



AUTOTESTGERÄTE **LEITENBERGER GMBH**

PRODUCT-CATALOGUE NO. 13



ENGINEERED AND MADE IN GERMANY
WWW.LEITENBERGER.COM





The LEITENBERGER Company was founded in 1969 in Reutlingen, an industrial town to the south of Stuttgart in the Federal German State of Baden-Württemberg.

Since then the company logo is unchanged:

LEITENBERGER REUTLINGEN.

ENGINEERED AND MADE IN GERMANY



QUALITY



MADE IN GERMANY



**Schwaben (swabian) power
since 1969**

From the outset, our employees' development capabilities and innovative ideas, characteristic qualities of the people of the area,

rapidly led to an extensive range of measuring, testing and recording instruments, designed to record physical variables. In addition, the range now includes mechanical, electronic and optical testers.

Of medium size, the Company has undergone considerable expansion as a result of further developments in every product group. In turn, we have been able to optimise our services and to introduce the

latest technologies jointly with our customers and, in this way, to establish long-term business relationships.

Thanks to our uncomplicated, direct contact with the customer, we are able to satisfy the most wide ranging of functional and other requirements in the minimum of time, with reliable, thorough solutions.

To this end, we also collaborate with efficient associates worldwide,

guaranteeing exceptional value for money and high standards of quality. Customer satisfaction throughout the world confirms our success on a global scale.

Thanks to user satisfaction and a loyal customer base,

Autotestgeräte
LEITENBERGER GMBH
can look forward to a successful, innovative future.

SCHWABEN_(SWABIAN) POWER SINCE 1969





Headquarter: Bahnhofstraße 33

- Offices, administration, purchasing, sales, QA, exhibition room, training room
- Lab for development electronics/ software, Development, Mechanics
- Production parts, Shipping



Factory II: Alexandroupolis, Greece

- Pre-installation
- Partial installation
- Warehouse



Factory III: Commercial park,

- Cardboard warehouse
- Packaging material warehouse
- Depot
- Employee parking spaces
- Visitor parking spaces



Factory IV: Wannweiler Straße 3

- CNC foam rotary cutter
- Case production, empty case and foam material blank warehouse
- Lab for sensory devices (software/ hardware) software development

THE LEITENBERGER COMPANY



Factory I: Bahnhofstraße 32

- Quality check
- Production, installation
- Lab / Development
- CAD office, 3D printer
- Electronics system
- Circuit board configuration
- Repair shop



GERMANY

Autotestgeräte

LEITENBERGER GmbH

- Development
- Production
- Prototyping
- Solutions

Our company is part of the **LEITENBERGER-group** with plants in Germany and Greece.

Following companies also belong to the group:



GERMANY

Druck & Temperatur

LEITENBERGER GmbH

- Pressure Gauges
- Pressure Calibration
- Thermometer
- Temperature Calibration
- Data Logging and Recorders



GERMANY

LEITENBERGER

Mess- und Regeltechnik GmbH

- Thermometers
- Combistats
- Digital thermometers
- Pressure gauges for refrigerants



The Company's headquarter: Bahnhofstraße 33

Today, the Company's headquarters are located in Kirchentellinsfurt, a municipality with a population of around 5500 in the Neckar valley, approximately 30 km to the south of Stuttgart.

Content

- **Cooling System**

 8 - 16
 Cooling system testing equipment, cooling system tester case custom made, diagnostic, vacuum cooling system filler, accessory for vacuum cooling system fillers, adapters for testing cooling systems, CO₂-leak detector, refractometer for different liquids, thermometer for cooling water
- **Engines**

 18 - 28
 Cylinder leakage testers for petrol and diesel engines, dead point gauge (TDC), compression testers, oil pressure testing equipment, topping up engine oil, digital thermometer, belt tension gauges, timing lights for petrol and diesel engines, accessories for timing lights, carburetor tester, revolution counter
- **Pumps**

 30 - 36
 Vacuum and pressure pumps, hand operated transfer pumps, hand metering pumps, hand suction pumps, accessories for manual vacuum extraction and metering pumps, barrel suction pumps, oil suction program
- **Fuel Injection System**

 38 - 56
 Common Rail high pressure tester, static and dynamic high pressure pump test, injector function test, return flow volume measurement, fuel identification, injection tester, diesel bleeding, fuel suction device, fuel consumption meter, accessory for diesel injection control units, fuel pressure and leakage tester, system pressure test on low pressure side, fuel supply pump tester, test benches for automatic testing, mini test bench
- **Brake System**

 58 - 65
 Brake fluid tester, refractometer, brake pressure testers for transport vehicles, brake pressure testers, digital brake pressure testers, vacuum brake bleeders, accessory vacuum brake bleeder, brake bleeder service unit, brake bleeder adapter kits

- **Transmission**

66 - 68



Service station for automatic transmission oil, pressure and vacuum pump for the suction, the refilling and the scavenge of gearbox-oil, gear oil filling pump, diagnose, oil pressure tester

- **Electrical/ Charging System**

69 - 82



Electric multifunction circuit testers, tester for battery and charging system, electronic protection, short circuit detector, code maintainer, multimeter, glow plug testers, trailer lighting tester, illumination testers - tractor testers, accessory for illumination testers

- **Safety**

84 - 87



Aero wipers testing and adjusting tools, electronic force measurement, tire pressure - checking and filling

- **Exhaust System**

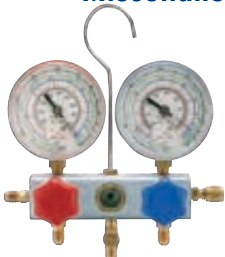
88 - 91



Service equipment for SCR systems, test tools for charge air systems, filler units, suction pumps, pressure and tightness tester, leakage tester, test devices for exhaust systems, leakage test fresh air intake

- **Miscellaneous**

92 - 95



Vehicle body, service equipment for air conditioning systems, testing of pressure switches, barrel suction pump, protection covers, hydraulic, battery case tightness tester, special tools



Cooling system testing equipment

Testing equipment for the leak testing of cooling systems and adapters for cars, transport vehicles, motor cycles, agricultural and construction machines.

A leaking cooling system is identified by a loss of pressure. All cooling system testers with quick-release couplings are capable of performing a self test (for leaks) without the use of any auxiliary equipment.

The assignment of the adapters designated K, KS and KW to the respective vehicle manufacturer is shown at our website at service, downloads "Adapter list for cooling system testers"

for this purpose you also can scan the QR-code →



Example of a complete cooling system test kit

A case containing cooling system test instruments can be fitted out in accordance with your personal requirements.

For the specifications of standard test instrument cases, see next pages.



Cooling system tester



flexible hose

K-adapter with thread connection



K-adapter with bajonet connection



KDV 01

060109



Combination pump for pressure and vacuum

2 functions - 1 pump

Combination pump for pressure and vacuum with change-over ring. Compound gauge DS 63 mm (2 1/2") with robust protective rubber cap and with dual fine scale.

Vacuum range -1...0 bar / 760 mmHg,

Pressure range 0...3 bar / 42 psi, fine graduation 0.05 bar.

Two operational alternatives

- as pressure pump for cooling system

- as vacuum pump for checking vacuum functions in the vehicle

Scope of delivery:

1 hand pump KDV 01 reversible, with quick coupling

1 flexible hose FZ 100K

1 conical plug-in adapter made of brass

1 PVC hose 0.50 m (20 in.) long

4 plastic adapters

TVU 100/2

010109



Commercial cooling system tester for the connection to compressed air

Commercial cooling system tester for the connection to compressed air by means of a tire inflating valve. Includes quick coupling, high quality gauge 52 mm (2"), double scale 0...2.5 bar / 0...36 psi, overpressure valve adjusted to 1.2 bar. Suitable for trucks and agriculture vehicles with large volume cooling systems in order to avoid prolonged pumping.

TVU 139/1

010130



Cooling system tester with quick coupling and drain valve

Cooling system tester with quick coupling and drain valve in fibreglass reinforced ABS body. DS 52 mm (2") precision pressure gauge with robust protective rubber cap, double scale 0...2.5 bar / 0...36 psi. This tester is distinguished by the ergonomic design of the pump body.

Note: Further ranges on request.

TVU 139/1S

010130_4



Cooling system tester

Cooling system tester with quick coupling. Same as TVU 139/1, but with fixed hose.

Cooling system tester case custom made

The case can be fitted out in accordance with your personal requirements:

case + pump + adapter

The assignment of the adapters designated K, KS and KW to the respective vehicle manufacturer is shown at our website at service, downloads: "Adapter list for cooling system testers"

The following cases are based on popular request.

LR 150/Motorrad 2

010727_3



Cooling system test kits

Cooling system test kit for motorcycles, suitable for European and Asian makes. To permit working in confined spaces in particular, the kit includes an angled adapter with extension hose.

Scope of delivery:
1 cooling system tester TVU 139/1
1 angled adapter KW 72
in solid plastic case

LR 150_PORSCHE 2

010781_1



Cooling system test kit, Porsche

Cooling system test kit with adaptations to the expansion tank, suitable for all Porsche models, incl. adaptations for functional and tightness test of the cooling system cap.

Scope of delivery:
1 cooling system tester TVU 139/1
1 flexible connector FZ 100K
6 test adapters (KS 22, DS 22K, K 60, DS 60K, KS 65, DS 65K)
in solid plastic case

LR 229

010922



Cooling system master kit 1, with 11 adapters

Master cooling adapter kit for a large variety of the latest European und Asian vehicles.

Scope of delivery:
1 cooling system tester TVU 139/1
1 flexible connector FZ 100K
11 test adapters (K 60, KS 22, KG 23, KS 31, K 32, KS 38, KS 65, KS 90, KS 86, KS 62.1, KS 77)
in solid plastic case

LR 230

010923_1



Cooling system test kit, europe, asia

Combination radiator tester for new generations of vehicles from VW, Audi, Ford, Opel and far eastern manufacturers. Due to space restrictions, the latest vehicles necessitate the use of angle adapters. As a result, the specification includes three adapters of that type KW.

Scope of delivery:

- 1 cooling system tester TVU 139/1**
- 1 flexible connector FZ 100K**
- 6 test adapters (KW 90, KW 85, KW 77, KS 65, KS 38, KS 31)**
- in solid plastic case**

LR 250

010949_1

NEW



Cooling system master kit 2, with 7 adapters

Cooling system master kit. With 7 adapters.

Scope of delivery:

- 1 cooling system tester TVU 139/1**
- 1 flexible connector FZ 100K**
- 7 test adapters (KW 77, KW 85, KS 79, KS 82.2, KS 84, KS 86, KS 90)**
- in solid plastic case**

LR 310

011004



Cooling system test kit with universal adapter UA 50

Cooling system test kit with universal adapter UA 50, application range radiator orifices diameter 20...41 mm (3/4...1 5/8").

Scope of delivery:

- 1 cooling system tester TVU 139/1**
- 1 universal adapter with hand wheel UA 50**
- 1 flexible connector FZ 100K**
- in solid plastic case**

The assignment of the adapters designated K, KS and KW to the respective vehicle manufacturer is shown at our website at service, downloads "Adapter list for cooling system testers "

for this purpose you also can scan the QR-code →



Cooling system Diagnostic

The Diagnostic unit 2000 allows the testing of all functions of the cooling system on all vehicles, without any additional adapters.

Diagnostic unit in a metal housing for the testing of cooling systems for leaks through pressure loss. It operates on compressed air and uses an integral pressure regulator.

Diagnose 2000

011501_1



Diagnostic unit in a metal housing for the testing of cooling systems for leaks through pressure loss

The pressure loss is indicated by an LCD display, either in % or bar, as required. The thermostat temperature can be monitored during the test by means of a temperature sensor (supplied). The instrument is connected to the return line of the supply tank by a number of brass hose connectors with hose clips.

Power supply 12...24 V/DC.

Testing facilities:

- cooling system pressure and leak test (0...3 bar / 0...43 psi)
- opening and closing pressures of the original cap
- cylinder head gasket
- engine block for cracks (locate)
- thermostat check (0...120 °C, 32...248 °F)

Scope of delivery:

- 1 diagnostic unit 2000**
- 1 temperature sensor**
- 3 hose connectors, made of brass**
- in solid plastic case**



Vacuum cooling system filler

The vacuum cooling system filler ensures that the cooling system is rapidly filled with coolant, **free of air pockets** and without any need for subsequent bleeding.

It is used following repairs or for the first fill. The machine also carries out a **vacuum leak test**, preventing the filling of a leaking cooling system. A vacuum is generated in the cooling system by means of the workshop compressed air supply (6...10 bar) and a venturi nozzle. Provided the vacuum remains constant, the cooling system can be rapidly filled, devoid of any air pockets; the coolant is drawn in under vacuum.

The filling method can be used on any type of vehicle.

- easy to use, no maintenance required
- filling without air pockets
- security of the process
- filling process and vacuum leak test are completed in about five minutes
- can be used to bleed stationary heating systems
- independent from the volume of cooling systems

KVB 01

011401_1



Vacuum cooling system filler with quick coupling

The unit can be used with any LEITENBERGER radiator adapter with a K, KS, KW or UA prefix.

Scope of delivery:

- 1 vacuum cooling System filler KVB 01**
- 1 venturi nozzle**
- 2 suction/emptying tube PVC, each 1.50 m Long**
- in solid plastic case**

KVB 01.1

011401_2



Vacuum cooling system filler with quick coupling and universal adapter

The unit can be used with any LEITENBERGER radiator adapter with a K, KS, KW or UA prefix.

Scope of delivery:

- 1 vacuum cooling system filler
- 1 venturi nozzle
- 2 suction/emptying tube PVC, each 1.50 m long
- 1 universal adapter UA 50 (diameter 20...41 mm / 0.7...1.6 in) in solid plastic case

KVB 02

011402_1



Vacuum cooling system filler with rubber cone

Vacuum cooling system filler with rubber cone for connection to the cooling system filler neck.

Scope of delivery:

- 1 vacuum cooling system filler KVB 02, 1 venturi nozzle
- 2 suction/emptying tube PVC, each 1.50 m long
- in solid plastic case

Accessory for vacuum cooling system fillers

EV 30_12VDC

011411_1

NEW



Mobile, electrical vacuum pump absolute vacuum 30 mbar (p_{abs})

For mobile use! Absolute vacuum ca. 30 mbar.

Modern thermomanagement systems (e.g. engine cooling system, air intake intercooler, battery cooling etc.) have to fulfill many purposes. These thermomanagement systems usually need to have a better filling grade compared to "traditional" engine cooling systems. With a better (deeper) final vacuum, better filling results can be obtained. Of course all components exposed to the vacuum level must be designed and manufactured to withstand these physical conditions.

Operating Voltage: 12 VDC, suitable for mobile use

Current Consumption: ca. 3.5 A

Final vacuum: (p_{abs}): 30 mbar, (p_{rel}): ca. -970 mbar / ca. -0.97 bar

Weight: 1.6 kg

EV 30_12VDC can be used with any of the Leitenberger KVB and it is delivered "ready to use". In the delivery of EV 30_12VDC no adaptor towards the expansion tank is included.

GKS 01

010411_1



Set of rubber cones with adapters

Set of rubber cones with adapters for connection to the quick-fit connector of the KVB 01 vacuum-type radiator filling unit. Carton pack.

Uses:

- rubber cone 1: 16...33 mm diameter
- rubber cone 2: 23...42 mm diameter
- rubber cone 3: 34...52 mm diameter

KVBB 30, KVBB 20, KVBB 10 011403_1, 011405, 011406_1

Plastic container with contents scale



Plastic container with contents scale for coolant. With piper rise with hose connection.

KVBB10 capacity 10 litres

KVBB20 capacity 20 litres

KVBB30 capacity 30 litres

Adapters for testing cooling systems

The assignment of the adapters designated K, KS and KW to the respective vehicle manufacturer is shown at our website at service, downloads "Adapter list for cooling system testers"

for this purpose you also can scan the QR-code →



K-Adapter



Singular adapter for radiator-orifices

Made of fibre-reinforced plastic. Vehicle-specific singular adapter for radiator-orifices and expansion tanks. With nipple for the connection with quick coupling of the radiator pump.

KS-Adapter



Singular adapter for radiator-orifices

Vehicle-specific singular adapter for radiator-orifices and expansion tanks, made of aluminium. With nipple for the connection with quick coupling of the radiator pump.

KW-Adapter



Angular adapter with 90°- angular connector

Angular adapter with 90°- angular connector for motorcycles and restricted access to radiator orifices.

DS-Adapter



Adapter for cooling cap testing

DS-Adapter are used for leak testing, function testing, valve cleaning of the original radiator filler cap. One end features a vehicle-related thread, while the other is fitted with a connecting nipple for attachment to the cooling system tester.

SZ U

010616



Rigid connector

Rigid connector for the connection of cooling system tester with bayonet connection or clamp and vehicle-specific singular adapters K or universal adapters UA.

It is also possible to connect pressure pumps of other manufacturers to the LEITENBERGER-adapter system.

FZ 100K

010501



Flexible connector

Flexible connector 0.50 m (20 in) long, connectable; required for restrictive access to radiators and expansion tanks. Connection of cooling system tester and vehicle-specific singular adapters K or universal adapters UA. One end with quick coupling, other end with nipple for quick coupling (for cooling system testers with quick coupling only).

KS-Set 86/90

010950_1



Adapter-Set

NEW

Bajonet type adapter set with spring. Fit to the majority of Asian vehicles. Content KS 86 and KS 90.

UA 1...4, UA 11...14



Universal adapters

Securing the adapter in the radiator or expansion tank is effected by depressing the handle into a horizontal position or by turning the hand wheels. With nipple for the connection to the radiator pump's quick coupling.



CO₂-Leak Detector

Test devices to indicate a leak at the cylinder head gasket or the cylinder head.

With 2 test chambers, quick coupling for the connection with our singular adapters K, KS and universal adaptors UA. With rubber ball for the quick suction of vapors.

A leak at the cylinder head gasket or the cylinder head is indicated by a change in colour of the reaction liquid from blue to yellow (petrol engines), from blue to green (diesel engines).

Note: reaction liquid environment friendly.

LT 200.2G

030114



CO₂-Leak detector with rubber cone

CO₂-Leak detector, version equivalent to LT 200.2, with rubber cone instead of quick coupling Ø 20...45 mm (3/4...1 3/4"). Universal use, with rubber cone.

Scope of delivery:

- 1 CO₂-Leak detector LT 200.2G**
- 1 bottle reaction liquid, 250 ml**

LT 200.2

030105



CO₂-Leak detector with quick coupling

Accurate and fast diagnosis. Leak detector for cylinder head gasket with 2 test chambers. With quick coupling for the connection with our singular adapters K and KS as well as universal adaptors UA, with rubber ball for the quick suction of vapors. A leak at the cylinder head gasket or the cylinder head is indicated by a change in colour of the reaction liquid.

- for diesel und petrol engines
- with quick coupling
- reaction liquid environment friendly

Scope of delivery:

- 1 CO₂ -Leak detector LT 200.2**
- 1 bottle reaction liquid, 250 ml**

LT 450

030101



CO₂-Leak detector set

Leak detector, equivalent version of LT 200.2 with rubber cone, delivery includes reaction liquid as well as rinsing liquid (LT 01).

Scope of delivery:

- 1 CO₂-Leak detector LT 450**
- 1 bottle reaction liquid, 250 ml**
- 1 bottle rinsing liquid, 100 ml**
- supplied in a wooden box**

LT 01

030106



1 set rinsing and reaction liquid

1 set rinsing liquid 100 ml and reaction liquid 250 ml.

LT 02

030107



1 bottle reaction liquid

Reaction liquid for LT 200.2 or LT 200.2G.
1 bottle
- content 250 ml



Refractometer for different Liquids

Our refractometers are used to assess liquid media.

The following liquids can be proofed:

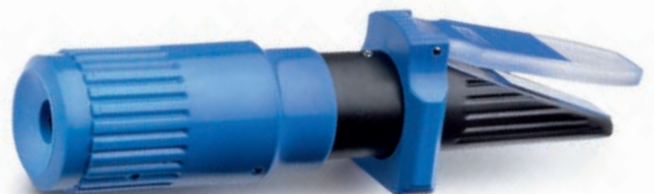
- Battery acid
- Coolant
- windshield washer fluid
- AdBlue®* operating additive
- gravity of the electrolyte
- concentration of antifreeze
- concentration of antifreeze
- quality

Further refractometers on request.

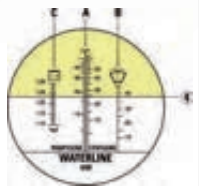
*AdBlue® is a registered Trade Mark of VDA, Verband der Deutschen Automobilindustrie e.V.

FT 2030

110306_1



Refractometer for radiator coolant, battery acid, windshield washer fluid



3 functions in 1 tester.

Approved and recommended by BASF. Suitable for use on coolant additives such as SONAX, G 11, G 12, G 12 Plus, Glysantin

Approved by vehicle manufacturers as an accurate and safe check on fluids' condition. Workshop tester (proven ten thousand times over) for checking the concentration of antifreeze (scale A) in coolant or windshield washer fluid (scale B).

A LIGHT/DARK dividing line (4) on different scales indicates the temperature in °C (optional in °F), down to which the fluid is protected against freezing.

The specific gravity of the electrolyte in the battery is indicated in kg/l (scale C). Adjustable eyepiece permits adaptation to the user's eyesight.

Including pipette.

Further refractometers on request.

RFM 02_AB_LR

110306_24



Refractometer for radiator coolant, battery acid, AdBlue® operating additive

For testing coolant, a light/dark dividing line is shown on the scale, up to which the temperature (in °C) of the coolant is protected. For testing battery acid, the acid concentration is displayed in kg/l and, in turn, broken down into grades such as TOP UP/ACCEPTABLE/SATISFACTORY.

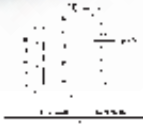
An adjustable eyepiece permits adjustment to the visual acuity of the user. Supplied in a carton pack complete with sampling pipettes.

Refractometer for the testing/evaluation of

- radiator coolant
- battery acid
- quality of AdBlue® operating additive

Notes on AdBlue® operating additive:

Prolonged storage and high temperatures will cause a creeping decomposition of AdBlue® operating additive. In case of new AdBlue® operating additive, the reference line must coincide with the light/dark dividing line. Any displacement of the water line indicates the decomposition of AdBlue® operating additive.



FT 2030 LED

110313_1

NEW



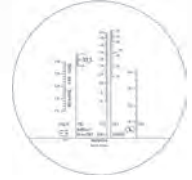
Refractometer fourfold scale and LED lighting

Refractometer for testing coolant, windshield washer fluid, battery acid and AdBlue® operating additive - with additional LED lighting. Workshop tester for accurate and safe check on fluids' condition. Adjustable eyepiece permits adaptation to the user's eyesight.

Switchable LED illumination for use in bad light conditions. Result is easy to read on the dark/light dividing line.

Refractometer for the testing/evaluation of

- radiator coolant
- windshield washer fluid
- battery acid
- quality of AdBlue® operating additive



FT 2030_AL

110311_1

NEW



Refractometer in solid aluminium housing for radiator coolant, battery acid, AdBlue® operating additive

Refractometer to determine the density of fluids in solid aluminium housing. The Refractometer FT 2030 AL indicates the freezing temperature of coolant and windscreen water, the density of battery acid and the quality of AdBlue® operating additive.

- adjustable eye piece
- unit for four different applications
- solid aluminium housing
- very good readability

Scope of delivery:

- 1 x Refractometer
 - 1 x Pipette
 - 1 x Instructions
- in small solid plastic case



Thermometer for cooling water

AZ 188 K, AZ 188 UA

020102_1, 020103



Thermometer for cooling water

AZ 188 K, thermometer DS 63 mm (2 1/2") for the controlling of the temperature of cooling water, of the thermostat, and of the cooling water measuring unit. Matches all radiator singular adapters K, KS, G.

range 0...120 °C/0...240 °F
length of shaft 170 mm (6.7 in.), Ø 7 mm

AZ 188 UA, equivalent version of AZ 188 K, but matches universal adapters UA.

length of shaft 170 mm (6.7 in.), Ø 4,4 mm

Digital temperatur measurement devices see page 25, Engines, digital thermometers, AR 203_LR und AR 300.

The "cool trio"



Vacuum cooling system filler
KVB 01

safe and fast
pressure test

fast filling
free of air pockets
no need for subsequent
bleeding

wide range of adapters



Cooling system tester
TVU 139/1



Suitable adapters



Cylinder leakage testers for petrol and diesel engines

For the test devices listed below, additional adapters are available for application in wide-ranging different engines.

You can find the list of the available adapters at our website at Service, Downloads, in "Adapter list for compression, pressure loss testers (ZKD)"

for this purpose you also can scan the QR-code →



DRV 02

041103



Engine pressure-loss tester in metal housing

Engine pressure-loss tester in metal housing for petrol and diesel engines permitting the pinpointing of pressure loss in cylinders. Supplied with additional control knob to increase air admission pressure, facilitating the audible locating of possible leakage point. Before the test is carried out, the engine is adjusted by workshop pressure to a permissible pressure loss (approx. 23 %). If the test instrument needle falls beyond 23%, the pressure loss is unacceptable.

Scope of delivery:

- 1 engine pressure-loss tester DRV 02
- 1 standard test hose, 1,00 m long (3 ft), with quick coupling
- 1 connectable adapter ZKS 01.1 with spark plug thread M 14x1.25 and M 18x1.5

DRV 05

041113



Engine pressure-loss tester

Engine pressure-loss tester for petrol and diesel engines with connection to workshop pressure. Indicates the cylinders' pressure-loss in percent. Precision gauge DS 80 mm (3 1/4") with green area (tolerated compression-loss); robust protective rubber cap.

Scope of delivery:

- 1 engine pressure-loss tester DRV 05
- 1 standard testing hose 1.00 m (3 ft) long, fastened to the gauge, incl. quick coupling for plug
- 1 thread connection ZKS 01.1, thread M 14x1.25 and M 18x1.5

DRV 05_FORD

041113_7



Engine pressure-loss tester Ford

Engine pressure-loss tester, specification as DRV 05. Customer specific configuration (Example).

Scope of delivery:

- 1 engine pressure-loss tester DRV 05 with testing hose 1.00 m (3 ft) fastened to the gauge, incl. quick coupling
- 1 adapter ET 37.3 (petrol engines)
- 2 adapters ZKD 26, ZKD 40 (diesel engines) in solid plastic case

DRV 05_KIA

041113_4



Engine pressure-loss tester with upper dead point tester Kia

Engine pressure-loss tester, specification as DRV 05.
Customer specific configuration (Example).

Delivery unit additional with upper dead point tester OT 04. Version in accordance with KIA requirements, with determination of top dead center (TDC)

Scope of delivery:

- 1 engine pressure-loss tester DRV 05
- 1 standard testing hose 1,00 m (3 ft) long, incl. quick coupling
- 4 adapters ZKD 21, ZKD 23, ZKD 24, ZKD 25 (diesel engines)
- 1 adapter ET 37.3 (petrol engines)
- 1 flexible adapter KPA 10 (petrol engines)
- 1 upper dead point gauge OT 04
- in solid plastic case

DRV 05.3

041119



Engine pressure-loss tester motorcycles

Engine pressure-loss tester, specification as DRV 05, especially for motorcycles.

Scope of delivery:

- 1 engine pressure-loss tester DRV 05
- 1 test hose connectable, length 1.00 m (3 ft)
- 1 adapter ZKS 01.1 for spark plug thread M 14x1.25 and M 18x1.5
- 1 adapter KPA 01_Motorrad, spark plug thread M 12x1.25
- 1 adapter KPA 02_Motorrad, spark plug thread M 10x1 (male thread)

DRV 05_Otto-Set

041113_8



Engine pressure-loss tester petrol engines

NEW

Engine pressure-loss tester for petrol engines.

Scope of delivery:

- 1 pressure-loss tester DRV 05
- 3 Adapters / petrol engines KPA 08, 09, 10 (flexible)

DRV 06

041121_1



Engine pressure-loss tester with gauge for inlet pressure

Engine pressure-loss tester, specification as DRV 05, but with additional gauge for the inlet pressure.

Scope of delivery:

- 1 engine pressure-loss tester DRV 06
- 1 test hose incl. quick coupling, length 1.00 m (3 ft)
- 1 gauge DS 50, 0... 16 bar (inlet pressure)
- 1 adapter ZKS 01.1 for spark plug thread M 14x1.25 and M 18x1.5

Dead point gauge (TDC)

OT 01

041311_1

NEW



Upper dead point gauge

Specification as OT 04 but detection via acoustic signal.

OT 04

041310_1



Upper dead point gauge

To achieve the optimum adjustment of ignition timing, the cylinder's dead center has to be found. This is particularly difficult, if ignition timing marks are indistinct. The upper dead center can be found easily. The OT 04 can be used with

the same adapters as for the Cylinder leakage testers DRV 05 or DRV 06.
- used in combination with adapters from Leakage Testers

Scope of delivery:

- OT 04 with acrylic cylinder
- including 1.00 m (2.9 ft.) hose with quick coupling



Compression testers

Compression pressure should be tested on each cylinder in succession at operating temperature and compared with the manufacturer's data.

If the results are below the manufacturer's figures, it can be assumed that the piston rings and valves are leaking. In addition to the standard connectors (M 18x1.5 and M 14x1.25 threads), special adapters can be supplied with different lengths and threads, including versions with clamps for use on commercial vehicles.

You can find the list of the available adapters at our website at Service, Downloads, in "Adapter list for compression, pressure loss testers (ZKD)"

for this purpose you also can scan the QR-code →



KP 80

040301_4



Compression tester

Basic device, to connect to any adapter.

High quality gauge with solid protective rubber cap DS 80 mm (3 1/4"), flexible hose with integrated pressure check valve and quick coupling. Hose length 250 mm / 98.4 in., with DN5-coupling.

- range 0...40 bar / 0...580 psi

KP 80/2A

040302_2



Compression tester for petrol engines (passenger cars, trucks and motorcycles)

Compression tester for passenger cars, trucks and motorcycles.
- range 0...25 bar / 263 psi

High quality gauge with solid protective rubber cap DS 80 mm (3 1/4"), flexible hose with integrated pressure check valve including spark plug connecting part with external thread M 14x1.25 and M 18x1.5, additional adapter KPA 01 thread M 12x1.25. An additional pressure release valve between hose and gauge allows a repetition of the test without dismantling of the instrument from the engine. Available with an ISO certificate of calibration (at extra charge).

Scope of delivery:
1 compression tester KP 80/2A
1 adapter KPA 01

KP 80/3A

040304_2



Compression tester for diesel engines (truck, marine and industrial engines)

Compression tester for trucks, marine and industrial engines.
- range 0...60 bar / 870 psi

High quality gauge with solid protective rubber cap DS 80 mm (3 1/4"), flexible hose with integrated pressure check valve including spark plug connecting part with external thread M 14x1.25 and M 18x1.5, additional adapter ZKD 02 thread M 24x2. An additional pressure release valve between hose and gauge allows a repetition of the test without dismantling of the instrument from the engine. Available with an ISO certificate of calibration (at extra charge).

Scope of delivery:
1 compression tester KP 80/3A
1 adapter ZKD 02

KP 80/4

040305_2



Compression tester for diesel and petrol engines

To control the cylinder compression chamber of diesel and petrol engines.
- range 0...40 bar / 580 psi.

High quality gauge with solid protective rubber cap DS 80 mm (3 1/4"), flexible hose with integrated pressure check valve and quick coupling connecting adapters. Additional pressure release valve between hose and gauge.

Scope of delivery:
1 compression tester KP 80/4
1 connecting adapter ET 37 (standard)
1 connecting adapter KPA 01
1 connecting adapter rigid with rubber cone,
1 adapter ET 36 M 14x1.25 - 1/4" thread
1 adapter for diesel vehicles ZKD 02

KP 80/41

040324_2



Compression tester for diesel and petrol engines

Compression tester, equivalent version of KP 80/4, but **supplied in solid plastic case.**

KP 80/5

040331



Compression tester for diesel and petrol engines, incl. 11 adapters

Tester to control the cylinder compression chamber of diesel and petrol engines.

range 0...40 bar / 580 psi

By means of this tester comparative measurements of the

compression of individual cylinders can be effected. Precision gauge DS 80 (3 1/4") with robust protective rubber cap. Connecting hose for gauge 0.35 m (13.8 in.) with quick coupling. Additional pressure release valve between hose and gauge.

Scope of delivery:

- 1 compression tester KP 80/5, test hose with quick coupling
 - 7 adapter for petrol engines (ET 35, ET 36, ET 37.3, ET 37.4, ZKS 01.1, KPA 01, KPA 02)
 - 5 adapters for diesel engines (ZKD 01, ZKD 02, ZKD 06, ZKD 07, ZKD 08)
 - 1 angular adapter ET 285
- in solid plastic case

KP 80/LKW

040396_1



Compression tester for diesel engines (trucks)

Compression tester for diesel engines, especially for trucks. - range 0...40 bar / 580 psi

High quality gauge with solid protective rubber cap DS 80 mm (3 1/4"), flexible hose with integrated pressure check valve and quick coupling. Additional pressure relief valve between hose and gauge allows a repetition of the test.

Scope of delivery:

- 1 compression tester KP 80 LKW
 - 10 adapters (ZKD 28, 29, 30, 31, 32, 33, 34, 35, 36, 37)
- in solid plastic case

KP 80_Otto-Set

040390_4



Compression tester for petrol engines

NEW

Compression tester for petrol engines.

Scope of delivery:

- 1 compression tester KP 80
- 3 adapters / petrol engine KPA 08, 09, 10 (flexible)

KP 80/5_Opel

040390_3



Compression tester for diesel and petrol engines (Opel)

Compression tester for diesel and petrol engines for Opel vehicles.

High quality gauge with solid protective rubber cup DS 80 mm (3 1/4"), flexible hose with integrated pressure check valve and quick coupling connecting different adapters. Additional pressure release valve between hose and gauge.

range 0...40 bar / 0...580 psi

Scope of delivery:

- 1 compression tester KP 80/5_Opel, test hose with quick coupling
 - 2 adapters KPA 09, KPA 10 (petrol engines)
 - 3 adapters ZKD 41, ZKS 42, ZKD 43 (diesel engines)
- in solid plastic case

KP 80/5_JLR_1

040393_1



Compression tester for diesel and petrol engines (Jaguar, Land Rover)

Compression tester for diesel and petrol engines for Jaguar and Land Rover vehicles. High quality gauge with solid protective rubber cup DS 80 mm (3 1/4"), flexible hose with integrated pressure check valve and quick coupling connecting different adapters. Additional pressure release valve between hose and gauge.

range 0...40 bar / 0...580 psi

Scope of delivery:

- 1 compression tester KP 80/5_JLR_1, test hose with quick coupling
 - 1 adapter ET 37.3 (petrol engines)
 - 5 adapters ZKD 01, ZKD 16, ZKD 20, ZKD 48, ZKD 49 (diesel engines)
- in solid plastic case

KP 63A_Scooter

042806_1



NEW

Compression tester for scooters

Compression tester with high quality gauge, DS 63 mm, including rubber protection, measuring range 0 to 16 bar/ 232 psi.

The flexible hose is fitted with a pressure release valve and quick coupling. The included angled adapter ET 285 can be coupled between hose and adapter and is needed at limited space situations under the hood. Suitable for scooters with spark plug thread M 14x1.25

Scope of delivery:

- 1 compression tester KP 63A_Scooter with test hose
- 1 hose adapter M 14x1.25 (length 110 mm)
- 1 angular adapter ET 285
- in solid plastic case

KPD 01

040328_1



Universal compression tester 12 V/DC with digital display

Universal compression tester with digital display for diesel and petrol engines. Available with an ISO certificate of calibration.

- measuring range 0...870 psi
 - resolution 1 psi
 - measuring accuracy $\pm 0.5\%$ FSO, IEC 60770
 - 12 V/DC supply voltage
 - illuminated LC display
 - with memory and RS 232 interface
- measurement results are displayed in %, psi or with bar graph

Scope of delivery:

- 1 digital compression tester KPD 01
- 1 pressure sensor with connecting cable
- 1 alimentations cable
- 1 serial interface cable, length 3.00 m (10 ft)
- 7 adapter for petrol engines
(ET 35, ET 36, ET 37.3, ET 37.4, ZKS 01.1, KPA 01, KPA 02)
- 5 adapters for diesel engines
(ZKD 01, ZKD 02, ZKD 06, ZKD 07, ZKD 08)
- 1 angular adapter ET 285
- in solid plastic case

KPD 01.1

040328_2



Universal compression tester 12 V/DC with digital display

Universal compression tester with digital display for diesel and petrol engines, equivalent version of KPD 01 but without adapters.

Scope of delivery:

- 1 digital compression tester
- 1 pressure sensor with connecting cable
- 1 alimentations cable
- 1 serial interface cable, length 3.00 m (10 ft)
- in solid plastic case]

DFL 10_150_LR

061113_1



NEW

Blow-by-gases measurement device

To measure Blow-By gases. Blow-By gases (also well known as leakage gases) are an indicator of the wear conditions of an engine. This gases can escape on leaking piston rings, valve guides or turbocharger bearings. Blow-By gases are measured in a realistic scenario.

- measurement range: 10 – 150 l/min
- high repeatability
- quick measurement results

DFL 20_220_LR

Blow-by-gases measurement device

Specification and operation as DFL 10_250, but measruement range 20 – 220 l/min.

Oil pressure testing equipment

You can find the list of the available adapters at our website at Service, Downloads, in "Adapter list for oil pressure testers (OP)"

for this purpose you also can scan the QR-code →



OP 85

040592_1



Tester for oil pressure check

Tester for oil pressure check. Connected instead of the oil pressure switch.
- double scale 0...10 bar / 0...140 psi
- supplementary adapters available

Precision gauge DS 80 mm (3 1/4") with robust protective rubber cap.
Gauge hose 1.00 m (3.3 ft) long with quick coupling.
Available with an ISO certificate of calibration (at extra charge).

Scope of delivery:

1 oil pressure tester OP 85, test hose with quick coupling
10 adapters ANK
1 angular adapter ET 285
in solid plastic case

Check out our range of pumps for oil suction at page 36 and vacuum brake bleeding at page 61.



Topping up engine oil

Oil filler funnel made out of strong plastic with sealing connection for the easy, clean topping-up of engine oil.

The funnel is invaluable for preventing contamination through spilled oil and the resultant smell when topping up oil in the engine compartment.

- clean and environmentally friendly
- time saving
- choice of adapters

EFT 01.1

040603_2



Topping-up funnel made of strong plastic and adapter with bayonet fitting

Oil filler funnel made out of strong plastic with sealing connection for the easy, clean topping-up of engine oil. Capacity approx. 1 liter. With bayonet adapter.

Suitable for use with the following makes of car: Audi, BMW, Dodge, Mercedes Benz, Toyota, VW etc.

Scope of delivery:

1 Topping-up funnel EFT 01, capacity approx. 1 liter
1 adapter EFTA 01 with bayonet fitting

EFT 02

040604_1



Topping-up funnel made of strong plastic with bayonet fitting

Topping-up funnel made of strong plastic with bayonet fitting for the easy, clean topping-up of engine oil. Capacity approx. 1 liter. Note: not useable with EFTW 01 angled extension. Suitable for use with the following makes of car: Audi, BMW, Dodge, Mercedes Benz, Toyota, VW etc.

Scope of delivery:

1 Topping-up funnel EFT 01, capacity approx. 1 liter, with bayonet fitting

EFTA



Adapters for oil filler funnel

Code	Ref. No.	suitable for use with
EFTA 01	040604	for Audi, BMW, Dodge, Mercedes Benz, Toyota, VW
EFTA 02	040609	for Porsche
EFTA 03	040605	for Lexus, Toyota
EFTA 04	040610	for Ford
EFTA 05	040606	for Subaru
EFTA 07	040607	for Honda, Nissan
EFTA 09	040613_1	for Audi A3, Golf 7, Seat Leon (MQB)
EFTA 10	040617_1	for Audi A3, Golf 7, Seat Leon (MQB)

EFTW 01

040608



Aluminium angled extension

For confined spaces in the engine compartment, the aluminium EFTW 01 angled extension is the ideal accessory. To facilitate use, the extension rotates and the angle can also be adjusted. It is simply installed between the adapter and the topping-up funnel.

EFT-Set

040616_1

NEW



Oil filler funnel set

Engine oil filler funnel set. Contains 5 adapters, aluminium angled extension.

Scope of delivery:

Topping-up funnel EFT 01
EFTA 01 for Audi, BMW, Dodge, Mercedes Benz, Toyota, VW
EFTA 02 for Porsche
EFTA 03 for Toyota, Lexus
EFTA 05 for Subaru
EFTA 07 for Honda, Nissan
EFTW 01 aluminium angled extension
in solid plastic case

FOP 01

040618_1

NEW



Filter opening tool

To open all oil and fuel filters with sheet metal housing and diameter from 40 - 120 mm. After opening the filter element can be removed and checked for abrasion and soiling. Available in different colors.

- adjustable cutting edge
- ball bearing holder
- suitable also for filters with bolt.

Digital thermometer

TP 82

040102



Digital thermometer for oil temperature

Digital thermometer, for testing of the temperature of oil, 3-digit LC display, Available with an ISO certificate of calibration (at extra charge).

- range - 40...+110 °C
- accuracy $\pm 2\%$ of the total range
- sensor cable length 1.50 m (4.3 ft)
- flexible sensor $\varnothing 5$ mm (1/4")
- power supply by 1.5 V Mignon battery

AR 300

110401



Digital, proximity-type infrared thermometer

Digital, proximity-type infrared thermometer for mobile purposes.

Applications:

Air conditioning and refrigerating systems, engines, cooling systems, ball bearings, tyres and brakes, electrical and electronic systems.

- test range from -18 °C...+315 °C
- convertible from °C to °F
- response time 1 sec.
- measuring accuracy $\pm 2\%$
- power supply by 9 V monobloc battery
- low battery indication

AR 203_LR

110210_2



Digital second thermometer

Digital second thermometer with 3 1/2 digit LC display. Surface/dip in and air/gas probe allows its universal use for surfaces, liquids, air and gas. The probe connecting lead is equipped with a plug and can be disconnected from the thermometer.

- temperature range - 65...+500 °C
- resolution 1 °C
- sensor cable length 1.00 m (3.3 ft)
- power supply by 9 V battery

Supplied in a solid plastic case.

Thermometer and manometer

Our sister company **LEITENBERGER** Mess- und Regeltechnik GmbH produces and delivers a wide range of thermometers and manometers for different applications (digital or analog).

For more informations please visit the website:
www.leitenberger.de/mrt_e/index.html

for this purpose you also can scan the QR-code →



Belt tension gauges

Toothed belt tension tester permitting the testing of toothed belt tension on almost every cars and motorcycles.

After the sensor has been attached to the belt, its tension is recorded in the form of longitudinal force (Newtons) in accordance with the principle of pressure testing.

ZSM 01_LR

041503



Toothed belt tension tester

Toothed belt tension tester permitting the testing of toothed belt tension on almost every car. The complete kit consists of a sensor, a digital display unit (pressure gauge) and a hand pump for the purpose of generating the requisite pneumatic pressure. After the sensor has been attached to the belt, its tension is recorded in the form of longitudinal force (Newtons) in accordance with the principle of pressure testing. If required, the tester can be individually programmed and supplied with an interface for the exchange of data with a computer.

- straightforward, universal use
- simple menu guidance
- testing can be carried out while the belt is being tensioned
- sensor miniaturisation permits the sensor to be attached to the engine without removing it
- the sensor can be attached to the belt with one hand
- acoustic and visual signal following successful test
- testing range 50...800 N
- power supply 12...24 V/DC

Scope of delivery:

- 1 sensor**
- 1 hand pump**
- 1 display and control unit**
- 1 compressed air hose**
- 1 sensor lead**
- 1 power supply lead for car battery or power supply unit**
- in a solid plastic case**

DZP 01

041501_1



Toothed belt tension tester, digital

DZP 01, Tester with digital display for checking the tension of toothed belts. Clamping the belt in a metal sensor brings up the tension in Newtons. This measurement has to be compared with the manufacturer's data.

- 3 1/2 digit display
- range 0 to 500 Newtons
- resolution 10 N
- low battery indication
- automatic cutout
- power supply by 9 V monobloc battery
- cable length 1.00 m (3.3 ft)

Supplied in a solid plastic case

DZP 01.1

041501_4

Timing belt tester as DZP 01, but with special sensor for hidden belts.

Supplied in a solid plastic case

Timing lights for petrol and diesel engines

Timing lights for the professional use. The slim, pistol-type design permits use in confined engine compartments. Robust construction with analog or digital display. Special high-performance bulbs generate exceptionally bright light. Adapter SKUA 01 is available for diesel-engined vehicles.

SKB 82

041302



Timing light with analog display

- analog display
- suitable for 4- and 2-stroke engines
- ignition timing angle 0 - 60°
- connection to vehicle battery 12 V/DC
- can be used with diesel adapter SKUA 01 (available as an option)

SKB 84

041303



Timing light with digital display

- digital display
- suitable for 4- and 2-stroke engines
- ignition timing angle 0 - 90°
- speed measurement 500 to 9990 U/min.
- connection to vehicle battery 12 V/DC
- can be used with diesel adapter SKUA 01 (available as an option)

Supplied in a solid plastic case

SKB 86

041304



Timing light with digital display

- Digital display
- suitable for 4- and 2-stroke engines
- ignition timing angle 0 - 90°
- speed measurement 500 to 9990 U/min.
- dwell angle display 0 to 100 %
- voltage test 0 to 20 V
- connection to vehicle battery 12 V
- can be used with diesel adapter SKUA 01 (available as an option)

Supplied in a solid plastic case

Accessories for timing lights

SKUA 01

041307



Diesel adapter SKUA 01

Diesel adapter SKUA 01 can be used with timing lights SKB 82/84/86.

Delivery including piezo clamp Ø 6 mm (1/4").

SKD



Piezo clamps for diesel adapter SKUA 01

Piezo clamps with different diameters:
Ø 4, 4.55, 5, 5.6, 6, 6.35 (1/4"), 7, 8, 9.5, 10, 11, 12, 12.7 (1/2"), 13 and 14 mm.

Carburetor tester

VE 01

050101



Vacuum meter

For the exact adjustment of multiple carburetor engines. High quality vacuum meter DS 60 mm (2 1/2"), -1...0 bar. The VE 01 can be supplemented piecewise with several vacuum meters in order to control all carburetors with a single device. This allows a comparison of all carburetors.

Scope of delivery:

- 1 vacuum meter, range -1...0 bar**
- 1 hose PVC length 0.60 m (2 ft)**

Revolution counter

MT 6000

041001



Digital hand revolution counter

The multifunctional digital hand tachometer is a robust high-quality tester for revolution measures effected without contact as well as for contact-measures of revolutions and speed. Extensive range and automatic memory of results.

- range of 0.5...100 000 RPM and up to 2000 m/min
- 5-digit LC display, 7-segments digits 10.2 mm high
- accuracy $\pm 0.05\%$, ± 1 digit of the measurement
- power supply by 4 ps. Mignon R6 1.5 V

- Ranges contact measure:
 - up to 19999 RPM
 - 0.05 to 1999.9 m/min
 - 0.2 to 6560 feet/min
- Contactless measure:
 - 5 to 99999 RPM

Scope of delivery:

- 1 detector**
- 1 ring gear wheel and 0.60 m (24 in.) reflecting tape**
- 1 rubber contact piece**
- 1 storage bag with foam material inlet**

MTDA 01

041714



Diesel Adapter MTDA to determine the revolutions of diesel engines

Diesel Adapter MTDA to determine the revolutions of diesel engines. No additional device necessary to use it.

- 4 digit display, (speed measurement 8750 RPM/min max.)
- resolution 10 RPM
- storage of the max. speed measurement
- low battery warning
- with automatic cut-off
- power supply by 9 V battery

Scope of delivery:

- 1 diesel adapter MTDA 01**
- 1 piezo clamp \varnothing 6 mm**

Supplementary piezo clamps SKD are available with the following dimensions: diam. 4, 4.55, 5, 5.6, 6, 6.35 (1/4"), 7, 8, 9.5, 10, 11, 12, 12.7 (1/2"), 13, 14 mm.

SERVICE

We produce the majority of our devices and almost all components ourselves. With a production scope which keeps surprising our customers of many years.

- 3D-print models
- Software programming
- Circuit board configuration
- CNC processing
- Manufacture by customer request
- Screen printing
- Laser printing
- Serial production

We are independent from suppliers with this production scope.

Our precision instruments are well packed and therefore safe and easy stored. The solid cases and individually cut inlays underline this promise. Nevertheless our instruments are designed in a way that they can be repaired easily.

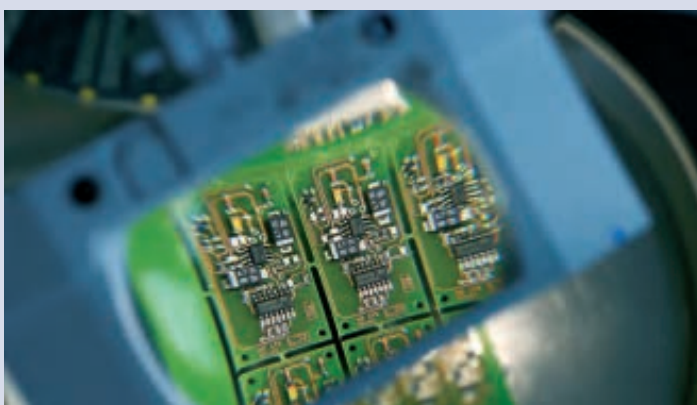
Our clients appreciate that and they have our equipment in use for decades.

We program the software for our instruments ourselves and we manufacture the circuit boards in house.

But we can do even more and everything is **“Made in Germany“**.

Our services

- Development
- Training
- Production
- Spare parts service and repairs
- Sales
- Product care
- Quality management
- Technical advise for customers and dealers
- ISO calibration service and dealers
- Prototype construction





Vacuum and pressure pumps

Vacuum and pressure pumps for testing all vacuum applications in a vehicle.

Possible use:

- carburetor
- A/C system
- central locking
- modulator at automatic gear boxes
- servo brake
- exhaust recirculation valve
- all actuators working with vacuum
- ignition
- heating valves
- automatic switch off at diesel vehicles
- fuel pressure regulator
- pressure control at turbo loader
- throttle
- membrane of injection pump

HV 84

060103_1



Vacuum pump

Vacuum pump, aluminium version, for the testing of all vacuum areas in vehicles. High quality vacuum meter with robust protective rubber cap DS 63 mm (2 1/2"), range -1...0 bar graduated in 0.05 bar steps and -760...0 in mmHg. Plastic hose and bilateral conical brass adapter. Vacuum decreasing is achieved by means of the set screw.

- one hand operated
- vacuum meter with 0.05 graduation
- with vacuum regulator

Applications:

- carburetors
- ignition systems
- air conditioning systems
- heating baffles
- central locking systems
- automatic cutout (diesel engined vehicles)
- modulators (automatic transmissions)
- servo-assisted brakes and all vacuum operated actuators

Scope of delivery:

- 1 vacuum pump HV 84**
- 1 hose transparent Ø 5x2 mm, length 0.50 m (20 in.)**
- 1 conical brass adapter**
- supplied with blue textile bag**

HV 90

060107



Vacuum and pressure pump

Vacuum and pressure pump, aluminium version, reversible from vacuum to pressure measures. For the use in various fields on the automotive testing sector. One hand operated, all metal version. High quality compound gauge with robust protective rubber cap DS 63 mm (2 1/2"), dual precision scale, minus-range -1...0 bar, plus-range from 0...+3 bar / 42 psi, graduation 0.1 bar.

- one hand operated
- reversible vacuum or pressure
- range - 1...+3 bar / 42 psi, fine graduation

Applications vacuum range:

- vacuum meter sensor check
- exhaust gas recirculation valve check
- throttle valve check
- fuel pressure regulator check
- vacuum modulator check (automatic transmissions)
- servo-assisted brake check

Applications pressure range:

- injection pump diaphragm check
- turbocharging pressure check

Scope of delivery:

- 1 vacuum and pressure pump HV 90**
- 1 hose transparent Ø 5x2 mm, length 0.50 m (20 in.)**
- 1 conical brass adapter**
- 4 connecting adapters made out of plastic**
- in solid plastic case**

HV 90.6

060107_6



Vacuum and pressure pump

Vacuum and pressure pump like HV 90, but including a 120 ml collecting tank HVZ 02, hoses and adapters.

Scope of delivery:

- 1 vacuum and pressure pump**
- 1 hose transparent Ø 5x2 mm, length 0.50 m (20 in.)**
- 1 conical brass adapter**
- 4 connecting adapters made out of plastic**
- 1 collecting tank HVZ 02**
- in solid plastic case**

HV 95

060108



Vacuum and pressure pump

Vacuum and pressure pump, combination in material of aluminium and plastic, change-over from pressure to vacuum range by means of a change-over ring. Precision compound gauge with protective rubber cap DS 60 mm (2 1/2").

- reversible vacuum or pressure
- vacuum range - 1...0 bar / 760 mmHg
- pressure range 0...+3 bar / 42 psi

Scope of delivery:

- 1 vacuum and pressure pump HV 95**
- 1 hose transparent Ø 5x2 mm, length 0.50 m (20 in.)**
- 1 conical brass adapter**
- 4 connecting adapters made out of plastic**

KDV 01

060109



Vacuum and pressure pump, set

2 functions - 1 pump

Combination pump for pressure and vacuum with change-over ring. Compound gauge DS 63 mm (2 1/2") with robust protective rubber cap and with dual fine scale.

- vacuum range -1...0 bar / 760 mmHg
- pressure range 0...3 bar / 42 psi
- fine graduation 0.1 bar

2 operational alternatives:

- as pressure pump for cooling system
- as vacuum pump for checking vacuum functions in the vehicle

Scope of delivery:

- 1 combination pump KDV 01**
- 1 flexible hose FZ 100 K, connectable**
- 1 hose transparent Ø 5x2 mm, length 0.50 m (20 in.)**
- 1 conical brass adapter**
- 4 connecting adapters made out of plastic**

HVZ 02

060111_1



Collecting tank

Accessory for pressure and vacuum pumps:

Collecting tank (120 ml) with hose connection, hose length 0,50 m (20 in.)



Hand pump range

The range of hand pumps includes transfer, suction and metering pumps.

They are suitable for extracting or transferring fluids such as: brake fluid, diesel, heating oil, various types of oil (hydraulic fluid, engine oil, machine oil, synthetic oil) and water.

Caution: Not suitable for petrol, acids or alkaline solutions!

A precision engineered tubular cylinder and perfectly matched plunger guarantee ease of movement and, in turn straight forward use in practice.

Hand transfer pumps HAP:

Twin connections on the cylinder permit fluids to be transferred in a single operation. Pulling the handle causes the fluid to be drawn into the pump cylinder via the suction side, then discharged through the delivery side when the handle is depressed. In the case of the HAP 600F and HAP 3000F models, the pumping process is made easier by the presence of a baseplate. Pumps cylinder made of aluminium, sealing caps of plastic.

Hand suction pumps HAP 02:

With this type of pump, the extracted fluid remains in the pump cylinder until it is discharged. Pump cylinder made of aluminium, sealing caps of plastic.

Hand metering pumps HDP:

A Plexiglass pump cylinder with graduated scale permits the precise, controlled extraction or filling of fluids.

Hand-operated transfer pumps

HAP



Hand-operated transfer pumps with twin connection

Hand-operated transfer pumps with twin connections. Connection on suction side with loose G 3/8 union nut and hose nipples for hoses of 10/15 mm internal diameter.

Different models available:

Code	Ref. No.	
HAP 125	060414_1	pump capacity about 125 ml per stroke
HAP 250	060415_1	pump capacity about 250 ml per stroke
HAP 600	060412_1	pump capacity about 600 ml per stroke

Scope of delivery:

- 1 HAP hand transfer pump**
- 1 transparent suction hose 0.50 m long (20 in.)**
- 1 transparent delivery hose 0.50 m long (20 in.)**

HAP 600F

060412_3



Hand-operated transfer pump with baseplate, 600 ml

Hand-operated transfer pump with baseplate and twin connections, pumping capacity about 600 ml per stroke. Connections on suction and delivery sides for hoses of 10/15 mm internal diameter.

Scope of delivery:

- 1 HAP 600F hand transfer pump**
- 1 transparent suction hose 0.50 m long (20 in.)**
- 1 transparent delivery hose 0.50 m long (20 in.)**

HAP 3000F

060413_1



Hand-operated transfer pump with baseplate, 3000 ml

Hand-operated transfer pump with baseplate and twin connections, pumping capacity about 3000 ml per stroke. Connections on suction and delivery sides for hoses of 20/22 mm internal diameter.

Scope of delivery:

- 1 HAP 3000F hand transfer pump
- 1 transparent suction hose 1.00 m long (3.3 ft)
- 1 transparent delivery hose 1.00 m long (3.3 ft)

HAP 500T

060428_1



Hand-operated transfer pump with twin connections, 500 ml

Hand-operated transfer pump with twin connections. Sealing caps made of Aluminium. The Plexiglass pump cylinder with graduated scale from 0 to 500 ml (10 ml graduation), permits a controlled dosing of fluids.

Pump capacity about 500 ml per stroke.

Caution : Not suitable for brake fluid!

Scope of delivery:

- 1 HAP 500T hand transfer pump
- 1 transparent suction hose 0,50 m long (20 in.)
- 1 transparent delivery hose 0,50 m long (20 in.)

Hand suction pump

HAP 02



Hand suction pump, 125 - 1000 ml

For different models available:

Code	Ref. No.	
HAP 02_125	060414_2	volume 125 ml
HAP 02_250	060403	volume 250 ml
HAP 02_600	060412_2	volume 600 ml
HAP 02_1000	060416_1	volume 1000 ml

Scope of delivery:

- 1 hand transfer pump HAP 02 with hose connection
- 1 transparent suction and delivery hose, 1.00 m long (3,3 ft)

Hand metering pump

HDP



Hand metering pump with graduated scale 125 - 2000 ml

For sucking, filling and exact dosing of different kinds of liquids.

Four different versions available:

Code	Ref. No.	
HDP 125	060417_1	volume 125 ml
HDP 500	060418_1	volume 500 ml
HDP 1000	060419_1	volume 1000 ml
HDP 2000	060429_1	volume 2000 ml

Scope of delivery:

- 1 Hand dosing pump HDP_U with hose connection
- 1 transparent hose, Ø internal 5 mm, Ø external 9 mm, 1,00 m length
- 1 transparent hose, Ø internal 10 mm Ø external 16 mm, 1,00 m length

HDP_U

NEW



Hand metering pump with graduated scale 125 - 2000 ml, universal

For universal use, even for brake fluid.

Different models available:

Code	Ref. No.	
HDP 125_U	060445_1	volume 125 ml
HDP 250_U	060446_1	volume 250 ml
HDP 500_U	060447_1	volume 500 ml
HDP 1000_U	060448_1	volume 1000 ml

Scope of delivery:

- 1 hand metering pump HDP_U with hose connection
- 1 hose transparent, Ø 5 mm internal, Ø 9 mm external, 1,00 m length
- 1 hose transparent, Ø 10 mm internal, Ø 16 mm external, 1,00 m length

Accessories for manual vacuum extraction and metering pumps

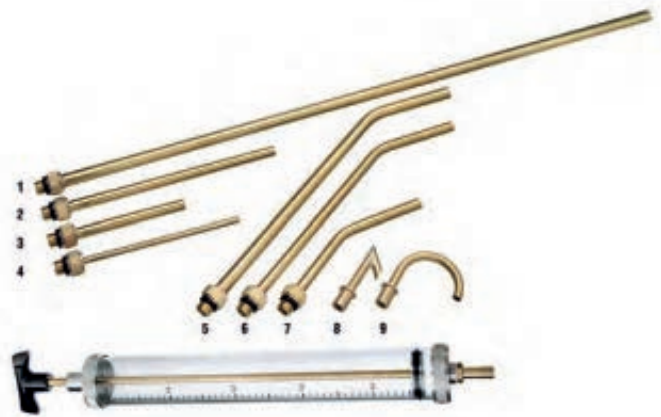
A large number of adapters, different in design and length, is available for the hand suction and metering pumps.

The adapters allow access to hard to reach spots. The standard hose connector is simply replaced by a suitable adapter with 1/4" thread.

The adapters no. 8 and 9 come with a hose connector and are used together with the standard hose.

HAPA-Adapter

060420_x



Adapters for manual extraction and metering pumps

1	HAPA_G 600/10	060420_1	straight adapter	length 600 mm, Ø 10
2	HAPA_G 200/10	060420_2	straight adapter	length 200 mm, Ø 10
3	HAPA_G 90/10	060420_3	straight adapter	length 90 mm, Ø 10
4	HAPA_G 130/6	060420_4	straight adapter	length 130 mm, Ø 6
5	HAPA_W 250/10	060420_5	angled adapter 30°	length approx. 250 mm, Ø 10
6	HAPA_W 200/10	060420_6	angled adapter 30°	length approx. 200 mm, Ø 10
7	HAPA_W 130/10	060420_7	angled adapter 30°	length approx. 130 mm, Ø 10
8	HAPA_SW 135/8	060421_2	angled adapter short 135°, Ø 8	with hose line connector
9	HAPA_SD 180/8	060421_1	curved adapter 180°, Ø 8	with hose line connector

Barrel suction pumps

HAP 21C

060427_1



Barrel suction pump with 1/4 SAE connection, aluminum design

Caution: Cannot be used for gasoline, acids and caustic solutions!

Barrel suction pump with 1/4 SAE connection with aluminum design. Can be used for media such as various types of oil, non-flammable and non-aggressive liquids, corrosion-free, maximum achievable pressure 30 bar, pump volume 400 ml/stroke

When using the hand pump, it is possible, for example, to pump oil directly out of the container into the crankcase of a refrigeration compressor. Thanks to the integrated sealing cone, the pump seals off the container and can remain on the container until it is completely emptied.

The GKS 02 sealing cone set and the HAP 21C_S02 suction hose are available for sealing off other container sizes.

Scope of delivery, HAP 21C:
1 barrel suction pump with ET 577 sealing cone

HAP 21_MK

060427_2



Barrel suction pump case-Set

Barrel suction pump with 1/4 SAE connection with aluminum design. Can be used for media such as various types of oil, non-flammable and non-aggressive liquids. Corrosion-free, maximum achievable pressure 30 bar, pump volume 400 ml/stroke.

Scope of delivery, HAP 21C_MK:
1 barrel suction pump with ET 577 sealing cone (111623)
1 refrigerant hose, 1/4 SAE connection, length 0.90 m (3 ft)
1 G 1/4 suction hose, length 1.00 m (3.3 ft)
1 sealing cone set (3 pcs) GKS 02
in solid plastic case

GKS 02

010411_5



Sealing cone set

Accessorie for barrel suction pump HAP 21.
For sealing off other container sizes. Height 40 mm, Ø internal: 9,5 mm for suction hose (060427_4).
Ø 30/15, 40/20, 50/35 mm

HAP 21C_S02

060427_4



suction hose

Accessorie for barrel suction pump HAP 21.
PVC suction hose G 1/4, length 1.00 m (3.3 ft)

HAP 20

060426_1



Container-extraction pump, made of aluminium

Vacuum extraction pump, made of aluminium, suitable for use with fluids such as diesel, oils, water, etc.

Caution: Cannot be used for gasoline, acids and caustic solutions!

- with integrated filter
- height adjustable
- pump volume per stroke: 300 ml

For the extraction process, insert the vacuum pipe into the opening of the container (canister, drum) until it reaches the bottom. The pump is supplied with a vertically adjustable foot, permitting use with containers of a variety of sizes. The manually operated pump, with an integrated filter in the suction pipe, can be used with openings of 45 mm in diameter and upwards.

Supplied with a transparent pressure hose, diameter 20 mm, with screw coupling. Length 1.40 m (4.9 ft).

Oil suction program and collecting tank

HAP 01.1

060410



Pressure and vacuum pump, for the suction, the refilling and the scavenge of gearbox-oil

Pressure and vacuum pump, aluminium version, for the suction, the refilling and the scavenge of gearbox-oil. The facility for extracting and refilling gearbox oil is provided by two connecting nipples.

Pressure performance min. 2 bar, vacuum performance appr. 0.8 bar.

- 2 connections PRESSURE or VACUUM
- used in conjunction with collecting tank HAP 15

A container HAP 15 with contents scale (1.5 l capacity), which can be connected to the unit, permits the temporary storage of the oil.

HAP 01.2

060411_1



Vacuum pump with transparent hose connectable

Vacuum pump, plastic version with transparent hose connectable, can be used in combination with collecting tank HAP 15 (not included).

- vacuum performance 0.8 bar
- length of hose.

Scope of delivery:

- 1 vacuum pump HAP 01.2**
- 1 transparent suction hose, 0.50 m long (20 in.) with nipple**

HAP 15

060408



Collecting tank, oil resistant, volume 1.5 l

Collecting tank, oil resistant, volume 1.5 l, provided with scale in 50-ml-graduation. Connection with Hand pumps HAP 01.1 and HAP 01.2 is effected by means of quick coupling.

Scope of delivery:

- 1 collecting tank HAP 15**
- 1 transparent suction hose, 2.00 m long (6.6 ft).**

Pump-tank-set:

HAP 03

(060406)

The set consist of

- vacuum pump HAP 01.2 (060411) and
- collecting tank HAP 15 (060408)

HAP 05

(060404)

The set consist of

- pressure and vacuum pump HAP 01.1 (060410) and
- collecting tank HAP 15 (060408)

Digital pressure measurement



Accurate measurement



Brake booster



Fuel pressure



Common Rail start pressure



Compression

Universal digital pressure measurement

pressure measurement range:	Applications:
-1 ... +16 bar	Vacuum, Oil pressure, Fuel pressure
0 ... 60 bar	Compression
0 ... 400 bar	Hydraulic
0 ... 2500 bar	Common Rail, Hydraulic

Automatic detection of the pressure sensor (measuring range). Example: see chapter BRAKE SYSTEM, page 60, UDD 01_LR_S.



Common rail high pressure testing device with analogue display for testing high pressure pumps during engine-start. Operation range up to 1000 bar / 14500 psi.

High pressure gauge, stainless steel construction, NG 63, measurement range 0...1000 bar, glycerine-filled. The testing device has diverse applications due to the various CRPZ adapters

Scope of delivery:

1 high pressure manometer		NG 63, 0...1000 bar, glycerine-filled
DETA	041257	adapter, thread M 14x1,5 (IG) - M 12x1,5 (AG)
1 adapter		G 1/4 - M 12x 1,5
CRPZ 01	042114_1	Adapter, thread M 14x1,5 (AG) - M 12x1,5 (AG)
CRPZ 02	042115_1	Fuel fuel, rigid, 120 mm, bended 50°, M 12x1,5 - M 14x1,5
CRPZ 03	042116_1	Fuel fuel, rigid, 120 mm, bended 90°, M 12x1,5 - M 14x1,5
CRPZ 04	042121_1	Fuel fuel, rigid, 120 mm, bended 90°, angle length 40 mm
CRPZ 05	042122_1	Fuel fuel, rigid, 120 mm, bended 90°+ 45°, M 12x1,5 - M 14x1,5
CRPZ 06	042123_1	Fuel fuel, rigid, 120 mm, bended 65°, M 12x1,5 - M 14x1,5

Supplied in a robust plastic case

Checking the fuel system

- Common Rail high pressure testing
- static and dynamic high-pressure pump testing
- injector function test, dribbling, pressure loss, etc.
- defective injector
- return flow volume measurement
- fuel identification
- injection testers
- diesel bleeding
- fuel suction device
- fuel consumption meter

Common Rail Systems

CRP 01.2

042134_1



Common rail high pressure testing device with analogue display

CRP 02.1

042102_2



Digital pressure tester with plug-in adapters for the pressure and leak testing of common rail systems

Digital pressure tester with plug-in adapters for the pressure and leak testing of common rail systems. The tester is directly connected to the high pressure rail sensor by means of the adapters supplied (see contents). The existing system pressure is shown on the display and can then be compared with the manufacturer's data. Two measuring ranges possible.

- range 0...1500 bar or 0...1800 bar
- measurement resolution 1 bar
- indication for defective pressure rail sensor
- fault detection indicated by a red warning LED
- automatic cut-off after 1 minute
- power supply by 9 V battery

Scope of delivery:

- 1 basic unit CRP 02
- 1 adapter cable CRPA 01 (042103) (Mercedes Benz vehicles)
- 1 adapter cable CRPA 02 (042104) (universal connecting plug)
- 1 adapter cable CRPA 03 (042105) (French and Italian vehicles)
- in solid plastic case

CRP 04

042112_1



Pressure tester for static and dynamic high-pressure pump testing

Both the pump starting pressure and the pressure level at changing speeds can be tested.

Scope of delivery:

- 1 pressure tester unit CRP 04 with high pressure gauge with protective rubber cap, DS 100 mm (4"), 0...1600 bar
- 2 high pressure hoses, each 0.50 m long
- 1 adapter M 12x1.5 both sides (ET 446)
- in solid plastic case

Accessory

DETA	041257	Adapter, thread M 14x1,5 (IG) + M 12x1,5 (AG)
CRPZ 01	042114_1	Adapter, thread M 14x1,5 (AG) + M 12x1,5 (AG)
CRPZ 02	042115_1	Fuel fuel, rigid, 120 mm, bended 50°, M 12x1,5 - M 14x1,5
CRPZ 03	042116_1	Fuel fuel, rigid, 120 mm, bended 90°, M 12x1,5 - M 14x1,5
CRPZ 04	042121_1	Fuel fuel, rigid, 120 mm, bended 90° angle length 40 mm
CRPZ 05	042122_1	Fuel fuel, rigid, 120 mm, bended 90°+45°, M 12x1,5 - M 14x1,5
CRPZ 06	042123_1	Fuel fuel, rigid, 120 mm, bended 65°, M 12x1,5 - M 14x1,5
CRPZ 07	042124_1	high pressure tap, M 14x1,5
CRPZ 08	042127_1	Fuel line 120 mm, bended 45°, M 12x1,5 both sides
CRPZ 09	042128_1	Fuel line 120 mm, bended 90°, M 12x1,5 both sides
CRPZ 10	042129_1	Fuel line 120 mm, bended 45°, M 14x1,5 both sides
CRPZ 11	042130_1	Fuel line 120 mm, bended 90°, M 14x1,5 both sides

CRP 2500

042131_2



Common rail high pressure tester

Common rail high pressure tester, design as for CRP 04, pressure gauge in stainless steel with measurement range 0 to 2500 bar.

Scope of delivery:

- 1 test block with high-pressure gauge with GSK, NG 100, measurement range 0 to 2500 bar
- 2 flexible high-pressure hoses M 14x1.5, length 0.50 m
- 1 adapter thread M 14x1.5 (male thread)
- 1 silicone hose, 1.00 m (3.3 ft)
- in solid plastic case

Common Rail-Injector return flow measurement

A very clear performance indicator for Common Rail Injectors is the diesel return-flow (spill rate).

A defective injector has a significant higher or lower return-flow compared with a good injector.

CRMK 01

042119_1



Common Rail return flow measurement for 6 injectors

Test kit for checking the return flow volumes from common rail systems for six injectors. Suitable for use with all BOSCH, DELPHI, DENSO and VDO/SIEMENS injectors.

A plexiglass container with a graduated scale permits the comparative measurement of return flow volumes from individual injectors. The container is provided with a hook, so that it can be hung up in the engine compartment. The tester is connected by adapters to the return flow pipe from the injector. The adapters, marked with the name of the injector manufacturer, can be changed over at the connecting hosepipe.

Scope of delivery:

- 1 plexiglass measuring container with 6 fuel-resistant, highly flexible hoses, each 0.40 m long (1ft)**
- 6 adapters for BOSCH injectors**
- 6 adapters for DELPHI injectors**
- 6 adapters for DENSO injectors**
- 6 adapters for VDO/SIEMENS injectors**
- in solid plastic case**

CRMK 02

042138_2



Common Rail return flow measurement for 4 injectors

Test kit for checking the return flow volumes from common rail systems for six injectors. Suitable for use with all BOSCH, DELPHI, DENSO and VDO/SIEMENS injectors.

Scope of delivery:

- 1 plexiglass measuring container with 4 fuel-resistant, highly flexible hoses, each 0.40 m long (1ft)**
- 4 adapters for BOSCH injectors**
- 4 adapters for DELPHI injectors**
- 4 adapters for DENSO injectors**
- 4 adapters for VDO/SIEMENS injectors**
- in solid plastic case**

CRP 08

042106_1



Common Rail return flow measurement up to 8 Injectors

A very clear performance indicator for Common Rail Injectors is the diesel return-flow (spill rate). A defective injector has a significant higher or lower return-flow compared with a good injector.

- especially testing BOSCH injectors
- identifying a defective injector
- comparison of the back flow volume of each injector
- determine the total backflow.

Scope of delivery:

- 8 acrylic glass tubes, scaled, with brass connectors**
- in solid plastic case**

CRRMK 01

042405_1



Master-Kit, Common Rail return flow measurement

Master kit, common rail return flow tester with graduated plastic measuring beaker (120 ml) in an aluminium holder, including 1.00 m highly flexible, fuel resistant plastic tube.

- interchangeable connectors
- useable for BOSCH, DELPHI, DENSO, VDO injektors

- 1 plexiglass measuring container with
- 1 highly flexibile hose (Silikon) 1.00 m (3 ft)
- 1 adapter for BOSCH (Piezo valve)
- 1 adapter for BOSCH (solenoid valve)
- 1 adapter for DELHPI (solenoid valve)
- 1 adapter DENSO (solenoid valve)
- 1 adapter VDO (Piezo valve)



Common Rail injector, return flow pressure measurement

FP 05_DELPHI

041224_1



Return flow pressure measurement for DELPHI Piezo common rail injectors

Instrument for testing the return flow pressure from DELPHI Piezo common rail injectors. Suitable for testing the condition of a Piezo common rail injector (pass/fail statement). The instrument features a transparent body, permitting the identification of any air bubbles which may be present.

- suitable for DELPHI injectors
- compound gauge DS 63 (2 1/2") with double scale
- measuring range - 1 ... +3 bar / 0...760 mmHG / 0...215 psi

Scope of delivery:

- 1 test unit with compound gauge
- 2 connectable hoses Ø 4 mm, each 0.50 m long
- 2 connectable hoses Ø 5 mm, each 0.50 m long
- 1 conical brass adapter

FP 06_BOSCH

041225_1



Return flow pressure measurement for BOSCH Piezo common rail injectors

Instrument for testing the return flow pressure from BOSCH Piezo common rail injectors. Suitable for testing the condition of a Piezo common rail injector (pass/fail statement).

The instrument features a transparent body, permitting the identification of any air bubbles which may be present.

- suitable for BOSCH injectors
- compound gauge DS 63 (2 1/2")
- measuring range - 1 ... +15 bar

Scope of delivery:

- 1 test unit with compound gauge**
- 1 release valve**
- 1 PVC hose 0.30 m long**
- 2 hoses each 0.30 m long with angle adapter**

FP 06U

041225_3



Return flow pressure measurement for piezo common rail injectors

Tester for measuring the return pressure from piezo common rail injectors. Suitable for testing the condition of a common rail injector (good/poor statement). The tester comes with a transparent body, permitting any air bubbles in the fluid to be seen.

The advantage of this tester is the possibility of changing testing hoses, thereby offering a choice of use with BOSCH or VDO/SIEMENS injectors (not supplied as standard but can be ordered separately (see accessory FPZ)).

- compound gauge DS 63, range -1...+15 bar
- bleeding and pressure release feature
- suitable for BOSCH, DELPHI, VDO/SIEMENS injectors

Scope of delivery:

- 1 test unit with compound gauge**
- 1 release valve**
- 1 PVC hose 0.30 m long**

FPMK 01

042118_1



Return flow pressure measurement set for Common Rail injectors

Test instrument for testing the return pressure from piezo common rail injectors. Suitable for testing the quality of a common rail injector (pass/fail statement). The tester features a test unit made of transparent plexiglass permitting the identification of any air pockets which may be present. The advantage of the tester is that the vacuum gauge on the test unit can be exchanged.

The required pressure range for BOSCH and VDO/SIEMENS injectors is -1 to +15 bar, for DELPHI injectors it is -1 to +3 bar.

The connecting leads FPZ 01, FPZ 02 and FPZ 03 can be connected to the control unit.

- suitable for use on a variety of injectors
- replaceable vacuum gauge
- release valve for venting/depressurisation

Scope of delivery:

- 1 test unit with gauge, quick-fit connectors and pressure release valve**
- 1 vacuum gauge DS 63, measuring range -1 to +15 bar**
- 1 vacuum gauge DS 63, measuring range -1 to +3 bar**
- 1 FPZ 01 set of hoses, for connection to VDO/SIEMENS injectors**
- 1 FPZ 02 set of hoses, for connection to BOSCH injectors**
- 1 FPZ 03 set of hoses, for connection to DELPHI injectors**
- 1 conical brass adapter in solid plastic case**

Accessory for Common Rail return flow tester

FPZ 01	041227_1	set of hoses with connectors each hose 0.30 m long for VDO/SIEMENS injectors.
FPZ 02	041227_2	set of hoses with connectors each hose 0.30 m long for BOSCH injectors
FPZ 03	041227_3	set of hoses with connectors each hose 0.30 m long for DELPHI injectors.
FPZ 04	041227_4	set of hoses with connectors each hose 0.30 m long for DELPHI solenoid

Fuel identification

The smallest quantities of gasoline in a common rail system lead to the corrosion of engine parts, which later causes individual components to fail. If a not suitably equipped diesel engine is refuelled with a diesel/biodiesel mixture, there is a possibility that the engine will be damaged.

In the area of motor vehicle servicing, it is a great help to be able to identify fuel before extensive measurements are carried out on the system pressure and for leaks etc.

KIK 01_LR

110804_1

Petrol detector

Same function and delivery content as KIK 02_LR, but with additional hydrometer.

KIK 02_LR

110803_1



Petrol detector

The use of the BD 01 petrol detector guarantees the detection of contaminated fuel, from a percentage as small as 0.2 % gasoline in a diesel system. In the area of motor vehicle servicing, it is a great help to be able to identify fuel before extensive measurements are carried out on the system pressure and for leaks etc. Power is supplied by the 12V/DC vehicle electrical system.

The measurement result is shown by a LED

- quantity of petrol < 0.2 % = LED lights green
- quantity of petrol > 0.2 % = LED lights red

Scope of delivery:

- 1 petrol detector 12 V/DC**
- 1 measuring cylinder 500 ml**
- 1 hook up clips NSVA 100**
- 1 cleaning brush**
- 50 pcs filter pads**
- in solid plastic case**

EMK 01

110805_1



Ethanol measurement kit

NEW

For detection and measurement of the ethanol concentration of a fuel probe.

Scope of delivery:

- 1 measurement flask**
- 1 measurement cylinder 500 ml**
- 1 measurement cylinder 100 ml**
- 1 cleaning brush**
- 10 pipets**
- 1 coloring liquid LT 02**
- in solid plastic case**

DMP 01

110801_1



Diesel mixture tester

If a not suitably equipped diesel engine is refuelled with a diesel/biodiesel mixture, there is a possibility that the engine will be damaged. The DMP 01 diesel mixture tester was developed to determine this mixture ratio.

Tester for measuring the mixture ratio of biodiesel and diesel fuel based on the principle of density measurement. The instrument permits rapid, reliable testing by sampling fuel direct from the tank. The test result is displayed on a coloured scale (see pic.).

- easy and reliable to use
- quick testing possible on sit
- wear-free testing

DMP 02

110802_1



Fuel identification device

The use of the fuel identification device enables definition of the fuel type in events of possible damage to the fuel system.

- rapid measurement possible on-site
- in diesel systems - diesel or biodiesel
- in otto/bifuel systems - petrol, E 85 or E 100 ethanol
- indication via measurement device with colour scale

By removing 500 ml of fuel from the fuel tank, a clear statement can be made about the fuel type used. Measurement results are based on an ambient temperature of 20 °C.

Supplied in a solid plastic case.

Note: The DMP 02 identification device does not give judicially useable measurement results.

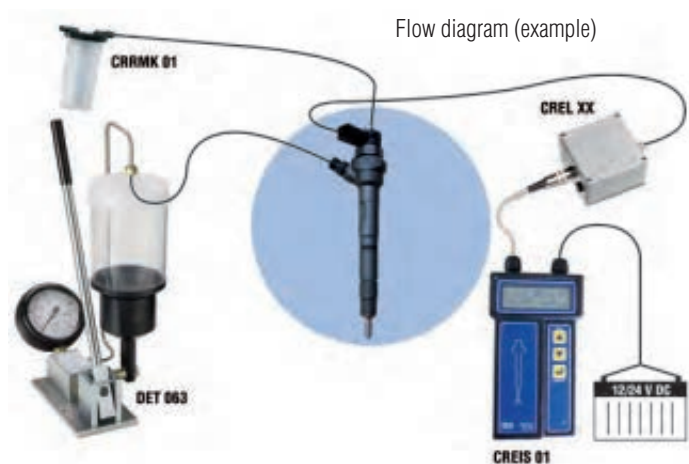


Injection testers for petrol and diesel engines

DET/BET-type fuel injector testers are available in steel or aluminium and can be supplied with or without a drag pointer, as required. DET testers: pressure gauge range 0...400 bar / 0...5800 psi or 0...600 bar / 0...8700 psi; BET testers 0...10 bar / 145 psi. (See tables)

All the testers are fitted with a splashproof plexiglas container for the protection of the environment.

Testing of Common Rail injectors



Flow diagram:

With injector testers types **DET 062** and **DET 063**, measuring range 0...600 bar, the **CREIS 01** electronic injector control system and the **CREL XX** electronic power section (depending on the injector manufacturer), Common Rail injectors can be function tested in removed condition for faults such as dribbling, pressure loss, etc.

At the same time, the return flow volume can be measured with the **CRRMK 01** Common Rail return flow tester. Can be used with the injectors of every manufacturer with the aid of replaceable adapters.

CREIS 01_12

042401_1



Electronic injector control

The CREIS 01 electronic injector control unit serves to control all the CREL_XXX units listed below (see flow diagram) - irrespective of the injector type and manufacturer. The duration of the injection process can be chosen between 200 μ s and 1000 μ s in 50 μ s stages. It is also possible to choose between continuous and single injection modes.

- automatic recognition of minimum operating voltage
- the injection process can be broken off by means of the stop button
- visual indicator activated when a control signal is being sent
- power supply, 12 V/DC

CREL_



Electronic power section for Common Rail injectors

Electronic power section for different Common Rail injectors based on the principle of the solenoid valve or piezo valve. The power section is fitted with an electrical connection to fit the injector. It generates suitable electrical signals specifically for this type of injector and in the form produced by the injector control unit in the vehicle.

Control functions are performed by a CREIS 01_12 (duration of the injection process, start, stop, control signal and fault display).

Different versions, depending on the injector manufacturer, are available:

CREL_BOSCH_M01	042402_1	solenoid valve
CREL_BOSCH_INDUSTRIAL_M01	042402_2	solenoid valve
CREL_DELPHI_M01	042403_1	solenoid valve
CREL_DENSO_M01	042404_1	solenoid valve
CREL_BOSCH_P01	042406_1	piezo valve
CREL_VDO_P01	042407_1	piezo valve

DET 400, 600

NEW



Injection tester for petrol and diesel fuel injectors

Workshop tester made of steel, for testing of
 - nozzle opening pressure (N.O.P.) spray pattern and leaks
 - measuring ranges 0...400 (600) bar / 0...5800 (8700) psi
 - detachable pump lever

Precision pressure gauge made of V steel DS 100, with protective rubber cap, splashproof plexiglas container for the protection of the environment. Double scale bar/psi. Two connecting lines with threaded connectors M 12x1.5 and M 14x1.5, swept volume 25 cm³.

Versions with **_SZ** are fitted with an additional drag pointer, eliminating the need for the jet from the nozzle and the pressure gauge to be observed at the same time.

Available with an ISO certificate of calibration (at extra charge).

Type:

DET 400	041230_1	0...400 bar / 0...5800 psi
DET 400_SZ	041230_2	0...400 bar / 0...5800 psi with drag pointer
DET 600	041231_1	0...600 bar / 0...8700 psi
DET 600_SZ	041231_2	0...600 bar / 0...8700 psi with drag pointer

DET 06, 061, 062, 063



Injection tester for petrol and diesel fuel injectors special version

Workshop tester for testing petrol and diesel fuel injectors for:
 - nozzle opening pressure (N.O.P.), spray pattern and leaks
 - measuring ranges 0...400 (600)bar / 0...5800 (8700 psi)

Special design in aluminium with baseplate; precision pressure gauge made of V steel DS 100, with protective rubber cap; splashproof liquid container (330 cm³) made of plexiglas. The advantage of this tester is that the pump lever can be transferred to the front socket to facilitate pumping (volume per stroke 35 cm³).

The drag pointer of DET 061 and DET 063 type testers registers the injection pressure and stays in that position. As a result, it is not necessary to observe the injector spray pattern and the pressure gauge at the same time.

Available adapters for injection testers DET 06:

DETA (041257)	standard adapter (M 14x1,5)
DETA 01 (041254)	Opel, motortype DTL + DTH (M 17x0,75 with closed cone)
DETA 02 (041256)	VW/Audi, motortype TDI (M 12x1,25)

Scope of delivery:

1 injection tester DET
1 pressure line thread M 12x1.5
1 adapter DETA thread M 14x1.5

Type:

DET 06	041255	0...400 bar / 0...5800 psi
DET 061	041255_1	0...400 bar / 0...5800 psi with drag pointer
DET 062	041255_2	0...600 bar / 0...8700 psi
DET 063	041255_3	0...600 bar / 0...8700 psi with drag pointer
BET 06	041255_4	0...10 bar / 0...145 psi

Note:

All makes of common rail injector can be tested for leaks (drips, loss of pressure, etc.) with the testers types DET 062 and DET 063 (test range 0...600 bar).

Accessory diesel injection control units

DETAVV

041259_1



Shut off and control unit

The shut off and control unit DETAVV will be installed between the testing device and the pressure gauge. The integrated shut off valve isolates the pressure gauge. The opening pressure of the valve can be regulated through a volume controller.

The shut off valve can also be ordered separately.

DETA V

041259_2



Shut off valve

The shut off valve will be installed between the testing device and the pressure gauge. The shut off valve isolates the pressure gauge.

The shut off valve can also be ordered with the control unit.

CRE 04

042125_1



Plastic containers for determining the injection volume of common rail injectors

Four plastic containers, with graduated scales, for determining the injection volume of common rail injectors in removed condition. For the function test during the startup process, the injectors are connected electrically to the control unit and hydraulically to the rail.

Test capabilities:

- determining injection volume
- determining damaged or leaking injectors (drips, etc.)
- determining closed injectors (no injection)
- determining open injectors (loss of hydraulic pressure)

Scope of delivery:

4 plastic containers (120 ml content)



Fuel pressure and leakage testers

You can find the list of the available adapters at our website at Service, Downloads, in "Adapter list for injection systems tester (DPAK)"

for this purpose you also can scan the QR-code →



Scope of delivery:

- 1 pressure gauge NG 100, MB 0...10 bar / 0...140 psi
- 1 three-way valve, connectable
- 3 hoses each end with quick coupling, each 0.25 m long
- 12 adapters, DPAK 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 21
- in solid plastic case

LR 180_Honda

041619



System pressure tester for mechanical and electronic fuel injection systems, Honda

System pressure tester for mechanical and electronic fuel injection systems. Special version in accordance with HONDA requirements.

Scope of delivery:

- 1 pressure gauge NG 100, 0...10 bar/0...140 psi, mit GSK
- 1 three-way valve (connectable)
- 3 hoses, each end with quick coupling 0.25 m (9.8 in.)
- 3 adapters DPAK 52, 53, 61 (with push in fitting)
- 1 adapter ANK 47 (with thread)
- 1 drain valve AVE 01 with hose
- in solid plastic case

LR 180/2

041605



System pressure tester for mechanical and electronic fuel injection systems

High quality for professional use. System-pressure tester for mechanical and electronic fuel injection systems. The tester can be used for the following systems:

- K-Jetronic, KE-Jetronic, L/LH-Jetronic, Motronic, MPI, HMPI, EFI, DIGIFANT, Mono-Jetronic, Opel-Multec, Weber CFI
- measuring range 0...10 bar / 0...140 psi
- graduation 0.1 bar

An adjustable three-way valve located between the warm-up regulator and fuel distributor permits the system pressure and control pressure to be tested, and the fuel injection system to be checked for leakages.

High quality gauge with robust protective rubber cap and hook, DS 100 mm (4"). With 12 adapters for the connection with European and Asian vehicles. Available with an ISO certificate of calibration (at extra charge).

LR 180/4

041615



System pressure tester for mechanical and electronic fuel injection systems

System pressure tester for mechanical and electronic fuel injection systems. Extended version of LR 180/2 with 30 adapters. Thanks to this wide range of adapters, use is assured with almost all makes of car.

- 1 drain valve for the discharge of residual fuel.
- available with an ISO certificate of calibration (at extra charge).

Scope of delivery:

- 1 pressure gauge NG 100, MB 0...10 bar/0...140 psi**
 - 1 three-way valve, connectable**
 - 3 hoses each end with quick coupling, each 0.25 m long**
 - 30 adapters DPAK 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 19, 21, 22, 24, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39**
 - 1 extensions hose 1.00 m long (3 ft)**
 - 1 drain valve**
- in solid plastic case

Accessory ET 366

121382



Extension hose

Accessory for fuel system pressure testers LR 180:
Extension hose, length 3.00 m (9.8 ft.),
- fuel resistant
- with quick coupling on both sides

Used to check fuel pressure while driving.

System pressure test on low pressure side

LR 180_AK2

041620_2



Fuel system pressure tester with compound gauge (vacuum/pressure)

Fuel system pressure tester with compound gauge (vacuum/pressure). Suitable to check pressure of fuel line and back flow on gasoline and diesel engines. The transparent body allows to visibly check the fuel flow for air bubbles.

The included adapters are suitable for fuel lines with quick connections according to SAE norm.

- easy to use
- compound gauge, range - 1...+9 bar

Scope of delivery:

- 1 compound gauge**
 - 7 adapters DPAK 64G, 65G, 66G, 67G, 68G, 69G, 70G**
- in solid plastic case

FP 04_DELPHI

041214_2



Tester for measuring the ingoing pressure to a DELPHI high-pressure pump

Tester for measuring the ingoing pressure to a DELPHI high-pressure pump. Thanks to the length of the testing hose, pressure measurements can be taken during a trial run.

- vacuum gauge DS 63 mm (2 1/2"), range - 1...+5 bar
- plug-in connectors at both ends
- measurement under driving conditions possible

Scope of delivery:

- 1 compound gauge**
- 1 test hose with T-piece, length 2.00 m (6 ft)**
- 2 test hoses, each 0.20 m long**

Fuel supply pump tester

FP 01

041213



Fuel supply pump testers -1 ... 3 bar

Fuel supply pump tester, range -1...+3 bar. The transparent body allows to visibly check the fuel flow for air bubbles. With quick connections for easy mounting and demounting.

Testing options:

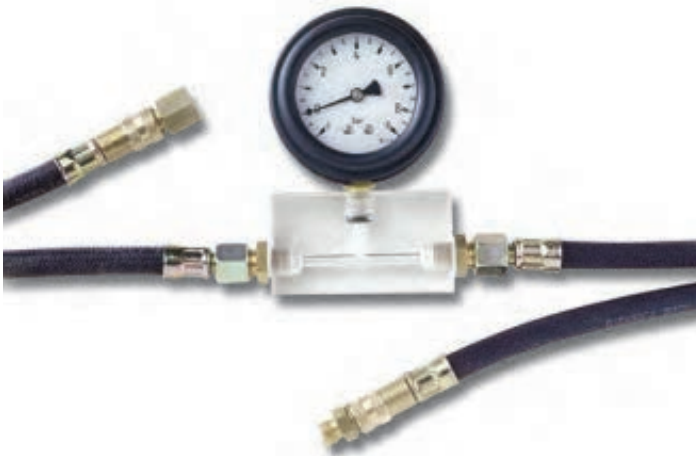
- malfunction of fuel supply
- malfunction of overflow valve
- malfunction of feed pump
- leaking oil/fuel leads
- bubbles within the system
- measurement under driving conditions possible.

Scope of delivery:

- 1 high quality compound gauge with solid protective rubber cap**
DS 63 mm (2 1/2"), range -1...+3 bar
- 2 hoses 3.00 m (10 ft) long**
- 1 adapter M 12x1.5 (female thread) connectable**
- 1 adapter M 12x1.5 (male thread) connectable**

FP 03

041213_1



Fuel supply pump testers -1 ... 9 bar

Fuel supply pump tester, equivalent version of FP 01, but range -1...+9 bar. -1...9 bar.

PRINTED CATALOGUE

Dear customer,

It has been a matter of particular importance for us to issue an attractive up-date of our illustrated catalogue.

Now we are proud to present the result of our efforts, which we hope will be a source of information on our equipment to facilitate communication and cooperation.

Our customers in Germany and abroad (50% of the yearly production is for export) confirm the company strategy, which can be summarized with three words:

Quality sells best.

Please accept this copy as our promise to continue doing our utmost to match your high expectations!

The  -Team
GERMANY

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More than just a catalogue of products.

An overview of all our products: Take a glance at our online product catalogue. Please note that the core of our activities cannot be shown on the pages of our catalogue because individual, customised solutions only result from the stimuli which you give to us!

Please contact us! We look forward to your ideas and meet new challenges enthusiastically.



EXHIBITIONS

Arrange meeting points

So would you like to get a personal impression from us and our products?
Then visit us on site, at our company. Or take the opportunity to meet with us
when you travel.

You can see here when and where you can find us:

For example, we regularly exhibit at the **Automechanika Frankfurt/Main**

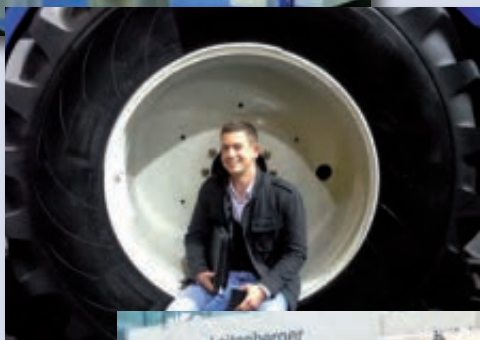
and at the exhibitions:

Agritechnica, Hannover
Testing Expo, Stuttgart
Rematec, Amsterdam
Automechanika, Istanbul
Automechanika, Shanghai

and at different in-house exhibitions.

The exact dates can be found on our homepage:
Service, Appointment overview

for this purpose
you also can scan the QR-code →



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Test benches for automatic testing

DISU = Diesel Injector Service Unit **_T** = only testfunction
GISU = Gasoline Injector Service Unit **_C** = test and cleaning function

DISU/GISU test benches features:

- control signals and test plans for the most piezo- and coil injectors
- OEM / custom database
- user-friendly, good / bad evaluation
- short testing time required
- repeatable test outputs
- ergonomic design
- robust test bench in high quality
- on-display guide with language selection
- Linux based PC
- filtered injection fumes extractor and collector
- testing (and cleaning) fluid is cleaned by a 2 µm filter
- clear protective test bench cover

- dynamically measuring in mg/strokes (equivalent to mm³/stroke)
- resolution 0.2 mg, accuracy 0.2 %
- touch screen LCD
- customizable control signals and test plans for all piezo and coil injectors
- up to 9 times multiple injection
- digitally monitored pressure control
- output of test protocols via USB / printer
- optional: measurement of injection response time/injector coding
- optional: injector coding
- optional: injector-cleaning-option

Models	Part-No	Models	Part-No
DISU 4000_1800 bar_T	041274_1	DISU 4000_1800 bar_T	041280_1
DISU 4000_2400 bar_T	on request	DISU 4000_1800 bar_T	on request

DISU 6000 / GISU 6000



NEW

Test bench for CR or DI-Injectors - high-end version

Features as mentioned above, additionally:

- Operating pressure up to 2450 bar
- Digital gravimetric injection mass measurement
- Dynamically measuring in mg/strokes (equivalent to mm³/stroke)
- Resolution 0.2 mg, accuracy 0.2 %
- Touch screen LCD
- Up to 9 times multiple injection
- Customizable signals and test plans for all piezo and coil injectors
- Digitally monitored pressure control
- Output of test protocols via USB / printer
- Optional: measurement of injection response time/injector coding
- Optional: injector-cleaning-option

Models	Part-No	Models	Part-No
DISU 6000_1800 bar_T	041275_1	GISU 6000_300 bar_T	on request
DISU 6000_1800 bar_C	041276_1	GISU 6000_300 bar_C	on request
DISU 6000_2400 bar_T	041277_1	GISU 6000_500 bar_T	on request
		GISU 6000_500 bar_C	

DISU 2000 / GISU 1000



NEW

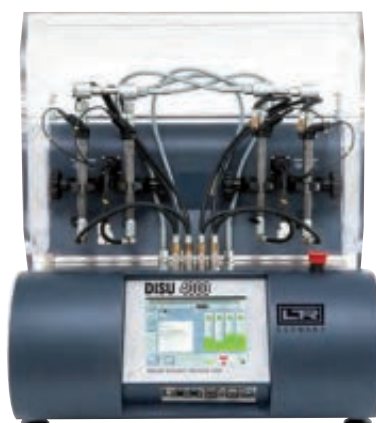
Test bench for CR or DI-Injectors - starter set

Features as mentioned above, additionally:

- operating pressure up to 1850 bar
- glass level indicators
- resolution 0.5 ml, accuracy ± 1 ml/65 ml
- automatically draining of the measuring tubes
- quick coupling for hydraulic connections
- optional: injector-cleaning-option

Models	Part-No	Models	Part-No
DISU 2000_1200 bar_T	041270_1	GISU 1000_300 bar_T	041278_1
DISU 2000_1200 bar_C	041271_1	GISU 1000_300 bar_C	041279_1
DISU 2000_1800 bar_T	041272_1		
DISU 2000_1800 bar_C	041273_1		

DISU 4000 / GISU 4000



NEW

Test bench for CR or DI-Injectors - high-end version for 4 injectors

Features as mentioned above, additionally:

- operating pressure up to 2450 bar
- digital gravimetric injection mass measurement
- control signals for the most piezo- and coil injectors

Accessories



NEW

Name	Part-No
DISU_Z01 Test fluid, 4l	041285_1
DISU_Z02 Cleanser, 2l	041292_1
GISU_Z01 Test fluid, 4l	041286_1
DISU_Z_RSP Response-Time-measuring Adapters for CRIN-Injectors	041284_1 on request

UISU 2000_T Unit Injector Service Unit	on request
UISU 2000_C Unit Injector Service Unit	on request



DISU_Z03 LED lighted pressurized injection chamber	on request
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MP_CR 01

042416_1

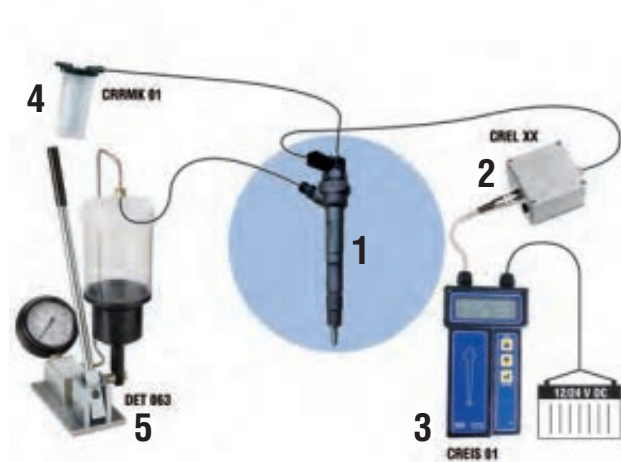


NEW

Mini-test bench for CR-injectoren

All components are mounted stationary on the stable plate.
Function and composition, see flow diagram below.

Flow diagram mini test bench



Testing Common Rail Injectors

With injector testers types **DET 062** and **DET 063** (5), measuring range 0-600 bar, the **CREIS 01** (3) electronic injector control system and the **CREL XX** (2) electronic power section (depending on the injector manufacturer), Common Rail injectors can be function tested in removed condition for faults such as dribbling, pressure loss, etc. At the same time, the return flow volume can be measured with the **CRRMK 01** (4) Common Rail return flow tester; can be used with the injectors of every manufacturer with the aid of replaceable adapters.

- 1 Common Rail Injector (test piece)
- 2 CREL_BOSCH_M01, solenoid valve (example)
- 3 CREIS 01 electronic injector control system 12 V/DV
- 4 CRRMK 01 Common Rail return flow tester
- 5 Injector testers types DET 062, DET 063 mechanical, MB 0-600 bar

USB 01_EU

130603_1



NEW

Ultrasonic Bath

For cleaning of injectors, injector parts and small mechanical parts.

Suitable for:

- cleaning of complete injectors
- cleaning of injector parts
- cleaning of small mechanical parts
- with timer

Technical data:

Operating voltage: 230 VAC
Frequency: 44 kHz
Heatable basin: 30 °C to 80 °C
Weight: 3.8 kg

Code	Description	Ref. No.
USB_Z1	Rack for gasoline direct injectors for USB 01_EU	130611_1
USB_Z2	Rack for diesel common rail injectors for USB 01_EU	130612_1
USB_Z3	Cage for small parts and cover plate for USB 01_EU	130613_1
USB_Z4	Cage for small parts for USB 01_EU	130614_1
USB_Z5	Cover plate for USB 01_EU	130615_1
USB_Z6	Cleanser, concentrate ,1 liter for USB 01_EU	130616_1

Diesel bleeding

DEP 01, DEP 01.1

060501, 060501_1



Electric pump for bleeding the fuel system of diesel engines

Electric pump with solid metal housing for bleeding the fuel system of diesel engines. Used after repair or when the tank was empty. When in operation, diesel is sucked and this prevents a dry run of the injection pump.

- suitable for Opel vehicles with 2.0 and 2.2 l diesel engines from 10/1996 on
- power supply 12 V/DC

DEP 01.1 equivalent version of DEP 01 but with connection for FORD vehicles.

Scope of delivery:

- 1 electric pump DEP 01 (without container)
- 1 suction hose with filter
- 1 battery connecting lead with clamps

DEP 02_DChr

060503_1



Electric pump for bleeding the fuel system of diesel engines

Electric pump for bleeding the fuel system of diesel engines. As described at DEP 01. Application: Mercedes Benz CDI engines. Item is approved and recommended by Daimler AG. Power supply 12 V/DC.

Scope of delivery:

- 1 electric pump DEP 02 with container
- 1 suction hose with filter
- 1 quick connector to MB CDI-engines
- 1 connecting cable with cigarette lighter adapter
- 1 lead for power supply from battery

DEG 01_24VDC

060504_2

NEW



Electrical pump for ventilation of fuel systems of HDEP/MDEG diesel motors in utility vehicles.

Electrical pump for ventilation of fuel systems of HDEP/MDEG diesel motors in utility vehicles. 24 V/DC power supply via battery terminals. Suction hose with integral fuel filter. Ventilation process can be precisely observed via an integrated pressure gauge with a measurement range of 0...10 bar, glycerine-filled. Automatic device switch-off at maximum pressure of 6.9 bar.

- 24 V/DC power supply
- Light metal housing with carrying handle

Scope of delivery:

- 1 electr. pum
- 1 suction hose, length 3.00 m, with fuel filter
- 2 spare filters including clamps
- 1 pressure hose, length 2.50 m (8.2 ft), with quick-connect coupling
- 1 electr. connection cable with battery terminals
- 1 lead for power supply from battery

Fuel suction device

The fuel extractor units BAS 01, BAS 02 and BAS 02.1 are TÜV approved.

Complying with the DIN EN 60079-15:2003 standard and directive 9479/EC, II 3 G Exx nC IIA T6 (protection against explosions).

BAS 01

060306



Fuel extractor unit, approx. 90 l/h

Explosion-proof fuel extractor unit, suitable for fuel tank repairs, by the used car trade and in any situation where fuel must be drawn off (tank emptying). Automatic cutout is assured when used with pressure sealed fuel container BAS 013 (see accessories). The unit is protected by an overload fuse.

- can be used anywhere
- suitable for all types of fuel
- power supply 12 V/DC by battery clamps

- extraction rate 90 l per hour
- refillable
- robust instrument in metal housing

Scope of delivery:

- 1 fuel suction device BAS 01**
- 1 electr. connecting lead 5.00 m (14 ft)**
- 1 fuel filter**
- 2 fuel hoses 2.50 m and 1.50 m long**

BAS 02

060310



Fuel extractor unit, approx. 180 l/h

Fuel extractor unit 12 V/DC. Equivalent version of BAS 01, but suction capacity 180 l/h.

BAS 02.1

060318

Fuel extractor unit, OPEL version

as approved and recommended by Adam Opel GmbH

Scope of delivery:

- 1 fuel suction device BAS 02**
- 1 auxiliary fuel tank**
- 1 adapter for petrol/air vapors BAS 015**
- 1 special hose (7.8 ft) BAS 020_Opel (Ref. No. 060324_4)**
- 1 adjustable carriage FTW 03**

BAS 2000

060401_1



Stationary suction device

Stationary suction device powered by workshop compressed air (4...8 bar). Suitable for the extraction of fuel, oil, water, etc.

- TÜV and CE approved
- extraction rate 15 l/min

Accessory for BAS 01/02

BAS 013

060312



Fuel tank metal version with fuel level gauge

Fuel tank metal version with fuel level gauge, suitable with petrol and diesel fluid. A riser pipe permits the emptying of the container or refilling of the extracted fuel. A1 certification (suitable for interim storage only).

- capacity 120 litres

BAS 015

060315



Adapter for the leading back of petrol/air vapors

Adapter for the leading back of petrol/air vapors.

FTW 03

130305



Rolling carriage

Rolling carriage metal version, adjustable for BAS 013.

Fuel tank cap testing

TVP 01

012201_1



Tank cap tester with quick-release coupling and drainage valve

Tank cap tester with quick-release coupling and drainage valve for testing the fuel tank cap. Using a vehicle-specific TV adapter and with the aid of manual pump TVU 139/1 with pressure gauge measurement 0...2.5 bar / 0...36 psi, pressure is generated to allow the following tests to be performed at the tank cap.

- valve function
- seal tightness of the tank cap

Fuel consumption meter

Measures your vehicle's exact consumption!

KVM 2012

041803_1



Fuel consumption meter for petrol engines and diesel engines

Measures your vehicle's exact consumption!

Measurement of a vehicles' consumption during a road test under real driving conditions.

For gasoline and diesel systems with or without return line. Calibrated flow sensors guarantee a high level of accuracy. For engines with a consumption of 3 - 50 l/h.

Indicates:

- current consumption
- consumption liters per 100 km or 100 miles
- consumption liters per hour

- easy handling by touchscreen menu
- USB port for data transfer

Scope of delivery, depending on variation

1 Measurement device KVM 2012 incl. all electrical connecting leads

2 flow-rate sensors, type 1

(for fuel systems with return, e.g. Common Rail)

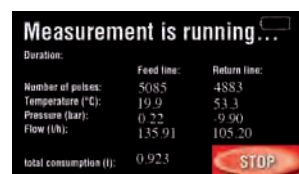
1 flow-rate sensor, type 2 (returnless fuel systems)

3 temperature sensors incl. hydraulic distributor,

one unit with the flow sensors

2 electr. distributing box

2 cable 9 pole, length 3 m



KVM 2012_HT

041807_1

Fuel consumption meter, high temperatur

NEW

NEW:

Fuel consumption meter KVM 2012_HT. Function and features as KVM 2012 but high temperatur version, up to + 200° C.

QUALITY MADE IN GERMANY

The quality management system
of the **LEITENBERGER**-group
is certified according to:

ISO 9001 : 2008,
Registration no. 12 100 24343 TMS





Brake fluid tester

The condition of the brake fluid in vehicles is an important factor for road safety. The effects of the hygroscopic nature of brake fluid are increased viscosity (delayed braking action), a lower boiling point and severe corrosion in the braking system. The timely replacement of used brake fluid ensures the road safety of the vehicle and the effective service life of the braking system.

The Leitenberger range comprises brake fluid testers capable of performing two measurement methods.

1. Measurements of the conductivity of the brake fluid

- EBT 01 (DOT 4)
- EBT 03 (DOT 3, DOT 4, DOT 4 Plus, DOT 5.1)
- EBT 06 (DOT 3, DOT 4 and DOT 5.1)

Note:

Mineral and silicon-based brake fluids cannot be tested with EBT 01, EBT 03 or EBT 06.

2. Measurement of the refractive index

- BC 03 (DOT 3)
- BC 04 (DOT 4, DOT 4 Plus)

EBT 01

100124



Electronic brake fluid tester with membrane keypad for DOT 4 brake fluid

Electronic brake fluid tester with membrane keypad for DOT 4 brake fluid. Results are indicated by 3 LEDs representing the percentage of water content in the brake fluid. Supplied in solid plastic case.

Indication:

- GREEN 0...1% = brake fluid is o.k.
- GREEN + YELLOW appr. 2% = change brake fluid soon
- GREEN, YELLOW + RED > 3% = change brake fluid immediately

- robust stainless steel test probe
- automatic cutout
- low battery warning
- power supply by 9 V monobloc battery

Supplied in a solid plastic case.

EBT 03

100128



Electronic brake fluid tester for brake fluid as DOT 3, DOT 4, DOT 4 Plus, DOT 5.1

Electronic brake fluid tester for various types of brake fluid as DOT 3, DOT 4, DOT 4 Plus, DOT 5.1. The instrument is menu assisted and displays the test results in form of the boiling temperature (in °C) and water content (in %).

- processor controlled
- two-line, alphanumeric display
- testing starts automatically when sensor immersed
- low battery display
- tester switches off automatically after two minutes of inactivity
- robust stainless steel test probe
- power supply by 9 V monobloc battery

Supplied in a solid plastic case.

EBT 06

100134



Electronic brake fluid tester with membrane keypad for brake fluids DOT 3, DOT 4 and DOT 5.1

Electronic brake fluid tester with membrane keypad for brake fluids DOT 3, DOT 4 and DOT 5.1. The EBT 06 shows the boiling temperature in 10 °C-steps from 150 °C to 240 °C.

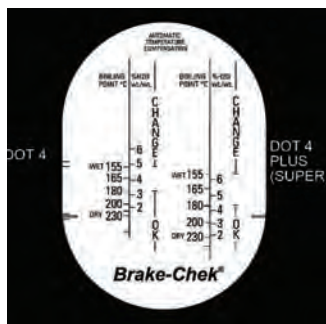
- GREEN LEDs = brake fluid is o.k.
- YELLOW LEDs = change brake fluid soon
- RED LEDs = change brake fluid immediately

- robust stainless steel test probe
- automatic cutout
- low battery display
- LED for defective sensor
- power supply by 9 V monobloc battery

Supplied in a solid plastic case.

BC 04

110601



Refractometer for brake fluids DOT 4 and DOT 4 Plus

Refractometer for brake fluids DOT 4 and DOT 4 Plus with temperature compensation. Indicating scales for boiling point (°C) and water content (%).

Test results are indicated on the respective scale by means of a LIGHT/DARK dividing line. Supplied complete with pipettes.

- results obtained with 1...2 drops of brake fluid
- rapid, simple visual check
- adjustable eyepiece
- reproducible results

Supplied in a solid plastic case.

Brake pressure testers, transport vehicles

BDP 01G

100102_2



Brake pressure tester for pneumatic braking systems on transport vehicles, 25 bar

Brake pressure tester for pneumatic braking systems on transport vehicles. Connecting heads are supplied for connection to the braking system. All pressure gauges with protecting rubber cap.

- suitable for safety test
- calibrated pressure gauges

Scope of delivery:

- 2 pressure gauges DS 100, 0...16 bar, class 1.0
 - 1 pressure gauge DS 100, 0...25 bar, class 1.0
 - 3 compressed air hoses, each 3.50 m (11.5 ft) long
 - 4 connecting heads
- in solid plastic case

BDP 02G

100103_1



Brake pressure tester for pneumatic braking systems on transport vehicles 16 bar

Brake pressure tester for pneumatic braking systems on transport vehicles. Connecting heads are supplied for connection to the braking system. All pressure gauges with protecting rubber cap.

- suitable for safety test
- calibrated pressure gauges

Scope of delivery:

- 2 pressure gauges DS 100, 0...16 bar, class 1.0
 - 2 compressed air hoses, 15.00 m (49 ft) long
 - 2 connecting heads
- in solid plastic case

Brake pressure testers

BDP 04G BDP 06G, BDP 08G 100105_1, 100107_1, 100119_1



Testers with high-capacity pressure gauge and high pressure lines

Testers with high-capacity pressure gauge and high pressure lines for hydraulic braking systems. Suitable for dual-circuit braking systems. Connection by means of brass adapter with metric thread. Testing can take place from the driver's seat. For specification, see table.

- suitable for safety test
- calibrated pressure gauge/vacuum meter

Scope of delivery:

BDP 04G:

- 2 pressure gauges DS 100, 0...160 bar, class 1.0
- 1 high pressure line 2 m long
- 1 high pressure line 5 m long
- 7 standard adapters BDA 01...07, M6, M7, M8, M 10x1, M 10x1.25, M 12x1, M 12x1.5 (2 of each)

BDP 06G same scope of delivery as BDP 04G plus:

- 1 vacuum meter DS 100 -1...0 bar
- 1 high pressure line 2 m long
- 2 x PVC hoses each 0.30 m

BDP 08G same scope of delivery as BDP 04G plus:

- 1 high capacity DS 100 pressure gauge, 0...250 bar
- 1 high pressure line 3 m long for brake servo-unit
- also permits testing of brake servo-units

Supplied in a solid plastic case.

Further adapters available:

BDA 08 (100135) thread M 18x1.5 - M 10x1 (rotatable, with release pin)
BDA 09 (100141) thread 3/8" - 24UNF (Peugeot/Renault)

Note:

All mentioned brake pressure testers BDP are also available with uncalibrated gauges/vacuum meters.

Code:	Ref. No.:
BDP 01	100102
BDP 02	100103_2
BDP 04	100105_2
BDP 06	100107_2
BDP 08	100119

Digital brake pressure tester

UDD 01_LR_S

040332_1



NEW

Digital brake pressure tester

The digital pressure test device with 2 pressure sensors allows the determination of 2 pressure valves. Smooth change-over from analogue to digital measurement. 2 pressure sensors 0...25 bar with differential pressure indication and RS 232 interface. Also available with analogue, proportional output signals on request.

Scope of delivery:

- 1 testdevice UDD 01
- 2 pressure sensors 0...25 bar, 0.5 % FS

Vacuum brake bleeders

VB 01

100801_1



Vacuum brake bleeder

Portable vacuum box, made of impact resistant, unbreakable ABS, for the automatic extraction of fluids such as water, refrigerant, oil (engine, compressor, gearbox oil), coolant, brake fluid as well as bleeding of the fuel line on diesel engines.

- connection for workshop compressed air system
- 11 litres capacity
- with drain valve

A vacuum is generated in the box by means of a venturi tube, connected to the workshop compressed air system. Extraction takes place by the removal of the venturi tube, connection of the extraction hose and opening of the valve.

Extracting capacity, approx. 7 litres at - 0.7 bar.

A drain valve at the rear of the box permits the extracted fluid to be emptied.

Scope of delivery:

- 1 VB 01 vacuum box
- 1 venturi tube
- 1 extraction hose with connector, 2.50 m (8.2 ft)
- 1 rubber angled adapter (UNW 01)

VB 01.1

100801_2



Vacuum brake bleeder with fluid level indication

Not suitable for inflammable fluids! Vacuum use only!

Portable vacuum box, specification as VB 01. An additional connection on the box permits the simultaneous generation of vacuum and extraction of fluid. A fluid level indication permits the contents of the box to be checked.

- connection for workshop compressed air system
- 11 litres capacity
- with drain valve
- with level indication

Scope of delivery:

- 1 VB 01.1 vacuum box with fluid level indication
- 1 venturi tube
- 1 extraction hose with connector, 2.50 m (8.2 ft)
- 1 rubber angled adapter (UNW 01)

Accessory Vacuum brake bleeder

UN 05

100211



Vacuum brake bleeder

Vacuum brake bleeder for connection to compressed air; for brake fluids, with hand valve. Can also be used to bleed CDI / TDI engines when the tank was empty.

- scaled collecting tank
- capacity 600 ml

Scope of delivery:

- 1 brake fluid-resistant container with hand valve
- 1 hose Ø 9 mm, 2.00 m (6.5 ft) long
- 1 hose Ø 6 mm, 1.00 m (3 ft) m long
- 1 rubber angled adapter (UNW 01)

ET 368

121384



Bleeder set for CDI engines

Bleeder set for Mercedes Benz CDI engines. Used after replacing the fuel filter or prior restart after empty tank.

Bleeder set is used in conjunction with VB 01/VB 01.1 and UN 05.

UNFB 03

100212



Refilling container for the refilling of brake fluid

Refilling container for the refilling of brake fluid. The container can be put directly on the brake fluid container. 2nd possibility: suspending the refilling container by means of the suspension hook, stick universal adapter

BAU on the brake fluid container and effect connection. The brake fluid stops running automatically as soon as the brake fluid container is full.

- scaled collecting tank with hook
- capacity 1.0 litre

Scope of delivery:

- 1 brake fluid-resistant container 1.5 l
- 1 hose Ø 13 mm, 1.00 m (3.3 in.)
- 1 hose Ø 6 mm, 1.10 m (3.6 in.)

VBA 011, VBA 012, VBA 013



Adapter for extracting engine oil, usable in conjunction with Vacuum box VB 01/VB 01.1

Adapter for extracting engine oil, usable in conjunction with VB 01/VB 01.1. On late car models the dip stick leads to the bottom of the oil pan in its own pipe.

The VB adapters can be fixed to the pipe opening and engine oil can be sucked without using a lift.

Application:

- VBA 011 (100804_1) Mercedes Benz
- VBA 012 (100805_1) VW
- VBA 013 (100806_1) BMW



Brake bleeder service unit

You can find the list of the available adapters at our website at Service, Downloads, in "Adapter list for brake tester"

for this purpose you also can scan the QR-code →



BSG



Brake service unit for maintenance and leak tests, draining brake systems and hydraulic clutches

All unit models of BSG xx with EG Declaration of conformity accordant
a) European directive 2006/42/EG, section II, No.1, paragraph A
b) European directive 2006/95/EG, section III, paragraph B

Brake service unit for maintenance and leak tests, draining brake systems and hydraulic clutches.

You can choose the power supply you required:

- 12 V/DC vehicle battery
- 110 V/AC mains voltage
- 230 V/AC mains voltage

One advantage of service units is the automatic shut-off function when the brake fluid container is empty. The unit is connected to the brake system at the expansion tank of the master brake cylinder. B 611 adapter suitable for many vehicles included. Additional adapters are available depending on the vehicle type.

The portable basic units can easily be supplemented with the FW cart depending on the unit voltage (see table and article description on next page).

- automatic shut-off function when the brake fluid container is empty
- 8 unit models available
- for DOT 3, DOT 4, DOT 4 Plus and DOT 5.1 brake fluid
- leak test of brake and clutch system
- steplessly adjustable operating pressure from 0 to 4 bar / 0 to 58 psi

When using the cart, a brake fluid container with a capacity of up to 20 liters can be mounted. With the unit models BSG 110_FWDL and BSG 230_FWDL, an extraction unit for the expansion tank is integrated in the cart.

Scope of delivery (basic unit without cart):

- 1 BSG brake service unit**
- 1 B 611 adapter**

FW



Transport cart

The cart is the ideal addition to the BSG 012_V3, BSG 110_V3 and BSG 230_V3 portable brake service units. The unit is screwed to the cart using a prepared fastening option.

An original container with a capacity of up to 20 liters can be transported on the back. The container is secured with a locking strap.

The extraction unit includes a spiral hose including a filter. The catch container (1 liter capacity) can be removed quickly and easily with a rapid-action coupling.

Depending on the unit voltage of the brake service unit, 3 models are offered, see table below.



Model	Ref. No.	Power supply	Container mount	Catch bottle with hose	Transport Cart	Extraction unit
BSG 012_V3	100505_1	12 V/DC	up to 5 l	-	-	-
BSG 012_Motorrad_V3	100505_3	12 V/DC	up to 5 l	-	-	-
BSG 110_V3	100506_1	110 V/AC	up to 5 l	-	-	-
BSG 230_V3	100507_1	230 V/AC	up to 5 l	-	-	-
BSG 012_FW	100509_1	12 V/DC	up to 20 l	X	X	-
BSG 110_FW	100510_1	110 V/AC	up to 20 l	X	X	-
BSG 230_FW	100508_1	230 V/AC	up to 20 l	X	X	-
BSG 110_FWDL	100512_1	110 V/AC	up to 20 l	X	X	X
BSG 230_FWDL	100511_1	230 V/AC	up to 20 l	X	X	X
FW	100513_1	-	up to 20 l	-	X	-
FW 110DL	100513_2	110 V/AC	up to 20 l	-	X	X
FW 230DL	100513_3	230 V/AC	up to 20 l	-	X	X

Brake bleeder adapter kits

BAK 05



Adapter examples

NEW

Brake bleeder adapter kit (standard)

With the composition of the following brake bleeder adapter kits, average values for the most frequently used B adapters in the passenger car sector were used.

The adapters are 90° angle versions for simpler application.

BAK 05_Basic_LR 101247_1	3 attachable angle adapters B 611W, B 648W, B 668W
BAK 05_Upgrade_LR 101248_1	5 attachable angle adapters B 612W (2-part), B 616W, B 635W, B 641W, B 674W
BAK 05_Master_LR 101249_1	8 attachable angle adapters B 611W, B 612W (2-part), B 616W, B 635W, B 641W, B 648W, B 668W, B 674W

Supplied in a solid plastic case

BAK 03

100690_2



Brake bleeder adapter kit (Asia, US, EU)

Brake bleeder adapter kit for use during brake and ABS maintenance. The range of connectors for the brake fluid reservoir ensures suitability for use on vehicles of European, Asian and American manufactures.

Scope of delivery:

- 1 adapter B 611W (100611_2)**
- 1 adapter set B 612W (100612_2)**
- 1 adapter B 641W (100641_2)**
- 1 adapter B 668W (100668_2)**
- 1 adapter B 674W (100674_2)**

in solid plastic case

BAK 01

100689_1



Brake bleeder adapter kit (Asia)

Brake bleeder adapter kit, used when servicing brake and ABS systems. Selected adapters for the connection to brake fluid reservoirs on asian vehicles.

Scope of delivery:

- 1 adapter B 633 (100633_1)**
 - 1 adapter B 685 (100685)**
 - 1 adapter B 686 (100686)**
 - 1 adapter B 687 (100687)**
 - 1 adapter B 688 (100688)**
- in solid plastic case**

MBAK



Brake bleeder adapter kit (motor and quad bike)

Brake bleeder adapter kit, specifically for motor and quad bike brake system maintenance. The adapter configuration is designed to guarantee use with almost all models produced by the named manufacturers.

All MBAK.W brake bleeder adapters are produced for simpler application in a 90° angle version.

MBAK_BMW 101221_1	3 attachable angle adapters MBA 10W, MBA 11W, MBA 12W
MBAK_Honda 101219_1	6 attachable angle adapters MBA 13W, MBA 14W, MBA 15W, MBA 16W, MBA 17W, MBA 18W
MBAK_KTM 101220_1	9 attachable angle adapters MBA 1W, MBA 2W, MBA 3W, MBA 4W, MBA 5W, MBA 6W, MBA 7W, MBA 8W, MBA 9W
MBAK_Peugeot 101250_1	5 attachable angle adapters MBA 34W, MBA 37W, MBA 38W, MBA 39W, MBA 40W
MBAK_Piaggio 101237_1	5 attachable angle adapters MBA 09W, MBA 33W, MBA 34W, MBA 35W, MBA 36W
MBAK_Suzuki 101236_1	5 attachable angle adapters MBA 14W, MBA 29W, MBA 30W, MBA 31W, MBA 32W
MBAK_Yamaha 101231_1	7 attachable angle adapters MBA 05W, MBA 19W, MBA 20W, MBA 21W, MBA 22W, MBA 23W, MBA 27W

BAK 06_LR

101251_1

NEW



Brake bleeder adapter kit

Scope of delivery consists of 4 adapters B 668F, B 611W, B 627, B 641
Supplied in a solid plastic case

BAK 09

101257_2

NEW



Brake bleeder adapter kit

Scope of delivery consists of 5 adapters B 600WS, 616, 648W, 668W, 678WS
Supplied in a solid plastic case

BAK 10

101257_1

NEW



Brake bleeder adapter kit

Scope of delivery consists of 6 adapters B 600WS, 616, 624, 648W, 668W, 678WS
Supplied in a solid plastic case

BAK 11

101258_1

NEW



Brake bleeder adapter kit

Scope of delivery consists of 5 adapters B 616, 624, 648W, 668W, 691
Supplied in a solid plastic case

You can find the list of the available adapters at our website at Service, Downloads, in "Adapter list for brake tester"

for this purpose you also can scan the QR-code →





Transmission

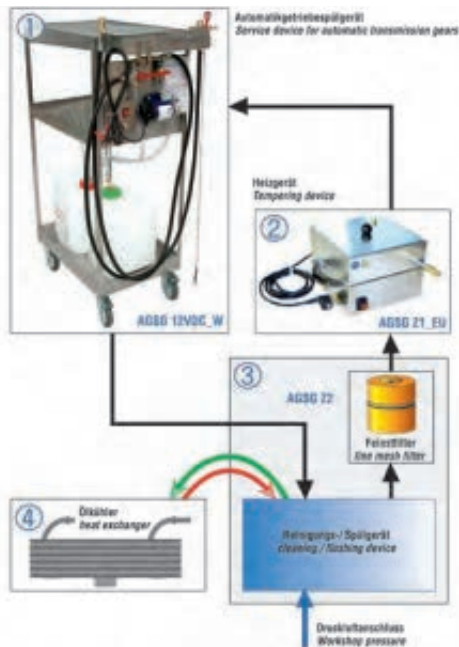
You can find the list of the available adapters at our website at Service, Downloads, in "Adapter list for Automatic transmission oil change device (AGSG)"

for this purpose you also can scan the QR-code →



Accessory for Service station for automatic transmission oil

NEW



AGSG_Z1_EU

043007_1

Accessory to our AGSG_12VDC_W. This unit is able to warm up gear oil up to +90 °C in order to open the transmission systems thermostat which is usually placed between heat exchanger and transmission.

AGSG_Z2

043008_1

Makes sure that the whole Transmission system is completely open during the cleaning process. This device makes sure the transmission system can be cleaned thoroughly.

Filling and flushing

AGSG 12VDC_W

043001_1

NEW



Service station for automatic transmission oil

Mobile service station made of stainless steel is suitable for holding required tools, replacement parts, new transmission oil and old oil which can be drained into the service station. This durable stainless steel service station is designed for long-term usage.

- operated with 12 VDC
- transmission oil changing rate of minimum 95 %
- one device for fast change of transmission oil and flushing of the whole transmission system
- many adapters are available: MB, BMW, Audi, VW, ZF, Aisin, etc.
- practice oriented, for clean removal of the hydraulic device or oil pan without oil drops on the floor and no oil splatter towards the mechanic

Our cleanser, developed to fit with automatic transmission applications, removes abrasion products and contaminations, bounds Glykol residues. The cleanser is not a part of the delivery, available at: www.automatikoelwechselsystem.de

HAP 01.1

060410



Pressure and vacuum pump, for the suction, the refilling and the scavenge of gearbox-oil

Pressure and vacuum pump, aluminium version, for the suction, the refilling and the scavenge of gearbox-oil. The facility for extracting and refilling gearbox oil is provided by two connecting nipples.

- pressure performance min. 2 bar, vacuum performance appr. 0.8 bar.
- 2 connections PRESSURE or VACUUM
- used in conjunction with collecting tank HAP 15

A container HAP 15 with contents scale (1.5 l capacity), which can be connected to the unit, permits the temporary storage of the oil, see page 36.

AGSG_12VDC_H

043002_1



Adaptable, mobile service station

Adaptable, mobile service device. Used to flush effectively gearboxes and change transmission oil. Easy attachment to an existing tool cart. With Intelligent adapter systems for nearly all automatic gear boxes.

- operated with 12 VDC
- transmission oil changing rate of minimum 95 %
- one device for fast change of transmission oil and flushing of the whole transmission system.
- our cleanser, developed to fit with automatic transmission applications, removes abrasion products and contaminations, bounds Glykol residues
- many adapters are available: Aisin, Audi, BMW, Jatco, MB, VW, ZF, etc.
- extendable by AGSG_W, mobile service station made of stainless steel

The tool cart is no part of the scope of delivery

GFP 01 , GFP 01.1

060430_1 , 060430_3



Gear oil filling pump

The gear oil filling pump with light metal construction is ideal for filling various manual transmission types, transfer gearboxes and differentials with gear oil. The various GFPA gear oil filling adapters can be used for diverse vehicle manufacturers and can be safely and rapidly replaced via a quickconnect coupling at the filling hose. Discharge-safe work is possible with the closable ball valve.

A plastic container with scale and 10 litre capacity enables filling in one work process.

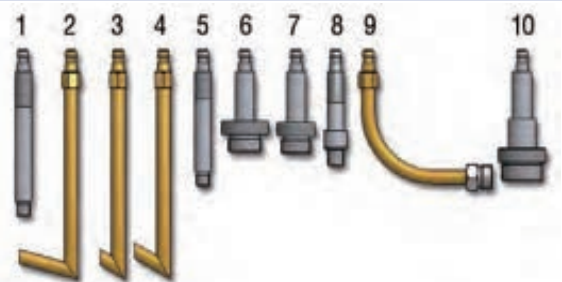
Scope of delivery GFP 01 (060430_1):

- 1 gear oil filling pump GFP 01 with filling hose, length 2.00 m (6.6 ft)**
- 1 plastic container, 10 litre capacity**
- 5 gear oil filling adapters GFPA 03, 04, 05, 06, 07**

Scope of delivery GFP 01.1 (060430_3) without adapters:

- 1 gear oil filling pump GFP 01 with filling hose, length 2.00 m (6.6 ft)**
- 1 plastic container, 10 litre capacity**

Accessory gear oil filling pump



Available adapters for gear oil filling pump:

No	Code	Art-No	suitable for
1	GFPA 01	060433_1	thread 1/8"-27 NPT (Ford)
2	GFPA 02	060434_1	long angle form (BMW)
3	GFPA 03	060435_1	short angle form (VW/Audi)
4	GFPA 04	060436_1	medium angle form (VW/Audi)
5	GFPA 05	060437_1	thread M 10x1 (VW/Audi)
6	GFPA 06	060438_1	thread M 24x1,5 (VW/Audi)
7	GFPA 07	060439_1	thread M 22x1,5 (VW/Audi)
8	GFPA 08	060440_1	thread M 12x1,5 (MB)
9	GFPA 09	060441_1	thread M 18x1,5 (Toyota)
10	GFPA 10	060442_1	thread M 30x1,5 (VW/Audi)

Diagnosis

GP 01

110901_1



Gearbox oil tester

Leaks in heat exchangers can cause coolant to mix with gearbox oil, leading the gearbox being damaged, possibly beyond repair. The centrifugal device in the tester provides evidence of coolant in the gearbox oil, down to as little as 0.01%.

- safe and easy to use
- free of wear measurements
- detailed visual display of results

Scope of delivery:

- 1 plexiglass test cylinder**
- 1 hand centrifuge (for bench mounting)**
- 1 rotor with counterweight**
- 5 disposable pipettes**

GP 01_BM

110901_2

NEW



Gearbox oil tester (operated by column drill)

Engine coolant can react with transmission fluids and reduce or eliminate the lubrication of a transmission system. The transmission system can be damaged (irreparable). By centrifuging of an oil sample the proportion of coolant in the transmission fluid can be determined.

- CNC machined bracket for holding in drill chuck
- small sample of (possible) contaminated transmission fluid required
- easy and clear to operate
- no liquid reaction fluids required
- wear free measurement
- visually detailed result

Scope of delivery:

- 1 plexiglass test cylinder**
- 1 CNC milled rotor with counterweight**
- 5 disposable pipettes**

Pressure test

BDP 09

100129



Pressure tester for automatic gearboxes

Tester recommended by Porsche AG. The tester permits the identification of faults in the hydraulic control of automatic gearboxes. The pressure gauges are fixtures in the case and are positioned at an angle of 15° to ensure that they can be easily read.

For use only in conjunction with the special Porsche tools 9170 and 9300, the tester can be used on Porsche models 924 and 928. The two pressure gauges are each equipped with a 3 m-long hose line for convenient testing.

Scope of delivery:

- 1 NG 100 pressure gauge**
range 0...10 bar with finely graduated scale, class 1
- 1 NG 100 pressure gauge**
range 0...25 bar with finely graduated scale, class 1
- 2 x 3.00 m (10 ft) hose lines**
- 2 x M 10x1 connector (BDA 04)**
- in solid plastic case**

OPA 01

040585



Oil pressure tester for automatic transmissions

Oil pressure tester for automatic transmissions according to the transmission- i.e. the manufacturer's specification.

- suitable for BMW, Ford, Honda, Mercedes Benz, Mitsubishi, Opel, Renault
- range 0...25 bar
- high quality gauge with solid protective rubber cap DS 63 mm (2 1/2") with pressure lead 3.00 m long (10 ft).
- with an ISO certificate of calibration (at extra charge)

Scope of delivery:

- 1 oil pressure tester, test hose with quick coupling**
- 6 standard connectors ANK 4, 18, 20, 55, 60, 61**
- in solid plastic case**



Electric multifunction circuit testers

Essential test instruments for all professional technicians in the workshop.

Circuit testers like AZ 172, AZ 173, AZ 174_V2, AZ 175 are exclusively designed for automotive electrical systems. Not suitable for any electronic application.

AZ 172

070105



Multifunction circuit testers for automotive electrical systems with automatic circuit breaker

Multipurpose circuit tester for use on electrical systems. The tester incorporates an automatic circuit breaker (7.5 V) which can be activated as often as required.

- operating range 6...24 V
- polarity testing with red/green LED indicator lamps
- with 7.5 A thermal release

Testing capabilities:

- operation of electrical components (cooling fan motors, electric window motors, electric fuel pumps, relays, lamps, etc)
- continuity test (switches, relays, fuses, cable runs)
- verification of poor earth connections
- self test

Scope of delivery:

- 1 test device, 6 m connection cable with battery clamps (20 ft) long
- 1 auxiliary clamp with 0.50 m (20 in.) lead

AZ 173

070106



Multifunction circuit testers for automotive electrical systems with automatic circuit breaker and lighting

Multipurpose circuit tester for use on 12...24 V electrical systems. Testing capabilities as described at AZ 172 plus additional functions:

- illumination of test location
- acoustic polarisation signal (+) (-)
- activating electric components

Scope of delivery:

- 1 test device, 6 m connection cable with battery clamps (20 ft) long
- 1 auxiliary clamp with 0.50 m (20 in.) lead

AZ 174

070201_1



NEW

Multifunction circuit testers for automotive electrical systems

- power supply 9...48 V/DC
- measurement range 0...48 V/DC
- replaceable test tip
- detection of D.C. voltage, AC voltage or ground connection
- Bad ground indication
- continuity test
- with sounding device for acoustic signals
- power up components
- fully isolated battery clamps
- bright LED light

Scope of delivery:

**1 test device, 6 m connection cable with battery clamps (20 ft) long
1 auxiliary clamp with 0.50 m (20 in.) lead
in solid plastic case**

AZ 176

070205_1



NEW

Multifunction circuit testers for automotive electrical systems

- power supply 9...48 V/DC
- measurement range 0...48 V/DC
- replaceable test tip
- peak to peak measurement
- detection of D.C. voltage, AC voltage or ground connection
- peak to peak setting
- Bad ground indication
- continuity test
- with sounding device for acoustic signals
- power up components
- fully isolated battery clamps
- bright LED light

Scope of delivery:

**1 test device, 6 m connection cable with battery clamps (20 ft) long
1 auxiliary clamp with 0.50 m (20 in.) lead
in solid plastic case**

AZ 175

070204_1



Multifunction circuit testers for automotive electrical systems, 9...48 V

Multipurpose tester for vehicle electrical systems employing power inputs from 9 to 48 V. A keyboard and two-digit LC display provide menu guidance to the individual testing modes. An electronic fuse protects the tester and the tested object from damage in the event of a short circuit. The tester also features lighting for the test object and an acoustic detecting sensor.

- power supply 9...48 V/DC
- measurement range 0...48 V/DC
- test result resolution 0.1 V/DC
- four different testing modes
- electronic fuse
- test object lighting
- acoustic detecting sensor for polarity displays and warning signals
- two-digit, red/green illuminated LC display

Testing facilities:

- voltage testing
- identification and storage of the maximum and minimum voltages during voltage testing
- determination of voltage peaks
- determining polarity
- operating electronic components and their fault diagnostics
- continuity test
- determining poor earth connections
- self test

Scope of delivery:

**1 test device, 6 m connection cable with battery clamps (20 ft) long
1 auxiliary clamp with 0.50 m (20 in.) lead
in solid plastic case**

AZ 175_MK

070204_2



Multifunction circuit testers for automotive electrical systems, 9...48 V, case set

Multifunction Tester, 9 to 48 V, see AZ 175 for unit description.

Includes high-quality measuring set designed especially for use in automotive measuring technology.

The various measuring adapters can be used by removing the test tip from the tester and using an insulated extension cable.

Scope of delivery:

- 1 test device, 6 m connection cable with battery clamps (20 ft) long
 - 1 auxiliary clamp with 0.50 m (20 in.) cable
 - 1 insulated extension cable, length 0.60 m (24 in.)
 - 1 connecting lead with clamps, fully insulated
 - 1 cable puncturer (for intrusive contact)
 - 1 test tip, needle-shaped (back probing probe)
 - 1 "mini" test tip, needle-shaped with cable puncturing adapter (back probing probe)
- in solid plastic case

Tester for battery and charging system

DBP 03

070711_1



Battery tester with digital display and temperature compensation

Battery tester with digital display and temperature compensation (below 0 °C), suitable for batteries and charging systems. The battery doesn't need to be removed for testing. The test results are displayed within approximately three seconds. The battery is not discharged by the test, i.e. its capacity is unaffected.

Test facilities:

- voltage testing, 1...30 V/DC
- cold start current testing, input in DIN, IEC, SAE, or EN standard
- range 50...2100 A (DIN), 40...2000 A (SAE)
- battery condition, ok / not ok
- suitable for 6 V and 12 V batteries
- suitable for 6 V, 12 V and 24 V charging systems

Supplied in a solid plastic case

DBP 03P

070712_1



Battery tester with digital display and temperature compensation and internal printer

Battery tester with digital display and temperature compensation (below 0 °C), suitable batteries and charging systems. Input possible in JIS, DIN, IEC, SAE, EN standard. An integrated printer allows the documentation of the testing results.

Test facilities:

- voltage testing, 1...30 V/DC
 - cold start current testing: JIS battery code; DIN 25...1300 A; IEC 30...1500 A; SAE 40...2000 A; EN 40...2100 A
 - battery condition, ok / not ok
 - selection of language
 - with integrated printer
- suitable for 6 V and 12 V batteries and for 6 V, 12 V and 24 V charging systems

Supplied in a solid plastic case

Electronic protection

ES 01, ES 02

071203, 071204_1



Electronic protection device of the vehicle's electronic components

For protection of the vehicle's electronic components. Occuring high voltages will be absorbed by this instrument. Connection to battery voltage 12 V through red and black battery clamps.

ES 01
for 12 V/DC systems

ES 02
equivalent version of ES 01, but automatic change-over from 12...24 V.

Technical Data	ES 01	ES 02
Battery voltage	12 V	12...24 V
Voltage suppression	> 15 V	> 25 V
Electrical input	2,0 W (2 ms), 0,05 W (contin.)	12 V 2,0 W (2 ms), 0,05 W (contin.) 24 V 3,7 W (2ms), 0,05 W (contin.)
Battery terminal connectors each with	0,25 m cable (2,5 mm ²)	0,40 m cable (2,5 mm ²)
Dimensions L/W/H	104 x 61 x 29 mm	104 x 61 x 29 mm
Weight	140 g	150 g

Short circuit detector

KSD 01

071205



Short-Circuit Detector for the localisation of short circuits

Short-Circuit Detector for the localisation of short circuits in the area of the vehicle's electric leads. The complete unit consists of a transmitter and a receiver. The transmitter is connected by a way of a plug in the fuse box. The transmitter delivers a signal over the entire short circuited current circuit. The receiver is tuned to the transmitter signal. The electrical lead is followed with the receiver with the aid of the signal, the direction of the short circuit being indicated by LEDs. The short circuit is located at the point where the signal at the receiver fades out. As a result, the need to remove plastic trim panels, door sills or carpets is eliminated.

- operating range 12...24 V
- signal as sound and LED
- power supply by 9 V battery
- with automatic cut-off

Note: The radio waves sent by the transmitter do not penetrate metal pieces or shielded cables!

Scope of delivery:
1 transmitter
1 receiver
1 adapter for ceramic fuse in solid plastic case

ECT 2000

071401_1



Detector for locating short circuits and interruptions

Detector for locating short circuits AND interruptions (parted cables). The tester consists of a receiver and a transmitter. It automatically identifies whether a short circuit or interruption is present, in which case it is indicated by LEDs. The method of operation of the detector is the same as that described for the KSD 01.

The advantage of this tester is the infinitely variable adjustment of sensitivity of the receiver to the transmitter signal.

- suitable for locating short circuits and interruptions
- operating range 12...24 V
- signal as sound and LED
- power supply by 2 pcs. 1.5 V batteries

Note: The radio waves sent by the transmitter do not penetrate metal pieces or shielded cables!

Scope of delivery:

- 1 transmitter**
- 1 receiver**
- 4 fuse adapters**
- in solid plastic case**

Fuse Master

071214_1



Resettable electronic fuse replacement instrument

Resettable electronic fuse replacement instrument which plugs into an appropriate socket instead of the fuse. Ideal for short circuits or troubleshooting in the electrical circuit, given that the faulty fuse doesn't need to be permanently replaced.

- operating range 12 V
- adjustable fuse ratings: 5 A, 7.5 A, 10 A, 15 A, 20 A, 25 A and 30 A
- processor controlled
- fuse rating adjustable via pushbutton
- fuse rating displayed by LED
- overload current indicated by acoustic and visual warnings
- reset button (for overload current)
- two additional fuse adapters for mini- and torpedo-fuses
- direct power supply through the fuse socket

Scope of delivery:

- 1 fuse master with leads, length 1.00 m (3 ft)**
- 1 adapter for mini fuse**
- 1 adapter for torpedo fuse**
- in solid plastic case**

ST 01

071218_1



Fuse tester for testing of flat fuses (standard / mini)

The ST 01 fuse tester enables convenient, simple testing of flat fuses (standard / mini) in removed or inserted state.

A green LED on the tester indicates whether the fuse is functional. The safety jack at the shaft end facilitates removal and replacement of fuses in compact fuse boxes.

ZAT 02

071217_1



Voltage testing device for 12/24 V with test-LED

Voltage testing device for 12/24 V with test-LED for dependable control of cigarette lighter sockets and standard sockets.

No unwanted short circuit from inattentive use of conventional voltage testers. Can also be used for small sockets such as those with motorcycles via removable compensating sleeve.

Can be used for example as part of an inspection.

- LED lights up green = polarity OK
- LED lights up red = polarity not OK

Code maintainer

Whenever it is necessary to disconnect the vehicle's battery, so in case of maintenance jobs and repair works, particular measures have to be taken to prevent the loss of electronic data and codes (drive-away lock, radio codes, door opening, adjustment of seat and mirrors, etc.).

In order to save the vehicle's electronic data, the use of code maintainers (emergency power units) is vital.

For a detailed view over LR-code maintainers (emergency power units), please consider the table below.

Description	NSV 01 (071201_1)	NSV 02 (071202)	NSV 03 (071208)	NSV 03/1 (071209)
		RED LINE		
built-in current supply		X		
with auxiliary battery only			X	X
mains alimentionation 230V/50Hz AC	X			
accumulator alimentionation		X		
connection to vehicle by means of cigarette lighter	X	X	X	X
polarization/ protected against	X	X	X	X
overload protection	X	X	X	X
incl. electronic protection	X	X	X	X
permissible on-board voltage	12 V	12 V	12 V	24 V
maximum output current	250 mA	2 A	2 A	2 A

NSV 01

071201_1



Emergency power supply for 12 V car electrical systems

Emergency power supply for 12 V car electrical systems. Connection to the vehicle via cigarette lighter socket. Power supply to the instrument via 230 V mains lead.

LED display for correct voltage connection. Acoustic warning and visual display indicate excessively high current consumption. Output current 250 mA.

Scope of delivery:

1 emergency power supply instrument NSV 01
1 power alimentionation cable 3.00 m (9 ft) long
1 connecting cable 1.00 m (3 ft) long with cigarette lighter adapter in solid plastic case

NSV 02

071202_1



Code maintainer with built in accumulator

Code maintainer with built in accumulator, connected to vehicle by means of cigarette lighter adapter.

LED-indication for:

- capacity indication when device is switched on
- in case of accu voltage <10.5 V
- current flow
- accu charging
- accu filled

Details accumulator: voltage 12 V, capacity 1.2 Ah.
 Further technical details see table.

Scope of delivery:

1 code maintainer NSV 02
1 connecting cable with cigarette lighter adapter, length 1.50 m (4.3 ft)

NSV 03, NSV 03/1

071208, 071209



Code Maintainer usable with external battery

Code Maintainer, usable with external battery. Connected to vehicle via cigarette lighter. Further technical details see table.

- model NSV 03 for 12 V systems
- model NSV 03/1 for 24 V systems

Scope of delivery:

1 code maintainer NSV 03
1 power alimentionation cable with clamps, length 4.00 m
1 connecting cable with cigarette lighter adapter, length 1.50 m (4.3 ft)

Multitester

MT 04

041705



**Universal multitester
4 digit display,
analogous meter**

Universal multitester in shock-protected thermoplastic case. 4 digit display and additional analogous meter. Overcharge protection with optical and acoustic signal. Automatic cut-off after 30 min.

Basic functions of the rotary switch: measuring of temperature, diode test, continuity, Ohmmeter, measuring voltage, measuring current, speed, phase, frequency, dwell angle.

Key functions:

- Hold = storage of measurements
- REL = relative-measuring
- REC = measuring of the max., the min. and the average value
- ON/OFF = switch on/switch off
- RPM IG = speed measurement
- DWL = dwell relation, continuity
- % DUTY = choice of phase, frequency
- RANGE = measuring range (+/-), trigger slope, no. of cylinder

Scope of delivery:

- 1 multitester MT 04**
- 1 test lead set red/black**
- 1 temperature sensor**
- 1 inductive pickup**
- in solid plastic case**

Testing capability	Range	Accuracy	Resolution
Direct voltage (DC)	400 mV	± 0.3% + 1dig.	100 µV
	4 V		1 mV
	400 V		100 mV
	750 V	± 0.75% + 3 dig.	1 V
	400 µA		0.1 µA
	4000 µA	± 0.75% + 2 dig.	1 µA
Direct current (DC)	40 mA		0.01 mA
	400 mA	± 0.75% + 2 dig.	0.1 mA
	4 A		0.0001 A
Alternating voltage (AC)	4 V	± 2.5% + 5 dig.	1 mV
	40 V		10 mV
	400 V	± 1.0% + 5 dig.	0.1 V
	750 V		1 V
	400 µA		0.1 µA
	400 µA	± 1.0% + 3 dig.	1 µA
Alternating current (AC)	40 mA		0.01 mA
	400 mA		0.1 mA
	4000 mA		1 mA
	10 A	± 1.5% + 5 dig.	0.01 A
	400 Ohm		0.1 Ohm
	4 kOhm		1 Ohm
Resistance	40 kOhm	± 0.5% + 35 dig.	10 Ohm
	400 kOhm		0.1 kOhm
	4 MOhm		1 kOhm
	40 MOhm	± 1.0% + 10 dig.	10 kOhm
	199,99 Hz		0.01 Hz
	(0.5Hz - 200 kHz)	1999,9 Hz	± 0.05% + 2 dig.
	19,999 kHz		0.001 kHz
	199,9 kHz		0.01 kHz
	200 kHz		0.1 kHz
RPM IP	30... 9000	± 2 RPM	1 RPM
RPM IG	60... 12000	± 2 RPM	1 RPM
Temperature	- 40...1370 °C	± 3 °C	1 °C
		(-40...+300 °C)	

Cycle (%) 0.9 - 99.9% (30 RPM - 19.999 RPM, impulse > 2µS)

Dwell degrees (°) 0.0 - 356.4° (30 RPM - 19.999 RPM, impulse > 2µS)

Impulse 0,002 - 199.9 mS (30 RPM - 19.999 RPM, impulse > 2µS)

Continuity 1.2 V - Diode test max. 2.5 mA - Counter sensitivity 150 mV

MT 042

041713



**Universal multimeter MT 04
incl. supplementary clamp-on current probe
STZ 01, 0...400 A**

Version and supplied unit equivalent to MT 04, but incl. supplementary clamp-on current probe STZ 01, 0...400 A

- Scope of delivery:**
1 multimeter MT 04
1 test lead set red/black
1 temperature sensor
1 inductive clamp
1 clamp current probe STZ 01
with flexible connecting lead red/black, length 1.60 m (4.6 ft)
in solid plastic case

MT 07

041708



**Multimeter
3-1/2 digit display**

Multimeter in rubber-protected plastic case, with rotary switch, 3 1/2 digit display. Automatic polarity indication and optical signal in case of overload, with storage of results. Technical data see table below.

- Scope of delivery:**
1 multimeter MT 07
1 test lead set red/black

Testing capability	Range	Accuracy	Resolution
Direct voltage (DC)	200 mV		100 µV
	2 V		1 mV
	200 V		100 mV
	1 kV		1 V
Alternating voltage (AC)	200 mV		100 µV
	2 V	± 0.8% + 3 dig.	1 mV
	20 V		10 mV
	200 V		100 mV
Direct current (DC)	750 V	± 1.2% + 3 dig.	1 V
	200 µA		0.1 µA
	2 mA		1 µA
	20 mA	± 0.8% + 1 dig.	10 µA
Alternating current (AC)	200 mA		100 µA
	2 A		1 mA
	10 A	± 2% + 10 dig.	10 mA
	200 µA		0.1 µA
	2 mA		1 µA
	20 mA	± 1.0% + 3 dig.	10 µA
Resistance	200 mA		100 µA
	2 A		1 mA
	10 A	± 3% + 10 dig.	10 mA
	200 Ohm		0.1 Ohm
	2 kOhm		1 Ohm
	20 kOhm	± 0.5% + 1 dig.	10 Ohm
	200 kOhm		100 kOhm
	2 MOhm		1 kOhm
	20 MOhm	± 1% + 2 dig.	10 KOhm

Diode test: Voltage < 3 V, short current appr. 1 mA
 Continuity test: less than 150 Ohm

MT 701

041716_1



Multimeter 3-1/2 digit display, illuminated

Multimeter in shock protected thermoplastic case with rotary switch, 3-1/2 digit digital display, illuminated. Possibility to connect clamp-on current probe STZ 01 (0...400 A) and STZ 02 (0...1000 A).

Scope of delivery:

- 1 multimeter
- 1 test lead set red/black

STZ 01, STZ 02

041712, 041718



Clamp-on current probe for testing direct and alternating currents

STZ 01

Clamp-on current probe for testing direct and alternating currents up to a maximum of 400 A, with red/black leads for connection to an MT 04, MT 07 or MT 701 multimeter.

- measuring range 0...40 A
- measuring range 40...400 A
- adapter opening width \varnothing 52 mm

STZ 02

equivalent version of STZ 01, but measuring range 1...1000 A.

Scope of delivery:

- 1 clamp-on current probe STZ
- 1 flexible connecting lead red/black, length 1.60 m (4.6 ft)

MTDA 01

041714



Diesel Adapter MTDA to determine the revolutions of diesel engines

Diesel Adapter MTDA to determine the revolutions of diesel engines. No additional device necessary to use it.

- 4 digit display, (speed measurement 8750 RPM/min max.)
- resolution 10 RPM
- storage of the max. speed measurement
- low battery warning
- with automatic cut-off
- power supply by 9 V battery

Scope of delivery:

- 1 diesel adapter MTDA 01
- 1 piezo clamp \varnothing 6 mm

Supplementary piezo clamps SKD are available with the following dimensions: diam. 4, 4.55, 5, 5.6, 6, 6.35 (1/4"), 7, 8, 9.5, 10, 11, 12, 12.7 (1/2"), 13, 14 mm.

CBB 01

081004_1

NEW



Interface for testing CAN bus systems

The CAN-Bus-Box CBB 01 is a mobile interface for testing CAN-Bus systems. The use of the box allows easy access to all pins of the OBD connector to measure and test the signals by different test devices. Also you can connect a multimeter or an oscilloscope to show CAN high and CAN low signals. At the same time an OBD-terminal can be connected.

Circuit, ground and quality of the CAN-bus-signals can be verified.

- easy access to all pins of the OBD connector
- quick test of wiring and ground circuit
- works without battery or power supply, because power supply via CAN bus
- simultaneous connection of other OBD tools possible
- length of the OBD connector cable: 2.50 m

Glow plug testers

GKP 05

070607_1



Glow plug tester for 4.4 V, 5 V...12V glow plugs

Glow plug tester for 4.4 V, 5 V...12 V glow plugs. Testing can take place with the glow plug installed. The state of the glow plugs is displayed by two LEDs (green/red).

- visual displays for 'instrument ON',
- 'low battery', 'glow plug OK' and 'glow plug faulty'
- robust clip connectors for glow plug and earth
- automatic tester cutout
- power supply by 9 V Monobloc battery

Scope of delivery:

1 glow plug tester
2 connecting cables each 1.00 m long (3 ft)

GKP 04.1

070606



Glow plug tester for 12 volt heater plugs

Glow plug tester for 12 volt heater plugs with 3 diodes. The test may be executed with glow plugs mounted. The tester should be connected to the vehicle battery by means of the red (+) and black (-) battery terminals. The auxiliary terminal should be connected to the glow plug undergoing testing. After pressing the START button the test result is shown within 15 seconds.

The condition of the glow plug is indicated by diodes.

- correct connection (green)
- good (green)
- defective (red)

Due to the integral automatic circuit breaker a change of the vehicles' fuses is not necessary.

Scope of delivery:

1 glow plug tester
1 power supply cable with clamps, length 1.40 m (4 ft)
1 auxiliary clip with cable, length 1.40 m

Trailer lighting tester

ATA 07

080119_1



Trailer lighting tester for electric simulation of tractors for 12 V

Trailer tester with accumulator for electric simulation of tractors for 12 V, with automatic cut-off after 2 min. out of use, automatic cut-off in case of short circuit. Details accumulator: voltage 12 V, capacity 1.2 Ah.

Suitable for use with following plugs:

- 13-pole, 12 V (WeSt)**
- 7-pole, 12 V (DIN/ISO 1724)**
- 13-pole, 12 V (Multicon)**

LED-indication for:

- capacity indication when device is switched on
- in case of accu voltage <10.5 V
- current flow
- accu charging
- accu filled

Scope of delivery:

1 trailer tester ATA 07,
1 220 V charging lead
in solid plastic case

AT 01

080122_1



Trailer lighting test device, for 12 V

Trailer lighting test device for control of incandescent lamps on trailers.

Test results are indicated via LEDs.

- LED green = lamp OK
- LED red = lamp defective

Suitable for the following plug:

13-pole plug 12 V (ISO 11446)

- automatic test run
- automatic switch-off
- power supply by 9 V block battery
- cable length 20 cm
- low-batt display

Note:

With 7-pole trailer plugs, the plug adapter **VK 27** (Art. No. 080329) is required (not included in delivery).

AT 2000

080120



Multi-purpose trailer lighting tester for 24 volts in metal housing

Special execution. Multi-purpose trailer lighting tester for 24 volts. Expanded version of AT 09.

Suitable for the following plugs:

- 4-pole, 24 V (DIN 72575)**
- 7-pole, 24 V (DIN/ISO 1185 N-Type, Euro)**
- 7-pole, 24 V (DIN/ISO 3731 S-type)**
- 13-pole, 24 V (ISO 12098 ADR/GGVS)**
- 15-pole, 24 V (ISO 12098 ADR/GGVS)**

The power supply is established with alligator clips at two 12 V batteries or a 24 V power supply unit (not included in delivery).

The following functions can be adjusted and tested with rotary switches: flasher right, flasher left, brake lights, reversing light, tail light right, rear foglamp, tail light left.

Scope of delivery:

- 1 trailer lighting tester AT 2000**
- 1 power supply cable with battery clamps, length 1.50 m (4.3 ft)**

AT 09

080121



Trailer lighting tester, for 24 V

Trailer lighting tester for 24 volt, in metal housing.

Suitable for use with the following plugs:

- 15-pole, 24 V (ISO 12098 ADR/GGVS)**
- 5-pole, 24 V (DIN/ISO 7638, ABS)**

Power supply established with battery clamps to two 12 V batteries or 24 V power supply unit (not included in delivery).

The following functions can be adjusted and tested with rotary switches: reversing light, brake lining wear sensor, solenoid valve (ABS), spring-operated brake, tail light right, electronics (ABS), tail light left, data communications warning system (ABS) flasher right, power supply (24 V), flasher left, brake lights axle raising system, rear foglamp

Scope of delivery:

- 1 trailer lighting tester AT 09**
- 1 power supply cable with battery clamps, length 1.50 m (4.3 ft)**

Illumination testers - tractor testers

ZWT 01

080203

NEW



Tractor tester, 7-pole plug, 12 V

Tractor Tester for testing the tractor's plug socket. LED-indication, integrated load resistors, instruments head part protected with protective rubber cap.

- 7-pole, 12 V (DIN/ISO 1724)

ZWT 02

080204

NEW



Tractor tester, 7-pole plug, 24 V

Tractor Tester for testing the tractor's plug socket. LED-indication, integrated load resistors, instruments head part protected with protective rubber cap.

- 7-pole, 24 V (DIN/ISO 1185)

ZWT 09

080219



Tractor unit lighting tester 24 V + ABS test function

Tractor unit lighting tester, 24 V, with integral ABS test function. Impact protected housing with hook, suitable for checking the following electrical sockets:

- 15-pole, 24 V (ISO 12098 and ADR/GGVS)
- 7-pole, 24 V (DIN/ISO 7638) ABS socket

Testing of the individual functions is effected by the lighting-up of the correspondingly marked LED. The tester is fitted with load resistors for the flasher function; as a result, the green indicator lamp in the instrument panel flashes when the flasher switch is operated.

Scope of delivery:

- 1 tractor lighting tester ZWT 09**
- 1 connecting cable with 15-pole and 5-pole plug, length 2.00 m (6.5 ft)**

ZWT 20

080247_1



Tractor tester, 13-pole plug, 12 V, 5 m cable

Tractor tester for testing the tractor's plug socket. The tester is fitted with load resistors. LEDs for individual functions and 5 m (16.4 ft) cable provide for use in the workshop and maintenance garage. Vehicles with CAN-bus can also be tested.

- plug 13-pole, 12 V (ISO 11446)
- integrated load resistors for flashers and rear foglamp

Test functions:

flashers, brake lights, tail lights, reversing light, rear foglamp.

Note:

Tractor unit tester with alternative test plug connectors, e.g. 15-pole, 24 V, available on request.

ZWT 30

080248_1



Tractor tester 12 V, CAN bus capable, for testing 7 and 13-pin sockets

Tractor tester 12 V, CAN bus capable, for testing 7 and 13-pin sockets on the towing vehicle. The 5.00 m long connecting cable allows testing to be performed by a person sitting in the driver's seat.

- test sequence menu prompted with display
- bulb function and simulation testing
- additional check of supply and ground terminals
- power supply via permanent positive and/or charge cable (with 13-pin socket)
- external power supply possible (with 7-pin socket)
- overheat protection
- acoustic warning and test signals

Scope of delivery:

1 tester ZWT 30

1 adapter cable with plug for cigarette lighter

ZWT 40

080249_2



Tractor tester 12 V, CAN bus-capable

Tractor vehicle tester 12 V, CAN bus-capable, for controlling of 13-pole socket of towing vehicle. The individual switches and testing lights such as tail lights, brake lights, indicators, reverse lights and rear fog lights are integrated in the test case and can be individually switched on or off. Testing can be carried out by one person from the driver's seat with a connection cable of length 5,00 m (16.4 ft).

- 13-pole plug 12 V (ISO 11446)
- function test and failure test for individual incandescent lamps
- power supply by continuous positive and/or charging line

Scope of delivery:

1 Tester ZWT 40, with 5 m connection cable

ZWT 2000.1

080501



Tractor unit lighting tester with automatic voltage identification

Tractor unit lighting tester, for 12 and 24 V.

The ZWT 2000 series permits the electrical socket on the tractor unit to be tested. Automatic voltage identification for 12 or 24 V by LED display, impact-protected plastic housing. Connection to the corresponding socket is established by various ZWTA-series adapter cables. A bayonet catch on the tester allows rapid changeover of adapter cables. To enable testing of the individual functions to be carried out from the driver's seat, a 5.00 m (16.4 ft) extension cable VK 2000 can be connected between the tester and the adapter. Approved for safety testing.

Tractor unit lighting tester, for 12 and 24 V.

Scope of delivery:

1 ZWT 2000 basic tester

3 ZWTA 01, 02, 03 test adapters (see table)

1 VK 2000 extension cable, 5.00 m (16.4 ft) long

ZWT 2009.1

080508



Tractor unit lighting tester with testing facility for ABS socket, automatic voltage identification

Tractor unit lighting tester for 12 and 24 V with additional testing facility for ABS socket.

The ZWT 2000 series permits the electrical socket on the tractor unit to be tested. Automatic voltage identification for 12 or 24 V by LED display, impact-protected plastic housing. Connection to the corresponding socket is established by various ZWTA-series adapter cables. A bayonet catch on the tester allows rapid changeover of adapter cables. To enable testing of the individual functions to be carried out from the driver's seat, a 5.00 m (16.4 ft) extension cable VK 2000 can be connected between the tester and the adapter. Approved for safety testing.

Tractor unit lighting tester for 12 and 24 V with additional testing facility for ABS socket.

Scope of delivery:

1 ZWT 2009 basic tester

1 ZWTA 05 test adapter, 5-pole, 24 V (ABS)

Lots of testing adapters ZWTA are available optionally.
Cable length 0,60 m, see table at the next page.

- 82 - Electrical/ Charging System

Code	Ref. No.	Description
ZWT 2000	080502_1	Basic tester for ZWT 2000.1 with bayonet catch for test adapter connection
ZWT 2009	080502_2	Basic tester for ZWT 2009.1 with bayonet catch for test adapter and additional connection for ABS testing
ZWTA 01	080503	Test adapter with 3 plugs, 4-pole, 24 V (DIN 72575); 7-pole, 24 V (DIN/ISO)
ZWTA 02	080504	Test adapter with 2 plugs, 7-pole, 12 V, (DIN/ISO 1724); 13-pole, 12 V (ISO 114 46)
ZWTA 03	080505	Test adapter with 2 plugs, 13-pole, 24 V (ADR/GGVS Hazardous goods)
ZWTA 04	080506	Test adapter with 1 plug, 13-pole, 24 V (tanker vehicle plug)
ZWTA 05	080509	Test adapter with 1 plug, 5-pole, 24 V (ABS)
ZWTA 06	080510	Test adapter with 2 plugs, 13-pole, 24 V (tanker vehicle plug); 15-pole, 24 V (ISO 12098)
ZWTA 07	080514	Test adapter with 1 plug, 12-pole (NATO)
VK 2000	080507	Extension, 5.00 m (16.4 ft) long (cannot used with ZWTA 05)

Accessory for Illumination testers

VK 26

080327



Adapter from 13 pole plug to 7 pole socket

VK 26, adapter from 13 pole, 12 V plug (ISO 11446) to 7 pole, 12 V socket (DIN/ISO 1724).

VK 27

080329

Adapter from 7 pole plug to 13 pole socket

VK 27, adapter from 7 pole, 12 V plug (DIN/ISO 1724) to 13 pole, 12 V socket (ISO 11446).

CUSTOMERS

Our customers

- Manufacturers of passenger cars and trucks
- Wholesalers and workshop chains
- Motorcycle manufacturers
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Aero wipers testing and adjusting tools

The new generation of bracketless windscreen wipers made by Bosch, Valeo, SWF etc. and known under the brandnames ‚Aerotwin‘, ‚Flat blade‘ etc. require new testing and adjusting tools. The wiper blade holders on the wiper arm must be presented to the windscreen or rear window at a specific angle.

If the wiper blades rattle/rub/squeal, if the wiping is inefficient or uneven and after the windscreen/rear window has been replaced, it is essential to check the angle because there is a high probability that the angle will have changed.

Checking the angle: Remove the wiper blade. Connect the adapter (angle measuring instrument). By using the appropriate adapter, it is possible to achieve a precise connection between the wiper blade holder and the angle measuring instrument. Holders are available for every type of wiper arm (Bosch, Valeo, SWF, etc.).

Angle adjusting tools: The special feature of the new wiper systems is that no force (may be applied through the wiperblade holder, to adjust the angle). Depending on the type of wiper arm, the adjusting tools invariably consist of two similar parts (adjusting tool and counter holder). The measurement and adjustment of the angle can take place simultaneously. Adjusting tools are available for all types of wiper arm.

Pressure applied by the wiper arm: The pressure applied by the wiper arm to the windscreen/rear window is approx. 10 Newtons, tolerance approx. ± 1 N. If the pressure applied by the spring is less than 10 N, it is impossible, as a matter of logic, to achieve the optimum wiping effect, the spring or complete wiper arm must be replaced.

You can find the list of the available adapters at our website, at Service, Downloads, in "Adapter list for Adjusting tool for Aero wipers (AWPE)"

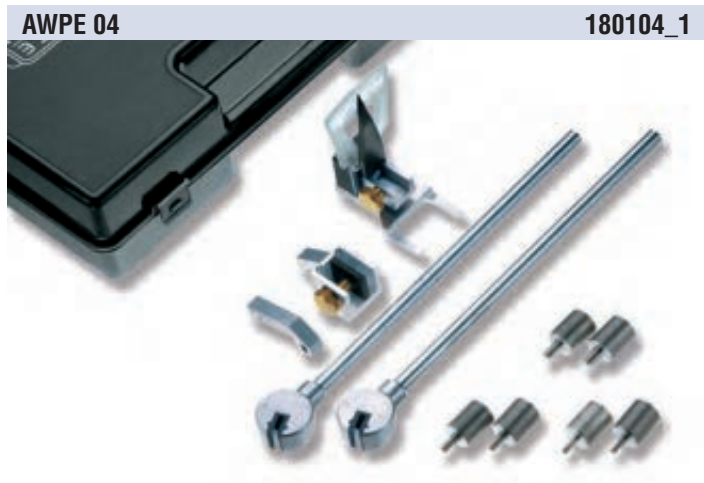
for this purpose you also can scan the QR-code →



Aero wiper testing and adjusting tool basic equipment

Aero wiper testing and adjusting tool; the delivery specification comprises basic equipment, but this can be extended with additional adapters or adjusting tools (see table next page and internet). For description, see introductory text.

Scope of delivery:
1 angle measuring unit (AWPE-WE)
1 wiper blade jig (AWPEA-B)
2 adjusting tools (AWPE-Z4)
in solid plastic case



Aero wiper testing and adjusting tool augmented version

Aero wiper testing and adjusting tool. Augmented version of the AWPE 03. Specification as above plus an additional wiper blade jig (AWPEA-C) and three pairs of lever jigs with M5, M6 and M8 threads to secure the various wiper blade adapters.

Scope of delivery:
1 angle measuring unit (AWPE-WE)
1 wiper blade jig (AWPEA-B)
1 wiper blade jig (AWPEA-C)
2 adjusting tools (AWPEE-Z4)
2 lever jigs (AWPE-M5)
2 lever jigs (AWPE M6)
2 lever jigs (AWPE-M8)
in solid plastic case

Code	Ref. No.	Description
AWPEE-Z4	180220_1	adjusting tool (1 unit)
AWPEE-GH	180222_1	set of adjusting tools G (M8) and H (M8), Seat Altea
AWPEE-KI	180229_1	set of adjusting tools K (M5) and I (M5), Renault VelSatis
AWPEE-LM	180223_1	set of adjusting tools L (M6) and M (M6), Audi A2
AWPEE-ON12	180224_1	set of adjusting tools O (M5) and N1 (M5) and N2 (M5), Audi A4
AWPEE-PQ	180225_1	set of adjusting tools P (M8) and Q (M5), Audi A6
AWPEE-RS	180226_1	set of adjusting tools R (M6) and S (M6), Audi A8
AWPEE-TU	180221_1	set of adjusting tools T (M6) and U (M6), Porsche Cayenne
AWPEE-VW	180227_1	set of adjusting tools V and W, BMW 5/6/7 series
AWPEE-XY	180228_1	set of adjusting tools X (M8) and Y (M8), MB C-class
AWPE-M5	180230	lever jig with M5 thread (2 units)
AWPE-M6	180231	lever jig with M6 thread (2 units)
AWPE-M8	180232	lever jig with M8 thread (2 units)
AWPE-M-Set	180233	lever jig M5, M6, M8 (6 units)
ET 465	121494_1	moulded tray for AWPEE-Z4 (5 pair)

Electronic force measurement

DMK 15

071502



Electronic force tester to check windscreen wipers

Electronic force tester to check windscreen wipers. Due to the construction of the sensor, the upper and lower side of the sensor have the same function, i.e. no matter how the sensor is used, the results are identical. Further ranges on request.

- range 0...15 Newton
- power supply by a 9 V battery
- 10 results/sec., accuracy $\pm 1\%$
- automatic memory of the maximum value
- dimensions of the sensor (L /W/H) 40 x 12 x 15 mm

Supplied in a solid plastic case.

DKM 45

071503_1



Electronic force tester to check windscreen wipers

Electronic force tester to check windscreen wipers, equivalent version of DKM 15, but range 0...45 Newton.

DKM 1500

071501



Electronic force tester for automatic cut off function

Electronic force tester to check electric windows, electric sunroofs and liftdoors. The electronic force tester is an accurate instrument and provides reproducible results. Due to the construction of the sensor, the upper and lower side of the sensor have the same function, i.e. no matter how the sensor is used, the results are identical.

Further ranges on request.

Application:

- checking the stop function of electric windows and sunroofs
- checking the stop function of liftdoors
- measuring the maximum pressure
- range 0...1500 Newton
- power supply by a 9 V battery
- 10 results/sec., accuracy $\pm 1\%$
- automatic memory of the maximum value
- dimensions of the sensor (L /W/H) 70 x 50 x 27 mm

Supplied in a solid plastic case.

WKZ_DKM 15

190102

Calibration certificate for DKM 15.

WKZ_DKM 45

190111

Calibration certificate for DKM 45.

WKZ_DKM 1500

190101

Calibration certificate for DKM 1500.

LDM 01

071601_1



Coating thickness gauge

Test instrument for the non destructive measurement of the thickness of surface coatings on iron and non-ferrous metals. The ergonomically designed coating tester with integral measuring probe gives rapid, precise test results with a high degree of accuracy. The display consists of a 4-place LCD module. Power supply by 4 x 1.5 V-batteries.

Supplied in a case with directions for use and calibrating standards.

- wireless design permits convenient, single handed operation.
- suitable for materials such as iron, steel, aluminium, copper and brass
- automatic material identification (F/NF)
- measuring range from 0 to 1250 µm
- measuring accuracy ± 2 %
- wear-free spring suspended measuring head
- automatic cutout

Supplied in a solid plastic case.

Tire pressure - checking and filling



RDM 01

130452_1



Tire pressure gauge with valve plug

Tire pressure gauge, DS 63 mm with protective rubber cap. Range 0...6 bar, with valve plug.

More test equipment for safety systems please see chapter BRAKE SYSTEM (page 58), brake fluid tester, brake pressure tester and brake bleeder service unit.

Different plug versions



Available connections

- ① Filling station plug
Code: HRT, DHRT
- ② Lever plug
Code: HRH, DHRH
- ③ Valve plug
Code: HRV, DHRV

HRH 01, HRT 01, HRV 01 130402, 130401, 130403



Hand tire inflator - with pistol handle

Hand tire inflator with pistol handle for the connection to compressed air.

Available versions: (see picture "different plug versions")

Filling station plug	HRT 01	Ref. No. 130401
Lever plug	HRH 01	Ref. No. 130402
Valve plug	HRV 01	Ref. No. 130403

- high quality gauge with protective rubber cap DS 63 mm (2 1/2")
- dual scale 0...10 bar/145 psi.

HRH 08.2, HRT 08.2, HRV 08.2 130442, 130443, 130448



Hand tire inflator - officially calibrated

Instrument including calibration mark, valid for 2 years. Tire inflators for highest demands. Hand tire inflator, ergonomic handle for connection to workshop compressed air system, with 2-stage inflation/deflation lever.

Available versions: (see picture "different plug versions")

Filling station plug	HRT 08.2	Ref. No. 130443
Lever plug	HRH 08.2	Ref. No. 130442
Valve plug	HRV 08.2	Ref. No. 130448

Working pressure between 6 and 12 bar. Clearly legible pressure on DS 80 mm (3 1/4") precision pressure gauge with robust rubber protective cap. Double scale, 0...10 bar/145 psi.

DHRH 08.2, DHRT 08.2, DHRV 08.2 130480_1, 130481_1, 130482_1

NEW



Digital tire inflator - officially calibrated

Digital tire inflators - officially calibrated. Digital tire inflator for high quality expectations. Operation with workshop pressure 6 to 12 bar. Pressure Measurement 0 to 8 bar (= possible outlet pressure).

Available versions: (see picture "different plug versions")

Filling station plug	DHRT 08.2	Ref. No. 130481_1
Lever plug	DHRH 08.2	Ref. No. 130480_1
Valve plug	DHRV 08.2	Ref. No. 130482_1

HRV 08.2AL

130474_1



Hand tire inflator - high quality, with valve plug

High quality hand tire inflator with valve plug, aluminium version. Pressure gauge DS 80 with rubber protection, dual scale 0...10 bar/145 psi. Ergonomic handle for connection to workshop compressed air system, with 2-stage inflation/deflation lever. Completed with hook for use in the Workshop.

Note:

If you exchange a calibrated manometer an official calibration is necessary.

Service equipment for SCR systems

*Notes on AdBlue® operating additive (urea-water-solution): AdBlue® is a registered Trade Mark of VDA, Verband der Deutschen Automobilindustrie e.V.

RFM 03_%AB

110306_25



Refractometer for testing the Urea concentration

Test instrument recommended by Daimler AG. Refractometer for testing the Urea concentration to evaluate the quality of the operating additive AdBlue®*. Prolonged periods in storage will cause a creeping decomposition of AdBlue®* operating additive. For evaluating quality on the delivery of new AdBlue®* operating additive containers (quality as supplied), during storage on one's site, in customers' vehicles.

AEKP 01

061202_1



Sampling and concentration test kit

Sampling and concentration test kit for AdBlue®* operating additive. With the AEKP 01, specimens of AdBlue®* operating additive can be extracted from the tank and evaluated.

Evaluation options:

- Refractometer for AdBlue®* operating additive concentration (f. descrip. see RFM 03_%AB)
- Delivery rate of the SCR pump (only with the support of the vehicle's software)
- Determination of the injected volume of AdBlue®* operating additive (only with the support of the vehicle's own Software)

Scope of delivery:

- 1 RFM 03 refractometer**
- 10 pipettes**
- 1 extractor for specimens with suction ball**
- 1 measuring cylinder with scale, 500 ml**
- 1 narrow-necked PE bottle, 1000 ml capacity**
- 1 silicone hose, Ø 9 mm, length 5.00 m**
- in solid plastic case**

ABE 02_MB

061201_4



Filler unit to fill SCR systems

Filler unit recommended by Daimler AG. Filler unit to fill SCR systems with AdBlue®* operating additive. To be used, especially, for all Mercedes Benz cars with an SCR system. Not to be used for commercial vehicles, e.g. Sprinters or transport vehicles. It is possible to use the filler unit directly with the original AdBlue®* operating additive container A 004 989 04 20. This saves transferring the fluid from one container to another and eliminates the possibility of contaminating the AdBlue®* operation additive. The filler is designed to function without compressed air.

- easy to use
- can be used anywhere
- integrated device to prevent overfilling the SCR system
- low cost, entry level maintenance of SCR systems

Scope of delivery:

- 1 filler unit, including container connection**
- 1 plastic container, capacity 10 litres (for emergency use, empty)**
- 1 transparent filler hose, length 1.60 m**
- 1 transp. venting hose, length 2.00 m**

ABE 03_LR

061201_5

NEW



Filler unit to fill SCR systems

Same function and delivery content as ABE 02_MB but with adapters for vehicles of the brand Mercedes Benz and VW.

Scope of delivery:

- 1 filler unit, including container connection**
- 1 plastic container, capacity 10 litres (for emergency use, empty)**
- 1 transparent filler hose, length 1.60 m**
- 1 transp. venting hose, length 2.00 m**

ABE 04_LR

061208_1



NEW

Inflating hose for 10 l container

To fill SCR systems with AdBlue®* operating additive. To be used as adapter between container and tank. For transferring the fluid from the container into the tank. Eliminates the possibility of contaminating the environment with AdBlue®* operating additive.

VB 01.1_AB

100801_5



Vacuum box for evacuation of the SCR tank

The VB 01.1_AB vacuum box is suitable to extract AdBlue®* operating additive out of the SCR tank. The unit can be used mobile and stationary. It has a capacity of 11 l.

For a detailed description, see chapter BRAKE SYSTEMS, page 61.

Applications:

- before replacing damaged components, e.g. the SCR pump
- to change the AdBlue®* operating additive

Scope of delivery:

- 1 vacuum box with venturi nozzle
- 1 transparent suction hose with connections, length 2.50 m (8.3 ft)

FP 07_AB

041228_1



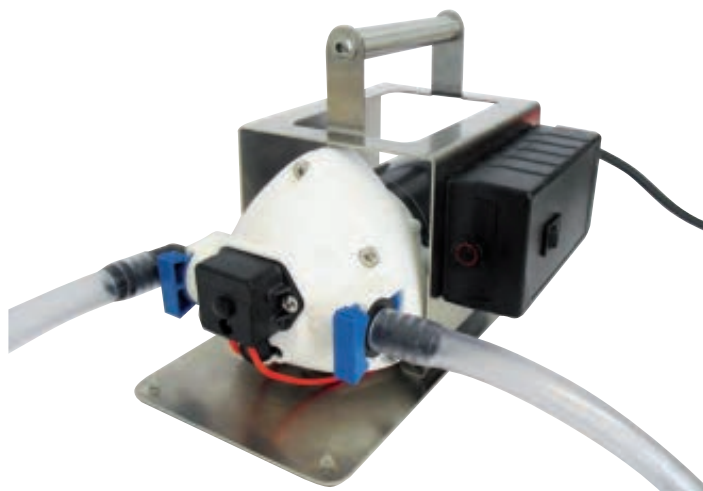
Device to measure the operating pressure and tightness of SCR-systems

Device to measure the operating pressure and tightness of SCR-systems. With push-in fitting for the connection to SCR-system.

- measuring range -1...+9 bar
- compound gauge DS 63 mm (2 1/2")

EAP 10_12 VDC

061301_1



Rugged suction pump with stainless-steel housing, 12 V/DC

Rugged suction pump, 12 V/DC, with stainless-steel housing. Designed especially for use with operating materials in SCR systems (urea-water solution). Design with ON/OFF switch and priming protection. Power supply with either plug for cigarette lighter or battery terminals (motor vehicle).

- feed rate 10 ltr./min.
- sturdy stainless-steel housing
- self-priming
- easy to use
- quiet operation

Caution: Cannot be used for gasoline and highly flammable media!

Scope of delivery:

- 1 EAP 10_12 suction pump
- 1 suction hose, length 1.00 m (3.3 ft)
- 1 outlet hose, length 2.00 m (6.6 ft)
- 1 power supply cable with plug and battery clamps, length 3.00 m (10 ft.)

EAP 10_24 VDC

061302_1

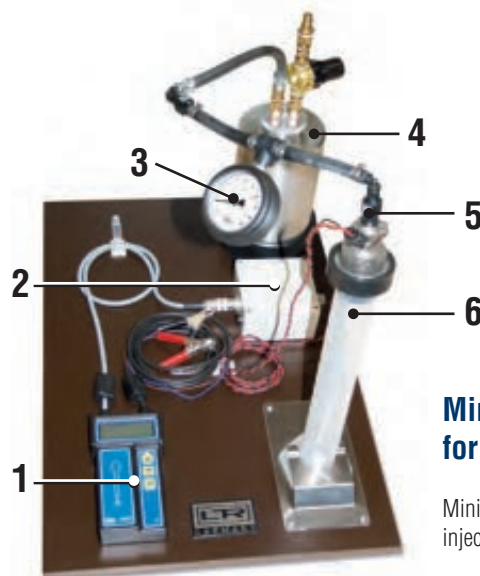
Rugged suction pump with stainless-steel housing, 24 V/DC

Rugged suction pump, 24 V/DC, with stainless-steel housing. Same function and delivery content as EAP 10_12 but with 24 V/DC power supply. Power supply with either plug for cigarette lighter or battery terminals (motor vehicle).

MP_SCR 01

041253_1

NEW



Mini test bench for SCR injectors

Mini test bench for SCR injectors.

To test SCR metering valves (passenger cars). With this set-up the following tests can be run:

- single shot test
- inspection, if all injection drillings are open
- "10 minute test": injection volume within 10 minutes under a fixed program

- 1 CREIS 01_SCR electronic injection controller, 12 V/DC
- 2 CREL 01_SCR electronic power section
- 3 FP 07_AB pressure tester
- 4 reservoir 1 L (water or urea-water solution) incl. pressure regulator
- 5 SCR-metering valve (test specimen) NOT included
- 6 measuring beaker

To operate the mini test bench, a 12 V/DC battery is required, as well as compressed air. All components are fitted on an urea-resistant panel.

Further applications on request.

Test tools for charge air systems

TDU 04

040405



To test pressure and vacuum of the engine's turbo loader

To test pressure and vacuum of the engine's turbo loader. High quality compound gauge DS 100 mm (4"), range -1...+3 bar, with robust protective rubber cap and hook, high resolution. Available with an ISO certificate of calibration (at extra charge).

Scope of delivery:

- 1 compound gauge with hook**
- 1 fuel resistant hose 3.00 m (10 ft) long incl. T-piece**
- 1 hose 0.30 m (12 in.) long**

Test devices for exhaust systems

The lambda probe is an important sensor for measurement of residual oxygen concentration in SCR systems. In the event of a leak, fresh air gains access to the SCR system, causing the lambda probe to detect an excessively high concentration of oxygen. The engine management system takes suitable action, but this has no effect, as the unused oxygen in the exhaust gas does not originate from the combustion process.

AGD 01

130605



Test device for exhaust gas pressure

Overheating and dirt of a catalytic converter has negative influence on the emission of exhaust gases. The testing of the exhaust gas pressure allows a quick catalyst diagnosis. The connection is at the exhaust gas system between engine and catalyst by means of a thread connector instead of the Lambda probe.

The connector can be coupled with the pressure hose. Gauge with protective rubber cap, DS 63 mm (2 1/2"), range -1...+3 bar, equipped with a red/green marked scale. When the indication remains within the green area, the catalytic

converter is in order; however, if the catalyst is defective or propped, the indication is in the red area.

Scope of delivery:

- 1 compound gauge, 63 mm, -1...+3 bar,**
- 1 pressure hose 3.00 m (10 ft) long,**
- 1 connector M 18x1.5 (ANK 40, male)**
- in solid plastic case**

ADP 01

130608_1



Leakage test exhaust system

The leak test is carried out when the engine is cold. The test device works using workshop compressed air and an integrated pressure regulator. The display is provided by a pressure gauge with a measurement range of 0 to 600 mbar.

A pressure drop is indicative of possible leaks in the SCR system.

The leak is localized acoustically by listening for the noise of escaping air or with the aid of a leak spray.

Scope of delivery:

- 1 tester DPL 01**
- 1 test and sealing adapter with hand wheel UA 4AG**
- 1 test seal with hand wheel UA 4VK**
- 1 test hose with quick-release coupling**
- in solid plastic case**

SV 01

130607_1



Air disturbance simulator

A part of the exhaust gas test - the circuit test - is effected to guarantee that the Lambda probe is working correctly.

By means of the adjustable disturbance air valve SV 01, a precisely measured quantity of disturbance air is introduced to the engine at a defined spot. The disturbance air with the SV 01 can be introduced from 0.0 to 2.3 mm.

Leakage test fresh air intake

MLPS 03

061114_1



Leak testing of charge air systems

To check the charge air system and its individual components for leaks. Time saving and proper work, locate leaks very fast. Safety valve prevents overpressure, maintenance free.

- universal use
- display 0 – 2.5 bar
- pressure relief valve max. 1 bar output
- hose length 0.4 m

Scope of delivery:

- 1 MLPS pressure regulator
 - 1 filling hose
 - 1 adapter (Ø in mm = 50, 60, 70)
 - 1 closing plug (Ø in mm = 50, 60, 70)
- in solid plastic case

MLPS 04

061115_1



NEW

Leak testing of charge air systems

Same function and design as MLPS 03, but different adapters. Adapters, see scope of delivery.

- universal use
- display 0 – 2.5 bar
- pressure relief valve max. 1 bar output
- hose length 0.4 m

Scope of delivery:

- 1 MLPS pressure regulator
 - 1 filling hose
 - 3 adapters (Ø in mm = 36, 41, 47, 52, 57, 63, 68, 78, 83, 88)
 - 3 closing plugs (Ø in mm = 36, 41, 47, 52, 57, 63, 68, 78, 83, 88)
- in solid plastic case

MLPS 06

061117_1



NEW

Leak testing of charge air systems

Same function and design as MLPS 03, but different adapters.

Scope of delivery:

- 1 MLPS pressure regulator
 - 1 filling hose
 - 6 adapters
 - 6 closing plugs
- in solid plastic case

LPS 01

061110_1



NEW

Leak testing of charge air systems

To check the charge air system and its individual components for leaks. Suitable for engines of the VW group.

Scope of delivery:

- 1 manifold (adjustable pressure)
 - 1 filling hose
 - 9 adapters
 - 3 hose fittings with clamps
- in solid plastic case

LPS 01.2

061110_2

Leak testing of charge air systems

NEW

To check the charge air system and its individual components for leaks. Suitable for engines of the VW group. Same function and design as LPS 01, but manifold with fixed measuring pressure.

Scope of delivery:

- 1 Prüfarmatur
 - 1 filling hose
 - 9 adapters
 - 3 hose fittings with clamps
- in solid plastic case

Vehicle body

PDC 01

130600_1

NEW



Tool Set for park distance control

13 pcs. tool set for drilling, punching and milling of holes for park distance controls that fits exact.

- burr-free drilled hole edges
- drilling without scrapes or dents in the paintwork
- fits accurately
- easy to use

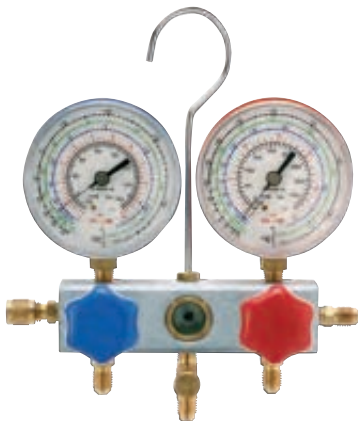
Scope of delivery:

- 1 punching tool, round 18,0 mm
 - 1 punching tool, round 22,5 mm
 - 1 punching tool, round 24,0 mm
 - 1 punching tool, round 26,0 mm
 - 1 stepped drill, titan nitrided 4 - 12 mm
 - 1 stepped drill, titan nitrided 4 - 20 mm
 - 1 stepped drill, titan nitrided 4 - 32 mm
 - 1 set of millers, 6 pcs. HSS shaft 6 mm
- in solid plastic case

Service equipment for air conditioning systems

PM 02

060610



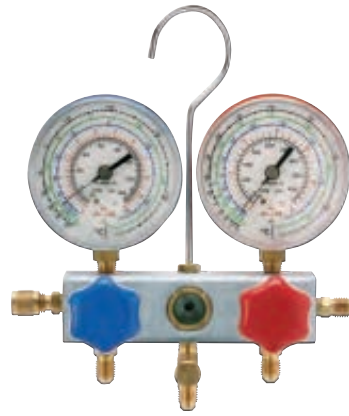
2 way manifold test kit

2 way manifold for service and diagnosis on air conditioning and refrigeration systems, with calibration screw. 2 gauges with DS 80 mm (3 1/4"). Supplied unit does not comprise hoses and adaptors.

- pressure units bar / psi
- temperatur unit °C
- coloured scales for refrigerants

PM 02.1

060619



2 way manifold test kit including hoses and quick couplings

Tester kit with 2 way manifold PM 02 for service and diagnosis on air conditioning and refrigeration systems including refrigerant hoses (red/yellow/blue), each 0.90 m long, 1 quick coupling set for refrigerant R 134a.

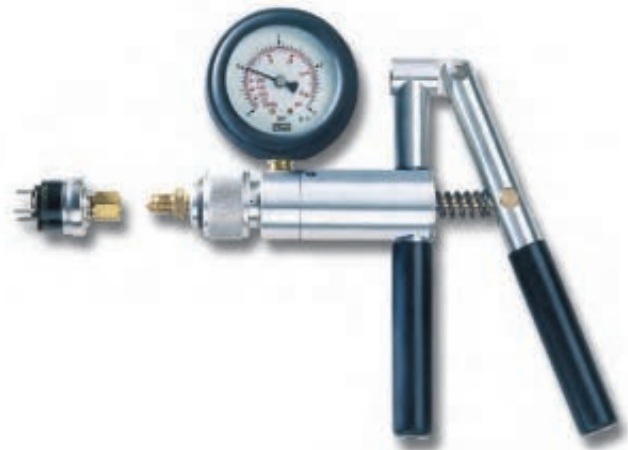
- pressure units bar / psi
- temperatur unit °C
- coloured scales for refrigerants
- with 3 refrigerant hoses

Supplied in a solid plastic case

Testing of pressure switches

HV 90.2

060107_2



Pressure and vacuum pump for the testing of low-pressure switches

Pressure and vacuum pump for the testing of low-pressure switches. Rubber protected DS 63 mm (2 1/2") pressure gauge, double scale -1...+3 bar / 45 psi with fine divisions. Connector with 7/16"-20UNF male thread (for other adaptors, see HVA-series).

HV 90.3

060110_1



Pressure pump with rotary spindle and drain valve, for testing of medium- and high-pressure switches

Pressure pump with rotary spindle and drain valve, for the testing of medium- and high-pressure switches; rubber protected DS 63 mm (2 1/2") pressure gauge, double scale 0...40 bar / 580 psi with fine divisions. Connector with 7/16"-20UNF male thread (for other adapters, see HVA-series).

Applications medium- and high-pressure switches in

- refrigeration and air conditioning systems
- pneumatic brake systems (transport vehicles)
- oil pressure switches

Testing capabilities

- determination of trip settings
- determination of on/off trip settings or switching differentials.

Delivery without adapters

Barrel suction pump

HAP 21C, HAP 21_MK

060427_1, 060427_2



Barrel suction pump with 1/4 SAE connection, aluminum design

Barrel suction pump with 1/4 SAE connection with aluminum design. Can be used for media such as oil and brake fluid, non-flammable and non-aggressive liquids, corrosion-free.

- maximum achievable pressure 30 bar
- pump volume 400 ml/stroke

For detailed description see chapter PUMPS, page 35, HAP 21C and HAP 21_MK.

Protection covers

SIS 01

130503



Seat cover

Seat cover with ergonomic fit and integrated head-rest.

Material: blue cotton, solid, tearproof.
Protects the environment - washable.

LES 01

130504



Steering wheel protection

Steering wheel protection, ideal for service jobs.
Fits for steering wheels in all sizes due to an allround-elastic.

Material: blue cotton, solid tearproof.
Washable - protects the environment.

KS 01

130501



Mudguard protection

Mudguard protection, ideal for service jobs.
Optimal fit with wheel cut-out, fixed by means of textile-covered magnets.

Material: textile-covered artificial leather, washable.

Hydraulic

HPG 1000

041900_1

NEW



Hydraulic system tester

For testing and diagnosing hydraulic systems. All relevant physical values are indicated simultaneously.

- easy handling
- measuring results in short test possible time
- pressure indication 0...40 bar and 0...400 bar, class 1.6
- temperature indication 0...120 °C, class 1.6
- flow indication 6 l/min...60 l/min,
at P_{max} 350 bar, T_{max} +90 °C, $\pm 5\%$ FS
- viscosity (oil) 10...200 cSt.

- **Spezial function:** An automatic switch ensures that the pressure is always indicated on the proper instrument. So the operator gets the best possible and most exact pressure indication and the low pressure gauge is protected against over pressure the best possible way.

- **Hydraulic load:**

Via a pressure resistant gaged, the hydraulic path can be completely blocked or a determined flow can be set.

- **Hydraulic connections:**

1" BSPP, outside thread (inlet and outlet)

Supplied in a solid plastic case (without hoses).

Further hydraulic system tester

HPG 1010, as HPG 1000 but without flow indication.

HPGD 1000

041901_1

NEW



Digital, hydraulic system tester

Same function and same fittings as HPG 1000, but with digital sensors.

- higher measuring accuracy
- better readout
- visualization of datas
 - chronologic data
 - current value
 - max. and min. values
- log, save and printing measuring values

Battery housing testing

LTBG 03_EV

042716_1

NEW



Tightness test of battery housings

LTBG 03_EV enables a tightness test with vacuum and/or pressure. It is fitted with special HV-connector* to induce vacuum or pressure into the battery housing. (*HV = high voltage)

- measuring range: -50 mbar ... +50 mbar

Supplied in a solid plastic case.

LTBG 03_EV

042716_1

NEW



Tightness test of battery housings with large-volume (more than 5 dm³)

LTBG 03_EV enables a tightness test with vacuum and/or pressure. It is fitted with special HV-connector* to induce vacuum or pressure into the battery housing. (*HV = high voltage)

- measuring range: -50 mbar ... +50 mbar

Supplied in a solid plastic case.

Special tools

FJW 01

012305_1

NEW



Installation tool for fuel filter lids

For the installation of fuel filter lids. To avoid leakages after the fuel filter was replaced. Suitable for all vehicles fitted with a threaded UFI fuel filter housing.

DPS 01_LR

40004_2

NEW



Pressure plate set

Plate to be used in workshop presses, load 30 tons. Universal 3 spot adjustment ensures a tilt-free working. Bolts adjustable in height.

Digital measurement technology

NEW



The devices mentioned in the table below are available as digital version, equipped with the digital gauge DM 100.

- for higher measuring accuracy
- exact, better readout

Specifications:

- measurement range: 0...600 bar (relative)
- accuracy: 0.5 % FS
- operating conditions: -25...+75° C / RH 60 %

Code	range of application
CRP 04D	Pressure tester for static and dynamic high-pressure pump testing
CRP 2500D	Common rail high pressure tester
FP 01D	Fuel supply pump testers -1 ... 3 bar
FP 03D	Fuel supply pump testers -1 ... 9 bar
LR 180_AK2D	Fuel system pressure tester with compound gauge (vacuum/pressure)
LTBG 03_EVD	Tightness test of battery housings
LTBG 05_EVD	Tightness test of battery housings

Exemplary composition (see image) of different measuring leads and testing adapters on request.



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Explanation:

MB	measuring range
GSK	protective rubber cap
AG	male thread
IG	female thread
DS	dial size

Note:

Delivery without batterie!
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Autotestgeräte





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