NPRC Test Rig
(Operation Manual)

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NEOMETRIX DEFENCE

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USER REQUIREMENT:

The semi automatic Test Rig is to be designed/ developed & fabricated as per the specifications for carrying out the testing of the Nozzle Pressure Ratio Control (NPRC) units herein after called Unit under Test (UUT), which are the part of the Reheat fuel control unit system of the aircraft.

GENERAL CONFIGURATION OF THE RIG

INTRODUCTION:

The Design Document is in 4 Parts as follows:

1. **UUT Test Bed**
2. **Control Panel**
3. **ATF/ Air/ Vacuum Circuit**
4. **Electronics/ Electrical**

All four of the above have been discussed in detail in the following pages. The main sub parts of the above said categories are as follows;

- Test Rig ATF Power Pack System
- Test Rig ATF System Controls & Measurements
- Scavenging System
- Test Rig Air & Vacuum System
- Test Rig Air & Vacuum System Controls & Measurements

1. UUT TEST BED

The Test Bed mainly comprises a frame prepared by using C-sections and SS sheets and a Dip Tray for containing the UUT. The size of the bed will be (1750×450×1000) mm including the Dip Tray. The color of the NPRC Test Rig Bed is proposed to be "**Siemens Grey**". Please give your confirmation for the same (We can provide the same with any standard color). The Bill of Material and GA Drawings are attached with this document.

2. CONTROL PANEL

The Control Panel will be made of 4mm SS sheet and will be fitted with the Test Bed and The room wall. It will consist of all the Pressure Gauges (ATF/Air/Vacuum), Control Valves, Pressure Regulators, Electrical Clogging Indicators, Temperature Sensors and Level Indicators. Tubing for connecting all the accessories, with the main piping circuit will be done behind the Control Panel by means of appropriate fittings. The size of the Panel will be (1750×4×1350) mm. The Bill of Material and GA Drawings are attached with this document. **B4, B5, B8, B9, B10, B11, B12, B13, B15, B17, B19, B20, B21, B23, B24, B25, B32, B33, B34, B35, B36, B37, B38, B39, B40, B41, B42, B43, B44, B45, B46, B56**

3. ATF/AIR/VACUUM CIRCUIT

The complete ATF/Air/Vacuum circuit will be consisting Pipes, Tubes and Hoses of different sizes and fitted with each other by using different appropriate fittings as per requirement. Circuit Drawing is attached with this document for further reference with proper color coding as per the sizes of the piping.

4. ELECTRICAL CIRCUIT

Electrical circuit of this Test Rig is prepared considering the explosiveness of the working fuel, with proper insulations and Explosion proof accessories. Circuit Drawing is attached with this document for further reference.

DETAILED CONFIGURATION OF MAIN ACCESSORIES OF THE RIG

TEST RIG ATF POWER PACK SYSTEM

The Test rig has its power pack mounted on a separate Frame with anti vibration pads, to be grouted. The Power Pack system will be kept in a separate room (behind a wall) and will be connected to the

Test Rig Panel system with the help of appropriate piping. The distance between the Panel and the Power pack will be 1.5 Mts.

The ATF Power Pack System comprises of the following key components.

- **RESERVOIR**

  The reservoir containing ATF will be made of SS having capacity of 200 Liters. The shape of the reservoir will be cylindrical having dished ends and the dimensions will be of 1000mm height and 600mm diameter having wall thickness of 4 mm. The Reservoir fittings will be mounted appropriately. The details of the reservoir fittings are as follows:

  - Explosion Proof Low Level and High Level Indicator with LIMIT SWITCH will be fitted with the Reservoir. This is for the safe operation of the system. In case the level goes below the minimum fuel level the level switch will automatically switch off the High Pressure Suction Pump.
  - Drain Pipe, Supply Line, Air Breather Return Line, Filling Point, Suction Strainer, Filter and Drain Valve are provided/ mounted appropriately on the tank.
  - Temperature Switch (flame proof) is mounted on the tank and is connected with the safety system of the test rig.
  - Proposed Reservoir peripherals are flameproof.
  - The Inlet to the pump (from the reservoir) is taken from a height from the lower level of the reservoir; this is to avoid any dirt or settled water particles getting into the system.

- **FILTRATION SYSTEM**

  - **Discharge of the Pump:**
    - Three filters are fitted in the rig on the outlet of the pump (25 Micron, 15 Micron & 5 Micron). **B9,B10,B11**
    - Electrical Clogging Indicators of these filters will be fitted on the Control Panel
  - **Tank Return Line:**
    - A 10-micron filter on the tank returns line of the circuit. **B51**
  - **Fuel Cooling Line:**
    - A 25 micron filter will be fitted in between the cooling pump and the Heat Exchanger to provide clean fuel in to the Heat Exchanger.**B4**

- **Air Supply Line:**
  - A 1 micron absolute filter will be fitted in air flow line. **B18**

- **HIGH PRESSURE ATF SUPPLY SYSTEM**
  - **Pump:**

    Bucher Hydraulics make Gear Pump (specially made for fluids like ATF), where working is at very low viscosities as mentioned in the tender document (less than 1.5 CST). This pump is able to deliver a flow of 200 GPH at 2000 PSI as per the requirement. The pressure of the fuel is controlled by using a pressure regulator manually from the Control Panel.
  - **Motor:**

    A suitable Flameproof Motor with appropriate fitting is used to run the pump. Make of the Motor will be CGL, 15 K.W. 2-Poles Type.

  - **Fuel Pump Outlet Relief Valve**

    A suitable Relief valve having the specification of 1500-2000PSI range is fitted to the outlet of the pump. **B 8.1**
  - **Pneumatically operated Back Pressure Maintaining Valve**

    A suitable Back Pressure Maintaining valve having the Pr. range of 0-2000 PSI & Flow of 0-200 GPH is fitted to the outlet of the pump. **B8**

  - **Turbine Flow Meter with DRO**

    A suitable Turbine Flow Meter having the Flow range of 0-200 IGPH & accuracy of ±1% fitted to the outlet of the pump. The digital display i.e. DRO is fitted on the Control Panel. **B5**

  - **Temperature Sensor with DRO**

    A Temperature sensor (RTD) 0-100°C accuracy, ±0.5% resolution 0.1°C is fitted to the outlet line of the pump to check out the temperature rising during the flow of the ATF. The digital display i.e. DRO is fitted on the Control Panel.**B12**

  - **Balanced Valve**

A suitable Balanced valve having the Pr. Range of 0-2000 PSI & Flow of 0-200 GPH is fitted to the outlet of the pump to supply ATF in a balanced manner as per requirement. **B13**

- **COOLING SYSTEM**

An independent cooling system is proposed. This is done for effective and better controlled cooling of the fuel. Also as detailed in the ATF circuit, attached, it also acts as a ATF filtration circuit.
The key components of the cooling circuit as detailed in the attached circuit diagram are as follows:

  - **Pump:**
    KSB make Centrifugal Pump (specially made for fluids like ATF), where working is at very low viscosities as mentioned in the tender document (less than 1.5 cst). This pump is able to deliver a flow of 60LPM.
  - **Motor:**

    A suitable Flameproof Motor with appropriate fitting is used to run the pump. Make of the Motor will be CGL, 3.7 K.W. 2-Poles Type.

  - **Heat Exchanger**

    A Plate Type Heat Exchanger, make Alfa Laval having the specifications as 14 plate type, range 30°C to 20°C & cooling media as water at 20°C is fitted to the outlet of the pump. **B6**
  - **Automatic Temperature Control Valve**

    A suitable Temperature Control Valve to be fitted to the Heat Exchanger Outlet to control the temperature of the ATF automatically. Make- Avcon. **B55**

- **SCAVENGING SYSTEM B47/B48/B49/B50/B51**
  - Scavenging system as detailed in the tender document is prepared.
  - 0.75 kW (Flameproof CGL Motor)
  - 1.7 LPM Flow Sauer Danfoss make TFP Model Pumps is used.
  - Low/ High Level flameproof limit switches are proposed and they start/ stop the flame proof pump.
  - 20 Liter Scavenging Tank of rectangular shape.

- AIR SUPPLY SYSTEM

Air supply at a pressure of 250PSI at a rate of 160 SCFM to be provided by HAL.

- **Absolute Air Filter**

  A 1 micron absolute filter will be fitted in air flow line. **B18**

- **Air Pressure Regulator**

  A suitable Air Pressure Regulator to be provided at the out let of air line and to be fitted on the control panel. **B18**

- **VACUUM SUPPLY SYSTEM**

A Rotary Piston Type Vacuum Pump, Make- HIND HIVAC having a flow rate of 170scfm capable of providing 3 inch Hg absolute is used for generating the required Vacuum for the Test Rig.

BOM OF ATF/AIR/VACUUM

Sr. No.	Item Code	Item Description (In PO)	Deviation (if any)	Detailed Execution Description	Qty
1		**Fuel Reservoir along with Accessories**			
1.1	B1	Fuel Reservoir along with Accessories	With mounting fixture and Stand	Capacity 200 Liters, Material SS-304, In Cylindrical Shape with Dished End. With Mountings for Auxiliaries namely: Low & High Level Switches, Level Indicator, Filling Line, Air Breather, Drain Valve, Suction Port, Return Lines, Pneumatically operated Dump Valves: (Design: Dia:600 mm, H:1000 mm; Total Volume:282L, 70% Usable Volume: ~200L	1
1.2		High Level & Low Level Switch with Visual Level Indicator with Flame Proof Certificate & Calibration Certificate		Explosion Proof	1
1.3		Temperature Gauge with Calibration Certificate			1
2	B2	Ball Valve with **Explosion Proof Limit Switch**		Full Bore, Flanged end SS of suitable size to pass 500 IGPH ATF (38 LPM); 1.25" Pipe Size	1
4	B4	LP Fuel Filter with Electrical Clogging Indicator	Aluminum Alloy Body & Bowl	Flow 500 IGPH (38 LPM), 25 Micron with SS Bowl	1
5	B5	Turbine Flow meter with DRO and Calibration Certificate		Range - 0-500 igph accuracy = ± 1% calibrated on ATF	1
6		HP Fuel Pump Motor Assembly		Working Pressure 2000 at flow of 200 IGPH (~15 LPM) with Suitable Flame Proof Motor	1

6.1		Pump	Flameproof, will be in Fire Prone Zone		1
6.2		Flame Proof Motor (3000 RPM), 15 kW with Flame Proof Certificate			1
6.3		Coupling			1
6.4		Frame with Anti Vibration Pad			1
6	B6	Heat Exchanger	Subject to Proving of the Test Rig & Design Approval		1
7	B8	Manually operated back pressure maintaining valve	Flow will be 500 IGPH	Diaphragm Type Pressure Range : - 0 - 2000 PSI Flow: - 0 - 2000 igph	1
8	B8-1	Relief Valve		Full Flow, adjustable set pressure (1500-2200 PSI)	1
9	B9	HP Fuel Filter with Electrical clogging indication		Working Pressure = 2000 PSI Flow-200 igph Filtration - 25 micron with SS Bowl.	1
10	B10	HP Fuel Filter with Electrical clogging indication		Working Pressure - 2000 PSI Flow-200 igph Filtration - 15 micron with SS Bowl.	1
11	B11	HP Fuel Filter with Electrical clogging indication		Working Pressure - 2000 PSI Flow-200 igph Filtration - 5 micron with SS Bowl.	1
12	B12	Temperature sensor with DRO		0-100ºC Accuracy ± 0.5% Resolution - 0.1ºC	1
13	B13	Balanced Valve	Appears to be a Needle Valve	Suitable for required flow & pressure	1
14	B14	Pressure Relief Valve		Full Flow, adjustable set pressure (50-80 PSI)	1
15	B15	Air operated Back pressure maintaining valve		Back pressure range:- 0-50 PSI	1
16	B17	Air Pressure Regulator		Inlet Pressure - 500 PSI Outlet: - 0-300 PSI Flow: 160 scfm	1
17	B18	Absolute Air Filter With Moisture Separator		(3 Micron)	1
18	B19	Pneumatic Precision Regulator (Air / Vacuum)	Supply 250 PSI instead od 300 PSI	Supply pressure: - Vacuum to 300 PSI Outlet: 2" of Hg absolute to 150 PSI	1
19	B20	Needle Valve	1/4"	Size- 1/2", SS Material	1
20	B21	Pneumatic Precision Regulator (Air / Vacuum)		Supply pressure: - Vacuum to 300 PSI Outlet: 2" of Hg absolute to 200 PSI	1
21	B22	Needle Valve		Size- 1/4" SS material	1
22	B23	Pneumatic Precision Regulator (Air / Vacuum)		Supply pressure:- Vacuum to 300 PSI Outlet: 2" of Hg absolute to 300 PSI	1
23	B24	Needle Valve		Size-1/4", SS material	1
24	B25	Vacuum Regulator		SS material	1

25	B26	Vent Valve	Needle Valve	SS material	1
26	B27	U-Tube Manometer		U-Tube Manometers with 0.1 inch of Hg resolution Range - 0-60 inch	2
27	B28	U-Tube Manometer			
28	B29	U-Tube Manometer		U-Tube Manometer with 0.1 inch of water resolution Range- 0-60 inch	1
29	B30	Single Limb Manometer		Single Limb Manometers with 0.1 inch of Hg resolution Range-0-90 inch of Hg	2
30	B31	Single Limb Manometer			
31	B32	Pressure Gauge	Dial Size: 8.5"	Range: 0-2000 PSI Dial Size: 10 in. Dia Accuracy: ± 0.25%	1
32	B33	Pressure Gauge	Dial Size: 8.5"	Range: 0-100 PSI Dial Size: 10 in. Dia Accuracy: ± 0.25%	1
33	B34	Pressure Gauge		Rage : 0-500 PSI Dial Size: 6 in. Dia Accuracy: ± 1%	1
34	B35	Pressure Gauge		Range: 0-1000 PSI Dial Size: 6 in. Dia Accuracy: ± 0.25 %	1
35	B36	Pressure Gauge		Range: 0-1000 PSI Dial Size: 6 in. Dia Accuracy: ± 0.25 %	1
36	B37	Pressure Gauge		Range: 0-1000 PSI Dial Size: 6 in. Dia Accuracy: ± 0.25 %	1
37	B38	Pressure Gauge		Range: 0-100 PSI Dial Size: 6 in. Dia Accuracy: ± 0.25%	1
38	B39	Pressure Gauge		Range: 0-50 PSI Dial Size: 6 in. Dia Accuracy ± 1%	1
39	B40	Diff. Pressure Gauge		Range: 0-50 PSI Dial Size: 6 in. Dia Accuracy ± 1%	1
40	B41	Pressure Gauge		Range: 0-100 PSI Dial Size 6 in. Dia	1
41	B42	ABS Pressure Gauge	Should be called Compound Pressure Gauge Range: (-)30 - 0 - (+)270" Hg instead of (-)30 - 0 - (+)300" Hg	Range: (-)30 - 0 - (+)270" Hg Accuracy ± 0.1 % Dial Size: 6 in. Dia	1
42	B43	Pressure Gauge		Range: 0-100 PSI Dial Size: 6 in. Dia Accuracy: ± 0.25%	1
43	B44	ABS Pressure Gauge	Should be called Compound Pressure Gauge Range: (-)15 - 0 - (+)300 PSI Accuracy ± 0.1% Dial Size: 6 in.	Range: (-)15 - 0 - (+)300 PSI Accuracy ± 0.1% Dial Size: 6 in. Dia Accuracy: ± 0.25%	1

44	B45	ABS Pressure Gauge	Should be called Compound Pressure Gauge Range: (-) 15 - 0 - (+)100 PSI Dial Size: 8 1/2" in. Dia	Range: (-) 15 - 0 - (+)100 PSI Dial Size: 10 in. Dia Accuracy: ± 0.25%	1
45	B46	ABS Pressure Gauge	Should be called Compound Pressure Gauge Range: (-) 15 - 0 - (+)100 PSI Dial Size: 8 1/2" in. Dia	Range: (-) 15 - 0 - (+)100 PSI Accuracy ± 0.1 % PSI Dial Size: 10 in. Dia Accuracy: ± 0.25%	1
46	B47/ B48/ B49/ B50/ B51	Scavenging system		5 gal capacity scavenge SS tank with built in pump, motor, filtration system, limit switch and strainer, flameproof, automatic start and stop with low-level and high level switch etc.	1
				1.7 LPM , TFP Model Pump	
				0.75 kW CGL Flame Proof Motor	
47	B52	Air Breather		Suitable as per requirement	1
48	B53	Drain valve		Suitable as per requirement	1
49	B54	Dump valve		Suitable as per requirement	1
50	B55	Automatic Temp. Control Valve		Suitable as per requirement	1
4	B56	Air cycling valve		Selected as per test requirement	1
4(i)	57	Vacuum Pump motor assembly with standard accessories	Flow Rate is not 170 scfm	Vacuum pump capable of providing 3-inch Hg absolute is better with a flow rate of 170 scfm.	1
4(ii)	58	Hoses / adapters / bulkhead etc as per requirement to test UUT		With SS end	1

BOM OF Electrical System

Test-1
INITIAL LEAKAGE TEST
Test 1(a) & 1(b) Preparation

For 1(a)
Blank '13' '14' 'E' 'E1' 'F'.
Connect HP Supply Directly to '7' & 'D'.
Connect 'H' to Tank(L.P. Return Port) Via Restrictor Cock 'RPC-002'.
Connect '5' to Tray Via RPC-005.
(Remaining Ports of RPC-002, RPC-004 & RPC-005 to be Blanked).
'Y' '2' '3' '15' 'BB' 'FF' may be left open to atmosphere or blanked with transport covers.
Port '16' & '20' to be Open to the atmosphere for Draining.
Micrometer to be screwed fully in. (Do not use force).
N.B. For ports 'E' 'F' 'Y' '2' '3' '15' '16' '20' 'BB' 'FF' refer to Sheet-1.

For 1(b)
Remove Po adjuster body.
Connect L.P. Supply to '16' (Drain).
All other connections as Initial Leakage Test.

Test-2
Test 2(a) 2(b) & 2(c) Preparation

2(a) Preparation DETERMINATION OF SEA LEVEL STATIC STEADY STATE POINT(S.L.S.)

Blank '7' & 'E'
Connect HP Supply Directly to 'D' Via RPC-004.
Connect 'H' to Tank(L.P. Return Port) Via Restrictor Cock 'RPC-002'.
Connect '5' to Tray Via RPC-005.
Connect 'F' to Tray.
Connect '13' & '14' Via RPC-001 to the Pressure Gauges as shown in figure.
(Remaining Ports of RPC-002, RPC-004, RPC-005 & RPC-006 to be Blanked).
Micrometer to be screwed fully in. (Do not use force).
N.B. For ports 'E' 'F' 'Y' '2' '3' '15' '16' '20' 'BB' 'FF' refer to Sheet-1.

2(b) Preparation DETERMINATION OF SURGE POSITION
As for Test 2(a).

2(c) Preparation DETERMINATION OF CHOKE FLUTTER POSITION
As for Test 2(a).

Test-3
AIR SPLITTER NETWORK STABILITY CHECK

Test 3 Preparation
Fit Rig Slave Air Pot. And Slave 'P3' & 'P2' plate restrictors(0.030" & 0.141" respectively).
Blank '7' & 'E'
Remaining Connections as shown in fig.
Set Micrometer at S.L.S.[Test 2(a)].
Redatum Lever at 25□.
N.B. For Ports 'E' 'F' '2' '3' '16' '20' Refer to Sheet-1

Test-4
S.L.S. WORKING LINE & FINAL SHIM FITTING

4(a) Preparation
Connections as shown in fig.Also refer to fig in Sheet-1
Fit matched Air Potentiometer (To be provided by HAL).
Blank '7' & 'E'
All Other Connections to Atmosphere.
Set redatum Lever at 25□.
Apply 30 PSIG to 'E1'
Set 'P3' at 167.0 PSIA.
'P2' at 85.2" Hg.
'Po' at Max Vacuum.
Set Micrometer to S.L.S. (Test 2A).
Adjuster 'Po' Adjuster to set 'Px' to 73.3" Hg.

4(b) Preparation
All Condition as 4(a).
Set 'P2' at 73.3"Hg.
Set Micrometer to S.L.S. [Test 2(a)].
(Ensure 'Px'=56.5" Hg Adjuster 'Po' Adjuster as Necessary).

4(c) Preparation
All Condition as 4(a).
Set 'P2' at 85.2"Hg.
Set Micrometer to S.L.S. [Test 2(a)].
(Adjust 'Po' Adjuster to set 'Px'=73.3" Hg).

Test-5
INITIAL PROFILE CHECK

Test 5(a)Preparation
All Condition as 4(a).
Set Micrometer to S.L.S. [Test 2(a)].

Test 5(b)
Needle Travel 'Px' Calibration & Air Potentiometer Check.
Note:-

(i) Record 'P3' & 'P2' Restrictor Orifice Dimensions.
(ii) Record Spacer Size.(Limit 0.020"-0.092").

Preparation
Connections as shown in fig.
Blank Connection '7' & 'E'.
All Other Connections to the Atmosphere.
Also refer the fig in Sheet-1.
Set Air Pressure at 'E1' to 30 PSIG.
Set Mechanical redutam lever to 25□.

Test 5(c)
Test 5(c) is only applicable.
When Matched Air Pot Fitted.
Preparation
As Conditions in 5(b).

Test 6

Test 6(a)Preparation P.R.C. WORKING LINES.

Pipe up the Connections as Shown in fig.
Blank '7' & 'E'.
Other Connections Left open to atmosphere.
Set Air Pressure in to 'E1' at 30 PSIG.
Set Mechanical redatum lever to 25□.
Set the Micrometer to S.L.S. [Test 2(a)].
Set 'P3' 'P2' & 'Po' as detailed in table below & recard Px" Hg.

Test- (i) **Altitude Working Line**

P_3 psia	P_2 "Hg	Po psia	Px Acceptance "Hg
50.0	22.15	2.0 max.	19.0 - 19.2
	22.9	2.1 max.	21.8 - 22.0
	29.15	2.3 max.	24.3 - 24.4

Test- (ii) **S.L.S. Working Line**

P_3 psia	P_2 "Hg	Po psia	Px Acceptance "Hg
167.0	74.1	6.3 max.	63.4 - 64.0
	85.2	6.4 max.	73.2 - 73.4
	94.6	7.0 max.	81.02 - 81.8

Test 6(b) Preparation 'Po' ADJUSTER RANGE CHECK.
Pipe up the Connections as Shown in fig.
Blank '7' & 'E'.

Other Connections Left open.
Set Air Pressure in to 'E1' at 30 PSIG.
Set Mechanical redatum lever to 25□.
Set the Micrometer to S.L.S. [Test 2(a)].
Set 'P3' to 167 psia.
'P2' to 85.2" Hg.
'Po' to max. Vacuum (6.7 psia max.)

Test 7

Test 7(a)Preparation P.R.C. WORKING LINES.

Pipe up the Connections as Shown in fig.
Blank '7' & 'E'.
Other Connections Left open.
Set Air Pressure in to 'E1' at 30 PSIG.
Set Mechanical redatum lever to 25□.
Set the Micrometer to S.L.S. [Test 2(a)].

Test- (i)
Set 'P3' to 167.0 psia.
'P2' to 85.2" Hg.
'Po' at 14.7 psia
Record Px.

Test- (ii)
Set Mechanical redatum lever to 0□.
Wind in Pre-open adjuster to its full travel
Record Px
Wind Out Pre-open adjuster through
its full effective travel untill Px remains stable.
Record Px.
Reset adjuster to give 50"Hg Px.

Test 7(b) Preparation ADJUSTER SETTING CHECKS(Use Slip Gauges).
Test- (i)
Check Po adjuster standout.

Test- (ii)
Check Re-datum (Pre open) adjuster standout.

Test 7(c) Preparation RESTRICTOR FLOW CHECK
**

Test 8

Test 8(a)Preparation BEAM SETTING

Pipe up the Connections as Shown in fig.
Blank 'E1'.
Disconnect the single limb manometer from RPC-007 & Connect to P6 '15' via Tee piece.
Connect one leg of the ΔP Manometer circuit to the P6 '15'. Connect other leg to Px (Y).
All other connections to be left open to atmosphere.
Set the Micrometer 0.250" out from the position determined in Test 2(a) (S.L.S).
Set Mechanical redatum lever to 25□.
Ensure cock 'A' is fully open.

Test 8(b)Preparation CYCLING TEST (Water manometer isolated)

Test 8(c)Preparation ADJUSTER RANGE CHECK (Condition as test 8-a)

Test 9

Test 9(a)Preparation
P6 / Px CALIBRATION & HYSTERESIS CHECK

Pipe up the Connections as Shown in fig.
All other conditions as Test-8.
Apply 200 PSIG Power Pack to D & 7.
Set 20 PSIG L.P. Return upstream of restrictor 'Y'.
Set 50 PSIA to P3.
Set 25.5"Hg to P2.
Set 22.0"Hg to P6.
Set Max. Vacuum to Po.
Set Beam Adjuster to give P6/Px ΔP + 1" H_2O (P6 High).

Test 10

Test 10 Preparation L.P. SENSITIVITY

Pipe up the Connections as Shown in fig.
All other connections to be left open to atmosphere.
Set the Micrometer 0.250" out from the position determined in Test 2(a) (S.L.S).
Set Mechanical redatum lever to 25□.

Apply 200 PSIG Power Pack to D & 7.
Set 20 PSIG L.P. Return upstream of restrictor 'Y'.
Set 50 PSIA to P3.
Set 22.9"Hg to P2.
Set 22.7"Hg to P6.
Set Max. Vacuum to Po.

Test 11

Test 11 (a) Preparation LEAKAGES

Pipe up the Connections as Shown in fig.
Fully open Cock 'A'.
All other connections to be left open to atmosphere.
Set the Micrometer 0.250" out from the position determined in Test 2(a) (S.L.S).
Set Mechanical redatum lever to 25□.

Test 11 (b) Preparation LIVE WORKING LINE
Condition as 11(a)
Blank 'E1'.

Test 11 (c) Preparation Po ORIFICE LEAKAGE TEST
Remove Po Adjuster body.