

# INSTALLING; CAP-800LH TORANA A/C SYSTEM



This unit is a combination heat/cool & defrost system. The kit is easy to install using basic mechanic tools and a 1-1/4" hole saw. The complete system provides a neat clean appearance with unsurpassed performance. To achieve maximum cooling efficiency, an air conditioner must remove heat from the air in a vehicle faster than it is added. We recommend tinting windows, insulating the roof, firewall, floorboards, seal all holes in the firewall and replacing old or damaged door and window seals. These are all important factors to reduce "added heat" and maximize the cooling efficiency of an A/C system.

For maximum cooling performance, a clutch style fan, straight six-blade fan with shroud or electric radiator fan is recommended. Note: Flex fans are not recommended.

CAUTION: When replacing the stock radiator fan blade with an electric fan assembly it will be necessary for the fan to engage when the A/C system is on, or add a second fan on the condenser dedicated to the A/C. The A/C head pressure will rise much faster than the engine temperature. Inadequate airflow will damage the A/C system (compressor failure, or ruptured hoses). The use of a fan pressure switch is recommended to allow the fan to engage according to A/C pressure.

## PREPARATION FOR UNIT INSTALLATION

- 1) Read the instructions thoroughly before beginning.
- 2) Disconnect the negative battery terminal.
- 3) If installing a complete A/C system, remove grill, hood latch, brace and horns.
- 8) Remove the A/C system from the box and spread parts out so they can be located as required.

## UNIT INSTALLATION

- 1) Install expansion valve.  
*Note: The expansion valve included in this kit may have a 134-A label, it refers to the type of refrigerant used in the sensor tube and can be used with either R-12 or 134-A.*

A) Lubricate a #8 O-ring with refrigerant oil, slide o-ring onto the lower fitting of the evaporator core, attach expansion valve and tighten the fitting using a 7/8" and 5/8" wrench. (Photo 8) Refer to o-ring torque specifications. (Diagram 3)

B) Gently bend the "pig tail" sensor that is attached to the expansion valve so that it is parallel and against the upper A/C (Suction) tube on the unit. Use the clip provided to secure the "pig tail" to the suction tube between the firewall and the brass fitting. (Photo 1).

C) Wrap the clip "pigtail" tube assembly with the black insulating tape provided. (Photo 2)

*Note: Sensor bulb and clip must be completely covered with the black insulating tape, if not the refrigerant flow may become inconsistent resulting in poor cooling performance.*



Photo 1 - Install Expansion Valve



Photo 2 - Wrap Sensor With Insulating Tape

2) Attach side mounting brackets to evaporator. (Photo 3)

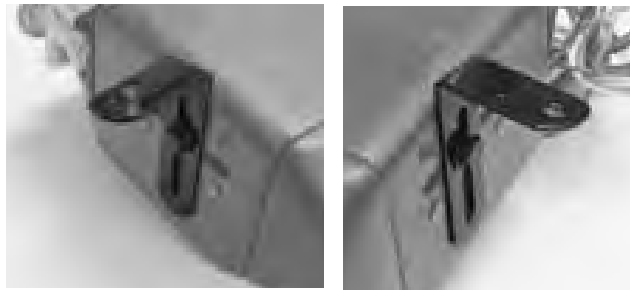
3) Insert mounting bolts through side bracket and loosely attach evaporator to bottom of dash. (Photo 4)

4) Use a small amount of ducting for the face of the evaporator going into 32-3 centre louver. Screw centre louver to the bottom of the dash to desired position. (Photo 4)

If retaining factory centre louver attach 2 x 32-16A adaptors to the face of the evaporator and trim louver to fit. (Photo 5)



**Photo 5 - Factory Centre Louver**



**Photo 3 - Attach Mounting Brackets**

*Side brackets may appear slightly different in photo.*



**Photo 4 - Mount Evaporator to Dash**

5) Attach ducting to RH side of evaporator and connect to factory indash louver with 32-7479-4 adaptor.

If using underdash louvers screw louver to desired position and connect the ducting.

6) Connect both the 26-1048 pull cable & 3 x 32-16A adaptors to 32-18AX shut off Y piece. This 32-18AX will be used for the defrost function (Photo 6)

7) Now connect ducting to the left hand side of evaporator to the 32-18AX. Attach more ducting to the 32-18AX and repeat step 5.



**Photo 6 - Connect ducting & 32-16A adaptors to 32-18AX Y piece**



8) Attach the 3rd piece of ducting to 32-18AX which will lead to the 32-32 Y piece. The now two separate ductings will go into either side of the defrost chamber with the 32-16A adaptors. These adaptors come with a foam surround to fit snugly to the defrost chamber. (Photo 7 & Photo 8)



**Photo 7** 32-16A adaptors to defrost chamber



**Photo 8** - 32-32 Y piece to defrost chamber

## COMPRESSOR AND BRACKETS

1) Locate the compressor and the mounting bracket.

2) Before opening hardware bag, check bracket application to make sure it is the correct one for your engine. If bracket is not correct or you have any questions about mounting bracket contact Old Air Products Dealer before proceeding.

3) Install bracket and compressor on engine, refer to the instructions in the bracket hardware bag for installation.

*NOTE: During installation the compressor may be mounted with fittings pointed to either side for easier hose routing.*

**DO NOT MOUNT COMPRESSOR UPSIDE DOWN or at the point where the oil drains from the sump.**

**NOTE:** New compressors from are filled with oil for the complete system.

## CONDENSER INSTALLATION

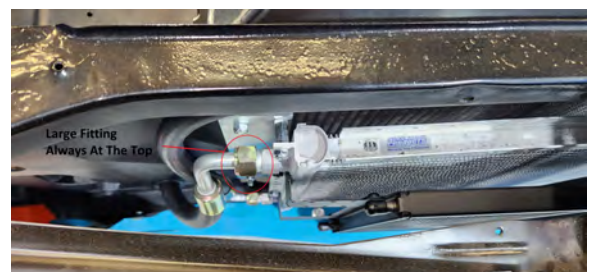
1) The condenser should be installed with 6mm to 10mm space between it and the radiator, being careful that they do not touch. On some vehicles, it may be necessary to space the radiator closer to the engine to allow room for condenser and or optional electric fan assembly. If you are installing an electric fan assembly to the condenser, this would be easier if done prior to mounting the condenser.

2) The larger fitting on the condenser should always be mounted at the top, and with the condenser tubes running horizontal to allow proper transition of the refrigerant from a gas to a liquid state. (Photo 5)

3) If required, remove the front grill. Some vehicles may require cutting out the radiator X-brace. The condenser will provide the support needed.

4) Modify condenser brackets as required to mount condenser to the radiator core support or splash panel.

**CAUTION:** A backup wrench must be used to hold condenser fittings



**Photo 5** - Large Fitting Always On Top Of Condenser

## A/C HOSE & DRIER INSTALLATION

**NOTE:** Hose Clamps should not be used with R-134A Refrigerant, a bubble style crimper (not a linear style) is recommended. Even though hose clamps are acceptable for use with R-12 refrigerant, it is recommended to crimp all hose fittings for neatness and to facilitate an easy conversion to another refrigerant if desired, at a later date.

For a custom appearance, hoses may be cut and assembled to length. We will crimp these at no charge, or most A/C shops or auto supply stores can also crimp the a/c hoses for a modest fee.

**CAUTIONS:** [a] Use refrigerant oil to lubricate all o-rings on all hose fittings and connections. [b] Protective caps and plugs should not be removed until refrigerant hoses are ready to be connected. [c] O-Ring fittings should be tight, although excessive over tightening will crush o-ring seal. [d] Avoid sharp bends when installing hose. Hoses should not be too close to the compressor clutch, or touch hot or moving parts of the engine. [e] Slide necessary grommets on hose before routing thru firewall and radiator cowling. Grommets will help prevent cutting hoses on sharp metal edges.

Refer to Diagrams #2 & #3 for the Following Steps 1-5.

1) The # 8 (13/32") discharge hose routes from the outlet of the compressor to the top matching inlet fitting on the condenser. *Tip: If the compressor is on the passenger side, we recommend first routing back toward the firewall then looped forward to the inlet of the condenser. This allows for engine torque and vibration without damaging A/C hoses or fittings.*

2) The # 10 (1/2") suction hose routes from the inlet of the compressor to the outlet of the evaporator. *Tip: Likewise, this hose may be routed forward and looped back to the outlet of the evaporator. Using a pull tie where this meets the discharge hose in the center makes for a clean installation.*

3) Using brackets supplied, mount the drier in a **VERTICAL** position. It can be mounted to the front of the condense, radiator core support, or inner fender.

4) Route a # 6 (5/16") hose from the outlet of the condenser to the inlet of the receiver drier. Cut to required length.

5) Route the remaining section of the #6 (5/16") hose from the outlet of the Drier to the inlet of the expansion valve.

6) Mark position of fittings on hose and remove hoses from vehicle. Replace Caps on drier, condenser and evaporator.

7) Crimp fittings, a **bubble style crimper is required to crimp beadlock fittings.** Most A/C shops & some auto supply stores can crimp the a/c hoses for a modest fee.

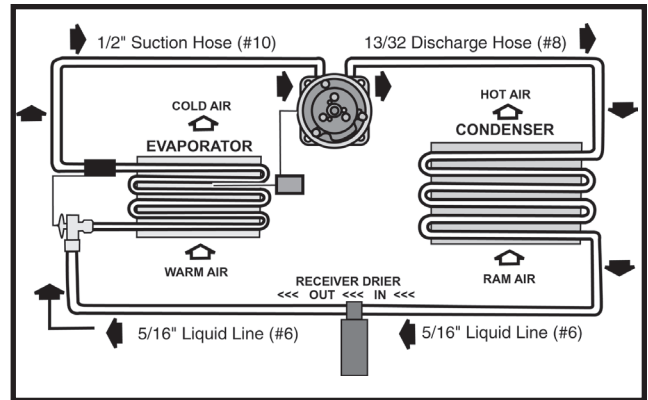


Diagram 1 - Refrigerant Flow Chart

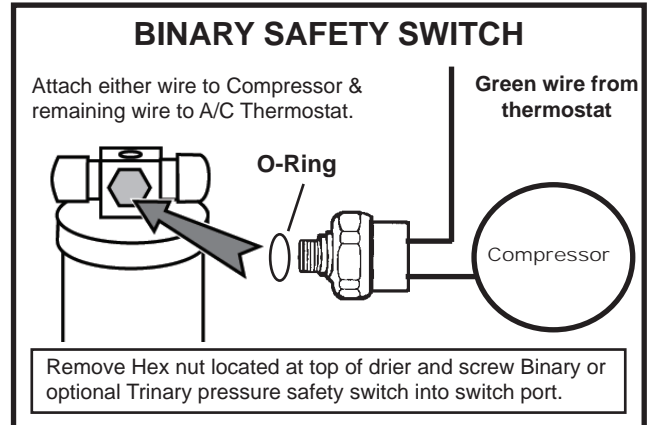


Photo 9 - Pressure Safety Switch

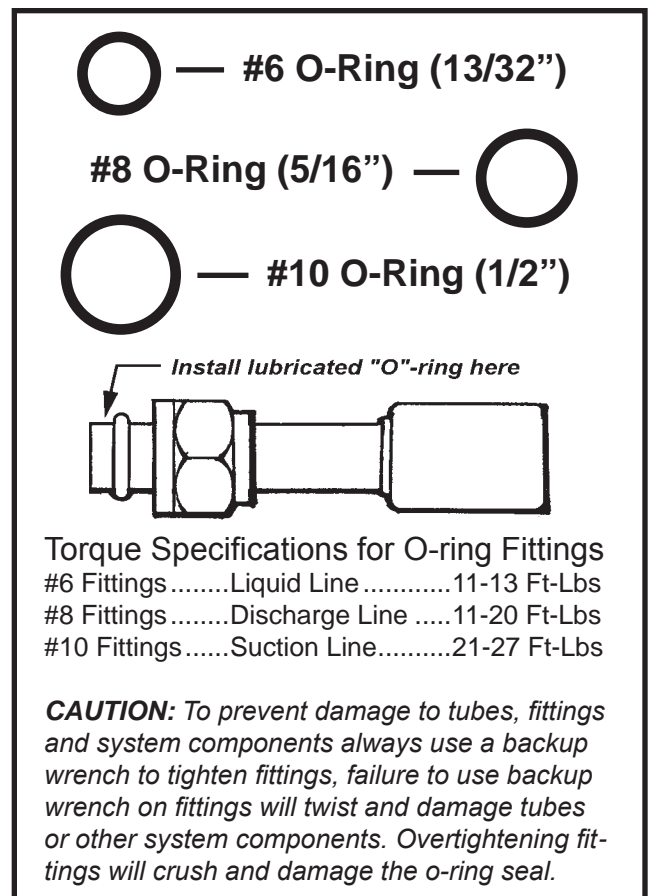


Diagram 2 - O-ring Seal Specifications

8) Reinstall hoses using lubricated o-ring seals, tighten all fittings (see torque specifications diagram 3, page 8)

9) Install wrap-around hose clamps or pull-ties as necessary to secure all hoses away from sharp edges, moving parts and exhaust manifold or headers to avoid damage to hoses. (photo 8).

## DRAIN TUBE INSTALLATION

1) Connect condensation drain tubes to unit per drawing. (Diagram 3) Cut tube lengths as needed.

2) Drill hole to route drain hose through floor of vehicle.

## ELECTRICAL CONNECTION

1) Connect Black wire from blower motor to Ground (-). Make sure to remove paint & clean metal surface for a solid connection. *Important Note: A dirty or loose ground connection can cause intermittent operation and excessive amperage draw that can damage wire harness, switches and/or blower motor.*

2) Connect Blue wire with fuse to a key on (+) power source.

3) Place electrical plug (rubber boot) on pressure safety switch. **CAUTION:** Make sure the terminals of the switch are inserted into the connectors, not between the rubber boot and connectors.

4) Route Green wire from unit through firewall and connect one wire on safety switch.

5) Connect the second wire from safety switch to the compressor clutch, it is recommended to wait until the system is ready for the refrigerant charge before making this final connection to the compressor to prevent compressor damage.

## COMPLETE INSTALLATION

1) Install wraparound hose clamps or pull-ties as necessary to secure all wires and hoses away from sharp edges, moving parts and exhaust manifold or headers to avoid damage to wiring and/or hoses.

2) Check firewall for leaks. All openings such as extra holes, missing or damaged grommets, steering column seal etc... must be sealed to prevent outside air from entering the passenger compartment to maximize the A/C system performance.

## FREON SERVICE

1) This system should be serviced/charged by a certified A/C technician and requires a minimal vacuum pump evacuation of 45 minutes.



Photo 9 - Mark Position of Fittings on Hose

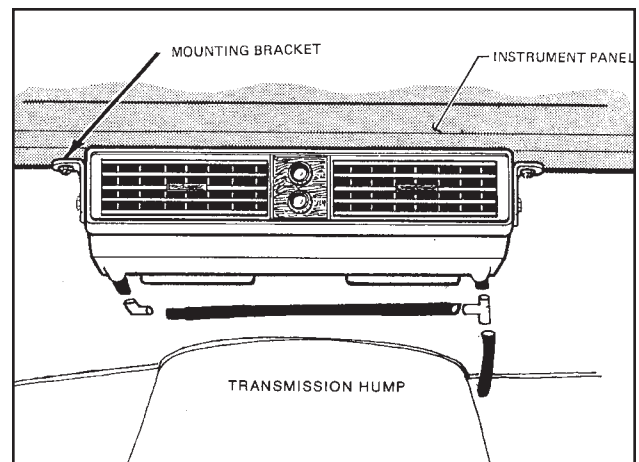


Diagram 3 - Attach Drain Tubes

2) New compressors purchased with complete systems from Old Air Products contain the correct amount of refrigerant oil.

**VARIABLES AFFECTING FREON CAPACITY**

- a) Length of hoses, driver or passenger side compressor.
- b) Size of condenser.
- c) Compressor capacity.

3) **134-A Systems** will require 32 to 36 ounces. An exact charge with 134-A is more critical for maximum performance than that of R-12. The exact charge will be relevant to the length of hose, compressor capacity, and size of condenser. We recommend adding a partial charge, and monitor temperature at vents while slowly adding remaining charge, while testing for point of maximum performance.

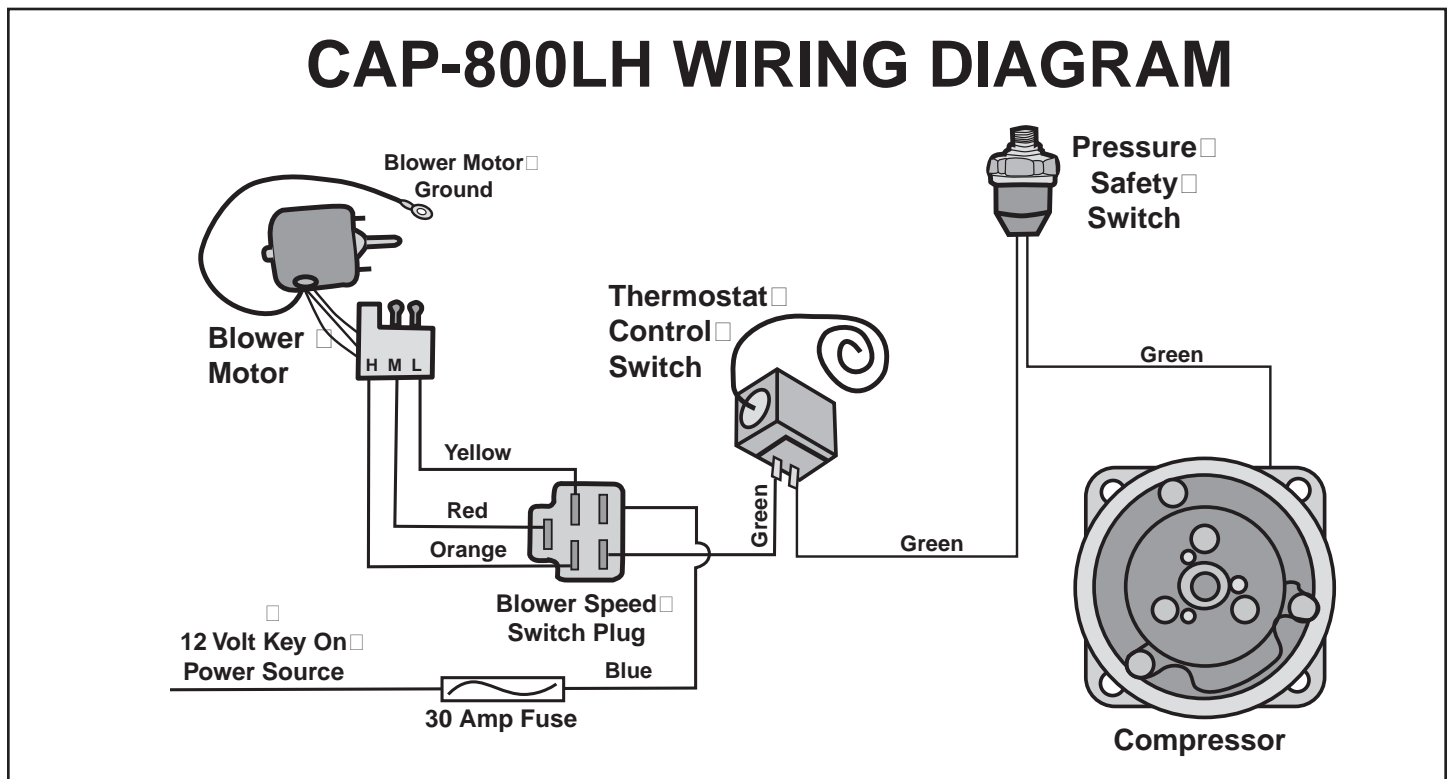
**R-12 Systems** will require 28 to 36 ounces of Freon. This is only a guide line, and the sight glass (under the dimple area) on top of the drier should be monitored. The exact charge will be relevant to the length of hose, compressor capacity, and size of condenser.

**NOTE:** When charging the system it will be necessary to put in about 12 to 18 ounces of refrigerant before the pressure safety switch will engage the compressor clutch. Charging and testing should be done with the doors shut, windows closed, convertible top up, fan on high blower, and an electric fan in front of radiator. If excessive high pressure exists adding an electric condenser fan is recommended if space permits.

*NOTE: 134A requires 15 - 20% less refrigerant than R-12, which means the sight glass may not ever clear.*

4) Leak test all A/C connections.

5) Place a copy of these installation instructions in glove box for future reference.





# PARTS LIST

## CAP-800LH

### A/C Unit (800 Series - Heat & Cool Unit Mounting Kit

- 2 Side Brackets
- 1 Rear Support Bracket
- 1 Plastic Drain Tube
- 1 Plastic 90° Fitting
- 1 Plastic "T" Fiting
- 1 Grommet

### Expansion Valve Kit (51-1003)

- 1 Expansion Valve (#25-1000)
- 1 Sensor bulb clamp (#60-1004)
- 1 Black Tacky Tape (#21-0617)
- 1 O-ring Kit (1/#6, 1/#8, 1/#10 & 1 Tube Oil)

### Compressor (Sanden or Equivalent)

### Compressor Mounting Bracket

Bracket will vary by engine application

### Condenser Kit

- 1 Condenser 11/1223
- 1 Condenser Mounting Kit

### A/C Hose Kit

- 1 #6 Liquid Line
- 1 #8 Discharge Hose
- 1 #10 Suction Hose

### Vents

- 5 32-16A Adaptors, if using factory centre louver will come with 2 additional 32-16A
- 1 32-3 Optional Centre vent
- 1 32-18AX used with 3 x 32-16A
- 1 26-1048 pull cable & 1 32-32 Y piece
- 2 32-7479-4 Adaptors for factory side louvers or 2 32-1 side louvers
- 1 32-4B Pod for rotary switched

### Ducting

- 2, 2 Inch ducting

### Fitting Sack Kit

- 1 #6 Straight Fitting
- 1 #6 90° FO Fitting
- 1 #8 Straight FO Fitting
- 1 #10 90° FO Fitting
- 1 #10 Straight FO Fitting
- 1 Discharge Tube Assembly
- 1 Liquid Tube Assembly w/ Safety Switch Port
- 1 O-ring Kit
- 1 Firewall Grommet

### Binary Safety Switch Kit

- 1 Binary Pressure Safety Switch
- 1 O-ring
- 1 Wire Harness

## Thank You for choosing an Autoware A/C System for your Classic Car.

We appreciate letters of response and photos of your vehicles. We will be selecting customer vehicles to feature on our web site. If you would like to submit your car send an e-mail with pictures and information to [info@autoware.com.au](mailto:info@autoware.com.au)

Regards,  
The Staff, Autoware

