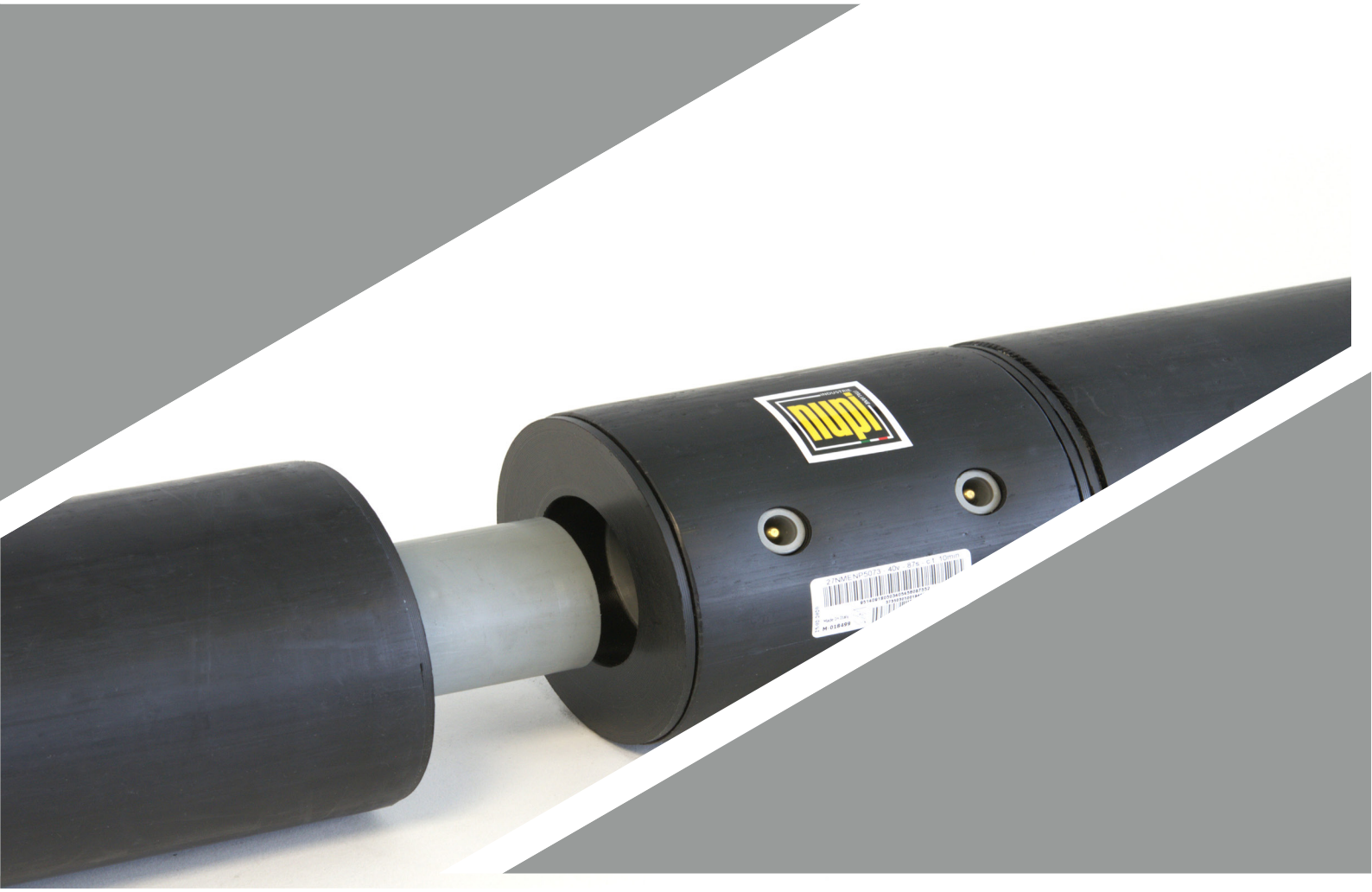
All-Pro™ NIRON



Pre-insulated Pipes and Fittings

HOT WATER | CHILLED

POTABLE WATER

HEATING COOLING NSTALLATIONS

GEOTHERMAL INSTALLATION

HVAC/R

INDUSTRIE ITALIANE nupi

"The height you attend depends on the depth of your roots"

The Company

In October 2015, **NUPI Industrie Italiane S.p.A.** took over **NUPIGECO S.p.A.** The name change brings with it an 'all-Italian' company that exports its products worldwide!

NUPIGECO S.p.A. was founded on October 1st 2008 by the merger of two of our companies, **NUPI S.p.A.** and **GECO System S.p.A.**, - both founded more than 30 years ago.

Combining their many years of experience and constant growth, the two firms decided to create a new flexible and advanced company, ready to play its role to satisfy the demands of the market whilst being environmentally astute.

NUPI Industrie Italiane S.p.A. s develops and produces pipe and fitting systems for plumbing, heating, air conditioning, irrigation, water and gas pipelines. NUPI Industrial Division (NUPI ID), which was founded in 1995, is dedicated to the production of the highest quality multilayer pipes specifically designed for the oil, chemical and petrochemical markets.

Today **NUPI Industrie Italiane S.p.A.** offers a complete range of pipes and fittings, produced using the most modern thermoplastic materials and manufacturing processes.

These product ranges are known worldwide by the following trademarks: **NIRON, MULTINUPI, MULTIGECO, ELOFIT, ELOTHERM, ELOPRESS, POLYSYSTEM, POLIETILENETUBI, SMARTFLEX, OILTECH, SMARTLPG, ELAMID, ELOSMART, SMARTCONDUIT, ECOWAVE,** and the **ELOSFERA** range dedicated to alternative energies: **NRGEO** and **ELOWEB.**

These systems are known as real problemsolving systems capable of supplying every kind of installation while reducing costs, avoiding wastes and increasing productivity. Thanks to their quality, these products positively fulfil the most stringent field tests and have obtained the most prestigious certifications, conforming to legislation from around the globe for water, gas networks and for the conveyance of fuels.

Producing better quality and being cost effective is the goal, which is made easier every day by new technology. **NUPI Industrie Italiane S.p.A.** is continuously investing in research and development programs, while strengthening the production systems, operated by a sophisticated technology that guarantees the highest quality of its products. The company's market leadership enforces its role in extremely competitive and technological fields such as the thermo-transformation of plastics and polymers.

1 - Headquarters and Production - Busto Arsizio (VA) - Italy
2 - Production and Operations Centre - Castel Guelfo di Bologna (BO) - Italy
3 - Production Centre - Imola (BO) - Italy
4 - Production Centre - Borsano (VA) - Italy

The product

It's the System of **PRE-INSULATED PIPES, FITTINGS and ACCESSORIES dedicated to the transport of hot and cold fluids,** able to considerably contain thermal dispersions.

This system complements the standard solution of pre-insulated polypropylene, which has been on the market for some time, and **improves its installation performance and versatility,** thanks to the range of compact fittings.

All-Pro™ NIRON

A STEP FORWARD

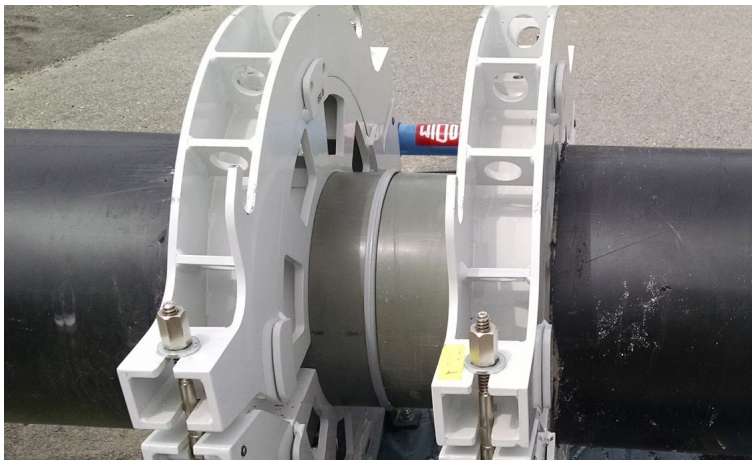
Strengths:

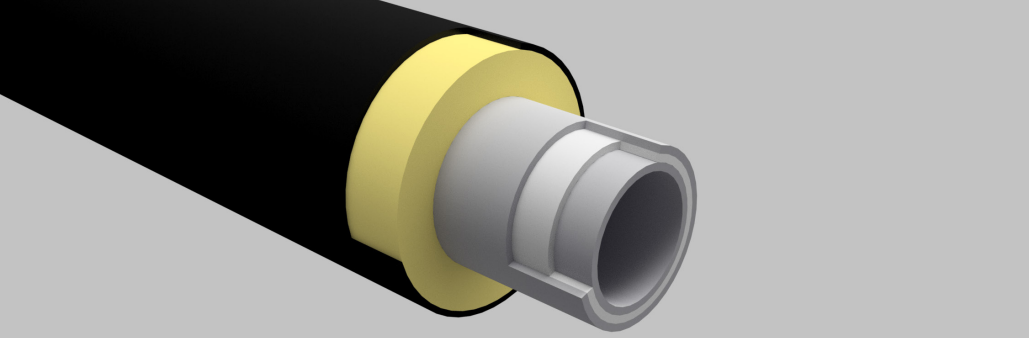
- **EXCELLENT INSULATION;**
- **LOW PRESSURE DROPS;**
- **LOW SPECIFIC WEIGHT;**
- **EXCELLENT WELDABILITY THANKS TO THE JOINING SYSTEMS OF THE NIRON RANGE;**
- **HIGH CORROSION RESISTANCE;**
- **HIGH CHEMICAL INERTNESS AND MAXIMUM RESISTANCE TO CHLORINE-BASED DISINFECTION SYSTEMS;**
- **HIGH DURABILITY;**
- **HOINING RELIABILITY;**
- **EXCELLENT RESISTANCE TO ABRASION;**
- **MAXIMUM RESISTANCE TO STRAY CURRENTS;**
- **QUICK INSTALLATION, AS JOINING IS CARRIED OUT WITH THE CLASSIC JOINING SYSTEMS (BUTT FUSION AND ELECTROFUSION WELDING) REDUCING INSTALLATION TIMES;**
- **SAFE INSTALLATION, AS WE AVOID CONTACT OF THE INSULATION WITH THE POTENTIALLY DANGEROUS TWO-COMPONENT LIQUIDS (SUCH AS ISOCYANATES).**

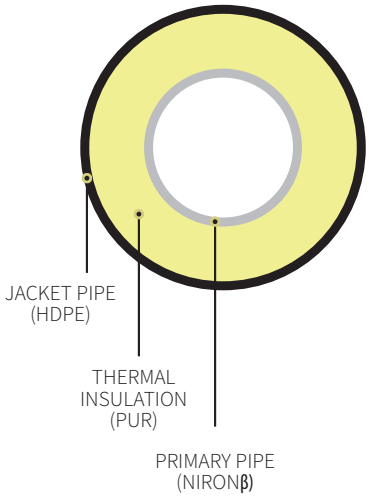
Applications:

The **NIRON All Pro** System is suitable for:

- Transport of hot, cold, chilled, potable water, wastewater and aggressive liquids.
- Systems in residential, civil, industrial, and agricultural areas where it is necessary to minimize the temperature drop between the source and the user.
- Geothermal plants that exploit groundwater (e.g. plants fed with groundwater).







Pre-insulated pipe

SERVICE PIPE OR PRIMARY PIPE (NIRON β)

The service pipe for transporting the heat transfer fluid belongs to the **NIRONβ** piping range, a randomized Beta-nuclearized polypropylene (PP-RCT) with modified crystallinity which demonstrates improved resistance to higher temperatures and guarantees maximum chemical resistance to ions free from chlorine and to disinfection treatments (resistant up to 4.3 ppm of NaClO).

It is supplied with the CLIMA version, that is a three-layer pipe having the intermediate layer composed of a heterophasic PP-RCT containing a defined percentage of fiberglass which guarantees a containment of the linear thermal expansion of the pipeline (bringing the coefficient of thermal expansion α to a value of 0.035 mm/mK), thus making the product more stable to thermal shocks from the dimensional point of view.

THERMAL INSULATION (PUR)

The insulation of the primary pipe **is obtained thanks to a rigid polyurethane foam compliant with Standard EN 253** and free from Freon. **The thermal conductivity coefficient is 0.027 W/mK at an average temperature of +50°C.**

This excellent characteristic of the material allows to obtain **high levels of thermal insulation** with significantly reduced insulation thicknesses compared to those which would be necessary using other materials.

Moreover, thanks to its closed cell structure, it does not undergo transformations caused by water absorption, compression, bagging, etc. in normal conditions of use.

JACKET PIPE (HDPE)

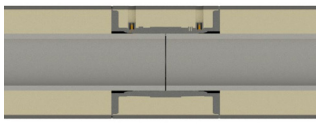
The polyurethane insulation layer is protected by a jacket pipe made of **high-density polyethylene (HDPE) compliant with Standard EN 253.**

Pipes are available in 6/12-meter bars for diameters from DN 32 to DN315, with the possibility of supplying pre-insulated lengths of pipe 0,5 and 1 meter long for intermediate joining with no need to modify entire bars. They are available with SDR 7,4 - 11 - 17 to meet the operating conditions of the plant they will serve.

Welding methods:
The Real Innovation

The **NIRON ALL-PRO system** allows to carry out joining in two different ways: **electrofusion welding (EF) and simultaneous butt welding (BFX2)**. Pipes and fittings have been designed to optimize installation times on site and, at the same time, to offer a system designed to reduce the thermal drops of the transported heat transfer fluids.

Electrofusion welding



NIRON ALL-PRO includes pre-insulated fittings that hold electrical resistances connected to external connectors that **can be welded using welding units normally used** for electrofusion joining.

When electrical energy passes through by applying voltage, the resistances generate the heat necessary for the fusion. Energy is transmitted directly to the contact surface between the fitting and the pipe, thus causing its thermo-fusion. After cooling, **a homogeneous, robust, safe, and hermetic connection is obtained.**

The innovation lies in **that a single step allows to have an already PRE-INSULATED joint,** thus allowing the **reduction of installation times by at least 50%,** and avoiding the long operations of restoring the insulation in the areas involved in the joining operation.

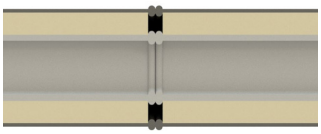
After welding, it will only be necessary to apply a heat-shrink sleeve (or a special self-amalgamating tape) supplied with the fitting, to preserve the integrity of the polyethylene coating.

Pipes with EF terminals are designed to accommodate the installation of **NIRON ALL-PRO electrofusion fittings without the need for cuts to size the lengths of the spigots**.

The range of fittings also **offers a wide range of combinations** that adapt to the many requirements of the installation (branches, valves, tests, and end of line fittings).

To complete the line, *pre-insulated PP-RCT ball valves, stub ends, flanges (free and removable) and transition fittings are available. They allow to start from the source and reach the user with a single valid system.*

Simultaneous butt welding



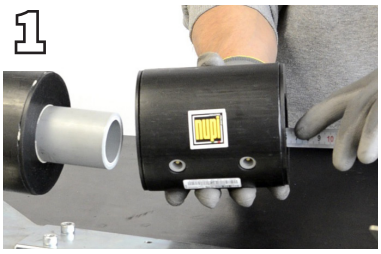
According to Standards, thermal element welding by contact (also called "butt fusion" welding) is the procedure that allows the joining of two elements (pipes and/or fittings) of equal diameter and SDR where the surfaces to be welded are initially heated until melting by contact with a thermal element (thermoelement) and subsequently, after its removal, they are joined under pressure to obtain welding.

Starting from the aforementioned "butt fusion" welding system, **with BFx2 system the junction between two pipes takes place with a single butt welding**, where both the PP-RCT service pipe and the HDPE jacket pipe are welded simultaneously, with a considerable saving in terms of time and costs. Welding takes place **with the usual butt fusion welders.**

In this case, too, it is possible to supply fittings on request, from DN 63 to DN 315mm, **which interface directly with the ends of BFX2 pipes.**

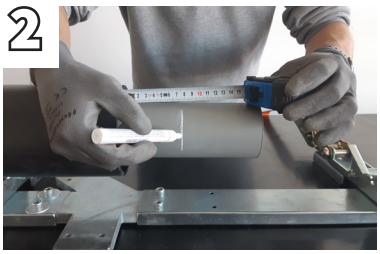
BFx2 simultaneous butt welding involves joining two specially prepared pipes so that the primary PP-RCT pipe does not extend beyond the secondary HDPE coating, thus ending on the same joining level. **The primary and secondary pipes are heated and welded simultaneously,** creating the perfect seal junction. In addition, the insulation of the joining areas is completed at the same time as the welding, without having to restore the same later. This **allows for extremely fast joining,** excluding the burden of purchasing fittings and sealing kits, with a **saving in installation time of more than 80% if compared to traditional installation systems.** The external coating is perfectly sealed, without any possibility of water infiltration. It is recommended to use this configuration whenever the system includes long straight underground and/or overhead sections. This method produces an integral system that guarantees high integrity of the components and **high stability of the pipeline,** thus allowing to easily carry out special underground installations such as those with controlled horizontal drilling (TOC or HDD, horizontal directional drilling).

Installation



1 Check that the insertion depth of the fitting corresponds to the exact length of the non-pre-insulated pipe end.

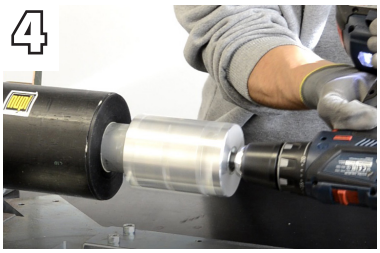
2 If this length is greater than the depth of the socket of the electrofusion fitting, proceed by marking the correct size on the pipe using the appropriate marker.



3 Cut the pipes perpendicularly using the appropriate pipe cutter. If the length of the non-pre-insulated pipe is less than the depth of the socket, free the primary pipe by cutting the insulation, following the same steps listed above.

4 Scrape the pipe surface and/or the fitting spigot uniformly with the appropriate pipe scraper. Scrape to completely remove the oxidized polypropylene layer. It is advisable to mark the surface involved in the operation with a marker to be sure that the oxidized layer has been completely removed. Mechanical orbital scrapers are recommended. Hand scrapers can be used.

5 Remove any mud, dust, grease or other traces of dirt from the pipe or spigot ends and the welding area of the fitting. Use only isopropanol (chlorotene, 99% pure alcohol or acetone) and a soft clean wiping cloth.



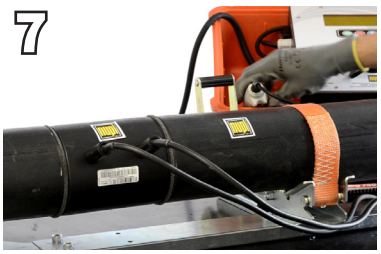
6 Insert the pipe or spigot ends into the fitting up to the marked insertion length (position the aligners in order to keep the pipes' position).
AVOID ANY MECHANICAL STRESS ON THE WELDING AREA DURING THE WELDING PROCEDURE AND THE COOLING TIME.

7 Connect the cables of the welding machine to the connectors of the fitting, read the barcode with the optical reader or enter the data manually.

8 At the end of the welding cycle, disconnect the cables and wait for the cooling time indicated on the barcode.

9 The welding data can be downloaded to a USB device or via CLOUD.

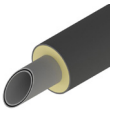
10 At the end of the cooling time, remove the aligner and start the pressure test using the pressure test unit.



The range

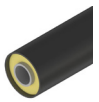
PIPES

PIPES WITH EF ENDS



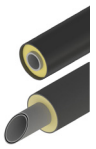
ITEM CODE	Ø
TNIRCLNP SDR 7.4	FROM 32 TO 200
TNIRCLNP SDR 11	FROM 40 TO 315
TNIRCLNP SDR 17	FROM 63 TO 315

BFX2 SIMULTANEOUS CONNECTIONS PIPES



ITEM CODE	Ø
TNIRCLNPTT SDR 7.4	FROM 63 TO 200
TNIRCLNPTT SDR 11	FROM 63 TO 315
TNIRCLNPTT SDR 17	FROM 160 TO 315

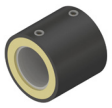
HYBRID PIPES



ITEM CODE	Ø
TNIRCLNPT SDR 7.4	FROM 63 TO 200
TNIRCLNPT SDR 11	FROM 63 TO 315
TNIRCLNPT SDR 17	FROM 160 TO 315

FITTINGS

ELECTROFUSION COUPLER



ITEM CODE	Ø
NMENP SDR 7.4	FROM 32 TO 160
NMENP SDR 11	FROM 90 TO 315

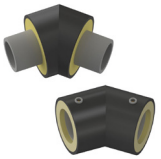
REDUCER

ITEM CODE	Ø
NRNP SDR 7.4	FROM 40-32 TO 160-125
NRNP-NRDENP SDR 11	FROM 40-32 TO 315-250
NRNP SDR 17	FROM 75-63 TO 315-250

90° ELBOW

ITEM CODE	Ø
NGNP SDR 7.4	FROM 32 TO 160
NGNP-NGENP SDR 11	FROM 32 TO 315
NGNP SDR 17	FROM 250 TO 315

45° ELBOW

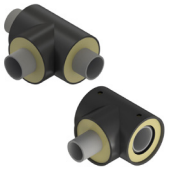


ITEM CODE	Ø
NC45NP SDR 7.4	FROM 32 TO 160
NC45NP-NCENP SDR 11	FROM 32 TO 315
NC45NP SDR 17	FROM 250 TO 315

30° ELBOW

ITEM CODE	Ø
NCENP30 SDR 11	FROM 90 TO 160

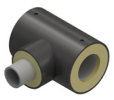
90° TEE



ITEM CODE	Ø
NTNP SDR 7.4	FROM 32 TO 160
NTNP-NTCENP SDR 11	FROM 32 TO 315
NTNP SDR 17	FROM 250 TO 315

REDUCING TEE

ITEM CODE	Ø
NTRNP SDR 7.4	FROM 40-32 TO 160-125
NTRNP SDR 11	FROM 40-32 TO 315-250
NTRNP SDR 17	FROM 75-63 TO 315-250



NTER SDR 11	FROM 110-63 TO 160-125

VALVES

LONG SPIGOT VALVE

ITEM CODE	Ø
NRSPPRCTSAP	FROM 32 TO 110

TRANSITION FITTINGS

FITTING WITH FEMALE THREADED OUTLET

ITEM CODE	Ø
NGSFNP SDR 7.4	FROM 32X½" TO 200X½"
NGSFNP SDR 7.4	FROM 32X¾" TO 200X¾"
NGSFNP SDR 9	32X½"
NGSFNP SDR 9	32X¾"
NGSFNP SDR 11	FROM 40X½" TO 315X½"
NGSFNP SDR 11	FROM 40X¾" TO 315X¾"
NGSFNP SDR 17	FROM 63X½" TO 315X½"
NGSFNP SDR 17	FROM 63X¾" TO 315X¾"

END OF LINE FITTINGS

MALE/MALE WELDING STUB END

ITEM CODE	Ø
NCRTNP SDR 7.4	FROM 32 TO 200
NCRTNP SDR 9	32
NCRTNP SDR 11	FROM 40 TO 315
NCRTNP SDR 17	FROM 63 TO 315

GASKET

ITEM CODE	Ø
GR - NEOPRENE	FROM 32 TO 40
GRMB - EPDM	FROM 50 TO 315

FLANGE

ITEM CODE	Ø
FLAALPV - ALUMINIUM	FROM 32 TO 125
FLAAC - GALVANIZED STEEL	FROM 140 TO 315

FEMALE THREADED COUPLER

ITEM CODE	Ø
NRFF SDR 11	FROM 32X1" TO 125X4"

MALE THREADED COUPLER

ITEM CODE	Ø
NRFM SDR 11	FROM 32X1" TO 125X4"

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