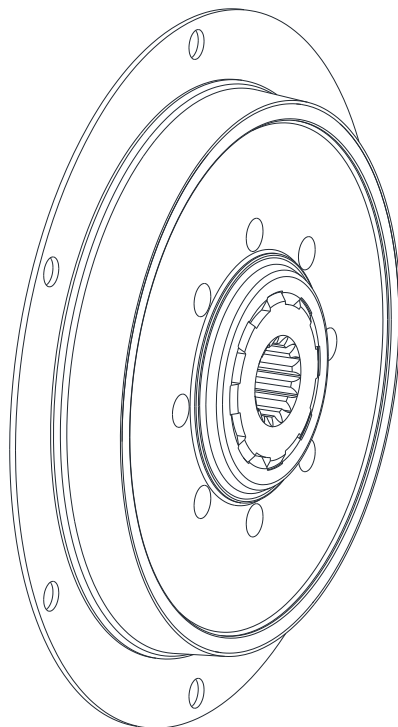


MONOLASTIC®
type with 3 holes



MONOLASTIC®
type SAE



The **MONOLASTIC®** is a torsionally flexible flange coupling easy to plug in axially. It dampens torsional vibrations and compensates for axial, radial and angular shaft displacements.

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1 Technical data

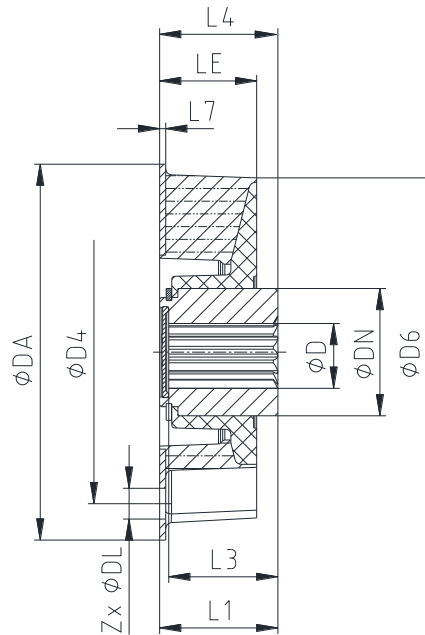


Illustration 1: MONOLASTIC® type with 3 holes

Table 1: Dimensions and technical data - MONOLASTIC® type with 3 holes

Size	Elastomer hardness [Shore A]	Torque in Nm			Dimensions in mm										
		T _{KN}	T _{K max.}	T _{KW}	D	DA	Z	DL	DN	D6	LE	L1	L3	L4	L7
22	T65	40	100	20	20	100	3	8.10	34	93	32	33	30	34	1.5
28	T65	70	175	35	25	124	3	10.10	42	115	32	40	38	40	2
	T70	100	250	50											
32	T65	160	400	80	32	150	3	12.10	50	140	42	42	38	43	2
	T70	225	562	112											
50-140	T70	260	650	130	32	175	3	14.10	50	167	35	46	43	46	3
50-165	T70	300	750	150	32	200	3	16.15	50	175	35	46	43	46	3
50-170	T70	300	750	150	32	200	3	16.15	50	175	35	46	43	46	3
60-165	T70	400	1000	200	48	205	3	16.15	68	191	40	50	46	55	3



**In case if a dimensional drawing was prepared for the coupling, the dimensions specified have to be primarily observed.
The operator of the machine is to be provided with the dimensional drawing.**

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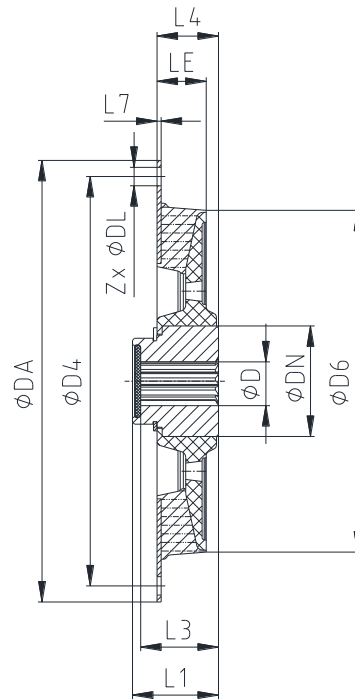

1 Technical data


Illustration 2: MONOLASTIC® type SAE

Table 2: Dimensions and technical data - MONOLASTIC® type SAE

Size	Elastomer hardness [Shore A]	Torque in Nm			Dimensions in mm								MONOLASTIC® flanges according to SAE				
		T _{KN}	T _{K max.}	T _{KW}	D	DN	D6	LE	L1	L3	L4	L7	6 ½"	7 ½"	8"	10"	11 ½"
30	T65	200	400	100	25	42	120	21	39	36	30	2	•	•			
	T70	250	500	125													
50	T65	350	700	175	32	50	167	24	42	38	30	2	•	•	•	•	
	T70	450	900	225													
G50	T70	600	1200	300	32	50	178	24	42	38	36	2		•	•	•	
65	T65	750	1500	375	48	68	200	32	45	42	45	3				•	•
	T70	1000	2000	500													
75	T65	1500	3000	750	60	90	265	35	58	54	50	3				•	•
	T70	1850	3700	925													

Table 3: Flange dimensions according to SAE J 620

Nominal size	Flange dimensions				
	6 ½"	7 ½"	8"	10"	11 ½"
Dimension DA in mm	215.90	241.30	263.52	314.32	352.42
Dimension D4 in mm	200.02	222.25	244.47	295.27	333.37
Number Z	6	8	6	8	8
Dimension DL in mm	9	9	11	11	11



In case if a dimensional drawing was prepared for the coupling, the dimensions specified have to be primarily observed.

The operator of the machine is to be provided with the dimensional drawing.

2 Advice

2.1 General advice

Please read carefully through these operating/assembly instructions before you start up the coupling.
 Please pay special attention to the safety instructions!
 The operating/assembly instructions are part of your product. Please store them carefully and close to the coupling. The copyright for these operating/assembly instructions remains with KTR.

2.2 Safety and advice symbols



Warning of personal injury

This symbol indicates notes which may contribute to preventing bodily injuries or serious bodily injuries that may result in death.



Warning of product damages

This symbol indicates notes which may contribute to preventing material or machine damage.



General advice

This symbol indicates notes which may contribute to preventing adverse results or conditions.



Warning of hot surfaces

This symbol indicates notes which may contribute to preventing burns with hot surfaces resulting in light to serious bodily injuries.

2.3 General hazard warnings



With assembly, operation and maintenance of the coupling it has to be made sure that the entire drive train is secured against accidental switch-on. You may be seriously hurt by rotating parts. Please make absolutely sure to read through and observe the following safety indications.

- All operations on and with the coupling have to be performed taking into account "safety first".
- Make sure to switch off the power pack before you perform your work on the coupling.
- Secure the power pack against accidental switch-on, e. g. by providing warning signs at the place of switch-on or removing the fuse for current supply.
- Do not reach into the operating area of the coupling as long as it is in operation.
- Secure the coupling against accidental contact. Please provide for the necessary protection devices and covers.

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2 Advice

2.4 Intended use

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

- have carefully read through the operating/assembly instructions and understood them
- are technically qualified and specifically trained (e. g. safety, environment, logistics)
- are authorized by your company

The coupling may only be used in accordance with the technical data (see chapter 1). Unauthorized modifications on the coupling design are not admissible. We will not assume liability for any damage that may arise. In the interest of further development we reserve the right for technical modifications.

The **MONOLASTIC®** described in here corresponds to the state of the art at the time of printing of these operating/assembly instructions.

2.5 Coupling selection



For a permanent and failure-free operation of the coupling it must be selected according to the selection instructions (according to DIN 740 part 2) for the particular application (see catalogue drive technology "MONOLASTIC®").

If the operating conditions (performance, speed, modifications on engine and machine) change, the coupling selection must be reviewed.

The transmittable torque of the shaft-hub-connection must be reviewed by the customer and is subject to his responsibility.

For drives subjected to torsional vibrations (drives with cyclic stress due to torsional vibrations) it is necessary to perform a torsional vibration calculation to ensure a reliable selection. Typical drives subject to torsional vibrations are e. g. drives with diesel engines, piston pumps, piston compressors etc. If requested, KTR will perform the coupling selection and the torsional vibration calculation.

2.6 Reference to EC Machinery Directive 2006/42/EG

The couplings supplied by KTR should be considered as components, not machines or partly completed machines according to EC Machinery Directive 2006/42/EC. Consequently KTR does not have to issue a declaration of incorporation. For details about safe assembly, start-up and safe operation refer to the present operating/assembly instructions considering the warnings.

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3 Storage, transport and packaging

3.1 Storage

The coupling is supplied packed in foil and remains unchanged up to 5 years if stored with package.



**The storage rooms must not include any ozone-generating devices like e. g. fluorescent light sources, mercury-vapour lamps or electrical high-voltage appliances.
Humid storage rooms are not suitable.
Make sure that condensation is not generated. The best relative air humidity is less than 65 %.**

3.2 Transport and packaging



In order to avoid any injuries and any kind of damage always make use of proper transport and lifting equipment.

The couplings are packed differently each depending on size, number and kind of transport. Unless otherwise contractually agreed, packaging will follow the in-house packaging specifications of KTR.



4 Assembly

The coupling is supplied as an mounted unit with the spline bore already greased. Before assembly the coupling must be inspected for completeness.

4.1 Hub type

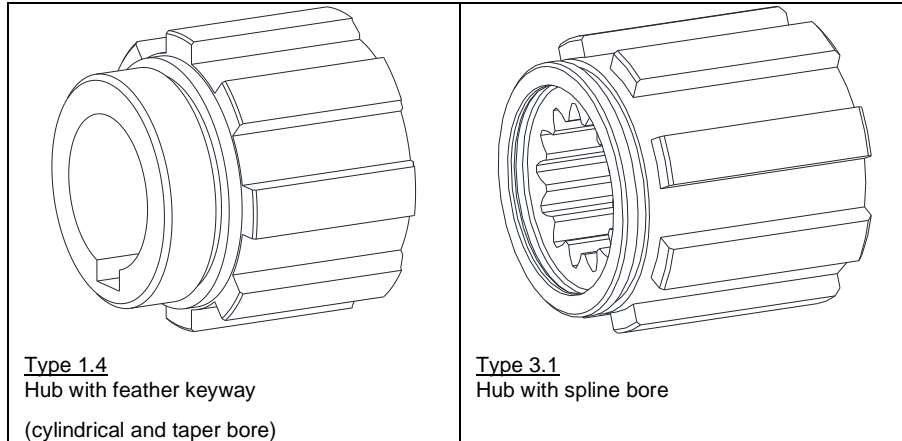


Illustration 3: Types of hubs

4.2 Components of the coupling

Components of the MONOLASTIC®

Component	Quantity	Description
1	1	Elastomer part
2	1	Hub
3	1	Circlip DIN 471
4	1	Sealing washer

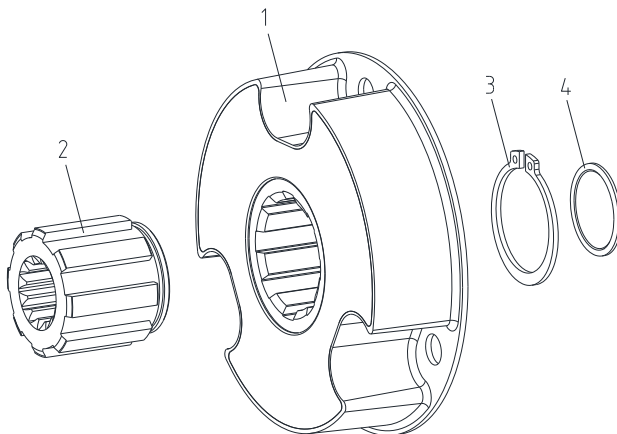


Illustration 4: MONOLASTIC® type with 3 holes

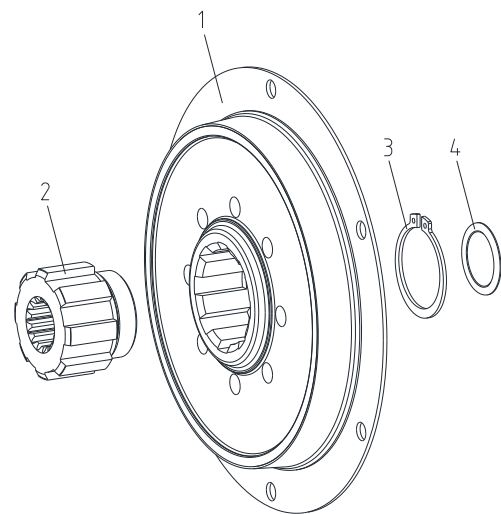


Illustration 5: MONOLASTIC® type SAE

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4 Assembly

4.3 General advice for assembly



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

4.4 Assembly of the coupling

- Put the connection flange (component 1) of the 3-hole version in position (see illustration 6) or insert the connection flange (component 1) into the centering of the flywheel (see illustration 7).
- Align the through holes of the connection flange to the threaded holes of the flywheel.

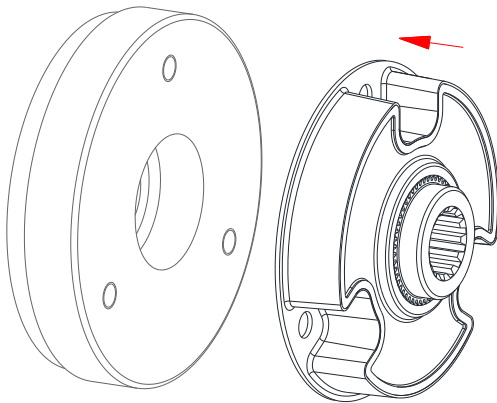


Illustration 6: MONOLASTIC® type with 3 holes

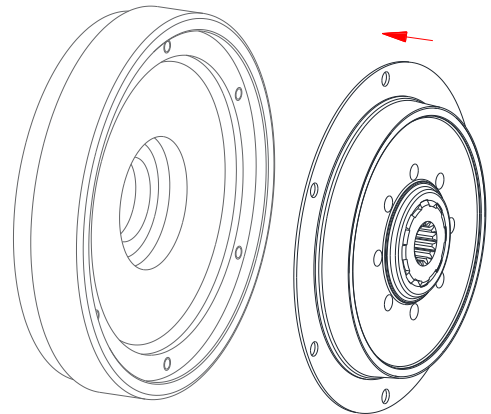


Illustration 7: MONOLASTIC® type SAE

- Hand-tighten the components via suitable screws (see illustration 10, not part of the scope of delivery) first.

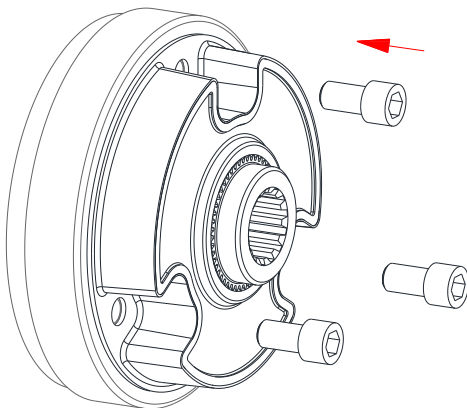


Illustration 8: MONOLASTIC® type with 3 holes

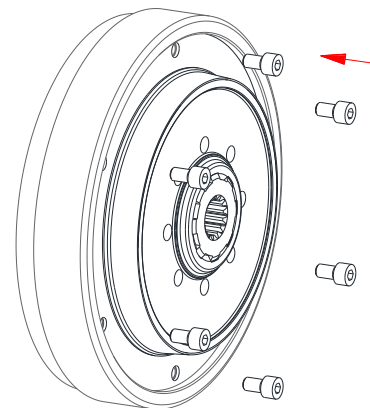


Illustration 9: MONOLASTIC® type SAE

- Tighten the screws one after the other, in several stages, to the tightening torques T_A specified in table 4 using a suitable torque key.



We recommend to secure all screw connections against working loose additionally, e. g. applying Loctite screw adhesive (average strength), while the elastomer must not come into contact with any type of adhesive.



4 Assembly

4.4 Assembly of the coupling

Table 4: Screw tightening torques for screwing the connection flange to the engine flywheel

Size	Size of flywheel acc. to SAE - J620 ¹⁾	Screw - property class	Number Z	Pitch circle D4 in mm	Tightening torque T _A in Nm
30	6 1/2"	M8 - 8.8	6	200.02	25
	7 1/2"	M8 - 8.8	8	222.25	25
50	6 1/2"	M8 - 8.8	6	200.02	25
	7 1/2"	M8 - 8.8	8	222.25	25
	8"	M10 - 8.8	6	244.47	49
	10"	M10 - 8.8	11	295.27	49
G50	7 1/2"	M8 - 8.8	8	222.25	25
	8"	M10 - 8.8	6	244.47	49
	10"	M10 - 8.8	11	295.27	49
65	10"	M10 - 8.8	11	295.27	49
	11 1/2"	M10 - 8.8	11	333.37	49
75	10"	M10 - 8.8	11	295.27	49
	11 1/2"	M10 - 8.8	11	333.37	49

1) For dimensions of flange connection see table 2.

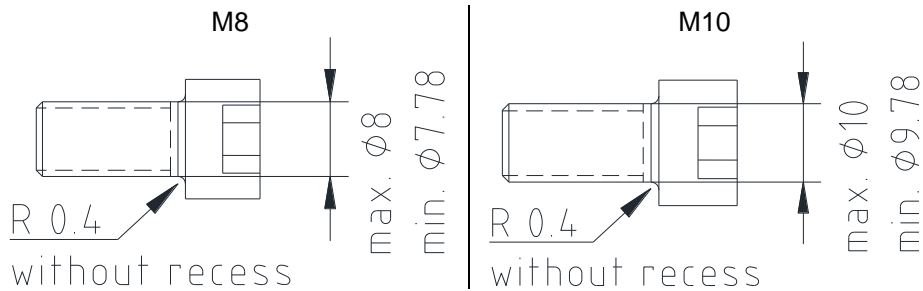


Illustration 10: condition for screws

- Put both power packs in position and align them to each other.
- Shift the power unit of the driven side in axial direction so that the minimum distance dimension of approx. 2 mm is not fallen below (see illustration 12). Please absolutely observe the maximum permissible displacement figures (see table 5).

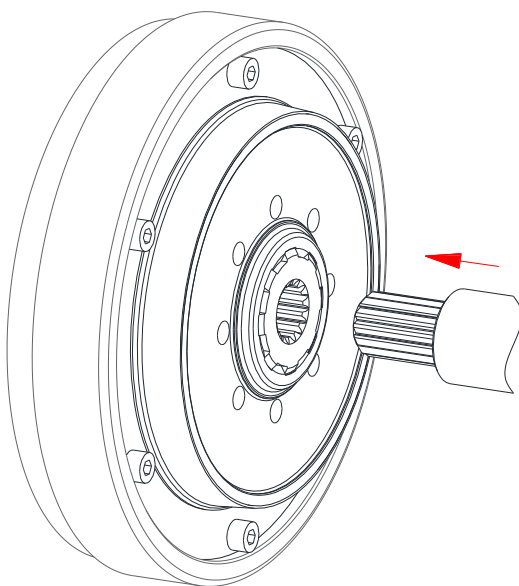


Illustration 11

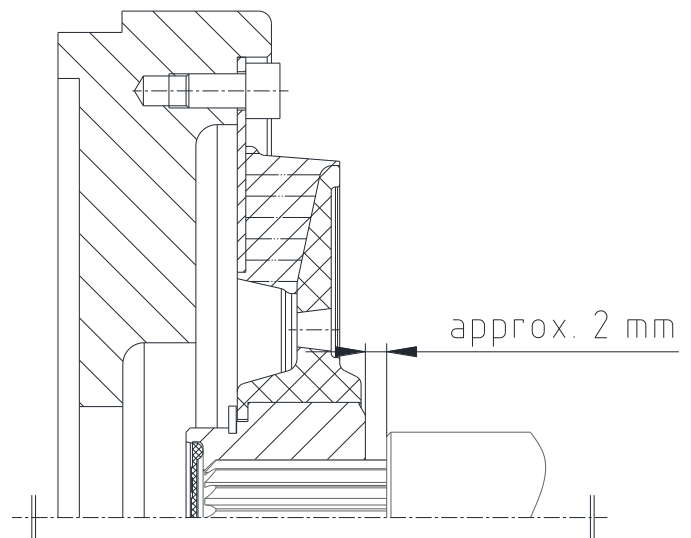


Illustration 12

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4 Assembly

4.5 Displacements - alignment of the coupling

The **MONOLASTIC®** flange couplings compensate for position deviations of the machine components to be connected up to the data specified in table 5.

With alignment, the radial and angular displacement should be kept as small as possible, because the service life is increased in this way under otherwise identical operating conditions.

The **MONOLASTIC®** flange coupling has to be aligned from the coupling hub on the shaft side to one of the machined surfaces of the flywheel or machine.

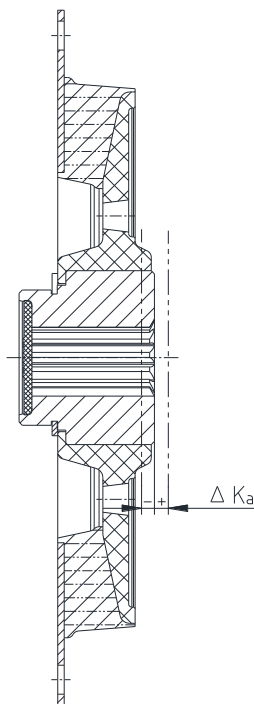


In order to ensure a long service life of the coupling, the shaft ends must be accurately aligned. Please absolutely observe the displacement figures specified (see table 5). If the figures are exceeded, the coupling will be damaged.

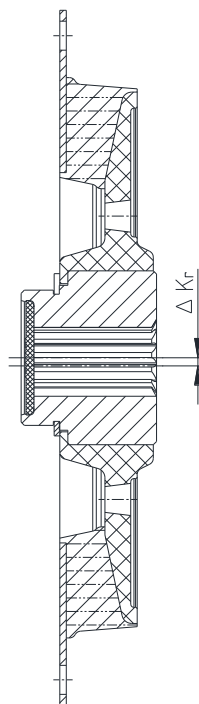
The more accurate the alignment of the coupling, the longer is its service life.

Please note:

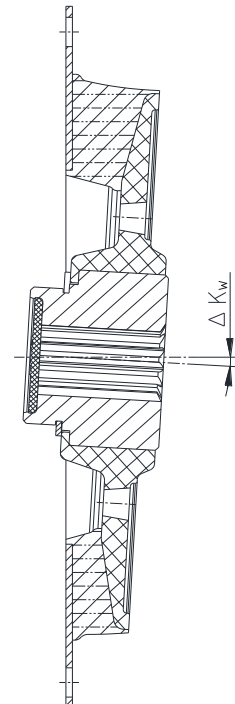
- The displacement figures specified in table 5 are maximum figures which must not arise in parallel. If radial and angular displacements arise simultaneously, the permissible displacement figures may only be used proportionally (see illustration 14).
- The displacement figures specified are general standard figures that apply up to an ambient temperature of 60 °C, ensuring a sufficient service life of the **MONOLASTIC®** coupling.
- Inspect with a dial gauge, ruler or feeler gauge whether the permissible displacement figures specified in table 5 can be observed.



Axial displacements



Radial displacements



Angular displacements

Illustration 13: Displacements

4 Assembly

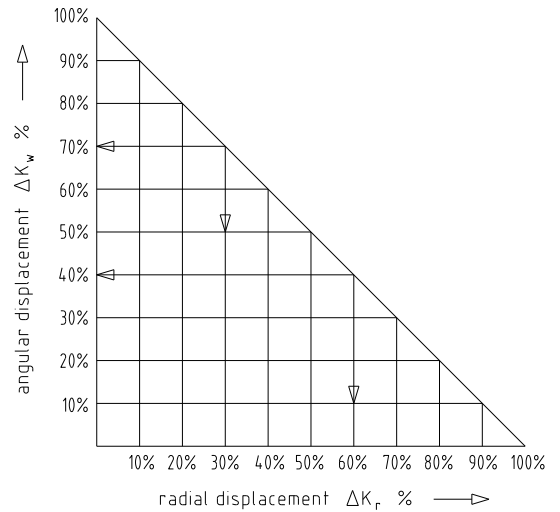
4.5 Displacements - alignment of the couplings

Examples of the displacement combinations specified in illustration 14:

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

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

Illustration 14:
Combinations of displacement



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

Table 5: Displacement figures

Size	Elastomer hardness [Shore A]	Perm. axial displacement ΔK_a in mm	Perm. radial displacement ΔK_r in mm with n = 2200 rpm	Perm. angular displacement ΔK_w in degree with n = 2200 rpm
Type with 3 holes				
22	T65	$\pm 1^{1)}$	0.6	1
28	T65		0.6	
	T70		0.5	
32	T65		0.6	
	T70		0.5	
50-140	T70		0.5	
50-165			0.5	
50-170			0.5	
60-165	T70	0.5		
SAE type				
30	T65	$\pm 1^{1)}$	0.5	1
	T70		0.5	
50	T65		0.5	
	T70		0.5	
G50	T70		0.5	
65	T65		0.5	
	T70		0.5	
75	T65		0.5	
	T70		0.5	

1) Coupling not assembled on block / axially preloaded. Axial compensation must be implemented by design.



5 Start-up

Before start-up of the coupling, inspect tightening of the cap crews in the flywheel, the alignment, the minimum distance dimension (see illustration 12) and adjust, if necessary, and also inspect all screw connections for the tightening torques specified.

Finally the coupling protection against accidental contact must be fitted. It is required in accordance with DIN EN ISO 12100 (Safety of Machinery) and must protect against

- access with a little finger
- falling down of solid foreign objects.

The coupling protection is not part of KTR's scope of delivery and is the customer's responsibility. It must have sufficient distance to the rotating components to safely avoid contact. We recommend a minimum distance of 15 mm from the outside diameter DA of the coupling.

The cover may provide for openings intended for necessary heat dissipation. These openings have to comply with DIN EN ISO 13857.

The cover must be electrically conductive and included in the equipotential bonding. The cover may only be taken off with standstill of the unit.

During operation of the coupling, please pay attention to

- different operating noise
- vibrations occurring.



If you note any irregularities with the coupling during operation, the drive unit must be switched off immediately. The cause of the breakdown must be specified by means of the table „Breakdowns“ and, if possible, be eliminated according to the proposals. The potential breakdowns specified can be hints only. To find out the cause all operating factors and machine components must be considered.

6 Breakdowns, causes and elimination

The below-mentioned failures can lead to a use of the MONOLASTIC® coupling other than intended. In addition to the specifications given in these operating/assembly instructions make sure to avoid such failures. The errors listed can only be clues to search for the failures. When searching for the failure the adjacent components must generally be considered.

General failures with improper use:

- Important data for the coupling selection were not forwarded.
- The calculation of the shaft-hub-connection was disregarded.
- Coupling components with damage occurred during transport are assembled.
- If the heated hub is assembled, the permissible temperature is exceeded.
- The clearance of the components to be assembled is not coordinated with one another.
- Tightening torques are fallen below/exceeded.
- Components are mixed up by mistake/assembled incorrectly.
- No original KTR components (purchased parts) are used.
- Old/already worn out flanges or flanges stored for too long are used.
- Maintenance intervals are not observed.

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6 Breakdowns, causes and elimination

Breakdowns	Causes	Elimination
Different operating noise and/or vibrations occurring	Micro friction by faulty alignment on the spline of the flange	<ol style="list-style-type: none"> 1) Set the unit out of operation 2) Eliminate the reason for the misalignment (e. g. loose foundation bolts, fracture of the engine mount, heat expansion of unit components, modification of the installation dimension L4 of the coupling)
	Screws for axial fastening of hubs working loose	<ol style="list-style-type: none"> 1) Set the unit out of operation 2) Inspect alignment of coupling 3) Tighten the screws to fasten the hubs and secure against working loose
Fracture of elastomer part/spline	Fracture of elastomer part/spline caused by high dynamic energy/overload	<ol style="list-style-type: none"> 1) Set the unit out of operation 2) Disassemble the coupling and remove remainders of the flange 3) Inspect coupling components and replace coupling components that are damaged 4) Insert flange, assemble coupling components 5) Find out the reason for overload
	Operating parameters do not meet with the performance of the coupling	<ol style="list-style-type: none"> 1) Set the unit out of operation 2) Review the operating parameters and select a bigger coupling (consider mounting space) 3) Assemble new coupling size 4) Inspect alignment
	Operating error of the unit	<ol style="list-style-type: none"> 1) Set the unit out of operation 2) Disassemble the coupling and remove remainders of the flange 3) Inspect coupling components and replace coupling components that are damaged 4) Insert flange, assemble coupling components 5) Instruct and train the service staff
Excessive wear on the spline of the elastomer part, fracture of elastomer	Vibrations of drive	<ol style="list-style-type: none"> 1) Set the unit out of operation 2) Disassemble the coupling and remove remainders of the flange 3) Inspect coupling components and replace coupling components that are damaged 4) Insert flange, assemble coupling components 5) Inspect alignment, adjust if necessary 6) Find out the reason for vibrations
	Ambient/contact temperatures which are too high for the elastomer part, max. permissible 100 °C	<ol style="list-style-type: none"> 1) Set the unit out of operation 2) Disassemble the coupling and remove remainders of the flange 3) Inspect coupling components and replace coupling components that are damaged 4) Insert flange, assemble coupling components 5) Inspect alignment, adjust if necessary 6) Inspect and adjust ambient/contact temperature
	e. g. contact with aggressive liquids/oils, ozone influence, too high/low ambient temperatures etc. causing physical modification of the flange	<ol style="list-style-type: none"> 1) Set the unit out of operation 2) Disassemble the coupling and remove remainders of the flange 3) Inspect coupling components and replace coupling components that are damaged 4) Insert flange, assemble coupling components 5) Inspect alignment, adjust if necessary 6) Make sure that further physical modifications of the flanges are excluded



7 Disposal

In respect of environmental protection we would ask you to dispose of the packaging or products on termination of their service life in accordance with the legal regulations and standards that apply, respectively.

- **Metal**
Any metal components have to be cleaned and disposed of by scrap metal.
- **Nylon materials**
Nylon materials have to be collected and disposed of by a waste disposal company.

8 Maintenance and service

We recommend to perform a visual inspection on the coupling **at least once a year**. Pay special attention to the condition of the elastomer part of the coupling.

- Remove loose dirt from the coupling.
- The coupling components must be inspected for damages.
- Damaged couplings should be replaced immediately.
- Inspect the tightening torques of all screw connections and correct, if necessary.
- Since the flexible machine bearings of the driving and driven side settle during the course of load, inspect the alignment of the coupling and re-align the coupling, if necessary.

Please perform visual inspection as follows:

- Inspect adhesion ① of elastomer part to the inner part (metal).
- Inspect the elastomer for cracks in the areas marked with , , , (2) and „ (3) in illustration 15.
If the depth of cracks achieve the limit of 3.0 mm or exceed it in the area marked with ③, the complete coupling must be replaced.



If the elastomer is damaged or worn off the complete coupling have to be replaced, with the maintenance interval of the engine at the latest.

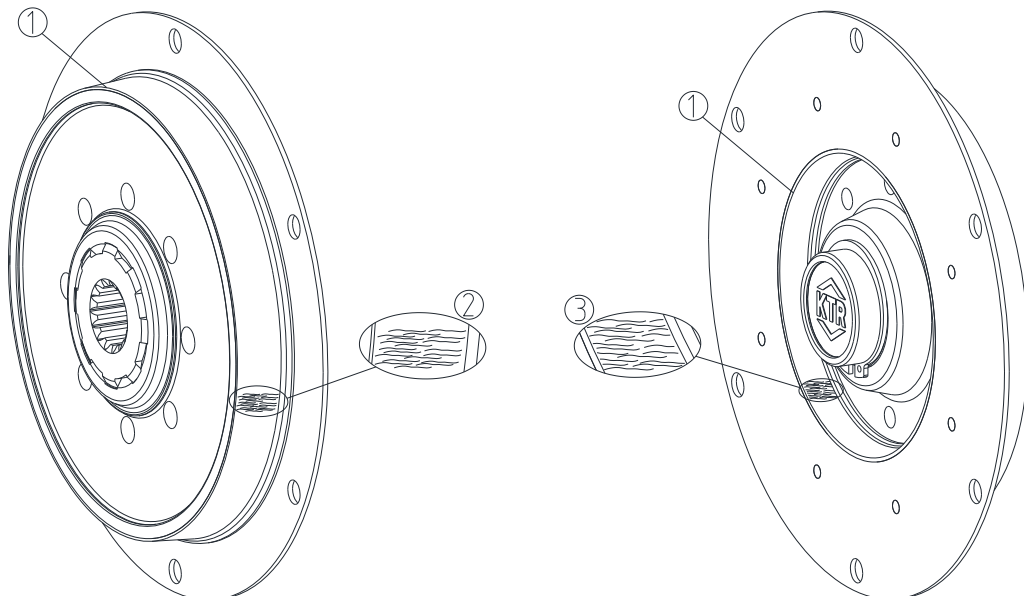


Illustration 15: Visual inspection

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9 Spares inventory, customer service addresses

A basic requirement to ensure the readiness for use 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.



KTR does not assume any liability or warranty for the use of spare parts and accessories which are not provided by KTR and for the damages which may incur as a result.

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E-mail: mail@ktr.com

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