VALVE TEST UNIT

MODEL: HC150

RANGE: 2 – 24” / DN50 – 600 mm.
HC-150 Test Unit

The Ventil HC150 is an universal and versatile test unit for pressure testing shut off and control valves. The design and configuration is based on many years of experience in safety valve testing and repair. The test unit is fully built in-house and only first class components and materials are used. The HC150 is delivered ready for use.

Control Panel

Clear, ergonomically designed control panel for operating the clamping system and controlling the test systems. The stainless steel control panel is provided with tag plates to identify all operation parts / devices and equipment.

Test Station

The HC150 clamping station is developed for quick and safe clamping of all conceivable types of shut off and control valves. The clamping force is applied by a computer operated proportional hydraulic system. As a result the HC-150 clamping station can test valves without exposing the valve body to a linear force that can cause stress (deformation) of the valve body. The clamping system is completed with a provision for soft clamping the valve.

Test Systems

Gas / Air Test System 0 – 7 bar / 100 PSI.
Liquid Test System 0 – 400 bar / 5,800 PSI

Maximum Test Pressure

<table>
<thead>
<tr>
<th>VALVE SIZE</th>
<th>MAXIMUM BODY TEST PRESSURE</th>
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<tr>
<td>Inch/mm</td>
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</tr>
<tr>
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<tr>
<td>8-10</td>
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<tr>
<td>12</td>
<td>300</td>
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<tr>
<td>14-18</td>
<td>350-450</td>
</tr>
<tr>
<td>20-24</td>
<td>500-600</td>
</tr>
</tbody>
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Contact us for smaller or larger test units, higher test pressure levels and custom build solutions.
Computer Registration System.

The Ventil Computer Registration System (CRS) exist of a full integrated PC system, set of accurate pressure transducers, A/D conversion unit and in house developed shut off valve test software. The main purposes are:

- Digital reading of test pressure, test time etc.
- Measuring seat leakage (bubble per minute) using installed laser bubble counter.
- Storing and printing customized test report of test certificate.

Working in Native Language

The CRS is can be set in a variety of languages. If a language is not standard installed, a translation function can be used to adapt the program text.

Support and Trouble shooting

Need help, an upgrade or additional function, the Ventil IT service department is available for answering questions. The remote access over internet allows efficient and quick service anytime, anywhere.

Customized Test Report / Certificate

The Ventil CRS is completed with report generator function to design a customized certificate lay-out. This includes add texts, adapting the language and placing company logo and other details at the report.

System Configuration

- State of the art Computer system (windows 7 pro. and HP Deskjet color printer, fully integrated.
- CRS test software, ready for use.
- Industrial trackball (‘mouse”) 
- Laser controlled bubble counter.
- Pressure transmitters, full range.
- A/D converter.
Safety Measures

The HC150 is designed and built according to high safety standards. To ensure safe operations, the test unit is standard completed with the following features:

Safety Screen

The clamping system and control panel are separated by a ridged safety screen with ½”/12 mm thick, clear Lexan (Polycarbonate) screen for keeping a clear and direct visual on the test object.

Safety Interlock at Clamping System

This automatic safety system blocks the clamping force when the test object is being tested. This ensures that the clamping force can only be released when the test pressure is fully released.

Flash Light (Under Pressure)

The orange colored LED flash light on top of the control panel is automatically activated when the test object is pressurized and deactivated when the test pressure is fully released. This warns the operator and personnel in the surrounding that the test object is under pressure and a test is ongoing.

2-Hand Operation (Kill Switch)

The high pressure liquid test system is completed with a hand operated (spring return) push button for allowing the test circuit to increase pressure. This way it is ensured that the operator will stay safely behind the safety screen when the valve is being pressurized.
General.

Test Unit Maintenance.
The HC150 requires minimum maintenance. Generally the test unit only has to be kept clean to ensure a safe and reliable performance. Periodical maintenance, testing and calibration instructions are described in the test unit manual.

Certification.
At Ventil we only use first class instruments to ensure best quality and reliable test results. The delivery includes the following documents:

- Test- and calibration certificates for all installed test pressure gauges and pressure transmitters.
- Factory acceptance test (FAT) certificate, according to DIN 50049 and CE89/392/EEG for test units.

Testing and inspection.
Testing will be done according our QC plan against a project related inspection plan and inspection procedure. Following tests are foreseen:

- Performance and functional tests at our works.
- NDE test at maximum working pressure.
- Visual inspection.
- Drawing and documents verification.
Optional Systems.

The test unit will work without any of the following offered options but depending to application these systems could increase the performance and efficiency of the test unit.

Option 87 – High pressure gas test system

Fully integrated test system for testing with compressed air, Nitrogen or Helium from an external supply source. The gas test system can be used for testing (for example) control valves or execute Emission test procedures. The system is completed with a dedicated set of controls for testing with test pressure 0 – 200 bar / 2,900 PSI.

Option 88 – Seat leakage measuring system for Control valves

For testing / classifying the control valve seat leakage accordance to international test standards FCI 70-2, Class I – VI with gas (compressed air). The range of the system is 0 - 100 ln / min (0 - 200 ft3/hr). The system contains an complete set of accurate, digital flow measuring instruments, connected to the Computer Registration System (CRS).

The installed flow meters have the following range:

- 0.05– 1 ln/min.
- 0.5 – 10 ln/min.
- 5 – 100 ln/min.

All (3) instruments are delivered with calibration certificates. The leakage (flow) is shown on the computer screen. The system enables the user to monitor the leakage in different units, for example liters per minute or cubic foot / hour. The computer assists the operator to select the right, most accurate instrument for the application.

This option includes update of CRS software allowing to test valves according to FC70-2 standard.

Option 89 – Actuator test- and control systems

The reliable and accurate working of control valves is effected by all components i.e. valve body, actuator, positioner, regulators etc. and can only be achieved when all items work together in strict harmony. Therefore the test unit can be completed with the actuator control - & test system to test and adjusting the ‘trim’ of the complete (control) valve to the manufacture specification or process requirements. The valve is sent to the open-/close position by operating the actuator and/or positioner with external signals;

- 0 – 20 PSI with accurate regulator, change-over valve, quick couplers and digital reading.
- 0 – 100 PSI with accurate regulator, change-over valve, quick couplers and digital reading.
- 24 Vdc. with on/off switch (with light) for operating solenoid valves.
- 0 - 20,5 mA with fixed steps 4/8/12/16/20 and variable setting and digital reading.
Option 91 – Valve Support

For safety reasons, it is advised to keep the valve hanging in a crane during the complete clamping and test procedure. To enable the operator to remove the crane, the HC150 can be optionally completed with a valve support system for supporting the valve during (un)clamping and testing. The support (see picture) is manually operated in horizontal direction and automatic, hydraulic operated up and down.

Option 92 – Quick Filling – Vacuum System

To assure an accurate and safe test procedure with liquid, the valve must be filled completely and most of the trapped air must be removed from the valve subjected to test. In case the valves to be tested do not have a de-airing possibility the test unit can be completed with a vacuum – filling system for quickly filling the valve body when it is clamped in horizontal position.

This system first creates a vacuum in the valve and then quickly shifts over to filling. Depending to the shape of the valve this system will remove 90-95% of the trapped air. The vacuum – filling system is operated with simple push button operation.

Option 99 – Liquid Test System Upgrade 689 Bar / 10,000 PSI

Upgrade maximum test pressure to 689 bar / 10,000 PSI to body test valves with a 2500 LBS rating. The upgrade includes an additional 700 bar / 10,000 PSI pressure transmitter and additional SS liquid pump to maintain quick testing times.

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<tr>
<td>2-5 (50 - 125)</td>
<td>689 Bar / 10,000 PSI</td>
</tr>
<tr>
<td>6 (150)</td>
<td>558 Bar / 8,090 PSI</td>
</tr>
<tr>
<td>8-10 (200 - 250)</td>
<td>345 – 255 Bar / 5,000 PSI – 3,700 PSI</td>
</tr>
<tr>
<td>12 (300)</td>
<td>170 Bar / 2,465 PSI</td>
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<tr>
<td>20-24 (500-600)</td>
<td>65-45 bar</td>
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Option 52 – Spare Parts and Consumables set.

Set of spare parts and consumable items for 2 years normal use.

The package includes:

- 2 Shop air inlet filters.
- 2 Block / release needle valves.
- 2 Sets of high pressure seals for valves up to 24” / DN 600 mm.
- 1 Pressure switch.

### Datasheet
Range | 2" – 24" / DN50 – 600 mm.
---|---
Test Station Operation | Hydraulic proportional operated, via CRS software.
Gas / Air Test System | 7 bar / 100 PSI
Liquid Test System | 400 bar / 5800 PSI.
Quick Filling | Centrifugal pump, operated from control panel.
Water Reservoir | 600 L
System | Accurate Regulator with two SS Needle Valves
Digital reading | CRS computer System with Valve Test Software
Computer Hardware | Modern PC, Windows 7 Pro, industrial trackball at control panel
Pressure Reading (master gauge) | Pressure Gauge. 0 – 400 bar / 5800 PSI cl 0.6
Digital Pressure Measurement | Pressure Transmitter. 0 – 100 bar / 1450 PSI 0.3% F.S.
| Pressure Transmitter. 0 – 400 bar / 5800 PSI 0.3% F.S.
Laser Bubble counter | 0-50 bubbles per minute (connected to CRS)
Test Procedures according to common test standards. | Body test and seat test procedures
Seat tightness testing using bubble counter or drip counter.
O’ring sealing plates | RF connection (DIN/ANSI) up to maximum pressure level.
Universal sealing plate | N/A
Force generation | Automatic, proportional with test pressure
Clamping Force (maximum) | 150 Metric tons.
Clamping Force (minimum) | 3 Metric tons
Clamping Table Diameter. | 2 x Ø 150 mm. / 17.3": + 2 x Ø 660
Clamping Table Material. | Carbon Steel
Distance between tables | 1,500 mm / 60 Inch (Please check with maximum body length)
Distance between columns | 1,000 mm / 39.4 Inch (Please check with maximum body width)
Safety features (standard) | Safety screen
| Safety interlock embedded in the operating system
| ‘Kill’ switch (2-hand operation)
| Flash light, connected to the high pressure test system(s)
Dimensions / weight | 4.55 x 2.2 x 2.1 m – 4,500 kg / 14.9 x 7.2 x 6.9 ft – 9,920 lbs.
Required connections | Electricity : 400 V 50 Hz. 3 phase + ground + neutral
| (Please advise for other requirements)
| Air : utility air 7 bar / 100 PSI
| High pressure : nitrogen / compressed air source (only with option 87)
Delivery | Ready for use (see optional features)