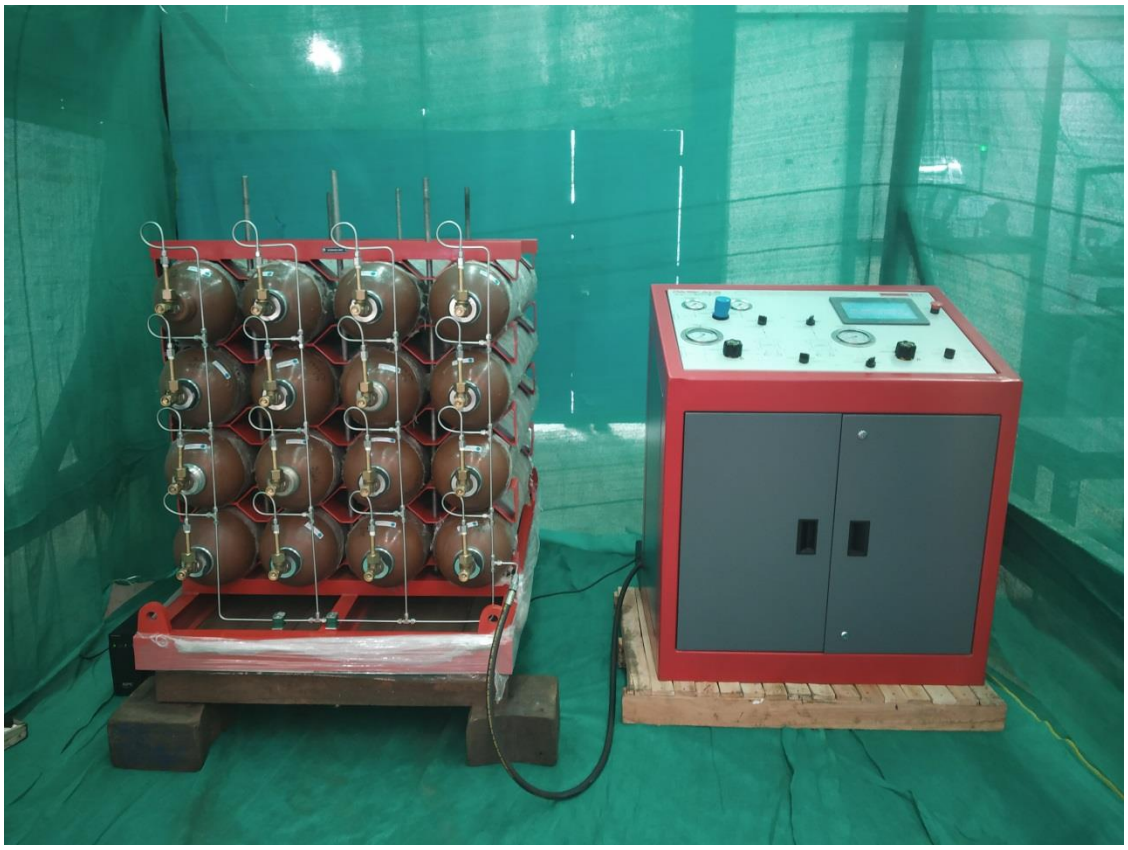
User Manual

Flowserve Helium Decanting System



Helium Decanting and Boosting System (Model no. – P1253-PressurePAC)

Document Prepared and Published By

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The Supply consists of:

Pack- 1 : Pressure PAC UNIT, Storage UNIT and Hose

Pack- 2 : Document Basket containing User Manual
Calibration Certificates of Pressure Gauges, inlet, outlet hose adaptor

1.) Do's& Don'ts List(Reference Circuit Diagram)

Helium Decanting and Boosting systems require HANDLING by TRAINED PERSONNEL only. Please STUDY the Operation & Maintenance manual carefully before operating the Boosting System.

Do's

1. Before starting the Boosting/Decanting make sure that Pressure PAC unit must be connected with Drive Air, (V1) is Open manually or by HMI.
2. Supply of gas and storage unit must be connected with inlet port and outlet port by Hose.
3. Valve (V3) must be in open condition.
4. Make sure that all joints with Hoses are properly tightened before starting the test.
5. Please ensure that the drive Air must be 4-5 kg/cm^2.
6. Pressure Regulator (13.0) is use to regulate 0 to 25 bar range for Amplifire (17.0).
7. Haskel Booster (20) use for Boosting, when boosting is done then close the valve (V1, V2).
8. During Boosting valve (V5) must be close.
9.

Don'ts

1. Don't open the door of Pressure PAC during oxygen boosting.

2. Never change the relief valve / Pilot valve settings as these are factory set at said point.
3. Do not attempt to change PLC program without any expert advice.
4. Do not attempt to repair without proper authorization & proper procedure in proper clean environment. Consult to Earth hydraulics always.

3.0 Pressure PAC SPECIFICATIONS

Pressure PAC SPECIFICATIONS for the proposed SYSTEM		
S.no.	**Name of Characteristic**	**Value of Characteristic**
1	Drive Pressure (Air)	5 kg/cm^2
2	Purity of Drive Air (1)	40 Micron
	Purity of helium	5 Micron
3	Inlet pressure switch and Pressure Transmitter set at	25 kg/cm^2
4	Pilot Switch set at	4000Psi
5	Pressure Relief Valve	4100 Psi
6	Inlet gas pressure	0-350Psi
7	Output Oxygen pressure	As required
8	Buffer storage capacity	47.5 L
9	Working Media	Helium and Nitrogen
10	Outlet Gas flow rate	Variable (As per requirement)
11	Movement Control of Trolley	Portable on 4 wheels and No Electrical connection

4. Pressure PAC System Detail

Paskals has developed Pressure PAC for High Pressure boosting system. Whole system is divided into four parts:-

A. **Air Drive Section**: - Dry & Filter Air @ 5 Kg/cm^2 is required for drive the Pressure PAC.

> **Please Note**
>
> **When Valve (V1, V2 and V4) is in SUPPLY condition, the Gas Booster shall operate and shall BOOST the Pressure, If gas supply is less than 25 Kg/cm^2. When User wants to STOP the gas Booster, this Valve (V1, V2) should be manually CLOSED or by HMI.**
>
> **Return Line can be operated by valve (V5)**

B. **Helium inlet Section**: - Helium inlet section comprises of (16.2) Pneumatic actuated valve for inlet and also supply by Amplifire (17.0) to main booster (20.0) Pressure Gauge (14.1) to read the Helium supply pressure, Maximum inlet gas pressure should be 25 kg/cm^2 .

C. **Helium Boosting Section**: This Helium boosting section comprises of Haskel Booster (20.0) to boost the available helium as required Pressure. it has High Pressure Gauge (14.2) to monitor the outlet pressure.

D. **Helium Outlet Section**: This section comprises of high pressure regulator and Pressure transmitter. Regulated outlet pressure is shown on HMI. the safety & controlling components of the Pressure PAC along with measuring devices to measure performance parameters of the Pressure PAC. This section has following key components:

- Air pilot switch (21.0), the function of air pilot switch is that, when it senses the pressure more than the required pressure, it will cut the

supply of air to the gas booster .By this action booster will stop working. When desired pressure attain.

- Safety relief valve (22.0), a safety valve is a safety device and in many cases the last line of defense. It is important to ensure that the safety valve is capable to operate at all times and under all circumstances. A safety valve is not a process valve or pressure regulator and should not be misused as such. It should have to operate for one purpose only: overpressure protection.
- Pressure gauges (14.2)-We can monitor the high pressure of helium after the booster and after valve (V4) we can monitor regulated outlet Pressure For precise filling pressure.

Please Note

(V5) should be close when (V4) is opened. Similarly (V4) should be closed when (V5) is opened.

Paskals providing the Pressure PAC unit in a very compact design and considering all the standards regarding operation & unit performance.

Pressure PAC Dimensions

LENGTH – 1000mm

HEIGHT – 1067mm

WIDTH – 700mm

5.)Pressure PAC-Photograph showing user Interface Points

1. Air Drive Inlet Port

2. Gas Inlet Port

3. High pressure Outlet Port

4. Storage unit Port

6.) Pressure PAC- Unpacking & Installation

1. Upon receipt of the system, visually inspect the shipping carton for signs of damage or mishandling. Immediately contact the carrier for an inspection if the shipping carton is damaged or evidence of mishandling exists.

2. Carefully remove the outer crafting materials. Care must be taken during unpacking to avoid enclosure damage or scratching.

3. Inspect the system for dents, scratches, or other evidence of mishandling during shipment. Request an immediate inspection from the carrier if damage is evident.

4. Keep the Pressure PAC unit in well-ventilated area (Temperature not Exceed beyond 40 degree centigrade).

5. Connect the Pressure PAC unit with Industrial Air supply hose.

6. Connect the Pressure PAC unit with helium supply.

7. Connect Buffer storage with storage unit port.

8. Check all Hose connections should be fully tightened.

7. Pressure PAC- Operation Procedure (Reference Circuit Diagram and Panel)

Pressure PAC is specially designed for High pressure which needs to be careful operated.

A. Boosting Pressure (0 - 4000 psi):

A. Connect the Compressed Air to Pressure PAC at Air Drive inlet port with the help of PU Tube.

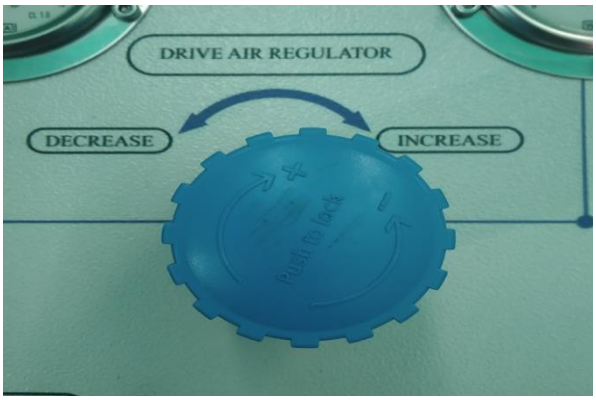
B. Connect the helium supply to Pressure PAC at Gas inlet port with the help of Hose.

C. Connect one end of Outlet Hose to the bulk head (high pressure outlet) and other end with the filling cylinder.

D. Open the valve (V3).

E. Supply drive air to the amplifier and booster by drive air valve (V1 and V2).

F. Regulate the air drive pressure to get the desire pressure (4.0)



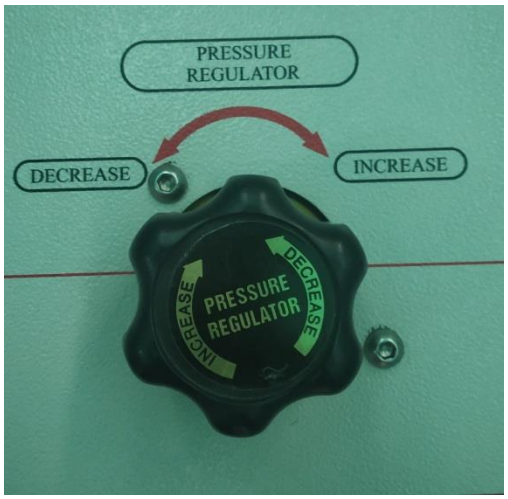
G. Drive air Regulated air pressure shown on pressure gauge (3.2)

H. After valve V3 is open, pressure of Helium is shown on pressure gauge (14.1).

i. Helium pressure regulator (13.0), it is mounted on inlet line of Amplifire and Regulate the desired pressure (0-400Psi) at the suction.

j. Boosting pressure is shown on the pressure gauge (14.2)

k. Boosting pressure at outlet is regulated by High pressure regulator (23).



l. Regulated pressure shown on the HMI interface (6.3).

m. Open the valve V5 for direct supply the helium from gas inlet to outlet.

n. This machine is also operated by HMI with the above instruction. All the valve control is given on HMI interface.

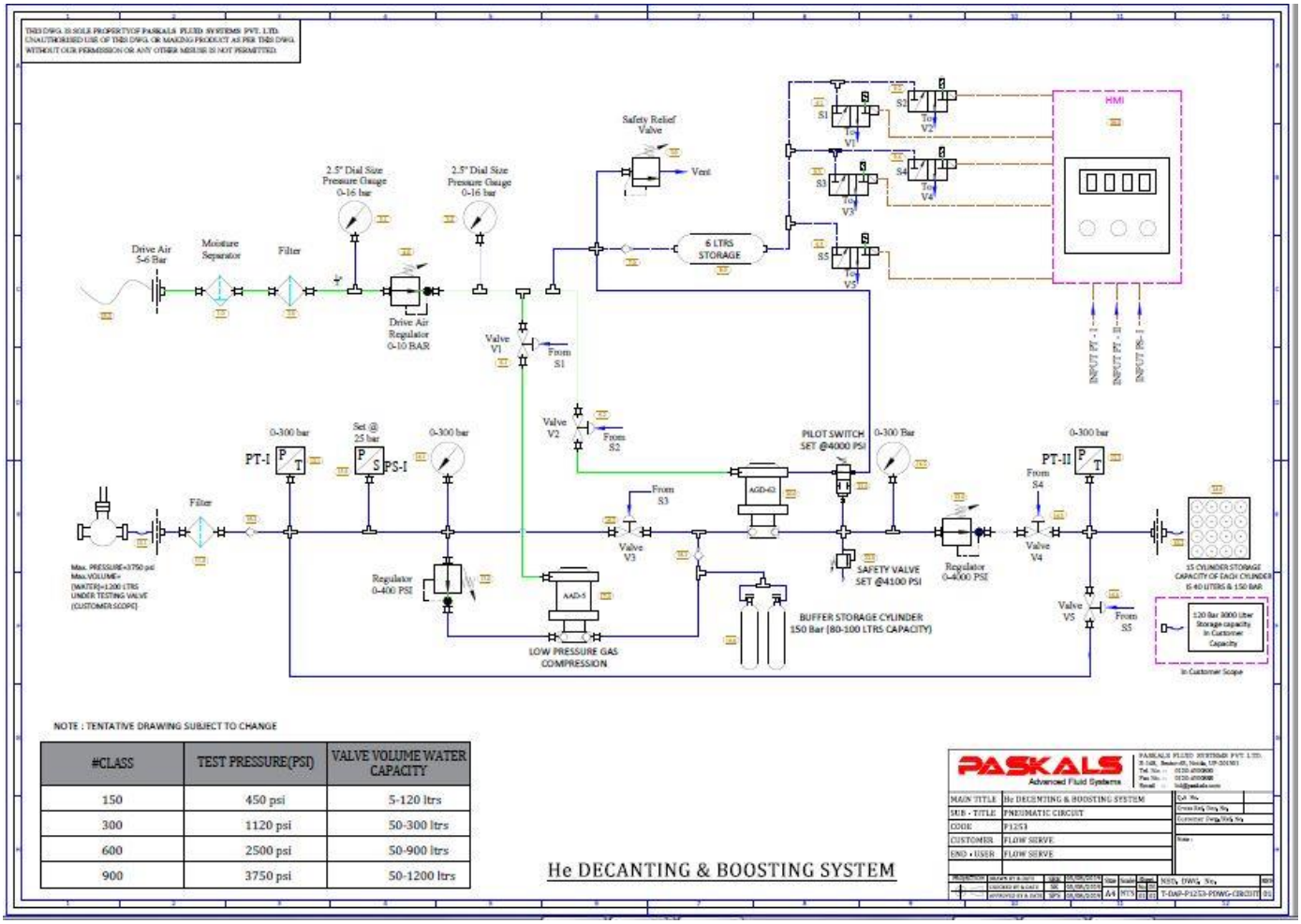
Note: Please ensure that all connection should be fully tightened before Starting the Test.

8.) Pressure PAC- Safety Features

1. **All the Joints should be fully tightened.**
2. **Please don't touch any high pressure hose & Tubes during Testing.**

3. Before starting the test make sure that NUT must be fully tightened
4. Don’t touch any component during testing.
5. Don’t change setting of safety relief valve and Pilot switch.
6. Please ensure that door of the Pressure PAC must be close during testing

10.Circuit Diagram of Pressure PAC

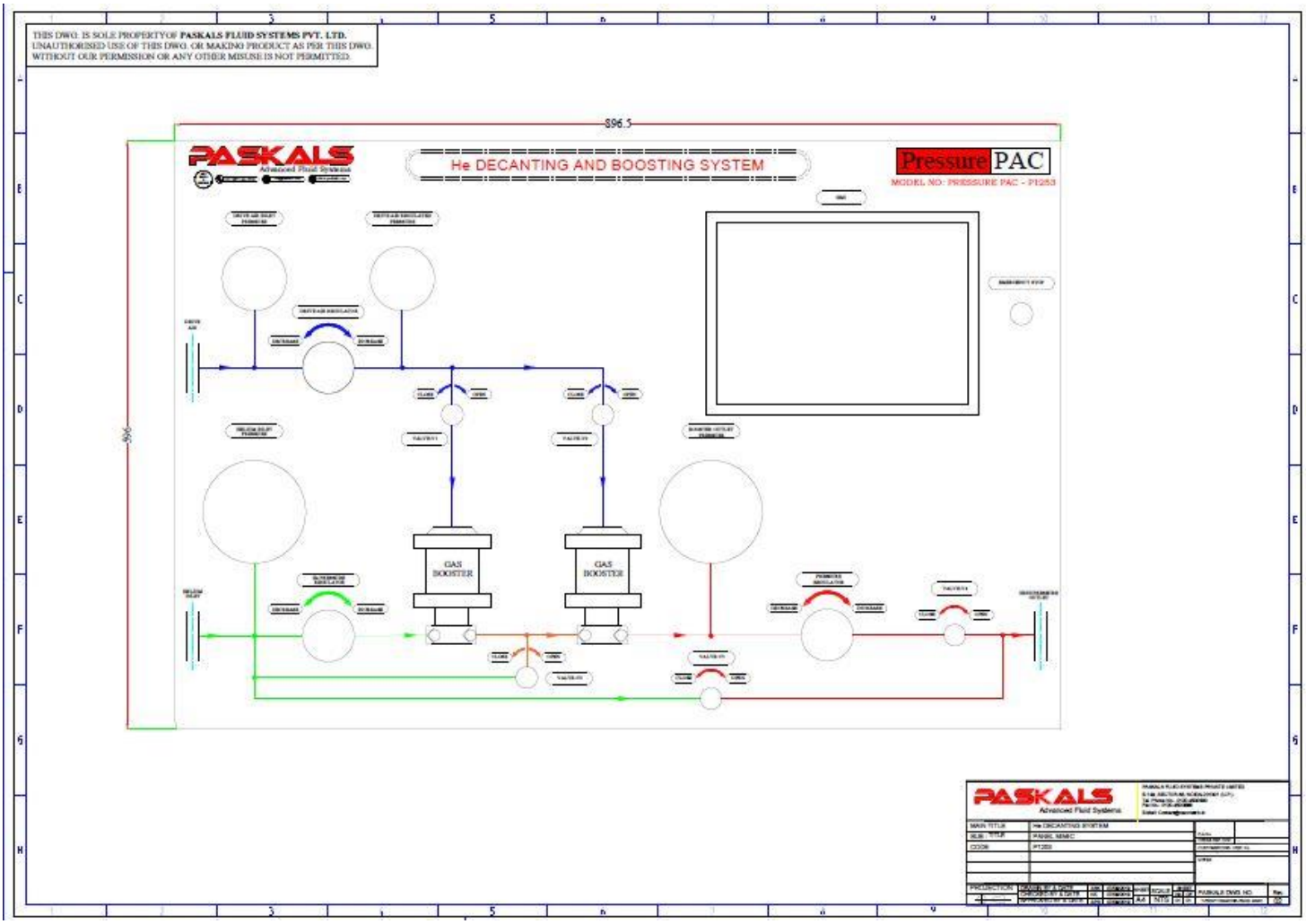


NOTE : TENTATIVE DRAWING SUBJECT TO CHANGE

#CLASS	TEST PRESSURE(PSI)	VALVE VOLUME WATER CAPACITY
150	450 psi	5-120 ltrs
300	1120 psi	50-300 ltrs
600	2500 psi	50-900 ltrs
900	3750 psi	50-1200 ltrs

He DECANTING & BOOSTING SYSTEM

11.Panel MIMIC Diagram



13. Sales /Service/Support Contact Details

With Best Regard

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