

# SOLFLO MAX<sup>®</sup>

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## INSTALLATION GUIDE

INSTALLATION INSTRUCTIONS FOR SOLFLO MAX<sup>®</sup>

### STEPS

#### Work planning

1. Before undertaking work
2. Handling and storage
3. On-site storage

#### Installation

4. Preparation of the trench and the bedding
5. Inspection, cleaning and lubrication
6. Assembly
7. Installation of removable clips

8. Positioning and installation of split couplers
9. Backfilling

### GENERAL NOTES

1. Cutting a pipe on construction site
2. Connection to a structure

Figure 1 : Installation type section

## STEP 1

### BEFORE UNDERTAKING THE WORK

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In case of discrepancy between the instructions contained in this guide and those contained in the plans and specifications, please contact your Soleno representative.

Contact your Soleno representative at least 48 hours before work begins. A visit from your authorized Soleno representative is recommended after receipt of the materials on site or before work begins.

Upon receipt of the materials, ensure that all items listed on the delivery slip are delivered and in good condition. Please notify immediately your Soleno representative in case of damage or missing items.

## STEP 2

### HANDLING

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- **Do not** use steel wire ropes, chains or hooks to unload or handle pipes.
- **Do not** drop pipes and fittings on the ground.
- **Do not** lift the pipe by inserting the forks into its ends
- Handle pipes manually or using slings.

## STEP 3

### ON-SITE STORAGE

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Provide an adequate storage space for pipes and fittings to prevent deformation or breakage.

#### Storage in stacks :

- Maximum height : 2 m (6 ft)
- Pipes of 750 mm (30 in) and more must be laid individually on the ground.



## STEP 4

### PREPARATION OF THE TRENCH AND THE SEAT

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Proceed with the excavation of the trench and the preparation of the bedding, in accordance with BNQ 1809-300 standard (Figure 33) or CSA 182.11 standard.

The installation of the pipe must be done in a dry trench. The drying techniques used must comply with local safety standards in force. The design engineer must adapt the foundation to these conditions.

## STEP 5

### INSPECTION, CLEANING AND LUBRICATION

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Solflo Max<sup>®</sup> pipes are usually assembled with a bell gasket system.

- Ensure that the bell is not damaged.
- For diameters of 1050 mm (42 in.) and 1500 mm (60 in.), remove the protective film on the sealing gasket.
- Clean the male part of the pipe as well as the inside of the bell.
- Lubricate the bell and spigot jointing surface. Lubricate the gasket on the spigot end. Ensure that the lubricant on the spigot & gasket assembly stays clean and free of any dirt.

## STEP 6

### ASSEMBLY

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- In general, start the installation on the downstream side.
- For the direction of installation, the male end is normally inserted inside the bell.
- Make sure that the male ends are fully inserted until the insertion line, see details below.
- Do not hesitate to enter the pipe to inspect the joints from inside and ensure that there is no space between the lengths.
- Use one of the two following methods for the assembly of Solflo Max<sup>®</sup> pipes: with a sacrificial pipe section or slings.

#### DIAMETERS FROM 300 mm (12 in) TO 900 mm (36 in) AND 1200 mm (48 in)

The insertion line is marked on the pipe itself by means of a paint line. The following diagram is indicative.

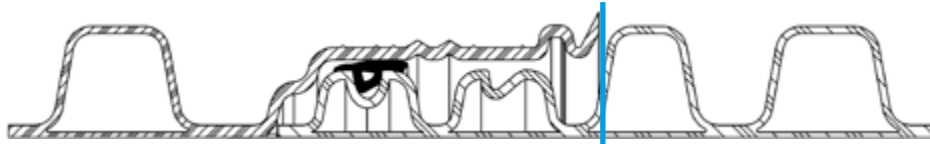


## STEP 6

### ASSEMBLY (CONTINUED)

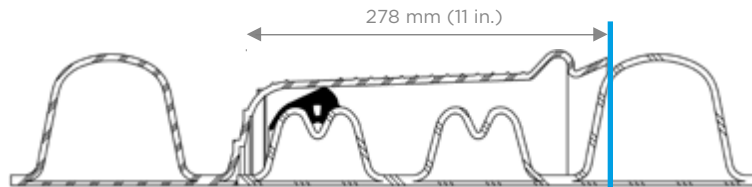
#### DIAMETER 1050 mm (42 in)

The insertion line is marked on the pipe itself by means of a paint line. The following diagram is indicative.



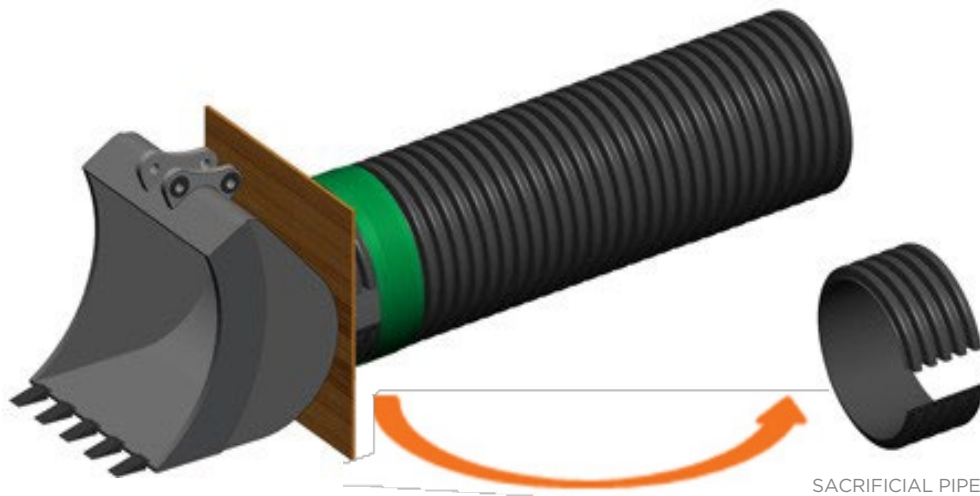
#### DIAMETER 1500 mm (60 in)

For this pipe, the insertion line is 278 mm (11 in) from the end of the male end.



#### A - METHOD WITH SACRIFICIAL PIPE

- Prepare a piece of sacrificial pipe by cutting a piece of pipe at least five corrugations long and removing a strip of material along the entire length.
- Insert the sacrificial pipe end inside the bell of the pipe to be connected.
- Place a rigid panel against the end of the sacrificial pipe. The panel should completely cover the surface of the sacrificial pipe.
- Firmly press the bucket of an excavating equipment against the panel and push until the insertion line is aligned with the end of the bell.



## STEP 6

### ASSEMBLY (CONTINUED)

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#### B - METHOD WITH SLING

- Wrap the sling around the pipe.
- With the excavating equipment, slowly move the pipe to align the male end with the bell.
- Make sure there is no dirt inside the bell.
- When the first ring is in the bell, lower the pipe to have the best possible alignment with the other pipe.
- Slowly pull the sling until the insertion line is aligned with the edge of the bell.
- Validate the longitudinal alignment of the section as the installation progresses.

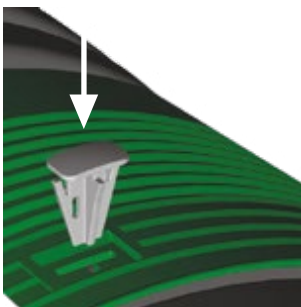


## STEP 7

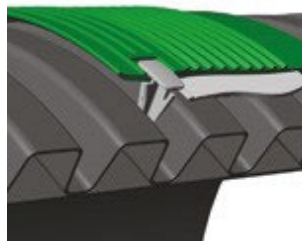
### INSTALLATION OF REMOVABLE CLIPS ON THE BELLS (IF APPLICABLE)

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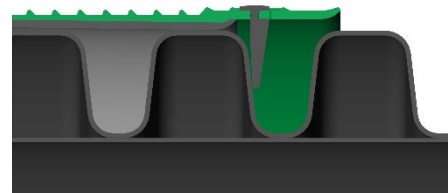
Installing the clips guarantees the complete insertion of the pipe and provides a robust interlocking until completion of the backfill. For 300 mm (12 in) to 900 mm (36 in) and 1200 mm (48 in) pipes.



Align the clip with the opening.



Push on the clip with the palm of your hand or with a hammer until it is fully inserted.



Install at least 3 clips per joint.

## STEP 8

### POSITIONING AND INSTALLATION OF SPLIT COUPLERS (IF APPLICABLE)

- Validate the alignment of the section as the installation progresses.
- Never attach and tighten the fasteners one at a time as there is a risk of breakage.

#### PIPES FROM 150 mm (6 in) TO 600 mm (24 in)



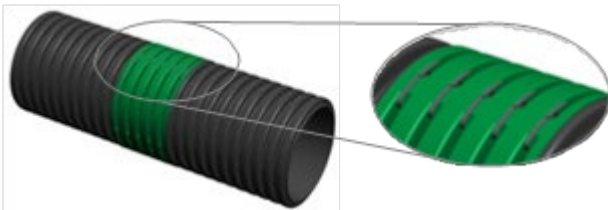
Align the two pipes.



Press the two pipes against each other on the lower part of the coupler.



Then place the upper part of the coupler on top of both pipes.

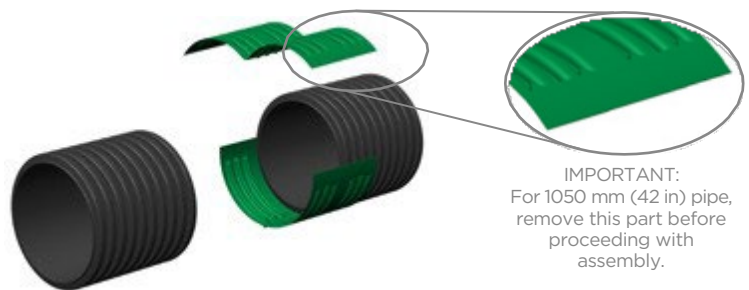


Loosely fasten all quick fasteners and tighten each of them properly when they are all in place.

#### PIPES FROM 750 mm (30 in) to 1200 mm (48 in)

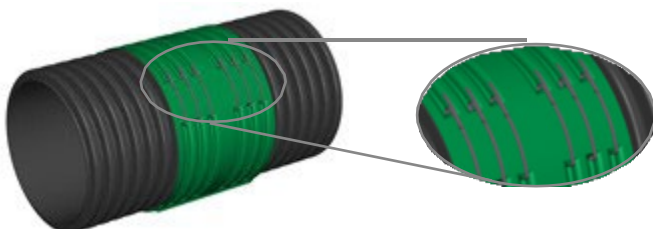


Place part of the coupler under the pipe.



Align and press the two pipes against each other. Then place the second part of the coupler on top of the pipes.

**IMPORTANT:**  
For 1050 mm (42 in) pipe, remove this part before proceeding with assembly.



Loosely fasten the quick fasteners until the two parts of the couple are touching and tighten them, taking care to overlap the two parts of the coupler.

## STEP 9

### BACKFILLING

- Proceed to the backfilling of the pipe, referring to BNQ 1809-300 standard (Figure 33) or CSA 182.11 standard, respecting the heights, the type of granular material and the degree of compaction.
- The most sensitive portion during backfilling is located under the springline of the pipe. Insufficient compaction at this location can lead to pipe ovalization and misalignment. The use of a vibratory compactor is recommended for an effective compaction of the granular material in the haunch area.
- Place the backfill material on the pipe so that it flows evenly on either side of the pipe. The backfill on one side must never exceed by more than 300 mm (12 in) the height of the backfill on the other side.
- For the first meter above the pipe, the only accepted compaction equipment is the rammer, vibrating plate and vibrating drum rollers, the total force of which must not exceed 50 kN. No compaction should be done directly on the pipe until the backfill above reaches at least 300 mm (12 in).
- See data sheet or its table for the minimum backfill height above the pipe (measured from the crown of the pipe to below a flexible pavement or above a rigid pavement) to support CL-625, H-25 or HS-25 road traffic loads.
- During the work, temporary loads of heavy vehicles may have to circulate above the pipe. In this case, a minimum additional backfill must be added to allow this circulation.
- To maintain the structural capabilities of the pipes, care must be taken to eliminate any conditions allowing their buoyancy as well as the erosion of the backfill material. The design engineer must ensure sufficient backfill to prevent flotation. The minimum backfill height above the pipe to prevent buoyancy uplift is given in Table 1.

TABLE 1  
TABLE OF MINIMUM BACKFILLS TO PREVENT BUOYANCY\*

Nominal diameter	mm	100	150	200	250	300	375	450	525	600	750	900	1050	1200	1500
	in	4	6	8	10	12	15	18	21	24	30	36	42	48	60
Minimum backfill	mm	300	300	300	300	300	300	300	300	330	400	450	550	600	720
	in	12	12	12	12	12	12	12	12	13	16	18	22	24	28

\* Assumption for calculations:

1. The density of dry soil is 1750 kg/m<sup>3</sup> (109.25 lb/ft<sup>3</sup>) and its saturated density is 2100 kg/m<sup>3</sup> (131.10 lb/ft<sup>3</sup>) (safe values).
2. The maximum level of the water table is at the same level as the crown of the pipe. Contact your Soleno representative to find out the specific data for your project.

## NOTE 1

### CUTTING OF THE PIPE ON SITE

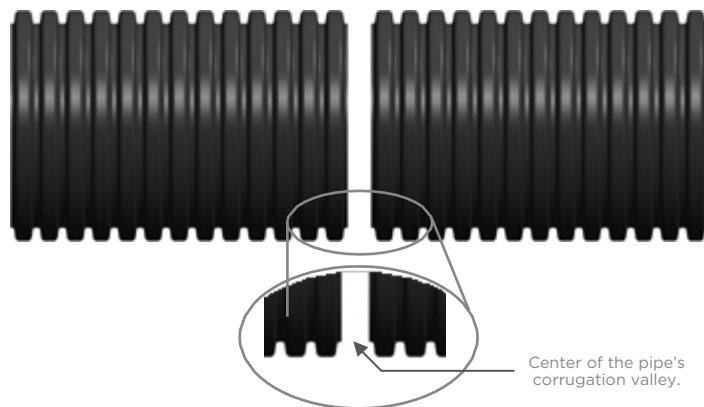
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If necessary, HDPE pipes can be cut at construction site.

Suggested tools for cutting:

- Reciprocating saw
- Circular saw
- Concrete saw

Note: Cut between two corrugations (in the center of the pipe's corrugation valley).



\* The 1050 mm (42 in) and 1500 mm (60 in) pipes have a male end with a smaller diameter, consult your Soleno representative to know the procedure for this specific case.

## NOTE 2

### CONNECTION TO A STRUCTURE

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The Solflo Max<sup>®</sup> pipe connects to a rigid structure using an adapter. Contact your Soleno representative to know the specifications of this type of connection.



## FIGURE 1 TRENCH INSTALLATION TYPE

The installation method of the Solflo Max<sup>®</sup> pipe, illustrated below, is based on BNQ 1809-300 standard (Figure 33) or CSA 182.11 standard. However, depending on the location of the project, other regulations or standards may apply. Soleno recommends complying with the requirements in force in the city or province of reference. Otherwise, Soleno recommends the application of the method illustrated below.

