



Compendium Screw Jacks

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MOTION TECHNOLOGY



Columbus McKinnon Engineered Products GmbH

The brands Pfaff-silberblau and ALLTEC Antriebstechnik are positioned under the strong umbrella of COLUMBUS McKINNON Corporation as COLUMBUS McKINNON Engineered Products GmbH. This unique constellation enables us to combine outstanding technologies, components and solutions depending on specific customer requests.

Pfaff-silberblau and ALLTEC Antriebstechnik's portfolios with both brands' wide range of products complement each other to form a comprehensive range of high-end, electromechanical components for linear motion technology.

Choose the ideal technology and engineering for your application from our range. You benefit from innovative complete solutions from a world leader that is also somewhere near you.



Imprint: Creative design and implementation: eest! DIE AGENTUR, Augsburg, Germany

Design: eest! DIE AGENTUR, Augsburg, Germany

Photography: Weiss Photo Studio, Gersthofen, Germany

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Screw Jack Technology

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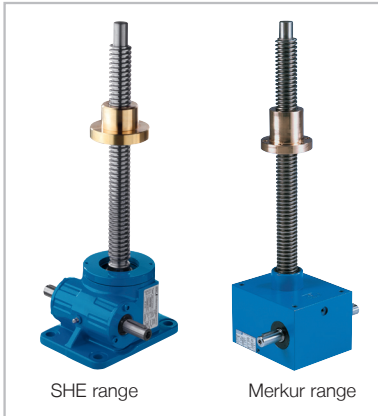
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Screw Jack Technology

Extract from our catalogue



Standard worm gear screw jacks **SHE** and cubic **MERKUR** elements for standard applications



HSE high performance worm gear screw jacks for highly-demanding dynamic applications



SHG quick-lifting screw jacks for extremely high-speed lifting operations



Special lifting elements configured to customer-specific requirements



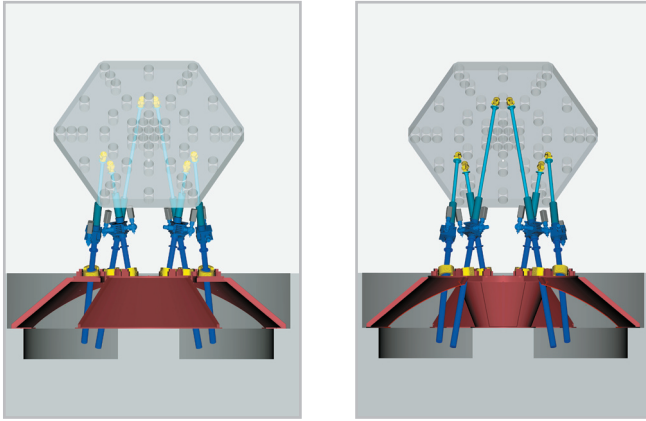
Bevel gear boxes



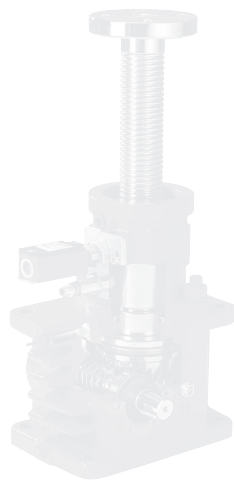
Accessories for lifting elements and screw lifting systems

Screw Jack Technology

Application Examples



Manufacturer's illustrations:
VERTEX ANTENNENTECHNIK GmbH
Parallel kinematics as drive system of a radio-astronomic receiver unit, consisting of 6 HSE high performance worm gear screw jacks with a lift of 3,500 mm. The system is used for precise positioning of several radio telescopes which are installed on one platform.

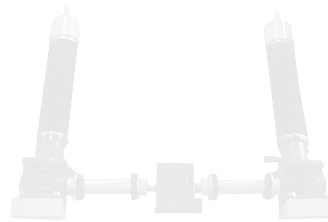
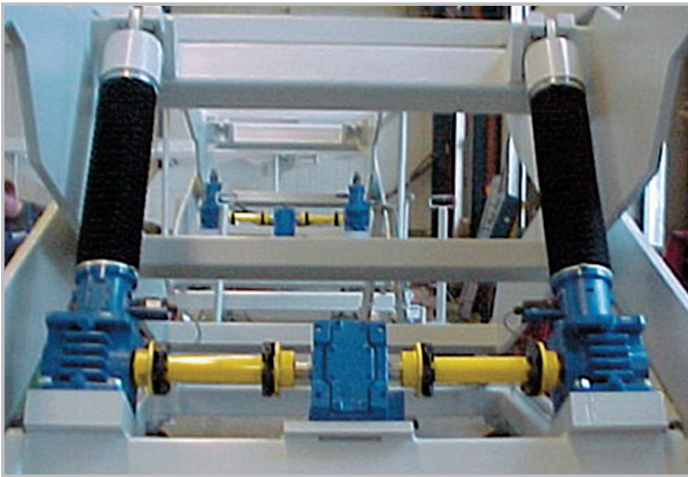


Manufacturer's illustration: Mero Airporttechnik
High performance worm gear screw jacks for adjusting the height of aircraft maintenance platforms.

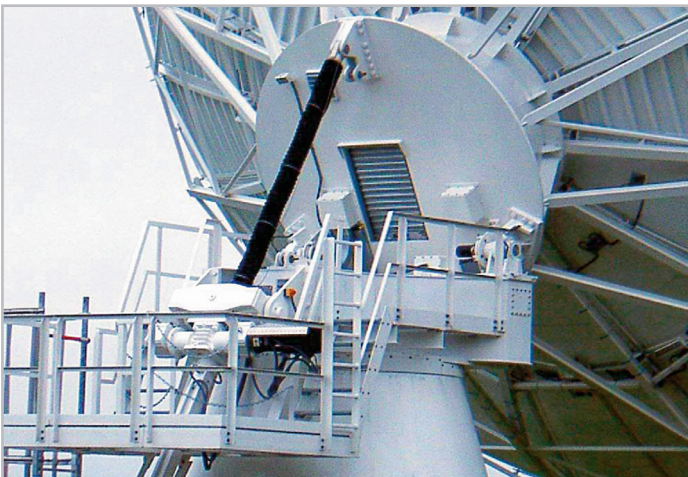


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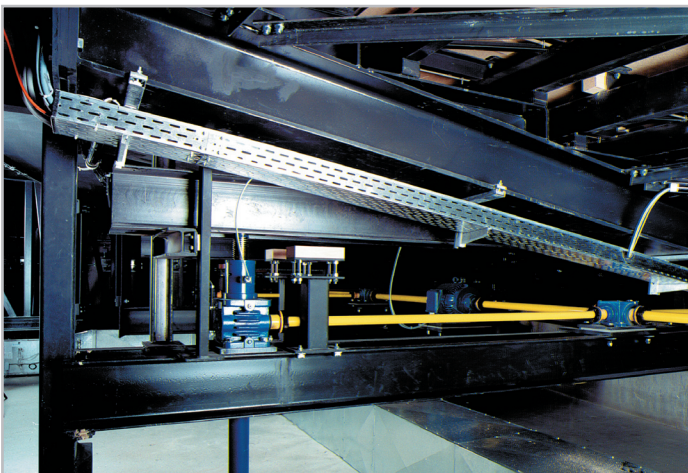
Application Examples



Scissors elevating platform with swivelling configuration HSE high performance worm gear screw jack, configuration type 1, synchronized as tandem drive via connecting shaft.

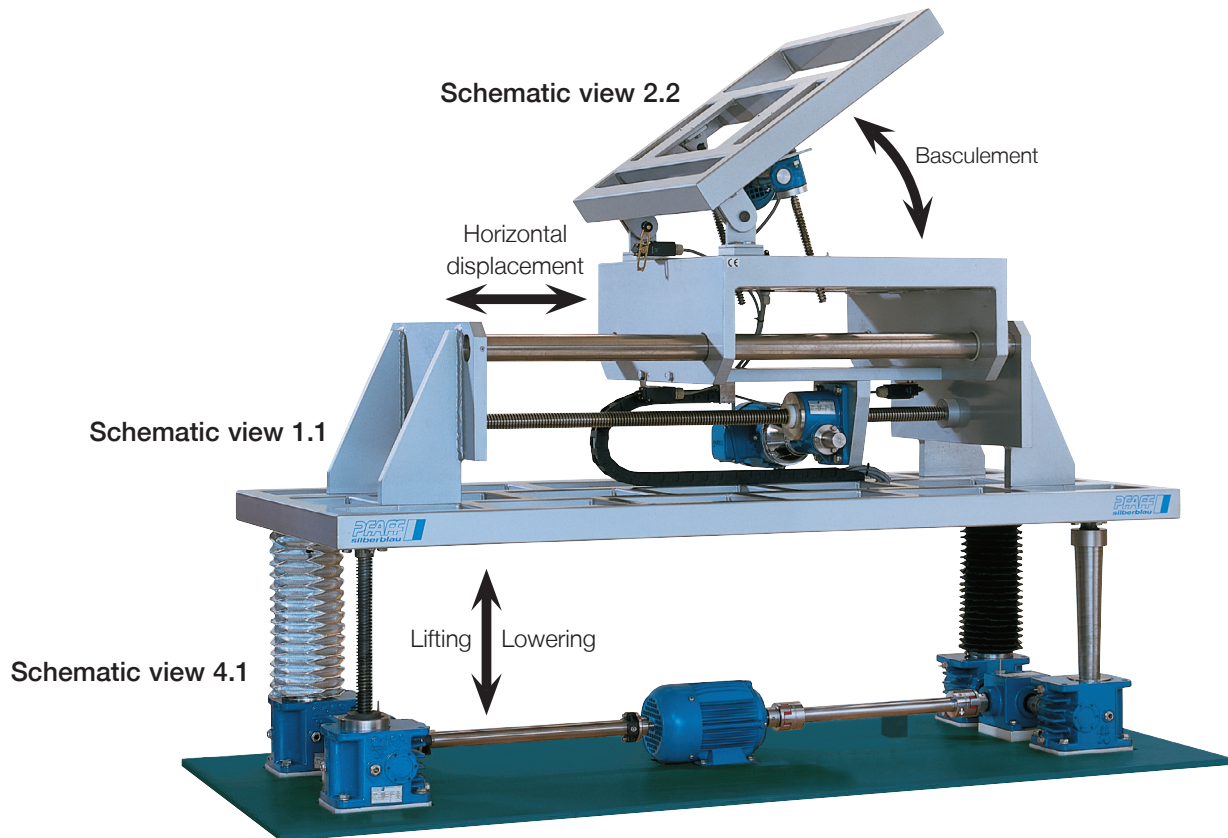


HSE high performance worm gear screw jack, special configuration for an elevation movement from 0 °C to 90 °C of an 11,1 m antenna.



Manufacturer's illustration:
SBS Bühnentechnik GmbH
Multi-screw lifting system (HSE high performance worm gear screw jacks) with safety device according to with BGV C1 (VBG 70) for adjusting hall platforms in the Culture Centre in Frankfurt/Oder. Synchronization is effected by means of bevel gear boxes and connecting shafts.

Three-axis functioning model



Schematic view 2.2

- 2 x type 2 worm gear screw jack
- Swivelling consoles
- Electric motor

Schematic view 1.1

- 1 x type 1 worm gear screw jack
- Coupling
- Connecting flange
- Frequency-controlled electric motor

Schematic view 4.1

- 4 x type 1 worm gear screw jack
- Bevel gear boxes
- Connecting shafts
- Couplings
- Electric motor

Useful information

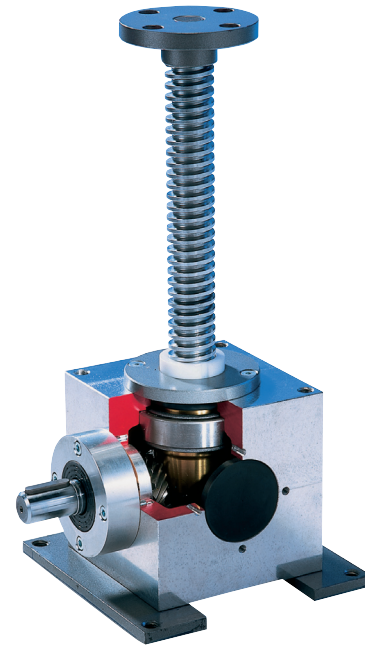
Useful information

Improving on existing trends in order to shape the future. Flexibility is the number-one requirement where a spontaneous ability to spot trends and convert them into useful developments is concerned.

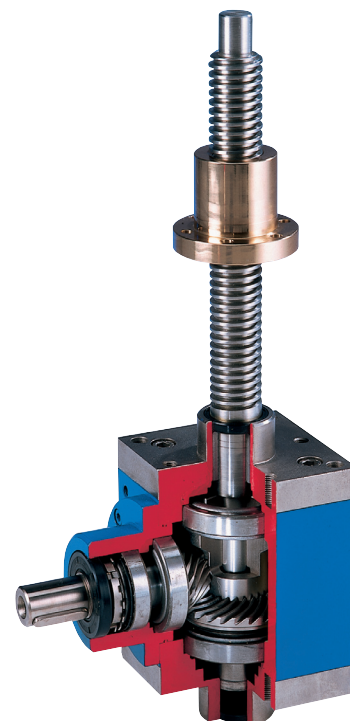
Pfaff-silberblau and ALLTEC Antriebstechnik make full use of their international technological expertise to set their own benchmarks in this fast-developing market.

In the specific field of drive engineering, increased automation and ease of operation are in tune with the ever-greater importance given to the precise control and monitoring of lifting, lowering, feed and swivel mechanisms. Areas such as miniaturization, controlled automation, intelligent drive systems and sensor technology, technology transfer and combination, and integrated and mechatronic systems have gained major development status, or have even turned into real applications. Given that mechanical engineering, machine-tool technology, rail and road technology etc. are in a state of constant ongoing development, Pfaff-silberblau and ALLTEC Antriebstechnik also offer electromechanical drive-system elements and complete drive-system solutions designed for universal applications.

This catalogue contains all the data required for carrying out an informed selection from the widest-possible range of different worm gear screw jacks. And answers to your own specific task-requirements, along with solutions designed to turn your product into a successful and high-quality overall concept. If you are also interested in recommended special solutions for Linear Motion Precision Screws and Linear Motion Devices, please ask for the appropriate additional catalogues. Do not hesitate to contact us if you have any query.



1

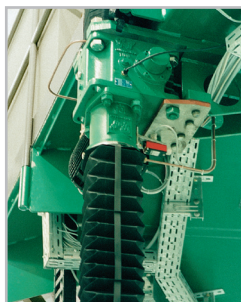


1.1 System solutions

1



Installation of lifting system with flexible protection boots for approx. 9 m of lift.
Manufacturer's illustration
MT Aerospace AG



Drive system layout

We can supply precise, reliable configured drive units, connecting shafts, bevel gear boxes, motors etc. that conform both to current industrial-machine legislation and standards and to your exact function requirements.

Engineering

Your proposals become our objectives where project planning and construction support for special individual configuration and calculation methods conforming to EN 1570, EN 280, EN 1756, EN 1493 (VBG14) and BGV C1 (VBG 70) are concerned. Ask your technical adviser about our construction support services.

Control units

Demand reliability and clear thinking: Whether you are looking for positioning control units that function via frequency-regulated individual drive systems for SLAVE-MASTER operation, or controls for universal applications and operating conditions – we supply the support you need.

Service

Customer satisfaction always occupies the head of our "to-do" list, which is why we supply you with full support during the installation process, while helping to ensure that everything conforms to EN 1570, EN 280, EN 1756, EN 1493 (VBG 14) and that the screw jack lifting systems and components are all duly certified.

Delivery dates you can rely on

Time is too valuable to be wasted on waiting for late deliveries, so you can rely on our promised delivery times – regardless of whether you have ordered standard jacking elements, modified units or series-produced special configurations. Just check it out.

Project planning

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2.1 List of formulae

2

Abbr.	Designation	Measuring unit	Formula
$\varphi^{(*)}$	Lead angle Self-locking during shutdown*: $2,4^\circ < \varphi < 4,5^\circ$ (Self-locking out of actuation: $\varphi < 2,4^\circ$) Not self-locking: $\varphi > 4,5^\circ$	°	$\varphi = \arctan[P_n / (d_2 \cdot \pi)]$
η_{Anl}	Lifting system efficiency rating		
η_{HE}	Worm gear screw jack efficiency rating		
a	Acceleration	m/s ²	$a = v / (60 \cdot t)$
As	Number of load cycles		
C	Dynamic load rating	kN	
C _o	Static load rating	kN	
d ₂	Pitch diameter	mm	
ED	Duty ratio	%/hr	$ED = [\text{lift} \cdot A_s / (60 \cdot v)] \cdot 100\%$
F _{dyn}	Dynamic axial force (= lifting force)	kN	
F _{stat}	Static axial force (= retention force)	kN	
HU	Lift per rotation	mm	$HU = P_n / i$
i	Transmission ratio		
L _h	Service life	h	$L_h = (C / F_{dyn})^3 \cdot 10^6 / (n_2 \cdot 60)$
n ₁	Input speed	min ⁻¹	
n ₂	Output speed	min ⁻²	$n_2 = n_1 / i$
P	Power rating	kW	$P = F_{dyn} \cdot v / (60 \cdot \eta)$
Ph	Screw lead	mm	
pv-value	Surface pressure x sliding speed	N/mm ² * m/min	
p _{zul}	Permitted surface pressure	N/mm ²	
t	Time	s	
T ₁	Drive torque	Nm	$T_1 = P \cdot 9550 / n_1$
T ₂	Output torque (= screw torque)	Nm	
T _A	Starting torque	Nm	$T_A \sim T_1 \cdot 1,3$
v	Lifting speed	m/min	$v = n_1 \cdot Ph / i$

(*) Vibrations and optimized sliding properties may affect the self-locking system. If in doubt, use a motor brake.

Index

HE _____ Worm gear screw jack

Anl _____ Lifting system

Ku _____ Ball screw

Tr _____ Trapezoidal screw

zul _____ Permissible

Configuration conforming to

EN 1570, EN 280, EN-1756, EN 1493 (VBG 14)

Lead angle:

$2,4^\circ < \varphi < 4,5^\circ$

$\varphi > 4,5^\circ$

⇨ Motor with single braking torque

⇨ Two independent braking systems

Standards for theatre stages and

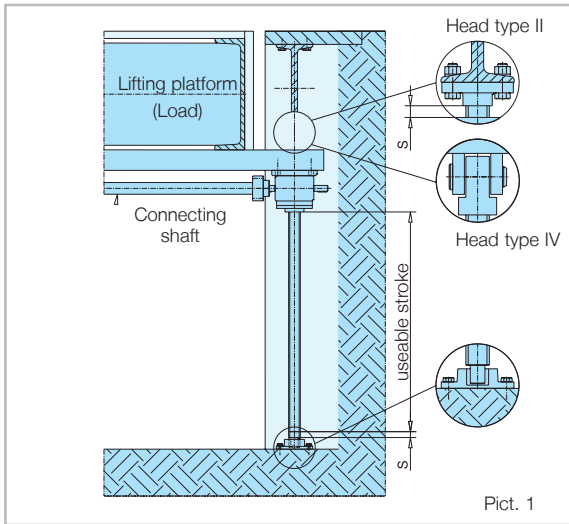
broadcasting studios BGV C1 (VBG 70)

Similar to configuration conforming to VBG 14, although self-locking screw is not an absolute requirement if all torque transmitting components are designed to withstand twice the rated load.

Project planning

2.2 Suggestions for installation

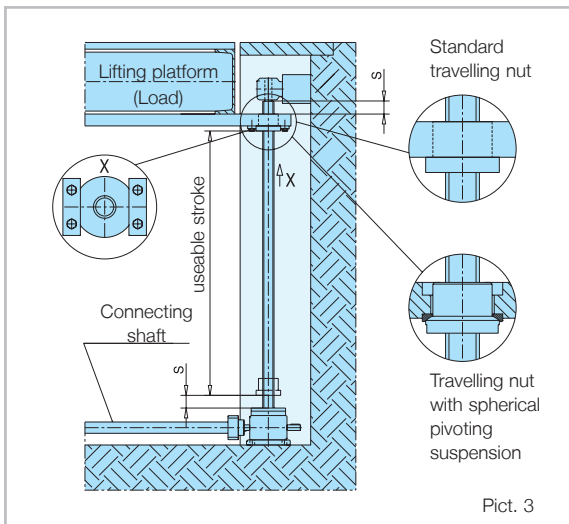
2.2.1 Vertical installation



Recommended arrangement for large lifting capacities and long screws

Tensile load

Design: Configuration type 1
With climbing screw jacks (without protection tube)



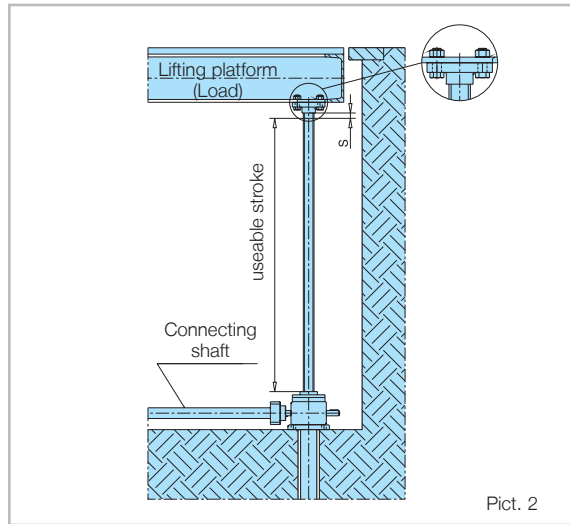
Arrangement with compression-loaded screw, possible with or without additional guides

Dimensioning of screw according to Euler's case III and critical screw speed

Design: Configuration type 2
With rotating screw and travelling nut

S = safety clearance

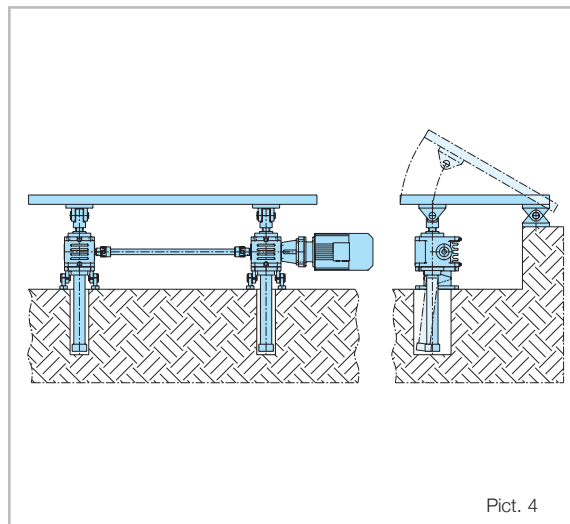
See chapter 7 "Accessories" for details of all required add-on items (connecting flanges, swivel mounting bases etc.).



Compression-loaded screws without lateral guides

Dimensioning of screw according to Euler's case I

Design: Configuration type 1
With lifting screw and protection tube



Swivelling movements require articulated mounting

Dimensioning of screw according to Euler's case II

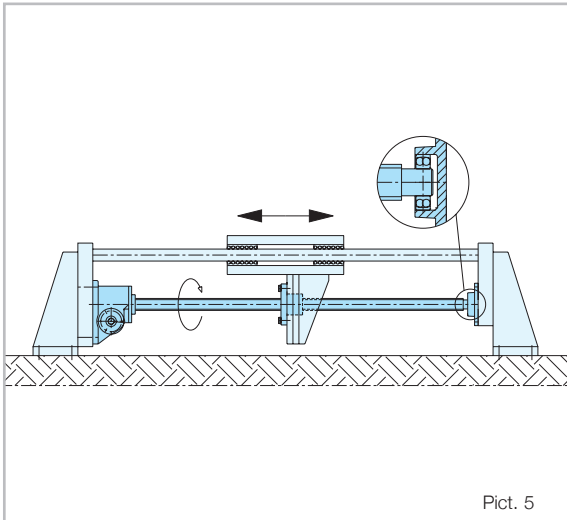
Design: Configuration type 1
With lifting screw, two guide rings and protection tube

2

2.2 Suggestions for installation

2.2.2 Horizontal installation

2



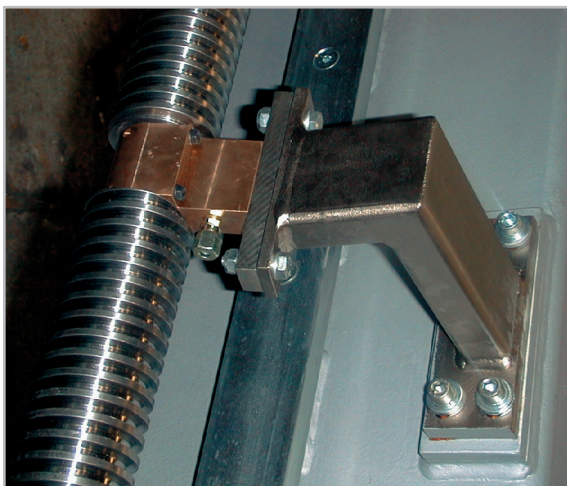
Pict. 5

Arrangement with compression- and tension-force-loaded screw
With guides supplied on site

Dimensioning of screw according to Euler's case III and critical screw speed

With screws pre-adjusted to tensile load ⇨
Dimensioning according to critical speed only

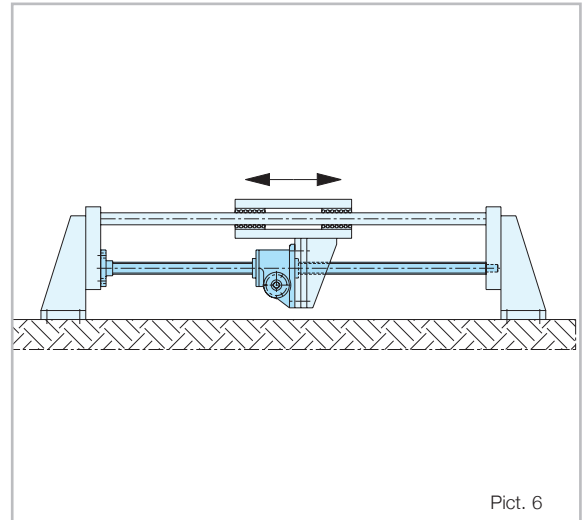
Design: Configuration type 2
With rotating screw and travelling nut



Intermediate bearing-support of a 12 m screw

Pict. 7

Standard once-piece screws can be made in lengths of up to 6 m (3 m for screws made of rust-free material). Longer screws are supplied in sections to make installation on site easier.



Pict. 6

Arrangement with compression- and tension-force-loaded screw
With guides supplied on site

Dimensioning of screw according to Euler's case II, if screw retaining force is insufficient. Otherwise, apply Euler's case III

Design: Configuration type 1
With clamped screw and linear traversing drive axis.



Special travelling nut

Pict. 8

If critical screw speed is exceeded (only applies to configuration type 2 = rotating screw), the screws must be adequately supported. This requires the use of our specially-supplied intermediate bearings and travelling nuts (see photos).

Project planning

2.3 Service life L_h

The design and construction of Pfaff-silberblau worm gear screw and quick-lifting jacks are based on our long years of experience in the field and they have a long service life if the instructions in the operating manuals are observed.

Screw		Gearing layout N or L	Bearing layout
Tr and S screw	Ku ball screw	Worm-drive gearing:	Thrust and radial bearings
<ul style="list-style-type: none"> • These values are for guidance only, as exact calculation is not possible • Decisive layout factors are surface pressure and sliding speed (pv-value, $p_{2,ul}$) • Guaranteed relubrication • Ideal installation 	<ul style="list-style-type: none"> • Calculation: $L_h = (C/F_{dyn})^3 \cdot 10^6 / (n_2 \cdot 60)$ 	<ul style="list-style-type: none"> • SHE standard worm screw jack and MERKUR: approximate values according to DIN3996-D • In the case of HSE high performance worm gear screw jack, according to DIN 3996-C Bevel gear tooth system: <ul style="list-style-type: none"> • SHG quick-lifting screw jacks, L_h = fatigue endurable 	<ul style="list-style-type: none"> • Calculations according to DIN or data supplied by the bearing supplier

2

The maximum load values given in the catalogue data (tables of settings) are based on a service life of minimum 500 operating hours.

2.4 Guidelines for use

2.4.1 Dirt protection

- Leakproofing of all ranges by means of rotary lip seals fitted to drive shafts is standard
- Enclosed housing configuration on HSE und SHG ranges using additional seals
- Screw protection tube for type 1

Optional lifting screw protective covers:

- Flexible protection boots made of various materials to prevent entry of dirt and for outdoor use (water-proof)
- Spiral spring cover for use in extreme environment (flying swarf, welding sparks)

Special configurations:

Special configurations, e. g. for use under water or at high temperatures, are available on request

2.4.2 Corrosion protection

Corrosion protected aluminium housings fitted to the following ranges:

SHE	Size 0.5 and 1.1
MERKUR	Size M0, M1 and M2
HSE	Size 32 and 36.1
SHG	Size G25

Surface coating for all other sizes:

- SHE and HSE housings with series-applied prime coat
- MERKUR and SHG with phosphate coated housings

Optional corrosion protection for special configurations:

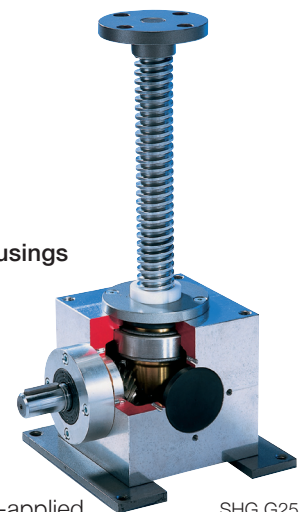
Available for all ranges:

- Special coatings
- Screws and screw heads made of material 1.4305, 1.4301, 1.4571
- Worm-drive shafts made of rust-free material
- SHE range in completely rust-free material configuration

Corrosion protection provided by surface coatings:

Available for all ranges:

- Tenifer treated (salt-bath nitrided)
- Hard-chrome plated drive shafts

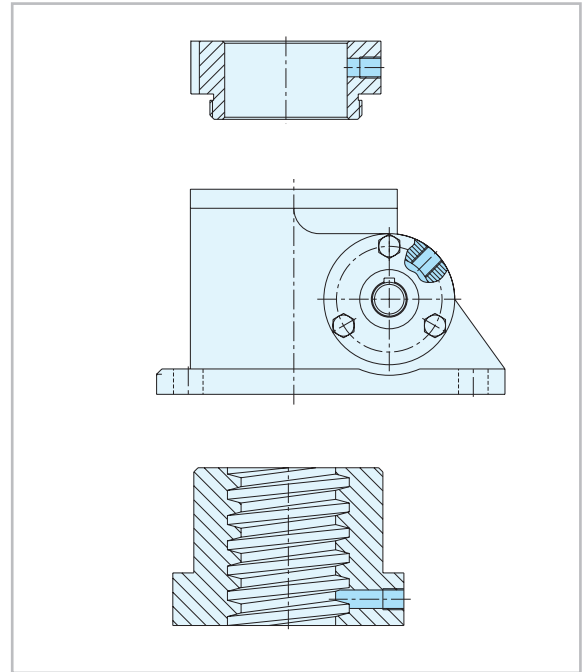


SHG G25
(aluminium housing)

2.4 Guidelines for use

2.4.3 Items requiring regular lubrication

If access to the screw itself or the lubrication points on the housing is difficult, we recommend the use of a central lubrication system or automatic lubricant dispenser (see chapter 7.8). Our components can be supplied with the necessary screw-in connections for this purpose.



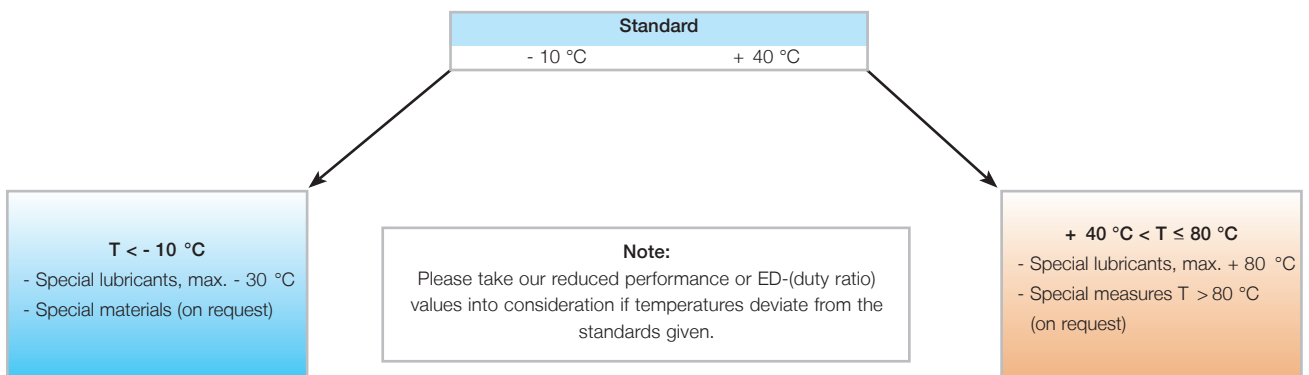
SHE and MERKUR range

Configuration	Lubrication point
Type 1	guide ring, protection tube, housing (gearing layout)
Type 2	travelling nut, housing (gearing layout)

HSE and SHG range

Configuration	Lubrication point
Type 1	guide ring, protection tube
Type 2	travelling nut

2.5 Ambient temperatures



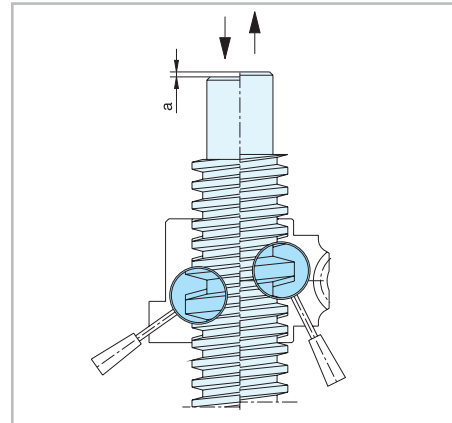
Project planning

2.6 Precision ratings

2.6.1 Axial play „a”

Axial play has no influence on positioning accuracy in the case of one-side load, as the flanks of the screw thread provide support.

Trapezoidal or buttress-thread screw	Ball screw
Standard $0,1 \text{ mm} \leq a \leq 0,3 \text{ mm}$, depending on size	Single flange nut $a \leq 0,05 \text{ mm}$
Modified configuration: Axial play can be readjusted	Initial tension depending on size of ball $0,01 \text{ mm} \leq a \leq 0,03 \text{ mm}$ Pre-stressed double nut $a \leq 0,01 \text{ mm}$



2

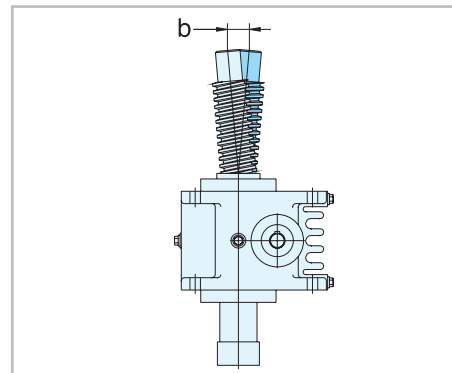
2.6.2 Lateral play „b”

Standard

Lateral play „b” occurs only in the case of type 1, as a result of play between the guide ring and the outer diameter of the screw. It comes up to about 0,2 mm and effects a linear calculative deviation „b” depending on stroke length. The amount of play „b” can be reduced by means of a second guide ring.

Special configuration

2nd guide ring with reduced play and additionally ground screw material.



2.6.3 Tooth profile play



The tooth profile play (when new) of 0,1 – 0,3 mm varies, depending on the size of the unit resp. centre distance of shaft to wheel, with the rate of wear.



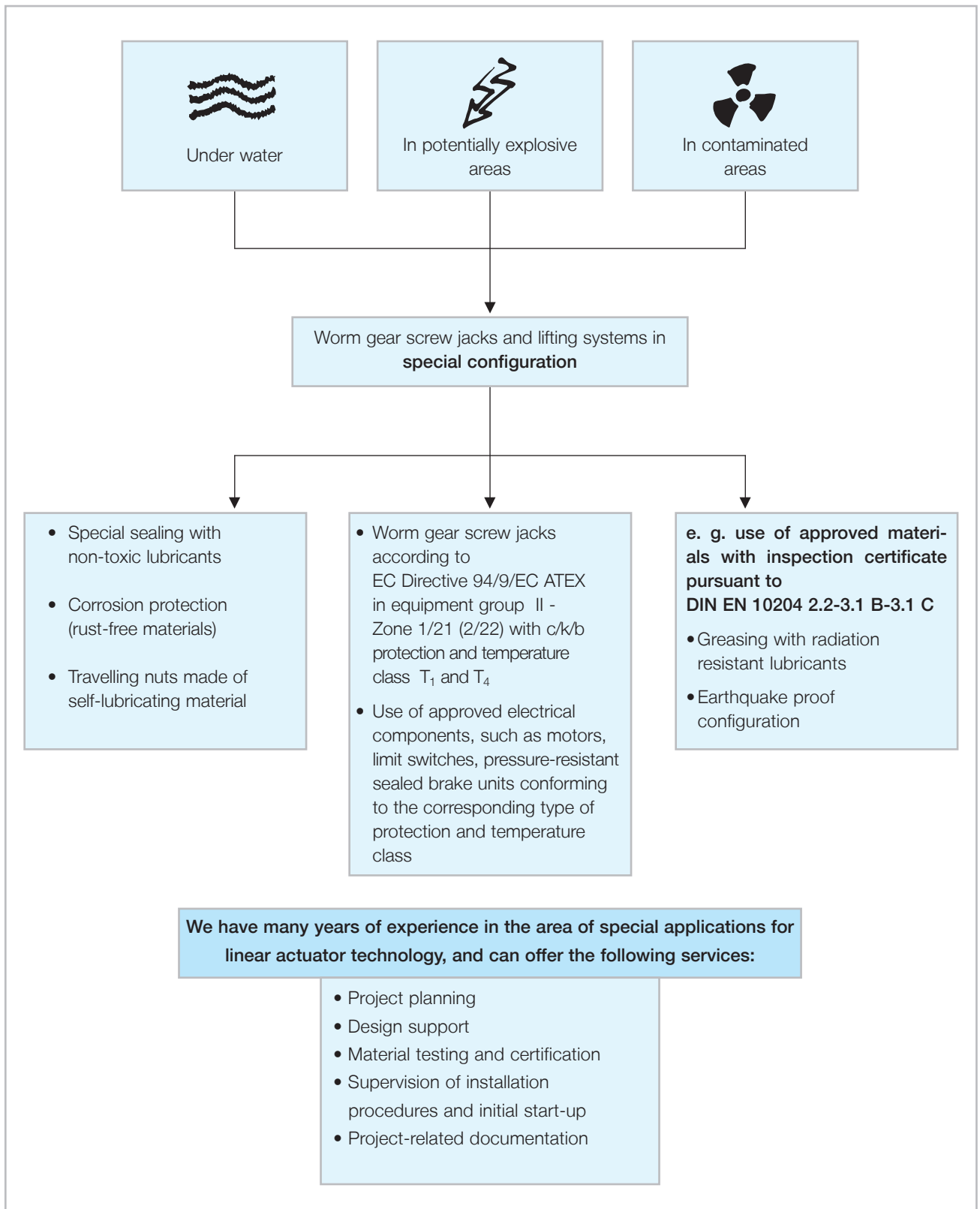
Tooth profile play of 0,05 – 0,1 mm kept constant throughout service life of unit.

2.6.4 Screw lead error

Trapezoidal screw thread conforming to DIN 103 T1; Buttress screw thread conforming to DIN 513		Ball screw thread conforming to DIN 69051 T3
Whirled screw (standard) $\pm 0,05 \text{ mm}$		Whirled screw (standard) Tolerance classification T7; P300 = 0,052 mm
Rolled screw $\pm 0,1 \text{ mm}$		Ground screw; tolerance classification T1 - 5; P300 = 0,006 - 0,023 mm Rolled screw; tolerance classification T9; P300 = 0,1 mm

2.7 Special operating areas of application

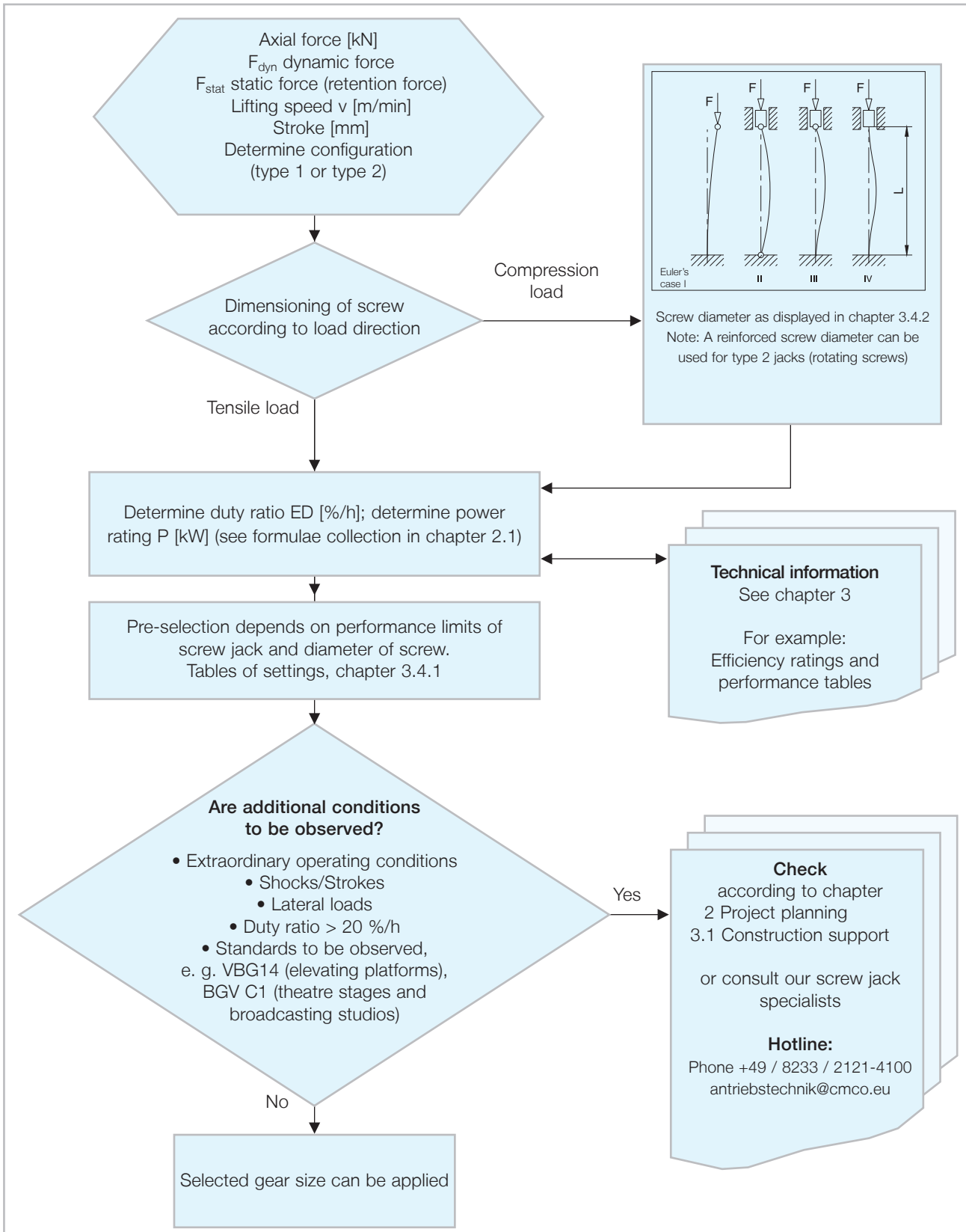
2



Project planning

2.8 Dimensioning of worm gear screw jacks

2.8.1 Flow diagram



2.8 Dimensioning of worm gear screw jacks

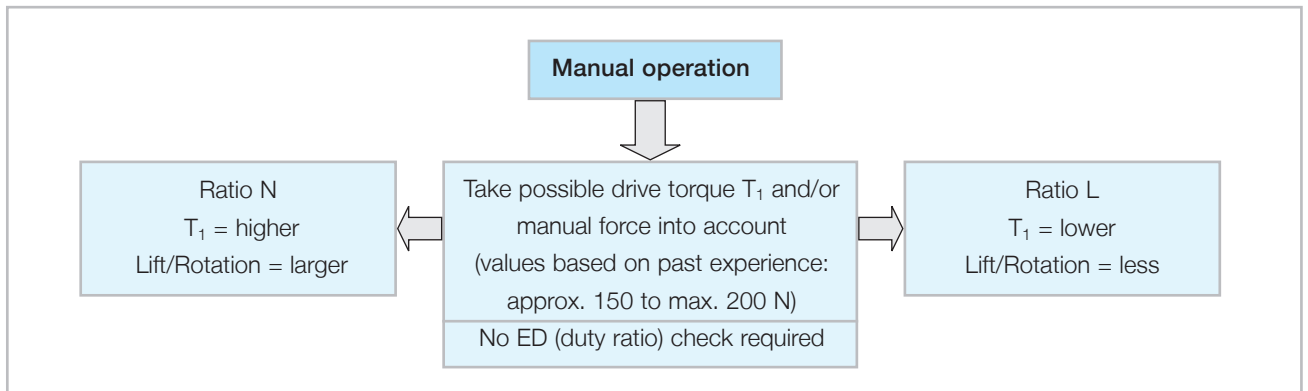
2.8.2 Example Single drive unit with motor

Required axial force F_{dyn} _____ 20 kN Guides fitted on site _____ Yes ⇨
 Required lifting speed v _____ 1,9 m/min Euler's case III
 Required lift _____ 1200 mm Load cycles/hour _____ 10
 Selected configuration _____ See chapter 3.2 Travel per load cycle _____ 1200 mm
 Configuration type 1 (lifting screw)

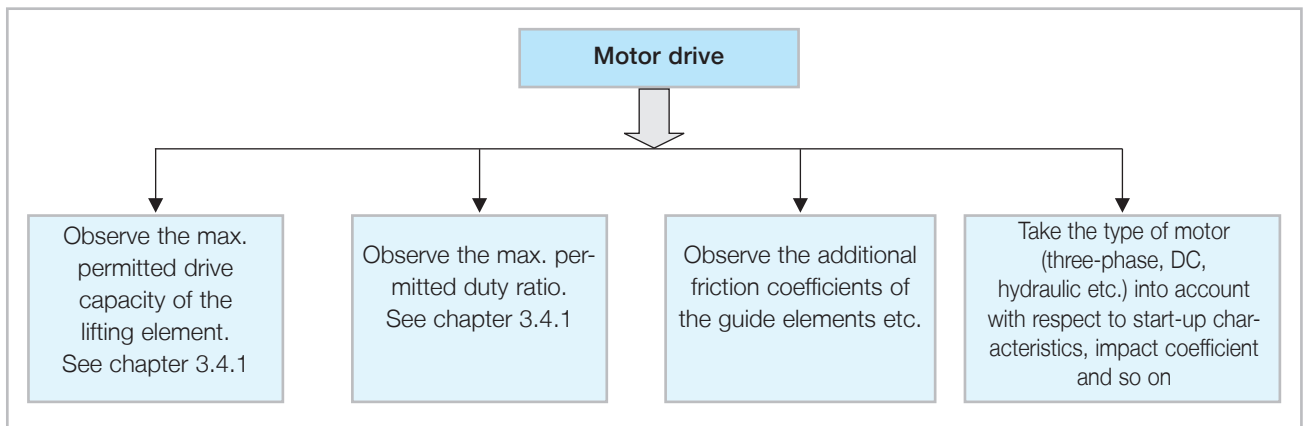
2

Screw	From buckling diagram	Tr 50x9	
Pre-selection of worm gear screw jack	Chapter 3.4.1	HSE 63.1	
Required drive performance	2,0 kW	Performance limit according to table of settings, chapt. 3.4.1	Perf < $p_{zul} = 2,3$ kW
Duty ratio	11%/h	For formula, see chapt. 2.1	$ED_{vorh} < ED_{zul} = 20\%/h$
Selected motor	2,2 kW, 1500 min ⁻¹		
Selected size HSE 63.1 is ok			

2.8.3 Manual operation for lifting elements



2.8.4 Motor drive for lifting elements



Motor designs:

Required starting torque	$T_A \sim 1,3 \times T_N$
High lifting speeds, e. g. servo drive system	⇨ Inertial mass and acceleration time are decisive factors for configuration

2.8 Dimensioning of worm gear screw jacks

2.8.5 Adjustment and stopping accuracy

The level of adjustment accuracy depends mainly on the precision of the screw (see chapter 2.6). Positioning accuracy is influenced, in the case of motor-actuated units, by the electrical control and regulating system, the control system of the brake, and by the adjustment precision of the limit switches.

2

IMPORTANT: DO NOT allow motor-actuated components to collide with fixed end-limit stops!

2.9 Permitted operating settings

2.9.1 General

Lateral force on screw

F_s

For details of permitted values, see diagrams in chapter 3.4.8

Dynamic and static compression/tensile load

F_{dyn}/F_{stat}

Configuration according to table of settings chapter 3.4.1 and/or buckling diagrams in chapter 3.4.2

Drive capacity

$P_{HE} < p_{zul}$

$P_{HE} = F_{dyn} \cdot v / (60 \cdot \eta_{HE})$
For calculation details, see chapter 2.1
Standard layout at
20 % ED/hour and 20 °C, or
10 % ED/hour and 20 °C

Axial load on drive shaft

F_a

No axial loads permitted
(This should also be taken into account when fitting couplings and connecting shafts)

Drive torque

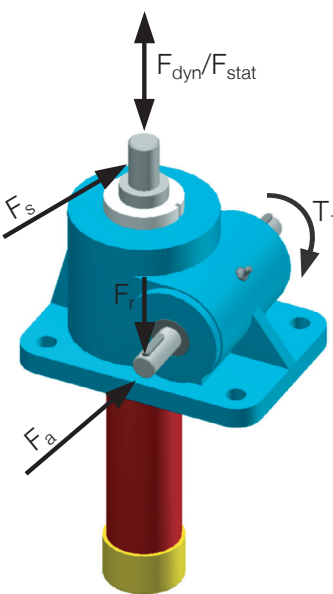
$T_1 < T_{zul}$

$T_1 = P_{HE} \cdot 9550 / n_1$
For calculation details, see chapter 2.1

Radial load on drive shaft

F_r

For details of permitted values, see chapter 3.4.9



2.9 Permitted operating settings

2.9.2 Operating factors

Standard worm gear screw jacks SHE and MERKUR

Reduction of ED relative to ambient temperature

2

Ambient temperature [°C]		50 °	60 °	70 °	80 °
in the case of screw jacks SHE and MERKUR					
Maximum permitted duty ratio	%/h	18	15	10	5
	%/10 min	36	30	20	10
CAUTION: Maximum operating temperature HE = 80 °C					

High performance worm gear screw jack HSE

Size HSE	32	36.1	50.1	63.1	80.1
Power factor k_1 [kW]	0,40	0,64	1,0	1,62	2,43

Size HSE	100.1	125.1	200.1
Power factor k_1 [kW]	3,30	5,41	13,30

Power factor k_1

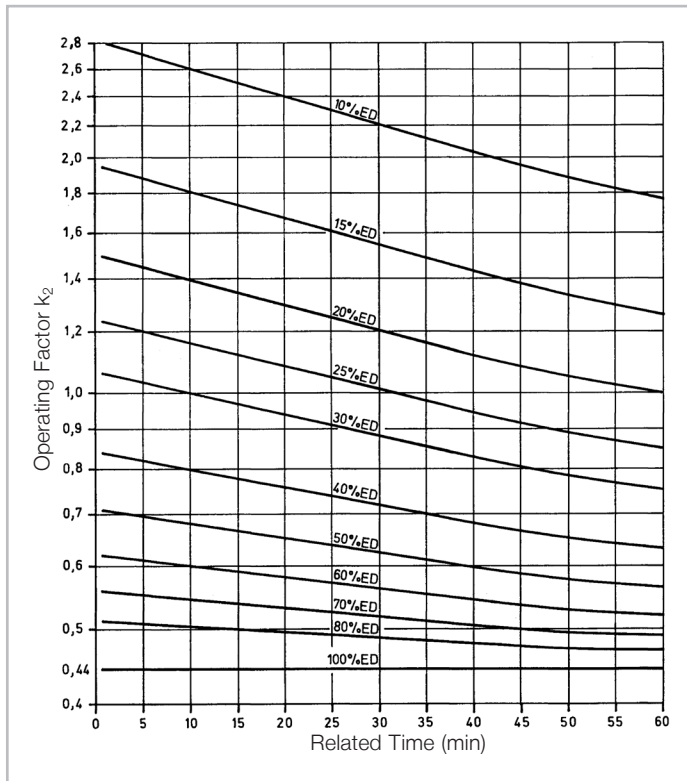
Power factor k_1 is the lost energy (quantity of heat) that can be dissipated at ED 20 %/h and 20 °C ambient temperature of HSE without an outside cooling system. The steady-state temperature in this case is 80 °C.

$$p_{zul} = k_1 * k_2 * k_3 / (1 - \eta_{HE})$$

Duty factor k_2

The duty factor k_2 is the correction value used to increase or decrease the permitted drive capacity p_{zul} with a deviation of 20 % ED/h. At 20 % ED/h or 30 % ED/10 min is $k_2 = 1$.

If the duty ratio deviates from the established settings, k_2 can be determined using the diagram shown here.



Temperature factor k_3

At normal temperatures of 20 °C, this factor is 1. In the event of fluctuating ambient temperatures ($= \vartheta$), this factor is calculated as follows:

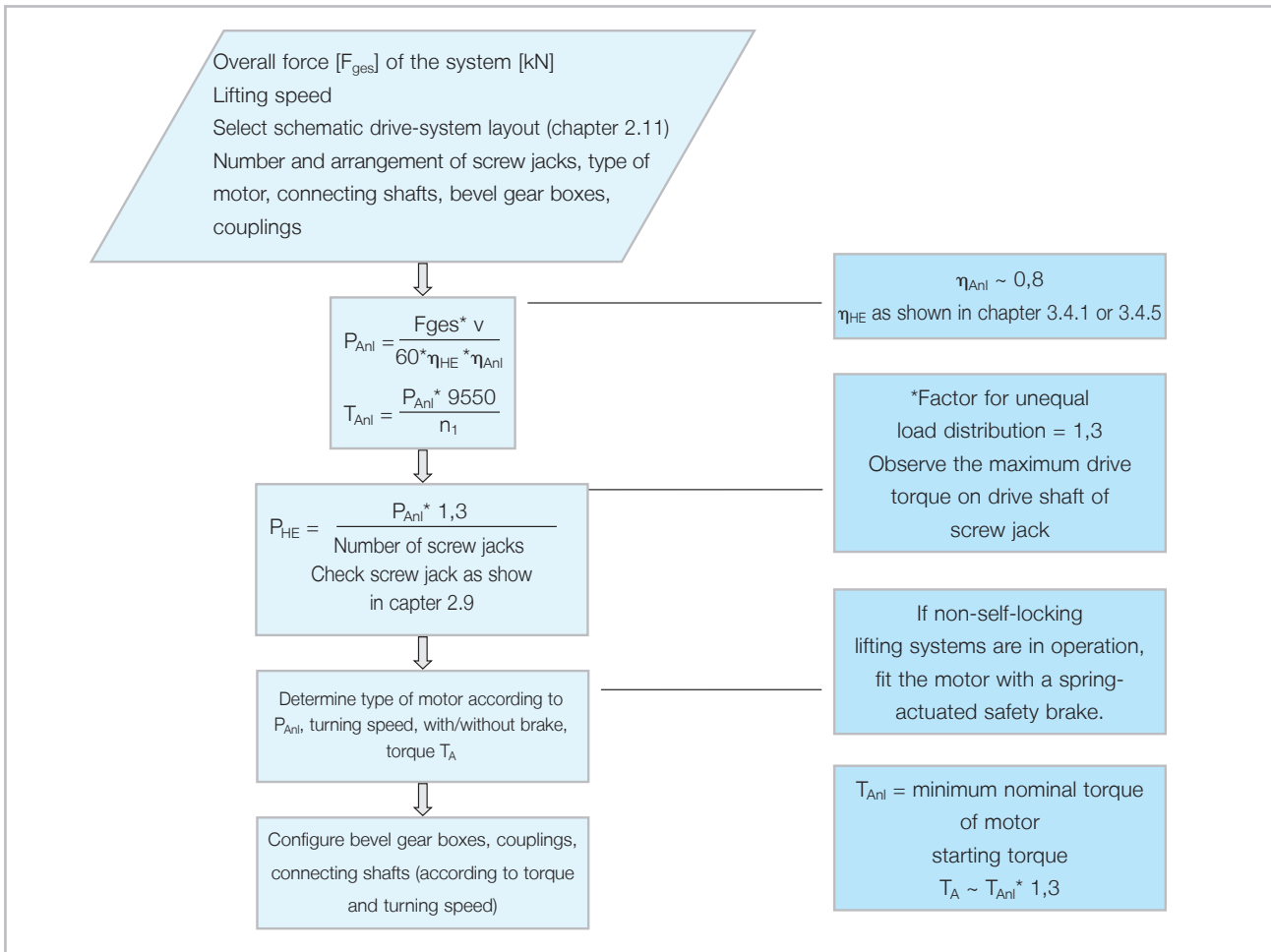
$$k_3 = \frac{80 - \vartheta}{60}$$

Power factors k_1 , k_2 and k_3 apply specifically to HSE high performance worm gear screw jacks. They must not be applied to standard worm gear screw jacks, Merkur systems or quick-lifting screw jacks.

Project planning

2.10 Dimensioning of lifting systems

2.10.1 Flow diagram



2

2.10.2 Example

Technical specifications:

$F_{ges} = 60 \text{ kN}$ (dyn. and stat.)

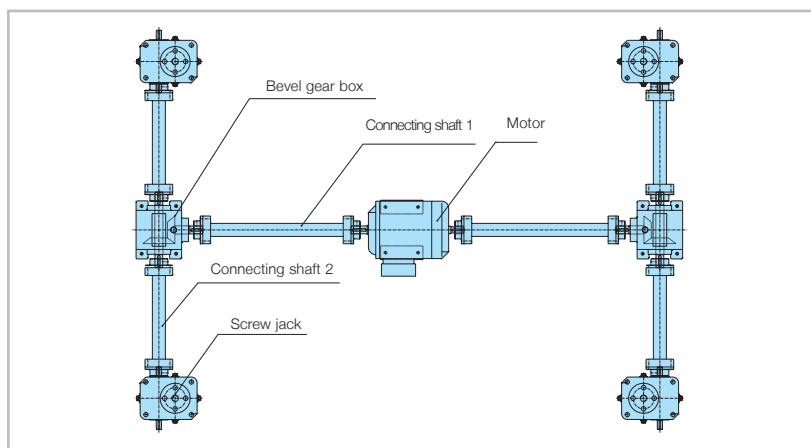
$v = 1,9 \text{ m/min}$

ED = 20 %/h

Schematic view 4.1

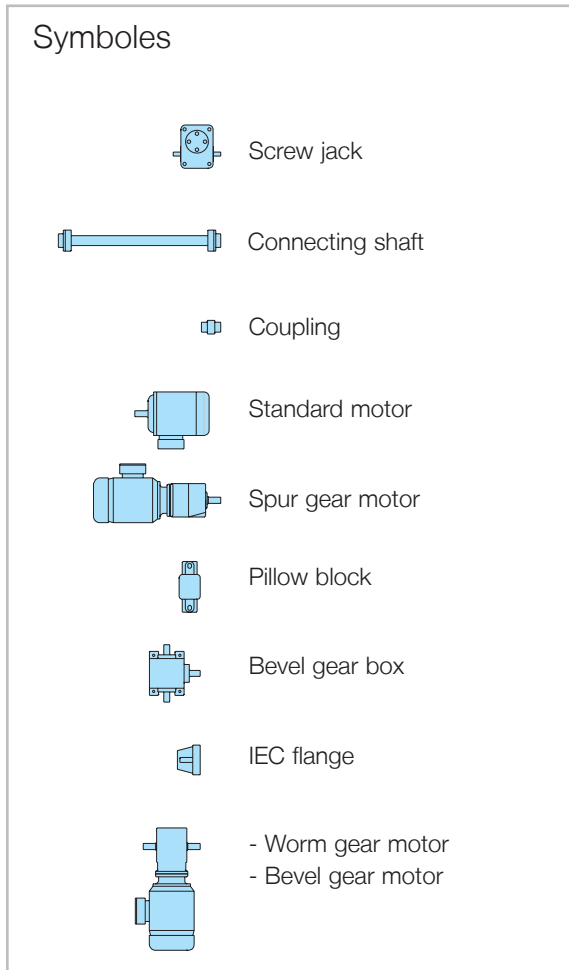
Three-phase motor

Bevel gear box $i = 1:1$



$F_{HE} = 60 \text{ kN} \cdot 1.3$	Pre-selection of screw jack according to chapter 2.8	⇒ HSE 63.1, Tr50x9, $\eta_{HE} = 0,311$; $P_{HE} = 2,0 \text{ kW}$, $\eta_{Anl} \sim 0,8$
$F_{HE} = 19,5 \text{ kN}$		⇒ motor 132 M/4
$P_{Anl} = 7,63 \text{ kW}$	⇒ motor selection 7,5 kW, $n_1 = 1500 \text{ min}^{-1}$	⇒ bevel gear box K 11.13
$T_{Anl} = 49 \text{ Nm}$	⇒ $T_{Keg} = 25 \text{ Nm}$, $i = 1:1$ (chapter 4)	⇒ connecting shaft ZR 28/38
	$T_{GW1} = 25 \text{ Nm}$, $n_1 = 1500 \text{ min}^{-1}$; observe max. length according to n_{krit} (chapter 6)	⇒ connecting shaft ZR 24/28
	$T_{GW2} = 12,5 \text{ Nm}$, $n_1 = 1500 \text{ min}^{-1}$; observe max. length according to n_{krit} (chapter 6)	

2.11 Schematic drive system layout



Pfaff-silberblau worm gear screw jacks and quick-lifting screw jacks can be used as either single drive units (see chapter 2.11.1) or multi-screw lifting systems (see chapter 2.11.2). Multi-screw lifting systems with mechanical synchronization are driven by a single motor, which makes them impervious to unequal load distribution and its negative effects on the synchronization of the screw jacks. Multi-screw lifting systems with electrical synchronization are distinguished by their low requirements in terms of mechanical connecting elements (and therefore lack of running noise), but they do require more sophisticated controls. Precise configuration of the drive motors, in conjunction with a master-slave layout, produces the corresponding exact synchronization of the drive systems.

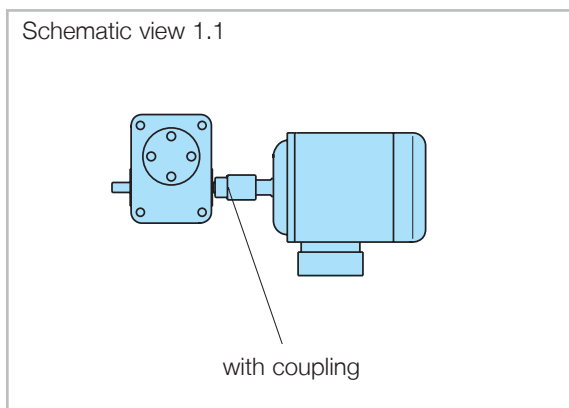
Once you have decided on the best layout for your needs, you can establish which bevel gear boxes, couplings and connecting shafts are to be fitted. The fitting of pillow blocks can multiply the speed-dependent length of the connecting shafts.

Note:

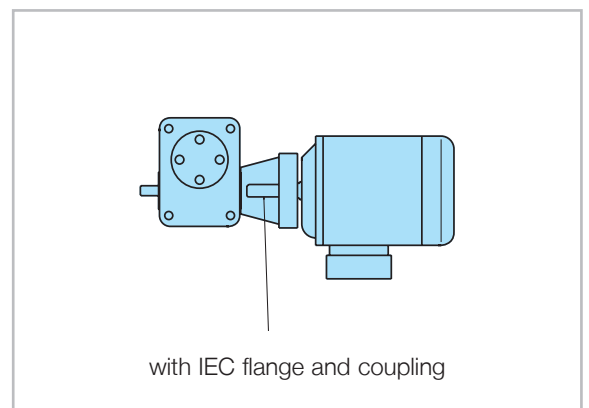
If quick-lifting screw jacks are in use, correct configuration can eliminate the need for bevel gear boxes.

2.11.1 Single drive unit

Worm gear screw jack – coupling – motor in configuration B3 (base-mounted)



Worm gear screw jack – coupling – IEC flange in configuration B14 or B5 (IEC flange-mounting)



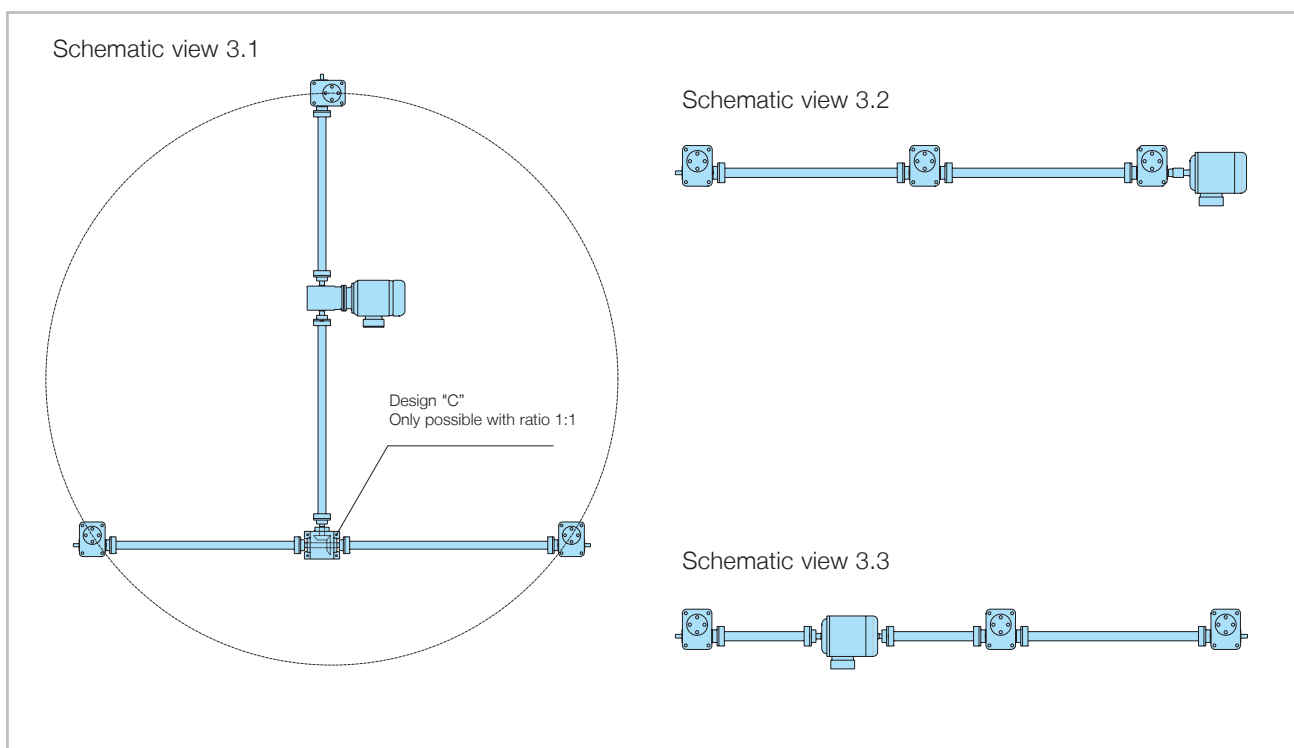
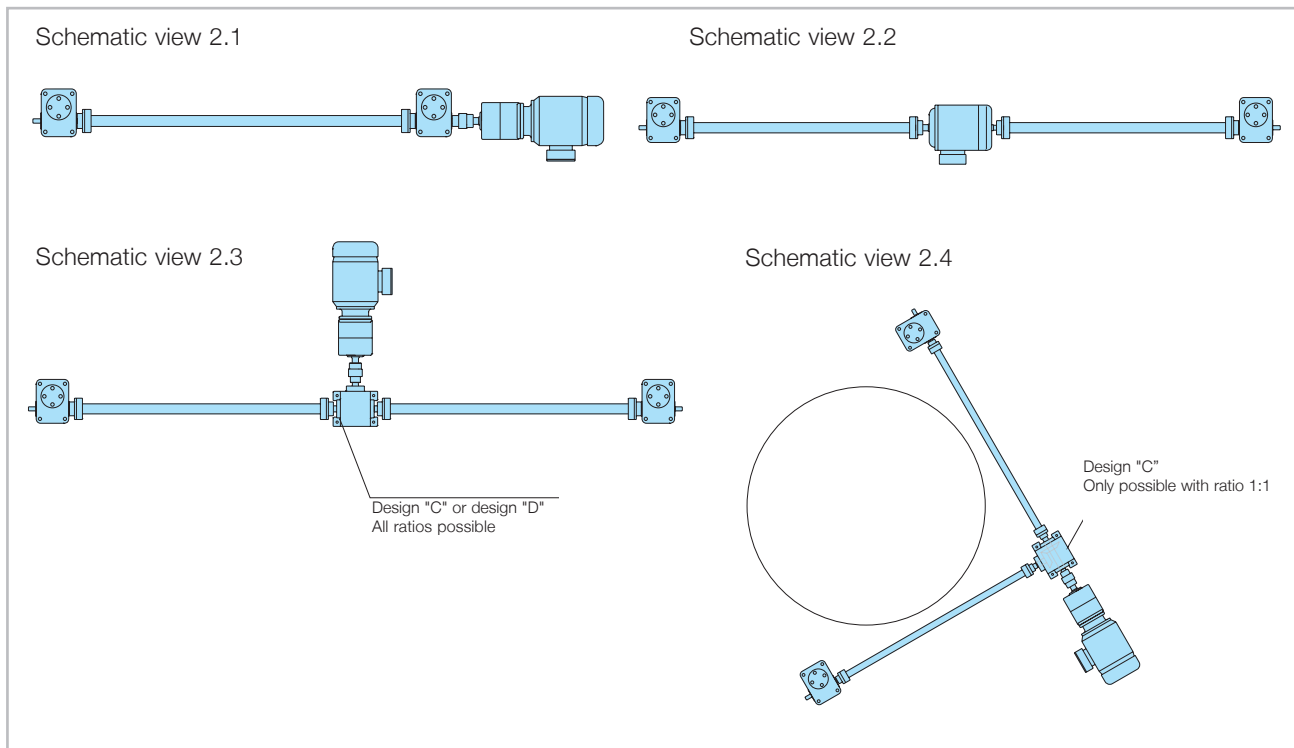
Project planning

2.11 Schematic drive system layout

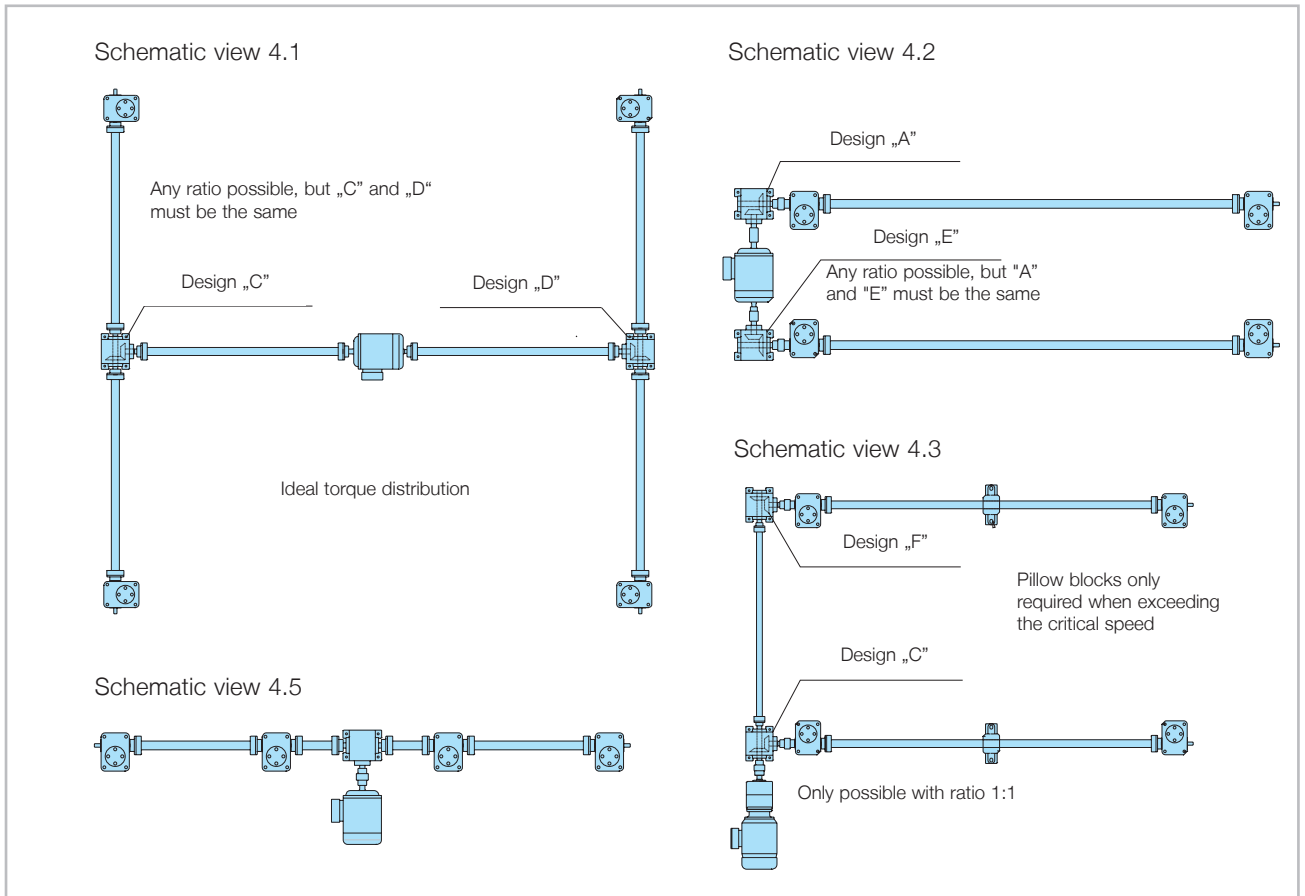
2.11.2 Multi-screw lifting system

2.11.2.1 Mechanically synchronized

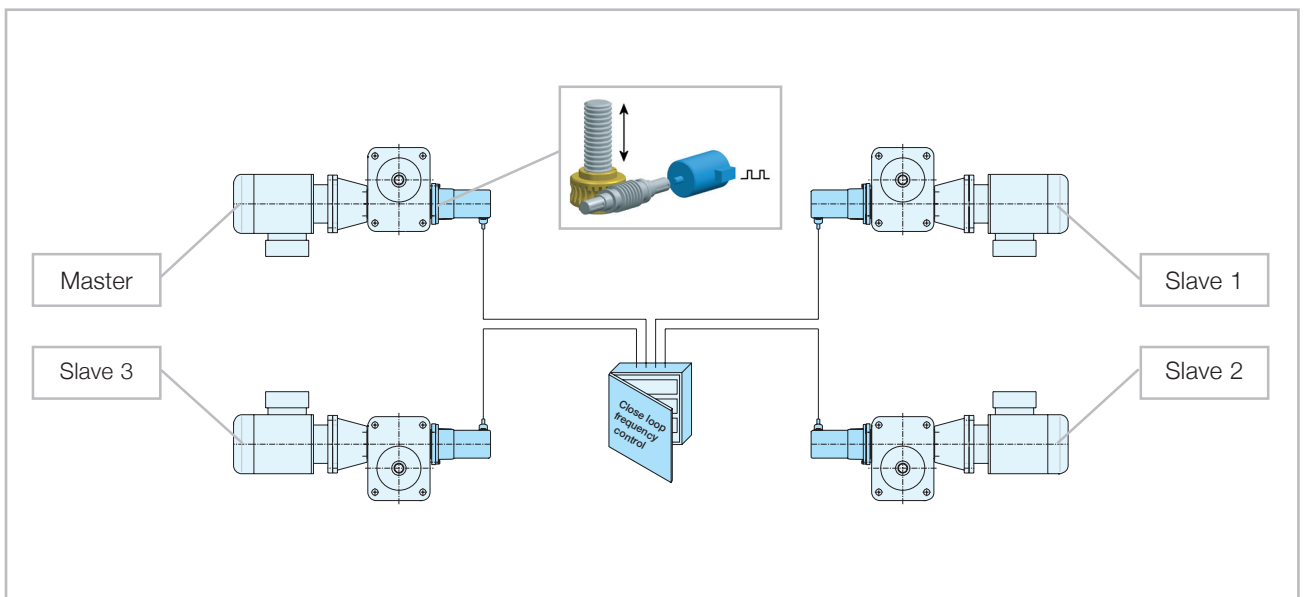
2



2.11 Schematic drive system layout



2.11.2.2 Electrically synchronized



Screw jacks

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Screw jacks

3.1 Construction support

The wide range of possible applications for our drive systems reveal their great versatility – which is increased even further through our customized solutions. Whatever operating task needs performing, whatever function you require – we can supply the right standard, modified or special solution, successfully combining off-the-peg elements with totally task-specific answers to your specifications. Just contact your technical specialist and draw up a draft solution for your particular task at hand.

3.1.1 Specifications/Solution system

In order to help you finding the correct specification we are indicating below both the task specification and the corresponding solution.

3

Your task specification

- Screw jack requirements
- Special configuration factors and features

Our solution

- Suggested solutions and recommendations

3.1.2 Construction

Your task specification	Symbol	Our solution
<ul style="list-style-type: none"> • No on site guidance possible • Lateral forces cannot be ruled out • Restoring forces produced by swivelling motion 		<p>1 2nd guide ring increases stability and prevents non-permitted edge compression on the nut thread</p> <p>2 Articulated head joint screw mounting</p>
		<p>Movable travelling nut mounting Use trunnion or spherical nut support</p> <p>Note: Lateral forces should be avoided, as they drastically reduce the service life of the supporting nut</p>
<ul style="list-style-type: none"> • Worm gear screw jack as single drive unit without on site guidance • No on site anti-turn device available • With/Without lift limitation 		<p>Anti-turn device Standard system using square tube or special configuration with feather key (for low lifting forces)</p>
<ul style="list-style-type: none"> • Mechanical run-out prevention system required • With/Without lift limitation 		<p>Mechanical lift limitation, configuration type 1 Screw end with mechanical end stop for emergency limiting. Protection tube with fitted limit switches</p>
<ul style="list-style-type: none"> • Swivelling/Tipping movements provided by worm gear screw jacks • With/Without lift limitation 		<p>Swivel-lug configuration Secure drive elements at two points using moveable mountings. This can be done using head IV on both screw ends or articulated head. The bending moments resulting from the swivelling motion should be minimized as much as possible by means of low-friction joints.</p>

Screw jacks

Your task specification	Symbol	Our solution
<ul style="list-style-type: none"> Requirement for constant axial play in trapezoidal screw thread 		<p>Configuration with adjustable play Special configuration with pre-stressed double nuts, axial play can be readjusted via housing cover. Special configuration with pre-stressed double travelling nuts. Axial play can be readjusted. Note: Only applies to load reversal (tensile and compression load). No readjustment is required if ball screws are used.</p>
<ul style="list-style-type: none"> Requirement for increased operating safety Limitation of material damage in event of nut breaking 		<p>Short safety nut</p> <ul style="list-style-type: none"> Supporting nut with short safety nut Visual wear monitoring <p>Note: Monitoring is only possible in one load direction.</p>
<ul style="list-style-type: none"> Requirement for personal safety measures and/or conformity to VBG 14 accident prevention standards (persons under raised load/working platforms) Or configuration conforming to BGV C1 (VBG 70) standards for stages and broadcasting studios 		<p>Long safety nut In the case of worm gear screw jacks used on theatre stages BGV C1 (VBG 70), lifting platforms (VBG 14) or lifting systems that might affect personal safety, screw jacks are designed according to current regulations, and include such items as anti-drop systems (self-locking screws and/or mechanical safety brakes as part of the drive system). The function of the synchronizing device is guaranteed, if required, by additional components.</p>
<ul style="list-style-type: none"> Large lifting capacity with small installation space 		<p>Telescopic configuration Right-/left-handed screw system requires – with large stroke – only half the length of protection tube (stroke x 0,5 + approx. 30 mm)</p>
<ul style="list-style-type: none"> Large lifting lengths and unfavourable clamping with minimal lifting force 		<p>Reinforced screw for configuration type 2, possible under certain circumstances for configuration type 1</p>
<ul style="list-style-type: none"> No accidental lowering of load while unit is shutdown 		<p>Single-start trapezoidal screw Tr with self-locking system (e. g.: Tr 40x7)</p>
<ul style="list-style-type: none"> High lifting capacity for same screw diameter 		<p>Buttress-thread screw S</p>
<ul style="list-style-type: none"> High lifting speed required Economical alternative to ball screw 		<p>Multi-start trapezoidal screw Tr</p> <ul style="list-style-type: none"> Efficiency rating (Tr > 50 %) (e. g.: 2-start screw Tr 40x14 P7) No self-locking system -> motor brake always required
<ul style="list-style-type: none"> Self-locking out of actuation No motor brake desired 		<p>Single-start trapezoidal screw with special lead * No additional motor brake required (e. g.: Tr 40x5)</p>
<ul style="list-style-type: none"> High lifting speed required Minimal axial play ($\leq 0,03$ mm) High lead accuracy P300 $\leq 0,05$ mm Minimal friction required 		<p>Ball screw Ku or PI planetary roller screw</p> <ul style="list-style-type: none"> Efficiency rating $\eta_{Ku} \approx 90\%$ $\eta_{PI} \approx 65\%$ No self-locking system -> motor brake always required

3.1 Construction support

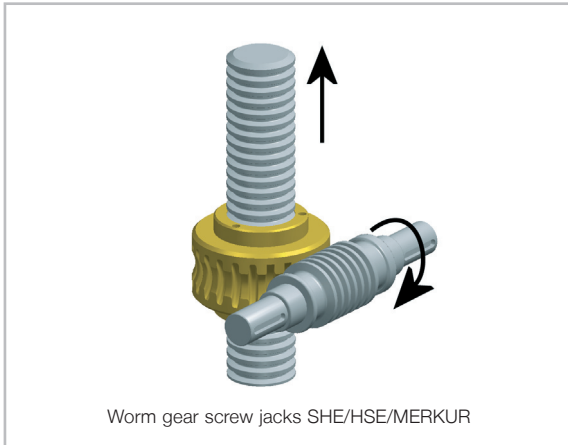
3

Your task specification	Symbol	Our solution
<ul style="list-style-type: none"> Positioning Position measurement 		<p>Shaft encoder installation</p> <p>Available as option for all common makes Fitted directly to worm gear screw jack</p> <ul style="list-style-type: none"> Angle incremental encoder SSI absolute-value transmitter or DP Profibus
<ul style="list-style-type: none"> Available installation space is limited 		<p>Hollow shaft</p> <p>Motor installation via hollow shaft and IEC flange</p>
<ul style="list-style-type: none"> Motor should be directly attached to screw jack 		<p>Motor mounting flanges</p>
<ul style="list-style-type: none"> Components are required to perform swivelling movements 		<p>Swivel mounting bases complete with bearing seats</p> <p>Swivel plates</p>
<ul style="list-style-type: none"> Active protection against dust, dirt or moisture required 		<p>Screw protection</p> <p>Flexible protection boots Spiral spring cover</p>
<ul style="list-style-type: none"> Variable structural attachment methods desired 		<p>Spindle heads</p> <p>Head I = plain head Head II = flange plate Head III = threaded head Head IV = rod-type head Head GK = fork-type head Option = articulated head</p>
<ul style="list-style-type: none"> Manual operation and/or manual emergency actuation required 		<p>Hand wheel</p> <p>Only advisable for emergency use or for small lifting movements. Conforming to DIN 950, compatible with the corresponding worm gear screw jack, supplied ready-drilled and keyed</p>

Screw jacks

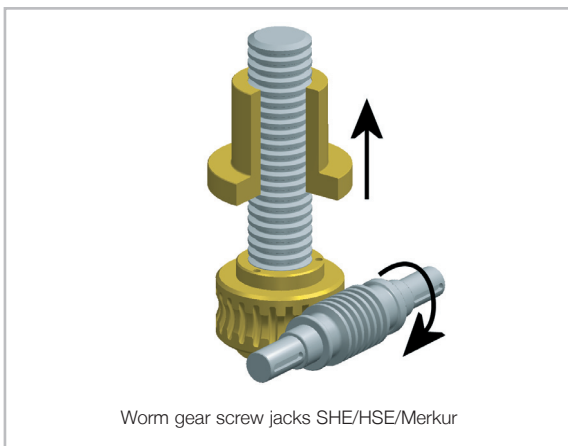
3.2 Configuration type 1 - Configuration type 2

Type 1: Axial lifting screw; nut thread integrated into worm gear



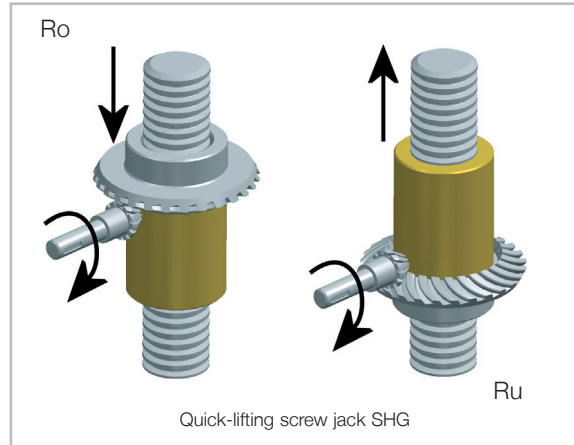
Drive is effected by the worm shaft acting on the worm wheel with nut thread. Lifting movement is effected by an anti-turn device (supplied with unit or added on site).

Type 2: Rotating screw; nut thread in travelling nut outside the housing



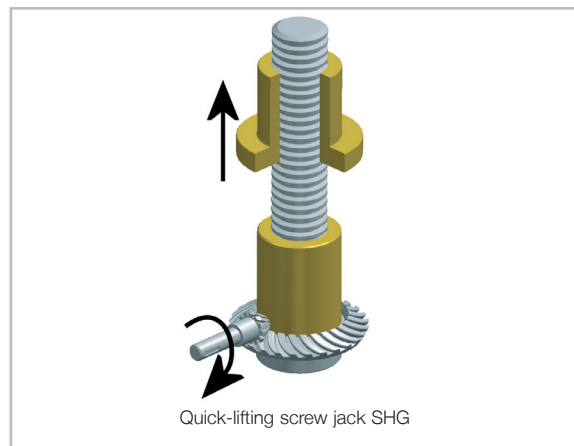
Drive is effected by the worm shaft acting on the worm wheel. Rotating movement is effected by the positive engagement of the screw in the worm wheel. Lifting movement is effected by the travelling nut anti-turn device fitted on site.

Type 1: Axial lifting screw; nut thread integrated into bevel gear



Drive is provided by the driving pinion acting on the bevel gear with nut thread. Lifting movement is effected by an anti-turn device (supplied with unit or added on site). The alignment of the bevel gear (Ro or Ru) determines the direction of rotation. (Ro = top wheel / Ru = bottom wheel)

Type 2: Rotating screw; nut thread in travelling nut outside the housing



Drive is effected by the driving pinion acting on the bevel gear. Rotating movement is effected by the positive engagement of the screw in the bevel gear. Lifting movement is effected by the travelling nut anti-turn device fitted on site. The alignment of the bevel gear (Ro = wheel upside / Ru = wheel downside) determines the direction of rotation (see type 1).

3

Note: standard configuration = right-handed screw;



axial movement (direction)



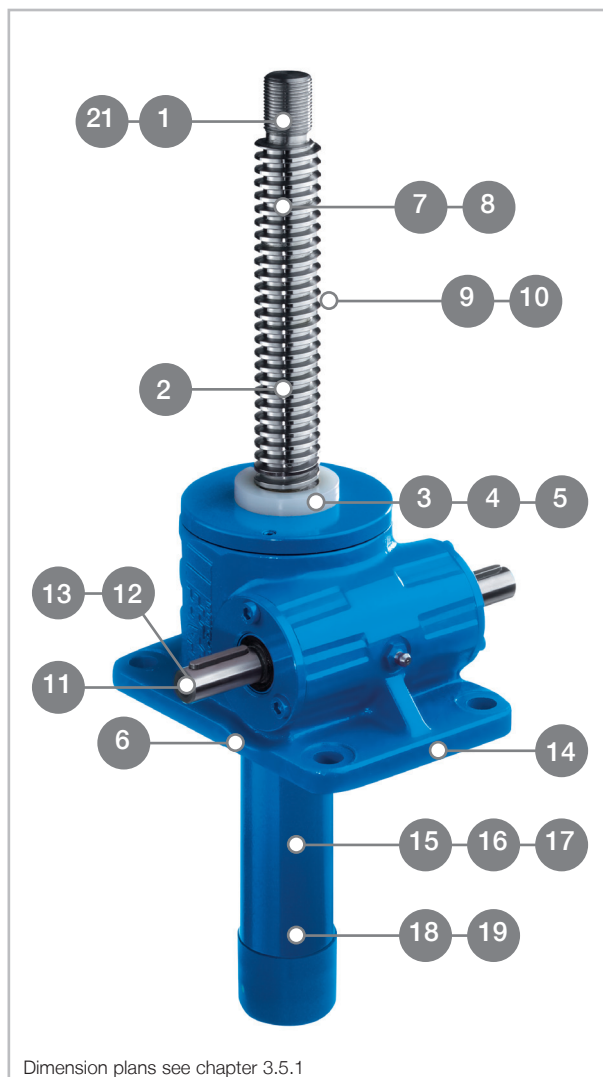
turning direction of drive shaft

Screw jacks

3.3 Structural configurations

3.3.1 SHE range type 1

Type 1 (lifting screw) - robust construction for low and medium lifting speeds



Modular design:

14 different sizes

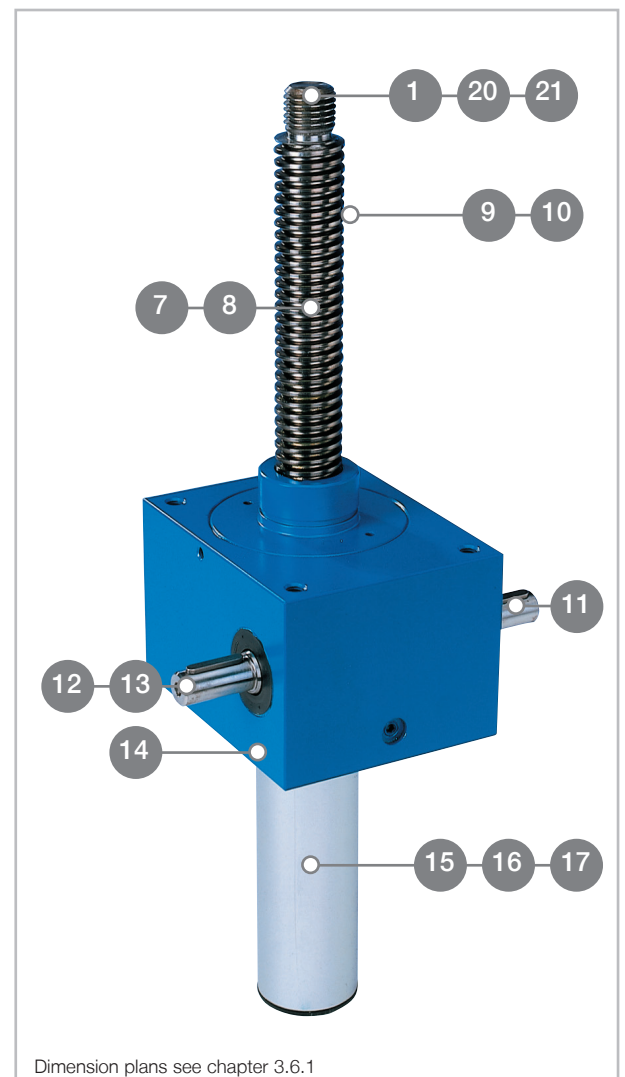
With lifting capacities ranging from 5 kN to 2000 kN

Input speeds of up to 1500 rpm

- Self-locking trapezoidal screw
- Grease-lubricated configuration
- Worm gear pairs in two ratio steps (normal "N" and slow "L")
- Worm-drive shaft is case-hardened and ground

3.3.2 MERKUR range type 1

Type 1 (lifting screw) – cubical design; alternative to SHE



Modular design:

9 different sizes

With lifting capacities ranging from 2.5 kN to 500 kN

Input speeds of up to 1500 rpm

- All-round configuration permits easy alignment
- Conforms to European manufacturers' standards for screw jacks in cubical design
- Self-locking trapezoidal screw
- Grease-lubricated configuration
- Worm gear pairs in two ratio steps (normal "N" and slow "L")

Screw jacks

3.3 Structural configurations

No.	Symbol	SHE range type 1	MERKUR range type 1	No.	Symbol	SHE range type 1	MERKUR range type 1
1		•	•	12		•	•
2		•		13		•	•
3		•		14		•	•
4		•	•	15		•	•
5		•	•	16		•	•
6		•		17		•	•
7		•	•	18		•	•
8		•	•	19		•	•
9		•		20			•
10		•	•	21		•	•
11		•	•				

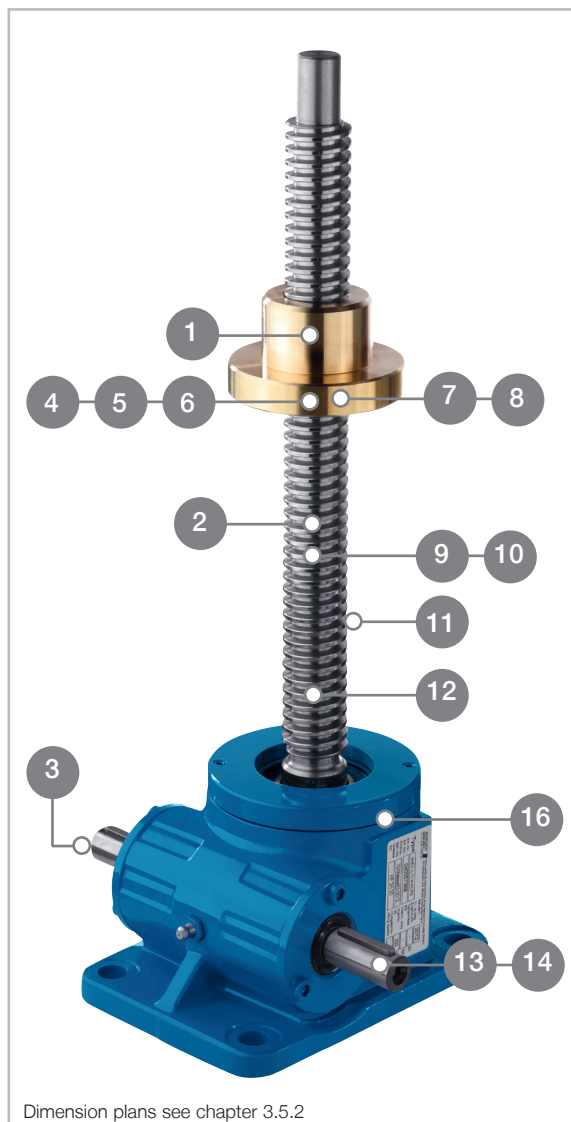
• SHE and MERKUR of standard configuration
 • Options and accessories

Screw jacks

3.3 Structural configurations

3.3.3 SHE range type 2

Type 2 (rotating screw) - robust construction for low and medium lifting speeds



Modular design:

14 different sizes

With lifting capacities ranging from 5 kN to 2000 kN

Input speeds of up to 1500 rpm

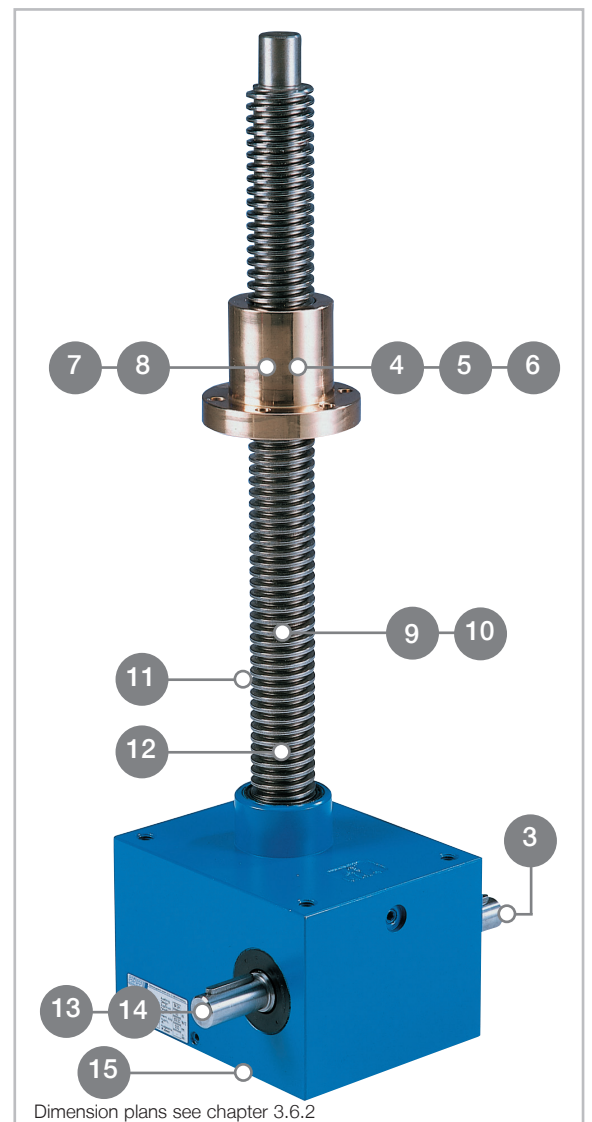
- Self-locking trapezoidal screw
- Grease-lubricated configuration
- Worm gear pairs in two ratio steps

(normal "N" and slow "L")

- Worm-drive shaft is case-hardened and ground

3.3.4 MERKUR range type 2

Type 2 (rotating screw) - cubical design; alternative to SHE



Modular design:

9 different sizes

With lifting capacities ranging from 2.5 kN to 500 kN

Input speeds of up to 1500 rpm

- All-round configuration permits easy alignment
- Equivalent to European manufacturers' standards for screw jacks in cubical design
- Self-locking trapezoidal screw
- Grease-lubricated configuration
- Worm gear pairs in two ratio steps (normal "N" and slow "L")

Screw jacks

3.3 Structural configurations

No.	Symbol	SHE range type 2	MERKUR range type 2	No.	Symbol	SHE range type 2	MERKUR range type 2
1		•	•	9		•	
2		•	•	10		•	•
3		•	•	11		•	•
4		•	•	12		•	•
5		•	•	13		•	•
6		•	•	14		•	•
7		•	•	15		•	•
8		•	•	16		•	•

- SHE and MERKUR of standard configuration
- Options and accessories

Screw jacks

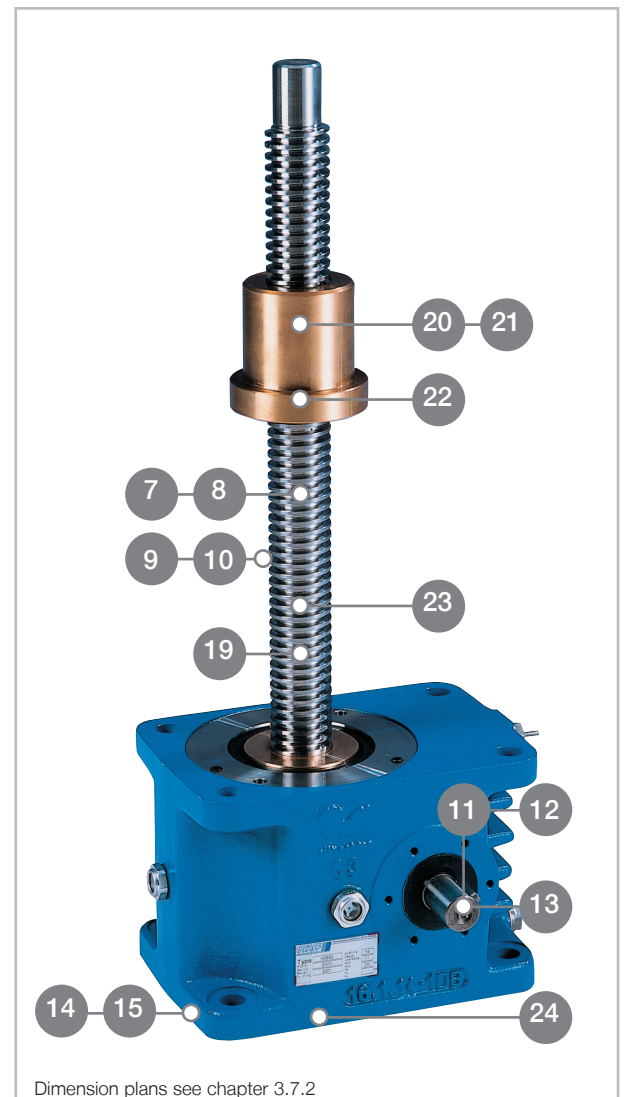
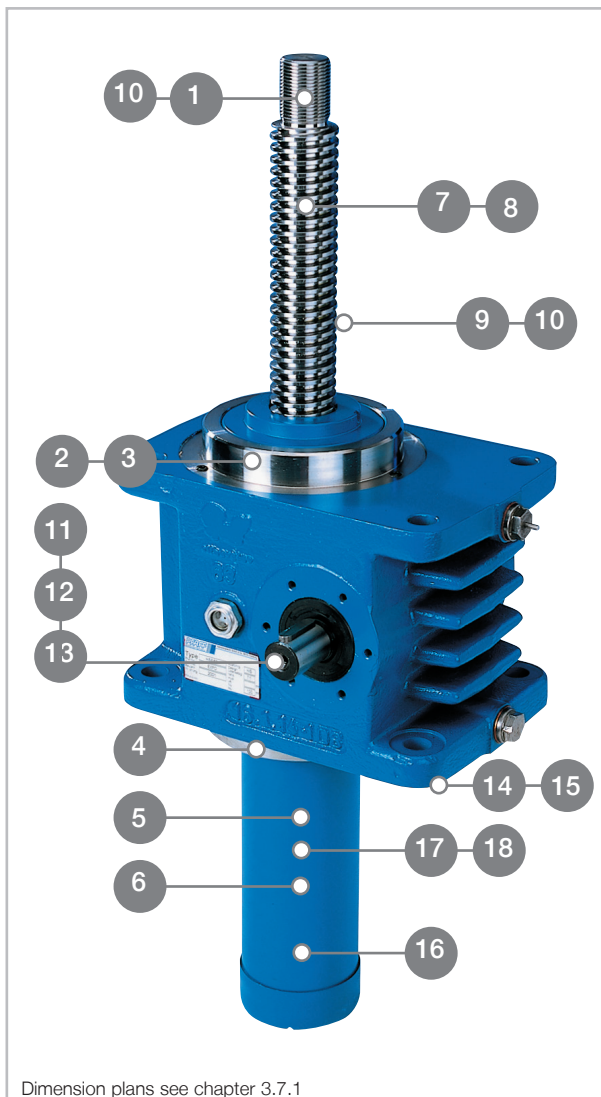
3.3 Structural configurations

3.3.5 HSE range type 1

Type 1 (lifting screw) and type 2 (rotating screw) - patented gearing construction with different heat zones for medium and high lifting speeds

3.3.6 HSE range type 2

3



Modular design for configuration type 1 and type 2:

8 different sizes with lifting capacities ranging from 5 kN to 1000 kN

Input speeds of up to 3000 rpm

- Self-locking trapezoidal screw
- Separate lubricating circuits: Tr screw with grease-lubrication and worm gears with oil-splash lubrication
- Worm gear pairs in two ratio steps (normal "N" und slow "L")
- Worm-drive shaft is case-hardened and ground

Screw jacks

No.	Symbol	HSE range type 1	HSE range type 2	No.	Symbol	HSE range type 1	HSE range type 2
1		•		13		•	•
2		•		14		•	•
3		•		15		•	•
4		•		16		•	
5		•		17		•	
6		•		18		•	
7		•	•	19			•
8		•	•	20			•
9		•	•	21			•
10		•	•	22			•
11		•	•	23			•
12		•	•	24			•

• HSE type1 and type 2 of standard configuration • Options and accessories

Screw jacks

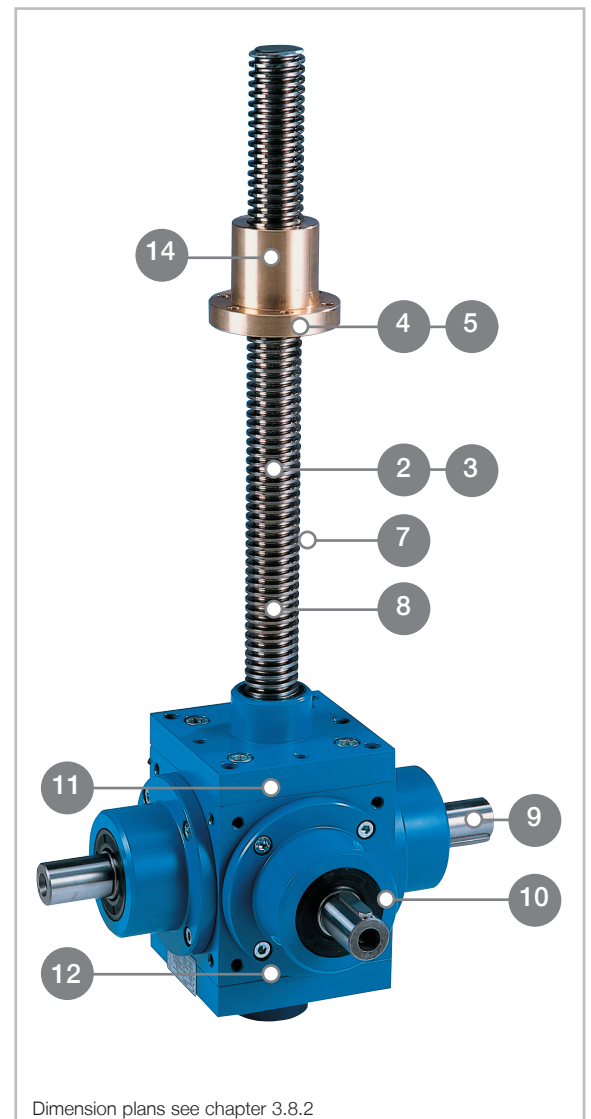
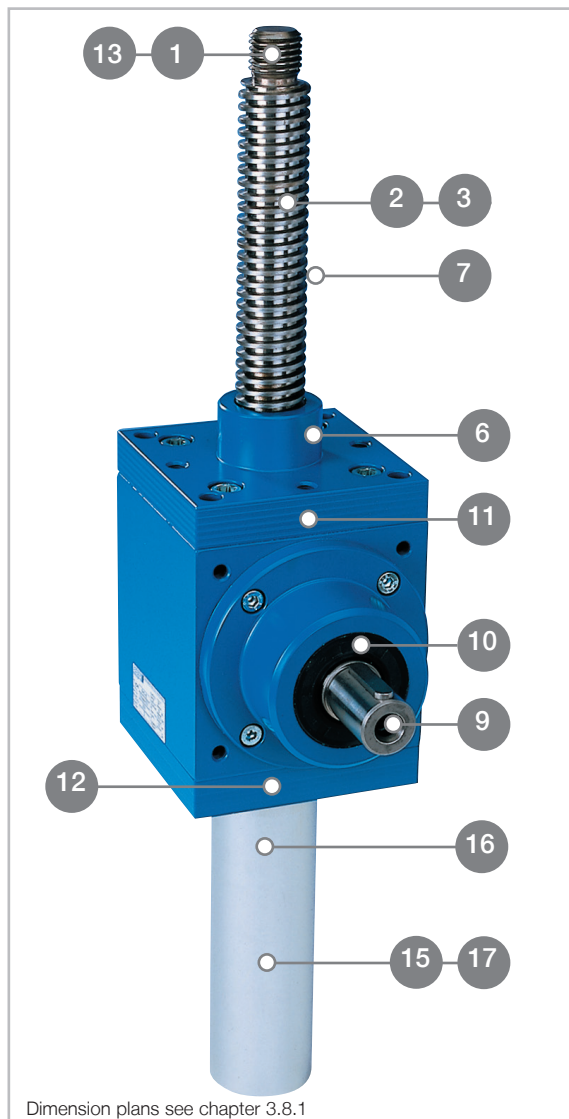
3.3 Structural configurations

3.3.7 SHG range type 1

3.3.8 SHG range type 2

Type 1 (lifting screw) and type 2 (rotating screw) - spiral bevel gear boxes for high lifting speeds, high efficiency ratings and long service life

3



Modular design for configuration type 1 and type 2:

4 different sizes with lifting capacities ranging from 15 kN to 90 kN

Lifting speeds of up to 19 m/min

Input speeds of up to 3000 rpm

- Self-locking trapezoidal screw
- Separate lubricating circuits: Tr screw with grease-lubrication and bevel gear boxes with oil-splash lubrication
- Bevel gear boxes in two ratio steps (2:1 and 3:1 as required)
- Gearing is case-hardened and ground

Screw jacks

3.3 Structural configurations

No.	Symbol	SHG range type 1	SHG range type 2
1		•	
2		•	•
3		•	•
4			•
5			•
6		•	
7		•	•

- SHG of standard configuration
- Options and accessories

No.	Symbol	SHG range type 1	SHG range type 2
8			•
9		•	•
10		•	•
11		•	•
12		•	•
13		•	
14			•
15		•	
16		•	
17		•	

Screw jacks

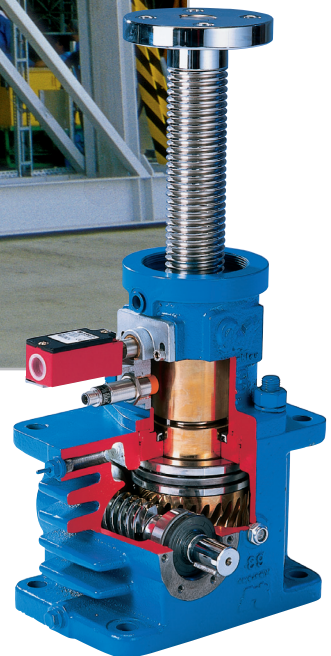
Application example

3



Pict.: Egypt-Air Works photo: MERO-Airporttechnik

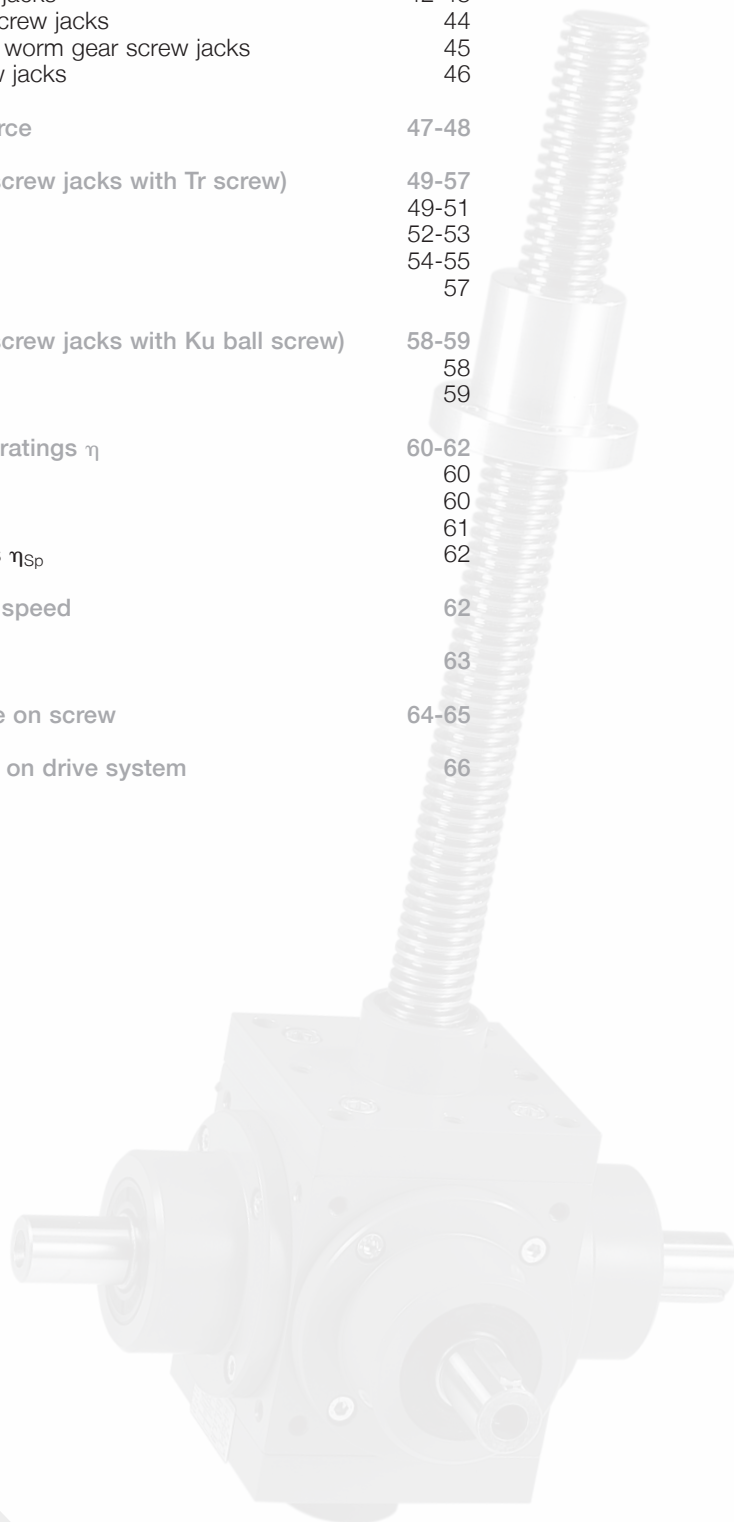
HSE high performance worm gear screw jacks (type 1) with long safety nut conforming to VBG 14 – used for adjusting the height of aircraft maintenance platforms.



Screw jacks

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Screw jacks

3.4 Technical information

3.4.1 Table of settings

3.4.1.1 Worm gear screw jacks SHE

Size		0,5	1.1	2	3.1	5.1	(10)	15.1
Max. lifting capacity dyn/stat	[kN]	5/5	15/15	20/20	30/45	50/75	on request	100/150
Max. tensile load dyn/stat	[kN]	5/5	10/10	19/19	30/45	50/75		99/99
Screw Tr ¹⁾		18x6	24x5	26x6,28	30x6	40x7		60x12
Ratio N		10:1	5:1	6:1	6:1	6:1		7 2/3:1
Lift per revolution for ratio N	[mm/per rev.]	0,60	1,0	1,047	1,0	1,167		1,565
Ratio L		20:1	20:1	24:1	24:1	24:1		24:1
Lift per revolution for ratio L	[mm/per rev.]	0,30	0,25	0,262	0,25	0,292		0,50
Max. drive capacity ²⁾ at T = 20 °C Duty type S3 20% - 60 min	[kW]	0,17	0,4	0,5	0,65	1,15		2,7
Max. drive capacity ²⁾ at T = 20 °C Duty type S3 10% - 60 min	[kW]	0,25	0,6	0,75	1,25	1,9		3,85
Overall efficiency for ratio N	[%]	31	30	31	27	24		27
Overall efficiency for ratio L	[%]	24	23	18	19	16		17
Screw efficiency rating	[%]	54	41	45	40	36,5		39,5
Torque, capacity, turning-speed at 20 % ED/h and 20 °C		see performance tables 3.4.3.1						
Screw torque at max. lifting power	[Nm]	8,8	29,1	44	60	153	on request	702
Max. permitted drive-shaft torque	[Nm]	12	29,4	36	46,5	92		195
Max. permitted screw length for compression load	[mm]	see buckling diagrams 3.4.2						
Housing material		G-AlSiCu4			GGG			
Weight without stroke length and protection tube	[kg]	1,2	3,0	7,3	7,3	16,2	on request	26,5
Screw weight per 100 mm stroke	[kg]	0,14	0,26	0,32	0,45	0,82		1,79
Amount of lubricant in worm gear	[kg]	0,05	0,1	0,15	0,2	0,35		0,9
Mass moment of inertia J ³⁾ Ratio N type 1	[kg cm ²]	0,095	0,383	0,651	0,780	2,234		5,256
Mass moment of inertia J ³⁾ Ratio N type 2	[kg cm ²]	0,100	0,390	0,657	0,792	2,273		5,356
Mass moment of inertia J ³⁾ Ratio L type 1	[kg cm ²]	0,089	0,269	0,459	0,558	1,696		4,081
Mass moment of inertia J ³⁾ Ratio L type 2	[kg cm ²]	0,089	0,275	0,460	0,558	1,699		4,091

Dimension plans type 1 - chapter 3.5.1/type 2 - chapter 3.5.2

¹⁾ Also applies to Ku screw, see chapter 3.4.7

²⁾ Max. permitted values for type 1 and Tr screw.

Higher values are possible when using type 2 or Ku screw.

³⁾ Referring to 100 mm screw length

Screw jacks

3.4 Technical information

20.1	25	35	50.1	75	100.1	150	200.1	Size
200/200	250/250	350/350	500/500	750/750	800/1000	1500/1500	2000/2000	Max. lifting capacity dyn/stat
178/200	250/250	350/350	500/500	750/750	800/1000	1500/1500	-	Max. tensile load dyn/stat
70x12	90x16	100x16	120x16	140x20	160x20	190x24	220x28	Screw Tr ¹⁾
8:1	10 2/3:1	10 2/3:1	10 2/3:1	12:1	12:1	19:1	17,5:1	Ratio N
1,50	1,50	1,50	1,50	1,667	1,667	1,263	1,60	Lift per revolution for ratio N
24:1	32:1	32:1	32:1	36:1	36:1	-	-	Ratio L
0,50	0,50	0,50	0,50	0,556	0,556	-	-	Lift per revolution for ratio L
3,8	5,0	6,0	7,4	9,0	12,5	18,5	on request	Max. drive capacity ²⁾ at T = 20 °C Duty type S3 20% - 60 min
5,4	7,2	8,6	10,4	12,6	17,5	26	on request	Max. drive capacity ²⁾ at T = 20 °C Duty type S3 10% - 60 min
24	22	21	15	18	15	15	17,5	Overall efficiency of ratio N
17	15	14	10	12	9	-	-	Overall efficiency of ratio L
37,5	36,5	34	30	31,6	28,5	28,8	29	Screw efficiency rating
see performance tables 3.4.3.1								Torque, capacity, turning-speed at 20 % ED/h and 20 °C
1061	1725	2600	4235	7550	11115	19850	30700	Screw torque at max. lifting power
280	480	705	840	2660	2660	4260	on request	Max. permitted drive-shaft torque
see buckling diagrams 3.4.2								Max. permitted screw length for compression load
GGG					GS			Housing material
36	70,5	87	176	ca. 350	538	850	ca. 1000	Weight without stroke length and protection tube
2,52	4,15	5,2	7,7	10,0	13,82	19,6	26,2	Screw weight per 100 mm stroke
2,0	1,3	2,5	4,0	5,0	10,0	10,0	on request	Amount of lubricant in worm gear
11,93	23,42	55,80	108,8	318,0	428,5	on request	on request	Mass moment of inertia J ³⁾ Ratio N type 1
12,14	23,74	56,30	109,9	325,2	431,3	on request	on request	Mass moment of inertia J ³⁾ Ratio N type 2
9,427	19,59	44,08	88,37	275,6	346,0	on request	on request	Mass moment of inertia J ³⁾ Ratio L type 1
9,451	19,62	44,13	88,49	279,4	346,3	on request	on request	Mass moment of inertia J ³⁾ Ratio L type 2

3.4 Technical information

3.4.1.2 Worm gear screw jacks MERKUR

Size		M0	M1	M2	M3	M4	M5	M6	M7	M8
Max. lifting capacity	[kN]	2,5	5	10	25	50	150	250	350	500
Max. tensile load	[kN]	2,5	5	10	25	50	150	250	350	500
Screw Tr ¹⁾		14x4	18x4	20x4	30x6	40x7	60x9	80x10	100x10	120x14
Ratio N		4:1	4:1	4:1	6:1	7:1	9:1	10:1	10:1	14:1
Lift per revolution for ratio N	[mm/rev.]	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Ratio L		16:1	16:1	16:1	24:1	28:1	36:1	40:1	40:1	56:1
Lift per revolution for ratio L	[mm/rev.]	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25	0,25
Max. drive capacity ²⁾ at T = 20 °C Duty type S3 20% - 60 min	[kW]	0,12	0,2	0,3	0,5	0,9	2,6	3,7	on request	on request
Max. drive capacity ²⁾ at T = 20 ° Duty type S3 10% - 60 min	[kW]	0,25	0,42	0,6	1,1	1,9	3,7	4,4	on request	on request
Overall efficiency of ratio N	[%]	34	30	28	27	25	19	19	15	15
Overall efficiency of ratio L	[%]	24	23	21	19	18	14	14	11	11
Screw efficiency rating	[%]	49	42,5	40	40	36,5	32,5	29	24	28
Torque, capacity, turning-speed at 20 % ED/h and 20 °C		see performance tables 3.4.3.2								
Screw torque at max. lifting power	[Nm]	3,2	7,5	16	60	153	437	1390	2312	4100
Max. permitted drive-shaft torque	[Nm]	1,5	3,4	7,1	18	38	93	240	340	570
Max. permitted screw length for compression load	[mm]	see buckling diagrams 3.4.2								
Housing material		Al-Leg			GG			GGG		
Weight without stroke length and protection tube	[kg]	0,6	1,2	2,1	6	17	32	57	85	160
Screw weight per 100 mm stroke	[kg]	0,1	0,35	0,45	0,7	1,2	2	4,2	6,6	10,3
Amount of lubricant in worm gear	[kg]	0,03	0,08	0,14	0,24	0,8	1,1	2,0	2,7	3,2
Mass moment of inertia J ³⁾ Ratio N type 1	[kg cm ²]	0,070	0,122	0,160	0,780	1,917	3,412	16,04	49,12	96,27
Mass moment of inertia J ³⁾ Ratio N type 2	[kg cm ²]	0,069	0,126	0,165	0,794	1,952	3,741	17,58	52,45	103,39
Mass moment of inertia J ³⁾ Ratio L type 1	[kg cm ²]	0,045	0,088	0,115	0,558	1,371	2,628	12,35	37,05	72,62
Mass moment of inertia J ³⁾ Ratio L type 2	[kg cm ²]	0,050	0,091	0,119	0,552	1,381	2,647	12,44	37,37	73,15

Dimension plans type 1 - chapter 3.6.1/type 2 - chapter 3.6.2

¹⁾ Also applies to Ku screw, see chapter 3.4.7

²⁾ Max. permitted values for type 1 and Tr screw. **Higher values are possible when using type 2 or Ku screw.**

³⁾ Referring to 100 mm screw length

Screw jacks

3.4 Technical information

3.4.1.3 High performance worm gear screw jacks HSE

Size		32 ⁴⁾	36.1	50.1	63.1	80.1	100.1	125.1	140	200.1
Max. lifting capacity	[kN]	5	10	25	50	100	200	350		1000
Max. tensile load	[kN]	5	10	25	50	100	178	350		1000
Screw Tr ¹⁾		18x6	24x5	40x8	50x9	60x12	70x12	100x16		160x20
Ratio N		4:1	5:1	6:1	7:1	8:1	8:1	10 2/3:1		13 1/3:1
Lift per revolution for ratio N	[mm/rev.]	1,5	1,0	1,33	1,28	1,5	1,5	1,5		1,5
Ratio L		16:1	20:1	24:1	28:1	32:1	32:1	32:1	on request	40:1
Lift per revolution for ratio L	[mm/rev.]	0,375	0,25	0,33	0,32	0,375	0,375	0,5		0,5
Max. drive capacity ²⁾ at T = 20 °C Duty type S3 20% - 60 min	[kW]	0,60	0,90	1,5	2,3	3,6	4,8	7,7		17,9
Max. drive capacity ³⁾ at T = 20 °C Duty type S3 10% - 60 min	[kW]	1,0	1,5	2,6	4,0	6,3	8,4	13,5		31
Overall efficiency of ratio N	[%]	see efficiency ratings tables 3.4.5.3								
Overall efficiency of ratio L	[%]	see efficiency ratings tables 3.4.5.3								
Screw efficiency rating	[%]	54	41	40	36,5	39,5	35,5	34	on request	28,5
Torque, capacity, turning-speed at 20 % ED/h and 20 °C		see performance tables 3.4.3.3								
Screw torque at max. lifting power	[Nm]	7,4	18,4	80	190	478	1060	2600		11115
Max. permitted drive-shaft torque	[Nm]	12,6	29,4	48,7	168	398	705	975	on request	4260
Max. permitted screw length for compression load	[mm]	see buckling diagrams 3.4.2								
Housing material		AISI 12			GGG 50					
Weight without stroke length and protection tube	[kg]	2,0	4,0	13	25	47	74	145		870
Screw weight per 100 mm stroke	[kg]	0,16	0,23	0,82	1,3	1,79	2,52	5,2		13,82
Amount of lubricant in worm gear	[kg]	0,07	0,15	0,4	0,9	1,5	2,1	5,0		15,5
Mass moment of inertia J ³⁾ Ratio N type 1	[kg cm ²]	0,237	0,466	1,247	3,100	11,97	30,11	60,76	on request	-
Mass moment of inertia J ³⁾ Ratio N type 2	[kg cm ²]	0,270	0,513	1,364	3,378	13,05	32,21	65,76		-
Mass moment of inertia J ³⁾ Ratio L type 1	[kg cm ²]	0,150	0,204	0,638	1,804	8,13	20,91	44,88		-
Mass moment of inertia J ³⁾ Ratio L type 2	[kg cm ²]	0,153	0,207	0,645	1,822	8,20	21,04	45,43		-

Dimension plans type 1 - chapter 3.7.1/type 2 - chapter 3.7.2

¹⁾ Also applies to Ku screw, see chapter 3.4.7

²⁾ Max. permitted values for type 1 and Tr screw. **Higher values are possible when using type 2 or Ku screws.**

³⁾ Referring to 100 mm screw length

⁴⁾ Size 32 replaces previous size 31.

3.4 Technical information

3.4.1.4 Quick-lifting screw jacks SHG

Size		G 15	G 25	G 50	G 90
Max. lifting capacity	[kN]	15	25	50	90
Max. tensile load	[kN]	15	25	50	90
Screw Tr ¹⁾		24x5	35x8	40x7	60x9
Ratio N		2:1			
Lift per revolution for ratio N	[mm/rev.]	2,5	4	3,5	4,5
Ratio L		3:1			
Lift per revolution for ratio L	[mm/rev.]	1,66	2,67	2,33	3
Max. drive capacity 2) at T = 20 °C Duty type S3 20% - 60 min	[kW]	1,0	1,5	2,4	8,9
Max. drive capacity 2) at T = 20 °C Duty type S3 10% - 60 min	[kW]	1,3	2,6	3,8	13
Screw efficiency rating	[%]	41	43	37	33
Torque, capacity, turning-speed at 20 % ED/h and 20 °C		see performance tables 3.4.3.4			
Screw torque at max. lifting power	[Nm]	29,4	73,2	123,4	398,5
Max. permitted drive-shaft torque	[Nm]	50	125	175	1600
Max. permitted screw length for compression load	[mm]	see buckling diagrams 3.4.2			
Housing material		GG	AlSi10Mg	GG	
Weight without stroke length and protection tube	[kg]	9	13,5	23	85
Screw weight per 100 mm stroke	[kg]	0,8	0,59	1,5	2,5
Amount of lubricant in worm gear	[kg]	0,15	0,9	0,6	3,5
Mass moment of inertia J ³⁾ Ratio N type 1	[kg cm ²]	1,058	6,63	22,44	181,28
Mass moment of inertia J ³⁾ Ratio N type 2	[kg cm ²]	1,079	6,79	22,89	184,92
Mass moment of inertia J ³⁾ Ratio L type 1	[kg cm ²]	0,677	3,60	7,248	123,79
Mass moment of inertia J ³⁾ Ratio L type 2	[kg cm ²]	0,691	3,67	7,393	126,28

Dimension plans type 1 - chapter 3.8.1/type 2 - chapter 3.8.2

¹⁾ Also applies to Ku screw, see chapter 3.4.7

²⁾ Max. permitted values for type 1 and Tr screw.

Higher values are possible when using type 2 or Ku screw.

³⁾ Referring to 100 mm screw length

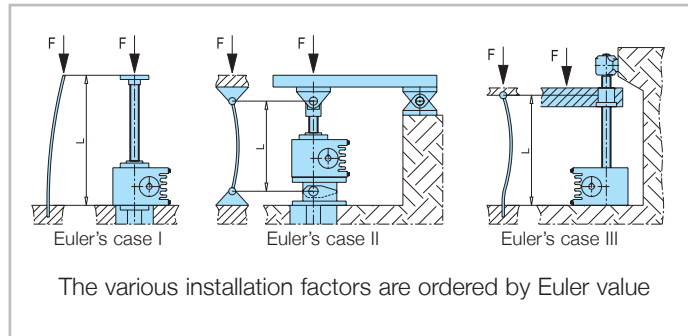
Screw jacks

3.4 Technical information

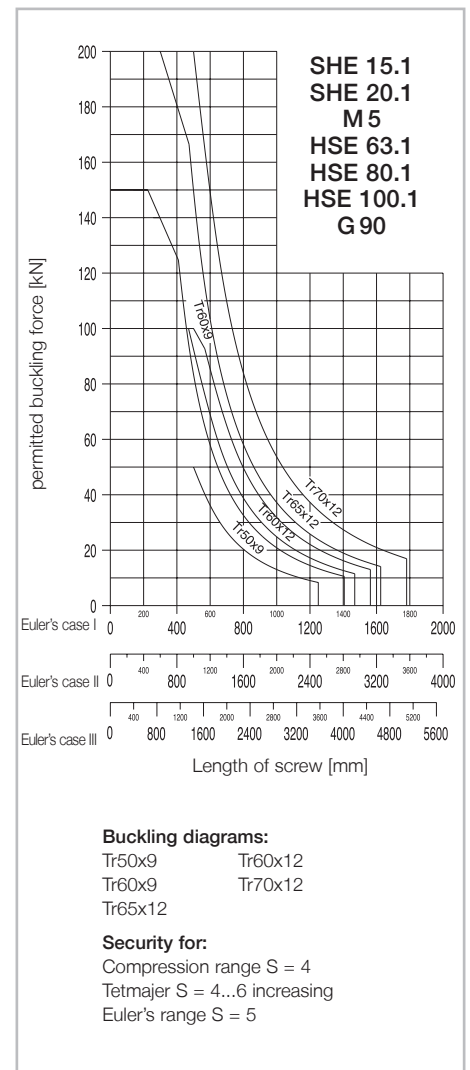
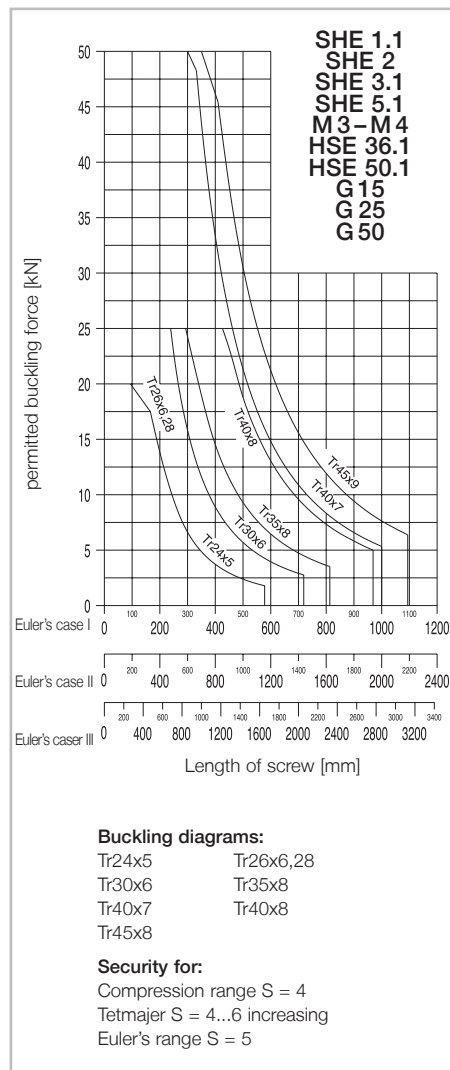
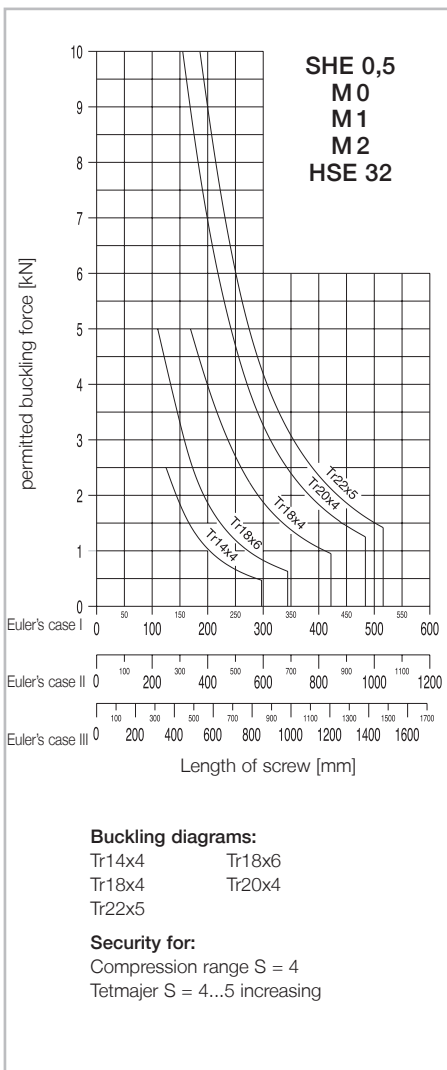
3.4.2 Permitted buckling force

Screw dimensioning of the screw jacks for compression force

The permitted buckling force for trapezoidal and ball screws can be verified using the following buckling diagrams.



3



Screw jacks

3.4 Technical information

3.4.3 Performance tables (screw jacks with Tr screw)

3.4.3.1 SHE range (Standard worm gear screw jack)

Rotary speed, power requirement and permitted lifting speed for ratio N and L with single-start, **lifting (type 1) trapezoidal screw**. All performance data is expressed in terms of dynamic lifting capacity. With duty ratio of < 10 %/h or configuration with rotating screw (type 2), the maximum permitted drive capacities can be increased. In this case, please consult our screw jack specialists.

SHE 0,5 screw Tr 18x6

n [1/min]	Lifting speed [m/min.]		F=5 [kN]				F=4 [kN]				F=3 [kN]				F=2,5 [kN]				F=2 [kN]				F=1,5 [kN]				F=1 [kN]			
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	0,90	0,450	1,54	0,24	0,99	0,16	1,23	0,19	0,80	0,13	0,92	0,15	0,60	0,10	0,77	0,12	0,50	0,1	0,62	0,1	0,40	0,1	0,46	0,1	0,30	0,1	0,31	0,1	0,20	0,1
1000	0,60	0,300	1,54	0,16	0,99	0,1	1,23	0,13	0,80	0,1	0,92	0,1	0,60	0,1	0,77	0,1	0,50	0,1	0,62	0,1	0,40	0,1	0,46	0,1	0,30	0,1	0,31	0,1	0,20	0,1
750	0,45	0,225	1,54	0,12	0,99	0,1	1,23	0,1	0,80	0,1	0,92	0,1	0,60	0,1	0,77	0,1	0,50	0,1	0,62	0,1	0,40	0,1	0,46	0,1	0,30	0,1	0,31	0,1	0,20	0,1
600	0,36	0,180	1,54	0,1	0,99	0,1	1,23	0,1	0,80	0,1	0,92	0,1	0,60	0,1	0,77	0,1	0,50	0,1	0,62	0,1	0,40	0,1	0,46	0,1	0,30	0,1	0,31	0,1	0,20	0,1
500	0,30	0,150	1,54	0,1	0,99	0,1	1,23	0,1	0,80	0,1	0,92	0,1	0,60	0,1	0,77	0,1	0,50	0,1	0,62	0,1	0,40	0,1	0,46	0,1	0,30	0,1	0,31	0,1	0,20	0,1
300	0,18	0,090	1,54	0,1	0,99	0,1	1,23	0,1	0,80	0,1	0,92	0,1	0,60	0,1	0,77	0,1	0,50	0,1	0,62	0,1	0,40	0,1	0,46	0,1	0,30	0,1	0,31	0,1	0,20	0,1
100	0,06	0,030	1,54	0,1	0,99	0,1	1,23	0,1	0,80	0,1	0,92	0,1	0,60	0,1	0,77	0,1	0,50	0,1	0,62	0,1	0,40	0,1	0,46	0,1	0,30	0,1	0,31	0,1	0,20	0,1
50	0,03	0,015	1,54	0,1	0,99	0,1	1,23	0,1	0,80	0,1	0,92	0,1	0,60	0,1	0,77	0,1	0,50	0,1	0,62	0,1	0,40	0,1	0,46	0,1	0,30	0,1	0,31	0,1	0,20	0,1

3

SHE 1.1 screw Tr 24x5

n [1/min]	Lifting speed [m/min.]		F=15 [kN]				F=12 [kN]				F=10 [kN]				F=8 [kN]				F=6 [kN]				F=4 [kN]				F=2 [kN]			
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1,500	0,375	8,1	1,27	2,6	0,42	6,5	1,02	2,1	0,33	5,4	0,85	1,8	0,28	4,3	0,68	1,4	0,22	3,2	0,51	1,1	0,20	2,2	0,34	0,7	0,1	1,1	0,20	0,4	0,1
1000	1,000	0,250	8,1	0,85	2,6	0,28	6,5	0,68	2,1	0,22	5,4	0,56	1,8	0,20	4,3	0,45	1,4	0,20	3,2	0,34	1,1	0,1	2,2	0,23	0,7	0,1	1,1	0,1	0,4	0,1
750	0,750	0,188	8,1	0,64	2,6	0,21	6,5	0,51	2,1	0,20	5,4	0,42	1,8	0,20	4,3	0,34	1,4	0,1	3,2	0,25	1,1	0,1	2,2	0,20	0,7	0,1	1,1	0,1	0,4	0,1
600	0,600	0,150	8,1	0,51	2,6	0,20	6,5	0,41	2,1	0,20	5,4	0,34	1,8	0,1	4,3	0,27	1,4	0,1	3,2	0,20	1,1	0,1	2,2	0,20	0,7	0,1	1,1	0,1	0,4	0,1
500	0,500	0,125	8,1	0,42	2,6	0,20	6,5	0,34	2,1	0,1	5,4	0,28	1,8	0,1	4,3	0,23	1,4	0,1	3,2	0,20	1,1	0,1	2,2	0,1	0,7	0,1	1,1	0,1	0,4	0,1
300	0,300	0,075	8,1	0,25	2,6	0,1	6,5	0,20	2,1	0,1	5,4	0,20	1,8	0,1	4,3	0,20	1,4	0,1	3,2	0,1	1,1	0,1	2,2	0,1	0,7	0,1	1,1	0,1	0,4	0,1
100	0,100	0,025	8,1	0,1	2,6	0,1	6,5	0,1	2,1	0,1	5,4	0,1	1,8	0,1	4,3	0,1	1,4	0,1	3,2	0,1	1,1	0,1	2,2	0,1	0,7	0,1	1,1	0,1	0,4	0,1
50	0,050	0,013	8,1	0,1	2,6	0,1	6,5	0,1	2,1	0,1	5,4	0,1	1,8	0,1	4,3	0,1	1,4	0,1	3,2	0,1	1,1	0,1	2,2	0,1	0,7	0,1	1,1	0,1	0,4	0,1

SHE 2 screw Tr 26x6.28

n [1/min]	Lifting speed [m/min.]		F=20 [kN]				F=15 [kN]				F=10 [kN]				F=8 [kN]				F=6 [kN]				F=4 [kN]				F=2 [kN]			
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1,57	0,393	10,75	1,7	4,63	0,7	8,06	1,3	3,47	0,5	5,37	0,8	2,31	0,4	4,30	0,7	1,85	0,3	3,22	0,5	1,39	0,2	2,15	0,3	0,93	0,1	1,07	0,2	0,46	0,1
1000	1,05	0,262	10,75	1,1	4,63	0,5	8,06	0,8	3,47	0,4	5,37	0,6	2,31	0,2	4,30	0,5	1,85	0,2	3,22	0,3	1,39	0,1	2,15	0,2	0,93	0,1	1,07	0,1	0,46	0,1
750	0,79	0,196	10,75	0,8	4,63	0,4	8,06	0,6	3,47	0,3	5,37	0,4	2,31	0,2	4,30	0,3	1,85	0,1	3,22	0,3	1,39	0,1	2,15	0,2	0,93	0,1	1,07	0,1	0,46	0,1
600	0,63	0,157	10,75	0,7	4,63	0,3	8,06	0,5	3,47	0,2	5,37	0,3	2,31	0,1	4,30	0,3	1,85	0,1	3,22	0,2	1,39	0,1	2,15	0,1	0,93	0,1	1,07	0,1	0,46	0,1
500	0,52	0,131	10,75	0,6	4,63	0,2	8,06	0,4	3,47	0,2	5,37	0,3	2,31	0,1	4,30	0,2	1,85	0,1	3,22	0,2	1,39	0,1	2,15	0,1	0,93	0,1	1,07	0,1	0,46	0,1
300	0,31	0,079	10,75	0,3	4,63	0,1	8,06	0,3	3,47	0,1	5,37	0,2	2,31	0,1	4,30	0,1	1,85	0,1	3,22	0,1	1,39	0,1	2,15	0,1	0,93	0,1	1,07	0,1	0,46	0,1
100	0,10	0,026	10,75	0,1	4,63	0,1	8,06	0,1	3,47	0,1	5,37	0,1	2,31	0,1	4,30	0,1	1,85	0,1	3,22	0,1	1,39	0,1	2,15	0,1	0,93	0,1	1,07	0,1	0,46	0,1
50	0,05	0,013	10,75	0,1	4,63	0,1	8,06	0,1	3,47	0,1	5,37	0,1	2,31	0,1	4,30	0,1	1,85	0,1	3,22	0,1	1,39	0,1	2,15	0,1	0,93	0,1	1,07	0,1	0,46	0,1

SHE 3.1 screw Tr 30x6

n [1/min]	Lifting speed [m/min.]		F=30 [kN]				F=25 [kN]				F=20 [kN]				F=15 [kN]				F=10 [kN]				F=5 [kN]				F=2,5 [kN]			
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1,50	0,375	17,6	2,76	6,3	1,00	14,7	2,31	5,2	0,82	11,8	1,85	4,2	0,66	8,8	1,39	3,1	0,49	5,9	0,93	2,1	0,33	2,9	0,46	1,0	0,2	1,5	0,2	0,5	0,1
1000	1,00	0,250	17,6	1,84	6,3	0,66	14,7	1,54	5,2	0,55	11,8	1,23	4,2	0,44	8,8	0,93	3,1	0,33	5,9	0,62	2,1	0,22	2,9	0,31	1,0	0,1	1,5	0,2	0,5	0,1
750	0,75	0,188	17,6	1,38	6,3	0,50	14,7	1,16	5,2	0,41	11,8	0,93	4,2	0,33	8,8	0,69	3,1	0,25	5,9	0,46	2,1	0,16	2,9	0,23	1,0	0,1	1,5	0,1	0,5	0,1
600	0,60	0,150	17,6	1,10	6,3	0,40	14,7	0,93	5,2	0,33	11,8	0,74	4,2	0,26	8,8	0,56	3,1	0,20	5,9	0,37	2,1	0,13	2,9	0,19	1,0	0,1	1,5	0,1	0,5	0,1
500	0,50	0,125	17,6	0,92	6,3	0,33	14,7	0,77	5,2	0,27	11,8	0,62	4,2	0,22	8,8	0,46	3,1	0,16	5,9	0,31	2,1	0,1	2,9	0,15	1,0	0,1	1,5	0,1	0,5	0,1
300	0,30	0,075	17,6	0,55	6,3	0,20	14,7	0,46	5,2	0,16	11,8	0,37	4,2	0,13	8,8	0,28	3,1	0,10	5,9	0,19	2,1	0,1	2,9	0,10	1,0	0,1	1,5	0,1	0,5	0,1
100	0,10	0,025	17,6	0,20	6,3	0,10	14,7	0,15	5,2	0,10	11,8	0,12	4,2	0,1	8,8	0,10	3,1	0,1	5,9	0,10	2,1	0,1	2,9	0,1	1,0	0,1	1,5	0,1	0,5	0,1
50	0,05	0,013	17,6	0,10	6,3	0,10	14,7	0,10	5,2	0,1	11,8	0,1	4,2	0,1	8,8	0,1	3,1	0,1	5,9	0,1	2,1	0,1	2,9	0,1	1,0	0,1	1,5	0,1	0,5	0,1

□ Duty type S3 20% - 60 min ■ static only (dynamic not permitted) ■ Duty type S3 10% - 60 min

3.4 Technical information

SHE 5.1 screw Tr 40x7

n [1/min]	Lifting speed [m/min.]		F=50 [kN]				F=40 [kN]				F=30 [kN]				F=20 [kN]				F=10 [kN]				F=5 [kN]				F=3 [kN]			
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1,75	0,438	38,7	6,08	14,5	2,28	30,9	4,86	11,6	1,82	23,2	3,65	8,7	1,37	15,5	2,43	5,8	0,91	7,7	1,22	2,9	0,5	3,9	0,6	1,5	0,2	1,9	0,3	0,7	0,2
1000	1,17	0,292	38,7	4,05	14,5	1,52	30,9	3,24	11,6	1,22	23,2	2,43	8,7	0,91	15,5	1,62	5,8	0,61	7,7	0,81	2,9	0,3	3,9	0,4	1,5	0,2	1,9	0,2	0,7	0,1
750	0,88	0,219	38,7	3,04	14,5	1,14	30,9	2,43	11,6	0,91	23,2	1,82	8,7	0,68	15,5	1,22	5,8	0,46	7,7	0,61	2,9	0,2	3,9	0,3	1,5	0,1	1,9	0,2	0,7	0,1
600	0,70	0,175	38,7	2,43	14,5	0,91	30,9	1,94	11,6	0,73	23,2	1,46	8,7	0,55	15,5	0,97	5,8	0,36	7,7	0,49	2,9	0,2	3,9	0,2	1,5	0,1	1,9	0,1	0,7	0,1
500	0,58	0,146	38,7	2,03	14,5	0,76	30,9	1,62	11,6	0,61	23,2	1,22	8,7	0,46	15,5	0,81	5,8	0,30	7,7	0,41	2,9	0,2	3,9	0,2	1,5	0,1	1,9	0,1	0,7	0,1
300	0,35	0,088	38,7	1,22	14,5	0,46	30,9	0,97	11,6	0,36	23,2	0,73	8,7	0,27	15,5	0,49	5,8	0,18	7,7	0,24	2,9	0,1	3,9	0,1	1,5	0,1	1,9	0,1	0,7	0,1
100	0,12	0,029	38,7	0,41	14,5	0,15	30,9	0,32	11,6	0,12	23,2	0,24	8,7	0,10	15,5	0,16	5,8	0,10	7,7	0,10	2,9	0,1	3,9	0,1	1,5	0,1	1,9	0,1	0,7	0,1
50	0,06	0,015	38,7	0,20	14,5	0,10	30,9	0,16	11,6	0,1	23,2	0,1	8,7	0,1	15,5	0,1	5,8	0,1	7,7	0,1	2,9	0,1	3,9	0,1	1,5	0,1	1,9	0,1	0,7	0,1

SHE 15.1 screw Tr 60x12

n [1/min]	Lifting speed [m/min.]		F=150 [kN]				F=100 [kN]				F=80 [kN]				F=60 [kN]				F=40 [kN]				F=20 [kN]				F=10 [kN]			
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	2,35	0,750	138,4	21,7	70,2	11,0	92,3	14,5	46,8	7,4	73,8	11,6	37,5	5,9	55,4	8,7	28,1	4,4	36,9	5,8	18,7	2,9	18,5	2,9	9,4	1,5	9,2	1,4	4,7	0,4
1000	1,57	0,500	138,4	14,5	70,2	7,4	92,3	9,7	46,8	4,9	73,8	7,7	37,5	3,9	55,4	5,8	28,1	2,9	36,9	3,9	18,7	2,0	18,5	1,9	9,4	1,0	9,2	1,0	4,7	0,2
750	1,17	0,375	138,4	10,9	70,2	5,5	92,3	7,2	46,8	3,7	73,8	5,8	37,5	2,9	55,4	4,3	28,1	2,2	36,9	2,9	18,7	1,5	18,5	1,4	9,4	0,7	9,2	0,7	4,7	0,2
600	0,94	0,300	138,4	8,7	70,2	4,4	92,3	5,8	46,8	2,9	73,8	4,6	37,5	2,4	55,4	3,5	28,1	1,8	36,9	2,3	18,7	1,2	18,5	1,2	9,4	0,6	9,2	0,6	4,7	0,1
500	0,78	0,250	138,4	7,2	70,2	3,7	92,3	4,8	46,8	2,5	73,8	3,9	37,5	2,0	55,4	2,9	28,1	1,5	36,9	1,9	18,7	1,0	18,5	1,0	9,4	0,5	9,2	0,5	4,7	0,1
300	0,47	0,150	138,4	4,3	70,2	2,2	92,3	2,9	46,8	1,5	73,8	2,3	37,5	1,2	55,4	1,7	28,1	0,9	36,9	1,2	18,7	0,6	18,5	0,6	9,4	0,3	9,2	0,3	4,7	0,1
100	0,16	0,050	138,4	1,4	70,2	0,7	92,3	1,0	46,8	0,5	73,8	0,8	37,5	0,4	55,4	0,6	28,1	0,3	36,9	0,4	18,7	0,2	18,5	0,2	9,4	0,1	9,2	0,1	4,7	0,1
50	0,08	0,025	138,4	0,7	70,2	0,4	92,3	0,5	46,8	0,2	73,8	0,4	37,5	0,2	55,4	0,3	28,1	0,1	36,9	0,2	18,7	0,1	18,5	0,1	9,4	0,1	9,2	0,1	4,7	0,1

SHE 20.1 screw Tr 70x12

n [1/min]	Lifting speed [m/min.]		F=200 [kN]				F=160 [kN]				F=120 [kN]				F=100 [kN]				F=75 [kN]				F=50 [kN]				F=25 [kN]			
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	2,25	0,750	199,0	31,3	93,6	14,7	159,2	25,0	74,9	11,8	119,4	18,8	56,2	8,8	99,5	15,6	46,8	7,4	74,6	11,7	35,1	5,5	49,7	7,8	23,4	3,7	24,9	3,9	11,7	1,8
1000	1,50	0,500	199,0	20,8	93,6	9,8	159,2	16,7	74,9	7,8	119,4	12,5	56,2	5,9	99,5	10,4	46,8	4,9	74,6	7,8	35,1	3,7	49,7	5,2	23,4	2,5	24,9	2,6	11,7	1,2
750	1,13	0,375	199,0	15,6	93,6	7,4	159,2	12,5	74,9	5,9	119,4	9,4	56,2	4,4	99,5	7,8	46,8	3,7	74,6	5,9	35,1	2,8	49,7	3,9	23,4	1,8	24,9	2,0	11,7	0,9
600	0,90	0,300	199,0	12,5	93,6	5,9	159,2	10,0	74,9	4,7	119,4	7,5	56,2	3,5	99,5	6,3	46,8	2,9	74,6	4,7	35,1	2,2	49,7	3,1	23,4	1,5	24,9	1,6	11,7	0,7
500	0,75	0,250	199,0	10,4	93,6	4,9	159,2	8,3	74,9	3,9	119,4	6,3	56,2	2,9	99,5	5,2	46,8	2,5	74,6	3,9	35,1	1,8	49,7	2,6	23,4	1,2	24,9	1,3	11,7	0,6
300	0,45	0,150	199,0	6,3	93,6	2,9	159,2	5,0	74,9	2,4	119,4	3,8	56,2	1,8	99,5	3,1	46,8	1,5	74,6	2,3	35,1	1,1	49,7	1,6	23,4	0,7	24,9	0,8	11,7	0,4
100	0,15	0,050	199,0	2,1	93,6	1,0	159,2	1,7	74,9	0,8	119,4	1,3	56,2	0,6	99,5	1,0	46,8	0,5	74,6	0,8	35,1	0,4	49,7	0,5	23,4	0,2	24,9	0,3	11,7	0,1
50	0,08	0,025	199,0	1,0	93,6	0,5	159,2	0,8	74,9	0,4	119,4	0,6	56,2	0,3	99,5	0,5	46,8	0,2	74,6	0,4	35,1	0,2	49,7	0,3	23,4	0,1	24,9	0,1	11,7	0,1

SHE 25 screw Tr 90x16

n [1/min]	Lifting speed [m/min.]		F=250 [kN]				F=200 [kN]				F=160 [kN]				F=120 [kN]				F=100 [kN]				F=75 [kN]				F=50 [kN]			
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1000	1,50	0,500	271,3	28,4	132,6	13,9	217,0	22,7	106,1	11,1	173,6	18,2	84,9	8,9	130,2	13,6	63,7	6,7	108,5	11,4	53,1	5,6	81,4	8,5	39,8	4,2	54,3	5,7	26,5	2,8
750	1,13	0,375	271,3	21,3	132,6	10,4	217,0	17,0	106,1	8,3	173,6	13,6	84,9	6,7	130,2	10,2	63,7	5,0	108,5	8,5	53,1	4,2	81,4	6,4	39,8	3,1	54,3	4,3	26,5	2,1
600	0,90	0,300	271,3	17,0	132,6	8,3	217,0	13,6	106,1	6,7	173,6	10,9	84,9	5,3	130,2	8,2	63,7	4,0	108,5	6,8	53,1	3,3	81,4	5,1	39,8	2,5	54,3	3,4	26,5	1,7
500	0,75	0,250	271,3	14,2	132,6	6,9	217,0	11,4	106,1	5,6	173,6	9,1	84,9	4,4	130,2	6,8	63,7	3,3	108,5	5,7	53,1	2,8	81,4	4,3	39,8	2,1	54,3	2,8	26,5	1,4
300	0,45	0,150	271,3	8,5	132,6	4,2	217,0	6,8	106,1	3,3	173,6	5,5	84,9	2,7	130,2	4,1	63,7	2,0	108,5	3,4	53,1	1,7	81,4	2,6	39,8	1,3	54,3	1,7	26,5	0,8
100	0,15	0,050	271,3	2,8	132,6	1,4	217,0	2,3	106,1	1,1	173,6	1,8	84,9	0,9	130,2	1,4	63,7	0,7	108,5	1,1	53,1	0,6	81,4	0,9	39,8	0,4	54,3	0,6	26,5	0,3
50	0,08	0,025	271,3	1,4	132,6	0,7	217,0	1,1	106,1	0,6	173,6	0,9	84,9	0,4	130,2	0,7	63,7	0,3	108,5	0,6	53,1	0,3	81,4	0,4	39,8	0,2	54,3	0,3	26,5	0,1

SHE 35 screw Tr 100x16

n [1/min]	Lifting speed [m/min.]		F=350 [kN]*				F=300 [kN]				F=250 [kN]				F=200 [kN]				F=150 [kN]				F=100 [kN]				F=50 [kN]			
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1000	1,50	0,500	397,9	41,7	199,0	20,8	341,1	35,7	170,5	17,9	284,2	29,8	142,1	14,9	227,4	23,8	113,7	11,9	170,5	17,9	85,3	8,9	113,7	11,9	56,8	6,0	56,8	6,0	28,4	3,0
750	1,13	0,375	397,9	31,3	199,0	15,6	341,1	26,8	170,5	13,4	284,2	22,3	142,1	11,2	227,4	17,9	113,7	8,9	170,5	13,4	85,3	6,7	113,7	8,9	56,8	4,5	56,8	4,5	28,4	2,2
600	0,90	0,300	397,9	25,0	199,0	12,5	341,1	21,4	170,5	10,7	284,2	17,9	142,1	8,9	227,4	14,3	113,7	7,1	170,5	10,7	85,3	5,4	113,7	7,1	56,8	3,6	56,8	3,6	28,4	1,8
500	0,75	0,250	397,9	20,8	199,0	10,4	341,1	17,9	170,5	8,9	284,2	14,9	142,1	7,4	227,4	11,9	113,7	6,0	170,5	8,9	85,3	4,5	113,7	6,0	56,8	3,0	56,8	3,0	28,4	1,5
300	0,45	0,150	397,9	12,5	199,0	6,3	341,1	10,7	170,5	5,4	284,2	8,9	142,1	4,5	227,4	7,1	113,7	3,6	170,5	5,4	85,3	2,7	113,7	3,6	56,8	1,8	56,8	1,8	28,4	0,9
100	0,15	0,050	397,9	4,2	199,0	2,1	341,1	3,6	170,5	1,8	284,2	3,0	142,1	1																

Screw jacks

3.4 Technical information

SHE 50.1 screw Tr 120x16

n [1/min]	Lifting speed [m/min.]		F=500 [kN]				F=400 [kN]				F=300 [kN]				F=200 [kN]				F=150 [kN]				F=100 [kN]				F=50 [kN]			
			N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW
1000	1,500	0,500	796	84	398	42	637	67	318	34	478	50	239	25	318	34	159	17	239	25	119	13	159	17	80	8,4	80	8,4	40	4,2
750	1,125	0,375	796	63	398	32	637	50	318	25	478	38	239	19	318	25	159	13	239	19	119	9,4	159	13	80	6,3	80	6,3	40	3,2
500	0,750	0,250	796	42	398	21	637	34	318	17	478	25	239	13	318	17	159	8,4	239	13	119	6,3	159	8,4	80	4,2	80	4,2	40	2,1
400	0,600	0,200	796	34	398	17	637	27	318	14	478	20	239	10	318	14	159	6,7	239	10	119	5	159	6,7	80	3,4	80	3,4	40	1,7
300	0,450	0,150	796	25	398	13	637	20	318	10	478	15	239	7,5	318	10	159	5	239	7,5	119	3,8	159	5	80	2,5	80	2,5	40	1,3
200	0,300	0,100	796	17	398	8,4	637	14	318	6,7	478	10	239	5	318	6,7	159	3,4	239	5	119	2,5	159	3,4	80	1,7	80	1,7	40	0,9
100	0,150	0,050	796	8,4	398	4,2	637	6,7	318	3,4	478	5	239	2,5	318	3,4	159	1,7	239	2,5	119	1,3	159	1,7	80	0,9	80	0,9	40	0,5
50	0,075	0,025	796	4,2	398	2,1	637	3,4	318	1,7	478	2,5	239	1,3	318	1,7	159	0,9	239	1,3	119	0,7	159	0,9	80	0,5	80	0,5	40	0,5

SHE 75 screw Tr 140x20

n [1/min]	Lifting speed [m/min.]		F=750 [kN]				F=500 [kN]				F=400 [kN]				F=300 [kN]				F=200 [kN]				F=100 [kN]				F=50 [kN]			
			N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW
1000	1,667	0,556	1105	116	553	58	737	77	368	39	590	62	295	31	442	46	221	23	295	31	147	15	147	15	74	7,7	74	7,7	37	3,9
750	1,250	0,417	1105	87	553	43	737	58	368	29	590	46	295	23	442	35	221	17	295	23	147	12	147	12	74	5,8	74	5,8	37	2,9
500	0,833	0,278	1105	58	553	29	737	39	368	19	590	31	295	15	442	23	221	12	295	15	147	7,7	147	7,7	74	3,9	74	3,9	37	1,9
400	0,667	0,222	1105	46	553	23	737	31	368	15	590	25	295	12	442	19	221	9,3	295	12	147	6,2	147	6,2	74	3,1	74	3,1	37	1,5
300	0,500	0,167	1105	35	553	17	737	23	368	12	590	19	295	9,3	442	14	221	6,9	295	9,3	147	4,6	147	4,6	74	2,3	74	2,3	37	1,2
200	0,333	0,111	1105	23	553	12	737	15	368	7,7	590	12	295	6,2	442	9,3	221	4,6	295	6,2	147	3,1	147	3,1	74	1,5	74	1,5	37	0,8
100	0,167	0,056	1105	12	553	5,8	737	7,7	368	3,9	590	6,2	295	3,1	442	4,6	221	2,3	295	3,1	147	1,5	147	1,5	74	0,8	74	0,8	37	0,4
50	0,083	0,028	1105	5,8	553	2,9	737	3,9	368	1,9	590	3,1	295	1,5	442	2,3	221	1,2	295	1,5	147	0,8	147	0,8	74	0,4	74	0,4	37	0,2

SHE 100.1 screw Tr 160x20

n [1/min]	Lifting speed [m/min.]		F=1000 [kN]				F=800 [kN]				F=600 [kN]				F=400 [kN]				F=200 [kN]				F=100 [kN]				F=50 [kN]			
			N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW
1000	1,667	0,556	1770	185	983	103	1420	148	786	83	1060	112	590	62	707	74	393	42	354	37	197	21	177	19	99	11	88	9,3	49	5,2
750	1,250	0,417	1770	139	983	78	1420	112	786	62	1060	84	590	47	707	56	393	31	354	28	197	16	177	14	99	7,8	88	7	49	3,9
500	0,833	0,278	1770	93	983	52	1420	74	786	42	1060	56	590	31	707	37	393	21	354	19	197	11	177	9,3	99	5,2	88	4,6	49	2,6
400	0,667	0,222	1770	74	983	42	1420	60	786	33	1060	45	590	25	707	30	393	17	354	15	197	8,3	177	7,5	99	4,2	88	3,7	49	2,1
300	0,500	0,167	1770	56	983	31	1420	45	786	25	1060	34	590	19	707	23	393	13	354	11	197	6,2	177	5,6	99	3,1	88	2,8	49	1,6
200	0,333	0,111	1770	37	983	21	1420	30	786	17	1060	23	590	13	707	15	393	8,3	354	7,4	197	4,2	177	3,7	99	2,1	88	1,9	49	1,1
100	0,167	0,056	1770	19	983	11	1420	15	786	8,3	1060	11	590	6,2	707	7,4	393	4,2	354	3,7	197	2,1	177	1,9	99	1,1	88	1	49	0,5
50	0,083	0,028	1770	9,3	983	5,2	1420	7,4	786	4,2	1060	5,6	590	3,1	707	3,7	393	2,1	354	1,9	197	1,1	177	1	99	0,6	88	0,5	49	0,5

SHE 150 screw Tr 190x24

n [1/min]	Lifting speed [m/min.]		F=1500 [kN]				F=1250 [kN]				F=1000 [kN]				F=750 [kN]				F=500 [kN]				F=250 [kN]				F=100 [kN]				
			N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	
1000	1,263		2010	211		1680	175		1340	140		1010	105		670	70		335	35		134	14		134	14		134	14		134	14
750	0,947		2010	158		1680	132		1340	105		1010	79		670	53		335	26		134	11		134	11		134	11		134	11
500	0,632		2010	105		1680	88		1340	70		1010	53		670	35		335	18		134	7		134	7		134	7		134	7
400	0,505		2010	84		1680	70		1340	56		1010	42		670	28		335	14		134	5,6		134	5,6		134	5,6		134	5,6
300	0,379		2010	63		1680	53		1340	42		1010	32		670	21		335	11		134	4,2		134	4,2		134	4,2		134	4,2
200	0,253		2010	42		1680	35		1340	28		1010	21		670	14		335	7		134	2,8		134	2,8		134	2,8		134	2,8
100	0,126		2010	21		1680	18		1340	14		1010	11		670	7		335	3,5		134	1,4		134	1,4		134	1,4		134	1,4
50	0,063		2010	11		1680	8,8		1340	7		1010	5,3		670	3,5		335	1,8		134	0,7		134	0,7		134	0,7		134	0,7

SHE 200.1 screw Tr 220x28

n [1/min]	Lifting speed [m/min.]		F=2000 [kN]				F=1500 [kN]				F=1000 [kN]				F=750 [kN]				F=500 [kN]				F=250 [kN]				F=100 [kN]								
			N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW					
1000																																			
750																																			
600																																			
500																																			
300																																			
100																																			
50																																			

□ Duty type S3 20% - 60 min

■ static only (dynamic not permitted)

■ Duty type S3 10% - 60 min

Screw jacks

3.4 Technical information

3.4.3.2 MERKUR range (Standard worm gear screw jack)

Rotary speed, power requirement and permitted lifting speed for ratio N and L with single-start, **lifting (type 1) trapezoidal screw**. All performance data is expressed in terms of dynamic lifting capacity. With duty ration of < 10 %/h or configuration with rotating screw (type 2), the maximum permitted drive capacities can be increased. In this case, please consult our screw jack specialists.

3

M 0 screw Tr 14x4

n [1/min]	Lifting speed [m/min.]		F=2,5 [kN]				F=2 [kN]				F=1,5 [kN]				F=1 [kN]				F=0,75 [kN]				F=0,5 [kN]				F=0,25 [kN]							
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW		
1500	1,50	0,375	1,2	0,18	0,4	0,1	0,9	0,15	0,3	0,1	0,7	0,1	0,2	0,1	0,5	0,1	0,2	0,1	0,4	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
1000	1,00	0,250	1,2	0,12	0,4	0,1	0,9	0,10	0,3	0,1	0,7	0,1	0,2	0,1	0,5	0,1	0,2	0,1	0,4	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
750	0,75	0,188	1,2	0,10	0,4	0,1	0,9	0,1	0,3	0,1	0,7	0,1	0,2	0,1	0,5	0,1	0,2	0,1	0,4	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
600	0,60	0,150	1,2	0,1	0,4	0,1	0,9	0,1	0,3	0,1	0,7	0,1	0,2	0,1	0,5	0,1	0,2	0,1	0,4	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
500	0,50	0,125	1,2	0,1	0,4	0,1	0,9	0,1	0,3	0,1	0,7	0,1	0,2	0,1	0,5	0,1	0,2	0,1	0,4	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
300	0,30	0,075	1,2	0,1	0,4	0,1	0,9	0,1	0,3	0,1	0,7	0,1	0,2	0,1	0,5	0,1	0,2	0,1	0,4	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
100	0,10	0,025	1,2	0,1	0,4	0,1	0,9	0,1	0,3	0,1	0,7	0,1	0,2	0,1	0,5	0,1	0,2	0,1	0,4	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
50	0,05	0,013	1,2	0,1	0,4	0,1	0,9	0,1	0,3	0,1	0,7	0,1	0,2	0,1	0,5	0,1	0,2	0,1	0,4	0,1	0,1	0,1	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1

M 1 screw Tr 18x4

n [1/min]	Lifting speed [m/min.]		F=5 [kN]				F=4 [kN]				F=3 [kN]				F=2,5 [kN]				F=2 [kN]				F=1,5 [kN]				F=1 [kN]							
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1,50	0,375	2,7	0,42	0,9	0,1	2,1	0,33	0,7	0,1	1,6	0,25	0,5	0,1	1,3	0,21	0,4	0,1	1,1	0,20	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1	0,5	0,1	0,2	0,1
1000	1,00	0,250	2,7	0,28	0,9	0,1	2,1	0,22	0,7	0,1	1,6	0,17	0,5	0,1	1,3	0,14	0,4	0,1	1,1	0,10	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1	0,5	0,1	0,2	0,1
750	0,75	0,188	2,7	0,21	0,9	0,1	2,1	0,17	0,7	0,1	1,6	0,13	0,5	0,1	1,3	0,10	0,4	0,1	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1	0,5	0,1	0,2	0,1
600	0,60	0,150	2,7	0,17	0,9	0,1	2,1	0,13	0,7	0,1	1,6	0,10	0,5	0,1	1,3	0,1	0,4	0,1	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1	0,5	0,1	0,2	0,1
500	0,50	0,125	2,7	0,14	0,9	0,1	2,1	0,1	0,7	0,1	1,6	0,1	0,5	0,1	1,3	0,1	0,4	0,1	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1	0,5	0,1	0,2	0,1
300	0,30	0,075	2,7	0,1	0,9	0,1	2,1	0,1	0,7	0,1	1,6	0,1	0,5	0,1	1,3	0,1	0,4	0,1	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1	0,5	0,1	0,2	0,1
100	0,10	0,025	2,7	0,1	0,9	0,1	2,1	0,1	0,7	0,1	1,6	0,1	0,5	0,1	1,3	0,1	0,4	0,1	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1	0,5	0,1	0,2	0,1
50	0,05	0,013	2,7	0,1	0,9	0,1	2,1	0,1	0,7	0,1	1,6	0,1	0,5	0,1	1,3	0,1	0,4	0,1	1,1	0,1	0,3	0,1	0,8	0,1	0,3	0,1	0,5	0,1	0,2	0,1	0,5	0,1	0,2	0,1

M 2 screw Tr 20x4

n [1/min]	Lifting speed [m/min.]		F=10 [kN]				F=8 [kN]				F=6 [kN]				F=4 [kN]				F=3 [kN]				F=2 [kN]				F=1 [kN]							
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1,50	0,375	5,7	0,89	1,9	0,30	4,5	0,71	1,5	0,24	3,4	0,54	1,1	0,18	2,3	0,36	0,8	0,1	1,7	0,27	0,6	0,1	1,1	0,20	0,4	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
1000	1,00	0,250	5,7	0,60	1,9	0,20	4,5	0,48	1,5	0,16	3,4	0,36	1,1	0,12	2,3	0,24	0,8	0,1	1,7	0,18	0,6	0,1	1,1	0,10	0,4	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
750	0,75	0,188	5,7	0,45	1,9	0,15	4,5	0,36	1,5	0,12	3,4	0,27	1,1	0,1	2,3	0,18	0,8	0,1	1,7	0,13	0,6	0,1	1,1	0,1	0,4	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
600	0,60	0,150	5,7	0,36	1,9	0,12	4,5	0,29	1,5	0,10	3,4	0,21	1,1	0,1	2,3	0,14	0,8	0,1	1,7	0,1	0,6	0,1	1,1	0,1	0,4	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
500	0,50	0,125	5,7	0,30	1,9	0,1	4,5	0,24	1,5	0,1	3,4	0,18	1,1	0,1	2,3	0,12	0,8	0,1	1,7	0,1	0,6	0,1	1,1	0,1	0,4	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
300	0,30	0,075	5,7	0,18	1,9	0,1	4,5	0,14	1,5	0,1	3,4	0,11	1,1	0,1	2,3	0,10	0,8	0,1	1,7	0,1	0,6	0,1	1,1	0,1	0,4	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
100	0,10	0,025	5,7	0,10	1,9	0,1	4,5	0,1	1,5	0,1	3,4	0,1	1,1	0,1	2,3	0,1	0,8	0,1	1,7	0,1	0,6	0,1	1,1	0,1	0,4	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
50	0,05	0,013	5,7	0,1	1,9	0,1	4,5	0,1	1,5	0,1	3,4	0,1	1,1	0,1	2,3	0,1	0,8	0,1	1,7	0,1	0,6	0,1	1,1	0,1	0,4	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1

M 3 screw Tr 30x6

n [1/min]	Lifting speed [m/min.]		F=25 [kN]				F=20 [kN]				F=15 [kN]				F=10 [kN]				F=5 [kN]				F=2,5 [kN]				F=1 [kN]							
	N	L	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
1500	1,50	0,375	14,7	2,31	5,2	0,82	11,8	1,85	4,2	0,66	8,8	1,39	3,1	0,49	5,9	0,93	2,1	0,33	2,9	0,46	1,0	0,2	1,5	0,2	0,5	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
1000	1,00	0,250	14,7	1,54	5,2	0,55	11,8	1,23	4,2	0,44	8,8	0,93	3,1	0,33	5,9	0,62	2,1	0,22	2,9	0,31	1,0	0,1	1,5	0,2	0,5	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
750	0,75	0,188	14,7	1,16	5,2	0,41	11,8	0,93	4,2	0,33	8,8	0,69	3,1	0,25	5,9	0,46	2,1	0,16	2,9	0,23	1,0	0,1	1,5	0,1	0,5	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
600	0,60	0,150	14,7	0,93	5,2	0,33	11,8	0,74	4,2	0,26	8,8	0,56	3,1	0,20	5,9	0,37	2,1	0,13	2,9	0,19	1,0	0,1	1,5	0,1	0,5	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
500	0,50	0,125	14,7	0,77	5,2	0,27	11,8	0,62	4,2	0,22	8,8	0,46	3,1	0,16	5,9	0,31	2,1	0,11	2,9	0,15	1,0	0,1	1,5	0,1	0,5	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
300	0,30	0,075	14,7	0,46	5,2	0,16	11,8	0,37	4,2	0,13	8,8	0,28	3,1	0,10	5,9	0,19	2,1	0,1	2,9	0,10	1,0	0,1	1,5	0,1	0,5	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
100	0,10	0,025	14,7	0,15	5,2	0,10	11,8	0,12	4,2	0,1	8,8	0,10	3,1	0,1	5,9	0,10	2,1	0,1	2,9	0,1	1,0	0,1	1,5	0,1	0,5	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1
50	0,05	0,013	14,7	0,10	5,2	0,1	11,8	0,1	4,2	0,1	8,8	0,1	3,1	0,1	5,9	0,1	2,1	0,1	2,9	0,1	1,0	0,1	1,5	0,1	0,5	0,1	0,6	0,1	0,2	0,1	0,6	0,1	0,2	0,1

□ Duty type S3 20% - 60 min ■ static only (dynamic not permitted) ■ Duty type S3 10% - 60 min

Screw jacks

3.4 Technical information

M 4 screw 40x7

n [1/min]	Lifting speed [m/min.]		F=50 [kN]				F=40 [kN]				F=30 [kN]				F=20 [kN]				F=10 [kN]				F=5 [kN]				F=2,5 [kN]			
			N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW
1500	1,50	0,375	31,8	5,0	11,1	1,7	25,5	4,0	8,8	1,4	19,1	3,0	6,6	1,0	12,7	2,0	4,4	0,7	6,4	1,0	2,2	0,3	3,2	0,5	1,1	0,2	1,6	0,3	0,6	0,1
1000	1,00	0,250	31,8	3,3	11,1	1,2	25,5	2,7	8,8	0,9	19,1	2,0	6,6	0,7	12,7	1,3	4,4	0,5	6,4	0,7	2,2	0,2	3,2	0,3	1,1	0,1	1,6	0,2	0,6	0,1
750	0,75	0,188	31,8	2,5	11,1	0,9	25,5	2,0	8,8	0,7	19,1	1,5	6,6	0,5	12,7	1,0	4,4	0,35	6,4	0,5	2,2	0,2	3,2	0,3	1,1	0,1	1,6	0,1	0,6	0,1
600	0,60	0,150	31,8	2,0	11,1	0,7	25,5	1,6	8,8	0,6	19,1	1,2	6,6	0,4	12,7	0,8	4,4	0,3	6,4	0,4	2,2	0,1	3,2	0,2	1,1	0,1	1,6	0,1	0,6	0,1
500	0,50	0,125	31,8	1,7	11,1	0,6	25,5	1,3	8,8	0,5	19,1	1,0	6,6	0,3	12,7	0,7	4,4	0,2	6,4	0,3	2,2	0,1	3,2	0,2	1,1	0,1	1,6	0,1	0,6	0,1
300	0,30	0,075	31,8	1,0	11,1	0,3	25,5	0,8	8,8	0,3	19,1	0,6	6,6	0,2	12,7	0,4	4,4	0,1	6,4	0,2	2,2	0,1	3,2	0,1	1,1	0,1	1,6	0,1	0,6	0,1
100	0,10	0,025	31,8	0,3	11,1	0,1	25,5	0,3	8,8	0,1	19,1	0,2	6,6	0,1	12,7	0,1	4,4	0,1	6,4	0,1	2,2	0,1	3,2	0,1	1,1	0,1	1,6	0,1	0,6	0,1
50	0,05	0,013	31,8	0,2	11,1	0,1	25,5	0,1	8,8	0,1	19,1	0,1	6,6	0,1	12,7	0,1	4,4	0,1	6,4	0,1	2,2	0,1	3,2	0,1	1,1	0,1	1,6	0,1	0,6	0,1

M 5 screw Tr 60x9

n [1/min]	Lifting speed [m/min.]		F=150 [kN]				F=100 [kN]				F=80 [kN]				F=60 [kN]				F=40 [kN]				F=20 [kN]				F=10 [kN]			
			N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW
1500	1,50	0,375	125,7	19,7	42,6	6,7	83,8	13,2	28,4	4,5	67,0	10,5	22,7	3,6	50,3	7,9	17,1	2,7	33,5	5,3	11,4	1,8	16,8	2,6	5,7	0,9	8,4	1,3	2,8	0,4
1000	1,00	0,250	125,7	13,2	42,6	4,5	83,8	8,8	28,4	3,0	67,0	7,0	22,7	2,4	50,3	5,3	17,1	1,8	33,5	3,5	11,4	1,2	16,8	1,8	5,7	0,6	8,4	0,9	2,8	0,3
750	0,75	0,188	125,7	9,9	42,6	3,3	83,8	6,6	28,4	2,2	67,0	5,3	22,7	1,8	50,3	3,9	17,1	1,3	33,5	2,6	11,4	0,9	16,8	1,3	5,7	0,4	8,4	0,7	2,8	0,2
600	0,60	0,150	125,7	7,9	42,6	2,7	83,8	5,3	28,4	1,8	67,0	4,2	22,7	1,4	50,3	3,2	17,1	1,1	33,5	2,1	11,4	0,7	16,8	1,1	5,7	0,4	8,4	0,5	2,8	0,2
500	0,50	0,125	125,7	6,6	42,6	2,2	83,8	4,4	28,4	1,5	67,0	3,5	22,7	1,2	50,3	2,6	17,1	0,9	33,5	1,8	11,4	0,6	16,8	0,9	5,7	0,3	8,4	0,4	2,8	0,1
300	0,30	0,075	125,7	3,9	42,6	1,3	83,8	2,6	28,4	0,9	67,0	2,1	22,7	0,7	50,3	1,6	17,1	0,5	33,5	1,1	11,4	0,4	16,8	0,5	5,7	0,2	8,4	0,3	2,8	0,1
100	0,10	0,025	125,7	1,3	42,6	0,4	83,8	0,9	28,4	0,3	67,0	0,7	22,7	0,2	50,3	0,5	17,1	0,2	33,5	0,4	11,4	0,1	16,8	0,2	5,7	0,1	8,4	0,1	2,8	0,1
50	0,05	0,013	125,7	0,7	42,6	0,2	83,8	0,4	28,4	0,1	67,0	0,4	22,7	0,1	50,3	0,3	17,1	0,1	33,5	0,2	11,4	0,1	16,8	0,1	5,7	0,1	8,4	0,1	2,8	0,1



M 6 screw Tr 80x10

n [1/min]	Lifting speed [m/min.]		F=250 [kN]				F=200 [kN]				F=150 [kN]				F=100 [kN]				F=80 [kN]				F=60 [kN]				F=40 [kN]			
			N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW
1500	1,50	0,375	209,4	32,9	71,1	11,2	167,5	26,3	56,8	8,9	125,7	19,7	42,6	6,7	83,8	13,2	28,4	4,5	67,0	10,5	22,7	3,6	50,3	7,9	17,1	2,7	33,5	5,3	11,4	1,8
1000	1,00	0,250	209,4	21,9	71,1	7,4	167,5	17,5	56,8	6,0	125,7	13,2	42,6	4,5	83,8	8,8	28,4	3,0	67,0	7,0	22,7	2,4	50,3	5,3	17,1	1,8	33,5	3,5	11,4	1,2
750	0,75	0,188	209,4	16,4	71,1	5,6	167,5	13,2	56,8	4,5	125,7	9,9	42,6	3,3	83,8	6,6	28,4	2,2	67,0	5,3	22,7	1,8	50,3	3,9	17,1	1,3	33,5	2,6	11,4	0,9
600	0,60	0,150	209,4	13,2	71,1	4,5	167,5	10,5	56,8	3,6	125,7	7,9	42,6	2,7	83,8	5,3	28,4	1,8	67,0	4,2	22,7	1,4	50,3	3,2	17,1	1,1	33,5	2,1	11,4	0,7
500	0,50	0,125	209,4	11,0	71,1	3,7	167,5	8,8	56,8	3,0	125,7	6,6	42,6	2,2	83,8	4,4	28,4	1,5	67,0	3,5	22,7	1,2	50,3	2,6	17,1	0,9	33,5	1,8	11,4	0,6
300	0,30	0,075	209,4	6,6	71,1	2,2	167,5	5,3	56,8	1,8	125,7	3,9	42,6	1,3	83,8	2,6	28,4	0,9	67,0	2,1	22,7	0,7	50,3	1,6	17,1	0,5	33,5	1,1	11,4	0,4
100	0,10	0,025	209,4	2,2	71,1	0,7	167,5	1,8	56,8	0,6	125,7	1,3	42,6	0,4	83,8	0,9	28,4	0,3	67,0	0,7	22,7	0,2	50,3	0,5	17,1	0,2	33,5	0,4	11,4	0,1
50	0,05	0,013	209,4	1,1	71,1	0,4	167,5	0,9	56,8	0,3	125,7	0,7	42,6	0,2	83,8	0,4	28,4	0,1	67,0	0,4	22,7	0,1	50,3	0,3	17,1	0,1	33,5	0,2	11,4	0,1

M 7 screw Tr 100x10

n [1/min]	Lifting speed [m/min.]		F=350 [kN]				F=300 [kN]				F=250 [kN]				F=200 [kN]				F=150 [kN]				F=100 [kN]				F=50 [kN]				
			N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	
1500																															
1000																															
750																															
600																															
500																															
300																															
100																															
50																															

M 8 screw Tr 120x14

n [1/min]	Lifting speed [m/min.]		F=500 [kN]				F=400 [kN]				F=300 [kN]				F=200 [kN]				F=150 [kN]				F=100 [kN]				F=50 [kN]				
			N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	N	L	Nm	kW	
1000																															
750																															
600																															
500																															
300																															
100																															
50																															

Duty type S3 20% - 60 min
 static only (dynamic not permitted)
 Duty type S3 10% - 60 min

Screw jacks

3.4 Technical information

HSE 80.1 screw Tr 60x12

n [t/min]	Lifting speed [m/min.]		F=100 [kN]				F=80 [kN]				F=60 [kN]				F=40 [kN]				F=20 [kN]				F=10 [kN]				F=5 [kN]			
			N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
3000	4,500	1,125	67,7	21,3	21,7	6,8	54,2	17,0	17,3	5,5	40,6	12,8	13,0	4,1	27,1	8,5	8,7	2,7	13,6	4,3	4,3	1,4	6,8	2,2	2,2	0,7	3,4	1,1	1,1	0,4
2500	3,750	0,938	68,0	17,8	21,9	5,8	54,4	14,3	17,5	4,6	40,8	10,7	13,2	3,5	27,2	7,1	8,8	2,3	13,6	3,6	4,4	1,2	6,8	1,8	2,2	0,6	3,4	0,9	1,1	0,3
2000	3,000	0,750	68,4	14,4	22,3	4,7	54,8	11,5	17,9	3,8	41,1	8,6	13,4	2,8	27,4	5,8	9,0	1,9	13,7	2,9	4,5	1,0	6,9	1,5	2,3	0,5	3,4	0,8	1,1	0,3
1500	2,250	0,563	69,2	10,9	23,0	3,6	55,4	8,7	18,4	2,9	41,6	6,5	13,8	2,2	27,7	4,4	9,2	1,5	13,9	2,2	4,6	0,8	6,9	1,1	2,3	0,4	3,5	0,6	1,2	0,2
1000	1,500	0,375	70,7	7,4	24,4	2,6	56,6	5,9	19,5	2,1	42,5	4,5	14,6	1,6	28,3	3,0	9,8	1,1	14,2	1,5	4,9	0,6	7,1	0,8	2,5	0,3	3,6	0,4	1,2	0,2
750	1,125	0,281	72,1	5,7	25,7	2,0	57,7	4,6	20,5	1,6	43,3	3,4	15,4	1,2	28,9	2,3	10,3	0,8	14,4	1,2	5,1	0,4	7,2	0,6	2,6	0,2	3,6	0,3	1,3	0,1
500	0,750	0,188	74,6	3,9	27,9	1,5	59,7	3,1	22,3	1,2	44,8	2,4	16,7	0,9	29,9	1,6	11,2	0,6	14,9	0,8	5,6	0,3	7,5	0,4	2,8	0,2	3,7	0,2	1,4	0,1
300	0,450	0,113	78,3	2,5	31,3	1,0	62,7	2,0	25,0	0,8	47,0	1,5	18,8	0,6	31,4	1,0	12,5	0,4	15,7	0,5	6,3	0,2	7,9	0,3	3,2	0,1	3,9	0,1	1,6	0,1
100	0,150	0,038	86,2	0,9	38,3	0,4	69,0	0,7	30,6	0,3	51,8	0,6	23,0	0,3	34,5	0,4	15,3	0,2	17,3	0,2	7,7	0,1	8,6	0,1	3,8	0,1	4,3	0,1	1,9	0,1
50	0,075	0,019	89,7	0,5	41,3	0,2	71,8	0,4	33,0	0,2	53,8	0,3	24,0	0,2	35,9	0,2	16,5	0,1	18,0	0,1	8,3	0,1	9,0	0,1	4,2	0,1	4,5	0,1	2,1	0,1

HSE 100.1 screw Tr 70x12

n [t/min]	Lifting speed [m/min.]		F=200 [kN]				F=160 [kN]				F=120 [kN]				F=100 [kN]				F=75 [kN]				F=50 [kN]				F=25 [kN]			
			N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
3000	4,500	1,125	148	46,4	45,9	14,4	118	37,1	36,7	11,6	88,6	27,9	27,6	8,7	73,9	23,2	23,0	7,2	55,4	17,4	17,2	5,4	37,0	11,6	11,5	3,6	18,5	5,8	5,8	1,8
2500	3,750	0,938	148	38,8	46,3	12,1	119	31,1	37,0	9,7	88,9	23,3	27,8	7,3	74,1	19,4	23,2	6,1	55,6	14,6	17,4	4,6	37,1	9,7	11,6	3,0	18,6	4,9	5,8	1,6
2000	3,000	0,750	149	31,2	46,9	9,9	119	25,0	37,5	7,9	89,3	18,7	28,1	5,9	74,4	15,6	23,5	4,9	55,8	11,7	17,6	3,7	37,2	7,8	11,7	2,5	18,6	3,9	5,9	1,3
1500	2,250	0,563	150	23,6	48,0	7,6	120	18,9	38,4	6,0	90,0	14,2	28,8	4,6	75,1	11,8	24,0	3,8	56,3	8,9	18,0	2,9	37,5	5,9	12,0	1,9	18,8	3,0	6,0	1,0
1000	1,500	0,375	153	16,0	50,3	5,3	122	12,8	40,2	4,2	91,6	9,6	30,2	3,2	76,3	8,0	25,2	2,7	57,3	6,0	18,9	2,0	38,2	4,0	12,6	1,3	19,1	2,0	6,3	0,7
750	1,125	0,281	155	12,2	52,6	4,2	124	9,8	42,1	3,3	93,1	7,3	31,6	2,5	77,6	6,1	26,3	2,1	58,2	4,6	19,7	1,6	38,8	3,1	13,2	1,0	19,4	1,6	6,6	0,6
500	0,750	0,188	160	8,4	56,9	3,0	128	6,7	45,5	2,4	96,0	5,1	34,2	1,8	80,0	4,2	28,5	1,5	60,0	3,2	21,4	1,1	40,0	2,1	14,2	0,8	20,0	1,1	7,1	0,4
300	0,450	0,113	168	5,3	63,9	2,0	134	4,2	51,2	1,6	101	3,2	38,4	1,2	83,9	2,7	32,0	1,0	62,9	2,0	24,0	0,8	42,0	1,4	16,0	0,5	21,0	0,7	8,0	0,3
100	0,150	0,038	187	2,0	80,8	0,9	150	1,6	64,6	0,7	112	1,2	48,5	0,6	93,3	1,0	40,4	0,5	70,0	0,8	30,3	0,4	46,7	0,5	20,2	0,2	23,4	0,3	10,1	0,2
50	0,075	0,019	196	1,1	88,9	0,5	157	0,8	71,1	0,4	118	0,6	53,4	0,3	98,0	0,6	44,5	0,3	73,5	0,4	33,4	0,2	49,0	0,3	22,2	0,2	24,5	0,2	11,1	0,2



HSE 125.1 screw Tr 100x16

n [t/min]	Lifting speed [m/min.]		F=350 [kN]				F=300 [kN]				F=250 [kN]				F=200 [kN]				F=150 [kN]				F=100 [kN]				F=50 [kN]			
			N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
3000	4,50	1,50	271	85	106	33	232	73	91	29	194	61	76	24	155	49	61	19	116	37	45	15	78	25	30	9,5	39	13	15	4,8
2500	3,75	1,25	272	71	106	28	233	61	91	24	194	51	76	20	155	41	61	16	117	31	46	12	78	21	30	8,0	39	11	15	4,0
2000	3,00	1,00	273	57	107	23	234	49	92	19	195	41	77	16	156	33	62	13	117	25	46	9,6	78	17	31	6,4	39	8,2	15	3,2
1500	2,25	0,75	275	43	109	17	236	37	93	15	196	31	78	13	157	25	62	9,8	118	19	47	7,4	79	13	31	4,9	39	6,2	16	2,5
1000	1,50	0,50	279	29	113	12	239	25	97	10	199	21	81	8,5	159	17	65	6,8	120	13	49	5,1	80	8,4	32	3,4	40	4,2	16	1,7
750	1,13	0,38	284	23	117	9,2	243	19	100	7,9	203	16	84	6,6	162	13	67	5,3	122	9,6	50	4,0	81	6,4	34	2,7	41	3,2	17	1,4
500	0,75	0,25	292	16	126	6,6	251	13	108	5,7	209	11	90	4,7	167	8,8	72	3,8	126	6,6	54	2,8	84	4,4	36	1,9	42	2,2	18	1,0
300	0,45	0,15	308	10	140	4,4	264	8,3	120	3,8	220	6,9	100	3,2	176	5,6	80	2,6	132	4,2	60	1,9	88	2,8	40	1,3	44	1,4	20	0,7
100	0,15	0,05	349	3,7	178	1,9	299	3,2	153	1,6	250	2,7	127	1,4	200	2,1	102	1,1	150	1,6	77	0,8	100	1,1	51	0,6	50	0,6	26	0,3
50	0,08	0,03	372	2,0	198	1,1	318	1,7	170	0,9	265	1,4	142	0,8	212	1,2	114	0,6	160	0,9	85	0,5	106	0,6	57	0,3	53	0,3	29	0,2

HSE 140 screw Tr 120x16

n [t/min]	Lifting speed [m/min.]		F=500 [kN]				F=400 [kN]				F=300 [kN]				F=250 [kN]				F=200 [kN]				F=150 [kN]				F=100 [kN]				
			N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	
3000																															
2500																															
2000																															
1500																															
1000																															
750																															
500																															
300																															
100																															
50																															

HSE 200.1 screw Tr 160x20

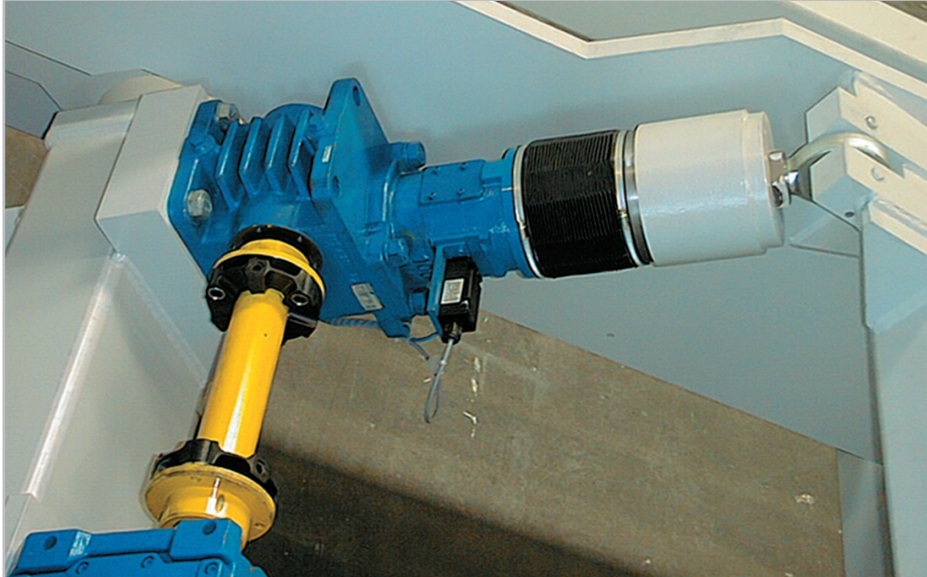
n [t/min]	Lifting speed [m/min.]		F=1000 [kN]				F=800 [kN]				F=600 [kN]				F=400 [kN]				F=200 [kN]				F=100 [kN]				F=50 [kN]			
			N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L	N	L
3000	4,50	1,50	905	284	342	108	724	228	274	86	543	171	205	65	362	114	137	43	181	57	69	22	91	29	34	11	46	15	17	5,4
2500	3,75	1,25	906	237	343	90	725	190	274	72	544	143	206	54	362	95	137	36	181	48	69	18	91	24	34	9,0	46	12	17	4,5
2000	3,00	1,00	907	190	344	72	726	152	275	58	545	114	207	44	363	76	138	29	182	38	69	15	91	19	35	7,2	46	10	17	3,6
1500	2,25	0,75	911	143	347	55	729	115	278	44	547	86	208	33	364	58	139	22	182	29	70	11	91	15	35	5,5	46	7,2	18	2,8

Screw jacks

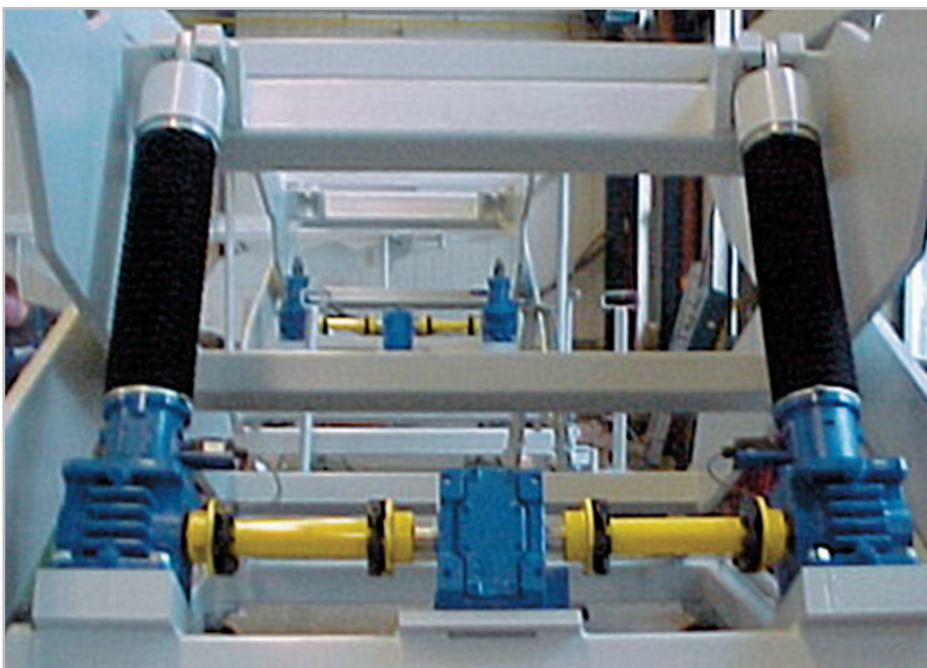
Application Examples

Scissors elevating platform in swivelling configuration.

3



HSE high performance worm gear screw jack, configuration type 1, synchronized as tandem via connecting shaft.



Screw jacks

3.4 Technical information

3.4.3.4 SHG range (Quick lifting screw jack)

Rotary speed, power requirement and permitted lifting speed for ratio 2:1 and 3:1 with single-start, **lifting (type 1) trapezoidal screw**. All performance data is expressed in terms of dynamic lifting capacity. With duty ratio of < 10 %/h or configuration with rotating screw (type 2), the maximum permitted drive capacities can be increased. In this case, please consult our screw jack specialists.

3

G 15 screw Tr 24x5

n [1/min]	Lifting speed [m/min.]		F=15 [kN]				F=12,5 [kN]				F=10 [kN]				F=7,5 [kN]				F=5 [kN]				F=2,5 [kN]				F=1 [kN]			
			2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1	
			Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	7,5	5	16	4,6	12	3,2	14	3,9	10	2,8	11	3,2	8	2,3	8,9	2,6	6,4	1,9	6,5	1,9	5	1,4	4,1	1,2	3,2	1	2,7	0,8	2,3	0,7
2250	5,6	3,75	16	3,5	12	2,4	14	3	10	2,1	11	2,4	8	1,8	8,9	1,9	6,4	1,4	6,5	1,4	5	1,1	4,1	0,9	3,2	0,7	2,7	0,6	2,3	0,5
1500	3,75	2,5	16	2,3	12	1,6	14	2	10	1,4	11	1,6	8	1,2	8,9	1,3	6,4	1	6,5	1	5	0,7	4,1	0,6	3,2	0,5	2,7	0,4	2,3	0,4
1000	2,5	1,67	16	1,6	12	1,1	14	1,3	10	1	11	1,1	8	0,8	8,9	0,9	6,4	0,7	6,5	0,7	5	0,5	4,1	0,4	3,2	0,4	2,7	0,3	2,3	0,3
750	1,88	1,25	16	1,2	12	0,8	14	1	10	0,7	11	0,8	8	0,6	8,9	0,7	6,4	0,5	6,5	0,5	5	0,4	4,1	0,3	3,2	0,3	2,7	0,2	2,3	0,2
500	1,25	0,83	16	0,8	12	0,6	14	0,7	10	0,5	11	0,6	8	0,4	8,9	0,5	6,4	0,3	6,5	0,4	5	0,3	4,1	0,2	3,2	0,2	2,7	0,2	2,3	0,1
250	0,63	0,42	16	0,4	12	0,3	14	0,4	10	0,3	11	0,3	8	0,2	8,9	0,3	6,4	0,2	6,5	0,2	5	0,2	4,1	0,1	3,2	0,1	2,7	0,1	2,3	0,1

G 25 screw Tr 35x8

n [1/min]	Lifting speed [m/min.]		F=25 [kN]				F=20 [kN]				F=15 [kN]				F=10 [kN]				F=5 [kN]				F=2,5 [kN]				F=1 [kN]			
			2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1	
			Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	12	8	40	13	28	8,6	33	10	23	7	25	7,8	18	5,6	18	5,5	13	3,9	10	3,2	8	2,4	7	2	6	1,6	5	1,3	4	1,1
2250	9	6	40	9,4	28	6,5	33	7,7	23	5,4	25	5,9	18	4,2	18	4,2	13	3	10	2,4	8	1,9	7	1,6	6	1,3	5	1	4	0,9
1500	6	4	40	6,3	28	4,4	33	5,2	23	3,6	25	4	18	2,8	18	2,8	13	2,1	10	1,7	8	1,3	7	1,1	6	0,9	5	0,7	4	0,7
1000	4	2,6	40	4,2	28	2,9	33	3,5	23	2,4	25	2,7	18	1,9	18	1,9	13	1,4	10	1,1	8	0,9	7	0,7	6	0,6	5	0,5	4	0,5
750	3	2	40	3	28	2,1	33	2,5	23	1,7	25	1,9	18	1,3	18	1,3	13	0,9	10	0,7	8	0,5	7	0,4	6	0,3	5	0,3	4	0,2
500	2	1,3	40	2	28	1,4	33	1,6	23	1,1	25	1,3	18	0,9	18	0,9	13	0,6	10	0,5	8	0,4	7	0,3	6	0,2	5	0,2	4	0,2
250	1	0,6	40	1,1	28	0,7	33	0,9	23	0,6	25	0,7	18	0,5	18	0,5	13	0,4	10	0,3	8	0,2	7	0,2	6	0,2	5	0,1	4	0,1

G 50 screw Tr 40x7

n [1/min]	Lifting speed [m/min.]		F=50 [kN]				F=30 [kN]				F=20 [kN]				F=15 [kN]				F=10 [kN]				F=5 [kN]				F=2,5 [kN]			
			2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1	
			Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	10,5	7	80	22	54	15	48	14	33	9,3	33	9,3	23	6,4	26	7,1	18	5	18	5	13	3,5	11	2,8	8	2,1	7	1,8	5,2	1,4
2250	7,9	5,25	80	16	54	11	48	10	33	7	33	7	23	4,8	26	5,4	18	3,7	18	3,7	13	2,7	11	2,1	8	1,6	7	1,3	5,2	1,1
1500	5,2	3,5	80	11	54	7,5	48	6,8	33	4,7	33	4,7	23	3,2	26	3,6	18	2,5	18	2,5	13	1,8	11	1,4	8	1,1	7	0,9	5,2	0,7
1000	3,5	2,3	80	7,5	54	5	48	4,6	33	3,1	33	3,1	23	2,2	26	2,4	18	1,7	18	1,7	13	1,2	11	1	8	0,7	7	0,6	5,2	0,5
750	2,6	1,75	80	5	54	3,8	48	3,4	33	2,3	33	2,4	23	1,6	26	1,8	18	1,3	18	1,3	13	0,9	11	0,7	8	0,6	7	0,5	5,2	0,4
500	1,75	1,17	80	3,8	54	2,5	48	2,3	33	1,6	33	1,6	23	1,1	26	1,2	18	0,9	18	0,9	13	0,6	11	0,5	8	0,4	7	0,3	5,2	0,3
250	0,87	0,58	80	1,9	54	1,4	48	1,2	33	0,8	33	0,8	23	0,6	26	0,6	18	0,5	18	0,5	13	0,3	11	0,3	8	0,2	7	0,2	5,2	0,2

G 90 screw Tr 60x9

n [1/min]	Lifting speed [m/min.]		F=90 [kN]				F=75 [kN]				F=50 [kN]				F=25 [kN]				F=10 [kN]				F=5 [kN]				F=2,5 [kN]			
			2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1		2:1		3:1	
			Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	13,5	9	207	58	140	39	174	49	118	33	119	33	81	22	63	17	44	12	30	7,6	22	5,5	19	4,5	14	3,4	14	2,9	10	2,4
2250	10,1	6,75	207	44	140	29	174	37	118	25	119	25	81	17	63	13	44	8,9	30	5,7	22	4,1	19	3,4	14	2,6	14	2,2	10	1,8
1500	6,75	4,5	207	29	140	20	174	24	118	16	119	16	81	11	63	8,5	44	5,9	30	3,8	22	2,8	19	2,3	14	1,7	14	1,5	10	1,2
1000	4,5	3	207	19	140	13	174	16	118	11	119	11	81	7,5	63	5,7	44	4	30	2,6	22	1,9	19	1,5	14	1,2	14	1	10	0,8
750	3,37	2,25	207	15	140	10	174	12	118	8,2	119	8,2	81	5,6	63	4,3	44	3	30	1,9	22	1,4	19	1,1	14	0,9	14	0,8	10	0,6
500	2,25	1,5	207	9,7	140	6,6	174	8,1	118	5,5	119	5,5	81	3,8	63	2,9	44	2	30	1,3	22	1	19	0,8	14	0,6	14	0,5	10	0,4
250	1,12	0,75	207	4,9	140	3,3	174	4,1	118	2,8	119	2,8	81	1,9	63	1,5	44	1	30	0,7	22	0,5	19	0,4	14	0,3	14	0,3	10	0,2

□ Duty type S3 20% - 60 min ■ static only (dynamic not permitted) ■ Duty type S3 10% - 60 min

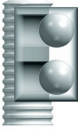
Screw jacks

3.4 Technical information

3.4.4 Performance tables (screw jacks with Ku ball screw)

3.4.4.1 HSE Ku range (High performance worm gear screw jack)

Rotary speed, power requirement and permitted lifting speed for **ratio „N“** with **lifting (type 1) ball screw**. All performance data is expressed in terms of dynamic lifting force with 20 % ED/h. Ball screws (Ku) with higher load capacity are possible with configuration type-2.



3

HSE 36.1 screw Ku 20x10; 20x5

n [1/min]	Lifting speed [m/min.]		F=10 [kN]				F=9 [kN]				F=8 [kN]				F=7 [kN]				F=6 [kN]				F=4 [kN]				F=2 [kN]			
	10	5	20x10		20x5		20x10		20x5		20x10		20x5		20x10		20x5		20x10		20x5		20x10		20x5		20x10		20x5	
Ku 20x			Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	6,0	3,0	4,2	1,3	2,1	0,7	3,8	1,2	1,9	0,6	3,4	1,1	1,7	0,5	2,9	0,9	1,5	0,5	2,5	0,8	1,3	0,4	1,7	0,5	0,8	0,3	0,8	0,3	0,1	0,1
2500	5	2,5	4,2	1,1	2,1	0,6	3,8	1	1,9	0,5	3,4	0,9	1,7	0,4	3	0,8	1,5	0,4	2,5	0,7	1,3	0,3	1,7	0,4	0,8	0,2	0,8	0,2	0,1	0,1
2000	4	2,0	4,3	0,9	2,1	0,4	3,8	0,8	1,9	0,4	3,4	0,7	1,7	0,3	3	0,6	1,5	0,3	2,6	0,5	1,3	0,3	1,7	0,4	0,9	0,2	0,9	0,2	0,1	0,1
1500	3	1,5	4,3	0,7	2,2	0,3	3,9	0,6	1,9	0,3	3,5	0,5	1,7	0,3	3	0,5	1,5	0,2	2,6	0,4	1,3	0,2	1,7	0,3	0,9	0,1	0,9	0,1	0,1	0,1
1000	2	1,0	4,4	0,5	2,2	0,2	4	0,4	2	0,2	3,5	0,4	1,8	0,2	3,1	0,3	1,5	0,2	2,7	0,3	1,3	0,1	1,8	0,2	0,9	0,1	0,9	0,1	0,2	0,1
750	1,5	0,75	4,5	0,4	2,2	0,2	4	0,3	2	0,2	3,6	0,3	1,8	0,1	3,1	0,2	1,6	0,1	2,7	0,2	1,3	0,1	1,8	0,1	0,9	0,1	0,9	0,1	0,2	0,1

HSE 50.1 screw Ku 32x10; 32x5

n [1/min]	Lifting speed [m/min.]		F=25 [kN]				F=22,5 [kN]				F=20,0 [kN]				F=17,5 [kN]				F=15 [kN]				F=10 [kN]				F=5 [kN]			
	10	5	32x10		32x5		32x10		32x5		32x10		32x5		32x10		32x5		32x10		32x5		32x10		32x5		32x10		32x5	
Ku 32x			Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	5,0	2,5	8,5	2,7	4,3	1,4	7,7	2,4	3,8	1,2	6,8	2,1	3,4	1,1	6	1,9	3	1	5,1	1,6	2,6	0,8	3,4	1,1	1,7	0,6	1,7	0,5	0,9	0,3
2500	4,2	2,1	8,6	2,2	4,3	1,1	7,7	2	3,9	1	6,9	1,8	3,4	0,9	6	1,6	3	0,8	5,2	1,3	2,6	0,7	3,4	0,9	1,7	0,5	1,7	0,4	0,9	0,2
2000	3,4	1,7	8,7	1,8	4,3	0,9	7,8	1,6	3,9	0,8	6,9	1,4	3,5	0,7	6,1	1,3	3	0,7	5,2	1,1	2,6	0,6	3,5	0,7	1,7	0,4	1,7	0,4	0,9	0,2
1500	2,4	1,2	8,8	1,4	4,4	0,7	7,9	1,2	3,9	0,6	7	1,1	3,5	0,6	6,1	1	3,1	0,5	5,3	0,8	2,6	0,4	3,5	0,6	1,8	0,3	1,8	0,3	0,9	0,2
1000	1,6	0,8	8,9	0,9	4,5	0,5	8	0,8	4	0,4	7,2	0,7	3,6	0,4	6,3	0,7	3,1	0,4	5,4	0,6	2,7	0,3	3,6	0,4	1,8	0,2	1,8	0,2	0,9	0,1
750	1,2	0,6	9,1	0,7	4,6	0,4	8,2	0,6	4,1	0,3	7,3	0,6	3,6	0,3	6,4	0,5	3,2	0,3	5,5	0,4	2,7	0,2	3,6	0,3	1,8	0,2	1,8	0,1	0,9	0,1

HSE 63.1 screw Ku 40x24; 40x10

n [1/min]	Lifting speed [m/min.]		F=50 [kN]				F=40 [kN]				F=30 [kN]				F=20 [kN]				F=10 [kN]				F=5 [kN]				F=2,5 [kN]			
	24	10	40x24		40x10		40x24		40x10		40x24		40x10		40x24		40x10		40x24		40x10		40x24		40x10		40x24		40x10	
Ku 40x			Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	10,3	4,3	35	11	14	4,6	28	8,7	12	3,7	21	6,5	8,7	2,7	14	4,4	5,8	1,8	6,9	2,2	2,9	0,9	3,5	1,1	1,4	0,5	1,7	0,5	0,7	0,3
2500	8,57	3,55	35	9,1	15	3,8	28	7,3	12	3,1	21	5,5	8,7	2,3	14	3,7	5,8	1,5	7	1,8	2,9	0,8	3,5	0,9	1,5	0,4	1,7	0,5	0,7	0,2
2000	6,86	2,85	35	7,4	15	3,1	28	5,9	12	2,5	21	4,4	8,8	1,9	14	2,9	5,9	1,3	7	1,5	2,9	0,6	3,5	0,7	1,5	0,3	1,8	0,4	0,7	0,2
1500	5,14	2,15	36	5,6	15	2,4	28	4,5	12	1,9	21	3,4	8,9	1,4	14	2,2	5,9	1	7,1	1,1	3	0,5	3,6	0,6	1,5	0,3	1,8	0,3	0,7	0,1
1000	3,43	1,45	36	3,8	15	1,6	29	3	12	1,3	22	2,3	9,1	1	15	1,5	6,1	0,7	7,3	0,8	3	0,3	3,6	0,4	1,5	0,2	1,8	0,2	0,8	0,1
750	2,57	1,05	37	2,9	15	1,2	30	2,3	12	1	22	1,7	9,3	0,8	15	1,2	6,2	0,5	7,4	0,6	3,1	0,3	3,7	0,3	1,5	0,1	1,9	0,1	0,8	0,1

HSE 80.1 screw Ku 50x24; 63x10

n [1/min]	Lifting speed [m/min.]		100 [kN]				80 [kN]				60 [kN]				40 [kN]				20 [kN]				10 [kN]				5 [kN]			
	24	10	50x24		63x10		50x24		63x10		50x24		63x10		50x24		63x10		50x24		63x10		50x24		63x10		50x24		63x10	
Ku 50/63			Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	9,0	3,7	60	19	25	7,9	48	15	20	6,3	36	11	15	4,7	24	7,5	10	3,1	12	3,8	5	1,6	6	1,9	2,5	0,8	3	0,9	1,3	0,4
2500	7,4	3,1	60	16	25	6,6	48	13	20	5,3	36	9,5	15	4	24	6,3	10	2,6	12	3,2	5	1,3	6	1,6	2,5	0,7	3	0,8	1,3	0,3
2000	6,0	2,5	61	13	25	5,3	48	10	20	4,2	36	7,6	15	3,2	24	5,1	10	2,1	12	2,5	5	1	6,1	1,3	2,5	0,5	3	0,6	1,3	0,3
1500	4,4	1,85	61	9,6	26	4	49	7,7	20	3,2	37	5,8	15	2,4	24	3,8	10	1,6	12	1,9	5,1	0,8	6,1	1	2,6	0,4	3,1	0,5	1,3	0,2
1000	3,0	1,25	62	6,5	26	2,7	50	5,2	21	2,2	37	3,9	16	1,6	25	2,6	10	1,1	12	1,3	5,2	0,5	6,2	0,7	2,6	0,3	3,1	0,3	1,3	0,1
750	2,3	0,95	64	5	27	2,1	51	4	21	1,7	38	3	16	1,3	25	2	11	0,8	13	1	5,3	0,4	6,4	0,5	2,7	0,2	3,2	0,2	1,3	0,1

HSE 100.1 screw Ku 63x20; 80x10

n [1/min]	Lifting speed [m/min.]		F=200 [kN]				F=160 [kN]				F=120 [kN]				F=100 [kN]				F=75 [kN]				F=50 [kN]				F=25 [kN]			
	20	10	63x20		80x10		63x20		80x10		63x20		80x10		63x20		80x10		63x20		80x10		63x20		80x10		63x20		80x10	
Ku 63/80			Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	7,5	3,75	98	31	49	15	79	25	39	12	59	19	29	9,3	49	15	25	7,7	37	12	18	5,8	25	7,7	12	3,9	12	3,9	6,1	2
2500	6,2	3,1	99	26	49	13	79	21	39	10	59	16	30	7,8	49	13	25	6,5	37	9,7	19	4,9	25	6,5	12	3,3	12	3,2	6,2	1,6
2000	5,0	2,5	99	21	50	10	79	17	40	8,3	59	13	30	6,3	50	10	25	5,2	37	7,8	19	3,9	25	5,2	12	2,6	12	2,6	6,2	1,3
1500	3,7	1,85	100	16	50	7,9	80	13	40	6,3	60	9,4	30	4,7	50	7,8	25	3,9	37	5,9	19	3	25	3,9	12	2	12	2	6,2	1
1000	2,5	1,25	101	11	51	5,3	81	8,5	41	4,3	61	6,4	30	3,2	51	5,3	25	2,7	38	4	19	2	25	2,7	13	1,4	13	1,3	6,3	0,7
750	1,9	0,95	103	8,1	51	4,1	82	6,5	41	3,3	62	4,9	31	2,5	51	4	26	2	39	3	19	1,5	26	2	13	1	13	1	6,4	0,5

- Service life > 500 hours
- static only (dynamic not permitted)</

Screw jacks

3.4 Technical information

3.4.4.2 SHG Ku range (Quick-lifting screw jack)

Rotary speed, power requirement and permitted lifting speed for ratio „N“ with **lifting (type 1) ball screw**. All performance data is expressed in terms of dynamic lifting force with 20 % ED/h. Ball screws (Ku) with higher load capacity are possible with configuration type 2.



G 15 screw Ku 25x5

n [1/min]	Lifting speed [m/min.]	F=15 [kN]		F=9,5 [kN]		F=7 [kN]		F=5 [kN]		F=3 [kN]		F=2 [kN]		F=1 [kN]	
		Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	7,5	11	3,1	8	2,2	6,2	1,8	5	1,5	4	1,2	3,3	1	2,7	0,8
2500	6,25	11	2,6	8	1,9	6,2	1,5	5	1,2	4	1	3,3	0,8	2,7	0,7
2000	5	11	2,1	8	1,5	6,2	1,2	5	1	4	0,8	3,3	0,7	2,7	0,6
1500	3,75	11	1,6	8	1,1	6,2	0,9	5	0,8	4	0,6	3,3	0,5	2,7	0,4
1000	2,5	11	1,1	8	0,8	6,2	0,6	5	0,5	4	0,4	3,3	0,4	2,7	0,3
750	1,87	11	0,8	8	0,6	6,2	0,5	5	0,4	4	0,3	3,3	0,3	2,7	0,2

G 25 screw Ku 25x10; 25x5

n [1/min]	Lifting speed [m/min.]	F=25 [kN]				F=20 [kN]				F=15 [kN]				F=10 [kN]				F=5 [kN]				F=2,5 [kN]				F=1 [kN]				
		25x10		25x5		25x10		25x5		25x10		25x5		25x10		25x5		25x10		25x5		25x10		25x5		25x10		25x5		
Ku	25x	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW			
3000	15,0	7,5	25	7,8	14	4,3	21	6,4	12	3,6	16	5	9,5	2,9	12	3,6	7	2,2	7	2,2	5	1,5	5	1,5	3,8	1,2	3,5	1,1	3,1	1
2500	12,5	6,25	25	6,5	14	3,6	21	5,4	12	3,1	16	4,2	9,5	2,5	12	3,1	7	1,9	7	1,9	5	1,3	5	1,3	3,8	1	3,5	1	3,1	0,9
2000	10	5	25	5,3	14	3	21	4,4	12	2,5	16	3,4	9,5	2	12	2,5	7	1,6	7	1,6	5	1,1	5	1,1	3,8	0,9	3,5	0,8	3,1	0,7
1500	7,5	3,75	25	4	14	2,2	21	3,3	12	1,9	16	2,6	9,5	1,5	12	1,9	7	1,2	7	1,2	5	0,8	5	0,8	3,8	0,7	3,5	0,6	3,1	0,6
1000	5	2,5	25	2,7	14	1,5	21	2,2	12	1,3	16	1,7	9,5	1	12	1,3	7	0,8	7	0,8	5	0,6	5	0,6	3,8	0,5	3,5	0,4	3,1	0,4
750	3,8	1,87	25	1,9	14	1	21	1,5	12	0,8	16	1,2	9,5	0,6	12	0,8	7	0,5	7	0,5	5	0,3	5	0,3	3,8	0,2	3,5	0,2	3,1	0,2

G 50 screw Ku 32x10; 40x5

n [1/min]	Lifting speed [m/min.]	F=40 [kN]				F=25 [kN]				F=20 [kN]				F=15 [kN]				F=10 [kN]				F=5 [kN]				F=2,5 [kN]				
		32x10		40x5		32x10		40x5		32x10		40x5		32x10		40x5		32x10		40x5		32x10		40x5		32x10		40x5		
Ku	32/40x	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW			
3000	15,0	7,5	48	14	26	7,2	31	8,9	17	4,8	25	7,2	14	3,9	20	5,6	14	3,1	14	3,9	9	2,3	8	2,3	5,6	1,5	5	1,5	4,1	1,1
2500	12,5	6,25	48	12	26	6	31	7,4	17	4	25	6	14	3,3	20	4,7	14	2,6	14	3,3	9	1,9	8	1,9	5,6	1,2	5	1,2	4,1	0,9
2000	10	5	48	9,2	26	4,8	31	5,8	17	3,2	25	4,8	14	2,6	20	3,7	14	2,1	14	2,6	9	1,5	8	1,6	5,6	1	5	1	4,1	0,7
1500	7,5	3,75	48	6,9	26	3,6	31	4,4	17	2,4	25	3,6	14	2	20	2,8	14	1,6	14	2	9	1,2	8	1,2	5,6	0,8	5	0,8	4,1	0,6
1000	5	2,5	48	4,6	26	2,4	31	3	17	1,6	25	2,4	14	1,3	20	1,9	14	1,1	14	1,3	9	0,8	8	0,8	5,6	0,5	5	0,5	4,1	0,4
750	3,8	1,87	48	3,5	26	1,8	31	2,3	17	1,2	25	1,9	14	1	20	1,4	14	0,8	14	1	9	0,6	8	0,6	5,6	0,4	5	0,4	4,1	0,3

G 90 screw Ku 63x10

n [1/min]	Lifting speed [m/min.]	F=90 [kN]		F=60 [kN]		F=40 [kN]		F=20 [kN]		F=15 [kN]		F=10 [kN]		F=5 [kN]	
		Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW	Nm	kW
3000	15	116	32	80	23	55	16	30	8,3	25	6,7	19	4,8	13	3,1
2500	12,5	116	28	80	19	55	13	30	7	25	5,5	19	4	13	2,6
2000	10	116	22	80	15	55	11	30	5,6	25	4,4	19	3,2	13	2
1500	7,5	116	17	80	12	55	8	30	4,2	25	3,3	19	2,4	13	1,5
1000	5	116	11	80	7,5	55	5,1	30	2,8	25	2,2	19	1,6	13	1
750	3,8	116	8,4	80	5,7	55	4	30	2,1	25	1,7	19	1,2	13	0,8

Service life > 500 hours
 static only (dynamic not permitted)
 Service life 100 to 500 hours

3.4 Technical information

3.4.5 Screw jack efficiency ratings „ η ”

$$\text{Formula: } \eta_{HE} = \eta_G \cdot \eta_{Sp}$$

3.4.5.1 SHE range

Overall efficiency ratings η_{HE} of SHE gears and trapezoidal screws with grease-lubrication

Size	0,5	1.1	2	3.1	5.1	15.1	20.1	25	35	50.1	75	100.1	150	200.1
η_{HE}	0,31	0,30	0,31	0,27	0,24	0,27	0,24	0,22	0,21	0,15	0,18	0,15	0,16	0,175
Size	0,5 L	1.1 L	2 L	3.1 L	5.1 L	15.1 L	20.1 L	25 L	35 L	50.1 L	75 L	100.1 L	150 L	200.1 L
η_{HE}	0,24	0,23	0,18	0,19	0,16	0,17	0,17	0,15	0,14	0,10	0,12	0,09	-	-

Gear efficiency ratings η_G of SHE gears with grease-lubrication (without screws)

Size	0,5	1.1	2	3.1	5.1	15.1	20.1	25	35	50.1	75	100.1	150	200.1
η_G	0,58	0,72	0,68	0,68	0,66	0,66	0,67	0,61	0,62	0,5	0,55	0,53	0,56	0,60
Size	0,5 L	1.1 L	2 L	3.1 L	5.1 L	15.1 L	20.1 L	25 L	35 L	50.1 L	75 L	100.1 L	150 L	200.1 L
η_G	0,45	0,55	0,41	0,47	0,43	0,42	0,47	0,41	0,42	0,34	0,35	0,32	-	-

3.4.5.2 MERKUR range

Overall efficiency ratings η_{HE} of MERKUR gears and trapezoidal screws with grease-lubrication

Size	M0	M1	M2	M3	M4	M5	M6	M7	M8
η_{HE}	0,34	0,30	0,28	0,27	0,25	0,19	0,19	0,15	0,15
Size	M0 L	M1 L	M2 L	M3 L	M4 L	M5 L	M6 L	M7 L	M8 L
η_{HE}	0,24	0,23	0,21	0,19	0,18	0,14	0,14	0,11	0,11

Gear efficiency ratings η_G of MERKUR gears with grease-lubrication (without screws)

Size	M0	M1	M2	M3	M4	M5	M6	M7	M8
η_G	0,68	0,71	0,70	0,69	0,69	0,57	0,64	0,61	0,57
Size	M0 L	M1 L	M2 L	M3 L	M4 L	M5 L	M6 L	M7 L	M8 L
η_G	0,47	0,54	0,51	0,48	0,49	0,42	0,47	0,45	0,42

Screw jacks

3.4 Technical information

3.4.5.3 HSE range

Overall efficiency ratings η_{HE} of HSE gears and trapezoidal screws

HSE n_1 [min ⁻¹]	32	36.1	50.1	63.1	80.1	100.1	125.1	140	200.1
3000	0,449	0,365	0,345	0,319	0,353	0,324	0,309		0,264
2500	0,446	0,362	0,343	0,317	0,352	0,323	0,308		0,264
2000	0,443	0,359	0,340	0,315	0,350	0,321	0,307		0,263
1500	0,437	0,355	0,336	0,311	0,346	0,319	0,305		0,262
1000	0,428	0,347	0,329	0,304	0,339	0,314	0,301	on	0,260
750	0,422	0,342	0,323	0,299	0,333	0,309	0,296	request	0,258
600	0,417	0,337	0,319	0,294	0,328	0,305	0,292		0,256
500	0,413	0,334	0,315	0,290	0,323	0,301	0,288		0,253
300	0,403	0,325	0,305	0,278	0,309	0,288	0,275		0,243
100	0,389	0,313	0,289	0,258	0,282	0,261	0,244		0,215
50	0,383	0,309	0,283	0,251	0,272	0,249	0,230		0,199
HSE n_1 [min ⁻¹]	32 L	36.1 L	50.1 L	63.1 L	80.1 L	100.1 L	125.1 L	140 L	200.1 L
3000	0,341	0,280	0,272	0,247	0,277	0,261	0,265		0,233
2500	0,334	0,275	0,267	0,243	0,274	0,259	0,263		0,233
2000	0,327	0,269	0,262	0,239	0,270	0,256	0,261		0,232
1500	0,317	0,260	0,254	0,232	0,262	0,250	0,257		0,230
1000	0,302	0,246	0,240	0,219	0,248	0,240	0,249	on	0,225
750	0,290	0,237	0,229	0,208	0,237	0,230	0,240	request	0,221
600	0,282	0,230	0,221	0,200	0,227	0,221	0,233		0,216
500	0,275	0,224	0,215	0,193	0,219	0,214	0,225		0,211
300	0,261	0,212	0,200	0,176	0,197	0,191	0,204		0,193
100	0,241	0,195	0,178	0,151	0,162	0,153	0,162		0,149
50	0,236	0,190	0,172	0,143	0,151	0,140	0,146		0,130

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Gear efficiency ratings η_G of HSE gears (without screws)

HSE n_1 [min ⁻¹]	32	36.1	50.1	63.1	80.1	100.1	125.1	140	200.1
3000	0,833	0,842	0,864	0,874	0,884	0,900	0,901		0,922
2500	0,827	0,835	0,858	0,868	0,880	0,896	0,898		0,920
2000	0,821	0,828	0,852	0,863	0,877	0,892	0,895		0,918
1500	0,810	0,819	0,842	0,852	0,867	0,886	0,889		0,915
1000	0,793	0,801	0,824	0,833	0,849	0,872	0,878	on	0,908
750	0,782	0,789	0,809	0,819	0,834	0,859	0,863	request	0,901
600	0,772	0,778	0,799	0,805	0,821	0,847	0,851		0,894
500	0,765	0,771	0,789	0,794	0,809	0,836	0,840		0,883
300	0,747	0,750	0,764	0,762	0,774	0,800	0,802		0,849
100	0,721	0,722	0,724	0,707	0,706	0,725	0,711		0,751
50	0,711	0,713	0,709	0,688	0,681	0,692	0,671		0,695
HSE n_1 [min ⁻¹]	32 L	36.1 L	50.1 L	63.1 L	80.1 L	100.1 L	125.1 L	140 L	200.1 L
3000	0,632	0,646	0,681	0,677	0,694	0,725	0,773		0,814
2500	0,619	0,633	0,669	0,666	0,686	0,718	0,767		0,812
2000	0,606	0,621	0,656	0,655	0,676	0,711	0,761		0,810
1500	0,587	0,600	0,636	0,636	0,656	0,695	0,749		0,803
1000	0,559	0,568	0,601	0,600	0,621	0,667	0,726	on	0,786
750	0,538	0,547	0,574	0,570	0,594	0,639	0,700	request	0,772
600	0,522	0,531	0,553	0,548	0,569	0,614	0,679		0,754
500	0,510	0,517	0,538	0,529	0,548	0,595	0,656		0,737
300	0,484	0,489	0,501	0,482	0,493	0,531	0,595		0,674
100	0,447	0,450	0,446	0,414	0,406	0,425	0,472		0,520
50	0,438	0,438	0,431	0,392	0,378	0,389	0,426		0,454

Screw jacks

3.4 Technical information

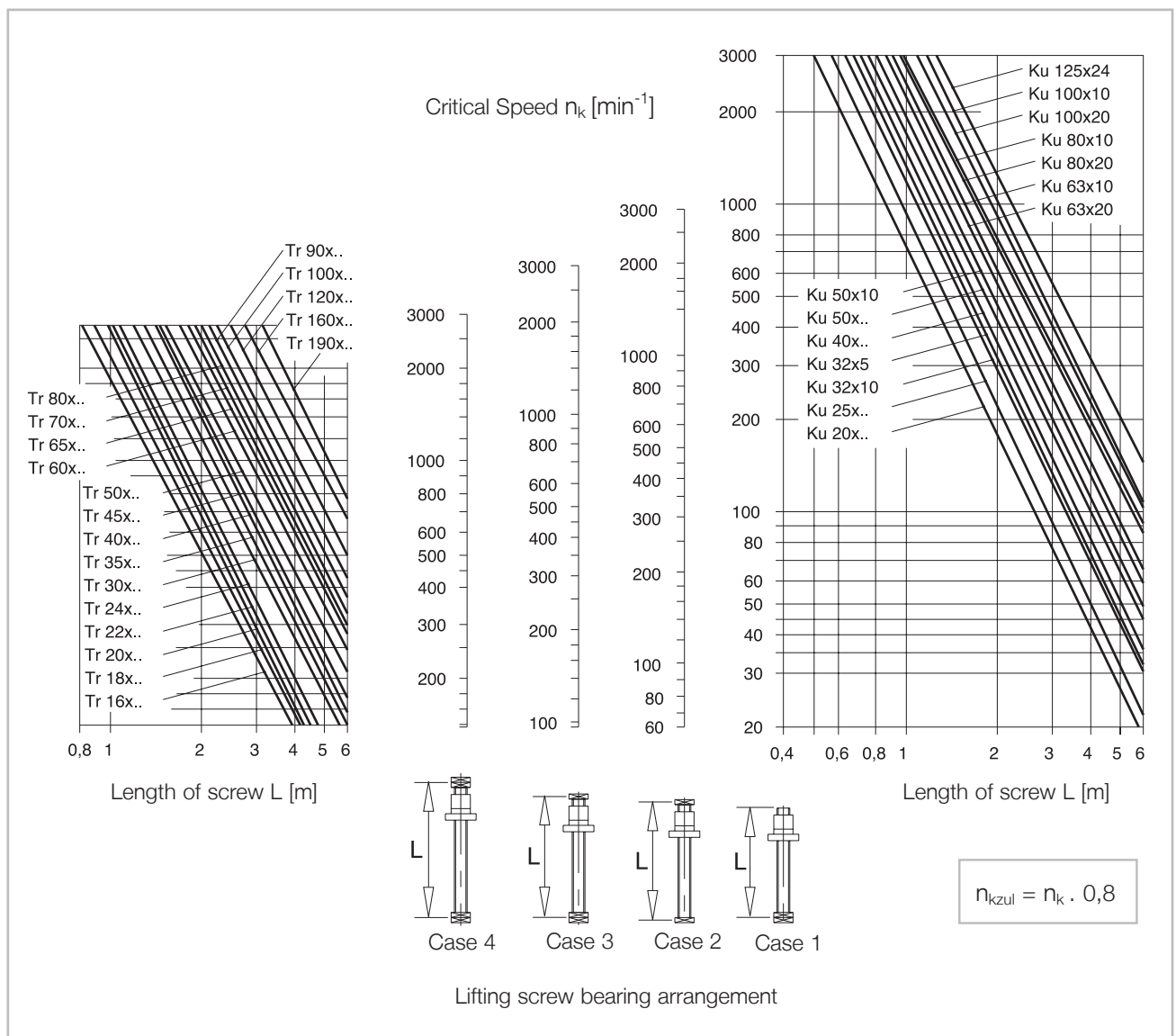
3.4.5.4 Screw efficiency ratings η_{sp} (steel/bronze; lubricated)

Tr screw	14x4	18x6	18x4	20x4	22x5	24x5	26x6,28	30x6	35x8	40x7
Screw efficiency rating [%]	49	54	42,5	40	43	41	45	40	43	36,5
Tr screw	40x8	50x9	58x12	60x9	60x12	65x12	70x10	70x12	80x10	90x16
Screw efficiency rating [%]	40	37	40,5	32,5	39,5	37,5	31,6	35,5	29	36,5
Tr screw	100x10	100x16	120x14	120x16	140x20	160x20	190x24	220x28		
Screw efficiency rating [%]	24	34	28	30	31,6	28,5	28,8	29		

3

3.4.6 Critical screw turning speed

The critical speed (only configuration type 2) is dependent on the screw diameter, the screw length and the screw bearing arrangement (see case 1-4).



Screw jacks

3.4 Technical information

3.4.7 Ball screw (Ku)

Standard dimensions and load ratings for configuration type 1. Other leads and load ratings on request. Reinforced screws with other leads and higher load ratings can be used with configuration type 2.



SHE range

Size	Ku screw	C _{dyn} [kN]	C _{stat} [kN]
3.1	25 x 05	24,1	49,9
	25 x 10	14,8	27,2
5.1	32 x 05	27,0	75,1
	32 x 10	16,6	42,4
15.1	50 x 10	111,5	326,8
	50 x 24	44,2	72,9
20.1	50 x 10	111,5	326,8
	50 x 24	44,2	72,9
25	80 x 10	134,6	575,4
	63 x 20	92,1	288,8
35	100 x 10	145,9	735,5
	80 x 20	145,9	735,5
50.1	125 x 10	157,6	931,5
	100 x 20	on request	on request
75	on request	on request	on request
100.1	160 x 20	172,9	1216
	125 x 24	328,1	1601

MERKUR range

Size	Ku screw	C _{dyn} [kN]	C _{stat} [kN]
M0	-	-	-
M1	16 x 05	9,3	12,7
	16 x 10	10,9	8,3
M2	16 x 20	10,2	14,2
	20 x 05	10,5	17,0
M3	25 x 05	12,1	22,4
	25 x 10	17,4	42,9
	25 x 25	16,7	32,6
M4	40 x 05	23,8	63,5
	40 x 10	35,9	70,0
	40 x 20	39,6	87,5
M5	50 x 10	65,1	153,0
M6		on request	
M7		on request	
M8		on request	

3

$$\eta_{Sp} \approx 0,9$$

HSE range

Size	Ku screw	C _{dyn} [kN]	C _{stat} [kN]
36.1	20 x 05	19,3	23,1
	20 x 10	11,19	14,5
50.1	32 x 05	27,0	75,1
	32 x 10	27,0	75,1
63.1	40 x 10	78,7	170,5
	40 x 24	48,4	85,2
80.1	63 x 10	136	511
	50 x 24	158	247,3
100.1	80 x 10	134,6	575,4
	63 x 20	92,1	288,8
125.1	100 x 20	304,4	1041
	80 x 20	280,5	798,3
140	on request	on request	on request
200.1	160 x 20	172,9	1216
	125 x 24	328,1	1601

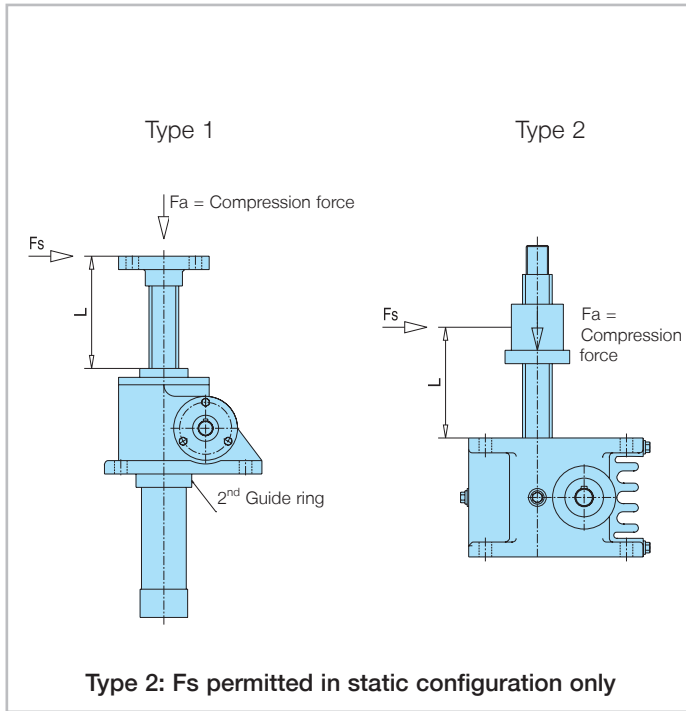
SHG range

Size	Ku screw	C _{dyn} [kN]	C _{stat} [kN]
G15	20 x 20	13,2	19,1
	25 x 05	12,1	19,0
G25	25 x 05	9,5	19,0
	25 x 10	16,5	42,9
G50	32 x 10	30,6	56,0
	32 x 20	27,1	65,0
	32 x 40	15,2	33,5
	40 x 05	23,8	63,5
G90	63 x 10	73,8	200,0

You will find further Ku ball screws in our catalogue „Linear Motion Precision Screws“. Please ask for a copy!

3.4 Technical information

3

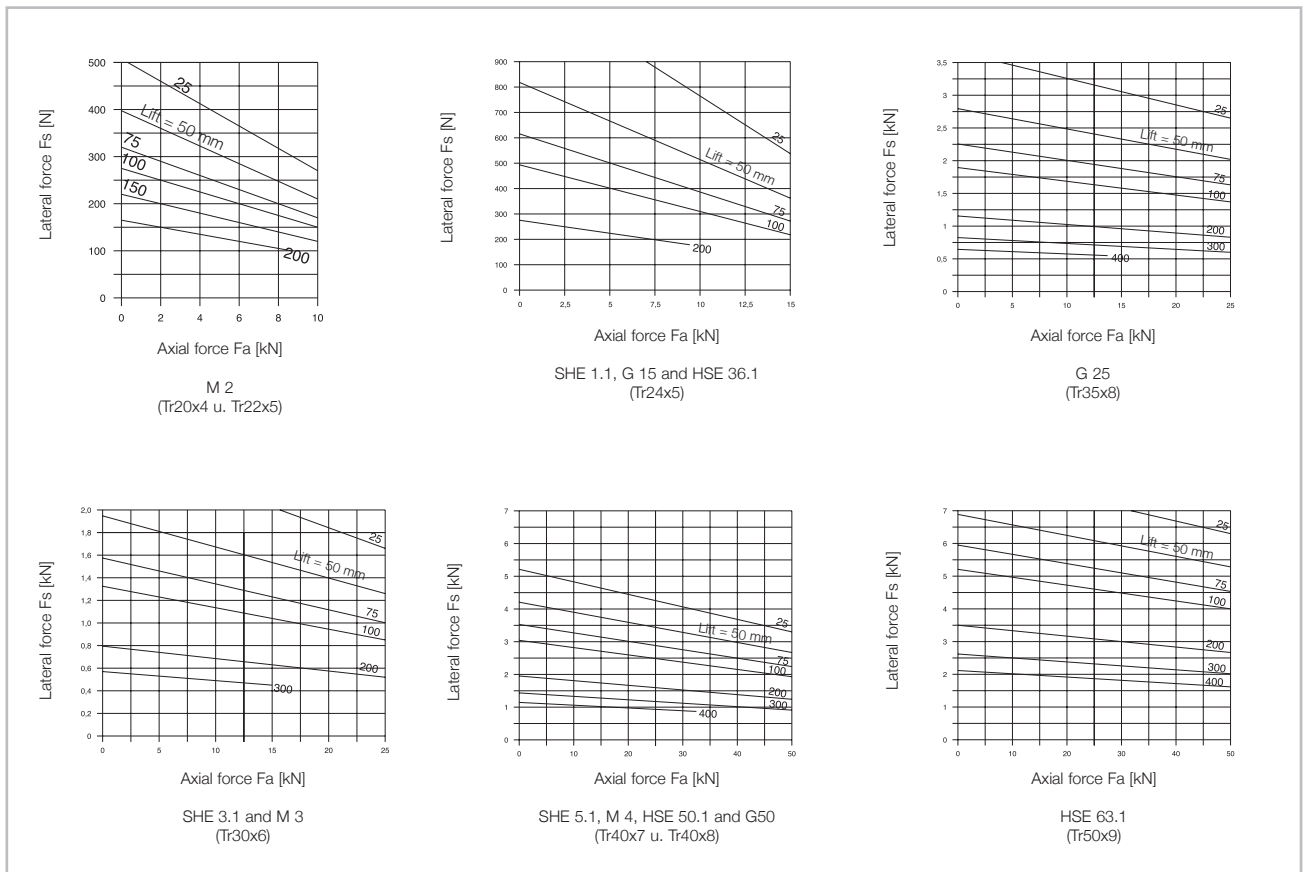


3.4.8 Permitted lateral force on screw

The permitted lateral force (F_s) on the screw depends on the axial force (F_a), the diameter of the screw (d) and the length of the screw (L). As compression and buckling force exercise negative influence, these factors were taken into account when determining this permitted lateral force (F_s). The maximum length of the screw (L) is limited by the value generally used in mechanical engineering applications: "unguided screw length = 4x clamping length".

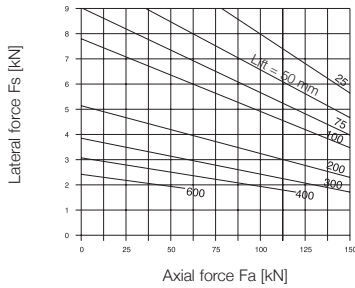
Lateral force on the screw is only permitted on screw jacks fitted with two guide rings.

Lateral forces on screws or travelling nuts exercise a reinforced edge compression on the movement thread, leading to increased wear and a shortened service life.

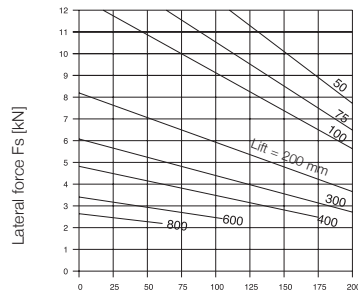


Screw jacks

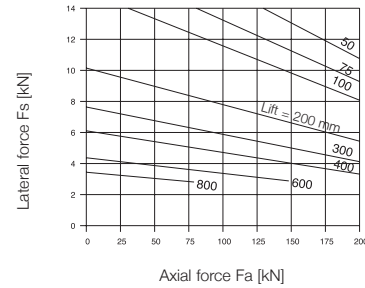
3.4 Technical information



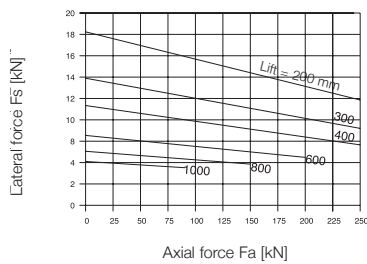
SHE 15.1 and HSE 80.1
(Tr60x12)



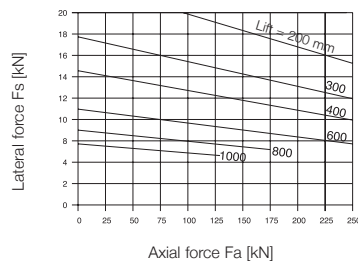
M 5 and G 90
(Tr65x12 and Tr60x9)



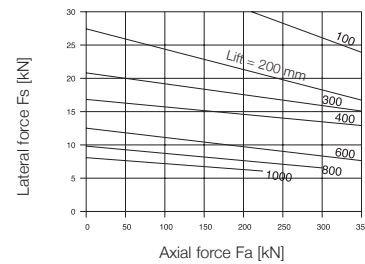
SHE 20.1 and HSE 100.1
(Tr70x12)



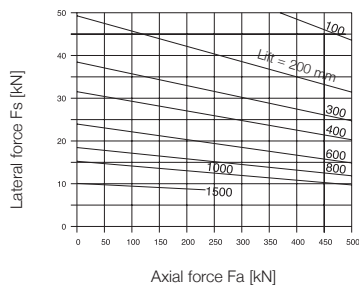
M 6 (Tr80x10)



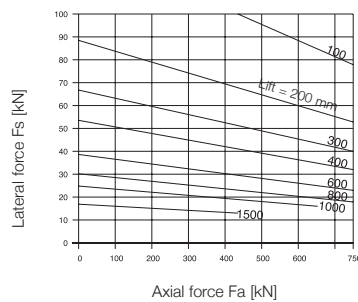
SHE 25 (Tr90x16)



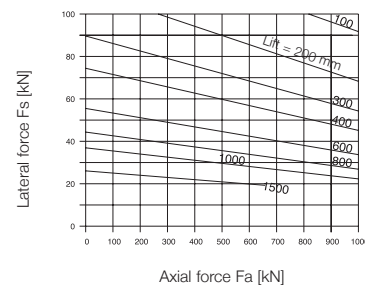
SHE 35, M 7 and HSE 125.1
(Tr100x16 and Tr100x10)



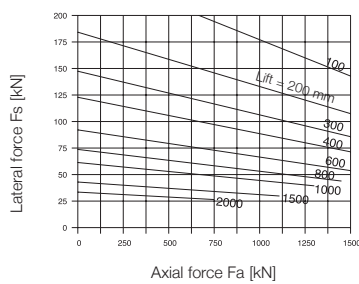
SHE 50.1 and M 8
(Tr120x16 and Tr120x14)



SHE 75
(Tr140x20)



SHE 100.1 and HSE 200.1
(Tr160x20)



SHE 150
(Tr190x24)

3.4 Technical information

3.4.9 Permitted radial force on drive system

Toothed and/or chain wheels along with pulley wheels take effect on radial forces on the drive shaft of the worm gear screw jacks. The maximum permitted value depends on the lifting force and size of the screw jack.

The table is calculated for $\varphi \sim 30^\circ$ or 330° . This is the least-favorable bearing with respect to application of the lifting force and turning direction.

Permitted radial force (Fr) on application of force in 1/2

Minimum diameter (D) for toothed wheel or pulleys:

$$D_{\min} = 19100 \frac{P}{Fr_{\max} \times n} = \frac{2 T_A}{Fr_{\max}} \quad (\text{m})$$

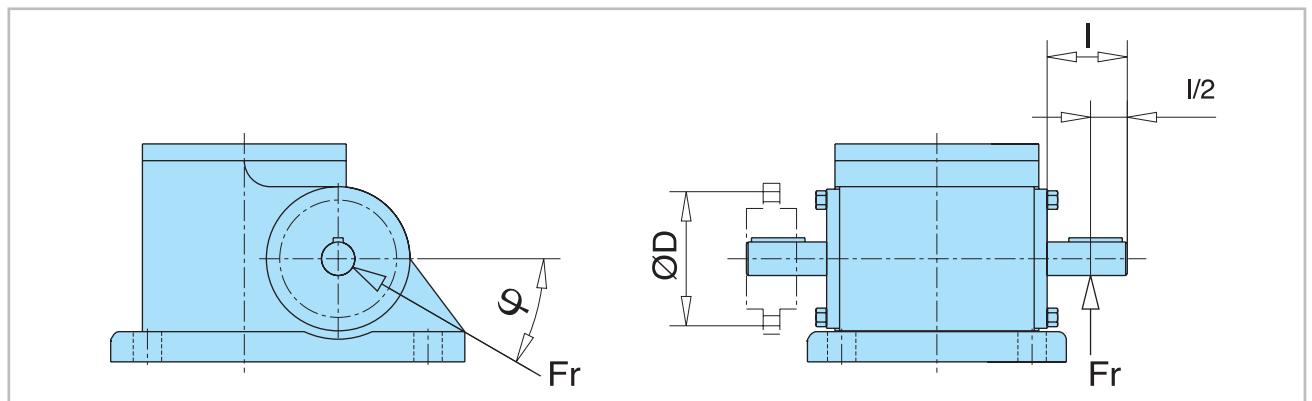
P (kW) = power rating

Fr max (N) = max. radial force (according to table)

n (min⁻¹) = turning speed of drive-shaft

T_A (Nm) = driving torque

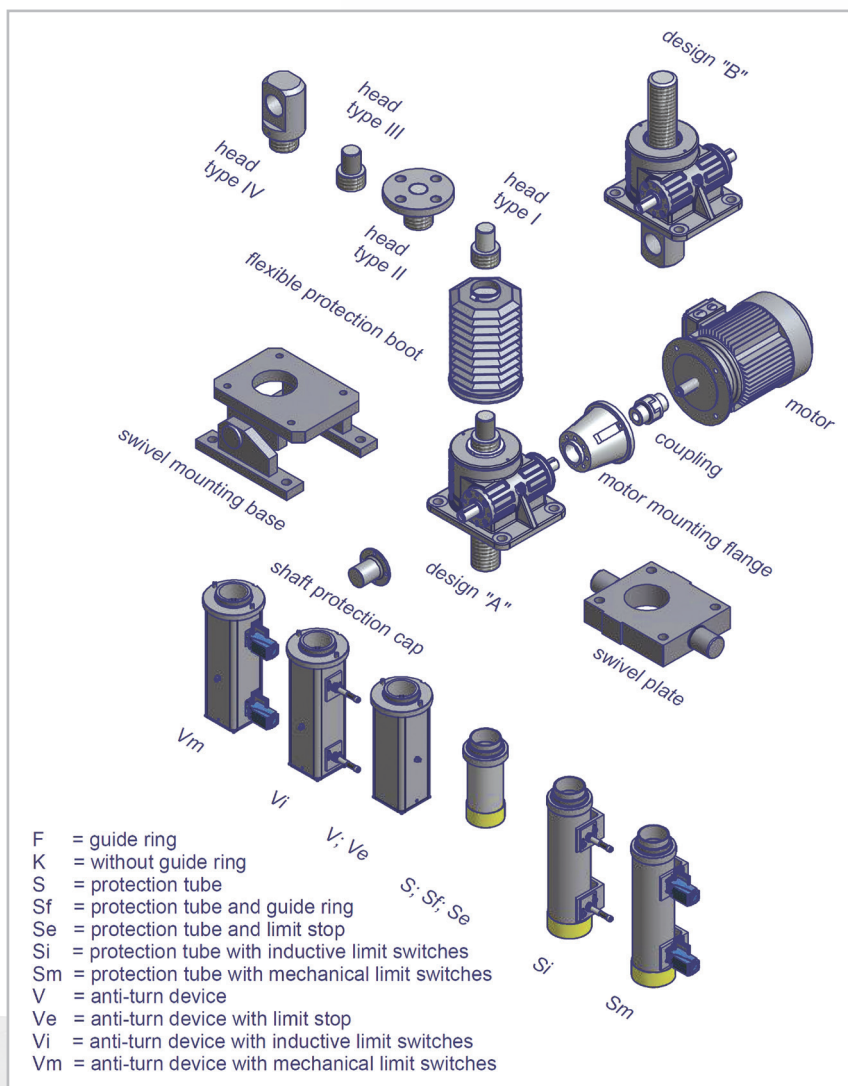
	Fr max (N)	at T _A max (Nm)
SHE range		
0,5 / 0,5 L	250	1,9
1.1 / 1.1 L	350	5,7
2 / 2 L	300	13
3.1 / 3.1 L	350	18
5.1 / 5.1 L	750	44,2
15.1 / 15.1 L	1000	108
20.1 / 20.1 L	1300	182
25 / 25 L	2000	314
35 / 35 L	2300	398
50.1 / 50.1 L	2400	796
100.1 / 100.1 L	5100	1415
150	6300	2011
HSE range		
32 / 32 L	200	2,7
36.1 / 36.1 L	350	5,3
50.1 / 50.1 L	400	14,5
63.1 / 63.1 L	900	32,4
80.1 / 80.1 L	1500	89,7
100.1 / 100.1 L	2000	196
125.1 / 125.1 L	2400	372
140 / 140 L	on request	on request
200.1 / 200.1 L	6300	1223
MERKUR range		
M 0	70	1,5
M 1	100	3,4
M 2	200	7,1
M 3	300	18
M 4	500	38
M 5	800	93
M 6	1300	240
M 7	2100	340
M 8	3100	570
SHG range		
G 15	300	15
G 25	800	40
G 50	1200	97
G 90	1800	199



Screw jacks

Contents

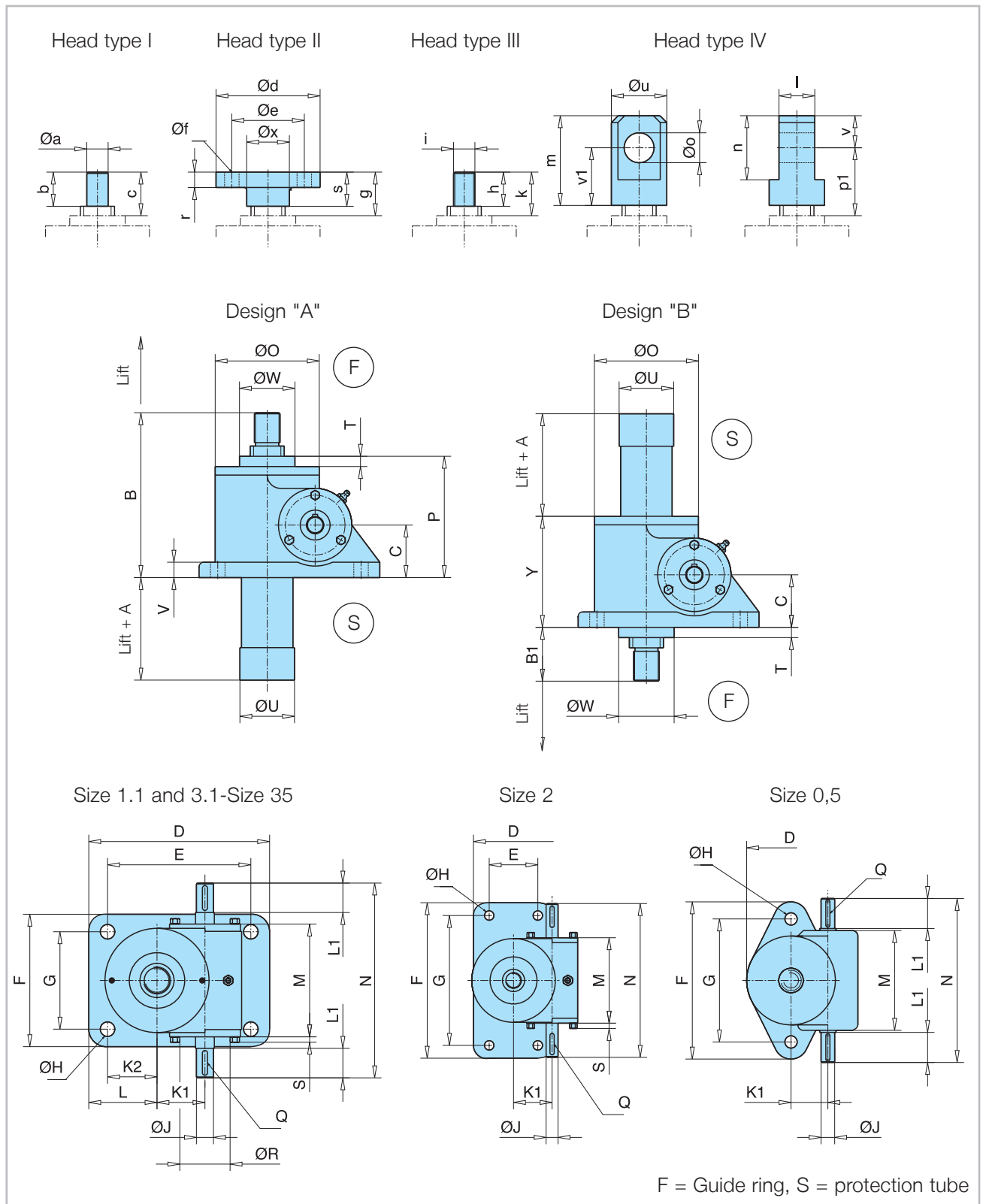
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3.5 SHE range dimension plans

3.5.1 Configuration type 1

3.5.1.1 Standard



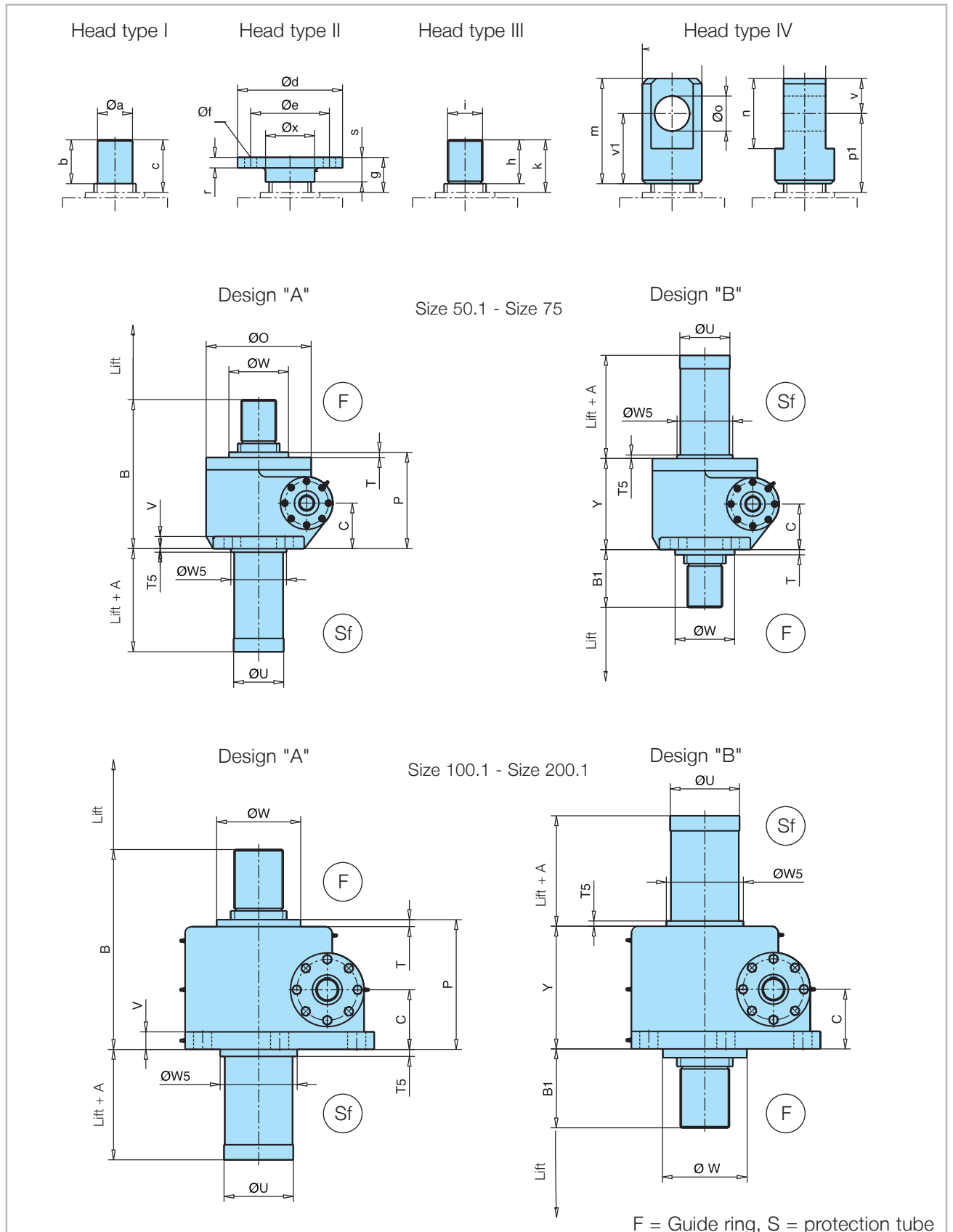
Screw jacks

Size	0,5	1.1	2	3.1	5.1	15.1	20.1	25	35
Screw	Tr 18x6	Tr 24x5	Tr 26x6,28	Tr 30x6	Tr 40x7	Tr 60x12	Tr 70x12	Tr 90x16	Tr 100x16
A	20	20	20	20	20	20	20	20	20
B	105,5	124	147,5	150,5	193	230	256	317	350
B1	35,5	54	54,5	53,5	63	80	80	100	110
C	32	35	44	45	61,5	70	87	102	115
D	81,5	150	94	165	212	235	295	350	430
E	-	130	57	135	168	190	240	280	360
F	115	100	182	120	155	200	215	260	280
G	90	80	152	90	114	155	160	190	210
Ø H	9	9	11	14	17	21	28	35	35
Ø J k6	10	14	14	16	20	25	28	34	38
K 1	27	36	45,2	45,2	56,2	66,8	72,5	97	120
K 2	-	58	28,5	50	58	63,5	95	95	135
L	32,5	68	47	65	80	86	122,5	130	170
L 1	22	18	-	-	-	47	52	60	80
M	73	100	100	110,5	132	185	213,5	221	265
N	120	140	180	190	228	280	322	355	430
Ø O	65	88	98	98	122	150	185	205	260
P	75,5	79	101,5	105,5	142	156	182	225	250
Q	3x3x20	5x5x16	5x5x25	5x5x32	6x6x32	8x7x40	8x7x45	10x8x50	10x8x70
Ø R	-	-	41	38	55	-	72	80	100
S	-	-	6	5,5	6	-	6	10	10
T	5,5	9	8,5	8,5	12	6,5	6	8	10
V	10	13	14	12	18	16	20	25	30
Ø W	36	52 ¹⁾	48	48	65	80	100	130	150
Ø U	29	40	49	49	64	81	88	120	139
Y	70	79	93	97	130	150	176	217	240
Head type I									
Ø a k6	18h9	15	18	20	25	40	50	70	80
b	20	24	30	30	40	50	54	63	80
c	30	45	46	45	51	74	74	92	100
Head type II									
Ø d	65	72	98	98	122	150	185	205	260
Ø e	45	50	75	75	85	105	140	155	200
Ø f	4xø7	4xø9	4xø11	4xø14	4xø17	4xø21	4xø26	4xø27	4xø33
r	8	10	12	12	18	20	20	25	30
s	20	25	30	30	40	50	54	63	80
Ø x	18	30	40	40	50	65	90	100	130
g	30	45	46	45	51	74	74	92	100
Head type III									
h	15	24	30	30	39	50	54	63	80
i	M 18x1,5	M 16x1,5	M 18x1,5	M 22x1,5	M 30x2	M 40x3	M 56x3	M 70x3	M 80x3
k	30	45	46	45	51	74	74	92	100
Head type IV									
l - 0,2	20	25	30	30	42	60	75	90	105
m	50	60	70	70	105	130	150	175	220
n	30	40	50	50	75	100	120	140	160
Ø o H8	15	20	20	25	35	50	60	70	80
p1	50	60	61	60	79	104	110	134	160
ø u	30	40	48	50	65	90	110	130	150
v1	35	40	45	45	67,5	80	90	105	140
v	15	20	25	25	37,5	50	60	70	80

¹⁾ only design B

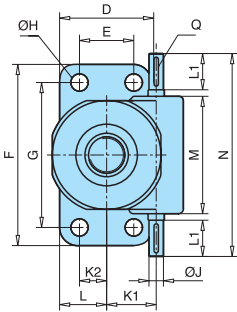
3.5 SHE range dimension plans

3

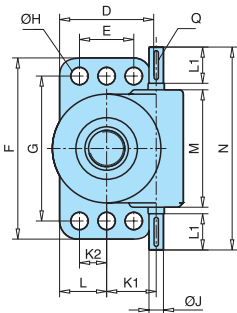


Screw jacks

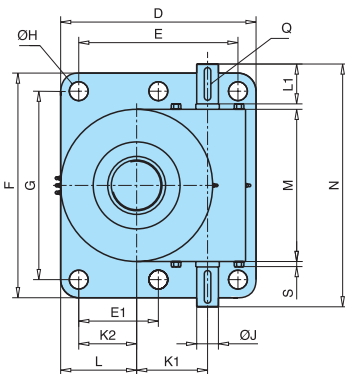
Size 50.1



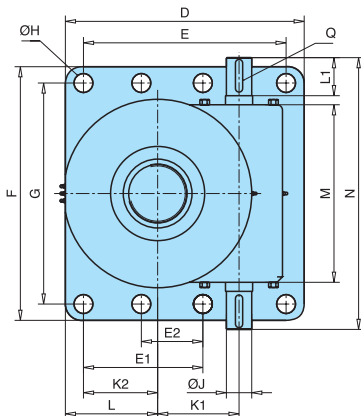
Size 75



Size 100.1



Size 150 and 200.1



Size	50.1	75	100.1	150	200.1
Screw	Tr 120x16	Tr140x20	Tr 160x20	Tr 190x24	Tr220x28
A	20	80	65	80	
B	425	485	570	675	
B1	165	175	220	230	
C	130	155	170	194	
D	260	330	540	660	
E	150	225	440	560	
E1	-	-	220	330	
E2	-	-	-	170	
F	500	540	620	700	
G	400	455	520	610	
Ø H	4xØ48	6xØ45	6xØ52	8xØ52	
Ø J	40k6	60 m6	60 m6	70 m6	
K 1	137	160	196	225	
K 2	75	112,5	160	210	
L	130	165	210	255	
L 1	100	110	110	110	
M	324	360	420	490	
N	560	600	670	710	
Ø O	290	375	420	510	
P	275	335	355	445	
Q	12x8x80	18x11x100	18x11x90	20x12x90	
S	-	-	14	-	
T	15	25	15	20	
T5	10	25	20	20	
V	35	40	50	60	
Ø W	170	265	182	300	on request
Ø W5	170	265	220	245	
Ø U	143	220	198	220	
Y	260	310	350	424	
Head type I					
Ø a k6	100	110	140	160	
b	125	125	175	200	
c	150	150	200	230	
Head type II					
Ø d	300	370	370	400	
Ø e	225	270	280	310	
Ø f	4xØ35	6xØ45	6xØ52	8xØ52	
r	30	75	75	90	
s	70	125	125	150	
Ø x	140	200	200	220	
g	100	150	150	180	
Head type III					
h	125	125	175	200	
i	M 100x5	M 120x6	M 140x6	M 160x6	
k	150	150	200	230	
Head type IV					
l	120-0,2	140-0,2	160-0,3	180-0,3	
m	300	360	360	400	
n	200	240	280	320	
Ø o H8	100	120	140	160	
p1	225	265	245	270	
Ø u	170	200	220	260	
v1	200	240	220	240	
v	100	120	140	160	

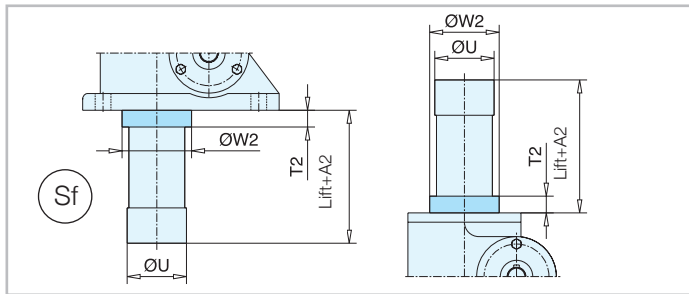
Screw jacks

3.5 SHE range dimension plans

3.5.1.2 2nd Guide ring Sf



If no guides can be fitted on site and restoring forces produced by swivelling motion or lateral forces cannot be ruled out the SHE unit should be fitted with a 2nd guide ring.

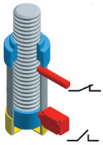


Size	A2	T2	ØW2	ØU
0,5	32	11,5	36	29
1.1	32	9	52 ¹⁾	40
2	44	20	60	49
3.1	40	20	60	49
5.1	43	18	75	64
15.1	42	18	95	81
20.1	55	31	100	88
25	65	40	130	120
35	60	40	150	139
50.1	Standard design with 2 nd guide ring			143
75				220
100.1				198
150				220
200.1				

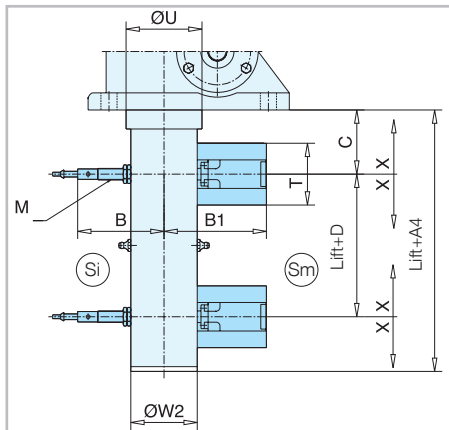
¹⁾ only design A

3

3.5.1.3 With added-on limit switches Sm/Si



All sizes can be supplied with mechanical or inductive limit switches.

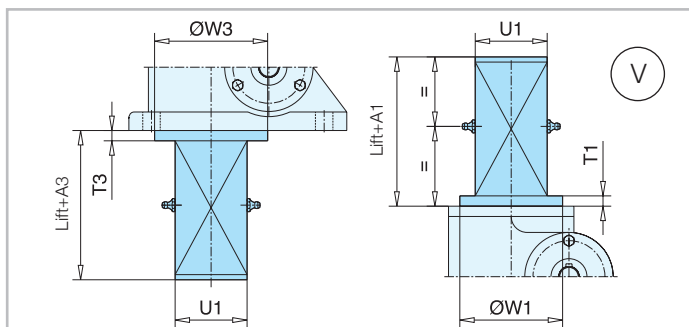


Size	A4	B	B1	C	D	T	M	ØU	ØW2	X
1.1	on request									
2	160	92	100	60	20	58	12x1	60	44,5	±10
3.1	170	100	106	65	25	58	12x1	75	60,3	±10
5.1	175	107	115	70	25	58	12x1	95	76,1	±10
15.1	185	114	122	75	30	58	12x1	110	88,9	±10
20.1	195	131	130	80	40	58	12x1	125	114,3	±10
25	225	141	137	90	50	65	18x1	150	133	±10
35	on request									
50.1	on request									
75	204	171	178	75	70	58	18x1	265	219,1	±10
100.1; 150; 200.1; on request										

3.5.1.4 Anti-turn device V



The screw must be prevented from twisting in order to ensure correct linear movement. This measure can be provided on site or by means of an anti-turn device fitted to the SHE unit using a square tube.



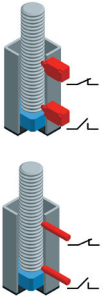
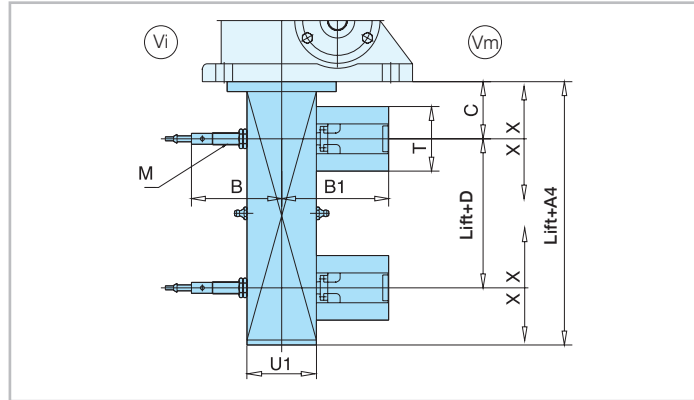
Size	A3	T3	ØW3	A1	T1	ØW1	U1
0,5	65	9	52	60	-	-	30 x30
1.1	74	8	80	74	8	80	40x40
2	85	8	65	77	-	-	40x40
3.1	85	8	70	77	-	-	50x50
5.1	95	10	110	85	-	-	80x80
15.1	115	15	130	100	-	-	90x90
20.1	100	20	160	100	20	160	100x100
25	110	20	180	110	20	160	120x120
35	115	20	200	115	20	200	140x140
50.1	158	15	240	158	15	240	180x180
75	170	20	300	170	20	300	220x220
100.1	170	10	300	170	15	300	200x200
150	210	20	380	210	20	380	260x260
200.1	on request						

Screw jacks

3.5 SHE range dimension plans

3.5.1.5 Anti-turn device Vm/Vi with added-on limit switches

Size	A4	B	B1	C	D	T	M	U1	X
0,5	on request								
1.1	on request								
2	130	90	100	60	20	58	12x1	40x40x2	± 10
3.1	130	95	105	60	25	58	12x1	50x50x2	± 10
5.1	130	102	112	55	25	58	12x1	80x80x3	± 10
15.1	155	111	116	80	30	58	12x1	90x90x6	± 10
20.1	180	130	131	80	40	68	18x1	110x110x5	± 10
25	210	145	145	90	50	68	18x1	140x140x6	± 10
35	on request								
50.1	on request								
75	220	171	178	75	90	58	18x1	220x220x10	± 10
100.1; 150; 200.1 on request									



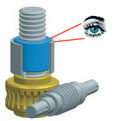
3

Ind. proximity switch Vi	Mechanical limit switch Vm
See chapter on accessories for technical data and dimension plans	

All sizes can be supplied with mechanical **or** inductive limit switches.

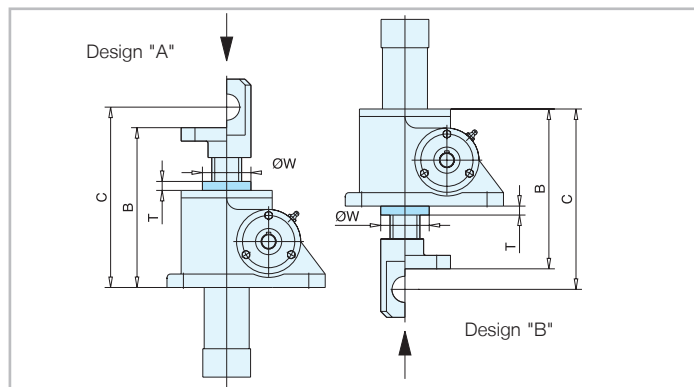
3.5.1.6 With short safety nut SFM-O

The short safety nut takes up the axial strain if the main nut breaks. This considerably increases the operating safety of the drive elements. The safety nut can also be used to precisely check for wear on the main nut, as the clearance between the two nuts changes according to the amount of wear. In the case of worm gear screw jacks with short safety nut, the direction of main stress (tensile or compression force) and the mounting position should be taken into account, as only a correctly fitted safety nut is capable of taking up the load.



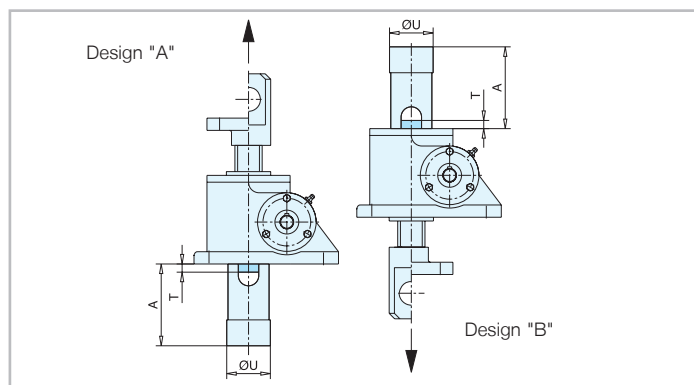
SHE type 1, compression force

Size	B	C	T ¹⁾	ØW
1.1	on request			
2	147,5	162,5	2	45
3.1	150,5	165,5	2	45
5.1	193	220,5	2	55
15.1	230	260	3	76
20.1	262	292	3	86
25	317	359	3,5	112
35	355	415	15	138
50.1; 75; 100.1; 150 and 200.1 on request				



SHE type 1, tensile force

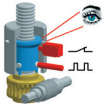
Size	A	T ¹⁾	ØU
1.1	on request		
2	lift + 20	2	61
3.1	lift + 20	2	61
5.1	lift + 40	2	81
15.1	lift + 20	3	93
20.1	lift + 20	3	119
25	lift + 20	3,5	145
35	lift + 45	4	173
50.1; 75; 100.1; 150 and 200.1 on request			



¹⁾ As new. If "T = 0", supporting and safety nut must be repaired.

Screw jacks

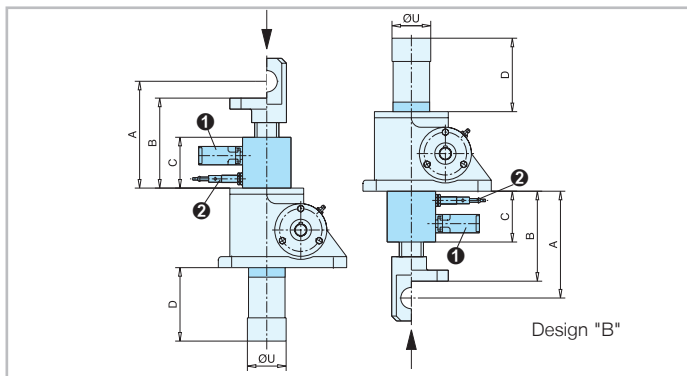
3.5 SHE range dimension plans



3.5.1.7 With long safety nut SFM-E / SFM-D (BGV C1 or VBG 14)

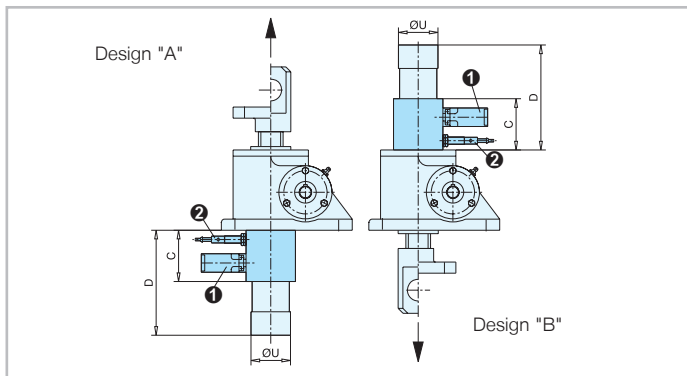
Worm gear screw jacks used on theatre stages (BGV C1, former VBG 70), lifting platforms (VBG 14) or lifting systems that might affect personal safety are designed according to current regulations, and include such items as anti-drop systems (self-locking screws and/or mechanical safety brakes as part of the drive system). The function of the synchronizing device is guaranteed, if required, by additional components.

SHE type 1, compression force



Size	A	B	C	D	ØU
1.1	on request				
2	on request				
3.1	140	125	80	Lift + 60	65
5.1	161,5	134	83	Lift + 70	65
15.1	201,5	171,5	87,5	Lift + 70	83
20.1	201	171	91	Lift + 70	115
25	264	222	130	Lift + 83	160
35; 50.1; 75; 100.1; 150 and 200.1 on request					

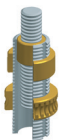
SHE type 1, tensile force



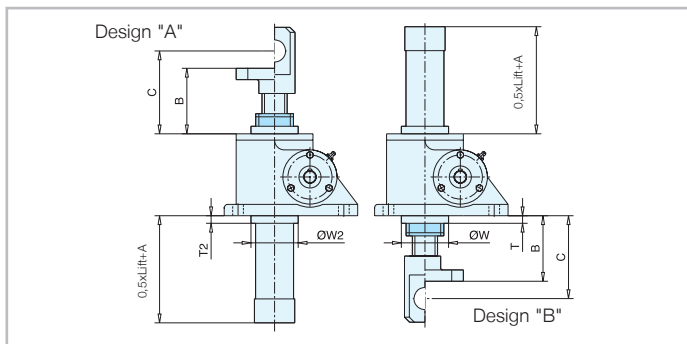
Size	A	B	C	D	ØU
Dimension plans available on request					

Ind. proximity switch ②	Mechanical limit switch ①
See chapter on accessories for technical data and dimension plans	

3.5.1.8 Telescopic configuration



Worm gear screw jacks in telescopic configuration permit long lifting distances in reduced spaces.



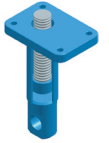
Size	Screw	A	B	C	ØW	T	ØW2	T1
3.1/0,5	on request							
5.1/1.1	Tr20x5LH Tr40x5RH	15	63	85	-	-	110	10
15.1/2	Tr26x6LH Tr60x6RH	35	72	87	135	26	85	17,5
15.1/3.1	Tr30x6LH Tr60x6RH	35	72	87	135	26	85	17,5
20/5.1	Tr40x7LH Tr72x7RH	33	90	117,5	120	32	116	12
25/10	Tr55x8LH Tr90x8RH	33	90	120	130	41	-	-
50.1/10	Tr60x12LH Tr110x12RH	35	160	130	200	15	200	15

Screw jacks

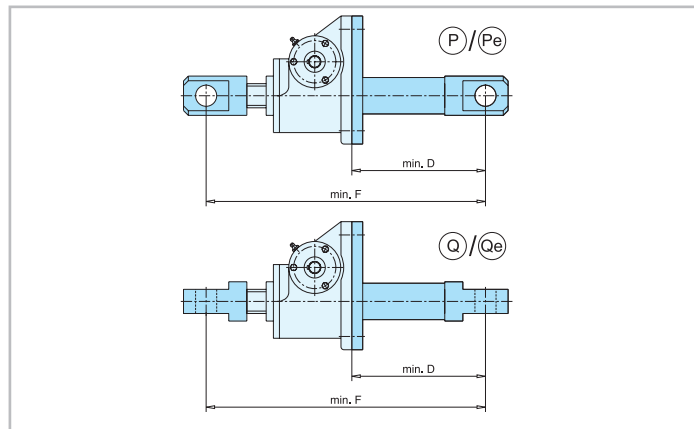
3.5 SHE range dimension plans

3.5.1.9 Swivelling configuration

In order to allow worm gear screw jacks to carry out swivelling and tipping movements, the drive elements must be secured at two points and permitted to move. This can be done using head IV on both screw ends or an articulated head. The bending moment resulting from the swivelling motion should be minimized as much as possible by means of low-friction articulations.



Size	With end-limit stop Pe/Qe		Without end-limit stop P/Q	
	D	F	D	F
1.1	on request			
2	lift + 90	lift + 252,5	lift + 70	lift + 232,5
3.1	lift + 110	lift + 275,5	lift + 90	lift + 255,5
5.1	lift + 128	lift + 349	lift + 108	lift + 329
15.1	lift + 155	lift + 415	lift + 125	lift + 385
20.1	lift + 175	lift + 467	lift + 135	lift + 427
25	lift + 200	lift + 559	lift + 150	lift + 509
35; 50.1; 75; 100.1 on request				

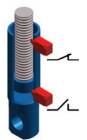
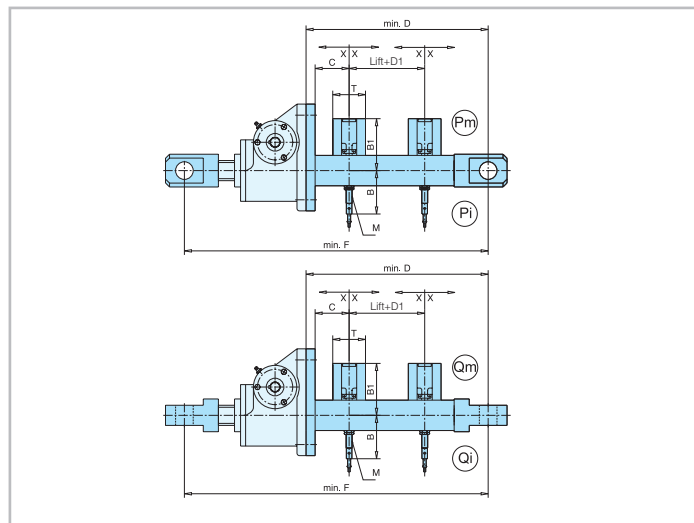


3

3.5.1.10 Swivelling configuration with added-on limit switches

All sizes can be supplied with mechanical or inductive limit switches

Size	B	B1	C	D	D1	F	M	T	X
3.1	91	100	48	175	25	340,5	12x1	58	± 10
5.1	103	80	48	203	20	424,5	12x1	58	± 10
15.1	106	115	48	228	30	488	12x1	58	± 10
0,5; 1.1; 2; 20.1; 25; 35; 50.1; 75 and 100.1 on request									

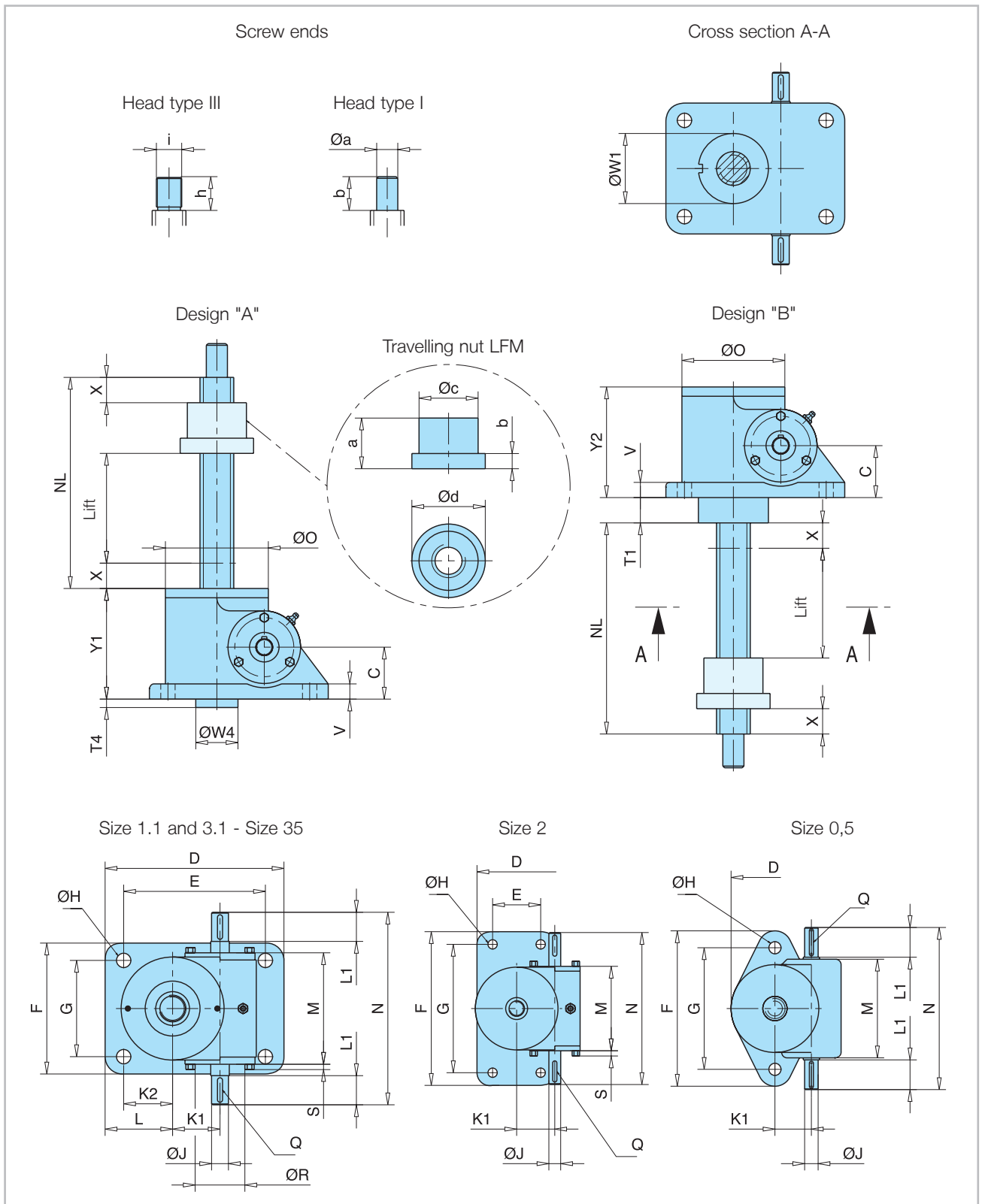


Screw jacks

3.5 SHE range dimension plans

3.5.2 Configuration type 2

3.5.2.1 Standard



Screw jacks

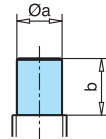
3.5 SHE range dimension plans

Size	0,5	1.1	2	3.1	5.1	15.1	20.1	25	35
Screw	Tr 18x6	Tr 24x5	Tr 26x6,28	Tr 30x6	Tr 40x7	Tr 60x12	Tr 70x12	Tr 90x16	Tr 100x16
C	32	35	44	45	61,5	70	87	102	115
D	81,5	150	94	165	212	235	295	350	430
E	-	130	57	135	168	190	240	280	360
F	115	100	182	120	155	200	215	260	280
G	90	80	152	90	114	155	160	190	210
ø H	9	9	11	14	17	21	28	35	35
ø J k6	10	14	14	16	20	25	28	34	38
K 1	27	36	45,2	45,2	56,2	66,8	72,5	97	120
K 2	-	58	28,5	50	58	63,5	95	95	135
L	32,5	68	47	65	80	86	122,5	130	170
L 1	22	18	-	-	-	47	52	60	80
M	73	100	100	110,5	132	185	213,5	221	265
N	120	140	180	190	228	280	322	355	430
NL	lift + 72	lift + 80	lift + 80	lift + 85	lift + 100	lift + 125	lift + 150	lift + 170	lift + 205
ø O	65	88	98	98	122	150	185	205	260
Q	3x3x20	5x5x16	5x5x25	5x5x32	6x6x32	8x7x40	8x7x45	10x8x50	10x8x70
ø R	-	-	41	38	55	-	72	80	100
S	-	-	6	5,5	6	-	6	10	10
T 1	18,5	16	24	26,5	30	34	39	52	45
T 4	-	-	-	-	-	-	-	-	15
V	10	13	14	12	18	16	20	25	30
ø W 1	45	52	60	68	83	110	140	160	180
ø W 4	-	-	-	-	-	-	-	-	150
Safety X	20	20	20	20	20	25	25	25	30
Y 1	74	86	95	100	131	160	194	226	250
Y 2	70	79	93	97	130	150	176	217	255
Traveling nut LFM									
a	32	40	40	45	60	75	100	120	145
b	10	12	18	15	18	25	30	35	35
ø c h9	40	45	50	50	70	90	90	130	150
ø d	50	65	76	80	87	110	120	155	190
Head I									
ø a k6	10	15	18	20	25	40	50	70	80
b	20	24	30	30	40	50	54	80	80
Head III									
h	20	24	30	30	39	50	54	80	80
i	M 10	M 16x1,5	M 18x1,5	M 22x1,5	M 30x2	M 40x3	M 56x3	M 70x3	M 80x3

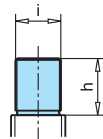
3.5 SHE range dimension plans

3

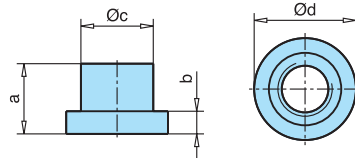
Head type I



Head type III



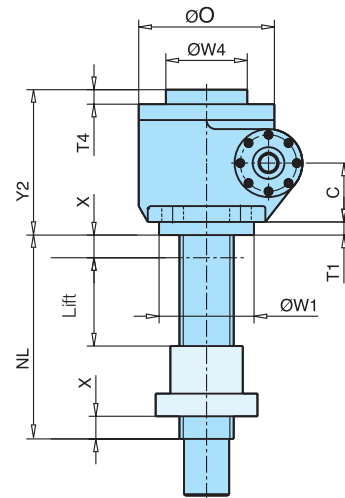
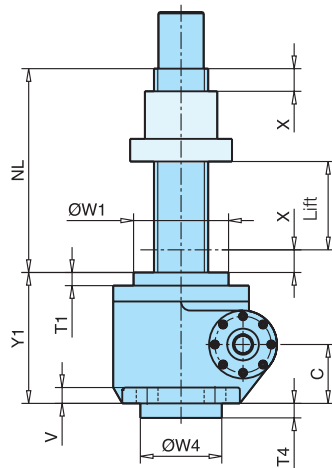
Travelling nut LFM



Design "A"

Design "B"

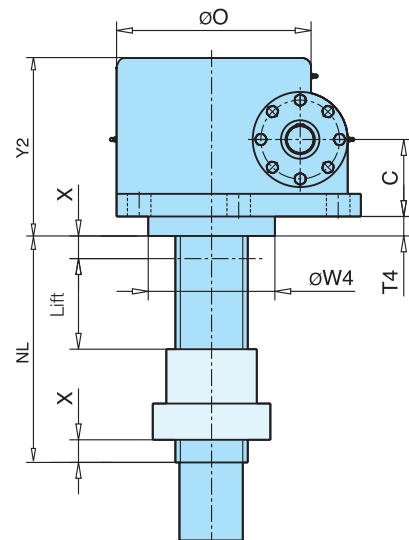
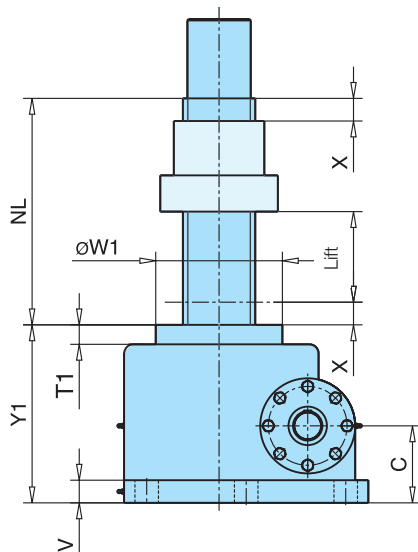
Size 50.1 - Size 75



Design "A"

Design "B"

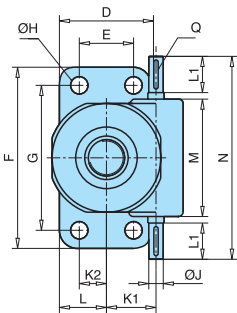
Size 100.1 - Size 200.1



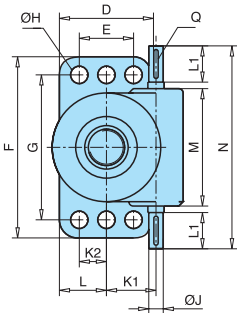
Screw jacks

3.5 SHE range dimension plans

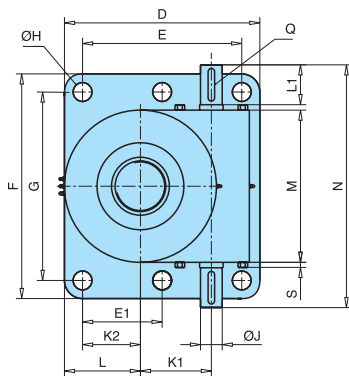
Size 50.1



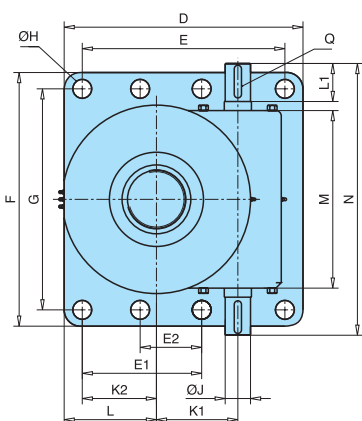
Size 75



Size 100.1



Size 150 and 200.1



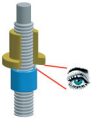
3

Size	50.1	75	100.1	150	200.1
Screw	Tr 120x16	Tr 140x20	Tr 160x20	Tr 190x24	Tr 220x28
C	130	155	170	194	
D	260	330	540	660	
E	150	225	440	560	
E1	-	-	220	330	
E2	-	-	-	170	
F	500	540	620	700	
G	400	455	520	610	
ø H	48	45	52	52	
ø J	40k6	60m6	60m6	70m6	
K 1	137	160	196	225	
K 2	75	112,5	160	210	
L	130	165	210	255	
L 1	100	110	110	110	
M	324	360	420	490	
N	560	600	670	710	
NL	lift + 255	lift + 300	lift + 300	lift + 340	
ØO	-	375	420	510	
Q	12x8x80	18x11x100	18x11x90	20x12x90	on request
S	-	-	14	-	
T 1	29	16	33	40	
T 4	32	-	43	50	
V	35	40	50	60	
Ø W 1	210	274	280	340	
Ø W 4	180	-	-	-	
Safety X	50	50	50	50	
Y 1	289	326	383	465	
Y 2	289	326	393	475	
Travelling nut LFM					
a	155	200	200	240	
b	50	70	80	90	
ø c h9	160	180	200	240	
ø d	225	250	260	300	
Head I					
ø a k6	100	110	140	160	
b	125	125	175	200	
Head III					
h	125	125	175	200	
i	M 100x5	M 120x6	M 140x6	M 160x6	

Screw jacks

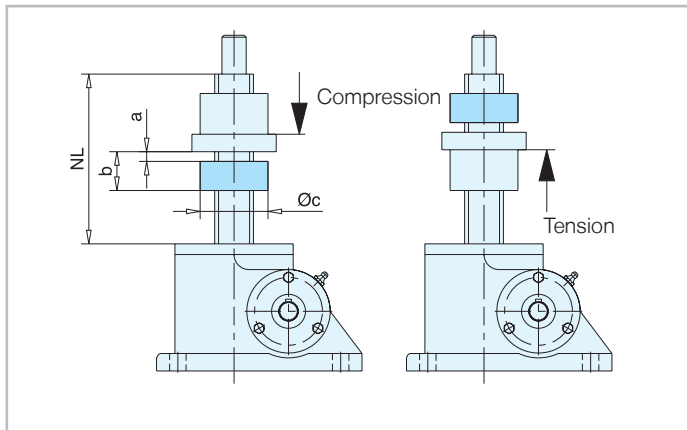
3.5 SHE range dimension plans

3.5.2.2 With short safety nut LFM-K



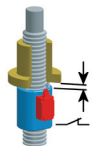
The short safety nut takes up the axial strain if the main nut breaks. This considerably increases the operating safety of the drive elements. The safety nut can also be used to precisely check for wear on the main nut, as the clearance between the two nuts changes according to the amount of wear. In the case of worm gear screw jacks with short safety nut, the direction of main stress (tensile or compression force) and the mounting position should be taken into account, as only a correctly fitted safety nut is capable of taking the load.

SHE type 2, compression and tensile force



Size	a ¹⁾	b	Øc	NL
1.1	5	25	45	lift+105
2	10	35	50	lift+115
3.1	10	35	50	lift+120
5.1	10	40	70	lift+140
15.1	10	60	90	lift+185
20.1	10	60	90	lift+210
25	15	80	130	lift+250
35	15	80	150	lift+285
50.1	15	80	160	lift+335
75	on request			
100.1	15	95	200	lift+395
150	20	120	240	lift+460
200.1	on request			

3



3.5.2.3 With long safety nut LFM-E (BGV C1 or VBG 14)

Worm gear screw jacks used on theatre stages (BGV C1, former VBG 70), lifting platforms (VBG 14) or lifting systems that might affect personal safety are designed according to current regulations, and include such items as anti-drop systems (self-locking screws and/or mechanical safety brakes as part of the drive system). The function of the synchronizing device is guaranteed, if required by, additional components.

SHE type 2, compression and tensile force

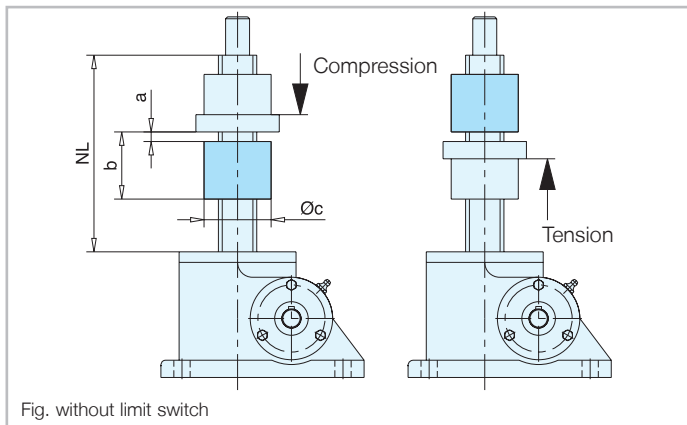


Fig. without limit switch

Size	a ¹⁾	b	Øc	NL
1.1	5	45	45	lift+125
2	10	50	50	lift+130
3.1	10	55	50	lift+140
5.1	10	70	70	lift+170
15.1	10	85	90	lift+210
20.1	10	110	90	lift+260
25	15	135	130	lift+305
35	15	160	150	lift+365
50.1	15	170	160	lift+425
75	on request			
100.1	15	215	200	lift+515
150	20	260	240	lift+600
200.1	on request			

See chapter 3.9 for details of further travelling nut configurations

- Travelling nut with trunnion LWZ
- Travelling nut with keyed surface LSF
- Travelling nut with spherical support LSA
- Ball screw (Ku) with single flange nut KGM

¹⁾ As new. If "T = 0", supporting and safety nut must be repaired.

Mechanical limit switch

See chapter on accessories for technical data and dimension plans

Screw jacks

Contents

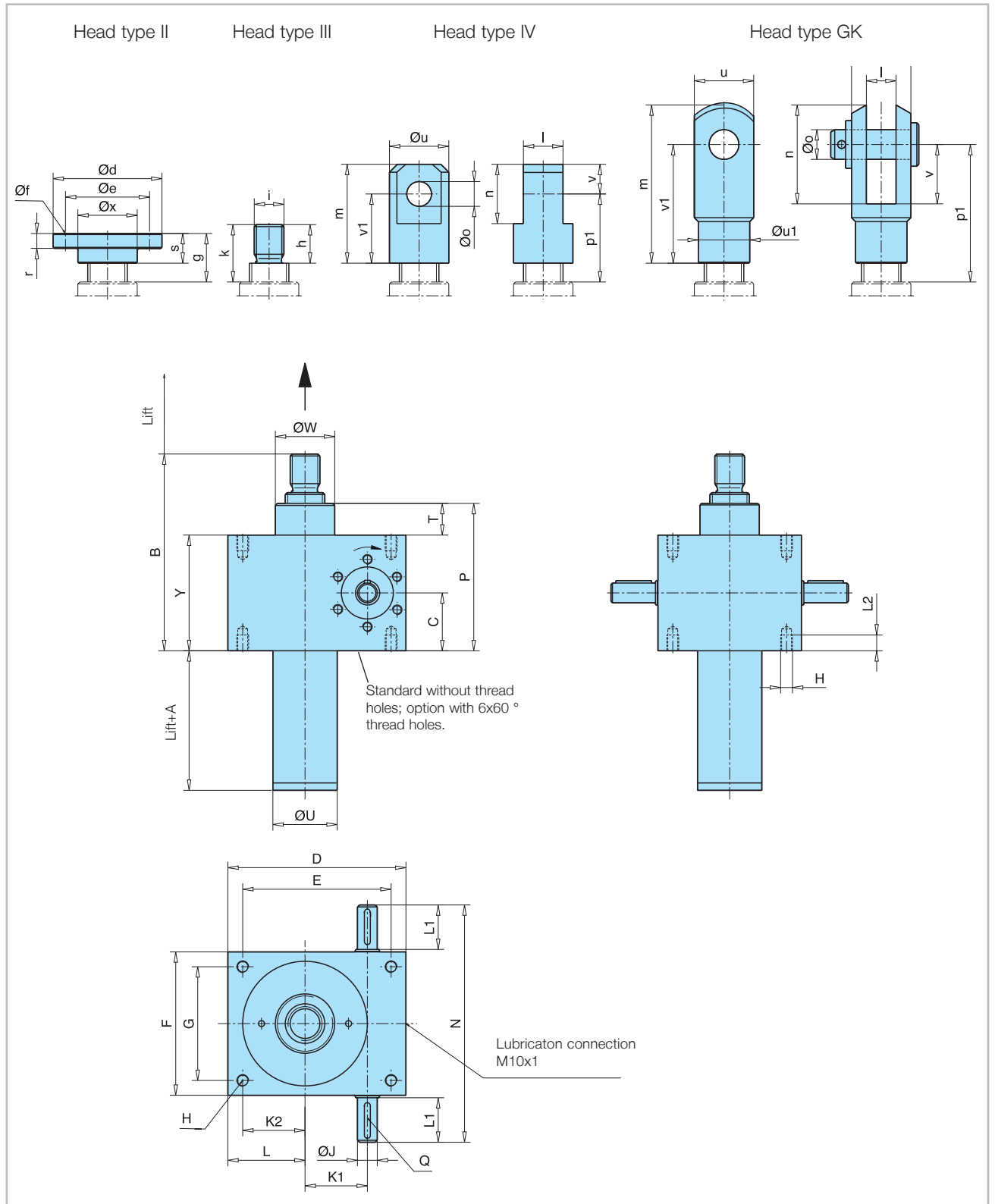
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3.6 MERKUR range dimension plans

3.6.1 Type 1

3.6.1.1 Standard



Screw jacks

Size	M 0	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8
Screw	Tr 14x4	Tr 18x4	Tr 20x4	Tr 30x6	Tr 40x7	Tr60x9	Tr80x10	Tr100x10	Tr120x14
Ball screw**	-	Ku 16x05 Ku 16x10 Ku 16x20	Ku 20x05	Ku 25x05 Ku 25x10 Ku 25x25	Ku 40x05 Ku 40x10 Ku 40x20	Ku 50x10	-	-	-
A/A*	25/55	25/55	35/65	40/75	45/100	55/90	60/110	65/155	100/145
B	77	97	120	132	182	255	275	360	466
C	25	31	37,5	41	58,5	80	82,5	110	133
D	60	80	100	130	180	200	240	290	360
E	48	60	78	106	150	166	190	230	290
F	50	72	85	105	145	165	220	250	300
G	38	52	63	81	115	131	170	190	230
H	M6	M8	M8	M10	M12	M20	M30	M36	M42
ø J k6	9	10	14	16	20	25	30	35	48
K 1	20	25	32	45	63	71	80	100	135
K 2	16	21	29	42	63	66	75	95	115
L	22	31	40	54	78	83	100	125	150
L 1	20	22,5	25,5	43	45	65	65	63	97,5
L 2	12	13	15	15	16	30	45	54	80
N	92	120	140	195	240	300	355	380	500
P	62	74	93	105	149	200	205	270	326
Q	3x3x14	3x3x18	5x5x20	5x5x36	6x6x36	8x7x56	8x7x56	10x8x56	14x9x90
T	12	12	18	23	32	40	40	50	60
ø U	28	32	40	50	65	90	125	150	180
ø W	26	30	38,7	46	60	85	120	145	170
Y	50	62	75	82	117	160	165	220	266
Head II									
ø d	50	65	80	90	110	150	220	260	310
ø e	40	48	60	67	85	117	170	205	240
ø f	4xØ7	4xØ9	4xØ11	4xØ11	4xØ13	4xØ17	4xØ25	4xØ32	4xØ38
g	19	24	28	28	34	57	72	92	142
s	16	20	21	23	30	50	60	80	120
r	6	7	8	10	15	20	30	40	40
ø x	26	30	40	46	60	85	120	145	170
Head III									
h	12	19	20	22	29	48	58	78	118
i	M8	M12	M14	M20	M30	M36	M64x3	M72x3	M100x3
k	15	23	27	27	33	55	70	90	140
Head IV									
l h10	12	15	20	30	35	40	80	110	120
m	40	55	63	78	105	147	175	220	330
n	20	30	36	45	65	83	130	170	230
ø o H8	10	14	16	24	32	40	60	80	90
p1	33	44	52	58	74	104	117	147	222
ø u	25	30	40	45	60	85	120	160	170
v	10	15	18	25	35	50	70	85	130
v1	30	40	45	53	70	97	105	135	200
Head GK									
l H13	8	12	14	20	30	36	-	-	-
m	42	62	72	105	160	188	-	-	-
n	26	37	44	65	100	116	-	-	-
ø o H9	8	12	14	20	30	35	-	-	-
p1	35	52	63	85	124	151	-	-	-
u	16	24	27	40	60	70	-	-	-
ø u1	14	20	24	34	52	60	-	-	-
v	16	24	28	40	60	72	-	-	-
v1	32	48	56	80	120	144	-	-	-

A* = Screw with run-out prevention system or screw for KGT-Version ** Dimensions for ball screws on request.

Screw jacks

3.6 MERKUR range dimension plans

3.6.1.2 2nd Guide ring 2FR

With all sizes of the MERKUR standard range

3.6.1.3 With added-on limit switches Sm/Si

All sizes can be supplied with mechanical Sm or inductive Si limit switches.

Size	A4	B	B1	C Sm/Si	D Sm/Si	T	M	Ø W2	X
M 0	105	84	95	44/38	12/24	50	M12x1	28	±10
M 1	105	86	97	44/38	12/24	50	M12x1	32	±10
M 2	110	90	100	44/38	16/28	50	M12x1	40	±10
M 3	115	94	104	49/43	16/28	50	M12x1	50	±10
M 4	135	101	111	58/52	20/32	50	M12x1	65	±10
M 5	140	114	123	66/60	20/32	50	M12x1	90	±10
M 6	135	on request		66/60	25/37	50	M12x1	125	±10
M 7	170	on request		76/70	30/42	50	M12x1	150	±10
M 8	160	on request		86/80	30/42	50	M12x1	180	±10

3.6.1.4 Anti-turn device V

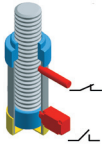
The screw must be prevented from twisting in order to ensure correct linear movement. This measure can be provided on site or by means of an anti-turn device fitted to the MERKUR unit using a square tube.

Size	A3	W4
M 1	60	35x35
M 2	70	40x40
M 3	80	50x50
M 4	100	70x70
M 5	115	90x90
M 6	120	125x125
M 7	125	150x150
M 8	155	180x180

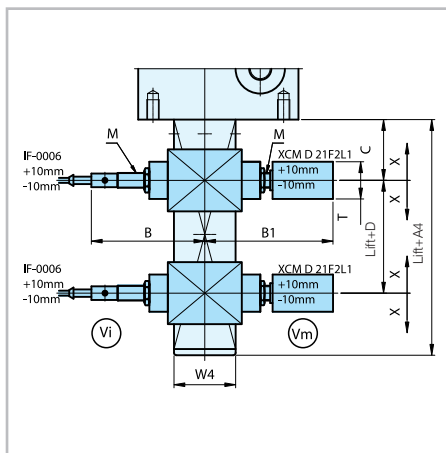
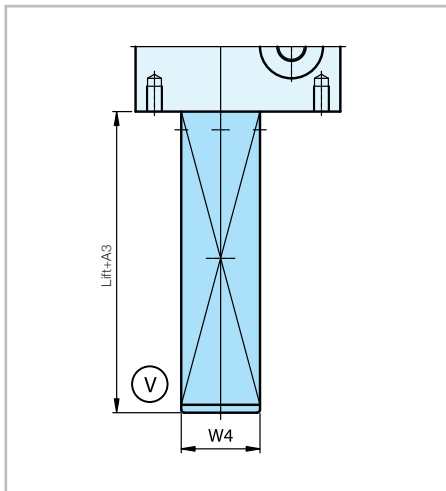
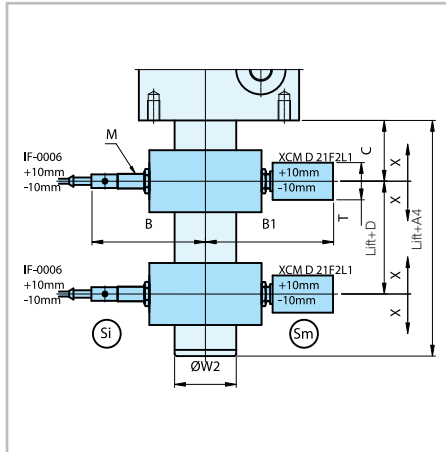
3.6.1.5 Anti-turn device Vm/Vi with added-on stroke limit switches

All sizes can be supplied with mechanical Vm or inductive Vi limit switches.

Size	A4	B	B1	C Vm/Vi	D Vm/Vi	T	M	W4	X
M 1	105	86	96	44/38	12/24	50	M12x1	35x35	±10
M 2	110	88	100	44/38	16/28	50	M12x1	40x40	±10
M 3	115	93	105	49/43	16/28	50	M12x1	50x50	±10
M 4	135	101	110	58/52	20/32	50	M12x1	70x70	±10
M 5	145	113	125	66/60	20/32	50	M12x1	90x90	±10
M 6	135	on request		66/60	25/37	50	M12x1	125x125	±10
M 7	170	on request		76/70	30/42	50	M12x1	150x150	±10
M 8	160	on request		86/80	30/42	50	M12x1	180x180	±10



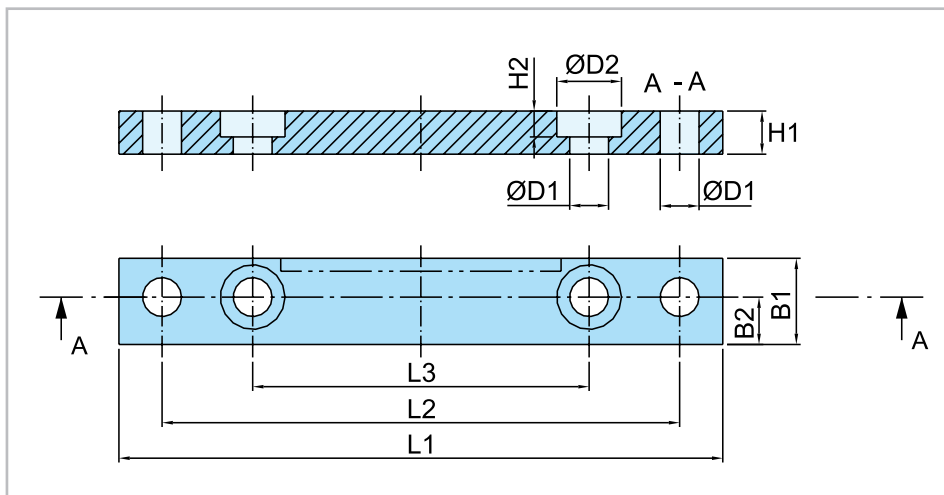
3



Screw jacks

3.6 MERKUR range dimension plans

3.6.1.6 Mounting brackets



3

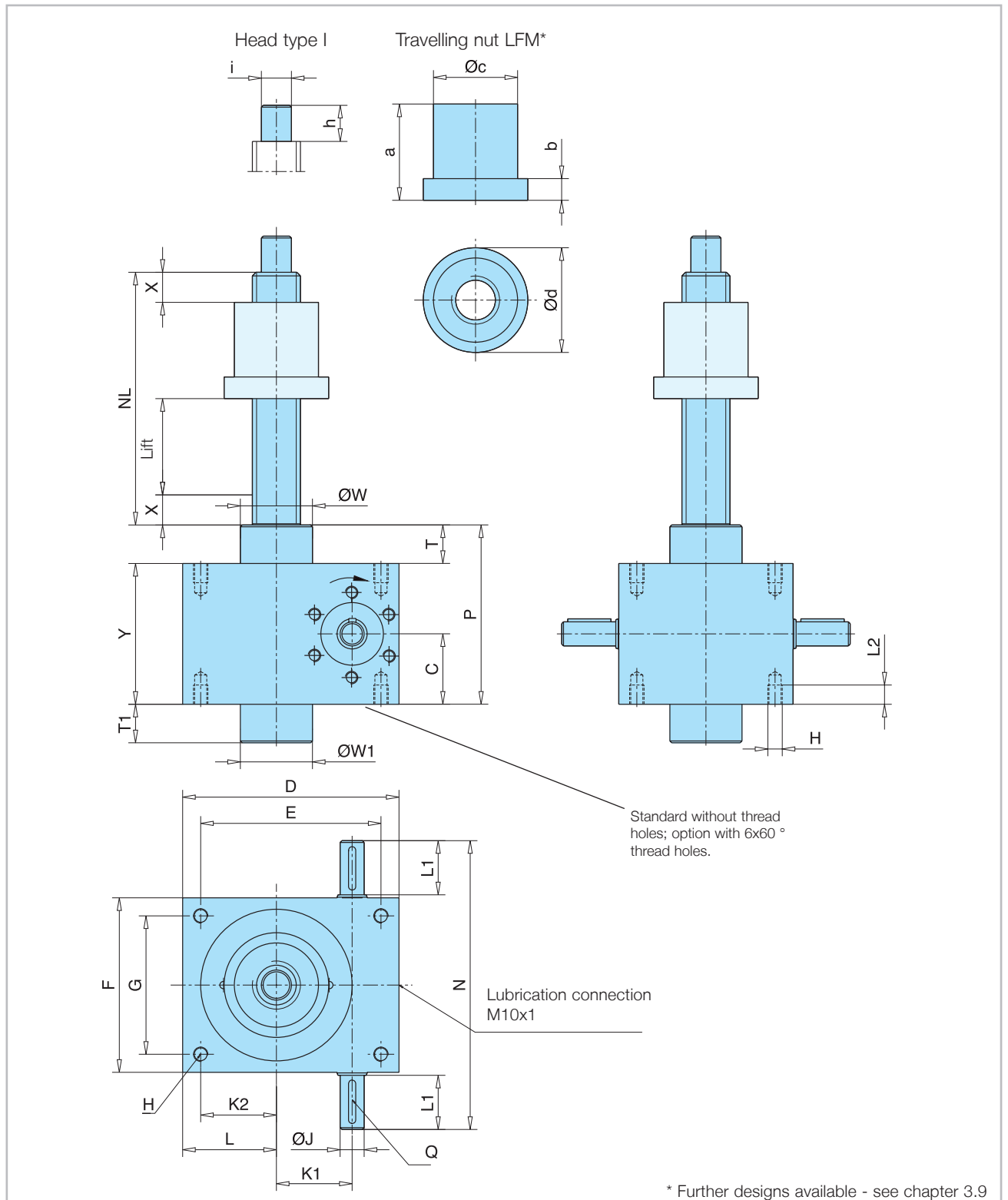
Size	L1	L2	L3	B1	B2	H1	H2	$\varnothing D1$	$\varnothing D2$
M 0	90	75	48	12	6	10	5	6,6	11
M 1	120	100	60	20	10	10	5	9,0	15
M 2	140	120	78	20	11	10	6	9,0	15
M 3	170	150	106	25	12	12	7	11,0	18
M 4	230	204	150	30	15	16	8	13,5	20
M 5	270	236	166	40	17	25	14	22,0	33
M 6	on request								
M 7									
M 8									

3.6 MERKUR range dimension plans

3.6.2 Type 2

3.6.2.1 Standard

3



* Further designs available - see chapter 3.9

Screw jacks

3.6 MERKUR range dimension plans

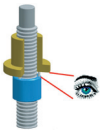
Size	M 0	M 1	M 2	M 3	M 4	M 5	M 6	M 7	M 8
Screw	Tr 14x4	Tr 18x4	Tr 20x4	Tr 30x6	Tr 40x7	Tr60x9	Tr80x10	Tr100x10	Tr120x14
C	25	31	37,5	41	58,5	80	82,5	110	133
D	60	80	100	130	180	200	240	290	360
E	48	60	78	106	150	166	190	230	290
F	50	72	85	105	145	165	220	250	300
G	38	52	63	81	115	131	170	190	230
H	M 6	M 8	M 8	M 10	M 12	M 20	M 30	M 36	M 42
ø J k6	9	10	14	16	20	25	30	35	48
K 1	20	25	32	45	63	71	80	100	135
K 2	16	21	29	42	63	66	75	95	115
L	22	31	40	54	78	83	100	125	150
L 1	20	22,5	25,5	43	45	65	65	63	97,5
L 2	12	13	15	15	16	30	40	54	80
N	92	120	140	195	240	300	355	380	500
NL	lift + 52	lift + 56	lift + 70	lift + 85	lift + 110	lift + 125	lift + 170	lift + 195	lift + 215
P	62	74	93	105	149	200	205	270	326
Q	3x3x14	3x3x18	5x5x20	5x5x36	6x6x36	8x7x56	8x7x56	10x8x56	14x9x90
T	12	12	18	23	32	40	40	50	60
T1 ¹⁾	12	12	18	23	32	40	40	50	60
ø W	26	30	36,1	46	60	85	120	145	170
ø W1 ¹⁾	26	30	38,7	46	60	85	120	145	170
Safety X	10	12	15	20	25	25	25	25	30
Y	50	62	75	82	117	160	165	220	266
Travelling nut LFM									
a	32	32	40	45	60	75	120	145	155
b	10	10	12	15	18	25	35	35	50
ø c h9	40	40	45	50	70	90	130	150	160
ø d	50	50	65	80	87	110	155	190	225
Head I									
ø i j6	8	12	15	20	25	40	60	80	95
h	12	15	20	25	30	45	75	100	120

¹⁾ For size M0 up to size M5 can the bearing neck be omitted.

Screw jacks

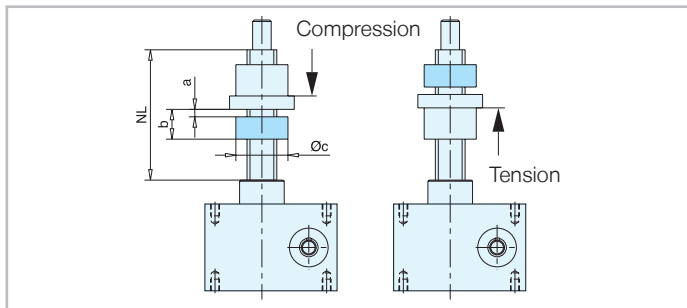
3.6 MERKUR range dimension plans

3.6.2.2 With short safety nut LFM-K



The short safety nut takes up the axial strain if the main nut breaks. This considerably increases the operating safety of the drive elements. The safety nut can also be used to precisely check for wear on the main nut, as the clearance between the two nuts changes according to the amount of wear. In the case of worm gear screw jacks with short safety nut, the direction of main stress (tensile and compression force) and the mounting position should be taken into account, as only a correctly fitted safety nut is capable of taking up the load.

MERKUR type 2, compression and tensile force

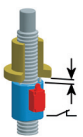


Size	NL	a ¹⁾	b	Øc*
M 0				
M 1	on request			
M 2	lift+95	5	25	45
M 3	lift+120	5	35	50
M 4	lift+150	5	40	70
M 5	lift+185	5	60	90
M 6	lift+250	10	80	130
M 7	lift+275	10	80	150
M 8	on request			

* Diameter Øc for standard supplied travelling nut FMR.

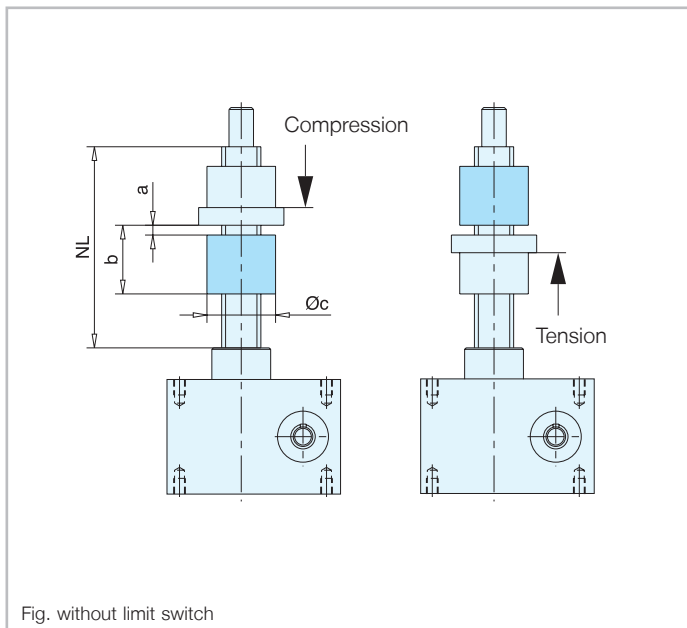
3

3.6.2.3 With long safety nut LFM-E (BGV C1 or VBG 14)



Worm gear screw jacks used on theatre stages (BGV C1, former VBG 70), lifting platforms (VBG 14) or lifting systems that might affect personal safety are designed according to current regulations, and include such items as anti-drop systems (self-locking screws and/or mechanical safety brakes as part of the drive system). The function of the synchronizing device is guaranteed, if required, by additional components.

MERKUR type 2, compression and tensile force



Size	NL	a ¹⁾	b	Øc*
M 0				
M 1	on request			
M 2	lift+115	5	45	45
M 3	lift+140	5	55	50
M 4	lift+180	5	70	70
M 5	lift+210	5	85	90
M 6	lift+305	10	135	130
M 7	lift+355	10	160	150
M 8	on request			

¹⁾ As new.

* Diameter Øc for standard supplied travelling nut FMR.

See chapter 3.9 for details of further travelling nut configurations

- Travelling nut with trunnion LWZ
- Travelling nut EFM
- Travelling nut with keyed surface LSF
- Travelling nut with spherical support LSA
- Ball screw (Ku) with single flange nut KGM

Screw jacks

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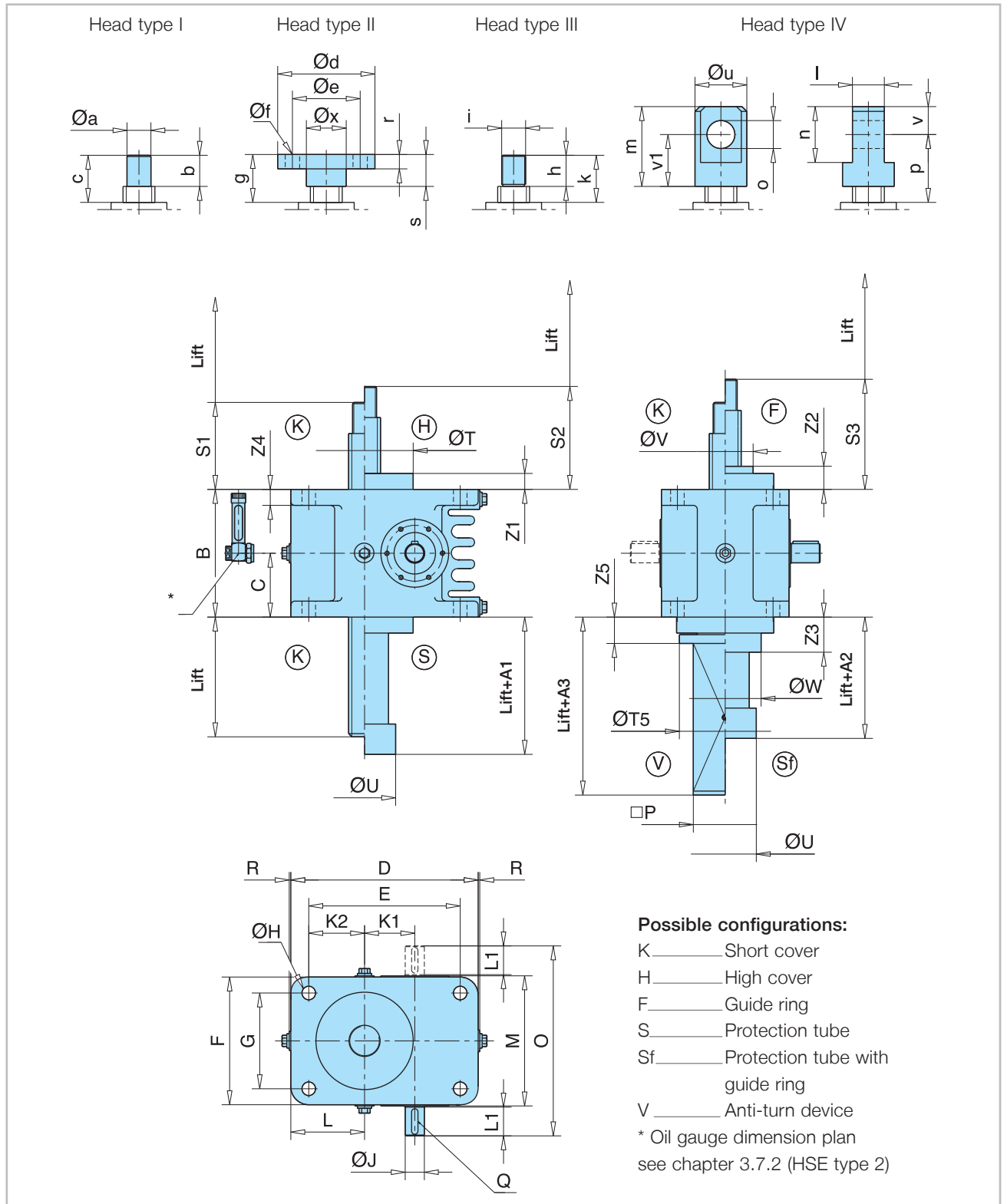


3.7 HSE range dimension plans

3.7.1 Type 1

3.7.1.1 Standard

3



Screw jacks

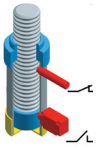
Size	32 ¹⁾	36.1	50.1	63.1	80.1	100.1	125.1	140	200.1
Screw	Tr 18x6	Tr 24x5	Tr 40x8	Tr 50x9	Tr 60x12	Tr 70x12	Tr100x16	Tr 120x16	Tr 160x20
A 1	22	22	22	22	22	23	22	22	22
A 2	39	44	46	52	61	71	76	86	101
A 3	98	104	117	123	136	146	154	179	199
B	80	105	130	160	200	230	300	350	450
C	40	52,5	65	80	100	115	150	175	225
D	117	138	175	235	275	330	410	490	680
E	95	110	140	190	220	270	330	390	550
F	80	105	130	160	200	230	300	350	460
G	62	80	100	120	150	175	230	260	330
Ø H	9	9	13	17	21	28	39	46	66
Ø J k6	14	14	16	24	32	38	42	50	70
K 1	32	36	50	63	80	100	125	140	196
K 2	31	40	50	70	75	87,5	110	130	185
L	42	54	67,5	92,5	102,5	117,5	150	180	250
L 1	25,5	18	28	36	58	58	82	82	105
M	83	108	133	163	204	235	305	355	470
N	86	112	136	166	206	240	310	360	472
O	140	140	192	238	322	356	474	524	682
□ P	30	40	70	80	90	100	140	180	220
Q	5x5x20	5x5x16	5x5x25	8x7x32	10x8x50	10x8x50	12x8x70	14x9x70	20x12x100
R	3	2	2	2	2	2	5	5	5
S 1	43	45	50	60	70	75	100	120	140
S 2	58	61	68	80	95	105	135	160	190
S 3	66	69	76	89	109	124	154	184	219
Ø T f7	62	72	92	122	152	182	222	262	352
Ø T5	50	-	100	115	130	-	200	260	310
Ø U	29	40	66	82	78	88,5	136	143	198
Ø V	35	35	60	70	100	125	140	195	240
Ø W	45	50	80	100	120	125	140	220	290
Z 1	15	16	18	20	25	30	35	40	50
Z 2	23	24	26	29	39	49	54	64	79
Z 3	29	34	39	44	54	64	74	84	109
Z 4	10	12	15	20	25	28	35	45	60
Z 5	27	-	28	33	40	-	54	63	73
Head I									
Ø a k6	18h9	15	20	30	40	50	80	95	130
b	20	24	29	39	49	54	79	99	119
c	37	44	49	59	69	74	99	119	139
Head II									
Ø d	65	72	92	122	150	182	222	262	352
Ø e	45	50	65	85	105	135	170	205	270
Ø f	4xØ 7	4xØ 9	4xØ 14	4xØ 17	4xØ 22	6xØ 26	8xØ 30	8xØ 33	8xØ 45
g	43	45	50	60	70	75	100	120	140
r	8	10	12	18	20	25	30	35	50
s	20	25	30	40	50	55	80	100	120
Ø x	18	30	35	50	65	85	115	140	185
Head III									
h	15	24	29	39	49	54	79	99	119
i	M 18x1,5	M 16x1,5	M 20x1,5	M 30x2	M 42x3	M 56x3	M 80x3	M 100x4	M 140x4
k	37	44	49	59	69	74	99	119	139
Head IV									
l - 0,2	20	25	30	40	60	75	100	120	160
m	50	60	70	100	130	150	230	300	360
n	30	40	50	70	100	120	160	200	280
Ø o H8	15	20	25	35	50	60	80	100	140
p	55	60	65	85	100	110	170	220	240
Ø u	30	40	50	65	90	110	140	170	220
v	15	20	25	35	50	60	80	100	140
v1	35	40	45	65	80	90	150	200	220

¹⁾ Size 32 will replace the existing size 31.

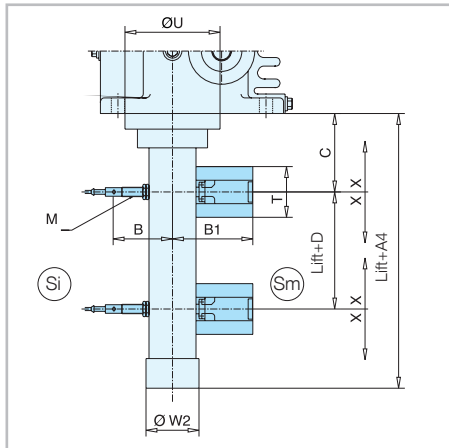
Screw jacks

3.7 HSE range dimension plans

3.7.1.2 With added-on limit switches Sm/Si

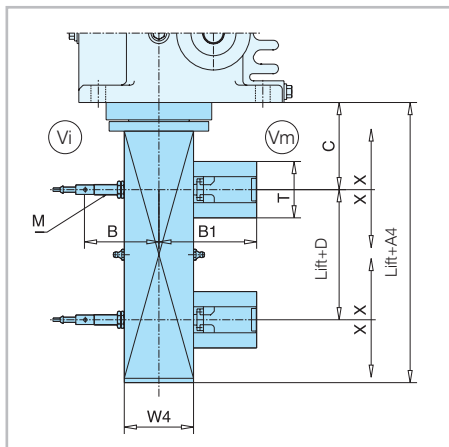
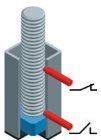
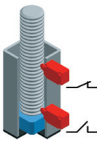


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Size	A4	B	B1	C	D	T	M	ØU	Ø W2	X
32										
36.1	140	86	*	70	12	*	12x1	72	42	±10
50.1	174	97	110	77	20	58	12x1	92	66	±10
63.1	180	106	110	88	25	58	12x1	122	82	±10
80.1	220	114	120	100	30	58	12x1	152	96	±10
100.1										
125.1										
140										
200.1										

3.7.1.3 Anti-turn device Vm/Vi with added-on limit switches



Size	A4	B	B1	C	D	T	M	W4	X
32									
36.1									
50.1	137	102	115	68	20	58	12x1	70x70	±10
63.1	150	107	115	75	25	58	12x1	80x80	±10
80.1	170	112	117	85	30	58	12x1	90x90	±10
100.1									
125.1									
140									
200.1									

3.7.1.4 With short safety nut SFM-O

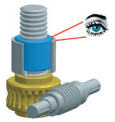
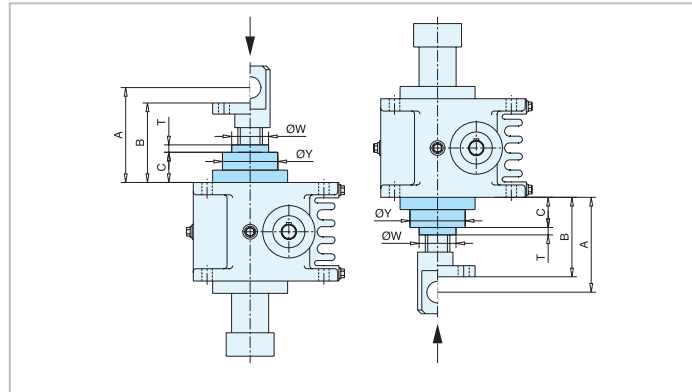
The short safety nut takes up the axial strain if the main nut breaks. This considerably increases the operating safety of the drive elements. The safety nut can also be used to precisely check for wear on the main nut, as the clearance between the two nuts changes according to the amount of wear. In the case of worm gear screw jacks with short safety nut, the direction of main stress (tensile and compression force) and the mounting position should be taken into account, as only a correctly fitted safety nut is capable of taking up the load.

Screw jacks

3.7 HSE range dimension plans

HSE type 1, compression force

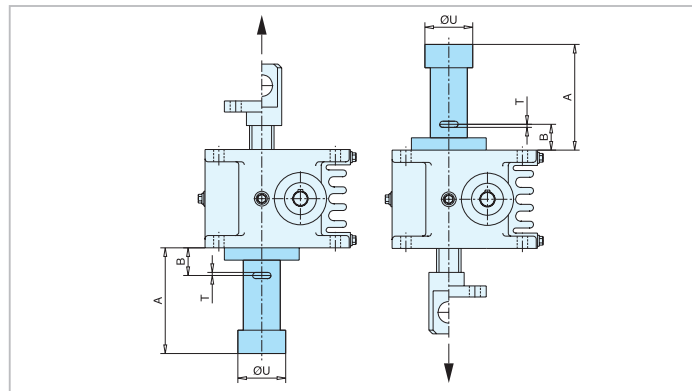
Size	A	B	C	T ¹⁾	ØY	ØW
32	80	63	24	1	50	30
36.1	85	70	24	1	55	35
50.1	100	85	43,5	1,5	85	60
63.1	125	100	48,5	1,5	105	70
80.1	160	130	57	3	125	90
100.1	170	135	57	3	155	110
125.1	250	180	76	4	190	140
140	on request					
200.1	335	235	90	5	300	240



3

HSE type 1, tensile force

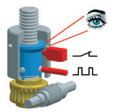
Size	A	B	T ¹⁾	ØU
32	lift + 67	25	1	47
36.1	lift + 67	25	1	56
50.1	lift + 77	35	1,5	80
63.1	lift + 82	40	1,5	92
80.1	lift + 102	60	3	107
100.1	lift + 102	60	3	132
125.1	lift + 122	80	4	158
140	on request			
200.1	lift + 137	95	5	272



¹⁾ As new. If "T = 0", supporting and safety nut must be repaired.

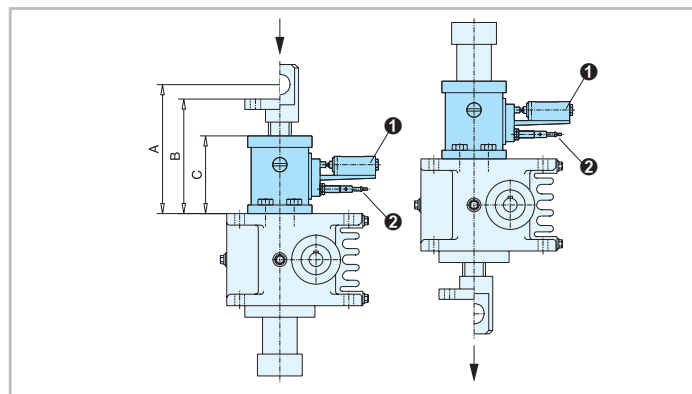
3.7.1.5 With long safety nut SFM-E / SFM-D (BGV C1 or VBG 14)

Worm gear screw jacks used on theatre stages (BGV-C1, former VBG 70), lifting platforms (VBG 14) or lifting systems that might affect personal safety are designed according to current regulations, and include such items as anti-drop systems (self-locking screws and/or mechanical safety brakes as part of the drive system). The function of the synchronizing device is guaranteed, if required, by additional components.



HSE type 1, compression and tensile force

Size	A	B	C
32	on request		
36.1	on request		
50.1	on request		
63.1	220	195	135
80.1	270	240	170
100.1	330	295	220
125.1	360	290	190
140	on request		
200.1	on request		

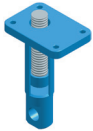


Ind. proximity switch ② Mechanical limit switch ①

See chapter on accessories for technical data and dimension plans

Screw jacks

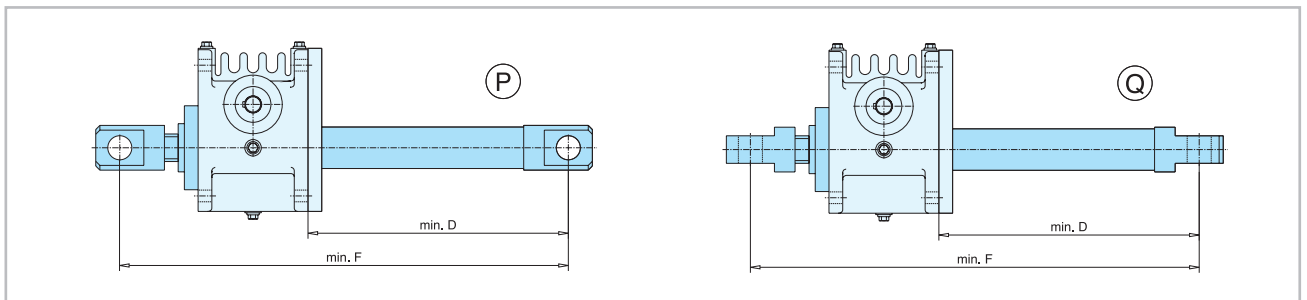
3.7 HSE range dimension plans



3.7.1.6 Swivelling configuration

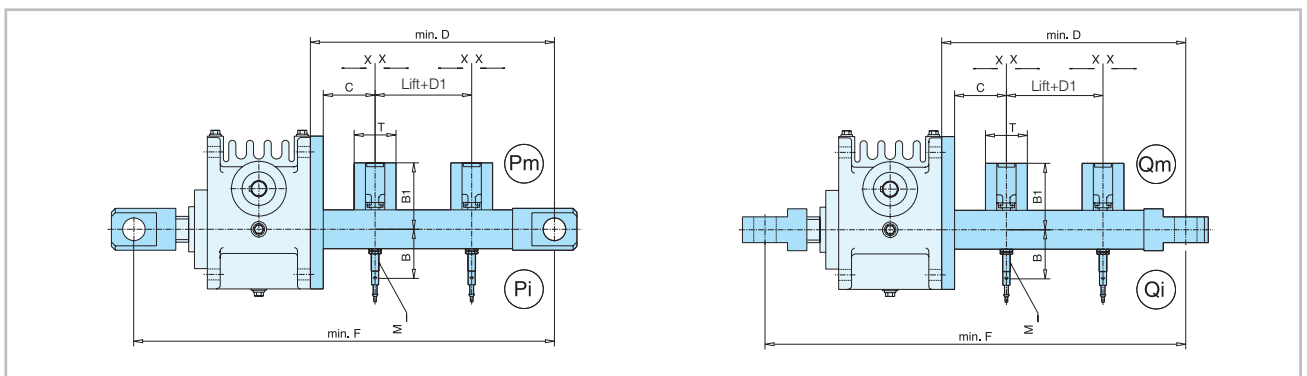
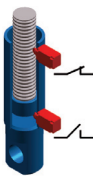
In order to allow worm gear screw jacks to carry out swivelling and tipping movements, the drive elements must be secured at two points and permitted to move. This can be done using head IV on both screw ends or an articulated head.

3



Size	D	F
32	on request	
36.1	lift +114	lift +303
50.1	lift +140	lift +361
63.1	lift +180	lift +454
80.1	lift +195	lift +534
100.1		
125.1	on request	
140		
200.1		

3.7.1.7 Swivelling configuration with added-on limit switches



Size	B	B1	C	D	D1	F	M	T	X
32					on request				
36.1	86	93	50	155	12	344	12x1	58	± 10
50.1	97	105	50	175	20	396	12x1	58	± 10
63.1	106	110	50	205	25	479	12x1	58	± 10
80.1	114	120	50	250	40	589	12x1	58	± 10
100.1									
125.1					on request				
140									
200.1									

Screw jacks

Application example



3



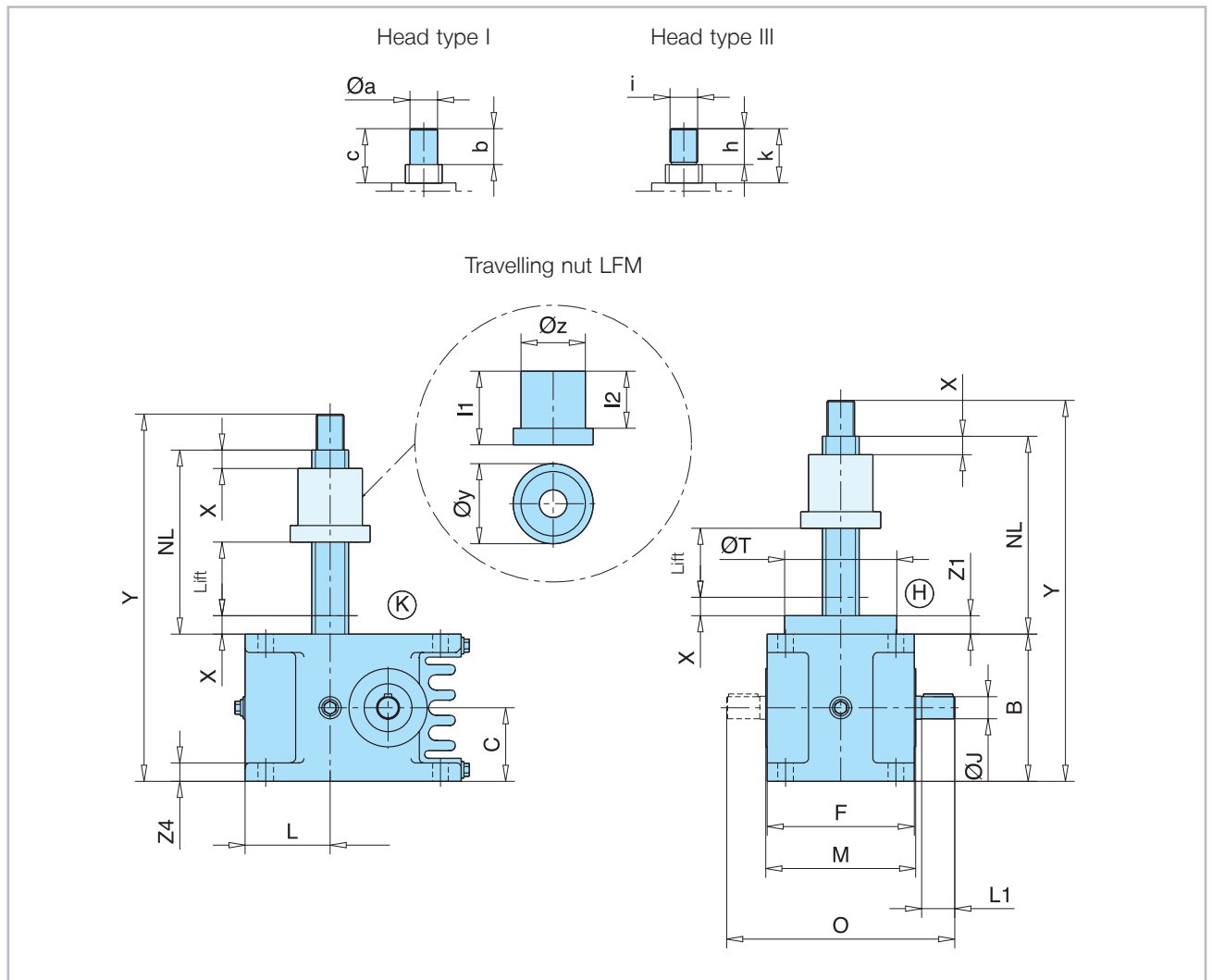
HSE high performance worm gear screw jack, type 1, special configuration for an elevation movement from 0 °C to 90 °C of an 11,1 m antenna.

Screw jacks

3.7 HSE range dimension plans

3.7.2 Type 2

3.7.2.1 Standard



Missing dimensions - see type 1

Possible configurations:

K _____ Short cover

H _____ High cover

Screw jacks

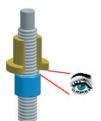
3.7 HSE range dimension plans

Size	32	36.1	50.1	63.1	80.1	100.1	125.1	140	200.1
Screw	Tr 18x6	Tr 24x5	Tr 40x8	Tr 50x9	Tr 60x12	Tr 70x12	Tr100x16		Tr 160x20
B	80	105	130	160	200	230	300		450
C	40	52,5	65	80	100	115	150		225
F	80	105	130	160	200	230	300		460
ØJ k6	14	14	16	24	32	38	42		70
L	42	54	67,5	92,5	102,5	117,5	150		250
L1	15	18	28	36	58	58	82		105
M	83	108	133	163	204	235	305		470
NL config. „K“	lift + 85	lift + 95	lift + 120	lift + 140	lift + 170	lift + 170	lift + 200		lift + 260
NL config. „H“	lift + 100	lift + 111	lift + 138	lift + 160	lift + 195	lift + 200	lift + 235		lift + 310
O	140	140	192	238	322	356	474		682
Q	5x5x20	5x5x16	5x5x25	8x7x32	10x8x50	10x8x50	12x8x70		20x12x100
ØT	62	72	92	122	152	182	222		352
Safety X	20	20	20	20	20	20	20		20
Y	NL + 97	NL + 129	NL + 169	NL + 199	NL + 249	NL + 284	NL + 379	on request	NL + 569
Z1	15	16	18	20	25	30	35		50
Z4	10	12	15	20	25	28	35		60
Travelling nut LFM									
l1	45	55	80	100	130	130	160		220
l2	35	43	62	78	105	100	115		140
Øy	50	65	87	105	110	120	190		260
Øz h9	40	45	70	80	90	90	150		200
Head I									
Ø a k6	10	15	30	40	40	50	80		130
b	20	24	39	49	49	54	79		119
c	37	44	59	69	69	74	99		139
Head III									
h	20	24	39	49	49	54	79		119
i	M 10	M 16x1,5	M 30x2	M 42x3	M 42x3	M 56x3	M 80x3		M 140x4
k	37	44	59	69	69	74	99		139

3

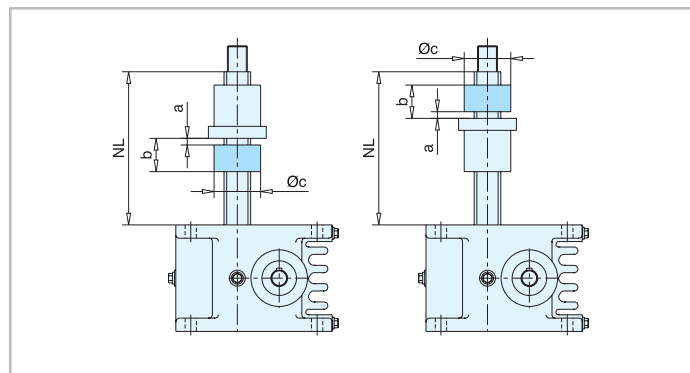
3.7.2.2 With short safety nut LFM-K

The short safety nut takes up the axial strain if the main nut breaks. This considerably increases the operating safety of the drive elements. The safety nut can also be used to precisely check for wear on the main nut, as the clearance between the two nuts changes according to the amount of wear. In the case of worm gear screw jacks with short safety nut, the direction of main stress (tensile and compression force) and the mounting position should be taken into account, as only a correctly fitted safety nut is capable of taking up the load.



HSE type 2, compression and tensile force

Size	a ¹⁾	b	Øc	NL	
				config. K	config. H
32	5	25	40	lift+110	lift+125
36.1	10	35	45	lift+130	lift+146
50.1	10	50	70	lift+170	lift+188
63.1	10	60	80	lift+200	lift+220
80.1	10	60	90	lift+240	lift+265
100.1	10	70	90	lift+240	lift+270
125.1	15	95	150	lift+295	lift+330
140	on request				
200.1	15	115	200	lift+375	lift+425

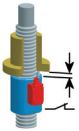


¹⁾ As new.

Screw jacks

3.7 HSE range dimension plans

3.7.2.3 With long safety nut LFM-E (BGV C1 or VBG 14)



Worm gear screw jacks used on theatre stages (BGV C1, former VBG 70), lifting platforms (VBG 14) or lifting systems that might affect personal safety are designed according to current regulations, and include such items as anti-drop systems (self-locking screws and/or mechanical safety brakes as part of the drive system). The function of the synchronizing device is guaranteed, if required, by additional components.

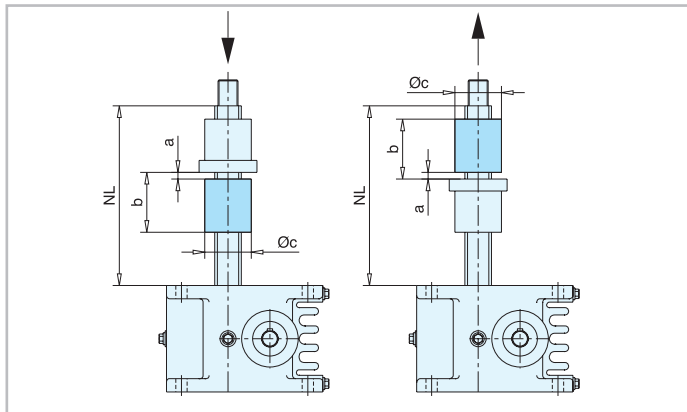


Fig. without limit switch

HSE type 2, compression and tensile force

Size	a ¹⁾	b	Øc	NL	
				config. K	config. H
32	5	50	40	lift+135	lift+150
36.1	10	65	45	lift+160	lift+176
50.1	10	90	70	lift+210	lift+228
63.1	10	110	80	lift+250	lift+270
80.1	10	140	90	lift+310	lift+335
100.1	10	140	90	lift+310	lift+340
125.1	15	175	150	lift+375	lift+410
140	on request				
200.1	15	235	200	lift+495	lift+545

¹⁾ As new. If "T = 0", supporting and safety nut must be repaired.

3

3.7.2.4 In HLA configuration

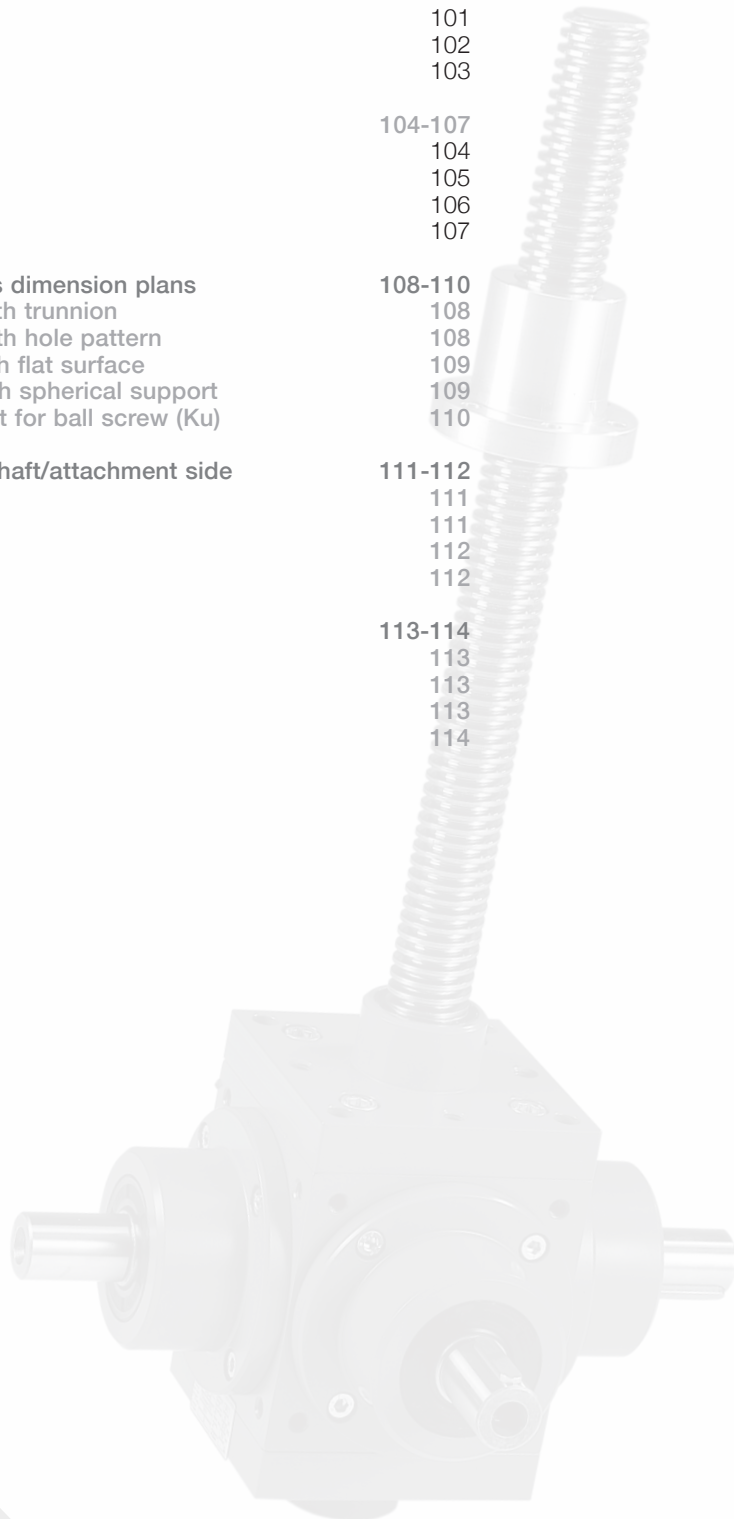


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Screw jacks

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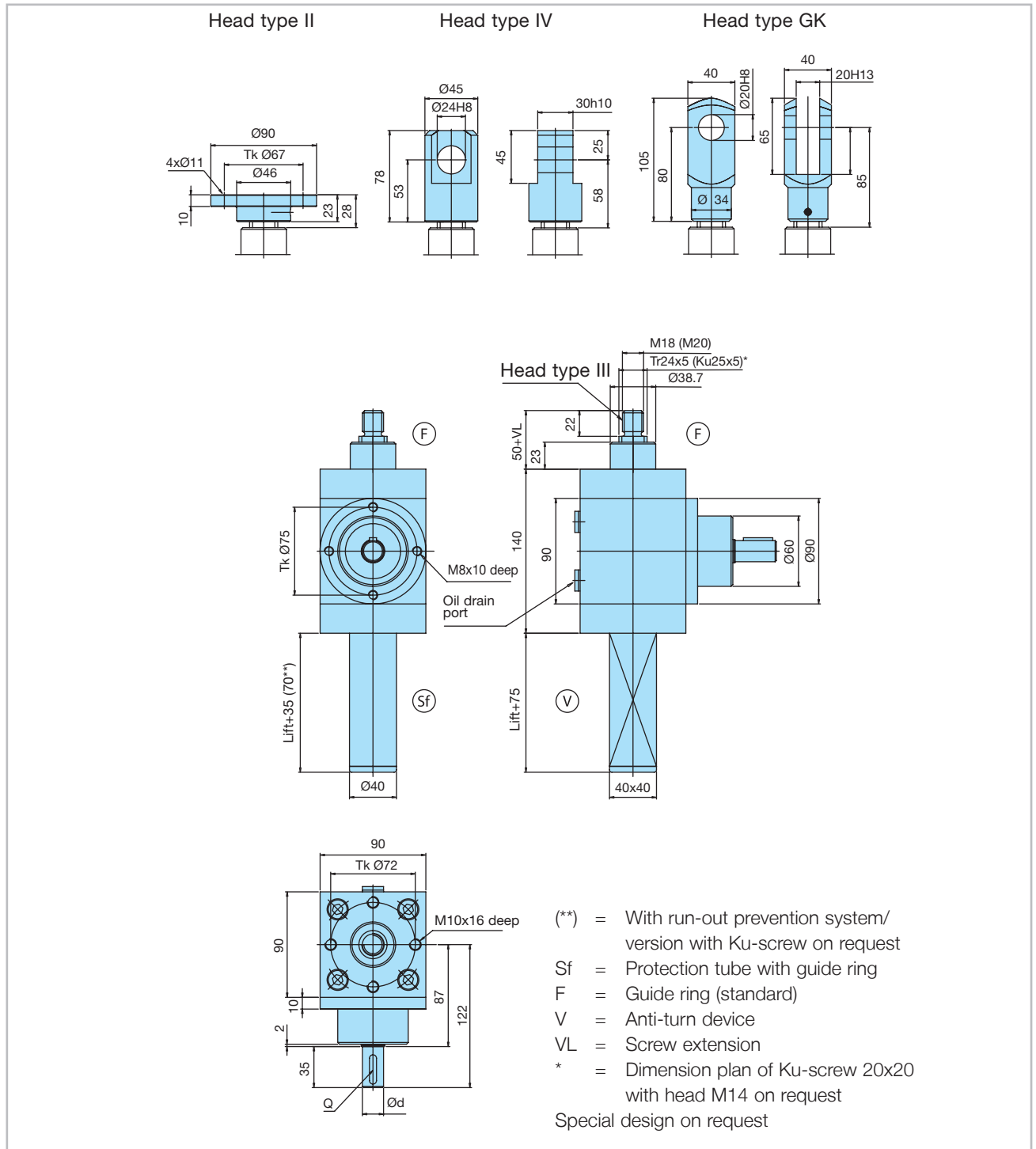


3.8 SHG range dimension plans

3.8.1 Type 1

3.8.1.1 Size G 15

3

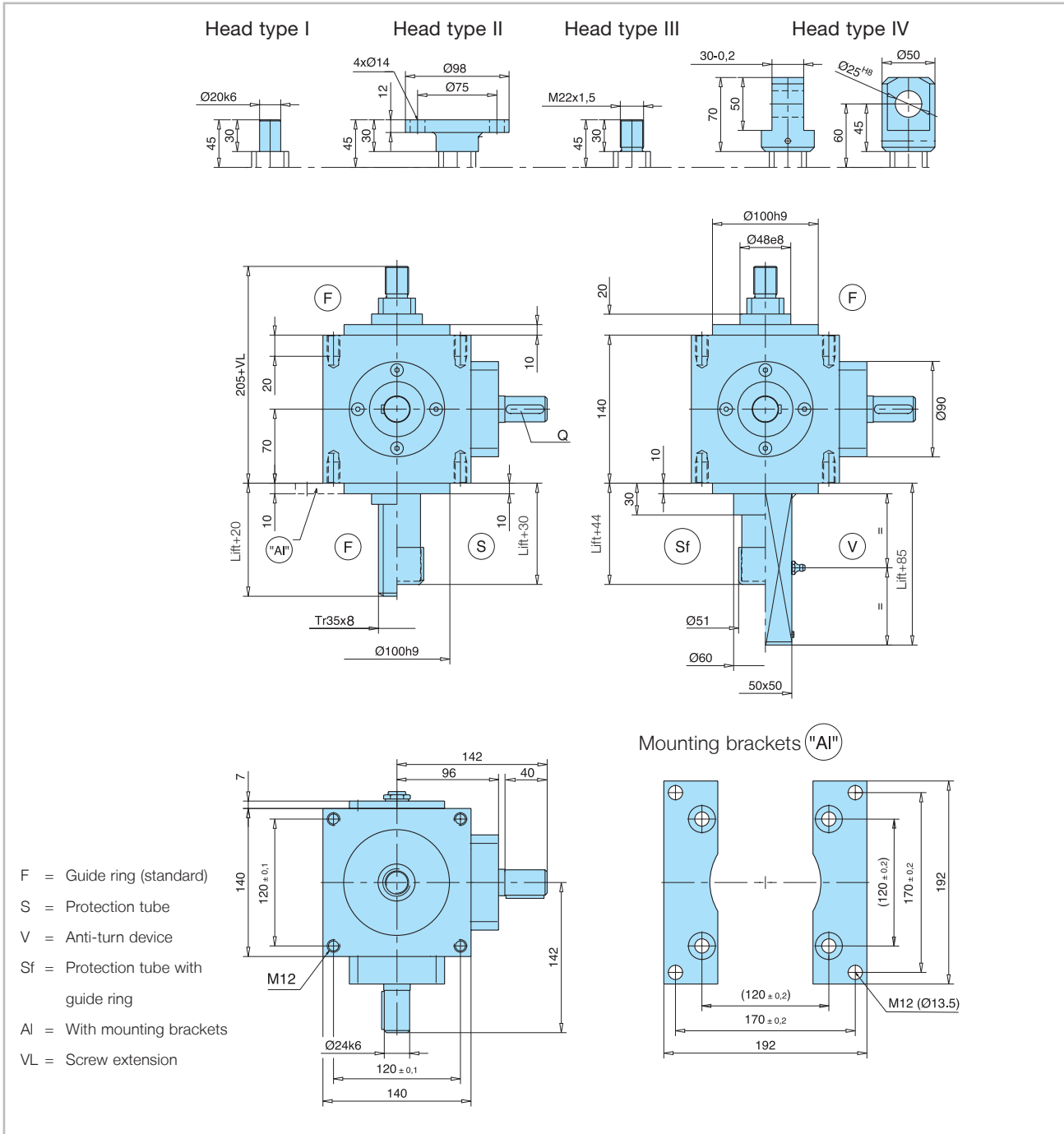


Ratio	$\varnothing d$ j6	Q (DIN 6885)
2:1	18	A 6x6x25
3:1	12	A 4x4x25

Screw jacks

3.8 SHG range dimension plans

3.8.1.2 Size G 25



3

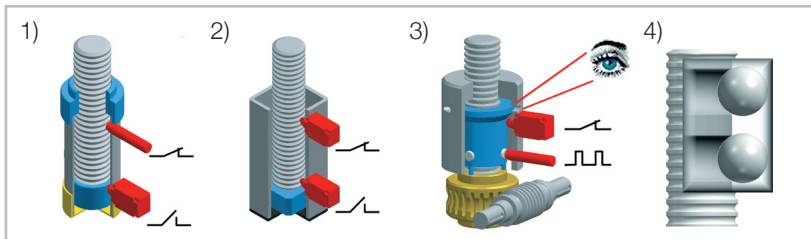
Q (DIN 6885)

A 8x7x36

Options:

Dimension plans of the options available on request

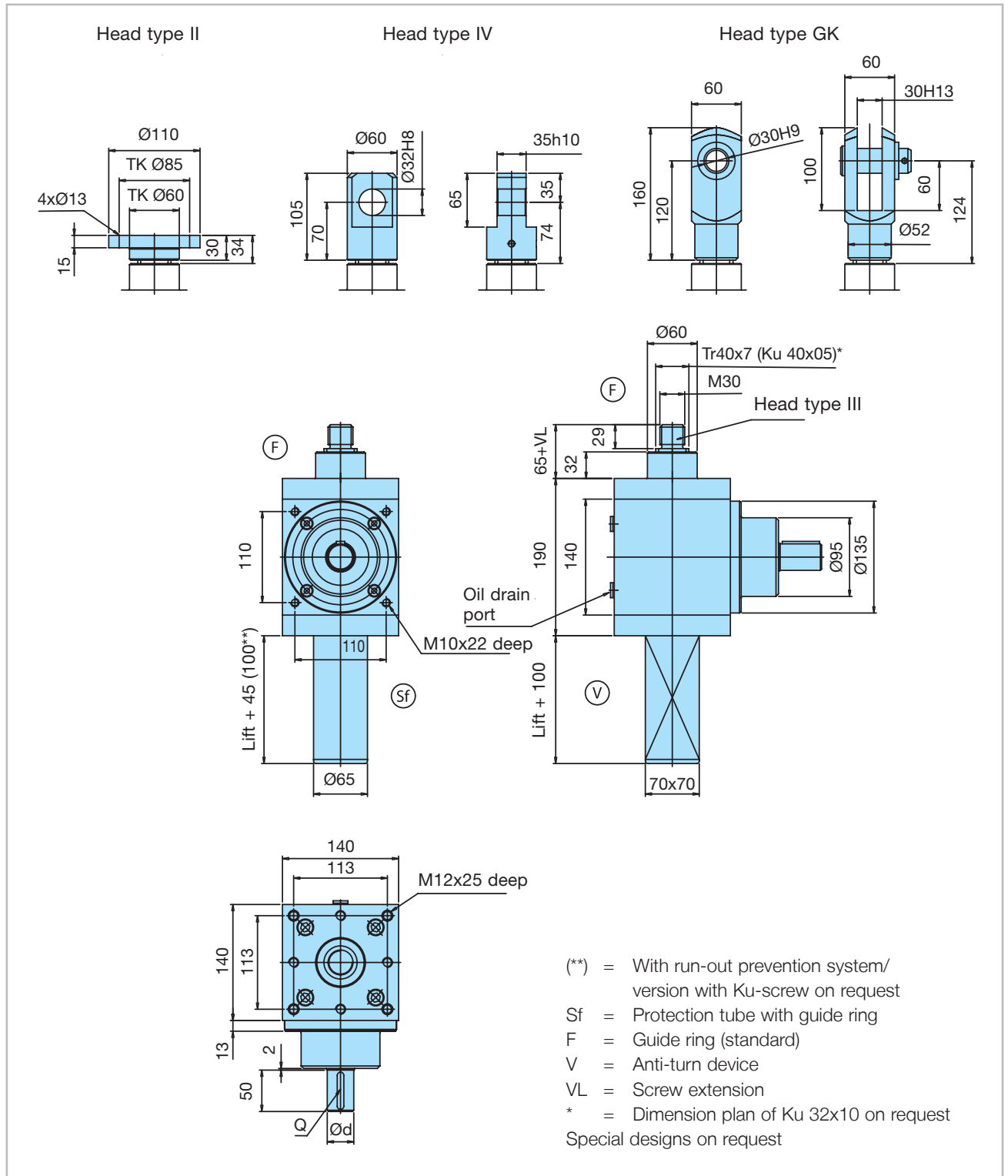
- 1) Stroke shutoff
- 2) Anti-turn device with stroke shutoff
- 3) Long safety nut (VB14)
- 4) Ball screw



3.8 SHG range dimension plans

3.8.1.3 Size G 50

3

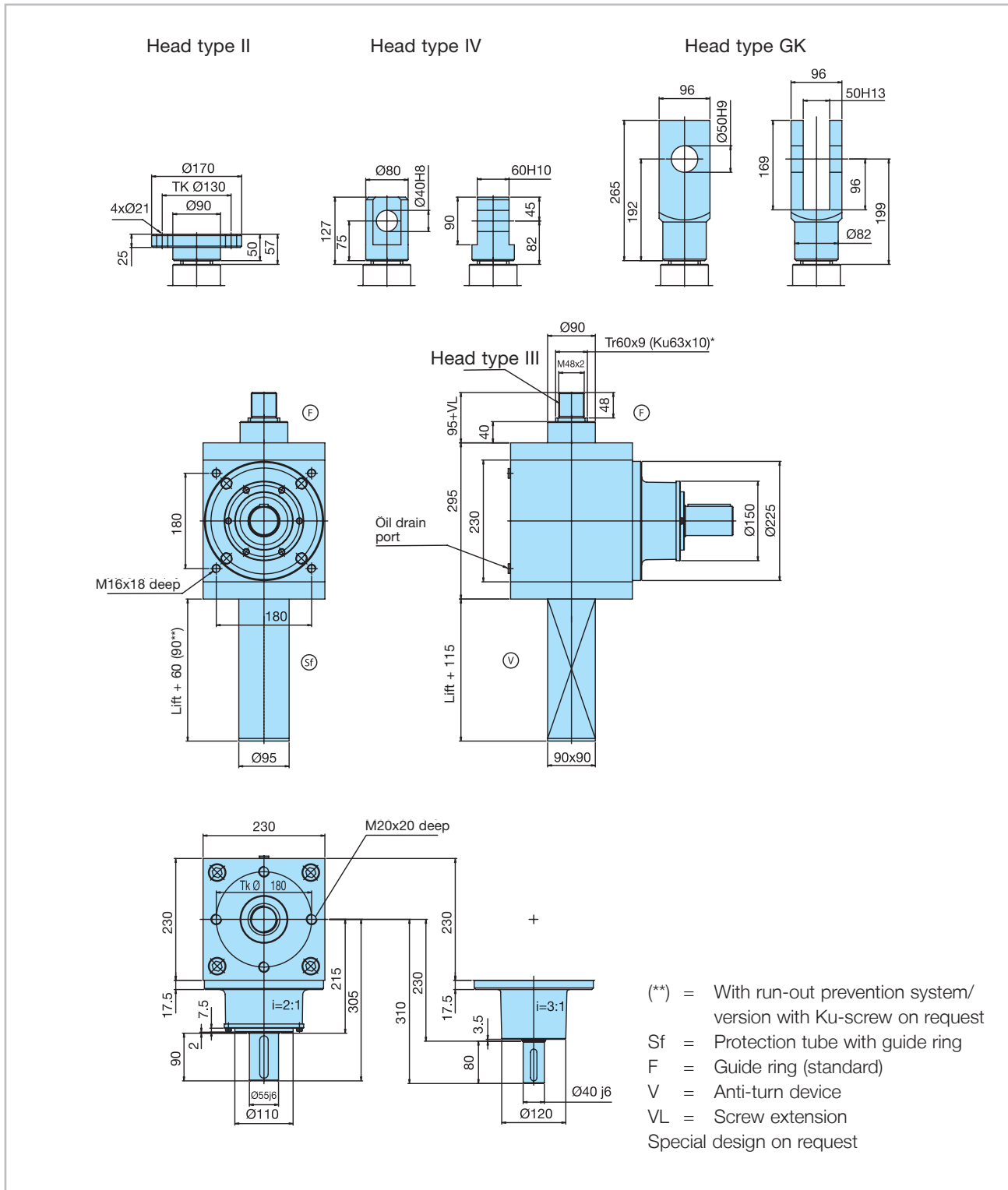


Ratio	Ød j6	Q (DIN 6885)
2:1	32	A 10x8x45
3:1	28	A 8x7x45

Screw jacks

3.8 SHG range dimension plans

3.8.1.4 Size G 90



3

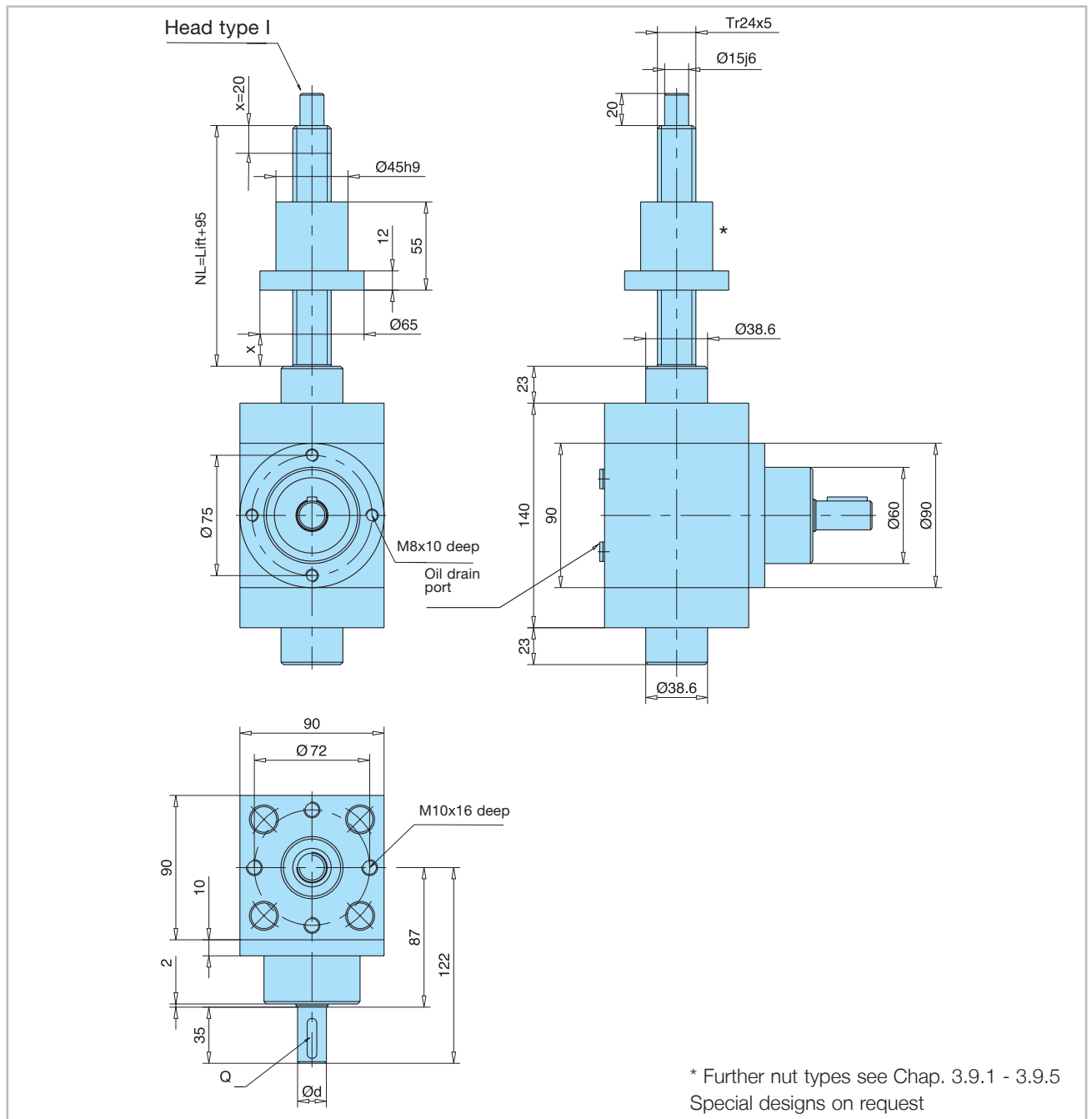
Ratio	Ød j6	ØD1	L1	L2	L3	Q (DIN 6885)
2:1	55	150	215	305	90	A 16x10x80
3:1	40	120	230	310	80	A 12x8x63

3.8 SHG range dimension plans

3.8.2 Type 2

3.8.2.1 Size G 15

3



Options:
Dimension plans of the options available on request

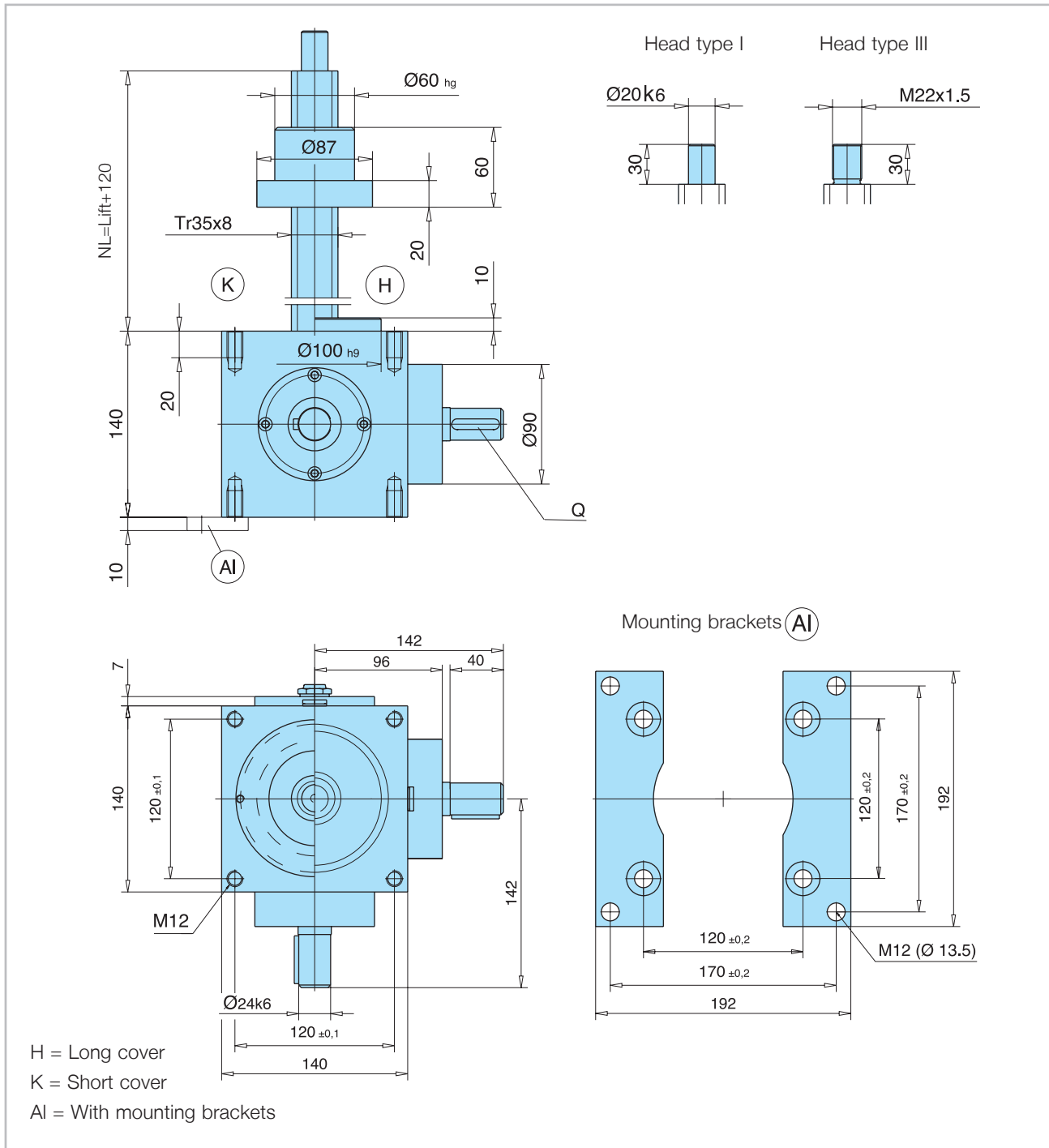
- 1) Ball screw and flange nut, see chapter 3.9.2/3.9.3
- 2) Short safety nut
- 3) Long safety nut

Ratio	Ød j6	Q (DIN 6885)
2:1	18	A 6x6x25
3:1	12	A 4x4x25

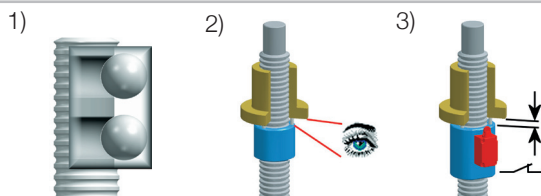
Screw jacks

3.8 SHG range dimension plans

3.8.2.2 Size G 25



3



Options:

Dimension plans of the options available on request

- 1) Ball screw and flange nut, see chapter 3.9.3
- 2) Short safety nut
- 3) Long safety nut

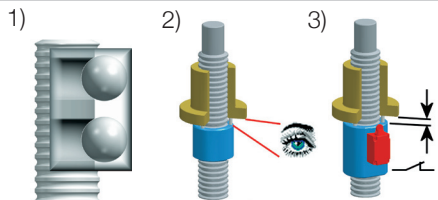
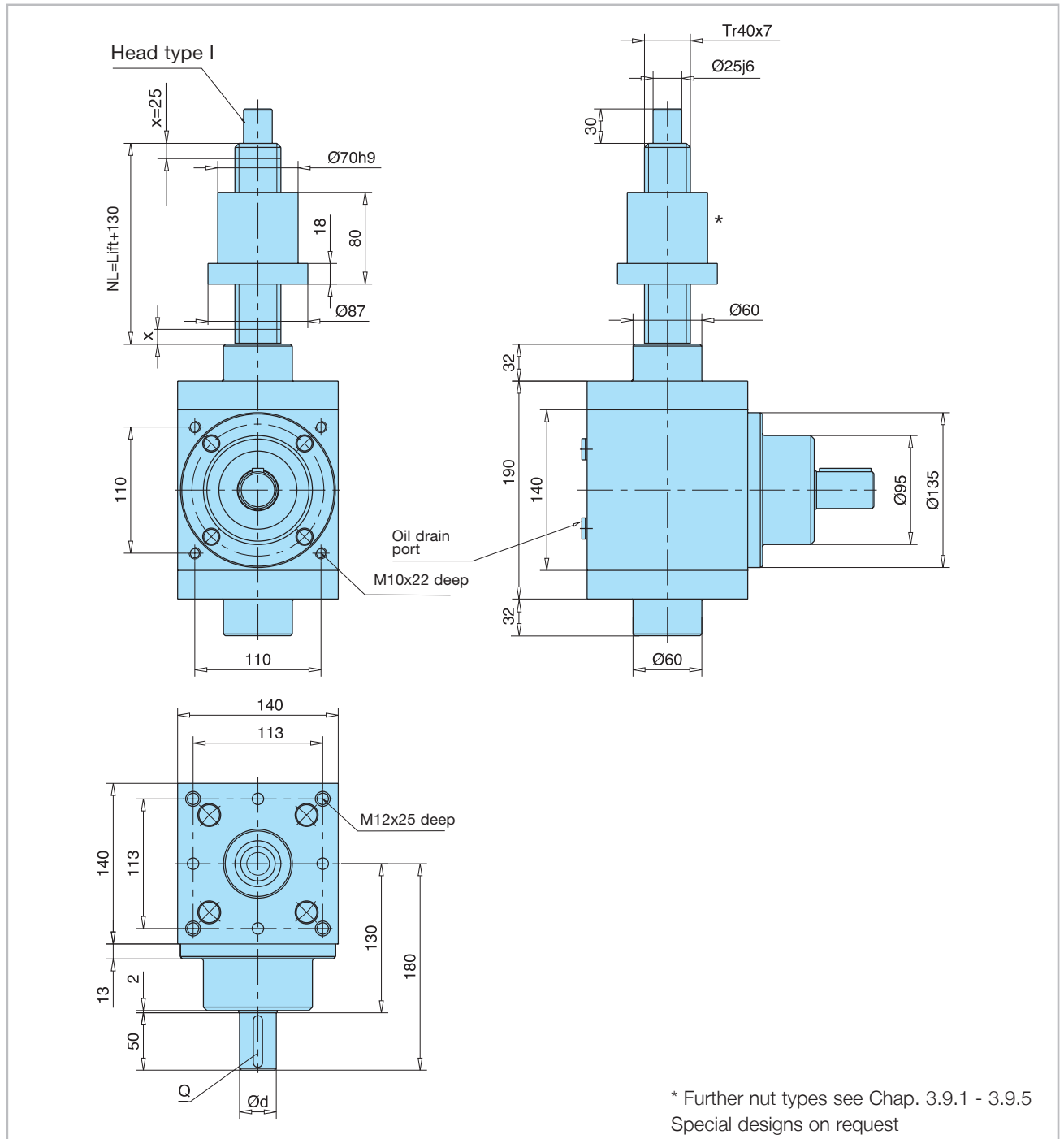
Q (DIN 6885)

A 8x7x36

3.8 SHG range dimension plans

3.8.2.3 Size G 50

3



Options:
Dimension plans of the options available on request

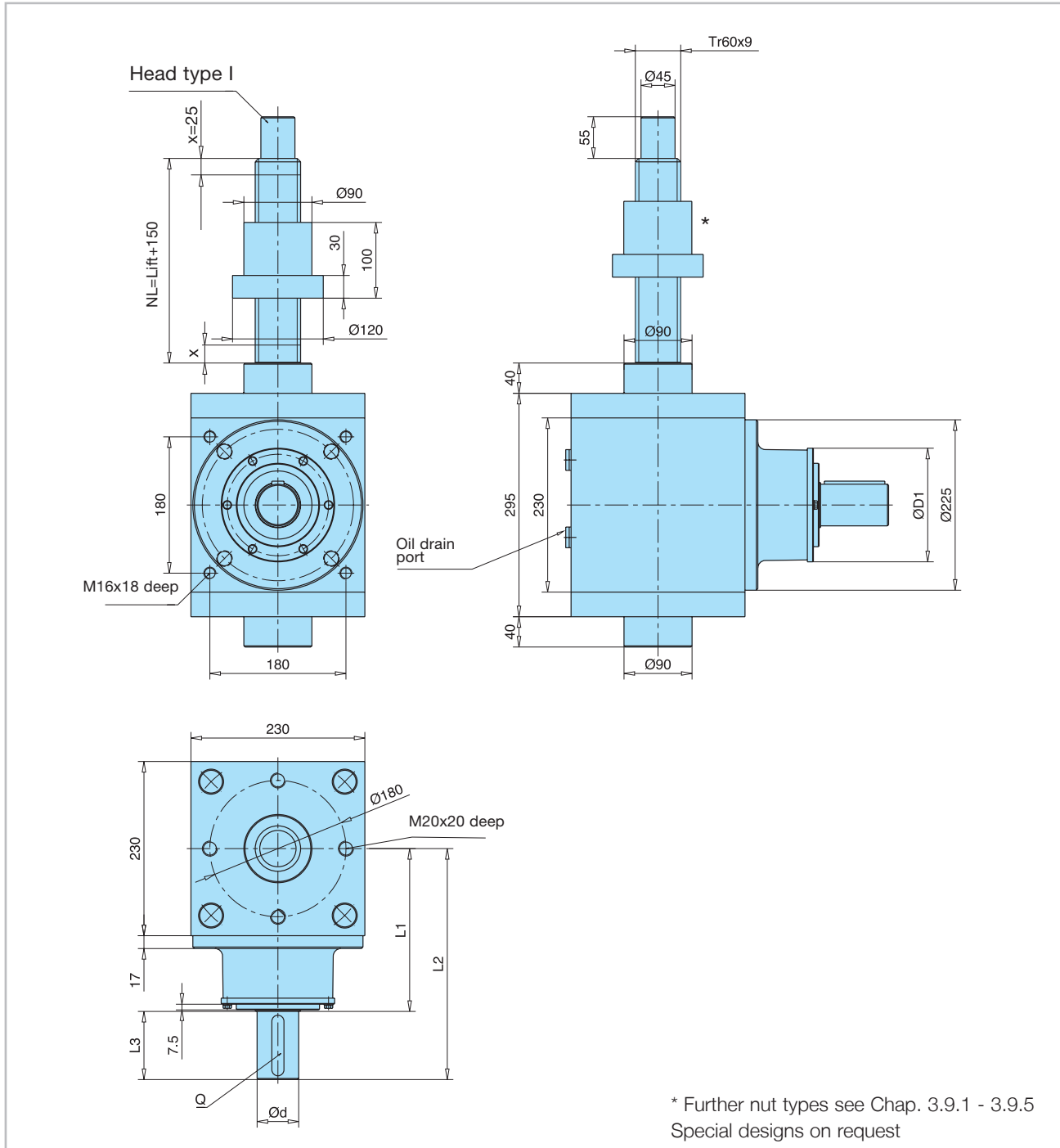
- 1) Ball screw and flange nut, see chapter 3.9.2/3.9.3
- 2) Short safety nut
- 3) Long safety nut

Ratio	Ød j6	Q (DIN 6885)
2:1	32	A 10x8x45
3:1	28	A 8x7x45

Screw jacks

3.8 SHG range dimension plans

3.8.2.4 Size G 90



3

Ratio	Ød j6	ØD1	L1	L2	L3	Q (DIN 6885)
2:1	55	150	215	305	90	A 16x10x80
3:1	40	120	230	310	80	A 12x8x63

1) 2) 3)

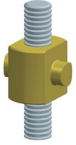
Options
Dimension plans of the options available on request

- 1) Ball screw and flange nut, see chapter 3.9.2/3.9.3
- 2) Short safety nut
- 3) Long safety nut

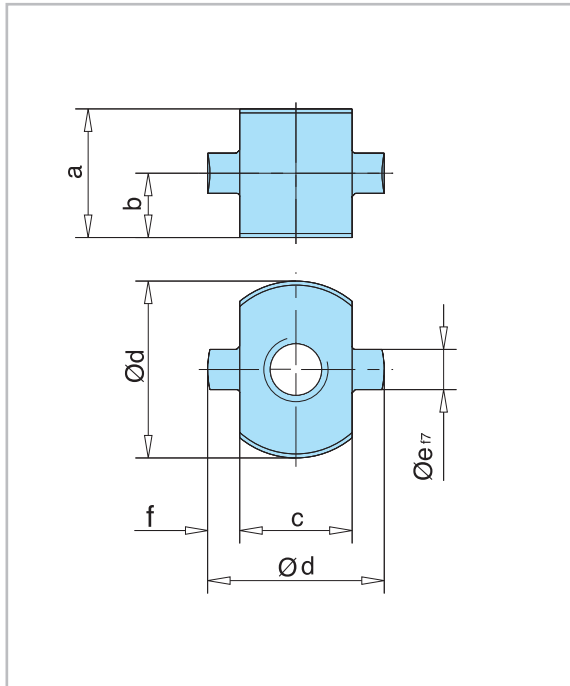
Screw jacks

3.9 Special travelling nuts dimension plans

3.9.1 LWZ Travelling nut with trunnion



3



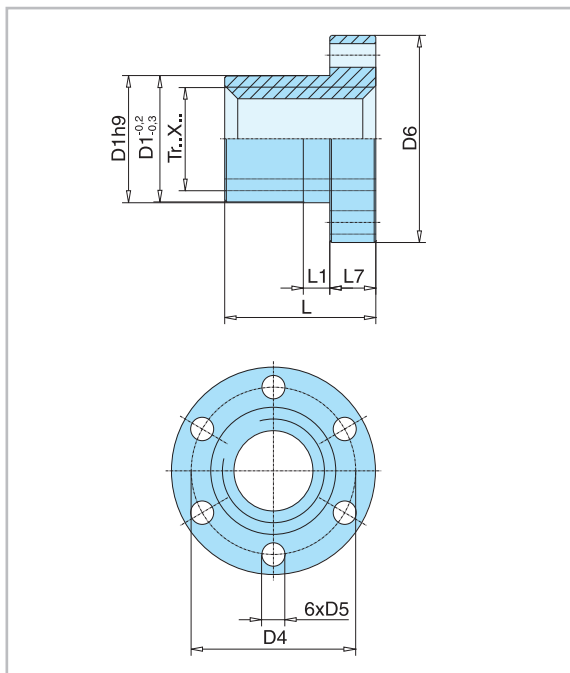
SHE / MERKUR M range

Size	a	b	c	Ød	Øe	f		
0,5	M1	45	22,5	35	50	14	7,5	
1.1	M2	50	25	40	60	18	10	
3.1	M3	60	30	50	80	25	15	
5.1	M4	70	35	62	95	35	16,5	
15.1	M5	90	45	80	130	50	25	
20.1	-	120	60	92	150	65	29	
25	M6	145	72,5	120	190	75	35	
35	M7	on request						
50.1	M8	on request						

HSE range

Size	a	b	c	Ød	Øe	f	
32	45	22,5	35	50	14	7,5	
36.1	50	25	40	60	18	10	
50.1	60	30	50	80	25	15	
63.1	70	35	62	95	35	16,5	
80.1	120	60	80	130	50	25	
100.1	120	60	92	150	65	29	
125.1	on request						
140	on request						

3.9.2 EFM Travelling nut with hole pattern



SHE range

Size	D1h9	D4	D5	D6	L	L1	L7
1.1	45	60	7	75	40	-	12
3.1	50	65	9	80	45	-	15
5.1	70	85	9	100	60	-	18
15.1	90	110	11	130	75	-	25
20.1	90	115	13,5	145	100	-	30
25	130	160	17,5	190	120	-	35

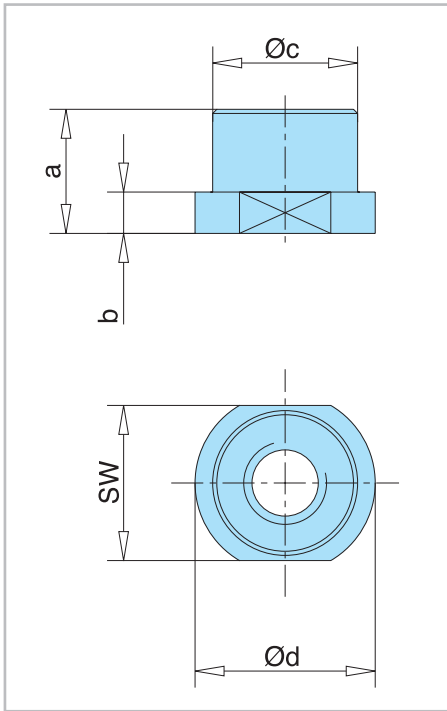
MERKUR M / SHG G range

Size	D1	D4	D5	D6	L	L1	L7
M0	28	38	6	48	35	8	12
M1	28	38	6	48	44	8	12
M2	32	45	7	55	44	8	12
G15	32	45	7	55	44	8	12
M3	38	50	7	62	46	8	14
M4 / G50	63	78	9	95	73	10	16
M5 / G90	85	105	11	125	99	10	20

Screw jacks

3.9 Special travelling nuts dimension plans

3.9.3 LSF Travelling nut with flat surface



SHE / MERKUR M range

Size		a	b	Øc	Ød	SW
0,5	M1	32	10	40	50	44
1.1	M2	40	12	45	65	50
3.1	M3	45	15	50	80	62
5.1	M4	60	18	70	87	75
15.1	M5	75	25	90	110	95
20.1	-	100	30	90	120	100
25	M6	120	35	130	155	135
35	M7	145	35	150	190	160
50.1	M8	155	50	160	225	180



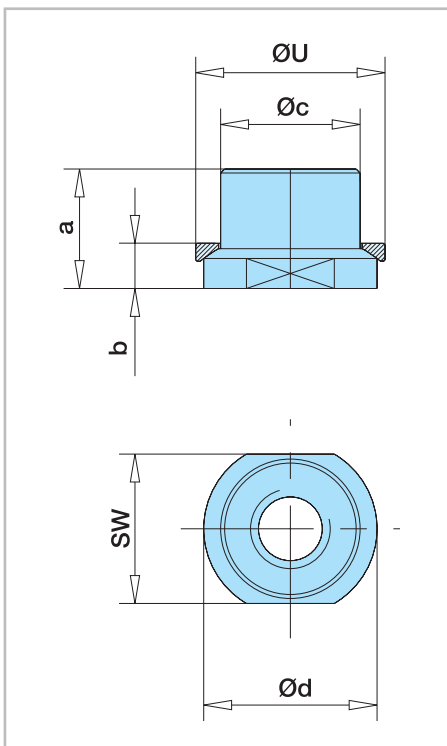
3

HSE range

Size	a	b	Øc	Ød	SW
32	45	12	40	50	44
36.1	55	15	45	65	50
50.1	80	18	70	87	75
63.1	100	22	80	105	85
80.1	130	25	90	110	95
100.1	130	30	90	120	100
125.1	160	45	150	190	160

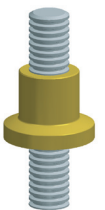
Further designs on request

3.9.4 LSA Travelling nut with spherical support



SHE and MERKUR M range

Size	a	b	Øc	Ød	ØU	SW
0,5	32	10	40	50	55	44
1.1	40	12	45	65	65	50
3.1 / M3	45	15	50	80	82	62
5.1	60	18	70	87	95	75
15.1	75	25	90	110	120	95
20.1	100	30	90	120	120	100
25 / M6	120	35	130	155	175	135
35 / M7	145	35	150	190	195	160
50.1 / M8	155	50	160	225	220	180



HSE range

Size	a	b	Øc	Ød	ØU	SW
32	45	12	40	50	55	44
36.1	55	15	45	65	65	50
50.1	80	18	70	87	95	75
63.1	100	22	80	105	110	85
80.1	130	25	90	110	120	95
100.1	130	30	90	120	120	100
125.1	160	45	150	190	195	160

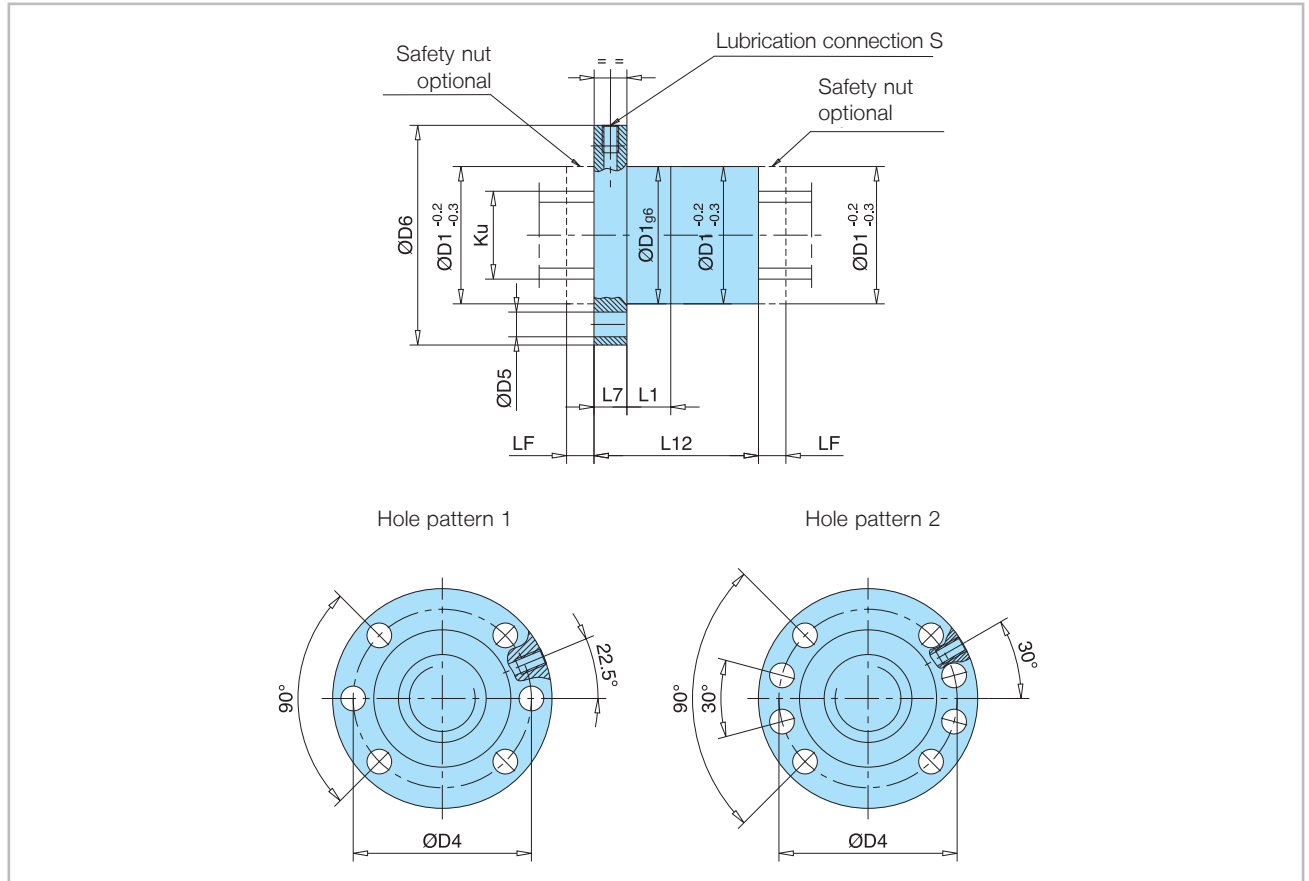
Further designs on request

3.9 Special travelling nuts dimension plans

3.9.5 KGM single flange nut for ball screw (Ku) for all ranges



3



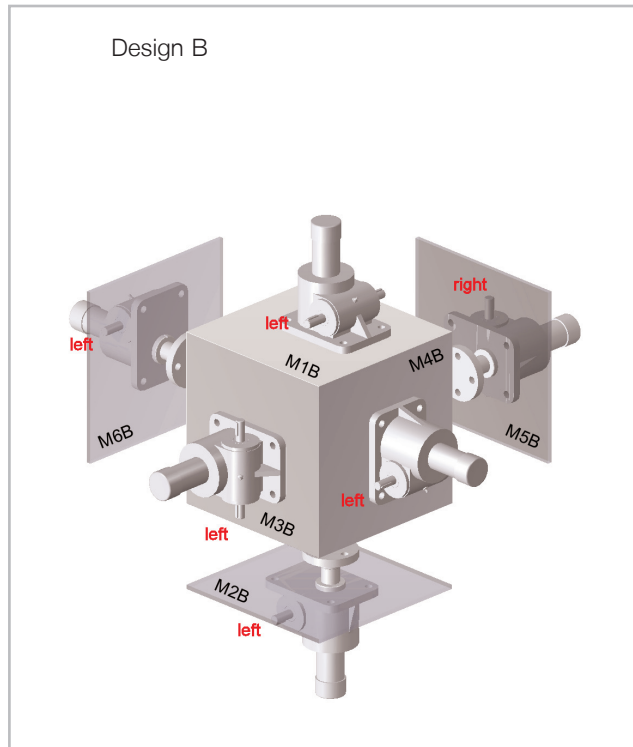
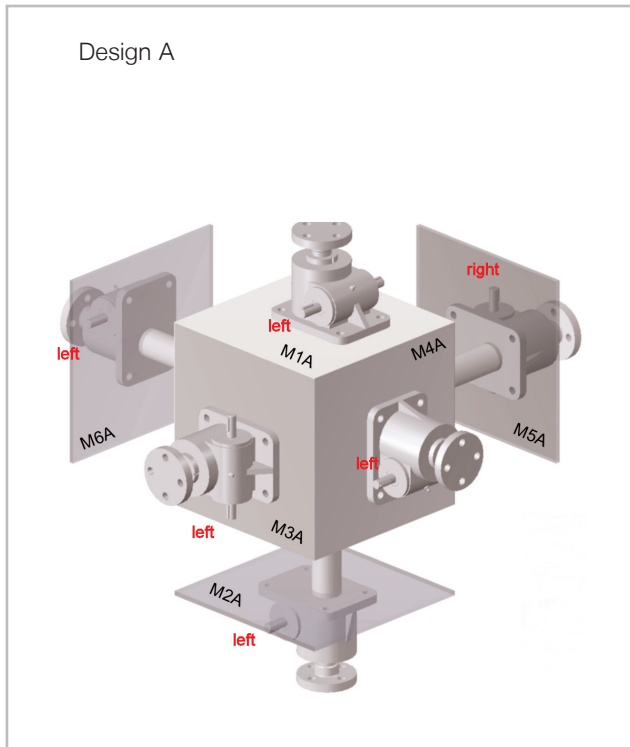
Size Ku d0 x P - Dw - i	Load ratings		Nut dimensions									Hole pattern LF	
	C _{dyn} [kN]	C _{stat} [kN]	D1	D4	D5	D6	L1	L7	L12	S	catch nut		
20 x 05RH - 3,5 - 4	22,7	42,6	36	47	6,6	58	10	10	43	M6	1	15	
20 x 10RH - 3,5 - 2	14,0	21,3	36	47	6,6	58	10	10	26	M6	1	20	
25 x 05RH - 3,5 - 4	24,2	54,8	40	51	6,6	62	10	10	43	M6	1	15	
25 x 10RH - 3,5 - 3	19,8	41,1	40	51	6,6	62	16	10	59	M6	1	20	
32 x 05RH - 3,5 - 5	30,8	91,4	50	65	9	80	10	12	50	M6	1	15	
32 x 10RH - 5 - 3	36,6	74,5	50	65	9	80	16	12	40	M6	1	25	
40 x 10RH - 7 - 4	79,2	170,5	63	78	9	93	16	14	76	M8x1	2	30	
40 x 20RH - 7 - 2	48,7	85,3	63	78	9	93	17	14	51	M8x1	2	50	
50 x 10RH - 7 - 6	112,1	328,8	75	93	11	110	16	16	101	M8x1	2	30	
50 x 20RH - 12,7 - 3	158,0	244,8	85	103	11	120	16	16	117	M8x1	2	50	
50 x 24RH - 12,7 - 3	158,0	244,8	85	103	11	120	18	16	92	M8x1	2	55	
63 x 10RH - 7 - 6	122,8	438,2	90	108	11	125	16	18	103	M8x1	2	30	
63 x 20RH - 12,7 - 3	173,5	333,2	95	115	13,5	135	25	20	121	M8x1	2	35	
80 x 10RH - 7 - 6	135,0	584,5	105	125	13,5	145	16	20	105	M8x1	2	30	
80 x 20RH - 12,7 - 5	282,0	800,7	125	145	13,5	165	25	25	170	M8x1	2	50	
100 x 10RH - 7 - 6	146,2	749,9	125	145	13,5	165	16	22	107	M8x1	2	30	
100 x 20RH - 12,7 - 6	336,6	1203,1	150	176	17,5	202	25	30	195	M8x1	2	60	
125 x 10RH - 7 - 6	157,9	952,6	150	170	13,5	190	25	25	110	M8x1	2	40	
125 x 24RH - 12,7 - 6	373,9	1622,2	170	196	17,5	222	25	40	235	M8x1	2	60	
160 x 20RH - 15 - 6	522	2476	on request										

Further Ku nuts on request

Screw jacks

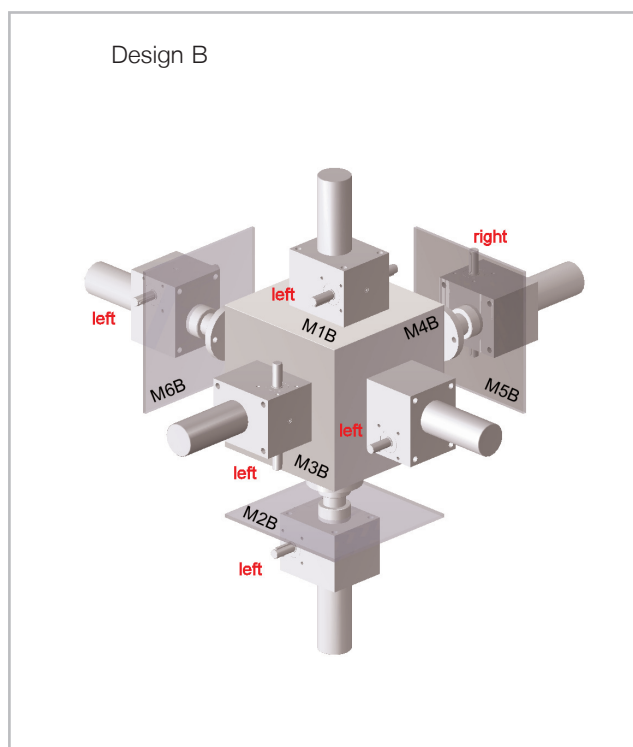
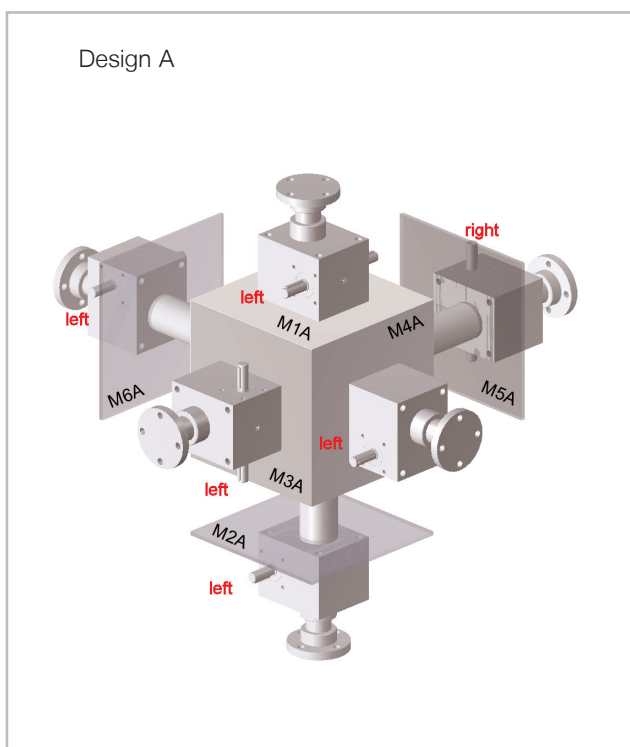
3.10 Mounting positions, shaft/attachment side

3.10.1 SHE range



3

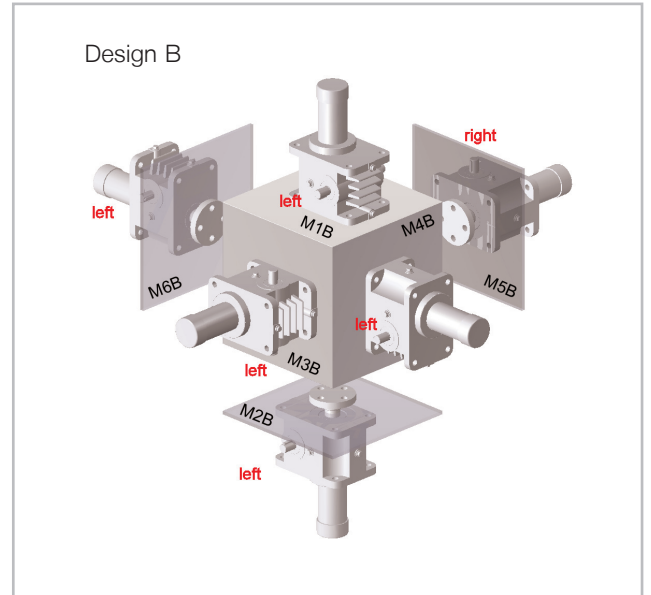
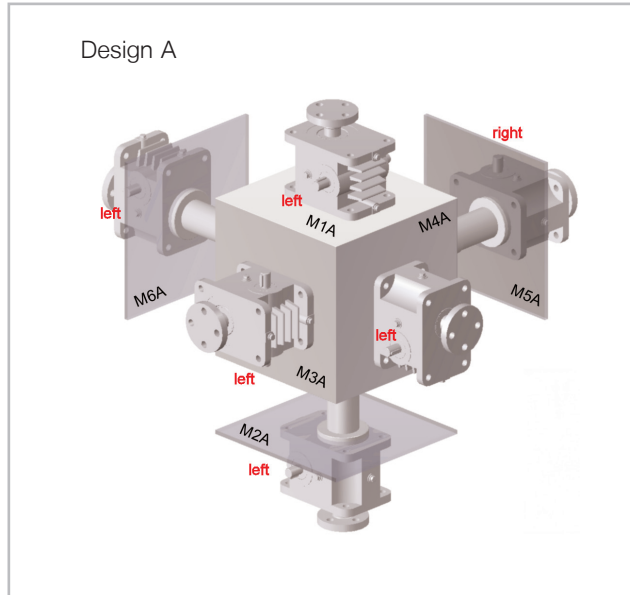
3.10.2 MERKUR range



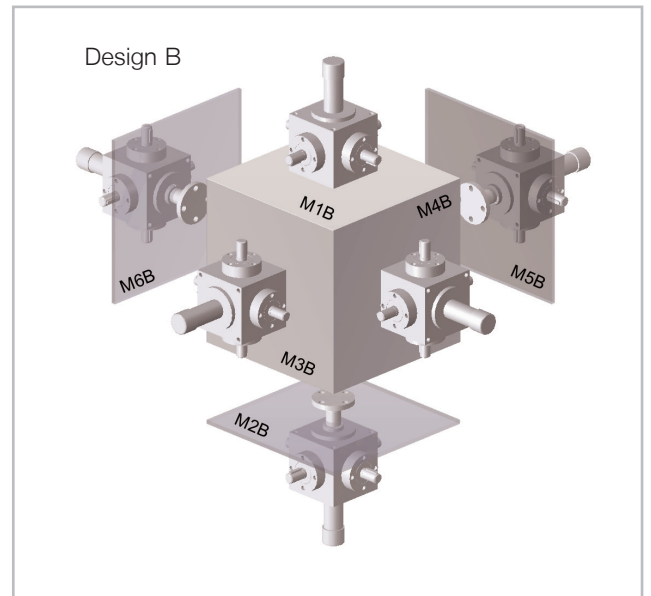
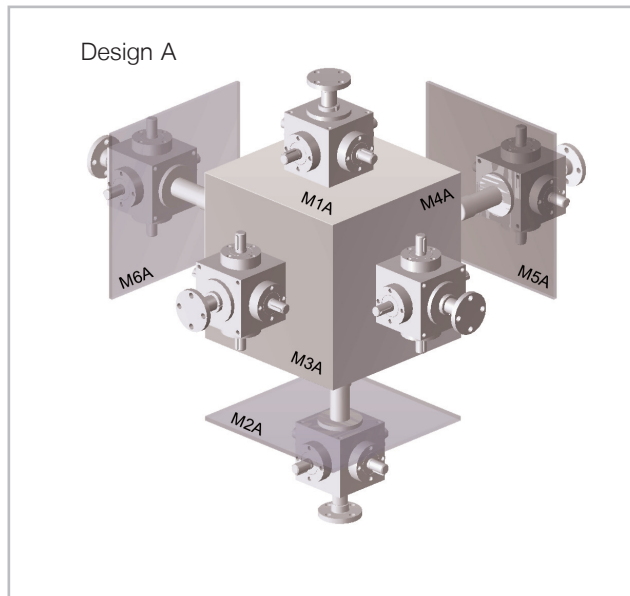
Screw jacks

3.10 Mounting positions, shaft/attachment side

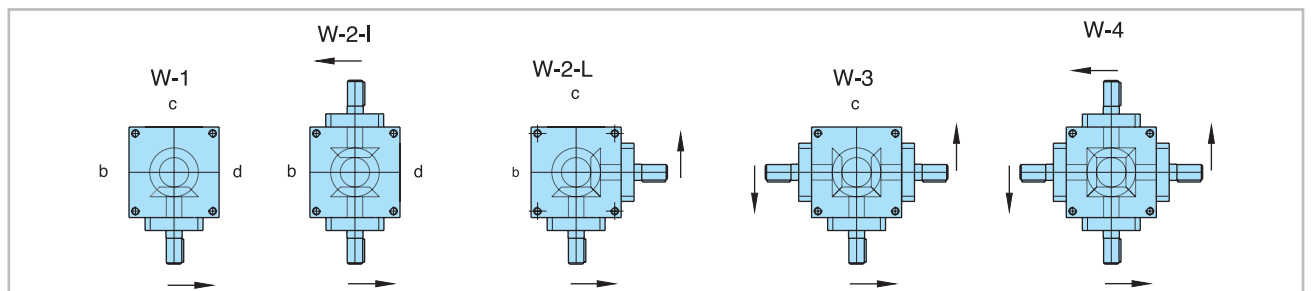
3.10.3 HSE range



3.10.4 SHG range



Shaft layout/Position of the oil fittings (b/c/d) - View from screw side



Screw jacks

3.11 Ordering details

3.11.1 SHE range

1	2	3	4	5	6	7	8	9	10	11	12	13	14		
S H E - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ X ■■■■ - ■■■■ - ...															
1	Range	SHE										7	Mounting position	M1A / M1B / M2A / M2B M3A / M3B / M4A / M4B M5A / M5B / M6A / M6B	
2	Size	0,5 / 1.1 / 2 / 3.1 / 5.1 15.1 / 20.1 / 25 / 35 / 50.1 75 / 100.1 ¹⁾ / 150 / 200.1 ¹⁾										8	Head [Type 1]	I / II / III / IV [Type 2] I / III	
3	Configuration type	1 / 2										9	Lift	Lift (mm)	
4	Design	A / B										10	VL [Type 1]	VL (mm)	
5	Screw side variant												NL [Type 2]	NL (mm)	
	[Type 1]	F										11	Ratio	N / L	
	[Type 2]	0										12	Screw	Tr (DxP) / Ku (DxP)	
6	Protective tube side variant											13	Drive shaft	b (both sides), r (right), l (left)	
	[Type 1]	K / F / S / Sf / Se / Si / Sm V / Ve / Vi / Vm										14	Options	according to specification, description or drawing (see chapter 3.5)	
	[Type 2]	0													

3

3.11.2 MERKUR range

1	2	3	4	5	6	7	8	9	10	11				
M E R K U R - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ X ■■■■ - ■■■■ - ...														
1	Range	MERKUR									6	Lift	Lift (mm)	
2	Size	M0 / M1 / M2 / M3 / M4 M5 / M6 / M7 / M8									7	VL [Type 1]	VL (mm)	
3	Configuration type	1 / 2										NL [Type 2]	NL (mm)	
4	Mounting position	M1A / M1B / M2A / M2B M3A / M3B / M4A / M4B M5A / M5B / M6A / M6B									8	Ratio	N / L	
5	Head [Type 1]	II / III / IV / GK									9	Screw	Tr (DxP) / Ku (DxP)	
	[Type 2]	I									10	Drive shaft	b (both sides)	
											11	Options	according to specification, description or drawing (see chapter 3.6)	

3.11.3 HSE range

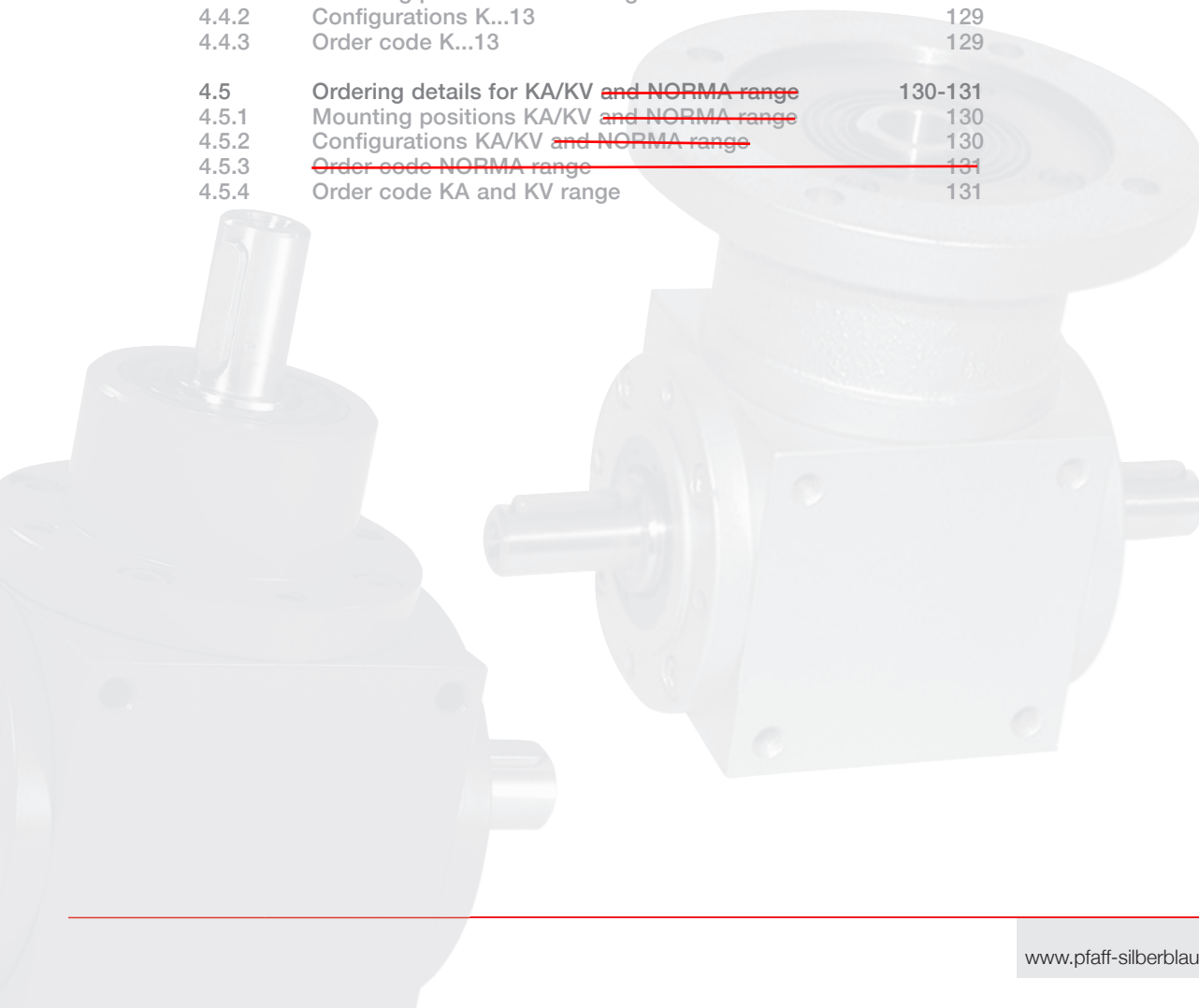
1	2	3	4	5	6	7	8	9	10	11	12	13
H S E - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ - ■■■■ X ■■■■ - ■■■■ - ...												
1	Range	HSE										
2	Size	32 ¹⁾ / 36.1 / 50.1 / 63.1 80.1 / 100.1 / 125.1 / 200.1										
3	Configuration type	1 / 2										
4	Layout on screw side											
	[Type 1]	K / H / F										
	[Type 2]	K / H										
5	Layout on protection tube side											
	[Type 1]	K / H / S / Sf / Sm / Si / V / Vm / Vi										
	[Type 2]	K / H										
6	Mounting position	M1A / M1B / M2A / M2B M3A / M3B / M4A / M4B M5A / M5B / M6A / M6B										
7	Head [Type 1]	I / II / III / IV										
	[Type 2]	I / III										
8	Lift	Lift (mm)										
9	VL [Type 1]	VL (mm)										
	NL [Type 2]	NL (mm)										
10	Ratio	N / L										
11	Screw	Tr (DxP) / Ku (DxP)										
12	Drive shaft	r (right) I (left) b (both sides)										
	(see section 3.10.3)											
13	Options	according to specification, description or drawing (see chapter 3.7)										

¹⁾ Size 32 will replace the existing size 31.

Bevel gear boxes

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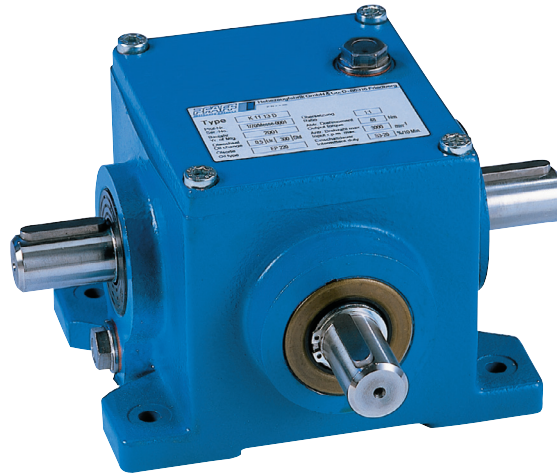
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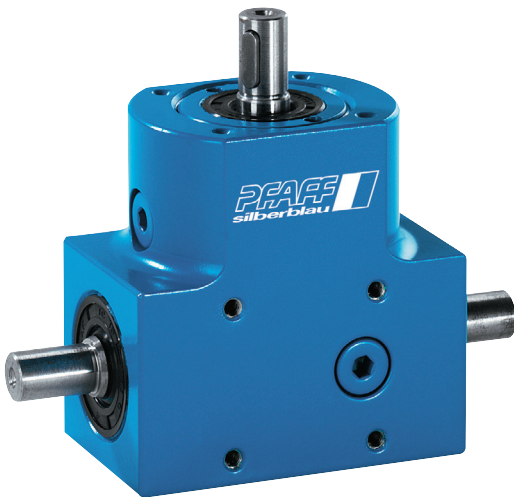
Bevel gear boxes

4.1 Structural configurations

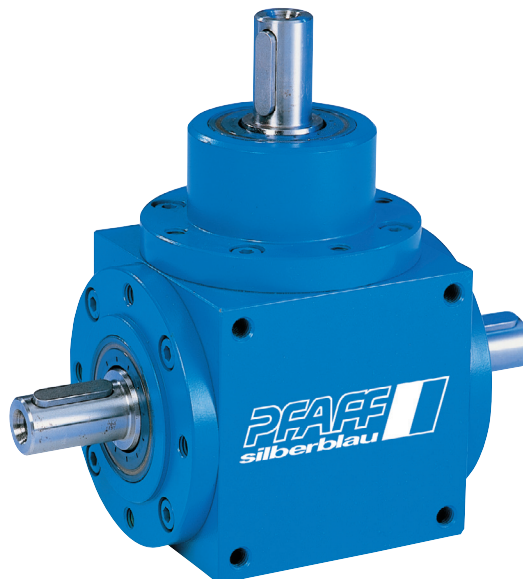
4



K...13 range



NORMA range - removed from program -
replacement series KA



KA and KV range

Bevel gear boxes

4.1 Structural configurations

4.1.1 K...13 range

5 sizes	K 0,5.13 to KV 60.13
Max. output torque	up to 700 Nm
Ratios K 0,5.13-K 25.13	1:1, 2:1, 3:1
Ratios KV 60.13	1:1, 1,5:1, 2:1, 3:1, 4:1 and 5:1

- For multi-screw lifting systems, adjusted to the axis height of our worm gear screw jacks
- Efficient design, with cast-on base strips
- Cast housing with prime coated surface

4.1.2 **NORMA range removed from program - replacement series KA**

4

4.1.3 KA and KV range

9 sizes	KA 1 to KA 35 and KV 90 to KV 550
Max. output torque	up to 8500 Nm
Ratios	1:1, 1,5:1, 2:1, 3:1, 4:1 5:1 and 6:1

- Hardened, paired, lapped helical tooth pattern
- Cubic, all-round machined symmetrical housing
- All-round fixing holes
- Mounting brackets available as accessories
- Configuration available with output-side hollow shaft
- Configuration available with input-side hollow shaft and IEC flange (rectangular flange available on request)
- Cast housing with prime coated surface
- Corrosion-resistant configuration available (single components up to entire transmission system can be supplied in "all stainless-steel configuration")
- Can be used without change for faster ratio (up to $i = 2:1$)

4.2 Project planning

4.2.1 Technical information

Bevel gear box	Max. operating torque T_{zul} [Nm]		Thermal load limit P_{Grenz} [kW] (at 20 % ED/h and 20 °C)	Possible ratios	Type of gearing design	Housing material	Average oil filling capacity	Drive system weight (with oil filling)		
	i	T_{Betr} [Nm]					[l]	[kg]		
K 0,5.13			2	1 : 1 2 : 1 3 : 1	Straight gearing design	G- AISiCu 4	0,1	1		
	1 : 1	2,6								
	2 : 1	3,7								
	3 : 1	3,5								
K 5.13	Table 4.2.3.1		4,5	1 : 1	Helical gear teeth	GG- 20	0,2	5,3		
K 11.13	Table 4.2.3.1		8,5	2 : 1		GG- 20	0,5	8		
K 25.13	Table 4.2.3.1		16	3 : 1		GG- 20	1	24		
KV 60.13	Table 4.2.3.1		43	1 : 1	Helical gear teeth	GG- 25	2,0	55		
				1,5 : 1						
				2 : 1						
				3 : 1						
				4 : 1						
NM0	4 Nm		-	1 : 1	Helical gear teeth	Al-alloy	0,03	1,2		
									NM1	10 Nm
									NM2	19 Nm
									NM3	40 Nm
KA 1	Table 4.2.3.2		2,5	1 : 1	Helical gear teeth	GG- 25	0,1	2		
KA 5	Table 4.2.3.2		8	1,5 : 1		0,2	6			
KA 9	Table 4.2.3.2		11,5	2 : 1		0,3	10			
KA 18	Table 4.2.3.2		20	3 : 1		0,4	20			
KA 35	Table 4.2.3.2		28	4 : 1		1,0	32			
KV 90	Table 4.2.3.3		56	5 : 1		2,5	70			
KV 120	Table 4.2.3.3		79	6 : 1		5,0	100			
KV 260	Table 4.2.3.3		126			13,5	200			
KV 550	Table 4.2.3.3		155			30	400			

4

4.2.2 Dimensioning

Gear dimensioning: The values shown in the table apply to 20 % ED/h and 20 °C ambient temperature. In the event of fluctuating operating conditions, the permitted power and torque ratings must be determined using the operating factors f_1 , f_2 , f_3 , f_4 and f_5 .

$$T_{Betr} = T_{N2} \times f_1 \times f_2 \times f_3$$

$$P_{Betr} = P_N \times f_1 \times f_2 \times f_3$$

$$P_{therm} = P_N \times f_1 / f_4 / f_5$$

$$T_{N2} \text{ [Nm]} = \text{rated drive torque}$$

$$P_N \text{ [kW]} = \text{rated drive capacity}$$

Gear selection according to:

operating performance

$$P_{Betr} < p_{zul} \text{ according to tables 4.2.3}$$

or operating torque

$$T_{Betr} < T_{zul} \text{ according to tables 4.2.3}$$

and therm. Power rating

$$P_{therm} < P_{Grenz} \text{ according to table 4.2.1}$$

Operating factor f_1 (start-up factor)

- $f_1 = 1,0$ Operation with or without light impact
- $f_1 = 1,25$ Operation with medium-strength impact
- $f_1 = 1,4$ Operation with strong impact

Operating factor f_2 (connecting frequency)

- $f_2 = 1,0$ up to 20 start-ups per hour
- $f_2 = 1,1$ up to 60 start-ups per hour
- $f_2 = 1,4$ up to 200 start-ups per hour

Operating factor f_3 (operating time)

- $f_3 = 0,8$ up to two hours per day
- $f_3 = 1,0$ up to eight hours per day
- $f_3 = 1,25$ over eight hours per day

Operating factor f_4 (duty ratio)

- $f_4 = 1,0$ at 20 % ED/h
- $f_4 = 0,85$ at 40 % ED/h
- $f_4 = 0,75$ at 60 % ED/h
- $f_4 = 0,65$ at 80 % ED/h
- $f_4 = 0,55$ at 100 % ED/h

Operating factor f_5 (ambient temperature)

- $f_5 = 1,0$ at 20 °C.
- $f_5 = 0,75$ at 40 °C.
- $f_5 = 0,6$ at 50 °C.
- $f_5 = 0,5$ at 60 °C.
- $f_5 = 0,2$ at 70 °C.

Bevel gear boxes

4.2 Project planning

4.2.3 Performance tables

4.2.3.1 K 5.13 - KV 60.13 range

Input speed n_1 [min ⁻¹]	Output speed n_2 [min ⁻¹]	K5.13		K11.13		K25.13		KV60.13	
		P ₁ [kW]	T ₂ [Nm]	P ₁ [kW]	T ₂ [Nm]	P ₁ [kW]	T ₂ [Nm]	P ₁ [kW]	T ₂ [Nm]
Ratio 1:1									
50	50	0,2	42	0,4	75	1,2	230	3,7	700
250	250	1,0	38	1,8	69	5,3	202	15,2	580
500	500	1,9	36	3,2	61	10,0	191	26,2	500
750	750	3,0	38	4,8	61	14,0	178	34,6	440
1000	1000	3,7	35	6,0	57	17,5	167	42,9	410
1500	1500	4,3	27	8,2	52	26,0	166	55,0	350
3000	3000	8,0	25	15,0	48	40,0	127	69,1	220
Ratio 1,5:1									
50	33,33	-	-	-	-	-	-	2,4	700
250	166,67	-	-	-	-	-	-	10,6	610
500	333,33	-	-	-	-	-	-	18,9	540
750	500	-	-	-	-	-	-	25,9	495
1000	666,67	-	-	-	-	-	-	32,8	470
1500	1000	-	-	-	-	-	-	43,0	410
3000	2000	-	-	-	-	-	-	62,8	300
Ratio 2:1									
50	25	0,1	48	0,2	82	0,7	250	1,8	700
250	125	0,6	48	1,1	80	3,2	244	8,4	640
500	250	1,1	42	1,8	69	5,5	210	15,2	580
750	375	1,6	41	2,6	66	7,5	191	20,7	526
1000	500	2,0	38	3,3	63	9,8	187	26,2	500
1500	750	3,3	42	4,8	61	14,0	178	35,3	450
3000	1500	4,5	29	8,5	54	26,0	166	55,0	350
Ratio 3:1									
50	16,67	0,1	48	0,2	90	0,5	260	0,9	500
250	83,33	0,4	48	0,8	87	2,2	252	4,0	460
500	166,67	0,8	48	1,3	74	4,1	235	7,3	420
750	250	1,2	44	1,8	69	5,7	218	9,95	380
1000	333,33	1,6	44	2,4	69	6,6	189	12,6	360
1500	500	2,2	42	3,4	65	10,0	191	16,2	310
3000	1000	3,9	37	6,1	58	18,0	172	25,1	240
Ratio 4:1									
50	12,5	-	-	-	-	-	-	0,6	480
250	62,5	-	-	-	-	-	-	2,8	430
500	125	-	-	-	-	-	-	5,3	400
750	187,5	-	-	-	-	-	-	7,4	375
1000	250	-	-	-	-	-	-	9,4	360
1500	375	-	-	-	-	-	-	12,6	320
3000	750	-	-	-	-	-	-	18,9	240
Ratio 5:1									
50	10	-	-	-	-	-	-	0,5	520
250	50	-	-	-	-	-	-	2,5	480
500	100	-	-	-	-	-	-	4,7	450
750	150	-	-	-	-	-	-	6,6	420
1000	200	-	-	-	-	-	-	8,4	400
1500	300	-	-	-	-	-	-	11,6	370

4.2 Project planning

4.2.3.2 KA 1 - KA 35 range

Input speed n_1 [min ⁻¹]	Output speed n_2 [min ⁻¹]	KA 1		KA 5		KA 9		KA 18		KA 35	
		P ₁ [kW]	T ₂ [Nm]	P ₁ [kW]	T ₂ [Nm]	P ₁ [kW]	T ₂ [Nm]	P ₁ [kW]	T ₂ [Nm]	P ₁ [kW]	T ₂ [Nm]
Ratio 1:1											
50	50	0,09	18	0,26	50	0,68	130	1,05	200	1,68	320
250	250	0,47	18	1,28	49	3,14	120	4,71	180	7,85	300
500	500	0,89	17	2,41	46	5,76	110	8,90	170	14,14	270
1000	1000	1,68	16	4,4	42	9,42	90	15,71	150	23,04	220
1500	1500	2,2	14	5,81	37	12,88	82	20,42	130	28,27	180
2000	2000	2,51	12	6,91	33	12,29	73	25,13	120	35,60	170
3000	3000	3,14	10	8,8	28	18,85	60	28,27	90	40,84	130
Ratio 1,5:1											
50	33,33	0,06	18	0,17	50	0,45	130	0,70	200	1,12	320
250	166,67	0,31	18	0,86	49	2,09	120	3,32	190	5,41	310
500	333,33	0,59	17	1,68	48	3,84	110	6,28	180	10,12	290
1000	666,67	1,12	16	3,07	44	6,98	100	11,17	160	18,15	260
1500	1000	1,57	15	4,19	40	9,42	90	15,71	150	23,04	220
2000	1333,33	1,95	14	5,31	38	11,87	85	19,55	140	27,92	200
3000	2000	2,51	12	6,91	33	15,29	73	25,13	120	35,60	170
Ratio 2:1											
50	25	0,05	18	0,13	50	0,34	130	0,52	200	0,84	320
250	125	0,24	18	0,64	49	1,64	125	2,49	190	4,06	310
500	250	0,47	18	1,26	48	3,14	120	4,71	180	7,85	300
1000	500	0,89	17	2,36	45	5,76	110	8,90	170	14,14	270
1500	750	1,26	16	3,38	43	7,85	100	12,57	160	19,63	250
2000	1000	1,57	15	4,19	40	9,42	90	15,71	150	23,04	220
3000	1500	2,2	14	5,81	37	12,88	82	20,42	130	28,27	180
Ratio 3:1											
50	16,67	0,03	16	0,07	40	0,17	95	0,31	175	0,51	290
250	83,33	0,13	15	0,34	39	0,77	88	1,48	170	2,27	260
500	166,67	0,26	15	0,66	38	1,47	84	2,79	160	4,19	240
1000	333,33	0,49	14	1,29	37	2,62	75	5,24	150	6,98	200
1500	500	0,68	13	1,83	35	3,51	67	6,81	130	9,42	180
2000	666,67	0,84	12	2,23	32	4,54	65	8,38	120	11,87	170
3000	1000	1,15	11	2,93	28	5,45	52	10,47	100	15,71	150
Ratio 4:1											
50	12,5	-	-	0,05	38	0,12	95	0,23	175	0,37	280
250	62,5	-	-	0,25	38	0,60	92	1,11	170	1,77	270
500	125	-	-	0,48	37	1,15	88	2,16	165	3,14	240
1000	250	-	-	0,92	35	2,09	80	3,93	150	5,50	210
1500	375	-	-	1,34	34	2,91	74	5,50	140	7,46	190
2000	500	-	-	1,62	31	3,56	68	6,81	130	9,16	175
3000	750	-	-	2,28	29	4,71	60	7,85	100	12,57	160
Ratio 5:1											
50	10	-	-	0,04	38	0,10	95	0,18	175	0,27	260
250	50	-	-	0,19	37	0,48	92	0,89	170	1,31	250
500	100	-	-	0,37	35	0,92	88	1,68	160	2,41	230
1000	200	-	-	0,69	33	1,68	80	2,93	140	4,19	200
1500	300	-	-	0,94	30	2,29	73	3,77	120	5,81	185
2000	400	-	-	1,17	28	2,85	68	4,61	110	7,54	180
3000	600	-	-	1,70	27	3,77	60	6,28	100	10,05	160
Ratio 6:1											
50	8,33	-	-	0,03	32	0,06	74	-	-	0,18	210
250	41,67	-	-	0,14	31	0,31	70	-	-	0,87	200
500	83,33	-	-	0,26	30	0,60	69	-	-	1,66	190
1000	166,67	-	-	0,51	29	1,19	68	-	-	3,23	185
1500	250	-	-	0,73	28	1,68	64	-	-	4,45	170
2000	333,33	-	-	0,94	27	2,09	60	-	-	5,58	160
3000	500	-	-	1,36	26	2,72	52	-	-	7,85	150

Bevel gear boxes

4.2 Project planning

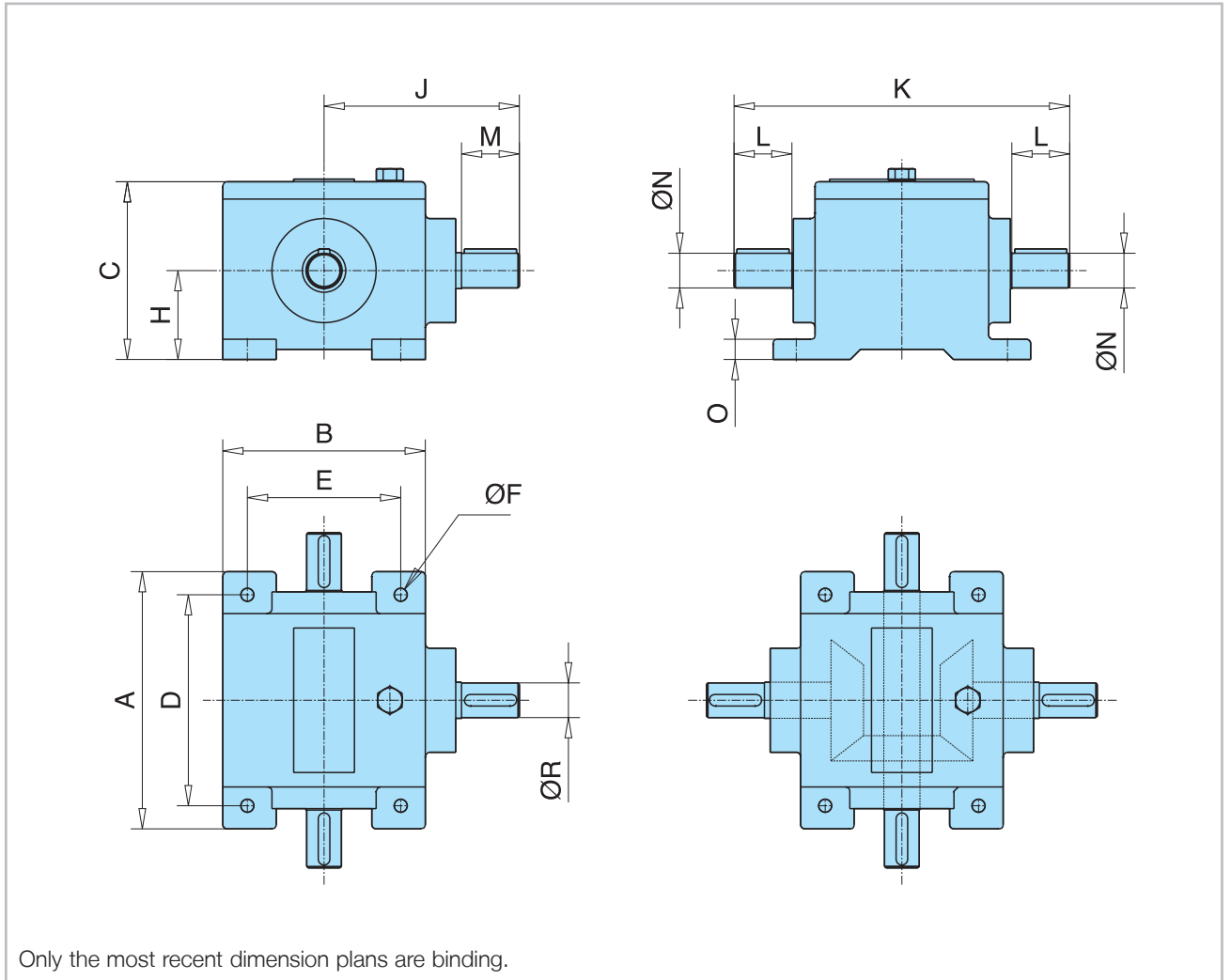
4.2.3.3 KV 90 - KV 550 range

Input speed n_1 [min ⁻¹]	Output speed n_2 [min ⁻¹]	KV 90		KV 120		KV 260		KV 550	
		P ₁ [kW]	T ₂ [Nm]	P ₁ [kW]	T ₂ [Nm]	P ₁ [kW]	T ₂ [Nm]	P ₁ [kW]	T ₂ [Nm]
Ratio 1:1									
50	50	6,54	1250	9,16	1750	23,04	4400	40,84	7800
250	250	24,87	950	36,65	1400	89,01	3400	154,45	5900
500	500	41,88	800	62,83	1200	146,60	2800	261,78	5000
1000	1000	67,02	640	94,24	900	198,95	1900	418,85	4000
1500	1500	81,68	520	116,23	740	251,31	1600	549,74	3400
2000	2000	92,15	440	127,75	610	-	-	-	-
3000	3000	100,52	320	138,22	440	-	-	-	-
Ratio 1,5:1									
50	33,33	4,54	1300	6,28	1800	15,71	4500	27,92	8000
250	166,67	19,20	1100	26,18	1500	64,57	3700	113,44	6500
500	333,33	31,41	900	45,38	1300	108,20	3100	188,48	5400
1000	666,67	52,36	750	76,79	1100	181,50	2600	328,10	4700
1500	1000	67,02	640	94,24	900	198,95	1900	418,85	4000
2000	1333,33	79,58	570	110,30	790	237,35	1700	516,58	3700
3000	2000	92,15	440	127,75	610	-	-	-	-
Ratio 2:1									
50	25	3,40	1300	4,71	1800	12,04	4600	21,47	8200
250	125	15,71	1200	20,94	1600	51,05	3900	90,31	6900
500	250	24,87	950	36,65	1400	89,01	3400	154,45	5900
1000	500	41,88	800	62,83	1200	146,60	2800	261,78	5000
1500	750	54,97	700	78,53	1000	188,48	2400	353,40	4500
2000	1000	67,02	640	94,24	900	198,95	1900	418,85	4000
3000	1500	81,68	520	116,23	740	251,31	1600	549,74	3500
Ratio 3:1									
50	16,67	1,52	870	2,97	1700	7,33	4200	14,83	8200
250	83,33	7,07	810	12,22	1400	32,29	3700	63,70	7300
500	166,67	13,09	750	21,82	1250	55,85	3200	109,95	6300
1000	333,33	21,64	620	34,21	980	90,75	2600	184,99	5300
1500	500	27,25	530	43,98	840	115,18	2200	240,84	4600
2000	666,67	33,51	480	53,05	760	132,64	1900	293,19	4200
3000	1000	40,84	390	62,83	600	178,01	1700	366,49	3500
Ratio 4:1									
50	12,5	1,26	960	2,09	1600	3,93	3000	11,13	8500
250	62,5	5,56	850	9,82	1500	18,32	2800	51,05	7800
500	125	10,21	780	17,67	1350	32,72	2500	91,62	7000
1000	250	17,28	660	30,10	1150	54,97	2100	159,69	6100
1500	375	23,17	590	38,48	980	74,61	1900	223,82	5700
2000	500	27,23	520	45,55	870	94,24	1800	261,78	5000
3000	750	33,77	430	54,97	700	125,65	1600	337,70	4300
Ratio 5:1									
50	10	1,02	970	1,57	1500	3,35	3200	7,54	7200
250	50	4,71	900	7,33	1400	15,18	2900	33,51	6400
500	100	8,48	810	13,61	1300	25,13	2400	60,73	5800
1000	200	14,66	700	23,04	1100	39,79	1900	104,71	5800
1500	300	19,48	620	29,84	950	53,40	1700	135,08	4300
2000	400	23,46	560	35,60	850	67,02	1600	159,16	3800
3000	600	31,41	500	46,49	740	81,68	1300	201,05	3200
Ratio 6:1									
50	8,33	0,53	610	0,87	1000	1,83	2100	5,41	6200
250	41,67	2,62	600	4,28	980	8,73	2000	25,31	5800
500	83,33	5,06	580	7,68	880	15,71	1800	45,38	5200
1000	166,67	9,25	530	13,61	780	29,67	1700	80,28	4600
1500	250	12,57	480	17,80	680	39,27	1500	104,71	4000
2000	333,33	15,01	430	20,94	600	48,87	1400	132,64	3800
3000	500	18,85	360	26,18	500	57,59	1100	167,54	3200

Bevel gear boxes

4.3 Dimension plans

4.3.1 K...13 range



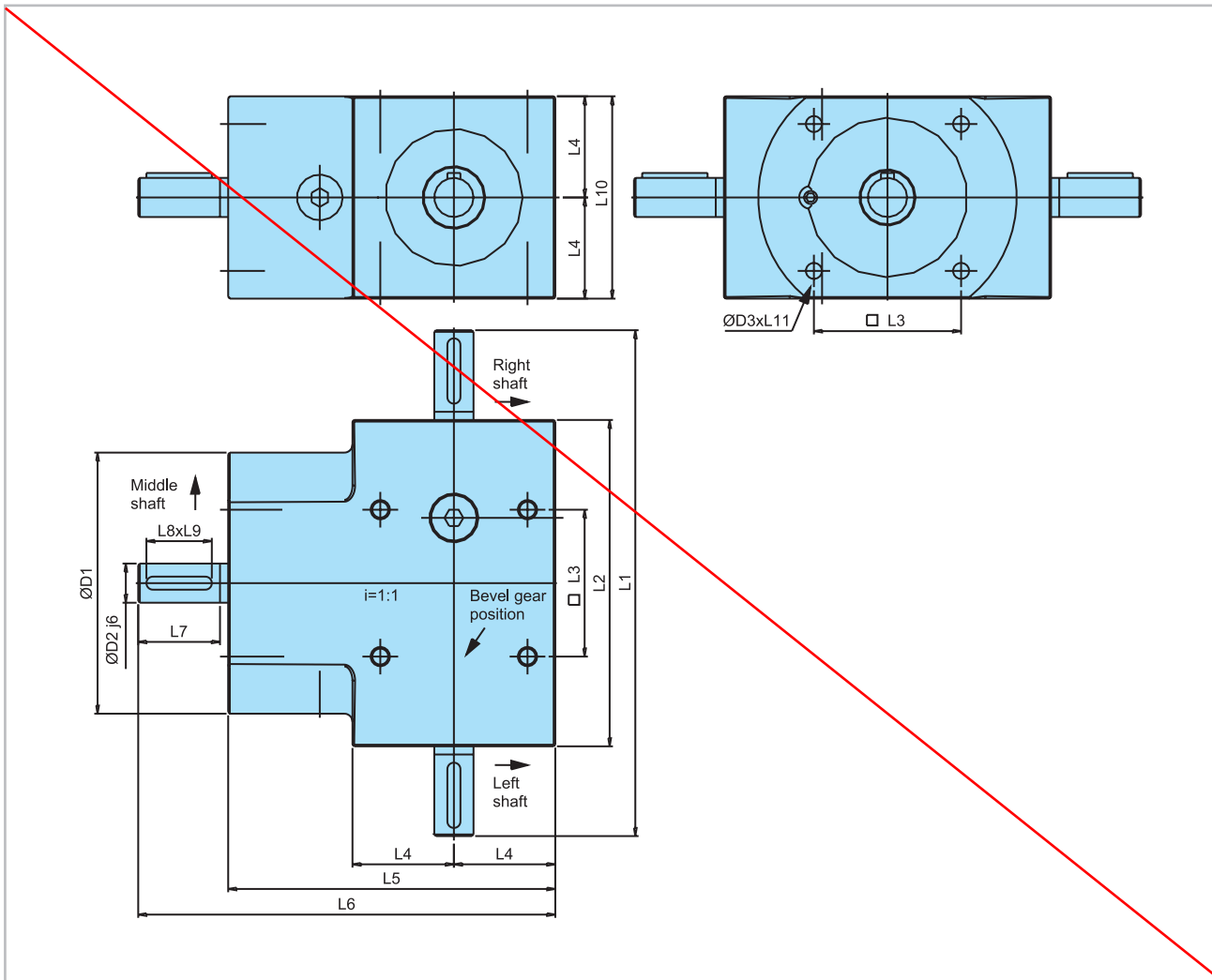
Size	K 0,5.13	K 5.13	K 11.13	K 25.13	KV60.13			
Ratio	1:1 / 2:1 / 3:1	1:1 / 2:1 / 3:1	1:1 / 2:1 / 3:1	1:1 / 2:1 / 3:1	1:1 / 1,5:1 / 2:1	3:1	4:1	5:1
A	105	135	178	230	300	300	300	300
B	64	110	140	230	210	210	210	210
C	64	105	123	152	202	202	202	202
D	84,5	110	146	195	270	270	270	270
E	50	85	106	195	170	170	170	170
ØF	6,5	9	9	11	13	13	13	13
H	32	52,5	61,5	70	102	102	102	102
J	64	110	135	223	273	261	261	248
K	114	170	232	356	406	406	406	406
L	15,5	28	40	80	80	80	80	80
M	15,5	30	40	80	80	68	68	55
ØN	10 _{h6}	16 _{h5}	24 _{h6}	30 _{h6}	42 _{h6}	42 _{h6}	42 _{h6}	42 _{h6}
O	8	12	14	15	15	15	15	15
ØR	10 _{h6}	16 _{h5}	24 _{h6}	30 _{h6}	42 _{h6}	35 _{h6}	35 _{h6}	28 _{h6}

Feather keys and grooves: DIN 6885 Page 1.

Bevel gear boxes

4.3 Dimension plans

4.3.2 NORMA range removed from program - replacement series KA



4

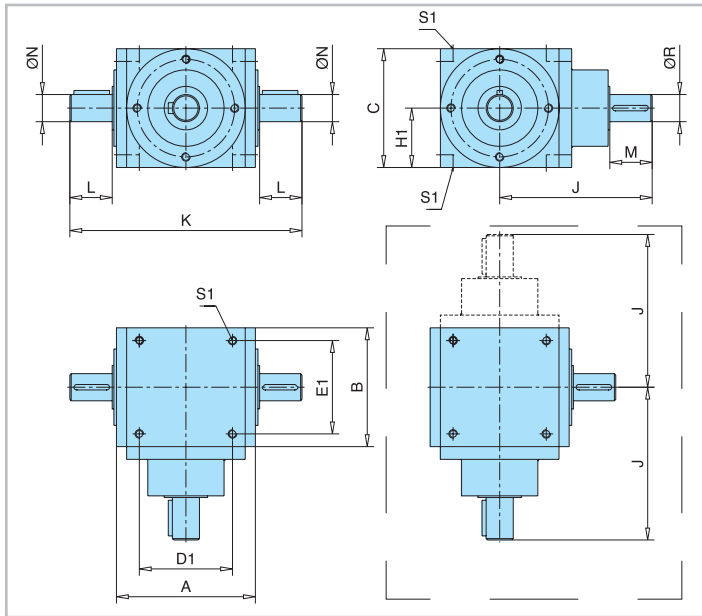
Size	NM0	NM1	NM2	NM3
Ratio	1:1	1:1	1:1	1:1
ØD1	65	80	90	100
ØD2	12	12	14	18
ØD3	M5	M6	M6	M8
L1	130	155	180	220
L2	85	100	115	130
L3	37	45	55	60
L4	25	31	37,5	41
L5	85	100	115	130
L6	107,5	127,5	147,5	175
L7	20	25	30	42,5
L8	4	4	5	6
L9	14	20	25	36
L10	50	62	75	82
L11	10	12	12	12

Radial forces are not allowed on the "middle" drive shaft.
Oil filling as standard

Bevel gear boxes

4.3 Dimension plans

4.3.3 KA and KV range



Only the most recent dimension plans are binding.

Size	KA 1				KA 5			
	1:1 / 1,5:1 / 2:1	3:1	4:1	5:1 / 6:1	1:1 / 1,5:1 / 2:1	3:1	4:1	5:1 / 6:1
A	84	84	-	-	110	110	110	110
B	65	65	-	-	90	90	90	90
C	65	65	-	-	90	90	90	90
D1 ^{±0,2}	45	45	-	-	70	70	70	70
E1 ^{±0,2}	45	45	-	-	70	70	70	70
H1	32,5	32,5	-	-	45	45	45	45
J	100	100	-	-	122	122	132	132
K	144	144	-	-	190	190	190	190
L	26	26	-	-	35	35	35	35
M	26	26	-	-	35	35	35	35
ØN _{j6}	12	12	-	-	18	18	18	18
ØR _{j6}	12	12	-	-	18	12	12	12
S1	M 6x12	M 6x12	-	-	M 8x14	M 8x14	M 8x14	M 8x14

Size	KA 9				KA 18			
	1:1 / 1,5:1 / 2:1	3:1	4:1	5:1 / 6:1	1:1 / 1,5:1 / 2:1	3:1	4:1	5:1 / 6:1
A	144	144	144	144	164	164	164	164
B	120	120	120	120	140	140	140	140
C	120	120	120	120	140	140	140	140
D1 ^{±0,2}	100	100	100	100	110	110	110	110
E1 ^{±0,2}	100	100	100	100	110	110	110	110
H1	60	60	60	60	70	70	70	70
J	162	162	172	162	180	180	195	195
K	244	244	244	244	274	274	274	274
L	45	45	45	45	50	50	50	50
M	45	45	45	35	50	50	50	50
ØN _{j6}	25	25	25	25	32	32	32	32
ØR _{j6}	25	20	20	15	32	28	24	24
S1	M 10x16	M 10x16	M 10x16	M 10x16	M 10x20	M 10x20	M 10x20	M 10x20

Shaft adapters: j₆, Shaft center holes: DIN 332 Page 2, Feather keys and grooves: DIN 6885 Page 1

Bevel gear boxes

4.3 Dimension plans

Size	KA 35				KV 90			
	1:1 / 1,5:1 / 2:1	3:1	4:1	5:1 / 6:1	1:1 / 1,5:1 / 2:1	3:1	4:1	5:1 / 6:1
A	190	190	190	190	264	264	264	264
B	160	160	160	160	230	230	230	230
C	160	160	160	160	230	230	230	230
D1 ^{±0,2}	120	120	120	120	180	180	180	180
E1 ^{±0,2}	120	120	120	120	180	180	180	180
H1	80	80	80	80	115	115	115	115
J	212	212	232	232	305	310	310	300
K	320	320	320	320	460	460	460	460
L	60	60	60	60	90	90	90	90
M	60	60	60	60	90	80	80	70
ØN ₆	35	35	35	35	55	55	55	55
ØR ₆	35	28	24	24	55	40	40	35
S1	M 12x24	M 12x24	M 12x24	M 12x24	M 16x32	M 16x32	M 16x32	M 16x32

4

Size	KV 120				KV 260			
	1:1 / 1,5:1 / 2:1	3:1	4:1	5:1 / 6:1	1:1 / 1,5:1 / 2:1	3:1	4:1	5:1 / 6:1
A	300	300	300	300	402	402	402	402
B	260	260	260	260	350	350	350	350
C	260	260	260	260	350	350	350	350
D1 ^{±0,2}	220	220	220	220	285	285	285	285
E1 ^{±0,2}	220	220	220	220	285	285	285	285
H1	130	130	130	130	175	175	175	175
J	380	360	360	360	570	540	540	510
K	570	570	570	570	820	820	820	820
L	110	110	110	110	170	170	170	170
M	110	90	90	90	170	140	140	110
ØN ₆	60	60	60	60	80	80	80	80
ØR ₆	60	50	50	45	80	65	65	55
S1	M 16x32	M 16x32	M 16x32	M 16x32	M 20x40	M 20x40	M 20x40	M 20x40

Size	KV 550				
	1:1 / 1,5:1 / 2:1	3:1	4:1	5:1	6:1
A	490	490	490	490	490
B	450	450	450	450	450
C	450	450	450	450	450
D1 ^{±0,2}	360	360	360	360	360
E1 ^{±0,2}	360	360	360	360	360
H1	225	225	225	225	225
J	600	570	570	530	540
K	940	940	940	940	940
L	150	150	150	150	150
M	150	120	120	110	110
ØN ₆	90	90	90	90	90
ØR ₆	90	75	75	60	60
S1	M 20x40	M 20x40	M 20x40	M 20x40	M 20x40

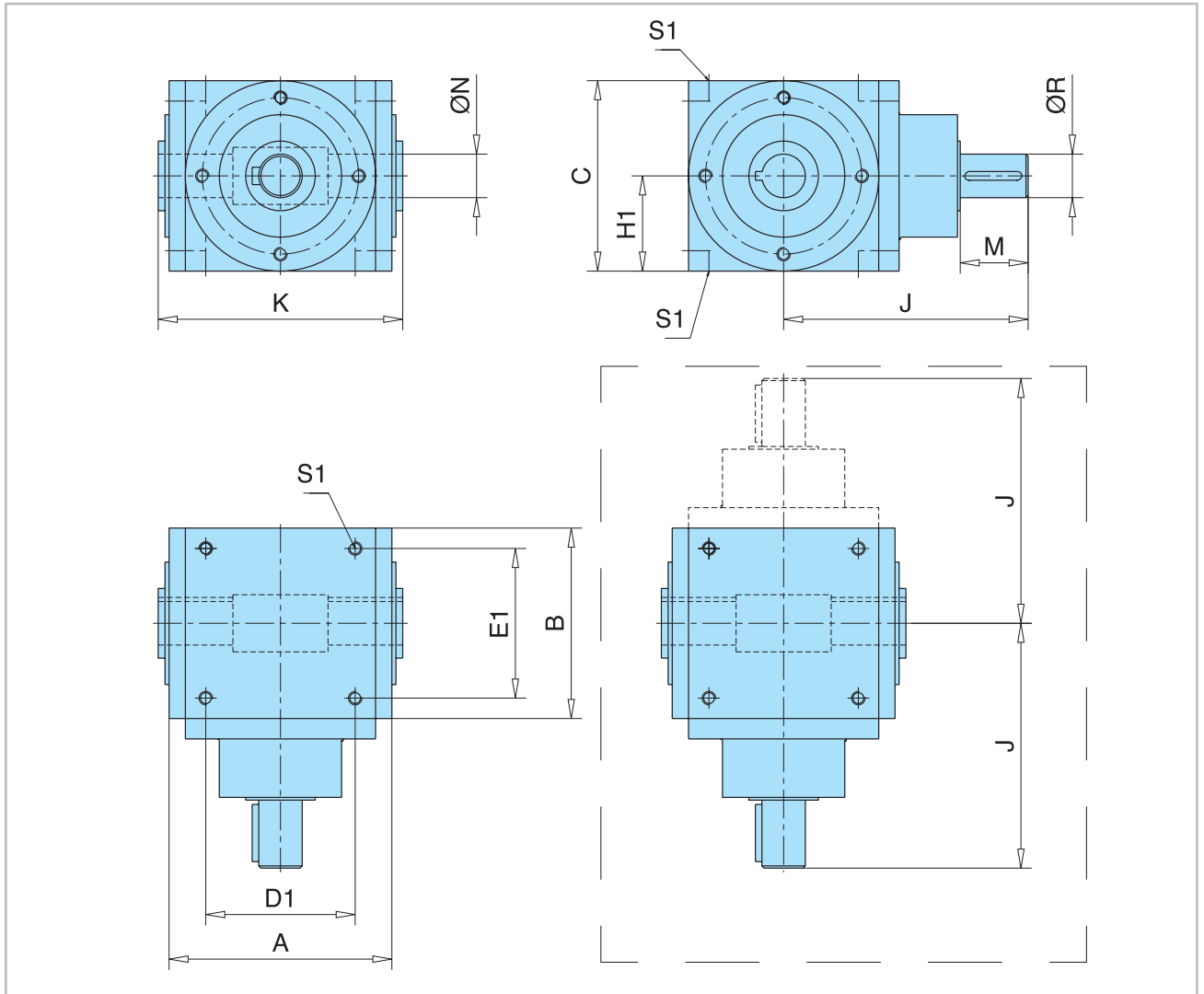
Shaft adapters: j6

Shaft center holes: DIN 332 Page 2.

Feather keys and grooves:
DIN 6885 Page 1.

4.3 Dimension plans

4.3.4 KA...H and KV...H range with output-side hollow shaft



Only the most recent dimension plans are binding.

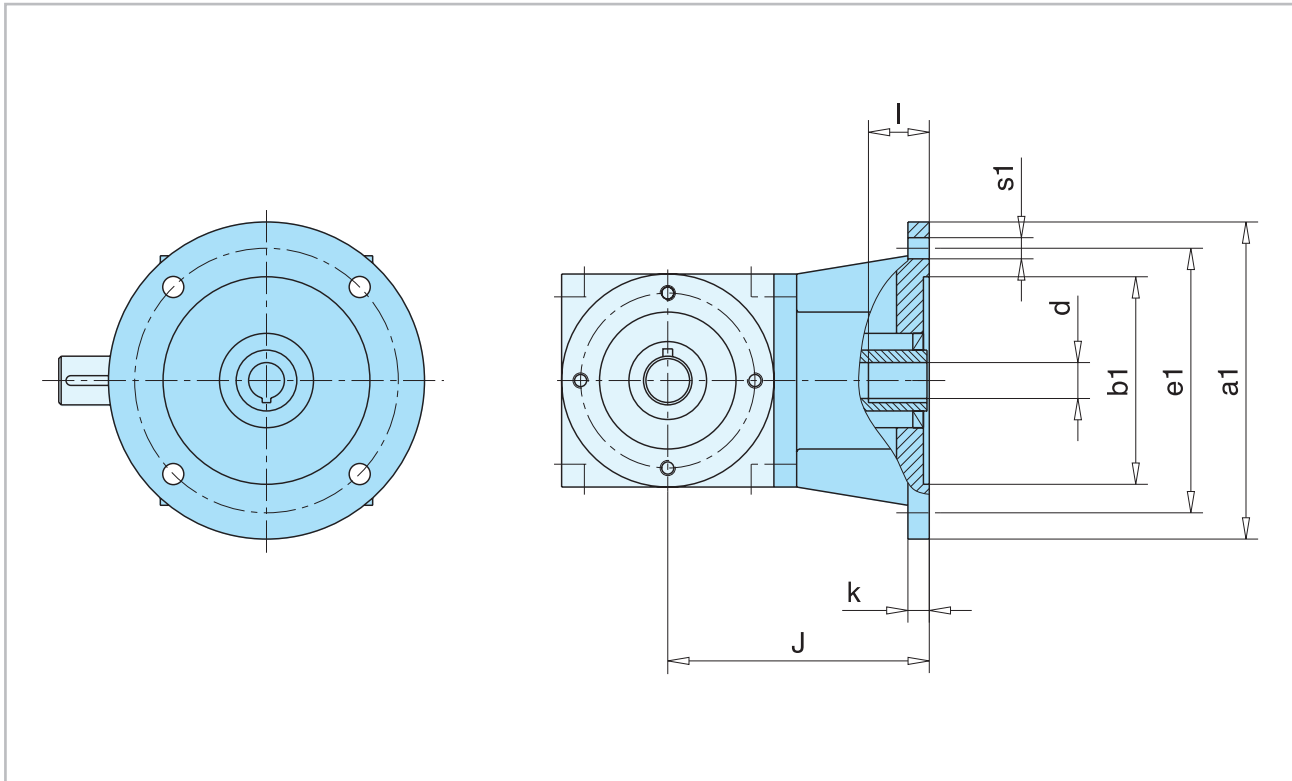
Size	KA 1 H	KA 5 H	KA 9 H	KA 18 H	KA 35 H	KV 90 H	KV 120 H	KV 260 H	KV 550 H
A	84	110	144	164	190	280	300	402	490
B	65	90	120	140	160	230	260	350	450
C	65	90	120	140	160	230	260	350	450
$D1^{+0,2}$	45	70	100	110	120	180	220	285	360
$E1^{+0,2}$	45	70	100	110	120	180	220	285	360
H1	32,5	45	60	70	80	115	130	175	225
J	Dependent on transmission, see chapter 4.3.2 for dimensions								
K	92	124	160	174	206	300	350	480	640
M	Dependent on transmission, see chapter 4.3.2 for dimensions								
ØN^{H7}	12	18	25	32	35	55	60	80	100
ØR_{f6}	Dependent on transmission, see chapter 4.3.2 for dimensions								
S1	M 6x12	M 8x16	M 10x18	M 10x18	M 12x24	M 16x32	M 16x32	M 20x40	M 20x40

Shaft center holes: DIN 332, Page 2, Feather keys and grooves: DIN 6885 Page 1.

Bevel gear boxes

4.3 Dimension plans

4.3.5 KA...FH and KV...FH range with input-side hollow shaft and motor flange



4

Only the most recent dimension plans are binding.

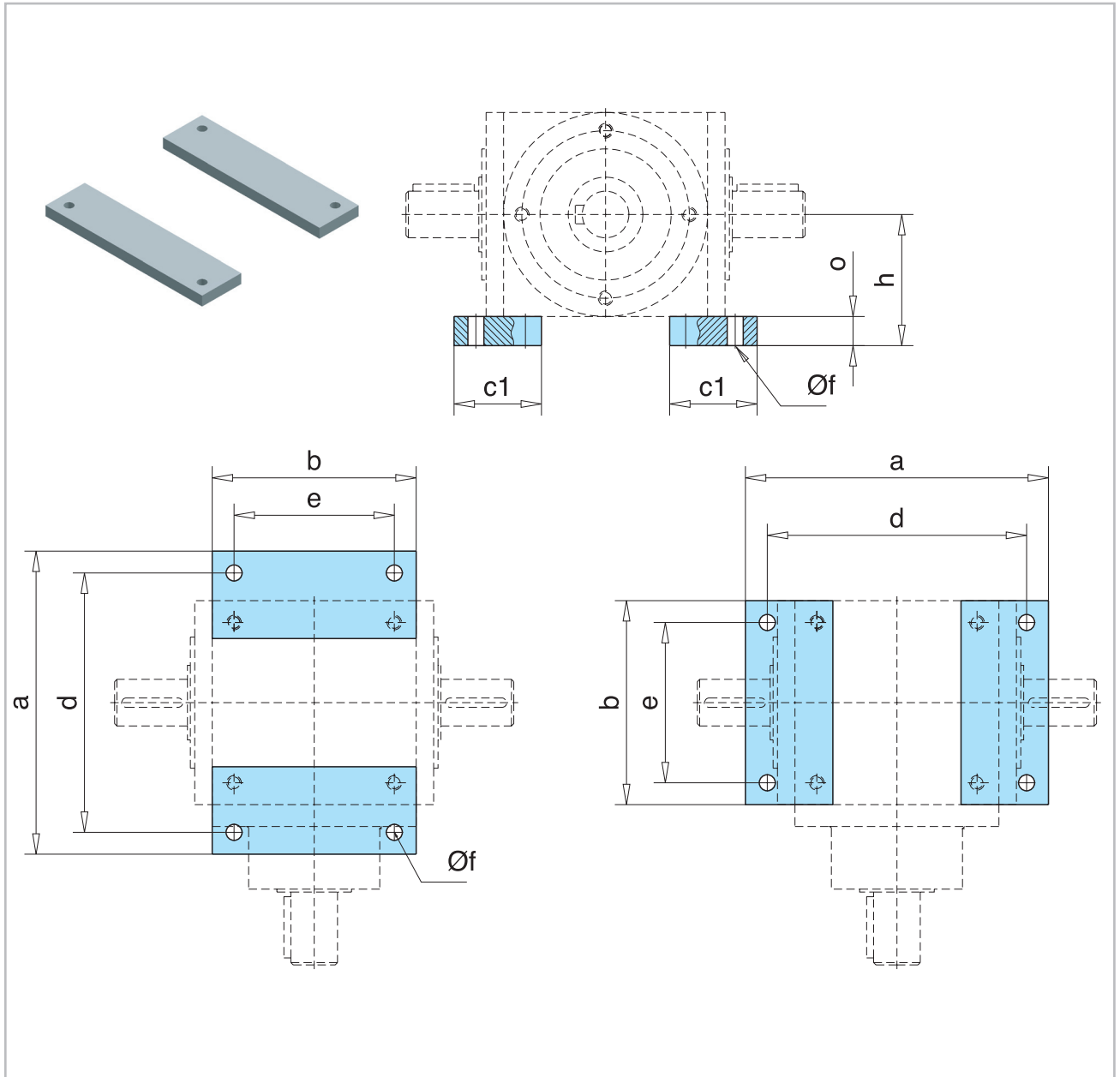
Size	Motor type	IEC flange			Hollow shaft Ød x l	Flange dimensions			
		Øa1	Øb1	Øe1		J	k	s1	
KA 1 FH	63	120	80	100	Ø11x23	90	10	4xØ7	
	71	105	70	85				Ø14x30	4xØ7
KA 5 FH	71	140	95	115	Ø19x40	110	12	4xØ9	
	80	120	80	100				4xØ7	
KA 9 FH		80	160	110	130	Ø24x50	135	15	4xØ9
	140		95	115	4xØ9				
	90 L / S	160	110	130	4xØ9				
		200	130	165	4xØ11				
KA 18 FH	90 L / S	160	110	130	Ø28x60	170	15	4xØ9	
	100 L	200	130	165				4xØ11	
KA 35 FH		90 L / S	250	180	215	Ø24x50	190	18	4xØ14
	200		130	165	4xØ11				
	100 L	250	180	215	Ø28x60				4xØ14
KV 90 FH	132 S / M	300	230	265	Ø38x81*	305	18	4xM12	
	160 M / L	350	250	300	Ø42x111*			4xM16	
	180 M / L	350	250	300	Ø48x111*	335	24	4xM16	
								200 L	400
KV 120 FH					on request				

* Assembly using clamping elements - special torque wrench required!

Non-listed dimensions can be found under the respective gear type in chapter 4.3.2 or 4.3.3

4.3 Dimension plans

4.3.6 AI Mounting brackets for KA and KV range



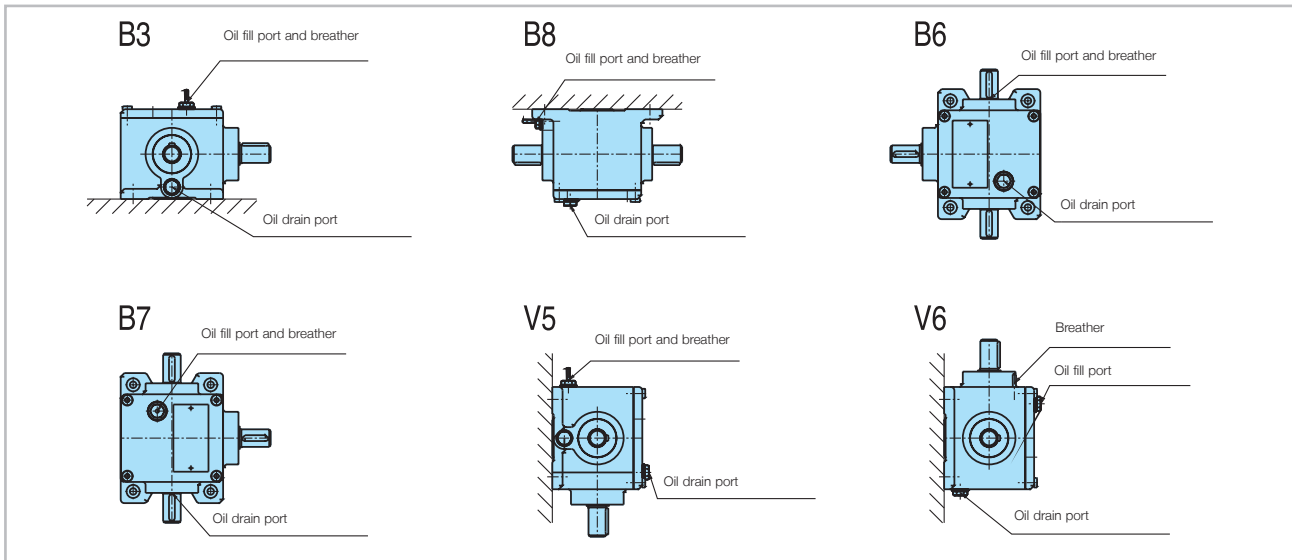
Size	KA1	KA 5	KA 9	KA 18	KA 35	KV 90	KV 120	KV 260	KV 550
a	100	140	190	210	250	340	380	490	590
b -0,5	84	90	120	140	160	230	260	350	450
c1	35	45	55	60	80	100	100	130	140
d ^{+0,2}	95	125	168	190	215	295	335	440	540
e	70	72	100	110	134	190	220	285	360
Øf	6,6	9,0	11	11	14	18	18	22	22
h	44,5	57	75	90	105	145	165	210	255
o	12	12	15	20	25	30	35	35	30

Bevel gear boxes

4.4 Ordering details for K...13

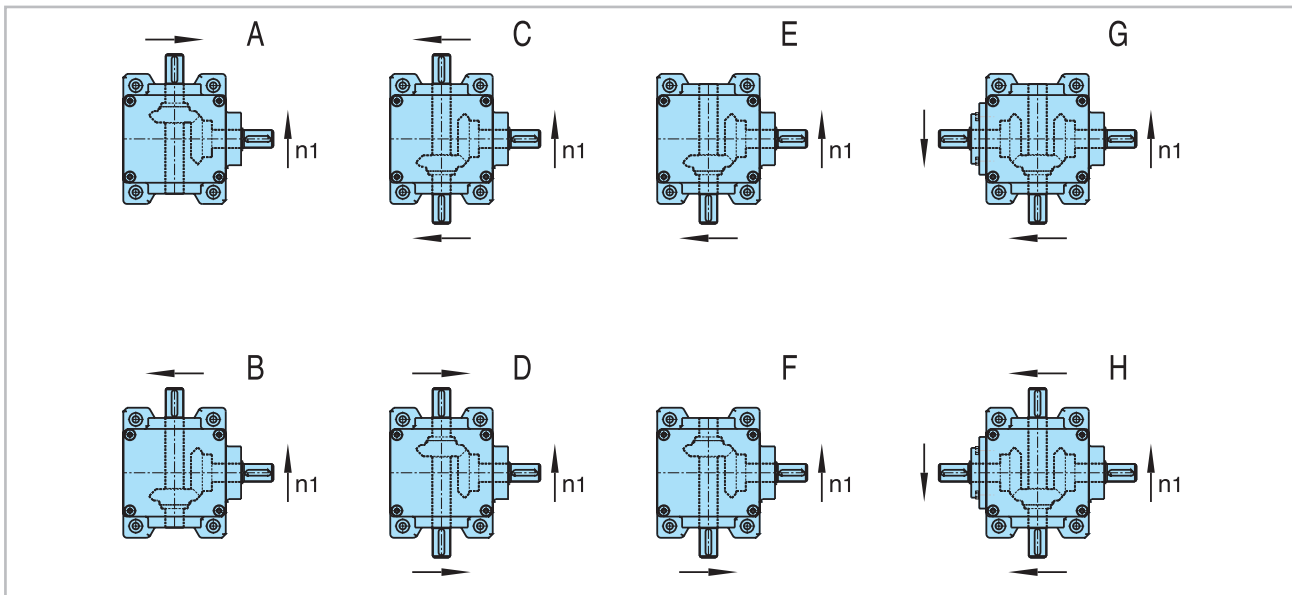
To process orders correctly we need to know the mounting position and configuration of the bevel gear box in addition to the type of gear box and ratio.

4.4.1 Mounting positions K...13 range



4

4.4.2 Configurations K...13 range



4.4.3 Order code K...13 range

Ordering designation:

1 - 2 - 3 - 4 - 5
K ■ ■ ■ ■ .13- ■ : ■ - ■ - ■ ■ - ■ ■ ■ ■ ■

Example: **K25.13-2:1-C-B6-1000**

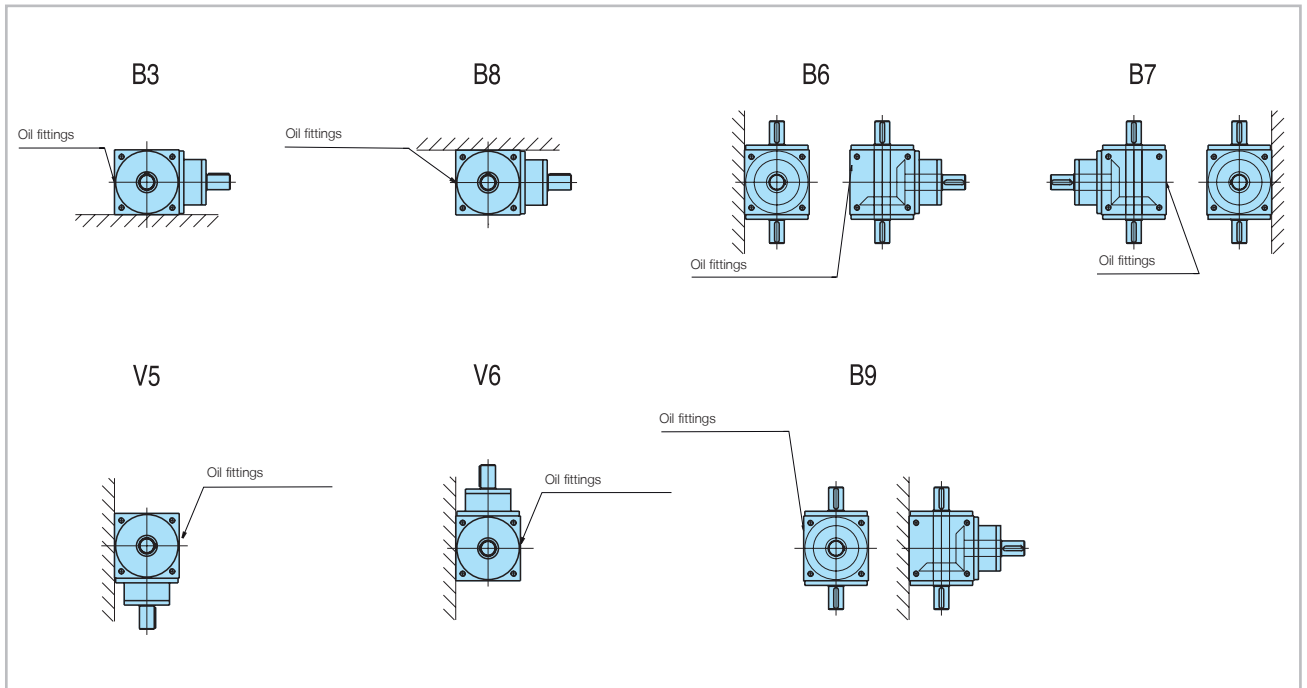
- Product designation/size: e. g. **K25.13**,
- Ratio: 1:1; 2:1; 3:1
(for KV 60.13 **1:1; 1,5:1; 2:1; 3:1; 4:1; 5:1**)
- Design: **A; B; C; D; E; F; G; H**
- Mounting positions: **B3; B8; B6; B7; V5; V6**
- Input speed n_1

Bevel gear boxes

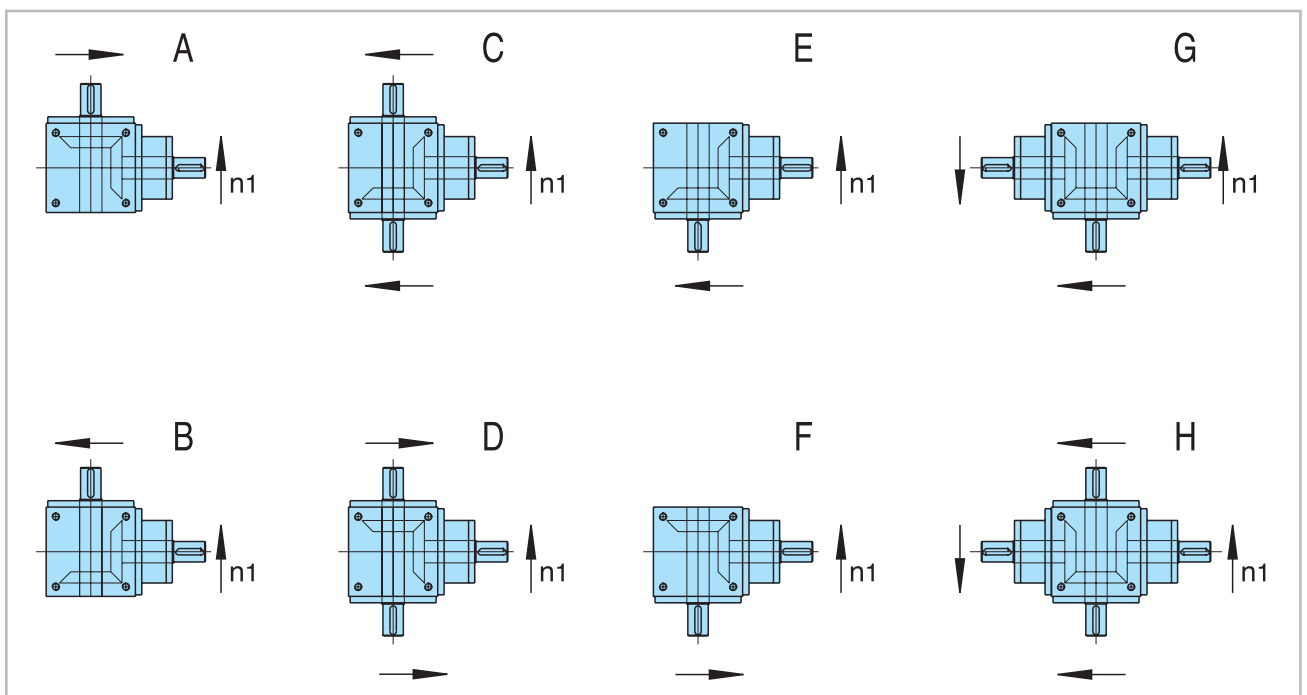
4.5 Ordering details for KA / KV ~~and NORMA~~

To process orders correctly we need to know the mounting position and configuration of the bevel gear box in addition to the type of gear box and ratio.

4.5.1 Mounting positions KA / KV ~~and NORMA~~ range



4.5.2 Configurations KA / KV ~~and NORMA~~ range



Configurations G and H only for KA and KV range.

Bevel gear boxes

4.5 Ordering details for KA / KV and ~~NORMA~~

~~4.5.3 Order code NORMA range~~

Ordering designation:

~~1 - 2 - 3 - 4 - 5 - 6 - 7
 NM - 1:1 - - L - 0 - -~~

Example: ~~NM2-1:1-E-L-0-B3-1500~~

1. Product designation/size: e. g. **NM0, NM2**
2. Ratio: **1:1**
3. Design: **A; B; C; D; E; F**
4. Shaft configuration
L = through shaft
5. Tolerance class: **0** = Torsional play max. 15 angular minutes
6. Mounting position: **B3; B8; B6; B7; V5; V6; B9**
7. Output speed n_2

4

4.5.4 Order code KA and KV range

Ordering designation:

K 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8
 - : - - - 0 - - -

Example: **KV260-3:1-C-0-B3-500**

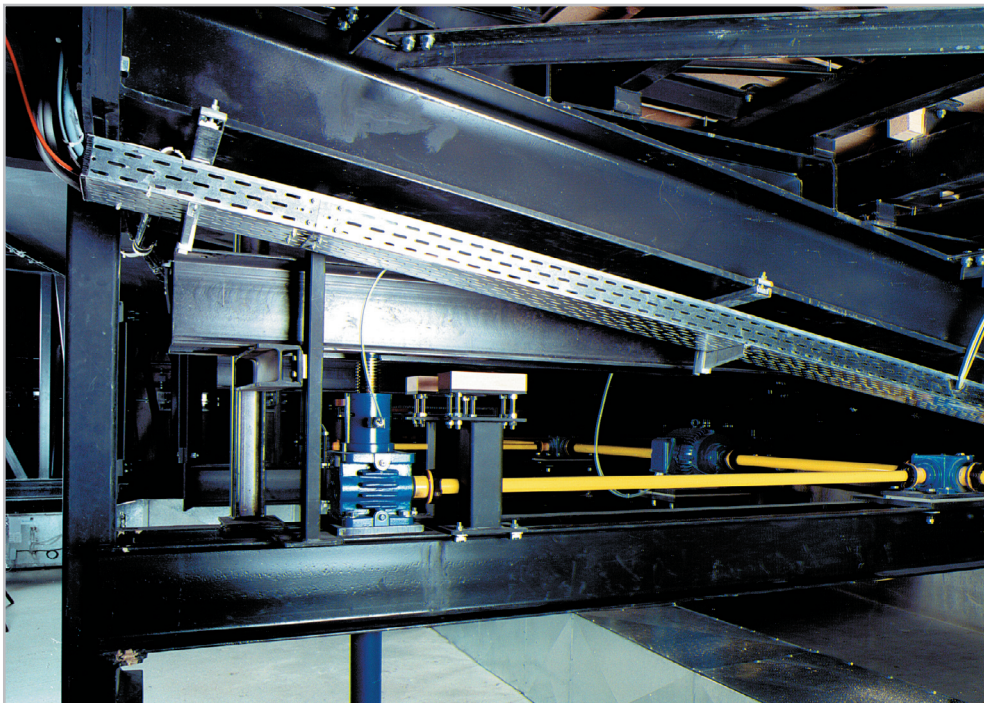
1. Product designation/size: e. g. **KV 120, KA 9**
2. Ratio: **1:1; 1,5:1; 2:1; 3:1; 4:1; 5:1; 6:1**
3. Design: **A; B; C; D; E; F; G; H**
4. Shaft configuration
L = through shaft
H = output-side hollow shaft
FH = flange with input-side hollow shaft
5. Tolerance class: **0** = Torsional play max. 15 angular minutes
6. Mounting position: **B3; B8; B6; B7; V5; V6; B9**
7. Output speed n_2
8. Option mounting brackets: **AI**

Bevel gear boxes

Application example

4

Manufacturer's illustration:
SBS Bühnentechnik GmbH
Multi-screw lifting system
for adjusting hall platforms
in the Culture Centre in
Frankfurt/Oder.

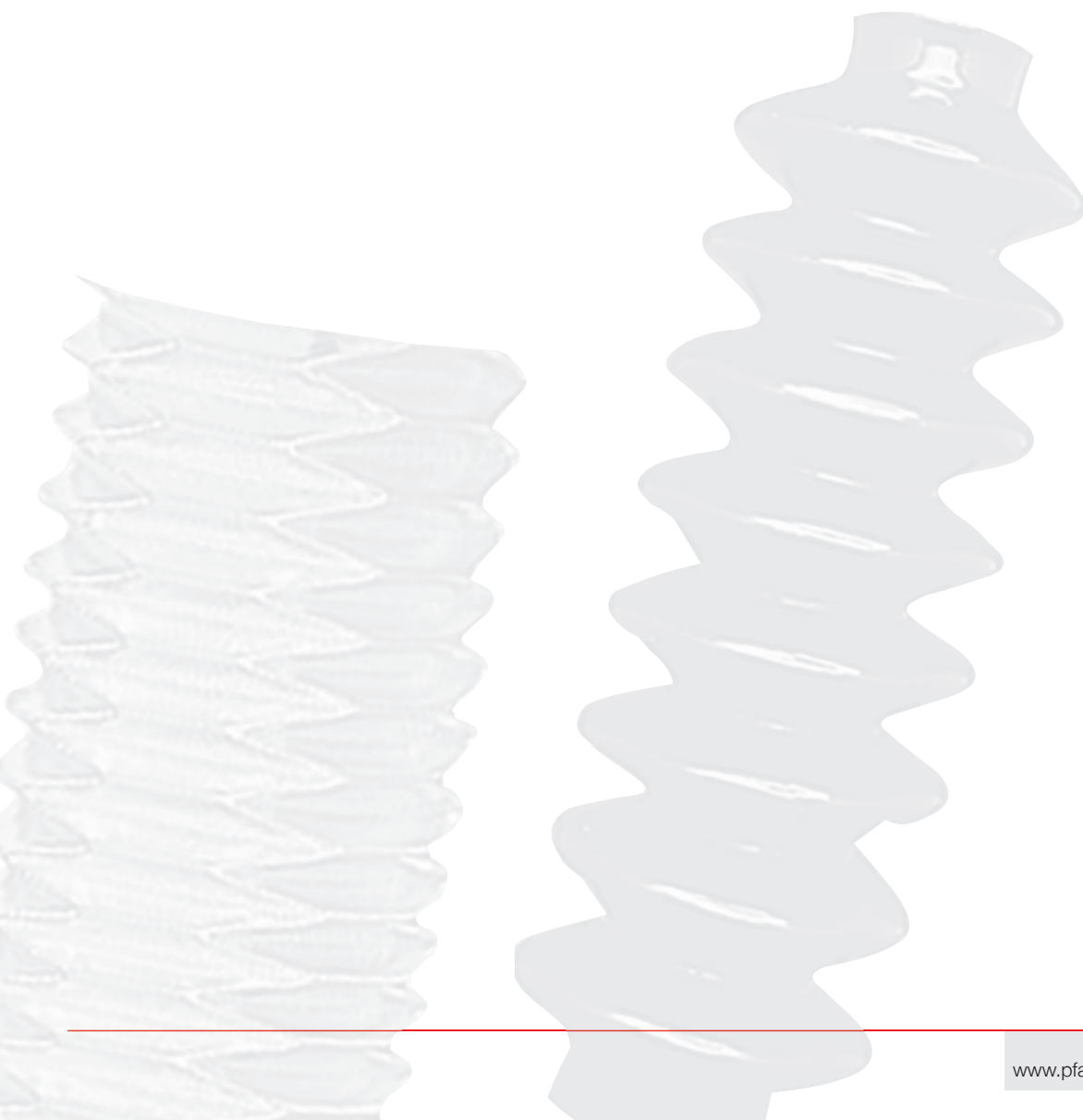


Manufacturer's illustration:
SBS Bühnentechnik GmbH
Multi-screw lifting system
(HSE high performance
worm gear screw jacks)
with safety device accord-
ing to BGV C1 (VBG 70)
for adjusting hall platforms
in the Culture Centre in
Frankfurt/Oder.
Synchronization is effected
by means of bevel gear
boxes and connecting
shafts.

Lifting screw protective covers

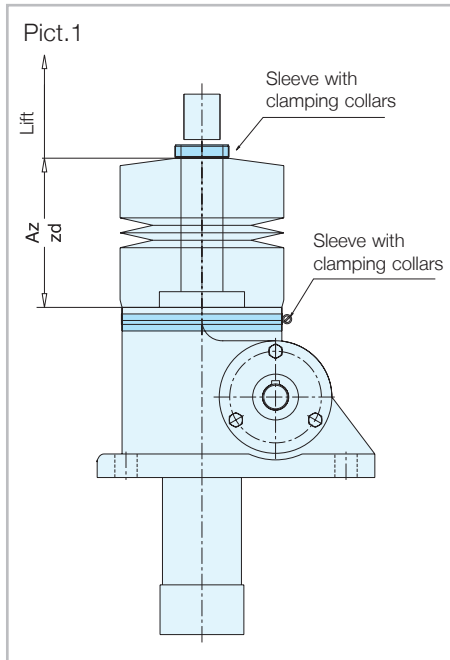
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Lifting screw protective covers

5.1 Flexible protection boots



Pfaff-silberblau worm gear screw jacks must be protected with flexible protection boots if they are to be used in circumstances where there is a danger of dirt entering the unit or damage or injury occurring. Several types of flexible protection boots in different materials are available according to requirements.

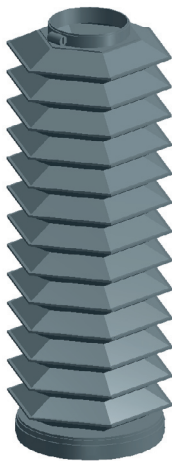
5.1.1 General

In the standard configuration, flexible protection boots made of material PN-100 or PN-200 are used. They are secured at both ends with galvanized metal clamping collars (Pict. 1). Stainless steel clamping collars (V2A) can also be supplied on request.

In the case of extension limits $Az > 1000$ mm, the flexible protection boots are fitted with limiting devices, which prevent over-extension of the individual protection boot segments.

If they are arranged in a tilted or horizontal position, the flexible protection boots must be fitted (from a stroke length of 400 mm onwards) with support rings in order to prevent them engaging with the threads. If they are arranged in a vertical position, one support ring per 1000 mm stroke is required.

5



Order code:

PN- - / - / - x / x - - - x

1 2 3 4 5 6 7

- 1 Material
- 2 zd / Az (zd = minimum length, Az = maximum length)
- 3 Inside Ø / Outside Ø
- 4 Sleeve 1 / Sleeve 2
- 5 Protection against over-extension 0/1 (yes/no)
- 6 Number of support rings
- 7 Size of screw Tr (DxP) / Ku (DxP)

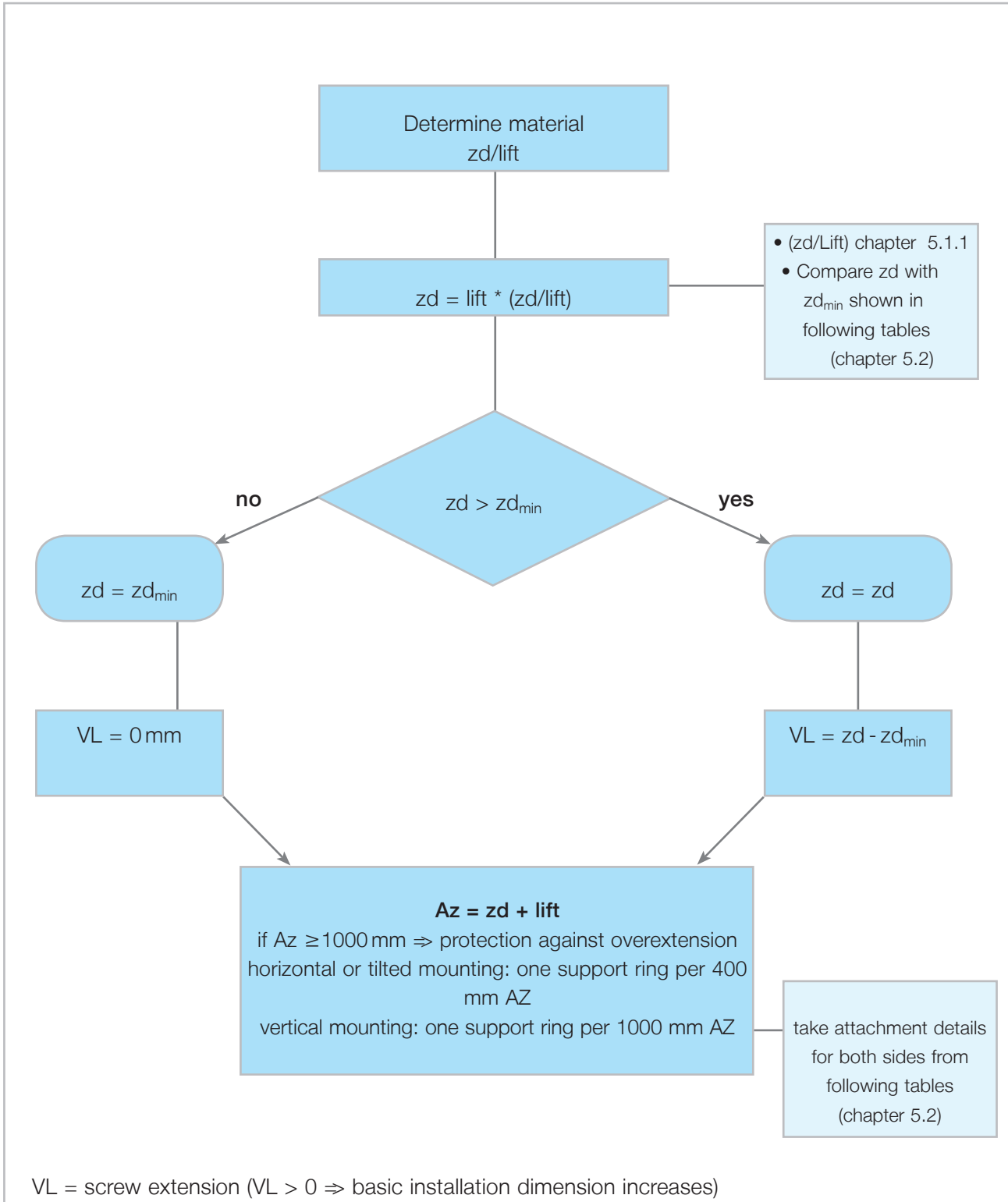
Material	Design	Temperature range °C	Dustproof	Waterproof	Oil-resistant	Chemical-resistant	Spark-resistant	zd/lift
PN-100*	Polygonal folding	-15° to 70°	●	●	● ₂	-	-	0,12
PN-200*	Polygonal folding	-15° to 100°	●	●	●	○	-	0,15
PN-300	Sewn round	-15° to 100°	●	○	○	-	-	0,20
PN-CSM-Rubber sheeting	Round	-28° to 110°	●	●	○	-	-	on request
PN-CR-Rubber fabric	Round	-38° to 100°	●	●	●	● ₁	-	on request
PN-ALU-Glass fiber	Sewn round	-20° to 200°	●	-	-	-	●	on request

* **Standard** ○ only conditional ● resistant ● 1 only if coated with Teflon ● 2 with synth. oil, with inner coating only

Lifting screw protective covers

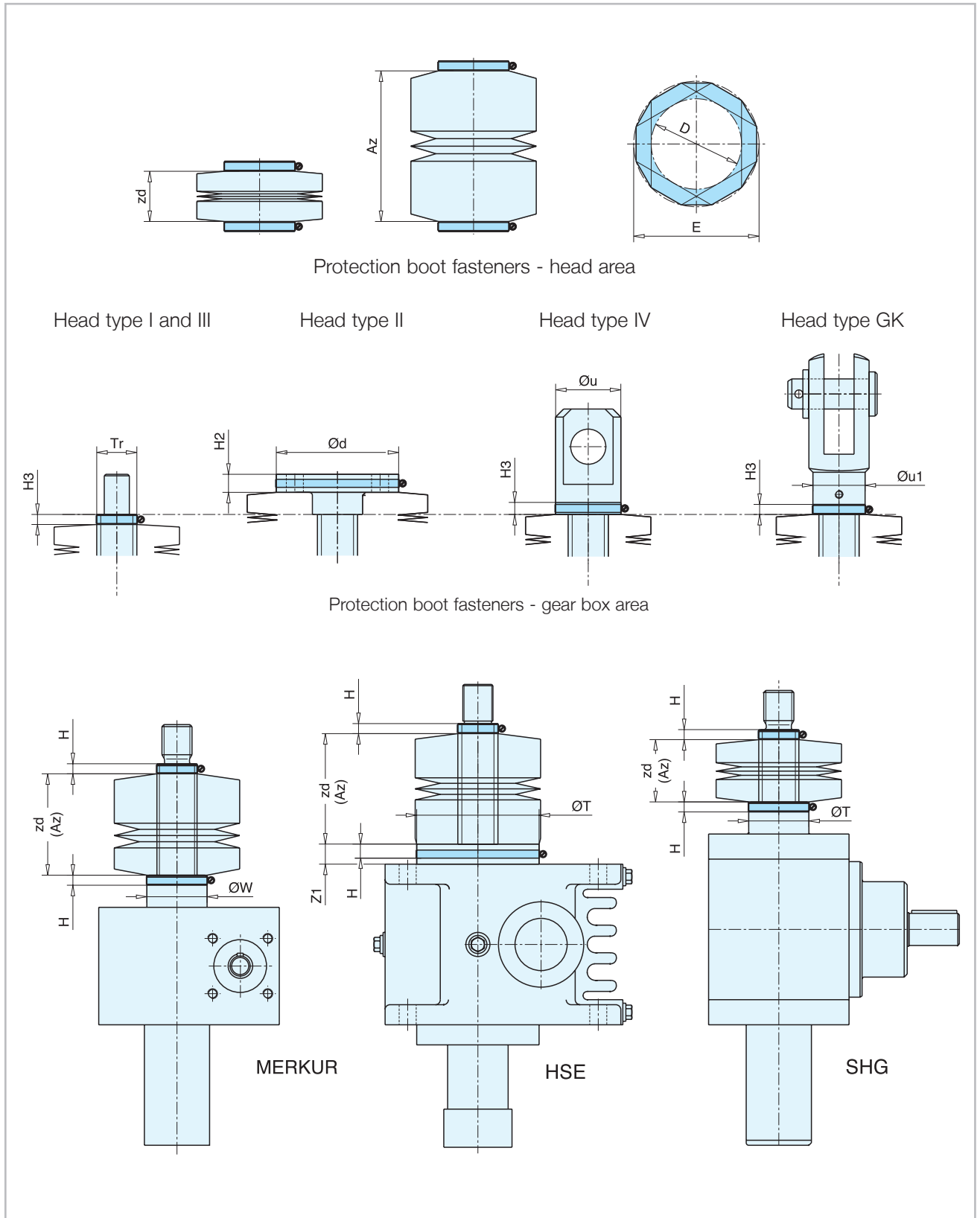
5.1 Flexible protection boots

5.1.2 Dimensioning



5.2 Dimensions, configuration type 1

5



Lifting screw protective covers

5.2 Dimensions, configuration type 1

5.2.1 MERKUR range

MERKUR		M0	M1	M2	M3	M4	M5	M6	M7	M8
Housing connection:										
Housing	ØW	26	30	39	46	60	85	120	145	170
	H	12	12	12	12	12	12	15	15	15
Screw head										
Head II	Ød	50	65	80	90	110	150	220	260	310
	H2	12	12	12	12	15	20	30	30	30
Head I/III	*ØTr	14	18	20	30	40	60	70	100	120
Head IV	Øu	25	30	40	45	60	85	120	160	170
	H3	12	12	12	12	12	12	15	15	15
Head GK	Øu1	14	20	25	34	52	60	-	-	-
	H3	12	12	12	12	12	12	-	-	-
Minimum zd_{min}										
Head II		7	12	16	16	19	37	42	52	102
Head I/III		0	0	0	0	0	0	0	0	0
Head IV-GK		3	4	7	5	4	7	12	12	22
Flexible protection boots inner and outer diameter (material PN 100 and PN 200)										
Head II	D	63	63	100	100	120	150	220	260	310
	E	105	105	140	140	180	210	280	320	370
Head I-III-IV-GK	D	38	38	45	63	100	100	120	200	200
	E	75	75	85	105	140	140	180	260	260

Dimensions for ball screws on request.

*for ball screw (Ku) –connection head I-III = Ku-Ø

5

5.2.2 HSE und SHG range

HSE		32	36.1	50.1	63.1	80.1	100.1	125.1	140	200.1
Housing connection:										
Housing	ØT	62	72	92	122	152	182	222		352
	H	15	16	18	20	25	25	25		25
Screw head										
Head II	Ød	65	72	92	122	150	182	222		352
	H2	12	12	12	18	20	20	25		30
Head I/III	ØTr	18	24	40	50	60	70	100		160
Head IV	Øu	30	40	50	65	90	110	140		220
	H3	12	12	12	12	15	15	20		20
Minimum zd_{min} with H configuration (chapter 3.7)										
Head II		31	33	38	42	50	50	70	on	20
Head I / III		8	8	10	10	10	15	15	request	20
Head IV		20	20	20	20	20	20	20		20
Minimum zd_{min} with F configuration (chapter 3.7)										
Head II		39	41	46	51	64	69	89		49
Head I / III		16	16	18	19	19	24	24		29
Head IV		28	28	28	29	34	39	39		49
Flexible protection boots inner and outer diameter (material PN 100 and PN 200)										
Head II	D	63	63	100	120	150	185	260		300
	E	105	105	140	180	210	245	320		360
Head I-III-IV	D	38	45	63	75	110	130	150		245
	E	75	85	105	125	150	185	210		295

() Values in brackets for configuration with ball screw (Ku)

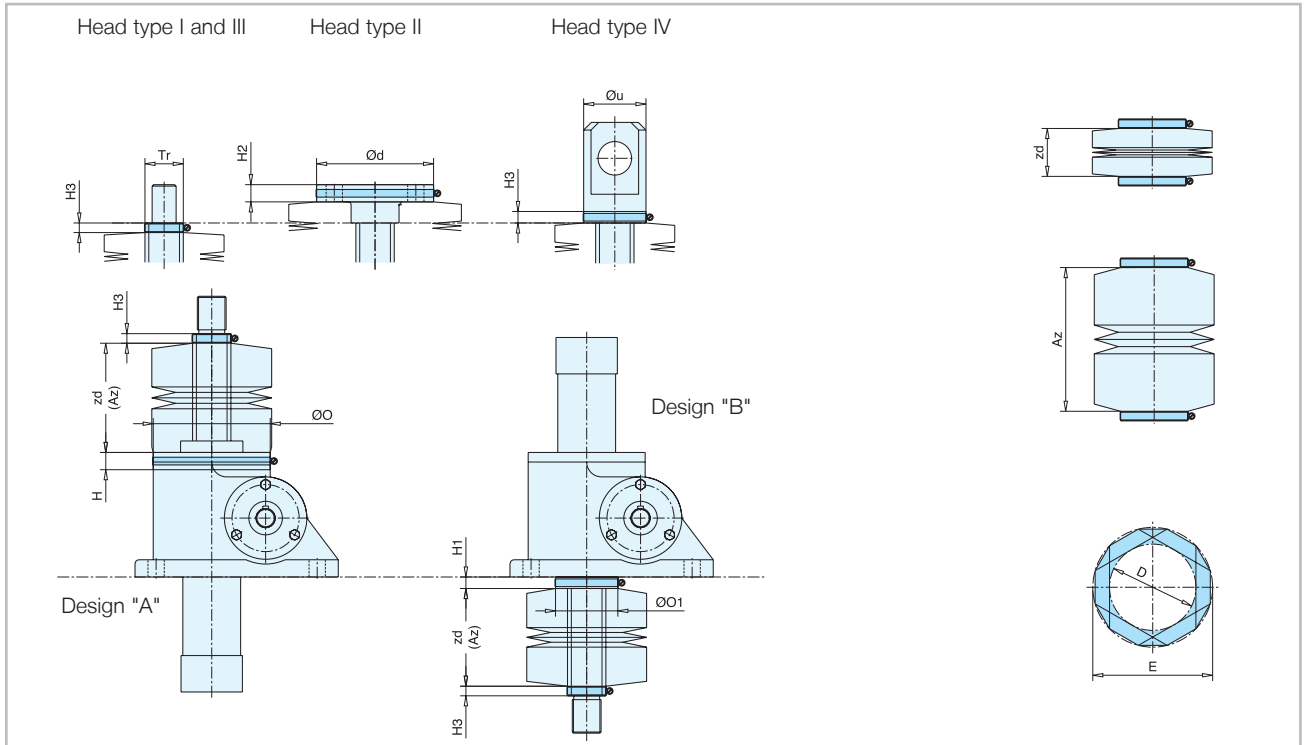
SHG		G15	G25	G50	G90
Housing connection:					
Housing	ØT	39	100	60	90
	H	12	12	15	15
Screw head					
Head II	Ød	90	98	110	170
	H2	12	12	15	25
Head I/III	ØTr	24	35	40	60
	(ØKu)	(25)	-	(40/32)	(63)
Head IV-	Øu	-	50	65	80
Head GK	Øu1	34	-	52	-
	H3	12	12	15	15
Minimum zd_{min} with H configuration (chapter 3.8.1.2)					
Head II		-	33	-	-
Head I / II		-	3	-	-
Head IV		-	15	-	-
Minimum zd_{min} with F configuration					
Head II		16	43	19	32
Head I / II		0	13	0	0
Head IV		-	25	4	7
Head GK		5	-	4	-
Flexible protection boots inner and outer diameter (Material PN 100 und PN 200)					
Head II	D	100	120	120	185
	E	140	180	180	245
Head I-III-IV-GK	D	63	75	110	110
	E	105	125	150	150

() Values in brackets for configuration with ball screw (Ku)

Lifting screw protective covers

5.2 Dimensions, configuration type 1

5.2.3 SHE range, design A and B, all mounting positions



5

SHE		0,5	1.1	2	3.1	5.1	(10 ¹)	15.1	20.1	25	35	50.1	75	100.1	150	200.1*
Housing connection design A																
Housing	ØO	65	88	98	98	122	150	150	185	205	260	170	250	240	300	
	H			12					15					20		
Housing connection design B																
Housing	ØO1	36	52	48	48	65	80	80	100	130	150	170	250	240	300	
	H1					12						15		20		
Screw head																
Head II	Ød	65	72	98	98	122	150	150	185	205	260	300	200	200	220	
	H2	12	12	12	12	18	20	20	25	25	25	30	30	30	30	
Head I/III	ØTr	18	24	26	30	40	58	60	70	90	100	120	140	160	190	
Head IV	Øu	30	40	48	50	65	90	90	110	130	150	170	200	220	260	
	H3			12					15					20		
Minimum z_{dmin} design A																
Head II		24	33	42	42	45	60	60	66	75	80	70	20	25	30	
Head I/III		4	8	12	12	11	15	15	11	22	15	10	0	5	10	
Head IV		20	20	24	24	24	30	30	26	37	30	25	20	25	30	
Minimum z_{dmin} design B																
Head II		12	30	30	30	33	48	48	54	63	68	70	20	20	30	
Head I/III		0	5	0	0	0	3	3	0	10	3	10	0	0	10	
Head IV		8	17	12	12	12	18	18	14	25	18	25	20	20	30	
Flexible protection boot dimensions (material PN 100 and PN 200)																
Head II	D	63	75	100	100	120	150	150	185	200	260	300	300	300	310	
	E	105	125	140	140	180	210	210	245	260	320	360	360	360	370	
Head I-III-IV	D	38	45	63	63	75	110	110	130	150	150	200	245	245	280	
	E	75	85	105	105	125	150	150	185	210	210	260	295	295	340	

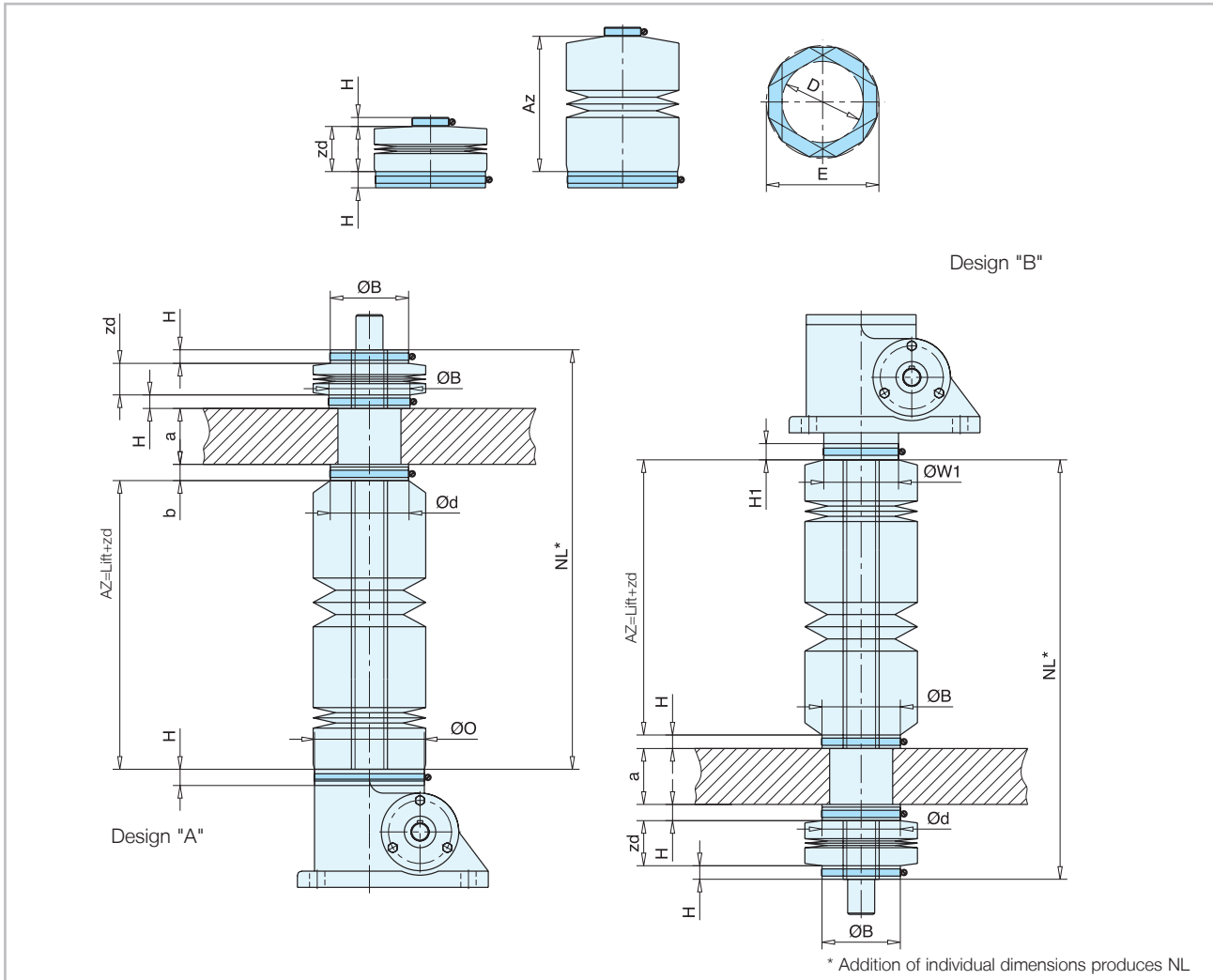
¹⁾ For new orders, use size 15.1; size 10 only available as a special version

* Flexible protection boots for SHE 200.1 on request

Lifting screw protective covers

5.3 Dimensions, configuration type 2

5.3.1 SHE range, design A and B, all mounting positions



5

SHE	0,5	1.1	2	3.1	5.1	(10 ¹)	15.1	20.1	25	35	50.1	75*	100.1	150	200.1*
Connecting dimensions: Housing design A															
ØO	65	88	98	98	122	150	150	185	205	260	210		240	300	
H	12	12	12	12	12	15	15	15	15	15	20		20	20	
Connecting dimensions: Housing design B															
ØW1	45	52	60	68	83	110	110	140	160	180	210		280	340	
H1	12	12	12	12	12	15	15	15	15	15	20		20	20	
Travelling nut connection															
Ød	50	65	76	80	87	110	110	120	155	190	225		260	300	
b	12	12	12	12	12	15	15	15	15	15	20		20	20	
On site connection															
ØB	50	65	80	80	87	110	110	120	155	190	225		260	300	
H	12	15	15	15	15	15	15	15	15	15	25		20	20	
Flexible protection boot dimensions (material PN 100 and PN 200)															
ØD	38	38	63	63	75	110	110	130	150	150	200		245	280	
ØE	75	75	105	105	125	150	150	185	210	210	260		295	360	

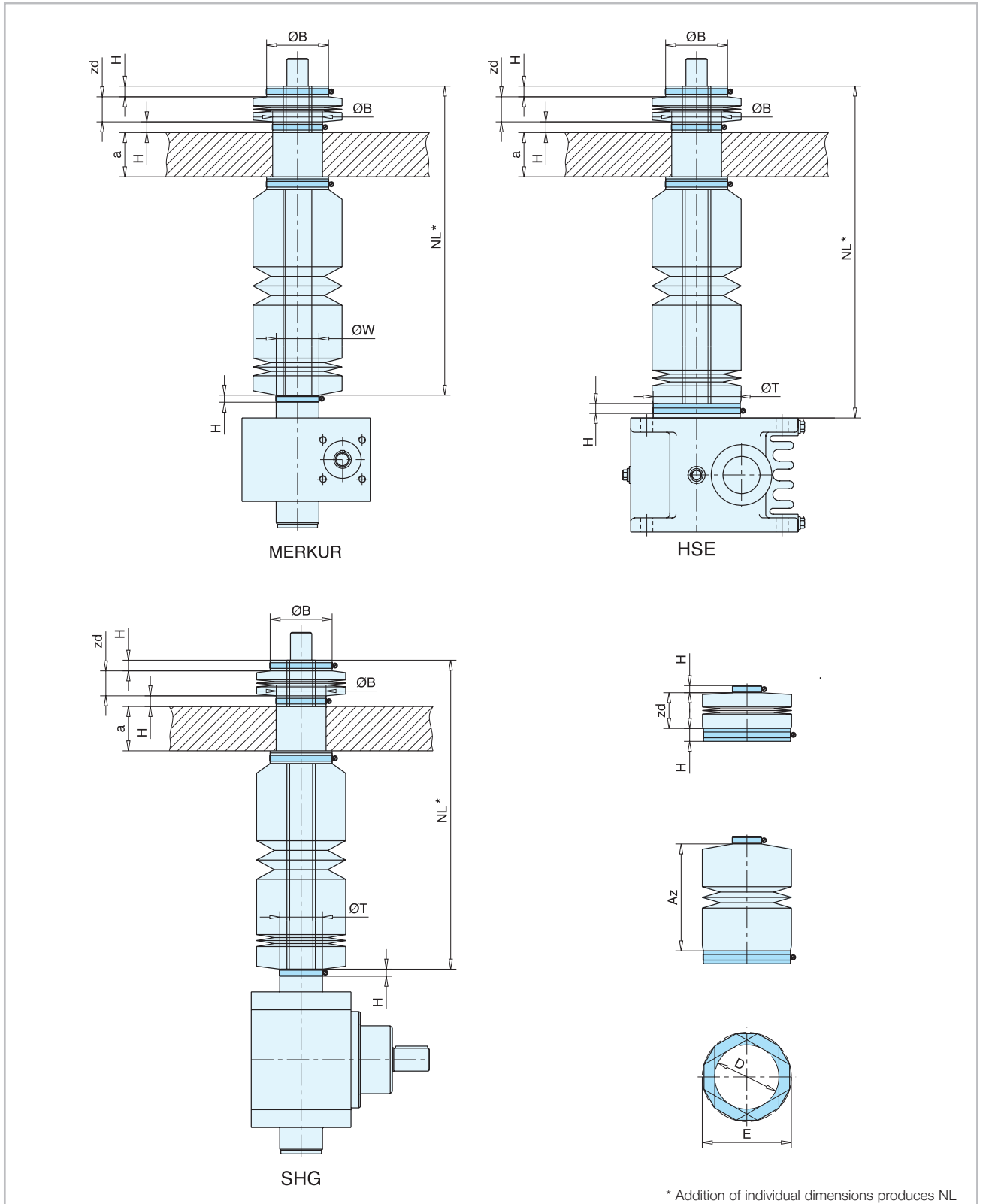
¹⁾ For new orders, use size 15.1; size 10 only available as a special version

* Dimensions on request

5.3 Dimensions, configuration type 2

5.3.2 MERKUR, HSE and SHG range

5



Lifting screw protective covers

5.3 Dimensions, configuration type 2

5.3.2 MERKUR, HSE and SHG range

MERKUR range

Size	M0	M1	M2	M3	M4	M5	M6	M7	M8
Connecting dimensions: Housing									
ØW	26	30	39	46	60	85	120	145	170
H	12	12	12	12	12	12	15	15	15
Travelling nut connection									
Ød	50	50	65	80	87	110	155	190	225
b	12	12	12	15	18	25	25	25	25
On site connection									
ØB	50	50	65	80	87	110	155	190	225
H	12	12	15	15	15	15	25	25	25
Flexible protection boot dimensions (material PN 100 and PN 200)									
D	38	38	38	63	75	110	150	150	200
E	75	75	75	105	125	150	210	210	260

HSE range

Size	32	36.1	50.1	63.1	80.1	100.1	125.1	140	200.1
Connecting dimensions: Housing									
ØT	62	72	92	122	152	182	222	on request	352
H	15	16	18	20	25	25	25		25
Travelling nut connection									
Øy	50	65	87	105	110	120	190	on request	260
H	12	15	18	18	15	15	15		15
On site connection									
ØB	50	65	87	105	110	120	190	on request	260
H	12	15	15	15	15	15	15		15
Flexible protection boot dimensions (material PN 100 and PN 200)									
D	38	38	75	110	110	130	150	on request	245
E	75	75	125	150	150	185	210		210

5

SHG range

Size	G15	G25	G50	G90
Connecting dimensions: Housing				
ØT	39	100	60	90
H	12	12	15	15
Travelling nut connection				
Ød	65	87	87	120
b	12	15	15	15
On site connection				
ØB	65	87	87	120
H	12	15	15	15
Flexible protection boot dimensions (material PN 100 and PN 200)				
D	63	75	75	130
E	105	125	125	185

Lifting screw protective covers

5.4 Spiral spring covers



5.4.1 General

Material:

Spiral spring covers can be supplied in blue-polished steel (standard) or stainless steel.

Fitting:

Can be fitted in any location (see illustration).

Note:

Spiral spring covers are self-cleaning when installed in a vertical position (with large diameter pointing upwards). Spiral spring covers should however still be cleaned at regular intervals and treated with special wet-spray oil.

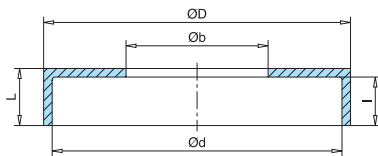
5.4.2 Dimensioning

Details of the correct dimensions for spiral spring covers, along with those of the required centering and guide flanges (ZF - FF) can be obtained on request.

Note: VL required (see chapter 5.1.2)

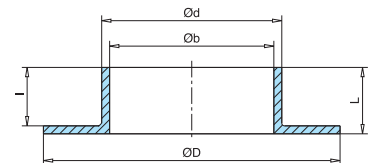
The use of spiral spring covers is recommended in extreme operating conditions (e. g. flying swarf, welding sparks).

5



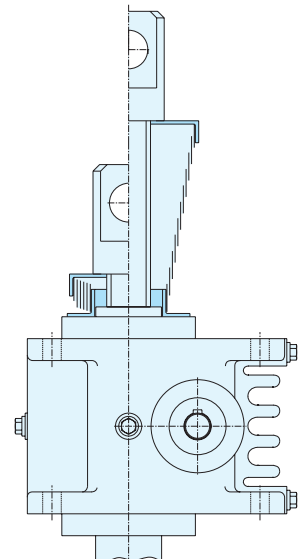
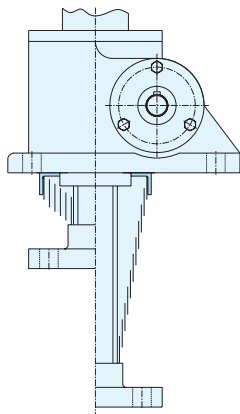
Centering flange: ZF- _ _ _ _ _

Order code: ZF-D - L - d - l - b - material



Guide flange: FF- _ _ _ _ _

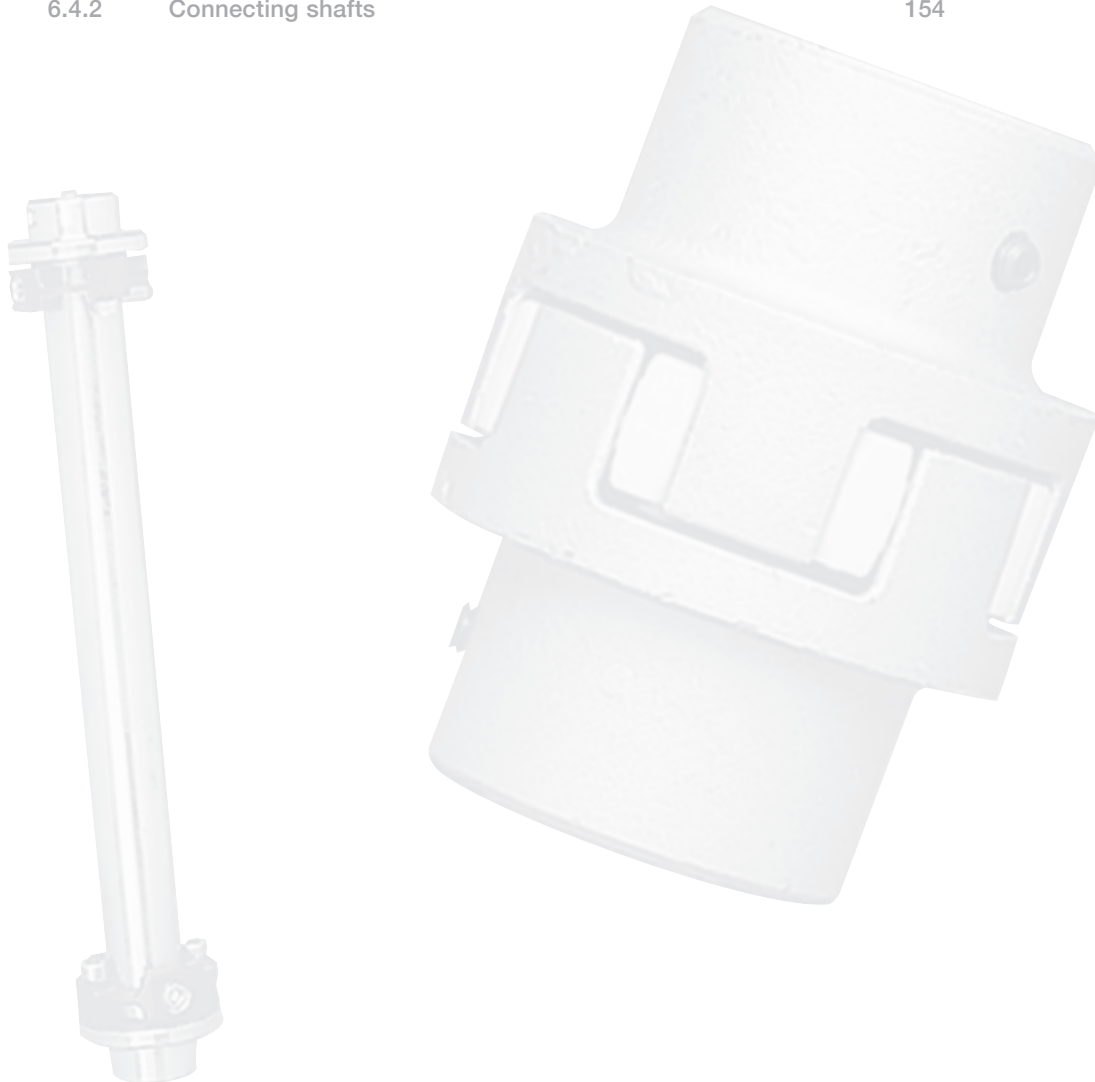
Order code: FF-D - L - d - l - b - material



Couplings and connecting shafts

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Couplings and connecting shafts

6.1 Flexible couplings

The impact- and vibration-absorbing effect of flexible couplings helps protecting the worm gear screw jacks and bevel gear boxes, as well as the motors.

6.1.1 R range

They also even out small, angular, radial and axial shaft displacements – which makes them preferable to rigid couplings or shaft connections.

Technical information

Size R	Nominal torque T_N [Nm]			Max. angle displacement [°]	Torsional angle T_N	Max. axial displacement [mm]	Max. radial displacement [mm]	Mass inertia moments ¹⁾ J [kgm ²]	Material ²⁾	Weight ³⁾ [kg] Layout	
	92 ° Shore	95 ° Shore	98 ° Shore							a/a	b/b
14	7		12	1,2°	6,4°	1,0	0,17	$5,60 \times 10^{-6}$	Al	0,14	0,14
19/24	10		17	1,2°		1,2	0,20	$1,03 \times 10^{-6}$	Al	0,32	0,36
24/28	35		60	0,9°	3,2°	1,4	0,22	$4,30 \times 10^{-4}$	or	0,60	0,72
28/38	95		160	0,9°		1,5	0,25	$9,80 \times 10^{-4}$	St	0,97	1,33
38/45	190		325	1,0°		1,8	0,28	$96,5 \times 10^{-4}$		2,08	2,46
42/55	265		450	1,0°		2,0	0,32	$0,35 \times 10^{-2}$		3,21	3,93
48/60	310		525	1,1°		2,1	0,36	$1,06 \times 10^{-2}$	cast iron	4,41	5,19
55/70	410		685	1,1°	3,2°	2,2	0,38	$2,03 \times 10^{-2}$	or	6,64	8,10
65/75	625	940	-	1,2°		2,6	0,42	$3,80 \times 10^{-2}$	St	10,13	11,65
75/90	1280	1920	-	1,2°		3,0	0,48	$8,20 \times 10^{-2}$		16,03	19,43
90/100	2400	3600	-	1,2°		3,4	0,50	$23,8 \times 10^{-2}$		27,50	31,70

Color coding Various flexible spiders:
 92 ° Shore yellow
 95/98 ° Shore red

Operating temperature: 92 ° Shore -40 ° to + 90 °C
 95/98 ° Shore -30 ° to + 90 °C

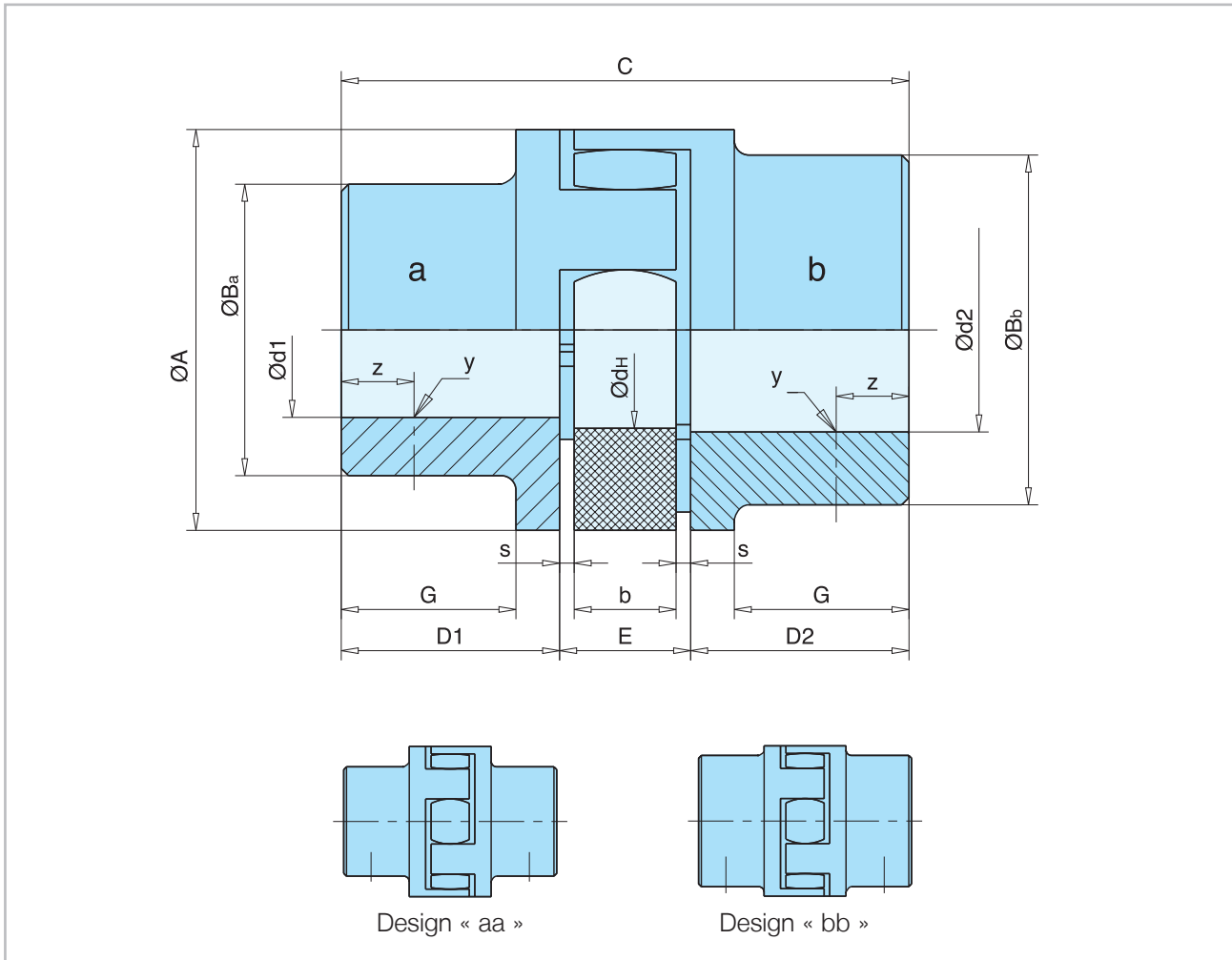
Dimensioning: The nominal torque (T_N) of the couplings - with impact factor S^4) taken into account-- must be at least equal to the system torque (T_{Anl}) to be transferred

$$T_N \geq T_{Anl} * S$$

Couplings and connecting shafts

6.1 Flexible couplings

Dimension plan



6

Size R	Ready-drilled holes ØdH7 ⁵⁾				ØA	ØBa	ØBb	C	D1 ⁶⁾ and D2 ⁶⁾	E	s	b	G	Ød _H	y	z
	Hub a Ød1		Hub b Ød2													
	min	max	min	max												
14	-	-	6	14	30	30	-	35	11	13	1,5	10	-	10	M4	-5
19/24	6	19	6	24	40	32	40	66	25	16	2	12	20	18	M5	10
24/28	8	24	8	28	55	40	48	78	30	18	2	14	24	27	M5	10
28/38	10	28	10	38	65	48	65	90	35	20	2,5	15	28	30	M8	15
38/45	12	38	38	45	80	66	77	114	45	24	3	18	37	38	M8	15
42/55	14	42	42	55	95	75	94	126	50	26	3	20	40	46	M8	20
48/60	15	48	48	60	105	85	102	140	56	28	3,5	21	45	51	M8	20
55/70	20	55	55	70	120	98	120	160	65	30	4	22	52	60	M10	20
65/75	22	65	65	75	135	115	135	185	75	35	4,5	26	61	68	M10	20
75/90	30	75	75	90	160	135	160	210	85	40	5	30	69	80	M10	25
90/100	40	90	90	100	200	160	180	245	100	45	5,5	34	81	100	M12	25

1) Values for steel hubs b-b und max. ready-drilled hole without grooves. This value is reduced by an approximate factor of 3 for Aluminium.
 2) A coupling in material cast iron or steel should be selected for use with hardened drive-shafts. (sizes R19/24 – R48/60 also in stainless steel 1.4571)
 3) Weight for cast iron material, approx. 60 % lower in the case of aluminium
 4) Impact coefficient S = 2 for use with three-phase motors
 5) Feather key grooves are configured according to DIN 6885/1 standards
 6) Special hub lengths available on request

Couplings and connecting shafts

6.2 Flexible overload couplings

Flexible overload couplings limit the drive torque (lifting force) of the lifting system, thus protecting the mechanism from overloads and malfunctions in the event of the drive system becoming blocked.

6.2.1 MKR range

Torque is transferred via wear-resistant, oil-proof and temperature-protected friction linings, which are held in place by means of disc springs. **MKR** (R = friction linings). Friction linings are also available in rust-free configuration for outdoor use.

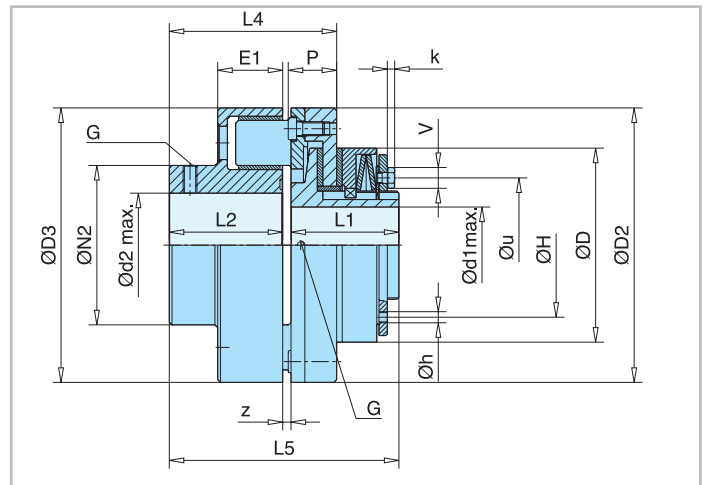
Technical information

Size	Torque limit for overload		Rotary speed n_{max} [min ⁻¹]	Weight pre-drilled [kg]
	Type MKR 1 [Nm]	Type MKR 2 [Nm]		
0	2- 10	10- 20	7000	1,3
01	6- 30	30- 60	6500	3,0
1	14- 70	70- 130	5600	3,2
2	26- 130	130- 250	4300	6,5
3	50- 250	250- 550	3300	10,1
4	110- 550	550- 1100	2700	19,5
5	140- 700	700- 1400	2200	23,4

Dimensioning:

The controlling torque of the overload coupling is factory-adjusted, with reference to starting torque T_A to 1.4 times the torque to be transferred (TN).

Dimension plan



Size	ØD	ØD3	ØD2	Ød1 _{min}	Ød1 _{max}	Ød2 _{min}	Ød2 _{max}	E1	G	H
0	45	80	80	7	20 ¹⁾	11	30	23	M4	37
01	58	105	105	12	22	11	42	32	²⁾	46
1	68	105	105	12	25	11	42	32	²⁾	50
2	88	135	135	15	35	13	60	36	³⁾	67
3	115	160	160	19	45	25	60	38	⁴⁾	84
4	140	198	198	25	55	30	75	47	M8	104
5	170	198	198	30	65	50	75	47	M8	125

Size	Øh	k	L1	L5	L4	P	L2	ØN2	z	Øu	v
0	3	⁵⁾	33	66	52	18	30	50 _{h11}	4	37	2 ⁵⁾
01	5	0,3 ⁵⁾	45	91	68	22	42	65 _{h11}	4	46	2,5 ⁵⁾
1	5	1,3 ⁵⁾	52	98	69	23	42	65 _{h11}	4	50	3 ⁵⁾
2	6	3	57	116	86	27	55	85 _{h11}	4	67	10
3	6	5,5	68	128	91	31	55	90	6	84	13
4	7	5,5	78	165	122	35	82	115	6	97	13
5	8	5,5	92	179	127	40	82	115	6	109	13

1) up to Ø19 groove according to DIN 6885-1,
over Ø19 groove according to DIN 6885-3

2) up to Ø12 -M4, over Ø12 up to Ø17 -M5, over Ø17 -M6

3) up to Ø17 -M5, over Ø17 -M6

4) up to Ø22 -M6, over Ø22 -M8

5) Countersunk screw with hexagon socket DIN 7991

Couplings and connecting shafts

6.2 Flexible overload couplings

6.2.2 MKE and MKS range with electrical shut-off

If the set torque limit is exceeded, the coupling disengages. The torque immediately drops. A mounted limit switch detects the disengagement movement and switches off the drive.

The safety coupling with electrical shut-off is available as configurations **MKE** (E = ratchet configuration) and **MKS** (S = synchronize configuration).

Technical information

- The ratchet coupling **MKE** locks in the event of an overload, pushing out the switching rod. During the locking procedure, the torque is considerably less than the pre-adjusted torque limit. The system re-engages automatically.
- The locked coupling **MKS** locks in the event of an overload, the torque is considerably less than the pre-adjusted torque limit. The system re-engages automatically after 360 °.

Size	Torque limit for overload coupling [Nm]						Rotary speed n_{\max} [min ⁻¹]		Weight [kg]
	MKE 5	MKE 6	MKE 7	MKS 5	MKS 6	MKS 7	MKE 5-7	MKS 5-7	
01	5-12,5	10-25	20-50	5-12,5	10-25	20-50	4000	3000	1,0
0	10-25	20-50	40-100	10-25	20-50	40-100	3000	3000	2,0
1	20-50	40-100	80-200	20-50	40-100	80-200	2500	2500	2,7
2	40-100	80-200	160-400	40-100	80-200	160-400	2000	2000	6,2
3	70-175	140-350	280-700	70-175	140-350	280-700	1200	1200	9,6
4	120-300	240-600	480-1200	120-300	240-600	480-1200	800	800	21,1

Option:

Limit switch with amplifier
 Mechanical limit switch
 Contact-free limit switch

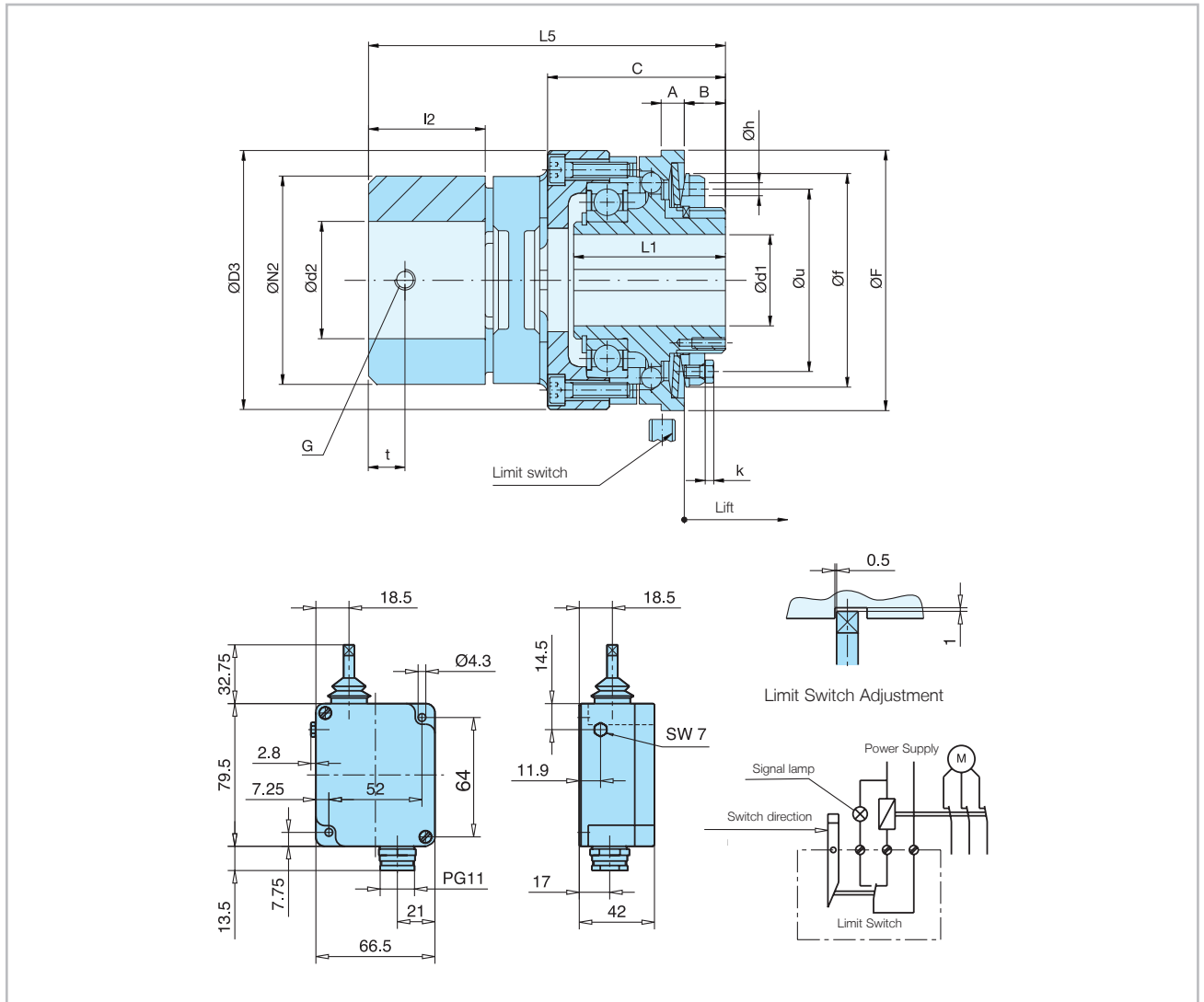
Dimensioning:

The controlling torque of the overload coupling is factory-adjusted, with reference to starting torque T_A to 1.4 times the torque to be transferred (T_N).

Couplings and connecting shafts

6.2 Flexible overload coupling

Dimension plan



Size	Ød1 _{min}	Ød1 _{max} ¹⁾	Ød2 _{min}	Ød2 _{max}	ØD ₃	G	A	B	ØF	ØU	t	Øh
01	12	20 ¹⁾	8	28	70	M5	7	12	70	50	10	5
0	15	25 ²⁾	10	38	85	M6	8	13,5	85	55	15	5
1	22	30	12	45	100	M8	9	16	100	70	15	5
2	28	40	14	55	115	M8	10	17	115	84	20	6
3	32	50	20	60	135	M8	12	20,5	135	100	25	7
4	40	65	38	80	175	M10	16	46	166	-	20	-

Size	k	L1	L5	C	l2	ØN2	Øf	Switching-rod lift in the event of an overload [mm]	
								MKE	MKS
01	2,8	40	95	47	30	55	61,5	1,2	1,2
0	2,8	48	111,5	56,5	35	65	67	1,5	1,5
1	3,5	59	138	69	45	80	82	1,8	1,8
2	4,0	64	150	74	50	95	97	2,0	2,0
3	4,0	75	171	87	56	105	117	2,2	2,2
4	-	115	240	130	75	135	150	2,5	2,5

¹⁾ Over Ø16 groove according to DIN 6885-3

²⁾ Over Ø22 groove according to DIN 6885-3

Couplings and connecting shafts

6.3 Connecting shafts

Connecting shafts are used to link individual drive-system elements to a centrally driven lifting system as a whole. They dampen vibrations and sudden impacts, compensate axial, radial and angular displacements and can be used up to critical speed without pillow blocks (see speed-length diagram).

The fitting of pillow blocks allows the shaft length (L) to be doubled or further multiplied, although a limit of 6 m is imposed with one-piece configuration due to the standard lengths of tube normally available.

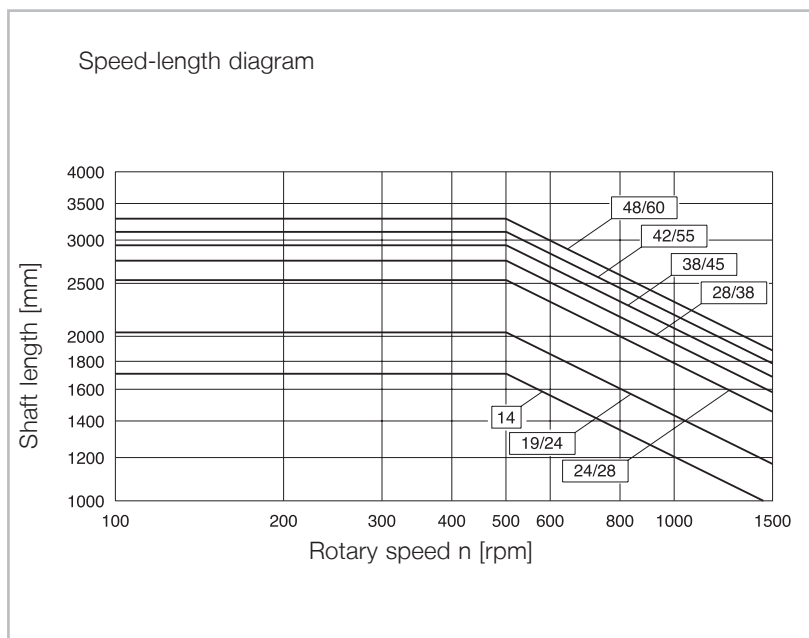
Four different configurations are available for various speed ranges and requirements.

6.3.1 ZR range

Technical information

Size ZR	Nominal torque $T_N^{1)}$ [Nm]	Locking screw		Axial displacement [mm]	Max. angle displacement	Mass moments of inertia [kgm ²]		Weight [kg]		Suitable pillow blocks
		Starting torque T [Nm]	M1			for 2 hubs	for 1 m tube length	for 2 hubs	for 1 m tube length	
14	6	1,3	M3	1,0	0,9°	$0,1317 \times 10^{-4}$	$0,218 \times 10^{-4}$	0,1	0,6	–
19/24	24	10	M6	1,2	0,9°	$0,8278 \times 10^{-4}$	$0,932 \times 10^{-4}$	0,3	1,3	SN 505
24/28	30	10	M6	1,4	0,9°	$8,830 \times 10^{-4}$	$4,414 \times 10^{-4}$	1,5	2,0	SN 507
28/38	70	25	M8	1,5	0,9°	$20,05 \times 10^{-4}$	$7,431 \times 10^{-4}$	2,7	3,1	SN 508
38/45	130	49	M10	1,8	1,0°	$20,15 \times 10^{-4}$	$11,59 \times 10^{-4}$	3,0	3,6	SN 509
42/55	150	49	M10	2,0	1,0°	$47,86 \times 10^{-4}$	$17,07 \times 10^{-4}$	5,0	4,1	SN 510
48/60	245	86	M12	2,1	1,1°	$74,68 \times 10^{-4}$	$24,06 \times 10^{-4}$	6,5	4,6	SN 511

¹⁾ These nominal torque settings are suitable for operation with light impacts. If impacts are heavy, an impact factor of 1.4 must be taken into account.



Rotary speed range:

$n = 1500 \text{ rpm}$

Operating temperature:

– 40 to 90 °C

(up to 120 °C for brief periods)

Dimensioning:

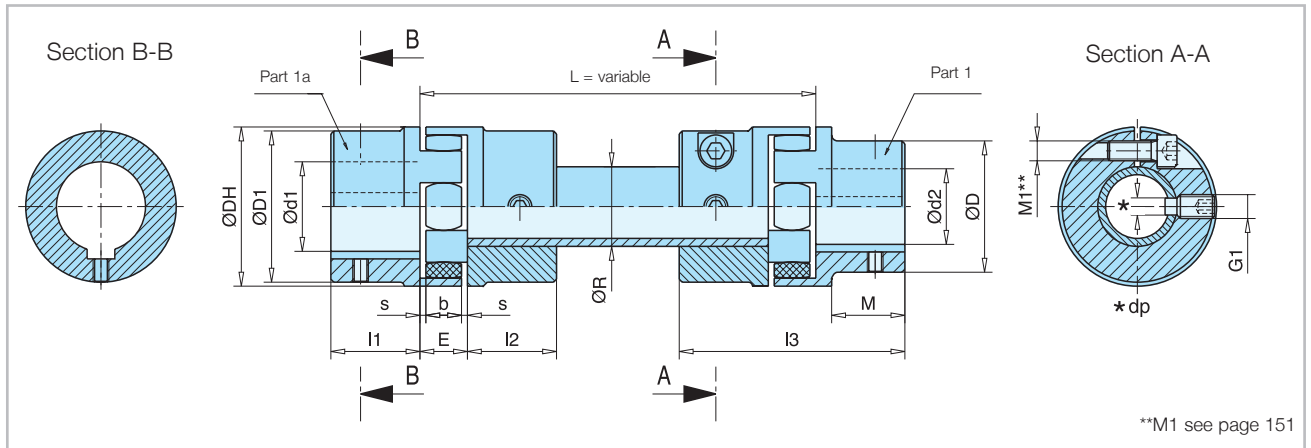
The nominal torque (T_N) of the ZR shaft - with **impact factor S^1** taken into account - must be at least equal to the system torque (T_{Anl}) to be transferred.

$$T_N \geq T_{Anl} * S$$

Couplings and connecting shafts

6.3 Connecting shafts

Dimension plan



Size ZR	Ready-drilled holes ØdH7 ²⁾				ØDH	ØD	ØD1	ØdH	l2	l1	M	s	b	E	l3	ØR	G1	dp
	min Ød2	max Ød2	min Ød1	max Ød1														
14	-	-	4	14	30	-	30	10,5	11	-	1,5	10	13	35	14x2	M4	2,5	
19/24	6	19	19	24	40	32	41	18	25	20	2	12	16	66	20x3	M6	4	
24/28	8	24	24	28	55	40	55	27	30	24	2	14	18	78	30x4	M8	5,5	
28/38	10	28	28	38	65	48	65	30	35	28	2,5	15	20	90	35x4	M10	7	
38/45	12	38	38	45	80	66	77	38	45	37	3	18	24	114	40x4	M12	8,5	
42/55	28	42	42	55	95	75	94	46	50	40	3	20	26	126	45x4	M12	8,5	
48/60	28	48	48	60	105	85	102	51	56	45	3,5	21	28	140	50x4	M16	12	

²⁾ Feather key groove conforming to DIN 6885/1

6.3.2 G / GX / GZ range

Technical information

	G range	GX range	GZ range
Rotary speed range	n= 750 rpm	n= 1500 rpm	n= 3000 rpm
Operating temperature	-40 to 90 °C (up to 120 °C for brief periods)	max. 150 °C ³⁾	max. 80 °C

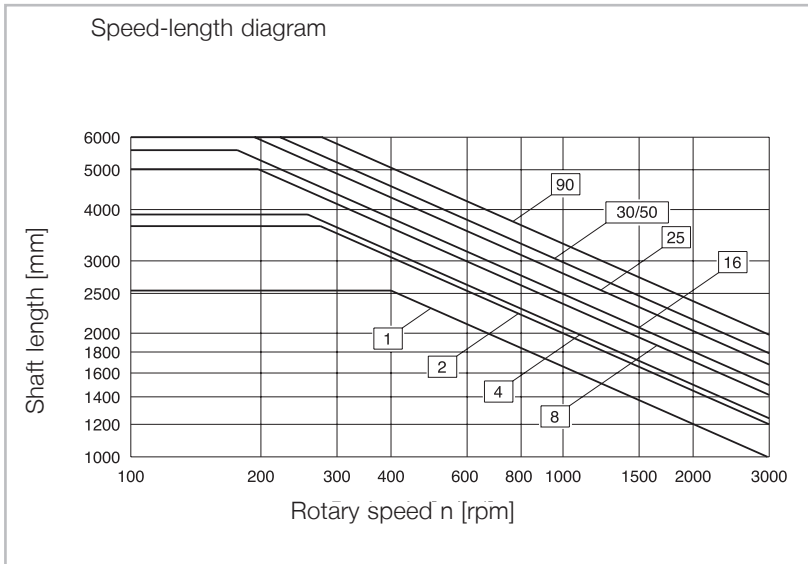
Size	Nominal torque T_N [Nm] ¹⁾³⁾			Weight [kg]		Max. angle displacement		Mass moment of inertia [kgm ²]	Suitable pillow blocks
	G	GX	GZ	for 2 hubs	for 1m tube	G+GX	GX		
1	10	10	10	1,0	1,1	3°	1°	0,00021	SN 507
2	20	30	20	2,2	1,4	3°	1°	0,00052	SN 509
4	40	60	40	3,4	1,6	3°	1°	0,00076	SN 510
8	80	120	80	7,3	2,2	3°	1°	0,00185	SN 513
16	160	240	160	12,4	2,5	3°	1°	0,00297	SN 516
25	250	370	250	19,1	3,1	3°	1°	0,00538	SN 519
30	400	550	400	31,1	4,8	3°	1°	0,0116	SN 522
50	600	-	600	32,1	4,8	3°	1°	0,0116	SN 522
90	900	-	900	58,7	7,6	3°	1°	0,0283	SN 528

¹⁾ These nominal torque settings are suitable for operation with light impacts. If impacts are heavy, an impact factor of 1.4 must be taken into account.

²⁾ From +80 °C onwards, the nominal torque is considerably reduced. In this case, please contact us.

Couplings and connecting shafts

6.3 Connecting shafts

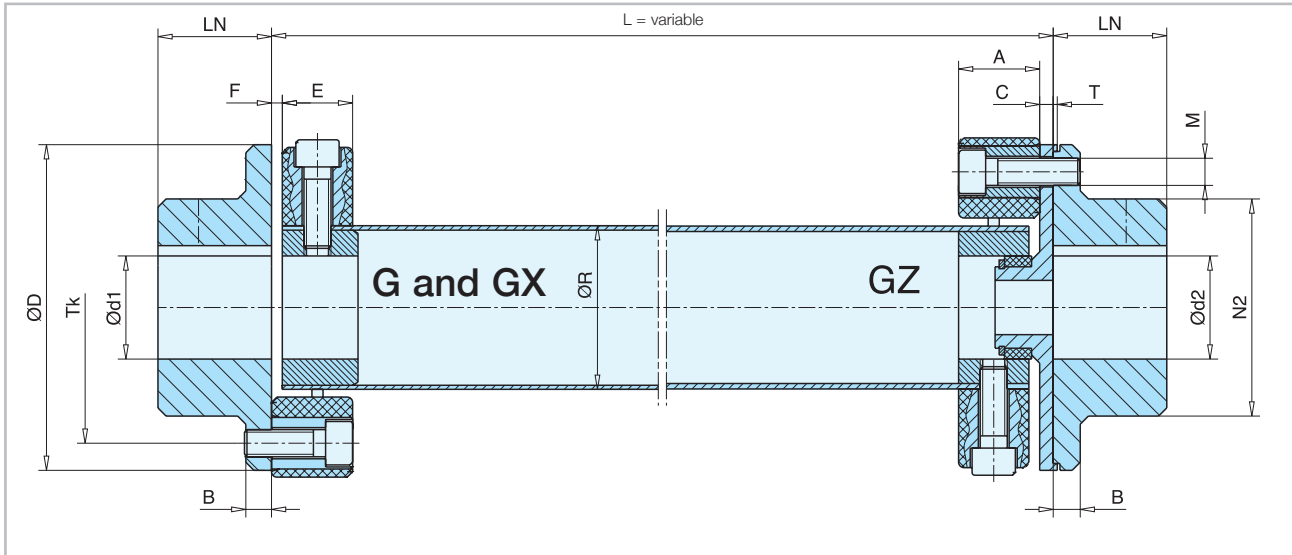


Dimensioning:

The nominal torque (T_N) of the G/GX/GZ shaft – with impact factor S^1 taken into account – must be at least equal to the system torque (T_{Anl}) to be transferred.

$$T_N \geq T_{Anl} * S$$

Dimension plan



6

Size	A	B	C	ØD	Ready-drilled holes Ød H7 ²⁾		E	F	L _N	ØN ₂	ØR	T	T _R /M
					min. Ø d1/d2	max. Ø d1/d2							
1	24	7	5	56	8	25	22	2	24	36	30	1,5	Ø44/2xM6
2	24	8	5	85	12	38	20	4	28	55	40	1,5	Ø68/2xM8
4	28	8	5	100	15	45	24	4	30	65	45	1,5	Ø80/3xM8
8	32	10	5	120	18	55	28	4	42	80	60	1,5	Ø100/3xM10
16	42	12	5	150	20	70	36	6	50	100	70	1,5	Ø125/3xM12
25	46	14	5	170	20	85	40	6	55	115	85	1,5	Ø140/3xM14
30	58	16	5	200	25	100	50	8	66	140	100	1,5	Ø165/3xM16
50	58	16	5	200	25	100	50	8	66	140	100	1,5	Ø165/3xM16
90	70	19	5	260	30	110	62	8	80	160	125	2,0	Ø215/3xM20

¹⁾ These nominal torque settings are suitable for operation with light impacts. If impacts are heavy, an impact factor of 1.4 must be taken into account.

²⁾ Feather key groove conforming to DIN 6885/1.

Couplings and connecting shafts

6.3 Connecting shafts

6.3.3 PW range

Technical information

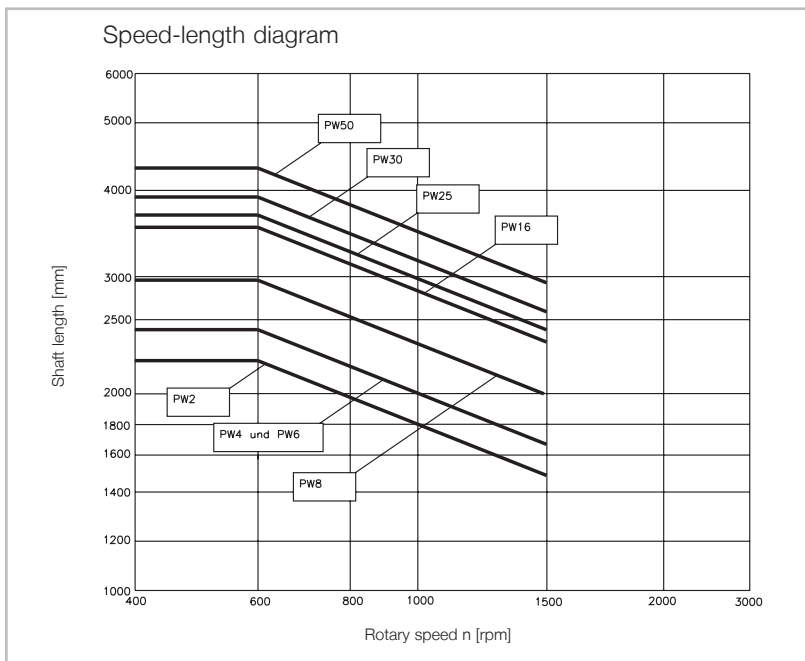
	PW range
Rotary speed range	n= 1500 rpm*
Operating temperature	-57 to +120 °C

* to 3000 rpm on request

Size	Nominal torque T_N [Nm] ¹⁾	Weight [kg]		Max. angle displacement	Mass moment of inertia [kgm ²]		Suitable pillow blocks
		2 x hubs with 300 mm tube	for 1m tube		2 x hubs with 300 mm tube	for 1m tube	
2	45	0,9	1,0	1°	0,00025	0,00021	SN 507
4	65	1,5	1,4	1°	0,00056	0,00052	SN 509
6	124	1,9	2,1	1°	0,00101	0,00098	SN 510
8	230	3,8	2,15	1°	0,00345	0,00185	SN 513
16	370	6,0	2,5	1°	0,00824	0,00297	SN 516
25	500	9,5	3,1	1°	0,01790	0,00538	SN 519
30	800	12,8	4,8	1°	0,03200	0,01160	SN 522
50	1300	18,0	7,13	1°	0,05870	0,01680	SN 522

¹⁾ The rated torques are valid for normal operation. If impacts are light, an impact factor of 1.5 must be taken into account.

6



Dimensioning:

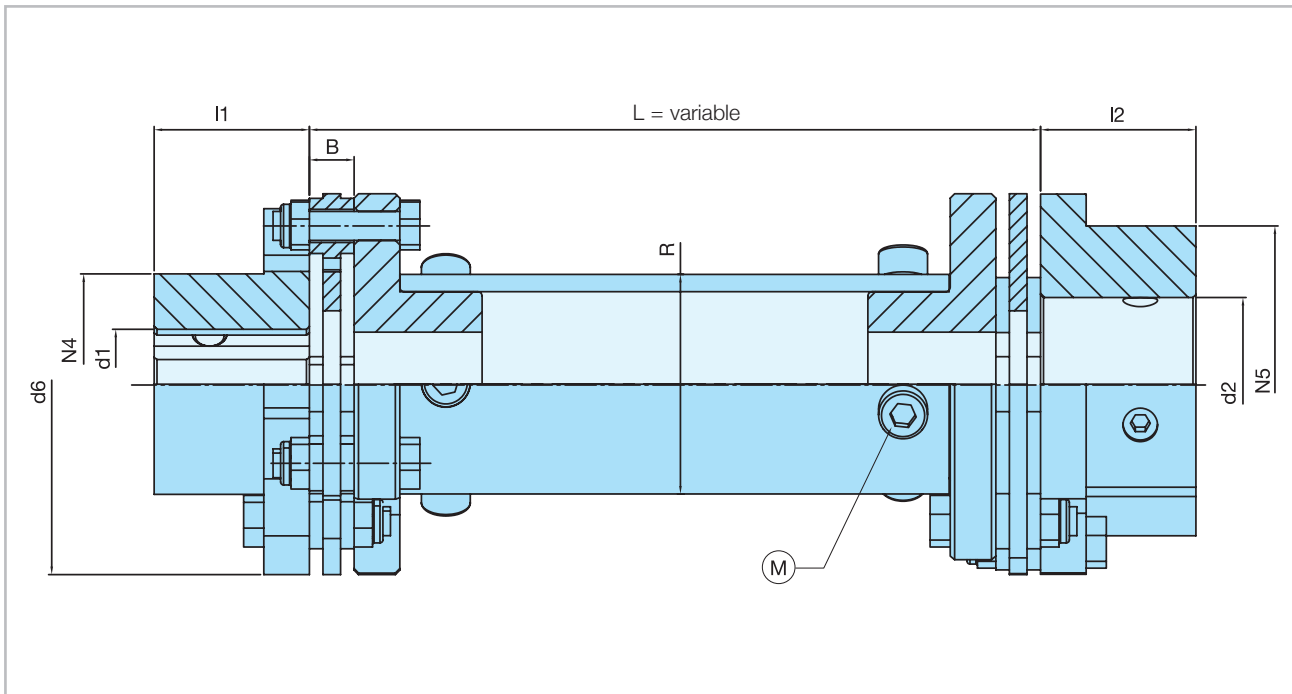
The nominal torque (T_N) of the PW shaft - with impact factor S^1 taken into account - must be at least equal to the system torque (T_{An}) to be transferred.

$$T_N > T_{An} \cdot S$$

Couplings and connecting shafts

6.3 Connecting shafts

Dimension plan



Size PW	Ød6	max. Ød1 ²⁾	max. Ød2 ²⁾	Ød4	ØN5	l1 / l2	M	ØR	ØB
2	57	16	26	31	47	24	3xM 8	30	7,9
4	66	19	32	38	55	27	3xM 8	40	7,9
6	76	25	35	43	64	32	3xM 10	45	11,7
8	95	32	46	56	79	36	3xM 12	60	13,2
16	114	42	60	68	95	43	3xM 12	70	14,7
25	133	48	66	84	111	49	3xM 16	85	16,5
30	152	60	76	93	127	62	3xM 16	100	19,6
50	171	66	85	109	143	70	3xM 20	100	21,8

¹⁾ Feather key groove conforming to DIN 6885/1

²⁾ Finish bore Ø H7

Couplings and connecting shafts

6.4 Order codes

6.4.1 Couplings

1 - 2 / 3 - 4 / 5



- 1) Range: R / MKR / MKE / MKS
- 2) Size
- 3) Torque (applies to MKR / MKE / MKS ranges only)
- 4) Hub drill-hole d1
- 5) Hub drill-hole d2

6.4.2 Connecting shafts

1 - 2 / 3 - 4 / 5

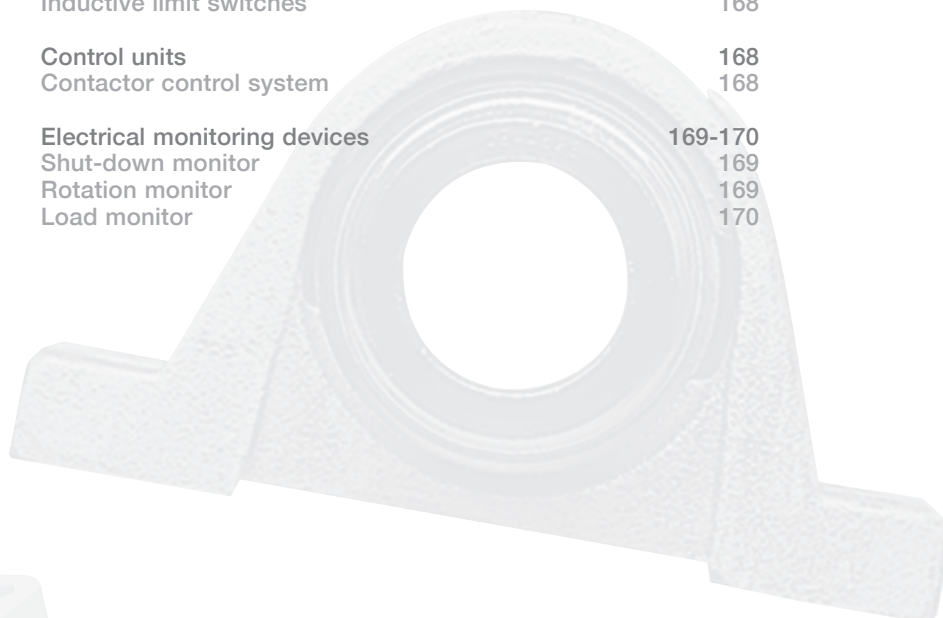


- 1) Range: G / GX / GZ / ZR / PW
- 2) Size
- 3) Length
- 4) Hub drill-hole d1
- 5) Hub drill-hole d2

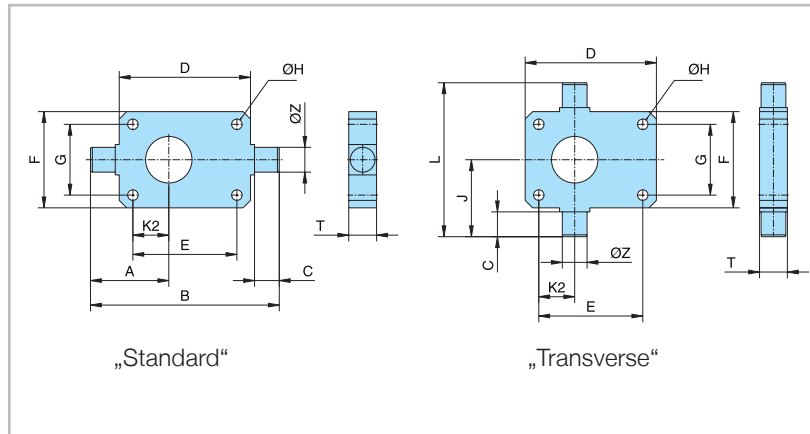
Accessories

Contents

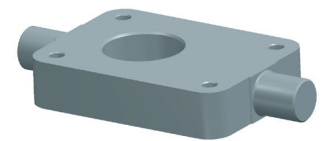
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7.1 Swivel plates



In order to allow worm gear screw jacks to carry out swivelling and tipping movements, the drive elements must be secured at two points and permitted to move. This can be done using swivel plates and a head IV or articulated head. The bending moment resulting from the swivelling motion should be minimized as much as possible by means of low-friction articulations.



7.1.1 SHE range

Size	A	B	C	D	E	F	G	ØH	J	K2	L	T	ØZ	Load max. „Standard“	Load max. „Transverse“
0,5	on request														
1.1	95,5	205	25	150	130	100	80	8,5	77,5	58	155	25	20	15 kN	15 kN
2	on request														
3.1	102,5	240	35	165	135	120	90	13	97,5	50	195	35	30	30 kN	30 kN
5.1	126,5	305	45	212	168	155	114	17	124	58	248	45	40	50 kN	50 kN
10	143,5	350	55	235	190	200	155	21	157,5	63,5	315	55	50	80 kN	100 kN
15.1	143,5	350	55	235	190	200	155	21	157,5	63,5	315	55	50	80 kN	100 kN
20.1	190	430	65	295	240	215	160	28	175	95	350	65	60	200 kN	160 kN
25	202,5	495	70	350	280	260	190	35	202,5	95	405	70	65	220 kN	250 kN
35	on request														
50.1	on request														
75	on request														
100.1	on request														
150	on request														

7.1.2 MERKUR range

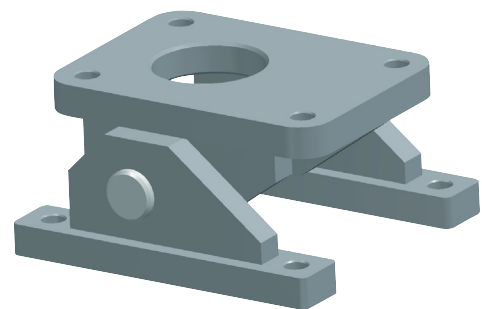
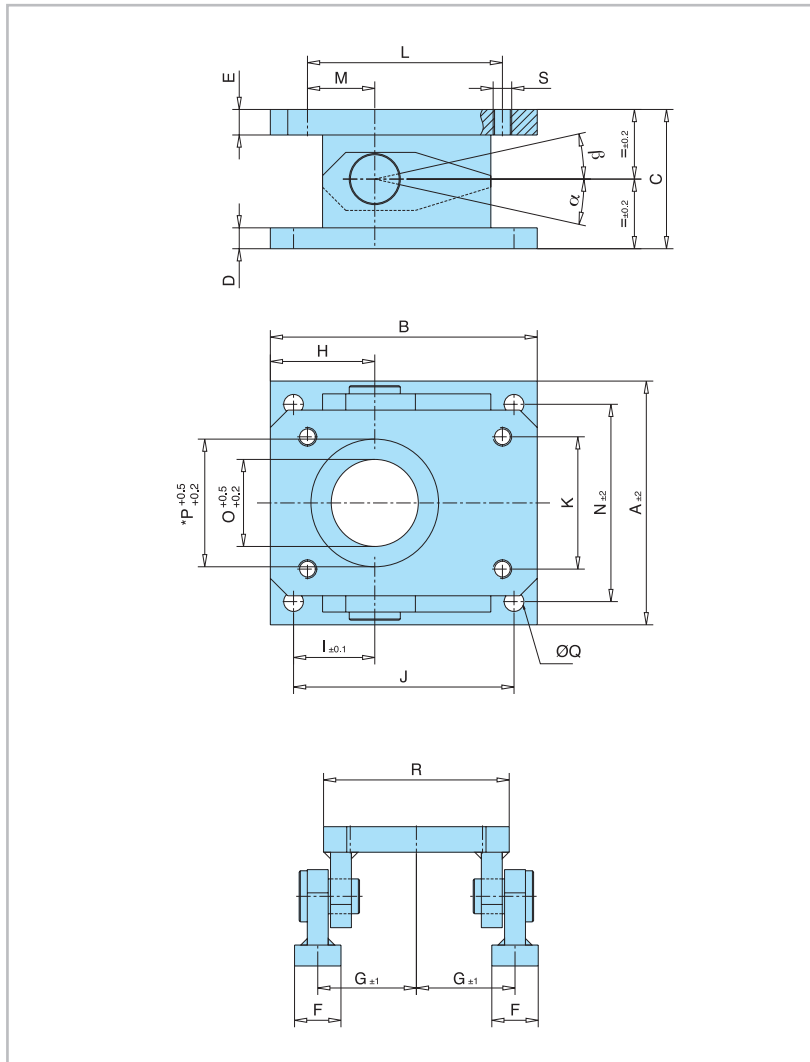
Size	A	B	C	D	E	F	G	ØH	J	K2	L	T	ØZ
0	34,5	85	10	60	48	50	38	6,6	37,5	16	75	15	10
1	48,5	115	15	80	60	72	52	9	53,5	21	107	20	15
2	62,5	145	20	100	78	85	63	9	65	29	130	25	20
3	76,5	175	20	130	106	105	81	11	75	42	150	30	25
4	110,5	245	30	180	150	145	115	13,5	105	63	210	40	35
5	120,5	275	35	200	166	165	131	22	120	66	240	50	45
6	on request												
7	on request												
8	on request												

7.1.3 HSE range

Size	A	B	C	D	E	F	G	ØH	J	K2	L	T	ØZ	Load max. „Standard“	Load max. „Transverse“
32	on request														
36.1	80	190	25	138	110	105	80	9	78,5	40	157	25	20	10 kN	10 kN
50 / 50.1	105	250	35	175	140	130	100	13	102,5	50	205	35	30	25 kN	25 kN
63 / 63.1	140	330	45	235	190	160	120	17	127,5	70	255	45	40	50 kN	50 kN
80 / 80.1	160	390	55	275	220	200	150	21	157,5	75	315	55	50	100 kN	100 kN
100 / 100.1	185	465	65	330	270	230	175	28	182,5	87,5	365	65	60	110 kN	110 kN
125 / 125.1	on request														
140	on request														
200.1	on request														

Accessories

7.2 Swivel mounting bases



In order to allow worm gear screw jacks to carry out swivelling and tipping movements, the drive elements must be secured at two points and permitted to move. This can be done using a swivelling bearing and a head IV or articulated head, or by means of a swivel-lug configuration. The lateral force resulting from the swivelling motion should be minimized as much as possible by means of low-friction articulations.

7

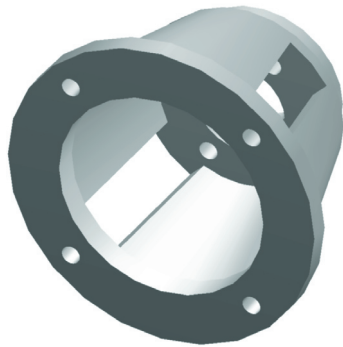
Only the most recent dimension plans are binding.

Size	Dimension																				
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P*	ØQ	R	S	α°	β°
SHE 1.1	150										80	130	58			80					
HSE 32	138	138	60	10	10	20	60	54	40	110	62	95	31	120	62	62	9	108	M8	26	42
HSE 36.1	138										80	110	40		72	72					
SHE 2,5/3.1	180	170	110	16	20	40	70	65	50	140	90	135	50	140	70	70	14	130	M12	35	55
HSE 50/50.1											100	140	50		100	100				25	
SHE 5/5.1	210	230	120	18	22	40	85	90	70	190	114	168	58	170	110	110				28	44
HSE 63/63.1											120	190	70		122	122		160	M16		
SHE 10/15.1	270	270	150	22	28	50	110	100	75	220	155	190	63,5	220	130	130				28	45
HSE 80/80.1											150	220	75		152	152	21	200	M20		
SHE 20/20.1	350	340	190	30	33	60	145	130	95	280	160	240	95	290	100	160				30	45
HSE 100/100.1											175	270	87,5		185	185		260	M24		

*applies to anti-turn device only

Swivel mounting bases for the MERKUR range are available on request

7.3 Motor mounting flanges

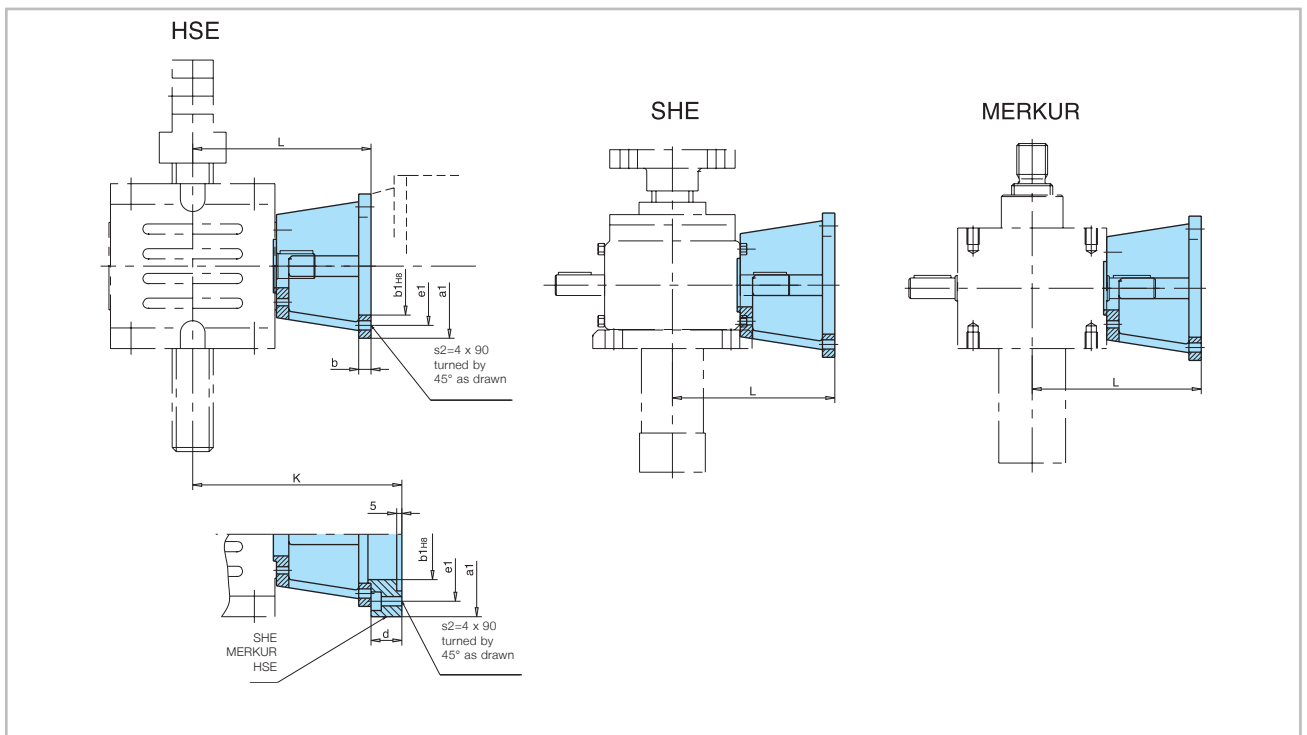


The diverse usage of the worm gear screw jacks requires directly mounted motors in certain situations. Direct motor mounting can be carried out with IEC flanges and flexible couplings provided the weight and dimensions of the two drive elements do not differ too much from each other.

If the drive motor is to be supplied and fitted by the customer, please provide us with a dimensional drawing showing the connection points. The customer should also determine whether installation on the lifting element should be on the right or left hand side (see chapter 3.10).

In order to simplify procedures, only the motor mounting flanges most often required are shown below.

Please consult us if you have any queries.



Only the most recent dimension plans are binding.

7.3.1 SHE range

Size	Motor type	Flange dimensions			Motor shaft	Coupling	Dimensions				
		Øa1	Øb1	Øe1			L	b	K	d	s2
2,5/3.1	63	105	70	85	Ø11x23	R19/24	136	10	-	-	4xØ6,6
2,5/3.1	71	105	70	85	Ø14x30	R19/24	141	10	-	-	4xØ6,6
2,5/3.1	80	120	80	100	Ø19x40	R19/24	151	10	-	-	4xØ6,6
2,5/3.1	90	140	95	115	Ø24x50	R24/28	164	10	-	-	4xØ9,0
2,5/3.1	SK 11 EF	120	80	100	Ø20x40	R19/24	151	10	-	-	4xØ9,0
2,5/3.1	SK 02 F	120	80	100	Ø20x40	R19/24	151	10	-	-	4xØ6,6
2,5/3.1	SK 12 F	140	95	115	Ø25x50	R24/28*	164	10	-	-	4xØ9,0

*Steel hub

■ Recommended flange dimensions

Accessories

7.3 Motor mounting flanges

7.3.1 SHE ranges from size 5

Size	Motor	Flange dimensions			Motor shaft	Coupling	Dimensions				
		Øa1	Øb1	Øe1			L	b	K	d	s2
5/5.1	71	140	95	115	Ø14x30	R 24/28	167	12	-	-	4xØ9
5/5.1	80	140	95	115	Ø19x40	R 24/28	177	12	-	-	4xØ9
5/5.1	90	140	95	115	Ø24x50	R 24/28	187	12	-	-	4xØ9
5/5.1	100	160	110	130	Ø28x60	R 24/28	197	12	-	-	4xØ9
5/5.1	SK 11 EF	140	95	115	Ø20x40	R 24/28	177	12	-	-	4xØ9
5/5.1	SK 02 F	140	95	115	Ø20x40	R 24/28	177	12	-	-	4xØ9
5/5.1	SK 12 F	140	95	115	Ø25x50	R 24/28	187	12	-	-	4xØ9
5/5.1	SK 13 F	140	95	115	Ø25x50	R 24/28	187	12	-	-	4xØ9
5/5.1	SK 22 F	160	110	130	Ø30x60	R 24/28*	197	12	-	-	4xØ9
5/5.1	SK 23 F	160	110	130	Ø30x60	R 24/28*	197	12	-	-	4xØ9
15.1	80	140	95	115	Ø19x40	R 28/38	200	10	-	-	4xØ9
15.1	90	160	110	130	Ø24x50	R 28/38	210	10	-	-	4xØ9
15.1	100	160	110	130	Ø28x60	R 28/38	220	10	-	-	4xØ9
15.1	112	160	110	130	Ø28x60	R 28/38	220	10	-	-	4xØ9
15.1	SK 11 EF	140	95	115	Ø20x40	R 28/38	200	10	-	-	4xØ9
15.1	SK 02 EF	140	95	115	Ø20x40	R 28/38	200	10	-	-	4xØ9
15.1	SK 12 EF	160	110	130	Ø25x50	R 28/38	210	10	-	-	4xØ9
15.1	SK 21 EF	160	110	130	Ø25x50	R 28/38	210	10	-	-	4xØ9
20.1	80	160	110	130	Ø19x40	R 28/38	221	12	-	-	4xØ9
20.1	90	160	110	130	Ø24x50	R 38/45	235	12	-	-	4xØ11
20.1	100	200	110	130	Ø28x60	R 42/55	248	15	-	-	4xØ14
20.1	112	200	110	130	Ø28x60	R 42/55	248	15	-	-	4xØ14
20.1	SK 02 F	160	110	130	Ø20x40	R 28/38	221	12	-	-	4xØ9
20.1	SK 12 F	160	110	130	Ø25x50	R 38/45	235	12	-	-	4xØ11
20.1	SK 11 EF	160	110	130	Ø25x50	R 38/45	235	12	-	-	4xØ11

*Steel hub

☐ Recommended flange dimensions

7

7.3.2 MERKUR range

Size	Motor type	Flange dimensions						Motor shaft	Coupling	Dimensions					
		Øa1	Øb1	Øe1	L	b	K			d	s2 (B14-Design)				
M2	80	120	140	80	110	100	130	Ø19x40	R19/24	-	-	132,5	20	4xØ6,6	4xØ9
M3	63	90	120	60	80	75	100	Ø11x23	R19/24	-	-	142	12	4xØ5,5	4xØ6,6
M3	71	105	140	70	95	85	115	Ø14x30	R19/24	-	-	147	17	4xØ6,6	4xØ9
M3	80	120	160	80	110	100	130	Ø19x40	R19/24	-	-	157	27	4xØ6,6	4xØ9
M3	90	140	160	95	110	115	130	Ø24x50	R19/24	-	-	167	37	4xØ6,6	4xØ9
M3	SK 11 EF	120	140	80	95	100	115	Ø20x40	R19/24	-	-	157	27	4xØ6,6	4xØ9
M3	SK 02 F	120	140	80	95	100	115	Ø20x40	R19/24	-	-	157	27	4xØ6,6	4xØ9
M3	SK 12 F	120	140	80	95	100	115	Ø25x50	R19/24*	-	-	167	37	4xØ6,6	4xØ9
M4	71	120	140	80	95	100	115	Ø14x30	R 24/28	-	-	169,5	10	4xØ6,6	4xØ9
M4	80	120	160	80	110	100	130	Ø19x40	R 24/28	-	-	179,5	20	4xØ6,6	4xØ9
M4	90	140	160	95	110	115	130	Ø24x50	R 24/28	-	-	189,5	30	4xØ9	
M4	100	160	200	110	130	130	165	Ø28x60	R 24/28	-	-	199,5	40	4xØ9	4xØ11
M4	SK 11 EF	120	140	80	95	100	115	Ø20x40	R 24/28	-	-	179,5	20	4xØ6,6	4xØ9
M4	SK 02 F	120	140	80	95	100	115	Ø20x40	R 24/28	-	-	179,5	20	4xØ6,6	4xØ9
M4	SK 12 F	140	160	95	110	115	130	Ø25x50	R 24/28	-	-	189,5	30	4xØ9	
M4	SK 13 F	140	160	95	110	115	130	Ø25x50	R 24/28	-	-	189,5	30	4xØ9	
M4	SK 22 F	160	200	110	130	130	165	Ø30x60	R 24/28*	-	-	199,5	40	4xØ9	4xØ11
M4	SK 23 F	160	200	110	130	130	165	Ø30x60	R 24/28*	-	-	199,5	40	4xØ9	4xØ11

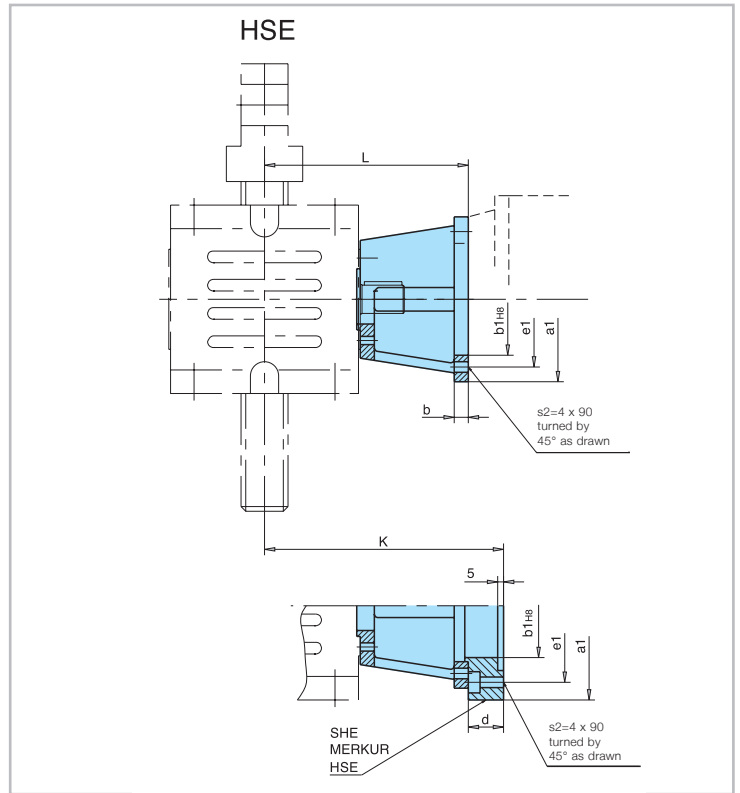
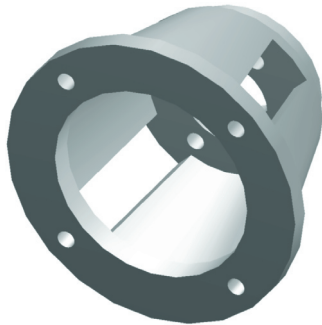
*Steel hub

☐ Recommended flange dimensions

Further mounting flanges on request

7.3 Motor mounting flanges

7.3.3 HSE range



Size	Motor type	Flange dimensions						Motor shaft	Coupling	Dimensions					
		Øa1		Øb1		Øe1				L	b	K	d	s2	
50.1	63	90	120	60	80	75	100	Ø11x23	R19/24	-	-	140,5	12	4xØ5,5	4xØ6,6
50.1	71	105	140	70	95	85	115	Ø14x30	R19/24	-	-	145,5	17	4xØ6,6	4xØ9
50.1	80	120	160	80	110	100	130	Ø19x40	R19/24	-	-	155,5	27	4xØ6,6	4xØ9
50.1	90	140	160	95	110	115	130	Ø24x50	R19/24	-	-	165,5	37	4xØ9	
50.1	SK 11 EF	120	140	80	95	100	115	Ø20x40	R19/24	-	-	155,5	27	4xØ6,6	4xØ9
50.1	SK 02 F	120	140	80	95	100	115	Ø20x40	R19/24	-	-	155,5	27	4xØ6,6	4xØ9
50.1	SK 12 F	120	140	80	95	100	115	Ø25x50	R19/24*	-	-	165,5	37	4xØ6,6	4xØ9
63.1	71	105	140	70	95	85	115	Ø14x30	R 24/28	-	-	168,5	10	4xØ6,6	4xØ9
63.1	80	120	160	80	110	100	130	Ø19x40	R 24/28	-	-	178,5	20	4xØ6,6	4xØ9
63.1	90	140	160	95	110	115	130	Ø24x50	R 24/28	-	-	188,5	30	4xØ9	
63.1	100	160	200	110	130	130	165	Ø28x60	R 24/28	-	-	198,5	40	4xØ9	4xØ11
63.1	SK 11 EF	120	140	80	95	100	115	Ø20x40	R 24/28	-	-	178,5	20	4xØ6,6	4xØ9
63.1	SK 02 F	120	140	80	95	100	115	Ø20x40	R 24/28	-	-	178,5	20	4xØ6,6	4xØ9
63.1	SK 12 F	140	160	95	110	115	130	Ø25x50	R 24/28	-	-	188,5	30	4xØ9	
63.1	SK 13 F	140	160	95	110	115	130	Ø25x50	R 24/28	-	-	188,5	30	4xØ9	
63.1	SK 22 F	160	200	110	130	130	165	Ø30x60	R 24/28*	-	-	198,5	40	4xØ9	4xØ11
63.1	SK 23 F	160	200	110	130	130	165	Ø30x60	R 24/28*	-	-	198,5	40	4xØ9	4xØ11
80.1	80	160	110	110	130	130	165	Ø19x40	R 28/38	232	15	-	-	4xØ9	
80.1	90	160	110	110	130	130	165	Ø24x50	R 28/38	232	15	-	-	4xØ9	
80.1	100	160	110	110	130	130	165	Ø28x60	R 38	232	15	-	-	4xØ9	
80.1	112	160	110	110	130	130	165	Ø28x60	R 38	232	15	-	-	4xØ9	
80.1	SK 21 F	160	110	110	130	130	165	Ø25x50	R 28/38	232	15	-	-	4xØ9	
80.1	SK 12 F	160	110	110	130	130	165	Ø25x50	R 28/38	232	15	-	-	4xØ9	
80.1	SK 22 F	160	110	110	130	130	165	Ø30x60	R 38	232	15	-	-	4xØ9	
80.1	SK 31 EF	160	110	110	130	130	165	Ø30x60	R 38	232	15	-	-	4xØ9	

*Steel hub

■ Recommended flange dimensions

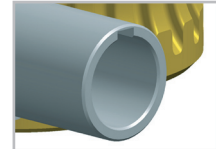
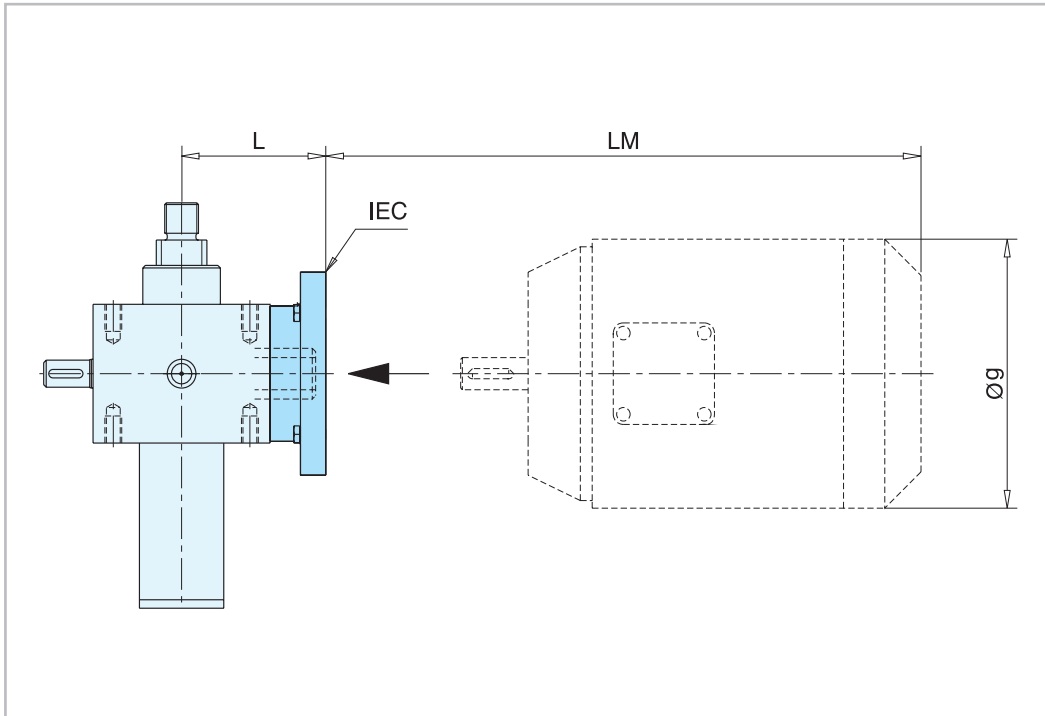
If required, motor mounting flanges can also supplied in special configurations.

Accessories

7.4 Mounting flanges for hollow shaft

7.4.1 MERKUR range

Mounting of motor on worm gear screw jack via hollow shaft and flange.

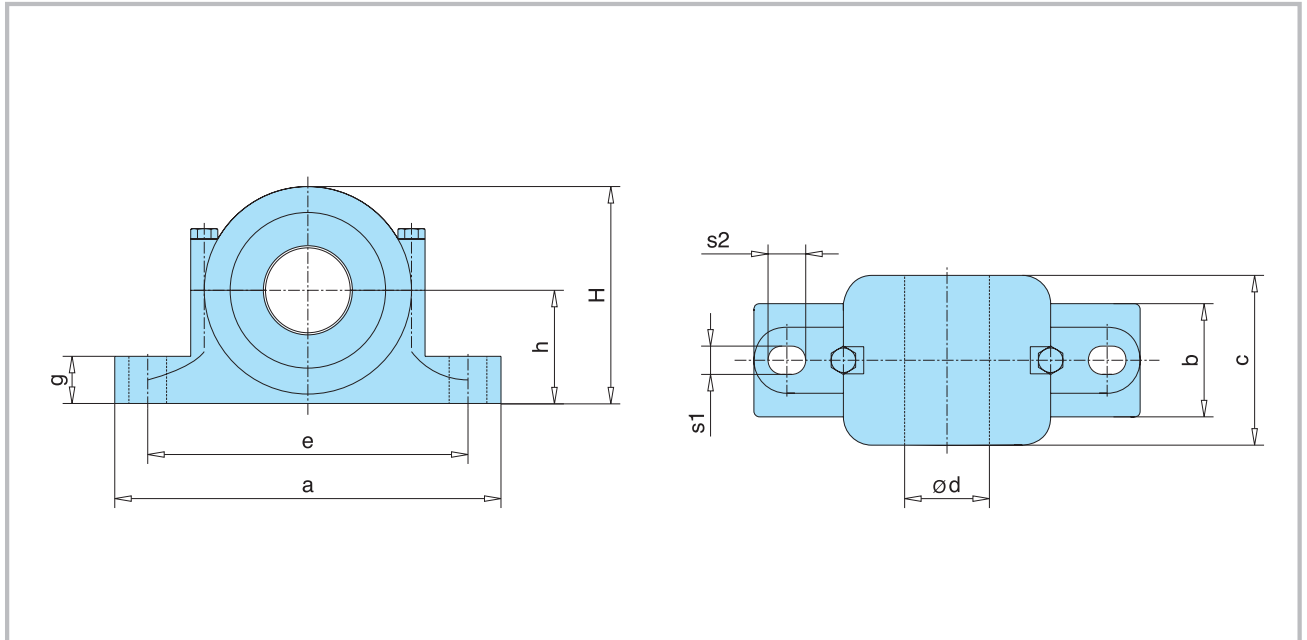


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Size	Motor type	IEC- flange			Motor shaft	L	LM ¹⁾ (approx)	Øg
		Øa1	Øb1	Øe1 H8				
M 0					on request			
M 1	63	90	60	75	Ø11x23	64	190	126
M 1	71	105	70	85	Ø14x30	64	213	142
M 2	63	90	60	75	Ø11x23	72,5	190	126
M 2	71	105	70	85	Ø14x30	72,5	213	142
M 2	80	120	80	100	Ø19x40	72,5	233	159
M 3	71	105	70	85	Ø14x30	82,5	213	142
M 3	80	120	80	100	Ø19x40	82,5	233	159
M 4	80	120	80	100	Ø19x40	117,5	233	159
M 4	90	140	95	115	Ø24x50	117,5	280	179
M 4	100	160	110	130	Ø28x60	117,5	308	200
M 5	80	120	80	100	Ø19x40	127,5	233	159
M 5	90	140	95	115	Ø24x50	127,5	280	179
M 5	112	160	110	130	Ø28x60	127,5	328	222
M 6								
M 7					on request			
M 8								

¹⁾ without brake

7.5 Pillow blocks



Pfaff-silberblau DIN 736-standard pillow block, complete with rolling bearing with conical hole and adapter sleeve. Housing with DIN 5419-standard two-sided felt gasket. This range of pillow blocks is particularly suitable for intermediate bearing support of connecting shafts, as the adapter sleeve can be fixed to the outer diameter of the tube.

In order to avoid distortion when more than one pillow block is fitted, only one of them should be configured as a fixed bearing.

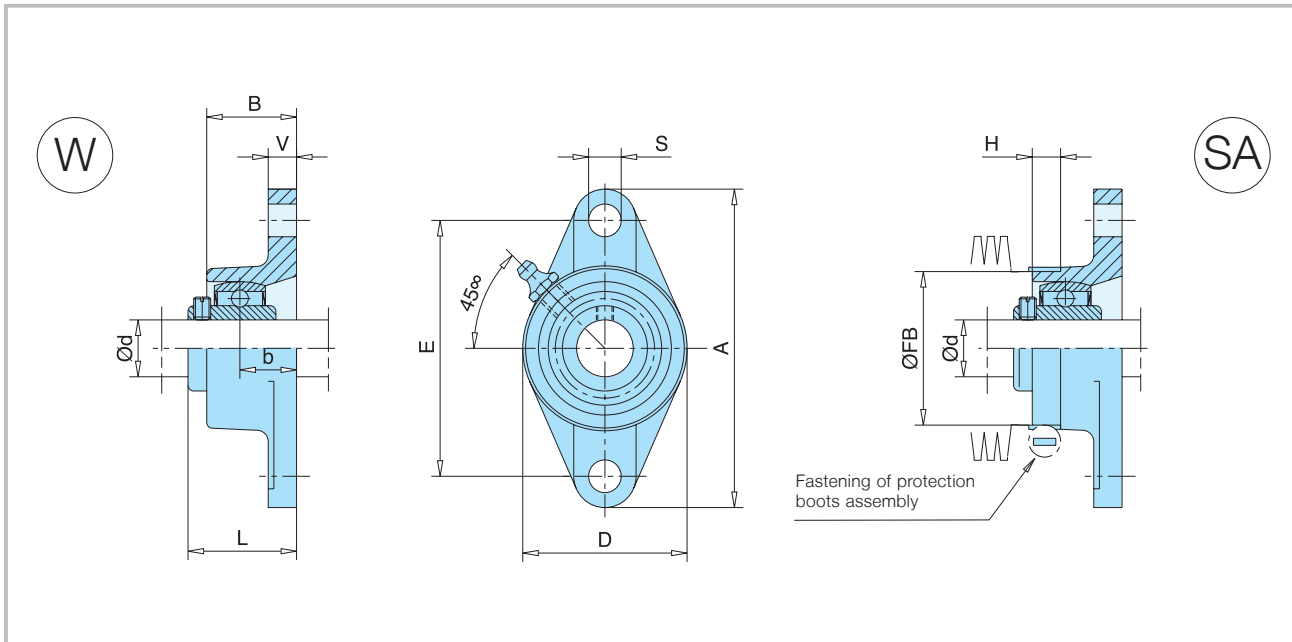
Order code:

SN _____

Size	Ød	H	h	e	S1	S2	c	a	b	g	Weight kg
SN 505	20	71	40	130	15	20	67	165	46	19	1,4
SN 506	25	87	50	150	15	20	77	185	52	22	1,9
SN 507	30	92	50	150	15	20	82	185	52	22	2,0
SN 508	35	106	60	170	15	20	85	205	60	25	2,7
SN 509	40	115	60	170	15	20	85	205	60	25	2,9
SN 510	45	112	60	170	15	20	90	205	60	26	2,8
SN 511	50	127	70	210	18	23	95	255	68	28	4,2
SN 512	55	133	70	210	18	23	105	255	70	30	4,9
SN 513	60	148	80	230	18	23	110	275	80	30	6,1
SN 515	65	154	80	230	18	23	115	280	80	30	6,8
SN 516	70	175	95	260	22	27	120	315	90	32	9,3
SN 517	75	181	95	260	22	27	125	320	90	32	9,7
SN 518	80	192	100	290	22	27	145	345	100	35	12,8
SN 519	85	210	112	290	22	27	140	345	100	35	15,0
SN 520	90	215	112	320	26	32	160	380	110	40	17,0
SN 522	100	239	125	350	26	32	175	410	120	45	18,5
SN 524	110	271	140	350	26	32	185	410	120	45	24,5
SN 528	125	302	150	420	35	42	205	500	150	50	38,0

Accessories

7.6 Flange bearings



Recommended fixation layout for screw for screw jacks, type 2.

Order code:
OWF ___ U-W

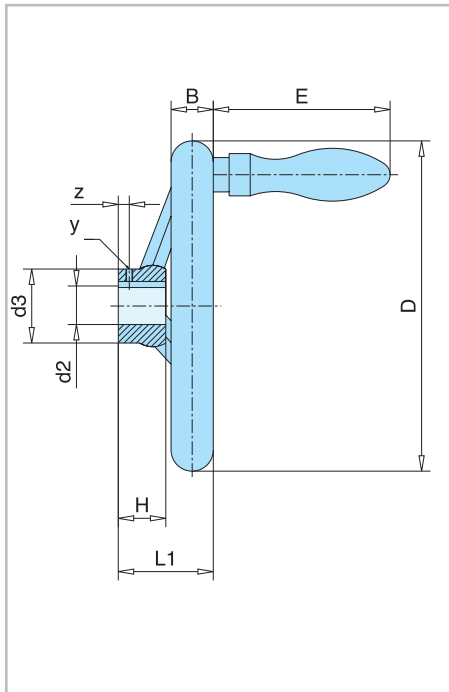
Order code:
OWF ___ U-SA¹⁾

(W= Standard;
SA = with centering shoulder)

Size	Weight kg	Dimensions in mm											
		d	D	B	E	A	V	S	L	H ¹⁾	FB ¹⁾	b	
OWF 12 U		12											
OWF 15 U	0,49	15	60	25,5	90	113	11	12	33,3	12	55	15	
OWF 20 U		20											
OWF 25 U	0,63	25	68	27	99	130	13	16	35,7	12	65	16	
OWF 30 U	0,94	30	80	31	117	148	13	16	40,2	15	75	18	
OWF 35 U	1,20	35	90	34	130	161	14	16	44,4	15	85	19	
OWF 40 U	1,60	40	100	36	144	175	14	16	51,2	15	95	21	
OWF 45 U	1,90	45	108	38	148	188	15	19	52,2	15	100	22	
OWF 50 U	2,20	50	115	40	157	197	15	19	54,6	15	110	22	
OWF 60 U	4,10	60	140	48	202	250	18	23	68,7	25	135	29	
OWF 80 U	7,90	80	180	59	233	290	20	25	84,3	25	175	35	

¹⁾ Flange bearing type "SA" are supplied with a centering shoulder Ø FB protection bellows assembly, to aid fastening of the bellows assembly on site.

7.7 Hand wheels



Further designs on request

For emergency manual operation or manual adjustment of worm gear screw jacks.
Design: DIN 950-standard hand wheel with rotating knob (DIN 98), made of polished anodized aluminium

Order code: Hand-wheel-____(indicate size, e. g.: HSE 32)

Size	ØD	Ød2	Ød3	H	L1	B	L2	z	y	E
SHE 0,5 M 1	80	10	24	16	29	14	55	6	M3	55
SHE 1.1 HSE 32 HSE 36.1 M 2	125	14	28	18	36	16	70	9	M 4	70
SHE 3.1 HSE 50.1 M 3	160	16	32	20	40	18	70	9	M 4	70
SHE 5.1 M 4 HSE 63.1	225	20 24	42	26	48	24	88	9	M 4	88
SHE 10 ¹⁾ /15.1 M 5 HSE 80.1	280	25 32	50	30	53	26	111	10	M 6	110
SHE 20.1 M 6 HSE 100.1	400	28 30 38	65	38	63	32	124	10	M 6	125

¹⁾ For new orders, use size 15.1; size 10 only available as a special version
Feather key groove conforming to DIN 6885/1

7

7.8 Lubrication systems

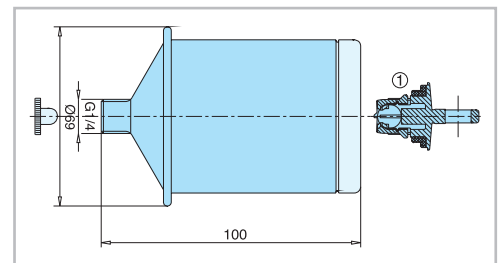
7.8.1 Automatic lubricant dispensers

Automatic lubricant dispensers filled with high-grade lubricating grease ensure permanent lubrication of the lifting screws and worm gears for up to 12 months, and are therefore a cost-effective solution for reducing maintenance intervals.

Standard range

Technical information:

- Metal housing
- Drive provided by electrochemical reaction
- At 20 °C, running times of 1, 3, 6 and 12 months are possible (the color of the activation screw ❶ denotes the dispensing time)
- 120 cm³ volume
- Maximum compression accumulation of 4 bar
- Operating temperatures ranging from 0 °C up to a maximum of + 40 °C are possible



❶ Color	Dispensing time
yellow	1 month
green	3 months
red	6 months
grey	12 months

Accessories

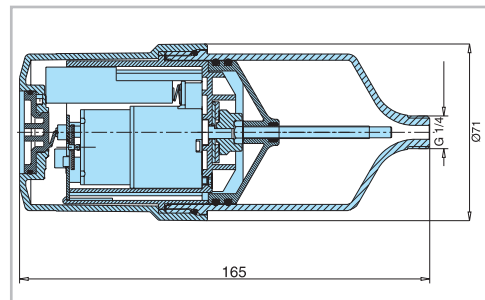
7.8 Lubrication systems

Vario range

The electromechanical operating system of the Vario unit is what makes it a high-precision dispenser. After entering the desired running time and LC unit, apply lubricating grease to the corresponding area. This unit is also fitted with a red- and green-LED function-indicating system.

Technical information:

- Transparent plastic housing
- Electromechanical operating system with set of replaceable batteries
- Running time can be individually set to 1, 3, 6 or 12 months
- LC units of 60 / 120 / 250 cm³ volume
- Automatic compression-limiting to 5 bar
- Operating temperatures ranging from - 10 °C up to a maximum of + 50 °C are possible
- LC (Lubrication Canister) units can be replaced on the spot
- Corrosion-resistant, dust- and hose-proof (IP65)



Frost range

The "Frost" dispenser is designed for operation at low temperatures.

Technical information:

- Metal housing
- Drive provided by electrochemical reaction
- Running time depends on temperature (see table ②)
- 120 cm³ volume
- Maximum compression accumulation of 4 bar
- Operating temperatures ranging from - 25 °C up to a maximum of + 10 °C are possible

② Temperature	Dispensing time
+10 °C	1 week
± 0 °C	2 weeks
-10 °C	6 weeks
-20 °C	14 weeks
-25 °C	26 weeks

7

7.8.2 Central lubricating systems

In the case of multi-screw lifting systems, or if access to the worm gear screw jacks is difficult, we recommend the use of a motor-actuated central lubricating system. The use of a lubricant tank, circulation pump and force-feed system with progressive distributor allows the required lubricant to be sent precisely to the individual lubrication points.

As each lubricant distribution system has to be configured to match the pertaining operating conditions, our technicians would be pleased to work out a special solution for your needs.

7.9 Synchronisation control in multi-screw lifting systems

The electrical synchronisation control of two or more individual drives is provided by a control system with frequency converter and speed control. The positioning control, which is integrated in the frequency converter, allows for simple relative and absolute positioning – up to 15 positions are possible. So can be realised complex drive tasks.

7.9.1 Synchronisation control in master/slave operation

Precise synchronisation control in master/slave operation by control system with frequency converter and speed control

- Safety equipment as per EN954-1, cat. 3 stop categories 0 and 1
- Simple relative and absolute positioning by positioning control
- Up to 15 different positions can be set by digital inputs
- Direct connection of an incremental encoder, connection of absolute encoders via CANopen interface
- Continuous and user-friendly parameter structure
- Automatic motor parameter identification
- 7 x digital input
- 2 x digital output
- 2 x analogue input (0..10V / 0/4..20mA)
- 1 x analogue output
- 2 x multifunction relay
- RS 485 and RS 232 on RJ12 bushing



Accessories

7.10 Limit switches

7.10.1 Mechanical limit switches

Limit switches in enclosed configuration for normal and emergency shut-off of the worm gear or on the on site structure.

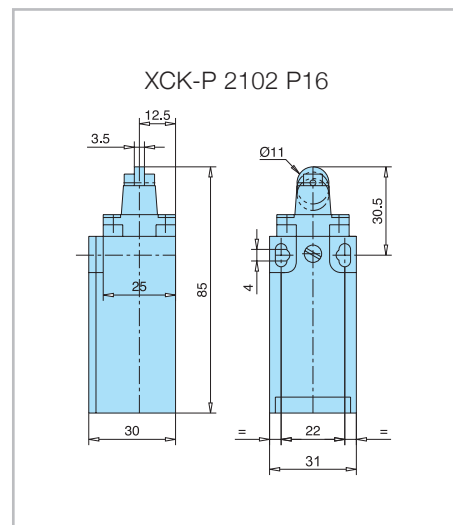
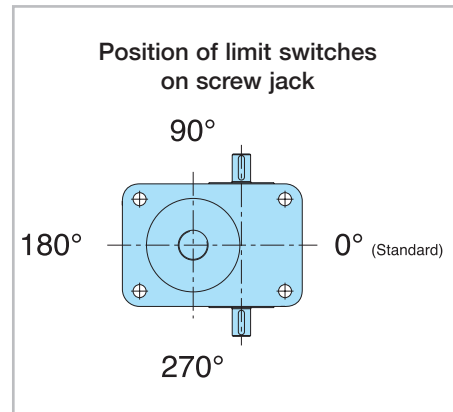
Technical specifications XCK- _ _ _ :

Design:	Enclosed in plastic (or metal)
Ambient temperature:	- 25 °C to + 70 °C
Protection rating:	IP 66
Line entrance:	ISO, M16 x 1,5 (M20 x 1,5)
Short-circuit protection:	10A
Auxiliary switch inserts:	Single-circuit change-over contact open/close with (without) jumper function and forced opening of break contact

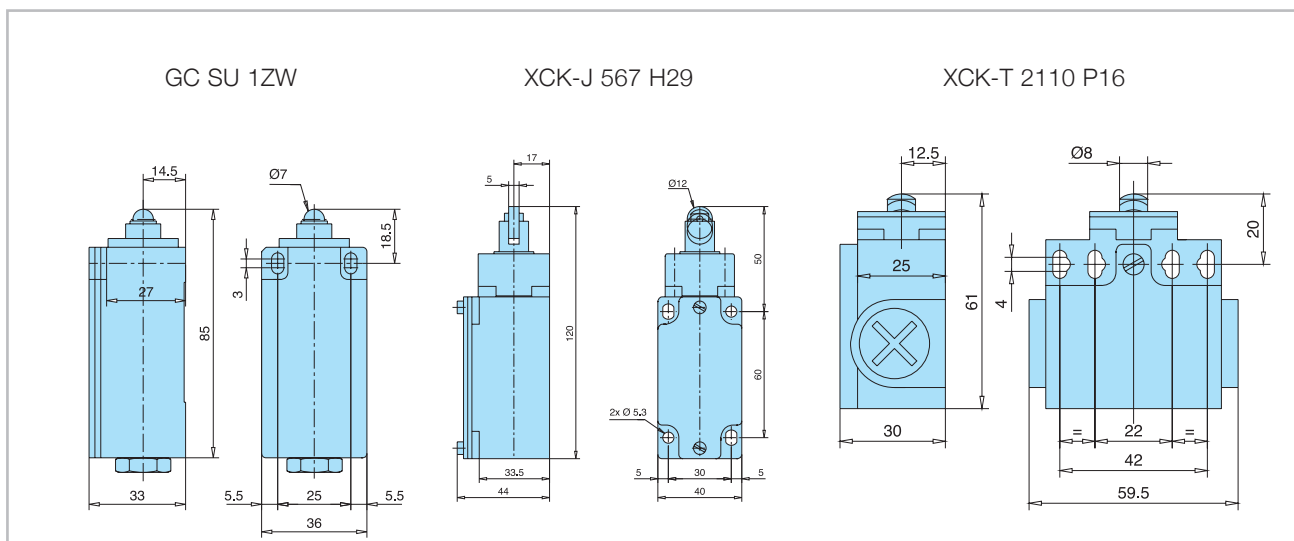
() values in brackets apply to XCK-J

Technical specifications GC SU 1ZW:

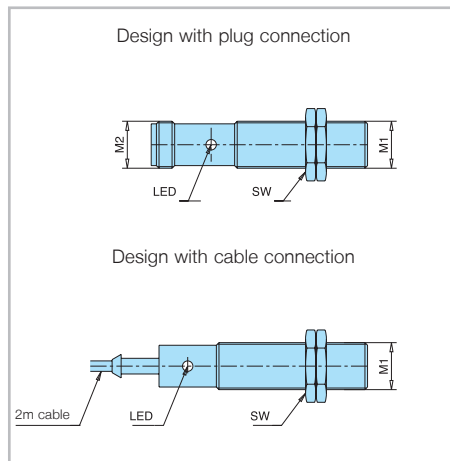
Design:	Enclosed in metal
Ambient temperature:	- 30 °C to + 80 °C
Protection rating:	IP 65
Line entrance:	ISO, M20 x 1,5
Short-circuit protection:	10A
Auxiliary switch inserts:	Single-circuit change-over contact open/close with jumper function and forced opening of break contact



7



7.10 Limit switches



7.10.2 Inductive limit switches

Can also be used for rotation or standstill monitoring purposes on the worm gear screw jack.

Type	IF 5598	IF 0006	IF 0093
Connection /	Plug	PVC cable	PVC cable
Sets of cable sockets	E10216	2m/2x0,5mm ²	2m/2x0,5mm ²
Operating voltage	10-55V	20-250VAC	20...250AC/DC
Current carrying capacity	PNP/NPN programm.	opening contact	opening contact
Current carrying capacity	300 mA	250 mA	350mA
Protection rating	IP67	IP67	IP67
Ambient temperature	- 25 °... + 80 °	- 25 °... + 80 °	- 25 °... + 80 °
Thread M1/2	M12/M12x1	M12x1	M18x1

The dimension plan and further technical specifications are available on request

7.11 Control units

Pfaff-silberblau can supply both conventional contactor control units and, on request, complete PLC controls.

7

7.11.1 Contactor control system

For lifting systems/linear actuators with three-phase motors (~400 V) - conforming to European Standard DIN-EN-60204 Part 1, Part 32.



Type H1TM	Motor power rating up to kW
Basic version	4,0
With external wall-mounted push-button	4,0
With external pendant switch	4,0
With electrical overload protection	4,0
With external wall-mounted push-button and electrical overload protection	4,0
With external pendant switch and electrical overload protection	4,0

The controls are also available in single-phase and D.C. design upon request.

H1TM basic version

- Protection rating IP 54
- Housing made of plastic (270 x 220 x 108 mm)
- Operating voltage ~ 400 V 50 Hz
- Control system voltage ~ 42 V 50 Hz
- Motor protection relay
- "UP/DOWN" push-button control
- Signals from the limit switches can be processed
- Built-in "EMERGENCY OFF" master switch and reversal protection

H1TM with external push-button controls and main contactor

- With wall-mounted "UP/DOWN" and "EMERGENCY OFF" push-buttons (supplied in separate package) or
- With "UP/DOWN" and "EMERGENCY OFF" pendant switches (incl. 5 m control cable)

H1TM with electronic overload protection

(required for lifting devices from loads of 1000 kg)

- With main contactor
- Overload relay
- Key-operated "reset" control
- Fault-warning light

Accessories

7.12 Electrical monitoring devices

7.12.1 Shut-down monitor

Together with the optional pulse generator fitted to the worm gear screw jack (see chapter 3 "long safety nut", electrically monitored), it is possible to use a standstill monitor integrated in the control system to track the movement of the screw/nut system.

Function

The lifting system shuts down automatically whenever the value drops below its preset level.

Technical information ¹⁾

- Target pulse-count achieved by coarse and fine adjustment: 5-25 pulses/min; 20-100 pulses/min
 - LED indicators show current switching status
- Start-up bypassing (or delay):
Available period of 0 to 14 sec. in 2 sec. steps

Dimension plan
Order code:

Pict. 1
AZ 33-B

7.12.2 Rotation monitor

The rotation monitor DZ 100 (Pict. 1) allows tracking of the linear and rotating movements of the unit, helping to prevent imbalanced operation of the individual drive units. As with the shut-down monitoring system, the optional pulse generator is also required on the worm gear screw jack.

Function

The pulse generator on the worm gear screw jack is actuated by means of a switch cam (e. g. fitted to the supporting nut in configuration type 1, and to the screw in configuration type 2).

The incoming pulse-count is compared to the programmed target value. If the value drops below or exceeds this preset level, an output relay is activated. The switching status of the output relay can be used to show operating conditions and for the control of processes.

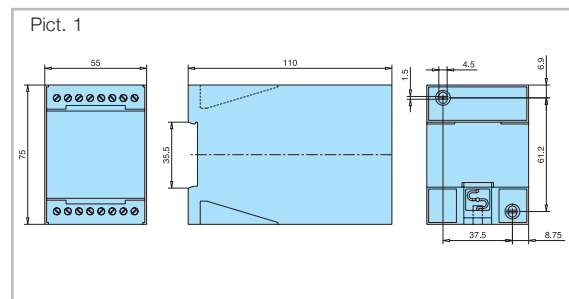
Technical information ¹⁾

- Setting range: 5...5000 pulses/min
Supply voltage: 24 V DC
Current consumption: max. 35mA
Signal level at impulse input: min. 14 V
Start-up bypassing: infinitely adjustable between 0,5 and 15 sec.

Switching-status indicator
by means of LEDs

Order code: DZ 34-A

¹⁾ Technical data sheet available on request



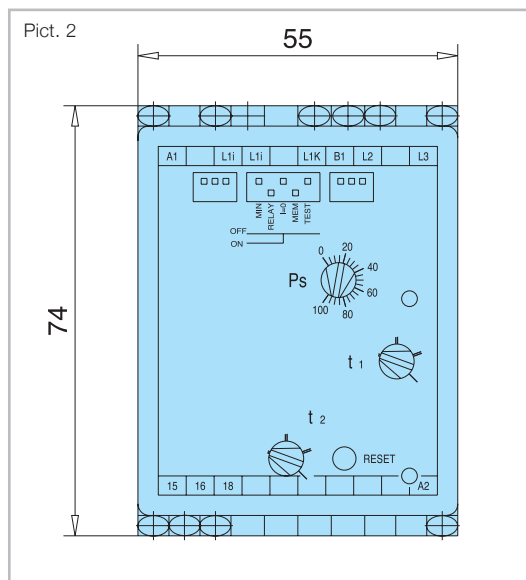
7.12 Electrical monitoring devices

7.12.3 Load monitor

If there is any danger of an overload occurring to the worm gear screw jacks/linear actuators in a lifting system (e. g. due to overrunning the operating end limit or an operating malfunction), we recommend the use of mechanical (safety couplings, see chapter 6) or electrical monitoring devices (load monitor, Pict. 2).

Function

The load monitor BU400V 5X determines the current power output of the drive motor. The fine-adjustment feature with respect to the nominal current range allows for precise detection and recording of load factors.




Technical information¹⁾

Power monitoring:	23-6930 W (without current transformer)
Supply voltages:	12-24-42-110-230-400-440 V AC
Distribution voltage:	+ 10 %.. - 15 % UN
Nominal consumption:	4 VA
Frequency range:	48-63 Hz
Repeating accuracy:	± 2 %
Setting accuracy:	± 5 % (in % of nominal value)
Output:	1 change-over contact for power supply
Amperage range:	1-5 A in steps of 1 A; 5-10 A in one step of 5 A; Current = 0 detection off approx. < 55 of nominal value
Protection rating:	IP40 conforming to VDE 0106 and VBG 4
Accessories:	Transformer module TR3-42VAC (please indicate other voltages)
Order code:	BU400 V/500 V A5 X and TR3-42 VAC

¹⁾ Technical data sheet available on request

Overview further linear motion products

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Overview further linear motion products



8.1 Electromechanical linear actuators CMLA

The CMLA electromechanical linear actuator is developed to specifically to meet the requirements of high-performance industrial equipment with a high processing speed and a need for precise positioning. With the compact design and its suitability for use in any position is the CMLA ideally suited a wide variety of applications. An economic solution for filling systems and equipment for metalworking, the packaging industry etc.

Available in 4 performance classes and 2 sizes

- with a rated output of 500 N to 1300 N
- "Plug and play" thanks to complete pre-wiring
- Precise positioning and repeat accuracy
- Constant lifting power during entire lifting process
- Standard stroke lengths of up to 1000 mm
- High lifting speeds through optional ball screw
- Fast delivery time thanks modular system



8.2 Electromechanical screw rams ALS /ALSR

The "ALS" electromechanical screw ram is a universal drive system for a wide range of applications within the machine building industry. With a choice of 4 sizes, a modular design in "ALS" compact version and "ALSR" cylinder version it is possible to obtain the optimal design features to suit your specific requirements. The system is particularly ideal for single drive applications on linear motion projects. The "ALSR" version consists of the "ALS" standard version plus a fully enclosed shaft and piston structure, with the tubes protected against corrosion.

Available in 4 standard sizes

- Lifting capacities ranging from 12.5 to 100 kN
- Lifting speeds of 0.5 m/min to 10 m/min
- With trapezoidal or ball screw
- Direct motor attachment possible
- Standard stroke lengths of up to 1.5 m, special lengths are also available

8.3 High performance linear actuators HLA

Multifarious useably drive element consisting of a drive mechanism with two possible transmission stages as well as a shaft and thrust tube design.

Available 4 standard sizes

- Lifting loads up to 100 kN
- Lifting speeds from 0.025 m/min to 10 m/min
- Enclosed design
- Self-supporting tube-in-tube system
- Two possible transmission stages
- With trapezoidal or ball screw
- Use in multi-screw lifting systems is possible



Overview further linear motion products

8.4 Electromechanical linear actuators ELA

Electromechanical linear actuators (ELA) consist of a completely enclosed aluminium housing with worm gearing and axial bearing driven by a standard supplied electric motor as well as a thrust and shaft tube construction. Trapezoidal or ball screws. It is possible to install ELAs in any position and the thrust and guide mechanism is designed for both compressive and tensile loading. Other distinguishing features include robust construction and reliability giving ELAs a wide range of applications. The use of weather-resistant materials in their construction means they are also suitable for outdoor use.

Available in 4 standard sizes

- Maximum dynamic axial loads from 55 to 1300 kg
- Stroke lengths of 100 to 800 mm
- Wide range of accessories (flexible protection boots, shaft encoder, control unit, lift limitation etc.)



8.5 Telescopic lifting columns PHOENIX

Precision and strength combined. They come together to form the PHOENIX, the compact, extremely strong and fast lifting system with integrated guides. A system of high-quality anodized precision aluminium profiles, a MERKUR worm gear screw jack and a directly mounted motor. PHOENIX is a master in absorbing high compression and tensile forces. It performs well independently, but does even more as a lifting system in a kit. With electrical or mechanical synchronization.

- Enclosed, low-maintenance design
- Admissible off-center load pick-up
- Self-locking mechanism in the trapezoidal version (TGT)
- High lifting speed with the two-start trapezoidal or ball screw
- Short delivery time
- Inductive limit switch for setting the upper and lower end positions
- Conforms with European EN 1494 (VBG 8) regulation and rating IP 55
- Numerous options: control unit, encoders, servo motor and much more.
- Power range from 5 to 25 kN lifting force
- Variable stroke lengths



8.6 Linear motion precision screws

Our linear motion precision screws give you the confidence that only an experienced manufacturer can provide and also offer a way of rising above the performance and ideas your competitors can offer.

Our extensive standard range can save you a fortune in purchasing, design and warehousing costs. The range includes trapezoidal screws from 12 mm to 190 mm diameter and ball screws from 6 mm to 125 mm diameter.



Overview further linear motion products

8.7 Screw jacks in imperial sizes (mechanical actuators)

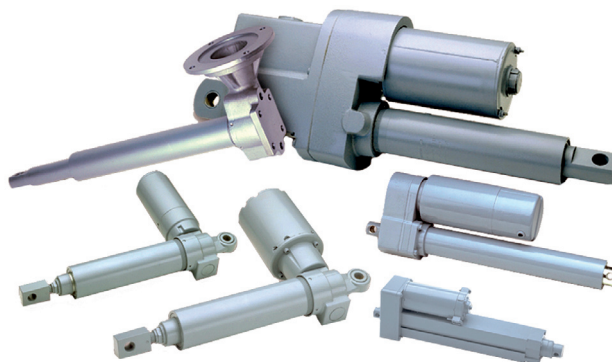


Product range

- Machine screw and ball screw actuators (screw jacks) ranging in size from 1/4 to 250 tons
- Specialty actuators: Stainless steel, Anti-Backlash, Anode jacks, Micro-miniature, Continuous duty
- Powered actuators: Gear reducer driven, C-face driven, Handwheels
- Actuator controls: Control panels, Rotary limit switches, Potentiometer/Transducers, Encoders, Rotary counters
- Power transmission components: Bevel gear boxes, Couplings, Connecting shafts, Pillow and Flange blocks

8.8 Linear actuator in imperial sizes

8



Industrial actuators:

- Capacities from 25 to 2500 lbs. (11 to 11.13 kN)
- Speeds up to 2.4 in/sec (61 mm/sec)
- Stroke lengths up to 24 in (609.6 mm)
- Multiple AC & DC voltages
- Custom actuators available

Commercial actuators:

- Capacities to 1350 lbs. (6 kN)
- Speeds up to 1.8 in/sec (45.7 mm/sec)
- Stroke lengths up to 24 in. (609.6 mm)
- Multiple AC & DC voltages
- Custom actuators available

General Informations

This page provides you with the most important links to our products, sites and to download options. In addition, you will also find information about our certifications and access to our newsletter, plus an extensive download list for our product catalogues



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Our CAD database comprises all the available components of our drive-related-products. You can save time by importing the finished CAD data in 2D or 3D into your program. Simply enter the parameters you require and export - job done.

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