

Installation and Operating Instructions for EAS[®]-NC, Lastic-Backlash-free Clutch Type 454. _ _ _ _ Sizes 01 - 3 (B.4.8.3.GB)

Please read and observe this Operating Instruction carefully!
A possible malfunction or failure of the clutch and any damage may be caused by not observing it.

Table of contents:

- Page 1:**
- Table of contents
 - Manufacturer's declaration
 - Safety regulations
- Page 2:**
- Clutch view
 - Parts list
 - Supply condition
 - Function
 - Temperature resistance
 - Designs
 - Limit switch
- Page 3:**
- Assembly of the clutch
 - Assembly / Dismantle of the clutch halves
 - Telescoping of the clutch halves
- Page 4:**
- Permissible shaft misalignments
 - Alignment of the shafts
 - Maintenance
 - Disposal
 - Technical data, Table 1

Manufacturer's declaration

EAS[®]-NC clutches are components within the scope of the Machinery directive 98/37/EC for installation into machines or equipment. An initial start-up is prohibited until it has been noticed that the machinery or the equipment into which this product has been incorporated correspond to the EC-guidelines

Safety regulations

The submitted installation and operating instructions (E+B) is part of the clutch shipment. Keep the E+B always well accessible near the clutch.



Danger!

- ☐ If the EAS[®]-NC clutches have been modified or reconverted.
- ☐ If the relevant standards of the safety or installation conditions are not observed.

Necessary protective measures to be undertaken by the user

Cover all moving parts for protection against squeezing, seizing, dust deposit and hit of foreign objects.

Only qualified and well-trained specialists should work on the units to avoid any personal injury or damage to machinery under observance of the valid standards and guidelines. The installation and operating instructions are to be read carefully before installation and operation

With these safety notes no claim on completeness is raised!

Attention:

Based on the guideline 94/9/EC (ATEX-guideline) this product is not suitable for the application in potential explosive areas without evaluation of the conformity.

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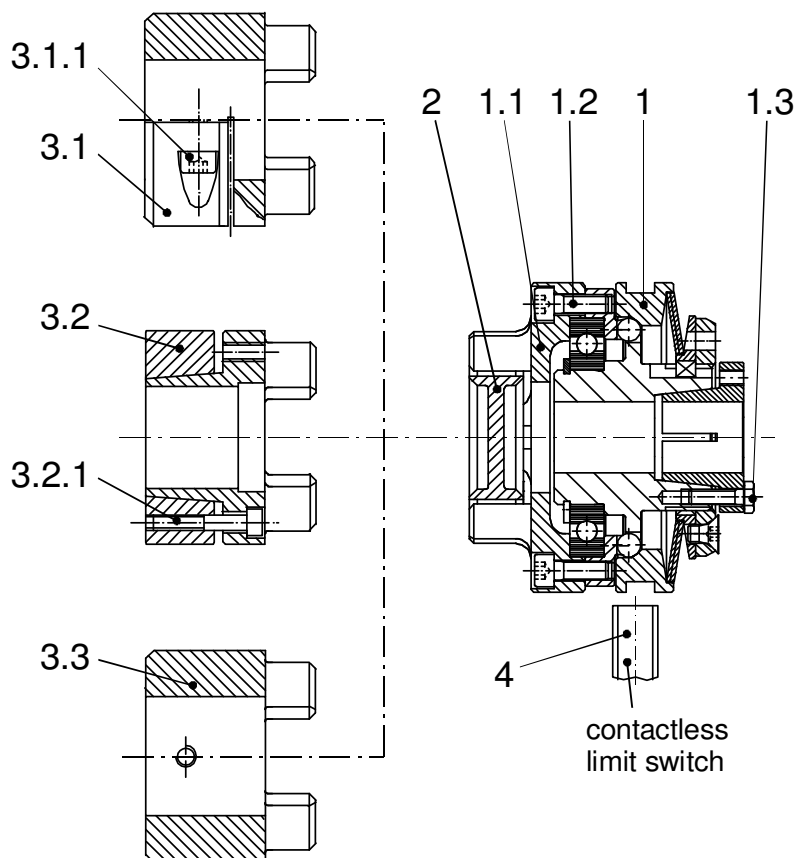


Fig. 1

Parts List (only mayr[®]-original parts are to be used)

1	EAS [®] -NC clutch	3.1.1	Clamping bolt – clamping hub
1.1	Connecting flange	3.2	ROBA [®] -ES – shrink disc hub
1.2	Cap screw	3.2.1	Clamping bolt – shrink disc hub
1.3	Clamping bolt – cone bushing	3.3	ROBA [®] -ES-hub with keyway
2	Elastom. element (red 98 Sh A / yellow 92 Sh A)	4	Limit switch
3.1	ROBA [®] -ES-clamping hub		



Note:

- ☐ Observe the own installation and operating instructions B.4.8.2.GB for the EAS[®]-NC clutch position 1.
- ☐ The limit switch position 4 does not belong to the scope of supply in series.

Supply condition

The clutch (EAS[®]-NC-element and flexible element) is completely assembled and adjusted to the torque requested in the order, if necessary.

Check supply condition!

Function

EAS-NC Lastic-Backlash-Free clutches are backlash-free, positive, torque limiting clutches in combination with a flexible coupling for connecting two shafts. Compensating for axial, radial and angular misalignment capabilities the EAS[®]-NC-Lastic-Backlash-Free transmits reliably and safely the torque from input to output during standard operation. In the case of an overload, i.e. when the set limiting torque is achieved, the clutch disconnects immediately input and output.

The mayr[®] limit switch recognises the overload and provides a signal to disconnect the drive or for another control function.

Temperature resistance

EAS[®]-NC clutches Type 454. can be operated in a continuous operation up to a temperature of -20 °C/ +80 °C; temperature peaks up to +120 °C are permissible for a short period.

Designs

1. EAS[®]-NC-Lastic-Backlash-Free Ratchetting Clutch Type 454.—0.-

ratchets in the event of an overload and gives electrical contact (via limit switch) for switching off the drive. While ratchetting the torque is considerably lower than the set disengaging torque. Automatic re-engagement.

2. EAS[®]-NC-Lastic-Backlash-Free Synchronous Clutch Type 454.—5.-

gives an electrical contact (via limit switch) to stop the drive in the event of an overload. Releases mechanically and re-connects the drive elements after one revolution (360°) at the same position where disengagement took place. The residual torque in a disengaged condition is substantially lower than the set disengaging torque.

Limit switch

In the case of an overload the mayr[®] limit switch recognises the disengagement of the clutch quickly and precisely and gives signal to switch off the drive or for any other control functions.

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Fitting of the clutch/coupling

As standard EAS®-NC clutches are supplied with cone bushings, shrink discs, clamping hubs or with keyways ready to be installed. EAS®-NC clutch (1) and ROBA®-ES-coupling hub (3) are drawn onto the shaft and fixed axially (example fig. 2). Both clutch halves can be pushed together without problems.

Please observe!

Do not exert an axial pressure onto the elastomeric element (2).

The dimension „E“ acc. to Table 1 and Fig. 2 must be maintained in any case.

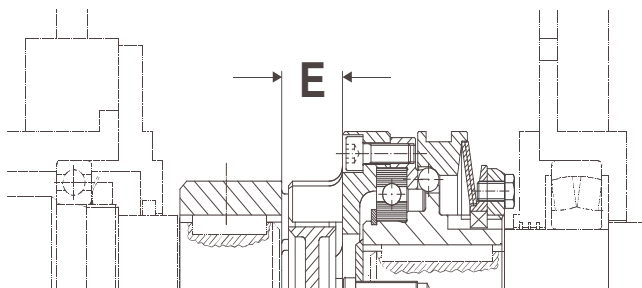


Fig. 2

Assembly of both clutch halves

Assembly of the clutch halves Type 454.-0/1.-

EAS®-NC side (1) cone bushing

ROBA®-ES-side clamping hub (3.1) or shrink disc hub (3.2)

Following points have to be noticed for the assembly:

- ☐ The shafts must not have any keyway
- ☐ **Shaft fits:** EAS®-NC-side up to diameter 38 h6, over diameter 38 h8; ROBA®-ES-side k6
- ☐ Surface quality of the shafts: fine turned or ground ($R_a = 0,8 \mu m$)
- ☐ Shaft material: yield point at least 350 N/mm², z. B. St 60, St 70, C 45, C 60
- ☐ Before installation of the clutch halves the bores must be cleaned from storage residues, as for example rough dust, preservatives etc., as otherwise a torque transmission can be substantially affected. Afterwards the cone bushings and shafts are oiled again.
- ☐ Attach both shaft ends and bring them into the correct position.

For Type 454._0._

- ☐ Tighten clamping bolt (3.1.1) ROBA®-ES-side uniformly to the required torque indicated on Table 1 by means of a torque wrench.
- ☐ Tighten clamping bolts (1.3) EAS®-NC-side uniformly step by step and crosswise (in 3 to max. 6 tightening revolutions) to the required torque indicated on Table 1 by means of a torque wrench.

For Type 454._1._

- ☐ Tighten clamping bolts (3.2.1) ROBA®-ES-side uniformly step by step and crosswise (in 3 to max. 6 tightening revolutions) to the required torque indicated on Table 1 by means of a torque wrench.
- ☐ Tighten clamping bolts (1.3) EAS®-NC-side uniformly step by step and crosswise (in 3 to max. 6 tightening revolutions) to the required torque indicated on Table 1 by means of a torque wrench.

Disassembly

- ☐ Unscrew all clamping bolts to release some threads.
- ☐ Unscrew the clamping bolts located beside the extraction holes and screw them into the extraction holes until contact. Afterwards tighten these screws until release of the clamping connections.

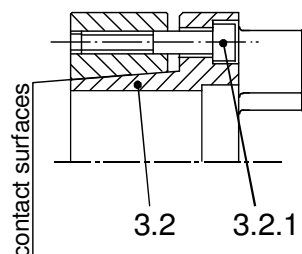


Fig. 3

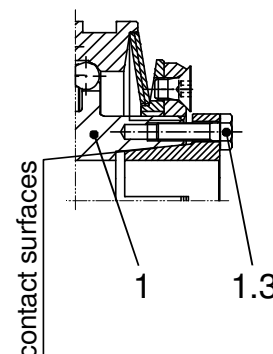


Fig. 4

Assembly of the clutch halves with keyway Type 454.-2.-

- ☐ Attach clutch halves (1 or 3.3) on both shaft ends with a suitable device and bring them into the correct position.
- ☐ Axially fix the clutch halves, e.g. by means of a retaining cap and setscrew (see Fig. 2).

Telescoping of both clutch halves

When pushing both clutch hubs (1 and 3.) together an axial assembly force must be exerted due to the pre-tension of the elastomeric element (2).

This force can be decreased by slightly greasing the elastomeric element.

Attention! Use Pu-compatible lubrications (e.g. Vaseline)!

Please observe!

Do not exert an axial pressure onto the elastomeric element (2).
Keep dimension „E“ acc. to Fig. 2 and Table 1 in any case!

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Permissible shaft misalignments

The EAS®-NC Lastic-Backlash-Free clutch compensates radial, axial and angular shaft misalignments (Fig. 5), without influencing its backlash-free design. However, the permissible shaft misalignments indicated on Table 1 must not achieve simultaneously the maximum value. In case several kinds of misalignment occur simultaneously, they influence each other, i.e. the permissible values of misalignment depend on each other depending on Fig. 6.

The amount of the actual misalignments, in percentage of the max. value, must not exceed 100 %.

The permissible misalignment values indicated on Table 1 refer to a coupling use with nominal torque, an ambient temperature of +30 °C and an operating speed of 1500 rpm.

Please contact the factory in case of different or extreme coupling application conditions.

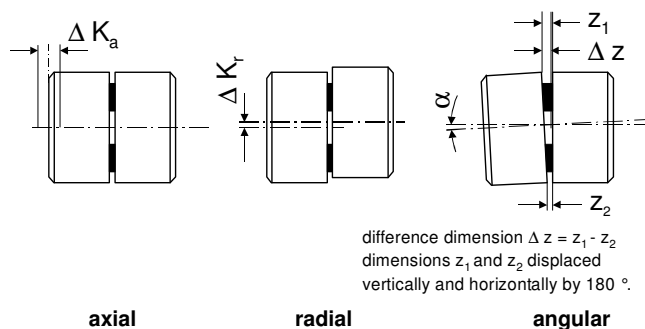


Fig. 5

Alignment of the shafts

An exact alignment of the shafts increases the service life considerably and decreases the load on the shaft bearings. For drives with a very high speed the coupling should be aligned by means of a feeler gauge or special devices for an alignment. Normally the alignment of the shafts with a straight-edge in two levels being vertically to each other is sufficient.

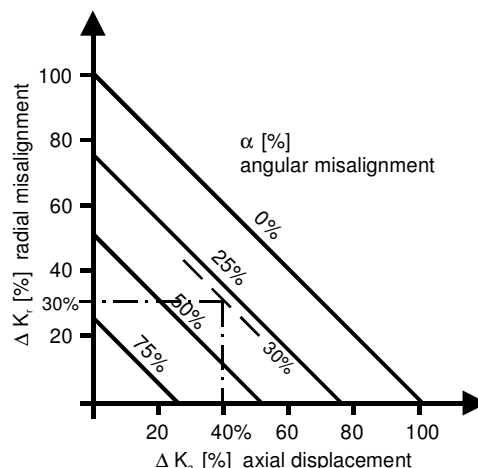


Fig. 6

Maintenance

EAS®-NC Lastic-Backlash-Free clutches are nearly maintenance-free. Only in case of extreme environmental or operative conditions a wear of the elastomeric element (2) can be caused. It is recommended to carry out an optical inspection within the regular inspection intervals.

Disposal

Electronic components

(Limit switch):

The undismantled products can be brought to the material utilization according to EAK 150106 (mixed materials) or to the disposal via the domestic refuse. (Code No. 200301).

All steel components:

scrap (Code No. 160117)

All aluminium components:

non-ferrous metals (Code No. 160118)

Seals, O-rings, V-Seal, Elastomers:

plastic (Code No. 160119)

Table 1 Technical data

EAS®-NC-Lastic-Backlash-free	Size	01	0	1	2	3
Distance dimension "E"	[mm]	16	18	20	24	26
Axial displacement ΔK_a	[mm]	1,2	1,4	1,4	1,8	2,0
Radial misalignment ΔK_r 92 Sh A / 98 Sh A	[mm]	0,1/0,06	0,14/0,1	0,15/0,11	0,17/0,12	0,19/0,14
Angular misalignment α 92 Sh A / 98 Sh A	[°]	1,0/0,9	1,0/0,9	1,0/0,9	1,0/0,9	1,0/0,9
Angular misalignment Δz 92 Sh A / 98 Sh A	[mm]	0,35/0,31	0,39/0,35	0,57/0,51	0,70/0,63	0,83/0,75
Tightening torque Clamping bolt-cone bushing (1.3)	[Nm]	3	3	5,5	9,5	9,5
Tightening torque Clamping bolt-clamping hub (3.1.1)	[Nm]	10,5	10,5	25	25	25
Tightening torque Clamping bolt-shrink disc (3.2.1)	[Nm]	3	6	6	10,5	35

Table 1