



Advanced Braking Pty Ltd

## **Technical Bulletin – TBN-019**

### **Product**

**EMMA™ Brake**

### **Subject**

**Adjustment of EMMA™ relief valve to change the delay in application of EMMA™ Brake**

### **Change Revision**

<b><u>Issue Revision</u></b>	<b><u>Issue Date</u></b>	<b><u>Comments</u></b>
<b>00</b>	<b>30-August-2006</b>	<b>Initial Release</b>
<b>01</b>	<b>15-November-2007</b>	<b>Updated to include Hilux</b>



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**Product:** EMMA™ Brake

**Subject:** Adjustment of EMMA™ relief valve to change the delay in application of EMMA™ Brake

### **Summary:**

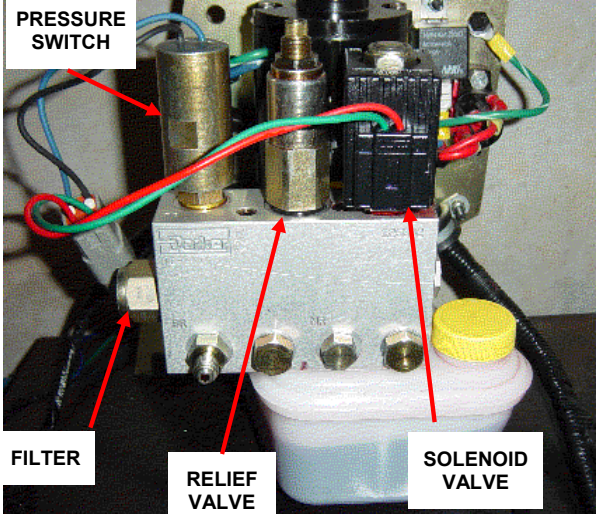
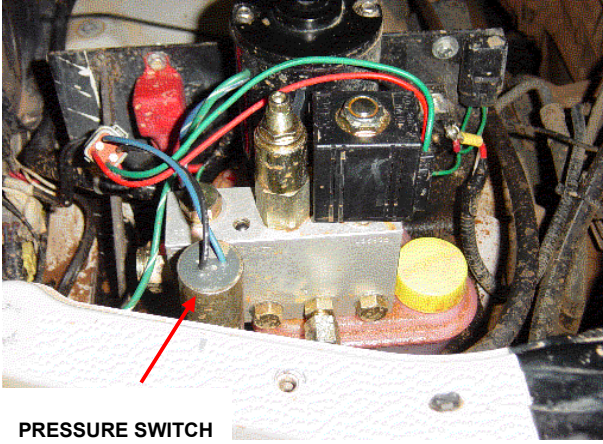
- This procedure specifically relates to the newer EMMA™ manifolds with one solenoid valve.
  - With this system there is no 'HARD STOP' option, only the 'SOFT STOP' option.
  - When EMMA™ brake application is called for (either by pressing the operator button, or triggering the interlock - when fitted), a modulated brake application occurs as the pressure dumps via a relief valve.
  - This Procedure can be used to negate the effect of the relief valve to provide a 'HARD STOP' only. This is only recommended when the vehicle is operated at low speed, as full EMMA™ application at higher speeds will cause the rear wheels to lock.
  
- The Procedure can also be used to adjust the EMMA™ relief valve if the application of the EMMA™ brake is either too rapid (causing the brakes to lock) or too slow.
  
- The relief valve is typically set to ~350psi

### **Recommended tools:**

To carry out this procedure, the following items will be required:

1. Spanner 11/16"
2. Allen key 3/16"

## Description:

 <p>PRESSURE SWITCH</p> <p>FILTER</p> <p>RELIEF VALVE</p> <p>SOLENOID VALVE</p>	<p>02-1007 EMMA™ PUMP/HARNESS ASSY</p> <p>This is the system typically fitted to 78/79 series Landcruisers as well as Hilux models.</p> <p>This EMMA™ system has one solenoid valve and internal cartridge filtration.</p> <p>Functionality of this system is 'SOFT STOP' only, whereby a modulated brake application occurs as the pressure dumps via a relief valve.</p>
 <p>PRESSURE SWITCH</p>	<p>02-1005 EMMA™ PUMP/HARNESS ASSY</p> <p>This is the system typically fitted to 100 series Landcruisers and the photo shows the system in situ.</p> <p>Note the position of the pressure switch has moved, otherwise the components remain the same as 02-1007 above.</p>

## Procedure:

1. Lift the bonnet, locate the EMMA™ unit.
2. Clean thoroughly around the relief valve and other hydraulic components

Note: A small amount of ATF leakage through the cap is normal, however excessive leakage should be investigated.

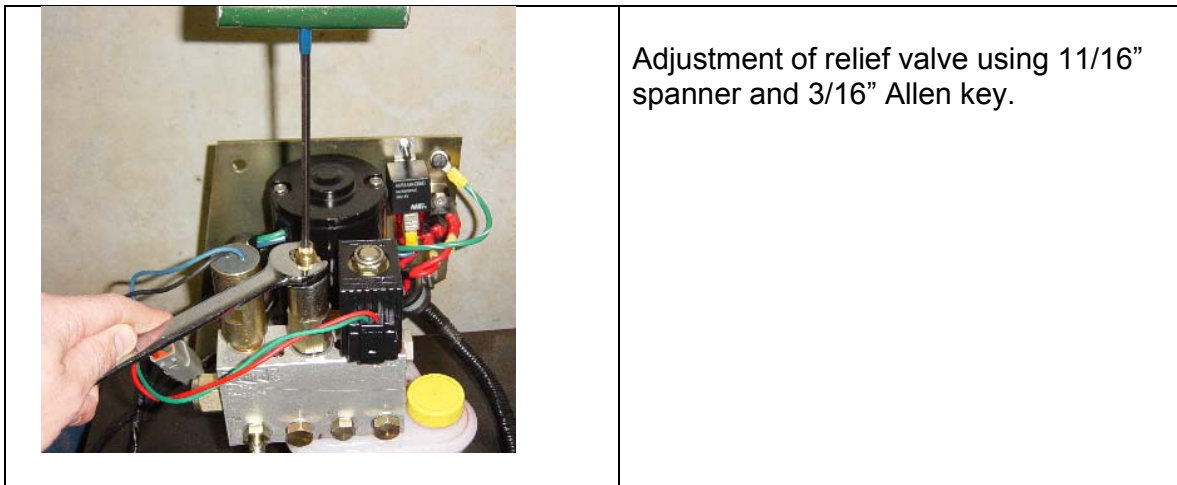
3. Using a 11/16" spanner, loosen the locknut at the top of the relief valve.



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If only a small adjustment is required:

4. Using a 3/16" Allen key, turn the adjusting screw only ¼ of a turn:
  - CLOCKWISE to INCREASE Relief Valve Pressure Setting – This will INCREASE the delay in EMMA™ brake application.
  - ANTI-CLOCKWISE to REDUCE Relief Valve Pressure Setting – This will DECREASE the delay in EMMA™ brake application.
5. Tighten the locknut and test drive the vehicle. Adjust again if necessary.



If a 'HARD STOP' only is required:

6. Using a 3/16" Allen key, turn the adjusting screw ANTI-CLOCKWISE as far as the adjustment will allow – this relief valve has a minimum setting of 100psi.
7. Tighten the locknut
8. Test drive the vehicle. If EMMA™ brake application is still delayed, the filter unit may need changing.

**WARNING**

It is not recommended to operate a vehicle at high speed with the minimum pressure setting on the relief valve, as full EMMA™ brake application at high speed will cause the rear wheels to lock.

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Issue Date: 15<sup>th</sup> November 2007  
Issue Revision: 01

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