Air Liquide

# DUO200 / DUO300 / THP200
## FLEX HOSES

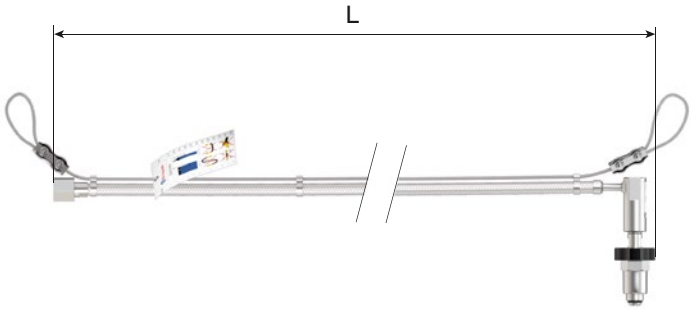
OP 1050 CWE
Operating Instructions

THP200
FOOD200

DUO200

DUO300

Dimensions



## Content



**Warning**

To preserve the quality of our product throughout its usage in the best safety conditions, please read this manual carefully and strictly follow the instructions that it contains. Non- compliane with these instructions or modification of the product many results in serious accidents or bodily injuries. Air Liquide shall not be held responsible in case of non approved usage of the product.

Air Liquide reserves the right to make all necessary modifications to the specifications described hereafter without notice.

# 1. General Information

## 1.1 Safety

First of all, it is ESSENTIAL to read and respect the safety instructions described in the document "General Safety Instructions" delivered with the product.

For safety reasons the inlet fitting and the seal of the flexible hose are specific to a gas or a mixture family, they are so designed to avoid any connection mistake.

**NEVER** use the flexible hose for an application or a gas different than the one for which it is intended.

- During operation, ensure the anti-whip safety cable has been securely fixed at its two extremities.
- During operation, ensure the anti-whip safety cable has been securely fixed at its two extremities.
- Before connecting the flexible hose to avoid any risk of falling cylinders etc., ensure that:
  - Cylinders are well attached,
  - Bundles are well settled on a plane and horizontal surface,
  - The location of the cylinders is sufficiently well ventilated.

**NEVER** dismantle a flexible hose if:

- The cylinder or bundle valve is not closed,
- The flexible hose is under pressure.

**NEVER** tighten or loosen a connection under pressure.

**NEVER** connect two flexible hoses together.

In each case slowly open and close cylinder valve. Never attempt to repair a flexible hose. In case of problem, close the cylinder valve fully, purge the flexible hose and proceed to replace with a new flexible hose.

## 1.2 Air Liquide commitments

Air Liquide certifies that the equipment is manufactured, tested and controlled, in accordance with the rules of art and design of Air Liquide.

This equipment has been degreased by special cleaning procedures and can therefore be used for oxygen service.

SG flexible hoses are compliance with the **EN ISO 10380:2012** standard.

## 1.3 ATEX Directive 2014/34/EC

The equipment is not in the scope defined in points a), b) et c) of the article of the ATEX Directive ; consequently, they shall not bear the CE marking.
The equipment are not capable of causing an explosion through their own potential sources of ignition: then, they can be installed in ATEX zone 1 or 2, as far as respecting up to date regulations, rules, operating instructions, in accordance with the sound engineering practice are followed during installation and use.
Reminder: it belongs to the end user to define the ATEX zone.

## 1.4 REACH regulation (EC) n°1907/2006

Equipment from Air Liquide can be made of brass components, which is a copper alloy with a lead content between 1 % and 4 % w/w. As requested by art. 33 of REACH Regulation (Registration, Evaluation and Authorisation of Chemicals) and with reference to current list of SVHC (substances of very high concern) available on ECHA website, we inform that lead may be present in a concentration above 0,1% w/w in our products made of brass.
Lead inclusion in the SVHC list in June 2018 does not modify the use conditions described in operating instructions.
Lead will not be released to the surrounding environment or the gas used during normal use.
After product end of life, the pressure reducers must be scrapped by an authorized metal recycler.

## 1.5 PED Directive 2014/68/EC: Pressurized equipment

The AIR LIQUIDE fittings with a nominal diameter <25 mm (e. g. pressure regulators, valves, filters, etc.) meet the requirements of Article 4, Paragraph 3 of the Directive 2014/68/EU and the provisions of the article. Therefore these devices do not bear a CE marking according to Article 18 of this Directive.

## 1.6 FOOD regulation (EC) n°1935/2004

The AL equipment enhancing the term “FOOD” in their designation are specifically designed for use with food gases used for food and beverage applications. They are compliant with Regulation EC 1935/2004 which requires that packaging and articles intended to be in contact with foodstuffs are to be manufactured in compliance with good manufacturing practices and standard operating procedures.
Thus, under normal or foreseeable conditions of use, , no transfer of contaminants, eg, metal elements, to food in quantities that could endanger human health, modify food composition or deteriorate organoleptic characteristics is expected.
Nethertheless, the end-user must check the compliance with an eventual national regulation.
Articles for food usage has a Food logo marking.
For traceability purposes, the batch number is written on each article and AL can perform a batch recall, as requested by its Quality.

## 1.7 Cleaning

Each equipment is subject to a grease removal and a high quality cleaning to preserve the purity of gas in the equipment as well as for use with oxygen for compatible equipment.
A suitable packaging protects the equipment against exterior pollutants during storage and transport.
Take care to avoid polluting the equipment during installation.

## 1.8 Warranty

The standard warranty period is one year from the date of delivery in accordance with the general terms and conditions of Air Liquide Deutschland GmbH, Air Liquide Austria GmbH and Carbagas AG. The standard warranty period is only valid for goods that have been used according to the operating manual and generally applicable industry practices and standards.

# 2. Field of Use

## 2.1 Intended Use

High pressure stainless steel hoses from Air Liquide are designed to transport compressed and dissolved gases under pressure, from pressurized gas cylinders or bundles with up to 300 bar filling pressure (depending on the technical design), safely to the gas manifold.
Gas purity is guaranteed up to and including N60.

These operating instructions apply to the product lines:

- DUO 200
- THP 200
- FOOD 200
- DUO 300

Technical data such as operating pressure and gas compatibility can be found in the actual data sheet of the corresponding product line.

## 2.2 Unintended use

- The equipment must not be used for liquid gases
- The equipment must not operate at ambient temperatures below -20 °C and above +60 °C.
- The equipment must not be modified or used contrary to its intended use.

# 3. Assembly – Activation

## 3.1 Precautions before assembly

- After opening the packaging, check that the equipment is not damaged and that the contents correspond to the accompanying delivery notes.
- Flexible hoses are sensitive to various mechanical constraints, before start of use, follow the recommendations of Air Liquide:
  - Act cleanly in order not to pollute,
  - Avoid twisting,
  - Avoid or limit vibration risks,
  - Avoid or limit “water hammer”,
  - Avoid tension and compression stress.
- Assemble the flexible hose in a ‘U’ shape with the single curve produced by using the right connection (straight or angle) and with appropriate length (1,3 or 2,5 mt).
- Ensure the assembly of the flexible hose is such that it’s curvature on the bend is higher than the allowed minimum:
  - R > 140 mm for DN5 and DN6
  - R > 190 mm for DN10.

## 3.2 Mounting

**Attachment of the safety cable(s):**

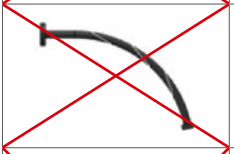
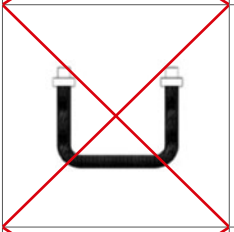
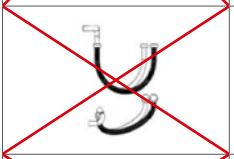
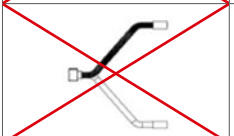
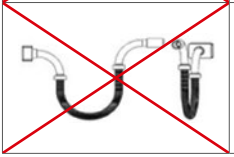
At flexible outlet:,on gas manifold:
Guide the safety rope through the opening provided. Attach the snap hook (only for bundles) to the attachment point on the bottom.

- At flexible inlet, on the cylinder (with the loop) or on the bundle (with the snap hook).

**Flexible mounting:**

One end to cylinder/bundle, the other end to the gas manifold (semi-automatic or panel).

- At the gas manifold: check the seal in the nut and replace if necessary.
- Attach nut of hose hand-tight to antiflapping or check valve which is mounted on the manifold.
- Tighten with wrench. Caution: Counter with second wrench, on body of anitflapping or check valve, so that the connection to gas manifold is not impaired.
- At Cylinder or Bundle: check the seal, replace if necessary
- Hand tighten the union nut or hand connection of the hose to the bottle/bundle valve.
- For flat seals, tighten with a hexagonal wrench, or by hand for O-ring seals.

| Wrong use | | Correct use |
|---|---|---|
|  | Don’t pull the hose off, uncoil it. |  |
|  | Don’t twist the hose, install it torsion-free. |  |
|  | Dimension the hose adequately, pay attention that the flexible length is not too short. |  |
|  | Avoid any obliquely movement to the installation plane, the movement should be in the hose axis only. |  |
|  | Avoid overbending when suspending the hose, use a support roll. |  |
|  | If larger axial movement has to be absorbed: don’t install the hose in a straight line, install it in a U-shaped bend. |  |
|  | Avoid torsional twist when fittings are not in line, install in one plane only. |  |

## 3.3 Activation

- Slowly open the cylinder valve and, in two stages:
  - Slowly and partially open the cylinder valve and wait for the balancing of the pressures.
  - Always slowly complete the total opening of the valve.
- Close the cylinder valve and check on the high-pressure gauge of the manifold that the pressure does not change.
- Slowly open the purge valve on the manifold valve inlet block and de-pressurise the hose leaving a small residual pressure showing on the pressure gauge before closing the purge valve.
- Repeat above 4 to 6 times the purge cycle (air / moisture contaminants) from the hose.
- Open again the cylinder valve. Proceed slowly to avoid “water hammer”
- Check the tightness of the assembly (upstream circuit closed). The tightness of each flexible hose, being controled in factory, it remains nevertheless necessary to check the tightness of connections.
- On the flexible hose label, indicate the expiry date. Permanently mark the corresponding Month & Year.

**Never** tighten a connection under pressure

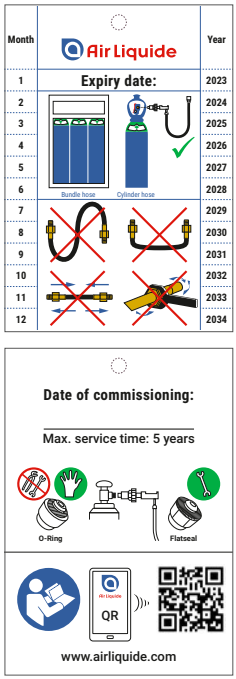
# 4. Marking

## 4.1 Indications on the flexible hose

Every flexible hose carries following marking:

- ISO 10380.
- Flexible hose type (example: T2 10a).
- Manufacturer Identification.
- Tube material.
- Date of manufacture (month / year).
- Nominal Pressure in Mpa and, between brackets, in bar.
- Reference n° for the tracebility of the product and link with the compliance test certificate.

**Label**



# 5. Maintenance

## 5.1 Troubleshooting

| Fault | Cause | Remedy |
|---|---|---|
| Assembly impossible | Connections do not connect | Verify the compatibility of gas, the inlet and the outlet |
| | Fittings are damaged | Change the flexible hose |
| Gas leak | Tightening failure* | Close the cylinder valve and change seals |

* In the case of hoses with metal / metal sealing, if there is a leak, change the hose.

## 5.2 Maintenance

Flexible hoses require a periodic check. The periodicity of this check depends on flexible hose use conditions (number of cycles, type of gas, environment...).

The maximum flexible hose lifetime is **5 years** from the date of activating.

The flexible is designed to resist 1000 hydraulic pressure cycling : on a bundle/cylinder change basis and taking into account purging cycles, the maximal lifetime is **5 years**. However the date of replacement of the flexible hose should not go over 1000 pressure cycling. The pressure cycles are determined by the conditions of use and the implemented gas. The replacement cycle frequency may be reduced by Air Liquide depending on the use conditions and the gas implemented.

Local regulations may also apply. AL advises to respect the regulations at all times. It is the users responsibility to ensure that this is followed and respected.

When installed this expiry date needs to be clearly pointed out by perforating the label fixed to the flexible hose.

# 6. Disposal

In accordance with Directive 2008/98/EC on waste, the equipment holder ensures that, where recovery in accordance with Article 10 is not undertaken, waste undergoes safe disposal operations which meet the provisions of Article 13 on the protection of human health and the environment.

The holder shall take measures to promote high quality recycling and, to this end, shall set up separate collections of waste where technically, environmentally and economically practicable and appropriate to meet the necessary quality standards for the relevant recycling sectors.

The AL equipment should be removed and/or recycled in compliance with the current national regulations.
If the equipment is put out of order, its disposal has to follow the safety regulations for people and environment.
The plastic or metallic components must be disassembled and gathered by kind of material.
Materials can be then processed as a waste or recycled.

## Contact

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Air Liquide

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