

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):**USER/ MAINTENANCE MANUAL**

Project : **KU-7 OXYGEN TESTER**
(Neometrix Model No. A1580)

Client : **INDIAN AIR FORCE**

P.O. No. : **AF Station, Bidar (Kar) - 585401**

PO Date : **13th May 2016**

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):**INDEX**

Chapter	Content	Page No.
1	Do's & Don'ts for the System	3
2	Warnings	4
3	System Description	5
4	Introduction Of System	6
5	Bill of Materials	7
6	List of Attachments	8-10
7	Operating Procedure	11-16
8	Maintenance	17
8.1	Daily Check	17

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):

Chapter 1

Do's & Do not's for the System:

Chapter 1.1

Do:



- ✓ Read the User Manual in detail before operating the System.
- ✓ Be certain what tools and equipment's are required to carry out the job.
- ✓ Use proper tools to suit the job and avoid unnecessary dismantling.
- ✓ Ensure that all nuts, screws, Tube connectors and covers are properly tightened.
- ✓ Only trained/qualified service personnel are authorized to service the unit.
- ✓ Make sure all the needle Valves are closed before connecting the system to Nitrogen Supply.
- ✓ Make sure both the Pressure Regulators are fully backed off.

Chapter 1.2

Do Not:

- ✓ Do not keep any of the Needle Valves open before connecting the Nitrogen supply.
- ✓ Do not keep the Pressure of the Regulators increased before connecting the Nitrogen Supply.
- ✓ Do not keep any fitting open before connecting the Nitrogen Supply.



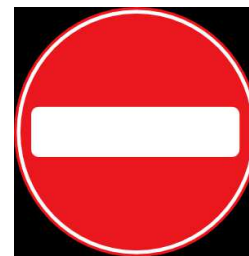
Chapter 2.0

Warnings:

- ✚ Do not run the machine unless all the valves and fittings i.e. these should be closed and tight.



- ✚ Ensure that all the Fittings and Connectors are fully tight.



Chapter 3.0**Description of KU – Oxygen Tester (Model No. 1580):**

KU – Oxygen Tester is a device that tests the UUT. The rig consists of a Chamber to keep the Unit for Testing, Pressure Regulators to control the pressure and read on the pressure gauges. The rig is working on both High Operating Pressure (4000psi) and Low Operating Pressure (50psi). The working medium for the operation is Nitrogen gas. The Rig is portable as it has a wheeled Base and compact. The whole rig looks like a Trolley. As the rig has a wheeled base so it can be moved from one place to another with less effort.

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):

Chapter 4

Introduction

The system consists of a chamber, Pressure Gauges, Pressure regulators to control the pressure. The system is operating at two ranges of pressure:

1. High pressure testing at 4000 psi.
2. Low pressure testing at 50 psi.

Chapter 4.1 Technical Specification:

- Working Medium : Nitrogen Gas
- Operating Pressure : (1) High pressure side: 4000 psi
(2) Low pressure side: 50 psi
- Pressure Gauges: (1) Pressure Range: 0- 8600 psi
(2) Pressure Range: 0- 140 psi
(3) Pressure Range: 0- 60 psi
- Function: Used for Leakage Testing
- Pressure Regulators: (1) Input: 6000 psi, Output: 4000 psi
(2) Input: 4000 psi, Output: 15000 psi
- Leak proof Chamber

Chapter 4.2 Major Component :

The complete rig is basically a leak tester to test the leakage in unit under test. A leak proof chamber is provided to keep the UUT. The leak proof chamber is cylindrical in shape thus making the rig compact and portable. Two pressure regulators are provided in the rig to control the high pressure and low pressure. Pressure gauges are used to measure the pressure of the Gas.

Indian Air force	Equipment Model No. A1580	Page 6 of 17
------------------	---------------------------	--------------

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):

Chapter 5 Bill of Material

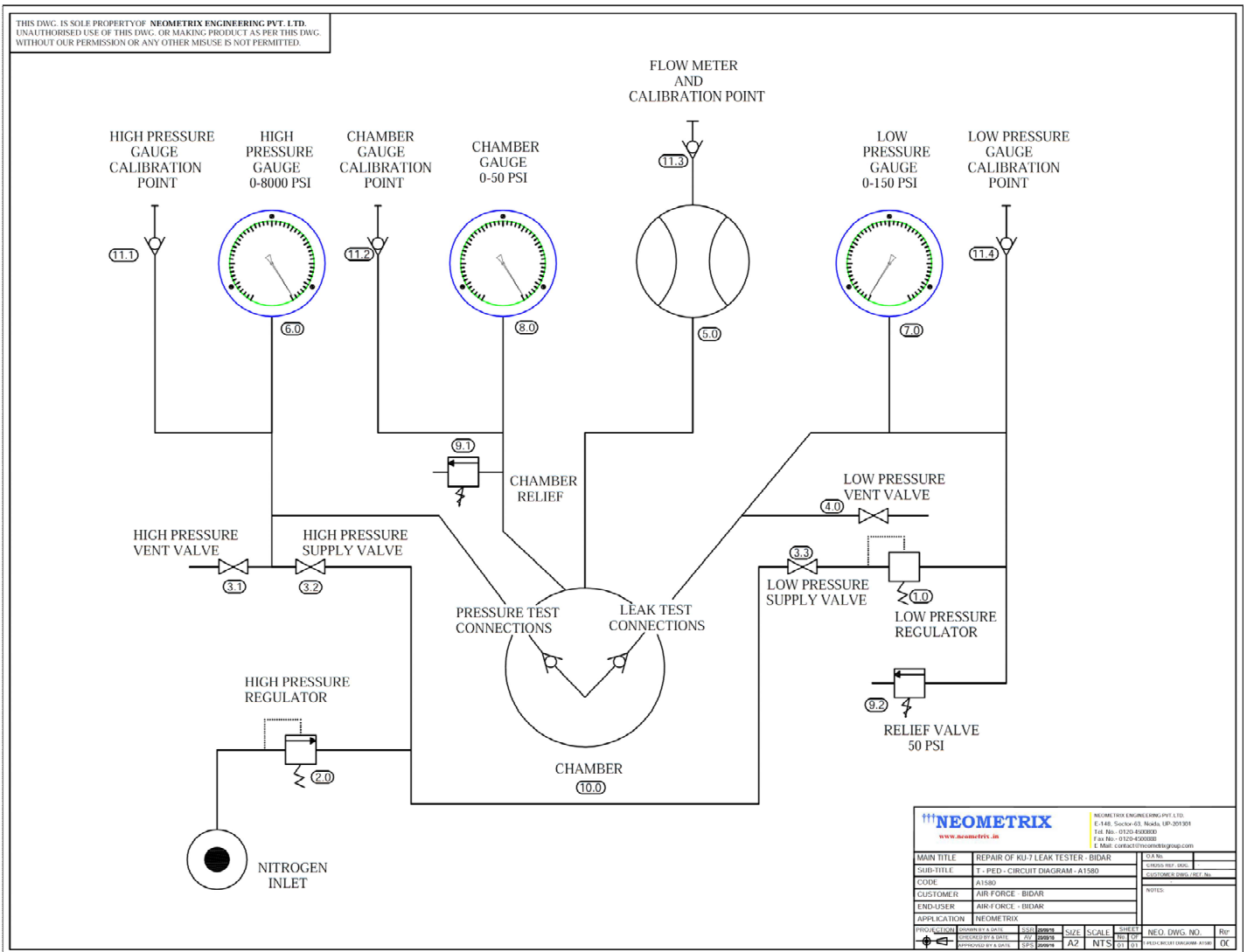
SL. No.	Item Code in Drawing	Item Name	Item Specifications	Quantity
1	1	Low Pressure Regulator	Input- 6000 PSI, Output-1500 PSI	1
2	2	High Pressure Regulator	Input- 6000 PSI, Output-4000 PSI	1
3	3	Needle Valve	Size: 1/4" Tube O.D, Max. Working Pressure: 345 Bar	3
4	4	Needle Valve	Size: 1/4" Tube OD, Max. Working Pressure: 315 Bar	1
5	5	Rotameter	Range: 0-6 SCFH	1
6	6	Pressure Gauge	Range: 0-8000 PSI	1
7	7	Pressure Gauge	Range: 0- 140 PSI	1
8	8	Pressure Gauge	Range: 0- 60 PSI	1
9	9	Pressure Relief Valve	Pressure: 0-10 Bar	2
10	10	Leak Proof Chamber	Material: M.S	1

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):

Chapter 6
List of Attachments

Chapter 6.1 Drawings:

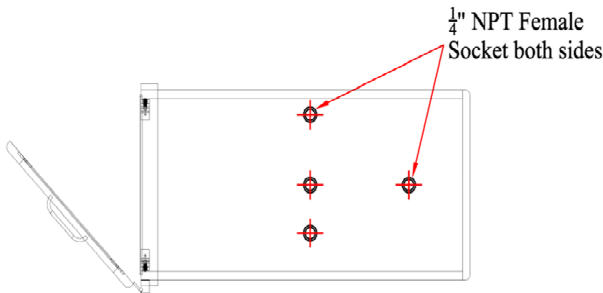
6.1.1 Circuit Diagram:



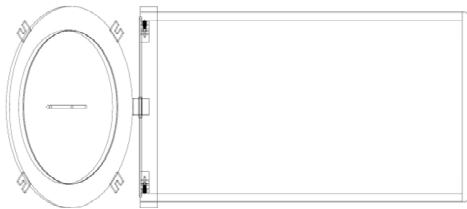
USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):

6.1.2. Chamber Diagram:

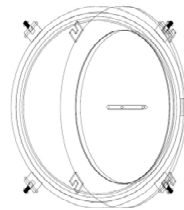
THIS DWG. IS SOLE PROPERTY OF NEOMETRIX ENGINEERING PVT. LTD.
UNAUTHORISED USE OF THIS DWG. OR MAKING PRODUCT AS PER THIS DWG.
WITHOUT OUR PERMISSION OR ANY OTHER MISUSE IS NOT PERMITTED.



TOP VIEW



FRONT VIEW

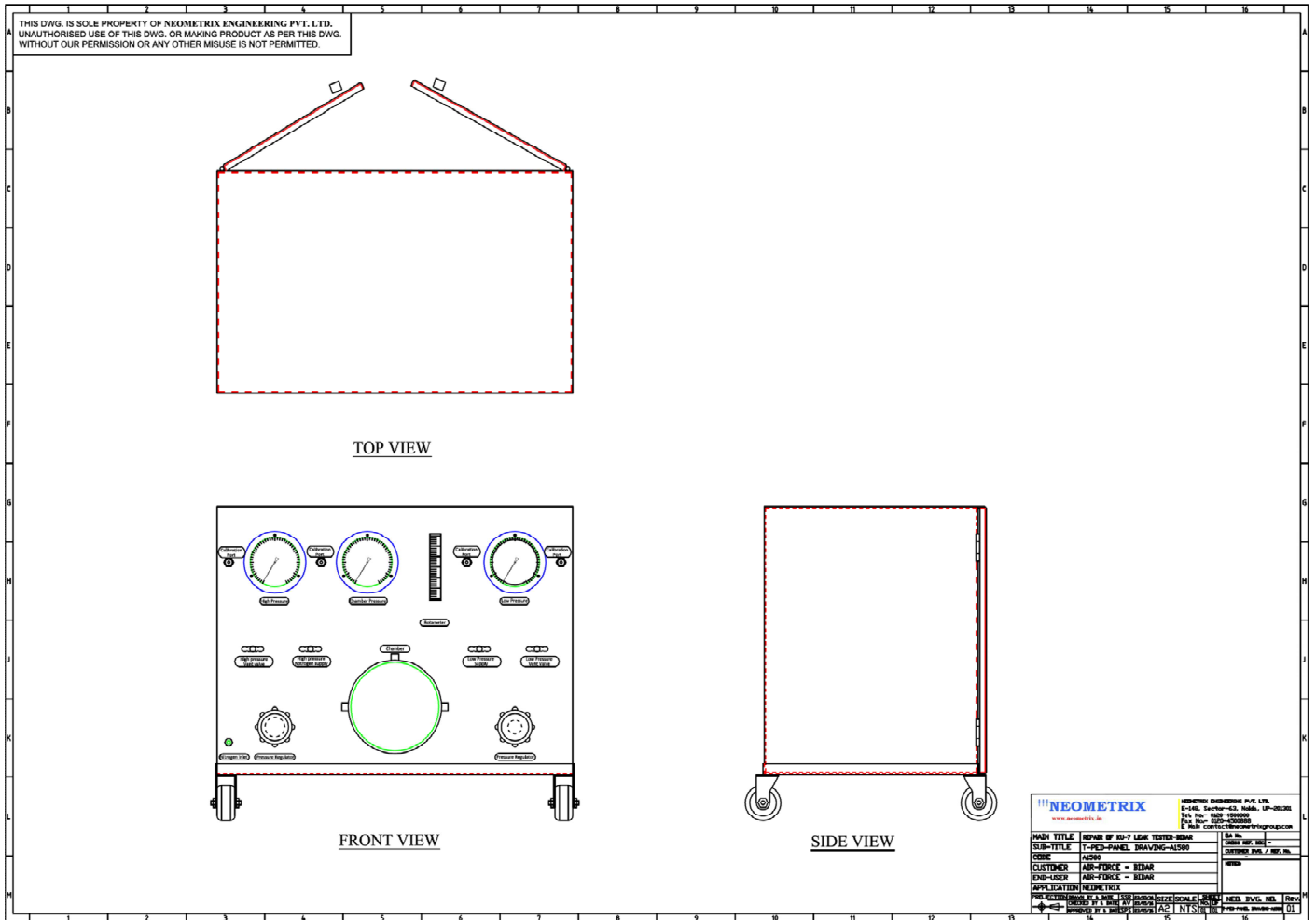


SIDE VIEW

NEOMETRIX		NEOMETRIX ENGINEERING PVT. LTD. E-148, Sector-63, Noida, UP-201301 Tel. No:- 91-120-4500800 Fax No:- 91-120-4500888 E-Mail: contact@neometrixgroup.com	
MAIN TITLE	REPAIR OF KU-7 LEAK TESTER-BIDAR	ISA No.	
SUB-TITLE	T-PED-CHAMBER DRAWING-A1580	CROSS REF. NO.	
CODE	A1580	CUSTOMER ENG. / REF. No.	
CUSTOMER	AIR-FORCE - BIDAR	NOTES	
END-USER	AIR-FORCE - BIDAR		
APPLICATION	NEOMETRIX		
PROJECTION	1ST ANGLE	DATE	SSR
CHECKED BY	A. DINESH	SIZE	A2
APPROVED BY	A. DINESH	SCALE	1:1
		SHEET	01
		NET DWG. NO.	
		Rev.	01

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):

6.1.3 Panel Diagram:



Chapter 7

Operating Procedure

7.1 Testing the High Pressure System:

To test the high pressure system for leakage, do the following:

1. Open the chamber, disconnect the high pressure connections and fitting then fit a ¼ Male NPT cap to the high pressure connection point within the chamber then close and clamp the chamber lid.
2. Ensure that the regulators are fully backed off.
3. Ensure that the valves are closed.
4. Connect a nitrogen supply to nitrogen inlet.
5. Turn on the external nitrogen supply.
6. Open the high pressure supply valve.
7. Turn the high pressure regulators clockwise until 4000 psi is shown on the high pressure gauge.
8. Turn off the external nitrogen supply.
9. Leave the system in this stage for 10 minutes then check the high pressure gauge, there should have been no drop in pressure.
10. When the test is complete, open the vent valve and disconnect the external nitrogen supply.
11. Open the chamber, remove the ¼" Male NPT cap and refit the fitting and high pressure connections.

7.2 Testing The Low Pressure System:

To test the low pressure system for leakage, do the following:

1. Open the chamber fit a 1/4" Male NPT plug to the flow meter connection point with in the chamber then close the chamber.
2. Ensure that the regulators are fully backed off.
3. Ensure that the valves are closed.
4. Connect a nitrogen supply to nitrogen inlet.
5. Turn on the external nitrogen supply.
6. Open the low pressure supply valve.
7. Turn the low pressure regulators clockwise until 50 psi is shown on the low pressure gauge.
8. Turn off the external nitrogen supply.
9. Leave the system in this stage for 10 minutes then check the low pressure gauge, there should have been no drop in pressure.
10. When the test is complete, open the vent valve and disconnect the external nitrogen supply.
11. Open the chamber; remove the 1/4" Male NPT plug from the flow meter connection.

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):

7.5 Calibration Check:

7.5.1 To check the calibration of the high pressure gauge, do the following;

1. Open the chamber, disconnect the high pressure connections and fitting then fit a ¼” Male BSP cap to the high pressure connection point within the chamber then close and clamp the chamber lid.
2. Remove the cap from the calibration point and fit a master gauge calibrated to 8000psi.
3. Ensure that the regulators are fully backed off.
4. Ensure that the valves are closed.
5. Connect a nitrogen supply to nitrogen inlet.
6. Turn on the external nitrogen supply.
7. Open the high pressure supply valve.
8. Turn the high pressure regulators clockwise until 4000 psi is shown on the high pressure gauge, checking at increment that the variation between the two gauges is within bounds.
9. Back off the regulators in stages, checking that the variations between the gauges are within bounds.
10. When the calibration check is complete, turn off and disconnect the external nitrogen supply and open the vent valve.
11. Remove the master gauge and refit the cap to the calibration point.
12. Open the chamber, remove the ¼” Male NPT cap and refit the fitting and high pressure connections.

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):**7.5.2 To check the calibration of the low pressure gauge, do the following;**

1. Open the chamber, disconnect the low pressure connections and fitting then fit a ¼" Male NPT cap to the high pressure connection point within the chamber then close and clamp the chamber lid.
2. Remove the cap from the calibration point and fit a master gauge calibrated to 150 psi.
3. Ensure that the regulators are fully backed off.
4. Ensure that the valves are closed.
5. Connect a nitrogen supply to nitrogen inlet.
6. Turn on the external nitrogen supply.
7. Open the low pressure supply valve.
8. Turn on the high pressure regulators clockwise two turns.
9. Turn the low pressure regulators clockwise until 50 psi is shown on the low pressure gauge, checking at increment that the variation between the two gauges is within bounds.
10. Back off the regulators in stages, checking that the variations between the gauges are within bounds.
11. When the calibration check is complete, turn off and disconnect the external nitrogen supply and open the vent valve.
12. Remove the master gauge and refit the cap to the calibration point.
13. Open the chamber, remove the ¼" Male NPT cap and refit the fitting and high pressure connections.

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):

7.5.3 To check the calibration of the chamber pressure gauge. Do the following;

1. Open the chamber and fit a ¼” male NPT plug in the flow meter supply (immediately left of the low pressure connection) within the chamber then close and clamp the chamber lid.
2. Remove the cap from the calibration point and fit a master gauge calibrated to 60 psi.
3. Ensure that the regulators are fully backed off.
4. Ensure that the valves are closed.
5. Connect a nitrogen supply to nitrogen inlet.
6. Turn on the external nitrogen supply.
7. Open the low pressure supply valve.
8. Turn on the high pressure regulators clockwise two turns.
9. Turn the low pressure regulators clockwise until 40 psi is shown on the chamber pressure Gauge, checking at increment that the variation between the two gauges is within bounds.
10. Back off the regulators in stages, checking that the variations between the gauges are within bounds.
11. When the calibration check is complete, turn off and disconnect the external nitrogen supply and open the vent valve.
12. Remove the master gauge and refit the cap to the calibration point.
13. Open the chamber; remove the ¼” Male NPT plug from the flow meter supply.

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):**7.5.4 To check the calibration of the flow meter, do the following:**

1. Turn the kit box onto its front face.
2. Remove the tube from the calibration point and fit a master flow meter calibrated in cubic feet per hour.
3. Ensure that the master flow meter is in the same orientation as the kit box flow meter (i.e. not leant backwards or forwards).
4. Ensure that the regulators are fully backed off.
5. Ensure that the valves are closed.
6. Connect a nitrogen supply to nitrogen inlet.
7. Turn on the external nitrogen supply.
8. Open the low pressure supply valve.
9. Turn on the high pressure regulators clockwise two turns.
10. Turn the low pressure regulators clockwise, checking at increment that the variation between the flow meter is within bounds. Do not exceed the maximum range of the flow meter and ensure that the master flow meter is in the same plane as the test kit flow meter.
11. When the calibration check is complete, turn off and disconnect the external nitrogen supply and open the vent valve.
12. Remove the master flow meter and refit the cap to the calibration point.

USER/ Maintenance Manual of KU-7 Oxygen Tester (Model No. A1580):**Chapter 8****MAINTENANCE****8.1 Daily Check:**

- a) Ensure that all nuts, screws, pipe connectors and covers are properly tightened.
- b) Ensure that the all the valves, regulators, gauges working properly.
- c) Check all the tubes connections are OK i.e. not damaged.

List of Catalogues attached

1. Pressure Regulator
2. Needle Valve
3. Rotameter
4. Pressure Gauge
5. Pressure Relief Valve