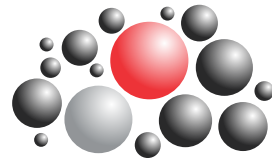
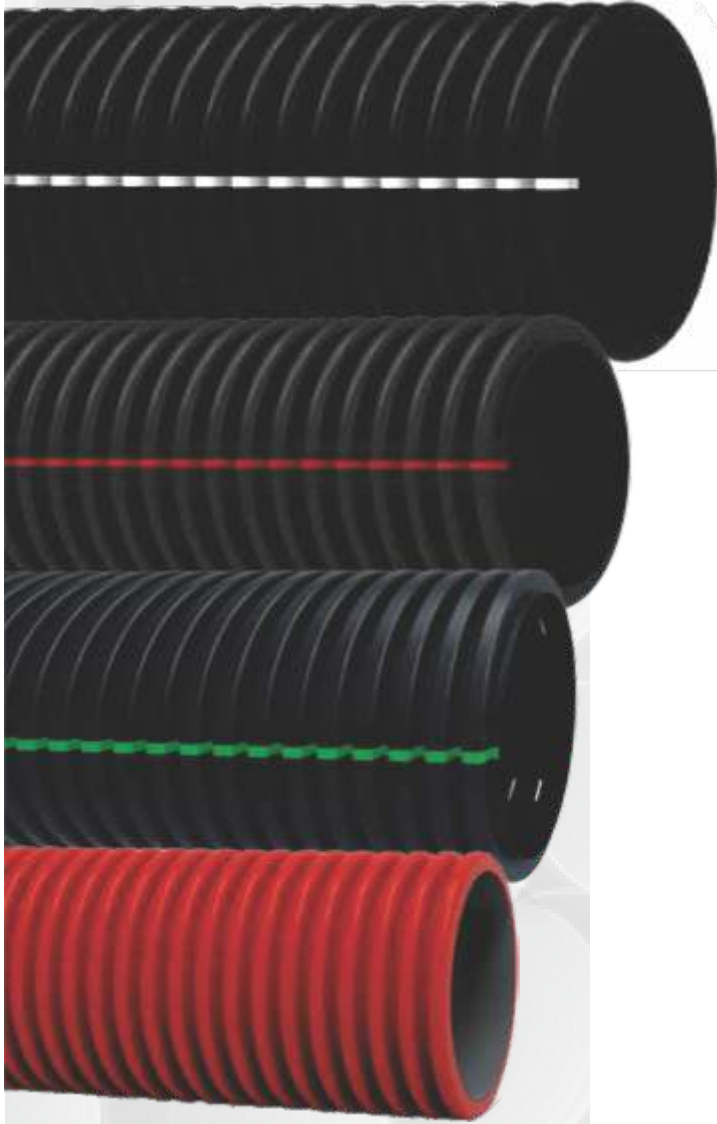
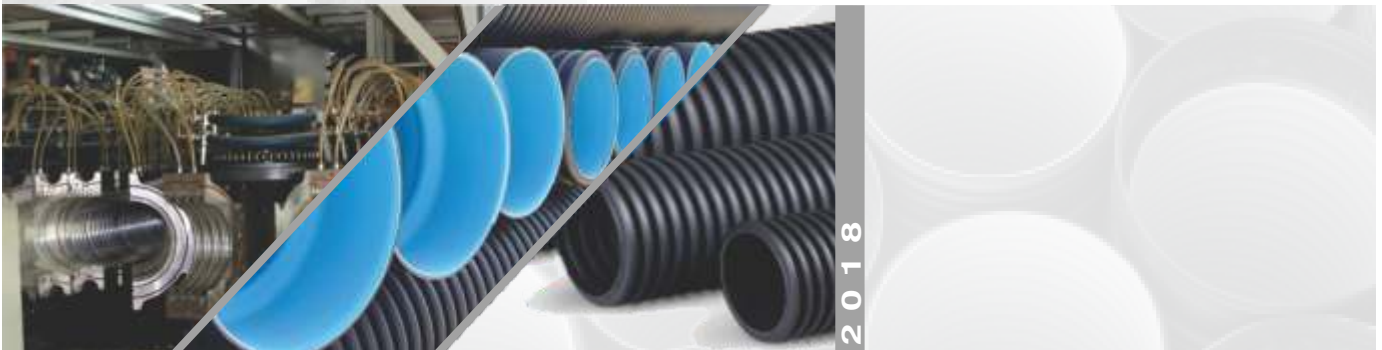


CORRUGATED HDPE PIPES FOR CABLE PROTECTION & DRAIN SEWER PIPES



نيبرو NEWPRO

مصنع المنتجات الجديدة للبلاستيك - نبرو
New Products Plastic Factory - NEPRO



PIPESTECH

High Quality ThermoPlastics Pipeline
System From The Point Of Source To
The Point Of Use.



INTRODUCTION

The advances made in the plastic industry during the past decades are reflected by the present existence of advanced products and sophisticated processes. Plastic products continued to grow with increasing importance in the wide spectrum of today's industries. As a potent approach, a competent team of business developers and researchers of New Products Plastic Factory -Nepro (NEWPRO), explore the potential of plastic pipe manufacturing industry in Qatar.

New Products Plastic Factory-Nepro (NEWPRO) in Qatar was formed with the strategy of being not only the profitable leader in the industry, but also reliable partner of Qatar Government in fulfilling its social obligations and achieving Qatar vision 2030. It is mandate of the company to continuously generate employment for the Qatari workforce. The Factory aims to be responsive and reliable producers of plastic pipe products, perfect to specific needs and provide specialized systems.

Just like any other plastic pipe manufacturing factories, our equipment and raw material are produced from internationally recognized manufacturers and suppliers. Similarly, our wide range of plastic pipes products is manufactured and quality tested in accordance with the international Standards such as BS, BS-EN, DIN, NEMA, ASTM and ISO. We treat our customers and suppliers as partners, we recognized our clients long term value and we are driving that value to its limit by providing excellent products services and advices our customer deserve.

Our research and development programs are geared not only highly technical advancement but also towards team building and career development for our employees and staff. We believe that there is no any substitute for accuracy and efficiency .

Excellence and quality products is our business .

ABDULLAH H. ALKHALAF

(CEO)

New Products Plastic Factory - (NEPRO)



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NEWPRO CORBLACK**HDPE CORRUGATED PIPES
FOR CABLE PROTECTION**

NEWPRO CORBLACK, double-wall corrugated pipe for the passage of cables from NEW PRODUCTS PLASTIC FACTORY-NEPRO (NEWPRO), guarantees considerably higher levels of UV resistance than the traditional materials available on the market.

The benefits deriving from this can be seen above all during the storage phase, both in the warehouse and on site, when dealers and installing companies sometimes require to store the goods in the open for long periods of time, with the risk that the color and quality of the material will deteriorate.

The co-extruded colored bands allow laying of multiple pipes in the same trench, as the color can be customized according to the service for which it is used. The standard colors are Black for the passage of electric cables, yellow for gas pipes and blue for telecommunication cables.

TECHNICAL SPECIFICATION

The product supplied is flexible, double wall, corrugated PE pipe manufactured in the continuous co-extrusion of both walls. The manufacturer's Quality Management System is certified to ISO 9001:2015, and the Environment Management System is certified to ISO 14001:2015. The pipe is black with coextruded light grey band on the outside and black on the inside, and supplied in lengths of 6m, or coils of 25 or 50m, complete with couplings. Pipe conforms to EN 61386-1-2-4, as class N with crush resistance higher than 450 N.

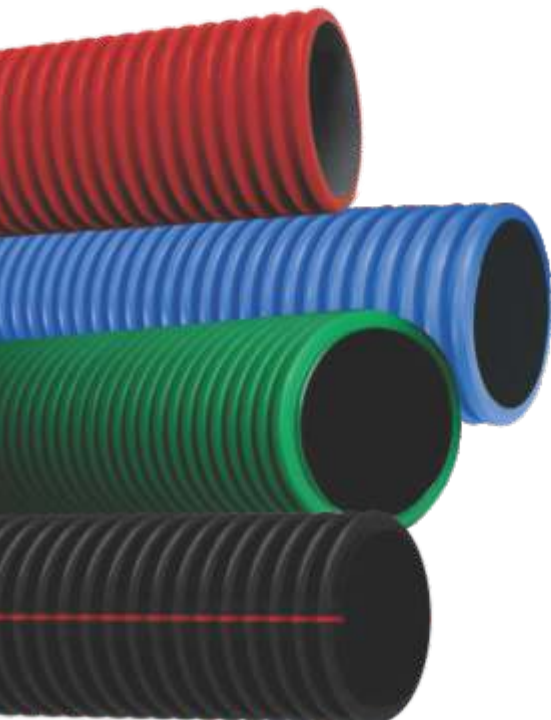


NEWPRO CORBLACK**GENERAL FEATURES**

DESIGN	Normal type double-wall black corrugated pipe with co-extruded bands on the outside and black interior.
APPLICATION	Grey/Red/Black/Green band: protection of LV and MV (low and medium voltage) electric cables; yellow band: protection of gas pipes; blue band: protection of telephone cables.
CRUSH RESISTANCE	EN 61386-1-2-4 with 5% deformation of internal diameter.
STRUCTURE	stabilised against UV rays and guaranteed for one year from the date of manufacture marked on the pipe.
RADIUS OF CURVATURE	15 times the external diameter
PACKAGING	6 m lengths or 25 or 50 m coils.
ACCESSORIES	Couplings + trailing wire in polypropylene/polyester
INSTALLATION	Underground.
ELECTRIC STRENGTH	Excellent
TYPE TESTING - PHYSICAL TESTS	
MELT FLOW RATE	according to ISO 1133: condition 1T (test parameter: 190°C / 5 Kg / 10 mins) on raw materials of both walls.
DENSITY	according to ISO 1183: (test temperature: 23°C) on pipe and on raw materials of both walls
TESTS OF CONFORMITY	
VISUAL INSPECTION	according to UNI ISO 4582 sections 3-4.
MARKING	clearly visible product code printed longitudinally in ink every 3 meters along the pipe .
DIMENSIONS	mean external diameter (de), minimum internal diameter (dim).
CRUSH RESISTANCE	according to EN 61386-1-2-4.
SHOCK RESISTANCE TEST	according to EN 61386-1-2-4.
OPERATING LIMITS	-50°C / +60°C.

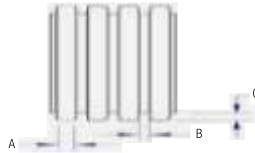
ADVANTAGES

LIGHTNESS, FLEXIBILITY, RING STIFFNESS, RESISTANT TO THE HARMFUL EFFECTS OF UV RAYS*



GENERAL ARRANGEMENT

**NEWPRO
COR BLACK**



Product code

Nominal Ø	40*	50*	63*	75*	90*	110	125	140	160	200
Min. ext. Ø	40	50	63	75	90	110	125	140	160	200
Max. ext. Ø	40.8	51	64.2	76.4	91.7	112	127.3	142.6	162.9	203.6
Min. int. Ø	30	37	47	56	67	82	94	106	120	150
Measured mean int (mm)	31.3	40	51.6	62	77	95	107	121	137	172
N. corrugations per linear meter	180	180	140	120	120	100	100	90	80	63
Material of external wall	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE
Material of internal wall	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE	HDPE
A (mm)	3.53	3.46	4.63	5.46	5.19	5.92	6.32	7.67	11.90	12.10
B (mm)	1.96	2.18	2.38	2.99	2.70	3.10	3.31	4.09	3.18	3.50
C (mm)	3.34	3.40	4.80	5.64	5.62	6.53	8.15	8.83	10	11

* Resale Product

Double-wall corrugated pipe for the passage of cables with Black outside, Black inside.
450 N**



50 m Roll (ND 200 in 25 Roll)

Code

Ext. Ø / Ø ext. min.(mm)	40	50	63	75	90	110	125	160	200
Int Ø / Ø int. min. (mm)	31	40	50	60	73	92	105	137	171

*Can be supplied with Polypropylene/Polyester draw wire.

**Can be produced in Grey/Blue/Green Exterior, Black Interior.

Double-wall corrugated pipe for the passage of cables with black interior and exterior.
450 N**



6 m lengths***

Code

Ext. Ø / Ø ext. min.(mm)	-	-	-	-	-	110*	125	160	200◇
Int Ø / Ø int. min. (mm)	-	-	-	-	-	92	105	137	171

*on request only - ◇ 3 m lengths available on request

**Can be produced in Blue/Red/Green exterior & Black Interior/Black Exterior with Blue/Red/Green co-extruded line and Black Interior.

***Can be produced in 50 m Roll.

Double-wall extra strength corrugated pipe with Black exterior and yellow interior.**
750 N



6 m lengths

Code	-	-	-	-	-	-	-	-	-
Ext. Ø / Ø ext. min.(mm)	-	-	-	-	-	110	125	160	200*
Int Ø / Ø int. min. (mm)	-	-	-	-	-	92	105	137	171

*on request only

**Can be produced with Grey Exterior & Yellow Interior.

Double-wall corrugated pipe for the passage of telecommunication cables with blue interior and exterior.**



50 m coils (coil length tolerance $\pm 2\%$)*

Code	-	-	-	-	-	-	-	-	-
Ext. Ø / Ø ext. min.(mm)	40	50	63	75	90	110	125	160	200
Int Ø / Ø int. min. (mm)	31	40	50	60	73	92	105	137	171

**Can be produced in Black Exterior with Blue co-extruded line & Blue Interior.

*Can be supplied with Polypropylene/Polyester draw wire.

Jolly coupling for self-draining cable ducts



Code	-	-	-	-	-	-	-	-	-
Ext. Ø / Ø ext. min.(mm)	40	50	63	75	90	110	125	160	200



DRAINAGE PIPE WITH HIGH UV RESISTANCE

NEWPRO CORBLACKDRIN has a much greater resistance to UV rays than the traditional materials available on the market (Artificial ageing test by exposure to UV radiation for 5000 hours, according to standard EN1297). The benefits deriving from this can be seen above all during the storage phase, both in the warehouse and on site, when dealers and installing companies sometimes require to store the goods in the open for long periods of time, with risk that the color and quality of the material will deteriorate. Slotted NEWPRO CORBLACKDRIN pipes for draining systems have a co-extruded green band on the outside for easy recognition and to identify their use.

TECHNICAL SPECIFICATIONS

Supply and laying of double-wall corrugated PE pipe made by continuous co-extrusion of the two walls, with equidistant slots of variable size, position and number, distributed throughout the circumference, located at the between two consecutive corrugations; manufactured by a company with ISO 9001:2015 certification and ISO 14001:2015 environmental certification.

The pipe must be entirely black with a co-extruded longitudinal green band on the outside, packed in 25/50 meter rolls, and fitted with a coupling. The manufacturer must supply the relevant construction specifications and product test certificate.





EXTERIOR DIAMETERS DE - SPECIFICATIONS

Supply and installation of high density polyethylene pipes (HDPE) for non pressure underground pipelines, made through the continuous co-extrusion of two layers; the internal layer is smooth and of light **blue** colour to facilitate visual inspection with telecameras, while the external layer must be corrugated and of **black** colour.

The system (pipe+ joint) is fully compliant with EN 13476 standard and certified with product quality label issued by an accredited, certifying third body, exterior nominal diameter DN/OD__* mm, annular rigidity class SN__** (equal to__*kN/square metres) measured according to EN ISO 9969 standard. The pipe is produced by a company operating in compliance with the production quality system set forth by ISO 9001/2015 standard and with the environmental quality system according to ISO 14001:2015.

Each length of pipes must be equipped with socket connection or exterior sleeve with relative EPDM compliant sealing gaskets in accordance to EN 681-1 standard, to position in the first groove between two following.

The pipe carries the label as foreseen by EN 13476 standard and the following must be shown:

- Test certifications on annular flexibility according to EN 13476 standard, using the testing method described in EN 1446 standard.
- Certification of compliance with the environmental quality system (EN ISO 14001:2015).
- Certification of production compliant with the corporate quality system (EN ISO 9001:2015).
- Test certification on the hydraulic seal of the gaskets, according to EN 13476, using the test method described in EN 1277.
- Test certification on resistance to abrasion, verified according to DIN EN 295-3 standard.

GENERAL FEATURES

DESIGN	Double-wall corrugated pipe, entirely black with co-extruded green band on the outside and slots.
APPLICATION	Agricultural and civil drainage.
CRUSH RESISTANCE	300N with 5% deformation of the internal diameter (measured according to EN 50086-2-4/A1).
RADIUS OF BENDING	15 times the external diameter.
PACKAGING	50 m coils (ø 200mm pipe only in 25 m coils).
ACCESSORIES	Couplings.
INSTALLATION	Underground.
TYPE TESTING PHYSICAL TESTS	
MELT FLOW RATE	According to ISO 1133: Condition 1T (test parameter: 190°C / 5 Kg /10 mins) on raw materials of both walls.
DENSITY	According to ISO 1183: (test temperature: 23°C) on pipe and on raw materials of both walls.
TESTS OF CONFORMITY	VISUAL INSPECTION: according to UNI ISO 4582 sections 3-4.
MARKING	Clearly visible product code printed longitudinally in ink every 3 meters along pipe.
DIMENSIONS	Mean external diameter (de), minimum internal diameter (dim).
CRUSH RESISTANCE	According to EN 50086-2-4.
OPERATING LIMITS	-50°C / +60°C.

NEWPRO CORMAG

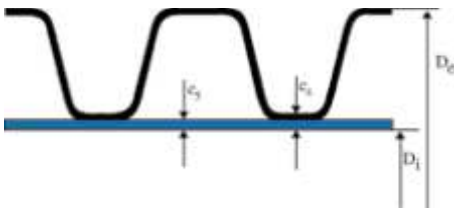
with socket connection EN 13476 (2008)



from Ø 110 to Ø 500 6mt lengths with socket - from Ø 630 to Ø 1200 6 mt lengths without socket (lengths tolerance $\pm 1\%$)

Ø ext. mm	110	160	200	250	315	400	500	630	800**	1000**	1200**
Ø int. mm	-	137	172	218	272	347	433	535	678	852	1030
3 m lengths SN 4 kN/m ²	-	√	√	√	√	√	√	√	-	-	-
6 m lengths SN 4 kN/m ² °	-	-	√	√	√	√	√	√	-	-	-
6 m lengths SN 8 kN/m ² °	-	√	√	√	√	√	√	√	√	√	√

** Available only in SN8



*DN/OD: External nominal diameter of the pipe
**SN4 (equal to 4 kN/m²) - SN8 (equal to 8 kN/m²)

For data and/or information on statistic design:

CENT R 1295-3

Installation: **ENV 1046**

On-site testing: **EN 1610**

THE FOLLOWING TYPES OF CONNECTION ARE FORESEEN FOR EXTERNAL DIAMETERS:

- connection system with socket "TYPE A" (from Ø 160 to Ø 400 mm)



- connection system with socket "TYPE B1" (internal Ø 300 - 400 mm)



Connection kit Additional details on connection systems

**NEWPRO
CORBLACKDRIN**



SLOTTED PIPE

NEWPRO CORSLTDRIN, the double-wall slotted corrugated pipe for underground drainage applications.

TECHNICAL SPECIFICATIONS

Supply and laying of double-wall corrugated PE pipe made by continuous co-extrusion of the wall, with equidistant slots of variable-size, position and number, distributed throughout the circumference, located on the bottom of the groove between two consecutive corrugations; manufactured by a company with ISO 9001:2015 certification and ISO 14001:2015 environmental certification. The pipe must be entirely black with a co-extruded longitudinal green band on the outside, packed in 25/50 meter rolls, and fitted with a coupling and wrapped in a geotextile fiber filter fabric. The manufacturer must supply the relevant construction specifications and product test certificate.

GENERAL CHARACTERISTICS

CONSTRUCTION	Double-wall corrugated pipe, entirely black with co-extruded green band on the outside and slots.
USE	Drainage, underground water (agriculture, building or dispersion).
CRUSHING RESISTANCE	300N with internal diameter deformation \leq 5% (measured according to EN 61386-24).
RADIUS OF CURVATURE	15 times the external diameter.
LIMITS FOR USE	-50 °C / +60 °C.
PACKAGING	50 metre rolls (or 25 metre rolls for \varnothing 200mm).
ACCESSORIES	Couplings.
INSTALLATION	Underground trench.

GEOTEXTILE FIBRE WRAPPING

Rot-proof synthetic fibre integral with the pipe over its entire length, perfectly adherent and possessing the following characteristics:

MASS	\geq 150 gr/m ² (EN 9864)
TRANSVERSAL TENSILE STRENGTH	kN/m MD 5,00 -0,75 / CMD 5,00 -0,75 (EN ISO 10319)
LONGITUDINAL TENSILE STRENGTH	\geq 6,0 kN/m (EN ISO 10319)
ULTIMATE ELONGATION	\geq 80% (EN ISO 10319)
STATIC PUNCTURE RESISTANCE	1,0 kN (EN ISO 12236)

**NEWPRO
COR BLACKDRIN**

detail from Ø63 to Ø125



Type 1 slots

detail from Ø160 to Ø200



Type 2 slots

Product code

Product code	63*	75*	90*	110	125	160	200
Ext. Ø / Ø ext. min. DN/OD (mm)	63*	75*	90*	110	125	160	200
Int Ø Ø int. min. (mm)	50	60	73	92	105	137	171
Thickness at the perforation (mm)	1,3	1,4	1,5	1,5	1,5	1,5	1,5
N. of corrugations per linear metre	140	111	111	99	99	66	50
N. of holes per groove	3	3	3	3	3	6	6
N. of holes per linear metre	210	167	167	149	149	198	150
Angle between adjacent holes	60°	60°	60°	60°	60°	60°	60°
Capture surface (sq.cm/ml)	>65	>65	>75	>80	>85	>110	>125
Crushing resistance (N/ml)	300	300	300	300	300	300	300
Coil length m	50	50	50	50	50	50	25
Inner/outer wall raw material	PE	PE	PE	PE	PE	PE	PE

* Resale Product



JOINTS

* Universal joints in MSC rubber



cod.

MOD	DE/OD min mm	DE/OD max mm	L mm
65	55	65	90
75	65	75	90
90	75	90	100
100	85	110	100
120	105	120	120
137	120	137	120
150	125	150	120
162	137	162	120
175	150	175	120
200	175	200	150
212	187	212	150
225	200	225	150
250	225	250	150
275	250	275	150
320	290	320	190
335	310	335	190
360	335	360	190
410	385	410	190
430	400	430	190
445	415	445	190
465	435	465	190
510	480	510	190
525	495	525	190
545	515	545	190
620	590	620	190
635	620	635	190
710	695	710	190
805	775	805	190
320	290	320	300
410	385	410	300
510	480	510	300
525	495	525	300
635	620	635	300
710	695	710	300
805	775	805	300
915	885	915	300
1010	995	1010	300
1100	1085	1100	300
1205	1190	1205	300

PRIMARY APPLICATIONS

- excellent as connection system for piping laid in extreme conditions
- transition joints between different materials and non compatible sizes
- collar for repairs

* guaranteed at 1.5 bar till diameter OD/DE 620
** guaranteed at 0.6 bar till diameter OD/DE 805

** Universal joints in MDC rubber



cod.

MOD	DE/OD min mm	DE/OD max mm	L mm
65	55	65	90
75	65	75	90
90	75	90	100
100	85	100	100
120	105	120	120
137	120	137	120
150	125	150	120
162	137	162	120
175	150	175	120
200	175	200	150
212	187	212	150
225	200	225	150
250	225	250	150
275	250	275	150
320	290	320	190
335	310	335	190
360	335	360	190
410	385	410	190
430	400	430	190
445	415	445	190
465	435	465	190
510	480	510	190
525	495	525	190
545	515	545	190
620	590	620	190
635	620	635	190
710	695	710	190
805	775	805	190

Other sizes available upon request
The specifications may change without notice.

CONNECTION KIT



cod.



cod.

∅ mm	125	160	200	250	284	315	350	400	468
	105	137	172	218	250	272	300	347	400

∅ mm	500	565	630	701	800	935	1000	1200
	433	500	535	600	678	800	850	1030

CONNECTION SYSTEMS

The connection between the pipes can be done with sockets or with the connection kit. The socket and/or connection kit allow the insertion more corrugations internally, in order to ensure the proper alignment of the two pipes. The gasket in EPDM is made so as to ensure the perfect hydraulic seal from the interior towards the exterior, and also against infiltrations from the exterior towards the interior.

■ connection system with socket "TYPE A" (from Ø 160 to Ø 400 mm)



"TYPE A" connection socket is automatically welded to the pipe during production. Each weld is then verified by testing with pressurized air, to ensure complete and correct efficiency of the welding process, then the perfect functionality of the sealing system. A label is attached on the pipe as attesting the test.

■ connection system with socket "TYPE B" (from external Ø 500 to external Ø 1200 mm - internal Ø 250 - 500 - 600 - 800 mm)



■ connection system with socket "TYPE B1" (internal Ø 300 - 400 mm)



■ connection system with socket "TYPE C" (from external Ø 125 to external Ø 1200 mm – from internal Ø 250 to internal Ø 800 mm)



OFF TAKE SYSTEM WITH SOCKET FOR NEWPRO CORMAG PIPES

Their use ensures a quick and safe operation in the construction site, also after the installation of the main piping, thus reducing the installation times, need of special parts and planning work, with a remarkable economic saving.

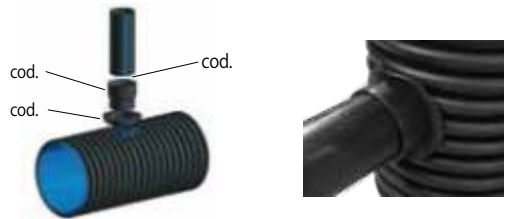
■ hollow cutter hole



■ Off-take system with socket for NEWPRO CORMAG



■ Off-take system with socket for the smooth PE/PVC/PP pipe



■ gaskets for derivations on NEWPRO CORMAG pipes

cod.



Ø connection	Ø MAIN PIPE / CONDUIT PRINCIPAL													
	250	284	315	350	400	468	500	565	630	701	800	935	1000	1200
110	√	√	√	-	-	-	-	-	-	-	-	-	-	-
125	-	-	√	√	√	√	√	-	√	-	-	-	-	-
160	-	-	√	√	√	√	√	√	√	√	√	√	√	√
200	-	-	-	√	√	√	√	√	√	√	√	√	√	√
250	-	-	-	-	-	√	√	√	√	√	√	√	√	√

■ sockets

cod.



cod.



cod.



Ø connection	* Smooth connection socket in PE/PVC/PP	** Connection socket for NEWPRO CORMAG pipe	Hollow cutter / core drill
110	√	-	√
125	√	√	√
160	√	√	√
200	√	√	√
250	√	√	√

* Including gasket for smooth pipes

** Gasket not included

SPECIAL MOULDED PARTS FOR NEWPRO CORMAG

Gasket excluded.

Upon request: prices for connection sleeves and elastomeric gaskets for pipes with standard internal diameter.



cod.	Ø est.	Ø int.	*
	125	105	√
	160	137	√
	200	172	√
	250	218	√
	284	250	√
	315	272	√
	350	300	√
	400	347	√
	468	400	√
	500	433	√
	565	500	√
	630	535	√
	701	600	√
	800	678	√
	935	800	√
	1000	850	√
	1200	1030	√



cod.	Ø est.	Ø int.	*
	125	105	√
	160	137	√
	200	172	√
	250	218	√
	284	250	√
	315	272	√
	350	300	√
	400	347	√
	468	400	√
	500	433	√
	565	500	√
	630	535	√
	701	600	√
	800	678	√
	935	800	√
	1000	850	√
	1200	1030	√



cod.	Ø est.	Ø int.	*
	125	105	√
	160	137	√
	200	172	√
	250	218	√
	284	250	√
	315	272	√
	350	300	√
	400	347	√
	468	400	√
	500	433	√
	565	500	√
	630	535	√
	701	600	√
	800	678	√
	935	800	√
	1000	850	√
	1200	1030	√



cod.	Ø est.	Ø int.	D max	Ø max int.	*
	125	105	160	137	√
	160	137	200	172	√
	200	172	-	-	-
	250	218	-	-	-
	284	250	-	-	-
	315	272	-	-	-
	350	300	-	-	-
	400	347	-	-	-
	468	400	-	-	-
	500	433	-	-	-
	565	500	-	-	-
	630	535	-	-	-
	701	600	-	-	-
	800	678	-	-	-
	935	800	-	-	-
	1000	850	-	-	-
	1200	1030	-	-	-



cod.	Ø est.	Ø int.	*
	125	105	-
	160	137	√
	200	172	√
	250	218	√
	315	272	√
	350	300	√
	400	347	√
	468	400	-
	500	433	√
	565	500	-
	630	535	√



cod.	Ø est.	Ø int.	*
	125	105	-
	160	137	√
	200	172	√
	250	218	√
	315	272	√
	350	300	√
	400	347	√
	468	400	-
	500	433	√
	565	500	-
	630	535	√



cod.	Ø est.	Ø int.	*
	125	105	-
	160	137	√
	200	172	√
	250	218	√
	315	272	√
	350	300	-
	400	347	√
	468	400	-
	500	433	-
	565	500	-
	630	535	-



cod.	Ø est.	Ø int.	*
	125	105	-
	160	137	-
	200	172	√
	250	218	√
	315	250	√
	350	300	√
	400	347	√
	500	433	√
	630	535	√
	701	600	√
	800	678	√
	935	800	√
	1000	850	√
	1200	1030	√

SPECIAL PARTS FOR NEWPRO CORMAG PIPES

NEWPRO CORMAG has a specialized technical structure for the production of standard and particular special parts (manholes, bends, derivations, reducers etc). All articles are produced inside the factory according to the design specifications and they are delivered "ready to use". The support of the said technical structure ensures the quality of the articles, services and proper technical assistance in the construction site and post-sale. Non-standard special parts can be supplied upon request, including connection elements of pipes made with different materials (cement wells, smooth PE, PP, PVC pipes).

THE SPECIAL PARTS ARE SUPPLIED WITHOUT CONNECTION SLEEVES FOR THE CONNECTION TO PIPES

30° BEND HDPE NEWPRO CORMAG			45° BEND HDPE NEWPRO CORMAG			60° BEND HDPE NEWPRO CORMAG			90° BEND HDPE NEWPRO CORMAG		
cod.			cod.			cod.			cod.		
Ø est.	Ø int.	**	Ø est.	Ø int.	**	Ø est.	Ø int.	**	Ø est.	Ø int.	**
125	105	✓	125	105	✓	125	105	✓	125	105	✓
160	137	✓	*160	137	✓	160	137	✓	*160	137	✓
200	172	✓	*200	172	✓	200	172	✓	*200	172	✓
250	218	✓	*250	218	✓	250	218	✓	*250	218	✓
284	250	✓	284	250	✓	284	250	✓	284	250	✓
315	272	✓	*315	272	✓	315	272	✓	*315	272	✓
350	300	✓	*350	300	✓	350	300	✓	*350	300	✓
400	347	✓	*400	347	✓	400	347	✓	400	347	✓
468	400	✓	468	400	✓	468	400	✓	468	400	✓
500	433	✓	*500	433	✓	500	433	✓	*500	433	✓
565	500	✓	565	500	✓	565	500	✓	565	500	✓
630	535	✓	*630	535	✓	630	535	✓	*630	535	✓
701	600	✓	701	600	✓	701	600	✓	701	600	✓
800	678	✓	800	678	✓	800	678	✓	800	678	✓
935	800	✓	935	800	✓	935	800	✓	935	800	✓
1000	850	✓	1000	850	✓	1000	850	✓	1000	850	✓
1200	1030	✓	1200	1030	✓	1200	1030	✓	1200	1030	✓

TEE 45° HDPE NEWPRO CORMAG			TEE 90° HDPE NEWPRO CORMAG			TEE 45° HDPE NEWPRO CORMAG REDUCED					TEE 90° HDPE NEWPRO CORMAG REDUCED				
cod.			cod.			cod.					cod.				
Ø est.	Ø int.	**	Ø est.	Ø int.	**	Ø est.	Ø int.	D1 min	D1 max	**	Ø est.	Ø int.	D1 min	D1 max	**
125	105	✓	125	105	✓	125	105	-	-	-	125	105	125	125	-
*160	137	✓	160	137	✓	160	137	125	125	✓	160	137	125	125	✓
*200	172	✓	*200	172	✓	200	172	125	160	✓	200	172	125	160	✓
*250	218	✓	*250	218	✓	250	218	125	200	✓	250	218	125	200	✓
284	250	✓	284	250	✓	284	250	125	200	✓	284	250	125	200	✓
*315	272	✓	*315	272	✓	315	272	125	250	✓	315	272	125	250	✓
350	300	-	350	300	✓	350	300	125	315	✓	350	300	125	315	✓
*400	347	-	*400	347	✓	400	347	125	350	✓	400	347	125	350	✓
468	400	-	468	400	✓	468	400	125	350	✓	468	400	125	350	✓
500	433	-	*500	433	✓	500	433	125	400	✓	500	433	125	400	✓
565	500	-	565	500	✓	565	500	125	468	✓	565	500	125	500	✓
630	535	-	*630	535	✓	630	535	125	500	✓	630	535	125	575	✓
701	600	-	*701	600	✓	701	600	125	500	✓	701	600	125	630	✓
800	678	-	*800	678	✓	800	678	125	500	✓	800	678	125	630	✓
935	800	-	*935	800	✓	935	800	125	500	✓	935	800	125	630	✓
1000	850	-	*1000	850	✓	1000	850	125	500	✓	1000	850	125	630	✓
1200	1030	-	*1200	1030	-	1200	1030	125	500	✓	1200	1030	125	630	✓



LINEAR
INSPECTION D110

cod.

Ø est.	Ø int.	**
125	105	✓
160	137	✓
200	172	✓
250	218	✓
284	250	✓
315	272	✓
350	300	✓
400	347	✓
468	400	✓
500	433	✓
565	500	-
630	535	-



DRAIN TRAP FIRENZE TYPE,
IN HDPE NEWPRO CORMAG
WITH TWO INSPECTION
ACCESS D110

cod.

Ø est.	Ø int.	**
125	105	✓
160	137	✓
200	172	✓
250	218	✓
284	250	✓
315	272	✓
350	300	✓
400	347	✓
468	400	✓
500	433	✓
565	500	✓
630	535	✓



TEE 90° HDPE NEWPRO CORMAG
WITH CENTRAL FLANGE
FOR INSPECTION ACCESS

cod.

Ø est.	Ø int.	**
125	105	✓
160	137	✓
200	172	✓
250	218	✓
284	250	✓
315	272	✓
350	300	✓
400	347	✓
468	400	✓
500	433	✓
565	500	✓
630	535	✓



CROS PIPE
HDPE NEWPRO CORMAG

cod.

Ø est.	Ø int.	**
125	105	✓
160	137	✓
200	172	✓
250	218	✓
284	250	✓
315	272	✓
350	300	-
400	347	-
468	400	-
500	433	-
565	500	-
630	535	-



ECCENTRIC REDUCER
NEWPRO CORMAG m/m

cod.

Ø est.	Ø int.	D1 min	D1 max	**
125	105	-	-	-
160	137	125	125	✓
200	172	125	160	✓
250	218	125	200	✓
284	250	125	200	✓
315	272	125	250	✓
350	300	125	315	✓
400	347	125	350	✓
468	400	125	400	✓
500	433	125	468	✓
565	500	125	500	✓
630	535	125	575	✓
701	600	125	635	✓
800	678	125	701	✓
935	800	125	800	✓
1000	850	125	935	✓
1200	1030	125	1000	✓



** ECCENTRIC REDUCER
NEWPRO CORMAG F/F

cod.

Ø est.	Ø int.	D1 min	D1 max	**
125	105	-	-	-
160	137	125	125	✓
200	172	125	160	✓
250	218	125	200	✓
284	250	125	200	✓
315	272	125	250	✓
350	300	125	315	✓
400	347	125	350	✓
468	400	125	400	✓
500	433	125	468	✓
565	500	125	500	✓
630	535	125	575	✓
701	600	125	635	✓
800	678	125	701	✓
935	800	125	800	✓
1000	850	125	935	✓
1200	1030	125	1000	✓



*** FEMALE CAP
NEWPRO CORMAG

cod.

Ø est.	Ø int.	**
125	105	✓
160	137	✓
200	172	✓
250	218	✓
284	250	✓
315	272	✓
350	300	✓
400	347	✓
468	400	✓
500	433	✓
565	500	✓
630	535	✓
701	600	✓
800	678	✓
935	800	✓
1000	850	✓
1200	1030	✓



MALE PLUG
NEWPRO CORMAG

cod.

Ø est.	Ø int.	**
125	105	✓
160	137	✓
200	172	✓
250	218	✓
284	250	✓
315	272	✓
350	300	✓
400	347	✓
468	400	✓
500	433	✓
565	500	✓
630	535	✓
701	600	✓
800	678	✓
935	800	✓
1000	850	✓
1200	1030	✓

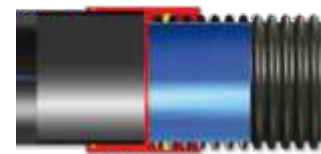
* Piece
** including n°2 gaskets
*** including n°1 gasket



An access D110 can be welded on
all fittings.

ECCENTRIC DOUBLE-JOINT FOR CONNECTING A NEWPRO CORMAG PIPE WITH A SMOOTH PE/PVC PIPE

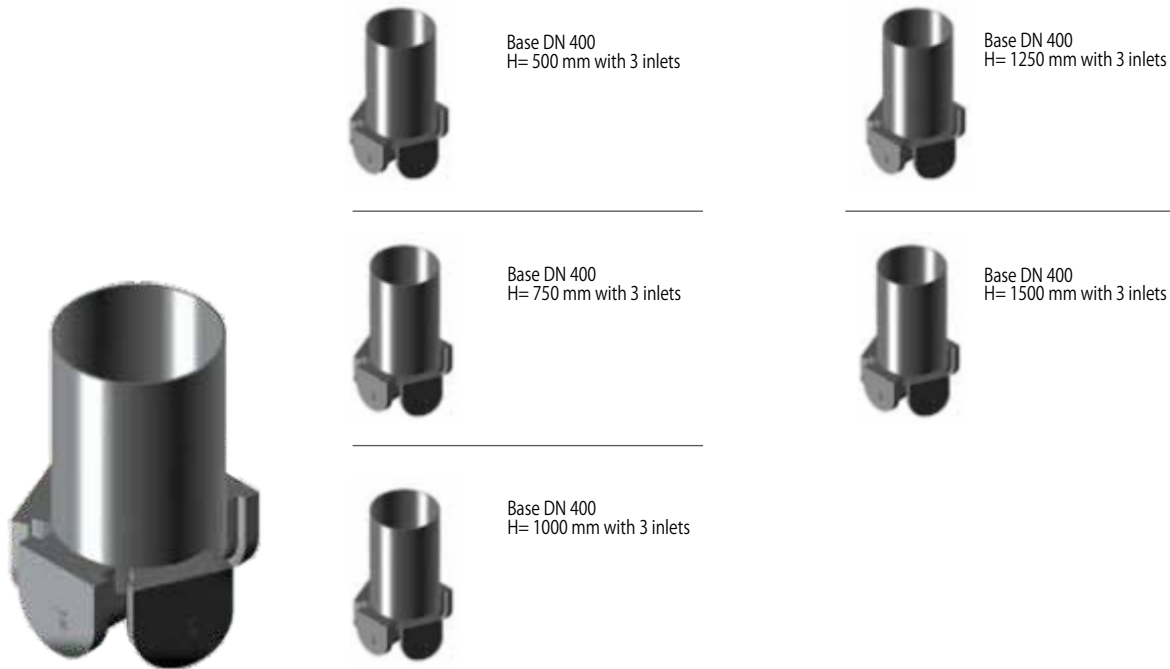
cod.	DE/OD mm
220LC	125
220LC	160
220LC	200
220LC	250
220LC	315
220LC	400
220LC	500



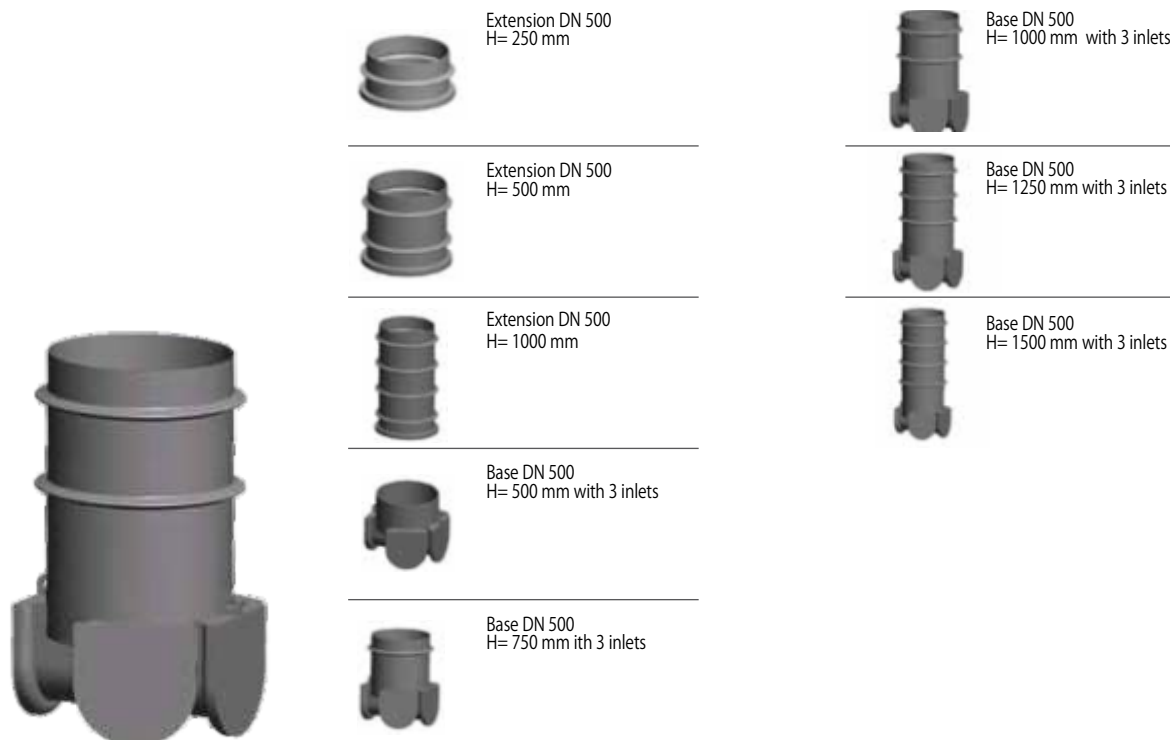
Custom special parts are also produced.

MOULDED MODULAR MANHOLES IN POLYETHYLENE

MANHOLES DN 400



MANHOLES DN 500



MANHOLES DN 600



Extension DN 600
H= 250 mm



Extension DN 600
H= 500 mm



Extension DN 600
H= 1000 mm



Base DN 600
H= 500 mm line



dn 600
H= 750 mm with 3 inlets



Base DN 600
H=1000 mm with 3 inlets



Base DN 600
H=1250 mm with 3 inlets



Base DN 600
H=1500 mm with 3 inlets



Base DN 600 H= 600
mm for slowing down purposes

MANHOLES DN 800



Cone DN 800 H= 800 mm
reduced at D= 625 mm with
possibility to cut to 250 mm



Cone DN 800 H= 450 mm
reduced at D= 625 mm with
possibility to cut to 250 mm



Extension DN 800
H= 250 mm



Extension DN 800
H= 500 mm



Extension DN 800
H= 1000 mm



Base DN 800
H= 500 mm line



Base DN 800
H= 800 mm with 3 inlets



Base DN 800 reduced at 600
H= 1000 mm with 3 inlets



Base DN 800 reduced at 600
H= 1250 mm with 3 inlets



Base DN 800 reduced at 600
H= 1400 mm with 3 inlets



Base DN 800 H= 450 mm for
slow-down purposes

■ **MANHOLES DN 1000**



Cone DN 1000 H= 650 mm
reduced at D= 625 mm with
possibility to cut to 300 mm



Cone DN 1000 H= 900 mm
reduced at D= 625 mm with
possibility to cut to 300 mm



Extension DN 1000
H= 250 mm



Extension DN 1000
Height = 500 mm



Extension DN 1000
H= 1000 mm



Base DN 1000
H= 600 mm line



Base DN 1000
H= 800 mm line



Base DN 1200 reduced to
1000 H= 1300 mm line



Base DN 1000
H= 650 mm with 3 inlets



Base DN 1000
H= 500 mm with 5 inlets



Ball-type base
DN 1000 H= 550 mm



HDPE MANHOLES WITH CONNECTION SOCKETS

■ **MANHOLES DN 400**



NEWPRO CORMAG Pipe



Gasket for NEWPRO CORMAG Pipe



Base DN 400 H=330 mm
socketed with 3 inlets



■ **MANHOLES DN 500**



NEWPRO CORMAG Pipe



Gasket for NEWPRO CORMAG Pipe



Base DN 500 H=750 mm



■ **MANHOLES DN 600**



NEWPRO CORMAG Pipe



Gasket for NEWPRO CORMAG Pipe



Base DN 600 H=800 mm



Base DN 600 H=600 mm
socketed in line



■ **MANHOLES DN 800**



NEWPRO CORMAG Pipe



Gasket for NEWPRO CORMAG Pipe



Cone DN 800 socketed H=450 mm



Base DN 800 H=750 mm
socketed in line



Base DN 800 H=700 mm



■ **MANHOLES DN 1000**



NEWPRO CORMAG Pipe



Gasket for NEWPRO CORMAG Pipe



Cone DN 1000 socketed
H= 400 mm



Base DN 1000 socketed
H= 650 mm line



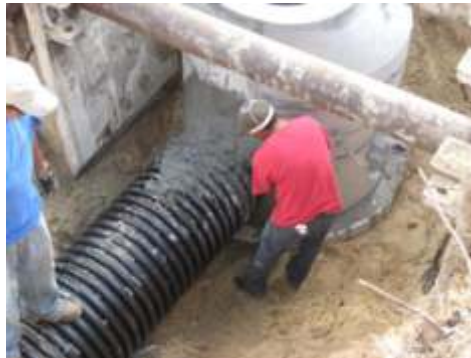
Base DN 1000 socketed
H= 850 mm line



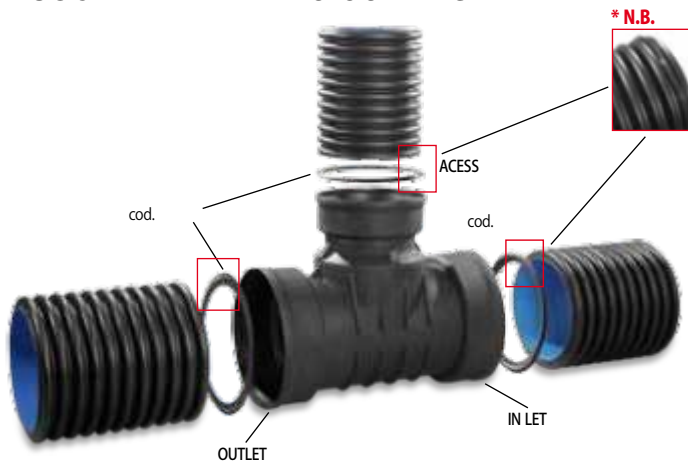
Base DN 1000 socketed
H= 700 mm with 3 inlets



Base DN 1000 socketed
H= 550 mm 5 inlets



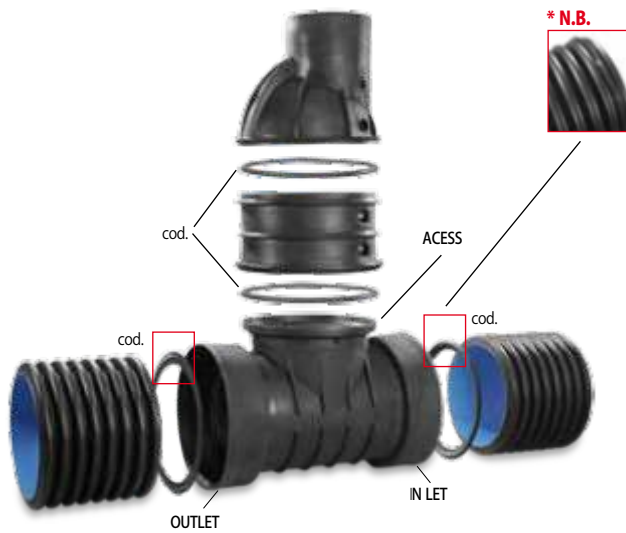
SOCKETED NEWPRO CORMAG TEE



GASKET FOR NEWPRO CORMAG PIPE					
cod.					
DN - OD mm					
630	701	800	935	1000	1200

OUTLET DE/OD mm	IN LET DN/OD mm	ACCESS DN - OD mm					
		630	701	800	935	1000	1200
1200	1200	√	√	√	√	√	√
1000	1000	√	√	√	√	√	-
935	935	√	√	√	√	-	-
800	800	√	√	√	-	-	-
701	701	√	√	-	-	-	-
630	630	√	-	-	-	-	-

NEWPRO CORMAG TEE FOR MOULDED MANHOLES



GASKET FOR NEWPRO CORMAG MANHOLES		
cod.		
DN - OD mm		
600	800	1000

OUTLET DE/OD mm	IN LET DN/OD mm	ACCESS DN - OD mm		
		630	800	1000
1200	1200	√	√	√
1000	1000	√	√	√
935	935	√	√	√
800	800	√	√	-
701	701	√	√	-

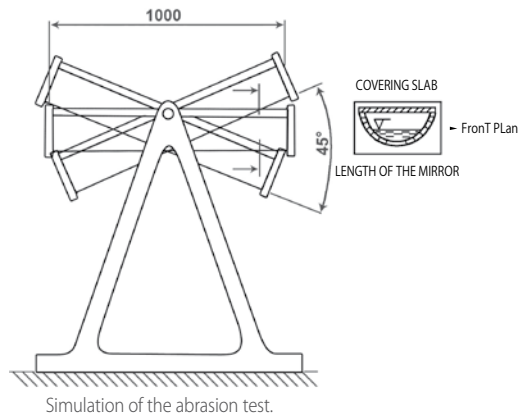
The line diameter can be changed upon request.
* N.B. Gasket must be positioned on the first corrugation of the pipe.

RESISTANCE OF ABRASION AND CLEANING WITH CANAL-JET

The resistance to abrasion is the resistance to friction with particles such as gravel, sand, stones, etc., which are elements that may be contained in the fluid transported through the pipes. The scarce roughness of the PE reduces said coefficient and as a consequence, the abrasion of its surface. The NEWPRO CORMAG pipe boasts of a resistance to abrasion up to 5 times greater than that of cement pipes, and makes it particularly suitable for sewer networks. In case of pipes produced with low resistance to abrasion, the shrinking of the layers' thickness due to erosion increases the tension and therefore, it decreases the useful life.



Abrasion tests using probes.



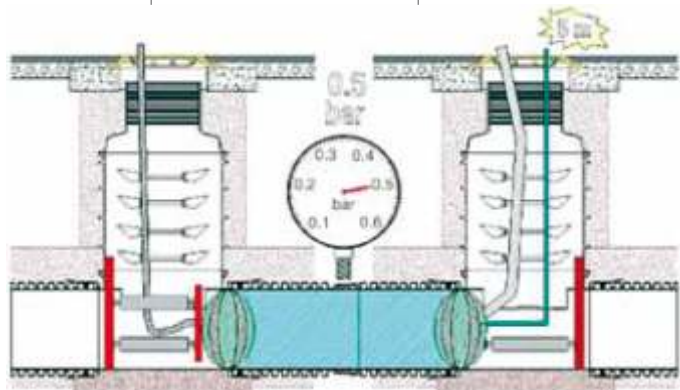
CEMENT	PRFV	STEEL	PVC	SANDSTONE	PEAD
= 20 h	= 25 h	= 34 h	= 50 h	= 60 h	= 100 h

Tests carried out by mixing sand and water and rotating the mix inside the pipe at high speed. The abrasion resistance time of PE is higher than that of all the other materials tested.

ROUGHNESS VALUES

TYPE OF PIPE	BAZIN - [m ²]	GAUCKLER - STRICKLER Ks m ^{1/3} s ¹	MANNING - m ^{1/3} s ¹	KUTTER m [m ²]
LAYERS IN HDPE-PP	(0,11)	(95)	(0,011)	(0,12)
CONCRETE LAYERS	(0,10)	(70)	(0,015)	(0,27)

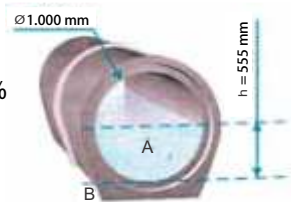
ON-SITE TESTING EN 1610



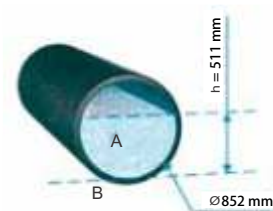
HYDRAULIC COMPARISON

Comparison between the filling degree of a concrete pipe DN 1000 and a corrugated pipe DN 1000.

CONCRETE PIPE
DN 1000 p 0,01
Q = 1,3 m³/s - h/d = 56%



CORRUGATED PIPE
DN/OD 1000 p 0,01
Q = 1,3 m³/s - h/d = 60%



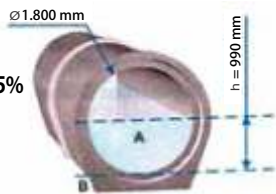
The corrugated pipes, despite having a smaller internal diameter, boast of the same hydraulic performance of concrete pipes, with equal capacity, even if the value of the filling degree of the former increases, it remains anyhow within acceptable values. The DN of PE or PP spiral wound pipes instead, has the same net internal diameter of concrete pipes. Thanks to the reduced roughness of PE layers, able to retain this characteristic also in the long run, filling degrees of the pipes lower than those in concrete pipes are obtained with spiral wound pipes, with equal diameter and capacity.

■ Values of the filling degree for concrete pipes and for corrugated pipes with the same capacity values (slope 0.01 m/m=1%)

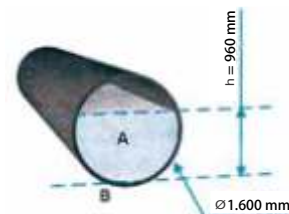
CONCRETE PIPES		Q (m ³ /s)	CORRUGATED PIPES	
SIZES/DIMENSIONS (mm)	H/D (%)		H/D (%)	SIZES/DIMENSIONS (mm)
500	60%	0,26	70%	433
600		0,42	65%	535
800		0,92	75%	678
1000		1,60	70%	852
1200		2,72	70%	1030

■ comparison between the filling degree of a concrete pipe DN 1800 and a spiral-wound pipe DN 1600

CONCRETE PIPE
DN 1800 p 0,01
Q = 7,0 m³/s - h/d = 55%



CORRUGATED PIPE
DN/OD 1600 p 0,01
Q = 7,0 m³/s - h/d = 60%



■ Values of the filling degree for concrete pipes and for spiral wound pipes with the same capacity values (slope 0.01 m/m=1%)

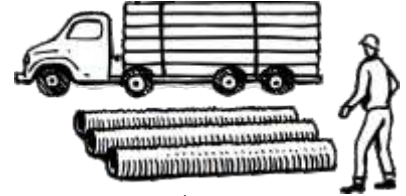
CONCRETE PIPES h/d 60%	Q (m ³ /s)	SPIRAL WOUND PIPES H/D 54%
SIZES/DIMENSIONS (mm)		SIZES/DIMENSIONS (mm)
800	0,92	800
1000	1,60	1000
1200	2,72	1200
1400	4,10	1400
1600	5,80	1600
1800	8,00	1800
2000	10,60	2000

I. SITE RECEIVING AND HANDLING

1 - Receiving Recommendations

Our distributors and customer service personnel make service and customer satisfaction their highest priority. If your order is incorrect, contact your distributor or our customer service personnel.

- Direct driver to a smooth, flat area, free of rocks and debris.
- Examine load quantities and quality immediately after unloading. Inspect pipe carefully for possible damage from transportation or unloading.
- Note damage or missing items on delivery receipt.
- Shortages and damaged material are not automatically reshipped. Reorder replacement material.
- Do not dispose of damaged items. Check with driver for proper return method. If driver is unsure, contact our customer service personnel.

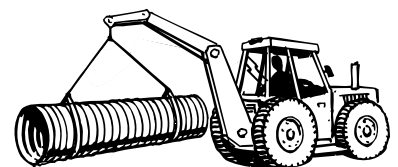
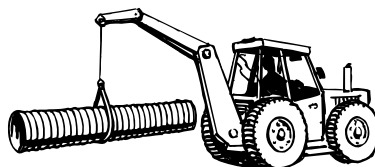
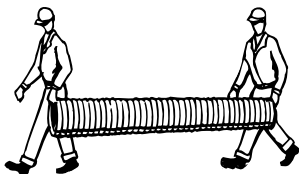


2 - Handling Recommendations

To avoid damage to the pipe and fittings the following handling recommendations should be followed:

- OSHA safety requirements.
- Do not drop pipe.
- 450mm and smaller pipe can be moved by hand. Larger pipe requires a backhoe with a nylon sling.
- Lift 900mm and larger diameter pipe with a sling at two points, spaced approximately 3m apart. Smaller diameters can use one lift point.
- Contractor assistance is required to unload palletized pipe.
- Do not use a loading boom or forklift directly on or inside pipe.

Recommended Handling Method for Pipe		
Diameter (mm)	Approx. Weight (kg/m)	Handling Method
110	0.74	Labor
160	1.24	Labor
200	1.80	Labor
250	2.52	Labor
315	4.31	Labor
400	5.91	Labor
500	8.08	Sling (1 points)
630	19.55	Sling (1 points)
800	27.65	Sling (2 points)
1000	43.21	Sling (2 points)

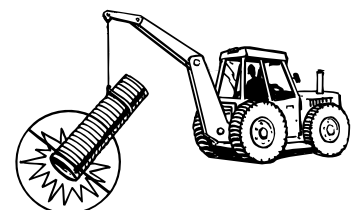
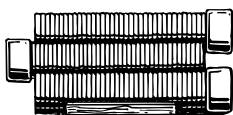


II. SITE PIPE STORAGE

1 - Storage Recommendations

To ensure that your delivered pipe products do not become damage during job site storage, follow these simple guidelines:

- Non-palletized pipe may be temporarily stockpiled on a flat, clear area.
- Use securing timbers (or blocks) to ensure the stockpile does not collapse.
- Failure to block pipe may result in stack collapsing, pipe damage or personal injury.
- While supporting lengths of pipe evenly, alternate bells for each row of pipe.
- To prevent damage to the bell or spigot when moving pipe sections, do not drag or strike pipe ends against anything.

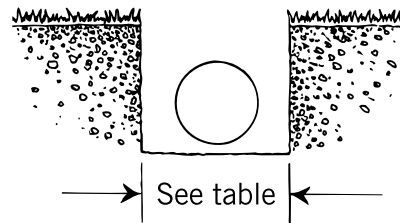


III. TRENCH CONSTRUCTION

- Information provided in this installation guide is intended as a quick reference only and does not supersede requirements specified on project plans.
- The trench or ditch should be wide enough to place and compact backfill around the entire pipe.
- Refer to below Table for recommended minimum trench widths. The design engineer may modify the trench width based on site specific conditions.

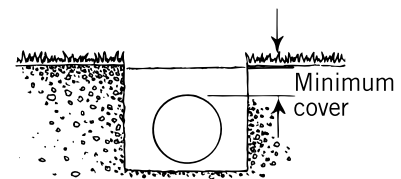
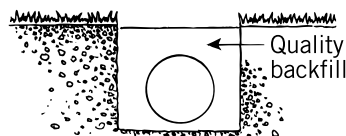
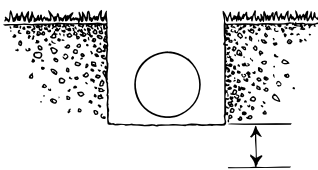
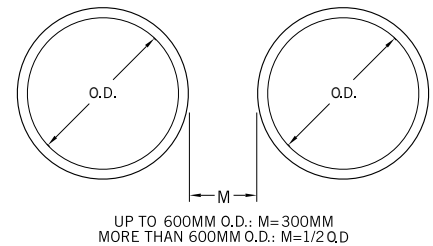
Minimum Trench Width	
Pipe Dia. (mm)	Trench Width(mm)
110 -200	*
250	0.7
315	0.8
400	0.9
500	1.0

**Usually depends on smallest bucket size available*



1 - Parallel Pipe Installation

- For parallel pipe installations, allow space between pipes for proper compaction.
*Spacing will differ for retention/detention systems due to the intended use of this product.
- Trench or ditch bottoms containing bedrock, soft muck or refuse, or other material unable to provide long-term uniform pipe support are unacceptable.
- All unsuitable foundation shall be excavated before pipe installation proceeds.
- Where rock or unyielding or soft foundation is present, the design engineer shall be contacted to determine the extent of excavation required.
- If native soil can migrate into backfill, use synthetic fabric (geotextile) to separate native soil from backfill.

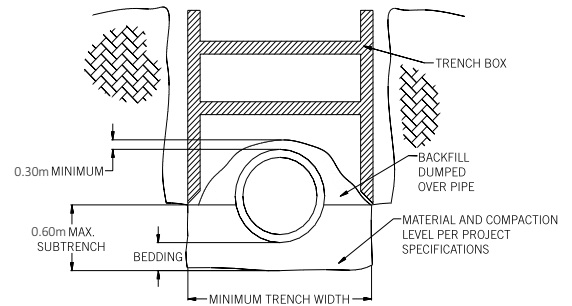


IV. TRENCH BOXES

- Trench boxes provide a safe work area to install pipe in deep trenches or in soils that have insufficient stability. Always follow OSHA requirements when using a trench box.
- The length of the trench box should be suitable for the pipe length. Nominal length for dual wall HDPE pipe is 6m although shorter lengths can be supplied.
- The most effective way to maintain a sound system is to provide a 'sub trench' within which to place the pipe and backfill. The sub trench shall not be greater than 0.6m above the bottom on the trench. Backfill and compact according to the design specifications within the sub trench. The trench box can be pulled along the top edge of the sub trench without affecting the backfill in the pipe embedment zone.

1 - Sub Trench Installation:

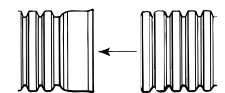
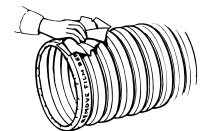
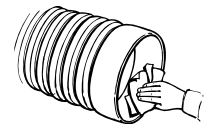
In installations not involving a sub trench, dragging a trench box should only be done if it does not damage the pipe or disrupt the backfill; otherwise, the box should be lifted vertically into its new position, again taking great care not to disturb the pipe or backfill.



V. BELL AND SPIGOT JOINT ASSEMBLY

For pipe with a bell-and-spigot connection, it is imperative that the joint be assembled properly to ensure that the product performs to expectations. The steps that must be followed to obtain a quality joint are provided below. Failure to follow these instructions may cause the joint quality to be severely compromised.

- Lower pipe into trench by hand, or use nylon straps and excavating equipment.
- Begin by inspecting the bell and remove any foreign matter.
- Use a clean rag or brush to lubricate bell of pipe lubricant.
- Clean spigot end of pipe.
- Remove protective wrap from gasket.
- Using clean rag or brush, lubricate exposed gasket with pipe lubricant.
- Do not allow lubricated section to touch dirt or backfill. Foreign matter could adhere to surface and compromise joint integrity.
- Place spigot into bell and align.



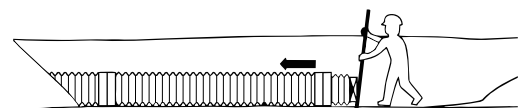
Note: Always push spigot end into bell, not bell end onto spigot.

Assemble joint using one of the following methods. (For smaller diameters, pipe may be joint manually.)

- For all methods, ensure bell and spigot are adequately "homed" for proper installation and tight joining seal. If no homing mark is present, measure the depth of the bell and use a crayon or other material to place a homing mark an appropriate corrugation of the spigot end.

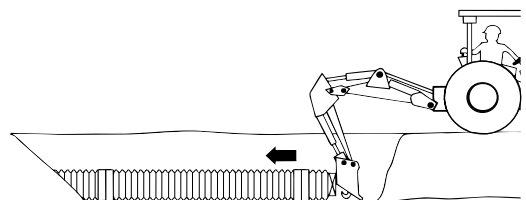
1 - Bar and Block Method

- Place installation stub into bell end of pipe.
- Place wooden block horizontally across end of installation stub.
- With a bar, push against wooden block until pipe is fully inserted into bell.



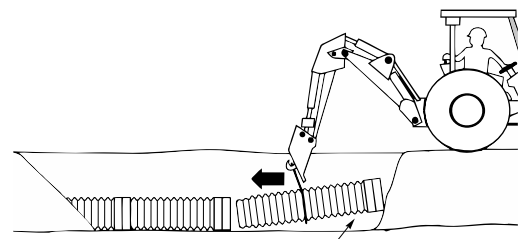
2 - Backhoe Method

- Place installation stub into bell end of pipe.
- Place wooden block horizontally across installation stub.
- Carefully push back of backhoe bucket against block until pipe is fully inserted into bell



3 - Backhoe and Sling Method

- Wrap nylon sling around pipe. Pipe 900mm or larger should be picked up at two points approximately 3m apart.
- Hook other end of nylon sling to backhoe bucket.
- Operator should carefully push strap tight toward bell of downstream pipe until spigot is fully inserted into bell.
- Ensure pipe slides squarely into bell to avoid misalignment.
- Keep pipe level.

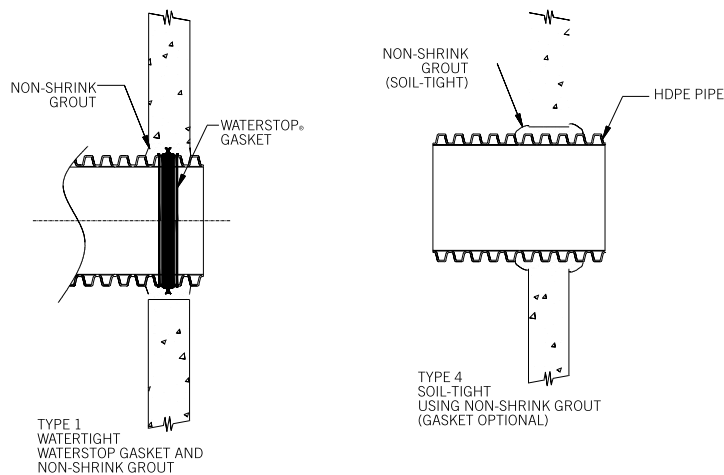


VI. MANHOLES AND CATCH BASIN/CONNECTIONS

Manholes or catch basins can be used at changes in pipe material, size, grade, direction and elevation. Manholes and catch basins can be more costly than other alternatives but also allow grade and directional changes in addition to changes in pipe material and size.

- Local regulations should be consulted to determine if manholes or catch basins are required at any or all pipe changes.

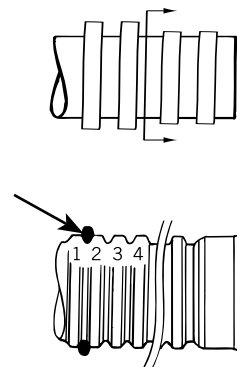
1 - Product Detail for Manhole Connections



VII. FIELD GASKET ASSEMBLY

When standard lengths of HDPE pipe must be cut to fit in a field application, the following instruction will ensure proper performing joints:

- For reduced spigot pipe ONLY, reducing spigot must be removed.
- Using a saw, cut in the center of the valley of the first full corrugation.
- Trim remaining polyethylene burrs from saw cut. Note: Failure to smoothly trim burrs may compromise joint integrity.
- Wipe clean first valley from end of pipe. This is where gasket will be placed.
- Hold gasket with both hands so printing is facing you.
- With printing on gasket face-up and toward spigot end of pipe, slide gasket into first corrugation valley, starting at bottom. Note: It is easier to pull gasket up to conform to valley.
- Slide gasket into first corrugation valley by hand.
- Ensure printing on gasket is face-up and toward spigot end of pipe.

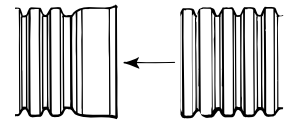
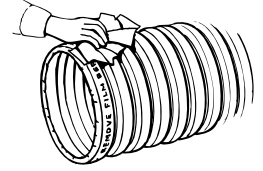


VIII. FITTING ASSEMBLY

This section includes information necessary for:

1. Soil-tight belled fittings.
2. Watertight fittings.
3. Repair couplers
 - Cut pipe to desired length in the center of the corrugation valley before placing in trench.
 - Trim remaining polyethylene burrs from saw cut. Note: Failure to smoothly trim burrs may compromise joint integrity.

- Excavate bedding from around spigot end where fitting shall be used. A bell hole will help prevent dirt and debris from contaminating joint during assembly.
- Install gasket in accordance with gasket assembly procedure.
- Measure the depth of the bell and use a crayon or other material to place a homing mark on appropriate corrugation of the spigot end.
- Using clean rag or brush, lubricate exposed gasket with pipe lubricant.
- Do not let lubricated section touch dirt or backfill, as foreign material could adhere to surface and compromise joint integrity.
- Inspect fitting and remove any foreign matter.
- Align and center pipe.
- Lubricate inside of bell.
- Align fitting with pipe end.
- Use installation stub or blocking where required.
- Take care not to damage pipe or fittings.
- Ensure pipe is straight and bell reaches homing mark.
- Assemble other end of pipe or fitting as described in the pipe assembly section on page 26.
- Special care should be taken to replace and compact bedding material in bell hole to provide adequate support under the joint.



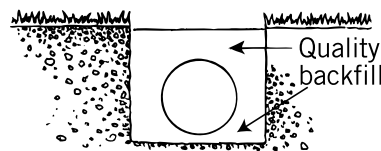
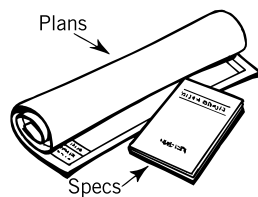
IX. BACKFILL RECOMMENDATIONS

HDPE Corrugated pipe and a well-constructed backfill envelope work together to support soil and traffic loads. Correct installation will ensure long-term trouble-free service for all types of pipe systems.

1 - Backfill Material Selection

- Locally available materials may be acceptable for backfill use, but must meet one of the acceptable soil classifications outlined in below table.
- Class I materials can be dumped around pipe. Voids must be eliminated by knifing under and around pipe or by some other technique.
- Non-cohesive sand, sand/gravel mixes and other Class II & III materials must be compacted to a minimum of 85% & 90% standard Proctor density, respectively.
- Inorganic silts, and gravelly, sandy or silty clays, and other Class IV materials are not permitted.
- Flowable fill is another acceptable backfill material. Misalignment or flotation may occur unless added precautions are taken, such as anchoring the pipe or pouring the flowable fill in lifts.

Acceptable Backfill Material and Compaction Requirements				
Description	Soil Classifications			Minimum Standard Proctor Density %
	ASTM D2321	ASTM D2487	AASHTO M43	
Graded or crushed, crushed stone, gravel	Class I	-	5 56	Dumped
Well-graded sand, gravels and gravel/sand mixtures; poorly graded sand, gravels and gravel/sand mixtures; little or no fines	Class II	GW GP SW SP	56 6	85%
Silty or clayey gravels, gravel/sand/silt or gravel and clay mixtures; silty or clayey sands, sand/clay or sand/silt mixtures	Class III	GM GC SM SC	Gravel and sand (<10% fines)	90%

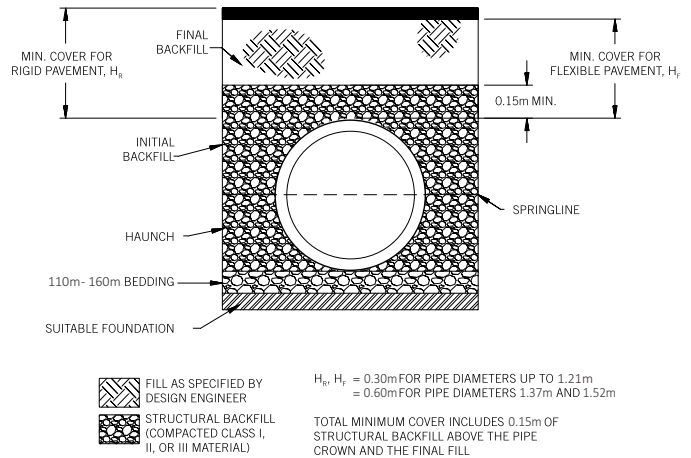


2 - Groundwater or Surface Runoff

When groundwater or surface runoff is present in the work area, dewater to maintain stability of native and imported materials. Maintain water level below pipe foundation to provide a stable trench bottom.

3 - Backfill Envelope Construction

- If native soil cannot carry load, import, compact and level adequate bedding material.
- Place and compact backfill in layers to meet requirements. Note that the smaller pipes may require layer heights less than those indicated in the table.
- Avoid impacting pipe with compacting equipment.
- 110-1200mm single pipe runs receiving H-25 traffic require final backfill (0.5m) above initial backfill to provide at least 0.3m of cover.
- 1350mm and 1500mm single pipe runs receiving H-25 traffic require final backfill (0.5m) above initial backfill to provide at least 0.6m of cover.
- Minimum cover may be reduced in areas with no or infrequent light traffic. These situations must first be reviewed by the pipe manufacturer.



X. OTHER INSTALLATION CONSIDERATIONS

All unique situations cannot be anticipated; however, several common questions are answered in the following material.

1 - Maximum Cover

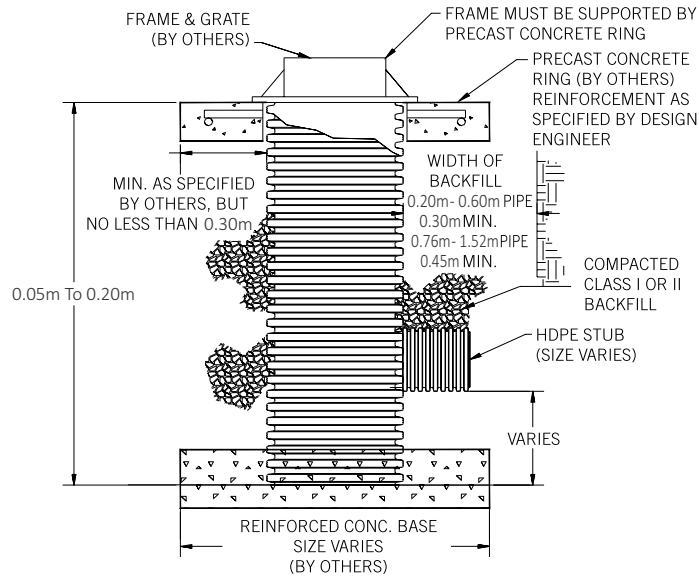
The maximum burial depth is highly influenced by the type of backfill installed around the pipe. Maximum cover limits for dualwall HDPE pipe are shown in below Table for a variety of backfill conditions. Greater cover heights may be possible but should be reviewed by the Application Engineering Department.

2 - Vertical Installations

- HDPE pipe is sometimes installed vertically for use as catch basin or manholes, meter pits, and similar applications.
- Backfill should extend a minimum of 0.3m completely around the vertical structure.
- Backfill material recommendations are identical to those for a horizontal installation; compaction levels and maximum lift requirements must be strictly followed (refer to Table 4 for material selection).
- Height of the vertical structure must not exceed 2.4m, unless the Application Engineering Department reviews the design.
- If traffic will be driving over a vertical structure, a concrete collar similar to that shall be used to transfer the load into the ground.
- Cast iron frames holding grates or lids must be seated on a concrete collar or similar structure so that the weight of the frame and grate or lid transferred in to the ground, not to the vertical pipe.
- There may also be other product performance limits depending on the application. Contact Application Engineering for further information.

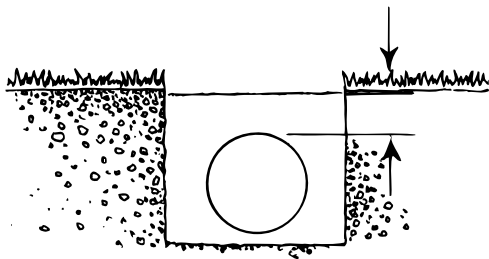
Diameter mm	Class 1	Class 2			Class 3		
	Compacted	95%	90%	85%	95%	90%	85%
110	13.7	9.1	6.4	4.5	6.4	4.8	4.2
160							
200	13.7	8.8	6.0	4.2	6.4	4.5	3.9
250							
315	13.1	8.5	6.0	4.2	6.0	4.5	3.9
400							
500							
630	10.4	7.0	4.8	3.3	5.1	3.6	3.0
800							
1000	10.4	7.0	4.5	3.0	4.8	3.3	2.7
1200	9.4	6.4	4.2	2.7	4.5	3.0	2.4

3 - Vertical Riser



4 - Flotation

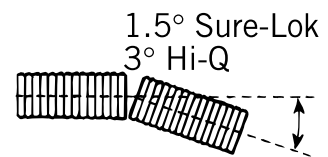
- Below Table shows minimum cover heights for various HDPE pipe sizes to prevent flotation.



	Nominal Diameter (OD) (mm)	Minimum Cover (mm)
Dual Wall HDPE	110	77
	160	102
	200	127
	250	178
	315	368
	400	457
	500	559
	630	711
	800	914
	1050	1219
	1200	1372

5 - Bending Radius

A curved pipe alignment is sometimes desired in drainage systems so that they can be installed around buildings or utilities without the use of fittings. HDPE pipe can be angled slightly at the joints to create this curvature. Coupling bands allow approximately 3 degrees of angular misalignment at each joint, while each bell-and-spigot joint can accommodate 1-1.5 degrees and remain at its specified joint quality. Additional information can be obtained through your Sales Representative or the Application Engineering Department.



XI. IN-FIELD TESTING**Recommendations for In-Field Testing**

Normally, a visual inspection is all that is necessary to identify proper line and excessive deflection. If it is determined that additional in-field testing is necessary, the following criteria or methods should be used.

**1- Summary of Air Test**

The section of the pipeline to be tested is sealed at all inlets and outlets. Air is pumped into the isolated section to a specified pressure and monitored for changes. The pipe section passes the test if the time it takes for pressure in the section to drop 1.0 psi (or 0.5 psi) is greater than the minimum time required for a specific length and diameter of pipe. These times are displayed in Table.

2- Time-Pressure Drop Air Test

Below are the basic steps for testing a pipeline by a low-pressure air test.

Step 1:

Pipeline installation and initial backfilling is to be completed before testing takes place. Groundwater should be lowered below the elevation of the pipe.

Step 2:

Obtain necessary materials: pipe plugs (mechanical or pneumatic), a time measuring device (minimum accuracy of 0.1 seconds), and an air compressor (range of 0 psi to at least 10 psi) with control panel, monitoring, and safety equipment.

Step 3:

Clean and plug all branches, laterals, trees, wyes and stubs of the test section to an airtight seal. All plugs should be securely braced to prevent blow-outs. One plug should have an inlet tap to supply pressure to the test section.

Step 4:

Slowly increase the pressure of the test section to 4.0 psi. Hold the pressure between 3.5 psi and 4.0 psi for 2 minutes to obtain temperature equilibrium within the pipe.

Step 5:

Determine the time required for pressure to drop 1.0 psi. The required pressure drop will be determined by the project engineer.

Step 6:

Disconnect the air supply and allow pressure to drop 3.5 psi before starting the test.

Step 7:

Start the test: Measure the time it takes for the pressure to drop 1.0 psi (3.5 to 2.5 psi) or 0.5 psi (3.5 to 3.0 psi) and compare that value to the minimum required time for the given pipe diameter and length found in Table for 1.0 psi pressure drop.

Step 8:

If the pressure-drop times is longer than the minimum time specified in Table, the pipe section passes the test and installation is acceptable.

Step 9:

Open the bleeder valve to allow the section to return to atmospheric pressure. Caps and plugs should remain in place until the system pressure is at equilibrium.

3 - Pressure Drop Times

Minimum times for pressure to decrease for each given pipe diameter and length in table. If a section of pipe loses pressure quicker than the minimum specified in the table, that section of pipe fails the test and should be retested or Examined to determine the mode of failure.

Pipe Diameter (mm)	Minimum Time min:s	Length for Min. Time (m)
110	3:50	181
160	6:0	121
200	7:50	90
250	9:40	72
315	11:45	60
400	14:25	48
450	18:00	40
500	19:00	34
630	22:40	30

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ISO 9001 : 2015

For the following Scope

"Provision of Production of HDPE, MDPE, PVC, CPVC,
PPRCT & PPR Pipes Fitting & Accessories"

Certificate Number: 1707210740102
Issue Date: 21st Jul. 2017
Valid Until: 20th Jul. 2020

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