



TEST EQUIPMENT DIVISION

Tel: 01772 694185

AUTOMOTIVE TEST EQUIPMENT

Leading the way in diesel technology

Equipment for Common Rail & EUI
Test Benches & Accessories
Injector Testing
Injector Reconditioning



www.merlindiesel.com

EM Series Test Stand



GENERAL INFORMATION

The Merlin EM Series are a range of test stands principally designed for the calibration of automotive fuel injection pumps. Designed and developed with the following functions:-

FEATURES

- Integrated digital electronic metering on a 24" monitor.
- Bluetooth connected removable keyboard.
- Electronic shot count.
- Forward mounted potentiometer, drive & fuel controls.
- Robust design with all steel frame construction.
- Water cooled & internally heated with air & power supply.
- 8 or 12 cylinder optional.
- 20, 25 & 30 hp available.
- Optional injectors 8 or 12 cylinder.
- Optional test tubes to replace the digital interface 8 or 12 cylinder (coming soon).
- The calibrating head is pivot mounted for right or left hand operation & height adjustable.
- Factory fitted equipment: 12v & 24v DC supply. Air boost.
- Smart wheels system.
- Results print out.
- Linux operating system.

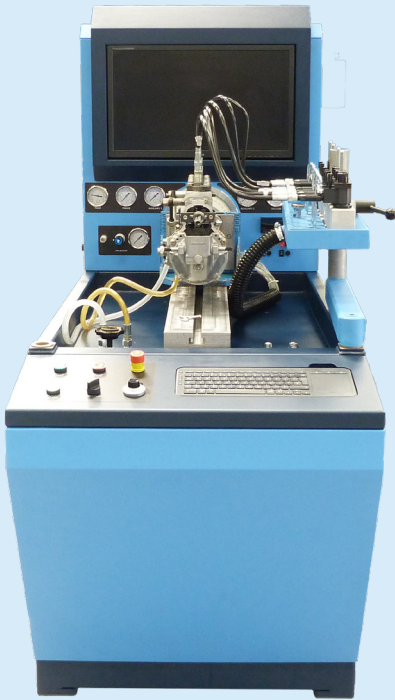
APPLICATIONS

- **'A' type Inline BOSCH, SIMMS & MINIMEC**
- **Mechanical/Rotary BOSCH, DELPHI, STANADYNE, DENSO & ZEXEL**
- **HK1400 all makes Cambox**
- **Submersible pumps (appropriate Cambox required)**

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

EM Series Test Stand

SPECIFICATION



DRIVE MOTOR	20, 25 & 30 hp variants
SPEED RANGE	0-4000 rpm
DISPLAY	Digital 24" monitor
MEASURING RANGE	8/12 cylinder 0-800cc
TEST OIL SUPPLY PUMP	600 litres/hr (tandem pump)
LUBE OIL SUPPLY PUMP	600 litres/hr (tandem pump)
TEST OIL FEED PRESSURE	0-4 bar
TEST OIL PHASE	0-40 bar
FLYWHEEL	Inertia value: 0.25 kgm ²
FLOWMETER	0-800cc Oval flowmeter ±1% of reading
TACHOMETER	± 1 rpm. Updates every 0.5 seconds
WATER SUPPLY	160 litres/hr min 3 bar required
TEMPERATURE CONTROL	0-60°C ±1°C at 40°C
CALIBRATION FLUID (TEST OIL)	Shell Calibration Fluid 4113, now S9365
WORK TABLE	125mm Centre height
AIR BOOST	0-4 bar

INSTALLATION DETAILS

ELECTRICAL SUPPLY

200-240v/ 3 phase/ 60Hz

380-440v/ 3 phase/ 50Hz

WATER SUPPLY

160 litres/hour (35 imperial gallons/hour) at 2-3 bar

AIR SUPPLY

5.5-6.9 bar (80-100psi) Normal workshop air supply

DIMENSIONS

HEIGHT 1780mm

LENGTH 2200mm

WIDTH 780mm

WEIGHT 700kg

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

S9000

GENERAL INFORMATION



The Merlin S9000 is a dual purpose test stand incorporating HEUI and Common Rail technology. Having both Hydraulic and High Pressure components allows this unique platform to give your workshop not only the flexibility of the all makes common rail, but also Caterpillar, Navistar and Ford off highway, HEUI capabilities.

The S9000 can also be coupled with Merlins S1000 all makes coding giving you even more control of the quality of your product. Designed and developed with the following functions:-

CODING

Merlin S1000 all makes coding is available on this test bench.

Capability to generate IMA, C2i/ C3i and QR Correction code for each individual Injector.

HEUI

- Tests Caterpillar C7/C9. Navistar & ford powerstroke 3126 type.
- Hydraulic oil leak test.
- Hydraulic oil return over four deliveries.
- Injection quantity's over four deliveries.
- Sealing test to check for leaks.
- Touch Screen.
- Built in WIFI for remote Assistance, Training & Upgrade.
- Customer printouts.

COMMON RAIL

- Tests Bosch, Denso, Delphi & Siemens injectors.
- High pressure cleaning to flush out the nozzle.
- Test injection & return volume under VL, TL, LL, VE & VE2 status.
- Sealing test to check for leaks.
- Tests Piezo injectors.

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

SPECIFICATION



TEST OIL DRIVE MOTOR	5hp (4kw)
LUBE OIL DRIVE MOTOR	3hp (2.2kw)
DISPLAY	19" touch screen LCD
TEST OIL FLOWMETER	High capacity
HYDRAULIC FLOWMETER	High capacity
TEST OIL SUPPLY PUMP	Bosch CP3.3
HIGH PRESSURE RAIL & DRV	Bosch original parts
RANGE OF RAIL PRESSURE	0-1800 bar (0-2400 bar optional)
RANGE OF OIL PRESSURE	0-250 bar
TEST OIL SUPPLY FILTRATION	Mesh tank strainer & 1 spin-on 2 micron cartridge element
FLOWMETER FILTRATION	1 spin-on cartridge element & 1 in-line filter
TEST OIL TANK	Capacity 19 litres
HYDRAULIC OIL TANK	Capacity 19 litres
TEST/HYDRAULIC OIL HEATER	1kw rating
OIL COOLER UNIT	Refrigerant gas R404A
TEMPERATURE CONTROL	0-60° C ±2° C at 40°

INSTALLATION DETAILS

ELECTRICAL SUPPLY

200-220v/ 3 phase/ 60Hz

380-420v/ 3 phase/ 50Hz

DIMENSIONS

HEIGHT 1450mm

LENGTH 900mm

WIDTH 1550mm

WEIGHT 500kg

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

S4000MK2



GENERAL INFORMATION

The Merlin S4000 MK 2 is a fully automatic common rail test bench designed and developed with the following functions:-

INJECTOR TESTER

- Test injection & return volume under VL, TL, LL, VE and VE2 status.
- Sealing test to check for leaks.

CODING

- Merlin S1000 all makes coding is available on this test bench.
- Capability to generate IMA C2i/ C3i & QR Correction code for each individual injector.

FEATURES

- Tests BOSCH, DENSO, DELPHI & SIEMENS injectors.
- Tests solenoid valve & Piezo injectors.
- Automatically measures & displays delivered fuel quantity.
- Tests the seal performance of injectors & delivery under different working conditions as follows:-
 - Pre-injection
 - Idle
 - Mid-range
 - Max fuel
- Operator can add data & customer information. This data can be viewed, printed & saved.
- Equipped with original Bosch CP1 pump, rail, DRV & ZME.
- Test oil temperature controlled to 40 ± 2 °C, built-in cooling system.

Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

S4000MK2

SPECIFICATION



DRIVE MOTOR	10hp (7.5kw) Variable frequency control
SPEED RANGE	0-3500rpm
DISPLAY	19" LCD
FLOWMETER	High capacity Flowmeter
TEST OIL SUPPLY PUMP	Bosch CPI
HIGH PRESSURE RAIL & DRV	Bosch original parts
TEST RANGE OF RAIL PRESSURE	0-1800 bar (0-2400 bar optional)
FLOWMETER FILTRATION:	1 spin-on cartridge element & 1 in-line filter
TEST OIL TANK	Capacity 28 litres
TEST OIL HEATER	1 kw rating
OIL COOLER UNIT	Refrigerant gas R404A
TEMPERATURE CONTROL	0-60° C ±2°C at 40°C
CABLE	4-6mm 2 x 5 core

INSTALLATION DETAILS

ELECTRICAL SUPPLY

200-240v/ 3 phase/ 60Hz

380-440v/ 3 phase/ 50Hz

DIMENSIONS

HEIGHT 1200mm

LENGTH 900mm

WIDTH 1650mm

WEIGHT 350kg

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

S8000



GENERAL INFORMATION

The Merlin S8000 is a fully automatic common rail test bench designed and developed with the following functions:-

FEATURES

- Tests BOSCH, DENSO, DELPHI & SIEMENS injectors & pumps.
- Tests up to 6 solenoid valve injectors in succession or 1 Piezo injector at once.
- Automatically measures & displays delivered fuel quantity.
- Tests the seal performance of injectors & delivery under different working conditions as follows:-
 - Idle
 - Pre-injection
 - Mid-range
 - Max fuel
- Operator can add data & customer information which can be printed & saved.
- Equipped with original Bosch CP3.3 pump, rail, DRV & ZME.
- Test oil temperature controlled to 40 ± 2 °C, built-in cooling system.
- Feeding pressure can be adjusted 0-8 bar.

PUMP TEST

- **Automatically tests volume, pump transfer pressure & ZME performance for Bosch, Delphi, Siemens & Denso common rail pumps.**

CODING

- **Merlin S1000 all makes coding is available on this test bench.**
- **Capability to generate IMA C2i/C3i and QR Correction code for each individual Injector.**

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

SPECIFICATION



DRIVE MOTOR	22hp (16.5kw) Variable Frequency Control
SPEED RANGE	0-3500rpm
DISPLAY	19" LCD
FLOWMETER	2 x Kobold Flowmeters
TEST OIL SUPPLY PUMP	Bosch CP3.3
HIGH PRESSURE & DRV	Bosch Original Parts
TEST RANGE OF RAIL PRESSURE	0-2200 bar
TEST OIL SUPPLY FILTRATION	Mesh Tank Strainer & 2 Spin-on 2 Micron Cartridge Elements
FLOWMETER FILTRATION	1 Spin-on Cartridge Element & 1 In-line Filter
TEST OIL TANK	Capacity 35 litres
OIL COOLER UNIT	Refrigerant Gas R404A
TEMPERATURE	0-60° C ±2° C at 40°C
CABLE	4-6mm 2 x 5 core
CALIBRATION FLUID	Shell Calibration Fluid 4113 now S9365

INSTALLATION DETAILS

ELECTRICAL SUPPLY

200-220v/ 3 phase/ 60Hz

380-420v/ 3 phase/ 50Hz

DIMENSIONS

HEIGHT 1900mm

LENGTH 900mm

WIDTH 1800mm

WEIGHT 850kg

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

MM SERIES



GENERAL INFORMATION

The Merlin MM Series is a range of direct drive test stands principally designed for the calibration of automotive fuel injection pumps. Designed and developed with the following functions:-

APPLICATIONS

- **A type Inline BOSCH, SIMMS & MINIMEC.**
- **Mechanical BOSCH, DELPHI, STANADYNE, DENSO & ZEXEL.**
- **HK1400 all makes Cambox**
- **Submersible pumps (appropriate Cambox required).**
- **Robust compact design with all steel frame construction. Water cooled and internally heated with air and power supply.**

FEATURES

- A solid state electronic shot counter, range 1-9999, incorporates a manual interrupter & is combined with a digital tachometer display.
- 8 or 12 cylinder scale graduates for greater accuracy.
- 10hp (7.5 kw) or 15hp (11.0 kw) available.
- Closed displacement system with test injectors fitted with ISO4010 nozzles as standard. The injectors incorporate vent valves for rapid high pressure phasing & pump venting. The calibrating head is pivot mounted for right or left hand operation.
- All gauges are grouped on one panel & face the control panel for ease of reading. A compound pressure/vacuum gauge indicates feed pressure or vacuum as required. Independently driven supply/lube pump.
- Supplied complete with test injectors & anti-backlash coupling.
- Basic in-line, rotary mounting kits optional.
- Factory fitted equipment: Variable DC supply, lube oil supply optional.

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

MM SERIES

SPECIFICATION



DRIVE MOTOR	10hp & 15hp (7.5kw & 11kw)
SPEED RANGE	0-4000rpm
DISPLAY	LED & Gauges
MEASURING RANGE	8/12 x 0-100cc capacity 1 x 0-100cc (back leak)
TEST OIL SUPPLY PUMP	435 litres/hr (tandem pump)
LUBE OIL SUPPLY PUMP	435 litres/hr (tandem pump)
TEST OIL FEED PRESSURE	0-7 bar
FLYWHEEL: Inertia value	0.25 kgm ²
TACHOMETER	± 1 rpm. Updates every 0.5 seconds
WATER SUPPLY	160 litres/hr min 3 bar required
TEMPERATURE CONTROL	0-60°C ±1°C at 40°C
CALIBRATION FLUID	Shell Calibration Fluid 4113, now S9365
WORK TABLE	125mm Centre height

INSTALLATION DETAILS

ELECTRICAL SUPPLY

200-220v/ 3 phase/ 60Hz

380-420v/ 3 phase/ 50Hz

DIMENSIONS

HEIGHT 1800mm

LENGTH 150mm

WIDTH 680mm

WEIGHT 463kg

Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

MER 12-20

GENERAL INFORMATION



Merlin's MER 12-20 is a 20hp (15.0 kw) direct drive test stand and is principally designed for the calibration of automotive fuel injection pumps. Designed and developed with the following functions:-

FEATURES

- All gauges are grouped on one panel and face the control panel for ease of reading. A compound pressure/vacuum gauge indicates feed pressure or vacuum as required.
- Robust compact design with all steel frame construction.
- Internally cooled and heated with air and 12v/24v power supply.
- Up to 12 cylinder dual scale graduates for greater accuracy.
- Independently driven supply pump.
- Supplied complete with test injectors and anti-backlash coupling.
- Basic in-line, rotary mounting kits.

APPLICATIONS

- **A type Inline BOSCH, SIMMS & MINIMEC.**
- **Mechanical BOSCH, DELPHI, STANADYNE DENSO & ZEXEL.**
- **HK1400 all makes Cambox.**
- **Submersible pumps (appropriate Cambox required).**
- **Multi programmable speed controls along with fully programmable shot & temperature range.**

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

SPECIFICATION



DRIVE MOTOR	20hp (15.0 kw)
SPEED RANGE	0-4000rpm x 10 pre-set speeds
DISPLAY	LED & Gauges
MEASURING RANGE	Dual scale graduates 12 x 45cc-150cc capacity
TEST OIL SUPPLY PUMP	400 litres/hr
TEST OIL FEED PRESSURE	0-6 bar
POWER POINT	12v-24v Sockets
TACHOMETER	Digital display, accuracy ± 1 rpm with 0.5 seconds update
TEMPERATURE CONTROL	0-60°C $\pm 2^\circ$ C at 40°C
OIL COOLER UNIT	Refrigerant Gas R404A
ELECTRICAL SUPPLY	380v /3-phase /50-60Hz
CALIBRATION FLUID	Shell Calibration Fluid 4113 now S9365
WORK TABLE	1.25 Centre Height

INSTALLATION DETAILS

ELECTRICAL SUPPLY

200-220v/ 3 phase/ 60Hz

380-420v/ 3 phase/ 50Hz

AIR SUPPLY

5.5-6.9 bar (80-100psi) Normal workshop air supply

DIMENSIONS

HEIGHT 1650mm

LENGTH 1600mm

WIDTH 960mm

WEIGHT 950kg

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

S300-1

GENERAL INFORMATION



The Merlin S300-1 is a single unit designed to test both electro-hydraulic and piezo common rail injectors. Designed and developed with the following function:-

SPECIFICATION

INJECTOR EXCITATION VOLTAGE 85v dc (Bosch/Delphi/Denso) 135v dc (Siemens)

PULSE-WIDTH RANGE 0.5-3.0ms

REPETITION RATE 0.75-14Hz

FAULT DETECTION Short circuit/open circuit

INJECTOR CURRENT 25A

ELECTRICAL 220-240v/110v

ADAPTOR CABLES Delphi, Bosch, Siemens
Piezo, Bosch Piezo, Bosh CRIN

DIMENSIONS

HEIGHT 150mm **LENGTH** 210mm

WIDTH 300mm **WEIGHT** 10kg

FEATURES

- S300-1 Common Rail Injector System tester, one unit for the following systems: Bosch, Delphi, Denso, Siemens (VDO).
- The S300-1 can generate pulses suitable to drive piezo injectors as well as conventional solenoid types.
- The duration of the pulse as well as the repetition rate can be adjusted to simulate a range of operating conditions.
- When used in conjunction with a Merlin S400A or S425A air operated injector tester, a common rail injector can be operated sufficiently to observe the nozzle spray pattern and measure the backleak time.
- It can also be used with manually operated injector testers.
- Fault detection of injector short circuit, injector open circuit, incorrect injector type connected.
- Supplied complete with electrical mains cable, connection cable with 4 adaptor cables to suit Bosch, Denso, Delphi, Siemens (VDO) Piezo and general purpose applications.

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

S500-2



GENERAL INFORMATION

The S500-2 monitor has been designed for accurate performance testing, production line testing and quality over checking of diesel fuel injectors and nozzles.

FEATURES

- The repeatable and reliable digital display of pressure eliminates errors normally found in conventional analogue pressure gauges. Errors can be due to hysteresis in gauge readings, possible undetected mechanical damage, gauge inaccuracies and gauge needle bounce when setting nozzle opening pressure (NOP).
- Back leakage timing errors are eliminated due to the absence of having to start and stop a remotely sited mechanical seconds timer.
- The S500-2/R retro-fit kit is supplied complete with 700 bar transducer and temperature probe and can be used with many types of injector tester.
- On completion of a test where both NOP and back-leak pass, the results of the test are automatically sent to the serial printer port. A print-out of the last test, whether "pass or fail", can be requested by pressing the push button when "print" is displayed on the screen.
- Test parameters are programmable, stored and saved.

SPECIFICATION

PRESSURE RANGE 0-700 Bar, PSI, MPa or kgf/cm²

TIME RANGE 0-99.9 seconds

PRESSURE ±1 bar

TIMING ±1 second

TRANSDUCER ±0.1% of full value

LINEARITY ±1 bar over full range

MEMORY Data store/recall for injector type test plans

DISPLAY LED, tick/cross symbols advise user of NOP & back-leak pass/fail

COMPENSATION: Automatic compensation for variations in test oil temperature

ELECTRICAL 220/240v/1PH/50 Hz

DIMENSIONS

HEIGHT 230mm **LENGTH** 185mm

WIDTH 540mm **WEIGHT** 10kg

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

S400A-CRC



GENERAL INFORMATION

The Merlin S400A-CRC is a 700 bar air operated, automated injector tester used for testing and adjusting Common Rail and conventional automotive injectors. The S400A-CRC incorporates the Merlin S500-2, S300-1 common rail trigger box and Merlin's C302 twin calibration unit. Designed and developed with the following functions:-

FEATURES

- Opening pressure.
- Chatter test (atomization).
- Spray pattern.
- Seat leakage.
- Back-leakage measurement.
- Flow measurement.
- All controls and instruments are grouped together for operator convenience and include the latest Merlin S500-2 display monitor, flow control valve, light and fume extraction control.
- Fully sealed air pump unit, robust construction, pneumatically operated via normal workshop air supply.
- Illuminated spray chamber to give a good view of injector spray form. A variable rate air operated fume extraction system with optional Perspex spray arrestor further assists the extraction operation.
- Standard tank features include sight level gauge, quick release filler cap and magnetic drain plug.
- Incorporating the Merlin S300-1, Merlin S500-2 and the Merlin C302
- The Merlin C302 is a twin calibration unit for the measurement of fuel delivery and back-leak flow.

BENEFITS

- **Merlin's patented solenoid bottom fill/bottom drain system eliminates aeration and frothing of test oil normally caused by top fill systems. Instant reading and rapid drain systems give unit accuracy and efficiency.**
- **Supplied with 2 x 0-30cc glass tubes.**
- **Cabinet optional**

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

S400A-CRC

SPECIFICATION



PRESSURE RANGE	0-700 bar, PSI, MPa or kgf/cm ²
TIME RANGE	0-99.9 seconds
PRESSURE	±1 bar
TIMING	±0.1% of full range
TRANSDUCER	±1 bar over full range
MEMORY	Data store/recall for injector type test plans
DISPLAY	LED, tick/cross symbols advise user of NOP and back-leak pass/fail
COMPENSATION	Automatic compensation for variations in test oil temperature
CALIBRATION FLUID	Shell Calibration Fluid 4113, now S9365
INJECTOR VOLTAGE	85 - 135v dc
PULSE-WIDTH RANGE	0.5 - 3.0ms
REPETITION RATE	0.75 - 14Hz
FAULT DETECTION	Short circuit, open circuit.
METERING	2 x 30cc calibrated tubes

INSTALLATION DETAILS

ELECTRICAL SUPPLY

240v/ 1 phase/ 50Hz

110v/ 1 phase/ 60Hz

DIMENSIONS

HEIGHT 780mm

LENGTH 650mm

WIDTH 1000mm

Please note dimensions are without cabinet

Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

S400A-CR



GENERAL INFORMATION

The Merlin S400A-CR is a 700 bar air operated, automated injector tester used for testing and adjusting Common Rail and conventional automotive injectors. The S400A-CR incorporates the Merlin S500-2 and the S300-1 common rail trigger box. Designed and developed with the following functions:-

FEATURES

- Opening pressure
- Chatter test (atomization)
- Spray pattern
- Seat leakage
- Back-leakage
- All controls and instruments are grouped together for operator convenience and include the latest Merlin S500-2 display monitor, flow control valve, light and fume extraction control.
- Fully sealed air pump unit, robust construction, pneumatically operated via normal workshop air supply.
- Illuminated spray chamber to give a good view of injector spray form. A variable rate air operated fume extraction system with optional Perspex spray arrestor further assists the extraction operation.
- Standard tank features include sight level gauge, quick release filler cap and magnetic drain plug.
- Incorporates Merlin's S300-1 AND Merlin's S500-2 (see pages 14-15)

SPECIFICATION

PRESSURE RANGE	0-700 Bar, psi, MPa or kgf/cm ²
TIME RANGE	0-99.9 seconds
PRESSURE	±1 bar
TIMING	±0.1% of full value
TRANSDUCER	±1 bar over full range
LINEARITY	±1 bar over full range
MEMORY	Data store/recall for injector type test plans
DISPLAY	LED, Tick/cross symbols advise user of NOP and backleak pass/fail
COMPENSATION:	Automatic compensation for variations in test oil temperature
CALIBRATION FLUID	Shell Calibration Fluid 4113, now S9365
INJECTOR VOLTAGE	85—135v dc
PULSE-WIDTH RANGE	0.5—3.0ms
REPETITION RATE	0.75 – 14Hz
FAULT DETECTION	Short circuit, open circuit

INSTALLATION DETAILS

ELECTRICAL SUPPLY

240v/ 1 phase/ 50Hz 110v/ 1 phase/ 60Hz

DIMENSIONS

HEIGHT	770mm	LENGTH	600mm
WIDTH	600mm	WEIGHT	66kg

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

S400A



GENERAL INFORMATION

The Merlin S400A is a 700 bar air operated, automated injector tester used for testing and adjusting conventional automotive injectors. Designed and developed with the following functions:-

FEATURES

- Opening pressure
- Chatter test (atomization)
- Spray pattern
- Seat leakage
- Back-leakage
- All controls and instruments are grouped together for operator convenience and include the latest Merlin S500-2 display monitor, flow control valve, light and fume extraction control.
- Fully sealed air pump unit, robust construction, pneumatically operated via normal workshop air supply.
- Illuminated spray chamber to give a good view of injector spray form. A variable rate air operated fume extraction system with optional perspex spray arrester further assists the extraction operation.
- Standard tank features include sight level gauge, quick release filler cap and magnetic drain plug.
- Incorporates Merlin's S500-2 (see page 15)

SPECIFICATION

PRESSURE RANGE	0-700 bar, psi, MPa or kgf/cm ²
TIME RANGE	0-99.9 seconds
PRESSURE	±1 bar
TIMING	±1 second
TRANSDUCER	±0.1% of full value
LINEARITY	±1 bar over full range
MEMORY	Data store/recall for injector type test plans
DISPLAY	LED, tick/cross symbols advise user of NOP and backleak pass/fail
COMPENSATION	Automatic compensation for variations in test oil temperature
CALIBRATION FLUID:	Shell Calibration Fluid 4113, now S9365

INSTALLATION DETAILS

ELECTRICAL SUPPLY

240v/1 phase/ 50Hz	110v/1 phase/ 60Hz
--------------------	--------------------

DIMENSIONS

HEIGHT	770mm	LENGTH	600mm
WIDTH	600mm	WEIGHT	66kg

Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

S400-5CR



GENERAL INFORMATION

The Merlin S400-5CR is a 700 bar manual hand lever operated injector tester used for testing and adjusting Common Rail and conventional automotive injectors. The S400-5CR incorporates the Merlin S500-2 and the S300-1 common rail trigger box. Designed and developed with the following functions:-

SPECIFICATION

PRESSURE RANGE	0-700 bar, PSI, MPa or kgf/cm ²
TIME RANGE	0-99.9 seconds
PRESSURE	±1 bar
TIMING	±1 second
TRANSDUCER	±0.1% of full value
LINEARITY	±1 bar over full range
MEMORY	Data store/recall for injector type test plans
DISPLAY	LED, tick/cross symbols advise user of NOP and backleak pass/fail
COMPENSATION	Automatic compensation for variations in test oil temperature
CALIBRATION FLUID	Shell Calibration Fluid 4113, now S9365
INJECTOR VOLTAGE	85—135v dc
PULSE-WIDTH RANGE	0.5—3.0ms
REPETITION RATE	0.75 – 14Hz
FAULT DETECTION	Short circuit, open circuit

INSTALLATION DETAILS

ELECTRICAL SUPPLY

240v/ 1 phase/ 50Hz 110v/ 1 phase/ 60Hz

FEATURES

- Opening pressure
- Chatter test (atomization)
- Spray pattern
- Seat leakage
- Back-leakage
- All controls and instruments are grouped together for operator convenience and include the latest Merlin S500-2 display monitor, flow control valve, light and fume extraction control.
- Left or Right handed operation with a robust construction.
- Illuminated spray chamber to give a good view of injector spray form. A variable rate air operated fume extraction system with optional perspex spray arrestor further assists the extraction operation.
- Standard tank features include sight level gauge, quick release filler cap and magnetic drain plug.
- Incorporates Merlin's S300-1 and Merlin's S500-2 (see pages 14-15)

DIMENSIONS

HEIGHT	770mm	LENGTH	600mm
WIDTH	600mm	WEIGHT	66kg

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

S400-5



GENERAL INFORMATION

The Merlin S400-5 is a 700 bar manual Hand lever operated injector tester used for testing and adjusting conventional automotive injectors. Designed and developed with the following functions:-

FEATURES

- Opening pressure
- Chatter test (atomization)
- Spray pattern
- Seat leakage
- Back-leakage
- All controls and instruments are grouped together for operator convenience and include the latest Merlin S500-2 display monitor, flow control valve, light and fume extraction control.
- Left or Right handed operation with a robust construction.
- Illuminated spray chamber to give a good view of injector spray form. A variable rate air operated fume extraction system with optional perspex spray arrestor further assists the extraction operation.
- Standard tank features include sight level gauge, quick release filler cap and magnetic drain plug.
- Back leakage timing errors are eliminated due to the absence of having to start and stop a remotely sited mechanical timer.
- Incorporates Merlin's S500-2 (see page 15)

SPECIFICATION

PRESSURE RANGE	0-700 Bar, PSI, MPa or kgf/cm ²
TIME RANGE	0-99.9 seconds
PRESSURE	±1 bar
TIMING	±1 second
TRANSDUCER	±0.1% of full value
LINEARITY	±1 bar over full range
MEMORY	Data store/recall for injector type test plans
DISPLAY	LED, tick/cross symbols advise user of NOP and backleak pass/fail
COMPENSATION	Automatic compensation for variations in test oil temperature
CALIBRATION FLUID	Shell Calibration Fluid 4113, now S9365

INSTALLATION DETAILS

ELECTRICAL SUPPLY

240v/1 phase/ 50Hz	110v/1 phase/ 60Hz
--------------------	--------------------

DIMENSIONS

HEIGHT	770mm	LENGTH	600mm
WIDTH	600mm	WEIGHT	66kg

Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

S425A



GENERAL INFORMATION

The Merlin S425A is a 700 bar air operated, automated injector tester used for testing and adjusting 2 stage (2 spring) and conventional injectors, before and after reconditioning. Features are basically the same as S400A with an additional high pressure circuit, pressure regulator, gauge and control valves required to operate second a stage opening pressure. Designed and developed with the following functions:-

SPECIFICATION

PRESSURE RANGE	0-700 Bar, PSI, MPa or kgf/cm ²
TIME RANGE	0-99.9 seconds
PRESSURE	±1 bar
TIMING	±1 second
TRANSDUCER	±0.1% of full value
LINEARITY	±1 bar over full range
MEMORY	Data store/recall for injector type test plans
DISPLAY	LED, tick/cross symbols advise user of NOP and backleak pass/fail
COMPENSATION	Automatic compensation for variations in test oil temperature
CALIBRATION FLUID	Shell Calibration Fluid 4113, now S9365

INSTALLATION DETAILS

ELECTRICAL SUPPLY

240v/1 phase/ 50Hz 110v/1 phase/ 60Hz

DIMENSIONS

HEIGHT	770mm	LENGTH	650mm
WIDTH	710mm	WEIGHT	66kg

FEATURES

- Opening pressure
- Chatter test (atomization)
- Spray pattern
- Seat leakage
- Back-leakage
- All controls and instruments are grouped together for operator convenience and include the latest Merlin S500-2 display monitor, flow control valve, light and fume extraction control.
- Nozzle opening pressure 1 and 2 are digitally displayed and stored to memory for print-out.
- Fully sealed air pump unit, robust construction, pneumatically operated via normal workshop air supply.
- Illuminated spray chamber to give a good view of injector spray form. A variable rate air operated fume extraction system with optional perspex spray arrestor further assists the extraction operation.
- Standard tank features include sight level gauge, quick release filler cap and magnetic drain plug. Incorporates Merlin's S500-2 (see page 15)

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

GENERAL INFORMATION



The Merlin S400 is a 700 bar manual hand lever operated injector tester used for testing and adjusting conventional automotive injectors. Designed and developed with the following functions:-

FEATURES

- Opening pressure
- Chatter test (atomization)
- Spray pattern
- Seat leakage
- Back-leakage
- All controls and instruments are grouped together for operator convenience and include, flow control valve, light and fume extraction control.
- Left or Right handed operation with a robust construction.
- Illuminated spray chamber to give a good view of injector spray form. A variable rate air operated fume extraction system with optional perspex spray arrestor further assists the extraction operation.
- Standard tank features include sight level gauge, quick release filler cap and magnetic drain plug.

SPECIFICATION

PRESSURE RANGE	0-700 bar, PSI, MPa or kgf/cm ²
PRESSURE	±1 bar
PUMP OUTPUT	1600/1800 mm ³ per stroke
DISPLAY	Analogue gauge
CALIBRATION FLUID	Shell Calibration Fluid 4113, now S9365
THREAD SIZE	M12 X 1.5
ADDITIONAL ADAPTORS	M12 x 1.5 split adaptor M18 x 1.5 1/4" BSP (Gardner Injectors) 9/16" x 18 UNF 5/8" x 18 UNF M14 x 1.5 (long reach)

INSTALLATION DETAILS

ELECTRICAL SUPPLY

240v/1 phase/ 50Hz	110v/1 phase/ 60Hz
--------------------	--------------------

DIMENSIONS

HEIGHT	770mm	LENGTH	600mm
WIDTH	600mm	WEIGHT	66kg

Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

S31



GENERAL INFORMATION

The Merlin S31 is a 400 bar portable hand lever operated injector tester. Used for testing and adjusting conventional automotive injectors. Designed and developed with the following functions:-

SPECIFICATION

PRESSURE RANGE	0-400 Bar, PSI (0-6000)
PRESSURE	±1 bar
PUMP OUTPUT	1600/1800 mm ³ per stroke
DISPLAY	Analogue Gauge
CALIBRATION FLUID	Shell Calibration Fluid 4113, now S9365
THREAD SIZE	M14 x 1.5
ADDITIONAL ADAPTORS	M18 X 1.5 M18 x 1.5 split adaptor 1/4" BSP (Gardner Injectors) 9/16" x 18 UNF 5/8" x 18 UNF M14 x 1.5 (long reach)

INSTALLATION DETAILS

ELECTRICAL SUPPLY

240v/ 1 phase/ 50Hz 110v/ 1 phase/ 60Hz

DIMENSIONS

HEIGHT	280mm	LENGTH	460mm
WIDTH	255mm	WEIGHT	24kg

FEATURES

- Opening pressure
- Chatter test (atomization)
- Spray pattern
- Seat leakage
- Back leakage
- Built-in perspex spray arrestor provides continuous circulation of test oil with minimum loss to atmosphere.
- Pump unit designed to give trouble free operation by the incorporation of a fuel pump type element, contained in a replacement cartridge.
- Pump output 1600/1800 mm³ per stroke. Trapped volume limited by design to satisfy injector manufacturers back leak test requirements.
- Lightweight die cast aluminium body with removable operating handle.

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information



GENERAL INFORMATION

The Merlin NR3B is an injector needle reconditioning machine capable of accurately grinding needle seat angles to manufacturer's settings. It is suitable for reconditioning all types of nozzles ranging from automotive to rail, traction, generating and marine applications.

FEATURES

- Independent direct motor drive to work-head, there is no flexible drive.
- Easily replaceable cartridge type extra precision grinding wheel spindle.
- Operative angles 44° to 106°.
- All handles grouped at front and side for ease of operation.
- All moving parts are adjustable to ensure and maintain accuracy.
- Optional cabinet is available, with ample storage space for laps, paste and equipment.

INSTALLATION DETAILS

ELECTRICAL SUPPLY

Wide range of voltages available 50 or 60Hz

SPECIFICATION

CAPACITY	Nozzle valves, laps up to 25mm diameter & 250mm long. (Use optional oversize V-blocks for diameters in excess of 7mm)
OPERATIVE ANGLES	44° to 106° with attachments 14° to 136°
ACCURACY OF ANGLE	1" of included angle
GRINDING HEAD	Instantly replaceable cartridge type extra precision grinding wheel spindle
MOTOR	1/3 hp (.25 Kw)
SPINDLE SPEED	4000rpm
WORK SPINDLE SPEED	150rpm
WORK-HEAD	Swivels through 180°. Rubber friction drive of needle valve, adjustable from spindle back plate. Slides and bearings are fully adjustable
ANGLE SETTING	Comprises V-block anvil mounting and dial gauge angle adjustment
CHUCK	0-13.5mm capacity. (General purpose, e.g. nozzle lapping)
MAGNIFIER/LIGHT:	Provides clear view of contact between the lap and grinding wheel

Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

AUTOLAP 200



GENERAL INFORMATION

The Merlin Autolap 200 is an injector nozzle seat lapping machine which dispenses with time, consuming hand lapping methods of nozzle reclamation.

SPECIFICATION

STANDARD ACCESSORIES 'S' size short & long stem nozzle adaptor
Long weight
Cutting fluid

OPTIONAL ACCESSORIES Adaptor 'T' Size Short Stem
Adaptor American Bosch/Bosch P
Adaptor 'V' Size
Adaptor 'U' Size
Adaptor Leyland/Gardner
Adaptor Gardner

ELECTRICAL Wide range of voltages available 50 or 60Hz

DIMENSIONS

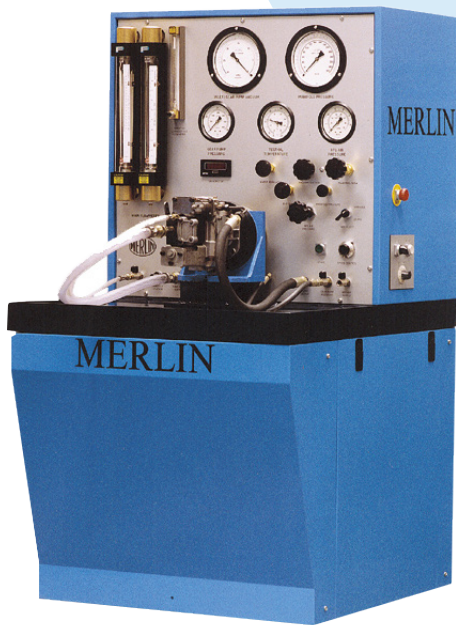
HEIGHT 775mm **LENGTH** 495mm
WIDTH 356mm **WEIGHT** 80kg

FEATURES

- A wide range of stone tipped laps are available to service most nozzle sizes from 'S' through to 'V'.
- These laps are positioned in a self-centring automatic chuck during the re-seating operation, on completion of which the chuck drive automatically disengages allowing nozzle removal for inspection purposes.
- A variable timer control allows for lapping periods of up to 7 minutes in 10 seconds steps.
- The timer control can be interrupted and re-started during any pre-set period.
- Stone tipped lapping tools can be re-dressed on the Merlin NR3B using dressing tool attachment.
- Nozzles can be tested on the Merlin S31 or S400 series injector test units.

Please contact **01772 694180** or **sales@merlindiesel.com** for more detailed information

PTG620-AC



The PTG 620-AC Test stand has been specifically designed to test the range of Cummins PT system fuel pumps, including the high flow types fitted to the 'K' series range of engines.

Robust compact design with all steel frame construction. Water cooled, internally heated with air supply.

Wide range of electrical voltages available to suit 50 or 60 Hz supply. All necessary accessories for the mounting of Cummins PT applications

Please enquire for full specifications: info@merlindiesel.com

CUMMINS P2/PTG FLOWPANEL

The Merlin P2 PTG is a self contained mobile flow-panel for the measurement of all Cummins PT type fuel pumps. Including 'K' series range of engines. Features as follows:

- Fuel flow
- Return
- Manifold pressure
- Gear pump pressure
- Gear pump vacuum
- Unit temperature

All necessary accessories for the mounting of Cummins PT applications.

Please enquire for full specifications: info@merlindiesel.com



Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

16328 INJECTOR COMPARATOR

The Merlin 16328 Cummins/ GM Injector Comparator is to test the fuel deliveries of Cummins PT injectors including 'K' series type.*

Also GM (Detroit) 53,71 & 93 standard and offset injector applications can be tested.

Developed with the following functions:-

- Integrated Cam box
- Hydraulic injector mounting
- Bottom fill/drain displacement system
- 300cc capacity graduate
- Temperature control

*'K' series requires additional accessories , not supplied.

Please enquire for full specifications: info@merlindiesel.com



S11A NOZZLE CLEANER



The Merlin S11A Nozzle cleaner is designed to remove lapping paste residue etc. which is present in injector nozzles after a reconditioning process.

The S11A will accept conventional nozzles ranging from the smaller 'R' size up to 'V' size and equivalents.

A self-contained bench mounted unit requiring no air or electrical supply with internal fume suppression.

Easy to maintain and service.

Please enquire for full specifications: info@merlindiesel.com

Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

BOOST CONTROL UNIT



T016-212 For setting injection pump boost pressure compensators

PNEUMATIC GOVERNOR TESTER



T016-210 For checking vacuum holding on all pneumatic type governors

S200 ADVANCE DISPLAY UNIT



MERLIN S200 AUTOMATIC ADVANCE AND CONTROL ROD OPENING MEASURING INSTRUMENT

- For automatic advance measurement of rotary pumps and control rod opening measurement on some in-line pumps. Suitable for DP210 & DP310 pumps.
- Selection for degree display of most popular rotary type fuel pumps
- Selection for mm measurement on rotary/in-line pumps
- Basic kit is supplied with DPA adaptor and two rods
- Additional adaptors are available for DPS, DP200, VE and in-line kit

TACHO / SHOTCOUNT KITS



T061-003

For Hartridge 800/875/1100 Series Test Benches

T061-004

For Bosch 385/390 Series Test Benches

- Dual Displays of RPM and Shotcount
- Push Button Mode Selection
- 1 To 9999 Countdown Display
- Display Accurate To ± 1 Rpm

Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

CLEANING TANKS



SOLVENT DEGREASING TANKS

P29/31 Electric motor driven flood wash gun

P29/32 Air motor pump driven flood wash gun

CLEANING TANKS



T040-001 Bench Mounted Wash Tank

T040-001CR As above but fitted with a 2 micron filter

Ideal for cleaning common rail components

WORKSHOP BENCH & CABINET



MWB 001 Workbench & cabinet

ULTRASONIC CLEANING TANKS



T041-515 Ultrasonic Cleaning Tank (15 ltr)

T041-520 Ultrasonic Cleaning Tank (20 ltr)

Basket & lid included.

Cleaning powder and additional sizes are available

Please contact **01772 694180** or sales@merlindiesel.com for more detailed information

USED EQUIPMENT



We offer a range of **USED** test stands & equipment at Merlin Diesel.

Check out our website www.merlindiesel.com or contact a member of our test equipment team on **01772 694180** and we can discuss your requirements.



We also offer a range of **NEW Hartridge** machines



Please contact **01772 694180** or sales@merlindiesel.com for more detailed information



PARTS DIVISION

Merlin Diesel Systems Parts Division supply diesel injection spare parts and complete units for Delphi, Bosch, Zexel, Denso, Yanmar, Stanadyne and Woodward applications. These include nozzles, fuel pumps, injectors, lift pumps, filters and glow plugs.

CONTACT DETAILS

T: +44 (0)1772 694130
F: +44 (0)1772 316375
E: parts@merlindiesel.com

TEST EQUIPMENT DIVISION

Merlin Diesel Systems Ltd
Bradkirk Place, Walton Summit Centre,
Preston, Lancashire PR5 8AJ England

T: +44 (0)1772 694180
F: +44 (0)1772 314565
E: sales@merlindiesel.com



Our test equipment division manufactures Merlin diesel fuel injection test equipment, cleaning tanks and engine valve re-facing machines.

The product range covers automotive, marine, rail and power generation applications and includes test equipment for electronic unit injectors, common rail injectors and electronic governed fuel pumps. Ultrasonic cleaning tanks, tachometers, service tools and test bench spares, plus a comprehensive selection of reconditioned test equipment complement the range.

www.merlindiesel.com

Distributed by:



DENSO

