

FLENDER COUPLINGS

N-ARPEX plate packs

Compact Hardware Installation Instructions 4280en
Edition 12/2017

ARN-6



FLENDER COUPLINGS

N-ARPEX plate packs 4280en

Compact Hardware Installation Instructions


ARN-6


Edition 12/2017


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.

Table of contents

1	Introduction.....	7
1.1	Superordinate operating instructions.....	7
1.2	General information.....	7
1.3	Protective coating.....	7
1.4	Marking of the coupling parts in compliance with the ATEX Directive.....	7
2	Assembly.....	9
2.1	Construction of a screw-connection point.....	10
2.2	Detailed view of the close-fitting bolt connection.....	11
2.3	Assembling the plate pack.....	11
2.3.1	Structure of a bolting point with axial play limiting.....	12
2.4	Aligning the coupling.....	15
2.4.1	Purpose of alignment.....	15
2.4.2	Aligning.....	15
A	Technical specifications.....	17
A.1	Tightening torques and widths A/F.....	17
A.2	Tightening procedure.....	17
A.3	Alignment values.....	18

Tables

Table A-1	Tightening torques and widths A/F.....	17
Table A-2	Tightening procedure.....	17
Table A-3	Alignment values	18

Figures

Figure 2-1	Construction of a screw-connection point.....	10
Figure 2-2	Detailed view of the close-fitting bolt connection.....	11
Figure 2-3	Structure of a bolting point with axial play limiting.....	13
Figure 2-4	Detailed view of the fitting bolt connection with axial play limiting.....	14
Figure 2-5	Aligning the machine parts.....	16

Introduction

1.1 Superordinate operating instructions

These assembly instructions apply only in conjunction with the operating instructions BA 8714.

1.2 General information

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

Observe the notes and regulations in these assembly instructions and in the superordinate operating instructions.

Make sure that every person who is commissioned to work on the coupling has read and understood these instructions and the superordinate operating 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 which are due to non-adherence to these instructions.

1.3 Protective coating

The parts delivered with these instructions are preserved. Please observe the notes and regulations in the superordinate operating instructions (Page 7).

1.4 Marking of the coupling parts in compliance with the ATEX Directive



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.

The marking of the coupling and information about the usage conditions can be found in the superordinate operating instructions.



 **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.

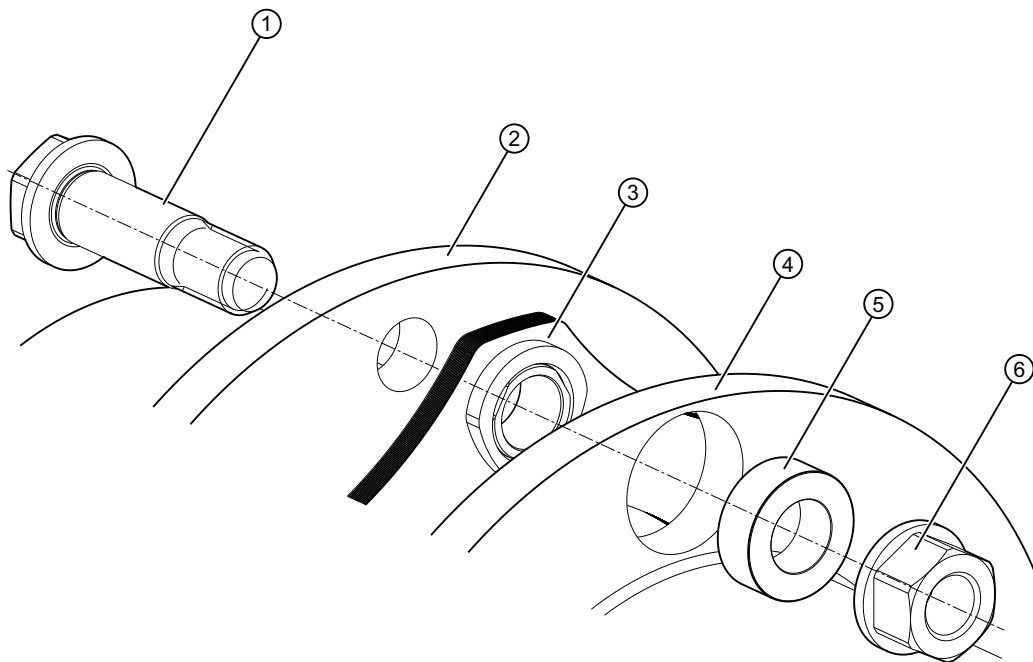
- Please observe all the stipulations concerning assembly.

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.

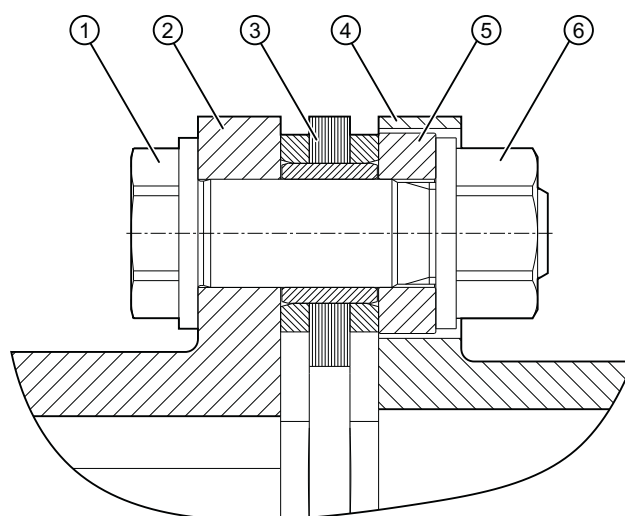
2.1 Construction of a screw-connection point



- ① Close-fitting bolt
- ② Flange
- ③ Plate pack
- ④ Flange
- ⑤ Interception ring
- ⑥ Collar nut

Figure 2-1 Construction of a screw-connection point

2.2 Detailed view of the close-fitting bolt connection



- ① Close-fitting bolt
- ② Flange
- ③ Plate pack
- ④ Flange
- ⑤ Interception ring
- ⑥ Collar nut

Figure 2-2 Detailed view of the close-fitting bolt connection

2.3 Assembling the plate pack

Procedure

1. Clean the locating holes of the flanges (2) and (4).
2. Clean the contact surfaces for the close-fitting bolts (1), collar nuts (6), interception rings (5), and the plate pack (3).
3. If you are using plate packs with axial play limiting, then please also note the following section: Structure of a bolting point with axial play limiting (Page 12).

2.3 Assembling the plate pack

4. Screw the plate pack (3) alternately to the flanges (2; 4). Note the arrangement of the screwed connection:
 - The plate pack (3) is located between the flanges (2; 4).
 - The fitting bolts (1) are in contact with the flange (2) or (4).
 - The flanged nuts (6) are in contact with the capture rings (5).

NOTICE
Insert the screws in the as-delivered condition.
Do not use additional grease/lubrication on the screws.

5. The plate packs are preloaded when mounting them. As a consequence, you can easily insert the first fitting bolt (1) through the flange bore and the plate pack (3). However, it will be more difficult for you to insert the second and third fitting bolts (1) through the bores. Proceed as follows to make it simpler to insert the fitting bolts:
 - Insert the fitting bolts (1) through the bores of the flange and plate pack (3).
 - Screw the flanged nuts (6) **without** capture rings (5) onto the fitting bolts (1). You pull in the fitting bolts up to their stop at the flange by tightening the flanged nuts (6).
 - Unscrew the flanged nuts (6).
 - Reattach the capture rings (5) and flanged nuts (6).
6. Preload the flanged nut (6). Secure the head of the close-fitting bolt (1) to prevent it from rotating. Brace the anti-rotation device (counter holder) on the flange to which the plate pack is screwed.
7. Tighten the collar nuts (6) one after the other with half the tightening torque from section Tightening torques and widths A/F (Page 17) the first time around.
8. Tighten the flanged nuts (6) one after the other with the full tightening torque from section Tightening torques and widths A/F (Page 17) the second time around.

2.3.1 Structure of a bolting point with axial play limiting

For mounting the plate packs with axial play limiting, the same procedure applies as was described in Section Mounting plate packs (Page 11). Note the following:

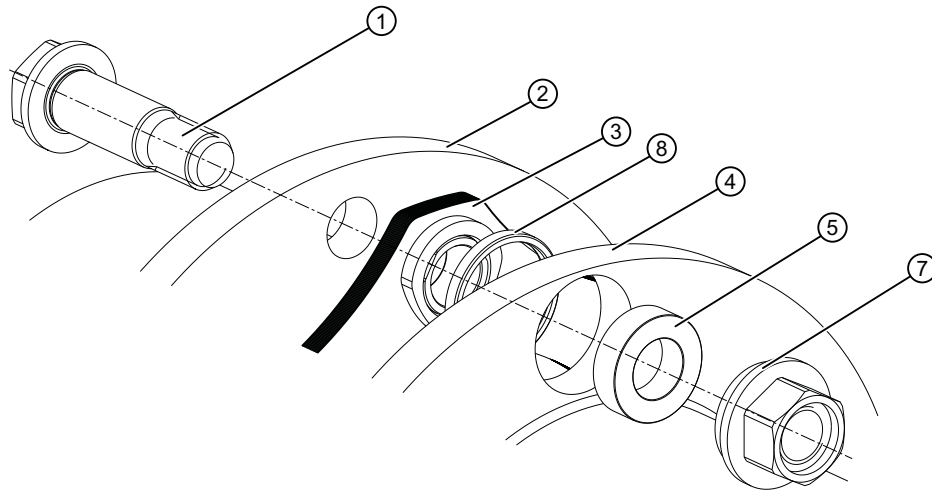
- For each plate pack, axial play limiting comprises three special nuts (7) and three spacer rings (8).
- The three special nuts (7) replace the three flanged nuts (6) at the flange of the intermediate sleeve (4).
- Mount the spacer rings (8) on the side of the plate pack (3), which is in contact with the flange of the intermediate sleeve (4). Position the plate pack (3) between the flanges (2; 4).
- To pull-in the fitting bolts (1) into the bores of the flange (2; 4) and plate pack (3), first use the flanged nuts (6). Then replace the flanged nuts (6) by the special nuts (7).

The correct functioning of the axial play limiting is only guaranteed in this mounting position.

NOTICE

An incorrectly mounted axial play limiting will result in coupling damage in operation.

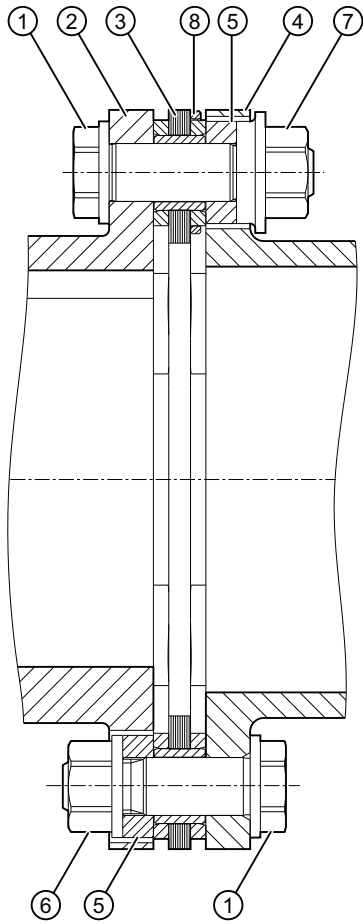
Carefully note the position of the special nuts (7) and the spacer rings (8) to the flange of the intermediate sleeve (4).



- ① Fitting bolt
- ② Flange
- ③ Plate pack
- ④ Flange of the intermediate sleeve
- ⑤ Capture ring
- ⑦ Special nut
- ⑧ Spacer ring

Figure 2-3 Structure of a bolting point with axial play limiting

2.3 Assembling the plate pack



- ① Fitting bolt
- ② Flange
- ③ Plate pack
- ④ Flange of the intermediate sleeve
- ⑤ Interception ring
- ⑥ Collar nut
- ⑦ Special nut
- ⑧ Spacer ring

Figure 2-4 Detailed view of the fitting bolt connection with axial play limiting

2.4 Aligning the coupling

2.4.1 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
- Reduced restoring forces
- Misalignment reserves for operation of the coupling

Alignment values can be found in section Alignment values (Page 18).

2.4.2 Aligning

N-ARPEX couplings with two plate packs accommodate axial, radial and angular offsets.

N-ARPEX couplings with one plate pack exclusively accommodate axial and angular offsets.

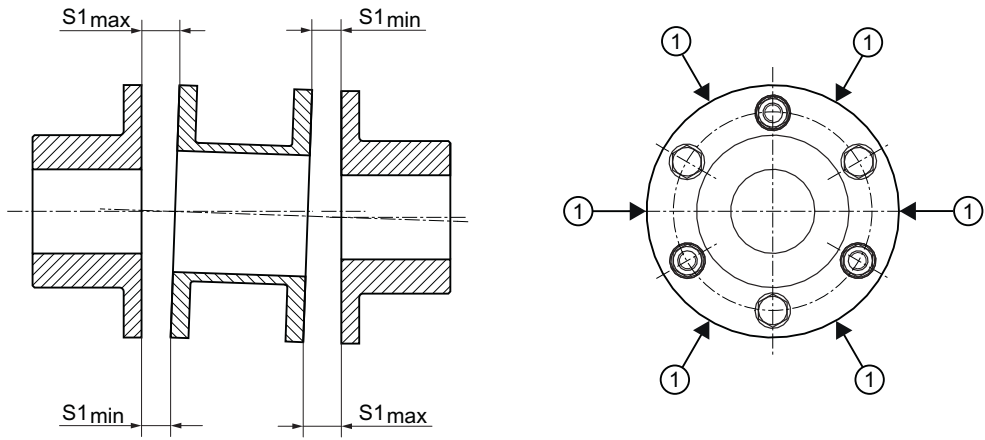
Procedure

Measure the distance $S1$ between the coupling parts at several points on the outer diameter.

If the measured distances lie between the value range of $S1_{\min}$ and $S1_{\max}$, then the machines are aligned accurately enough.

You can find the values for $S1_{\min}$ and $S1_{\max}$ in section Alignment values (Page 18).

2.4 Aligning the coupling



① Measuring point

Figure 2-5 Aligning the machine parts

Technical specifications

A.1 Tightening torques and widths A/F

Table A-1 Tightening torques and widths A/F

N-ARPEX Size	Thread	Width across flats SW mm	Tightening torque T _A Nm
86-6	M6	10	14
103-6	M6	10	14
122-6	M8	13	35
133-6	M8	13	35
159-6	M10	17	69
174-6	M10	17	69
184-6	M12	19	120
203-6	M14	21	190
217-6	M16	24	290
251-6	M18	27	400
268-6	M20	30	560
291-6	M22	32	750
318-6	M24	36	900
343-6	M24	36	900

Apply the recommended tightening torques in accordance with the stipulations in section Tightening procedure (Page 17).

A.2 Tightening procedure

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

Table A-2 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 %	<ul style="list-style-type: none"> 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

A.3 Alignment values

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.3 Alignment values

Table A-3 Alignment values

N-ARPEX Size	S1 mm	S1_{min} mm	S1_{max} mm
86-6	8.0	7.8	8.2
103-6	8.4	8.2	8.6
122-6	8.8	8.5	9.1
133-6	9.6	9.3	9.9
159-6	11.6	11.2	12.0
174-6	12.8	12.3	13.3
184-6	14.6	14.1	15.1
203-6	15.0	14.5	15.5
217-6	15.4	14.8	16.0
251-6	20.6	20.0	21.2
268-6	22.0	21.4	22.6
291-6	22.8	22.1	23.5
318-6	23.2	22.5	23.9
343-6	24.0	23.2	24.8

FLENDER COUPLINGS

N-ARPEX plate packs
Compact Hardware Installation Instructions 4280en
Edition 12/2017

Flender GmbH
Alfred-Flender-Straße 77
46395 Bocholt
GERMANY