



**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-138**

ISSUE DATE: Oct 14 2014

<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"/> <b>ALL</b>
<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"/> <b>ALL</b>
<b>FUEL TYPE</b>	<input checked="" type="checkbox"/> Diesel	<input checked="" type="checkbox"/> Electric	<input checked="" type="checkbox"/> CNG	<input type="checkbox"/> LNG	<input type="checkbox"/> <b>ALL</b>
	<input checked="" type="checkbox"/> Diesel/Electric	<input type="checkbox"/> Gas/Electric	<input type="checkbox"/> Fuel Cell		
<b>SUBJECT</b>	<b>Steering Stop Adjustment</b>				
<b>SECTION TITLE</b>	<b>3 - Steering System</b>				
<b>DETAILS</b>	<p>This bulletin provides revised information on the adjustment of the steering stop on your New Flyer vehicle.</p> <p>This bulletin supersedes any prior information on this subject already provided in your New Flyer Service Manuals. Make this Service Bulletin available to service personnel to inform them of changed information.</p>				

## 1. Wheel Alignment Adjustments (40ft.)

### 1.1. Steering Stops

The travel of the steering system is limited by mechanical stops on the steering knuckle and a hydraulic relief setting within the power steering gear.

- The mechanical stops on the steering knuckle provide a safe minimum clearance between the tire and the chassis.
- The hydraulic power steering relief provides a means of relieving hydraulic pressure prior to contacting the mechanical steering stop and determines the maximum usable wheel cut or steering angle. Hydraulic relief is provided by automatic relief valve plungers located in the bearing cap and cylinder head.

#### 1.1.1. Mechanical Steering Stop Adjustment

The mechanical left-hand and right-hand steering stops are factory preset to obtain a minimum clearance of 0.38" between the tire and the chassis, suspension, or steering components. The maximum usable steering cut is determined by the power steering relief valve which is automatically set to relieve before the axle stop bolt contacts the axle boss. See "Fig. 1: Turn Angle & Tire to Frame Clearance" on page 2.

During the alignment process the mechanical steering stops may need to be reset.

To achieve the required maximum steering angles, first adjust the front axle left and right-hand stop bolts. Proceed as follows:

1. Park vehicle on level surface and chock rear wheels.
2. Raise the vehicle and place jack stands under the front axle. Tire must clear the

ground and be free to turn fully left and right.

3. Loosen mechanical stops on axle and screw them in all the way.
4. Turn wheels fully left until a gap of 0.38" exists between the tire and any vehicle component. Check tire clearance on both sides of vehicle.
5. Adjust axle stop until it just contacts the axle. Apply Loctite 242 and torque the lock nut  $50 \pm 5$  ft-lb. ( $68 \pm 7$  Nm).
6. Repeat steps 4 and 5 with the wheels turned fully right. Check tire clearance on both sides of vehicle.
7. Reset the automatic plungers. Refer to 2.1.2. "Automatic Plunger Adjustment" on page 4 in this section for reset procedure.

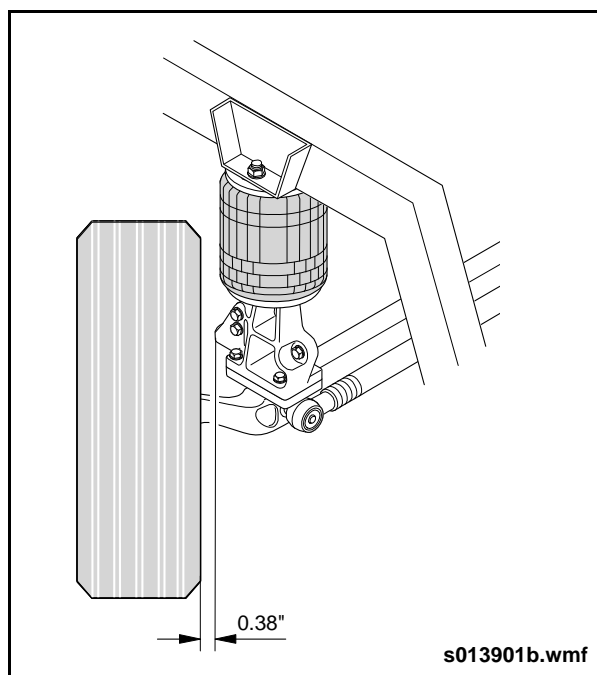


Fig. 1: Turn Angle & Tire to Frame Clearance



## 2. Wheel Alignment Adjustments (60ft.)

### 2.1. Steering Stops

The travel of the steering system is limited by mechanical stops on the steering knuckle and a hydraulic relief setting within the power steering gear.

- The mechanical stops on the steering knuckle provide a safe minimum clearance between the tire and the chassis.
- The hydraulic power steering relief provides a means of relieving hydraulic pressure prior to contacting the mechanical steering stop and determines the maximum usable wheel cut or steering angle. Hydraulic relief is provided by automatic relief valve plungers located in the bearing cap and cylinder head.

#### 2.1.1. Mechanical Steering Stop Adjustment

The mechanical steering stops are factory preset on an articulated vehicle to provide an acceptable turning radius while at the same time protecting the articulating joint from exceeding a safe turning angle.

The mechanical steering stops should be checked prior to performing a wheel alignment, and if not within specification, adjusted as follows:

1. Set up the vehicle on wheel alignment machine, with full weight on the front axle.
2. Locate the steering stop on the curbside steering knuckle and loosen the lock nut. Screw in the stop bolt.
3. Turn the wheel to the right until 39° steering angle is reached.
4. Screw out the steering stop bolt until it contacts the axle beam.
5. Visually confirm that a minimum clearance of 3/8" exists between tire and any chassis, suspension, or steering component. Check tire clearance on both sides of vehicle.
6. Apply Loctite 242 and torque the lock nut on steering stop bolt to 50 ± 5 ft-lb. (68 ± 7 Nm).
7. Repeat the above process on streetside wheel, except turn the wheel to the left to achieve the 39° turn angle. Check tire clearance on both sides of vehicle.
8. Reset the automatic plungers. [Refer to 2.1.2. "Automatic Plunger Adjustment" on page 4](#) in this section for reset procedure.

**2.1.2. Automatic Plunger Adjustment**

The automatic plungers are preset at the factory and do not require adjustment unless the mechanical steering stop setting has changed. Reset the automatic plungers as follows:

1. Park the vehicle on level ground, set the parking brake, and chock the rear wheels.
2. Raise the front axle until the tires clear the ground. Refer to the General Information Section of your New Flyer Service Manual for further information on the jacking procedure.
3. Remove the plastic cap from both steering gear plungers.



**Carefully insert the punch into the bore to ensure the bore is not damaged during bottoming of plungers. DO NOT use a screwdriver to perform this procedure. Ensure there are no sharp edges on the punch which could damage the bore. DO NOT use excessive force when seating the plunger.**

4. Carefully insert a 1/4" punch into each plunger hole and drive in the plunger until it bottoms in the bore.

**NOTE:**

*There is restricted working space between the steering gear bearing cap and the wheel housing. Use a shortened punch and lever the punch into the bore with a pry bar, being careful not to use excessive force.*

5. Start the vehicle and slowly turn the wheels fully left with the tires still off the ground. Continue turning the wheel until the mechanical stop is reached. This will reset the automatic plunger.
6. Repeat the previous step, except turn the wheel fully right.
7. Return the wheels to the straight ahead position.
8. Shut off the engine and lower the vehicle.
9. Remove chocks from rear wheels.