

# CASM electric cylinders





The SKF brand now stands for more than ever before, and means more to you as a valued customer.

While SKF maintains its leadership as the hallmark of quality bearings throughout the world, new dimensions in technical advances, product support and services have evolved SKF into a truly solutions-oriented supplier, creating greater value for customers.

These solutions encompass ways to bring greater productivity to customers, not only with breakthrough application-specific products, but also through leading-edge design simulation tools and consultancy services, plant asset efficiency maintenance programmes, and the industry's most advanced supply management techniques.

The SKF brand still stands for the very best in rolling bearings, but it now stands for much more.

**SKF – the knowledge engineering company**

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# The modular electric cylinder system

CASM electric cylinders are ideally suited to performing fast and powerful linear movements. Unlike pneumatic or hydraulic cylinders, CASM electric cylinders are flexible and thus can be positioned precisely. Furthermore, due to a reduced number of components, the whole system is more cost-effective, resulting in lower energy and maintenance costs.

The CASM modular concept enables easy connection to your preferred motor and control system. This can reduce design and programming costs considerably.

A complete solution - with SIEMENS 1FK7 servo motors – can be supplied on short notice from stock. This solution is compatible with the SINAMICS S110/S120 control systems by SIEMENS. Thanks to high-grade materials, a sealing system with IP54S level protection, and high-quality manufacturing, CASM electric cylinders can also be used long-term under adverse conditions. The low-backlash design provides positioning precision of up to  $\pm 0,01$  mm. Together with various spindles for different speeds and forces, CASM electric cylinders are the optimum solution for a wide variety of applications.



## Features

- ▶ Customised motor adapters
- ▶ Multi-option modular system
- ▶ Highly energy-efficient
- ▶ Highest levels of precision and repeatability
- ▶ Pre-mounted version with 1FK7 servo motors available

## Benefits

- Use your own controls and motors
- Easy integration and fast assembly
- Reduced stock
- Lower energy costs
- Worldwide service and support
- Very secure investment
- Integrated system solution using Siemens drive and control technology



# CASM linear units

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## CASM linear units

### Technical data

	Unit	CASM 32-LS	CASM 32-BS	CASM 32-BN
Screw type	–	Lead screw	Ball screw	Ball screw
Screw diameter	mm	9	10	10
Screw pitch	mm	1,5	3	10
Max. dynamic force	N	300	700	630
Max. static force	N	700	700	700
Max. speed	mm/s	60	150	500
Stroke	mm	50 to 400	50 to 400	50 to 400
Max. input RPM	1/min	2 400	3 000	3 000
Max. acceleration	m/s <sup>2</sup>	1	6	6
Duty cycle	%	60	100	100
Lifetime	km	70	see chart	see chart
Max. number of load direction changes	–	0,4×10 <sup>6</sup>	20×10 <sup>6</sup>	20×10 <sup>6</sup>
Max. number of starts/stops	–	0,2×10 <sup>6</sup>	10×10 <sup>6</sup>	10×10 <sup>6</sup>
Repeatability	mm	± 0,07	±0,01	±0,01
Operating temperature	°C	0 to +50	0 to +50	0 to +50
Humidity	%	95	95	95
Type of protection	IP	54S	54S	54S
Max. input torque	Nm	0,5	0,8	1,4

### Technical data

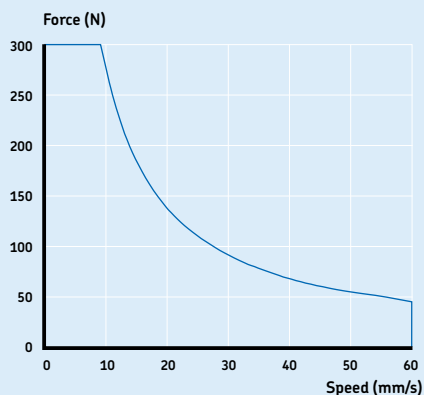
	Unit	CASM 40-LS	CASM 40-BS	CASM 40-BN
Screw type	–	Lead screw	Ball screw	Ball screw
Screw diameter	mm	12,5	12	12,7
Screw pitch	mm	2,5	5	12,7
Max. dynamic force	N	600	2 375	1 550
Max. static force	N	1 500	2 375	2 375
Max. speed	mm/s	70	300	825
Stroke	mm	100 to 600	100 to 600	100 to 600
Max. input RPM	1/min	1 680	3 600	3 900
Max. acceleration	m/s <sup>2</sup>	1	6	6
Duty cycle	%	60	100	100
Lifetime	km	100	see chart	see chart
Max. number of load direction changes	–	0,4×10 <sup>6</sup>	20×10 <sup>6</sup>	20×10 <sup>6</sup>
Max. number of starts/stops	–	0,2×10 <sup>6</sup>	10×10 <sup>6</sup>	10×10 <sup>6</sup>
Repeatability	mm	± 0,07	±0,01	±0,01
Operating temperature	°C	0 to +50	0 to +50	0 to +50
Humidity	%	95	95	95
Type of protection	IP	54S	54S	54S
Max. input torque	Nm	1,2	2,8	4

### Technical data

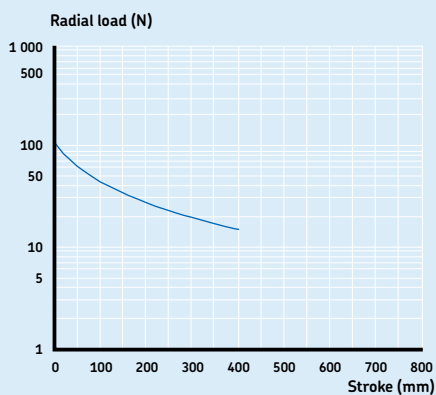
	Unit	CASM 63-LS	CASM 63-BN	CASM 63-BF
Screw type	–	Lead screw	Ball screw	Ball screw
Screw diameter	mm	20	20	20
Screw pitch	mm	4	10	20
Max. dynamic force	N	1 000	5 400	2 800
Max. static force	N	3 700	5 400	5 400
Max. speed	mm/s	70	530	1 060
Stroke	mm	100 to 800	100 to 800	100 to 800
Max. input RPM	1/min	1 050	3 200	3 200
Max. acceleration	m/s <sup>2</sup>	1	6	6
Duty cycle	%	60	100	100
Lifetime	km	100	see chart	see chart
Max. number of load direction changes	–	0,4×10 <sup>6</sup>	20×10 <sup>6</sup>	20×10 <sup>6</sup>
Max. number of starts/stops	–	0,2×10 <sup>6</sup>	10×10 <sup>6</sup>	10×10 <sup>6</sup>
Repeatability	mm	± 0,07	±0,01	±0,01
Operating temperature	°C	0 to +50	0 to +50	0 to +50
Humidity	%	95	95	95
Type of protection	IP	54S	54S	54S
Max. input torque	Nm	3	11,5	11,5



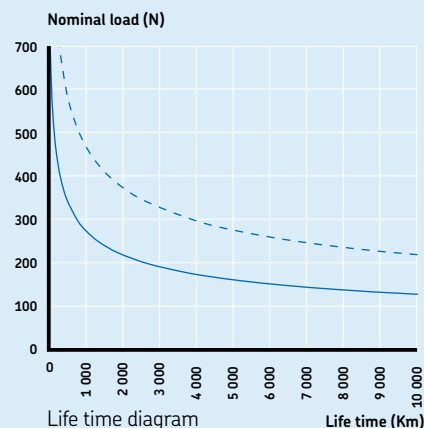
Performance diagrams CASM 32



Speed – force diagram CASM 32-LS

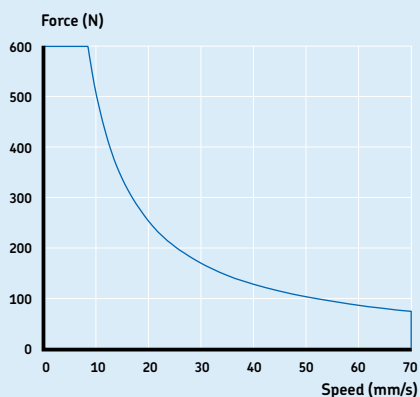


Radial load diagram.  
The radial load acts perpendicular to the moving direction.

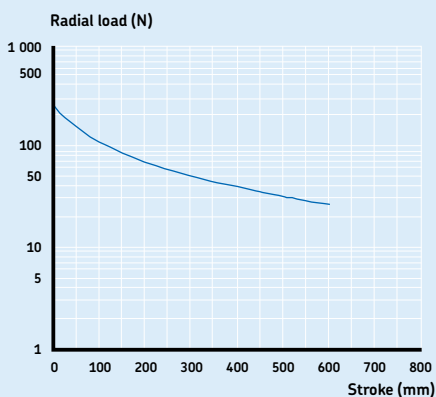


Life time diagram  
--- CASM 32 – BN  
— CASM 32 – BS

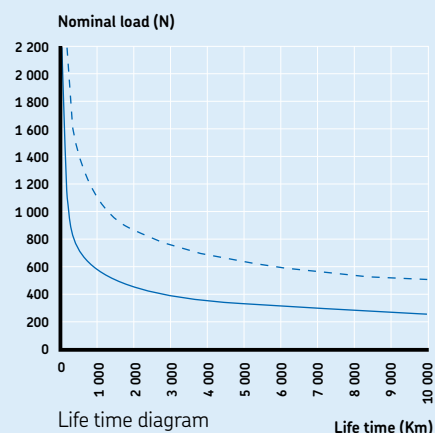
Performance diagrams CASM 40



Speed – force diagram CASM 40-LS

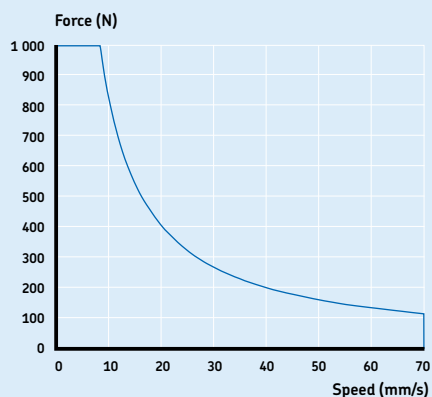


Radial load diagram.  
The radial load acts perpendicular to the moving direction.

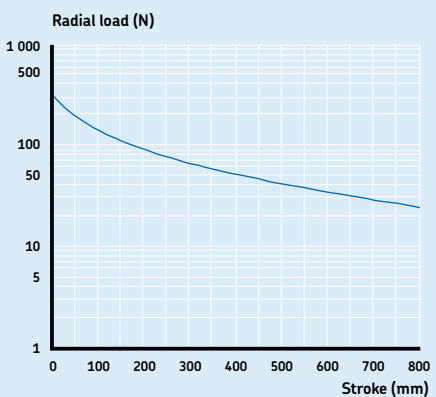


Life time diagram  
--- CASM 40-BN  
— CASM 40-BS

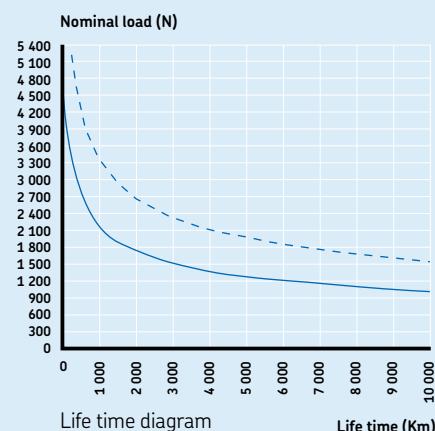
Performance diagrams CASM 63



Speed – force diagram CASM 63-LS



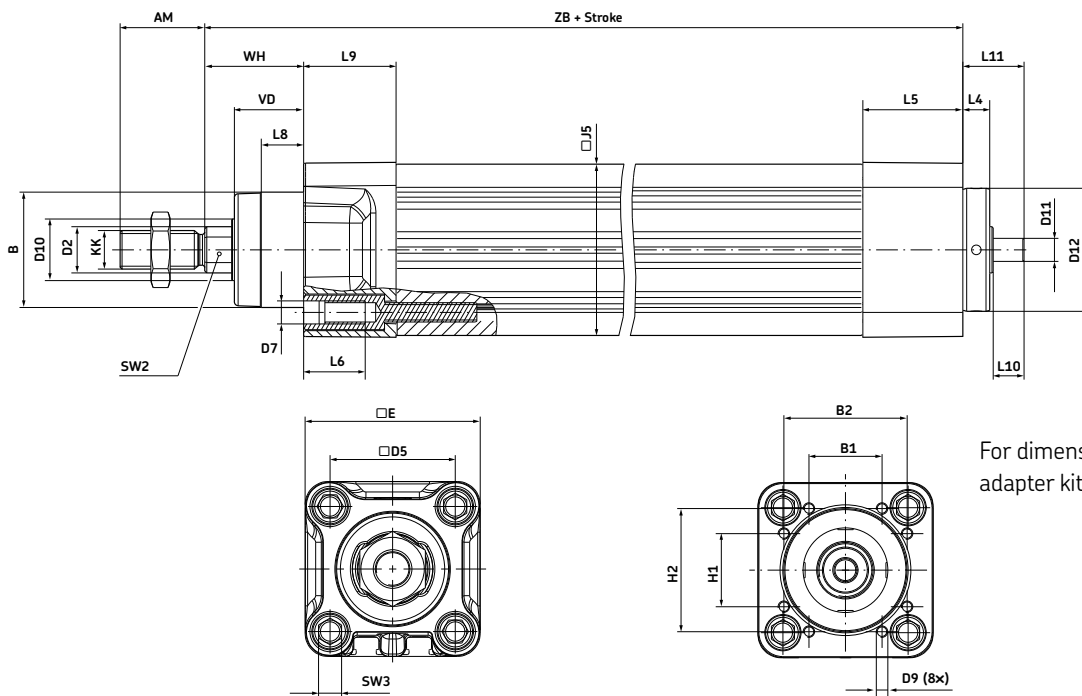
Radial load diagram.  
The radial load acts perpendicular to the moving direction.



Life time diagram  
--- CASM 63-BN  
— CASM 63-BF

# CASM linear units

## Dimensional drawing

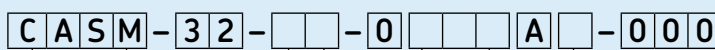


For dimensions of motor adapter kits, see page 16.

## Dimensions

Unit	CASM 32	CASM 40	CASM 63
ZB	mm 148 ±1	mm 176,5 ±1	mm 214 ±1
AM	mm 22	mm 24	mm 32
KK	mm M10x1,25	mm M12x1,25	mm M16x1,5
WH	mm 26	mm 30	mm 37
VD	mm 18	mm 21,5	mm 28,5
B	mm Ø30 d11	mm Ø35 d11	mm Ø45 d11
D2	mm Ø12	mm Ø16	mm Ø20
D5	mm □32,5	mm □38	mm □56,5
D7	mm M6	mm M6	mm M8
D10	mm Ø16	mm Ø20	mm Ø28
D11	mm Ø6 h6	mm Ø8 h6	mm Ø12 h6
D12	mm Ø32 f7	mm Ø40 f7	mm Ø60 f7
E	mm □45,5	mm □54	mm □75,5
J5	mm □44,5	mm □53	mm □74
L4	mm 7	mm 7	mm 9
L5	mm 26	mm 30	mm 36
L6	mm 16	mm 16	mm 17
L8	mm 10	mm 10,5	mm 15
L9	mm 24	mm 28,5	mm 34
L10	mm 8	mm 14	mm 17
L11	mm 15,9	mm 18,4	mm 23,5
SW2	mm SW10	mm SW13	mm SW17
SW3	mm SW6	mm SW6	mm SW8
B1	mm 19	mm 20	mm 31
B2	mm 32	mm 42	mm 62
H1	mm 19	mm 20	mm 31
H2	mm 32	mm 42	mm 62
D9	mm M3	mm M4	mm M5

Ordering keys



Type

Screw:

Lead screw 9x1,5 mm  
Ball screw 10x3 mm  
Ball screw 10x10 mm

LS  
BS  
BN

Stroke:

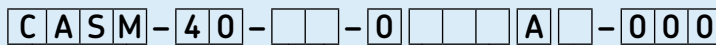
50 mm  
100 mm  
150 mm  
200 mm  
300 mm  
400 mm

050  
100  
150  
200  
300  
400

Option\*:

Motor, adapter and accessories separately delivered  
Motor, adapter and foot mounting pre-mounted

A  
M



Type

Screw:

Lead screw 12,5x2,5 mm  
Ball screw 12x5 mm  
Ball screw 12,7x12,7 mm

LS  
BS  
BN

Stroke:

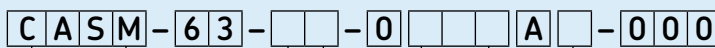
100 mm  
200 mm  
300 mm  
400 mm  
500 mm  
600 mm

100  
200  
300  
400  
500  
600

Option\*:

Motor, adapter and accessories separately delivered  
Motor, adapter and foot mounting pre-mounted

A  
M



Type

Screw:

Lead screw 20x4 mm  
Ball screw 20x10 mm  
Ball screw 20x20 mm

LS  
BN  
BF

Stroke:

100 mm  
200 mm  
300 mm  
400 mm  
500 mm  
600 mm  
700 mm  
800 mm

100  
200  
300  
400  
500  
600  
700  
800

Option\*:

Motor, adapter and accessories separately delivered  
Motor, adapter and foot mounting pre-mounted

A  
M

\* Motor, adapter kit and accessories need to be ordered separately. When pre-mounted, the motor is mounted so that the slots for the proximity switch and the motor connectors are on the same side.



# Motors

Siemens 1FK7015 motor .....	12
Siemens 1FK7022 motor .....	12
Siemens 1FK7034 motor .....	12
Siemens 1FK7044 motor.....	12



## Motors

CASM linear units have the advantage of being compatible with many of the motors available on the market today.

In order to provide you a fully tested system, SKF combined its actuator expertise with Siemens' well-known motor knowledge.

Thanks to this partnership, SKF offers a complete linear solution, including a CASM linear unit mounted with a SIEMENS 1FK7 servo-motor. Per CASM size, two SIEMENS motors from the 1FK7 product line are available for a total of 6 different combinations.

Except for the smallest 1FK7015 model, all motors are equipped with a DRIVE-CLiQ interface. In addition, they all come with a multi-pole resolver, a shaft-end with no keyway and a holding brake. A rotating plug adapter simplifies the connection and cable routing in all installation positions.

For more information, please visit the following sites:

**Motors:** [www.siemens.com/motors](http://www.siemens.com/motors)

**Frequency converters:** [www.siemens.com/sinamics](http://www.siemens.com/sinamics)

**Automation systems:** [www.siemens.com/simotion](http://www.siemens.com/simotion)

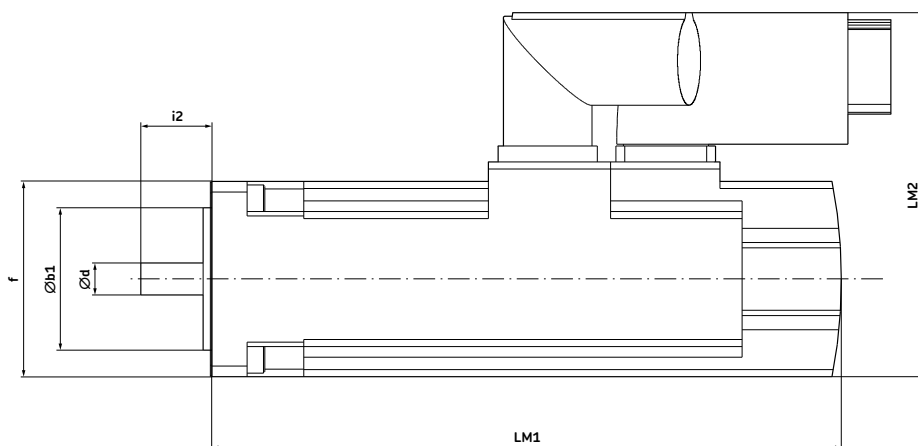
**Controls:** [www.siemens.com/simatic](http://www.siemens.com/simatic)

**Engineering software:** [www.siemens.com/sizer](http://www.siemens.com/sizer)

**Support worldwide:** [www.siemens.de/service](http://www.siemens.de/service)

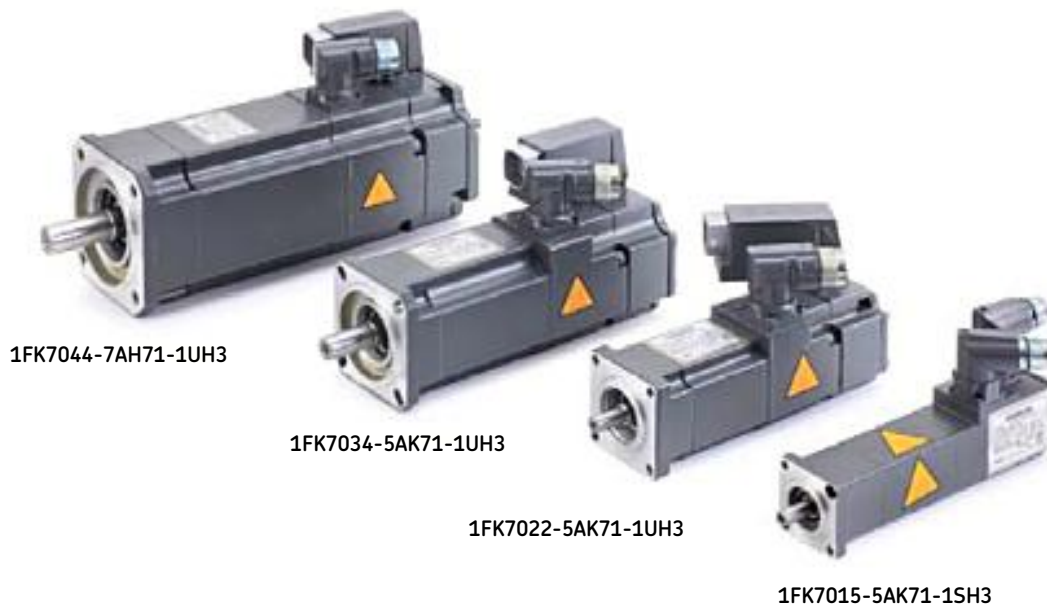
The CASM can also easily be connected to your own motor and integrated into your environment. Please contact your local SKF dealer to obtain an adapter for your desired motor type.

Dimensional drawing



### Dimensions

	Unit	1FK7015 motor	1FK7022 motor	1FK7034 motor	1FK7044 motor
LM1	mm	165	175	200	245
LM2	mm	86	103	117	138
Øb1	mm	30	40	60	80
Ød	mm	8	9	14	19
i2	mm	18	20	30	40
f	mm	□40	□55	□72	□96



## Motor data

	Unit	1FK7015	1FK7022	1FK7034	1FK7044
Type	–	1FK7015-5AK71-1SH3	1FK7022-5AK71-1UH3	1FK7034-5AK71-1UH3	1FK7044-7AH71-1UH3
Rated speed	min <sup>-1</sup>	6 000	6 000	6 000	4 500
Shaft height	mm	20	28	36	48
Rated power	kW	0,1	0,43	0,63	1,41
Static torque	Nm	0,35	0,85	1,6	4
Rated torque	Nm	0,16	0,6	1	3
Rated current	A	0,85	1,4	1,3	4,9
Number of pole pairs	–	4	3	3	3
Rotor moment of inertia with brake	10 <sup>-4</sup> kgm <sup>2</sup>	0,01	0,35	0,98	1,41
Weight	kg	1,2	2	4	8,3
Static current	A	1,5	1,8	1,9	6,3
Calculated power	kW	0,22	0,5	1	1,9
Suitable with	–	CASM 32	CASM 32/CASM 40	CASM 40/CASM 63	CASM 63





# Adapter kits\*

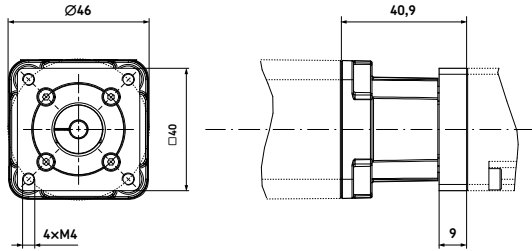
Adapter kit for CASM 32 and 1FK7015 motor . . . . .	16
Adapter kit for CASM 32 and 1FK7022 motor . . . . .	16
Adapter kit for CASM 40 and 1FK7022 motor . . . . .	16
Adapter kit for CASM 40 and 1FK7034 motor . . . . .	17
Adapter kit for CASM 63 and 1FK7034 motor . . . . .	17
Adapter kit for CASM 63 and 1FK7044 motor . . . . .	17



\* Note: for customised adapter kits, please contact your local SKF dealer

## Adapter kits

Adapter kit for CASM 32 and Siemens 1FK7015 motor\*

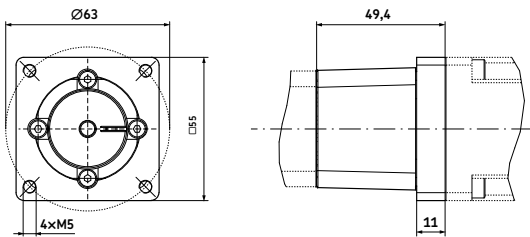


\* Screws included

Order N°

ZBE-375530

Adapter kit for CASM 32 and Siemens 1FK7022 motor\*

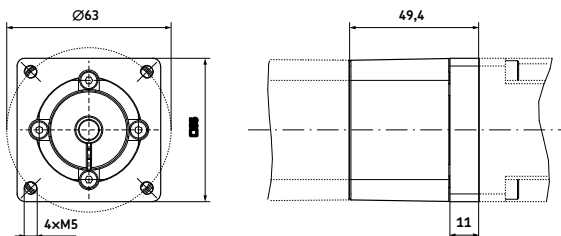


\* Screws included

Order N°

ZBE-375531

Adapter kit for CASM 40 and Siemens 1FK7022 motor\*

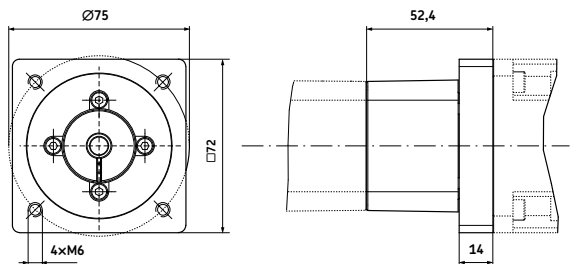


\* Screws included

Order N°

ZBE-375532

Adapter kit for CASM 40 and Siemens 1FK7034 motor\*

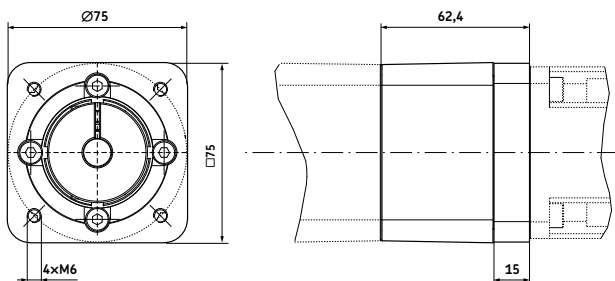


\* Screws included

Order N°

ZBE-375533

Adapter kit for CASM 63 and Siemens 1FK7034 motor\*

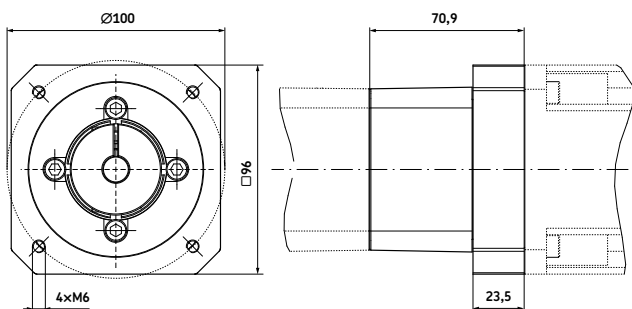


\* Screws included

Order N°

ZBE-375534

Adapter kit for CASM 63 and Siemens 1FK7044 motor\*



\* Screws included

Order N°

ZBE-375535



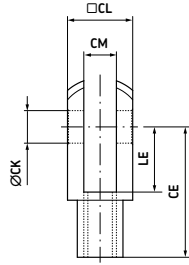
# Accessories

Rod clevis .....	20
Rod eye .....	20
Flange mounting kit .....	20
Trunnion flange kit .....	21
Trunnion mounting kit .....	21
Trunnion support pair .....	21
Foot mounting kit axial .....	22
Proximity sensor .....	22



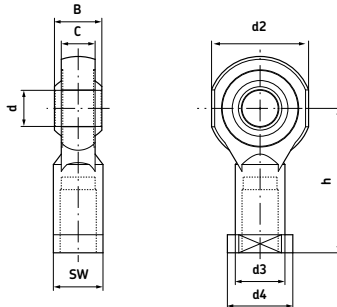
## Accessories

### Rod clevis



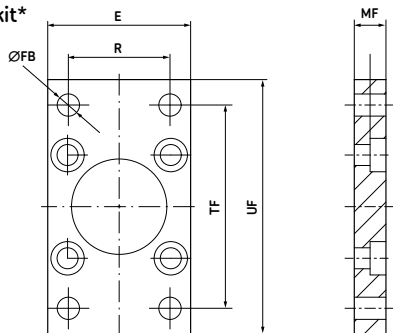
	Unit	CE	CK	CL	CM	LE	Order N°
CASM 32	mm	40	10	20	10	20	ZBE-375510-32
CASM 40	mm	48	12	24	12	24	ZBE-375510-40
CASM 63	mm	64	16	32	16	32	ZBE-375510-63

### Rod eye



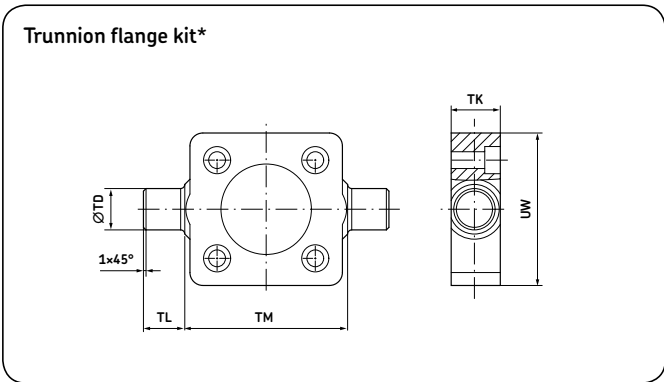
	Unit	B	C	d	d2	d3	d4	h	SW	Order N°
CASM 32	mm	14	10,5	10	29	15	20	43	17	ZBE-375511-32
CASM 40	mm	16	12	12	33	17,5	23	50	19	ZBE-375511-40
CASM 63	mm	21	15	16	43	22	29	64	22	ZBE-375511-63

### Flange mounting kit\*



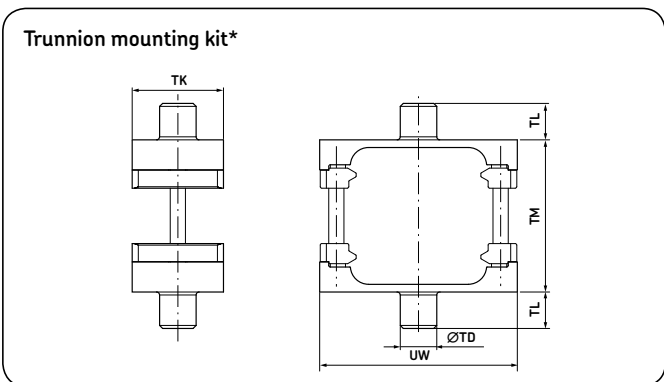
\* Screws included

	Unit	E	FB	MF	R	TF	UF	Order N°
CASM 32	mm	45	7	10	32	64	80	ZBE-375502-32
CASM 40	mm	52	9	10	36	72	90	ZBE-375502-40
CASM 63	mm	75	9	12	50	100	120	ZBE-375502-63



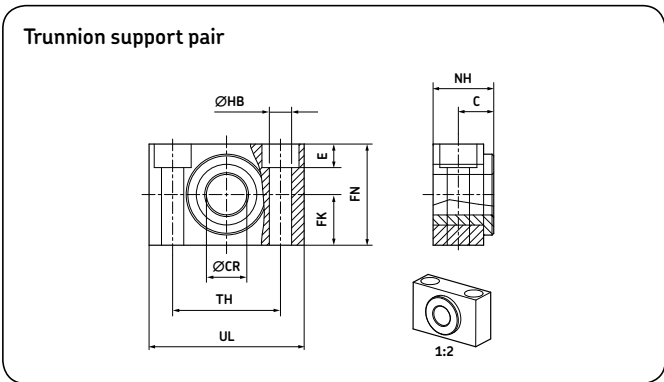
\* Screws included

	Unit	TD	TK	TL	TM	UW	Order N°
CASM 32	mm	12	14	12	50	46	ZBE-375503-32
CASM 40	mm	16	19	16	63	59	ZBE-375503-40
CASM 63	mm	20	24	20	90	84	ZBE-375503-63



\* Screws included

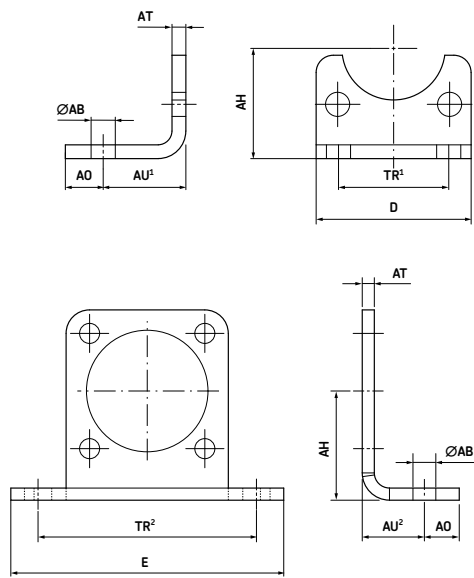
	Unit	TD	TK	TL	TM	UW	Order N°
CASM 32	mm	12	30	12	50	65	ZBE-375508-32
CASM 40	mm	16	32	16	63	75	ZBE-375508-40
CASM 63	mm	20	41	20	90	105	ZBE-375508-63



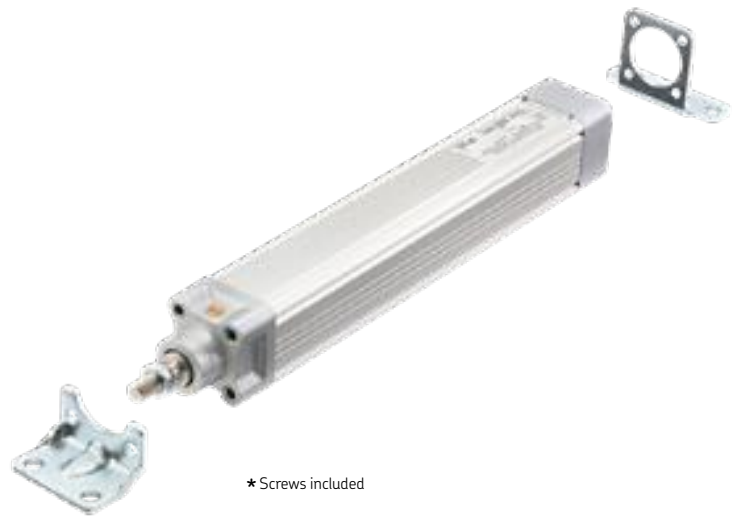
	Unit	C	CR	E	FK	FN	HB	NH	TH	UL	Order N°
CASM 32	mm	10,5	12	6,8	15	30	6,6	18	32	46	ZBE-375509-32
CASM 40	mm	12	16	9	18	36	9	21	36	55	ZBE-375509-40
CASM 63	mm	13	20	11	20	40	11	23	42	65	ZBE-375509-63

## Accessories

### Foot mounting kit axial\*



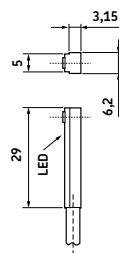
Note: The foot mounting between the linear unit and the adapter kit increases the length of the actuator by "AT"



\* Screws included

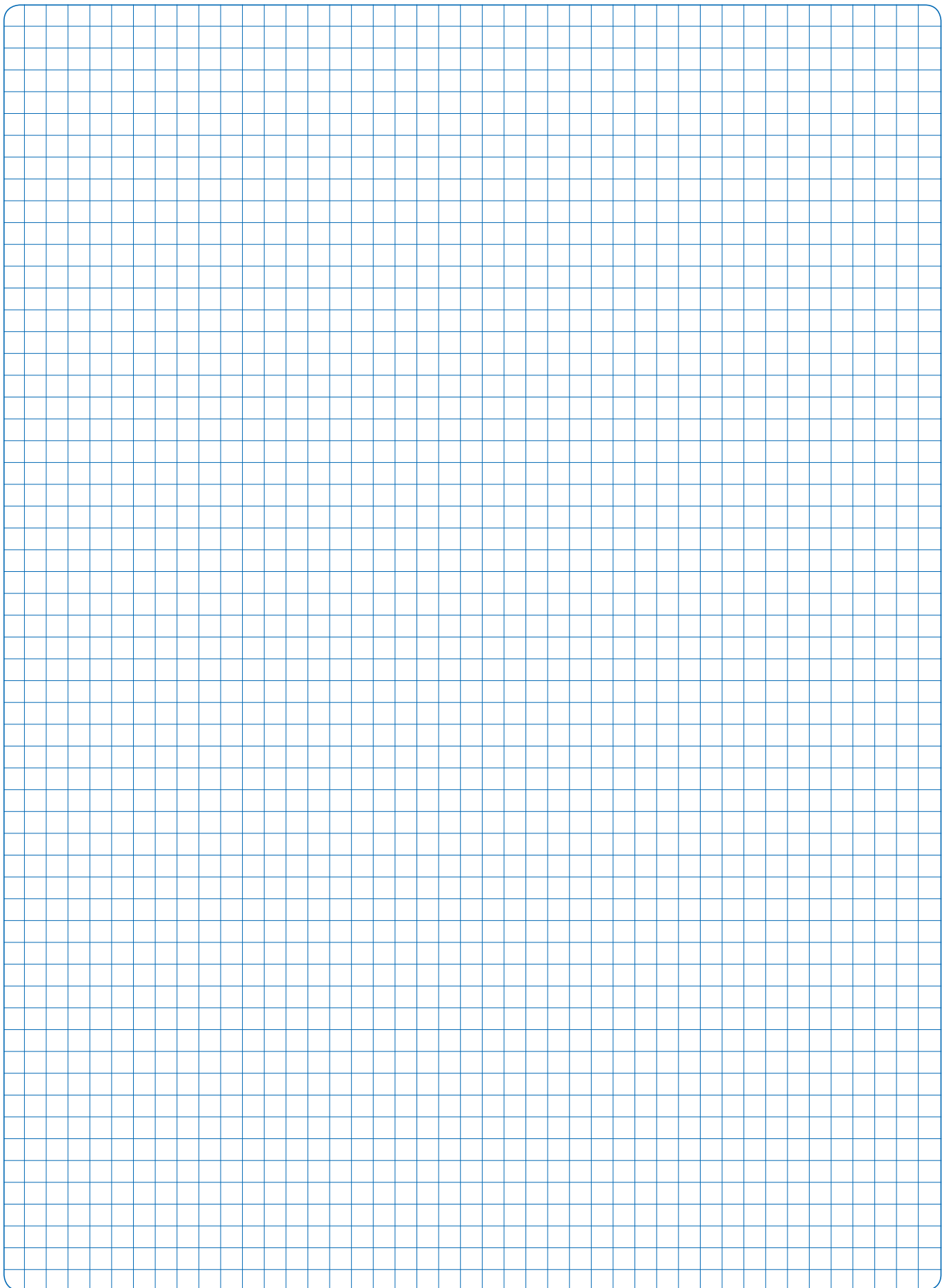
	Unit	AB	AH	AO	AT	AU <sup>1</sup>	AU <sup>2</sup>	D	E	TR <sup>1</sup>	TR <sup>2</sup>	Order N°
CASM 32	mm	7	32	10	4	24	18	45	71	32	58	ZBE-375507-32
CASM 40	mm	9	36	11,5	4	28	20,5	52	90	36	72	ZBE-375507-40
CASM 63	mm	9	50	14	5	32	24	75	110	50	92	ZBE-375507-63

### Proximity sensor



Switching function	Output signal	Rated voltage	Max. current	Cable length	Order N°
Normally open	PNP	24 V DC	30 mA	5 m	ZSC-375525-N0





# SKF – the knowledge engineering company

From the company that invented the self-aligning ball bearing more than 100 years ago, SKF has evolved into a knowledge engineering company that is able to draw on five technology platforms to create unique solutions for its customers. These platforms include bearings, bearing units and seals, of course, but extend to other areas including: lubricants and lubrication systems, critical for long bearing life in many applications; mechatronics that combine mechanical and electronics knowledge into systems for more effective linear motion and sensorized solutions; and a full range of services, from design and logistics support to condition monitoring and reliability systems.

Though the scope has broadened, SKF continues to maintain the world's leadership in the design, manufacture and marketing of rolling bearings, as well as complementary products such as radial seals. SKF also holds an increasingly important position in the market for linear motion products, high-precision aerospace bearings, machine tool spindles and plant maintenance services.

The SKF Group is globally certified to ISO 14001, the international standard for environmental management, as well as OHSAS 18001, the health and safety management standard. Individual divisions have been approved for quality certification in accordance with ISO 9001 and other customer specific requirements.

With over 100 manufacturing sites worldwide and sales companies in 70 countries, SKF is a truly international corporation. In addition, our distributors and dealers in some 15 000 locations around the world, an e-business marketplace and a global distribution system put SKF close to customers for the supply of both products and services. In essence, SKF solutions are available wherever and whenever customers need them. Overall, the SKF brand and the corporation are stronger than ever. As the knowledge engineering company, we stand ready to serve you with world-class product competencies, intellectual resources, and the vision to help you succeed.

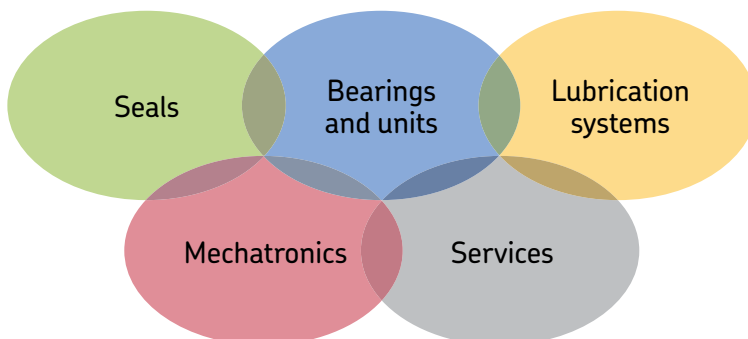


© Airbus – photo: e\*rm company, H. Goussé

### **Evolving by-wire technology**

*SKF has a unique expertise in the fast-growing by-wire technology, from fly-by-wire, to drive-by-wire, to work-by-wire. SKF pioneered practical fly-by-wire technology and is a close working partner with all aerospace industry leaders. As an example, virtually all aircraft of the Airbus design use SKF by-wire systems for cockpit flight control.*

*SKF is also a leader in automotive by-wire technology, and has partnered with automotive engineers to develop two concept cars, which employ SKF mechatronics for steering and braking. Further by-wire development has led SKF to produce an all-electric forklift truck, which uses mechatronics rather than hydraulics for all controls.*





#### **Harnessing wind power**

The growing industry of wind-generated electric power provides a source of clean, green electricity. SKF is working closely with global industry leaders to develop efficient and trouble-free turbines, providing a wide range of large, highly specialized bearings and condition monitoring systems to extend equipment life of wind farms located in even the most remote and inhospitable environments.



#### **Working in extreme environments**

In frigid winters, especially in northern countries, extreme sub-zero temperatures can cause bearings in railway axleboxes to seize due to lubrication starvation. SKF created a new family of synthetic lubricants formulated to retain their lubrication viscosity even at these extreme temperatures. SKF knowledge enables manufacturers and end user customers to overcome the performance issues resulting from extreme temperatures, whether hot or cold. For example, SKF products are at work in diverse environments such as baking ovens and instant freezing in food processing plants.



#### **Developing a cleaner cleaner**

The electric motor and its bearings are the heart of many household appliances. SKF works closely with appliance manufacturers to improve their products' performance, cut costs, reduce weight, and reduce energy consumption. A recent example of this cooperation is a new generation of vacuum cleaners with substantially more suction. SKF knowledge in the area of small bearing technology is also applied to manufacturers of power tools and office equipment.



#### **Maintaining a 350 km/h R&D lab**

In addition to SKF's renowned research and development facilities in Europe and the United States, Formula One car racing provides a unique environment for SKF to push the limits of bearing technology. For over 60 years, SKF products, engineering and knowledge have helped make Scuderia Ferrari a formidable force in F1 racing. (The average racing Ferrari utilizes around 150 SKF components.) Lessons learned here are applied to the products we provide to automakers and the aftermarket worldwide.



#### **Delivering Asset Efficiency Optimization**

Through SKF Reliability Systems, SKF provides a comprehensive range of asset efficiency products and services, from condition monitoring hardware and software to maintenance strategies, engineering assistance and machine reliability programmes. To optimize efficiency and boost productivity, some industrial facilities opt for an Integrated Maintenance Solution, in which SKF delivers all services under one fixed-fee, performance-based contract.



#### **Planning for sustainable growth**

By their very nature, bearings make a positive contribution to the natural environment, enabling machinery to operate more efficiently, consume less power, and require less lubrication. By raising the performance bar for our own products, SKF is enabling a new generation of high-efficiency products and equipment. With an eye to the future and the world we will leave to our children, the SKF Group policy on environment, health and safety, as well as the manufacturing techniques, are planned and implemented to help protect and preserve the earth's limited natural resources. We remain committed to sustainable, environmentally responsible growth.



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