

Operation Manual

(Nitrogen Booster Pump)



Issued by

Chongqing Weiyun Technology Development Co.,Ltd

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1.Introduction

WY-400N/30-J0/327 is an air driven gas booster pump system used for pressurizing air and nitrogen. The equipment adopts a small portable structure, which has the characteristics of high pressure, high flow rate, and low failure rate. The high-pressure wet part of the equipment is made of stainless steel material, which is suitable for various harsh environments.

The equipment is a high pressure equipment, and there are safety risks associated with improper operation. Before using the equipment, please carefully read the content of this manual.

1.1 Safety Rule

- 1) Equipment operation should be in accordance with process by professional or trained worker.
- 2) Do not causally apart or change every connector, especially high-pressure and safety valve connector.
- 3) Maintenance should be taken in a certain period time.
- 4) Driven air power must be cut off after using equipment.



WARNING

Do not tighten pipeline under pressure .




This device is forbidden from pressurizing or conveying other media.

1.2 System Piping Color-coded Instructions



NOTICE

The color identifications are as follows:

	Compressed air
	Low pressure
	High pressure

1.3 After-sale Service

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2. Working Principle

2.1 Equipment Characteristics

- Compressed air is used as the boosting power source for the equipment, while nitrogen is used as the medium for high-pressure boosting. The input nitrogen pressure value is between 30-60Bar. This equipment is convenient ,safe to use, and has no explosion-proof requirements;.

- The equipment has a pressure self-locking function, which means that under the condition of adjusting the driving air pressure, the output pressure remains constant but does not rush.
- The equipment provides dual scale shock-absorbing pressure gauge display.
- All components, pipelines, and valves of the equipment are made of stainless steel material, which can effectively prevent corrosion.
- With centralized control panel, which is easy to observe and operate.

2.2 Schematic Diagram

See Attachment 1

3. Operation Instructions

3.1 Working Environment

- Ambient temperature: 0~ +60°C;
- Power supply: No;
- Driven air pressure: 3-8bar;
- Input nitrogen pressure: 30-60Bar;

3.2 Technical Data

- Testing medium: Gas/Nitrogen;
- Max. Operation pressure: 539bar;
- Max. Flow: 327NL/min;
- Max. Driven-air Operating pressure: 10bar ;
- Nitrogen input pressure: 30-60bar;
- Pipeline usage pressure:600bar;
- Equipment connector:
 - Drive air inlet: G1/2 " (F);
 - Nitrogen inlet interface: 1/2 "NPT (F)-with quick pull connector 1/2"NPT;
 - High pressure outlet: 3/8 "NPT (F);
 - High pressure outlet quantity: 3/8 "NPT (F) for 1 piece;
 - Pressure relief outlet: 3/8 "NPT (F) for 1 piece;
- Dimension: 900L×500W×550H mm

3.3 Main Elements

Function introduction: The equipment mainly consists of booster pump, Pressure Regulator, Air Filter, Pressure Gauge, N2 Ball Valve, HP Check Valve, Air Pipelines, and inlet & outlet interface,etc .



3.3.1 Booster Pump (air-driven)

Manufacturer:WINGOIL;

Model:WY2GBD60;

Pressure ratio: 1:65;

Max. Output pressure:539bar;

Max Flow:327L/min;

Driven type: compressed air-driven;

Control>manual control;



- Usage:Main components of the equipment ,for air injection and boosting;

Theoretical output pressure: $P=Pa \times 65$

P: Output pressure

Pa: Compressed air adjusting pressure

For example:when the compressed air pressure of the low-pressure pump is set to 5 bar, the output pressure is 65×5 , which is equal to 325 bar.

3.3.2 Driven-air Filter

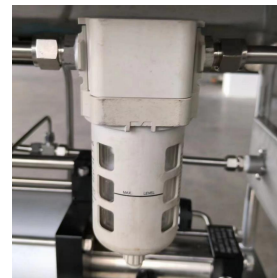
Brand:Easun;

Model:EAF4000-04 ;

Material: plastic&aluminum alloy;

Max. operation pressure: 10bar;

Connection:G1/2;



Drainage: manual drain,rotate the bottom knob to drain water when there is no pressure, and close it after the drainage is completed.

- Usage:Driven-air filter provides clean compressed air and effectively filter moisture and dust. In the compressed air.

3.3.3 Pressure Regulator (Driven-air)

Brand:Easun;

Model:EAF4000-04;

Material: plastic&aluminum alloy;

Max. operation pressure: 10bar;

Connection:G1/2;



- Usage: adjust driven-air pressure of the low pressure pump, based on the pressure to estimate maximum output pressure;

3.3.4 Driven-air Pressure Gauge

Brand:Shengdi;

Model:03820639;

Pressure range:0~16bar;

Connection: 1/4"NPT



- Usage: Display the driving air pressure value of the air-driven pump;

3.3.5 Driven-air Ball Valve

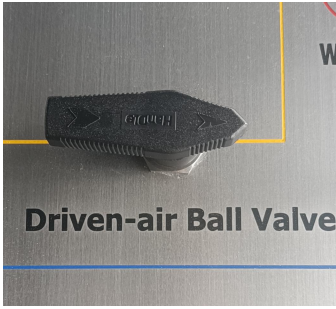
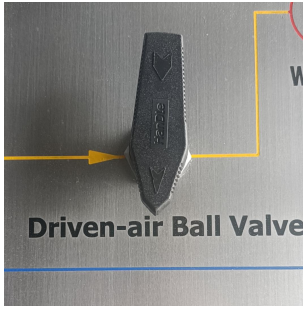
Material:316L stainless steel;

Model : BV-04OD;

Maximum working pressure: 64 bar;

Diameter: 8mm;

- Usage:Control the start and stop of the booster pump;

ON/OFF Instruction	
 <p style="text-align: center;">Driven-air Ball Valve</p>	 <p style="text-align: center;">Driven-air Ball Valve</p>
ON	OFF
The arrow on the handle of the ball valve is consistent with the arrow on the flowchart, indicating that it is open;	The arrow on the handle of the ball valve is perpendicular to the arrow on the flowchart, indicating that it is closed;

3.3.6 N2 Ball Valve

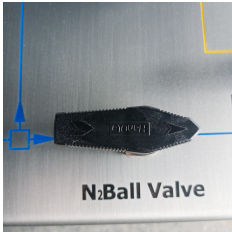
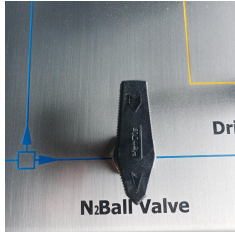
Material: 316L stainless steel;

Model : BV-04OD;

Maximum working pressure: 64 bar;

Diameter: 8mm;

- Usage: Control the start and stop of the booster pump;

ON/OFF Instruction	
 <p style="text-align: center;">N:Ball Valve</p>	 <p style="text-align: center;">N:Ball Valve</p>
ON	OFF
The arrow on the handle of the ball valve is consistent with the arrow on the flowchart, indicating that it is open;	The arrow on the handle of the ball valve is perpendicular to the arrow on the flowchart, indicating that it is closed;

3.3.7 High Pressure Needle Valve

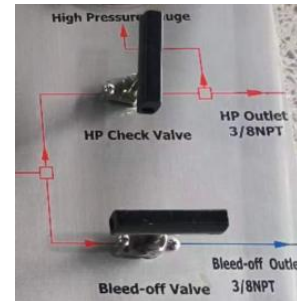
Brand:China;

Material:316L stainless steel;

Model:1/4-10000;

Max. Working pressure:10000psi;

Control:manual control,Clockwise rotation to close,
counterclockwise rotation to open;



- Usage: control the high pressure mediums inlet. It also can be used as flow controller according to needle valve open degree.

3.3.8 High Pressure Gauge

Brand:STK;

Model:YB100-60-HF4;

Range:0~600bar;

Connection:HF4;



- Usage:high pressure circuit and outlet value display;

3.3.9 Low Pressure Pipeline and Connector

Brand:JY-LOK;

Material: 316 stainless steel;

Seal: ferrule sealing;

Specification: Φ 1/2" ;

Maximum operating pressure: 64bar;

- Usage: for medium boosting inlet and driven air pipeline;

3.3.10 High Pressure Pipeline and Connector

Brand:JY-LOK;

Material:316L stainless steel;

Model:1/4;

Maximum operating pressure: 600bar;

- Usage:connecting the high pressure system and high pressure chemicals supply

3.4 Operation



WARNING

Please stay away from high-pressure outlet during equipment is using.

Turn on high pressure check valve when discharging and stay away from discharge outlet.

3.4.1 Operation Steps



NOTICE

See following table for picture Indication of serial number.

- 1) Connect the external pipelines of the equipment (drive air pipeline, nitrogen input pipeline, nitrogen inlet pressure should be within the pressure range of 30-60Bar). If there are many impurities in the gas input medium, a filter should be installed before import.The working air consumption of the pneumatic booster pump is 1m³/ Min, ensure sufficient air supply for the air compressor.

2) Check the status of each valve on the equipment. All ball valves and needle valves on the panel should be in a closed state, and the pressure indication should be displayed as 0.

3)

- a. Pull up the button ① ,then turn the button counterclockwise ②,release the self-locking of the **"Pressure Regulator"** handle,The pressure indicator should be 0 ③ .
- b. Turn on **"Driven-air Ball Valve"** ④ and **"N2 Ball Valve"** ⑤,and the booster pump will start working.
- c. Clockwise rotation the button ⑥ ,adjust the **"Pressure Regulator"**. **"Driven-air Pressure Gauge"** displays an appropriate value and the ratio of the outlet pressure and driven-air pressure of booster pump theoretical value should be 65:1. It can be adjusted according to the values, also can be set higher value to increase the efficiency of the pump .
- d. After adjustment is completed, press the button ⑦ to lock the **"Pressure Regulator"**.








4)



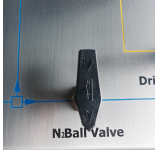


- a. Rotate counterclockwise to turn on the **"HP Check valve"** ⑧ to connect the workpiece with the equipment outlet.
- b. Observe the **" High Pressure Gauge"** valve.

5) After reaching the usage requirements, close the **"Driven-air ball Valve"** ⑨ and **"N2 Ball Valve"** ⑩ , stop the booster pump, and start the pressure maintaining operation.

6)

- a. After the pressure maintaining operation is completed, counterclockwise rotation switch ⑪ to open the **“Bleed-off Valve”**.
 - b. The **“High Pressure Gauge”** ⑫ reading is zero, indicating that the unloading is complete.
- 7) Dismantle external pipelines and restore all valves to their initial state, and complete the pressure test operation.

Section Level	Serial Number	Picture Indication
3.4.1 -3)-a	①	
3.4.1 -3)-a	②	
3.4.1 -3)-a	③	
3.4.1 -3)-b	④	
3.4.1 -3)-b	⑤	
3.4.1 -3)-c	⑥	
3.4.1 -3)-d	⑦	

3.4.1 -4)-a	⑧	
3.4.1 -5)	⑨	
3.4.1 -5)	⑩	
3.4.1 -6)-a	⑪	
3.4.1 -6)-b	⑫	



WARNING

When removing the drive-air pipeline should turn off the outlet valve of gas tank or compressor. Turn on the low-pressure pump driven valve, discharge air remaining in the compressed air line until driven-air pressure gauge indicates to 0. Then remove the air pipeline. It is hazard to remove the air pipeline directly if there is indication on driven-air pressure gauge.

During operation, pay attention to water of the air filter cup. When water more than 2/3 cup, rotate knob at the bottom of the cup to drainage, and turn off the knob to continue to work when finished.

4. Maintenance



WARNING

Cut off driven air before it's maintained.

4.1 Maintenance for Long Time Stop Using

For keep excellent operation it should take following steps:

- 1) Cut off Driven-air pipeline.
- 2) Turn off all switches in control panel .
- 3) All the outside connectors shall be sealed.
- 4) Operate the whole system for 5 min every one month to prevent sealing ring aging.
- 5) Drain the residual water in the storage tank.

4.2 Daily Maintenance



WARNING

Ensure Driven air is cut off and every pressure is unloading before its maintenance.

Maintenance should be taken by professional trainee.

4.2.1 Maintenance of Booster Pump and High-Pressure

Elements

Adopted pressurized and high-pressure elements are both kinds of high accuracy which requires inspection and maintenance by professors. Please contact us if anything wrong.

4.2.2 Maintenance of Booster Pump and High-Pressure

Elements

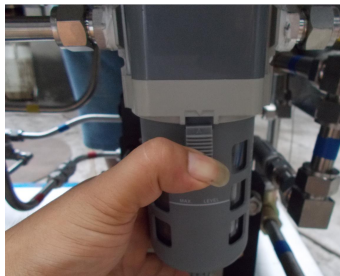
Regulator is used for output pressure adjusting. to adjust the output pressure of the elements of the device, and its main role is to come from the air compressor (gas tank) of 0.8Mpa air pressure adjusted to fit the device from the pressure regulator corresponding mechanical pressure gauge,It can display time-driven air pressure. Use, pulls out regulator adjustment handle clockwise rotation regulator handle (H logo direction), increase drive air pressure can be achieved; counterclockwise rotation of the handle (L identifies directions), enabling the drive air pressure decreases, after adjustment is completed, press regulator handle, self-locking regulator.



4.2.3 The Usage and Maintenance of Air Filter

Air filters is used to filter the impurities and water in the driven-air. It should be installed at the compressor outlet of the filter. This secondary filter filters

small impurities. If driven-air is not clean enough or after long-term use, the filter glass may have some water and impurities. When the filter stops working, water inside the cup will be automatically discharged, but the impurities should be regularly cleaned as follows:



Press this button → Rotate to this location → Remove the cup

4.2.4 Maintenance for Normal Elements

Name	Time for Inspection and Maintenance
Water inlet Filter: Open the filter and remove the filter to clean	once/ month
Air drainer: Before and during using, observe the drainage water glass whenever necessary	Drain over the water before using .During the process of using, it must be drained when water more than 2/3 cups
Panel: clean the dust	Twice/ month

Pressure gauge: send to institutes for regularly inspection	Once/ year
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Auto Drain Valve

5. Attachment 1

