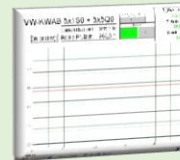
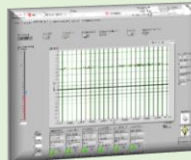


Automotive component testing

Static tests / Dynamic tests / Vibration tests

Static tests

(tests with constant conditions)



Operating fluids: Glycol, Oil, AdBlue,
Petrol, Air

Fluid temperatures: +25 ... +180 °C (300°C)
Ambient temperatures: -50 ... +210 °C (300°C)

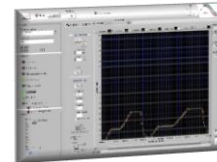
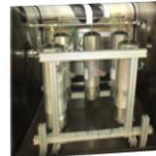
Pressure range: 0 ... 10 bar
In relation to the 0 ... 50 bar
different medium 0 ... 250 bar

Long term tests
Perfusion tests

Aging tests
Lifecycle tests

Dynamic tests

(tests with changing conditions)



Typical pressure waveforms: Sine, Trapezoidal

Operating fluids: Glycol, Oil, AdBlue,
Petrol, Air

Fluid temperatures: +25 ... +180 °C
Ambient temperatures: -40 ... +210 °C

Pressure range: 0...10, 50, 250 bar
Pressure frequency: < 0 ... 3 Hz
High frequency pressure peak

Pressure fluctuation / pulse tests
Pressure ramp tests
Bursting pressure tests (up to 300 bar)

Pressure pulse air with linear motion (up to 250 °C)
Pressure swell with oil
3D-movement tests

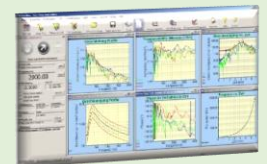
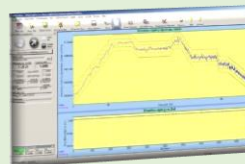
Vibration tests / Movement tests

Tests with electrodynamic shaker's /
and uniaxial and 3D / 4D moving unit's

Operation modes: RSTD, Sine sweep, Random,
Sine random, ...

Operating fluids: Glycol, Oil, Petrol,
AdBlue, Air

Fluid temperatures: -40 ... +180 °C
Ambient temperatures: -50 ... +180 °C



Vibration test with temperature overlap
Sine sweep with temperature overlap and pulse of heated air
Resonance search and dwell tests
Determining of the natural resonance frequency
Shock tests

Linear movement: ±40mm/0 ... 2Hz / ±2mm/20Hz
3D / 4D movement:
Amplitude motion: ± 50 mm
Frequency motion: 5 ... 3000 Hz
Nominal forces: 2,9 ... 28 kN
X: ±35mm, 2Hz / ±40mm, 1,5Hz
Z: ±35mm, 2,5Hz / ±40mm, 2,0Hz
Y: ±35mm, 3Hz / ±40mm, 2,5Hz
Rotation: to ±20°/2Hz

Our Service

- Implementation of time-critical projects
- Quick, flexible and easy realization of special tests
- Implementation and evaluation of the complete test according to the product requirement document
- Constant contact with the person responsible
- If necessary the test part can be filmed during the test
- Handing-in of a test report which contains the summary of all measurement data and photo documentation of the damaged test parts
- A confidential handling of all data will be assured.

**Customers for tests,
of ID-Lindner**



Specification; item	Test
150306_JBP_TestSpec_MAN_SCANIA_v1_5	change in pressure
Audi customer specifications; vibration test with temperature overlap +120C° -30C°	Sinus Sweep
BMW 044 – 7.1; extended Q requirements KML 5.4.4.2 vibration test with temperature overlap +120C° -30C°	movement test
BMW 10356681; item 000-03	pressure threshold
BMW 10359189; item 5	pressure threshold with temperature change
BMW 10403165-036.1.2.5	pressure pulse air
BMW 7823444.6; item 5.3.4.1	pressure swell test
BMW GS 95003-3; item 4	resonance search and dwell
BMW GS 95003-3; item 4.2	resonance search and dwell
BMW GS 97073-2; item 4.3	resonance search and dwell
BMW GS97073-2; item 4.3.4	resonance search and dwell
BMW GS97093-1; tabel 1, classe B	random
BMW LH 10354886-000-01 (Version 10.04.2012); 6.3.4.2	pressure pulse air, linear motion
BMW LH PR 603.1; Sinus Sweep with temperature overlap and pulse of heated air	Sinus Sweep
BMW LH10356682	random
BMW QV17004D	pressure swell surge tank
BMW QV17004D; item 3.2.11	vibration test
BMW QV17006 VWTL 52068; item 5.1	test of pressure threshold with change in temperature
BMW, 10356681; item 6.2.2.13.2	flow test
BMW, 10356682; item 6.2.2.2	bursting pressure
BMW, 10356682; item 6.2.2.9	flow test
BMW, 10451650; item 6.2.2.3	pressure swell oil
BMW, 10451650; item 6.2.2.3	pressure swell
BMW, 10477795; item 6.1.2.1 und 6.1.2.2.	flow test
Bosch BMTS V_0079, V0.0 from 01.05.2013	pressure pulse air, linear motion
customer demand	pressure pulse air, linear motion
customer demand	pressure pulse air, motion, slop
customer specifications and VW TL 82048; item 5.7.1	pressure swell oil
customer specifications Nissan; vibration test with different frequencies and speed-up with temperature and hot air cushion	vibration test HLP1
customer specifications; resonance search between 10-200Hz and dwell for 10.000.000 cycles	resonance search and dwell
customer specifications; 0 - 500bar; 1 bar/second; room temperature 150°C	bursting pressure
customer specifications; 0,0bar - 15,0bar; room temperature; saw tooth tread design, increase of pressure 4 sekonds, decrease in pressure 1 second, no duration of dwell	pressure swell oil
customer specifications; 0,0bar - 34,0bar; 1Hz Sinus; 100°C medium and surrounding	pressure swell oil
customer specifications; 0,0bar - 42,0bar; 3Hz Sinus; 170°C medium and surrounding	pressure swell oil
customer specifications; 0,5bar - 9,0bar; 4Hz Sinus; 120°C medium and surrounding	pressure swell oil
customer specifications; 0l/min bis 80l/min, in change with a frequency of 0,2Hz; 50°C medium and surrounding	flow test
customer specifications; 15,0bar - 300,0bar; 0,5Hz Sinus; 40°C medium and surrounding	pressure swell oil
customer specifications; 2,0bar - 16,0bar; 1Hz trapeze; 150°C medium and surrounding	pressure swell oil
customer specifications; 2,0bar/5,0bar - 20,0bar/40,0bar/60,0bar; 2Hz Sinus; 120°C medium and surrounding	pressure swell oil

customer specifications; Rauschen with temperature and medium	cooler validation
customer specifications; resonance search between 10-200Hz	determining the natural resonance
customer specifications; search area 10-1000Hz at a fluid temperature of 135 °C	determining the natural frequency
customer specifications; speed-up 10g, shock duration 10ms, 3000 cycles	shock test
customer specifications; swoosh 10-2000Hz	random
customer specifications; swoosh 10-2000Hz, shock test 100g	random
customer specifications; vibration test at 15Hz with different speed-ups with temperature and pressure	vibration test
Daimler specification; A 210 006 40 99; item 6	dynamic short-term test
Diamler customer specifications; resonance search between 10-2000Hz and dwell	resonance search and dwell
Diamler customer specifications; thrust and ± 15 mm at a frequency of 2Hz	movement test
DIN3859-3	bending strength
Engine Rock expanded, customer demand	3D-movement
ESDG93-8260-AA; item 3.15	PVT test
EvoBus FV EVO142.60/2; item 12.2.2	change in pressure
Fiat 9.02132-012.5.9	pressure pulse air
Fiat LH 9.02245; item 2.10	endurance test
Fiat LH 9.02245; item 2.10	test of endurance
Ford ESB53-6C646-AA; 4.3.1	pressure pulse air, linear motion
Ford ES-DG93-8260-AA; item 3.15	PVT
Ford ESDG93-8C012-AA; item 3.13	PVT
Ford ES-GK2Q-6K679-BA; item 3.3	movement test
Ford ES-GK2Q-6K679-BA; item 3.4	resonance search and dwell
Ford ES-HL3E-8A520-AA; item 3.11	resonance search and dwell
Ford ES-HL3E-8A520-AA; item 3.12	movement test
Ford ESHX7G-6K677-AA; item 3.1	resonance search and dwell
Ford ESHX7G-6K677-AA; item 3.4	movement test
Ford, ESDG93-8A080-AA	Expansions Tank Tests
GM, 14329; item 4.3 und 4.5	flow test
GM, 14329; item 4.3.1	bursting pressure
GM, 14329; item 4.6	fatigue test
GM15310	Lifecycle Test Surge Tanks
GMW 15803_2015-04_EN; 4.2.2	pressure pulse air, 3D-movement
GMW, 14319; item 4.3.20	pressure swell oil
GMW15310-june2007; item 3.2.1.3.	movement test
GMW16153, Version Oct. 2014; 3.2.1.2	pressure pulse air, 3D-movement
low frequency 3D Motor movements	3D-movement
Nissan 92480 NDS10	tests with refrigerant R134a for air conditioning system
Porsche PLB-A2B-Z	pressure swell surge tank
PSA B21 7120; item 6.5.6 M5.5	vibration test
PSA, 01497_11_00078 and Std. D15 3519; Capacity To Maintain Urea Above -10°C, Resistance to Washing Tools / item unknown	Ad Blue
PSA, 01497_11_00078; Cleanliness after Purge, Cleanliness at Work, Resistance to Salt, Mechanical Resistance of Electrical Conductor	Ad Blue
PSA, 9690669299; item 11.3	pressure swell with oil
PSA, 9690669299; item 11.3	bursting pressure
Renault 32-02-840/--C	vibration test
Renault 34-00-039/--C	resonance search and dwell
Renault M5MT_K1, customer demand	pressure pulse air, linear motion

request specification	Several life tests coolant expansion tank
RSA 31-05-103--A	resonance search and dwell
RSA 32-02-027	random
RSA 32-02-028	movement test
RSA 37-06-097	acoustic
TL unknown / customer specifications; item 6.3.1.2	bursting pressure
TL VW60562, 2010-06; 4.2.2.1-4.2.2.2	pressure pulse air, linear motion
TL VW60562, customer demand	pressure pulse air, linear motion
VDA functional provision; item 4.4.3	resonance search and dwell
VW 4G0 260 D1; item 6.2.5/6.2.6	Resonanz resistance/Vibration resistance
VW 80.000	permeation
VW 80000, item 13.4	M-04 vibration tests
VW TL 80000; item 8.4	Sinus on random
VW TL82041 customer version	Sinus Sweep
VW TL82041; item 7.7	vibration resistance test
VW, TL 52435; item 6.4	Bursting pressure
VW, TL 82086; item 5.1.2	pressure swell oil
VW, TL 82316; item 9.6.1	pressure swell oil
VW, TL 874, item 4.7 (following 4.4 + 4.3.2)	Static temperature and pressure loading
VW, TL52361, item 6.1.1	pressure swell coolant
VW, TL52682, item 6.12	Static long term test
VW, TL60562, item 4.1	pressure swell air
VW, TL82041; item 7.8.2	pressure swell oil
VW, TL82253, item 5.1	Fuel line tests
VW, TL874, item 4.4	pressure swell cooler
VW, TL889	Static pressure test for expansion tanks
VW, TL889	life test coolant expansion tank
VWTL 60562 - 2010-06; 4.1 + 4.2.2	pressure pulse air, linear motion
VWTL; item 9.8.3/9.8.5/9.8.7	vibration test
VWTL52068; item 5.1	test of pressure threshold (swell)
VWTL52361; item 6.1.1	pressure swell coolant
VWTL52682; item 6.11	pressure pulse test coolant
VWTL60562 (2010-06)	pressure pulse air, one side fixed
VWTL82029; item 4-6	expansion tank cap test
VWTL874; item 4.3 + 4.4	pressure swell cooler
VWTL889; item 4.1	Life test coolant expansion tank