

Commissioning

Before commissioning the ORELL dampers the following checks should be executed:

1. Compare precharge pressure with the precharge pressure indicated on the label, if necessary, refill with nitrogen or air (see instructions for testing and increasing the precharge pressure using a VG U).
2. Fill damper carefully on the fluid side and set under hydraulic system pressure.
Bleed any air in the hydraulic fluid pipe connection during filling.
3. Check damper on gas side for leaks using a leak detection spray.

Following procedures should be adopted for dampers with level indicator:

1. Close stop valve on gas and water side.
2. Compare precharge pressure with the precharge pressure indicated on the label, if necessary, refill with nitrogen or air (see instructions for testing and increasing the precharge pressure using a VG U).
3. Fill damper **carefully** on the fluid side and set under hydraulic system pressure.
Bleed any air in the hydraulic fluid pipe connection while the filling procedure.
4. Check damper on gas side for leaks using a leak detection spray.
5. Open stop valve on gas side (only for dampers with analogue display).
6. Check level indicator for leaks.
7. Open stop valve on water side.
8. Mark liquid level (gas/water) at static / dynamic pressure.
9. Close stop valve on gas and water side (only for dampers with analogue display).

Stop valves of level indicators with magnetic switches for permanent level control always remain opened.

Operation

ORELL dampers work, except for regular checks of the precharge pressure, maintenance-free.
Make sure that the dampers are not subject to any external mechanical load.

Precharge pressure testing (recommendation)

After new installation of the ORELL dampers the precharge pressure must be checked as follows:

- At least once during the first week, so that large nitrogen losses can be detected and eliminated immediately.
- If no losses are detected at the first check, the second should be carried out after approximately 3 months.
- If no considerable gas losses are detected at the second check, the interval of periodic checks can be extended to annual checks, depending on mode of operation.

Checking the precharge pressure with VG U (see OLD 1160)

1. Isolate the damper from the hydraulic system. For dampers with level indicator close the stop valve and discharge the fluid side using the connecting flange drain valve. Leave the drain valve open!
2. Check precharge pressure with built-in damper manometer.
3. Compare precharge pressure with the precharge pressure indicated on the label. If requested, fill damper carefully with nitrogen or air (instructions for increasing the precharge pressure).
4. Check damper on gas side for leaks using a leak detection spray.
5. Recommission the damper.

Important note!

When discharging the hydraulic system, for example during maintenance in a pump station, at dampers with level indicator the stop valve on gas and water side must be closed to ensure, that the precharge cannot escape through the level indicator! The damper must not be precharged without back pressure (dry) for quite some time .

Therefore we recommend discharging the precharge pressure after max. 7 days!

Increasing the precharge pressure using a VG U (see OLD 1160)

1. Isolate the damper from the hydraulic system and discharge the fluid side. Leave the drain valve open!
2. Check the precharge pressure.
3. Unscrew the gas valve cap.
4. Screw the compressed air or nitrogen cylinder charging hose onto the gas valve.

Caution:

- **Never** use oxygen - **Explosion hazard!**
 - Do not connect the charging hose directly to the nitrogen cylinder without using a pressure reducer!
5. Open carefully the compressed air or nitrogen cylinder and the pressure reducer stop valve. Let the air or the nitrogen slowly enter the damper until the desired precharge pressure is reached.
 6. Close the compressed air or nitrogen cylinder and the pressure reducer stop valve. Check and if necessary adjust the precharge pressure after 5 to 10 minutes (to allow for temperature equalisation) as previously described.
 7. Unscrew the compressed air or nitrogen cylinder charging hose from the gas valve.
 8. Check the gas valve and the damper on gas side for leaks using a leak detection spray.
 9. Screw the gas valve cap.
 10. Recommission the damper.

General Information

Precharge pressure

The precharge pressure is of crucial importance for the proper functioning and serviceable life of the damper. Generally, the precharge pressure P_0 is calculated and defined by ORELL. As a rule $\leq 80\%$ of the minimal working pressure P_1 is recommended, but at least 20% of the maximal working pressure P_2 .

Important note

The precharge pressure changes with the temperature. Therefore, checks should always be made at the same temperature.

Caution!

The dampers are charged with nitrogen, to prevent risk of explosion with unknown hydraulic fluids. With water, air can be used as well. The use of oxygen is forbidden!

Installation

Location

In order to achieve the highest efficiency, the damper should be installed as close as possible to the system application. To allow to attach the tester and pressurizer, a space of 200 mm must be left free over the gas valve.

Position

ORELL dampers without legs can be installed vertical (gas valve upwards) to horizontal. Large dampers with legs are available in horizontal or vertical construction.

Mounting

By means of clamps, support brackets or standing on legs.

No attachments of any kind must be welded onto the damper!

Installation

We recommend the mounting of a stop and drain valve unit to enable isolation of the damper from the hydraulic system and to discharge the fluid side.

VG U Tester and Pressuriser (see OLD 1160)

