

Pressure strength test for bare shaft blower

Process description



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1 Pressure strength test

1.1 Application range

Bare shaft blowers of the types

- BS3 to BS240

1.2 Definition

In the pressure strength test, the components exposed to pressure medium are pressure-tested internally with either air or water (hydrostatic test).

1.3 Aim of the test

The pressure strength test intends to verify the bursting strength (static tensile strength) of the housing components.

1.4 Test conditions

Auditor

The test is carried out by instructed personnel.

Location

Water basin or test facility, frost-free environment

Test medium

Air or tap water

Test pressure before commissioning

$$P_T = 1.43 \times P_S$$

P_T = test pressure

P_S = maximum permissible pressure (corresponds to the maximum pressure specified by the manufacturer for which the pressure equipment has been designed)

Test pressure for recurring testing

$$P_T = 1.3 \times P_B$$

P_T = test pressure

P_B = maximum permissible working pressure (corresponds to the maximum pressure in normal operation – in bar – at which the machine/machine stage is operated)

Test device

Calibrated pressure gauge quality grade 1

Pressure strength test

Test sequence > Testing with water (hydrostatic test)

Test duration

The test duration is divided into three time periods:

- Period 1
Building up the test pressure to a defined value
- Period 2
Dwell time for the test pressure: 30 minutes
- Period 3
Relieving the test pressure to atmospheric pressure

1.5 Test sequence

1.5.1 Testing with air

The fully installed machine stage may only be tested with air.

The test sequence consists of the following steps:

1. ➤ Seal openings with plugs and dummy flanges.
2. ➤ Fully immerse the machine stage in the water basin.
3. ➤ Apply the specified test pressure to the machine stage via the feed socket at the dummy flange.
4. ➤ Monitor and document the pressure drop over the duration of the dwell time.
 - ⇒ If there is no impermissible pressure drop within the specified time, the test is passed without reservation.
5. ➤ In the event of an impermissibly large pressure drop, locate the leak and rectify it.
 - ⇒ Repeat the test procedure until the specifications are met and the test is passed without reservation.

1.5.2 Testing with water (hydrostatic test)

Only individual components of the machine stage, such as cylinders and side plates, may be subjected to a hydrostatic test.

The inner rotor seals must not come into contact with water.

The test sequence consists of the following steps:

1. ➤ Seal openings with plugs and dummy flanges.
2. ➤ Completely fill the housing with water via the feed socket at the dummy flange.
3. ➤ Vent the housing at the highest points in order to avoid hazardous air pockets.
4. ➤ Apply the specified test pressure to the housing.

- 5.** ➤ Monitor and document the pressure drop over the duration of the dwell time.
 - ⇒ If there is no impermissible pressure drop within the specified time, the test is passed without reservation.
- 6.** ➤ In the event of an impermissibly large pressure drop, locate the leak and rectify it.
 - ⇒ Repeat the test procedure until the specifications are met and the test is passed without reservation.

1.6 Documentation

The result of the test is documented in an inspection certificate 3.1 in accordance with DIN EN 10204.

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