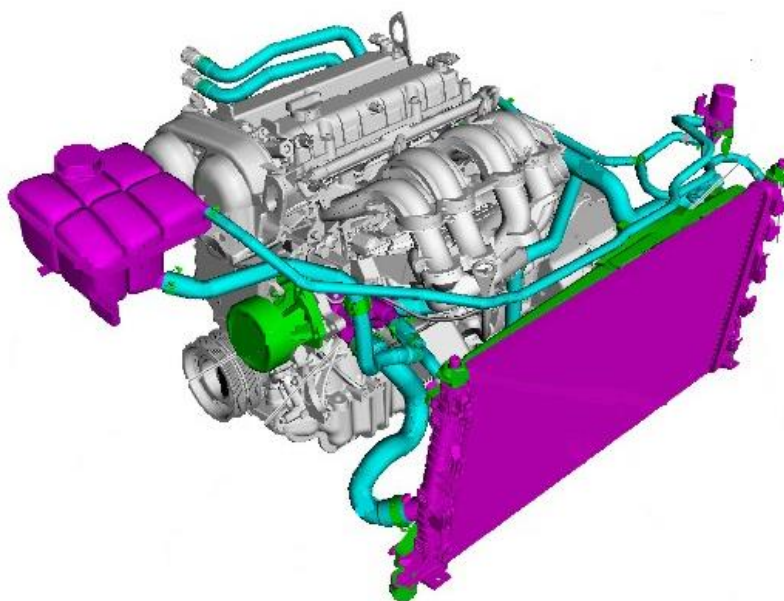




Components Testing Equipment



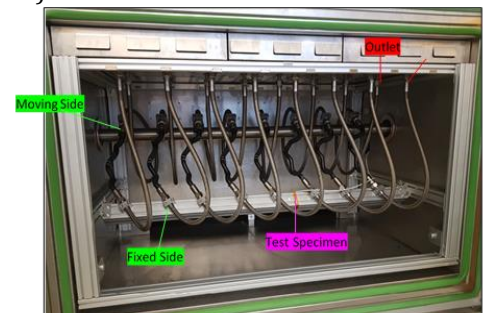
Pressure Fluctuation Test Bench For Cooling Water Circuit Components (With "Linear" and "Eccentric" Moving Unit)



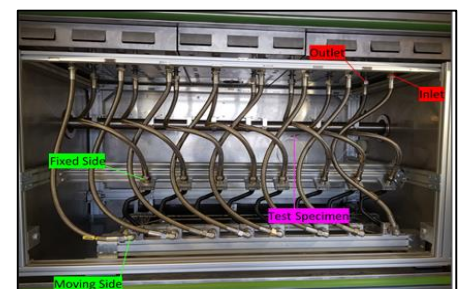
Features:

- Pressure Fluctuation test bench with linear and eccentric moving unit
- Pressure in the range from 0.1 to max. 5bar
- Heating of the test chamber with monitoring and limitation of the max. surface temperature
- Automatic leak detect and leak test (with automatic switching off, of failed test parts)
- Automatic backflow pump for coolant leakage
- Windows / LabView based control unit and data recording

- Dimensions test rig: 4350mm x 2520mm x 2150mm (w x h x d)
- Inner dimensions chamber: 1800 x 1000 x 1000mm (w x h x d)
- Rated power: 60 kW
- Operating fluid: Glycol / Water
- Pressure range: 0...5 bar
- Main flow: up to ca. 100 l/min
- Range of movement:
 - ±25mm at 1Hz
 - ±12mm at 5Hz
 - ±6mm at 10Hz
 - ±2mm at 20Hz
- Temperature range fluid: -40°C ... +150°C
- Temperature range chamber: -40°C ... +150°C
- Number of test channels: 8
- Examples for practicable test specifications:
 - VW 78007, TL 82048, TL 81165, TL 874 (4.4)
 - TL 82002, TL 52682, TL886, TL889, TL 82086
 - TL 52361 (6.1.1/6.1.2)
 - PV 1712 (Ag-99-03), GMW 3155
 - PTL 14052-A1203, PTL 14100-A0911
 - BMW LH 10356681 (10.5), LH 10757369 (6.), QV 17004
 - BMW LH 7823444.6, LH 10591317, LH 10274837
 - Daimler M139 (2), M177 (2)
 - DIN 73411-2 [39]



Construction inside the chamber,
linear movement



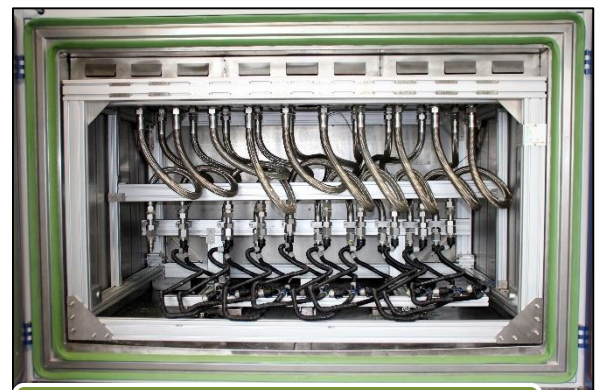
Construction inside the chamber,
eccentric movement

Pressure Fluctuation Test Bench For Cooling Water Circuit Components (with 3D-moving unit)



Features:

- Designed for pressure tests on various hose components of the automotive cooling water circuit
 - Pressure change test stand with 3D-moving unit. 3D-moving unit installed under the test chamber
 - Static and pulse pressures in the range of -0.5 to max. 10bar
 - Heating of the test chamber with monitoring and limitation of the max. over temperature
 - Automatic leak detect and leak test (with automatic switching off, of failed test parts)
 - Automatic backflow pump for coolant leakage
 - Windows / LabView based control unit and data recording
-
- | | |
|---|--|
| • Dimensions test rig: | 4700mm x 1900mm x 2500mm (w x h x d) |
| • Inner dimensions chamber: | 1800 x 1000 x 1000mm (w x h x d) |
| • Rated power: | 82 kW |
| • Operating fluid | Glycol / Water |
| • Pressure range: | up to 10 bar |
| • Main flow: | up to ca. 40 l/min per test parts (max. 400 l/min with 10 channels) |
| • Range of movement: | X- axis: max. ±40mm max. 2,0Hz
Y- axis: max. ±40mm max. 2,5Hz
Z- axis: max. ±40mm max. 3,0Hz |
| • Waveform pressure: | Sine, Trapezoidal, Static |
| • Temperature range fluid: | -40°C ... +150°C |
| • Temperature range chamber: | -40°C ... +150°C |
| • Number of test channels: | 10 |
| • Examples for practicable test specifications: | |
| ○ | VW 78007, TL 81165, TL 874 (4.4) |
| ○ | TL 82002, TL 52682, TL886, TL889, TL 82086 |
| ○ | TL 52361 (6.1.1/6.1.2), PV 1712 (Ag-99-03) |
| ○ | GMW 3155, GMW 18152, GMW 18165 |
| ○ | PTL 14052-A1203, PTL 14100-A0911 |
| ○ | BMW LH 10356681 (10.5), LH 10757369 (6.), QV 17004 |
| ○ | BMW LH 7823444.6, BMW LH 10591317, LH 10274837 |
| ○ | Daimler M139 (2), M177 (2) |
| ○ | DIN 73411-2 [39] |



Construction inside the chamber

Pressure Fluctuation Test Bench For Automotive Cooling Parts

Four Door Design



Features:

- Designed to test automotive cooling parts, in particular radiators, rubber hoses and surge tanks
- Pressure in the range from 0.1 to max. 5bar
- In explosion protect class 1, because of indirect chamber heating
- Automatic leak detect and leak test (with automatic switching off of failed test parts)
- Automatic backflow pump for coolant leakage
- Chamber entrance front and backside (Front twin door + Rear twin door)
- Windows based control unit and data recording

• Dimensions test rig:	4600 x 2300 x 1950mm (w x h x d)
• Inner dimensions chamber:	2400 x 1200 x 1600mm (w x h x d)
• Rated power:	60 kW
• Operating fluid:	Glycol / Water
• Pressure range:	0 ... 5 bar
• Main flow:	up to ca. 100 l/min
• Pressure frequency:	>0 ... 2Hz
• Waveform pressure:	Sine, Trapezoidal, Static
• Temperature range fluid:	RT ... +150°C
• Temperature range chamber:	RT ... +150°C
• Number of test channels	8
• Examples for practicable test specifications:	
○ TL889	
○ TL874	4.4
○ TL52361	6.1.1 / 6.1.2
○ TL52682	6.1.1 /6.1.2



Construction inside the chamber



Pressure Fluctuation Test Bench For Automotive Cooling Parts

Single Door Design



Features:

- Designed to test automotive cooling parts, in particular rubber hoses and surge tanks
- Pressure in the range from 0.1 to max. 5bar
- In explosion protect class 1, because of indirect chamber heating
- Automatic leak detect and leak test (with automatic switching off of failed test parts)
- Automatic backflow pump for coolant leakage
- Chamber entrance at the front side
- Windows based control unit and data recording

• Dimensions test rig:	2850 x 2200 x 1800mm (w x h x d)
• Inner dimensions chamber:	1000 x 1000 x 1000mm (w x h x d)
• Rated power:	35 kW
• Operating fluid:	Glycol / Water
• Pressure range:	0 ... 5 bar
• Main flow:	up to ca. 100 l/min
• Pressure frequency:	>0 ... 2Hz
• Waveform pressure:	Sine, Trapezoidal, Static
• Temperature range fluid:	RT ... +150°C
• Temperature range chamber:	RT ... +150°C
• Number of test channels:	8
• Examples for practicable test specifications:	
○ TL889	
○ TL874	4.4
○ TL52361	6.1.1 / 6.1.2
○ TL52682	6.1.1 / 6.1.2



Construction inside the chamber

Inner Pressure Generator For Parts Of Commercial Vehicle Cooling Circuit



Features:

- Designed to test various components of the commercial vehicle cooling water circuit
- Static pressures in the range from 0.1 to max. 7 bar possible
- Dynamic pressures up to max. 3.5 bar possible

-
- Dimensions test rig: 1200 x 2450 x 1650mm (w x h x d)
 - Rated power: 12 kW
 - Operating fluid: Glycol / Water
 - Pressure range:
 - static: 0 ... 7 bar
 - dynamic: 0 ... 3,5 bar
 - Main flow: up to ca. 100 l/min
 - Pressure frequency:
 - Expansion volume 0.1 L: up to 5 Hz
 - Expansion volume up to 1.5 L: up to 1 Hz
 - Waveform pressure: Sine, Trapezoidal, Static
 - Temperature range fluid: RT ... +150°C
 - Examples for practicable test specifications:
 - TL889
 - TL874 4.4
 - TL52361 6.1.1 / 6.1.2
 - TL52682 6.11 / 6.12

Bending Cycle And Spiral Cable Test Bench



Features:

- The "bending cycle and spiral cable test bench" is designed and built for functional tests on various test parts (cables).
- Specially developed for long-term tests
- Tests of the main wires with a defined current strength up to 32A and superimposed mains voltage as well as of the secondary wires with 100 mA can be carried out without superimposed mains voltage
- Automatic stretching (spiral cable) or bending (normal cable)
- Operation of the test stand via a touch panel on the swivel arm

-
- Test stand dimensions (without pendulum): 6000 x 2178 x 1100mm (w x h x d)
 - Weight ca. (empty): 2300 kg
 - Displacement movement unit: 0 ... 3000 mm
 - Displacement speed movement unit: 0 ... 0,5 m/s
 - Rated power: 6870 W
 - Rated current: 30 A
 - Pre-fuse by customer: 32 A
 - Test specimens: normal cables, spiral cables, Car charging cables
 - Number of test specimens: 3 identical test specimens
 - practicable tests :
 - exclusively for function tests
 - to EN 50396-6.2 and
 - to EN 50396-9.2



Installation of the Test specimens

Water Pump Test Bench For Functional Tests On Coolant-Water Pumps



Features:

- Designed to test components of the automotive coolant circuit, in particular coolant-water pumps
- Pressures in the range from 0.1 to max. 6 bar possible
- Automatic leak detect (with automatic switching off of failed test parts)
- Windows based control unit and data recording
- Designed e.g. for functional tests according to VW TL 82165 -4.2

• Dimensions test rig:	2000 x 1800 x 1200mm (w x h x d)
• Dimensions protective cabin:	2200 x 2260 x 1600mm (w x h x d)
• Weight (empty):	ca. 1000 kg
• Rated power:	10 kW
• Operating fluid:	Glycol / Water
• Pressure range:	0 ... 6 bar
• Flow rate:	up to ca. 1000 l/min
• Temperature range fluid:	+30°C ... +150°C
• Number of test channels:	3

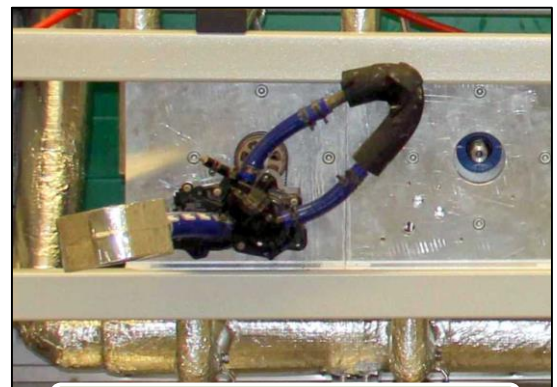
Water Pump Test Bench



Features:

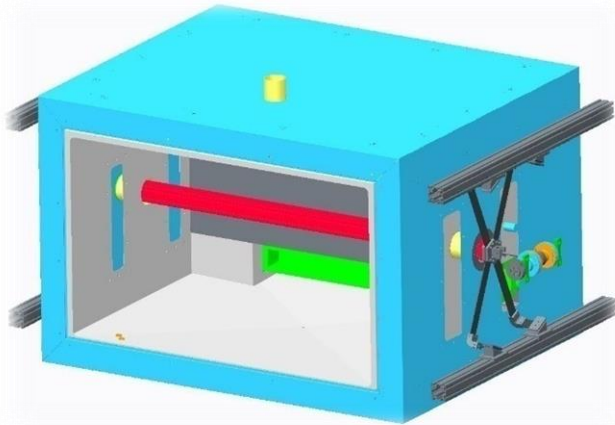
- Designed to test components of the automotive cooling water circuit, in particular water pumps
- Specially developed for long-term tests on water pumps
- Possibility of thermal shock tests
- Pressurisation of the flow pipe in the range from 0 to max. 8 bar
- Automatic leak detection with automatic switch-off of the test bench
- Control and measurement data storage realized via PLC

-
- | | |
|---|----------------------------------|
| • Dimensions test rig: | 4200 x 1750 x 1200mm (w x h x d) |
| • Rated power: | 36 kW |
| • Operating fluid: | Glycol / Water |
| • Pressure range: | 0 ... 8 bar |
| • Waveform pressure: | Static |
| • Temperature range fluid: | -25 °C ... 135 °C |
| • Number of test channels: | 10 |
| • Examples for practicable test specifications: | |
| ○ TL82165 | 4.1 / 4.2 |



Installation of a water pump

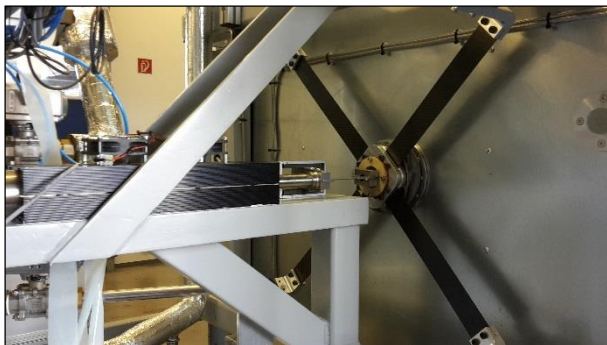
For Each Test Chamber: Variably Usable Linear Moving Unit



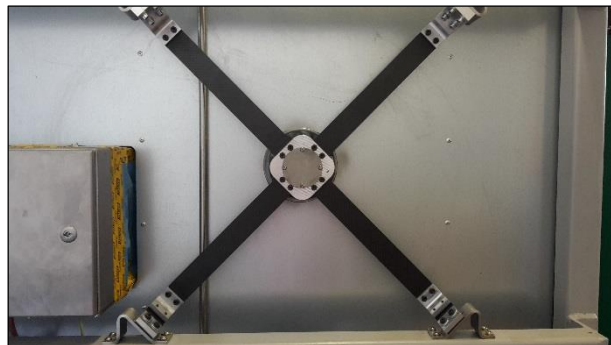
Principle drawing



Moving profile in the chamber



Drive via steplessly adjustable linear servo Drive



Carbon spring bearing

Features:

- Designed to test automotive parts, in a temperature-chamber with a superimposed low frequency vibration profile
- Can be installed in any test chamber
- Adjustable frequency from >0 to 20Hz
- Adjustable amplitude from $\pm 30\text{mm}$ (depends on frequency)

-
- Motion amplitude: $\pm 30\text{mm}$
 - Motion frequency: >0 ... 20Hz
 - Examples for practicable test specifications:
 - GM, 14329 4.3

Perfusion Test Bench



Features:

- Designed to test automotive cooling parts, in particular rubber hoses and pipes
- Especially for static long-term tests
- Adjustable static pressure in the range from 0 to max. 5bar
- Adjustable flow rate per specimen from 0 to 5000 l/h / test part
- Maximum total flow rate 50000 l/h
- In explosion protect class 1, because of indirect chamber heating
- Automatic leak detect and leak test (with or without automatic switching off of failed test parts)
- Chamber entrance front and backside (Front twin door + Rear twin door)
- Available with water chiller or with air recooling based on radiators
- Windows based control unit and data recording

-
- | | |
|---|----------------------------------|
| • Dimensions test rig: | 3400 x 2500 x 1600mm (w x h x d) |
| • Inner dimensions chamber: | 1790 x 1000 x 1200mm (w x h x d) |
| • Rated power: | 46 kW |
| • Operating fluid: | Glycol / Water |
| • Pressure range: | 0 ... 5 bar |
| • Main flow: | up to ca. 50000 l/h |
| • Waveform pressure: | Static |
| • Temperature range fluid: | 40 ... +150°C |
| • Temperature range chamber: | 40 ... +150°C |
| • Number of test channels: | 10 |
| • Examples for practicable test specifications: | |
| ○ BMW, 10356681 | 6.2.2.13.2 |
| ○ BMW, 10356682 | 6.2.2.9 |
| ○ BMW, 10477795 | 6.1.2.1 |



Construction inside the chamber

Test Bench For Cooling Water Surge Tank



Features:

- Designed to perform tests on surge tanks
- Adjustable static pressure in the range from 0 to max. 5bar
- Adjustable flow rate per specimen from min. 0 to max. 8 l/h
- In explosion protect class 1, because of indirect chamber heating
- Automatic leak detect and leak test (with automatic switching off of failed test parts)
- Possibility of manual level control
- Chamber entrance at the front side
- Windows based control unit and data recording

-
- Dimensions test rig: 2200 x 2240 x 1550mm (w x h x d)
 - Inner dimensions chamber: 1000 x 800 x 1000mm (w x h x d)
 - Rated power: 9,5 kW
 - Operating fluid: Glycol / Water
 - Pressure range: 0 ... 5 bar
 - Main flow: up to ca. 48 l/min
 - Waveform pressure: Static
 - Temperature range fluid: 25 ... +150°C
 - Temperature range chamber: 25 ... +150°C
 - Number of test channels: 6
 - Examples for practicable test specifications:
 - VW, TL889 4.1
 - ESDG93-8A080-AA 3.6
 - GMW15310 3.2.1.2
 - QV17004D 3.2.6
 - PLB-A2B-Z



Construction inside the chamber



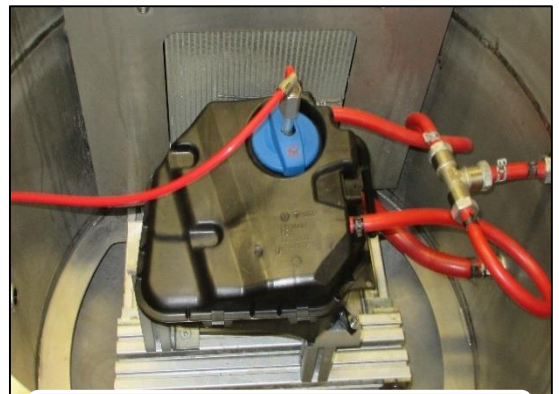
Cooling Water Surge Tank Misuse Test Bench



Features:

- Designed to test surge tanks with extreme test requirements
- Especially build for misuse tests
- Adjustable static pressure in the range from 0 to max. 5bar
- Adjustable flow rate from min. 0 to max. 10 l/min
- In explosion protect class 1, because of indirect chamber heating
- Automatic leak detect (with automatic switching off)
- Stainless steel test chamber with top opening (special lockable access opening)
- Pressure-resistant test chamber up to 5 bar
- Control and measurement data storage realized via PLC

-
- | | |
|---|----------------------------------|
| • Dimensions test rig: | 1000 x 2200 x 2200mm (w x h x d) |
| • Inner dimensions chamber: | 700 x 750mm (d x h) |
| • Rated power: | 7,5 kW |
| • Operating fluid: | Glycol / Water |
| • Pressure range: | 0 ... 5 bar |
| • Main flow: | up to ca. 10 l/min |
| • Waveform pressure: | Static |
| • Temperature range coolant: | 30 ... +150°C |
| • Temperature range chamber: | 30 ... +160°C |
| • Number of test channels: | 1 |
| • Examples for practicable test specifications: | |
| ○ LAH.4S0.121 | |
| ○ Build for tests out of specification | |



Construction inside the chamber

Thermal Shock Test Bench



Features:

- Designed to test automotive parts of the exhaust gas cooling system, e. g. heat exchanger
- Designed for thermal shock testing
- Static pressures adjustable in the range from 1 to max. 10 bar
- Flow rate adjustable from 0 to max. 100 l/min
- Automatic leak detect (with automatic switching off)
- Windows based control unit and data recording

-
- | | |
|------------------------------|----------------------------------|
| • Dimensions test rig: | 2500 x 2000 x 1500mm (w x h x d) |
| • Inner dimensions chamber: | 1000 x 800 x 600mm (w x h x d) |
| • Rated power: | 50 kW |
| • Operating fluid: | Glycol / Water |
| • Pressure range: | 1 ... 10 bar |
| • Main flow: | up to ca. 100 l/min |
| • Waveform pressure: | Static |
| • Temperature range coolant: | -30 ... +125°C |
| • Number of test channels: | 8 |



Construction inside the chamber



Burst Pressure Test Bench



Features:

- Designed to test any media carrying components, e.g. heat exchangers, pipes, vessels, etc.
- For burst pressure tests, with media according to customer specification
- Pressure range depending on requirements: 0 to max. 30 / 100 / 250/ ... bar
- Automatic burst pressure detection (with automatic switch-off)
- Windows based control unit and data recording

	Type 1	Type 2
• Dimensions test rig:	1600 x 1600 x 800mm (w x h x d)	1700 x 1700 x 700mm (w x h x d)
• Inner dimensions chamber:	800 x 500 x 700mm (w x h x d)	1200 x 550 x 700mm (w x h x d)
• Rated power:	2 kW	2 kW
• Operating fluid:	specified Water	low viscosity oils
• Pressure range:	0 ... 100 bar	0 ... 250 bar
• Waveform pressure:	Ramp	Ramp
• Temperature range coolant:	RT	RT
• Temperature range chamber:	RT	RT
• Number of test channels:	1	1
• Examples for practicable test specifications:		
○ GMW, 10356682	6.2.2.2	
○ GM, 14329	4.3.1	



Construction inside the chamber

Burst Pressure Aggregate For Functional Tests on Diverse Test Parts **(e.g. QC Connectors)**



Features:

- Designed to test components from the vehicle cooling water circuit
- For burst pressure tests
- Pressure in the range from 0 to max. 140 bar; other ranges according to customer requirements!
- Automatic burst pressure detection (with automatic switch-off)
- Windows based control unit and data recording

• Dimensions test rig:	1010 x 1160 x 730mm (w x h x d)
• Weight (empty):	ca. 180 kg
• Rated power:	300 W
• Operating fluid:	Glycol / Water
• Pressure range:	0 ... 140 bar
• Ambient temperature for operation:	+10°C ... +35°C
• Number of test channels	variable
• Examples for practicable test specifications:	
○ GMW, 10356682	6.2.2.2
○ GM, 14329	4.3.1



Construction inside the chamber

Burst Pressure Aggregate For Functional Tests On Diverse Test Parts **(with Chamber)**



Features:

- Designed to test components from the vehicle cooling water and charge air area
- For burst pressure tests
- Pressure in the range from 0 to max. 30 bar
- Automatic burst pressure detection (with automatic switch-off)
- Windows based control unit and data recording

-
- Dimensions test rig: 3100 x 2500 x 1700mm (w x h x d)
 - Inner dimensions chamber: 1000 x 900 x 1000mm (w x h x d)
 - Weight (empty): ca. 2200 kg
 - Rated power: 27 kW
 - Operating fluid: Compressed air / water
 - Pressure range: 0 ... 30 bar
 - Temperature range water: 0°C ... +90°C
 - Temperature range compressed air: -40°C ... +220°C
 - Number of test channels 1
 - Examples for practicable test specifications:
 - GMW, 10356682 6.2.2.2
 - GM, 14329 4.3.1



Construction inside the chamber

Burst Pressure Test Bench For Function Tests On Complete Wheels



Features:

- Designed for functional tests on complete wheels only (rims with tyres)
- For burst pressure tests
- Overpressure in the range from 0 to max. 30 bar
- Automatic burst pressure detection (with automatic switch-off)
- Windows-based control and measurement data storage

- Test stand dimensions: 1200 x 1850 x 1200mm (w x h x d)
- Internal chamber dimensions: 1150 x 1070 x 1150mm (w x h x d)
- Test chamber volume: ca. 1400 L
- Weight (empty): ca. 720 kg
- Rated power: 1.1 kW
- Operating fluid: water
- Pressure range: 0 ... 30 bar overpressure
- Temperature range water: +5°C ... +40°C
- Ambient temperature range: +10°C ... +35°C
- Temperature range storage: +5°C ... +55°C
- Number of test specimens: 1
- Examples for practicable test specifications:
 - Built according to customer specification, or according to specifications of the end customer in the automotive sector Porsche AG



Test set-up in the chamber

Pressure Pulse Test Bench With Pressure Peak Generator



Features:

- Designed to test automotive motor parts, e. g. Quick Connectors (QC) and SCR-pipes
- Pressure in the range from 0 to max. 50bar
- Especially for highly dynamic pressure pulse tests with electrodynamic shaker and integrated pressure peak generator for superimposed pressure peaks
- Automatic leak detect and leak test (with automatic switching off)
- Orderable with different chambers (Explosion protection because of nitrogen inertisation)
- Windows based control unit and data recording

• Dimensions test rig:	1000 x 2100 x 2300 (w x h x d)
• Inner dimensions chamber:	Depends on chamber
• Rated power:	20 kW
• Operating fluid:	Hydraulic Oil / Gear Oil
• Pressure range:	0 ... 50 bar
• Main flow:	up to ca. 170 l/min
• Pressure frequency:	0 ... 2Hz
• Pressure-Peak-Generator:	>0 ... 10 Hz
○ Pulse pauses ratio e. g.:	10ms / 90ms
• Waveform pressure:	Sine, Trapezoidal, Triangle
• Temperature range coolant:	+20 ... +170°C
• Temperature range chamber:	Depends on chamber
• Number of test channels:	Depends on chamber
• Examples for practicable test specifications:	
○ BMW, 10451650	6.2.2.3
○ PSA, 9690669299	11.3
○ VW, TL82041	7.6
○ VW, TL82316	9.6.1
○ VW, TL82086	5.1.2
○ VW, TL82048	5.7.1
○ GMW, 14319	4.3.20



Construction inside the chamber
(Depends on chamber)



Pressure Pulse Test Bench For Oil



Features:

- Designed to perform pressure tests on diverse piping and pipe components
 - Pressures with flow possible in the range from 0 to max. 40 bar
 - Pressures without flow possible in the range from 0 to max. 170 bar
 - Suitable for unsupervised operation
 - Automatic leak detection (with automatic switch-off)
 - Orderable with different test chambers
 - Windows based control and measurement data storage
-
- | | |
|---|---|
| • Dimensions test rig: | 1240 x 2200 x 1350mm (w x h x d) |
| • Inner dimensions chamber: | Depends on chamber |
| • Rated power: | 16,1 kW |
| • Operating medium: | different oils from the automotive industry |
| • Pressure range: | |
| ○ static: | 0 ... 40 bar |
| ○ dynamic: | 0 ... 40 (170) bar |
| • Main flow: | up to ca. 120 l/min |
| • Pressure frequency: | |
| ○ Expansion volume 0.1 L: | up to 5 Hz |
| ○ Expansion volume up to 1.5 L: | up to 1 Hz |
| • Waveform pressure: | Sine, Trapezoidal, Static |
| • Temperature range fluid: | +15°C ... +150°C |
| • Examples for practicable test specifications: | |
| ○ BMW, 10451650 | 6.2.2.3 |
| ○ PSA, 9690669299 | 11.3 |
| ○ VW, TL82041 | 7.6 |
| ○ VW, TL82086 | 5.1.2 |
| ○ GMW, 14319 | 4.3.20 |

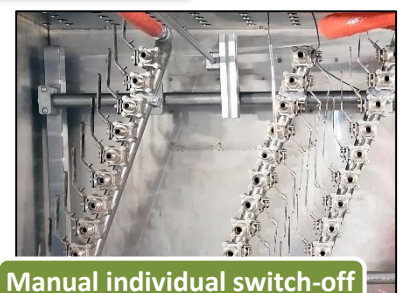
Pressure Pulse Test Bench For Oil, 50 bar (with Chamber)



Features:

- Designed to perform pressure tests on various hose components
- Constant pressures as well as pressure pulses in the range of 0 to max. 50 bar possible
- Suitable for unattended operation
- Protection of the highly hygroscopic test medium by nitrogen atmosphere in the medium tank possible
- Automatic leak detection (with automatic central switch-off)
- Windows-based control and measurement data storage

- Dimensions test rig: 3701 x 2434 x 1634mm (w x h x d)
- Inner dimensions chamber: 1500 x 1000 x 1000mm (w x h x d)
- Rated power: 47 kW
- Operating medium: PAG-Oil, POE-Oil, Hydraulic Oil
- Pressure range:
 - static : 0 ... 50 bar
 - dynamic: 0 ... 50 bar
- Main flow: up to ca. 60 l/min
- Pressure frequency:
 - Expansion volume 0.1 L: up to 5 Hz
 - Expansion volume up to 1.5 L: up to 1 Hz
- Waveform pressure: Sine, Trapezoidal, Static
- Temperature range fluid: °C ... +140°C
- Temperature range chamber: -40°C ... +140°C
- Max number of test items: 24, manual individual switch-off
- Temperature range fluid:
 - directly: 0°C ... +140°C
 - indirectly via chamber: down to -40°C
- Temperature range chamber:
 - fluid: -40°C ... +140°C
 - chamber: -40°C ... +140°C
- Examples for practicable test specifications:
 - VW, TL82316
 - A211830060
 - BMW, QV64005



**Manual individual switch-off
through Stopcock**



Construction inside the chamber

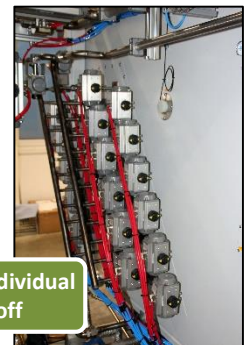
Pressure Pulse Test Bench For Oil, 50 bar LP, 200 bar HP (with Chamber)



Features:

- Designed to perform pressure tests on various hose components
- Equipped with two pressure units. Constant pressures as well as pressure pulses in the low-pressure range from 0 to max. 50 bar and in the high-pressure range from 0 to max. 200 bar possible
- Suitable for unattended operation. Doors with large observation windows
- Protection of the highly hygroscopic test medium by nitrogen atmosphere in the medium tank possible
- Automatic leak detection and individual switch-off of the test channels
- Test channels with adjustable distance between 150 mm and 450 mm
- Windows-based control and measurement data storage

- | | |
|---|--|
| • Dimensions test rig: | 4600 x 2500 x 2300mm (w x h x d) |
| • Inner dimensions chamber: | 1800 x 1000 x 1000mm (w x h x d) |
| • Rated power: | 50 kW |
| • Operating medium: | PAG-Oil, POE-Oil, Hydraulic Oil |
| • Pressure range LP: | |
| ○ static: | 0 ... 50 bar |
| ○ dynamic: | 0 ... 50 bar |
| • Pressure range HP: | |
| ○ static: | 0 ... 200 bar |
| ○ dynamic: | 0 ... 200 bar |
| • Main flow: | up to ca. 60 l/min |
| • Pressure frequency LP: | up to 50 bar |
| ○ Expansion volume 0.1 L: | up to 5 Hz |
| ○ Expansion volume up to 1.5 L: | up to 1 Hz |
| • Pressure frequency HP: | up to 200 bar |
| ○ Expansion volume up to 0.3 L: | up to 1 Hz |
| • Waveform pressure: | Sine, Trapezoidal, Static |
| • Max number of test items: | 24, automatic individual switch-off |
| • Temperature range fluid: | directly: -40°C ... +150°C,
indirectly via chamber: +150°C ... +170°C |
| chamber: | -40°C ... +180°C |
| • Examples for practicable test specifications: | |
| ○ for HP: LAH.1EA.816K, DIN 74102, DIN 74106 | |
| ○ for LP: VW, TL82316, A211830060, BMW, QV64005 | |



automatic individual switch-off



Construction inside the chamber



Adjustable distance from 150 mm to 450 mm

Air Charge Hose Tester (With Robot)



Features:

- Designed to test automotive motor parts, in particular air charge hoses
- Especially for high temperature pressure pulse tests with hot air
- With a large chamber
- Pressure in the range from -0.5 to max. 5bar
- Automatic leak detect and leak test (with automatic switching off of failed test parts)
- With an integrated robot for tests with a superimposed 3D - moving
- Windows based control unit and data recording

-
- Dimensions test rig: 4100 x 2400 x 2000 (w x h x d)
 - Inner dimensions chamber: 1500 x 1500 x 1000 (w x h x d)
 - Rated power: 35 kW
 - Operating fluid: Air
 - Pressure range: -0.5 ... 5 bar
 - Pressure frequency: >0 ... 2Hz
 - Waveform pressure: Trapezoidal, near Sine
 - Temperature range air: +30 ... +250°C
 - Temperature range chamber: +30 ... +250°C
 - Number of test channels: 4
 - Frequency motion: >0 ... 2 Hz
 - Amplitude motion: max. ± 30mm
 - Examples for practicable test specifications:
 - GMW16153, Version Oct. 2014 3.2.1.2
 - TL VW60562, 2010-06 4.2.2.1-4.2.2.2
 - Fiat 9.02132-01 2.5.9
 - BMW 10403165-03 6.1.2.5
 - Ford ESBB53-6C646-AA 4.3.1
 - LH 10354886-000-01 6.3.4.2
 - Renault M5MT_K1 to customer specification
 - Bosch BMTS V_0079, V0.0



Construction inside the chamber

Air Charge Hose Tester (With 3-D Moving Unit)



Features:

- Designed to test automotive motor parts, in particular air charge hoses
- Especially for high temperature pressure pulse tests with hot air
- Pressure in the range from -0.5 to max. 5bar
- Automatic leak detect and leak test (with automatic switching off of failed test parts)
- With an integrated moving unit for tests with a superimposed 3D – moving
- Orderable with different chambers
- Windows based control unit and data recording

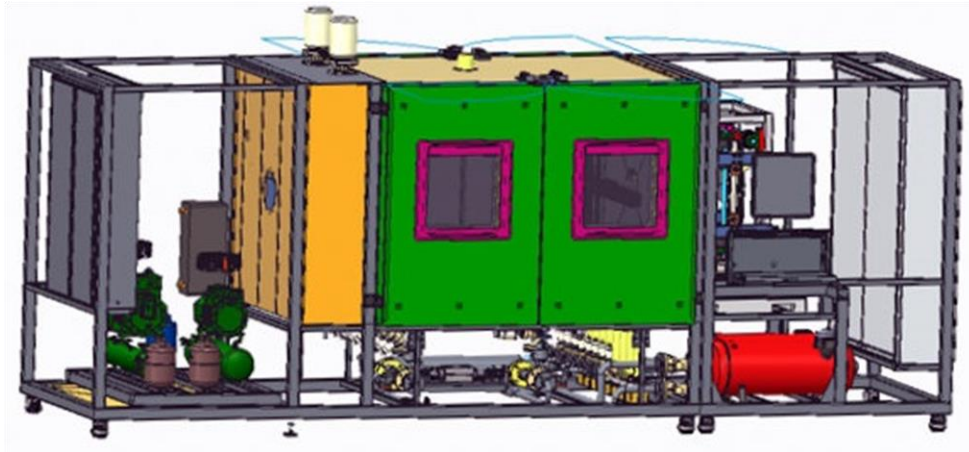
- | | |
|---|---|
| • Dimensions test rig: | ~3300 x 2500 x 3200 mm (w x h x d) |
| • Inner dimensions chamber: | Depends on chamber |
| • Rated power: | 40 kW, 55kW |
| • Operating fluid: | Air |
| • Pressure range: | -0.5 ... 5 bar |
| • Pressure frequency: | >0 ... 2Hz |
| • Waveform pressure: | |
| ○ manual regulation: | Trapezoidal with not exact rise-fall time, near Sine regulated trapezoidal, regulated sine wave |
| ○ option: automatic regulation: | |
| • Temperature range air: | |
| ○ active tempering: | +30 ... +250°C |
| ○ without pulsation: | temp. of air = temp. of chamber possible, but normally not necessary (also not for specs below) |
| ○ option: active cooling: | |
| • Temperature range chamber: | Depends on chamber |
| ○ normally: | -40°C ... 180°C |
| ○ possible if necessary: | -60°C ... 210°C |
| • Number of test channels: | 4 |
| • Frequency motion: | >0 ... 3Hz |
| • Amplitude motion: | max. ± 40mm |
| • Examples for practicable test specifications: | |
| ○ GMW16153, Version Oct. 2014 3.2.1.2 | TL VW60562, 2010-06 4.2.2.1-4.2.2.2 |
| ○ Fiat 9.02132-01 2.5.9 | BMW 10403165-03 6.1.2.5 |
| ○ Ford ESB53-6C646-AA 4.3.1 | LH 10354886-000-01 6.3.4.2 |
| ○ Bosch BMTS V_0079, V0 | Renault M5MT_K1 to customer specification |



**Construction inside the chamber
(Depends on chamber)**

Air Charge Hose Tester (With 3-D Moving Unit)

Extremely Wide Heating And Cooling Range



Features:

- Designed to test automotive motor parts, in particular charge air components
- Especially for high temperature pressure pulse tests with hot air
- Pressures in the range from -0.5 to max. 5 bar possible
- Automatic leak detect and leak test (with automatic switching off of failed test parts)
- Automatic control of the waveform (sinus, trapezoid and static mode)
- With an integrated moving unit for tests with a superimposed 3D – moving
- Windows based control unit and data recording

- | | |
|---|----------------------------------|
| • Dimensions test rig: | 5870 x 2648 x 1887mm (w x h x d) |
| • Inner dimensions chamber: | 1800 * 1500 * 1100mm (w x h x d) |
| • Weight (empty): | 4200 kg |
| • Rated power fluid conditioning | 35 kW |
| • Rated power chamber | 70 kW |
| • Operating fluid: | Air |
| • Pressure range: | -0.5 ... 5 bar |
| • Pressure frequency: | >0 ... 2Hz |
| • Waveform pressure: | trapezoid, near sine |
| • Temperature range air | +40 ... +250°C |
| • Temperature range chamber: | -40 ... +230°C |
| • Number of test channels: | 8 |
| • Frequency motion: | >0 ... 3 Hz |
| • Amplitude motion: | max. ± 40mm |
| • Examples for practicable test specifications: | |
| ○ GMW16153, Version Oct. | 2014 3.2.1.2 |
| ○ TL VW60562, 2010-06 | 4.2.2.1-4.2.2.2 |
| ○ Fiat 9.02132-01 | 2.5.9 |
| ○ BMW 10403165-03 | 6.1.2.5 |
| ○ Ford ESBB53-6C646-AA | 4.3.1 |
| ○ LH 10354886-000-01 | 6.3.4.2 |
| ○ Renault M5MT_K1 | to customer specification |
| ○ Bosch BMTS V_0079, V0.0 | |



**Construction inside the chamber
(Depends on chamber)**



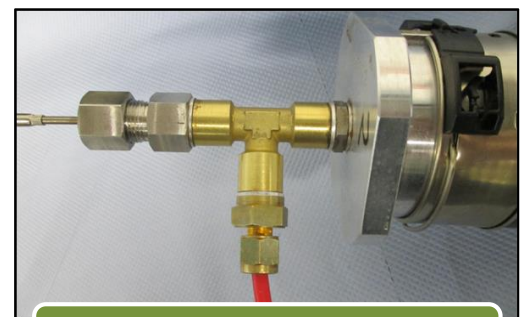
Air Leak Test Unit With 4 Automatic Channels



Features:

- Designed to test automotive motor parts, e.g. charge air, fuel components, etc.
- Especially to measure leak rates between $1.0\text{mm}^3/\text{s}$ and $80,000\text{mm}^3/\text{s}$
- Pressures in the range of -0.98bar (20mbar absolute) to maximum 6 bar possible
- Temperature range from -60°C to 200°C possible (depending on chamber)
- Temperature sensor for chamber included (to take temperature changes into account)
- Automatic leak test of 4 Specimen, one after the other, over more temperature set points
- Automatic calculation of pressure loss in mbar and leak rate in mm^3/s
- Data storage in Excel format (.csv), if required with macros for further evaluation, e.g. in "mbar * l / s"
- Delivered with an Excel Macro for fast measurement data evaluation
- Control system based on a high performance industry CPU
- Data storage integrated in control system
- Data transfer over network interface (Web browser)
- Specimen connection parts can optionally be delivered in several forms and diameters

- | | |
|--|---|
| • Dimensions test rig: | ~ 600 x 1500 x 500mm (w x h x d) |
| • Weight | ca. 85kg |
| • Rated power: | 600W |
| • Operating fluid: | Air |
| • Pressure range: | $-0,98 \dots 6 \text{ bar}$ |
| • Leak Test Time (per channel): | 5s ... 120min |
| • Temperature range chamber: | Depending on chamber |
| ○ normally: | $-40^\circ\text{C} \dots 180^\circ\text{C}$ |
| ○ possible if necessary | $-60^\circ\text{C} \dots 210^\circ\text{C}$ |
| • Number of test channels: | 4 |
| • Designed for Air-Leak-Test in accordance to specification: | |
| ○ GMW16153, Version Dec. 2015 3.2.1.4 | |



Test specimen connection
(by means of copper capillary)

Gas Tightness Test Bench R744 (CO₂) And Generally He-Leak Test



Features:

- Designed to test components of R744 (CO₂) air conditioning systems, such as metal pipes and rubber hoses
- Especially to measure leakage rates with the measuring accuracy of < 0.05 g/a (R744 / CO₂)
- Pressure range test gas from 10 to 180bar (rel.) is automatically controlled by electronic pressure regulator
- test specimen temperatures in the range of -40°C to 180°C possible (depending on test chamber)
- Speed of temperature change, ca. ±2.5°K / minute (depending on test chamber)
- Automatic leak test of six test specimens, one after the other, over several temperature levels. With separate temperature sensors to protect the samples
- Automatic calculation of the CO₂ leakage rate from the measured He leakage rate, in [g/a]
- Possibility to save the data directly to file. The format and path of the data can be selected (e.g. Excel)
- Controlled by a very powerful industrial PC with touch display
- Data storage integrated in control system
- Remote maintenance / remote control of the machine can be carried out via an installed remote maintenance router
- Test specimen connections can be supplied in various shapes and diameters

- | | |
|---|------------------------------------|
| • Dimensions test rig: | ≈ 1000 x 1200 x 1400mm (w x h x d) |
| • Weight | ca. 340kg |
| • Rated power: | ca. 1kW |
| • Operating medium: | helium |
| • Pressure range: | 10 ... 180 bar |
| • Temperature range chamber: | dependent on chamber |
| ○ normal: | -40°C ... 180°C |
| • Number of test cells: | 6 |
| • Developed for leak tests, according to: | |
| - LAH.1EA.816.K, version 2.0.1 von 21.09.2017 | |
| - IDC 60068-3-5 | |



Test cells

3-D Moving Unit Solo



Features:

- Designed to test automotive motor parts (in particular air charge hoses) and also hoses and pipes of the air conditioning system
- Especially for motion tests in various test chambers
- For motion frequencies up to 3 Hz and a max amplitude of ± 35 mm, separately adjustable for each axis
- With an integrated measurement system for measurements of a superimposed pressurization up to 250 bar
- Possibility of communication with external chambers and pressure controllers
- Orderable with or without test chamber (different manufacturers / types possible)
- Windows based control unit and data recording

-
- | | |
|---|--------------------------------|
| • Dimensions test rig: | 2600 x 2200 x 1300 (w x h x d) |
| • Inner dimensions chamber: | Depends on chamber |
| • Rated power: | 8 kW |
| • Temperature range chamber: | Depends on chamber |
| • Frequency motion: | >0 ... 3 Hz |
| • Amplitude motion: | max. ± 35 mm |
| • Examples for practicable test specifications: | |
| ○ Low frequency 3-D motor movement | |

Accessory Equipment

- High Pressure Generator



Equipment shown without housing

- For pressures up to 250 bar
- Pressure reservoir contains 3 litres
- Manually pressure adjustment



Introduction into the chamber
(Depends on chamber)

Temperature Test Chamber With Electrodynamical Shaker



Features:

- Designed to test automotive parts
- Especially for tests with high frequency vibration profiles
- Possible frequencies from 5Hz to 3000Hz
- Possible amplitude of $\pm 25\text{mm}$
- Temperature test chambers according to customer requirements (stationary and movable chambers available)
- Windows based control unit and data recording

• Dimensions shaker:	1000 x 2500 x 1000 (w x h x d)
• Dimensions test rig	Depends on chamber
• Inner dimensions chamber:	Depends on chamber
• Nominal force:	10 kN / 20 kN / 30 kN / etc.
• Operating modes:	RSTD, Sine sweep, Random, Sine random,
• Temperature range chamber:	Depends on chamber
• Frequency motion:	5Hz ... 3000 Hz
• Amplitude motion:	max. $\pm 25\text{mm}$
• Examples for practicable test specifications:	
○ RSA 31-05-103--A	
○ RSA 32-02-028	
○ RSA 32-02-027	
○ RSA 37-06-097	
○ ESDG93-8260-AA	3.15
○ BMW GS97073-2	4.3.4
○ BMW GS95003-3	4
○ BMW LH PR 603.1	
○ BMW LH10356682	
○ Fiat LH 9.02245	2.10
○ Ford ES-HL3E-8A520-AA	3.11 / 3.12
○ Ford ES-GK2Q-6K679-BA	3.3 / 3.4
○ Renault 32-02-840/--C	
○ Renault 34-00-039/--C	
○ VW TL80000	8.4



**Specimen build up outside the chamber
(only with movable chamber)**

Test Bench For Pressure Retention Valves And Leakage Oil Lines



Features:

- Designed to test components of the automotive fuel system, in particular pressure retention valves and leakage oil lines
- Especially for testing opening pressures and flow characteristics
- Adjustable static pressure in the range from 0 bar to 50 bar
- Windows based control unit and data recording

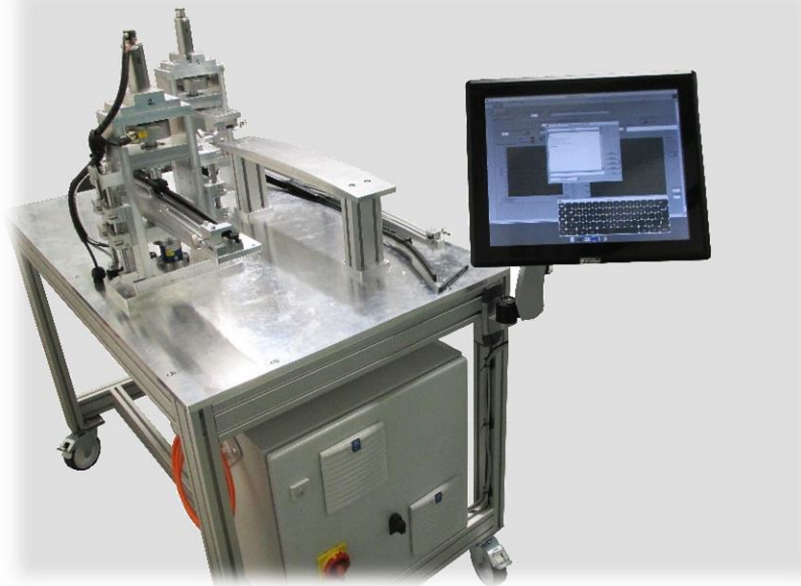
• Dimensions test rig:	2500 x 2000 x 1300mm (w x h x d)
• Inner dimensions chamber:	1200 x 600 x 600mm (w x h x d)
• Rated power:	3 kW
• Operating fluid:	Diesel
• Pressure range:	0 ... 50 bar
• Main flow:	2 ... 60 l/h
• Waveform pressure:	Static
• Temperature range coolant:	20 ... 80°C
• Number of test channels:	1

○



Construction inside the chamber

Test Bench For Joint Play Measurement On Windscreen Wipers



Features:

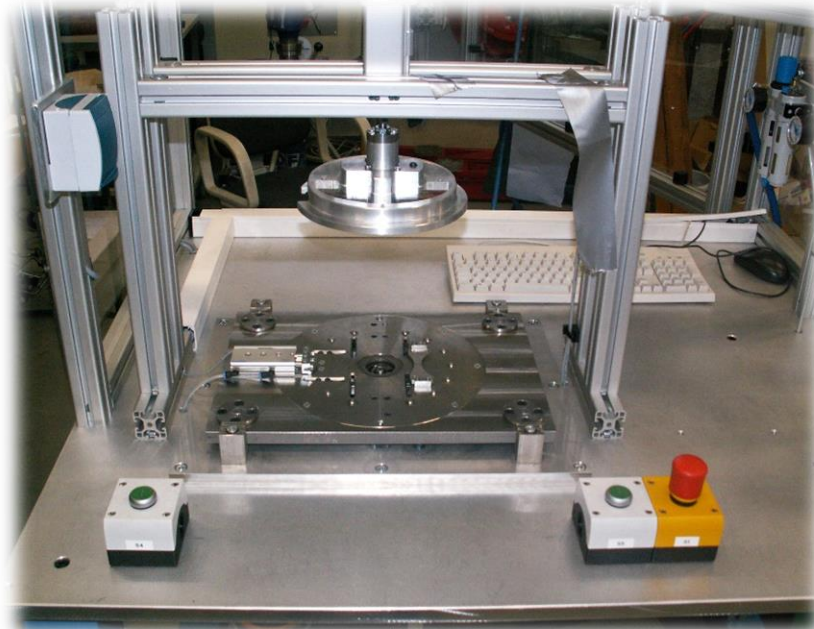
- Designed to determine the tolerance of the hinge of the windscreen wiper
- Especially for measurements on the wiper arm and the wiper rubber
- Measurement on wiper arm and wiper rubber possible at the same time
- Max. traverse angel of $\pm 30^\circ$
- Rotation speed continuously adjustable
- Monitoring of torque limits
- Real-time control and data storage (Linux based)

-
- | | |
|-------------------------|---------------------------------|
| • Dimensions test rig: | 1300 x 1200 x 750mm (w x h x d) |
| • Rated power: | 0.5 kW |
| • Angle range: | $\pm 30^\circ$ |
| • Max Torque: | 0.5 Nm |
| • Number of test parts: | 2 |



Test build up
(Test of the wiper rubber)

Test Bench For Determining The Backlash In Seat Back Adjusters



Features:

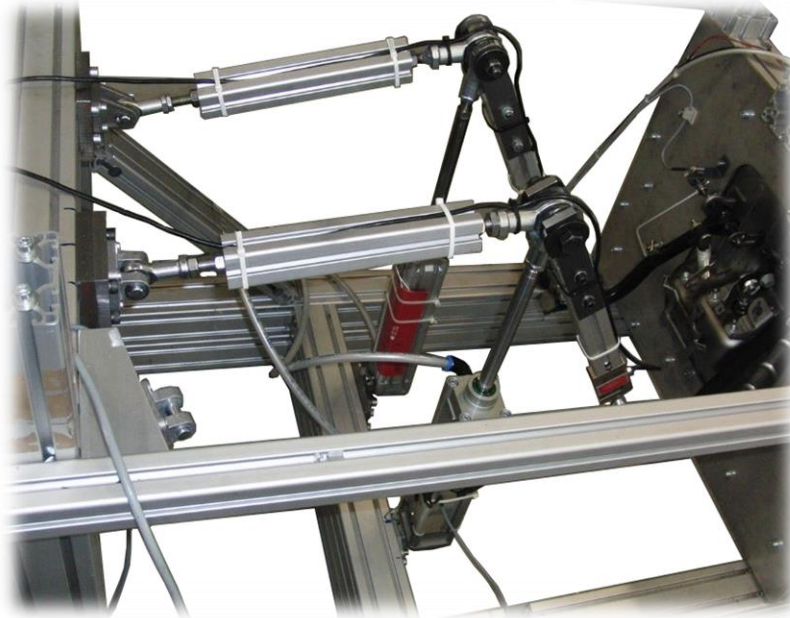
- Designed to measure and compensate backlash in seat back adjustment gears of car seats in the production process
- Strain-Gauge-Supported measurement of the tolerances with a defined subcomponent
- Automatically evaluation of the measurement and selection of the right component to compensate the tolerance
- Operator safety ensured by two-hand control
- Windows based control unit and data recording

-
- Dimensions test bench: 1000 x 1600 x 700mm (w x h x d)
 - Rated power: 0.5 kW
 - Number of test parts: 1



Test specimen at the testing device

Test Bench For Pedals

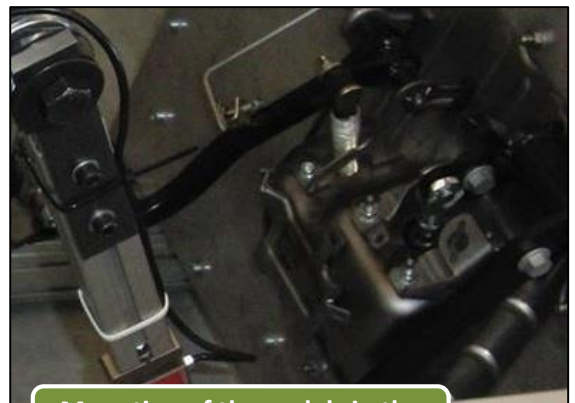


Test bench shown without housing

Features:

- Designed for long term tests on pedals with a defined load spectrum
- Adjustable pedal load from 0 to 2 kN
- Automatic detect of failed test specimen
- PLC based control unit and data recording

-
- Dimensions test rig: 1000 x 1000 x 1500mm (w x h x d)
 - Rated power: 0.5 kW
 - Force range: 0 ... 2000 N
 - Number of test parts: 3
 - Examples for practicable test specifications:
 - SFPP D17.30.01 4.1 / 4.2 / 4.3 / 4.4
 - SFPP D17.30.02 4.1 / 4.2 / 4.3



Mounting of the pedals in the
test bench

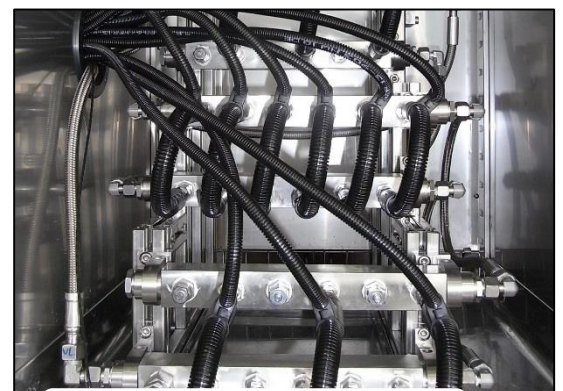
Pressure Fluctuation Test Bench For AdBlue-Components



Features:

- Designed to test automotive parts of the exhaust gas post processing, e. g. SCR-, AdBlue- or Coolant-pipes
- Specially designed for testing with AdBlue
- Heating of the AdBlue with the help of the hose-integrated heaters of the test specimen
- Pressure range from 0 to 30 bar
- Possibility of different pressure waveforms
- Automatic leak detect and leak test (with automatic switching off of the test bench)
- Orderable with different test chambers (explosion protection by inerting)
- Windows based control unit and data recording

• Dimensions test rig:	1500 x 2000 x 1100mm (w x h x d)
• Inner dimensions chamber:	Depends on chamber
• Rated power:	23 kW
• Operating fluid:	AdBlue / Glycol / Water
• Pressure range AdBlue:	0 ... 30 bar
• Pressure range Glycol / Water:	0 ... 10 bar
• Pressure frequency:	>0 ... 2Hz
• Waveform pressure:	Sine, Trapezoid, Static
• Temperature range AdBlue:	Depends on test specimen
• Temperature range Glycol / Water:	20 ... 135°C
• Temperature range chamber:	Depends on chamber
• Number of test channels:	Depends on chamber
• Examples for practicable test specifications:	
○ TL52361	6.1.1 / 6.1.2
○ Daimler	3.11.1.16



**Construction inside the chamber
(Depends on chamber)**

AdBlue Refuelling System



Features:

- The system is used for "refuelling simulation" with varying flow rates and test media on different test specimens. Available with different nozzles
- Functional principle of the refuelling system as controlled pump unit
- Use of AdBlue®, ShellSol TD® and water as test media possible
- The flow rate in the range of 5 l/min to a maximum of 100 l/min is possible
- Temperature monitoring with automatic switch-off
- Control and operation via a touch panel

- | | |
|--|--------------------------------|
| • Dimensions test rig: | 600 x 995 x 1176mm (w x h x d) |
| • Weight (empty): | ca. 280kg |
| • Rated power: | 2500 W |
| • Operating fluid: | AdBlue / ShellSol TD® / Water |
| • Flow rate: | 5 100 l/min |
| • Temp. ambient during operation: | min. +10 ... max. +25°C |
| • Temp. medium during operation: | min. +10 ... max. +29°C |
| • Allowable storage temperature: | min. +10 ... max. +25°C |
| • Number of nozzles: | all available |
| • Examples of tests that can be carried out: | |
| ○ Customer requirements | |
| ○ Specification for mobile filling station for AUS 32 and synthetic fuel | |



Functional Principle

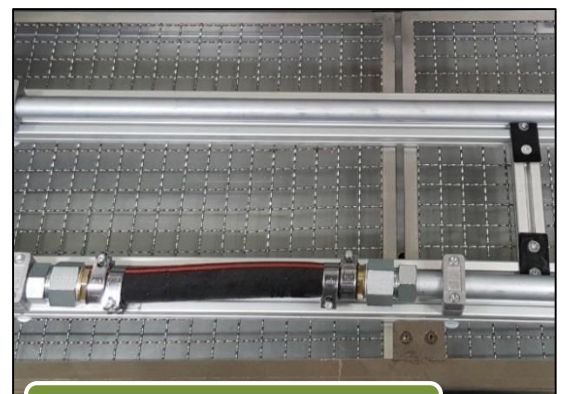
Test Bench For Leak Tests Under Water, 200bar!



Features:

- Designed to test several different automotive parts, e. g. hoses and lines
- Especially for leak tests under water, with air or CO₂
- Pressure range from 0 to 200 bar
- Certified safety for a max. pressure content product up to 120 bar litres
- Automatic leak detection (with adjustable limits) during the test
- With huge windows in the housing for an optimal view on the test part
- With permanently installed and additional freely movable LED light for optimum illumination of the test specimen
- Windows based control unit and data recording

• Dimensions test rig:	3100 x 1300 x 1000mm (w x h x d)
• Inner dimensions chamber:	2000 x 700 x 800 (w x h x d)
• Rated power:	0,75 kW
• Operating fluid:	Air, CO ₂
• Pressure range Air / CO ₂ :	0 ... 200 bar
• Waveform pressure:	Ramp, Static
• Temperature range Air / CO ₂ :	RT
• Temperature Water:	RT
• Number of test channels:	1



Construction inside the chamber
(Test part on a steel grid)



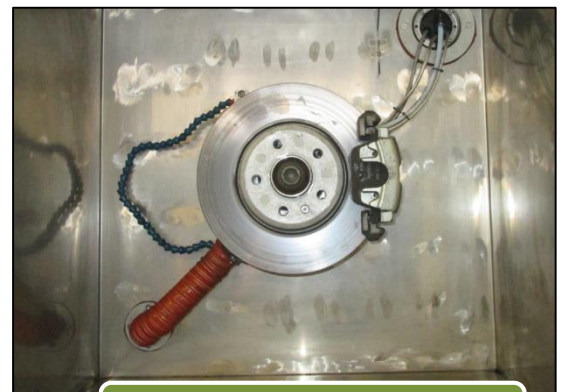
Brake Dust Generator For Defined Contamination Of Rims



Features:

- Designed to create a defined and reproducible brake dust contamination on wheel rims
- Adjustable speed from 0 to 200 km/h
- Adjustable break pressure and breaking time
- Simulated airstream to distribute the brake dust like in a real automobile
- Integrated wastewater pump to simulate rain and wet roads
- Visualization of all relevant states of the system
- Monitoring and displaying of the actual values
- PLC based control unit and data recording

• Dimensions test rig:	1000 x 2000 x 1500 mm (w x h x d)
• Inner dimensions chamber:	800 x 800 x 400 (w x h x d)
• Rated power:	18 kW
• Additional fluid:	Dirty water
• Orbital speed of the wheel rim:	0 ... 200 km/h
• Temperature range chamber:	Resultant temperature
• Number of test parts:	1



Drive axle inside the chamber
(View on the break system)

Test Chamber With Indirect Heating 1000 Litre For Oil Impulse Bench



Features:

- An incomplete test chamber specially designed and constructed for applications in conjunction with pressure pulse aggregates
- Ex-protection by avoiding excessive surface temperatures
- Avoidance of ignition sources
- Use of intrinsically safe sensors
- The test chamber may only be operated in accordance with country-specific laws, regulations and standards

• External dimensions test chamber:	1400 x 2400 x 1800mm (w x h x d)
• Inner dimensions chamber:	1000 x 1000 x 1000mm (w x h x d)
• Weight:	ca. 750 kg
• Rated power:	12 kW
• Temperature range chamber:	+20°C ... +160°C
• Temperature Rate of change:	
○ Heating:	3 ... 5 K/min
○ Cooling:	ca. 3 K/min



Test chamber inside

Test Bench For Spray Nozzles

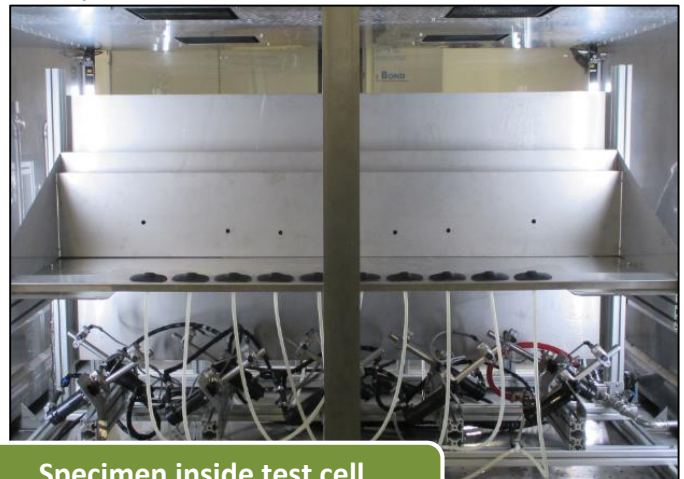


The test bench components (nitrogen generator / control unit / test cell)

Features:

- Designed to test automotive spray nozzles in climatic chambers, e.g. windshield cleaning nozzles (WCS) and headlight cleaning nozzles (HCS)
- Especially developed for tests with explosive / flammable fluids
- Consists of three separate components, (test cell, control unit, nitrogen generator)
- In explosion protect class 1, because of the nitrogen inertisation of the test cell
- Suction with explosion prevention to remove flammable fumes and smells from the test cell
- Tempering of the test cell and the fluid depends on the ambient temperature
- Visualization of all relevant states of the system
- Monitoring and displaying of the actual values
- PLC based control unit and data recording

• Dimensions test cell:	2030 x 2550 x 1600 mm (w x h x d)
• Inner dimensions test cell:	1900 x 1150 x 1450 (w x h x d)
• Rated power:	4 kW
• Operating fluid:	Water-Ethanol mixture
• Allowable ambient temp. test cell:	min. -25 °C / max. 80 °C
• Number of test parts:	20 (10 HCS / 10 WCS)



Specimen inside test cell
(Windshield cleaning system above,
headlight cleaning system below)

Multi Impact Test Unit (Gravelometer)

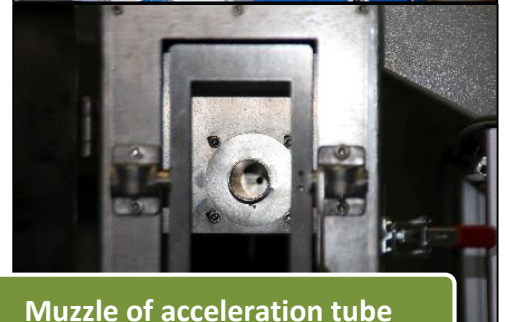


Features:

- Designed to assess the resistance of automotive paints and media-carrying pipes to bombardment with a chilled cast iron granulate as a simulated stone impact. The stone impact resistance of the coating or the pipes is tested by many small, sharp-edged impact bodies which strike in rapid succession and largely independently of each other
- Especially according to DIN EN ISO 20567-1 for continuous operation in multi-impact process. Usable for DIN and SAE standards; DIN → with metal granules, SAE → with crushed stone
- Pressures from 0 to 11 bar. Pressures > 11 bar possible, depending on the container Pressure accumulator
- SPS-control

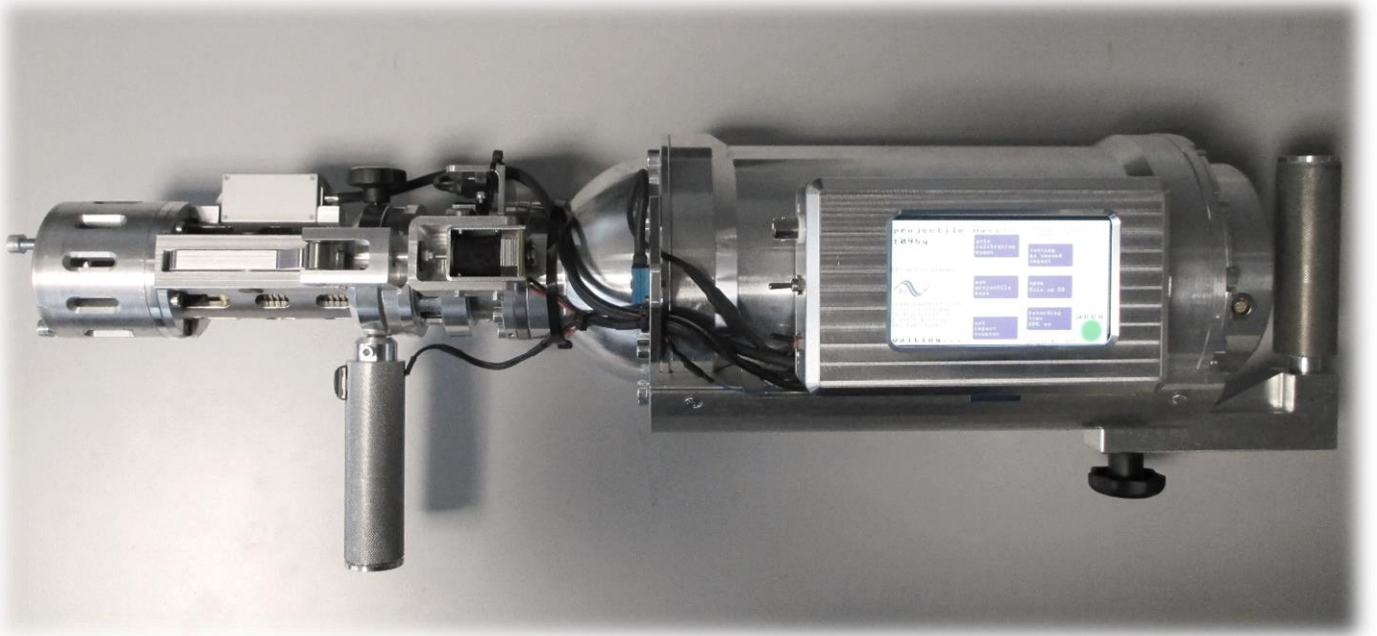
- | | |
|---|----------------------------------|
| • Dimensions test rig: | 1350 x 1300 x 600 mm (b x h x t) |
| • Acceleration tube diameter: | 30 mm |
| • Distance between acceleration tube and test specimen: | 290 mm |
| • Rated power: | < 500 W |
| • Operating fluid: | Air |
| • Pressure range | 0 ... 11 bar, > 11 bar possible |
| • Number of test parts: | 1 |
| • Examples for practicable test specifications: | |
| • DIN EN ISO 20567-1, 2007-01 | |
| • SAE J400, 2012-10 | 4.1.1 |
| • BMW GS 95024-3-1, 2010-01 | 4.2 |
| • Tesla TS-0002476, 2014-09 | |
| • GMW 14700 | customer specification |

Loading container



Muzzle of acceleration tube

Mobile Impactor



Features:

- Designed for material tests in the aviation and the railway sector
- Designed for one-man operation
- Material testing by generating an impact with a defined energy level using compressed air
- Available with different projectiles (different weights, different projectile heads)
- Effective energy adjustable from 3 to 140 Joule, by means of supplied filling station
- Analysis and display directly on the built-in touch screen (4.3", 480x272 pixels)
- Measurement data storage on SD card
- Data recording with 50kHz sampling rate for distance, speed, acceleration
- A mobile compressor is available on request if no compressed air supply is available

-
- | | |
|------------------------|-------------------------------|
| • Dimensions Impactor: | 270 x 600 x 200mm (w x h x d) |
| • Weight: | 10 kg |
| • Impact energy: | max. 140 J at 6 bar |

Accessories For Test Benches

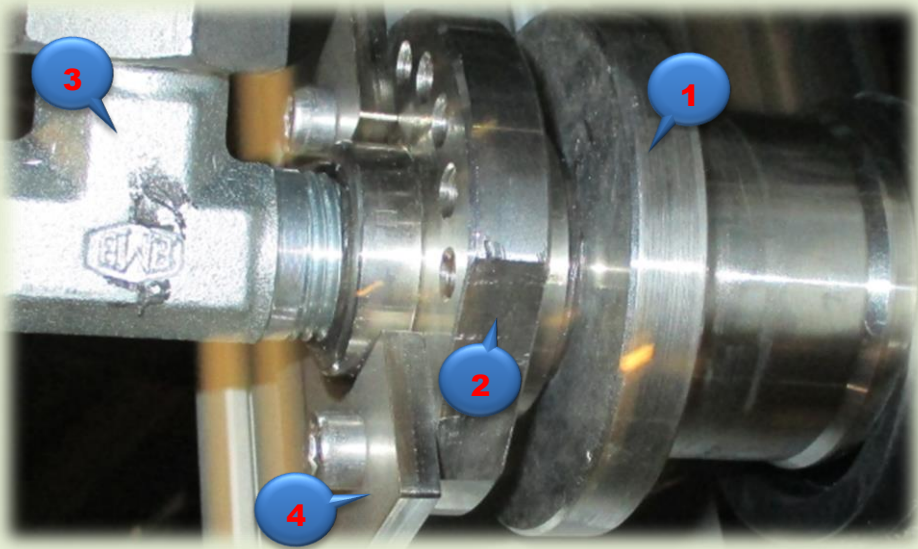
Steel braided flexible connection line

- Available in different nominal sizes
- Available with insulation
- Connection fittings available in galvanized or stainless steel version
- Available for a diverse range of test rigs and applications



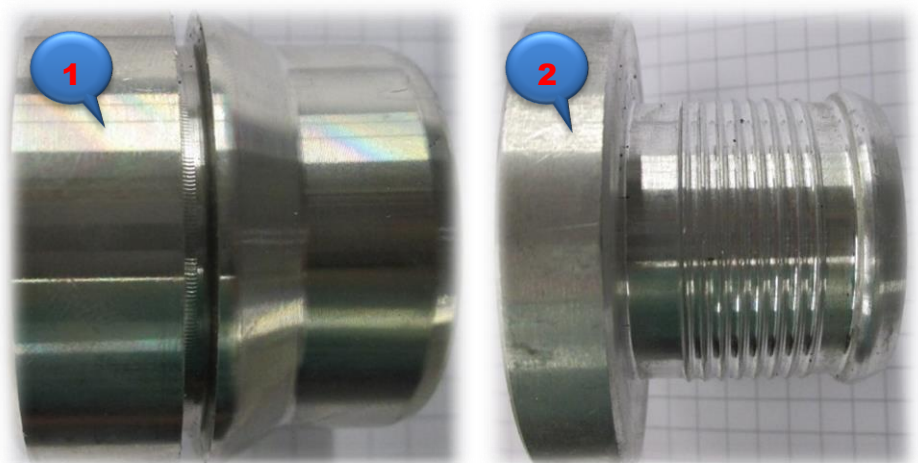
Test piece connection for hot Air Charge Hose Tester

- Exchangeable connection part for different samples (1)
- Fixing component to the fixed frame or moving hand in stainless steel (2)
- T-fitting for connection line and temperature sensor (3)
- Stainless steel bracket for mechanical fixation (4)



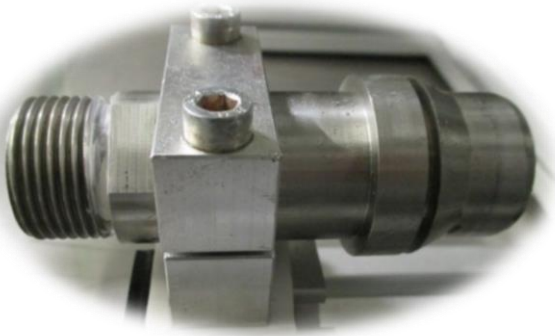
Connection parts for Air Charge Hose Tester

- Different geometries possible
- Available in aluminium or stainless steel
- Different QC (quick coupling) connection parts available (1)
- Different hose spouts possible (2) in accordance to different TLs



Hose spouts for Coolant Test benches

- Hose spouts, different nominal width available
- In accordance to variant TLs (VW TL78007)
- Direct connection to steel flex hose
- No cross-section narrowing
- Fast modification to different specimen, because of same basic construction



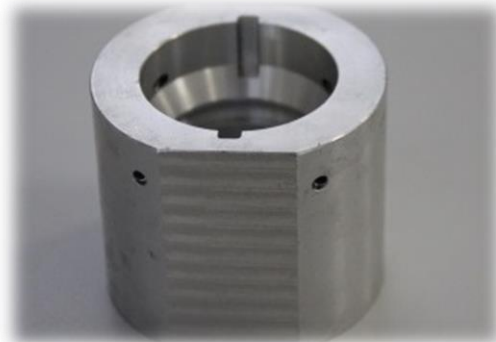
VDA - Connection parts for Coolant Test benches

- VDA standard (male): Available in different nominal width
- Connection fittings made in stainless steel
- Direct connection to steel braided lines
- No cross-section narrowing
- Fast modification to different specimen, because of same basic construction



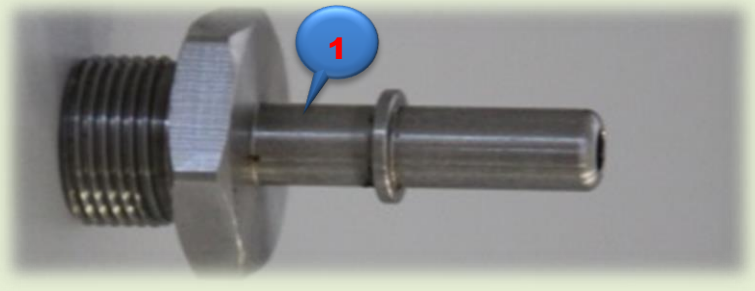
VDA - Connection parts for Coolant Test benches

- VDA standard (female): Available in different nominal width
- Connection fittings made in aluminium (stainless steel available)
- Direct connection to steel braided lines possible
- No cross-section narrowing



Various connection parts available

- Fittings made in aluminium or stainless steel
- Direct connection to steel braided lines possible
- No cross-section narrowing
- E.g. SAE fitting (1)



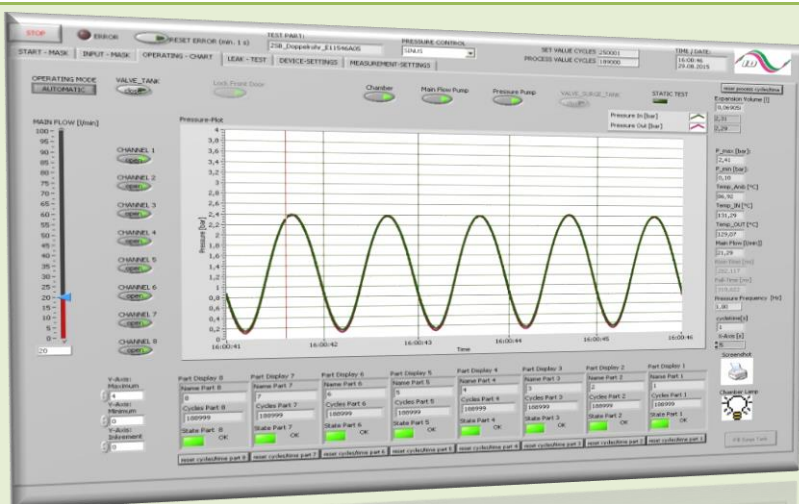


Software



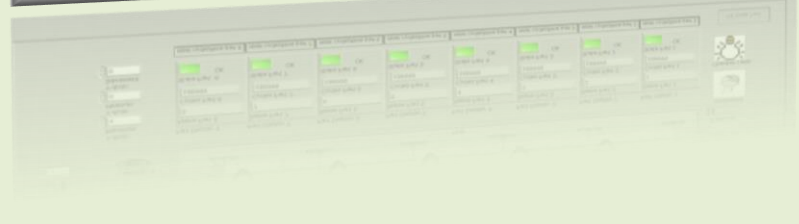
Input Mask Chart:

- 10 Step sequencer
- Ramp functions
- Time settings
- Temperature control
- Start temperature selection
- Pressure control
- Movement control
- Pressure Curve selection
- Storing of all entered values in a Config file



Operating Chart:

- Pressure curve display
- Overview all actual values
- Several manual control options
- Auto/Man operation mode selection
- Channel state overview
- Display the long-term Max and Min Pressure (Inlet + Outlet)
- Pressure curve display settings (both axes)
- Screenshot button
- Chamber light





**We introduced
measures for a quality
management. Thus, we
are ISO 9001-certified.**

**We are currently working on
accreditation as a testing
laboratory according to ISO
17025**

