

USER/ Maintenance Manual of Set for Aero Engine Preservation (Model No. A1524)**USER/ MAINTENANCE MANUAL**

Project : SET FOR AERO ENGINE PRESERVATION
(Neometrix Model No. A1524)

Client : ISC/ 3BRD Chandigarh
INDIAN AIR FORCE

PO Number : 3BRD/30102/ISC/Tech/1000156

PO Date : 12th Nov 2015

USER/ Maintenance Manual of Set for Aero Engine Preservation (Model No. A1524)**INDEX**

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USER/ Maintenance Manual of Set for Aero Engine Preservation (Model No. A1524)**Chapter 1****Do's & Do not's for the System:****Chapter 1 .1****Do:**

- ✓ Read the User Manual in detail before operating the System.
- ✓ Check the Oil Level before operation; it should be above the lowest marking.
- ✓ Connect the unit only to the recommended 28 VDC supply.
- ✓ Connect the wire properly with the right terminals of the Supply, '+' shall be connected to '+' and '-' with '-'.

Chapter 1 .2**Do Not:**

- ⚠ Do not run the machine if the level of Oil is Low.
- ⚠ Do not put anything on the top of machine when in operation.
- ⚠ Do not open any part without switching OFF the System.
- ⚠ Do not keep the open End of the delivery Hose uncapped when not in use.
- ⚠ Do not operate machine, if supply voltage is less than 24 V.
- ⚠ No part (Hose/Cable) should touch the ground while the movement of the machine.

Chapter 2.0

Warnings:

- ✚ Do not run the machine unless the delivery hose is connected to the Engine Fuel Tank.



- ✚ Do not Run the Machine if the Oil Level in the Tank is below Lowest marking on the Scale.



- ✚ Do not make the wrong connections with Supply, positive should be connected with and negative with negative as indicated on the wire.

Chapter 3.0

Description of Set for Aero Engine Preservation (Model No. 1524):

Set for Aero Engine Preservation is a device that pumps inhibiting fuel into the Fuel Tank of the Aero Engine (Air Force). Traditionally, the pump is driven directly by the 28 V DC motor coupled to the Pump through Bell-Housing and Coupling. Set for Aero Engine Preservation is used to inhibit the fuel in Aero engines. The Pump delivers a flow of 800 liters/hour at 3 Kg/cm² to the engine. The level of oil in tank is indicated through Level Indicator mounted on the Tank. The filtered oil is supplied to the engine through the delivery hose. The Rig is portable as it has a wheeled Base, the tank is Cylindrical and it makes the Rig compact. The whole rig looks like a Trolley.

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Chapter 4

Introduction

The system consists of a 24 liters tank, strainer, level indicator for measuring the level manually, filler breather. The system is operating at a pressure of 3 Kg/cm².

The test bench consists of pump and motor coupled through Coupling and Bell Housing

Chapter 4.1 - Technical Specification:

- Working Medium : OM-11
- Operating Pressure : 3 Kg/cm²
- Drive Motor : 0.35 KW
- Function: Used for Preservation of Aero Engine and SAFIR
- Tank capacity: 24 litres
- Preserving Oil temp.: 50- 70 °C
- Consumed DC Voltage: 28 V
- Delivery rate: 800 liters/hour

Chapter 4.2 - Major Component :

The complete rig is basically a power pack to pump the inhibiting oil into the engine of the helicopter. A 24 liters supply tank is provided for supply of inhibiting fluid. The tank is cylindrical in shape thus making the rig compact and portable. The inhibiting fluid is delivered to the engine of the helicopter by transfer pump which is driven through motor of 0.35 KW and located above the supply tank.

Accessories of Power pack:

1. Level gauge:

Level gauge are used to measure the level of oil manually

USER/ Maintenance Manual of Set for Aero Engine Preservation (Model No. A1524)**2. Filler Breather:**

Filler Breather is used to fill the inhibiting oil in the supply tank; it also filters the oil to the fineness of 40 microns.

3. Suction Strainer:

The filter of **149 μ** is provided before the transfer pump. A check Valve is provided to drain back the oil to the supply tank. After that the inhibiting oil is pumped to a filter of 10 microns that has an electrical clogging indicator and it delivers the oil to the engine of the helicopter through the delivery Hose of size-1”.

4. Drive motor coupled with Pump:

This arrangement consists of drive motor of 0.35 KW is coupled with the pump with coupling and bell housing.

The speed of the Drive motor is 1500 RPM.

Chapter 5

Operating Procedure

a) Step 1:

Make sure all the connections are tight and the Delivery Hose is Connected to the Aero Engine, the Tank shall have at least 10 liters of Oil as indicated by the level Scale and Switch on the MCB.

b) Step 2:

As soon as the power is switched On the Motor starts working and Simultaneously the pump also starts as both are coupled with each other.

c) Step 3:

The Pump starts pumping the fuel with a flow of 800liters/ Hour to the Fuel Tank in the Engine.

d) Step 4:

The Pressure can be controlled using the Control Valve present on the Panel and the Pressure is indicated on the Pressure Gauge.

e) Step 5:

When sufficient amount of Oil is transferred to the Engine Fuel Tank, the Main supply can be switched off and after the system stops working the delivery Hose can be withdrawn from the fuel tank of the Engine.

f) Step 6:

The Hose shall be plugged after usage and the cable and the Hose shall be Rolled back over.

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Chapter 6

Calibration Chart

Pressure Calibration Chart				
S.NO	V(Voltage)	I(Current)	Pressure after Filter (Bar)	Pressure at the Hose Outlet (Bar)
1	25	12	1	0.9
2	25	12.5	1.5	1.3
3	25	13.5	2	1.8
4	25	14	2.5	2.3
5	25	15	3	2.6
6	25	17	4	3.5

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Chapter 7

Bill of Material

SL. No.	Neometrix Item Code	Item Name	Specifications	Drawing No.	Quantity
1	2A1524P001	Reservoir	Cylindrical, 24 Litres, Aluminium	A1524-DWG-01	1
2	2A1524P002	Filler Breather	Filtration: 40 Microns, Metal Strainer	A1524-DWG-02	1
3	2A1524P003	Level Gauge	10" between Bolt Centres, O-ring type Construction	A1524-DWG-03	1
4	2A1524P008	Suction strainer	Reusable SS 100 Mesh/149 Micron, End Connection:G1/2"	A1524-DWG-04	1
5	2A1524P004	DC motor	Field Voltage: 28 VDC, 500 Watt, 1500 RPM	A1524-DWG-05	1
6	2A1524F002	Bell Housing and Coupling	As per Pump and Motor	A1524-DWG-06	1
7	2A1524P006	Gear Pump	11 cc/rev, Max. Pressure: 200 Bar	A1524-DWG-07	1
8	2A1524P007	Pressure Line Filter	10 Micron Element, End Connection: 1/4" BSP(F)	A1524-DWG-09	1
9	2A1524P009	Hose	Size- 1/2", Length- 25 ft, 110 Bar, Working Pressure: 110 Bar	A1524-DWG-10	1
10	2A1524P010	Pressure Gauge	Range: 0-10 Kg/cm ² , 4" Dial Size, Panel Mountable, Back Connection	232.50.100	1
11	2A1524P011	Needle Valve	Size: 1/2"		1
12	2A1524F001	Level Scale	Material- Aluminum		1
13		Extruded Aluminum Frame		A1524-DWG-11	1
14		All steerable Castor			4
15	2A1524F005	Electrical Box	For switching the Motor On and Off	A1524-DWG-14	1
16	2A1524P012	Electrical cable	2 core, 6mm ² , 20 Amps, 15 m Copper	A1524-DWG-12	1
17	2A1524F004	Check Valve	3 Bar, End Connection: 3/4" BSP(F)	A1524-DWG-13	1

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LIST OF MANDATORY SPARES

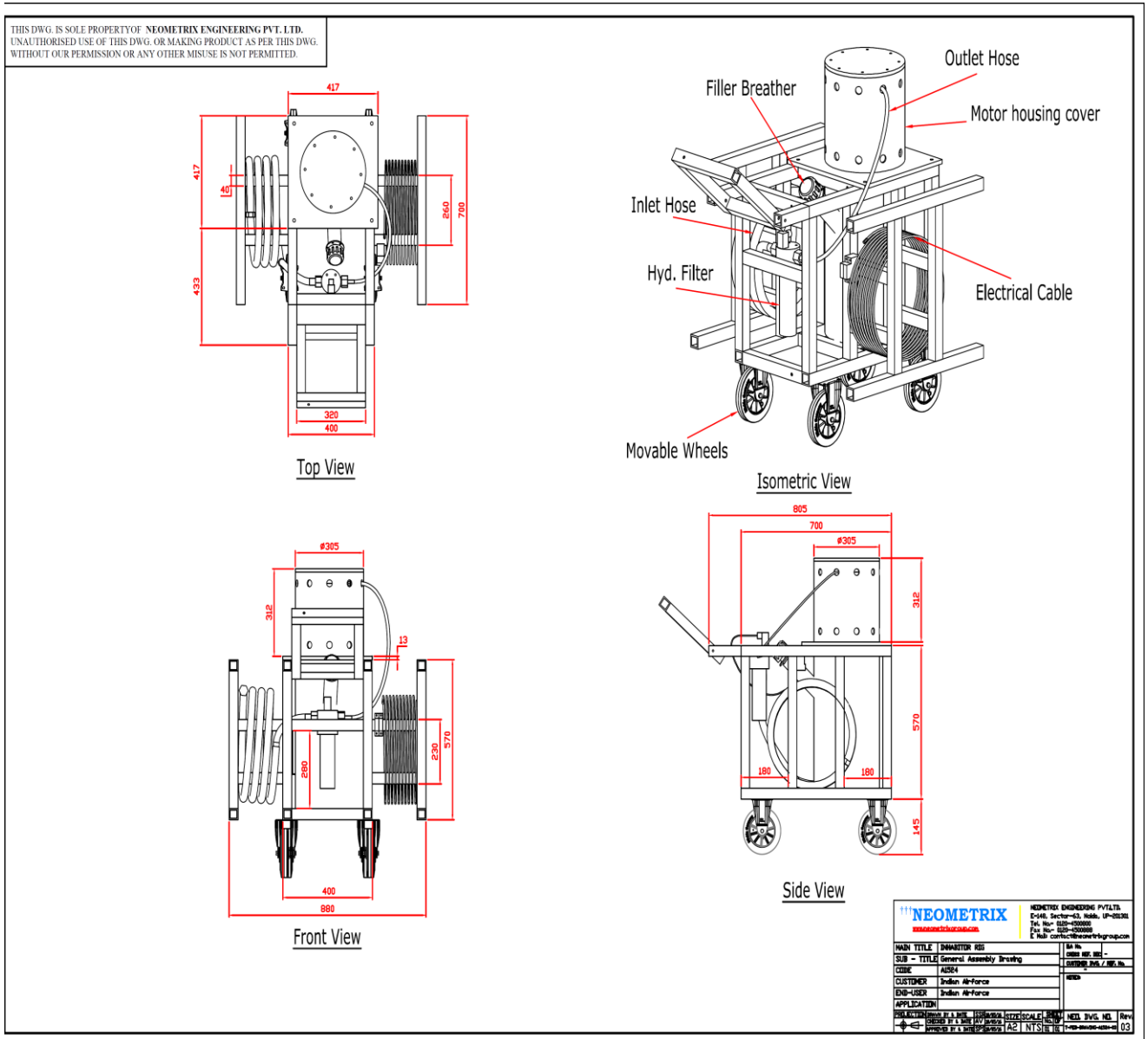
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1	Filler Breather	Filtration: 40 Microns, Metal Strainer	2A1524P002	01
2	Level Gauge	10" between Bolt Centres, O-ring type Construction	2A1524P003	01
3	Suction strainer	Reusable SS 100 Mesh/149 Micron, End Connection:G1/2"	2A1524P008	01
4	Pressure Line Filter	10 Micron Element, End Connection: 1/4" BSP(F)	2A1524P007	01
5	Hose	Size-1/2" , Length 25 ft, Working Pressure: 110 Bar	2A1524P009	01
6	Pressure Gauge	Range: 0- 10 Kg/cm ²	2A1524P010	01
7	Level Scale	Material- SS	2A1524F001	01

LIST OF CONSUMABLE ITEMS

SL. No.	Neometrix Item Code	Item Name	Specifications	Advised Frequency Of Change	Quantity
1	2A1524P002	Filler Breather Sieve	Filtration: 40 Microns, Metal Strainer	6 Months	1
2	2A1524P008	Suction strainer	Reusable SS 100 Mesh/149 Micron, End Connection:G1/2"	6 Months	1
4	2A1524P007	Filter Element	10 Micron Element, End Connection: 1/4" BSP(F)	6 Months	1
5	2A1524P009	Hose	Size- 1/2", Length- 25 ft, 110 Bar, Working Pressure: 110 Bar	6 Months	1
6	2A1524P013	Hose Adapter	Size- 1/2", Length- 25 ft, 110 Bar, Working Pressure: 110 Bar	6 Months	1
6	2A1524F001	Level Scale	Material- Aluminum	6 Months	1

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8.1.2. General Appearance Diagram



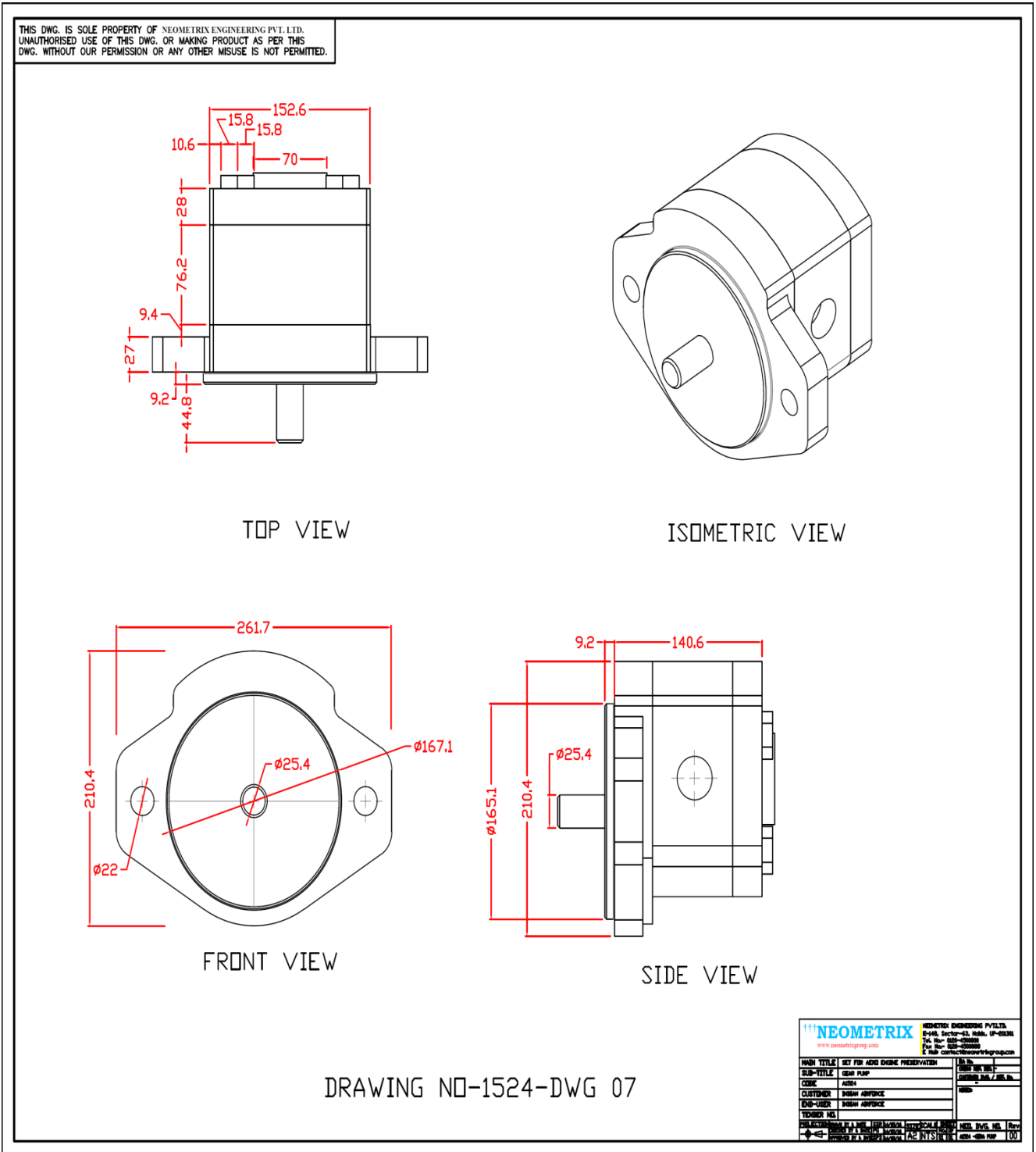
USER/ Maintenance Manual of Set for Aero Engine Preservation (Model No. A1524)**Chapter 9****Chapter 9.1 MAINTENANCE****Daily Check:**

1. Check the Supply tank oil level. Insure that oil level inside the tank should be above the lowest marking in the Level Scale.
2. Ensure that all nuts, screws, pipe connectors and covers are properly tightened.

Chapter 10**Drawings of the Items Used****10.1: Pump****10.2: Filter****10.3: Level Gauge****10.4: Check valve****10.5: Filler Breather****10.6: Suction Strainer****10.7: Reservoir****10.8: DC Motor****10.9: Bell Housing****10.10: Extruded Aluminum Frame**

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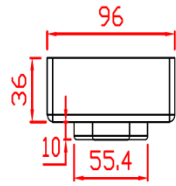
10.1 - Pumps



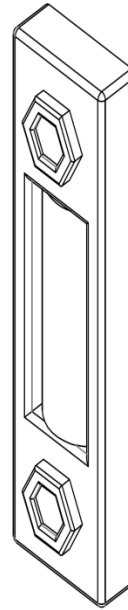
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10.3 - Level Gauge:

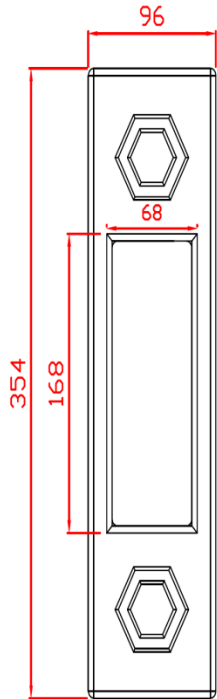
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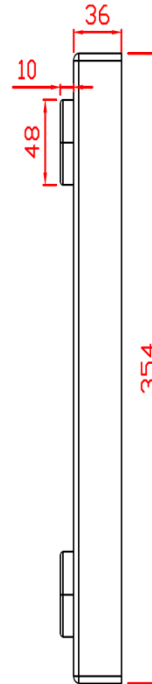
TOP VIEW



ISOMETRIC VIEW



FRONT VIEW



SIDE VIEW

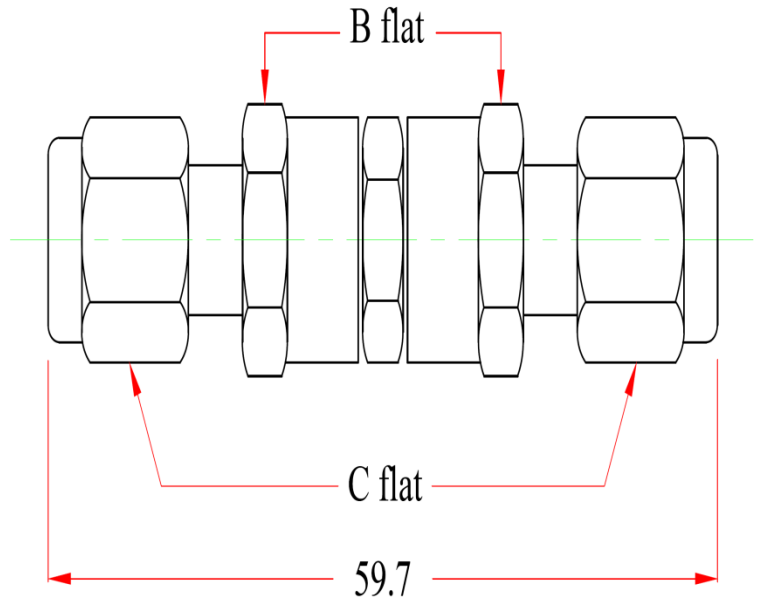
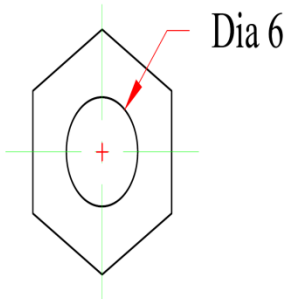
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END-USER	INDIAN AIRFORCE		
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CHECKED BY	A. JAIN	SCALE	1:1
APPROVED BY	A. JAIN	DATE	12/05/2011
		NETL DWG. NO.	00

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10.4 - Check valve

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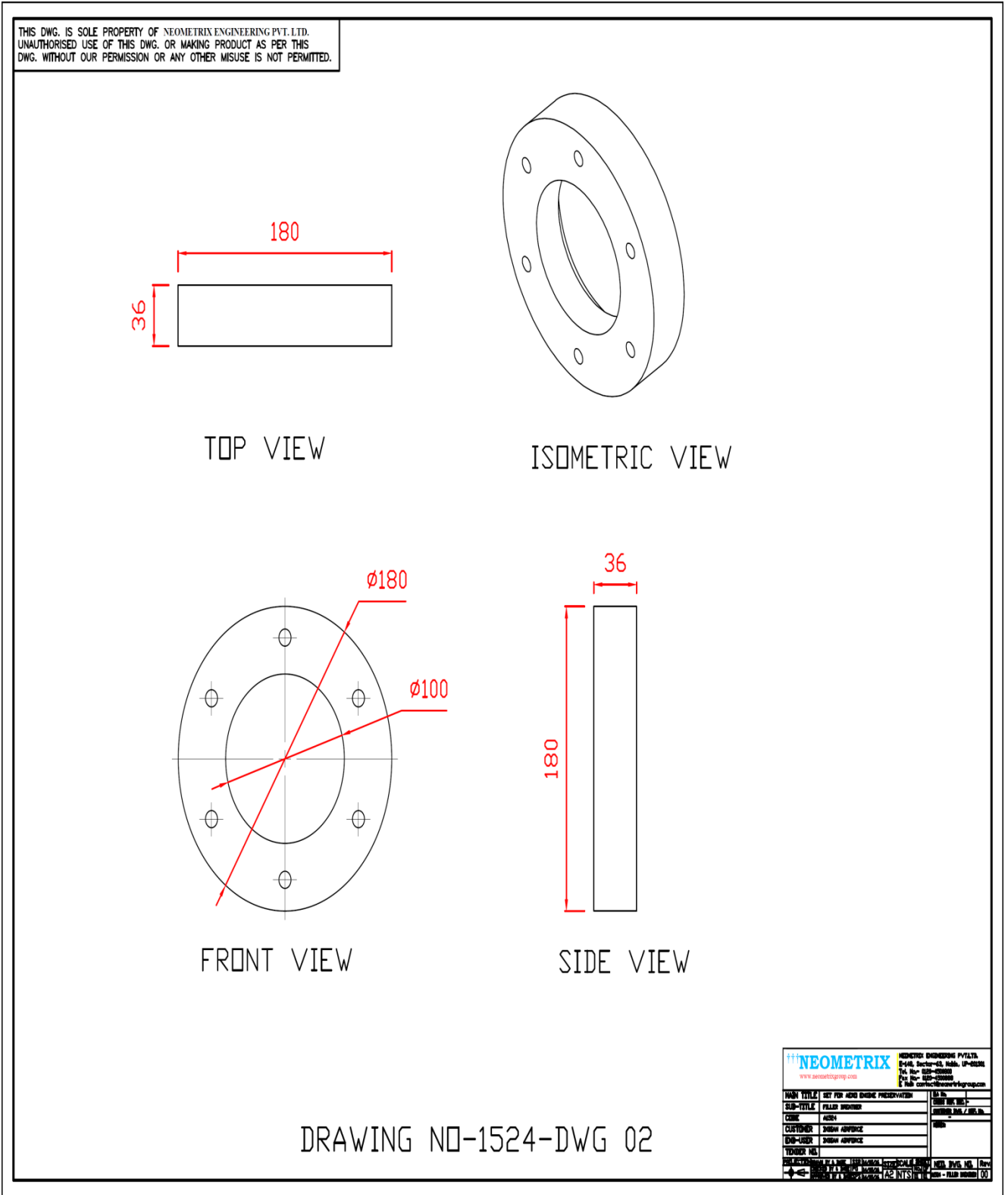


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END-USER	INDIAN AIRFORCE		
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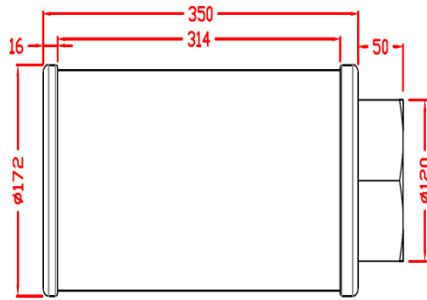
10.5 - Filler Breather



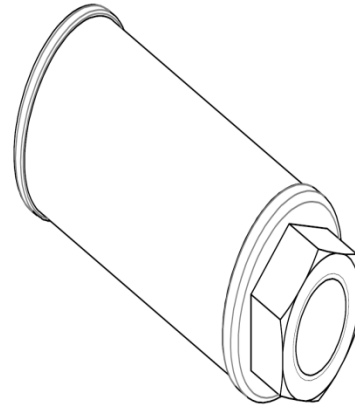
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10.6 - Suction Strainer

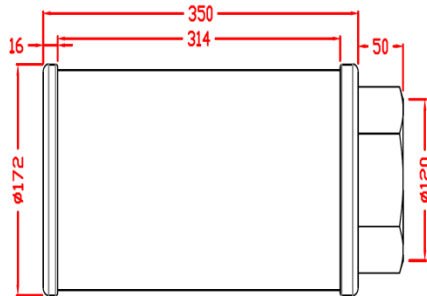
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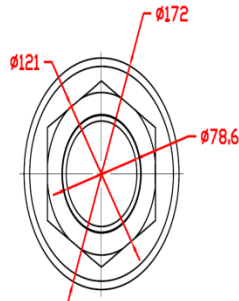
TOP VIEW



ISOMETRIC VIEW



FRONT VIEW



SIDE VIEW

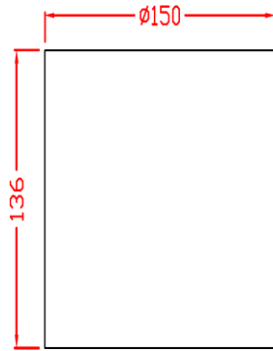
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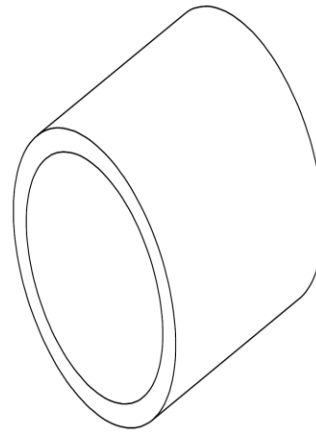
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10.7 - Reservoir

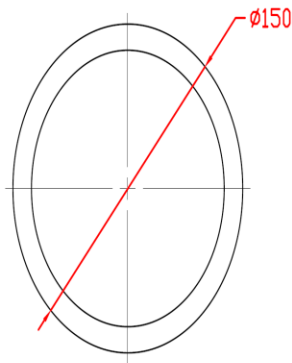
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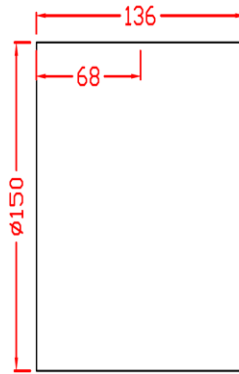
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ISOMETRIC VIEW



FRONT VIEW



SIDE VIEW

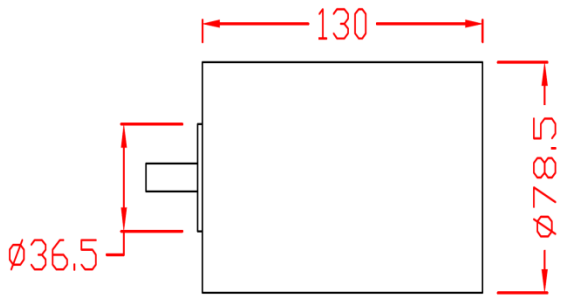
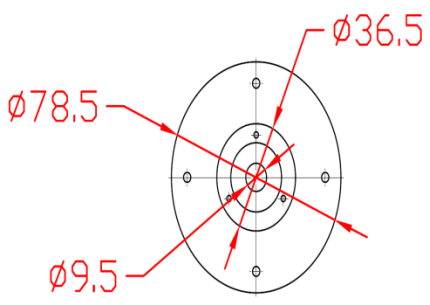
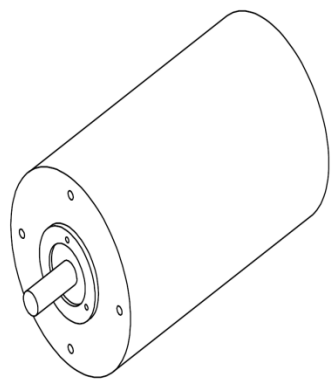
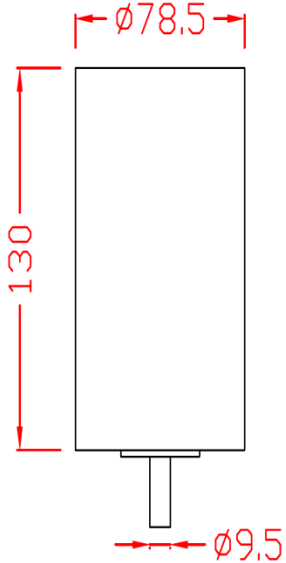
RESERVOIR
Cylindrical 24 Litres, Aluminium
DRAWING NO-1524-DWG 01

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END-USER	INDIAN AIRFORCE	
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DESIGNED BY A. NISHU	ISSUED BY A. NISHU	SCALE
CHECKED BY A. NISHU	DATE	NEET DWG. NO.
APPROVED BY A. NISHU	DATE	REV
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10.8 - DC Motor

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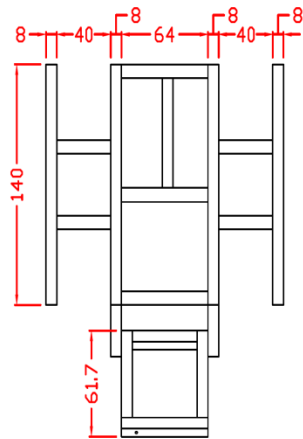
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		Fax: No:- 0120-4500888	
		E-Mail: contact@neometrixgroup.com	
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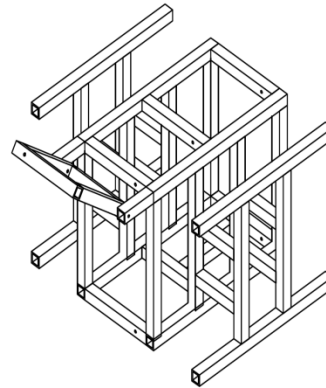
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10.10 - Extruded Aluminium Frame:

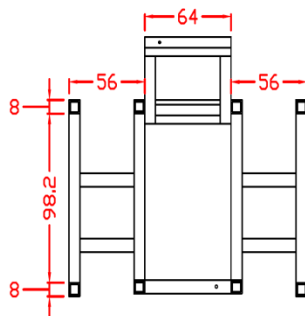
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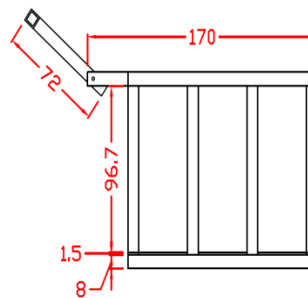
TOP VIEW



ISOMETRIC VIEW



FRONT VIEW



SIDE VIEW

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SUB-TITLE	EXTRUDED ALUMINIUM FRAME	CUSTOMER Dwg. / REV. No.	
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END-USER	INDIAN AIRFORCE		
TENDER NO.			
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APPROVED BY & DATE	DESIGNED BY & DATE	CHECKED BY & DATE	SCALE
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