

INSTALLATION INSTRUCTIONS
FOR
AIR CONDITIONING CAT 933
TRACK LOADER

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EVAPORATOR COIL: The evaporator coil mounts alongside the heater coil in the compartment on the right hand side of the cab.

1. Open the side access panel to the heater compartment for the tractor.
2. Remove the inside air filter - inside the cab.



Heater area opened up for evaporator installation.

3. Cut the bolt hole tab, on the cab side, off the heater coil flange.
4. Slide the evaporator coil into place hooking the back tab of the evaporator coil over the heater coil flange.
5. Screw the evaporator flange (the one to the outside of the machine) to the heater flange using the hardware (self-drilling screws) provided.

****NOTE** It will be easier to install the ½" line before securing the evaporator coil into place.**



Evaporator in place against heater assembly.



Evaporator assembly in place with lines run.

THERMOSTAT: The thermostat is mounted on the switch cluster on the control panel on the operator's right.

1. The blower switch on older machines must be modified so that all positions operate. This will entail removing the post or stop on the switch. This will allow the switch to be turned to the left which is where the air conditioning functions will be controlled from.
- 1a. On newer machines it is only necessary to take the power from the blower switch and run it to the thermostat. This will mean the thermostat will act as the control for the air conditioning function.
2. Drill a 7/16" hole in the centre of the control panel to mount the thermostat in.
- 2a. On the newer machines with rocker style switches the thermostat will be placed to the right of the existing panel as shown in the picture.
3. Extend the probe of the thermostat down and insert into the evaporator coil. Ensure the end of the probe extends down to a point 2" to 3" in from the expansion valve and 2" to 3" up from the bottom of the evaporator.
4. Mount the thermostat and secure.
5. Turn the blower switch to the left and determine which terminal will be live in all the blower positions to this side. This terminal will supply power to the thermostat.
- 5a. Power on the newer machines will be taken off the live clutch post of the blower switch. This is the post that is live in any blower 'on' position.



Older style machine thermostat set-up.



Newer control panel set-up for operator.

RECEIVER DRYER:

The drier is mounted on the firewall on the engine side to the right of the engine compartment.

1. The drier bracket is a straight bracket with a slotted hole at one end. The bracket mounts on an existing bolt point with a threaded hole (for an M10 bolt).
2. Mount the bracket in place with the hardware provided and secure the drier to the bracket with the #48 gear clamps provided.



Drier in place against firewall.

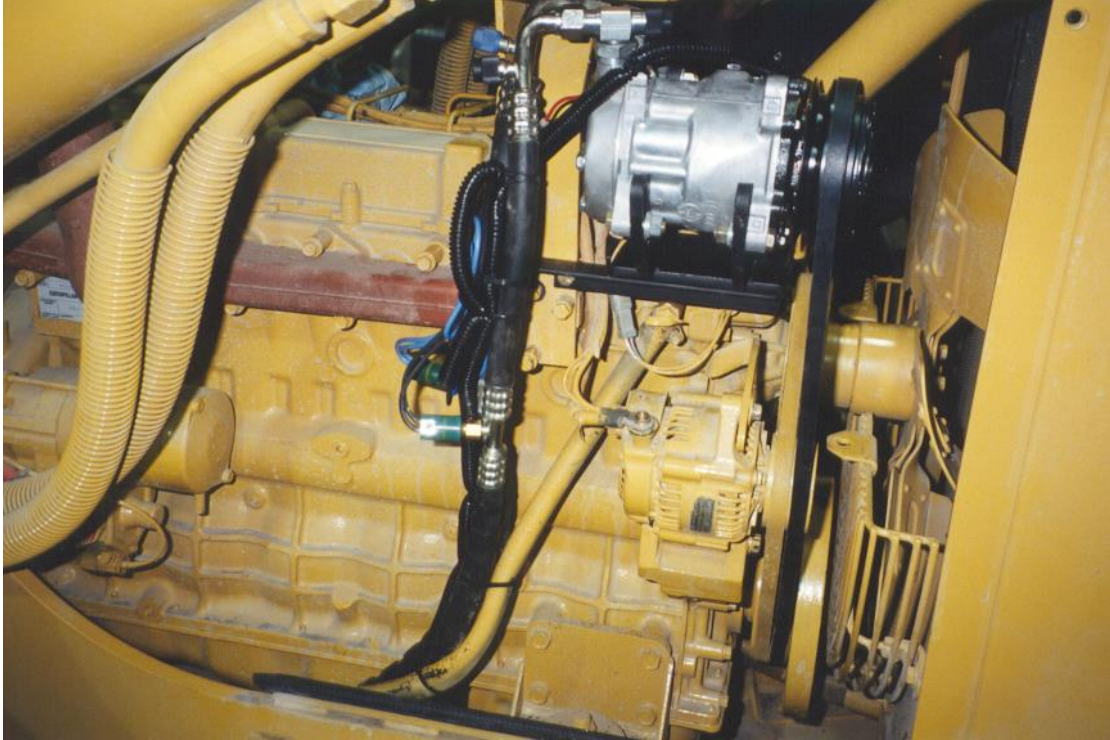
COMPRESSOR:

The compressor is mounted at the top of the engine on the right hand side underneath the muffler assembly. The belt drives off the front groove on the crank pulley.

1. Remove the upper fan screen assembly and remove the front belt driving the alternator and fan assembly.
2. With the two M8 bolts loosely secure the mount in place to the area of the thermostat housing. The cut-outs on this part of the mount will straddle the heater hose tap and the holes will line up with existing bolt holes.
3. The other bolt holes must be drilled out for 3/8" bolts ensuring that the mount remains properly aligned square to the motor.
4. Secure all mounting hardware and mount the compressor on the adjusting ears.
5. Set the belt into place around the crank pulley, up across the alternator pulley, over the compressor (the front groove of the pulley), and around the fan pulley. Tighten the belt and secure the compressor in place.



Compressor mount in place.



Compressor assembly in place.



Back view of compressor assembly.

CONDENSER COIL: The condenser is designed to be mounted on the front of the radiator. In order to make the air conditioning system work with this configuration it is necessary to install a PULLER fan, purchased from Caterpillar, in place of the pusher fan currently on the engine.

1. Remove the grill from in front of the radiator to get at the mounting area for the condenser.
2. Set the condenser assembly up against the radiator approximately 2" to 2 ½" above the base of the radiator compartment. Mark the locations on the side walls of the radiators for the bolts on the condenser frames. Drill and tap the inner walls only for ¼" x 20NC bolts (the area is double walled at this point).
3. Mark a location on the bottom of the radiator area (see pictures) to drill out for hoses to pass through. Drill out using a 2 ½" hole saw and protect the rim with edging material (supplied).
4. Mount the condenser as shown in the pictures.



Condenser in place on radiator.



Condenser view showing hose cut out.

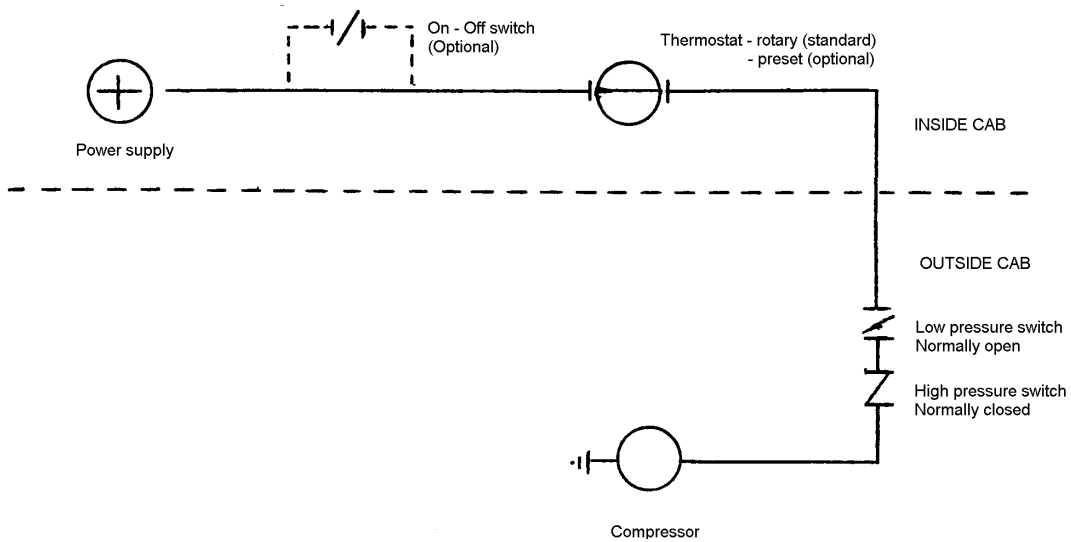


Condenser view showing hose routing.

ELECTRICAL:

The wiring is set up in series on all controls and switches running from the thermostat to the compressor.

1. Take power from the blower switch as described in the thermostat section above.
2. From the other post of the thermostat run the black 14ga wire in the wire loom down out of the heater compartment with the 5/8" hose and into the engine compartment.
3. Run the power through each of the pressure switches in series (it is not important the order the switches are hooked up in) and connect to the compressor.
4. The system is 12v and should not require any additional fusing over what is present on the blower system.



HOSE RUNS: The hose fittings have been pre-assembled on
at least one end of each hose.

13/32" hose compressor to condenser:

The 90o fitting at the compressor is pre-crimped. Connect the discharge side rotolock onto the compressor and hand tighten (make sure the white nylon seal is in place). Determine the orientation of the fitting to best allow for the installation of the hose assembly and tighten fully. Connect the hose assembly (making sure the O ring is in place) and tighten the fitting. Rout the hose down the side of the engine as shown in the compressor pictures, then forward and up through the hole forward of the radiator. Hook up to the top fitting on the condenser and tighten.

5/16" hose condenser to drier:

The 5/16" hose is connected to the lower condenser fitting with the 90o fitting as shown in the pictures of the condenser assembly. Route the hoses out of the compartment with the 13/32" hoses and follow them back along the bottom of the engine compartment. Continue back to the firewall and then up to the 'INLET' side of the drier (already mounted). Connect the 90o fitting at this end of the hose to the inlet fitting on the drier and tighten.

5/16" hose drier to expansion valve:

Connect the 90o fitting pre-crimped on the hose to the 'OUTLET' side of the drier and route the hose down, around, and back up into the evaporator/heater compartment. Connect the 90o fitting to the inlet fitting of the expansion valve as shown in the evaporator pictures and tighten.

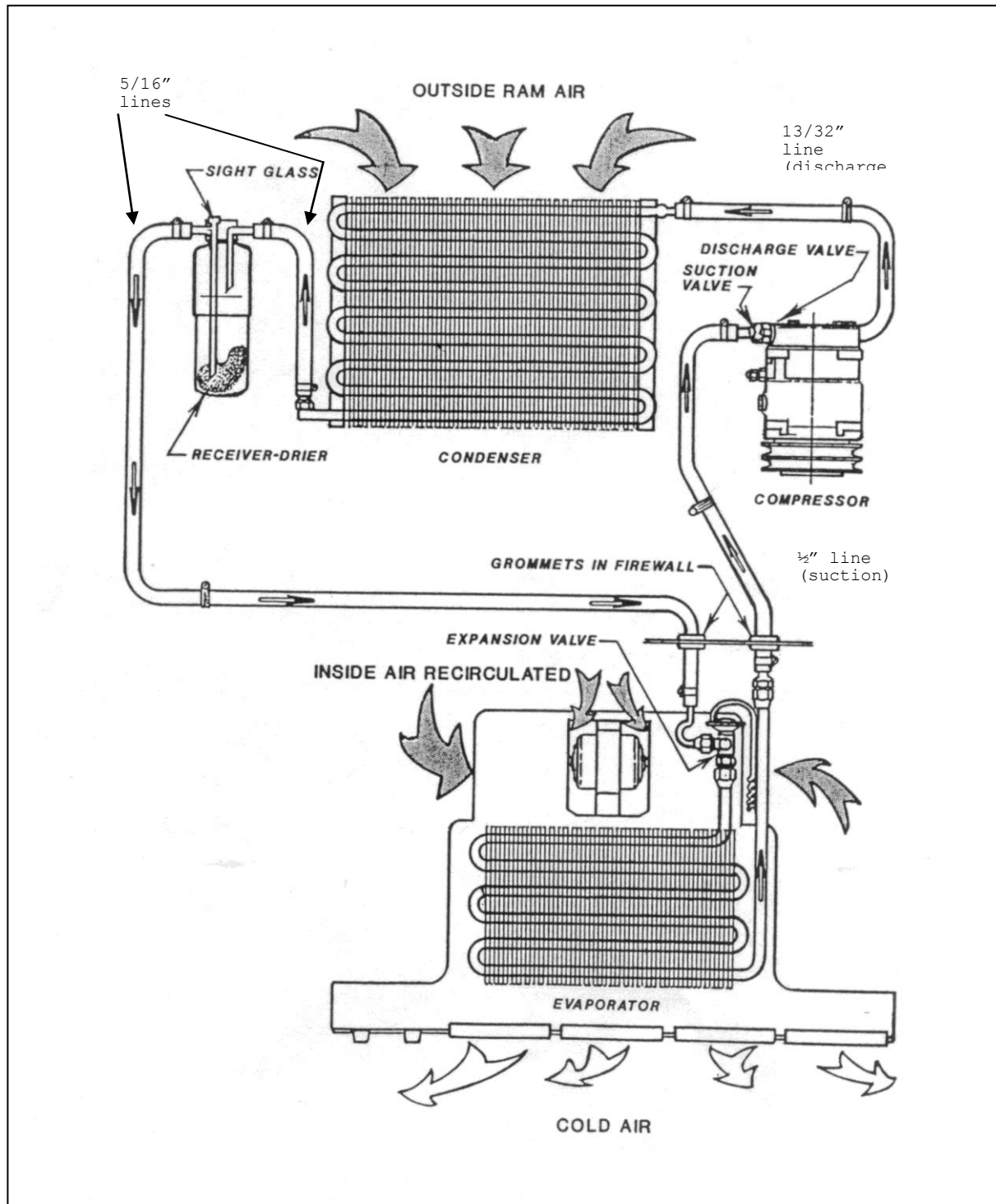
1/2" hose compressor to evaporator:

Connect the suction side rotolock to the suction fitting on the compressor. Hand tighten and determine the best orientation for the fitting to allow for the best hose routing. Tighten securely and connect the pre-crimped fitting to the rotolock. Route the hose around to the back of the engine, across the back of the engine and down with the outlet hose from the drier feeding to the evaporator area. Run the hose up into the evaporator area and connect the 90o fitting to the suction fitting of the evaporator.

HINTS:

1. When running the hoses, hose wrap any areas where the hoses may tend to rub or where there are sharp edges.
2. Secure the hoses using clamps or cable ties provided.
3. Lubricate all seals with refrigerant oil to ensure an adequate seal.
4. Run the wiring out of the evaporator box with the hoses and secure to the 1/2" hose going to the compressor.

Refrigerant Flow Pattern in a Standard Air Conditioning System



Thermostat Setting Procedures

- 1) Thermostat types
- a) preset
 - b) adjustable

- a) A preset thermostat is adjusted to its specific cut in and cut out temperatures when manufactured and does not have a rotary adjustment for the operator.
- b) An adjustable or rotary thermostat has been manufactured to a predetermined cut in and cut out temperatures, but it is also operator adjustable to achieve the desired comfort level.

Both types of thermostats can have their factory settings adjusted by turning the setting screws on the body of the thermostat. One body type has the setting screws mounted externally and labeled for direction of rotation. The other body type requires the removal of the plastic end plate to expose the set screw.

- 2) Thermostat probe location: The location of the thermostat probe in an evaporator coil can be very important to achieve the maximum cooling potential of the coil while also preventing coil freeze-up. There is no set location for the thermostat probe to be put that will be optimum for all systems, but several rules of thumb may be followed:
- a) Insert the probe in the coldest area of the evaporator coil.
 - b) Insert the probe from the top of the coil down, if possible.
 - c) Make sure that at least the last 3" of the thermostat probe are in the coil.

To find the most likely area where the coil is the coldest, consider these factors:

- 1) Direction of air flow through the coil.
 - 2) The coil area likely to have the lowest air flow.
 - 3) The inlet locations of the refrigerant into the coil.
 - 4) The inlet of the hotter outside air into the coil area.
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- 1) Usually the coldest side of the evaporator coil will be the air outlet side. Often the thermostat probe can be inserted between the last and second last row of tubes.
 - 2) The lower air flow area of the evaporator coil in most systems tends to be near either end of the coil. These areas will be colder
 - 3) The area of the coil that the refrigerant inlet tube(s) occupy should be the coldest part of the coil.
 - 4) If the system is equipped with an outside air intake, where and how that air is brought into the evaporator area can have a large effect on the coil temperature. If all the outside air is piped into the evaporator in one area, that area will be considerably warmer in hot weather.

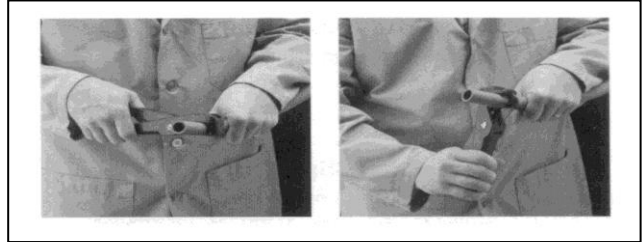
By looking at all these different factors, the area of an evaporator coil most likely to be the coldest can be determined.

Once the probe is inserted, the A/C system needs to be tested. Run the system to ensure that the thermostat is cycling the compressor off at the appropriate temperature. A core temperature ranging between 25° and 30° F should cause the thermostat to cycle off. The air temperature at the vent outlet closest to the evaporator coil should be between 38° F and 45° F when the compressor cycles off.

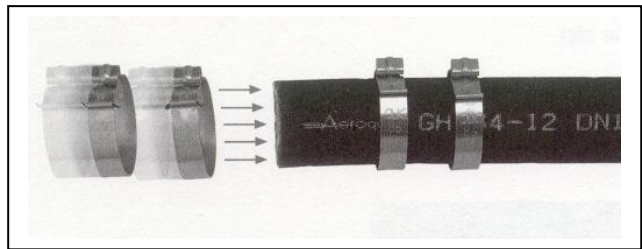
If the thermostat doesn't cycle off after a reasonable cool down period, and the air outlet temperature has dropped below 40° F, the cut in and cut out settings should be adjusted until the compressor is cycling on and off regularly. Let the system run for a decent time period (at least 15 min) and then check the evaporator coil for any signs of freezing.

Aeroquip E-Z Clip Assembly Instructions

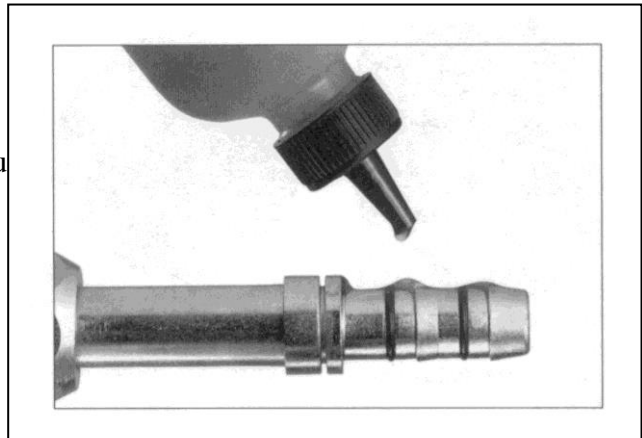
Step 1. Cut the hose to proper length with an appropriate cutting tool. Aeroquip's hand held hose cutter has been specially designed for cutting all non-wire reinforced hose, such as GH-134 Multi-Refrigerant hose. Be sure the cut is made square to the hose length.



Step 2. Install two proper-sized clips onto the cut end of the hose. Orientation of the clips does not affect the performance of the connection. However, for ease of assembly, both clips should have the same orientation. NOTE: Failure to slide the clips over the hose at this time will require the clips to be stretched over the hose or fitting later. This may permanently damage the clip.



Step 3. Lubricate the nipple with a generous amount of the refrigeration or A/C system's compressor lubricating oil. This MUST be done to lower the force of nipple insertion.

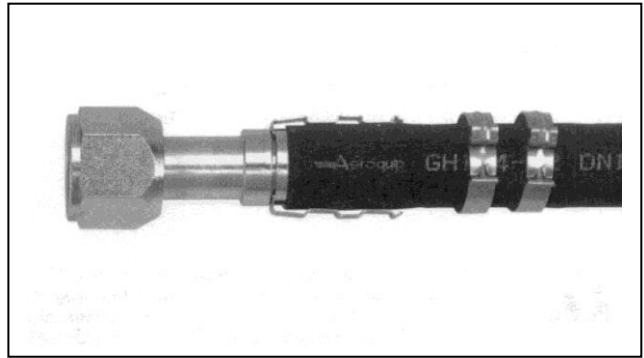


Step 4. Insert the nipple into the hose. To ensure that the nipple is fully inserted, check the gap between the cut end of the hose and the shoulder on the nipple. Care should be taken to avoid kinking or other damage to the hose during nipple insertion. NOTE: Be sure to wipe excess oil from the nipple and hose.

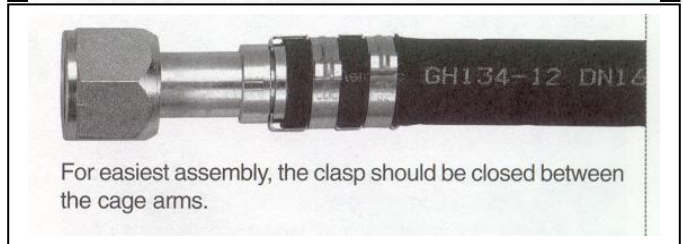
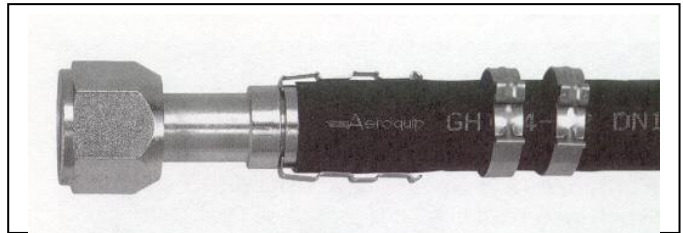


Step 5. Snap the cage into the groove on the nipple. The arms should extend over the hose length. When the cage has been correctly installed in the cage groove, the cage will be able to rotate in the groove. This step **MUST** be performed to ensure:

1. The clips will be located over the O-rings on the nipple.
2. The connection will be compatible with the connection's pressure rating.



Step 6. Slide the clips over the cage arms and into the channels on each arm.



Step 7. Use the pliers to close the clips. The pliers should be positioned squarely on the clip connection points and should remain square during the closing of the clip.

NOTICE: E-Z Clip components should not be reused.

