

VENTIL[⊕]

TEST BENCH MODEL: HC5

TECHNICAL SPECIFICATION



UNIVERSAL TEST BENCH FOR SHUT-OFF AND CONTROL VALVES
RANGE: ½ - 4" / DN15 - 100 MM.



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TESTING SHUT-OFF AND CONTROL VALVES

Industrial valves are crucial assets and play a key role in the operation of any continuous generating process plant. Valves either isolate the pressure, regulate the flow or protect the process plant. It is therefore obvious that the plant efficiency is directly affected by the non-performance of valves, either in terms of output or in terms of reliability and availability. Valves should be given the right treatment and be correctly tested to ensure that they will fulfil their important role.

TEST BENCH HC5

The Ventil **HC5** is an universal and versatile test bench for shut-off and control valves ½ - 4 / DN15 - 100 mm. Main features and unique characteristics of this test bench;

- ⊕ Gas and liquid testing of all kinds of linear body pattern shut-off and control valves, according to all common international test standards, such as; API 598, EN 12266-1 and ISO 5208.
- ⊕ Design and configuration based on many years of experience in valve testing and repair.
- ⊕ Fully built in-house, only first class components are used.
- ⊕ Standard completed with the unique, fully integrated, Windows 10 Ventil Computer Registration System.
- ⊕ Delivered ready for use, including all necessary safety features, globally used by numerous manufacturers, end-users and valve repairers.



Test systems		
Gas / air test system	0 - 7 bar / 100 psi.	Compressed / utility air
Liquid test system	0 - 400 bar / 5,800 psi.	Potable water or mixture of water with anti-corrosion inhibitor

Range and application							
VALVE SIZE		MAXIMUM TEST PRESSURE*					
Inch	mm	Class 150 PN20	Class 300 PN50	Class 600 PN100	Class 900 PN150	Class 1500 PN250	Class 2500 PN400
½ - 1	15 - 25	400 bar / 5,800 psi					
1½ - 2	32 - 50	130 bar / 1,885 psi					
2½ - 4	65 - 100	40 bar / 580 psi					

*The above maximum test pressures are based on sealing on the Raised Faces of flanged valves. Higher test pressures may apply when inner/radial sealing adapters are used.

Quick clamping system

5 Metric ton strong clamping system for quickly clamping all common Gate, Globe, Ball, Plug, Check, Plug and Butterfly Shut-off and Control valves with linear body pattern up to 4" / DN100 mm.

The valve is safely clamped in horizontal position (valve stem vertical), giving the operator full access to the valve and its controls, gearbox, actuator, etc.

Completed with a long stroke hydraulic cylinder for quickly adapting to the body length (the face to face dimension of the test object) and for generating the actual clamping force.

- ⊕ Range: ½ - 4" / DN15 - 100 mm.
- ⊕ Exchangeable O-ring sealing adapters for Raised Faced flanges ANSI Cl. 150 - 2500 / DIN PN2.5 - 500.
- ⊕ Stainless Steel splash guards and liquid sump/drip tray.

Clamping and sealing methods

Single-body-piece valves are clamped with the use of the automatically controlled hydraulic system. After positioning of the valve an initial 'soft' pre-clamping force, seals the inlet and outlet ports. The easy operated controls enable the operator to adjust the clamping force, depending on size and target test pressure.

Split-body valves or valves with a fragile body structure, brittle materials or valves with butt/socket welded ends can be clamped with the use of inner / radial sealing adapters. These simple adapters seal inside the valve bores and this prevents that the valve is exposed to a linear force.

Remark: inner / radial sealing adapters have to be 'sized' to the dimensions and shape of the valve ports. Therefore these adapters are not standard included, but available on request.



Quick filling and liquid storage

The HC5 is completed with a built-in storage reservoir for the 're-circulating' liquid test system.

- ⊕ Volume capacity 50 liter / 13 gallons, non-corrosive PE.
- ⊕ Completed with level gauge, filtration, block and drain connections.
- ⊕ Keeping the test liquid as long as possible in good condition, easy to clean and renew the test liquid.

The liquid test system can work with clean potable water or with a mixture of water with an anti-corrosion inhibitor, as described within the most common test standards. In this case the high pressure test system pumps the liquid from the reservoir into the test object and, at the end of the test, the liquid is pressed back, from the valve into the reservoir.

Remark: when testing valves which do not have a point to bleed air while filling, we suggest the optional vacuum – filling system. See the HC5 options sheet.

The ergonomically designed, fully Stainless Steel Control panel contains all parts and systems for operating the clamping and test systems.

Smart design has led to a minimum amount of operating components, allowing very easy, safe and intuitive operation and control.

Just like the CRS test program, the control panel can be completed with text plates in your native language.

The Windows 10 operated 'CRS', exists of a ruggedized laptop computer, a set of accurate - calibrated pressure transducers, A/D conversion unit and fully in-house developed test software.

Besides digital reading of the test data (pressure, time and leakage), the CRS system includes a variety of unique functions to help the operator with achieving accurate and reliable test results.



- ⊕ Accurate digital reading of pressure, time and leakage.
- ⊕ Printing and automatically storing a complete test certificate, with a customized lay-out, showing company logo's, texts and in the preferred language.
- ⊕ CRS test program is available in a variety of languages or can be converted into your native language by using the text translation function.
- ⊕ Rugged (industrial) DELL Laptop computer.
- ⊕ 'Laser' bubble counter with validation function for accurate seat leakage detection/measuring.
- ⊕ Prepared for connection to on your LAN network.
- ⊕ Need help, an upgrade or an additional function..? The Ventil IT service team is available for answering questions, remote access and support over Internet, anytime, anywhere.



Standard test and leak detection procedures

Test procedure	Test fluid	Valve position	Criteria
Body / shell test	Compressed air or	Half open	No leakage allowed
Back seat test		Fully open	No leakage allowed
Bi-directional seat test	Potable water / mixture of water with anti-corrosion inhibitor	Closed	Acc. to applicable standard
Function / performance test		Closed	Customer specification

The test bench is completed with a 'laser' bubble counter for easy and accurate testing / measuring of the gas seat leakage, according to the API and EN standards.

The seat leakage test can be executed in both A to B and B to A directions. The smart designed instrument automatically counts the bubbles and displays the leakage on the CRS screen. The found leakage is than automatically subjected to the allowable leak rate, described in the applicable standard.

Remark: See the test bench options sheet for additional solutions for measuring the seat leakage.

Safe design approach

With over 5000 test benches installed and a zero accident track record, we can conclude and emphasize that we 'deliver safety'. A long, reliable, and most of all, safe working effect starts with a 'safe design approach'.

With the design of the HC5 we consider the position and role of the operator and the character of tests. Our design engineers subject each particular part and system to a thorough risk assessments. Good work - design and ergonomics helps to achieve reliable and consequent test results and keep the operator safe at work.

Standard Safety features:

- ⊕ **Safety screen** with 12 mm thick - bulletproof Polycarbonate screen, separating the control panel from the test area (full surrounding safety enclosure optionally available).
- ⊕ **Kill switch** to ensure that the operator stays with the control panel while the pressure rises.
- ⊕ **Automatic safety interlock system** to prevent that the clamping force can be released while the valve is still under pressure.
- ⊕ **Flash light** on top of the control panel, automatically activated to warn personnel in the surrounding that a pressure test is in progress.

SPECIFICATION HC5

Range		½ - 4" / DN100 mm
Clamping orientation		Horizontal (valve stem vertical)
Test station operation		Automatic, push button operated. Hydraulic operated, from control panel
Clamping sealing methods		Hydraulic, manual clamping force setting – sealing on the Raised Faces
		Prepared for the use of inner / radial sealing adapters for BW/SW ends
Test procedures		Body / shell testing with gas and liquid
		Bi-direction seat testing with gas and liquid
GAS / AIR test system	Range	0 - 7 bar / 100 psi
	Test fluid	Compressed shop/utility air from the external supply
	System	Hand-operated pressure controller with SS block and release valves
	Analogue pressure reading	Pressure gauge, case Ø100 mm / 4", cl. 0.6 range: 0-10 bar / 145 psi
	Seat leakage measuring	'laser' bubble counter, 0 - 50 bubbles per minute (connected to CRS)
LIQUID test system	Range	0 - 400 bar / 5,800 psi
	Test fluid	Potable water or a mixture of water with anti-corrosion inhibitor
	Operation	Hand-operated pressure controller with SS block and release valves
	System	Recirculating 50 liter storage reservoir with filter and drain connections
	Analogue pressure reading	Pressure gauge, case Ø100 mm / 4", cl. 1 range: 0-600 bar / 8,700 psi
Digital reading 'CRS'		Computer Registration System with Ventil test software
		Rugged (industrial) laptop computer
		0 - 400 bar / 5,800 psi, 0.3% F.S.
Clamping force		0 (0.5) - 5 Metric tons, automatically adjusted
Distance between the columns		300 mm / 12" (maximum width of the test object)
Distance between the sealing adapters		0 - 400 mm / 16" (maximum face to face dimensions of the test object)
Diameter O-ring sealing adapters		2x Ø180 / 7" Carbon steel
Safety features (standard)		Safety screen with 12 mm thick Polycarbonate window
		Safety interlock embedded in the operating system
		'Kill' switch (2-hand operation)
		Flash light, connected to the high pressure test system(s)
Dimensions / weight		(l) 1.5 x (w) 0.7 x (h) 1.3 meter - 175 kg
		(l) 60 x (w) 28 x (h) 51 Inch - 385 lbs
Required connections	Electricity	220-240 V 50-60 (other available on request)
	Utility air	7 bar / 100 psi.
	High pressure test gas	Nitrogen / Compressed air source (only in combination with option 87)
Delivery		Ready for use

Additional (optional) parts and systems

The Ventil HC5 is delivered ready for use, including sealing plates, leak detection system and set of consumables. However, a variety of optional parts, systems and tools are available to increase the performance and efficiency for your specific range and application.

Please see the HC5 options sheet with detailed description and feel free to contact us for assistance..!