



SERVICE MANUAL BULLETIN

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

SMB-138B

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APPLICABILITY	
VEHICLE LENGTH	<input type="checkbox"/> 30ft. <input checked="" type="checkbox"/> 35ft. <input checked="" type="checkbox"/> 40ft. <input checked="" type="checkbox"/> 60ft. <input type="checkbox"/> ALL
VEHICLE TYPE	<input checked="" type="checkbox"/> Xcelsior® <input type="checkbox"/> MiDi® <input checked="" type="checkbox"/> Invero® <input checked="" type="checkbox"/> Low Floor <input type="checkbox"/> High Floor <input type="checkbox"/> ALL
FUEL TYPE	<input type="checkbox"/> Diesel <input type="checkbox"/> Diesel/Electric <input type="checkbox"/> CNG <input type="checkbox"/> LNG <input type="checkbox"/> Fuel Cell <input type="checkbox"/> Trolley/Electric <input type="checkbox"/> Battery/Electric <input checked="" type="checkbox"/> ALL
SUBJECT	Steering Stop Adjustment VOK-07F Front Axle
SECTION TITLE	3 - STEERING SYSTEM
INITIAL DETAILS	This bulletin provides revised information on the adjustment of the steering stop on your New Flyer Vehicle. 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.
REV B DETAILS	SMB138 dated Oct 14 2014 has been revised to: <input type="checkbox"/> Correct information provided for the Mechanical Steering Stop Adjustment on 35 and 40 ft. New Flyer Vehicles. <input type="checkbox"/> Correct information provided for the Automatic Plunger Adjustment on 35, 40 and 60ft. New Flyer Vehicles (not applicable to Invero). <input type="checkbox"/> Add information for the Special Tools List used on 35, 40 and 60ft. Vehicles (not applicable to Invero).

1. Wheel Alignment Adjustments (35 & 40 ft.)

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 3/8" 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.

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.

NOTE:

All gap measurements must be made with 20 to 30 lb. force applied to the steering wheel. This force will maintain the angle of the wheel in the turn.

4. Steer wheels to the right and measure the distance from the tire to the drag link. See ["Fig. 1: Tire to Drag Link Clearance"](#) on page 3. Alternately measure from the center link to the axle housing. See ["Fig. 2: Center Link to Axle Housing Clearance"](#) on page 3. The smallest allowable gap is 3/8".
5. Adjust axle stop until it just contacts the axle. Torque the lock nut 50 ± 5 ft-lb. (68 ± 7 Nm).
6. Steer wheels to the left and measure the distance from the tire to the steering damper. Alternately measure from the center link to the axle housing. The smallest allowable gap is 3/8".
7. Adjust axle stop until it just contacts the axle. Torque the lock nut 50 ± 5 ft-lb. (68 ± 7 Nm).
8. Reset the automatic plungers. Refer to [2.1.2. "Automatic Plunger Adjustment \(35, 40 & 60 ft.\)"](#) on page 5 in this section for reset procedure.

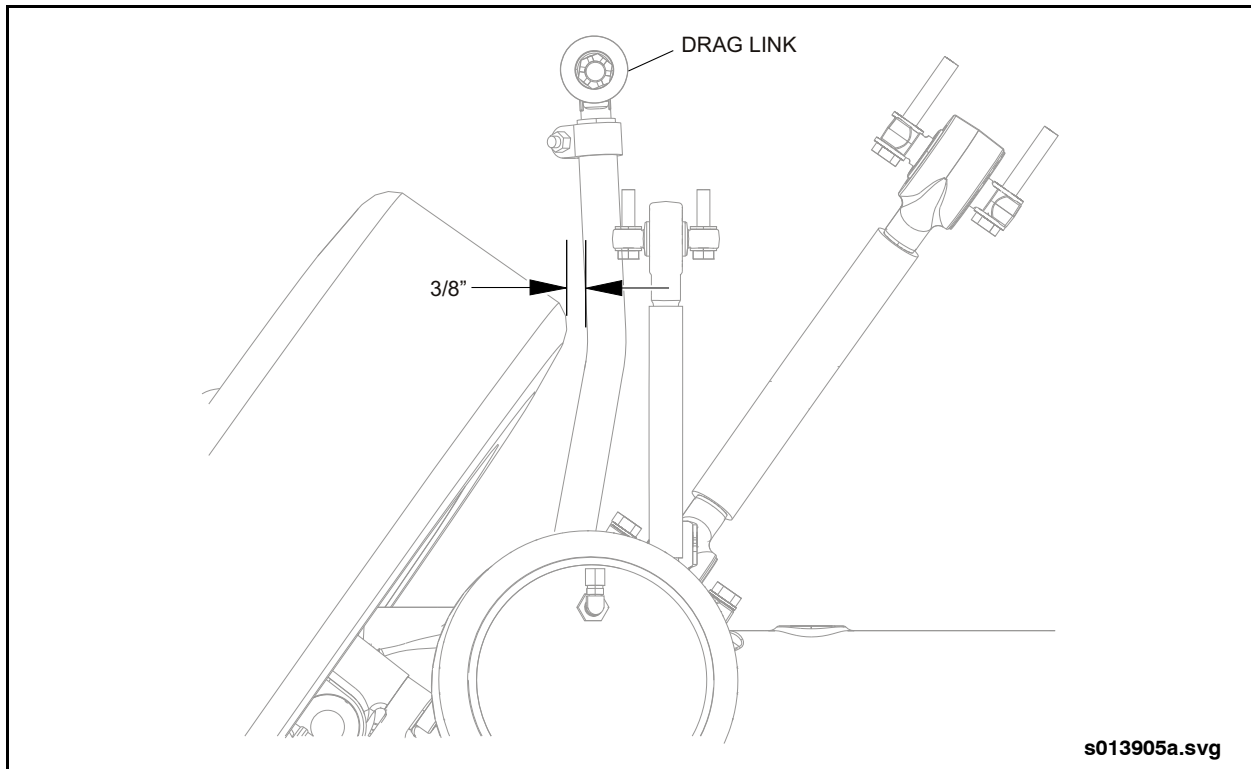


Fig. 1: Tire to Drag Link Clearance

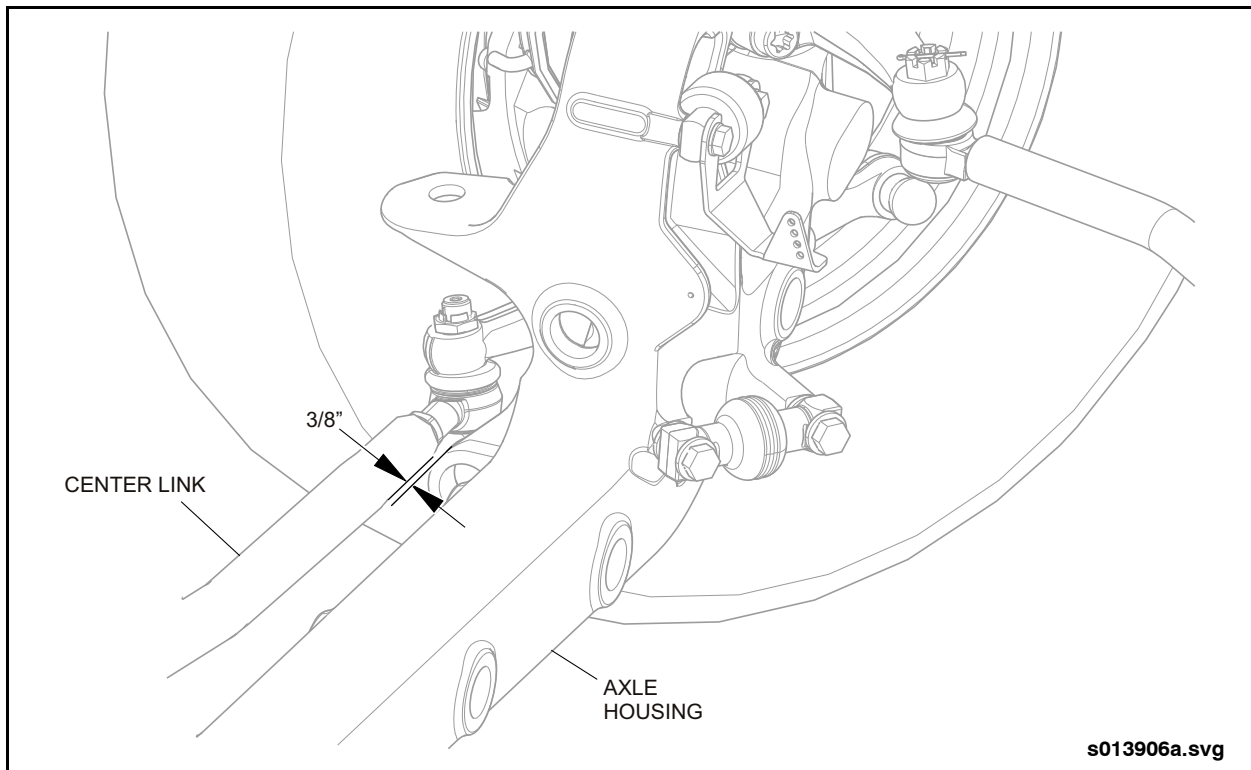


Fig. 2: Center Link to Axle Housing Clearance

2. Wheel Alignment Adjustments (60 ft.)

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. 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 \(35, 40 & 60 ft.\)" on page 5](#) in this section for reset procedure.

**2.1.2. Automatic Plunger Adjustment (35, 40 & 60 ft.)**

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 this manual for further information on the jacking procedure.
3. Remove the plastic cap from both steering gear plungers.



Carefully insert the tools into the bore to ensure the bore is not damaged during bottoming of plungers. DO NOT use a screwdriver to perform this procedure. DO NOT use excessive force when seating the plunger.

4. Carefully insert a Punch (Item 1 from the Special Tools List) into the front plunger hole and use a mallet to drive in the plunger until the tool bottoms out against the housing. See "Fig. 3: Special Tools" on page 6.
5. Carefully insert Adjustment Tool (Item 2 from the Special Tools List) into the rear plunger hole and drive in the plunger until the bolt bottoms in the tool.
6. 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.
7. Repeat the previous step, except turn the wheel fully right.
8. Return the wheels to the straight ahead position.
9. Shut off the engine and lower the vehicle.
10. Remove chocks from rear wheels.

3. Steering System Special Tools

dures in this section. See “Fig. 3: Special Tools” on page 6. Refer to your New Flyer Parts Manual for purchase part numbers.

3.1. Steering System Special Tools Chart

The following special tools are referenced in the automatic plunger adjustment procedure

SPECIAL TOOL	DESCRIPTION
1	Punch, Steering Pressure Relief
2	Adjustment Tool, Steering Pressure Relief

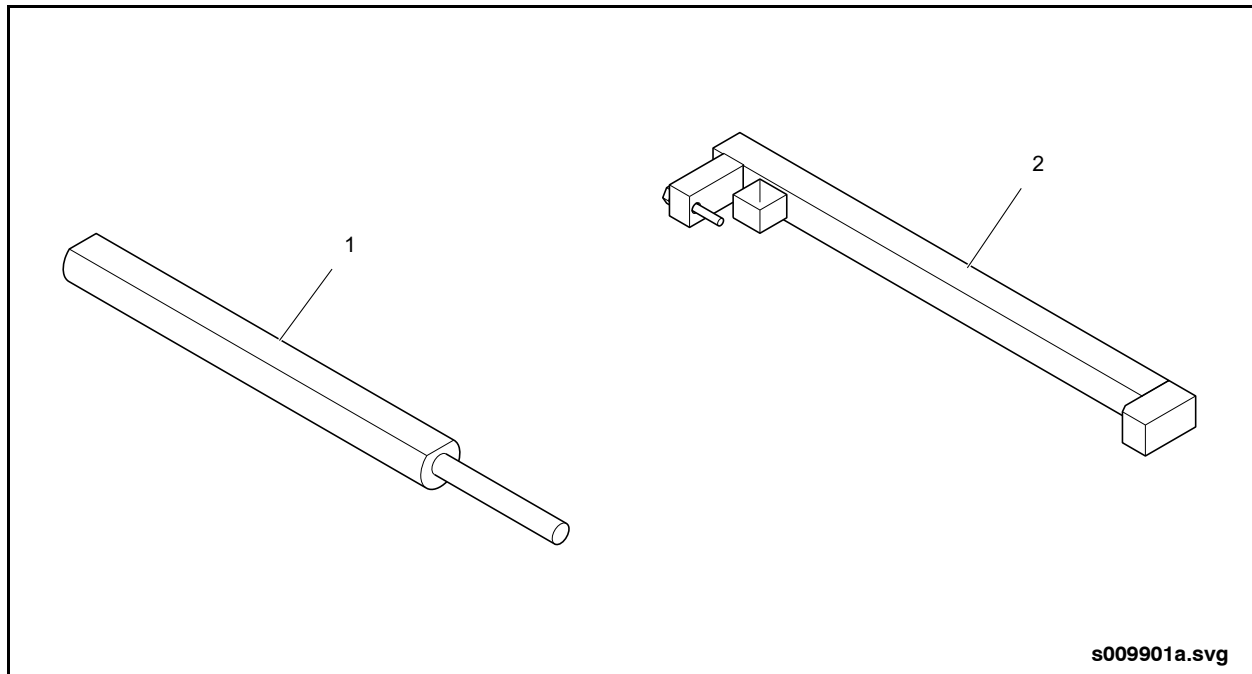


Fig. 3: Special Tools