FLENDER COUPLINGS

N-BIPEX

Operating Instructions 3401en
Edition 10/2017

BWN, BWT, BNT

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N-BIPEX
3401en

Operating Instructions

BWN, BWT, BNT

Introduction 1

Safety instructions 2

Description 3

Application planning 4

Assembly 5

Commissioning 6

Operation 7

Servicing 8

Service and support 9

Disposal 10

Spare parts 11

Technical data A

Quality documents B

Edition 10/2017

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER
indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING
indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Flender products

Note the following:

⚠ WARNING
Flender products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Flender. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Flender GmbH. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Table of contents

1 Introduction 9

1.1 About these instructions 9

1.2 Text attributes 9

1.3 Copyright 9

2 Safety instructions 11

2.1 General information 11

2.2 Intended use 13

2.3 Safety instructions for a coupling for use in potentially explosive atmospheres 13

2.3.1 Marking 13

2.3.2 Conditions of use 14

2.4 General warning notices 16

3 Description 19

4 Application planning 21

4.1 Transport of the coupling 21

4.2 Storage of the coupling 21

5 Assembly 23

5.1 Preparatory work 23

5.1.1 Milling the parallel keyway 24

5.1.2 Milling the parallel keyway 25

5.1.3 Machining an axial locking mechanism 25

5.1.4 Balancing the coupling 27

5.2 Assembling the coupling 28

5.2.1 Installing coupling part 1/2 (1 or 2) 29

5.2.2 Assembling coupling part 3 (3) or 4 (4) 30

5.3 Aligning the coupling 31

5.3.1 Purpose of alignment 31

5.3.2 Possible misalignment 31

5.3.2.1 Axial misalignment 32

5.3.2.2 Angular misalignment 32

5.3.2.3 Radial misalignment 32

6 Commissioning 33

7 Operation 35

7.1 Normal operation of the coupling 35

7.2 Faults - causes and rectification 35

7.2.1 Procedure in the event of malfunctions 35

7.2.2 Identifying the fault cause 35

7.2.2.1 Possible faults....36
7.2.2.2 Possible causes....37
7.2.3 Correcting faults....38
7.2.3.1 Replacing wearing parts....38
7.2.3.2 Correcting the changed alignment....39
8 Servicing....41
8.1 Maintenance intervals....41
8.2 Maximum permissible torsional backlash....42
8.3 Replacing wearing parts....42
8.4 Removing coupling part 1/2 (1 or 2)....43
8.5 Removing coupling part 3 (3) or 4 (4)....44
9 Service and support....45
9.1 Contact....45
10 Disposal....47
11 Spare parts....49
11.1 Ordering spare parts....49
11.2 Spare parts drawing and spare parts list....50
11.2.1 Type BWN....50
11.2.2 Type BWT....51
11.2.3 Type BNT....52
A Technical data....53
A.1 Speeds, geometry data and weights....53
A.1.1 Dimension drawing of type BWN....54
A.1.2 Technical data of type BWN....55
A.1.3 Dimension drawing of type BWT....56
A.1.4 Technical data of type BWT....57
A.1.5 Dimension drawing of type BNT....58
A.1.6 Technical data of type BNT....59
A.1.7 Flat groove in TAPER clamping bushes (101), (102)....60
A.2 Shaft misalignment values during operation....60
A.3 Tightening torques and widths A/F....62
A.4 Tightening procedure....63
A.5 Cam rings....63
A.5.1 Use and storage of the cam rings....63
A.5.2 N-BIPEX cam ring (50)....63
B Quality documents....65
B.1 Declaration of Conformity....65

Tables

Table 2-1 General warnings....11

Table 2-2 Temperature classes (TX) for explosive atmospheres as a result of gases, vapours or mists.....15
Table 2-3 Maximum surface temperature (TX) for an explosive atmosphere as a result of dust/air mixtures.....15
Table 4-1 Types of preservative agents for long-term storage.....22
Table 5-1 Recommended assigned fits for bores with parallel key connection.....24
Table 5-2 Tapped hole, tightening torque and width A/F.....26
Table 7-1 Table of faults.....36
Table 8-1 Maintenance intervals.....41
Table 8-2 Maximum permissible torsional backlash.....42
Table 11-1 Spare parts list for type BWN.....50
Table 11-2 Spare parts list for type BWT.....51
Table 11-3 Spare parts list for type BNT.....52
Table A-1 Speeds, geometry data and weights of type BWN.....55
Table A-2 Speeds, geometry data and weights of type BWT.....57
Table A-3 Speeds, geometry data and weights of type BNT.....59
Table A-4 Flat groove in TAPER clamping bushes.....60
Table A-5 Correction factor.....60
Table A-6 Maximum permissible shaft misalignment values during operation for cam rings (50) with hardness 92 Shore A.....61
Table A-7 Maximum permissible shaft misalignment values during operation for cam rings (50) with hardness 95 Shore A.....61
Table A-8 Maximum permissible shaft misalignment values during operation for cam rings (50) with hardness 64 Shore A.....62
Table A-9 Tightening torques and widths A/F of bolts for the TAPERclamping bushes (101 or 102).....62
Table A-10 Tightening procedure.....63
Table A-11 N-BIPEX cam ring.....63

Figures

Figure 3-1 Type BWN.....19
Figure 3-2 Type BWT.....20
Figure 3-3 Type BNT.....20
Figure 4-1 Transport symbols.....21
Figure 5-1 Tolerances for the finished bore in coupling part 1/2 (1 or 2).....25
Figure 5-2 Diameter and axial position of the tapped hole in the hub.....26
Figure 5-3 Position of the balancing bore for single-plane balancing.....28
Figure 5-4 Position of the balancing bore for two-plane balancing.....28
Figure 5-5 Possible misalignment.....31
Figure 8-1 Markings for calculating the torsional backlash.....42
Figure 11-1 Spare parts drawing for type BWN.....50
Figure 11-2 Spare parts drawing for type BWT.....51

Figure 11-3 Spare parts drawing for type BNT....52
Figure A-1 Type BWN....54
Figure A-2 Type BWT....56
Figure A-3 Type BNT....58
Figure A-4 Flat groove in TAPER clamping bushes....60

Introduction 1

1.1 About these instructions

These instructions describe the coupling and provide information about its handling - from assembly to maintenance. Please keep these instructions for later use.

Please read these instructions prior to handling the coupling and follow the information in them.

1.2 Text attributes

The warning notice system is explained on the back of the inner cover. Always follow the safety information and notices in these instructions.

In addition to the warning notices, which have to be observed without fail, you will find the following text attributes in these instructions:

1. Procedural instructions are shown as a numbered list. Always perform the steps in the order given.

- Lists are formatted as bulleted lists.
  - The dash is used for lists at the second level.

(1) Numbers in brackets are part numbers.

Note

A note is an important item of information about the product, the handling of the product or the relevant section of the instructions. The note provides you with help or further suggestions/ ideas.

1.3 Copyright

If you have any technical queries, please contact our factory or one of our service outlets (refer to Service and support (Page 45)).

Safety instructions

2

2.1 General information

Instructions

These instructions are part of the delivery. Always keep these instructions close to the coupling.

Please make sure that every person who is commissioned to work on the coupling has read and understood these instructions prior to handling the coupling and observes all of the points.

Only the knowledge of these instructions can avoid faults on the coupling and ensure fault-free and safe operation. Non-adherence to the instructions can cause product or property damage or personal injury. Flender does not accept any liability for damage or operating failures that are due to non-adherence to these instructions.

State of the art

The coupling described here has been designed in consideration of the latest findings for demanding technical requirements. This coupling is state-of-the-art at the time of printing these instructions.

In the interest of further development, Flender reserves the right to make such changes to the individual components and accessories that increase performance and safety whilst maintaining the essential features.

Symbols

Table 2-1 General warnings

ISO	ANSI	Warning
		Warning - hazardous electrical voltage
		Warning - explosive substances
	---	Warning - entanglement hazard
	---	Warning - hot surfaces
	---	Warning - substances that are harmful to health or are irritants

ISO	ANSI	Warning
	---	Warning - corrosive substances
	---	Warning - suspended load
	---	Warning - hand injuries
		ATEX certification

Explanation regarding Machinery Directive 2006/42/EC

The couplings described here are “components” in accordance with the Machinery Directive and do not require a declaration of incorporation.

ATEX Directive

The term "ATEX Directive" used in these instructions stands for the harmonisation legislation of the European Union in compliance with the declaration of conformance for equipment and protective systems for correct use in hazardous zones.

Protective clothing

In addition to the generally prescribed personal protective equipment (safety shoes, overalls, helmet, etc.), also wear suitable safety gloves and safety goggles when handling the coupling.

Using the coupling

The relevant work safety and environmental protection regulations must be complied with at all times during transport, assembly, installation, dismantling, operation and maintenance of the coupling.

Only qualified personnel may operate, assemble, maintain and repair the coupling. Information about qualified personnel can be found in the legal notes at the beginning of these instructions.

If lifting gear or load suspension devices are used for transporting, these have to be suitable for the weight of the coupling.

If the coupling has visible damage, it may not be assembled or put into operation.

The coupling may only be operated in a suitable housing or with touch protection according to applicable standards. This also applies to test runs and rotational direction checks.

Work on the coupling

Only carry out work on the coupling when it is not in operation and is not under load.

Secure the drive unit against being switched on accidentally. Attach a notice to the switch stating clearly that work is being carried out on the coupling. Ensure that the entire unit is not under load.

2.2 Intended use

Only use the coupling according to the conditions specified in the service and delivery contract and the technical data in the annex. Deviating operating conditions are considered improper use. The user or owner of the machine or plant is solely liable for any resulting damage.

When using the coupling please specifically observe the following:

- Do not make any modifications to the coupling that go beyond the permissible machining described in these instructions. This also applies to touch protection facilities.
- Only use original spare parts from Flender. Flender only accepts liability for original spare parts from Flender.
  Other spare parts are not tested and approved by Flender. Non-approved spare parts may possibly change the design characteristics of the coupling and thus impact active and/or passive safety.
  Flender will accept no liability or warranty whatsoever for damage occurring as a result of the use of non-approved spare parts. The same applies to any accessories that were not supplied by Flender.

If you have any queries, please contact our customer service (see Service and support (Page 45)).

2.3 Safety instructions for a coupling for use in potentially explosive atmospheres

2.3.1 Marking

You can find a description of the coupling parts in chapter Description (Page 19).

A coupling designed in accordance with the ATEX Directive has a marking on the coupling parts.

Damage to coupling part 1/2, coupling part 3 or coupling part 4

One of the following markings is visible on the outer diameter of coupling parts 1/2, coupling part 3 or coupling part 4:

Version 1:

Flender GmbH	CE	II 2G c IIB TX X
46393 Bocholt - Germany		II 2D c TX X
FLENDER couplings N-BIPEX	<Year of manufacture>	I M2 c X

Version 2:

Flender GmbH	CE	II 2G c IIB TX -50 °C ≤ Ta ≤ +100 °C X
46393 Bocholt - Germany		II 2D c TX -50 °C ≤ Ta ≤ +90 °C X
FLENDER couplings N-BIPEX	<Year of manufacture>	I M2 c -50 °C ≤ Ta ≤ +100 °C X

Undrilled or predrilled couplings

A coupling part with Ex marking, the letter "U" and the Flender order number has been delivered undrilled or predrilled.

Note

Undrilled or predrilled couplings with Ex marking

Flender only supplies an undrilled or predrilled coupling with Ex marking on the condition that the customer assumes the responsibility and liability for correct finishing work in a declaration of exemption.

2.3.2 Conditions of use

Note

Note also the material-dependent permissible ambient temperature of the cam rings (50) in accordance with section N-BIPEX cam ring (50) (Page 63).

A coupling designed in accordance with the ATEX Directive is suitable for the following conditions of use:

- Equipment group I
  - Category M2
- Equipment group II
  - Category 2 and 3
  - Group of substances G, zone 1 and 2
  - Group of substances D, zone 21 and 22
  - Explosion group IIA and IIB

Conditions of use for products with TX marking

The maximum ambient temperature stated in the following tables applies to the temperature in the direct vicinity of the coupling and the temperature of adjacent components.

1. Gases, vapours or mists

Check the ambient temperature for use of the coupling in the relevant temperature class.

Table 2-2 Temperature classes (TX) for explosive atmospheres as a result of gases, vapours or mists

Max. ambient temperature	Temperature class
100 °C	T4
70 °C	T5
55 °C	T6

2. Dust/air mixtures

Check the ambient temperature.

Table 2-3 Maximum surface temperature (TX) for an explosive atmosphere as a result of dust/air mixtures

Max. ambient temperature	Max. surface temperature
90 °C	120 °C

Notes concerning operation of the coupling in potentially explosive atmospheres

- Only use the coupling underground in mines in potentially explosive atmospheres together with drive motors that can be switched off in the event of the formation of an explosive atmosphere.
- Earth machines that are connected via the coupling with a leakage resistance of less than 10^6 Ω.

- If you want to use a coated coupling in potentially explosive atmospheres, please note the requirements concerning the conductivity of the paint and the limitation on the paint layer thickness applied in accordance with EN 13463-1. No build-up of electrostatic charges is to be expected with a paint layer thickness of less than 200 µm.
- Only use TAPER clamping bushes with parallel key in potentially explosive atmospheres. Insert the screws for fastening the TAPER clamping bushes with liquid screw locking agent. If you are not using an original Flender TAPER clamping bush, make sure that the TAPER clamping bush you are using fully meets the technical requirements.

2.4 General warning notices

⚠ DANGER

Danger due to bursting of the coupling

The coupling may burst if it is not used properly. There is a risk of fatal injury from flying fragments. Bursting of the coupling can lead to an explosion in potentially explosive atmospheres.

- Use the coupling for the purpose for which it is intended.

⚠ DANGER

Risk of explosion when using coupling parts without Ex marking

Coupling parts without Ex marking have not been approved for use in potentially explosive atmospheres. These coupling parts can lead to an explosion during operation.

- Only use couplings with Ex marking in potentially explosive atmospheres.

⚠ DANGER

Danger

Risk of injury due to the use of unsuitable and/or damaged components. The use of unsuitable and/or damaged components can lead to an explosion in potentially explosive atmospheres.

- Observe the information regarding conditions of use.

⚠ DANGER

Danger of explosion

Improper operation of the coupling can lead to an explosion in potentially explosive atmospheres.

- Please observe the notes concerning operation of the coupling in potentially explosive atmospheres.

⚠ DANGER

Danger from hot coupling parts

Risk of injury due to hot surfaces. Hot coupling parts can lead to an explosion in potentially explosive atmospheres.

- Wear suitable protective equipment (gloves, safety goggles).
- Ensure that the area is not at risk of explosion.

⚠ WARNING

Risk of chemical burns due to chemical substances

There is a risk of chemical burns when handling aggressive cleaning agents.

- Please observe the manufacturer's information on how to handle cleaning agents and solvents.
- Wear suitable protective equipment (gloves, safety goggles).

⚠ CAUTION

Physical injury

Risk of injury due to falling coupling parts.

- Secure the coupling parts to prevent them from falling.

Description

3

The N-BIPEX couplings described here are torsionally flexible claw couplings that are available in various types and sizes. They are characterised by a very compact design. The couplings can be used in accordance with the ATEX Directive in potentially explosive atmospheres if they have a CE marking.

N-BIPEX couplings are fail-safe.

These instructions describe the assembly and operation of an N-BIPEX coupling arranged horizontally with a shaft-hub connection made by a cylindrical or conical bore with parallel key, or with TAPER clamping bush with parallel key. Please consult Flender if you want to use a different type of installation.

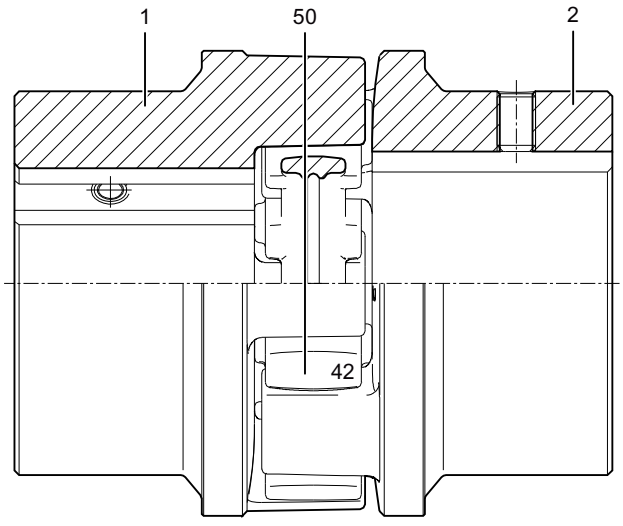
Application

N-BIPEX couplings are suitable for drives with a uniform torque load and low misalignment.

Design

An N-BIPEX coupling consists of two hub parts that are connected to one another by a cam ring made of an elastomer material. The hub parts are joined to the shaft by finished bores with a parallel key or by TAPER clamping bushes with a parallel key. The three different types are differentiated by various combinations of these two options.

The diagrams show the various types with their constituent parts and their part numbers.

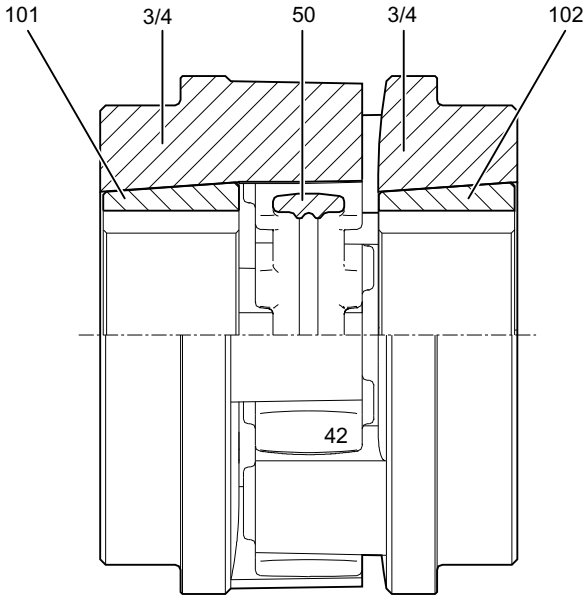


1 Coupling part 1/2

2 Coupling part 1/2

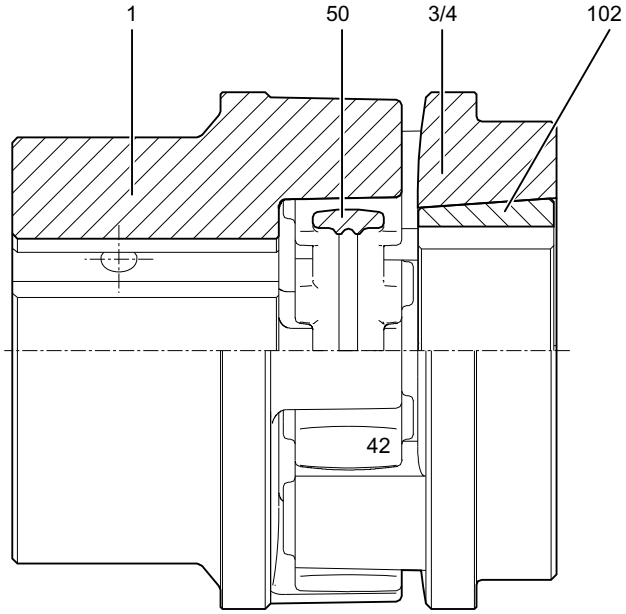
50 Cam ring

Figure 3-1 Type BWN



3/4 Coupling part 3 or 4
50 Cam ring
101 TAPER clamping bush
102 TAPER clamping bush

Figure 3-2 Type BWT



1 Coupling part 1/2
3/4 Coupling part 3 or 4
50 Cam ring
102 TAPER clamping bush

Figure 3-3 Type BNT

Application planning

4

Check the delivery for damage and for completeness. Report any damage and/or missing parts to Flender immediately.

The coupling is delivered in individual parts and preassembled groups. Preassembled groups may not be dismantled.

4.1 Transport of the coupling

⚠ WARNING

Severe personal injury due to improper transport

Severe personal injury due to falling components or due to crushing. Damage to coupling parts possible due to use of unsuitable transport means.

- Only use lifting gear and load suspension devices with sufficient load bearing capacity for transport.
- Please observe the symbols applied on the packaging.

If not specifically contractually agreed otherwise, the packaging complies with the HPE Packaging Directive.

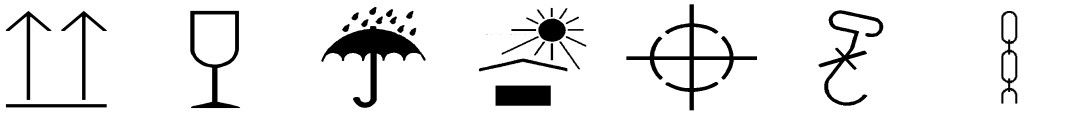


Figure 4-1 Transport symbols

4.2 Storage of the coupling

NOTICE

Property damage due to improper storage

Negative changes to the physical properties of the coupling and/or coupling damage.

- Please observe the information about storing the coupling.

The coupling, unless not specifically ordered otherwise, is supplied with preservation and can be stored for up to 3 months.

Note

Information about storing the coupling

- Ensure that the storage room is dry (relative humidity < 65 %) and free of dust.
- Ensure that there is no condensation.
- Do not store the coupling together with corrosive chemicals, acids, caustic solutions, etc.
- If the coupling contains elastomer components, ensure that there are no devices in the storage room that produce ozone, such as fluorescent lights, mercury vapour lamps or high-voltage electrical equipment.
- Store the coupling on suitable supports or in suitable containers.

Long-term storage

NOTICE
Property damage due to improper long-term storage Negative changes to the physical properties of the coupling and/or coupling damage. • Note the handling instructions for long-term storage.

1. You can find the required type of preservative agent in the following table (types of preservative agents for long-term storage).
2. Remove the elastomer components. These must not come into contact with cleaning agents and long-term preservative agents.
3. Clean the coupling parts.
4. Apply the stipulated preservative agent.
5. Store the coupling parts and the elastomer components separately.

Table 4-1 Types of preservative agents for long-term storage

Preservative agents	Features	Indoor storage	Outdoor storage
Oil spray	Anti-corrosion agent	Up to 12 months	Up to 4 months
Tectyl 846 or similar	Long-term preservative agent on wax basis	Up to 36 months	Up to 12 months
Emulsion cleaner + VCI foil	Active system, reusable	Up to 5 years	Up to 5 years

Assembly 5

Assembly of the coupling comprises the following steps:

- Preparatory work (Page 23)
- Assembling the coupling (Page 28)
- Aligning the coupling (Page 31)

⚠ DANGER

Danger due to bursting of the coupling

If you do not observe the information stipulated here regarding assembly, this can lead to bursting of the coupling during operation. There is a risk of fatal injury from flying fragments. Bursting of the coupling can lead to an explosion in potentially explosive atmospheres.

- Please observe all the stipulations concerning assembly.

Note

Information about the assembly of the coupling

- Only use undamaged components for the assembly of the coupling.
- Follow the assembly sequence.
- Please ensure that there is sufficient space at the assembly location and that the location is tidy and clean in order to be able to assemble and maintain the coupling without any risk.
- If a dimension drawing has been created for the coupling, please observe the information it contains as a matter of priority.

5.1 Preparatory work

Note

Please consult Flender if you want to machine a conical finished bore.

Carry out the following steps if the coupling does not have a finished bore:

- Milling the parallel keyway (Page 24)
- Milling the parallel keyway (Page 25)
- Machining an axial locking mechanism (Page 25)
- Balancing the coupling (Page 27)

Note

The customer is responsible for execution of the finishing work on the coupling. Flender shall have no liability whatsoever for claims under warranty arising from finishing work that has not been carried out adequately.

5.1.1 Milling the parallel keyway

The diameter of the finished bore depends on the shaft used.

Recommended assigned fits

In the following table you can find the recommended assigned fits for bores with a parallel key connection. The assigned fit m6 / H7 is especially suitable for a host of applications.

Table 5-1 Recommended assigned fits for bores with parallel key connection

Description	Push fit		Press fit		Interference fit		
	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

Procedure

1. Remove the cam ring (50).
2. Remove the preservation and clean the coupling part 1/2 (1 or 2) to be machined.
3. Clamp the coupling to the areas marked with ⌜ in the diagram below.
4. Machine the finished bore in accordance with the diagram below.

Note

Diameter of the finished bore

The diameter of the finished bore may not exceed the specified maximum diameter.

- Please observe the maximum diameters specified in section Speeds, geometry data and weights (Page 53).

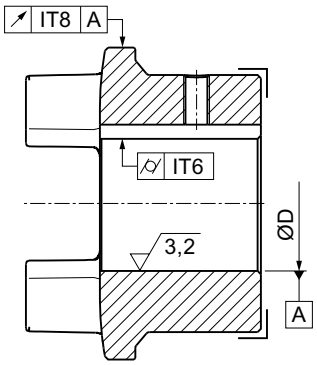


Figure 5-1 Tolerances for the finished bore in coupling part 1/2 (1 or 2)

5.1.2 Milling the parallel keyway

Arrangement of the parallel keyway

Arrange the parallel keyway in the centre between the cams.

Applicable standards

- If the coupling is intended for use under normal operating conditions, mill the parallel keyway according to DIN 6885/1 ISO JS9.
- If the coupling is intended for reversing operation, mill the parallel keyway according to DIN 6885/1 ISO P9.
- If you want to mill a parallel keyway that does not correspond to DIN 6885/1, please consult Flender.

5.1.3 Machining an axial locking mechanism

The coupling part 1/2 (1 or 2) is secured by a set screw or an end plate to prevent axial movements.

Please consult Flender if you want to use an end plate.

Note the following when using a set screw:

- Diameter and axial position of the tapped hole in the hub
- Position of the tapped hole with respect to the parallel keyway
- Selection of the set screw

Diameter and axial position of the tapped hole in the hub

The following diagram shows the axial position of the tapped hole.

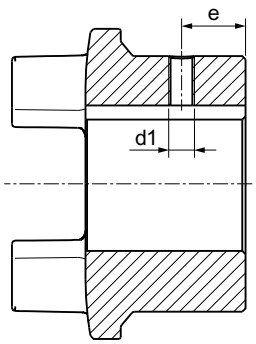


Figure 5-2 Diameter and axial position of the tapped hole in the hub

The following table contains the values for the diameter and axial position of the tapped hole depending on the size of the coupling.

Table 5-2 Tapped hole, tightening torque and width A/F

Coupling part 1/2 (1 or 2) of types BWN and BNT				
Coupling size	Tapped hole d1	Clearance e mm	Tightening torque T_A Nm	Width across flats Hexagon socket wrench mm
19	M5	10	3	2.5
24	M5	10	3	2.5
28	M8	15	8	4
38	M8	15	8	4
42	M8	20	8	4
48	M8	20	8	4
55	M10	20	15	5
65	M10	20	15	5
75	M10	25	15	5
90	M12	30	25	6

Apply the recommended tightening torques in accordance with the stipulations in section Tightening procedure (Page 63).

Position of the tapped hole with respect to the parallel keyway

The tapped hole for the set screw is positioned on the parallel keyway.

Selection of the set screw

⚠ CAUTION
Physical injury
Danger of injury from protruding set screw. • Please observe the information about selecting the set screw.

As set screws use threaded studs in accordance with ISO 4029 with a toothed cup point. The size of the set screw is determined by the bore made. The set screw should fill out the tapped hole as much as possible and must not protrude beyond the hub.

5.1.4 Balancing the coupling

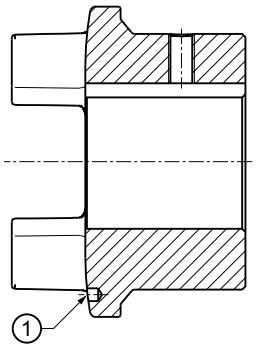
Notes on balancing the coupling

NOTICE
Damage to coupling part 1/2 (1 or 2)
If you completely drill through the base on coupling part 1/2 (1 or 2), then coupling part 1/2 (1 or 2) is no longer allowed to be used for operation. • Please observe the stipulations about machining the balancing hole.

Please note the following when balancing the coupling:

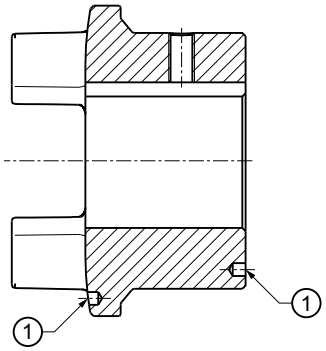
- Select the balancing quality according to the application (but at least G16 in accordance with DIN ISO 21940).
- Observe the balancing specification according to DIN ISO 21940-32.

- Machine the balancing bore on a large radius with adequate clearance to the cams and the outer circumference.
- Carefully deburr the balancing bore.



① Balancing bore

Figure 5-3 Position of the balancing bore for single-plane balancing



① Balancing bore

Figure 5-4 Position of the balancing bore for two-plane balancing

5.2 Assembling the coupling

NOTICE
Property damage
Damage to the elastomer components from cleaning agents. • Ensure that the elastomer components do not come into contact with cleaning agents.

NOTICE
Property damage
Damage to the shaft end, the coupling parts, the TAPER clamping bush and/or the parallel key. • Note the handling instructions regarding assembly of the coupling parts.

The assembly procedure depends on which coupling part you wish to assemble.

- The coupling parts 1/2 (1 and 2) with coupling types BWN and BNT are mounted on the shaft by means of a parallel key.
- The coupling parts 3 (3) and 4 (4) with coupling types BWT and BNT are mounted on the shaft with TAPER clamping bushes with parallel key.

5.2.1 Installing coupling part 1/2 (1 or 2)

Procedure

1. Unscrew the set screw until it is no longer possible for there to be a collision with the parallel key or the shaft.
2. Clean the bores and shaft ends.
3. Coat the bores of the coupling parts 1/2 (1 and/or 2) and the shafts with MoS_2 assembly paste (e.g. Microgleit LP 405).
4. Mount the coupling part 1/2 (1 and/or 2) on the shaft.

   Note

   Coupling parts with conical bore

   Mount the coupling part 1/2 (1 or 2) with conical bore and parallel keyway on the shaft in cold condition. Secure the coupling part with a suitable end plate without pulling the coupling part further onto the cone (fitting dimension = 0).

   Note

   Coupling parts with cylindrical bore

   To make assembly easier, you can heat coupling part 1/2 (1 or 2) with cylindrical bore up to a maximum of 150 °C if required. Note when doing this the temperature range of the cam ring (50) (see section N-BIPEX cam ring (50) (Page 63)). Remove the cam ring (50) where appropriate. Protect adjacent components against damage and heating to temperatures above 80 °C.

5. Secure the coupling parts 1/2 (1 and 2) with a set screw or an end plate. When securing with a set screw the shaft must not protrude or be set back from the inner side of the hub.
6. Tighten up the set screw or the screw to attach the end plate to the specified tightening torque T_A (for the set screw please refer to section Machining an axial locking mechanism (Page 25)).
7. If you have removed the cam ring (50), re-fit the cam ring (50).

5.2.2 Assembling coupling part 3 (3) or 4 (4)

⚠ DANGER

Danger of explosion

Improper operation of the coupling can lead to an explosion in potentially explosive atmospheres.

- Make sure that a parallel key has been inserted in the shaft.
- Apply a small quantity of liquid screw locking agent (e.g. Loctite 243, medium strength) to the threads of the screws for the TAPER clamping bush (101), (102).

Procedure

1. Clean the bores, the shaft ends and the TAPER clamping bush (101), (102). The large front face of the TAPER clamping bush (101), (102) has two axis-parallel half blind holes up to size 3030 and three in the case of size 3535 and larger. The coupling part 3 (3) or 4 (4) has half tapped holes 4 (4) in the same angular position.
2. Insert the TAPER clamping bush (101) or (102) in the coupling part 3 (3) or 4 (4).
3. Line up the half blind holes of the TAPER clamping bush (101) or (102) with the half tapped holes of the coupling part 3 (3) or 4 (4). Insert the screws for the TAPER clamping bush (101, (102) into the blind hole/tapped hole combination and tighten them slightly.
   Install the TAPER clamping bush (101), (102) from the shaft end face end in the case of coupling part 3 (3), and from the shaft shoulder end in the case of coupling part 4 (4).
4. Position the coupling part 3 (3) or 4 (4) together with the TAPER clamping bush (101) or (102) on the shaft. When doing this the shaft must not protrude or be set back from the inner side of the hub.
5. Gradually tighten the screws for the TAPER clamping bush (101), (102) in sequence up to the specified tightening torque T_A (see section Tightening torques and widths A/F (Page 62)).
   As the screws are tightened, the hub is drawn against the TAPER clamping bush (101), (102) and the bush thus pressed onto the shaft.
6. Fill any unused bores of the TAPER clamping bush (101), (102) with a suitable grease to prevent the ingress of dirt.
7. After a brief period of operation under load, check the tightening torques T_A again (see section Tightening torques and widths A/F (Page 62)). When liquid screw locking agent is used (for use in potentially explosive atmospheres) the tightening torques do not have to be checked.

5.3 Aligning the coupling

5.3.1 Purpose of alignment

The shafts that are joined by the coupling are never on an ideal precise axis but have a certain amount of misalignment.

Misalignment in the coupling leads to restoring forces that can stress adjacent machine parts (e.g. the bearings) to an unacceptable extent.

The misalignment values in operation result from the following:

- Misalignment due to assembly
  Incorrect position due to a lack of precision when aligning
- Misalignment due to operation
  Example: Load-related deformation, thermal expansion

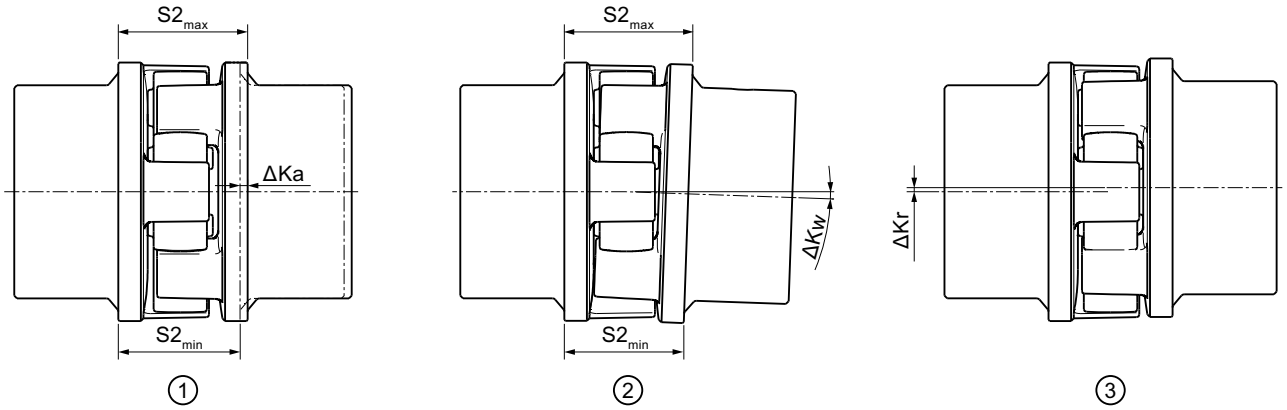
You can minimise misalignment by aligning after assembly. A lower misalignment in the coupling has the following advantages:

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

You can find the maximum permitted shaft misalignment values during operation in section Shaft misalignment values during operation (Page 60).

5.3.2 Possible misalignment

The following types of misalignment can occur:



① Axial misalignment (ΔKa)
② Angular misalignment (ΔKw)
③ Radial misalignment (ΔKr)

Figure 5-5 Possible misalignment

5.3.2.1 Axial misalignment

Set the axial misalignment ΔKa to a value within the permissible tolerance range of dimension S2.

You can find the values for dimension S2 in section Speeds, geometry data and weights (Page 53).

5.3.2.2 Angular misalignment

Determine the value ΔS2 ($\Delta S2 = S2_{max} - S2_{min}$). The determined value ΔS2 may not exceed the value $\Delta S2_{perm.}$.

You can find the values for $\Delta S2_{perm}$ in section Shaft misalignment values during operation (Page 60).

If required, you can calculate the angular misalignment ΔKw as follows:

ΔKw [rad] = ΔS2 / DA

ΔKw [deg] = (ΔS2 / DA) · (180 / π)

If required, you can calculate the permissible angular misalignment ΔKw_{perm} as follows:

ΔKw_{perm} [rad] = $\Delta S2_{perm}$ / DA

ΔKw_{perm} [deg] = ($\Delta S2_{perm}$ / DA) • (180 / π)

DA in mm see section Speeds, geometry data and weights (Page 53)

$\Delta S2_{perm}$ see section Shaft misalignment values during operation (Page 60)

5.3.2.3 Radial misalignment

Determine the value ΔKr. The determined value ΔKr may not exceed the value ΔKr_{perm}.

You can find the permissible radial misalignment ΔKr_{perm} in section Shaft misalignment values during operation (Page 60).

Commissioning 6

⚠ DANGER

Danger due to igniting deposits

During use in potentially explosive atmospheres deposits from heavy metal oxides (rust) can ignite due to friction, impact or friction sparks and lead to an explosion.

- Ensure through the use of an enclosure or other suitable measures that the deposition of heavy metal oxides (rust) on the coupling is not possible.

In order to ensure safe commissioning, carry out various tests prior to commissioning.

Testing before commissioning

⚠ DANGER

Danger

Overload conditions can occur during the commissioning of the coupling. The coupling can burst and metal parts can be flung out. There is a risk of fatal injury from flying fragments. Bursting of the coupling can lead to an explosion in potentially explosive atmospheres.

- Carry out the tests prior to commissioning.
- Do not touch the rotating coupling.

1. Check the tightening torques of the screws of the coupling in accordance with section Tightening torques and widths A/F (Page 62).
2. Check the tightening torques of the foundation bolts of the coupled machines.
3. Check whether the enclosures (coupling guard, touch protection) have been installed and that the function of the coupling has not been adversely affected by the enclosure. This also applies to test runs and rotational direction checks.

Operation 7

7.1 Normal operation of the coupling

The coupling runs quietly and shock-free during normal operation.

7.2 Faults - causes and rectification

A form of behaviour which is different to normal operation is classed as a fault and has to be rectified immediately.

Look out specifically for the following faults during coupling operation:

- Unusual coupling noise
- Sudden occurrence of shocks

7.2.1 Procedure in the event of malfunctions

⚠ DANGER

Danger due to bursting of the coupling

There is a risk of fatal injury from flying fragments. Bursting of the coupling can lead to an explosion in potentially explosive atmospheres.

- Switch off the unit at once if any malfunctions occur.
- Note during the maintenance work the possible causes of faults and the notes on rectifying them.

Proceed as described below if there is a malfunction of the coupling during operation:

1. De-energise the drive immediately.
2. Initiate the required action for repair, taking into consideration the applicable safety regulations.

If you cannot determine the cause or if you cannot carry out repair work with your own means, request one of our customer service technicians.

7.2.2 Identifying the fault cause

Faults occur frequently due to application errors or they occur due to operational circumstances such as wear of wearing parts or changes to the system.

The faults and fault causes listed below only serve as an indication for troubleshooting. In the case of a complex system be sure to include all the system components in the search for the fault.

⚠ WARNING

Physical injury

Injury from rotating parts.

- Only carry out work on the coupling when it is not moving.
- Secure the drive unit against being operated accidentally.
- Attach a notice to the switch stating clearly that work is being carried out on the coupling.
- Before starting any work, make sure that the unit is free from loads.

Intended use

The coupling is only approved for the applications specified in these instructions. Please observe all the stipulations in section Intended use (Page 13).

7.2.2.1 Possible faults

Table 7-1 Table of faults

Fault	Cause	Rectification
Sudden changes in the noise level and/ or sudden occurrences of shocks	Wear of wearing parts	Follow the instructions given in section Replacing wearing parts (Page 38).
	Changed alignment	Follow the instructions given in section Correcting the changed alignment (Page 39).
	Coupling not suitable for the operating conditions. Check the possible causes given in section Unsuitable coupling (Page 37).	Use a coupling that is suitable for the operating conditions.
	Incorrect assembly of the coupling. Check the possible causes given in sections Assembly-related causes (Page 37) and Specific installation-related and maintenance-related causes (Page 38).	Reassemble the coupling in accordance with these instructions. Please observe all the stipulations and requirements given in chapter Assembly (Page 23).
	Incorrect maintenance of the coupling. Check the possible causes given in sections Maintenance-related causes (Page 38) and Specific installation-related and maintenance-related causes (Page 38).	Please observe all the stipulations and requirements given in chapter Servicing (Page 41).

Fault	Cause	Rectification
Presence of vibration	Coupling not suitable for the operating conditions. Check the possible causes given in section Unsuitable coupling (Page 37).	Use a coupling that is suitable for the operating conditions.
	Incorrect assembly of the coupling. Check the possible causes given in sections Assembly-related causes (Page 37) and Specific installation-related and maintenance-related causes (Page 38).	Reassemble the coupling in accordance with these instructions. Please observe all the stipulations and requirements given in chapter Assembly (Page 23).
	Incorrect maintenance of the coupling. Check the possible causes given in sections Maintenance-related causes (Page 38) and Specific installation-related and maintenance-related causes (Page 38).	Please observe all the stipulations and requirements given in chapter Servicing (Page 41).

7.2.2.2 Possible causes

Unsuitable coupling

- Important information on the description of the drive unit and the environment were not available when the coupling was chosen.
- System torque too high and/or torque dynamics not permissible.
- System speed too high.
- Application factor not selected correctly.
- Chemically aggressive environment not taken into consideration.
- Coupling not suitable for the ambient temperature.
- Diameter and/or assigned fit of the finished bore not permissible.
- Width across corners of the parallel keyways greater than the width across corners of the parallel keyways in accordance with DIN 6885/1 for the maximum permissible bore.
- Shaft-hub connection incorrectly sized.
- Maximum permissible load conditions not taken into consideration.
- Maximum permissible overload conditions not taken into consideration.
- Dynamic load conditions not taken into consideration.
- Coupling and the machine and/or drive train form a critical torsional, axial or bending vibration system.

Assembly-related causes

- Damaged parts installed.
- Shaft diameter outside the stipulated tolerance range.

- Coupling parts interchanged and hence not assigned to the specified shaft.
- Stipulated locking elements to prevent axial movements not installed.
- Stipulated tightening torques not adhered to.
- Bolts inserted dry or greased.
- Flange surfaces of screwed connections not cleaned.
- Alignment and/or shaft misalignment values not set in accordance with the instructions.
- Coupled machines were not correctly connected to the foundation so that a shifting of the machines leads to an impermissible displacement of the coupling parts.
- Coupled machines not earthed adequately.
- Coupling guard used is not suitable.

Maintenance-related causes

- Stipulated maintenance intervals not adhered to.
- Spare parts that were used were not original spare parts from Flender.
- Flender spare parts that were used were old or damaged.
- Leak in the area of the coupling not detected so that chemically aggressive substances damage the coupling.
- Indications of faults, such as noise or vibration, were not heeded.
- Stipulated tightening torques not adhered to.
- Alignment and/or shaft misalignment values not set in accordance with the instructions.

Specific installation-related and maintenance-related causes

- Cam ring (50) not fitted.
- Fitted cam ring (50) excessively heated up when applying heat to the coupling parts.

7.2.3 Correcting faults

7.2.3.1 Replacing wearing parts

Cam rings (50) are subject to wear and this wear can result in torsional backlash.

Procedure

1. Check the wear on the cam ring (50) (see section Maximum permissible torsional backlash (Page 42)).
2. Replace the cam ring (50) where appropriate (see section Replacing wearing parts (Page 42)).

7.2.3.2 Correcting the changed alignment

A changed alignment of the coupling during operation often occurs when the coupled machines shift towards one another. A cause of this can be loose foundation bolts.

Procedure

1. Correct the cause for the change in alignment.
2. Check the wearing parts for wear and replace them as required.
3. Check the locking elements that prevent axial movements and correct these as required.
4. Realign the coupling.

Servicing 8

8.1 Maintenance intervals

⚠ DANGER

Danger due to bursting of the coupling

The coupling can burst if the maintenance intervals are not adhered to. There is a risk of fatal injury from flying fragments. Bursting of the coupling can lead to an explosion in potentially explosive atmospheres.

- Please observe all the stipulations concerning maintenance of the coupling in this section.

⚠ DANGER

Danger due to bursting of the coupling

The coupling can burst if the maximum permitted torsional backlash is exceeded. There is a risk of fatal injury from flying fragments. Bursting of the coupling can lead to an explosion in potentially explosive atmospheres.

- Note also the actual wear of the elastomer components.

⚠ WARNING

Physical injury

Injury from rotating parts.

- Only carry out work on the coupling when it is not moving.
- Secure the drive unit against being operated accidentally.
- Attach a notice to the switch stating clearly that work is being carried out on the coupling.
- Before starting any work, make sure that the unit is free from loads.

Check the torsional backlash between the coupling parts at the specified maintenance intervals. The maximum permissible torsional backlash for the various coupling sizes can be found in section Maximum permissible torsional backlash (Page 42).

Table 8-1 Maintenance intervals

Type	Initial maintenance	Follow-up maintenance
BWN	3 months after commissioning	Every 12 months
BWT		
BNT		

Note

Shorter maintenance intervals

If necessary, set shorter maintenance intervals depending on actual wear.

8.2 Maximum permissible torsional backlash

In order to calculate the torsional backlash, rotate one coupling part without applying torque up to the stop. Mark both of the coupling halves in the way shown in the diagram below. Turn the coupling part in the opposite direction up to the stop. The markings on both halves will then move apart. The distance between the markings corresponds to the torsional backlash.

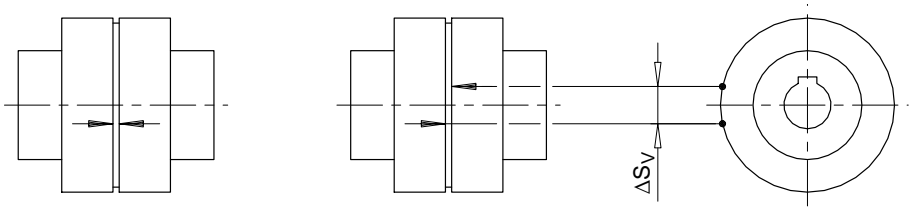


Figure 8-1 Markings for calculating the torsional backlash

Table 8-2 Maximum permissible torsional backlash

Size	19	24	28	38	42	48	55	65	75	90
Maximum permissible torsional backlash ΔS_V [mm]	2.5	3.5	4.5	5.5	6.5	7	8	9	11	13.5

8.3 Replacing wearing parts

⚠ DANGER

Danger due to bursting of the coupling

If you do not observe the information stipulated here regarding replacement of wearing parts, this can lead to bursting of the coupling during operation. There is a risk of fatal injury from flying fragments. Bursting of the coupling can lead to an explosion in potentially explosive atmospheres.

- Please observe all the stipulations concerning the replacement of wearing parts.

Replace the cam ring (50) if the maximum permissible torsional backlash has been reached.

Procedure

1. Move the coupled machines apart.
2. Remove the cam ring (50).
3. Insert the new cam ring (50).
   Please observe the information in section Use and storage of the cam rings (Page 63).

When reinstalling the coupling parts please observe the information in chapters Assembly (Page 23) and Commissioning (Page 33).

8.4 Removing coupling part 1/2 (1 or 2)

⚠ WARNING

Danger from burners and hot coupling parts

Risk of injury due to burners and hot surfaces. Burners or hot coupling parts can lead to an explosion in potentially explosive atmospheres.

- Wear suitable protective equipment (gloves, safety goggles).
- Ensure that the area is not at risk of explosion.

Procedure

1. Move the coupled machines apart.
2. Secure the coupling parts to prevent them from falling.
3. Remove the axial locking elements (set screw, end plate).
4. Use a suitable pulling fixture.
5. Heat up the coupling part 1/2 (1 or 2) using a burner above the parallel keyway along its length to maximum 80 °C.
   Note when doing this the temperature range of the cam ring (50) (refer to section N-BIPEX cam ring (50) (Page 63)). Remove the cam ring (50) where appropriate.
6. Pull off the coupling part 1/2 (1 or 2). Use suitable lifting gear when doing this.
7. Check the hub bore and the shaft for damage and protect them against corrosion.
8. Replace any damaged parts.

When reinstalling the coupling parts please observe the information in chapters Assembly (Page 23) and Commissioning (Page 33).

8.5 Removing coupling part 3 (3) or 4 (4)

Procedure

1. Move the coupled machines apart.
2. Secure the coupling parts to prevent them from falling.
3. Remove the bolts from the TAPER clamping bush (101) or (102).
4. Insert one of the bolts as a clamping screw into the thread of the TAPER clamping bush (101) or (102) and tighten the bolt.
   Use two jacking screws for no. 3535 TAPER clamping bushes or larger.
5. Pull off the coupling part 3 (3) or 4 (4). Use suitable lifting gear when doing this.
6. Check coupling part 3 (3) or 4 (4), the TAPER clamping bush (101) or (102) and the shaft for any damage and protect them against corrosion.
7. Replace any damaged parts.

When reinstalling the coupling parts please observe the information in chapters Assembly (Page 23) and Commissioning (Page 33).

Service and support

9

9.1 Contact

Contact

When ordering spare parts, requesting a customer service technician or in the case of technical queries, please contact our factory or one of our customer service addresses:

Flender GmbH

Schlavenhorst 100

46395 Bocholt

Germany

Tel.: +49 (0)2871/92-0

Fax.: +49 (0)2871/92-2596

Disposal

10

Disposal of the coupling

Dispose of the coupling parts according to applicable national regulations or recycle them.

Spare parts 11

11.1 Ordering spare parts

By stocking the most important spare parts at the installation site you can ensure that the coupling is ready for use at any time.

Note

Original spare parts

Only use original spare parts from Flender. Flender only accepts liability for original spare parts from Flender.

Other spare parts are not tested and approved by Flender. Non-approved spare parts may possibly change the design characteristics of the coupling and thus impact active and/or passive safety.

Flender will accept no liability or warranty whatsoever for damage occurring as a result of the use of non-approved spare parts. The same applies to any accessories that were not supplied by Flender.

You can find the available spare parts for the coupling described here at Spare parts drawing and spare parts list (Page 50).

You will find our contact data for ordering spare parts in Service and support (Page 45).

Information required when ordering spare parts

- Flender order number with item
- Flender drawing number
- Coupling type and size
- Part number (refer to Spare parts drawing and spare parts list (Page 50))
- Dimensions of the pare part, for example:
  - Bore
  - Bore tolerance
  - Parallel keyway and balancing
- Special dimensions, for example, flange connection dimensions, intermediate sleeve length or brake drum dimensions

- Any special properties of the spare part, such as, for example:
  - Temperature resistance
  - Electrical insulation
  - Operating fluid
  - Use in potentially explosive atmospheres
- Quantity

11.2 Spare parts drawing and spare parts list

11.2.1 Type BWN

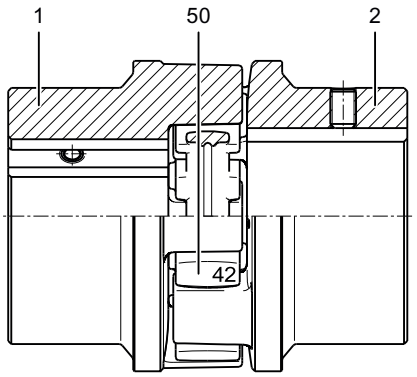
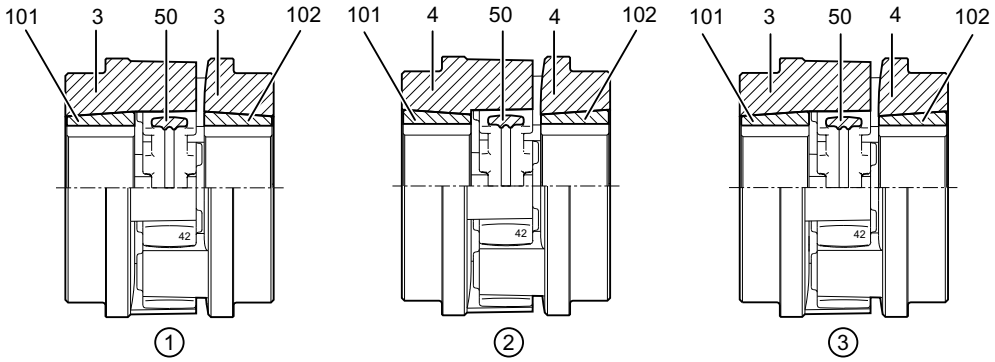


Figure 11-1 Spare parts drawing for type BWN

Table 11-1 Spare parts list for type BWN

Part number	Designation
1	Coupling part 1/2
2	Coupling part 1/2
50	Cam ring

11.2.2 Type BWT



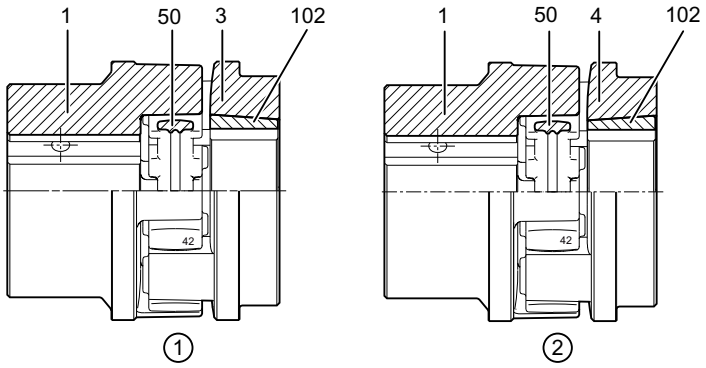
① Design A
② Design B
③ Design AB

Figure 11-2 Spare parts drawing for type BWT

Table 11-2 Spare parts list for type BWT

Design A		Design B		Design AB	
Part number	**Designation**	**Part number**	**Designation**	**Part number**	**Designation**
3	Coupling part 3	4	Coupling part 4	3	Coupling part 3
3	Coupling part 3	4	Coupling part 4	4	Coupling part 4
50	Cam ring	50	Cam ring	50	Cam ring
101	TAPER clamping bush	101	TAPER clamping bush	101	TAPER clamping bush
102	TAPER clamping bush	102	TAPER clamping bush	102	TAPER clamping bush

11.2.3 Type BNT



① Design A
② Design B

Figure 11-3 Spare parts drawing for type BNT

Table 11-3 Spare parts list for type BNT

Design A		Design B	
Part number	**Designation**	**Part number**	**Designation**
1	Coupling part 1/2	1	Coupling part 1/2
3	Coupling part 3	4	Coupling part 4
50	Cam ring	50	Cam ring
102	TAPER clamping bush	102	TAPER clamping bush

Technical data

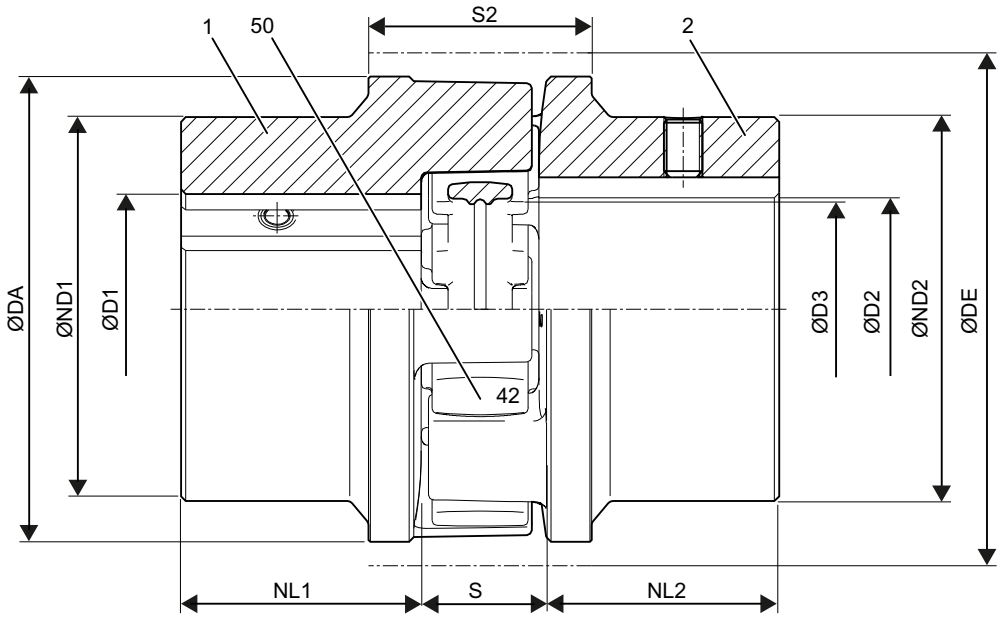
A

A.1 Speeds, geometry data and weights

In this section you can find dimension drawings and technical data for N-BIPEX couplings of the following types:

- Type BWN, dimension drawing (Page 54) and Technical data (Page 55)
- Type BWT, dimension drawing (Page 56) and Technical data (Page 57)
- Type BNT, dimension drawing (Page 58) and Technical data (Page 59)

A.1.1 Dimension drawing of type BWN



1 Coupling part 1/2
2 Coupling part 1/2

Figure A-1 Type BWN

A.1.2 Technical data of type BWN

Table A-1 Speeds, geometry data and weights of type BWN

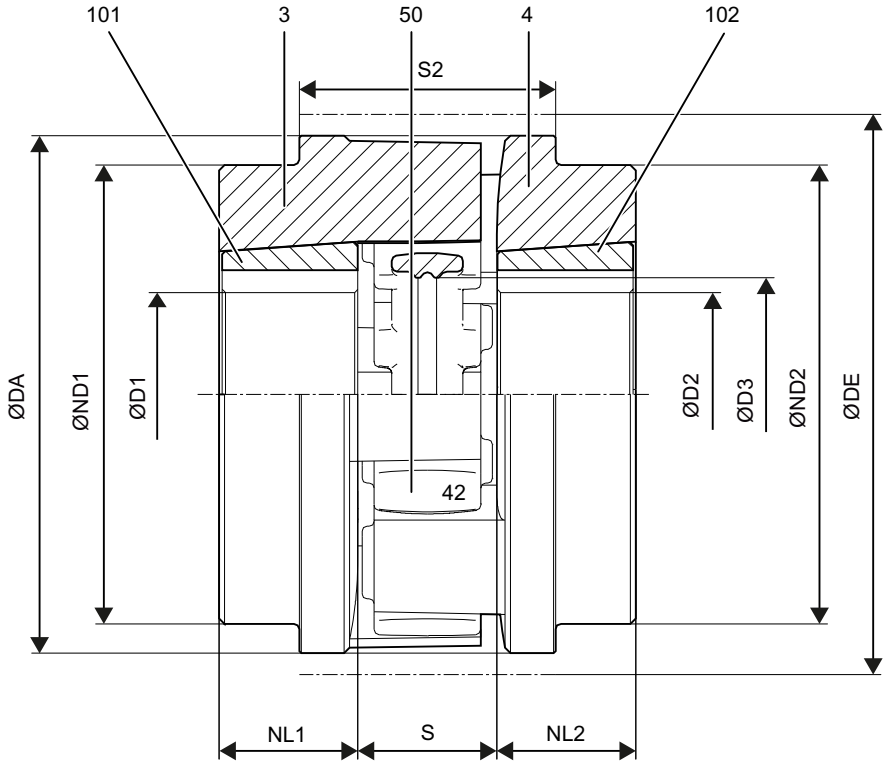
Size	Speed										Weight [3]
	n_{max}	D1 / D2 max.[1]	DA	ND1 / ND2	NL1 / NL2	D3	DE [2]	S	S2		m
										perm dev.	
	rpm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
19	19 500	25	42	38	25	17	46	16	31	± 1	0.3
24	14 500	35	57	50	30	25	62	18	37	± 1.5	0.6
28	12 500	40	67	58	35	28	73	20	41	± 1	1
38	10 000	48	82	68	45	36	89	24	45	± 1.5	1.7
42	8 500	55	97	80	50	43	105	26	48	± 1.5	2.6
48	7 500	62	107	90	56	48	116	28	50	± 2	3.6
55	6 500	75	123	105	65	57	133	30	60	± 2	5.2
65	6 000	82	138	115	75	64	150	35	65	± 2.5	7.5
75	5 000	96	163	135	85	76	177	40	75	± 2.5	11.5
90	4 000	120	205	170	100	95	220	45	85	± 3	21.4

[1] Maximum bore for parallel keyway in accordance with DIN 6885/1

[2] Required installation space

[3] Weight applies to one coupling with maximum bore

A.1.3 Dimension drawing of type BWT



3 Coupling part 3
4 Coupling part 4

Figure A-2 Type BWT

A.1.4 Technical data of type BWT

Table A-2 Speeds, geometry data and weights of type BWT

Size	Speed											TAPER-clamping bush	Weight [5]
	n_{max}	D1 / D2		DA	ND1 / ND2	NL1 / NL2	D3	DE [4]	S	S2			m
		min.	max. [1]							perm dev.			
	rpm	mm	mm	mm	mm	mm	mm	mm	mm	mm		No.	kg
24	14 500	10	25 [2]	57	54	23	25	62	18	37	± 1.5	1008	0.6
28	12 500	10	28 [2]	67	58	23	28	73	20	41	± 1.0	1108	0.8
38	10 000	10	28 [2]	82	58	23	36	89	24	45	± 1.5	1108	1.2
42	8 500	14	42 [2]	97	86	26	43	105	26	48	± 1.5	1610	1.8
48	7 500	14	42 [2]	107	80	39	48	116	28	50	± 2.0	1615	2.6
55	6 500	14	50	123	100	33	57	133	30	60	± 2.0	2012	3.5
65	6 000	14	50	138	100	33	64	150	35	65	± 2.5	2012	4.5
		55	60		118	46						2517 [3]	5.5
75	5 000	16	60	163	118	46	76	177	40	75	± 2.5	2517	7.7
		65	75		142	52						3020 [3]	8.0
90	4 000	25	75	205	142	52	95	220	45	85	± 3.0	3020	12.9
		80	90		170	90						3535 [3]	19.8

[1] Maximum bore for parallel keyway in accordance with DIN 6885/1.

[2] Some bores have a flat groove.

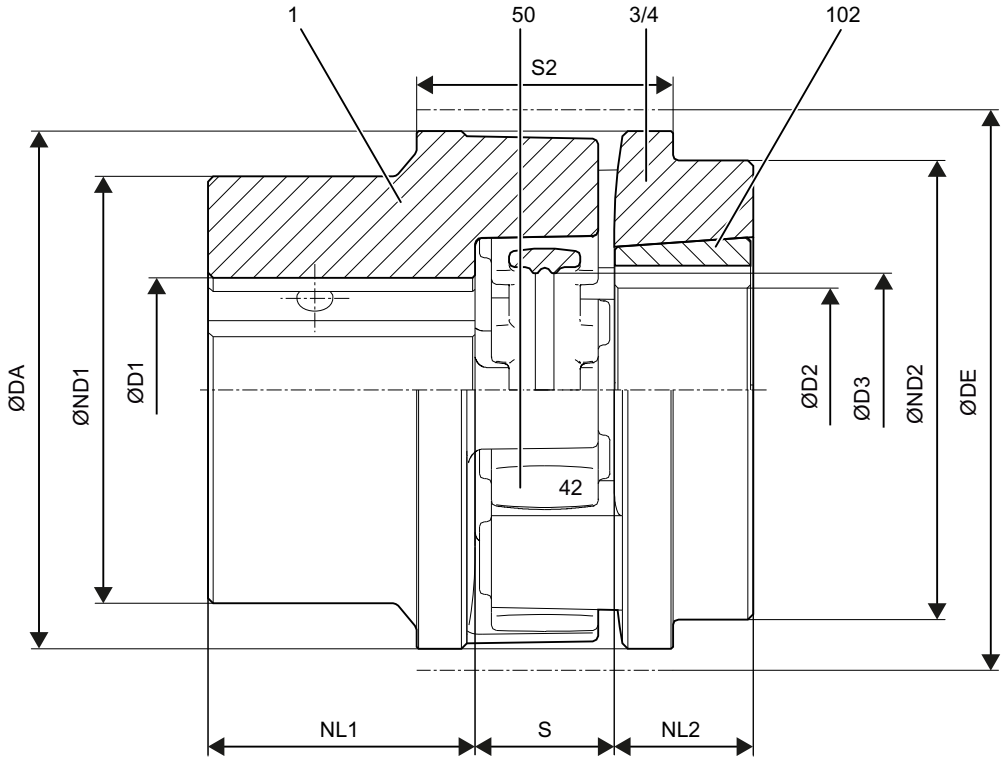
[3] TAPER clamping bush only possible in coupling part 4 (4).

[4] Required installation space.

[5] Weight applies to one coupling without TAPER clamping bush.

For flat groove see Flat groove in TAPER clamping bushes (101), (102) (Page 60).

A.1.5 Dimension drawing of type BNT



1 Coupling part 1/2
3/4 Coupling part 3 or 4

Figure A-3 Type BNT

A.1.6 Technical data of type BNT

Table A-3 Speeds, geometry data and weights of type BNT

Size	Speed n_{max}	D1	D2		DA	ND1	ND2	NL1	NL2	D3	DE [4]	S	S2		TAPER-clamping bush	Weight [4]
	rpm	max [2]	min.	max. [1]									perm dev.			m
		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	No.	kg
24	14 500	35	10	25 [2]	57	50	54	30	23	25	62	18	37	± 1.5	1008	0.6
28	12 500	40	10	28 [2]	67	58	58	35	23	28	73	20	41	± 1.0	1108	0.8
38	10 000	48	10	28 [2]	82	68	58	45	23	36	89	24	45	± 1.5	1108	1.4
42	8 500	55	14	42 [2]	97	80	86	50	26	43	105	26	48	± 1.5	1610	2.3
48	7 500	62	14	42 [2]	107	90	80	56	39	48	116	28	50	± 2.0	1615	3.2
55	6 500	75	14	50	123	105	100	65	33	57	133	30	60	± 2.0	2012	4.4
65	6 000	82	14	50	138	115	100	75	33	64	150	35	65	± 2.5	2012	6.0
			55	60			118		46						2517 [3]	6.5
75	5 000	96	16	60	163	135	118	85	46	76	177	40	75	± 2.5	2517	9.4
			65	75			142		52						3020 [3]	9.6
90	4 000	120	25	75	205	170	142	100	52	95	220	45	85	± 3.0	3020	17.2
			80	90			170		90						3535 [3]	20.7

1) Maximum bore for parallel keyway in accordance with DIN 6885/1.

2) Some bores have a flat groove.

3) TAPER- clamping bush only possible in coupling part 4 (4).

4) Required installation space.

5) Weight applies to one coupling with maximum bore in coupling part 1/2 (1), without TAPER clamping bush.

For flat groove see Flat groove in TAPER clamping bushes (101), (102) (Page 60).

A.1.7 Flat groove in TAPER clamping bushes (101), (102)

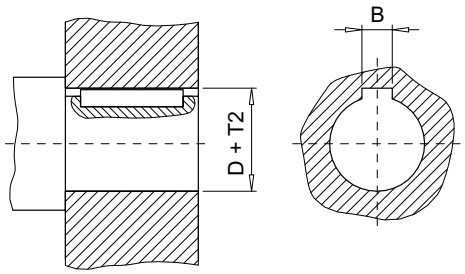


Figure A-4 Flat groove in TAPER clamping bushes

Table A-4 Flat groove in TAPER clamping bushes

TAPER- Clamping bush No.	Bore D mm	Width B JS9 mm	Hub groove depth D + T2 mm
1008	24	8	D + 2
1008	25	8	D + 1.3
1108	28	8	D + 2
1610 1615	42	12	D + 2.2

A.2 Shaft misalignment values during operation

The maximum permissible radial and angular misalignment depends on the operating speed.

Use the following formulae to calculate the maximum permissible misalignment in your system:

$\Delta K_{perm} = \Delta K_{1500} \cdot FKV$

You can find the correction factor FKV and the values for ΔK in the following tables.

Table A-5 Correction factor

	Speed in rpm			
	500	1 000	1 500	3 000
Correction factor FKV	1.2	1.1	1.0	0.7

Note

Note the maximum speed for the relevant coupling size and coupling type.

Table A-6 Maximum permissible shaft misalignment values during operation for cam rings (50) with hardness 92 Shore A

Size	ΔK_{1500} at n = 1500 rpm		
	ΔKr_{perm} 1)	ΔKa_{perm}	$\Delta S2_{perm}$ 1)
	mm	mm	mm
19	0.17	0.3	0.37
24	0.23	0.4	0.50
28	0.25	0.5	0.58
38	0.29	0.6	0.72
42	0.34	0.7	0.85
48	0.38	0.8	0.93
55	0.40	0.9	1.10
65	0.45	1.0	1.20
75	0.52	1.2	1.42
90	0.60	1.4	1.77

1) At a speed of 1500 rpm $\Delta S2_{perm}$ corresponds to a permissible angular deviation of ΔKw_{perm} = 0.5°

Table A-7 Maximum permissible shaft misalignment values during operation for cam rings (50) with hardness 95 Shore A

Size	ΔK_{1500} at n = 1500 rpm		
	ΔKr_{perm} 1)	ΔKa_{perm}	$\Delta S2_{perm}$ 1)
	mm	mm	mm
19	0.15	0.27	0.29
24	0.21	0.36	0.40
28	0.23	0.45	0.47
38	0.26	0.54	0.57
42	0.31	0.63	0.68
48	0.34	0.72	0.75
55	0.36	0.81	0.86
65	0.41	0.9	0.96
75	0.47	1.08	1.14
90	0.54	1.26	1.42

1) At a speed of 1500 rpm $\Delta S2_{perm}$ corresponds to a permissible angular deviation of ΔKw_{perm} = 0.4°

Table A-8 Maximum permissible shaft misalignment values during operation for cam rings (50) with hardness 64 Shore A

Size	ΔK_{1500} at n = 1500 rpm		
	ΔKr_{perm} 1)	ΔKa_{perm}	$\Delta S2_{perm}$ 1)
	mm	mm	mm
19	0.14	0.24	0.22
24	0.18	0.32	0.30
28	0.20	0.40	0.35
38	0.23	0.48	0.43
42	0.27	0.56	0.51
48	0.30	0.64	0.56
55	0.32	0.72	0.64
65	0.36	0.80	0.72
75	0.42	0.96	0.85
90	0.48	1.12	1.06

1) At a speed of 1500 rpm $\Delta S2_{perm}$ corresponds to a permissible angular deviation of ΔKw_{perm} = 0.3°

A.3 Tightening torques and widths A/F

Table A-9 Tightening torques and widths A/F of bolts for the TAPERclamping bushes (101 or 102)

Size	TAPER-Clamping bush Number	Tightening torque T_A and width A/F SW			
		BSW 1)	Length	T_A	SW
		Inch	Inch	Nm	mm
24	1008	1/4	1/2	5.6	3
28/38	1108	1/4	1/2	5.6	3
38	1210	3/8	5/8	20	5
42	1610	3/8	5/8	20	5
48	1615	3/8	5/8	20	5
55/65	2012	7/16	7/8	31	5
65/75	2517	1/2	1	48	6
75/90	3020	5/8	1 1/4	90	8
90	3535	1/2	1 1/2	113	10

1) BSW: British Standard Whitworth

Apply the recommended tightening torques in accordance with the stipulations in section Tightening procedure (Page 63).

A.4 Tightening procedure

Tighten fastening screws to the specified tightening torque in accordance with the following table:

Table A-10 Tightening procedure

Scatter of the torque applied at the tool	Tightening procedure (As a rule, the tightening procedures listed are within the specified tool torque scatter)
±5 %	• Hydraulic tightening with mechanical screwdriver • Torque-controlled tightening with a torque wrench or a torque wrench that gives a signal • Tightening with a precision mechanical screwdriver with dynamic torque measurement

The tightening torques apply to screws/bolts with untreated surfaces that are not oiled or are only lightly oiled, and for screws/bolts that are used with a liquid screw locking agent in accordance with these instructions. Use with lubricant paint or lubricant is not permitted.

A.5 Cam rings

A.5.1 Use and storage of the cam rings

Note the following concerning the use and storage of the cam rings:

- Storage possible for up to 5 years
- Protect against direct sunlight, artificial light with a high UV-content and extreme temperatures
- Avoid contact with aggressive media

A.5.2 N-BIPEX cam ring (50)

Table A-11 N-BIPEX cam ring

Material	Hardness	Comment	Marking	Ambient temperature
TPU	92 Shore A	standard, soft	red	-50 °C to +100 °C
TPU	95 Shore A	medium, shifting of the resonant speed	green	-50 °C to +100 °C
TPU	64 Shore D	hard	blue	-50 °C to +100 °C

Quality documents

B

B.1 Declaration of Conformity

EU declaration of conformity

Product:

FLENDER N-BIPEX® couplings
Types BWN, BWT, BNT

Name and address of the manufacturer:

Flender GmbH
Schlavenhorst 100
46395 Bocholt
Deutschland – Germany

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Object of the declaration is the product specified above.

The object of the declaration described above is in conformity with the relevant harmonisation legislation of the Union:
– Directive 2014/34/EU Official Journal L 96, 29.3.2014, pages 309-356

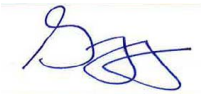
Harmonised standards or other technical specifications, on which the declaration of conformity is based:

EN 1127-1 : 2011
EN 1710 : 2008
EN 13463-1 : 2009
EN 13463-5 : 2011

The notified body, DEKRA EXAM GmbH, code number 0158, has received the technical documentation.

Signed for and on behalf of:
Flender GmbH

Bocholt, 2017-10-01 i.V. Felix Henseler, Head of PD MD AP



Bocholt, 2017-10-01 i.V. Thomas Tebrügge, Head of PD MD AP COU BA

FLENDER COUPLINGS

N-BIPEX
Operating Instructions 3401en
Edition 10/2017

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