Preservation for Storage of Ariel Rotary Compressors

1.0 Purpose

1.1 This document is to be used after an Ariel rotary compressor (RG282, RG282M, or RG357M) has been stored for 12 months since its last preservation.

1.2 Following the procedures detailed in this document should prevent corrosion inside an Ariel rotary compressor for 12 months, provided the protection is not compromised. If any deterioration is observed, or should the jackshaft be turned, re-preserve per ER-25.1.

1.3 For a new compressor that will be stored longer than 12 months from the Ariel shipment date, see "Warranty Administration Procedure" in the Ariel Packager Standards (ER-10.5.1), available at **www.arielcorp.com**, and apply for a Deferred Start-up status to extend the Standard Warranty.

2.0 Materials and Equipment

To preserve a compressor, use the following, or the equivalents:

2.1 A contact rust preventative such as Mobil Oil Corporation, Mobilarma 247 or Cortec Corporation, VpCI 322.

2.2 A liquid vapor phase corrosion inhibitor (VpCI) such as Cortec Corporation (St. Paul, Minnesota) VpCI 329 or VpCI 322. **These products are not compatible with polyglycol (PAG) synthetic oils. For PAG applications consult Ariel Corporation (see page 8). The VpCI 329 and VpCI 322 are equivalent in strength and are compatible with each other.**

2.3 Waterproof backed tape: UV resistant Duct Tape such as Shurtape PC667.

2.4 Shipping covers and gaskets to seal inlet and discharge openings.

2.5 Wax impregnated cloth: MARVELPAK #12 JAN-B-121F, TYPE I GRADE C, CLASS II. Available from EDCO Supply (Brooklyn, New York).

2.6 A pump to apply the corrosion inhibitor, an oil filter 5-10 microns or better, and necessary pipe fittings. Oil filter should be located after the pump to prevent any pump contamination from entering the compressor.

2.7 Tarps and tie down materials if compressor is stored outdoors.

2.8 8 quarts (8 L) of new, clean, lube oil, (ISO 68).

REV	DESCRIPTION	REV	EC	DATE	REV	EC	DATE
5	Revised to Cortec and generally updated.	4	013951	12-6-06			
		3	013234	5-15-06			
		2	010774	8-14-02			
		1	ECN8050	---			
		0	ECN7293	6-25-98	5	014737	11-13-08

3.0 Procedure

3.1 Inspection and preservation must be performed in a clean, dry environment.

3.2 To start inspection and preservation, remove the following:

- Inlet and discharge nozzle shipping covers.
- Duct tape and wax impregnated cloth from jackshaft.

3.3 Inspect all internal surfaces and cavities of the compressor

- Look for signs of corrosion.
- Standing water.
- Potential leak paths for water and air.
- If corrosion or standing water is found, photograph the affected areas and contact Ariel Corporation (see page 8).
- Remove water contamination and corrosion prior to coating parts with rust preventative or VpCI.
- Seal any leak paths that are found.
- Ensure plastic plugs are tight and replace plugs that appear damaged.
- Inspect inlet and discharge nozzle shipping covers and gaskets for damage.

3.4 It may be necessary to flush the compressor and oil system if the corrosion inhibitor is incompatible with the compressor operating lube oil. Contact Ariel Corporation (see page 8) if oil is not compatible with corrosion inhibitor.

3.5 Once inspection is complete, thoroughly agitate rust preventative and VpCI before dispensing from the barrel. Use VpCI within 24 months of manufacture date.

3.6 Thoroughly mix 1.6 quarts (1.6 L) of VpCI 329 or VpCI 322 with 8 quarts (8 L) of compressor oil.

- All corrosion inhibitor oil mixture must be pumped through a 5-10 micron or better filter, not poured into the compressor.

SIMPLEX OIL SYSTEM:

3.7 **Pre-lube the lube oil system before turning the jackshaft.**

3.8 Pump 1 quart (1 L) of the VpCI corrosion-inhibitor/oil mixture into the rotor housing via the inlet nozzle while rotating the jackshaft clockwise, 180°. Ensure that all internal surfaces of the rotor housing and exposed surfaces of the rotors are coated (see Figure 1).

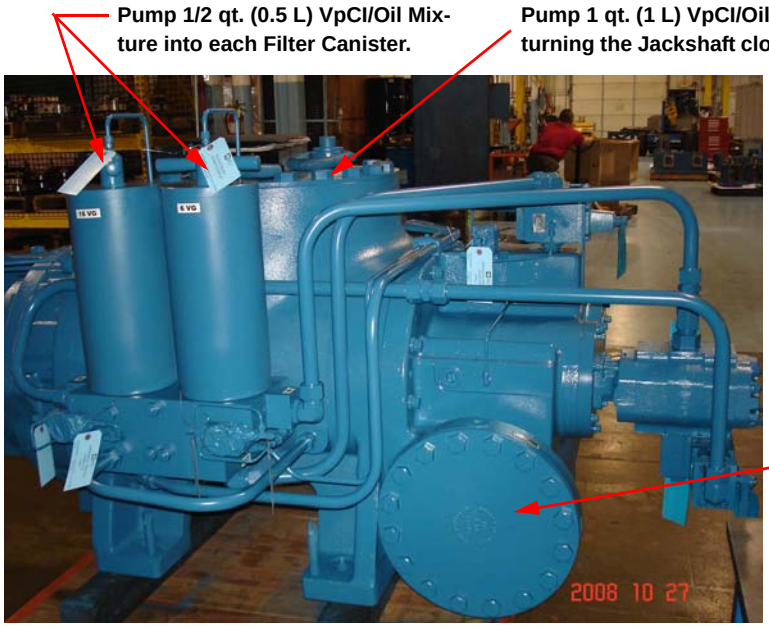

FIGURE 1: SIMPLEX OIL SYSTEM - INLET/DISCHARGE/OIL FILTER CANISTERS

3.9 Remove the two filter canister covers. Pump 1/2 quart (0.5 L) of the VpCI corrosion-inhibitor/oil mixture into each oil filter canister and replace filter canister covers (see Figure 1).

3.10 Pump 1/2 quart (0.5 L) of the VpCI corrosion-inhibitor/oil mixture into the discharge housing via the discharge nozzle. Ensure that all internal surfaces of the discharge housing are coated (see Figure 1).

3.11 Loosen, but do not remove the oil tube at the filter housing outlet. Disconnect the other end of the tube at the top of the discharge housing (see Figure 2). Connect the pump to the fitting at the top of the discharge housing and pump 5 quarts (5 L) of the VpCI corrosion-inhibitor/oil mixture into the compressor.

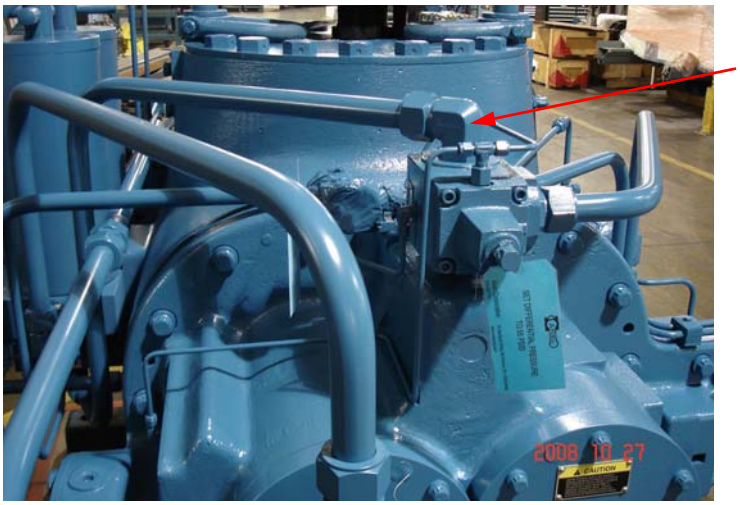

FIGURE 2: SIMPLEX OIL SYSTEM - OIL PRESSURE CONTROL CONNECTION

3.12 Pump 1 quart (1 L) of the VpCI corrosion-inhibitor/oil mixture at the plugged port on the block bolted to the oil pump inlet (see Figure 3).

3.13 Pump 1/2 quart (0.5 L) of the VpCI corrosion-inhibitor/oil mixture at the prelube connection (see Figure 3).

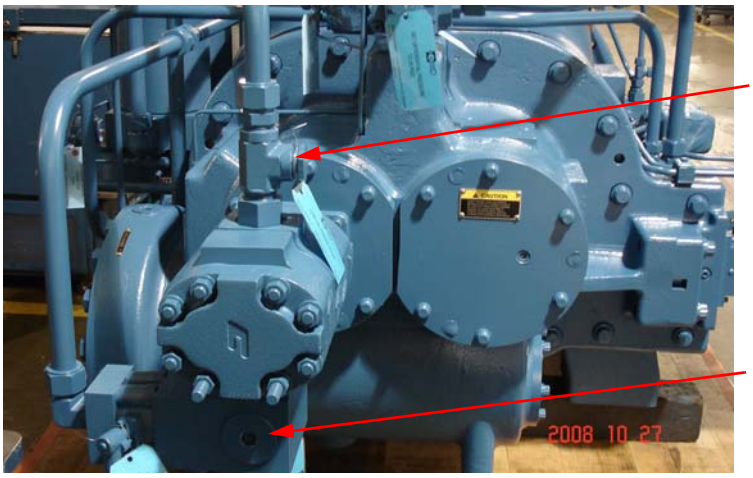

FIGURE 3: SIMPLEX OIL SYSTEM - PRE-LUBE/OIL PUMP BLOCK

3.14 Pump any remaining VpCI corrosion-inhibitor/oil mixture into the rotor housing via the inlet nozzle.

DUPLEX OIL SYSTEM:

3.15 **Pre-lube the lube oil system before turning the jackshaft.**

3.16 Pump 1 quart (1 L) of the VpCI corrosion-inhibitor/oil mixture into the rotor housing via the inlet nozzle while rotating the jackshaft clockwise, 180 degrees. Ensure that all internal surfaces of the rotor housing and exposed surfaces of the rotors are coated (see Figure 4).

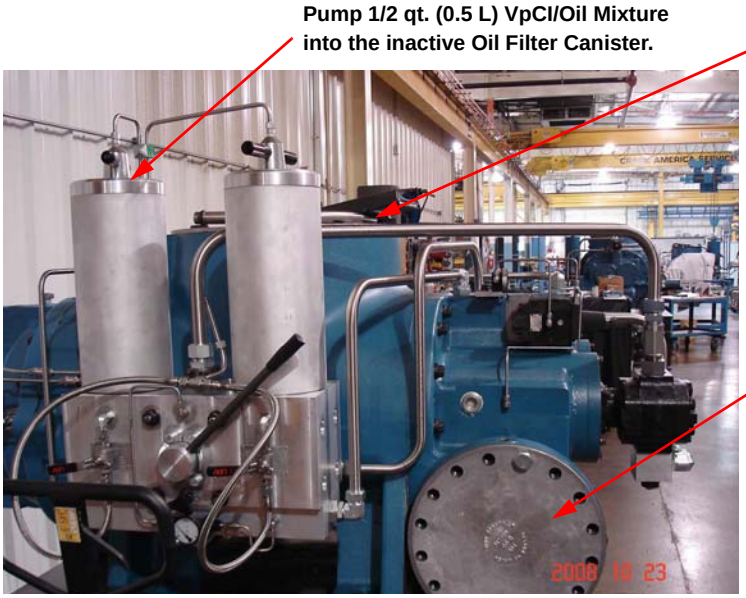

FIGURE 4: DUPLEX OIL SYSTEM - INLET/DISCHARGE/OIL FILTER CANISTERS

3.17 Remove the inactive filter canister cover. Pump 1/2 quart (0.5 L) of the corrosion inhibitor oil mixture into the inactive oil filter canister and replace the filter canister cover (see Figure 4).

3.18 Pump 1/2 quart (0.5 L) of the VpCI corrosion-inhibitor/oil mixture into the discharge housing via the discharge nozzle. Ensure that all internal surfaces of the discharge housing are coated (see Figure 4).

3.19 Pump 1/2 quart (0.5 L) of the VpCI corrosion-inhibitor/oil mixture into the tubing line going to the directional control manifold (see Figure 5).

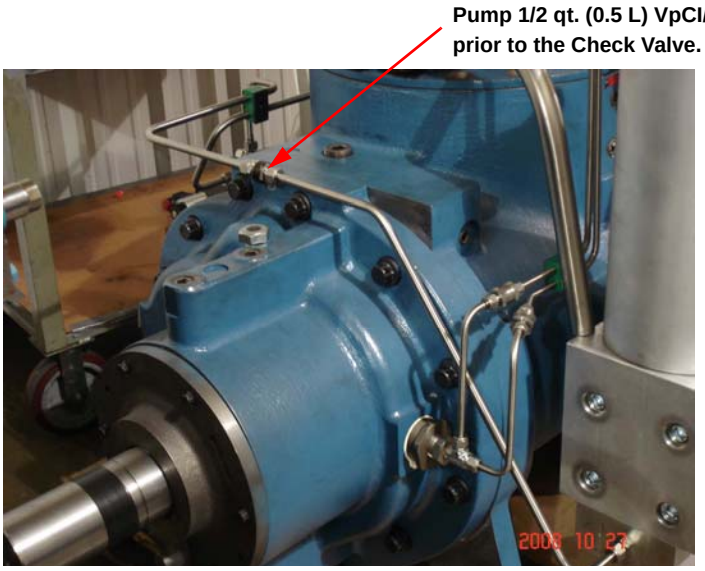

FIGURE 5: DUPLEX OIL SYSTEM - DIRECTIONAL CONTROL TUBE CONNECTION

3.20 Loosen, but do not remove the oil tube at the filter housing outlet. Disconnect the other end of the tube at the top of the discharge housing. Connect the pump to the fitting at the top of the discharge housing and pump 5 quarts (5 L) of VpCI corrosion-inhibitor/oil mixture into the compressor (see Figure 6).

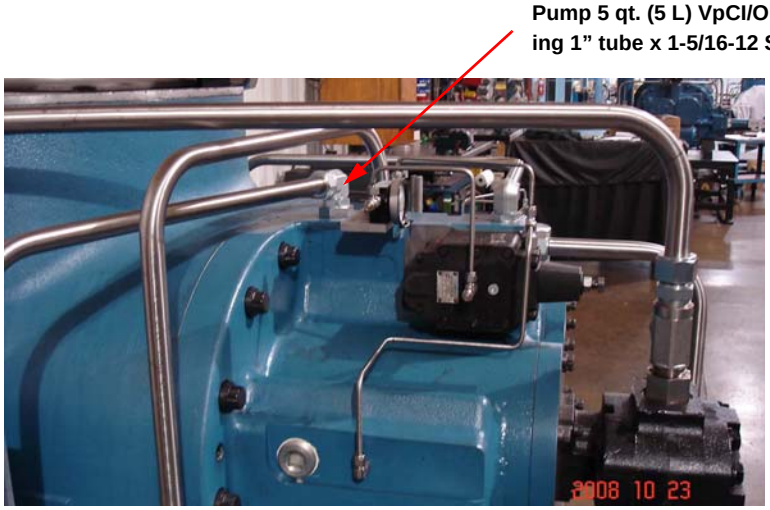

FIGURE 6: DUPLEX OIL SYSTEM - OIL TUBE CONNECTION AT DISCHARGE

3.21 Pump 1 quart (1 L) of the VpCI corrosion-inhibitor/oil mixture into the plugged port on the block bolted to the oil pump inlet (see Figure 7).

3.22 Pump 1/2 quart (0.5 L) of the VpCI corrosion-inhibitor/oil mixture into the prelube connection (see Figure 7).

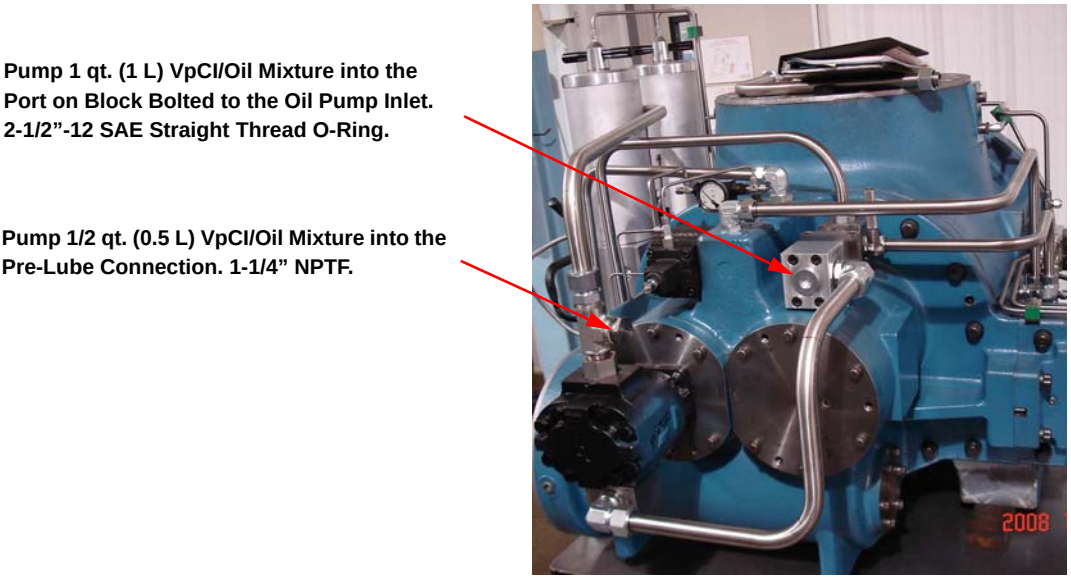

FIGURE 7: DUPLEX OIL SYSTEM - PRE-LUBE/OIL PUMP BLOCK

3.23 Pump any remaining VpCI corrosion-inhibitor/oil mixture into the rotor housing via the inlet nozzle.

GENERAL - APPLIES TO BOTH TYPES OF OIL SYSTEMS:

3.24 VpCI corrosion inhibitors require protected cavities to remain sealed during the storage period. Open cavities will deplete the VpCI concentration, rendering the VpCI ineffective. To prevent VpCI depletion, seal the compressor as follows:

- Remove the corrosion inhibitor pump connections and return all compressor tubing connections to their original configuration.
- Reinstall the inlet and discharge shipping flange covers and gaskets.
- Check for proper installation of the nozzle shipping covers and gaskets.
- Replace any damaged shipping flange covers and gaskets.
- Hand-wrench tighten the shipping flange cover bolts in an alternating (criss-cross) pattern.

3.25 Coat jackshaft with rust preventative, wrap with wax impregnated cloth such as MARVELPAK #12, followed by waterproof backed tape such as Shurtape PC667.

3.26 Tape the clearance opening between the jackshaft, and the mechanical seal cover to prevent any exchange of air to the compressor housing. Plug or otherwise seal the mechanical seal weepage tube.

3.27 Tag the compressor, noting that the jackshaft should not be turned and the date when the compressor was last inspected and preserved. If the jackshaft is turned for any reason, re-preserve per ER-25.1.

4.0 Storage

4.1 **If the compressor is to be stored after being packaged, ensure that enough VpCI and rust preventative has been used to protect all piping and bottles in the package, in addition to the compressor. Ensure that all openings in the package are sealed.**

4.2 **All Ariel rotary compressors must be stored in a clean, dry environment. If stored outdoors, the compressor must be protected from direct contact with the elements.**

4.3 **The compressor must never be stored with the mounting feet directly on the ground**.

5.0 Recommissioning Compressor to Service

5.1 Before re-commissioning, drain the corrosion inhibitor oil mixture. Remove all low point drain plugs in the gearbox, rotor, and discharge housings. It may be necessary to flush the compressor and oil system if the corrosion inhibitor/oil mixture is incompatible with the compressor operating lube oil. Consult your lube oil supplier or Ariel Corporation to confirm compatibility. Remove the waterproof backed tape at the jackshaft and uncover the mechanical seal weepage tube. If oil filters were removed during preservation, inspect and re-install filters.

5.2 Always pre-lube the compressor prior to operation. Consult the Ariel's Rotary Screw Packager's Standards, available at the Ariel web site, for more information.

5.2 Check fastener torque on all bolting which may have been loosened as a result of applying this procedure and all critical bolting as a result of re-applying the compressor to service. Reference Ariel Technical manual, ER-63.1 for RG and RG-M compressors (toolbox torque charts) for fastener torque values, available at the Ariel web site.

5.3 Utilize the appropriate start-up check list (ER-10.4.2 for RG compressors or ER-10.4.3 for RG-M compressors), available at the Ariel web site.

Ariel Contact Information

Contact	Telephone	Fax	E-Mail
Ariel Response Center	888-397-7766 (toll free USA & Canada) or 740-397-3602 (International)	740-397-1060	arc@arielcorp.com
Spare Parts		740-393-5054	spareparts@arielcorp.com
Order Entry		740-397-6450	---
Ariel World Headquarters	740-397-0311	740-397-3856	info@arielcorp.com
Technical Services			fieldservice@arielcorp.com
Application Engineering			---
Web Site: www.arielcorp.com			

Ariel Response Center Technicians or Switchboard Operators will answer telephones during Ariel business hours, Eastern Time - USA or after hours by voice mail. Contact an Authorized Distributor to purchase Ariel Parts. Always provide the Ariel equipment serial number(s) when ordering spare parts.

The after hours Telephone Emergency System works as follows:

1. **Follow automated instructions to Technical Services Emergency Assistance or Spare Parts Emergency Service. Calls are recorded by answering machine.**
2. **Leave a message: Please provide the following:**
   - Caller's name and telephone number
   - Frame or Rotor Housing serial number
   - Cylinder serial number
   - Clearance pocket serial number
   - A brief description of the emergency
3. **Your voice message routes to an on-call representative, who will respond as soon as possible.**