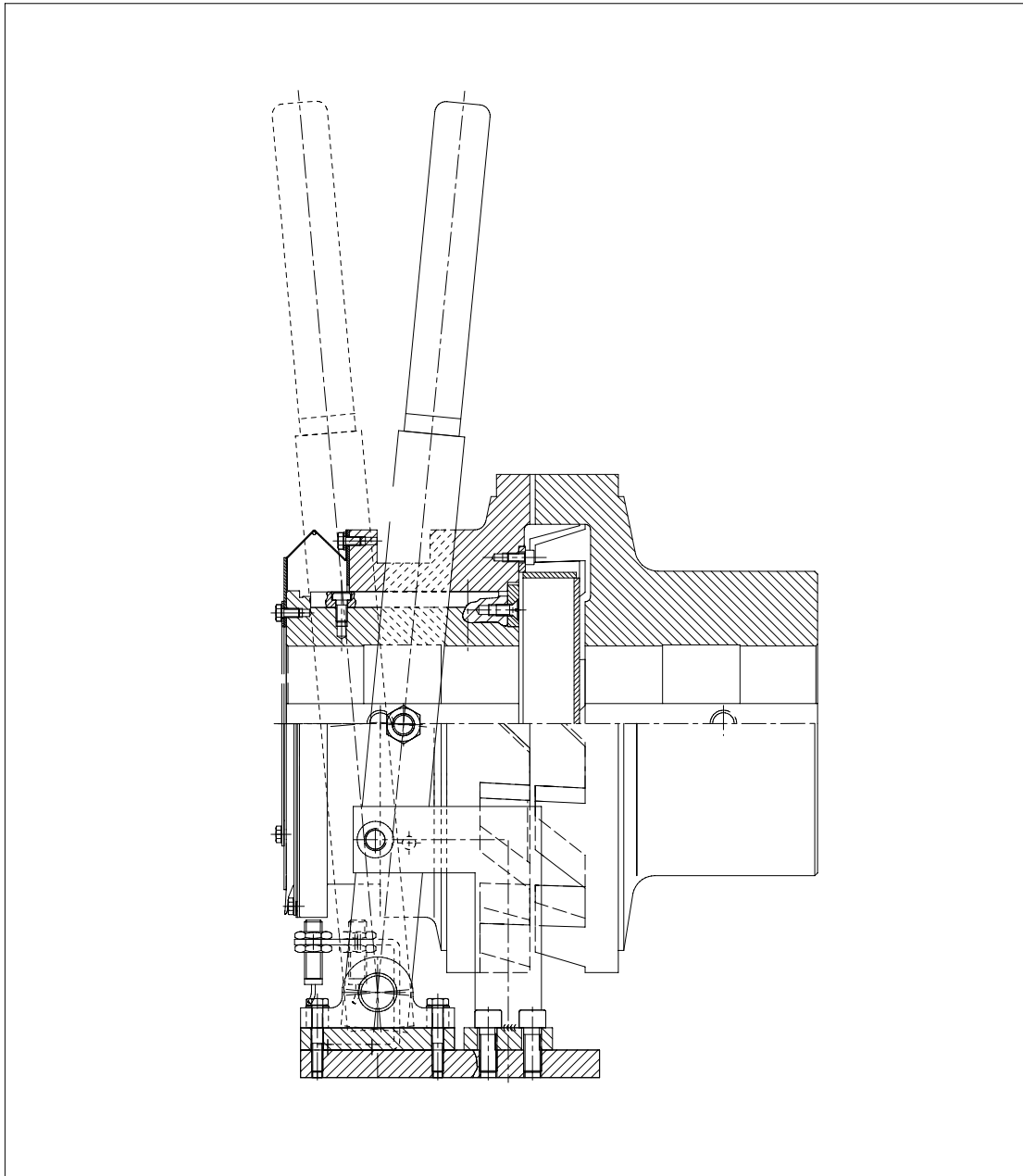


Operating Instructions

BA 3001 EN 09.07

Overrunning clutches of type **UZWN**
with clutch shift **KSUN**
optionally with control unit **STKS**



FLENDER

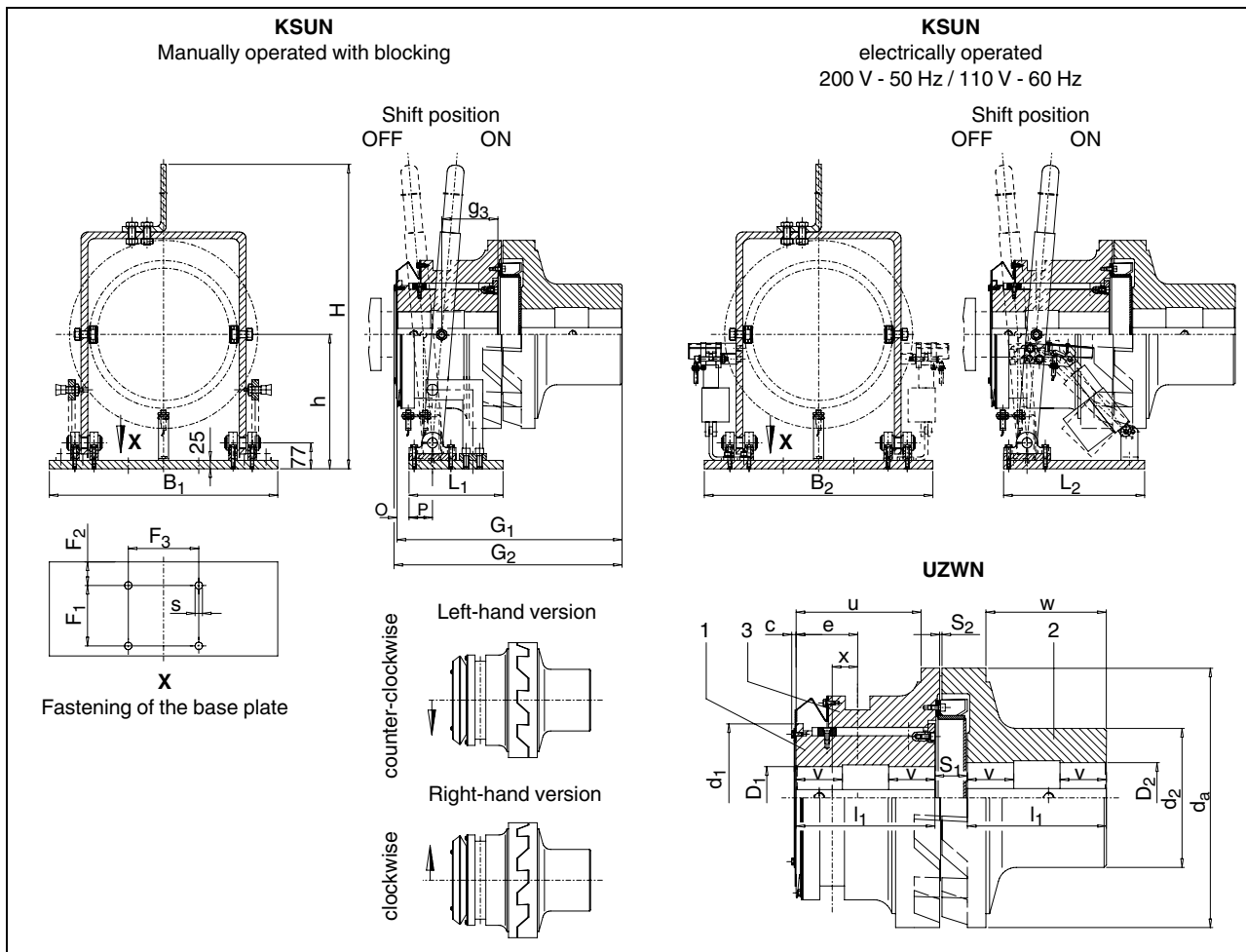
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1. Technical data

1.1 Overrunning clutch Type UZWN with clutch shift KSUN sizes 325 / 450 / 560 / 660

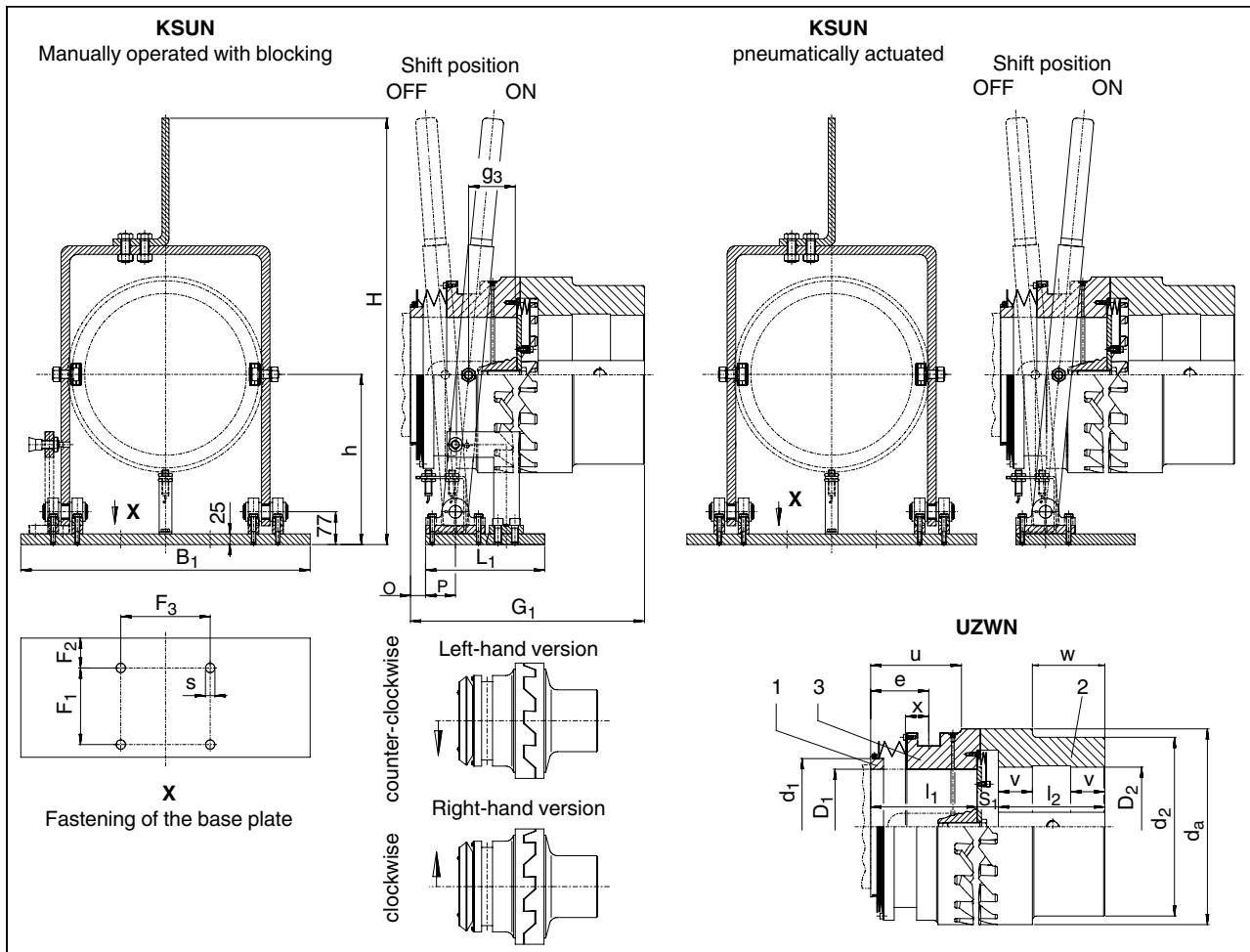


rated torques T_{KN} , speeds $n_{max.}$, dimensions, mass moments of inertia J and weights																				
Type	T_{KN}	Output	Input	Hole		d_1	d_2	u	w	l_1	v	S_1	S_2	e	stroke	c	Weight 1)		J 1)	
UZWN		$n_{max.}$		D_1	D_2												1 + 3	2	1 + 3	2
Size	Nm	1/min		from-to				mm									Part		kgm ²	
d_a																	kg	kg	kgm ²	kgm ²
325.1	9000	2900	1500	60-100	80-125	178	200	155	145	170	55	50		80	35	8.0	59	37	0.48	0.33
325.2	12500			60-110	80-145		220	195	185	210	70						69	46	0.62	0.7
450.1	22500	2100	1100	80-150	100-170	240	275	190	180	210	70	60	5	106	45	9.0	135	89	2.3	1.9
450.2	30000			90-160	100-200		300	230	220	250	80							140	99	2.5
560.1	45000	1700	850	90-180	125-200	320	300	270	260	300	100	70	5	133	55	9.5	255	180	7.0	4
560.2	60000			100-190	140-225		340	320	310	350	120							280	215	7.7
660.1	80000	1400	750	150-230	140-225	425	340	280	270	320	110	80	5	145	65	9.5	460	275	20	8.3
660.2	100000			160-240	170-250		380	340	330	380	120							530	320	23

Dimensions for shift KSUN																
Shift Size	B_1	L_1	B_2	L_2	h	H	F_1	F_2	F_3	O	P	G_1	G_2	g_3	s	Weight kg
	mm															
325	475	276	475	390	240	750	90	42	200	-	69.5	390 470	398 478	90 130	M16	58
450	550	270	565	370	320	880	160	69.5	210	13	69.5	480 560	490 570	104 144	M20	60
560	680	280	680	420	400	1000	180	70	210	35.5	70	670 770	680 780	169 219	M20	70
660	740	290	880	475	650	1330	160	79.5	300	32.4	79.5	720 840	730 850	175 235	M20	90

1) Mass moments of inertia and weights are valid for max. bores D_1 , D_2 , for version "Manually operated with blocking".

1.2 Overrunning clutch Type UZWN with clutch shift KSUN sizes 330 / 460 / 610



rated torques T_{KN} , speeds $n_{max.}$, dimensions, mass moments of inertia J and weights																			
Type	T_{KN}	Output	Input	Hole		d_1	d_2	$u_{min.}$	w	$l_{1min.}$	l_2	v	S_1	$e_{min.}$	stroke	Weight 1)		J 1)	
UZWN		$n_{max.}$		D_1	D_2										x	Part		Part	
Size	Nm	1/min		from-to				mm		2)						1+3	2	1+3	2
d_a																kg		kgm ²	
330	40000	2900	1500	60-160	80-200	210	300	195	100	210	170	55	40	127	37	37.24	59.2	0.5	1.1
460	110000	2100	1100	80-270	100-280	320	420	213	170	250	250	80	50	136.5	55	120	167	3.9	5.7
610	175000	1500	800	360	370	420	560	250	250	350	350	120	60	156.5	65	320	445	19.5	26.6

Dimensions for shift KSUN													
Shift Size	B_1	L_1	h	H	F_1	F_2	F_3	$O_{min.}$	P	$G_{1min.}$	g_3	s	Weight
	mm											for	kg
330	475	276	240	750	90	42	200	33	69.5	420	83	M16	58
460	680	280	400	1000	180	70	210	35.5	70	600	114	M20	70
610	740	290	650	1330	160	80	300	33	79.5	760	193.5	M20	90

1) Mass moments of inertia and weights are valid for max. bores D_1 , D_2 , for $l_{1min.}$.

2) Min. hub length, hub extension possible up to $2 \times l_{1min.}$.

Note: Parallel key connection of machine shaft and clutch part 3 of sizes 330, 460 and 610:

The parallel key connection is to be designed with an additional safety factor of 1.3 of the required minimum safety. The parallel key is to be manufactured using a hardened or very strong material. The parallel key is to be connected to the machine shaft using retaining screws, in order to ensure the correct position of the parallel key in the shaft keyway.

2. General notes

2.1 Introduction

These Operating Instructions (BA) are an integral part of the delivery and must be kept in the vicinity of the clutch and clutch shift for reference at all times.

Caution!

All persons involved in the installation, operation, maintenance and repair of the clutch and clutch shift must have read and understood these Operating Instructions and must comply with them at all times. We accept no responsibility for damage or disruption caused by disregard of these Instructions.

The "**Overrunning clutch and clutch shift**" described in these operating instructions (BA) have been developed for stationary use in general engineering applications. The overrunning clutch serves to transmit power and torque between two shafts or flanges connected by this clutch. The clutch shift and control unit serve to actuate the overrunning clutch.

The overrunning clutch is designed only for the application described in section 1, "Technical data". Other operating conditions must be contractually agreed.

The overrunning clutch, clutch shift and control unit described in these Operating Instructions (BA) reflect the state of technical development at the time these Instructions went to print.

In the interest of technical progress we reserve the right to make changes to the individual assemblies and accessories which we regard as necessary to preserve their essential characteristics and improve their efficiency and safety.

2.2 Copyright

The copyright to these Operating Instructions is held by **FLENDER AG**.

These Operating Instructions (BA) must not be wholly or partly reproduced for competitive purposes, used in any unauthorised way or made available to third parties without our agreement.

Technical enquiries should be addressed to the following works

FLENDER AG
D - 46393 Bocholt

Telefon: 02871/92-2868
Telefax: 02871/92-2579

or to one of our customer-service addresses. A list of our customer-service addresses is given in section 11, "Spare parts, customer-service addresses".

3. Safety instructions

3.1 Proper use

- The overrunning clutch, clutch shift and control unit have been manufactured in accordance with the state of the art and are delivered in a condition for safe and reliable use. Any changes on the part of the user which may affect safety and reliability are prohibited. This applies equally to safety features designed to prevent accidental contact.
- The overrunning clutch, clutch shift and control unit must be used and operated strictly in accordance with the conditions laid down in the contract governing performance and supply.

3.2 Obligations of the user

- The operator must ensure that all persons involved in installation, operation, maintenance and repair have read and understood these Operating Instructions (BA) and comply with them at all times in order to:
 - avoid injury or damage,
 - ensure the safety and reliability of the overrunning clutch, clutch shift and control unit
- and
- avoid disruptions and environmental damage through incorrect use.
 - During transport, assembly, installation, dismantling, operation and maintenance of the unit, the relevant safety and environmental regulations must be complied with at all times.
 - The overrunning clutch, clutch shift and control unit must be operated, maintained or repaired only by authorised, duly trained and qualified personnel.
 - All work must be carried out with great care and with due regard to safety.
 - All work on the overrunning clutch, clutch shift and control unit must be carried out only when they are at a standstill.
The drive unit must be secured against being switched on accidentally (e.g. by locking the key switch or removing the fuses from the power supply). A notice should be attached to the ON switch stating clearly that work on the overrunning clutch, clutch shift and control unit is in progress.
 - The overrunning clutch, clutch shift and control unit must be fitted with suitable safeguards to prevent accidental contact. The operation of the overrunning clutch, clutch shift and control unit must not be impaired by the safeguard.
 - All work on the control unit must be carried out only when the power supply is switched off.
 - The drive unit must be shut down as soon as changes to the overrunning clutch are detected during operation.
 - If the overrunning clutch, clutch shift and control unit are intended for installation in plant or equipment, the manufacturer of such plant or equipment must ensure that the contents of the present Operating Instructions are incorporated in his own instructions.
 - All spare parts must be obtained from FLENDER.

3.3 Warnings and symbols used in these Operating Instructions



This symbol indicates safety measures which must be observed to avoid **personal injury**.

Caution!

This symbol indicates safety measures which must be observed to avoid **material damage**.

Note:

This symbol indicates general **operating instructions** which are of particular importance.

4. Handling and storage

4.1 Scope of supply

The products supplied are listed in the despatch papers. Check immediately on receipt to ensure that all the products listed have actually been delivered. Parts damaged during transport or missing parts must be reported in writing immediately. After consulting FLENDER an expert is to be called in.

4.2 Handling

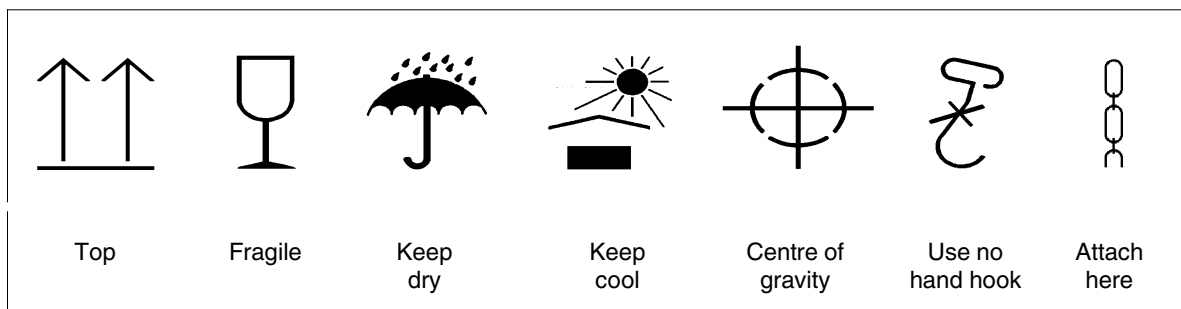


When handling FLENDER products, use only lifting and handling equipment of sufficient load-bearing capacity!

Note: The overrunning clutch, clutch shift and control unit must be transported using suitable transport equipment only.

Different forms of packaging may be used depending on the size of the overrunning clutch, clutch shift and control unit and method of transport. Unless otherwise agreed, the packaging complies with the **HPE Packaging Guidelines**.

The symbols marked on the packaging must be observed at all times. These have the following meanings:



4.3 Storage of the overrunning clutch, clutch shift and control unit

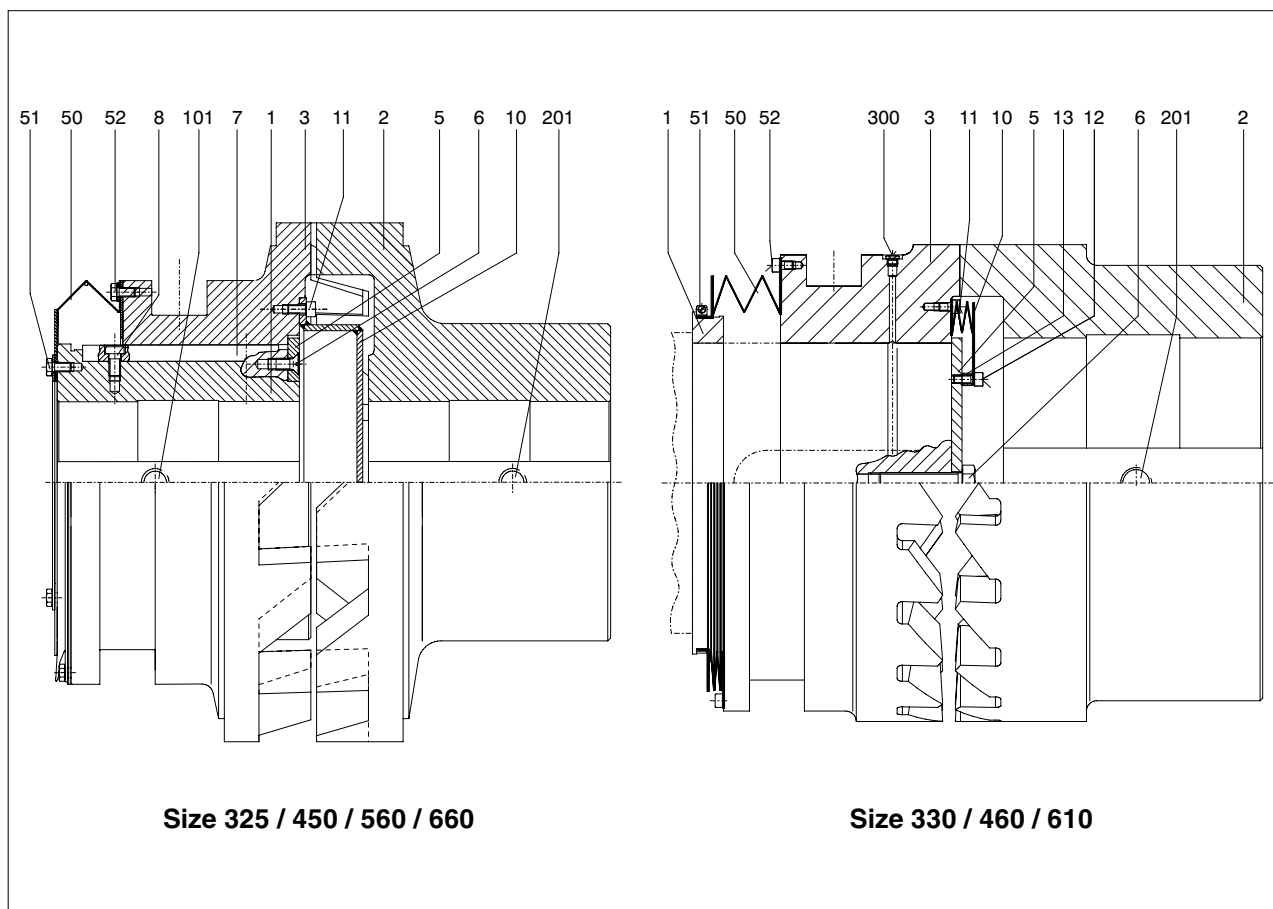
The components are delivered in a preserved condition and can be stored in a covered, dry place for up to 6 months. If the unit is to be stored for a protracted period, it should be treated with a long-term preservative agent (FLENDER must be consulted).

4.4 Storage area

The storage area must be dry and free from dust.

5. Technical description

5.1 General description of the UZWN overrunning clutch



The type UZWN overrunning clutch is a directionally actuated freewheel clutch. clutch part 1 is mounted on the motor or a driving gear unit shaft. clutch part 2 is mounted on the driven machine shaft or driven gear unit shaft.

The overrunning clutch is engaged in the stationary condition by shifting clutch part 3 axially. Once the speed of clutch part 3 is higher than that of clutch part 2, independent disengagement caused by the angled faces of the engaging dogs on clutch part 2 and clutch part 3 takes place. Motor and driven machine unit are then disengaged mechanically.

Caution!

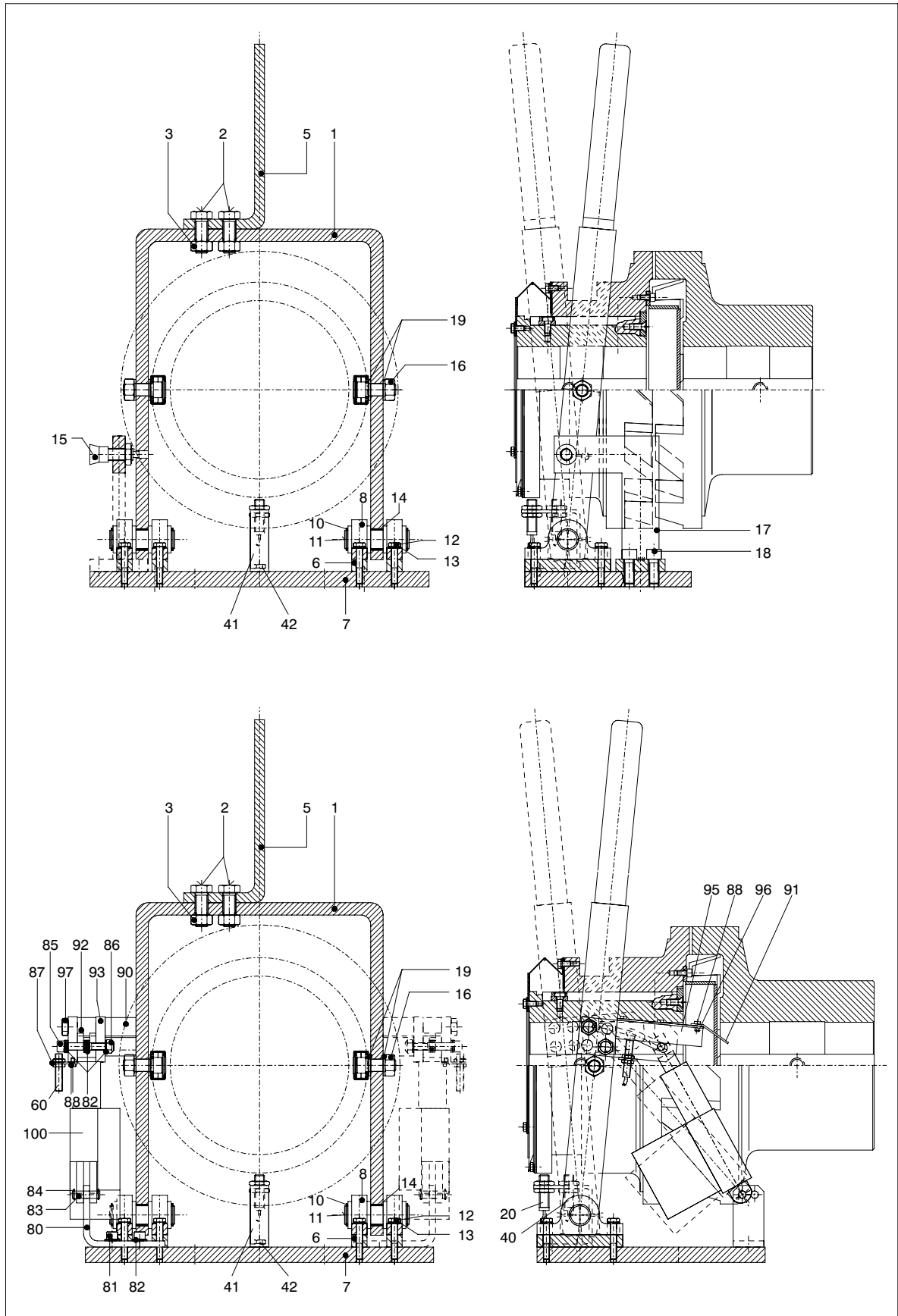
The overrunning clutch is suitable only for horizontal arrangement.



Engage clutch part 3 only when it is in the stationary condition.

The overrunning clutch may be optionally constructed as a left-hand version for counter-clockwise rotation or as a right-hand version for clockwise rotation, seen from the driving shaft end (clutch part 3).

5.2 General description of the clutch shift KSUN



The KSUN clutch shift is suitable for attachment and operation of the UZWN overrunning clutch.

The shifting fork (1) engages in the groove around clutch part 3 by the cam rollers (19) and shifts the UZWN overrunning clutch.

The shift fork (1) can be controlled manually via the shift lever (5) or automatically via a linear cylinder (100), if necessary, equipped with a PLC control.

The shift position of the UZWN overrunning clutch is identified by proximity indicators and transmitted to the control system.

Caution!

**The clutch shift must be actuated only while the machine is at a standstill.
Danger of squeezing!**

When the UZWN overrunning clutch overruns, clutch part 3 is pushed back. The clutch shift moves into the "disengaged" position in jerks.



**During overrun disengagement is jerky.
There is a risk of injury from the movement of the clutch shift.**

If a locking piece (15) is fitted, the clutch shift is retained in this position until manual engagement.

In the case of the version with linear cylinder the position of clutch part 3 is indicated by proximity indicators.

Caution!

The linear cylinder can take up only shifting forces from the UZWN overrunning clutch. The threaded spindle of the linear cylinder is designed to be self-locking. The linear cylinder must not be used to hold the UZWN overrunning clutch in an engaged position against axial forces, e.g. from the work process.

5.3 General description of the control unit STKS

The STKS control unit consists of a compact programmable logic control PLC to monitor and operate the UZWN overrunning clutch with the aid of the KSUN clutch shift.

Note: The clutch shift must be provided with linear cylinders, in case the STKS control unit is to be used.

The STKS control unit requires a supply voltage and shift pulses. As well as the control system to the KSUN clutch shift or UZWN overrunning clutch, signals are emitted to the control system, e.g. the PLC system of the main drive.

Feed voltage: 230 V 50 Hz
or
115 V 60 Hz

Input signals: Switch UZWN overrunning clutch on
Switch UZWN overrunning clutch off

Output signals: UZWN overrunning clutch is switched on
UZWN overrunning clutch is switched off
Fault

6. Fitting

Clutch parts are delivered finish-machined according to order.

A set screw to DIN 916 with toothed cup points or end plate is provided to secure the clutch parts axially. If the clutch part mounted on the shaft does not lie up against the shaft shoulder, we recommend using grooved spacer rings.

Note: **Parallel key connection of machine shaft and clutch part 3 of sizes 330, 460 and 610:**

The parallel key connection is to be designed with an additional safety factor of 1.3 of the required minimum safety. The parallel key is to be manufactured using a hardened or very strong material. The parallel key is to be connected to the machine shaft using retaining screws, in order to ensure the correct position of the parallel key in the shaft keyway.

The overrunning clutches are balanced to the customer's specifications.

6.1 Notes to the fit pairs of the bore / shaft

Caution! **The fits of the bores / shafts must be checked!**

For drive by means of parallel keys the following fit pairs are prescribed for the bores:

Selection of fit	Hole		Shaft tolerances	Bore tolerances
	over mm	up to mm		
Shaft tolerances to FLENDER standard		25	k6	H7
	25	100	m6	
	100		n6	
Shaft tolerances to DIN 748/1		50	k6	H7
	50		m6	
System standard shaft		50	h6	K7
	50			M7
		all	h8	N7

Table 6.1: Fit pairs

Caution! **The assigned fits must be adhered to in order, on the one hand, to keep the play in the shaft-hub connection as low as possible, depending on utilisation of the tolerance zones, or, on the other, to keep the hub tension arising from the oversize within the permissible load limit. Failure to adhere to the fits may impair the shaft-hub connection.**
If the tolerance values of the shafts deviate from those in table 6.1, FLENDER must be consulted.

Caution! **Failure to observe these instructions may result in breakage of the overrunning clutch.**
Danger from flying fragments!

6.2 General information on fitting

During fitting, the "Safety Instructions" in Section 3 must be observed.

Fitting work must be done with great care by trained and qualified personnel.

As early as during the planning phase it must be ensured that sufficient space is available for installation and subsequent care and maintenance work.

Adequate lifting equipment must be available before beginning the fitting work.

Screws must be tightened at torques according to Item 6.9.

The safety regulations for handling and using electric operating elements must be adhered to.

6.3 Fitting the UZWN overrunning clutch

6.3.1 Fitting the UZWN overrunning clutch sizes 325 / 450 / 560 / 660

The subassembly clutch part 1 (1; 3; 5; 6; 7; 8; 10; 11; 50; 51; 52) is delivered in pre-assembled condition. Before beginning installation, the shaft ends and bores of the clutch parts must be carefully cleaned.

Caution!

The bellows (50) must not come into contact with solvents and cleansing agents.



Note manufacturer's instructions for handling solvent.

Insert parallel keys into the shaft ends and, if necessary, bolt on.

Undo the screw connection (51; 52) on the subassembly clutch part 1 (1; 3; 5; 6; 7; 8; 10; 11; 50; 51; 52) and demount the bellows (50).

Undo cheese head screws (11) and demount dust protection (10).

Push bellows (50) onto shaft.

Mount subassembly clutch part 1 and clutch part 2 on shafts, after first coating shaft ends and holes in the clutch parts 1 and 2 with MoS₂ mounting paste, e.g. Molycote G-Rapid Plus Paste or Microgleit LP410 Paste.

Heating (to max. + 150 °C) of the clutch parts 1 and 2 will facilitate fitting.



Take precautions to avoid burns from hot components!

Caution!

The clutch part 1 and clutch part 2 subassembly should be fitted with the aid of suitable equipment to avoid possible damage to the shaft bearings through axial joining forces.

Always use suitable lifting equipment.

Axial securing is effected by means of set screws. Clutch part 3 must be shifted on clutch part 1 in order to enable the set screw to be tightened.

Tightening the set screws (101; 201) to tightening torques indicated in item 6.9.

With bolts (51) bolt the bellows (50) to clutch part 1 and with bolts (52) to clutch part 3.

With cheese head screw (6) fasten stop (5) to tightening torque as stated in item 6.9.

With cheese head screws (11) screw dust protection (10) to clutch part 3.

Push together the machines to be coupled, noting the axial distance S₂ in accordance with item 6.6.

6.3.2 Fitting the UZWN overrunning clutch sizes 330 / 460 / 610

Before beginning installation, the shaft ends and bores of the clutch parts must be carefully cleaned.

Caution!

The bellows (50) and the dust protection (10) must not come into contact with solvents and cleansing agents.



Note manufacturer's instructions for handling solvent.

Insert parallel keys into the shaft ends and, if necessary, bolt on.

Mount clutch parts 1 and 2 on shafts after first coating shaft ends and holes in clutch parts 1 and 2 with MoS₂ mounting paste, e.g. Molycote G-Rapid Plus Paste or Microgleit LP410 Paste.

Heating (to max. + 150 °C) of the clutch parts 1 and 2 will facilitate fitting.



Take precautions to avoid burns from hot components!

Caution!

The clutch parts 1 and 2 should be fitted with the aid of suitable equipment to avoid possible damage to the shaft bearings through axial joining forces. Always use suitable lifting equipment.

Axial securing is effected by means of set screws.

Tightening the set screws (101; 201) to tightening torques indicated in item 6.9.

Push bellows (50) with hose clip (51) onto clutch part 1 and fit.

Oil the hole in clutch part 3 (oil viscosity VG32).

Caution!

The clutch part 3 should be fitted with the aid of suitable equipment to avoid damage to the shaft bearings through axial joining forces. Always use suitable lifting equipment.

With cheese head screw (12) fasten stop (5) to tightening torque as stated in item 6.9.

With cheese head screws (52) fasten the bellows (50) to clutch part 3.

With cheese head screws (11) screw the dust protection (10) to clutch part 3 and with bolts (12) and the sleeves (13) fitted behind the plate screw to stop (5).

Push together the machines to be coupled, observing the axial distance S_2 in accordance with item 6.6.

6.4 Alignment

The overrunning clutch takes up only slight positional errors in the shaft ends to be connected (see item 6.6).

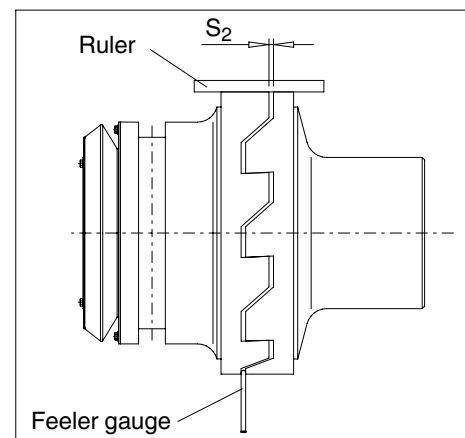
Alignment is best done in the order:

1. angular alignment
2. radial alignment

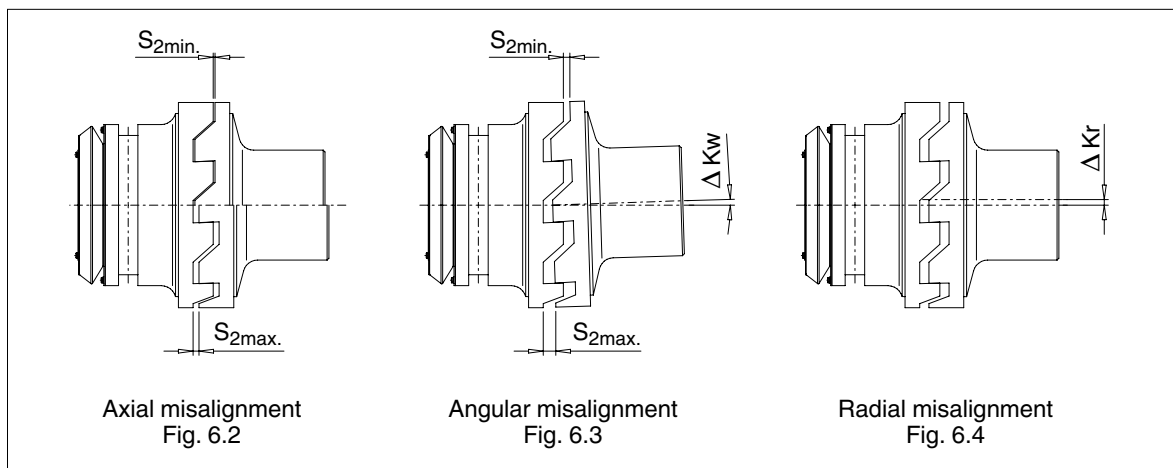
Alignment has to be effected in two axial planes arranged in vertical relation to each other. This can be done by means of a ruler (radial misalignment) and feeler gauge (angular misalignment), as shown in the illustration. The distance S_2 must be adhered to (see item 6.6).

The aligning accuracy can be increased by using a dial gauge.

To allow the shaft ends to rotate freely, the connection can be broken by switching off the overrunning clutch.



6.5 Possible misalignments



Misalignments of the clutch parts in relation to each other can be caused by inaccurate alignment during assembly, but also by actual operation of the equipment (expansion due to heat, shaft deflection, insufficiently rigid machine frames, etc.).

Caution!

The following maximum permissible misalignments must by no means be exceeded during operation.

6.5.1 Axial misalignment

Axial misalignment ΔK_a (Fig. 6.2) of the clutch parts relative to one another is possible within the "permissible error" for dimension S_2 (see item 6.6).

6.5.2 Angular misalignment

To facilitate matters, the angular misalignment ΔK_w (Figure 6.3) is calculated as the difference between distances $S_{2max.}$ and $S_{2min.}$ (for $\Delta K_{wperm.}$, see Section 1.).

For the permissible angular misalignment ΔK_w (Figure 6.3), see item 6.6.

6.5.3 Radial misalignment

The permissible radial misalignment ΔK_r (fig 6.4) is given in Item 6.6.

Caution!

Angular and radial misalignments may occur at the same time.

6.6 Assignment of misalignments

Size	Axial misalignment ΔK_a S_2 mm	Angular misalignment $\Delta K_{wperm.}$ $S_{2max.} - S_{2min.}$ mm	Radial misalignment $\Delta K_{rperm.}$ mm
325.1 325.2 330	4 ... 6	0.15	0.15
450.1 450.2 460	4 ... 6	0.20	0.20
560.1 560.2	4 ... 6	0.25	0.25
610 660.1 660.2	4 ... 6	0.30	0.30

Table 6.6: Assignment of misalignments

6.7 Fitting the clutch shift KSUN

Caution! Using lifting gear transport the clutch shift by the eye bolts (9).

The clutch shift must be fitted after fitting and aligning the UZWN overrunning clutch.

The shift fork (1) must be demounted by removing retaining pins (11) and locking rings (10).

The base plate (7) can then be bolted to the foundation.

Remove eye bolts (9).

Quality 8.8 screws or higher must be used for fastening.

Fit the shift fork (1) with the retaining pins (11) and the locking rings (10) so that the cam rollers (16) engage in the groove running around clutch part 3.

Align the base plate to ensure that the two cam rollers (16) are in even contact with the side of the groove and both bearings act at an axial height at more or less the same depth in the groove.

In the case of the manually shiftable version of the KSUN clutch shift mark the position of the locking piece (15) on the shift fork (1) for the switch "OFF" position and at this point drill a hole with diameter $d = 12$ mm.

Note: Check that the locking piece (15) locks in correctly.

Check tightening torques against item 6.9 and, if necessary, retighten the bolts.

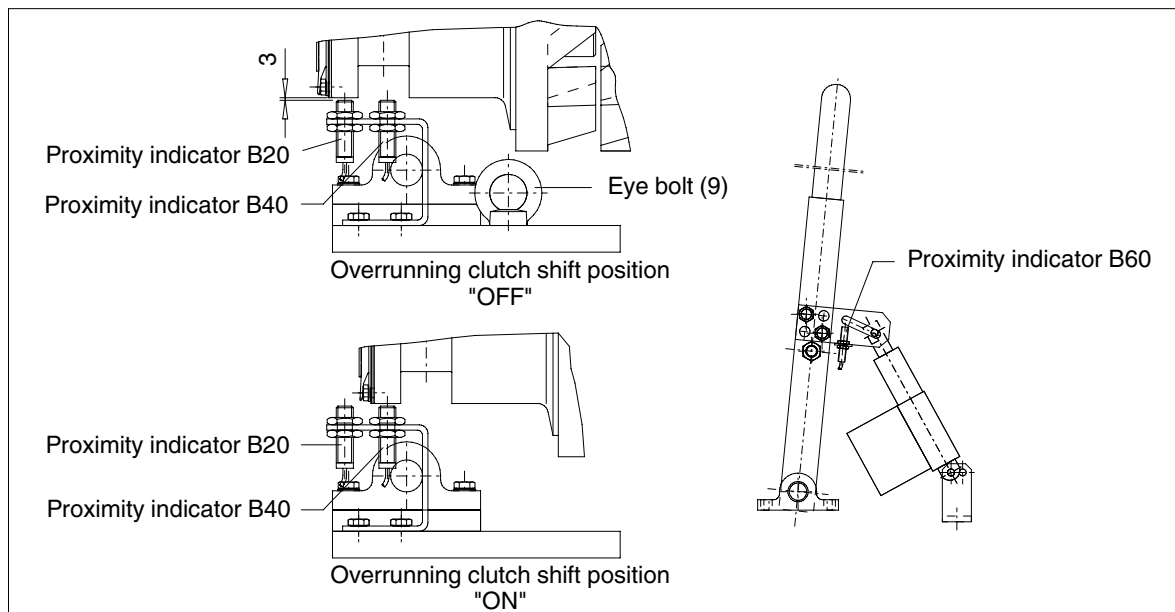
Fit proximity indicators B20, B40 and B60 as described and connect to the control system as described in item 6.8.

Gap dimension between proximity indicator and UZWN overrunning clutch = 3 ± 0.5 mm.

Check UZWN overrunning clutch manual engage and disengage and signals.



Signals B20 and B40 must not be given at the same time.



The control system of the main drive must be connected to the proximity indicators of the clutch shift, when using the STKS control unit via interrogation of relays K31, K25 and K30.



While the main drive is running, no attempt must be made to engage the auxiliary drive.

Note: The proximity indicators are designed by Messrs. TURCK in PNP design, NO contact.

6.8 Fitting the STKS control unit

Fitting the switch cabinet of the STKS control unit.

Connect proximity indicators B20, B40 and B60 of the clutch shift to the STKS control unit according to the circuit diagram in the switch cabinet.

Connect the external control system, if provided, to terminal strip X51 and signal relays K31, K25, K30 according to the circuit diagram.



Observe safety instructions!

Connect voltage feed to terminal strip X41 (115 V / 60 Hz or 230 V / 50 Hz).

Caution!

When the control system is switched on, the "OFF" shift position is automatically selected.

Check operation of the STKS control unit and the KSUN clutch shift.

Note: For circuit diagram with construction diagram, terminal diagram and function diagram, see information in item 7.2.

6.9 Tightening torques

Size	M 6	M 8	M 10	M 12	M 16	M 20	M 24	M 30
Tightening torque in Nm	10	25	49	86	210	410	710	1450

Table 6.9 a: Tightening torques of nuts and bolts

Tighten hexagon-head bolt (12) for fastening the sliding bearings (14) to 25 Nm and secure medium-firmly with LOCTITE.

Note: Tightening torques apply to bolts with untreated surfaces which are not or only lightly oiled (coefficient of friction $\mu = 0.14$). The use of lubricant paint or the like, which affects the coefficient of friction μ , is not permitted.

Caution!

The specified tightening torques T_A have been fixed with reference to DIN 25202 Screw Connection Class B with an output torque scatter of $\pm 5\%$.

Bore range		Set screw size d_1 mm	Tightening torque T_A mm
over mm	up to mm		
38	65	M10	15
65	95	M12	25
95	110	M16	70
110	150	M20	130
150	230	M24	230
230	600	M30	470

Table 6.9 b : Set screw assignment

7. Start-up

7.1 Procedure before start-up

Before start-up the screw connections must be checked according to the tightening torques specified and, if necessary, adjusted.

The position and operation of the proximity indicators to determine the shift position must be checked. Then fit the clutch guard to prevent unintentional contact.

The following switching-on procedure must be followed for start-up and later operation.

Manual operation of the clutch shift

- Main motor "OFF"
Shift position "OFF"
UZWN overrunning clutch is disengaged, signal B20 of the proximity indicator has been given.
- Shift KSUN clutch shift mechanically and adjust UZWN overrunning clutch.
- If signal B40 is given, start auxiliary drive, then enable main drive.
- If signal B40 is not given, start auxiliary drive briefly and once more try to adjust KSUN clutch shift.

Actuation of the KSUN clutch shift via the STKS control unit

- Main motor "OFF"
Shift position "OFF"
UZWN overrunning clutch is disengaged, signals K30, B20 and B60 of the proximity indicators have been given.
- Switch on control unit.
- Press "Overrunning clutch ON" button: the linear cylinder will move to "ON" position for 9 seconds; after 5 seconds switch on the auxiliary drive. The main drive remains off initially.
- Check signals of the proximity indicators.

– Signal B40 has been given

- UZWN overrunning clutch has been correctly shifted, the linear cylinder moves automatically to the middle position.
- On signals K25, B40 and B60 enable main motor.
- The UZWN overrunning clutch automatically disengages, if the speed of clutch part 2 is higher than that of clutch part 3.
- Linear cylinder moves to "OFF" position; signals K30, B20 and B60 are given.

– Signal B40 has not been given

- UZWN overrunning clutch has not engaged (tooth-to-tooth position); linear cylinder is blocked and after 9 seconds the clutch shift moves automatically to "OFF" position.
- Stop auxiliary drive, wait 30 seconds.
- Signals K30, B20 and B60 are given.
Press "Overrunning clutch ON" button: the linear cylinder will move to "ON" position for 9 seconds; after 5 seconds switch on the auxiliary drive. The main drive remains off initially.

Note: If after 3 attempts the UZWN overrunning clutch does not switch on correctly, the H31 fault signal will be given.

7.2 Description of the STKS control unit

The detailed functional description of the STKS control unit can be obtained from the following items and the drawings listed in the annex relating to the specific order.

7.2.1 Operation

7.2.1.1 Description of the switch-on and switch-off process

Note: Precondition: Overrunning clutch switched off, relay K30 closed, B20 and B40 actuated (see als K30 description)

- Switching on the overrunning clutch via external button S415 (S25 turn clockwise)
 - The overrunning clutch is switched on via the spindle motor.
 - If the clutch halves are positioned tooth to tooth, after approx. 5 seconds the control system will move automatically to the "OFF" position.
 - The auxiliary drive should now be inched in such a way that the teeth of the clutch halves are offset.
 - Once more switch on overrunning clutch via button S415 (S25 turn clockwise) If on the third attempt the overrunning clutch does not reach sensor B40 (overrunning clutch "ON"), the clutch control system will shift to fault (H31 flashes and K31 drops out).
 - If the overrunning clutch reaches sensor B40 in the specified time, the spindle motor moves automatically to the rest position, actuating sensors B40 & B60. The overrunning clutch has now been switched on (see description K25).
- Switching off the overrunning clutch via external button S420 (S25 turn counter-clockwise) or by main drive "ON".
 - If the overrunning clutch has been switched on, sensors B40 and B60 actuated, the overrunning clutch can be switched off with the main drive by overrunning. If the overrunning clutch is disengaged by overrunning of the clutch half on the shaft of the main drive (sensor B40 not actuated), the overrunning clutch will move automatically to the "OFF" position (sensor B20 and B60 actuated).
 - The overrunning clutch can be switched off at any time via switch S420 (S25 turn counter-clockwise).

If an end position of the overrunning clutch is not reached and so the monitoring time is exceeded, the clutch control switches to fault (see also K31, K25, K30 and H31).

7.2.2 Description of equipment

7.2.2.1 Function of signal lamps

- H20 Overrunning clutch switched off
- H60 Overrunning clutch in rest position
- H40 Overrunning clutch switched on
- H31 Fault
 - A fault is signalled if
 - the time for monitoring a movement has been exceeded.
 - the number of attempts to switch on the overrunning clutch has been exceeded.
 - sensor B20 and B40 were actuated simultaneously.

See also the function of K31, K25 and K30!

7.2.2.2 Function of the switches and buttons

- S0 EMERGENCY OFF detent button
- S10 Key switch automatic/manual operation
 - Automatic operation:
 - Function via the PLC system, using external buttons S415 and S420
 - Manual:
 - Function via the manual toggle switch S15 without PLC system.
 - The motor is controlled direct via button S15.
(to adjust the sensors and in case of fault)
- S15 Manual operation
 - Turn clockwise:
 - Motor overrunning clutch moves in direction Overrunning clutch "ON"
 - Turn counter-clockwise:
 - Motor overrunning clutch moves in direction Overrunning clutch "OFF"
- S25 Local Auto
 - Turn clockwise:
 - Instruction Overrunning clutch "ON" (same function as S415)
 - Turn counter-clockwise:
 - Instruction Overrunning clutch "OFF" (same function as S420)
- S31 Reset button
 - Function:
 - Resetting of all faults signalled by H31 and K31.

Caution!

If after operating the reset button the overrunning clutch is not in an "ON" or "OFF" position (see K25 and K30), the control system attempts to move automatically to the "OFF" position!

7.2.2.3 Operation of internal relays

- K15 Motor control Overrunning clutch "ON"
- K20 Motor control Overrunning clutch "OFF"

7.2.3 Interfaces

7.2.3.1 Feed

- X41 Control voltage 115 V / 60 Hz or 230 V / 50 Hz

Caution!

If after operating the reset button the overrunning clutch is not in an "ON" or "OFF" position (see K25 and K30), the control system attempts to move automatically to the "OFF" position!

7.2.3.2 Signals for clutch control terminal strip X51

- S415 Instruction Overrunning clutch "ON" (pulse)
- S420 Instruction Overrunning clutch "OFF" (pulse; if the button is permanently pressed, the overrunning clutch cannot be switched on via button S415).

7.2.3.3 Signals from the clutch control

- K25 Overrunning clutch switched on (sensors B40 and B60 actuated)

– Relay closed:

- Enable auxiliary drive "ON"
- Enable Main drive "ON" (enable for overrunning by main drive)

Note: In case of fault the relay drops out!

- K30 Overrunning clutch switched off (sensors B20 and B60 actuated)

– Relay closed:

- Enable main drive "ON"

Note: In case of fault the relay drops out!

- K31 Fault

– Relay dropped out:

- The time for monitoring a movement has been exceeded.
- The number of attempts to switch on the overrunning clutch has been exceeded.
- Sensors B20 and B40 have been actuated simultaneously.

8. Operation

8.1 General operating data

During operation of the overrunning clutch watch for:

- changes in running noise
- sudden vibrations

Caution!

If any irregularities are noticed during operation, switch the drive assembly off at once. Determine the cause of the fault, using the table in section 9. The trouble-shooting table contains a list of possible faults, their causes and suggested remedies. If the cause cannot be identified or the unit repaired with the facilities available, you are advised to contact one of our customer-service offices for specialist assistance (see section 11).

9. Faults, causes and remedy

9.1 General

The following irregularities can serve as a guide for fault tracing.

Where the system is a complex one, all the other component units must be included when tracing faults.

The overrunning clutch must run with little noise and without vibration in all operating phases. Irregular behaviour must be treated as a fault requiring immediate remedy.



Before carrying out maintenance work, repairs or other work the operator must ensure that the entire drive train remains stationary. In particular the drive motors must be prevented from being started up unintentionally. We also refer to the relevant accident prevention regulations at the place of installation.

9.2 Possible faults

Faults	Possible causes	Remedy
Sudden changes in the noise level and/or sudden vibrations.	Change of alignment.	Take the system out of service. If necessary, rectify causes of alignment change (e.g. tighten loose foundation bolts). Check clutch parts, and replace any damaged clutch parts. Check and, if necessary, adjust alignment (see section 6).
The overrunning clutch does not or does not completely disengage during overrun. The overrunning clutch cannot be shifted.	Sliding surfaces fouled.	Take the system out of service. Check and clean clutch and shift parts and replace, if damaged. Check and, if necessary, adjust alignment (see section 6).

10. Maintenance and repair

10.1 General

Caution!

Maintenance work must be carried out only while the machine system is stationary.

UZWN overrunning clutch:

- Check tightness and porosity of the bellows (50) regularly, at least once yearly.
- Oil sizes 330 / 460 / 610 regularly, at least once yearly, by grease nipple (300) with VG 32 oil.
- Clean the track of the KSUN cam rollers (16) regularly (at least once yearly) with a cleaning cloth.

KSUN clutch shift:

- Clean the cam rollers regularly (at least once yearly) with a cleaning cloth.
- Regularly (at least once yearly) grease the cam rollers via grease nipples.

STKS control unit:

- maintenance-free

11. Spare parts, customer-service addresses

By stocking the most important spare and wearing parts on site you can ensure that the overrunning clutch is ready for use at any time.

When ordering spare parts, always state the following:

- Part no.
- Description, size
- Quantity

We guarantee only the original spare parts supplied by us.

Caution!

Please note that spare parts and accessories not supplied by us have not been tested or approved by us. The installation or use of such products may therefore impair essential characteristics of the overrunning under certain circumstances and so pose an active or passive hazard. FLENDER will assume no liability or guarantee for damage caused by spare parts and accessories not supplied by FLENDER.

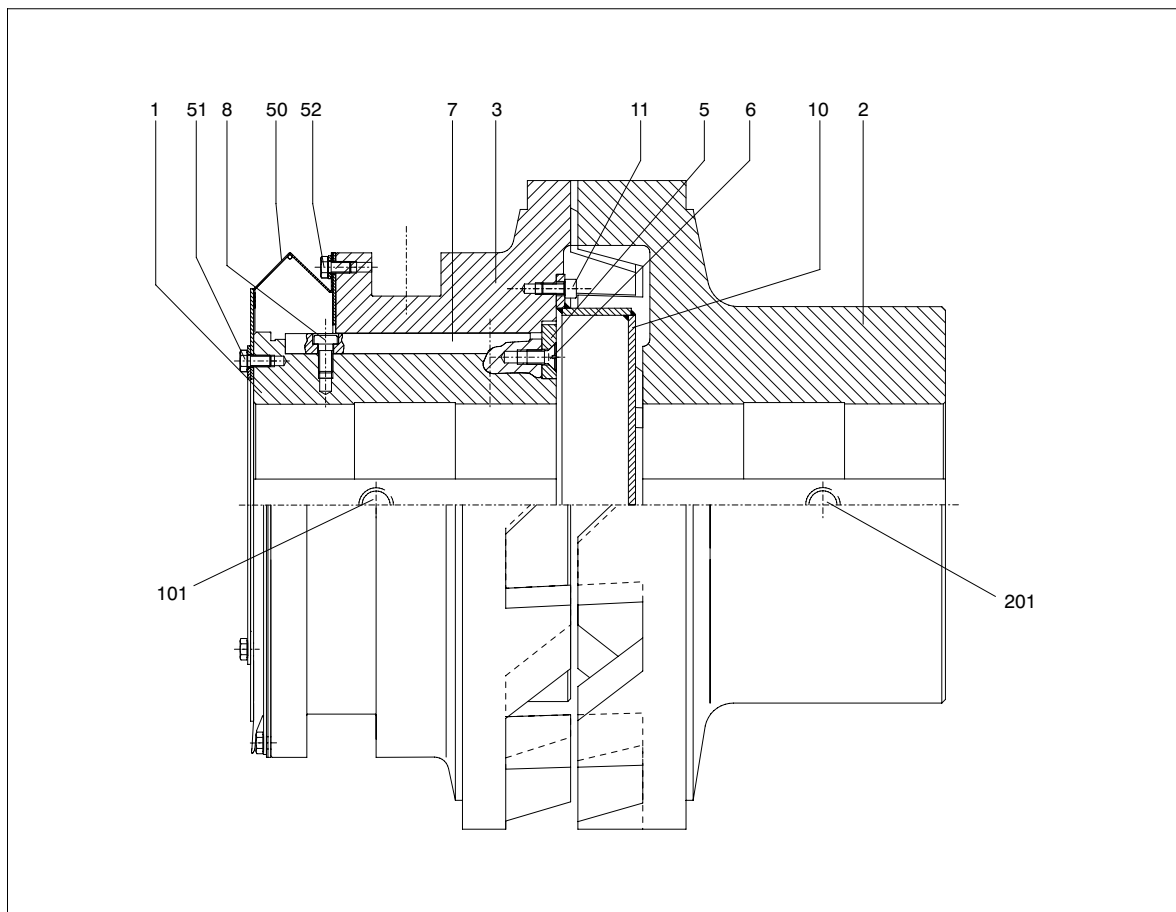
Please note that certain components often have special production and supply specifications and that we supply you with spare parts which comply fully with the current state of technical development as well as current legislation.

11.1 Spare parts and customer-service addresses

When ordering spare parts or requesting the services of our specialist engineers, please apply first to FLENDER.

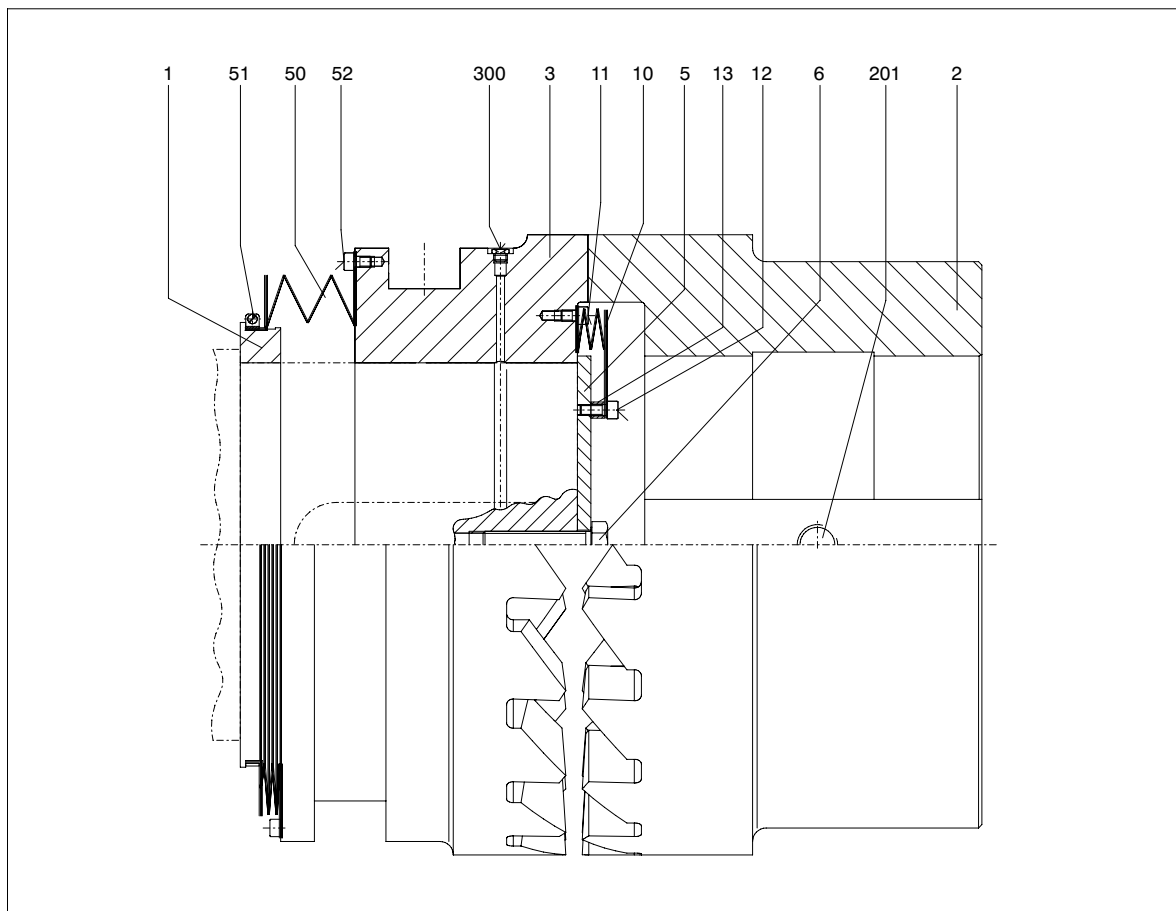
11.2 Spare parts list

11.2.1 Spare parts drawing and spare parts list UZWN overrunning clutch sizes 325 / 450 / 560 / 660



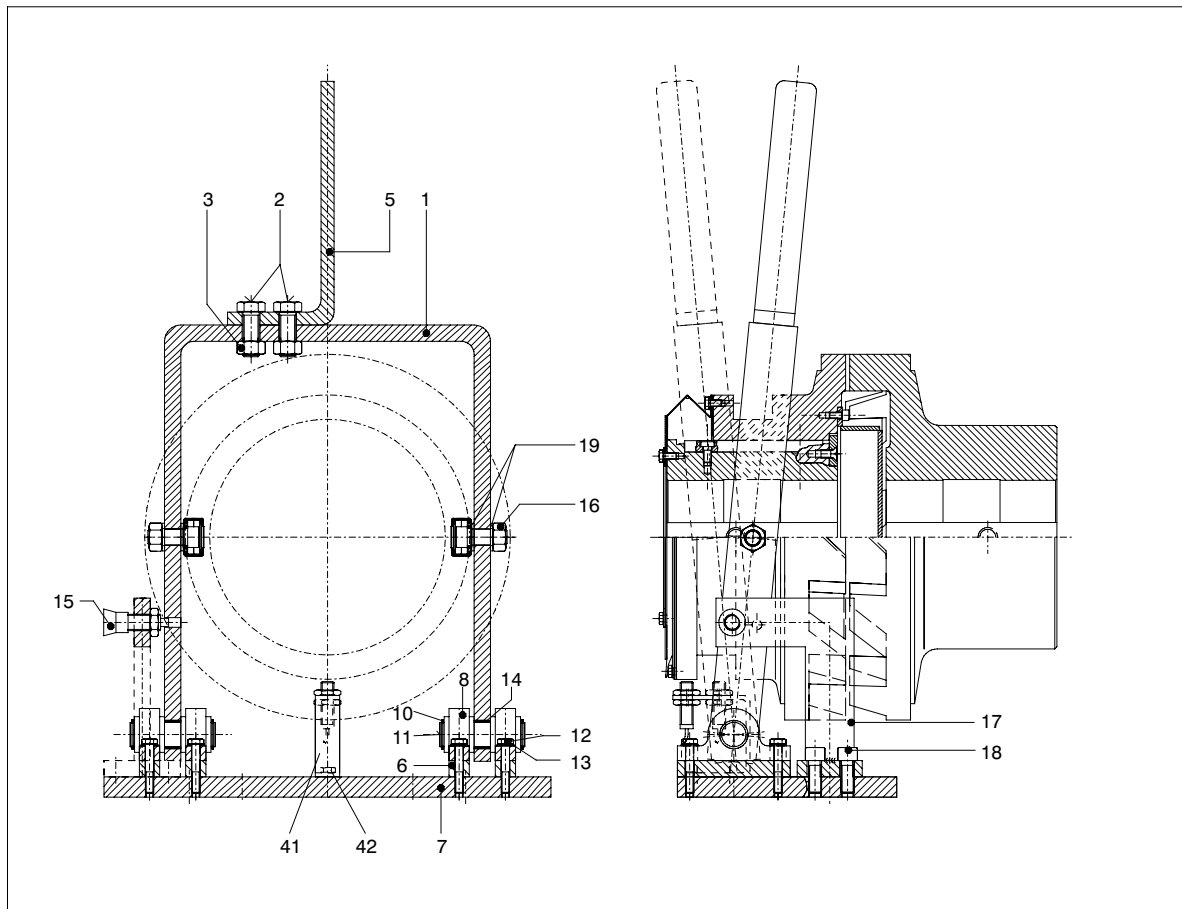
Part no.	Description	Part no.	Description	Part no.	Description
1	Clutch part 1	7	Parallel key	51	Hexagon head screw
2	Clutch part 2	8	Cheese head screw	52	Hexagon head screw
3	Clutch part 3	10	Dust protection	101	Set screw
5	Stop	11	Cheese head screw	201	Set screw
6	Cheese head screw	50	Bellows		

11.2.2 Spare parts drawing and spare parts list UZWN overrunning clutch sizes 330 / 460 / 610



Part no.	Description	Part no.	Description	Part no.	Description
1	Clutch part 1	10	Dust protection	51	Hose clip
2	Clutch part 2	11	Cheese head screw	52	Cheese head screw
3	Clutch part 3	12	Cheese head screw	201	Set screw
5	Stop	13	Bush	300	Grease nipple
6	Hexagon head screw	50	Bellows		

11.2.3 Spare parts drawing and spare parts list Clutch shift KSUN; KSUN with locking piece

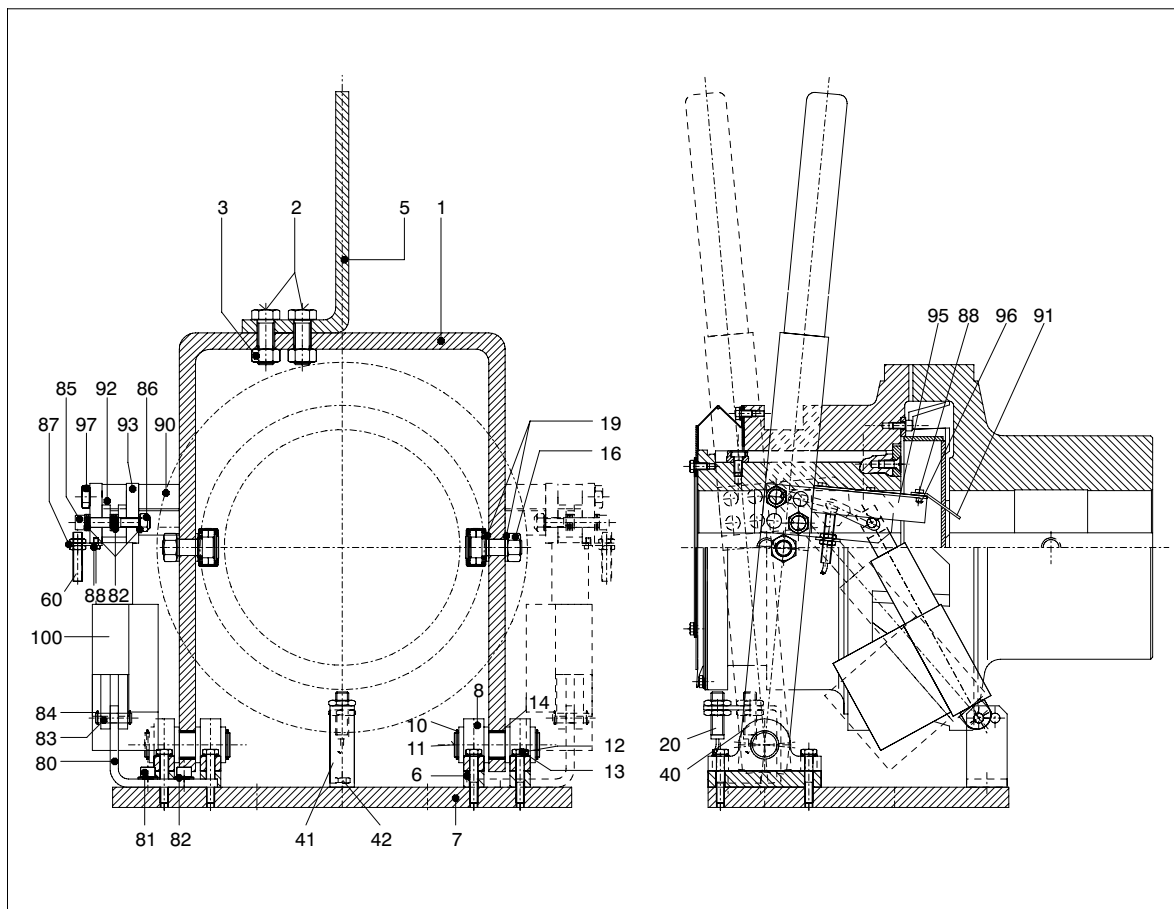


Part no.	Description	Part no.	Description	Part no.	Description
1	Shift fork	10	Locking ring	18	Cheese head screw 2)
2	Hexagon head screw	11	Locking bolt	19	Washer
3	Hexagon nut	12	Hexagon head screw	20	Proximity indicator
5	Hand lever	13	Washer	40	Proximity indicator
6	Adaptor plate	14	Sliding bearing	41	Holder
7	Base plate	15	Locking piece 2)	42	Hexagon head screw
8	Pillow block	16	Cam roller		
9	Eye bolt 1)	17	Holder 2)		

1) For the eye bolt arrangement, see diagrams in item 6.7.

2) only on version with locking piece

11.2.4 Spare parts drawing and spare parts list clutch shift KSUN (with linear cylinder)



Part no.	Description	Part no.	Description	Part no.	Description
1	Shift fork	16	Cam roller	86	Hexagon nut, self-locking
2	Hexagon head screw	19	Washer	87	Sheet-metal holder
3	Hexagon nut	20	Proximity indicator	88	Cheese head screw
5	Hand lever	40	Proximity indicator	90	Bolt
6	Adaptor plate	41	Holder	91	Cover plate
7	Base plate	42	Hexagon head screw	92	Bolt
8	Pillow block	60	Proximity indicator	93	Mounting plate
9	Eye bolt 1)	80	Holder	95	Cover plate
10	Locking ring	81	Cheese head screw	96	Hexagon nut, self-locking
11	Locking bolt	82	Washer	97	Hexagon head screw
12	Hexagon head screw	83	Locking bolt	100	Linear cylinder
13	Washer	84	Locking ring		
14	Sliding bearing	85	Cheese head screw		

1) For the eye bolt arrangement, see diagrams in item 6.7.

For the list of spare parts for the STKS control unit, see the documents listed in the annex relating to the specific order.

Adressen - Deutschland

(2007-12-14)

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12. Declaration by the manufacturer

Declaration by the manufacturer

in accordance with EC Engineering Directive 98/37/EC, Appendix II B

We hereby declare that the components described in these Operating Instructions:

Overrunning clutches of type **UZWN**
with clutch shift **KSUN**
optionally with control unit **STKS**

are intended for incorporation in a machine, and that it is prohibited to put them into service before verifying that the machine into which they are incorporated complies with the EC Directive (original edition 98/37/EC including any subsequent amendments thereto).

This Declaration by the Manufacturer takes into account all the unified standards (inasmuch as they apply to our products) published by the European Commission in the Official Journal of the European Community.



Bocholt, 2007-09-03

Signature (Director KUE Engineering)