



**NEW FLYER**

## ***SERVICE MANUAL BULLETIN***

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

### **SMB-120**

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<b>APPLICABILITY</b>					
<b>VEHICLE LENGTH</b>	<input type="checkbox"/> 30ft.	<input type="checkbox"/> 35ft.	<input type="checkbox"/> 40ft.	<input type="checkbox"/> 60ft.	<input checked="" type="checkbox"/> ALL
<b>VEHICLE TYPE</b>	<input type="checkbox"/> High Floor	<input type="checkbox"/> Low Floor	<input type="checkbox"/> Invero	<input checked="" type="checkbox"/> Xcelsior	<input type="checkbox"/> ALL
<b>FUEL TYPE</b>	<input type="checkbox"/> Diesel	<input type="checkbox"/> Electric	<input type="checkbox"/> CNG	<input type="checkbox"/> LNG	<input checked="" type="checkbox"/> ALL
	<input type="checkbox"/> Diesel/Electric	<input type="checkbox"/> Gas/Electric	<input type="checkbox"/> Fuel Cell		
<b>SUBJECT</b>	<b>Disc Brake System Inspection</b>				
<b>SECTION TITLE</b>	<b>PM - PREVENTIVE MAINTENANCE</b>				
<b>DETAILS</b>	<p>The preventive maintenance information for the disc brake system may not have been available at time of publication of your New Flyer Service Manual. This bulletin provides preventive maintenance information for the disc brake pads, calipers, and brake chambers used on your New Flyer vehicle.</p> <p>This information supersedes any prior information on this subject already provided in your New Flyer Manuals. Make this Service Bulletin available to service personnel to inform them of changed information.</p>				

## 1. Disc Brake System Inspection

### 1.1. Purpose

This bulletin is issued to ensure that all users are aware of the preventive maintenance intervals and procedures for the disc brake system.

### 1.2. 6,000 Miles (9,600 km) Preventive Maintenance

#### 1.2.1. Disc Brake Pad Wear Inspection

Visually check brake pad wear every 6,000 miles (9,600 km) or every 3 months, whichever occurs first.

**NOTE:**

*Brake pad wear can be assessed visually without removing the brake pads using the following procedure.*

1. Locate the lower caliper guide pin.

2. Inspect the amount of guide pin bushing showing on the caliper lower guide pin. A fully extended bushing indicates a new brake pad condition. A retracted bushing with less than 1 mm showing indicates a worn brake pad condition. See "Fig. 1: Brake Pad Wear Inspection" on page 2.
3. If a worn condition is indicated, remove the brake pads and measure actual thickness of friction material. Refer to Section 1 or 2 of your New Flyer Service Manual for brake pad removal procedure. Replace brake pads if measured thickness is 0.118" (3.0 mm) or less.
4. If brake pad thickness is within limits, inspect condition of friction surface. Minor material breakout at the edges is permitted but major material breakout is unacceptable. Replace brake pads as necessary.

**NOTE:**

*Replace all brake pads on same axle. DO NOT replace one side only.*

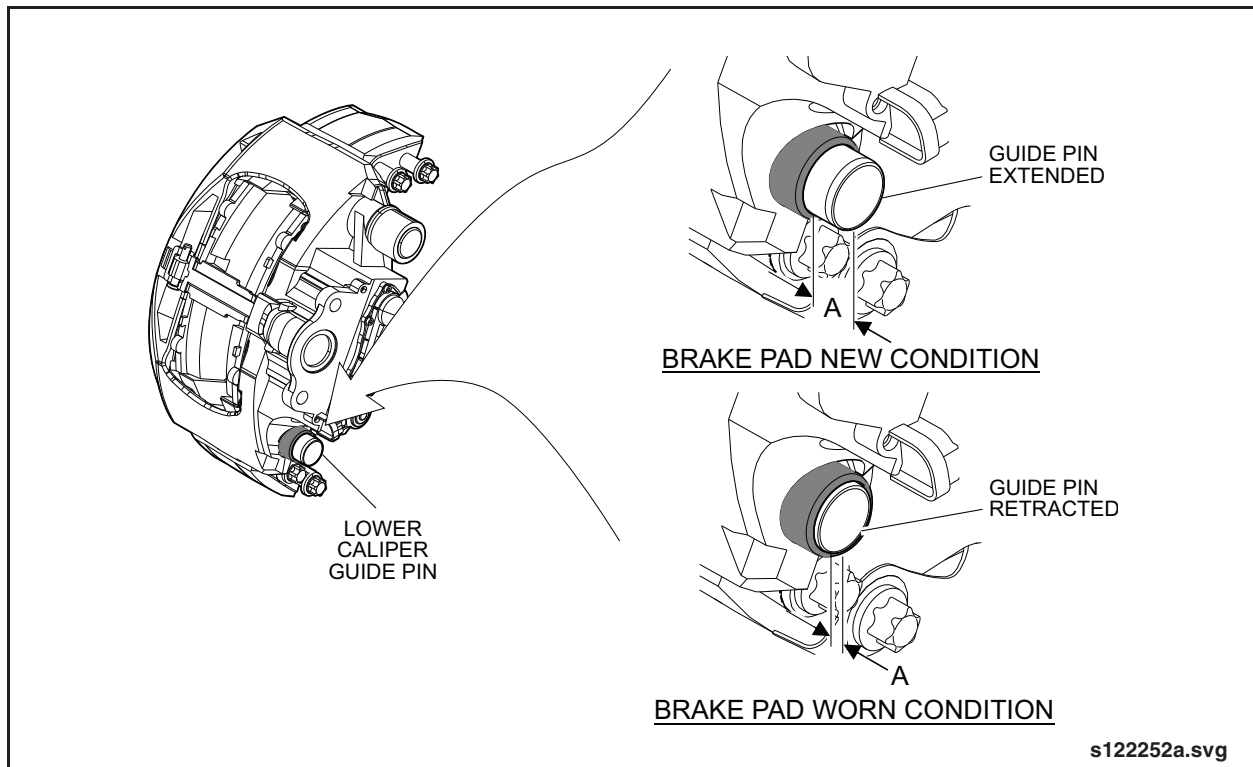


Fig. 1: Brake Pad Wear Inspection



### 1.3. 36,000 Miles (58,000 km) Preventive Maintenance

#### 1.3.1. Disc Brake Caliper Inspection

Perform a disc brake caliper inspection every 36,000 miles (58,000 km) or every year, whichever occurs first. A more frequent inspection may be necessary depending on the operating conditions. Perform the following inspections:

- Inspect the six brake caliper mounting bolts that attach the brake caliper to the axle to ensure the bolts are tight. Refer to Section 1 and 2 of this manual for mounting bolt torque specifications.
- Inspect the eight M12 and two M10 Torx bolts on the caliper housing to ensure they are not loose or broken.
- Caliper Running Clearance - refer to "Brake Pad Clearance Inspection" in Section 1 and 2 of your New Flyer Service Manual for inspection procedure.
- Guide Pin Covers - check that the protective covers are properly installed on the caliper guide pins and are in good condition. Replace covers if damaged or missing.

- Adjuster Cap - check that the protective cap is properly installed on the adjuster and is in good condition. Replace adjuster cap if damaged or missing
- Brake Disc - refer to "Brake Disc Inspection" in Section 1 and 2 of your New Flyer Service Manual for inspection procedure.
- Brake Adjuster - refer to "Automatic Adjustment Inspection" in Section 1 and 2 of your New Flyer Service Manual for inspection procedure

**NOTE:**

*The brake adjuster should always be inspected and tested whenever brake pads have been replaced*

- Caliper Guide Pin - refer to "Caliper Guide Pin Inspection" in Section 1 and 2 of your New Flyer Service Manual for inspection procedure.
- Tappet & Boot Assembly - refer to "Tappet Rubber Boot Inspection" in Section 1 and 2 of your New Flyer Service Manual for inspection procedure.
- Guide Pin Inner Boot - refer to "Upper Guide Rubber Boot Inspection" in Section 1 and 2 of your New Flyer Service Manual for inspection procedure.

**1.4. 48,000 Miles (77,200 km) Preventive Maintenance**

**1.4.1. Front, Center & Rear Brake Chamber Inspection**

**1.4.1.1. Front Brake Chambers**



**Disc brake chambers can only be installed/removed on a vehicle once. Any brake chamber that is removed must be replaced with a new unit. The internal boot that seals the caliper from contaminants may not seal properly upon re-installation.**

Perform the following inspection every 48,000 miles (77,200 km):

1. Visually inspect the exterior surfaces of the brake chamber for signs of damage. Replace the brake chamber if damaged. Refer to Section 1 of your New Flyer Service Manual for replacement procedure.

2. Apply system pressure (minimum 100 psi) to the brake chamber and check for leaks around the circumference of the clamp band and air inlet fittings, using soapy water or leak detection solution.

- a. If bubbles appear around clamp band, release air pressure and torque clamp band nuts to 30 to 35 ft-lbs (41 to 47 Nm). Recheck for leaks. If leaks continue, replace the brake chamber.
- b. If bubbles appear at air inlet fittings, tighten fittings until leaks cease, but do not exceed 25 to 30 ft-lb. (34 to 41 Nm) torque for 3/8 - 18 NPTF fittings or 13 to 15 ft-lb. (18 to 20 Nm) for M16 x 1.5 -6H fittings. If leaks continue, release air pressure and remove air lines from inlet ports. Repair or replace hose and fittings as required Reinstall air lines to the brake chamber and recheck for leaks.

3. Check to ensure the mounting stud nuts are torqued to 133 to 155 ft-lb. (180 to 210 Nm).

**1.4.1.2. Center Brake Chambers**** NOTE:**

*The following information on Center Brake Chambers applies only to articulated XD60 vehicles with a center axle.*

Perform the following inspection every 48,000 miles (77,200 km):

1. Visually inspect the exterior surfaces of the spring brake chamber for signs of damage. Replace the brake chamber if damaged. Refer to Section 2 of your New Flyer Service Manual for replacement procedure.
2. Inspect the drain hole at the bottom of the brake chamber to ensure it is open.
3. Inspect circumference of the service brake chamber to ensure drain holes in this area are plugged.
4. Apply system pressure (minimum 100 psi) to the spring brake and service brake chambers and check for leaks at the clamp band or air inlet fittings using soapy water or leak detection solution.
  - a. If bubbles appear around clamp band, release air pressure and torque clamp band nuts to 30 to 35 ft-lb. (41 to 47 Nm). Recheck for leaks. If leaks continue, replace the brake chamber.

- b. If bubbles appear at air inlet fittings, tighten fittings until leaks cease, but do not exceed 25 to 30 ft-lb. (34 to 41 Nm) torque for 3/8 - 18 NPTF fittings or 13 to 15 ft-lb. (18 to 20 Nm) for M16 x 1.5 -6H fittings. If leaks continue, exhaust all air from both sides of the chamber. Remove air lines from inlet ports. Repair or replace hose and fittings as required. Reinstall air lines to brake chamber and check for leaks.

5. Check to ensure the mounting stud nuts are torqued to 133 to 155 ft-lb. (180 to 210 Nm).



**DO NOT use an impact wrench to tighten the release bolt in the following step.**

6. Check to ensure that the release bolt is seated against the head insert and torqued to 52 ft-lb. (70 Nm). Fully seating the release bolt ensures that the parking brake will have full stroke capability and seals the release bolt threads, preventing contaminants from entering the brake chamber.

**1.4.1.3. Rear Brake Chambers**



**Disc brake chambers can only be installed/removed on a vehicle once. Any brake chamber that is removed must be replaced with a new unit. The internal boot that seals the caliper from contaminants will have taken a set and may not seal properly upon re-installation.**

Perform the following inspection every 48,000 miles (77,200 km):

1. Visually inspect the exterior surfaces of the spring brake chamber for signs of damage. Replace the brake chamber if damaged. Refer to Section 2 of your New Flyer Service Manual for replacement procedure.
2. Apply system pressure (minimum 100 psi) to the spring brake chamber and check for leaks at the head/flange case interface, air inlet fittings, at vent elbows in non-pressure housing, and center seal using soapy water or leak detection solution.
  - a. If bubbles appear at the head/flange case interface, a leak is present and the spring brake chamber must be replaced.
  - b. Check for leaks from the vent elbow located in the non-pressure housing. If more than one vent elbow is present, plug all but one elbow and check for leaks at the unplugged elbow. If leaks are detected, there is an internal leak and the spring brake chamber needs to be replaced.
  - c. For center seal leaks, check for continuous discharge from the service side quick release valve. If a leak is present, the brake chamber must be replaced.
  - d. If bubbles appear at air inlet fittings, tighten fittings until leaks cease, but do not exceed 25 to 30 ft-lb. (34 to 41 Nm) torque for 3/8 - 18 NPTF fittings or 13 to 15 ft-lb. (18 to 20 Nm) for M16 x 1.5 -6H fittings. If leaks continue, exhaust all air from spring side of the chamber. Remove air lines from inlet ports. Repair or replace hose and fittings as required. Reinstall air lines to brake chamber and check for leaks.
3. With spring brake still fully pressurized, apply system pressure (minimum 100 psi) to the service brake chamber and check for leaks around the circumference of the clamp band and air inlet fittings, using soapy water or leak detection solution.
  - a. If bubbles appear around clamp band, release air pressure and torque clamp band nuts to 30 to 35 ft-lb. (41 to 47 Nm). Recheck for leaks. If leaks continue, replace the brake chamber.
  - b. If bubbles appear at air inlet fittings, tighten fittings until leaks cease, but do not exceed 25 to 30 ft-lb. (34 to 41 Nm) torque for 3/8 - 18 NPTF fittings or 13 to 15 ft-lb. (18 to 20 Nm) for M16 x 1.5 -6H fittings. If leaks continue, exhaust all air from service side of the chamber. Remove air lines from inlet ports. Repair or replace hose and fittings as required. Reinstall air lines to the brake chamber, and recheck for leaks
4. Check to ensure the mounting stud nuts are torqued to 133 to 155 ft-lb. (180 to 210 Nm).



**DO NOT use an impact wrench to tighten the release bolt in the following step.**

5. Check to ensure that the release bolt is seated against the head insert and torqued to 50 to 60 ft-lb. (68 to 81 Nm). Fully seating the release bolt ensures that the parking brake will have full stroke capability and seals the release bolt threads, preventing contaminants from entering the brake chamber.
6. Check the external breather tube to ensure there is no damage or cracks in the rubber elbows and ensure the tube is securely engaged a minimum of 1/2 inch (13 mm) into the rubber elbows and glued together with a high quality rubber cement. Replace with breather tube repair kit if required.