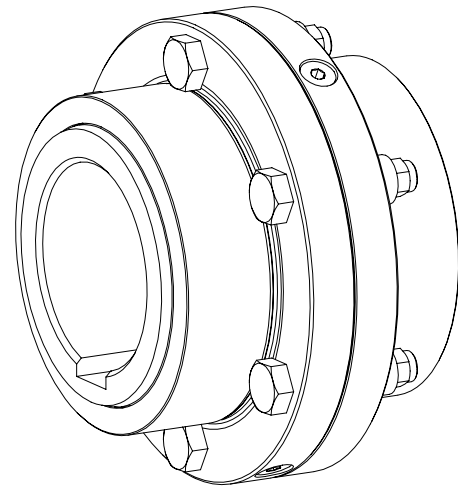


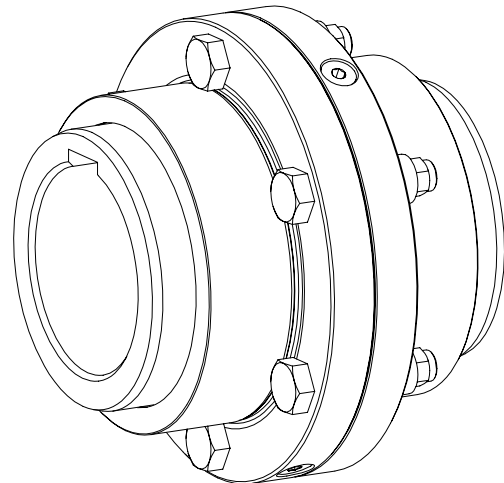


GEAREX

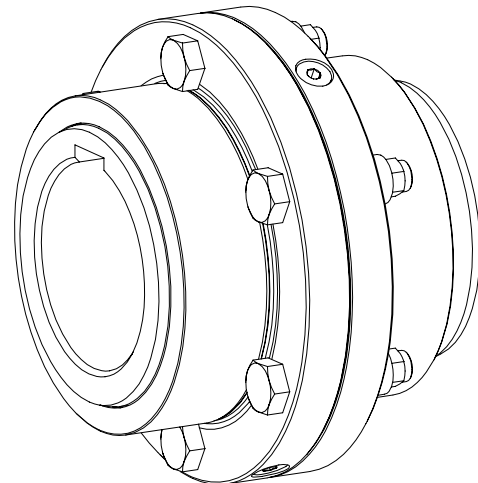
Gear couplings type
FA, FB and FAB
along with combinations



Type FA



Type FB



Type FAB

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk Geprüft: 05.12.08 Li	Ersatz für: KTR-N vom 27.11.08 Ersetzt durch:
--------------------------------------	----------------------------------------------------	--------------------------------------------------



GEAREX gear couplings are flexible shaft connections. They are in a position to compensate for shaft misalignment caused, as an example, by inaccuracies in production, heat expansion, etc.

Table of Contents

1 Technical Data

2 Hints

- 2.1 Coupling Selection
- 2.2 General Hints
- 2.3 Safety and Advice Hints
- 2.4 General Hints to Danger
- 2.5 Proper Use

3 Storage

- 3.1 Storage of the Coupling
- 3.2 Arrangement of Bearings of Toroidal Sealing Rings

4 Assembly

- 4.1 Components of the Couplings
- 4.2 Hint Regarding Finish Bore
- 4.3 Assembly of the Coupling
- 4.4 Displacements - Alignment of the Couplings

5 Starting and Lubrication

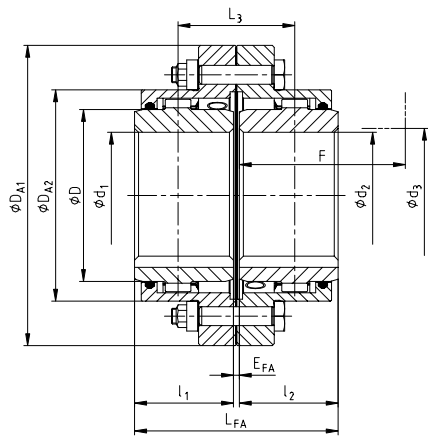
- 5.1 Types of Grease Recommended
- 5.2 Grease Capacity
- 5.3 Grease Feeding

6 Maintenance and Service

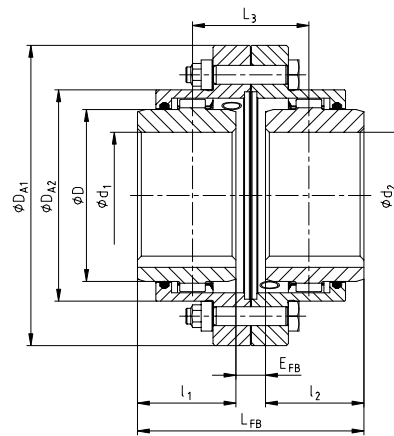
- 6.1 Intervals of Maintenance
- 6.2 Failures, Reasons and Repair
- 6.3 Replacement of Grease
- 6.4 Replacement of Sealing Elements
- 6.5 Cleaning of the Coupling
- 6.6 Disassembly of the Coupling
- 6.7 Spares Inventory, Customer Service Addresses



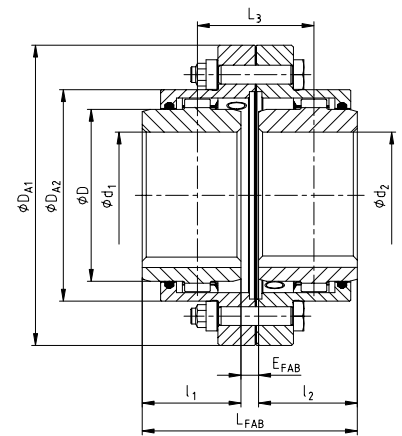
1 Technical Data



picture 1: Type FA



picture 2: Type FB



picture 3: Type FAB

Table 1:

Size	Max. finish bore d ₁ , d ₂	Dimensions [mm]														Grease ²⁾ feeding [dm ³]
		l ₁ , l ₂	E _{FA}	E _{FB}	E _{FAB}	L _{FA}	L _{FB}	L _{FAB}	L ₃	D	D _{A1}	D _{A2}	F ¹⁾	D ₃ ¹⁾		
10	50	43	3	21	12	89	107	98	55	67	111	83	74	52	0,02	
15	64	50	3	15	9	103	115	109	59	87	152	107	84	68	0,04	
20	80	62	3	31	17	127	155	141	79	108	178	129,5	104	85	0,08	
25	98	76	5	29	17	157	181	169	93	130	213	156	123	110	0,12	
30	112	90	5	33	19	185	213	199	109	153	240	181	148	130	0,18	
35	133	105	6	40	21,5	216	250	233	128	180	280	211	172	150	0,22	
40	158	120	6	42	24	246	282	264	144	214	318	249,5	192	175	0,35	
45	172	135	8	50	29	278	320	299	164	233	347	274	216	190	0,45	
50	192	150	8	56	32	308	356	332	182	260	390	307	241	220	0,70	
55	210	175	8	70	39	358	420	389	214	283	425,5	332,5	275	250	0,90	
60	232	190	8	84	46	388	464	426	236	312	457	364	316	265	1,15	
70	276	220	10	76	43	450	516	483	263	371	527	423,5	360	300	1,50	

Table 2:

Size	Torque T _{KN} [Nm]	Max. speed [1/min]	Weight with max. bore [kg]			Mass moment of inertia J with max. bore [kgm ²]	Dowel screws (10.9)/Nut		
			Sleeve S	Hub	Total		z	M	T _A [Nm]
10	930	8500	0,748	0,553	2,73	0,00436	6	M6	15
15	2000	7700	1,878	1,119	6,38	0,01894	8	M8	36
20	3500	6900	2,602	2,089	9,94	0,04000	6	M10	72
25	6500	6200	4,432	3,564	16,83	0,09749	6	M12	125
30	10000	5800	5,829	6,184	25,21	0,18080	8	M12	125
35	17000	5100	9,705	9,868	41,25	0,41419	8	M14	200
40	28500	4500	11,883	16,065	58,14	0,75535	8	M14	200
45	37000	4000	15,724	21,419	77,08	1,17590	10	M14	200
50	51000	3750	25,661	29,594	114,40	2,24991	8	M18	430
55	65000	3550	31,522	40,304	150,41	3,45102	14	M18	430
60	85000	3400	32,822	52,960	177,44	4,16734	14	M18	430
70	135000	3200	43,521	85,768	268,20	9,32429	16	M20	610

- 1) Required space to align the coupling or replace the sealing ring, respectively.
- 2) Grease feeding for each coupling half



CAUTION!

In case that a dimensioned drawing has been prepared for the coupling, the dimensions shown have to be respected first.
The operator of the machine should be provided with the dimensioned drawing.



CAUTION!

If you note any irregularities on the coupling during operation, the drive unit must be turned off immediately. The cause of the failure must be found out by means of the table „Failures“ and, if possible, be eliminated according to the proposals. The possible failures mentioned can be hints only. To find out the cause all operating factors and machine components must be considered.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



2 Hints

2.1 Coupling Selection

For drives with endangered torsional vibration (drives with periodical load or torsional vibration) it is necessary to make a torsional vibration calculation to ensure a perfect selection. Typical drives with endangered torsional vibration are e. g. drives with diesel engines, piston pumps, piston compressors etc. On request KTR performs the coupling selection and the torsional vibration calculation.



CAUTION!

For a continuous and trouble-free operation of the coupling it must be designed according to the selection instructions for the particular application (see GEAREX catalogue).

If the operating conditions (performance, speed, changes on engine and machine) change, the coupling selection must be verified again.

The transmittable torque of the shaft/hub connection must be verified by the customer, and he is responsible for the same.

2.2 General Hints

Please read through these mounting instructions carefully before you set the coupling into operation.

Please pay special attention to the safety instructions!

The mounting instructions are part of your product. Please keep them carefully.

The copyright for these mounting instructions remains with **KTR Kupplungstechnik GmbH**.

2.3 Safety and Advice Hints



DANGER!

Danger of injury to persons.



CAUTION!

Damages on the machine possible.



ATTENTION!

Pointing to important items.

2.4 General Hints to Danger



DANGER!

With assembly, operation and maintenance of the coupling it has to be made sure that the entire drive train is protected against unintentional engagement. You can be seriously hurt by rotating parts. Please make absolutely sure to read through and observe the following safety instructions.

- All operations on and with the coupling have to be performed taking into account "safety first".
- Please make sure to disengage the power pack before you perform your work.
- Protect the power pack against unintentional engagement, e. g. by providing hints at the place of engagement or removing the fuse for current supply.
- Do not touch the operation area of the coupling as long as it is in operation.
- Please protect the coupling against unintentional touch. Please provide for the necessary protection devices and caps.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk Geprüft: 05.12.08 Li	Ersatz für: KTR-N vom 27.11.08 Ersetzt durch:
--------------------------------------	----------------------------------------------------	--------------------------------------------------



2 Hints

2.5 Proper Use

You may only assemble, operate and maintain the coupling if you

- have carefully read through the mounting instructions and understood them
- had technical training
- are authorized to do so by your company

The coupling may only be used in accordance with the technical data (see table 1). Unauthorized modifications on the coupling design are not admissible. We do not take any warranty for resulting damages. To further develop the product we reserve the right for technical modifications.

The **GEAREX** described in here corresponds to the technical status at the time of printing of these mounting instructions.

3 Storage

3.1 Storage of the Coupling

Unless explicitly ordered differently, the coupling is supplied with preservation and may be stored in a dry place with roof cover up to 3 months.

In case of a longer period of storage please consult with **KTR Kupplungstechnik GmbH**.

3.2 Arrangement of Bearings of Toroidal Sealing Rings

A proper storage increases the service life of toroidal sealing rings. For the storage of toroidal sealing rings basically DIN 7716 (standards for storage, maintenance and cleaning of rubber products) or ISO 2230 (rubber products – standards for storage) applies.

The physical characteristics and period of use may be subject to negative influences like, as an example, light, heat, moisture, oxygen, ozone, etc.

In general the optimum storage condition is said to be welded in polyethylene bags with temperatures between + 5 °C to + 20 °C.



CAUTION!

The toroidal sealing rings (component 8) must not be stored being mounted to the hubs (component 1).



ATTENTION!

The storage space should be dry and free from dust. The toroidal sealing rings (component 8) must not be stored together with chemicals, solvents, fuels, acids, etc.

4 Assembly



ATTENTION!

Please pay attention to the manufacturer's instructions with regard to solvents.



DANGER!

Parts falling down may cause injury of persons or damage to the machine. Secure the driving parts during assembly or disassembly.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



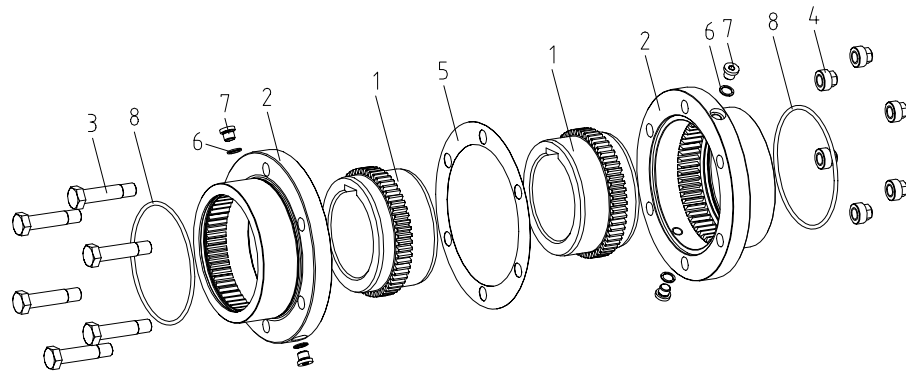
4 Assembly

4.1 Components of the Couplings

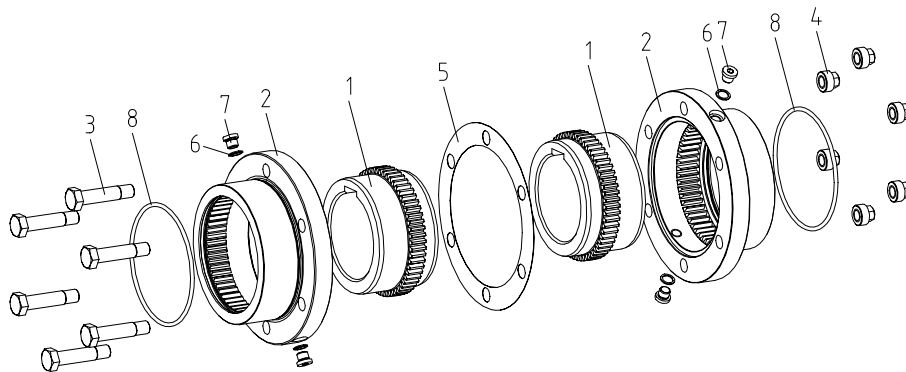
The coupling is supplied in single parts. Before assembly the coupling has to be inspected for completeness.

Component	Quantity	Designation
1	2	hub
2	2	S-sleeve
3	see table 2	dowel screw
4	see table 2	nut
5	1	flat seal
6	4	washer – DIN 7603
7	4	locking screw DIN 908 ¹⁾
8	2	toroidal sealing ring – material 70 NBR

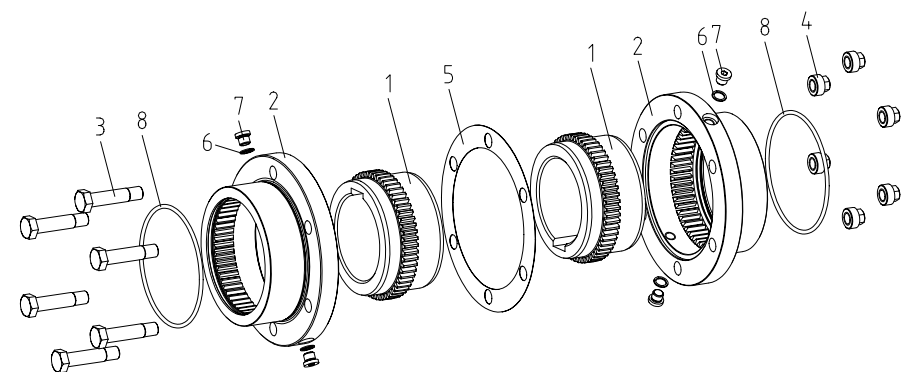
1) with size 10 cap screws DIN 7984 – 8.8



picture 4: GEAREX, Type FA



picture 5: GEAREX, Type FB



picture 6: GEAREX, Type FAB

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



4 Assembly

4.2 Hint Regarding Finish Bore



DANGER!

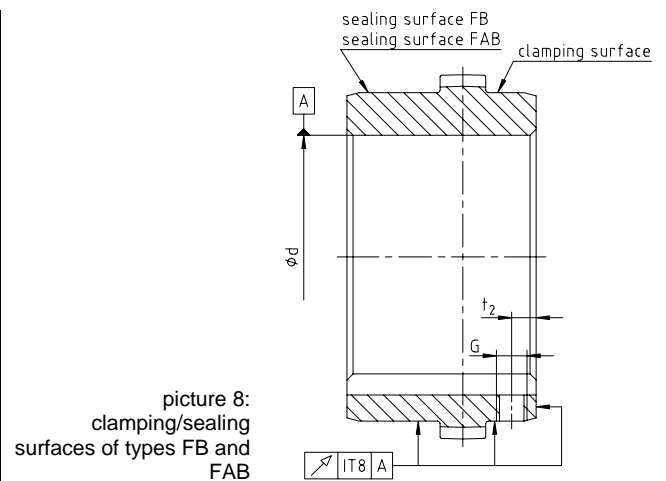
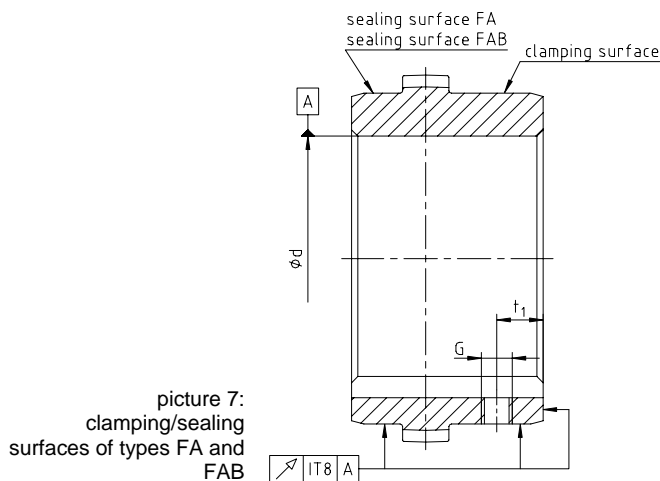
The maximum permissible bore diameters d (see table 1 - Technical Data) must not be exceeded. If these figures are disregarded, the coupling may tear. Rotating particles may cause serious danger.



CAUTION!

Do not clamp on the sealing surface at any time!

- Hub bores machined by the customer have to observe concentric running or axial running, respectively (see picture 7 and 8).
- Please make absolutely sure to observe the figures for d_{max} .
- Carefully align the hubs when the finish bores are brought in.
- Please choose a setscrew according to DIN EN ISO 4029 with cup point, an end plate or shrinking to secure the hubs axially (see picture 7 and 8 and table 3).
- If other shaft-hub-connections (e. g. clamping elements, spline, taper bores, etc.) are to be used, please consult with **KTR Kupplungstechnik GmbH**.



CAUTION!

The customer is responsible for all machinings made subsequently to unbored or pilot bored and to finish machined coupling parts and spare parts. KTR does not assume any warranty claims resulting from insufficient machining.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



4 Assembly

4.3 Assembly of the Coupling



ATTENTION!

We recommend to check bores, shaft, keyway and feather key for dimensional accuracy before assembly.

Heating the hubs slightly (approx. 80 °C) allows for an easier installation onto the shaft.



DANGER!

Touching the heated hubs causes burns.
We would recommend to wear safety gloves.



CAUTION!

For the assembly please make sure that the distance dimension E (see table 1) is kept to ensure that the sleeve can be moved axially.
Disregarding this hint may cause damage to the coupling.

- Clean all components and shaft ends carefully (see chapter 6.7). The toroidal sealing rings (component 8) must not get in touch with solvents and detergents.
- Lightly grease the toroidal sealing rings (component 8) and insert in the corresponding keyway of the S-sleeves (component 2).
- Lightly grease the sealing surfaces on the face of the S-sleeves (component 2) and push them over the shaft ends. Please make sure that the toroidal sealing rings (component 8) are not damaged.
- To facilitate the assembly please heat the hubs (component 1) evenly by inductive heating (approx. 80° C), either in the furnace or by means of a torch.
- Push the hubs (component 1) onto the shaft of the driving and driven side until the hub surfaces on the face are flush with the shaft ends. When the hubs are heated, any contact with the toroidal sealing rings (component 8) should be avoided.
- Secure the hubs (component 1) axially by tightening the set screws DIN EN ISO 4029 by means of a cup point (tightening torque T_A see table 3), an end plate or shrinking.
- Shift the power packs in axial direction until the distance dimension E (see table 1) is achieved.
- Align both shafts and inspect the permissible displacement figures as per chapter 4.4.
- Grease the spline of the hubs (component 1) (quantity of grease see table 5), afterwards push the S-sleeves (component 2) over the spline of the hubs (component 1) and keep them in place.
- Align the fitting bores of the S-sleeves (component 2) to be flush. Please make sure that the lubrication holes on both S-sleeves have an angle of 90° versus each other.
- Please insert the flat seal (component 5) and screw the S-sleeves by means of setscrews (component 3) and nuts (component 4), adhering to the tightening torques indicated (see table 3).
Please follow the instructions mentioned in chapter startup and lubrication (see chapter 5).



ATTENTION!

For each re-assembly of the coupling we would recommend to replace the flat seal (component 5) and the dowel pins (component 4) as well as nuts (component 4).

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



4 Assembly

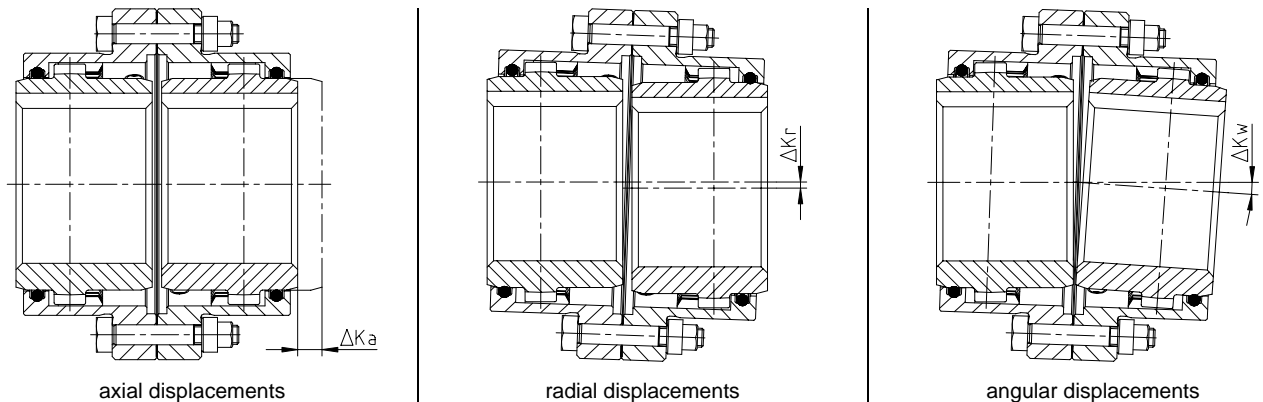
4.3 Assembly of the Coupling

Table 3:

Size	Setscrews DIN EN ISO 4029 [mm]				Screw connections of sleeves dowel screws (10.9)		
	G	t ₁ ¹⁾	t ₂ ¹⁾	T _A [Nm]	Number z	M	T _A [Nm]
10	M8	10	6	10	6	M6	15
15	M8	10	6	10	8	M8	36
20	M10	15	8	17	6	M12	72
25	M10	15	8	17	6	M12	125
30	M12	20	12	40	8	M12	125
35	M12	24	15	40	8	M16	200
40	M16	25	18	80	8	M16	200
45	M16	30	18	80	10	M16	200
50	M20	35	22	140	8	M20	430
55	M20	40	25	140	14	M20	430
60	M20	45	25	140	14	M20	430
70	M24	50	35	240	16	M24	610

1) see picture 7 and 8

4.4 Displacements - Alignment of the Couplings



picture 9: displacements

Table 4: Displacement figures

Size	Overall mounting length of the coupling assembled [mm]			Shaft distance dimension ¹⁾ [mm]			max. axial displacement ΔK _a [mm]	max. permissible displacements	
	L _{FA}	L _{FB}	L _{FAB}	E _{FA}	E _{FB}	E _{FAB}		ΔK _r [mm]	ΔK _w [°]
10	89	107	98	3	21	12	± 1,0	± 0,09	± 0,5
15	103	115	109	3	15	9		± 0,10	
20	127	155	141	3	31	17		± 0,13	
25	157	181	169	5	29	17		± 0,16	
30	185	213	199	5	33	19		± 0,19	
35	216	250	233	6	40	21,5		± 0,22	
40	246	282	264	6	42	24	± 0,25		
45	278	320	299	8	50	29	± 0,28		
50	308	356	332	8	56	32	± 0,31		
55	358	420	389	8	70	39	± 0,37		
60	388	464	426	8	84	46	± 0,41		
70	450	516	483	10	76	43	± 0,45		

1) Please make absolutely sure to adhere to the distance dimension E for the various types, specifically with radial and angular displacement.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



4 Assembly

4.4 Displacements - Alignment of the Couplings

Misalignment of the coupling parts may be produced due to incorrect alignment during assembly or due to the operation of the machine (thermal expansion, shafts bending, elastic machine mounts etc.).

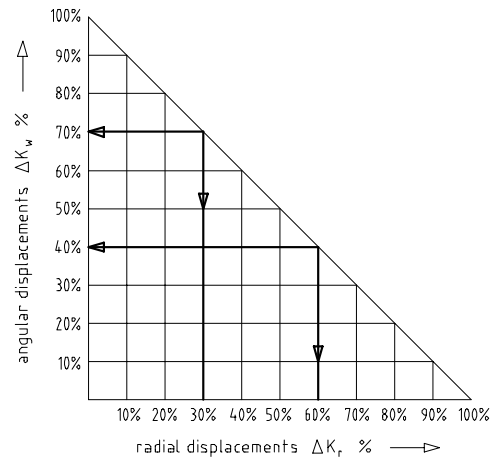
The values stated in table 4 are maximum values that cannot be experienced by the coupling simultaneously. If radial, axial and angular misalignments arise at the same time, these figures have to be reduced (picture 10).

Example of misalignment combinations given in picture 10:

Example 1:
 $\Delta K_r = 30 \%$
 $\Delta K_w = 70 \%$

Example 2:
 $\Delta K_r = 60 \%$
 $\Delta K_w = 40 \%$

picture 10:
combinations of displacement



$$\Delta K_{total} = \Delta K_r + \Delta K_w \leq 100 \%$$



CAUTION!

In order to ensure a long service life of the coupling the shaft ends must be aligned accurately. Please pay careful attention to the misalignment values given (see table 4). If these values are exceeded the coupling may be damaged.

5 Starting and Lubrication

5.1 Types of Grease Recommended



CAUTION!

Only those greases recommended by KTR may be used. Claims to warranty caused by the use of non-recommended greases are disregarded by KTR.

Manufacturer of grease			
Product description ¹⁾	Klüberplex GE 11-680	Energ grease LS-EP 00	Tribol 3020/100-00 Longtime PD 00
Manufacturer of grease			
Product description ¹⁾	Aralub liquid grease An 0	Mobilux EP 004	Alvania GL 00

1) The lubricants mentioned above are suitable for operating temperatures from -20°C to +80°C .



CAUTION!

Please note the manufacturers' hints regarding the handling of lubricants!

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk Geprüft: 05.12.08 Li	Ersatz für: KTR-N vom 27.11.08 Ersetzt durch:
--------------------------------------	----------------------------------------------------	--------------------------------------------------



5 Starting and Lubrication

5.2 Grease Capacity



CAUTION!

The grease capacity always has to correspond to the quantities indicated!

Table 5: Grease capacity

Size	Grease capacity ¹⁾ [dm ³]	Size	Grease capacity ¹⁾ [dm ³]	Size	Grease capacity ¹⁾ [dm ³]
10	0,02	30	0,18	50	0,70
15	0,04	35	0,22	55	0,90
20	0,08	40	0,35	60	1,15
25	0,12	45	0,45	70	1,50

1) Grease capacity for each coupling half

5.3 Grease feeding

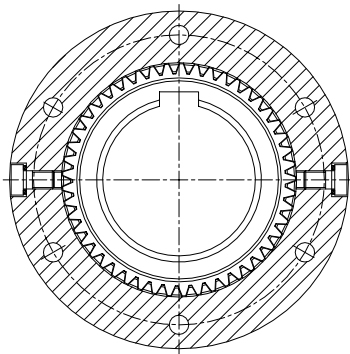


ATTENTION!

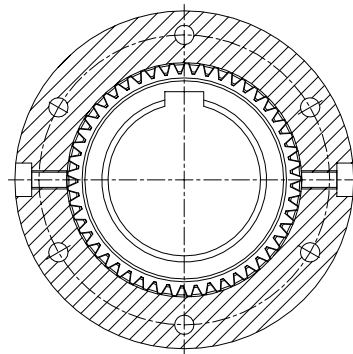
Lubricants of various types and manufacturers must not be mixed!

Procedure of grease feeding:

- Turn the coupling until the filler caps (component 7) are in horizontal position (see picture 11).
- Remove the cap screws (component 7) along with the sealing plates (component 6) and fill in the grease, e. g. by means of a grease injector.
- Afterwards screw in the cap screws (component 7) and the sealing plates (component 6) again and prove for tightness.
- Please repeat this procedure with the other coupling half.



picture 11: Horizontal position of cap screws



picture 12: Removing the cap screws and sealing plates



ATTENTION!

Both cap screws (component 7) have to be removed. One hole serves as a filler hole, the other one as venting hole.



ATTENTION!

For each re-assembly of the coupling we would recommend to replace the flat seal (component 5) and the dowel screws (component 3) and nuts (component 4).



CAUTION!

In order to ensure a long service life of the coupling and avoid damages on the coupling, please make sure to adhere to the quantities of grease indicated in the different coupling sides.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



6 Maintenance and Service

6.1 Intervals of Maintenance

The coupling has to be inspected regularly for leakages/grease capacity, uncontrolled heating and modifications of the running noise. The inspection has to be performed during the general maintenance intervals, at least every quarter of a year. Moreover, the correct position of the safeguard for rotation parts has to be inspected.

The following items of inspection are the main components of maintenance work:

Grease:	quantity of grease feeding, replacement of grease (see chapter 5.2 and 6.3)
Sealing elements:	leakages, replacing of sealing elements (see chapter 6.4)
Shaft displacements:	re-aligning the coupling (see chapter 4.4)

6.2 Failures, Reasons and Repair

The following errors may cause an inappropriate use of the **GEAREX** coupling. Apart from the information mentioned in the present operating and assembly instructions before, you should try to avoid such errors. The failures mentioned can only give ideas for searching for the reasons. When searching for the reasons you should generally include the adjacent components, too.



CAUTION!

Not taking into account the hints and inappropriate use may cause damages to the coupling.

The failure on the coupling may cause standstill of the operation and the overall machine.

General errors of inappropriate use:

- Important data to select the coupling were not passed on.
- The calculation of the shaft-hub-connection was disregarded.
- Coupling components subject to damages during the transport are assembled.
- During warm drawing of the hubs the permissible temperature is exceeded.
- During warm drawing of the toroidal sealing rings are heated excessively/damaged.
- The fittings of the components to be assembled are not adjusted with each other.
- Tightening torques are fallen below/exceeded.
- Components are mixed up/assembled inappropriately.
- Parts that are no original **KTR** parts are used (external components).
- Old/coupling parts already worn off are used.
- Intervals of maintenance are not adhered to.
- No lubricants recommended by **KTR** are used.
- Operating temperatures are exceeded.
- Axial fastening of hubs does not exist or is installed loosely.
- Insufficient or inappropriate lubrication.
- Operating conditions were modified inappropriately.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



6 Maintenance and Service

6.2 Failures, Reasons and Repair

Failures	Reasons	Repair
Modification of running noise und/or vibrations coming up	Error in alignment/the permissible displacement figures are exceeded	<ol style="list-style-type: none"> 1) Stop the machine 2) Sort out the reason for misalignment (e. g. loose foundation bolts, fracture of motor fixing, heat expansion of machine components, modification of distance dimension E of the coupling) 3) Inspection of wear 4) Re-aligning the coupling
	Axial securing of hub getting loose	<ol style="list-style-type: none"> 1) Stop the machine 2) Inspect the alignment of the coupling 3) Inspection of wear 4) Secure the hubs axially against relieving
	Lack of grease	<ol style="list-style-type: none"> 1) Stop the machine 2) Inspection of wear 3) Replacing the grease 4) Inspect the sealing and replace, if necessary
Excessive wear of spline	Driving vibrations	<ol style="list-style-type: none"> 1) Stop the machine 2) Disassemble the coupling and remove remainders of failure 3) Inspect the coupling parts and replace those coupling parts that are damaged 4) Finding out the reasons of vibration 5) Assemble new coupling components 6) Inspect the alignment and correct, if necessary
	Error in alignment/the permissible displacement figures are exceeded	<ol style="list-style-type: none"> 1) Stop the machine 2) Sort out the reason for misalignment (e. g. loose foundation bolts, fracture of motor fixing, heat expansion of machine components, modification of distance dimension E of the coupling) 3) Inspection of wear 4) Re-aligning the coupling
	Lack of grease	<ol style="list-style-type: none"> 1) Stop the machine 2) Inspection of wear 3) Replacement of lubricant 4) Inspect sealings, replace sealings, if necessary
Leakages/escape of grease	Wear of toroidal sealing rings	<ol style="list-style-type: none"> 1) Stop the machine 2) Inspection of wear 3) Drain the grease 4) Replace the sealings 5) Grease feeding
	Toroidal sealing rings damaged by inappropriate storage or during the assembly	<ol style="list-style-type: none"> 1) Stop the machine 2) Inspection of wear 3) Drain the grease 4) Replace the toroidal sealing rings 5) Ensure proper storage of toroidal sealing rings or eliminate errors in assembly, respectively 6) Grease feeding
	Toroidal sealing rings are in touch with aggressive liquids/oils, influence of ozone, too high ambient temperatures	<ol style="list-style-type: none"> 1) Stop the machine 2) Inspection of wear 3) Drain the grease 4) Eliminate negative influences on the toroidal sealing rings 5) Replace toroidal sealing ring 6) Grease feeding



6 Maintenance and Service

6.2 Failures, Reasons and Repair

Failures	Reasons	Repair
Fracture of spline/ fracture of S-sleeve	Fracture of spline/ S-sleeve subject to high impact energy/overload	<ol style="list-style-type: none"> 1) Stop the machine 2) Disassemble the coupling and remove remainders of failure 3) Sort out the reasons for overload 4) Inspect coupling components and replace damaged coupling components 5) Replace S-sleeve, assemble coupling components
	Operating parameters do not correspond to the coupling power	<ol style="list-style-type: none"> 1) Stop the machine 2) Disassemble the coupling and remove remainders of failure 3) Check operating parameters and select a bigger coupling size (please note mounting space) 4) Assemble new coupling size, align and grease according to operating/assembly instructions of GEAREX type FA, FB and FAB
	Operating error on the machine	<ol style="list-style-type: none"> 1) Stop the machine 2) Disassemble the coupling and remove remainders of failure 3) Inspect coupling components and replace damaged coupling components 4) Insert S-sleeve, assemble coupling components 5) Introduce and train the operators
Fracture of spline/ fracture of S-sleeve	Lack of lubricant	<ol style="list-style-type: none"> 1) Stop the machine 2) Disassemble the coupling and remove remainders of failure 3) Inspect sealings and coupling components and replace, if necessary 4) Assemble new coupling components/sealings, align and grease according to operating/assembly instructions of GEAREX type FA, FB and FAB
	Error in alignment/ the permissible displacement figures are exceeded	<ol style="list-style-type: none"> 1) Stop the machine 2) Disassemble the coupling and remove remainders of failure 3) Eliminate the reason for the error in misalignment (e. g. loose foundation bolts, fracture of motor fixing, heat expansion of machine components, modification of distance dimension E of the coupling) 4) Assemble new coupling components, align and grease according to operating/assembly instructions of GEAREX type FA, FB and FAB

6.3 Replacement of Grease



CAUTION!

In order to ensure a long service life of the coupling and avoid damages on the coupling, the quantities of grease indicated for the different coupling sides and the intervals of replacement of grease absolutely have to be observed!



DANGER!

Please note manufacturers' hints regarding the handling of grease!

The replacement of grease depends on various operating conditions like load, ambient temperature, speed, shaft displacements and operating period. Anyway, the replacement of grease is recommended for an operation up to 70 °C after about 8000 hours of operation, a maximum of 2 years and for an operation exceeding 70 °C after about 3000 hours of operation, a maximum of 1 year.

Please note that when you replace the grease the remaining quantities in the coupling should be kept as small as possible.

Please have the manufacturer confirm the compatibility of the new lubricant with remainders of the former lubricant.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



6 Maintenance and Service

6.3 Replacement of Grease



ATTENTION!

Various types and manufacturers of lubricants must not be mixed!

Procedure for the replacement of grease:

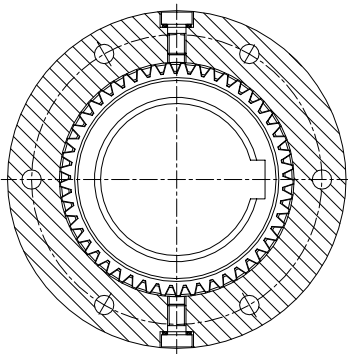
- Inspect the tightness and replace the sealing elements, if necessary.
- Turn the coupling until the cap screws are in vertical position (see picture 13).
- Remove the cap screws (component 7) along with the sealing plates (component 6) and afterwards drain the grease into a suitable tank. To facilitate the replacement you may add thin-bodied oil.



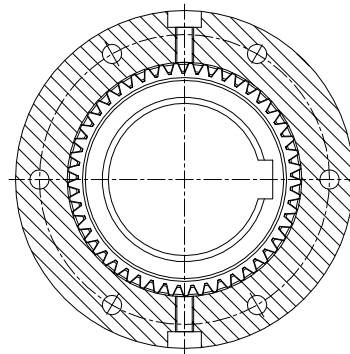
ATTENTION!

Please check the compatibility of the oil with the grease!

- Perform grease feeding as per chapter 5.3.
- Please repeat this procedure with the other coupling half.



picture 13: vertical position of cap screws



picture 14: removal of cap screws and sealing plates

6.4 Replacement of Sealing Elements



CAUTION!

In case of leakages (escape of grease) defective sealing elements have to be replaced immediately! The coupling may be damaged if these hints are disregarded.

The escape of grease has to be fully collected and disposed of as per the regulations that apply.

Replacement of flat seal (component 5):

If the flat seal (component 5) is defective/untight, it has to be replaced immediately. Furthermore we would recommend to replace the flat seal (component 5) as well as the dowel screws (component 3) and nuts (component 4) with every re-assembly of the coupling.

- Drain the grease as per chapter 6.3.
- Unscrew and remove the screwing (components 3 and 4) of the S-sleeves (component 2).
- Shift the S-sleeve (component 2) axially backwards until the flat seal (component 5) may be disassembled and replaced.
- Lightly grease the sealing surfaces and insert new flat seals (component 5). Afterwards inspect the alignment and, if necessary, re-align and assemble.
- Perform grease feeding as per chapter 5.3.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



6 Maintenance and Service

6.4 Replacement of Sealing Elements

Replacement of toroidal sealing rings (component 8):

The toroidal sealing rings (component 8) can be replaced with no need to shift power packs to be connected, provided that the shaft shoulder is not bigger than the outside diameter D of the hubs (component 1).

- The grease has to be drained as per chapter 6.3.
- Unscrew and remove the screwing (components 3 and 4) of the S-sleeves.
- Shift the S-sleeves (component 2) from the spline and the hub (component 1) until the toroidal sealing ring (component 8) can be disassembled.
- Cut a new toroidal sealing ring (component 8) radially in one position or cut the toroidal sealing ring to peripheral length.
- Put the toroidal sealing ring (component 8) around the shaft and afterwards glue the separation line, e. g. with Loctite 401.
- Insert the toroidal sealing ring (component 8) into the keyway of the S-sleeve (component 2).
- Assemble the S-sleeves as per chapter 4 and 5 and start with the operation.



HINT!

If toroidal sealing rings (component 8) only are to be used, the power packs to be combined have to be shifted and the coupling has to be disassembled as per chapter 6.6.



CAUTION!

Protect toroidal sealing rings (component 8) and flat seals (component 5) on the driving and driven side against damages and heat.



CAUTION!

Please note manufacturers' hints regarding the handling of adhesives.

6.5 Cleaning the Coupling



CAUTION!

Please ensure sufficient ventilation and follow the manufacturers' hints regarding the handling of solvents and detergents.

When the coupling is assembled/disassembled, the coupling components should be subject to careful cleaning. Specifically the sealing surfaces and the area of the spline should be free from dirt, wear and old grease. A subsequent correct assembly (chapter 4) and startup (chapter 5) has to be ensured.

6.6 Disassembly of the Coupling



DANGER!

With disassembly, operation and maintenance of the coupling it has to be made sure that the entire drive train is protected against unintentional engagement.



CAUTION!

If a dimensioned drawing has been prepared for the couplings, the details mentioned have to be respected first.

The operator of the machine has to be provided with the dimensioned drawing.

It is necessary to disassemble the coupling if coupling components have to be inspected for damages or have to be replaced. Moreover, a disassembly is necessary to replace the sealing elements.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk	Ersatz für: KTR-N vom 27.11.08
	Geprüft: 05.12.08 Li	Ersetzt durch:



6 Maintenance and Service

6.6 Disassembly of the Coupling

- Drain the grease as per chapter 6.3.
- Unscrew the dowel screws and shift the S-sleeves (component 2) axially backwards until the spline is no longer engaged.
- Mark the spline of the sleeves (component 2) versus the hubs (component 1).
- Link the power packs.
- Clean the coupling (see chapter 6.5) and inspect the coupling components, sealing surfaces and spline.
- Replace damaged components.
- A re-assembly has to be performed as per chapters 4 and 5.



CAUTION!
Components that are damaged or worn off have to be replaced!



CAUTION!
To re-assemble the coupling we would recommend to replace the flat seal (component 5) and dowel screws (component 3) and nuts (component 4).

If the coupling hubs (component 1) have to be disassembled, the axial fixing of the hubs has to be removed first. Even heating (approx 80 °C) of the coupling hubs (component 1) by means of a torch and a puller, the hubs (component 1) can be pulled from the shafts of the power packs.

The sealing surfaces, the spline, the hub bore and the shaft have to be inspected for damages.

A re-assembly has to be performed as per the instructions in chapter 4 and 5.



CAUTION!
Never use the S-sleeves (component 2) to pull-off the hubs (component 1)!



CAUTION!
Please make use of proper pullers. The shaft bearing must not be loaded.

6.7 Spares Inventory, Customer Service Addresses

A basic requirement to ensure the readiness for operation of the coupling is a stock of the most important spare parts on site.

Contact addresses of the KTR partners for spare parts and orders can be obtained from the **KTR** homepage at www.ktr.com.

The following details should be mentioned in the order for spare parts:

- Original order number
- Material number
- Description and quantity



CAUTION!
KTR does not take over any warranty or guaranty for spare parts or accessories which have not been supplied by KTR or the resulting damages.

Schutzvermerk ISO 16016 beachten.	Gezeichnet: 05.12.08 Li/Hk Geprüft: 05.12.08 Li	Ersatz für: KTR-N vom 27.11.08 Ersetzt durch:
--------------------------------------	----------------------------------------------------	--------------------------------------------------