

All Makes Common Rail Injector Test



All Makes Common Rail Injector Test HK900 & HK901

The HK900 operates in conjunction with our AVM2-PC and HF1130 Common Rail Pump Control Unit.

This extends the Service Workshops' capability from pump only repairs to full Common Rail System Test.

The "All Makes" capability facilitates the testing of injectors from the major Common Rail FIE manufacturers Bosch, Delphi, Denso and Siemens.

The test system consists of the following:-

- HK900 All Makes Common Rail Injector Base Kit including the basic injector fixturing assembly and main control box.
- HK901 Backleakage Measurement Kit (optional), a digital measurement system designed specifically for Common Rail injector backleakage. It measures four lines simultaneously, and provides either shot-based or time-based results according to the test requirements. It also provides temperature measurement on each line and interfaces directly with the HK900.
- Application kits for different injectors.

Clamping of the injector under test is critical for correct performance and safety. Incorrect clamping can cause unstable results and poor repeatability at full operating pressures. The "All Makes" solution provides repeatable alignment and clamping. Furthermore, by clamping the injector as it is in the engine, the risk of cap nuts "blowing off" is removed (this is a real danger in unrestrained solutions).

Ease of use, robustness, safety and affordability are crucial for workshop profitability. The Common Rail Injector Test System not only meets, but exceeds these criteria's with functionality as yet unseen in other systems currently available.

The AVM2-PC software* detects when the HK900 kit is fitted and shows the Common Rail Injector features automatically. The standard metering screen is replaced by the new screen shown.

The screen is divided into three sections:-

1. Test plan Data (left hand side).
2. Injector Results (centre section).
3. Other test bench data and measurements (right hand side).

*Existing AVM2 customers may require a software upgrade; HK900 requires version 33 or later.



Figure 1 AVM2-PC Test Stand, Common Rail injector screen display.

Equipment Required

HF1130

The HF1130, All Makes CR Pump Test Kit, has been designed to provide the diesel fuel injection service network with a comprehensive CR pump test capability. This applies to both the franchised and independent workshops. The HF1130 kit can be used to test and calibrate Bosch, Delphi, Denso and Siemens CR pumps.

AVM2-PC Test Stand

The AVM2-PC is the Hartridge™ flagship test platform and utilises a PC based digital fuel metering system. Its advanced design and ease of use combine to save you time. It can be up to 50% faster than test benches that use alternative metering systems. The AVM2-PC is the platform that Hartridge™ will use for all new fuel injection technology including Common Rail and Electronic Unit Injection (see product brochure for further details).

HB378 Common Rail Base Kit

Principally an interlocked safety guard designed to ensure operator protection from the very high pressures generated by Common Rail fuel injection systems, the kit also includes:

- Improved test oil filtration – 2 micron.
- Pressure control valve to allow pump flow tests via the AVM2 metering unit.
- Pressure relief valve to 'dump' the rail pressure if the safety is compromised.
- The safety guard has been designed to become part of the test bench and should not require removal when a different type of Common Rail pump is tested (see product brochure for further details).
- The chart below defines the products required to test the various designs of Common Rail Injectors (see the enclosed applications list for full details).

Main Features

- All test work is based around test plans which can be created and stored on the PC by manufacturer and then by part number. Hartridge™ provides a generic test plan for each manufacturer; which will give typical settings but not expected results. You can use these generic test plans to create specific test plans for particular injectors.
- Tests up to 4 injectors at a time. Key tests include:
 - Coil Resistance
 - Injector Response Time
 - Delivery
 - Backleak (optional)
- Software control via AVM2-PC adopting a user-friendly test plan format (a software upgrade will be required for existing benches – pre version 33).
- Builds on the existing HF1130 All Makes Common Rail Pump Test Kit and HB378 Base Kit which are prerequisites for all Common Rail injector testing.
- HK900 Common Rail Injector Base Kit contains an electronic control box and a 4-line injector clamping fixture.
- HK901 Backleakage Measurement kit for digital backleak metering (optional).
- Additional injector application kits contain specific fixturing parts and high pressure pipes for particular injectors.

Benefits

- Tests Bosch, Delphi, Denso, and Siemens injectors.
- Tests up to 4 injectors at a time.
- Modular kit structure – only buy the parts you need.
- Fast diagnosis of faulty injectors.

Product Matrix

No.	Description	Part No.	Bosch	Delphi	Denso	Siemens
1.0	AVM2-PC Test Stand 20hp recommended to cover a wide range of applications.	AVM2-PC	✓	✓	✓	✓
2.0	Common Rail base kit including safety cover suitable for all applications.	HB378	✓	✓	✓	✓
3.0	All Makes Common Rail pump control box	HF1130	✓	✓	✓	✓
4.0	All Makes Common Rail injector test box	HK900	✓	✓	✓	✓
5.0	Backleakage Measurement Unit	HK901	Optional As Required			
6.0	AVM2-PC Software Upgrade	HB374	Required for pre version 33			

Please note that in addition to the above, application kits are required in order to test Common Rail injectors, please refer to the enclosed application coverage and parts list for further information.

Technical Specification

- Rail pressure control: closed loop control using surrogate pump.
- Injector control: generic current, voltage, and pulse width settings are supplied for existing Bosch, Delphi, Denso, and Siemens injectors.
- Injector coil resistance measurement.
- Rigid, aligned injector clamping fixture.
- Response time measurement.
- Delivery measurement.
- Backleak flow measurement: mm³/stroke or mm³/sec depending on test requirement (specific to HK901).
- Backleak temperature measurement (specific to HK901).

Additional Accessories

Hartridge™ HM1050 Trolley can be used to store the All Makes Common Rail pump and injector control boxes, HB378 base kit and EUI Cambox. In addition to the basic kits above, specific injector fitting parts will be required. These include:

- Injector Cables
- Nosepiece Adaptors
- Clamp Blocks
- HP Pipes (rail to injector)
- Backleak Adaptors

Please note that the following are required for testing:

- A surrogate high pressure pump (not supplied by **Hartridge™**)
- A Common Rail Pump kit for the surrogate pump (supplied by **Hartridge™**)
- A software upgrade kit HB374 (required for existing benches – pre version 33 refer to Technical Bulletin 195/11 for further details).

Contact your local **Hartridge™** distributor for more detailed information or visit

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Continuous development is taking place. **Hartridge™** reserves the right to alter the design and/or specification without prior notice.

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