

# UNIVERSAL HYDRAULIC SERVICING TROLLEY



**HST 300U is UNIVERSAL HYDRAULIC SERVICING TROLLEY.** HST 300U is used as Servicing Trolley of the various aircraft. It consists of the following **MAJOR SUBSYSTEMS** as follows:

- 1. Main Hydraulic System.**
- 2. Static Pressure (Hand Pump) System.**
- 3. Engine Driven Compressed Air System.**
- 4. Engine Driven Vacuum System.**
- 5. Pressurization System for Hydraulic Reservoir.**

### **Brief Introduction to the Main Hydraulic System:**

The UNIVERSAL HYDRAULIC SERVICING is specially designed and developed for the GROUND SERVICING of two independent aircraft systems. It is used for actuation of the aircraft hydraulic system through the supplied pressurized hydraulic oil from the trolley to the aircraft, comprising of a pressurized reservoir, with filtered and de-aerated fluid at flow and pressure characteristics required for testing. The Trolley (HST300U) is suitable for wide range of fighter aircraft, military transport aircraft, and helicopters used in Indian Air Force.

It provides following type of hydraulic services

- Continuous filtered high pressure hydraulic oil supply to two independent aircraft Systems.
- Delivery Pressure & flow can be controlled from the Panel mounted Relief valve manually. Also ready selection to suit the type of the Aircraft can be done through selector switch on the Panel.
- A system regulating the hydraulic fluid level in each system of aircraft and also enables to increase & decrease the level of aircraft reservoir at quantitative volume of oil
- Consequently air can be bled from the Hydraulic circuit through the engine driven Vacuum Pump system working to achieve 200mBar (abs) and vaporize the moisture content in the hydraulic oil
- Trolley tank can be completely isolated and aircraft tank can be used in the circuit and including both in the circuit is also possible. Hand Pump assembly mounted on the Panel (from Panel front to Right ) (Static Pressure (Hand Pump) System) mounted on the Panel for the filling the Aircraft Reservoir Instrumentation of different parameters like deli every pressure , boost pressure return line pressure delivery flow.

### **Static Pressure (Hand Pump) System:**

For filling the Aircraft Hydraulic Reservoir through the Hand Pump to develop a Pressure of 350Bar having the flow in 'CC' per stroke.



### **Engine Driven Vacuum System:**

It is used to de-aerate the Hydraulic system, with the solenoid valve to start the de-aeration by cutting, venting when de-energized it vent the negative pressure allow the aeration of the Hydraulic system.

### **Pressurization System for Hydraulic Reservoir:**

Pneumatic system is designed for the pressurization of the **Aircraft Hydraulic Reservoir**, with the cylinder mounted and clamped on a separate trolley is charged by Nitrogen from outside compressor up to 50Bars having capacity of 40Liters.

**HYDRAULIC SERVICING TROLLEY (HST300U)**

<b>Operation</b>	Outdoor.
<b>Overall dimensions</b>	(L)3400 X (W)1500 X (H)1690
<b>Numbers of wheels</b>	2Nos (Front ) & 2Nos (Rear)
<b>Suspension</b>	Leaf Spring for Front & Rear Wheel
<b>Fuel Tank Capacity</b>	140 Liters.
<b>Towing speed</b>	10Km/hrs.
<b>Steering mechanism</b>	Ackerman steering mechanism.
<b>Rear Axle Weight (RAW)</b>	2205 Kg (Actual Measurement DATED 13/07/2012)
<b>Front Axle Weight (FAW)</b>	1625 Kg. (Actual Measurement DATED 13/07/2012)
<b>Gross Vehicle Weight (GVW)</b>	3830Kg. (Actual Measurement DATED 13/07/2012)

**MAIN HYDRAULIC SYSTEM**

<b>Working Media</b>	Mineral base Hydraulic Oil OM-15, DTD-585, Superclean MIL-H-5606.
<b>No. Of supply &amp; Return lines</b>	2 set of Delivery and Return Line (Including System-I and System-II).
<b>Flow rate</b>	100 LPM in each system.
<b>Operating Pressure(</b>	300BAR.
<b>Temperature range</b>	-5 to 50°C.
<b>Filtration level</b>	3μ. of High Pressure Filter.
<b>Vacuum Level (Working range)</b>	200mBar (abs).
<b>Compressed Air Pressure (Working range)</b>	7 Bar (Max).
<b>Noise Level</b>	
<b>Prime Mover</b>	Diesel Engine TBD3V6 Greaves.
<b>Battery</b>	Lead Acid battery 2Nos each of 12V, 120Ah rating.
<b>Hydraulic Reservoir</b>	Stainless Steel-SS304L, 70 Ltrs + 70Ltrs, Twin chamber , with std accessories
<b>Flow meter</b>	Turbine type, Digital indication.
<b>Oil sampling</b>	Independent in both pressure lines.
<b>Hoses</b>	2Nos, 20mtrs Long Pressure Hose:1-1/4" 2Nos, 20mtrs Long Return Hose:1-1/4" 1Nos , 20mtrs Long Pressure Hose : 1/4"



## **Main Hydraulic System Working**

### OPERATING PROCEDURE

- Switch ON the Engine Electricals.
- Engage the Selector valve position in both the system from Trolley tank to the Aircraft tank.
- Actuate the Solenoid operated Air assisted valve no and through the DC valve (83.2) actuation.
- In Unload Position, Open fully the Pressure relief valve No and in both system.
- Connect the pressure hose and return hose to aircraft hydraulic system.
- Start the Engine.

- Regulate the Relief valve and manually to set the upstream pressure as per the Aircraft Requirement.
  - Monitoring upstream pressure System-I gauge
  - And System-II gauge
- Regulate the Flow control knob manually to control the flow rate and monitor the same on the Flow rate display unit in LPM(38.1) & (38.2).

## **Pneumatic System Working**

### OPERATING PROCEDURE

- Switch ON the Engine Electricals.
- Buffer chamber (71.0) is having Compressed Air trapped @7 bar set through the relief valve 7Bar.
- De-actuate the 5/2 DC valve (75.1) & 3/2 DC valve (75.2) in normal position it is connected through the selector switch for COMPRESSED AIR in System-II.
- Start the Engine.
- As soon as the Air Pressure Gauge (73.0) monitor the set pressure.
- Shut down the Engine.
- Actuate the 5/2DC valve (75.1) allowing closing circuit for trapping compressed air.

## Vacuum System:

### OPERATING PROCEDURE

- Switch ON the Engine Electricals.
- Engage the selector switch to VACUUM SYSTEM on System-I.
- Start the Engine.
- Monitor the float of the Rota meter Pressure Gauge (73.0) monitor the set pressure. Reaches the Green REGION it indicate that deration completes.
- Monitor the Vacuum gauge (85.0) to read the set pressure of 200mBar (abs).
- Shut down the Engine.

