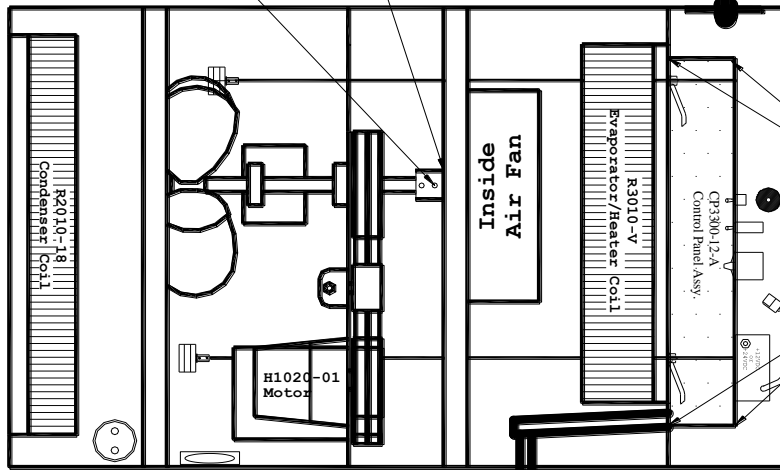


	Problem	Cause	Solution/Test
1	Unit not cooling	a Compressor does not energize	Verify the compressor is running by seeing if outer most plate of compressor pulley is turning with main compressor pulley. If compressor outer clutch pulley plate is not turning, check the following. 1) Turn brown thermostat knob fully clockwise. If cab temperature is below 65° F, the compressor will not energize due to minimum thermostat setting of 65° F. 2) Use a voltmeter to measure 12vdc or 24vdc to stud on voltage selector (black box). If no voltage is measured, check fuse and wiring. 3) Use voltmeter to measure 12vdc exiting voltage selector located at 5 amp toggle switch where wire connects between resistor and toggle switch. If no voltage is measured or incorrect voltage, replace voltage selector. 4) Use voltmeter to measure 12vdc at terminals between 5 amp toggle switch and thermostat. If no voltage is measure, replace 5 amp toggle switch. 5) Use voltmeter to measure 12vdc exiting thermostat wire to compressor clutch coil (see wiring diagram below) or connect jumper wire across both thermostat terminals. If compressor energizes, replace thermostat. 6) Measure resistance on compressor clutch coil by removing wire from thermostat to compressor clutch coil. The resistance is measured between this wire and ground. A resistance measurement between 3.2 and 3.5 ohms should be measured. Change compressor clutch coil (MacBone# R1010-18) if resistance is not within this range.
		b Compressor energizes but still not cooling properly	1) Verify hydraulic motor is operating at designed speed range. Use a tachometer and measure the hydraulic motor pulley speed. Hydraulic motor pulley speed range should be between 1800 to 2200 rpm. If hydraulic motor is not within this range, check hydraulic oil flow and pressure, which should be 10 gpm at 600 to 1400 PSIG. If this flow or pressure is not correct, check pump and pressure relief valve for proper flow and operation. 2) Locate refrigerant sight glass below hydraulic connections. While the compressor is operating, shine a flashlight through the sight glass. If sight glass is cloudy or bubbles are seen, the unit is low on charge. Have a person certified to handle refrigerant add R-134A refrigerant until the sight glass is clear or recover remaining refrigerant, pull at least a 15 minute vacuum and recharge unit (CH24 = 1 lb 6 oz. of R-134A, CHV24 = 1 lb. 10 oz. of R-134A). Unit may be sent back to MacBone for repair.
		c Evaporator or condenser coils or filters are dirty	Inspect evaporator and condenser coils and filters for dirt. Clean coils or replace filters as necessary.
		d Hydraulic motor running backwards	Make sure MacBone hydraulic motor is turning in the proper direction. Hydraulic motor pulley should rotate clockwise (CW) facing the pulley. If rotation is CCW, check hydraulic supply and return lines for proper connection. The hydraulic return hose connects to the upper or top fitting marked "RETURN" on the motor, and the supply hose connects to the lower fitting from the hydraulic motor.
		e Blue handle fan and motor speed control not fully open hydraulic ball valve	Make sure the Blue handle, which controls the fan and motor speed, is in the fully open position (handle parallel to unit).
		f Blue handle speed control rod not moving hydraulic ball valve stem	Blue handle control rod to hydraulic ball valve coupling is loose or pin has sheared. Replace coupling pin by drilling 1/8" Hole and replace with 1/8" x 3/4" roll pin (MacBone# F6520-02).
		g Heat circuit is circulating while in cool mode	Make sure the Red handle for the heat circuit is in the off position (handle perpendicular to unit). Also, make sure control rod and ball valve stem is connected by coupling and pin has not sheared. Replace coupling pin by drilling 1/8" Hole and replace with 1/8" x 3/4" roll pin (MacBone# F6520-02).
2	Fan speed or motor speed is perceived as slow	a Blue handle fan and motor speed control not fully opening ball valve	Make sure the Blue handle fan and motor speed control is in the fully open position (parallel to unit).
		b Supply pump to MacBone or pressure relief valve not operating properly	Verify hydraulic motor is operating at designed speed range. Use a tachometer and measure the hydraulic motor pulley speed. Hydraulic motor pulley speed range should be between 1800 to 2200 rpm. If hydraulic motor is not within this range, check hydraulic oil flow and pressure for 10 gpm at 600 to 1400 PSIG. If this flow or pressure is not correct, check pump and pressure relief valve for proper operation.
	Problem	Cause	Solution/Test

2	Fan speed or motor speed is perceived as slow	c	Excessive hydraulic motor case drain	Measure case drain from MacBone unit hydraulic motor. Case drain is typically .1 to .2 gpm. Excessive case drain will cause the hydraulic motor to run slow (1 gpm case drain reduces motor speed by approx. 200 rpm).
3	Dust entering cab	a	Dust entering through blower shaft, condensate drain on CHV or louvers	Use MacBone# DK-1 and follow instructions below.
4	Unit does not heat	a	Heater circuit ball valve not open or fully open	Make sure the Red handle for the heat circuit is in the fully on position (handle parallel to unit). Also, make sure control rod and ball valve stem is connected by coupling and pin has not sheared. Replace coupling pin by drilling 1/8" Hole and replace with 1/8" x 3/4" roll pin (MacBone# F6520-02).
		b	Engine coolant, hydraulic oil or engine oil is not circulating through coil	Check engine coolant, hydraulic oil or engine oil for proper flow through coil.
5	5 amp toggle switch trips to off position	a	Faulty voltage selector (black box)	1) Use a voltmeter to measure 12vdc or 24vdc to stud on voltage selector (black box). Now measure 12vdc exiting voltage selector located at 5 amp toggle switch where wire connects between resistor and toggle switch. If a difference of more than 1 volt from the incoming stud voltage is measured, replace voltage selector. Measure resistance on compressor clutch coil by removing wire from thermostat to compressor clutch coil. The resistance is measured between this wire and ground. A resistance measurement between 3.2 and 3.5 ohms should be measured. Change compressor clutch coil (MacBone# R1010-18) if resistance is not within this range.
		b	Faulty compressor clutch coil	Measure resistance on compressor clutch coil by removing wire from thermostat to compressor clutch coil. The resistance is measured between this wire and ground. A resistance measurement between 3.2 and 3.5 ohms should be measured. Change compressor clutch coil (MacBone# R1010-18) if resistance is not within this range.
		c	Faulty thermostat	Remove both wires going to thermostat and connect the two wire together. If breaker no longer trips and compressor begins to operate, replace thermostat.
		d	Poor or faulty ground (mounting studs) connection	If applying 24 VDC to the voltage selector, (black box) stud with red nut causes the 5 amp toggle switch to trip, a faulty ground connection may be the problem. Make sure both voltage selector mounting studs are mounted to the ground chassis frame. If these mounting studs are not grounded, the 24 VDC source will be incorrectly applied to the 12 VDC compressor clutch coil.

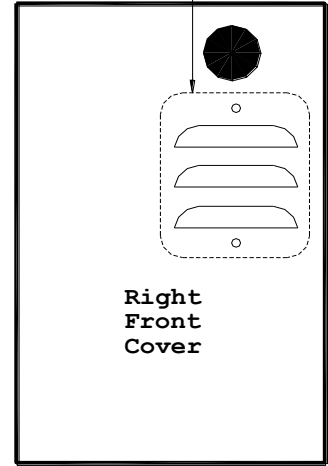
- 2) Remove right and left front covers.
- 3) If coupling set screw, located closest to bulkhead, is above shaft surface, file set screw down to level of shaft surface.
- 4) Clean 4"x4" area on metal bulkhead around shaft coupling
- 5) Wrap 3"x3" felt pad around 1-1/2" coupling and remove white paper to adhere to metal bulkhead.

- 6) Remove filter located on back side of front cover. Use existing bolts and wing nuts to attach cover plate.



CHV Series Unit

- 7) Seal any open cracks w/ silicone sealer around return air rubber gasket.



Right Front Cover

- 1) Connect duckbill condensate drain (clear tube) to both aluminum tubes under unit. This can be accomplished during installation of unit to subbase. Secure tubes with tie wraps.

Scale: None	DK-1 Install on CHV unit	
By: JDR	Date: 12/13/07	Drawing Number: DK-1



