## Maintenance Checklist: Konvekta KL60 Dual Circuit

**BUS NUMBER __________ DATE __________ INSPECTED BY _________________________**

**MILES __________ HOURS __________**

### Interior

1. ☐ Check air inlet filter and secondary inlet filter.
   a. If dirty remove and clean with compressed air or mild soap and water or replace with part number 307H14001442 (Air Inlet Filter) or 307094 (Secondary Air Inlet Filter) available from Trans/Air.
   b. Make sure that secondary filter is secured against the coil with no possibility of air bypassing.

2. ☐ Check evaporator coils for cleanliness.
   a. If coils are dirty clean with compressed air or a Biodegradable coil cleaner. To do this job properly you must remove evaporator cover. Trans/Air uses EVAP POW'R (Nu-Calgon product from Granger).

3. ☐ Check fuses and electrical connections in return air.
   a. If loose connection is found, perform repair.
   b. If blown fuse is found, replace fuse.
   c. If replacement fuse blows, perform electrical troubleshooting.

4. ☐ Check ABS air out transitions for loose / missing screws or cracked / broken transitions.
   a. If loose or missing screws are found, tighten or replace.
   b. If transitions are cracked or broken, replace with Champion supplied replacement.

5. ☐ Check air outlet louvers to make sure they all are open.
   a. If louvers are found closed, open louvers.

6. ☐ Check sight glasses to see if they are yellow / wet or black / contaminated.
   a. If yellow / wet;
      i. Recover and recycle refrigerant.
      ii. Change filter driers, part number 307H14001057 available from Trans/Air.
      iii. Change sight glasses, part number 307H14001137 available from Trans/Air.
      iv. Begin to pull vacuum using micron gauges.
      v. Lock out vacuum pumps.
      vi. Check and repair system for leaks if needed.
      vii. Continue to vacuum until system locks out below 1000 microns.
      viii. Charge system with 11 lbs. per side of R134a.
   b. If sight glasses are black / contaminated,
      i. System will need to be flushed.
      ii. You can either use commercial flushing machine or Trans/Air method.
         1. Commercial Flushing Machine
            a. Follow manufactures directions supplied with your flush machine.
         2. Trans/Air Method (requires push-pull recycling machine)
            a. Recover and recycle refrigerant.
b. Remove expansion valves  
c. Remove internal component from expansion valve  
d. Re-install expansion valve into system.  
e. Remove filter drier.  
f. Remove descant from filter drier.  
g. Re install filter drier into system.  
h. Remove and cap lines from compressor.  
i. Begin flushing system with a push-pull recycler.  
j. Flush from the suction side to discharge side.  
k. Change filter driers, part number 307H14001057 available from Trans/Air.  
l. Change sight glasses, part number 307H14001137 available from Trans/Air.  
m. Change expansion valves, part number 307H14002075 available from Trans/Air.  
n. Remove compressor.  
o. Drain compressor oil.  
p. Refill compressor with 6.1 oz of Pag oil 46 viscosity oil, part number 913018 available from Trans/Air.  
q. Re-install compressor and attach compressor lines.  
r. Begin to pull vacuum using micron gauges.  
s. Lock out vacuum pumps and check and repair system for leaks.  
t. Continue to vacuum until system locks out below 1000 microns.  
u. Charge system with 16.5 oz of Pag 46 viscosity oil, part number 913018 available from Trans/Air.  
v. Charge system with 11 lbs. per side of R134a. (Charging Procedure)

7. Check for water or condensation leaks to the interior of the bus

**Recommend Equipment**

816189 - 4-Way Manifold Gauge set (R134a) available from Trans/Air  
816188 - Pump, 7 CFM Vacuum available from Trans/Air  
816117 - Micron Gauge available from Trans/Air  
816095 - Bottle Blanket Heater available from Trans/Air  
816121 - Adapter, Ball Valve available from Trans/Air  
913018 – Pag 46 Viscosity oil available from Trans/Air  
816028 – Oil injector bottle available from Trans/Air

**Drivers Area**

1.☐ Locate the PCM board in the compartment above Drivers seat.  
   a. Check PCM board to see if and unauthorized red fuse holder has been added to the board at the heat relay.  
   b. If unauthorized red fuse holder is found, remove it from PCM board to prevent back-feed which will damage KS60 controller.

2.☐ Check KS60 controller for faults.  
   a. Fault check KS60 controller using procedure as contained in Service manual (page 15).  
   b. Make note of any faults, and correlate to fault code descriptions as contained in Service manual (page 15).  
   c. Verify by clearing faults and re-checking.
d. If faults return, troubleshoot and correct faults.

3. ☐ Check the KS60 Parameter Settings.
   a. Verify that the KS60 has the correct parameter settings using the Service manual.
   b. If the parameter settings are wrong, change to factory default listed in Service manual.
   c. Make sure Fahrenheit is selected on step 8.

4. ☐ Remove controller from dash and check the dip code setting.
   a. The switches should be set to code 10, Off, On, Off, On.
   b. If not set as above, reset.

5. ☐ Check to see if there are signs of a burnt chip on back of controller.
   a. If burnt chip is found, replace controller, part number 307H11005401 available from Trans/Air.
   b. Re-install controller and check new controller for faults as above.

6. ☐ Check wire crimps at K21 and K22 relays located at drivers feet.

**Engine Area**

1. ☐ Check compressor
   a. Check clutch for evidence of damage due to low voltage slippage and high heat.
   b. Inspect compressor for evidence of damage by turning compressor clutch while feeling for asymmetrical operation or grinding. Compressor should turn smooth in both directions.
   c. Inspect compressor body for oil leaks.
   d. Inspect clutch pulley for oil or foreign matter.
   e. If the inspection indicates any failures, replace compressor, part number 512242 available from Trans/Air, per mount kit drawing 4013186, 4013200, 4013269 or 4013324 available from Trans/Air at 800-673-2446 x226.
   f. For further information see Compressor Diagnostics

2. ☐ Check condition of belts.
   a. If any belt is faulty, replace
   b. Belts can be ordered from Trans/Air under part numbers identified on Mount Kit DWG. 4013186, 4013200, 4013269 or 4013324
      i. 4013186-02 = 7155060780 Belt
      ii. 4013200-02 = 7155060785 Belt
      iii. 4013324-02 = 7155060805 Belt
      iv. 4013269-02 = 7155060805 Belt

3. ☐ Check to make sure belt is in running in the correct grooves of compressor
   a. If not tracking properly, re-position belt.

4. ☐ Make sure belt is routed properly.
   a. If not routed properly, re-route per Mount Kit DWG. 4013186, 4013200, 4013269 or 4013324.

5. ☐ Check condition of Idler pulleys.
   a. Check condition of bearing seal.
   b. Spin bearing feeling for asymmetrical operation, dry bearings, rough spots, and grinding
   c. If any problems are found replace idler pulley.
   d. Idler pulleys can be ordered from Trans/Air under part numbers identified on Mount Kit DWG. 4013186, 4013200, 4013269 or 4013324
i. 4013186-02 = 711084 Idler Pulley, 711048 Idler Pulley, 711075 Spring Tensioner, 711063 Pulley, 4012529 Bushing
ii. 4013324-02 = 711084 Idler Pulley, 711048 Idler Pulley, 711079 Spring Tensioner, 711077 Pulley, 711041 Pulley, 4012529 Bushing
iii. 4013200-02 = 711084 Idler Pulley, 711048 Idler Pulley, 711075 Spring Tensioner, 711063 Pulley
iv. 4013269-02 = 711084 Idler Pulley, 711048 Idler Pulley, 711047 Idler Pulley, 711079 Spring Tensioner, 711041 Pulley, 4012529 Bushing

6. Check charging port caps.
   a. If missing, replace;
      i. Suction cap part number 813046 available from Trans/Air.
      ii. Discharge cap part number 813045 available from Trans/Air.

7. Inspect all fittings under the hood for leaks.
   a. If leaks found, replace fittings available from Trans/Air.
   b. Fitting part numbers can be obtained from piping diagram 5031145 available from Trans/Air at 800-673-2446 x226.

8. Verify proper use of clips and cages on the inspected fittings (Crimping Guidelines).
   a. If improper clips and cages found, replacements are available from Trans/Air;
      i. #10 Clips, 313502
      ii. #12 Clips, 313503
      iii. #12 Clip Holder, 313507
      iv. #10 Clip Holder, 313506

9. Check hose routing
   a. Verify clearance of hose to all moving parts and repair as necessary.
   b. Add clamps, tie-wraps where needed.
   c. Verify clearance of hose to all heat sources.
   d. Add hose protectant where needed.

**Roof Area**

1. Check condition of Evaporator and condenser covers
   a. Check for anything that may have gotten stuck in grills that obstruct air flow.
   b. Check cover mounting hardware making sure nothing is missing or loose.
   c. Check for any damage to unit covers that may be potential places for water to enter the passenger compartment.
   d. Check for damage to condenser fan panel.

**Under The Bus**

1. Check hose routing.
   a. Make sure that hoses are clamped, tied and protected from sharp edges or heat sources.

**Electrical Operation**
1. ☐ Check electrical operation of system using the “Service-Through-Keyboard” function listed on page 17 of the KS60 Service manual. Note that step 3 is used for the heat circuit not the condenser fans, the condenser works in junction with step 4 the compressors.

2. ☐ Check the operation of each component; listen for noisy fans and blowers.
   a. Replacement fans, part number 307H11001271 are available from Trans/Air.
   b. Replacement blowers, part number 307H11001230 are available from Trans/Air.

3. ☐ Check controller for faults, consult the KS60 Service manual for fault checking procedure (page 15)
   a. Make note of any faults, and correlate to fault code descriptions as contained in Service manual (Page 15).
   b. Verify by clearing faults and re-checking.
   c. If faults return, troubleshoot and correct faults.

System Operation

1. ☐ Check standing pressure in system.
   a. Install gauges and utilize Temperature/Pressure Chart to check for standing pressure in system.
   b. If no pressure is found, perform leak checking procedures (Leak Check Procedures).
   c. If leaks are found, repair using parts available from Trans/Air at 800-673-2446 x226.

2. ☐ Check fresh air inlet door operation.
   a. With bus running and system off, press the S6 air recirculation button on the controller, check see the air flap door closes, press again to see if the door opens.
   b. If door does not close when button is on, door is wired backwards, reverse wiring going to door motor.

3. ☐ Check overall system operation.
   a. Press the A/C button on controller.
   b. Verify proper operation of evaporator fan motors.
   c. Press fan speed up and check high and low speed fan operation.
   d. Set fan speeds back to 0 (auto operation) once both speeds are verified.

4. ☐ Check compressor operation.
   a. Once compressors have engaged, check system pressures and record findings.
   b. Note that fast Idle may have to be used to for system to work properly.

5. ☐ Check condenser fan operation.
   a. All condenser fans should operation in concert with compressors.

6. ☐ Check proper pressure switch wiring.
   a. Verify that the correct pressure switches are wired to the correct compressors.
   b. This is done by unplugging one set of pressure switches and making sure that the corresponding compressor shuts off. Rewire pressure switches if needed.
   c. While the pressure switch is unplugged, verify proper system piping by observing the flow in the sight glass and the air out temperature in the vents.

7. ☐ Check refrigerant charge.
   a. Sight glasses should be green, indicating dry.
      i. If not green;
         1. Operate system for a period of time allowing filter drier to remove moisture.
         2. If filter drier is not able to remove moisture to the extent that the indicator turns greens then perform total evacuation and charging as stated above in Interior, Section 6.a.
b. Sight glasses should be clear, no bubbles or cloudiness.
   i. If bubbles are present, the system is low on charge and R134a will need to be added.
   ii. If a significant amount of R134a needs to be added, system should be leak checked (Leak Checking Procedures).

8. ☐ Check compressor clutch voltage
   a. Check at K21 and K22 relays located at driver feet.
   b. Clutch voltage should be at least 12.5v at all times.
   c. If not 12.5v, the Navistar fast idle kit is required.

9. ☐ Check belt alignment
   a. Make that belt is running straight, not walking or jumping.
   b. If not tracking properly, check and correct alignment.

Leak Checking (Leak Checking Procedure)

1. ☐ Check all connection point in condenser and evaporator halves.
2. ☐ Check ends of coils at solder joints.
3. ☐ Check hose crimps in engine compartments and inside ABS air out transitions.
4. ☐ Check fitting blocks on back of compressor.

Recommend Equipment

816035 - Electronic leak detector, (heated diode) ......................... Available from Trans/Air.

Locking Controller

1. ☐ Once Buses completed, lock the controller at desired temperature following the procedure listed in the KS60 controller service manual on page 14.

For more information, please see the Trans/Air website and the following links:

www.busacparts.com
Recommended Tools List
KS60 Controller Service Manual
Compressor Diagnostics
Evacuation Guidelines
Charging Instructions
Leak Test Instructions
Hose Crimping Guidelines
Temperature Pressure Chart
KL60 Operating Instructions

Referenced Parts

307H14001057 - Filter Drier
307H14001137 - Sight Glass
307H14002075 - Expansion Valve
307H11001271 – Condenser Fans
307H11001230 – Evaporator Blowers
307H14001442 – Evaporator Air Inlet Filter
307094 – Evaporator Secondary Air Inlet Filter
307H11005401 - KS60 Controller
512242 – Compressor
5031145 – Piping Kit
5031149 – Electrical Kit
7155060780 – Belt
7155060785 – Belt
7155060805 – Belt
4012529 - Bushing
711047 - Idler Pulley
711048 - Idler Pulley
711041 - Pulley
711063 - Pulley
711077 – Pulley
711084 - Idler Pulley
711075 - Spring Tensioner
711079 - Spring Tensioner
313502 - #10 Clips
313503 - #12 Clips
313507 - #12 Clip Holder
313506 - #10 Clip Holder
913018 - Pag Oil
816189 - 4-Way Manifold Gauge set (R134a)
816188 - Pump, 7 CFM Vacuum
816117 - Micron Gauge
816095 - Bottle Blanket Heater
816121 - Adapter, Ball Valve
913018 - Pag 46 Viscosity oil
816028 - Oil injector bottle
813046 – Suction Cap
813045 – Discharge Cap
816035 - Electronic leak detector, (heated diode)