

## HAND HELD TOOL FOR DIRECT DRIVE CLUTCHLEES COMPRESSORS CLT1



### **CLT1 – TEST – TOOL FOR EXTERNAL OPERATED COMPRESSOR**

Dear Costumer,

You have done a selection to buy a technical highlight. We wish you a lot of fun and success with this unit.

### **TECHNICS**

The CLT1 is a Unit to drive a normally external steered clutch less compressor without the electronic of the car. This unit is the issue to test a modern compressor simply. It helps you to find the roght direction of trouble shouting. That means: You can select the right way to find a problem on a modern system of an A/C system with these compressors. A further positive aspect is to use this unit for servicing A/C systems in times with a low outside temperatures. You can operate and



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check the compressor in any conditions.

## **GENERAL INFORMATION**

Please read this user manual carefully to do no mistakes during the test. It helps you to save the test unit and the compressor.

The technical guy has to have A/C knowledge.

This unit is replacing non special knowledge.

Perfect would be a temperature up to +15°C, but it is not necessarily.

For damages due to of not correct using CTR Group is not responsible.

## **TECHNICAL DATA**

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

## **ART OF SHIPMENTS**

- ⊗ CLT1 Test – Unit with user manual
- ⊗ Cable with clamps for Power Supply
- ⊗ Universal Cable to connect the magnetic valve
- ⊗ Shipped in a strong 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



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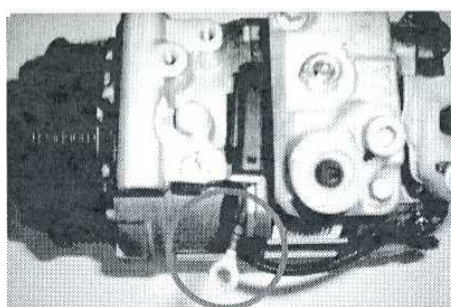
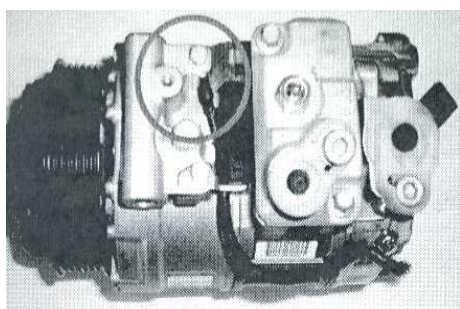
## **SUPPLEMENT TO OPERATING MANUAL CLT1 – COMPRESSOR TESTING UNIT**

APPLIES TO ALL TYPES OF CONNECTIONS THAT HAVE THE EARTH DIRECTLY ON THE COMPRESSOR HOUSING.

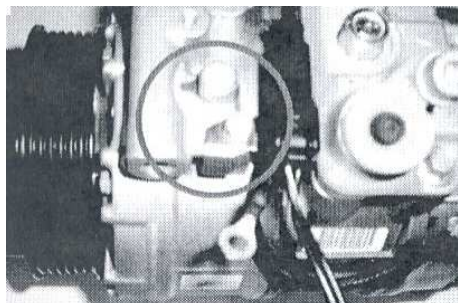
### **CONNECTING PROCEDURE**

#### **1. CONNECTING OPTION:**

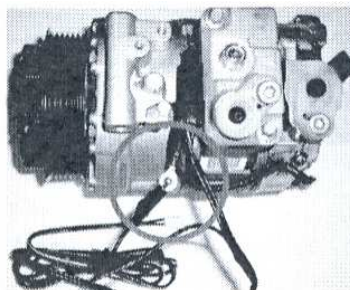
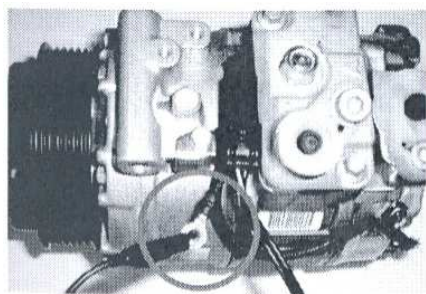
DISCONNECT THE EARTH FROM THE COMPRESSOR HOUSING.



ALSO REMOVE THE OE COMPRESSOR CABLE.



CONNECT THE ALLIGATOR CLIP TO THE COMPRESSOR EARTH CABLE.



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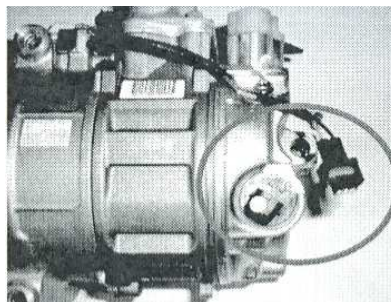
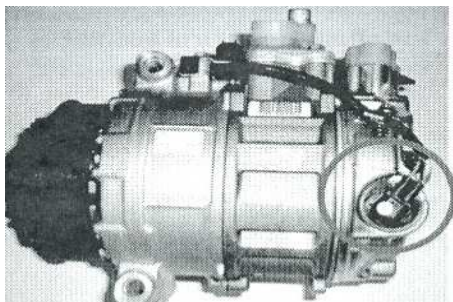
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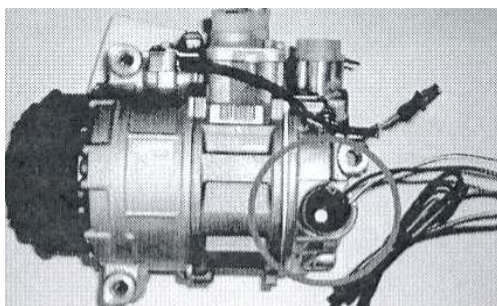
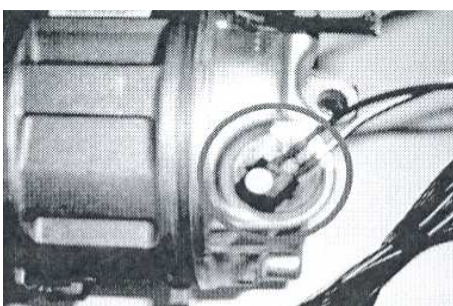
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## 2. CONNECTING OPTION

REMOVE THE DISPLACEMENT CONTROL VALVE CONNECTION ON THE COMPRESSOR (NOT ALWAYS REMOVABLE).



CONNECT THE CLT UNIVERSAL CABLE TO DISPLACEMENT CONTROL VALVE VIA PIN 1 AND PIN 2.



**ATTENTION:**  
**DO NOT CONNECT CONTROL LEADS TO THE VEHICLE EARTH!!!**

**IMPORTANT:**  
NEVER ALLOW CLT CONTROL LEADS TO COME INTO CONTACT WITH THE VEHICLE EARTH !!!

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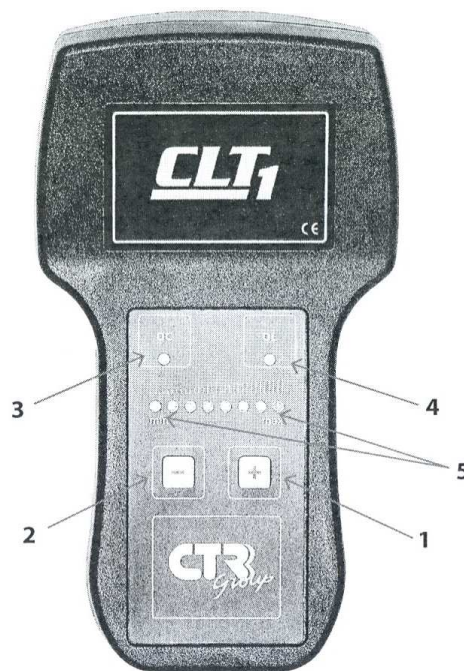
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## UNIT DESCRIPTION



1. Button to increase the compressor power
2. Button to decrease the compressor power
3. Flare for short-circuit or interruption at the electromagnetic valve
4. Flare for to hight power input of the electromagnetic valve
5. Announcement for handling capacity min. = left and max. = right



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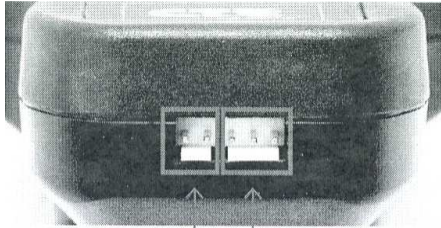
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## CONNECTION ON THE CLT1



B) Plug with 3 pins for the current supply of a 12V automotive battery to avoid connecting mistake

A) To attach plug with 2 pins for the control line over at the compressor

## PREPARATION AND START-UP OF THE CLT1



1) Current supply cable connect with the plug planned for it at the equipment on connector with 3 pins

2) Die Steuerleitung für den Kompressor verbinden Sie mit dem dafür am Gerät vorgesehenen Stecker 2 polig.  
Dazu stehen Ihnen 3 verschiedene Leitungen (siehe Punkt Lieferumfang) zur Verfügung.  
Diese Abbildung zeigt die Kombination mit dem Kabel der VAG Gruppe.

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- a) Kabelsatz univerzal  
für die Möglichkeit universell direkt am Pin anzuschließen
- b) Kabelsatz für die VAG-Gruppe  
Für den Anschluss an Modellen der VAG Gruppe
- c) Kabelsatz für Denso Kompressoren  
Für den Anschluss an Modellen von Mercedes, BMW und diversen

## PREPARING WORK ON THE VEHICLE

The vehicle should be at operating temperature.

The operation of the air conditioning system is to set on maximum cold.

Fan to set on maximum speed and the setting of the air flow have to be thru the air ducts at the instrument panel. This is also the measuring point for the air outlet temperature

A measuring system (A/C Service station is optimal) for the pressure has to be attached to the air conditioning system.

To measure the out let temperature use a thermometer.

Disconnect the plug direct on the compressor and connect the line from the CLT1.

Should the plug not fit – use the appropriate adapter or the universal set of cables.

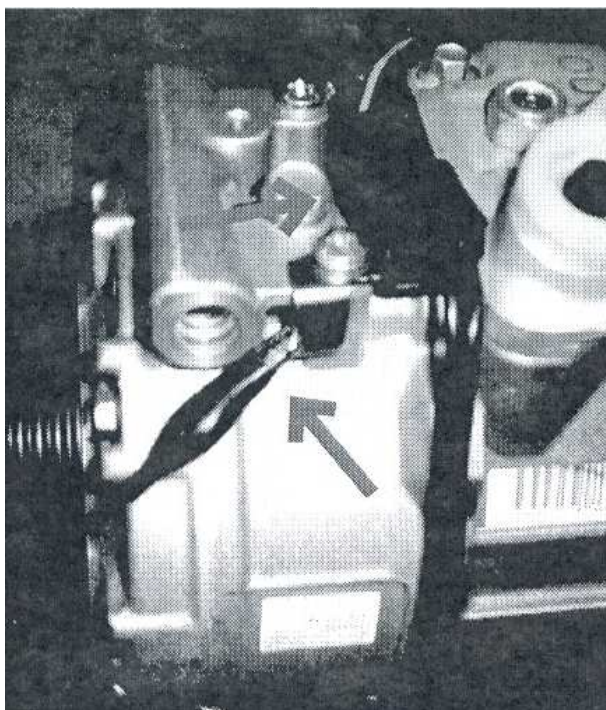


Image: Shows you the point of connection at a Denso Compressor

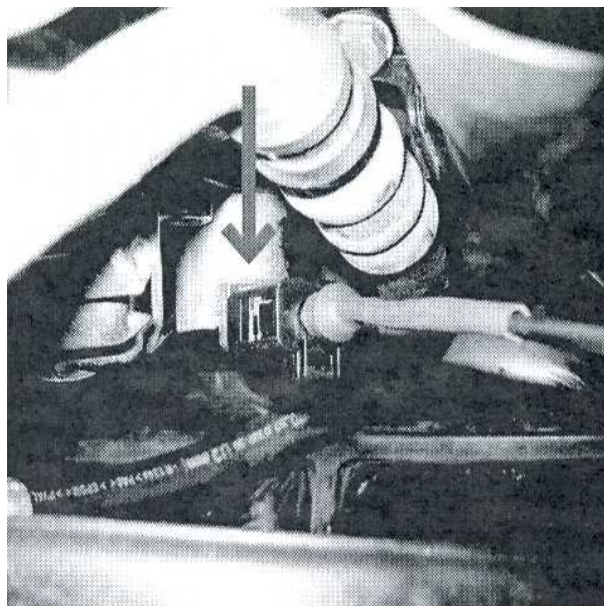


Image: Shows you the point of connection in a VW Touran with a Sanden compressor

### General reference:

The polarity when connecting the electromagnetic control valve does not have relevance. However a clear polarity should be ascertainable should for the protection of the equipment and the compressor these be kept.

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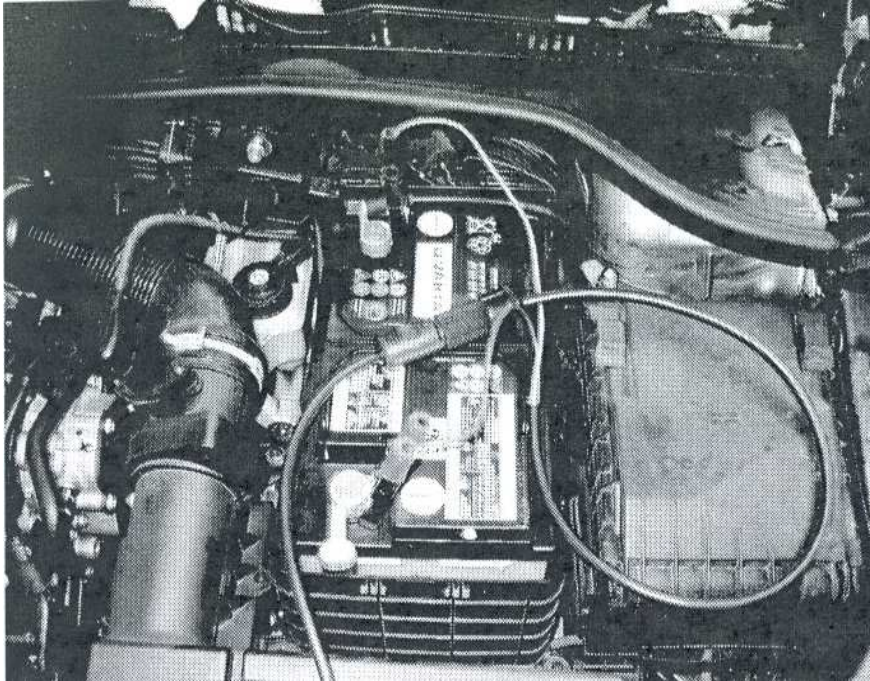
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## CONNECTION ON THE VEHICLE BATTERY

ATTACH NOW THE CLAMPS OF VOLTAGE SUPPLY TO THE AUTOMOTIVE BATTERY. PAID ATTENTION: KEEP ABSOLUTELY TO THE POLARITY.

THAT MEANS:



RED=POSITIVE  
=PLUS  
=30

BLACK=NEGATIVE  
=GROUND  
=31

## TEST PROCEDURE

CLT1 over the minus key by repeated operate switch off. You recognize this by the fact that at the bar for the announcement no lamp shines for the mechanical handling capacity.

Vehicle to run let bring and on constant, increased idling speed (~1500U/min.)

Over manipulation of the pluses key stage for stage of the mechanical handling capacity increase.

Between each stage wait for some seconds (~15 seconds) and control the pressures of the air conditioning system.

Between each increase control whether the compressor the stages promotes accordingly.

Keep always the pressures in your eye. Unfavourable operating conditions do not lead a starting of the condenser fans to an enormous rise of high pressure by that!



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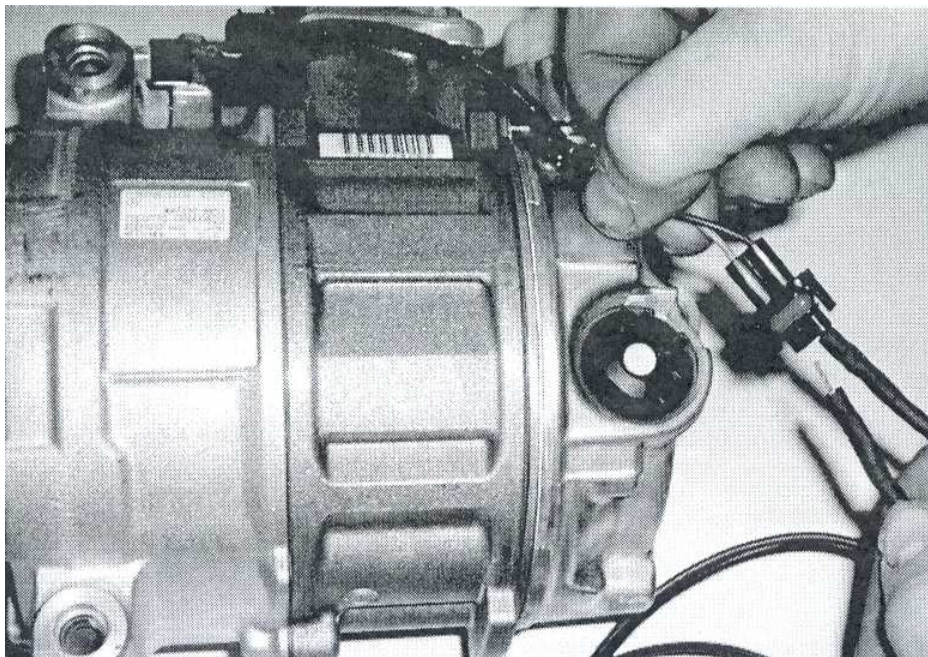


## CHECK TEMPERATUR AND PRESSURES

SETTING ON CLT1	LOW PRESSURE	OUTLET TEMPERATURE
MAXIMUM	1,6±0,5 BAR	0°C ± 3°C
MINIMUM	3,0±0,7 BAR	10°C ± 3°C

It is to be noted that the tolerances a result from the thermal loads of the ambient. Between the minimum and maximum values the compressor must to be regulated in stages. The changes on low pressure side should be similar to the change of the settings on the CLT1.

To prevent storing error in vehicle electronics, use the simulator. Connect it with the free connection.



The simulation box simply contact with the free plug of vehicle electronics. For that use the universal pins on the simulations box.

The polarity is with the simulation box without relevance. For Vehicles with only one line you connect the second line of the simulation box with ground (31).



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## POSSIBLE ELECTRICAL DISTURBANCES OF THE ELECTRONIC SINGLE SOLENOID VALVE



If the lamp, „**OL**“ shines:  
Shining the lamp OL shows you:

Too high power consumption of the valve

If the lamp, „**OC**“ shines:  
Shining the lamp OC shows you:

Not well connected valve  
Valve with complete interruption  
Valve with short – circuit  
(smaller than  $3\Omega$ )

