

# Mahindra Roxor Complete Kit (989020)



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# Important Note for 2018 M/T Models:

• Due to firewall differences, some additional steps and modifications may be required - See Pages 11, 16, 17 and 35 for more information.



NOTE: Images may not depict actual parts and quantities. Refer to packing list for actual parts and quantities.



# Important Notice—Please Read

For Maximum System Performance, Vintage Air Recommends the Following:

NOTE: Vintage Air systems are designed to operate with R134a refrigerant only. Use of any other refrigerant could damage your A/C system and/or vehicle, and possibly cause a fire, in addition to potentially voiding the warranties of the A/C system and its components.

### Refrigerant Capacities:

Vintage Air System: 1.7 lbs. (27.2 oz.) or 771 grams of **R134a**, charged by weight with a quality charging station or scale. **NOTE: Use of the proper type and amount of refrigerant is critical to system operation and performance.** 

Other Systems: Consult manufacturer's guidelines.

### Lubricant Capacities:

**New Vintage Air-Supplied Sanden Compressor:** No additional oil needed (Compressor is shipped with proper oil charge).

**All Other Compressors:** Consult manufacturer (Some compressors are shipped dry and will need oil added).

### Safety Switches

Your Vintage Air system is equipped with a binary pressure safety switch. A binary switch disengages the compressor clutch in cases of extreme low pressure conditions (refrigerant loss) or excessively high head pressure (406 PSI) to prevent compressor damage or hose rupture. A trinary switch combines Hi/Lo pressure protection with an electric fan operation signal at 254 PSI, and should be substituted for use with electric fans. Compressor safety switches are extremely important since an A/C system relies on refrigerant to circulate lubricant.

### Service Info:

**Protect Your Investment:** Prior to assembly, it is critical that the compressor, evaporator, A/C hoses and fittings, hardlines, condenser and receiver/drier remain capped. Removing caps prior to assembly will allow moisture, insects and debris into the components, possibly leading to reduced performance and/or premature failure of your A/C system. This is especially important with the receiver/drier.

Additionally, when caps are removed for assembly, **BE CAREFUL!** Some components are shipped under pressure with dry nitrogen.

**Evacuate the System for 35-45 Minutes:** Ensure that system components (Drier, compressor, evaporator and condenser) are at a temperature of at least 85°F. On a cool day, the components can be heated with a heat gun *or* by running the engine with the heater on before evacuating. Leak check and charge to specifications.

### Bolts Passing Through Cowl and/or Firewall:

To ensure a watertight seal between the passenger compartment and the vehicle exterior, for all bolts passing through the cowl and/or firewall, Vintage Air recommends coating the threads with silicone prior to installation.

### Heater Hose (not included with this kit):

Heater hose may be purchased from Vintage Air (Part#31800-VUD) or your local parts retailer. Routing and required length will vary based on installer preference.



# Important Wiring Notice—Please Read

Some vehicles may have had some or all of their radio interference capacitors removed. There should be a capacitor found at each of the following locations:

- 1. On the positive terminal of the ignition coil.
- 2. If there is a generator, on the armature terminal of the generator.
- 3. If there is a generator, on the battery terminal of the voltage regulator.

Most alternators have a capacitor installed internally to eliminate what is called "whining" as the engine is revved. If whining is heard in the radio, or just to be extra cautious, a radio interference capacitor can be added to the battery terminal of the alternator.

It is also important that the battery lead is in good shape and that the ground leads are not compromised. There should be a heavy ground from the battery to the engine block, and additional grounds to the body and chassis.

If these precautions are not observed, it is possible for voltage spikes to be present on the battery leads. These spikes come from ignition systems and charging systems, and from switching some of the vehicle's other systems on and off. Modern computer-operated equipment can be sensitive to voltage spikes on the power leads, which can cause unexpected resets, strange behavior and/or permanent damage.

Vintage Air strives to harden our products against these types of electrical noise, but there is a point where a vehicle's electrical system can be degraded so much that nothing can help.

Radio interference capacitors should be available at most auto and truck parts suppliers. They typically are cylindrical in shape, a little over an inch long and a little over a half-inch in diameter, and they have a single lead coming from one end of the cylinder with a terminal on the end of the wire, as well as a mounting clip which is screwed into a good ground on the vehicle. The specific value of the capacitance is not too significant in comparison to ignition capacitors that are matched with the coil to reduce pitting of the points.

- Care must be taken, when installing the compressor lead, not to short it to ground. The compressor lead must not be connected to a condenser fan or to any other auxiliary device. Shorting to ground or connecting to a condenser fan or any other auxiliary device may damage wiring or the compressor relay, and/or cause a malfunction.
- When installing ground leads on Gen 5 systems, the blower control ground and ECU ground must be connected directly to the negative battery post.
- For proper system operation, the heater control valve must be connected to the ECU.



# Passenger Compartment Disassembly

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NOTE: Before starting the installation, check the function of the vehicle (horn, lights, etc.) for proper operation, study the instructions, illustrations, photos & diagrams. Begin by removing any accessories mounted or wired to the dash. A base model Mahindra Roxor was used for example. Perform the following:

- 1. Behind the dash, unplug the ignition, gauge cluster, headlight switch and horn button (See Photo 1, below). NOTE: Heater equipped vehicles may have a control switch as well.
- 2. Disconnect any accessory switches (See Photo 2, below).
- 3. Disconnect 12v power plug. (See Photo 3, below).
- 4. Remove the (2) bolts from the passenger-side dash to unbolt the hood release (See Photo 4, below).
- 5. Carefully remove the plastic steering column cover with a plastic trim tool (See Photo 5, below). NOTE: It is secured with double stick adhesive tape.
- 6. Remove (3) 12mm bolts from around the steering column (See Photo 6, below).





# Passenger Compartment Disassembly (Cont.)

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7. Remove (11) T-30 bolts from the perimeter of the dash, then carefully remove by lifting the dash up and away from the cowl (See Photo 7, below).



Dash Removed

Photo 7

# **Engine Compartment Disassembly**

- 1. Disconnect the battery.
- 2. Using the proper clamp pliers, remove the spring clamp and crank case vent hose (See Photo 1, below).
- 3. Remove the air box clamp (See Photo 2, below), and the turbo inlet clamp (See Photo 3, below).
- 4. Remove the entire air box assembly (See Photo 4, below).









# Heater Hose Modification (Cont.)

- **3**. Mark and cut the hose  $3 \frac{1}{2}$ " from the end (See Photos 3 and 4, below).
- **4.** Install the 5/8" heater hardline straight splice and using proper clamp pliers, install the 5/8" hose clamp as shown in Photo 5, below.









Defrost

Template

640653







# **Evaporator Installation**

**NOTE: On 2018 manual transmission models, the driver side evaporator bracket may need to be** replaced with the center support bracket (640640).

NOTE: To ensure a watertight seal between the passenger compartment and the vehicle exterior, for all bolts passing through the firewall, Vintage Air recommends coating the threads with silicone prior to installation.

- **1.** Locate the battery tray bolts installed during the engine compartment preparation.
- Install the evaporator module onto the bolts and secure using (2) M8-1.25 locknuts and (2) 5/16" flat washers as shown in Photo 1, below.
- Insert studs on the driver-side evaporator bracket into the corresponding holes on the firewall (See Photo 2, below). Secure from the engine bay side using (2) 9/32" flat washers and (2) M6-1.0 locknuts as shown in Photo 3, below.
- **4.** Install (4) M6 x 1 U-nuts onto the control panel and evaporator bracket slots (See Photos 4, 5 and 6, below).







# Heater Hose & Heater Control Valve Installation (Cont.)

- **9.** Connect the 37" length of hose to the evaporator heater line closest to the dash, and feed through the next hole over. Secure with a 5/8" hose clamp (See Photo 10, below).
- **10.** From the engine bay, connect the hoses coming through the firewall to the corresponding ports on the heater control valve (See Photo 11, below).
- **11.** Once all the hoses are routed and connected, secure the hoses inside the cab to the bracket on the evaporator using 11" tie wraps as shown in Photo 12, below.
- **12.** Remove the nut from the heater control cable (See Photo 13, below).
- 13. Install the cable through the control panel (See Photo 14, below).
- 14. Install the nut back onto the cable and tighten on the back of the bracket (See Photo 15, below).
- **15.** Loop the cable and install it through the grommet into the engine bay as shown in Photo 16, below.
- **16.** Install the .188" O.D. x .125" I.D. x .336" length nylon spacer onto the heater control valve lever (See Photo 17, below).
- 17. Install the cable onto the spacer (See Photo 18, below).

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# Fan Shroud Assembly & Installation (Cont.)

NOTE: The following steps are to be performed on the vehicle.

- 5. Install the radiator and shroud assembly into the vehicle using the OEM hardware. NOTE: Heater hose bracket may need to be loosened.
- 6. Install the lower fan shroud onto the shroud assembly (See Figure 5, below).
- 7. Secure the lower fan shroud with (4) 1/4-20 x 1/2" hex bolts into the U-Nuts (See Figures 5 and 6, below).





# A/C Hose Installation

- Remove the #8 cap from the compressor, and with a properly lubricated #8 O-ring (See Lubricating O-rings, Page 20), connect the straight service port fitting of the #8 A/C hose to the compressor block fitting as shown in Photo 1, below.
- 2. Route the hose through the air cleaner bracket as shown in Photo 2, below.
- **3.** With a properly lubricated #8 O-ring (See Lubricating O-rings, Page 20), connect the #8 A/C hose from the compressor to the upper fitting on the condenser (See Photo 2, below).
- **4.** Remove the #10 cap from the compressor. With a properly lubricated #10 O-ring (See Lubricating O-rings, Page 20), connect the straight service port fitting of the #10 A/C hose to the compressor block fitting as shown in Photo 3, below. **NOTE: Check orientation of service ports.**
- **5.** Remove the larger passenger-side firewall grommet, and install it onto the #10 A/C hose (See Photo 4, below), then reinstall the grommet as shown in Photo 5, below.









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### NOTE: See Quality Crimp Guidelines (Page 32), for all crimped connections.

- 1. Locate the cigarette lighter/12V power pigtail on the passenger side of the vehicle (See Photo 1, below).
- 2. Cut the violet/yellow stripe wire 3" behind the plug and strip both sides (See Photo 2, below).
- **3.** Strip the violet wire of the wire assembly and twist together with the violet/yellow wire coming from the factory harness (See Photo 3, below). Using the 14GA end of the 14-12GA butt connector, crimp the violet and violet/yellow striped wires together (See Photo 3, below).
- **4.** Using the heat shrink, crimp the plug end of the violet/yellow striped wire to the 12GA end of the 14-12GA butt connector (See Photo 4, below).
- 5. Install the ring terminal on the black wire from the wire assembly onto the ground stud on the passenger-side inner firewall (See Photo 5, below).
- 6. Route the red wire out of the #6 A/C hose grommet toward the battery (See Photo 6, below).











# Dash Reassembly (Cont.)

- 2. Use the remaining (2) M6 x 1 truss head screws to secure the control panel bracket (See Photo 3, below).
- 3. Secure the rest of the dash with the OEM hardware (See Photo 4, below).
- 4. Reconnect all previously removed and disconnected components.
- 5. Reconnect all previously removed accessories.



Photo 3





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# Final Steps: Completing the Install

- 1. Reinstall all previously removed items.
- 2. Fill radiator with at least a 50/50 mixture of approved antifreeze and distilled water. It is the owner's responsibility to keep the freeze protection at the proper level for the climate in which the vehicle is operated. Failure to follow antifreeze recommendations will cause heater core to corrode prematurely and possibly burst in A/C mode and/or freezing weather, voiding your warranty.
- **3**. Double-check all fittings, brackets and belts for tightness.
- 4. Vintage Air recommends that all A/C systems be serviced by a licensed automotive A/C technician.
- **5.** Evacuate the system for a minimum of 45 minutes prior to charging and perform a leak check prior to servicing.
- 6. Charge the system to the capacities stated on Page 4 of this instruction manual.
- 7. See Operation of Controls Procedures on Page 34.





# **Mahindra Wiring Diagram**





**Operation of Controls** 





# Packing List: Complete Kit (989020)



Description

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Qty.

Part No.

No.



# Mahindra Roxor Condenser Kit with Drier

ondenser Kit with Drier (039020)



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# Packing List: Condenser Kit (039020)

No.	Qty.	Part No.	Description
1.	1	640649	Bracket, Condenser, Bottom
2.	1	640647	Bracket, Condenser, Top
3.	1	200107	Rubber, 15.25", Condenser Bottom
4.	1	200106	Rubber, 10.5", Condenser Top
5.	1	656016	Bracket, Drier
6.	1	07321-VUC	Drier
7.	1	11079-VUS	Binary Switch, Male
8.	5	186011	Washer, .625" O.D. x .281" I.D.
9.	2	186021	Locknut, M6-1.0mm
10.	5	181490	Locknut, 1/4-20
11.	4	182873	Bolt, 1/4-20 x 1/2". Hex
12.	1	188888	Bolt, 1/4-20 x 1". Serrated Flange
13.	1	045003	Compressor Block Kit, 7B10
Plea Vint	ase report a tage Air wil	ny shortages direct I not be responsible	tly to Vintage Air within 15 days. After 15 days, e for missing or damaged items.
		2	3 4
Ć			
		6	
9			
		NOTE: Images Refer to	may not depict actual parts and quantities.



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# Grille Removal

- **1.** Remove the grille by removing (18) clips from the core support as shown in Photo 1, below.
- 2. Remove (1) T-30 screw from the bottom center (See Photo 2, below).
- 3. Clips and holes visible with grille removed (See Photos 3 and 4, below).





- Install the shorter insulator aligned with the mark, with the groove facing the back of the condenser (See Photo 6, below).
- 6. Install the top condenser bracket into the insulator groove with the slotted holes towards the front of the condenser (See Photo 7, below).





8





Condenser Installation

- 1. Install the condenser assembly into the core support, aligning the bottom studs into the lower mounting
- 2. Push the top condenser bracket into place, securing it with (2)  $1/4-20 \times 1/2''$  hex bolts, and (2) 1/4-20locknuts (See Photos 4 and 5, below). NOTE: For '18-'19 Roxors, install the bracket into previously
- 3. Secure the botton condenser bracket studs with (2) .625" O.D. x .281" I.D. washers, and (2) M6-1.0mm







# Drier Installation (Cont.)

Secure drier bracket

clamp with a 1/4-20

x 1" hex bolt, a .625"

O.D. x .281" I.D.

washer, and a 1/4-20 locknut

- 6. Install the drier into the drier bracket as shown in Photo 7, below. NOTE: Refrigerant flow through drier
- 7. With a properly lubricated O-ring, install the hose end with a straight fitting onto the lower condenser port
- 8. Secure the drier bracket clamp with a 1/4-20 x 1" hex bolt, a .625" O.D. x .281" I.D. washer, and a 1/4-20









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