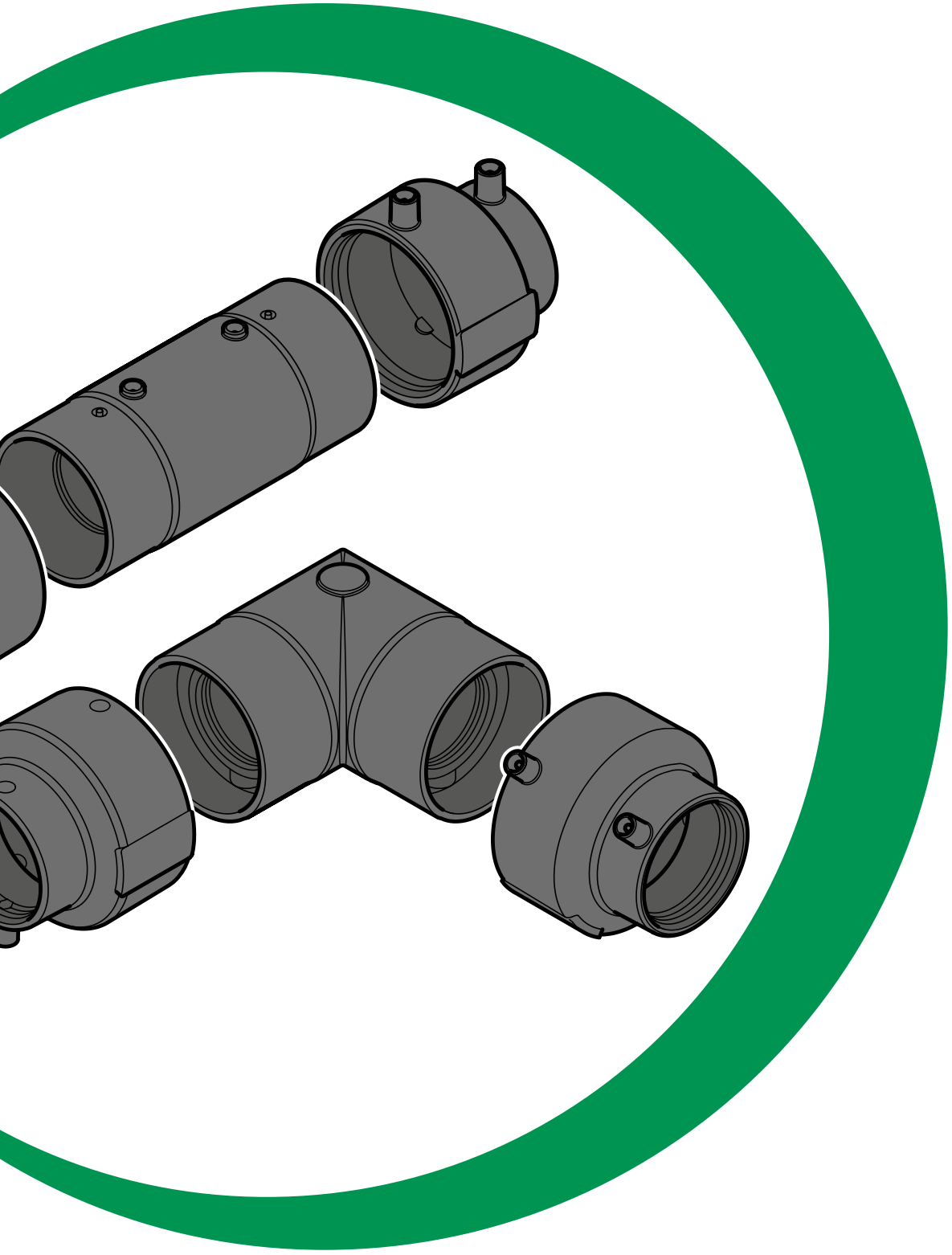
SMARTFLEX™



INDUSTRIE ITALIANE nupi

Recommendations and assembly instructions

SMARTFLEX™

INSTRUCTIONS AND WARNINGS

Trench preparation

- Minimum depth 45 cm.
- Minimum width 3 times the diameter.
- Use fine sand to cover the first 15cm, wet it thoroughly to compact it.
- When intersecting 2 pipes, keep them at a distance of 5 cm or put a piece of Styrofoam between them.
- Every meter shall have 1 cm slope. Do not create traps.

Welding

- Make sure that the color of the inner liner is homogeneous. If discolored due to UV rays cut 5 cm.
- Cut the pipe with a pipe circular pipe cutter (the cut must be perpendicular).
- Mark the insertion depth on the pipe.
- Scrape the pipe with the proper pipe scraper **(models RAT1A, RATOR25125 or RATURBO50 and 63)**.
- Insert the scraped pipe into the fitting until it reaches a complete stop (leave the bag for dust protection).
- The pipe shall be aligned (max. 10/15°) and in its complete stop position.
- Weld as per welding instructions.
- Wait until the cooling down time shown on the barcode of the fitting has elapsed.
- When using coils, the minimum bending radius is 20 times the pipe diameter.

Testing

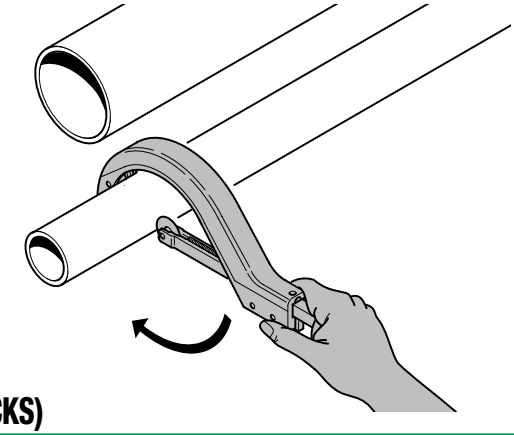
- Always perform the pressure test on the primary pipe at 5 Bar and on the secondary pipe at 4 Bar for 1 hour.

Recommendations

- **NEVER SCRAPE WITH SANDPAPER.**
- **IF NECESSARY, THE FITTING SHALL BE WELDED JUST ANOTHER TIME AND ONLY WHEN COMPLETELY COOL.**

ASSEMBLY INSTRUCTIONS OF COAXIAL DOUBLE WALL FITTINGS ø50 (ø 50/63), ø 63 (ø 63/75) and Model SGEDW110 (ø 110/125)

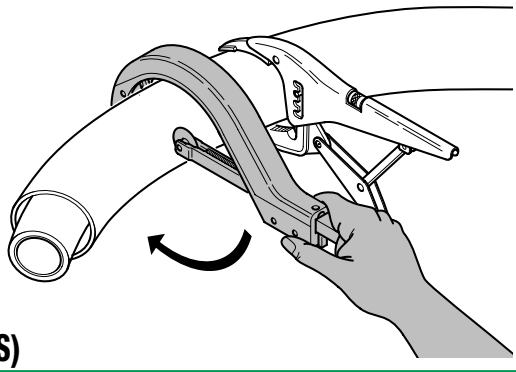
Fig.1



(STICKS)

Cut the primary and secondary pipes to the same length using the appropriate pipe cutter (Model SCUT).

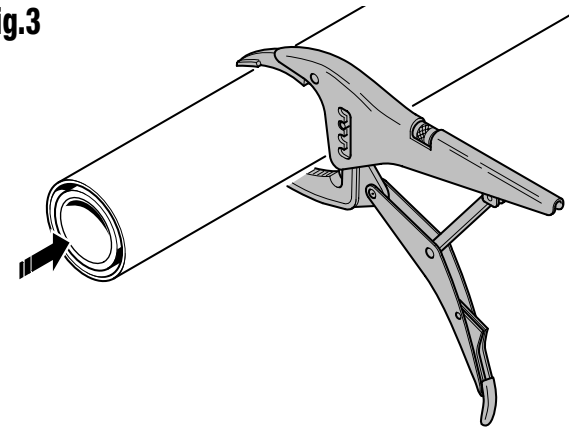
Fig.2



(COILS)

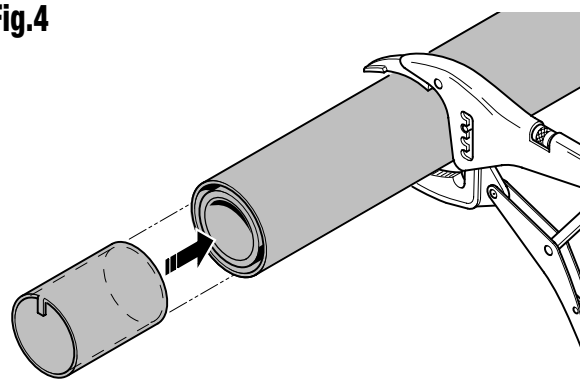
Cut the primary and secondary pipes to the same length using the appropriate pipe cutter (Model SCUT).

Fig.3



Ensure the primary pipe is constrained by using the pliers for double wall pipes (Model SPLIDW).

Fig.4



Insert the metallic protective sleeves (Model STP) between the secondary and primary pipes.

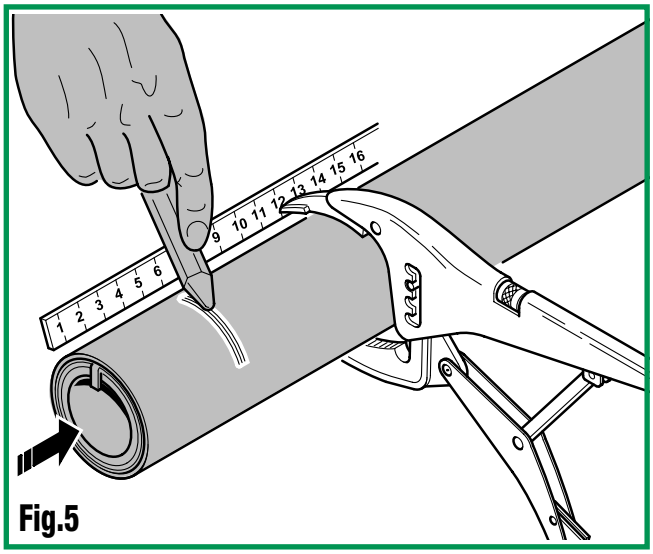
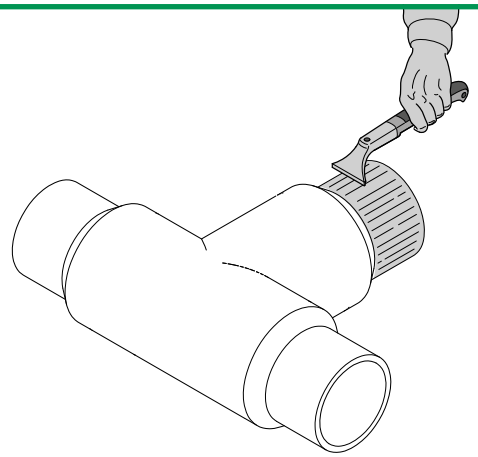


Fig.5

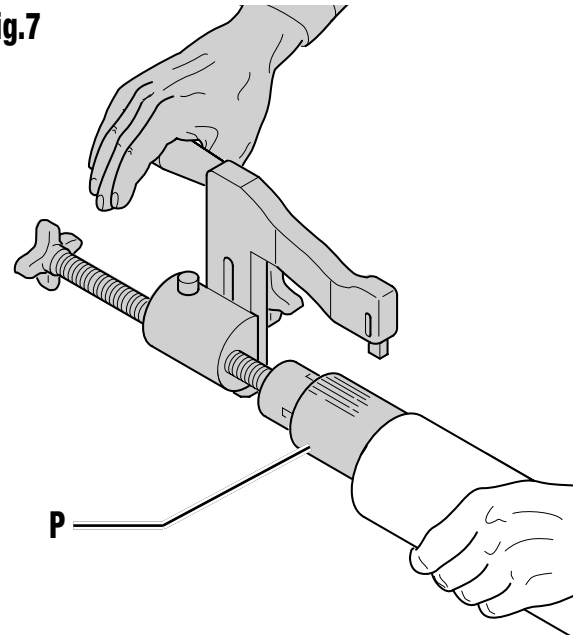
Use the appropriate marker (Model MARK) to clearly indicate on the secondary pipe the measurement **Px** (as listed in the table on page 8).

Fig.6



Cut the pipe at the correct length using the appropriate pipe cutter (Model SCUTDW or Model SCUT).

Fig.7

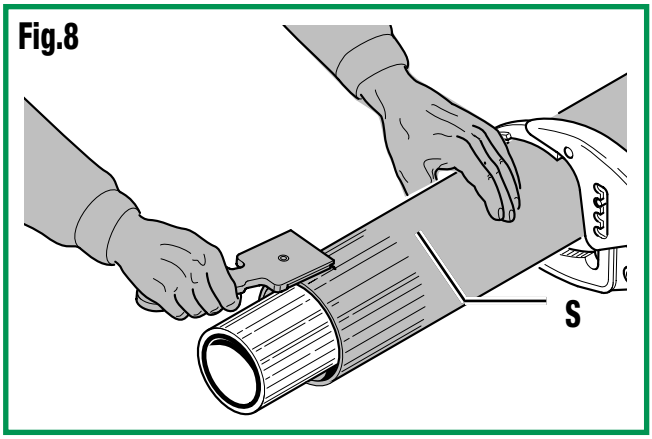


Scrape the primary pipe to a length equivalent to **P** (as listed in the table on page 8), using the universal scraper (Model RAT1A).

For primary pipes ø 50 and ø 63 you can use also RATURBO50 or RATURBO63 scrapers.

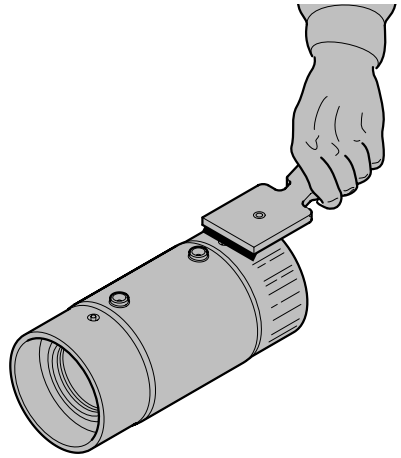
Note: For a correct installation of the SuperSmartIfex pipe, ensure to **SCRAPE AND COMPLETELY REMOVE THE GREEN OUTER LAYER** from the primary pipe until the black polyethylene layer is clearly visible on the outside of the pipe. Remove the outer layer completely, including the tie layer, until you reach the black HDPE layer. The omission of this step can cause a weld to fail.

Fig.8



Scrape the secondary pipe to a length equivalent to **S** (as listed in the table on page 8) using the manual scraper (Model RAM1) or the universal scraper (Model RAT0R25125 or RAT1A).

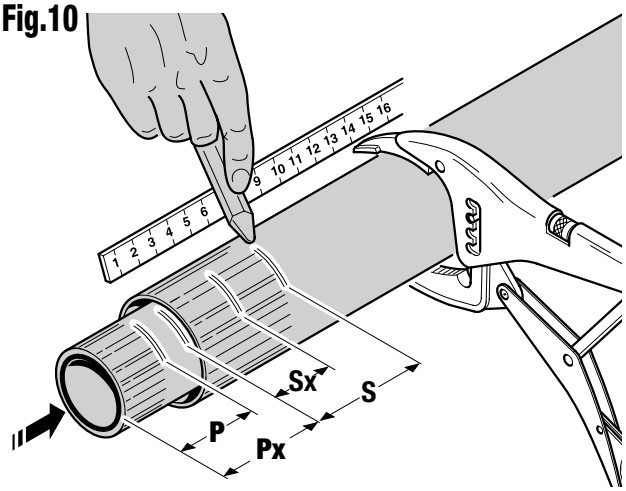
Fig.9



Scrape the fitting spigot with the manual scraper (Model RAM1). If the fitting is taken from its protective wrapping and used immediately it is not necessary to scrape it.

Note: Never use under any circumstances sand paper, emery cloth, files, knives or sharp objects.

Fig.10

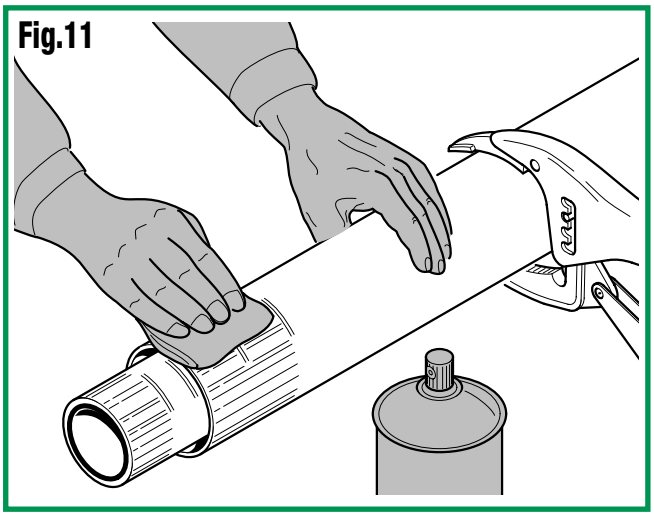


Use the appropriate marker (Model MARK) to clearly indicate the insertion length **Px** on the primary pipe and **Sx** on the secondary pipe.

Note: When possible, always use the pipe aligner (Model ALL225/4) to eliminate stress and/or tension during the welding process.

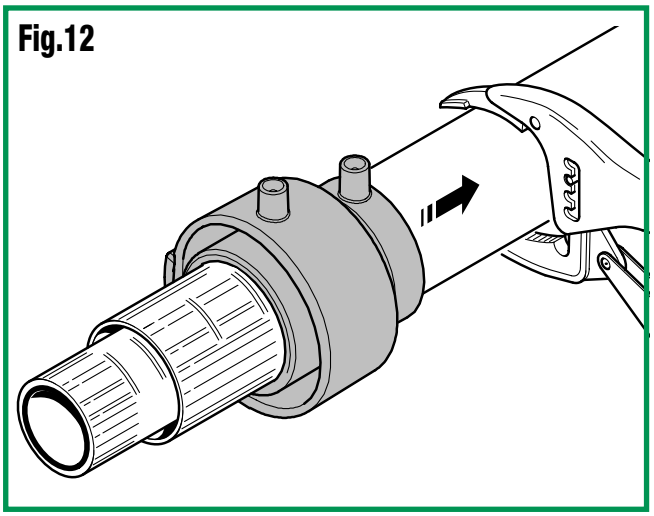
CODE	**Px** (mm)	**P** (mm)	**Sx** (mm)	**S** (mm)
SMEDW50	60	56	47	100
SMEDW63	70	62	60	120
SCEDW63	70	62	60	120
SGEDW50	60	56	47	100
SGEDW63	70	62	60	120
STEDW50	60	56	47	100
STEDW63	70	62	60	120
SGEDW110	115	95	105	200
SCEDW110	115	95	105	200

CODE	**P** (mm) (scrape + 10 mm)	**Sx** (mm) (scrape + 10 mm)
SETFCV50	35	40
SETFCV63	35	40
SETFCV110	59	64



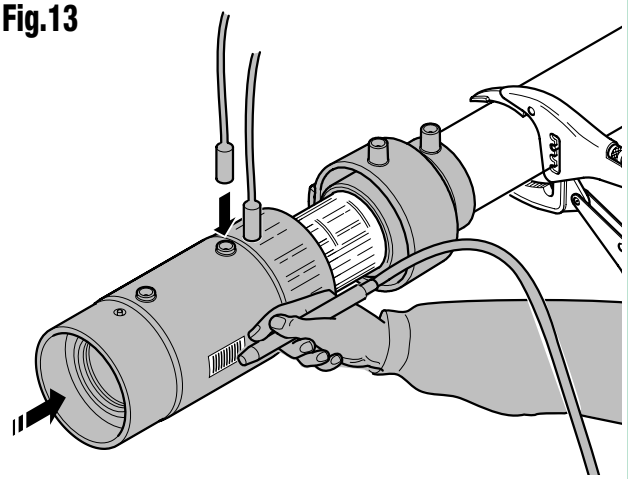
Clean the ends of the primary and secondary pipes, the fitting spigot and the internal part of the reducers with a clean cloth soaked with a recommended cleaning solvent (Model LID1).

Note: The following solvents may be used, **Acetone, Isopropyl Alcohol, Trichloroethane and Dichloromethane.** The use of other primers or solvents is not allowed.



Fit the reducer and slide it along the secondary pipe.

Fig.13



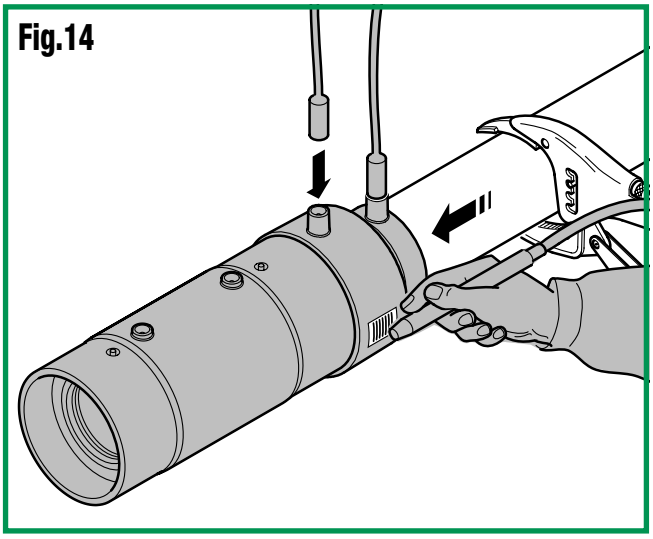
WELDING OF THE PRIMARY PIPE

Check that the pipes are correctly clamped with the pliers (Model SPLIDW), then insert the primary pipe ensuring that the insertion length **Px** is reached.

Electro-fusion welding of pipe and fitting may now commence following the instructions shown on the welding unit's display.

NOW WE RECOMMEND TO PERFORM THE PRESSURE TEST ON THE PRIMARY LINE
The test can be performed only after the cooling down process has been completed.

Fig.14



WELDING OF THE SECONDARY PIPE

Slide the reducer until it fits correctly on the fitting and check that the insertion length **Sx** previously marked on the pipe is visible.

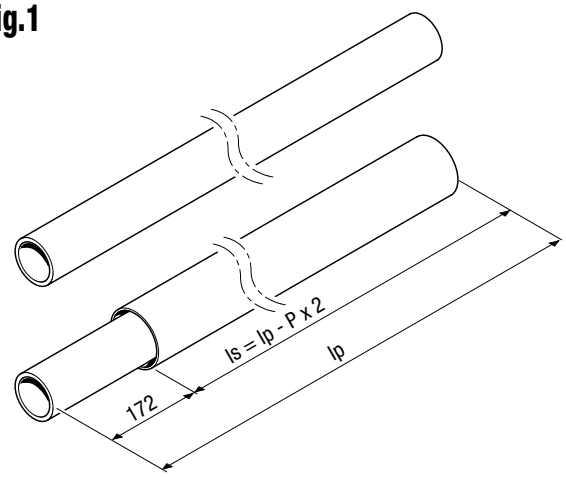
Note: Do not force the pipe to a complete stop inside the fitting as this may shut off the interstitial space.

Electro-fusion welding of the secondary pipe may now commence following the instructions shown on the welding unit's display.

NOW WE RECOMMEND TO PERFORM THE PRESSURE TEST ON THE SECONDARY LINE
The test can be performed only after the cooling down process has been completed.

ASSEMBLY INSTRUCTIONS OF COAXIAL DOUBLE WALL FITTINGS ø 90 (ø 90/125)

Fig.1

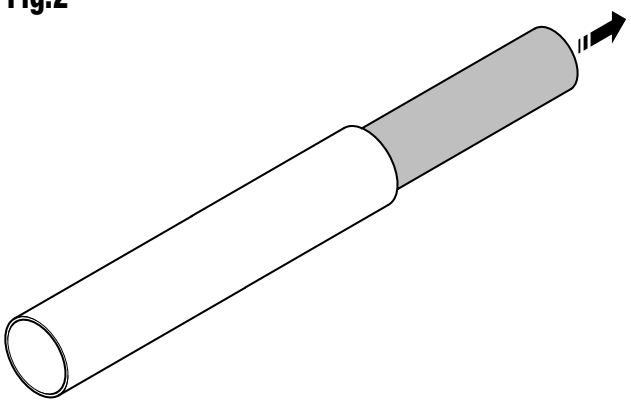


Cut the two pipes perpendicularly using the appropriate pipe cutter (Model SCUT) to the correct length for the installation, then remove a further length equal to P x 2 (as listed in the table below) from the secondary pipe using the appropriate pipe cutter (Model SCUT).

CODE	**P** (mm)	**S** (mm)
SMEDW90	72	87
SCEDW90	72	87
SGEDW90	72	87
STEDW90	72	87

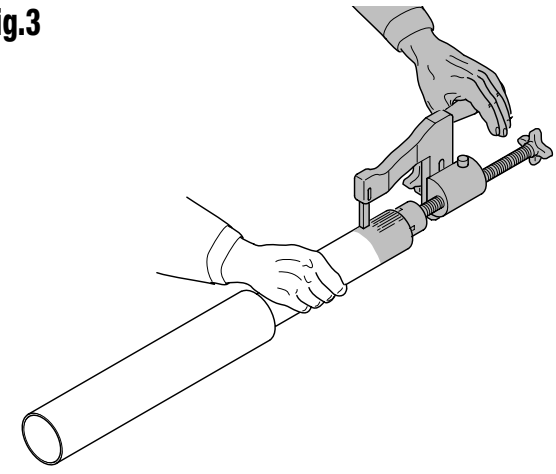
CODE	**P** (mm) (scrape + 10 mm)	**S** (mm) (scrape + 10 mm)
SETFV90	56	78

Fig.2



Separate the primary pipe from the secondary pipe.

Fig.3

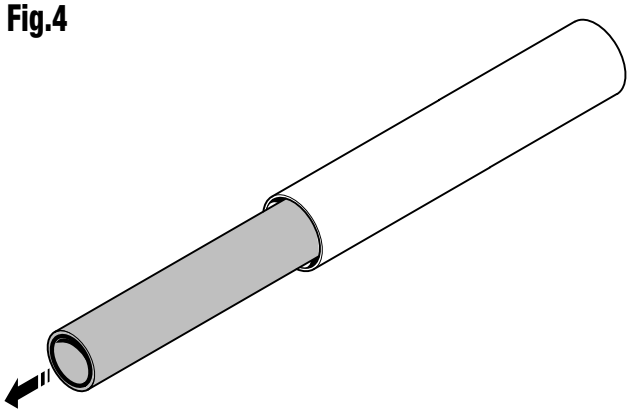


Scrape the primary pipe to a length equal to P using the universal scraper (Model RAT1A).

Note: Never use under any circumstances sand paper, emery cloth, files, knives or sharp objects.

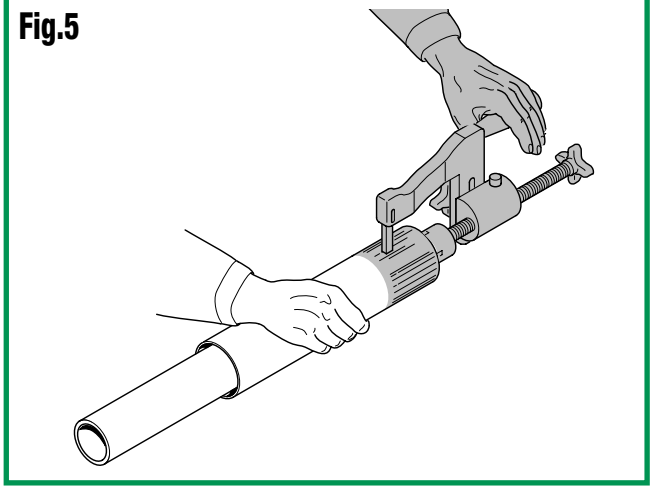
Note: For a correct installation of the SuperSmartIfex pipe, ensure to **SCRAPE AND COMPLETELY REMOVE THE GREEN OUTER LAYER** from the primary pipe until the black polyethylene layer is clearly visible on the outside of the pipe. Remove the outer layer completely, including the tie layer, until you reach the black HDPE layer. The omission of this step can cause a weld to fail.

Fig.4



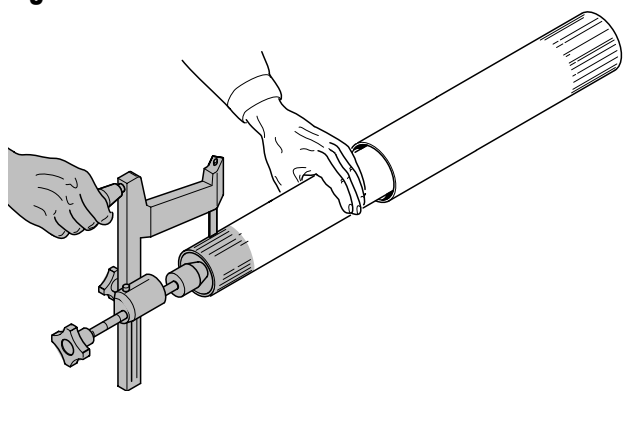
Separate the primary pipe from the secondary pipe.

Fig.5



Scrape the secondary pipe to a length equal to S using the universal scraper (Model RAT1A).

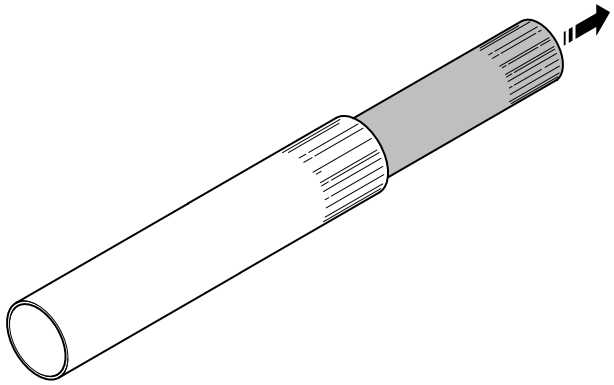
Fig.6



Scrape the other end of the primary pipe to a length equal to P using the universal scraper (Model RAT1A).

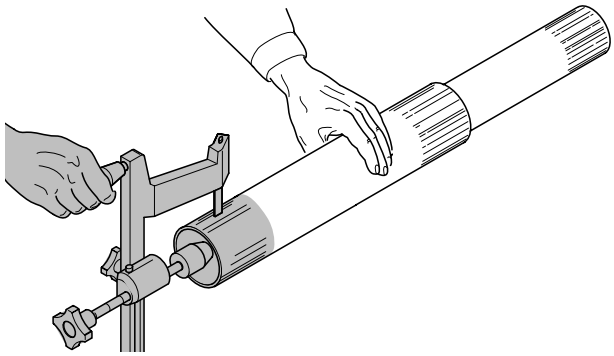
Note: For a correct installation of the SuperSmartIfex pipe, ensure to **SCRAPE AND COMPLETELY REMOVE THE GREEN OUTER LAYER** from the primary pipe until the black polyethylene layer is clearly visible on the outside of the pipe. Remove the outer layer completely, including the tie layer, until you reach the black HDPE layer. The omission of this step can cause a weld to fail.

Fig.7



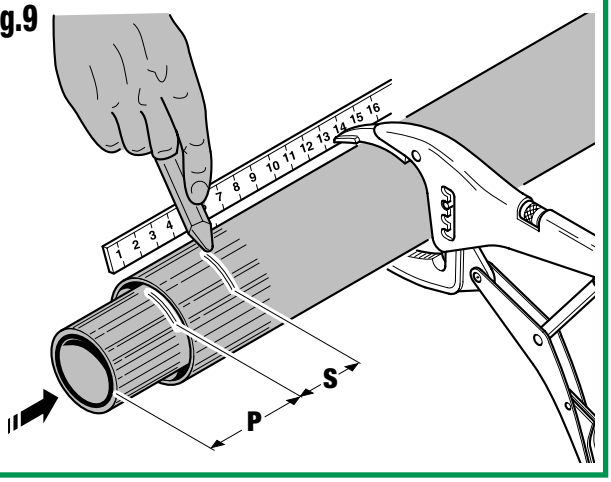
Separate the primary pipe from the secondary pipe.

Fig.8



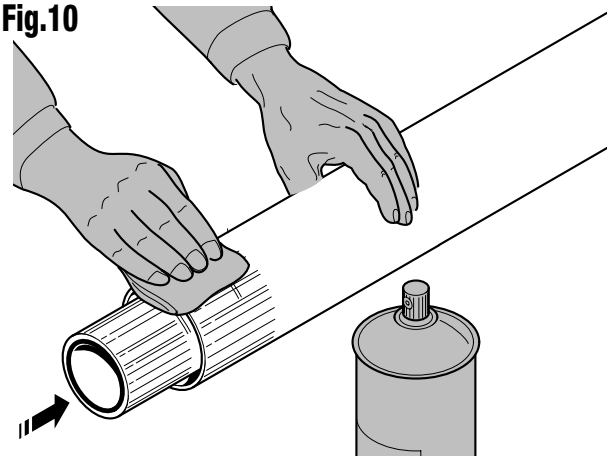
Scrape the order end of the secondary pipe to a length equal to S using the universal scraper (Model RAT1A).

Fig.9



Use the appropriate marker (Model MARK) to clearly indicate the insertion lengths on the surface of the primary and secondary pipes.

Fig.10

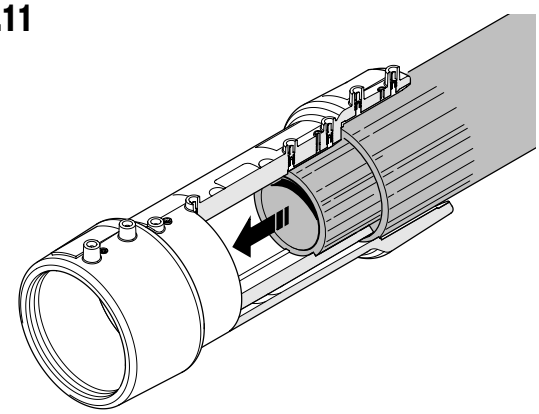


Clean the ends of the primary and secondary pipes, the fitting spigot and the internal part of the reducers with a clean cloth soaked with a recommended cleaning solvent (Model LID1).

Note: The following solvents may be used, **Acetone, Isopropyl Alcohol, Trichloroethane and Dichloromethane.** The use of other primers or solvents is not allowed.

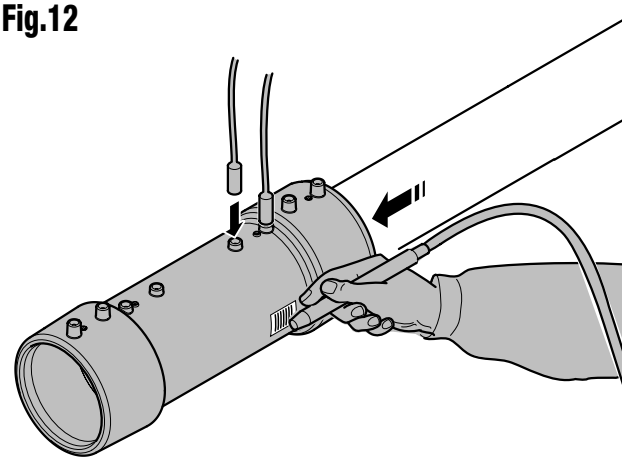
Note: When possible, always use the pipe aligner (Model ALL225/4) to eliminate stress and/or tension during the welding process.

Fig.11



Insert the double wall pipe into the fitting, ensuring that the marked insertion depth is reached (the pipes come to a stop inside the fitting).

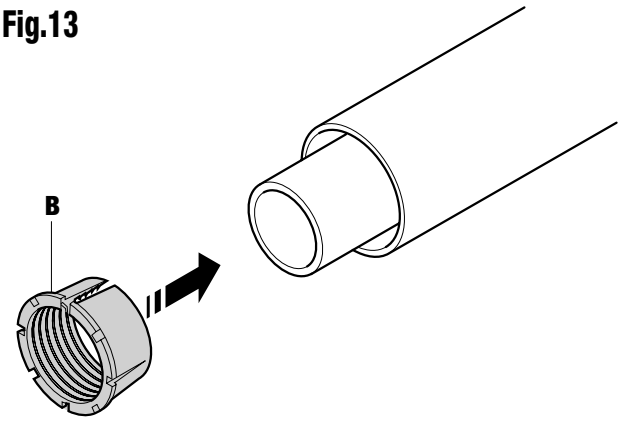
Fig.12



You can now commence the welding process of the primary pipe following the instructions shown on the welding unit's display.

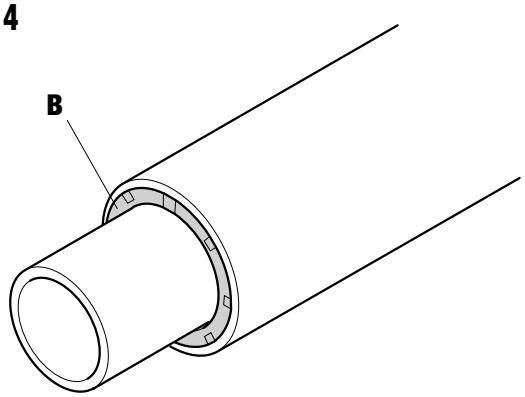
NOW WE RECOMMEND TO PERFORM THE PRESSURE TEST ON THE PRIMARY LINE
The test can be performed only after the cooling down process has been completed.

Fig.13



Insert the centering ring **B** shown in the drawing between the pipes that will be welded on the other side of the fitting.

Fig.14

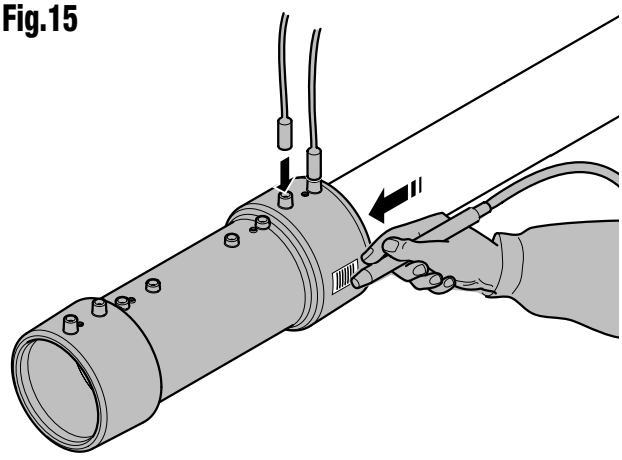


By blocking the centering ring **B** between the primary pipe and the secondary to the insertion distance **P**, clearly indicate the insertion lengths on the surface of the primary and secondary pipes, as shown in Figure 9. Insert the double wall pipe into the fitting, making sure to reach the insertion lengths and repeat the steps as per Figures 11 and 12.

The centering ring **B** acts as **a barrier to the movement of the secondary pipe to ensure a correct weld, so that the two pipes come to a stop inside the fitting**.

Since it is not necessary to use the ring during the welding of the pipes inside the first part of the fitting, only one centering ring will be included in the package of Models **SMEDW90**, **SGEDW90** and **SCEDW90**, while two rings will be included in the package of Model **STEDW90**.

Fig.15

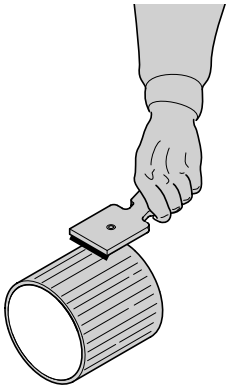


You can now commence the welding process of the secondary pipe following the instructions shown on the welding unit's display.

NOW WE RECOMMEND TO PERFORM THE PRESSURE TEST ON THE SECONDARY LINE
The test can be performed only after the cooling down process has been completed.

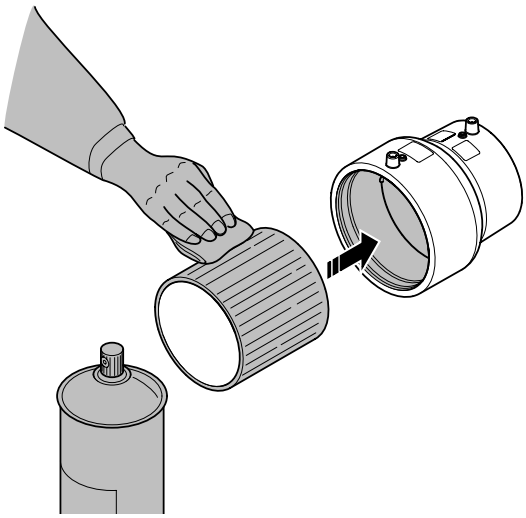
ASSEMBLY INSTRUCTIONS MODEL SMEDWR110125

Fig.1



Scrape the secondary coupler to its complete length.

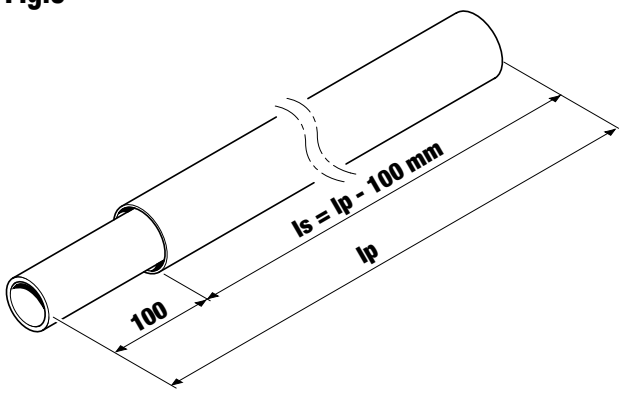
Fig.2



Clean one of the fitting spigots and the internal part of one of the reducers with a recommended cleaning solvent (Model LID1).

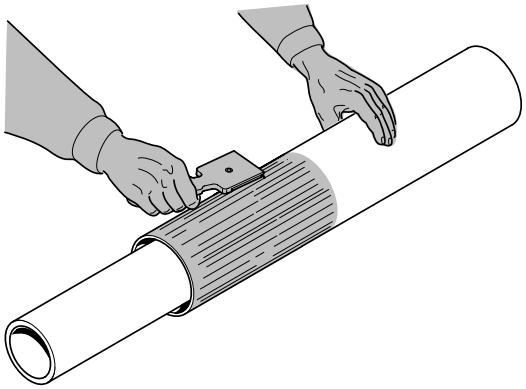
Insert the cleaned spigot of the secondary coupler inside the cleaned reducer to its complete stop. Before carrying out this step, check and clearly mark the insertion length on the spigot of the secondary fitting.

Fig.3



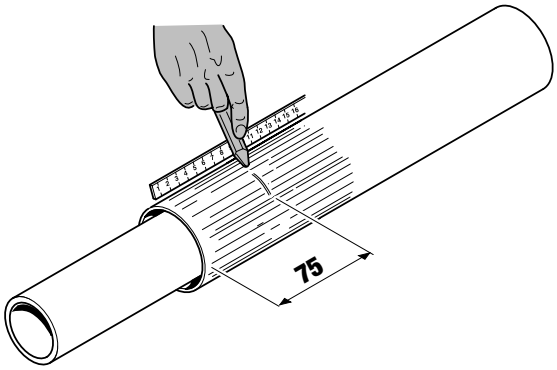
Cut the secondary pipe to a length equal to about 100 mm.

Fig.4



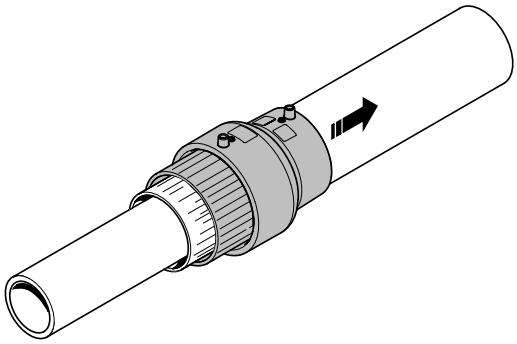
Scrape the secondary pipe to a length of 270mm (about 1,5 times the length of the reducer).

Fig.5



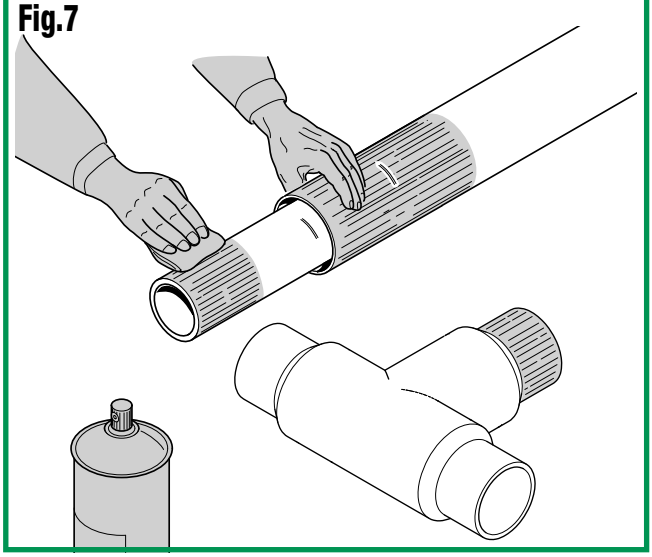
Mark the insertion length of the secondary pipe equal to about 75 mm.

Fig.6



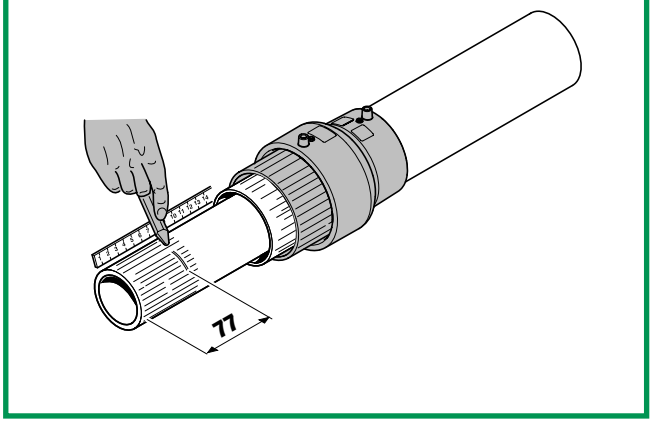
Slide the reducer that has just been assembled on the scraped secondary pipe.

Fig.7



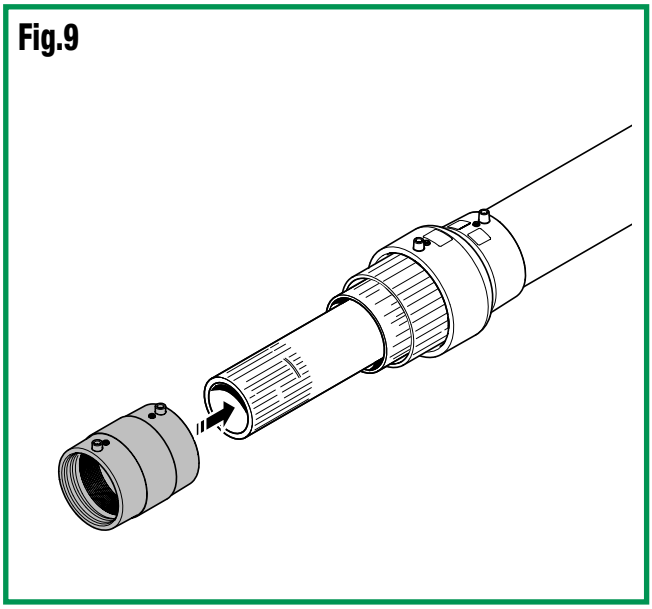
Let the primary pipe come out of the assembly as per figure 6, scrape it and clean it to a length equal to its insertion length inside the primary coupler.

Fig.8



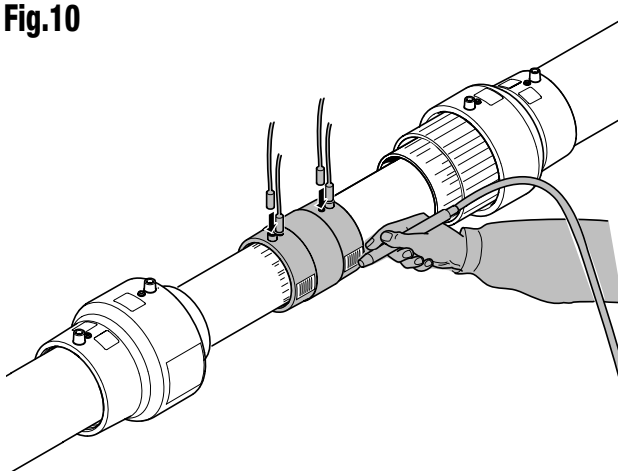
Mark the insertion length of the primary pipe inside the primary coupler equal to about 77 mm.

Fig.9



Insert the primary pipe inside the coupler.

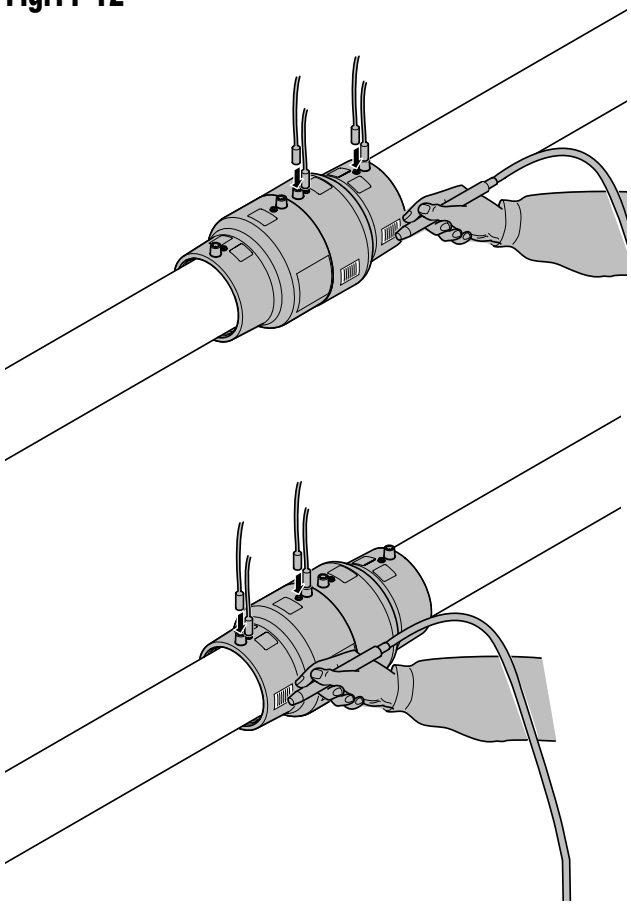
Fig.10



Repeat the operations indicated in the previous points for the other end of the fitting, by scraping the secondary pipe to a length corresponding to 1 time the length of the reducer (about 180 mm instead of 270 mm).

Weld the primary pipe by reading the barcode indicated on the coupler.

Fig.11-12



Slide the pre-assembled spigot of the secondary fitting on the primary coupler that has just been welded.

Clean the free spigot of the secondary straight connector and the two ends of the secondary pipe previously scraped with a recommended cleaning solvent (Model LID1).

Insert the second reducer on the free spigot of the secondary fitting.

Make sure that the two secondary pipes have been inserted to the insertion lengths previously marked.

Weld the secondary pipe.

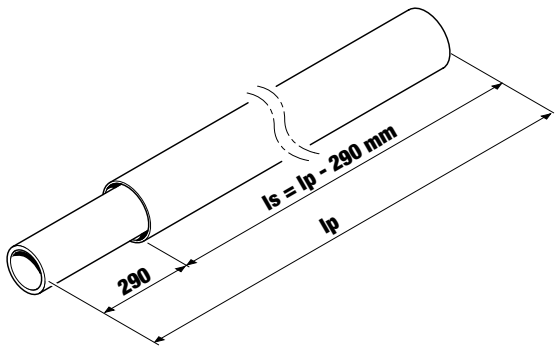
When the weld is finished and after the fitting passed the hydraulic test, cut/tear off the brass parts of the welding pins so that the copper wire is not visible. Insulate the end of the welding pin by using insulating tape or paste. Place the covered wires so that they remain inside the secondary reducer.

N.B.: We recommend to insulate all cable lugs or metal ends that are visible inside the cavity or non- grounded.

N.B.: We strongly recommend to proceed with the welding of the whole primary line and carry out the pressure test to check the tightness of the joints before proceeding with the welding of the secondary line.

ASSEMBLY INSTRUCTIONS MODEL STEDWR110125

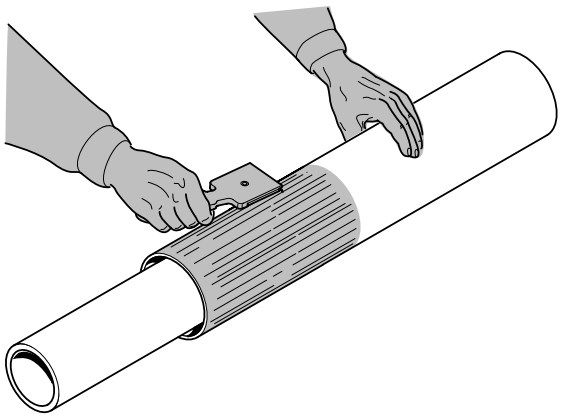
Fig.1



Measure the insertion length of the primary pipes. It is the distance between the complete stop inside the primary tee and the spigot rim of the secondary tee (A = about 310 mm for the sides of the tee, about 195 mm for the outlet).

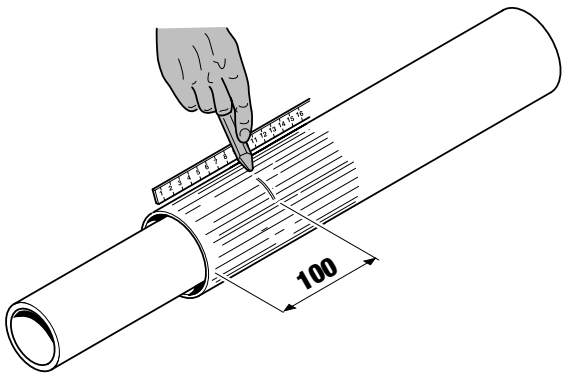
Cut the secondary pipes to the insertion length of the primary pipes previously measured.

Fig.2



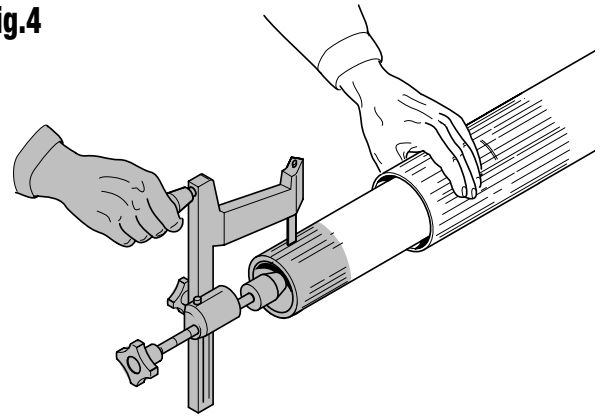
Scrape the secondary pipes to a length of 300 mm each.

Fig.3



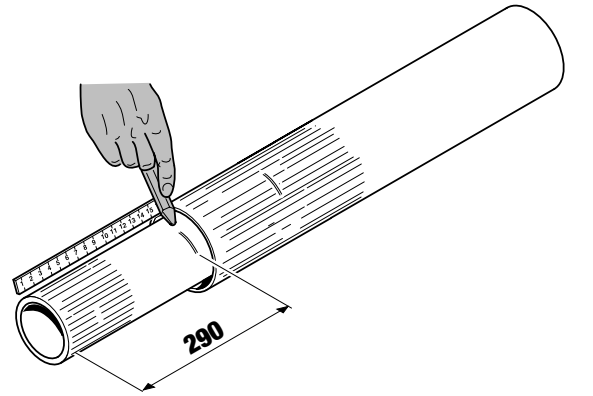
Mark the insertion length of the secondary pipes equal to 100 mm each.

Fig.4



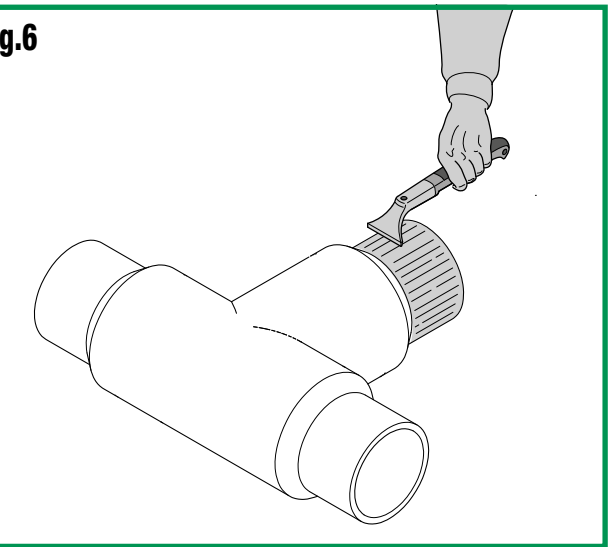
Scrape the primary pipes to a length of 100 mm each.

Fig.5



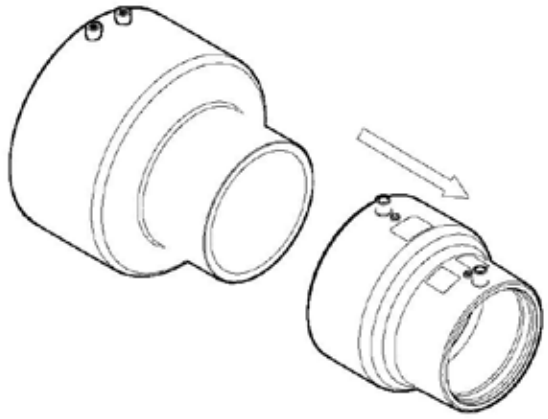
Mark the insertion length of the primary pipes (about 180 mm for the sides of the tee, about 80 mm for the outlet).

Fig.6



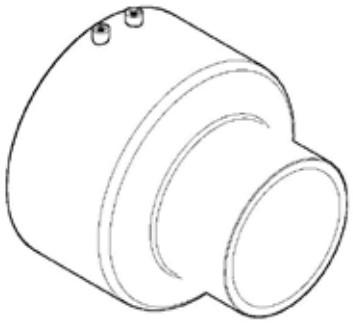
Scrape the secondary fitting spigot to a length of 120 mm.

Fig.7



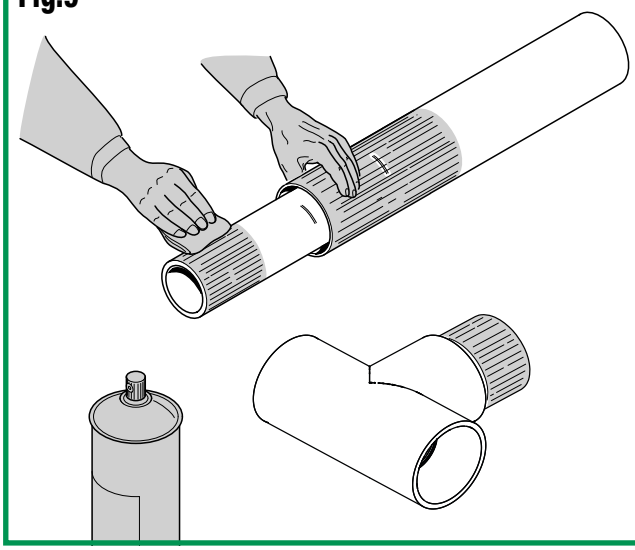
Separate the reducers.

Fig.8



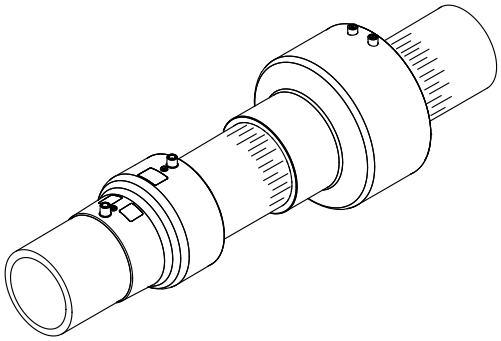
Scrape the spigot of the reducer.

Fig.9



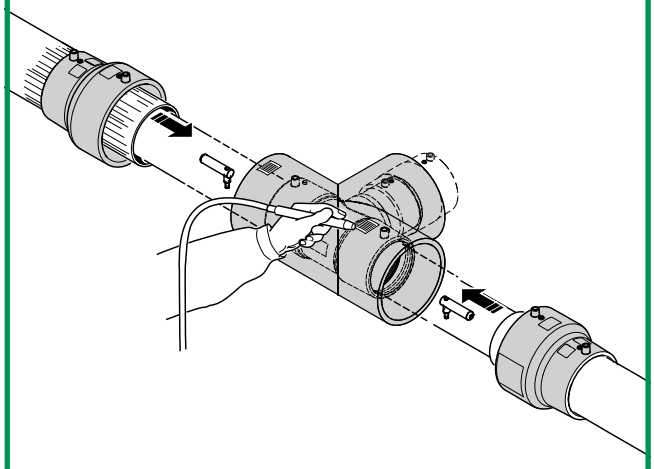
Clean the external surfaces of the pipes, the internal and external surfaces of the fitting and the internal surface of the reducer with the recommended cleaning solvent.

Fig.10



Slide the reducers on the secondary pipes to the whole length of the scraped part.

Fig.11

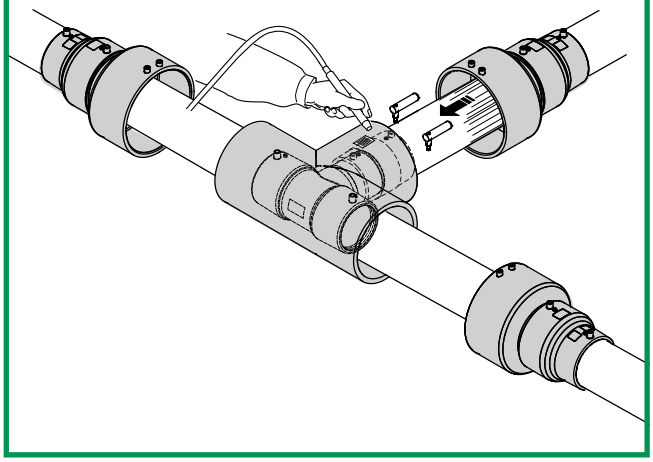


Insert the two primary pipes inside the fitting in both the ends of the long side to its complete stop inside the internal tee.

Insert the 90° connectors inside the welding pins.

Weld the two primary pipes of the long side at the same time (the internal fitting is single-wire) by reading the barcode indicated on the long side of the external tee.

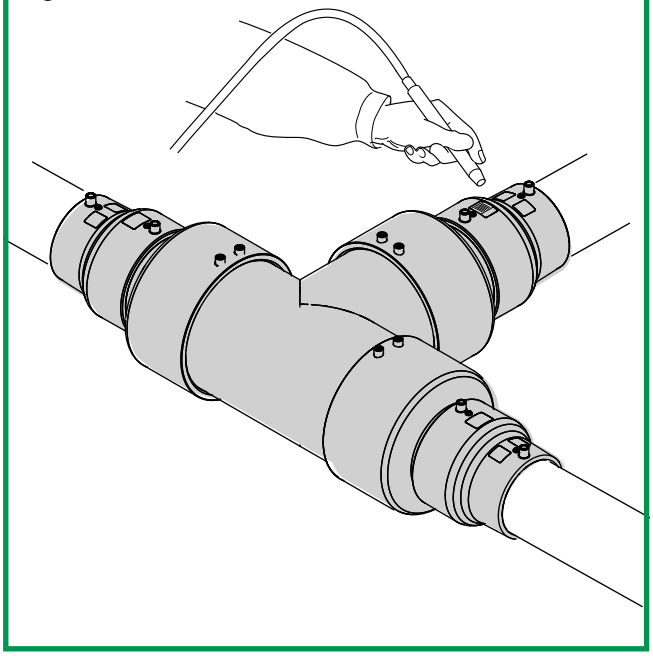
Fig.12



Insert the primary pipe to its complete stop inside the straight connector placed on the short side of the internal tee.

Insert the 90° connectors inside the welding pins of the welding machine and weld by reading the barcode indicated on the side of the outlet.

Fig.13



Slide the electric reducers on the secondary fitting spigot previously scraped and cleaned. Make sure that the insertion length indicated in figure 4 is reached.

First of all, weld the reducer DN225, then, weld the reducer DN160/125.

Weld the reducers by reading the barcode indicated on the reducers.

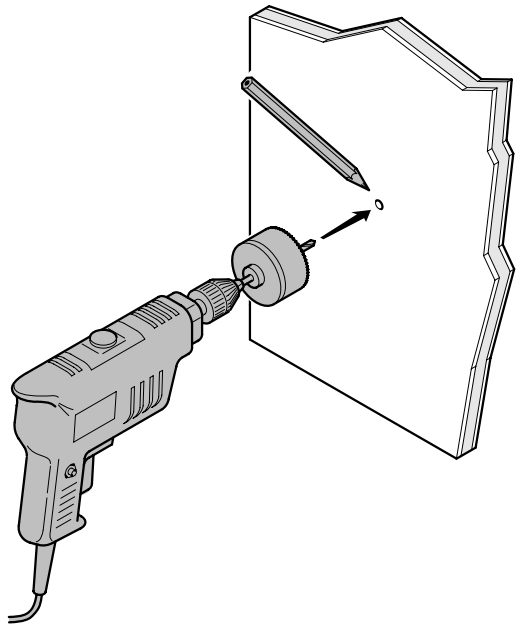
When the weld is finished and after the fitting passed the hydraulic test, cut/tear off the brass parts of the welding pins so that the copper wire is not visible. Insulate the end of the welding pin by using insulating tape or paste. Place the covered wires so that they remain inside the secondary reducer.

N.B.: We recommend to insulate all cable lugs or metal ends that are visible inside the cavity or non- grounded.

N.B.: We strongly recommend to proceed with the welding of the whole primary line and carry out the pressure test to check the tightness of the joints before proceeding with the welding of the secondary line as the welding pins will remain trapped in the interstitial space of the secondary line. It will not be possible to repeat the welding operation.

ASSEMBLY INSTRUCTIONS OF AN ELECTROFUSION ENTRY BOOT FOR FIBRE GLASS TANKS - Model SEBEF-SEBEFM

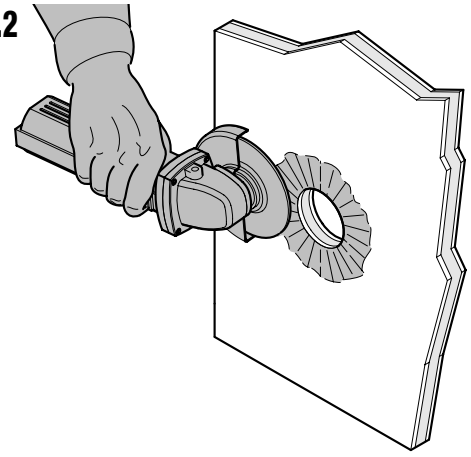
Fig.1



Assemble the mandrel (Model SMAN) and the hole saw (Model STAZ) and insert them into the power drill. Mark the position along the long side of the sump where the entry boot (Model SEBEF-SEBEFM) is to be installed. Now drill the required hole through the wall of the sump. Repeat the procedure if more than one entry boot is to be installed.

STAZ57 57mm - 2"1/4	To be used with SEBEF, SEBEFM_A and SEBEF_A diameters 1" (32 mm) and 1 ¼" (40 mm)
STAZ89 89mm - 3"½	To be used with SEBEF, SEBEFM_A and SEBEF_A diameters 1 ½" (50 mm), 2" (63 mm) and 2 ½" (75 mm)
STAZ152 152mm - 6"	To be used with SEBEF, SEBEFM_A and SEBEF_A diameters 3" (90 mm), 4" (110 mm) and 5" (125 mm)

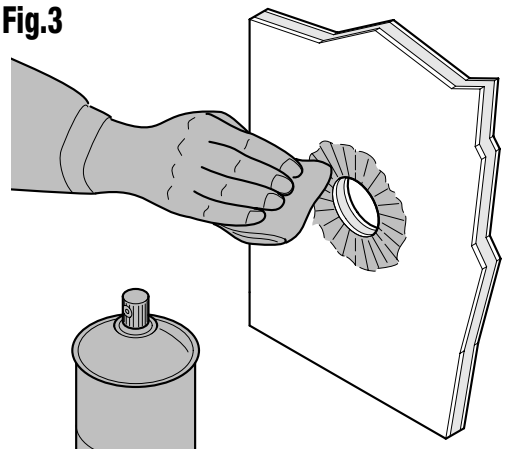
Fig.2



Prepare the surface of the sump's wall where the entry boot is to be installed with an angle grinder fitted with the appropriate sanding disc.

ATTENTION: The sanded area around the hole shall be larger than the outside diameter of the entry boot.

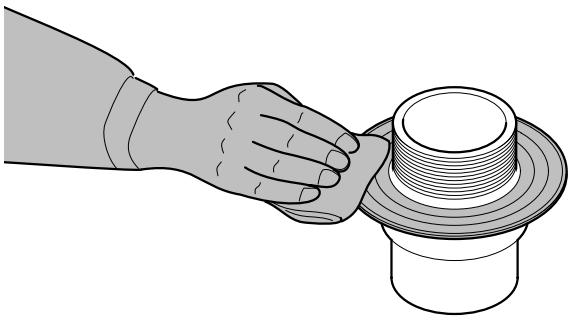
Fig.3



Clean all the components involved in the assembly with a clean cloth soaked with a recommended cleaning solvent (Model LID1).

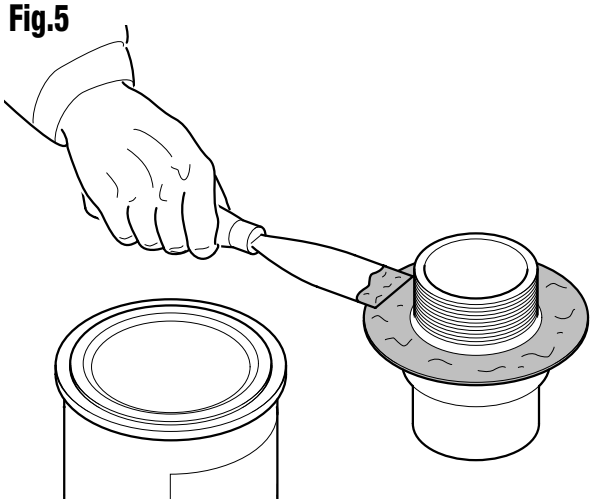
Note: The following solvents may be used, **Acetone, Isopropyl Alcohol, Trichloroethane and Dichloromethane.** The use of other primers or solvents is not allowed.

Fig.4



Use a proper emery cloth to clean thoroughly the SEBEF-SEBEFM brass flat surfaces.

Fig.5



Pour and spread a consistent layer of epoxy sealant (Petrol Seal) over the contact side of the brass flanges. Avoid any spillage of product.

ATTENTION: During this process, avoid contaminating the SEBEF-SEBEFM threaded parts and the internal surface of the sump.

Fig.6

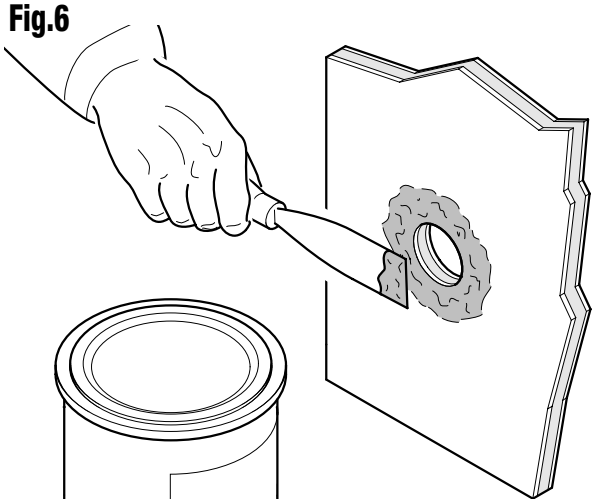
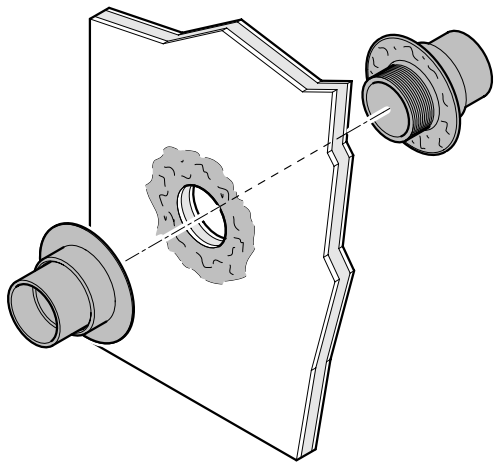
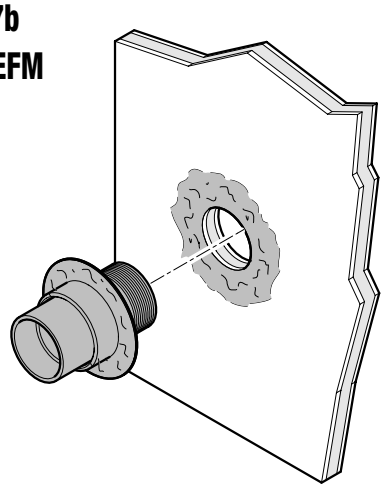


Fig.7a
SEBEF



Assemble the two components of the entry boot together centring the flanges through the hole.

Fig.7b
SEBEFM



Insert the entry boot centring the flange through the hole.

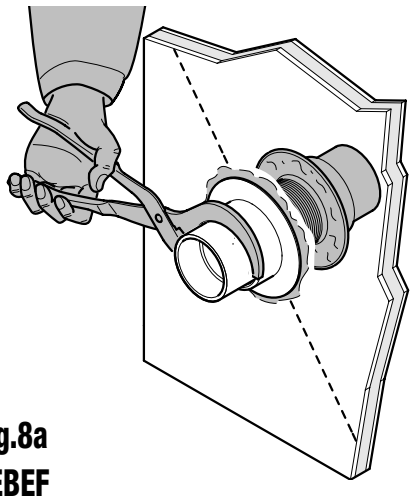


Fig.8a
SEBEF

Tighten the SEBEF-SEBEFM assembly (special filter pliers are available).

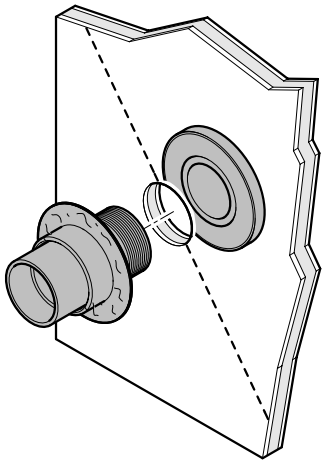
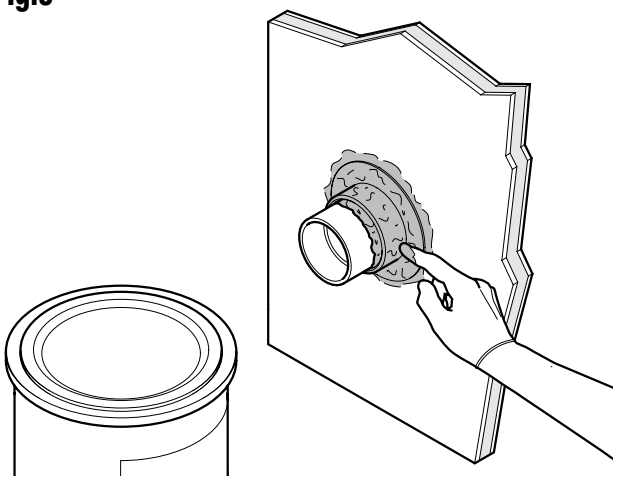


Fig.8b
SEBEFM

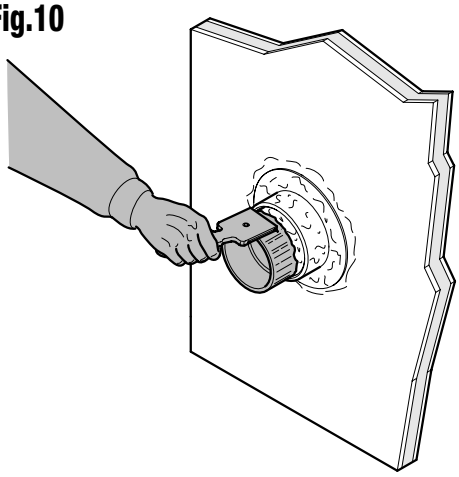
Tighten the threaded flange onto the fitting.

Fig.9



Pour and spread the Epoxy Sealant “Petrol Seal” on each side of the entry boot using the tip of the gloved finger and coat all the metal surfaces.

Fig.10

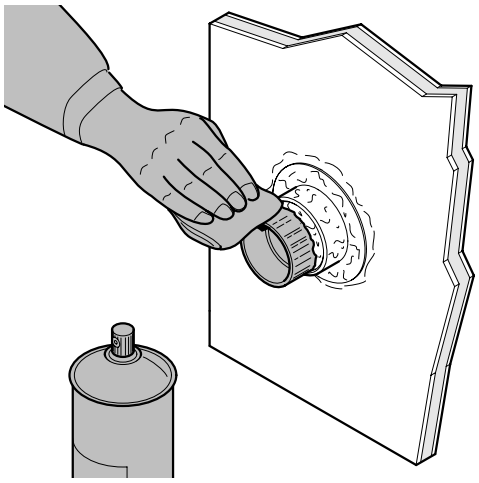


Let the assembly cure for the appropriate time (24 hours).

ATTENTION: Protect the fitting from any direct contact with water (such as rain) during the curing time.

After the curing time, scrape the HDPE ends using the manual scraper (Model RAM1).

Fig.11



Clean the scraped surfaces with a clean cloth soaked with a recommended cleaning solvent (Model LID1).

Note: The following solvents may be used, **Acetone, Isopropyl Alcohol, Trichloroethane and Dichloromethane.** The use of other primers or solvents is not allowed.

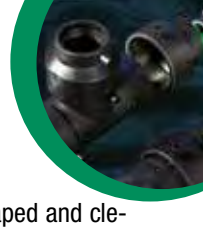
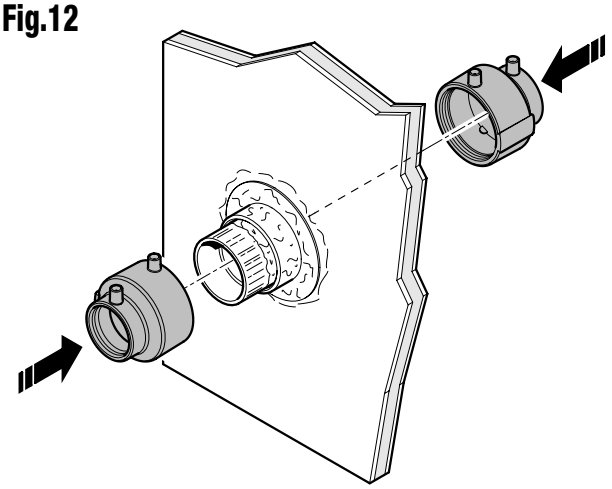


Fig.12



Place the reducers on the entry boot previously scraped and cleaned.

Note: As regards the installation procedure of Model SEBEFM, from figure 12 onwards it is understood that the front side of the sump shows the installation procedure of SEBEF and SEBEFM, whereas the back side refers to figure 8b for Model SEBEFM.

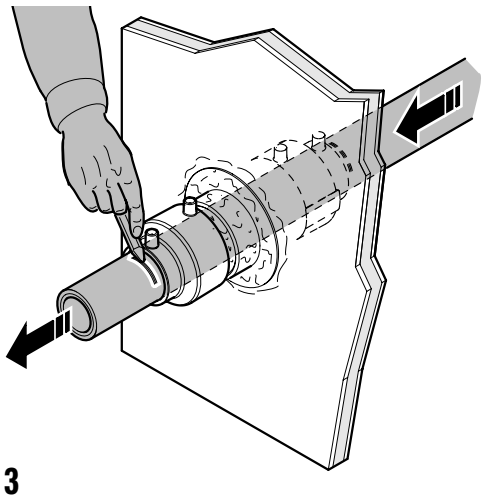
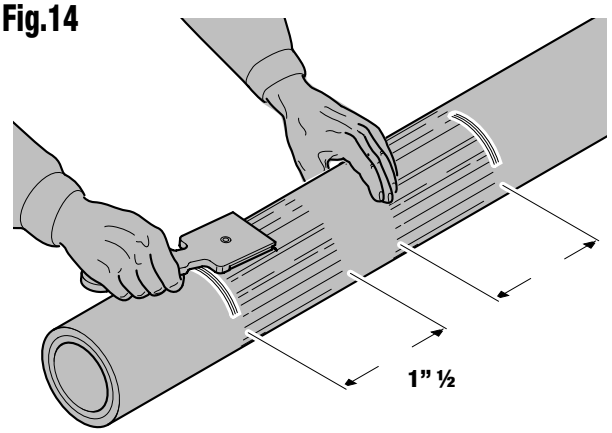


Fig.13

Insert the pipe into the entry boot until the correct position is reached. Use the appropriate marker to indicate the position at the contact point between the pipe and the reducer on the outside surface of the pipe.

Fig.14



Remove the pipe and scrape along its length where it is to be welded using the manual scraper (Model RAM1).
From the point previously marked, scrape 1" ½ (50 mm) from each side.

Note: For a correct installation of the SuperSmartIfex pipe, ensure to **SCRAPE AND COMPLETELY REMOVE THE GREEN OUTER LAYER** from the primary pipe until the black polyethylene layer is clearly visible on the outside of the pipe. The omission of this step can cause a weld to fail.

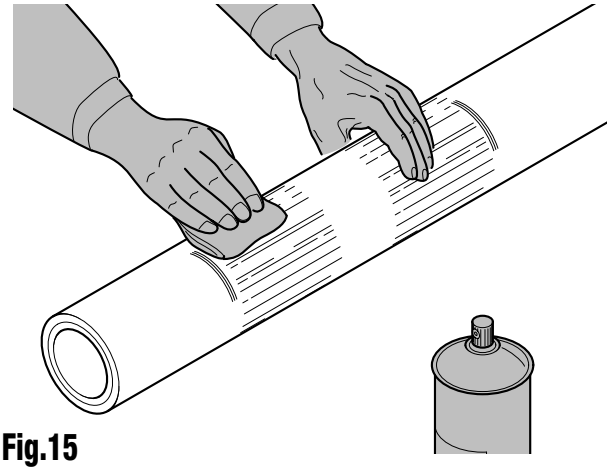
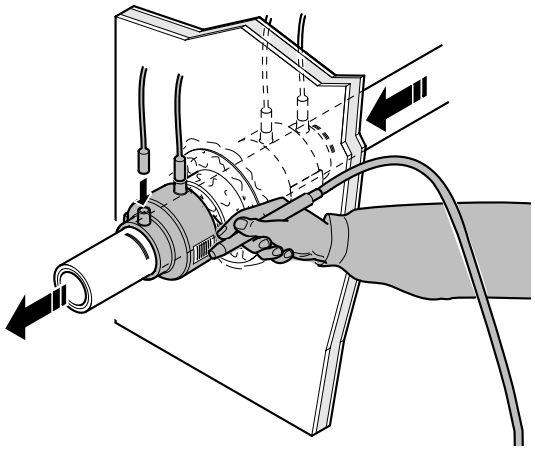


Fig.15

Clean the scraped surface with a clean cloth soaked with a recommended cleaning solvent (Model LID1).

Note: The following solvents may be used, **Acetone, Isopropyl Alcohol, Trichloroethane and Dichloromethane.** The use of other primers or solvents is not allowed.

Fig.16



Re-insert the pipe through the fitting until it lines up with the previously marked position.

Weld each reducer by scanning the bar code sticker and following the instructions on the welding unit's display.

Note: Wait until the cooling down time shown on the bar code has elapsed before performing other operations.

ATTENTION: The preferred fluid to be used for monitoring purposes is PP glycol.

DO NOT USE BRINE!

The use of a proper corrosion inhibitor to be added to the monitoring fluid is also recommended.

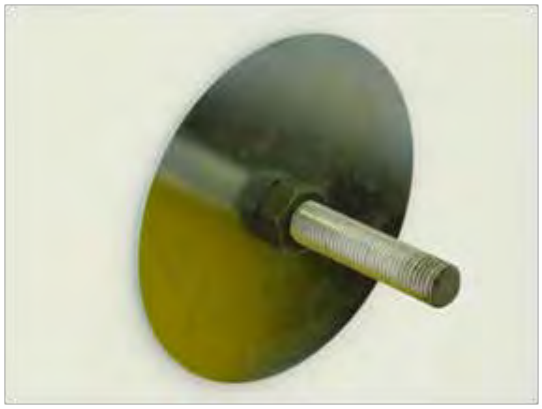
Please contact our Technical Department for other types of fluid.

ATTENTION: We recommend to flow air into the sump annulus when the epoxy is not dry yet to make sure that the purge holes remain open and free of blockage.

ASSEMBLY INSTRUCTIONS FOR THE ENTRY BOOT MODEL SEBE

After tracing the center, make a small central hole.

Make the hole for the mounting toolusing a Ø24 mm sawand scrape the outer surface of the sumpfor the whole area involved in the welding operations.



Mount the steel disk of the mounting tool ref. 19SEBECOMT inside the sump...

...and the aluminiumcentering disc outside the sump, at the center of the entry boot.

Tighten the bolts all the way.

Weld the body of the entry boot on the sump.

During welding, tighten the bolts again.

After welding the assembly and once the cool down time has elapsed, open the center of the entry boot with a saw having the following diameter:

Ø 51mm for entry boots ref. SEBE32, SEBE40, SEBE50
Ø 79mm for entry boots ref. SEBE63
Ø 98mm for entry boots ref. SEBE75
Ø 140mm for entry boots ref. SEBE90, SEBE110, SEBE125

Mounted entry boot with the central hole open for the passage of a double wall pipe.

Scrape the pipe surface with the circumferential scraper ref. 00RA-TOR25125:

- scrape the primary pipesto a length of about 80mm;
- scrape the secondary pipes to a length of about 300mm to allow the pipe to pass through the entry boot until the stop inside the terminal fitting.

Insert the primary pipe until the stop inside the terminating fitting.

Insert the secondary pipe until the stop inside the terminating fitting.

Once all the connections inside the sump have been completed,weld the entry boots on the pipes.

ASSEMBLY INSTRUCTIONS FOR ENTRY BOOTS MODEL SEBEP

After tracing the center, make a small centering hole.

Make the hole for the mounting tool by using a saw with the following diameter:

Ø 79mm for entry boots ref. **SEBEP40**

Ø 111mm for entry boots ref. **SEBEP63, SEBEP75, SEBEPC110129, SEBEPC110229, SEBEPC110511, SEBEC110**

Ø 152mm for entry boots ref. **SEBEP90, SEBEP110, SEBEP125**

Insert the entry boots inside the hole until the stop...

(entry boots ref. SEBEP63 e SEBEP75can be mounted inside and/or outside – entry boot ref. SEBEP125 shall be mounted outside).

...by screwing the clamping ring completely on the other side.

Weld the body of the entry boot on the sump.

Scrape the surface of the pipes with the circumferential scraper Model 00RATOR25125.

Insert the primary pipe into the terminating fitting until the stop.

Insert the secondary pipe into the terminating fitting until the stop.

Once all the connections inside the sump have been completed, weld the entry boots on the pipes.

ASSEMBLY INSTRUCTIONS FOR THE ENTRY BOOT FOR CABLES REF. SEBEPC

Insert the entry boot into the hole until the stop on the outside of the sump…

…by completely screwing the tightening ring and the entry boot for cables on the inside of the sump..

Weld the body of the entry boot on the sump.

Connect the corrugated pipe and the electric cables and tighten the clamps.

INSTALLATION INSTRUCTIONS FOR SUMPS REF. 19S22TS5238N/_LR

Make a rib with polyurethane mastic with high modulus elasticity below and above the gasket.

Cut the base of the sump according to the relevant standard.

Place the bottom of the sump by installing the reinforcing elements and the bolts.

Tighten the bolts deeply by cross-tightening them.

Mount the entry boots and if they are of the electrofusion type just weld the body on the sump and **do not weld the reducer**.
Connect all the pipes.
Pressure test the pipes at 6 bar for the primary and 4 bar for the secondary for 2h – **If the pressure test has been successful, weld the reducer.**

ASSEMBLY OF THE BASE AND RISER

Make sure that the electrical resistance on the base of the sump and the lower surface of the riser are clean.
Assemble the sump by mounting the riser on the base, making sure that the two arrows coincide.

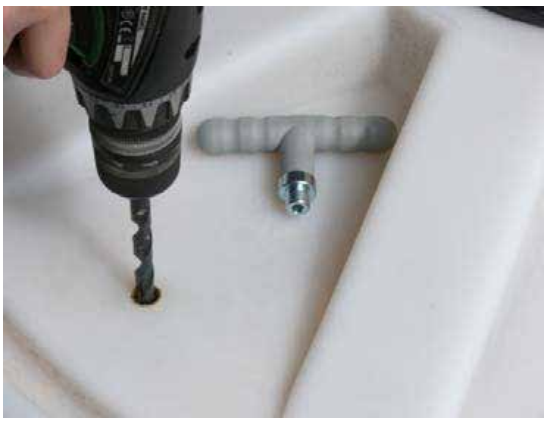
Warning !!! Do not mix risers or covers of different sumps. Each sump must be composed of the 3 elements that come in the package.

Join the two parts (upper and lower) from the inside using at least 12 locking pliers (one in each corner and one in the middle of the long sides).

Connect the welding pins of the welding machine to the two terminals of the resistors placed on the sides of the sump.

Weld the sump using the SMARTFLEX welding machine (the welding data are indicated on the label included in the fitting bag).

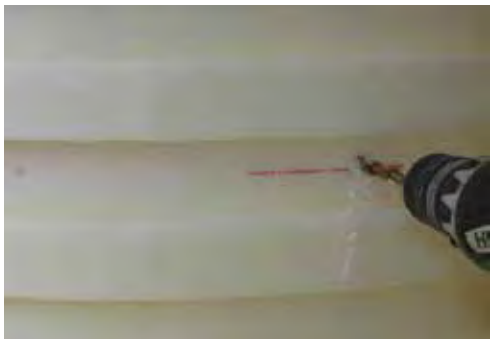
Align the cover by aligning the two arrows.
If the cover has to be locked, mount the 6 hold-down hooks (ref. 19SKF).
The height of the riser can be adjusted (see instructions).



If it is necessary to perform the vacuum test of the sump you need to:
- Drill the polyethylene with a 10 mm point below the ¼" insert.
- Screw a ¼" threaded fitting (ref. 19SVT6).
- Place a bag of sand in the middle of the cover to ensure a uniformly distributed load.
- Perform the test with a maximum vacuum of **-0.05 bar**.

If the passage of a gauge is needed, it is possible to mount an entry boot on the cover.
- Make 6 mounting holes with a Ø 8mm point.
- Open the center with a Ø 98mm hole saw.

Install the entry boot ref. SEB50.

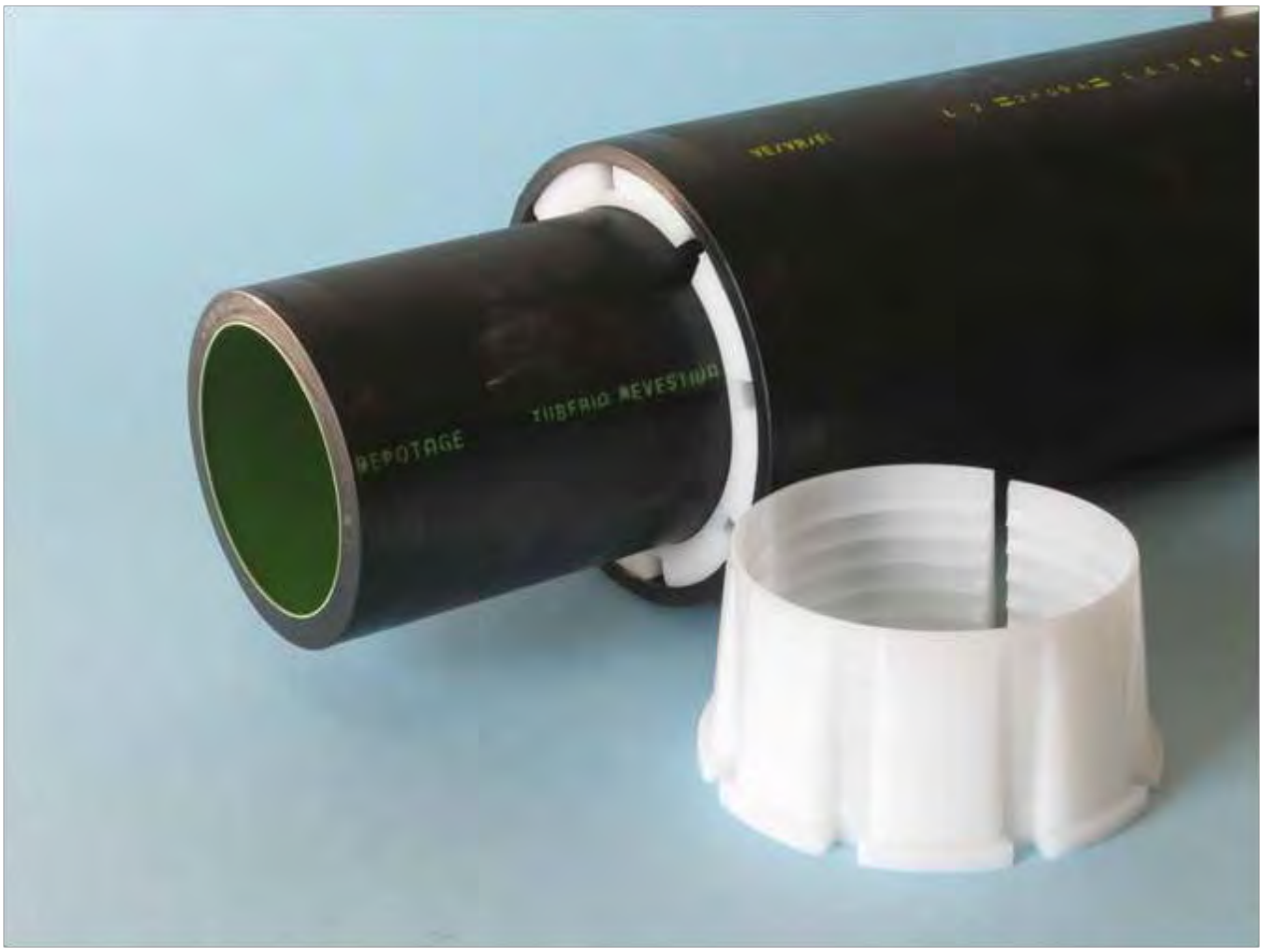


If it is necessary to cut the riser you must:
- Use a sabre jig saw with a 48 mm wide guide plate (see photo).

- Make a 10 mm hole above the middle of the ring to cut.

- Insert the blade into the hole, activate the sabre jig saw and turn around the ring.
- Cut around the ring without interruption.

CONCENTRIC TIGHTENING SUPPORT FOR DOUBLE WALL PIPE Ø 90/125



To facilitate the installation of Ø 90/125 double wall pipes, we designed a concentric tightening support that makes the two pipes perfectly coaxial and helps the insertion of the fittings.

1) Insert the support on the Ø 90mm primary pipeby sliding it completely inside the secondary pipe.
2) Scrape the pipe with the appropriate scraper.
3) Insert the pipes into the fitting up to the stop.

The support has grooves to allow the passage of air and liquids.

Model 19SPINZABOX > Box with 50 pieces

SMARTFLEX PRESSURE TEST

All SMARTFLEX installations must be pressure tested prior to being placed into service.

The primary pipe and secondary containment pipe (where applicable) shall be tested separately. The primary pipe shall be tested before completing all the welds in the secondary system.

A pressure gauge with test pressure at mid-scale is recommended. If the SMARTFLEX Pressure Test Device SENS010 is utilized as testing device please refer to its specific instruction guide.

If the installation has pressure constraints due to the installation of auxiliary devices, please contact our technical office before testing.

	Gaseous Fluids		Liquid Fluids	
	Test Pressure	**Test Duration**	**Test Pressure**	**Test Duration**
Primary pipe	87 psi (6 bars)	2 hours	116 psi (8 bars)	2 hours
Secondary pipe	58 psi (4 bars)	2 hours	58 psi (4 bars)	2 hours
Rubber termination fittings	5 psi (0.3 bar)	2 hours	5 psi (0.3 bar)	2 hours

The following table provides testing parameters. Higher test pressures must be approved by the manufacturer.
The conditions above are valid for the pipe at room temperature (20°C). For higher temperatures, wait for the conditions to be restored. The pipe shall NOT be tested when it is hot (pipe temperature > 35 ° C). It is recommended to carry out the pressure test in the early morning during the warm season of the year.

The pressure test shall be carried out on pipe runs with a maximum length of 100 metres in order to avoid that small pressure drops due to micro leaks will spread on the entire system under test and will not be detected.

The SMARTFLEX system includes a special testing device (model SENS010) to be connected to the welding unit and the fluid generator. Barcode PRESSURE TEST CARDS are available for test performing.

Prior to commencing any pressure test it is good practice to inspect all welded fittings for to ensure all fittings have been welded correctly.

The fluids recommended for the tests are: compressed air, nitrogen, helium or water.

Make sure that the filling phase of the sumps to be monitored is carried out gradually, avoiding overpressures.

CAUTION:

Before testing the primary pipe, ensure that the test ports on the double wall fittings are open and the interstice is properly vented.

CAUTION:

If gaseous fluids are employed for the pressure test, adequate safety precautions must be exercised.

Record the ambient temperature at the beginning and at the end of testing, as temperature changes will affect gas pressure inside the pipe.

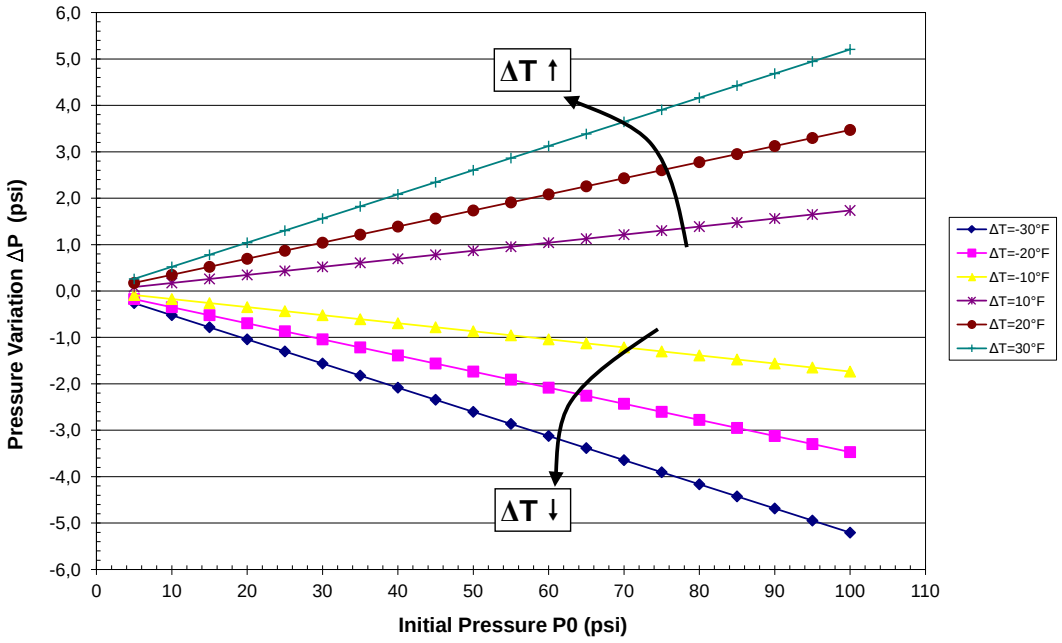
Pressure change due to temperature (only for gaseous fluids) is 0.35% for °C and 0.19% for °F. [e.g. ± ΔT = -18°F (-10 °C) will cause ΔP= -3.5%, hypothesizing that the temperature at the start of the test is around 60°F (+15°C)]. A net pressure change (after temperature compensation) of -2% is typically considered acceptable to take into account eventual micro leakage of testing devices.

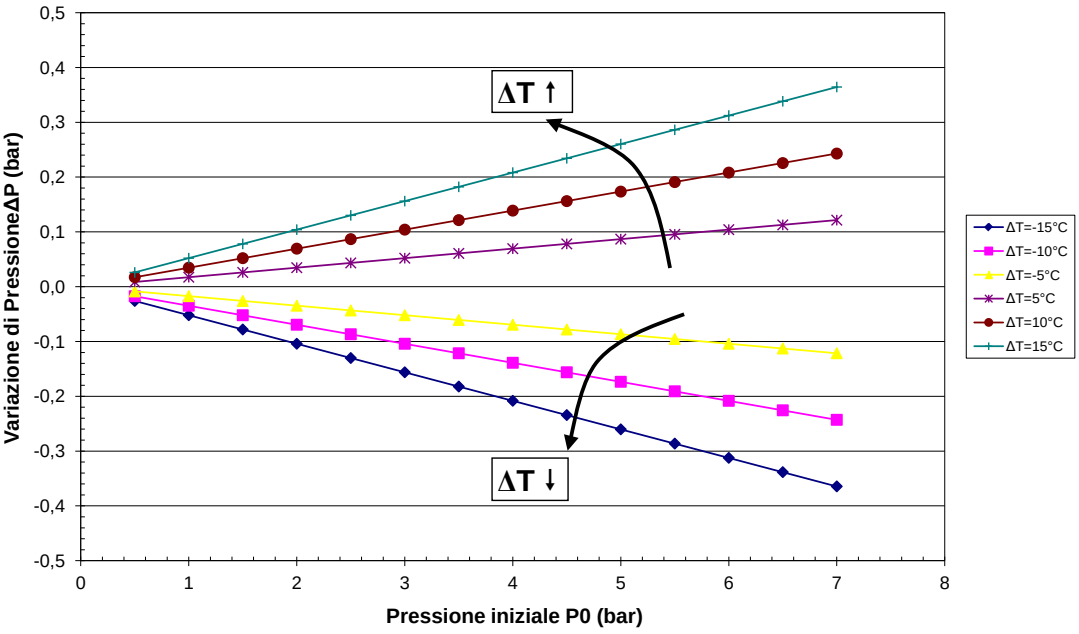
The following table shows the final pressure P (psi) in function of initial pressure P0 (psi) and of temperature change ΔT (°F).

Initial pressure (psi)	Temperature variation ΔT (°F)						
	-27	-18	-9	0	9	18	27
	Final pressure (psi)						
5	4.7	4.8	4.9	5.0	5.1	5.2	5.3
10	9.5	9.7	9.8	10.0	10.2	10.3	10.5
15	14.2	14.5	14.7	15.0	15.3	15.5	15.8
20	19.0	19.3	19.7	20.0	20.3	20.7	21.0
25	23.7	24.1	24.6	25.0	25.4	25.9	26.3
30	28.4	29.0	29.5	30.0	30.5	31.0	31.6
35	33.2	33.8	34.4	35.0	35.6	36.2	36.8
40	37.9	38.6	39.3	40.0	40.7	41.4	42.1
45	42.7	43.4	44.2	45.0	45.8	46.6	47.3
50	47.4	48.3	49.1	50.0	50.9	51.7	52.6
55	52.1	53.1	54.0	55.0	56.0	56.9	57.9
60	56.9	57.9	59.0	60.	61.0	62.1	63.1
65	61.6	62.7	63.9	65.0	66.1	67.3	68.4
70	66.4	67.6	68.8	70.0	71.2	72.4	73.6
75	71.1	72.4	73.7	75.0	76.3	77.6	78.9
80	75.8	77.2	78.6	80.0	81.4	82.8	84.2
85	80.6	82.0	83.5	85.0	86.5	88.0	89.4
90	85.3	86.9	88.4	90.0	91.6	93.1	94.7
95	90.1	91.7	93.4	95.0	96.6	98.3	99.9
100	94.8	96.5	98.3	100.0	101.7	103.5	105.2

Initial pressure (bar)	Temperature variation ΔT (°C)						
	-15	-10	-5	0	5	10	15
	Final pressure (bar)						
0.5	0.47	0.48	0.49	0.50	0.51	0.52	0.53
1	0.95	0.97	0.98	1.00	1.02	1.03	1.05
1.5	1.42	1.45	1.47	1.50	1.53	1.55	1.58
2	1.90	1.93	1.97	2.00	2.03	2.07	2.10
2.5	2.37	2.41	2.46	2.50	2.54	2.59	2.63
3	2.84	2.90	2.95	3.00	3.05	3.10	3.16
3.5	3.32	3.38	3.44	3.50	3.56	3.62	3.68
4	3.79	3.86	3.93	4.00	4.07	4.14	4.21
4.5	4.27	4.34	4.42	4.50	4.58	4.66	4.73
5	4.74	4.83	4.91	5.00	5.09	5.17	5.26
5.5	5.21	5.31	5.40	5.50	5.60	5.69	5.79
6	5.69	5.79	5.90	6.00	6.10	6.21	6.31
6.5	6.16	6.27	6.39	6.50	6.61	6.73	6.84
7	6.64	6.76	6.88	7.00	7.12	7.24	7.36

The following diagram shows the pressure change ΔP (psi) in the system, considering an initial pressure P0 and according to various temperature changes ΔT (°F).





NOTE: the procedure described above is a quick test procedure carried out under a so-called low pressure. This testing procedure could rarely not allow detection of anomalies caused by non-perfectly welds e.g. pasted welds, excessive offset or pipe that has not reached its correct position inside the fitting.

In case the pressure test had a negative result due to a leak at a fitting detected through soapy water or a suitable leak detection gas, the test shall be interrupted and the fitting shall be removed and replaced with a new one.

Problem solving in case of leak at any welded assembly

Considering that the electro-fusion welding process is an optimal welding process (as it is based on molecular fusion between the materials that creates the assembly), possible leaks of the welded parts can occur only for the following reasons:

- The welding process was interrupted. Therefore, it was not completed correctly (the welding unit would have displayed an error on the screen).

Or:

- The pipes and fittings were not scraped and cleaned correctly. In this case, the material may not have fused together properly.

Since it is not possible to determine defective welding solely through a visual examination, we recommend:

- Re-welding the fitting one further time.
- Repeating the pressure test once welded and cooled.

Guidelines for system maintenance

The following guidelines shall be explained to the installer during their training:

- If a leak or anomaly is detected in any part of the system (by inspecting the sumps or through the leak monitoring system), the problem must be resolved by the maintenance person immediately.
- If the piping system is damaged or there is a leak, the manufacturer or distributor should be contacted for further advice.

The service station operator should be advised accordingly.

CAUTION:

Ignoring or disabling any monitoring system alarms may cause future damage.

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