



## User Manual

### CLT1 – Hand Held A/C Test - Module for externally controlled A/C Compressors

Dear Customer,

Thank you for making the decision to purchase the **CLT-1** from COMPRESSORTECH.

The **CLT-1** can be used for testing all Clutch Less Direct Drive Externally Controlled compressors simply all year round, no matter how Low or High the ambient Temperature.

The CLT-1 has been designed By “ **Technicians For Technicians** “

#### Technical Application;

The **CLT1** will provide a direct power supply to the Electronic control valve on all Clutch Less Direct Drive externally controlled A/C Compressors without having to integrate the vehicles electrics. Its simple, easy to use format, will greatly save valuable A/C Diagnostic time. The **CLT-1** allows you to expand your A/C Diagnostic Skills.

#### CLT-1 Kit Options:

##### Pt No: CLT1

- CLT1 Test- Unit with User Manual
- Cable with clamps for 12v Battery Power Supply
- Universal Cable to connect the Control valve
- Shipped in a rugged plastic box

##### Pt No : CLT-SET-1

- CLT1 Test- Unit with User Manual
- Cable with clamps for 12v Battery Power Supply
- Universal Cable to connect the Control valve
- Shipped in a rugged plastic box
- Hook with a strong magnet
- Cable with connector for **VAG - Group**
- Cable with connector for Compressor from Denso
- Simulator for connecting on the car
- Digital Measuring unit for measuring signals from the car.

##### Pt No : CLT-SET-2

- CLT1 Test- Unit with User Manual
- Cable with clamps for 12v Battery Power Supply
- Universal Cable to connect the Control valve
- Shipped in a rugged plastic box
- Hook with a strong magnet
- Cable with an connector for **VAG- Group**
- Cable with an connector for Compressor from Denso
- Simulator for connecting on the car



## CLT-1 Overview;



1. Button to increase the compressor voltage
2. Button to decrease the compressor voltage
3. LED indicating short-circuit or interruption at the electromagnetic valve
4. LED indicating excess high power input of the electromagnetic valve
5. 8 LED Tachometer display for changing control valve capacity, - / +

### Technical Data:

- Voltage supply: 11 to 15 Volt
- Temperature to use -10°C to 40°C
- Storage temperature -20°C to +50°C
- Power consumption max. 3A
- Drives the compressor from 3 to 100%
- Weight: ca. 600 Gram
- CE and EMV approved



## CLT-1 Connections



A.) 2 Pin plug port for the Compressor control valve harness.

B.) 3 pin Plug for the vehicle 12v battery power supply.

### General Information:

- Please **read the User Manual** prior to connecting to the Vehicle A/C Compressor.
- The Technician using the **CLT-1** must have good working knowledge and A/C Diagnostic trouble shooting skills prior to using the **CLT-1**
- Ideal testing conditions would be a temperature of +15°C, but the **CLT-1** can operate below this temperature.
- Warranty is not covered by Incorrect use and application of the **CLT-1**



## Preparation and set up of the CLT1

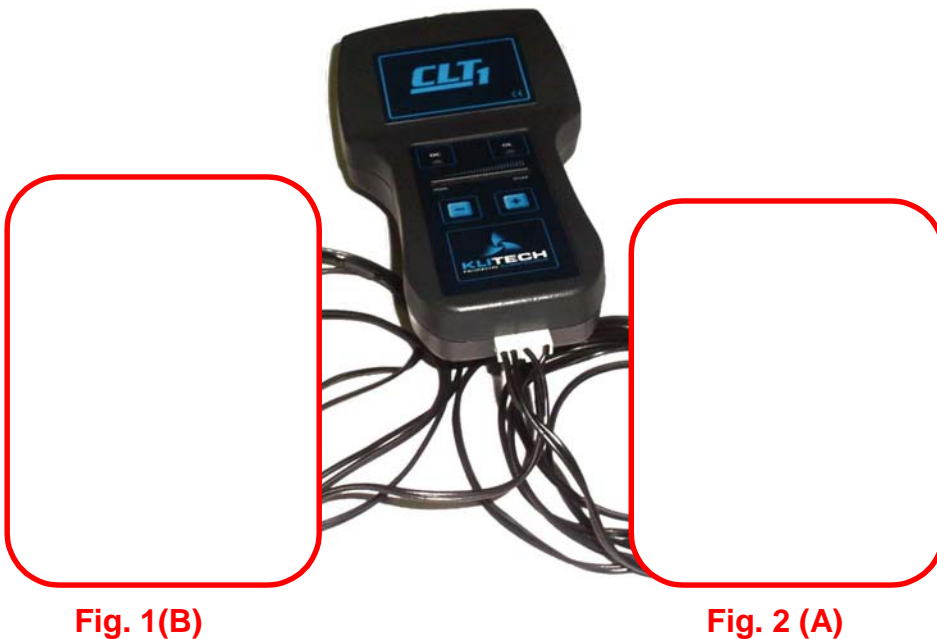


Fig. 1(B)

Fig. 2 (A)

**1.) Fig.1 (B) 3-pin port 12v Battery supply cable Harness**

**2.) Fig. 2 (A) 2-pin port Compressor Control Valve harness 3-Options of Control Valve connector Harness available.**

This illustration shows the combination with the cable of the VAG - group.

**I.) Universal 2-pin Cable Harness: Pt No: CLTUNI**

(Included in Standard Pt No-CLT-1 Kit)

**II.) VAG-Group Harness: Pt No: CLTVAG**

Specially Order or included in **CLTSET1 & CLTSET2**

**III.) Denso Control Valve Harness; Pt No; CLTDEN**

Special Order or included in **CLTSET1 & CLTSET2**

**IV.) Digital Measuring Unit, Pt No; CLTMU-0170**

For measuring the signal output from the vehicle harness

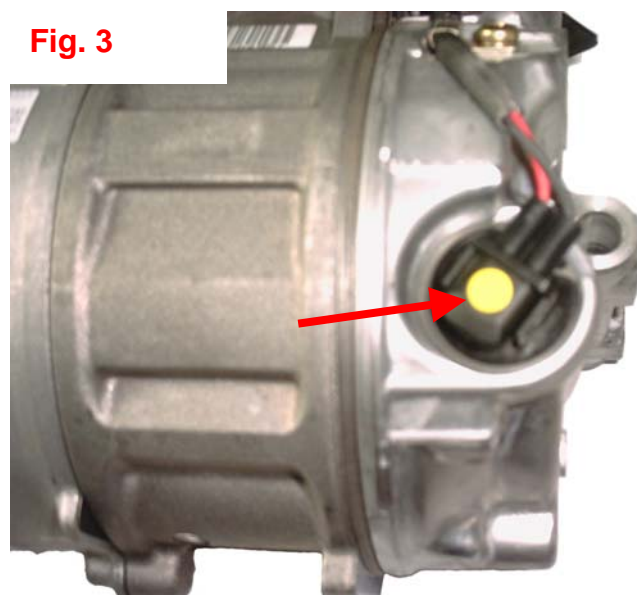
Or included in **CLTSET1**

**V.) Dummy Simulator unit, Pt No; CLTSIM**

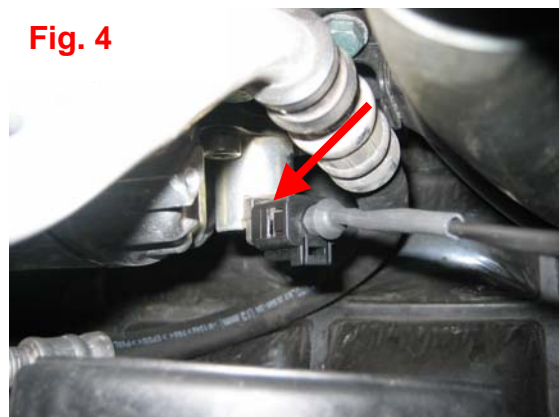
Plugs into Vehicle harness, while carrying out CLT-1 Tests, prevents faults codes logging on Vehicle Electronics memory system.

## Preparing the CLT-1 prior to connecting to the vehicle:

- Check Vehicle has correct Charge weight in A/C System
- The vehicle should be at operating temperature.
- The operation of the air conditioning system is to be set on maximum cold.
- Set the blower fan set on maximum speed.
- The airflow should be positioned and set at face vent level, and position a Temperature Probe in the centre allowing you to measure the air outlet temperature.
- Connect a manifold Set or A/C Service station to allow you to view the operating Low & High side system pressures.
- Disconnect the plug on the A/C Compressor Control Valve or Control Valve Harness, and connect the appropriate **CLT-1** Universal, VAG-Group or Denso Harness.
- 



**Fig. 3**



**Fig. 4**

**Fig. 3** Shows you the point of connection for a **Denso** Compressor

**Fig. 4** Shows you the point of connecting in a VW Touran with a **Sanden** compressor.

## General Advise:



Observing the **correct polarity** when connecting the **CLT-1** Control valve Harness, And 12v Battery power supply should be maintained for the protection of the Test equipment and the compressor.

### Connecting to the Vehicle Battery

Attach the 12v Battery Clamps to the vehicle Battery observing the **Correct Polarity** connections, otherwise the **CLT-1** Unit will be **damaged**.



That means:

**Red** = positive = plus = 30

**Black** = negative = ground = 31

- To prevent storing an error code in vehicle electronics fault code memory system, use the simulator (Pt No: **CLTSIM**). Connect it to the Original factory Control Valve Harness Block Connector, while you are Carrying out tests with the **CLT-1**.



The **CLTSIM** has a universal 2-pin connector that will fit all vehicle Control valve harness applications. Single wire vehicle harness should be connected to ground 31 on the simulator box. The **CLTSIM** can be ordered separate, and is included in kits **CLTSET1 & CLTSET2**



## Test procedure :

**CLT1 Double click** the -minus button until the unit switches off. This is indicated by the LED Tachometer display no longer being illuminated -zero compressor capacity load.

- Start & run the Vehicle, then increase the idling speed to (~1500 U/min)
- Proceed to Double Click the + Plus button stage by stage, (**allowing a 15-second gap between each stage**). This will start to load the Compressor control valve mechanical capacity. Take care to observe the vehicle A/C operating Low & High side pressures are changing accordingly - on your manifold gauges.
- Care should be taken, as the High Side pressure can increase during Testing with the **CLT-1**, and the Quick start-up operation of Vehicle's Control Fans will interrupt correct testing of the A/C Compressors control Valve.
- Always Observe the A/C systems Temperatures & Pressures while Testing with the **CLT-1**.

Setting on CLT1	Low Pressure	Outlet Temp.
Maximum	1,6 +/- 0,5 bar	0°C +/- 3°
Minimum	3 +/- 0,7 bar	10°C +/-3°

It should be noted that the tolerances are compared against Ambient Temperature vs. Compressor Load conditions, and must be evaluated in Minimum & Maximum stages while testing the compressor. The changes on the low-pressure side should be similar to the change of the settings on the **CLT1**.

## Measuring of signals in the Vehicle Electronics:

If you want to measure signals from the car you should choose the Digital Measuring instrument. **Pt No CLTMU-0170.**

- For this operation please connect the cables direct to the Original factory Control Valve Harness Block Connector, while you are Carrying out tests with the **CLT-1** and the Digital Measuring unit **Pt No CLTMU-0170.**



Choose the selection "Hz-%Duty"

Observe & measure the frequency.

The results should be between 300 and 500Hz.

Through press the key "hz - %" you can now measure the pulse width. This should be between 20 and 90%, depending upon performance requirement.

The measuring wires contact at "COM" and "Hz - %"

For further information – see the separate user manual for this unit.



Trouble Shooting possible electrical disturbances when connected to the Compressor electronic control valve:



If the "OC" Lamp illuminates:

Illumination of the "OC" Lamp indicates:

- Poor Control Valve connection
- Control Valve complete interruption (open circuit)
- Control Valve with short-circuit (less than 3 ohm)

If the "OL" Lamp illuminates:

Illumination the "OL" Lamp indicates:

- Power consumption of the valve is too high

## Compressortech UK Ltd

66-102 Cherrywood Road  
Bordesley Green  
Birmingham  
United Kingdom  
B9 4UD

Tel: +44 (0)121 766 5006

Fax: +44 (0)121 772 8397

Email: [sales@compressortech.co.uk](mailto:sales@compressortech.co.uk)

Web: [www.compressortech.co.uk](http://www.compressortech.co.uk)