THERMO KING

TriPac™ and TriPac™ EVOLUTION

CLOSED LOOP COOLING INSTALLATION INSTRUCTIONS

AFTERMARKET KIT 100484

KIT COMPONENTS			
Item	**P/N**	**Description**	**Qty.**
1.	931106	Bracket, tank	1
2.	557075	Flatwasher, M6	2
3.	557008	Nut, locking M6	2
4.	130989	Tank, expansion	1
5.	130990	Cap, pressure 15 lbs.	1
6.	511883	Manifold, CLC	1
7.	131020	Hose, 3/4 ID x 5.75	1
8.	131021	Hose, 3/4 ID x 2.50	2
9.	511713	Clamp, CTB hose	6
10.	131022	Elbow, 90 degree	1
11.	131023	Nipple, male	1
12.	991655	Hose,(25 ft. cut to 22 in.)	A/R
13.	552979	Screw, 1/4-20 x 1-1/4”	3
14.	424420	Harness, resistor	1

STEP #1 - Drain Coolant and Remove Components

1. Drain and save the coolant from both the tractor's engine and the TriPac's APU.
2. Disconnect and remove all coolant hoses, tee fittings and hand valves from the tractor's engine to the TriPac's APU. These components will no longer be needed.
   - If the APU is equipped with the Arctic Switch Option - cut the wires off at the Arctic Switch tube assembly. The Arctic Switch will no longer be used.
   - If the APU's coolant hoses were tee'd into the tractor's heater hoses - remove the tee's and join the hoses together to maintain the tractor's OEM heating system.
   - If the APU's coolant hoses were attached directly to the tractor's engine block - remove the fittings and cap off the engine block with appropriate fittings.
3. Locate and remove the nameplate under the tractor's hood that states - **NOTICE: This truck is equipped with auxiliary power unit. Coolant system must be bled after main engine coolant system servicing.** This nameplate will no longer be needed.
4. Add coolant back into the tractor's radiator and bleed air from the system per the tractor manufacturer's instructions. Operate the tractor's engine and check for leaks.

STEP #2 - Install Closed Loop Cooling Components

Reference Figure 1 on page 3.

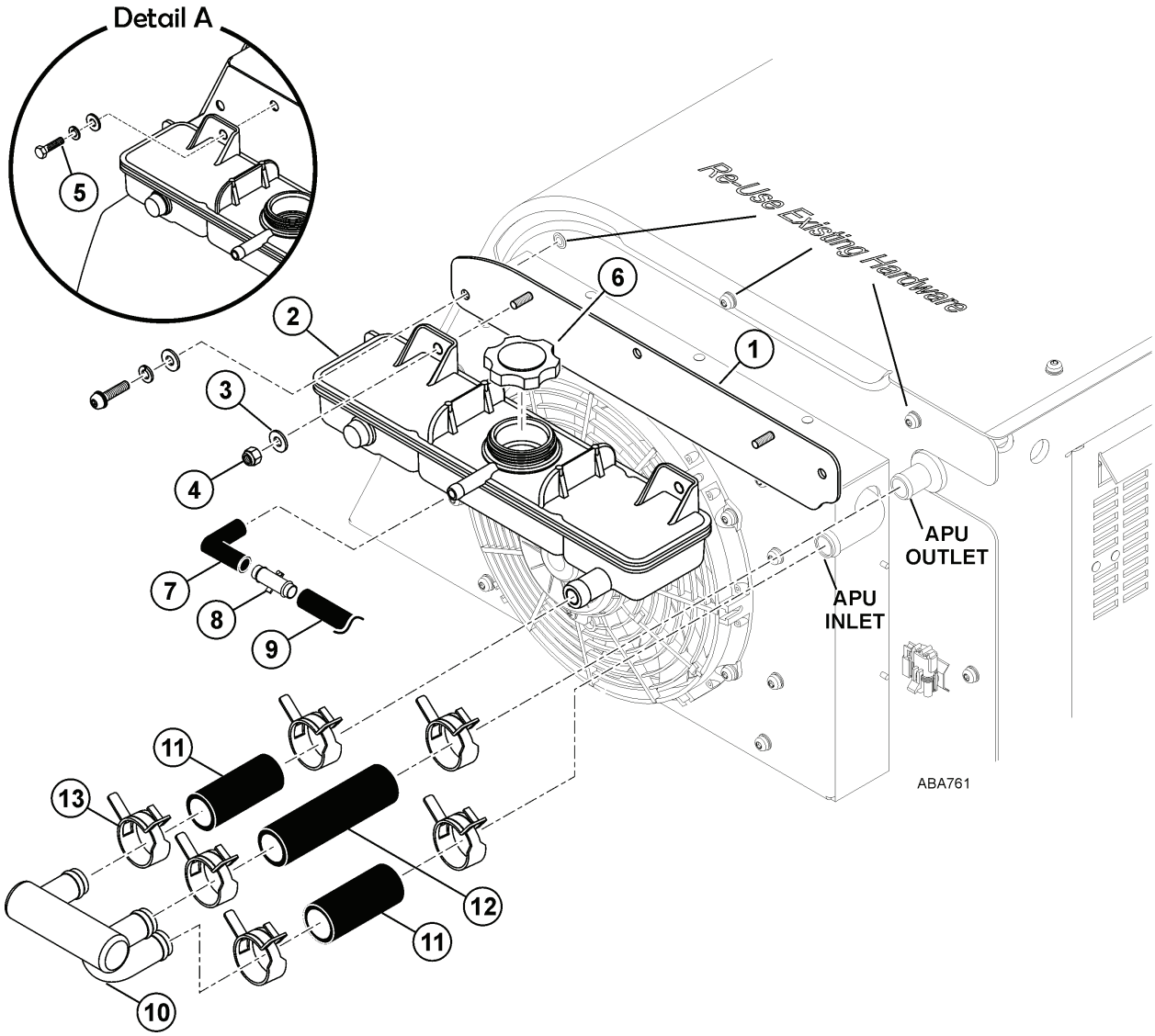
1. **TriPac Legacy units (DETAIL A)** - Install the expansion tank directly onto the APU by removing the three existing 1/4-20 x 1" mounting bolts and replacing them with the longer bolts supplied in the kit. Reuse the existing flat washers and lock washers. Tighten mounting hardware to 5 ft. lb.(7 Nm).

   TriPac EVOULUTION units - Remove the three existing 1/4-20 mounting bolts on the APU, install the expansion tank bracket and reinstall hardware. Tighten mounting hardware to 5 ft.lb (7 Nm). Install the expansion tank onto the mounting studs of the tank bracket and secure with the supplied flatwashers and nuts. Tighten mounting hardware to 5 ft.lb (7 Nm).
2. Install the copper manifold with the supplied sections of hose and clamps as shown. ***Note: The longer length hose (item #4) goes to the APU's Outlet fitting.***
3. Install the 90 degree elbow, hose nipple and overflow hose onto the tank fitting. Route the overflow hose down and out towards the rear of the APU and secure with tie bands.

STEP #3a- TriPac Legacy Units - Reconnect the Pre-cooler Fan Temperature Switch

IMPORTANT: If your APU was equipped with the Arctic Switch Option, the Pre-cooler Fan Temperature Switch located inside the APU must be reconnected to the main wire harness. If your APU did not have the Arctic Switch Option, disregard the steps below.

1. Locate wires **(7A, 8FET)** inside the APU. The wires will have white wires butt spliced to them that went to the Arctic Switch tube assembly. These wires are no longer needed. Heat shrink each wire end closed and secure the wires with tie bands.
2. Locate the **Pre-cooler Fan Temperature Switch** inside the APU. The switch will have wires **(CH, LWT)** with blue wires butt spliced to them that went to the Arctic Switch tube assembly.
   - Locate the matching wires **(CH, LWT)** on the main harness inside the APU.
   - Reconnect the **Pre-cooler Fan Temperature Switch** wires **(CH, LWT)** to the matching wires **(CH, LWT)** on the main harness using butt splice connectors crimped firmly.



1.	*Expansion Tank Bracket	8.	Nipple
2.	Expansion Tank	9.	3/8 in. Hose
3.	*M6 Flatwasher	10.	CLC Manifold
4.	*M6 Locking Nut	11.	Hose, 3/4 ID x 2.50 in.
5.	**Screws 1/4-20 x 1-1/4” long	12.	Hose, 3/4 ID x 5.75 in.
6.	Pressure Cap	13.	CTB hose Clamps
7.	Elbow 90 degree		
**** Only used on TriPac EVOLUTION units.*** ***** Only used on TriPac Legacy units.***			

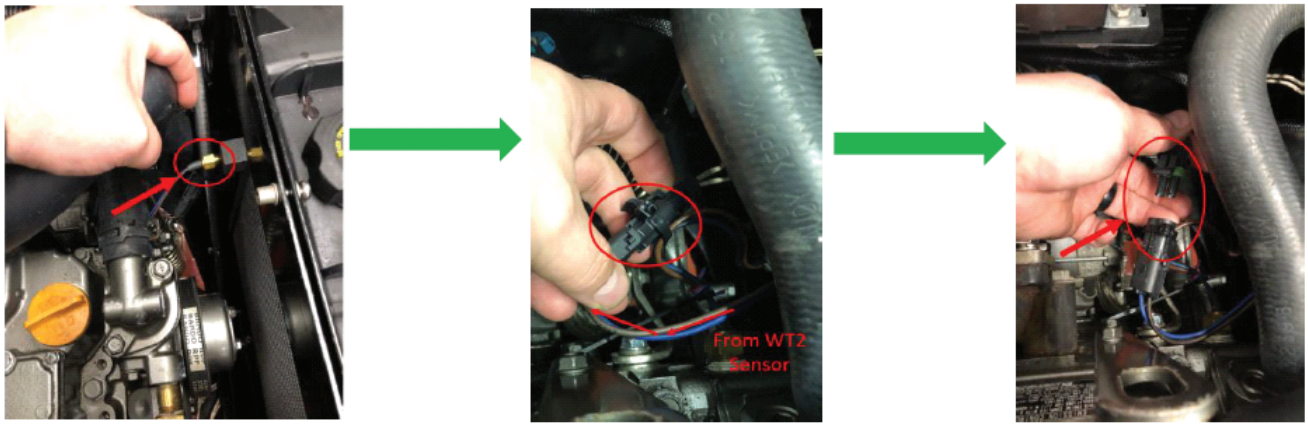
Figure 1: TriPac Closed Loop Cooling Component Assembly

STEP #3b TriPac EVOLUTION Units - Resistor Harness Installation

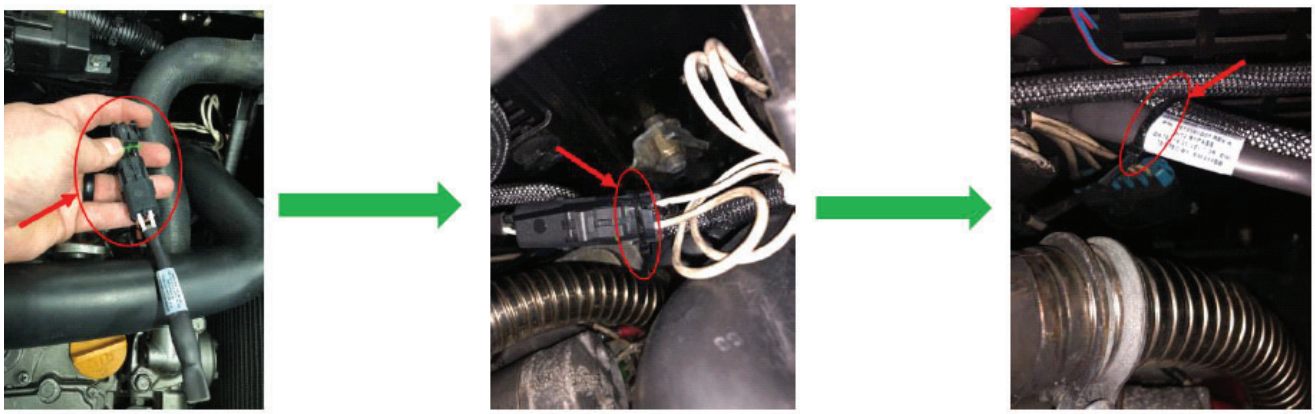
WARNING: Take precautions to ensure the TriPac will not accidentally start while you are servicing the system by turning the TriPac's Engine Switch to the OFF position.

When converting an open loop unit to a closed loop unit, a Resistor Harness (424420) must also be installed. This is to make units uniform in build and function to units built after 8/12/19.

1. With unit off and cool, remove the six (6) T27 Torx bolts securing top cover. Remove cover and turn the APU Engine Switch to the OFF position to ensure engine does not inadvertently start.
2. Locate the **WT2** sensor threaded into the top left corner of the pre-cooler (if looking from the engine). Trace the lead wire back to its connector and disconnect from the harness. Secure the connector away from the belt using a cable tie.



3. Plug the resistor harness into the connector the WT2 sensor was removed from and fold the sensor back onto the wire harness. Use cable ties near the bottom and the top of the resistor harness to attach it firmly to the harness ensuring it does not become loose in the engine compartment.



STEP #4 - Bleeding the Closed Loop Cooling System

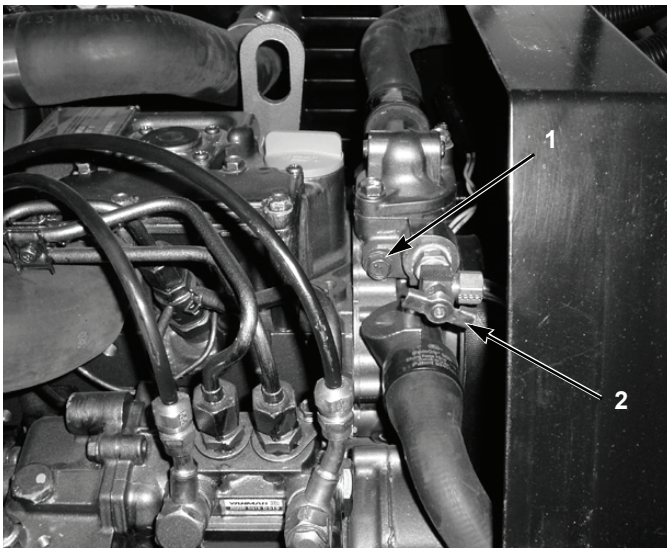
CAUTION: Do not start the engine without bleeding the air out of the engine block.

NOTE: If an engine runs with air trapped in the block, the engine may be damaged. The high water temperature switch may not protect an engine that has air trapped in the block, because the high water temperature switch is designed to protect an engine from overheating due to failures in the cooling system and the loss of coolant.

Often when a TriPac unit cooling system is refilled, air is trapped in the engine block and/or under the thermostat. Use the following procedure to bleed air out of the block and the cooling system:

1. Place a clean container under the TriPac bleed line to catch the coolant that is drained.
2. Open bleed petcock on the TriPac engine to allow air to bleed out.

NOTE: Units built prior to September 2006 have the bleed petcock on top of the thermostat housing. On theses units, remove the water pump bleeder bolt and bleed the air until there is a stead stream of coolant. Then reinstall the water pump bleeder bolt.



1.	Water Pump Bleeder Bolt
2.	Bleed Petcock

Figure 2: Water Pump Bleeder Bolt and Bleed Petcock Locations

3. Slowly pour coolant into expansion tank until a steady stream of coolant flows from bleed line, then close the bleed petcock.
4. Slowly pour coolant into expansion tank until the coolant level is at the top of the tank window.
5. Install the expansion tank cap.
6. Start the TriPac engine and use a non-contact thermometer pointed at the water pump bleeder bolt to monitor the coolant temperature. The water pump bleeder bolt is located next to the bleed petcock on the water pump **(See Figure 2)**.
7. When the temperature reaches 150F (66C) for units with a 160F (71C) thermostats, or 170F (76C) for units with 180F (82C) thermostats, shut off engine for 2 minutes to allow the thermostat to heat soak and open completely to purge air out of block, head, and water pump.
8. After 2 minutes, re-start the engine.
9. Remove expansion tank cap and slowly pour coolant into expansion tank until coolant level is at the top of the tank window, then reinstall the expansion tank cap.
10. Repeat steps 7 through 9 until coolant level stabilizes. The TriPac APU cooling system should now be bled of all air.
11. Turn the APU Engine Switch to the ON position. Reinstall top cover and the six (6) T27 Torx bolts and tighten hardware securely.