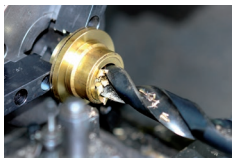
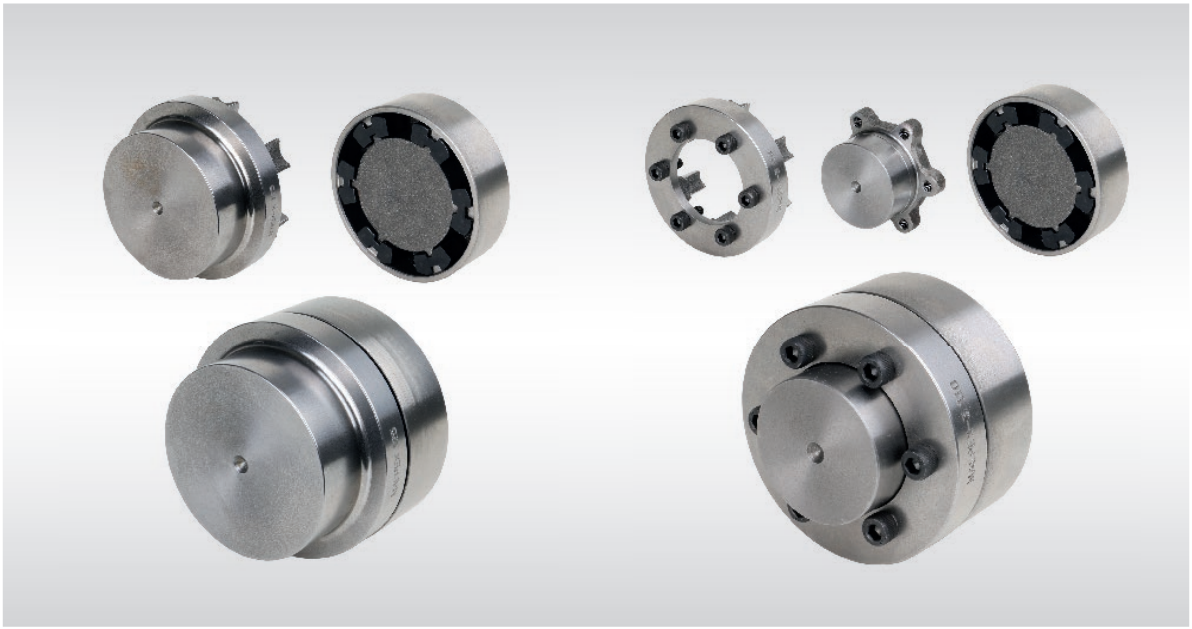




Mounting and Operating Instructions

Couplings MAEPEX®



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1 Safety Instructions

During assembly and disassembly of the clutch, it must be ensured that the entire drive train is secured against unintentional engagement and that the system is depressurized. Improper handling of rotating parts can cause serious injuries.

Switch off the drive unit before carrying out work on the coupling.
Secure the drive unit against unintentional switch on, e.g. by affixing information signs at the switch-on point or removing the fuse from the power supply.

Do not reach into the working area of the machine while it is still in operation.
Secure the rotating drive parts against accidental contact. Fit appropriate safety devices and covers.

2 General Instructions

Please read these assembly instructions carefully before installing the coupling.

The assembly instructions are an important document. Archive the assembly instructions and allow your maintenance personnel to access them. The copyright of these assembly instructions remains with MÄDLER GmbH Stuttgart. The original language is German.

The designation MAEPEX® is a protected brand name.

MAEPEX® cam couplings are universally applicable, torsionally flexible, damping and fail-safe couplings. The mechanically machined driver claws (cams) reduce wear on the elastomeric bodies used and guarantee the MAEPEX® coupling a long service life.

Description:

- 13 Sizes Version Standard, 2-part (MAEPEX® 58 to 280)
- 9 Sizes Version, 3-part (MAEPEX® 3-part Version, 110 to 280)
- Nominal torques: 19 Nm to 3.900 Nm
- Dimensions: Ø 58 mm x 42 mm long to Ø 280 mm x 223 mm long
- simple in construction
- no lubrication required
- low procurement and operating costs
- Torsional vibration isolation and damping
- no metal-to-metal contact, therefore electrically insulated
- withstands short-term overload or overspeed
- easy assembly and disassembly
- allows angular, axial and parallel displacement or a combination of the displacements
- The flexible, easily exchangeable elastomer bodies have the following characteristics:
    - Working temperature from -30°C to +80°C
    - good resistance to greases, oils, hot water and abrasion
    - good insulating properties
    - torsionally flexible design (supplied as standard with 80° Shore hardness)

3 Application Range

MAEPEX® couplings were developed for use in the entire field of mechanical engineering.

4 MAEPEX® Product Range

- 13 Sizes Version Standard, 2-part (MAEPEX® 58 to 280)
- 9 Sizes Version, 3-part (MAEPEX® 3-part Version, 110 to 280)
- Nominal torques: 19 Nm to 3,900 Nm
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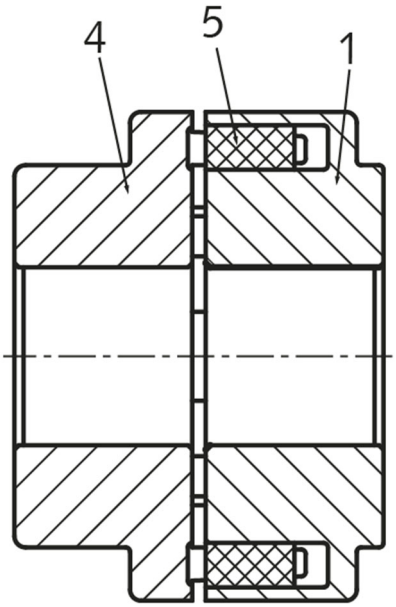
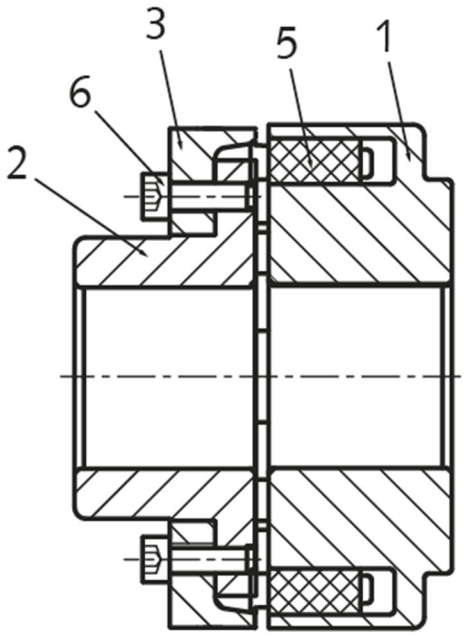
5 Configuration of the MAEPEX® Cam Coupling

The illustrations show the associated components of the MAEPEX® coupling designs:





MAEPEX® Version, 2-part

1 = Hub 1
4 = Nabe 4
5 = Elastomere

MAEPEX® Version, 3-part

1 = Hub 1
2 = Hub 2
3 = Cam ring with driving claws
5 = Elastomere
6 = Cylinder head screws

6 Preparation and finishing for assembly

The coupling is mounted according to the following steps:

- Preparatory works
- Assembly of the coupling
- Alignment of the coupling

Preparatory works

MAEPEX® couplings are supplied without pilot bore as standard.
Exceptions: Sizes 250 and 280 are supplied with 44/57 mm pilot bores.

Please observe the following specifications:

- Insert finish bore
- Insert keyway
- Insert axial securing
- Balancing the coupling

Insert finish bore

The diameter of the finished bore must not exceed the maximum diameter indicated in the tables of the MÄDLER product catalogue.

Procedure

1. Remove the elastomeric bodies (5)

2. De-preserve and clean the hubs 1, 2 and 4 to be machined

3. Produce a finish bore with reference to the coupling outside diameter. Ensure alignment of the hubs 1, 2 and 4 within a max. concentricity of 0.05 mm.

Recommended fit assignments for bores with keyway connection

The following table shows the recommended fit assignments for bores with keyway connection. The fit assignment m6 / H7 is particularly suitable for many applications.

Description	Sliding seat		Detention seat		Fixed seat		
	Not suitable for reversing operation				Suitable for reversing operation		
Shaft tolerance	j6	h6	h6	k6	m6	n6	h6
Bore tolerance	H7	J7	K7	H7	H7	H7	M7

Insert keyway

Arrangement of the keyway:

Hub 1: Keyway between two webs of the elastomer slots.

Hub 2: Keyway centered between the tapped holes of the cam ring (3)

Hub 4: below a cam

Keyway standards and tolerances

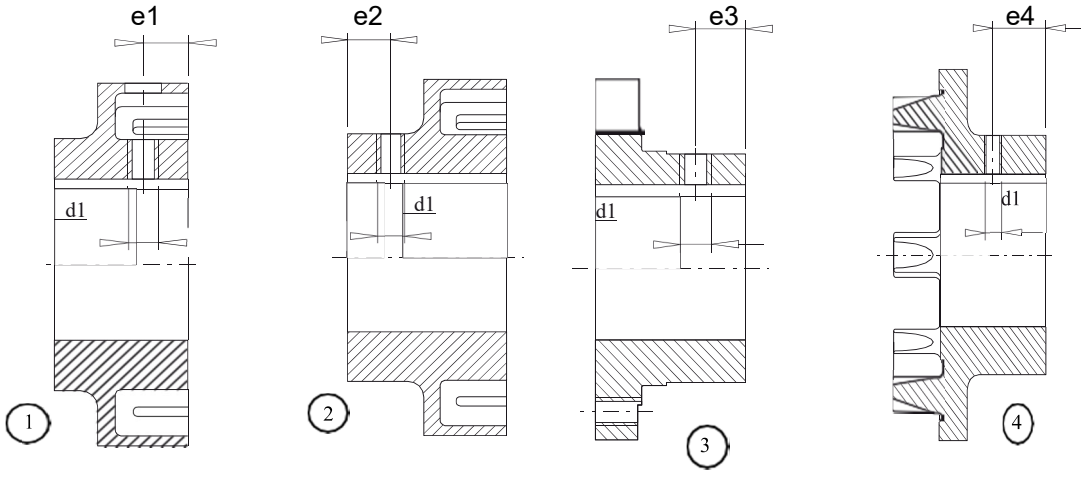
If the coupling is used for normal operating conditions, the keyway should be manufactured according to DIN 6885/1 ISO JS9. If the coupling is intended for reversing operation, the keyway should be manufactured according to DIN 6885/1 ISO P9.

7 Axial securing of the MAEPEX® cam coupling by means of set screw

The coupling is secured against axial movement by set screws. The following points must be observed:

- Diameter and axial position of the threaded bore on the hub
- Position of the tapped hole to the keyway
- Selecting the set screw

The following figure shows the axial position of the threaded hole for set screws:



Hub 1
axial position of
threaded hole
up to size 125

Hub 1
axial position of
threaded hole
up to size 140

Hub 2

Hub 4

8 Set screw tapped hole, diameter and axial position

Diameter and axial position of the threaded hole, tightening torque:

Size						Tightening torque
	d1	e1 mm	e2 mm	e3 mm	e4 mm	T_A Nm
58	M5	10	-	-	8	3
68	M6	10	-	-	8	4
80	M6	11	-	-	12	4
95	M6	15	-	-	15	4
110	M6	18	-	9	18	4
125	M8	20	-	12	20	8
140	M8	-	13	15	22	8
160	M10	-	13	20	25	15
180	M12	-	16	30	32	25
200	M12	-	20	30	40	25
225	M12	-	22	35	40	25
250	M16	-	24	40	45	70
280	M16	-		45	45	70

Position of the threaded hole to the keyway

As a rule, the threaded hole for the set screw is positioned on the keyway.
An exception are the coupling parts listed in the following table.

Position of the threaded hole to the keyway

Coulingpart	Size	Finish bore [mm]	Position of the threaded hole
1	58	≥ 15	180° offset to keyway
	68	≥ 20	144° offset to keyway
	80	≥ 25	180° offset to keyway
	95	≥ 38	180° offset to keyway
2	110	≥ 30	180° offset to keyway
4	58	≥ 18	180° offset to keyway
	68	≥ 20	180° offset to keyway

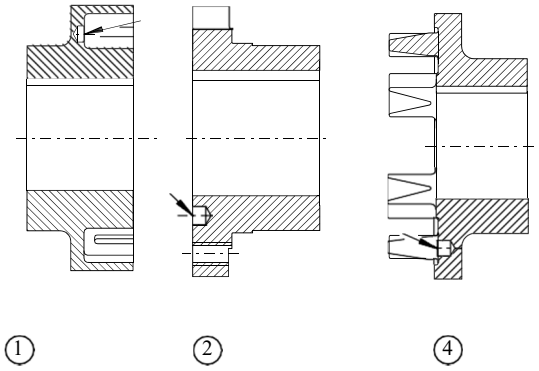
9 Balancing the MAEPEX® Cam Coupling

Balancing is necessary depending on the coupling size and speed.

- Select the balancing quality according to the application (at least G16 to DIN ISO 21940)

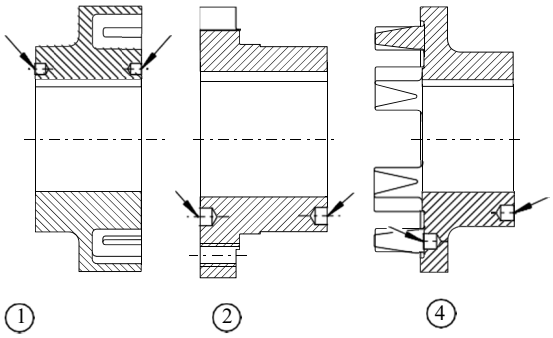
- Please observe the balancing agreement according to DIN ISO 21940-32
- Drill the required compensation holes on a large radius with sufficient distance to the elastomer retaining webs / elastomer pockets, cams and the outer contour.

Position of the balancing holes for single-plane balancing



Compensation hole →
Part 1 of the MAEPEX® Coupling
Part 2 of the MAEPEX® Coupling
Part 4 of the MAEPEX® Coupling

Position of the balancing holes for two-plane balancing



Compensation hole →
Part 1 of the MAEPEX® Coupling
Part 2 of the MAEPEX® Coupling
Part 4 of the MAEPEX® Coupling

By balancing the bolted coupling parts (2 and 3) as an assembly, a better balancing result can be achieved. In the case of total balancing, you can draw the position of the components in relation to each other.

10 Mount the coupling

- Unscrew the set screw from clutch parts 1 and 2 or 4 so far that no collision with the feather key or the shaft is possible.
- Clean the bores and shaft ends. Coat the bores of coupling parts 1 and 2 or 4 and the shafts with MoS2 assembly paste (e.g. Microgleit LP 405).

- If you have disassembled the coupling part, place coupling part 3 on the shaft before fitting coupling part 2.
- Place coupling parts 1 and 2 or 4 on the shaft.
- Tighten the set screw or the screw for securing the end plate to the specified tightening torque T_A (for the set screw, see section Inserting the axial securing device).
- If you have removed the elastomeres, insert them in the same way.

Screw together coupling parts 2 and 3 with the specified tightening torque T_A.

11 Coupling alignment

Purpose of the alignment:

The shafts connected by the coupling are never on an ideally precise axis, but have a certain amount of misalignment.

Misalignment in the coupling leads to restoring forces which can place unacceptable stress on the adjacent machine parts (e.g. the bearing).

The misalignment values during operation result from the following:

● Installation-related misalignment
  Misalignment due to inaccurate alignment

● Operational misalignment
  Example: Load induced deformation, thermal expansion

By aligning after mounting, you minimize the misalignment. A slight misalignment in the coupling has the following advantages:

● Reduced wear of the elastomer components
● Reduced restoring forces
● Misalignment reserves for operation of the coupling

The maximum permitted shaft misalignment values during operation are given in section Shaft Misalignment Values during Operation.

12 Backlash

- To determine the circumferential backlash, turn a coupling part without torque until the stop.
- Apply a marking to both coupling halves.

- Turn the coupling part in the opposite direction until the stop. This causes the markings to move apart.

The distance between the markings gives the circumferential backlash.

Maximum permissible circumferential backlash (sizes 58 to 280)

Couplingsize	Maximum permissible Backlash ΔSV (mm)
58	5.5
68	5.5
80	5.0
95	6.0
110	7.0
125	8.0
140	8.0
160	8.0
180	8.0
200	8.5
225	9.0
250	10.0
280	11.5

13 Replace wearing parts

Replace wearing parts at 2-part version

If the maximum permissible torsional backlash is reached, replace the elastomeres (5).
The procedure for replacing the elastomeres (5) depends on the type of coupling.

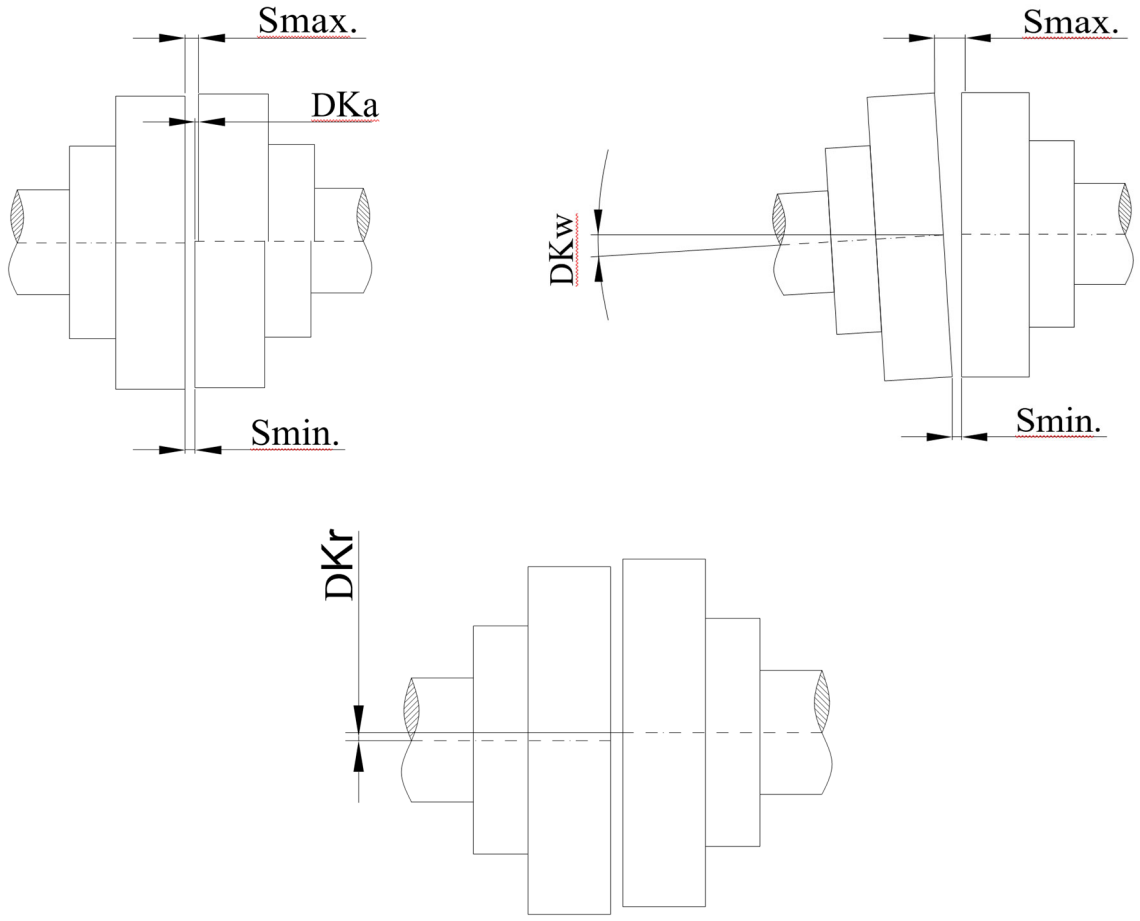
1. To replace the elastomeres (5), disengage the coupled machines.
2. Remove the elastomeres (5)
3. Insert the new elastomeres (5).

Replace wearing parts at 3-part version

Replace the elastomeres (5) without moving the coupled machines.

1. Release the connection between coupling parts 2 and 3
2. Move the coupling part 3 axially.
   The elastomeres (5) are freely accessible after turning the coupling part 2.
   Note: Loosening coupling part 3 - to facilitate the loosening of coupling part 3, a tapped forcing hole is provided in coupling part 1 on coupling sizes 225 to 280.
3. Remove the elastomeres (5).
4. Insert the new elastomeres (5).

Maximum permissible shaft misalignment values



(1) Axial displacement
Set the axial displacement ΔKa to a value within the permissible tolerance range of dimension S.
The values for dimension S can be found in the enclosed Mädler catalogue sheets.

(2) Angular misalignment
Determine the value ΔS (ΔS = Smax - Smin).
The determined value ΔS must not exceed the value ΔSzul.
The values for ΔSzul can be found below at the end of these instructions.

(3) Radial displacement
Determine the value ΔKr.

The determined value ΔKr must not exceed the value ΔKrzul.

Couplingsize	**ΔSzul / ΔKrzul**
58	0.2
68	0.2
80	0.2
95	0.2
110	0.2
125	0.25
140	0.25
160	0.3
180	0.3
200	0.3
225	0.35
250	0.35
280	0.4

Coupling size / Max. permissible angular misalignment values ΔSzul (mm) and radial misalignment value ΔKrzul at speed 1500 min^{-1}

14 Maintenance Intervals

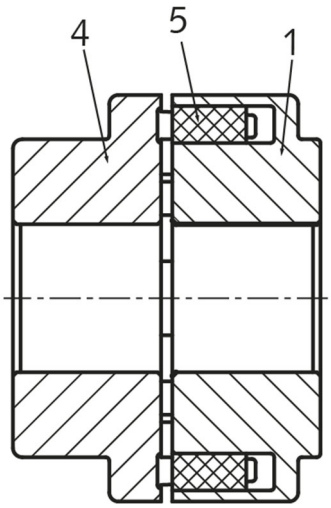
Check the circumferential backlash between the coupling parts at the specified maintenance intervals. The maximum permissible circumferential backlash for the different coupling sizes can be found in section Maximum permissible circumferential backlash (page 11)

Version	First Maintenance	Follow-up maintenance
2-part	3 months after commissioning	Every 12 months
3-part		

Note: Depending on the application, shorter maintenance intervals may be required.

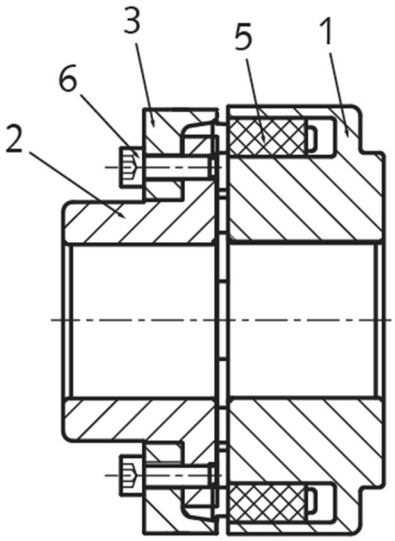
15 Spare parts drawing and spare parts list

MAEPEX® Version, 2-part



Partnumber	Description
1	Hub 1
4	Hub 4
5	Elastomere

MAEPEX® Version, 3-part



Partnumber	Description
1	Hub 1
2	Hub 2
3	Hub 3
5	Elastomere
6	Cylinder head screw