NORHAM

ETA 09/0248 — 82-01-352

ALL THESE CONNECTION SOLUTIONS ARE COVERED BY OUR CERTIFICATIONS.

NORHAM FLEXIBLE COUPLINGS

COUPLINGS & SEALS

Connection and repair multimaterial couplings, with water flow preservation, for all sewerage, rainwater and backflow networks.

- **Multimaterial :** connects pipes, materials, and different diameters..
- Suitable for **above or below ground applications, inside or outside** buildings.
- **Completely watertight :** withstands pressures up to 1.0 bar.
- **Manufactured and certified in France :** DTA N° 17.2/20-352_V2 and ETA-09/0248.

NORHAM

afaq ISO 9001 Qualité AFNOR CERTIFICATION N° 1997 | 8004.7

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NORHAM COUPLINGS

COUPLINGS & SEALS

CONTENTS

NORHAM COUPLINGS

COUPLINGS & SEALS

INTRODUCTION

Since its creation in 1989, NORHAM has specialised in the design, development and manufacture of products and solutions for the water and sanitation sectors. NORHAM became known particularly for its **NORHAM FLEXIBLE COUPLINGS** multimaterial couplings designed for connecting and repairing pipes in gravity networks.

In 1997, **NORHAM FLEXIBLE COUPLINGS** obtains the first Technical Assessment issued by CSTB for *"flexible elastomeric couplings, with or without stainless steel reinforcement bands, designed to assemble different types of sanitation pipelines."*

In 2009, **NORHAM FLEXIBLE COUPLINGS** obtained the first European Technical Approval issued by EOTA.

Through these certifications, NORHAM consistently strives to attest to the quality, reliability, and performance of its **NORHAM FLEXIBLE COUPLINGS**.

In 2020, NORHAM completed and renewed its production facilities and **NORHAM FLEXIBLE COUPLINGS** became the only couplings CERTIFIED AND MADE IN FRANCE.

They also have a Community registration(1) for their unique design.

More than 30 years of NORHAM history and millions of **NORHAM FLEXIBLE COUPLINGS** installed by professionals are references and recommendations that feed NORHAM's experience and are sources of inspiration for our future developments.

(1) No. 006352787 issued by the European Office for Intellectual Property.

AREA OF USE

NORHAM FLEXIBLE COUPLINGS multimaterial couplings have been designed to connect pipes of different diameters and materials and all types of equipment with tubular connections (e.g., end-of-pipe valves, manholes, etc.).

NORHAM FLEXIBLE COUPLINGS have a soft, flexible elastomer sleeve.

The two stainless steel clamps are used to secure the sleeve to the pipes, ensuring that the sewerage, rainwater and backflow networks are perfectly watertight.

NORHAM FLEXIBLE COUPLINGS multimaterial couplings are quick and easy to install. All you need is a screwdriver or ratchet spanner. They can be installed above or below ground, inside or outside buildings.

Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

TECHNICAL DATA

- **Pressure resistance :**
  - **LC et XLC couplings:** max. 1,0 bar ;
  - **SC et XL couplings :** max. 1,0 bar ;
  - **AC et DC couplings :** max. 0,6 bar.
- **Test pressure :**
  - **LC et XLC couplings :** max. 1,0 bar ;
  - **SC et XL couplings :** 1,5 bars ;
  - **AC et DC couplings :** 0,6 bar.

Requirement for gravity flow in accordance with European Standard EN 476 = 0.5 bar.

- **Temperature resistance :** -40 °C à +140 °C ;
- **Angulaire deflection :** see table below. For extreme conditions, please contact us.

	DN	MAX. ANGULAR DEFLECTION
SC / XL	DN ≤ 200	5,0° (80 mm/m)
	200 < DN < 500	2,0° (30 mm/m)
	DN ≥ 500	1,5° (20 mm/m)
AC / DC	DN ≤ 200	7,5° (120 mm/m)
	200 < DN ≤ 500	3,0° (45 mm/m)

ASSEMBLY TECHNOLOGY

- **TOX® :** assembly of parts in AISI 304 stainless steel (or AISI 316 stainless steel), without the addition of material, by clinching (deep-drawing process) for optimum corrosion resistance (SC and XL couplings) ;
- **CLIP-IN :** a profiled system in the rubber that holds the clamps and the central anti-shearing band in place for easier handling and installation (SC, DC and AC couplings). ;
- **MEDIUM-TORQUE and HI-TORQUE :** ptimum clamping system for guaranteed pressure resistance: :
  - **MEDIUM-TORQUE :** all AC, DC and SC couplings up to 200 mm diameter ;
  - **HI-TORQUE :** SC from diameter 200 mm and all XL couplings ;
  - **T-BOLT :** clamping system for optimum pressure resistance for all LC and XLC couplings.

MATERIALS QUALITY

Materials have been selected for their performance. AISI 304 and AISI 316 stainless steels offer excellent corrosion resistance, while EPDM is highly resistant to the main effluents.

For all special applications (industrial fluids, chlorinated fluids, etc.), consult NORHAM's technical department.

- **EPDM elastomer** in compliance with standard **NF EN 681-1**, or nitrile rubber as an option ;
- **AISI 304 stainless steel** with a minimum hardness corresponding to class **+C850** in accordance with standard **NF EN 10088-2** (AISI 316 stainless steel optional).

The strain-hardened stainless steel of the **anti-shear reinforcement band**, through rolling, increases the yield strength and hardness of the stainless steel and confers a memory effect on the coupling, giving it high resistance to shear load: **25 x DN** (in Newton, N).

NORHAM FLEXIBLE COUPLINGS comply with the following standards :

- **NF-EN 476 :** general requirements for components used for sewerage connections and collectors ;
- **NF-EN 13501-1 :** fire classification of construction elements ;
- **NF-EN 10088-2 :** characteristics of stainless steels ;
- **NF-EN 681-1 :** specifications for elastomers used in pipe couplings and seals.

All the requirements of these standards, as well as those relating to the performance of couplings, are set out in our Technical Approvals and certifications (see p. 6).

CERTIFICATIONS AND TESTS

CERTIFICATIONS BY BODIES

NORHAM COUPLINGS multimaterial couplings are the only ones manufactured and certified in France.

They have :

- **European Technical Assessment ETA n° 09/0248** (issued by **EOTA**);
- a Technical Notice : **Technical application document DTA n° 17.2/20-352_V2** (issued by the **CSTB**).

As part of our DTA / ETA, tests are carried out on our **NORHAM COUPLINGS** solutions to certify that the performance of our products complies with current requirements :

- sizing inspection ;
- watertightness of pipe coupling assembles with :
  - short and long-terme shear strenght ;
  - angular deviation ;
  - pipe ovality ;
  - temperature cycling ;
  - fire resistance.

Thanks to these certifications, **NORHAM COUPLINGS** are QB et CE marked.

ETE CE 09 QB 82-01-352
ETA 09/0248
ALL THESE CONNECTION SOLUTIONS ARE COVERED BY OUR CERTIFICATIONS.

DOCUMENTS AVAILABLE ON REQUEST OR DOWNLOADABLE FROM OUR WEBSITE WWW.NORHAM.FR.

CSTB
Le futur en construction
Centre Scientifique et Technique du Bâtiment
84 avenue Jean Jaurès
CHAMPS-SUR-MARNE
F-77447 Marne-la-Vallée Cedex 2
Tél. : (33) 01 64 68 82 82
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EOTA Member of www.eota.eu

Evaluation Technique Européenne — **ETA-09/0248 du 18/05/2021**
(version originale en langue française)

PARTIE GENERALE

Organisme d'Evaluation Technique délivrant l'Evaluation technique Européenne :	Centre Scientifique et Technique du Bâtiment (CSTB)
Dénomination commerciale du produit de construction :	- FLEX-SEAL Plus
Famille de produits à laquelle le produit de construction appartient :	Raccords flexibles en élastomère, éventuellement pourvus d'une bande de renfort en acier inoxydable, destinés à assembler des canalisations d'assainissement avec ou sans pression
Fabricant :	**Société NORHAM** **ZA Les Druisieux** **F-26260 Saint-Donat-sur-l'Herbasse** www.norham.fr
Usine(s) de fabrication :	**- Société NORHAM, ZA Les Druisieux, F-26260 Saint-Donat-sur-l'Herbasse**
La présente Evaluation technique européenne contient :	10 pages incluant 5 annexes faisant partie intégrante du document.
Cette Évaluation Technique Européenne est délivrée conformément au Règlement (UE) n° 305/2011, sur la base du :	Document d'Evaluation Européen EAD 17-18-0018-07.04
Cette version remplace :	ETA 09/0248-2018-01-23

Les traductions de cette Évaluation Technique Européenne dans d'autres langues doivent correspondre entièrement au document d'origine délivré et doivent être identifiées comme telles. Cette Évaluation Technique Européenne doit être communiquée dans son intégralité, y compris par voie électronique (sauf l'Annexe confidentielle référencée ci-dessus). Cependant, elle peut être reproduite partiellement, avec l'accord écrit du CSTB. Toute reproduction partielle doit être identifiée en tant que telle.

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CC FAT
DTA
DOCUMENT TECHNIQUE D'APPLICATION

17.2/20-352_V2

Relevant de l'Evaluation Technique Européenne
ETA-09/0248

Valide du
au **31 janvier 2026**

Sur le procédé
FLEX-SEAL Plus

Titulaire : **Société NORHAM SAS**
Internet : www.norham.fr

Descripteur :
Les assemblages souples et pièces d'adaptation FLEX-SEAL Plus pour canalisations d'assainissement sont des raccords en élastomère (EPDM ou nitrile), éventuellement pourvus d'une bande de renfort métallique (acier inox), destinés à raccorder différents types de canalisations.
Le serrage de l'élément en élastomère sur les canalisations est obtenu par des bandes de tension en acier inox pour lesquelles le couple de serrage est recommandé. Les matériaux constitutifs des canalisations ainsi que leur diamètre peuvent être différents.
Cet avis est formulé en prenant en compte les contrôles et modes de vérification de de fabrication décrits dans le Dossier Technique.

Groupe Spécialisé n° 17.2 - Réseaux et épuration / Réseaux

Famille de produit/Procédé : Tuyau, tube, canalisation et accessoire d'assainissement

CC FAT COMMISSION CHARGÉE DE FORMULER LES AVIS TECHNIQUES
Secrétariat : CSTB, 84 avenue Jean Jaurès, FR-77447 Marne la Vallée Cedex 2
Tél. : 01 64 68 82 82 - email : secretariat.at@cstb.fr
www.ccfat.fr

PERFORMANCE TEST PERFORMED BY THE CSTB

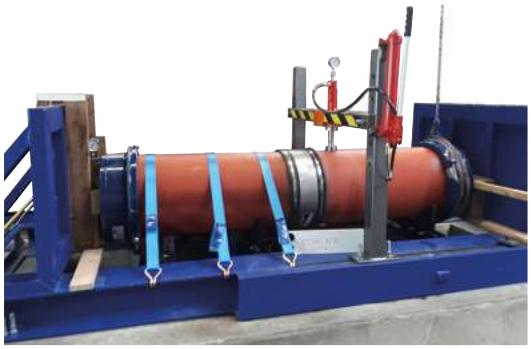
Tests carried out on NORHAM FLEXIBLE COUPLINGS SC as part of our certification process. Test report available on request.

TESTS ON NORHAM TEST BENCH

To ensure the consistent quality of its products and their durability over time, NORHAM tests its **NORHAM FLEXIBLE COUPLINGS** under extreme conditions on its test benches (in addition to the tests carried out by the CSTB).

Leak test : **NORHAM FLEXIBLE COUPLINGS** are fitted to pipes and subjected to water pressure of up to 1.5 bars. If no leakage is detected, the test is validated.

Shear strength test : **NORHAM FLEXIBLE COUPLINGS** are fitted to pipes and pressurised to 1.5 bar for 30 minutes, a shear load (in N) equal to 25 x DN is applied to the coupling. If no leakage is detected, the test is validated.



*Shear strength test on a **NORHAM FLEXIBLE COUPLINGS** SC445. The same type of test is applied to all the couplings in the **NORHAM FLEXIBLE COUPLINGS** range.*

THE RANGE

This flow chart will help you choose the most appropriate coupling from the **NORHAM FLEXIBLE COUPLINGS** range.

To do this, check the following points:

- is the configuration underground (see Ⓐ) or above ground (see Ⓑ) ?
- is there a risk of shearing (see 1) ?
- is there a PVC coupling to another material (see 2) ?
- is there a large difference between the two outside diameters (see 3) ?

Ⓐ UNDERGROUND LAYING

ARE THE EXT. Ø TO BE FITTED (WITHIN THE TOLERANCE OF Δ MAX. ? (SEE 3)

- NO
  - IF COUPLING PVC TO OTHER MATERIAL (SEE 2)
    - 
    - NORHAM FLEXIBLE COUPLINGS SC + BC-EX[2]
    - Page 15
  - IF COUPLING OTHER THAN PVC
    - 
    - NORHAM FLEXIBLE COUPLINGS SC + BC[3]
    - Page 10 et 12
- YES
  - PIPE DN > 600 mm
    - WIDTH 300 mm
      - 
      - NORHAM FLEXIBLE COUPLINGS XLC
      - Page 19
    - WIDTH 190 mm
      - 
      - NORHAM FLEXIBLE COUPLINGS LC
      - Page 19
  - PIPE DN ≤ 600 mm
    - WIDTH 300 mm
      - 
      - NORHAM FLEXIBLE COUPLINGS XL
      - Page 16
    - WIDTH OF 100 mm TO 190 mm[1]
      - 
      - NORHAM FLEXIBLE COUPLINGS SC
      - Page 10

Ⓑ ABOVE-GROUND INSTALLATION

Ø TO BE FITTED ARE > OR < THAN DN 300

- > DN 300
  - COUPLING ON 2 SIMILAR EXT. Ø AND > TO THE Δ MAX. (SEE 3)
    - IF COUPLING PVC TO OTHER MATERIALS (SEE 2)
      - 
      - NORHAM FLEXIBLE COUPLINGS SC + BC-EX[2]
      - Page 15
    - IF CONNECTING PVC TO OTHER MATERIALS
      - 
      - NORHAM FLEXIBLE COUPLINGS SC + BC[3]
      - Page 10 et 12
  - COUPLING ON 2 SIMILAR EXT. Ø OR WITHIN THE TOLERANCES OF Δ MAX
    - 
    - NORHAM FLEXIBLE COUPLINGS SC
    - Page 10
- < DN 300
  - WITH REDUCTION
    - 
    - NORHAM FLEXIBLE COUPLINGS AC
    - Page 22
  - WITHOUT REDUCTION
    - 
    - NORHAM FLEXIBLE COUPLINGS DC
    - Page 20

(1) The width of the coupling may vary depending on the part number. See table on p. 11.
(2) If the maximum Δ with a BC-EX ring is still greater than the maximum permitted Δ, CR rings can be added.
*(3) BC and BC-EX compensating rings can only be combined with **NORHAM FLEXIBLE COUPLINGS SC, XL, LC and XLC**.*

NORHAM COUPLINGS

COUPLINGS & SEALS

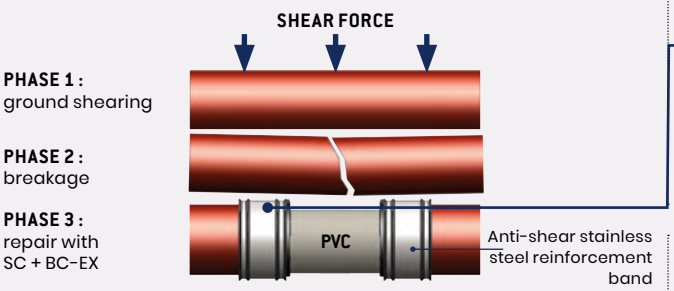
1 WHAT IS SHEARING ?

When pipes are buried, they are subject to shearing stresses due to movement, ground settlement, rolling loads, etc. This can lead to damage to the pipe.

This can lead to the pipe cracking or breaking.

This can be repaired with our **NORHAM FLEXIBLE COUPLINGS SC, XL, XLC and LC**, which are equipped with anti-shear bands.

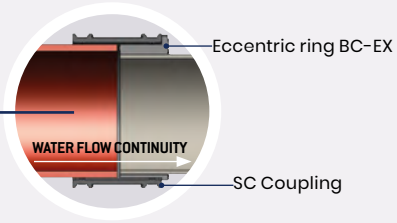
Example of ground shearing and solution:



2 SPECIAL PVC WATER FLOW CONTINUITY[1]

When multimaterial couplings include a PVC pipe, the internal diameters (int. Ø) are not identical (depending on the DN).

In this case, an eccentric compensation ring is required to maintain the water flow.



(1) Requirements defined in standard NF-EN476 "General requirements for components used in sewerage connections and collectors".

3 WHAT IS Δ MAX. ?

The Δ max. is the difference between the external diameters (ext. Ø) of the two pipes to be fitted. To make a connection with just one coupling, the difference between the external diameters (ext Ø) of the pipes must be less than the coupling's Δ max.

If the difference between the two diameters is greater than the maximum Δ of the coupling, compensation rings are required.

Δ MAX TABLE

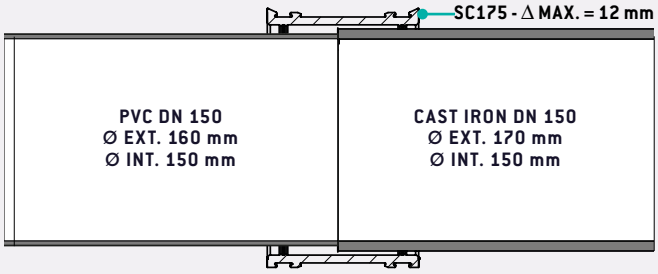
SC / XL / LC / XLC CONNECTIONS	MAX. Δ
Ø ext. ≤ 120 mm	10 mm
120 mm < Ø ext. < 300 mm	12 mm
Ø ext. ≥ 300 mm	15 mm

EXAMPLE 1 :

The difference between the two external diameters **is less than** the maximum Δ of the coupling.

Δ MAX. :

- **Difference in Ø ext. :** 170 mm - 160 mm = Δ 10 mm ;
- **Δ Max. of SC175 = 12 mm** ➞ does not require the use of a ring ;
- **Complete assembly :** SC175.

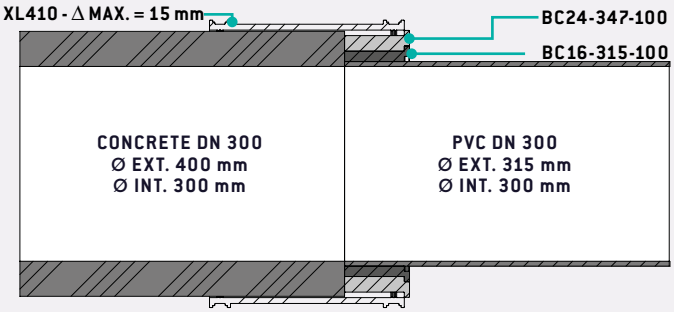


EXAMPLE 2 :

The difference between the two external diameters **is higher than** the maximum Δ of the coupling.

Δ MAX. :

- **Difference in Ø ext. :** 400 mm - 315 mm = Δ 85 mm ;
- **Δ max. of XL410 = 15 mm** ➞ require the use of compensation rings;
- **Complete assembly :** XL410 + BC16-315-100 + BC24-347-100 ;
- **Δ Final with compensation :** 5 mm.



Compliance with the Δ max. ensures that the coupling retains all its performance in terms of pressure resistance, shearing stress, ovality, etc.

COUPLINGS REINFORCED WITH ANTI-SHEARING BANDS

NORHAM FLEXIBLE COUPLINGS SC

AREA OF USE

Multimaterial **NORHAM FLEXIBLE COUPLINGS SC** are equipped with an anti-shear bands. They can be used to connect and repair pipes of similar or different materials and diameters for underground or overhead networks. They can be installed inside or outside buildings.

TECHNICAL DATA

- **Multimaterial couplings :** PVC, PP, smooth or corrugated HDPE, GRP, cast iron, fibre cement, steel, clay, concrete ;
- **Pressure-resistance :** up 1,0 bar ;
- **Test pressure :** 1,5 bars ;
- **Temperature resistance :** -40 °C to +140 °C ;
- **Angular deflection :** 1,5° to 5,0° depending on DN (see p. 5) ;
- **Shear strength** : 25 x DN (in N). For example : DN 200 x 25 = 5000 N, approximatively 500 kg ;
- **Fire resistance :** class E (NF-EN 13501-1).

MATERIALS

- **Sleeve :** made of EPDM 60 IRHD grade WG complying with standard NF-EN 681-1 (NBR option for DN ≥ 300 mm) ;
- **Anti-shear bands and fixing collars :** in AISI 304 stainless steel, with a minimum hardness corresponding to class +C850, in compliance with standard NF-EN 10088-2 (AISI 316 stainless steel option for DN ≥ 300 mm) .

ASSEMBLY TECHNOLOGY

- **TOX® :** assembly of AISI 304 stainless steel fasteners (AISI 316 stainless steel option for DN ≥ 300 mm) on the anti-shear band, without any additional material, by clinching (a joining process) for optimum corrosion resistance ;
- **CLIP-IN :** a profiled system in the rubber that holds the clamps and the central anti-shear band in place, making them easier to handle and install ;
- **MEDIUM-TORQUE and HI-TORQUE :** optimum clamping system for guaranteed pressure resistance :
  - **MEDIUM-TORQUE :** all couplings up to 200 mm diameter ;
  - **HI-TORQUE :** from diameter 200 mm.

Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

NORHAM COUPLINGS

COUPLINGS & SEALS

SC RANGE FROM DN 50 TO DN 600

REF.	RANGE OF USE		Δ MAX.[1]	L	TIGHT. TORQUE
	SIDE A	SIDE B			
SC65	50-65	50-65	5	100	6
SC75	65-75	65-75	5	100	6
SC90	75-90	75-90	8	100	6
SC100	85-100	85-100	8	100	6
SC115	100-115	100-115	10	120	6
SC120	105-120	105-120	10	120	6
SC140	120-140	120-140	10	120	6
SC150	130-150	130-150	10	120	6
SC162	137-162	137-162	10	120	6
SC175	150-175	150-175	10	120	6
SC190	165-190	165-190	12	120	6
SC200	175-200	175-200	12	150	10
SC210	187-210	187-210	12	150	10
SC225	200-225	200-225	12	150	10
SC250	225-250	225-250	12	150	10
SC275	250-275	250-275	12	150	10
SC290	265-290	265-290	12	150	10
SC310	285-310	285-310	15	190	10
SC320	295-320	295-320	15	190	10
SC335	310-335	310-335	15	190	10
SC350	325-350	325-350	15	190	10
SC365	340-365	340-365	15	190	10
SC385	355-385	355-385	15	190	10
SC410	385-410	385-410	15	190	15
SC430	400-430	400-430	15	190	15
SC445	415-445	415-445	15	190	15
SC465	435-465	435-465	15	190	15
SC490	460-490	460-490	15	190	15
SC495	465-495	465-495	15	190	15
SC510	480-510	480-510	15	190	15
SC525	495-525	495-525	15	190	15
SC545	515-545	515-545	15	190	15
SC550	525-550	525-550	15	190	15
SC560	530-560	530-560	15	190	15
SC570	545-570	545-570	15	190	15
SC585	550-585	550-585	15	190	15
SC600	570-600	570-600	15	190	15
SC620	590-620	590-620	15	190	15
SC635	605-635	605-635	15	190	15
SC645	615-645	615-645	15	190	15

(1) See "What is the Δ max?" on page 9.

Regulatory requirements
ATE n° 09/0248
DTA n° 17.2/20-352_V2

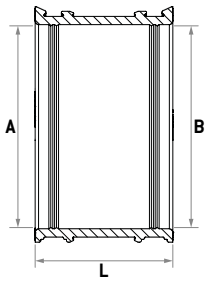
W_p : 1,0 bar
Test pressure : 1,5 bars

NORHAM
Internal tests

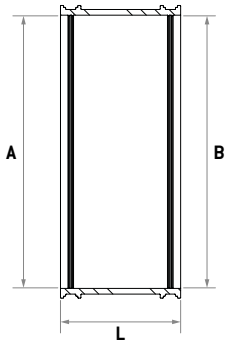
W_p : 2,5 bars

Test reports on request.

FROM SC65 TO SC290



SC310 AND MORE



ETE CE 09 ETA 09/0248 QB 87-01-352
ALL THESE CONNECTION SOLUTIONS ARE COVERED BY OUR CERTIFICATIONS.

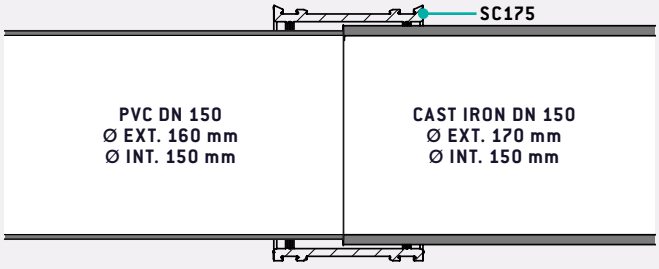
EXAMPLE OF COUPLING WITH CONTINUOUS WATER FLOW

PVC DN 150 EXTERNAL DIAMETER (EXT.Ø) 160 MM

TO CAST IRON DN 150 EXTERNAL DIAMETER (EXT.Ø) 170 MM

Δ MAX. :

- **Difference in ext. Ø :** 170 mm - 160 mm = Δ 10 mm (see p. 9) ;
- **Δ Max. du SC175 = 12 mm →** does not require the use of a ring ;
- **Complete assembly :** SC175.



COMPENSATION RINGS

AREA OF USE

Compensation rings[1] can be used to make customised reductions to multimaterial couplings and to compensate for large differences in the outside diameters of the pipes to be connected.

The couplings accept a maximum permissible outside diameter difference, equal to the Δ max. (see "*Δ max table*" below).

If the Δ between two pipe outside diameters is greater than the max. Δ, a BC compensating ring must be used, see "*What is the max.Δ*? " p. 9.

REPRESENTATION OF 3 BESPOKE BC RINGS (SUPERPOSED)

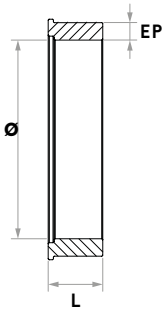
POSSIBILITY OF SUPERIMPOSING UP TO 3 BC / BC-EX RINGS

(1) BC and BC-EX compensating rings can only be combined with NORHAM FLEXIBLE COUPLINGS SC, XL, LC and XLC.

COMPENSATION RINGS

BC RANGE

REF.	POSSIBLES Ø	EP	L	Ø REDUCTION
BC05-Ø	< 100	5	32	10
BC08-Ø	100 to 2000	8	80 / 100	16
BC16-Ø	115 to 2000	16	100	32
BC24-Ø	250 to 2000	24	100	48
BC32-Ø	315 to 2000	32	100	64
BC40-Ø	500 to 2000	40	100	80
BC48-Ø	500 to 2000	48	100	96



ETE ETA 09/0248 CE 09 QB 87-01-352
DETAIL OF REFERENCES UNDER CERTIFICATES, CONSULT US.
FRENCH
design and manufacture

Δ MAX TABLE

SC / XL / LC / XLC + COMPENSATION RING CONNECTIONS	MAX. Δ [2]
Ø ext. ≤ 120 mm	10 mm
120 mm < Ø ext. < 300 mm	12 mm
Ø ext. ≥ 300 mm	15 mm

(2) Δ = difference between the external diameters of the pipes to be fitted.
If Δ > Δ max, a CR compensating ring must be used in addition.

Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

ECCENTRIC COMPENSATING RINGS ESPECIALLY FOR PVC

Depending on the DN, the internal diameters (int. Ø) of PVC pipes are not identical to the int. Ø of other pipes.

When the **int. Ø are not identical**, an eccentric BC-EX(1) compensating ring must be used to maintain the continuity of the water flow.

The tables below and on page 26 show the main "PVC to other type of pipe" couplings requiring the use of BC-EX bushes (see also pages 14 and 15).

BC-EX compensating rings enable customised reductions to be made in addition to multimaterial couplings, **while preserving the water flow.**

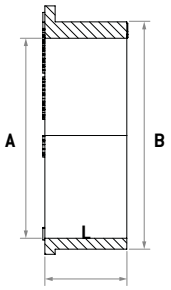
They ensure that the installation complies with the requirements of standard NF-EN 476(2) and guarantee the performance of the coupling.

(1) BC and BC-EX compensating rings can only be combined with **NORHAM FLEXIBLE COUPLINGS SC, XL, LC and XLC.**
(2) NF-EN 476: general requirements for components used for sewerage connections and collectors.

BC-EX RANGE

REF.	DN	RANGE OF USE		L	FOR CONNECTIONS	FOR NORHAM FLEXIBLE COUPLINGS SC
		SIDE A	SIDE B			
BC08-125EX	125	125	144	100	PVC to FC and/or PVC to cast iron	SC150
BC08-200EX	200	200	222			SC225
BC16-250EX	250	250	290			SC290
BC16-400EX	400	400	429			SC430 ou SC445

For other made-to-measure BC-EX couplings, please contact us.



On the next page, you'll find the full range of **NORHAM FLEXIBLE COUPLINGS SC-EX** (SC couplings + BC-EX compensating rings), depending on the type of pipe to be connected.

FIND THE NORHAM FLEXIBLE COUPLINGS AND RINGS YOU NEED QUICKLY AND EASILY
thanks to the new application to help you define your couplings.

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COUPLINGS TO MAINTAIN THE FLOW OF WATER

ECCENTRINC NORHAM FLEXIBLE COUPLINGS SC-EX, SPECIAL PVC

AREA OF USE

Multimaterial **eccentric NORHAM COUPLING SC-EX** consist of an SC coupling and a BC-EX eccentric ring. SC couplings are equipped with anti-shear bands.

They can be used to connect and repair pipes of different materials and diameters for underground networks. They can be installed inside or outside buildings.

SC-EX eccentric couplings are ideal for connecting PVC to cast iron or fibre cement, and f**or maintaining the flow of water.**

TECHNICAL DATA

- **Multimaterial couplings :** PVC, PP, smooth or corrugated HDPE, GRP, cast iron, fibre cement, steel, clay, concrete ;
- **Pressure-resistance :** up 1,0 bar ;
- **Test pressure :** 1,5 bars ;
- **Temperature resistance :** -40 °C to +140 °C ;
- **Angular deflection :** 1,5° to 5,0° depending on DN (see p. 5) ;
- **Shear strength** : 25 x DN (en N). For example : DN 200 x 25 = 5000 N, approximately 500 kg ;
- **Fire resistance :** class E (NF-EN 13501-1).

MATERIALS

- **Sleeve :** made of EPDM 60 IRHD complying with standard NF-EN 681-1 (NBR option for DN ≥ 300 mm). ;
- **Anti-shear bands and fixing collars :** in AISI 304 stainless steel, with a minimum hardness corresponding to class +C850, in compliance with standard NF-EN 10088-2 (AISI 316 stainless steel option for DN ≥ 300 mm).

ASSEMBLY TECHNOLOGY

- **TOX® :** assembly of AISI 304 stainless steel fasteners (AISI 316 stainless steel option for DN ≥ 300 mm) , on the anti-shear band without any additional material, by clinching (a joining process) for optimum corrosion resistance ;
- **CLIP-IN :** a profiled system in the rubber that holds the clamps and the central anti-shear band in place, making them easier to handle and install ;
- **MEDIUM-TORQUE or HI-TORQUE :** optimum clamping system for guaranteed pressure resistance :
  - **MEDIUM-TORQUE :** all couplings up to 200 mm diameter ;
  - **HI-TORQUE :** from diameter 200 mm.

Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

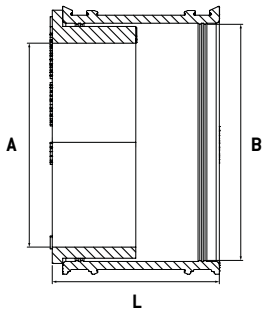
SC- EX RANGE FROM DN 125 TO DN 400

Designed for PVC to cast iron or PVC to FC couplings, with no loss of flow.

For couplings with pipes of different internal diameters, the use of the BC-EX eccentric ring guarantees continuity of water flow(1).

REF.	DN	RANGE OF USE			L	W_p (3)	TIGHT. TORQUE	CONNECTIONS	REFERENCE COMPOSITION
		Ø SIDE A PVC	Ø SIDE B CAST IRON	Ø SIDE B FC					
SC150EX-PFF	125	125	144	144	120	1,0	6	PVC to cast iron or FC	SC150 + BC08-125EX
SC175(2)	150	160	170	171	120		6	PVC to cast iron or FC	SC175
SC225EX-PFF	200	200	222	223	150		10	PVC to cast iron or FC	SC225 + BC08-200EX
SC290EX-PFF	250	250	265	290	150		10	PVC to cast iron or FC	SC 290 + BC16-250EX
SC335(2)	300	315	325	332	190		15	PVC to cast iron ou FC	SC335
SC430EX-PFTE	400	400	429	-	190		15	PVC to cast iron	SC430 + BC16-400EX
SC445EX-PFC	400	400	-	445	190		15	PVC to FC	SC445 + BC16-400 EX + BC08-429-80

*(1) Requirements defined in standard NF-EN476 "**General requirements for components used in sewerage connections and collectors**".*
(2) For DN 150 and 300, the internal diameters of PVC and other materials are identical, so there is no need for an eccentric ring, SC coupling only.
(3) Operating pressure: 1.0 bar; test pressure: 1.5 bar.



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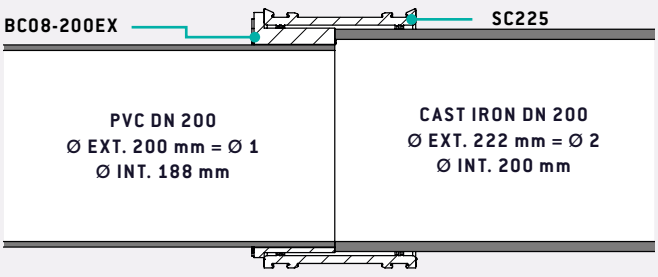
EXAMPLE OF COUPLING WITH CONTINUOUS WATER FLOW

PVC DN 200, EXTERNAL DIAMETER (EXT.Ø) 200 MM)
TO CAST IRON DN 200 EXTERNAL DIAMETER (EXT.Ø) 222 MM)



Δ MAX. :

- **Difference in Ø ext. :** 222 mm - 200 mm = Δ 22 mm (see p. 9) ;
- **Δ Max. of SC225 = 12 mm** → requires the use of a BC-EX ring ;
- **Complete assembly :** SC225EX-PFF.

CONNECTIONS	Ø 1	Ø 1 WITH COMPENSATION RING	Ø 2	FINAL Δ
SC225EX-PFF	200	222	222	0

COUPLINGS WITH EXTRA WIDE ANTI-SHEARING BANDS

NORHAM FLEXIBLE COUPLINGS XL EXTRA WIDE

AREA OF USE

Multimaterial **NORHAM COUPLING XL EXTRA-WIDE** are equipped with an anti-shear band. They can be used to connect and repair pipes of similar or different materials and diameters. Their width ensures optimum coupling even on pipes with cutting defects.

They can be used for underground or above ground network couplings and can be installed inside or outside buildings.

TECHNICAL DATA

- **Multimaterial couplings :** PVC, PP, smooth or corrugated HDPE, GRP, cast iron, fibre cement, steel, clay, concrete ;
- **Pressure-resistance :** up 1,0 bar ;
- **Test pressure :** 1,5 bars ;
- **Temperature resistance :** -40 °C à +140 °C ;
- **Angular deflection :** 1,5° à 2,0° depending on (see p. 5) ;
- **Shear strength** : 25 x DN (en N). For example : DN 200 x 25 = 5000 N, approximately 500 kg ;
- **Fire resistance :** class E (NF-EN 13501-1) ;

MATERIALS

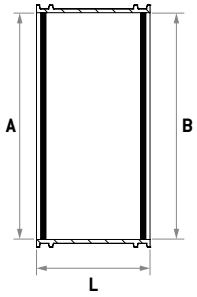
- **Sleeve :** made of EPDM 60 IRHD grade WG complying with standard NF-EN 681-1 (NBR option);
- **Anti-shear bands and fixing collars :** made from AISI 304 stainless steel, with a minimum hardness corresponding to class +C850, in compliance with standard NF-EN 10088-2 (AISI 316 stainless steel option).

ASSEMBLY TECHNOLOGY

- **TOX® :** assembly of AISI 304 stainless steel fasteners (or AISI 316 stainless steel), on the anti-shear band without any additional material, by clinching (a joining process) for optimum corrosion resistance.
- **HI-TORQUE :** optimum tightening system for guaranteed pressure resistance.

XL RANGE FROM DN 300 TO DN 600

REF.	RANGE OF USE		Δ MAX.[1]	L	W_p[2]	TIGHT. TORQUE
	SIDE A	SIDE B				
XL310	285-310	285-310	15	300	1,0	15
XL320	295-320	295-320				
XL335	310-335	310-335				
XL350	325-350	325-350				
XL365	340-365	340-365				
XL385	355-385	355-385				
XL410	385-410	385-410				
XL430	400-430	400-430				
XL445	415-445	415-445				
XL465	435-465	435-465				
XL495	465-495	465-495				
XL510	480-510	480-510				
XL525	495-525	495-525				
XL545	515-545	515-545				
XL550	520-550	520-550				
XL560	530-560	530-560				
XL570	545-570	545-570				
XL585	550-585	550-585				
XL600	570-600	570-600				
XL620	590-620	590-620				
XL635	605-635	605-635				
XL645	615-645	615-645				

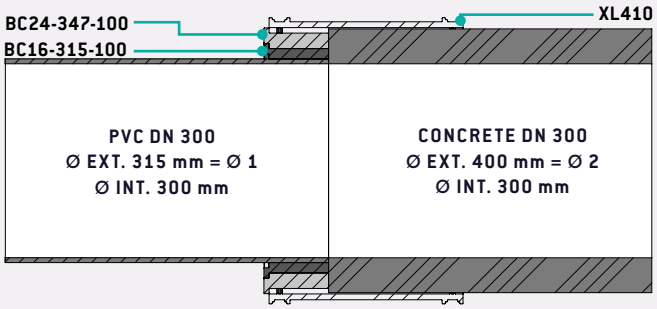


(1) See "What is the Δ max?" on page 9.
(2) Operating pressure: 1.0 bar; test pressure: 1.5 bar.

EXAMPLE OF COUPLING WITH CONTINUOUS WATER FLOW

PVC DN 300, EXTERNAL DIAMETER (EXT.Ø) 315 MM

TO CONCRETE DN 300 EXTERNAL DIAMETER (EXT.Ø) 400 MM



Δ MAX. :

- **Difference Ø ext. :** 400 mm - 315 mm = Δ 85 mm (see p. 9) ;
- **Δ Max. XL410 = 15 mm** → requires the use of compensation rings ;
- **Complete assembly :** XL410 + BC16-315-100 + BC24-347-100.

CONNECTIONS	Ø 1	Ø 1 WITH COMPENSATION RING	Ø 2	FINAL Δ
XL410 + BC16-315-100 + BC24-347-100	315	395	400	5

COUPLINGS REINFORCED WITH LARGE DIAMETER ANTI-SHEARING BANDS

AREA OF USE

Multimaterial N**ORHAM FLEXIBLE COUPLINGS Large Diameter** are custom-made to connect and repair pipes of similar or different materials and diameters with BC ferrules (see p. 12), from DN 600 to DN 2000.

They can be used to connect and repair pipes of different materials and diameters for underground networks. They can be installed inside or outside buildings.

They ensure that sewerage, rainwater, gravity and backflow networks are perfectly watertight.

TECHNICAL DATA

- **Multimaterial couplings :** PVC, PP, smooth or corrugated HDPE, GRP, cast iron, fibre cement, steel, clay, concrete ;
- **Pressure-resistance :** up 1,0 bar(1) ;
- **Test pressure :** 1,0 bar(1) ;
- **Temperature resistance :** -40 °C to +140 °C ;
- **Angular deflection :** 1,5° (see p. 5) ;
- **Shear strength** : 25 x DN (en N). For example : DN 200 x 25 = 5000 N, approximately 500 kg ;
- **Fire resistance :** class E (NF-EN 13501-1).

(1) Nous consulter.

MATERIALS

- **Sleeve :** made of EPDM 60 IRHD grade WG complying with standard NF-EN 681-1 (NBR option for LC range only).
- **Anti-shear bands and fixing collars :** made of AISI 304 stainless steel.

ASSEMBLY TECHNOLOGY

- **Clamping system :** Ø 8 mm "T-Bolt" type, made of AISI 304 stainless steel.

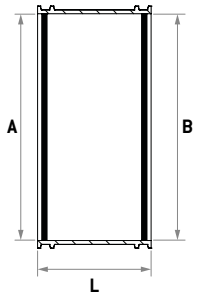
Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

NORHAM FLEXIBLE COUPLINGS LC, WIDTH 190 MM

LC RANGE FROM DN 600 TO DN 2000

Multimaterial **NORHAM FLEXIBLE COUPLINGS Large Diameter LC** with anti-shear band, width 190 mm.

REF.	RANGE OF USE		Δ MAX.[1]	L	W_p[2]	ANGULAR DEFLECTION	TIGHT. TORQUE[3]
	SIDE A	SIDE B					
LC Ø	25	25	15	190	Jusqu'à 1,0	1,5°	16
LC640	615-640	615-640					
LC645	620-645	620-645					
LC650	625-650	625-650					
↓	↓	↓					
↓	↓	↓					
LC2000	1975-2000	1975-2000					



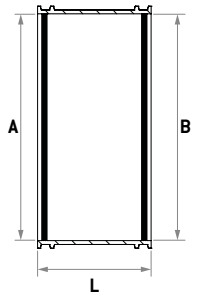
(1) See "What is the Δ max? " on page 9. // (2) Operating pressure: 1.0 bar; test pressure: up to 1.0 bar (consult us)
3) For mounting on flexible pipes (corrugated HDPE type, for example) the tightening torque may be increased. Observe the installation precautions defined in the Installation Instructions supplied with the coupling (consult us).

NORHAM FLEXIBLE COUPLINGS XLC, WIDTH 300 MM

XLC RANGE FROM DN 600 TO DN 2000

Multimaterial **NORHAM FLEXIBLE COUPLINGS Large Diameter XLC** with anti-shear band, width 300 mm.

REF.	RANGE OF USE		Δ MAX.[1]	L	W_p[2]	ANGULAR DEFLECTION	TIGHT. TORQUE[3]
	SIDE A	SIDE B					
XLC Ø	25	25	15	300	Jusqu'à 1,0	1,5°	16
XLC640	615-640	615-640					
XLC645	620-645	620-645					
XLC650	625-655	625-655					
↓	↓	↓					
↓	↓	↓					
XLC2000	1975-2000	1975-2000					



(1) See "What is the Δ max? " on page 9. // (2) Operating pressure: 1.0 bar; test pressure: up to 1.0 bar (consult us)
(3) For mounting on flexible pipes (corrugated HDPE type, for example) the tightening torque may be increased. Observe the installation precautions defined in the Installation Instructions supplied with the coupling (consult us).

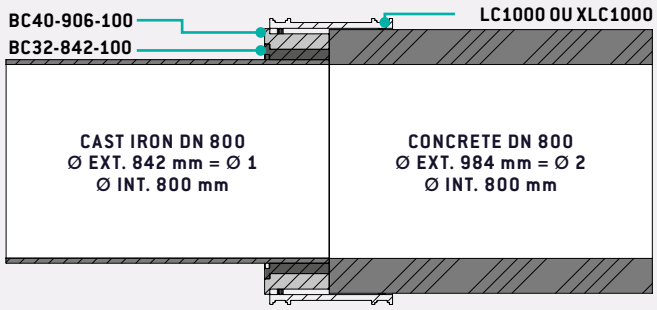
EXAMPLE OF COUPLING WITH CONTINUOUS WATER FLOW

CAST IRON DN 800, EXTERNAL DIAMETER (EXT.Ø) 842 MM

TO CONCRETE DN 800 EXTERNAL DIAMETER (EXT.Ø) 984 MM

Δ MAX. :

- **Difference in Ø ext. :** 984 mm - 842 mm = Δ 142 mm (see p. 9) ;
- **Δ Max. XLC1000 or LC1000 = 15 mm** ➡ requires the use of compensation rings ;
- **Complet assembly :** LC1000 + BC32-842-100 + BC40-906-100 ou XLC1000 + BC32-842-100 + BC40-906-100.



CONNECTIONS	Ø 1	Ø 1 WITH COMPENSATION RINGS	Ø 2	FINAL Δ
LC1000 ou XLC1000 + BC32-842-100 + BC40-906-100	842	986	984	2

COUPLINGS FOR SHEAR-FREE INSTALLATION

NORHAM FLEXIBLE COUPLINGS DC

AREA OF USE

Multimaterial **NORHAM FLEXIBLE COUPLINGS DC** allow the connection and repair of pipes of similar diameters for above ground or buried networks, without risk of soil shear, inside and outside buildings.

TECHNICAL DATA

- **Multimaterial couplings :** PVC, PP, smooth or corrugated HDPE, GRP, cast iron, fibre cement, steel, clayconcrete ;
- **Pressure-resistance :** up 0,6 bar ;
- **Test pressure :** 0,6 bar ;
- **Temperature resistance :** -40 °C yo +140 °C ;
- **Angular deflection :** 3,0° à 7,5° depending on DN (see p. 5) ;
- **Fire resistance :** class E (NF-EN 13501-1).

MATÉRIAUX

- **Sleeve :** made of EPDM 60 IRHD grade WG complying with standard NF-EN 681-1.
- **Clamps :** made from AISI 304 stainless steel, with a minimum hardness corresponding to class +C850, in compliance with standard NF-EN 10088-2.

ASSEMBLY TECHNOLOGY

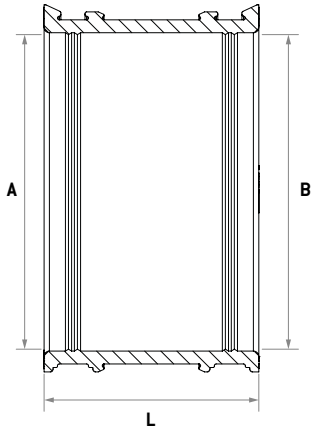
- **CLIP-IN :** a profiled system in the rubber that holds the clamps in place, making them easier to handle and install ;
- **MEDIUM-TORQUE :** optimum clamping system for guaranteed pressure resistance..

Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

DC RANGE FROM DN 20 TO DN 250

REF.	RANGE OF USE		L	W_P [1]	ANGULAR DEFLECTION	TIGHT. TORQUE
	SIDE A	SIDE B				
DC32	24-32	24-32	64		7,5°	
DC40	32-40	32-40	64		7,5°	
DC50	42-50	42-50	64		7,5°	
DC65	50-65	50-65	100		7,5°	
DC75	65-75	65-75	100		7,5°	
DC90	75-90	75-90	100		7,5°	
DC100	85-100	85-100	100		7,5°	
DC115	100-115	100-115	120		7,5°	
DC120	105-120	105-120	120		7,5°	
DC140	120-140	120-140	120		7,5°	
DC150	130-150	130-150	120	0,6	7,5°	6
DC162	137-162	137-162	120		7,5°	
DC175	150-175	150-175	120		7,5°	
DC190	165-180	165-180	120		7,5°	
DC200	175-200	175-200	150		3,0°	
DC210	185-210	185-210	150		3,0°	
DC225	200-225	200-225	150		3,0°	
DC250	225-250	225-250	150		3,0°	
DC275	250-275	250-275	150		3,0°	
DC290	265-290	265-290	150		3,0°	

(1) Operating pressure: 0.6 bar; test pressure: 0.6 bar



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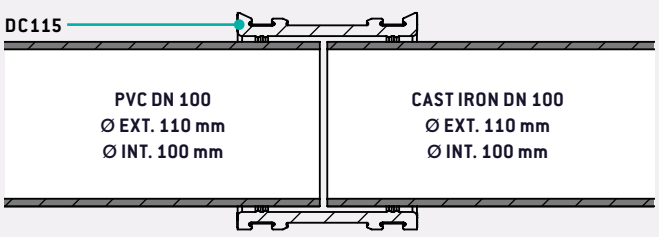
EXAMPLE OF COUPLING WITH CONTINUOUS WATER FLOW

PVC DN 100, EXTERNAL DIAMETER (EXT.Ø) 110 MM

TO CAST IRON DN 100 EXTERNAL DIAMETER (EXT.Ø) 110 MM

- **Difference in Ø ext. :** 110 mm - 110 mm = Δ 0 mm ;
- **Complete assembly :** DC115.



NORHAM FLEXIBLE COUPLINGS AC

AREA OF USE

Multimaterial adaptor **NORHAM FLEXIBLE COUPLINGS AC** can be used to connect and repair pipes of similar or different materials with a wide range of external diameters. They are designed for above-ground or underground networks, without risk of ground shearing, inside and outside buildings.

TECHNICAL DATA

- **Multimaterial couplings :** PVC, PP, smooth or corrugated HDPE, GRP, cast iron, fibre cement, steel, clay, concrete ;
- **Pressure-resistance :** up 0,6 bar ;
- **Test pressure :** 0,6 bar ;
- **Temperature resistance :** -40 °C to +140 °C ;
- **Angular deflection :** 3,0° à 7,5° depending on DN (see p. 5) ;
- **Fire resistance :** class E (NF-EN 13501-1).

MATERAILS

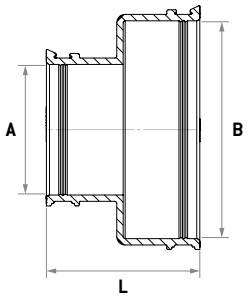
- **Sleeve :** made of EPDM 60 IRHD grade WG complying with standard NF-EN 681-1.
- **Clamps :** made from AISI 304 stainless steel, with a minimum hardness corresponding to class +C850, in compliance with standard NF-EN 10088-2.

ASSEMBLY TECHNOLOGY

- **CLIP-IN :** profiled system in the rubber that holds the clamps in place, making them easier to handle and install ;
- **MEDIUM-TORQUE :** optimum clamping system for guaranteed pressure resistance.

DC RANGE FROM DN 20 TO DN 350

REF.	OLD REF.	RANGE OF USE		L	W_p [1]	TIGHT. TORQUE
		SIDE A	SIDE B			
AC032-040	AC0401	24-32	32-40	64		
AC032-050	AC110	24-32	40-50	64		
AC040-050	AC0502	32-40	40-50	64		
AC042-063	AC5622125	35-42	53-63	64		
AC064-090	AC5632	50-64	75-90	100		
AC064-115	AC5642	50-64	100-115	100		
AC090-115	AC5643	75-90	100-115	100		
AC090-137	AC0243	75-90	122-137	120		
AC095-125	AC1221	80-95	110-125	120		
AC095-136	AC1361	80-95	121-136	120		
AC115-125	AC5144	100-115	110-125	120		
AC115-136	AC1362	100-115	121-136	120		
AC115-145	AC5654	100-115	130-145	100		
AC115-152	AC0644	100-115	137-152	100		
AC115-170	AC5664	100-115	155-170	120		
AC115-182	AC5164	100-115	165-182	153		
AC115-200	AC0264	100-115	180-200	150		
AC125-136	AC4000	110-125	121-136	120		
AC125-145	AC1452	110-125	130-145	120		
AC125-160	AC1602	110-125	144-160	120		
AC125-170	AC1702	110-125	155-170	120		
AC125-193	AC1922	110-125	170-193	120		
AC125-210	AC2102	110-125	185-210	150		
AC125-235	AC2352	110-125	210-235	150		
AC136-160	AC1603	121-136	144-160	120		
AC136-193	AC1923	121-136	170-193	120		
AC136-235	AC2353	121-136	210-235	150		
AC145-170	AC1703	130-145	155-170	120		
AC145-200	AC2000	130-145	180-200	150		
AC145-210	AC2104	130-145	185-210	150		
AC145-235	AC5685	130-145	210-235	166	0,6	6
AC160-193	AC1924	144-160	170-193	120		
AC160-210	AC2105	144-160	185-210	150		
AC160-235	AC2354	144-160	210-235	150		
AC160-265	AC2654	144-160	240-265	150		
AC168-257	AC0286	153-168	232-257	150		
AC170-200	AC2001	155-170	180-200	150		
AC170-222	AC5686	150-170	197-222	150		
AC175-280	AC56106	155-175	255-280	150		
AC180-200	AC6000	160-180	180-200	120		
AC193-235	AC2355	170-193	210-235	150		
AC193-265	AC2655	170-193	240-265	150		
AC200-300	AC0698	180-200	275-300	152		
AC205-335	AC3351	180-205	310-335	150		
AC215-235	AC2356	190-215	210-235	150		
AC215-265	AC2656	190-215	240-265	150		
AC215-290	AC2906	190-215	265-290	150		
AC222-257	AC0288	197-222	232-257	150		
AC222-275	AC56108	197-222	250-275	150		
AC235-265	AC2657	210-235	240-265	150		
AC235-290	AC2907	210-235	265-290	150		
AC235-320	AC3207	210-235	295-320	150		
AC265-290	AC2908	240-265	265-290	150		
AC265-320	AC3208	240-265	295-320	150		
AC275-325	AC5612	250-275	300-325	150		
AC290-320	AC3209	265-290	295-320	150		
AC320-360	AC3600	295-320	335-360	150		
AC325-375	AC0212	300-325	350-375	150		
AC325-385	AC3850	300-325	360-385	150		
AC335-375	AC0312	310-335	350-375	150		



(1) Operating pressure 0.6 bar; test pressure: 0.6 bar

APPLICATION TO HELP DEFINE COUPLINGS

NORHAM has developed an app designed to help you choose the **NORHAM FLEXIBLE COUPLINGS** you need quickly and easily from any device (smartphone, computer or tablet, for Windows and iOS).

The app can be used with or without an internet connection.

STEP 1

Download the application free of charge from the NORHAM website : **http://www.norham.fr/app/** or scan the QR code opposite, using your device (smartphone, computer or tablet).

STEP 2

Open the application and fill in the necessary fields (external diameter, DN, materials, type of coupling).

Click on "*Find my coupling*".

STEP 3

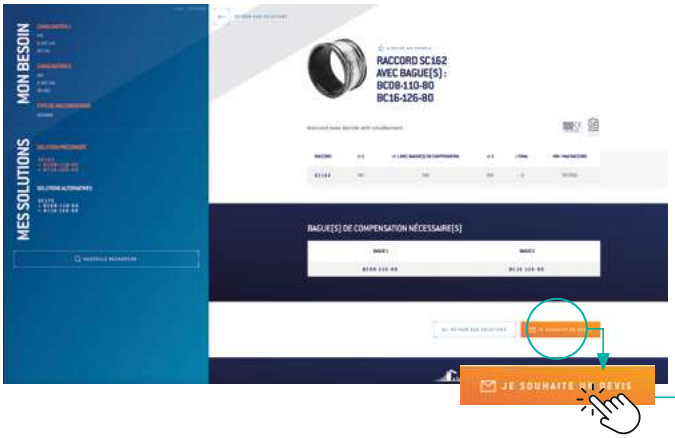
Choose the coupling that best suits your needs. In orange, the recommended solution, in blue, the alternative solutions.

STEP 4

You'll see the references for your coupling.

Print or save the coupling in your "*Favourites*".

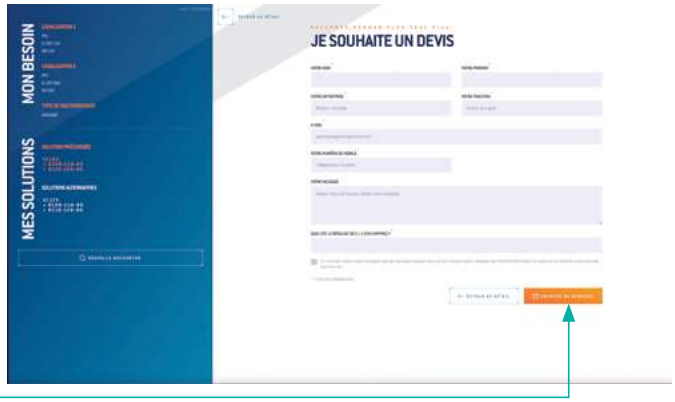
You can then contact your usual retailer, providing the references.



STEP 5

Alternatively, scroll down the page and click on "*I'd like a quote*". Fill in the fields provided.

Our sales team will contact you as soon as possible.



Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

INSTALLATION AND USE

WARNING

Installation and coupling must be carried out in accordance with the **NORHAM** recommendations set out in ATE-09/0248 and DTA 17.2/20-352_V2 (downloadable from www.norham.fr).

In all cases, the coupling must be in contact with the pipe for 4 cm on each side.

If there is a risk of shearing, the distance between the two pipes must not exceed 2 cm.

INSTALLATION OF SC COUPLINGS WITH BC AND BC-EX RINGS

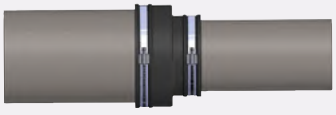
(1) For BC-EX rings only.

1. Loosen the clamps and slide the coupling onto the pipe with the largest external diameter.
2. Slide the ring onto the pipe with the smallest external diameter. The ring should be flush with the edge of the pipe. For BC-EX eccentric rings, ensure that the mark is on the top of the pipe.
3. Align the two pipes and bring them as close together as possible.
4. Slide the coupling onto the bushing until it is flush with the shoulder of the bushing. Tighten the fasteners until they lock (the recommended torque is shown on the coupling label).

INSTALLATION OF SC AND DC COUPLINGS

1. Draw a mark on the pipe with the largest external diameter, corresponding to half the width of the coupling.
2. Loosen the clamps and slide the coupling onto the pipe with the largest external diameter.
3. Align the two pipes and bring them as close together as possible.
4. Slide the coupling up to the mark and tighten all the fasteners until they lock (the recommended torque is shown on the coupling label).

INSTALLATION OF AC COUPLINGS



1. Loosen the fasteners.
2. Slide the coupling onto the pipe with the smallest external diameter.
3. Bring the smaller external diameter pipe towards the larger external diameter pipe and bring the larger external diameter pipe as close as possible to the inside shoulder of the coupling.
4. Tighten the fasteners of the coupling until they lock (the recommended torque is shown on the coupling label).

COUPLINGS : COMMON PRODUCTS

PVC / PP - CAST IRON CONNECTIONS

MATERIALS		DN	Ø EXT.		SOLUTIONS	FINAL Δ	CONTINUOUS WATER FLOW
PVC / PP	CAST IRON		PVC / PP	CAST IRON			
		125	125	144	SC150EX-PFF (SC150 + BC08-125EX)	1	YES
		150	160	170	SC175	10	
		200	200	222	SC225EX-PFF (SC225 + BC08-200EX)	0	
		250	250	274	SC290EX-PFF (SC290 + BC16-250EX)	1	
		300	315	326	SC335	11	
		400	400	429	SC445EX-PFF (SC445 + BC16-400EX)	0	

PVC / PP - FIBRE CEMENT CONNECTIONS

MATERIALS		DN	Ø EXT.		SOLUTIONS	FINAL Δ	CONTINUOUS WATER FLOW
PVC / PP	FIBRE CEMENT		PVC / PP	FIBRE CEMENT			
		125	125	141	SC150EX-PFF (SC150 + BC08-125EX)	4	YES
		150	160	166	SC175	6	
		200	200	218	SC225EX-PFF (SC225 + BC08-200EX)	4	
		250	250	274	SC290EX-PFF (SC290 + BC16-250EX)	1	
		300	315	328	SC335	13	
		400	400	445	SC465 + BC16-400EX + BC08-429-100	0	

PVC / PP - CLAY CONNECTIONS

MATERIALS		DN	Ø EXT.		SOLUTIONS	FINAL Δ	CONTINUOUS WATER FLOW
PVC / PP	CLAY		PVC / PP	CLAY			
		300	315	355	SC365 + BC16-315-100	8	YES
		400	400	492	SC510 + BC16-400EX + BC32-429-100	1	

PVC / PP - CONCRETE CONNECTIONS

MATERIALS		DN	Ø EXT.		SOLUTIONS	Δ FINAL	CONTINUOUS WATER FLOW
PVC / PP	CONCRETE		PVC / PP	CONCRETE			
		300	315	400	SC410 + BC16-315-100 + BC24-347-100	5	YES
				420	SC430 + BC24-315-100 + BC24-363-100	9	
		400	400	502	SC510 + BC16-400EX + BC32-429-100	9	
		500	500	628	SC635 + BC32-500-100 + BC32-564-100	0	NO

Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

NORHAM COUPLINGS

COUPLINGS & SEALS

PVC / PP - GRP CONNECTIONS

MATERIALS		DN	Ø EXT.		SOLUTIONS	FINAL Δ	CONTINUOUS WATER FLOW
PVC / PP	PRV		PVC / PP	PRV			
		125	125	142	SC150EX-PFF (SC150 + BC08-125EX)	3	YES
		150	160	168	SC175	8	
		200	200	220	SC225EX-PFF (SC225 + BC08-200EX)	2	
		250	250	272	SC290EX-PFF (SC290 + BC16-250EX)	3	
		300	315	324	SC335	9	
		400	400	428	SC445EX-PFF (SC445 + BC16-400EX)	1	

CLAY - CAST IRON CONNECTIONS

MATERIALS		DN	Ø EXT.		SOLUTIONS	FINAL Δ	CONTINUOUS WATER FLOW
GRÈS	CAST IRON		CLAY	CAST IRON			
		125	159	144	SC162 + BC08-144-80	1	YES
		150	186	170	SC200 + BC08-170-80	0	
		200	242	222	SC250 + BC08-222-80	4	
		250	296	274	SC310+ BC08-274-100	6	
		300	355	326	SC365 + BC08-326-100	13	
		400	486	429	SC495 + BC24-429-100	9	

CLAY - FIBRE CEMENT CONNECTIONS

MATERIALS		DN	Ø EXT.		SOLUTIONS	FINAL Δ	CONTINUOUS WATER FLOW
GRÈS	FIBROCIMENT		CLAY	FIBRE CEMENT			
		125	159	141	SC162 + BC08-141-80	2	YES
		150	186	167	SC200 + BC08-167-80	3	
		200	242	218	SC250 + BC08-218-80	8	
		250	296	274	SC310+ BC08-274-100	6	
		300	355	328	SC365 + BC08-328-100	11	
		400	486	442	SC495 + BC16-442-100	12	

ALL THESE COUPLING SOLUTIONS ARE COVERED BY OUR CERTIFICATIONS

ETE CE 09 ETA 09/0248 QB 87-01-352

ARE YOU IN A CONFIGURATION THAT DIFFERS FROM THE COMMON COUPLINGS ?

Download our new NORHAM FLEXIBLE COUPLINGS COUPLING DEFINITION HELP application

www.norham.fr/app/

NORHAM COUPLINGS

COUPLINGS & SEALS

CORRESPONDENCE BETWEEN DN AND EXTERNAL DIAMETERS

TYPE DE CANALISATION		DN	100	125	140	150	175	200	225	250	300	350	375	400	450	500	550	600	700	750
ACIER			114	140		168	194	219		273	324	356		406	457	508	559	610	711	762
TUBE ANNELÉ	POLIECO	ECOPAL, ECOBOX						250			350			465		580		700		
	POLYPIPE HYDROTUB	HYDRO 8	118			176			265		353		435	460	514	570		675		
		WEHOLITE (4KN/m)												450	510	558		678		840
		WEHOLITE (2kN/m)																658		812
	URALITA	SANECOR (PVC annelé SN8)									315			400		539		649		
	REHAU	RAUVIA								290	349	414		468						
	ELYDAN	ULTRA RIB 2 SN10/16				170		225		280	335			450		560				
	HEGLER	AQUATUB-EU (ATEC)				175		235		294	353			464						
		AQUATUB				175		235		294	353			464		579		693		
	SYSTEME GROUPE France	MAGNUM, BIG-DREN, HYDRO 16	125		160		200	250	284	315	338	400		452	500	565	630	701	800	
		SGK																		
	FRÄNKISCHE	ROBUKAN SN8/16				174		235		294	348			461		571		684		
		AQUA-PIPE				174		235		292	346	399		461		587		694		
FIBRO CIMENT	partie brute		116	144		171		223		278	332	384		445	494	549		658	768	
	partie usinée		115	141		167		219		274	329	378		442	486	540		648	756	
BÉTON	PLATTARD	TRADITEC									420			530		650		760		
		TEVOLIS									420			530		650		760		
	ALKERN	Tuyau Armé									400			512		640		750		
	STRADAL	135A									404			510		630		750		
	BONNA SABLA	Tuyau Armé TCR														650		760	880	
		Tuyau Armé 135 A									396			502		606		724	840	
		Non Armé 90B/ 135B Usine Diou (03)*									400			508		622		746		
	LPB	ASSAINOR, ECO									370			465		605		715		
	NORMANDY TUB	135A									400			504		628		752		
	URVOY	90A - 135A									396			504		628		752		
	BETONS LIBAUD	135F									418			519		650		770		
		135A																		
	PMR	135F									421			524		644		768		
FONTE	PAM	INTEGRAL, PLUVIAL	118	144		170		222		273	325	377		428	479	531		633	737	
		SMU S, SME, SMU plus	110	135		160		210		274	326			429		532		635		
	ELECTROSTEEL	Fonte ductile (EN545- ISO 2531)	118	144		170		222		274	326	378		429	480	532		635	738	
	SERTUBI	Fonte ductile	144		170		222		274	326	378		429	480	532		635	738		842
	BUDERUS		118	144		170		222		274	326	378		429		532		635	738	
	Fonte ductile	Norme Anglaise BS4772	118			170		222		274	326	378		429	480	532		635	738	
GRÈS	HEPWORTH (WAVIN)	EUROTOP	122			178					358									
	NAYLOR	DENSEAL				192		249	273	310	364		460	482	547	609		715		
		DENSLEEVE	131			187		254	278	318	380									
		DENLOK				208		271	293	357	412			552	585	639		758	855	
	STEINZEUG-KERAMO	Assemblage F	131	159		186		242												
		Assemblage C (classe 95 - 120 - L)														581		687		
		Assemblage C (classe 160)								299	355	417		486	548	609		725		
		Assemblage C (classe 200-240)						254	278	318	376			492					862	
PEHD	Polyéthylène		110	125	140	160	180	200	225	250/280	315	355		400	450	500	560	630	710	
PVC	PVC		100/110	125	140	160	180	200	225	250	315			400	450	500		630	710	
PRV	HOBAS	Série 1 et 2				168		220		272	324	376		427	478	530		616	718	
		Série 3												401		501				
	FLOWTITE					168		221		272	325	377		428	479	531		618	720	
	HPS	SUBOR®								273	325	377		428	479	531		618	720	
PP	DYKA	AWADUKT PP10	110	125		160		200		250	315			400		500				
	POLOPLAST	POLO-ECO plus SN8/12	110	125		160		200		250	315			400		500				
	PIPELIFE	PP Master	110	125		160		200		250	315			400		500				
TYPE DE CANALISATION		DN	100	125	140	150	175	200	225	250	300	350	375	400	450	500	550	600	700	750

Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

NORHAM COUPLINGS

COUPLINGS & SEALS

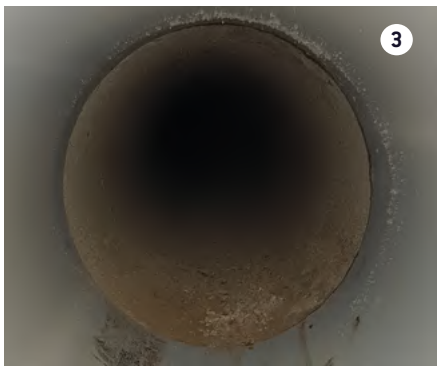
800	850	900	1000	1030	1050	1100	1200	1300	1350	1400	1500	1600	1650	1700	1800	1900	2000	DN	TYPE DE CANALISATION	
813	864	914	1016				1220			1420	1520	1620		1720	1820		2020			ACIER
930				1200														ECOPAL, ECOBOX	POLIECO	TUBE ANNELÉ
																		HYDRO 8	POLYPIPE HYDROTUB	
		1012			1172		1346		1506		1662		1810		1998		2230	WEHOLITE (4KN/m)		
		962			1134		1316		1474		1636		1786		1976		2180	WEHOLITE (2kN/m)		
855			1072				1220											SANECOR (PVC annelé SN8)	URALITA	
																		RAUVIA	REHAU	
																		ULTRA RIB 2 SN10/16	ELYDAN	
																		AQUATUB-EU (ATEC)	HEGLER	
																		AQUATUB		
935	1000			1200														MAGNUM, BIG-DREN, HYDRO 16	SYSTEME GROUPE France	
			1092				1312			1542	1642	1746		1850	1954		2162	SGK		
																		ROBUKAN SN8/16	FRÄNKISCHE	
																		AQUA-PIPE		
878																			partie brute	FIBRO CIMENT
864																			partie usinée	
																		TRADITEC	PLATTARD	BÉTON
990			1240				1470											TEVOLIS		
984			1230				1460			1680	1800	1920			2160		2390	Tuyau Armé	ALKERN	
980			1220				1470											135A	STRADAL	
1000		1120	1270			1380	1480	1620		1720	1820	1940			2160		2400	Tuyau Armé TCR		
980		1080	1200							1680	1800	1920			2160		2400	Tuyau Armé 135 A	BONNA SABLA	
																		Non Armé 90B/ 135B Usine Diou (03)*		
930																		ASSAINOR, ECO	LPB	
970			1220															135A	NORMANDY TUB	
976			1200				1440											90A - 135A	URVOY	
																		135F	BETONS LIBAUD	
988			1224				1471											135A		
																		135F	PMR	
840		943	1046			1149	1252			1459	1562	1665			1871		2078	INTEGRAL, PLUVIAL	PAM	FONTE
																		SMU S, SME, SMU plus		
842		945	1048															Fonte ductile (EN545- ISO 2531)	ELECTROSTEEL	
	945	1048																Fonte ductile	SERTUBI	
842		945	1048																BUDERUS	
842		945	1048			1152	1255											Norme Anglaise BS4772	Fonte ductile	
																		EUROTOP	HEPWORTH (WAVIN)	GRÈS
																		DENSEAL	NAYLOR	
																		DENSLEEVE		
950		1080	1193			1307	1430											DENLOK		
																		Assemblage F	STEINZEUG-KERAMO	
			1273				1457			1600								Assemblage C (classe 95 - 120 - L)		
964		1084																Assemblage C (classe 160)		
																		Assemblage C (classe 200-240)		
800		900	1000				1200												Polyéthylène	PEHD
800																			PVC	PVC
820		924	1026															Série 1 et 2	HOBAS	PRV
																		Série 3		
822		924	1026			1128	1230	1332		1434	1536	1638		1740	1842	1944	2046		FLOWTITE	
822		924	1026			1128	1230	1332		1434	1536	1638		170	1842	1944	2046	SUBOR®	HPS	
																		AWADUKT PP10	DYKA	PP
																		POLO-ECO plus SN8/12	POLOPLAST	
																		PP Master	PIPELIFE	
800	850	900	1000	1030	1050	1100	1200	1300	1350	1400	1500	1600	1650	1700	1800	1900	2000	DN	TYPE DE CANALISATION	

Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

CASE STUDY

1 NORHAM FLEXIBLE COUPLINGS WITH ECCENTRIC RING
To maintain the flow of water at Perros Guirec

	CONDITIONS
SITE	Perros Guirec (France)
BESOIN	Need for a water flow-preserving coupling between a **DN 400 PP pipe** (external diameter 400 mm) and a **DN 400 concrete pipe** (external diameter 502 mm).
SOLUTION	An eccentric **NORHAM FLEXIBLE COUPLINGS SC + BC-EX** was installed. For this job, it consisted of an SC510 coupling with a **BC16-400EX eccentric compensation ring** for the preservation of the water flow, as well as a BC32-429-100 ring.



LÉGENDES

1
Installation of the eccentric coupling and installation of the pipe.

2
Eccentric coupling installed.

3
View of the inside of the pipes after the eccentric coupling was installed; there was **no break in the water flow.**

PROJECT MANAGEMENT

FITTER : CEGELEC TP.

Find all our case studies on our website : www.norham.fr

Dimensions and thickness (EP) in mm. Shear strength in Newton (N). Operating pressure (Wp) in bar. Tightening torque in Nm. Non-contractual visuals.

OTHER NORHAM SOLUTIONS

T-SADDLE MULTI

T-SADDLE MULTI
ON CONCRETE PIPE

T-SADDLE MULTI
ON CORRUGATED PIPE

Saddles for multimaterial branches
for all types of collector valves from DN 400 to DN 1200.

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T-SADDLE

Saddles for multimaterial branches for all smooth pipes.

DOWNLOAD DOCUMENTATION

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TÉL : 33 (0) 4 75 45 00 00 - norham@norham.fr
www.norham.fr

afaq ISO 9001 Qualité
AFNOR CERTIFICATION
N° 1997 / 8004.7

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DC-C&J-NORHAM FLEXIBLE COUPLINGS-001-NUM--20231016