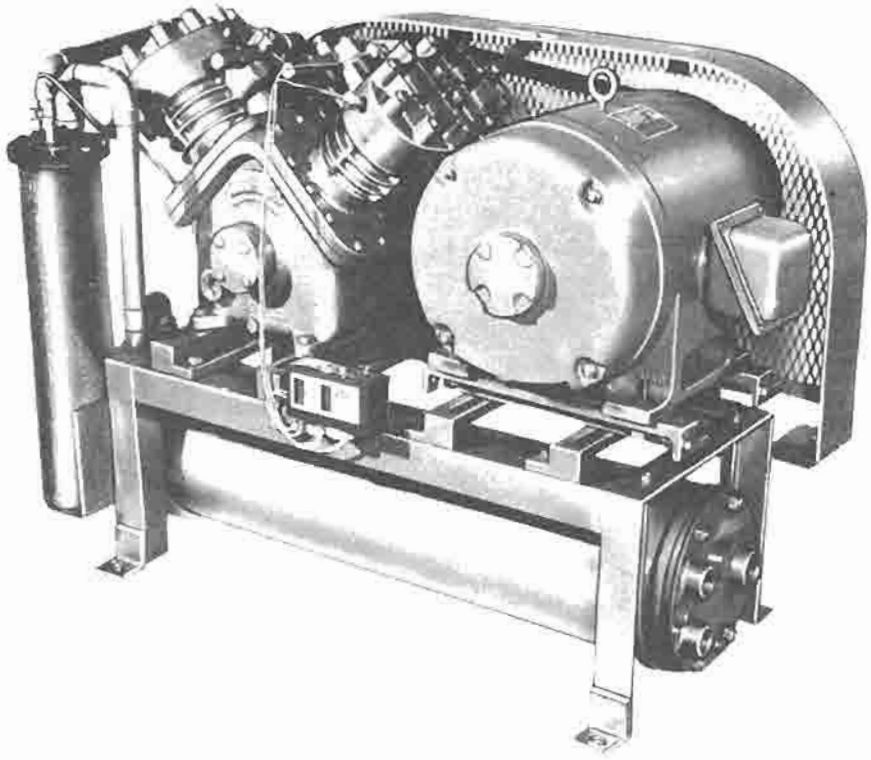
REFRIGERANT TRANSFER UNIT



SERVICE

SERVICING

The service information which follows applies directly to the Refrigerant Transfer Unit. The Refrigerant Transfer Unit consists of the following components: base, condenser-receiver, dual pressure control, water valve, pulley, fan, belts, compressor and driver (electric motor).

BASE

The base consists of steel, channel, and angle iron.

WATER COOLED CONDENSER-RECEIVER

Water cooled condensers used on the refrigerant transfer unit to include 2 HP are manufactured by Frick Company.

All water cooled condensers-receivers are of shell and tube type and are actually combination water-cooled-condenser-receivers. There are few things which can go wrong with a water cooled condenser-receiver. If a water cooled condenser leaks, it either must be replaced or repaired in the field. If efficiency falls off, then the water core must be cleaned chemically. Since the water core is not of the cleanable type, the condenser must be replaced.

CONTROLS

A dual pressure control, solonoids, water valves, etc. are vendor supplied. Information is available on these items through the renewal parts Form 160.65-RP4.

PULLEY AND FAN

All pulleys are balanced to eliminate any tendency toward vibration. Fans are checked for proper pitch to insure proper air flow through the condenser.

BELTS

All belts used are of the highest quality. The drive consists of multiple groove pulley and flywheel and matched belts. Belts will wear, and in making replacement, be sure to use belts of the proper length, width, and angle. Replace the entire matched set of belts. Belts should be purchased locally.

COMPRESSOR

The compressor body (pump) is the heart of the refrigerant transfer unit it removes the refrigerant gas from the CodePak cooler, compresses it into a high temperature vapor and moves it to the condenser where condensation takes place and the refrigerant is pressure forced into the chiller condenser for storage.

All transfer unit condenser compressors are built to rigid specifications.

CHECKING COMPRESSOR EFFICIENCY

1. Install a high pressure gauge (0 - 300 PSI) in the discharge service valve.
2. Install a compound gauge (30" vac. - 150 PSI) in the suction service valve.
3. Allow suction pressure to build up to 30 lbs. minimum. At this pressure test thoroughly for leaks in vicinity of crankcase as well as all connections and tubing leading to the crankcase.
4. Test thoroughly for leaks at compressor head, condenser, receiver, as well as at all connections and tubing from these components.
5. If no leaks exist, front seat (close) suction service valve and run compressor until the suction pressure is at 0 lb.
6. Stop compressor. Observe discharge pressure and if it remains constant the discharge valves of the valve plate assembly are holding properly. If pressure drops more than 5 lbs. in one minute, this indicates the discharge valves of the valve plate assembly are leaking and should be replaced. If in doubt as to whether the discharge valves leak, turn the compressor over by hand. If pressure rises and falls with each revolution this will confirm the discharge valve leak.
7. If the discharge valves are holding then check suction valves of the valve plate assembly.
8. Back seat (open) the discharge service valve and run compressor until a vacuum of 25" is reached. Failure of a compressor to reach 25" vacuum indicates leaky suction valves. All compressors should pump a 25" vacuum against nomral head pressures.

CHANGING THE VALVE PLATE ASSEMBLY

1. Make certain that suction pressure is at 5 - 10 lbs. to eliminate as much as possible the danger of drawing moisture into the system.
2. Front seat (close) both the discharge and the suction service valves.

   Remove cylinder head bolts, cylinder head and valve plate assembly from compressor.
4. Remove all traces of gasket material from both the cylinder and the cylinder head flanges.
5. Thoroughly clean the cylinder head using a good solvent as a cleaning agent.
6. Thoroughly clean the top of the pistons and the cylinder flange: The most efficient manner in which to accomplish this is to bring one piston flush with the top of the cylinder and clean the top of the piston and approxiamately one-half of the cylinder flange in one operation. This process should be repeated for each cylinder using a good solvent as a cleaning agent.

NOTE: Do not allow any solvent to seep into crankcase oil.

7. Place the valve plate gasket on the cylinder head following the outline of the cylinder head itself to insure correct gasket postion. Use a thin film of refrigerant oil to make gasket adhere to cylinder head.
8. Place the cylinder gasket on the cylinder flange using a thin film of refrigerant oil to make gasket adhere to the gasket flange.
9. Thoroughly clean the valve plate assembly with good solvent.
10. Place suction reeds on the cylinder dowel pins.
11. Place the valve plate assembly on the cylinder using the cylinder dowel pins as a guide.
12. Replace the cylinder head (on which the valve plate gasket has already been place - See No. 4 above.) and make certain the discharge outlet is opposite the suction port on the cylinder.
13. Replace cylinder head and tighten belts using the torque requirement specified for the valve plate.

CHANGING THE SEAL ASSEMBLY

1. Remove compressor body from base. (Follow instruction 1 through 4 under CHANGING THE COMPRESSOR).
2. Completely remove all parts of old seal from seal housing.
3. Make sure that the synthetic rubber seat ring is tight against the shoulder of the floating seat, with rounded outer edge at the rear to facilitate insertion. The ring is assembled this way when shipped. See that there is a 1/32" minimum radius (do not chamfer) on the edge of the cavity which holds the floating seat and seat ring. Oil the outer surface of the seat ring with 300 viscosity refrigeration oil, and push the assembly into the cavity seating it firmly and squarely.
4. Thoroughly clean seal housing and shaft.
5. Oil shaft with refrigeration oil to allow new seal to be pushed into postion.
6. Put on spring holder and spring. Be sure that spring is centered in spring holder.
7. Slide the bellows and washer assembly along shaft just far enough to center in spring and hold spring in place. Do not compress the spring at this stage.
8. Before putting on end plate, thoroughly clean and oil with 300 viscosity refrigeration oil on both sealing frames. Install floating seats in end plate as described above. Slide end plate on shaft and press it in as far as it will go. Do not allow it to spring out or move backward. Tighten screws or bolts uniformily to keep the face of the seat at right angles to shaft. Tightening of end plate automatically sets seal on proper postition. Be sure to use the torque requirement specified for the seal assembly.

NOTE: After seal installation is completed, rotate the compressor by hand several times to help set the seal mating surface.

CHANGING THE COMPRESSOR

1. Install a compound gauge (30" vac. - 150 PSI) in the suction service valve.
2. Front seat (close) suction service valve and operate compressor until suction pressure 0 lb.
3. Front seat (close) discharge service valve. Remove both the suction service valve and the discharge service valve from the compressor and leave both valves connected to the lines. This will prevent any loss of refrigerant as well as keep moisture out of the system.
4. Remove compressor from base. Install new compressor on base.
5. Reinstall both the suction service valve and the discharge service valve to the compressor body.
6. Remove plug from gauge connection of the discharge service valve.
7. Run compressor to purge all air from crankcase. Air will discharge through gauge port of discharge service valve.
8. After air is completely evacuated reinstall plug in port of discharge service valve quickly as possible and while the compressor is running. Compressor should now be in a vacuum.
9. Back seat (open) both suction service valve and discharge service valve.
10. Remove gauge from suction service valve and reinstall plug.
11. Start compressor.

REPLACING INTERNAL PARTS OF THE COMPRESSOR

In servicing the internal parts of the compressor body (eccentrics, rods, shafts, wrist pins, etc.) extreme caution is recommended. Many times a Service Technician will replace a connecting rod which shows evidence of extreme wear and not replace the eccentric. Generally, when one internal part of a compressor shows evidence of wear there is also wear present on other moving parts.

Service Technicians, in general, lack the precision instruments which are at the disposal of the manufacturer and are unable to ascertain the degree of wear except by the naked eye. Since the tolerance of .0005" are maintained, in some cases, a seemingly good part may actually be worn to such an extent as to render the compressor inefficient.

To take care of situations where return of the compressor is not feasible (emergency breakdown), or where the Service Technician prefers to do his own rebuilding, a complete parts list is available, FORM 160.65-RP4.

CHARGING THE SYSTEM WITH OIL

It is common knowledge that some new installations will utilize some oil from the crankcase of the compresssor and generally it is necessary to check the oil level of a compressor after several operations. Oil does mix with the refrigerant and consequently the larger the refrigerant charge the greater the amount of oil necessary. Use YORK C refrigeration oil only for all compressors.

Manufacturers specify the correct operating or running oil levels and the Service Technician has the responsibility of making sure these specifications are followed. In charging oil to a compressor follow the following procedure as outlined below.

1. Front seat (close) suction service valve, remove plug and install compound gauge (30" vac. - 150 PSI).
2. Run compressor until suction pressure is approximately 0 lb. As previously mentioned, this precaution is to prevent any possible loss of refrigerant through pressure and eliminate as much as possible the danger of drawing moisture into the system should a vacuum exist.
3. If oil is required, add until oil covers the sight glass halfway when compressor is not running.
4. Back seat (open) suction service valve, remove gauge, and install plug. Front seat (close) suction service valve.
5. Remove plug from front seated (closed) discharge service valve.
6. Run compressor to purge all air from crankcase. Air will discharge through gauge port of discharge service valve.
7. After air is completely evacuated, reinstall plug in port of discharge service valve. Compressor should now be in a vacuum.
8. Back seat (open) both suction service valve and discharge service valve.
9. Start compressor.

THE SERVICE ENGINEER SHOULD ADVISE HIS CUSTOMER

1. How to replace fuses and the importance of selecting the proper amperage.
2. How to oil or grease the electric motor which should be done as recommended by the motor manufacturer.
3. How to inspect belts periodically and the importance of keeping them clean. Many times a seemingly knocking compressor is merely a frayed or worn belt. Belts can be procured locally.
4. Never tamper with a pressure control which may change the cut-in setting to a point where short cycling occurs.

TORQUE REQUIREMENTS FOR COMPRESSORS

Model No.	Location	Foot Lbs.
16799	Head	25 - 30
	Clamping stud	32 - 35
	Cylinder To Crankcase	25 - 30
	Shaft End Plate	9 - 15
	Seal End Plate	9 - 15

COMPRESSOR DESIGN LIMITS

Maximum condensing pressure is 235 PSIG.

ACCEPTABLE SPEED RANGE

V16799 240-800 RPM

COMPRESSOR DISPLACEMENT

.0432 cu. ft./rev.

ABNORMAL OPERATION ANALYSIS

SERVICE INFORMATION

Due to the many variable causes of trouble it is impossible to list all the reasons why a transfer unit will not operate properly under given sets of conditions. What follows is a brief listing of the most common causes of unsatisfactory transfer unit operation.

TRANSFER UNIT WILL NOT RUN

1. Electric current off.
2. Main or branch circuit fuses blown due to tight compressor, excessive head pressure, tight motor, lowvoltage, or unit overloaded.
3. Loose or broken wires in control circuit or motor.
4. Contacts of control burned or not making contact.
5. Area around condensing unit too cold; suction pres sure does not rise to cut-in point.

York International Corporation | **Applied Systems** | **Post Office Box 1592-36BE** | **York Pennsylvania 17405-1592** | **Telephone 717 771 7890**

YORK

FORM 160.65-NM1 TPC 4M 290 .20
CODE: SK, RSC