

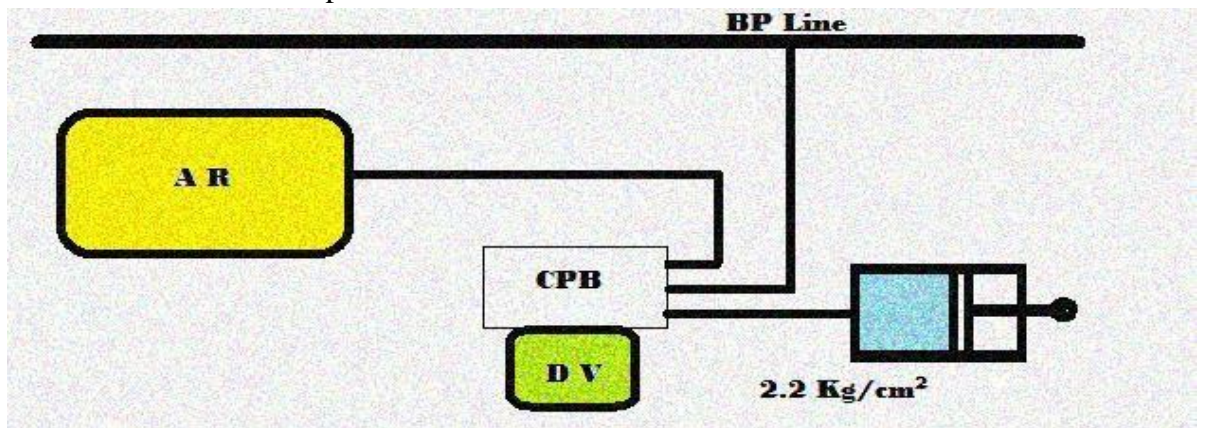
## **AUTOMATIC LOAD SENSING DEVICE**

Low platform container flat is fitted with two stage automatic load sensing device in each of the bogie. Initial pressure of 2.2 kg/ cm<sup>2</sup> is set under the condition. Clearance between operating value and buffer is adjusted such that it operates when gross weight crosses 40 tonnes. At this changeover weight pressure in the brake cylinder raises to 3.8 kg/cm<sup>2</sup>.

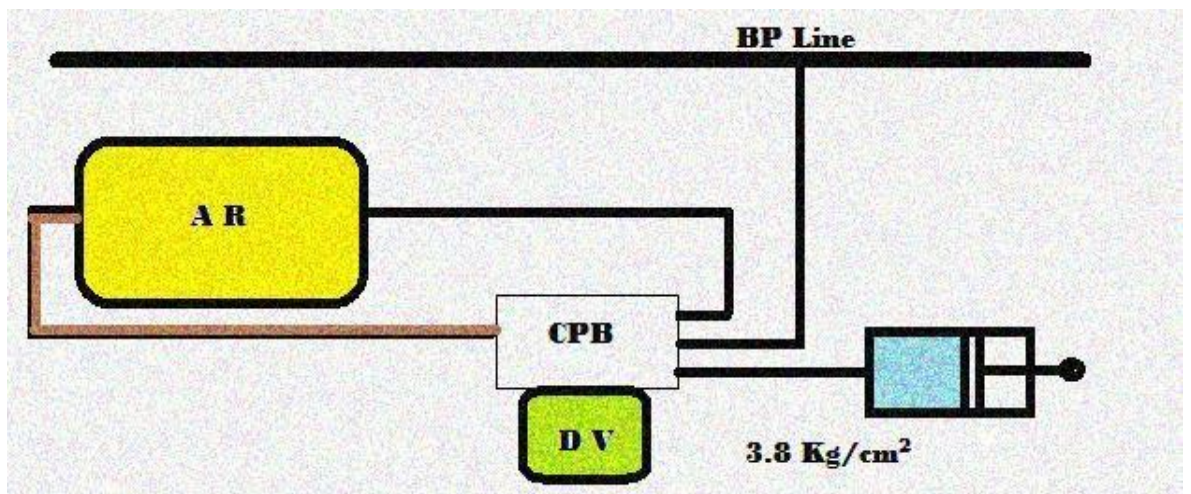
### **The Brake system of BLC wagons are designed in such a way that:**

- The DV admits the maximum of 2.2 Kg/cm<sup>2</sup> air pressure to Brake cylinder when the wagon is in Empty condition and the Maximum of 3.8 Kg/cm<sup>2</sup> in Load condition.
- There is a provision of Load sensing devise duly eliminating the mechanical devise of Load Empty Box. This purpose is serving by two stage DV(C3W2)

- BLC wagons are provided with special type of DV which admits the maximum BC pressure of 2.2 kg/cm<sup>2</sup> during the application of brake,
- In the absence of the provision of additional pipe line connection from Auxiliary Reservoir to Common Pipe Bracket.

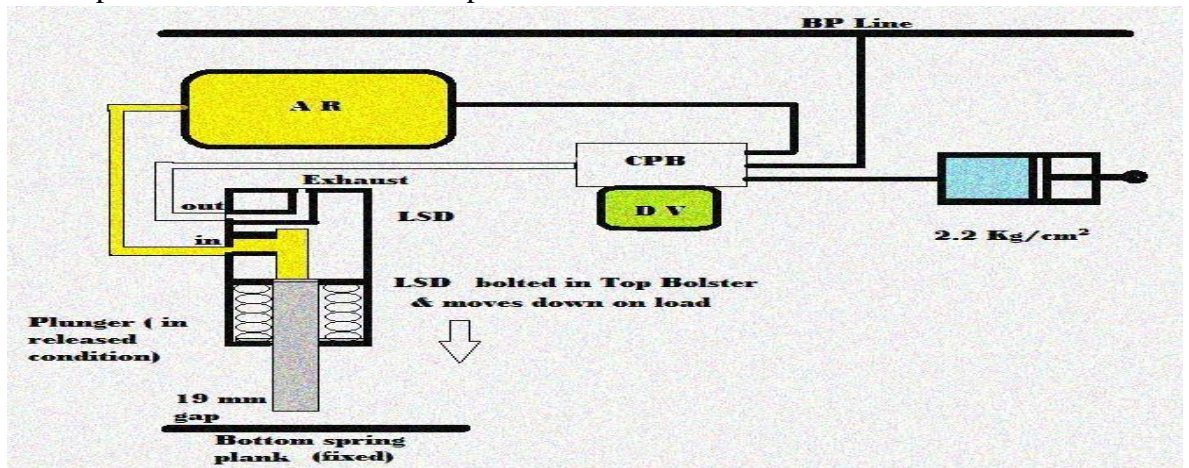


- This special type DV admits the maximum BC pressure of 3.8 kg/cm<sup>2</sup> during application (Loaded train), when the air is admitted from Auxiliary Reservoir to DV through additional port of Common Pipe Bracket, apart from the normal connection from DV to AR.
- This is achieved by introducing the additional pipe line from Auxiliary Reservoir to Common Pipe Bracket of DV.
- From the above it is understood that :



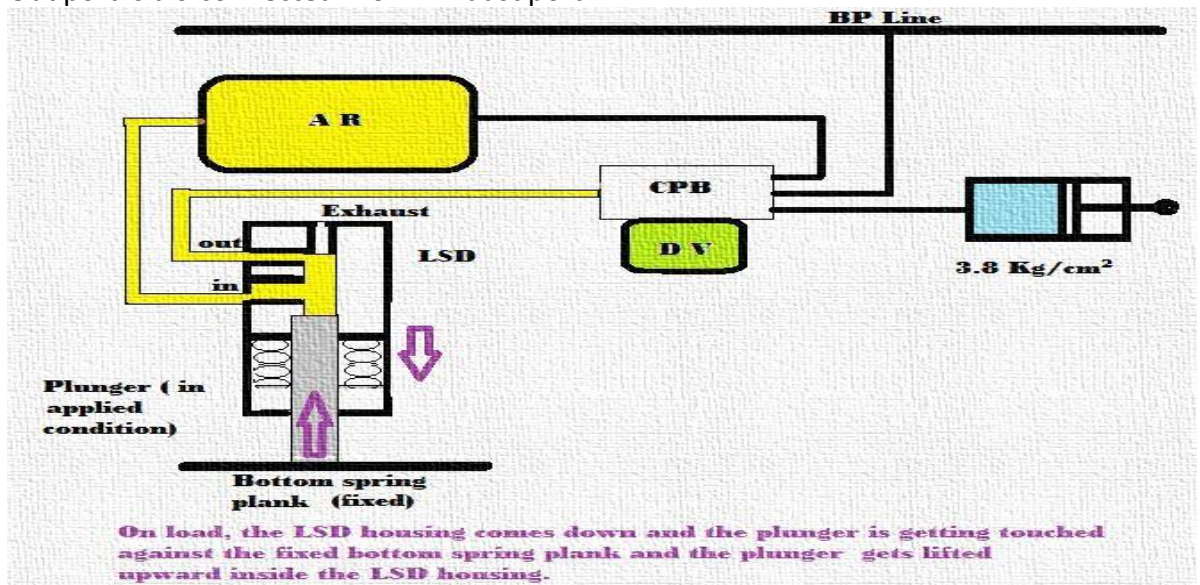
- To obtain the maximum of 3.8 kg/cm<sup>2</sup> of pressure in BC, the DV requires an additional input pressure of air from AR to DV to sense the DV in such a way to admit the maximum of 3.8 Kg/cm<sup>2</sup> BC pressure.
- And the Maximum BC pressure can be reduced from 3.8 to 2.2 by cutting off the additional input air from AR to DV.
- Load sensing device (LSD) is introduced in the additional pipe line and it acts as a switch to admit/cut-off the input air from AR to DV depends upon the condition of wagon.
- **POSITION OF LSD when the wagon is in EMPTY**
- There are three ports available in LSD ( i.e. inlet port, outlet port & Exhaust port)
- Inlet-port is isolated from outlet port

- Outlet port is connected to Exhaust port



### POSITION OF LSD when the wagon is in LOAD

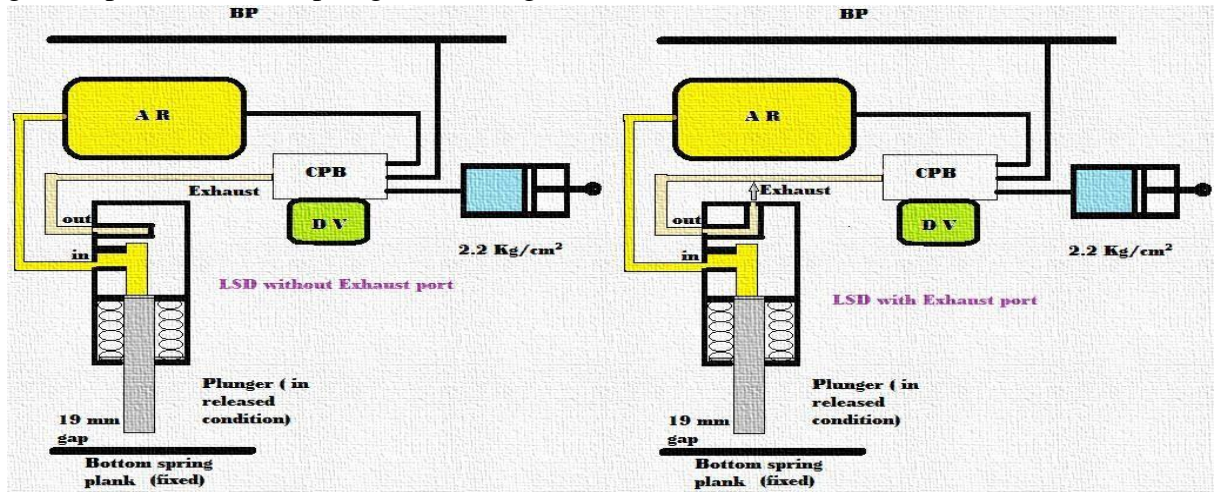
- In-port is connected to outlet port
- Out port is dis-connected from Exhaust port



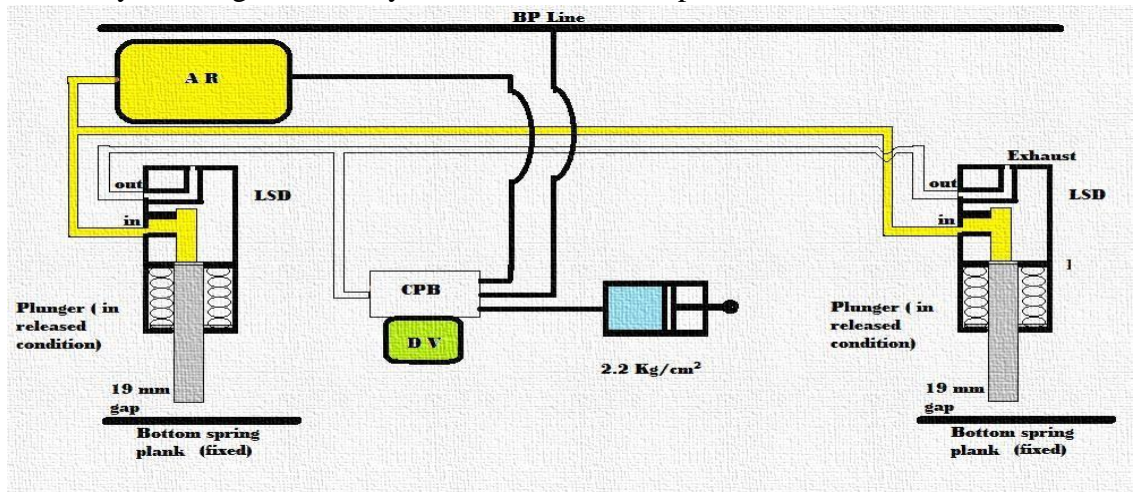
### Necessity of EXHAUST PORT in LSD

- When the containers are unloaded, the wagon becomes empty and the plunger of LSD gets released and the in-let port is dis-connected from out-let port, thereby further supply of air from inlet is cut-off.
- But the air which was admitted earlier in the outlet pipe when the plunger was in lifted condition (on load) remains in the outlet pipe and which may still sense the DV to admit the maximum BC pressure of 3.8 instead of 2.2 kg/cm<sup>2</sup> even in the plunger is in released position.

- To exhaust the available air in the outlet pipe, exhaust port is necessary when the wagon gets emptied (i.e. when plunger of LSD gets released)



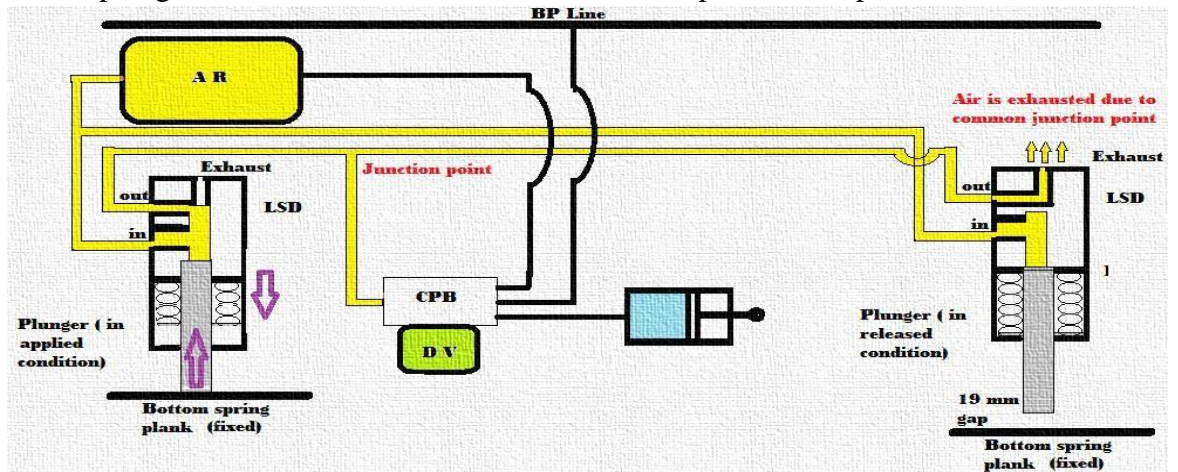
- As there are two CASNUB bogies in each BLC wagon, both the bogies are provided with LSD duly securing the LSD by bolt & nuts at the Top bolster.



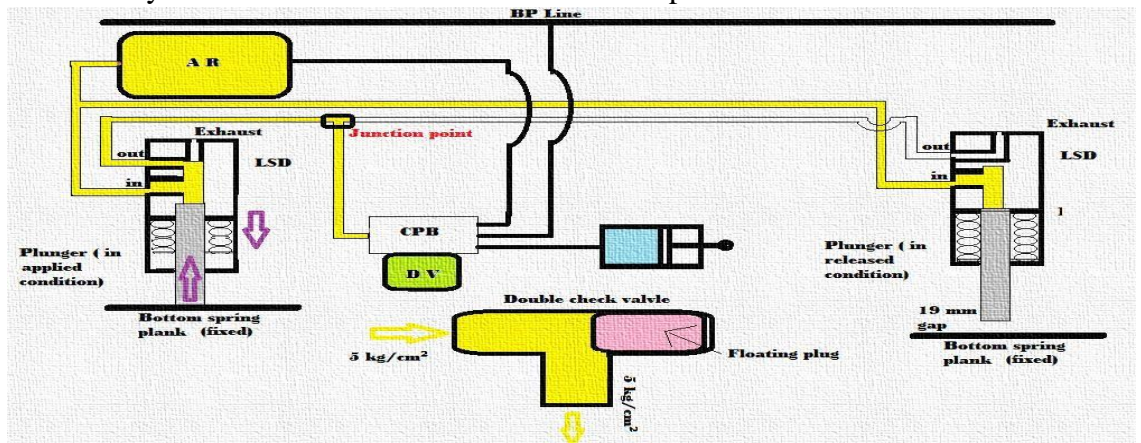
### Necessity of DOUBLE CHECK VALVE

- It is possible to load two containers on one BLC wagon.
- There are possibilities to one of the LSD plunger to get applied due to the load on one side container and this LSD may supply the air from AR to CPB of DV.
- Since the outlets pipes of both the LSDs are commonly connected, the air in the one of the LSD's outlet pipe is sent out through the exhaust port of other LSD as the other

LSD's plunger is in released condition and causes for pressure drop in loco.



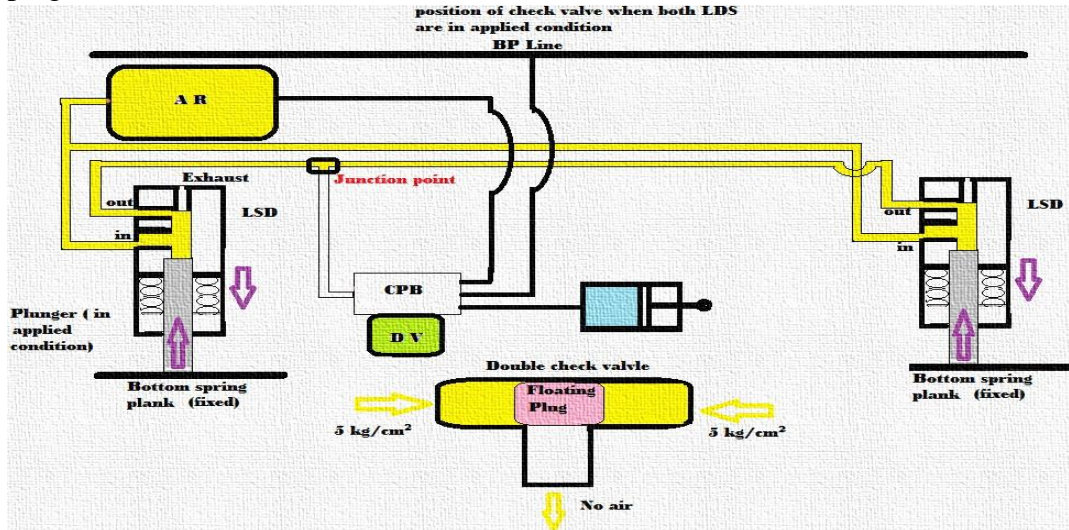
- To overcome the said problem, one Double check valve is provided at the common junction point to admit the air only from the LSD which is in applied condition duly isolating the path of the other LSD which is in released condition ( i.e. one LSD functions on load and one LSD functions on Empty)
- In the Double check valve, there is a floating plug inside the housing which moves horizontally and it closes one of the end due the air pressure on the other end.



### Necessity of Pressure Reducing Valve:

- Double check valve admits air to DV only because of difference of air pressure acting on the floating plug.
- When two containers are loaded, both the LSDs start function on load criteria and admits the air of 5 kg/cm<sup>2</sup> on both the end of the double check valve.

- Double check valve prevents sending of air pressure to DV as the position of floating plug will be in neutral condition.



- To overcome the said problem, one pressure reducing valve is provided in between the double check valve & the out let of any one of the LSD.
- This pressure valve is set to the output pressure of 4 kg/Cm<sup>2</sup>.
- It means that the air received from one side of the LSD to Double check valve will be 5 Kg/cm<sup>2</sup> and the other side of the LSD to Double check valve will be 4 kg/cm<sup>2</sup>.
- This causes the pressure difference over the floating plug and the 5 kg/cm<sup>2</sup> air will be admitted into the CPB of DV.

