

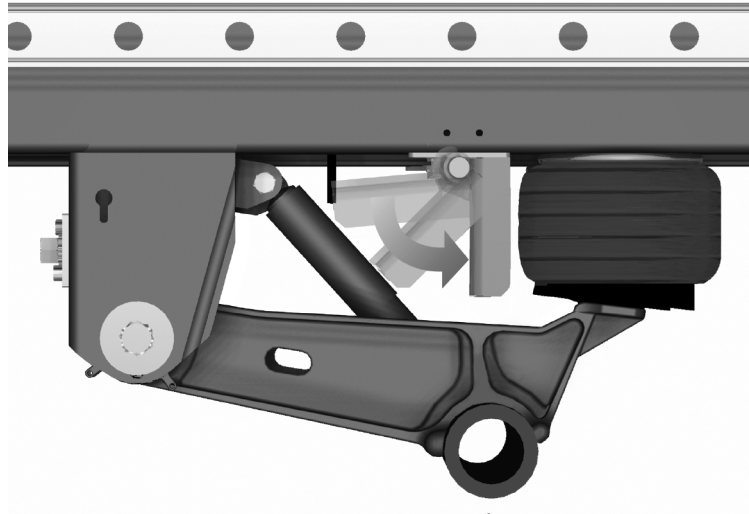


POSILOK™

OPERATION INFORMATION

PosiLok™

Suspension Docking Feature
for Trailer Air-Ride Suspensions



PosiLok™ for CB400

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INTRODUCTION

This manual provides you information necessary for the installation, adjustment, inspection, and safe operation of the SAF-HOLLAND PosiLok™ suspension feature for NS400 and CB400 Trailer Air-Ride Suspensions.

The PosiLok™ docking assembly was designed to provide additional stability to the air ride suspension during unloading or loading of a trailer. The proper functional use of the system is dependent on proper installation of the hardware as well as avoiding operational overloading of the system. Additionally, if the suspension is below ride height when the PosiLok is engaged by breaking the emergency glad hands or applying the trailer parking brakes, damage to the PosiLok may occur.

The SAF-HOLLAND PosiLok is designed and engineered to provide trouble-free service. In the event of an inoperative PosiLok, such as a bent rod assembly or a damaged cam bracket, the vehicle should be driven CAUTIOUSLY at slow speed, to the nearest service facility for repair or replacement.

This PosiLok uses air drawn from the truck/tractor air system to operate the PosiLok actuator. The PosiLok feature automatically engages when the parking brakes are set, providing a stable floor height while loading and unloading. This feature automatically disengages when the trailer brakes are released and allows the height control valve to regulate the air pressure and return the suspension to ride height.

WARRANTY

Refer to the complete warranty for the country in which the product will be used. A copy of the written warranty is included with the product as well as in the suspension catalogs and the SAF-HOLLAND Web Site (www.safholland.us). It may also be ordered directly by calling 1-888-396-6501.

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NOTES, CAUTIONS, AND WARNINGS

You must read and understand all of the safety procedures presented in this manual before starting any work on the suspension.

Proper tools must be used to perform the maintenance and repair procedures described in this manual. Many of these procedures require special tools.

Failure to use the proper equipment could result in personal injury and/or damage to the suspension.

Safety glasses must be worn at all times when performing the procedures covered in this manual.

Throughout this manual, you will notice the terms “NOTE,” “IMPORTANT,” “CAUTION” and “WARNING” followed by important product information. So that you may better understand the manual, those terms are as follows:

NOTE: Includes additional information to enable accurate and easy performance of procedures.

IMPORTANT: Includes additional information that if not followed could lead to hindered product performance.

CAUTION

Used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, may result in property damage.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

SERIAL NUMBER TAG INFORMATION

Model Identification

The NS400 Series and CB400 Suspension Serial Tag is located on the rear crossmember (*FIGURE 1*).

NOTE: This manual applies to the suspension series or the models listed on the front cover. However, we urge you to determine your specific model number, write that information below and refer to it when obtaining information or replacement parts.

NOTE: Refer to the serial number tag attached to the slider rear crossmember for information.

Model Nomenclature

The sample tag shown below will help you interpret the information on the SAF-HOLLAND, USA, Inc. serial number tag. The model number is on the first line along with the suspension capacity. The second line contains the serial number and the third line has the parts list numbers (*FIGURE 2*).

FIGURE 2 Serial Number Tag

Model Number _____

Parts List Number _____

Serial Number _____

In Service Date _____

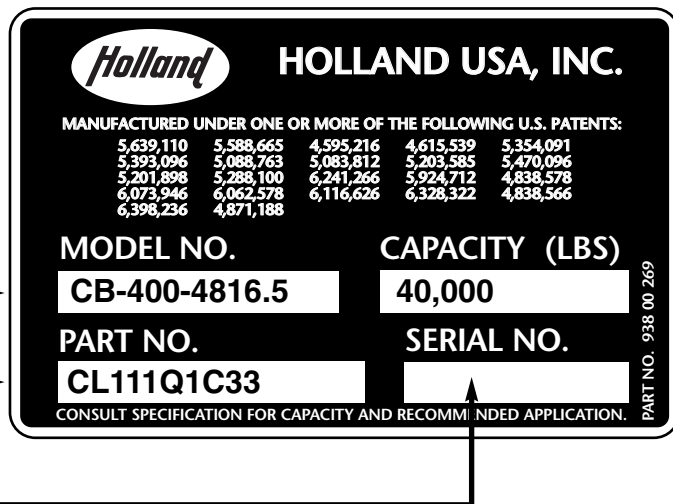
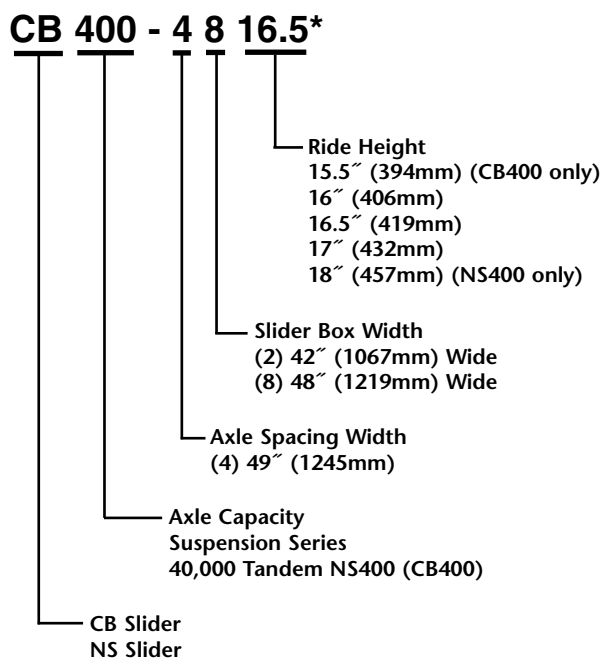
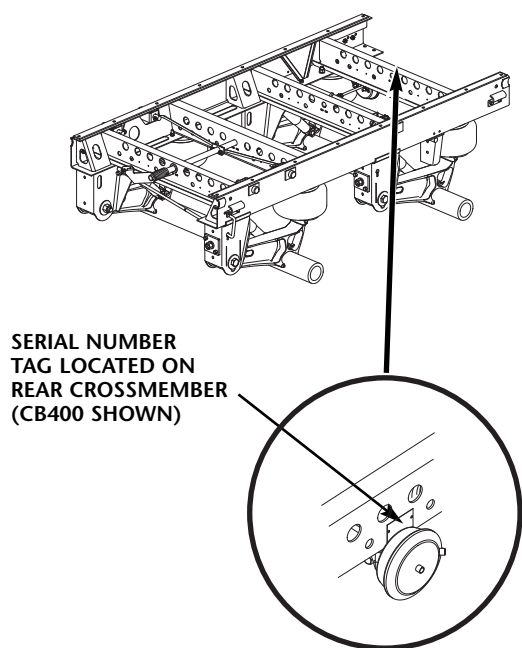


FIGURE 1 Serial Number Tag Location



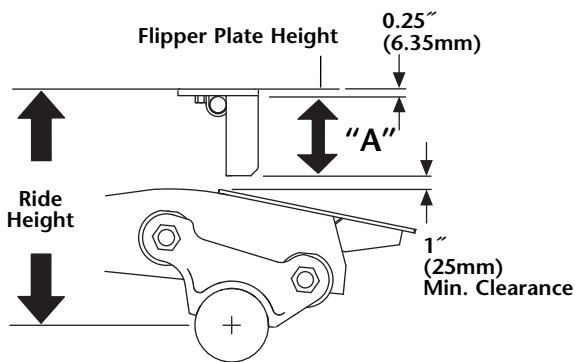
NS400 SUSPENSION MODEL IDENTIFICATION

IMPORTANT: Be certain the correct PosiLok assembly for the suspension ride height is being installed. Various suspension ride heights require different assemblies with different flipper plate heights. If unsure of ride height, see **FIGURE 3** and Table 1 or call SAF-HOLLAND Customer Service.

Verification of Suspension Model

1. If the serial tag is not legible or is unavailable, verify the ride height by measuring the PosiLok flipper plate height (**FIGURE 3**) and compare it to the ride height from Table 1 below. If the unit is not equipped with a PosiLok feature, refer to **FIGURE 4**.

FIGURE 3
Flipper Plate



NOTE: "A" dimension does not include mounting plate.

TABLE 1
Ride Height and Flipper Plate Height

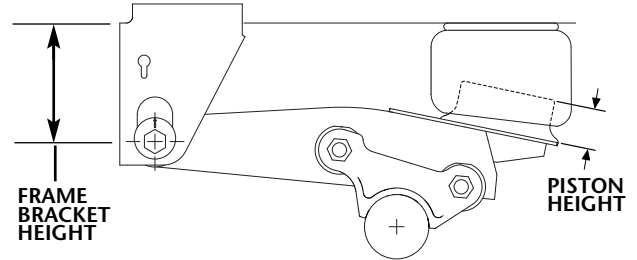
Model No.	Ride Height	"A" Flipper Plate Height
NS400-16.5	16.5" (419mm)	6.0" (152mm)

NOTE: Flipper plate height does not include mounting plate.

Additional Suspension Model Verification Procedures

1. Verify the ride height by measuring the height of the frame bracket (**FIGURE 4**). Compare it to the *Frame Bracket and Piston Height Charts* (this page).

FIGURE 4



2. Fully extend the air spring and measure the air spring piston height (**FIGURE 4**) and then compare it to the *Frame Bracket and Piston Height Charts* (this page).
3. After determining the frame bracket and/or piston height, determine the shock part number and cross reference the information in the chart to confirm the model number.

Frame Bracket and Piston Height Charts

EZ-Align

MODEL NO.	FRAME BRACKET HEIGHT	PISTON HEIGHT	SHOCK ABS. PART NO.
NS400-16.5	9.06" (230mm)	3.75" (95mm)	900 44 162

Welded

MODEL NO.	FRAME BRACKET HEIGHT	PISTON HEIGHT	SHOCK ABS. PART NO.
NS400-16.5	9.25" (235mm)	3.75" (95mm)	900 44 162

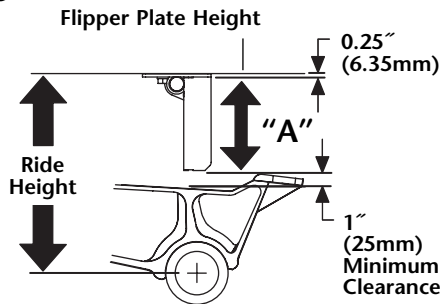
CB400 SUSPENSION MODEL IDENTIFICATION

IMPORTANT: Be certain the correct PosiLok assembly for the suspension ride height is being installed. Various suspension ride heights require different assemblies with different flipper plate heights. If unsure of ride height, see **FIGURE 5** and Table 1 or call SAF-HOLLAND Customer Service.

Verification of Suspension Model

1. If the serial tag is not legible or is unavailable, verify the ride height by measuring the PosiLok flipper plate height (**FIGURE 5**) and compare it to the ride height from Table 2 below. If the unit is not equipped with a PosiLok feature, refer to **FIGURE 6**.

FIGURE 5
Flipper Plate



NOTE: "A" dimension does not include mounting plate.

TABLE 2
Ride Height and Flipper Plate Height

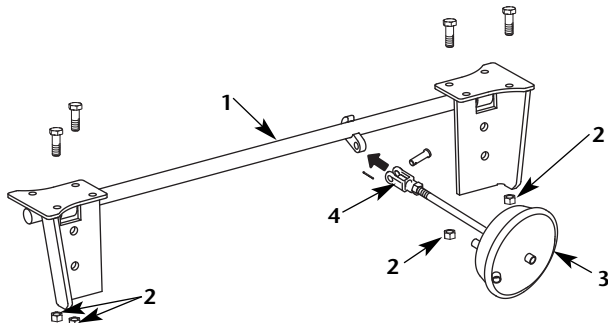
Model No.	Ride Height	"A" Flipper Plate Height
CB400-15.5	15.5" (394mm)	7.5" (191mm)
CB400-16	16" (406mm)	8.0" (203mm)
CB400-16.5	16.5" (419mm)	8.5" (216mm)
CB400-17	17" (432mm)	8.9" (229mm)
CB400-18	18" (457mm)	9.75" (247mm)

NOTE: Flipper plate height does not include mounting plate.

POSILOK™ INSTALLATION

FIGURE 7A

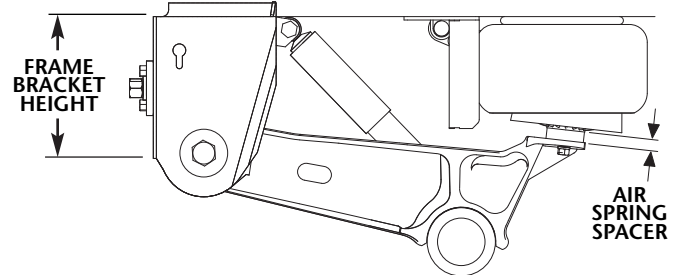
NS400 PosiLok Components



Additional Suspension Model Verification Procedures

1. Measure the height of the spacer under the air spring (**FIGURE 6**) and then compare it to a value in the *Spacer Height Charts* (this page).

FIGURE 6



2. After determining the spacer height, determine the shock part number and cross reference the information in the chart to confirm the model number.

Spacer Height Charts

SwingAlign

MODEL NO.	FRAME BRACKET HEIGHT	SPACER HEIGHT	SHOCK ABS. PART NO.
CB400-15.5	10.0" (254mm)	0.188" (4.8mm)	900 45 298
CB400-16	10.0" (254mm)	0.188" (4.8mm)	900 45 298
CB400-16.5	10.0" (254mm)	0.62" (15.8mm)	900 44 162
CB400-17	10.0" (254mm)	1.22" (31mm)	900 44 162
CB400-18	10.0" (254mm)	-	900 45 040

Welded

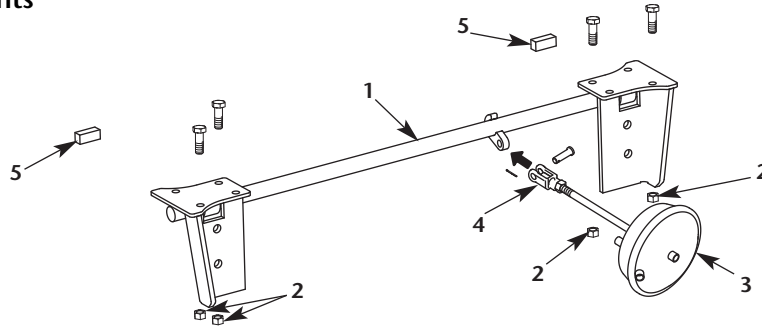
MODEL NO.	FRAME BRACKET HEIGHT	SPACER HEIGHT	SHOCK ABS. PART NO.
CB400-15.5	10.0" (254mm)	0.188" (4.8mm)	900 45 298
CB400-16	10.0" (254mm)	0.188" (4.8mm)	900 45 298
CB400-16.5	10.0" (254mm)	0.62" (15.8mm)	900 44 162
CB400-17	10.0" (254mm)	1.22" (31mm)	900 44 162
CB400-18	10.0" (254mm)	-	900 45 040

ITEM NO.	DESCRIPTION	NS400-16.5	QTY.
1	NS400 PosiLok Flipper Plate Assy	42" - 905 47 989 48" - 905 47 990	1
2	Nut 1/2" Grade B	XB-SLN-012-42	4
3	Actuator Chamber	905 48 040	1
4	1/2" Clevis Assembly w/1/2" Pin	11M018-8	1

POSILOK™ INSTALLATION

FIGURE 7B

CB400 PosiLok Components



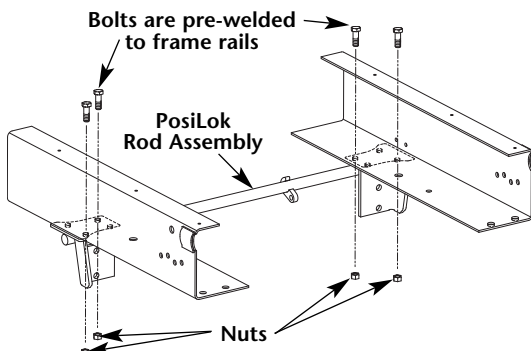
ITEM NO.	DESCRIPTION	CB400-15.5	CB400-16.0	CB400-16.5	CB400-17.0	QTY.
1	CB400 PosiLok Flipper Plate Assy	42" - 905 48 065 48" - 905 48 066	42" - 905 48 018 48" - 905 48 019	42" - 905 48 020 48" - 905 48 021	42" - 905 48 022 48" - 905 48 023	1
2	Nut 1/2" Grade B	XB-SLN-012-42	XB-SLN-012-42	XB-SLN-012-42	XB-SLN-012-42	4
3	Actuator Chamber	905 48 040	905 48 040	905 48 040	905 48 040	1
4	1/2" Clevis Assembly w/1/2" Pin	11M018-8	11M018-8	11M018-8	11M018-8	1
5	Block	900 34 559	900 34 559	900 34 559	900 34 559	2

PosiLok Flipper Plate Installation

1. Locate bolts in the bottom of frame rail above rear axle. Raise the flipper plate assembly so bolts protrude through the plate holes (4 places). Bolts must be clean; tighten nuts. Torque lubricated nuts to 75-90 ft. lbs. (102-122 Nm) (FIGURE 8).

NOTE: Bolts are **prewelded** to frame rail.

FIGURE 8
PosiLok Installation

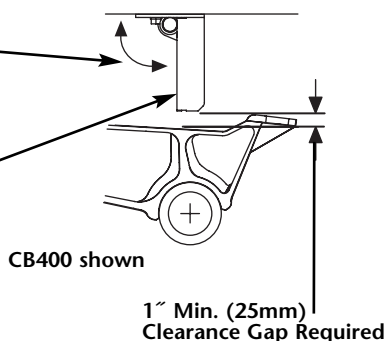


IMPORTANT: PosiLok Flipper Plate Assembly should rotate freely without binding (FIGURE 9).

FIGURE 9
Flipper Plate Installation

IMPORTANT: PosiLok Flipper Plate Assembly should rotate fully without binding

IMPORTANT: Flipper Plate must be completely down when attaching actuator push rod

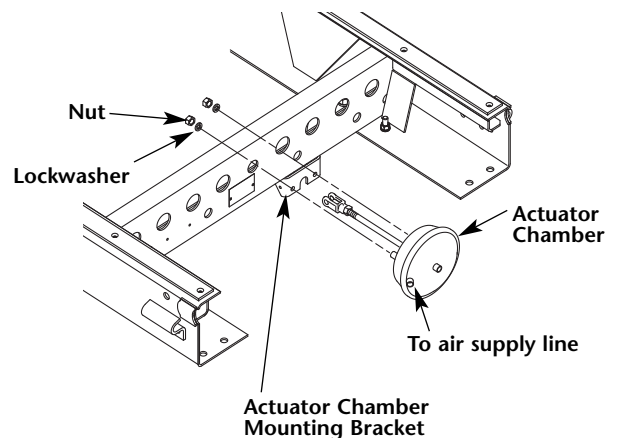


IMPORTANT: Both flipper plates must rest on equalizing beam when trailer is being loaded.

Actuator Chamber Installation

1. Attach actuator chamber to mounting bracket on slider box rear crossmember (FIGURE 10). Fasten with two lock washers and nuts. Torque nuts to 50-60 ft. lbs. (68-81 Nm).

FIGURE 10
Actuator Chamber Installation

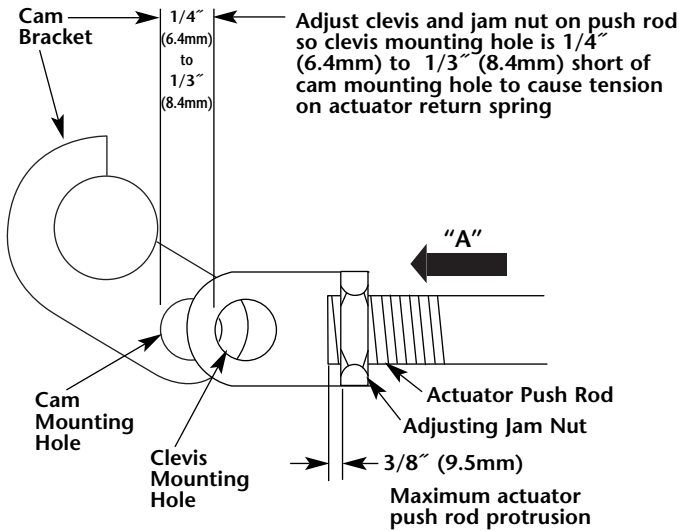
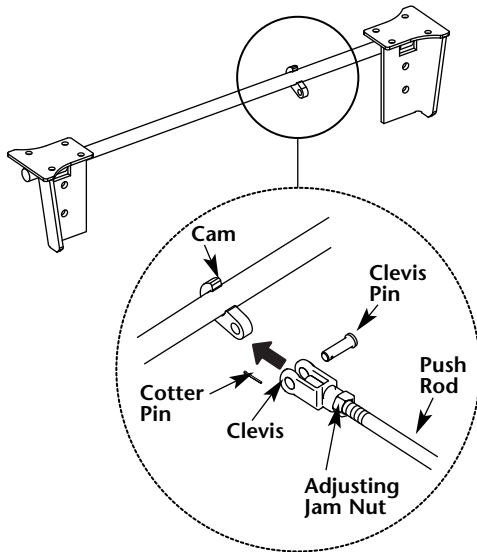


continued

2. Pull actuator push rod out (arrow A) so the hole in the cam aligns with the clevis hole. Approximately 20 psi can be used to extend the actuator chamber push rod (this creates tension on the actuator spring to help keep the flipper plate completely down). Install clevis pin and secure with cotter pin (FIGURE 11).

FIGURE 11
Clevis Installation

IMPORTANT: Flipper Plate must be completely down when attaching actuator push rod.



IMPORTANT: Adjust the actuator push rod length to assure flipper plate is completely down (engaged position) (FIGURE 9).

IMPORTANT: PosiLok Flipper Plate Assembly should rotate freely without binding after attaching actuator push rod (FIGURE 9).

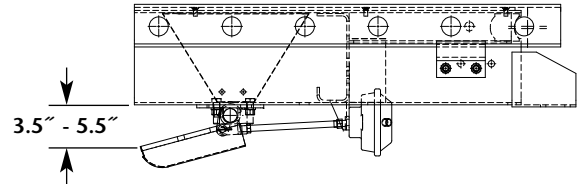
3. Let the flipper plate return to vertical. Lightly push the block against the bar as shown, and weld in place (for block location refer to SAF-HOLLAND drawing 100 00 517).

Clevis Adjustment

1. With the emergency glad hands hooked up to the trailer, check the 3.5" - 5.5" dimension (FIGURE 12) for the flipper plates to be in adjustment.

IMPORTANT: If dimension is incorrect, thread the clevis in or out, as necessary, to achieve this dimension. After the clevis is properly adjusted, tighten the clevis nut.

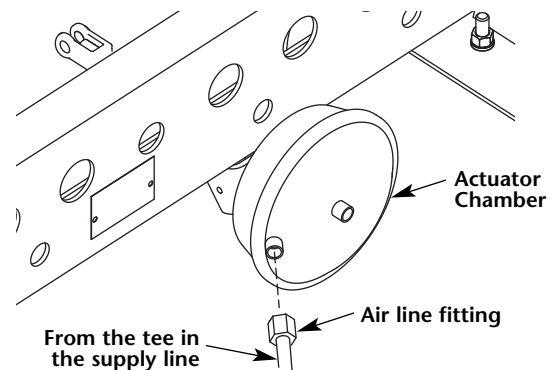
FIGURE 12
Flipper Plate Dimension



Air System Connection

1. The control for releasing the PosiLok is the same for releasing the emergency brakes on the trailer. Locate a trailer supply line (usually red) at the point it enters the spring brake valve (supply port).
2. Using a tee, replace straight connector fitting with a tee and reconnect the supply line. Run a length of plastic line from the tee to the pilot valve; run another line from the tee to the actuator chamber (FIGURE 13).

FIGURE 13
Connect Air System



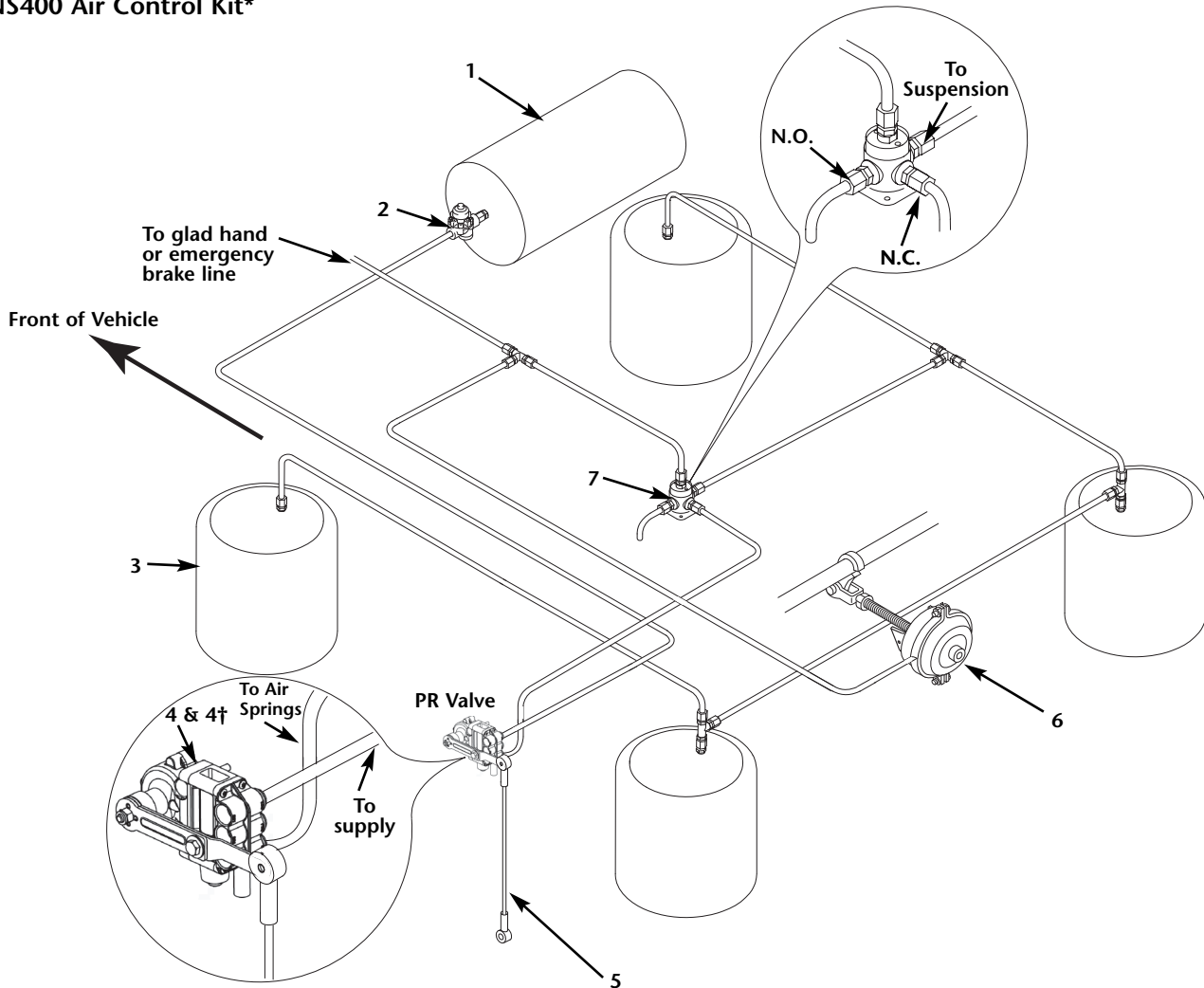
3. Attach the supply line from the brake valve to a 1/4 N.P.T. tube fitting in the top of the pilot valve (FIGURE 13).
4. Insert the 1/4 N.P.T. tube fitting from the supply line into the brake actuator inlet port (FIGURE 13 and FIGURE 14).
5. From the pressure protection valve (PPV), run a line to the PR valve bottom port (FIGURE 14).

IMPORTANT: It is the responsibility of the air system installer to secure all air lines and check for any air leaks. If air leaks are detected, repair as required. Failure to eliminate the air leaks may compromise the suspension performance.

6. From the bottom port of the PR valve, run a line to the N.C. port on the pilot valve (FIGURE 14).

Air System Connection *continued*

FIGURE 14A
NS400 Air Control Kit*



* Old dump system optional plumbing.

Overview: The flipper plates are activated by the vehicle's emergency parking brakes. When the parking brakes are engaged, the flipper plates rotate down to the engaged position. When the parking brakes are released, the flipper plates rotate up to the disengaged position.

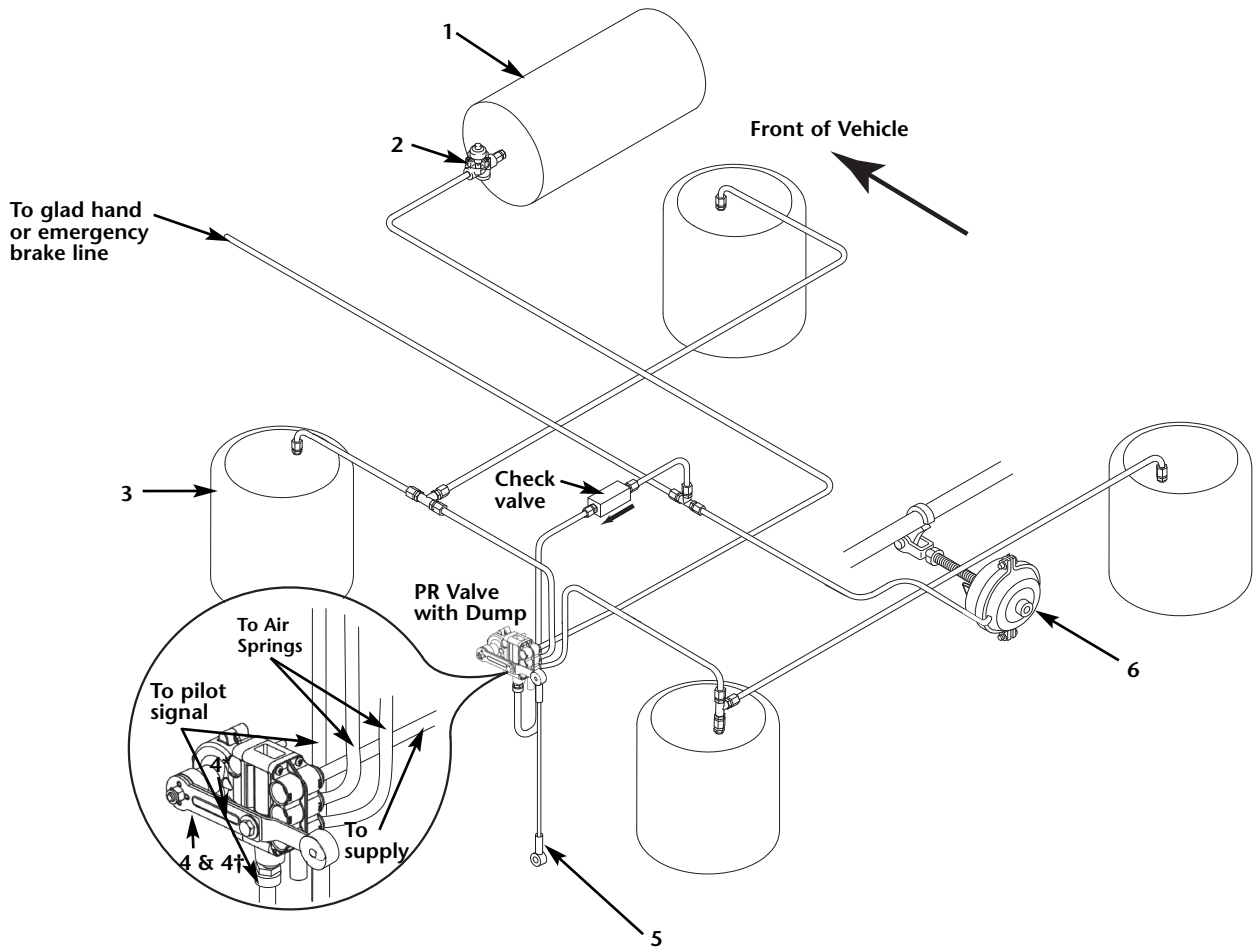
1. **Air Reservoir:** Main vehicle air supply.
2. **Pressure Protection Valve:** Air pressure protection valve ensures that safe air brake pressure is always maintained (65 psig—4.5 bars) in the air reservoir.
3. **Air Spring:** When the emergency brakes are released, air is supplied to the air springs, raising the trailer to ride height. This frees the trapped flipper plates on the trailing arm load pads. Flipper plates will then rotate up and out of the way.

4. **Primary Height Control Valve (1/4" and 3/8" air lines):** The Primary Height Control (PR) valve must always be properly adjusted to suspension design ride height to assure proper air suspension and PosiLok function. When the flipper plates are up, the PR valve has full function.
- 4.† **PR Valve with Pilot Valve:** The PR valve with pilot valve is used to monitor emergency brake pressure and pressure to the air springs. When the flipper plates are in the up position, the standard PR valve maintains the predetermined ride height.
5. **Linkage:** The linkage monitors movement between the frame and the axle, assisting the PR valve in maintaining a proper ride height.
6. **Actuator (905 48 040):** Push rod retracts (with emergency brakes on) to pull flipper plates down (engaged).
7. **Pilot Valve:** The pilot valve exhausts air from the air springs while the PosiLok is engaged (flipper plates in the down position when loading and unloading).

continued

Air System Connection *continued*

FIGURE 14B
NS400/CB400 Air Control Kit*



* If the height control valve automatic dump feature is not required, a one-way check valve can be placed in-line as shown to eliminate the automatic dump feature.

Overview: The flipper plates are activated by the vehicle's emergency parking brakes. When the parking brakes are engaged, the flipper plates rotate down to the engaged position. When the parking brakes are released, the flipper plates rotate up to the disengaged position.

1. **Air Reservoir:** Main vehicle air supply.
2. **Pressure Protection Valve:** Air pressure protection valve ensures that safe air brake pressure is always maintained (65 psig—4.5 bars) in the air reservoir.
3. **Air Spring:** When the emergency brakes are released, air is supplied to the air springs, raising the trailer to ride height and disengaging the the flipper plates. Flipper plates will then rotate up and out of the way. Rotating the flipper plates upward allows the PR valve to control all air flow for ride height.

4. **Primary Height Control Valve (1/4" and 3/8" air lines):** The Primary Height Control (PR) valve must always be properly adjusted to suspension design ride height to assure proper air suspension and PosiLok function. When the flipper plates are up, the PR valve has full function.
- 4.† **PR Valve with Dump:** The PR valve with dump feature is used to monitor emergency brake pressure and pressure to the air springs. When the flipper plates are in the up position, the standard PR valve maintains the predetermined ride height.
5. **Linkage:** The linkage monitors movement between the frame and the axle, assisting the PR valve in maintaining a proper ride height.
6. **Actuator (905 48 040):** Push rod retracts (with emergency brakes on) to pull flipper plates down (engaged).

OPERATION

Engaged Application

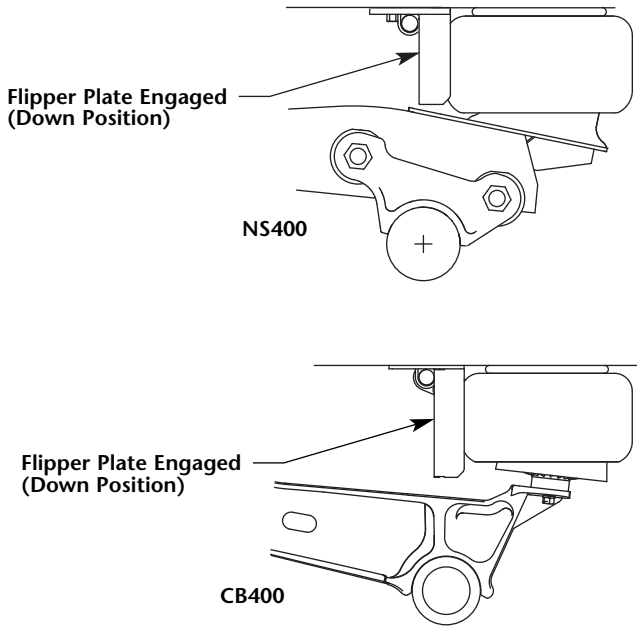
PosiLok Flipper plates down (engaged) and vehicle parking brakes are set

1. Releasing air pressure from the trailer brake system or disconnecting the glad hand engages the parking brakes and the PosiLok actuator retracts, rotating the rod so the flipper plates swing down (engaged position-**FIGURE 15**).
2. When the brakes are set, the air pressure to the "pilot valve" is cut off, exhausting the suspension air springs and resting the flipper plates on the equalizing beam load pads.

IMPORTANT: DO NOT operate vehicle (put in motion) if flipper plates are trapped in the down position (**FIGURE 17**). Refer to Troubleshooting on page 12.

CAUTION Failure to adequately raise flipper plates could result in trailer, suspension component, and cargo damage.

FIGURE 15
Flipper Plate Engaged

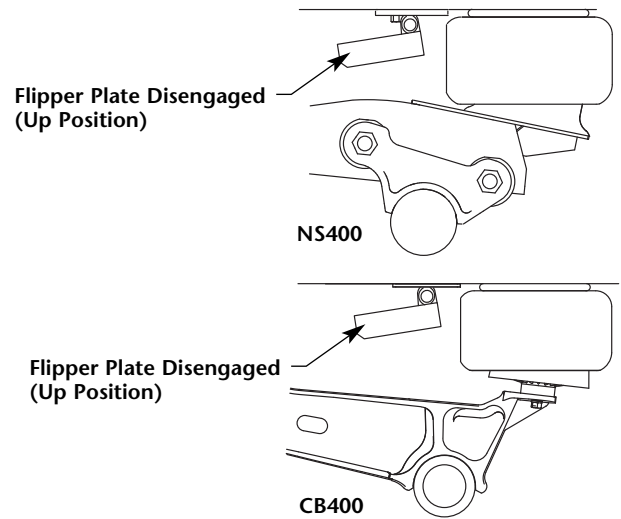


Disengaged Application

EDL Flipper plates up (disengaged) and vehicle is ready to move or is moving

1. When the parking brakes are disengaged, the primary height control valve (PR valve) has full function. When the system has sufficient air pressure in the suspension air springs, the actuator extends, rotating the rod so the flipper plates swing up away from the load pads (disengaged position-**FIGURE 16**). Vehicle is ready to move.

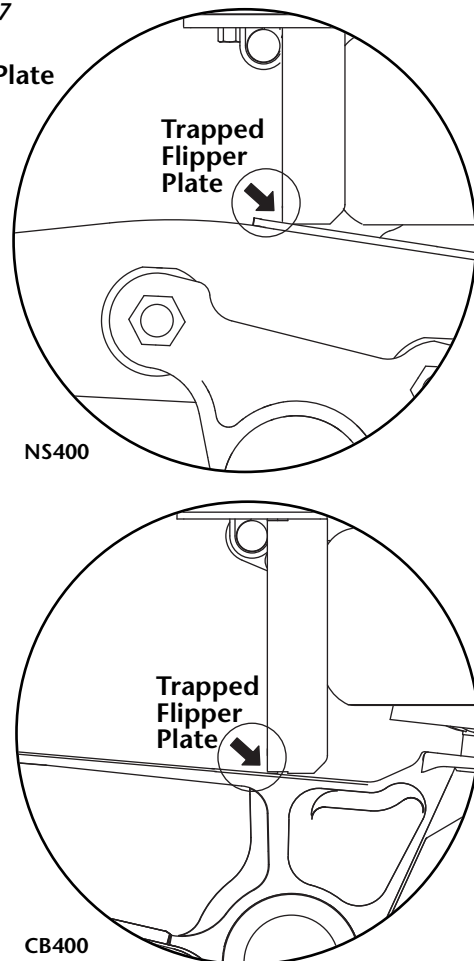
FIGURE 16
Flipper Plate Disengaged



IMPORTANT: DO NOT operate vehicle (put in motion) if flipper plates are trapped in the down position (**FIGURE 17**). Refer to Troubleshooting on page 12.

CAUTION Failure to adequately raise flipper plates could result in trailer, suspension component, and cargo damage.

FIGURE 17
Trapped Flipper Plate



MAINTENANCE

Primary Height Control Valve Adjustment

Height Control Valve Adjustment Procedures

IMPORTANT: SAF-HOLLAND recommends referring to the manufacturer's Height Control Valve manual for the correct procedure.

IMPORTANT: This adjustment procedure is for **ONE** Height Control Valve system with a PosiLok trailer stabilizing feature.

1. Prior to adjustment, the vehicle must be in an unladen condition on a level floor and supported on a king pin stand or coupled to a tractor (**FIGURE 18**).

⚠ WARNING Failure to properly support suspension during maintenance may allow suspension to fall which, if not avoided, could result in death or serious injury.

IMPORTANT: **DO NOT** use flipper plate height plus 1" (25mm) clearance spacing to determine ride height setting.

2. Verify ride height by checking serial number tag located on the rear crossmember (**FIGURE 19**).

Example: CB400-4816.5, last three digits represent 16.5" (419mm) ride height.

3. Confirm proper PosiLok flipper plate assembly by comparing predetermined ride height to corresponding flipper plate height (see NS400 *Suspension Model Identification* on page 4 or CB400 *Suspension Model Identification* on page 5).
4. Adjust Primary HCV (PR valve).

NOTE: If the suspension returns to a dimension less than design ride height, adjust link according to valve manufacturer's procedure so suspension will always return to its correct ride height.

FIGURE 18
Trailer Supported at Fifth Wheel Height

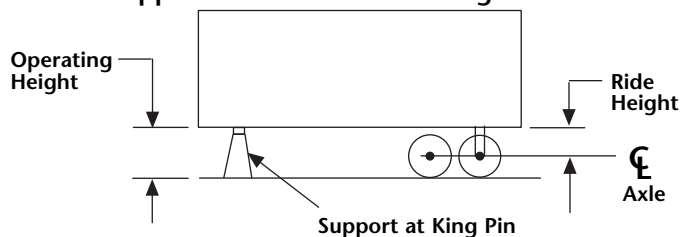
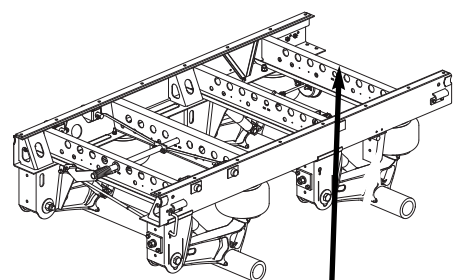
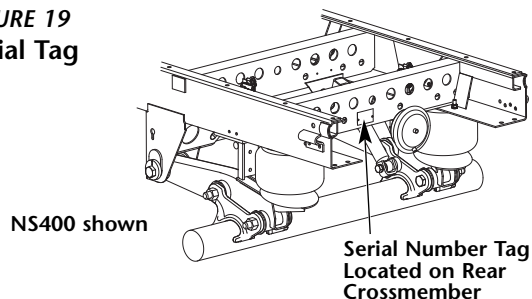
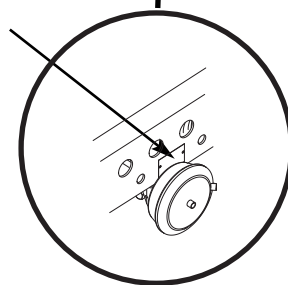


FIGURE 19
Serial Tag



SERIAL NUMBER TAG LOCATED ON REAR CROSSMEMBER (CB400 SHOWN)



SYSTEM TROUBLESHOOTING

⚠️ WARNING Failure to chock tires prior to beginning maintenance could allow vehicle rollaway which, if not avoided, could result in death or serious injury.

IMPORTANT: Apply air system pressure in excess of 85 psig (5.9 bars) before doing any performance checks.

PROBLEM	POSSIBLE CAUSE	and	REMEDY
Trailer is at full extension and suspension is pulling on shock absorber.	No air flow out of pressure protection valve from the air reservoir.		Check specified air pressure. Minimum 85 psig (5.9 bars) required in air reservoir. Repair or replace as required.
	Actuator or PR valve mis-adjusted or malfunctioning.		Check and adjust or replace as required. (See pages 6 and 7.)
	PR valve malfunctioning.		Check PR valve installation and function: repair or replace as required. (See page 8.)
	Actuator push rod is bent.		Replace as required. (See pages 6 and 7.)
	Cam bracket that connects to actuator is damaged or weld is broken.		Repair or replace as required.
	Actuator diaphragm is ruptured.		Replace as required. (See pages 6 and 7.)
Flipper plates are trapped in the down position.	No air flow out of pressure protection valve from the air reservoir.		Check specified air pressure. Minimum 85 psig (5.9 bars) required in air reservoir.
	Air flow to either the pilot valve or to the PR valve does not exhaust.		Check for breach in air supply line and repair/replace as required. (See page 8.)
	Vehicle overloaded or unevenly loaded.		Check loads and correct as needed.
	Primary HCV mis-adjusted or malfunctioning.		Check and repair or replace as required. (See manufacturer's HCV manual).
	Trailer not at proper ride height.		Check and adjust HCV if needed. (See page 10.)
Flipper plates will not swing down completely	Cam bracket that connects to actuator is damaged.		Repair or replace as required.
	Ride height set improperly (too low).		Need 1" (25mm) gap between top of the equalizing beam and flipper plates or center line of axle to the underside of the frame. (See page 4 or 5.)
	Actuator push rod needs adjustment.		Check and adjust. (See page 6.)
Flipper plates are bent or buckled	Moving trailer through rough yard without waiting for the suspension to air up.		Replace bent or buckled flipper plates.
	Trailer loaded with heavy fork truck/load combination with slider in forward position.		
	Improper ride height setting due to load or lowering trailer for bridge height.		
	Overload of rear suspension caused by yard horse raising front of trailer too high and moving trailer to and from dock.		
	Temporary loss of ride height when slider is moved at a high rate of speed and engaging emergency brakes.		
	Using a spring brake proprietary system which will allow the trailer to be moved before the suspension is aired up.		Removal of the air dump system and/or change the spring brake priority valve to a reservoir priority valve system (see page 9).

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