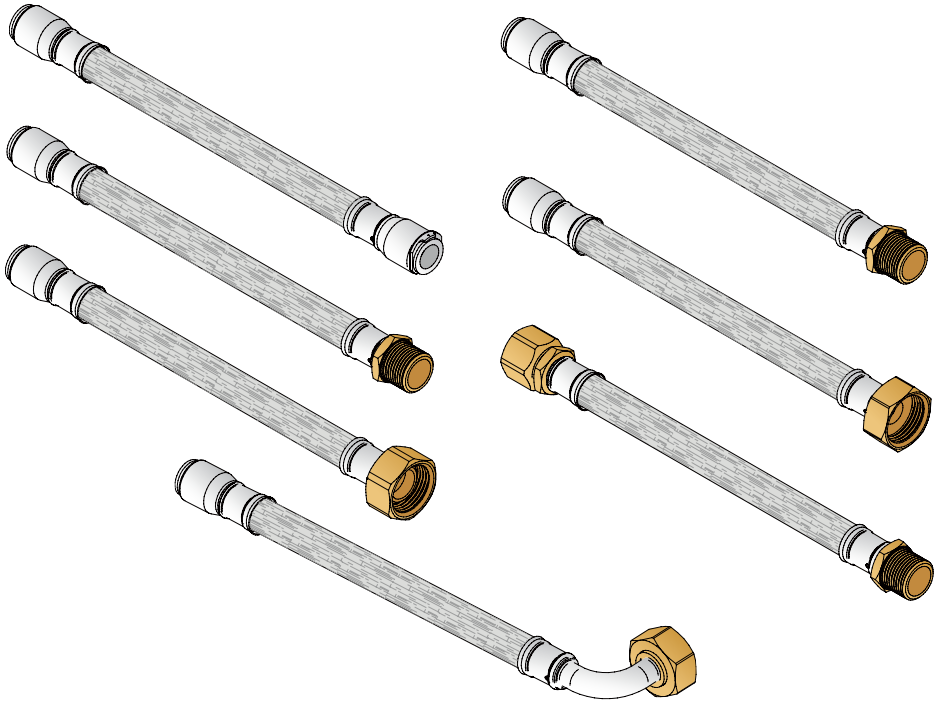
FH

Flexible hoses with couplings to chilled beams and comfort modules



QUICK FACTS

- Flexible range: Available in several lengths and with different fittings – adapted for all Swegon's chilled beams and comfort modules
- Oxygen diffusion-tight: EVOH barrier that protects against corrosion, bacterial growth, and sludge formation
- Robust construction: 5-layer composite with stainless steel reinforcement for long service life
- High performance: Maximum working pressure up to 15 bar and temperature up to +80 °C

Technical description

Swegon's flexible hose is a very flexible, easy-to-handle, sustainable and oxygen diffusion-tight flexible hose.

Application

Due to its oxygen impermeability our OXYban hose is ideally suited for the connection of heating and cooling systems.

Temperature range: up to +80 °C

Maximum operating pressure:	
DN 12:	15 bar
Note! when using Quick-fit coupling (push-on) differing operating pressures and temperatures apply, see page 4.	

Properties

5-layer-compound-structure

1. *PE-protection layer protects the oxygen barrier from damage*
2. *Adhesive layer*
3. *Oxygen diffusion barrier EVOH*
4. *Adhesive layer*
5. *Pure polyethylene approved as pipe, flexible as hose*

High-quality braiding made of stainless steel AISI 304 with marking wire.
Standard connection fittings brass nickel-plated, blank resp. custom made fittings.

Material

The hose material OXYban is free of any halogenes, flexibilisers and heavy metals. It has been examined for its oxygen diffusion behaviour acc. to DIN 4726. In order to be classified as oxygen impermeable acc. to DIN a maximum of 0,32 mg of oxygen per m² and per day is licit to diffuse into the inside of the hose. Oxyban undercuts this limit with an amount of only 0,11 mg of oxygen per m² and per day

The exclusion of oxygen stops corrosion as well as the growth of bacteria and consequently prevents the silting in heating and air-conditioning systems.

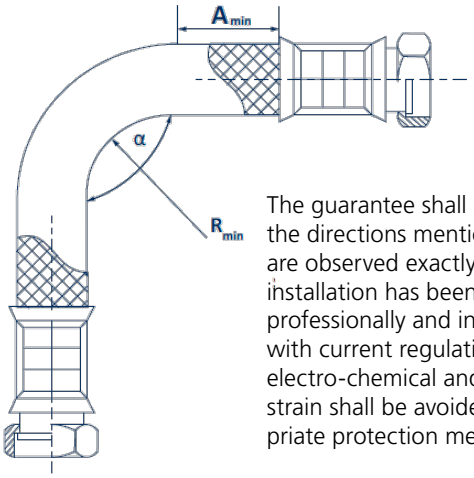
Vacuum resistance up to 0,1 mbar even with the smallest bending radiuses and temperatures of up to + 80 °C.

Material properties

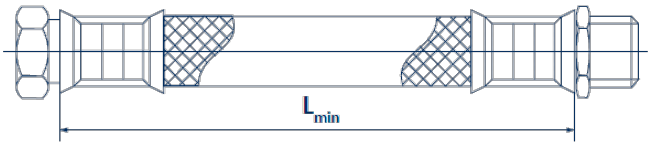
DN	12
inner diameter in mm	11,1
outside diameter in mm*	16,5
max. operating pressure in bar	15
max. operating temperature:	+80 °C

** with brading*

Bending radiuses



The guarantee shall apply only if the directions mentioned above are observed exactly as well as the installation has been carried out professionally and in accordance with current regulations. Corrosive, electro-chemical and bacteriological strain shall be avoided by appropriate protection measures.



DN	A/R_{min}	L_{min}	L_{min} a = 90°	L_{min} a = 180°	L_{min} a = 360°
12	40	80	200	270	420

Measurements in mm
All quotations (excluding diameter) are minimum measurements and shall be exceeded when possible

Sound emission

DN	flow rate in l/s	1. sound pressure level in dB (A)	2. sound power level in dB (A)
12	0,12 0,2	13,3 20,1	11,3 ~ 11 18,1 ~ 18

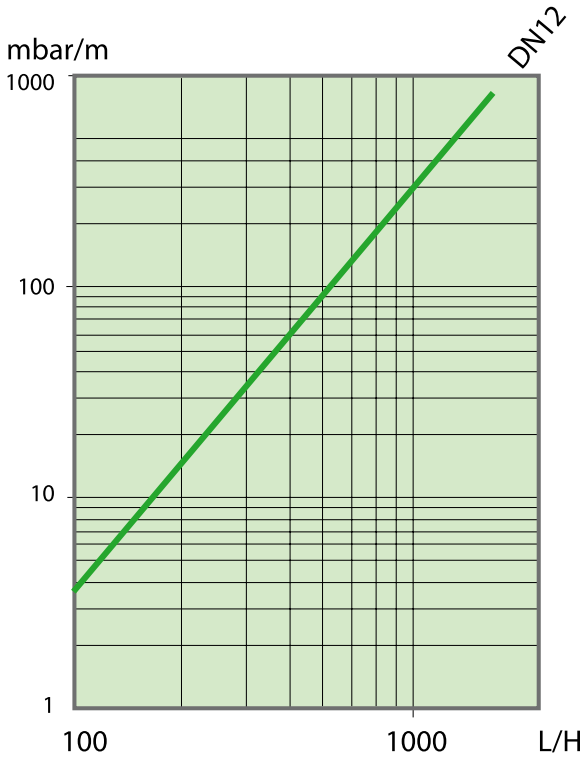
1. measured value in a 0,1 m distance; corrected spectrally for background noise level

2. calculated sound power level with Lw = Lp - 10 log (distance: here 0,1 m) - 8 dB - (approximately determined for ideal linear sound source; without floor reflections)

Climatic conditions during measurement: air temperature 20 °C / air pressure 988 hPa / air moisture 42 %.

Pressure loss

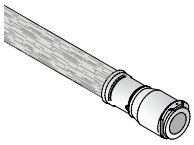
Diagram for pressure drop per meter at different flows and hose size DN12 with water at 18 °C, 3 bar.



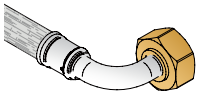
Connection variants

LCC:	Quick-fit coupling (push-on)
AG:	External thread
IG:	Internal thread
UM:	Internal thread with conical connection for VEN/VDN valve
UMB:	Internal thread with conical connection for VEN/VDN valve, 90° bend.

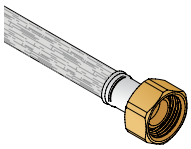
Examples of connections: Nut, external thread, quick coupling (straight and angled) See figure below.



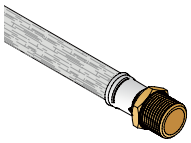
LCC12



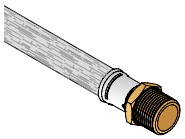
UMB 3/4" KD



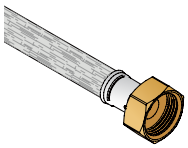
UM 3/4" KD
UM 1" KD



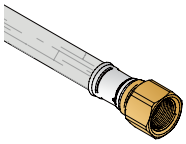
AG3/8"
AG1/2"
AG3/4"



AG1/2" NPT
AG3/4" NPT



IG1/2"
IG3/4"
IG1"



IG1/2" NPT

Before assembly and commissioning, Push-on

Water Quality:	See Section "Water Quality" below
Operating temperature:	Max. 65 °C
Operating pressure:	Max. 10 bar (at 23 °C) Max. 7 bar (at 65 °C)

Pipe connections

- Suitable copper pipes according to DIN EN 1057 and DIN EN 12449.
- For pipes made of brass or gunmetal, locking grooves are always recommended. With a hardness ≥ 120 HV 1/10, as well as for stainless steel pipes or pipes with surface coatings (e.g. chrome), locking grooves are always mandatory.
- Plastic pipes, e.g. made of PA or PE, may be used provided they are approved by the manufacturer.
- When installing with soft, thin-walled, or synthetic pipes, support sleeves must be used.
- The couplings are manufactured and tested in accordance with DVGW W534 and DIN EN 1254-6.
- Tolerance +0.05 / -0.10 for the outside diameter of the connecting component.
- Due to its special design, the quick coupling must not be integrated into equipotential bonding systems.
- The quick coupling must not be subjected to lateral loads. Pipes and couplings must therefore be installed in such a way that lateral loads are avoided (e.g. by using pipe clamps) to eliminate such loads from the outset. Heavy components should also be secured to prevent the entire weight from stressing the connection.

Water quality

Swegon recommends water quality according to VDI 2035-2 for both the heating and cooling systems. In order to maintain the oxygen content in the water below the levels (<0.1 mg/l) prescribed in VDI 2035-2, it is recommended to install a vacuum degasser, particularly in the cooling system where it's more challenging to dissolved gas. It is also important that the pre-pressure in the expansion vessel is dimensioned according to EN-12828 for both the heating and cooling systems and that regular checks are made of the pre-pressure. The cooling and heating systems must be designed to prevent oxygen from entering the system, this is particularly important to consider when selecting flex hose, pipes and expansion vessels. When the system is filled with fresh water, it has an oxygen content of approximately 8 mg/l, however, this oxygen is consumed quickly through corrosion processes and within a few days the oxygen in the water should be consumed. Nevertheless, it is important to avoid filling the system with fresh water unnecessarily.

Automatic deaerators are often installed to facilitate filling of the system. It is recommended that the automatic deaerators are turned off once the system has been fully vented to avoid these drawing in air in the system if the pre-pressure in the expansion vessel should drop.

Installation of push-on fittings

Cutting and preparation of pipe

1. Cut the pipe perpendicular to its length.
2. Remove all burrs.
3. Use support sleeves when installing soft, thin-walled, or synthetic pipes.
4. Check that the pipe is free from damage such as sharp edges, longitudinal grooves, or similar.

Inserting the pipe

1. Insert the pipe all the way until it bottoms out in the fitting.
   NOTE! Push fully until it stops.

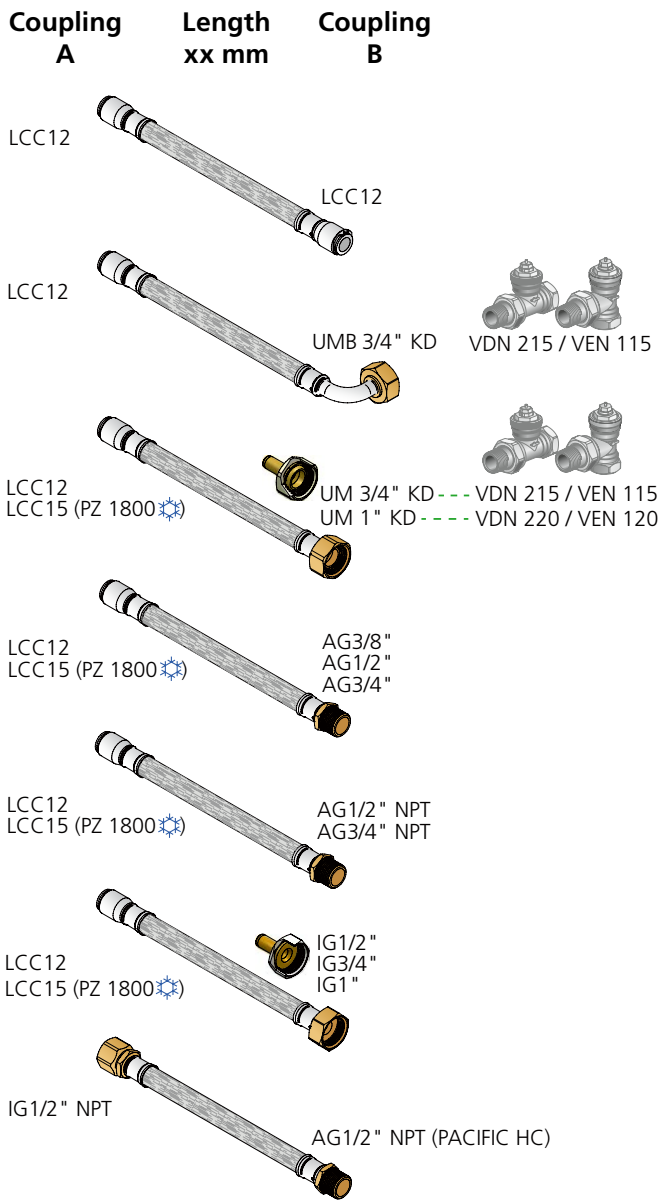
Inspection and pressure testing

1. Pull on the pipe to ensure the fitting is properly locked.
2. Install safety clips if they are included with the fitting.
3. Perform pressure testing as follows:
   - Pressurize with p = 10 bar for 10 minutes
   - Release pressure to p = 0 bar
   - Pressurize with p = operating pressure for 10 minutes

Disassembly of puch-on fitting

1. Ensure that the system is fully depressurized.
2. If safety clips are used, remove them before disassembly.
3. Remove the pipe by pressing the sleeve perpendicular against the fitting.

Figure with designation of coupling A and B
In some cases, a cross-section of the coupling and the intended valve are shown



Specification

Product

Designation	Item number
FH-LCC12-275-LCC12	83072701
FH-LCC12-475-LCC12	83072702
FH-LCC12-200-UMB 3/4 KD	83072703
FH-LCC12-400-UMB 3/4 KD	83072704
FH-LCC12-500-UM 3/4 KD	83072705
FH-LCC12-500-UM 1" KD	83072706
FH-LCC15-500-UM 1" KD	83072707
FH-LCC12-500-AG3/8"	83072708
FH-LCC12-500-AG1/2"	83072709
FH-LCC15-500-AG3/4"	83072710
FH-LCC12-500-AG1/2" NPT	83072711
FH-LCC15-500-AG3/4" NPT	83072712
FH-LCC15-500-IG 1"	83072713
FH-LCC12-500-IG 3/4"	83072714
FH-LCC12-500-IG 1/2"	83072715
FH-IG 1/2" NPT-500-AG1/2" NPT	83072716

Note! Items marked in gray are intended for the North American market

Specification text

Example of description text according to VVS AMA

Swegon's flexible hose for heating and cooling systems.

- Available with different types of connections and in several lengths.
- The OXYban-type flexible hose is a very flexible, easy-to-handle, durable and oxygen diffusion-tight flexible hose.
- Thanks to its oxygen barrier, the OXYban flexible hose is excellent for flexible connection of heating and cooling systems.