

Manual

Installation manual for Benarx Preformed End Cap Gasket

Installation manual for Benarx Preformed End Cap Gasket

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Detailed Principal Work Description for Benarx Preformed End Cap Gasket

CONTENT

1. Scope
2. Tools and equipment
3. Component list
4. Work prior to installation
5. Installation
6. Installation of double Benarx Preformed End Cap Gasket
7. Health, Environment and Safety (HES)
8. References
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1. SCOPE

This document is a Principal Detailed Work Description (DPWD) for installation of Benarx Preformed End Cap Gasket.

The purpose with this document is to be a reference-document to all Detailed Work Descriptions (DWDs) that deal with installation of Benarx Preformed End Cap Gasket. It is the reference document for all project related Preformed End Cap Gasket installation procedures.

Detail descriptions in this DPWD may derogate from details given in project related DWDs. However, if a project does not have drawn up a project-specific DWD it is this document that determines the installation of the product.

All deviations from this DPWD shall be approved by the Engineering Product Ownership Manager at Beerenberg in advance of any project start-up. A separate project DWD can be made exclusively for a specific project.

2. TOOLS AND EQUIPMENT

1. Stanley knife
2. Caulking gun
3. Numeric measuring (length 3 meter)
4. Tightening tool
5. Tightening band, 3/4"
6. Glass fiber tape, 19 mm
7. Nitoseal SC N / Nitoseal SC 30

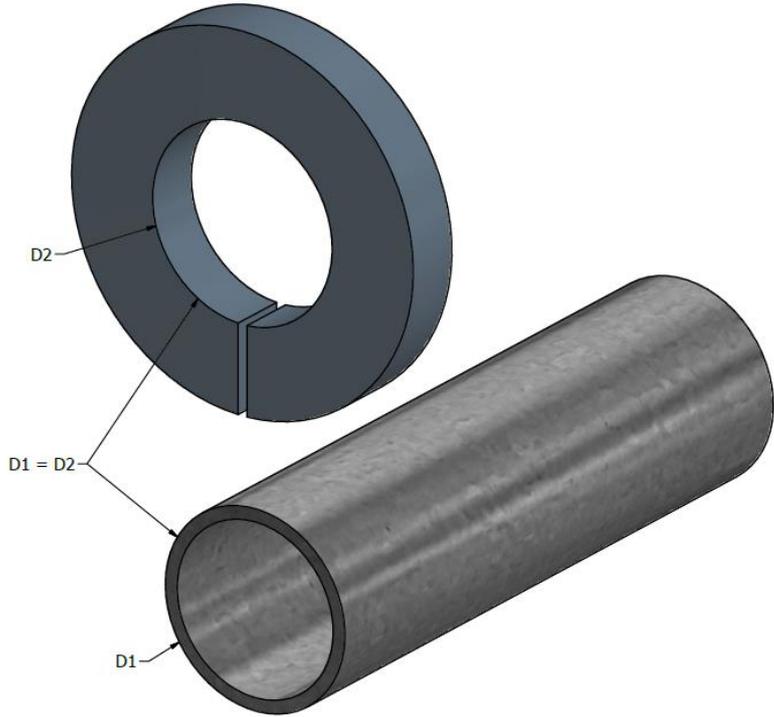
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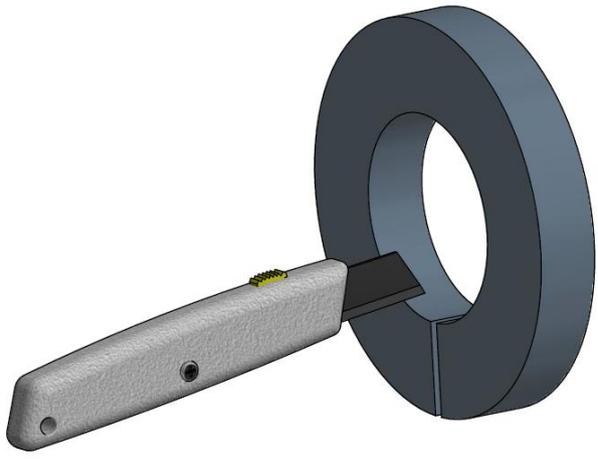
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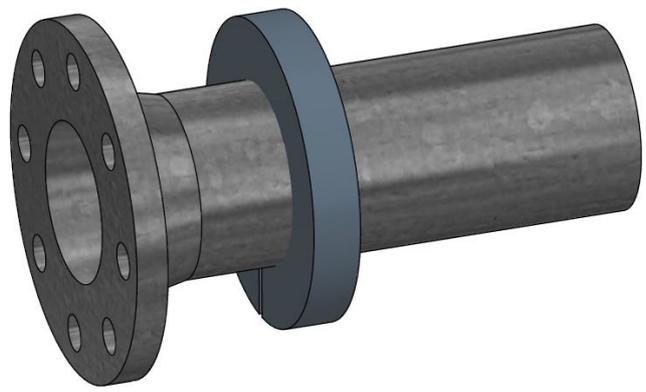
3. COMPONENT LIST			
Component number	Description	Notice	Illustration
1.	Benarx Preformed End Cap Gasket	<ul style="list-style-type: none"> - Gasket is delivered in different sizes depending on pipe sizes and insulation thicknesses - Temperature range is -164 °C to +230 °C. <p><u>Order information:</u></p> <ul style="list-style-type: none"> - Pieces - Inner diameter - Gasket thickness <p>(Gasket height shall be 2 mm oversized compared to theoretical insulation thickness)</p>	
3.	Nitoseal sealant	<p>Nitoseal SC N shall be used for T < 120 °C</p> <p>Nitoseal SC 30 shall be used for 120 °C ≤ 230 °C</p>	

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4. WORK PRIOR TO INSTALLATION	
Description	Illustration
<p>1: How to measure Benarx Preformed End Cap Gasket</p> <ul style="list-style-type: none"> - Measure outer diameter of pipe (D2); gasket inner diameter shall be correct - Measure insulation thickness; gasket-height shall be correct (2 mm oversized; ref. notice to component no. 1 in 3. Component List) 	

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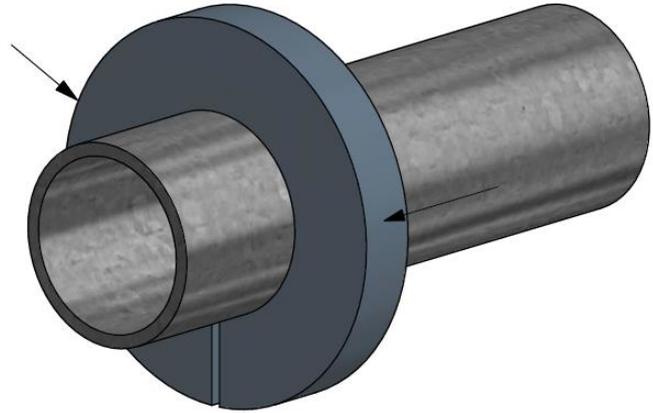
<p>2: Cutting of gasket</p> <ul style="list-style-type: none"> - Gasket cut shall be done by using a sharp Stanley knife - Gasket shall be clean and without contaminants before and after cutting 	
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Description	Illustration
<p>3: Clarification og installation</p> <ul style="list-style-type: none"> - Bolt length according to current regulations - If heat trace is used make an exact furrow with a sharp Stanley knife (or similar other tool that fits this task) - Mark with felt pen around pipe where gasket shall be mounted; distance to flange shall as far as possible be identical <p>Example: Measure distance from flange or welded joint to gasket. Gasket shall, as far as possible, all over have equal distance to flange or welded joint. Purpose is to prevent a crooked installation. By performing 3 to 4 measurements risk for crooked installation will be considerably reduced.</p>	

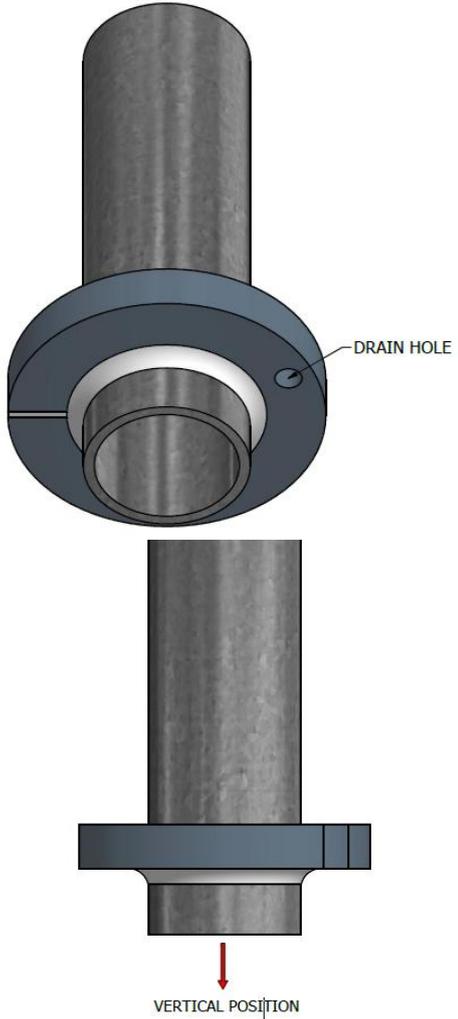
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4: Precheck that gasket fits before installation take place

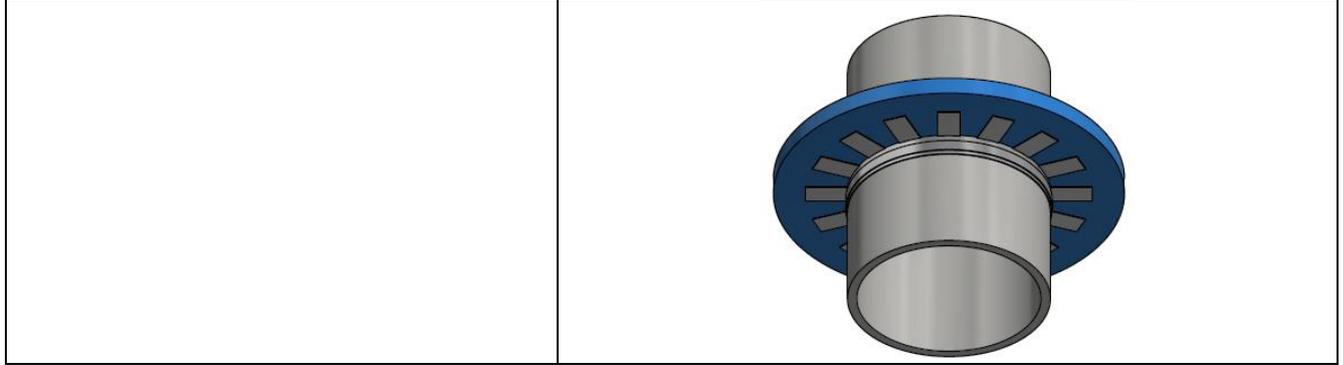
- Put gasket around pipe
- Ensure that it fits tight toward pipe without slack
- The two joints shall meet without side displacement and without air gap between



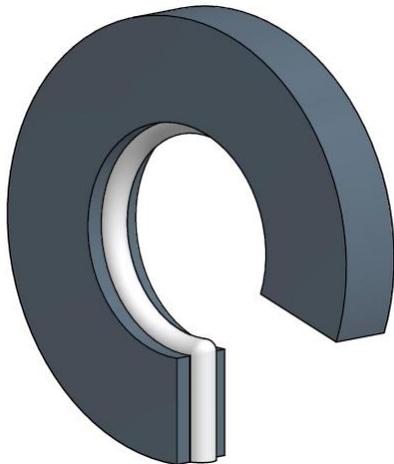
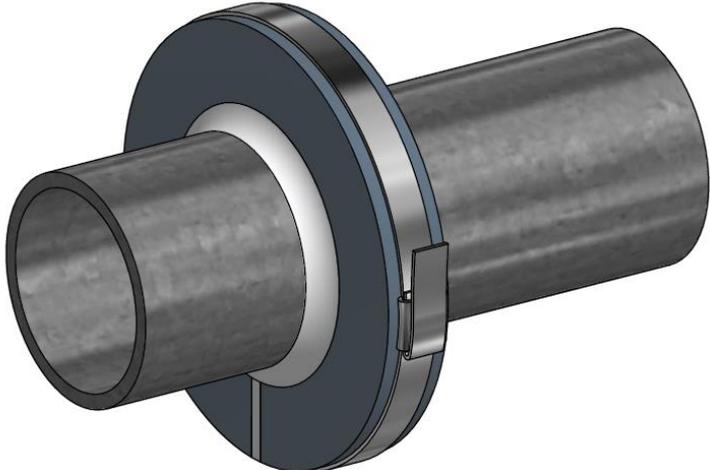
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Description	Illustration
<p>5: Drain hole for vertical pipeline</p> <ul style="list-style-type: none"> - Make the drain hole before installing gasket on pipe (to avoid pipe surface and/or painting damages). - The drain hole should be approx. 5-6mm wide in diameter. - A drain hole should never be made if the insulation specification states otherwise, or if the gasket is used for cold-conservation insulation classes. - Drain hole shall always be located at lowest point. Never on the highest point! 	
<p>6: Use of support rings on large gasket & pipe dimensions (For vertical pipes only)</p> <p>For large gasket heights (> 80mm) in combination with medium to large pipe-dimensions (>8") it may be practical to temporary support rings to support the gasket during the sealant curing time and until the insulation has been installed.</p> <p>If support-rings are already used to support the insulation on vertical pipes in projects, these may be used. Other temporary support-solutions may also be used.</p>	

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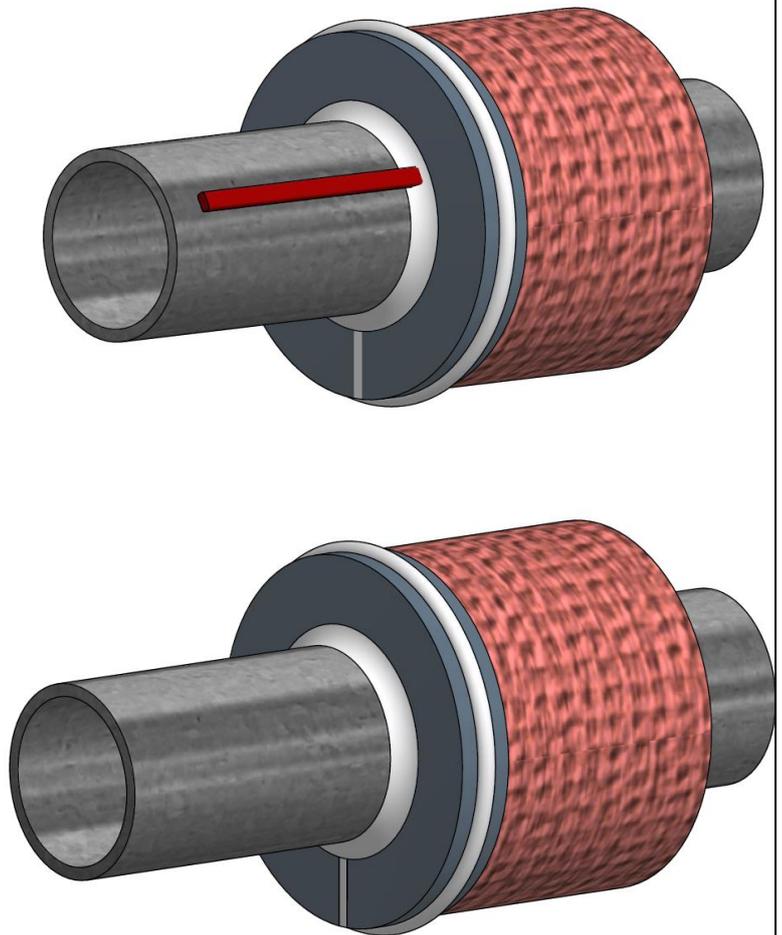
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5. INSTALLATION	
Description	Illustration
<p>7: Sealant</p> <ul style="list-style-type: none"> - Both gasket and pipe needs to be clean, free from dust and dry from moisture before application of sealant. Use a cloth of cleaning alcohol to clean the two surfaces. - Install sealant as shown on sketch - Gasket shall be applied sealant on inner diameter and joint - Sealant thickness shall be 5 mm thick - Ensure sealant color is visible for inspection <p>Note: Ensure correct sealing compound is applied with reference to operating temperature. Ref section 2.</p>	
<p>9: Smoothing of sealant</p> <ul style="list-style-type: none"> - Smoothen firmly out sealant in transition between pipe and gasket as well as on gasket joint (split) – on both sides - After sealant smoothing it shall be visible on both sides of the gasket and not any of it shall be removed - Keep the gasket fastened with tensioning band or glass fibre tape until the cladding is ready to be installed 	
Description	Illustration

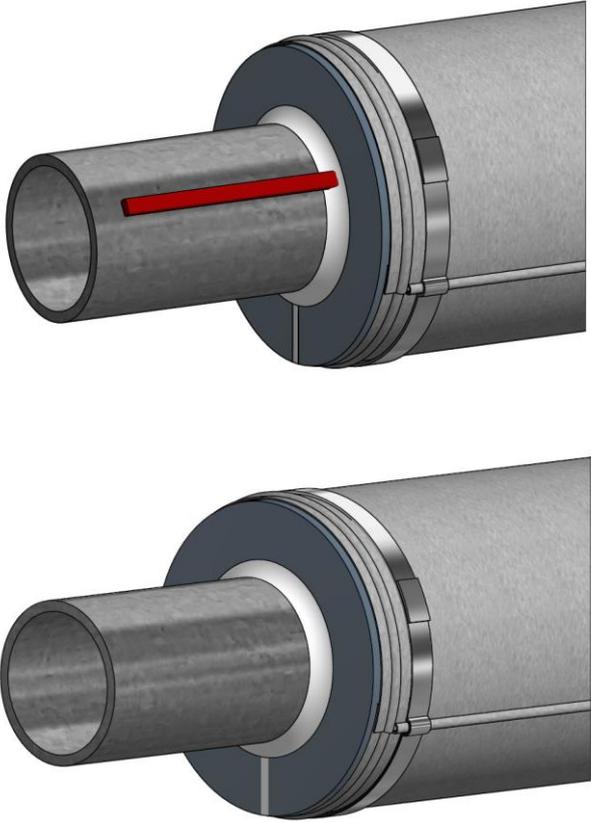
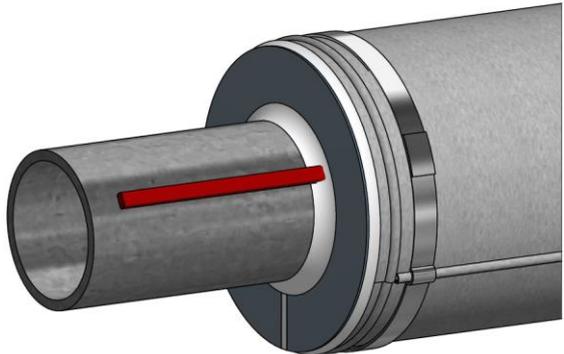
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10: How applied sealant shall look previous to installation of cladding

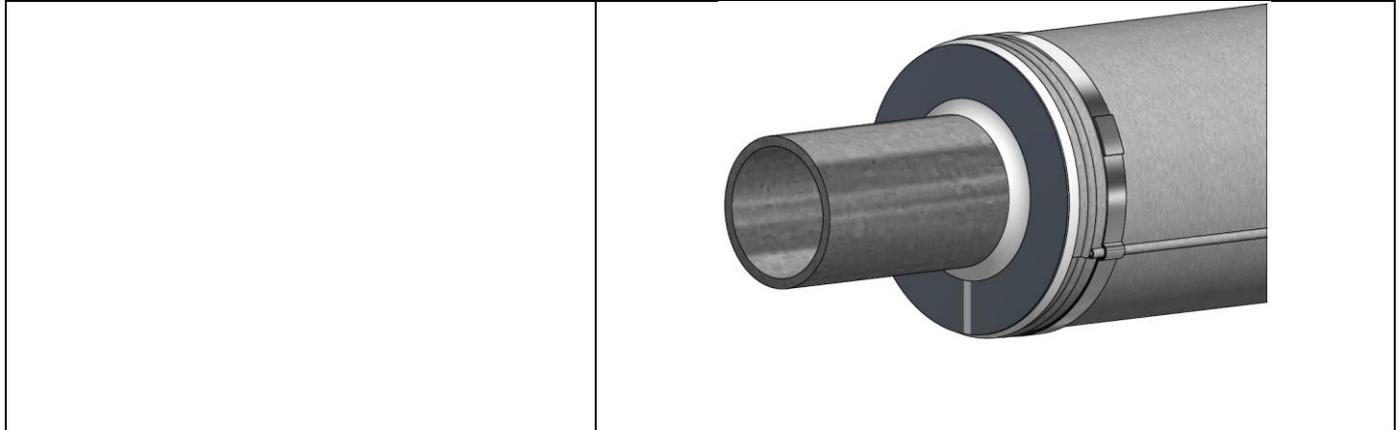
- The insulation shall be installed according to specified regulations before cladding is installed
- Remove tightening band or tape from gasket
- The gasket and cladding must be free from dust, moisture and clean before application of sealant. Use a cloth of cleaning alcohol on both parts.
- Apply sealant as shown on sketch
- Sealant thickness shall be 5 mm thick



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Description	Illustration
<p>11: Installing of cladding:</p> <ul style="list-style-type: none"> - Place the cladding carefully on top of sealant applied the gasket's circumferential outer edge - Place tightening band close to or nearby the cladding's overseam and install it according to specified regulations - If quantity of applied sealant is correct some of it will be squeezed out between gasket and cladding 	
<p>12: Smoothing of sealant</p> <ul style="list-style-type: none"> - Sealant that has been squeezed out between gasket and cladding shall be smoothed firmly around transition gasket and cladding edge - It is important that cladding edges is covered with sealant - If any part of edge still is visible put on some more sealant and smoothen it making a nice finish 	

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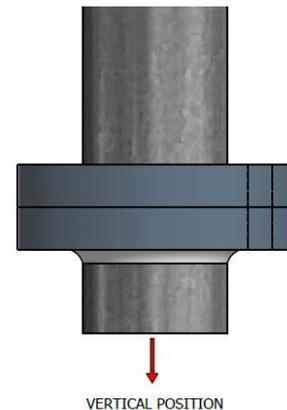
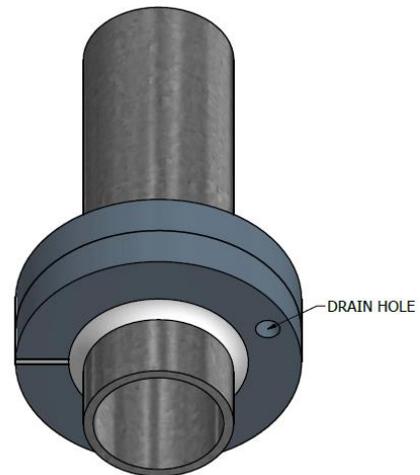
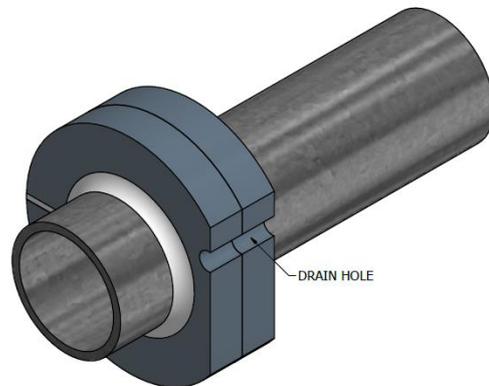
6. INSTALLATION OF DOUBLE BENARX PREFORMED END CAP GASKET

Description	Illustration
<p>13: Table</p> <ul style="list-style-type: none"> - Table states when there has to be mounted two pieces (double) of Benarx Preformed End Cap Gasket 	<p>See table attached at page 14, section 9, Attachments.</p>

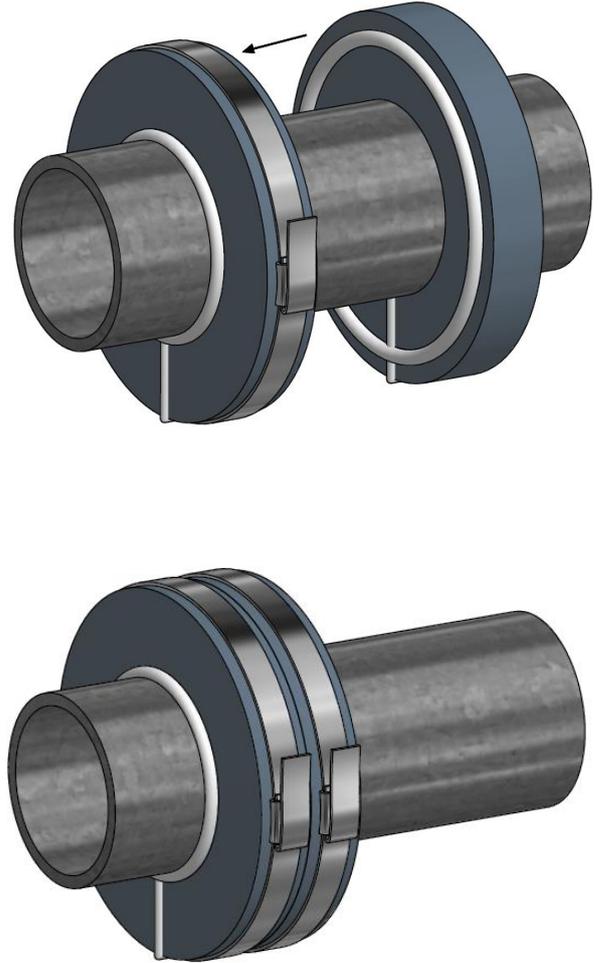
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14: Drain hole for vertical pipeline – double gasket

- Always make the drain hole before installation of gasket so that damages on pipe surface and/or paint will be avoided
- Drain hole shall always be located at lowest point
- Check that both drain holes are laying upon each other (for water runoff)
- Insulation shall be visible when looking through the two drain holes after installation of gaskets and cladding have taken place



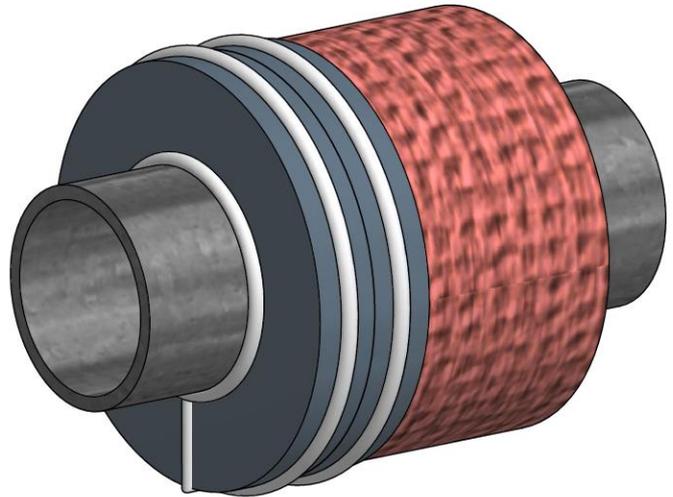
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Description	Illustration
<p>15: Installation of double Benarx Preformed End Cap Gasket</p> <ul style="list-style-type: none"> - Installation performance of the gasket laying closest to flange is similar to text given in description numbers 1 to 8 - Put on gasket number two - Gasket number two shall be applied sealant as shown on sketch - Sealant shall now squeeze out between the gaskets in that instant moment those are put together - Fasten gasket number two in the same way as the first one by using tightening band or glass fibre tape (ref. description numbers 1 to 8) - Smoothen firmly out sealant in transition between pipe and gasket as well as on gasket joint (split) – <u>on each side of the double gasket</u> - Sealant shall be visible on each side of the double gasket and not any of it shall be removed - Keep the two gaskets fastened with tensioning bands or glass fibre tape until the cladding is ready to be installed 	

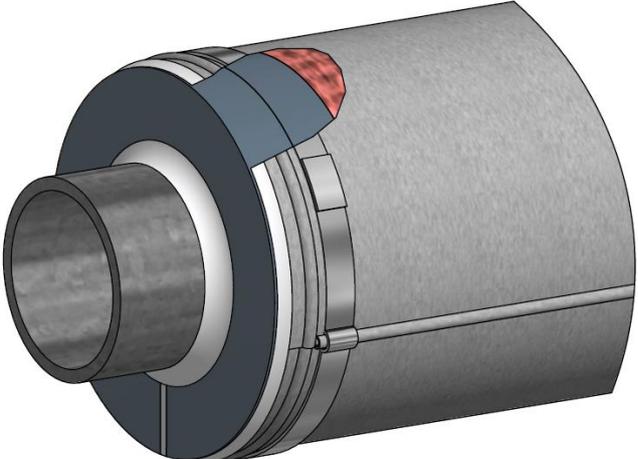
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16: Applying sealant on the outer edges of gaskets

- Remove tightening bands or glass fibre tape
- Check that gaskets fits firmly around the pipe
- Apply sealant as shown
- Sealant thickness shall be 5 mm thick
- It shall be sufficient sealant applied on outer edges so that sealant will be squeezed out when cladding is installed and tightened
- (Performance similar to text given in description number 9)



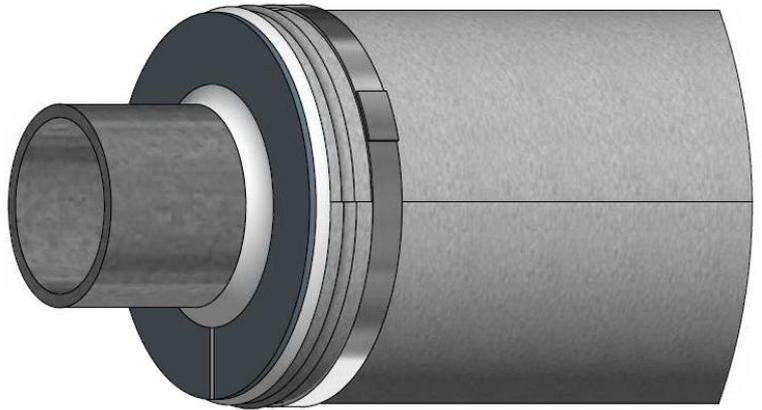
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Description	Illustration
<p>17: Installation of cladding</p> <ul style="list-style-type: none"> - Place the cladding carefully on top of sealant laying on the gaskets' outer edges - Place tightening band close to or nearby the cladding's overseam and install it according to project regulations - If quantity of applied sealant is correct some of it will be squeezed out between gasket and cladding (Performance similar to text given in description number 10) 	

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18: Smoothing of sealant

- Sealant that has been squeezed out between gaskets and cladding shall be smoothed firmly around transition gaskets to cladding edge
- It is important that cladding edges is covered with sealant
- If any part of edge still is visible put on some more sealant and smoothen it making a nice finish
- (Performance similar to text given in description number 11)



7. HEALTH, ENVIRONMENT AND SAFETY (HES)

All personnel protection shall be in accordance with specified regulations demands. Instructions given in safety data sheets shall always be complied.

8. REFERENCES

- Technical Data Sheet for Benarx Preformed End Cap Gasket
- Safety Data Sheet for Benarx Preformed End Cap Gasket

9. ATTACHMENTS

Table for Benarx Preformed End Cap Gasket

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Table for Benarx Preformed End Cap Gasket															
Pipe size		Insulation thicknesses													
Inches	NPS	mm													
"	mm	10	20	30	40	50	60	70	80	90	100	110	120	130	140+
1/4	8	1	1	1	1	1	1	1	1	1	1	1	1	2	2
3/8	15	1	1	1	1	1	1	1	1	1	1	1	1	2	2
1/2	21	1	1	1	1	1	1	1	1	1	1	1	1	2	2
3/4	27	1	1	1	1	1	1	1	1	1	1	1	1	2	2
1	34	1	1	1	1	1	1	1	1	1	1	1	1	2	2
1 1/4	42	1	1	1	1	1	1	1	1	1	1	1	1	2	2
1 1/2	48	1	1	1	1	1	1	1	1	1	1	1	1	2	2
2	60	1	1	1	1	1	1	1	1	1	1	1	1	2	2
2 1/2	76	1	1	1	1	1	1	1	1	1	1	1	1	2	2
3	89	1	1	1	1	1	1	1	1	1	1	1	1	2	2
3 1/2	101	1	1	1	1	1	1	1	1	1	1	1	1	2	2
4	114	1	1	1	1	1	1	1	1	1	1	1	1	2	2
5	139	1	1	1	1	1	1	1	1	1	1	1	1	2	2
6	168	1	1	1	1	1	1	1	1	1	1	1	1	2	2
8	219	1	1	1	1	1	1	1	1	1	1	1	1	2	2
10	273	1	1	1	1	1	1	1	1	1	1	1	1	2	2
12	324	1	1	1	1	1	1	1	1	1	1	1	1	2	2
14	356	1	1	1	1	1	1	1	1	1	1	1	1	2	2
16	406	1	1	1	1	1	1	1	1	1	1	1	1	2	2
18	457	1	1	1	1	1	1	1	1	1	1	1	1	2	2
20	508	1	1	1	1	1	1	1	1	1	1	1	1	2	2
22	559	1	1	1	1	1	1	1	1	1	1	1	1	2	2
24	610	1	1	1	1	1	1	1	1	1	1	1	1	2	2
26	660	1	1	1	1	1	1	1	1	1	1	1	1	2	2
28	711	1	1	1	1	1	1	1	1	1	1	1	1	2	2
30	762	1	1	1	1	1	1	1	1	1	1	1	1	2	2
32	813	1	1	1	1	1	1	1	1	1	1	1	1	2	2
34	864	1	1	1	1	1	1	1	1	1	1	1	1	2	2
36	914	1	1	1	1	1	1	1	1	1	1	1	1	2	2
38	970	1	1	1	1	1	1	1	1	1	1	1	1	2	2
40	1026	1	1	1	1	1	1	1	1	1	1	1	1	2	2
42	1077	1	1	1	1	1	1	1	1	1	1	1	1	2	2
44	1129	1	1	1	1	1	1	1	1	1	1	1	1	2	2
46	1180	1	1	1	1	1	1	1	1	1	1	1	1	2	2

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48	1231	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2
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Notes:

1. Table show for which pipe sizes and insulation thicknesses 1 or 2 layers of Benarx Preformed End Cap Gasket shall be used.
2. Nominal Pipe Sizes (NPS) are rounded to the nearest millimeter.
3. Standard thickness for the Benarx Preformed End Cap Gasket is 20 mm.