SERVICE MANUAL BULLETIN

This Service Manual Bulletin is prepared by the Publications Department of New Flyer Industries Canada ULC. Refer to details below.

SMB-188

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APPLICABILITY					
VEHICLE LENGTH	☐ 30ft.	☐ 35ft.	☐ 40ft.	☐ 60ft.	■ ALL
VEHICLE TYPE	■ Xcelsior®	☐ MiDi®	☐ Invero®		☐ ALL
	☐ Low Floor	☐ High Floor			
FUEL TYPE	☐ Diesel	■ Diesel/Electric	☐ CNG	☐ LNG	☐ ALL
	■ Fuel Cell	■ Trolley/Electric	■ Battery/Electric		
SUBJECT	Belt Driven Scroll Air Compressor - Powerex				
SECTION TITLE	PM - PREVENTIVE MAINTENANCE				
DETAILS	**This bulletin provides revised information for the Preventive Maintenance on the Powerex Belt Driven air compressor.** **This information supersedes any prior information on this subject already provided in your New Flyer Service Manual.** **Make this Service Bulletin available to service personnel to inform them of changed information.**				

1. BELT DRIVEN SCROLL COMPRESSOR

1.1. Preventive Maintenance Guide

Intervals are based on the manufacturer's recommendations which are expressed in compressor operating hours.

Intervals listed in this bulletin were converted from compressor operating hours to mileage using an average vehicle speed of 12.5 mph and a compressor duty cycle of 50%. Adjust the service interval according to actual operating conditions.

Compressors operating in a hot dusty environment will need more frequent servicing.

PREVENTIVE MAINTENANCE GUIDE

12,000 mi. (19,300 km)	Yearly	60,000 mi. (96,560 km)	120,000 mi. (193,000 km)	250,000 mi. (402,330 km)
Compressor Air Filter Inspection (500 hrs.)	Compressor Orbital Scroll Bearing Lubrication	Compressor Air Filter Replacement (2,500 hrs.)	Compressor Fan & Duct Seal Cleaning (5,000 hrs.)	Compressor Tip & Dust Seal Replacement (10,000 hrs.)
		Fixed Scroll Fin Cleaning (2,500 hrs.)		Crank Pin Bearing Lubrication (10,000 hrs.)
				Heat Insulation Pipe Replacement (10,000 hrs.)

1.2. 12,000 Miles (19,300 km) Preventive Maintenance

1.2.1. Compressor Air Filter Inspection

Inspect the air compressor air filter element.

1. Remove air filter cover.
2. Inspect filter element for contamination.
3. Reinstall filter element and replace cover.

1.3. Yearly Preventive Maintenance

1.3.1. Compressor Orbital Scroll Bearing Lubrication

DANGER

Maintenance of high voltage equipment must be performed by qualified personnel only. Refer to your New Flyer Service Manual for safety requirements. Ensure that the High Voltage Interlock and Battery Disconnect switches are set to the OFF position and locked-out and tagged-out.

Lubricate the orbital scroll (OS) bearing yearly. Lubricate the bearing in the spring before the high summer temperatures.

If the compressor needs to be removed from the vehicle to access the lubrication port, refer to Section 8 of your New Flyer Service Manual for removal procedure.

1. Wipe off around dust cap. Remove plastic dust cap for orbital scroll bearing grease fitting. See "Fig. 1: Orbital Scroll Bearing Lubrication" on page 3.
2. Rotate compressor pulley until grease fitting lines up with lubrication port.
3. Obtain a grease gun kit with special adapters and grease.

☞NOTE:

Contact New Flyer Parts for information on the grease gun kit with special adapters and grease cartridge.

☞NOTE:

Pump grease gun to eliminate air from the extension adapter before use.

4. Apply three full pumps of the grease gun to deliver the correct amount of grease to the bearings.

☞NOTE:

Each pump of the grease gun delivers 0.65 grams of grease.

5. Remove grease gun and reinstall plastic dust cap.

1.4. 60,000 Miles (96,560 km) Preventive Maintenance

1.4.1. Compressor Air Filter Replacement (if equipped)

❒ Replace the air filter element.

1.4.2. Fixed Scroll Fin Cleaning

❒ Remove the fixed scroll cover and clean the cooling fins using compressed air. See “Fig. 2: Scroll Compressor Filter Replacement” on page 3.

1.5. 120,000 Miles (193,500 km) Preventive Maintenance

1.5.1. Air Compressor Cleaning, Lubrication & Parts Replacement

⚠DANGER

Maintenance of high voltage equipment must be performed by qualified personnel only. Refer to your New Flyer Service Manual for safety requirements. Ensure that the High Voltage Interlock and Battery Disconnect switches are set to the OFF position and locked-out and tagged-out.

1.5.2. Compressor Fan & Duct Seal Cleaning

Remove the blower fan cover and clean the compressor fins and fan using compressed air. Wipe the fan duct interior with a clean cloth.

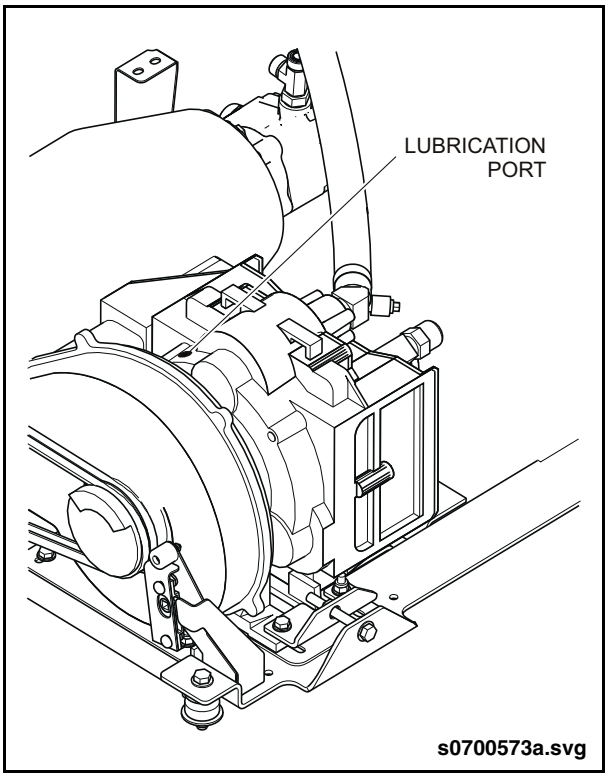

Fig. 1: Orbital Scroll Bearing Lubrication

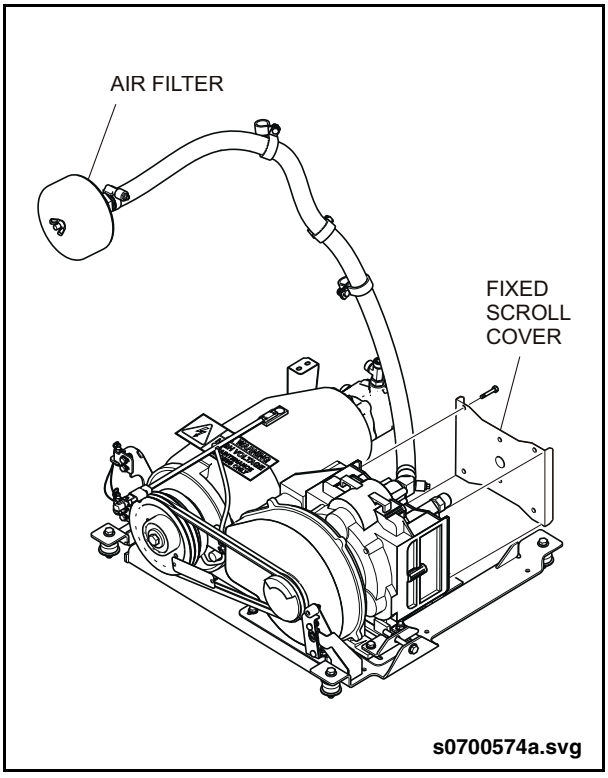

Fig. 2: Scroll Compressor Filter Replacement

1.6. 250,000 Miles (402,330 km) Preventive Maintenance

1.6.1. Crank Pin Bearing Lubrication

☞NOTE:

Contact New Flyer Parts for information on the grease gun kit with special adapters and grease cartridge.

1. Remove V-belts and fan cover.
2. Remove air end pulley and cooling fan using a gear puller.
3. Remove the duct shroud.
4. Remove three grease caps. Do not attempt to loosen or tighten bolt.
5. Grease all three crank bearings. Deliver seven full pumps of grease to each grease fitting. See “Fig. 3: Crank Pin Bearing Lubrication” on page 4.
6. Reinstall all removed parts.

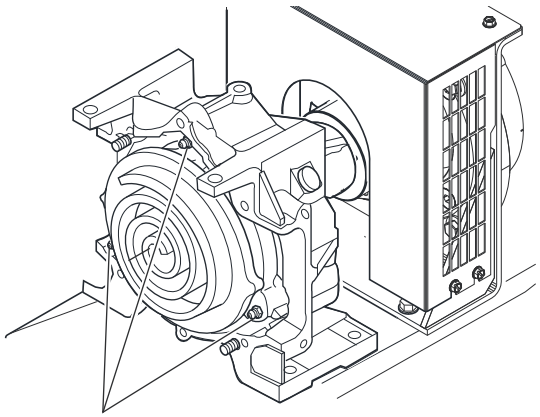

Fig. 3: Crank Pin Bearing Lubrication

1.6.2. Compressor Tip & Dust Seal Replacement

1. Remove the scroll compressor assembly from the vehicle. Refer to Section 8 of your New Flyer Service Manual for removal procedure.
2. Remove the hardware from fixed scroll assembly and separate from orbital scroll assembly. See “Fig. 4: Scroll Compressor Assembly” on page 5.
3. Remove old seal. Clean scroll using a clean cloth and compressed air.

☞NOTE:

Tip seals for fixed scroll and orbital scroll have opposing seal cut angles. To distinguish between fixed scroll and orbital scroll seals. See “Fig. 5: Seal Identification” on page 6.

4. Insert tip seal with lip of the seal (grooved bottom) facing bottom of scroll seal groove. Ensure lip faces center of scroll. See “Fig. 6: Orbital Scroll Seal Installation” on page 6.

⚠CAUTION

During seal installation, it is important to verify that a notch in the seal has been achieved. Follow the procedures carefully to prevent seal movement during installation.

5. Insert a new high pressure tip seal from the center of the orbital scroll as follows:
   a. Make sure there is no gap at the tip, and that the low pressure seal contacts the high pressure seal inside the scroll groove.
   b. Insert approximately half of the low pressure seal and then remove it to verify that a notch in the seal has been achieved. See “Fig. 7: Seal Installation” on page 6.
   c. Reinstall the portion of the seal removed previously and complete the installation of the remainder of the seal.
6. Repeat steps 4 & 5 for fixed scroll seal.
7. Remove the dust seal and backup tube on outermost side of fixed scroll set.

8. Insert new backup tube in fixed scroll set. Orient split in tube to the 6 o'clock position. See "Fig. 8: Backup Tube Installation" on page 6.
9. Insert new dust seal on backup tube. Face seamed section of dust seal at the 3 o'clock position. See "Fig. 9: Dust Seal Installation" on page 7.

☞NOTE:

DO NOT allow dust seal or tip seal to fall out of position during installation.

10. Reassemble fixed scroll set to orbital scroll.
11. Install and lightly tighten the six retaining fasteners. Rotate crankshaft and confirm it rotates smoothly.
12. Torque the fasteners in two stages.
    - ❒ First Stage - 17 in-lb.
    - ❒ Second Stage - 265 in-lb.

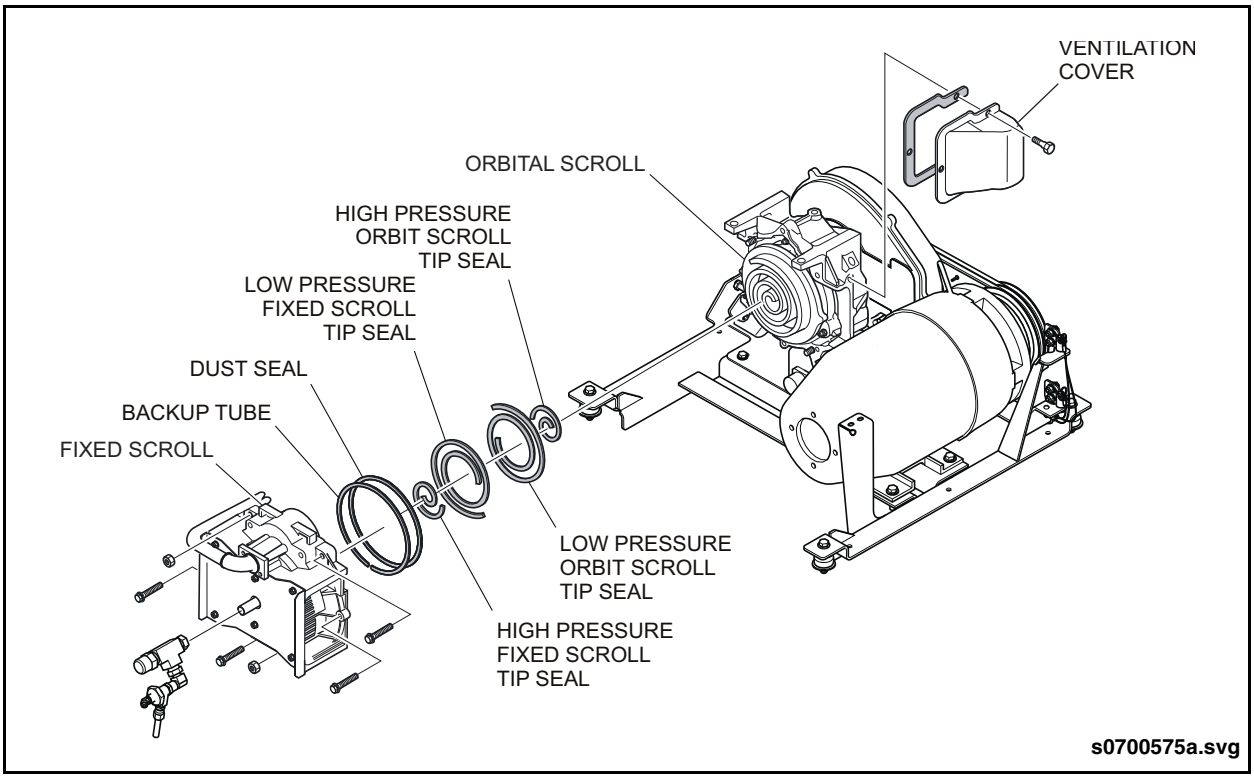

Fig. 4: Scroll Compressor Assembly

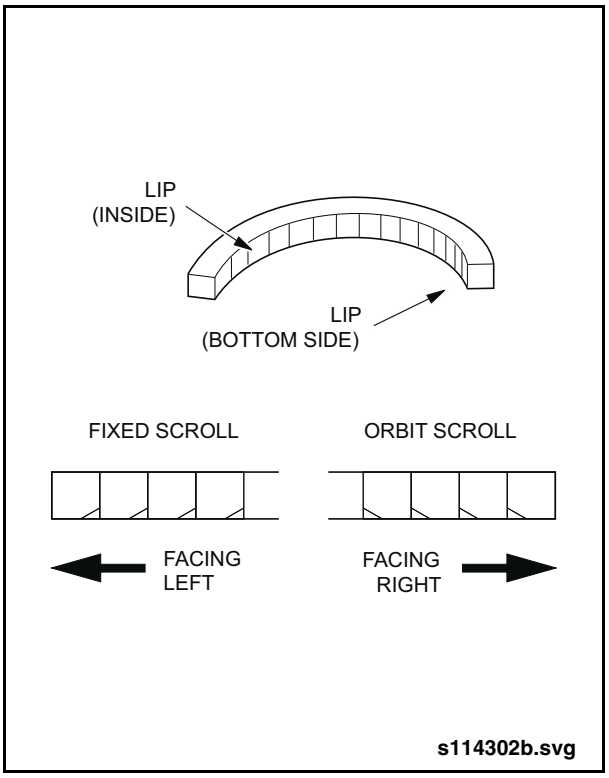

Fig. 5: Seal Identification

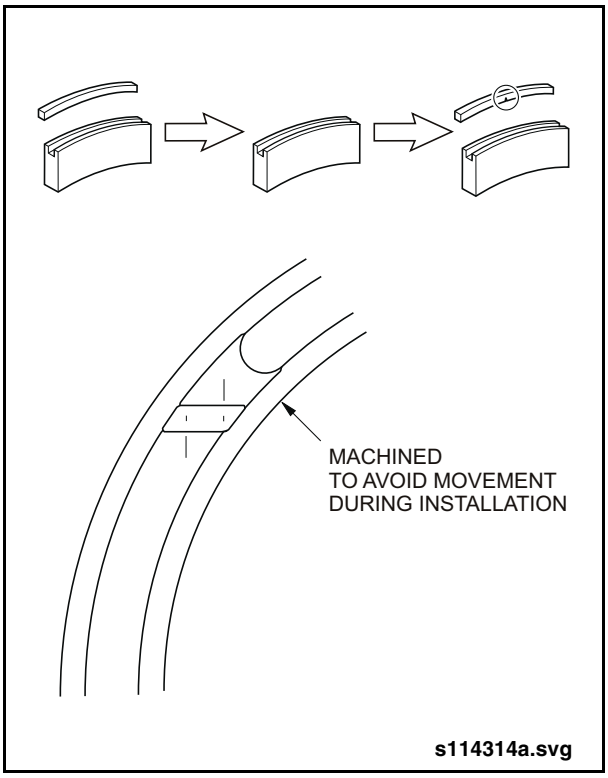

Fig. 7: Seal Installation

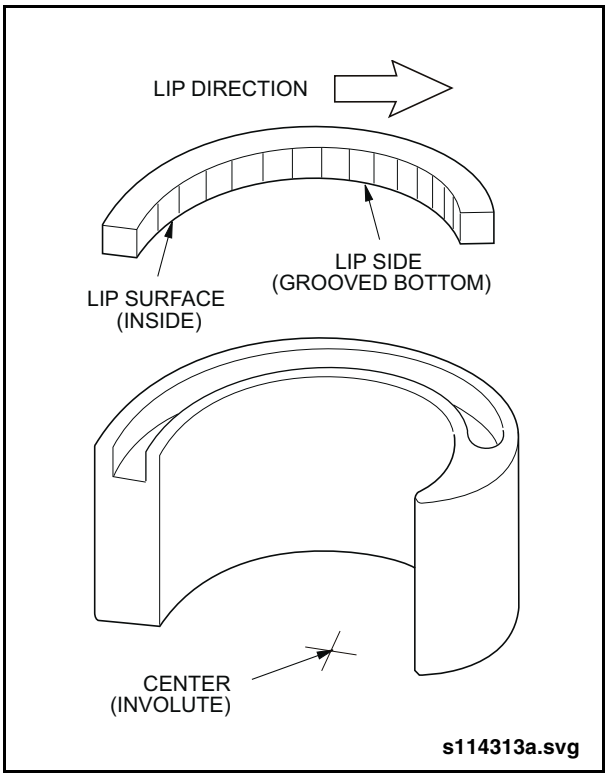

Fig. 6: Orbital Scroll Seal Installation

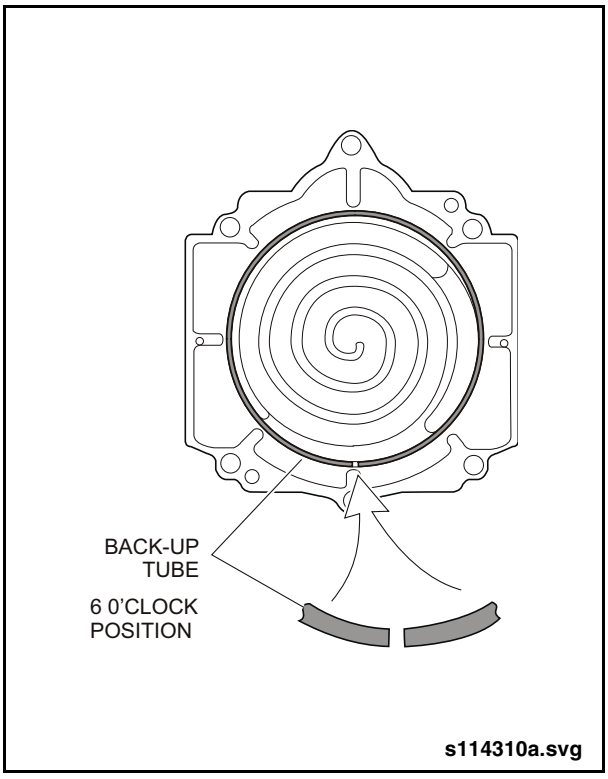

Fig. 8: Backup Tube Installation

1.6.3. Heat Insulation Pipe Replacement

1. Set the Battery Disconnect switch to the OFF position.
2. Drain the vehicle air system.
3. Disconnect the discharge lines and fittings from the long nipple on the compressor.
4. Unthread the long nipple from the compressor housing. See “Fig. 10: Heat Insulation Pipe” on page 7.
5. Pull out the heat insulation insert.

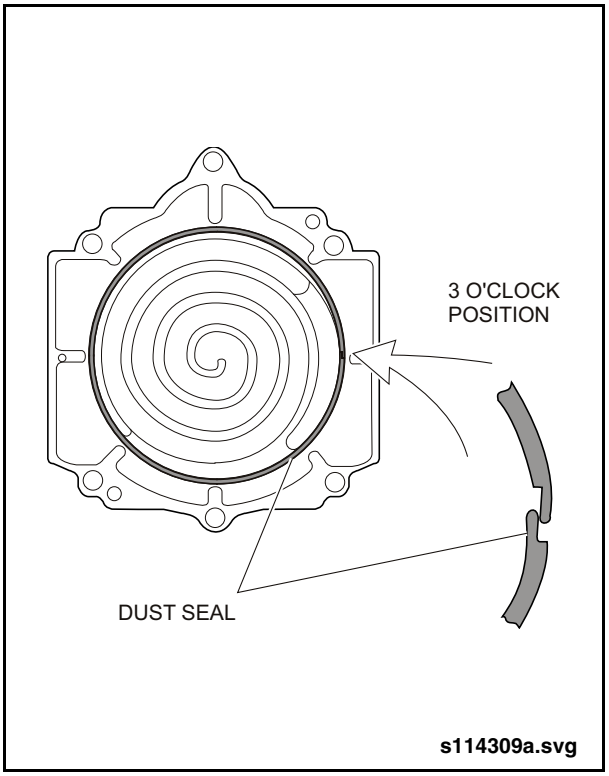

Fig. 9: Dust Seal Installation

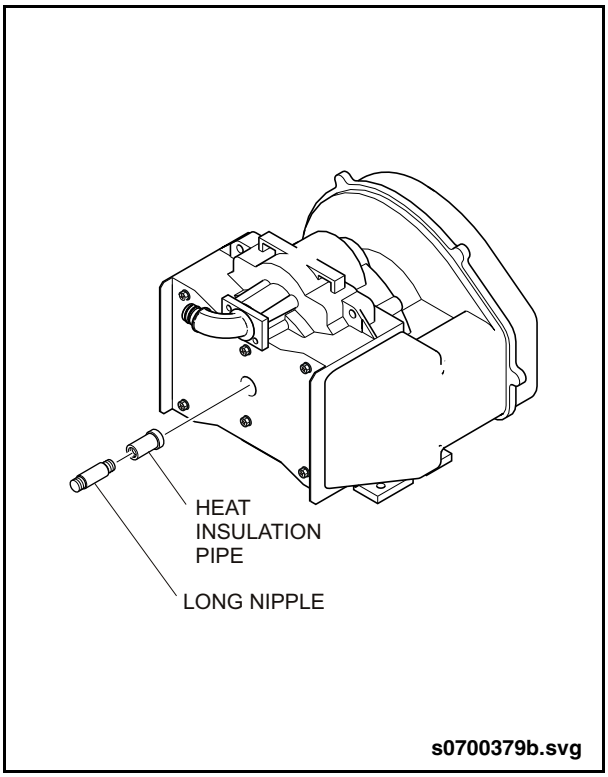

Fig. 10: Heat Insulation Pipe

2. FLUID & LUBRICATION GUIDE

2.1. Lubrication Chart

FLUID & LUBRICATION GUIDE				
ITEM	**COMPONENT**	**PROCEDURE**	**INTERVAL**	**LUBE TYPE**
1	Orbital Scroll Bearing	Lubricate Grease Fittings	Yearly	Powerex Grease
2	Crank Pin Bearing	Lubricate Grease Fittings	250,000 mi. (402,330 km) (10,000 hrs.)	Powerex Grease