Electrocooler
Electric A/C System
for your
Porsche 964/993
Issue 1.3



Classic Retrofit: ElectroCooler 964/993 Install Manual © 2026 Issue 1.3

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Introduction

Welcome to the installation manual for the Electrocooler Air Conditioning system for the Porsche 964 and 993 series of cars.

Electrocooler provides a lightweight and non-invasive way of adding air conditioning to your 964/993 without the need to use an engine driven compressor. Our AC systems are currently installed in hundreds of classic and modern cars worldwide. We are suppliers to Singer Vehicle Design, Tuthill, Theon, and other high quality car builders.

As of April 2026 for the latest revision of this manual, this 964 and 993 specific A/C system has been installed in over 300 cars across the world, including all models of 964 and 993, in fact some of the pictures in this manual are from an early install in a 964RS - as can be seen from the wonderful Rubystone Red paint and lack of underseal.

We hope that this manual is concise and clear but if you have any difficulty or suggestions on how to make the manual better, please contact us by email: support@classicretrofit.com

You might also like to refer to our technical forum (on our website) for other queries: Technical Forum



ElectroCooler Kit - what's included?

The kit you have purchased contains the following parts:

- Electric A/C compressor and control ECU
- Condenser, fan, and shroud assembly
- Drier
- Lightweight narrow wall hose set with custom fittings
- ECU wiring loom and sundries
- Kits are supplied with an evaporator, or without an evaporator
- **Please see full breakdown of parts on the following pages 5 and 6**

We don't provide:

- 'Oetiker' crimp pliers / pincers (available in our web-shop)
- Rubber grommets (for routing hoses and wiring)

Tools and sundries needed:

- Good quality set of allen keys
- Standard wrenches and socket set
- Side cutters
- Small selection of male and female spade terminals (6.8mm)
- Crimp tool for above
- Selection of cable ties (300mm) for general use
- P clips (for securing hose)
- Hose cutters (although a clean set of garden shears are excellent for this purpose)

Please note that 911s are METRIC. All our fastenings are METRIC.
Please don't use Imperial tools and fastenings on these cars or we will report you to the Porsche Gods!.

ElectroCooler Kit – with hi performance evaporator

Bill Of Materials - 964/993 A/C system WITH HI PERFORMANCE EVAPORATOR	
[20476] CONDENSER - '996 Style' condenser	2 pcs
[20345] COMPRESSOR- 12V - Standard	1 pcs
[20530] #6180 deg female	1 pcs
[20362] A/C Shroud with Fan	1 pcs
[20350] ECO Standard hose set	**1 pcs**
[21234] Hose - #8	4 m
[21233] Hose - #6	4 m
[21075] Cable Tie - 300mm x4.6mm	3 pcs
[20348] 911 A/CFittings box	**1 pcs**
[20385] AC Drier - 911	1 pcs
[20384] Horseshoe Drier Bracket	1 pcs
[20156] M6 x 16mm Hex Socket Button Head -Stainless Steel	4 pcs
[20158] M8 ×16mm Hex Socket Button Head -Stainless Steel	4 pcs
[20355] 964 Bracket Box	**1 pcs**
[20409] Wiring- BatteryCable 911	1 pcs
[20469] 964 Front Left Condenser Air Baffle	1 pcs
[20471] 964Condenser rear lower mount	1 pcs
[20470] 964Condenser front mount	1 pcs
[20468] 964Compressor mount plate	1 pcs
[21175] M8 ×110mm Hex Socket Button Head Stainless Steel	3 pcs
[21187]M8x25mm Hex Socket Button Head Stainless Steel	2 pcs
[21177] M6 x 20mm Hex Socket Button Head A2Stainless Steel	2 pcs
[121188] M6 x12mm Hex Socket Button Head Stainless Steel	2 pcs
[21077] M8Nylon Lock Hex Nut Stainless Steel	2 pcs
[20748] M8 ×16.0x 1.6mm Nylon Washers Black	3 pcs
[20747] Nylon Shoulder Washer M8x12mm	3 pcs
[21189] M8 Half Hex Nut Stainless Steel	1 pcs
[21075] Cable Tie - 300mm x4.6mm	2 pcs
[21174] Dual Fittings Kit	**1 pcs**
[20328] Pad Fitting E	2 pcs
[20522] Clip 8mm (metal)	4 pcs
[21171] Loose Fan power cable	1 pcs
[21233] Hose - #6	4 m
[21075] Cable Tie - 300mm x4.6mm	1 pcs
[20343] ECO Wiring Box - v1.20	**1 pcs**
[20344] ECO Wiring harnesses	1 pcs
[20396] ECO-Wiring-911-Loose electrical items	1 pcs
[22991] Rubber Terminal Cover - Red	1 pcs
[20320] Heavyduty12V Contact Relay- SW60-38P (M6Stud)	1 pcs
[23014] Heat Shrink Tubing, Red 24mm Sleeve Dia. x 3m Length	100 mm
[20395] ECU Standard	1 pcs
[20358] A/C Shroud Fan Fittings bag	**1 pcs**
[20158] M8 x 16mm Hex Socket Button Head Stainless Steel	2 pcs
[21228] M8 ×25mm Full Thread Coach Bolt Stainless Steel	1 pcs
[21069] 8.4mm x 24mm x 2mm Flat Washers - TPR Rubber	1 pcs
[21075] Cable Tie - 300mm x4.6mm	4 pcs
[20878] 964/993 High Performance Evaporator	**1 pcs**
[20072] EVAPORATOR - BRICK (964)	1 pcs
[20752] 964/993 Evaporator mount	1 pcs
[20419] Standard Expansion block	1 pcs
[10281] Evap Port Extension 60mm Long - 4-Point Port	1 pcs
[10282] Evap Port Extension 60mm Long - 5-Point Port	1 pcs
[20094] Foam Tape - 15mm x 3mm	25 cm
[21229] 11mm ID x 2.4mm CS HNBR O-ring	1 pcs
[21067] M5 x 110mm Socket Cap Head Screws- Stainless Steel	2 pcs
[21230] 13.8mm ID x 2.4mm CS HNBR O-ring	1 pcs
[21242] No.8(4.2mm) x 1.1/4Inch (32mm) Pozi Self Tapping Pan Head Screws - Stainless Steel	6 pcs
[20352] ECO-Fittings-911-Bag	1 pcs
[20324] Pad Fitting A8	2 pcs
[20325] Pad Fitting B	1 pcs
[20326] Pad Fitting C	1 pcs
[20327] Pad Fitting D	1 pcs
[20328] Pad Fitting E	1 pcs
[20516] Fill Port Blue	1 pcs
[20527] 90deg fitting (drier - Fitting F)	1 pcs
[20526] #645 deg Female - drier	1 pcs
[20521] FITTINGS - Clip Holder 8mm (plastic)	2 pcs
[20522] Clip 8mm (metal)	12 pcs
[20523] Clip Holder 10mm (plastic)	2 pcs
[20524] Clip 10mm (metal)	12 pcs
[20517] Fill Port Red	1 pcs
[20101] Pad E / D Orings	2 pcs

ElectroCooler Kit - without hi-performance evaporator

Bill Of Materials - 964/993 A/C system WITHOUT HI PERFORMANCE EVAPORATOR
[20476] CONDENSER - '996 Style' condenser
[20345] COMPRESSOR- 12V - Standard
[20530] #6 180 deg female
[20878] 964/993 High Performance Evaporator
[20362] A/C Shroud with Fan
[20350] ECO Standard hose set
[21234] Hose - #8
[21233] Hose - #6
[21075] Cable Tie - 300mm x 4.6mm
[20355] 964 Bracket Box
[20409] Wiring- Battery Cable-911
[20469] 964 Front Left Condenser Air Baffle
[20471] 964 Condenser rear lower mount
[20470] 964 Condenser front mount
[20468] 964 Compressor mount plate
[21175] M8 × 110mm Hex Socket Button Head - Stainless Steel
121187] M8x25mm Hex Socket Button Head - Stainless Steel
[21177] M6 x 20mm Hex Socket Button Head -A2 Stainless Steel
121188] M6 x 12mm Hex Socket Button Head -Stainless Steel
[21077] M8 Nylon Lock Hex Nut DIN -Stainless Steel
[20748] M8 × 16.0 x 1.6mm Nylon Washers Black
[20747] Nylon Shoulder Washer M8x12mm
[21189] M8 Half Hex Nut Stainless Steel
[21075] Cable Tie - 300mm x 4.6mm
[21174] Dual Fittings Kit
[20328] Pad Fitting E
[20522] Clip 8mm (metal) (8768-06)
[21171] Loose Fan power cable
[21233] Hose - #6
[21075] Cable Tie - 300mm x 4.6mm
[20343] ECO Wiring Box - v1.20
20344] ECO Wiring harnesses
(20396] Wiring-911-Loose electrical items
22991] Rubber Terminal Cover - Red
[20320] Heavy duty 12V Contact Relay (M6 Stud)
[23014] Heat Shrink Tubing, Red 24mm Sleeve Dia. x 3m Length
[20395] ECU Standard (sub-assembly)
[20358] A/C Shroud Fan Fittings bag
[20158] M8 x 16mm Hex Socket Button Head -Stainless Steel
[21228] M8 × 25mm Full Thread Coach Bolt -Stainless Steel
[21069] 8.4mm x 24mm x 2mm Flat Washers - TPR Rubber
[21075] Cable Tie - 300mm x 4.6mm
[20351] 964 A/C Fittings Box
[20324] Pad Fitting A8
[20325] Pad Fitting B
(20327) Pad Fitting D
[20328] Pad Fitting E
(20516) Fill Port Blue
[20517) Fill Port Red
[20521) FITTINGS - Clip Holder 8mm (plastic)
[20522) Clip 8mm (metal)
[20523) Clip Holder 10mm (plastic)
[20524) Clip 10mm (metal)
(20527] 90 deg fitting (drier Fitting F)
[20529) Straight male No 8 hose (expansion)
[20518] 90 deg male No 6 (expansion small)
[20530] #6 180 deg female
[20532] O-ring #6 HBNR Green 7.65 x 1.78
(20657] O-ring #8 HBNR Green 10.82 x 1.78
[20531] O-ring #10 HBNR Green 14.00 x 1.78
[20381] Expansion Block Adapter-964
(20380) STANDARD 964 EXPANSION BLOCK
[20493] M5 x 40mm Hex Socket Cap -Stainless Steel
[20494) M6 x 50mm Hex Socket Button Head -Stainless Steel
[20156] M6 × 16mm Hex Socket Button Head -Stainless Steel
[20158] M8 x 16mm Hex Socket Button Head -Stainless Steel
[20385] AC Drier - 911

System Overview

ElectroCooler is unique in the air conditioning marketplace as it dispenses with the traditional engine driven compressor.

This offers several advantages over traditional systems:

- Compact: entirely packaged in the front of the vehicle
- Lightweight: typically half the weight of a factory or dealer system
- Better weight distribution
- Simpler to install
- Non-damaging: Does not require cutting holes in the body shell
- More energy efficient: Uses typically < 1 HP
- Saves fuel. (independent white papers show up to 15% fuel saving)

For this kit, we chose to retain the factory blower unit and twin fans as this does provide good air flow and is tightly integrated with the vehicle already.

We do strongly recommend that the original blower unit is overhauled prior to installing the kit. All servo valves , fans and flaps should be checked over and a new evaporator fitted (if you have not purchased our hi performance evaporator) if you are updating a factory A/C car – these are available from Porsche. Non A/C cars use the same blower so an evaporator can be retrofitted.

Core components

The kit is suitable for cars either with and without factory AC. When the car has AC, the control can come from the factory CCU. Without, you can use a spare accessory button or our standard push button.

Note: Using the CCU for control or using a latching button may require a change to the button type by changing ECU parameters with a laptop. You can do this during setup.

Apart from the factory blower unit, everything else required is provided in the kit. All Porsche A/C hard and soft lines can be removed from the vehicle.

We place the electric compressor and condenser in the front left wing/fender beneath the headlamp. The brackets provided pick up on existing studs in the bodywork. A couple of extra holes are needed to complete fitment but these are hidden behind the battery. If you have no room here, the compressor can be located in the spare wheel space.

The factory wheel arch liner can be retained but a small cut out is required. This is not seen when installed.

Installation

Please check for current Service Bulletins on our website -this will inform you of any current changes to the install procedure or issues we are working on.

Although the installation of the components can be safely undertaken on a DIY basis, when it comes to filling and commissioning of the system, it is essential to seek professional assistance.

Air conditioning hoses run at high pressure and must be correctly crimped and pressure tested with the correct equipment.

We recommend that the initial filling and commissioning of the system is carried out by a qualified air conditioning engineer.

We absolutely DO NOT recommend that the system is filled from 'cans' of R134a. Step away from the eBay or Harbour Freight DIY fill kit, and seek professional help.



PERSONAL INJURY, DEATH AND / OR PROPERTY DAMAGE HAZARD

Failure to follow this warning could result in personal injury, death or property damage. Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause personal injury or property damage.

Consult a qualified installer, service agency, or Classic Retrofit Ltd for assistance. Read and follow all instructions and warnings.

Please consider your and other people's safety before installation.

Disconnect the vehicle battery before installation!

Prerequisites

The kit has been designed to fit 964 and 993 cars where there is space under the front left headlamp. If the car has factory AC, the old condenser and fan unit are removed. Both our compressor and condenser fit into this space.

Updating the Alternator

Classic Retrofit recommends our 175A 964/993 unit, which will enable the system to run full time in traffic. We do not recommend that the system is installed and run with a standard / factory alternator.

Updating the alternator also requires that the wiring can take the extra current. The wire from the alternator to the starter solenoid must be uprated to 170A 25mm2 wire along with the alternator ground to the engine case. NB Our 240A alternator requires a serpentine belt conversion.

We provide the cable set with all our uprated units - other Alternator suppliers may not supply this cable.

Check out our alternators here:
https://www.classicretrofit.com/collections/upgraded-alternators

Earth straps

It is strongly advised to remove and replace both the battery and transmission earth straps. The studs and landing surface of the earth point should be cleaned until shiny. It is important that the earth strap lug sits flat on the landing surface so that maximum contact area is achieved. The same is true for attaching the compressor earth.

Batteries

The kit has been tested with standard batteries (typically) 75Ah. The battery must be in good order. The A/C will use some battery reserve at idle. If you have a lesser rated battery, you run the risk of depleting it sooner. Settings can be changed within the A/C ECU to guard against this at the detriment to A/C performance at low engine RPM. Please contact us regarding battery spec.

Update: With our high output 175A alternator we have run smaller race batteries with success (e.g. Odyssey PC925 which is 28Ah).

Heat regulators (servo 'Flapper' boxes)

The 964/993 series uses five servo operated valves for the HVAC system. These must be in working order. If not, they may 'leak' hot air into the air box and AC function will be reduced.

Before you start the installation, you can easily check whether the valves are working. Get the car warm and set the heating to the coldest setting. Behind the carpet, ahead of the 'A' pillar, feel the 60mm pipe that runs upwards through the lower dash. A bit of leaked warmth here can be tolerated but if it is hot then this needs to be addressed as a priority.

Preparation

The installation is not difficult, but does require removal of fuel tank and blower unit in order to replace the evaporator. Take your time and be methodical. The install can be undertaken with common workshop tools.

The only special tool required is the hose crimp tool. The hose crimps are 'Oetiker' ear clamps. The tool required is available to buy on our website.

The bulkhead panel should be removed for this and it is much easier if the fuel tank is removed.



Figure 1 - Oetiker clip and pliers

All cars

You will be connecting some high current wires so please make sure the vehicle is electrically safe to work on.

- Disconnect vehicle
- Remove front left wheel
- Remove front left wheel arch liner (both parts)
- Remove front left lower valence PU

Factory A/C cars only

If the vehicle already has factory or dealer fitted air conditioning, these parts need to be removed prior to the fitment of the kit.

This includes:

- Remove the engine driven compressor
- Remove the factory condensers
- Remove all hoses and the drier
- Removal of A/C specific hoses under the scuttle area

Cabin Controls

If the car had factory A/C, the system can be operated by the existing 'snowflake' button on the CCU. **This requires a change to the button type in the ECU – needs to be set to 'Latch' . Please refer to our '964 set up and test manual' on our website.**

If the car had no A/C, the button provided can be used.

Addressing the blower / evaporator unit - the HVAC Suitcase'

The 964 and 993 Porsche's both use the same blower unit - which is known as the 'Suitcase' or 'Klimakasten'.

Our A/C system is supplied in two options - **with** a new hi-performance evaporator, or **without** an evaporator, both using the factory 'suitcase'.

NB We do not supply a direct replacement of the factory specification evaporator, our evaporator is a modern design with increased performance over the factory item.

If you have bought our A/C system without an evaporator:

If you have a **factory A/C car** and you have opted for the system **without** a high performance evaporator **we strongly recommend that you replace the existing evaporator**.

If you have a factory **non-A/C car** and you have opted for the system **without** a high performance evaporator, **you will need to purchase fit a new factory evaporator**.

The system ships with all of the necessary fixings and fittings to work with the factory evaporator. Please follow the installation instructions on page 12

If you have bought our A/C system with a Classic Retrofit High Performance evaporator:

The system ships with all of the necessary fixings and fittings to integrate our new evaporator into the standard HVAC suitcase.
Please follow the installation instructions on page 13.

For all systems: You will need to remove the 'suitcase' from the vehicle to install the evaporator. The bulkhead panel should be removed, and it is much easier of the fuel tank is removed.

Watch the video on why you should upgrade your evaporator HERE

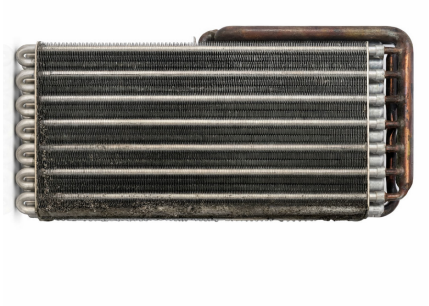


Figure 2 - Factory evaporator

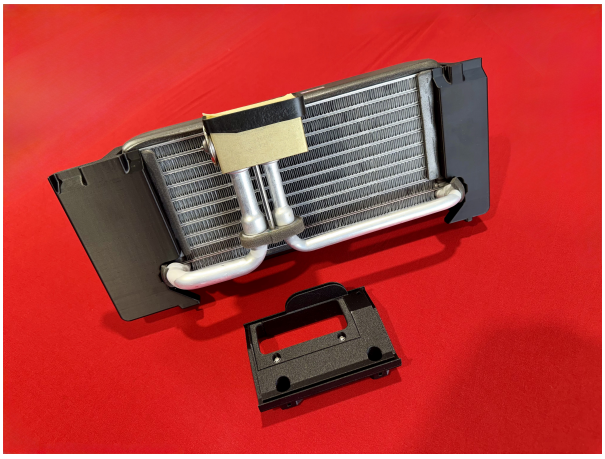


Figure 3 - Classic Retrofit High Performqnce Evaporator

Blower unit - for systems WITHOUT a new CR Hi-Performance Evaporator

The factory 964/993 blower unit should first have been fitted (or retrofitted in the case of non-AC cars) with a new evaporator. We provide a new expansion block with the kit and a special adapter block that is used to attach our flexible hoses.

Attach the expansion block/valve to the evaporator (2 x o-rings on evaporator). Attach the #6 90 deg and the #8 straight connector to the block using O-rings. Now, attach the block assembly to the expansion block/valve.

To be clear, that's total of 6 o-rings used in attaching the block and valve to the evaporator.

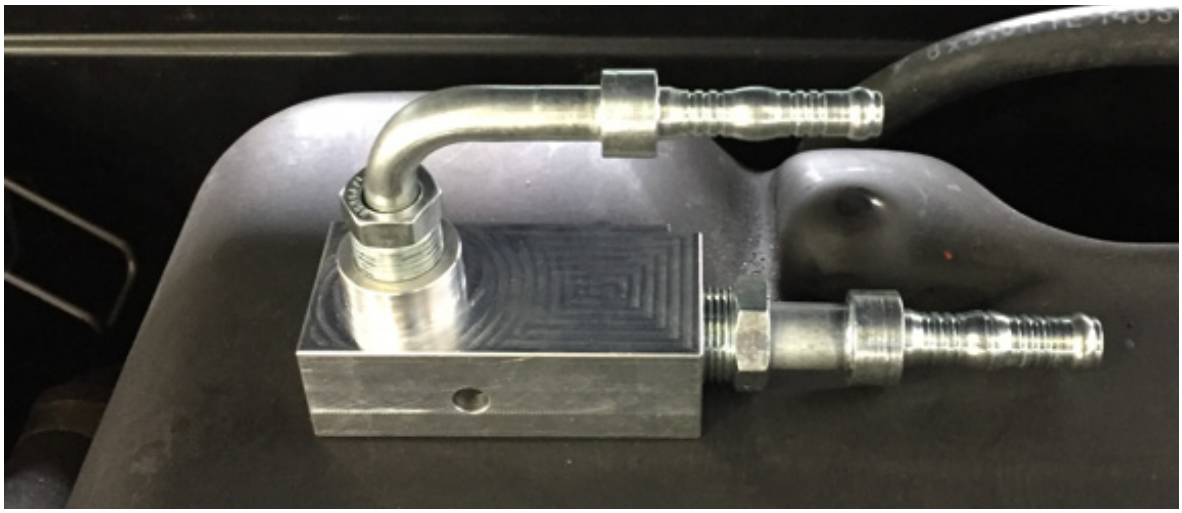


Figure 4 - Adapter block for flexible hoses.

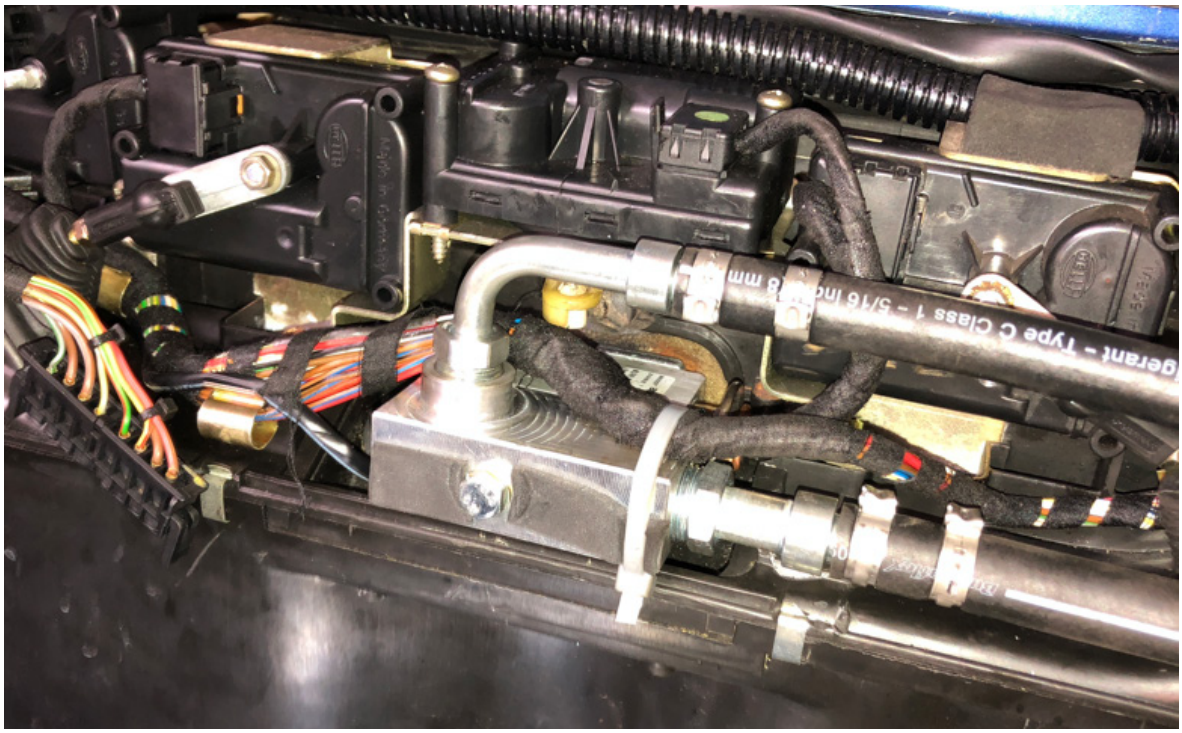


Figure 5 - Adapter block fitted. cable tie holding wiring loom away from servo arm.

Blower unit - for systems WITH a new CR Hi-Performance Evaporator

The HVAC suitcase must be removed from the vehicle to install the new CR evaporator.
NB The bulkhead panel should be removed for this and it is much easier of the fuel tank is removed.
We provide a new evoprator with expansion block, a cover plate, and the pad fittings to connect the lines to the expansion block.



Figure 6 - CR Evaporator and cover panel - in packaging

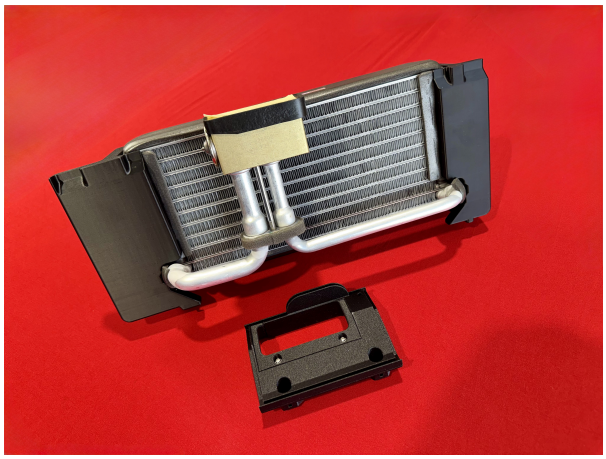


Figure 7 - CR Evaporator and cover panel

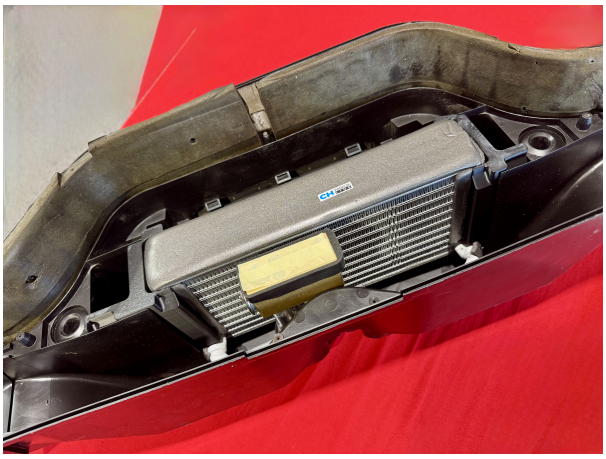


Figure 8 - CR Evaporator fits into suitcase

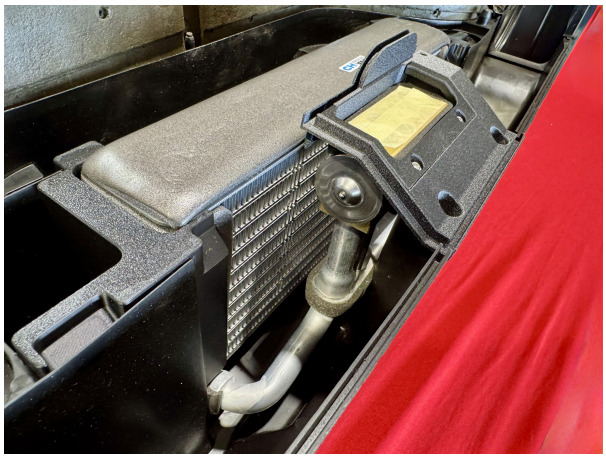


Figure 9 - Cover panel put into place

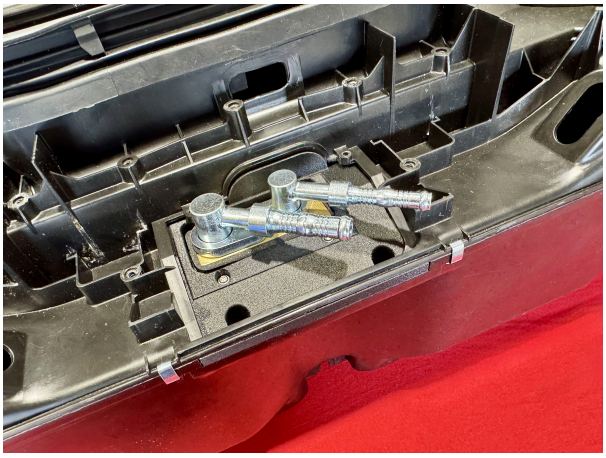


Figure 10 - Suitcase main cover added - pad fitting A and C shown in position

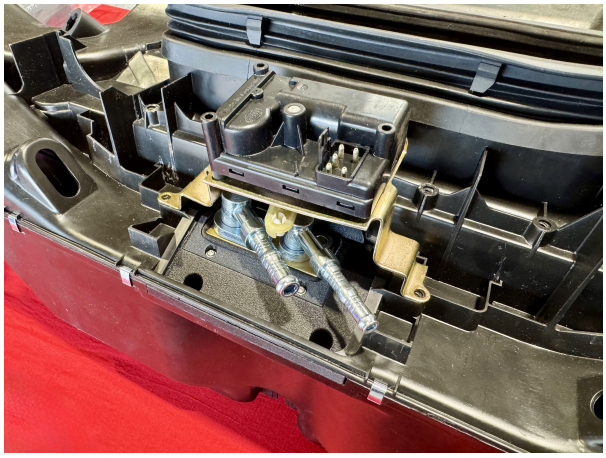


Figure 11 - Servo and bracket reassembled

Connecting the suitcase

At this point, consider routing the #6 and #8 hoses up through the hole in the inner fender/wing and attaching them. This will allow you to complete the bulkhead part of the install and re fit the fuel tank if it is out. There is a convenient stud that allows a p-clip to hold the hoses if need be. You don't need to cut the hose yet, just leave it coiled under the fender. You can reuse the factory grommet / plate on the fender hole where the hose go through.



Figure 13 - Hoses secured by P-clip before going through factory inner wing hole.

Temperature Sensors

Electrocooler has two temperature sensors which have their own sub harness. One for the cabin temperature and the other for the evaporator. They are colour coded:

Yellow – cabin temp sensor. This should be placed so that it samples incoming air from the cabin. A good position is near the inlet flaps behind the evaporator. Alternatively at the back of the CCU near the CCU's own cabin temp fan.

Red – evaporator temp sensor. This should be placed in the evaporator core. Insert it in between the fins. This is to prevent evaporator freeze.

Electrocooler can work in two different modes. Climate/default and Hi/Lo. They can be set using a laptop and the provided USB cable. **See the separate Setup and Test Manual on our website.**

You may have to drill a small hole to get the sensor wires out of the blower box. They will need to come over to the fuse box side of the car.

In Hi/Lo mode, the compressor will just operate as fast as it can, given the output available from the alternator. The cabin sensor is ignored. The evaporator sensor handles freeze protect.

In Climate Mode, the ECU will attempt to make the air temperature match the Cabin Temperature Setpoint adjusted by the CTS setting (default 21 deg C). If you use climate mode, it can save some power since the compressor will reduce speed when the cabin cools off.

In both modes, the 964 cabin controller can still be used to adjust temperature as before.

Remove the battery from the vehicle. **You will be drilling through the panel in the battery area.**

Compressor Installation

If the car has factory A/C, remove the condenser, shroud and fan assembly.

Locktite should be used on all compressor bolts.

Offer up the compressor mounting plate to the factory stud at the bottom of the chassis leg (see picture). Use the bracket to mark position of the two other (non-threaded) holes for drilling. Drill 2 x 8.5 mm holes through the panel and secure the compressor plate to the car with m8 bolts and nuts.



Refer to the picture of the battery compartment.

Drill an additional hole for a wiring grommet - This must be big enough for the grey compressor control cable connector to fit through.

Figure 14 - Battery side showing 2 x M8 screws. Also note hole on right with grommet for wiring.

Compressor Installation

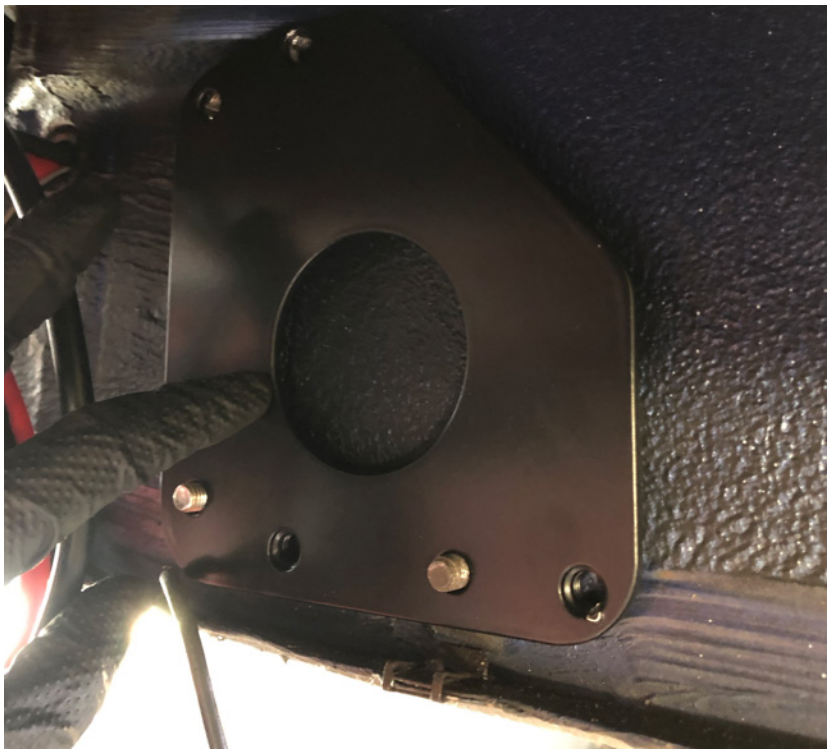


Figure 15 - Compressor bracket. Offer up to factory mounting stud (lower right).

Offer up the compressor and mount to the plate with the 100mm bolts. Attach the heavy black compressor cable ground to the factory stud and secure with M8 nut.

Note: On production mounting plates the earth stud is masked off and has no paint around it.



Figure 16- View of compressor from under vehicle.

Note. Some 'backdates' (964 with early front wings/fenders) may not allow compressor mounting in this location so might require location in the spare wheel well. Please note that if you are making your own compressor mount, **the compressor MUST be mounted the correct way up**. The flat lid is the TOP. Mounting the compressor on its side or inverted will shorten its life due to oil starvation.

Preliminary Wiring and ECU

Locate the ECU inside the front slam panel. Lay the two main loom connectors (grey and black) into the front of the car. The longest branches of both looms can be routed along the RH chassis leg and up to the fuse box, entering through the hole in the front of the fuse box using a suitable grommet.

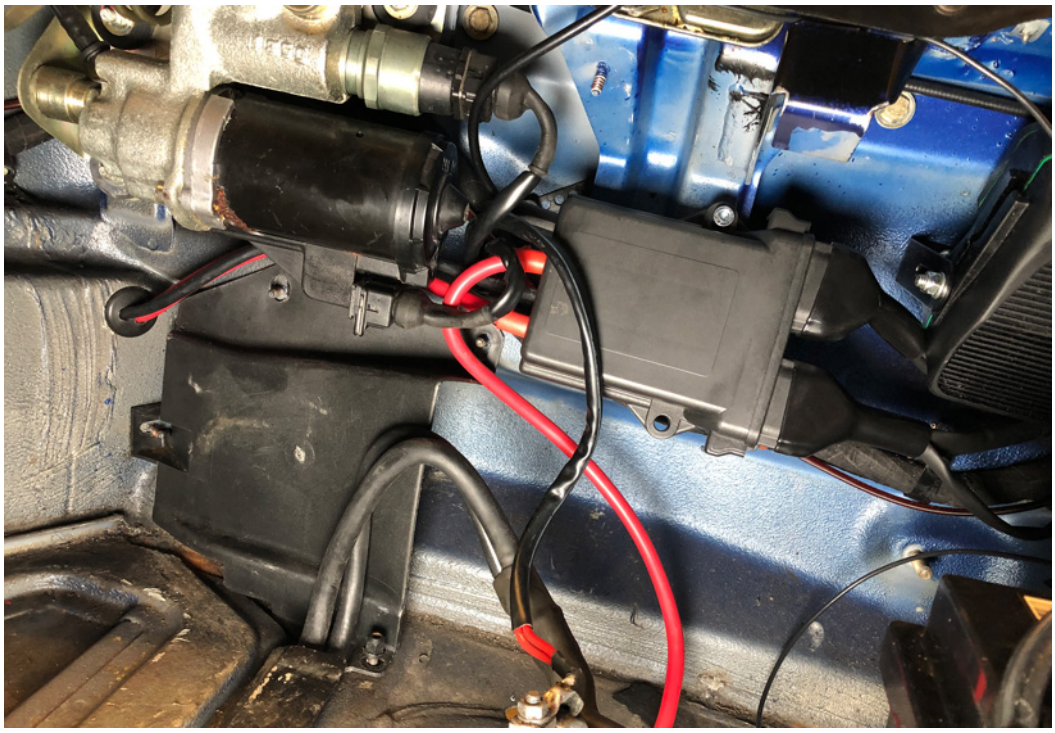


Figure 17 – Hole for heavy red wire, ECU control cable and fan cable on left. ECU can be mounted on front panel.



Route the correct heavy red ECU cable (see photo), the compressor control cable and the condenser fan loom (see wiring diagram) through the chassis leg wiring grommet to the compressor.

Fig 18 - Check spare tire clearance.

Preliminary Wiring and ECU

Above the compressor and to the front of the vehicle, there is a factory stud. You can use this to mount one side of the contactor relay. Secure the other side of the contactor relay to the body with a self tap screw of Rivnut, attach either side using the contactor relay (see heavy gauge wiring diagram).

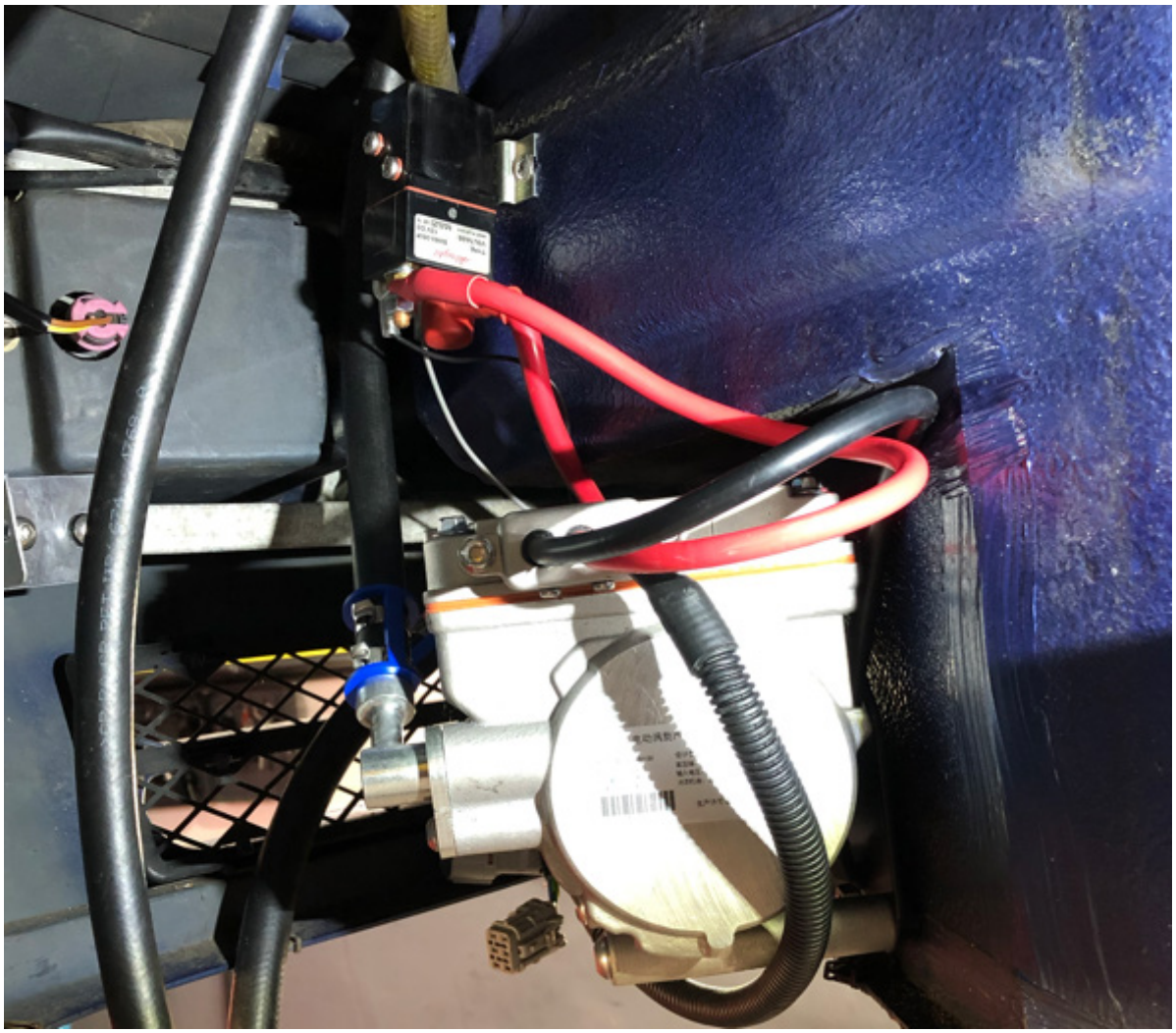


Figure 20 - Install using isolating contactor relay NB old spec compressor shown, new picture as per listing on website.

Connect the ECU compressor control cable to the compressor.

Primary Condenser Installation

Condenser preparation. With the fan facing you, the inlet and outlet ports should be bottom left and top right. If not, the condenser may need to be flipped on the shroud. To do so, loosen the six screws on one end only of the shroud. Attach the triangular top baffle to the condenser using two of the existing screws. See picture.

There are two brackets that hold the condenser. Fit the rear bracket to the factory stud shown in the picture below. Drill and tap 2 x M6 holes in the bumper support for the small front bracket.

Loosely fit the condenser and adjust the brackets accordingly as you will be removing again for hose fitting. A little 'adjustment of the brackets is normal. Make sure the condenser is secure. Plug in the fan loom to the fan.



Figure 21 - Rear condenser mount bracket

Primary Condenser Installation



Figure 22 - Drill and tap 2 x M6 holes in bumper support for front condenser bracket.

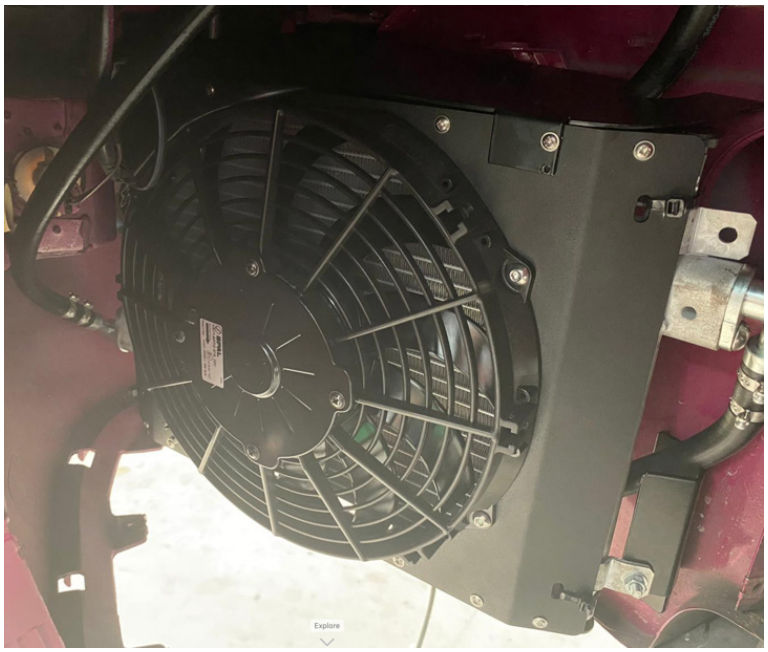


Figure 23 - Condenser in place.

Second Condenser Install

We ship two condensers with 964/993 kits after feedback from hotter climates.

We have put together this guide to fitting the second condenser, but some simple fabrication and fixings may be required as we didn't have time to design and manufacture and complete set of plug and play parts.

To install the second condenser you may need:

- Some self-adhesive neoprene foam tape to form a seal between condenser and oil cooler (12mm x 12mm is ideal)
- Cable ties
- Self tap screws

The second condenser helps to improve cooling performance in hotter climates - it is supplied as the radiator unit only with two fittings and some extra hose. Some minor modification is required to the oil cooler bracket and the rear closing panel.

The condenser is fitted behind the existing oil cooler on the right side of the car. Space was allocated here for the Tiptronic transmission cooler so on a manual car this is fairly easy. At this time, we don't have an easy fitment option for a Tiptronic car but spacing the oil cooler bracket away from the body could provide enough space to mount.

Since the condenser is longer than the oil cooler, the oil cooler lower bracket needs a notch cutting in it to allow the condenser to slide in behind the oil cooler. The closing panel (the flat panel attached to the oil cooler with the rubber edge) will need some modification or a new part fabricated to force the air path through the radiator.

Remove the arch liner front half and under tray on the right side of the car. Remove the closing panel from the back of the oil cooler. Mark the lower section of the support bracket in line with the rear of the oil cooler so that the condenser will sit close to the oil cooler. On the bench, cut a notch in the support bracket, wide enough for the condenser, protect the edges with some rubber U channel.

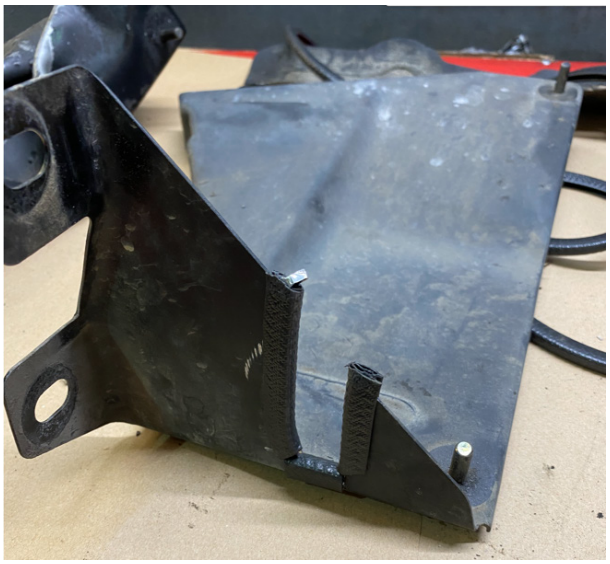


Fig 24- Notch cut in oil cooler support bracket.

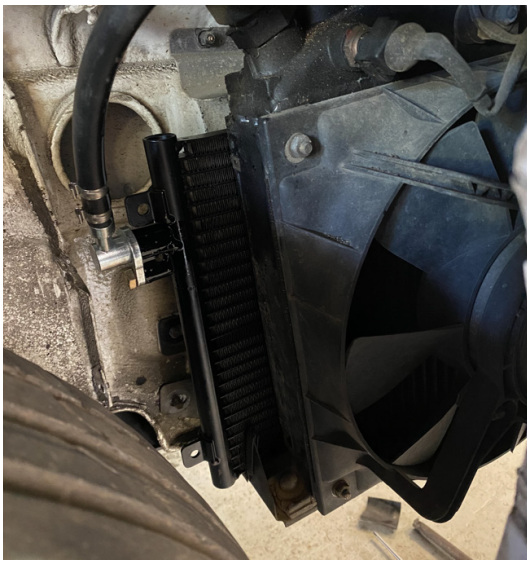


Fig 25 - Second condenser slides in behind oil cooler.

The condenser should be positioned as far forward in the car as possible. Fit the front most hose fitting to the condenser before committing to position. Ideally a foam seal is put around the oil cooler perimeter before the condenser is put in place.

When the unit is in place it can be secured with cable ties to the oil cooler bracket or any other method you choose.

Arch Liners

The arch liner will fit back on but requires trimming of the ‘flap’ as below. On the oil cooler side a similar approach may be necessary and a heat gun used to relieve area of the top AC fitting.



Figure 26 - Removing a section of the arch liner to clear condenser. Important to leave lower mounting holes.

Arch Liners

For very hot climates, venting the arch liners on both sides can improve both oil cooler and AC performance. In the picture below we have cut an aperture and used black mesh to finish.



Figure 27 - Arch liner close up

Drier Install

The drier can be fitted in the standard location at the rear of the wing/fender.



Figure 28 - Drier can be fitted in standard location.

Hoses and fittings

Hose routing

Identify the fittings noting that there are two different hose sizes (#6 and #8) used. Some fittings have the same port size but different hose size (e.g. on the condenser). The larger #8 hose is used between evaporator and compressor only.

Position of charge ports is up to you and dependent on installation. We favour putting them over the wheel arch, just forward of the strut tower. Dry fit the hoses without the clips and cut hoses to size for your installation.

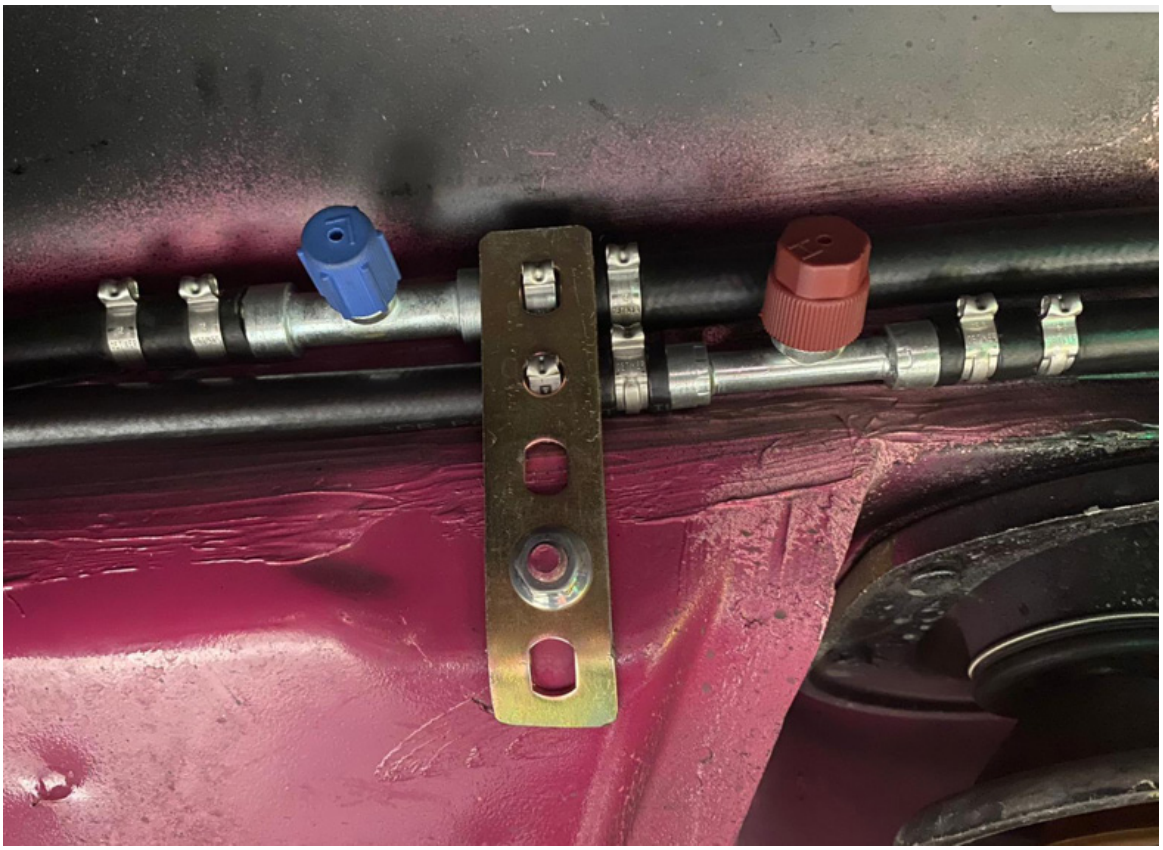


Figure 29 - Fill ports over wing under fender (metal clip by installer)

Tip: You can use cheap garden hose to work out run lengths first before cutting the actual hose!

Crimping the hoses: Please refer to the following video for instructions on how to crimp the connections;

http://www.burgaclip.com/content/6-instructions



Figure 30 Blue Spacer Clip

We prefer to remove the blue spacer clip after use as it looks better, hence we only supply 4 per kit.

Before use, clip out the side of the spacer so that it can be pushed off the fitting and reused.

Hoses and fittings

Some fittings can be tight due to variance in port and fitting sizes. Lubricate the O-ring with PAG oil or a light silicone spray. Tighten the nut while applying corrective force to bring the fitting in square to the port.

Fittings should **NOT** look like this:



Figure 31 - example of Incorrect Pad fitting installation

Wiring

High Current Cabling

Refer to Appendix B for the wiring diagram.
The red and black 16mm2 heavy cable is the main supply of current to the compressor. As supplied, the cables are joined at the contactor relay.

The connection of the ECU red wires to battery and compressor is important for the ECU to read the current correctly. If they are swapped, the current read by the ECU will be negative and odd behaviour will occur – e.g. condenser fan will not run

Note: The compressor has a parasitic draw of about 70mA. The contactor relay must be fitted.

The connection of the red supply cable between the battery + and contactor must be fused with the supplied 80A inline fuse. For safety, the connection of this cable to the battery should be the last you do on the install. This wire will be carrying 50A+ so it is important that cable cannot be pinched or the insulation chafed or broken.

In the event that the red cable is shorted to ground, the fuse will blow.

Make sure all connections have good contact and are securely fastened.



PERSONAL INJURY, DEATH AND / OR PROPERTY DAMAGE HAZARD

Failure to follow this warning could result in personal injury, death or property damage. Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause personal injury or property damage.

Consult a qualified installer, service agency, or Classic Retrofit Ltd for

assistance. Read and follow all instructions and warnings.

Please consider your and other people's safety before installation.

Disconnect the vehicle battery before installation!

Low Current Cabling

The wiring loom consists of 6 separate parts:

1. Cabin Button Loom
2. Black ECU Loom
3. Grey ECU Loom
4. Condenser Fan loom 27
5. Condenser Fan relay loom
6. Temperature Sensor loom

Please refer to the wiring diagrams in Appendix B. The following notes offer more guidance.

The fuse box on the car can be lifted and supported during wiring. On the underside of the fuse box you will find one connector without a plug. Pin A22 of this connector is a switched live feed. In line fuses can be used for the power feeds.

Operation from original Climate Control Unit (CCU) 'Snowflake' button.

If wiring an original AC car, an additional relay is used to activate the AC from the snowflake button on the CCU(see AC car wiring diagram). Porsche sell the correct relay carrier for the spare relay positions. Part number 92861051100. When the snowflake is pressed, the relay should activate, supplying 12V to the black/white wire on the ECU loom. You do not need to use the button loom in this configuration. See Appendix B for wiring.

The ECU needs to be configured to use a 'latching' button in this configuration. This is done by changing the button setting (setting name BUT) to latch.

Resistor Mod: After a period of running, some users experience electric compressor switch off even if the snowflake button is still pressed. This is due to additional logic in the Porsche CCU that used to turn the mechanical compressor off when the temperature fell below a certain threshold. This is not desirable behaviour with the electric compressor as it is speed regulated by our ECU and is meant to remain running.

To fix this behaviour, the CCU can be 'fooled' by biasing the evaporator temperature sensor. This is done by putting a 47k resistor in parallel / across the evaporator sensor.

1) Pull the sensor out of the air box. It is located just to the left of the expansion block.

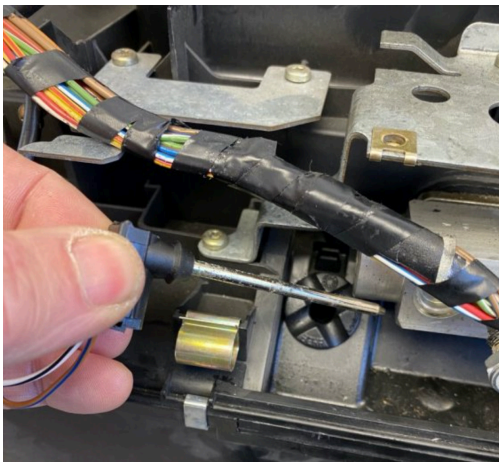


Figure 32 -Sensor removed from air box

2) Trim back the insulation and solder the resistor across the 2 wires. Tape and insulate. Push the sensor back into the blower unit..

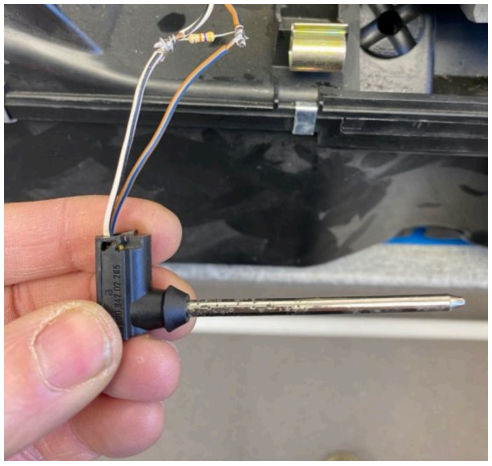


Figure 33 - resistor added

3) The resistor is a standard 1/2w 47k 'through hole' type.

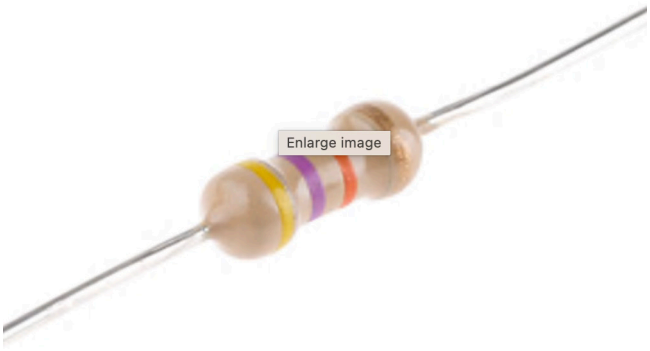


Figure 34- resistor spec

Link to RS Components to buy resistor

Low Current Cabling

Button Loom (1)

If the car has a A/C enabled cabin controller with a snowflake button, you do not need to install the button loom so skip this section.

If the car never had A/C, use the button loom provided to operate the AC.

The cabin button is NOT designed to be taken apart. If inserting through a panel, please note that you must feed the wires through from the front of the panel, and do not forget to feed the wiring through the nut.

The button harness has 4 connections.

Colour	**Connection**
Red	Permanent or 12V Switched Live (ignition)
Black	GND
Brown/Yellow	to Brown/Yellow on Black Harness.
Black/white	to black/white on Black Harness.

The red wire is very low current so can be taken from the radio feed. The black wire can also ground in the cabin if convenient. Alternatively, run red through to fuse box.



Figure 35 and 36 - Feeding Electrocooler loom into front of fusebox.

Black ECU Loom (loom 2)

Plug the black connector into the ECU. Find the short spur with the ground lug and attach to vehicle chassis.

The longest spur needs to connect to the cabin control cable (black/white and brown/yellow) if this is used. Refer to the wiring for Non A/C and A/C cars in Appendix B.

Low Current Cabling

Grey ECU Loom (loom 3)

Plug the grey connector into the ECU. Identify the spur with the white and grey wires. Identify the condenser fan relay loom (it has a relay socket and ground lug). Plug the white wire into pin 86 of the relay socket. Find a suitable earth point for the lug and attach to chassis.

NB Disregard the orange wire.

Take the remaining spur to the fuse box area. The red wire should be wire to the fused side of permanent live. The yellow and yellow/black wires are wired to ignition live.

The only remaining wires are blue/white, blue/yellow and blue/red. These are the compressor defeat lines. They are uses to slow the compressor when 12V is applied. This is useful to limit current on vehicles with lower output alternators. 964/993 vehicles do not usually need these connections.

Contactor Relay

For the Contactor Relay fitment - wire the grey and the spare black wire to the coil terminals. The terminals are not polarised

Temperature Sensors (loom 6)

There are two temperature sensors, Cabin and Evaporator which have a 4 pin connector that plugs into the grey harness. You should have already installed this with the blower so just plug it in.

Setup

Please refer to our separate Setup and Test Manual on our website for test and commissioning.

	**PERSONAL INJURY, DEATH AND / OR PROPERTY DAMAGE HAZARD** Failure to follow this warning could result in personal injury, death or property damage. Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause personal injury or property damage. Consult a qualified installer, service agency, or Classic Retrofit Ltd or assistance. Read and follow all instructions and warnings. Please consider your and other people's safety before installation. **Disconnect the vehicle battery before installation!**

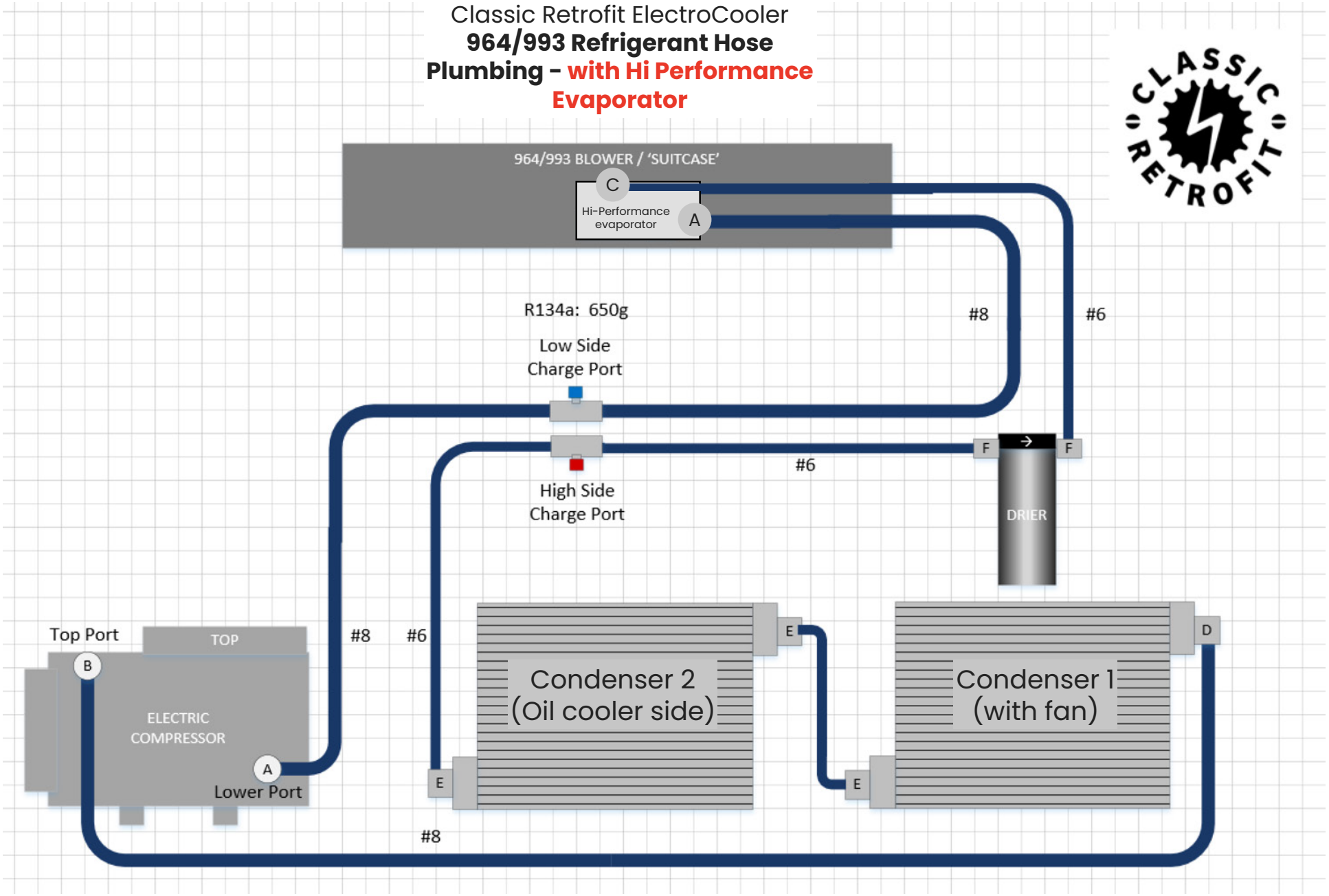
Filling the system with R134A refrigerant

The system uses standard R134a charge ports. Test the system for leaks with nitrogen at pressure and check that it holds for 30 minutes.

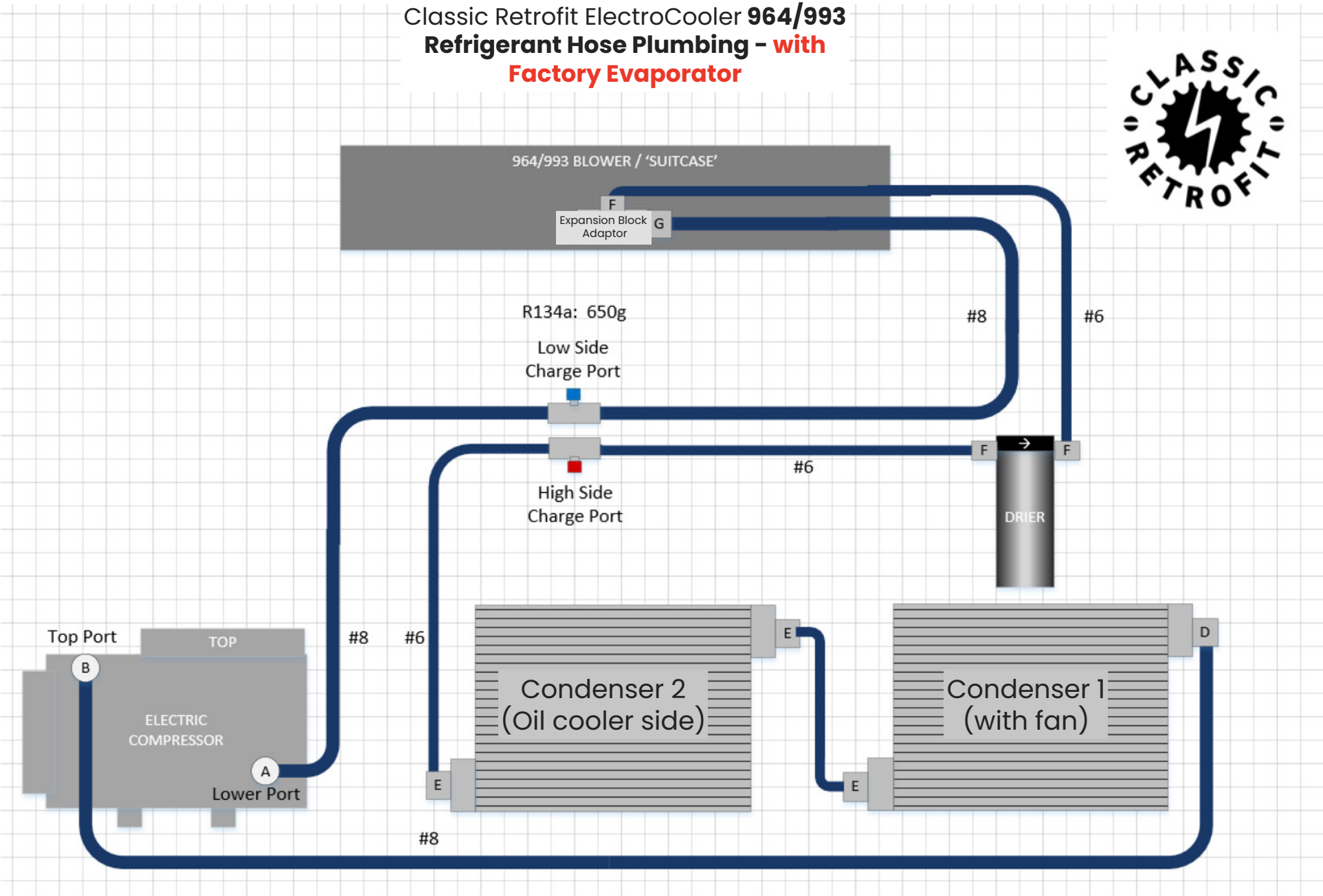
System as shipped does not need compressor oil added. The compressor is pre-filled with PAG oil. Although this is an electric compressor, it does not need special oil as it is a 12V system.

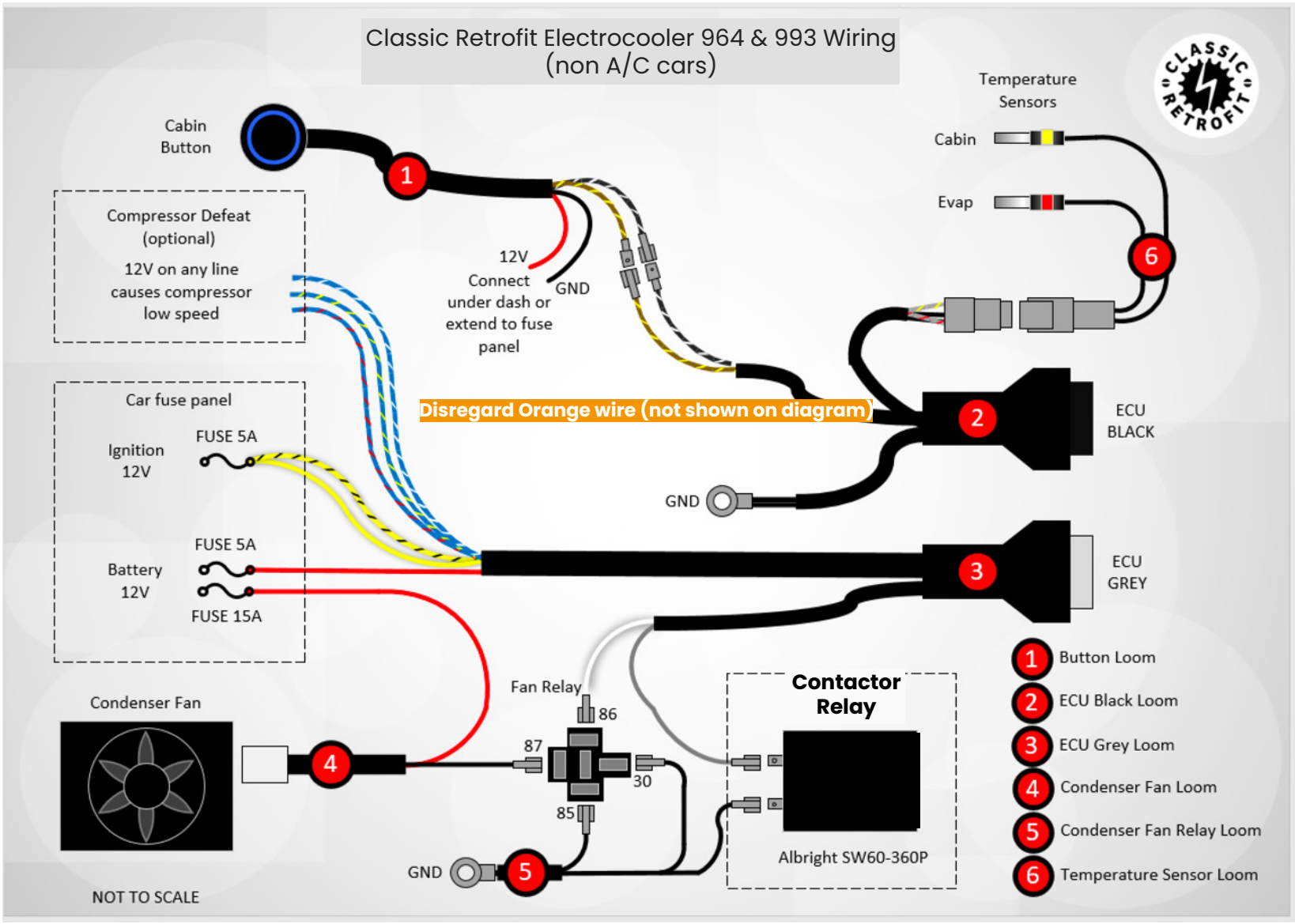
The system should be filled **without** the compressor running.

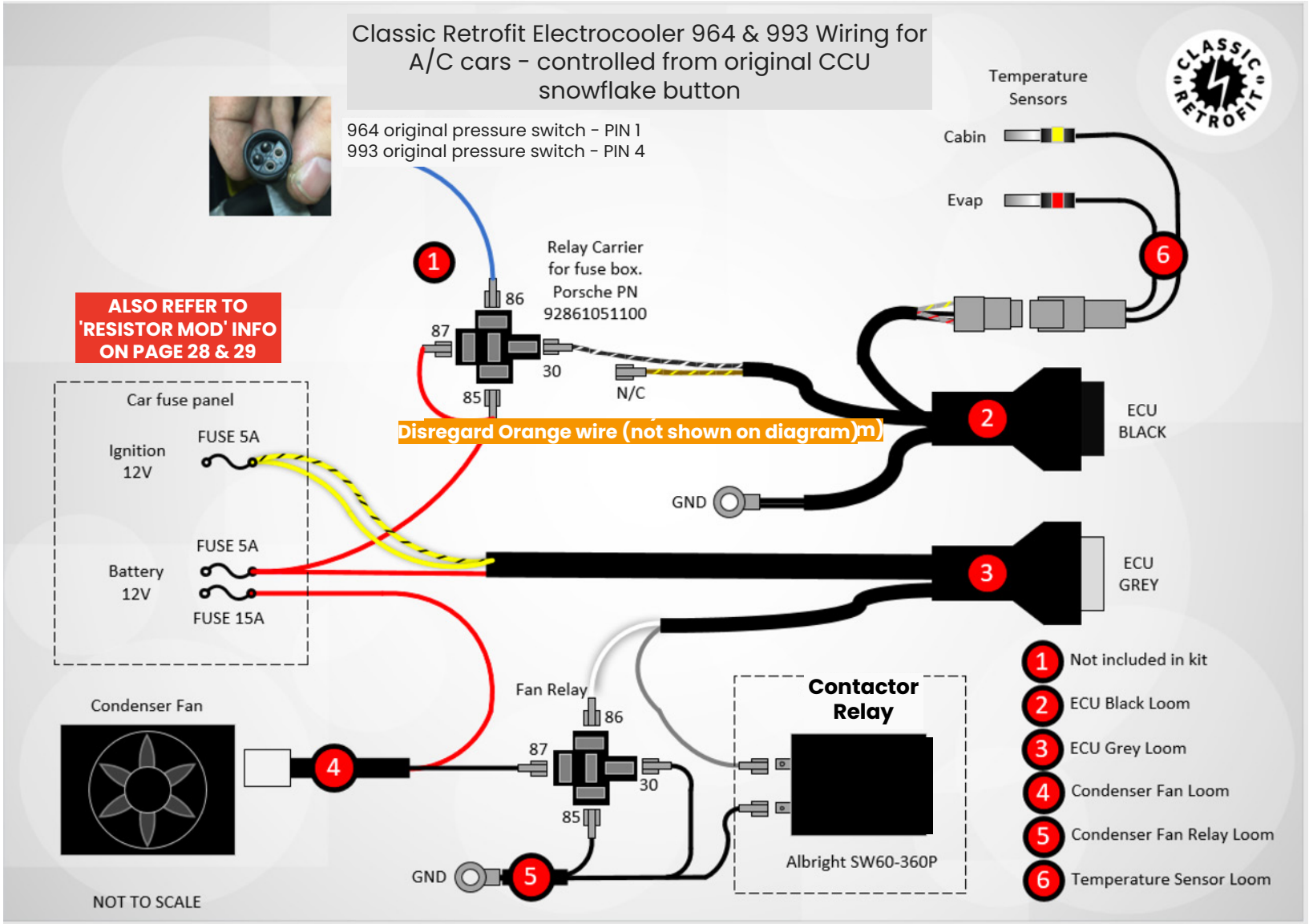
Fill with 550g to 600g of R134a (dual condenser system).

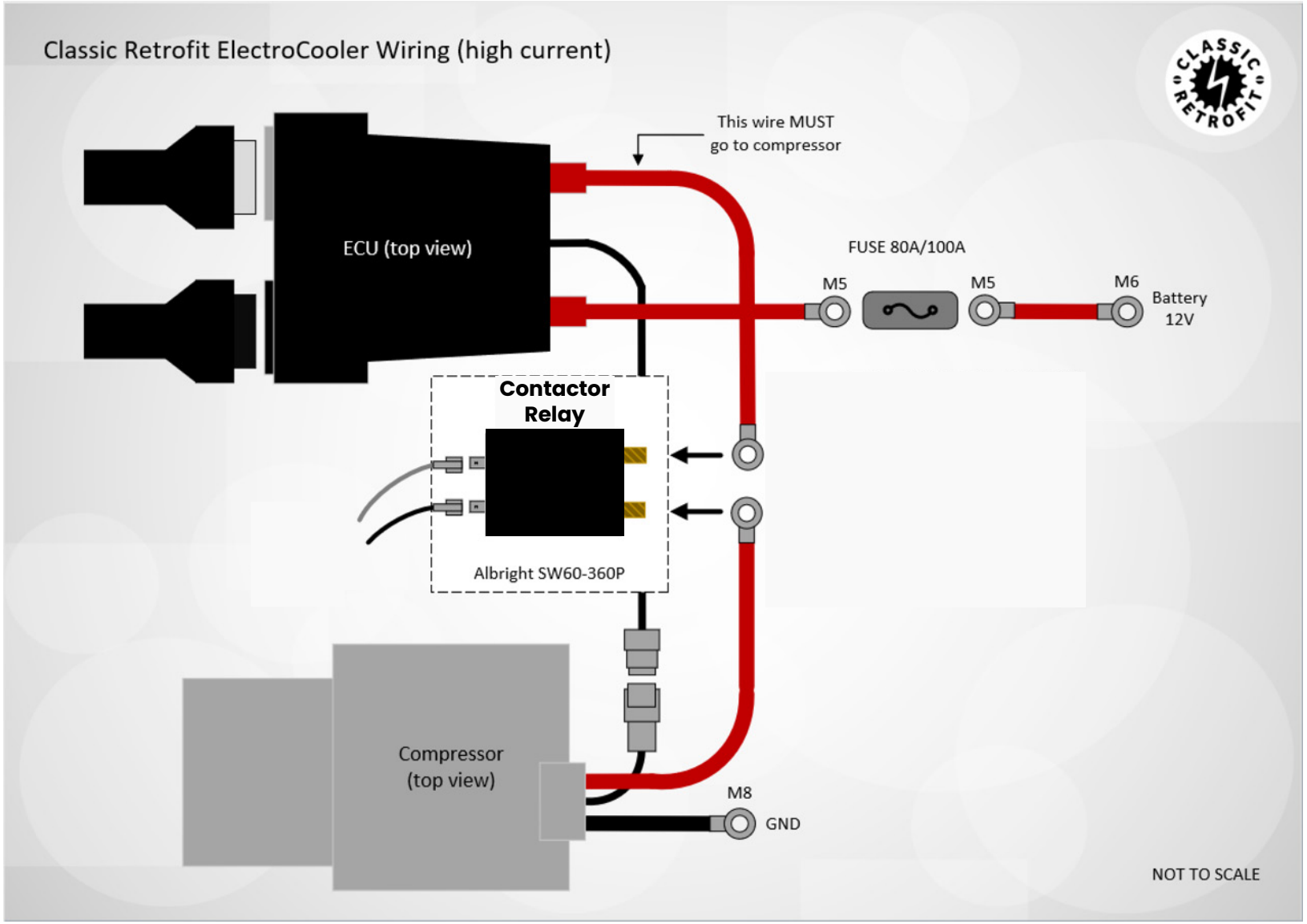

Classic Retrofit ElectroCooler
964/993 Refrigerant Hose Plumbing - with Hi Performance Evaporator
964/993 BLOWER / 'SUITCASE'
C
Hi-Performance evaporator
A
R134a: 650g
Low Side Charge Port
High Side Charge Port
#8
#6
#6
#6
F
F
DRIER
Top Port
TOP
B
ELECTRIC COMPRESSOR
A
Lower Port
#8
#6
Condenser 2 (Oil cooler side)
E
E
E
Condenser 1 (with fan)
D
#8

Classic Retrofit ElectroCooler **964/993**
Refrigerant Hose Plumbing - with Factory Evaporator




Classic Retrofit Electrocooler 964 & 993 Wiring
(non A/C cars)
Cabin
Button
1
12V
GND
Connect
under dash or
extend to fuse
panel
Temperature
Sensors
Cabin
Evap
6
Compressor Defeat
(optional)
12V on any line
causes compressor
low speed
Disregard Orange wire (not shown on diagram)
2
ECU
BLACK
GND
Car fuse panel
Ignition
12V
FUSE 5A
Battery
12V
FUSE 5A
FUSE 15A
3
ECU
GREY
Condenser Fan
4
Fan Relay
86
87
30
85
GND
5
Contactor
Relay
Albright SW60-360P
NOT TO SCALE
1 Button Loom
2 ECU Black Loom
3 ECU Grey Loom
4 Condenser Fan Loom
5 Condenser Fan Relay Loom
6 Temperature Sensor Loom


Classic Retrofit Electrocooler 964 & 993 Wiring for A/C cars - controlled from original CCU snowflake button
964 original pressure switch - PIN 1
993 original pressure switch - PIN 4
Temperature Sensors
Cabin
Evap
ALSO REFER TO 'RESISTOR MOD' INFO ON PAGE 28 & 29
Relay Carrier for fuse box. Porsche PN 92861051100
86
87
30
85
N/C
Disregard Orange wire (not shown on diagram)
Car fuse panel
Ignition 12V
FUSE 5A
Battery 12V
FUSE 5A
FUSE 15A
ECU BLACK
GND
ECU GREY
Condenser Fan
Fan Relay
Contactor Relay
Albright SW60-360P
GND
NOT TO SCALE
1 Not included in kit
2 ECU Black Loom
3 ECU Grey Loom
4 Condenser Fan Loom
5 Condenser Fan Relay Loom
6 Temperature Sensor Loom


Classic Retrofit ElectroCooler Wiring (high current)
This wire MUST
go to compressor
ECU (top view)
FUSE 80A/100A
M5
M5
M6
Battery
12V
Contactor
Relay
Albright SW60-360P
Compressor
(top view)
M8
GND
NOT TO SCALE

ECU

ElectroCooler's ECU provides the necessary control to regulate the compressor speed in accordance to the power available from the charging system. Without the ECU, the compressor could run beyond the means of the alternator which would result in a flat battery - either that, or the compressor would be run too slow and compromise the A/C performance.

The ECU contains an algorithm that adjusts the compressor speed (and thus current) based on alternator output, battery voltage, driving conditions and a number of other factors.

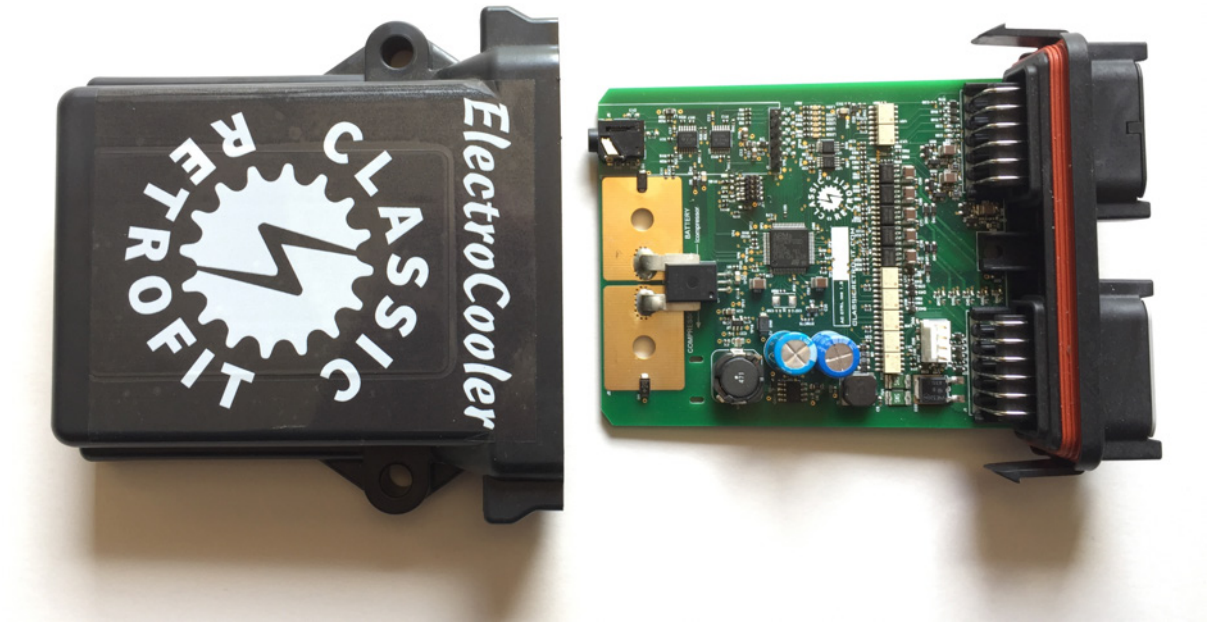


Figure 37 - ECU

The ECU comes preset with conservative working parameters. It is possible to adjust the values using a laptop as described in our setup and test manual.

It is strongly recommended NOT to adjust these values without reading the manual or consulting us first.

The ECU is housed in an automotive enclosure and has two keyed 12 way Deutsch connectors, accepting female 0462 crimp contacts. All wiring to ECU to be 14/0.30mm, 1mm2., 8.75amp.

Power Connections

16mm2 170A wire.

Red from battery with 80A inline fuse to input terminal on ECU. ECU Output terminal to terminal post or contactor (if fitted). Other side of post / contactor to compressor 12v Red.

ECU, contactor and inline fuse have M6 studs. Peripheral connections at battery terminal are typically M6 too.

Use 16mm2 M5 crimp terminals for ECU and fuse connections.

Use 16mm2 M6 crimp terminals for contactor relay.

Compressor Gnd (black) to chassis.

Grey Connector Pinout.

Pin	Colour	Function	Typical install
1	red	Vfan	Permanent Live
2	Green/red	GPIO1	nc
3	Green/yellow	GPIO2	nc
4	Green/white	GPIO3	nc
5	blue	ACcool	nc
6	Blue/yellow	ACdefeat2*	Main beam*
7	Yellow/black	VacControl	Switched Live
8	Blue/red	ACdefeat1*	Wiper Full Speed*
9	yellow	IGNon	Switched Live
10	Blue/white	ACdefeat3*	Rear Screen Demister*
11	white	FANpwrenable	Condenser fan relay
12	grey	COMPpwrenable	Contact breaker relay

nc – not connected

* The 3 defeat signals tell the ECU whether to slow or stop the AC compressor. Wire them to the 12V feed for higher current accessories. In the above example, they are on the main beams, wiper full speed and the rear screen demister. These connections are not mandatory, the ECU can operate without them.

Pins 11 and 12 both provide 12V to the relay coils. It is expected that the other side of the relay coils are connected to chassis. Please note if the relays have coil diodes fitted, the polarity of the connections is important (see electrical diagram).

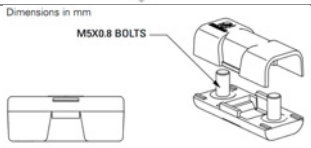
Black Connector Pinout

Pin	Colou	Function	Typical install
1	Brown/red	STATUSOp1	nc
2	Brown/yellow	STATUSOp2	Cabin control led
3	Grey/red	EVAPTemp	Temp sensor
4	Grey/yellow	CabinTemp	Temp sensor
5	Black/blue	ENCb	nc
6	Black/white	ENCSwitch	Cabin control button
7	orange	BLOWposn	+ve on blower motor
8	black	GND	Chassis
9	Black/red	ENCa	nc
10	black	GND	Chassis
11	Brown/white	StatusOp3	nc
12	black	GND	Chassis

Your harness may not have a full set of wires depending on the installation. We supply the harness unsheathed for custom installations. Please group the wires and sheath them to suit your installation

Appendix E. Part numbers

For RS stock numbers listed - please go to uk.rs-online.com

Photo	Description	Mfr Part Number	RS Stock Code
	PFL PCB Case	Deutsch EEC-325X4B	724-2557
	Contactor (optional): 12V Extra Heavy Duty Make/Break Relay - 120A	Albright Engineers SW60-360P Or Classic Retrofit SW60-38P	UK: Farnell US: Curtis-Albright
	DTM Series, 12 Way Plug Connector, with Crimp Termination. Grey	Deutsch DTM0612SA	724-2576
	DTM Series, 12 Way Plug Connector, with Crimp Termination. Black	Deutsch DTM0612SB	724-2579
	DTM Series Wedge Lock For Use With 12 Way Plug	Deutsch WM12S	724-2573
	0462 Crimp Contact, Female, Crimp, Nickel Plating 20 - 24 AWG	Deutsch 0462-201-20141	425-822
	Crimp Tool DT Series, HD10 Series, HD30 Series, HDP20 Series, 20 → 12 AWG Wire Size	HDT-48-00	425-973
	Uninsulated Tin Plated Tubular Ring Terminal, M5 Stud Size, 16 mm²	RS Pro	122-5002
	Uninsulated Tin Plated Tubular Ring Terminal, M6 Stud Size, 16 mm²	RS Pro	531-043
	100A Midi fuse holder	Littelfuse	04980921GXM5