Push-fit system


BONOMI
GROUP

Drainage system for gravity or vacuum

Chibro manufactures stainless steel push-fit pipe system for drainage which is ideal for both gravity and vacuum. Industries, hospitals, shipbuilding, big kitchens for communities, drainage waters are charged with several substances which are often corrosive.
In certain concentrations and temperatures these chemicals may damage - chemically, mechanically or per electrolysis - the materials they come in touch with.

Therefore the piping systems that evacuate such waters must be made of suitable materials to reasonably withstand the corrosive agents.

To comply with this need **Chibro** proposes a programme of stainless steel drainage piping made in of AISI 316L, a **push-fit system**.

Advantages

RELIABLE

Quality and **reliability** of all system components.

QUICK

Fast and safe installation using the push-fit technique.

EASY
INSTALLATION

R & D

Design, **development** and **in-house production** of all products.

Complete range **100% made in Italy.**

Pipes in stainless steel AISI 316L

The system is made from these materials:
AISI 316L UNI - EN 10088 X 2 Cr Ni Mo 17-12-2

Steels with chrome-nickel-molybdenum, thanks to their good resistance to acids and pitting corrosion, are used to drain certain organic and inorganic acids. On the contrary this alloy may have a limited resistance to reduced acids and chlorides. A list of substances compatible with AISI 316L is available upon request.

Applications

The system is suitable for different types of application and it is used by many industries: chemical, pharmaceutical, food and beverage, dairy, soap, shipbuilding and big kitchens.


PLUMBING


DRINKING WATER


CHEMICAL


DETERGENT & BEAUTY CARE


MARINE


MEDICAL


FOOD & BEVERAGE


WATER TREATMENT


INDUSTRIAL

Technical features

Thermal expansion

Each installation is subjected to temperature excursions either due to the temperature of the fluid circulating or to the environment in which they operate. These thermal variations may involve significant expansions especially at the straight sections of pipelines that have to be assessed in advance for the proper disposal of the fixing points, and for the development of any expansion compensation.
The expression used to calculate the variations in length of the pipeline is as follows:

$\Delta L = \alpha \times L \times \Delta T$

$\Delta\Lambda$ = linear thermal expansion [mm]
α = coefficient of linear expansion [mm/m°C]
L = length of the track [m]
ΔT = thermal excursions [°C]

The values of α for different materials are shown in Tab. 1 here below.
To take a simple example, considering a stretch of straight pipe in stainless steel 15 m long subjected to a change in temperature of 30°C we have:

ΔL = 0,0165 [mm/m°C] x 15 [m] x 30 [°C] = 7,425 mm

PE	PVC	Multilayer pipe	Aluminium	Cupronichel 90/10	Rame	Stainless steel	Steel	Cast iron
0,12	0,08	0,025	0,024	0,017	0,0165	0,0165	0,011	0,009

Tab. 1

Fire safety

The push-fit system programme complies with the codes of fire prevention.
Steel piping is listed in the A-Class of fire resistance, i.e. it is acknowledged as a “non-burning” product.

Low noise rate

The mass of the stainless steel push-fit piping system transmits the flow noises of the draining water at a much lower rate than it is allowed by existing rules.
A higher noise reduction can be achieved with the use of rubber cushioned pipe collars on all hanging and fastening points.

Seals

The sealing ring is a gasket that fits within the socket of the pipe and grips on the whole rim of the socket. When the spigot of the other piece is inserted into the socket the ring is compressed between

the outer surface of the spigot and the inner surface of the socket with a perfect seal.
The grip over the rim of the socket has the twofold aim to hold the seal in its place when inserting the spigot as well as to evidence to the installer the correctness of the joint.
If the internal pressure increases, also the pressure of the seal against the walls increases, and the joint remains tight.
Standard seals are EPDM and upon request, we can also supply FKM O-Ring (Viton).

Tightness

The tightness of the joints of the push-fit system is according to DIN-Norm 19530 Part 2 for joints with sockets and spigots.
Pipes and fittings are tight against internal pressure as well as vacuum.

The socket

The socket of the push-fit system has a double annular shape in which it is lodged the seal and inserted the spigot. The peculiar shape of the socket gives strength to the joint and ensures its tightness along the time in spite of axial and cross stresses that may be exerted from outside and/or the weight of the piping system. The socket and spigot joints are officially certified and the manufacture of the components is subject to periodic external surveys.

Approvals

	RINA Registro Italiano Navale- Marine Equipment Directive 2014/90/EU	RINA
	Lloyd's Register Marine	Lloyd's Register
	ABS	ABS
	DNV GL	DNV·GL
	Bureau Veritas Industry and Marine Division	BUREAU VERITAS

Cutting pipe

All pipes may be cut to a desired length on site by using a hack-saw or, better, a fine-tooth HSS motor-saw.
We recommend a low speed, 7-10 m/min, as well as a good lubrication.
After cutting, the rim should be carefully deburred and beveled for an easy insertion into the socket.

Separating a joint

Should it be necessary to separate an already assembled joint, heat the outside of the socket by means of a gas torch until the spigot can be pulled out.
In reassembling the joint a new rubber seal must be used.

Fastening the pipes

When a piping runs horizontally, its hangers should be such as to carry the weight of the piping as well as its contents of water.
The fasteners for the push-fit system programme are:
- Grip-collars, preventing axial gliding of the pipes.
- Rubber-cushioned collars with masonry nails.
- Rubber-cushioned collars with welded nut for screw-and-plug or threaded bar.

It is advisable to avoid a direct contact to other metals by properly inserting rubber cushions.

Here are the weights of 1 m pipe lengths filled with water:

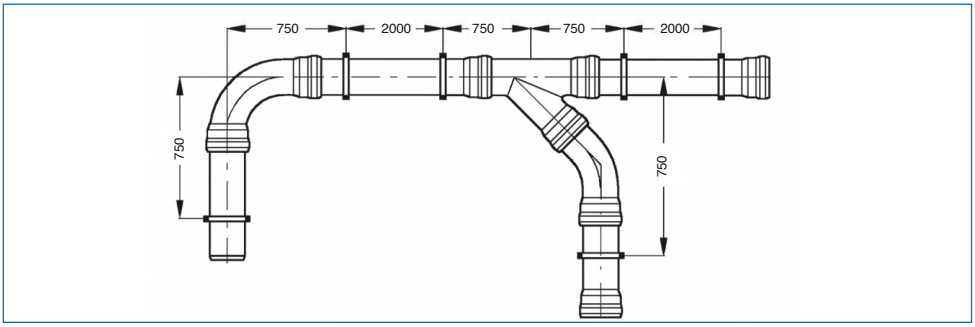
DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200
2,3 kg	3,3 kg	6,1 kg	8,6 kg	10,9 kg	18,1 kg	25,0 kg	47,0 kg

Sometimes the surface of stainless steel parts may appear stained in a somewhat rusty colour, and this could give the wrong impression that stainless steel undergoes corrosion.
The phenomenon is in reality due to the corrosion of other metals, e.g. carbon steel, with consequent transfer of iron oxide ions from a larger cathodic area towards a smaller anodic area.

All vertical as well as horizontal pipings must be fastened at all changes of directions and at all branches with intervals of no more than 750 mm.
Vertical and horizontal straight pipings should be fastened at intervals of no more than 2000 mm.

Connection to other pipe materials

The system has number of adapters that enable its connection-upflow or downflow piping systems of other materials such as: cast iron, PVC, PE, PP, ABS, reinforced concrete, sandstone (supplied upon request).



Tab. 2 Maximum distances in mm of collars for all diameters.

Laying pipings underground

The push-fit system pipings may be laid underground if they are properly protected against corrosion.

Pipings within concrete

If the mix contains additives such as setting accelarators or retardants, antifreeze, fluidifiers etc., it is advisable to protect the piping outside with a wrapping or a lacquer. Joints should also be blocked with grip-collars.

Laying the piping

The high degree of quality of the product and its complying with the relevant codes make the laying an easy work. Care and precision are anyhow a must in order to achieve a durable an efficient draining pipe system.
The system should be easily and quickly assembled. Its wide inventory of parts allows to cope with any architectural or structural peculiarity of the building. Its spigot and socket joints are easily assembled and adjusted without the need of any special tools. After assembling two parts it is possible to adjust them simply by rotating and/or pulling by hand.
The components of steel are sturdy enough to withstand the transport and handling on the yard.
Normally straight pipes have one socket and one spigot, but it is possible to have pipes with two sockets, which can be cut at length giving two pieces of pipes with one socket and one spigot and practically no scrap.
One more advantage of a steel pipe system is that it is selfstanding, with very little need of fasteners, as it can be seen at Tab. 2.

Installation procedure

Assembling a joint

1) **Set the seal** with some angle on the socket hooking the rim of it.

2) **Squeeze the rubber ring** giving it a shape like a heart, insert into the socket and let it spring into position.

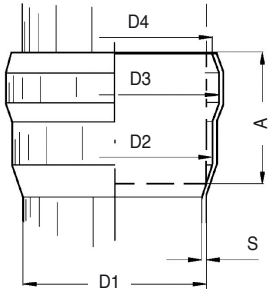
3) **Check** that **the contour** of the seal covers the rim of the socket all around.

4) **Apply some lubricant** to the inside of the seal.

5) Before inserting a spigot it is recommended to **mark its penetration depth** by means of a felt marker. At Page 11 the penetration depths “A” into their sockets are to be found.

6) **Insert the spigot** of the other part into the socket slightly rotating and push until the stop.

Socket dimension

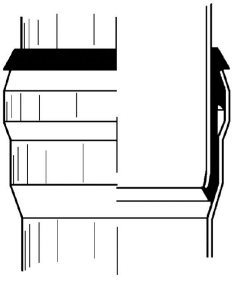


DN	40	50	65	80	100	125	150	200
Ø D1	42	53	73	88,90	102	133	159	219
S (thickness)	1	1	1,25	1,25	1,25	1,5	1,5	2
Ø D2	45	56	76	92	106	138	164	224
Ø D3	48	60	81	99	114	147	176	241
Ø D4	45	56	76	92	107	140	168	227
Ø A	30	38	55	60	70	75	80	120

Dimension A is the shortest allowed penetration of the pipe into the socket.

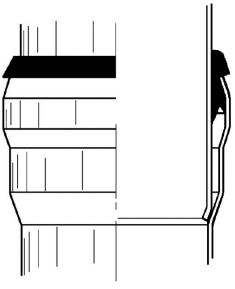
Seals details

DN 40-50-65



For gravity and vacuum

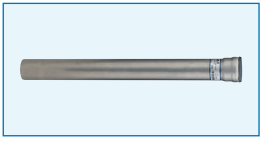
DN 40-50-80-100-125-150-200



For gravity

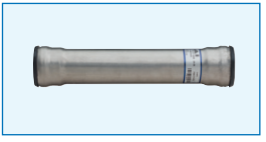
PUSH-FIT SYSTEM

Range

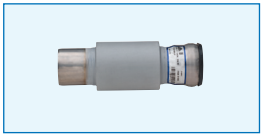


Art. 50002
Push-fit connection of pipe in stainless stell AISI 316 L.

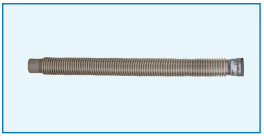
Art. 50292
Short radius 90° bend.



Art. 51452
2 Sockets stainless steel pipe.



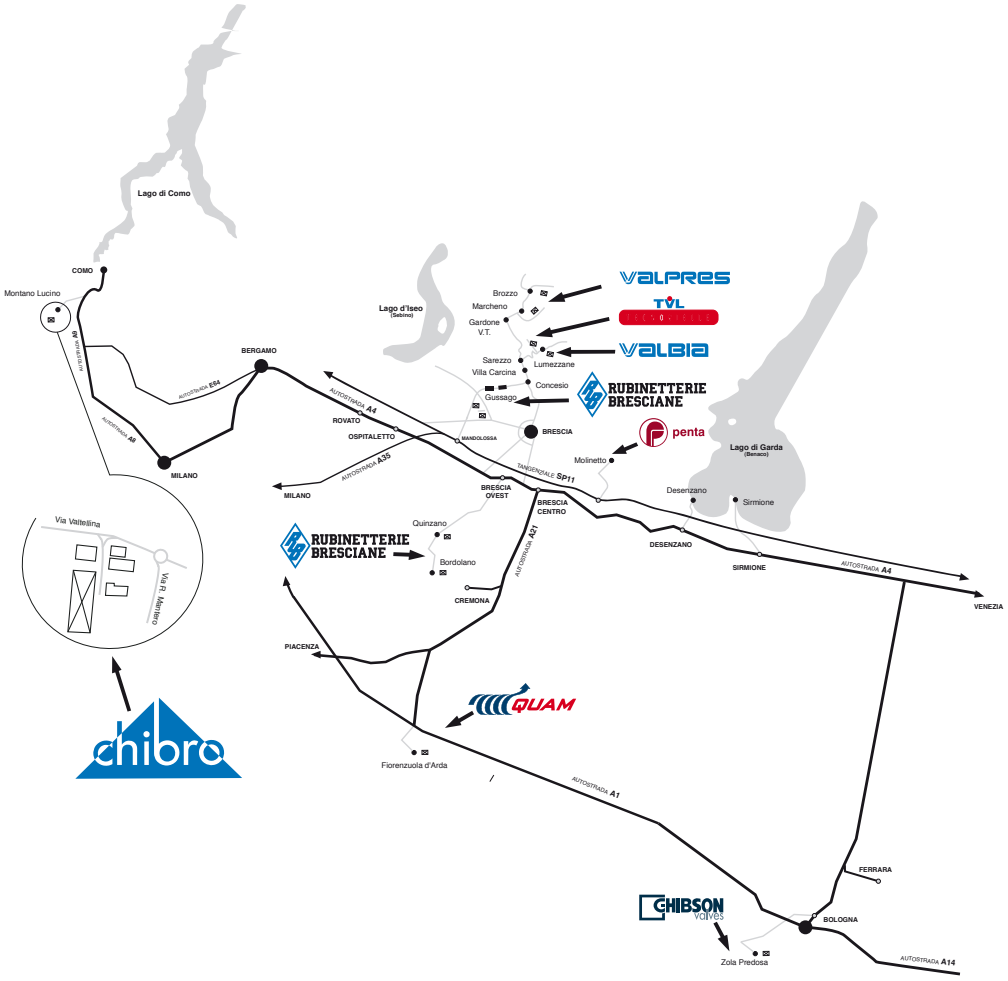
Art. 51363
Deck/Bulkhead penetration M4 shape.



Art. 51400
Vacuum flexible hose.

Art. 51730
Drain with vertical outlet.

WHERE WE ARE


Lago di Como
COMO
Montano Lucino
AUTOSTRADA A9
AUTOSTRADA A8
BERGAMO
AUTOSTRADA E64
MILANO
Lago d'Iseo
(Sebino)
Brozzo
Marcheno
Gardone V.T.
Sarezzo
Villa Carcina
Lumezzane
Concesio
Gussago
VALPRES
TVL
VALBIA
RUBINETTERIE BRESCIANE
penta
AUTOSTRADA A4
ROVATO
OSPITALETTO
MANDOLOSSA
BRESCIA
Molinetto
Lago di Garda
(Benaco)
AUTOSTRADA A35
MILANO
TANGENZIALE SP11
BRESCIA OVEST
BRESCIA CENTRO
Desenzano
Sirmione
DESENZANO
SIRMIONE
AUTOSTRADA A4
VENEZIA
Via Valtellina
Via Martiri
RUBINETTERIE BRESCIANE
Quinzano
Bordolano
AUTOSTRADA A21
CREMONA
PIACENZA
chibro
QUAM
Fiorenzuola d'Arda
AUTOSTRADA A1
FERRARA
CHIBSON valves
BOLOGNA
Zola Predosa
AUTOSTRADA A14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