1. Purpose
   The purpose for this instruction is to describe the guidelines for the testing of Norske Ventiler's products.

2. Responsibility
   Each employee is responsible that the tasks are carried out according to this instruction and that he and she has the relevant instruction available for the present test.
   The tests must be approved by qualified personnel (Production 4.2.).

3. Definition

Maximum working pressure:	MWP = Specified on the main drawing.
Temperature area:	Specified on the main drawing.
Time- and leakage rates:	Is specified in the test standard on the main drawing.
Remarks:	Before each task is started the employee must communicate with the technical manager or the pointed project manager to verify that the above mention information is according to the customers order acknowledgement.

4. Description

Preparations before the test.

The product is given a visual control (Production, 3.1). Install the product to the test equipment with the flow direction (if specified) as showed on the main drawing.

The main drawing specifies witch tests the actual valve must execute. The tests shall normally be executed in this order:

- Low pressure seat test with water. (Only if specified on the drawing).
- High pressure seat test with water.(All valves)
- Test of operation on the spindle.(All valves except check valves)
- "Back-seat test" with water (If specified on the drawing)
- "Body" test with water. (All valves)
- High pressure seat test with gas(N2)(only if specified from customer)
- High pressure body test with gas (N2)(only if specified from customer).

For the valves that have not a defined flow direction the seat tests must be performed from both ends.
For combination valves, seat tests (low pressure and high pressure) and eventually"back-seat test" are to be performed according to the following table:

	Low pressure-air seat test	High pressure-water seat test	"Back-seat test"	Body test
Needle valve		X		X
Ball valve	X	X		X
Check valve		X		X
Gate valve	X	X	X	X
Globe valve	X	X	X	X

High pressure gas test on seats and body can be performed on all valves.

Pressure test description

Pneumatics low pressure test of seat(s) with air.

Pressure:	6 bar
Performance time	1 minute (or according to the specified test standard)
Demand:	The leakage rate is specified in the test standard stated on the drawing, in addition the product parts shall not show signs of destruction.

Hydrostatics high pressure test of seat(s) with water.

Pressure:	MWP x 1,1
Performance time:	1 minute (or according to the specified test standard)
Demand:	The leakage rate is specified in the test standard stated on the drawing, in addition the product parts shall not show signs of destruction.

Test of the operation of the spindle.

Pressure:	MWP x 1,1
Demand:	The valve shall be operated without use of extra tools. Necessary operation moment is noted in the test log.

Hydrostatics test of ”back-seat” with water.

Pressure:	MWP x 1,1
Performance time:	1 minute (If not specified in the test standard on the main drawing).
Demand:	The leakage rate is specified in the test standard stated on the drawing, in addition the product parts shall not show signs of destruction.

Hydrostatics test of body and the stem packing with water.

Pressure:	MWP x 1.5
Performance time:	1 minute (If not specified in the test standard on the main drawing).
Demand:	The leakage rate is specified in the test standard stated on the drawing, in addition the product parts shall not show signs of destruction.

High pressure gas test of seat(s) with N2.

Pressure:	MWP x 1,1 (or acc. to customer demands)
Performance time:	1 minute (or according to the specified test Standard/customer demands)
Demand:	The leakage rate is specified in the test standard stated on the drawing/customer demands, in addition the product parts shall not show signs of destruction.

High pressure gas test of body and stem packing with N2.

Pressure:	MWP x 1,1 (or acc. to customer demands)
Performance time:	1 minute (or according to the specified test Standard/customer demands)
Demand:	The leakage rate is specified in the test standard stated on the drawing/customer demand, in addition the product parts shall not show signs of destruction.

Final tasks of the pressure test.

Remove the test object from the test equipment.
If there are any testplugs or bleed plugs remove them form the testobject. The testobject is to be wiped, air dried and cleaned. Preservation fluid if applicable is described on the orders production spec/end control.
The test is documented on the test certificate, Production, 7.1 where there are stated a unik number. This number is to be logged in a separate file for all the test certificates. The original certificates are filed on the computer.

1 copy of the test certificate is filed in the order file.
1 copy of the test certificate and 1 copy of the material certificate shall be produced for every test object
The test object is to be marked according to ISO 7.3.7.
Every valve tested at Norske Ventiler shall be logged in the test log, Production, 7.3. The valves are logged accordingly.
The product will be packed according to Production, 8.

If the valve is not to be used within six months, it can be an advantage to loosen all the glands. If this is done, the valve must be marked explicitly that this has been done.

5. Description of Norske Ventiler's test equipment.

Hydrostatic pressure seat bench

Maximum pressure:	1600 bar – 23205 psi
Medium:	Water, potable (supply is required max chlorine residue 50 µg/l) Medium temperature as specified in the test standard on the main drawing. Special requirements (corrosion inhibitor, gas service etc.) is specified on the main drawing.

Pneumatic pressure test equipment

Maximum pressure:	1000 bar
Medium:	Air or Nitrogen

For all test equipment the pressure is measured using manometers, tolerances varying 0.15bar to 9.6 bar depending on the manometer range (varying from 0-25bar up to 0-1600 bar).

Remark: Shall not be used when the test is above 20 bar without necessary security procedures are effectuated.