

ANNEXURE 4.5

RAKE TEST

The Air Brake system of the rake, that are brought at primary/ secondary maintenance depot, on every round trip should be tested by using a 'Test Rig' or with a locomotive. The test rig is as shown in **figure 1**.

The different activities/tests that are performed on the air brake assemblies of the rake are as follows:

- A. Carry out Visual Examination.
- B. Prepare set up (Rig) for rake Test.
- C. Leakage, Service Application and Release Test.

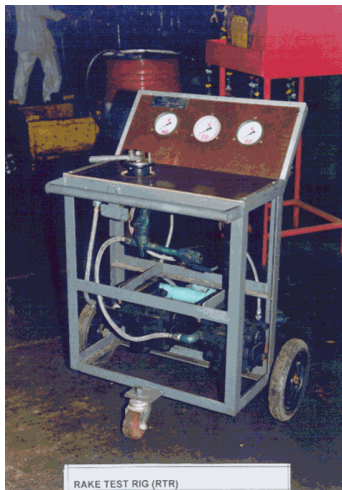


Figure 1 : Rake Test Rig

1. CARRY OUT VISUAL EXAMINATION

a) Procedure

- Check any loose suspension brackets and anti-pilferage devices of all air brake subassemblies
- Visually inspect for any problem/damage in the brake or feed pipe hose pipe/coupling etc.
- Rectify or replace the problematic part/subassembly.

2. PREPARE SET UP FOR RAKE TEST

a) Concept

Rake Test can be performed, by using a portable device called 'Test Rig' or by a locomotive. The source of compressed air supply to the test rig is through a compressor installed in the sick lines . A schematic layout of 'Test Rig' is shown in figure 2.

b) Procedure (see figure 2)

The necessary pre-requisite activities to perform rake test are as given under:-

- Transport the rake in the primary maintenance depot for rake test.
- Take the test rig near the rake.
- Connect the near end of the first coach under test, to the test rig / locomotive by connecting both the brake pipe (BP) and feed pipe (FP) through coupling heads.
- Connect dummy coupling to BP and FP hose coupling on the far end of the last coach on the rake, if the brake van is not connected along with the rake.
- Open isolating cocks (2) and (5) of the test rig that are connected to feed pipe and brake pipe of the first coach. Close the isolating cocks (8),(9),(10) and (11). Or
- In the case of locomotive charge the brake pipe with 5kg/cm^2 pressure by placing DBV at releasing and running position. Then open the cock charging the feed pipe at 6.0 kg/cm^2 .
- Open the BP and FP angle cocks of the near end of the first coach and all subsequent coaches of the rake.
- Close both angle cocks at the rear end of the last coach.
- Keep the driver's brake valve handle in release position and charge the system for 5 minutes. Check BP and FP pressures and these should be $5 \pm 0.1\text{ kg/cm}^2$ and $6 \pm 0.1\text{ kg/cm}^2$ respectively.

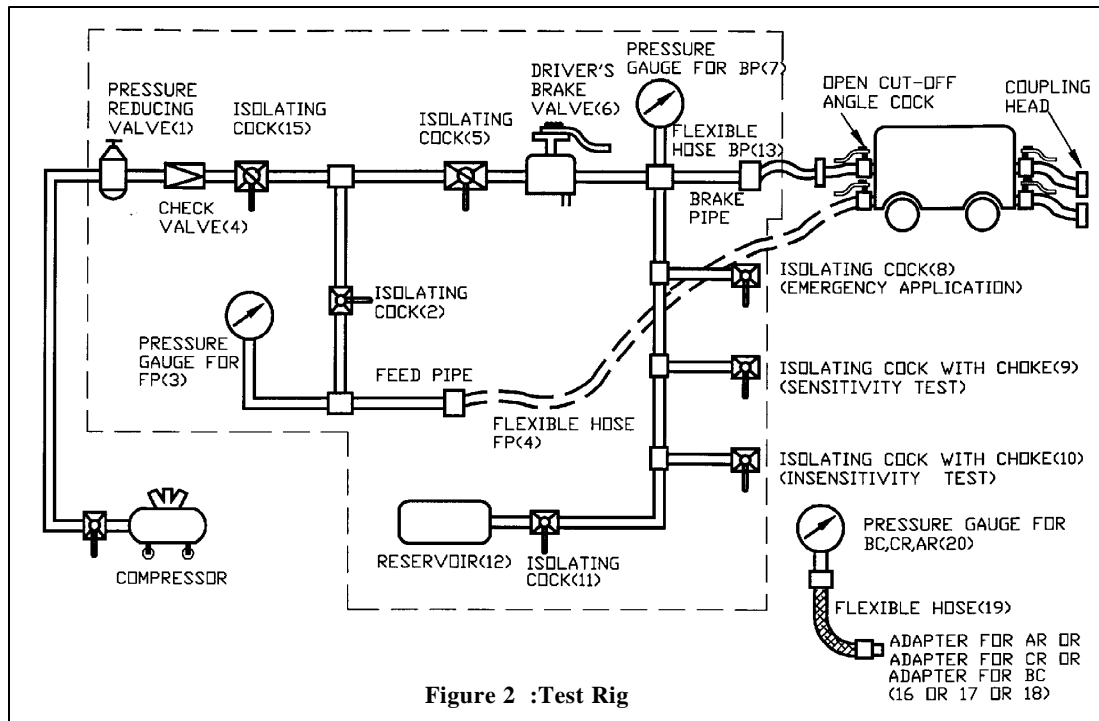


Figure 2 :Test Rig

3. LEAKAGE, SERVICE APPLICATION AND RELEASE TEST

- Cut off the supply of compressed air by closing cock (2) and (5) of the test rig, or cut off the supply of compressed air by operating DBV and the isolating cock charging brake pipe and feed pipe (if test is being conducted with the locomotive)
- If tested through the locomotive, excessive leakage will be indicated in the drivers air flow indicator installed in the locomotive.
- Watch the drop in pressure due to leakage in the pressure gauges of the guard van or the pressure gauge attached, for 3 minutes and record the drop in pressure.
- Drop in pressure of more than **0.2 kg/cm²** per minute, indicates that there is leakage in the system.
- Examine the coaches using soap water and listening for hissing sound.
- Identify the leakage and take necessary remedial measures.
- Charge the Air Brake System to the required air pressure through the test rig again.
- Open the isolating cock for brake pipe and feed pipe of the test rig and make a full service application of brakes by reducing the brake pipe pressure by **1.5 kg/cm²**. Or in the case of locomotive charge the brake pipe with **5 kg/cm²** pressure by placing DBV at releasing and running position. Then open the cock charging the feed pipe at **6.0 kg/cm²**. Make a full service application of brakes by DBV.
- Check the piston strokes of brake cylinders of all the coaches of the rake. The piston should be in applied position.
- Record the piston stroke.
- Release the brakes by charging the brake pipe to **5 kg/cm²**.
- The pistons of all the brake cylinders should come to release position
- Identify and rectify the defects by repairing or replacing of defective assembly.
- Close the angle cock (2) and (5) of the test rig.
- Detach the brake pipe and feed pipe hose coupling connected to the test rig.
- Observe the required safety precautions.
- Record the results in the Proforma .

PROFORMA FOR RAKE TEST			
Coach No.:			
Type of DV:			
BP pressure:			
FP pressure:			
	Check	Specified	Actual
1.	Leakage Rate a) Brake pipe b) Feed pipe	0.2 kg/cm ² /min (max.) 0.2 kg/cm ² /min (max.)	
2.	Service Application and Release Test a) Brake application when B.P. pressure reduced to 1.5 Kg/cm ² b) Observe Piston stroke of brake cylinder c) Record the piston stroke	Brake should apply Piston in applied position	