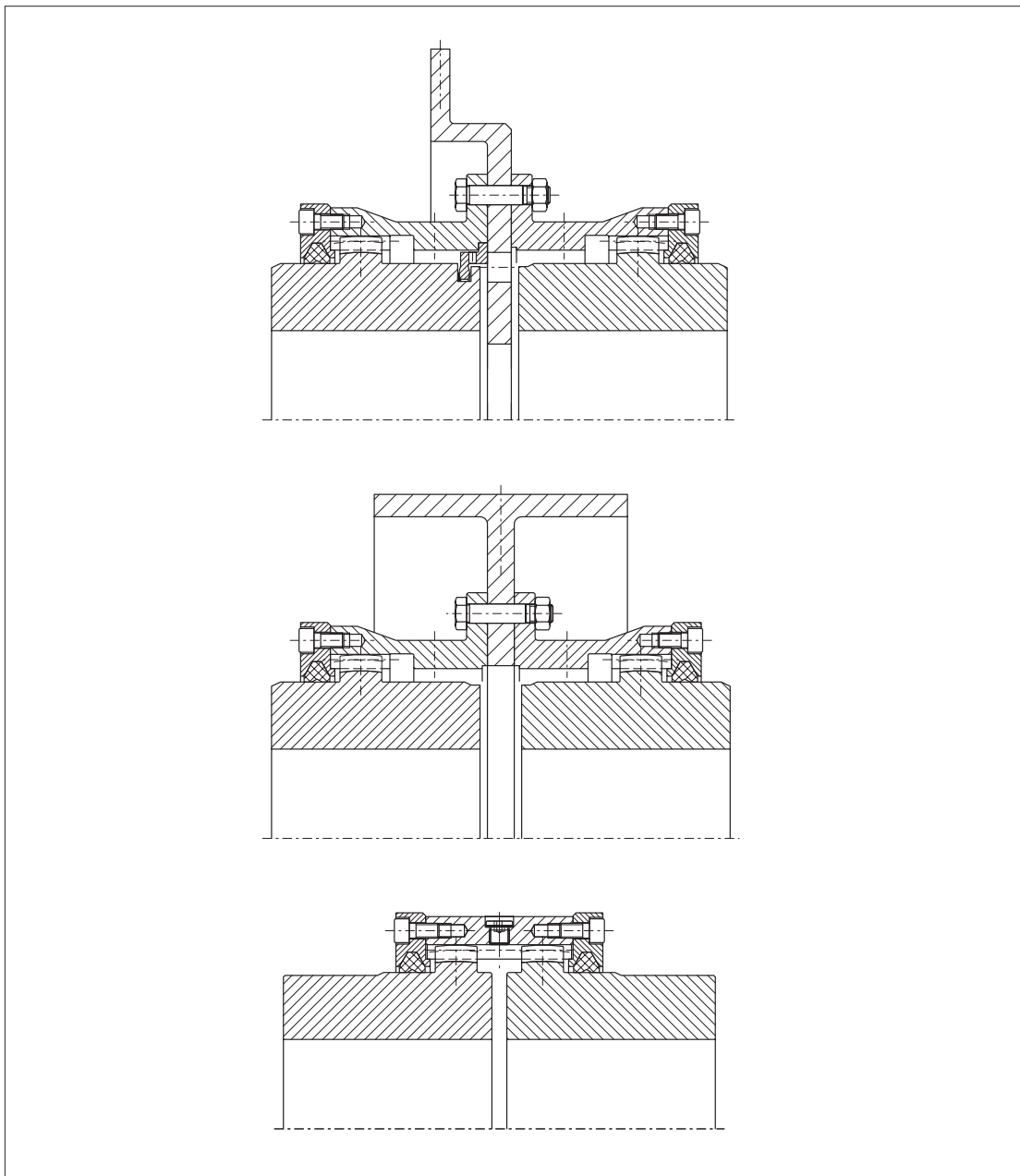


# Operating Instructions

## BA 3502 EN 02.00

ZAPEX couplings types  
ZWBT, ZWBG, ZWB, ZWH and ZWHD



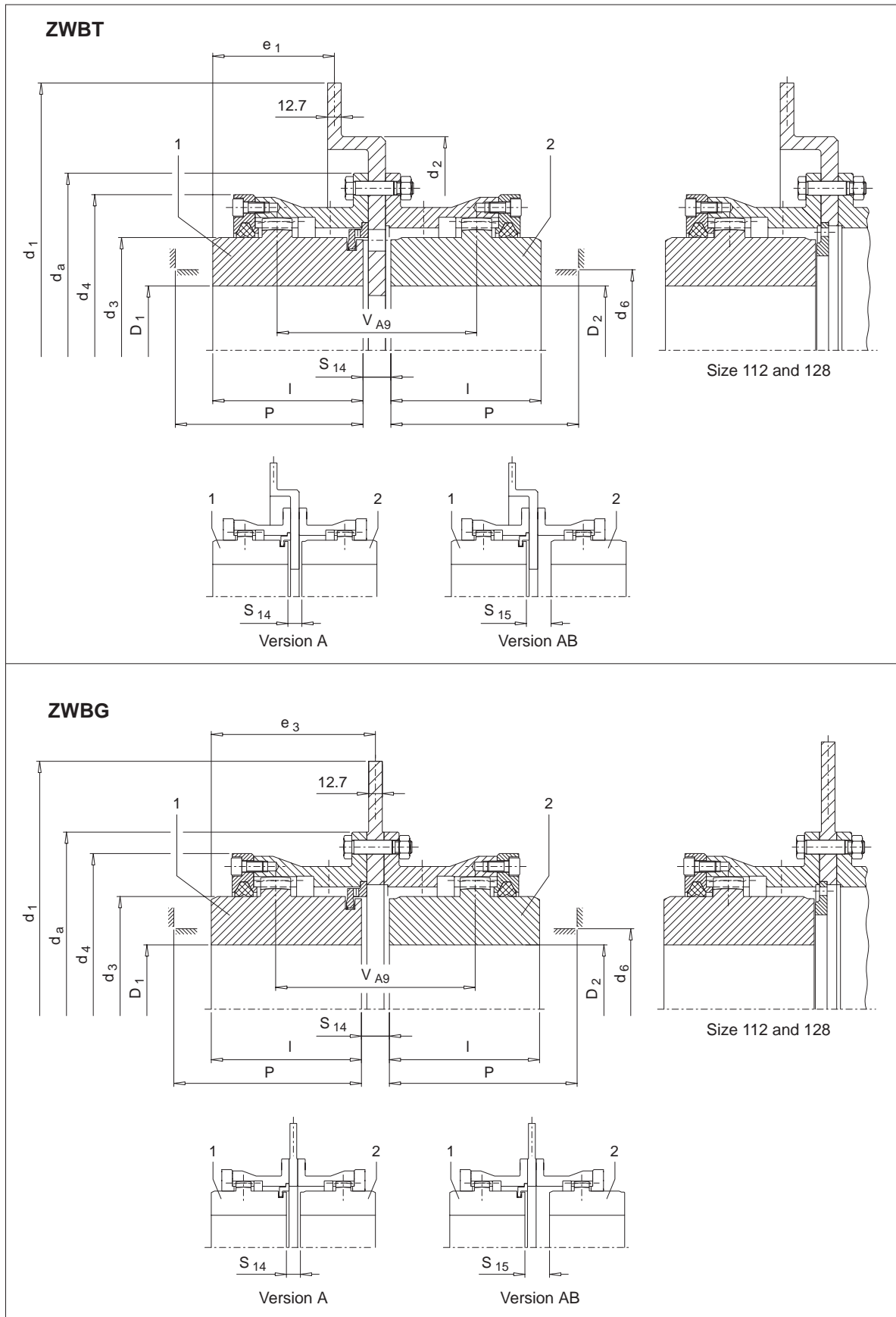
**FLENDER**

<b>1.</b>	<b>Technical data</b>	<b>4</b>
1.1	Types ZWBT and ZWBG	4
1.2	Type ZWB	6
1.3	Types ZWH and ZWHD	8
<b>2.</b>	<b>General notes</b>	<b>10</b>
2.1	Introduction	10
2.2	Copyright	10
<b>3.</b>	<b>Safety notes</b>	<b>11</b>
3.1	Proper use	11
3.2	Obligations of the user	11
3.3	Warnings and symbols used in these Instructions	11
<b>4.</b>	<b>Handling and storage</b>	<b>12</b>
4.1	Scope of supply	12
4.2	Handling	12
4.3	Storage	12
4.3.1	Storage of the coupling parts	12
4.3.2	Storage of the DUO sealing rings	12
4.3.2.1	General	12
4.3.2.2	Storage room	12
<b>5.</b>	<b>Technical description</b>	<b>13</b>
5.1	General description	13
5.1.1	Types ZWBT, ZWBG, ZWB	13
5.1.2	Types ZWH and ZWHD	14
<b>6.</b>	<b>Assembly</b>	<b>14</b>
6.1	Notes on fitting the finished bore, the axial securing, the set screws, the balancing	14
6.1.1	Finished bore for parallel keyway connection	15
6.1.1.1	Parallel keyway	16
6.1.2	Axial securing in case of parallel key connection	16
6.1.3	Set screws in case of parallel key connections	16
6.1.4	Balancing	18
6.2	General installation notes	18
6.3	Installing the coupling parts (1/2) in case of shaft / hub connection with parallel key	19
6.4	Installing the coupling parts (1/2) in case of cylindrical and tapered interference fit set for oil hydraulic removal by shrinking	20
6.5	Assembly of the coupling	21
6.6	Aligning	22
6.7	Possible misalignments	24
6.7.1	Axial misalignment	24
6.7.2	Angular misalignment in dependence on the operating torque and the operating speed	24
6.7.3	Radial misalignment	24
6.8	Alignment values	25
6.9	Assignments of the tightening torques and wrench width	26
<b>7.</b>	<b>Start-up</b>	<b>27</b>
7.1	Lubricant recommendation	27
7.2	Oil filling quantity / grease filling quantity	28
7.3	Measures before startup	28
<b>8.</b>	<b>Operation</b>	<b>29</b>
8.1	General operating data	29

<b>9.</b>	<b>Disturbances, reasons and remedy</b>	<b>29</b>
9.1	General	29
9.2	Possible faults	30
<b>10.</b>	<b>Maintenance and repair</b>	<b>30</b>
10.1	General	30
10.2	Oil change or grease change	30
10.3	Change of wear parts	31
10.4	Disassembly of the coupling parts (1/2) in case of shaft / hub connection with parallel key	31
10.5	Disassembly of the coupling parts (1/2) in case of cylindrical and tapered interference fit set for removal by oil hydraulic shrinking	32
10.6	Disassembly of the coupling parts in case of stepped bore for removal by oil hydraulic shrinking	34
<b>11.</b>	<b>Spare parts stock, service facility addresses</b>	<b>35</b>
11.1	Service facility addresses	35
<b>12.</b>	<b>Declaration by the manufacturer</b>	<b>40</b>

## 1. Technical data

### 1.1 Types ZWBT and ZWBG



# FLENDER

Size	Nominal torque $T_N$ 1) Nm	Speed $n_{max}$ 1/min	Bore 2)			$d_a$ mm	$d_3$ mm	$d_4$ mm	$d_6$ mm	$l$ mm	$P$ 3) mm	$V_{A9}$ mm	$S_{14}$ mm	$S_{15}$ mm	perm. mis-alignment $S_{14}, S_{15}$ mm	Brake disk				Weight	
			from mm	to mm	to mm											$d_1$ mm	$d_2$ mm	$e_1$ mm	$e_3$ mm	ZWBT	ZWBG
																				4) kg	4) kg
112	1300	3800	0	45	45	143	65	110	45	50	85	69	19	-	+0.5	300	181	36.35	64.5	14	14
112	1300	3200	0	45	45	143	65	110	45	50	85	72	22	-	+0.5	356	210	26.35	66	17.5	17
128	2500		0	55	55	157	80	128	60	60	105	89	22	29	+0.5			31.35	71	20.5	20
128	2500	2800	0	55	55	157	80	128	60	60	105	86	19	26	+0.5	406	260	28.35	69.5	23.5	22.5
146	4300		0	60	65	177	95	146	75	75	120	101	19	26	+0.5			43.35	84.5	28	27
175	7000		0	70	80	215	112	175	85	90	140	117	21	27	+0.5			59.35	100.5	39	38
146	4300	2500	0	60	65	177	95	146	75	75	120	104	22	29	+0.5	457	311	46.35	86	33	31
175	7000		0	70	80	215	112	175	85	90	140	120	24	30	+0.5			62.35	102	44	42
198	11600		0	85	95	237	135	198	110	100	150	135	24	35	+0.5			72.35	112	55	52
175	7000	2200	0	70	80	215	112	175	85	90	140	120	24	30	+0.5	514	368	62.35	102	49	46
198	11600		0	85	95	237	135	198	110	100	150	135	24	35	+0.5			72.35	112	60	57
230	19000		0	100	110	265	160	230	135	110	160	146	24	36	+0.5			82.35	122	77	72
255	27000		0	115	125	294	185	255	160	125	175	166	26	41	+0.8			98.35	138	98	93
230	19000	1850	0	100	110	265	160	230	135	110	160	146	24	36	+0.5	610	464	82.35	122	88	81
255	27000		0	115	125	294	185	255	160	125	175	166	26	41	+0.8			98.35	138	110	100
290	39000		70	130	145	330	210	290	180	140	200	186	26	46	+0.8			113.35	153	135	125
315	54000		80	145	160	366	230	315	200	160	220	206	26	46	+0.8			133.35	173	165	160
290	39000	1600	70	130	145	330	210	290	180	140	200	189	29	49	+0.8	711	565	116.35	154.5	150	140
315	54000		80	145	160	366	230	315	200	160	220	209	29	49	+0.8			136.35	174.5	180	170
342	69000		90	160	180	392	255	340	225	180	240	241	31	61	+0.8			157.35	195.5	225	205
375	98000		100	180	200	430	290	375	260	200	260	261	31	61	+0.8			177.35	215.5	285	270
415	130000	1400	120	200	220	478	320	415	285	220	300	319	37	99	+0.8	812	660	203.35	238.5	390	355
465	180000		140	225	250	528	360	465	325	240	320	361	41	121	+1.0			225.35	260.5	490	450

Table 1.1: Torques  $T_N$ , speeds  $n_{max}$ , dimensions and weights

- 1) The given torques refer to the tooth system and **not** to the shaft / hub connection. This must be checked separately.
- 2) Max. bore at keyways to DIN 6885/1
- 3) Space required for aligning the coupling parts and renewing the sealing rings.
- 4) Weights apply to medium-size bores

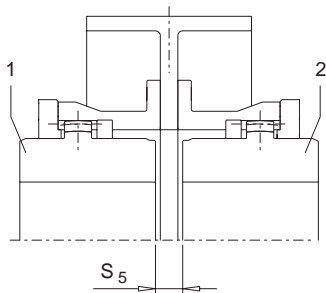
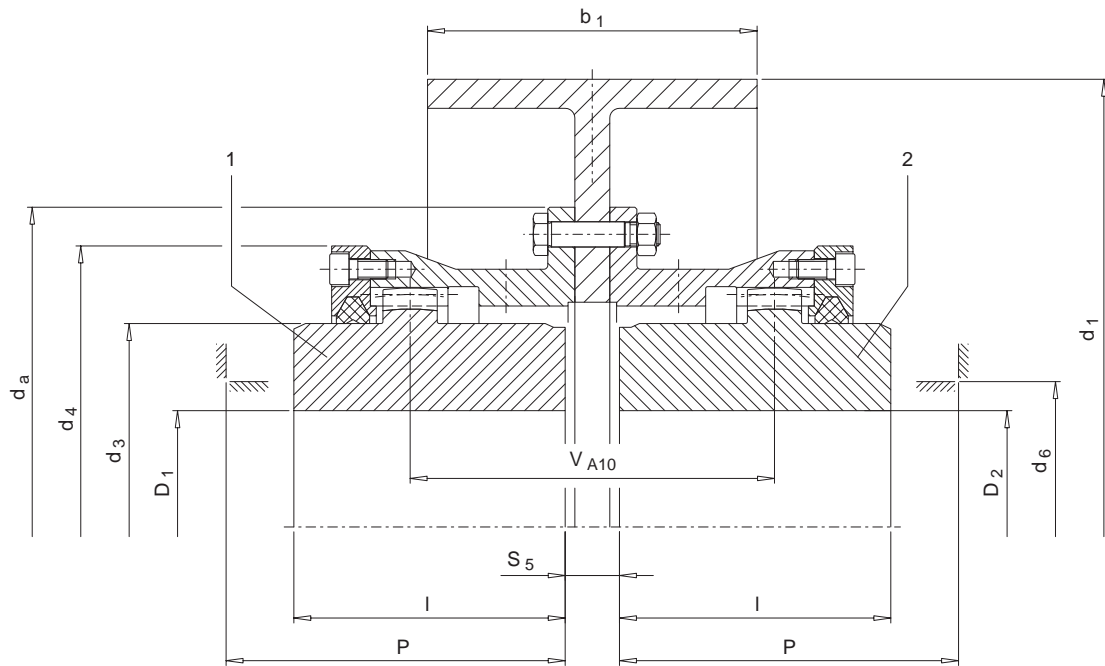
The nominal torques  $T_N$  are valid for:

- daily operating cycle up to 24 h
- Operation within the prescribed alignment
- Operation in the temperature range of - 30 °C to + 80 °C (ambient temperature or temperature of the shaft ends).
- Up to 25 starts per hour with double torque permissible during start.

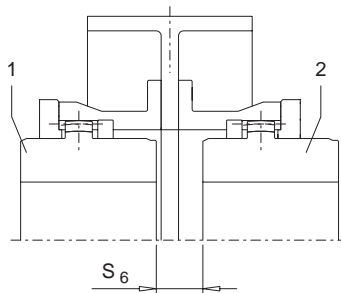
**Caution!**

**For permanent trouble-free operation, the coupling has to be designed with a service factor appropriate to the respective application. When changing the operating conditions (performance, speed, changes on power engine and machine), a check of the design is absolutely necessary.**

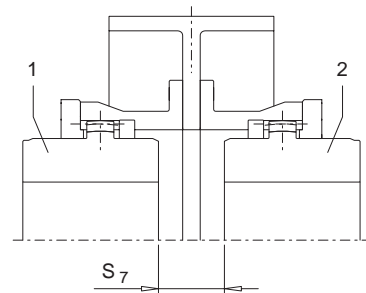
## 1.2 Type ZWB



Version A



Version AB



Version B

# FLENDER

Size	Nominal torque	Speed	Bore 2)		d <sub>a</sub> mm	d <sub>3</sub> mm	d <sub>4</sub> mm	d <sub>6</sub> mm	l mm	P mm	V <sub>A10</sub> mm	S <sub>5</sub> mm	S <sub>6</sub> mm	S <sub>7</sub> mm	perm. mis-alignment S <sub>5</sub> , S <sub>6</sub> , S <sub>7</sub> mm	Brake disk		Weight kg
	T <sub>N</sub>	n <sub>max</sub>	D <sub>1</sub> / D <sub>2</sub>													d <sub>1</sub>	b <sub>1</sub>	
	1) Nm	1/min	from mm	to mm												mm	mm	
128	2500	2500	0	55	157	80	128	60	60	105	83	16	23	30	+1	200	75	14
128	2500	2000	0	55	157	80	128	60	60	105	83	16	23	30	+1	250	95	17.5
146	4300	2000	0	65	177	95	146	75	75	120	98	16	23	30	+1			22
146	4300	1600	0	65	177	95	146	75	75	120	100	18	25	32	+1	315	118	29
175	7000	1600	0	80	215	112	175	85	90	140	116	20	26	32	+1			40
198	11600	1600	0	95	237	135	198	110	100	150	131	20	31	42	+1			50
175	7000	1250	0	80	215	112	175	85	90	140	118	22	28	34	+1	400	150	52
198	11600	1250	0	95	237	135	198	110	100	150	133	22	33	44	+1			62
230	19000	1250	0	110	265	160	230	135	110	160	144	22	34	46	+1			78
230	19000	1000	0	110	265	160	230	135	110	160	145	23	35	47	+1	500	190	97
255	27000	1000	0	125	294	185	255	160	125	175	165	25	40	55	+1.5			115
255	27000	1000	0	125	294	185	255	160	125	175	168	28	43	58	+1.5	630	236	155
290	39000	1000	70	145	330	210	290	180	140	200	188	28	48	68	+1.5			180
290	39000	750	70	145	330	210	290	180	140	200	188	28	48	68	+1.5	710	265	210

Table 1.2: Torques T<sub>N</sub>, speeds n<sub>max</sub>, dimensions and weights

- 1) The given torques refer to the tooth system and **not** to the shaft / hub connection. This must be checked separately.
- 2) Max. bore at keyways to DIN 6885/1
- 3) Space required for aligning the coupling parts and renewing the sealing rings.
- 4) Weights apply to medium-size bores

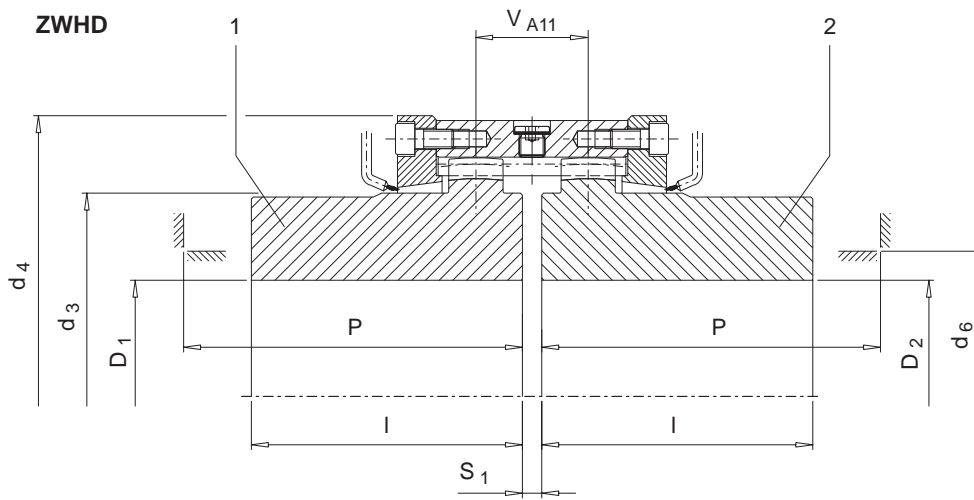
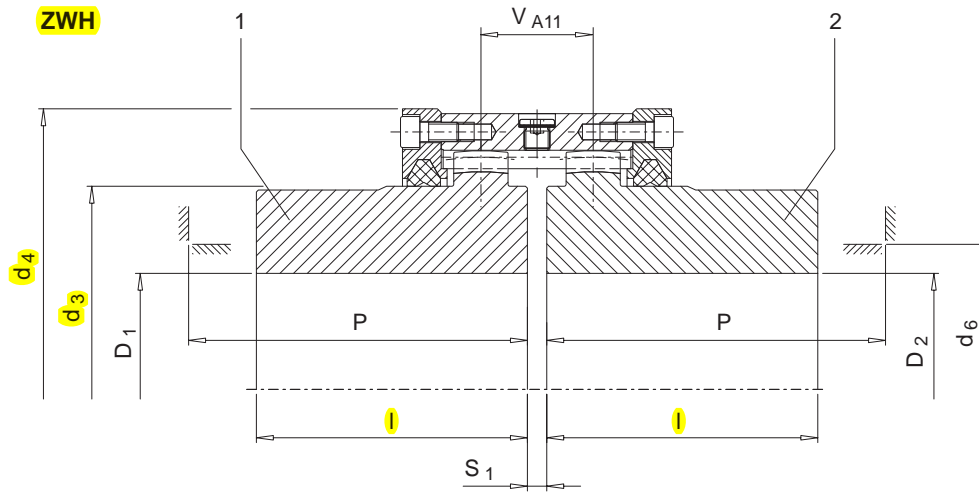
The nominal torques T<sub>N</sub> are valid for:

- daily operating cycle up to 24 h
- Operation within the prescribed alignment
- Operation in the temperature range of - 30 °C to + 80 °C (ambient temperature or temperature of the shaft ends).
- Up to 25 starts per hour with double torque permissible during start.

**Caution!**

**For permanent trouble-free operation, the coupling has to be designed with a service factor appropriate to the respective application. When changing the operating conditions (performance, speed, changes on power engine and machine), a check of the design is absolutely necessary.**

## 1.3 Types ZWH and ZWHD





# FLENDER

Size	Nominal torque	Speed $n_{\max}$ 1/min	Bore 2)		$d_3$ mm	$d_4$ mm	$d_6$ 3) mm	$l$ mm	P 3) mm	$V_{A11}$ mm	$S_1$ mm	perm. misalignment $S_1$ mm	Weight 4) kg
	$T_N$ 1) Nm		$D_1 / D_2$ from   to mm   mm										
112	1300	9400	0	45	65	110	45	50	85	28	6	+ 1	4.9
128	2500	8300	0	55	80	128	60	60	105	30	6	+ 1	7.4
146	4300	7300	0	65	95	146	75	75	120	33	6	+ 1	11.5
175	7000	6400	0	80	112	175	85	90	140	46	8	+ 1	21
198	11600	5500	0	95	135	198	110	100	150	48	8	+ 1	30
230	19000	4700	0	110	160	230	135	110	160	50	8	+ 1	45
255	27000	4100	0	125	185	255	160	125	175	55	10	+ 1.5	63
290	39000	3700	70	145	210	290	180	140	200	58	10	+ 1.5	83
315	54000	3300	80	160	230	315	200	160	220	62	10	+ 1.5	110
342	69000	3000	90	180	255	340	225	180	240	70	12	+ 1.5	140
375	98000	2700	100	200	290	375	260	200	260	72	12	+ 1.5	195
415	130000	2500	120	220	320	415	285	220	300	76	12	+ 1.5	255
465	180000	2200	140	250	360	465	325	240	320	90	16	+ 2	350
505	250000	2000	160	275	400	505	365	260	340	92	16	+ 2	450
545	320000	1800	180	300	440	545	405	280	360	96	16	+ 2	570
585	400000	1700	210	330	480	585	445	310	390	102	20	+ 2	710

Table 1.3: Torques  $T_N$ , speeds  $n_{\max}$ , dimensions and weights

- 1) The given torques refer to the tooth system and **not** to the shaft / hub connection. This must be checked separately.
- 2) Max. bore at keyways to DIN 6885/1
- 3) Space required for aligning the coupling parts and renewing the sealing rings.
- 4) Weights apply to medium-size bores

The nominal torques  $T_N$  are valid for:

- daily operating cycle up to 24 h
- Operation within the prescribed alignment
- Operation in the temperature range of - 30 °C to + 80 °C (ambient temperature or temperature of the shaft ends).
- Up to 25 starts per hour with double torque permissible during start.

**Caution!**

**For permanent trouble-free operation, the coupling has to be designed with a service factor appropriate to the respective application. When changing the operating conditions (performance, speed, changes on power engine and machine), a check of the design is absolutely necessary.**

## 2. General notes

### 2.1 Introduction

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

**Caution!**

**All persons involved in the installation, operation, maintenance and repair of the coupling 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 "**coupling**" dealt with in these Operating Instructions was developed for stationary use in general engineering.

The coupling is designed only for the application described in section 1 "Technical data". Possible use in any other area must be contractually agreed.

The coupling described in these Instructions reflects 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 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 plant:

FLENDER AG  
D 46393 Bocholt

Telefon: 02871/92-2800  
Telefax: 02871/92-2801

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

## 3. Safety notes

### 3.1 Proper use

- The coupling has been manufactured in accordance with the state of the art and is delivered in a condition for safe and reliable use. All changes to the coupling on the part of the user which may affect its safety and reliability are prohibited. This applies equally to safety features designed to prevent accidental contact.
- The coupling should be used and operated only within the context of the conditions laid down in the contract governing performance and supply.

### 3.2 Obligations of the user

- The user must ensure that all persons involved in the installation, operation, maintenance and repair of the coupling have read and understood these Operating Instructions and comply with them at all times in order to:

- avoid injury or damage,
- ensure the safety and reliability of the coupling,

and

- avoid disruptions and environmental damage through incorrect use.
- During transport, assembly, installation, dismantling, operation and maintenance of the coupling, the relevant safety and environmental regulations must be complied with at all times.
- The coupling should be operated, maintained or repaired by authorised, trained and qualified personnel.
- All work on the coupling must be carried out with great care and with due regard to safety.
- All work on the coupling must be carried out only when it is not in operation. The drive assembly 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 is in progress.
- Protect the coupling against accidental contact by means of appropriate guards. The guard must not impair the function of the coupling.
- The drive unit should be shut off at once if changes in the coupling are detected during operation.
- If the coupling is intended for installation in plant or machinery, the manufacturer of such plant or machinery must ensure that the contents of these Instructions are incorporated in his own instructions.
- All spare parts must be obtained from FLENDER.

### 3.3 Warnings and symbols used in these 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 **damage to the coupling**.

**Note:**

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

## 4. Handling and storage

**Note:** Observe the "Safety notes" in section 3.

### 4.1 Scope of supply

The products supplied are listed in the dispatch papers. Check immediately on receipt to ensure that all the products listed have actually been delivered. Damaged or missing parts must be notified in writing immediately.

The ZAPEX coupling is delivered in components ready for installation, however, **without** oil or grease filling.

### 4.2 Handling

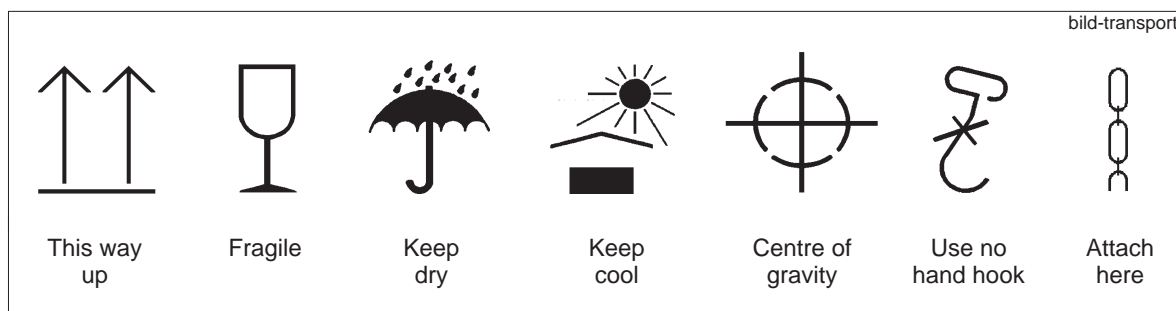


**When handling FLENDER products use only lifting and handling equipment of sufficient load-carrying capacity!**

**Note:** The coupling must be transported using suitable equipment only.

Different forms of packaging may be used depending on the size of the coupling 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

#### 4.3.1 Storage of the coupling parts

The coupling is delivered in a preserved state and can be stored at a covered dry place up to 6 months. If the coupling shall be stored for a longer period of time, an appropriate long-term preservation is necessary (consultation with FLENDER required).

#### 4.3.2 Storage of the DUO sealing rings

##### 4.3.2.1 General

Proper storage maintains the life of the DUO sealing rings (12). Unfavourable storage conditions and improper treatment of the DUO sealing rings (12) result in a negative change of the physical characteristics. These changes can be caused by the effects of e.g. ozone, extreme temperatures, light, moisture or solvents.

**Caution!**

**The DUO sealing rings (12) must not be stored installed on the coupling part (1,2).**

##### 4.3.2.2 Storage room

The storage room should be dry and dust-free. The DUO sealing rings (12) must not be stored together with chemicals, solvents, fuels, acids, etc. Furthermore, they should be protected against light, especially against direct sunlight and strong artificial light with a high ultra-violet percentage.

**Caution!**

**The storage rooms must not contain any ozone-producing devices like e.g. fluorescent light sources, mercury-vapour lamps, electric high-voltage devices. Damp storage rooms are unsuitable. Make sure that no condensation develops. The relative humidity of air is most favourable below 65 %.**

## 5. Technical description

**Note:** Observe the "Safety notes" in section 3.

**Caution!**

**If a dimensioned drawing has been made out for the coupling, the data in this drawing must be given priority.**

### 5.1 General description

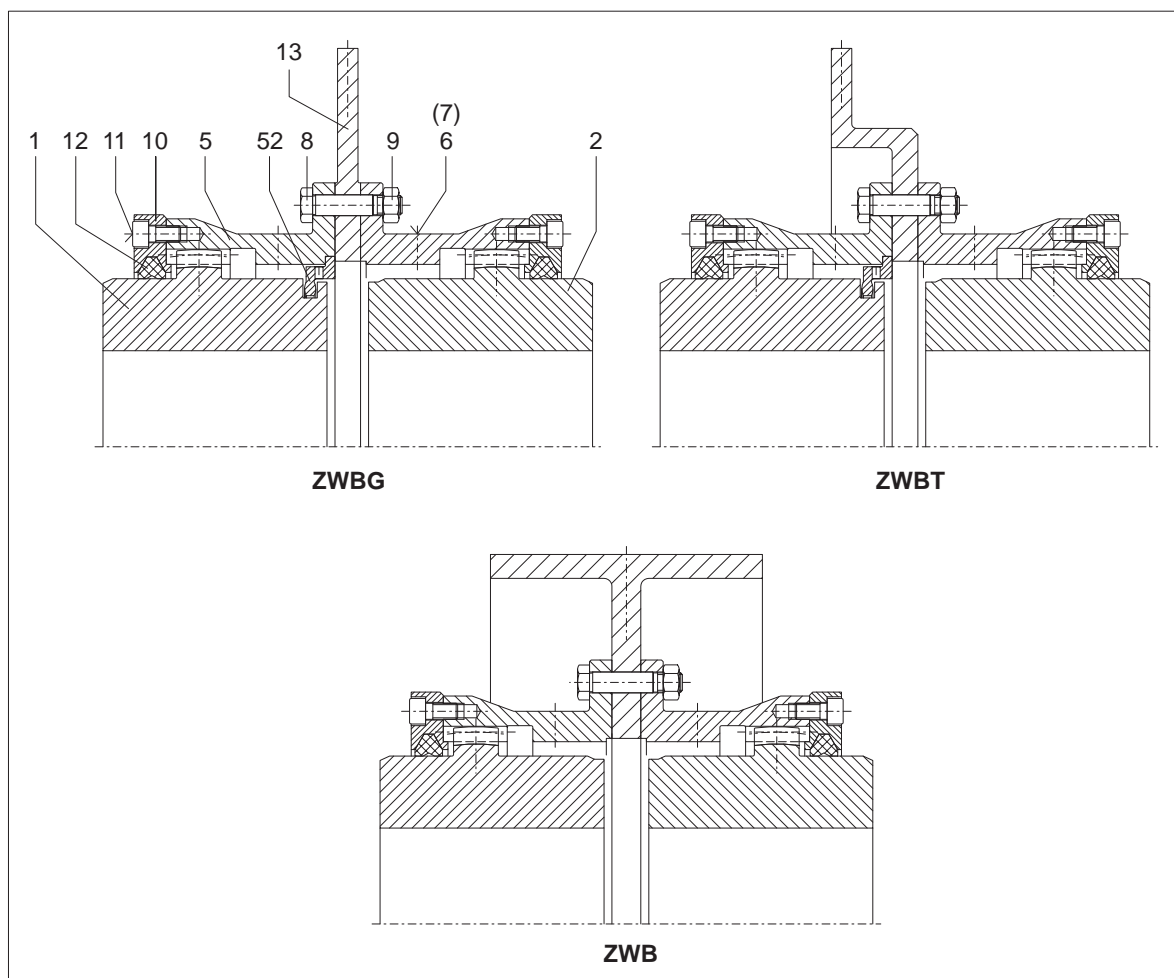
ZAPEX couplings of types ZWBT, ZWBG, ZWB, ZWH and ZWHD are designed for connecting two shafts. The shaft ends to be connected must be supported in bearings directly before and behind the coupling.

ZAPEX couplings are suitable for clockwise and counter-clockwise operation as well as reversing operation.

The coupling parts with external gear teeth (1, 2) engage the internal teeth of the sleeves (5) and/or of the coupling sleeve (5).

In the case of types ZWBT, ZWBG, ZWB and ZWH, DUO sealing rings (12) serve for sealing the oil spaces towards the outside.

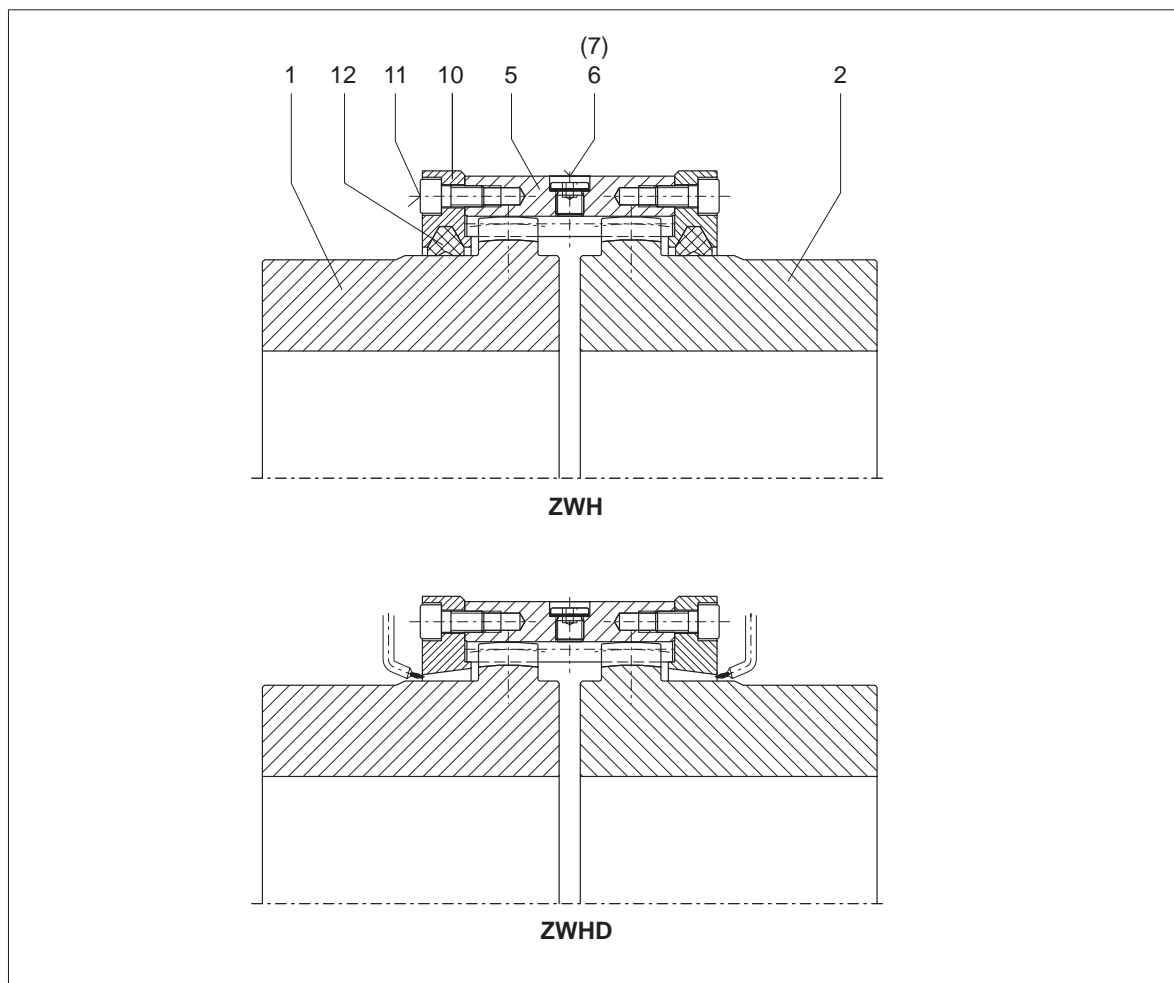
#### 5.1.1 Types ZWBT, ZWBG, ZWB



Torque transmission is effected from the shaft via parallel key, shrink connection or the like onto the coupling part (1), onwards via the gear teeth onto the sleeve (5), then via the fitting-bolt connection (8,9) to the second sleeve (5), via the gear teeth onto the coupling part (2) and then again via the parallel key, shrink connection or the like onto the shaft. The brake disk (13) is arranged between the sleeves (5).

In the case of types ZWBT and ZWBG, the axial play is limited by the two-part retaining ring (52).

## 5.1.2 Types ZWH and ZWHD



Torque transmission is effected from the shaft via parallel key, shrink connection or the like onto the coupling part (1), onwards via the gear teeth onto the sleeve (5), and from there via the gear teeth to the coupling part (2) and then again via the parallel key, shrink connection or the like onto the shaft.

Type ZWHD is provided for circulation lubrication and is therefore, supplied without DUO sealing rings (12).

## 6. Assembly

**Note:** Observe the "Safety notes" in section 3.

**Caution!**

If a dimensioned drawing has been made out for the coupling, the data in this drawing must be given priority.

### 6.1 Notes on fitting the finished bore, the axial securing, the set screws, the balancing

According to the order placed, the coupling parts (1/2) for removal by oil hydraulic shrinking are delivered with finished bores.

## 6.1.1 Finished bore for parallel keyway connection

- Depreserve coupling part (1/2).



**Observe the manufacturer's instructions on handling the solvents.**

For making the finished bore, the coupling parts must be clamped as shown in the following figure.

**Caution!** The clamping chuck must always be opposite the sealing surface.

The coupling part must be aligned carefully. For the permissible radial eccentricity see DIN ISO 286 degree of fundamental tolerance IT 6 (see table 6.1).

**Caution!** The maximum permissible boring diameters (see section 1.) are designed for parallel key connections without tightening according to DIN 6885/1 and must not be exceeded in any case.

**When the keyway is to be designed deviating from DIN 6885/1 for a parallel key connection, FLENDER should be consulted.**

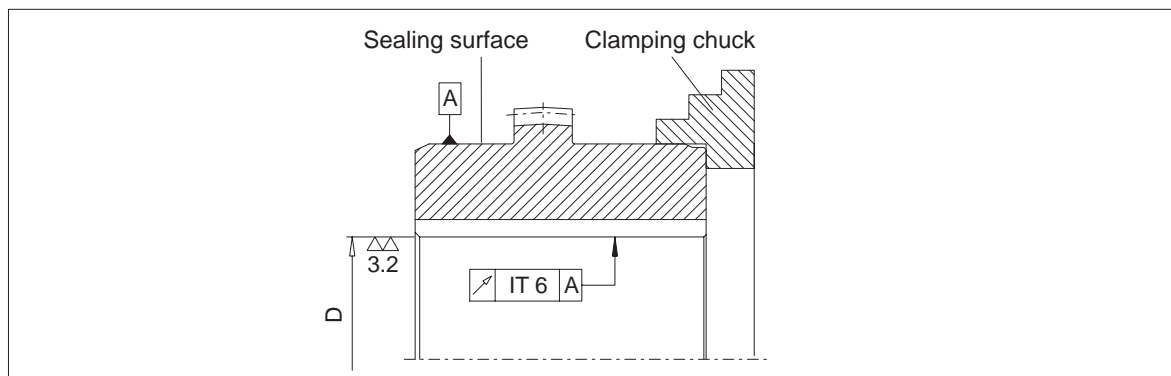
If other hub connections (e.g. spline bore hub profile, tapered or stepped bores, parallel key connections with tightening etc.) are to be used instead of the provided parallel key connection, FLENDER should be consulted.



**Non-observance of these notes may lead to the drifting of coupling. There is a danger to life due to broken pieces flying around!**

Dimension or nom. dimension	> 18 to 30	> 30 to 50	> 50 to 80	> 80 to 120	> 120 to 180	> 180 to 250	> 250 to 315	> 315 to 330
Perm. deviation acc. to DIN ISO 286 part 1, IT6	0.013	0.016	0.019	0.022	0.025	0.029	0.032	0.036

Table 6.1: Permissible radial run-out



In case of a parallel key connection the following is recommended for bore and shaft:

<b>Shaft end tolerances</b>	h6	k6	m6	n6	p6	s6
<b>Bore tolerances</b>	P7	M7	K7	J7	H7	F7

Table 6.2: Fit pairings

**Caution!**

**The tolerance field must be observed in anyway, in order to restrict the hub tension resulting from the oversize to the permissible load. In case of non-observance of the tolerance field, the shaft / hub connection may be damaged.**



**Non-observance of these notes may lead to the drifting of coupling. There is a danger to life due to broken pieces flying around!**

## 6.1.1.1 Parallel keyway

In the case of a parallel key connection to DIN 6885/1 and one keyway, the tolerance zone of hub keyway width **ISO P9** is recommended.

In the case of a parallel key connection to DIN 6885/1 and two keyways, the tolerance zone of hub keyway width **ISO JS9** is recommended.

## 6.1.2 Axial securing in case of parallel key connection

For axially securing the coupling parts, a set screw or an end plate has to be provided for. When using end plates, FLENDER is to be consulted with regard to the insertion of recess in the coupling parts.

## 6.1.3 Set screws in case of parallel key connections

Headless pins with notched cut point according to DIN 916 are to be used as set screws.

It is absolutely necessary to observe the following guidelines!



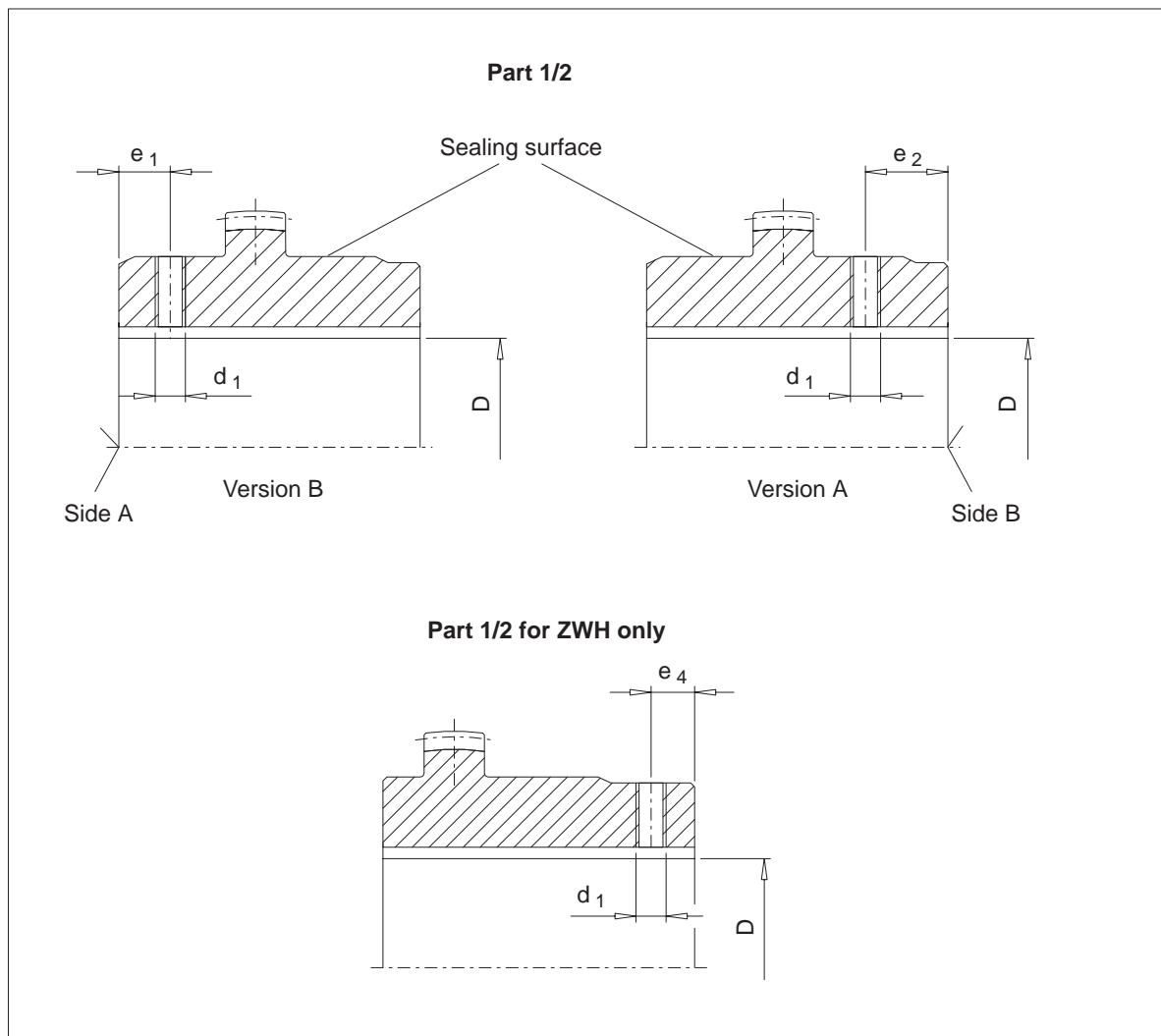
**The length of the set screw is to be chosen so that it completely fills the cut hole but that it does not protect over the hub ( $L_{\min} = d_1$ ).**

### Caution!

**The set screws should generally be arranged on the parallel key. Check the length of the parallel key.**

The tapped holes are to be arranged in accordance with the drawing considering the used version A or B for the coupling parts 1/2.

For size 112, the set screw must always be arranged in the unground hub side.





Size	Bore D <sub>1</sub> / D <sub>2</sub>	Bore D <sub>1</sub> for ZWBT, ZWBG only		d <sub>1</sub>	e <sub>1</sub>	e <sub>2</sub>	e <sub>4</sub>
112	10 ... 17	10 ... 17	10 ... 17	M 5	15	-	7
	17 ... 45	17 ... 45	17 ... 45	M 6			
128	10 ... 17	10 ... 17	10 ... 17	M 5	14	20	10
	17 ... 30	17 ... 30	17 ... 30	M 6			
	> 30 ... 55	> 30 ... 55	> 30 ... 55	M 8			
146	10 ... 17	10 ... 17	10 ... 17	M 5	16	26	16
	17 ... 30	17 ... 30	17 ... 30	M 6			
	> 30 ... 38	> 30 ... 38	> 30 ... 38	M 8			
	> 38 ... 65	> 38 ... 60	> 38 ... 60	M10			
175	10 ... 17	10 ... 17	10 ... 17	M 5	20	26	20
	> 17 ... 22	> 17 ... 22	> 17 ... 22	M 6			
	> 22 ... 30	> 22 ... 30	> 22 ... 30	M 8			
	> 30 ... 80	> 30 ... 70	> 30 ... 70	M10			
198	10 ... 17	10 ... 17	10 ... 17	M 5	22	36	22
	> 17 ... 22	> 17 ... 22	> 17 ... 22	M 6			
	> 22 ... 30	> 22 ... 30	> 22 ... 30	M 8			
	> 30 ... 44	> 30 ... 44	> 30 ... 44	M10			
	> 44 ... 95	> 44 ... 85	> 44 ... 85	M12			
230	10 ... 17	10 ... 17	10 ... 17	M 5	25	38	25
	> 17 ... 22	> 17 ... 22	> 17 ... 22	M 6			
	> 22 ... 30	> 22 ... 30	> 22 ... 30	M 8			
	> 30 ... 38	> 30 ... 38	> 30 ... 38	M10			
	> 38 ... 58	> 38 ... 58	> 38 ... 58	M12			
	> 58 ... 110	> 58 ... 100	> 58 ... 100	M16			
255	10 ... 17	10 ... 17	10 ... 17	M 5	30	45	30
	> 17 ... 22	> 17 ... 22	> 17 ... 22	M 6			
	> 22 ... 30	> 22 ... 30	> 22 ... 30	M 8			
	> 30 ... 38	> 30 ... 38	> 30 ... 38	M10			
	> 38 ... 50	> 38 ... 50	> 38 ... 50	M12			
	> 50 ... 110	> 50 ... 110	> 50 ... 110	M16			
	> 110 ... 125	> 110 ... 115	> 110 ... 115	M20			
290	10 ... 17	10 ... 17	10 ... 17	M 5	30	48	30
	> 17 ... 22	> 17 ... 22	> 17 ... 22	M 6			
	> 22 ... 30	> 22 ... 30	> 22 ... 30	M 8			
	> 30 ... 38	> 30 ... 38	> 30 ... 38	M10			
	> 38 ... 50	> 38 ... 50	> 38 ... 50	M12			
	> 50 ... 75	> 50 ... 75	> 50 ... 75	M16			
> 75 ... 145	> 75 ... 130	> 75 ... 130	M20				
315	80 ... 160	80 ... 145	M20	40	55	40	
342	90 ... 170	90 ... 160	M20	40	60	40	
	> 170 ... 180		M24				
375	100 ... 110	100 ... 110	M20	35	70	35	
	> 110 ... 200	> 110 ... 180	M24				
415	120 ... 220	120 ... 200	M24	40	90	40	
465	140 ... 250	140 ... 225	M24	40	110	40	
505	160 ... 275	160 ... 275	M24			45	
545	180 ... 300	180 ... 300	M24			60	
585	210 ... 330	210 ... 330	M24			70	

Table 6.3: Set screw assignment

## 6.1.4 Balancing

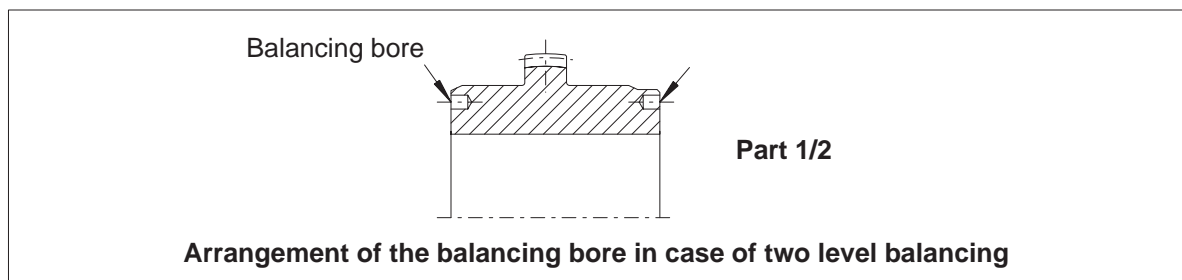
Prebored couplings resp. prebored coupling parts are shipped unbalanced. For these parts it is recommended to balance them depending on the application case after finish boring (see also DIN ISO 1940 part 1).

**Note:** FLENDER recommendation:  
Balancing in two levels Q6.3, measured from peripheral speed  $v = 36 \text{ m/s}$  on  $d_4$ , according to Section 1, "Technical Data".

Balancing is usually carried out by material cutting through boring. In order to restrict the material quantity to be cut to a minimum, the biggest possible balancing radius is to be selected. Removal of material should only be effected at the marked points (see illustration).

**Caution!** Under no circumstances may the tooth system be damaged.

If balancing is required after keywaying, please refer to FLENDER.



Finished-bored couplings are only balanced if requested by the orderer.

## 6.2 General installation notes

For the installation the safety notes in Section 3. "Safety notes" are to be observed.

The installation has to be carried out with utmost care by trained personnel.

Already during the planning phase it is to be observed that sufficient room is to be provided for the installation and later inspection and maintenance work.

Before starting the installation a sufficient number of hoists must be provided for.

## 6.3 Installing the coupling parts (1/2) in case of shaft / hub connection with parallel key

Before starting the assembly all coupling parts and shaft ends must be cleaned thoroughly.

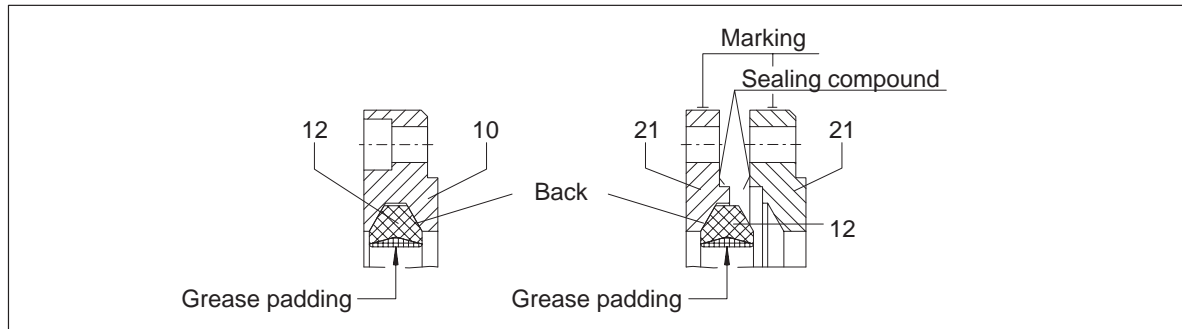
**Caution!** The DUO sealing rings (12) may not contact solvents or cleaning agents.



**Observe the manufacturer's instructions on handling the solvents.**

Grease the back or the sides of the DUO sealing ring (12) and the groove in the cover (10) thoroughly and fit it in the cover (10 or 21). Apply a grease padding in the ring-shaped hollow space. When using two-part covers (21) the connecting points must be sealed with sealing compound on one side.

**Caution!** Observe the marking.



The cover (10 or 21) with fitted DUO sealing ring (12) should be installed on the shaft such that the DUO sealing ring (12) cannot be damaged by the coupling parts (1/2).

Check the required space for inserting the cheese head screws (11) and insert the screws (11) in the cover (10 or 21), if necessary.

**Caution!** Unscrew set screws from the coupling parts (1/2). DUO sealing rings (12) and seals of the input and output sides should be protected from damage and heating in excess of +80 °C.

**Caution!** Coupling parts (1/2) with conical bore and parallel key connection should be mounted in cold condition.

Heating (max. +80 °C) the coupling parts (1/2) with cylindrical bore may ease pulling on. Heating can be effected inductively in the oven or by means of a burner. Heating by means of a burner must be carried out in longitudinal direction of the hub above the groove.



**Protect yourself against burns by hot parts!**

**Caution!** The coupling parts (1/2) should be mounted using suitable equipment. Damage to the shaft bearing arrangement through the axial mounting force should be precluded.  
**Make sure that suitable hoists are used.**  
**Make sure that the bore and the sealing surface for the DUO sealing ring are not damaged by hoists etc.**

**Note:** The coupling parts (1/2) with tapered bore should be secured by means of appropriate end plates. For this purpose, apply sealing compound to the hub face on the shaft face and screw on the end plate.

In case of coupling parts (1/2) with keyway and set screw, the tapped hole for the set screw 2/3 should be filled with sealing compound after cooling down to ambient temperature in order to prevent the lubricant from leaking through the parallel keyway. Screw in the set screw (the position of the set screw must be above the parallel key).

**Caution!** Tightening of the set screws only by means of a hexagon socket head wrench according to DIN 911, without an extension pipe.

- 6.4 Installing the coupling parts (1/2) in case of cylindrical and tapered interference fit set for oil hydraulic removal by shrinking

**Caution!** The data given in the dimensioned drawing must be observed in any case.

Before the assembly, the plug screws (22) should be unscrewed from the coupling parts (1/2) and all parts and the shaft ends must be cleaned thoroughly and dried. Under no circumstances may the oil ducts and oil circulating grooves be dirty.

**Caution!** The DUO sealing rings (12) may not contact solvents or cleaning agents.

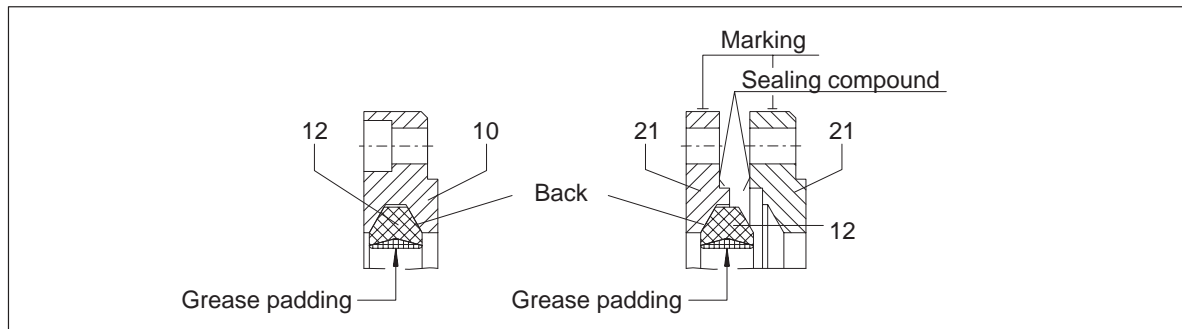


Observe the manufacturer's instructions on handling the solvents.

**Caution!** The fit surfaces may never be greased with grease containing molybdenum sulphide (Molykote or comparable products).

Grease the back or the sides of the DUO sealing ring (12) and the groove in the cover (10) thoroughly and fit it in the cover (10 or 21). Apply a grease padding in the ring-shaped hollow space. When using two-part covers (21) the connecting points must be sealed with sealing compound on one side.

**Caution!** Observe the marking.



The cover (10 or 21) with fitted DUO sealing ring (12) should be installed on the shaft such that the DUO sealing ring (12) cannot be damaged by the coupling parts (1/2).

Check the required space for inserting the cheese head screws (11) and insert the screws (11) in the cover (10 or 21), if necessary.

**Caution!** DUO sealing ring (12) and seals of the input and output sides should be protected from damage and heating in excess of +80 °C. (Use heat insulation shields against heat radiation.)

The coupling parts (1/2) should be mounted while they are warm and heated to the temperature given in the dimensioned drawing in accordance with the shrinking dimension.

Heating can be effected inductively by means of a burner or in the oven.



Protect yourself against burns by hot parts!

Before mounting, the bore size of the heated coupling parts (1/2) must be checked, e.g. by means of a gauge for bore holes.

**Caution!** The heated coupling parts (1/2) should be mounted using suitable equipment. Damage to the shaft bearing arrangement through the axial mounting force should be precluded. Make sure that suitable hoists are used. Make sure that the bore and the sealing surface for the DUO sealing ring are not damaged by hoists etc.

The coupling parts (1/2) should be pulled quickly onto the shaft according to the specifications in order specific dimensioned drawing.

**Note:** Until the coupling parts (1/2) have cooled down and are tight, they must be held on the shaft by means of a suitable holding device.

After the coupling parts (1/2) have cooled down to room temperature, the oil ducts must be filled with clean oil, e.g. ISO VG 150 and closed with the plug screws (22) (protection against corrosion).

## 6.5 Assembly of the coupling

Oil the gear teeth of the coupling parts (1/2) and of the sleeves (5) and/or the coupling sleeve (5) and the outer diameter of the hub of parts (1/2) (sealing surfaces).

Push the sleeves (5) onto the gear teeth of the coupling parts (1/2) and hold and/or support. In the case of types ZWH and ZWHD, push the sleeve (5) onto the gear teeth of one coupling part (1/2) and hold and/or support. In the case of types ZWBT and ZWBG, place the axial play limiting device (52) into the recess of part 1 and pull the sleeve (5) over the axial play limiting device (52). In the case of types ZWBT, ZWBG and ZWB, arrange the brake disk (13) between the two sleeves (5) and retain.

Push the machines to be coupled together. The dimension  $S_1$  to  $S_{15}$  (see item 6.9 and section 1. "Technical data") is to be observed. Align the coupling in accordance with item 6.6 to item 6.9.

In the case of types ZWH and ZWHD, push the sleeve (5) onto the gear teeth of both coupling parts (1/2).

Pull the covers (10 and 21) with suitable tools onto the hub.

Coat the sealing surfaces of the covers (10 and/or 21) with sealing compound (sealing compound always to be applied on one side only) and screw together with the sleeves (5) and/or coupling sleeve (5) (for tightening torque see Item 6.9).

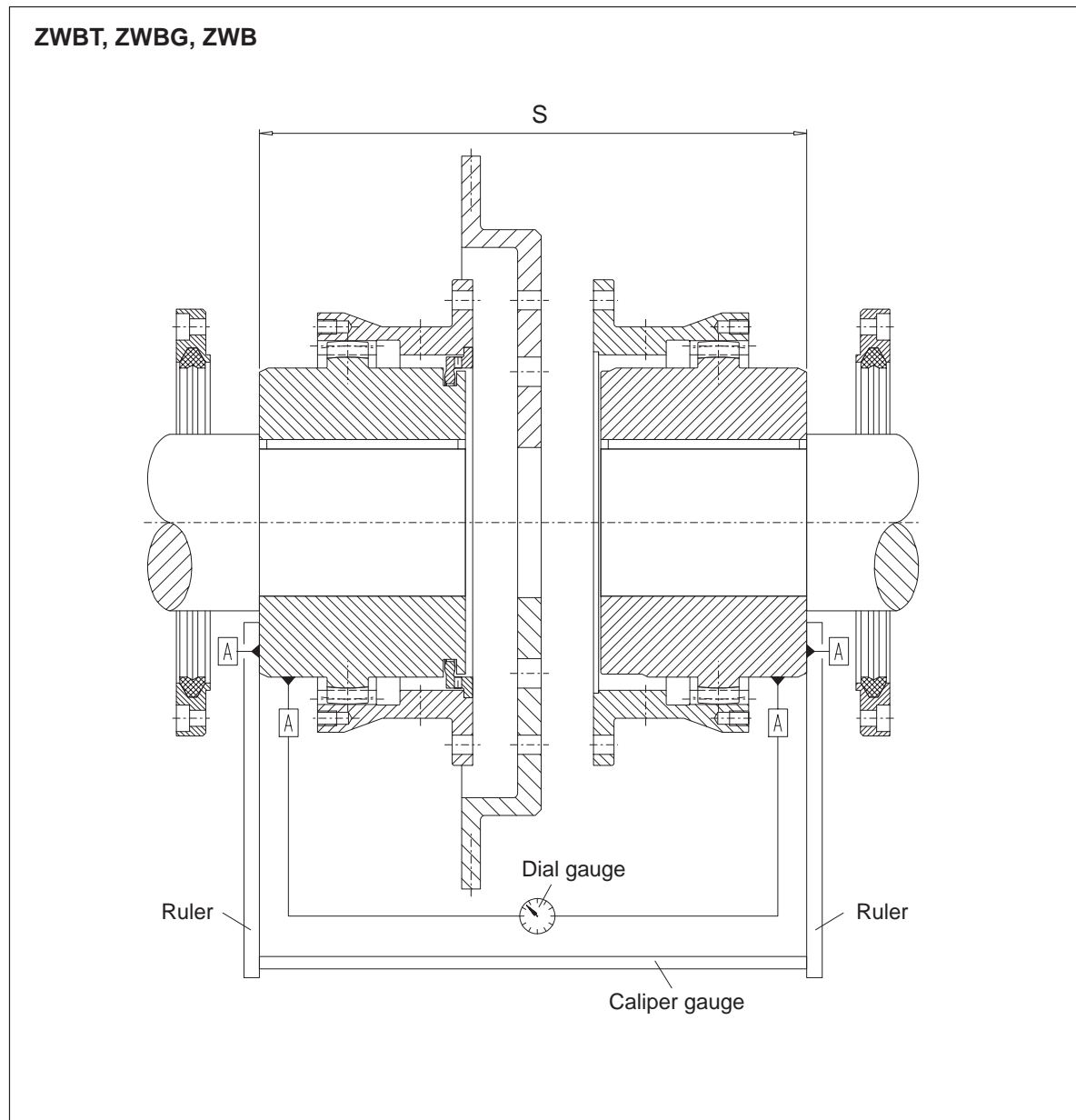
In the case of types ZWBT, ZWBG and ZWB, coat the sealing surfaces of the sleeves (5) and/or of the brake disk (13) with sealing compound. Align the fitting holes of the flanges, paying special attention to markings, if any. Insert fitting bolts (8) and tighten nuts (9) (for tightening torques see Item 6.9).

## 6.6 Aligning

Types ZWB, ZWH and ZWHD compensate for positional variations of the shaft ends to be connected up to  $1^\circ$ . Because of the axial play limiting devices, the types ZWBT and ZWBG only compensate for a positional variation of up to  $0.3^\circ$ .

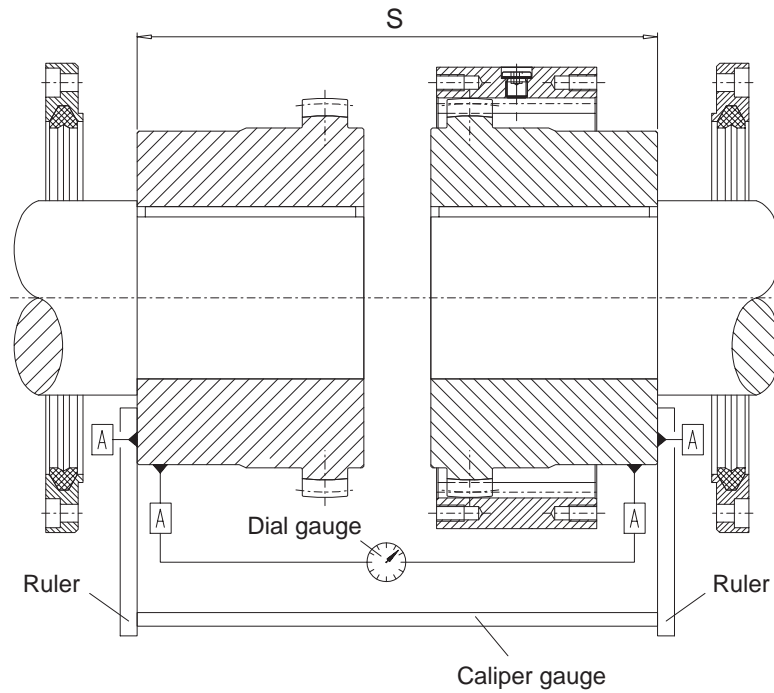
When aligning, keep the radial and angular misalignment of the shaft ends as small as possible because hereby the service life of the coupling is increased under otherwise the same operating conditions. However, the angular misalignment may not be smaller than  $0.05^\circ$ .

Aligning is done by means of suitable measuring tools. The following figure shows aligning proposals and the alignment surfaces (  $\square A$  ).



# FLENDER

ZWH, ZWHD

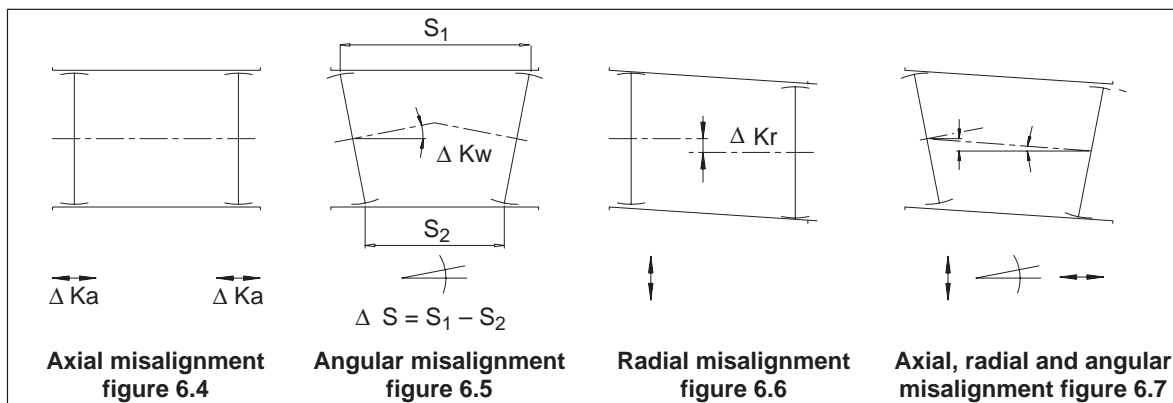


Instead of ruler and measuring tape, a feeler gauge, a measuring bolt or a calliper gauge can be used in case of small distance dimensions S.

## Caution!

The max. permissible misalignments depend on the service factor, the axial play limiting device and the coupling speed. In case of a change in speed, checking is an absolute must. Since additional misalignments could occur during operation (expansion due to heat, shaft deflection, foundation settlement etc), a misalignment of  $0.1^\circ$  should be strived for when aligning. However, the misalignments during aligning must not be less than  $0.05^\circ$ . For alignment values see Item 6.8.

## 6.7 Possible misalignments



Misalignments of the coupling parts may result from an inexact alignment during the assembly but also from the operation of the plant (expansion due to heat, bending of the shaft, machine frame too soft, etc.).

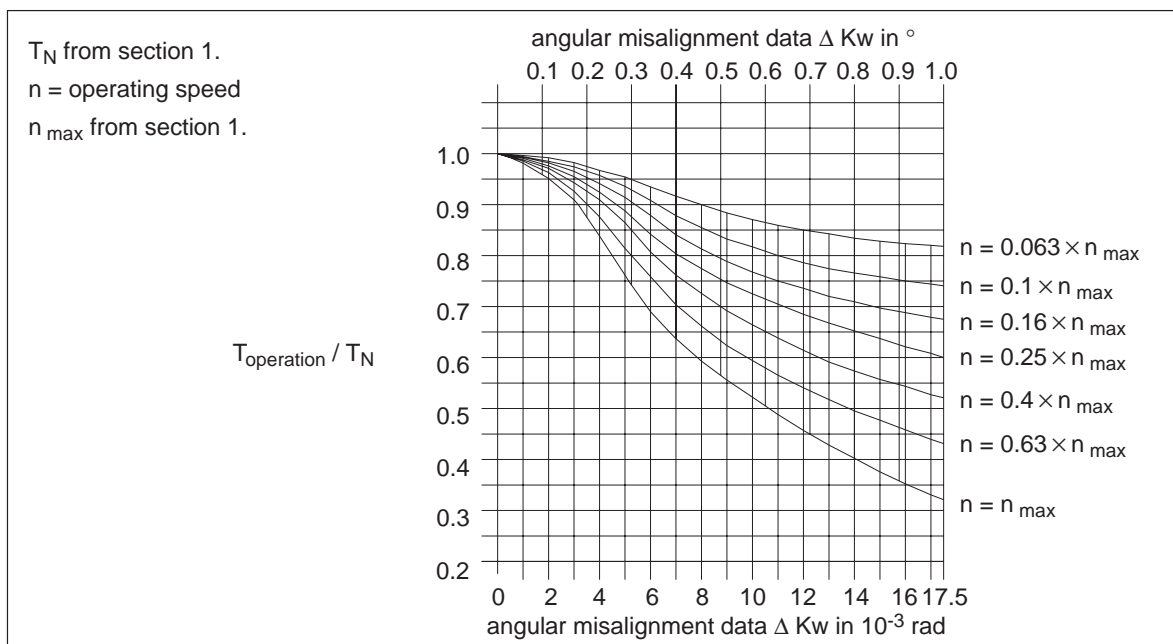
**Caution!**

The following max. permissible misalignments must not be exceeded during operation under any circumstances.

### 6.7.1 Axial misalignment

Axial misalignment  $\Delta K_a$  (figure 6.4) of the coupling parts to each other is permissible within the "permissible variation" for the dimension  $S$  (see section 1.).

### 6.7.2 Angular misalignment in dependence on the operating torque and the operating speed



For reasons of simplification, the angular misalignment  $\Delta K_w$  (figure 6.5) is determined as difference ( $\Delta S$ ) of the dimension  $S$  (alignment surface  $\square A$ , see item 6.6). The measurement should be carried out at several points on the periphery.

For the permissible alignment values see item 6.8

### 6.7.3 Radial misalignment

For types ZWB, ZWH and ZWHD, the max. possible radial misalignment  $\Delta K_{r_{\text{max}}}$  (figure 6.6) corresponds to a possible angular deviation per coupling half of  $\Delta K_{w_{\text{max}}} = 0.0175 \text{ rad} = 1^\circ$ .

For types ZWBT and ZWBG, the max. possible radial misalignment  $\Delta K_{r_{\text{max}}}$  (figure 6.6) corresponds to a possible angular deviation per coupling half of  $\Delta K_{w_{\text{max}}} = 0.00525 \text{ rad} = 0.3^\circ$ .

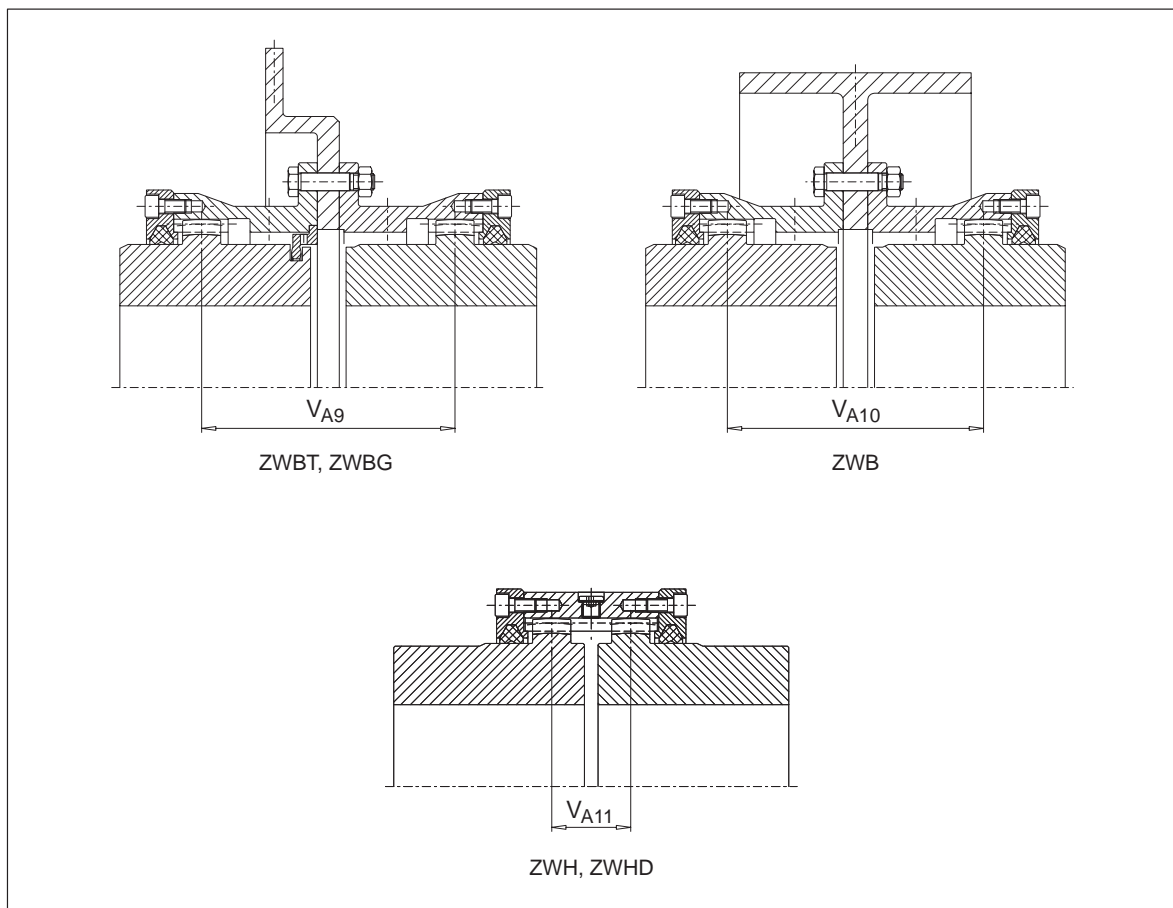
For the permissible alignment values see item 6.8

**Caution!**

Angular and radial misalignment (figure 6.7) may occur at the same time. The sum of both misalignments must not exceed  $\Delta K_w$  or  $\Delta K_r$ .



## 6.8 Alignment values



### Angular misalignment $\Delta K_w$ :

$$\Delta S = S_1 - S_2 = d_3 \times \tan 0.1^\circ$$

For the hub diameter  $d_3$  see Section 1, "Technical Data".

### Radial misalignment $\Delta K_r$ :

$$\text{ZWBT, ZWBG: } \Delta K_r = V_{A9} \times \tan 0.1^\circ$$

$$\text{ZWB: } \Delta K_r = V_{A10} \times \tan 0.1^\circ$$

$$\text{ZWH, ZWHD: } \Delta K_r = V_{A11} \times \tan 0.1^\circ$$

For the gearing distance  $V_{A9}$ ,  $V_{A10}$  and  $V_{A11}$  see Section 1, "Technical Data".

#### Caution!

Angular and radial misalignment may occur at the same time. The sum of both misalignments must not exceed  $\Delta K_w$  or  $\Delta K_r$ .

#### Caution!

For types ZWB, ZWH and ZWHD, up to 10 times the values, allowing for the Table shown under Item 6.7.2, are permissible during operation.  
For types ZWBT and ZWBG, only three times the values, allowing for the Table shown under Item 6.7.2, are permissible during operation because of the axial play limiting device.

## 6.9 Assignments of the tightening torques and wrench width

Size	Tightening torque $T_A$ (with $\mu = 0.14$ )		Wrench width $S_W$		
	Part No. 9	Part No. 11	Part No. 6 hexagon socket wrench	Part No. 9 hexagon wrench	Part No. 11 hexagon socket wrench
	Nm	Nm	mm	mm	mm
112	25	10	3	13	5
128	25	10	3	13	5
146	25	10	5	13	5
175	49	25	5	17	6
198	49	25	6	17	6
230	49	25	6	17	6
255	86	25	8	19	6
290	86	49	8	19	8
315	210	49	8	24	8
342	210	49	8	24	8
375	210	49	10	24	8
415	410	86	10	30	10
465	410	86	10	30	10
505	410	86	10	30	10
545	710	86	10	36	10
585	710	86	10	36	10

Table 6.6: Tightening torques and wrench width

**Note:** The tightening torques apply only for screws with untreated surfaces which are not or only slightly oiled (friction coefficient  $\mu = 0.14$ ). The use of a gliding lacquer or comparable products which modify the friction coefficient  $\mu$  is not permissible.

## 7. Start-up






**Note:** Observe the "Safety notes" in section 3.

**Caution!**

**If a dimensioned drawing has been made out for the coupling, the data in this drawing must be given priority.**

### 7.1 Lubricant recommendation

The following lubricants are recommended for the FLENDER ZAPEX mentioned in these Operating Instructions.

Manufacturer						<b>FLENDER</b>
Oils	Degol BG 460/680	Energol GR-XP 460/680	Alpha SP / MW 460/680	Falcon CLP 460/680	Spartan EP 460/680	–
Liquified greases	Aralub Fließfett ANO	Energrease LS-EP 00	CLS Grease	Orona FG EP 0	Fibrax EP 370	FLENDER Hochleistungsfett
NLGI grade	0	00	00	0-00	0-1	0-00





Manufacturer		<b>Mobil</b>			<b>Tribol</b> <small>THE BURMAH-CASTROL COMPANY</small>	
Oils	Structovis BHD-MF	Mobilgear 634/636	Optigear BM 460/680	Omala 460/680	Tribol 1100 460/680	Renolin CLP 460/680 Plus
Liquified greases	Grafloscon C-SG 500	Mobilux EP 004	Longtime PD 00	Alvania GL 00	Tribol 3020/1000-00	Renolit SO-D 6024
NLGI grade	0-00	00	00	00	00	00

Table 7.1: Lubricant recommendations

For normal operating conditions, we recommend an oil filling. This is advantageous because the lubricant is easy to change and the surface is wetted adequately.

The lubricants are suited for operating temperatures from -10 °C to +80 °C. In case of deviating temperatures, consult FLENDER.



**Observe the manufacturer's notes on handling oils / greases!**

## 7.2 Oil filling quantity / grease filling quantity

Size	Oil filling quantity 1)			Size	Oil filling quantity 1)		
	ZWBT, ZWBG dm <sup>3</sup>	ZWB dm <sup>3</sup>	ZWH dm <sup>3</sup>		ZWBT, ZWBG dm <sup>3</sup>	ZWB dm <sup>3</sup>	ZWH dm <sup>3</sup>
112	0.02	–	0.02	315	0.4	–	0.25
128	0.03	0.05	0.02	342	0.5	–	0.3
146	0.05	0.1	0.03	375	0.6	–	0.35
175	0.1	0.2	0.07	415	0.9	–	0.35
198	0.1	0.2	0.07	465	1.4	–	0.6
230	0.15	0.3	0.1	505	–	–	0.75
255	0.15	0.35	0.1	545	–	–	0.7
290	0.3	0.6	0.2	585	–	–	0.9

Table 7.2: Oil filling quantities

1) For types ZWBT and ZWBG, the oil volumes are specified for one coupling side apply.

When using liquefied grease, 1.3 x given oil filling quantity must be used.

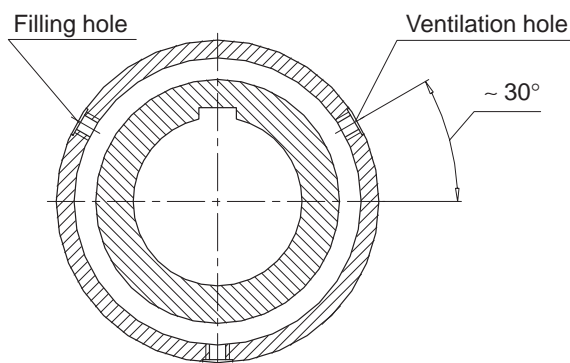
**Caution!** For the oil flow quantities of type ZWHD see the dimensioned drawing.

For simplified filling proceed as follows:

Rotate the coupling until the plug screws (6) are positioned as shown in the figure.

Remove the upper plug screws (6) and fill in oil / grease. Measure the correct oil quantity / grease quantity by means of a measuring jug.

Screw in the plug screws (6) with inserted / vulcanised sealing rings.



**Caution!** Overflown oil/grease must be collected without residue and disposed of in compliance with regulations.

## 7.3 Measures before startup

Before startup, check the proper assembly, the alignment and the oil or grease filling and correct, if necessary and check all screw connections for the prescribed tightening torques.

**Caution!** Finally, fix the coupling guard to prevent accidental contact.

## 8. Operation

**Note:** Observe the "Safety notes" in section 3.

**Caution!**

**If a dimensioned drawing has been made out for the coupling, the data in this drawing must be given priority.**

### 8.1 General operating data

During operation, the coupling should be checked for

- any changes in running noises
- leakages (oil leakage / grease leakage).

**Caution!**

**If irregularities are detected during operation, the drive assembly should be set off immediately. The cause of the malfunction should be determined with the aid of the Troubleshooting Table (Section 9.).**

**The Troubleshooting Table lists possible malfunctions, their causes and suggestions for remedying them.**

**If the cause cannot be determined or there is no facility for repair with suitable equipment, we recommend calling in one of our service fitters (see Section 11.).**

## 9. Disturbances, reasons and remedy

**Note:** Observe the "Safety notes" in section 3.

**Caution!**

**If a dimensioned drawing has been made out for the coupling, the data in this drawing must be given priority.**

### 9.1 General

The malfunctions listed below can only be hints for a troubleshooting.

In case of a complex plant, all other components have always to be included in the troubleshooting.

The coupling has to run with low noise and without shaking in all operating phases. Any deviating behaviour is to be regarded as malfunction and should be repaired immediately.

**Note:** Faults and malfunctions occurring during the guarantee period and which require repair work on the coupling, must be carried out only by FLENDER Customer Service. In the case of faults and malfunctions occurring after the guarantee period, and whose cause cannot be precisely identified, we advise our customers to contact our Customer Service.

**Caution!**

**FLENDER will not be bound by the terms of the guarantee or otherwise be responsible in cases of improper use of the coupling, modifications carried out without the consent of FLENDER, or use of spare parts not supplied by FLENDER.**



**To remedy faults and malfunctions, the coupling must always be taken out of service.**

**Secure the drive assembly to prevent it from being started up accidentally. Attach a warning notice to the start switch.**

## 9.2 Possible faults

Malfunctions	Causes	Remedy
Sudden change of the noise level and/or sudden shaking	Exceeding the permissible misalignments	Shut down the plant  Re-align according to Section 6, if necessary
	Lack of lubricant	Shut down the plant  Change lubricant according to Section 7, when doing so, check the tooth system and the seals.  If necessary, replace the seals according to Section 10.

Table 9.1: Malfunction, causes and remedy

## 10. Maintenance and repair

**Note:** Observe the "Safety notes" in section 3.

**Caution!**

**If a dimensioned drawing has been made out for the coupling, the data in this drawing must be given priority.**

### 10.1 General

Check the coupling for leakages, heating, change of noise level at the regular maintenance intervals, at least every three months.

The coupling must run at low noise and without vibration during all operation phases. Any deviating behaviour should be regarded as malfunction and rectified immediately.

The space required for changing the DUO sealing rings (12) will be found in the dimension table in section 1. "Technical data" with letter P and  $d_6$ .

### 10.2 Oil change or grease change

When carrying out the regular inspections, check the coupling for leakages, check the lubricant level and refill, if necessary.

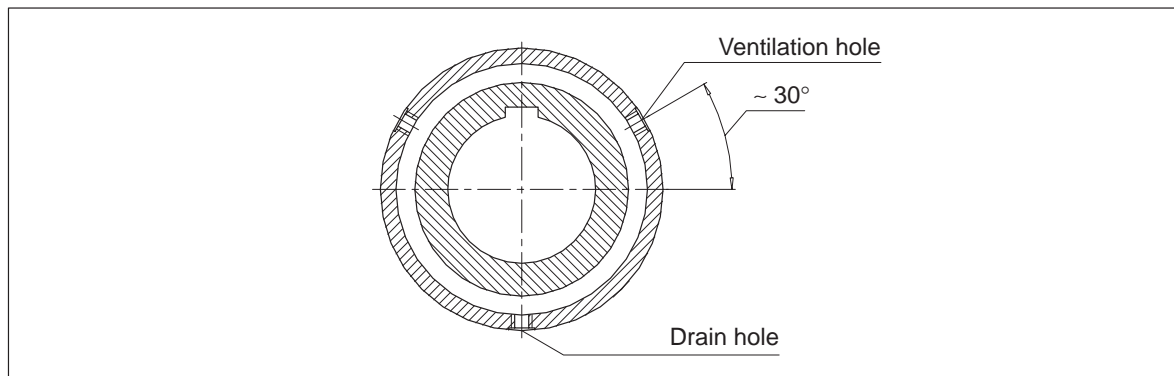
Change of lubricant after approx. 8000 operating hours max. 2 years in case of use up to 70 °C , above 70 °C and after approx. 3000 operating, max. 1 year.

## 10.3 Change of wear parts

Remove screw plugs (6) and drain the oil/grease into a suitable collecting vessel as shown in the figure (in the case of grease filling, make things easier by adding light-bodied oil to the old grease and mixing well).

**Caution!**

The oil/grease must be collected without residue and disposed of in compliance with regulations.



If the dimensions  $d_6$  and  $P$  are kept (see section 1. "Technical data"), the DUO sealing rings (12) can be replaced by open-ended (cut) DUO sealing rings (12) without dislocating the machines to be connected.

To do so, loosen the cover joint (11) and push the cover (10 and/or 21) off the hub until the DUO sealing ring (12) can be taken out.

Cut the new DUO sealing ring (12) radially at one point. Grease the groove prior to inserting the DUO sealing ring (12).

DUO sealing rings (12) with trapezoidal back can be inserted without bonding. For this purpose, insert the connecting point without clearance into the V-groove and then insert the DUO sealing ring (12) starting at the connecting point on both sides.

Replace the cover (10 and/or 21) as described in Section 6, "Assembly". Fill with oil/grease as described in Section 7, "Startup".

## 10.4 Disassembly of the coupling parts (1/2) in case of shaft / hub connection with parallel key

Unscrew screw plugs (6) and drain the oil/grease into a suitable collecting vessel as shown in the above figure (in the case of grease filling, make things easier by adding light-bodied oil to the old grease and mixing well).

**Caution!**

The oil/grease must be collected without residue and disposed of in compliance with regulations.

Loosen the fitting-bolt connection (8, 9) and the cover joint (11). Pull off the covers (10 and/or 21) and support above the shafts. Move the coupled machines apart. Remove the sleeve (5) / coupling sleeve (5), the axial play limiting device (52) and the brake disk (13).

**Caution!**

Make sure that suitable hoists are used.

Check the tooth system, seals (12) and sealing surfaces for damages. Replace damaged parts.

# FLENDER

Remove the set screw or the axial securing device. Mount a suitable pulling-off device. Heat the coupling part (1/2) by means of a burner above the parallel keyway in longitudinal direction (max. +80 °C).

## Caution!

**DUO sealing rings (12) and seals of the input and output sides should be protected from damage and heating in excess of +80 °C.**



**Protect yourself against burns by hot parts!**

## Caution!

**Remove coupling parts (1/2) smoothly. Make sure that suitable lifting gear and detaching devices are used. The shaft bearing arrangement must not be loaded. Make sure that the bore and the sealing surface for the DUO sealing ring are not damaged by hoists etc.**

For the reassembly, observe the instructions in section 6. "Assembly" and in section 7. "Startup".

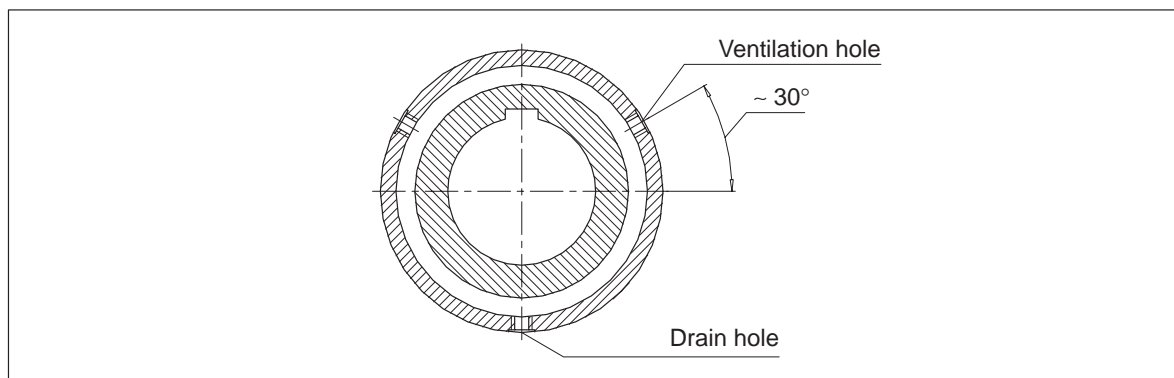
10.5 Disassembly of the coupling parts (1/2) in case of cylindrical and tapered interference fit set for removal by oil hydraulic shrinking

The disassembly of the coupling must be carried out considering all precautions.

Unscrew screw plugs (6) and drain off the grease into a suitable collecting vessel, as shown in the illustration (to speed up the process, add light-bodied oil to the used grease and mix).

## Caution!

**The oil/grease must be collected without residue and disposed of in compliance with regulations.**



Loosen the fitting-bolt connection (8, 9) and the cover joint (11). Pull off the covers (10 and/or 21) and support above the shafts. Move the coupled machines apart. Remove the sleeve (5) / coupling sleeve (5), the axial play limiting device (52) and the brake disk (13).

## Caution!

**Make sure that suitable hoists are used.**



**Danger of squeezing!**

Check the tooth system, seals (12) and sealing surfaces for damages. Replace damaged parts.



# FLENDER

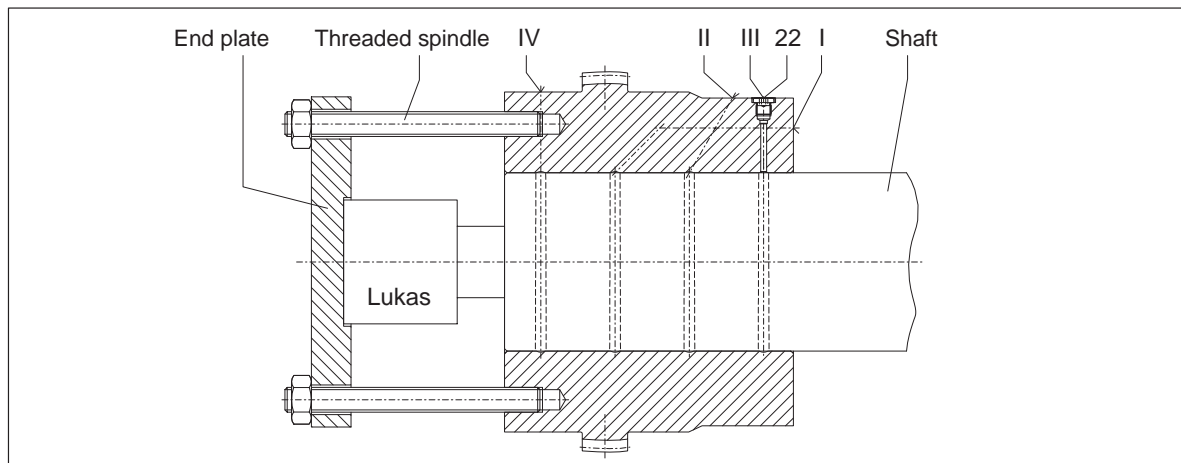
The following tools are required for disassembly:

- For each oil duct (for the exact number see dimensioned drawing) one oil pump with pressure gauge (min. 2500 bar) and/or motor-driven pump with a corresponding number of connections to be closed independently.
- Suitable connections and lines
- 1 Detaching device and/or retaining plate with retaining screws and/or threaded spindles with nuts (material of screws and spindles min. 10.9; material of nuts identical to screw material).
- 1 Hydraulic cylinder (Lukas) with oil pump. Observe adjustment path and compressive force of Lukas (axial force after consultation with FLENDER and/or according to dimensioned drawing).



**Observe the manufacturer's notes on handling the forcing-off device / pulling-off device and pumps.**

Before pulling off the coupling hub, the pulling-off device must be mounted as shown in the figure.



**Caution!**

**Secure the coupling parts (1/2) and the holding device by means of suitable hoists.  
In case of coupling parts with tapered bore, axial securing against sudden loosening of the coupling part must be provided.**

The screw plugs (22) must be removed from the oil ducts. One oil pump must be bled and connected to the centre oil duct (in this case oil duct I).

Next the pressure indicated in the dimensioned drawing must be allowed to act upon the pump until the oil escapes from the adjacent connections (oil ducts IV and II).

**Caution!**

**The maximum pressure indicated in the dimensioned drawing must not be exceeded!**

Bleed the next oil pump and connect to oil duct II and allow the pressure indicated in the dimensioned drawing to act upon the pump until the oil escapes ring-like at oil duct III.

Bleed the next oil pump and connect to oil duct IV and allow the pressure indicated in the dimensioned drawing to act upon the pump until the oil escapes ring-like at the front.

Bleed the next oil pump and connect to oil duct III and allow the pressure indicated in the dimensioned drawing to act upon the pump until the oil escapes ring-like at the front.

**Caution!**

**Observe the order!**

**Caution!**

**During the entire process, the pressure must be kept constant at all pressurised oil ducts.**

If so much oil leaks during pressurising that the pressure cannot be kept, oil with a higher viscosity must be used.

Only when oil leaks as a closed oil ring from both faces and after waiting for approx. 30 minutes, Lukas may be pressurised so that the coupling hub can slide off the coupling hub quickly.

**Caution!**

**The oil must be collected without residue and disposed of in compliance with regulations.**

**Caution!**

**Observe the stroke of the hydraulic cylinder. When readjusting, if necessary, the face of Lukas must stop between 2 oil ducts.**

After pulling off, the oil pumps and holding devices must be removed from the coupling hub.

Check the coupling bore and shaft for damages and protect them against corrosion. Replace damaged parts if necessary.

For the reassembly, carefully follow the instructions in section 6. "Assembly" and in section 7. "Startup".

## 10.6 Disassembly of the coupling parts in case of stepped bore for removal by oil hydraulic shrinking

The disassembly is carried out as described under item 10.5. The only difference is that a motor driven pump is connected to the oil duct at the change-over from the smaller bore to the larger bore since a larger oil quantity per time unit is required.

For the reassembly, carefully follow the instructions in section 6. "Assembly" and in section 7. "Startup".

## 11. Spare parts stock, service facility addresses

Maintaining a stock of the most essential spare and wear parts is an important prerequisite for the permanent service ability of the coupling.

When ordering spare parts, the following data should be stated:

- Original Order No.
- Part No. (see Section 5. "Technical Description")
- Type / size
- Quantity

We assume warranty only for original spare parts supplied by us.

### Caution!

**We would expressly draw attention to the fact that spare parts and accessories not supplied by us have not been tested or approved by us either. Fitting and/or use of such products can therefore under certain circumstances adversely affect structurally specified properties of the coupling and will thus impair active and/or passive safety. No form of reliability or warranty will be assumed by FLENDER for damage occasioned by use of non-original spare parts and accessories.**

Please note that production and supply specifications frequently exist for components and we will always offer spare parts in accordance with the state of the art and in accordance with the latest legal requirements.

### 11.1 Service facility addresses

When ordering spare parts or requesting a service fitter, please contact FLENDER AG first of all.

#### FLENDER Germany

##### A. FRIEDR. FLENDER AG

46393 Bocholt - Tel.: (0 28 71) 92-0 - Fax: (0 28 71) 92 25 96  
E-mail: [contact@flender.com](mailto:contact@flender.com) • [www.flender.com](http://www.flender.com)  
Shipping address: Alfred - Flender - Strasse 77 - 46395 Bocholt

##### A. FRIEDR. FLENDER AG - Kupplungswerk Mussum

Industriepark Bocholt - Schlavenhorst 100 - 46395 Bocholt - Tel.: (0 28 71) 92 28 68 - Fax: (0 28 71) 92 25 79  
E-mail: [couplings@flender.com](mailto:couplings@flender.com) • [www.flender.com](http://www.flender.com)

##### A. FRIEDR. FLENDER AG - Werk Friedrichsfeld

Am Industriepark 2 - 46562 Voerde - Tel.: (0 28 71) 92-0 - Fax: (0 28 71) 92 25 96  
E-mail: [contact@flender.com](mailto:contact@flender.com) • [www.flender.com](http://www.flender.com)

##### A. FRIEDR. FLENDER AG - Getriebewerk Penig

Thierbacher Strasse 24 - 09322 Penig - Tel.: (03 73 81) 60 - Fax: (03 73 81) 8 02 86  
E-mail: [ute.tappert@flender.com](mailto:ute.tappert@flender.com) • [www.flender.com](http://www.flender.com)

##### FLENDER - TÜBINGEN GMBH

72007 Tübingen - Tel.: (0 70 71) 7 07-0 - Fax: (0 70 71) 70 74 00  
E-mail: [sales-motox@flender-motox.com](mailto:sales-motox@flender-motox.com) • [www.flender.com](http://www.flender.com)  
Shipping address: Bahnhofstrasse 40 - 72072 Tübingen

##### LOHER GMBH

94095 Ruhstorf - Tel.: (0 85 31) 3 90 - Fax: (0 85 31) 3 94 37  
E-mail: [info@loher.de](mailto:info@loher.de) • [www.loher.de](http://www.loher.de)  
Shipping address: Hans-Loher-Strasse 32 - 94099 Ruhstorf

##### FLENDER SERVICE GMBH

44607 Herne - Tel.: (0 23 23) 940-0 - Fax: (0 23 23) 940 333  
E-mail: [infos@flender-service.com](mailto:infos@flender-service.com) • [www.flender-service.com](http://www.flender-service.com)  
24h Service Hotline +49 (0) 17 22 81 01 00  
Shipping address: Südstrasse 111 - 44625 Herne

##### A. FRIEDR. FLENDER AG - FLENDER GUSS

Obere Hauptstrasse 228-230 - 09228 Chemnitz / Wittgensdorf - Tel.: (0 37 22) 64-0 - Fax: (0 37 22) 64 21 89  
E-mail: [flender.guss@flender-guss.com](mailto:flender.guss@flender-guss.com) • [www.flender-guss.de](http://www.flender-guss.de)

## Germany

**A. FRIEDR. FLENDER AG**

**46393 BOCHOLT - TEL.: (0 28 71) 92 - 0 - FAX: (0 28 71) 92 25 96**

**SHIPPING ADDRESS: ALFRED - FLENDER - STRASSE 77 - 46395 BOCHOLT**

---

**E-mail: [contact@flender.com](mailto:contact@flender.com) • [www.flender.com](http://www.flender.com)**

---

### **VERTRIEBSZENTRUM BOCHOLT**

46393 Bocholt  
Alfred-Flender-Strasse 77, 46395 Bocholt  
Tel.: (0 28 71) 92 - 0  
Fax: (0 28 71) 92 - 14 35  
E-mail: [vz.bocholt@flender.com](mailto:vz.bocholt@flender.com)

---

### **VERTRIEBSZENTRUM STUTT GART**

70472 Stuttgart  
Friedlzheimer Strasse 3, 70499 Stuttgart  
Tel.: (07 11) 7 80 54 - 51  
Fax: (07 11) 7 80 54 - 50  
E-mail: [vz.stuttgart@flender.com](mailto:vz.stuttgart@flender.com)

---

### **VERTRIEBSZENTRUM MÜNCHEN**

85750 Karlsfeld  
Liebigstrasse 14, 85757 Karlsfeld  
Tel.: (0 81 31) 90 03 - 0  
Fax: (0 81 31) 90 03 - 33  
E-mail: [vz.muenchen@flender.com](mailto:vz.muenchen@flender.com)

---

### **VERTRIEBSZENTRUM BERLIN**

Schlossallee 8, 13156 Berlin  
Tel.: (0 30) 91 42 50 58  
Fax: (0 30) 47 48 79 30  
E-mail: [vz.berlin@flender.com](mailto:vz.berlin@flender.com)

---

### EUROPE

#### AUSTRIA

Flender Ges.m.b.H.  
Industriezentrum Nö-Süd  
Strasse 4, Objekt 14, Postfach 132  
2355 Wiener Neudorf  
Phone: +43 (0) 22 36 6 45 70  
Fax: +43 (0) 22 36 6 45 70 10  
E-mail: office@flender.at  
www.flender.at

#### BELGIUM & LUXEMBOURG

N.V. Flender Belge S.A.  
Cyriel Buyssestraat 130  
1800 Vilvoorde  
Phone: +32 (0) 2 - 2 53 10 30  
Fax: +32 (0) 2 - 2 53 09 66  
E-mail: sales@flender.be

#### BULGARIA

A. Friedr. Flender AG  
Branch Office  
c/o Auto - Profi GmbH  
Alabin Str. 52, 1000 Sofia  
Phone: +359 (0) 2 - 9 80 66 06  
Fax: +359 (0) 2 - 9 80 33 01  
E-mail: sofia@auto-profi.com

#### CROATIA / SLOVENIA BOSNIA-HERZEGOVINA

A. Friedr. Flender AG  
Branch Office  
c/o HUM - Naklada d.o.o.  
Mandroviceva 3, 10000 Zagreb  
Phone: +385 (0) 1 - 2 30 60 25  
Fax: +385 (0) 1 - 2 30 60 24  
E-mail: flender@hi.hinet.hr

#### CZECH REPUBLIC

A. Friedr. Flender AG  
Branch Office  
Hotel DUO, Teplicka 17  
19000 Praha 9  
Phone: +420 (0) 2 - 83 88 23 00  
Fax: +420 (0) 2 - 83 88 22 05  
E-mail: flender\_pumprla@hotelduo.cz

#### DENMARK

Flender Scandinavia A/S  
Rugmarken 35 B, 3520 Farum  
Phone: +45 - 70 22 60 03  
Fax: +45 - 44 99 16 62  
E-mail: kontakt@flenderscandinavia.com  
www.flenderscandinavia.com

#### ESTHONIA / LATVIA / LITHUANIA

Flender Branch Office  
Addinol Mineralöl Marketing OÜ  
Suur-Sõjamäe 32  
11415 Tallinn / Esthonia  
Phone: +372 (0) 6 - 27 99 99  
Fax: +372 (0) 6 - 27 99 90  
E-mail: flender@addinol.ee  
www.addinol.ee

#### FINLAND

Flender Oy  
Ruosilantie 2 B, 00390 Helsinki  
Phone: +358 (0) 9 - 4 77 84 10  
Fax: +358 (0) 9 - 4 36 14 10  
E-mail: webmaster@flender.fi  
www.flender.fi

#### FRANCE

Flender s.a.r.l.  
3, rue Jean Monnet - B.P. 5  
78996 Elancourt Cedex  
Phone: +33 (0) 1 - 30 66 39 00  
Fax: +33 (0) 1 - 30 66 35 13  
E-mail: sales@flender.fr

#### SALES OFFICES:

Flender s.a.r.l.  
36, rue Jean Broquin  
69006 Lyon  
Phone: +33 (0) 4 - 72 83 95 20  
Fax: +33 (0) 4 - 72 83 95 39  
E-mail: sales@flender.fr

Flender - Graffenstaden SA  
1, rue du Vieux Moulin  
67400 Illkirch-Graffenstaden  
B.P. 84  
67402 Illkirch - Graffenstaden  
Phone: +33 (0) 3 - 88 67 60 00  
Fax: +33 (0) 3 - 88 67 06 17  
E-mail: flencomm@flender-graff.com

#### GREECE

Flender Hellas Ltd.  
2, Delfon str., 11146 Athens  
Phone: +30 210 - 2 91 72 80  
Fax: +30 210 - 2 91 71 02  
E-mail: flender@otenet.gr  
Mangrinox S.A.  
14, Grevenon str., 11855 Athens  
Phone: +30 210 - 3 42 32 01  
Fax: +30 210 - 3 45 99 28  
E-mail: mangrinox@otenet.gr

#### HUNGARY

A. Friedr. Flender AG  
Branch Office  
Bécsi Út 3-5, 1023 Budapest  
Phone: +36 (0) 1 - 3 45 07 90 / 91  
Fax: +36 (0) 1 - 3 45 07 92  
E-mail: jambor.laszlo@axelero.hu

#### ITALY

Flender Cigala S.p.A.  
Parco Tecnologico Manzoni  
Palazzina G  
Viale delle industrie, 17  
20040 Caponago (MI)  
Phone: +39 (0) 02 - 95 96 31  
Fax: +39 (0) 02 - 95 74 39 30  
E-mail: info@flendercigala.it

#### THE NETHERLANDS

Flender Nederland B.V.  
Industrieterrein Lansinghage  
Platinastraat 133  
2718 ST Zoetermeer  
Postbus 725  
2700 AS Zoetermeer  
Phone: +31 (0) 79 - 3 61 54 70  
Fax: +31 (0) 79 - 3 61 54 69  
E-mail: sales@flender.nl  
www.flender.nl

#### SALES OFFICES:

Flender Nederland B.V.  
Lage Brink 5-7  
7317 BD Apeldoorn  
Postbus 1073  
7301 BH Apeldoorn  
Phone: +31 (0) 55 - 5 27 50 00  
Fax: +31 (0) 55 - 5 21 80 11  
E-mail: tom.alberts@flender-group.com

#### Bruinhof B.V.

Boterdiep 37  
3077 AW Rotterdam  
Postbus 9607  
3007 AP Rotterdam  
Phone: +31 (0) 10 - 4 97 08 08  
Fax: +31 (0) 10 - 4 82 43 50  
E-mail: info@bruinhof.nl  
www.bruinhof.nl

#### NORWAY

Elektroprosess AS  
Frysjaveien 40, 0884 Oslo  
Postboks 165, Kjelsås  
0411 Oslo  
Phone: +47 (0) 2 - 2 02 10 30  
Fax: +47 (0) 2 - 2 02 10 50 / 51  
E-mail: post@elektroprosess.no

#### POLAND

A. Friedr. Flender AG  
Branch Office  
Przedstawicielstwo w Polsce  
ul. Wyzwolenia 27  
43 - 190 Mikołów  
Phone: +48 (0) 32 - 2 26 45 61  
Fax: +48 (0) 32 - 2 26 45 62  
E-mail: flender@pro.onet.pl  
www.flender.pl

#### PORTUGAL

Rodamientos FEYC, S.A.  
R. Jaime Lopes Dias, 1668 CV  
1750 - 124 Lissabon  
Phone: +351 (0) 21 - 7 54 24 10  
Fax: +351 (0) 21 - 7 54 24 19  
E-mail: info@rportugal.com

#### ROMANIA

A. Friedr. Flender AG  
Branch Office  
98 - 106, Soseaua Mihai Bravu  
Sector 2, Bloc D 16, Sc 1, Apartament 4  
021331 Bucuresti - 2  
Phone: +40 (0) 21 - 4 91 10 08  
Fax: +40 (0) 21 - 4 91 10 08  
E-mail: flender@fx.ro

#### RUSSIA

F & F GmbH  
Tjuschina 4-6  
191119 St. Petersburg  
Phone: +7 (0) 8 12 - 3 20 90 34  
Fax: +7 (0) 8 12 - 3 40 27 60  
E-mail: flendergus@mail.spbnit.ru

#### SLOVAKIA

A. Friedr. Flender AG  
Branch Office  
Vajanského 49  
P.O. Box 286, 08001 Presov  
Phone: +421 (0) 51 - 7 70 32 67  
Fax: +421 (0) 51 - 7 70 32 67  
E-mail: micenko.flender@nextra.sk

#### SPAIN

Flender Ibérica S.A.  
Poligono Industrial San Marcos  
Calle Morse, 31 (Parcela D-15)  
28906 Getafe - Madrid  
Phone: +34 (0) 91 - 6 83 61 86  
Fax: +34 (0) 91 - 6 83 46 50  
E-mail: f-iberica@flender.es  
www.flender.es

#### SWEDEN

Flender Scandinavia  
Åsensvägen 2  
44339 Lerum  
Phone: +46 (0) 302 - 1 25 90  
Fax: +46 (0) 302 - 1 25 56  
E-mail: kontakt@flenderscandinavia.com  
www.flenderscandinavia.com

#### SWITZERLAND

Flender AG  
Zeughausstr. 48  
5600 Lenzburg  
Phone: +41 (0) 62 8 85 76 00  
Fax: +41 (0) 62 8 85 76 76  
E-mail: info@flender.ch  
www.flender.ch

#### TURKEY

Flender Güc Aktarma Sistemleri  
Sanayi ve Ticaret Ltd. Sti.  
IMES Sanayi, Sitesi  
E Blok 502, Sokak No. 22  
81260 Dudullu - Istanbul  
Phone: +90 (0) 2 16 - 4 66 51 41  
Fax: +90 (0) 2 16 3 64 59 13  
E-mail: cuzkan@flendertr.com  
www.flendertr.com

#### UKRAINE

A. Friedr. Flender AG  
Branch Office, c/o DIV - Deutsche Industrie-  
vertretung, Prospect Pobedy 44  
252057 Kiev  
Phone: +380 (0) 44 - 4 46 80 49  
Fax: +380 (0) 44 - 2 30 29 30  
E-mail: flender@div.kiev.ua

#### UNITED KINGDOM & EIRE

Flender Power Transmission Ltd.  
Thornbury Works, Leeds Road  
Bradford  
West Yorkshire BD3 7EB  
Phone: +44 (0) 12 74 65 77 00  
Fax: +44 (0) 12 74 66 98 36  
E-mail: flenders@flender-power.co.uk  
www.flender-power.co.uk

# FLENDER

## SERBIA-MONTENEGRO ALBANIA / MACEDONIA

A. Friedr. Flender AG  
Branch Office  
c/o G.P.Inzenjering d.o.o.  
III Bulevar 54 / 19  
11070 Novi Beograd  
Phone: +381 (0) 11 - 60 44 73  
Fax: +381 (0) 11 - 3 11 67 91  
E-mail: flender@eunet.yu

## AFRICA

### NORTH AFRICAN COUNTRIES

Please refer to Flender s.a.r.l.  
3, rue Jean Monnet - B.P. 5  
78996 Elancourt Cedex  
Phone: +33 (0) 1 - 30 66 39 00  
Fax: +33 (0) 1 - 30 66 35 13  
E-mail: sales@flender.fr

### EGYPT

Sons of Farid Hassanen  
81 Matbaa Ahlia Street  
Boulac 11221, Cairo  
Phone: +20 (0) 2 - 5 75 15 44  
Fax: +20 (0) 2 - 5 75 17 02  
E-mail: hussein@sonfarid.com

### SOUTH AFRICA

Flender Power Transmission (Pty.) Ltd.  
Cnr. Furnace St & Quality Rd.  
P.O. Box 131, Isando 1600  
Johannesburg  
Phone: +27 (0) 11 - 5 71 20 00  
Fax: +27 (0) 11 - 3 92 24 34  
E-mail: sales@flender.co.za  
www.flender.co.za

**SALES OFFICES:**  
Flender Power Transmission (Pty.) Ltd.  
Unit 3 Marconi Park  
9 Marconi Crescent, Montague Gardens  
P.O. Box 37291

Chempet 7442, Cape Town  
Phone: +27 (0) 21 - 5 51 50 03  
Fax: +27 (0) 21 - 5 52 38 24  
E-mail: sales@flender.co.za

Flender Power Transmission (Pty.) Ltd.  
Unit 3 Goshawk Park  
Falcon Industrial Estate  
P.O. Box 1608  
New Germany 3620, Durban  
Phone: +27 (0) 31 - 7 05 38 92  
Fax: +27 (0) 31 - 7 05 38 72  
E-mail: sales@flender.co.za

Flender Power Transmission (Pty.) Ltd.  
9 Industrial Crescent, Ext. 25  
P.O. Box 17609, Witbank 1035  
Phone: +27 (0) 13 - 6 92 34 38  
Fax: +27 (0) 13 - 6 92 34 52  
E-mail: sales@flender.co.za

Flender Power Transmission (Pty.) Ltd.  
Unit 14 King Fisher Park, Alton  
Cnr. Ceramic Curve & Alumina Allee  
P.O. Box 101995  
Meerensee 3901, Richards Bay  
Phone: +27 (0) 35 - 7 51 15 63  
Fax: +27 (0) 35 - 7 51 15 64  
E-mail: sales@flender.co.za

## AMERICA

### ARGENTINA

Chilicote S.A.  
Avda. Julio A. Roca 546  
C 1067 ABN Buenos Aires  
Phone: +54 (0) 11 - 43 31 66 10  
Fax: +54 (0) 11 - 43 31 42 78  
E-mail: chilicote@chilicote.com.ar

### BRASIL

Flender Brasil Ltda.  
Rua Quatorze, 60 - Cidade Industrial  
32211 - 970, Contagem - MG  
Phone: +55 (0) 31 - 33 69 21 00  
Fax: +55 (0) 31 - 33 69 21 66  
E-mail: vendas@flenderbrasil.com

### SALES OFFICES:

Flender Brasil Ltda.  
Rua James Watt, 142  
conj. 142 - Brooklin Novo  
04576 - 050, São Paulo - SP  
Phone: +55 (0) 11 - 55 05 99 33  
Fax: +55 (0) 11 - 55 05 30 10  
E-mail: flesao@uol.com.br

Flender Brasil Ltda.  
Rua Campos Salles, 1095  
sala 04 - Centro 14015 - 110,  
Ribeirão Preto - SP  
Phone: +55 (0) 16 - 6 35 15 90  
Fax: +55 (0) 16 - 6 35 11 05  
E-mail: flender.ribpreto@uol.com.br

### CANADA

Flender Power Transmission Inc.  
215 Shields Court, Units 4 - 6  
Markham, Ontario L3R 8V2  
Phone: +1 (0) 9 05 - 3 05 10 21  
Fax: +1 (0) 9 05 - 3 05 10 23  
E-mail: flender@ca.inter.net  
www.flenderpti.com

### SALES OFFICE:

Flender Power Transmission Inc.  
34992 Bemina Court  
Abbotsford - Vancouver  
B.C. V3G 1C2  
Phone: +1 (0) 6 04 - 8 59 66 75  
Fax: +1 (0) 6 04 - 8 59 68 78  
E-mail: tvickers@rapidnet.net

### CHILE / ARGENTINA / BOLIVIA ECUADOR / PARAGUAY / URUGUAY

Flender Cono Sur Limitada  
Avda. Galvarino Gallardo 1534  
Providencia, Santiago  
Phone: +56 (0) 2 - 2 35 32 49  
Fax: +56 (0) 2 - 2 64 20 25  
E-mail: flender@flender.cl  
www.flender.cl

### COLOMBIA

A.G.P. Representaciones Ltda.  
Flender Liaison Office Colombia  
Av Boyaca No 23A  
50 Bodega UA 7-1, Bogotá 53  
Phone: +57 (0) 1 - 5 70 63 54  
Fax: +57 (0) 1 - 5 70 73 35  
E-mail: aguerrero@agp.com.co  
www.agp.com.co

### MEXICO

Flender de Mexico S.A. de C.V.  
17, Pte. 713 Centro  
72000 Puebla  
Phone: +52 (0) 2 22 - 2 37 19 00  
Fax: +52 (0) 2 22 - 2 37 11 33  
E-mail: szugasti@flendermexico.com  
www.flendermexico.com

### SALES OFFICES:

Flender de Mexico S.A. de C.V.  
Lago Nargis No. 38  
Col. Granada,  
11520 Mexico, D.F.  
Phone: +52 (0) 55 - 52 54 30 37  
Fax: +52 (0) 55 - 55 31 69 39  
E-mail: info@flendermexico.com

Flender de Mexico S.A. de C.V.  
Ave. San Pedro No. 231-5  
Col. Miravalle  
64660 Monterrey, N.L.  
Phone: +52 (0) 81 - 83 63 82 82  
Fax: +52 (0) 81 - 83 63 82 83  
E-mail: info@flendermexico.com

### PERU

Potencia Industrial E.I.R.L.  
Calle Victor González Olaechea N° 110  
Urb. La Aurora - Miraflores,  
P.O.Box: Av. 2 de Mayo N° 679  
Of.108-Miraflores  
Casilla N° 392, Lima 18  
Phone: +51 (0) 1 - 2 42 84 68  
Fax: +51 (0) 1 - 2 42 08 62  
E-mail: cesarzam@chavin.rcp.net.pe

### USA

Flender Corporation  
950 Tollgate Road  
P.O. Box 1449, Elgin, IL. 60123  
Phone: +1 (0) 8 47 - 9 31 19 90  
Fax: +1 (0) 8 47 - 9 31 07 11  
E-mail: flender@flenderusa.com  
www.flenderusa.com

Flender Corporation  
Service Centers West  
4234 Foster Ave.  
Bakersfield, CA. 93308  
Phone: +1 (0) 6 61 - 3 25 44 78  
Fax: +1 (0) 6 61 - 3 25 44 70  
E-mail: flender1@lightspeed.net

### VENEZUELA

F. H. Transmisiones S.A.  
Urbanización Buena Vista  
Calle Johan Schafer o Segunda Calle  
Municipio Sucre, Petare  
Caracas  
Phone: +58 (0) 2 - 21 52 61  
Fax: +58 (0) 2 - 21 18 38  
E-mail: fhtransm@telcel.net.ve  
www.fhtransmisiones.com

## ASIA

### BANGLADESH / SRI LANKA

Please refer to Flender Limited  
No. 2 St. George's Gate Road  
5th Floor, Hastings  
Kolkata - 700 022  
Phone: +91 (0) 33 - 2 23 05 45  
Fax: +91 (0) 33 - 2 23 18 57  
E-mail: flender@flenderindia.com

### PEOPLE'S REPUBLIC OF CHINA

Flender Power Transmission  
(Tianjin) Co. Ltd.  
ShuangHu Rd.- Shuangchen Rd. West  
Beichen Economic Development  
Area (BEDA)  
Tianjin 300400  
Phone: +86 (0) 22 - 26 97 20 63  
Fax: +86 (0) 22 - 26 97 20 61  
E-mail: flender@flendertj.com  
www.flendertj.com  
Flender Power Transmission  
(Tianjin) Co. Ltd.  
Beijing Office  
C-415, Lufthansa Center  
50 Liangmaqiao Road, Chaoyang District  
Beijing 100016  
Phone: +86 (0) 10 - 64 62 21 51  
Fax: +86 (0) 10 - 64 62 21 43  
E-mail: beijing@flenderprc.com.cn

Flender Power Transmission  
(Tianjin) Co. Ltd.  
Shanghai Office  
1101-1102 Harbour Ring Plaza  
18 Xizang Zhong Rd.  
Shanghai 200 001  
Phone: +86 (0) 21 - 53 85 31 48  
Fax: +86 (0) 21 - 53 85 31 46  
E-mail: shanghai@flenderprc.com.cn

Flender Power Transmission  
(Tianjin) Co. Ltd.  
Wuhan Office  
Rm. 1503, Jianyin Building,  
709 Jiashedadao  
Wuhan 430 015  
Phone: +86 (0) 27 - 85 48 67 15  
Fax: +86 (0) 27 - 85 48 68 36  
E-mail: wuhan@flenderprc.com.cn

Flender Power Transmission  
(Tianjin) Co. Ltd.  
Guangzhou Office  
Rm. 2802, Guangzhou International  
Electronics Tower  
403 Huanshi Rd. East  
Guangzhou 510 095  
Phone: +86 (0) 20 - 87 32 60 42  
Fax: +86 (0) 20 - 87 32 60 45  
E-mail: guangzhou@flenderprc.com.cn

Flender Power Transmission  
(Tianjin) Co. Ltd.  
Chengdu Office  
G-6 / F Guoxin Mansion,  
77 Xiyu Street  
Chengdu 610 015  
Phone: +86 (0) 28 - 86 19 83 72  
Fax: +86 (0) 28 - 86 19 88 10  
E-mail: chengdu@flenderprc.com.cn

# FLENDER

Flender Power Transmission  
(Tianjin) Co. Ltd.  
Shenyang Office  
Rm. 2-163, Tower I, City Plaza Shenyang  
206 Nanjing Street (N), Heping District  
Shenyang 110 001  
Phone: +86 (0) 24 - 23 34 20 48  
Fax: +86 (0) 24 - 23 34 20 46  
E-mail: shenyang@flenderprc.com.cn

Flender Power Transmission  
(Tianjin) Co. Ltd.  
Xi'an Office  
Rm. 302, Shaanzi Zhong Da  
International Mansion  
30 Southern Rd.  
Xi'an 710 002  
Phone: +86 (0) 29 - 7 20 32 68  
Fax: +86 (0) 29 - 7 20 32 04  
E-mail: xian@flenderprc.com.cn

## INDIA

Flender Limited  
Head Office:  
No. 2 St. George's Gate Road  
5<sup>th</sup> Floor, Hastings  
Kolkata - 700 022  
Phone: +91 (0) 33 - 22 23 05 45  
Fax: +91 (0) 33 - 22 23 08 30  
E-mail: flender@flenderindia.com

Flender Limited  
Industrial Growth Centre  
Rakhajungle, Nimpura  
Kharagpur - 721 302  
Phone: +91 (0) 3222 - 23 33 07  
Fax: +91 (0) 3222 - 23 33 64  
E-mail: works@flenderindia.com

SALES OFFICES:  
Flender Limited  
Eastern Regional Sales Office  
No. 2 St. George's Gate Road  
5<sup>th</sup> Floor, Hastings  
Kolkata - 700 022  
Phone: +91 (0) 33 - 22 23 05 45  
Fax: +91 (0) 33 - 22 23 08 30  
E-mail: ero@flenderindia.com

Flender Limited  
Western Regional Sales Office  
Plot No. 23, Sector 19 - C  
Vashi, Navi Mumbai - 400 705  
Phone: +91 (0) 22 - 27 65 72 27  
Fax: +91 (0) 22 - 27 65 72 28  
E-mail: wro@flenderindia.com

Flender Limited  
Southern Regional Sales Office  
41 Nelson Manickam Road  
Aminjikarai,  
Chennai - 600 029  
Phone: +91 (0) 44 - 23 74 39 21  
Fax: +91 (0) 44 - 23 74 39 19  
E-mail: sro@flenderindia.com

Flender Limited  
Northern Regional Sales Office  
209-A, Masjid Moth, 2nd Floor  
(Behind South Extension II)  
New Delhi - 110 049  
Phone: +91 (0) 11 - 26 25 02 21  
Fax: +91 (0) 11 - 26 25 63 72  
E-mail: nro@flenderindia.com

## INDONESIA

Flender Singapore Pte. Ltd.  
Representative Office  
Perkantoran Puri Niaga II  
Jalan Puri Kencana Blok J1  
No. 2i, Kembangan  
Jakarta Barat 11610  
Phone: +62 (0) 21 - 5 82 86 24  
Fax: +62 (0) 21 - 5 82 86 23  
E-mail: bobwall@cbn.net.id

## IRAN

Cimaghand Co. Ltd.  
P.O. Box 15745-493  
No. 13, 16<sup>th</sup> East Street  
Beyhaghi Ave., Argentina Sq.  
Tehran 15156  
Phone: +98 (0) 21 - 8 73 02 14  
Fax: +98 (0) 21 - 8 73 39 70  
E-mail: info@cimaghand.com

## ISRAEL

Greenshpon Engineering Works Ltd.  
Haamelim Street 20  
P.O. Box 10108, 26110 Haifa  
Phone: +972 (0) 4 - 8 72 11 87  
Fax: +972 (0) 4 - 8 72 62 31  
E-mail: sales@greenshpon.com  
www.greenshpon.com

## JAPAN

Flender Japan Co., Ltd.  
WBG Marive East 21F  
Nakasa 2 - 6  
Mihama-ku, Chiba-shi  
Chiba 261-7121  
Phone: +81 (0) 43 - 2 13 39 30  
Fax: +81 (0) 43 - 2 13 39 55  
E-mail: contact@flender-japan.com

## KOREA

Flender Ltd.  
7<sup>th</sup> Fl. Dorim Bldg.  
1823 Bangbae-Dong, Seocho-Ku,  
Seoul 137-060  
Phone: +82 (0) 2 - 34 78 63 37  
Fax: +82 (0) 2 - 34 78 63 45  
E-mail: flender@unitel.co.kr

## KUWAIT

South Gulf Company  
Al-Reqai, Plot 1, Block 96  
P.O. Box 26229, Safat 13123  
Phone: +965 (0) - 4 88 39 15  
Fax: +965 (0) - 4 88 39 14  
E-mail: adelameen@hotmail.com

## LEBANON

Gabriel Acar & Fils s.a.r.l.  
Dahr-el-Jamal  
Zone Industrielle, Sin-el-Fil  
B.P. 80484, Beyrouth  
Phone: +961 (0) 1 - 49 82 72  
Fax: +961 (0) 1 - 49 49 71  
E-mail: gacar@beirut.com

## MALAYSIA

Flender Singapore Pte. Ltd.  
Representative Office  
37 A - 2, Jalan PJU 1/39  
Dataran Prima  
47301 Petaling Jaya  
Selangor Darul Ehsan  
Phone: +60 (0) 3 - 78 80 42 63  
Fax: +60 (0) 3 - 78 80 42 73  
E-mail: flender@tm.net.my

## PAKISTAN

Please refer to  
A. Friedr. Flender AG  
46393 Bocholt  
Phone: +49 (0) 28 71 - 92 22 59  
Fax: +49 (0) 28 71 - 92 15 16  
E-mail: ludger.wittag@flender.com

## PHILIPPINES

Flender Singapore Pte. Ltd.  
Representative Office  
28/F, Unit 2814  
The Enterprise Centre  
6766 Ayala Avenue corner  
Paeso de Roxas, Makati City  
Phone: +63 (0) 2 - 8 49 39 93  
Fax: +63 (0) 2 - 8 49 39 17  
E-mail: roman@flender.com.ph

## BAHRAIN / IRAQ / JORDAN / LYBIA OMAN / QATAR / U.A.E. / YEMEN

Please refer to A. Friedr. Flender AG  
Middle East Sales Office  
IMES Sanayi Sitesi  
E Blok 502, Sokak No. 22  
81260 Dudullu - Istanbul  
Phone: +90 (0) 2 16 - 4 99 66 23  
Fax: +90 (0) 2 16 - 3 64 59 13  
E-mail: meso@flendertr.com

## SAUDI ARABIA

South Gulf Co.  
Al-Khobar, Dahrn Str.  
Middle East Trade Center  
3rd floor, Flat # 23  
P.O. Box 20434 31952 Al-Khobar  
Phone: +966 (0) 3 - 8 87 53 32  
Fax: +966 (0) 3 - 8 87 53 31  
E-mail: adelameen@hotmail.com

## SINGAPORE

Flender Singapore Pte. Ltd.  
13 A, Tech Park Crescent  
Singapore 637843  
Phone: +65 (0) - 68 97 94 66  
Fax: +65 (0) - 68 97 94 11  
E-mail: flender@singnet.com.sg  
www.flender.com.sg

## SYRIA

Misrabi Co & Trading  
Mezzeh Autostrade Transportation  
Building 4/A, 5<sup>th</sup> Floor  
P.O. Box 12450, Damascus  
Phone: +963 (0) 11 - 6 11 67 94  
Fax: +963 (0) 11 - 6 11 09 08  
E-mail: ismael.misrabi@gmx.net

## TAIWAN

A. Friedr. Flender AG  
Taiwan Branch Company  
1F, No. 5, Lane 240  
Nan Yang Street, Hsichih  
Taipei Hsien 221  
Phone: +886 (0) 2 - 26 93 24 41  
Fax: +886 (0) 2 - 26 94 36 11  
E-mail: flender\_tw@flender.com.tw

## THAILAND

Flender Singapore Pte. Ltd.  
Representative Office  
23/F M Thai Tower, All Seasons Place  
87 Wireless Road, Phatumwan  
Bangkok 10330  
Phone: +66 (0) 2 - 6 27 91 09  
Fax: +66 (0) 2 - 6 27 90 01  
E-mail: christian.beckers@flender.th.com

## VIETNAM

Flender Singapore Pte. Ltd.  
Representative Office  
Suite 6/6A, 16F Saigon Tower  
29 Le Duan Street, District 1  
Ho Chi Minh City, Vietnam  
Phone: +84 (0) 8 - 8 23 62 97  
Fax: +84 (0) 8 - 8 23 62 88  
E-mail: flender@hcm.vnn.vn

## A U S T R A L I A

Flender (Australia) Pty. Ltd.  
9 Nello Place, P.O. Box 6047  
Wetherill Park  
N.S.W. 2164, Sydney  
Phone: +61 (0) 2 - 97 56 23 22  
Fax: +61 (0) 2 - 97 56 48 92, 97 56 14 92  
E-mail: sales@flender.com.au  
www.flender.com.au

SALES OFFICES:  
Flender (Australia) Pty. Ltd.  
Suite 3, 261 Centre Rd.  
Bentleigh, VIC 3204 Melbourne  
Phone: +61 (0) 3 - 95 57 08 11  
Fax: +61 (0) 3 - 95 57 08 22  
E-mail: sales@flender.com.au

Flender (Australia) Pty. Ltd.  
Suite 5, 1407 Logan Rd.  
Mt. Gravatt  
QLD 4122, Brisbane  
Phone: +61 (0) 7 - 34 22 23 89  
Fax: +61 (0) 7 - 34 22 24 03  
E-mail: sales@flender.com.au

Flender (Australia) Pty. Ltd.  
Suite 2 403 Great Eastern Highway  
W.A. 6104, Redcliffe - Perth  
Phone: +61 (0) 8 - 94 77 41 66  
Fax: +61 (0) 8 - 94 77 65 11  
E-mail: sales@flender.com.au

## NEW ZEALAND

Please refer to Flender (Australia) Pty. Ltd.  
9 Nello Place, P.O. Box 6047  
Wetherill Park  
N.S.W. 2164, Sydney  
Phone: +61 (0) 2 - 97 56 23 22  
Fax: +61 (0) 2 - 97 56 48 92  
E-mail: sales@flender.com.au

## 12. Declaration by the manufacturer

### Declaration by the manufacturer

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

We hereby declare that the

### **ZAPEX couplings types ZWBT, ZWBG, ZWB, ZWH and ZWHD**

described in these Operating Instructions 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 Guidelines (original edition 98/37/EC including any subsequent amendments thereto).

This Manufacturer's Declaration 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, 2000-02-10

\_\_\_\_\_  
Signature (person responsible for products)