

Assembly and maintenance manual

Type AV



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General safety instructions






	WARNING	<p>Risk of injury due to moving components! Rotating driven components can cause the most severe injuries. Therefore, during operation:</p> <ul style="list-style-type: none"> ➤ It is strictly forbidden for persons to loiter in the danger zone or in its immediate vicinity. ➤ Do not disable, render unusable or circumvent safety equipment and / or safety functions. <p>Prior to entering the danger zone:</p> <ul style="list-style-type: none"> ➤ Switch off the power supply and secure it against being switched on again. ➤ Wait for lagging components to come to a standstill.
	DANGER!	<p>Danger due to improper operation!</p> <ul style="list-style-type: none"> ➤ Modifications to the clutch coupling are not permitted and may impair safety. ➤ All tasks may only be performed by personnel with the requisite training and expertise. ➤ Repairs and maintenance tasks may only be performed when the machine is at a standstill. To this end, the machine is to be secured against a restart.
	WARNING	<p>Risk of injury due to the clutch coupling falling down or tipping over! The weight of the clutch coupling can injure people and cause severe crushing. Therefore:</p> <ul style="list-style-type: none"> ➤ Use a suitable lifting gear for lifting (slings, etc.) which is able to support the weight of the clutch coupling.
	WARNING	<p>Risk of injury due to incorrect assembly! Faulty installation and maintenance can cause severe property damage and personal injury. Installation, maintenance and repair work may only be performed by personnel with the requisite training and expertise.</p>
	WARNING	<p>Risk of injury for insufficiently qualified personnel! Improper handling can cause significant personal injury and property damage. Therefore:</p> <ul style="list-style-type: none"> ➤ Only ever have tasks performed by those persons to whom the tasks have been assigned.

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1 General

1.1 Information relating to the assembly and maintenance manual

This assembly and maintenance manual provides important information regarding the installation and commissioning of the clutch coupling of type AV.






Prerequisite for safe operation is compliance with all of the stated safety and handling instructions.

Moreover, the relevant local accident protection guidelines and general safety provisions for the field of application of the clutch coupling are to be complied with.

Read the assembly and maintenance manual carefully prior to installation and commissioning. It is a product component and must be kept in the immediate vicinity of the installation site and be accessible to personnel at all times. Furthermore, all safety instructions stated in the assembly and maintenance manual are to be observed.

1.2 Explanation of symbols

Warnings are marked throughout this assembly and maintenance manual by symbols. These warning symbols are introduced by signal words which indicate the extent of the danger. Comply with these warning symbols under all circumstances and act with due care and attention to avoid accidents, personal injury and property damage.

	Danger!	...indicates an imminently dangerous situation which can be fatal or cause severe injuries if it is not averted.
	WARNING	...indicates a potentially dangerous situation which can be fatal or cause severe injuries if it is not averted.
	ATTENTION	...indicates a potentially dangerous situation which can cause minor or light injuries if it is not averted.
	CAUTION	...indicates a potentially dangerous situation which can cause property damage if it is not averted.
	NOTE	... highlights helpful tips and recommendations as well as information for efficient and fault-free operation.

1.3 Manufacturer

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1.4 Labeling

Front face of the inner race

- Manufacturer's name
- Type designation
- Date of manufacture (coded)

1.5 Environmental protection

Energy: The clutch coupling does not use any electrical energy

Materials: Steel

Recycling: Steel parts are up to 100% recyclable

2 Safety

2.1 Intended use

Clutch couplings of type AV are directional clutches, engaged and disengaged automatically.

They can be used as backstops or indexing clutches in machinery and equipment.

Clutch couplings may only be operated within the limitations of use outlined in section 2.5.

All of the specifications stated in the assembly and maintenance manual must be strictly adhered to.

Any claims due to damage arising from improper use are excluded. The operator carries sole liability for all damage arising from improper use.

Lockout mode of a backstop:

When operating in the locking direction of the clutch coupling, the machine shaft and the torque bracing to the machine element are connected in a force-locking manner.

In this operating state, torque will be transferred.

Overrunning mode of a backstop:

The clutch coupling disengages automatically the force-locked connection between the machine shaft and the torque bracing to the machine element, when the machine shaft runs in clutch coupling direction.

Driving operation of an indexing clutch:

When operating in torque transmission mode the driving machine element and the driven member are connected in a force-locking manner. In this operating state, power will be transferred.

Overrunning operation of an indexing clutch:

The clutch coupling disengages automatically the force-locked connection between the machine shaft and the torque bracing to the machine element when the machine shaft is idling.


2.2 Responsibility of the operator

The operator of the machine, in which the clutch coupling is installed, is subject to the legal obligations concerning occupational safety.

The valid provisions for the site of operation as well as the safety and accident prevention regulations of the trade associations are to be observed. This, in particular, means that the operator:

- is aware of the valid occupational safety provisions.
- implements the necessary behavioral requirements for operation of the machine, in which the clutch coupling is installed, at the site of operation.
- clearly defines responsibilities for installation, operation, maintenance and cleaning of the machine in which the clutch coupling is installed.
- ensures that all staff members, who work at or with the machine in which the clutch coupling is installed, are employed and have read and understood the operating manual. Moreover, he must, at regular intervals, provide training for personnel on how to handle the machine, in which the clutch coupling is installed, and inform them of the potential dangers. In addition, the operator is responsible for ensuring that the machine in which the clutch coupling is installed:
 - is always in perfect technical condition.
 - is maintained in accordance with the specified maintenance intervals.
 - has all its safety equipment checked regularly for completeness and functionality.

2.3 Assembly and maintenance personnel

	WARNING	Risk of injury for insufficiently qualified personnel! Improper handling can cause significant personal injury and property damage. Therefore: <ul style="list-style-type: none"> ➤ Only ever have tasks performed by those persons to whom the tasks have been assigned.
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Qualified personnel are those persons who, owing to their training, experience and instruction as well as their knowledge of relevant standards, provisions, accident prevention

regulations and operating conditions, have been authorized by the person responsible for the safety of the plant to perform the requisite tasks and are able to recognize and avoid potential dangers in doing so. Knowledge of first-aid measures and on-site emergency equipment must also be included.

2.4 Personal protective equipment

It is necessary to wear personal protective equipment when handling the machine, in which the clutch coupling is installed, to minimize health risks.


The necessary protective equipment such as work shoes, gloves, safety goggles etc. is to be put on prior to all tasks and kept on during the task.

2.5 Limitations of use

- Maximum allowable overrunning speeds and maximum torque capacity

Type	Size * bore dia. [mm]	maximum torque [Nm] *	maximum overrunning speed inner race [rpm]	maximum overrunning speed outer race [rpm]
AV	20	530	450	–
	25	530	450	–
	30	2400	320	–
	35	2400	320	–
	40	2400	320	–
	45	4300	280	–
	50	4300	280	–
	55	4300	280	–
	60	4300	280	–
	70	4300	280	–
	80	5800	200	–
	90	14250	150	–
	100	14250	150	–
	110	14250	150	–
	120	22000	130	–
Types AV..VV (with re-enforced spring)				

Table 1 Spezifikationen

	NOTE	With smaller bore diameters than the maximum bore diameter, the maximum transmittable torque depends on the keyway connection!
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- Limits for ambient temperature: from -15°C to +50°C
- Maximum operating temperature: 90°C
- Required machine shaft tolerance: d = h6 oder j6
- Radial clearance of the bolt must be 1-3% of the slot width
- Lifetime lubrication: Klübersynth Poly Lup WH2

3 Structure and function

3.1 Structure

Pos. 1	Inner race
Pos. 2	Outer race (torque arm)
Pos. 3	Rollers
Pos. 4	Spring loaded plungers
Pos. 5	Laminated seal
Pos. 7	Bearing washer
Pos. 8	Retaining ring
Pos. 9	Shim

Table 2 Part list

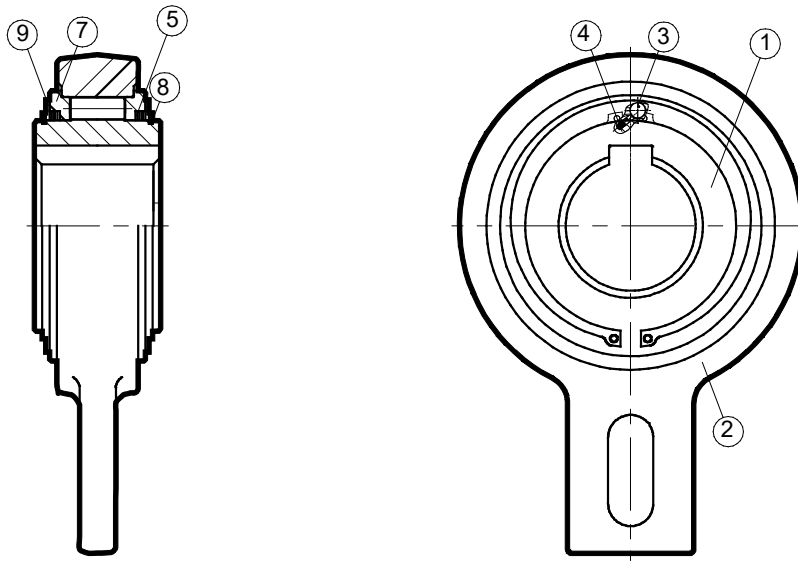


Fig.1 Structure AV

3.2 Function

Clutch couplings of type AV are fitted with ramps on which rollers are located. Springs and plungers ensure a permanent contact between inner race and outer race for an instant torque transmission.

While the outer race or inner race (see Fig.2) is turned in the direction of driving operation, the rollers ensure a connection between inner and outer race, so that torque and power can be transmitted.

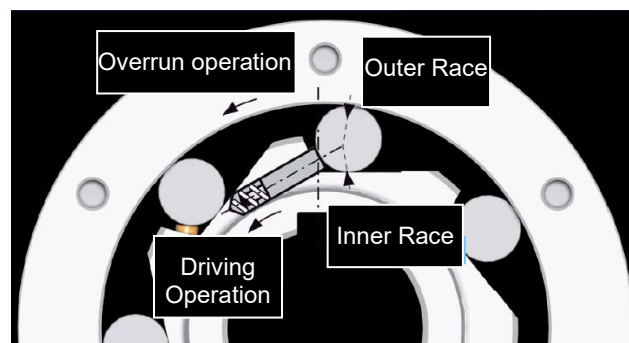


Fig.2 Driving/ Overrun Operation

The overrunning operation takes place while the outer race or inner race is turned in the direction of rotation. Whereby force-locked connection (see Fig.2) between inner race and outer race is interrupted.

In overrun operation the speeds of the inner and outer race are different.

4 Transport and packaging



NOTE

The local provisions regarding the disposal of transport and packaging materials are to be observed!

The clutch couplings are sent in a cardboard or other box.

Transport damage to the packaging and / or the clutch coupling is to be reported to the respective transit company! The clutch coupling must be unpacked in a clean and dry environment!

5 Storage

5.1 Short-term storage

Clutch couplings of type AV come with an oil film as corrosion protection. This corrosion protection is to be renewed at regular intervals. The frequency of these renewal intervals is dependent on the environmental conditions (temperature, moisture, salt content of the air, etc.) at the storage site.

The maximum storage period (short-term storage) is 6 months. Moreover, the clutch coupling must have long-term storage corrosion protection applied to it.

Storage should be organized in such a way that the lubricant is distributed evenly.

Due to storage lying flat the lubricant will drip gradually from the upper bearing to the bottom.

For this reason the clutch coupling must be turned few times during the storage period and run-in prudently until shortly before installation.



NOTE

The clutch coupling must be run-in prudently until shortly before installation!

Store packages under the following conditions:

- Do not keep outdoors.
- Keep dry and free from dust.
- Do not expose to aggressive media.
- Keep away from direct sunlight.
- Avoid mechanical shocks and vibrations.

- Storage temperature: from –10 to +60 °C.
- Relative humidity: maximum 95%, non-condensing.

5.2 Long-term storage

To this end the clutch coupling must be welded in PE foil with desiccant agent. The corrosion protection must be checked after a period not exceeding one year or else depending on the environmental conditions (temperature, moisture, salt content of the air, etc.) at the storage site.

Store packages under the following conditions:

- Do not keep outdoors.
- Keep dry and free from dust.
- Do not expose to aggressive media.
- Keep away from direct sunlight.
- Avoid mechanical shocks and vibrations.
- Storage temperature: from –10 to +60 °C.
- Relative humidity: maximum 95%, non-condensing.

6 Installation

6.1 Checking the direction of rotation

The direction of rotation must be checked prior to installation.






6.2 Changing the direction of rotation

Changing of the direction of rotation is achieved by turning round the clutch coupling.

6.3 Lubrication


The clutch coupling is equipped at the factory with a lifetime grease filling (Klübersynth Polyub WH2).

6.4 Assembly

	WARNING	Risk of injury due to incorrect assembly! Faulty installation and maintenance can cause severe property damage and personal injury. Installation, maintenance and repair work may only be performed by personnel with the requisite training and expertise.
	WARNING	Risk of injury due to moving components! Rotating driven components can cause the most severe injuries. Therefore, during operation: <ul style="list-style-type: none"> ➤ It is strictly forbidden for persons to loiter in the danger zone or in its immediate vicinity. ➤ Do not disable, render unusable or circumvent safety equipment and / or safety functions. Prior to entering the danger zone: <ul style="list-style-type: none"> ➤ Switch off the power supply and secure it against being switched on again. ➤ Wait for lagging components to come to a standstill.
	WARNING	Risk of injury due to falling down components! Falling down components can cause serious injuries! Prevent the clutch coupling from falling down!
	WARNING	Risk of injury for insufficiently qualified personnel! Improper handling can cause significant personal injury and property damage. Therefore: <ul style="list-style-type: none"> ➤ Only ever have tasks performed by those persons to whom the tasks have been assigned.
	NOTE	The clutch coupling must be run-in prudently until shortly before installation!

Procedural steps:

- Key in accordance with DIN 6885 sheet 1 throughout the whole length of the clutch coupling. Lift up the clutch coupling using suitable lifting gear and push it onto the oiled machine shaft.

	NOTE	Apply pressure to the inner race only when pressing the clutch coupling onto the shaft!
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- Fasten the clutch coupling axially on the machine shaft.
- Position torque reaction bolt in lever with a clearance of 1-3%.

**NOTE**

Torque arm and plain bearings must not be distorted!

6.5 Mounting example

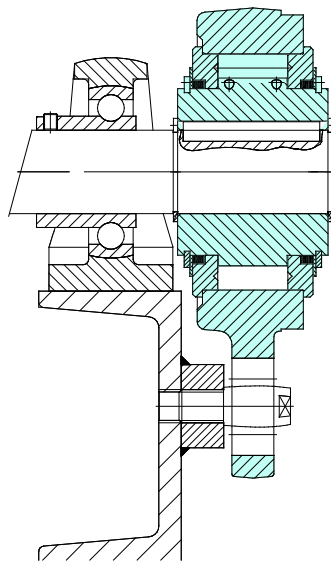


Fig. 3: Mounting example AV

7 Maintenance

No maintenance is required for the clutch couplings of type AV.

8 Disassembly



WARNING

Risk of injury due to incorrect assembly!

Faulty installation and maintenance can cause severe property damage and personal injury.

Installation, maintenance and repair work may only be performed by personnel with the requisite training and expertise.



WARNING

Risk of injury due to moving components!

Rotating driven components can cause the most severe injuries.

Therefore, during operation:

- It is strictly forbidden for persons to loiter in the danger zone or in its immediate vicinity.
- Do not disable, render unusable or circumvent safety equipment and / or safety functions.

Prior to entering the danger zone:

- Switch off the power supply and secure it against being switched on again.
- Wait for lagging components to come to a standstill.



WARNING

Risk of injury for insufficiently qualified personnel!

Improper handling can cause significant personal injury and property damage. Therefore:

- Only ever have tasks performed by those persons to whom the tasks have been assigned.



WARNING

Risk of injury due to falling down components!

Falling down components can cause serious injuries!

Prevent the clutch coupling from falling down!

Procedural steps:

- Remove the axial fixing of the clutch coupling.
- Apply force on inner race only and pull the clutch coupling from the machine shaft. Use suitable lifting gear for this.



NOTE

Clutch coupling will be damaged when the outer race is pulled!

9 Disposal



NOTE

The local provisions regarding the disposal of metallic components and any lubricants present are to be observed!

The clutch coupling is comprised of metallic materials which are coated with grease or oil. Metallic materials are fully recyclable. Lubricants and anticorrosive agents are to be disposed of separately. The local disposal provisions are to be observed in this regard.

10 Faults

The manufacturer is to be contacted immediately should any faults arise.

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