VENTIL

TEST BENCH MODEL: VC25-SRV-FL5

TECHNICAL SPECIFICATION



Universal, high volume test bench for Pressure Relief Valves Range: ½ - 10" / DN15 - 250 mm.

Testing according to ASME Boiler and Pressure Vessel Code section XIII - 2021

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TEST & REPAIR EQUIPMENT ⊕ ENGINEERED SOLUTIONS ⊕ VALVE ACADEMY

High Volume testing of Pressure Relief Valves

Acting as a 'last resort', Pressure Relief Valves are installed on process equipment to release excess pressure due to faulty process operations, external fires and other hazards. Or simply said; the Pressure Relief Valve serves to protect 'life and property'. Pressure Relief Valves should be given the right treatment and be correctly tested to ensure that they will fulfil this so important role when needed.

The Ventil test benches for Pressure relief Valves have a strong, universal character to enable the user to test a wide variety of types and sizes, according to all common international standards and directives, such as; API 526, API 527, ANSI / API RP 576. The VC25-SRV-FL5 has an uniquely designed and configured 'high volume' test system to also enable 'high volume' testing in compliance to the ASME Boiler and Pressure Vessel Code section XIII - 2021.

Test bench VC25-SRV-FL5

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The Ventil **VC25-SRV-FL5** is an universal 'high volume' test bench for pressure testing and setting of Pressure Relief Valves in the range $\frac{1}{2}$ - 10" / DN15 - 250 mm. Main features and unique characteristics of this test bench;

- High volume gas and liquid testing of all kinds Spring loaded or Pilot Operated of Pressure Relief Valves with flange and thread connections.
- Heavy constructed, automatically (hydraulic) operated 4 Claw clamping system.
- Automatic volume selection system for adapting the volume capacity to the valve (orifice) size.
- Safety enclosure with
- gas / liquid receiver / absorber.
- , d 4 m. ume for ume alve /ith er /
- Standard completed with the unique, fully integrated, Win 10 Ventil Computer Registration System.
- Design and configuration based on many years of experience in valve testing and repair.
- Fully built in-house, only first class components are used.
- Delivered ready for use, including integrated safety features, globally used by numerous manufacturers, end-users and valve repairers.

Test systems

Gas test system Liquid test system Seat tightness test system (API 527) 0 - 300 bar / 4,350 psi. 0 - 300 bar / 4,350 psi. full range

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Tip: See options sheet for additional / different test systems



Range and application

VALVE SIZE*		MAXIMUM GAS / LIQUID TEST PRESSURE*		
Inch	mm			
1⁄2 - 3	15 - 80	300 bar / 4,350 psi		
4	100	200 bar / 2,900 psi		
6	150	100 bar / 1,450 psi		
8	200	60 bar / 870 psi		
10	250	40 bar / 580 psi		

* Larger range (½ - 16" / DN15 - 400 mm.) and higher test pressures are optionally available.

High volume gas and liquid testing

The VC25-SRV-FL5 is designed and equipped for 'high volume' testing with a strong dynamic lift and safe cushioned re-seating, preventing seat damage. The system is completed with a volume capacity of 295 liter / 10.4 cft³ and has a 50 mm / 2 Inch full bore J-tube design test connection. The ingeniously configured and designed system enables the user to automatically select and adapt the volume capacity to the size of the valve with the following standard test volumes;

GAS TESTING	Low volume	20 liter / 0.7 cft ³
	Middle volume	130 liter / 4.6 cft ³
	High volume	295 liter / 10.4 cft ³
LIQUID TESTING	Standard volume	130 liter / 4.6 cft ³

Besides saving time and ensuring better and more accurate test results, the automatic, electronically controlled volume selection system also saves energy by preventing excessive use of high pressure test gas.

When switching to liquid testing, the quick fill system fills up two large accumulators, allowing a full series of tests needed for adjusting the set pressure and executing the final test. The liquid test system works on the gas-over-liquid principle, giving very accurate pressure control, a strong dynamic lift and steady flow when the valve opens.

Test bench control panel

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

Seat leakage detection and measuring

The test bench is standard completed with a 'laser' bubble counter for easy and accurate testing / measuring of the gas seat leakage, according to the API 527 standard. Included in the delivery is a spring loaded, rubber lined outlet adapter set for connecting the bubble counter to the outlet of the valve. The smart designed instrument automatically counts the bubbles and displays the leakage on the CRS Computer screen. The found leakage is than automatically subjected to the allowable leakage, referring to the applicable standard.







4-Claw Clamping

The 25 ton strong 4 - Claw clamping system enables quick and easy clamping of the complete range, types and sizes up to 10". Specifically designed for Pressure Relief Valves, the hydraulic operated clamping system works with a fixed clamping table and vertically moving claws.

The angular design and space between the claws gives an ideal spreading of the force and enables easy clamping of Pilot-Operated Relief Valves.

After positioning of the valve on the Stainless Steel clamping table, the operator uses the hand lever to quickly move the four claws simultaneously to the center until they safely overlap the flange. The foot - operated switch is then used to activate the hydraulic system and clamp the valve on the inlet flange, allowing the operator to safely support the valve.



On the back side the enclosure is completed with a Stainless Steel gas / liquid receiver to absorb the energy blast when testing with high pressure gas and catching and returning the test fluid to the Stainless Steel reservoir, when testing with water.

- 0 25 Metric ton, fully adjustable for all types, sizes and materials, range ½ 10" / DN15 250 mm.
- Suited for all flange types and valves with thread connections (see options for Male/Female adapters).
- 2" / DN50 mm full bore, J-tube design test connection to ensure a strong and dynamic lift reaction with cushioned re-seat (preventing seat damage)!
- Exchangeable adapters for extending the range, clamping exotic types and protecting the main claws.
- Stainless Steel test liquid reservoir / sump with filter.
- Easy lever controlled centering system for simultaneously moving the claws from and to the center.

O-ring sealing plates

The delivery includes one Vulcolan (rubber) plate and a set of 8 pcs O-ring sealing plates for clamping all valves with Raised Face flanges, ANSI Cl. 150 - 2500 / DIN PN2.5 - 500. The galvanized steel O-ring sealing plates are easily positioned and have and grooves to help the operator to quickly align the valve. The sealing plates ensure the highest level of tightness and are suited for gas and liquid service. To enhance safety and prevent premature wear of the O-rings, the plates are stored in a bracket on the side of the machine.

Computer Registration System

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The fully integrated Windows 10 operated 'CRS', exists of a complete PC system, 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, for example; automatic verification of the found set pressure and leakage against the applicable ASME/API standards or a user defined tolerance.

- Accurate digital reading of pressure, time and leakage.
- Printing and automatically storing a complete test certificate, with a fully 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.
- Complete PC system including fully integrated Deskjet color printer and industrial track ball.
- 'Laser' bubble counter with validation function for accurate seat leakage detection/measuring.
 Prepared for installation 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.

Safe design approach

With over 5000 test benches installed globally 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'. Each particular part and system is subject to a thorough risk assessments.

With the design of the VC25-SRV-FL5 we consider the position and role of the operator and character of tests executed. Good work - design and ergonomics helps to achieve reliable and consequent test results and keep the operator safe at work. The VC25-SRV-FL5 is standard completed with;

- Safety enclosure with ½" / 12 mm thick bulletproof Polycarbonate screens with heavy constructed, electronically controlled lock device.
- **Will 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.

Remark:

The test bench shown on the pictures in this specification is completed with;

- **Example 2** Liquid test system upgrade 700 bar / 10,150 psi (Option code 165)
- **Back pressure test system** (Option code 198)



Specification VC25-SRV-FL5

Range		½ - 10" / DN15 - 250 mm (see options sheet for larger range)		
Test station operation		Hydraulic operated, from control panel		
Gas test sys	tem	300 bar / 4,350 psi.		
Liquid (gas-over-liquid) test system		300 bar / 4,350 psi.		
System		Accurate regulator with two SS needle valves, semi-automatic		
Volume canacity system		295 liter / 10.4 cft ³ , completed with actuator controlled valves for		
		automatic selection by the operator		
Gas test vol	ume	20 liter / 0.7 cft ³ 130 liter /	4.6 cft ³ 295 liter / 10.4 cft ³	
Liquid test v	volume	130 liter / 4.6 cft ³		
Test port		Full bore 2" / DN50 mm (J-tube design) from test system to the valve inlet		
Digital read	ing	CRS computer system with valve test software		
Computer h	ardware	Desktop PC, Windows 10 Pro, industrial trackball at control panel		
Pressure Ga	uge Ø160 mm / 6.2"	0 - 400 bar / 5,800 psi, cl 0.6	0 - 6,000 psi	
Digital press	sure measurement	0 - 25 bar / 360 psi, 0.3% F.S.	0 - 60 bar / 870 psi 0.3% F.S.	
		0 - 160 bar / 2,320 psi, 0.3% F.S.	0 - 400 / 5,800 psi 0.3% F.S.	
Laser bubble	e counter	0 - 50 bubbles per minute (connected to CRS)		
Test proced	ures according to common	Set Pressure testing with gas and liquid		
test standards		Seat tightness testing according to API 527		
O-ring seali	ng plates	RF connection (DIN/ANSI) up to maximum pressure level 8 pcs. for $\frac{1}{2}$ - 10" / DN15 - 250 mm.		
Universal, fl	lat sealing plate	Vulcolan (rubber) for testing up to max 25 bar / 360 psi		
Clamping fo	orce (maximum)	25 Metric tons, fully adjustable		
Height unde	er the Claws	0 - 130 mm / 0 - 5"		
Flange outli	ne diameter	Ø80 mm - 460 mm / 3 - 18"		
Clamping ta	ble diameter / Material	Ø330 mm / 13" / Stainless Steel 304		
		Safety closure, completed with electronically lock		
Safaty faatu	uros (standard)	Safety interlock embedded in the operating system		
Salety leat		'Kill' switch (2-hand operation)		
		Flash light, connected to the high pressure test system(s)		
Dimonsions	(woight	2.45 x 1.5 x 2.25 meter - 1,525 kg (ca. 500 kg/m2)		
Dimensions	/ weight	97 x 60 x 88 Inch - 3,360 lbs (ca. 1,100 lbs/m2)		
Required	Electricity	220 - 240 V 50 - 60 Hz OR	110 V 60 Hz	
	Utility air	7 bar / 100 psi		
	High pressure	300 bar / 4,350 psi Nitrogen / Compressed air source (see options)		
Other requirements		Please advise, to possibly adapt to local standards / requirements		
Delivery		Ready for use		

Additional (optional) parts and systems

The Ventil VC25-SRV-FL5 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 VC25-SRV-FL5 options sheet with detailed description and feel free to contact us for assistance..!