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Other Languages:	NONE	**Author**:	David Horner
Viewed:	4546		

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Title: **LT, RH- Hydraulic Clutch Diagnostic & Service Information**

Applies To: **LT, RH, Equipped with a Manual Transmission and Eaton Advantage Solo Self-Adjusting Clutch**

CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

03/14/2019 - Updated description, steps, formatting
01/09/2018 - New Article Owner
12/20/2017 - Added RH to "Applies To"
09/11/2017 - Formatting corrected

DESCRIPTION

This iKNow article is designed to identify and correct a hydraulic hose route & clip condition that may cause driver symptoms listed below.

The route and clip condition exists when the hose between the reservoir and master cylinder does not have a natural horizontal slope angle; thus, creating a sharp vertical slope angle (often referred to as a P Trap) on the hose which prevents upward air bubble migration to the highest exit point (fluid reservoir) in the system (Figure 1)

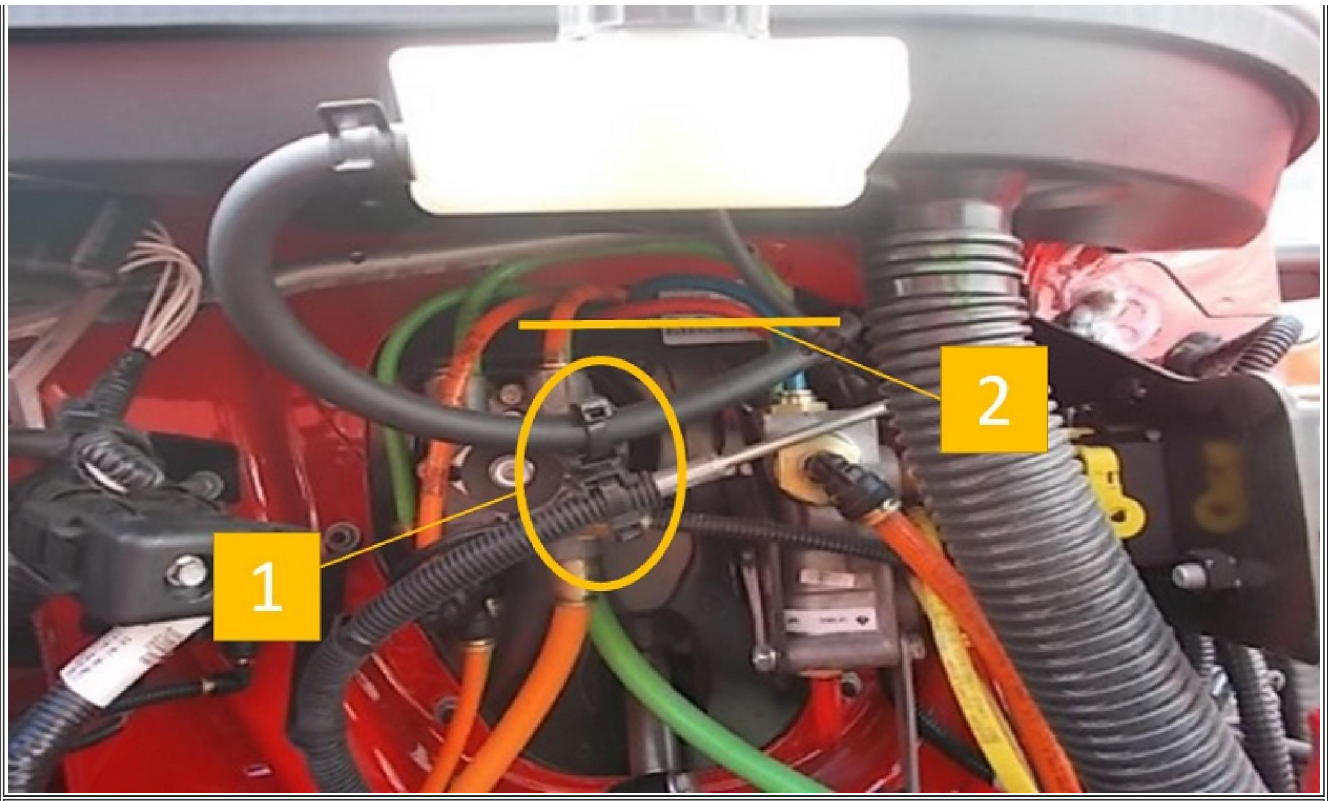

Figure 1. Incorrect Master Cylinder Supply Hose Routing

Item 1: P-trap
Item 2: Master Cylinder Inlet level

SYMPTOM(s)

Customer Observations or Concerns:

Spongy Pedal

Won't go into gear

No clutch brake

Diagnostic Trouble Code(s) & Dashboard Indicator Light(s):

DTC/Light	Description
N/A	N/A

SPECIAL TOOL(s) / SOFTWARE

Tool Description	Tool Number	Comments	Instructions
Hand Operated Vacuum Pump Tester	ZTSE2499		Vacuum Bleed Procedure
Solo Clutch Resetting Tool	RR1005CL		
Clutch Measurement Tool	RR1007CL		

SERVICE PARTS INFORMATION

Kit Description	Part Number	Quantity Required	Notes
CYLINDER, CLUTCH OPERAT,	3868300C94	1	
HOSE FLEX HYDRAULIC CLUTCH	3953848C1	1	
CLAMP, PIPE SGL-CUSHIONED 7/16 ID X .281 MOUNTING	98959R1	2	
BOLT M6 X 25 PHC CLS 10.9	30194R1	2	M6 X 25
NUT, HEXAGON HEAD FLANGE CLASS 10 M6	40233R1	2	M6 X 25
WASHERS, FLAT METRIC	1696027C1	4	M6

DIAGNOSTIC STEP(s)

WARNING:

To prevent property damage, personal injury, and / or death, keep flames or sparks away from vehicle and do not smoke while servicing the vehicle’s batteries. Batteries expel explosive gases.

WARNING:

To prevent property damage, personal injury, and / or death, remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last.

WARNING:

To prevent property damage, personal injury, and / or death, if the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over.

WARNING:

To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

WARNING:

To prevent property damage, personal injury, and / or death, park vehicle on a hard, flat surface, turn the engine off, set the parking brake, and install wheel chocks to prevent the vehicle from moving in either direction.

Step	Action	Decision
#1	If symptoms above are present: 1. Perform re-routing procedure (Repair Steps Below) 2. Perform clutch bleeding procedure outlined (Bleed Procedure Below)	**Continue to Step 2.**

Step	Action	Decision
#2	**DIAGNOSTIC:** Depress the pedal by hand until the master cylinder begins to stroke. Is clutch pedal free-play between 0.4" and 0.6"?	**Yes.** Continue to Step 3.
		No. Adjust Clutch Linkage to obtain 0.4" - 0.6" freeplay, continue to step 3

Step	Action	Decision
#3	**DIAGNOSTIC:** Measure release bearing gap using clutch measurement tool (RR1007CL), long handle bore micrometer, or inside digital spring caliper. • See page 8, step 3 of Eaton Manual for reference, if needed. Is release bearing gap .490" to .560"?	**Yes.** Continue to Step 4.
		No. Perform In Vehicle Resetting Procedure in the Eaton Manual on page 14.

Step	Action	Decision
#4	**DIAGNOSTIC:** Measure clutch brake squeeze: 1. Insert 0.010" feeler gauge between release bearing and clutch brake 2. Measure how far the clutch pedal is from the floor at time of release of 0.010" feeler gauge. See page 9 of Eaton Manual for reference, if needed. Is clutch brake squeeze ~1" from the floor?	**Yes.** Finish repairs and release truck.
		No. Replace master cylinder & slave cylinder then repeat steps 1-4

REPAIR STEP(s)

1. Cut 2 zip ties holding the master cylinder supply hose down to the air assist servo cylinder supply hose.

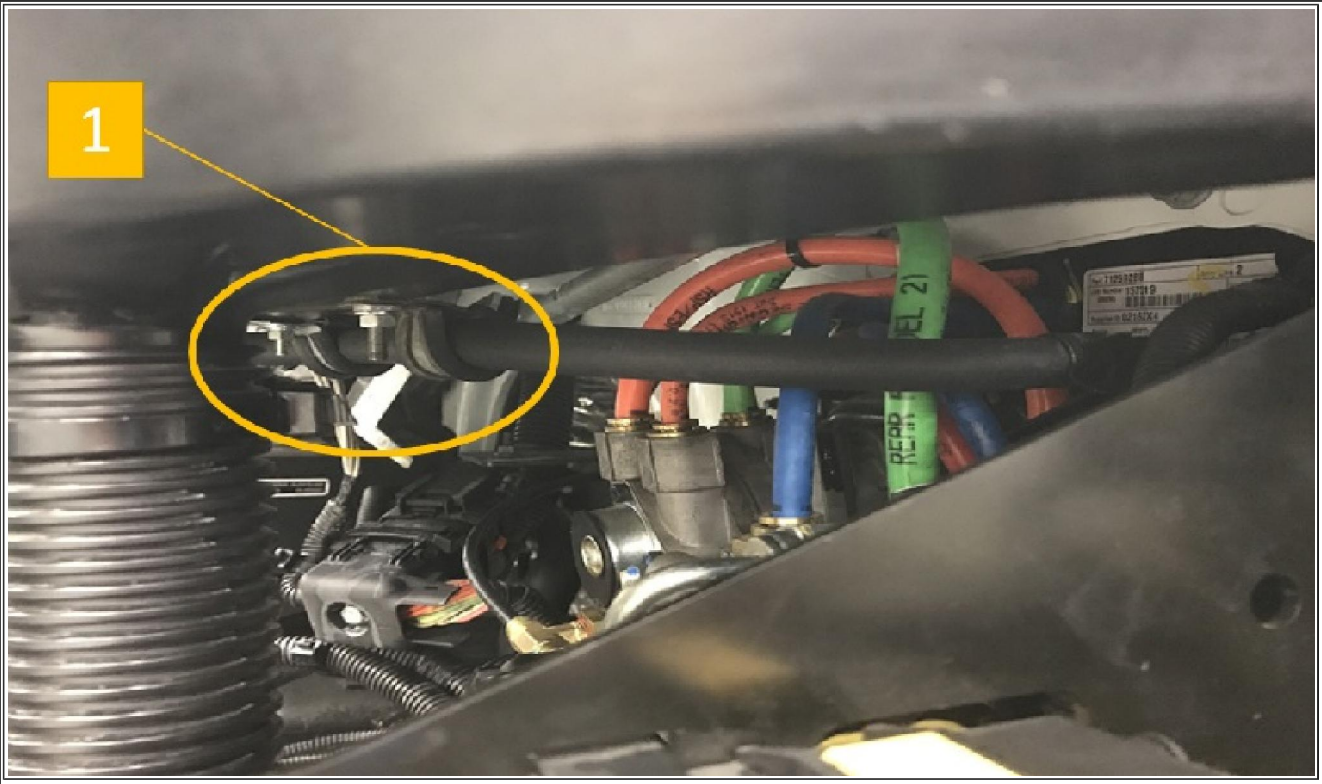

Figure 2. Correct Master Cylinder Supply Hose Routing

Item 1: New Supply Hose Clipping Points

Figure 3. Top View of Cowl Tray

Item 1: Drilling locations

2. Drill 2 holes in the approximate location (Figure 3, Item 1) in the cowl tray using a 1/4" drill bit.

3. Seal holes with RTV

4. Using 2 bolts, 2 nuts, 4 washers and 2 p-clamps secure the master supply hose to the cowl tray.

Air Assist Servo Supply Hose Routing

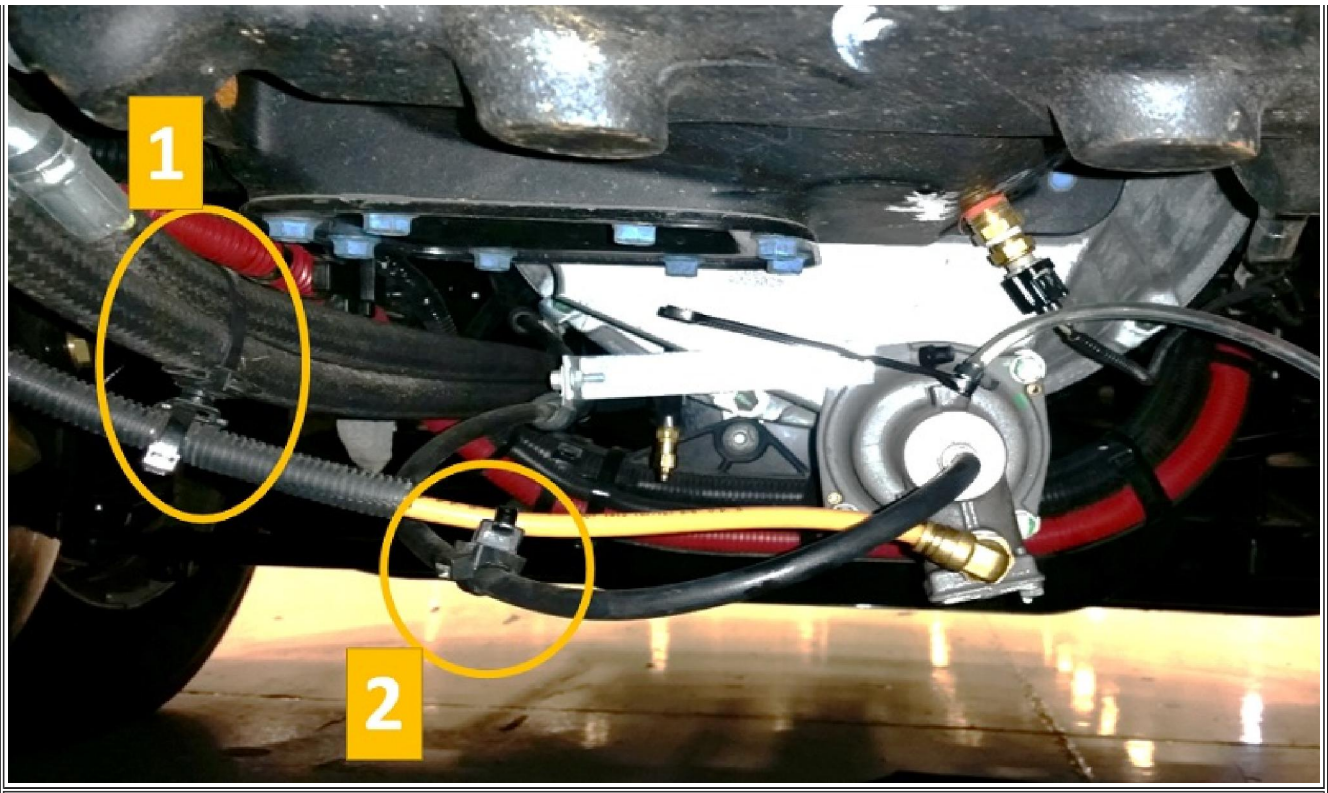

Figure 4. Incorrect Air Assist Servo Cylinder Supply Hose Routing

Item 1: Saddle clamp on the wrong side of transmission cooler lines
Item 2: Saddle clamp

1. Disconnect the air hose from the air assist servo cylinder.

2. Cut the zip tie at the saddle clamp (Figure 4, Item 2).

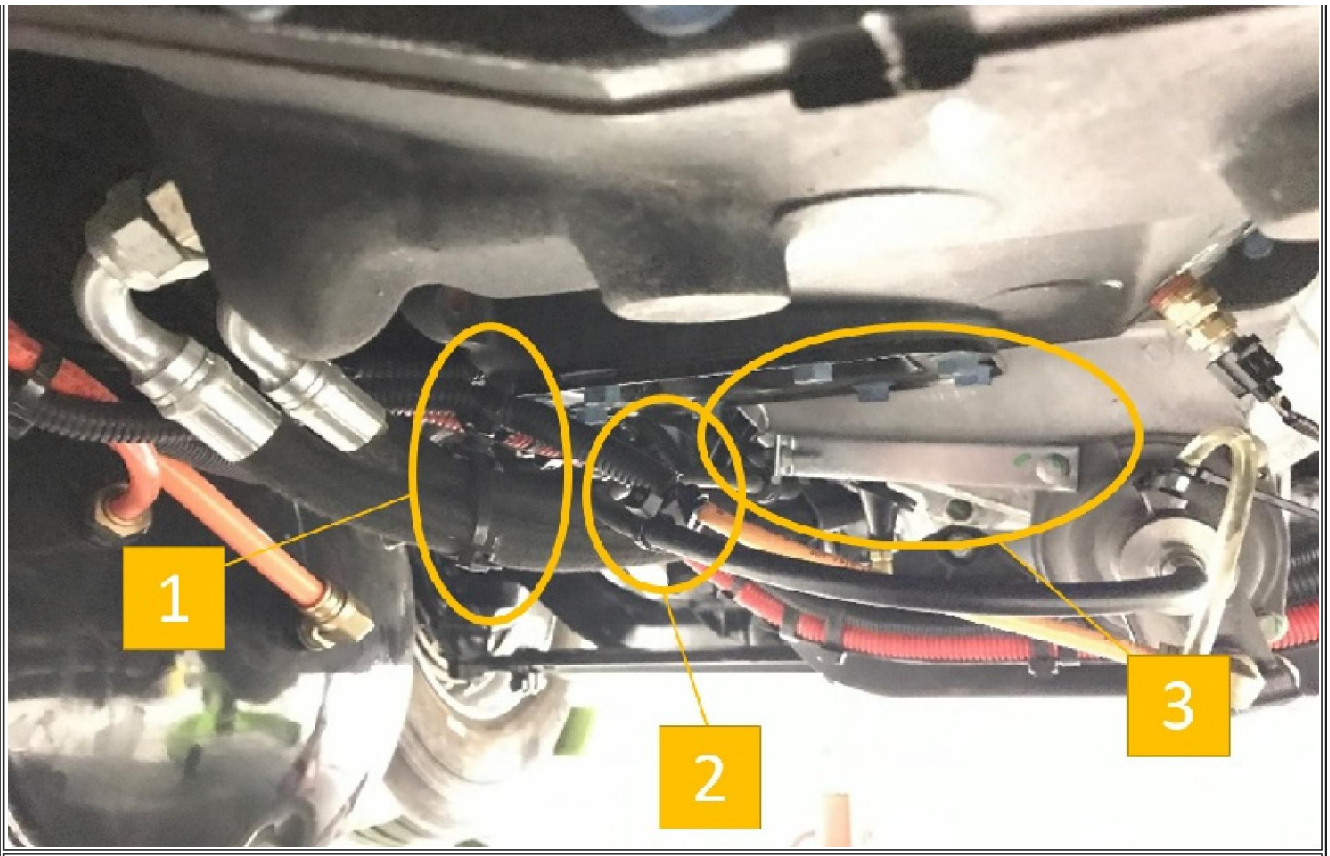

Figure 5. Correct air assist servo Cylinder Supply Hose Routing

Item 1: Air line routed over transmission cooler lines
Item 2: Saddle clamp
Item 3: Extension Brake Repositioned

3. Re-position the extension bracket (Figure 5, Item 3) bolted to the air assist servo cylinder as high as possible without causing a hose rub condition.

4. Re-route the air line over the transmission cooler lines (Figure 5, Item 1).

5. Secure the air line to the air assist servo cylinder supply hose with a new zip tie to the saddle clamp (Figure 5, Item 2).

6. Re-insert the air line into the air assist servo cylinder air supply connection.

Bleeding Procedure

1. Pull vehicle into the shop, apply parking brake, chock wheel and open hood.

2. Drain air tanks.

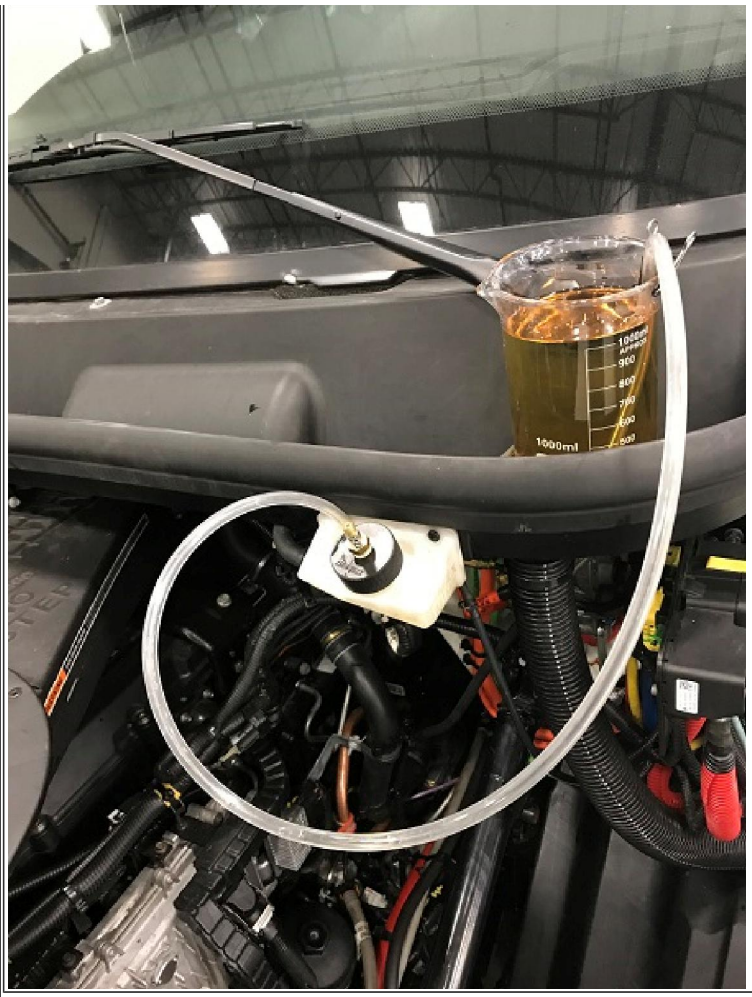

Figure 6. Reservoir Hook-up

3. Fill a clean container full of brake fluid (at least a quart).

4. Install reservoir adapter cap.

5. Insert tube from reservoir adapter cap into container full of brake fluid, submerge until 10mm from the bottom of the container.

6. Set container full of brake fluid on the cowl to allow gravity feed.

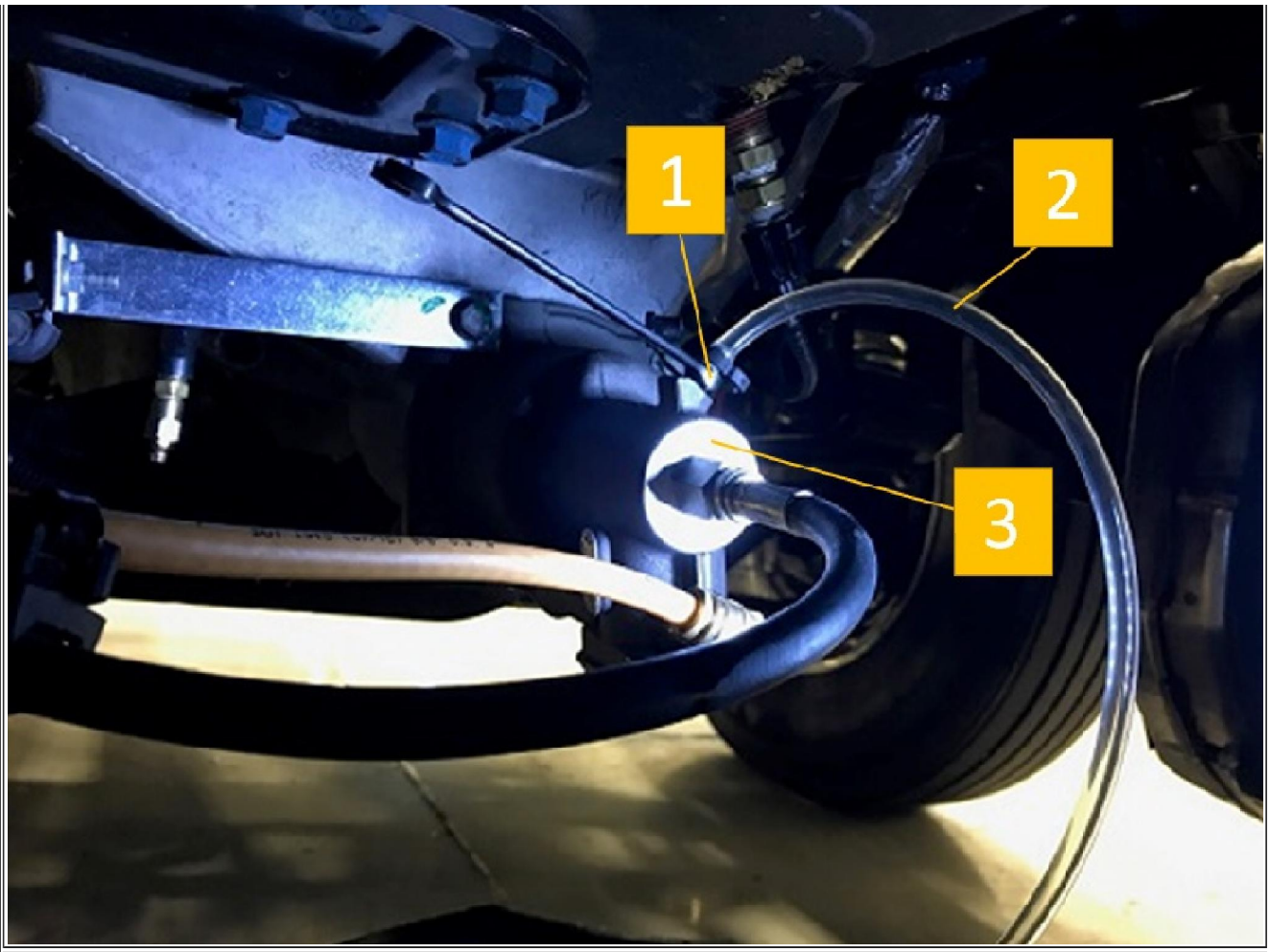

Figure 7. Air Assist Servo Bleeder Screw

Item 1: Bleeder Screw
Item 2: Hand Operated Vacuum Pump Suction Hose
Item 3: Air Assist Servo

7. Set-up hand operated vacuum pump to the air assist servo bleeder screw.

8. Pump hand operated vacuum pump up to 15” of mercury and then open the bleeder screw.

Figure 7. Hand Operated Vacuum Pump

9. Continue pumping keep vacuum needle between 10” and 15” of mercury.

10. Once container on hand operated vacuum pump is full, close the bleeder screw.

11. Release the pressure in the hand operated vacuum pump by pressing the relief valve.

12. Dump the brake fluid into an empty container.

13. Set-up the hand operated vacuum pump again to pull vacuum.

14. Pump hand operated vacuum pump up to 15” of mercury and then open the bleeder screw.

15. Continue pumping keep vacuum needle between 10” and 15” of mercury, while doing this have an assistant press the clutch pedal twice. Perform this step three times.

16. Adjust fluid level to max level.

17. Install battery/skirt cover.

18. Return to step 3 in step based diagnostics.

WARRANTY INFORMATION

Group:	11000 - Clutch
Noun:	352 - Hose / Pipe

Warranty Claim Coding:

Refer to the Warranty Coding Manual for Group and Noun Codes.

Standard Repair Time(s)

Description	Chassis	SRT	Hours
Reroute hose	LT	T-Time	0.5 HRS

Standard Repair Time(s):

Refer to the SRT Manual for Repair Times

OTHER RESOURCES

Master Service Information Site

Hide Details Feedback Information

Viewed: 4545
Helpful: 37
Not Helpful: 0

Staff ID	Client ID	Comments	Created Date
	DY35478	You received the following feedback From: dy35478 - Steve Ziegler Email Address: steveziegler@selkinginternational.com Job Classification: SA003, Salesperson Dealer: SELKING INTERNATIONAL Feedback: Shouldn't step 18 in the bleed procedure say to go back to step 2 in step based diagnostics?	3/14/2019 10:36:20 AM
