

BIOGAN DN 150 AND 200

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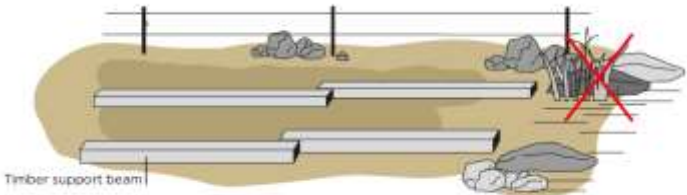
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The contractor is responsible for analyzing and eliminating any risks during installation (especially the use of personal protective equipment).

1 Storage

1 PREPARE THE STORAGE AREA

The storage area for pipes, fittings and accessories must be organized for each type of products and also by diameter.



Do not store products on unstable or sloping ground

Avoid:

- Marshy ground
- Contaminated ground
- Placing pipes directly on the ground

Support beams, spacers and chocks must be made from construction-grade lumber without any brittle knots. The minimum dimensions are specified in the following tables.

2 STORE THE GASKETS

(according to the latest version of ISO 2230)

In particular, **avoid:**

- Removing gaskets from their bags
- Exposing gaskets to sunlight
- High storage temperatures



Restrict storage times.

Storage life: seven years in optimal storage conditions (contact us for our recommendations).

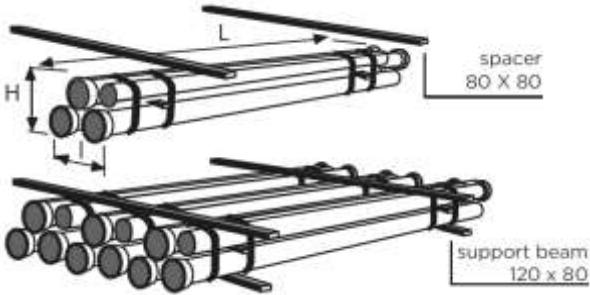
Refer to ISO 2230:2002 - Rubber products - Guidelines for storage



When installing pipes at low temperatures, bring rings up to a temperature of 20°C to ensure maximum flexibility (such as by immersing them in warm water).

3 DN150 AND 200: DELIVERY IN BUNDLES

Stack while keeping the bundles perfectly square. Do not exceed the maximum heights specified in the following table.



Always ensure a good tension of the bundle straps. Never lift a bundle with hooks or vacuum pads. Use slings that **support the bundle from underneath (the straps used to secure the bundles are not slings and are not designed to withstand the load).**

Bundle stack heights

Maximum number of stackable bundles

Type of pipe	DN	Number of bundles on the ground	Max. no. Stacked bundles	Bundle contents and dimensions			
				L m	I m	H m	Bundle weight (kg)
BIOGAN	150 (9 pipes /bundle)	3	5	6.3	0.59	0.66	950
	200 (6 pipes /bundle)	3	5	6.3	0.75	0.56	871

2 Handling

1 BASIC ADVICE

To avoid damaging the products:

- **Use** lifting equipment that is capable of supporting the weights specified in the tables below.
- **Prevent** pipes from banging or rubbing against the trailer's sides and pillars.
- **Lift and move** the pipes gently to prevent any swinging.
- **Do not drag** pipes across the ground and do not let pipes fall to the ground.

2 BUNDLE WEIGHTS AND DIMENSIONS

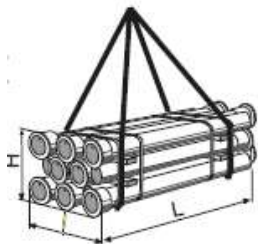
DN	No. Layers x no. pipes	L	I	H	Bundle weight INTEGRAL DUCTAN
		m	m	m	kg
150	3 x 3	6.3	0.59	0.66	950
200	2 x 3	6.3	0.75	0.56	871

3 PIPE UNIT WEIGHT

DN	pipe length (m)		pipe weight (kg)
	working	overall	INTEGRAL DUCTAN
150	6.00	6.10	106.5
200	6.00	6.10	145.2

4 LIFTING BUNDLES

Use textile slings suited to the load.
Ensure that the slings support the bundle from underneath.





Caution! Never lift a bundle with hooks or vacuum pads. The straps used to secure the bundles are not designed to withstand the load.

5 LIFTING BY THE PIPE BARREL

Use a **textile sling** suited to the load.
Attach the belt to the **center of gravity** and ensure that it does not slip.



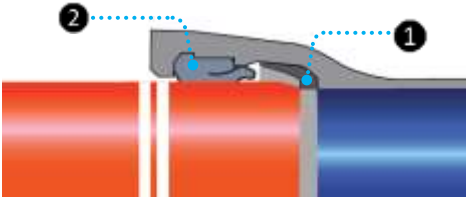
New

An indication of **theoretical centre of gravity** is marked on BIOGAN pipe.



- *The lift point is to search around +/- 20 cm of this theoretical centre of gravity*
- *This indication is valid only for 6-meter pipes, and not for cut of pipes made on jobsite.*

3 Biogan Ring



- ① Biogan Ring
- ② Gravity Standard Gasket



When the Biogan Ring is pre-assembled in factory, **ensure** that the gasket is properly seated in its groove: see paragraph 3 “Check the Ring”.

When the ring is not pre-assembly in factory or if it was removed, using the marking as a reference, **check** that the gasket is suited to the project specifications:

- DN
- Material : NBR
- Marking: Anneau « D » Ring
- Storage life: seven years for other joints subject to optimal storage conditions (contact us for our recommendations).
- Refer to ISO 2230:2002 - Rubber products - Guidelines for storage



1 CLEAN

Carefully **clean** the inside of the socket, the spigot and the Biogan Ring.

Keep all parts clean until assembly has been completed.



2 INSERT THE BIOGAN RING

Insert the joint ring before the pipe is laid in the trench.



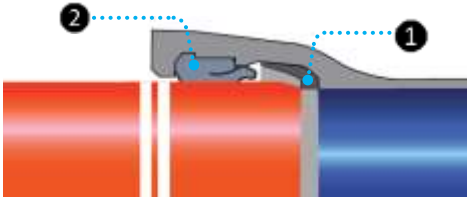
- In cold temperatures and especially with small diameters, store joints in a heated room.
- The rings can be soaked in water for easier set up.
- Biogan Ring shall not be lubricated

3 CHECK THE GASKET

Ensure that the ring is properly seated in its groove

Always **push** the ring towards the bottom of the socket to ensure that it is correctly positioned.

4 Gravity Standard Joint or STD G



- 1 Ring Biogan
- 2 Gravity Standard Gasket



Using the marking as a reference, **check** that the gasket is suited to the project specifications:

- DN
- Material: NBR + yellow marking (yellow "G")
- Storage life: seven years for other joints subject to optimal storage conditions (contact us for our recommendations).
- Refer to ISO 2230:2002 - Rubber products - Guidelines for storage



1 CLEAN

Carefully **clean** the inside of the socket, the spigot and the gasket.

Keep all parts clean until assembly has been completed.



2 INSERT THE GASKET

Insert the joint ring before the pipe is laid in the trench.



- In cold temperatures and especially with small diameters, store joints in a heated room.
- Gaskets can be soaked in water for easier set up.
- the socket's gasket groove shall not be lubricated before insertion of the joint ring.

3 CHECK THE GASKET

Ensure that the gasket is properly seated in its groove and especially on the inner loop.



Always **pull** the gasket towards the outside to ensure that it is correctly positioned.



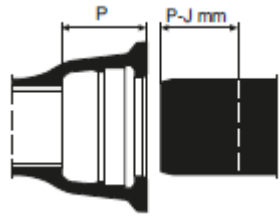
4 MARK THE INSERTION DEPTH

Nota: Biogan Ring ensures a safe jointing respecting the insertion depth. When the Biogan Ring is pre-assembled go to step 5 "Lubricate".

(if there is no original marking, i.e. if the pipe has been cut or a spigot is used from a different range and without Biogan ring).

Mark the spigot at a distance of P-J mm.

Caution: failure to adhere to the insertion depth will affect the performance of any angular deflections.

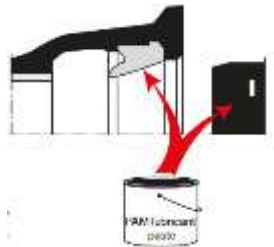


DN (mm)	P (mm)	J (mm)	P-J (mm)
150	100.5	15	85.5
200	106.5		91.5

5 LUBRICATE

Coat:

- The exposed surface of the gasket with lubricant paste,
- The pipe chamfer and spigot with:
 - Lubricant paste, or;
 - Protective paste (Isolarm)



Never lubricate the interior of the gasket groove.

Apply a sufficient amount of lubricant paste with a paintbrush (refer to the quantities table on the next page).

Comply with the recommended applications specified in the safety data sheets available in the Downloads section on www.pamline.com.



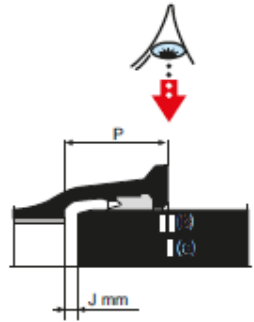
Limit intrusion of sand and dust in the socket in putting the plug until the insertion of the next pipe.

6 ASSEMBLE

Center and **introduce** the spigot into the perfectly aligned socket:

(a) Up to the marked line corresponding to "P-J mm"

(b) Up to the area between the white lines



Failure to observe the insertion depths could lead to the risk of leaks.

Nota: Biogan Ring (See paragraph "Biogan Ring") ensures a safe jointing respecting the insertion depth. After the assembly, the spigot is placed on the Biogan Ring.

7 CHECK THE ASSEMBLY

Before angular deflection, insert a metal rule into the socket gap and ensure that the depth of penetration is the same around the whole circumference.

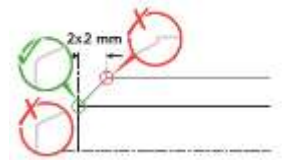
PAM metal rule ref: 241 031



8 INFORMATIONS

Cuts and chamfers

DN	m (mm)	n (mm)
150 and 200	2	2



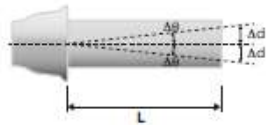
Round off the angle with a file or a grinder

Lubricant paste

Number of boxes for 100 joints	
DN	Nb
150	3
200	2

Angular deflection

Pipes must be connected together while keeping them perfectly aligned with their centerlines.



The joint must only be deflected when fully assembled and before pressurizing the system.

Maximum admissible deflection:			
DN	$\Delta \theta$ (°)	L m	Δd (cm) for L
150 and 200	4	6	42

5 Assembly equipment

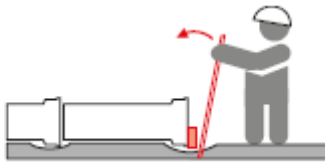


Limit intrusion of sand and dust in the socket in putting the plug until the insertion of the next pipe.

Several methods can be used to assembly pipes. The most common one are listed below. The choice mainly depends on the installation conditions (accessibility, equipment, etc.) and the pulling force needed to plug pipes:

- Crowbar
- Assembly equipment
- Pull lift or ratchet chain winch
- Digger Bucket

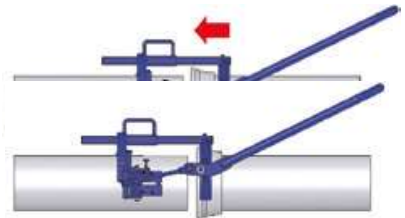
1 CROWBAR



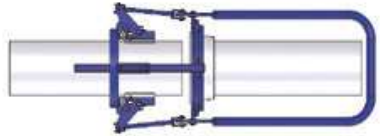
Insert a wooden batten between the crowbar and the pipe.

2 ASSEMBLY EQUIPMENT

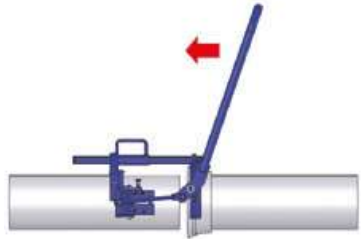
1 - Place the socket frame behind the socket of the installed pipe and **slide** until touching as shown by the arrow.



2- Put the lever in the lower position and then **move** the grip section using the handle so that the four grips are correctly positioned against the pipe.



3 - Stand so that you are facing the socket and firmly **pull** the lever towards you in the direction shown by the arrow until the lever is in the lower position.

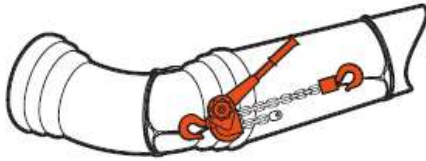


4 - If necessary, repeat the procedure from step three until both pipes are totally interlocking.



Comply with the insertion depth

3 PULL LIFT OR RATCHET CHAIN WINCH



DN	Pipe / Pipe Ratchet chain winch	Number	Pipe / Fitting Ratchet chain winch	Number
WITH FLAT STRAPS 21 Chain length 2m				
150	500 kg	1	250 kg	2
200	500 kg	1	250 kg	2



These values are provided for guidance only and may vary according to the installation conditions (temperature, lubrication, assembly of cut sections, etc.).

Ratchet chain winch



Max load	Reference
250	265 417
500	Consult us
750	265 418
1500	158 511
3000	158 513
6000	158 518

4 ACCESSORIES

Flat textile straps

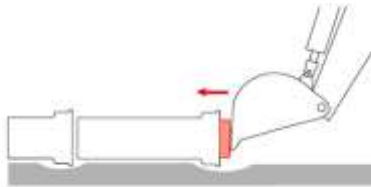
Color	Max. load	Length	Reference
Purple	1.5 t	2 m	158 511
Green	2 t	2 m	158 512
		8 m	158 380
Yellow	3 t	3 m	158 514
		4 m	158 515
		5 m	158 516
Gray	4 t	5 m	158 517
		8 m	219 996
Red	5 t	6 m	158 388
Brown	6 t	5 m	158 519
Blue	8 t	4 m	158 383
		6 m	199 148
		7 m	199 201
		10 m	158 520



To recognize the straps, count the number of seams (e.g. 3 seams = 3 t).

5 DIGGER BUCKET

Insert a wooden batten between the bucket and the pipe.



6 Pipe cutting

1 EQUIPMENT AND TOOLS REQUIRED

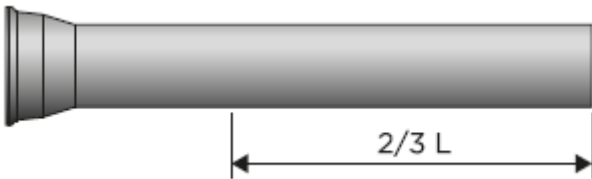
- Pipe cutting machine
- Gloves, protective mask and goggles
- Brush, abrasive paper and cutter
- Paintbrushes, roller
- Gas burner

2 CHECK THE EXTERNAL DIAMETER

Before cutting, use a circometer to **check** that the OD measured is less than the OD + 1 mm (see table below).

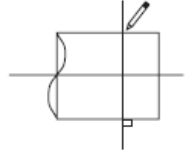
DN	Max OD mm
150	171
200	223

Preferably cut within 4 m of the spigot.

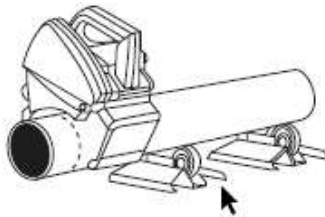


3 DRAW THE CUTTING LINE

Draw the cutting plane perpendicular to the pipe centerline.



4 CUTTING



Cut the pipe with an electric or heat pipe cutting machine, for example.



Irrespective of the cutter used, always fit a diamond disc.

Limit the metal filings and dusts sparks inside the pipe in particular under windy and rainy conditions.

5 DEBURRING

Deburr all defects in the cutting edge with a cutter.



Immediately **clean** the inside of the pipe: after cutting, ensure the absence of metal filings and dusts on the lining.



If it remains metal filings and dusts but non-through in Ductan lining, it may be seen in the visual inspection but it does not compromise the lining integrity.

6 CONTROL

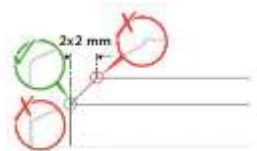
Control internal lining aspect closed to the cut:

- Adhesion:
 - **Remove every non adherent parts of the internal lining**
 - Repair the exposed iron
 - Defect size above 2 or 3 mm: see “Internal lining repairs” guide.
 - In any case, see “Repair the exposed iron” paragraph below.
- Check the absence of blister:
 - Repair the blisters and through defects (exposed lining) according the internal lining repairs guide.



7 CHAMFERING

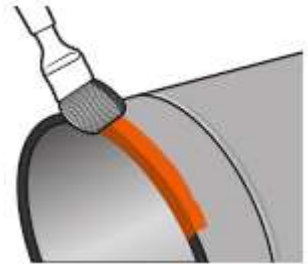
DN	m (mm)	n (mm)
150 and 200	2	2



Round off the angle with a file or a grinder

8 REPAIR THE EXPOSED IRON

Repair the protective coating on the exposed face and chamfer.



Brush to remove any dirt or loose particles.

Dry the surfaces to be coated (in case of low temperatures or high humidity, use a gas burner).

Apply the protective paste with a paintbrush. (See « Repair products » paragraph).



Do not let the protective paste dry before assembling the pipe

Protective paste replaces the lubricate paste (on the spigot)

Pipe Range	Repair product
BIOGAN	Isolarm 671-50

Protective paste Isolarm

Number of tubes for 100 cuts	
DN	Nb
150	8
200	10



Biogan Plus

To maintain the required performance to pH1 effluent of the Bio-gan Plus pipes, it is necessary to repair the coating protection of the spigots. The rehabilitation can be made on site or on a stock.

Ask the Repairing kit Topaz (See paragraph “Repair Products”).

Cleaning the surface to be coated.

Brushing with brush or sandpaper.

Dusting with cloth or compressed air.



Cleaning the inside of the pipe: after cutting, ensuring the absence of filings in the internal Ductan

Heating the surface by sweeping with the flame of a lamp solder (1-2 min). Maximum temperature: 50°C (higher temperature gives the risk of damaging the internal Ductan)



Apply a first laying of Eurokote 4820 paint (See Paragraph “Repair Products”). To have maintain the continuity of the protection, the painting layer shall overlay the internal lining of few millimeters.

Gentle heat the surface after application to shorten the drying time.



When the first laying is dry to the touch, apply the second laying of Eurokote 4820 paint (including few millimeters inside the barrel).

Gentle heat the surface after application to shorten the drying time (The film is dry to the touch when the finger leaves no footprint).

Thickness obtained after 2 layers: 250 microns.

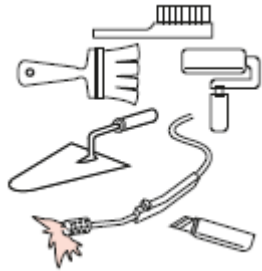
Control with circumferential tape:

DN	Max DE mm
150	171
200	223

7 External coating repairs

1 EQUIPMENT AND TOOLS REQUIRED

- Gloves, protective mask and goggles
- Brush, abrasive paper and cutter
- Spatula, mastic knife
- Paintbrushes, roller
- Gas burner
- Adhesive roller



2 INTEGRAL DUCTAN PIPE: BIOZINALIUM EXTERNAL COATING

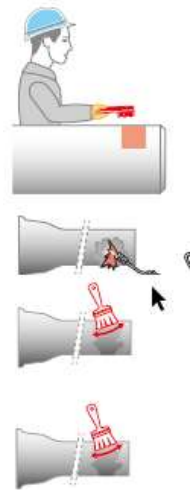
Brush to remove any dirt or loose particles.

Dry the surfaces to be coated (in case of low temperatures or high humidity, use a gas burner).

If the iron is exposed, apply high-zinc anticorrosion primer NATZINC (See « Repair products » paragraph) with a paintbrush with vertical and horizontal strokes.

Allow to **dry** for a few minutes.

Apply AQUACOAT paint with a paintbrush (See « Repair products » paragraph) with vertical and horizontal strokes.



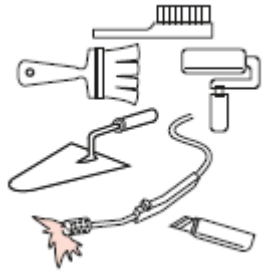
8 Internal lining repairs



For all mixtures of resins and hardeners, you must comply with the specified proportions.

1 EQUIPMENT AND TOOLS REQUIRED

- Gloves, protective mask and goggles
- Brush, abrasive paper and cutter
- Spatula, mastic knife
- Paintbrushes, roller
- Gas burner



2 INTEGRAL DUCTAN PIPE: DUCTAN INTERNAL LINING

Deburr the edges of the damaged area with a cutter.



Sand and **clean** the damaged area.



Apply the Eurokote 4820 mixture (See « Repair products » paragraph) to the damaged area with a paintbrush



9 Repair products

BIOGAN RANGE DN150 and 200

Area		Ref.	Product	packaging
① Exterior		251 222	NATZINC®	5 kg dose (R 90% + H 10%)
	and	240 990	Red AQUACOAT	0,75 kg dose
② Interior and ③ Interior socket		158 255	Blue EUROKOTE® 4820	1 kg dose (R 68% + D 32%)
	or	220 815	Blue EUROKOTE® 4820	Kit de five 50 ml syringes
④ Cut		179 099	Protective Paste ISOLARM 671-50	200 g tube

BIOGAN PLUS RANGE DN150 and 200

Area		Ref.	Product	packaging
① Exterior		251 222	NATZINC®	5 kg dose (R 90% + H 10%)
	and	240 990	Red AQUACOAT	0,75 kg dose
② Interior and ③ Interior socket and ④ Exterior Spigot		158 255	Blue EUROKOTE® 4820	1 kg dose (R 68% + D 32%)
	or	220 815	Blue EUROKOTE® 4820	Five 50 ml syringes kit
④ Cut		220 817	Red EUROKOTE® 4820	Five 50 ml syringes kit
	or	250 714	Topaz repairing kit	See below

TOPAZ repairing kit ref 250 714	Quantity
Pair of gloves	1
Brush	5
Abrasive paper 80	5
Gas burner	1
Five 50 ml red Eurokote 4820 syringes kit	1
Plastic nozzle	10

10 Ovality correction

Using a circometer, ensure that the outer diameter complies with the following values:

DN	Outside diameter OD (mm)	
	Nominal value	Limit deviations
150	170	+1/-2.9
200	222	+1/-3.0

Extract from standard EN598 – table 11

However, pipes may become oval-shaped due to transportation and handling, meaning that fittings cannot be assembled correctly.

1 CHECK THE OVALITY

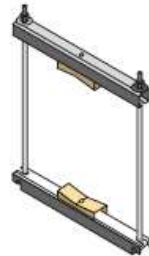
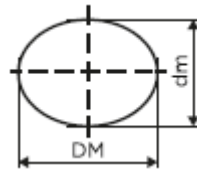
$$ovality (\%) = \frac{DM - dm}{DM + dm} \times 100$$

DM : maximum diameter measured

dm : minimum diameter measured

TACKLE (ref. 244524)

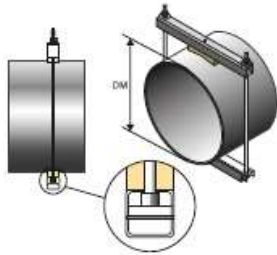
- Two steel **bars** (top and bottom) fitted with movable pads
- Two **threaded rods** (right-hand thread)
- Two **Nylstop nuts + washers**



2 FIT

Fit the tackle according to the diagram.

The tackle can be set up 50 cm from the end of the pipe so that sleeves can be fitted.



3 TIGHTEN

Tighten the nuts by hand so that the tackle is stable.

With a size 30 spanner, **tighten** the nuts on the rods **alternately** and **gradually**.

4 CONTROL

Control the ovality of the spigot in order not to pass the circular shape.

5 ASSEMBLE

With the tackle in position, **introduce** the spigot in the socket. Nut tightening should be maintained during the assembly.