

RINGFEDER POWER TRANSMISSION

Installation and Operating Manual
RLDS BWB / BSB / BAB series

RINGFEDER®
Torsionally rigid coupling



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1 Legal information

This installation and operation manual contains instructions that must be followed to ensure your personal safety and to prevent injury or damage to property.

Only qualified personnel are permitted to use the product or system to which this documentation applies. Please read and observe all related documents, especially the safety instructions and warnings.

2 Liability of the RINGFEDER POWER TRANSMISSION GMBH

All contents of this document, including texts, graphics, and figures, are protected by copyright. Unless otherwise stated, the copyright is held by **RINGFEDER POWER TRANSMISSION GMBH** (hereinafter referred to as RPT). This document may not be copied, reproduced, shortened, or expanded, either in whole or in part, without prior consent from the manufacturer.

RPT reserves the right to modify these instructions as part of ongoing development and considering new findings.



- RINGFEDER® couplings must be used in accordance with the intended functionality described in the technical paper and this assembly and operating manual.
- Third-party products or external components may only be used with prior approval from RPT.
- Proper transport, storage, positioning, assembly, installation, commissioning, operation, and maintenance are essential prerequisites for the fault-free and safe functioning of the products.
- The permissible environmental conditions must be observed.
- The design and dimensioning of the shaft-hub connections are the responsibility of the user.
- For future development of the product, we reserve the right to make technical modifications.

3 Safety instructions

This installation and operation manual describes the coupling and provides guidance on its use from assembly to disposal. Retain this manual for future reference. Read the instructions carefully before using the coupling and follow all guidelines provided. Always observe the safety instructions.

3.1 Legend

Table 1 displays all symbols used in this manual.

Table 1: Legend for warning symbols

Warning	Symbol	Warning message
General Mandatory Sign		Instructions marked with this symbol must be followed with particular care to ensure the correct operation of the coupling and consequently of the machine or system.
Warning of Personal Injury		This symbol warns of information that, if ignored, may lead to serious or fatal injuries.
Warning of Product Damage		This symbol indicates important information that must be observed to avoid damage to the coupling or the system.
Warning of Suspended Load		This symbol warns of the risk of injury from loads being transported, e.g., by crane.
Warning of Crushing Hazard		This symbol indicates work steps where there is an increased risk of crushing injuries.
Warning for Hot Surface		This symbol warns of hot surfaces that may cause burns, avoid contact to prevent injury.
Torque Specification Notice		Before assembly, please refer to the table for the correct screw tightening torques.
Heating or Cooling Required		This symbol indicates that a heating or cooling process is required for assembly and/or disassembly.

Cleaning		This symbol indicates that the surface and/or object must be cleaned of all contaminants that could hinder assembly and/or operation.
Inject Lubricant		This symbol indicates that the application of lubricant is required for proper operation and/or assembly of the device.
Recycling / Disposal		Any item to be recycled or disposed of must be handled in an environmentally friendly manner.

3.2 General Safety Instructions

Safe and trouble-free operation of the coupling can only be ensured through familiarity with this manual. Failure to follow the instructions may result in damage to the product, property, and/or personal injury. RPT assumes no liability for damages or operational disruptions resulting from non-compliance with the manual.



During assembly, operation, and maintenance of the coupling, it must be ensured that the entire drive train is secured against unintentional activation. Rotating parts can cause serious injuries. Therefore, be sure to read and follow the instructions below:

- All work on and with the equipment must be carried out in accordance with safety regulations.
- In accordance with accident prevention regulations, all freely rotating parts must be protected against unintentional contact and falling objects by fixed protective devices.
- In case of a special coupling, the coupling design takes precedence.
- Unauthorized modifications to the coupling are not admissible. We decline any warranty due to consequent damage.
- Only use original spare parts from RPT.
- Visibly damaged parts must not be installed or put into operation.
- Note that improperly tightened screws can lead to serious personal injury and property damage.

3.3 EC Machinery Directive 2006/42/EC

The equipment supplied by RPT is component and not machine or incomplete machine within the meaning of the EC Machinery Directive 2006/42/EC. Accordingly, RPT is not required to issue a separate installation declaration.

4 Transportation, delivery, and storage

4.1 Transportation



Always use suitable transport equipment and lifting devices during transport to avoid injuries caused by falling components or crushing, as well as any kind of damage.

4.2 Scope of Delivery



Upon delivery, check for the presence of all items listed in the enclosed shipping documents. Any damage or missing parts must be reported to the supplier immediately in writing.

4.3 Delivery conditions

The coupling is delivered pre-assembled, and the surfaces are lightly oiled to protect against corrosion.

4.4 Storage

Store the product in its original packaging. Under ideal conditions, the storage duration is unlimited.



- The coupling must not come into contact with aggressive substances, extreme temperatures, or moisture.
- The coupling must not be stored together with acids, alkalis, or other corrosive chemicals.
- The storage location should be dry and dust-free. Humidity should not exceed 65%, and condensation must be avoided.
- The disc packs are made of stainless spring steel. They must not be exposed to any aggressive products, extreme temperatures or humidity.
- Do not store the disc packs along with acids, alkaline solutions or other caustic chemicals.

5 Technical description

The RLDS series is a torsionally rigid steel disc coupling designed to transmit torque without backlash through flexible steel discs, which compensates for angular, radial and axial shaft misalignments within defined ranges.

The coupling is suitable for operation in either direction of rotation when installed in the horizontal position. For applications in the vertical position, a special design is required, consult RPT for more details.

The spacer can be radially mounted and dismounted without having to move the connected machines.

5.1 Intended use of the coupling

The intended use of the coupling is to connect in- and output of a power transmission drive with each other, in most cases these are two shafts. For stationary applications additional equipment like brake drums, torque limiters, etc. can be added to the coupling and will not change the intended use.



- The coupling may only be used in accordance with the technical data sheet.
- In the case of special couplings, the coupling design takes precedence.
- The coupling shall only be used and operated within the frame of the conditions as defined in the performance or delivery contract.
- Any change in the operation conditions or service parameters requires the verification of the coupling design.
- Unauthorized modifications to the coupling are not admissible. We decline any warranty due to consequent damage.
- For future development of the product, we reserve the right to make technical modifications.

5.2 Layout

5.2.1 RLDS BWB components

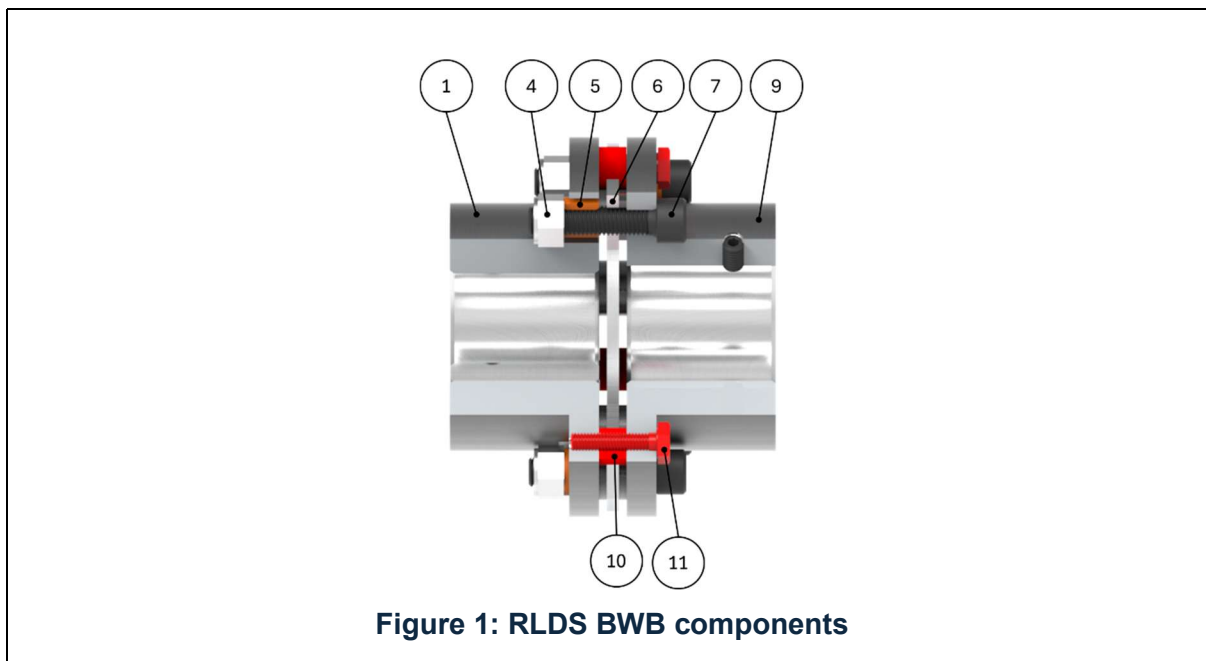


Table 2: RLDS BWB components

Number	Component	Qty.
1	Hub type I	1
4	Cleaveloc Nut	6
5	Sleeve	6
6	Blade disc pack	1
7	Coupling bolt	6
9	Hub type I	1
10	Transport spacer	3
11	Transport bolt	3



- The RLDS BWB do not comply with API 610/670 standards

5.2.2 RLDS BSB components

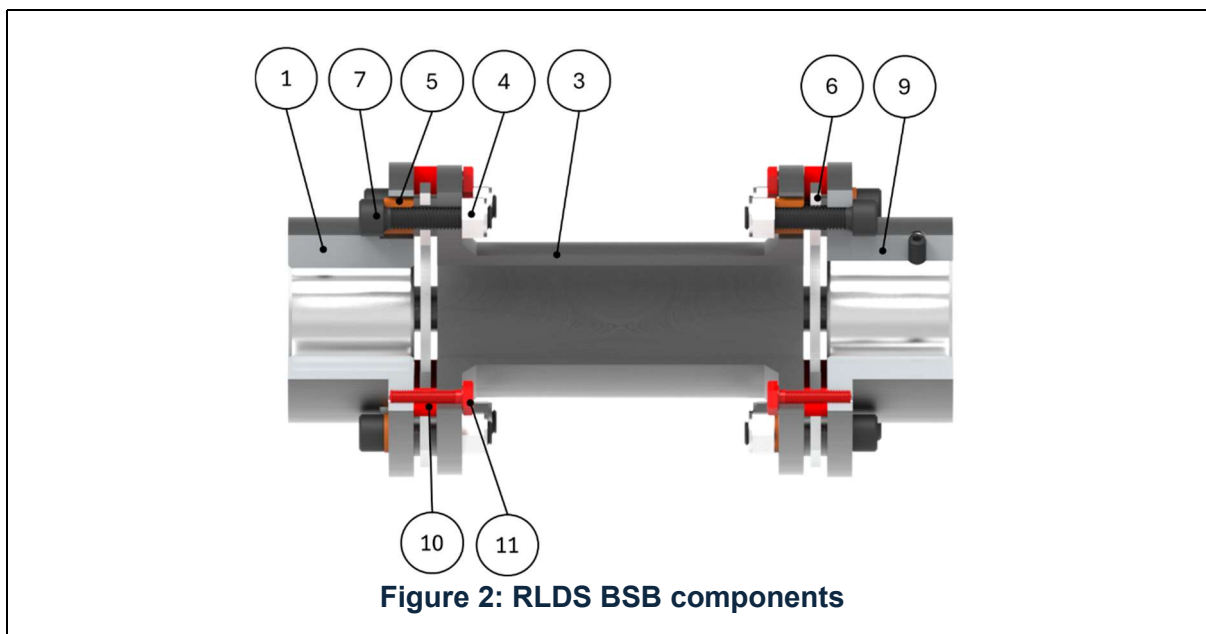


Table 3: RLDS BSB components

Number	Component	Qty.
1	Hub type I	1
3	Spacer	1
4	Clevis nuts	12
5	Sleeve	12
6	Blade disc pack	2
7	Coupling bolt	12
9	Hub type I	1
10	Transport spacer	6
11	Transport bolt	6



- The RLDS BSB do not comply with API 610/670 standards

5.2.3 RLDS BAB components

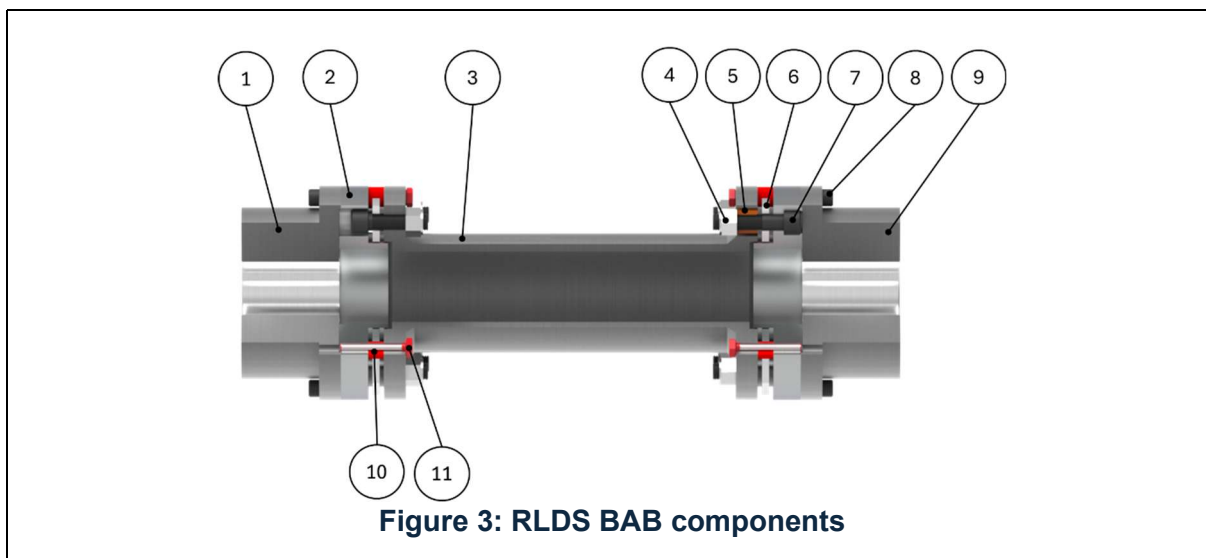


Table 4: RLDS BAB components

Number	Component	Qty.
1	Hub type I	1
2	Adapter	2
3	Spacer	1
4	Clevlock nuts	12
5	Sleeve	6
6	Blade disc pack	2
7	Coupling bolt	12
8	Attachment bolt	12
9	Hub type I	1
10	Transport spacer	6
11	Transport bolt	6



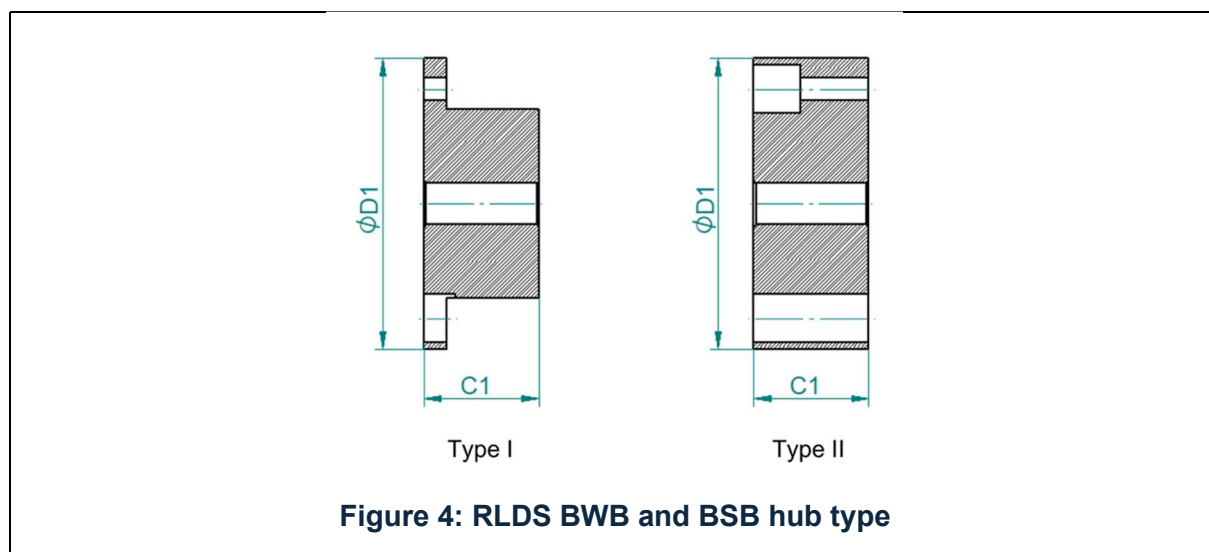
- The RLDS BAB complies with API 610/670 standards
- The adapter is supplied ready for use.
- It should not be disassembled or changed
- The bolts (Pos. 7) are supplied already tightened to the correct torque; there is no need to check or adjust them.

5.3 Hub types

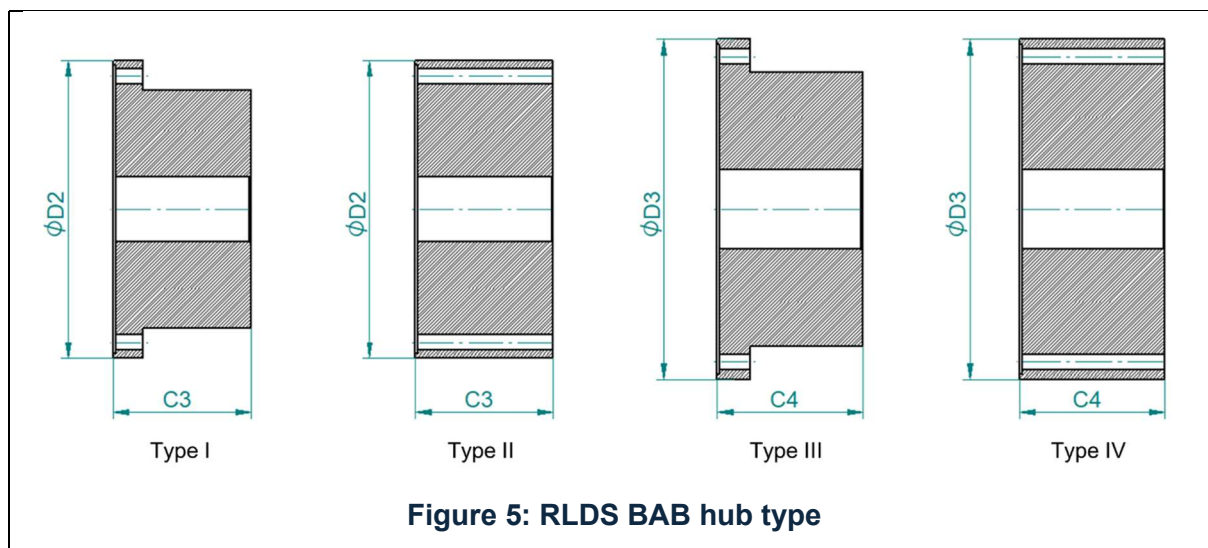
The RLDS BWB and BSB couplings are available with two hub types: Type I, which is the standard hub, and Type II, designed for larger bore sizes.

The RLDS BAB, compliant with API 610/670 standards, offers four hub types. Type I, which is the standard hub, while the remaining types accommodate larger bore diameters.

This model offers additional hub types because the adapter allows for further increases in hub dimensions, resulting in a wider bore range.



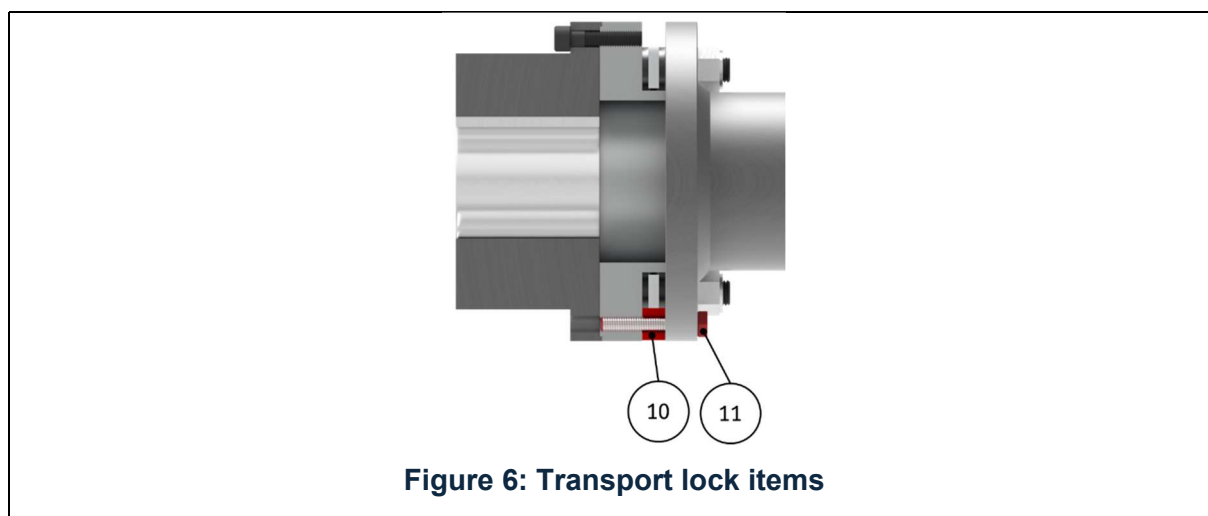
For Type II hubs, larger sleeves (Pos. 5) and coupling bolts (Pos. 7) are supplied as part of the assembly kit; both components are included whenever a Type II hub is selected.



- For Type II and IV hubs, larger attachment bolts (Pos. 8) are supplied as part of the assembly kit; this components are included whenever a Type II or IV hub is selected.
- The adapter (Pos. 2) and blade disc pack (Pos. 6) for Type III and IV hubs are different from those used in Type I and II hubs, meaning they cannot be interchanged.

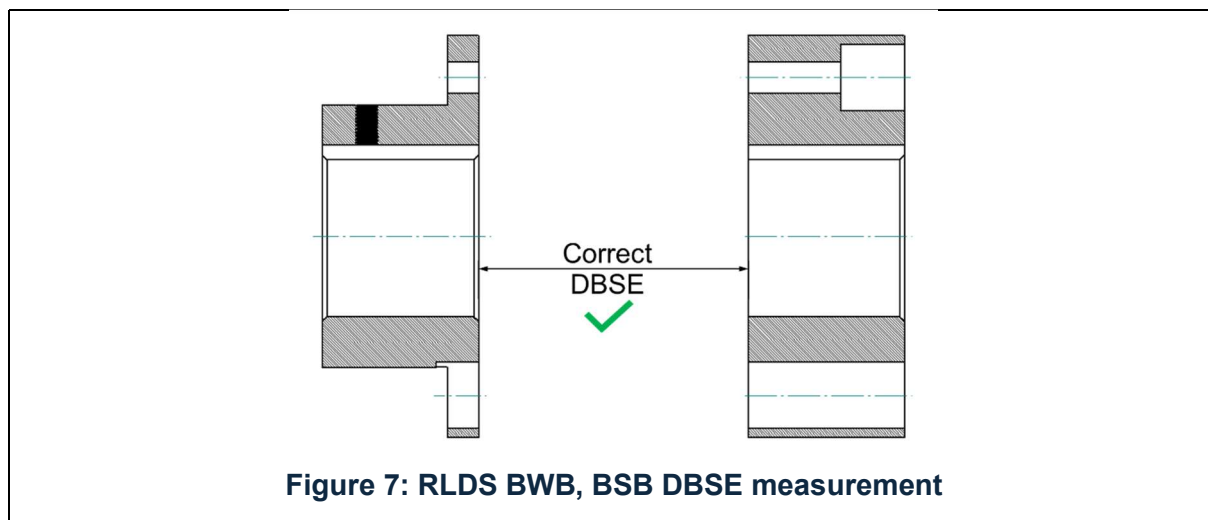
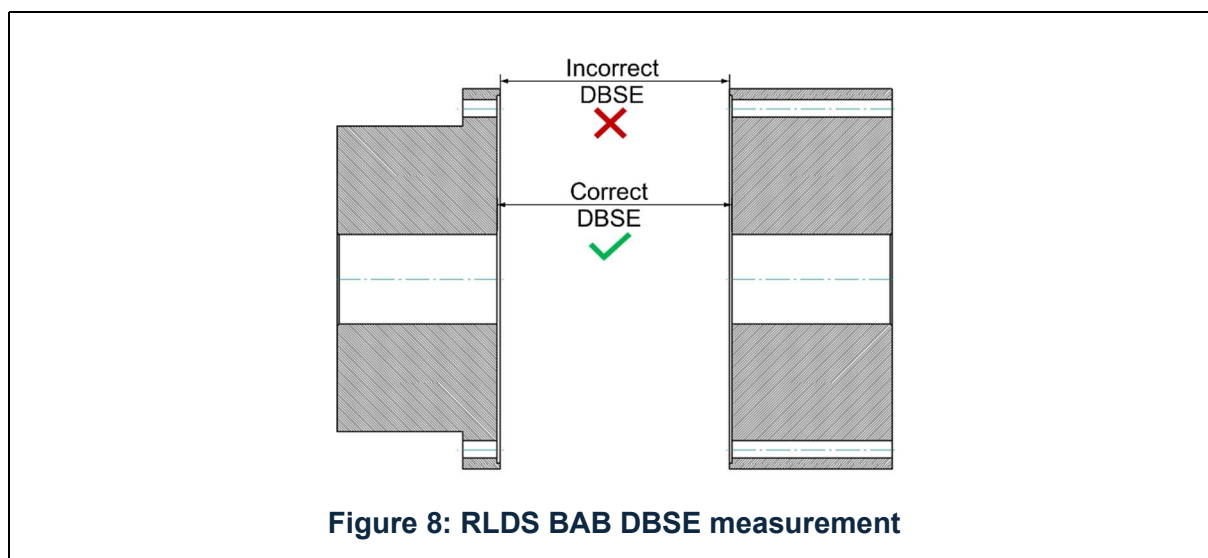
5.4 Transport lock items

The RLDS BAB adapter is delivered from the factory ready for use, meaning no adjustments are required. To prevent any damage during transportation and prior to installation, items Pos. 10 and 11 are supplied. Further details regarding these items will be provided during the coupling assembly and disassembly procedures.



5.5 DBSE measurement

The DBSE shall be measured with reference to the inner faces of the hubs.



6 Technical data

The summarized technical data and properties are provided below. For complete and updated data, please refer to the technical document “RINGFEDER® RLDS Steel Disc Couplings” this document is available for standard couplings at www.ringfeder.com.



- If an individual, order-specific customer drawing has been created for the RLDS coupling, the information contained there shall take precedence.
- Observe maximum speed and operating temperature. If operating conditions change (e.g., power, speed, start-up frequency, temperature, etc.), the coupling selection must be checked.

6.1 RLDS BWB: Single-Jointed without Spacer

Table 5: RLDS BWB: Single-Jointed without Spacer

Size	T_{KN}	T_{Kmax}	n_{max}	J	C_{Tdyn}	ΔK_a	$\Delta K_{w max}$	ΔK_r
BWB	Nm	Nm	1/min	Kg.m ²	MNm/rad	mm	degrees	mm/mm E
10	95	190	7500	0.00047	0.041	±1	0.75°	±0
35	229	458	7000	0.0017	0.093	±1	0.75°	±0
95	621	1242	6000	0.0082	0.248	±1	0.75°	±0
170	1203	2406	5200	0.0143	0.529	±1	0.75°	±0
220	1910	3820	4800	0.0263	0.895	±1	0.75°	±0
400	3466	6932	4400	0.0640	1.665	±1	0.75°	±0
520	5586	11172	4200	0.1320	2.393	±2	0.75°	±0
1000	7086	14172	4000	0.2311	3.490	±2	0.75°	±0
1300	10380	20760	3800	0.3945	On Request	±2	0.75°	±0
2000	14534	29068	3700	0.6350	On Request	±2	0.75°	±0
2500	18717	37434	3600	1.0050	On Request	±2	0.75°	±0



Moment of Inertia J and Torsional Stiffness C_{Tdyn} are given at maximum bore diameter and with hub combination Type I / Type II.

6.2 RLDS BSB: Double-Jointed with Spacer

Table 6: RLDS BSB: Double-Jointed with Spacer

Size	T_{KN}	T_{Kmax}	n_{max}	J for DBSE min	J for extra DBSE	C_{Tdyn}	ΔK_a	$\Delta K_{w max}$	ΔK_r
BSB	Nm	Nm	1/min	Kg.m ²	Kg.m ²	MNm/rad	mm	degrees	mm/mm E
10	95	190	7500	0.001	0.001	0.021	±2	1.5°	0.013
35	229	458	7000	0.002	0.001	0.047	±2	1.5°	0.013
95	621	1242	6000	0.006	0.002	0.100	±2	1.5°	0.013
170	1203	2406	5200	0.017	0.004	0.222	±2	1.5°	0.013
220	1910	3820	4800	0.033	0.009	0.381	±2	1.5°	0.013
400	3466	6932	4400	0.079	0.021	0.773	±2	1.5°	0.013
520	5586	11172	4200	0.160	0.032	0.962	±4	1.5°	0.013
1000	7086	14172	4000	0.286	0.065	1.529	±4	1.5°	0.013
1300	10380	20760	3800	0.501	0.062	1.892	±4	1.5°	0.013
2000	14534	29068	3700	0.814	0.104	2.454	±4	1.5°	0.013
2500	18717	37434	3600	1.279	0.143	3.783	±4	1.5°	0.013



Moment of Inertia J and Torsional Stiffness C_{Tdyn} are given at maximum bore diameter with minimum standard E (DBSE) and with hub combination Type I / Type II.

6.3 RLDS BAB: Double-Jointed with Spacer, compliant with API 610 / 671.

Table 7: RLDS BAB: Double-Jointed with Spacer

Size	T_{KN}	T_{Kmax}	n_{max}	J for DBSE min	J for extra DBSE	C_{Tdyn}	ΔK_a	$\Delta K_{w max}$	ΔK_r
BAB	Nm	Nm	1/min	Kg.m ²	Kg.m ²	MNm/rad	mm	degrees	mm/mm E
8	95	190	7500	0.001	0.001	0.018	±2	1.5°	0.013
25	229	458	7000	0.003	0.001	0.043	±2	1.5°	0.013
65	621	1242	6000	0.008	0.003	0.100	±2	1.5°	0.013
125	1203	2406	5200	0.026	0.006	0.232	±2	1.5°	0.013
165	1910	3820	4800	0.051	0.012	0.395	±2	1.5°	0.013
370	3466	6932	4400	0.116	0.025	0.749	±2	1.5°	0.013
390	5586	11172	4200	0.225	0.047	1.239	±4	1.5°	0.013
790	7086	14172	4000	0.408	0.076	1.649	±4	1.5°	0.013
1025	10380	20760	3800	0.708	0.079	2.179	±4	1.5°	0.013
1425	14534	29068	3700	1.113	0.134	3.350	±4	1.5°	0.013
1880	18717	37434	3600	1.787	0.168	4.271	±4	1.5°	0.013



Moment of Inertia J and Torsional Stiffness C_{Tdyn} are given at maximum bore diameter with minimum standard E (DBSE) and with hub combination Type I / Type II.

7 Assembly

7.1 Before installation



Check the coupling assembly for visible damage. If you find any damage, please contact RPT immediately.



Use suitable transport equipment and lifting devices for installation to prevent injuries caused by falling components or crashes, as well as any type of damage.

Ensure that the system is disconnected from the power supply and other possible energy sources before starting work!



The hub can be heated evenly between 80 °C and 120 °C to facilitate mounting on the shaft.

If this option is chosen, remember to use the correct equipment to avoid any damage due to burns.



Remove all protective coatings/lubricants from the individual components



To protect yourself from burns caused by hot components, always wear gloves when working!



For larger couplings, use suitable assembly aids and lifting equipment such as cranes.



The colors shown in the illustrations of this assembling process are only graphical representations. They are intended to improve the visualization of each step and do not reflect the final colors of the product.

7.2 Finished Bore Instruction

The finished bores of the hubs must be machined by the customer using the flange outside diameter as a reference.

Machining of the finished bore must strictly comply with the specified tolerance limits, such as H7 or JS9.

Keyway is to be slotted between two adjacent holes of hub as shown in fig. It is recommended that the distance 'd' should be half of the length through bore 'LTB'.

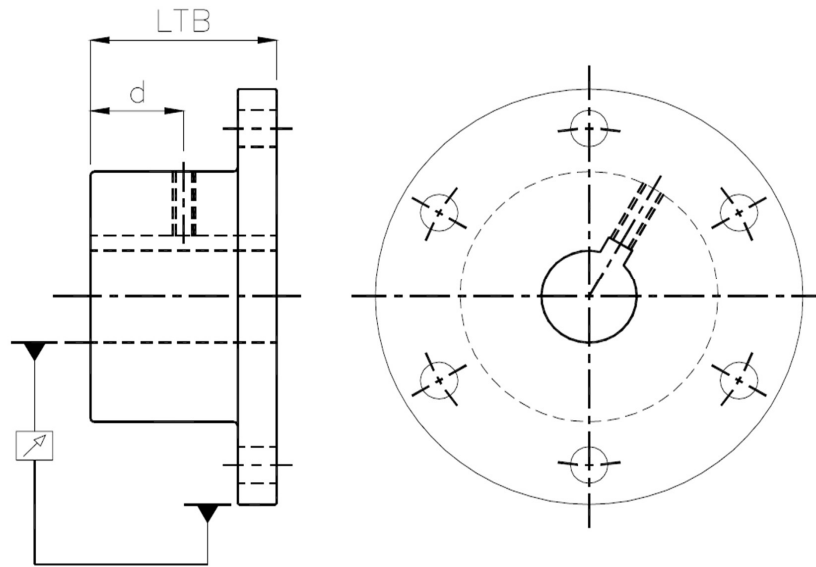
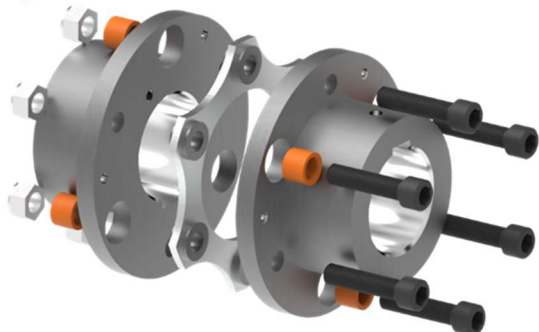


Figure 9: Pilot bore machining

7.3 RLDS BWB assembling process

Step 1

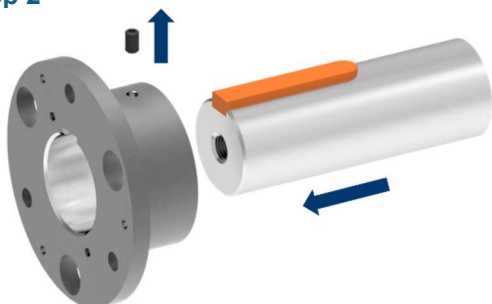


Carefully disassemble all components.

Remove all protective coatings and lubricants from each individual part using appropriate cleaning agents.

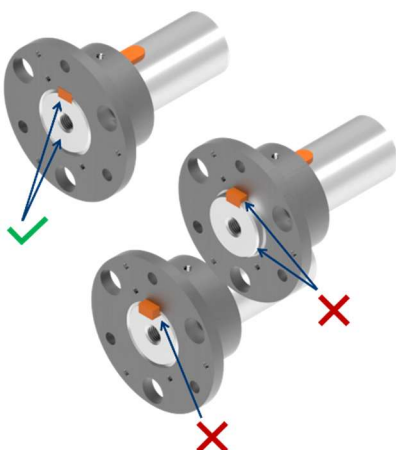
Ensure all surfaces are clean, dry, and free from contaminants before proceeding with assembly.

Step 2



Before mounting the hub, the Set screw must be turned out far enough so that there is no risk of collision with the key when the hub is pulled on.

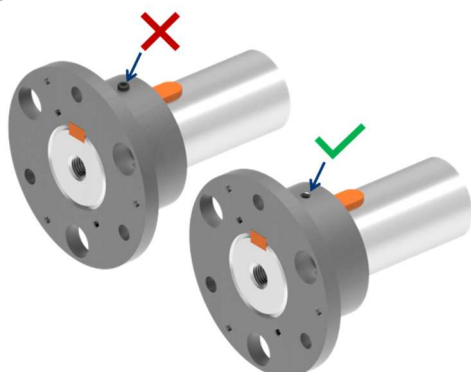
Step 3



Pull the coupling hubs onto the shaft ends in the designated position.

Mount the hub so that the shaft end is flush with the inner bore opening.

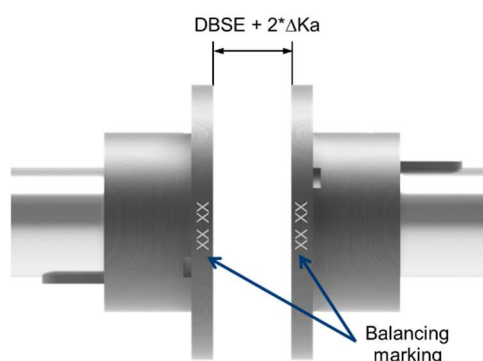
Step 4



Install the specified key and Set screw so that they do not protrude beyond the shaft end and hub back.

Install the Set screw with a tightening torque according to Table 9.

Step 5

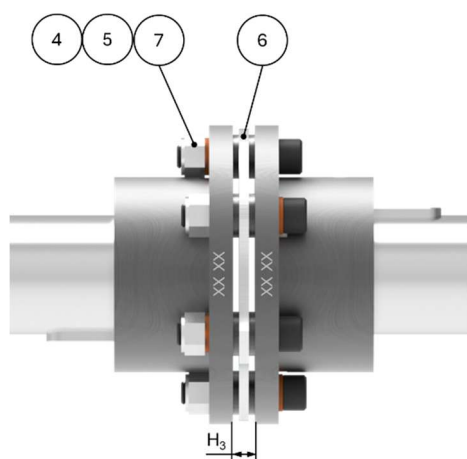


Push the shaft ends with the pre-assembled hubs together to the installation dimension $DBSE + 2 \cdot \Delta Ka$, so that an installation clearance remains (see Table 5).

At this point, the procedure described in Chapter 9 should be followed to ensure the hubs are positioned correctly.

For final assembly, the balancing marks shall be aligned and all transport components shall be removed.

Step 6



After completing the procedure described in Chapter 9 and aligning the balance marks.

Install components 4, 5, 6, and 7 and tighten the screws as specified in Table 10.

Special attention shall be paid to dimension H3. The dimension shall not be less than the value specified in Table 8. The permissible variation shall not exceed one half of the allowable axial misalignment.



The tightening torque shall not be applied to the bolts in a single step.

The total specified tightening torque (Table 10) shall be applied in three (3) successive steps, with one third (1/3) of the final torque applied in each step.

This procedure is mandatory in order to prevent improper load distribution and to avoid overloading of the components.

7.4 RLDS BSB assembling process

Step 1

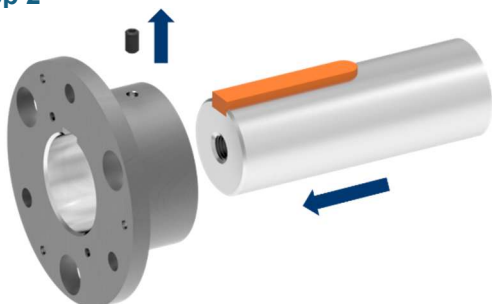


Carefully disassemble all components.

Remove all protective coatings and lubricants from each individual part using appropriate cleaning agents.

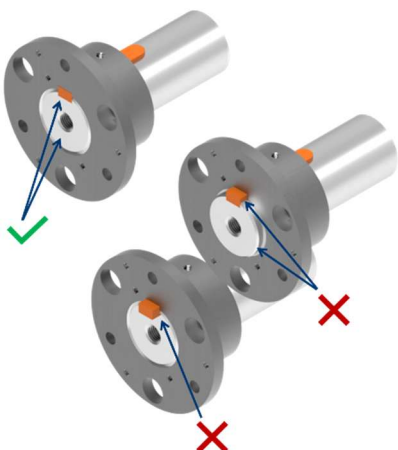
Ensure all surfaces are clean, dry, and free from contaminants before proceeding with assembly.

Step 2



Before mounting the hub, the Set screw must be turned out far enough so that there is no risk of collision with the key when the hub is pulled on.

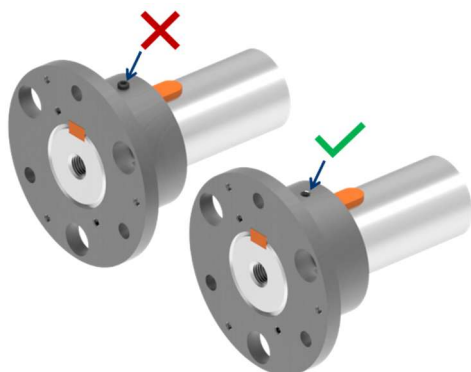
Step 3



Pull the coupling hubs onto the shaft ends in the designated position.

Mount the hub so that the shaft end is flush with the inner bore opening.

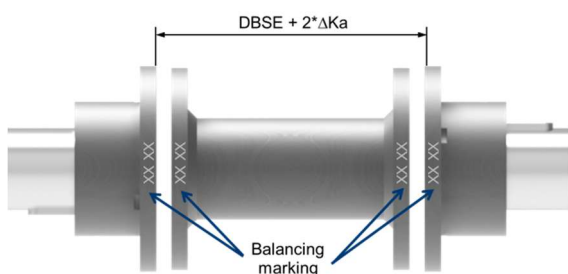
Step 4



Install the specified key and Set screw so that they do not protrude beyond the shaft end and hub back.

Install the Set screw with a tightening torque according to Table 9.

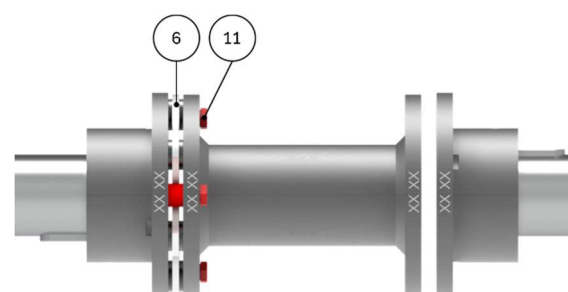
Step 5



Push the shaft ends with the pre-assembled hubs together to the installation dimension $DBSE + 2 \cdot \Delta Ka$, so that an installation clearance remains (see Table 6).

At this point, the alignment procedure (Chapter 9) should be followed to ensure the hubs are positioned correctly.

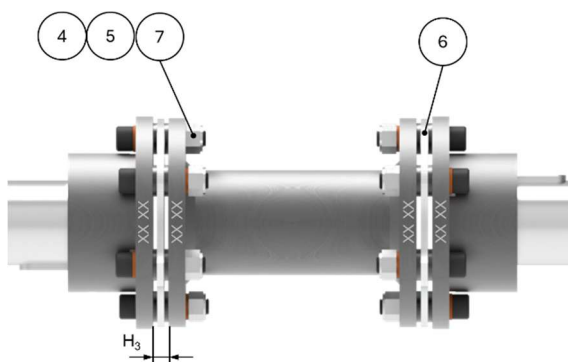
Step 6



After completing the alignment procedure (Chapter 9), the balancing marks shall be aligned.

Install the blade disc pack on one side together with the spacer and use the transport bolt to compress the blade disc pack. This procedure will facilitate the installation of the second disc pack without disturbing the already mounted hub.

Step 7



Install components 4, 5, 6, and 7 and tighten the screws in accordance with the specifications given in Table 10.

All transport components (Figure 2) shall be removed after tightening.

Special attention shall be paid to dimension H_3 . The dimension shall not be less than the value specified in Table 8. The permissible variation shall not exceed one half of the allowable axial misalignment.



The tightening torque shall not be applied to the bolts in a single step.

The total specified tightening torque (Table 10) shall be applied in three (3) successive steps, with one third (1/3) of the final torque applied in each step.

This procedure is mandatory in order to prevent improper load distribution and to avoid overloading of the components.

7.5 RLDS BAB assembling process

Step 1



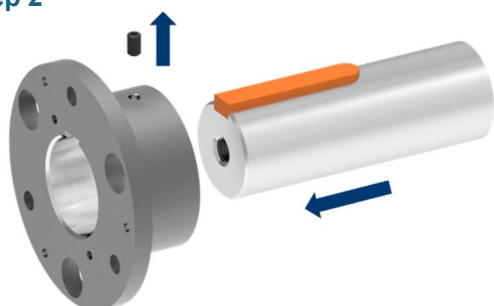
The hubs shall be carefully disassembled from the transmission unit by loosening the attachment bolts.

The transmission unit must not be disassembled.

Remove all protective coatings and lubricants from the hubs using appropriate cleaning agents.

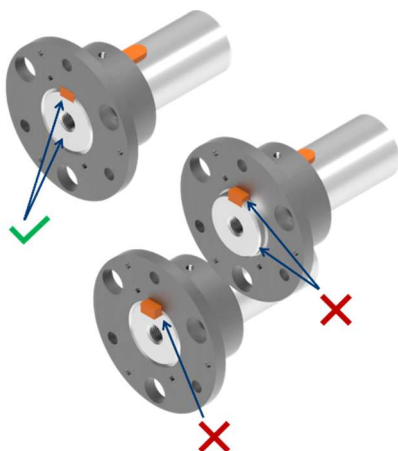
Ensure all surfaces are clean, dry, and free from contaminants before proceeding with assembly.

Step 2



Before mounting the hub, the Set screw must be turned out far enough so that there is no risk of collision with the key when the hub is pulled on.

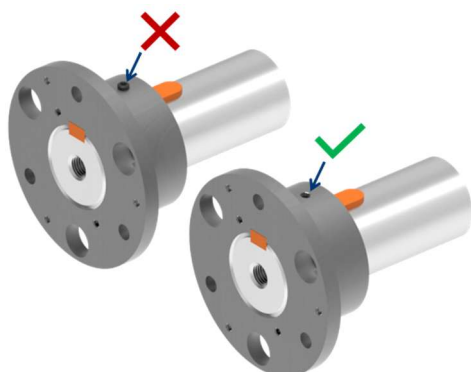
Step 3



Pull the coupling hubs onto the shaft ends in the designated position.

Mount the hub so that the shaft end is flush with the inner bore opening.

Step 4



Install the specified key and Set screw so that they do not protrude beyond the shaft end and hub back.

Install the Set screw with a tightening torque according to Table 9.

Step 5

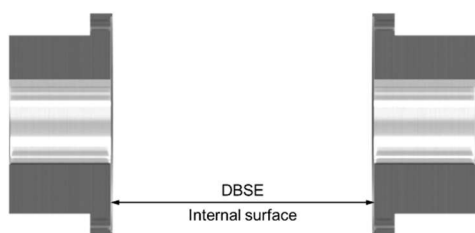


Figure 10: RLDS BAB transmission unit

The transport bolts (identified by the red color in the illustration) shall be slightly tightened in order to compress a little the blade disc pack.

This step shall be carried out in order to facilitate proper assembly between the hubs.

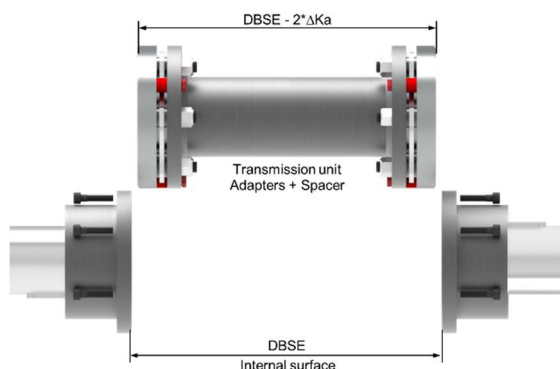
Step 7



The shaft ends with the pre-assembled hubs shall be pushed together until the installation dimension DBSE is reached (Figure 8).

At this point, the procedure described in Chapter 9 should be followed to ensure the hubs are positioned correctly.

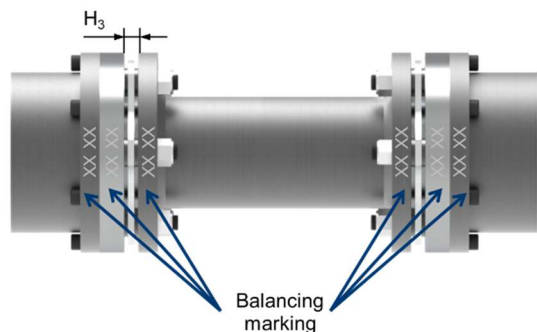
Step 8



The transmission unit shall be shorter than DBSE. The required installation clearance ΔKa shall be taken from Table 7.

The transmission unit shall be positioned between the hubs.

Step 9



For final assembly, the balancing marks must be aligned.

All the attachment bolts can be installed, and the tightening procedure shall be commenced in accordance with Table 11.

After tightening the transport components (Figure 6) shall be removed.

Special attention shall be paid to dimension H3. The dimension shall not be less than the value specified in Table 8. The permissible variation shall not exceed one half of the allowable axial misalignment.



The tightening torque shall not be applied to the bolts in a single step.

The total specified tightening torque (Table 11) shall be applied in three (3) successive steps, with one third (1/3) of the final torque applied in each step. This procedure is mandatory in order to prevent improper load distribution and to avoid overloading of the components.

7.6 Tightening torque and blade pack width tables

Table 8: Width of disc pack

Coupling size	10	35	95	170	220	400	520	1000	1300	2000	2500
	8	25	65	125	165	370	390	790	1025	1425	1880
Dimension H ₃ [mm]	6.5	6.5	8.0	9.5	12.0	13.0	14.4	16.2	19.5	21.5	23.5

Table 9: Set screw tightening torque

Screw Size	M5	M6	M8	M10	M12	M16
T _A [Nm]	8	15	20	25	35	75

Table 10: Coupling bolt tightening torque

Screw Size	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24
T _A [Nm]	10	25	49	85	136	211	292	412	562	713

Table 11: Attachment bolt tightening torque

Screw Size	M6	M8	M10	M12
T _A [Nm]	13	31	62	108

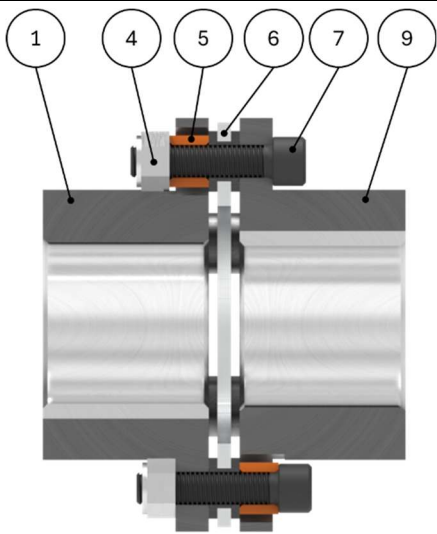
8 Disassembling



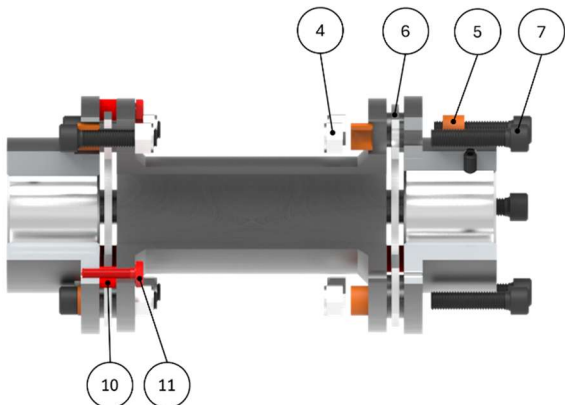
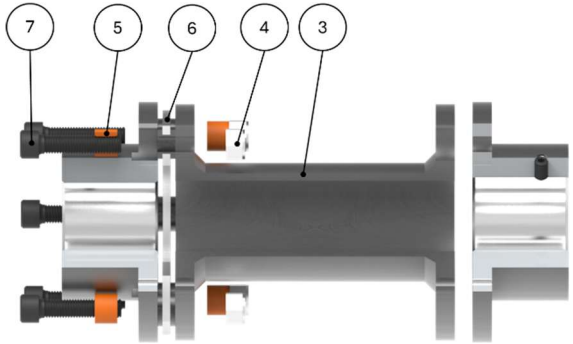
Use suitable transport equipment and lifting devices for disassembly to prevent injuries caused by falling components or crashes, as well as any type of damage.

Ensure that the system is disconnected from the power supply and other possible energy sources before starting work!

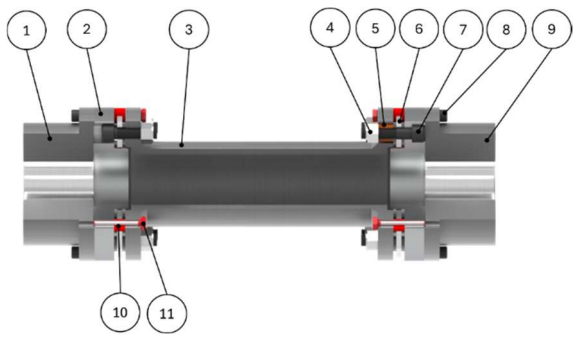
8.1 RLDS BWB

	<ul style="list-style-type: none"> • Items 7, 5, and 4 shall be removed first, thereby allowing item 6 to be removed. • The shaft together with the hub may then be withdrawn, and the hub shall be removed. • If required, a suitable lifting device or puller shall be used. • When reassembling the coupling components, the instructions given in Chapter 7 shall be strictly followed.
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8.2 RLDS BSB

 <p>Compress</p> <p>Loosen</p>	<ul style="list-style-type: none"> • Secure the hub or spacer to prevent it from falling. • Reinstall the transport components on one side. • On the opposite side, loosen items 4, 5, and 7, and then compress the blade disc pack using the transport components. • This procedure shall be carried out to facilitate removal of the opposite blade disc pack. • Items 4, 5, 7, and 6 can now be fully removed.
	<ul style="list-style-type: none"> • Remove the transport components. • Items 7, 5, and 4 shall be removed first, thereby allowing item 3 and 6 to be removed. • Lift the spacer radially out between the hub using appropriate assembly aids and lifting equipment such as cranes or hoists for this purpose. • The shaft together with the hub may then be withdrawn, and the hub shall be removed. • If required, a suitable lifting device or puller shall be used. • When reassembling the coupling components, the instructions given in Chapter 7 shall be strictly followed.

8.3 RLDS BAB

	<ul style="list-style-type: none"> • Secure the transmission unit (Pos. 2 and 3) to prevent it from falling. • Reinsert the transport lock items (see Figure 6) in the designated place and compress the blade disc pack to facilitate the removal of the transmission unit . • Lift the transmission unit radially out between the hub using appropriate assembly aids and lifting equipment such as cranes or hoists for this purpose. • The shaft together with the hub may then be withdrawn, and the hub shall be removed. • When reassembling the coupling components, the instructions given in Chapter 7 shall be strictly followed.
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8.3.1 Replacement of the blade disc pack

If replacement of the blade disc pack of the RLDS BAB is required, the disassembly procedure shall be carried out as described above.

After removal of the transmission unit , proceed as follows:

- All transport locking (Pos. 10 and 11) items shall be removed.
- Items 4, 5, and 7 shall be removed; item 2 may then be removed.
- The blade disc pack (Pos. 6) can be replaced.
- Items 2, 4, 5, and 7 shall be reinstalled.
- Note that Item 5 shall be installed only on the spacer side (Item 3); Item 5 is not installed on the hub side.
- The bolted connection (Pos. 7 and 4) shall be tightened gradually and uniformly around the entire circumference. Tightening shall be performed on the nut (Pos. 4) side only, using a suitable and accurate torque wrench, in accordance with the specifications given in Table 10.
- After completion, the assembly procedure described in Chapter 7.5, starting from Step 5, shall be followed.

9 Alignment

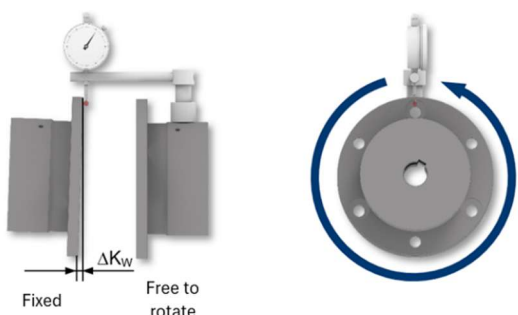
9.1 Shaft alignment



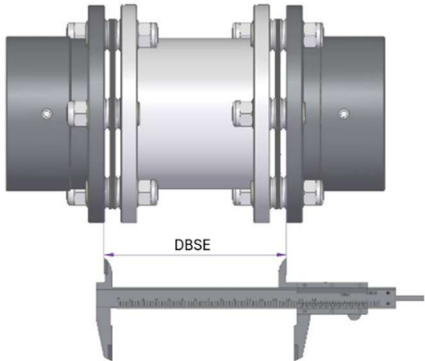
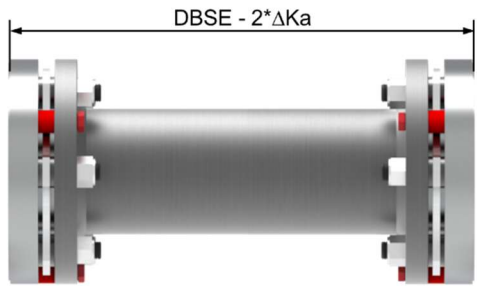
In order to achieve the optimum service life of the coupling, shafts must be aligned, and the initial misalignment should not be more than 25 % of the maximum misalignment.

In all configurations (BWB, BSB, BAB), the alignment procedure may be carried out prior to installation of the blade disc pack.

9.2 Angular displacement

 <p>Figure 11: Determining the angular offset</p>	<p>Measure one complete revolution (360°) on the outer diameter at the end face. Determine the largest deviation Kw1 and the smallest deviation Kw2 (see Figure 11). Calculate the angular displacement</p> $\Delta K_w = K_{w1} - K_{w2}$ <p>When aligning, observe the maximum permissible angular displacement $\Delta K_{w_{max}}$ according to the tables in Chapter 6.</p>
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9.3 Axial displacement

 <p>Figure 12: DBSE (mounted state) for RLDS BWB and BSB</p>	<p>Before installing the spacer, measure the actual length dimension "DBSE" of the spacer over the bushes of the disc packs (Figure 12).</p> <p>Adjust the distance between the hubs and do not exceed the tolerances (ΔK_a) specified in the tables in Chapter 6.</p>
 <p>Figure 13: DBSE for RLDS BAB</p>	<p>Before installing the transmission unit, the actual length dimension DBSE shall be measured (Figure 8).</p> <p>The transmission unit length shall be shorter than the measured DBSE dimension.</p> <p>Adjust the distance to not exceed the tolerances (ΔK_a) specified in the tables in Chapter 6.</p>

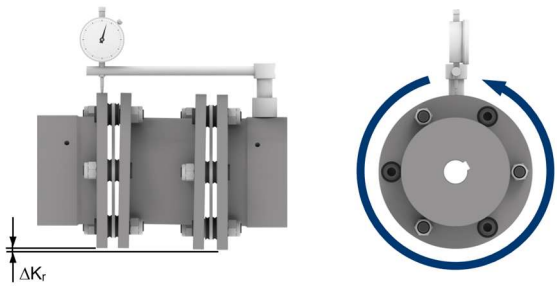


If the installation dimension "DBSE" is not reached, the spacer or the transmission unit cannot be mounted radially!

If larger axial deviations are expected during operation, e.g. due to thermal expansion or similar, the coupling can be installed with axial preload against the expected expansion. For this purpose, consultation with RPT is required if this has not been taken into account when designing the coupling.

During operation, the coupling should run stress-free with installation dimension "DBSE"

9.4 Radial displacement

 <p>Figure 14: Determining the radial offset</p>	<p>Measure one complete revolution (360°) and determine the largest deviation Kr1 and the smallest deviation Kr2 (Figure 14). Calculate the radial displacement $\Delta Kr = 0.5 \times (Kr1 - Kr2)$ and take note of the measured values.</p> <p>When aligning, observe the maximum permissible radial displacement as a function of the installation dimension "DBSE"</p> <p>$\Delta Kr_{max} = DBSE/1000$ [mm].</p> <p>To check, you should also carry out this measurement in the second half of the coupling. If there are deviations, the alignment must be corrected accordingly.</p>
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9.5 Relationship between axial, radial and angular misalignment

The specified maxima of axial, radial and angular misalignment must not occur simultaneously. The following relationship applies to dynamic running condition must be considered.

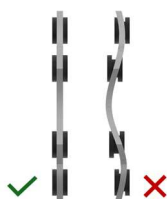
$$\frac{\Delta Ka}{\Delta Ka_{max}} + \frac{\Delta Kw}{\Delta Kw_{max}} + \frac{\Delta Kr}{\Delta Kr_{max}} \leq 1$$

10 Start-up and Operation



Before proceeding, verify that the disc pack is parallel to the faces of both the hub and the spacer.

The disc pack must not operate at an angle relative to these faces, as misalignment can significantly reduce its service life and compromise system performance.



- Verify all tightening torques for the coupling and the foundation screw of the connected machine.
- Ensure that all protective enclosures (e.g., coupling guards, contact protection) are properly installed and secured.
- Be aware that overload conditions during startup cannot be ruled out. In the event of coupling failure due to overload, metal fragments may be ejected, posing a risk of personal injury and/or equipment damage.
- The coupling must operate quietly and without vibration. Any irregular behavior should be treated as a fault requiring immediate corrective action.
- If any abnormalities are observed during operation, shut down the drive system immediately and investigate the root cause.
- If the fault cannot be identified or resolved using available resources, it is recommended to contact RPT technical support for assistance.

11 Inspection and Periodic maintenance

The RLDS coupling can be monitored both during operation and in idle conditions.

Perform a visual inspection every 3 months during idle periods or during scheduled maintenance.

After the first 2,000 operating hours, or within 3 months after initial startup (whichever comes first), visually inspect the disc packs for signs of damage such as cracks, dents, or deformation.

If no damage is detected, subsequent inspections may be carried out at intervals of 4,000 operating hours, or at least once per year, provided that operating conditions remain unchanged.

If damage is observed during the first inspection, refer to Chapter 12 to identify potential causes.

- Inspection intervals must be adapted to the actual operating conditions. Under special or severe conditions, more frequent inspections may be necessary.

During operation, monitor vibration and noise levels on both sides of the equipment. These should remain within specified limits to ensure safe and efficient performance.

During routine inspections or maintenance, check the following:

- Coupling alignment
- Condition of the disc packs
- Secure fit of all fastening elements in the disc packs
- Removal of dust and debris from coupling components and disc packs

12 Malfunctions and their possible causes

Table 12: Malfunctions and their possible causes

No.	FAILURE MODE	PROBABLE CAUSES	CORRECTIVE ACTIONS
1	Running noises Vibrations	Alignment fault	<ul style="list-style-type: none"> - Check disc packs for damage such as cracks, dents or similar damage, and replace them, if necessary. - Realign coupling.
1	Running noises Vibrations	Unbalance	<ul style="list-style-type: none"> - Check disc packs for damage, such as cracks, dents or similar damage, and replace them, if necessary - Verify balance state of plant components and correct it, if necessary
1	Running noises Vibrations	Loose screw connections	<ul style="list-style-type: none"> - Check coupling parts for damage, replace parts, if necessary. - Verify alignment of coupling. - Tighten nuts with the specified tightening torque.
1	Running noises Vibrations	Damaged disc packs	<ul style="list-style-type: none"> - Check coupling components for damage and replace parts, if necessary - Check alignment. - Verify coupling design. - Replace disc packs. - Verify balance state of plant components and correct it, if necessary
2	Cracking of disc packs	Excessive misalignments	<ul style="list-style-type: none"> - Remove cause for alignment fault. - Replace the disc pack. - Re-align coupling.

No.	FAILURE MODE	PROBABLE CAUSES	CORRECTIVE ACTIONS
3	Fatigue of disc packs	Torsional vibration	<ul style="list-style-type: none"> - Conduct a torsional vibration analysis
4	Elongation of the disc pack holes	Loose coupling bolts	<ul style="list-style-type: none"> - Change the disc pack on both sides. - Tighten the bolts to required tightening torque.
5	Deformation of the disc pack	Torque Overload, axial load	<ul style="list-style-type: none"> - Check sizing and Service Factor of Coupling. - Review operational history for any abnormalities. - Replace the disc pack.
6	Coupling bolt distortions	Torque Overload, axial load	<ul style="list-style-type: none"> - Check sizing and Service Factor of Coupling. - Review operational history for any abnormalities. - Replace all bolts.

13 Disposal



When disposing of coupling parts, observe the locally applicable legal regulations.

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