Flow Test Device LTS 673

Technical Information

dr. wiesner prüftechnik®

Basic functions

The *LTS 673* flow test device can be used to check hollow objects for leaks.
It was developed as a variant of the leakage testing system *LTS 670* and, because of the large nominal width of its valves, it is especially suited for testing parts with very large filling volume and for medium to large admissible leakage rates.
The device comes equipped with a desk top housing and can be controlled manually or using external control signals.

All device models feature the following basic functions:

- 64 test programs
- Display of measured values in various formats on the built-in LCD display
- Textual help for setting parameters
- Password protection against unauthorized change of parameters
- Permanent self-test using monitoring of the measurement signal
- Serial interface for output of measuring values to a subsequent process data documentation system or a printer
- Test process controlled manually or by external signals
- Comprehensive testing functions and diagnosis features
- Statistical functions

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Testing

Testing method
The device operates according to the flow metering method.
For this method the test piece is filled via a bypass pipe with a large diameter. After the pre-set filling time has passed or the test pressure has been reached, the bypass valve is closed. The air escaping from the test piece is led to a flow sensor.
The flow is displayed on the measuring electronics with adjustable limit values.
After an adjustable damping period, the measured flow is evaluated. The test result is displayed with one green (OK) or 2 red (NOK) LEDs. After the test has ended, the displayed measurement value is transmitted via serial interface.
A Laminar-Flow-Element (LFE) with a differential pressure transmitter is used for measuring.

Test procedure
- Select existing test program or enter new time and limit values.
- Start by pressing the “Start” button on the front panel or by sending an external control signal.
- Filling
- Damping
- Flow measurement (testing)
- Hold (value display is frozen)
- Evaluation
  Test result “Poor” must be acknowledged by pressing the “Stop” button; if test result is “Good”, the procedure is continued by
- Emptying

By pressing the “Stop” button, the test routine can be stopped at any step. In this state, the display of the remaining time switches to negative time so that the duration of the interruption can be determined at any time. Press the “Start” button to continue the test run. Press the “Stop” button twice to terminate the test.

Display during test
During each test step, various textual information will be displayed.

Before start:
Test program and the state of the integrated statistics counters in the upper rows, result and measured value of the last test in the lower rows.

In the filling step:
Test program and the state of the integrated statistics counters in the upper rows, text “Filling”, display of remaining time, and measured value of the test pressure monitoring in the lower rows.

In the damping step:
Test program and the state of the integrated statistics counters in the upper rows, text “Damping”, display of remaining time, and measured value of the test pressure monitoring in the lower rows.

In the test step:
Test program and the state of the integrated statistics counters in the upper rows, text “Damping”, display of remaining time, and measured value of the flow rate in the lower rows.

In the emptying step:
Test program and the state of the integrated statistics counters in the upper row, text “Testing”, test result, and measured value of the flow rate in the lower rows.

Test results
- Red LED “>” is on, output “Poor” is set.
  Measured value at the end of test time exceeds upper limit value.
- Red LED “<” is on, output “Poor” is set:
  Measured value at the end of test time is smaller than the lower limit value.
- Green LED “=” is on, output “Good” is set:
  Measured value at the end of test time is within the pre-set range between limit values.
- All three result LEDs are on, output “Poor” is set: The test was terminated by pressing the “Stop” button twice, the test piece cannot be evaluated.

The measured value and the measuring result (good or poor) are saved until the start of the following test or until the “Stop” button is pressed.

Statistics

The statistics menu shows the following information:

Total	Number	Percent
NOK	Number	Percent
OK	Number	Percent
NOK total	Number	Percent
Flow	Number	Percent
Rough/Wrong	Number	Percent
OK results		
minimum	Value	
maximum	Value	
mean value	Value	

Interfaces

Interface to external control
The plug of the electrical part of the standard test device is assigned as follows:

Inputs:
Start
Stop/Interruption
Test program bit 0
Test program bit 1
Test program bit 2
Test program bit 3
Test program bit 4
Test program bit 5

Outputs:
Ready
Test running
Pause
Test result Good
Test result Poor
Test finished
Mark OK part
Signal end of test
Error
Pre-filling

Voltage:
+ 24 V Power output for external opto coupler or relay with potential-free input
0 V Input as reference potential for the test device outputs.

The test device outputs and the 24V voltage output can be loaded with 0.5 A each. However, the overall load in the basic device must not exceed 2.5 A. A stronger power supply is available upon request.

Serial interface

After the completion of each test, a character string is transmitted containing the test result, the measured value, and the test program.
The output of date and time, and test pressure can be switched on and off. Optionally, the flow test device *LTS 673* can be equipped with an interface extension to integrate the number of the selected test connection into the result output.

Technical data

Supply:
electrical: U = 230 V, 50 Hz
pneumatic: clean pressurized air, max. 7 bar

Power rating of the outputs:
individual maximum 0.5 A
total maximum 2.5 A
stronger power supply is available upon request.

Pressure range:
manually adjustable 0 … 1000 mbar
display calibrated at 500 mbar,
other calibrations upon request

Adjustable times:
Filling time: 0.0...3,000.0 sec
Stabilisation time: 0.0...3.000.0 sec
Test time: 0.0...3,000.0 sec
Emptying time: 0.0...3.000.0 sec

Available measuring ranges:
0.3...3 l/min
1.5...15 l/min
5.0...50 l/min
12.5...125 l/min
other measuring ranges upon request

Measuring accuracy:
<±5% of max.

Housing:
desk top housing 19“, 6HE
520x286x430mm (wxhxd)
from measuring range 5…50 l/min:
520x286x530mm (wxhxd)
with separate slots for electrical and pneumatic parts

supply connections, interfaces and main switch on back panel

optional IP54 metal housing

Serial interface

9600 bps
1 start bit
8 data bit (ASCII characters)
1 stop bit
no parity check

Available options

- Metal housing, protection type IP 54 600x345x515mm (wxhxd)
- two externally selectable test connections
- second measuring range
- Integrated PLC to control a fastening and sealing device
- Test start via external switch
- Enforced voltage supply
- Test and calibration aids
- Special protocol for serial interface