

Thank you for purchasing a Sealey product. Manufactured to a high standard this product will, if used according to these instructions and properly maintained, give you years of trouble free performance.



**IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS & CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY AND WILL INVALIDATE THE WARRANTY. PLEASE KEEP THESE INSTRUCTIONS SAFE FOR FUTURE USE.**

## 1. SAFETY INSTRUCTIONS

### 1.1. PERSONAL PRECAUTIONS

- ✓ When using this analyser, please observe all normal safety rules concerning:
  - Protection against the dangers of electric current.
  - Protection of the analyser against misuse.
- ✓ Full compliance with safety standards can only be guaranteed if used with the test leads supplied. If necessary, they must be replaced with genuine Sealey leads with the same electronic ratings. Failure to do so will invalidate the warranty.
- ✗ **DO NOT** use leads if damaged or if the wire is bared in any way.

### 1.2. GENERAL SAFETY INSTRUCTIONS

- ✓ Familiarise yourself with the application and limitations of the analyser as well as the potential hazards. **IF IN ANY DOUBT CONSULT A QUALIFIED ELECTRICIAN.**
- ✓ Before commencing testing, follow instructions below and select the correct input sockets, function and range on the analyser.
- ✓ When the analyser is connected to a circuit, do not touch any unused analyser terminals.
- ✓ When the magnitude of the value to be measured is unknown beforehand, set the range selector to the highest value available.
- ✓ Before rotating the range selector to change functions, disconnect test probes from the circuit under test.
- ✗ **WARNING! Never perform resistance, transistor, diode or continuity measurements on live circuits.**
- ✓ Always take care when working with voltages above 35V DC or 25V AC rms. These voltages are considered a shock hazard.
- ✗ **WARNING! USE EXTREME CAUTION** when working with high voltages.
- ✓ Always keep fingers behind the probe barriers whilst measuring, and **DO NOT** use when hands are wet..
- ✓ Before attempting to insert transistors for testing, ensure that the test leads have been disconnected.
- ✓ Components should not be connected to the transistor socket when taking voltage measurements with the test leads.
- ✗ **DO NOT** test voltages above 600V AC or DC - the circuitry of the analyser will be destroyed.
- ✗ **WARNING! NEVER** connect the analyser to a voltage source / live circuit when the rotary switch is set to any other function apart from Voltage testing.
- ✓ **ALWAYS** discharge filter capacitors in power supplies and disconnect the power when making resistance or diode tests.
- ✗ **WARNING!** Voltage checks on electrical outlets can be difficult and misleading because of the uncertainty of connection to the recessed electrical contacts. Other means should be used to ensure that the terminals are not "live".
- ✗ **DO NOT** use the analyser in a potentially explosive atmosphere or where flammable material is present.
- ✓ **ONLY** operate the analyser when the back cover is in place and fastened securely.
- ✓ If any abnormal readings are observed, the analyser must be checked out by an authorised technician.
- ✓ **ALWAYS** turn off the analyser and disconnect the test leads, before opening the back cover to replace the fuse or battery.
- ✓ When not in use, store the analyser carefully in a safe, dry, childproof location out of direct sunlight. If storing for a long period of time, remove the battery. Storage temperature range: -20°C to 60°C.

**Note:** The warnings, cautions and instructions referred to in this manual cannot cover all possible conditions and situations that may occur. It must be understood that common sense and caution are factors which cannot be built into this product, but must be applied by the operator.

## 2. FEATURES

New generation 14-function, auto-ranging automotive diagnostic multimeter. Combination digital/bar-graph display gives accurate indication of component outputs. Large, easy to read high contrast display with bright, white backlight. Workshop-tough, durable bi-composite case with integral stand and auto power shut-off. High speed processing circuitry reads standard automotive parameters including duty cycle and pulse width making this tool ideal for testing fuel injection systems. Features auto-ranging, and data hold functions with overload protection on all ranges. Includes relative functions including Max/Min and Peak/Hold. Supplied with inductive coupler, test probes and thermocouple.

**Layout:** (Refer to fig.1.)

1. Hold Button
2. DC/AC/Ω/→/←/↻ Button
3. Range (2/4 stroke/no. cyl) Button
4. Max/Min Button
5. Peak Button
6. Back Light Button
7. Rotary Selector Switch
8. 20A Terminal
9. 400mA Terminal
10. V/Ω/Hz/%/RPM/CAP/ms/ Dwell/°C/°F Terminal
11. Com Terminal
12. Large LCD display
13. Test Probes
14. Thermocouple
15. Inductive Coupler

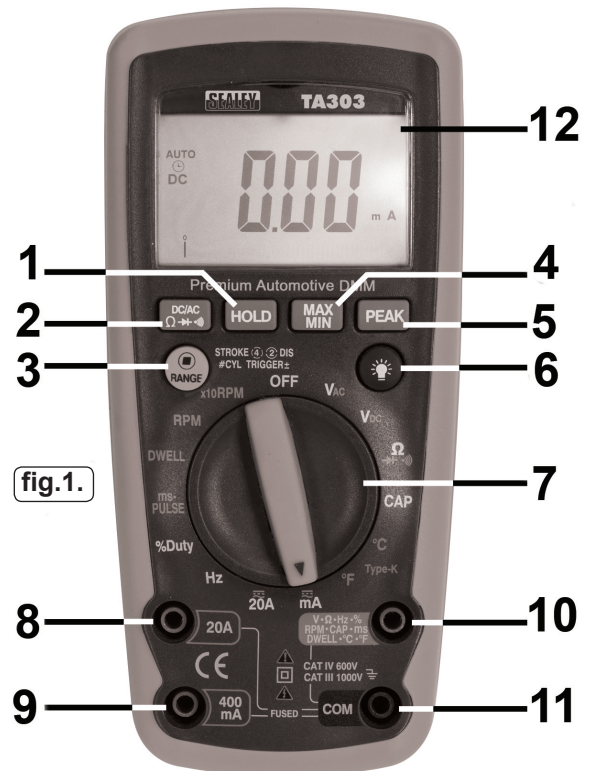
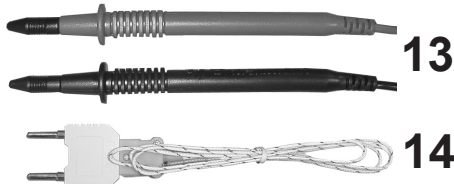
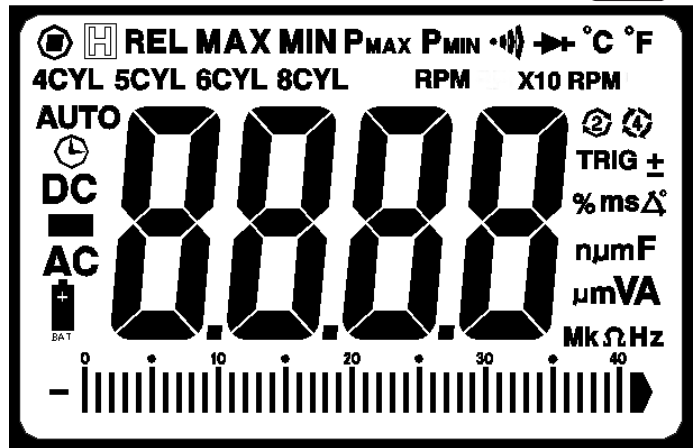


fig.1.

LCD DISPLAY SYMBOLS

fig.2.

GENERAL INSTRUMENT SPECIFICATION	
Instrument complies with	IEC 1010-1 EN61010-1
Insulation	Class 2, Double Insulation
Overvoltage category	CAT.III 1000V / CAT.IV 600V
Display	4000 counts LCD display with function indication
Polarity	Automatic, (-) negative polarity indication.
Over range	"OL" marks indication
Low battery indication	"BAT" is displayed when the battery voltage drops below the operating level
Measurement rate	2 times per second, nominal
Auto power off	Analyser automatically shuts down after approx. 30 minutes of inactivity
Operating environment	0°C to 50°C (32°F to 122°F) at < 70% relative humidity.
Storage temperature	-20°C to 60°C (-4°F to 140°F) at < 80% relative humidity.
For inside use, max height	2000m
Pollution degree	2
Power	One 9V battery (PP3)
Dimensions	170mm x 79mm x 50mm
Weight	366g



- MAIN LCD DISPLAY KILO (10 ) (OHMS) F **k**
- CONTINUITY MEGA (10 ) (OHMS) **M**
- LOW BATTERY HERTZ (FREQUENCY) **Hz**
- DIODE PERCENTAGE (DUTY RATIO) **%**
- DATA HOLD DEGREES FAHRENHEIT **°F**
- AUTO RANGING **AUTO** DEGREES CENTIGRADE **°C**
- ALTERNATING CURRENT OR VOLTAGE **AC** AMPS **A**
- DIRECT CURRENT OR VOLTAGE **DC** FARADS (CAPACITANCE) **F**
- NANO (10 ) (CAPACITANCE) **n** OHMS **Ω**
- MICRO (10 ) (AMPS, CAPS) **μ** VOLTS **V**
- MILLI (10 ) (VOLTS, AMPS) **m**

FUNCTION	RED TERMINAL	INPUT LIMIT
DC/AC Volts, Ohms, Continuity, Diode, CAP., Type-K TEMP., Hz, % Duty, Ms Dwell, RPM	VΩHz% etc.	600Volts AC DC
Current AC/DC 400mA	400mA	400mA DC/AC
Current AC/DC 20A	20A	*20A DC/AC

\* 20 Amp measurement for 30 seconds maximum.

ⓘ Ohms cannot be measured if voltage is present, ohms can be measured only in a non-powered circuit. However, the analyser is protected to 600 volts.

### 3. SPECIFICATION

#### DC Voltage (Auto Ranging)

Range	Resolution	Accuracy
400.0mV	0.1mV	± 0.5% of reading ± 3 digits
4.000V	1mV	
40.00V	10mV	± 1.5% of reading ± 2 digits
400.0V	100mV	
600V	1V	± 1.8% of reading ± 2 digits

Input Impedance: 10MΩ.  
Maximum Input: 600Vdc.

#### AC Voltage (Auto Ranging)

Range	Resolution	Accuracy
400.0mV	0.1mV	± 1.5% of reading ± 5 digits
4.000V	1mV	
40.00V	10mV	± 1.0% of reading ± 3 digits
400.0V	100mV	
600V	1V	± 1.5% of reading ± 3 digits
		± 2.0% of reading ± 4 digits

Input Impedance: 10MΩ.  
Frequency Range: 50 to 60Hz.  
Maximum Input: 600Vac rms.

#### Duty Cycle

Range	Resolution	Accuracy
0.5%~99.0%	0.1%	± 2.0% of reading ± 5 digits

Pulse Width: >100us, <100ms  
Sensitivity: > 5V rms  
Frequency width: 5Hz - 100kHz

#### Dwell Angle

Cylinder	Range	Resolution	Accuracy
4CYL	0~90.0°	0.1°	± 2.0% of reading ± 4 digits
5CYL	0~72.0°		
6CYL	0~60.0°		
8CYL	0~45.0°		

#### Frequency (Auto Ranging)

Range	Resolution	Accuracy
4.000kHz	1Hz	± 1.5% of reading ± 3 digits
40.00kHz	10Hz	
400.0kHz	100Hz	
4.000MHz	1000Hz	± 2.0% of reading ± 4 digits
40.00MHz	1kHz	

Sensitivity: >5V RMS MIN up to 4.0000MHz range.  
>15V RMS MIN on 40.00MHz range.

#### Capacitance (Auto Ranging)

Range	Resolution	Accuracy
4nF	1pF	± 5.0% of reading ± 7 digits
40nF	10pF	± 5.0% of reading ± 7 digits
400nF	0.1nF	± 3.0% of reading ± 5 digits
4uF	1nF	
40uF	10nF	
400uF	0.1uF	
4mF	0.001mF	±10.0% of reading ±10 digits
40mF	00.01mF	

#### Resistance (Auto Ranging)

Range	Resolution	Accuracy
400.0Ω	0.1Ω	± 1.2% of reading ± 4 digits
4.000kΩ	1Ω	± 1.0% of reading ± 2 digits
40.00kΩ	10Ω	± 1.2% of reading ± 2 digits
400.0kΩ	100Ω	
4.000MΩ	1kΩ	
40.00MΩ	10kΩ	± 2.0% of reading ± 3 digits

#### Diode test

Range	Resolution	Accuracy
1.0mA typical	1mV	± 5% of reading ± 15 digits

Open Circuit Voltage: 3.0V dc typical.

#### Temperature

Range	Resolution	Accuracy
-30°C~1000°C	1°C	± 3.0% of reading ± 5°C / 8°F (Meter only, probe accuracy not included).
-22°F~1832°F	1°F	

Sensor: Type K Thermocouple

Audible Continuity	
Audible threshold:	Less than 35Ω
Test Current:	< 1mA dc typical

## 4. OPERATION

- ❑ **WARNING!** Ensure that you read, understand and apply the safety and operational instructions in Section.1 before connecting the analyser. Only when you are sure that you understand the procedures, is it safe to proceed with testing.
  - ❑ **WARNING!** Risk of electrocution. high voltage circuits, both AC and DC are very dangerous and should be measured with great care. Remember to turn meter off when measurement is completed.
- Note:** If 'OL' (over limit) appears in the display during a measurement, the value exceeds the range that is selected. Change to a higher range.
- Note:** On some low AC and DC ranges, with the test leads not connected to a device, the reading may show a random fluctuating reading. This is normal and is caused by the high input sensitivity. The reading will stabilise and give an accurate measurement when connected to a circuit.
- 4.1. Mode Button (fig.1.2)**
- 4.1.1. Press the Mode button to toggle between:  
AC / DC Voltage  
AC / DC Current  
Resistance, Continuity and Diode measurements.
- 4.2. Range Button (fig.1.3)**
- The range is automatically selected in modes where Auto-ranging is stated above.
- 4.2.1. To manually select a range within a function, press the range button repeatedly until the desired range is selected.
- 4.2.2. To exit the manual range mode and return to auto-ranging, press and hold the range button for two seconds.
- Note:** If the range is too high, the meter will be less accurate.  
If the range is too low, the meter displays 'OL' (Over Limit).
- 4.3. Hold button (fig.1.1)**
- The data hold function allows the meter to freeze a measurement reading for later reference.
- 4.3.1. Press the data hold button once to freeze the reading in the display. The indicator "hold" will appear in the display.
- 4.3.2. Press the data hold button again to return to normal operation.
- 4.4. Peak Button (fig.1.5)**
- The peak measurement feature allows peak AC / DC Voltage or Current to be captured. The analyser can capture peaks as quick as 1 millisecond in duration.
- 4.4.1. Whilst in AC / DC Voltage or Current measurement mode, press and hold the Peak button until CAL is displayed. This procedure will zero the range selected.
- 4.4.2. Press the Peak button again and Pmax will display. Manual ranging is selected. The display will now update each time a higher peak occurs.
- 4.4.3. Press the Peak button again and Pmin will display. The display will now update each time a lower negative peak occurs.
- 4.4.4. Press and hold the Peak button and Pmax or Pmin will switch off and the analyser returns to normal mode.
- 4.5. Backlight Button (fig.1.6)**
- 4.5.1. To turn the backlight on, press the backlight button.
- 4.5.2. To turn the backlight off, press the backlight button again.
- 4.6. MAX/MIN Button (fig.1.4)**
- 4.6.1. Press the MAX/MIN button to enter the MAX/MIN recording mode. The display icon MAX will be displayed. Press it again and MIN will be displayed. The analyser will go to manual ranging and display and hold the maximum or minimum reading (as selected) and will update only when a new "max or min" occurs.
- 4.6.2. Press the MAX/MIN button again and a flashing "MAX MIN" will appear. The analyser will display the present reading, but will continue to update and store the max and min readings.
- 4.6.3. To exit MAX/MIN mode, press and hold the MAX/MIN button for 2 seconds.
- 4.7. AC and DC Voltage Measurement**
- 4.7.1. Insert the black test lead into the negative "COM" jack and the red test lead into the positive VΩHz% etc. jack.
- 4.7.2. Turn the rotary switch to the VAC or VDC position as required.
- 4.7.3. Touch the test probes to the circuit under test (black test probe to earth or negative terminal) and read the voltage displayed.
- Note:** **IMPORTANT:** Voltage must be measured in parallel (Red probe measuring circuit from power source).
- ❑ **WARNING:** When measuring voltage, be sure that the red test lead is in the jack marked VΩHz% etc. If the red test lead is in the 20A or 400mA jack, the user may be injured or the analyser damaged.

#### DC Current

Range	Resolution	Accuracy
40.00mA	10uA	± 1.5% of reading ± 3 digits
400.0mA	100uA	
20A	10mA	± 2.5% of reading ± 5 digits

Overload Protection: 0.5A/250V and 20A/250V Fuse.  
Maximum Input:400mA ac rms or 400mA dc on uA/mA ranges,  
20A ac rms or dc on 20A range.

#### AC Current

Range	Resolution	Accuracy
40.00mA	10uA	± 1.8% of reading ± 5 digits
400.0mA	100uA	
20A	10mA	± 3.0% of reading ± 7 digits

Overload Protection: 0.5A/250V and 20A/250V Fuse.  
Frequency Range: 50 to 60Hz  
Maximum Input: 40mA ac rms or 400mA dc on uA/mA ranges,  
20A ac rms or dc on 20A range.

#### Pulse Width

Range	Resolution	Accuracy
1.0~20.0ms	0.1ms	± 2% of reading ± 20 digits

#### RPM (Tach)

Range	Resolution	Accuracy	
RPM 4	600~4000RPM	1RPM	±2% of rdg ± 4 digits
	1000~12000RPM (x 10RPM)	10RPM	
RPM 2 & DIS	300~4000 RPM	1RPM	±2% of rdg ± 4 digits
	1000~6000RPM (x 10RPM)	10RPM	

Effect Reading: >600RPM

**Accuracy is given at 18°C to 28°C (65°F to 83°F) with less than 70% relative humidity.**

#### 4.8. AC and DC Current Measurement

**WARNING! Do not make current measurements on the 400mA and 20A ranges for longer than 30 seconds. Allow 5 minutes for cool down before commencing measurements again. Exceeding 30 seconds may cause damage to the meter and test leads.**

4.8.1. Insert the black test lead into the negative "COM" jack and the red test lead into either the Positive 400mA jack for currents up to 400mA (fig.1.9) or the Positive 20A jack for currents from 400mA to 20A (fig.1.8).

**Note:** If you are unsure of the current draw, select the 20A jack first.

4.8.2. Turn the rotary switch to the 20A or mA position.

4.8.3. Press the mode button to select AC or DC current.

**WARNING! Be sure to disconnect the power supply from the circuit.**

4.8.4. Touch the test probes in series with the circuit under test. Turn the power on to the circuit, and read the current displayed.

#### 4.9. Resistance Measurement

**WARNING! To avoid electric shock, disconnect power to unit under test and discharge all capacitors before taking any resistance measurements. Accurate resistance measurement cannot be taken if voltage is present. Only measure in non-powered circuits.**

4.9.1. Insert the black test lead into the negative "COM" jack and the red test lead into the positive  $V\Omega Hz\%$  etc. jack.

4.9.2. Turn the rotary switch to the  $\Omega \rightarrow \rightarrow$  position.

4.9.3. Press the Mode button (fig.1.12) to select the resistance  $\Omega$  mode.

4.9.4. Connect the test probes to the two ends of the Resistance circuit to be measured.

4.9.5. Read the measured value on the display.

4.9.6. If greater accuracy is required, press the Range button to select the desired range.

#### 4.10. Diode Test

**IMPORTANT:** Turn the power OFF to the test circuit

4.10.1. Insert the black test lead into the negative "COM" jack and the red test lead into the positive  $V\Omega Hz\%$  etc. jack.

4.10.2. Turn the rotary switch to the  $\Omega \rightarrow \rightarrow$  position.

4.10.3. Press the Mode button (fig.1.12) to select the Diode  $\rightarrow$  mode.

4.10.4. Connect the test probes to the two ends of the Diode to be tested, read the measured value on the display.

4.10.5. Reverse the test probes on the two ends of the Diode to be tested, read the measured value on the display again.

4.10.6. When measuring the voltage across a good Diode, it will be high in one direction and low in the other, A defective diode will read the same in both directions or read between 1.0 to 3.0 V. in both directions

#### 4.11. Continuity Test

**WARNING! When checking continuity, be sure to disconnect the power supply from the circuit.**

4.11.1. Insert the black test lead into the negative "COM" jack and the red test lead into the positive  $V\Omega Hz\%$  etc. jack.

4.11.2. Turn the rotary switch to the  $\Omega \rightarrow \rightarrow$  position.

4.11.3. Press the Mode button (fig.1.12) to select the continuity  $\rightarrow$  mode.

4.11.4. Connect the test probes to the two ends of the circuit to be tested.

4.11.5. If there is a complete circuit, the analyser will beep continuously. If the circuit is open, there will be no beep and the display will show OL (over limit)..

#### 4.12. Capacitance Measurement

**WARNING! When checking in-circuit capacitance, be sure to disconnect the power supply from the circuit and that the capacitors are fully discharged.**

In order to obtain an accurate reading, a capacitor must be discharged before measurement begins. The meter has a built-in discharge mode to automatically discharge the capacitor. In discharge mode, the LCD displays "DIS.C". However discharging through the chip is quite slow. We recommend that some other apparatus is used to discharge the capacitor.

4.12.1. Insert the black test lead into the negative "COM" jack and the red test lead into the positive  $V\Omega Hz\%$  etc. jack.

4.12.2. Turn the rotary switch to the CAP position.

4.12.3. Touch the test probes to the ends of the capacitor and read the capacitor value on the display.

**Note:** The bar graph is disabled in capacitance measurement mode. However, since the measurement time in the 4mF and 40mF ranges is quite long (3.75s and 7.5s respectively), the bar graph is used to display the time taken to accomplish the measurement.

#### 4.13. Frequency Measurement

4.13.1. Insert the black test lead into the negative "COM" jack and the red test lead into the positive  $V\Omega Hz\%$  etc. jack.

4.13.2. Turn the rotary switch to the Hz position.

4.13.3. Connect the negative test probe to ground.

4.13.4. Connect the positive test probe to the "signal out" wire of the sensor to be tested.

#### 4.14. Duty Cycle Measurement

4.14.1. Insert the black test lead into the negative "COM" jack and the red test lead into the positive  $V\Omega Hz\%$  etc. jack.

4.14.2. Turn the rotary switch to the %DUTY position.

4.14.3. Connect the negative test probe to ground.

4.14.4. Connect the positive test probe to the signal wire circuit.

#### 4.15. Temperature Measurement

**WARNING! To avoid heat damage, it is important to keep the analyser away from very high heat sources.** The life of the probe is also reduced if exposed to very high temperatures. Probe operating range is -58°F to 482°F.

4.15.1. Insert the type K thermocouple plug into the analyser using the negative "COM" jack and the positive  $V\Omega Hz\%$  etc. jack - ensuring the '+' symbol on the plug is inserted into the positive  $V\Omega Hz\%$  etc. jack.

4.15.2. Turn the rotary switch to either the °C or °F position as required.

4.15.3. Place the end of the thermocouple's tip on the object to be measured.

4.15.4. Read the temperature on the display.

#### 4.16. Pulse Width Measurement

4.16.1. Insert the black test lead into the negative "COM" jack and the red test lead into the positive  $V\Omega Hz\%$  etc. jack.

4.16.2. Turn the rotary switch to the ms-PULSE position.

4.16.3. Press the range button until the negative (-) trigger slope is displayed on the right of the display.

**Note:** The applied time for most fuel injectors is displayed on the negative (-) slope.

4.16.4. Connect jumper wires between the fuel injector and the harness connector.

4.16.5. Connect negative test probe to a good ground at the fuel injector. or the negative (-) vehicle battery terminal.

4.16.6. Connect the red test probe to the fuel injector solenoid driver input on the jumper cable.

4.16.7. Start the vehicle's engine. A pulse width in milliseconds should be displayed.

**Note:** Initially the reading will be 'OL', then the reading will descend and stabilise to the actual pulse width. If 'OL' remains, re-check the connections.

This can also be used to measure other automotive applications such as fuel mixture control solenoids and Idle air control motors.

#### 4.17. RPM Measurement

4.17.1. Insert the inductive pick-up leads into the analyser. Plug the black lead into the negative "COM" jack and the red lead into the positive  $V\Omega Hz\%$  etc. jack.

4.17.2. Turn the rotary switch to either the RPM or x10 RPM position as required ( for the X10 RPM range, multiply the displayed reading times by 10 to get the actual RPM).

4.17.3. Press the Range button (fig.1.3) to select through RPM 4 for 4-stroke, or RPM 2 for 2-stroke and DIS systems.

**Note:** RPM 4 for RPM of 4-stroke engines which have 1 ignition on every 4 engine strokes.

RPM 2 for RPM of DIS (Distributorless Ignition System) & 2-Stroke engines which have 1 ignition on every 2 engine strokes.

4.17.4. Connect the inductive pick-up to a spark plug HT lead. If no reading is received, unhook the clamp, turn it over and connect again.

**Note:** Position the pick-up as far away from the distributor and exhaust manifold as possible.

Position the pick-up to within 15cm of the spark plug, or move it to another plug HT lead if no reading or an erratic reading is obtained.

The inductive pick-up has an adjustable sensitivity switch that may also be used to correct an unstable reading.

Keep the analyser away from the engine to ensure a stable reading is obtained.



#### 4.18. Dwell Angle Measurement

Dwell angle is the number of degrees through which the distributor cam rotates while the breaker points are closed.

- 4.18.1. Insert the black test lead into the negative "COM" jack and the red test lead into the positive  $V\Omega Hz\%$  etc. jack.
- 4.18.2. Turn the rotary switch to the dwell position.
- 4.18.3. Press the Range button to select the number of cylinders (4, 5, 6 or 8 cylinders).
- 4.18.4. Connect the black test lead to the Ground terminal (-) on the vehicle's battery and the red test lead to the contact breaker points or the negative (-) terminal of the ignition coil.
- 4.18.5. When the vehicle's engine is started the Dwell angle will be displayed.  
Note: To reduce the dwell angle reading the points gap must be increased, to increase the dwell angle the points gap must be reduced.  
Refer to your vehicle manufacturer's handbook for detailed procedures on dwell settings and adjustments.

## 5. MAINTENANCE

- WARNING!** do not attempt to repair or service the analyser unless you are qualified to do so and have the relevant calibration, performance test, and service information. To avoid electrical shock or damage to the analyser, do not get water inside the case.
- 5.1. Periodically wipe the case with a damp cloth and mild detergent. Do not use solvents.
- 5.2. Turn the analyser off when not in use and remove the battery if stored for a long period of time.
- 5.3. Do not store the analyser in a place of high humidity or high temperature
- 5.4. **Replacing The Battery**
  - WARNING!** To avoid electric shock, disconnect the test leads from the analyser before removing the battery cover.
  - 5.4.1. When the battery becomes exhausted or drops below the operating voltage, the battery symbol will appear in the left hand side of the display.
  - 5.4.2. Open the battery cover by loosening the two screws using a small cross head screwdriver.
  - 5.4.3. Remove the old battery and insert the new one, observing the correct polarity.
  - 5.4.4. Replace the battery cover and secure with the two screws.
  - WARNING!** To avoid electric shock, do not operate the analyser until the battery cover is secured in place.
- 5.5. **Replacing the Fuses**
  - WARNING!** To avoid electric shock, disconnect the test leads from the analyser before accessing the fuses.
  - 5.5.1. Open the rear cover by loosening the six screws using a small cross head screwdriver. Gently ease the rear cover off.
  - 5.5.2. Remove the old fuse from its holder by gently pulling it out. Take care not to touch any other internal parts of the analyser.
  - 5.5.3. Install the new fuse into its holder by gently pushing it in.  
Note: Always use a fuse of the correct size and value.  
**Fuse Ratings:**  
20A/250V, 6.3 x 32mm fast acting ceramic type for the 20A range.  
0.5A/250V, 5 x 20mm fast acting ceramic type for the 400mA range.
  - 5.5.4. Replace the rear cover and secure with the six screws.
  - WARNING!** To avoid electric shock, do not use the analyser until it has been fully re-assembled.

## 6. PARTS

Item	Part No.	Description
1.	TA302.01	TEMPERATURE PROBE
2.	TA302.02	INDUCTIVE PICK-UP
3.	TA302.03	TEST LEADS
4.	TA302.04	WATER PLUG

### Environmental Protection.



Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycle centre and disposed of in a manner which is compatible with the environment.



When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.

### Battery Removal.

**WARNING!** To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery cover. Disconnect the test leads from the meter.

See Section 5.4 for battery removal.

1. Remove and dispose of batteries according to local authority guidelines.
2. Under the Waste Batteries and Accumulators Regulations 2009, Jack Sealey Ltd are required to inform potential purchasers of products containing batteries (as defined within these regulations), that they are registered with Valpak's registered compliance scheme. Jack Sealey Ltd's Batteries Producer Registration Number (BPRN) is BPRN00705

**NOTE:** It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

**IMPORTANT:** No liability is accepted for incorrect use of this equipment.

**WARRANTY:** Guarantee is 12 months from purchase date, proof of which will be required for any claim.

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