

Installation and Operational Instructions for ROBA®-DS Couplings Type 95_ _ _ Sizes 3 to 15

(B.9.7.1.ATEX.EN)

Please read these Operational Instructions carefully and follow them accordingly!

Ignoring these Instructions may lead to malfunctions or to coupling failure, resulting in damage to other parts.
These Installation and Operational Instructions (I + O) are part of the coupling delivery.

Please keep them handy and near to the coupling at all times.

The product must be specially marked for use in areas where there is a danger of explosion.

The product will only be marked if it is ordered especially for an Ex-area.

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Safety and Guideline Signs

DANGER



Immediate and impending danger, which can lead to severe physical injuries or to death.

CAUTION



Danger of injury to personnel and damage to machines.

Attention!

Possible property damage can be the consequence.



Please Observe!
Guidelines on important points.



Guidelines on explosion protection

Safety Regulations

These Installation and Operational Instructions (I + O) are part of the coupling delivery. Please keep them handy and near to the coupling at all times.



It is forbidden to start initial operation of the product until you have ensured that all applicable EU directives and directives for the machine or system, into which the product has been installed, have been fulfilled. At the time these Installation and Operational Instructions go to print, the ROBA®-DS couplings accord with the known technical specifications and are operationally safe at the time of delivery.

DANGER



- ☐ If the ROBA®-DS couplings are modified.
- ☐ If the relevant standards for safety and / or installation conditions are ignored.



The ROBA®-DS coupling is permitted for use in areas where there is a danger of explosion. For application in Ex-areas, please observe the special safety-related guidelines and directives. The product must be especially marked for this area. The product will only be marked if it is ordered especially for an Ex-area.

User-implemented Protective Measures

- ☐ Cover all moving parts to protect against seizure, dust impacts or foreign body impact.

To prevent injury or damage, only specialist personnel are allowed to work on the components. They must be familiar with the dimensioning, transport, installation, initial operation, maintenance and disposal according to the relevant standards and regulations.

Please read the Installation and Operational Instructions carefully prior to installation and initial operation of the device.

These Safety Regulations are user hints only and may not be complete!

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Summary of Constructional Designs

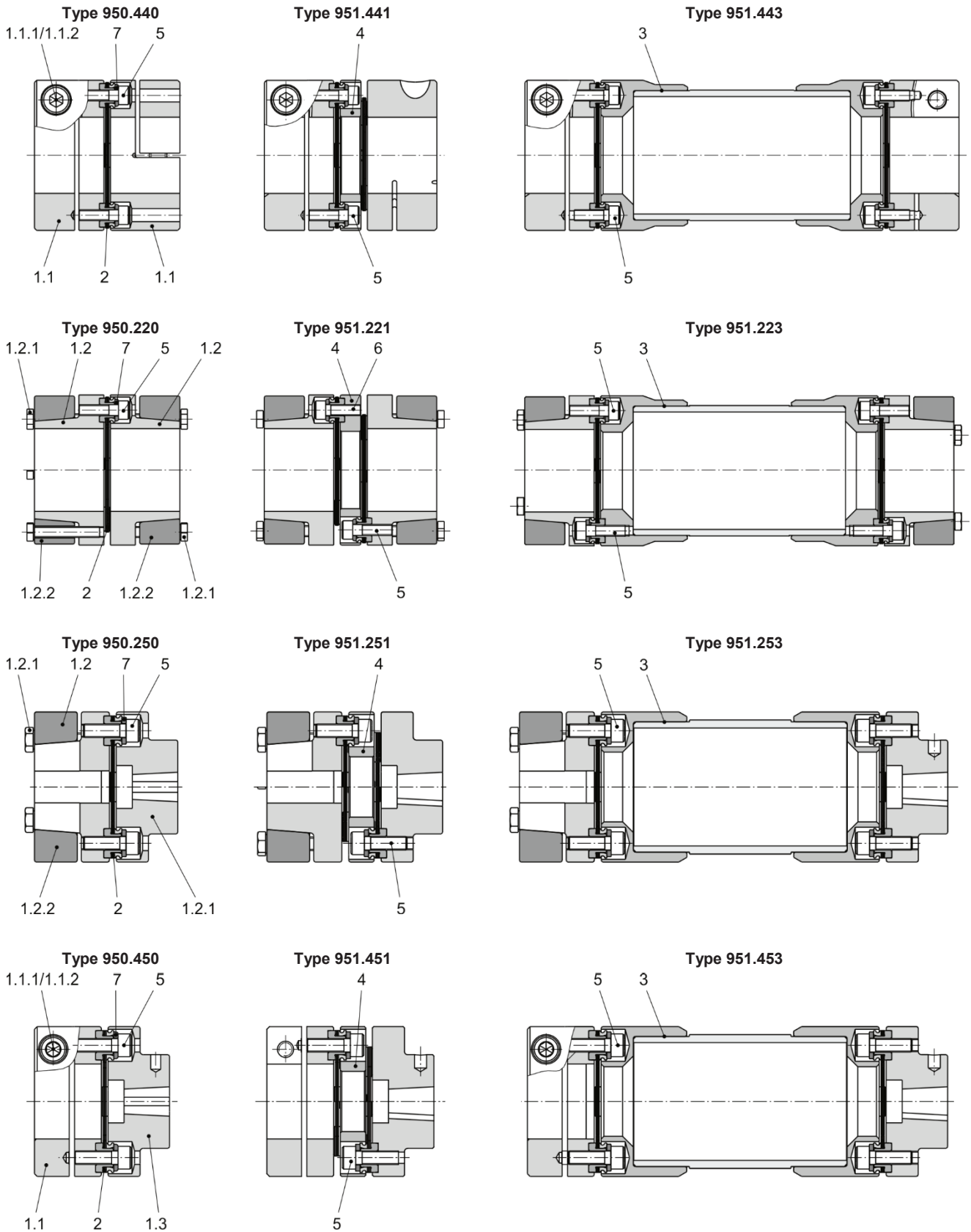


Fig. 1

Installation and Operational Instructions for ROBA®-DS Couplings Type 95_ _ _ Sizes 3 to 15

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Parts List

Only use *mayr*® original parts

Item	Name	Material
1.1	Clamping hub Type 95_4_ _	Anodised aluminium
1.1.1	Cap screw for clamping hub Type 95_4_ _	Steel
1.1.2	Washer	Steel
1.2	Shrink disk hub Type 95_3_ _	Aluminium
1.2.1	Hexagon head screws for shrink disk hub Type 95_3_ _	Steel
1.2.2	Shrink disk	Phosphated steel
1.3	Hub with tapered bore Type 95_ _ 5_ _	Aluminium
2	Disk pack	Steel / Stainless steel
3	Sleeve	Aluminium
4	Connection plate	Phosphated steel
5	Cap screw	Steel
6	Cap screw	Steel
7	Washer	Steel

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Table 1: Technical Data

ROBA®-DS Size		3		6			10	15
d _{R min} Hub Type 95_4__ (Item 1.1)	[mm]	10		14			19	25
d _{R max} Hub Type 95_4__ (Item 1.1)	[mm]	20		28			35	42
d _{S min} Hub Type 95_2__ (Item 1.2)	[mm]	10		14			19	25
d _{S max} Hub Type 95_2__ (Item 1.2)	[mm]	20		28			38	45
d _F ±0.05 Hub Type 95_._5_ (Item 1.3)	[mm]	11	14	11	14	16	---	---
Coupling nominal torque T _{KN} Valid for max. permitted shaft misalignment	[Nm]	35		60			100	150
Coupling alternating torque T _{KW} Valid for max. permitted shaft misalignment	[Nm]	21		36			60	90
Coupling peak torque T _{KS} Valid for unchanging load direction, max. load cycles ≤ 10 ⁵	[Nm]	52		90			150	225
Max. speed n _{max} on Type 95_2__ (not valid for sleeve)	[rpm]	22500		18000			15000	13000
Max. speed n _{max} on Type 95_4__ (not valid for sleeve)	[rpm]	13500		10800			9000	7800
Max. speed n _{max} on Type 95_._5_ (not valid for sleeve)	[rpm]	22500		18000			15000	13000
Distance dimension “S” (Fig. 3 / page 9)	[mm]	2.5 ±0.2		2.6 ±0.2			2.9 ±0.2	2.9 ±0.25
Axial displacement ΔK _a Values refer to couplings with 2 disk packs. Only permitted as a static or virtually static value.	[mm]	±0.5		±0.7			±0.9	±1.1
Radial misalignment ΔK, for Type 951.___1	[mm]	0.15		0.15			0.2	0.2
Radial misalignment ΔK, for Type 951.___3	[mm]	(H _s – S) x 0.0174						
Radial misalignment for single-jointed coupling		If there is only one disk pack, the shafts must be aligned exactly.						
Angular misalignment ΔK _w per disk pack	[°]	1		1			1	1
Cap screw Item 1.1.1 (Hub Type 95_4__) Tightening torque	[Nm]	M6 x 20 14		M6 x 20 13			M8 x 25 33	M8 x 30 33
Hexagon head screw Item 1.2.1 (Hub Type 95_2__) Tightening torque	[Nm]	M4 x 22 3		M5 x 25 6			M5 x 25 6	M5 x 35 6
Cap screws Item 5 Tightening torque	[Nm]	M4 x 14 4.5		M5 x16 8.5			M5 x 18 8.5	M5 x 20 8.5
Cap screws Item 6 Tightening torque	[Nm]	M4 x 12 4.5		M5 x 16 8.5			M5 x 16 8.5	M5 x 16 8.5

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Table 2: Transmittable Torques on Clamping Hubs (1.1) - Dependent on Bore - Suitable for H7/k6

Bore	Size			
	3	6	10	15
Ø10	27	-	-	-
Ø12	32	-	-	-
Ø14	37	46	-	-
Ø15	39	51	-	-
Ø16	42	56	-	-
Ø18	47	65	-	-
Ø19	49	70	99	-
Ø20	52	74	105	-
Ø22	-	84	116	-
Ø24	-	92	128	-
Ø25	-	95	135	143
Ø28	-	107	151	163
Ø30	-	-	162	177
Ø32	-	-	173	191
Ø35	Attention! Please observe permitted peak torques for selected coupling size and Type.		189	211
Ø38			-	229
Ø40	-	-	-	241
Ø42	-	-	-	253



The transmittable torques refer to a temperature range of -20 °C to +40 °C.
At temperatures over +40 °C, the torque transmitted via frictional locking reduces by 10 % per 10 °C.
The max. permitted operating temperature is +80 °C.

Transmittable Torques on Shrink Disk Hubs

The transmittable torques on shrink disk hubs Type 95_2_ _ equal the maximum coupling torques.



Exception:
On Size 3 and a preferred bore Ø 10,
the max. transmittable torque is: 41 Nm.

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Function – Application

ROBA®-DS couplings are shaft connections for torsionally rigid, backlash-free torque transmission. At the same time they compensate for angular misalignments and axial displacements on single-jointed couplings (Type 950_ _ 0), and additionally for radial misalignments on double-jointed couplings (Type 951_ _ _).

State of Delivery

ROBA®-DS couplings are delivered completely manufacturer-assembled.

In special cases, the ROBA®-DS couplings are delivered in individual parts and pre-assembled units.



All screw connections must be checked or pre-tensioned during the final installation to a torque value according to Table 1.

The coupling components are, in the standard version, made of the materials listed in the Parts List (page 4).

Temperature Resistance

Temperature resistance of ROBA®-DS Sizes 3 to 15 from -20 °C up to +80 °C.

The clamping hub torques transmitted via frictional locking, however, depend on bores and temperatures. (Please observe the guidelines below Table 2).

Storage

The couplings are delivered preserved and can be stored in dry rooms protected from the weather for 6 to 9 months.



Damp storage rooms are not suitable. In order to exclude condensation, the relative air humidity should ideally total maximum 65 %.

Installation Position

ROBA®-DS couplings are designed for horizontal installation. In case of vertical or inclined installation, on long sleeves (3) the sleeve's own weight must be supported with a vertical support. This vertical support including both centerings in the hub and in the sleeve is produced at the place of manufacture.

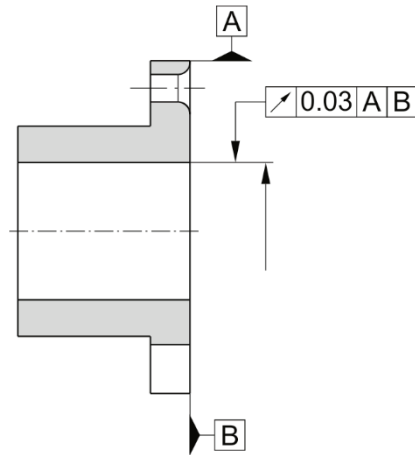


Fig. 2

Guidelines on Hub Bore and Shaft

General Guidelines:

- ❑ The maximum bore diameter according to Table 1 may not be exceeded.
- ❑ For application with clamping hubs (1.1), a tolerance connection of H7/k6 should be selected. The shrink disk hubs (1.2) should have a tolerance connection of H7/g6 on bores smaller than Ø 25 H7/h6.
- ❑ On clamping hubs (1.1) the transmittable torques are dependent on the bore and must be observed acc. Table 2. Table 2 does not take temperatures over +40 °C into account. Please observe the guidelines below Table 2.
- ❑ On shrink disk hubs (1.2), the transmittable torques on the shaft-hub connection exceed the maximum coupling values, and are therefore not additionally specified. The only exception to this is the shrink disk hub (1.2) Size 3 with bore Ø 10. In this case, only max. 41 Nm can be transmitted. These values are valid for the entire permitted temperature range from -20 °C up to +80 °C.
- ❑ The recommended bore tolerances are to be produced using the position and tolerance width as references; at the same time, please keep to the shaft run-out and axial run-out tolerances of 0.03 mm (see Fig. 2).
- ❑ The shaft surfaces should be finely turned or ground ($R_a = 0.8 \mu\text{m}$).
- ❑ The required yield point for the shafts used is at least 350 N/mm² (St60, St70, C45, C60).

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Hub Installation

The configuration of the different individual components can be seen in Fig. 1.

Guidelines on the Hub Installation of Types 95_2_ _ (Shrink Disk Hubs) or 95_4_ _ (Clamping Hubs):



- ❑ The torque transmission of the clamping hubs (1.1) or the shrink disk hubs (1.2) takes place using frictional locking.
- ❑ The contact surfaces between the shrink disk (1.2.2) and the hub (1.2) are greased manufacturer-side.
- ❑ The hub bores and the shaft ends must be completely grease-free during installation. Greasy or oily bores or shafts do not transmit the maximum coupling torque.
- ❑ Please make sure that the key sits securely for designs with keyway. Please see guideline under ATEX!
- ❑ The clamping hubs (1.1) or the shrink disk hubs (1.2) must be completely relaxed. If necessary, loosen the screws (1.1.1 or 1.2.1) by several thread turns.

Hub Installation Type 95_2_ _ (Shrink Disk Hubs)

- a) Mount the shrink disk hubs (1.2) onto the shafts using a suitable device and bring them into the correct position.
- b) Tighten the tensioning screws (1.2.1) using a torque wrench evenly and **one after the other in 3 to max. 6 tightening sequences** to the torque stated in Table 1.

For de-installation:

- a) Loosen all tensioning screws (1.2.1) in several sequences by several thread turns.
- b) Normally the hubs on the shaft are loosened by hand. If this is not possible, please proceed as follows:
Remove the tensioning screws (1.2.1) and screw them into the tapped extracting holes in-between. Then, tighten them evenly and one after the other until the shrink disk (1.2.2) loosens.



Please take the axial space requirements for the tensioning screws to be screwed into the tapped extracting holes into account (length of the hexagon head screws Item 1.2.1 in Table 1).

Hub Installation Type 95_4_ _ (Clamping Hubs)

- a) Mount the clamping hubs (1.1) onto the shafts using a suitable device and bring them into the correct position.



The clamping screw (1.1.1) must be greased **in the area of the thread**. This is usually carried out manufacturer-side.
Please use NLGI Class 1.5 grease with a basic oil viscosity of 460 mm²/s at 40 °C, e.g. Mobilith SHC460.
Should the grease layer be washed off, it must be re-greased customer-side.

- b) Tighten the clamping screw (1.1.1) using a torque wrench to the torque stated in Table 1.

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Coupling Installation (Figs. 1 and 3)



Only a thin oil film is permitted on the contact surfaces of the disk packs (Fig. 3). If applicable, thick layers of preservative must be removed before assembly.

The disk packs (2) are screwed together **alternately** with the hubs and the sleeve (3) or the connection plate (4) using lightly oiled cap screws (5 and 6) with washers (7).

The cap screws (5 and 6) must be tightened in several steps to their full tightening torque acc. Table 1. Please see Table 3 for the respective tightening torques for each step.



In order to install the shrink disk hubs (1.2) with the respective connection elements, the shrink disk (1.2.2) must be unscrewed from the shrink disk hub (1.2).

Table 3

Step	Tightening torque of the cap screws (Items 5 and 6)
1	30 % of the nominal tightening torque
2	60 % of the nominal tightening torque
3	100 % of the nominal tightening torque

The disk pack (2) must not under any circumstances be distorted when applying the pre-tension force.



The disk pack (2) is to be installed in such a way that the collar bushing (**Item 2a, Fig. 3**) is combined with the corresponding tolerance bore in the respective hub, connection plate (4) or in the sleeve (3). Due to the high joining forces (caused by the transition tolerance) installation of the disk packs is only possible using the screw pre-tension force.

For disk pack (2) disassembly, use suitable tools, e.g. screwdrivers on the right and left side of the collar bushing (2a) (Fig. 4).

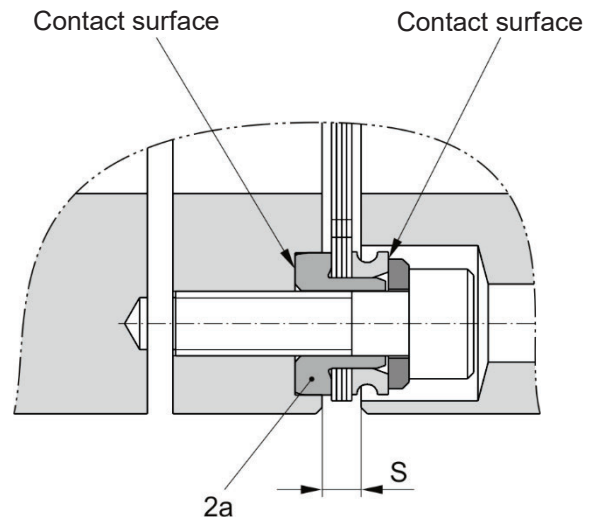


Fig. 3

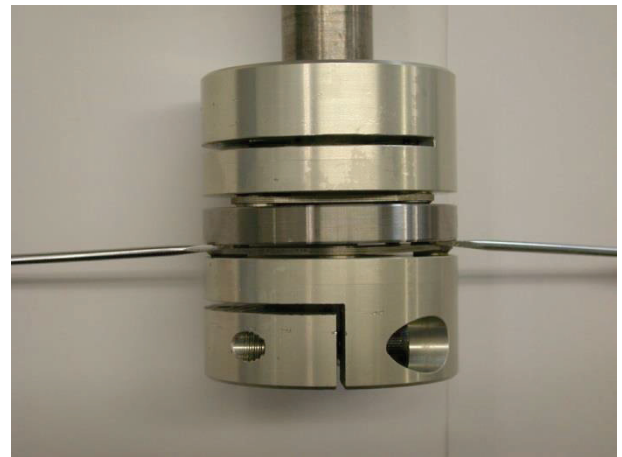


Fig. 4

Coupling Alignment

Exact coupling alignment reduces the reaction forces and therefore increases the lifetime of the coupling and the shaft bearing.

In most of the applications, coupling alignment using a straight edge in two levels vertical to each other is sufficient.

However, we recommend alignment of the coupling (of the shaft ends) using a dial gauge or laser on drives operating at very high speeds.

In order to prevent axial distortion of the disk packs, the dimension "S" (see Fig. 3 / page 9 and Table 1) must be maintained with aligned angular and radial shaft misalignments.

Permitted Shaft Misalignments

ROBA®-DS single-jointed couplings (Type 950_ _ _) compensate for angular and axial shaft misalignments. ROBA®-DS double-jointed couplings (Type 951_ _ _) compensate for angular, axial and radial shaft misalignments (Fig. 6) without losing their backlash-free function. However, the permitted shaft misalignments indicated in Table 1 must not simultaneously reach their maximum value. If more than one kind of misalignment takes place simultaneously, they influence each other. This means that the permitted misalignment values are dependent on one another, see Fig. 5. The sum total of the actual misalignments in percent of the maximum value must not exceed 100 % (see example and Fig. 5).

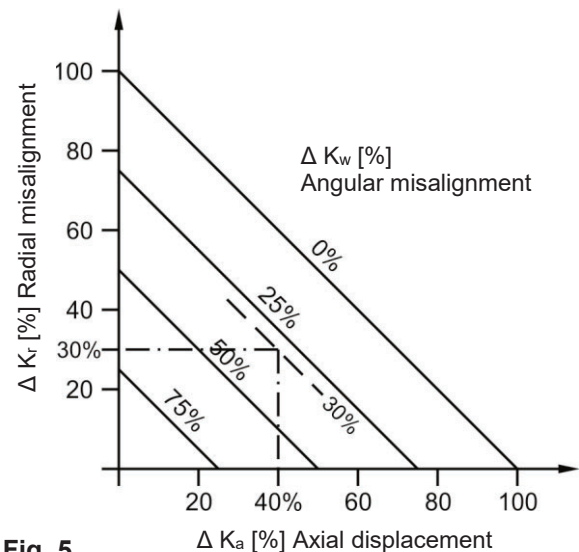


Fig. 5

Example:

ROBA®-DS, Size 10, Type 951.221

Axial displacement occurrence $\Delta K_a = 0.36$ mm equals 40 % of the permitted maximum value $\Delta K_a = 0.9$ mm

Angular misalignment occurrence in the disk pack $\Delta K_w = 0.3^\circ$ equals 30 % of the permitted maximum value $\Delta K_w = 1^\circ$

=> permitted radial misalignment $\Delta K_r = 30$ % of the maximum value $\Delta K_r = 0.2$ mm => $\Delta K_r = 0.06$ mm

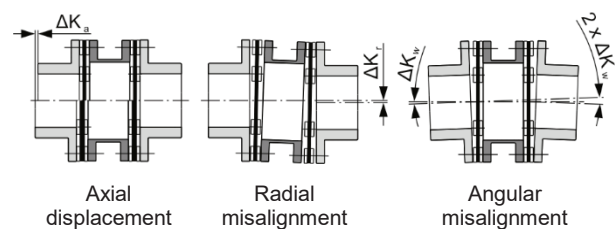


Fig. 6

Installation and Operational Instructions for ROBA®-DS Couplings Type 95_ _ _ Sizes 3 to 15

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Coupling Dimensioning

$$T_{KN} \geq \frac{9550 \times P \times f_B}{n}$$

Definition of terms:

T_{KN} [Nm]	Coupling nominal torque
T_{KW} [Nm]	Coupling alternating torque
T_W [Nm]	Operating alternating torque
T_B [Nm]	Operating torque
T_S [Nm]	Operating peak torque
P [kW]	Drive machine nominal power
f_B [Nm]	Service factor acc. Table 4
n [rpm]	Drive machine nominal speed

Table 4

Service Factor f_B		Work Machine Load Class		
		I	II	III
Drive machine	Electromotor, turbine, hydraulic motor	1.1	1.4	1.9
	Piston machine with more than 3 cylinders	1.4	1.7	2.2
	Piston machine with up to 3 cylinders	1.7	2.0	2.5

If the operating torque is known, the coupling nominal torque must be higher than the maximum occurring operating torque $T_{KN} > T_B$.
The specified coupling alternating torque (Table 1) must be higher than a possible system alternating torque $T_{KW} > T_W$.
Please also observe the height and type of start-up impacts or sporadic load impacts.
As individual events, these may not exceed the stated coupling peak torque $T_{KS} > T_S$. The max. number of impact occurrences over the entire coupling lifetime must not exceed pulsating 1×10^5 or alternating 1×10^4 .



In ATEX applications, no temperature factor must be taken into consideration as the maximum permitted ambient temperature is 80°C.

Table 5

Classification of Work Machines into Load Classes	
Construction machinery - Concrete blenders - Chain conveyors - Chain carriages - Crushers	II III III III
Chemical industry - Mixers (thick fluids) - Mixers (thin fluids) - Centrifuges - Blenders	II I II II
Fans / vents	II
Generators / convertors - Frequency converters - Generators	I II
Foodstuffs machines - Kneading machines - Mills - Packaging machines	II III II
Paper machines	III
Compressors	II
Conveyor systems - Conveyor belts - Sloping elevators - Goods elevators - Passenger elevators	II III II II
Wood / plastic processing - Planing machines - Reciprocating saws - Extruders - Blenders	II III II II
Crane systems	II
Metal processing - Punching / pressing - Machine tools	III II
Pumps - Centrifugal pump (thin fluids) - Centrifugal pump (thick fluids) - Pistons / plunger pumps	I II III
Textile machines	II
Washing machines	II

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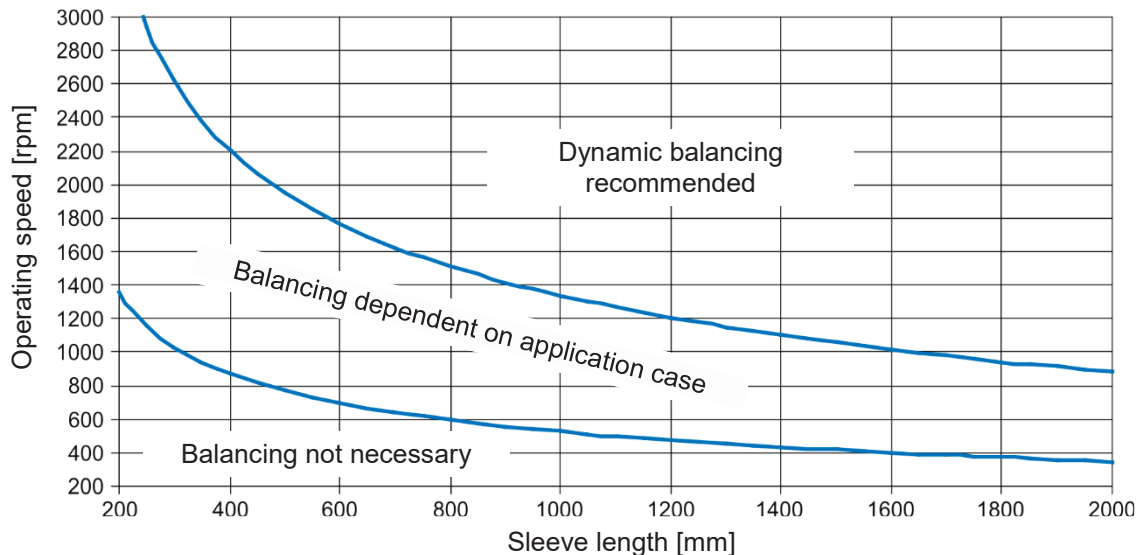
Balancing the Coupling

In most applications, balancing the ROBA®-DS coupling is not necessary.

In general, the following points are crucial when deciding whether the coupling needs balancing:

- ☐ Circumferential speed of the coupling
- ☐ Length of the sleeves S (Diagram 1)
- ☐ Required balance quality

Diagram 1: Balancing the Couplings with Sleeve S (Special Length)



Smooth running of the machine is not only ensured by the coupling balance quality, but is also influenced by parameters such as rigidity and distance to the adjacent bearings as well as by the sensitivity and mass of the entire construction.

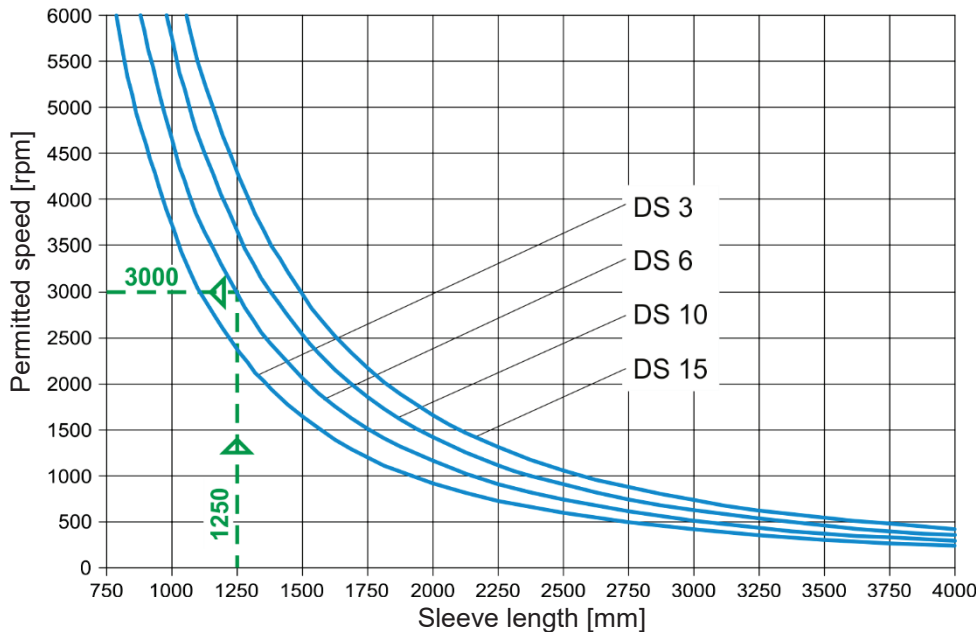
Diagram 1, therefore, only shows reference values as recommendations for balancing.

All parts of the ROBA®-DS couplings, except for the sleeve S pipe, are machined on all sides, and therefore lie in the range G 6.3 acc. ISO DIN 1940 at medium speeds (1500 rpm).

When ordering the coupling with a special sleeve, please always state the coupling operating speed.

If higher demands are placed on the balance quality, it is possible to balance individual parts or even the entire installed coupling (on request). However, for this option, the hubs must have a finish bore.

Diagram 2: Permitted Speeds (Bend-critical) for Sleeves S Type 951_ _ 3



Example:

Size 6, sleeve length $H_s = 1250 \text{ mm} \Rightarrow$ permitted speed 3000 rpm.



The coupling must be operated in the subcritical speed range.

Attention: When passing through the bend-critical speed (resonance), there is a danger of coupling destruction.

Maintenance

ROBA®-DS couplings are largely maintenance-free.

The following maintenance and inspection intervals are to be maintained:

- 1.) Visual inspection, inspection of the installation parameters (misalignment and tightening torques) and the coupling running behavior **before initial operation**.
- 2.) Check the tightening torques produced **after 5 to 10 operating hours**.
- 3.) Visual inspection, torsional backlash, inspection of the misalignment and the tightening torques, coupling running behavior **after 1000 h, at the latest after 3 months**.
- 4.) If no irregularities or wear are found during the maintenance and inspection interval defined in point 3.), further inspection intervals can, with unchanged operating parameters, take place **after 4000 operating hours or after maximum 12 months**.

In extreme coupling ambient or operating conditions, the maintenance and inspection intervals should be shortened.

Disposal

All steel components:

Steel scrap (Code No. 160117)



All aluminum components:

Non-ferrous metals (Code No. 160118)

Guidelines and Directives for Operation in Areas Where There is a Danger of Explosion



Classification of Areas Where There is a Danger of Explosion and Permitted Types According to the Directive 2014/34/EU

For the implementation of the Directive, the ignition protection type "c" (constructional safety) has been applied in accordance with DIN EN ISO 80079-36/37 and the letter "h" has been recorded in the classification.
According to the described coupling combinations and if the measures and guidelines described in the Installation and Operational Instructions are observed, the ROBA®-DS is suitable for use in areas where there is a danger of explosion according to the category:



  II 3G Ex h IIC T5 -20°C ≤ Ta ≤ +80°C Gc
II 3D Ex h IIIC T110°C -20°C ≤ Ta ≤ +80°C Dc

Permitted Types: 950.220 / 950.440 / 950.250 / 950.450 /
951.221 / 951.223 / 951.441 / 951.443 /
951.251 / 951.253 / 951.451 / 951.453

The values stated on page 6 for transmittable torques for clamping hubs and shrink disk hubs must be observed.
For the bore diameters shown in Table 6, an additional keyway can be used in these designs for secure torque transmission. Designs with such positive locking connections are suitable for use in the following areas:

  II 2G Ex h IIC T5 -20°C ≤ Ta ≤ +80°C Gb
II 2D Ex h IIIC T110°C -20°C ≤ Ta ≤ +80°C Db

Furthermore, secure torque transmission is guaranteed if the respective customer-side application constellation is checked as to whether the torque transmission capability of the shaft-hub connection can be sufficiently guaranteed (at least 1.5 to the maximum torque on the system). This inspection must be repeated at regular intervals during maintenance work (see Maintenance).
In these conditions, coupling application is possible in the following areas:

  II 2G Ex h IIC T5 -20°C ≤ Ta ≤ +80°C Gb X
II 2D Ex h IIIC T110°C -20°C ≤ Ta ≤ +80°C Db X



The X at the end of the classification refers to the operating conditions for an inspection of the transmission reliability of the frictionally-locking shaft-hub connection.
Without this inspection, this classification is rendered invalid.

Conditions to Observe in Areas Where There is a Danger of Explosion

For malfunction-free coupling operation, it is necessary to keep to the coupling characteristic values (Technical Data) indicated on pages 5 to 6.

For suitable coupling dimensioning (see page 11), please observe the following points:

- Coupling nominal torque
- Coupling alternating torque
- Coupling peak torque
- Max. speed
- Max. misalignment compensation capability
- Ambient conditions (see Temperature Resistance)
- Service factors (see Table 4 / page 11)

CAUTION



Operation outside of the indicated characteristic data is not permitted. There is a danger of coupling destruction.

Coupling dimensioning in accordance with the currently valid Installation and Operational Instructions is required for each application case.

Changed operating parameters in the system require an inspection of the coupling dimensioning.
Despite technical coupling dimensioning, system-dependent vibration excitations may occur during operation, which might lead to resonances and therefore to destructions of the ROBA®-DS coupling. On critical applications, the total load profile of the application must be run through during initial operation in order to confirm the suitability of the coupling in the application.
Operation in an overcritical speed range and in the resonance range is not permitted.

CAUTION



No transverse forces may be introduced into the coupling which the coupling cannot compensate through flexible compensation. Permitted misalignments are to be observed.
Type 950.- 0 couplings cannot compensate for radial shaft misalignments. If these couplings are installed in an arrangement with radial misalignment, enormously high restoring forces are generated which affect the coupling and the coupling mounted parts, including the bearings. Danger of component destruction and danger of ignition.

Table 6

Type	Bore [mm]	Size			
		3	6	10	15
95-2--	dmin	10	14	19	25
	dmax	16	22	32	38
95-4--	dmin	10	14	19	25
	dmax	20	28	35	42

Furthermore, coupling malfunctions must be expected if the Installation Guidelines are not observed. The data stated in these Installation and Operational Instructions must be observed.
All tightening torques must be observed.
After having reached the specified Maintenance and Inspection Intervals, the tightening torques must be inspected using a torque wrench. If the specified torques are not observed, component movements due to metal contact and therefore warming up and formation of sparks must be expected.
Constructional modifications of the coupling are not permitted.

Guidelines and Directives for Operation in Areas Where There is a Danger of Explosion

Initial Operation

The coupling components are, in the standard version, made of the materials listed in the Parts List (page 4).
No special corrosion protection is provided in the standard version.

The coupling must only be used in areas protected from the weather. Additional corrosion protection is required for use in the open air or if the device is subject to weather conditions. Severely corroded coupling components mean a danger of ignition.
The functional components of the coupling must not stick together as a result of paint or other sticky media, and electrostatic charges must not be caused (see DIN EN ISO 80079-36 6.7).
The connection components are untreated.

The ROBA®-DS coupling must be axially secured onto the input and output shaft. Correct securement must be checked before initial operation.

The shafts must be positioned in the couplings so that the neighboring coupling parts do not contact each other (Fig. 7).

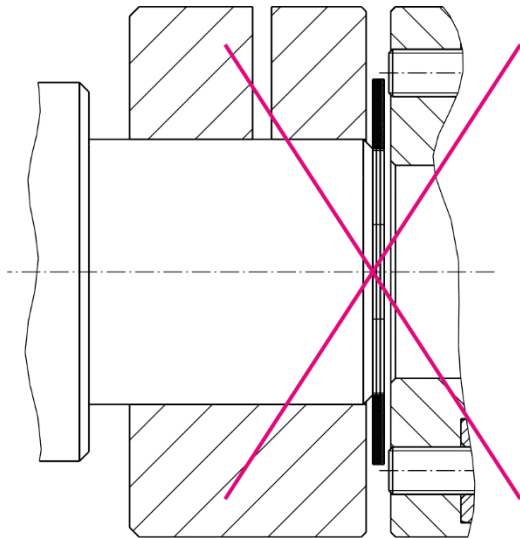


Fig. 7

Layers of dust on the coupling or operation in piles of dust is not permitted.

The rotating coupling components must be protected against contact and against foreign body impacts.

Please mount a suitable cover onto the coupling.

The distance from the cover to the rotating components must be at least 5 mm.

The cover must be electrically conductible.

Covers made of aluminum are not permitted.

Maintenance and Inspection Intervals for

Couplings in Areas Where There is a Danger of Explosion

The maintenance and inspection intervals stated on page 13 must be maintained.

If wear or damages are detected, the affected components must be replaced immediately and the cause of the malfunction must be determined.

Causes of malfunctions could be:

- a.) Excessive misalignment
- b.) Excessive load (load alternations, start-up impacts, overload)
- c.) Ambient influences

Wear or damage on the ROBA®-DS coupling manifest themselves as:

- a.) Noise development
- b.) Troubled running behavior, vibration occurrences
- c.) Formation of cracks on the components
- d.) Warming
- e.) Loosening of the components
- f.) Buckling of the disk packs
- g.) Friction tracks




Should any irregularities occur, the system must be stopped independently of imminent maintenance and inspection intervals, and the cause of the malfunction must be determined using the Malfunctions / Breakdowns Table.

Installation and Operational Instructions for ROBA®-DS Couplings Type 95_ _ _ _ Sizes 3 to 15

(B.9.7.1.ATEX.EN)

Malfunctions / Breakdowns

Malfunction	Possible Causes	Danger Guidelines for  Areas	Solutions
Changes in running noise and / or vibration occurrence	Incorrect alignment, incorrect installation	Danger of ignition due to hot surfaces	<ol style="list-style-type: none"> 1) Set the system out of operation 2) Find / resolve the cause of incorrect alignment 3) Check the coupling for wear
	Loose connecting screws, fretting corrosion under the screw head and on the disk pack	Danger of ignition due to hot surfaces	<ol style="list-style-type: none"> 1) Set the system out of operation 2) Check the coupling parts and replace if damaged 3) Tighten the connecting screws to the specified torque 4) Check the alignment and correct if necessary
	Tensioning and clamping screws for axial securement of the hubs are loose	Danger of ignition due to hot surfaces and impact sparks	<ol style="list-style-type: none"> 1) Set the system out of operation 2) Check the coupling alignment 3) Tighten the tensioning and clamping screws for axial hub securement to the required torque and secure it against self-loosening using sealing lacquer 4) Check the coupling for wear
	Coupling braced in tensile direction due to incorrect assembly with installed vertical support through vibration contact between the pressure plate and the pressure lens	No danger of ignition	<ol style="list-style-type: none"> 1) Set the system out of operation 2) Check the installation position
Disk pack breakage	Disk pack breakage due to high load impacts / overload	Danger of ignition due to impact sparks	<ol style="list-style-type: none"> 1) Set the system out of operation 2) Dismantle the coupling and remove the remainders of the disk packs 3) Check the coupling parts and replace if damaged 4) Find the cause of overload and remove it
	Operating parameters are not appropriate for the coupling performance	Danger of ignition due to impact sparks	<ol style="list-style-type: none"> 1) Set the system out of operation 2) Check the operating parameters and select a suitable coupling (observe installation space) 3) Install a new coupling 4) Check the alignment
	Incorrect operation of the system unit	Danger of ignition due to impact sparks	<ol style="list-style-type: none"> 1) Set the system out of operation 2) Dismantle the coupling and remove the remainders of the disk packs 3) Check the coupling parts and replace if damaged 4) Train and advise operating personnel
Disk packs / connecting screws cracks or breakage	Drive vibrations	Danger of ignition due to impact sparks	<ol style="list-style-type: none"> 1) Set the system out of operation 2) Dismantle the coupling and remove the remainders of the disk packs 3) Check the coupling parts and replace if damaged 4) Check the alignment and correct if necessary 5) Find the cause of vibration and remove it



mayr® will take no responsibility or guarantee for replacement parts and accessories which have not been delivered by mayr®, or for damage resulting from the use of these products.

Declaration of Conformity

According to the EU Directive on the harmonisation of the laws of the Member States concerning devices and protective systems intended for use in areas where there is a danger of explosion (ATEX) 2014/34/EU, we:

**Chr. Mayr GmbH + Co. KG
Eichenstraße 1
D-87665 Mauerstetten**

hereby declare that the product described in these Installation and Operational Instructions

**ROBA®-DS servo coupling
Type 95_._ _ _ X
Sizes 3, 6, 10, 15**

has been developed, constructed and produced by us in accordance with the EU Directive named above.


Deposit Receipt: EX9A 010376 0002

Notified Body number: 0123

Applied Standards, Regulations and Inspections (ASRI)

- 1 DIN EN 1127-1: 2011-10
Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology
- 2 DIN EN ISO 80079-36: 2016-12
Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic method and requirements
- 3 DIN EN ISO 80079-37: 2016-12
Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres
- Non-electrical type of protection constructional safety "c", control of ignition sources "b", liquid immersion "k"

Mauerstetten, June 2, 2023
Place / Date


Ferdinand Mayr, M. Sc.
(CEO)