



Operating instruction  
Assembling instruction  
Worm gear screw jacks  
**SHE, HSE**

[www.pfaff-silberblau.com](http://www.pfaff-silberblau.com)

Safety - Made by Pfaff-silberblau

## Table of contents

<b>1</b>	<b>General information and safety</b>	<b>4</b>
1.1	Introduction	4
1.2	Explanation of the symbols	4
1.3	Glossary	4
1.4	Intended use	5
1.4.1	Standard screw jacks	5
1.4.2	Screw jacks with safety devices for lifting platforms	5
1.4.3	Screw jacks with safety devices for stages and studios	5
1.4.4	Screw jacks for use in explosive areas	5
1.5	Accident prevention guide	6
1.6	General safety information	6
1.7	Safety information ATEX	7
1.8	Type plate	7
1.8.1	Design variants	8
1.8.2	Travelling nut types (Ba2)	8
1.9	Technical specifications	8
1.9.1	SHE standards and with safety features	8
1.9.2	High-performance worm gear screw jack HSE	9
1.9.3	SHE for spaces with explosion hazards acc. 94/9/EC (ATEX)	10
1.9.4	HSE for explosive areas acc. 94/9/EC (ATEX)	11
<b>2</b>	<b>Receipt of goods, storage, transport</b>	<b>11</b>
2.1	Receipt of goods	11
2.2	Transport	11
2.3	Storage	12
<b>3</b>	<b>Standard version worm gear screw jacks Ba1</b>	<b>12</b>
3.1	SHE Ba1	12
3.2	HSE Ba1	13
3.3	Options for screw jacks Ba1	13
3.3.1	Second guide ring "Sf"	13
3.3.2	Anti turn device "V" "VP" "Ve"	14
3.3.3	Protection against skimming "Se, Ve";	14
3.3.4	Inductive stroke limit "Si; Vi	14
3.3.5	Electromechanical stroke limit "Sm"; "Vm"	15
3.3.6	Electromechanical stroke limit "Sme"; "Vme"	15
3.4	Ball thread spindle "Ku"	16
3.5	Multi-gear trapezoidal thread screws	16
3.6	Buttress thread screws "S"	16
<b>4</b>	<b>Worm gear screw jacks Ba 1 special models</b>	<b>16</b>
4.1	Adjustable clearance version	16
4.2	Swivel drive	16
4.2.1	Specifications	17
4.3	Telescope specifications	17
4.4	Short safety nut	17
4.4.1	Short safety nuts without tube cap	17
4.4.2	Short safety nuts with tube cap	17
4.4.3	Visual wear indicator	18
<b>5</b>	<b>Safety worm gear screw jacks</b>	<b>18</b>
5.1	Long safety nut	19
5.1.1	Installing the limit switch (nut breakage)	19
5.1.2	Visual wear indicator	19
5.1.3	Speed monitoring (optional)	19
5.2	Safety-trap nut (optional with Ku screws)	20
<b>6</b>	<b>Standard version worm gear screw jacks Ba2</b>	<b>20</b>
6.1	Worm gear screw jack SHE Ba2	20

6.2	High-performance worm gear screw jack HSE Ba2.....	21
<b>7</b>	<b>Worm gear screw jacks Ba 2 special models .....</b>	<b>22</b>
7.1	Ball thread spindle "Ku" .....	22
7.2	Multi-geared trapezoidal thread screws .....	22
7.3	Buttress thread screws "S" .....	22
7.4	Adjustable clearance version .....	22
7.5	Swivel drive .....	22
7.6	Short safety nut .....	23
7.7	Visual wear indicator .....	23
<b>8</b>	<b>Safety worm gear screw jacks Ba2.....</b>	<b>23</b>
8.1	Long safety nut .....	24
8.2	Electrical nut breakage monitoring .....	24
8.2.1	Installing the limit switch .....	24
8.3	Visual wear indicator .....	24
8.4	Speed monitoring option .....	24
8.4.1	Mounting the pulse transmitter .....	24
8.5	Safety-trap nut (optional with Ku screws).....	24
<b>9</b>	<b>Assembly .....</b>	<b>25</b>
9.1	Assembly SHE.....	25
9.1.1	Layout and fitting position.....	25
9.1.2	SHE with trapezoidal thread screw .....	25
9.1.3	SHE with ball screw spindle .....	26
9.2	Assembly HSE.....	26
9.2.1	Layout and fitting position.....	26
9.2.2	HSE with trapezoidal thread screw .....	26
9.2.3	HSE with ball screw spindle .....	27
9.3	Assembly of multi-screw units .....	27
9.4	Pivot version .....	28
9.5	Mechanical fastening.....	28
9.5.1	Screw jack housing.....	28
9.5.2	Screw heads.....	29
9.5.3	Screw starting torques.....	30
<b>10</b>	<b>Initial operation .....</b>	<b>30</b>
<b>11</b>	<b>Maintenance and inspection.....</b>	<b>30</b>
11.1	Maintenance plans .....	31
11.1.1	Standard SHE and HSE .....	31
11.1.2	Safety screw jack SHE and HSE.....	31
11.1.3	Atex Screw jacks SHE and HSE .....	32
11.2	Maintenance instructions.....	32
11.2.1	Safety test.....	32
11.2.2	Record for measuring the wear .....	34
11.3	Lubrication .....	34
11.3.1	Spindle lubrication .....	35
11.3.2	Gear unit lubrication .....	35
11.3.3	Grease the anti turn device (V) .....	36
11.3.4	Quantity of lubricant.....	37
11.4	SHE with low-viscosity grease level in the lift gear box .....	37
<b>12</b>	<b>Decommissioning .....</b>	<b>37</b>
<b>13</b>	<b>Declaration of incorporation.....</b>	<b>38</b>
<b>14</b>	<b>Declaration of conformity acc. 94/9/EC .....</b>	<b>40</b>

## 1 General information and safety









### 1.1 Introduction

These operating instructions describe the Pfaff-silberblau worm gear screw jack line SHE and HSE type 1 and type 2. Please refer to our order confirmation or worm gear screw jack compendium for details on the layout, design and operating conditions for the drives. Always observe and follow these operating instructions when using the equipment.



- Read these operating instructions carefully before assembly and initial operation and have them available to all responsible persons.
- Observe the safety information.
- Store the operating instructions and documents carefully.

### 1.2 Explanation of the symbols

	Practical information
	Warning against a general hazard. Risk of injury due to neglect.
	Warning against electrical voltage. Severe risk of injury due to neglect.
	Information on safety screw jack
	Important information for use in explosive areas
	Important information
	Assembly and setting information
	Disposal

### 1.3 Glossary

SHE	Worm gear screw jack
HSE	High-performance worm gear screw jack
Type 1 (Ba1)	Method of operation for type with lifting screw
Type 2 (Ba2)	Method of operation for type with rotating screw
Specifications	A = screw on housing cover side; B= screw on mounting surface side
Tr	Trapezoidal thread spindle
Ku	Ball screw spindle
S	Buttress thread screw
P	Screw pitch
DIN	German industry standards
EN	European norm
ISO	International standards
ID	Intermittent duty in % / h

## 1.4 Intended use

Worm gear screw jacks are partly completed machines in accordance with MRL 2006/42/EC and intended to be used with machinery and systems.

These are driving elements that lift, lower, adjust and move loads or forces. The drive system may only be used for its designated purpose.

Observe the technical data such as lifting power, lift speed, intermittent duty, and ambient temperature as written in our order confirmation, our operating instructions / technical data sheet.



If stated in the order confirmation, the screw jacks with corresponding additional supplementary equipment must comply the particular specifications and guidelines for lifting platforms (EN 1570, EN 280; EN 1756; EN 1493) stages and studios (BGV C1) and/or explosion protection guidelines 94/9/EC

Any use other than the intended use is prohibited.

Changes to the operating conditions or modifications to our drives are permissible only with our expressed written consent.

### 1.4.1 Standard screw jacks

The basic model of the worm gear screw jack is designed **according to DIN EN 1494**.



- The screw jacks of the worm gear serve to move and position weights or forces.
- The **presence of persons** under hoisted loads is **forbidden**.
- Use in **explosive areas** is **forbidden**.

### 1.4.2 Screw jacks with safety devices for lifting platforms

**in accordance with EN 1570, EN 280; EN 1756; EN 1493**

The worm gear screw jacks serve to move and position weights or forces.



They are equipped with safety features such as safety nuts, speed monitors, wear indicators.

The use of screw jacks in the overall system according to the aforementioned standards is the responsibility of the manufacturer of the whole system.

Risk analysis by the manufacturer of the overall system.

### 1.4.3 Screw jacks with safety devices for stages and studios

**in accordance with BGV C1**



- The worm gear screw jacks are intended for installation in stage and studio equipment.
- The worm gear screw jacks serve to move and position weights/forces and **persons**.
- **Persons** are allowed to remain under hoisted loads or lifting of persons is permitted under the conditions of the respective rules and regulations (e.g. DIN 56950).

Risk analysis by the manufacturer of the overall system.

### 1.4.4 Screw jacks for use in explosive areas

**in accordance with Guideline 94/9/EC (ATEX)**



- The worm gear screw jacks are **suited** for **use explosive areas** as indicated by the ATEX label.

- The worm gear screw jacks serve to move and position weights or forces.

For the analysis on the source of ignition, the ATEX checklist must be filled out thoroughly.


The manufacturer is responsible for the ATEX conformity of the overall system.



The owner is responsible for observing the terms and conditions of ATEX as well as preparing an analysis on the source of ignition.

The worm gear screw jacks within systems are applicable as components in the sense of the guideline 94/9/EC Art1 (3).

#### 1.4.4.1 Markings according to RL 94/9/EC



		II	2	G/D	c*	T4	135°C
Ex (explosion-proof) symbol							
Device group							
Category							
Ex Atmosphere							
Ignition protection type							
Temperature class							
Max. surface temperature where 5 mm dust can collect							

\*= at HSE Ignition protection type "ck"

If not otherwise indicated the explosion group is at Gas IIB

#### 1.5 Accident prevention guide

Observe the relevant instructions, regulations, and standards in the country of use. In Germany, these are currently:

	Rules and regulations	Former guidelines
EC machinery directive	2006/42/EC	98/37/EC
Machine safety	DIN EN ISO 12100-1 DIN EN ISO 12100-2	EN 292 T1,T2
Winches, hoists, and pulling equipment	DIN EN 1494	BGV D8
	Lifting tables	EN 1570
	Lift work platforms	EN 280
	Loading platforms	EN 1756
	Car hoists	EN 1493
	Stages and studios	BGV C1
	Stage mechanics, safety equipment	DIN 56950
	Mechanical equipment for potentially explosive areas	Guideline 94/9/EC (ATEX)

#### 1.6 General safety information



Assembly, service, commissioning and maintenance only by authorised personnel familiar with the relevant regulations.



- It is **forbidden to transport people or to loiter in the danger area**. Exception: Screw jacks with safety features with appropriate intended use



- Not** suitable for use in **spaces with explosion hazards!**
- Exception:** Screw jacks are designed and marked as components for use in spaces with explosion hazards.



- Never reach into moving parts and make sure to cover them or label them appropriately.
- Never remove or partially disable the safety devices.
- The operational and safety limit switches have to ensure that the lifting process stops safely at the end positions.
- To prevent contact with rotating/moving parts, fasten protective covers (such as bellows, shaft caps) or make those areas of the machine inaccessible.
- In the standard version, the screw does not have any protection against unintended skimming out of the gear box (Ba1) or against the travelling nut driving out the screw. A protection against skimming needs to be realised either on site or by worm gear screw jacks with mechanical end stops (chapter on options).
- No lateral forces on the screw.
- Risk assessment by the manufacturer of the overall system.

### 1.7 Safety information ATEX



- The owner of a system must ensure that the explosion-risk conditions are adhered to.
- On-site layer thickness from surface coatings (e.g. lacquering) max. 2 mm (explosion group IIA and IIB) and 0.2 mm at explosion group IIC
- Requirements for the reliable operation is a properly lubricated screw and a lift gear box provided with lubrication.
- The affects from knocks and bumps on the screw jack is to be avoided.
- Dust deposits are to be avoided or removed regularly.
- Connect the screw jacks with potential equalisation (earth) and check the bleeder resistance ( $<10^6$  Ohm).
- Observe the speeds and permitted drive power output specified in the technical data when operating with rotation speed control in the potentially explosive atmospheres.
- For motorised drive, set motor in the 90 to 110 % range and monitor motor output with an output gauge.
- Materials used need to be resistant to the media.
- The operator has to count or measure the alternations of load or operating hours and document them.

### 1.8 Type plate

		Year of manufacture	2010	
Type	SHE 3.1 N-B-F/S	Pres. extension	-	kN
Item no.	K040040400		-	%/h
Ser. no.	202420 0001	Stroke / NL	150	mm
Grease / Oil	KP 2 K - 20	Lift speed	-	m/min

		SHE		N	A	
		HSE		L	B	
Model series						
Size						
Ratio						
Specifications						
Method						



### 1.8.1 Design variants

K	Short lid
H	High lid
F	Guide ring
S	Sheath tube
Sf	Sheath tube with guide ring
Si	Sheath tube with inductive limit switches
Sm	Sheath tube with mechanical limit switches
Se	Sheath tube with mechanical end stop (protection against skimming)
V	Anti turn device
Vi	Anti turn device with inductive limit switches
Vm	Anti turn device with mechanical limit switches
Ve	Anti turn device with end stop
VP	Anti turn device by feather key
G	Safety nut integrated in bell

In the stated variants, the first letter on the head side refers to the screw jack and the second letter refers to the opposite side.

### 1.8.2 Travelling nut types (Ba2)

Standard	
LSF	Travelling nut with spanner flat
LSA	Travelling nut with spherical contact surface
TFM	Travelling nut with attachment holes
LWZ	Travelling nuts with swivel pin

## 1.9 Technical specifications

### 1.9.1 SHE standards and with safety features

Model series SHE unit size	BG	0,5	1.1	2	3.1	5.1	15.1
Max. lifting force	[kN]	5	10	20	25	50	100
Max. tension	[kN]	5	10	19	25	50	99
Screw Tr <sup>1</sup>		18x6	22x5	26x6.28	30x6	40x7	60x12
Ratio N		10:1	5:1	6:1	6:1	6:1	7 2/3:1
Lift per rotation at ratio N	[mm/U]	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 rotation at ratio L	[mm/U]	0,30	0,25	0,262	0,25	0,292	0,50
Max. drive power <sup>2</sup> at 20°C ambient temperature and 20% ID/hr	[kW]	0,17	0,35	0,5	0,65	1,15	2,7
Max. drive power <sup>2</sup> at 20°C ambient temperature and 10% ID/hr	[kW]	0,25	0,55	0,75	0,9	1,65	3,85
Overall efficiency ratio N	[%]	31	29	31	27	24	27
Overall efficiency ratio L	[%]	24	20	18	19	16	17
Spindle efficiency	[%]	54	43	45	40	36,5	39,5
Torque-capacity-rotation speed at 20% ID/hr. and 20°C	See power table compendium on worm gear screw jacks						
Screw torque at max. lifting force	[Nm]	8,8	18,4	44	60	153	702
Max. permit. torque on the drive shaft	[Nm]	12	29,4	36	46,5	92	195
Max. permit. screw length at pressure load	[mm]	See offset diagram compendium worm gear screw jacks					

<sup>1</sup> Also with Ku screw

<sup>2</sup> Max. permissible values with BA 1 and Tr screw. Higher values are possible using BA 2 or Ku screws

Subject to technical modifications

Pictorial representations are not binding



Model series SHE unit size	BG	20.1	25	35	50	75	100	150	200
Max. lifting force	[kN]	200	250	350	500	750	1000	1500	2000
Max. tension	[kN]	166	250	350	500	750	1000	1500	-
Screw Tr <sup>1</sup>		65x12	90x16	100x16	120x16	140x20	160x20	190x24	220x28
Ratio N		8:1	10 2/3:1	10 2/3:1	10 2/3:1	12:1	12:1	19:1	17,5:1
Lift per rotation at ratio N	[mm/U]	1,50	1,50	1,50	1,50	1,667	1,667	1,263	1,60
Ratio L		24:1	32:1	32:1	32:1	36:1	36:1	-	
Lift per rotation at ratio L	[mm/U]	0,5	0,5	0,5	0,5	0,556	0,556	-	
Max. drive power <sup>2</sup> at 20°C ambient temperature and 20% ID/hr	[kW]	3,8	5,0	6,0	7,4	9,0	12,5	18,5	
Max. drive power <sup>2</sup> at 20°C ambient temperature and 10% ID/hr	[kW]	5,4	7,2	8,6	10,4	12,6	17,5	26	
Overall efficiency ratio N	[%]	24	22	21	15	18	15	15	
Overall efficiency ratio L	[%]	17	15	14	10	12	9	-	
Spindle efficiency	[%]	37,5	36,5	34	30	31,6	28,5	28,8	29
Torque-capacity-rotation speed at 20% ID/hr. and 20°C		See power table compendium on worm gear screw jacks							
Screw torque at max. lifting force	[Nm]	1009	1725	2600	4235	7550	11115	19850	
Max. permit. torque on the drive shaft	[Nm]	280	480	705	840	2660	2660	4260	
Max. permit. screw length at pressure load	[mm]	See offset diagram compendium worm gear screw jacks							

### 1.9.2 High-performance worm gear screw jack HSE

Model series HSE unit size		31	36	50	63	80	100	125	140	200
Max. lifting force	[kN]	5	10	25	50	100	200	350	500	1000
Max. tension	[kN]	5	10	25	50	100	178	350	500	1000
Screw Tr <sup>3</sup>		18x4	22x5	40x8	50x9	60x12	70x12	100x16	120x16	160x20
Ratio N		4:1	5:1	6:1	7:1	8:1	8:1	10 2/3:1	10 2/3:1	13 1/3:1
Lift per rotation at ratio N	[mm/U]	1,0	1,0	1,33	1,28	1,5	1,5	1,5	1,5	1,5
Ratio L		16:1	20:1	24:1	28:1	32:1	32:1	32:1	32:1	40:1
Lift per rotation at ratio L	[mm/U]	0,25	0,25	0,33	0,32	0,375	0,375	0,5	0,5	0,5
Max. drive power <sup>4</sup> at 20°C ambient temperature and 20% ID/hr	[kW]	0,60	0,90	1,5	2,3	3,6	4,8	7,7	10,2	17,9
Max. drive power <sup>2</sup> at 20°C ambient temperature and 10% ID/hr	[kW]	1,0	1,5	2,6	4,0	6,3	8,4	13,5	17,9	31
Overall efficiency ratio N	[%]	See efficiency table compendium worm gear screw jack								
Overall efficiency ratio L	[%]	See efficiency table compendium worm gear screw jack								
Spindle efficiency	[%]	42,5	43	40	36,5	39,5	35,5	34	30	28,5
Torque-capacity-rotation speed at 20% ID/hr. and 20°C		See power table compendium on worm gear screw jacks								
Screw torque at max. lifting force	[Nm]	7,4	18,4	80	190	478	1060	2600	4235	11115
Max. permit. torque on the drive shaft	[Nm]	12,6	29,4	48,7	168	398	705	975	1640	4260
Max. permit. screw length at pressure load	[mm]	See offset diagram compendium worm gear screw jacks								

<sup>3</sup>Also with Ku screw see chapter 3.4

<sup>4</sup> Max. permissible values with BA 1 and Tr screw. Higher values are possible using BA 2 or Ku screws

Subject to technical modifications

Pictorial representations are not binding

### 1.9.3 SHE for spaces with explosion hazards acc. 94/9/EC (ATEX)



Worm gear screw jack for use in **spaces with explosion hazards** are laid out based on the environmental influences (ATEX checklist) that has been given to us. The technical specifications and ATEX terms and conditions specified in the order confirmation must be adhered to.

The declaration of conformity expires according to guideline 94/9/EC if the technical data and ATEX terms and conditions are not followed.

Model series SHE unit size	BG	1.1	3.1	5.1	15.1	20.1	25
Max. lifting force	[kN]	10	25	25	100	200	250
Max. tension	[kN]	10	25	50	99	166	250
Screw Tr <sup>5</sup>		22x5	30x6	40x7	60x12	65x12	90x16
Ratio N		5:1	6:1	6:1	7 2/3:1	8:1	10 2/3:1
Lift per rotation at ratio N	[mm/U]	1,0	1,0	1,167	1,565	1,50	1,50
Ratio L		20:1	24:1	24:1	24:1	24:1	32:1
Lift per rotation at ratio L	[mm/U]	0,25	0,25	0,292	0,50	0,5	0,5
Max. drive power at 20°C ambient temperature and 20% ID/hr	[kW]	0,18	0,33	0,7	1,4	2,0	2,5
Max. drive power at 20°C ambient temperature and 10% ID/hr	[kW]	0,35	0,65	1,15	2,7	3,8	5,0
Overall efficiency ratio N	[%]	29	27	24	27	24	22
Overall efficiency ratio L	[%]	20	19	16	17	17	15
Spindle efficiency	[%]	43	40	36,5	39,5	37,5	36,5
Torque-capacity-rotation speed at 20% ID/hr. and 20°C	See power table compendium on worm gear screw jacks						
Screw torque at max. lifting force	[Nm]	18,4	60	153	702	1009	1725
Max. permit. torque on the drive shaft	[Nm]	29,4	46,5	92	195	280	480
Max. permit. screw length at pressure load	[mm]	See offset diagram compendium worm gear screw jacks					

Model series SHE unit size	BG	35	50	75	100	150	200
Max. lifting force	[kN]	350	500	750	1000	1500	2000
Max. tension	[kN]	350	500	750	1000	1500	-
Screw Tr		100x16	120x16	140x20	160x20	190x24	220x28
Ratio N		10 2/3:1	10 2/3:1	12:1	12:1	19:1	17,5:1
Lift per rotation at ratio N	[mm/U]	1,50	1,50	1,667	1,667	1,263	1,60
Ratio L		32:1	32:1	36:1	36:1	-	
Lift per rotation at ratio L	[mm/U]	0,5	0,5	0,556	0,556	-	
Max. drive power at 20°C ambient temperature and 20% ID/hr	[kW]	3,0	3,8	4,5	6,5	9,5	
Max. drive power at 20°C ambient temperature and 10% ID/hr	[kW]	6,0	7,4	9,0	12,5	18,5	
Overall efficiency ratio N	[%]	21	15	18	15	15	
Overall efficiency ratio L	[%]	14	10	12	9	-	
Spindle efficiency	[%]	34	30	31,6	28,5	28,8	29
Torque-capacity-rotation speed at 20% ID/hr. and 20°C	See power table compendium on worm gear screw jacks						
Screw torque at max. lifting force	[Nm]	2600	4235	7550	11115	19850	
Max. permit. torque on the drive shaft	[Nm]	705	840	2660	2660	4260	
Max. permit. screw length at pressure load	[mm]	See offset diagram compendium worm gear screw jacks					

<sup>5</sup>Also with Ku screw

Subject to technical modifications

Pictorial representations are not binding

### 1.9.4 HSE for explosive areas acc. 94/9/EC (ATEX)



Worm gear screw jack for use in **spaces with explosion hazards** are laid out based on the environmental influences (ATEX checklist) that has been given to us. The technical specifications and ATEX terms and conditions specified in the order confirmation must be adhered to.

The declaration of conformity expires according to guideline 94/9/EC if the technical data and ATEX terms and conditions are not followed.

Model series HSE unit size		36	50	63	80	100	125	140	200
Max. lifting force	[kN]	10	25	50	100	200	350	500	1000
Max. tension	[kN]	10	25	50	100	178	350	500	1000
Screw Tr <sup>6</sup>		22x5	40x8	50x9	60x12	70x12	100x16	120x16	160x20
Ratio N		5:1	6:1	7:1	8:1	8:1	10 2/3:1	10 2/3:1	13 1/3:1
Lift per rotation at ratio N	[mm/U]	1,0	1,33	1,28	1,5	1,5	1,5	1,5	1,5
Ratio L		20:1	24:1	28:1	32:1	32:1	32:1	32:1	40:1
Lift per rotation at ratio L	[mm/U]	0,25	0,33	0,32	0,375	0,375	0,5	0,5	0,5
Max. drive power at 20°C ambient temperature and 20% ID/hr	[kW]	0,45	0,75	1,2	1,8	2,4	3,8	5,5	9
Max. drive power at 20°C ambient temperature and 10% ID/hr	[kW]	0,9	1,5	2,3	3,6	4,8	7,7	10,2	17,9
Overall efficiency ratio N	[%]	See efficiency table compendium worm gear screw jack							
Overall efficiency ratio L	[%]	See efficiency table compendium worm gear screw jack							
Spindle efficiency	[%]	43	40	36,5	39,5	35,5	34	30	28,5
Torque-capacity-rotation speed at 20% ID/hr. and 20°C		See power table compendium on worm gear screw jacks							
Screw torque at max. lifting force	[Nm]	18,4	80	190	478	1060	2600	4235	11115
Max. permit. torque on the drive shaft	[Nm]	29,4	48,7	168	398	705	975	1640	4260
Max. permit. screw length at pressure load	[mm]	See offset diagram compendium worm gear screw jacks							

## 2 Receipt of goods, storage, transport

### 2.1 Receipt of goods



Startup with defective screw jacks is forbidden.



Immediately check if the contents of delivery correspond with the shipping documents upon receipt. No other warranties can be approved for subsequent defect claims.

Claims on defects and incompleteness are to be made immediately at Pfaff-silberblau.

Claims on perceivable damages due to transport are to be reported to the transport company immediately.



Small parts such as limit switches can be packed and delivered separately.

### 2.2 Transport

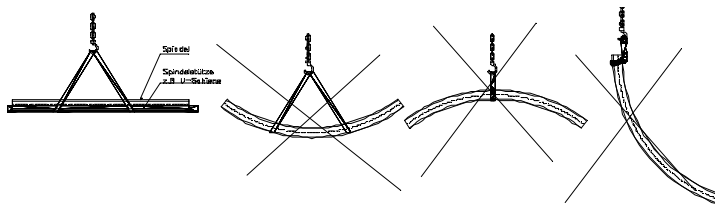


- Lift / transport the screw jack by the appropriate hoisting points.
- Pay attention to the attachment parts. No person is to stand under suspended loads.
- Use hoisting gear in good condition.



- Keep long screws from getting warped. Support screw by appropriate means.
- Remember that the ball thread spindles are not self-locking.

<sup>6</sup>Also with Ku screw see chapter 3.4  
Subject to technical modifications

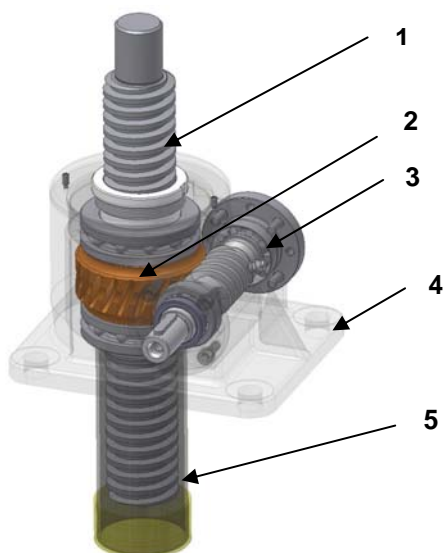


## 2.3 Storage


<b>Storage period &lt; 3 years</b>	Check corrosion protection; renew or repair, if necessary. Check lubrication of moveable machinery, relubricate if necessary. Check oil level of gears; refill, if necessary.
<b>Storage period &gt; 3 years</b>	Check corrosion protection; renew or repair, if necessary. Check lubrication of moveable machinery, relubricate if necessary. Clean spindle and grease with fresh lubricant along the whole length. Drain gear oil, and fill gear unit with the prescribed oil quantity and quality.

## 3 Standard version worm gear screw jacks Ba1

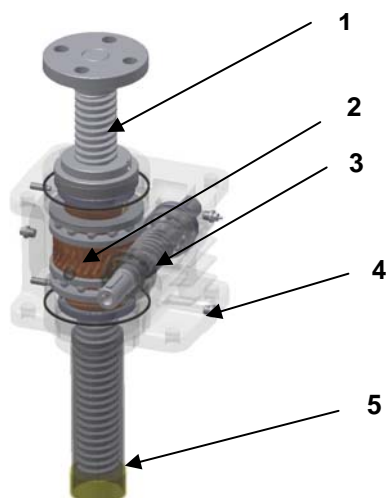
### 3.1 SHE Ba1




- 1 Screw
- 2 Worm wheel
- 3 Worm
- 4 Housing
- 5 Sheath tube

Feature	Description
<b>Rotating worm wheel</b>	Translation thread or ball thread nut integrated into the worm wheel
<b>Lifting screw</b>	Trapezoidal thread, buttress thread, multiple trapezoidal thread, ball screw  <b>Note: Screws must be fastened on-site or be turn-secured or equipped with the optional anti turn device (max. screw torque according to technical documents)</b>
<b>Worm gear with grease lubrication</b>	Other forms of lubrication are possible
<b>Screw spindle with grease lubrication</b>	Other forms of lubrication are possible
<b>Operating temperature range 0 to +40°C</b>	Variations in temperature cause a reduced switch-on duration or power output, and may require special materials and lubricants.

### 3.2 HSE Ba1

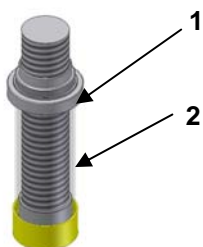


- 1 Screw
- 2 Worm wheel
- 3 Worm
- 4 Housing
- 5 Sheath tube

Feature	Description
Rotating worm wheel	Translation thread or ball thread nut integrated into the worm wheel
Lifting screw	Trapezoidal thread, buttress thread, multiple trapezoidal thread, ball screw  <b>Note: Screws must be fastened on-site or be turn secured or equipped with anti turn device (max. screw torque according to technical documents)</b>
Worm gear with oil lubrication	Other forms of lubrication are possible
Screw spindle with grease lubrication	Other forms of lubrication are possible
Operating temperature range 0 to +40°C	Variations in temperature cause a reduced switch-on duration or power output, and may require special materials and lubricants.

### 3.3 Options for screw jacks Ba1

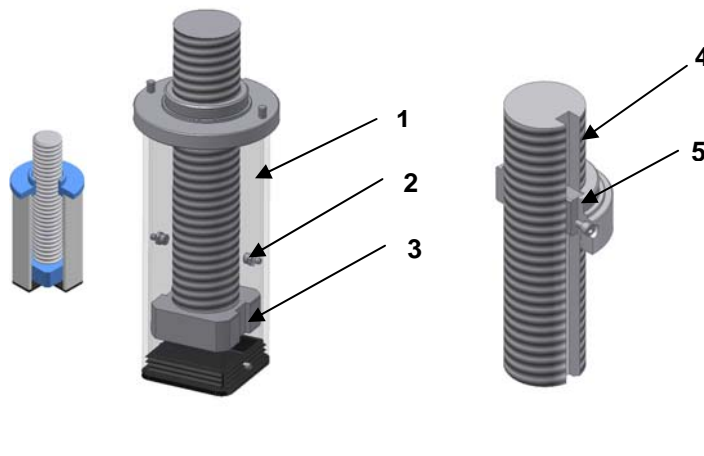
#### 3.3.1 Second guide ring "Sf"



The type of screw with the 2nd guide ring can bear lateral forces  $F_s$  to a certain extent. The maximum permitted lateral forces dependent on strokes are specified in our compendium on worm gear screw jacks Chapter 3.4.8.

- 1 2nd Guide ring
- 2 Sheath tube

### 3.3.2 Anti turn device "V" "VP" "Ve"

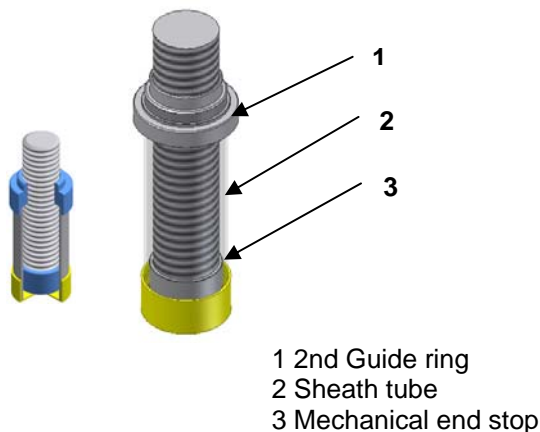



Due to a sliding pad in the guiding tube (see figure) or a anti turn device with feather key, the spindle is prevented from turning as well and transfers the rotational movement into a linear lift motion.


The max. lifting force must be limited during anti turn device by a feather key. (Please check back with the production plant)

- 1 Guiding tube
- 2 Lubricating nipple
- 3 Sliding pad
- 4 Grooved screw
- 5 Feather key

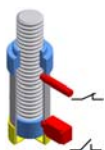
### 3.3.3 Protection against skimming "Se, Ve";



 The end stop is a safety device and should not be used as a "working stop".

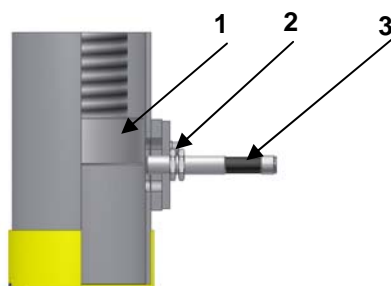
 The end stop at block should be able to navigate this through damages to the screw or gears.

### 3.3.4 Inductive stroke limit "Si; Vi"



The stroke limit can be found at the sheath tube for each inductive limit switch in the upper and lower stroke position. A switching cam on the screw end (also anti turn device sliding pad) charges the inductive limit switch.

#### 3.3.4.1 Assembly of the limit switch



- 1 Switching cam
- 2 Hexagon nut
- 3 Inductive transmitter

1. Screw the displacement sensor until it is aligned with the tube wall thickness.



**Should the sensor extend inwards it will break and its sheared off parts have to be removed from the gears.**

2. Secure the sensor emitter by pulling the hexagon nut and ensure that the emitter does not turn.



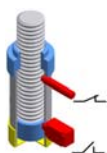
**Observe the maximum tightening torque!**

**Adjusting the switch point:**

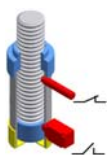
Loosen screws (Pos1).  
Slide the holding plate up or down  
Retighten the screws



Material	Type	Max. tightening torque [Nm]
Plastic	M 8	0,25
	M 12	1,2
	M 18	2
Metal	M 8	2,5
	M 12	7
	M 18	35

**3.3.5 Electromechanical stroke limit "Sm"; "Vm"**

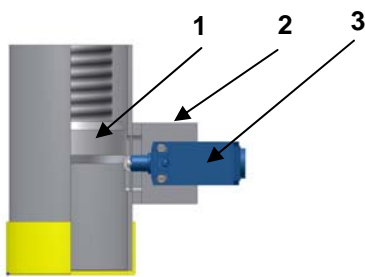
The stroke limit can be found at the sheath tube for each mechanical limit switch in the upper and lower stroke position. A switching cam at the end of the screw activates the limit switch.

**3.3.6 Electromechanical stroke limit "Sme"; "Vme"**

The stroke limit can be found at the sheath tube for each mechanical limit switch in the upper and lower stroke position. A mechanical end stop at the end of the screw is also used as a switching cam.

**Caution:**

The end stop is only intended as a safeguard against inadvertent extension of the screw out of the gearbox and may not be used as a working stop. If the end stop is run against the block, this can cause damages to the screw or gears.

**3.3.6.1 Assembly of the limit switch**

1. Screw the limit switch onto the holding plate.
2. Carry out the lift test and set the actual lift.  
Individual adjustments  $\pm x$  according to the order confirmation.

- 1 Switching cam
- 2 Holding plate
- 3 Mechanical limit switch



**Attention:** Secure screws against unintentional loosening. (e.g. serrated lock washer).

**Adjusting the switch point:**

Loosen screws (Pos 1).  
Slide the holding plate downwards or upwards.  
Retighten the screws





### 3.4 Ball thread spindle "Ku"



A worm wheel is fitted with a recirculating-ball nut for versions with a ball thread spindle. The mode of operation is identical to the trapezoidal screw.

Note the specific installation tolerances and varying lubricants during lubrication in regards to the Tr design.



**Ball thread spindles are not self-locking.**  
**Please note during assembly and transport.**  
**Driving only permitted with a brake motor.**

### 3.5 Multi-gear trapezoidal thread screws



On models with multi-gear trapezoidal screws, a higher lift speed and a higher efficiency is achieved in comparison to those with single gears.

The mode of operation is identical to the single-gear trapezoidal screw.



**Multi-gear trapezoidal thread spindles are not self-locking.**  
**Please note during assembly and transport.**  
**Driving only permitted with a brake motor.**

### 3.6 Buttress thread screws "S"



On modes with buttress thread screws, a greater support surface and thereby a lower bearing pressure is achieved in comparison to the trapezoidal thread screws. Therefore, the buttress thread is suitable for heavier loads with consistent screw dimensions.

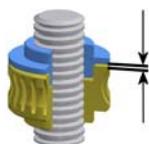
The mode of operation is identical to the single-gear trapezoidal screw.



**Only in combination with 2 guide rings.**

## 4 Worm gear screw jacks Ba 1 special models

### 4.1 Adjustable clearance version



The setting of the axial play in the translation thread is performed by the readjustment of the housing cover (fine thread).

The **smallest possible play** in the trapezoidal thread is **0.05 mm** to ensure the accumulation of a coating of lubrication.

The axial play can be set by loosening the headless pins and a screw movement on the housing cover.

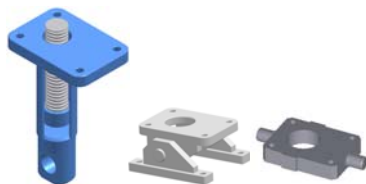


**If the housing cover rest on the housing, then the screw nut has been worn out and it needs to be replaced with a new one. (Readjustment possibilities up to wear limit)**



**Please request our operating instructions for adjustable clearance screw jacks.**

### 4.2 Swivel drive



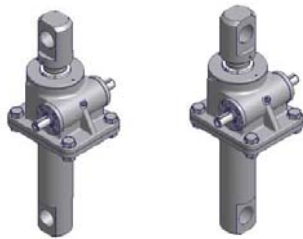
With swivel drive, the screw jack is equipped with a reinforced sheath tube and 2x head IV. (The screw-sided head can also be replaced by on-site swivelling attachment parts.) It is possible to employ swivel bearings or joint heads for special models.

Most of the other options can be combined with the swivel drive.



**A gear-sided anti turn device is recommended during the use of joint bearings or joint heads.**

#### 4.2.1 Specifications



Version P   Version Q

Version P or Q defines the position of the worm shaft towards the swivel axis.

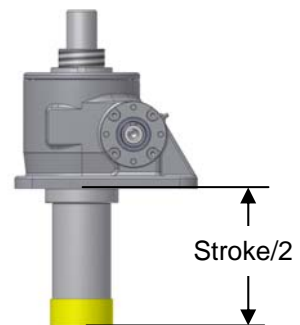
#### 4.3 Telescope specifications



The screw jacks have been fitted with a telescope screw so as to achieve the maximal lift for minimal spatial requirements.

The telescope principle is created by the counter movement of the screw in a screw pipe.

The sheath tube length amounts to about  $\text{stroke}/2 + 20 \text{ mm}$



#### 4.4 Short safety nut

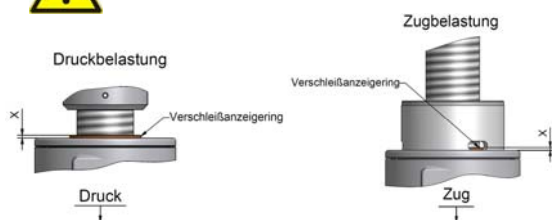


The safety nut (wear indication ring) is form-fitted to the carrying nut (worm wheel). Wear on the carrying nut may cause axial displacement to the safety nut, i.e. the distance between the safety nut and the carrying nut reduces linearly with the wear. **Only possible with SHE trapezoidal thread screws or buttress thread screws.**

##### 4.4.1 Short safety nuts without tube cap



**Pay attention to the installation position and force directions (pull/push)**



Once the wear limit has been reached (measurement x, safety nut is aligned with the housing top edge or bottom edge) then the carrying nut including the safety nut need to be replaced.

##### 4.4.2 Short safety nuts with tube cap

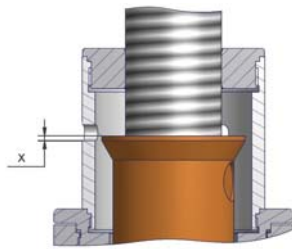
The short safety nut is incorporated into a tube cap.

**Only possible with trapezoidal thread screws or buttress thread screws.**



**Pay attention to the installation position and force directions (pull/push)**

#### 4.4.3 Visual wear indicator



For **visual monitoring of wear**, there are one or more view slits on the circumference of the tube cap. The safety nut stands above the edge of the oblong hole upon delivery. The maximum permitted wear limit is reached when the safety nut is at the same level as the view slit.

### 5 Safety worm gear screw jacks



The worm gear screw jacks are equipped with a long safety nut, and an electric nut breakage monitoring system for lifting tables acc. to EN 1570, lift work platforms acc. to EN 280, loading platforms acc. to EN 1756, car hoists acc. to EN 1493 and stages and studios acc. to BGV C1.



The manufacturer is responsible for the risk assessment of the entire system.

Feature	Description
<b>Long safety nut</b>	Safety nut of the same material with the same length as the carrying nut
<b>Visual wear indicator</b>	For monitoring the wear of the carrying nut
<b>Electrical nut breakage monitoring</b>	For monitoring the carrying nut for breakage
<b>Self-locking spindle option</b>	On lifting systems in which the secure function of a safety brake (e.g. because of coupling failure, shaft breakage or where no brake is provided) cannot prevent an independent lowering of the load, worm gear screw jacks with self-locking screws are then required.
<b>Speed monitoring option</b>	To monitor the synchronisation of all screw jacks in one lifting systems with several SHE

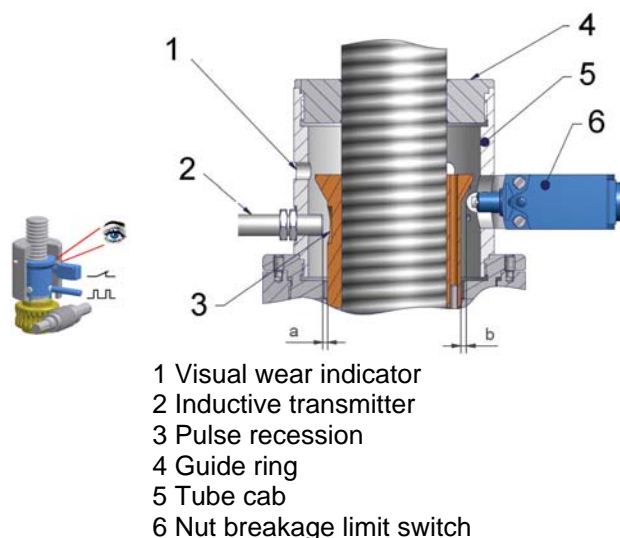


Trapezoidal thread spindle with a pitch angle of  $\leq 2.4^\circ$  is considered as self-locking out of the movement.



Check the overtravel and braking distance of the overall system. If necessary, the stopping distance will have to be reduced by taking additional measures.

## 5.1 Long safety nut



A second unloaded safety nut is connected to the carrying nut (worm wheel). Wear on the support nut causes axial displacement of the lock nut. This reduces the distance between the lock nut and the support nut proportionately to the wear. Once the wear limit has been reached, both the carrying nut and safety nut need to be replaced. If the timely replacement of carrying and safety nut has been neglected, the mechanical compulsory opening limit switch is activated and the system has to be put out of service by the control system. Only **one** more raising/lowering motion into basic position will be possible.

**Only possible with trapezoidal thread screws or buttress thread screws.**

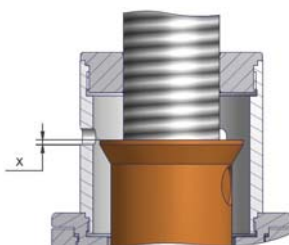
### 5.1.1 Installing the limit switch (nut breakage)



1. Screw the limit switch onto the bracket, do not tighten it completely however. Push the switch all the way in until the roll on the lock nut lies against it.
2. Measure limit switch distance (for example, the back edge of the switch housing).
3. Pull the limit switch back by the distance  $b$  and tighten it.

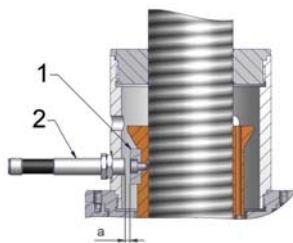
**Caution:** Secure it against unintentional loosening. (e.g. by a serrated lock washer)

### 5.1.2 Visual wear indicator



For **visual monitoring of wear**, there are one or more view slits on the circumference of the tube cap. The safety nut stands above the edge of the oblong hole upon delivery. The maximum permitted wear limit is reached when the safety nut is at the same level as the view slit.

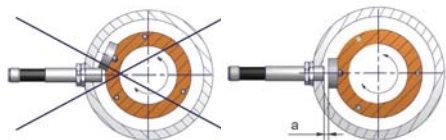
### 5.1.3 Speed monitoring (optional)



An inductive sensor generator is attached to the tube cap. If damage (breakage) occurs at the gear teeth or another transmission element, no further pulses are transmitted by the respective screw jack or sensors to the controls; the system is to be shut down immediately by the control unit.

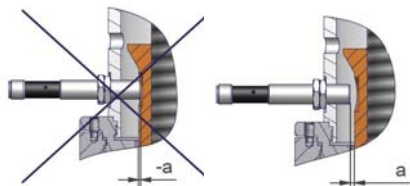
### 5.1.3.1 Installing the pulse generator (rotational speed monitor)

#### 5.1.3.1.1 Unit sizes 5; 20; 25 (pulse by cam)



1. Turn the worm wheel (worm) until the pulse cam is visible in the fixing thread of the pulse generator.
2. Screw in the sensor until it lies at the outer diameter of the pulse cam. **Caution:** If the transmitter is screwed in all the way to the outer diameter of the lock nut, the transmitter will be destroyed and its sheared off parts will have to be removed from the gears.
3. Turn the transmitter back again by 0.5 to 1 rotation until the distance between the transmitter and the pin is between 0.5 and 1 mm (measurement a).
4. Secure the pulse generator by tightening the hexagon nut and make sure that the emitter does not turn.

#### 5.1.3.1.2 Unit sizes 2.5; 10/15; (pulse by recession or flattening)



1. Turn the worm wheel (worm) until the pulse levelling is **not** visible in the fixing thread of the pulse generator.
2. Screw in the pulse transmitter until it lies at the **outer diameter** of the safety nut. **Caution:** If the transmitter is screwed into the recession, the transmitter will be destroyed and its sheared off parts will have to be removed from the gears.
3. Turn the transmitter back again by 0.5 to 1 rotation until the distance between the transmitter and the safety nut is between 0.5 and 1 mm (dimension a).
4. Secure the pulse generator by tightening the hexagon nut and make sure that the emitter does not turn.

### 5.2 Safety-trap nut (optional with Ku screws)

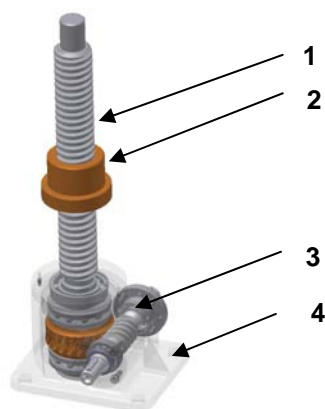


The trap nut is connected to the Ku nut. If the Ku nut malfunctions, the Ku screw sets onto the thread of the trap nut. As a result, the power requirement of the drive motors is increased. The unit needs to be switched off by the controller.


**Only possible with the ball thread spindle.**

## 6 Standard version worm gear screw jacks Ba2

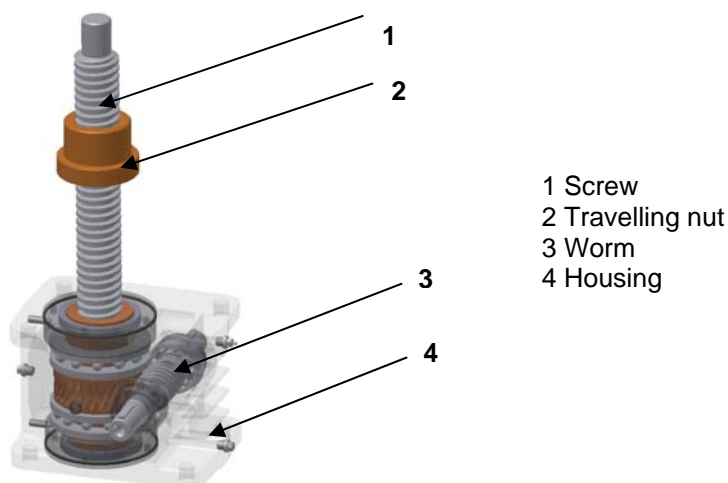
### 6.1 Worm gear screw jack SHE Ba2




- 1 Screw
- 2 Travelling nut
- 3 Worm
- 4 Housing

Feature	Description
Rotating screw	From worm gear propelled trapezoidal, buttress, or ball thread spindle.
Lifting travelling nut	Travelling nuts conduct the lift movement.  <b>Note: Travelling nut must be fastened on-site or be secured against twisting Max. torque, see technical specifications.</b>
Worm gear with grease lubrication	Other forms of lubrication are possible
Screw spindle with grease lubrication	Other forms of lubrication are possible
Operating temperature range 0 to +40°C	Variations in temperature cause a reduced switch-on duration or power output, and may require special materials and lubricants.

## 6.2 High-performance worm gear screw jack HSE Ba2

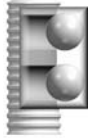


Feature	Description
Rotating screw	From worm gear propelled trapezoidal, buttress, or ball thread spindle.
Lifting travelling nut	Travelling nuts conduct the lift movement.  <b>Note: Travelling nut must be fastened on-site or be secured against twisting.</b>
Worm gear with oil lubrication	Other forms of lubrication are possible
Screw spindle with grease lubrication	Other forms of lubrication are possible
Operating temperature range 0 to +40°C	Variations in temperature cause a reduced switch-on duration or power output, and may require special materials and lubricants.



## 7 Worm gear screw jacks Ba 2 special models

### 7.1 Ball thread spindle "Ku"



The worm gear drives a recirculating ball screw versions with a ball thread spindle.  
The mode of operation is identical to the trapezoidal screw.  
Note the specific installation tolerances and varying lubricants during lubrication in regards to the Tr design.



**Ball thread spindles are not self-locking.**  
**Please note during assembly! Driving only permitted with a brake motor.**

### 7.2 Multi-gear trapezoidal thread screws



On models with multi-gear trapezoidal screws, a higher lift speed and a higher efficiency is achieved in comparison to those with single gears.  
The mode of operation is identical to the single-gear trapezoidal screw.



**Multi-gear trapezoidal thread spindles are not self-locking.**  
**Please note during assembly! Driving only permitted with a brake motor.**

### 7.3 Buttress thread screws "S"

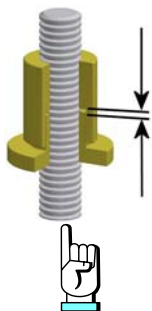


On modes with buttress thread screws, a greater support surface and thereby a lower bearing pressure is achieved in comparison to the trapezoidal thread screws. Therefore, the buttress thread is suitable for heavier loads with consistent screw dimensions.  
The mode of operation is identical to the single-gear trapezoidal screw.



**Since the buttress thread does not centre itself, make sure the assembly and operation are precise.**

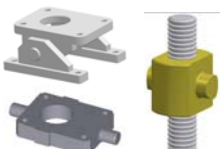
### 7.4 Adjustable clearance version



The setting of the axial play in the translation thread is carried out by counteracting two travelling nuts.  
The **smallest possible play** in the trapezoidal thread is **0.05 mm** to ensure the accumulation of a coating of lubrication.  
The axial play can be set by loosening the headless pins, counteracting the nuts and a new bore hole.

**Once the wear limit has been reached, the safety nut rests on the carrying nut.**

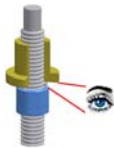
### 7.5 Swivel drive



The SHE Ba 2 can be equipped with a travelling nut with swivel pin (LWZ). It is possible to install swivel bearings or gimbal/pivoting travelling nut supports in a special model.  
Most of the other options can be combined with the swivel drive.



## 7.6 Short safety nut

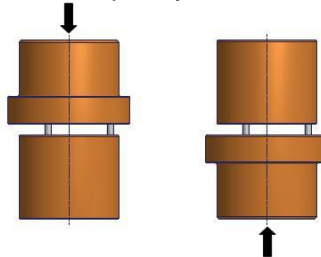


The safety nut is form-fitted to the carrying nut (travelling nut). Wear on the carrying nut may cause axial displacement to the safety nut, i.e. the distance between the safety nut and the carrying nut reduces linearly with the wear. **Only possible with SHE trapezoidal thread screws or buttress thread screws.**



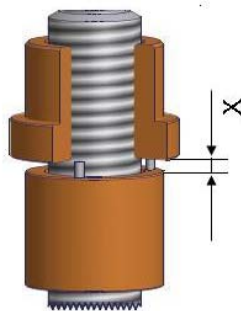
### Pay attention to the installation position and force directions (pull/push)

The safety nut has to be placed subsequently in the load direction of the travelling nut.



➡ = Load direction

## 7.7 Visual wear indicator



For optical wear indication, the distance between travelling and safety nuts needs to be checked yearly. The travelling and safety nuts need to be changed should the wear limit be reached.

## 8 Safety worm gear screw jacks Ba2



The worm gear screw jacks are equipped with a long safety nut, and an electric nut breakage monitoring system for lifting tables acc. to EN 1570, lift work platforms acc. to EN 280, loading platforms acc. to EN 1756, car hoists acc. to EN 1493 and stages and studios acc. to BGV C1.



The manufacturer is responsible for the risk assessment of the entire system.

Feature	Description
<b>Long safety nut</b>	Safety nut of the same material with the same length as the carrying nut
<b>Visual wear indicator</b>	For monitoring the wear of the carrying nut
<b>Electrical nut breakage monitoring</b>	For monitoring the carrying nut for breakage
<b>Self-locking spindle option</b>	On lifting systems in which the secure function of a safety brake (e.g. because of coupling failure, shaft breakage or where no brake is provided) cannot prevent an independent lowering of the load, worm gear screw jacks with self-locking screws are then required.
<b>Speed monitoring option</b>	To monitor the synchronisation of all screw jacks in one lifting systems with several SHE

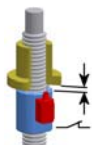


Trapezoidal thread spindle with a pitch angle of  $\leq 2.4^\circ$  is considered as self-locking out of the movement.



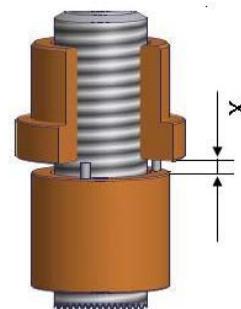
Check the overtravel and braking distance of the overall system. If necessary, the stopping distance will have to be reduced by taking additional measures.

## 8.1 Long safety nut



The safety nut is form-fitted to the travelling nut. Wear on the travelling nut reduces the distance between the travelling and safety nut. Once the wear limit has been reached, both the travelling nut and safety nut need to be replaced. Only **one** more raising/lowering motion into basic position will be possible.

**Only possible with trapezoidal thread screws or buttress thread screws.**



**Pay attention to the installation position and force directions (pull/push)**

The safety nut has to be placed subsequently in the load direction of the travelling nut.

## 8.2 Electrical nut breakage monitoring

If the safety nut (carrying nut breakage) is loaded the mechanical compulsory opening limit switch is activated and the system is put out of service.

### 8.2.1 Installing the limit switch

1. Screw the limit switch onto the safety nut.
2. Set the distance of the limit switch so that the tappet switches once the wear limit is exceeded,
3. **Caution:** Secure screws against unintentional loosening. (e.g. serrated lock washer) since function is guaranteed only if the limit switch is installed properly.



## 8.3 Visual wear indicator

For optical wear indication, the distance between travelling and safety nuts needs to be checked yearly. Once the wear limit has been reached, both the travelling nut and safety nut need to be replaced.

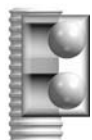
## 8.4 Speed monitoring option

The speed and rotation movement of the screw is monitored by an inductive sensor. If a speed error is reported, no further pulses are transmitted by the respective screw jack to the controls; the system is to be immediately shutdown by the control unit.

### 8.4.1 Mounting the pulse transmitter

see chapter 5.1.3.1

## 8.5 Safety-trap nut (optional with Ku screws)



The trap nut is connected to the Ku nut. If the Ku nut malfunctions, the Ku screw sets onto the thread of the trap nut. As a result, the power requirement of the drive motors is increased. The unit needs to be switched off by the controller.

**Only possible with the ball thread spindle.**

## 9 Assembly

### 9.1 Assembly SHE

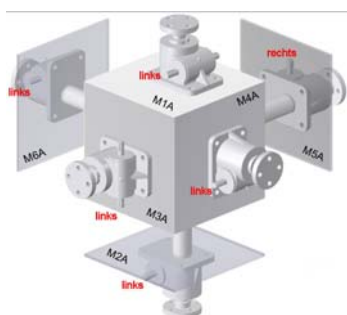


- Inspecting the used screw jacks for compliance with the technical requirements.
- Add-on construction, supporting structure and groundwork is designed for the maximum forces.
- Protect screws from soiling during transport, assembly, construction and storage.
- Screws need to be protected against soiling, e.g. by bellows, coils or on-site covers.
- Distortions increase power consumption and reduce the service life!
- Avoid misalignment and angular offset.
- Provide movable load support points if necessary.
- Unit risk analysis by the manufacturer of the overall system.

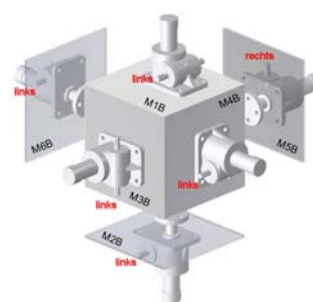


Carry out assembly and run-in phase without explosion-risk atmosphere.  
Unit risk analysis by the manufacturer of the overall system.

#### 9.1.1 Layout and fitting position

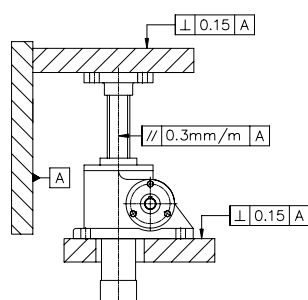


Version A

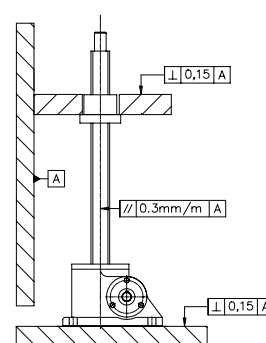


Version B

#### 9.1.2 SHE with trapezoidal thread screw



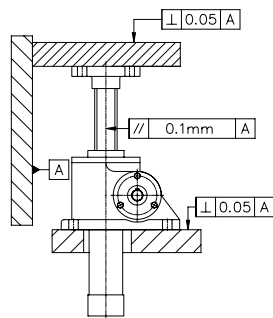
SHE Ba1



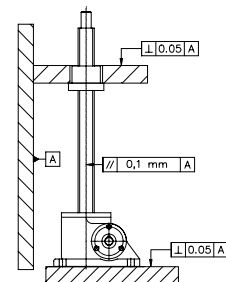
SHE Ba2

1. Align screw and screw jack with a spirit level and then screw tight, dowel down if necessary.
2. Make sure the screw is parallel and at a right angle to the on-site guides. Start alignment work always from the basic position with the least play between worm gear screw jacks and guides and continue along the entire lift height.
3. Avoid distortions. The worm shaft should turn easily and evenly throughout the entire lift height.
4. Clean screw, spray with screw spay if necessary, and grease along the entire lift height. Lubricate the gear using the grease gun at the housing's lubricator nipple.

### 9.1.3 SHE with ball screw spindle



**SHE Ba1 Ku**

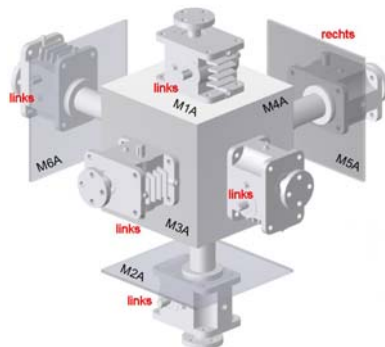


**SHE Ba2 Ku**

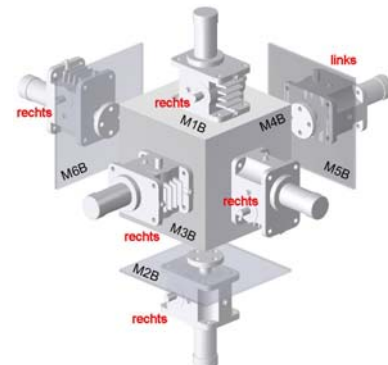
1. Align screw and screw jack with a spirit level and then screw tight, dowel down if necessary.
2. Make sure the screw is parallel and at a right angle to the on-site guides. Start alignment work always from the basic position with the least play between worm gear screw jacks and guides and continue along the entire lift height.
3. Avoid distortions. The worm shaft should turn easily and evenly throughout the entire lift height.
4. Clean screw and grease along the entire lift height. Lubricate the gear using the grease gun at the housing's lubricator nipple.

## 9.2 Assembly HSE

### 9.2.1 Layout and fitting position

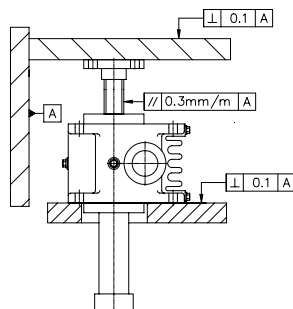


**Version A**

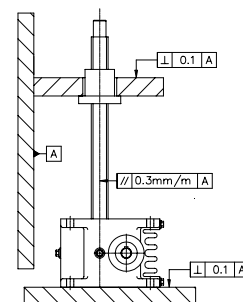


**Version B**

### 9.2.2 HSE with trapezoidal thread screw



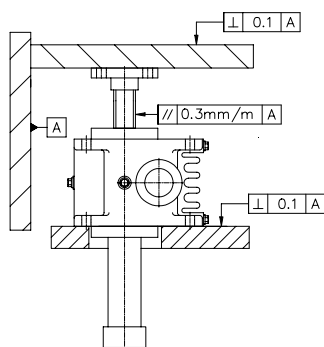
**HSE Ba1**



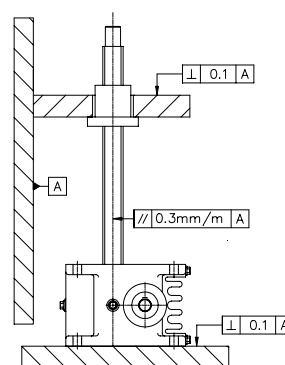
**HSE Ba2**

1. Align screw and screw jack with a spirit level and then screw tight.
2. Replace lock screw with oil sight glass (oil level indicator), pull tapered pin at the venting (see chapter 3.2) or insert pressure venting screw.
3. Make sure the screw is parallel and the gearbox mounting surface is at a right angle to the on-site guides. Start alignment work always from the basic position with the least play between worm gear screw jacks and guides and continue along the entire lift height.
4. Avoid distortions. The worm shaft should turn easily and evenly throughout the entire lift height.
5. Clean screw, spray with screw spay if necessary, and grease along the entire screw length.
6. Check oil level and refill if necessary.

### 9.2.3 HSE with ball screw spindle



**HSE Ba1 Ku**



**HSE Ba2 Ku**

1. Align screw and screw jack with a spirit level and then screw tight.
2. Replace lock screw with oil level indicator (oil sight glass), pull tapered pin at the venting or insert pressure venting screw.
3. Make sure the screw is parallel and the gearbox mounting surface is at a right angle to the on-site guides. Start alignment work always from the basic position with the least play between worm gear screw jacks and guides and continue along the entire lift height.
4. Avoid distortions. The worm shaft should turn easily and evenly throughout the entire lift height.
5. Clean screw and grease along the entire screw length.
6. Check oil level and refill if necessary.



For high-performance worm gear screw jacks in the ATEX area:  
Insert the pressure bleed plug for venting.

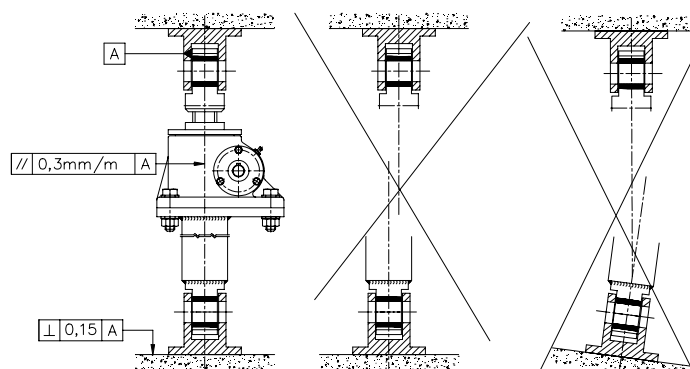
### 9.3 Assembly of multi-screw units

1. Check turning directions of all screw jacks.
2. Even out uneven support surfaces (pieces of sheet metal).
3. Move the screws/travelling nuts to the same height before depositing, aligning and fastening the load.



To even out alignment errors between the individual elements, use rotationally elastic couplings, rotationally elastic propeller shafts or cardan shafts.

## 9.4 Pivot version



- No side forces due to alignment errors.
- If necessary, install movable load support points or pivoting bearings.
- Fasten screw jacks using only quality bolts and screws.
- Secure bolts and screws.
- Design added constructions for maximum force.



- Distortions increase power consumption and reduce the service life!
- Monitor the lubrication film and the screw temperature during the run-in phase. Rapid dry-run and excessive temperature indicate undue lateral forces even if the power-on time and the maximum power specifications are complied with.

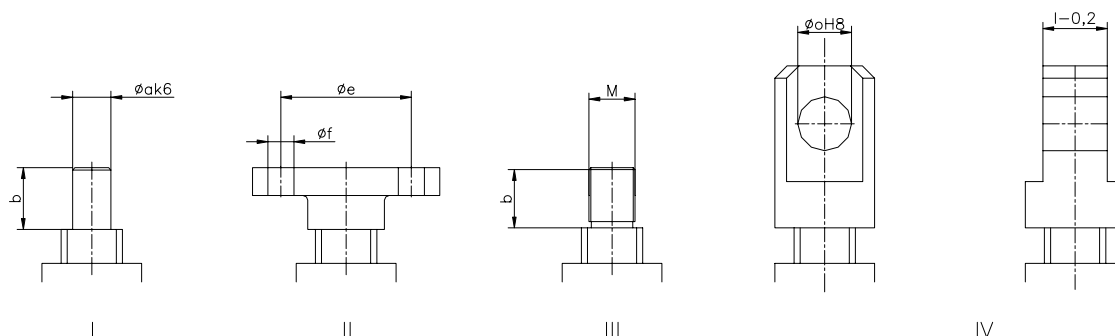
## 9.5 Mechanical fastening

### 9.5.1 Screw jack housing

SHE unit size	0,5	1.1	3.1	5.1	15.1	20.1	25	35	50	75	100	150
Screws (quality class min. 8.8)	M 8	M8	M 12	M 16	M 18	M 27	M 33	M 33	M 45	M 36	M 48	M48
Screws head II	M 8	M8	M 12	M 16	M 18	M 27	M 33	M 33	M 33	M 36	M 48	M48
Number of screws	2	4	4	4	4	4	4	4	4	6	6	8

HSE size	31	36	50	63	80	100	125	140	200
Screws (quality class min. 8.8)	M 8	M 8	M 12	M 16	M 20	M 24	M 27	M 42	M64
Number of screws	4	4	4	4	4	4	8	4	4

## 9.5.2 Screw heads



SHE model size	0,5	1.1	3.1	5.1	15.1	20.1	25	35	50	75	100	150
Ø a k6	10	15	20	25	40	50	70	80	100	110	140	160
Ø e	45	50	75	85	105	140	155	200	225	270	280	310
n x Ø f	4 x 7	4 x 9	4 x 14	4 x 17	4 x 21	4 x 26	4 x 27	4 x 33	4 x 35	6x45	6 x 52	8x52
Thread M	18x1.5	16x1.5	22x1.5	30x2	40x3	50x3	70x3	80x3	100x5	100x6	140x6	160x6
Ø o H8	15	20	25	35	50	60	70	80	100	120	140	160
l-0.2	20	25	30	42	60	75	90	105	120	140	160	180

HSE size	31	36	50	63	80	100	125	140	200
Ø a k6	12	15	20	30	40	50	80	95	130
Ø e	45	50	65	85	105	135	170	205	270
n x Ø f	4 x 6.6	4 x 9	4 x 14	4 x 18	4 x 22	6 x 26	8 x 30	8 x 33	8 x 45
Thread M	12x1.5	16x1.5	20x1.5	30x2	42x3	56x3	80x3	100x4	140x4
Ø o H8	15	20	25	35	50	60	80	100	140
l-0.2	20	25	30	40	60	75	100	120	160



For the exact mounting dimensions, please request our offer drawings.

### 9.5.2.1 Joint heads



Screw jacks with joint heads are available as special models.

A gear-sided anti turn device is recommended during the use of joint bearings or joint heads.



### 9.5.3 Screw tightening torques

Coarse-pitch thread	Tightening torque M <sub>A</sub> [Nm]		
	Quality 8.8	Quality 10.9	Quality 12.9
M 4	2,8	4,1	4,8
M 6	9,5	14	16,5
M 8	23	34	40
M 10	46	68	79
M 12	79	117	135
M 16	195	280	330
M 20	390	560	650
M 24	670	960	1120
M 27	1000	1400	1650
M 30	1350	1900	2250
M 36	2330		
M 42	3676		
M 45	5502		
M 48	5636		
M 56	8856		

## 10 Initial operation



- Before putting the machine into service, these operating instructions must be read carefully and made available to all responsible persons.
- Always observe and follow these operating instructions when using the equipment.
- Any use other than the intended use is prohibited.
- Commissioning may only be performed by authorised personnel.
- Check limit stop switches.
- Pay attention to the proper polarization of the electrical installation.
- Put lift unit into operation without a load. (1x lifting 1x lower)
- Operate intermittently, gradually increasing the load.
- During initial operation, constantly control the operating temperature, the motor's current consumption and the spindle contact pattern.
- After 5 hours of operation, check that the screws are tight. Retighten where necessary.
- Monitor the lubrication film and the screw temperature during the run-in phase. Rapid dry-run and excessive temperature indicate undue lateral forces even if the power-on time and the maximum power specifications are complied with.



Carry out commission and run-in phase in secure explosive-free atmosphere.  
Check the earthing of the mounted parts. (Discharge resistance less than 10<sup>6</sup>Ω)



Units for spaces with explosion hazards should be checked by a specially authorised person before commissioning. (TRBS 1203-1)

## 11 Maintenance and inspection



According to BetrSichV (operational safety ordinance), lifting equipment are deemed waste requiring special supervision. Regular safety tests (recommended annually) are to be carried out by authorised personnel mandated by the owner.  
We recommend that Pfaff-silberblau Hebezeugfabrik performs this test.



The operator has to count or measure the alternations of load or operating hours and document them.  
Risk analysis by the manufacturer of the overall system.





Power must be turned off before maintenance and inspection of the unit.






Observe to the pertinent safety regulations during maintenance and inspection.  
Support loads.

## 11.1 Maintenance plans




### 11.1.1 Standard SHE and HSE

	Standard screw jack	Every 50 hours of operation	Every 300 hours of operation or annually	Every 5 years or after 1000 hours of operation
	SHE Ba1	Check the <b>screw's</b> grease level and refill if necessary.	<b>Safety test*</b> Grease the <b>screw</b> Check the <b>gear</b> lubrication level and refill if necessary. Grease the <b>anti turn device</b>	Change the grease in the <b>gear box</b>
	SHE Ba2			
	HSE Ba1			<b>Gear box</b> oil change
	HSE Ba2			

### 11.1.2 Safety screw jack SHE and HSE

	Safety screw jacks	Every 50 hours of operation	Every 300 hours of operation or annually	Every 5 years or after 1000 hours of operation
	SHE Ba1	Check the <b>screw's</b> grease level and refill if necessary.	<b>Safety test*</b> Grease the <b>screw</b> Check the <b>gear</b> lubrication level and refill if necessary. Grease the <b>anti turn device</b>	Change the grease in the <b>gear box</b>
	SHE Ba2			
	HSE Ba1			<b>Gear box</b> oil change
	HSE Ba2			

## 11.1.3 Atex Screw jacks SHE and HSE

	Atex screw jack	Every 50 hours of operation	Prior to every operation	Quarterly	Every 300 hours of operation or annually	Every 5 years or after 1000 hours of operation
	SHE Ba1	Check the <b>screw's</b> grease level and refill if necessary.	Check <b>screw jack</b> externally for leaks.	Check the <b>gear</b> lubrication level and refill if necessary.	<b>Safety test*</b> Grease the <b>screw</b> Check the <b>gear</b> lubrication level and refill if necessary. Damaged surface treatment should be properly repaired immediately.  Grease the <b>anti turn device</b>	Change the grease in the <b>gear box</b>
	SHE Ba2					
	HSE Ba1					
	HSE Ba2					<b>Gear box</b> oil change

## 11.2 Maintenance instructions

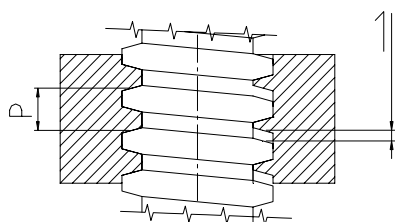
## 11.2.1 Safety test

## 11.2.1.1 Wear limits

Tr screw	14x4	18x4	18x6	20x4	22x5	26x6.2 8	30x6	35x8	40x7
Max. wear [mm]	1,0	1,0	1,5	1,0	1,3	1,5	1,5	2	1,6
Tr screw	40x8	50x9	58x12	60x9	60x12	65x12	70x10	70x12	80x10
Max. wear [mm]	2	2,3	3,0	2,3	3,0	3,0	2,5	3,0	2,5
Tr screw	90x1 6	100x10	100x16	120x14	120x16	140x20	160x20	190x24	220x28
Max. wear [mm]	4,0	2,5	4,0	3,5	4,0	5,0	5,0	6,0	7,0

Wear limits of special pitches upon request

## 11.2.1.2 Standard screw jack with trapezoidal thread screw

**Safety test:**

Check the screw jacks at least once per year for wear if the translation thread in the worm wheel.

Replacement is urgently required once the wear limit has been reached.

1 = maximum wear

### 11.2.1.3 Standard screw jack with ball thread screw



#### Safety test:

Pay attention to the running noises of the Ku screws during operation. An increase in noise indicates wear of the Ku nuts at which point the nuts and screws need to be exchanged promptly.

The Ku screws/nuts should generally be exchanged at the end of its service life.

### 11.2.1.4 Safety screw jacks



In accordance with BetrSichV, lifting equipment must undergo an examination by an authorised person in intervals specified by the owner.

The inspection term should not exceed a year.



We recommend that Pfaff-silberblau Hebezeugfabrik performs this inspection.

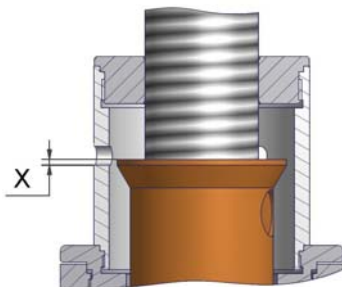
#### Screw jacks Ba1 with short safety nut



#### Safety test:

Check the wear in the worm wheel screw jacks (dimension x) of the translation thread in the worm wheel. Prompt replacement of the carry nut and safety nuts is required should the safety nut (wear indication ring) should align with the upper and lower edge of the housing.

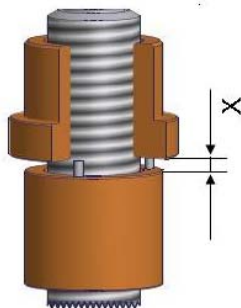
#### Safety screw jacks Ba1 with long safety nut



**Safety test: Check the wear of the translation thread at the visual wear indicator. Prompt replacement of the worm wheel and safety nut is urgently required once the wear limit has been reached.**

Wear limits = X - max. wear

#### Ba2 safety screw jacks with safety nut



**Safety test: Check the wear of the translation thread at the visual wear indicator. Prompt replacement of the travelling nut and safety nut is urgently required once the wear limit has been reached.**

Wear limits = X - max. wear









## 11.2.2 Record for measuring the wear

We recommend recording the new condition and the results from measuring the wear (dimension X).

	Screw jack 1	Screw jack 2	Screw jack. 3	Screw jack 4	Signature
New condition Dimension X					
Measuring the wear on _____					
Measuring the wear on _____					
Measuring the wear on _____					
Measuring the wear on _____					
Measuring the wear on _____					

## 11.3 Lubrication

The gear boxes and spindle lubrication is coordinated in the factory with the listed lubricants. However, it is possible to use other lubricants equal in quality with the same specifications (intrinsic oil viscosity, operating temperature range, worked penetration, and consistency class).

Anwendung	Umgebungs- temperatur- bereich in °C	Drehzahl- bereich	Schmierstoff <sup>1)</sup>	ISO- Viskosität / NLGI- Klasse <sup>1)</sup>								
SHE Getriebe u. Tr- Spindeln BG0,5 bis BG100 / Merkur Getriebe u. Spindeln	-30 bis 0		Fett	NLGI 2	SKF LGLT 2 <sup>4)</sup>	Agint LF 2	Mobil-Akyl 243 Aktik	Opttemp TT 1 EP	UNIREX S 2	ALMETYN SF 2	ISO FLEX LDS 18 Special A	
	-15 bis +40		Fett	NLGI 2	Huggetriebe Sonderfett EP2	Agint MHC 2		Longlife PD 2	Beacon EP 2	ALMETYN SF 2	Kilbeplast BE 11-462	Alkalg G 2
	+20 bis +80		Fett	NLGI 2	Huggetriebe Sonderfett EP2	Agint MHC 2		Longlife PD 2	Beacon EP 2	ALMETYN SF 2	Kilbeplast BE 11-462	Alkalg G 2
	+40 bis +120		Fett	NLGI 2				Opttemp HT 2		URETHYN EM 2	Kilbeplast BH 72-422	Stamla EP 2
SHE Spindeln BG150 / BG200	0 bis +80 °C		Fett	NLGI 0			Mobil-Akyl 306 SF Heavy	Opttemp OG D Plus 3)			Gratificon C-S 2000 Ultra	
SHE Getriebe BG150 / BG200	0 bis +80 °C		Mineralöl	ISO VG 680			Optigear BM 680				Kilbeplast EM 1-680 N	
HSE/SHG Spindeln (Trapezgewinde)	-30 bis 0		Fett	NLGI 2	SKF LGLT 2 <sup>4)</sup>		Mobil-Akyl 243 Aktik	Opttemp TT 1 EP	UNIREX S 2	ALMETYN SF 2	ISO FLEX LDS 18 Special A	
	-15 bis +40		Fett	NLGI 2	PS-Grease 011		Mobil-Akyl 306 SF Heavy	Opttemp OG D Plus 3)	GleitholwSP 5040	Kilbeplast GE 11-680	Alkalg G 2	
	+20 bis +80		Fett	NLGI 2	PS-Grease 011		Mobil-Akyl 306 SF Heavy	Opttemp OG D Plus 3)	GleitholwSP 5040	Kilbeplast GE 11-680	Alkalg G 2	
	+40 bis +120		Fett	NLGI 2				Opttemp HT 2	URETHYN EM 2	Kilbeplast BH 72-422	Stamla EP 2	
HSE-Getriebe	2) -30 bis 0		Synth. Öl	ISO VG 68		Degol GS 68	Tribol 800/220	Optiflex A 220	Glycolube 220	Geamstarter PG P 220	Kilberlythm GH 6-68	
	2) -15 bis +40	1) <= 1500	Synth. Öl	ISO VG 220		Degol GS 220	Tribol 800/150	Optiflex A 150	Glycolube 150	Geamstarter PG P 150	SYNTHES O D 220 EP	Trebo IIW 6
	2) -15 bis +40	1) > 1500	Synth. Öl	ISO VG 150		Degol GS 150	Tribol 800/680	Optiflex A 680	Glycolube 680	Geamstarter PG P 680	SYNTHES O D 150 EP	Trebo IIW 6
	2) +20 bis +80	1) <= 1500	Synth. Öl	ISO VG 680		Degol GS 680	Tribol 800/220	Optiflex A 220	Glycolube 220	Geamstarter PG P 220	SYNTHES O D 680 EP	
	2) +20 bis +80	1) > 1500	Synth. Öl	ISO VG 220		Degol GS 220	Tribol 800/220	Optiflex A 220	Glycolube 220	Geamstarter PG P 220	SYNTHES O D 220 EP	
	2) +40 bis +120		Synth. Öl	ISO VG 680		Degol GS 680				Geamstarter PG P 680	Kilberlythm GH 6-680	
SHE-Getriebe Ölschmierung	2) -30 bis 0		Synth. Öl	ISO VG 100		Dinmol ICL ISO 220 <sup>5)</sup>	Degol BG 220	Optigear BM 220	Spartan EP 220	Geamstarter CLP 220	Kilberlythm GH 6-100	
	2) -15 bis +40		Mineralöl	ISO VG 220		Dinmol ICL ISO 220 <sup>5)</sup>	Degol BG 680	Optigear BM 680	Spartan EP 680	Geamstarter CLP 680	Kilbeplast EM 1-220 N	Omala Oil 220
	2) +20 bis +80		Mineralöl	ISO VG 680		Dinmol ICL ISO 220 <sup>5)</sup>	Degol BG 680	Optigear BM 680	Spartan EP 680	Geamstarter CLP 680	Kilbeplast EM 1-680 N	Omala Oil 680
	2) +40 bis +120		Synth. Öl	ISO VG 680						Geamstarter PG P 680	Kilberlythm GH 6-680	
SHG-Getriebe Kegelradgetriebe Baureihe K...13	2) -30 bis 0		Synth. Öl	ISO VG 150		Dinmol ICL ISO 220 <sup>5)</sup>	Degol BG 150	Optigear BM 220	Spartan EP 220	Geamstarter CLP 220	Kilberlythm GH 6-150	
	2) -15 bis +40	1) <= 1500	Mineralöl	ISO VG 220		Dinmol ICL ISO 100 <sup>5)</sup>	Degol BG 220	Optigear BM 100	Spartan EP 100	Geamstarter CLP 100	Kilbeplast EM 1-220 N	Omala Oil 220
	2) -15 bis +40	1) > 1500	Mineralöl	ISO VG 100		Dinmol ICL ISO 100 <sup>5)</sup>	Degol BG 100	Optigear BM 100	Spartan EP 100	Geamstarter CLP 100	Kilbeplast EM 1-100 N	Omala Oil 100
	2) +20 bis +80	1) <= 1500	Mineralöl	ISO VG 680		Dinmol ICL ISO 680 <sup>5)</sup>	Degol BG 680	Optigear BM 680	Spartan EP 680	Geamstarter CLP 680	Kilbeplast EM 1-680 N	Omala Oil 680
	2) +20 bis +80	1) > 1500	Mineralöl	ISO VG 220		Dinmol ICL ISO 220 <sup>5)</sup>	Degol BG 220	Optigear BM 220	Spartan EP 220	Geamstarter CLP 220	Kilbeplast EM 1-220 N	Omala Oil 220
	2) +40 bis +120		Synth. Öl	ISO VG 680		Degol GS 680				Geamstarter PG P 680	Kilberlythm GH 6-680	
Ku-Spindeln	-30 bis 0		Fett	NLGI 2	SKF LGLT 2 <sup>4)</sup>	Agint LF 2		Opttemp LG 2		ISO FLEX LDS 18 SPEZIAL A		
	-15 bis +80		Fett	NLGI 1		Agint MHC 2		Opttemp LG 2	URETHYN EM 2	Staburthm GH 46 1	Retrax LX2	
	+40 bis +120		Fett	NLGI 1					URETHYN EM 2	Staburthm GH 46 1	Retrax LX2	

Fettgedruckt = Standardschmierstoffe: werkseitiger Getriebe-Schmierstoff bzw. Schmierstoffempfehlung für Spindeln

Achtung: Die Alternativen zu unseren Standardschmierstoffen sind Angaben der Schmierstoffhersteller.  
Pfaff-silberblau verfügt über keine Erfahrungswerte, ob die Schmierstoffe den Herstellerangaben entsprechen.

Schmierstoffauswahl: Die Temperaturbereiche beziehen sich auf die Umgebungstemperatur. Höhere Schmierstofftemperaturen, die sich während des Betriebs der Antriebskomponenten ergeben können, sind bereits berücksichtigt.  
Standard-Temperaturbereich: -10°C bis +40°C  
Nur bei Über- bzw. Unterschreiten des Standard-Temperaturbereichs sind Schmierstoffe aus anderen Temperaturbereichen zu verwenden.  
Zum Betreiben der Antriebskomponenten in vom Standard abweichenden Temperaturbereichen, sind Auslegungsanpassungen und ggf. konstruktive Maßnahmen notwendig!  
Technischen Daten gem. Auftragsbestätigung und die Betriebsanleitung beachten.

- 1) Angaben beziehen sich auf den werkseitigen Schmierstoff
- 2) Kritisches Anlaufverhalten bei tiefen Temperaturen beachten
- 3) nicht mehr erhältlich (bis September 2006 Standardschmierstoffe)
- 4) SKF GmbH
- 5) Zeller+Gmelin GmbH & Co. KG



Used lubricants are to be disposed of in accordance with legal requirements!

### 11.3.1 Spindle lubrication



Clean the screw with grease evenly with a brush.

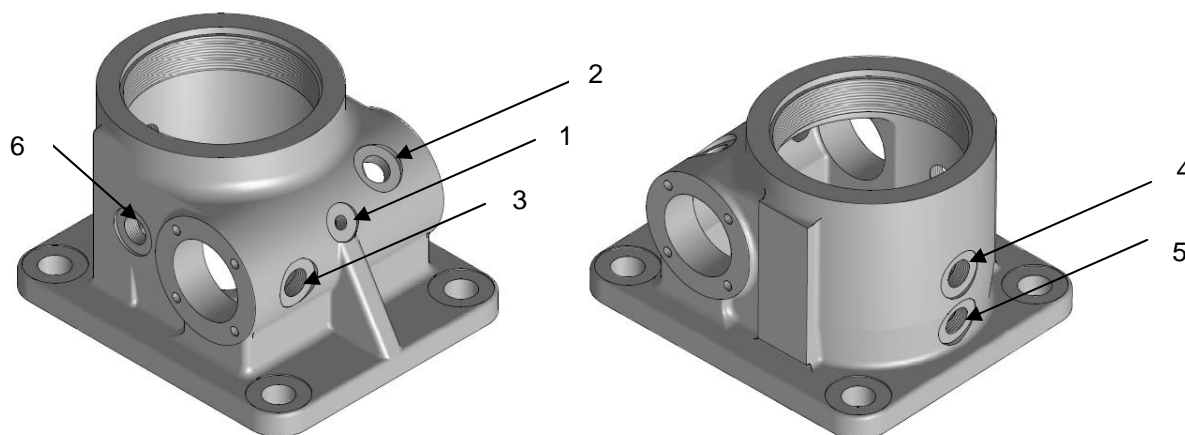
We recommend an automatic lubricant dispenser in places of difficult accessibility, a longer power time or in dirty environments. Automatic lubricant dispensers are also available with Atex conformity.

### 11.3.2 Gear unit lubrication

#### 11.3.2.1 SHE



Lubricate the lubrication nipple (Pos 1) at the gear box with the grease gun.  
Press the grease until it discharges from the seal lip or from the venting bore.



SHE with oil lubrication is only available as type 2.

Check the oil level. Refill if necessary.

Fitting position	M1A M1B	M2A M2B	M3A M3B	M4A M4B	M5A M5B	M6A M6B
Pos 2	E	A	E	V	A	V
Pos 3	O/V	O/V	A	A	E	E
Pos 4	O/V	O/V	O/V	V/E	O/V	V
Pos 5	A	E	O/V	V	OV	V
Pos 6	V	V	V	O	V	O

E = fill screw/venting

O = oil viewing glass

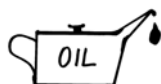
V = lock screw

A = drain screw



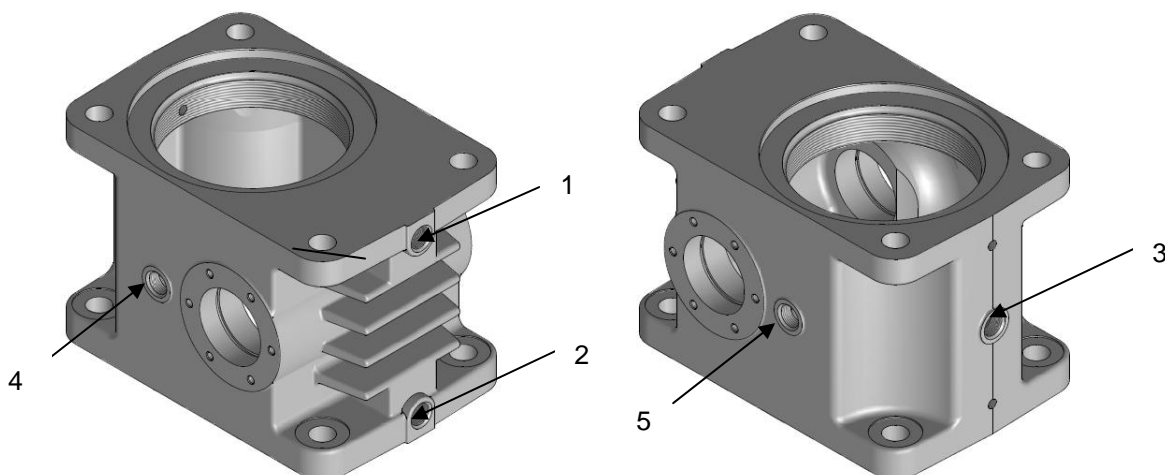
Tighten the venting screws always to the highest position.

## 11.3.2.2 HSE



Check the oil level. Refill if necessary.

## Oil level HSE



Fitting position	M1A M1B	M2A M2B	M3A M3B	M4A M4B	M6A M6B
Pos 1	E	E	O	A	E
Pos 2	A	A	O	A	E
Pos 3	O	O	O	E	A
Pos 4	O	O	E/A	O	O
Pos 5	O	O	E/A	O	O

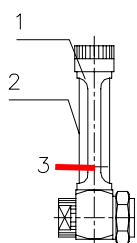
O = oil viewing glass or oil level display

E = oil fill or venting screw

A = oil drain screw



Tighten the venting screws always to the highest position.



- 1 Brass housing
- 2 Viewing glass
- 3 Oil level

## 11.3.3 Grease the anti turn device (V)



Lubricate the lubrication nipple at the guiding tube with the grease gun. Grease amount about 20ml.



### 11.3.4 Quantity of lubricant

#### SHE gear box with grease lubrication



<b>SHE unit size</b>	0,5	1.1	3.1	5.1	15.1	20.1
<b>Quantity of lubricant(kg)</b>	0,05	0,1	0,2	0,35	0,9	2,0

<b>SHE unit size</b>	25	35	50	75	100	150	200
<b>Quantity of lubricant(kg)</b>	1,3	2,5	4	5	10	10	

#### HSE gear box with oil lubrication



<b>HSE size</b>	31	36	50	63	80	100	125	140	200
<b>Filling quantity (l)</b>	0,07	0,15	0,4	0,9	1,5	2,1	5,0	10	15,5

### 11.4 SHE with low-viscosity grease level in the lift gear box

The maintenance of the lift gear box with low-viscosity grease level does not differ from screw jacks with standard grease filling.



Take note of the grease types according to the lubrication table.

## 12 Decommissioning



When decommissioning the system, recycle or dispose of the various system components and/or screw jacks according to the legal requirements.

### 13 Einbauerklärungen

<b>Einbauerklärung</b> <i>für unvollständige Maschinen im Sinne der EG-Maschinenrichtlinie 2006/42/EG, Anhang II, Nr. 1B</i>	<b>Declaration of incorporation</b> <i>for incomplete machines according to EC machine directive 2006/42/EC, Annex II, No. 1B</i>	<b>Déclaration d'incorporation</b> <i>pour machines incomplètes conformément à la directive européenne relative aux machines 2006/42/CE, annexe II, n° 1B</i>
<b>Spindelhubelemente SHE; HSE Bauart 1 und 2 zum Heben und Senken von Lasten</b>	<b>Worm Gear Screw Jack SHE and HSE type 1 and 2 for lifting and lowering loads</b>	<b>Vérins à vis sans fin SHE et HSE type 1 et type 2 pour lever et baisser des charges</b>
ist eine unvollständige Maschine nach Artikel 2g und ausschließlich zum Einbau in eine Maschine oder zum Zusammenbau mit anderen Maschinen oder Ausrüstung vorgesehen.	is an incomplete machine according to Article 2 g and has been designed exclusively for installation in a machine or for assembly with other machines or equipment.	est une machine incomplète selon l'article 2g et a été conçue uniquement pour être montée dans une machine ou à être assemblée avec d'autres machines ou équipement.
Folgende grundlegenden Sicherheits- und Gesundheitsschutzanforderungen gemäß Anhang I dieser Richtlinie kommen zur Anwendung und wurden eingehalten 1.1.2; 1.1.3; 1.1.5; 1.3.2; 1.3.3; 1.3.4; 1.3.7; 1.3.9; 1.5.2; 1.7.3; 1.7.4; 4.1.2.6	The following basic health and safety requirements in Annex I to this Directive are applicable and have been observed 1.1.2; 1.1.3; 1.1.5; 1.3.2; 1.3.3; 1.3.4; 1.3.7; 1.3.9; 1.5.2; 1.7.3; 1.7.4; 4.1.2.6	Les exigences suivantes de sécurité et relatives à la santé, conformes à l'annexe I de cette directive, ont été appliquées et respectées 1.1.2; 1.1.3; 1.1.5; 1.3.2; 1.3.3; 1.3.4; 1.3.7; 1.3.9; 1.5.2; 1.7.3; 1.7.4; 4.1.2.6
Die speziellen technischen Unterlagen gemäß Anhang VII B wurden erstellt und sie werden der zuständigen nationalen Behörde auf Verlangen in elektronischer Form übermittelt	The special technical documentation referred to in Annex VII B has been prepared and will be forwarded to the competent national authority, upon request in electronic form	La documentation technique spéciale conforme à l'annexe VII B a été préparée et sera transmise aux autorités nationales compétentes, également sous forme électronique, si nécessaire.
Diese unvollständige Maschine ist in Übereinstimmung mit den Bestimmungen der folgenden EG Richtlinien	This incomplete machine is in compliance with the provisions of the following EC directives	Cette machine incomplète est conforme aux dispositions des directives européennes suivantes
Angewendete harmonisierte Normen, insbesondere: <b>DIN EN 1494:2000; DIN EN ISO 12100-1; DIN EN ISO 12100-2</b>	Applied harmonised standards, in particular:	Normes harmonisées utilisées, en particulier :
Angewendete nationale Normen und technische Spezifikationen, insbesondere: <b>BGV D8;</b>	Applied national technical standards and specifications, in particular:	Normes et spécifications techniques nationales qui ont été utilisées, notamment
Diese unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn festgestellt wurde, dass die Maschine, in die diese unvollständige Maschine eingebaut werden soll, den Bestimmungen der EG-Maschinenrichtlinie entspricht	This incomplete machine may only be put into operation if it has been determined that the machine into which this incomplete machine will be installed complies with the provisions of the EC machine directive	Cette machine incomplète ne doit être mise en service que lorsqu'il a été déterminé, que la machine dans laquelle cette machine incomplète doit être montée, est conforme aux dispositions de la directive européenne relative aux machines

Ort/Datum

Kissing, 29.12.2009

Name:

ppa. Ulrich Hintermeier

**PFAFF**  
 silberblau  
 Pfaff-silberblau Hebezeugfabrik GmbH  
 Am Silberpark 2-8, 86438 Kissing  
 www.pfaff-silberblau.de

i.V. Konrad Ertl

Der Unterzeichnende ist bevollmächtigt die technischen Unterlagen gemäß Anhang VII A zusammenzustellen und der der zuständigen Behörde auf Verlangen zu übermitteln.	The undersigned is authorised to prepare the technical documentation referred to in Annex VII A and submit it to the responsible authorities on request.	Le signataire est habilité à réunir la documentation technique spéciale conforme à l'annexe VII A et à la transmettre aux autorités compétentes si nécessaire.
--	--	--

<b>Einbauerklärung für unvollständige Maschinen im Sinne der EG-Maschinen- richtlinie 2006/42/EG, Anhang II, Nr. 1B</b>	<b>Declaration of incorporation for incomplete machines according to EC machine directive 2006/42/EC, Annex II, No. 1B</b>	<b>Déclaration d'incorporation pour machines incomplètes conformément à la directive européenne relative aux machines 2006/42/CE, annexe II, n 1B</b>
<b>Spindelhubelemente SHE; HSE Bauart 1 und 2 mit Sicherheitseinrichtungen zum Heben und Senken von Lasten. zum Einbau in Hubtische, Hebebühnen, Hubarbeitsbühnen oder Fahrzeughebe- bühnen</b>	<b>Worm Gear Screw Jack SHE and HSE type 1 and 2 with safety devices for lifting and lowering loads for assembly in lifting tables, lifting platforms, working platforms or vehicle lifting platforms</b>	<b>Vérins à vis sans fin SHE et HSE type 1 et type 2 avec équipement de sûreté pour lever et baisser des charges pour installation dans table de levage, plateforme élévatrice, plateforme de travail, plateforme de levage pour véhicule</b>
ist eine unvollständige Maschine nach Artikel 2g und ausschließlich zum Einbau in eine Maschine oder zum Zusammenbau mit anderen Maschinen oder Ausrüstung vorgesehen.	is an incomplete machine according to Article 2 g and has been designed exclusively for installation in a machine or for assembly with other machines or equipment.	est une machine incomplète selon l'article 2g et a été conçue uniquement pour être montée dans une machine ou à être assemblée avec d'autres machines ou équipement.
Folgende grundlegenden Sicherheits- und Gesundheitsschutzanforderungen gemäß Anhang I dieser Richtlinie kommen zur Anwendung und wurden eingehalten 1.1.2; 1.1.3; 1.1.5; 1.3.2; 1.3.3; 1.3.4; 1.3.7; 1.3.9; 1.5.2; 1.7.3; 1.7.4; 4.1.2.6	The following basic health and safety requirements in Annex I to this Directive are applicable and have been observed 1.1.2; 1.1.3; 1.1.5; 1.3.2; 1.3.3; 1.3.4; 1.3.7; 1.3.9; 1.5.2; 1.7.3; 1.7.4; 4.1.2.6	Les exigences suivantes de sécurité et relatives à la santé, conformes à l'annexe I de cette directive, ont été appliquées et respectées 1.1.2; 1.1.3; 1.1.5; 1.3.2; 1.3.3; 1.3.4; 1.3.7; 1.3.9; 1.5.2; 1.7.3; 1.7.4; 4.1.2.6
Die speziellen technischen Unterlagen gemäß Anhang VII B wurden erstellt und sie werden der zuständigen nationalen Behörde auf Verlangen in elektronischer Form übermittelt	The special technical documentation referred to in Annex VII B has been prepared and will be forwarded to the competent national authority, upon request in electronic form	La documentation technique spéciale conforme à l'annexe VII B a été préparée et sera transmise aux autorités nationales compétentes, également sous forme électronique, si nécessaire.
Diese unvollständige Maschine ist in Übereinstimmung mit den Bestimmungen der folgenden EG Richtlinien	This incomplete machine is in compliance with the provisions of the following EC directives	Cette machine incomplète est conforme aux dispositions des directives européennes suivantes
Angewendete harmonisierte Normen, insbesondere: <b>DIN EN ISO 12100-1; DIN EN ISO 12100-2; DIN EN 1494; EN1570; EN280; EN1756; EN1493</b>	Applied harmonised standards, in particular: <b>DIN EN ISO 12100-1; DIN EN ISO 12100-2; DIN EN 1494; EN1570; EN280; EN1756; EN1493</b>	Normes harmonisées utilisées, en particulier : <b>DIN EN ISO 12100-1; DIN EN ISO 12100-2; DIN EN 1494; EN1570; EN280; EN1756; EN1493</b>
Angewendete nationale Normen und technische Spezifikationen, insbesondere: <b>BGV D8;</b>	Applied national technical standards and specifications, in particular: <b>BGV D8;</b>	Normes et spécifications techniques nationales qui ont été utilisées, notamment <b>BGV D8;</b>
Diese unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn festgestellt wurde, dass die Maschine, in die diese unvollständige Maschine eingebaut werden soll, den Bestimmungen der EG-Maschinenrichtlinie entspricht	This incomplete machine may only be put into operation if it has been determined that the machine into which this incomplete machine will be installed complies with the provisions of the EC machine directive	Cette machine incomplète ne doit être mise en service que lorsqu'il a été déterminé, que la machine dans laquelle cette machine incomplète doit être montée, est conforme aux dispositions de la directive européenne relative aux machines

Ort/Datum

Kissing, 29.12.2009

Name:

ppa. Ulrich Hintermeier




PFAFF  
silberblau  
Pfaff-silberblau Hebezeugfabrik GmbH  
Am Silberpark 2-8, 86438 Kissing  
www.pfaff-silberblau.de

i.V Konrad Ertl

Der Unterzeichnende ist bevollmächtigt die technischen Unterlagen gemäß Anhang VII A zusammenzustellen und der der zuständigen Behörde auf Verlangen zu übermitteln.	The undersigned is authorised to prepare the technical documentation referred to in Annex VII A and submit it to the responsible authorities on request.	Le signataire est habilité à réunir la documentation technique spéciale conforme à l'annexe VII A et à la transmettre aux autorités compétentes si nécessaire.
--	--	--

## 14 Konformitätserklärung nach 94/9/EG

**Konformitätserklärung****im Sinne der EG-Richtlinie  
94/9/EG vom 23.03.1994****Declaration of  
conformity****as defined by EC Directive  
94/9/EC, from 23.03.1994****Declaration de  
conformité****conformément à la directive  
"CE" 94/9/CE 23 03.1994**

Hiermit erklären wir, dass	Herewith we declare that the supplied model of	Nous déclarons que le modèle
<b>Spindel-Hubelement SHE / HSE</b>  ein Gerät im Sinne der RL 94/9/EG Artikel 1 (3) ist und die Anforderungen gemäß Anhang II der RL 94/9/EG erfüllt.	<b>Worm gear screw jack SHE / HSE</b>  <i>an equipment as defined by EC Directive 94/9/EC article 1(3) is and fulfills the requirement according to annex II of the Directive 94/9/EC</i>	<b>Vérins à vis sans fin SHE / HSE</b>  <i>un appareil dans le sens de la directive 94/9/EC article 1 (3) est et les exigences conformément à l'annexe II de la directive 94/9/EC ré</i>
Das Spindelhubelement ist geeignet für den Einsatz in explosionsgefährdeten Bereichen entsprechend der Kennzeichnung  II 2 G/D-ck-T4/135°C	The worm gear screw jack is suitable for the operation in hazardous environment according to the marking  II 2 G/D-ck-T4/135°C	<i>vérins à vis sans fin est approprié pour l'application dans les secteurs explosifs conformément au marquage</i>  II 2 G/D-ck-T4/135°C

Angewendete harmonisierte Normen, insbesondere:	Applied harmonized standards, in particular:	Normes harmonisées utilisées, notamment
<b>EN 1127-1 (Explosionsschutz Grundlagen und Methodik)</b>  <b>EN 13463-1 (Grundlagen und Anforderungen)</b>  <b>EN 13463-5 (Schutz durch konstruktive Sicherheit)</b>  <b>94/9/EG Anhang VIII</b> <b>94/9/EC Annex VIII</b> <b>94/9/EC annexe VIII</b>		
<b>Auftragsbestätigung bzw. technisches Datenblatt sind Bestandteil dieser Konformitätserklärung.</b>  <b>Die Anlage darf erst in Betrieb genommen werden, wenn festgestellt wurde, dass die Gesamtanlage in die diese Komponenten eingebaut werden, den Bestimmungen der Atex Richtlinie 94/9/EG entspricht</b>		

Ort/Datum

Kissing, 29.12.2009

Name:

ppa. Ulrich Hintermeier

  
PFAFF  
silberblau  
Pfaff-silberblau Hebezeugfabrik GmbH  
Am Silberpark 2-8, 86438 Kissing  
www.pfaff-silberblau.de

i.V. Konrad Ertl



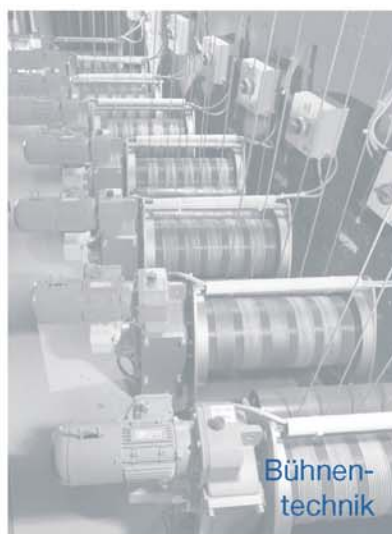
Hebezeuge &  
Fördergeräte



Antriebs-  
technik



Verkehrs-  
technik



Bühnen-  
technik

