August 30, 2013 Subject: **Can-Am™ Roadster - Improved Procedure to Replace Tandem Master Cylinder (TMC)** No. **2013-9**

YEAR	MODEL	MODEL NUMBER	SERIAL NUMBER
2008 - 2013	Spyder GS Series	All	All
	Spyder RS Series		
	Spyder ST Series		
	Spyder RT Series		

A new procedure has been developed to improve the replacement of the tandem master cylinder (TMC) without the necessity of bleeding the whole brake system.

REQUIRED PARTS AND SHOP SUPPLY

When replacing a master cylinder, the following items are required to perform the procedure properly.

Required Parts

DESCRIPTION	PART NUMBER	QTY
Tandem master cylinder (TMC)	705 600 722	1
M8 x 30 hexagonal flanged screw (with self-locking product)	207 583 044	2
M8 x 20 hexagonal flanged screw (with self-locking product)	207 582 044	2
M6 hexagonal flanged elastic nut	233 261 414	2
Cotter pin	371 800 700	1
Sealing washer	414 920 600	4
Oetiker clamp	293 650 047	2

Shop Supply

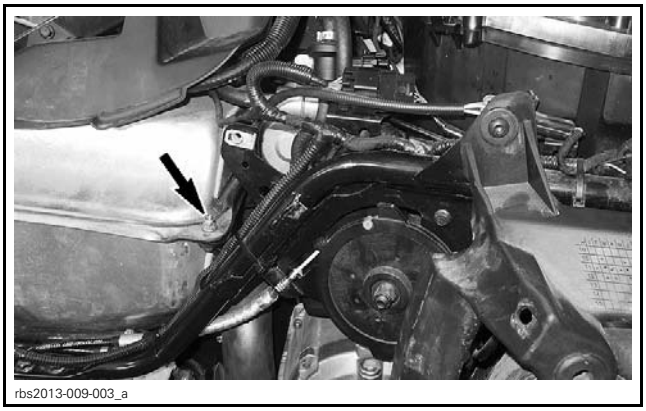
DESCRIPTION	PART NUMBER
Brake fluid	293 600 131
XPS Brakes and Parts cleaner	219 701 705 (USA)
	219 701 776 (Outside USA)

PROCEDURE

Tandem Master Cylinder (TMC) Replacement

TMC Removal

1. Remove RH body panels to access the TMC.
2. Remove the bolt securing lateral support to fuel tank. Discard the nut.



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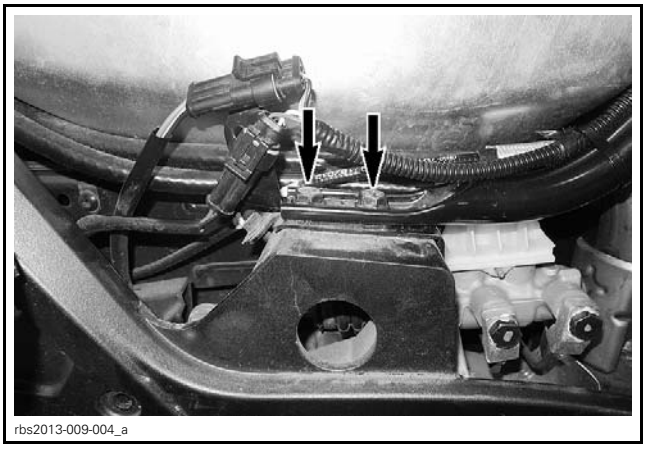
3. Remove and discard bolts (2x) retaining the bottom of RH lateral support.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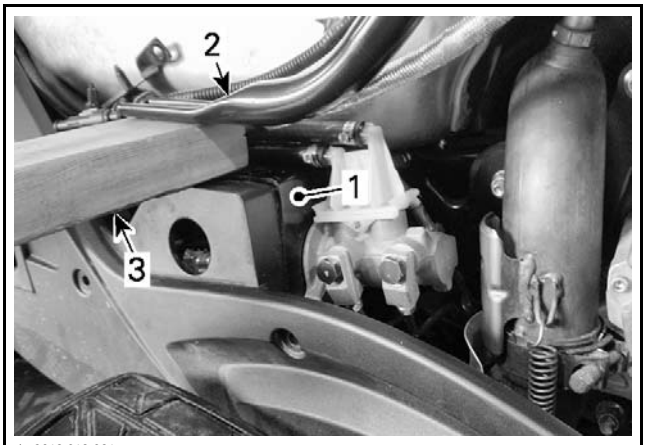
4. Insert a piece of wood (2" x 3") between frame and the bottom of the RH lateral support to ease access.

NOTICE To avoid damaging the footrest support, make sure the piece of wood is well positioned between frame and lateral support.



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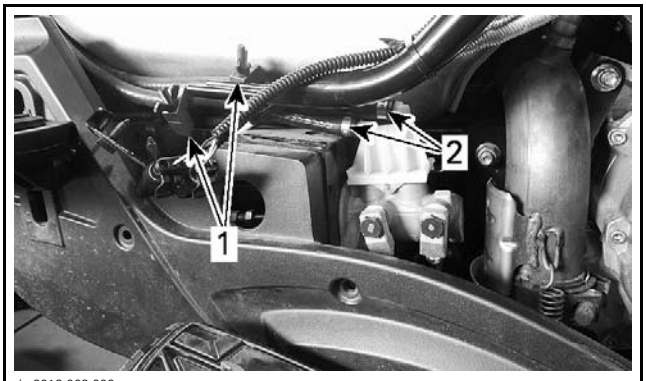
1. Frame
2. Bottom of RH lateral support
3. Piece of wood

5. Detach both brake fluid hoses from TMC manifold inlet. Note hoses location for reinstallation.
   5.1 Pinch each brake hose from reservoir as close to the TMC as possible.

REQUIRED TOOL		
SMALL HOSE PINCHER (P/N 295 000 076)	**2x**	

   5.2 Place a drain pan under vehicle to catch brake fluid.
   5.3 Remove and discard both Oetiker clamps securing brake fluid hoses to TMC manifold inlet.
   5.4 Remove hoses from TMC manifold inlet.



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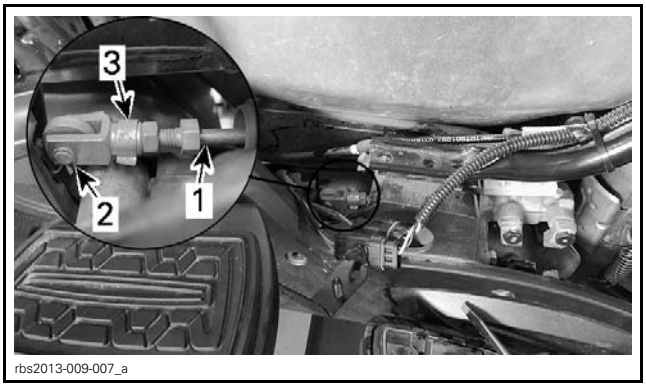
1. Hose pinchers
2. Oetiker clamps

6. Remove TMC rod.
   6.1 Remove and discard cotter pin.
   6.2 Remove locking pin.
   6.3 Pull TMC rod out of TMC.



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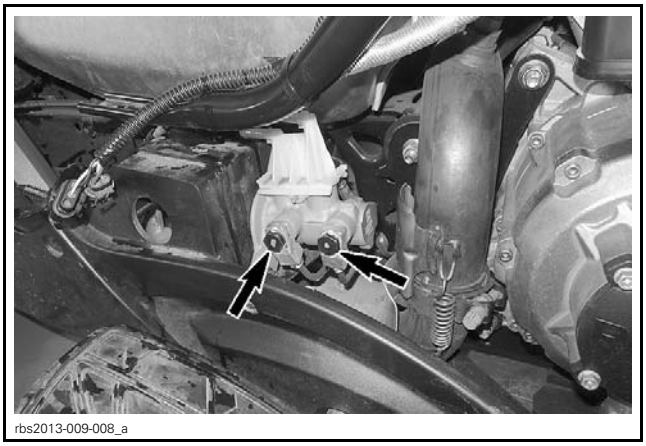
1. TMC rod
2. Cotter pin
3. Locking pin

7. Remove Banjo bolts and discard sealing washers.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8. Remove and discard TMC retaining screws.
9. Remove TMC by pulling it forwards.

NOTICE Be careful not to bend metallic brake lines.

TMC Installation

The TMC installation is the reverse of the removal procedure. However, pay attention to the following.

Securing the TMC using new M8 x 30 hexagonal flanged screw (with self-locking product). Install the outside screw first.

TIGHTENING TORQUE	
TMC retaining screw (New M8 x 30 hexagonal flanged screw)	25 N•m (18 lbf•ft)

Install both brake fluid hoses to TMC manifold inlet using new Oetiker clamps.

Install Banjo bolts with new sealing washers.

TIGHTENING TORQUE	
Banjo bolt	Finger tighten, leave the Banjo bolts 1/2 turn loose

Install the TMC rod using the previously removed locking pin and a new cotter pin.

Bleed the system as per the procedure described below.

Bleeding Procedure

1. Fill up brake fluid reservoir using BRAKE FLUID (P/N 293 600 131).

NOTE: Brake fluid reservoir must be kept full to prevent air from being pumped into the system. If a lack of fluid occurs, start the sequence again.

2. Raise the rear of the vehicle until the TMC is level (the rear of the TMC may be slightly higher).
3. Remove small hoses pinchers and let brake fluid leak to Banjo bolts.
4. While slowly pressing down on brake pedal, temporarily tighten Banjo bolts.
5. Pump brake pedal 3 times and hold it.
6. Loosen then tighten Banjo bolts to evacuate air from system.
7. Repeat 3 times for each Banjo bolts.
8. Apply final torque to Banjo bolts.

TIGHTENING TORQUE	
Banjo bolt	Final torque: 28.5 N•m (21 lbf•ft)

9. Refill brake fluid reservoir.
10. Confirm LPS pressure in B.U.D.S. See procedure below in *BRAKE SYSTEM PRESSURE VALIDATION*.

If pressure is low, repeat steps 4 to 8.

11. Using XPS Brakes and Parts cleaner, clean TMC area.
12. Reinstall RH lateral support using new M8 x 20 hexagonal flanged screw (with self-locking product) and new M6 hexagonal flanged elastic nut

TIGHTENING TORQUE	
M8 x 20 hexagonal flanged screw (with self-locking product)	15 N•m (133 lbf•**in**)
M6 hexagonal flanged elastic nut	7.5 N•m (66 lbf•**in**)

13. Reinstall all removed body parts.

Brake System Pressure Validation

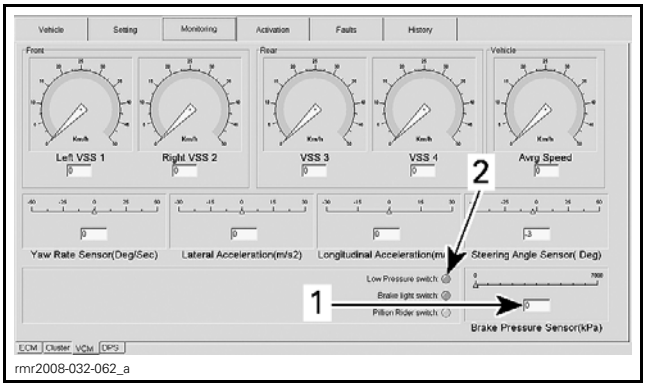
NOTICE **Do not pump up the brake pedal repeatedly before doing the validation.**

In B.U.D.S., select **Monitoring** folder then the **VCM** page.

Slowly depress the brake pedal (only once) until you reach **3500 kPa (508 PSI)** at the brake pressure sensor.

Maintain the brake pedal in position.

Check the **Low Pressure Switch** button value on the computer screen.



TYPICAL
1. *Brake Pressure Sensor (PSI) value*
2. *Low Pressure Switch button*

If **Low Pressure Switch** button is still off when you reached the required pressure the validation is successful.

If **Low Pressure Switch** button turns on before reaching **3500 kPa (508 PSI)**, perform the following additional steps:

Perform equivalent of 3 complete wheels rotation (for the 3 wheels).

Slowly depress the brake pedal until **Low Pressure Switch** button turns on.

Take note of the **Brake Pressure Sensor (PSI)** value.

Perform equivalent of 3 complete wheels rotation (for the 3 wheels).

Slowly depress the brake pedal until **Low Pressure Switch** button turns on.

Take note of the **Brake Pressure Sensor (PSI)** value.

Perform equivalent of 3 complete wheels rotation (for the 3 wheels).

Slowly depress the brake pedal until **Low Pressure Switch** button turns on.

Take note of the **Brake Pressure Sensor (PSI)** value.

Calculate the average of the 3 **Brake Pressure Sensor (PSI)** values previously noted.

If the average is **EQUAL OR ABOVE 3500 kPa (508 PSI)**, the brake system pressure is conform. Clear fault codes.

If the average is **BELOW 3500 kPa (508 PSI)**, bleed the brake system again.