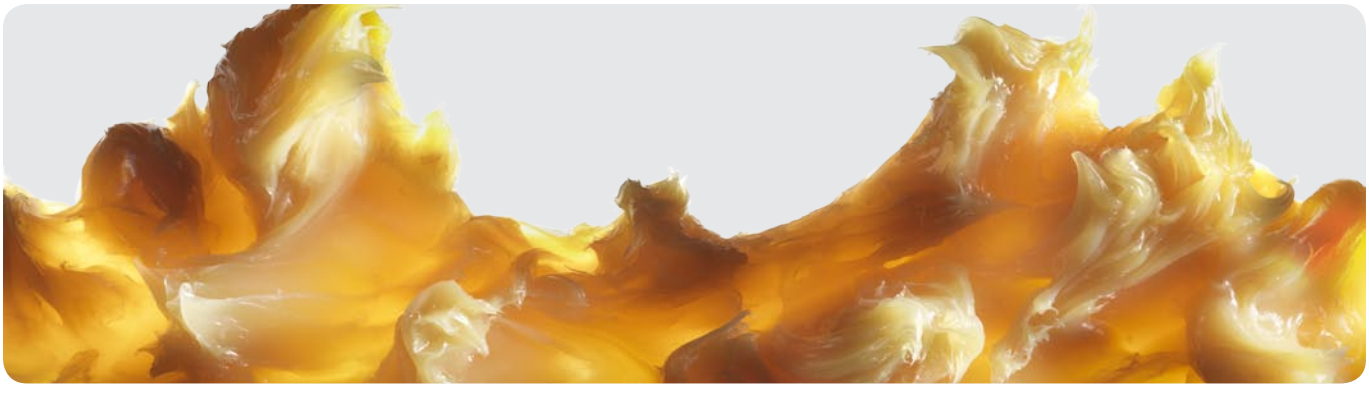
- Bearing performance
- Quantities and frequencies
- Accuracy
- Safety
- Time consumption

SKF has used its lubrication expertise to develop suitable lubrication systems that properly feed lubrication points, thereby creating synergy between SKF lubricants and SKF lubrication systems.

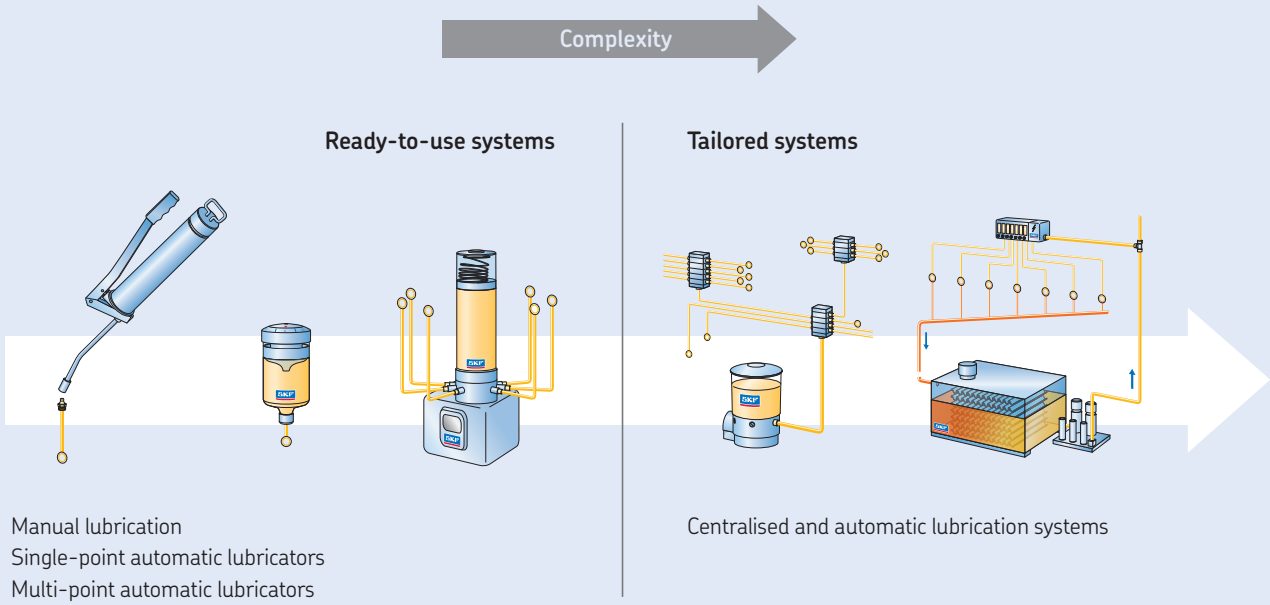
The SKF lubrication systems portfolio provides a comprehensive range of products from user friendly and cost-effective single point automatic lubricators to complete centralised lubrication systems engineered for specific application(s).

The whole range of products is built so that every new product offers:

- Further installation distance from the lubrication point: important for reduced spaces or high vibrations
- Enhanced monitoring/control possibilities: highly valuable for critical applications that deserve constant monitoring or machine steering
- Multiple points: when several lubrication points have similar conditions, multipoint lubricators provide an ideal solution



Overview of lubrication methods



Selection chart – Automatic lubricators

	SKF SYSTEM 24	SKF SYSTEM 24		
				
Designation	**LAGD 60 and LAGD 125**	**LAGE 125 and LAGE 250**	**LAGD 400**	**LAGD 1000**
Number of points	1	1	1 to 8	6 to 20
Container capacity	60 ml *(2 US fl. oz)* and 125 ml *(4.2 US fl. oz)*	122 ml *(4.1 US fl. oz)* and 250 ml *(8.5 US fl. oz)*	400 ml *(13.5 US fl. oz)*	1 000 ml *(33.8 US fl. oz)*
Power Supply	Electrochemical gas generation	Batteries	DC/AC	Battery / DC/AC
Maximum feed line	<0,3 m *(0.1 ft)*	<3 m *(10 ft)*	5 m *(16 ft)*	6 m *(19.7 ft)*
Temperature range	–20 to +60 °C *(–5 to 140 °F)**	0 (–10 peak) to 50 °C *(32 (15 peak) to 120 °F)*	0 to 50 °C *(30 to 120 °F)*	B : –10 to +60 °C *(15 to 140 °F)* DC: –25 to +75 °C *(–15 to +165 °F)* AC: –25 to +60 °C *(–15 to +140 °F)*
Reusable	Disposable	Replaceable container	Replaceable 400 g cartridges / Refillable	Refillable
Monitoring	Piston displacement	LEDS	On site / remote	On site / remote
IP rating	IP 68	IP 65	IP 54	IP 65
Approvals	EX	UL	–	–
Available lubricants	SKF greases and oils assortment Special fillings on request	SKF greases and oils assortment Special fillings on request	A cartridge of SKF LGMT 2 is provided. NLGI 1, 2 and 3 grease are suitable	NLGI 000 to NLGI 2

* If the ambient temperature is constant between 40 and 60 °C *(105 and 140 °F)*, do not select dispense rate of more than 6 months for optimum performance.

SKF SYSTEM 24

Gas driven single point automatic lubricators

SKF LAGD Series

The units are supplied ready-to-use straight from the box and filled with a wide range of high performance SKF lubricants. Tool-free activation and time-setting allow easy and accurate adjustment of lubrication flow.

- Flexible dispense rate from 1 to 12 months
- Stoppable or adjustable if required
- Intrinsic safety rating: ATEX approved for zone 0
- Transparent lubricant container allows visual inspection of dispense rate
- Compact size, permits installation in restrictive areas
- Greases and chain oils available

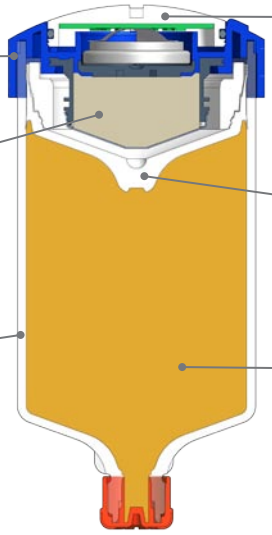
Typical applications

- Applications in restrictive and hazardous locations
- Bearing housing lubrication
- Electric motors
- Fans and pumps
- Conveyors
- Cranes
- Chains (oil)
- Elevators and escalators (oil)

SKF DialSet helps to calculate the correct dispense rate.

60 ml unit

125 ml unit



Easy-grip top-cover
Facilitates easy and quick fitting

Gas cell
Generates pressure to enable lubricant dispensing

Lubricant container
Transparent lubricant container allows visual inspection of dispense rate

Time setting slot
Allows easy and accurate adjustment of flow rate

Piston
Special piston shape helps ensure optimum emptying of lubricator

SKF Lubricants
Filled with high quality SKF lubricants

Ordering details

Grease	LGWA 2	LGEM 2	LGGB 2	LGHB 2	LGHP 2	LGFP 2	LGWM 2
Description	Multi-purpose EP type grease	High loads, slow rotations	Biodegradable	High temperature & loads, plain bearings	High performance polyurea	Food processing industry	High load, wide temperature
Unit 60 ml	LAGD 60/WA2	LAGD 60/EM2	–	LAGD 60/HB2	LAGD 60/HP2	–	–
Unit 125 ml	LAGD 125/WA2	LAGD 125/EM2	LAGD 125/GB2	LAGD 125/HB2	LAGD 125/HP2	LAGD 125/FFP2**	LAGD 125/WM2

Chain oils	LHMT 68	LHHT 265	LHFP 150	–-
Description	Medium temperature oil	High temperature oil	Food compatible, NSF H1 approved oil	Empty unit suitable for oil filling only
Unit 60 ml	LAGD 60/HMT68*			
Unit 125 ml	LAGD 125/HMT68*	LAGD 125/HHT26*	LAGD 125/FHF15*/**	LAGD 125/FU*/**

* Includes non-return valve ** Not available in USA and Canada

Technical data

Designation	LAGD 60 and LAGD 125
Grease capacity – LAGD 60 – LAGD 125	 60 ml *(2 US fl. oz)* 125 ml *(4.2 US fl. oz)*
Nominal emptying time	Adjustable; 1–12 months
Ambient temperature range – LAGD 60/.. and LAGD 125/.. – LAGD 125/F..	 –20 to +60 °C *(–5 to +140 °F)* –20 to +55 °C *(–5 to +130 °F)*
Maximum operating pressure	5 bar *(75 psi)* (at start-up)
Drive mechanism	Gas cell producing inert gas
Connection thread	R1/4
Maximum feed line length with: – grease – oil	 300 mm *(11.8 in.)* 1 500 mm *(59.1 in.)*

Intrinsically safe approval	II 1 G Ex ia IIC T6 II 1 D Ex iaD 20 T85°C I M1 Ex ia I
EC Type Examination Certificate – LAGD 60/.. and LAGD 125/.. – LAGD 125/F..	 Kema 04ATEX1275 × Issue 2 Kema 07ATEX0132 X
Protection class	IP 68
Recommended storage temperature	20 °C *(70 °F)*
Storage life of lubricator	2 years
Weight	LAGD 125 approx 200 g *(7.1 oz)* LAGD 60 approx 130 g *(4.6 oz)* Lubricant included

Note: For optimum performance, SKF SYSTEM 24 LAGD units filled with LGHP 2 should not be exposed to ambient temperatures over 40 °C *(105 °F)*, or have a time setting longer than 6 months.

SKF SYSTEM 24

Electro-mechanical single point automatic lubricators

SKF LAGE Series

The SKF LAGE series is the first choice when a simple and reliable automatic lubricator is required under variable temperatures, or when the application conditions (such as vibration, limited space or hazardous environments) require the lubricator to be remotely installed. Battery powered, LAGE units are a perfect complement to the comprehensive range of SKF automatic lubricators.

- Temperature independent dispense rate
- Maximum discharge pressure of 5 bar over the whole dispensing period
- Remote mounting
- Transparent reservoir allows visual inspection.
- Red-green LEDs indicate the electro-mechanical status
- Refill sets include battery pack
- Supplied with support flange for enhanced sturdiness

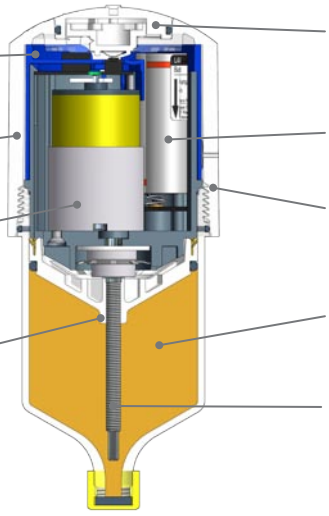
Typical applications

- Critical applications where extreme reliability and additional monitoring is required
- Applications in restrictive and hazardous locations
- Applications requiring high volumes of lubricant

SKF DialSet helps to calculate the correct dispense rate.

122 ml unit

250 ml unit



LED status indicators
Helps verify operating status

Drive cover
Easily removable; seals which helps prevent ingress of dirt and moisture

Electric motor and gearbox
Helps enable constant discharge pressure

Piston
Special piston shape helps ensure optimum emptying of lubricator

On/off knob and time setting dial
Enables easy activation and dial setting

Battery pack

Anti-vacuum membrane
Helps prevent vacuum forming

Lubricant canister
Filled with high quality SKF lubricants

Spindle
Rotates to drive piston, enabling lubricant to be dispensed

Ordering details

Grease	LGWA 2	LGEM 2	LGHB 2	LGHP 2	LGFP 2	LGWM 2
Description	Multi-purpose EP type grease	High loads, slow rotations	High temperature, loads, plain bearing	High performance polyurea	Food processing industry	High loads, wide temperature
Complete unit 125	LAGE 125/WA2	LAGE 125/EM2	LAGE 125/HB2	LAGE 125/HP2	LAGE 125/FP2	LAGE 125/WM2
Complete unit 250	LAGE 250/WA2	LAGE 250/EM2	LAGE 250/HB2	LAGE 250/HP2	LAGE 250/FP2	LAGE 250/WM2
Refill set 125	LGWA 2/EML125	LGEM 2/EML125	LGHB 2/EML125	LGHP 2/EML125	LGFP 2/EML125	LGWM 2/EML125
Refill set 250	LGWA 2/EML250	LGEM 2/EML250	LGHB 2/EML250	LGHP 2/EML250	LGFP 2/EML250	LGWM 2/EML250

Chain oils	LHMT 68	LHHT 265	LHFP 150
Description	Medium temperature oil	High temperature oil	Food compatible, NSF H1 approved oil
Complete unit 125	LAGE 125/HMT68	LAGE 125/HHT26	LAGE 125/HFP15
Complete unit 250	LAGE 250/HMT68	LAGE 250/HHT26	LAGE 250/HFP15
Refill set 125	LHMT 68/EML125	LHHT 265/EML12	LHFP 150/EML12
Refill set 250	LHMT 68/EML250	LHHT 265/EML25	LHFP 150/EML25

Technical data

Designation	LAGE 125 and LAGE 250
Grease capacity – LAGE 125 – LAGE 250	 122 ml *(4.1 US fl. oz)* 250 ml *(8.5 US fl. oz)*
Emptying time	User adjustable: 1, 3, 6, 9 and 12 months
Ambient temperature range	0 °C (–10 °C peak) to 50 °C *(30 °F (15 °F peak) to 120 °F)*
Maximum operating pressure	5 bar *(75 psi)*
Drive mechanism	Electro mechanical
Connection thread	R¼
Maximum feed line length with: – grease – oil	 Up to 3 meters *(10 ft)** Up to 5 meters *(16 ft)*
LED status indicators	operating, purging lubricant,empty, malfunction

UL certification	UL listed T code 59 °C – Category BAYZ – 92UM Lubricant dispensing equipment for use in hazardous locations Class I, Division II, Group A, B, C, D Class II, Division II, Group F &G Class III
Protection class assembled lubricator	IP 65
Battery pack	4,5 V 2,7 Ah–Alkaline manganese
Recommended storage temperature	20 °C *(70 °F)*
Storage life of lubricator	3 years** (2 years for LGFP 2 and Oils)
Total weight – LAGE 125 – LAGE 250	 635 g *(22.5 oz)* 800 g *(28.2 oz)*

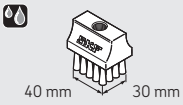
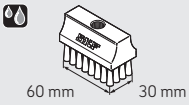
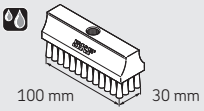
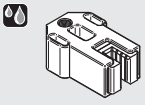
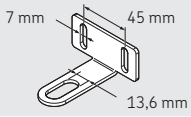
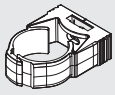
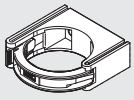
* The maximum feed line length is dependent on ambient temperature, grease type and back pressure created by the application.
** Storage life is 3 years from production date, which is printed on the side of the canister. The canister and battery pack may be used at 12 months setting even if activated 3 years from production date.

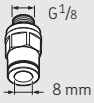
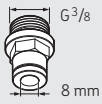
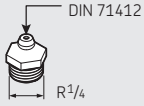
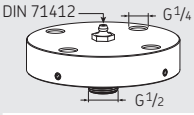
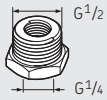
SKF SYSTEM 24

A full range for enhanced versatility of SKF automatic lubricators

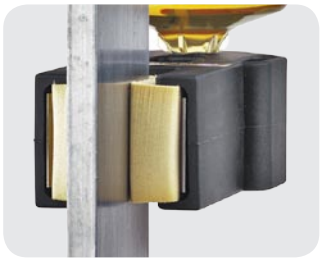
Accessories for SKF SYSTEM 24 single point automatic lubricators

Accessories ordering details

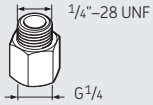
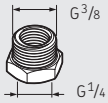
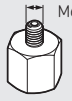
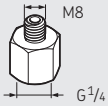
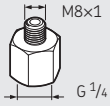
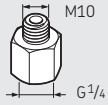
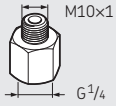
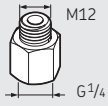
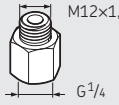
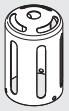
	Designation	Description
	LAPA 45	Angle connection 45°
	LAPA 90	Angle connection 90°
	LAPB 3x4E1*	Brush 30 × 40 mm
	LAPB 3x7E1*	Brush 30 × 60 mm
	LAPB 3x10E1*	Brush 30 × 100 mm
	LAPB 5-16E*	Elevator brush, 5–16 mm gap
	LAPB D2*	Brush round Ø20 mm
	LAPC 13	Bracket
	LAPC 50**	Clamp
	LAPC 63***	Clamp
	LAPE 35	Extension 35 mm

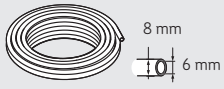
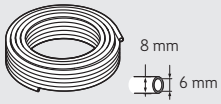
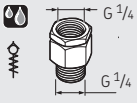
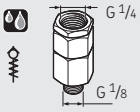
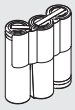
	Designation	Description
	LAPE 50	Extension 50 mm
	LAPF F 1/4	Tube connection female G 1/4
	LAPF M 1/4	Tube connection male G 1/4
	LAPF M 1/8	Tube connection male G 1/8
	LAPF M 3/8	Tube connection male G 3/8
	LAPG 1/4	Grease nipple G 1/4
	LAPM 2	Y-connection
	LAPM 4**	Manifold (4 to 1)
	LAPN 1/8	Nipple G 1/4 – G 1/8
	LAPN 1/2	Nipple G 1/4 – G 1/2
	LAPN 1/4	Nipple G 1/4 – G 1/4



Accessories ordering details

	Designation	Description
	LAPN 1/4 UNF	Nipple G1/4 – 1/4 UNF
	LAPN 3/8	Nipple G1/4 – G3/8
	LAPN 6	Nipple G1/4 – M6
	LAPN 8	Nipple G1/4 – M8
	LAPN 8x1	Nipple G1/4 – M8 × 1
	LAPN 10	Nipple G1/4 – M10
	LAPN 10x1	Nipple G1/4 – M10 × 1
	LAPN 12	Nipple G1/4 – M12
	LAPN 12x1.5	Nipple G1/4 – M12 × 1,5
	LAPP 2E **	Protection base
	LAPP 3E **	Protection cover

	Designation	Description
	LAPP 63***	Support flange
	LAPP 63V***	Support flange with non-return valve
	LAPT 1000	Flexible tube, 1 000 mm long, 8 × 6 mm
	LAPT 5000***	Flexible tube, 5 000 mm long, 8 × 6 mm
	LAPV 1/4	Non-return valve G1/4
	LAPV 1/8	Non-return valve G1/8
	LAGE 1-BAT***	Battery pack
	LAGE 1-KEY***	Key for time setting and activation

* Suitable for use with oil filled LAGD and LAGE units only
** Suitable for use with LAGD 60 and LAGD 125only
*** Suitable for use with LAGE 125 and LAGE 250 only

SKF MultiPoint Automatic Lubricator

Ready-to-use centralised lubrication systems

SKF LAGD 400 and LAGD 1000

SKF MultiPoint Lubricators are designed to simultaneously feed several points. They are often the most user-friendly and cost-effective option when longer distances, high flow, or enhanced monitoring features are required.
These ready-to-use centralised lubrication systems can be installed without any additional assistance and require no special training to be configured.

- Easy to install and use
- Transparent reservoir allows visual inspection
- Refillable through grease fitting
- Alarm function for blocked feed lines (except on LAGD 1000/B - battery version), and empty reservoir
- Machine steering (i.e. lubricator only operates while machine is running)
- Electronic setting and read–out of control parameters

Typical applications

- Series of lubrication points with similar requirements
- Components requiring large amounts of grease
- Critical applications requiring continuous monitoring or machine steering

SKF DialSet helps to calculate the correct dispense rate.

Technical data




Designation	LAGD 400	LAGD 1000/B	LAGD 1000/DC	LAGD 1000/AC
Number of outlets	1 to 8	6 to 12	10 to 20	10 to 20
Max. length of pipes	5 m *(16 ft.)*	6 m *(19.7 ft.)*	6 m *(19.7 ft.)*	6 m *(19.7 ft.)*
Flow rate	Up to 10 cm^3/day *(0.3 US fl. oz/day)*	Up to 18 cm^3/day *(0.6 US fl. oz/day)*	Up to 16 cm^3/day *(0.5 US fl. oz/day)*	Up to 33 cm^3/day *(1.1 US fl. oz/day)*
Reservoir capacity	0.4 litre *(13.5 US fl. oz)*	1 litre *(33.8 US fl. oz)*	1 litre *(33.8 US fl. oz)*	1 litre *(33.8 US fl. oz)*
Tubing	6 × 1,5 mm *(¼ × 0.06 in.)* 20 m *(65 ft.)* and fittings included	6 × 1,25 mm *(0.05 in.)* 50 m *(164 ft.)* and fittings included	6 × 1,25 mm *(0.05 in.)* 50 m *(164 ft.)* and fittings included	6 × 1,25 mm *(0.05 in.)* 50 m *(164 ft.)* and fittings included
Greases	NLGI 1, 2 and 3	Up to NLGI grade 2 Flow pressure <300 mbar	Up to NLGI grade 2 Flow pressure <700 mbar	Up to NLGI grade 2 Flow pressure <700 mbar
Permissible operating temperature	0 to 50 °C *(30 to 120 °F)*	–10 to +60 °C *(15 to 140 °F)*	–25 to +75 °C *(–15 to +165 °F)*	–25 to +60 °C *(–15 to +140 °F)*
Max. operating pressure	40 bar *(600 psi)*	150 bar *(2 175 psi)*	150 bar *(2 175 psi)*	150 bar *(2 175 psi)*
IP Rating	IP54	IP65	IP65	IP65
Rated voltage	110–240 V AC, 50–60 Hz or 24 V DC	18 V Alkaline battery	24 V DC	110–240 V 50/60 Hz
Connection thread	G¼	G⅛	G⅛	G⅛
Alarms	Blocked feed lines, empty cartridge	Empty cartridge	Blocked feed lines, empty cartridge	Blocked feed lines, empty cartridge

Automatic adjustment for optimal lubricating oil level

SKF Oil Levellers LAHD series

SKF LAHD 500 and LAHD 1000 oil levellers are designed to automatically compensate oil evaporation and leakages under running conditions. This helps in maintaining the correct oil level within a bearing housing, gear box, crankcase, or similar oil bath application. The SKF LAHD series optimises machine performance and increases their service life. Furthermore, they enhance the possibility of an accurate visual inspection of the oil level.

- Optimally maintained oil level
- Extended inspection interval
- Easy visual inspection
- Compensation for evaporation losses

Typical applications

- Oil lubricated bearing housings
- Gear boxes
- Crankcases

Technical data

Designation	LAHD 500 / LAHD 1000
Reservoir volume – LAHD 500 – LAHD 1000	 500 ml *(17 US fl. oz)* 1 000 ml *(34 US fl. oz)*
Boundary dimensions – LAHD 500 – LAHD 1000	 Ø91 mm × 290 mm high *(3.6 × 11.4 in.)* Ø122 mm × 290 mm high *(4.8 × 11.4 in.)*
Allowed temperature range	– 20 to +125 °C *(–5 to +255 °F)*
Length of connecting tube	600 mm *(23.5 in.)*
Connection thread	G1/2
Suitable oil types	Mineral and synthetic oils

Manual lubrication

A basic element of lubrication plans

The main pitfall of manual lubrication is ensuring accuracy and top cleanliness. Lubricant film in the application can be over 40 times thinner than the smallest visible particle. The SKF range of manual lubrication tools is designed to help you with the storage, handling, dosing and supplying of lubricants for your machinery in a clean and easy way.

A comprehensive range to meet your needs

SKF Grease Guns

SKF Grease Guns are suitable for agricultural, industrial, automotive and construction industries amongst others. Except for the SKF LAGP 400, which is designed for emptying cartridges only, all of them are equipped with a grease filling fitting. This fitting enables the use of SKF Grease Filler Pumps to refill the guns with loose grease, thus keeping contaminants out of the grease.

Selection chart and technical data – SKF Grease Guns

						
Designation	**LAGP 400**	**TLGH 1**	**1077600**	**1077600/SET**	**LAGH 400**	**LAGG 400B and LAGG 400B/US**
Drive	Manual	Manual	Manual	Manual	Manual One hand	Battery LAGG 400B (230 V charger) LAGG 400B/US (110 V charger)
Maximum pressure		400 bar *(5 800 psi)*	400 bar *(5 800 psi)*	400 bar *(5 800 psi)*	300 bar *(4 350 psi)*	400 bar *(5 800 psi)* Min. burst pressure: 800 bar *(11 600 psi)*
Volume per stroke	20 cm^3 (1.2 $in.^3$)	Approx. 0,9 cm^3 *(0.05 $in.^3$)*	Approx. 1,5 cm^3 *(0.09 $in.^3$)*	Approx. 1,5 cm^3 *(0.09 $in.^3$)*	Approx. 0,8 cm^3 *(0.05 $in.^3$)*	Approx. 400 g *(0.9 lb)* /10 min
Weight	0,35 kg (12 oz)	1,5 kg (3.3 lb)	1,5 kg (3.3 lb)	Complete: 2,3 kg (5.1 lb)	1,2 kg (2.6 lb)	Grease gun Including battery 3,1 kg (6,8 lb)
Reservoir	Suitable for the SKF grease cartridges.	Loose grease (ca. 500 cm^3) or grease cartridges.	Loose grease (ca. 500 cm^3) or grease cartridges.	Loose grease (ca. 500 cm^3) or grease cartridges.	Loose grease (ca. 500 cm^3) or grease cartridges.	Loose grease (ca. 500 cm^3) or grease cartridges.
Discharge pipe length	–	175 mm *(6.9 in.)*	175 mm *(6.9 in.)* 1077600 H: 300 mm *(12 in.)*	175 mm *(6.9 in.)*	300 mm *(12 in.)*	750 mm *(29.5 in.)*
Accessories	–	1077601	1077601	1077601	1077601	Carrying strap
Notes	Three spout caps included			Set includes: Extension pipe, Snap-on high pressure hose, Snap-on extension pipe with cardan nozzle, Snap-on extension pipe for flat-head grease fittings (Ø16 mm), Female and pointed nozzle		Operating temperature range: –15 to +50 °C *(5 to 120 °F)*

Note: 1077601: Flexible 500 mm *(19.7 in.)* long pressure hose with hydraulic gripping nozzle.

Optimum cleanliness when filling your grease guns

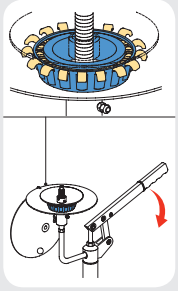
SKF Grease Filler Pumps LAGF Series

Best lubrication practices say that each type of grease requires an individual grease gun and the refilling has to be a clean process. SKF Grease Filler Pumps are designed to help achieve this goal.

- Quick filling: low pressure high stroke volume
- Easy installation: all necessary items are included
- Reliable: tested and approved for all SKF greases
- Appropriate as a complement for SKF Bearing Packer VKN 550

Technical data

Designation	LAGF 18	LAGF 50
Maximum pressure	30 bar *(430 psi)*	30 bar *(430 psi)*
Volume/stroke	approx. 45 cm^3 *(1.5 US fl. oz)*	approx. 45 cm^3 *(1.5 US fl. oz)*
Suitable drum dimensions: inside diameter maximum inside height	 265–285 mm *(10.4–11.2 in.)* 420 mm *(16.5 in.)*	 350–385 mm *(13.8–15.2 in.)* 675 mm *(26.6 in.)*
Weight	5 kg *(11 lb)*	7 kg *(15 lb)*



Contamination free grease filling

SKF Bearing Packer VKN 550

The sturdy and easy-to-use SKF Bearing Packer VKN 550 is designed to completely fill open bearings such as tapered roller bearings. They can be used with a standard grease gun, air-operated grease pump or grease filler pump.

- Flushes the grease right between the rolling elements
- Closed system: the cover lid prevents ingress of dirt

Note: Most suitable in conjunction with SKF Grease Filler Pumps LAGF Series

Technical data

Designation	VKN 550
Bearing range:	
inner diameter (d)	19 to 120 mm *(0.7 to 4.7 in.)*
outer diameter (D)	max. 200 mm *(7.9 in.)*

Accurate grease quantity measurement

SKF Grease Meter LAGM 1000E

The amount delivered per stroke by grease guns depends on many variables. It is generally difficult to supply an accurate quantity of grease when manually lubricating bearings. The right amount of grease, however, is critical for the bearings' service life, as over- or under-greasing can result in machine breakdown. Although a common practice is to weigh the grease per stroke, this procedure does not consider the backpressure, the ongoing wear inside the grease gun or any other variables.

The SKF Grease Meter LAGM 1000E accurately measures grease discharge in volume or weight in metric (cm^3 or g) or US units (US fl. oz or oz), making conversion calculations unnecessary.

- Suitable for most NLGI 0-3 greases
- A rubber sleeve protects the electronics in case of impact and is also oil and grease resistant
- The backlit LCD displays large and clear-to-read digits
- Maximum pressure of 700 bar *(10 000 psi)*
- Small, compact and lightweight design
- Corrosion-free aluminium housing
- Fits with all SKF grease guns

Technical data

Designation	LAGM 1000E
Housing material	Aluminium, anodised
Weight	0,3 kg *(0.66 lb)*
IP rating	IP 67
Suitable greases	NLGI 0 to NLGI 3
Maximum operating pressure	700 bar *(10 000 psi)*
Maximum grease flow	1 000 cm^3/min *(34 US fl. oz/min)*
Thread connections	M10x1
Display	Lit LCD (4 digits / 9 mm)
Accuracy	±3% from 0 to 300 bar ±5% from 300 to 700 bar
Selectable units	cm^3, g, US fl. oz or oz
Display lamp auto switch off	15 seconds after last pulse
Battery type	2 × 1,5 V Alkaline type LR1
Unit auto switch off	Programmable

For high volume requirements

SKF Grease Pumps LAGG Series

SKF manual and air-operated grease pumps are designed to supply large amounts of grease. This is useful when large housings have to be filled or when numerous points have to be lubricated. They are also suitable for topping up centralised lubrication systems reservoirs.

- Full range: pumps available for 18, 50 or 180 kg *(39, 110 or 400 lb)* grease drums
- High pressure: maximum of 420 bar *(6 090 psi)* for air-driven models
- Reliable: tested and approved for SKF greases
- Easy and ready to install
- 3,5 m *(11.5 ft)* of tubing included

LAGG 18M

LAGG 18AE

LAGG 50AE

LAGG 180AE

LAGG 180

Technical data

Designation	LAGG 18M	LAGG 18AE	LAGG 50AE	LAGG 180AE	LAGT 180
Description	Grease pump for 18 kg *(39.6 lb)* drums	Mobile grease pump for 18 kg *(39.6 lb)* drums	Grease pump for 50 kg *(110 lb)* drums	Grease pump for 180 kg *(396 lb)* drums	Trolley for drums up to 200 kg *(440 lb)*
Power source	Manual	Air–pressure	Air–pressure	Air–pressure	n.a.
Max. pressure	500 bar *(7 250 psi)*	420 bar *(6 090 psi)*	420 bar *(6 090 psi)*	420 bar *(6 090 psi)*	n.a.
Suitable drum	265–285 mm *(10.4–11.2 in.)*	265–285 mm *(10.4–11.2 in.)*	350–385 mm *(13.8–15.2 in.)*	550–590 mm *(21.7–23.2 in.)*	n.a.
Mobility	Stationary	Mobile	Stationary	Stationary	Mobile
Maximum flow rate	1,6 cm^3/stroke *(0.05 US fl. oz)*	200 cm^3/min. *(6.8 US fl. oz)*	200 cm^3/min. *(6.8 US fl. oz)*	200 cm^3/min. *(6.8 US fl. oz)*	–
Suitable grease NLGI class	000–2	0–2	0–2	0–2	–

Renew or upgrade your equipment

SKF Grease Nozzles LAGS 8

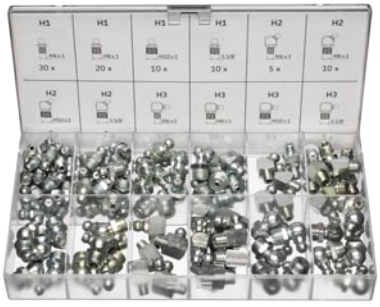
The SKF Grease Nozzles LAGS 8 kit provides practical accessories for daily lubrication, such as connectors, couplings and nozzles that are most widely used in the industry.

Technical data

Designation	LAGS 8
Maximum working pressure	400 bar *(5 800 psi)*
Minimum bursting pressure	800 bar *(11 600 psi)*

Kit contents

Straight pipe 180 mm and nozzle (DIN 71412)	1x
Hose with nozzle (DIN 71412)	1x
Tube with nozzle for buttom head grease fittings (DIN 3404)	1x
Tube with nozzle for Flush type grease fittings and plastic transparent cover (DIN 3405)	1x
Grease fitting M10x1–G1/8	1x
Grease fitting M10x1–1/8–27NPS	1x
Nozzle (DIN 71412)	2x



The link to your lubrication points

SKF Grease Nipples LAGN 120

The LAGN 120 grease fitting kit contains a full range of 120 standardised conical grease fittings made of precision steel, zinc plated, hardened and blue chromated.

Technical data

Designation	LAGN 120
Max working pressure	40 MPa *(5 800 psi)*
Min burst pressure	80 MPa *(11 600 psi)*

Kit contents

Grease fitting type		Quantity	Grease fitting type		Quantity
M6x1	straight	30x	M10x1	45°	5x
M8x1	straight	20x	G1/8	45°	5x
M10x1	straight	10x	M6x1	90°	5x
G1/8	straight	10x	M8x1	90°	10x
M6x1	45°	5x	M10x1	90°	5x
M8x1	45°	10x	G1/8	90°	5x

Proper identification of your lubrication points

SKF Grease fitting caps and tags TLAC 50

In conjunction with the SKF Lubrication Planner software, grease fitting caps and tags offer a complete solution to protect lubrication fittings from external contamination and simultaneously allow for proper identification.

Technical data

Description	Value
Label dimensions	45 × 21 mm *(1.8 × 0.8 in.)*
Material	LLDP + 25% EVA
Temperature range	from –20 to +80 °C *(–5 to +175 °F)*
Suitable for grease fitting sizes	G¼, G⅛, M6, M8, M10 and grease fitting head

Kits contents

Kit designation	Description
TLAC 50/B	50 blue caps and tags + 2 printable stickers sheets
TLAC 50/Y	50 yellow caps and tags + 2 printable stickers sheets
TLAC 50/R	50 red caps and tags + 2 printable stickers sheets
TLAC 50/G	50 green caps and tags + 2 printable stickers sheets
TLAC 50/Z	50 black caps and tags + 2 printable stickers sheets
TLAT 10	10 printable stickers sheets

Skin protection when handling grease

SKF Disposable Grease Resistant Gloves TMBA G11D

SKF TMBA G11 D gloves are specially designed to protect skin when working with lubricants. The gloves are packed in a handy box containing 50 pairs.

- Non-powdered nitrile rubber gloves
- Tight fitting for precision wear
- Excellent resistance against lubricants
- Non-allergenic

Technical data

Designation	TMBA G11D
Pack size	50 pairs
Size	9
Colour	blue

A proper solution for oil handling

Oil handling containers LAOS series

LAOS series is comprised of an extensive assortment of drums and dispensing lids ideal for the storage and administration of fluids and oil lubricants. The lids are available in ten different colours to fit colour coded identification systems.

- Enables easier, safer and cleaner lubrication
- Allows for accurate oil consumption control
- Improves health and safety due to oil spillage minimisation
- Heat and chemically resistant
- Drum and lid threads provide tight, quick and easy assembly
- Quick closing spouts
- Vacuum valve for enhanced spilling control

Mini spout

Ideal where the reservoirs to be filled have small filling holes. Outlet diameter is approx. 7 mm *(0.28 in.)*

Stretch spout

Ideal for precise pouring tasks and difficult to access points. The 12 mm *(0.48 in.)* outlet is ideal for viscosities up to ISO VG 220.

Stumpy spout

Due to the wide opening of 25 mm *(1 in.)*, ideal for high viscosities and/or when a high flow is required.

Utility lid

Two main uses: Quick pouring if necessary and assembly of pump onto a 3,5 or 10 L drum *(0.3 or 2.7 US Gal)*.

Storage lid

Useful for storage or transportation of oils.

Contents label

For proper marking of drum contents

LAOS series lids

Colour	Mini spout	Stretch spout	Stumpy spout	Utility lid	Storage lid	Contents label
Tan	LAOS 09057	LAOS 09682	LAOS 09705	LAOS 09668	LAOS 09644	LAOS 06919
Grey	LAOS 09064	LAOS 09699	LAOS 09712	LAOS 09675	LAOS 09651	LAOS 06964
Orange	LAOS 09088	LAOS 09798	LAOS 09729	LAOS 09866	LAOS 09934	LAOS 06940
black	LAOS 09095	LAOS 09804	LAOS 09736	LAOS 09873	LAOS 09941	LAOS 06995
dark green	LAOS 09101	LAOS 09811	LAOS 09743	LAOS 09880	LAOS 09958	LAOS 06971
green	LAOS 09118	LAOS 09828	LAOS 09750	LAOS 09897	LAOS 09965	LAOS 06957
blue	LAOS 09125	LAOS 09835	LAOS 09767	LAOS 09903	LAOS 09972	LAOS 06988
red	LAOS 09132	LAOS 09842	LAOS 09774	LAOS 09910	LAOS 09989	LAOS 06926
purple	LAOS 09194	LAOS 09392	LAOS 09388	LAOS 09408	LAOS 09415	LAOS 06902
yellow	LAOS 09071	LAOS 62437	LAOS 64936	LAOS 62451	LAOS 62475	LAOS 06933

Drums

Designed with wide necks and a standard thread size. Fits any LAOS lid. Available in 5 different sizes.

Pump

Suitable for viscosities up to ISO VG 680.
High flow (approx. 14 strokes per litre/US quart)
Long discharge hose of 1,5 m *(4.9 ft)* and anti-drip nozzle. Reducer nozzle is available.

Stretch spout

Designed to extend the reach of the lids.
Two different versions available for stumpy and stretch lids. The stretch version's length can be adjusted by removing the fitting and cutting it down to the desired size.

LAOS series drums, pumps and spouts

Drums		Pump		Stretch spout	
LAOS 09224	1,5 litre drum *(0.4 US gal)*	LAOS 62567	Pump (to fit LAOS utility lids)	LAOS 67265	Stumpy spout hose extension
LAOS 63571	2 litre drum *(0.5 US gal)*	LAOS 09422	Pump reducer nozzle	LAOS 62499	Stretch spout hose extension
LAOS 63595	3 litre drum *(0.8 US gal)*				
LAOS 63618	5 litre drum *(1.3 US gal)*				
LAOS 66251	10 litre drum *(2.6 US gal)*				

Lubrication management tools

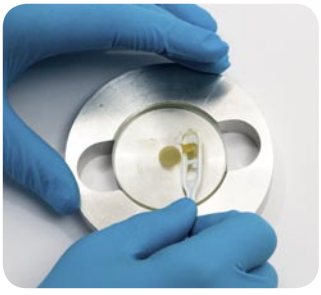
Portable grease analysis kit for field use

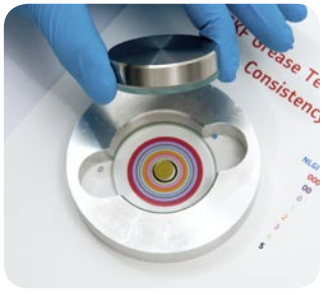
SKF Grease Test Kit TKGT 1

Lubricant analysis is a vital part of a predictive maintenance strategy. Until recently, however, oils were almost always analysed despite the fact that around 80% of bearings are lubricated with grease. Tribology expertise and years of research have allowed SKF to develop a complete methodology to assess grease condition.

- Extremely useful in field decision-making processes
- Allows adjustment of grease relubrication intervals according to real conditions
- Grease can be evaluated to detect possible unacceptable deviations from batch to batch
- Allows verification of the suitability of certain greases in specific applications
- Helps in the prevention of damage due to underperforming lubricant greases
- Provides more information on root cause analysis
- Requires no special training to perform the tests
- Requires no harmful chemicals
- Small sample sizes required. Only 0,5 g of grease is needed to perform all the tests

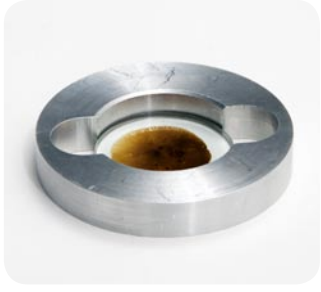
Consistency test
(Patent applied for)





Oil bleeding characteristics

Contamination evaluation



Technical data

Designation	TKGT 1		
Parts	**Components**	**Quantity**	**Specifications**
Sampling tools	Sampling syringe	1	Polypropylene
	Sampling tube	1	PTFE, length approx. 1 m
	Permanent marker	1	Black
	Sampling containers	10	35 ml polyethylene
	Gloves	10 pairs	Grease resistant nitrile (synthetic rubber), powder free, size XL, colour blue
	Disposable spatulas	1	Set of 25
	250 mm stainless steel spatula	1	Stainless steel
	150 mm stainless steel spatula	1	Stainless steel
	Scissors	1	Stainless steel
Consistency test	Housing	1	Aluminium
	Weight	1	Stainless steel
	Mask	1	Plexiglas
	Glass plates	4	
Oil bleeding test	USB heater	1	2,5 W–5 V
	USB/220/110 V adaptor	1	Universal (EU, US, UK, Australia) to USB
	Paper pack	1	Contains 50 sheets
	Ruler	1	Aluminium graduated 0,5 mm
Contamination test	Pocket microscope	1	60–100x with light
	Batteries	2	AAA
Carrying case	CD	1	Contains instructions for use, report template, and consistency test scale
	Carrying case	1	Dimensions: 463 × 373 × 108 mm *(18.2 × 14.7 × 4.25 in.)*

Quick detection of oil condition changes

SKF Oil Check Monitor TMEH 1

The SKF TMEH 1 measures the changes in dielectric constant of an oil sample. By comparing measurements obtained from used and fresh samples of the same oil, the degree of change in the condition of the oil is established.

Dielectric change is directly related to the oil's degradation and contamination level. The monitor allows tracking of mechanical wear and of any loss of the oil's lubricating properties.

- Hand-held and user friendly
- Numerical readout to facilitate trending
- Can store calibration (good oil) in its memory
- Shows changes in oil condition affected by such things as:
  - Water content
  - Fuel contamination
  - Metallic content
  - Oxidation

Note

The SKF Oil Check Monitor is not an analytical instrument. It is an instrument to only detect changes in the oil condition. The visual and numerical read-outs are merely a guide to enable trending of the comparative readings of a good oil to a used oil of the same type and brand. Do not rely solely on numerical readings.

Technical data

Designation	TMEH 1
Suitable oil types	mineral and synthetic oils
Repeatability	±5%
Readout	green/red grading + numerical value (–999 to +999)
Battery	9 V Alkaline type IEC 6LR61
Battery lifetime	>150 hours or 3 000 tests
Dimensions	250 × 95 × 32 mm *(9.8 × 3.7 × 1.3 in.)* (instrument)

Reduce costly and time consuming laboratory analyses

SKF Handheld Viscometer TMVM 1

The SKF TMVM 1 is a handheld rotational viscometer for quick and reliable viscosity measurements of lubrication oils and hydraulic fluids.

It is suitable for both quantitative and qualitative measurements.
The SKF TMVM 1 is a first check device for carrying out on-site measurements.
Regular viscosity verification provides timely information regarding oil condition, which can have an effect on lubrication and machine performance.

- Portability
- Accessories available for additional viscosities
- Ergonomic
- Direct reading

Technical data

Designation	TMVM 1
Dynamic viscosity range (mPas)	30 to 1 300 with rotor 3 (30 to 400 000 using optional rotors)
Rotor supplied	R3
Repeatability	±1% of total range
Accuracy	±3% of total range with R3
Operating temperature	10 to 40 °C *(50 to 105 °F)*
Oil sample volume	Approx. 150 cm^3 *(5.1 US fl. oz)*
Rotor material	Stainless steel
Battery	4x AA Alkaline type IEC LR06
Total weight (including case)	2 kg *(4.4 lb)*
Certificate of calibration	Yes

Lubrication software

For access or download: www.skf.com/lubrication or www.mapro.skf.com

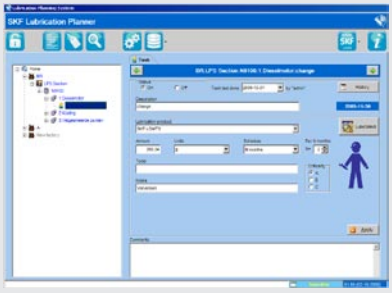
LubeSelect for SKF greases

Advanced tool for grease selection and relubrication calculation

LubeSelect for SKF greases

Selecting a suitable grease for a particular bearing is a crucial step if the bearing is to meet design expectations in its application. SKF knowledge about bearing lubrication has been encapsulated into a computer program that can be consulted at www.skf.com/lubrication

LubeSelect for SKF greases provides you a user friendly tool to select the right grease and suggest frequency and quantity, while taking into account the particular conditions of your application. General guidelines for typical greases for different applications are also available.



SKF Lubrication Planner

A user friendly tool to administer your lubrication plan

SKF Lubrication Planner

The SKF Lubrication Planner has been developed to help in the administration of a lubrication plan, thereby bridging the gap between the need for a software platform vs. administration by a simple spreadsheet.

- Establish a mapping of lubrication points
- Create a colour coded identification system
- Get expert advice on grease selection
- Calculate relubrication quantities and intervals
- Discover the benefits of dynamic route planning
- Get expert advice on best lubrication procedures
- Keep the history of performed lubrication tasks per point

SKF Lubrication Planner is available in several languages.
Register and download it for free at www.skf.com/lubrication

SKF DialSet

Quick tool for relubrication calculation

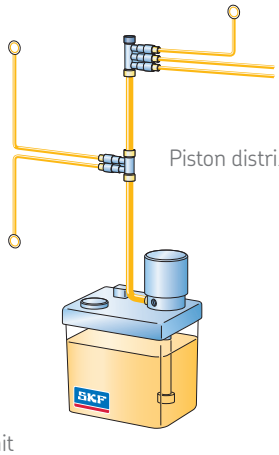
SKF DialSet

SKF DialSet has been designed to help you to set up your SKF automatic lubricators. After selecting the criteria and grease appropriate for your application, the program provides you with the correct settings for your SKF automatic lubricators. It also provides a quick and simple tool for relubrication intervals and quantity calculations.

- Allows quick calculation of the relubrication intervals based on the operating conditions of your application
- Calculations are based on SKF lubrication theories
- Calculated lubrication intervals depend on the properties of the selected grease, thereby minimising the risk of under- or overlubrication and optimising grease consumption
- Calculations take into account SKF automatic lubrication systems, grease dispense rates, thus facilitating the selection of the correct lubricator setting
- Recommended grease quantity depends on the grease replenishment position; side or W33 for optimum grease consumption
- Includes a complete list of the SKF SYSTEM 24 accessories
- Available online or downloadable at www.skf.com/lubrication

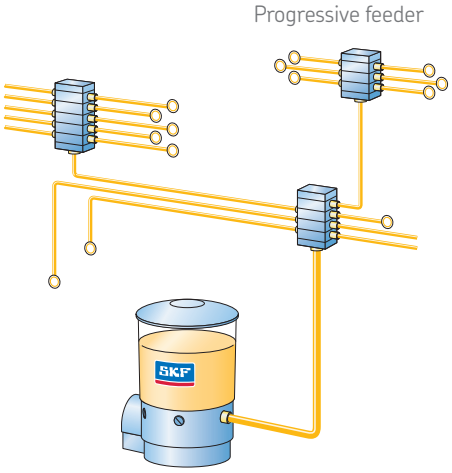
Also available from SKF

When the application conditions require a tailored solution, SKF can, through its extensive range of centralised lubrication systems, provide you with the system engineered to fit your needs. For additional information, please contact your SKF representative.



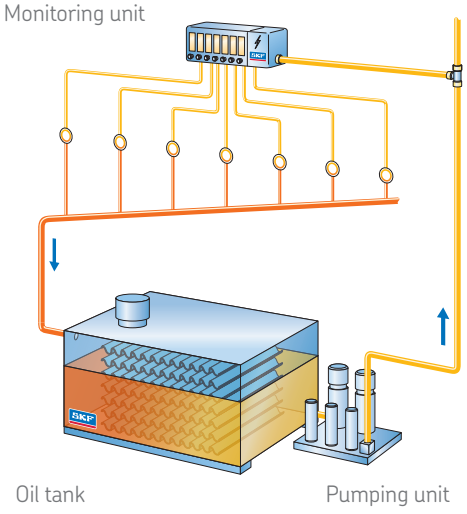
SKF MonoFlex

Single-line lubrication systems designed for oil, semi-fluid grease and hard grease. The system shown above is for oil or semi-fluid grease.



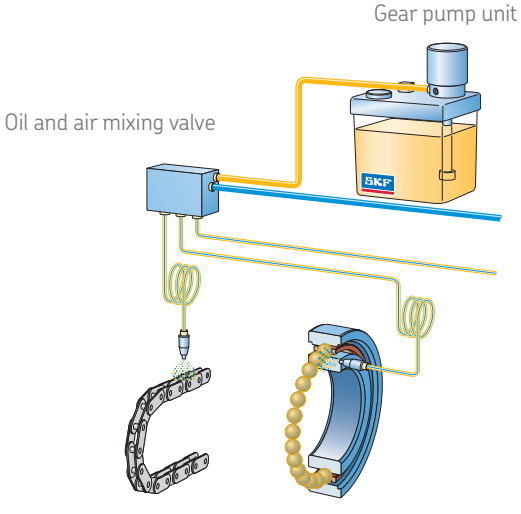
SKF ProFlex

Progressive lubrication systems designed for oil, semi-fluid grease and hard grease. The system shown above is for hard grease.



SKF CircOil

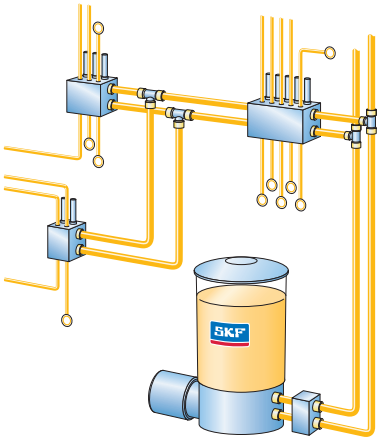
Circulating oil lubrication systems



SKF Oil+Air

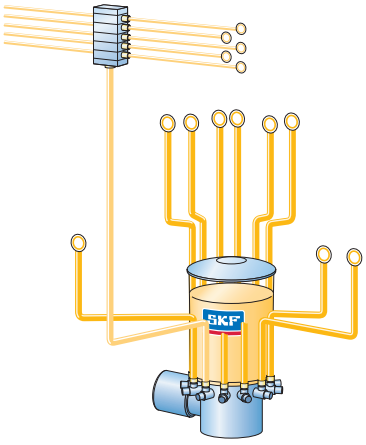
Oil and Air lubrication systems

Dual-line piston distributor



Piston pump unit

Progressive feeder



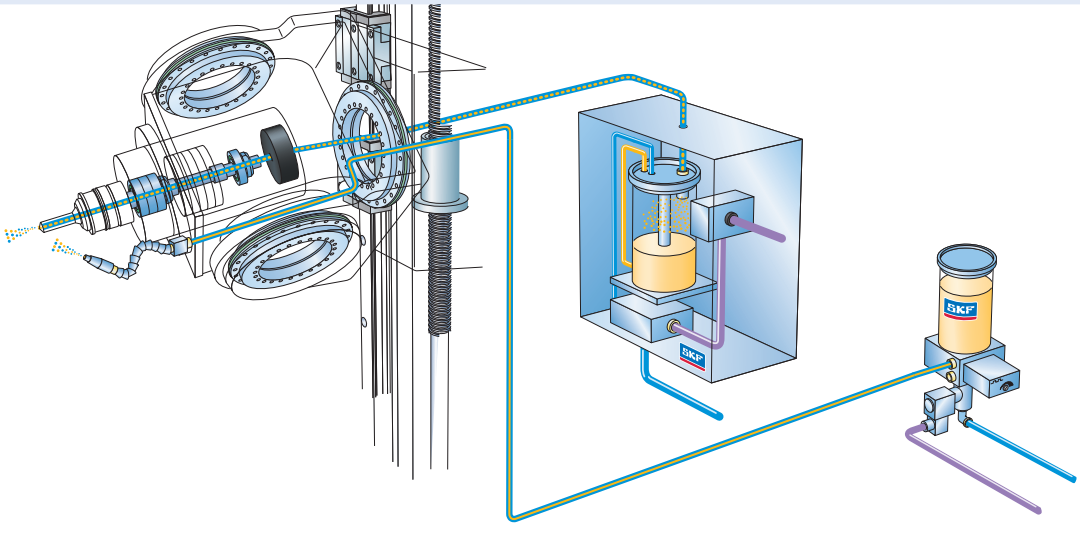
Multi-piston pump unit

SKF DuoFlex

Dual-line lubrication systems designed for oil, semi-fluid grease and hard grease. The system shown above is for hard grease.

SKF MultiFlex

Multi-line lubrication systems designed for oil, semi-fluid grease and hard grease. The system shown above is for hard grease.



SKF LubriLean

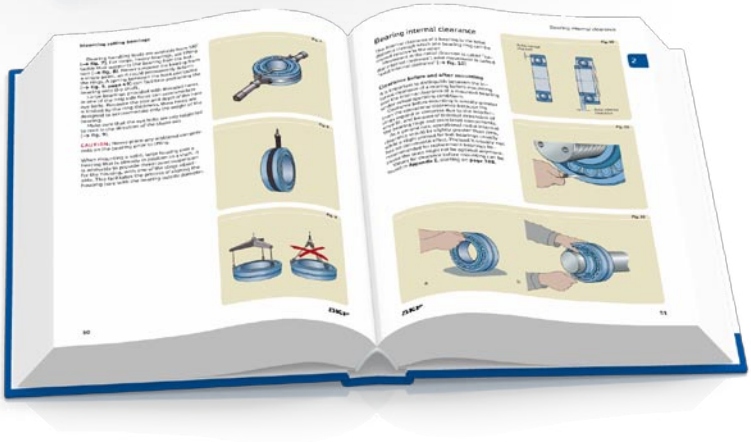
Minimal quantity lubrication systems

A comprehensive working guide for the maintenance professional

SKF Bearing Maintenance Handbook

By covering the basics of bearings and bearing arrangements, including instructions for mounting bearings, bearing units, housings and seals, and making recommendations in this handbook, SKF aims to encourage safe and skilled maintenance practices that can help extend bearing service life, reduce machine downtime and minimise unplanned maintenance activities.

The handbook is not intended as an application design catalogue. For detailed information about designing bearing arrangements, refer to the SKF Interactive Engineering Catalogue available online at www.skf.com.



Structure of the SKF Bearing Maintenance Handbook

The handbook is divided into fourteen chapters, marked with numbered blue tabs in the right margin:

Chapter 1	Covers the basics of bearings, related products, and bearing arrangements
Chapters 2 to 5	Contains instructions for mounting rolling bearings, bearing housings, bearing units, and seals
Chapter 6	Describes the maintenance activities associated with machine alignment
Chapter 7	Provides information and recommendations for important maintenance activities in the bearing-related field of lubrication
Chapter 8	Covers the maintenance activities of inspection and condition monitoring
Chapter 9	Covers troubleshooting, presenting common maintenance problems and suggested solutions
Chapter 10	Contains instructions for dismounting rolling bearings, bearing units, bearing housings and seals
Chapter 11	Discusses the ISO classification system of bearing damage
Chapter 12	Provides an overview of SKF's additional resources for maintenance support
Chapter 13	Appendices containing important reference information needed for maintenance work as well as an overview of SKF maintenance products
Chapter 14	Index

The SKF Bearing Mainenance Handbook (Publication number 10001 EN) is also available in electronic format via SKF @ptitude Exchange (www.aptitudeexchange.com)

Tap into over 100 years of industry experience and knowledge

SKF @ptitude Exchange

SKF @ptitude Exchange is SKF's knowledge source for asset maintenance and reliability expertise. Within SKF @ptitude Exchange, you will find white papers, interactive services, tutorials, etc., all at your fingertips. Available 24 hours per day, 7 days per week, 365 days per year via Internet access experts.

With almost 120 000 users and growing, SKF @ptitude Exchange aims to become the preferred internet knowledge source for asset maintenance and reliability related issues. High quality, technical information is presented from a "commercially neutral" viewpoint, with content coming from a wide range of industry subject matter experts.

SKF @ptitide Exchange is ideal as a knowledge resource for practicing:

- Maintenance and reliability engineers
- Plant engineers
- Vibration technicians
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