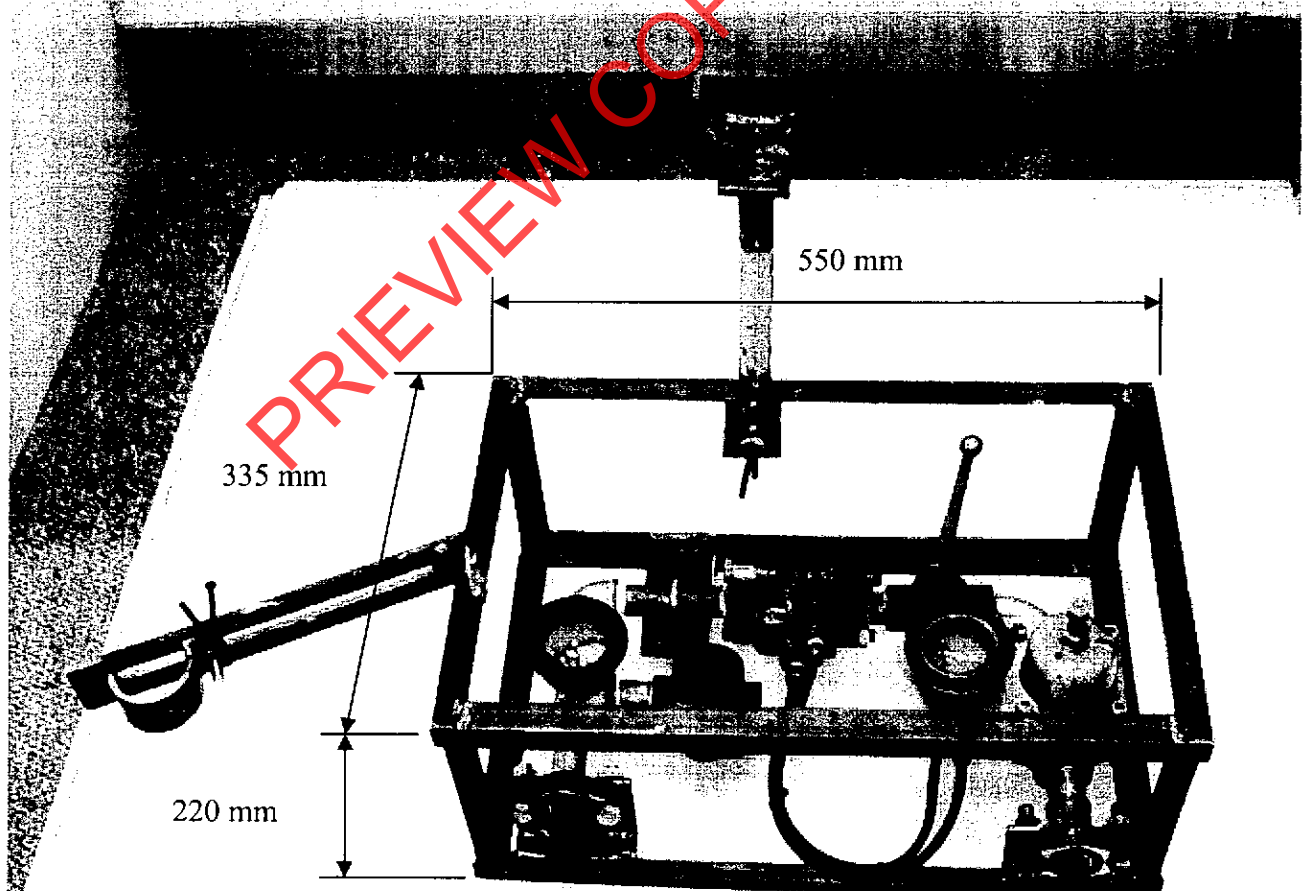


SPOORNET: ENGINEERING - ROLLSTOCK.

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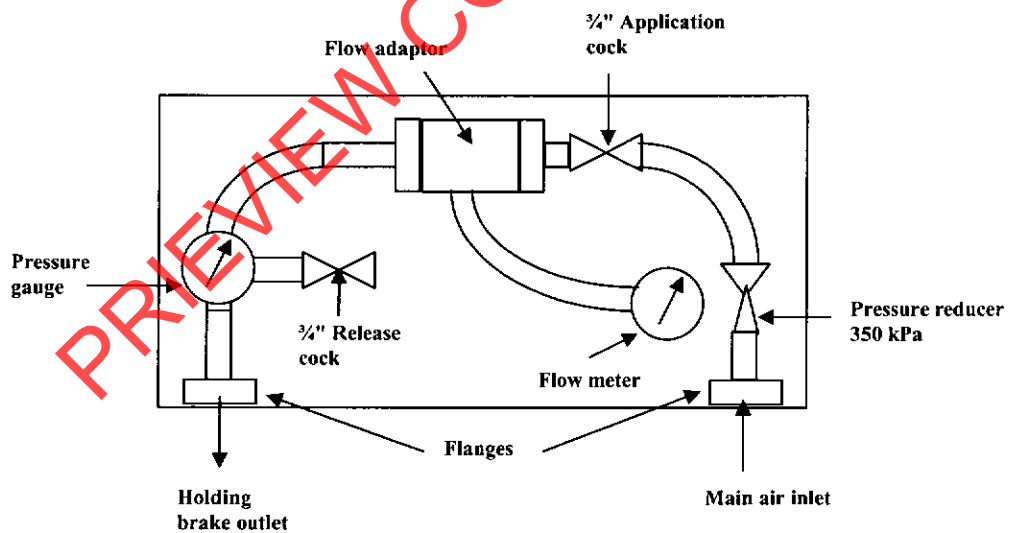
## 1. PURPOSE

The purpose of this document is to describe the design, testing and safe operation of the portable holding brake.

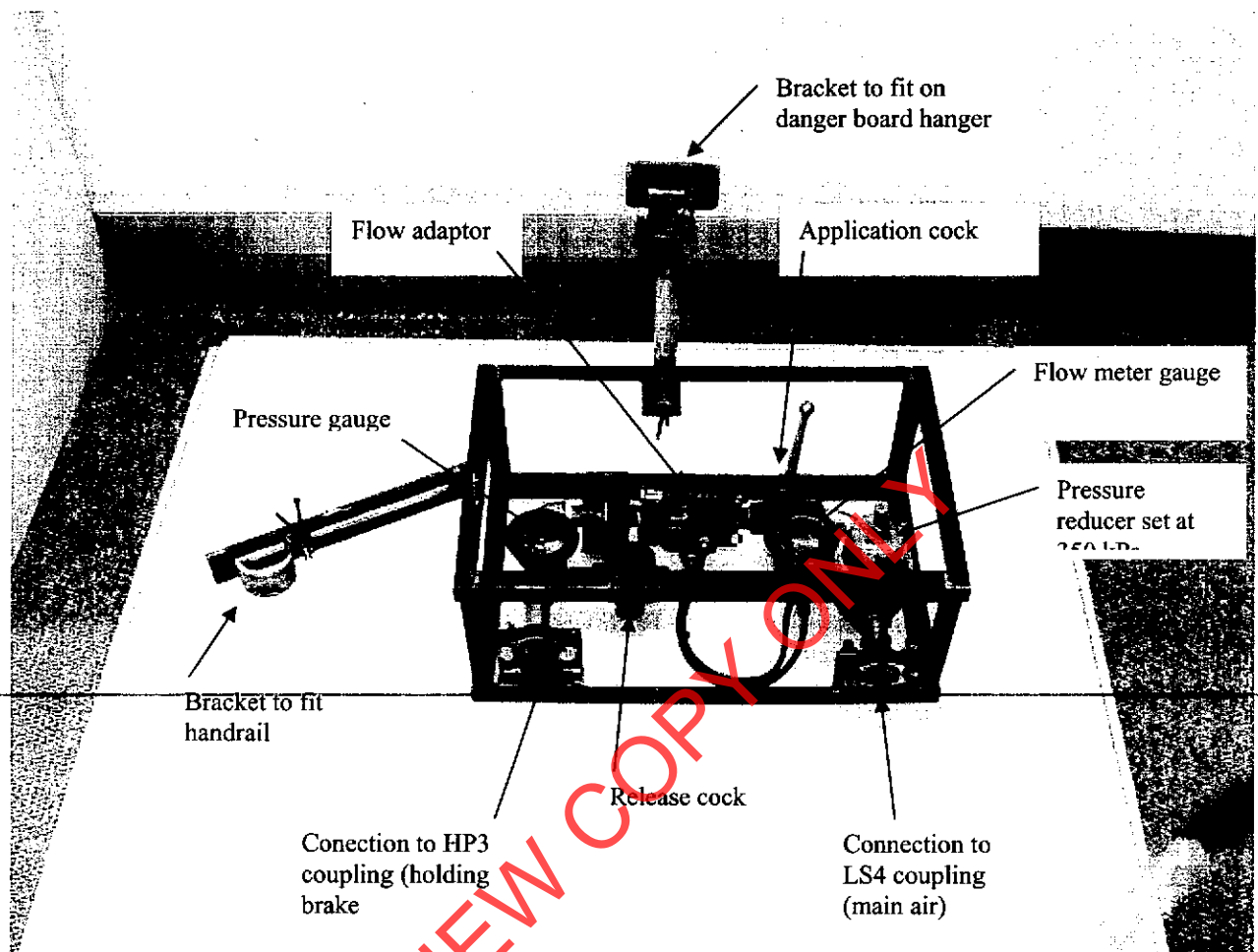
## 2. LAYOUT OF PORTABLE HOLDING BRAKE

The portable holding brake is made up of the following valves.

1. Pressure reducing valve set at 350 kPa.
2.  $\frac{3}{4}$ " cock for applying the holding brake.
3. Flow adaptor.
4. Flow meter.
5. Pressure gauge.
6.  $\frac{3}{4}$ " cock for releasing the holding brake.
7. A flange on each end to attach the rubber hoses one with an HP3 head and the other with an ES4 head.
8. Other equipment needed: - Two flanges for attaching the flow adaptor, one  $\frac{3}{4}$ " male elbow, one  $\frac{3}{4}$ " female elbow and five  $\frac{3}{4}$ " nipples.



Sketch 1



### 3. FITTING OF PORTABLE HOLDING BRAKE

When coupling to the train secure the portable holding brake to the handrail and the danger board bracket of the locomotive closest to the train. The holding brake is to be fitted to the left hand side of the locomotive, when standing in front of and facing the locomotive.

Connect the main air pipe (LS4 coupling) to corresponding coupling on the portable holding brake and open the locomotive end cock and make sure that the cock after the pressure reducer is in the closed position. Connect the coupling with the HP3 head to the wagon holding brake pipe.

### 4. OPERATION OF PORTABLE HOLDING BRAKE

Once the train has come to a standstill, the driver must fully apply the locomotive independent brake and then the assistant/driver must activate the holding brake by ensuring the release cock is closed and opening the application cock. At this point the holding brake pressure gauge will move towards the green scale (300-400 kPa) and the flow meter will register a high flow in the red scale (25-100) to the holding brake pipe.

The train brakes can only be released once the pressure gauge registers  $\pm 350$  kPa in the green scale, and the flow meter gauge has also returned to the green scale (0-25).

Once the brake pipe is fully charged, the holding brake is to be released by closing the application cock and opening the release cock. Ensure that the holding brake pressure gauge, and the flow meter gauge both return to zero.

## 5. TESTING OF PORTABLE HOLDING BRAKE

The portable holding brake is to be tested at the locomotive depot on a six monthly basis, where the pressure reducing valve setting must be checked as well as the pressure gauge and flow meter.

The inlet pressure for the test is to be between 850 and 960 kPa and the outlet pressure to be  $350 \pm 10$  kPa.

## 6. HOLDING BRAKE TEST ON A TRAIN

1. Connect the portable holding brake to the main air pipe (LS4) on the diesel locomotive closest to the wagons and the holding brake pipes to each other and make sure all the holding brake pipes on the train are coupled and the last wagon is connected to it's dummy coupling. (In the case of a 100 wagon train this will be the 50<sup>th</sup> wagon and a 200 wagon train it will be the 100<sup>th</sup> wagon.)
2. Make sure the cock to apply the holding brake is closed and the exhaust cock is open. Apply the train brakes and wait for the brake pipe to stabilize, now close the holding brake exhaust cock and open the application cock the holding brake flow gauge must rise quickly to towards full scale (that is towards 100 in the red scale) and the holding brake pressure gauge must rise to  $\pm 350$  kPa (that is in the green scale).
3. Once the holding brake flow gauge has returned to the green scale (between 0 and 25) the train brakes can be released by recharging the train pipe. While recharging the brake pipe check to see that the wagons with the holding brakes applied do not release their brake cylinders.
4. Once train pipe has recharged close the holding brake application cock and release the holding brake via the exhaust cock. Both gauges are to return to zero, check to see that the brake cylinders on the wagons with holding brakes have released.