

Assembly and Installation Instructions

LORO-X steel discharge pipes, DN 32-DN 200

LORO-X stainless steel discharge pipes are planned and installed in accordance with the technical rules and regulations of DIN EN 12056 (Gravity Drainage Systems inside Buildings) and DIN 1986 Parts 3, 4 and 100 (Drainage Systems for Land

and Buildings). Amongst others, DIN 4102 (Fire Prevention in Buildings) and DIN 4109 (Noise Control in Buildings) are also to be observed.

1. Establishing the LORO-X push-fit socket connection

For LORO-X push-in joints we recommend to use original sealing elements with the manufacturer's mark LORO. With consistent use of all LORO-X system parts, we ensure the tightness of the LORO-X push-in joint. Store LORO-X sealing elements at room temperature for easier assembly in case of lower outside temperatures.

- 1.1 Place sealing element in inclined position on the edge of the sealing chamber.
Push in top sealing element with your finger and let it engage in the sealing chamber until the collar of the sealing element lies level on the socket edge.
- 1.2 Smear only original LORO-X lubricant no. 986X or 9861X over the entire surface on the inside of the sealing element and the outside of the insert pipe.
Surplus lubricant is to be removed.
The use of other lubricants may lead to visual and technical impairments.
- 1.3 Line up the socket and insert pipe and push together, twisting gently.
Push the insert pipe in as far as the socket base.
For installing pipes of a nominal size DN 40 – DN 200, an assembly aid can be borrowed from the factory.
- 1.4 Finished LORO-X socket joint according to DIN 1986 (permanent tightness with an internal and external overpressure of 0 – 0.5 bar).
- 1.5 If higher pressures are expected, the socket joint can be secured using the LORO-X anchor clip, no. 806X (DN 32 – DN 125) or the LORO-X anchor hoop, no. 808X (DN 150 – DN 200). Tighten the screws of the LORO-X or LORO-XCL anchor clip and LORO-X anchor hoop all round evenly.

Tightening torque:

Version	Diameter	Hex wrench	Tightening torque
LORO-X anchor clip	DN 32 - 40	13	15 Nm
LORO-X anchor clip	DN 50 - 125	15	30 Nm
LORO-X anchor hoop	DN 150 - 200	17	50 Nm

2. Cutting to length

It is best to use a pipe cutter to cut the LORO-X pipes to length. When cutting, the zinc coating provides cathodic protection for the inner pipe and prevents under-rusting. They can also be cut at right angles to the pipe axis with an angle grinder with a parting wheel or saw.
After chamfering, a post-treatment with cold zinc is recommended as additional corrosion protection.

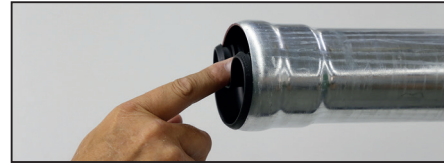
The pipe ends must be deburred inside and outside.

LORO-X pipes can be supplied with two sockets up to DN 100. This prevents waste pieces without sockets being produced when cutting to length. The cut-to-length pipe ends with sockets can be used as adaptors. Waste is reduced as a result.

If a pipe section has no socket, add a LORO-X double socket no. 560X, to turn it into a socket pipe. Glue the double socket onto the remaining pipe with the LORO-X sealing element, no. 911X, and LORO-X adhesive no. 985X.

Attention: In frost-exposed areas, sockets (including double sockets) must not be facing opposite to the flow direction.

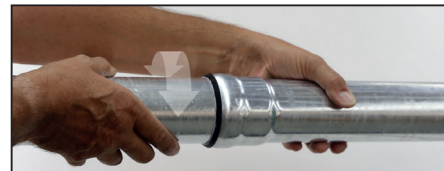
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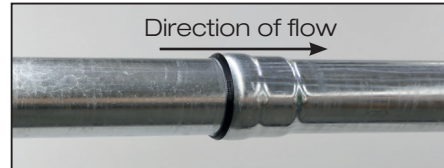
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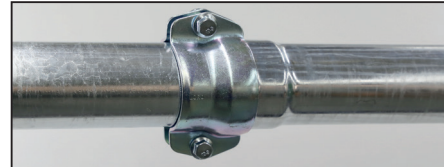
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3. Pipe fastening

The following pipe clips from our product range can be used for fastening the pipes:

- Pipe clips with knocking pin (if substrate is firm).
- Pipe clips with connecting threaded socket for hanger bolt or set screw, with/without sound-damping.
- Anchor clip up to DN 125 for suspension with perforated strap or flat bar. The firm seating of the anchor clip on the pipe and socket must not be impaired.

Fastening systems:

The pipe system has to be fastened in accordance with the requirements (e. g. fixed point, pipe clips etc.).

The following basically applies

for connecting and collector pipe:

- the distance between **fixed points** should be 12 m.
- the distance from **suspensions** should be

DN	32	40	50	70	80	100	125	150	200
X	2.0m	2.0m	2.0m	3.0m	3.0m	3.0m	3.0m	3.0m	3.0m

For fastening LORO-XML pipes (pipe without sockets), DN 250 and DN 300, please request the installation instruction LORO-XML steel discharge pipes DN 250/300.

for downpipes:

- 3 m spacing.
- Downpipe supports can be placed every 12 m, if the weight of the downpipe is not lifted completely by the pipe clips.
- Fixed point at the transition of collector pipe and downpipe.

For the fastening of LORO-X pipes the following weights have to be taken into account:

1 m pipe completely filled with water weighs:

DN	LX steel discharge pipe kg/m	LX composite pipe kg/m
32	1.6	5.2
40	2.6	6.1
50	4.0	8.3
70*	6.8	13.8
80*	9.3	17.8
100*	12.4	22.5
125*	20.8	38.8
150*	28.2	49.1
200	51.4	78.7
250	81.7	-
300	110.0	-

*Pipes 5 m and 6 m are equipped with small lugs.

4. Tightness values when using the anchor clip, no. 806X, or the anchor hoop, no. 808X

The tightness of the LORO-X push-fit socket connection is secured till at least 0.5 bar for all nominal sizes. If higher pressures are expected, the socket joint can be secured against axial thrust by the LORO-X anchor clip (DN 32 – DN 125) or by the anchor hoop (DN 150 – DN 200). The tightness is ensured with LORO-X sealing element and LORO-X anchor clip until:

DN 40: 15 bar overpressure	DN 100: 5 bar overpressure
DN 50: 15 bar overpressure	DN 125: 4 bar overpressure
DN 70: 5 bar overpressure	DN 150: 1.5 bar overpressure
DN 80: 5 bar overpressure	DN 200: 1.5 bar overpressure

LORO-X steel discharge pipes DN 40, DN 50 and DN 70 are vacuum-tight to 0.2 bar absolute pressure (80% vacuum) even under vibration when using the LORO-X VAC sealing element.

5. Thermal expansion

LORO-X steel discharge pipes have a low coefficient of expansion: 0.0117 mm/m per °C.

Example:

3 m pipe, temperature difference = 25 °C

Elongation = $3 \times 25 \times 0.0117 = 0.8775 \text{ mm}$

6. Casting in

The expansion coefficient of the steel discharge pipe corresponds approximately to that of the concrete. Casting-in of hot-dip galvanised steel discharge pipes has been state of the art for years.

If additives are used in the concrete (frost protection, retarder, setting accelerator), the outer pipe must be given a coat of a standard building protection agent on site.

It is advantageous to use LORO-X clips with an insulation layer for fixing in the concrete. For socket joints inside the concrete, the LORO-X anchor clip or anchor hoop can be used as an additional safety measure. When using the LORO-X anchor clip or anchor hoop, the socket joint is secured against axial thrust.

7. Underground installation

According to DIN 1986-100, LORO-X steel discharge pipes are also approved for underground installation. In this case, depending on the load/surrounding ground, LORO-X steel discharge pipes must be provided on site with corrosion protection according to DIN 30672.

8. Releasing the socket joint

Heat the insert pipe well with a soft soldering flame close to the socket rim until the pipe can be pulled out of the socket. The tip of the flame should be about 10 cm away from the pipe to be heated.

The sealing element is to be renewed when reassembling the socket joint.

9. Painting

Hot-dip galvanised steel discharge pipes can be painted. Use paints specially designed for hot-dip galvanized substrates.

10. Connection to other types of pipe

LORO-X connectors are to be used to connect LORO-X pipes to other types of pipe (cast iron pipe, plastic pipe, stoneware pipe). The sealing elements to match the LORO-X sockets of the connectors are supplied by LOROWERK. Original sealing elements for the sockets of the external makes are not part of our scope of supply. LOROWERK supplies special sealing elements for the connection of odour traps of sanitary objects.

11. Other installation instructions

1. Pipes exposed to corrosion by electrical current, corrosive liquids, gases or fumes, must be protected in a suitable manner.
2. Pipes with corrosion protection (hot-dip galvanising with added inside coating) cannot be welded.
3. Roof drains and pipes in areas endangered by frost are recommended to be completed by a trace heating by customer (see EN 12056, Part 1, or DIN 1986, Part 100).
4. **Attention:** LORO-X steel discharge pipes must be checked for leak-tightness by the installer after installation.

12. Auxiliary tools

The following assembly aids can be provided on request:

- Assembly tool for making socket joint
- Pipe cutter

13. Supervision

Supervision is done by:

For rubber sealing elements: **MPA-NRW**

For steel discharge pipes: **LGA QualITest GmbH**



DIN EN 1123



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