TECHNICAL SPECIFICATIONS FOR
BRAKE OIL FILLING & LEAK TESTER MACHINE

Reference photograph for Brake Oil Filling System

Reference photograph for Pumping System
# BRAKE OIL FILLING MACHINE

## SPECIFICATIONS

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PRINCIPLE OF OPERATION: 

The offered Brake Fluid Filling Machine works on the principle of Evacuation and pressurized oil filling & leveling the volume in the bowl.

BASIC SEQUENCE OF OPERATION: 

- EVACUATION
- LEAK TEST
- PRESSURE FEEDING
- FLUID LEVELLING

COMPONENTS OF BRAKE OIL FILLING SYSTEM: 

Basically the proposed automatic brake fluid filling machine is designed for assembly line applications. The machine is modular; besides the basic equipment different accessories or attachments could be selected to facilitate the assembly line operations.

The components of the system are:

1. BASIC SYSTEM UNIT WITH CONSOLE
2. FILLING ADAPTOR OR GUN

BASIC SYSTEM UNIT WITH CONSOLE: 

This is further divided into following subcomponents: 

Evacuation Line: This consists of the source of evacuation, i.e. the vacuum pump, vacuum line piping connected to the adaptor or gun. The evacuation of brake system will be carried through this line. During leak test the system tries to maintain certain level of vacuum in a specified time span in the vacuum line for
detection of any leak in the system.

**Filling Line:** - This consists of storage tank of 35 ltr capacity with degassing chamber in built in the tank, pumping device (Gear Pump) and fluid Piping connected to the filling adaptor or gun. The brake system after evacuation will be filled through this line with the help of New generation Gear Pump. The feeding pressure inside the brake system will be sensed & then filling cycle will be cut off. The pressure can be adjusted according to the requirement.

**Rigid SS Piping**

**Fluid leveling line:** - After sensing the fluid pressure in the vehicle reservoir (bowl), the excess volume of fluid will be sucked and forwarded to the machine fluid tank.

**Fluid transfer system:** - The facility is provided to transfer the brake fluid from 200 ltr barrel to the storage tank automatically by vacuum pump. Min & Max level sensor is provided in the machine tank. On achieving the low-level signal fluid will get transferred automatically by pressure difference. If the fluid is not transferred within the specified time, machine will give indication of storage tank empty. Buzzer will indicate this. The 200 ltr barrel should be placed near to the machine (1 mtr area).

Fluid transfer from 200 ltr barrel will pass through the filter; the de-aerator provided in the system will remove the air/moisture entrapped in the fluid. Hence the conditioned fluid is available for filling.

**Fluid transfer logic as per requirement of oil from TAL 200 ltr barrel to machine after every cycle.**

**Operating Console:** - This consists of the number of user-friendly operating options, including auto cycle, manual cycle options, various displays for alarms and fault indicators. The operating console also has the digital vacuum controller L.C.D. display for indicating the vacuum levels achieved and the limits set. The operating console will mainly indicate the functional status of the system through the M.M.I. (Man Machine Interface) of the P.L.C.
FILLING ADAPTOR OR THE GUN: - This is the important component of the system, which comes directly in contact with the brake system. This adaptor is mounted on the bowl (Bowl design to be specified as per model by TAL) of the brake system and all operations i.e. evacuation, filling are operated through this adaptor.

At present it is considered that one adaptor will work for all the variants. Additional adaptors would be provided at extra price.

This adaptor is connected to the various lines (vacuum, filling) through flexible piping.

OPERATION PROCESS:

- Connect the Gun to the Reservoir Tank
- Push the Cycle Start button on the Gun
  - Pre Vacuum and Vacuum
  - Leak Test (Major and Minor)
  - Filling of Brake Fluid
  - Re-suction and Leveling
- Completion of cycle will be indicated by Buzzer and Lamp
- Press Gun remove acknowledgement button on the Gun
- Remove the Gun
- Park the Gun on the gun stand provided on the Machine
ADVANTAGES OF TEPL BRAKE OIL FILLING MACHINE:

- Very short cycle times. 120 Sec. minimum.
- Only one operator is required for complete fill and top off procedure.
- No loss of fluid with clean and drip-free operation.
- Degassing of new oil in separate tank and then transferred to storage tank hence, very little or no contamination.
- Positive displacement pump (Gear Type) used for filling hence; required pressure can be developed in less time.
- Continuous flow of oil is achieved during filling no air bubble.
- Testing the security of the brake system before filling.
- Self-contained and compact in size. Excellent access for maintenance with all components tagged for ease of identification.
- Most component parts are easy to source. Some valves are multi-purpose, which reduces the variety to hold as spares.
- Vacuum at gun tip 2 mbar.