2010 43QGP Allegro Bus

8/22/2012

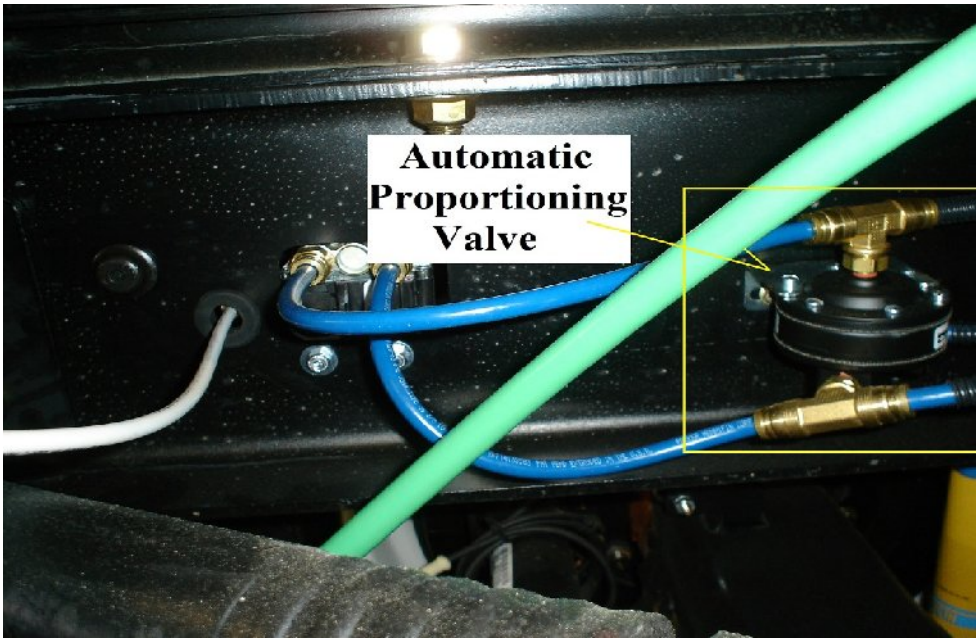
59 – FYI – <u>REBALANCING THE TAG AXLE POWERGLIDE BUS CHASSIS.</u> This file is my effort on explaining what I think is necessary to rebalance the 43QGP Allegro Bus Powerglide chassis. Tiffin installs two automatic proportioning valves they are used to proportion 40% of the supplied suspension air pressure to the proportioning valve which sends the pressure to the tag axle air bags. The balance of the supplied suspension air (60%) is routed to the drive axle air bags. This distribution of air pressure **SHOULD** balance the chassis distributing the coach's front and drive axles weight. I stated **SHOULD**, however I know of many cases where this design has not worked, as the design did not work on our 2010 43QGP.

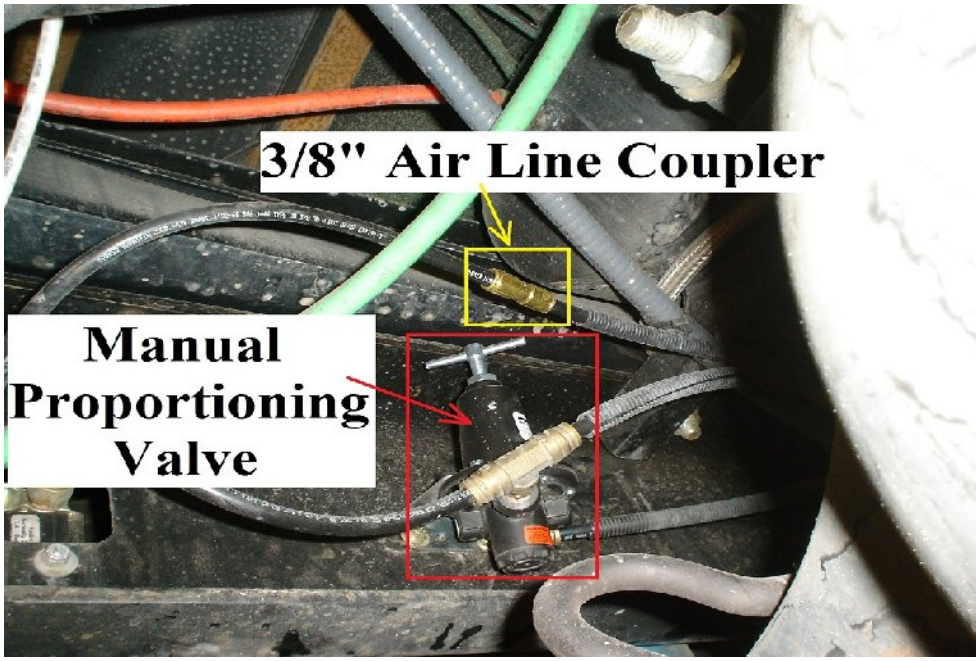
STEP 1 - Have the coach's six wheel positions weighed. During the first week of ownership our coach was weighed finding the front axle to be overweight, weighing slightly over 15,600 lbs. the coach was weighted without any of our personal belongings except a couple nights worth of clothes and other small items. If after having your coach's six wheel positions weighed the coaches weight is below the front axle's rated weight, your coach is OK you can stop now you do not need to go further. However, in many cases after weighting you will find the front axle weight is close to being over-weight or is actually over-weight, if so continue on to step 2.

STEP 2 – This step is not necessary but in my opinion, it makes seeing what is happening easier to understand as this gives you a visual aid. Install a pair of tag axle air pressure gauges. The necessary components are not expensive and IMO not hard to install. You can find a written file about their installation at: http://www.tiffinrvnetwork.com/crusingator/ABmod/MOD-65.pdf

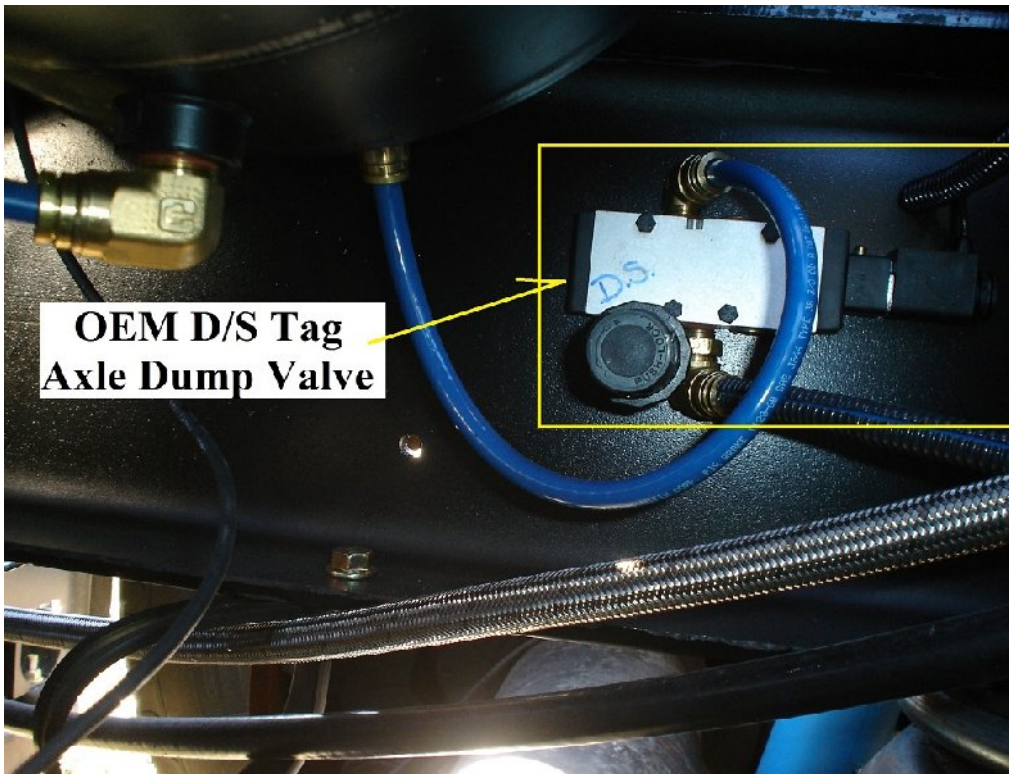
STEP 3 - Replace the OEM automatic proportioning valves with manual proportioning valves. The valve body for the automatic valve is the same as on the manual valves, so the valves can be modified rather than having to completely replace the valve. A 3/8" air-line coupler is used to connect the two air-lines removed from the automatic proportioning valve. After replacing/modifying the proportioning valves the manual valve air pressure needs to be adjusted to 30 PSI. I found this to be the optimum pressure for our 43QGP chassis. How do you know when there is 30 PSI in the tag axle air bags? That is the reason for installing STEP 2. With these two air

pressure gauges you will be able to monitor the operation as well as set the air pressure in the tag axle air bags. After completing the installation of Step 3, you will most likely find the tag axle air bags are not properly responding to either the automatic (reversing/backing) or manual (switch) dump commands. The dump valves response or lack of response can be seen by looking at the air gauges installed in step 2. The below file will provide additional information on installing/modifying the proportioning valves.
http://www.tiffinrvnetwork.com/crusingator/ABmod/MOD-38-1.pdf





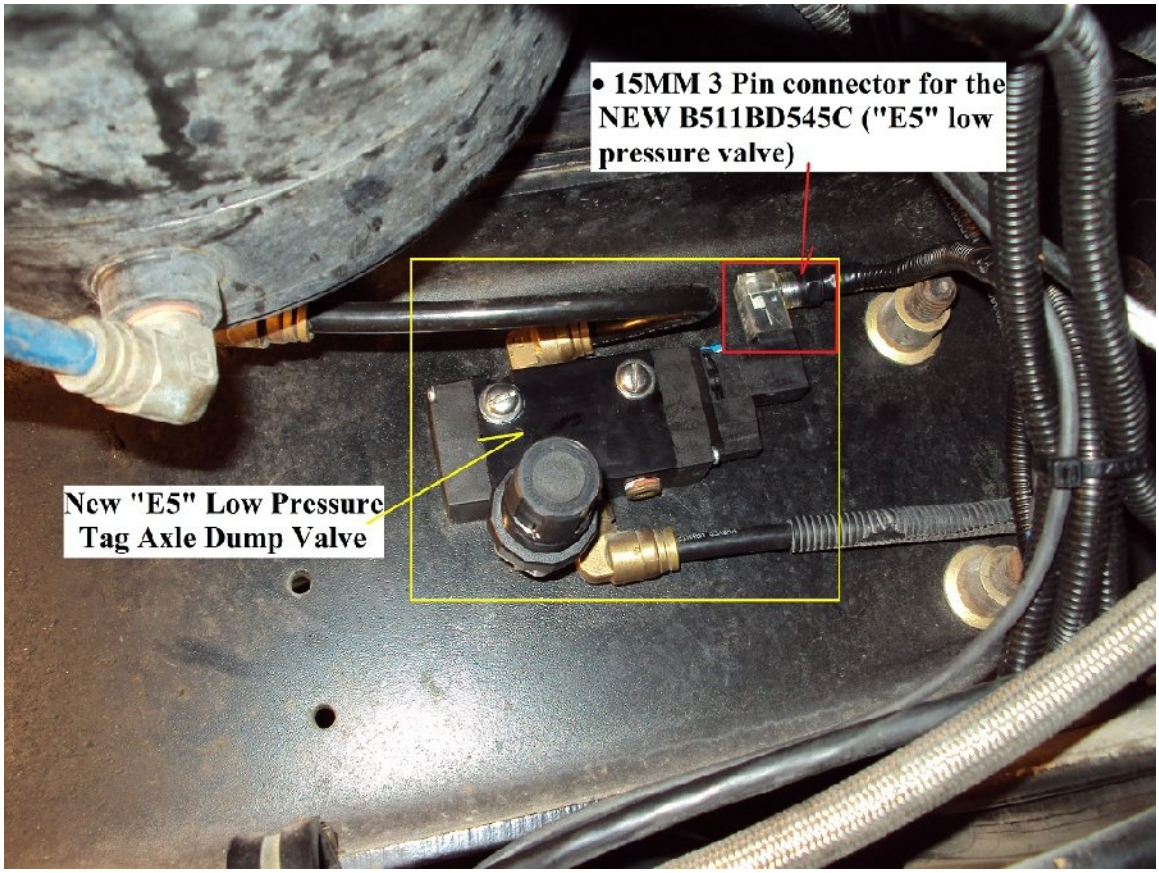
Or occasionally only one tag axle air bag or in some cases both air bags will dump. However most often they will not dump either air bag, if this is the case it is time to move on to STEP 4.
STEP 4 - becomes necessary because the tag axle OEM air dump valves (**P2LB592008**) installed on the Powerglide chassis by Tiffin are not designed to operate below 51 PSI. The valves manufacturer designed these valves to be used in a system with a supply operating pressure over 51PSI.



There is also a second problem the OEM valve when the solenoid voltage is removed is designed to return to is non- operating position using an internal return spring. At the same time the voltage is removed the supply air pressure is used to give the valve's spool a push to assist (help) the return spring push the spool back to the non-energized position. With 30 PSI set as the supply air pressure there is not enough push (air pressure) to assist returning the spool to its non-energized position. Without the air assist the return spring is not strong enough by itself to re-turn the air dump valve to its non-energized position, when this happens the air pressure supplied to the tag axle dump valve continues dumping the tag axle air bag pressure. Therefor with this OEM tag axle dump valve, two problems now exist where **BEFORE** the automatic proportioning valves maintained **TOO** much air

pressure in the tag axle air bags. **NOW**, after modifying those proportioning valves and setting the air pressure to 30 PSI the tag axle air dump valves will not operate properly because there is **TOO** little air pressure supplied to those valves. This problem now dictates making a step 5.

STEP 5 - Parker Pneumatics the manufacturer of the tag axle dump valves manufactures a low pressure operating valve which can be used for this operation. Two new (**B511BD545C**) valves are needed to replace the two **P2LB592008** valves. The new valves are configured using the same port plugs removed from the old valves along with the adjustable air pressure regulator on each valve. Two new holes through the chassis frame will be required for mounting each new valve as the OEM valves were mounted with four small diameter screws while the new valves have two larger diameter mounting holes. This new valve also requires a three pin 15MM connector which Tiffin will need to supply along with each valve. Tiffin did not order the correct valve connector harnesses for our coach as a result I had to build my own wiring harness for each valve using the supplied 15MM 3 pin connector. Click on this link for more information on these valves.
http://www.tiffinrvnetwork.com/crusingator/ABmod/MOD-59.pdf



After installing and/or modifying the four valves the tag axle dump system should operate as it was originally designed to function. Driving the coach in reverse automatically dumps the air pressure in the tag axle air bags. Depressing the tag axle dump switch dumps the tag axle air bags to aid in cornering.

STEP 6 - Another item which may need to be addressed, the tag axle dump switch (driver's console) will not function (Dump) above a set forward speed, Tiffin has programmed speed settings ranging from a low of 3 MPH to a high of 8 MPH. I found our coach's speed had been set for 5 MPH having an opportunity to experiment with various speeds while the computer was connected to the engine's ECM led me to request Chris (Powerglide Electrical Engineer) to reprogram the dump speed for 15 MPH. After reprogramming the speed setting the tag axle dump switch will function (dump) when the manual switch is depressed after the coach's speed drops UNDER 15 MPH. After making a corner the tag axle air bags will begin to re-inflate when the coach speed reaches 15 MPH. When the dump speed was set to 5 MPH I had to almost bring the coach to a complete stop before the tag axle speed programming would allow dumping also when coming out of a corner the tag axle air bags would re-inflate too soon because in my opinion the 5 MPH speed was just too low. When the dump feature is not used or cannot be used the tag axle tires will be damaged. That damage can be either the outer edge of the tire tread rounded or flat spots may develop on the tire thread. If a tread flat spot develops the tire will sound like you are dribbling a basketball down the road if the flat spot is not too bad the sound will likely disappear when the coach reaches normal road speed.

STEP 7 – This step is not necessary however while making all of the above coach modifications this was found to be useful, while getting all of the weight issues out of the Powerglide chassis balancing. Two LEDs were dash mounted in the cockpit each was wired to one of the 12 VDC + tag axle dump valve control solenoids. When the tag axle dump system is active and are electrically operating the LEDs are illuminated. Click on this link for more information about installing the LEDs.

http://www.tiffinrvnetwork.com/crusingator/ABmod/MOD-61.pdf

In hind sight the above information could have been written in a more user friendly manner however each SINGLE piece of the suspension puzzle had to be worked out. After finding a missing piece of the puzzle Tiffin had to be convinced before they would provide the needed parts. By convinced, I mean Gary Harris, Brad Warner or Greg Dees had to SEE FOR THEMSELVES the system was not functioning correctly before they would authorize repair parts. Each puzzle piece meant another trip to Red Bay.