

## PRODUCT CATALOG 2024 | 2025

AA

## EQUIPMENT FOR TEST AND DIESEL REPAIR FUEL EQUIPMENT

Test benches, specialized tools, repair complexes, equipment, electronic devices for CR, UIS, UPS, injection pump systems



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Control boards for Dieselland equipment

Control boards for Dieselland equipment 403



**TRIUMF** benches are manufactured with the possibility of retrofitting with a hardware and software complex for encoding Bosch, Delphi, Denso injectors. To encode the Delphi injectors, a device is additionally installed, which allows to create a vacuum in the backleak line of the injector. The set of the vacuum creating device is a gear pump, a venturi tube and an electric motor. The device is installed on the bulkhead, which is located in the lower part of the bench above the cooling unit.

• The software allows you to code injectors BOSCH isa / ima cod, Delphi C2i / C3i / C4i\*, Denso, VDO Siemens.

• Working pressure up to 1800 bar. It is possible to increase the working pressure to 2400 bar.

- The stand is produced with the following characteristics of the main drive:
  - TRIUMF 4 kW 380 V
  - TRIUMF 5,5 kW 380 V

\* coding Delphi C4i in the stand TRIUMF 5,5 kW 380 V





### Software «CASCADE»



The software has a user-friendly interface. The program contains built-in test plans for testing and coding Bosch, Delphi, Denso, Siemens (VDO) injectors. Functions for creating new test plans, editing built-in ones, as well as creating targets for Delphi C2i, C3i, C4i injectors are available. The results and progress of testing are displayed in graphical form and saved to a file and sent to print.

## The stand is equipped with a modern system of thermal stabilization test liquids in the tank, which includes:

1. Two radiators with forced air cooling for the backflow line from the injection pump and the backflow line from the pressure accumulator (rail).

2. Pressure accumulator with cooling. The rail cooling line includes an individual air-cooled radiator and a circulation pump.

- 3. Independent refrigeration unit with air heat exchanger.
- 4. Three individual thermal controllers for controlling radiator fans.
- 5. Tubular electric heater with a power of 1000 W for heating the test liquid in the tank.
- Operating pressure up to 2400 bar.
- The pressure is controlled by two regulators.
- The stand has an electronic measurement system with the ability to check four injectors at the same time.
- The stand is equipped with a frequency converter.





### TRIUMF

### STAND EQUIPMENT

DL-CAU001







DL-CAU002

Cable for BOSCH injectors (universal)

Cable for Delphi injectors (C2i, C3i)

DL-CAU003 Delphi injector cable (C3i)

DL-CAU005

**DL-CAU007** 

Cable for cargo injectors

Cable for BOSCH injectors

DL-CAU004 Cable for injectors BOSCH, SIEMENS











DL-CAU006 Universal cargo injector cable

DL-CAU09 Pressure sensor cable

DL-CAU10 Pressure regulator connection cable



### TRIUMF

### STAND EQUIPMENT



#### DL-24CRM

Set of fittings for reverse draining CR injectors



**DL-UNI50343** 

Nozzles for sprayers nozzles Ø= 9 mm (1 pc.)



### DL-UNI50083

Adapter straight with M14 on M12 for tube (4 pcs.)



### DL-CR10015

Nozzle holder frame with cups (**DL-UNI50342**) for sprayers 7 mm (4 pcs.) and clamping sleeves

DL-UNI31019 Ø=17 (4pcs.) DL-UNI31020 Ø=18,9 (1pc.) DL-UNI31021 Ø=19,2 (1pc.) DL-UNI31022 Ø=21 (1pc.) DL-UNI31231 Ø=21,4 (1pc.)

590 590 590 590



Reverse set drain nozzle Denso (4 pcs.)

0000

DL-CR50162

Stubs on RAIL (4 pcs.)



### DL-TVD41414

High pressure pipes M14xM14x400mm (4 pcs.)



DL-54127

Leg (foot with regulating bolt) (4 pcs.)



#### **DL-UNI30497**

Stub instead regulator pressure (1 pc.)



Door key (4 pcs.)



#### **OPTIONAL EQUIPMENT AND ACCESSORIES**



**DL-MOK** 

Coupling adapter with check valve  $\emptyset$  6 x  $\emptyset$  6mm with collet





Valve for respons time (DELPHI)





Check valve BOSCH electromagnetic injectors on the stand



### DL-CR50210

Return pressure valve for testing piezo injectors SIEMENS at the booth



### DL-CR50177

Return pressure valve for Bosch piezo injectors





#### **OPTIONAL EQUIPMENT AND ACCESSORIES**



### DL-CR50013

Universal adapter for cargo injectors CR (Bosch, Denso, Delphi Smart) for supply connection and back drain with approach angles  $0^{\circ}$ ,  $4^{\circ}$  and  $13^{\circ}$ .



### DL-CR50140

Universal adapter for trucks injectors CR Denso, including Volvo 21952974 for supply and return connection.



#### **OPTIONAL EQUIPMENT AND ACCESSORIES**

ADAPTERS FOR TESTING CARGO INJECTORS



DL-02 DL-CR31046

BOSCH MAN Ø 29мм



DL-09 DL-CR31439

BOSCH VOLVO Ø 28мм



DL-015 DL-CR30822

DENSO Ø 18,5 мм Caterpillar, Perkins



DL-021 DL-CR31565

BOSCH CRIN3 0445124015



DL-027 DL-CR31698 BOSCH



DL-035 DL-CR31561

DENSO

14



DL-04A DL-CR30848 BOSCH RENAULT





CUMMINS



DL-016 DL-CR31486

SCANIA 2/4 pin



DL-022 DL-CR31566

Caterpillar 3809888



DL-030 DL-CR30818

BOSCH ЯМЗ-530



DL-036 DL-CR31563

> Delphi A9362187 MB Actros Mersedes Actros Euro 6



DL-05N DL-CR31048 CUMMINS



DL-011 DL-CR30985

SIEMENS VDO FORD



DL-017 DL-UNI30037

BOSCH DEUTZ Ø 21,5мм



DL-023 DL-CR31567

Delphi Smart injector Mersedes



DL-031 DL-CR31040

BOSCH 0445120303



DL-037 DL-CR50304

04 DL-CF



DL-00 DL-CR31440 DENSO Ø 27мм



DL-012 DL-CR30036 CRIN BOSCH

SISU Ø 26,6мм



DL-018 DL-CR30595

CURSOR 9



DL-024 DL-CR31620





DL-032 DL-CR31430



DL-038 DL-CR31606

5296723 DENSO



DL-07 DL-CR31044 DENSO Ø 23,5мм



DL-013 DL-CR30968

DELPHI SMART INJECTOR



DL-019 DL-CR30804

BOSCH MTU



DL-025 DL-CR31625

DELPHI CRIN DAF EURO 6 SMART INJ



DL-033 DL-CR31479

DENSO



DL-08 DL-CR31045

BOSCH MAN Ø 26мм



DL-014 DL-UNI30038

DENSO



DL-020 DL-CR30596

SCANIA 4 PIN



DL-026 DL-CR31626

CUMMINS



DL-034 (CR31538)

**DENSO 1211** 

11L1063 (095000-121)

diese

equipment for diesel

### TRIUMF

### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### DL-UNF20420L

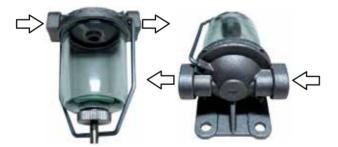
A set of sedimentation filters for testing injectors on the stand TRIUMPH. Designed for preliminary cleaning of nozzles before their bench test.



#### Комплект поставки:

- 1. **DL-UNF20300L** Settling filter (inlet on the left) 2 pcs.
- 2. **DL-UNI31427** Adapter 1/8"xM14x1.5mm 4 pcs.
- 3. **34-RL010602** Quick adapter straight  $\emptyset$  6x1/4" 2 pcs.
- 4. **34-RL310602** Quick adapter angled Ø 6x1/4" 2 pcs.
- 5. **DL-UNI31399** Splitter <sup>1</sup>/<sub>4</sub>" 1 pc.

Attention! All items are also sold separately.



#### DL-UNF20420L

Filter - sump (entrance on the left) *The filter contains:* 

- 1. Holes for entry and exit M14x1.5mm
- 2. Mounting holes Ø 8mm



### DL-UNI31399

Splitter ¼" *Attached to the splitter:* 

- 1. **34-RL010802** Two quick adapters Ø 8mm (at ends)
- 2. **34-RL310601** Two corner fast adapter Ø 6mm (at the ends)

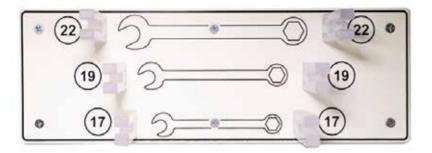


### TRIUMF

### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### DL-UNI01792

A set of open-end wrenches for the TRIUMF stand has a convenient and secure fixation of keys directly in the test bench.



#### Contents of delivery:

- 1. DL-TRF50244 Key holder
- 2. DL-UNI31217 Open-end wrench 17x17mm -1 pc
- 3. **DL-UNI31219** Open-end key. 19x19mm -1 pc.
- 4. **DL-UNI31222** Open-end key. 22x22mm -1 pc.

Attention! All keys are also sold separately.



### **DL-ORV6**

Air defense radiator for pressure accumulator stands TRIUMF



#### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### DL-HEUI0037

### TRIUMF Low Pressure Equipment 0-8 bar for HEUI injector chec ks

24-DBK-06L	Three-way valve 3/8"	1 pc.
26-04020-06	Connecting sleeve 3/8".	1 pc.
13-VMP-06	Safety valve (SV) 3/8"	1 pc.
DL-UNI20024	SV mounting bracket to oil filter with 2 screws M16x16mm	1 pc.
13-VRFB04	Throttle 1/4"	1 pc.
DL-UNI31316	SS washer 50x22mm "OIL SUPPLY" (FUEL SUPPLY)	1 pc.
041616005	Support washer, hole diam. 22mm	1 pc.
DL-UNI30020	Union 1/4"x8mm (discharge to tank from SV)	1 pc.
DL-UNI30859	Union 3/8"x8mm (discharge from SV to tank)	1 pc.
DL-UNI30530	Union 3/8"x3/8" (three-way valve: 2 pc. SV: 1 pc.)	3 pcs.
DL-UNI30363	Banjo bolt 3/8"	2 pcs.
DL-UNI30365	Banjo bolt 1/4"	1 pc.
12-03-005	Banjo female, diam. 14mm (1/4")	1 pc.
34-MA16-08-14	Quick adapter, elbow, 8mm x 1/4"	2 pcs.
DL-UNI31036	Special union 3/8"x3/8"x1/8" for supply.	1 pc.
DL-UNI31024	Special union 3/8"x3/8"x for leak-off	1 pc.
A50051-06-06	Elbow union 3/8"x8mm for special unions.	2 pcs.
DL-UNI20016	Pressure gauge bracket	1 pc.
12-TG63-010	Flanged pressure gauge 0-10 bar	1 pc.
DL-UNI30613	Pressure gauge sleeve 1/4"x 1/8"	1 pc.
34-MA12-04-18	Quick adapter, diam. 4mm x 1/8"	1 pc.
34-PTFE-04-250	PVC tube 4mm x 250mm for pressure gauge	1 pc.



#### **OPTIONAL EQUIPMENT AND ACCESSORIES**

P1331012019-850	PVC tube 8mm x 850mm for drain from throttle to tank	1 pc.
TI-1ZTX-06-090	High-pressure fuel line 3/8"x 3/8" L=90 cm	1 pc.
18-806-008-173	Low-pressure fuel line (LPFL) 8mm L=173cm (SV-Spec. union. "Oil Supply").	1 pc.
18-806-008-155	LPFL 8mm L=155cm (Throttle-Special union "Oil Return")	1 pc.
18-806-008-105	LPFL inside diam. 8mm L=105cm (SV-tank)	1 pc.
DL-UNI20021	Washer with marking "FUEL SUPPLY"	1 pc.
DL-UNI20022	Washer with marking "FUEL RETURN"	1 pc.
0540159	Clamps 15mm	8 pcs.
004636	Screw M3x6mm for pressure gauge mounting	3 pcs.
0046435	Screw M4x35mm	6 pcs.
0083645	Screw M6x45mm+washer+nut for SV mounting	2 set
D-GM1504AN	Rubber-metal washer 1/4" for banjo bolt on throttle	2 pcs.
D-GM1506AN	Rubber-metal washer 3/8" for three-way valve	4 pcs.

ATTENTION! The three low-pressure fuel lines (LPFL, items 25, 26 and 27) can be supplied as a single 433cm LPFL

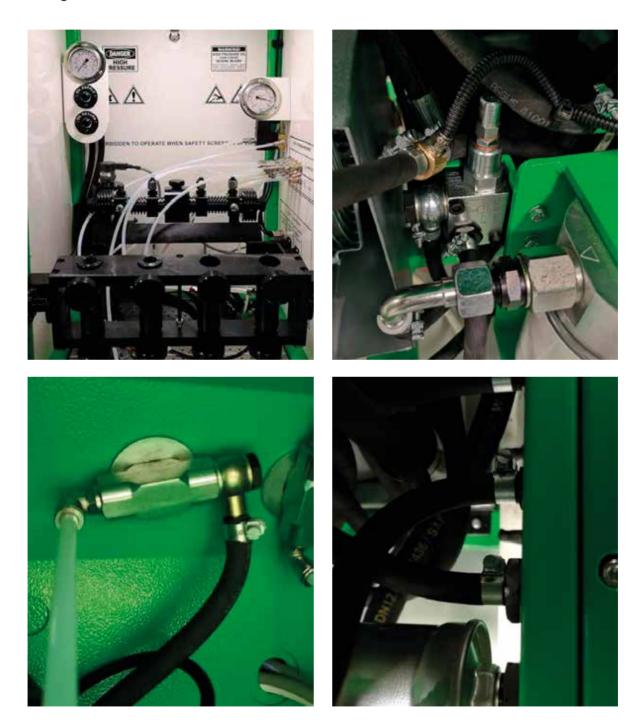


### TRIUMF

### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### DL-HEUI0037

Equipment for 0-8 bar low pressure generation for checking of HEUI unit injectors using the test bench TRIUMF





### TRIUMF

#### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### DL-HEUI0037

Equipment for 0-8 bar low pressure generation for checking of HEUI unit injectors using the test bench TRIUMF







### TRIUMF

### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### **HEUI INJECTOR TESTING TOOL**

HEUI CATERPILLAR 3126B, CATERPILLAR 3126E µ FORD 1998-2003 DIESEL 7.3 FUEL INJECTOR 128-6601, AD1831489C1 (INTERNATIONAL)



#### Equipment includes:

1. **DL-HEUI50223** Pump installation adapter nozzles



- 2. DL-HEUI50240 Set of hydraulic hoses and HP line 400mm 14x14mm
- 3. **DL-HEUI50219** Adapter holder with clamping strip.
- 4. DL-HEUI50230 Adapter cable for connecting the unit injector
- 5. **DL-UNI50084** Angular adapter M14.



Attention! All accessories are sold separately.



**HEUI CATERPILLAR C7-C9** 

#### Equipment includes:

- 1. DL-HEUI50221 Pump ins nozzles
  - Pump installation adapter nozzles



### CRUIS

The **CRUIS** stand allows you to perform procedures related to testing and checking Common-Rail injectors from manufacturers such as Bosch, Denso, Delphi, VDO (Siemens), Cummins, AZPI, as well as HEUI Caterpillar unit injectors installed on diesel engines of light and medium-sized automobiles, including high-speed engines of cars and trucks, buses, agricultural machinery and tractors.

• The software allows coding BOSCH isa / ima cod, Delphi C2i / C3i / C4i\*, Denso, VDO Siemens injectors.

- Stand working pressure up to 2400 bar.
- The stand is produced with the following characteristics of the main drive:
  - CRUIS 4 kW 380 V,
  - CRUIS 5.5 kW 380 V,
  - CRUIS 4 kW 220 V

\* Delphi C4i coding in CRUIS 5.5 kW 380 V

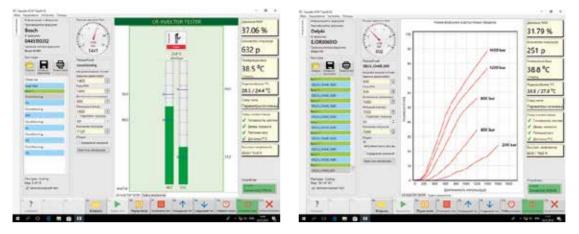
When installing additional equipment, the CASCADE program allows you to test HEUI unit injectors.





### CRUIS

### Software «CASCADE»



### The stand has a low noise level.

When starting the high-pressure pump, its smooth spin-up is ensured due to the use of a Schneider frequency converter in the stand.

The design of the CR test stand and the elements of its equipment meet the requirements of international standards in terms of static and dynamic parameters of ISO 4008/1 and ISO 4008/2.

For coding Delphi injectors, a device is used that allows creating a vacuum in the injector backflow line. The set of the device that creates a vacuum includes a gear pump, a venturi tube and an electric motor. The device is installed at the bottom of the stand next to the refrigeration unit. Also, in the working (test) area at the top right, a pressure gauge is installed that measures the vacuum with an electrovalve providing vacuum access to the nozzle. In this case, the vacuum is regulated by a throttle valve installed under the monitor on the left. When coding Delphi injectors in the CRUIS stand, a sensor is used that determines the injection start time.

The program with test plans is included in the package. Software updates that include new test plans are released twice a year and are provided free of charge.

### For thermal stabilization of the test liquid in the tank, the following are used:

1. two radiators with forced air cooling for the backflow line from the injection pump and the backflow line from the pressure accumulator (rail).

- 2. independent refrigeration unit with air heat exchanger.
- 3. tubular electric heater 1000 W

Operating pressure up to 1800 bar. It is possible to increase the working pressure up to 2400 bar.

The stand has an electronic measurement system with the ability to check one nozzle.



## STANDS and EQUIPMENT for testing common rail injectors and pumps

### CRUIS

### STAND EQUIPMENT



DL-CAU011 Cable for BOSCH injectors (universal)

DL-CAU012 Cable for Delphi injectors (C2i, C3i)

DL-CAU013 Delphi injector cable (C3i)

DL-CAU014 Cable for injectors BOSCH, SIEMENS

DL-CAU015 Cable for BOSCH injectors

DL-CAU016 Universal cargo injector cable

DL-CAU017 Cable for cargo injectors

DL-CAU09 Pressure sensor cable

DL-CAU10 Pressure regulator connection cable



### **CRUIS**

### STAND EQUIPMENT



Set of fittings for reverse drain nozzles CR BOSCH, DENSO, DELPHI, SIEMENS



### **DL-TVD41414**

High pressure tube М14 х М14 х 400мм (1 рс)







**DL-UNI50083** 

Adapter straight from M14 to M12 for tubes (1 pc)



**DL-UNI30497** 

Stub instead regulator pressure (1 pc)



RAIL (1 pc)

**DL-CR50162** 



DL-UNI31011

Clamping sleeves Ø17; Ø18,9; Ø19,2; Ø21 и Ø21,4



### **DL-UNI50343**

Spray nozzle nozzles Ø=9 мм (1 pc)



#### DL-54127

Leg (foot with adjustable bolt) (4 pcs)

### **OPTIONAL EQUIPMENT AND ACCESSORIES**



**DL-CR50015** 

Sensor for coding Ø=7мм (1 pc)







Handle for convenient stand movement. Set includes 2 handles

### CRUIS

#### **OPTIONAL EQUIPMENT AND ACCESSORIES**



**DL-MOK** 

Coupling adapter with check valve  $\emptyset$  6 x  $\emptyset$  6mm with collet





Valve for respons time (DELPHI)



### DL-CR50136

Check valve BOSCH electromagnetic injectors on the stand



### DL-CR50210

Return pressure valve for testing piezo injectors SIEMENS at the booth



### DL-CR50177

Return pressure valve for Bosch piezo injectors





### CRUIS

#### **OPTIONAL EQUIPMENT AND ACCESSORIES**



### DL-CR50013

Universal adapter for CR truck injectors (Bosch , Denso, Delphi Smart) for supply and backflow lines at angles of  $0^{\circ}$ ,  $4^{\circ}$  and  $13^{\circ}$ . It is used both for testing nozzles on test benches, and when checking the spray part of nozzles on a hand press.



#### DL-CR50140

Adapter for truck injectors CR Denso, including Volvo21952974 for connecting the supply and overflow drain



### **CRUIS**

### **OPTIONAL EQUIPMENT AND ACCESSORIES**

**DL-06** 

DL-CR31440

DL-012

DL-CR30036

**DL-018** 

DL-CR30595

DL-024

DL-CR31620

DL-032

DL-CR31430

DAF-SMART

injector

BOSCH

0445120134

CURSOR 9

**CRIN BOSCH** 

SISU Ø 26.6mm

DENSO Ø 27мм

ADAPTERS FOR TESTING CARGO INJECTORS



DL-02 DL-CR31046

**BOSCH MAN** Ø 29мм



DI -09 DL-CR31439

**BOSCH VOLVO** Ø 28мм



DL-015 DL-CR30822

**DENSO Ø 18,5 мм** Caterpillar, Perkins



DL-021 DL-CR31565

**BOSCH CRIN3** 0445124015



**DL-027 DL-CR31698** BOSCH

DL-035 DL-CR31561

DENSO

28



DL-04A DL-CR30848 **BOSCH RENAULT** 



DL-010

DL-CR31047 CUMMINS



DL-016 DL-CR31486

SCANIA 2/4 pin



DL-022 DL-CR31566

Caterpillar 3809888



DL-030 DL-CR30818

**BOSCH ЯМЗ-530** 



DL-036 DL-CR31563

> MB Actros Delphi A9362187 Mersedes Actros Euro 6



**DL-05N** DL-CR31048 CUMMINS



**DL-011** DL-CR30985

SIEMENS VDO FORD



DL-017 **DL-UNI30037** 

BOSCH DEUTZ Ø 21,5мм



DL-023 DL-CR31567

Delphi Smart injector Mersedes



DL-031 DL-CR31040

BOSCH 0445120303



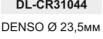
DL-037 **DL-CR50304** 



5296723 DENSO









DL-013 DL-CR30968

**DELPHI SMART INJECTOR** 



DL-019 DL-CR30804

BOSCH MTU



DL-025 DL-CR31625

DELPHI CRIN DAF EURO 6 SMART INJ



DL-033 DL-CR31479

DENSO





**DL-08** DL-CR31045

**BOSCH MAN** Ø 26мм



DL-014 **DL-UNI30038** 

DENSO



DL-020 DL-CR30596

SCANIA 4 PIN



DL-026 DL-CR31626

CUMMINS



DL-034 (CR31538)

**DENSO 1211** 11L1063 (095000-121)





### CRUIS

### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### DL-UNF20420R

### Set of pit filters for the injector testing on CRUIS test bench

Designed for pre-cleaning the injectors before they are tested on the test bench.



#### Contents of delivery:

- 1. **DL-UNF20300R** Settling filter (entrance on the right) 2pc
- 2. **DL-UNI31427** Adapter 1/8"xM14x1,5mm 4pc
- 3. 34-RL010602 Quick adapter straight Ø 6x1/4" 2pc
- 4. **34-RL310602** Quick adapter angled Ø 6x1/4" 2pc
- 5. **DL-UNI31399** Splitter ¼" 1pc

Attention! All items are also sold separately.



### DL-UNF20300R

Pit filter (entrance on the right) *The filter contains:* 

- 1. Holes for entry and exit M14x1,5mm
- 2. Mounting holes Ø 8mm



### DL-UNI31399

Splitter ¼" *Attached to the splitter:* 

- 1. **34-RL010802** Two quick adapters Ø 8mm (at ends)
- 2. **34-RL310601** Two corner fast adapter Ø 6mm (at the ends)



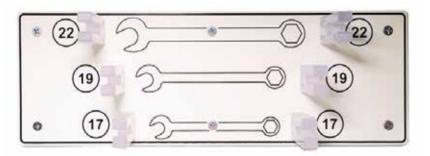
### CRUIS

**OPTIONAL EQUIPMENT AND ACCESSORIES** 

### DL-UNI01791

### Set of open-end spanners for the CRUIS stand.

The set has a convenient and secure fixation of keys directly in the test bench.



#### Contents of delivery:

- 1. DL-CRS50243 Key holder
- 2. DL-UNI31217 Open end wrench 17x17mm -1 pc
- 3. DL-UNI31219 Open end wrench 19x19mm -1 pc
- 4. DL-UNI31222 Open end wrench 22x22mm -1 pc

Attention! All keys are also sold separately.



### DL-ORV3

Air Defense Radiator for Cruis Stand Pressure Accumulator



### CRUIS

#### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### DL-HEUI0038

### Equipment for creating low pressure 0-8 bar CRUIS for

HEUI injector checks

24-DBK-06L	Crane 3-way 3/8"	1 pc
26-04020-06	Coupling 3/8"	1 pc
13-VMP-06	Safety valve (PC) 3/8"	1 pc
DL-UNI20023	Bracket for fastening the PC to the FTO (filter) bracket	1 pc
13-VRFB04	Choke 1/4"	1 pc
DL-UNI31316	Stainless steel washer 50 x 22mm "OILSUPPLY" (FUELSUPPLY)	1 pc
041616005	Washer persistent Ø otv. 22mm	1 pc
DL-UNI30020	Fitting 1/4 "x 8mm (draining into the tank from the PC)	1 pc
DL-UNI30859	Fitting 3/8" x 8mm (drain from PC to tank)	1 pc
DL-UNI30530	Fitting 3/8" x 3/8" (3-way valve - 2 pcs. PC - 1 pc.)	3 pcs
DL-UNI30363	Bolt Banjo 3/8"	2 pcs
DL-UNI30365	Bolt Banjo 1/4"	1 pc
12-03-005	Banjo fitting "female" Ø 14mm (1/4")	1 pc
34-MA16-08-14	Quick adapter elbow 8mm x1/4"	2 pcs
DL-UNI31036	Specialist. fitting 3/8" x 3/8" x 1/8" for supply	1 pc
DL-UNI31024	Specialist. fitting 3/8" x 3/8" for backflow	1 pc
A50051-06-06	Elbow fitting 3/8" x 8mm for special fittings	2 pcs
DL-UNI20015	pressure gauge bracket	1 pc
12-TG63-010	Flanged manometer 0-10 bar	1 pc
DL-UNI30613	Coupling for pressure gauge 1/4" x 1/8"	1 pc
34-MA12-04-18	Quick adapter Ø 4mm x 1/8"	1 pc
34-PTFE-04-250	PVC tube 4mm x 250mm for pressure gauge	1 pc



### CRUIS

### **OPTIONAL EQUIPMENT AND ACCESSORIES**

P1331012019-850	PVC pipe 8mm x 850mm for draining from the throttle into the tank	1 pc
TI-1ZTX-06-015	High pressure fuel line 3/8" x 3/8" L=15cm	1 pc
18-806-008-104	LPT Ø 8mm L=104cm (PC-Special Fitting "OilSupply")	1 pc
18-806-008-075	LPT Ø 8mm L=75cm (Throttle-Special Fitting "OilReturn")	1 pc
18-806-008-037	LPT Ø vnutr.8mm L=37sm (PC-Tank)	1 pc
DL-UNI20021	Washer labeled "FUELSUPPLY"	1 pc
DL-UNI20022	Washer labeled "FUELRETURN"	1 pc
0540159	Clamps 15mm	8 pcs
004636	Screw M3 x 6mm for fixing the pressure gauge	3 pcs
0089416	Screw M4 x 16mm for fastening special fittings	6 pcs
0083645	Screw M6 x 45mm + washer + nut for PC fixing	2 set
D-GM1504AN	Rubber washer. 1/4" for banjo bolts on throttle	2 pcs
D-GM1506AN	Rubber washer. 3/8" for 3-way valve	4 pcs

ATTENTION! It is allowed to supply low-pressure fuel lines (LPF) in one piece 216 cm long.

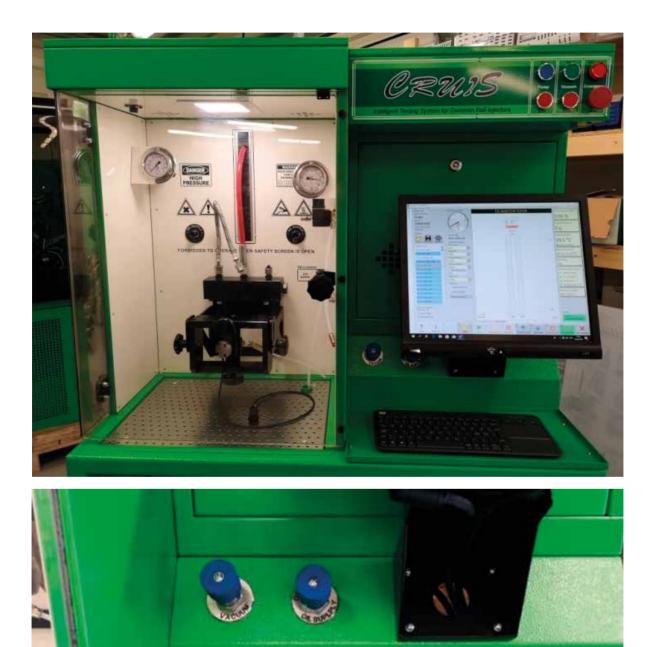


### CRUIS

### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### DL-HEUI0038

CRUIS low pressure tool 0-8 bar for testing pump injector HEUI





### CRUIS

#### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### DL-HEUI0038

CRUIS low pressure tool 0-8 bar for testing pump injector HEUI







### CRUIS

### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### DL-HEUI0038

CRUIS low pressure tool 0-8 bar for testing pump injector HEUI

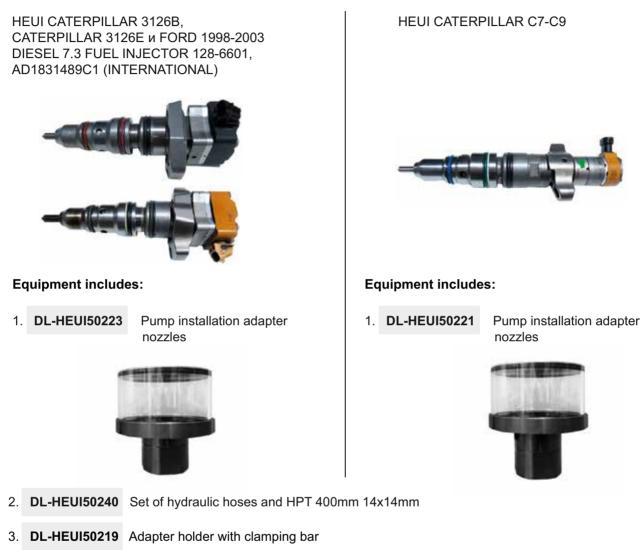




### CRUIS

### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### ACCESSORIES FOR CHECKING HEU INJECTORSI



- 4. **DL-HEUI50230** Adapter cable for connecting the pump injector
- 5. DL-UNI50084 Corner adapter M14



Attention! All accessories are sold separately.



The test bench **CR-Test4E** allows checking the following equipment of the COMMON RAIL system: BOSCH, DENSO, DELPHI nozzles, (SIEMENS optional), BOSCH, DENSO, DELPHI, SIEMENS pumps (CP1, CP2, CP3, HP2, HP3, DFP1, DFP3, DFP6, HP3, HP4), regulators and pressure sensors. The operating pressure of the test is up to 1800 bar. At the request of the customer, there is possibility to increase the working pressure to 2200 bar. Test bench is equipped with an electronic measuring system. Test bench includes a software with built-in test plans.

**CR-Test-4E** - test stand for Common Rail (CR) injectors and pumps with an electronic measurement system (simultaneous testing of up to 4 injectors); The performance of the CR injection pump is checked using a two-channel flow meter.





### Software

### «CASCADE»

The complex includes software software for testing CR injectors



### **«DieselTest»**

The complex includes software pump testing software





## Программное обеспечение «CASCADE»



The software has a user-friendly interface. The program contains built-in test plans for testing and coding Bosch, Delphi, Denso, Siemens (VDO) injectors. Functions for creating new test plans, editing built-in ones, as well as creating targets for Delphi C2i, C3i, C4i injectors are available. The results and progress of testing are displayed in graphical form and saved to a file and sent to print.

# The stand is equipped with a modern system of thermal stabilization test liquids in the tank, which includes:

1. Two radiators with forced air cooling for the backflow line from the injection pump and the backflow line from the pressure accumulator (rail).

2. Pressure accumulator with cooling. The rail cooling line includes an individual air-cooled radiator and a circulation pump.

- 3. Independent refrigeration unit with air heat exchanger.
- 4. Three individual thermal controllers for controlling radiator fans.
- 5. Tubular electric heater with a power of 1000 W for heating the test liquid in the tank.
- Operating pressure up to 2400 bar.
- The pressure is controlled by two regulators.
- The stand has an electronic measurement system with the ability to check four injectors at the same time.
- Drive motor power for checking high pressure fuel pump 11 kW
- Drive motor power for checking injectors 5.5 kW
- The stand is equipped with frequency converters.





# STANDS and EQUIPMENT for testing common rail injectors and pumps

# CR-Test4E

### STAND EQUIPMENT



Liquid flow meter for simultaneous checking from 1 to 4 nozzles. Installed on a stand.



### FMDE-520

Liquid flow meter for pumps 2-channel. Installed on a stand.



### PTC-2520

**Pump control controller.** Installed on a stand.



**Injector controller.** Installed on a stand.



### STAND EQUIPMENT



DL-24CRM

Set of fittings for reverse draining CR injectors



DL-UNI50343

Nozzles for sprayers nozzles Ø= 9 mm (1 pc.)



DL-UNI50083

Adapter straight with M14 on M12 for tube (4 pcs.)



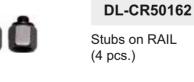
DL-TVD61414	High pressure tube M14xM14x600mm - 2 pcs.
DL-TVD51414	High pressure tube M14xM14x500mm - 5 pcs.

590 590 590 590

D-OCDE

Reverse set drain nozzle Denso (4 pcs.)

0000







Angle adapter M14 x M14 (2 pcs.)





Leg (foot with regulating bolt) (4 pcs.)



Stub instead regulator pressure (5 pcs.)

**DL-UNI30497** 



Door key (4 pcs.)





# STANDS and EQUIPMENT for testing common rail injectors and pumps

# CR-Test4E

### STAND EQUIPMENT





### DL-CR10015

Nozzle holder frame with cups **(DL-UNI50342)** for sprayers 7 mm (4 pcs.) and clamping sleeves

DL-UNI31019 Ø=17 (4pcs) DL-UNI31020 Ø=18,9 (1pc) DL-UNI31021 Ø=19,2 (1pc) DL-UNI31022 Ø=21 (1pc) DL-UNI31231 Ø=21,4 (1pc)

#### DL-CR30522KIT

Pressure accumulator RAIL 1 (distributive) for 3 regulators pressure for checking injectors and CR pumps. Installed on a stand.



Pressure accumulator RAIL 2 for checking injectors and pumps with cooling (for 2 pressure regulators) Installed on a stand.



### DL-CR31053KIT

RAIL 3 pressure accumulator for 3 pressure regulators (with cooling) to test pumps. Installed on a stand.



# STANDS and EQUIPMENT for testing common rail injectors and pumps

# CR-Test4E

### STAND EQUIPMENT



### DL-UNI50008

Bracket for pumps, Bosch standard 125 mm installed at the stand

### FLANGES



### DL-UNI30428

Mounting flange for injection pump 107 mm CP-3, installed on the stand



### DL-UNI30465

Mounting flange for injection pump CR (BMW, RENAULT, MB, Peugeot)



### DL-UNI30464

Mounting flange for injection pump CR ( MB )



### DL-UNI30474

Mounting flange for injection pump MAN CP3 MAN, similar to Bosch 1685720258



### DL-UNI30884

Mounting flange for injection pump MAN CP3.4, similar to Bosch 1685720312



### DL-UNI30886

Mounting flange for injection pump 107 mm CP2 Bosch 0445020036 (Renault).



### DL-CR30860

Mounting flange for injection pump CR DENSO HP2 , HP3.





# COUPLINGS

DL-CR31251 Coupling cone 24mm for

High pressure fuel pump CR CP-3

### DL-CR31271

Coupling cone 17mm for checks of CR pumps and high pressure fuel pump VE

### DL-CR31269

Cone coupling 19mm for checks of CR pumps and high pressure fuel pump VE



### DL-CR31248

Coupling spline (11 spline) for testing pumps MAN CR CP-3



#### DL- UNI31025

Coupling for injection pump Bosch CP1 (included insert UNI31028 with groove width 8 mm) and for high pressure fuel pump VDO

(included insert UNI31027 with 9 mm groove). Can be used on Bosch stands instead of coupling 1685702090.





# Cone check fuel p



### STAND EQUIPMENT



#### **DL-FMDE064**

Hose for measuring the "supply" of the injection pump" from the pressure accumulator to the fitting entrance to the cooling radiator (RAIL -CR PUMP FM1) ø12x3/8x200mm with bolt, Banjo fitting and 2 gaskets. 1 PC.

# DL- FMDE025

Set of 2 hoses for connection from the fittings on the front panel "CR PUMP FM1" and "CR PUMP FM2" to connectors "IN1" and "IN2" of the controller flow measurement "FMDE". (hoses installed on the stand). The kit includes:

- Hose 3/8x3/8x250mm 1 pc.
- Hose 3/8x3/8x350mm 1 pc.



#### DL-FMDE045

Set of 2 hoses for connection from fittings "OUT 1" and "OUT 2" flow measurement controller "FMDE" to the fittings drain into the tank of the stand (hoses are installed on the stand) The set includes:

- Hose 3/8x3/8x1550mm 1 pc.
- Hose 3/8x3/8x1550mm 1 pc.



DL-1CP2304

Set of 5 hoses for pumps CP1, CP2, CP3. The set includes:

- Hose ø12x3/8x700mm -1pc.
- Hose ø12x3/8x800mm 1 pc.
- Hose ø12x3/8x850mm 1 pc.
- Hose ø12x3/8x700mm -1pc.
- Hose ø12x3/8x800mm 1 pc.
- Hose ø12x3/8x850mm 1 pc.



**DL-2UMS004** 

Set of 7 hoses for various connections. The set includes:

- Universal hose Ø8x3/8x1000mm. 3 pcs.
- Universal hose Ø10x3/8x1000mm. 4 pcs.



# STANDS and EQUIPMENT for testing common rail injectors and pumps

# **CR-Test4E**

STAND EQUIPMENT

### **Connection set**

**DL-KUK0040** 



Kit includes :

- Conical fitting 3/8 "x10 mm 4 pcs.;
- Taper fitting 3/8"x8 mm 3 pcs.;
- Clamp Ø15 7 pcs.;
- Clamp Ø10 7 pcs.;
- Banjo fitting Ø16 mm x 10 mm 2 pcs.;
- Banjo fitting Ø14 mm x 10 mm 2 pcs.;
- Banjo fitting Ø12 mm x 8 mm 2 pcs.;
- Bolt Banjo M16 2 pcs.;
- Bolt Banjo M14 2 pcs.;
- Bolt Banjo M12 6 pcs.;
- Gasket Ø12 mm 16 pcs.;
- Gasket Ø14 mm 12 pcs.;
- Gasket Ø16 mm 12 pcs.;
- Gasket Ø21 mm (1/2") 1 pc.;
- Plastic fitting for VDO pumps (Siemens) 1 pc.
- Fitting 1/2"x3/8" 1 pc.;
- Fitting M16x1.5x3/8" 1 pc.
- Adapter M12xM16 (pitch 1.5 mm) 4 pcs.
- Adapter M12xM14 (pitch 1.5 mm) 4 pcs.
- Adapter M12xM12vn (pitch 1.5 mm) 4 pcs.



### STAND EQUIPMENT



0 281 002 842

Pressure sensor Bosch (2pcs) on Rail, installed on the stand



pressure regulator Bosch (5pcs) on Rail, installed on the stand



















DL-CAU001 Cable for BOSCH injectors (universal)

DL-CAU002 Cable for Delphi injectors (C2i, C3i)

DL-CAU003 Delphi injector cable (C3i)

DL-CAU004 Cable for injectors BOSCH, SIEMENS

DL-CAU005 Cable for BOSCH injectors

DL-CAU007 Cable for cargo injectors

DL-CAU006 Universal cargo injector cable

DL-CAU09 Pressure sensor cable

DL-CAU10 Pressure regulator connection cable



#### **OPTIONAL EQUIPMENT AND ACCESSORIES**



**DL-MOK** 

Coupling adapter with check valve  $\emptyset$  6 x  $\emptyset$  6mm with collet





Valve for respons time (DELPHI)





Check valve BOSCH electromagnetic injectors on the stand



### DL-CR50210

Return pressure valve for testing piezo injectors SIEMENS at the booth



### DL-CR50177

Return pressure valve for Bosch piezo injectors





#### **OPTIONAL EQUIPMENT AND ACCESSORIES**



#### DL-CR50013

Universal adapter for CR truck injectors (Bosch , Denso, Delphi Smart) for supply and backflow lines at angles of  $0^{\circ}$ ,  $4^{\circ}$  and  $13^{\circ}$ . It is used both for testing nozzles on test benches, and when checking the spray part of nozzles on a hand press.



#### DL-CR50140

Adapter for truck injectors CR Denso, including Volvo21952974 for connecting the supply and overflow drain



#### **OPTIONAL EQUIPMENT AND ACCESSORIES**

ADAPTERS FOR TESTING CARGO INJECTORS



DL-02 DL-CR31046

BOSCH MAN Ø 29мм



DL-09 DL-CR31439

BOSCH VOLVO Ø 28мм



DL-015 DL-CR30822

DENSO Ø 18,5 мм Caterpillar, Perkins



DL-021 DL-CR31565

BOSCH CRIN3 0445124015



DL-027 DL-CR31698 BOSCH



DL-035 DL-CR31561

DENSO



DL-04A DL-CR30848 BOSCH RENAULT





DL-CR31047 CUMMINS



DL-016 DL-CR31486

SCANIA 2/4 pin



DL-022 DL-CR31566

Caterpillar 3809888



**DL-030 DL-CR30818** BOSCH ЯМ3-530



DL-036 DL-CR31563

equinment for diesel





DL-05N DL-CR31048 CUMMINS



DL-011 DL-CR30985

SIEMENS VDO FORD



DL-017 DL-UNI30037

BOSCH DEUTZ Ø 21,5мм



DL-023 DL-CR31567

Delphi Smart injector Mersedes



DL-031 DL-CR31040

BOSCH 0445120303



DL-037 DL-CR50304





**DL-CR31440** DENSO Ø 27mm



DL-012 DL-CR30036 CRIN BOSCH

SISU Ø 26,6мм



DL-018 DL-CR30595

CURSOR 9



DL-024 DL-CR31620

DAF-SMART injector



DL-032 DL-CR31430



DL-038 DL-CR31606

5296723 DENSO



**DL-07 DL-CR31044** DENSO Ø 23,5мм



DL-013 DL-CR30968

DELPHI SMART INJECTOR



DL-019 DL-CR30804

BOSCH MTU



DL-025 DL-CR31625

DELPHI CRIN DAF EURO 6 SMART INJ



DL-033 DL-CR31479

DENSO





DL-08 DL-CR31045

BOSCH MAN Ø 26мм



DL-014 DL-UNI30038

D. .

DENSO



DL-020 DL-CR30596

SCANIA 4 PIN



DL-026 DL-CR31626

CUMMINS



DL-034 (CR31538)

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#### **OPTIONAL EQUIPMENT AND ACCESSORIES**

### ACCESSORIES FOR CHECKING HEU INJECTORSI

HEUI CATERPILLAR 3126B, CATERPILLAR 3126E µ FORD 1998-2003 DIESEL 7.3 FUEL INJECTOR 128-6601, AD1831489C1 (INTERNATIONAL)



#### Equipment includes:

1. **DL-HEUI50223** Pump installation adapter nozzles



- 2. DL-HEUI50240 Set of hydraulic hoses and HPT 400mm 14x14mm
- 3. DL-HEUI50219 Adapter holder with clamping bar
- 4. DL-HEUI50230 Adapter cable for connecting the pump injector
- 5. DL-UNI50084 Corner adapter M14



Attention! All accessories are sold separately.



**HEUI CATERPILLAR C7-C9** 

#### Equipment includes:

- 1. DL-HEUI50221 Pump ins nozzles
  - Pump installation adapter nozzles





CR-Test4E CR-JET-4EM

**OPTIONAL EQUIPMENT AND ACCESSORIES** 

#### DL-KD020 DELPHI INJECTOR CODER FOR STAND CR-TEST-4E AND CR-JET-4EM



#### Contents of delivery:

- 1. Control valve
- 2. Vacuum pressure gauge
- 3. \*Pressure accumulator (Rail)
- 4. Sensor for coding
- 5. Pressure valve for Delphi injectors
- 6. Venturi tube
- 7. Signal booster

- 9. Tap adjustment
- 10. Electric motor ~230V 50Hz
- 11. Coupling
- 12. Bracket
- 13. Vacuum pump
- 14. Tee with fitting
- 15. Connecting hose a 8mm
- 16. Connecting hose a 10mm

\* for additional order



CR-Test4E CR-Test-2P

**OPTIONAL EQUIPMENT AND ACCESSORIES** 

### DL-UNF20400

A set of sedimentation filters for checking high-pressure fuel pumps at the stand CR-TEST-4E and CR-TEST-2P



1.	DL-UNF20300L	Settling filter (entrance on the left) - 2 pcs.
2.	DL-UNI50211	Extended adapter 3/8" x M14 x 1.5mm - 2 pcs.
3.	DL-UNI31161	Reducer short 3/8" x M14 x 1.5mm - 2 pcs.
4.	DL-UNI50213	mounting bracket filters.

### DL-UNF20410

# Sump filter kit for checking injectors at the stand CR-TEST-4E

Designed for pre-cleaning nozzles before their check on the stand.



#### Contents of delivery:

1.	DL-UNF20300L	Settling filter (entrance on the left) - 1 pc.
2.	DL-UNF20300R	Settling filter (entrance on the right) - 1 pc.
3.	DL-UNI31427	Adapter 1/8" x M14 x 1.5mm - 4 pcs.
4.	34-RL020602	Quick adapter straight Ø 6x1/4" – 2 pcs.
5.	34-RL310602	Quick adapter angled Ø 6x1/4" – 2 pcs.
6.	DL-UNI50212	Filter mounting bracket.
7.	DL-UNI30090	Mounting bolt with M14 nut.





CR-Test4E CR-Test-2P

**OPTIONAL EQUIPMENT AND ACCESSORIES** 



DL-CR31497

Adapter for measuring the pressure of the CR booster pump

ATTENTION! The adapter is supplied without tube fittings and pressure gauge!

DL-CR31497KIT

Adapter kit for measuring the pressure of the Common Rail feed pump.

Contents of delivery:

1.	DL-SP09570	L-shaped "quick" adapter M5 x 4mm
2.	DL-SP09580	The union "mother" 1/4" x 4 mm for the manometer
3.	DL-P1002	Flexible PVC tube dia.4mm (100cm)
4.	D-12-TV63-016	Pressure gauge 16 bar with bottom fitting 1/4"



#### DL-ORV9

Air-cooled radiator for testing MAN high-pressure fuel pumps workbenches CR-TEST-2P/CR-TEST-4E



TRIUMFCR-Test-4ECRUISCR-JET-4EM

**OPTIONAL EQUIPMENT AND ACCESSORIES** 

### Set of split bushings (basic) for installing injectors



ATTENTION! All bushings are sold separately.

Set of split bushings (additional) for installing injectors



ATTENTION! All bushings are sold separately.

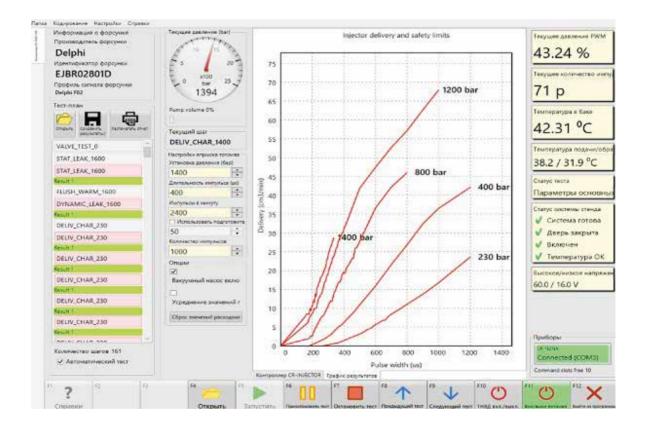


TRIUMFCR-Test-4ECRUISCR-JET-4EM

**OPTIONAL EQUIPMENT AND ACCESSORIES** 

### C4i-CODE DELPHI C4i injector coding

Software for the CASCADE program that allows code DELPHI C4i injectors on CRUIS, TRIUMF, CR-Test-4E test benches, CR Jet





# **CR-Test2P**

Stand **CR-Test2P** for testing high pressure fuel pumps Common Rail system.

The CR-TEST-2P test bench allows you to perform procedures related to the testing of high-pressure fuel pumps of the Common Rail system of various manufacturers (Bosch, Denso, Delphi, VDO (Siemens)). The design of the test stand CR-TEST-2P and the elements of its equipment meet the requirements of international standards in terms of static and dynamic parameters-ISO 4008/1 and ISO 4008/2.

**CR-Test-2P** – is a CR pump test stand with a 2-channel electronic measurement unit.







# **CR-Test2P**

### Software







# STANDS and EQUIPMENT for testing common rail injectors and pumps

# **CR-Test2P**

### STAND EQUIPMENT





# FMDE-520

**Liquid flow meter for pumps 2-channel.** Installed on a stand.



**Pump control controller.** Installed on a stand.



0 281 002 842

Safety bosch valve on rail, installed on the stand



### DL-CR31053

RAIL 3 pressure accumulator for 3 regulators pressure (with cooling) to test pumps. Installed on a stand.



0 281 002 494

Bosch pressure regulator on Rail (3pcs), installed at the stand



### 0 281 002 842

Bosch pressure sensor on Rail, installed at the stand

# DL-54127

Leg (foot with regulating bolt) (4 pcs.)





## STANDS and EQUIPMENT for testing common rail injectors and pumps

# **CR-Test2P**



**DL-CAU018** 

Connection cable pressure sensor



### STAND EQUIPMENT



**DL-CAU019** 

Connection cable pressure regulator LP-2

**DL-UNI50008** 

Bracket for pumps, Bosch standard 125 mm. Installed on a stand.



**DL-CAU020** 

Connection cable pressure regulator NR-3

### **FLANGES**



### **DL-UNI30428**

Mounting flange for injection pump 107 mm CP-3, installed on the stand

### **DL-UNI30465**

Mounting flange for injection pump CR (BMW, RENAULT, MB, Peugeot)





Mounting flange for injection pump CR (MB)



### **DL-UNI30474**

Mounting flange for injection pump MAN CP3 MAN, similar to Bosch 1685720258





Mounting flange for injection pump MAN CP3.4, similar to Bosch 1685720312





# **DL-UNI30886**

Mounting flange for injection pump 107 mm CP2 Bosch 0445020036 (Renault).

### **DL-CR30860**

Mounting flange for injection pump CR DENSO HP2, HP3.







**COUPLINGS** 

Coupling cone 24mm for High pressure fuel pump CR CP-3

## **DL-CR31271**

Coupling cone 17mm for checks of CR pumps and high pressure fuel pump VE

## **DL-CR31269**

Cone coupling 19mm for checks of CR pumps and high pressure fuel pump VE



Coupling spline (11 spline) for testing pumps MAN CR CP-3



# **DL-UNI31025**

Coupling for injection pump Bosch CP 1(included insert UNI31028 with groove width 8 mm) and for high pressure fuel pump VDO

(included insert UNI31027 with 9 mm groove). Can be used on Bosch stands instead of coupling 1685702090.













# **CR-Test2P**

STAND EQUIPMENT



#### DL-FMDE014

Hose for measuring the "supply" of the injection pump" from the pressure accumulator to the inlet fitting into the cooling radiator (RAIL-CR PUMP FM1) ø 12 x 3/8 x 900 mm with bolt, Banjo fitting and 2 gaskets. - 1 PC.



#### DL-FMDE024

Set of 2 hoses for connection from fittings on the front panel "COOLLER OUT1" and "COOLLER OUT2" to connectors "IN1" and "IN2" of the controller flow measurement "FMDE". (hoses are installed on the stand)

The set includes:

- Hose ø 3/8 x 3/8 x 700 mm 1 pc.
- Hose ø 3/8 x 3/8 x 800 mm 1 pc.



**DL-1CP2304** 

Set of 5 hoses for pumps CP1, CP2, CP3. The set includes:

- Hose ø 12 x 3/8 x 700 mm 1 pc.
- Hose ø 12 x 3/8 x 800 mm 1 pc.
- Hose ø 12 x 3/8 x 850 mm 1 pc.
- Hose ø 12 x 3/8 x 900 mm 1 pc.
- Hose ø 3/8 x 3/8 x 1250 mm 1pc.



**DL-2UMS004** 

Set of 7 hoses for various connections. The set includes:

- Universal hose Ø 8 x 3/8 x 1000 mm 3 pcs.
- Universal hose Ø 10 x 3/8 x 1000 mm 4 pcs.



# STANDS and EQUIPMENT for testing common rail injectors and pumps

# **CR-Test2P**

STAND EQUIPMENT

## **Connection set**

**DL-KUK0040** 



Kit includes :

- Conical fitting 3/8 "x10 mm 4 pcs.;
- Taper fitting 3/8"x8 mm 3 pcs.;
- Clamp Ø15 7 pcs.;
- Clamp Ø10 7 pcs.;
- Banjo fitting Ø16 mm x 10 mm 2 pcs.;
- Banjo fitting Ø14 mm x 10 mm 2 pcs.;
- Banjo fitting Ø12 mm x 8 mm 2 pcs.;
- Bolt Banjo M16 2 pcs.;
- Bolt Banjo M14 2 pcs.;
- Bolt Banjo M12 6 pcs.;
- Gasket Ø12 mm 16 pcs.;
- Gasket Ø14 mm 12 pcs.;
- Gasket Ø16 mm 12 pcs.;
- Gasket Ø21 mm (1/2") 1 pc.;
- Plastic fitting for VDO pumps (Siemens) 1 pc.
- Fitting 1/2"x3/8" 1 pc.;
- Fitting M16x1.5x3/8" 1 pc.
- Adapter M12xM16 (pitch 1.5 mm) 4 pcs.
- Adapter M12xM14 (pitch 1.5 mm) 4 pcs.
- Adapter M12xM12vn (pitch 1.5 mm) 4 pcs.



# ADDITIONAL EQUIPMENT FOR STANDS



DL-USN0021

# Universal cradle for CR pumps

Contents of delivery:

- Rotary stand 1 pc.
- Flange kit for mounting CR pumps, 6 pcs.
- Set of 4 pump support plates.





## ADDITIONAL EQUIPMENT FOR STANDS



**DL-ORV2** 

### Cooling stand of radiator-fan type.

External heat exchangers are designed for additional temperature adjustment test liquid. They can be connected to various flows with pressure up to 0.4 MPa.

- Number of radiators: 2
- Connection fitting: M14x1.5
- Supply voltage: ~220V50Hz
- Power consumption: 20W (0.23A; 0.5A max)
- Dimensions : width 500, height 770, depth 370 (mm)
- Total weight: net ~24kg, gross ~30kg



DL-MSP

### Mobile oil station for stands

- Operating pressure 0-10 bar
- Capacity at 3 bar -150 liters / hour
- Fine filter 10 µm
- Tank 20 liters
- Power supply 380 V 50 Hz
- Power consumption 0.37 kW
- Dimensions: width 300, height 800, depth 420 (mm)
- Total weight: net ~54kg, gross ~60kg



# ADDITIONAL EQUIPMENT FOR STANDS



#### DL-SRS020

### **Calibration fluid SRS**

ISO 4113-CV-AW (VS 15665-OL-CV), canister 20 liters.

Used in test benches for testing of CR injectors, unit injectors PLD sections.



### **CRS** Calibrol

# Calibration fluid for diesel fuel equipment

The CRS Calibrol calibration fluid (20 litre plastic canister container) is a test oil for testing injectors and pumps of diesel fuel equipment.

**CRS Calibrol** is a low viscosity working oil for calibration with a very tight viscosity tolerance. It is distinguished by an exceptional level of protection against wear and corrosion, as well as a low tendency to foaming.

#### DL-SRS200

### **Calibration fluid SRS**

ISO 4113-CV-AW (VS 15665-OL-CV), Barrel 200 liters.

Used in test benches for testing of CR injectors, unit injectors PLD sections.





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### ADDITIONAL EQUIPMENT AND ACCESSORIES FOR STANDS



### DL-TVD-S

High Pressure Tube 1000x14x14 1800 Bar

### DL-TVD-K

**High Pressure Tube** 

**DL-TVD-K1000** (1000x14x14 2500 Bar) **DL-TVD-K830** (830x14x14 2500 Bar) **DL-TVD-K700** (700x14x14 2500 Bar)



DL-TVD-B

High Pressure Tube 800x14x14 2500 Bar



DL-TVD-G

High Pressure Tube 650x14x14 2500Bar



DL-TVD

High Pressure Tube for stands and rigs:

DL-TVD31212 (300x12x12), DL-TVD31214 (300x12x14), DL-TVD31414 (300x14x14), DL-TVD41212 (400x12x12), DL-TVD41214 (400x12x14), DL-TVD41414 (400x14x14), DL-TVD51212 (500x12x12), DL-TVD51214 (500x12x14), DL-TVD51414 (500x14x14), DL-TVD61212 (600x12x12), DL-TVD61214 (600x12x14), DL-TVD61414 (600x14x14)



### DL-TVD-M

High pressure metal tube

DL-TVD-M81412	(800)	M14xM12
DL-TVD-M81414	(800)	M14xM14
DL-TVD-M61412	(600)	M14xM12
DL-TVD-M61414	(600)	M14xM14



DL-CR14P2000 Pressure gauge 2000 bar



DL-CR50015

Sensor for coding



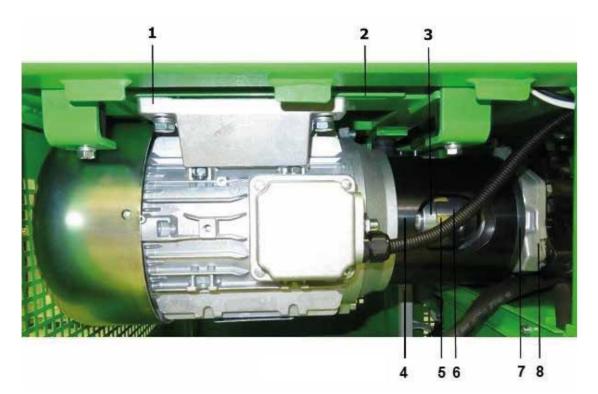
### ADDITIONAL EQUIPMENT AND ACCESSORIES FOR STANDS





### ADDITIONAL EQUIPMENT AND ACCESSORIES FOR STANDS TRIUMF, CRUIS , CR-TEST-4E AND CR-JET-4EM

# Re-equipment of stands CRUIS, TRIUMF, CR-Jet for electric motors 5.5 kW



1.	DL-EDF0055	Electric motor flange 5.5 kW
2.	DL-UNI50277	Motor Mounting Bracket 5.5 kW for TRIUMF, CR-Jet stands
	DL-UNI31521	Motor Mounting Bracket 5.5 kW for CRUIS stand
3.	DL-UNI31444	Coupling for the engine for injection pump 0445020139, 0445020088
	DL-UNI31502	Coupling on the engine for injection pump 0445020078, 0445020119
4.	DL-UNI31449	Clip for fastening the injection pump to the electric motor
5.	DL-MUP0060	Compensatory polyurethane insert
6.	DL-UNI31443	Coupling for injection pump 0445020139
	DL-UNI31520	Coupling for injection pump 0445020119
7.	DL-UNI31459	Flange for injection pump 0445020078 (119,175,105)
8.	ТНВД 020139	High pressure fuel pump Bosch 0445020139



### ADDITIONAL EQUIPMENT AND ACCESSORIES FOR STANDS TRIUMF, CRUIS , CR-TEST-4E AND CR-JET-4EM







Electric motor flange 5.5 kW

### DL-UNI50277

Electric motor mounting bracket 5.5kW for stands TRIUMF, CR-Jet

DL-UNI31521

**DL-UNI31444** 

**DL-UNI31449** 

**DL-MUP0060** 

Motor mounting bracket 5.5 kW for stands CRUISE

Coupling for the engine for injection pump 0445020139, 0445020088

DL-UNI31502 Coupling on the engine for injection pump 0445020078, 0445020119



Clip for fastening the injection pump to the electric motor

Compensatory polyurethane insert

e



DL-UNI31443 Coupling for injection pump 0445020139

DL-UNI31520 Coupling for injection pump 0445020119

DL-UNI31459 Flange for injection pump 0445020078 (119,175,105)

**ТНВД 020139** High pressure fuel pump BOSCH 0445020139



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### MODERNIZATION KIT FOR CR-JET-4E STANDS. INSTALLING THE CASCADE PROGRAM

#### **DL-KMS-JET** List of modernization components:

- Electronic part / set of mounting materials
- Delphi piezo transducer for Cascade software
- Personal Computer / PC Installation Accessories
- Frequency converter / Drive control software / Mounting kit
- Vacuum system / Mounting kit
- Mounting elements for inverter and vacuum pump
- Vacuum adjustment unit / Mounting kit
- Vacuum control unit
- Bench retrofit up to 2400 bar / hydraulic kit



The Cascade software has a user-friendly interface. The program contains built-in test plans for testing and coding Bosch, Delphi, Denso, Siemens (VDO) injectors. The functions of creating new test plans, editing built-in ones, as well as creating targets for Delphi C2i, C3i, C4i injectors are available. The results and progress of testing are displayed in graphical form and saved to a file and sent to print.

Cascade software allows coding BOSCH isa / ima cod, Delphi C2i / C3i / C4i\*, Denso, VDO Siemens injectors.

Stand working pressure up to 2400 bar.

\* coding Delphi C4i in the configuration of the stand 5.5 kW 380 V



# **PUMP TEST.02**

### **Common-Rail High Pressure Pump Testing Equipment**



PUMP TEST .02

The kit includes:

1. The **PTC-2520** device is designed to provide user-programmable control signals to Common Rail injection pump pressure regulators to test their performance.

2. Device **FMDE-520**, designed to measure the performance of the Common Rail injection pump in two channels.

- 3. Tool rack on wheels for easy operation.
- 4. A set of adapter cables.
- 5. Liquid fine filters (2 pcs.)
- 6. Software.







Anne i sene i i here i sene i sene i i here i sene i sene i sene i here i sene i sene i sene i sene i here i sene i sene i sene i sene i here i sene i sene i sene i sene i sene i here i sene i sene i sene i sene i sene i here i sene i sene i sene i sene i sene i sene i here i sene i here i sene				-	1	
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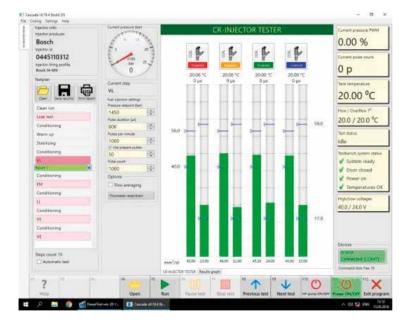
## **CR-TESTER** . CRT-5040

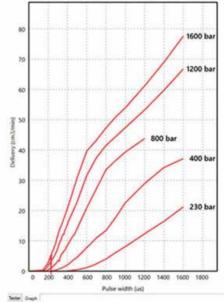
4-channel device for testing and testing Common Rail injectors Bosch, Denso, Delphi, Siemens VDO with a set of cables.

The device has the ability to connect to the FLAGMAN-FLOW beakerless measuring system with the ability to generate correction codes for Delphi C2i / C3i, BOSCH, DENSO injectors

At the CR-TESTER device. CRT-5040 has the functions of controlling the curtain of the metering unit, stopping the high-pressure pump, measuring and controlling the temperature in the tank, measuring the temperature of the back-tested injectors, measuring the injection start time, etc.

Computer control of the set through the CASCADE software.







# 1

# STANDS and EQUIPMENT for testing common rail injectors and pumps



## **FLAGMAN-FLOW**

CR injector dosage measuring unit, 8-channel for CR-TESTER device. CRT-5040

Computer control of the set through the CASCADE software.

# **FLAGMAN-FULL**

CR injector test kit

The FLAGMAN-FULL complex is intended for testing CommonRail injectors manufactured by Bosch, Denso, Delphi, Siemens VDO at the stand.

The measurement takes place in an 8-channel FLAGMAN-FLOW system without a beaker. There is a possibility of retrofitting with a hardware-software complex for coding injectors.

Computer control of the set through the CASCADE software.





# FLAGMAN-CODE (FLAGMAN-CODE-L)

CR injector test kit

The FLAGMAN-CODE complex is designed to test common rail injectors manufactured by Bosch, Denso, Delphi, Siemens VDO at the stand.

The measurement takes place in the 8-channel FLAGMAN-FLOW system without beakers. The complex consists of a FLAGMAN-FLOW measuring unit and a CR-TESTER controller. CRT-5040. The complex is also equipped with a vacuum system for coding Deiphi C2i, C3i injectors. Computer control of the set through the CASCADE software.

The FLAGMAN-CODE-L kit is equipped with equipment for installing injectors on a test bench.

#### DL-CR50015

Sensor for coding — upon additional order





# **FLAGMAN-CODE**

CR injector test kit

The FLAGMAN-FULL complex is intended for testing CommonRail injectors manufactured by Bosch, Denso, Delphi, Siemens VDO at the stand.

The measurement takes place in an 8-channel beakerless FLAGMAN-FLOW system. The complex consists of a FLAGMAN-FLOW measuring unit and a CR-TESTER controller. CRT-5040. The complex is also equipped with a vacuum system for coding Deiphi C2i, C3i injectors. Computer control of the set through the CASCADE software.



DL-CR50015

Sensor for coding — upon additional order

# Kit of delivery FLAGMAN-CODE

1 pc
1 pc
1 set
1 pc
1 pc
1 set
1 pc
1 set
1 pc
1 pc
1 pc
1 pc
1 set
1 pc
4 pcs
1 pc
1 pc
1 set





# FLAGMAN-CODE-L

CR injector test kit

The FLAGMAN-FULL complex is intended for testing common rail injectors manufactured by Bosch, Denso, Delphi, Siemens VDO at the stand.

The measurement takes place in an 8-channel beakerless FLAGMAN-FLOW system. The complex consists of a FLAGMAN-FLOW measuring unit and a CR-TESTER controller. CRT-5040. The complex is also equipped with a vacuum system for coding Deiphi C2i, C3i injectors. Computer control of the set through the CASCADE software.



#### DL-CR50015

Sensor for coding — upon additional order

# Kit of delivery FLAGMAN-CODE-L

Measurement unit without beaker FLAGMAN-FLOW					1 pc
Controller CR-TESTER. CRT-5040					1 pc
Vacuum system	1				1 set
Software					1 pc
Passport (techr	ical description, instructior	n mar	nual)		1 pc
	ng cables for FLAGMAN-F R controller. CRT-5040	LOW	measuring unit	t	1 set
Extension cord	for injector cables: "Injecto	or" so	cket -1.5m		1 pc
Adapter cable f	or injectors				1 set
Adapter cable f	or high pressure regulators	6			1 pc
Adapter cable for low pressure regulators			1 pc		
Adapter cable for pressure sensor			1 pc		
Power cable 22	0 V				1 pc
Connectors for self-manufacturing of cables into sockets: "Protection", "TanktC", "RegtC", "Cycle", "Pump", "Invertor", "Rpm"				1 set	
Temperature sensor for monitoring the temperature of the liquid in the tank: "TanktC" socket			1 pc		
Temperature sensors for measuring the temperature of the TJ backflow			4 pcs		
Reed switch for connecting a protective screen: "Protection" socket			1 pc		
Fuse 3A			1 pc		
Connecting pipelines			1 set		
DL-CR10015	Nozzle holder frame				1 pc
DL-CR10025	Injector holder bracket as	ssem	bly		1 pc
DL-CR10006	Protective glass (6mm)	or	DL-CR10010	Protective glass (10mm)	1 pc







**CR-Active** 

The **CR-Active** signal activator is designed to supply a control signal to the solenoid valve of Common-Rail injectors with a set of cables. It is used to measure the valve stroke when measuring the magnetic gap of electromagnetic Common-Rail injectors.

It has two delivery options: basic and complete. In addition to the signal activator and a set of cables, the complete set includes a stand for injectors, a set of measuring probes and adapters, and a measuring indicator head



# **CR-NeXT**

Armature activator device for Common-Rail injector solenoid valve. The **CR-NeXT** device is designed to supply a control signal to the solenoid valve of Common-Rail injectors. It is mainly used to measure the valve stroke when measuring the magnetic gap of common-rail solenoid injectors.

## **MONICA CTV-08**

The device **"MONICA"** CTV-08 for measuring the actuation current of the electromagnet of Common Rail type injectors

In its case, the device has 2 connectors for connecting a signal cable and a power cable. The measurement takes place by pressing the "Enter" button, after the flashing dot appears on the display, the device is ready for a new measurement. It is also possible to reset the measurement by pressing the "Reset" button



# **PTC-2520 CP TESTER**

Device for testing and testing high-pressure fuel pumps of the Common Rail system with a set of cables.



# **FMDE-520**

Device for testing the performance of fuel pumps of the Common Rail system of various manufacturers: Bosch, Delphi, Denso, Siemens, Cummins on a test bench.

It is a 2-channel liquid flow meter (pump supply and return discharge) in various modes, with digital information output to a backlit liquid crystal display.



# CRISTINA

The **CRistina** complex is designed for assembling injectors of the COMMON RAIL BOSCH, DELPHI, DENSO systems using a technology that allows you to calculate and select all the necessary adjusting elements.

CRistina repair- and testing complex is dedicated to assembing and disassembling Bosch, Denso and Delphi Common Rail inejctors according to manufacturer specified steps and mechanical tolerances. The complex offers the ability to measure relevant mechanical tolerances of the injector parts and electrical characteristics of the electromagnet. The assembly/disasembly steps and critical measurement points are presented by convenient step-by-step instructions descriptions and relevant images of the work process itself.









# **CRistina-PIEZO**

Device for testing piezo injectors and piezo element.

#### Features of the device:

- Feeding signal to activate the injector on the hand press
- Measuring the resistance of a piezo
- Measuring the capacity of the piezo
- Measurement function of the smooth running of the piezo





# PR-TESTER.V05

DL-UNI20061

Electronic pressure gauge 2 channel

**Delivery set for measurement** pressure on 2 CHANNELS:

1.	DL-UNI20065	Electronic pressure gauge
2.	DL-UNI20071	Main adapter cable for 2-channel connection - 1 pc.
3.	DL-UNI20072	Adapter cable for pressure sensor BOSCH type 1 – 2 pcs.
4.	DL-UNI20073	Adapter cable for pressure sensor BOSCH 2 type – 2 pcs.
5.	DL-UNI20074	DELPHI pressure sensor adapter cable – 2 pcs.
6.	DL-UNI20075	Adapter cable for universal for pressure sensor - 2 pcs.
7.	Charger	



PR-TESTER V05

. EXIT

PR-TESTER.V05

The passport

8.

Electronic pressure gauge 2 channel

**Delivery set for measurement** DL-UNI20060 pressure on 1 CHANNEL:

1.	DL-UNI20065	Electronic pressure gauge
2.	DL-UNI20070	Main adapter cable for single-channel connection – 1 pc.
3.	DL-UNI20072	Adapter cable for pressure sensor BOSCH type 1 – 1 pc.
4.	DL-UNI20073	BOSCH pressure sensor adapter cable 2 type – 1 pc.
5.	DL-UNI20074	DELPHI pressure sensor adapter cable – 1 pc.
6.	DL-UNI20075	Universal adapter cable for pressure sensor - 1 pc.

- 7. Charger
- 8. The passport





DL-UNI20065



Electronic pressure gauge included with charger



#### DL-UNI20077

adapter cable for pressure sensor BOSCH 1500 bar



### DL-UNI21030

mounting bracket electronic manometer



DL-UNI30237 Pressure gauge leg (fitting) G1/2

### DL-UNI30445

Manometer leg (fitting) M20 x 1.5mm with nut M12 x 1.25 mm



DL-CR10058 DL-CR10059 DL-CR10060

with nut M12 x 1.25 mm



### DL-UNI20065 PR-TESTER.V05

Electronic pressure gauge suitable for manual presses:



DL-RP420 (without pressure sensor)

DL-RP425 (with pressure sensor 1500 bar)

Hand press RP 400 for injector testing with electronic pressure gauge DL-UNI20065

#### Contents of delivery:

- mechanical press 1 pc. connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 425) for 1500 bar 1 pc.

DL-RP520	(without pressure sensor)
DL-RP525	(with pressure sensor 1500 bar)

# ZECA hand press for injector testing with electronic pressure gauge DL-UNI20065

### Contents of delivery:

- $\bullet$  mechanical press 1 pc.  $\bullet$  connecting tube – 2 pcs.
- $\bullet$  electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 525) for 1500 bar 1 pc.



## **BASIC KITS FOR CR NOZZLE TESTING**

### WITH THE HELP OF A MEASURING BLOCK. FROM POSSIBILITY OF CONNECTING TO ELECTRONIC MEASURING FLAGMAN-MUFI-CR UNIT AND CODING RETROFIT FLAGMAN CODE.



#### DL-CR10030

A set of basic equipment for testing CR injectors with a controller CR-TESTER CRT-5040 and High pressure fuel pump Basic equipment kit designed to test Common Rail injectors various manufacturers (Bosch, Denso, Delphi, VDO (Siemens) Cummins, Caterpillar, AZPI.

The DL-CR10030 set is completed with a DL-CR00088 injection pump with a working pressure of 1800 bar.

#### DL-CR10031

Basic equipment kit for testing CR injectors with controller CR-TESTER CRT-5040 without injection pump kit CP3 **DL-CR00088** 

#### DL-CR10020

Basic kit for testing CR injectors without controller CR-TESTER CRT-5040

#### DL-CR10021

Basic kit for testing CR injectors without controller CR-TESTER CRT-5040 and injection pump CP3 **DL-CR00088** 

#### DL-CR00139

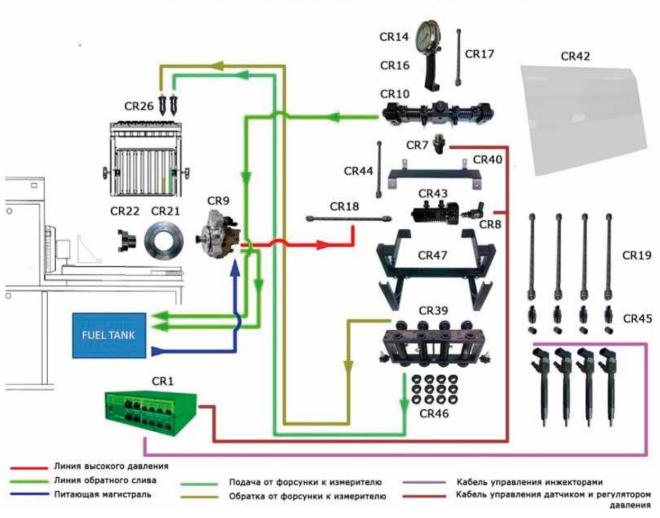
The injection pump kit **DL-CR00139** is used with a working pressure of 2400 bar and is supplied by separate order. Also, when installing **DL-CR00139** in the basic equipment kit, it is necessary to replace the sensor and pressure regulator for 2400 Bar and 2200 Bar, respectively.



# **BASIC KITS FOR CR NOZZLE TESTING**

**DL-CR10030** Basic equipment kit for testing CR injectors with controller CR-tester CRT-5040 and injection pump. The basic equipment kit is designed to test CommonRail injectors from various manufacturers (Bosch, Denso, Delphi, VDO (Siemens) Cummins, Caterpillar, AZPI.

The injection pump kit **DL-CR00139** is used for operating pressures of 2400 bar or 2200 bar and is available upon separate order. When installing DL-CR00139 in the basic equipment kit, it is necessary to replace the sensor and pressure regulator with 2400 bar or 2200 bar, respectively.



#### Принципиальная схема установки комплекта базовой оснастки



## DL-CR10030

#### EQUIPMENT KIT FOR TESTING CR INJECTORS

CR1	Common Rail Injector Test Controller	CRT-5040	1 pc
	Pressure sensor 1800 bar	DL-CR10050	1 pc
CR7	*Pressure sensor 2200 bar	DL-CR10052	1 pc
	*Pressure sensor 2400 bar	DL-CR10053	1 pc
	Pressure regulator 1800 bar	DL-CR10051	1 pc
CR8	*Pressure regulator 2200 bar	DL-CR10054	1 pc
	*Pressure regulator 2700 bar	DL-CR10055	1 pc
CR43	Rail pressure accumulator small	DL-CR30180	1 pc
CR10	Rail pressure accumulator for 2 regulators	DL-CR30181	1 pc
CR43	*Rail pressure accumulator for 2 regulators with cooling	DL-CR30188	1 pc
CR32	*Safety valve for pressure accumulator 1800 bar	DL-CR10056	1 pc
CR32	*Safety valve for pressure accumulator 2400 bar	DL-CR10057	1 pc
CR30	Plug M14 cap	DL-UNI50271	4 pcs
CR19	High pressure pipes M14 x 14 x 400 mm / M12 x 14 x 400 mm for injectors	DL-TVD41414 DL-TVD41214	4 pcs
CR17	High pressure tube M14 x 14 x 300 mm for pressure gauge	DL-TVD31414	1 pc
CR44	High pressure tube M14 x 14 x 300 mm for rail connection	DL-TVD31414	1 pc
CR45	Adapter from M14 to M12 / M12 to M12	DL-UNI50083 DL-UNI50087	4 pcs
CR39	Nozzle holder frame	DL-CR10015	4 pcs
CR46	Bushing set <b>DL-UNI31019</b> -Ø 17 (4pcs); <b>DL-UNI31020</b> -Ø 18.9 (1pc); <b>DL-UNI31021</b> -Ø 19.2 (1pc); <b>DL-UNI31022</b> -Ø21 (1pc) and DL- <b>UNI31231</b> -Ø21.4(1pc)	DL-UNI50161	1 set
CR24	Beaker - Clamp for 9mm atomizers	DL-UNI50343	2 pcs
CR47	Bracket - injector frame holder	DL-CR10025	1 pc
CR29	Tube TEFLON for connection of injectors to dia. 6 mm	P1004	16 m
CR31	Plug instead of pressure regulator	DL-UNI30497	2 pcs
CR32	Plug instead of safety valve	DL-CR30493	1 pc
CR36	Backflow connection kit DENSO banjo fitting, bolt M8 x 1 mm, copper washers 2 pcs.	DL-CR20060	4 sets



CR38	Return fitting for "rail" (banjo 12 mm + M12 bolt + rubber-metal washers)	DL-CR20062	2 sets	
CR35	A set of fittings for measuring the return flow of fuel from the injectors	DL-24CRM	1 set	
CR40	Bracket-holder "rail" on the frame	DL-CR10028	1 pc	
CR41	Mounting kit for rail and frame	DL-CR20063	1 set	
CR42	Protective cover (plexiglass) + 2 brackets-holders	DL-CR10006	1 pc	
CR26	Defoamers	DL-UNI30156	8 pcs	
CR28	Quick connect adapters for defoamers	34-RL310602	8 pcs	
CR14	Pressure gauge 0-2500 bar	DL-CR14P2500	1 pc	
CR15	Adapter 1/2" X M14 (for pressure gauge)	DL-UNI30287	1 pc	
CR16	Pressure gauge holder	DL-KM2500	1 pc	
Set of equipment injection pump CP3 DL-CR00088 1800 bar				
CR9	High pressure fuel pump SR-3 1800 bar	DL-CR10088	1 pc	
CR18	High pressure pipe M14 X 14 X 400 mm for injection pump	DL-TVD51414	1 pc	
CR21	Pump bracket adapter (diameter 107 mm)	DL-UNI30428	1 pc	
CR22	Coupling for connecting the pump to the drive	DL-M24/DL-M19	1 pc	
CR34	Rubber hose dia.8 mm for fuel supply to the pump	D-18-806-008	2,4 m	
CR38	Fitting (banjo 12 mm + M12 bolt + rubber-metal washers) for injection pump	DL-CR20062	1 set	
—	Clamps 13 mm for rubber hoses $\Phi$ 8 mm	DL-CR20066	4 pcs	
	Conical fitting M12x1.5, for a hose with a diameter of 8 mm	DL-UNI30112	3 pcs	
_	Washer, rubber-metal, M12	D-GM1537AN	5 pcs	

CR9	High pressure fuel pump SR-3 2400 bar	DL-CR10139	1 pc
CR18	High pressure pipe M14 X 14 X 400 mm for injection pump	DL-TVD51414	1 pc
CR21	Pump bracket adapter (diameter 107 mm)	DL-UNI30428	1 pc
CR22	Coupling for connecting the pump to the drive	DL-M24	1 pc
CR34	Rubber hose dia.8 mm for fuel supply to the pump	D-18-806-008	2 m
CR38	Fitting (banjo 12 mm + M12 bolt + rubber-metal washers) for injection pump	DL-CR20062	2 sets
—	Clamps 13 mm for rubber hoses $\Phi$ 8 mm	DL-CR20066	4 pcs
—	Conical fitting M12x1.5, for a hose with a diameter of 8 mm	DL-UNI30112	3 pcs
_	Washer, rubber-metal, M12	D-GM1537AN	5 pcs

\* for additional order





# **CR INJECTOR TEST KITS**



#### DL-CR10000

Basic set of equipment CR with CR-Tester and with high pressure fuel pump CP-3 DL-CR10001

CR tool kit (without pump, without CR-Tester)

#### DL-CR10000

# BASIC EQUIPMENT KIT COMMON RAIL

#### Electronic part:

CR1	Signal simulator 4-channel CR-Tester	1 pc
CR2	Cable kit (basic)	1 pc
CR3	Connector-adapter (male) for connecting injectors "on the thread"	1 pc
CR4	Connector-adapter for connecting Delphi injectors	1 pc
CR5	Connector-adapter for connecting MB injectors	1 pc
CR6	Connector-adapter for connecting BMW injectors	1 pc
CR7	Pressure sensor (0281002921 -1800 bar)	1 pc
CR8	Pressure regulator (0281002494)	1 pc



#### Mechanical part:

CR9	injection pump (CP3) BOSCH	1 pc
CR10	"Rail" for 4 nozzles on 2 RD	1 pc
CR11	Fitting for "Rail" M14xM14 in a set with gaskets	5 pcs
CR12	Fitting for "Rail" M14xM12(M14) in a set with gaskets	1 pc
CR14	Pressure gauge 0-2500 bar D-CR14P2500	1 pc
CR15	Pressure gauge adapter	1 pc
CR16	Pressure gauge holder	1 pc
CR17	High pressure pipes M14 x M12 (M14) x 300 mm for pressure gauge	1 pc
CR18	High pressure pipes M12 x M12 (M14) x 300 mm for injection pump	1 pc
CR19	High pressure pipes M14XM14 x300mm for injectors	4 pcs
CR20	Straight adapter from M14 to M12 for high pressure tube	4 pcs
CR21	Adapter for mounting the pump on a bracket (Ø107mm.)	1 pc
CR22	Coupling for connecting the pump to the drive	1 pc
CR23	BOSCH-DENSO injector adapter	4 pcs
CR24	Adapter-glass for installing DELPHI injectors	4 pcs
CR25	Clamp (collet) for injector nozzles 7mm	4 pcs
CR26	Defoamers	8 pcs
CR27	1/8" adapters for quick connection (Ø 6mm angled)	4 pcs
CR28	1/4" adapters for quick connection (Ø 6mm) straight	8 pcs
CR29	PVC spout Ø 6 mm	16 m
CR30	Plug M14 for "Rail"	4 pcs
CR31	Plug instead of RD	1 pc
CR32	Plug instead of safety valve	1 pc
CR33	Plug M12 instead of return fitting "Rail"	1 pc
CR34	PVC hose 8mm for fuel supply to the pump	1,5 m
CR35	BOSCH injector return fitting	4 pcs
CR36	DENSO injector return fitting	4 pcs
CR37	"Bolts" for DENSO injector return fittings	4 pcs
CR38	Return fitting for "Rail" (banjo12mm + bolt M12 + washers)	2 sets
CR39	Nozzle holder frame	1 pc
CR40	Rail bracket on frame	1 pc
CR41	Mounting kit for "Rail" and frame	1 pc
CR42	Protective cover	1 set





### DL-12CRM

Reverse flask set draining CR injectors



#### DL-24CRM

Set of flasks with measuring adapters return flow of CR injectors



#### DL-36CRM

Connection adapter set return flow of CR injectors



# DL-80CRM

# Set of connections for measuring the fuel backflow from Common Rail injectors



Kit includes :

1	DL-6015168	Fitting for injectors FORD (Siemens VDO)	4 pcs
2	DL-6015188	Fitting for FORD Transit (Siemens VDO)	4 pcs
3	DL-60151111	Fitting for injectors BOSCH Piezo	4 pcs
4	DL-6015166	Fitting for SIEMENS VDO injectors	4 pcs
5	DL-GSDE	L-shaped fitting with bracket for Denso injectors	4 pcs
6	DL-OCDE	Banjo fitting for Denso injectors	4 pcs
7	DL-6015195	Fitting for DELPHI injectors	4 pcs
8	DL-6015176	Fitting for injectors 0445110368 (BOSCH)	4 pcs
9	DL-6015130	DELPH injector fitting	4 pcs
10	DL-6015161	Fitting for SIEMENS injectors	4 pcs
11	DL-KLB01	Fitting with bracket for BOSCH injectors	4 pcs
12	DL-SMS01	Clamp long for clamping SIEMENS fitting	4 pcs
13	DL-SMS02	Medium bracket for clamping the SIEMENS fitting	4 pcs
14	DL-SMS03	Bracket standard for clamping the SIEMENS fitting	4 pcs



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# STANDS and EQUIPMENT for testing common rail injectors and pumps



DL-6015168

Nozzle fitting FORD (Siemens VDO)



**(**7)

DL-GSDE

Fitting L-shaped with bracket for injectors Denso



DL-6015188

Nozzle fitting FORD Transit (Siemens VDO)



DL-OCDE

Banjo fitting for Denso injectors

10



DL-60151111

Nozzle fitting BOSCH Piezo

7

11



DL-6015195 Nozzle fitting DELPHI

**DL-KLB01** 

Union with clamp

for Bosch injectors



DL-6015166

Nozzle fitting SIEMENS VDO



DL-6015176

Nozzle fitting 0445110368 (BOSCH)





DL-SMS01

Bracket long for fitting clamp SIEMENS



DL-6015130

Nozzle fitting DELPHI



DL-SMS02

Bracket medium for fitting clamp SIEMENS



-

DL-6015161

Nozzle fitting SIEMENS

14

7

### DL-SMS03

Bracket standard for fitting clamp SIEMENS



# DL-90CRM

# Set of connections for measuring the fuel backflow from Common Rail injectors



Kit includes :

1	DL-6015168	Fitting for injectors FORD (Siemens VDO)	4 pcs
2	DL-6015188	Fitting for FORD Transit (Siemens VDO)	4 pcs
3	DL-60151111	Fitting for injectors BOSCH Piezo	4 pcs
4	DL-6015166	Fitting for SIEMENS VDO injectors	4 pcs
5	DL-GSDE	L-shaped fitting with bracket for Denso injectors	4 pcs
6	DL-OCDE	Banjo fitting for Denso injectors	4 pcs
7	DL-6015195	Fitting for DELPHI injectors	4 pcs
8	DL-6015176	Fitting for injectors 0445110368 (BOSCH)	4 pcs
9	DL-6015130	DELPH injector fitting	4 pcs
10	DL-6015161	Fitting for SIEMENS injectors	4 pcs
11	DL-KLB01	Fitting with bracket for BOSCH injectors	4 pcs
12	DL-6015181	Fitting for SIEMENS injectors	4 pcs
13	DL-6015193	Fitting for injectors 0445110550 (BOSCH)	4 pcs
14	DL-SMS01	Clamp long for clamping SIEMENS fitting	4 pcs
15	DL-SMS02	Medium bracket for clamping the SIEMENS fitting	4 pcs
16	DL-SMS03	Bracket standard for clamping the SIEMENS fitting	4 pcs



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# STANDS and EQUIPMENT for testing common rail injectors and pumps



DL-6015168

Nozzle fitting FORD (Siemens VDO)



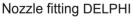


DL-GSDE

Fitting L-shaped with bracket for injectors Denso

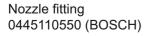


DL-6015130





DL-6015193







DL-6015188

Nozzle fittingFORD Transit (Siemens VDO)



DL-OCDE

Banjo fitting for Denso injectors



DL-6015161

Nozzle fitting SIEMENS



DL-SMS01

Bracket long for fitting clamp SIEMENS



DL-60151111

Nozzle fitting BOSCH Piezo



DL-6015195 Nozzle fitting DELPHI



DL-KLB01

Union with clamp for Bosch injectors



DL-SMS02

Bracket medium for fitting clamp SIEMENS



DL-6015166

Nozzle fitting SIEMENS VDO



DL-6015176

Nozzle fitting 0445110368 (BOSCH)



DL-6015181

Nozzle fitting SIEMENS

16



DL-SMS03

Bracket standard for fitting clamp SIEMENS

# DL-100CRM

# Set of connections for measuring the fuel backflow from Common Rail injectors



Kit includes :

1	DL-6015168	Fitting for injectors FORD (Siemens VDO)	4 pcs
2	DL-6015188	Fitting for FORD Transit (Siemens VDO)	4 pcs
3	DL-60151111	Fitting for injectors BOSCH Piezo	4 pcs
4	DL-6015166	Fitting for SIEMENS VDO injectors	4 pcs
5	DL-GSDE	L-shaped fitting with bracket for Denso injectors	4 pcs
6	DL-OCDE	Banjo fitting for Denso injectors	4 pcs
7	DL-6015195	Fitting for DELPHI injectors	4 pcs
8	DL-6015176	Fitting for injectors 0445110368 (BOSCH)	4 pcs
9	DL-6015130	DELPH injector fitting	4 pcs
10	DL-6015161	Fitting for SIEMENS injectors	4 pcs
11	DL-KLB01	Fitting with bracket for BOSCH injectors	4 pcs
12	DL-6015181	Fitting for SIEMENS injectors	4 pcs
13	DL-6015193	Fitting for injectors 0445110550 (BOSCH)	4 pcs
14	DL-CR31256	Fitting for injectors Denso M8 x 1mm	4 pcs
15	DL-CR31312	Fitting for injectors Denso M8 x 1.25mm	4 pcs
16	DL-CR31254	Fitting for Denso injectors	4 pcs
17	DL-CR31255	Fitting for Denso injectors	4 pcs
18	DL-SMS01	Clamp long for clamping SIEMENS fitting	4 pcs
19	DL-SMS02	Medium bracket for clamping the SIEMENS fitting	4 pcs
20	DL-SMS03	Bracket standard for clamping the SIEMENS fitting	4 pcs



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## STANDS and EQUIPMENT for testing common rail injectors and pumps

3

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DL-6015168

Nozzle fitting FORD (Siemens VDO)



DL-6015188

Nozzle fitting FORD **BOSCH** Piezo Transit (Siemens VDO)



DL-60151111 Nozzle fitting

Δ

DL-6015166

Nozzle fitting SIEMENS VDO

9

14



**DL-GSDE** 

Fitting L-shaped with bracket for injectors Denso

10



**DL-OCDE** Banjo fitting for Denso injectors



7

12

DL-6015195

Nozzle fitting DELPHI



DL-6015176

Nozzle fitting 0445110368 (BOSCH)

DL-6015193



DL-6015130

Nozzle fitting DELPHI

**DL-CR31256** 

Nozzle fitting Denso

M8 x 1mm



DL-6015161

Nozzle fitting SIEMENS



**DL-CR31312** 

Nozzle fitting Denso M8 x 1,25mm



20

DL-SMS03

Bracket standard for fitting clamp SIEMENS



Nozzle fitting Denso





Bracket long for fitting clamp SIEMENS



DL-SMS02 Bracket medium for fitting clamp

SIEMENS



# DL-120CRM

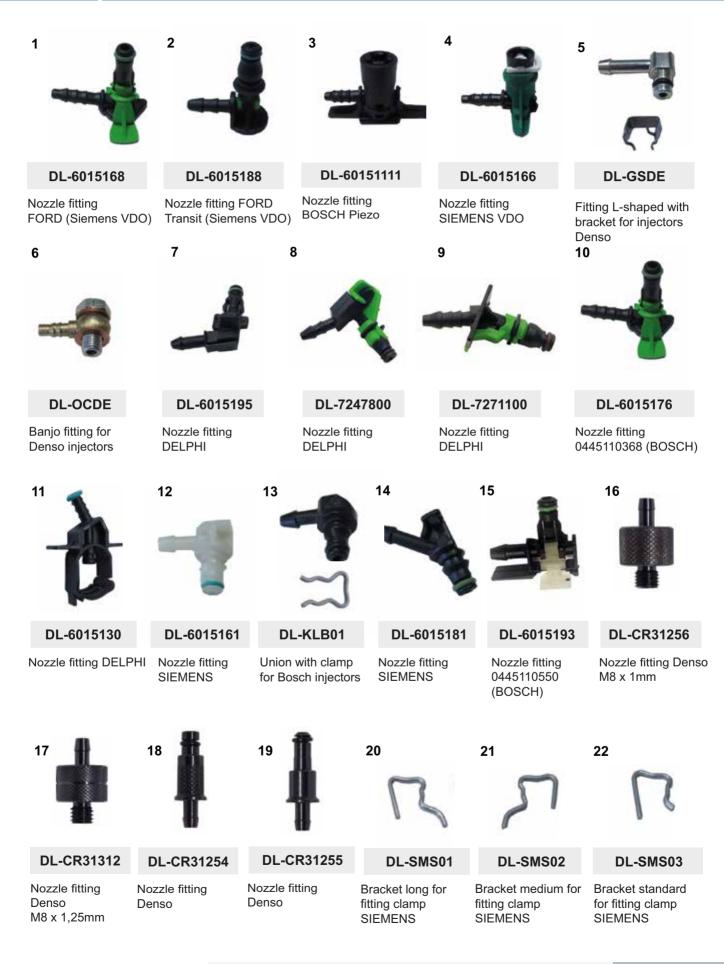
# Set of connections for measuring the fuel backflow from Common Rail injectors



### Kit includes :

1	DL-6015168	Fitting for injectors FORD (Siemens VDO)	4 pcs
2	DL-6015188	Fitting for FORD Transit (Siemens VDO)	4 pcs
3	DL-60151111	Fitting for injectors BOSCH Piezo	4 pcs
4	DL-6015166	Fitting for SIEMENS VDO injectors	4 pcs
5	DL-GSDE	L-shaped fitting with bracket for Denso injectors	4 pcs
6	DL-OCDE	Banjo fitting for Denso injectors	4 pcs
7	DL-6015195	Fitting for DELPHI injectors	4 pcs
8	DL-7247800	Fitting for DELPHI injectors	4 pcs
9	DL-7271100	Fitting for DELPHI injectors	4 pcs
10	DL-6015176	Fitting for injectors 0445110368 (BOSCH)	4 pcs
11	DL-6015130	DELPH injector fitting	4 pcs
12	DL-6015161	Fitting for SIEMENS injectors	4 pcs
13	DL-KLB01	Fitting with bracket for BOSCH injectors	4 pcs
14	DL-6015181	Fitting for SIEMENS injectors	4 pcs
15	DL-6015193	Fitting for injectors 0445110550 (BOSCH)	4 pcs
16	DL-CR31256	Fitting for injectors Denso M8 x 1mm	4 pcs
17	DL-CR31312	Fitting for injectors Denso M8 x 1.25mm	4 pcs
18	DL-CR31254	Fitting for Denso injectors	4 pcs
19	DL-CR31255	Fitting for Denso injectors	4 pcs
20	DL-SMS01	Clamp long for clamping SIEMENS fitting	4 pcs
21	DL-SMS02	Medium bracket for clamping the SIEMENS fitting	4 pcs
22	DL-SMS03	Bracket standard for clamping the SIEMENS fitting	4 pcs







# Universal adapter for truck CR injectors (Bosch , Denso, Delphi Smart) for supply and backflow lines at angles of 0°, 4° and 13°

### DL-CR50013



#### Kit includes :

DL-CR30219	Adapter housing
DL- CR50035	Holding bracket with fitting and fitting for backflow
DL- CR30419	Nozzle for backflow of CR Delphi Smart injectors
DL- CR30238	The fitting extended for connection of giving
DL- CR30225	Standard fitting for supply connection
DL- CR30661	Nozzle for backflow of injectors CR Bosch 0445120147,0445120098
DL- CR30269	A fitting with a fitting for backflow of injectors Delphi, Smart, Denso,
	Bosch 0445120147, 0445120098
D-27-200078	O-ring for backflow fitting (2pcs).
	Hex wrench 3mm.



# Universal adapter repair kit Kit includes :

- D-27-026000 Sealing rubber ring 1 pc.
   D-27-026210 Sealing rubber ring 1 pc.
- 3. **D-27-200078** Sealing rubber ring 4 pcs.



### **EXAMPLES OF USING THE UNIVERSAL ADAPTER DL-CR50013**





### Installation in nozzle adapter Bosch 0445120218 with direct connection "0°".

#### Used:

- DL-CR30219 Adapter body (wide shelf towards sprayer)
- DL-CR30225 Standard fitting for supply connection
- DL-CR50035 Holding bracket with fitting and fitting for backflow



#### Installation in nozzle adapter Bosch 0445120067 with approach angle "13°".

#### Used:

- DL-CR30219 Adapter body (wide shelf towards sprayer)
  - DL-CR30238 The fitting extended for connection of giving
- DL-CR50035 Holding bracket with fitting and fitting for backflow
- Allen key for fixing the swivel base of the adapter housing by 13°



### **EXAMPLES OF USING THE UNIVERSAL ADAPTER DL-CR50013**



#### Installation in nozzle adapter Bosch 0445120147, 0445120098 with direct connection "0°".

#### Used:

- DL-CR30219 Adapter body (wide shelf towards sprayer)
- DL-CR30661 Backflow nozzle
- DL-CR30225 Standard fitting for supply connection
- DL-CR30269 Short fitting with backflow fitting





#### Installation in nozzle adapter Denso with approach angle "0°".

#### Used:

- **DL-CR30219** Adapter body (wide shelf towards sprayer)
  - **DL-CR30225** Standard fitting for supply connection
- DL-CR30269 Short fitting with backflow fitting



### **EXAMPLES OF USING THE UNIVERSAL ADAPTER DL-CR50013**





### Installation in nozzle adapter Delphi Smart with direct "0°" approach.

#### Used:

- **DL-CR30219** Adapter body (wide shelf towards sprayer)
- DL-CR30225 Standard fitting for supply connection
- DL-CR30419 Nozzle for backflow of nozzles
- DL-CR30269 Short fitting with backflow fitting



## Adapter for CR Denso truck injectors, incl. Volvo 21952974 for supply and return connection

DL-CR50140





#### Kit includes :

- 1. DL-CR31031 Adapter housing
- 2. DL-CR30225 Feed connector
- 3. **DL-CR50035** Holding bracket with fitting and fitting for backflow





## ADAPTERS FOR TESTING CARGO INJECTORS



DL-01 (UIS31524)

Adapter for testing mechanical injectors sections PLD MB ACTROS and MB ATEGO

**Contents of delivery:** adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 1 pc, screw - 1 pc.



#### DL-02 (DL-CR31046)

Truck injector adapter Bosch 0445120098, 0445120147 MAN Ø 29mm

**Contents of delivery:** adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc.



#### DL-04A (DL-CR30848)

Adapter for truck injectors RENAULT Ø 32mm 0445120020, 0445120019, 0445120003, 0445120004

**Contents of delivery:** adapter - 1 pc, cola receiver (9mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc.



#### DL-05N (DL-CR31048)

Truck injector adapter CUMMINS Be110/162kW; KAMAZ 11TS 150/133kW, 20TS 207kW, 25TS 207W 0445120123

**Contents of delivery:** adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc.



### DL-06 (DL-CR31440)

Truck injector adapter DENSO Ø 27mm

**Contents of delivery:** adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc.



## ADAPTERS FOR TESTING CARGO INJECTORS



DL-07 (DL-CR31044)

Truck injector adapter DENSO Ø 23.5mm

**Contents of delivery:** adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting with axial compression of the core without rotation - 1 pc, fitting - 2 pcs, screw - 1 pc.



DL-08 (DL-CR31045)

Truck injector adapter MAN Ø 26mm

**Contents of delivery:** adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc.



#### DL-09 (DL-CR31439)

Truck injector adapter MAN Ø 28mm (Volvo) 0445120044

**Contents of delivery:** adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting 1 pc, fitting 2 pcs, screw - 1 pc.



#### DL-010 (DL-CR31047)

Truck injector adapter CUMMINS 0445120121, 0445120125

**Contents of delivery:** adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc.



#### DL-011 (DL-CR30985)

Adapter for connecting the return flow of cargo injectors SIEMENS VDO FORD

**Contents of delivery:** adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.



## ADAPTERS FOR TESTING CARGO INJECTORS







#### adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc.

DL-012 (DL-CR30036)

Truck injector adapter Bosch 0445120063 Contents of delivery:

#### DL-013 (DL-CR30968)

Truck injector adapter Delphi Smart Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting with axial compression of the core without rotation - 1 pc, fitting - 2 pcs, screw - 1 pc.

#### DL-014 (DL-CR30038)

Adapter for connecting the return flow of cargo injectors Denso 24mm Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.



#### DL-015 (DL-CR30822)

Adapter for connecting the return flow of cargo injectors Denso 18.5mm, Caterpillar, Perkins Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.



#### DL-016 (DL-CR31486)

Adapter for connecting the return line of SCANIA 2/4 pin cargo injectors Contents of delivery: adapter - 1pc, cola receiver (9mm) - 1pc, fitting - 2 pcs, screw - 1 pc.



#### DL-017 (DL-UNI30037)

Adapter for connection of return to cargo injectors Bosch 0445120066 Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.



## ADAPTERS FOR TESTING CARGO INJECTORS





Adapter for connecting the return flow of trucks nozzles Cursor 9 Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.

Adapter for connecting the return flow of trucks

adapter - 1 pc, cola receiver (7mm) - 1 pc,







# DL-020 (DL-CR30596)

fitting - 2 pcs, screw - 1 pc.

DL-019 (DL-CR30804)

injectors Bosch MTU Contents of delivery:

Adapter for connecting the return flow of trucks injectors MB 4PIN Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.



BOSCH injector test adapter CRIN3 0445124015 Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 1 pc, screw - 1 pc.



#### DL-022 (DL-CR31566)

Truck injector test adapter Caterpillar 3809888 Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting with axial compression of the core without rotation - 1 pc. fitting - 2 pcs, screw - 1 pc.



### DL-023 (DL-CR31567)

Truck injector test adapter Delphi Smart injector Mersedes Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting with axial compression of the core without rotation - 1 pc. fitting - 2 pcs, screw - 1 pc.



## ADAPTERS FOR TESTING CARGO INJECTORS







#### DL-024 (DL-CR31620)

Adapter for connecting backflow of injectors CR DAF-SMART injector (DAF-1826007) Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.

### DL-025 (DL-CR31625)

Adapter for connecting backflow of injectors DELPHI CRIN DAF EURO 6 SMART INJ Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc.

#### DL-026 (DL-CR31626)

Adapter for connecting the supply and backflow injectors CUMMINS D26 Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc.

#### DL-027 (DL-CR31698)



Truck injector adapter Bosch 0445120086, 0445120087, 0445120127, 0445120265, 0445120266, 0445120389, 0445120391, 0445120412, 0445120462, 0445120474, 0445120524, 0445120526, 0445120527, 0445120531, 0445120562, 0445120571, 0445120580. Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc.





# DL-030 (DL-CR30818)

Truck injector adapter Bosch 0445120178 YaMZ-530 Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, side fitting - 1 pc, fitting - 2 pcs, screw - 1 pc

#### DL-031 (DL-CR31040)

Adapter for connecting backflow of injectors Bosch 0445120303 Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.



## ADAPTERS FOR TESTING CARGO INJECTORS



#### DL-032 (DL-CR31430)

Backflow connection adapter injectors Bosch 0445120134 Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.



#### DL-033 (DL-CR31479)

Adapter for connecting the return flow of trucks injector DENSO 7140 08S02953 33800-52000 Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.



### DL-034 (DL-CR31538)

Nozzle Backflow Adapter DENSO 1211 11L1063 (095000-121) Contents of delivery: adapter - 1 pc, sealing rubber ring - 2 pcs. fitting - 1 pc, locking screw - 1 pc.



#### DL-035 (DL-CR31561)

Nozzle Backflow Adapter DENSO 2300/3100 07T00365 (5213417 Komatsu) Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 2 pcs, screw - 1 pc.



#### DL-036 (DL-CR31563)

Injector test adapter Delphi A9362187 Mercedes Actros Euro 6 Contents of delivery: adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting - 1 pc, screw - 1 pc.



#### DL-037 (DL-CR50304)

Adapter for testing 4-pin injectors MB Actros Contents of delivery: adapter - 1 pc, clamp - 1 pc, bracket - 1 pc, set of screws - 1 pc, fitting - 2 pcs.



## ADAPTERS FOR TESTING CARGO INJECTORS

**DL-037KIT (DL-CR50304KIT)** 

форсунки MB Actros 0445120303

Комплект для проверки 4-х контактной



Contents of delivery:

- DL-037
- DL-SHL02037
- DL-ADS04020
- DL-UNI31616
- 34-GU11-21-0014
- DL-34-N3-213B
- D-GM1537AN
- •

Adapter for fixing the 4-pin nozzle MB Actros - 1 pc. 20mm x 150mm reverse drain hose for the stand - 1 pc. Adapter cable with 2 connectors - 1 pc. Fitting with external threads G1/4 to G1/8- 1 piece. Fitting quick-release adapter G1/4", type "dad" - 1 piece. Fitting Ø 6mm x 1/8"- 1 piece. Rubber-metal washer Ø12mm - 1 piece. Rubber-metal washer Ø10mm - 2 pcs.



#### DL-038 (CR31606)

Connection adapter injectors 5296723 DENSO Contents of delivery: Adapter - 1 pc, cola receiver (7mm) - 1 pc, fitting (quick adapter) - 2 pcs, screw-"butterfly" - 1 pc.



DL-CR30429 (DL-EA) Side fitting for cargo adapters





Feed connector for weight adapter



DL-CR50303

Feed connector for weight adapter assembly (nipple + bushing + nut + copper washer)



### EQUIPMENT FOR CHECKING PUMPS AND INJECTORS



#### DL-K7 (DL-CR30161)

Fuel jet catcher (cola receiver) for nozzle nozzles (nozzle on the nozzle) Ø7 mm

**Contents of delivery:** cola receiver - 1 pc, fitting - 1 pc, fixing screw - 1 pc.



#### DL-K9 (DL-CR30505)

Fuel jet catcher (cola receiver) for nozzle nozzles (nozzle on the nozzle) Ø9 mm

**Contents of delivery:** cola receiver - 1 pc, fitting - 1 pc, fixing screw - 1 pc.



## DL-UNI30156 (DL-PG)

**Defoamer Liquid** 

**Contents of delivery:** defoamer - 1 pc, fitting - 1 pc.



#### DL-MOK 6мм х 6мм

Quick coupling with return valve Connection holes Ø 6mm X 6mm



## EQUIPMENT FOR CHECKING PUMPS AND INJECTORS



### DL-CR10028 DL-KD (CR40)

Bracket for Rail DL-CR30181KIT, DL-CR30522KIT from CR accessories



DL-ASB (CR23)

Adapter cup for Bosch injectors to frame CR-equipment



DL-ASD (CR24)

Adapter cup for Delphi injectors to frame CR-equipment



DL-RF (CR39)

Frame - nozzle holder



### DL-CR10015 DL-RFJ

Nozzle holder frame with cups (DL-UNI50342) for sprayers 7 mm (4 pcs.) and clamping sleeves

DL-UNI31019	inner Ø 17 mm – 4pcs
DL-UNI31020	inner Ø 18,9 mm – 1pc
DL-UNI31021	inner Ø 19,2 mm – 1pc
DL-UNI31022	inner Ø 21 mm – 1pc
DL-UNI31031	inner Ø 21,4 mm - 1pc



### EQUIPMENT FOR CHECKING PUMPS AND INJECTORS

#### DL-UNI31011

Set of split sleeves (basic) to install injectors

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DL-UNI31019	inner Ø 17 mm
DL-UNI31020	inner Ø 18,9 mm
DL-UNI31021	inner Ø 19,2 mm
DL-UNI31022	inner Ø 21 mm
DL-UNI31031	inner Ø 21,4 mm

Attention! All bushings are also sold separately.

### DL-UNI31013

# Split sleeve kit for nozzle settings

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DL-UNI31015	inner Ø 24 mm
DL-UNI31016	inner Ø 25 mm
DL-UNI31017	inner Ø 26 mm

Attention! All bushings are also sold separately.



### DL-UNI50342

Cup-clamp for nozzles Ø7 mm





Cup-clamp for nozzles Ø9 mm



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DL-CR50302

Nozzle holder frame for one channel Included in the package:

DL-UNI31019	inner Ø 17 mm – 1pc*
DL-UNI31020	inner Ø 18,9 mm – 1pc
DL-UNI31021	inner Ø 19,2 mm – 1pc
DL-UNI31022	inner Ø 21 mm – 1pc
DL-UNI31031	inner Ø 21,4 mm – 1pc
DL-SZR	cup-clamp sprayer 7 mm

\* mounted on a frame

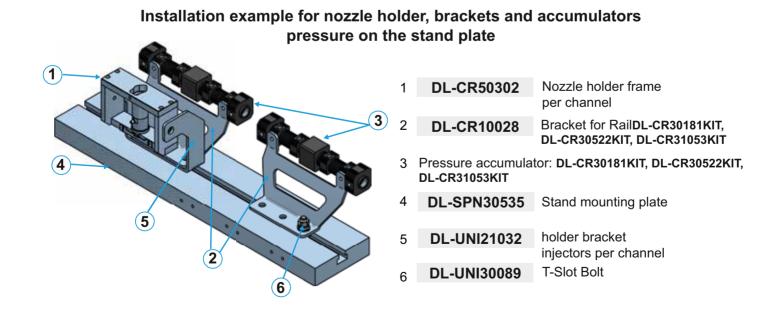


DL-UNI21032

holder bracket injectors per channel



Nozzle holder frame for one channel with bracket assembly





## STANDS and EQUIPMENT for testing common rail injectors and pumps

### EQUIPMENT FOR CHECKING PUMPS AND INJECTORS



### DL-CR10025 DL-KDRJ

### Bracket - injector frame holder

Contents of delivery:

- Frame 1 pc.
- Intermediate bracket 2 pcs.
- Protective glass bracket 2 pcs. (can be welded to the frame)
- Bracket holder of an additional pressure accumulator. (can be welded to the frame)



### DL-CR10026

### Drive Side Fixing Bracket pressure (Rail)

The bracket is fixed with M8x25 bolts to the carrier plate in the test compartment of the stand, or to a structure that performs a similar function.

Used to mount pressure accumulators (Rail): DL-CR30181, DL-CR30522 and DL-CR31053.

*Attention!* Bolts and nuts are not included in the scope of delivery!





### DL-CR10027

Bracket for pressure accumulator (Rail)

### Suitable for the following pressure accumulators:

DL-CR30181KIT	fo
DL-CR30522KIT	fo
DL-CR31053KIT	ra

or 2 pressure regulators or 3 pressure regulators

rail with cooling for 3 pressure regulators

Some drives can be installed from various vehicles

It is installed regularly on stands CR-TEST 4E, CR-TEST-2P, on stands of the SPF series manufactured by Dieselland.

For installation on other stands, it is necessary to make two M10 threaded holes on the side of the plate in a convenient place.



## STANDS and EQUIPMENT for testing common rail injectors and pumps

### EQUIPMENT FOR CHECKING PUMPS AND INJECTORS



### DL-CR10029

Bracket for pressure accumulator (Rail)

### Suitable for the following pressure accumulators:

DL-CR30181KIT	or 2 pressure regulators
DL-CR30522KIT	for 3 pressure regulators
DL-CR31053KIT	rail with cooling for 3 pressure regulators

Some drives can be installed from various vehicles



### It is established on any stands.

For installation, it is necessary to fix the bracket with one or two bolts on top of the stand plate. One or two bolts are preliminarily installed in the T-slot of the plate.

The number of bolts is determined independently or depending on the location of the bracket. For example, with a longitudinal installation on the stand plate, it is possible to fix the bracket with 1-2 bolts, and with a transverse arrangement, fastening is possible with only one bolt. The bracket is put on the bolts through the holes and the bracket is fixed to the plate with nuts.

### ATTENTION!

Bolts and nuts are not included in the scope of delivery!



### DL-CR10006

Protective glass from polycarbonate 6 mm thick. Protective glass is mounted on brackets DL-CR10011 or DL-CR-10025

**Contents of delivery:** Protective glass - 1 pc. U-shaped handle - 2 pcs.



Protective glass from polycarbonate 8 mm thick. Protective glass is mounted on brackets DL-CR10011 or DL-CR-10025

**Contents of delivery:** Protective glass - 1 pc. U-shaped handle - 2 pcs.

### DL-CR10011

A set of brackets for installing a protective fences

Installed with protective railing polycarbonate **DL-CR10006** and **DL-CR10010** directly on the stand plate. **Contents of delivery:** Protection mounting bracket - 2 pcs. Nut "lamb" for fixing the protection - 2 pcs.







Pressure accumulator (Rail) for checking nozzles and CR pumps on the stand

The rail has holes for:

- pressure sensor connection M18x1.5
- pressure regulator connections M24x1.5 (2 holes)
- backflow connections M12x1.5 (4 holes)
- liquid supply to rail M14x1.5 (2 holes)
- exit of liquid from railan M14x1.5 (4 holes)
- connection of safety valve M20x1.5
- pressure relief in case of its excess Ø 3mm. or M5
- M6 pressure gauge mounts (2 blind holes)
- M8 rail attachments (2 or 4 blind holes).

### Contents of delivery:

- 1. **DL-CR30181** ramp (Rail) 1 pc,
- 2. **DL-UNI30218** fitting M14x1.5 in a set with washers-gaskets SHP15084 6 pcs,
- 3. **DL-UNI50271** plug with internal thread M14x1.5 5 pcs,
- 4. DL-UNI30497 plug instead of pressure regulator 2 pcs.,
- 5. **DL-CR30493** plug instead of safetyvalve M20x1.5 1 pc.
- 6. DL-SHP15084 washer-gasket for pressure sensor
- 7. DL-UNI30162 M18x1.5 plug instead of pressure sensor

DL- CR30522KIT (for 3 regulators)

Pressure accumulator (Rail) for testing pumps CP1, CP2, CP3, CP4, Delphi, Denso and CR injectors on the bench

### The rail has holes for:

- pressure sensor connection M18x1.5
- pressure regulator connections M24x1.5 (3 holes)
- backflow connections M12x1.5 (5 holes)
- liquid supply to rail M14x1.5 (2 holes)
- liquid outlet from railan M14x1.5 (2 holes)
- connection of safety valve M20x1.5
- pressure relief in case of its excess Ø3mm. or M12x1.5
- M6 pressure gauge mounts (2 blind holes)
- M8 rail attachments (2 or 4 blind holes).

- 1. **DL- CR30522** ramp (Rail) 1 pc,
- 2. **DL-UNI30218** itting M14x1.5 in a set with washers-gaskets SHP15084 6 pcs,
- 3. **DL-UNI50271** plug with internal thread M14x1.5 5 pcs,
- 4. **DL-UNI30497** plug instead of pressure regulator 3 pcs.,
- 5. **DL-CR30493** plug instead of safetyvalve M20x1.5 1 pc.
- 6. **DL-SHP15084** washer-gasket for pressure sensor
- 7. DL-UNI30162 M18x1.5 plug instead of pressure sensor









### DL-CR30777KIT

Pressure accumulator (Rail) for testing CR injectors, pumps BOSCH CP1, CP2, CP3, CP4, various types High pressure fuel pump Delphi, Denso, Siemens and other CR pumps. (Mounting holes 90° away from fittings.)

#### The rail has threaded holes for:

- pressure sensor connection M18x1.5
- pressure regulator connections M24x1.5
- backflow connections 1 hole M12x1.5
- supply and exit of liquid from the rail 2 holes
- for fittings M14x1.5
- mounting rail M8 (2 blind holes)
- additional fitting made in one
- whole with rail M14x1.5

### Contents of delivery:

- 1. DL-CR30777 ramp (Rail) 1 pc.
- 2. **DL-UNI30218** fitting M14x1.5 in a set with washers-gaskets SHP15084 2 pcs.
- 3. DL-UNI30497 plug instead of pressure regulator 1 pc.
- 4. **DL-UNI50271** plug with internal thread M14x1.5 2 pcs.





### DL-CR30180KIT

Pressure accumulator (Rail) for testing pumps CP1, CP2, CP3, CP4, Delphi, Denso and CR injectors

### The rail has threaded holes for:

- pressure regulator connections M24x1.5
- backflow connections 1 hole. M12x1.5
- supply and exit of liquid from the rail 2 holes. for fittings M14x1.5
- M8 rail attachments (2 blind holes)
- nipple M14x1.5

### Комплект поставки:

- 1. **DL-CR30180** ramp (Rail) 1 pc.
- 2. **DL-UNI30218** fitting M14x1.5 in a set with washers-gaskets SHP15084 2 pcs.
- 3. **DL-UNI30497** plug instead of pressure regulator 1 pc.
- 4. **DL-UNI50271** plug with internal thread M14x1.5 2 pcs.





### DL-CR30526KIT

Pressure accumulator (Rail) for testing pumps CP1, CP2, CP3, CP4, Delphi,Denso and CR injectors below the pressure sensor. (Mounting holes 180° from fittings.)

#### The rail has threaded holes for:

- pressure sensor connection M18x1.5
- pressure regulator connections M24x1.5
- backflow connections 1 hole M12x1.5
- supply and exit of liquid from the rail 2 holes
- for fittings M14x1.5
- mounting rail M8 (2 blind holes)

### Contents of delivery:

- 1. **DL-CR30526** ramp (Rail) 1 pc.
- 2. **DL-UNI30218** fitting M14x1.5 in a set with washers-gaskets SHP15084 2 pcs.
- 3. **DL-UNI30497** plug instead of pressure regulator 1 pc.
- 4. DL-UNI50271 plug with internal thread M14x1.5 2 pcs.

### DL-CR30878KIT

Pressure accumulator (Rail) for testing pumps CP1, CP2, CP3, CP4, Delphi,Denso and CR injectors below the pressure sensor. (Mounting holes 90° away from fittings.)

### The rail has threaded holes for:

- pressure sensor connection M18x1.5
- pressure regulator connections M24x1.5
- backflow connections 1 hole M12x1.5
- supply and exit of liquid from the rail 2 holes for fittings M14x1.5
- mounting rail M8 (2 blind holes)

- 1. **DL-CR30878** ramp (Rail) 1 pc.
- 2. **DL-UNI30218** fitting M14x1.5 in a set with washers-gaskets SHP15084 2 pcs.
- 3. **DL-UNI30497** plug instead of pressure regulator 1 pc.
- 4. **DL-UNI50271** plug with internal thread M14x1.5 2 pcs.







### DL-CR30479KIT

Pressure accumulator (Rail) for testing pumps and CR injectors for pressure regulator and safety valve.

### The rail has threaded holes for:

- connection of the pressure regulator M24x1.5 (1 hole)
- backflow connections M12x1.5 (1 hole)
- supply and exit of liquid from the rail M14x1.5 (3 holes)
- connection of safety valve M20x1.5
- pressure relief if it is exceeded M12x1.5
- M6 pressure gauge mounts (2 blind holes)
- M8 rail attachments (4 blind holes)

### **ATTENTION!**

Pressure regulators and pressure sensor included supplies are not included! The pressure sensor is connected through the fitting-adapter M14xM18

Contents of delivery:

1. DL-CR30479 Ramp (Rail) - 1 piece

2.	DL-UNI30218	Fitting M14x1.5 complete with washers-gaskets
		SHP15084 - 3 pcs.
3.	DL-UNI30497	Plug instead of pressure regulator - 1 pc.
4.	DL-UNI50271	Plug with internal thread M14x1.5 - 3 pcs.
5.	DL-UNI30796	Special fitting-adapter for the sensor
		pressure M14xM18 - 1 pc.
6.	DL-UNI30493	Plug instead of safety valve - 1 pc.
7.	22-HS-06	M12x1.5 bolt-banjo fitting for connection
		backflow, hole next to the pressure regulator - 1 pc.
8.	22-RSN-06	Banjo fitting Ø12mm x 8mm (herringbone) for connection
		back drain - 1 pc.
9.	D-GM1537AN	Rubber-metal washer Ø12mm, installed on the plug
		DL-UNI30636, banjo bolt 22-HS-06 and similar parts providing
		connection tightness - 2 pcs.

\*Instead of a banjo fitting Ø12mm x 8mm **22-RSN-06**, an M12" x 8 fitting can be used **34-R0608** M12 x 1.5 allowing backflow through Teflon tube **P1006** 





### DL-CR50269

Drive holder bracket Pressure (RAIL) DL-CR30180

Also suitable for pressure accumulators DL-CR30479, DL-CR30526, DL-CR30878, DL-CR30777

### DL-CR50268

Drive holder bracket Pressure (RAIL) DL-CR30188







### **DL-CR30188KIT**

Pressure accumulator (Rail) for testing pumps CP1, CP2, CP3, CP4, Delphi, Denso and CR injectors. Rail has channels cooling for improved thermal stability during testing and testing of nozzles and pumps of the Common-Rail system.

### The rail has threaded holes for:

- pressure sensor connection M18x1.5
- pressure regulator connections
- backflow connections 1 hole. M12x1.5
- fitting for connecting a hose or tube for rail cooling Ø8mm
- supply and exit of liquid from the rail 3 holes. for fittings M14x1.5
- fixings, 4 blind holes. M8.

### Contents of delivery:

- 1. DL-CR30188 рампа (Rail) 1 шт.
- 2 DL-UNI30218 fitting M14x1.5 complete with washers-gaskets SHP15084 - 3 pcs. 3.
  - **DL-UNI30497** plug instead of pressure regulator - 1 pc.
- 4. **DL-UNI50271** plug with internal thread M14x1.5 - 2 pcs. 5.
  - fitting 1/8"x8 (herringbone) for connecting hoses **DL-UNI30293** cooling - 2 pcs.
- 6. DL-UNI30162 plug instead of pressure sensor M18x1.5 - 1 pc.





### DL-CR31068KIT

Pressure accumulator (Rail) for testing pumps CP1, CP2, CP3, CP4, Delphi, Denso and CR injectors. The rail has cooling channels for improved thermal stability in testing and testing nozzles and pumps of the Common-Rail system.

### The rail has threaded holes for:

- pressure sensor connection M18x1.5
- pressure regulator connections
- backflow connections 1 hole M12x1.5
- safety valve
- fitting for connecting a hose or tube for
- cooling rail diameter 8mm
- supply and exit of liquid from the rail 3 holes for fittings M14x1.5
- fixings, 4 blind holes M8

- 1. **DL-CR31068** ramp (Rail) 1 pc.
- 2. **DL-UNI30218** fitting M14x1.5 in a set with washers-gaskets SHP15084 - 3 pcs.
- 3. DL-UNI30497 plug instead of pressure regulator - 1 pc.
- **DL-UNI50271** plug with internal thread M14x1.5 - 1 pc. 4.
- DL-UNI30293 5. fitting 1/8"x8 (herringbone) for connecting hoses cooling - 2 pcs.
- 6. **DL-UNI30162** plug instead of pressure sensor M18x1.5 1 pc.





### DL-CR31053KIT

Pressure accumulator for 3 regulators with cooling for testing injection pump CR

### Contents of delivery:

00	intents of deliver	y.					
1.	DL-CR31053	ramp (Rail) - 1 pc.					
2.	DL-UNI3015	Plug instead of pressure regulator - 3 pcs.					
3.	DL-UNI30162	Plug M18x1.5 instead of pressure sensor - 1 pc.					
4.	34-R0608M12X	.5 Fitting M12 "x8 for backflow - 3 pcs.					
5.	34-RL0408	Fitting-angle 8mmx8mm for backflow - 2 pcs.					
6.	34-RL0508	Tee fitting 8mmx8mmx8mm for backflow - 1 pc.					
7.	P1006	Teflon tube d.8mmx180mm - 2 pcs.					
8.	22-HS-06	M12x1.5 bolt-banjo fitting for hose connection					
		return drain - 1 pc.					
9.	22-RSN-06	Banjo fitting Ø12mmx8mm (herringbone) for					
	backflow hose connections - 1 pc.						
10.	D-GM1537A	N Rubber-metal washer Ø12mm - 2pcs					
11.	DL-UNI3063	Plugs in backflow channels - 2 pcs.					
12.	DL-UNI3029	<b>3</b> 1/8"x8 (herringbone) fitting for connecting hoses					
		cooling - 2 pcs.					
13.	DL-UNI302	B High pressure fitting M14(1.5)xM14(1.5)					
		in a set with washers-gaskets SHP15084 - 2 pcs.	;.				
14.	14. <b>DL-UNI50271</b> Plug for high pressure fitting - 2 pcs.						
15.	DL-SHP150	4 Gasket for pressure sensor - 1 pc.					









### **DL-UNI30828KIT**

### high pressure Bosch filter adapter for testing pumps CP2-CP4.

The adapter is mounted in one of the 2 holes M14x1.5 in Rail. Used with pressure accumulators (rail) DL-CR31053, DL-CR30181 and DL-CR30522

### The adapter has threaded holes:

- for a filter for a special fitting M18x1.5 (1 hole)
- for liquid supply M14x1.5 (2 holes from above)
- for connecting a pressure sensor M18x1.5 (1 hole)
- for connecting a safety valve
- M20x1.5 (1 hole)
- to relieve pressure in case of its excess M5 (1 hole)

- 1. DL-UNI30828 Adapter housing - 1 pc,
- 2. DL-UNF21100 High pressure filter - 1 pc.,
- 3. DL-UNI30871 Special fitting for high pressure filter
  - M14xM18 1 pc., Fitting M14x1.5 -2 pcs.,
- 4. DL-UNI30218 5. DL-SHP15084
- Sealing washer 3 pcs., 6. **DL-UNI50271** Plug M14x1.5 -1 pc.,
- 7. 34-RL01006M5
  - Straight fitting Ø 6mm x M5 or 34-RL3106M5 elbow fitting Ø 6mm x M5.,
- 8. DL-SHP15084 Gasket for pressure sensor - 1 pc.





### DL-CR31049KIT

### Pressure accumulator (rail) for checking injectors and pumps with cooling (for 3 pressure regulators)

Pressure accumulator (Rail) for testing pumps CP1, CP2, CP3, CP4, Delphi, Denso and CR injectors The rail has cooling channels for improved thermal stabilization during testing and testing nozzles and pumps of the Common-Rail system.

### Contents of delivery:

1.	DL-CR31049	Pressure accumulator for 3 pressure regulators
2.	DL-CR30497	Plug (M24x1.5mm) instead of regulator
		pressure - 2 pcs.
3.	DL-UNI30162	Plug (M18x1.5mm) instead of pressure sensor
		- 1 pc
4.	DL-UNI30056	Cooling fitting (1/2"x8mm) - 2 pcs.
5.	DL-UNI30020	Fitting (1/4 "x8mm) outlet of the return drain
		from the pressure regulator - 3 pcs.
6.	DL-UNI31478	Fitting (M18x1.5mm X M14x1.5mm)
		for high pressure tube - 3 pcs.
7.	DL-UNI50271	Plug for fitting DL-UNI31478 - 1 pc.
8.	DL-UNI30203	Plugs (1/8") for cooling channels - 4 pcs.
9.	DL-UNI30635	Plug (M12x1.5) for rubber-metal
		washer - 1 pc.

ATTENTION! Regulators and pressure sensor not included!

**DL-UNI21042** 

Pressure accumulator bracket



### DL-CR31514 Drain rail

Designed to work with the main pressure accumulator (rail) with installed 3 taxiways. This drain rail facilitates switching drain hoses. Normally, the pressure accumulator **DL-CR31049** is drained from

each pressure regulator (RD). When using this rail drain is made from one fitting.



### DL-CR31528 Drain rail

Designed to work with the main pressure accumulator (rail) with installed 2 taxiways. This drain rail facilitates switching drain hoses. Normally, the pressure accumulator **DL-CR31049** is drained from each pressure regulator (RD). When using this rail drain is made from one fitting.



## STANDS and EQUIPMENT for testing common rail injectors and pumps

### EQUIPMENT FOR CHECKING PUMPS AND INJECTORS





### DL-CR31257KIT

Pressure accumulator (rail) for checking injectors and pumps with cooling (for 2 pressure regulators)

#### The rail has threaded holes for:

- pressure sensor connection (M18x1.5)
- pressure regulator connection (2 holes M24x1.5mm)
- backflow connections and plugs (4 holes 1/8")
- a fitting for connecting a hose or tube for rail cooling and plugs (5 holes 1/4")
- supply and output of high pressure fluid from the rail (2 holes M24x1.5mm)
- high-pressure fluid inlet and outlet from the rail on the side (2 holes M14x1.5mm)
- rail mounting (4 blind holes M8)

### Contents of delivery:

- 1. **DL-CR31257** Pressure accumulator for 2 pressure regulators
- 2. **DL-CR30497** Plug (M24x1.5mm) instead of pressure regulator (1 pc.)
- 3. **DL-UNI30162** Plug (M18x1.5mm) instead of pressure sensor (1 pc.)
- 4. **DL-UNI30020** Fitting (1/4"x8mm) for inlet and outlet of TJ for cooling (2 pcs.)
- 5. DL-UNI30202 Plug (1/4") cooling channel (3 pcs.)
- 5. **DL-UNI30293** Fitting (1/8"x8mm) for backflow outlet from RD (1 pc.)
- 6. **DL-UNI30203** Plug (1/8") for the rubber gasket in the channel back drain (1 pc.)
- 7. **DL-UNI31082** Plug (1/8") slotted in the backflow channel with rail ends (2 pcs.)
- 6. **DL-UNI31041** Fitting (M24x1.5mm X M14x1.5mm) for TVD (1 pc.)
- 7. **DL-UNI31039** Plug (M24x1.5mm) for HP channel (1 pc.)
- 8. DL-UNI31535 Fitting (M14x1.5 X M14x1.5mm) for TVD (2 pcs.)
- 9. DL-UNI50271 Plug for fitting DL-UNI31535 (1 pc.)

### **ATTENTION!**

Regulators and pressure sensor not included!

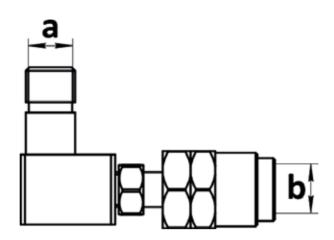


### **DL-UNI21041**

Pressure accumulator bracket



**ANGLE ADAPTERS** 

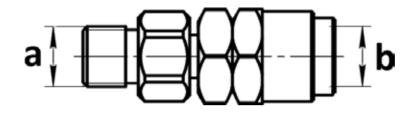


Article	a (mm)	b (mm)
DL-UNI50278	M14 x 1,5	M14 x 1,5
DL-UNI50279	M14 x 1,5	M12 x 1,5
DL-UNI50280	M14 x 1,5	M16 x 1
DL-UNI50281	M14 x 1,5	M16 x 1,5
DL-UNI50282	M14 x 1,5	M18 x 1,5

DL-UNI50283	M12 x 1,5	M14 x 1,5	
DL-UNI50284	M12 x 1,5	M12 x 1,5	
DL-UNI50285	M12 x 1,5	M16x1	
DL-UNI50286	M12 x 1,5	M16x1,5	
DL-UNI50287	M12 x 1,5	M18 x 1,5	



ADAPTERS STRAIGHT

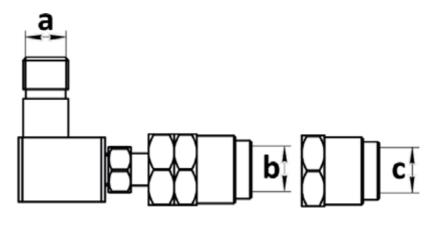


Article	a (mm)	b (mm)
DL-UNI50288	M14 x 1,5	M14 x 1,5
DL-UNI50289	M14 x 1,5	M12 x 1,5
DL-UNI50290	M14 x 1,5	M16 x 1
DL-UNI50291	M14 x 1,5	M16 x 1,5
DL-UNI50292	M14 x 1,5	M18 x 1,5

DL-UNI50293	M12 x 1,5	M14 x 1,5	
DL-UNI50294	M12 x 1,5	M12 x 1,5	
DL-UNI50295	M12 x 1,5	M16 x 1	
DL-UNI50296	M12 x 1,5	M16 x 1,5	
DL-UNI50297	M12 x 1,5	M18 x 1,5	

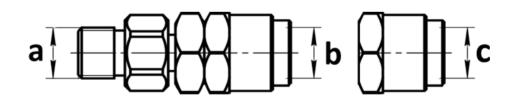


### ANGLE ADAPTERS WITH INTERCHANGEABLE NUT



Article	a (mm)	b (mm)	c (mm)	
DL-UNI50084	M14 x 1,5	M12 x 1,5	M14 x 1,5	
DL-UNI50088	M12 x 1,5	M12 x 1,5	M14 x 1,5	

### ADAPTERS STRAIGHT WITH INTERCHANGEABLE NUT



Article	a (mm)	b (mm)	c (mm)	
DL-UNI50083	M14x1,5	M12x1,5	M14x1,5	
DL-UNI50087	M12x1,5	M12x1,5	M14x1,5	









### DL-UNI30980

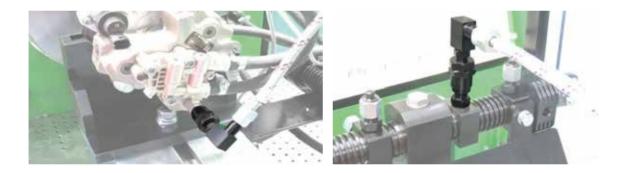
Replaceable nut from M16x1.0 to M18x1.5 for injector CR Bosch 0445120303 (MB)

### DL-UNI30981

Replacement nut from M16x1.5 to M18x1.5 for pumps CR Bosch CP4 0445010637, 0445010506, 0445010512.

### DL-UNI31398

Replaceable nut from M18x1.5 to M18x1.5 for connection to pressure accumulator BOSCH EPS-815 / EPS-708









### DL-UNI50175

Adapter straight long M14xM12 (pitch 1.5mm) with inner cone

Used for installation on a pressure accumulator

Can be installed for testing BOSCH PIEZO injectors.



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### EQUIPMENT FOR CHECKING PUMPS AND INJECTORS





### **DL-UNI50055**

Thread adapter M14x1.5mm to M12x1.5mm

Contents of delivery adapter - 1 pc.





### DL-UNI50056

Thread adapter M12x1.5mm to M14x1.5mm

Contents of delivery adapter - 1 pc.

**DL-UNI50276** 





Thread adapter M14x1.5mm to M14x1.5mm

Contents of delivery adapter - 1 pc.

### DL-CR50121



Adapter for high pressure filter DL-UNF2110 Mounted instead of a conventional fitting in a pressure accumulator (Rail) DL-CR30479, DL-CR30180, DL-CR30181, DL-CR30188, DL-CR30522, DL-CR30526. Contents of delivery: Adapter DL-CR30834 M14x1.5 ("Male") x M18x1.5 ("Mother") - 1 pc. Adapter body with M14x1.5 thread - 1 pc. ATTENTION! High pressure filter BOSCH DL-UNF2110 not included in the delivery set and must be ordered separately!

### DL-CR50372



Adapter for high pressure filter for high pressure fuel pump Has a 60° cone on both sides for connecting conical tubes high pressure from various manufacturers Has connecting threads M14x1.5 x M14x1.5 Contents of delivery: Adapter DL-CR31757 M14x1.5 ("Male") x M18x1.5 ("Mother") - 1 pc. Adapter DL-CR30835 M14x1.5 ("Male") x M18x1.5 ("Mother") - 1 pc. Attentional to the filter BOSCH DL-UNF2110 not included in the delivery set and must be ordered separately! It is recommended to install the filter in the fuel system of diesel engines. engines into the high pressure line injection pump ↔ Rail.



## STANDS and EQUIPMENT for testing common rail injectors and pumps

### EQUIPMENT FOR CHECKING PUMPS AND INJECTORS



### DL-CR50374

Adapter with high pressure filter for high pressure pump Has a 60° cone on both sides for connecting conical tubes high pressure from various manufacturers. Has connecting threads M14x1.5 x M14x1.5 Contents of delivery: Adapter DL-CR31757 M14x1.5 ("Male") x M18x1.5 ("Mother") - 1 pc. Adapter DL-CR30835 M14x1.5 ("Male") x M18x1.5 ("Male") - 1 pc. High pressure filter BOSCH DL-UNF2110 - 1 pc. It is recommended to install the filter in the fuel system of diesel engines. engines into the high pressure line injection pump ↔ Rail



### DL-UNI50363

Adapter with positioning 3/8" female x 3/8" male Contents of delivery: adapter – 1 pc. O-ring 27-014400 (8.1 x 1.6 mm) – 1 pc.





### **DL-UNI30650**

Adapter for safety valve for pressure accumulator (Rail) DL-CR30188, DL-CR30180 Contents of delivery: adapter – 1 pc.

### DL-UNI30796

Adapter from M14 to M18 thread for installation pressure sensor in pressure accumulators DL-CR30479,DL-CR30180 Contents of delivery: adapter – 1 pc.







### DL-CR14014

Angle adapter with thread M14x1.5mm to M14x1.5mm Convenient for connection to pumps high pressure, pressure accumulators (rails) and injectors. Delivery set: adapter 1 pc.

### DL-CR14012

Angle adapter with thread M14x1.5mm to M12x1.5mm Convenient for connection to pumps high pressure, pressure accumulators (rails) and injectors. Delivery set: adapter 1 pc.



### DL-UNI30287

Adapter with internal thread G1/2" for pressure gauge at 2000 bar. Has a connecting M14x1.5mm thread with 60° cone for tube high pressure (HPT)

**Contents of delivery:** adapter - 1 pc.



### DL-UNI30508

Adapter with internal thread M20x1.5mm for pressure gauge at 2500 bar. Has a connecting M14x1.5mm thread with 60° cone for tube high pressure (HPT).

**Contents of delivery:** adapter - 1 pc.



DL-SM Gasket for pressure gauge



DL-CR14P2500 Pressure gauge 2500 bar







### **DL-KM2000**

Pressure gauge bracket for 2000bar. For rail DL-CR30181 and DL-CR30522

### Contents of delivery:

- bracket
- clamping bar
- M6x60 bolt, nuts, washers 2 sets
- M6x45 bolt, washers 2 sets

### **DL-KM3000**

Pressure gauge bracket 2000bar for installation on a stand plate.

### Contents of delivery:

- bracket
- Profile bolt with nut, washer and grommet
- clamping bar
- M6X60mm bolt with nut, washer and grommet 2 sets





**DL-KM2500** 

Pressure gauge bracket for 2500bar. For rail DL-CR30181 and DL-CR30522

### Contents of delivery:

- main bracket
- pressure gauge mounting ring
- M6x45 bolt, washers 2 sets
- M6x30 bolt, washers 2 sets
- M6x10mm bolt 3 pcs.

### **DL-KM3500**

### Pressure gauge bracket 2500bar for installation on a stand plate

- main bracket
- pressure gauge mounting ring
- Profile bolt with nut, washer and grommet
- M6 x30mm bolt with washer and grommet 2 sets
- M6x10mm bolt 3 pcs.









Pressure sensor 150 bar for the compressor DL-UNI20008

DL-CR10046

Pressure sensor 250 bar for the compressor DL-UNI20008



DL-CR10058 Bosch pressure sensor 1500 bar





DL-CR10059 Bosch pressure sensor 1500 bar

DL-CR10060 Bosch pressure sensor 1500 bar



DL-CR10050 Bosch pressure sensor 1800 bar



DL-CR10061 Bosch pressure sensor 1800 bar

Bosch pressure sensor 2200 bar

DL-CR10052

**DL-CR10053** 









Bosch pressure sensor 2400 bar

DL-CR10062 Bosch pressure sensor 2400 bar

DL-CR10063 Bosch pressure sensor 2400 bar





DL-CR10051 Bosch pressure regulator 1800 bar



DL-CR10064 Bosch pressure regulator 1800 bar



DL-CR10065 Bosch pressure regulator 1800 bar



DL-CR10054 Bosch pressure regulator 2200 bar



DL-CR10055 Bosch pressure regulator 2700 bar



DL-CR10056 Safety valve Bosch 1800 bar



DL-CR10066 Safety valve Bosch 1800 bar



DL-CR10057 Safety valve Bosch 2400 bar









### DL-CR50204

Set with pressure gauge for testing back pressure in the injector return BOSCH Piezo.

The test is carried out on the vehicle. The pressure gauge is installed in the device with a hook fixing it over the motor space (eg under the hood).

Using this valve kit backwater **DL-CR50177** possible control the correct operation this valve when testing injectors BOSCH Piezo **on the stand.** 



### Contents of delivery:

1.	D-12-TV63-016	Pressure gauge 0-16 bar	
2.	DL-CR31311	Special adapter for pressure gauge	
3.	DL-CR31310	Union with rubber gasket for connection to the trunk back drain in the car.	
4.	DL-CR31285	Union with fixing screw for installation in the return connection drain nozzle	
5.	34-RL0506	Tee with quick fittings 6mm	
6.	34-RL010601	Straight quick-release fitting 1/8x6mm - 2 pcs.	
7.	DL-CR50246	Suspended Mounting Bracket	
8.	D-P1004	Teflon tube - 100cm	

ATTENTION! Valve DL-CR50177 is not included in the scope of delivery!









**DL-UNI31498** 

**DL-CR30493** 

M14x1.5 x M14x1.5 fitting for pressure accumulator (Rail)

M14x1.5 x M12x1.5 fitting for pressure accumulator (Rail)

Plug with external thread M20 x1.5 instead of safety valve for pressure accumulator (Rail)





### **DL-UNI30159**

Plug with external thread M24x1.5 heat-treated instead of pressure regulator for pressure accumulator (Rail)



### **DL-UNI30162**

Plug with external thread M18x1.5 instead of pressure sensor for pressure accumulator (Rail)



### **DL-UNI30636**

Plug with external thread M12x1.5 for drain hole in the pressure accumulator (Rail)



### **DL-UNI30529**

Plug with external thread M14x1.5



### **DL-UNI50271 (CR30)**

Plug with internal thread M14x1.5 for fitting DL-UNI30218 for pressure accumulator (Rail)



### **DL-UNI50275**

Plug with internal thread M12x1.5 for fitting DL-UNI3021 for pressure accumulator (Rail)





### DL-UNI30003

Fitting M14x1.5 X M14x1.5 60° cone for connecting two high pressure pipes



### DL-UNI31589

Fitting M14x1.5 X M12x1.5 60° cone for connecting two high pressure pipes



DL-UNI31592 Fitting M12x1.5 X M12x1.5 60° cone for connecting two high pressure pipes



### DL-UNI50312

Set of fittings and plugs for (TVD) fuel lines high pressure

Contents of delivery:

DL-UNI30003Tubing adapterM14x1.5 X M14x1.5mm. Has a cone on both sides for tightfit to the cone of the tubeDL-UNI31589Tubing adapterM14x1.5 X M12x1.5mm. Has a cone on both sides for tightfit to the cone of the tubeDL-UNI31592Tubing adapterM12x1.5 X M12x1.5mm. Has a cone on both sides for tightfit to the cone of the tubeDL-UNI31592Tubing adapterM12x1.5 X M12x1.5mm. Has a cone on both sides for tightfit to the cone of the tubeDL-UNI31590Plug M12x1,5 cone 60°DL-UNI31591Plug M14x1,5 cone 60°



### DL-UNI31591

M14x1.5 plug  $60^{\circ}$  cone for high pressure pipe



### **DL-UNI31590**

M12x1.5 plug 60° cone for high pressure pipe



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### EQUIPMENT FOR CHECKING PUMPS AND INJECTORS



### DL-TVD-S (Type 5/4 grey)

High Pressure Tube 1000x14x14 mm 1800 bar

### DL-TVD-K1000

High Pressure Tube 1000x14x14 mm 2500 bar

### DL-TVD-K830

High Pressure Tube 840x14x14 mm 2500 bar

### DL-TVD-K700

High Pressure Tube 700x14x14 mm 2500 bar

### DL-TVD-G

High Pressure Tube 650x14x14 mm 2500 Bar

### **DL-TVD-M**

High pressure metal tube

DL-TVD-M81412	(800)	M14xM12
DL-TVD-M81414	(800)	M14xM14
DL-TVD-M61412	(600)	M14xM12
DL-TVD-M61414	(600)	M14xM14

### **DL-TVD**

High Pressure tube for stands and equipment:

TVD31212 (300x12x12), TVD31214 (300x12x14), TVD31414 (300x14x14), TVD41212 (400x12x12), TVD41214 (400x12x14), TVD41414 (400x14x14), TVD51212 (500x12x12), TVD51214 (500x12x14), TVD51414 (500x14x14), TVD61212 (600x12x12), TVD61214 (600x12x14), TVD61414 (600x14x14)



## DL-CR50149 Retrofit kit for CR-Jet stands for pressure 2400 bar



### Kit includes:

- 1. Plug in Rail 4 pcs.
- 2. Plug instead of pressure regulator
- 3. Pressure sensor 2400 bar
- 4. Pressure regulator 2400 bar
- 5. Bracket for rail
- 6. Tree fitting 1/8" x1.5 2 pcs.
- 7. Fitting quick adapter M12x1.5 2 pcs.
- 8. Corner fittings 8x8 2 pcs.
- 9. Fitting M14x M14 (step 1.5) 4 pcs.
- 10. Teflon tube Ø 8mm
- 11. Rail with cooling
- 12. Flange Ø 107mm
- 13. Hose Ø 8mm
- 14. Banjo 14.5x8 mm, banjo bolt M14x1.5 (for supplying TJ to high-pressure fuel pump)
- 15. Rubber-metal gasket M14x1.5 2 pcs.
- 16. M14x1.5 fitting for backflow from high pressure fuel pump
- 17. Rubber-metal gasket 14x1.5
- 18. Fitting M12x1.5 3 pcs. (two for injection pump and one for rail drain)
- 19. Rubber-metal gasket M12
- 20. Clamp 13 mm 3 pcs.
- 21. High pressure fuel pump

### DL-CR50149 Retrofit kit for CR-Jet stands for pressure 2400 bar without injection pump



### CRISTINA

**CRistina** High-quality testing and assembly complex of BOSCH, DENSO and DELPHI Common Rail injectors.

CRistina repair- and testing complex is dedicated to assembing and disassembling Bosch, Denso and Delphi Common Rail inejctors according to manufacturer specified steps and mechanical tolerances.

The complex offers the ability to measure relevant mechanical tolerances of the injector parts and electrical characteristics of the electromagnet. The assembly/disasembly steps and critical measurement points are presented by convenient step-by-step instructions descriptions and relevant images of the work process itself.

### Available in options:

- CRISTINA-BASE
- CRISTINA-BASE-F
- CRISTINA-FULL
- CRISTINA-PROF
- CRISTINA-PROF-FULL
- CRISTINA-SPECIAL









## **CRISTINA-BASE**

- 1. DL-CRN005 Stand for measuring and adjusting injector parameters 1 set
- 2. DL-KIP020 or DL-KIP025 Indicator digital measuring head
- 3. DL-KIP0023 or DL-KIP0028 Communication device for measuring head
- 4. DL-CRN50094 Probe set and adapters
- 5. DL-CRN50099 Set of 4 adapters for measuring clearances of injectors BOSCH, DENSO
- 6. **DL-CRistina** Injector control signal activator "Valve stroke actuator" with kit cables including:
  - Power cable 220V 1 pc.
  - Main cable for connection to the electromagnet 1 pc.
  - Adapter cable for light injector 1 pc.
  - Adapter cable for cargo injector 1 pc.
- 7. CRistina Software
- 8. DL-PASSCRistina Passport (technical description, instruction manual)
- NOTE: Dedicated workbench table is not included.





### **CRISTINA-BASE-F**

### Contents of delivery:

- 1. DL-CRN005 Stand for measuring and adjusting injector parameters 1 set
- 2. **DL-ST01** Clamp for disassembling and assembling nozzle elements and measuring its parameters.
- 3. DL-KIP020 or DL-KIP025 Indicator digital measuring head
- 4. DL-KIP0023 or DL-KIP0028 Communication device for measuring head
- 5. DL-CRN50094 Probe set and adapters
- 6. DL-CRN50099 Set of 4 adapters for measuring clearances of injectors BOSCH, DENSO
- 7. **DL-CRistina** Injector control signal activator in large case with a set of cables including:
  - Power cable 220V 1 pc.
  - Main cable for connection to the electromagnet 1 pc.
  - Adapter cable for light injector 1 pc.
  - Adapter cable for cargo injector 1 pc.
- 8. PC with monitor, keyboard
- 9. CRistina Software
- 10. DL-PASSCRistina Passport (technical description, operating instructions)

NOTE: Dedicated workbench table is not included.





## **CRISTINA-FULL**

### Contents of delivery:

- 1. DL-CRN005 Stand for measuring and adjusting injector parameters 1 set
- 2. DL-KIP020 or DL-KIP025 Indicator digital measuring head
- 3. DL-KIP0023 or DL-KIP0028 Communication device for measuring head
- 4. DL-CRN50094 Probe set and adapters
- 5. DL-CRN50099 Set of 4 adapters for measuring clearances of injectors BOSCH, DENSO
- 6. **DL-CRistina** Injector control signal activator "Valve stroke actuator" with kit cables including:
  - Power cable 220V 1 pc.
  - Main cable for connection to the electromagnet 1 pc.
  - Adapter cable for light injector 1 pc.
  - Adapter cable for cargo injector 1 pc.
- 7. PC with monitor, keyboard
- 8. CRistina Software

**CR-NEXT-ST01** 

11.

- 9. DL-PASSCRistina Passport (technical description, operating instructions)
- 10. **DL-125** Vice L=125mm

Special table-workbench with two drawers included:

- Table with two drawers
- Perforated wall for tool placement
- Lighting ramp with two holders
- PC shelf
- Shelf for signal generator





or





### **CRISTINA-PROF**

- 1. DL-CRN005 Stand for measuring and adjusting injector parameters 1 set
- 2. DL-KIP020 or DL-KIP025 Indicator digital measuring head
- 3. DL-KIP0023 or DL-KIP0028 Communication device for measuring head
- 4. DL-CRN50094 Probe set and adapters
- 5. **DL-CRN50099** Set of 4 adapters for measuring clearances of injectors BOSCH, DENSO
- 6. **DL-CRistina** Injector control signal activator "Valve stroke actuator" with kit cables including:
  - Power cable 220V 1 pc.
  - Main cable for connection to the electromagnet 1 pc.
  - Adapter cable for light injector 1 pc.
  - Adapter cable for cargo injector 1 pc.
- 7. CRistina Software
- 8. **DL-PASSCRistina** Passport (technical description, operating instructions)
- 9. **D-MV200UM** Electron microscope
- 10. D-07147122 Torque wrench 1/2" 20-100 Nm
- 11. DL-CR50104 Support ring set
- 12. **DL-UNI30390** Wrench for removing the solenoid for CR injectors with a 30 mm hexagon.
- 13. DL-UNI30389 Wrench for removing the solenoid for CR injectors with a 29 mm hexagon.
- 14. **DL-UNI30435** Wrench for removing the solenoid of CR injectors with a 28 mm dodecahedron.
- 15. **DL-UNI30434** Wrench for removing the solenoid of CR injectors with a 27 mm dodecahedron.
- 16. **DL-UNI50046** 3 prong wrench for removing the nut in the electronic part of DENSO injectors.
- 17. DL-UNI30545 Wrench for removing the nut in the electronic part of Siemens injectors DL-UNI30545
- 18. **DL-UNI50050** A set of wrenches for dismantling the atomizer nut (hexagon 14 mm, 15 mm, 17mm, 19mm, 16mm and 17.5mm octagon and 27mm wrench)
- 19. **DL-CR30561** Wrench for dismantling the multiplier nut for Bosch CR injectors, hexagon 10 mm.
- 20. **DL-TORX10** Wrench for removing the nut in the electronic part of Bosch injectors 10 mm.



- 21. **DL-TORX12** Wrench for removing the nut in the electronic part of Bosch injectors 12 mm.
- 22. **DL-AP2** Set of 2 anti-magnetic tweezers.
- 23. DL-08CR5-244 Adjusting washers 55 pcs.
- 24. DL-09CR5-219 Adjusting washers 55 pcs.
- 25. **DL-11CR5-236** Adjusting washers 55 pcs.
- 26. DL-12CR5-230 Adjusting washers 130 pcs.
- 27. **DL-16CR5-232** Adjusting washers 60 pcs.
- 28. DL-18CR5-271 Adjusting washers 55 pcs.
- 29. **DL-19CR5-273** Adjusting washers 55 pcs.
- 30. **DL-25CR5-288** Adjusting washers 55 pcs.
- 31. DL-28CR5-287 Adjusting washers 110 pcs.

### NOTE: Dedicated workbench table is not included.





### **CRISTINA-PROF-FULL**

- 1. DL-CRN005 Stand for measuring and adjusting injector parameters 1 set
- 2. DL-KIP020 or DL-KIP025 Indicator digital measuring head
- 3. DL-KIP0023 or DL-KIP0028 Communication device for measuring head
- 4. DL-CRN50094 Probe set and adapters
- 5. **DL-CRN50099** Set of 4 adapters for measuring clearances of injectors BOSCH, DENSO
- 6. **DL-CRistina** Injector control signal activator "Valve stroke actuator" with kit cables including:
  - Power cable 220V 1 pc.
  - Main cable for connection to the electromagnet 1 pc.
  - Adapter cable for light injector 1 pc.
  - Adapter cable for cargo injector 1 pc.
- 7. CRistina Software
- 8. DL-PASSCRistina Passport (technical description, operating instructions)
- 9. **D-MV200UM** Electron microscope
- 10. **D-07147122** Torque wrench 1/2" 20-100 Nm
- 11. DL-CR50104 Support ring set
- 12. **DL-UNI30390** Wrench for removing the solenoid for CR injectors with a 30 mm hexagon.
- 13. **DL-UNI30389** Wrench for removing the solenoid for CR injectors with a 29 mm hexagon.
- 14. **DL-UNI30435** Wrench for removing the solenoid of CR injectors with a 28 mm dodecahedron.
- 15. **DL-UNI30434** Wrench for removing the solenoid of CR injectors with a 27 mm dodecahedron.
- 16. **DL-UNI50046** 3 prong wrench for removing the nut in the electronic part of DENSO injectors.
- 17. DL-UNI30545 Wrench for removing the nut in the electronic part of Siemens injectors DL-UNI30545
- 18. **DL-UNI50050** A set of wrenches for dismantling the atomizer nut (hexagon 14 mm, 15 mm, 17mm, 19mm, 16mm and 17.5mm octagon and 27mm wrench)
- 19. **DL-CR30561** Wrench for dismantling the multiplier nut for Bosch CR injectors, hexagon 10 mm.
- 20. **DL-TORX10** Wrench for removing the nut in the electronic part of Bosch injectors 10 mm.



# 2

## EQUIPMENT and TOOLS for repairing common rail injectors

- 21. **DL-TORX12** Wrench for removing the nut in the electronic part of Bosch injectors 12 mm.
- 22. **DL-AP2** Set of 2 anti-magnetic tweezers.
- 23. **DL-08CR5-244** Adjusting washers 55 pcs.
- 24. DL-09CR5-219 Adjusting washers 55 pcs.
- 25. **DL-11CR5-236** Adjusting washers 55 pcs.
- 26. DL-12CR5-230 Adjusting washers 130 pcs.
- 27. **DL-16CR5-232** Adjusting washers 60 pcs.
- 28. **DL-18CR5-271** Adjusting washers 55 pcs.
- 29. DL-19CR5-273 Adjusting washers 55 pcs.
- 30. **DL-25CR5-288** Adjusting washers 55 pcs.
- 31. DL-28CR5-287 Adjusting washers 110 pcs.
- 32. **DL-125** Vice L=250 mm
- 33. CR-NEXT-ST01 Special table-workbench with two drawers included:Table with two drawers
  - Perforated wall for tool placement
  - Lighting ramp with two holders
  - PC shelf
  - Shelf for signal generator
- 34. PC with monitor, keyboard
- 35. **DL-KIP010** Digital measuring head 0.01mm, travel 12.7mm (1pc)
- 36. DL-KIP011 Digital measuring heads 0.001mm, travel 12.7mm (2pcs)
- 37. DL-KIP012 Digital measuring head 0.001mm, stroke 25.4mm (1pc.)
- 38. **DL-ST-01** Clamp for disassembly-assembly of injectors.





### **CRISTINA-SPECIAL**

- 1. DL-CRN005 Stand for measuring and adjusting injector parameters 1 set
- 2. DL-KIP020 or DL-KIP025 Indicator digital measuring head
- 3. DL-KIP0023 or DL-KIP0028 Communication device for measuring head
- 4. DL-CRN50094 Probe set and adapters
- 5. **DL-CRN50099** Set of 4 adapters for measuring clearances of injectors BOSCH, DENSO
- 6. **DL-CRistina** Injector control signal activator "Valve stroke actuator" with kit cables including:
  - Power cable 220V 1 pc.
  - Main cable for connection to the electromagnet 1 pc.
  - Adapter cable for light injector 1 pc.
  - Adapter cable for cargo injector 1 pc.
- 7. CRistina Software
- 8. DL-PASSCRistina Passport (technical description, instruction manual)
- 9. **D-MV200UM** Electron microscope
- 10. **D-07147122** Torque wrench 1/2" 20-100 Nm
- 11. DL-CR50104 Support ring set
- 12. **DL-UNI30390** Wrench for removing the solenoid for CR injectors with a 30 mm hexagon.
- 13. **DL-UNI30389** Wrench for removing the solenoid for CR injectors with a 29 mm hexagon.
- 14. **DL-UNI30435** Wrench for removing the solenoid of CR injectors with a 28 mm dodecahedron.
- 15. **DL-UNI30434** Wrench for removing the solenoid of CR injectors with a 27 mm dodecahedron.
- 16. **DL-UNI50046** 3-prong wrench for removing the nut in the electronic part of DENSO injectors.
- 17. DL-UNI30545 Wrench for removing the nut in the electronic part of Siemens injectors DL-UNI30545
- 18. **DL-UNI50050** A set of wrenches for dismantling the atomizer nut (hexagon 14 mm, 15 mm, 17mm, 19mm, 16mm and 17.5mm octagon and 27mm wrench)
- 19. **DL-CR30561** Wrench for dismantling the multiplier nut for Bosch CR injectors, hexagon 10 mm.
- 20. **DL-TORX10** Wrench for removing the nut in the electronic part of Bosch injectors 10 mm.



01	DI TODVAS	Wrench for removing the put in the electronic part of Deach injectors 12 mm
ΖΙ.	DL-IOKA12	Wrench for removing the nut in the electronic part of Bosch injectors 12 mm.

- 22. **DL-AP2** Set of 2 anti-magnetic tweezers.
- 23. DL-08CR5-244 Adjusting washers 55 pcs.
- 24. DL-09CR5-219 Adjusting washers 55 pcs.
- 25. **DL-11CR5-236** Adjusting washers 55 pcs.
- 26. DL-12CR5-230 Adjusting washers 130 pcs.
- 27. **DL-16CR5-232** Adjusting washers 60 pcs.
- 28. **DL-18CR5-271** Adjusting washers 55 pcs.
- 29. **DL-19CR5-273** Adjusting washers 55 pcs.
- 30. **DL-25CR5-288** Adjusting washers 55 pcs.
- 31. DL-28CR5-287 Adjusting washers 110 pcs.
- 32. **DL-125** Vice L=125 mm
- 33. DL-STN
  Special table-workbench with two drawers included:
  Table with two drawers
  Perforated wall for tool placement
  - Lighting ramp with two holders
  - PC shelf
  - Shelf for signal generator
- 34. PC with monitor, keyboard
- 35. **DL-KIP010** Digital measuring head 0-12.7mm, 0.01µm (1pc)
- 36. **DL-KIP011** Digital measuring head 0-12.7mm, 0.001µm (2pcs)
- 37. DL-KIP012 Digital measuring head 0-25.4mm, 0.001µm (1pc)
- 38. **DL-ST-01** Clamp for disassembly-assembly of injectors.
- 39. **DL-CRN50113** Set of goniometers to control the tightening of
- 40. D-1012020001 Stainless steel bath
- 41. **DL-M035** Digital micrometer
- 42. **DL-M040** Tripod stand for micrometer
- 43. **D-07147120** Torque wrench 1/4"-1/2" with a force of 1-25 Nm
- 44. **DL-TX10** T-key Tx10
- 45. **DL-TX25** T-wrench 2.5 mm.
- 46. **DL-TX30** T-key 3 mm



46.	DL-UNI31113	The socket wrench is 6-sided by 13 mm.
47.	DL-UNI31114	The socket wrench is 6-sided by 14 mm.
48.	DL-UNI31115	The socket wrench is 6-sided by 15 mm.
49.	DL-UNI31119	The socket wrench is 6-sided by 19 mm.
50.	DL-CR50052	Device for filling the hydraulic compensator of the Bosch piezo injector.
51.	DL-UNI50043	Universal clamping tool for CR injectors.
52.	DL-UNI50032	Universal clamping tool for CR DENSO injectors.
53.	DL-1219KIT	Set of box spanners 10mm, 12mm, 13mm, 14mm, 15mm, 17mm, 19mm
54.	DL-UNI30776	Adapter from 1/4" to 1/2" for torque wrench

For additional payment: DL-UNI31117 Long hex wrench 17 mm.







#### DL-CRN50134

Table stand for tripod CR-CRistina

#### Contents of delivery :

- Base **CRN30918** 1pc
- Rack CRN30919 4 pcs
- Bolt with internal hexagon DIN912 M8x25 8 pcs.





#### **DL-1019KIT**

Open-end spanner set:

Contents of delivery :

•	DL-UNI31210	- 10 mm

- **DL-UNI31212** 12 mm
- DL-UNI31213 13 mm
- DL-UNI31214 14 mm
- **DL-UNI31215** 15 mm
- **DL-UNI31217** 17 mm
- DL-UNI31219 19 mm





#### **DL-PNP08**

#### **Pneumatic press** for pressing in the stop sleeve adjusting washer of the magnetic gap of the injectors Common Rail Bosch with pressure range 0-8 bar.

#### Contents of delivery :

- pneumatic press
- DL-CRN30914 adapter
- DL-CRN30921 pusher
- DL-CRN30915 adapter
- DL-CRN30920 pusher



## DL-CRN30915

adapter

DL-CRN30920

pusher for pneumatic press

.



DL-CRN30914

### adapter

#### DL-CRN30921

pusher for pneumatic press



#### DL-CRNRLS02

Adapter kit for pneumatic press

Contents of delivery :

- DL-CRN30914 adapter
  - DL-CRN30921 pusher
- DL-CRN30915 adapter
  - DL-CRN30920 pusher
    - **;RN30920** pusi





Wrench for removing the solenoid for CR injectors with a 29 mm hexagon

Wrench for removing the solenoid for CR injectors with 28 mm dodecahedron

Wrench for removing the solenoid for CR injectors with 27 mm dodecahedron

3-prong wrench for removing the nut in the electronic part of Denso injectors

Dismantling wrench set, 14,15,17,19 mm hex, 16, 17.5 mm octagon and 27 mm

Wrench for removing the nut in the electronic part of Siemens injectors

1 DL-CR50104

Support ring removal/installation kit CR injector solenoid wrench with 30 mm hexagon

- 2 DL-UNI30390
- 3 DL-UNI30389
- 4 DL-UNI30435
- 5 DL-UNI30434
- 6 DL-UNI50046
- 7 DL-UNI30545
- 8 DL-UNI50050

11

12

wrench for torque handle

9**DL-CR30561**Wrench for dismantling the nut of the Bosch CR injector multiplier, hexagon 10 Wrench10**DL-UNI31010**The key for removing the nut in the electronic part of the Bosch injector

- DL-UNI31012The key for mounting / dismounting the nut of multiplier of the CRIN truck injectorsDL-AP2Set of 2 anti-magnetic tweezers DL-AP2
- 13 DL-UNI31110 T-key Tx10

 14
 DL-UNI31125
 T-wrench 2.5mm

 15
 DL-UNI31130
 T-key 3 mm

- 16 DL-UNI31113 Allen wrench hexagon 13 mm
- 17 DL-UNI31114 Allen key 14 mm hex
- 18 DL-UNI31115 Allen key hexagonal 15 mm
- 19 DL-UNI31119 Allen key 19 mm hex
- 20 DL-CR50052 Bosch piezo injector hydraulic compensator filling tool
- 21 **DL-UNI50043** Universal clamping tool for CR injectors
- 22 **DL-UNI50032** Universal clamping tool for CR Denso injectors



## DL-CRTOOLKIT-12

## CR injector repair tool kit



1	DL-CR50104	Support ring removal/installation kit
2	DL-UNI30390	CR injector solenoid wrench with 30 mm hexagon
3	DL-UNI30389	Wrench for removing the solenoid for CR injectors with a 29 mm hexagon
4	DL-UNI30435	Wrench for removing the solenoid for CR injectors with 28 mm dodecahedron
5	DL-UNI30434	Wrench for removing the solenoid for CR injectors with 27 mm dodecahedron
6	DL-UNI50046	3-prong wrench for removing the nut in the electronic part of Denso injectors
7	DL-UNI30545	Wrench for removing the nut in the electronic part of Siemens injectors
8	DL-UNI50050	Dismantling wrench set, 14,15,17,19 mm hex, 16, 17.5 mm octagon and 27 mm
		wrench for torque handle
9	DL-CR30561	Wrench for dismantling the nut of the Bosch CR injector multiplier, hexagon 10 Wrench
10	DL-UNI31010	The key for removing the nut in the electronic part of the Bosch injector
11	DL-UNI31012	The key for mounting / dismounting the nut of multiplier of the CRIN truck injectors
12	DL-AP2	Set of 2 anti-magnetic tweezers DL-AP2







#### DL-CRN50113

#### Set of goniometers to control the tightening of the atomizer nut

#### **Contents of delivery:**





#### DL-CRN50107

**Protractor for injectors with nut diameter atomizer 17 mm** Angle range: 0° - 360°

#### DL-CRN50110

## Protractor for injectors with diameter atomizer nuts 19 mm

Angle range: 0° - 360°



#### DL-CRN50108

## Protractor for injectors with diameter atomizer nuts 21 mm

Angle range: 0° - 360°



All goniometers are for sale also separately.





### DL-ST01

## Clamp for disassembly and assembly of CR injectors and cargo pump injectors

#### Contents of delivery:

1. STD50115	Rack – 1 pc.	18. –	Nut M10 – 4 pcs.
2. STD50116	Large vise – 1 pc.	19. –	Washer 10.5x20x2 – 4 pcs.
3. STD30586	Sponge-clamping large vise- 2 pcs.	20. –	Nut M20 – 2 pcs.
4. STD30569	Large locking handle vise – 2 pcs.	21. –	Washer 21x37x3 – 2 pcs.
5. STD30498	Replaceable presser foot – 2 pcs.	22. –	Grover 20 – 2 pcs.
6. STD30540	Guide rail – 1 pc.	23. –	Bolt M10x30 – 4 pcs.
7. STD30846	Locking handle, Ø 50 mm – 1 pc.	24. STD30752	Presser foot replaceable for
8. STD50117	Small vise – 1 pc.		Denso injectors – 2 pcs.
9. STD30500	Small vise handle – 2 pcs.	25. STD30873	Axis under the sight – 1 pc.
10. STD30563	"V-shaped" sponge clamp for	26.	M4x8 screw – 4 pcs.
	small vise – 2 pcs.	27. STD31172	Presser foot replaceable
11. STD30468	Locking handle, Ø 35 mm – 2 pcs.		(with increased height) – 2 pcs.
12. STD30610	Bracket – 1 pc.	28. –	M4x16 screw – 1 pc.
13. STD30811	Clamping screw handles – 3 pcs.	29. –	M4x20 screw – 2 pcs.
14. STD30810	Clamping screw – 1 pc.	30. STD30874	Sight for goniometer – 1 pc.
15. STD30812	Axis – 1 pc.	31. STD30147	Stop STD30147 Ø9 mm, for
16. STD30813	Holder – 1 pc.		clamping screw position 14 – 1 pc.
17. –	Grover washer for 10 – 4 pcs.	32. STD30148	Stop STD30148 Ø7 mm, for
			clamping screw position 14 – 1 pc.



### SPARE PARTS FOR CLAMP DL-ST01



DL-STD30498

Replaceable presser foot (standard) (Set 2 pcs)





DL-STD31172 Replaceable presser foot (with increased height) (Set of 2 pcs)



DL-STD30586

Sponge-clamp of a large vice



DL-STD30563 V-shaped clamping jaw for small vices



DL-STD30752 Replacement presser foot for Denso injectors (Set of 2 pcs)





#### ADDITIONAL EQUIPMENT FOR CLAMP DL-ST01

### DL-STD50072 KIT

Set of holders for single pump sections (PLD sections) and Audi / VW unit injectors (DL-STD50070K, DL-STD50071K)



#### **DL-STD50070 K**

Set of single section holders pumps (PLD sections)

Contents of delivery:

1	STD-50077	AT holder
2	STD-50078	speaker holder
3	STD-30671	bar
4	STD-30672	rack
5	STD-30673	emphasis

6 screw GOST11738-84 M10x60 - 2 pcs.



### DL-STD50071 K

Set of pump nozzle holders Audi / VW

Contents of delivery:

1	STD-50009	clamp VW2.0
2	STD-50010	clamp VW1.9
3	STD-30656	bar
4	STD-30657	stand - 2 pcs.
5	STD-30678	emphasis
6	STD-30658	bolt
7	STD31245	Short stand
		UIS - 2 pcs.



DL-STD30874

Visor for protractor



DL-STD30873 Axle under the sight





#### DL-CR50341

Bracket with adapter for measurement valve stroke of BOSCH piezo injectors used during their assembly.

Package Included: adapter **DL-CR31201** and measuring probe **DL-CR31206** 



#### DL-CR50340

Bracket for measurement adapter valve stroke of BOSCH piezo injectors used during their assembly.

Adapter **DL-CR31201** and Measuring probe **DL-CR31206 are not included** in the delivery package.







#### **OPTIONAL CLAMP DL-ST01**





#### DL-STD50206

Injector holder AUDI / VW 1.9 to adjust el. magnetana clamp ST-01 / ST-02







#### DL-STD50207

Injector holder AUDI / VW 2.0 to adjust el. magnetana clamp ST-01 / ST-02





#### Set of adapters with digital indicators

Adapter set with digital dial indicators for assembly gaps measurement and nozzle valve and needle stroke measurement.



#### Kit includes:

1. DL-CRI 2.1-RLS-N, CRN 30031	1.1	CRN 30032
BOSCH CR 12.1 injector magnetic gap adapter		
2. DL-CRI 1-AHE, CRN 50089	2.1	CRN 30708
Valve travel adapter for injectors BOSCH CRI 1, C	RI 2.0/2.2	, CRIN 1/1.6
3. DL-DENSO016-N, CRN 30033	3.1	CRN 30034
Denso injector overstroke adapter		
4. DL-CRI-DNH-N, CRN 30027	4.1	CRN 30028
BOSCH needle stroke adapter, BOSCH CRI 2.0/2.	2 excess	stroke adapter
5. DL-CRI-RLS-N, CRN 30029	5.1	CRN 30030
Magnetic gap adapter BOSCH CRI 1, CRI 2.0/2.2, overstroke adapter BOSCHCRI2.0/2.2	CRIN 1/1	.6,
6. DL-CRI 2.1-AHE1 CRN 30705	6.1	CRN 30706
BOSCH CRI 2.1 injector valve stroke adapter indire	ect measu	irement
7. DL-CRI 2.1-AHE 2, CRN 30707	7.1	CRN 50007
Адаптер хода клапана инжекторов BOSCH CRI	2.1 прямо	й замер
8. DL-VFK-DFK, CRN 30709	8.1	CRN 30710
BOSCH Atomizer Spring and Armature Spring Ada	pter for B	OSCH Injectors
9. DL-CRIN 2/3AHE, CRN 50299		
Valve travel and overstroke adapter for BOSCH CF	RIN 2, CR	IN 3 injectors
10. Digital measuring head 0-12.7mm, 0.001mm	DL-KIP01	11
11. Digital measuring head 0-25.4mm, 0.001mm	DL-KIP01	12

12. Allen key 2.5 mm



#### Set of adapters with digital indicators

Adapter set with digital dial indicators for assembly gaps measurement and nozzle valve and needle stroke measurement.



#### Катипания в ключает:

1. <b>DL-CRI 2.1-RLS-N, CRN 30031</b> BOSCH CR 12.1 injector magnetic gap a	1.1 <b>CRN 30032</b> adapter	
2. <b>DL-CRI 1-AHE, CRN 50089</b> Valve travel adapter for injectors BOSCH	2.1 <b>CRN 30708</b> H CRI 1, CRI 2.0/2.2, CRIN 1/1.6	
3. <b>DL-DENSO016-N, CRN 30033</b> Denso injector overstroke adapter	3.1 CRN 30034	
4. <b>DL-CRI-DNH-N, CRN 30027</b> BOSCH needle stroke adapter, BOSCH	4.1CRN 30028CRI 2.0/2.2 excess stroke adapter	
5. <b>DL-CRI-RLS-N, CRN 30029</b> Magnetic gap adapter BOSCH CRI 1, CF overstroke adapter BOSCHCRI2.0/2.2	5.1 <b>CRN 30030</b> RI 2.0/2.2, CRIN 1/1.6,	
6. <b>DL-CRI 2.1-AHE1 CRN 30705</b> BOSCH CRI 2.1 injector valve stroke ada	6.1 <b>CRN 30706</b> lapter indirect measurement	
7. DL-CRI 2.1-AHE 2, CRN 30707 Адаптер хода клапана инжекторов ВО	7.1 <b>СRN 50007</b> ОSCH CRI 2.1 прямой замер	
8. <b>DL-VFK-DFK, CRN 30709</b> BOSCH Atomizer Spring and Armature S	8.1 <b>CRN 30710</b> Spring Adapter for BOSCH Injectors	
9. <b>DL-CRIN 2/3AHE, CRN 50299</b> Valve travel and overstroke adapter for B	BOSCH CRIN 2, CRIN 3 injectors	
10. DL-KIP025MS Digital measuring hea	ad 0-12.7mm, 0.001mm (PC connection po	ssibl

11. **DL-KIP0026** Digital measuring head 0-25.4mm, 0.001mm (PC connection possible)

12. Allen key 2.5 m





Adapter for measuring valve stroke of CRIN 2/3 injectors. Used together with probe DL-CRN30708.

#### Contents of delivery:

 DL-CRN50090
 adapter CRIN 2/3 — 1 pc.

 DL-CRN30708
 probe - 1 pc.

#### **DL-CRN50299**

Адаптер измерения хода клапана и избыточного хода форсунок CRIN 2/3



Contents of delivery:

DL-CR31555	adapter case — 1 pc
DL-CR31527	adapter nut — 1 pc
DL-CRN30708	measuring probe — 1 pc.
DL-CR31556	anchor fixing sleeve — 1 pc



#### DL-CRN50299KIT

Valve Stroke Measurement Kit and overstroke CRIN 2 / CRIN 3 with collapsible and a non-separable anchor

#### **Contents of delivery**

- Digital indicator head **DL-KIP012** 1 pc.
- Adapter case **DL-CR31555** 1 pc.
- Adapter nut **DL-CR31527** 1 pc.
- Measuring probe **CRN30708** 1 pc.
- Fixing bushing with toujon **DL-CR31556** 1 pc.
- L-shaped hex wrench 2.5 for fixing measuring head 1 pc.
- L-shaped hex wrench 1.5 for fixing bushings 1 pc

*Attention!* Positions are specified according to kit **DL-CRN50091**. Others may also apply indicator measuring heads are of higher quality and more expensive. CIG have the same measuring range (stroke 0-25.4 mm and resolution 0.001 mm). As an example **DL-KIP021**, **DL-KIP026**, **DL-KIP031**. All of them are available upon request.





#### DL-CRN50299KIT

Kit for measuring the valve stroke (AH) of CRIN 2 / CRIN 3 injectors with detachable and non-demountable armature

Contents of delivery:

DL-CR31586	Base - 1 pc.	
DL-CR31583	Height adapter springs - 1 pc.	
DL-CR31584	Height adapter washers Ahe - 1 pc.	
DL-CR31585	Washer height adapter Rls - 1 pc	
DL-CRN30033	3 Adapter for measuring the height of washers and	
	springs - 1 pc.	
DL-KIP0036	Indicator digital measuring head with an accuracy	
	of 0.001 mm and a stroke of 25 mm - 1 pc	



#### DL-CR50311

Set of tools and adapter for measuring the height of washers and springs CRI1/CRI2

#### Contents of delivery:

	•
DL-CR31586	Base - 1 pc.
DL-CR31583	Height adapter springs - 1 pc.
DL-CR31584	Height adapter washers Ahe - 1 pc.
DL-CR31585	Washer Height Adapter RIs - 1 pc
DL-CRN30033	Adapter for measuring the height of washers and
	springs - 1 pc.

#### DL-CR50306

Set of devices for measuring the height of washers and springs of CRI1/CRI2 injectors



#### Contents of delivery:

DL-CR31586	Base - 1 pc.
DL-CR31583	Height adapter springs - 1 pc.
DL-CR31584	Height adapter washers Ahe - 1 pc.
DL-CR31585	Washer Height Adapter RIs - 1 pc





### DL-UNI20150 CRISTINA - PIEZO

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect. The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.

#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package

#### Contents of delivery:

- 1. Signal generator "CRistina-PIEZO"
- 2. A set of cables to the signal generator "CRistina-PIEZO"
- Power cable 220V
- Main cable for connecting to the piezo package
- Cable adapter universal
- Adapter cable with crocodile clips
- Earthing cable
- 3. Passport (technical description, operating instructions) 1 pc.

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!





## \_/ acoustic testing \_\_\_\_



## DL-UNI20150A CRISTINA - PIEZO ACOUSTIC

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect.

The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.

#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package
- 6. Valve opening/closing control with acoustic test
- 7. Precise detection of valve opening and closing with an acoustic test

#### Contents of delivery:

- 1. Signal generator "CRistina-PIEZO"
- 2. A set of cables to the signal generator "CRistina-PIEZO"
  - Power cable 220V
  - Main cable for connecting to the piezo package
  - Cable adapter universal
  - Adapter cable with crocodile clips
- Earthing cable
- 3. Microphone
- 4. Microphone holder
- 5. Passport (technical description, operating instructions) 1 pc.

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!







### **DL-UNI20050 CRISTINA - PIEZO**

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect. The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.





#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. The clamp-holder of injectors Piezo ST-04
- 3.Bracket holder.
- 4. The air meter.
- 5. The air filter.
- 6. The distributive air valve.
- 7. Reducer for air.
- 8. The electronic manometer.
- 9. Set of tubes.
- 10. Quick coupling 6mm.
- 11. Set of 2 nozzles for the backflow of the Siemens VDO injectors
- 12. **DL-CR50157** Set of adapters for measuring f the valve stroke of CR VDO Siemens injector
- (DL-CR50165 for DL-UNI20050-F)
- 13.Connector M12x1,5X1/8"

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!

It differs from the DL-UNI20050F set in a less complete set of adapters for injectors.





### **DL-UNI20050F CRISTINA - PIEZO**

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect. The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.







DL-CR50165

#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. Clamp-holder for injectors Piezo ST-04
- 3. Bracket holder for equipment.
- 4. Air meter.
- 5. Air filter.
- 6. Air distribution crane.
- 7. Reducer for air.
- 8. Electronic manometer.
- 9. Set of tubes.
- 10.Coupling of quick connection 6mm.
- 11.Set of 2 fittings for backflow of Siemens VDO injectors
- 12. **DL-CR50165** Set of adapters for measuring the stroke of the injector valve CR VDO Siemens 13. Adapter M12x1.5X 1/8 "

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!

It differs from the **DL-UNI20050** kit in a more complete set of adapters for injectors.



## \_\_\_\_A\_ acoustic testing \_\_\_\_



## DL-UNI20050A CRISTINA - PIEZO ACOUSTIC

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect. The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.







DL-CR50157

#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package
- 6. Valve opening / closing control with acoustic test

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. Clamp-holder for injectors Piezo ST-04
- 3. Bracket holder for equipment.
- 4. Air meter.
- 5. Air filter.
- 6. Air distribution crane.
- 7. Reducer for air.
- 8. Electronic manometer.
- 9. Set of tubes.
- 10. Coupling of quick connection 6mm.
- 11.Set of 2 fittings for backflow of Siemens VDO injectors
- 12. **DL-CR50157** Set of adapters for measuring the stroke of the valve injector CR VDO Siemens 13.Adapter M12x1.5X 1/8 "
- 14. Microphone
- 15. Microphone holder
- 16. Passport

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!

It differs from the DL-UNI20050F (A) kit in a less complete set of adapters for injectors.



## \_\_\_\_A\_ acoustic testing \_\_\_\_



## DL-UNI20050FA CRISTINA - PIEZO ACOUSTIC

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect. The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.

CRistina - Piezo





DL-CR50165

#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package
- 6. Valve opening / closing control with acoustic test

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. Clamp-holder for injectors Piezo ST-04
- 3. Bracket holder for equipment.
- 4. Air meter.
- 5. Air filter.
- 6. Air distribution crane.
- 7. Reducer for air.
- 8. Electronic manometer.
- 9. Set of tubes.
- 10. Coupling of quick connection 6mm.
- 11.Set of 2 fittings for backflow of Siemens VDO injectors
- 12. **DL-CR50165** Set of adapters for measuring the stroke of the injector valve CR VDO Siemens
- 13.Adapter M12x1.5X 1/8 "
- 14. Microphone
- 15. Microphone holder
- 16. Passport

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!

Differs from DL-UNI20050 (A) kit in more complete set of injector adapters





### DL-UNI20051 Комплект с CRistina-PIEZO

Repair kit for piezo injectors CR Siemens / VDO (without clamp for clamping injectors and acoustic test). The device confidently detects all malfunctions of the piezoelectric package. Identifies problems that similar instruments or benches do not detect.

The device was developed for assembling Siemens injectors, but it is also functional with Bosch injectors.





#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. Bracket holder for equipment.
- 3. Air meter.
- 4. Air filter.
- 5. Air distribution crane.
- 6. Reducer for air.
- 7. Electronic manometer.
- 8. Set of tubes.

9.Quick coupling 6mm.
10.Set of 2 fittings for backflow of Siemens VDO injectors
11.Adapter M12x1.5X 1/8 "
DL-UNI20051A CRistina-PIEZO kit with acoustic test
Repair kit for piezo injectors CR Siemens / VDO (without clamp for clamping injectors)

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!



## \_\_\_\_A\_ acoustic testing \_\_\_\_



### DL-UNI20051A Комплект с CRistina-PIEZO

Repair kit for piezo injectors CR Siemens / VDO (without clamp for clamping injectors with acoustic test). The device is designed to test the piezo injector of the piezo package. The device confidently detects all malfunctions of the piezoelectric package. Identifies problems that similar instruments or benches do not detect.

The device was developed for assembling Siemens injectors, but it is also functional with Bosch injectors.







#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package
- 6. Valve opening / closing control with acoustic test

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. Bracket holder for equipment.
- 3. Air meter.
- 4. Air filter.
- 5. Air distribution crane.
- 6. Reducer for air.
- 7. Electronic manometer.
- 8. Set of tubes.
- 9. Quick coupling 6mm.
- 10. Set of 2 fittings for backflow of Siemens VDO injectors
- 11. Adapter M12x1.5X 1/8 "
- 12. Microphone
- 13. Microphone holder
- 14. Passport

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!



#### ADDITIONAL EQUIPMENT FOR CRISTINA-PIEZO



### DL-UNI20054 ACOUSTIC BOARD

#### Acoustic test kit for CRISTINA - PIEZO

#### The kit includes:

- 1. Microphone in a plastic case
- 2. Clip for fixing the microphone on the nozzle body
- 3. Acoustic test board for installation inside the instrument CRISTINA -PIEZO
- 4. Set of connecting wires
- 5. Set of racks and bolts for fixing the board
- 6. Instructions for assembly.





## DL-UNI20052

Injector repair kit CR Siemens VDO (without controller Cristina-Piezo.

#### Contents of delivery:

- 1. Clamp-holder of nozzles PiezoST-04
- 2. Equipment holder bracket.
- 3. Air meter.
- 4. Air filter.
- 5. Air distribution valve.
- 6. Reducer for air.
- 7. Electronic pressure gauge.
- 8. Set of tubes.
- 9.6mm quick coupling.
- 10. Set of 2 fittings for reverse Siemens injector drain
- 11. Adapter M12x1.5 X 1/8"



## DL-UNI20053

Injector repair kit CR Siemens VDO (without controller CRistina-Piezo and clamps ST-04)

#### Contents of delivery:

- 1. Equipment holder bracket.
- 2. Air meter.
- 3. Air filter.
- 4. Air distribution valve.
- 5. Reducer for air.

- 6. Electronic pressure gauge.
- 7. Set of tubes.
- 8. 6mm quick coupling.
- 9. Set of 2 fittings for

backflow of SiemensVDO injectors 10. Adapter M12x1.5 X 1/8"

ADDITIONALLY! For kits DL-UNI20051, DL-UNI20052, DL-UNI20053 requires a set of adapters with measuring head DL-CR50157 for 6 pos. or DL-CR50165 for 8 positions





Adapter set without indicator head for measurement injector parameters CR VDO Siemens.

#### Contents of delivery:

- 1. **DL-CR31079** Adapter for testing the piezo package.
- 2. **DL-CR50147** Adapter (body with nut) for measuring valve travel.
- 3. DL-CR31177 Measuring probe
- 4. **D-7153136** Hex key 2mm



## DL-CR50157

Adapter kit with indicator head for measuring parameters injectors CR VDO Siemens.

#### Contents of delivery:

	· · · · · · · · · · · · · · · · · · ·				
1.	DL-CR31079	Adapter for testing the piezo package.			
2.	DL-CR50147	Adapter (body with nut) for measuring valve travel.			
3.	DL-CR31177	Measuring probe			
4.	D-7153136	Hex key 2mm			
5.	DL-KIP002	Indicator measuring mechanical head with			
		precision 0.001mm, travel 5mm			

6. Organizer





Adapter set with indicator head for measuring valve travel CR VDO Siemens injectors of all types.

#### Contents of delivery:

1.	DL-CR31079	Adapter for measuring the parameters of the piezo injector package new type M25x1
2.	DL-CR31179	Adapter for measuring the parameters of the piezo injector package old type M27x1
3.	DL-CR31080	Adapter housing for measuring the stroke of the injector valve
4	DL-CR31081	Nut to body of adapter for measuring valve travel
		nozzles of a new type M25x1
5.	DL-CR31178	Nut to the body of the adapter for measuring the valve travel
		nozzles of a new type M27x1
6.	D-7153136	Hex key 2mm
7.	DL-KIP002	Indicator measuring head mechanical
		0.001mm travel 5mm
8.	DL-CR31177	Measuring probe
~		

9. Organizer

## DL-CR50166

Adapter kit without indicator head for measuring valve travel CR VDO Siemens injectors of all types.

The kit is identical to **DL-CR50165**, except for the indicator mechanical measuring head.





#### Set of adapters and wrenches for repairing CR VDO Siemens injectors

#### Contents of delivery:

- 1. DL-CR50165 Set of adapters with indicator head for measuring valve travel of the CR VDO Siemens injector of all types.
  - 1. **DL-CR31079** Adapter for measuring the parameters of the piezo injector package new type M25x1
  - 2. **DL-CR31179** Adapter for measuring the parameters of the piezo injector package old type M27x1
  - 3. **DL-CR31080** Adapter housing for measuring the stroke of the injector valve
  - 4 **DL-CR31081** Nut to body of adapter for measuring valve travel nozzles of a new type M25x1
  - 5. **DL-CR31178** Nut to the body of the adapter for measuring the valve travel nozzles of a new type M27x1
  - 6. **D-7153136** Hex key 2mm
  - 7. **DL-KIP002** Indicator measuring head mechanical 0.001mm travel 5mm
  - 8. **DL-CR31177** Measuring probe
  - 9. Organizer

## 2. DL-CR50163 Wrench for mounting / dismounting the piezo package of CR injectors VDO Siemens.



With the help of an elongated base, this wrench provides convenient work with CR VDO Siemens injectors. The closed zones of the nozzle are excluded and the adjustment of the piezo package is facilitated. Landing dimensions of the key:

a) hexagon for piezo package 25mmb) 1/2" square for torque wrench



3. DL-CR50164 Wrench for mounting / dismounting the piezo package of CR injectors VDO Siemens.



With the help of an elongated base, this wrench provides convenient work with CR VDO Siemens injectors. The closed zones of the nozzle are excluded and the adjustment of the piezo package is facilitated. Landing dimensions of the key:

a) hexagon for piezo package 27mmb) 1/2" square for torque wrench

4. DL-UNI30545 Wrench for mounting / dismounting the multiplier nut SIEMENS injectors



### ATTENTION! All keys are sold separately.



#### DL-CR30843

Key attachment for convenient and safe tube removal piezo injectors (turnkey 27 mm).

Prevents nozzle breakage injector backflow.

#### DL-RP430

#### Manufacturer - ZECA (Italy) Flame test chamber (aspirator) nozzle spray.

Allows visual sprayer quality control diesel injectors without harm to health. The device collects the working fluid for reuse.









#### DL-RP400

## Manual press for injector testing with mechanical pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- mechanical pressure gauge 1 pc.
- connecting tube 2 pcs.

DL-RP410 (without pressure sensor)

DL-RP415 (with pressure sensor. 1500 bar)

## Manual press for injector testing with electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 415**) for 1500 bar 1 pc.

DL-RP420	(without pressure sensor)
DL-RP425	(with pressure sensor. 1500 bar)

## Manual press for injector testing with 2-channel electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 425**) for 1500 bar 1 pc.

#### **DL-RP430**

Manufacturer - ZECA (Italy) Flame test chamber (aspirator) nozzle spray

Allows for visual inspection performance of diesel i njectors without harm to health. The device is going to work liquid for reuse.







### **DL-RP500**

#### Manufacturer - ZECA (Italy) Manual press for injector testing with mechanical pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- mechanical pressure gauge 1 pc.
- connecting tube 2 pcs.

DL-RP510	(without pressure sensor)
DL-RP515	(with pressure sensor. 1500 bar)

#### ZECA hand press for injector testing with electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 515) for 1500 bar 1 pc.

**DL-RP520** (without pressure sensor)

**DL-RP525** (with pressure sensor. 1500 bar)

### ZECA hand press for injector testing with 2-channel electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 525) for 1500 bar 1 pc.

#### **DL-UNI20150**

#### **CRistina-PIEZO instrument**

The device is designed to test piezo injectors and piezo package

#### Instrument capabilities:

- Sending a signal to activate the nozzle on the hand press
- Piezo resistance measurement
- Case breakdown test
- Measuring the capacitance of a piezo pack
- Measuring the smooth running of a piez



## MP-250 SASH

Machine for fast and precise valve seat restoration injector multiplier BOSCH Common Rail.

Restoration is achieved by the translational-rotational action of the lap in a special abrasive medium on the seat of the damaged nozzle valve.

Available in 2 versions:

- MP-250 SASH-Z with collet chuck
- MP-250SASH-S with self-locking chuck.
- Vibration mechanism in a protective case.
- Screw adjustment on table height.
- Compactness.

#### Contents of delivery:

- MPS30515 Lapping at 120 ° 5 pcs.
- MPS30516 Lapping at 124 ° 5 pcs.
- grinding paste diamond ASM 7/5(k)
- grinding paste diamond ASM 5/3 (k)
- grinding paste diamond ASM 3/2 (k)
- DL-MPZ30336 valve holder electromagnetic injectors



#### A set of lapping diamond pastes for the MP-250 machine DL-ACM3(K) KIT



**DL-ACM75K**Lapping paste diamond fraction 7/5 microns, 25 gr.**DL-ACM53K**Lapping paste diamond fraction 5/3 microns, 25 gr.**DL-ACM32K**Lapping paste diamond fraction 3/2 microns, 25 gr.





#### DL-MPS31241

#### Spray body holder piezo injectors BOSCH

Used for hull restoration atomizer of piezo injectors BOSCH. Suitable for lapping machine MP-250 SASH.

Application: Suitable for BOSCH injectors piezo series 0445115



#### DL-MPS31240 Medium soft lap (CM)

for restoring the atomizer housing of CR BOSCH piezo

injectors. Sharpening angle 60 degrees. Example: BOSCH CR 04455115



#### DL-MPS31250 Medium hard lap

**DL-MPS31322** 

to restore the spray body of the piezo nozzles from BOSCH. The sharpening angle is 60 degrees. Example: BOSCH CR 04455115



#### Elbor lap of increased hardness (PT)

for restoring the atomizer housing of CR BOSCH piezo injectors. Sharpening angle 60 degrees. Example: BOSCH CR 04455115



#### DL-MPS31291

Lapping for the restoration of the valve regulators pressure pumps CR CP-1 Restoration is carried out using a machine lapping of injector valves MP-250 SASH



### DL-MPS31705

Lapping 64 degrees for grinding the sprayer body Caterpillar injectors



#### DL-MPS31704

Caterpillar Nozzle Sprayer Housing Holder Restoration is carried out during processing on the MR-250 lapping machine





#### BOSCH CR piezoelectric valve seat retainer during its restoration

- Suitable for piezo injectors BOSCH 0445115
- Adapted for lapping machine SASH MP-250
- It can also be used for machines of other manufacturers.





#### DL-MPS50173

#### Restoration Lapping Kit BOSCH Piezo injector valve

The kit includes laps with different angles: 1. DL-MPS31220 (angle 77 gr.) - 7 pcs. 2. DL-MPS31221 (angle 127 gr.) - 7 pcs.

#### ATTENTION!

All laps are also sold separately!



### **ACCESSORIES FOR MACHINE MP-250**



DL-MPS50033	Self-tightening chuck for MP-250S assy	1 pc
DL-MPS30341	Axle (Shaft Ø12) for MP-250S	1 pc
DL-MPS30298	Chuck body for MP-250S	1 pc
DL-MPS30299	Cartridge cover for MP-250S	1 pc
DL-MPS30297	Capture for MP-250S	2 pcs
DL-MPS30364	Cartridge cover (protective) for MP-250S	1 pc
DL-MPS30338	Washer for plastic cover for MP-250S	1 pc
DL-MPS30337	Upper washer for MP-250S	1 pc



DL-MPS30364

Cartridge protective cover





Capture for MP-250S



#### DL-MPZ30506

plastic pad for MP-250S and MP-250Z



#### DL-MPS30337

Top washer for MP-250S





Washer for plastic trim for MP-250S







#### DL-ACM3(K) KIT

Lapping diamond set pastes for the MP-250 machine

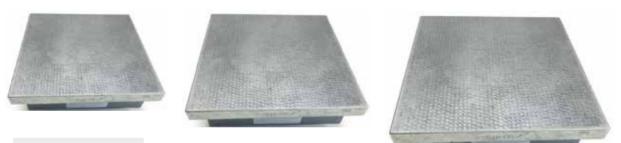
DL-ACM75K DL-ACM53K DL-ACM32K

Lapping paste diamond. Fraction of grain large 7/5 microns, 25 gr.Lapping paste diamond. Fraction of grain average 5/3 microns, 25 gr.Lapping paste diamond. Grain fraction small 3/2 microns, 25 gr.



#### DL-CR50112

Set of laps for CR injector valve seat recovery



#### D-261102

Lapping plate Size: 200X200 mm



Lapping plate Size: 300X300 mm D-190171207

Lapping plate Size: 400X400 mm

#### DL-UNI50270

different washers.





#### DL-UNI31635

Holder for lapping spacers and nozzle valves Piezo Bosch

**Set of holders for grinding washers** Set of holders for grinding washers

The set includes two holders with diameters for

We recommend sanding on a special lapping plate





### CP-230 Grinding machine for dressing of the laps



- The greatest transverse movement 100mm.
- The greatest longitudinal movement 70mm.
- Width of a working surface of a table 200mm.
- Length of a working surface of a table 90mm.
- Power supply: ~220 B±15%;
- Engin power 0,23 kWt.
- Dimensions (length x width x height), mm 400x280x260
- Weight, kg 21
- Revolutions per minute on the engine: 2760
- Revolutions per minute on the drive shaft: 200



### TOM-2









#### Additional equipment and accessories

#### DL-UNI20212

#### Stone abrasive with grain 36

- outer diameter 125 mm
- internal diameter 12.7 mm
- thickness 16 mm
- processing speed 35 m/s

#### DL-UNI20213

#### Stone abrasive with grain 60

- outer diameter 125 mm
- internal diameter 12.7 mm
- thickness 16 mm
- processing speed 40 m/s

#### DL-UNI20214

#### Stone abrasive with grain 80

- outer diameter 125 mm
- internal diameter 32 mm
- thickness 10 mm
- processing speed 40 m/s

#### DL-UNI20215

#### Stone abrasive with grain 120

- outer diameter 125 mm
- internal diameter 12.7 mm
- thickness 16 mm
- processing speed 40 m/s

#### DL-UNI20218

#### Stone abrasive with grain 230

- outer diameter 125 mm
- internal diameter 12.7 mm
- thickness 16 mm
- processing speed 40 m/s

#### DL-UNI20220

#### Stone abrasive with grain 400

- outer diameter 125 mm
- internal diameter 12.7 mm
- thickness 16 mm
- processing speed 40 m/s



### TOM-5

# Grinding machine for dressing of the laps and other bodies of revolution





The largest transverse movement	+/-50mm
The largest longitudinal movement	+/-50mm
Angle of rotation of the working carriage	270°
Type of electronic protractor	Absolute
Granularity of abrasive stone (cup)	100 grit
Supply voltage	~ 220 V ± 15%
Power of the electric motor of the main drive	0.2 kW
Maximum power consumption of the machine	0.3 kW
The number of revolutions per minute of the electric motor	0–12000
The number of revolutions per minute of the drive shaft	0–2000
Dimensions (Depth x Width x Height), mm	335x250x300
Dimensions with lamp (Depth x Width x Height), mm	335x250x450
Machine weight (net), kg	22



TOM-5

### Additional equipment and accessories



#### DL-UNI20224

#### Cup abrasive with grain 80

- •outer diameter 50 mm
- internal diameter 13 mm
- height 32 mm
- processing speed 35 m/s



#### DL-UNI20225

#### Stone abrasive with grain 100

- Outer diameter 125 mm
- Inner diameter 12.7 mm
- Thickness 16 mm
- Processing speed 35 m/s



#### DL-UNI20226

#### Stone abrasive with grain 200

- outer diameter 125 mm
- internal diameter 12.7 mm
- thickness 16 mm
- processing speed 35 m/s







### Contents of delivery:

2

1.	DL-CR50160	Clamp for pressing pins
		injector valve core.
2.	DL-CR31199	Valve seat holder for BOSCH CR piezo injectors
		during its restoration.
3.	DL-CR50169	Adapter for measuring the stroke of the BOSCH piezo injector valve
4.	DL-MPS31220	Lapping 77 degrees (6 pcs.)
5.	DL-MPS31221	Lapping 127 degrees (6 pcs.)
6.	DL-CR50209-15	Collet chuck valve holder for BOSCH piezo injectors.
7.	DL-CR31204	Plate N1 for injector valve recovery
		CR BOSCH Piezo
8.	DL-CR31205	N2 plate for injector valve recovery
		CR BOSCH Piezo
9.	DL-KIP002	Indicator measuring head of the clock type.



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#### DL-CR50160

Press-in clamp CR injector valve core pins piezo BOSCH.

Suitable for BOSCH piezo series injectors 0445115

#### DL-CR50169

Adapter for measuring the stroke of the injector valve piezo BOSCH. Suitable for BOSCH piezo series injectors 0445115

Contents of delivery: 1. Adapter DL-CR31201 2. Measuring probe DL-CR31206

**ATTENTION!** The measuring head is not included in the scope of delivery!

#### DL-CR50340

Bracket for measurement adapter BOSCH piezo injector valve travel Bracket for measurement adapter BOSCH piezo injector valve travel, applied during assembly. Adapter DL-CR31201 and measuring probe DL-CR31206 not included.

#### DL-CR31204

Lapping plate N1 for valve recovery injectors CR BOSCH Piezo

#### DL-CR31205

Lapping plate N2 for valve recovery injectors CR BOSCH Piezo





#### DL-HK50259

#### Universal device for filling the hydraulic compensator of Piezo injectors BOSCH and pressing/unpressing pins of nozzles SIEMENS / BOSCH Piezo

The first purpose is filling the hydraulic compensator of the Piezo BOSCH injectors. The second purpose is to dismantle and press the pins of the valve core of the Common Rail Piezo BOSCH 0445115 injectors. The third purpose is dismantling and pressing the pins of the valve core of Common Rail SIEMENS injectors.

In the first and in the second case, an elongated cartridge with a hole is used. In the third case, a short cartridge without a hole is used.

#### Scope of delivery:

Universal fixture - 1 pc, Elongated cartridge - 1 pc, Short cartridge — 1 pc.

#### DL-CR50209

collet chuck valve holder piezo injectors BOSCH for restoration geometry by lapping.

Collet chucks are divided by accuracy:

DL-CR50209-5 Collet chuck runout up to 1-5 microns

DL-CR50209-10 Collet chuck runout up to 6-10 microns

DL-CR50209-15 Collet chuck runout up to 11-15 microns





#### DL-CR50052

Filler hydraulic compensator for Bosch piezo injectors.

Consists of two parts: housings with guides and clamps.



### DL-GR7500 Grinding machine for the needles of nozzles



Grinding machine for dressing needles of nozzles with rotation speed indicators

The machine is controlled by PWM controllers.

The control of the speed of rotation of the spindle and the processed body is regulated by means of rotary knobs located on the control panel.

Adjusting the brightness of the lower illumination of the processed body of rotation is performed using the rotary knob located in the upper part of the control panel. The control panel has a general power switch for the machine and three power switches on each electric motor of the corresponding drive and lower lighting bulbs.

On the rear side of the machine body there is a connector for supplying a 220-volt power cable, two 220-volt sockets and a 12-volt connector for connecting a monitor.

On the front side of the machine body there is a 12 volt connector for connecting the electric motor power cable to drive rotation bodies.

The grinding machine **DL-GR7500** can be used in conjunction with the kits: **DL-UNI20025**, **DL-UNI20026**, **DL-UNI20027**, **DL-UNI20030**.

which includes: electronic industrial microscope, tripod holder, top illumination and monitor. This kit is not included in the scope of supply and is available by separate order.



### **DL-GR7400**

### Grinding machine for nozzle needles with rotation speed indicators in percent



The **DL-GR7400** machine is used for grinding needles of nozzles and other bodies of rotation. The machine is controlled by PWM controllers.

The control of the speed of rotation of the spindle and the processed body is regulated by means of rotary knobs located on the control panel.

Rotation speed (revolutions) is displayed as a percentage.

Adjusting the brightness of the lower illumination of the processed body of rotation is performed using the rotary knob located in the upper part of the control panel.

The control panel has a general power switch for the machine and three power switches for each electric motor of the corresponding drive and a backlight.

On the rear side of the machine body there is a connector for supplying a 220-volt power cable, two 220-volt sockets and a 12-volt connector for connecting a monitor.

On the front side of the machine body there is a 12 volt connector for connecting the electric motor power cable to drive rotation bodies.

The grinding machine DL-GR7400 can be used in conjunction with the kits: **DL-UNI20025**, **DL-UNI20026**, **DL-UNI20027**, **DL-UNI20030**.

which includes: electronic industrial microscope, tripod holder, top illumination and monitor. This kit is not included in the scope of supply and is available by separate order.



### **DL-GR7300**

### Grinding machine for the needles of nozzles with speed indicators



The **DL-GR7300** machine is used for sharpening needles of atomizers and other bodies of rotation. The machine is controlled by PWM controllers.

The control of the speed of rotation of the spindle and the processed body is regulated by means of rotary knobs located on the control panel.

Adjusting the brightness of the lower illumination of the processed body of rotation is performed using the rotary knob located in the upper part of the control panel.

The control panel has a general power switch for the machine and three power switches on each electric motor of the corresponding drive and lower lighting bulbs.

On the rear side of the machine body there is a connector for supplying a 220-volt power cable, two 220-volt sockets and a 12-volt connector for connecting a monitor.

On the front side of the machine body there is a 12 volt connector for connecting the electric motor power cable to drive rotation bodies.

The grinding machine DL-GR7300 can be used in conjunction with the kits: **DL-UNI20025**, **DL-UNI20026**, **DL-UNI20027**, **DL-UNI20030**.

which includes: electronic industrial microscope, tripod holder, top illumination and monitor. This kit is not included in the scope of supply and is available by separate order.



### DL-UNI20025

## Set with industrial microscope, elongated tripod, light and monitor.

The microscope has a clear image and high resolution.



#### **Technical data:**

- 1. The magnification of the microscope: 8x-130x
- 2. Working distance : 50-200mm
- 3. Connect to monitor via ports: HDMI/VGA
- 4. Microscope size (width x length): 40mm x 115mm

#### Contents of delivery:

- 1. DL-UNI20016 Industrial electronic microscope with power supply (HDMI / VGA / AV).
- 2. DL-UNI20019 Tripod holder extended for microscope
- 3. **DL-UNI20018** Lamp diode for a microscope.
- 4. DL-UNI20021 Monitor
- 5. DL-UNI20022 Dedicated monitor holder on a tripod





### DL-UNI20030

## Set with industrial microscope, elongated tripod, light and monitor.

The microscope has a clear image and high resolution.



#### **Technical data:**

- 1. The magnification of the microscope: 8x-130x
- 2. Working distance : 50-200mm
- 3. Connect to monitor via ports: HDMI/VGA
- 4. Microscope size (width x length): 40mm x115mm

#### Contents of delivery:

- 1. **DL-UNI20010** Industrial electronic microscope with power supply (HDMI / USB / AV).
- 2. DL-UNI20019 Tripod holder extended for microscope
- 3. **DL-UNI20018** Lamp diode for a microscope.
- 4. DL-UNI20021 Monitor
- 5. DL-UNI20022 Dedicated monitor holder on a tripod





### DL-UNI20026

## Set with industrial microscope, elongated tripod, light and monitor.

The microscope has a clear image and high resolution.





#### **Technical data:**

- 1. The magnification of the microscope: 5x-100x
- 2. Working distance : 50-170mm
- 3. Connect to monitor via ports: HDMI
- 4. Microscope size (width x length): 40mm x 115mm

#### Contents of delivery:

- 1. **DL-UNI20013** Industrial electronic microscope with power supply and backlight (HDMI / USB).
- 2. DL-UNI20019 Tripod holder extended for microscope
- 3. DL-UNI20021 Monitor
- 4. DL-UNI20022 Dedicated monitor holder on a tripod





### **DL-UNI20027**

## Set with industrial microscope, elongated tripod, light and monitor.

The microscope has a clear image and high resolution.



#### **Technical data:**

- 1. The magnification of the microscope: 10x-180x
- 2. Working distance : 100-150mm
- 3. Connect to monitor via ports: HDMI
- 4. Microscope size (width x length): 40mm x115mm

#### Contents of delivery:

- 1. **DL-UNI20014** Industrial electronic microscope with power supply (HDMI / USB / AV).
- 2. DL-UNI20019 Tripod holder extended for microscope
- 3. **DL-UNI20018** Lamp diode for a microscope
- 4. DL-UNI20021 Monitor
- 5. DL-UNI20022 Dedicated monitor holder on a tripod





### DL-UNI20031

#### Microscope kit HDMI USB 1080P FHD 48MP x 200

The microscope has a clear image and high resolution Lens: 200X C-MOUNT magnification



#### Technical data:

1. Photo / video shooting

2. Additional functions: adding guide lines, image fixation,

mirroring, image rotation, digital zoom

- 3. Housing: aluminum alloy
- 4. Matrix: Panasonic
- 5. Matrix resolution 48 MP
- 6. Frame rate: at 1920\*1080 / 60fps
- 7. Outputs: USB, HDMI, TF card, infrared sensor for remote control
- 8. Power supply: DC-12V/1A
- 9. Max TF card capacity: 64G
- 10.HDMI image resolution: 8168\*6128 4:3 (50MP) 8168\*4592 16:9 (37MP) (for TF card),
- 11. USB image resolution: 1920\*1080 (for PC USB)
- 12. Video resolution: 1920\*1080/60fps for HDMI, 1920\*1080/
- 30fps 1280\*720 / 30fps 640\*480 / 30fps 320\*240 /
- 30 fps for USB
- 13. Video format: MP4
- 14. Picture format: JPG
- 15. Remote control
- 16. Language support: Russian, Chinese, English, French, Spanish, Portuguese,
- German, Italian, Japanese
- 17. Lens: 200X C-MOUNT magnification
- 18. Working distance: 95mm (maximum working distance 16cm)
- 19. Zoom Ratio: 6.5:1

#### Contents of delivery:

- 1. DL-UNI20023 Microscope electronic promiscuous with power supply (HDMI / USB / AV)
- 2. DL-UNI20019 Tripod holder extended for microscope
- 3. **DL-UNI20018** Lamp diode for a microscope
- 4. DL-UNI20021 Monitor
- 5. **DL-UNI20022** Dedicated monitor holder on a tripod



### **DL-UNI20032**

### Set with industrial microscope, elongated tripod, light and monitor.

The microscope has a clear image and high resolution Lens: 180X C-MOUNT magnification





#### Technical data:

- 1. Photo / video shooting
- 2. Additional functions: adding guide lines, image fixation,
- mirroring, image rotation, digital zoom
- 3. Housing: aluminum alloy
- 4. Matrix: Panasonic
- 5. Matrix resolution 37.0 MP
- 6. Frame rate: at 1920\*1080 / 60fps
- 7. Outputs: USB, HDMI, TF card, infrared sensor for remote control
- 8. Power supply: DC-12V/1A
- 9. Max TF card capacity: 64G
- 10.HDMI image resolution: 8168\*6128 4:3 (50MP) 8168\*4592 16:9 (37MP) (for TF card),
- 11. USB image resolution: 1920\*1080 (for PC USB)
- 12. Video resolution: 1920\*1080/60fps for HDMI, 1920\*1080/
- 30fps 1280\*720 / 30fps 640\*480 / 30fps 320\*240 /
- 30 fps for USB
- 13. Video format: MP4
- 14. Picture format: JPG
- 15. Remote control
- 16. Language support: Russian, Chinese, English, French, Spanish, Portuguese,
- German, Italian, Japanese
- 17. Lens: 180X C-MOUNT magnification
- 18. Working distance: 95mm (maximum working distance 16cm)
- 19. Zoom Ratio: 6.5:1

#### Contents of delivery:

- 1. **DL-UNI20011** Industrial electronic microscope with power supply (HDMI / USB / AV).
- 2. DL-UNI20019 Tripod holder extended for microscope
- 3. DL-UNI20018 Lamp diode for a microscope
- 4. DL-UNI20021 Monitor
- 5. **DL-UNI20022** Dedicated monitor holder on a tripod





### DL-UNI20200 Stone abrasive with grain 400

DL-UNI20201 Stone abrasive with grain 200

### DL-UNI20202

Stone abrasive with grain 100









DL-GR60007

Diamond pencil for grooving abrasive stones (standard)



DL-GR60008

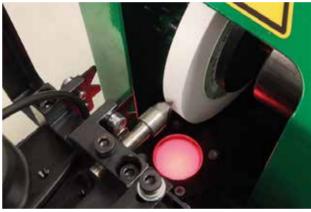
Diamond pencil for grooving abrasive stones (reinforced)



DL-NG31309

Editing pencil abrasive wheel (needle)









**dieselland** 

DL-GR1050 Stone holder (mandrel)

DL-GR1060

Axle for stone balancing (Gem with holder not included)



#### **DL-GR1070**

**Balancing device** (Gem with holder not included)





#### **DL-NG50196**

Stone remover with mandrel with spindle taper.



#### DL-NG50194

Set of drive pulleys for machine tools GR-7300, GR-7400, GR-7500. Material: polyurethane

Package Included:

1

1.	DL-NG31264	Pulley Ø
2.	DL-NG31264-01	Pulley Ø
3.	DL-NG31264-02	Pulley Ø

Ø15x3 for atomizer needle Ø15x4 for atomizer needle Ø15x5 for holder piezo injector valve 4. DL-NG31196 Pulley Ø15x7 for lapping

Attention! All pulleys are also sold separately!







#### DL-GR1080

#### Angle measuring kit

#### Contents of delivery:

- 1. Protractor electronic
- 2. Protractor bracket
- 3. Protractor axis NG31249
- 4. A set of M4 screws 3 pcs.

#### **Specifications:**

- 1. Measuring range: 0-360 degrees
- 2. Graduation: 0.1 degree
- 3. Accuracy : +-0.2 degree
- 4. Accuracy : 0.1 degree
- 5. Battery: 3V CR20032
- 6. Battery life: 1 year



#### DL-NG31263

Gauge for setting the angle of 60 degrees



#### DL-NG31253

Valve holder (pin) injectors BOSCH piezo to polish it







### DL-GR1090

Measurement kit angles of increased accuracy

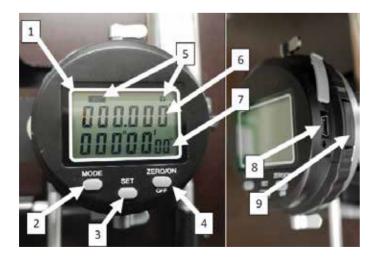
#### Contents of delivery:

- 1. Protractor electronic
- 2. Protractor bracket
- 3. Protractor axis NG50205
- 4. A set of M4 screws 2 pcs.

#### Specifications:

- 1. Measuring range: 0-360 degrees
- 2. Division value: 0.005 degrees (10 seconds)
- 3. Accuracy: +-0.2 degree
- 4. Accuracy: 0.08 degree (±30 seconds)
- 5. Working temperature range: 0 ÷40°C
- 6. Battery: 3V CR20032
- 7. Battery life: 1 year

On two lines at the same time the measurement value is displayed in decimal degrees (upper line) and in seconds (bottom line)



1.Display
 2. MODE button
 3. "SET" button
 4. "ZERO / ON-OFF" button
 5. Display selected
 measuring range

 (360°, 180° x 2, 90° x 4)
 6. Display angle in decimal
 fractions of a degree.
 7. Display in degrees, minutes
 and seconds.
 8.USB socket
 9. Retractable battery slot





#### DL-NG50201

Prisms with electric motor assembly

Contents of delivery:

- 1. DL-NG50200 Prisms assemblies
- 2. DL-NG31189 platform
- 3. DL-NG50199 electric motor assembly
- 4. **DL-NG31246** Pencil holder for editing (no pencil)
  - DL-NG31309 Editing pencil
- 5. **DL-NG31290** Stop extension bracket
- 6. DL-NG31183 stop bracket standard



DL-NG50200 Prisms with holder assembly



DL-NG31189

Mounting platform prisms, electric motor and bracket with pencil for straightening stone.



DL-NG50199

Electric motor 12 volt 1000 rpm with protective cover with mounting bracket and pulley.



DL-NG31246

Editing pencil holder abrasive stone (no pencil). **DL-NG31309** Straightening Pencil abrasive wheel.





DL-NG31290

stop extension for installation of long details for their grinding.



DL-NG31183

stop bracket workpiece with standard length

### GM-08

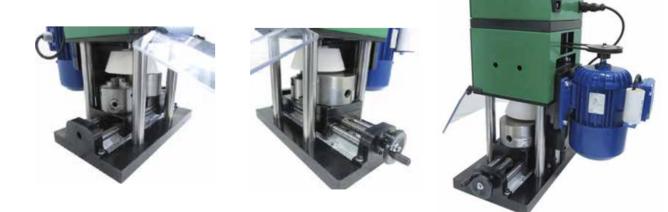
# Surface grinding machine with bottom movable desktop.

Designed for grinding shims, nozzle ends and other parts of fuel equipment.



#### Specifications:

Motor power	0.37 kW
Value of division	1 µm
Working stroke of the stone	35 mm
Height length Width	505 / 370 / 340 mm
Supply voltage	~220 V ±15%
Tolerance of parallelism of the surface of the workpiece	0,002-0,004 mm
The weight	60 kg





2

#### SPARE PARTS AND ACCESSORIES K SURFACE GRINDING MACHINE GM-08



#### **DL-UNI20205**

Grinding stone for GM-08 straight, seating diameter 20mm, outer diameter 100mm at 80grit

#### DL-UNI20206

Grinding stone for GM-08 straight, seating diameter 20mm, outer diameter 100mm at 60 grit

#### **DL-UNI20207**

Grinding stone for GM-08 straight, seating diameter 20mm, outer diameter 100mm at 40 grit



#### DL-UNI20208

Grinding stone for GM-08 conical, landing diameter 32mm, outer diameter 125mm at 80 grit



#### DL-GM50248

mandrel stone holder for modernized machines GM-08





#### DL-GM31280

Drive shaft with taper fit under the mandrel for the modernization of machines GM-08, issued before 04.2020.

#### DL-GM50263

Stone puller with mandrel with cone shaft.

### **MGM-500**

#### Surface grinding machine with moving column

Machine **MGM-500** is designed for grinding shims and other elements and bodies of revolution when they are fixed with a magnetic plate or clamps.



#### The design of the machine includes:

- The base housing in which the gearbox for the vertical movement of the column with grinding stone
- Electric motor with direct drive of the grinding cup
- Powerful magnet for grinding washers
- High-precision vise for trimming parts
- Protective cover
- Handle for vertical movement of the column
- Rotary handle
- Protective corrugation
- Indicator head with 0.001mm pitch
- Bracket with a cutter for straightening a stone is mounted on a protective cover

#### Specifications:

Vertical movement of the column	40 mm
Vise Width	50 mm
vise stroke	65 mm
stone grain	80 grit
Supply voltage	~220 V ±15%
Motor power	0.5 kW
Height length Width	310x260x450
Machine weight	43 kg
The number of revolutions per minute of the electric motor	2800 / 3600
Tolerance of parallelism of the surface of the workpiece	0,003-0,006 mm





#### DL-CR50167

#### Set of CR injector holders for vise

The block has undergone heat treatment, which increases many times its service life.

#### Contents of delivery:

DL-CR31054	Universal block for vise with groove dimensions 11,12,13,19mm for installation
	injectors CR BOSCH and DELPHI.
DL-CR31055	Universal block for vise with groove sizes 14,16,20 mm for installation
	injectors CR VOLVO, Fiat Dukato, BMW (similar to SIRINI AB0122-02)
DL-CR31056	Universal block for vise with groove sizes 15,17,18,22 mm for installation
	injectors CR (similar to SIRINI AB0122-03)
DL-CR31158	Universal block for vise with groove sizes 13, 15, 18, 22 mm for installation
	injectors CR PIEZO SIEMENS and BOSCH



#### DL-CR50158

Set of CR injector holders for vices.

The blocks have been heat treated, which increases many times their service life.

#### Contents of delivery:

DL-CR31054	Universal block for vise with groove dimensions 11,12,13,19mm for installation
	injectors CR BOSCH and DELPHI.
DL-CR31055	Universal block for vise with groove sizes 14,16,20 mm for installation
	injectors CR VOLVO, Fiat Dukato, BMW (similar to SIRINI AB0122-02)
DL-CR31056	Universal block for vise with groove sizes 15,17,18,22 mm for installation
	injectors CR (similar to SIRINI AB0122-03)





#### DL-CR31054

Universal block for vise with slot sizes 11, 12, 13.19mm for installation of CR BOSCH injectors and DELPHI. (similar to BOSCH 0986612786, analogue SIRINI AB0122-01) The block has undergone heat treatment, which increases many times its service life.



#### DL-CR31055

Universal block for vise with slot sizes 14, 16, 20 mm for installation of CR VOLVO injectors, FiatDukato, BMW (similar to SIRINI AB0122-02) The block has undergone heat treatment, which increases many times its service life.







#### DL-CR31056

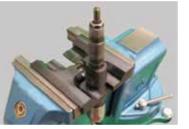
Universal block for vise with slot sizes 15, 17, 18, 22 mm for mounting CR injectors (similar to SIRINI AB0122-03) The block has undergone heat treatment, which increases many times its service life.

#### DL-CR31058

Universal block for vise with slot sizes 13, 15, 18, 22 mm for installation of CR BOSCH piezo injectors and Siemens The block has undergone heat treatment, which increases many times its service life.







#### DL-UNI50043

Universal fixture for clamps in the vise of CR injectors

Clamps in two positions:

- spray up;
- spray down.





#### DL-UNI50032

Universal fixture for clamp in the vise of CR Denso injectors

Clamps in two positions:

- spray up;
- spray down.











#### DL-CR31093

Wrench for dismantling the injector solenoid DENSO, CAT, PERKINS Key Features:

- 1. The key has 12 faces.
- 2. Distance between faces27,5mm
- 3. Connecting square 1/2"

#### DL-CR31667

Wrench 27 mm 1/2 for injector solenoid DENSO

#### DL-CR31668

Long wrench 27 mm 1/2 for solenoid DENSO

#### **DL-UNI50046**

Three-pin wrench for disassembly and Denso injector assembly. Completeness:

- key;
- guide nut;
- drift;
- 3 additional pins.

Technological holes are provided in the key, through which you can knock out broken or worn pins and install new pins.



Atomizer Nut Wrench DENSO 5471 08K125157032

### DL-NG50109

Set of wrenches for mounting / dismounting nuts in electronic part of BoschCR injectors.

DL-CR30543	Wrench 10-17 for mounting/dismounting the multiplier nut for BOSCH CR injectors,
	hexagon 10 mm with internal Ø7.5 mm wrench 17
DL-CR30558	Wrench for mounting / dismounting the nut in the electronic part of the BOSCH CR injectors,
	10 mm hexagon with $\Box$ 1/2" square for torque wrench
DL-CR30561	Wrench 10-13 for mounting / dismounting the multiplier nut for BOSCH CR injectors,
	hexagon 10 with internal Ø7.5 mm for a torque wrench
DL-CR30393	Wrench for mounting / dismounting the nut in the electronic part of the Bosch CR injectors



Contents of delivery:

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**DL-UNI50058** 

Wrench 32 with teeth for mounting / dismounting the nozzle nut DELPHI trucks.



#### DL-CR30545

Wrench for mounting / dismounting the multiplier nut SIEMENS injectors



#### **DL-UNI30434**

Wrench for mounting / dismounting the nut of the solenoid injectors CR with dodecahedron 27 mm



#### DL-UNI30435

Wrench for mounting / dismounting the nut of the solenoid injectors CR with dodecahedron 28 mm



#### DL-UNI30389

Wrench for mounting / dismounting the solenoid nut CR injectors with hexagon 29 mm



#### DL-UNI30390

Wrench for mounting / dismounting the nut of the solenoid injectors CR with hexagon 30 mm



#### DL-CR31092

Allen key 7/8 for mounting / dismounting CR injector solenoid inner ring nut Denso. Connecting square 1/2











#### **DL-UNI50050**

A set of keys designed for tightening the CR injector nozzle nut any manufacturers (BOSCH, DELPHI, DENSO, Siemens).

Includes: hexagons for 14, 15, 17, 19 mm, octahedrons 16, 17.5 mm and a 27 mm wrench for a torque handle.

#### **DL-UNI30384**

socket wrench with hexagon socket by 14 mm

#### **DL-UNI30385**

socket wrench with hexagon socket by 15 mm

#### **DL-UNI30386**

socket wrench with hexagon socket by 17 mm

#### **DL-UNI30387**

socket wrench with hexagon socket by 19 mm

#### **DL-UNI30388**

Key socket with internal octagon by 16 mm

#### **DL-UNI30692**

Key socket with internal octagon at 17.5 mm

#### **DL-UNI30382**

Allen key 27 mm with square hole for torque arm



#### DL-UNI50054

A set of keys designed for tightening the CR injector nozzle nut any manufacturers (BOSCH, DELPHI, DENSO, SIEMENS).

**Includes:** hexagons with collar 14, 15, 17, 19 mm, octahedrons with collar 16, 17.5 mm and a 27 mm wrench for a torque handle.











#### DL-UNI30460

Nozzle wrench with inner collar hexagon 14 mm

#### DL-UNI30461

Nozzle wrench with inner collar hexagon 15 mm

#### **DL-UNI30459**

Nozzle wrench with shoulder internal octagon 16 mm

#### DL-UNI30462

Nozzle wrench with inner collar hexagon 17 mm

#### **DL-UNI30691**

Nozzle wrench with inner collar 17.5 mm octagon

#### DL-UNI30463

Nozzle wrench with inner collar hexagon 19 mm

#### DL-UNI30382

Allen key 27 mm with square hole for torque arm





#### DL-CR50261

Mounting wrench set / dismantling the atomizer nut for piezo injectors BOSCH, VDO (Siemens) and BOSCH series 111



#### DL-UNI30461

Nozzle wrench with inner collar hexagon 15 mm



#### DL-UNI31442

Nozzle wrench for mounting / dismounting the atomizer nut injectors BOSCH 0445118 The key has 7 faces inside. A 27mm wrench is used. Made from high quality tool steel with subsequent heat treatment.

#### DL-UNI30459

Nozzle wrench with shoulder internal octagon 16 mm



#### DL-UNI31395

Nozzle wrench for mounting / dismounting the atomizer nut injectors BOSCH 0445118 The key has 8 protrusions inside. A 27mm wrench is used. Made from high quality tool steel with subsequent heat treatment.



#### DL-UNI31394

Nozzle wrench for mounting / dismounting the atomizer nut nozzles VDO (SIEMENS) PCRs5 Has an internal 9-sided face. A 27mm wrench is used. Made from high quality tool steel with subsequent heat treatment.





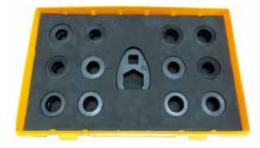
#### DL-UNI31435

Nozzle wrench for mounting / dismounting the atomizer nut injectors BOSCH 111 series. The key has 10 projections inside. Used turnkey 27mm. Made from high quality tool steel with subsequent heat treatment. Durability is guaranteed.

#### DL-UNI30382

Allen key 27 mm with square hole for torque arm





#### DL-CR50262

Mounting wrench set / dismantling the nozzle spray nut Common Rail BOSCH, VDO (Siemens), DENSO, DELPHI of all types.



Nozzle wrench with inner collar hexagon 14 mm

**DL-UNI30461** 

**DL-UNI30462** 

hexagon 15 mm

Nozzle wrench with inner collar

Nozzle wrench with inner collar

Nozzle wrench with inner collar

**DL-UNI30460** 



8



DL-UNI30814

hexagon 17 mm

socket wrench with hexagon socket 18 mm for BOSH electromagnetic injectors



DL-UNI30463

hexagon 19 mm



#### DL-UNI31442

Nozzle wrench for mounting / dismounting the atomizer nut injectors BOSCH 0445118 The key has 7 faces inside. A 27mm wrench is used. Made from high quality tool steel with subsequent heat treatment.

#### DL-UNI31288

Key socket with internal octahedron 15 mm for BOSH electromagnetic injectors



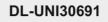
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DL-UNI30459

Nozzle wrench with shoulder internal octagon 16 mm



Nozzle wrench with inner collar 17.5mm octagon



#### DL-UNI31395

Nozzle wrench for mounting / dismounting the atomizer nut injectors BOSCH 0445118 The key has 8 protrusions inside. A 27mm wrench is used. Made from high quality tool steel with subsequent heat treatment.



#### DL-UNI31394

Nozzle wrench for mounting / dismounting the atomizer nut nozzles VDO (SIEMENS) PCRs5 Has an internal 9-sided face. A 27mm wrench is used. Made from high quality tool steel with subsequent heat treatment.



#### DL-UNI31435

Nozzle wrench for mounting / dismounting the atomizer nut injectors BOSCH 111 series. The key has 10 projections inside. A 27mm wrench is used. Made from high quality tool steel with subsequent heat treatment. Durability is guaranteed.



#### DL-UNI30382

Allen key 27 mm with square hole for torque arm





#### DL-UNI50105

Set of hex wrenches for 25,27,29,30 mm square hole for dyno handle or wrench 1/2"



#### DL-UNI30803

24 mm hex wrench with square hole for torque arm or wrench 1/2"



#### DL-UNI30382

27 mm hex wrench with square hole for torque arm or wrench 1/2"





#### DL-UNI30541

29 mm hex wrench with square hole for torque arm or wrench 1/2"

#### DL-UNI30625

30 mm hex wrench with square hole for torque arm or wrench 1/2"





#### DL-CR30814

Nut wrench (18) for mounting / dismounting CR SCANIA injector nozzle nuts 1881565 The key has 6 faces with a width of 18mm

#### DL-CR30816

Wrench 2V for mounting / dismounting the nut injector solenoid CR SCANIA 1881565

#### DL-CR30815

Wrench 16Z for mounting / dismounting the toothed nut injector CR SCANIA 1881565

#### DL-CR50119

Set of keys for disassembly / injector assembly CR SCANIA 1881565

Kit includes:

- key DL-CR30814
- key DL-CR30815
- key DL-CR30816

#### DL-CR30843

Key - nozzle for convenient and safe dismantling the piezo injector tube (turnkey 27 mm). Prevents breakage of the return fitting drain nozzle





#### DL-UIS30767

Nozzle test adapter CR injectors Delphi Smart(1725282).



#### DL-UNI50039

Wrench for mounting / dismounting the spray nut Ø 20.9 mm Delphi Smart nozzles (for torque wrench)



#### DL-UNI50131

Wrench for mounting / dismounting the spray nut Ø 25.8mm nozzles CR Bosch (for torque wrench)



#### DL-CR31095

Wrench for mounting / dismounting the internal ring-nuts for Denso, CAT, Perkins injectors.



#### DL-CR50148

Valve Installer CRIN injectors



DL-CR50154

Valve removal tool injector multiplier CRIN M19 x 0.75mm





#### DL-CR50104

Seal removal and installation kit rings and valve settings for CR injectors

DL-CR31553	Pusher (Ø 9.4mm x 7.4mm) for installation
	O-ring for BOSCH CRIN 3-18 injectors
DL-CR30756	Guide sleeve (Ø 10mm)
DL-CR30755	Pusher for valve installation (Ø 15.5mm)
DL-CR30753	Extractor for old O-rings
Organizer.	



DL-CR50298

Seal removal and installation kit rings and valve settings for CR injectors

DL-CR31553Pusher (Ø 9.4mm x 7.4mm) for installationO-ring for BOSCH CRIN 3-18 injectorsDL-CR30756Guide sleeve (Ø 10mm)DL-CR30755Pusher for valve installation (Ø 15.5mm)DL-CR30754Pusher (Ø 10mm x 7.6mm) for installationO-ring for BOSCH CRI injectorsExtractor for old O-ringsOrganizer.Extractor for old O-rings

DL-CR50172

Set of accessories for installing paronite CRIN injector rings

**DL-CR50153** 

Contents of delivery:





Device for installing paronite CRIN injector rings Collet outer diameter 6.5mm Connecting thread M18x0.75mm Analog BOSCH 0986613648 Analog SIRINI AAZ034-648

DL-CR50155

Device for installing paronite CRIN injector rings Collet outer diameter 7.5mm Connecting thread M18x0.75mm Analog BOSCH 0986613646 Analog SIRINI AAZ034-646

DL-CR50170

Device for installing paronite CRIN injector rings Collet outer diameter 7.5mm Connecting thread M17x1mm Analog BOSCH 0986613640 Analog SIRINI AAZ034-640

ATTENTION! All fixtures are sold separately.





#### DL-CR50308

Adapter for pressing in O-rings injectors CRI1/CRI2 Consists of guide nut **DL-CR31579** and pusher **DL-CR31578**.





Extractor (collet) for dismantling valve seats CRI/CRIN1



#### DL-CR50317

Needle extractor nozzle sprayer

#### DL-CR50245

## Filter extraction and installation kit injectors DENSO CR



#### Contents of delivery:

- 1. M14 adapter 2 pcs.
- 2. M12 adapter 2 pcs.
- 3. Collet clamp 1 pc.
- 4. Collet for collet clamp 1 pc.
- 5. Threaded stud 2 pcs.
- 6. Tap 2 pcs.
- 7. Extractor for extracting the filter 1 pc.
- 8. Pusher for filter installation 1 pc.



### DL-CR50300

Set of cutters for cleaning engine seats injectors Delphi, Bosch



#### Applicability:

- Bosch common rail Piezo
- Common rail Daily
- Pump injector Volkswagen Audi
- Tector and Man nozzles





D-07147122

Torque wrench 1/2" 25-100 Nm



D-07147121

Torque wrench 3/8"



D-07147120

Torque wrench 1/4" 0-20 Nm



DL-UNI30776 Adapter with 1/4" internal square and outer square 1/2"



**DL-UNI31593** 

Adapter with vnutr. 3/8" square and outer square 1/2"













#### DL-UNI50327

## Double-sided pneumatic puller for removing the injectors from the engine car

Kit includes two mounting adapters nozzles: DL-CR30542 with thread M17x1 to M14x1.5; DL-CR30984 with thread M20x1.5 to M14x1.5

#### DL-UNI50334

## One-sided pneumatic puller for removing the injectors from the engine car

Kit includes two mounting adapters nozzles: DL-CR30542 with thread M17x1 to M14x1.5; DL-CR30984 with thread M20x1.5 to M14x1.5

#### DL-UNI50049

#### Puller for extracting CR injectors Bosch from the engine head.

There are two ways to remove injectors: using a hydraulic jack and using reverse hammer.

#### DL-CR50197

#### Puller (device for dismantling) BOSCH injectors from the engine.

Suitable for extracting injectors BOSCH with internal thread M17x1 and external thread M27x1

There are two ways to remove injectors: with the help of a hydraulic jack and with the help of reverse hammer.

#### DL-CR50337

#### Nozzle Puller Kit for Ssang Yong Kyron

The puller consists of three elements: housing, nut, screw. The kit also includes 2 remote bushings of different heights.







#### DL-CR30542

Internal puller for CR injectors with thread M17x1 and M14x1.5

#### DL-CR31077

Puller for CR injectors with internal thread M14x1.5 and external thread M14x1.5



#### DL-CR30984

Internal puller for injectors CR Denso 23670-OR010 Threaded M20x1 and M14x1.5



Internal puller for injectors CR Siemens with M25x1 and M14x1.5 threads



DL-UNI50060 Impact puller 340 mm long



DL-CR50059 Puller for CR injectors with M27x1 thread



#### DL-CR31600

Puller for removing DENSO injectors from the engine



Non-stick ceramic paste Pasta in a tube 50 gr.



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#### DL-UNI50062

Measurement adapter compression in diesel engines (M12x1.5; stem L=175 mm). Installed in place of the injector. The pressure sensor is not included.

#### DL-UNI20008

Compression test kit in diesel engines. Kit includes:

- adapter DL-UNI50062 1 pc.
- Pr-tester 1pc;
- cable for pressure sensor 1 pc.

The pressure sensor is not included. \*Appearance and scope of delivery subject to change to improve equipment performance

#### DL-UNI20000

#### Compression test kit in diesel engines.

#### Kit includes:

- adapter DL-UNI50062 1 pc.
- Pr-tester 1pc;
- cable for pressure sensor 1 pc.
- pressure sensor up to 150 bar or 200 bar



#### DL-CR10045

Pressure sensor 150 bar for the compressor DL-UNI20008



#### DL-CR10046

Pressure sensor 250 bar for the compressor DL-UNI20008







#### DL-PR363

#### Compressor kit for diesel engines

#### The kit includes:

- Recording compressograph 1 pc, Adapter M14x1.5 1 pc,
- Instruction 1 pc,
- Quick release adapter M14x1.5 - 1 pc,
- Adapter M12x1.5 1 pc,
  - Spare cards 1 k-t,
  - Case 1 pc.

DL-WT04A3021

Fuel pressure measuring kit in the low pressure line in diesel and gasoline engines.

Measuring range 0-140 psi (0-10 bar)



#### **DL-KIP0001**

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 10mm
- Resolution 0.01 mm
- Repeatability 0.01 mm



#### DL-KIP0002

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 5 mm
- Resolution 0.001 mm
- Repeatability 0.001 mm



#### DL-KIP0003

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 5 mm
- Resolution 0.01 mm
- Repeatability 0.02 mm



#### DL-KIP0004

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 10 mm
- Resolution 0.01 mm
- Repeatability 0.02 mm



#### DL-KIP0005

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 20 mm
- Resolution 0.01 mm
- Repeatability 0.03 mm





#### DL-KIP0006

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 30mm
- Resolution 0.01 mm
- Repeatability 0.03 mm



#### **DL-KIP0007**

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 50 mm
- Resolution 0.01 mm
- Repeatability 0.04 mm



#### DL-KIP0008

#### Indicator measuring head Characteristics :

- Type mechanical
- Stroke 25 mm
- Resolution 0.01 mm
- Repeatability 0.02 mm



#### DL-KIP0010

## Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.7mm
- Resolution 0.01 mm
- Repeatability 0.01 mm
- Sleeve 8 mmAutomatic shutdown



#### DL-KIP0011

## Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.7mm
- Resolution 0.001 mm
- Repeatability 0.004 mm
- Sleeve 8 mm
- Automatic shutdown





#### **DL-KIP0012**

#### Indicator measuring head Characteristics :

- Type electronic
- Stroke 25 mm
- Resolution 0.001 mm
- Repeatability 0.004 mm
- Sleeve 8 mm
- Automatic shutdown

#### DL-KIP0015 Limit

## Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.5 mm
- Resolution 0.01 mm
- Repeatability 0.03 mm
- Sleeve 8 mm
- Automatic shutdown

#### DL-KIP0016 Limit

#### Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.5 mm
- Resolution 0.001 mm
- Repeatability 0.004 mm
- Sleeve 8 mm
- Automatic shutdown

#### DL-KIP0019 TESA

#### Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.7mm
- Resolution 0.01 mm
- Repeatability 0.01 mm
- Sleeve 8 mm
- Automatic shutdown



#### Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.7mm
- Resolution 0.001 mm
- Repeatability 0.002 mm
- Sleeve 8 mm
- Automatic shutdown









DL-KIP0021 TESA

#### Indicator measuring head

- Characteristics :
- Type electronic
- Stroke 25 mm
- Resolution 0.001 mm
- Repeatability 0.002 mm
- Sleeve 8 mm
- Automatic shutdown





#### DL-KIP0023 Dieselland

Measuring communication key PC heads

#### DL-KIP0025 Eee

## Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.7mm
- Resolution 0.001 mm
- Repeatability 0.002 mm
- Sleeve 8 mm
- Automatic shutdown

#### DL-KIP0026 Eee

### Indicator measuring head

- Characteristics :
- Type electronic
- Stroke 25 mm
- Resolution 0.001 mmRepeatability 0.004 mm
- Sleeve 8 mm
- Automatic shutdown

DL-KIP0028

0028 Eee

Measuring communication key PC heads





#### **DL-KIP0029** SHAHE

#### Indicator measuring head

- **Characteristics :**
- Type electronic
- Stroke 12.7mm
- Resolution 0.001 mm
- Repeatability 0.002 mm
- Sleeve 8 mm
- Automatic shutdown
- Communication with a PC using a COM port (cable included)

SHAHE





DL-KIP030 SHAHE

#### Indicator measuring head **Characteristics :**

• Type - electronic

- Stroke 12.7mm
- Resolution 0.001 mm • Repeatability - 0.002 mm
- Sleeve 8 mm
- Automatic shutdown

#### **DL-KIP0031**

#### Indicator measuring head **Characteristics :**

- Type electronic
- Stroke 25 mm
- Resolution 0.001 mm
- Repeatability 0.004 mm
- Sleeve 8 mm
- Automatic shutdown



#### **DL-KIP0032** Eee

#### Indicator measuring head **Characteristics :**

- Type electronic
- Stroke 50 mm
- Resolution 0.001 mm
- Repeatability 0.005 mm
- Sleeve 8 mm
- Automatic shutdown





#### DL-KIP0034

#### Indicator digital measuring head with an accuracy of 0.01 mm, stroke 12.5 mm Characteristics :

- Type electronic
- Resolution 0.01mm
- Accuracy 0.01mm
- Large, high contrast LCD display
- Carbide tip, thread M2.5
- Sleeve 8mm
- Automatic shutdown
- Case Ø 60mm

#### DL-KIP0035

#### Indicator digital measuring head with an accuracy of 0.001 mm, stroke 12.5 mm Characteristics :

- Type electronic
- Measuring range 12.7mm
- Resolution 0.001mm
- Accuracy 0.002mm
- Large, high contrast LCD display
- Carbide tip, thread M2.5
- Sleeve 8mm
- Automatic shutdown
- Case Ø 60mm

#### DL-KIP0036

Indicator digital measuring head with an accuracy of 0.001 mm, stroke 25mm Characteristics :

- Type electronic
- Measuring range 25.4mm
- Resolution 0.001mm
- Accuracy 0.004mm
- Large, high contrast LCD display
- Carbide tip, thread M2.5
- Sleeve 8mm
- Automatic shutdown
- Case Ø 60mm



#### DL-KIP0037

## Digital thickness gauge 0-12.7 mm, 0.001 mm Characteristics :

- Measuring range 0-12.7 mm
- Resolution 0.001 mm
- LCD display
- Automatic shutdown
- Case Ø 57 mm







#### DL-KIP0250

#### Magnetic stand for mounting indicator measuring head

The stand base has high magnetic properties, which allows installation both on horizontal as well as vertical surfaces.

#### **ATTENTION!**

The measuring head is not included in the scope of delivery!



#### **DL-KIP0251**

#### Magnetic stand for mounting indicator measuring head

The stand base has high magnetic properties, which allows installation both on horizontal as well as vertical surfaces.

#### **ATTENTION!**

The measuring head is not included in the scope of delivery!





DL-STC150 digital caliper



DL-M030

*(limited quantity)* Digital micrometer

Measuring range 0-25mm Measurement accuracy 0.001mm



#### DL-M035

**Digital micrometer** 

Measuring range 0-25mm Measurement accuracy 0.001mm



DL-M040

D-SDM tripod for digital micrometer



D-DMTS-KIT

*(limited quantity)* Kit DL-030 with DL-040. Tripod and digital micrometer



# ВСПОМОГАТЕЛЬНОЕ ОБОРУДОВАНИЕ и ИНСТРУМЕНТ для проверки и ремонта ДТА







# AUXILIARY EQUIPMENT and TOOLS for checking and repairing DTA



D-UV9.5R ultrasonic bath capacity 9.5 liters



D-UV9.5R ultrasonic bath capacity 5.7 liters





#### DL-AP2

Set of 2 anti-magnetic tweezers

### 0503-03

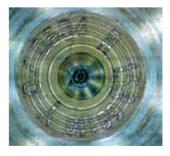
High magnification lens backlit







DL-MV200UM Digital microscope







# Set with industrial microscope, tripod and lighting.

The microscope has a clear image and high resolution.







#### Technical data:

- 1. The magnification of the microscope: 8x-130x
- 2. Working distance : 50-200mm
- 3. Connecting to a monitor via ports: (HDMI/VGA).
- 4. Microscope size (width x length): 40mm x 115mm

#### Contents of delivery:

- 1. **DL-UNI20016** Industrial electronic microscope with power supply (HDMI / VGA).
- 2. **DL-UNI20017** tripod holder for microscope
- 3. **DL-UNI20018** Lamp diode for a microscope.





# Set with industrial microscope, extended tripod and backlight.

The microscope has a clear image and high resolution.



#### Technical data:

- 1. The magnification of the microscope: 8x-130x
- 2. Working distance : 50-200mm
- 3. Connecting to a monitor via ports: (HDMI/VGA).
- 4. Microscope size (width x length): 40mm x 115mm

#### Contents of delivery:

- 1. **DL-UNI20016** Industrial electronic microscope with power supply (HDMI / VGA).
- 2. **DL-UNI20019** Tripod holder extended for microscope
- 3. **DL-UNI20018** Lamp diode for a microscope.





# Set with industrial microscope, elongated tripod, light and monitor.

The microscope has a clear image and high resolution.



#### Technical data:

- 1. The magnification of the microscope: 8x-130x
- 2. Working distance : 50-200mm
- 3. Connect to monitor via ports: HDMI/VGA
- 4. Microscope size (width x length): 40mm x 115mm

#### Contents of delivery:

- 1. DL-UNI20016 Industrial electronic microscope with power supply (HDMI / VGA / AV).
- 2. DL-UNI20019 Tripod holder extended for microscope
- 3. **DL-UNI20018** Lamp diode for a microscope.
- 4. DL-UNI20021 Monitor.
- 5. **DL-UNI20022** Dedicated monitor holder on a tripod.





# Set with industrial microscope, elongated tripod, light and monitor.

The microscope has a clear image and high resolution.



#### Technical data:

- 1. The magnification of the microscope: 8x-130x
- 2. Working distance : 50-200mm
- 3. Connect to monitor via ports: HDMI/VGA
- 4. Microscope size (width x length): 40mm x115mm

#### Contents of delivery:

- 1. DL-UNI20010 Industrial electronic microscope with power supply (HDMI / USB / AV).
- 2. DL-UNI20019 Tripod holder extended for microscope
- 3. **DL-UNI20018** Lamp diode for a microscope.
- 4. DL-UNI20021 Monitor.
- 5. **DL-UNI20022** Dedicated monitor holder on a tripod.





# Комплект с микроскопом промышленным, удлиненным штативом, подсветкой и монитором.

Микроскоп имеет четкое изображение и высокое разрешение.





#### Технические данные:

3

- 1. Кратность увеличения микроскопа: 5х-100х
- 2. Рабочее расстояние : 50-170 мм
- 3. Подключение к монитору через порты: HDMI
- 4. Размер микроскопа (ширина х длина): 40мм х 115мм

#### Комплект поставки:

- 1. DL-UNI20013 Микроскоп электронный промышленный с блоком питания и
  - лампой подсветки (HDMI / USB).
- 2. DL-UNI20019 Штатив держатель удлиненный для микроскопа
- 3. DL-UNI20021 Монитор.
- 4. **DL-UNI20022** Специальный держатель монитора на штативе.

ВНИМАНИЕ! Все оснащение из комплекта поставки продается в том числе и отдельно!





# Set with industrial microscope, elongated tripod, light and monitor.

The microscope has a clear image and high resolution.



#### Technical data:

- 1. The magnification of the microscope: 10x-180x
- 2. Working distance : 100-150mm
- 3. Connect to monitor via ports: HDMI
- 4. Microscope size (width x length): 40mm x115mm

#### Contents of delivery:

- 1. **DL-UNI20014** Industrial electronic microscope with power supply (HDMI / USB / AV).
- 2. DL-UNI20019 Tripod holder extended for microscope
- 3. **DL-UNI20018** Lamp diode for a microscope.
- 4. DL-UNI20021 Monitor.
- 5. **DL-UNI20022** Dedicated monitor holder on a tripod.





#### Microscope kit HDMI USB 1080P FHD 48MP x 200

The microscope has a clear image and high resolution Lens: 200X C-MOUNT magnification



#### **Technical data:**

1. Photo / video shooting

2. Additional functions: adding guide lines, image fixation,

mirroring, image rotation, digital zoom

- 3. Housing: aluminum alloy
- 4. Matrix: Panasonic
- 5. Matrix resolution 48 MP
- 6. Frame rate: at 1920\*1080 / 60fps
- 7. Outputs: USB, HDMI, TF card, infrared sensor for remote control
- 8. Power supply: DC-12V/1A
- 9. Max TF card capacity: 64G
- 10.HDMI image resolution: 8168\*6128 4:3 (50MP) 8168\*4592 16:9 (37MP) (for TF card),
- 11. USB image resolution: 1920\*1080 (for PC USB)
- 12. Video resolution: 1920\*1080/60fps for HDMI, 1920\*1080/
- 30fps 1280\*720 / 30fps 640\*480 / 30fps 320\*240 /
- 30 fps for USB
- 13. Video format: MP4
- 14. Picture format: JPG
- 15. Remote control
- 16. Language support: Russian, Chinese, English, French, Spanish, Portuguese,
- German, Italian, Japanese
- 17. Lens: 200X C-MOUNT magnification
- 18. Working distance: 95mm (maximum working distance 16cm)
- 19. Zoom Ratio: 6.5:1

#### Contents of delivery:

- 1. DL-UNI20023 Microscope electronic promiscuous with power supply (HDMI / USB / AV)
- 2. DL-UNI20019 Tripod holder extended for microscope
- 3. DL-UNI20018 Lamp diode for a microscope
- 4. DL-UNI20021 Monitor
- 5. DL-UNI20022 Dedicated monitor holder on a tripod



# Комплект с микроскопом промышленным, удлиненным штативом, подсветкой и монитором.

Микроскоп имеет четкое изображение и высокое разрешение Объектив: увеличение 180Х С-MOUNT



#### Технические данные:

1. Фото / видео съемка

2. Дополнительные функции: добавление вспомогательных линий, фиксация изображения,

зеркальное отображение, вращение изображения, цифровой зум

- 3. Корпус: алюминиевый сплав
- 4. Матрица: Panasonic
- 5. Разрешение матрицы 37.0 МР
- 6. Частота кадров: при 1920\*1080 / 60 кадров в секунду
- 7. Выходы: USB, HDMI, tf-карта, инфракрасный датчик для пульта дистанционного управления
- 8. Питание: DC-12V / 1A
- 9. Максимальный объем tf-карты: 64G
- 10.Разрешение изображения HDMI: 8168\*6128 4:3 (50MP) 8168\*4592 16:9 (37MP) (для tf-карты),
- 11. Разрешение изображения USB: 1920\*1080 (для ПК USB)
- 12. Разрешение видео: 1920\*1080 / 60 кадров в секунду для HDMI, 1920\*1080 /
- 30 кадров в секунду 1280\*720 / 30 кадров в секунду 640\*480 / 30 кадров в секунду 320\*240 /
- 30 кадров в секунду для USB
- 13. Формат видео: МР4
- 14. Формат изображения: JPG
- 15. Дистанционное управление
- 16. Поддержка языков: русский, китайский, английский, французский, испанский, португальский, немецкий, итальянский, японский
- 17. Объектив: увеличение 180X C-MOUNT
- 18. Рабочее расстояние: 95 мм (максимальное рабочее расстояние 16 см)
- 19. Коэффициент масштабирования: 6,5: 1

#### Комплект поставки:

- 1. DL-UNI20011 Микроскоп электронный промышленный с блоком питания (HDMI / USB / AV).
- 2. DL-UNI20019 Штатив держатель удлиненный для микроскопа
- 3. DL-UNI20018 Лампа диодная для микроскопа.
- 4. DL-UNI20021 Монитор.
- 5. **DL-UNI20022** Специальный держатель монитора на штативе.

#### ВНИМАНИЕ! Все оснащение из комплекта поставки продается в том числе и отдельно!



### AUXILIARY EQUIPMENT and TOOLS for checking and repairing DTA



**DL-UNI20017** 

Штатив держатель для микроскопа



#### **DL-UNI20019**

Штатив держатель удлиненный для микроскопа



#### **DL-UNI20022**

Держатель монитора монитора на штативе Посадочный диаметр 25мм.



#### DL-UNI20021

Монитор

#### Комплект поставки:

- 1.Монитор
- 2. Кабель HDMI
- 3. Кабель BNC
- 4. Кабель AV
- 5. Пульт управления 6. Блок питания
- 7. Кронштейн
- 8. Кабель VGA
- 9. Прокладка









Кабель AV







Кабель VGA

Прокладка





# AUXILIARY EQUIPMENT and TOOLS for checking and repairing DTA



DL-UNI20012 Endoscope Camera 3.9mm

#### **Specifications:**

- 1. Camera resolution: 1.0 Megapixel (FHD) 2. Field of view: 70°
- 3. Diameter: 3.9mm
- 4. Length of the thin part: 25mm
- 5. Total length: 140mm
- 6. Backlight: 6 high brightness LEDs
- 7. Waterproof case
- 8. Two types of connection ports: USB / Type-c
- 9. Ability to adjust the backlight 10. Ability to save photos
- 11. Ability to install software on the phone and PC



#### **DL-UNI20100**

Control stand for test benches injectors and injection pump

#### Benefits of this stand:

The stand can move across the floor for fixed wheels.

The rack can mount a PC with keyboard and monitor or laptop. There is a shelf at the bottom of the rack for a printer that closes with a door with polycarbonate glass.

Printer safety door retracts inside the rack, which creates additional convenience for accessing the printer.

There are two shelves in the middle of the rack for installation of control devices for various fuel systems.

Provides convenient access to everything equipment installed on this control stand.

#### **Specifications:**

- rack weight 80 kg
- overall dimensions mm (width x depth x height) 500x500x1600
- weight load kg. 160



### AUXILIARY EQUIPMENT and TOOLS for checking and repairing DTA



#### **DL-RP400**

#### Manual press for injector testing with mechanical pressure gauge

#### **Contents of delivery:**

- mechanical press 1 pc.
- mechanical pressure gauge 1 pc.
- connecting tube 2 pcs.





#### **DL-RP415** (with pressure sensor. 1500 bar)

(without pressure sensor)

#### Manual press for injector testing with electronic pressure gauge

#### Contents of delivery:

**DL-RP410** 

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 415**) for 1500 bar 1 pc.

DL-RP420	(without pressure sensor)
DL-RP425	(with pressure sensor. 1500 bar)

### Manual press for injector testing with 2-channel electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 425) for 1500 bar 1 pc.



Manufacturer - ZECA (Italy) Flame test chamber (aspirator) nozzle spray

Allows for visual inspection performance of diesel i njectors without harm to health. The device is going to work liquid for reuse.









# AUXILIARY EQUIPMENT and TOOLS for checking and repairing DTA



#### **DL-RP500**

#### Manufacturer - ZECA (Italy) Manual press for injector testing with mechanical pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- mechanical pressure gauge 1 pc.
- connecting tube 2 pcs.



DL-RP515 (with pressure sensor. 1500 bar)

## ZECA hand press for injector testing with electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 515) for 1500 bar 1 pc.



DL-RP520	(without pressure sensor)
DL-RP525	(with pressure sensor. 1500 bar)

ZECA hand press for injector testing with 2-channel electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 525) for 1500 bar 1 pc.



## **PUMP TEST.02**

#### **Common-Rail High Pressure Pump Testing Equipment**



PUMP TEST .02

#### В состав комплекта входит: The kit includes:

1. The **PTC-2520** device is designed to provide user-programmable control signals to Common Rail injection pump pressure regulators to test their performance.

2. Device **FMDE-520**, designed to measure the performance of the Common-Rail injection pump in two channels.

- 3. Tool rack on wheels for easy operation.
- 4. A set of adapter cables.
- 5. Liquid fine filters (2 pcs.)
- 6. Software.













### **PTC-2520 CP TESTER**

Device for testing and testing high-pressure fuel pumps of the Common Rail system with a set of cables.





#### FMDE-520

Device for testing the performance of fuel pumps of the Common Rail system of various manufacturers: Bosch, Delphi, Denso, Siemens, Cummins on a test bench.

It is a 2-channel liquid flow meter (pump supply and return discharge) in various modes, with digital information output to a backlit liquid crystal display.

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# AUXILIARY EQUIPMENT and TOOLS for checking and repairing DTA



#### Universal cradle for CR pumps

#### Delivery set DL-USN0021 (ST-03):

- 1. Rotary stand 1 pc.
- 2. Set of flanges for fastening CR pumps of 6 pcs.
- 3. Set of 4 pump support plates.

#### Delivery set DL-USN0021CR (ST-03CR):

- 1. Rotary stand 1 pc.
- 2. Set of flanges for fastening CR pumps of 6 pcs.

#### ATTENTION!

Holder plates for high pressure fuel pumps CR and rotary high pressure fuel pumps are also sold separately!







# **FLANGES**









## **DL-UNI30465**

**DL-CR30466** 

VDO, Land Rover,

Mounting flange 68 mm,

RangeRoverV8 and for

for injection pump CR Renault Megane, Delphi Siemens

**DL-UNI30474** 

Mounting flange

1685720258

equivalent to Bosch

**DL-UNI30464** 

Mounting flange

for injection pump CP3 MAN,

Mounting flange for injection pump CR (BMW, RENAULT, MB, Peugeot)

for injection pump CR (MB)



# DL-CR31607

**DL-UNI30884** 

Mounting flange

CP3.4 analog

for injection pump MAN

Bosch 1685720312

Mounting flange for injection pump DENSO HP0 094000-0635

#### DL-CR30860

Mounting flange for injection pump CR DENSO HP2, HP3.

#### **DL-CR30861**

DL-CR30862

Bosch0445010637,

Bosch0445010506.

Mounting flange 50 mm

for injection pump CR CP4HS2

Mounting flange 50 mm for injection pump CR CP4. (AAE001-CP4)

#### **DL-UNI30428**

HPFP VE

Mounting flange 107 mm for injection pump CP3 Bosch.



#### **DL-UNI31739**

Mounting flange for Fuel injection pump AZPI A-08-013-10, 708, BOSCH 0445020224



# **DL-UNI30886**

Mounting flange for injection pump 107 mm CP2 Bosch 0445020036 (Renault).



#### **DL-UNI50008**

Bracket for pumps, Bosch standard 125 mm. Installed on a stand.











#### DL-CR31145

Mounting flange 80mm for injection pump CR CP3S3 Bosch 0445020060





DL-CR50159 Mounting stand HPFP SIEMENS





#### DL-CR31150

Flange for mounting on stand injection pump CR DELPHI with bore diameter 50 mm and mounting holes perpendicular to the plane of the bore.



#### DL-UNI30887

Mounting flange HPFP CRCP3 Mercedes, (Similar to SIRINI AAE001-03)



#### DL-CR31165

High pressure fuel pump mounting flange BOSCH CR / CP1H3 60mm For example BOSCH injection pump 0445010223 (Renault Megane 2012)



#### DL-UNI31207

Universal flange with mounting hole diameter 50 mm, without mounting holes. Created for independent fastening holes for pumps which boarding diameter 50 mm.



#### DL-UNI31208

Universal flange with mounting hole diameter 60 mm, without mounting holes. Created for independent fastening holes for pumps which boarding diameter 60 mm













#### DL-CR30866

Flange for stand mounting High pressure fuel pump CR DELPHI with landing 50 mm in diameter and three mounting holes: two of which are located perpendicular to the plane mounting hole, and one parallel to it.

#### DL-CR31228 (CP383)

Mounting flange for injection pump CR BOSCH 0445010091 MB Sprinter, Viti, Viano2,1 I. Since 2006 Mounting hole 50mm.





#### DL-CR31513

Flange for stand mounting High pressure fuel pump CR CP3S3/K140/40-789S Bosch 0445020125 Mounting hole 107 mm





#### DL-CR50267

Corner stand for fastenings for injection pump CR SIEMENS when tested on the stand.





#### DL-CR50266

Corner stand for CR DENSO injection pump mountings 097300-0023 during testing on the stand.





# COUPLINGS



## **DL-UNI50132**

Compensation clutch with clamping jaws and reinforced package plate



## DL-M24L (CR31098)

Long sleeve Ø 24 mm for injection pump DENSO HP0



Coupling slotted for injection pump CR (for MV slot 8x18)

#### **DL-MS9**

Coupling slotted for CR injection pump (for Renault slot 9x20)

#### DL-MS10D

Coupling slotted for injection pump CR Denso, slot 10x23

#### DL-MS10 S

Муфта шлицевая для **ТНВД Siemens Peugeot** Boxer 2.2,шлиц 10x21,6

#### DL-MS11

Coupling slotted for injection pump CR MAN (11 splines)

#### **DL-M17**

Cone coupling Ø 17 mm for injection pump CR and injection pump VE

#### **DL-M19**

Cone coupling Ø 19 mm for CR and VE injection pumps





with flange connection and reinforced package plates (analogue Bosch 1686401024)



DL-CB230016

Conical coupling with flange connection Ø 30 mm Cam Box2, injection pump







#### DL-CB130139

Conical coupling Ø 30 mm





#### **DL-M22** (UNI31481)

Cone coupling Ø 22 mm for injection pump CR



#### **DL-M23** (UNI30917)

Cone coupling Ø 23 mm for injection pump Continental A2C59517053, Bosch CR\ CP4HS2 0445010637, CP4S2 0445010611, CP4S1 0445010506



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#### **DL-M24** (UNI30127)

Cone coupling Ø 24 mm for injection pump CRSR-3 mod.044502088



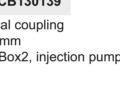




Cam Box2, injection pump

















DL-CR31703 Coupling for clamping jaws for injection pump CR Delphi 28384347



**Coupling for injection pump Bosch 0445010512** Grooves for splines are made on the coupling pump connector and cone for centering.



DL-CR31416

**Coupling for injection pump Bosch 0445010512 CR / CP4S1** Grooves for splines are made on the coupling pump connector and cone for centering. Fastening is carried out to expansion joint flange. Fits to stands BOSCH EPS-815, CR-Test 4E, CR-Test 2P and mounts adapted to them.



## Coupling for injection pump Bosch CP1

**DL-UNI31025** 

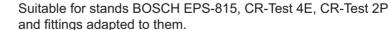
(included insert UNI31028 with groove 8 mm wide) and for high pressure fuel pump VDO (included insert UNI31027 with 9mm slot). Can be used on Bosch stands instead couplings 1685702090. Suitable for BOSCH stands EPS-815, CR-Test 4E, CR-Test 2P and customized attachments to them.

#### DL-UNI31029

**Coupling DL-UNI31029 for injection pump Denso** (included insert UNI31030 with groove 10 mm wide). Suitable for BOSCH stands EPS-815, CR-Test 4E, CR-Test 2P and fittings adapted to them.

**Flange type coupling for injection pump CR Delphi 28384347** Fastening is carried out to the flange compensation clutch.





**DL-CR31669** 



#### DL-CR31271

# Coupling cone 17mm for testing CR pumps and VE injection pumps

Fastening is carried out to the flange compensation clutch. Suitable for stands BOSCH EPS-815, CR-Test 4E, CR-Test 2P and fittings adapted to them.

























#### DL-CR31269

#### **Coupling cone 19mm for testing CR pumps and VE injection pumps** Fastening is carried out to the flange compensation clutch. Suitable for stands BOSCH EPS-815, CR-Test 4E, CR-Test 2P and fittings adapted to them.

#### DL-CR31558 (K23)

Cone coupling 23 mm for high pressure fuel pump CR Bosch and Continental Fastening is carried out to the flange compensation clutch. Suitable for CR-Test stands, BOSCH EPS-815 and mounts adapted to them Installed injection pump CR:

- Continental A2C59517053
- BOSCH CR/CP4HS2 0445010637
   DOSCH CR/CP4HS2 0445010637
- BOSCH CR/CP4S2 0445010611
- BOSCH CR/CP4S1 0445010506

#### DL-CR31251

# Cone coupling 24mm for high pressure fuel pump CR CP-3

Fastening is carried out to the flange compensation clutch. Suitable for stands BOSCH EPS-815, CR-Test 4E, CR-Test 2P and fittings adapted to them.

#### DL-CR31248

# Coupling spline (11 splines) for injection pump CR MANN

Fastening is carried out to the flange compensation clutch. Suitable for stands BOSCH EPS-815, CR-Test 4E, CR-Test 2P and adapted to them fasteners.

#### DL-CR31480

# Cone coupling 22 mm for checking pumps CR Siemens (VDO).

Fastening is carried out to the flange compensation clutch. Suitable for stands BOSCH EPS-815, CR-Test 4E, CR-Test 2P and adapted to them fasteners.

#### DL-CR31594

#### Coupling K35 for connection on the stand Fuel pump CP2 MAZ

Fastening is carried out to the flange compensation clutch. Suitable for stands BOSCH EPS-815, CR-Test 4E, CR-Test 2P and adapted to them fasteners.







Set of equipment for the repair of injection pump CR CP4 Bosch.

Contents of delivery:

- **DL-CR30861** Flange 1 pc.
- DL-CR30862 Flange 1 pc.
- **DL-UNI50083** Adapter 1 pc.
- DL-UNI50084 Adapter 2 pcs.
  - **DL-UNI30980** Nut M16x1 3 pcs.
- DL-CR31003 Socket for pump valve CP4 1 pc.



**DL-CR50151** 

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Stand support kit pumps Denso HP0.

Contents of delivery:

- **DL-CR31094** Support 2 pcs.
- DL-UNI30090 Profile bolt 2 pcs.
- Nut M14 2 pcs.
- Washer 14mm 2 pcs.
- Grover14mm 2 pcs.



Device for hanging the pusher of plunger pairs, BOSCH CP2 pumps of the system Common Rail

DL-CR50156

Set of clamps for assembly of injection pump CP3 (Similar to SIRINI AZ0128-427)

Contents of delivery:

• Clamp DL-CR50152 - 3 pcs.

#### DL-CR50307

#### Clamp for dismantling the dosing injection pump valve CR CP3 Contents of delivery:

- DL-CR31580 clamp body 1 pc
- DL-CR31582 clamp slide 1 pc.
- **DL-CR31581** clamp axle 1 pc.
- Pins 2 pcs.
- Recessed fixing bolt 1 pc.





















#### DL-CR31003

Socket for mounting / dismounting valve injection pump CR CP4 Bosch for torque wrench 1/2".

#### DL-CR50364

A set of fittings with a lock for checking the injection pump CP1

Contents of delivery:

- DL-CR31683 Connector dia. 8mm 2 pcs.
- DL-CR31676 Mounting strip 1 piece,
- D-27-013700 O-ring 2 pcs.

#### DL-CR31676

Mounting strip for fittings Used with DL-CR31683 fittings to test CP1 MB pumps

#### DL-CR50198

Adapter for measuring pressure in HPFP CR CP-3. It is installed instead of the dispenser. Contents of delivery: • Adapter Body - 1/8" Barb - Herringbone for hose with internal Ø10mm

**ATTENTION!** *Quick connector not included in the scope of delivery and must be ordered separately.* 

#### DL-CR31497

Pressure adapter booster pump CR

ATTENTION! The adapter comes without tube fittings and pressure gauge!

#### DL-CR31497KIT

Pressure adapter kit booster pump CR

#### Contents of delivery:

- DL-SP09570 L-shaped "quick"
- adapter M5x4mm
- DL-SP09580 Fitting "mother" 1/4"x4mm for manometer
- DL-P1002 Flexible PVC tube dia.4mm (100cm)
- **D-12-TV63-016** Pressure gauge 16 bar with lower fitting 1/4"



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## **ACCESSORIES FOR DL-CR31497 ADAPTER**

Pressure gauge 0+10bar, Ø63 with bottom fitting 1/4"

Pressure gauge 0÷16 bar, Ø63 with bottom fitting 1/4"

D-12-TV63-010

D-12-TV63-016





34-RL3104M5 Angle adapter M5 x Ø4mm with collet

#### 34-RL3106M5

Angle adapter M5 x Ø6mm with collet



**34-RA30-4,5-M5 Fitting** straight M5 x Ø4mm herringbone



DL-MSDE Fitting kit "banjo" M5 x Ø4mm



DL-R1001

**fuel hose** Ø int. 4mm





**34-RL020402 adapter** with internal thread G1/4" x Ø4mm with collet

**34-RL020602** adapter with internal G1/4"xØ6mm thread with collet



**34-MC130614 adapter** with internal thread G1/4"x Ø 6mm with union nut



DL-P1002

PVC tube Ø outer 4mm

DL-P1004

**Teflon tube** Ø outer 6mm



34-RL0104M5 Adapter straight M5 x Ø 4mm with collet

34-RL0106M5

Adapter straight M5 x Ø 6mm with collet



#### 34-MC2306M5C

**Fitting kit** "banjo" M5 with a union tube nut Ø 6mm x Ø4mm



#### DL-CR50246

Manometer mounting bracket. Made in the form of a hook and gauge holder brackets. Used with pressure gauges of the series D-12-TV63







#### DL-UNI50264

#### Fitting 3/8 "x8 mm

#### Designed for the following equipment:

- 1. Stands CR-Test, SPF, SPN, DORPAT
- 2. FMDE device (2-channel liquid flow meter)
- 3. "PUMP-TEST.02" Test equipment
- CR high pressure pumps

The fitting has a 3/8" thread and is designed for hose diameter 8  $\mbox{mm}$ 





#### DL-UNI50265

#### Fitting 3/8 "x10 mm

#### Designed for the following equipment:

- 1. Stands CR-Test, SPF, SPN, DORPAT
- 2. FMDE device (2-channel liquid flow meter)
- 3. "PUMP-TEST.02" Test equipment CR high pressure pumps
- The fitting has a 3/8" thread and is designed for hose diameter 10 mm





DL-UNI50126 5 µm liquid filter with 3/8" outlets

DL-UNI50047

5 μm liquid filter with fittings (herringbone) by 10 mm



The test stand is designed to test pump injectors, pump sections.

**DORPAT Multi-Cam11** – The stand can be used for fuel equipment of any diesel engines of light and medium traction, including high-speed engines of cars, buses, trucks and agricultural tractors with UIS (unit injector system) and UPS (unit pump system) fuel equipment installed on them.

Stands are produced with a capacity of 11 kW.

The measurement takes place in an electronic system.





## STAND EQUIPMENT

2CB20001	CamBox CB	1 pc		
DL-CB230016	Drive Coupling CamBox2	1 pc		
DL-CB230010	Spray nozzle bracket	1 pc		
	Bolt M10,L=106mm, bolt M10,L=56mm for brackets. atomizer nozzles	1 set		
DL-CB230012	Spray nozzle Ø 9mm	1 pc		
DL-CB230022	Injector clip	1 pc		
DL-CB230046, DL-CB230047, DL-CB230048, DL-CB230049 Sealing washers atomizer 1				
DL-CB230013	Cam stroke position lock	2 pcs		
DL-CB230084	Remote bushing H=7 Ø20 for mounting the clip under the passenger NF	2 pcs		
DL-CB230109	Pusher screw for pump injector spherical	1 pc		
DL-CB230134	Screw pusher for pump-injector spherical short	1 pc		
DL-CB230135	Screw-pusher for pump-injector internal	1 pc		
DL-CB230043	Pusher screw with nut for pumping sections M12x1.25	1 pc		
DL-CB20151	Clamp-adapter No. 0151 for Audi / VW1.9 unit injectors	1 pc		
DL-CB20152	Clamp-adapter No. 0152 for Audi / VW2.0 unit injectors	1 pc		
DL-CB20124	Clamp-adapter No. 0124 for pump-injectors Volvo FH12, Iveco, Bosch	1 pc		
DL-CB20148	Clamp-adapter No. 0148 for unit injectors Volvo FH12, Delphi E3	1 pc		
DL-CB20140	Clamp-adapter No. 0140 for Scania unit injectors	1 pc		
DL-CB20129	Clamp-adapter No. 0129 for MBActros unit injectors	1 pc		
DL-CB201333	Clamp-adapter No. 0133 for MBAtego unit injectors	1 pc		
DL-CB20144	Clamp-adapter No. 0144 for pump injectors DAF, MAK, Renault			
DL-CB20123	Clamp-adapter No. 0123 for PLD sections of unit injectors No. 0129,133,144	1 pc		
DL-CB20100	Clamp-adapter No. 0100 for installing the indicator head	1 pc		
DL-UNI30035	Fitting for clamp-adapter M14x1.5x1/4"	16pcs		
1/4MBSPF04	Quick coupler male hydraulic 1/4"	2 pcs		
D-GM1538AN	Rubber-metal gasket ØM14	20pcs		
D-GM1504AN	Gasket rubber-metal Ø1/4"	20pcs		
DL-UIS0920B	Adapter cable for Bosch injector universal	1 pc		
DL-UIS0921D1	Adapter cable for Delphi E3 injector 4-pin	1 pc		



## STAND EQUIPMENT

DL-UIS0922D2	Adapter cable for injectors Delphi E3 4-pin second type	1 шт.	
DL-UIS0923D	Adapter cable for Delphi injector 2-pin		
DL-UIS0924V	Adapter cable for VW injector		
DL-CB250001	Adjustable gauge for setting the preload of the unit injector	1 шт.	
	Supply hose 3/8"x1/4"x750mm	1 к-т.	
	34-K2-212D - Ø1/4" female quick coupler (1pc)		
	Backflow outlet hose 3/8"x1/4"x700mm	1 к-т.	
	34-K2-212D - Ø1/4" female quick coupler (1pc)		
	Bolt Banjo 1/4" (2pcs) + Bolt Banjo M14x1.5 (2pcs)	1 к-т.	
	The quick adapter from the spray nozzle to the tube will measure. 1/8" x 1/8"	1 шт.	
	vUNI30081		
DL-UNI50138	Measuring tube Teflon flexible in steel braid for flow measurement	1 шт.	
P1004	Teflon tube Ø 6mm x 1500mm	1 шт.	
34-RL020602	Fitting (quick adapter) Ø 6mm x 1/4"	1 шт.	
D1530075	Handwheel for scrolling the flywheel	1 шт.	
	Cushioning legs (4 pcs.) + Door key (4 pcs.)	1 к-т.	
	Program with test plans from the manufacturer (1 pc.)	1 шт.	
	Compensation spring (red L=76mm) for plunger travel 10-12mm	1 шт.	
DL-CB230169	Pusher for compensating spring (red L=76mm)	1 шт.	
DL-UNI31222	Open-end wrench 22mm	1 шт.	



## STAND EQUIPMENT



DL-UIS0920B Cable for BOSCH injectors (universal)



DL-UIS0921D1 Cable for injectors Delphi E3 4-pin



DL-UIS0923D Cable for Delphi injectors 2-pin



DL-UIS0924V Cable for VW injectors



DL-UIS0922D2

Cable for injectors Delphi E3 4-pin second type

















## STAND EQUIPMENT

#### DL-CB20124

**Clamp for injectors Volvo FH12, lveco, Bosch** 0414701004, 0414701006, 0414701013, 0414701014, 0414701015, 0414701021, 0414701022, 0414702002, 0414702003, 0414702005, 0414702006, 0414702007, 0414702009, 0414702010, 0414702012, 0414702013, 0414702014, 0414702015

#### to Cam Box 2 of the DORPAT stand Delivery set: clamp - 1 pc, fitting - 2 pcs,

rubber-metal. gasket - 4 pcs.

#### DL-CB20148

# Clamp for injectors Volvo FH12, Delphi E3 to Cam Box 2 of the DORPAT stand

Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB2 0151

#### Clamp for injectors Audi / VW 1.9

0414720002, 0414720003, 0414720005, 0414720007, 0414720008, 0414720009, 0414720013, 0414720014, 0414720015, 0414720016, 0414720018, 0414720028, 0414720029, 0414720030, 0414720033, 0414720034, 0414720205, 0414720036, 0414720037, 0414720038, 0414720039, 0414720201, 0414720204, 0414720206, 0414720208, 0414720209, 0414720210, 0414720213, 0414720214, 0414720215, 0414720216, 0414720217, 0414720220, 0414720221, 0414720222, 0414720223, 0414720224, 0414720225, 0414720226, 0414720227, 041472028, 041472029, 0414720230, 0414720231, 0414720232, 0414720301, 0414720302, 0414720303, 0414720304, 0414720305, 0414720311, 0414720312, 0414720313, 0414720314 **to Cam Box 2 of the DORPAT stand** 

Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs, tack - 1 pc, fixing screw - 1 pc.

#### DL-CB20152

Clamp for injectors Audi / VW 2.0 0414720401, 0414720402, 0414720403, 0414720404

#### to Cam Box 2 of the DORPAT stand

Delivery set: clamp - 1 pc, fitting - 2 pcs, sealing washer - 4 pcs, fixing screw - 2 pcs.

## STAND EQUIPMENT

## DL-CB20140

#### Clamp for Scania injectors

0414701017, 0414701018, 0414701019, 0414701020, 0414701030, 0414701032, 0414701035, 0414701036, 0414701037, 414701038, 0414701040, 0414701042, 0414701043, 0414701044, 0414701045, 0414701069, 0414700002, 0414701005, 0414701007, 0414701008, 0414701016

## to Cam Box 2 of the DORPAT stand

Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.



#### DL-CB20129

Clamp for PLD Mercedes Actros 0414799005, 0414799007, 0414799009, 0414799010, 0414799011, 0414799015, 0414799016, 0414799018, 0414799021, 0414799023, 0986445002

**to Cam Box 2 of the DORPAT stand** Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.



#### DL-CB20133

Clamp for PLD Mercedes Atego 0414799003, 0414799006, 0414799008, 0414799012, 0414799013, 0414799014, 0414799017, 0414799019, 0414799022, 0986445003

**to Cam Box 2 of the DORPAT stand** Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.



#### DL-CB20144

Clamp for PLD DAF, MAK, Renault 0414755005, 0414755006, 0414755007, 0414755008, 0414755014, 0414755015, 0414755016, 0414755017, 0414755018

**to Cam Box 2 of the DORPAT stand** Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.



## STAND EQUIPMENT



#### DL-CB20100

Clamp-adapter for indicator head to Cam Box 2 of the DORPAT stand

Delivery set: clamp - 1 pc.



#### DL-CB20123D

Clamp-adapter for PLD sections pump injectors 0129, 0133, 0144, 0145 to Cam Box 2standDORPAT

Delivery set: clamp – 1 pc.



#### DL-UNI31222

Open-end wrench at 22mm



## **OPTIONAL EQUIPMENT**









#### DL-CB20125KIT

Inspection and test kit unit injector Caterpillar C12 to CamBox 2 of the DORPAT stand. Contents of delivery:

- clip-adapter **DL-CB20125** 1 pc.
- injector pusher CB230276 (for C13)
- sealing washer SV230289
- nozzle for sprayer SV230282
- fitting to the adapter 2 pcs.
- rubber-metal gasket 4 pcs.

Nozzle not included.

#### DL-CB20126KIT

Inspection and test kit injectors Caterpillar C15, C13 (CAT2490713) Perkins to CamBox 2 of the DORPAT stand. Contents of delivery:

- clip-adapter **DL-CB20126** 1 pc.
- injector pusher CB230294 (for C15)
- injector pusher CB230276 (for C13)
- sealing washer SV230289
- nozzle for sprayer **SV230282**
- fixing bracket **SV230283**
- fitting to the adapter 2 pcs.
- rubber-metal gasket 4 pcs.

Nozzle not included.

#### DL-CB20127

Clamp for PLD Detroit (Bosch) 0414750003, 0414750004 to Cam Box 2

**Delivery set:** clamp - 1 pc, fitting - 1 pc, rubber-metal. gasket - 2 pcs.

#### DL-CB20128

Clamp for injectors lveco 7,8 Liters

0414700002, 0414700003, 0414700004, 0414700005, 0414700006 **to Cam Box 2 Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.



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DL-CB20130

to Cam Box 2

Clamp for injectors 0414703005, 0414703007

# **DORPAT Multi-Cam11**

## **OPTIONAL EQUIPMENT**





## DL-CB20131

rubber-metal. gasket - 4 pcs.

Clamp for UD Nissan injectors 0414701023, 0414701024, 0414701033, 0414701034 to Cam Box 2

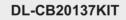
**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

Delivery set: clamp - 1 pc, fitting - 2 pcs,

#### DL-CB20136

Clamp for Land Rover-Discovery injectors (Delphi) to Cam Box 2

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.



Clamp for Caterpillar L10 injectors to Cam Box 2

Kit includes:

- Clamp adapter DL-CB20137
- Sealing washer **SV230289**
- Nozzle for sprayer SV230282
- Fitting to the adapter 2 pcs.
- Rubber-metal gasket 4 pcs.

Nozzle not included.



**OPTIONAL EQUIPMENT** 

#### DL-CB20138KIT

Inspection and test kit pump injector Detroit 5234770-5235580 to CamBox 2 of the DORPAT stand. Contents of delivery:

- clip-adapter **DL-CB20138** 1 pc.
- nozzle pusher **SV230276** 1 pc.
- fixing bracket **SV230440** 1 pc.
- fitting to the adapter 2 pcs.
- rubber-metal gasket 4 pcs.

Nozzle not included.







#### DL-CB20139KIT

#### Inspection and test kit pump injector Cummins 4DEC01L4061851 to CamBox 2 of the DORPAT stand. Contents of delivery:

- clip-adapter DL-CB20139 1 pc.
- fixing bracket SV230440 1 pc.
- fitting to the adapter 2 pcs.
- rubber-metal gasket 4 pcs.

Nozzle not included.

#### DL-CB20145

Clamp for PLD DELPHI to Cam Box 2 of the DORPAT stand

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20146

Clamp for injectors Caterpillar L15 to Cam Box 2 of the DORPAT stand

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.



## **OPTIONAL EQUIPMENT**









#### DL-CB20146KIT

**Clamp for Caterpillar L15 injectors** to Cam Box 2 Kit includes:

- DL-CB20146 Clamp adapter
- Sealing washer SV230289
- Nozzle for sprayer SV230282
- Injector pusher CB230294
- SV230283
- Fixing bracket
- Fitting to the adapter 2 pcs.
- Rubber-metal gasket 4 pcs.

Nozzle not included.

#### **DL-CB20149**

**Clamp for Bosch injectors** 0414703004, 0414703008, 0414703009, 0414703013 to Cam Box 2 of the DORPAT stand Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20153KIT

#### Inspection and test kit pump injector Bosch 0414703003 to CamBox 2 of the DORPAT stand. Contents of delivery:

- clip-adapter DL-CB20153 1 pc;
- nozzle pusher SV230276 - 1 pc;
- fitting to the adapter 2 pieces;
- rubber-metal gasket 4 pcs.

Nozzle not included.

#### DL-CB20154KIT

#### Kit for checking and testing unit injectors CumminsHPI to DORPAT CamBox 2. Contents of delivery:

- clip-adapter **DL-CB20154** – 1 pc.
- nozzle pusher CB230356 - 1 pc.
- nozzle for sprayer CB230357 1 pc.
- valve holder CB230355 1 pc.
- bracket **CB220007** for valve holder – 1 pc.
- Timing valve 1 pc.
- Metering valve 1 pc.
- steel braided hose 2 pcs.
- fitting for a hose 4 pcs.
- fitting to the adapter 2 pieces;
- rubber-metal gasket 4 pcs.
- pressure nozzle 1 pc.



#### OPTIONAL EQUIPMENT



#### DL-CB20155

Clamp for injectors Delphi E1 (John Deere) to Cam Box 2 of the DORPAT stand

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

Nozzle not included.



#### DL-CB20156

Clamp adapter for testing unit injectors CAT 3920206

**Delivery set:** clip - 1 pc, fixing bracket - 1 pc fixing bolt of the clamp-lock 8x35 - 2 pcs fitting - 2 pcs, rubber-metal. gasket - 4 pcs

Nozzle not included.



#### DL-CB20157

Test adapter clamp pump injector Cummins 3053124

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

Nozzle not included.



#### DL-CB20158

Adapter clip for injectors CUMMINS 4902827

Scope of delivery:

DL-CB231672adapter clip № 0158 — 1 pc;DL-CB231675bracket-retainer — 1 pc;DL-CB230357nozzle on the sprayer — 1 pc;DL-UNI30035fitting for the adapter clip M14x1,5x1/4" — 3 pcs;D-GM1538ANrubber-metal gasket ØM14 — 3 pcs;D-GM1504ANrubber-metal gasket Ø1/4" — 3 pcs.

Nozzle not included.



## **OPTIONAL EQUIPMENT**





Injection sensor for unit injectors Cummins HPI



#### DL-CB250036KIT

injection sensor (piezo)





#### 25-FPKM-04

Fitting - quick adapter for adapter

#### 25-FPKF-04

Hydraulic Quick Connector female connections 1/4"



## **OPTIONAL EQUIPMENT**



#### 1680750120

Tube for test nozzle to the DORPAT Multi-Cam stand



1688901119

Test nozzle for checking fuel equipment to the stand DORPAT Multi-Cam

#### 1688901118

Test nozzle for checking fuel equipment to the stand DORPAT Multi-Cam



ISO-100-V5

Jet 0.5mm



#### DL-UNI30229

Tip (with gaskets and fitting) for test injector to DORPAT stand Multicam

Contents of delivery: tip - 1 pc, rubber-metal gasket - 2 pcs, connecting fitting 1 pc



# **CAM-BOX1 FORCE**

Basic kit for testing unit injectors and single pumps (UI / UP SYSTEM).

#### Kit includes:

- 1. CAMBOX 1
- 2. Controller UIS TESTER V6



# CAMBOX 1

Mechanical part to check injector pump.

The basic version comes with clip for Volvo FH12 unit injectors and some lveco injectors Bosch. Clips for other nozzles by additional order.



## **UIS TESTER V6**

# Controller - electronic part to check pump injectors.

Device for testing and performance checks unit injectors (UIS) and individual fuel pumps (pump sections) high pressure with solenoid valves high pressure (UPS).



EQUIPMENT





#### Crankcase - protective cover

Included in CAM-BOX1: • crankcase 3pcs.

crankcase 3pcs.



Included in CAM-BOX1:

- nozzle 3 pieces,
- fitting 3 pcs.



#### Threaded pusher

Included in CAM-BOX1:

- spherical pusher 1 piece,
- concave pusher 1 pc.





## Pen holder

Included in CAM-BOX1:

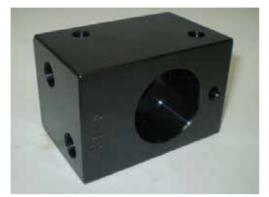
• handle - 1 pc.

#### Mounting guides Cam box on stand

Included in CAM-BOX1: • guide sleeve - 2 pcs.



## EQUIPMENT











#### Clamp for injectors Volvo FH12 and some Bosch lveco injectors CB0124-01

Included in CAM-BOX1: • clamp - 1 pc.

# Hose kit to adapter - clamp

Included in CAM-BOX1:

- pressure valve 1 piece,
- banjo bolt 1 piece,
- banjo fitting 2 pcs.,
- washers 4 pcs.

#### **Clamp for injectors**

Included in CAM-BOX1: • clamp - 1 pc.

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#### Atomizer Kit

Included in CAM-BOX1:

- atomizer holder 1 pc,
- adapter for atomizer 7mm 1pc,
- fitting 1 pc.

#### Strait Kit

Included in CAM-BOX1:

- defoamer 1 piece,
- fitting 1 piece,
- PVC tube 6mm x 1.5m 1 pc.





# KV

Camshaft for LandRov, Iveko Cur, VW Contents of delivery: • Cam shaft - 1 pc.



#### VW

#### Adapter for Audi / VW Contents of delivery:

- adapter 2 pcs (2 options),
- spray tip.
- fitting 1 piece,
- side fitting 1 pc,
- clamp 1 piece,
- fastening bolt 1 pc.



# CB 0128-01 IVECO

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to the pump flange for TNVDP, PE and for CAM BOX

Contents of delivery:

coupling - 1 piece,
lock washer - 1 piece,
fixing nut- 1 PC.

Mounting sleeve

Clamp for lveco 7,8L Contents of delivery: • clamp - 1 piece.

• side fitting - 1 pc.



#### CB 0136-01 LR

#### Clamp for injectors Land Rover Discovery Contents of delivery:

- clip 1pc,
- fitting 1 piece,
- clamp 1 piece, tip on
- the spray nozzle

ø=7mm – 1pc.



#### CB0140-01 SC

Clamp for injectors Scania Contents of delivery: • clip - 1pc,

• pusher - 1 pc.



## CB0148-01500 HP

Clamp for injectors Volvo 500HP Delphi Contents of delivery: • clamp - 1 pc.



#### CB0147-01 JD

Clamp for injectors John Deere Delphi Contents of delivery: • clamp - 1 pc.



#### CB 0129-01 ACT

Clamp for injectors Mercedes Actros Contents of delivery:

- clamp 1 piece,
- adapter AZ0309-01 1 pc,
- side fitting DL-EA 1pc



#### CB0133-01 AT

Clamp for injectors Mercedes Atego Contents of delivery: • clip - 1pc,

- clip Tpc
- adapter AZ0309-01 1 pc,
- side fitting DL-EA 1pc



#### CB0144-01 DAF

Clamp for injectors Clamp for injectors DAF, MAK, Renault Contents of delivery:

- clip 1pc,
- adapter AZ0309-02 1 pc,
- side fitting 1 pc,
- cola receiver 1 piece,
- fitting 2 pcs.



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**OPTIONAL EQUIPMENT** 



## CB0146-01 CAT15

**Clamp for injectors** Caterpillar L15 Contents of delivery: • clamp-1pc, • clamp-1pc,

- spray tip
- nozzles Ø- "cone" 1 pc,
- crankcase 1 pc, fitting 1 pc.

#### **OPTIONAL EQUIPMENT**



#### CB0137-01 CAT10

Clamp for injectors Caterpillar L10 Contents of delivery: clip - 1pc. spray tip nozzles Ø=10.5mm - 1pc, • fitting - 1 piece

#### CB0138-01 DET

**Clamp for injectors** Detroit Contents of delivery:

- clip 1pc,
- spray tip
- nozzles Ø=8.5mm 1pc,
- clamp 1 piece,
- fitting 1 piece



#### CB0139-01 CUM

Clamp for injectors Cummins Contents of delivery: clip - 1pc,

- spray tip
- nozzles Ø=8.5mm 1pc, • clamp - 1 piece,
- fitting 1 piece



#### DL-CB230017

Flange for sensor revolutions to CAM BOX1 and to CAM BOX2 • flange - 1pc



#### **DL-UNI50038**

Encoder housing for 5000 impulses for CAM BOX1 and CAM BOX2 encoder housing – 1pc



#### PCIDS2ZNKW-M8-45-M8

Rev. sensor for CAM BOX 1 Contents of delivery: • sensor - 1 piece,

- connecting
- cable 1pc,
- fastening nut 2 pcs.



#### **DL-CBTS**

Pusher spherical to rocker on CAM BOX1



#### **DL-CBT**

Pusher concave to rocker on CAM BOX1



#### 0232103064

**RPM** sensor for CAMBOX 1 and CAMBOX 2



# CAM-BOX 2 MASTER

Kit for testing unit injectors and single pumps (UI / UP SYSTEM).

#### Kit includes:

- 1. CAM-BOX 2 MECHANIC
- 2. Controller UIS TESTER Multi-CAM



## **CAM-BOX 2 MECHANIC**

# Mechanical part to check pump nozzles and pump sections.

Device for testing and performance checks unit injectors (UIS) and individual fuel pumps (pump sections) high pressure with electromagnetic high pressure valves (UPS). The CAM-BOX2 MECHANIK has integrated inductive speed sensor and sensor angle (encoder) allowing to read indication of revolutions and angles for testing of modern EUI systems and EUP



## **UIS TESTER Multi-CAM**

# Electronic part for checking pump injectors

Test and Verification Instrument unit injector performance (UIS) and individual fuel pumps (pump sections) high pressure with high pressure solenoid valves pressure (UPS).



DL-CB2 0124

# **CAM-BOX 2 MECHANIC**

## EQUIPMENT

Clamp for injectors Volvo FH12, Iveco, Bosch

0414702012, 0414702013, 0414702014, 0414702015

0414700002, 0414701004, 0414701006, 0414701013, 0414701014, 0414701015, 0414701021, 0414701022, 0414702002, 0414702003, 0414702005, 0414702006, 0414702007, 0414702009, 0414702010,





DL-CB230035

**Fitting** Ø M14 (1.5) x1/4 "- 2 pcs. with rubber-metal gasket - 4 pcs.



test holder nozzles to the clamp adapter



DL-CB2 0123 Clamp-adapter for sections PLD NF 0129.0133.0144



DL-CB230022 Bracket-clamp

#### DL-CB230010

Bracket-nozzles and spray nozzle Ø 7mm

DL-CB230012 Spray nozzle Ø 9mm



M10 bolt, L= 106mm, M10 bolt, L= 56mm for nozzle bracket



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DL-CB2 0100 Clip-adapter for indicator head

DL-CB230046, CB230047, CB230048, CB230049

Sealing washer (4pcs)



#### DL-CB230084

Remote bushing H=7 Ø 20 for installation of passenger NF (2 pcs.)



## DL-CB230189

Remote bushing H=5 Ø 12 for installation of passenger NF (2 pcs.)



#### DL-CB230013

Retaining pin (3 pcs)



CAM-BOX 2 MECHANIC EQUIPMENT					
DL-CB230109,CB230134, DL-CB230135,DL-CB230043 Screw pusher (4pcs)	DL-CB250001 Caliber adjustable for preload settings injector pump	Banjo fitting, Banjo bolt, rubber-metal gaskets and hose clamps (2 sets)			
	pressure hose to pump nozzle Ø 10x1000mm				
	return hose from pump nozzle Ø 10x1000mm	DL-1004 Teflon tube Ø 6mm x 1500mm			
	Û				
DL-UNI30001	DL-PG	D-5358			
Union with fitting Ø 6mm x 1/8" for teflon tube	Defoamer with fitting Ø 6mm x1/4"	Compensating spring for light injectors (red)			

DL-CB230169

pusher for

springs

compensatory

Back pressure valve drain 2.5 bar



DL-UNI30090

M14 x 44mm with nut and

washers for fastening

Cam-Box (2 sets)

profile bolt

## **OPTIONAL EQUIPMENT**





#### DL-UNI50132

Compensation clutch with clamping jaws and reinforced package plates

#### **DL-UNI50139**

Compensation clutch with flange connection and reinforced package plates (analogue Bosch 1686401024)

#### DL-CB230016

Conical coupling with flange connection Ø 30 mm Cam Box2, injection pump



#### DL-CB130139

Cone coupling Ø 30 mm Cam Box2, injection pump



DL-CB230879

Mounting key for CAM-BOX couplings DL-CB130139 and DL-CB230016











## **OPTIONAL EQUIPMENT**

#### DL-CB20124

**Clamp for injectors Volvo FH12, lveco, Bosch** 0414701004, 0414701006, 0414701013, 0414701014, 0414701015, 0414701021, 0414701022, 0414702002, 0414702003, 0414702005, 0414702006, 0414702007, 0414702009, 0414702010, 0414702012, 0414702013, 0414702014, 0414702015

#### to Cam Box 2 of the DORPAT stand

Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20125KIT

#### Inspection and test kit unit injector Caterpillar C12 to CamBox 2 of the DORPAT stand. Contents of delivery:

- clip-adapter **DL-CB20125** 1 pc.
- injector pusher CB230276 (for C13)
- sealing washer **SV230289**
- nozzle for sprayer SV230282
- fitting to the adapter 2 pcs.
- rubber-metal gasket 4 pcs.

Nozzle not included.

#### DL-CB20126KIT

Inspection and test kit injectors Caterpillar C15, C13 (CAT2490713) Perkins to CamBox 2 of the DORPAT stand. Contents of delivery:

- clip-adapter DL-CB20126 1 pc.
- injector pusher CB230294 (for C15)
- injector pusher CB230276 (for C13)
- sealing washer SV230289
- nozzle for sprayer SV230282
- fixing bracket SV230283
- fitting to the adapter 2 pcs.
- rubber-metal gasket 4 pcs.

Nozzle not included.

#### DL-CB20127

Clamp for PLD Detroit (Bosch) 0414750003, 0414750004 to Cam Box 2

**Delivery set:** clamp - 1 pc, fitting - 1 pc, rubber-metal. gasket - 2 pcs.



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## **OPTIONAL EQUIPMENT**

#### DL-CB20128

Clamp for injectors lveco 7,8 Liters

0414700002, 0414700003, 0414700004, 0414700005, 0414700006 **to Cam Box 2 Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20129

Clamp for PLD Mercedes Actros 0414799005, 0414799007, 0414799009, 0414799010, 0414799011, 0414799015, 0414799016, 0414799018, 0414799021, 0414799023, 0986445002

to Cam Box 2 of the DORPAT stand Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20130

Clamp for injectors 0414703005, 0414703007 to Cam Box 2

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20131

Clamp for UD Nissan injectors 0414701023, 0414701024, 0414701033, 0414701034 to Cam Box 2

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20133

Clamp for PLD Mercedes Atego

0414799003, 0414799006, 0414799008, 0414799012, 0414799013, 0414799014, 0414799017, 0414799019, 0414799022, 0986445003

to Cam Box 2 of the DORPAT stand Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.











## **OPTIONAL EQUIPMENT**

#### DL-CB20136

Clamp for Land Rover-Discovery injectors (Delphi) to Cam Box 2

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20137KIT

Clamp for Caterpillar L10 injectors to Cam Box 2

#### Kit includes:

- Clamp adapter DL-CB20137
- Sealing washer SV230289
- Nozzle for sprayer **SV230282**
- Fitting to the adapter 2 pcs.
- Rubber-metal gasket 4 pcs.

Nozzle not included.

#### DL-CB20138KIT

#### Inspection and test kit pump injector Detroit 5234770-5235580 to CamBox 2 of the DORPAT stand. Contents of delivery:

- clip-adapter **DL-CB20138** 1 pc.
- nozzle pusher **SV230276** 1 pc.
- fixing bracket **SV230440** 1 pc.
- fitting to the adapter 2 pcs.
- rubber-metal gasket 4 pcs.

Nozzle not included.

#### DL-CB20139KIT

#### Inspection and test kit pump injector Cummins 4DEC01L4061851 to CamBox 2 of the DORPAT stand. Contents of delivery:

- clip-adapter **DL-CB20139** 1 pc.
- fixing bracket **SV230440** 1 pc.
- fitting to the adapter 2 pcs.
- rubber-metal gasket 4 pcs.

Nozzle not included.















#### **OPTIONAL EQUIPMENT**

#### DL-CB20140

#### Clamp for Scania injectors

0414701017, 0414701018, 0414701019, 0414701020, 0414701030, 0414701032, 0414701035, 0414701036, 0414701037, 414701038, 0414701040, 0414701042, 0414701043, 0414701044, 0414701045, 0414701069, 0414700002, 0414701005, 0414701007, 0414701008, 0414701016

#### to Cam Box 2 of the DORPAT stand

Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20144

**Clip for PLDDAF, MAK, Renault** 0414755005, 0414755006, 0414755007, 0414755008, 0414755014, 0414755015, 0414755016, 0414755017, 0414755018

to Cam Box 2 of the DORPAT stand Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20145

Clamp for PLD DELPHI to Cam Box 2 of the DORPAT stand Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20146

Clamp for injectors Caterpillar L15 to Cam Box 2 of the DORPAT stand Delivery set: clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB20146KIT

Clamp for Caterpillar L15 injectors to Cam Box 2 Kit includes:

- Clamp adapter DL-CB20146
- Sealing washer SV230289
- Nozzle for sprayer SV230282
- Injector pusher CB230294
- Fixing bracket SV230283
- Fitting to the adapter 2 pcs.
- Rubber-metal gasket 4 pcs.

Nozzle not included.







#### DL-CB20149

**Clamp for Bosch injectors** 0414703004, 0414703008, 0414703009, 0414703013 **to Cam Box 2 of the DORPAT stand Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

#### DL-CB2 0151

Зажим для форсунок Audi / VW 1.9 0414720002, 0414720003, 0414720005, 0414720007, 0414720008, 0414720009, 0414720013, 0414720014, 0414720015, 0414720016, 0414720018, 0414720028, 0414720029, 0414720030, 0414720033, 0414720034, 0414720205, 0414720036, 0414720037, 0414720038, 0414720039, 0414720201, 0414720204, 0414720206, 0414720208, 0414720209, 0414720210, 0414720213, 0414720214, 0414720215, 0414720223, 0414720217, 0414720220, 0414720221, 0414720222, 0414720223, 0414720224, 0414720225, 0414720226, 0414720227, 041472023, 041472029, 0414720230, 0414720231, 0414720232, 0414720301, 0414720302, 0414720303, 0414720304, 0414720305, 0414720311, 0414720312, 0414720313, 0414720314 **to Cam Box 2 of the DORPAT stand** 

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs, tack - 1 pc, fixing screw - 1 pc.





#### DL-CB20152

Clamp for injectors Audi / VW 2.0 0414720401, 0414720402, 0414720403, 0414720404 to Cam Box 2 of the DORPAT stand Delivery set: clamp - 1 pc, fitting - 2 pcs, sealing washer - 4 pcs, fixing screw - 2 pcs.

#### DL-CB20153KIT

Inspection and test kit pump injector Bosch 0414703003 to CamBox 2 of the DORPAT stand. Contents of delivery:

- clip-adapter **DL-CB20153** 1 pc;
- nozzle pusher **SV230276** 1 pc;
- fitting to the adapter 2 pieces;
- rubber-metal gasket 4 pcs.

Nozzle not included.



#### **OPTIONAL EQUIPMENT**



#### DL-CB20154KIT

- Kit for checking and testing unit injectors CumminsHPI to DORPAT CamBox 2. Contents of delivery:
- clip-adapter **DL-CB20154** 1 pc.
- nozzle pusher CB230356 1 pc.
- nozzle for sprayer CB230357 1 pc.
- valve holder **CB230355** 1 pc.
- bracket **CB220007** for valve holder 1 pc.
- Timing valve 1 pc.
- Metering valve 1 pc.
- steel braided hose 2 pcs.
- fitting for a hose 4 pcs.
- fitting to the adapter 2 pieces;
- rubber-metal gasket 4 pcs.
- pressure nozzle 1 pc.



#### DL-CB20155

# Clamp for injectors Delphi E1 (John Deere) to Cam Box 2 of the DORPAT stand

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

Nozzle not included.



#### DL-CB20156

#### Clamp adapter for testing unit injectors CAT 3920206

**Delivery set:** clip - 1 pc, fixing bracket - 1 pc fixing bolt of the clamp-lock 8x35 - 2 pcs fitting - 2 pcs, rubber-metal. gasket - 4 pcs

Nozzle not included.



#### DL-CB20157

Test adapter clamp pump injector Cummins 3053124

**Delivery set:** clamp - 1 pc, fitting - 2 pcs, rubber-metal. gasket - 4 pcs.

Nozzle not included.







# OPTIONAL EQUIPMENT

#### DL-CB2 50037

Injection sensor for unit injectors Cummins HPI

#### DL-CB250036KIT

injection sensor (piezo)



DL-CB20158

Adapter clip for injectors CUMMINS 4902827

Scope of delivery:

DL-CB231672adapter clip № 0158 — 1 pc;DL-CB231675bracket-retainer — 1 pc;DL-CB230357nozzle on the sprayer — 1 pc;DL-UNI30035fitting for the adapter clip M14x1,5x1/4" — 3 pcs;D-GM1538ANrubber-metal gasket ØM14 — 3 pcs;D-GM1504ANrubber-metal gasket Ø1/4" — 3 pcs.

Nozzle not included.



Fitting - quick adapter for adapter

25-FPKM-04



#### 25-FPKF-04

Hydraulic Quick Connector female connections 1/4"



D-1324179 Pusher for Cam-Box2



## **CAMBAT-FLOW**

Injection meter for pump injectors of pump sections of the UIS/UPS system (for UIS-Tester MULTICAM).







### **UIS-TESTER MultiCAM**

The UIS-Tester device is designed to test and verify the performance of unit injectors (UIS -Unit Injector System) and individual high-pressure fuel pumps with high-pressure solenoid valves (UPS -Unit Pump System).



### **CAMBAT-FULL**

Equipment for testing and checking unit injectors and pump sections of the UIS / UPS system without a mechanical part.



# Equipment CAMBAT-FULL includes:

- 1. Rack with measuring unit CAMBAT-FLOW
- 2. Control device for pump-injectors of pumping sections UIS-Tester MULTICAM
- 3. A set of connecting wires for injectors, measuring unit, etc.



### **CAMBAT-FULL-SET**

Equipment for testing and checking the pump injector of pump sections of the UIS / UPS system with a mechanical part.

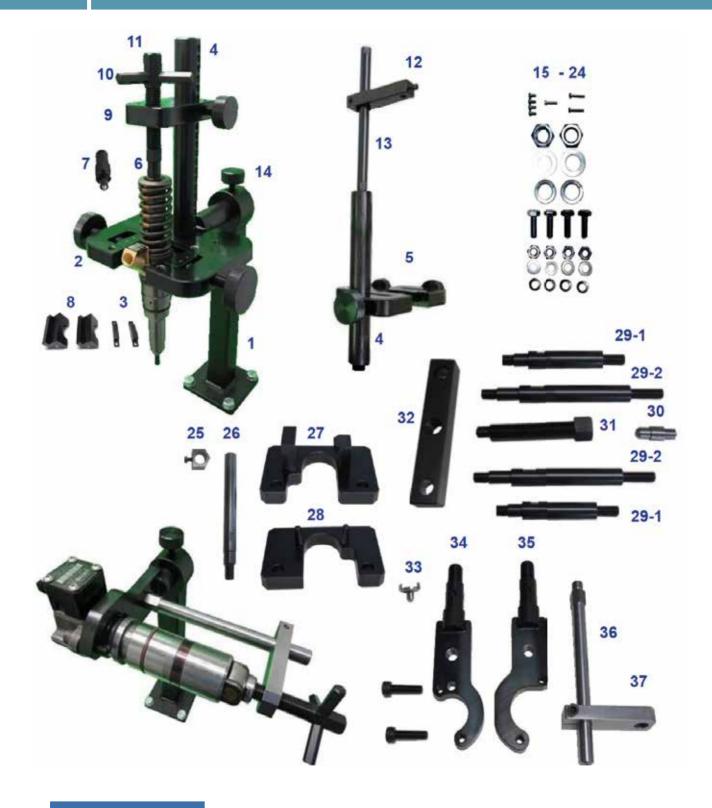


# Equipment CAMBAT-FULL-SET includes:

- 1. Rack with measuring unit CAMBAT-FLOW
- 2. Control device for unit injectors and pump sections UIS-Tester MULTICAM
- 3. A set of connecting wires for injectors, measuring unit, etc.
- 4. The mechanical part for testing the pump-injector pump sections CAM-BOX MECHANIC



### ОБОРУДОВАНИЕ и ИНСТРУМЕНТ для ремонта насос-форсунок (UIS) и насосных секций (UPS)



#### DL-ST02

Clamp for dismantling and assembling the unit injector of CR injectors with two stops on atomizer nozzles with  $\emptyset$  7mm, with  $\emptyset$  9mm.



#### Contents of delivery:

- 1. Rack STD50115 1 pc.
- 2. Large vice **STD50116** 1 pc.
- 3. Replaceable foot **STD30498** 2 pcs.
- 4. Guide post STD30540 1 pc.
- 5. Small vice **STD50117** 1 pc.
- 6. Stop Ø 7mm **STD30148** 1 pc.
- 7. Stop Ø 9mm STD30147 1 pc.
- 8. Replaceable foot **STD30752** 2 pcs.
- 9. Bracket STD30610 1 pc.
- 10. Handle **STD30811** 3 pcs.
- 11. Clamping screw **STD30810** 1 pc.
- 12. Holder **STD30813** 1 pc.
- 13. STD30812 axle 1 pc.
- 14. Retainer **STD30468** 3 pcs.
- 15. Screw **M4x8 Din012** 4 pcs.
- 16. Screw **M4x16 Din012** 1 pc.
- 17. Screw **M4x20 Din012 -** 2 pcs.
- 18. Nut M20 Din034 2 pcs.
- 19. Washer 21x37x3 **Din0125** 2 pcs.

- 20. Grover 20 Din127 2 pcs.
- 21. Bolt M10x30 **Din033** 4 pcs.
- 22. Nut M10 Din034 4 pcs.
- 23. Washer 10.5x20x2 **Din0125** 4 pcs.
- 24. Grover10 Din127 4 pcs.
- 25. Viewfinder for goniometer DL-STD30874
- 26. Axis under the sight DL-STD30873
- 27. Clamp **STD50010** VW1.9 1 pc.
- 28. Clamp **STD50009** VW2.0 1 pc.
- 29-1. Short stand **STD31245** 2 pcs.
- 29-2. Extended stand STD30657 2 pcs.
- 30. Stop **STD30678** 1 pc.
- 31. Bolt **STD30658** 1 pc.
- 32. STD30656 bar 1 pc.
- 33. Stop **STD30673** 1 pc.
- 34. Holder AT **STD50077** 1 pc.
- 35. Speaker holder STD50078 1 pc.
- 36. Rack **STD30672** 1 pc.
- 37. STD30671 bar 1 pc.



Clamp installation unit injector AUDI / VW 1.9



Clamp installation injector pump SCANIA H-shaped



# 6

# EQUIPMENT and TOOLS for the repair of unit injectors (UIS) and pump sections (UPS)



Installation in a tube injector pump VOLVO Delphi 2x and 4x contact



Clamp installation injector pump SCANIA



Clamp installation pump section Delphi 082240354



Clamp installation pump section DAF Bosch 0414755005



Clamp installation pump section MV ATEGO



Clamp installation pump section MV ACTROS





#### **OPTIONAL CLAMP DL-ST02**





#### DL-STD50206

Injector holder AUDI / VW 1.9 to adjust el. magnetana clamp ST-01 / ST-02







#### DL-STD50207

Injector holder AUDI / VW 2.0 to adjust el. magnetana clamp ST-01 / ST-02







Key for positioning the electromagnet in the pump injectors BOSCH AUDI / VW 1.9

#### Contents of delivery:

- Key for electromagnet
- Key positioner

Analog BOSCH 0986610318



#### DL-UIS50195

Key for positioning the electromagnet in the pump injectors BOSCH AUDI / VW 2.0

#### Contents of delivery:

- Key for electromagnet
- Key positioner

Analog BOSCH 0986610318







**(8 faces, 38mm)** Wrench for mounting / dismounting the electromagnet nut valve injector pump Bosch (Iveco, Scania, Volvo)

#### DL-UIS31438

(12 faces, 39mm) Wrench for mounting / dismounting the electromagnet nut valve injector pump Bosch (Volvo)



#### DL-UIS30693

Hex wrench for mounting / dismounting the nut injector nozzle Audi / VW1,9 **Applicability:** PDE-P1,PDE-P1,1,PDE-P1,3,PDE-P1,4



#### DL-UIS30724

Wrench for mounting / dismounting the atomizer nut unit injectors Audi / VW 2.0 TDI Bosch **Applicability:** 414720403, 0414720404





#### DL-UIS30725

Octagonal wrench for mounting / dismounting the nut atomizer pump-injector Audi / VW 1.9-5.0 PDE-P1.5. **Applicability:** 0414720309-2.5, 0414720359-2.5, 0414720310-2.5, 0414720360-2.50414720305-5.0, 0414720301-5.0, 0414720311-5.0, 0414720361-5.0 0414720306-2.0, 0414720302-2.0, 0414720312-2.0, 0414720362-2.0

 $\begin{array}{l} 0414720307\text{-}1.9\ ,\ 0414720303\text{-}1.9\ ,\ 0414720313\text{-}1.9\ ,\\ 0414720363\text{-}1.9\ 0414720308\text{-}1.9\ ,\ 0414720304\text{-}1.9\ ,\\ 0414720314\text{-}1.9\ ,\ 0414720364\text{-}1.9 \end{array}$ 

#### DL-UIS30751

Octagonal wrench 17mm for atomizer nut unit injectors Audi / VW Siemens VDO (PIEZO)





Wrench for mounting / dismounting the electromagnet nut unit injectors Audi / VW 2.0 **Applicability:** 0414720403, 0414720404



#### DL-UIS30733

Wrench for mounting / dismounting the electromagnet nut unit injector Audi / VW 1.9 **Applicability:** 0414720029-0414720215



#### DL-UNI30667

29 mm hex wrench for mounting / dismounting AUDI / VW injector housing nuts **Applicability:** 0414720400, 0414720401, 0414720402, 0414720403, 0414720453, 0414720454





#### DL-UNI30668

Key 30 mm octagonal for mounting / dismounting VW SIEMENS injector housing nuts









#### DL-UNI50011

Wrench for mounting / dismounting the spray nut Ø 27 mm injectors Volvo, Delphi, Lucas (for torque wrench)

#### DL-UNI50313

Wrench for mounting / dismounting the spray nut Ø 28 mm unit injector Cummins 3053124 (for torque wrench)



DL-UNI50127

Wrench for mounting / dismounting the spray nut Ø 29.4 mm injectors Caterpillar C12, C15 (for torque wrench)

#### DL-UNI50012

Wrench for mounting / dismounting the spray nut Ø 31.5mm Cummins (Scania) HPI injectors (for torque wrench)

#### DL-UNI50048

Wrench for mounting / dismounting the nut Ø 36.2 mm PLD sections Delphi 1668325 (for torque wrench)





### DL-UNI30763

Wrench for mounting / dismounting the spray nut Ø 32mm Bosch unit injectors Applicability: 0414701005, 0414701006, 0414701008, 0414702002, 0414702007, 0414702010, 0414703008

#### DL-UIS30880

Caterpillar injector holder adapter C12, C15 in a vice





Valve Stroke Kit unit injector AUDI / VW BOSCH 1.9/2.0

Contents of delivery:

- 1. **DL-UIS31069** Double-sided clip
- 2. DL-UIS31070 Measuring head adapter.
- 3. DL-UIS31071 The washer is stubborn.
- 4. DL-UIS31072 Calibration plate
- 5. **DL-CRN30503** Measuring probe

ATTENTION! Measuring indicator head in delivery set is not included!



#### **DL-UIS30827**

**Stand adapter for indicator** for measuring the air gap in the housing injector pump



#### DL-UIS50102

Adapter for indicator for stroke measurement injector valve Bosch



#### DL-UIS50100

Wrench for mounting / dismounting and adjustment pump-injector solenoid nuts Audi / VW 1.9 TDI ( Bosch) on the stand. Applicability: 0414720029 -0414720215

#### DL-UIS50101

Wrench for mounting / dismounting and adjustment pump-injector solenoid nuts Audi / VW 2.0 TDI





#### SET OF KEYS FOR DISASSEMBLY-ASSEMBLY OF PUMP INJECTORS AUDI / VW

#### 1. DL-UIS30667

Wrench 29mm hex for mounting / dismounting the nut of the unit injector housing AUDI / VW 2.0 , PDE-P2. Applicability: 0414720400 0414720401 0414720402 0414720403 0414720453 0414720454

#### 2. DL-UIS30668

Wrench 30 mm octagonal for mounting / dismounting the nut of the unit injector housing VW Siemens

#### 3. **DL-UIS50100**

Wrench for mounting / dismounting and adjusting the nut of the electromagnet of the unit injector Audi / VW 1.9-5.0 (Bosch) on the stand. Applicability: 0414720029-0414720215

#### 4. DL-UIS30726

Wrench for assembly / disassembly of the solenoid nut of the pump injector Audi / VW 2.0 Bosch Applicability: 0414720403 0414720404

#### 5. **DL-UIS30725**

Octagonal wrench for mounting / dismounting the nozzle nut of the unit injector Audi/ VW 1.9-5.0, PDE-P1.5. Applicability: 0414720309-2.5 l. 0414720359-2.5 l. 0414720310-2.5 l. 0414720360-2.5 l. 0414720305-5.0 l. 0414720301-5.0 l. 0414720311-5.0 l. 0414720361-5.0 l. 0414720306-2.0 l. 0414720302-2.0 l. 0414720312-2.0 l. 0414720362-2.0 l. 0414720307-1.9 l. 0414720303-1.9 l.0414720313-1.9 l. 0414720363-1.9 l. 0414720308-1.9 l. 0414720304-1.9 l. 0414720314-1.9 l.0414720364-1.9 l.

#### 6. DL-UIS30693

Hexagonal wrench for mounting / dismantling the sprayer nut of the unit injector Audi / VW 1.9, PDE-P1 PDE-P1.1 PDE-P1.3 PDE-P1.4



#### 7. DL-UIS50101

Wrench for adjusting the solenoid nut NF Audi / VW 2.0

#### 8. DL-UIS30733

Wrench for mounting / dismantling the nut of the electromagnet of the unit injectors Audi / VW 1.9 TDI Bosch Applicability: 0414720029-0414720215

#### 9. DL-UIS30724

Wrench for mounting / dismantling the sprayer nut of the pump injector Audi / VW 2.0 Bosch Applicability: 0414720403 0414720404

#### 10. **DL-UIS30751**

Octagonal wrench 17mm for Audi / VW injector nozzle nut Siemens VDO (PIEZO)

#### 11. **DL-UIS30757**

Dodecahedral key for mounting / dismounting of the piezoelectric element.



#### **DL-VW2-SVDO**

#### Tool kit for disassembly-assembly NF Audi/VW Siemens VDO

#### 1. **DL-UIS30668**

Wrench 30 mm octagonal for mounting / dismounting the nut of the VW SIEMENS unit injector body

#### 2. DL-UIS30751

Octagonal wrench 17mm for Audi / VW Siemens VDO (PIEZO) sprayer nut

#### 3. DL-UIS30757

Dodecahedral key for installation / dismantling of the piezoelectric element NF Siemens VDO





#### **DL-VW PDE**

#### TOOL KIT FOR DISASSEMBLY-ASSEMBLY NF AUDI / VW1,9 PDE-P1.5

#### 1. DL-UIS50100

Wrench for mounting / dismounting and adjusting the nut of the electromagnet of the unit injector Audi / VW 1.9-5.0 (Bosch) on the stand. Applicability: 0414720029-04147202152

#### 2. DL-UIS30733

Wrench for mounting / dismounting the nut of the electromagnet of the pump injectors Audi / VW 1.9 Bosch TDI. Applicability: 0414720029-0414720215

#### 3. DL-UIS30725

Octagonal wrench for mounting / dismounting the nozzle nut of the unit injector Audi/VW 1.9-5.0, PDE-P1.5. Applicability: 0414720309-2.5 I. 0414720359-2.5 I. 0414720310-2.5 I. 0414720360-2.5 I. 0414720305-5.0 I. 0414720301-5.0 I. 0414720311-5.0I. 0414720361-5.0I. 0414720306-2.0 I. 0414720302-2.0 I. 0414720312-2.0 I. 0414720362-2.0 I. 0414720307-1.9 I. 0414720303-1.9 I.0414720313-1.9 I. 0414720363-1.9 I. 0414720308-1.9 I. 0414720304-1.9 I. 0414720314-1.9 I.0414720364-1.9 I.

#### 4. DL-UIS30693

Hexagonal wrench for mounting / dismantling the nut of the Audi / VW 1.9 injector sprayer PDE-P1 PDE-P1.1 PDE-P1.3 PDE-P1.4





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#### **DL-VW-PDE-2**

#### Tool kit for disassembly-assembly NF Audi / VW 2.0

#### 1. DL-UIS30667

Wrench 29mm hex for mounting / dismounting the nut of the unit injector housing AUDI / VW 2.0 , PDE-P2. Applicability: 0414720400 0414720401 0414720402 0414720403 0414720453 0414720454

#### 2. DL-UIS30726

Wrench for mounting / dismounting the solenoid nut of the pump injector Audi / VW 2.0 Bosch. Applicability: 0414720403 0414720404

#### 3. DL-UIS50101

Wrench for adjusting the solenoid nut NF Audi / VW 2.0

#### 4. DL-UIS30724

Wrench for assembly / disassembly of the nozzle nut of the pump-injector Audi / VW 2.0 Bosch Applicability: 0414720403 0414720404







Adapter for testing the injector part Bosch injectors (Scania, Volvo, IVECO CURSOR TYPE 350).

#### DL-UIS30591

Adapter for testing the injector part pump-injector Bosch (Volvo).



#### DL-UIS30594

Adapter for testing the injector part pump-injector Volvo 520 CV.

#### DL-UIS30597

Adapter for testing the injector part pump-injector Delphi (Volvo Tape A).



#### DL-UIS30598

Adapter for testing the injector part pump injector Detroit .



DL-UIS30606

Adapter for testing the injector part pump injectors Cummins L10-M11.







Adapter for testing the injector part injectors Volvo 460 2 tape, Scaniapumps.

#### DL-UIS30631

Adapter for testing the injector part pump injectors EUI / PDE Cummins N14 pumps.

#### DL-UIS30634

Adapter for testing the injector part unit injector EUI / PDE Audi, VW 2. (2.0 liters)



#### DL-UIS50082

Adapter for testing the injector part pump injectors EUI / PDE Audi, VW pumps all types except EUI / PDE Audi, VW 2. (2.0 liter)



#### DL-UIS30643

Adapter for testing the injector part unit injector EUI / PDE Iveco Stralis 500 HP. 0414703004, 0414703008, 0414703010.



#### DL-UIS30640

Adapter for testing the injector part Cummins pump injectors.







Adapter for testing the injector part pump injector Volvo Delphi 4PIN.

#### DL-UIS50079

Injector test adapter injectors Audi, VW. 04147203XX for assembly on a clamp.





#### DL-UIS50081

Adapter for testing the injector part injector pump Audi, VW.04147200XX, 04147202XX, 04147204XX, 04147206XX for assembly on a clamp.

#### DL-UIS30638

Adapter for testing the injector part unit injectors EUI / PDE Audi, VW 2. (2.0 liters). 1 681 398 033 for assembly on a clamp.



#### DL-UIS30662

Adapter for testing the injector part pump injectors Audi, VW Siemens VDO piezo for assembly on a clamp.



#### DL-UIS30770

Adapter for testing the injector part unit injector EUI / PDE Nissan 440 (M31x1).



#### DL-UIS31507

Adapter for testing the injector part of the pump injector EUI / PDE HYUNDAI 22880-84001(M28x1)



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#### АДАПТЕРЫ ДЛЯ CATTERPILLAR



#### DL-UIS30789

Adapter for testing the injector part injector pump EUI / PDE HEUICAT 3126 The adapter has a connecting thread M28x1

#### DL-UIS30768

Adapter for testing the injector part unit injector EUI / PDE Caterpillar series 3500 The adapter has a connecting thread M27x1.5

#### DL-UIS30769

Adapter for testing the injector part injector unit EUI / PDE Caterpillar Marino Adapter has a connecting thread M36x1.5

#### DL-UIS30897

Adapter for testing the injector part unit injectors EUI / PDE CAT C15, C16. The adapter has a connecting thread M33x1.5

#### DL-UIS31441

Adapter for testing the injector part unit injector Caterpillar CAT C12 The adapter has a connecting thread M28x1

#### DL-UIS31511

Adapter for testing the injector part of the pump injectors EUI / PDE Caterpillar CAT3112 The adapter has a connecting thread M36x1.5 and longer than DL-UIS30769

#### DL-UIS31559

Adapter for testing the injector part of the pump injectors CAT M32. The adapter has a connection thread M32x1.5mm Has two holes for atomizer pins.





#### ADAPTERS FOR CATERPILLAR



#### **DL-TRUKUSA-04CAT**

Test Adapter Kit injector part of unit injectors american trucks manufactured by CATERPILLAR. • DL-UIS30789

- DL-UIS30768
- DL-UIS30768
   DL-UIS30769
- DL-UIS30897

#### **DL-TRUKUSA-05CAT**

Set of adapters for checking the injector truck injector parts American made CATERPILLAR

- DL-UIS30789
- DL-UIS30768,
- DL-UIS30768
   DL-UIS30769
- DL-UIS30709
   DL-UIS30897
- DL-UIS31441

#### **DL-TRUKUSA-06CAT**

Set of adapters for checking the injector truck injector parts American made CATERPILLAR • DL-UIS30789

- DL-UIS30768
- DL-UIS30769
- DL-UIS30709
  DL-UIS30897
- DL-01330897
   DL-UIS31441
- DL-01531441
   DL-UIS31511



#### DL-TRUKUSA-07CAT

Set of adapters for checking the injector truck injector parts American made CATERPILLAR

- DL-UIS30789
- DL-UIS30768
- DL-UIS30769
- DL-UIS30897
- DL-UIS31441
- DL-UIS31511
- DL-UIS31559





#### ADAPTER SETS FOR CHECKING THE INJECTOR PART



#### **DL-TRUSA-04BR**

#### Set of adapters for checking the injector truck injector parts American production CUMMINS and DETROIT.

(DL-UIS30598-DETROIT, DL-UIS30606-CUMMINS L10-M11, DL-UIS30631-CUMMINS N14, DL-UIS30640-CUMMINS)



#### **DL-TRUKE-07BR**

Test Adapter Kit injector part of unit injectors European cars.

(DL-UIS30590 - BOSCH (Scania, Volvo, Iveco Cursor), DL-UIS30591 - BOSCH (Volvo), DL-UIS30594 -Volvo 520CV, DL-UIS30597 - DELPHI (Volvo Tape A), DL-UIS30627 - (Volvo 460 Tape 2, Scania), DL-UIS30635 - DELPHI (Volvo 4 Pin), DL-UIS30643 - (Iveco Stralis 500HP)



#### DL-VW-4BR

Set of adapters for checking the injector AUDI / VW car injector parts all types. (DL-UIS50079-AUDI/VW 04147203XX, DL-UIS50081-AUDI/VW 04147200XX, 04147202XX, 04147204XX, 04147206XX, DL-UIS30638-EUI / PDE AUDI/VW 2.0 Liter (TYPE2), DL-UIS30662-AUDI / VW SIEMENS VDO piezo)





#### DL-RP400

# Manual press for injector testing with mechanical pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- mechanical pressure gauge 1 pc.
- connecting tube 2 pcs.



DL-RP410	(without pressure sensor)
DL-RP415	(with pressure sensor. 1500 bar)

# Manual press for injector testing with electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 415**) for 1500 bar 1 pc.

DL-RP420	(without pressure sensor)
DL-RP425	(with pressure sensor. 1500 bar)

#### Manual press for injector testing with 2-channel electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 425**) for 1500 bar 1 pc.



#### DL-RP430

Manufacturer - ZECA (Italy) Flame test chamber (aspirator) nozzle spray Allows for visual inspection performance of diesel injectors without harm to health. The device is going to work liquid for reuse.





#### DL-RP500

#### Manufacturer - ZECA (Italy) Manual press for injector testing with mechanical pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- mechanical pressure gauge 1 pc.
- connecting tube 2 pcs.



DL-RP510	(without pressure sensor)

DL-RP515 (with pressure sensor. 1500 bar)

# ZECA hand press for injector testing with electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 515) for 1500 bar 1 pc.



DL-RP520	(without pressure sensor)

DL-RP525 (with pressure sensor. 1500 bar)

# ZECA hand press for injector testing with 2-channel electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 525) for 1500 bar 1 pc.





# A set of diamond laps and reamers for restoring the landing BOSCH unit injector valve locations.

#### Contents of delivery:

- 1. DL-UIS1368063 Diamond conical lap with pilot (L 136°) 80/63
- 2. DL-UIS1364028 Diamond conical lap with pilot (L 136°) 40/28
- 3. **DL-UISPA78063** Diamond reamer RA \overline{07} 80/63
- 4. DL-UISPA74028 Diamond reamer RA ©7 40/28
- 5. **DL-UIS50193** Guide puller with split sleeve
- 6. **DL-UIS50247** Diamond reamer jacket puller
- 7. DL-UNI30975 Handle for lapping 2 pcs.
- 8. DL-UNI30978 Handle fixing screw 2 pcs.

# Injector valve for VOLVO, SCANIA, IVECO:



D-GR02X \ 136 \ 7,010
D-GR02X \ 136 \ 7,015
D-GR02X \ 136 \ 7,020
D-GR02X \ 136 \ 7,025
D-GR02X \ 136 \ 7,030
D-GR02X \ 136 \ 7,035
D-GR02X \ 136 \ 7,040
D-GR02X \ 136 \ 7,045
D-GR02X \ 136 \ 7,050
D-GR02X \ 136 \ 7,050
D-GR02X \ 136 \ 7,060
D-GR02X \ 136 \ 7,070
D-GR02X \ 136 \ 7,080





#### Set of diamond laps and reamers to restore a seat BOSCH unit injector valves

#### Contents of delivery:

- 1. Diamond conical lap (L 136°) "coarse" 1 pc.
- 2. Diamond conical lap (L 136°) "finish" 1 pc.
- 3. Pilot for lapping diamond conical 2 pcs.
- 4. Diamond reamer 1 pc.
- 5. Pilot for reaming 1 pc.
- 6. Handle to hold the pilot 1 pc.
- 7. Cap for pressing on the reamer and laps 3 pcs.
- 8. Brush for cleaning the NF valve channel 1 pc.
- 9. Organizer 1 pc.



#### DL-UIS50257

#### Set of diamond laps and reamers to restore a seat DETROIT unit injector valves

#### Contents of delivery:

- 1. Diamond conical lap "coarse" 1 pc.
- 2. Diamond taper lap "finish" 1 pc.
- 3. Pilot for lapping diamond conical 2 pcs.
- 4. Diamond reamer 1 pc.
- 5. Pilot for reaming 1 pc.
- 6. Handle to hold the pilot 1 pc.
- 7. Cap for pressing on the reamer and laps 3 pcs.
- 8. Brush for cleaning the NF valve channel 1 pc.
- 9. Organizer 1 pc.



#### DL-UIS50255

Set of diamond laps and reamers to restore a seat BOSCH unit injector valves

#### Contents of delivery:

- 1. Diamond conical lap (L 136°) "coarse" 1 pc.
- 2. Diamond conical lap (L 136°) "finish" 1 pc.
- 3. Pilot for lapping diamond conical 2 pcs.
- 4. Diamond reamer 1 pc.
- 5. Pilot for reaming 1 pc.
- 6. Handle to hold the pilot 1 pc.
- 7. Cap for pressing on the reamer and laps 3 pcs.
- 8. Brush for cleaning the NF valve channel 1 pc.
- 9. Organizer 1 pc.



#### ОСНАЩЕНИЕ И ИНСТРУМЕНТ ДЛЯ ПРОВЕРКИ И РЕМОНТА НАСОС-ФОРСУНОК НЕUI

HEUI CATERPILLAR 3126B, CATERPILLAR 3126E 
µ FORD 1998-2003 DIESEL 7.3 FUEL INJECTOR 128-6601, AD1831489C1 (INTERNATIONAL)



#### Equipment includes:

- 1. DL-HEUI50223
- Pump installation adapter nozzles



**HEUI CATERPILLAR C7-C9** 



#### Equipment includes:

- 1. DL-HEUI50221
- Pump installation adapter nozzles



- 2. DL-HEUI50240 Set of hydraulic hoses and HPT 400mm 14x14mm
- 3. DL-HEUI50219 Adapter holder with clamping bar
- 4. **DL-HEUI50230** Adapter cable for connecting the pump injector
- 5. DL-UNI50084 Corner adapter M14



Attention! All accessories are sold separately.



#### EQUIPMENT AND TOOLS FOR CHECKING AND REPAIRING HEUI INJECTORS



#### DL-UNI50208

Wrench for unscrewing the atomizer nut injectors Caterpillar C7-C9. Key working diameter 24 mm

#### DL-UIS30789

Adapter for testing the injector part injector pump EUI / PDE HEUICAT 3126 The adapter has a connecting thread M28x1

#### DL-HEU50251

Seal kit HEUI CAT C7-C9 unit injector rings



#### DL-HEUI31342

Upper case for pump-injector installations high pressure supply.



#### DL-HEU31332

Lower housing for low pressure supply



#### DL-HEU50227

Protective screen with cover from polycarbonate. (DL-HEU31333 Protective polycarbonate screen)( DL-HEU31334 Lid protective screen)



### DL-HEU31335

Conical washer clamping (2 pcs)



# SPF: 708, 712, 1108, 1112, 1508, 1512

The assay stand is designed for testing and adjusting with increased accuracy of in-line injection pumps, V-shaped injection pumps, distribution-type injection pumps with independent and forced lubrication systems, a pressurization corrector of all domestic manufacturers and major foreign ones: "BOSCH", "LUCAS", "ZEXEL", NIPPON DENSO.

#### When using additional equipment, the stand allows you to test and check:

- Common-Rail injectors (BOSCH, DELPHI, DENSO, SIEMENS)
- Common-Rail pumps (CP1, CP2, CP3) (BOSCH, DELPHI, DENSO)
- regulators and pressure sensors CR-pump-injectors of European and American cars
- electronic pumps such as VE, VP, Zexel, PE.

Stands are produced with a power of 7.5 kW (**SPF-308, SPF-712**), 11 kW (**SPF-1108, SPF-1112**), 15kW (**SPF-1508, SPF-1512**).

Stands **SPF-708**, **SPF-1108** and **SPF-1508** have an 8-section measuring block. Stands **SPF-712**, **SPF-1112** and **SPF-1512** have a 12-section measuring block.

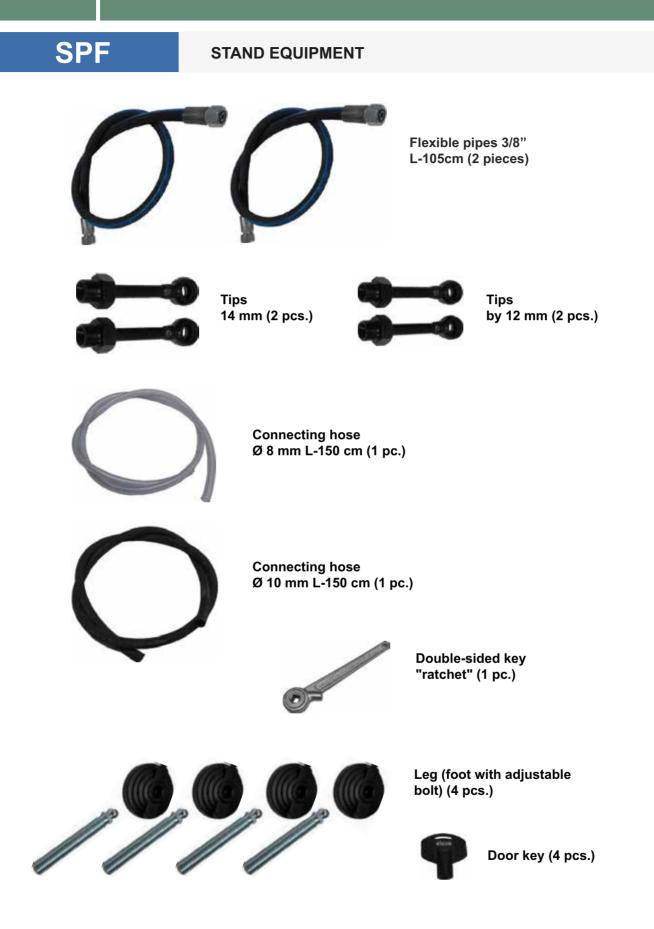
#### The stand is equipped with:

- integrated personal computer
- monitor
- · control panel of the stand and booster pump
- protective fence with 2 doors made of polycarbonate
- · cooling unit of radiator-fan type for 2 channels
- cooling unit of radiator-fan type for 1 channel





# STANDS for testing fuel pumps high pressure injection pump





# PTB-3, PTB-5, PTB-7, PTB-9, PTB-12

The assay stand is designed for testing and adjusting with increased accuracy of in-line injection pumps, V-shaped injection pumps, distribution-type injection pumps with independent and forced lubrication systems, a pressurization corrector of all domestic manufacturers and major foreign ones: "BOSCH", "LUCAS", "ZEXEL", NIPPON DENSO.

#### When using additional equipment, the stand allows you to test and check:

- Common-Rail injectors (BOSCH, DELPHI, DENSO, SIEMENS)
- Common-Rail pumps (CP1,CP2,CP3) (BOSCH,DELPHI,DENSO)
- Regulators and pressure sensors CR
- injectors of European and American cars
- electronic pumps such as VE, VP, Zexel, PE.

#### Stands are produced with capacity:

PTB-3 - 15 kW PTB-5 - 18 kW PTB-7 - 22 kW PTB-9 - 30 kW PTB-12 - 37kW







## **PTB14**

#### with additional oil station and tank

The assay stand is designed for testing and adjusting with increased accuracy of in-line injection pumps, V-shaped injection pumps, distribution-type injection pumps with independent and forced lubrication systems, a pressurization corrector of all domestic manufacturers and major foreign ones: "BOSCH", "LUCAS", "ZEXEL", NIPPON DENSO.

#### When using additional equipment, the stand allows you to test and check:

- Common-Rail injectors (BOSCH, DELPHI, DENSO, SIEMENS)
- Common-Rail pumps (CP1,CP2,CP3) (BOSCH,DELPHI,DENSO)
- Regulators and pressure sensors CR
- injectors of European and American cars
- electronic pumps such as VE, VP, Zexel, PE.

#### The stand is produced with a capacity of 45 kW





# PTB

#### **TECHNICAL DETAILS**

Stands of the **PTB** series for checking high-pressure fuel pumps allow you to perform all procedures related to testing and adjusting high-pressure fuel pumps in accordance with international ISO standards:

- drive system with smooth speed control;
- power supply system with smooth pressure regulation;
- pneumatic system with smooth pressure adjustment;
- a block for measuring the dosage of the strait;
- fastening elements of tested pumps.

The design of the injection pump test bench and its equipment elements meet the requirements of international standards in terms of static and dynamic parameters - ISO4008/1 and ISO4008/2

#### Technical data of PTB series stands:

rotational speed	30–3000min-1
direction of rotation	left / right
engine power (nom.)	from 15kW to 45kW by modification
programmable number of shots	50–1000
tank capacity	30-160 dm <sup>3</sup> by modification
number of sections	eight
measuring beaker capacity	44 and 260 +/- 0.25cm <sup>3</sup>
supply voltage	3x400V/230V~50Hz
shut-off valve supply	12V / 24V
distance from the plate to the axis of the drive	125mm-170mm by modification
compensation sleeve diameter	110mm
feed pump performance assay oil at 3bar	6,5dm³
high pressure gauge	0÷10Bar
maximum current	24.5A (38.5A) by modification
total weight and dimensions L(length) x B(width) x H(height)	1830 x 1710(900) x 1670



#### OPTIONAL EQUIPMENT AND ACCESSORIES TO STANDS FOR CHECKING FUEL PUMPS OF HIGH PRESSURE



DL-MSP

Mobile oil station for stands



Frequency converter for stands: • 2,2 κW

- 4 ĸW
- 5,5 κW
- 7,5 кW
- 11 ĸW
- 15 кW



#### OPTIONAL EQUIPMENT AND ACCESSORIES TO STANDS FOR CHECKING FUEL PUMPS OF HIGH PRESSURE



MZK-45

Measuring cylinder 45ml (beaker) for stands injection pump checks Length - 320mm Diameter - 18mm Scale – 0-150ml Division price - 0.2ml

#### MZK-260

Measuring cylinder 260ml (beaker) for stands injection pump checks Length - 320mm Diameter - 38mm Scale - 0-260ml Division price - 2ml



#### MZK-150

Measuring cylinder 150ml (beaker) for stands injection pump checks Length - 320mm Diameter - 28mm Scale – 0-150ml Division price - 1ml



#### SDMZ-38

Bracket-holder for MZK-260 for 260ml



#### SDMZ-28

Bracket-holder for MZK-150 for 150ml

#### SDMZ-18

Bracket-holder for MZK-45 for 45ml



#### DL-OHL

Fridgestand air conditioner



#### OPTIONAL EQUIPMENT AND ACCESSORIES TO STANDS FOR CHECKING FUEL PUMPS OF HIGH PRESSURE



#### DL-UNI50132

Compensation clutch with clamping jaws and reinforced package plates



#### DL-MS9

Coupling slotted for CR injection pump (for Renault slot 9x20)



#### DL-UNI50139

Compensation clutch with flange connection and reinforced package plates (analogue Bosch 1686401024)



#### DL-MS10D

Coupling slotted for injection pump CR Denso, slot 10x23



#### DL-CB230016

flange connection

Ø 30 mm

Conical coupling with



#### DL-MS10S

Coupling slotted for Siemens Peugeot injection pump Boxer 2.2, slot 10x21.6

#### DL-MS11

Coupling slotted for injection pump CR MAN (11 splines)



#### DL-M24 (UNI30127)

Cam Box2, injection pump

Cone coupling Ø 24 mm for injection pump CRSR-3 mod.044502088

DL-M24L (CR31098)

for injection pump DENSO HP0

Long sleeve Ø 24 mm



#### **DL-M17**

Cone coupling Ø 17mm for injection pump CR and injection pump VE

#### **DL-M19**

Cone coupling  $\emptyset$  19 mm for CR and VE injection pumps



#### DL-MS8

Coupling slotted for injection pump CR (for MV slot 8x18)



#### DL-M23 (UNI30917)

Conical coupling for 23 for injection pump Continental A2C59517053, Bosch CR\ CP4HS2 0445010637, CP4S2 0445010611, CP4S1 0445010506



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#### DL-UNI50051-KIT

# VE injection pump test kit

#### Contents of delivery:

DL-UNI50051	Holder frame for 6 nozzles	
DL-TVD-K700	Profile bolt for fastening the frame	
	Injector fixing screws – 6 pcs.	
	Injector holder fastening screws – 2 pcs.	
DL-PG(CR26)	Defoamers for spilling liquid - 6 pcs.	
34-RL020602	Fitting 6mm x 1/4 for defoamer - 6 pcs.	
DL-UNI30452	Nozzle nozzle - 6 pcs.	
34-RL020601	Fitting 6mm x 1/8 for nozzle - 6 pcs.	
34-RWN-06x04	PVC pipe Ø6mm for connection - 12m	



#### **DL-TVD-M**

High pressure metal tube

DL-TVD-M81412	(800)	M14xM12
DL-TVD-M81414	(800)	M14xM14
DL-TVD-M61412	(600)	M14xM12
DL-TVD-M61414	(600)	M14xM14





#### DL-UNI30465

Mounting flange Ø 50/60mm for high pressure fuel pump VE and for high pressure fuel pump CR (BMW, RENAULT, MB, Peugeot



#### DL-CB130139

Cone coupling Ø 30 mm Cam Box2, injection pump



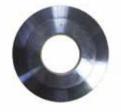
#### DL-CR30466

Mounting flange Ø 68 mm, for injection pump CR Renault Megane, Delphi Siemens VDO, Land Rover, RangeRoverV8 and for HPFP VE



#### **DL-M17**

Cone coupling  $\emptyset$  17 mm for CR and VE injection pumps



#### DL-UNI30467

Mounting flange Ø 70mm for injection pump VE



#### **DL-M19**

Cone coupling  $\emptyset$  19 mm for CR and VE injection pumps



#### DL-UNI30521

Mounting flange Ø 105mm for injection pump MTZ-50, MTZ-80, MTZ-82, MTZ-825, T16, T25, T30, T40, SND-18, SND-17, SND-14.



#### DL-UNI50008

Bracket for pumps, Bosch standard 125 mm. Installed on a stand.





#### DL-UNI30514

Mounting kit to the stand of in-line pumps Bosch-Kamaz (similar to Bosch1688030141)

#### Contents of delivery:

- support 2 pcs.
- profile bolt 2 pcs.
- nut 2 pcs.
- washer 2 pcs.
- grower 2 pcs.



#### DL-UNI30525

Stand support in-line pumps MAN double rail (similar to Bosch1688030184)

- support 1 pc.
- profile bolt 1 pc.
- nut 1 pc.
- washer 1 pc.
- grower 1 pc.





#### **DL-UNI50042**

indicator fixture measuring rack travel in-line pumps BoschP (P7100, P8500).

### Completed

- adapters: • 18x1.5 (B, BV pumps)
- 20x1.5 (A pumps)
- 24x1.5 (P pumps)
- 24x1.5 (8500 pumps)



#### AAE388-0A

Comparator for P7000 / 8500 pumps to determine the height of the start of the feed. Connection 24x1.5mm.

#### **DL-UNI50040**

Retainer-eccentric plungers in-line pumps BoschP (P7100, P7800).

#### **DL-RD30765**

Wrench for repairing mechanical nozzles with a 28 mm hexagon.

#### DL-RD30766

Wrench for repairing mechanical nozzles with hexagon 27mm.















#### DL-UNI30786 (VP3)

Coupling for fastening to the pump flange for High pressure fuel pump series VP (Opel)

#### DL-UNI30787 (VP4)

Coupling for fastening to the pump flange for VP series injection pump (Audi / VW, BMW, MB)

#### DL-UNI30788 (VP5)

Coupling for fastening to the pump flange for injection pump series VP (Ford)

#### DL-UNI30603 (VP6)

Coupling for fastening to the pump flange for High pressure fuel pump series VP (Nissan Almera, Tino, Terano 3, Patrol 3.0)

#### **DL-VPLO**

Lodgment for injection pump VP series, Opel

#### **DL-VPLA**

Lodgment for injection pump VP, Aud/VW, BMW, MB series





## Universal cradle for CR pumps

#### Delivery set DL-USN0021 (ST-03):

- 1. Rotary stand 1 pc.
- 2. Set of flanges for fastening CR pumps of 6 pcs.
- 3. Set of 4 pump support plates.

#### Delivery set DL-USN0021CR (ST-03CR):

- 1. Rotary stand 1 pc.
- 2. Set of flanges for fastening CR pumps of 6 pcs.

#### **ATTENTION!**

Holder plates for high pressure fuel pumps CR and rotary high pressure fuel pumps are also sold separately!





# 10



# CR TESTER . CRT-5040

4-channel device for testing and testing Common Rail injectors Bosch, Denso, Delphi, Siemens VDO with a set of cables.

The device has the ability to connect to the FLAGMAN-FLOW beakerless measuring system with the ability to generate correction codes for Delphi C2i / C3i, BOSCH, DENSO injectors

The **CR TESTER. CRT-5040** has the functions of controlling the curtain of the metering unit, stopping the high-pressure pump, measuring and controlling the temperature in the tank, measuring the temperature of the back-tested injectors, measuring the injection start time, etc.

Computer control of the set through the CASCADE software.





# 10

ELECTRONIC DEVICES for diagnostics and repair of diesel fuel equipment



## **FLAGMAN-FLOW**

CR injector dosage measuring unit, 8-channel for CR-TESTER device. CRT-5040

Computer control of the set through the CASCADE software.

# **FLAGMAN-FULL**

CR injector test kit

The FLAGMAN-FULL complex is intended for testing CommonRail injectors manufactured by Bosch, Denso, Delphi, Siemens VDO at the stand.

The measurement takes place in an 8-channel FLAGMAN-FLOW system without a beaker. There is a possibility of retrofitting with a hardware-software complex for coding injectors.

Computer control of the set through the CASCADE software.





# FLAGMAN-CODE (FLAGMAN-CODE-L)

CR injector test kit

The FLAGMAN-CODE complex is designed to test common rail injectors manufactured by Bosch, Denso, Delphi, Siemens VDO at the stand.

The measurement takes place in the 8-channel FLAGMAN-FLOW system without beakers. The complex consists of a FLAGMAN-FLOW measuring unit and a CR-TESTER controller. CRT-5040. The complex is also equipped with a vacuum system for coding Deiphi C2i, C3i injectors. Computer control of the set through the CASCADE software.

The FLAGMAN-CODE-L kit is equipped with equipment for installing injectors on a test bench.

#### DL-CR50015

Sensor for coding — upon additional order





# FLAGMAN-CODE

CR injector test kit

The FLAGMAN-FULL complex is designed for diagnosing CommonRail injectors manufactured by Bosch, Denso, Delphi, Siemens VDO at the stand.

The measurement takes place in an 8-channel beakerless FLAGMAN-FLOW system. The complex consists of a FLAGMAN-FLOW measuring unit and a CR-TESTER controller. CRT-5040. The complex is also equipped with a vacuum system for coding Deiphi C2i, C3i injectors. Computer control of the set through the CASCADE software.

# Scope of delivery FLAGMAN-CODE



DL-CR50015

Sensor for coding

Measurement unit without beaker FLAGMAN-FLOW		
Controller CR-T	ESTER. CRT-5040	1 pc
Vacuum system	1	1 set
Software		1 pc
Passport (techr	ical description, instruction manual)	1 pc
	ng cables for FLAGMAN-FLOW measuring unit R controller. CRT-5040	1 set
Extension cord	for injector cables: "Injector" socket -1.5m	1 pc
Adapter cable f	or injectors	1 set
Adapter cable f	or high pressure regulators	1 pc
Adapter cable for low pressure regulators		
Adapter cable for pressure sensor		
Power cable 22	0 V	1 pc
Connectors for self-manufacturing of cables into sockets: "Protection", "TanktC", "RegtC", "Cycle", "Pump", "Invertor", "Rpm"		
Temperature sen	sor for monitoring the temperature of the liquid in the tank: "TanktC" socket	1 pc
Temperature sensors for measuring the temperature of the TJ backflow		
Reed switch for	connecting a protective screen: "Protection" socket	1 pc
Fuse 3A		
Connecting pipe	elines	1 set
DL-CR50015	Injection start measuring sensor (for coding)	1 pc





# FLAGMAN-CODE-L

CR injector test kit

The FLAGMAN-FULL complex is intended for testing common rail injectors manufactured by Bosch, Denso, Delphi, Siemens VDO at the stand.

The measurement takes place in an 8-channel beakerless FLAGMAN-FLOW system. The complex consists of a FLAGMAN-FLOW measuring unit and a CR-TESTER controller. CRT-5040. The complex is also equipped with a vacuum system for coding Deiphi C2i, C3i injectors. Computer control of the set through the CASCADE software.



RD1-0R50015

Sensor for coding — upon additional order

# Kit of delivery FLAGMAN-CODE-L

Measurement unit without beaker FLAGMAN-FLOW			1 pc		
Controller CR-TESTER. CRT-5040			1 pc		
Vacuum system	1				1 set
Software					1 pc
Passport (techr	ical description, instruction	mar	nual)		1 pc
	ng cables for FLAGMAN-FL R controller. CRT-5040	_OW	measuring unit	t	1 set
Extension cord	for injector cables: "Injector	r" so	cket -1.5m		1 pc
Adapter cable f	or injectors				1 set
Adapter cable f	or high pressure regulators				1 pc
Adapter cable for low pressure regulators			1 pc		
Adapter cable for pressure sensor			1 pc		
Power cable 220 V			1 pc		
Connectors for self-manufacturing of cables into sockets: "Protection", "TanktC", "RegtC", "Cycle", "Pump", "Invertor", "Rpm"				1 set	
Temperature sensor for monitoring the temperature of the liquid in the tank: "TanktC" socket			1 pc		
Temperature sensors for measuring the temperature of the TJ backflow			4 pcs		
Reed switch for connecting a protective screen: "Protection" socket			1 pc		
Fuse 3A			1 pc		
Connecting pipelines			1 set		
DL-CR10015	Nozzle holder frame				1 pc
DL-CR10025	Injector holder bracket as	sem	bly		1 pc
DL-CR10006	Protective glass (6mm)	or	DL-CR10010	Protective glass (10mm)	1 pc



# CRISTINA

The **CRistina** complex is designed for assembling injectors of the COMMON RAIL BOSCH, DELPHI, DENSO systems using a technology that allows you to calculate and select all the necessary adjusting elements.

The software and hardware of the complex allows not only to accurately measure the required dimensions, but also to diagnose the state of the injector electromagnet with the measurement of the resistance and inductance of the winding.

The working program of the complex contains a detailed database of mounting dimensions of the most common COMMON RAIL injectors and a complete visualization of the assembly process, which allows you to avoid assembly errors and significantly reduce repair time.

To eliminate errors in measuring dimensions, the design of the CRistina complex allows you to accurately and rigidly base the nozzle body to eliminate the effects of vibration and uncontrolled movement of the measured element relative to the measuring device.

#### Equipment options:

- CRISTINA-BASE
- CRISTINA-BASE-F
- CRISTINA-FULL
- CRISTINA-PROF
- CRISTINA-PROF-FULL
- CRISTINA-SPECIAL











# DL-UNI20150 CRISTINA - PIEZO

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect. The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.

#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package

#### Contents of delivery:

- 1. Signal generator "CRistina-PIEZO"
- 2. A set of cables to the signal generator "CRistina-PIEZO"
- Power cable 220V
- Main cable for connecting to the piezo package
- Cable adapter universal
- Adapter cable with crocodile clips
- Earthing cable
- 3. Passport (technical description, operating instructions) 1 pc.

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!





# \_A\_acoustic testing\_\_\_



# DL-UNI20150A CRISTINA - PIEZO ACOUSTIC

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect.

The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.

#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package
- 6. Valve opening/closing control with acoustic test
- 7. Precise detection of valve opening and closing with an acoustic test

#### Contents of delivery:

- 1. Signal generator "CRistina-PIEZO"
- 2. A set of cables to the signal generator "CRistina-PIEZO"
  - Power cable 220V
  - Main cable for connecting to the piezo package
  - Cable adapter universal
  - Adapter cable with crocodile clips
- Earthing cable
- 3. Microphone
- 4. Microphone holder
- 5. Passport (technical description, operating instructions) 1 pc.

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!







## DL-UNI20050 CRISTINA - PIEZO

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect. The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.





#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. The clamp-holder of injectors Piezo ST-04
- 3.Bracket holder.
- 4. The air meter.
- 5. The air filter.
- 6. The distributive air valve.
- 7. Reducer for air.
- 8. The electronic manometer.
- 9. Set of tubes.
- 10. Quick coupling 6mm.
- 11. Set of 2 nozzles for the backflow of the Siemens VDO injectors
- 12. **DL-CR50157** Set of adapters for measuring f the valve stroke of CR VDO Siemens injector
- (DL-CR50165 for DL-UNI20050-F)
- 13.Connector M12x1,5X1/8"

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!

It differs from the **DL-UNI20050F** set in a less complete set of adapters for injectors.





# **DL-UNI20050F CRISTINA - PIEZO**

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect. The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.







DL-CR50165

#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. Clamp-holder for injectors Piezo ST-04
- 3. Bracket holder for equipment.
- 4. Air meter.
- 5. Air filter.
- 6. Air distribution crane.
- 7. Reducer for air.
- 8. Electronic manometer.
- 9. Set of tubes.
- 10.Coupling of quick connection 6mm.
- 11.Set of 2 fittings for backflow of Siemens VDO injectors
- 12. **DL-CR50165** Set of adapters for measuring the stroke of the injector valve CR VDO Siemens 13. Adapter M12x1.5X 1/8 "

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!

It differs from the **DL-UNI20050** kit in a more complete set of adapters for injectors.



# 📣 acoustic testing \_\_\_\_



# DL-UNI20050A CRISTINA - PIEZO ACOUSTIC

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect. The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.







DL-CR50157

#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package
- 6. Valve opening / closing control with acoustic test

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. Clamp-holder for injectors Piezo ST-04
- 3. Bracket holder for equipment.
- 4. Air meter.
- 5. Air filter.
- 6. Air distribution crane.
- 7. Reducer for air.
- 8. Electronic manometer.
- 9. Set of tubes.
- 10. Coupling of quick connection 6mm.
- 11.Set of 2 fittings for backflow of Siemens VDO injectors
- 12. **DL-CR50157** Set of adapters for measuring the stroke of the valve injector CR VDO Siemens 13.Adapter M12x1.5X 1/8 "
- 14. Microphone
- 15. Microphone holder
- 16. Passport

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!

It differs from the DL-UNI20050F (A) kit in a less complete set of adapters for injectors.



# \_A\_acoustic testing\_\_\_



# DL-UNI20050FA CRISTINA - PIEZO ACOUSTIC

The device is designed to test piezo injectors and piezo package.

The device confidently determines all the faults of the piezo package. Identifies problems that similar instruments or stands do not detect. The device was developed for the assembly of Siemens injectors, but it is also efficient with BOSCH injectors.

CRIstina - Piezo





DL-CR50165

#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package
- 6. Valve opening / closing control with acoustic test

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. Clamp-holder for injectors Piezo ST-04
- 3. Bracket holder for equipment.
- 4. Air meter.
- 5. Air filter.
- 6. Air distribution crane.
- 7. Reducer for air.
- 8. Electronic manometer.
- 9. Set of tubes.
- 10. Coupling of quick connection 6mm.
- 11.Set of 2 fittings for backflow of Siemens VDO injectors
- 12. **DL-CR50165** Set of adapters for measuring the stroke of the injector valve CR VDO Siemens
- 13.Adapter M12x1.5X 1/8 "
- 14. Microphone
- 15. Microphone holder
- 16. Passport

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!

Differs from DL-UNI20050 (A) kit in more complete set of injector adapters





# DL-UNI20051 Комплект с CRistina-PIEZO

Repair kit for piezo injectors CR Siemens / VDO (without clamp for clamping injectors and acoustic test). The device confidently detects all malfunctions of the piezoelectric package. Identifies problems that similar instruments or benches do not detect.

The device was developed for assembling Siemens injectors, but it is also functional with Bosch injectors.





#### **Device capabilities:**

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. Bracket holder for equipment.
- 3. Air meter.
- 4. Air filter.
- 5. Air distribution crane.
- 6. Reducer for air.
- 7. Electronic manometer.
- 8. Set of tubes.
- 9. Quick coupling 6mm.

10.Set of 2 fittings for backflow of Siemens VDO injectors

11.Adapter M12x1.5X 1/8 "

DL-UNI20051A CRistina-PIEZO kit with acoustic test

Repair kit for piezo injectors CR Siemens / VDO (without clamp for clamping injectors)

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!



# \_//L\_acoustic testing\_\_\_\_



# DL-UNI20051A Комплект с CRistina-PIEZO

Repair kit for piezo injectors CR Siemens / VDO (without clamp for clamping injectors with acoustic test). The device is designed to test the piezo injector of the piezo package. The device confidently detects all malfunctions of the piezoelectric package. Identifies problems that similar instruments or benches do not detect.

The device was developed for assembling Siemens injectors, but it is also functional with Bosch injectors.







#### Device capabilities:

- 1. Signal giving to activate the nozzle on the hand press
- 2. Measurement of the resistance of the piezo package
- 3. Breakdown test on the case
- 4. Measuring the capacity of the piezo package
- 5. Measurement of the smooth running of the piezo package
- 6. Valve opening / closing control with acoustic test

#### Contents of delivery:

- 1. Controller CRistina-Piezo
- 2. Bracket holder for equipment.
- 3. Air meter.
- 4. Air filter.
- 5. Air distribution crane.
- 6. Reducer for air.
- 7. Electronic manometer.
- 8. Set of tubes.
- 9. Quick coupling 6mm.
- 10. Set of 2 fittings for backflow of Siemens VDO injectors
- 11. Adapter M12x1.5X 1/8 "
- 12. Microphone
- 13. Microphone holder
- 14. Passport

#### ATTENTION ! ADDITIONAL EQUIPMENT ARE POSSIBLE TOGETHER WITH THE DEVICE!



#### ADDITIONAL EQUIPMENT FOR CRISTINA-PIEZO



#### DL-UNI20054 ACOUSTIC BOARD

#### Acoustic test kit for CRISTINA - PIEZO

#### The kit includes:

- 1. Microphone in a plastic case
- 2. Clip for fixing the microphone on the nozzle body
- 3. Acoustic test board for installation inside the instrument CRISTINA -PIEZO
- 4. Set of connecting wires
- 5. Set of racks and bolts for fixing the board
- 6. Instructions for assembly.



## ADDITIONAL EQUIPMENT FOR CRISTINA-PIEZO



#### Contents of delivery:

- 1. Clamp-holder of nozzles PiezoST-04
- 2. Equipment holder bracket.
- 3. Air meter.
- 4. Air filter.
- 5. Air distribution valve.
- 6. Reducer for air.
- 7. Electronic pressure gauge.
- 8. Set of tubes.
- 9.6mm quick coupling.

#### 10. Set of 2 fittings (DL-60151/61 and DL-60151/66) for backflow of Siemens injectors

11. Adapter M12x1.5X 1/8"



#### Contents of delivery:

- 1. Equipment holder bracket.
- 2. Air meter.
- 3. Air filter.
- 4. Air distribution valve.
- 5. Reducer for air.
- 6. Electronic pressure gauge.
- 7. Set of tubes.
- 8.6mm quick coupling.

9. A set of 2 fittings (DL-60151/61 and DL-60151/66) for backflow of Siemens injectors 10. Adapter M12x1.5X 1/8"



#### DL-UNI20052

#### Injector repair kit CR Siemens VDO (without CRistina-Piezo controller)

#### Kit features:

- 1. Reliable installation and fixation of nozzles
- 2. Air supply with pressure valve
- 3. Adjusting the air pressure with a reducer
- 4. Air filtration from liquid residues
- in the nozzle
- 5. Convenient connection with fittings made of
- delivery set to injector return
- 6. Valve opening/closing control with using a rotameter

#### DL-UNI20053

#### Injector repair kit CR Siemens VDO (without CRistina-Piezo controller and clamps ST04)

#### Kit features:

- 1. Air supply with push valve
- 2. Adjustment of air pressure by a reducer
- 3. Air filtration from liquid residues in the nozzle
- 4. Convenient connection with fittings from the kit supplies to the return nozzle
- 5. Valve opening/closing control with

rotameter

#### ADDITIONAL EQUIPMENT FOR CRISTINA-PIEZO



**DL-CR50165** 

Set of adapters with indicator head for measuring the stroke of the CR VDO injector valve Siemens all types

Nut to the body of the adapter for measuring the stroke of the injector valve of the new type M27x1

Contents of delivery:

- 1. DL-CR31079 Adapter for measuring the parameters of the piezo injector package of a new type M25x1
- 2. DL-CR31179 Adapter for measuring the parameters of the piezo injectors of the old type M27x1
- 3. **DL-CR31080** Adapter housing for measuring the stroke of the injector valve
- 4. DL-CR31081 Nut to the body of the adapter for measuring the stroke of the injector valve of the new type M25x1
- 5. DL-CR31178
- 6. **D-7153136**
- 7. DL-KIP002 Indicator measuring head mechanical 0.001mm stroke 5mm

**DL-CR50157** 

8. DL-CR31177 Measuring probe

Hex key 2mm

9. Organizer



#### Contents of delivery:

- 1. DL-CR31079
  - Adapter for testing the piezo package.
- 2. DL-CR50147 Adapter (body with nut) for measuring valve travel.
- 3. DL-KIP002 Indicator measuring mechanical head with an accuracy of 0.001 mm, stroke 5 mm

Set of adapters with indicator head for

- 4. **D-7153136** Hex key 2mm
- 5. DL-CR31177 Measuring probe
- 6. Organizer



#### **DL-CR30545**

Wrench for mounting / dismounting the multiplier nut **SIEMENS** injectors

measuring the parameters of the CR VDO Siemens injector.



#### **DL-CR50163**

Wrench 25mm for mounting/dismantling the piezo package of CR VDO Siemens injectors. Landing dimensions of the key: a) hexagon for piezo package 25mm b) 1/2" square for torque wrench



#### **DL-CR50164**

Wrench 27mm for mounting/dismantling the piezo package of CR VDO Siemens injectors. Landing dimensions of the key: a) hexagon for piezo package 27mm b) 1/2" square for torque wrench



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# **CR-ACTIVE**

The **CR-Active** signal activator is designed to supply a control signal to the solenoid valve of Common-Rail injectors. It is used to measure the valve stroke when measuring the magnetic gap of electromagnetic Common-Rail injectors.



#### The base package includes:

- Signal generator "CR-ACTIVE" 1 pc.
- Power cable (2.1) 220V 1 pc.
- Main cable (2.2) for connection to the electromagnet 1 pc.
- Adapter cable (2.3) for light injector 1 pc.
- Adapter cable (2.4) for cargo injector 1 pc.
- Passport (technical description, operating instructions) 1 pc.



# **CR-ACTIVE**

#### EQUIPMENT AND CHARACTERISTICS

#### The complete package includes:

- Signal generator "CR-ACTIVE" 1 pc.
- Power cable (2.1) 220V 1 pc.
- Main cable (2.2) for connection to the electromagnet -1 pc.
- Adapter cable (2.3) for light injector 1 pc.
- Adapter cable (2.4) for cargo injector 1 pc.
- Stand for injectors 1 pc.
- Set of measuring probes. 1 set
- Set of 4 adapters for measuring force parameters. 1 PC.
- Measuring indicator head 1 pc.
- Passport (technical description, operating instructions) 1 pc.

#### Main technical data and characteristics:

Supply voltage	~220 V ±15%
Power consumption	up to 150 W
Four levels of current control signal	
Control signal duration	1.5 sec
Number of operations per minute	no more than 12
Short circuit protection	
Activator dimensions (depth x width x height) mm	240x230x72
Device weight	net 4kg
Weight of the complete set	net 9kg



# **CR-NeXT**

CR-NeXT - Armature activator device for Common-Rail injector solenoid valve

The CR-NeXT device is designed to supply a control signal to the solenoid valve of Common-Rail injectors. It is mainly used to measure the valve stroke when measuring the magnetic gap of common-rail solenoid injectors.



- CR-NeXT device 1 pc.
- Power cable 220 V 1 pc.
- Universal cable for connection to the injector 1 pc.
- Extension cable 1 pc
- Cable with crocodile clips 1 pc.





#### DL-RLC41R

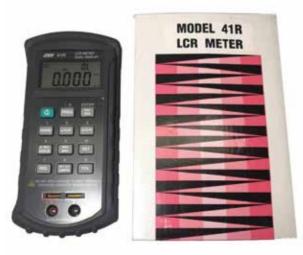
Instrument for measuring capacitance of piezo packs nozzles.

#### Contents of delivery:

- LRC Meter 41R
- Set of test leads
- Communication cable
- Software CD
- Battery











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# **PUMP TEST.02**

#### **Common-Rail High Pressure Pump Testing Equipment**



PUMP TEST .02

#### The kit includes:

1. The **PTC-2520** device is designed to provide user-programmable control signals to Common Rail injection pump pressure regulators to test their performance.

2. Device **FMDE-520**, designed to measure the performance of the Common Rail injection pump in two channels.

- 3. Tool rack on wheels for easy operation.
- 4. A set of adapter cables.
- 5. Liquid fine filters (2 pcs.)
- 6. Software.













# **PTC-2520 CP TESTER**

Device for testing and testing high-pressure fuel pumps of the Common Rail system with a set of cables.





# **FMDE-520**

Device for testing the performance of fuel pumps of the Common Rail system of various manufacturers: Bosch, Delphi, Denso, Siemens, Cummins on a test bench.

It is a 2-channel liquid flow meter (pump supply and return discharge) in various modes, with digital information output to a backlit liquid crystal display.

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# **UIS-TESTER 2**

The **UIS TESTER Multi-CAM** device is designed to test and verify the performance of unit injectors (UIS - Unit Injector System) and individual high pressure fuel pumps with high pressure solenoid valves (UPS - Unit Pump System).

Using the **UIS TESTER Multi-CAM** device, you can measure the response time of an electric valve, the device also has the ability to automatically control the electric drive of the measuring unit, and additional options for self-updating the firmware and adapting to various CAMBOX versions.

#### The UIS TESTER Multi-CAM device allows you to:

- Set high pressure solenoid valve control signal;
- Measure the rotational speed of the pressure cam drive shaft;
- Set the required number of cycles;
- Preset mode, for 5 solenoid valve control modes;
- Set any value of the solenoid valve actuation advance angle.



- Instrument UIS TESTER Multi-CAM;
- Software with BOSCH test plans;
- Speed sensor; power cable;
- Adapter cable for connecting the speed sensor;
- Adapter cable for connecting BOSCH injectors 1 type;
- Cable-adapter for connecting injectors BOSCH 2type;
- Adapter cable for connecting DELPHI injectors;
- Universal adapter cable for injectors;
- Limit switch (reed switch) for protective fencing at the stand;
- Connector for curtain control cable.







# **DL-UNI20001 PR-INDICATOR**

Electronic pressure gauge for hand press (instead of regular). Thread for the sensor in the indicator leg M12x1.5.

#### Contents of delivery:

- Electronic pressure gauge with cable for 1500 bar pressure sensor 1 pc.
- Charger for manometer accumulator 1 pc.

NB! The pressure sensor is not included in the scope of delivery.

# **DL-UNI20002 PR-INDICATOR**

Electronic pressure gauge with pressure sensor for 1500 bar for a hand press (instead of the regular one).

#### Contents of delivery:

- Electronic pressure gauge with cable for 1500 bar pressure sensor 1 pc.
- Charger for manometer accumulator 1 piece,
- Pressure sensor for 1500 bar 1 pc.





# DL-RP410

(without pressure sensor)

DL-RP415 (with pressure sensor. 1500 bar)

# Hand press RP 400 for injector testing with electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc. connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 415**) for 1500 bar 1 pc.

DL-RP510	(without pressure sensor)
DL-RP515	(with pressure sensor. 1500 bar)

# ZECA hand press for injector testing with electronic pressure gauge

- mechanical press 1 pc. connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 515**) for 1500 bar 1 pc.



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ELECTRONIC DEVICES for diagnostics and repair of diesel fuel equipment





#### DL-UNI20065



Electronic pressure gauge complete with charger device. Electronic pressure gauge included with charger

#### DL-UNI20077

adapter cable for pressure sensor BOSCH 1500 bar



Pressure sensor 1500 bar

#### DL-UNI21030

mounting bracket electronic manometer



#### DL-UNI30237

Pressure gauge leg (fitting) G1/2 with nut M12 x 1.25 mm

Manometer leg (fitting) M20 x 1.5mm with nut M12 x 1.25 mm

**DL-UNI30445** 



DL-CR10058 DL-CR10059 DL-CR10060

# DL-UNI20065 PR-TESTER.V05

Electronic pressure gauge suitable for hand presses:



DL-RP420 (without pressure sensor)

DL-RP425 (with pressure sensor. 1500 bar)

## Hand press RP 400 for injector testing with electronic pressure gauge DL-UNI20065

#### Contents of delivery:

- mechanical press 1 pc. connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 425) for 1500 bar 1 pc.

DL-RP520	(without pressure sensor)
DL-RP525	(with pressure sensor. 1500 bar)

# ZECA hand press for injector testing with electronic pressure gauge DL-UNI20065

- mechanical press 1 pc. connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 525**) for 1500 bar 1 pc.





**PR-TESTER.V05** 

DL-UNI20061

**ELECTRONIC DEVICES for diagnostics** 

and repair of diesel fuel equipment

Electronic pressure gauge 2 channel

Delivery set for measurement pressure on 2 CHANNELS:

1.	DL-UNI20065	Electronic pressure gauge
2.	DL-UNI20071	Main adapter cable for 2-channel connection - 1 pc.
3.	DL-UNI20072	Adapter cable for pressure sensor BOSCH type 1 – 2 pcs.
4.	DL-UNI20073	Adapter cable for pressure sensor BOSCH 2 type – 2 pcs.
5.	DL-UNI20074	DELPHI pressure sensor adapter cable – 2 pcs.
6.	DL-UNI20075	Adapter cable for universal for pressure sensor - 2 pcs.



8. The passport





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Electronic pressure gauge 2 channel

DL-UNI20060 Delivery set for measurement pressure on 1 CHANNEL:

1.	DL-UNI20065	Electronic pressure gauge
2.	DL-UNI20070	Main adapter cable for single-channel connection – 1 pc.
3.	DL-UNI20072	Adapter cable for pressure sensor BOSCH type 1 – 1 pc.
4.	DL-UNI20073	BOSCH pressure sensor adapter cable 2 type – 1 pc.
5.	DL-UNI20074	DELPHI pressure sensor adapter cable – 1 pc.
6.	DL-UNI20075	Universal adapter cable for pressure sensor - 1 pc.

- 7. Charger
- 8. The passport





#### **PR-TESTER.V03**

**ELECTRONIC DEVICES for diagnostics** 

and repair of diesel fuel equipment

Instrument for measuring fuel pressure in CR systems, FSI and measurement of air pressure and vacuum in pneumatic systems.

#### Contents of delivery:

- Pressure measuring device 1 pc.
- **DL-UNI20072** Sensor adapter cable pressure BOSCH 1 type 1 pc.
- DL-UNI20075 Universal adapter cable
  - for pressure sensor 1 pc.
- Charger
- Passport / instruction manual / warranty card

Additional adapter cables (not included in the main set):

- main set).
Adapter cable for pressure sensor
BOSCH 2 type
Adapter cable for pressure sensor
DELPHI



#### **DT-SCOPE**

Oscilloscope attachment for measurement of the pressure value in the CommonRail system



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ELECTRONIC DEVICES for diagnostics and repair of diesel fuel equipment



#### DL-UNI20009

CR test kit	
Contents of deliv	/ery:
DL-UNI30744	Tee – 1pc
DL-CR10050	Pressure sensor 1800 bar - 1 pc
	or DL-CR10061, DL-CR10065
DL-TVD31414	HP tube 14x14x300 - 1 pc
DL-TVD31214	HP tube 12x14x300 - 1 pc
DL-UNI30218	Fittings 14x14 – 2 pcs
DL-UNI31498	Fitting 12x14 – 1 pc
DL-UNI30529	Plug M14x1,5 – 1 pc
DL-UNI30636	Plug M12x1,5 – 1 pc





#### DL-CR50310KIT

Adapter assembly for diagnostics of the fuel system

#### Contents of delivery:

DL-CR31557	Adapter housing - 1 pc.
DL-CR10056	Safety valve 1800 bar - 1 pc
DL-CR10050	Pressure sensor 1800 bar - 1 pc
DL-UNI30218	High pressure fitting M14(1,5)xM14(1,5) in a set with a washer - gasket DL-SHP15084 – 1 pc.
34-RL3106M5	L-shaped "fast" adapter - 1 pc
DL-P1002	PVC tube with a diameter of 4 mm - 30 cm





#### DL-UNI20006

CR test kit Contents of delivery:

DL-UNI20005	PR-tester (electronic pressure gauge) - 1 pc.
DL-CR10050	Pressure sensor 1800 bar - 1 pc.
or DL-CR10061, DL-CR10065	
DL-UNI30744	Tee (for connecting a pressure sensor and HP tubes) - 1 pc
DL-UNI30218	Fittings 14x14 – 2 pcs
DL-UNI31498	Fitting 12x14 – 1 pc
DL-TVD31414	HP tube 14x14x300 – 1pc
DL-TVD31214	HP tube 12x14x300 – 1 pc
DL-UNI30529	Plug M14x1,5 – 1 pc
DL-UNI30636	Plug M12x1,5 – 1 pc



#### **DL-UNI20007**

CR test kit Contents of delivery:

DL-UNI20005	PR-tester (electronic manometer) – 1pc
DL-CR10050	Pressure sensor 1800 bar – 1 pc or DL-CR10061, DL-CR10065
DL-UNI30744	Tee (for connecting the pressure sensor and HP tube) – 1pc
DL-UNI30218	Fittings 14x14 – 2 pcs DL-UNI31498 Fitting 12x14 – 1 шт.
DL-TVD31414	HP tube 14x14x300 - 1 pc <b>DL-TVD31214</b> HP tube 12x14x300 - 1 pc
DL-UNI30529	Plug M14x1,5 – 1 pc DL-UNI30636 Plug M12x1,5 – 1 pc
DL-12CRM	Backflow test flask set (only for <b>DL-UNI20007</b> )
DL-24CRM	Backflow test adapter kit (only for <b>DL-UNI20007</b> )





#### **DL-UNI30287**

Adapter with internal thread G1/2" for pressure gauge at 2000 bar. Has a connection M14x1.5mm thread with 60° cone for tube high pressure (HPT)

Contents of delivery: adapter - 1 pc.



#### **DL-UNI30508**

Adapter with internal thread M20x1.5mm for pressure gauge at 2500 bar. Has a connecting M14x1.5mm thread with 60° cone for tube high pressure (HPT).

Contents of delivery: adapter - 1 pc.



DL-CR14P2000

Gasket for pressure gauge





DL-CR14P2500 Pressure gauge 2500 bar



#### **DL-CR50246**

Manometer mounting bracket. Made in the form of a hook and gauge holder brackets. Used with pressure gauges of the series D-12-TV63







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#### DL-KM2000

#### Pressure gauge bracket for 2000bar. For rail DL-CR30181 and DL-CR30522

#### Contents of delivery:

- bracket
- clamping bar
- M6x60 bolt, nuts, washers 2 sets
- M6x45 bolt, washers 2 sets

#### DL-KM3000

Pressure gauge bracket 2000bar for installation on a stand plate.

#### Contents of delivery:

- bracket
- Profile bolt with nut, washer and grommet
- clamping bar
- M6X60mm bolt with nut, washer and grommet 2 sets

#### **DL-KM2500**

#### Pressure gauge bracket for 2500bar. For rail DL-CR30181 and DL-CR30522

#### Contents of delivery:

- main bracket
- pressure gauge mounting ring
- M6x45 bolt, washers 2 sets
- M6x30 bolt, washers 2 sets
- M6x10mm bolt 3 pcs.



#### DL-KM3500

## Pressure gauge bracket 2500bar for installation on a stand plate

#### Contents of delivery:

main bracket

- pressure gauge mounting ring
- Profile bolt with nut, washer and grommet
- M6 x30mm bolt with washer and grommet 2 sets
- M6x10mm bolt 3 pcs.



#### Anti-vibration pressure gauges with glycerin D-12-TG63 and D-12TV63 series















#### D-12-TG63-1-0

Pressure gauge for vacuum from-1-0 bar Ø63 back 1/4" flange type

#### D-12-TG63-1-3

Vacuum pressure gauge from-1-3bar Ø63 back 1/4" flange type

#### D-12-TG63-01

Manometer for 0÷1 bar, Ø63 back 1/4" flange type

#### D-12-TG63-02,5

Manometer for 0÷2.5 bar, Ø63 back 1/4" flange type

#### D-12-TG63-004

Manometer for 0÷4 bar, Ø63 back 1/4" flange type

#### D-12-TG63-006

Manometer for 0÷6 bar, Ø63 back 1/4" flange type

#### D-12-TG63-010

Manometer for 0÷10 bar, Ø63 back 1/4" flange type

#### D-12-TG63-016

Manometer for 0÷16 bar, Ø63 back 1/4" flange type

#### D-12-TG63-025

Manometer for 0÷25 bar, Ø63 back 1/4" flange type

#### D-12-TG63-040

Manometer for 0÷40 bar, Ø63 back 1/4" flange type

#### D-12-TG63-060

Manometer for 0÷60 bar, Ø63 back 1/4" flange type



#### Anti-vibration pressure gauges with glycerin D-12-TG63 and D-12TV63 series





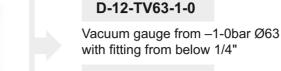












#### D-12-TV63-1-3

D-12-TV63-1-0

Vacuum pressure gauge from-1-3bar Ø63 with fitting from below 1/4"

#### D-12-TV63-01

Manometer for 0÷1 bar, Ø63 with fitting from below 1/4"

#### D-12-TV63-02,5

Manometer for 0÷2.5 bar, Ø63 with fitting from below 1/4"

#### D-12-TV63-004

Manometer for 0÷4 bar, Ø63 with fitting from below 1/4"

#### D-12-TV63-006

Manometer for 0÷6 bar, Ø63 with fitting from below 1/4"

#### D-12-TV63-010

Manometer for 0÷10 bar, Ø63 with fitting from below 1/4"

#### D-12-TV63-016

Manometer for 0÷16 bar, Ø63 with fitting from below 1/4"

#### D-12-TV63-025

Manometer for 0÷25 bar, Ø63 with fitting from below 1/4"

#### D-12-TV63-040

Manometer for 0÷40 bar, Ø63 with fitting from below 1/4"

#### D-12-TV63-060

Manometer for 0÷60 bar, Ø63 with fitting from below 1/4"

#### Anti-vibration pressure gauges with glycerin of the D-12-TG100 and D-12TV100 series





#### D-12-TG100-1-0

Vacuum gauge, Ø100 mm with connector at the back -1 to 0 bar / -0.10 to 0 MPa

#### D-12-TG100-02,5

Pressure gauge, Ø100 mm with 1/2" rear connection 0 to 2.5 bar / 0 to 0.25 MPa

#### D-12-TG100-004

Pressure gauge, Ø100 mm with 1/2'' rear connection 0 to 4 bar / 0 to 0.4 MPa

#### D-12-TG100-016

Pressure gauge, Ø100 mm with 1/2" rear connection 0 to 16 bar / 0 to 1.6 MPa

#### D-12-TG100-040

Pressure gauge, Ø100 mm with 1/2" rear connection 0 to 40 bar / 0 to 4 MPa

#### D-12-TV100-1-0

Vacuum gauge, Ø100 mm with bottom fitting 1/2" -1 to 0 bar / -0.10 to 0 MPa

#### D-12-TV100-02,5

Pressure gauge, Ø100 mm with 1/2" bottom connection 0 to 2.5 bar / 0 to 0.25 MPa

#### D-12-TV100-004

Pressure gauge, Ø100 mm with 1/2" bottom connection 0 to 4 bar / 0 to 0.4 MPa

#### D-12-TV100-016

Pressure gauge, Ø100 mm with 1/2" bottom connection 0 to 16 bar / 0 to 1.6 MPa

#### D-12-TV100-040

Pressure gauge, Ø100 mm with 1/2" bottom connection 0 to 40 bar / 0 to 4 MPa







## Control and measuring tool and instrumentation



#### DL-KIP0001

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 10mm
- Resolution 0.01 mm
- Repeatability 0.01 mm



#### DL-KIP0002

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 5 mm
- Resolution 0.001 mm
- Repeatability 0.001 mm



#### DL-KIP0003

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 5 mm
- Resolution 0.01 mm
- Repeatability 0.02 mm



#### DL-KIP0004

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 10 mm
- Resolution 0.01 mm
- Repeatability 0.02 mm



#### DL-KIP0005

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 20 mm
- Resolution 0.01 mm
- Repeatability 0.03 mm





#### DL-KIP0006

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 30mm
- Resolution 0.01 mm
- Repeatability 0.03 mm



#### **DL-KIP0007**

#### Mechanical dial gauge Characteristics :

- Type mechanical
- Stroke 50 mm
- Resolution 0.01 mm
- Repeatability 0.04 mm



#### DL-KIP0008

#### Indicator measuring head Characteristics :

- Type mechanical
- Stroke 25 mm
- Resolution 0.01 mm
- Repeatability 0.02 mm



#### DL-KIP0010

## Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.7mm
- Resolution 0.01 mm
- Repeatability 0.01 mm
- Sleeve 8 mmAutomatic shutdown



#### DL-KIP0011

## Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.7mm
- Resolution 0.001 mm
- Repeatability 0.004 mm
- Sleeve 8 mm
- Automatic shutdown





#### **DL-KIP0012**

#### Indicator measuring head Characteristics :

- Type electronic
- Type electronic
  Stroke 25 mm
- Resolution 0.001 mm
- Repeatability 0.004 mm
- Sleeve 8 mm
- Automatic shutdown

#### DL-KIP0015 Limit

## Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.5 mm
- Resolution 0.01 mm
- Repeatability 0.03 mm
- Sleeve 8 mm
- Automatic shutdown

#### DL-KIP0016 Limit

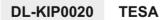
#### Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.5 mm
- Resolution 0.001 mm
- Repeatability 0.004 mm
- Sleeve 8 mm
- Automatic shutdown

#### DL-KIP0019 TESA

#### Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.7mm
- Resolution 0.01 mm
- Repeatability 0.01 mm
- Sleeve 8 mm
- Automatic shutdown



#### Indicator measuring head Characteristics :

- Type electronic
- Stroke 12.7mm
- Resolution 0.001 mm
- Repeatability 0.002 mm
- Sleeve 8 mm
- Automatic shutdown







#### Control and measuring tool and instrumentation



#### **TESA**

#### Indicator measuring head



Dieselland

Measuring communication key PC heads

#### Eee

### Indicator measuring head

- Resolution 0.001 mm
- Repeatability 0.002 mm

#### Eee

#### Indicator measuring head

**DL-KIP0028** 

Measuring communication key

Eee







#### Indicator measuring head

- Characteristics :
- Type electronic
- Stroke 12.7mm
- Resolution 0.001 mm
  Reportability 0.002 mm
- Repeatability 0.002 mm
- Sleeve 8 mm
- Automatic shutdown
- Communication with a PC using a COM port (cable included)





#### DL-KIP030 SHAHE

#### Indicator measuring head Characteristics :

• Type - electronic

- Stroke 12.7mm
- Resolution 0.001 mm
- Repeatability 0.002 mm
- Sleeve 8 mm
- Automatic shutdown

#### DL-KIP0031

#### SHAHE

Indicator measuring head Characteristics :

- Type electronic
- Stroke 25 mm
- Resolution 0.001 mm
- Repeatability 0.004 mm
- Sleeve 8 mm
- Automatic shutdown



#### DL-KIP0032 Eee

## Indicator measuring head Characteristics :

- Type electronic
- Stroke 50 mm
- Resolution 0.001 mm
- Repeatability 0.005 mm
- Sleeve 8 mm
- Automatic shutdown





#### DL-KIP0034

Indicator digital measuring head with an accuracy of 0.01 mm, stroke 12.5 mm Characteristics :

- Type electronic
- Resolution 0.01mm
- Accuracy 0.01mm
- Large, high contrast LCD display
- Carbide tip, thread M2.5
- Sleeve 8mm
- Automatic shutdown
- Case Ø 60mm

#### DL-KIP0035

Indicator digital measuring head with an accuracy of 0.001 mm, stroke 12.5 mm Characteristics :

- Type electronic
- Measuring range 12.7mm
- Resolution 0.001mm
- Accuracy 0.002mm
- Large, high contrast LCD display
- Carbide tip, thread M2.5
- Sleeve 8mm
- Automatic shutdown
- Case Ø 60mm

#### DL-KIP0036

#### Indicator digital measuring head with an accuracy of 0.001 mm, stroke 25mm Characteristics :

- Type electronic
- Measuring range 25.4mm
- Resolution 0.001mm
- Accuracy 0.004mm
- Large, high contrast LCD display
- Carbide tip, thread M2.5
- Sleeve 8mm
- Automatic shutdown
- Case Ø 60mm



#### DL-KIP0037

## Digital thickness gauge 0-12.7 mm, 0.001 mm Characteristics :

- Measuring range 0-12.7 mm
- Resolution 0.001 mm
- LCD display
- Automatic shutdown
- Case Ø 57 mm









#### DL-KIP0250

#### Magnetic stand for mounting indicator measuring head

The stand base has high magnetic properties, which allows installation both on horizontal as well as vertical surfaces.

#### **ATTENTION!**

The measuring head is not included in the scope of delivery!



#### DL-KIP0251

#### Magnetic stand for mounting indicator measuring head

The stand base has high magnetic properties, which allows installation both on horizontal as well as vertical surfaces.

ATTENTION! The measuring head is not included in the scope of delivery!







#### DL-CVC525

Digital internal caliper 5-25mm / 0.005mm

Measuring range 5-25 mm Measurement accuracy 0.005 mm

#### DL-STC150

digital caliper



#### DL-M030

*(limited quantity)* Digital micrometer

Measuring range 0-25mm Measurement accuracy 0.001mm



#### DL-M035

**DL-M040** 

tripod for digital micrometer

D-SDM

**Digital micrometer** 

Measuring range 0-25mm Measurement accuracy 0.001mm





D-DMTS-KIT

*(limited quantity)* Kit DL-030 with DL-040. Tripod and digital micrometer







#### DL-UNI50062

Measurement adapter compression in diesel engines (M12x1.5; stem L=175 mm). Installed in place of the injector. The pressure sensor is not included.

#### DL-UNI20008

Compression test kit in diesel engines. Kit includes:

- adapter DL-UNI50062 1 pc.
- Pr-tester 1pc;
- cable for pressure sensor 1 pc.

The pressure sensor is not included. \*Appearance and scope of delivery subject to change to improve equipment performance

#### DL-UNI20000

#### Compression test kit in diesel engines.

#### Kit includes:

- adapter DL-UNI50062 1 pc.
- Pr-tester 1pc;
- cable for pressure sensor 1 pc.
- pressure sensor up to 150 bar or 200 bar



#### DL-CR10045

Pressure sensor 150 bar for the compressor DL-UNI20008



#### DL-CR10046

Pressure sensor 250 bar for the compressor DL-UNI20008







#### DL-PR363

#### Compressor kit for diesel engines

#### The kit includes:

- Recording compressograph 1 pc, Adapter M14x1.5 1 pc,
- Instruction 1 pc,
- Quick release adapter M14x1.5 - 1 pc,
- Adapter M12x1.5 1 pc,
  - Spare cards 1 k-t,
  - Case 1 pc.
- DL-WT04A3021

Fuel pressure measuring kit in the low pressure line in diesel and gasoline engines.

Measuring range 0-140 psi (0-10 bar)



D-07147122

Torque wrench 1/2" 25-100 Nm



D-07147121 Torque wrench 3/8"



#### D-07147120

Torque wrench 1/4" 0-20 Nm



DL-UNI30776 Adapter with 1/4" internal square and outer square 1/2"



DL-UNI31593

Adapter with vnutr. 3/8" square and outer square 1/2"





#### DL-RP400

## Manual press for injector testing with mechanical pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- mechanical pressure gauge 1 pc.
- connecting tube 2 pcs.



DL-RP410(without pressure sensor)DL-RP415(with pressure sensor. 1500 bar)

## Manual press for injector testing with electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for RP 415) for 1500 bar 1 pc.

DL-RP420	(without pressure sensor)
DL-RP425	(with pressure sensor. 1500 bar)

## Manual press for injector testing with 2-channel electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 425**) for 1500 bar 1 pc.



#### DL-RP430

Manufacturer - ZECA (Italy) Flame test chamber (aspirator) nozzle spray Allows for visual inspection performance of diesel injectors without harm to health. The device is going to work liquid for reuse.







#### **DL-RP500**

#### Manufacturer - ZECA (Italy) Manual press for injector testing with mechanical pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- mechanical pressure gauge 1 pc.
- connecting tube 2 pcs.



DL-RP510	(without pressure sensor)
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DL-RP515 (with pressure sensor. 1500 bar)

## ZECA hand press for injector testing with electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 515**) for 1500 bar 1 pc.



DL-RP520	(without pressure sensor)

DL-RP525 (with pressure sensor. 1500 bar)

## ZECA hand press for injector testing with 2-channel electronic pressure gauge

#### Contents of delivery:

- mechanical press 1 pc.
- connecting tube 2 pcs.
- electronic pressure gauge with cable 1 pc.
- battery charger 1 pc.
- pressure sensor (for **RP 525**) for 1500 bar 1 pc.



#### DL-CRN50113

#### Set of goniometers to control the tightening of the atomizer nut

#### Contents of delivery:







#### DL-CRN50107

Protractor for injectors with nut diameter atomizer 17 mm

Angle range: 0° - 360°

#### DL-CRN50110

## Protractor for injectors with diameter atomizer nuts 19 mm

Angle range: 0° - 360°

#### DL-CRN50108

## Protractor for injectors with diameter atomizer nuts 21 mm

Angle range: 0° - 360°



All goniometers are for sale also separately.





#### DL-UNF20113

Liquid fine filter with 3  $\mu m$  housing for stands TRIUMF, CR-TEST, SPF, CR-JET , SPN(U), DORPAT



#### DL-UNF20103

**3 micron liquid fine filter** for stands TRIUMF, CR-TEST, SPF, CR-JET , SPN(U), DORPAT



#### **DL-UNF20105**

**5 micron liquid fine filter** for stands TRIUMF, CR-TEST, SPF, CR-JET , SPN(U), DORPAT



#### DL-UNF20110

**10 micron liquid fine filter** for stands TRIUMF, CR-TEST, SPF, CR-JET, SPN(U), DORPAT



#### DL-UNF20210

**Liquid fine filter (long body) 10 μm** for DORPAT stands



#### DL-UNF20124

**3 micron liquid fine filter** for stands CRUIS, CR-JAS, CR-iXE



#### DL-UNF24020

Liquid filter for stand TRIUMF, CRUIS, CR-JET (draining from the desktop)





#### DL-UNI50214

Filter housing with G3/4" connection thread It has an inlet and outlet opening with G1/2" threads. Suitable for DL-UNF20113, DL-UNF20110, DL-UNF20103, DL-UNF20210



#### DL-UNI50215

Housing for filters with M16x1.5 mm connection thread. It has inlet and outlet hole with  $G^{1/2}$ " threads. Suitable for **DL-UNF20124**.





#### DL-UNI50338

**Housing for filters** with connecting thread M16x1.5mm and fitting 3/4" **DL-UNI30741**. Fitting 16.5 x 16.5 **DL-UNI30520** can also be installed The body has an inlet and outlet with M14 threads.

#### DL-UNI50339

**Filter housing** with connecting thread M16.5 x 16.5 **DL-UNI30520** Fitting 16.5 x 3/4" **DL-UNI30741** can also be installed The body has an inlet and outlet with M14 threads.

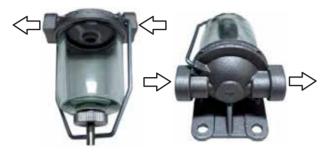


#### DL-UNI31662

**Housing for filters** with connecting thread M16x1.5mm. Has inlet and outlet with M14 threads.







#### DL-UNF20300R

Filter - sump (entrance on the right) The filter contains:

Holes for entry and exit M14x1.5mm
 Mounting holes Ø 8mm



#### DL-UNF20300L

Filter - sump (entrance on the left) The filter contains:

Holes for entry and exit M14x1.5mm
 Mounting holes Ø 8mm



#### DL-CR30051

15 micron liquid filter with 1/8" outlets



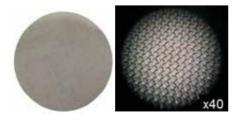
#### DL-UNI50126

15 micron liquid filter with 3/8" outlets



#### DL-UNI50047

15 micron liquid filter with fittings (herringbone) 10 mm



#### DL-SDF0410

Mesh 15 µm for filters DL-UNI5026, DL-UNI50047, DL-CR30051







#### DL-UNI30828

#### Adapter with Bosch high pressure filter for testing pumps CP1, CP2, CP3, CP4. Used with pressure accumulators (rail) DL-CR31083, DL-CR30181 and DL-CR30522. Installed in any convenient place on the rail.

#### The adapter has threaded holes:

- for a filter with a special fitting M18x1.5 (1 hole)
- for liquid supply M14x1.5 (2 holes at the top)
- for connecting a pressure sensor M18x1.5 (1 hole)
- for connecting a safety valve M20x1.5 (1 hole)
- to relieve pressure if it exceeds M5 (1 hole)

#### Contents of delivery:

- 1. adapter 1 pc.
- 2. high pressure filter DL-UNF21100 1 pc.
- 3. cone fitting for high pressure filter M14xM18 – 1 pc.
- 4. fitting M14x1.5 2 pcs.
- 5. sealing washer 3 pcs.
- 6. plug M14x1.5 1 pc.
- 7. fitting Ø 6mm x M5.



#### DL-CR50121

Adapter for high pressure filter DL-UNF2110 Mounted instead of a conventional fitting in a pressure accumulator (Rail) DL-CR30479, DL-CR30180, DL-CR30181, DL-CR30188, DL-CR30522, DL-CR30526.

**Contents of delivery:** Adapter DL-CR30834 M14x1.5 ("Male") x M18x1.5 ("Mother") - 1 pc. Adapter body with M14x1.5 thread - 1 pc.

ATTENTION! High pressure filter BOSCH DL-UNF2110 not included in the delivery set and must be ordered separately!



#### **DL-UNF2110**

High pressure filter for pressure accumulators (Rail) DL-CR30479,DL-CR30180, DL-CR30181,DL-CR30188, DL-CR30522,DL-CR30526 Can also be used with adapter DL-CR50121





#### DL-SRS020

#### **Calibration fluid SRS**

ISO 4113-CV-AW (VS 15665-OL-CV), canister 20 liters.

Used in test benches for testing of CR injectors, unit injectors PLD sections.

#### **CRS** Calibrol

## Calibration fluid for diesel fuel equipment

The CRS Calibrol calibration fluid (20 litre plastic canister container) is a test oil for testing injectors and pumps of diesel fuel equipment.

**CRS Calibrol** is a low viscosity working oil for calibration with a very tight viscosity tolerance. It is distinguished by an exceptional level of protection against wear and corrosion, as well as a low tendency to foaming.



#### **Calibration fluid SRS**

ISO 4113-CV-AW (VS 15665-OL-CV), Barrel 200 liters.

Used in test benches for testing of CR injectors, unit injectors PLD sections.











#### DL-PLP125

#### Plafond lighting for stands TRIUMF / CRUIS / CR-Test / DORPAT / CR-Jet

#### **Specifications:**

Overall dimension	145x145 mm
Mounting hole size	125x125 mm
Power	9 W
Voltage	24 V

Supplied complete with power supply.

#### DL-PLP135

#### Plafond lighting for stands TRIUMF / CRUIS / CR-Test / DORPAT / CR-Jet

#### **Specifications:**

Overall dimension	145x145 mm
Mounting hole size	135x135 mm
Power	9 W
Voltage	24 V

Supplied complete with power supply.



34-RL0306

34-RL0306C

34-RL0306E

34-RL0304C

34-RL0308C

34-RL0310C

#### Fittings for connecting hydraulic and pneumatic systems

34-RL3104M5	Angle adapter M5 x Ø 4mm with collet
34-RL3106M5	Angle adapter M5 x Ø 6mm with collet
34-RL310401	Angle adapter 1/8" x Ø 4mm with collet
34-RL310601	Angle adapter 1/8" x Ø 6mm with collet
34-RL310801	Angle adapter 1/8" x Ø 8mm with collet
34-RL310602	Angle adapter 1/4" x Ø 6mm with collet
34-RL310802	Angle adapter 1/4" x Ø 8mm with collet
34-RL311002	Angle adapter 1/4" x Ø 10mm with collet
34-RL310803	Angle adapter 3/8" x Ø 8mm with collet
34-RL311003	Angle adapter 3/8" x Ø 10mm with collet



34-RL020402	Adapter with internal thread $1/4" \ge 0.4mm$ with collet
34-RL020602	Adapter with internal thread $1/4" \ge 0$ 6mm with collet
34-RL020401	Adapter with internal thread $1/8" \times \emptyset$ 4mm with collet
34-RL020601	Adapter with internal thread 1/8" x Ø 6mm with collet

Adapter-coupling collet with M13x1mm thread and 2 nuts Ø6 x Ø 6mm

Adapter-coupling collet with M14x1mm thread and 2 nuts Ø6 x Ø 6mm

Adapter-coupling collet with M15x1mm thread and 2 nuts Ø6 x Ø 6mm

Adapter-coupling collet with M10x1mm thread and 2 nuts Ø4 x Ø 4mm

Adapter-coupling collet with M16x1mm thread and 2 nuts Ø8 x Ø 8mm

Adapter-coupling collet with M18x1mm thread and 2 nuts  $\emptyset$ 10 x  $\emptyset$  10mm



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#### Fittings for connecting hydraulic and pneumatic systems

34-RL01004M5	Straight adapter M5 x Ø 4mm with collet
34-RL01006M5	Straight adapter M5 x Ø 6mm with collet
34-RL020401	Adapter straight 1/8" x Ø 4mm with collet
34-RL020601	Adapter straight 1/8" x Ø 6mm with collet
34-RL010801	Adapter straight 1/8" x Ø 8mm with collet
34-RL020602	Adapter straight 1/4" x Ø 6mm with collet
34-RL010802	Adapter straight 1/4" x Ø 8mm with collet
34-RL011002	Adapter straight 1/4" x Ø 10mm with collet
34-RL010803	Adapter straight 3/8" x Ø 8mm with collet
34-RL011003	Adapter straight 3/8" x Ø 10mm with collet

34-RL0306B	Adapter-coupling collet Ø 6 x Ø 6mm
34-RL0304B	Adapter-coupling collet Ø 4 x Ø 4mm
34-RL0308B	Adapter-coupling collet Ø 8 x Ø 8mm
34-RL0310B	Adapter-coupling collet Ø 10 x Ø 10mm



34-RL0406	
34-RL0408	

Elbow fitting with collet clamp Ø 6mm Elbow fitting with collet clamp Ø 8mm



34-RL0504	Tee adapter Ø 4 x Ø 4 x Ø 4mm with collet
34-RL0506	Tee adapter Ø 6 x Ø 6 x Ø 6mm with collet
34-RL0508	Tee adapter Ø 8 x Ø 8 x Ø 8mm with collet
34-RL0510	Tee adapter Ø 10 x Ø 10 x Ø 10mm with collet



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#### Fittings for connecting hydraulic and pneumatic systems



**DL-MOK** 

Coupling adapter with check valve  $\emptyset$  6 x  $\emptyset$  6mm with collet



#### 34-MC15-06-06

Coupling adapter with union nuts and 2 clamping nuts nuts with M10 x 1mm thread for tube  $Ø6 \times Ø6mm$ 



#### 34-MO15-06-06

Coupling adapter with union nuts and 2 clamping nuts nuts with M10 x 1mm thread for tube  $Ø6 \times Ø6mm$  (complete with 2 sleeves)



#### 25-FPKM-04

Hydraulic quick connector "daddy" 1/4"



#### 25-FPKF-04

Hydraulic quick connector "mother" 1/4"





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#### Banjo fittings for hydraulic and pneumatic connections



#### DL-CR20062

Kit (banjo fitting 12mm + M12 bolt + rubber-metal washers) for hose 8mm (zinc)



#### DL-CR20064

Kit (14mm banjo fitting, M14 bolt, rubber-metal washers) for hose 8mm (zinc)

#### **Bolts with zinc coating:**

22-HS-06	banjo bolt hydraulic M12x1.5mm
22-HS-08	Hydraulic banjo bolt M14x1.5mm
22-HS-10	Hydraulic banjo bolt M16x1.5mm
22-HS-13	Hydraulic banjo bolt M18x1.5mm
22-HZ-08	Banjo bolt hydraulic 1/4"
22-HZ-10	Banjo bolt hydraulic 3/8"
570RLP-08	-08 Hydraulic banjo bolt 1/2"

#### Oxidized (black) coated bolt fittings:

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DL-UNI30908	Fitting banjo-bolt M16x1.5mm
DL-UNI30364	Fitting banjo-bolt 1/4"
DL-UNI30363	Fitting banjo bolt 3/8"
DL-UNI30350	Fitting 1/2" banjo bolt

#### Banjo fittings with galvanized coating:

22-RS	N-06	Banjo fitting Ø12mm herringbone 8mm
22-RS	N-08-06	Banjo fitting Ø14mm herringbone 8mm
22-RS	N-08	Banjo fitting Ø14mm herringbone 10mm
22-RS	N-10	Banjo fitting Ø16mm herringbone 11-12mm
22-RS	N-13	Banjo fitting Ø18mm herringbone 13-14mm

























#### DL08CR-220 Bosch

WASHER KIT DFK type CRI ,CRIN Ø= 3.5X5.3mm, H=1.20-1.70mm, Pitch=0.02mm, 24 sizes x 10 = 240 pcs

#### DL08CR5-244 Bosch

WASHER KIT DFK type CRI ,CRIN Ø= 3.5X5.3mm, H=1.20-1.70mm, Pitch=0.05mm, 11 sizes x 10 = 110 pcs

#### DL09CR-219 Bosch

WASHER KIT Ø= 10.5 X 15.7 mm, H=1.20-1.30mm, Pitch=0.01mm, 11 sizes x 10 = 110 pcs

#### DL10CR-235 Bosch

WASHER KIT AHE type CRIN1 Ø= 19Es 22mm, H=1.00-1.10mm, Pitch=0.01mm 11 sizes x 10 = 110 pcs

#### DL11CR-236 Bosch

WASHER KIT RLS type CRI-1 CRI-2.0 CRI-2.2, AHE type CRI-2.1 Ø= 19 X23.7mm, H=1.00-1.10mm, Pitch=0.01mm 11 sizes x 10 = 110 pcs



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#### Adjusting washers for Common-Rail injectors BOSCH

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1.34 1.36 1.38 1.40 1.42 1.44 1.48











#### DL12CR-230 Bosch

**WASHER KIT** VFK type CRI Ø= 2.5X4.5mm, H=1.20-1.70mm, Pitch=0.02mm 26 sizes x 10 = 260 pcs

#### DL12CR5-245 Bosch

**WASHER KIT** VFK type CRI Ø= 2.5X4.5mm, H=1.20-1.70mm, Pitch=0.05mm 11 sizes x 10 = 110 pcs

#### DL14CR-228 Bosch

**WASHER KIT** VFK type CRIN Ø= 2.3X4.2mm, H=1.20-1.70mm, Pitch=0.02mm 24 sizes x 10 = 240 pcs

#### DL14CR5-243 Bosch

WASHER KIT VFK type CRIN Ø= 2.3X4.2mm, H=1.20-1.70mm, Pitch=0.05mm 11 sizes x 10 = 110 pcs

#### DL16CR-232 Bosch

WASHER KIT DNH type CRI,CRIN Ø= 2.25mm, H=1.14-1.25mm, Pitch=0.01mm 12 sizes x 10 = 120 pcs















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#### DL17CR-269 Bosch

**WASHER KIT** DFK type CRI ,CRIN Ø= 3.5X5.3mm, H=0.90-1.90mm, Pitch=0.05mm 21 size x 10 = 210 pcs

#### DL18CR-271 Bosch

**WASHER KIT** CRI-1 CRI-2.0 CRI-2.2, AHE type CRI-2.1 Ø= 19 X23.7mm, H=0.90-1.00mm, Pitch=0.01mm 11 sizes x 10 = 110 pcs

#### DL19CR-273 Bosch

**WASHER KIT** RLS type CRIN-1 Ø= 19 Es 22mm, H=0.90-1.00mm, Pitch=0.01mm 11 sizes x 10 = 110 pcs

#### DL24CR-301 Bosch

**WASHER KIT** RLS type CRIN-1 Ø= 19Es 22mm, H=1.30-1.40mm, Pitch=0.01mm 11 sizes x 10 = 110 pcs

#### DL25CR-288 Bosch

**WASHER KIT** AHE type CRIN1 Ø= 18 Es 22mm, H=1.00-1.10mm, Pitch=0.01mm 11 sizes x 10 = 110 pcs







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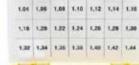
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#### DL26CR-283 Bosch

**WASHER KIT** DNH type CRI,CRIN Ø= 2.3 mm, H=0.95-1.13mm, Pitch=0.01mm 19 sizes x 10 = 190 pcs

#### DL28CR-287 Bosch

**WASHER KIT** AHE,RLS type CRIN2, CRIN3 Ø= 19.5 X 22.8mm, H=1.34-1.76mm, Pitch=0.02mm 22 sizes x 10 = 220 pcs

#### DL180CR-180 Bosch

**WASHER KIT** Ø= 19 Es22 mm, H=1.20-1.30mm, Pitch = 0.01mm 11 sizes x 10 = 110 pcs

#### DL77CR-77 Bosch

**WASHER KIT** DFK type CRI ,CRIN Ø= 3.5x 5.3mm, H=1.04-1.44mm, Pitch=0.02mm 21 size x 10 = 210 pcs

#### DL376CR-376 Bosch

**WASHER KIT** RLS type CRI ,CRIN Ø= 2.5x 6.4mm, H=1.00-1.20mm, Pitch=0.01mm 21 size x 10 = 210 pcs























#### DL88CR-88 Bosch

WASHER KIT

DFK type CRI, CRIN Ø= 3.5x 5.3mm, H=1.46-1.86mm, Pitch=0.02mm 21 size x 10 = 210 pcs

#### DL99CR-99 Bosch

**WASHER KIT** AHE type CRI-1, CRI2.0, CRI2.2 Ø= 10.5 x 15.7mm, H=1.12-1.23mm, Pitch=0.01mm 12 sizes x 10 = 120 pcs

#### DL120CR-120 Bosch

**WASHER KIT** VFK CRIN Ø= 2.5 x 4.5 mm, H=1.70-1.90mm, Pitch=0.02mm 11 sizes x 10 = 110 pcs

#### DL20CR-272 Bosch

**WASHER KIT** VFK CRI Ø= 2.40 x 5.30mm, H=1.72-1.90mm, Pitch=0.02mm 10 sizes x 10 = 100 pcs

#### DL377CR-377 Bosch

**WASHER KIT** RLS type CRI ,CRIN Ø= 2.5x 6.4mm, H=1.21-1.40mm, Pitch=0.01mm 20 size x 10 = 200 pcs





1.04	1,05	1.08	1,10	1,12	1,14	1,18
1,18	1,20	1,22	1,24	1,25	1,28	1,30
1.32	1,34	1.36	1.38	1,40	1.42	1,44
100	1	1.55	100		1 100	inin .
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		A Designed	1	1		1 11

#### DL22CR-222 Bosch

**WASHER KIT** Ø= 4.4x 7.7mm, H=0.98-1.44mm, Pitch=0.02mm 24 size x 10 = 240 pcs

#### Adjusting washers for CR DENSO injectors



1.10	1,15	1,28	1.25	1.38	1.35	1,48
1.45	1.50	1.05	1.60	1.65	1,70	1,75
1,88	1,85	1,00	1,05	2,00		
-	-				1	1000
-			-			1
産業		副副				劉耀



1,75	1,80	1,85	1,99	1.30	2.50
2.05	2,10	2,15	2.28	2.25	2.30
	-			-	
<b>B</b>	1		R		
E.	13	183	E.	10	100
	198	193	1.000	1.53	

#### DL130CR-130 Denso

**WASHER KIT** DENSO VFK Ø= 3.0 x 5.75mm, H=1.10-2.00mm, Pitch=0.05mm 19 sizes x 10 = 190 pcs

#### DL78CR-78 Denso

**WASHER KIT** DENSO VFK Ø= 3.0 x 6.75mm H=1.75-2.30mm, Pitch=0.05mm 12 sizes x 10 = 120 pcs

#### DL55CR-344 Denso

**WASHER KIT** DENSO VFK Ø= 24.3 mm x21.5 mm, H=1.50-1.72mm, Pitch=0.01mm 23 size x 10 = 230 pcs

#### DL57CR-843 Denso

**WASHER KIT** DENSO VFK Ø= 4mm x1.8mm, H=1.00-2.00mm, Pitch=0.05mm 21 size x 10 = 210 pcs







1.00 1.05 1.10 1.15 1.20 1.25 1.30 1.35 1.40 1.45 1.50 1.55 1.60 1.65

1.70 1.75 1.80 1.85 1.90 1.95 2.00





#### Adjusting washers for CR DENSO injectors



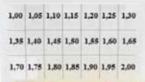
#### **DL70CR-DENSO**

WASHER KIT Ø = 23 X 21 mm, H = 3.00-3.10 mm, Pitch = 0.01 mm, 11 sizes x 10 = 110 pcs

#### Adjusting washers for Common-Rail VDO (SIEMENS) PIEZO injectors



0,91	0,92	0,93	0,94	0,95	0,96
0,98	0,99	1,00	1,01	1,02	1,03
1,05	1,06	1,07	1,08	1,10 1,11	1,12 1,13
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	0,98	0,98 0,99	0,98 0,99 1,00	0,98 0,99 1,00 1,01	0.91 0.92 0.93 0.94 0.95 0.98 0.99 1.00 1.01 1.02 1.05 1.06 1.07 1.08 1.10 1.09 1.11 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0





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		-				

#### DL-400CR-VDO

#### ADJUSTING SET WASHER VDO (SIEMENS)

Ø ext.= 18 mm, Ø inside = 14 mm, H=0.9-1.13mm, Pitch = 0.01mm 24 sizes x 10 = 240 pcs. or 24 x 5 = 120 pcs

#### DL-410CR-VDO

#### ADJUSTING SET WASHER VDO (SIEMENS)

Ø ext.= 5.7 mm, Ø inside = 3 mm, H =1.00-2.00mm, Pitch = 0.05mm 24 sizes x 10 = 240 pcs. or 24 x 5 = 120 pcs



#### Adjusting washers and adjusting elements for CR DELPHI injectors



1.15	1,20	1,25	1,30	1,35	1,40
1,45	1,50	1,55	1,60	1,65	1,70
		100	- 28		1
	a.		100	100	100
-	-	121	(B)	124	I



2,30	2,32	2,34	2,36	2,38	2,40	2,42
2,44	2,46	2,48	2,50	2,52	2,54	2,56
2,58	2,60	2,62	2,64			
-	-				-	-
1120	たい	2,2062	2.8562 2.8562	an about	THE O	
- 384 P	a Stati	C 2840				
	騎	4.35655 here	2.25453			
		1			1.	

#### **DL-378CR-SMART E3**

ADJUSTING SET WASHER DELPHI SMART E3  $\emptyset$  ext.= 4.3 mm,  $\emptyset$  inside = 1.9 mm, H = 1.15-1.70 mm, Pitch = 0.05mm 12 sizes x 10 = 120 pcs. or 12 sizes x 5 = 60 pcs

#### **DL-600CR-DELPHI**

**SET OF ADJUSTING ELEMENTS** Ø = 2.0 mm, H = 2.30-2.64mm, Pitch = 0.02mm 18 sizes x 10 = 180 pcs.



2,66	2,68	2,70	2,72	2,74	2,76	2,78
2,80	2,82	2,84	2,86	2,88	2,90	2,92
2,94	2,96	2,98	3,00			
-			10.00	180	1 215	
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1	1 SAME	Station of the second				1 32
日本	100	TV-	100	100		1 24

#### DL-601CR-DELPHI

#### **SET OF ADJUSTING ELEMENTS** Ø = 2.00 mm, H = 2.66-3.00 mm,

Pitch = 0.02mm 18 sizes x 10 = 180 pcs



#### DL-602CR-DELPHI

#### SET OF ADJUSTING ELEMENTS

 $\emptyset$  = 2.0 mm, H = 3.75-4.30mm, Pitch = 0.05mm 11 sizes x 10 = 110 pcs.



#### Adjusting washers and adjusting elements for CR DELPHI injectors



#### DL-603CR-DELPHI

SET OF ADJUSTING ELEMENTS  $\emptyset = 2.00 \text{ mm},$ H=4.35-4.90mm, Pitch = 0.05mm 12 sizes x 10 = 110 pcs

#### Adjusting washers for Unit Injectors (UIS) and Single Pumps (PLD)





0.50 0.55 0.60 0.65 0.70

0.80

0.54

0.66 0.70

0.85

0.90

0.45 0.47 0.44 0.46 0.45 0.50 0.52

0.53 0.60

0,75

1.00

0.62 0.64 0.65

0.72 0.74 0.76 0.78 0.80

31g

#### **DL-723UIS**

ADJUSTING SET WASHER FOR UIS/UIP Ø outside= 7.3 mm, Ø inside= 3.0 mm, H=0.30-0.58mm, Pitch=0.02mm 15 sizes X 10 = 150 pcs. or 15 sizes x 5 = 75 pcs



#### ADJUSTING SET WASHER FOR UIS/UIP Ø outside= 7.3 mm, Ø inside= 3.0 mm, H=0.50-1.05mm, Pitch=0.05mm 12 sizes x 10 = 120 pcs. or 12 sizes x 5 = 60 pcs

#### DL-725UIS

#### ADJUSTING SET WASHER FOR UIS/UIP Ø outside= 9.3 mm, Ø inside= 4.7 mm, H=0.40-0.80mm, Pitch=0.02mm 21 sizes x 10 = 210 pcs. or 21 sizes x 5 = 105 pcs



-

#### Adjusting washers for Unit Injectors (UIS) and Single Pumps (PLD)



8,45	0.42		0,45	0,48	0.00	. W.D.E.
0.54	0.56	0.58	0.60	0,62	0,64	0,66
0,68	8,70	1,72	0,74	6,76	0,78	8,80
	E				1	
	-	10	100	13	1.0	
	-		-	100	10 AM	
	1		10 C C C	C THEY LOW	10 Mar 1	



137	220	11/200	Nee.	220	2221		100
0	64	0.05	0,68	0,71		1.74	178
0	71	4,10	24,0 14,0	8,88 5.81		1,04	100
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1+142-		12 L	影。	14	11	14	-
10		2	USP .	No.	1	No.	
		-	_		_		

#### DL-726UIS

ADJUSTING SET WASHER FOR UIS/UIP  $\emptyset$  outside= 8.3 mm,  $\emptyset$  inside= 4.7 mm, H=0.40-0.80mm, Pitch=0.02mm 21 sizes x 10 = 210 pcs. or 21 sizes x 5 = 105 pcs

#### DL-727UIS

ADJUSTING SET WASHER FOR UIS/UIP  $\emptyset$  outside= 5.0 mm,  $\emptyset$  inside= 2.5 mm, H =0.50-1.00 mm, Pitch = 0.02 mm 337 26 sizes x 10 = 260 pcs. or 26 sizes x 5 = 130 pcs

## 0



#### DL-728UIS

#### ADJUSTING SET WASHER FOR UIS/UIP Ø outside= 5.0 mm, Ø inside= 2.5 mm, H=0.50-1.05 mm, Pitch=0.05 mm12 sizes x 10 = 150 pcs. or 12 sizes x 5 = 60 pcs

0



#### DL-729UIS

ADJUSTING SET WASHER FOR UIS/UIP Ø outside= 4.3 mm, Ø inside= 1.9 mm, H=0.50-1.10mm, Pitch=0.05mm 12 sizes x 10 = 120 pcs. or 12 sizes x 5 = 60 pcs



#### Adjusting washers for Unit Injectors (UIS) and Single Pumps (PLD)



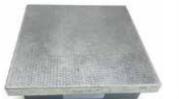
#### DL-730UIS

ADJUSTING SET WASHER FOR UIS/UIP Ø outside= 4.3 mm, Ø inside= 1.9 mm, H=1.10-1.50mm, Pitch=0.05mm 9 sizes x 10 = 90 pcs. or 9 sizes x 5 = 45 pcs

#### DL-731UIS

ADJUSTING SET WASHER FOR UIS/UIP Ø outside= 4.3 mm, Ø inside= 1.9 mm, H=1.15-1.70mm, Pitch=0.05mm 12 sizes x 10 = 120 pcs. or 12 sizes x 5 = 60 pcs

#### Tools and fixtures for grinding washers and other parts



#### D-261102

Plate (finishing) lapping Size: 200x200 mm



#### D-190171108

Plate (finishing) lapping Size: 300x300 mm

#### DL-UNI50270

Set of washer holders for grinding them. The kit includes two holders with diameters for different pucks. It is recommended to carry out grinding on a special lapping plate.



#### DL-UNI31635

D-190171207

Plate (finishing)

Size: 400x400 mm

lapping

Holder for lapping spacers and nozzle valves Piezo Bosch



#### 402





#### DL-TS800PL

Tachometer board



DL-PTC700PL

PTC device board



DL-FMDE800PL

Flow meter board FMDE



DL-CR500PL

Cristina instrument board



DL-CRP600PL

Cristina-Piezo instrument board







**DL-AC400PL** Board from the Acoustic kit



DL-CAS1200PL CASCADE board



DL-CASP400PL Piezo board CASCADE



DL-RPC160PL

Time circuit board injector response



DL-SHT180PL

Printed circuit board curtain control measuring block





With our full range of products

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