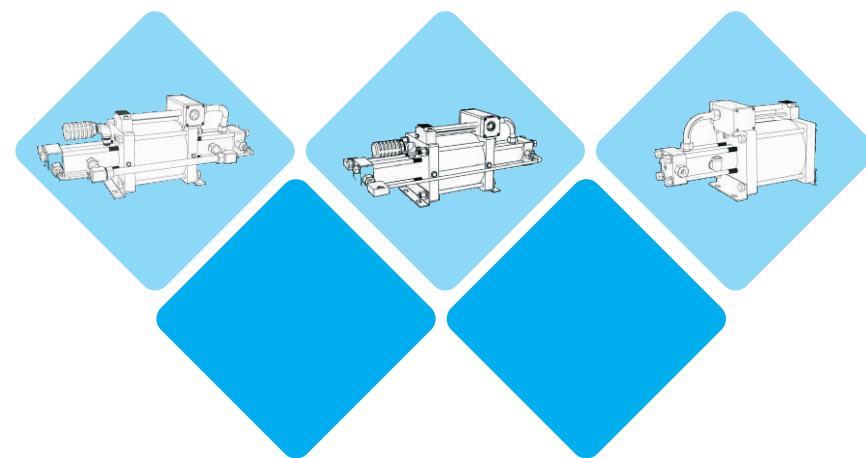


**USUN**<sup>®</sup>

# ***GAS BOOSTER MANUAL***

Operations & maintenance manual  
( 160mm driven)



## **Usun Fluid Control Equipment Co Ltd**

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# CONTENTS

1.0 Introduction .....	01
2.0 Operation Principles .....	01
3.0 Installation .....	02
4.0 Operation.....	02
5.0 Trouble shooting .....	03
6.0 Directional Valve Assembly.....	05
7.0 Impactor Assembly .....	07
8.0 Drive and High-pressure Components .....	08
9.0 Technical Parameters .....	12
10.0 Partial Break Down and Supplementary Data.....	15

## 1.0 Introduction

This installation and operation manual offers detailed informational service.

Installation and maintenance of some assemblies are similar to maintenance of pumps from other series.

Most of the information contained in this manual is applicable to all USUN Gas Booster Pumps.

## 2.0 Operation Principles

### CAUTION!

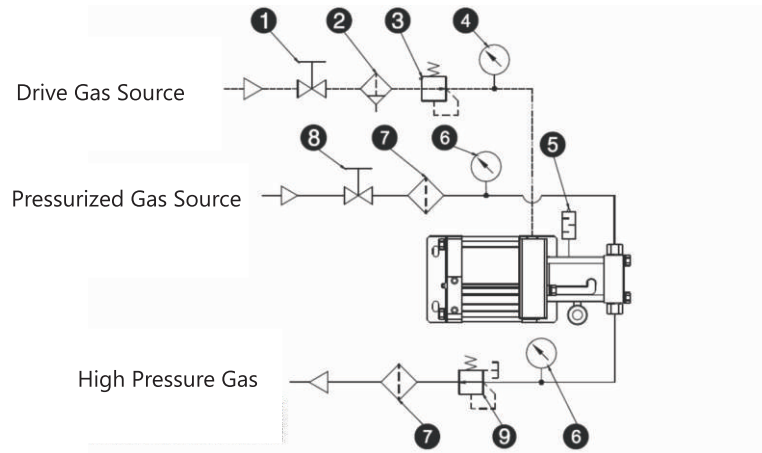
Misuse of pressurized air or gas might cause serious injuries or even death.

Adopt the following precautionary measures to minimize the risk.

- Before operation carefully read the manual
- You must wear safety goggles
- When you are adding pressure do not randomly disconnect high-pressure duct
- When you are decreasing pressure do not touch outlet of high-pressure gas duct
- Ensure that input and output pump pressure is compliant with pump's pressure rating

USUN GB Gas Booster Pump series use a single pneumatic control non-equilibrium gas distributing valve, so the pump can realize automatic reciprocating movement. It is produced entirely from aluminum alloys and stainless steel. The maximum drive pressure is 8.3 Bar. However, to ensure longer pump life, pressure  $\leq 7$ Bar is recommended. Drive piston diameter of GB series' gas booster pumps is 160 mm. All pump head components have venting and cooling functions.

Figure 1. Classic installation circuit diagram



- 1. Drive air source switch
- 2. Air filter
- 3. Air pressure regulator
- 4. Air pressure gauge
- 5. Silencer
- 6. Pressure gauge
- 7. precision filter
- 8. Needle valve
- 9. Relief valve

### 3.0 Installation

Drive pressure connection range of USUN GB Gas Booster Pump series is ( 3- 8.3Bar max).

#### CAUTION!

Modification or changes of the system (machinery, liquid gas, pneumatic, etc.) may cause harm or damage to the system and injury to operators.

### 4.0 Operation

- 4.1 Working environment must be free of dust and pests.
- 4.2 Each pressure pump is equipped with two L-shaped biponds , which means that dimensions need to be considered during installation.

### 4.3 Air source requirements

Solid particles		Pressure dew point		Maximum oil content	
Category	µm	Category	°C	Category	mg/m3
6	≤ 5	4	≤ +3	2	≤ 0.1

Category standard: ISO 8573-1

### 4.4 Gas insert

On standard drive connection (end thread dimension must be taken into account), connect drive pre-pressured medium. Oil atomizer deployed in drive inlet air lubricates pump's body (we recommend that you add VG32 turbine oil to oil atomizer. Other oils might cause accelerated wear and tear of sealing components).

### 4.5 Pipe requirements

According to output pressure, you must select pipes that can withstand maximum output pressure of the pump.

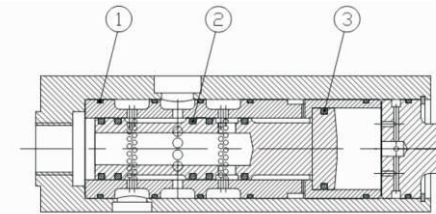
### 4.6 Activation

- a. Ensure that all joints are tightly screwed and that all components are in their designated positions.
- b. Using relief valve, adjust the pressure to 0 psi.
- c. Open inlet air switch and slowly increase the value on relief valve until you activate the pump (under usual circumstances, activation pressure of the pump is 15~43 psi), continue to adjust and observe the pressure on pressure gauge, until you reach desired pressure.

### 5.0 Trouble shooting

No.	Symptoms	Malfunction reason analysis	Solution
1	No reciprocating movement in pump, silencer does not vent the air or in small amount	1. Stuck directional valve 2. Clogged silencer	1. Disassemble stuck directional valve spring, and extract directional valve core, clean dirt, apply appropriate amount of lubricant. 2. Disassemble silencer, clean.
2	No reciprocating movement in pump, silencer vents excessive amount of air	O-ring of directional valve core is seriously worn	Extract stuck directional valve ring, use new sealing component to replace damaged sealing component, apply appropriate amount of lubricant and install
3	Pump movement, process is irregular, pump often abnormally accelerates or abnormally decelerates	1. Stuck impactor 2. O-ring impactor detached	1. Unscrew impactor, use cutting pliers to take out impactor and wipe it clean. 2. Unscrew impactor, return O-ring to starting position
4	Pump movement normal, no increased pressure or might increase pressure, but increased pressure does not reach rated pressure.	1. Stuck check valve or check valve has foreign matter in it. 2. Sealing components of pressurizing piston are seriously worn.	1. Inspect single directional valve, clean dirt 2. Remove stuck check valve and replace pressuring piston sealing component.

## 6.0 Directional Valve Assembly



NO.	Name	Dimension(mm) internal diameter*wire diameter	Qty
1	O-ring	ID38.5x1.8	6
2	O-ring	ID19.8x2.65	5
3	O-ring	ID28x2.65	1



Actual appearance

### 6.1 Directional valve assembly

Maintenance , disassembly and explanation of pneumatic directional valve as follows

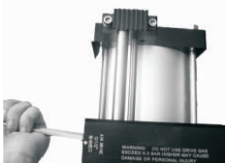


#### CAUTION!

1. During disassembly and installation process , you must first ensure ensure that drive air source is disconnected , and only then perform the operations described below. otherwise there is a risk of injury or damage.
2. During disassembly and installation , you must be careful to keep note of the sealing rings position . All parts must be kept clean and without damage . Where metal and sealing rings are in contact there must be appropriate silicone used.

Figure 6-1

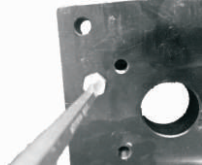

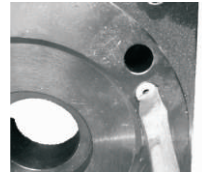

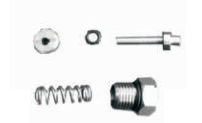


Use circlip pliers to remove 40 ring

<p><b>Figure 6-2</b></p>		<p>Use screwdriver to go through gas inlet . Gently push valve lid and extract valve core and plane in a clean place.</p>																								
<p><b>Figure 6-3</b></p>		<p>Use external pliers to stop the internal part of valve sleeve . Gently extract it and place in a clean place . sleeve , unless you are replacing the valve core's seal.</p>																								
<p><b>Figure 6-4</b></p>		<p>Manually extract the sealing ring of the valve core's sleeve</p>																								
<p><b>Figure 6-5</b></p>	<p>Direction Valve components</p> <table border="1" data-bbox="312 1078 929 1390"> <thead> <tr> <th>No.</th> <th>Name</th> <th>Dimensions</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Valve sleeve</td> <td></td> </tr> <tr> <td>2</td> <td>Valve core</td> <td></td> </tr> <tr> <td>3</td> <td>Valve lid</td> <td></td> </tr> <tr> <td>4</td> <td>Shield Ring</td> <td></td> </tr> <tr> <td>5</td> <td>O-ring</td> <td>O-ring-19.8x2.65</td> </tr> <tr> <td>6</td> <td>O-ring</td> <td>O-ring-28x2.65</td> </tr> <tr> <td>7</td> <td>O-ring</td> <td>O-ring-36.5x1.8</td> </tr> </tbody> </table>		No.	Name	Dimensions	1	Valve sleeve		2	Valve core		3	Valve lid		4	Shield Ring		5	O-ring	O-ring-19.8x2.65	6	O-ring	O-ring-28x2.65	7	O-ring	O-ring-36.5x1.8
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6	O-ring	O-ring-28x2.65																								
7	O-ring	O-ring-36.5x1.8																								

## 7.0 Impactor Assembly

Maintenance ,Disassembly and explanation of impactor is as follows

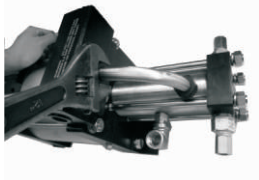


<p><b>Figure 7-1</b></p>		<p>Use a Spanner or slotted screwdriver to remove the Nut as shown . Inspect O-ring on Nut for damage</p>
<p><b>Figure 7-2</b></p>		<p>As shown in figure , First Extract Pressurized Spring and then from the back push out impactor or use sharp pliers and pull impactor Out .</p>
<p><b>Figure 7-3</b></p>		<p>Use slotted Screwdriver to disassemble guide sleeve And remove guide sleeve .</p>
<p><b>Figure 7-4</b></p>		<p>Extract the seal on the bottom of guide sleeve as shown. Clean sealed groove , inspect and replace sealing ring if it is damaged .</p>
<p><b>Figure 7-5</b></p>		<p>After removing all the components , clean sealing groove and all components and inspect seals for damage.</p>

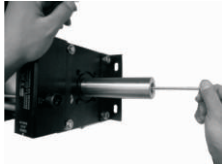
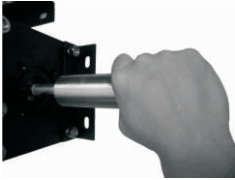
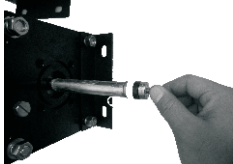



Direction Valve components

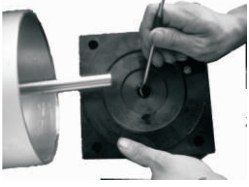
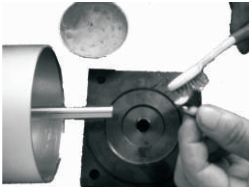




No.	Name	Dimensions	Qty
1	Guide Sleeve		1
2	O ring	D4X1.8	1
3	Impactor		1
4	O ring	D5.6X1.8-90°	1
5	Pressurizing Spring	D7XCS1x25-8.5	1
6	O ring	D11.8x1.8	1
7	Impactor Nut		1

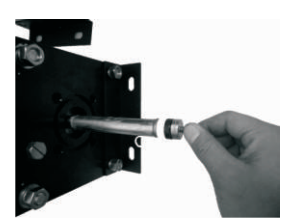
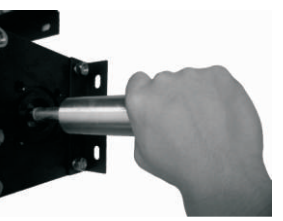
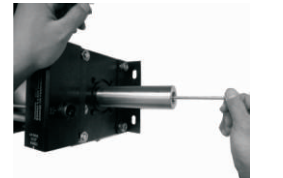


## 8.0 Drive and Pressurized Components

### 8.1 Disassembly procedure

	Use adjustable spanner to remove connecting nut from distribution pipe of directional valve. Inner part of Nut has 2 PCS D15X2.65 Sealing rings .
	Use spanner to remove M12 Nut from High pressure cylinder head bar . Extract high pressure cylinder head and four pieces Bars . High pressure cylinder head has 1 sealing ring.
	Extract high pressure cooling sleeve ,Both heads of cooling sleeve have Sealing ring With size of D38.7X1.8 .

	Use M6 inner Hex to loosen tightened M6 screw on high pressure piston.
	Manually Maintain Parallel direction ,Steadily pull out High pressure cylinder to ensure that no sharp objects touch inner walls of high pressure cylinder.
	Manually remove M6 Screw ,Extract high pressure guide sleeve , High pressure seals and support pad.
	High pressure assembly has: Support pad 1, High pressure seal 1 , High pressure guide sleeve 1, Inner hex screw 1.
	Use spanner 19 to manually remove two screws fastening drive Terminal sleeve And extract stand and bar.
	Remove gas distribution block and gas pipe and use rubber hammer to hit cover Edges to remove left and right side cover. ( Both ends of gas pipe and gas distribution block have O rings )

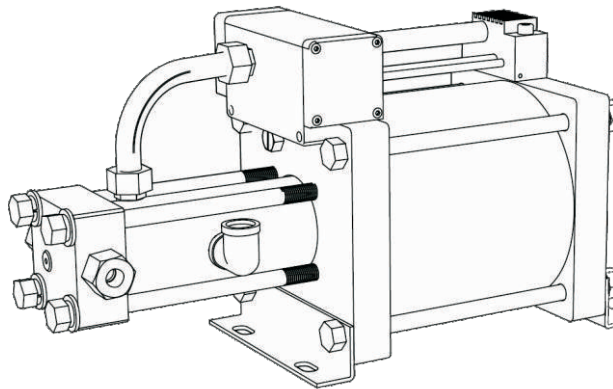
	<p>Use a tool to extract bearing seals in cover .You can first remove slip ring from Bearing Seal and then extract O ring and clean sealing Groove .</p>
	<p>Clean bearing seal and apply Lubricant, Fit in left and right covers . First , Install O-ring seal into sealing groove and then install slip Ring Groove 2,072 bearing seals does not have to be installed without direction separation.</p>
	<p>Install left and right cover : First Put cylinder pole into right cover and after installing drive piston and install drive cylinder tube. ( Drive cylinder tube can be assembled with driven piston under 45 angle )</p>
	<p>Install gas distribution pipe : before installation , gas pipes sealing rings are divided into D11.2X2.65 1 And D6.9x1.8 1</p>
	<p>Use M8 inner hex spanner to manually tighten distribution block . As much as possible press distribution block into directional valve end and tighten Screws .</p>
	<p>First ,clean all components and partially apply lubricant on seals .</p>

	<p>Install High pressure seals in the following order : Support pad , high pressure seal , High pressure sleeve, Inner-hex screw . This procedure does not require screw to be tightened.(High pressure seal can be first installed with base and then O-ring ) .</p>
	<p>Apply Lubricant on the inner parts of High pressure cylinder and in the same direction of plane install High pressure cylinder .( Be carefully of the direction of High pressure cylinder ,parts that match the front part of cylinder body are the correct installation direction)</p>
	<p>Use M6 Hex spanner to tighten fastening screw on the outside part of High pressure piston.</p>
	<p>Install cooling jacket and bar ( Groove in bottom of cooling sleeve end has sealing Ring D38.7x1.8)</p>
	<p>Install High pressure cylinder head ( Put high pressure cylinder head into matching high pressure cylinder and cooling sleeve and use spanner to tighten fastened high pressure cylinder head screw and connect nut onto gas pipe of directional valve )</p>

**9.0** Technical data for GB ,GBD,GBT serial gas booster

**GB Series - Single Acting Single Stage Gas Boosters**

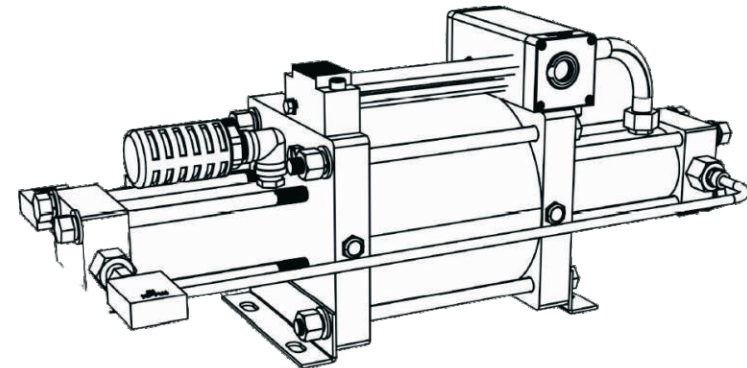
GB Series Technical Data



Model	Displacement		Gas Piston	Minimum Gas	maximum Gas Po Formula	Gas	Gas	Flow(where	
	Actual	Per Cycle	Diameter	Inlet Pressure	Outlet Pressure (where Pa=air	Inlet	Outlet	Pa = 7 Bar)	
	Ratio	-ml	-mm	(Pi)-Bar	(Po)- Bar	drive pressure)		- NL/min	
GB02T	2.5:1	804	100	0	16.6	2.5Pa+Pi	NPT1/2"	NPT1/2"	520@Pi=7
GB04	4:1	402	80	1.2	33.2	4Pa	NPT1/2"	NPT1/2"	354@Pi=7
GB05T	5:1	321	80	1.7	41.5	4Pa+Pi	NPT1/2"	NPT1/2"	572@Pi=7
GB07	7:1	344	63	3.4	58.1	7Pa	NPT3/8"	NPT3/8"	252@Pi=7
GB08T	8:1	201	63	3.4	66.4	7Pa+Pi	NPT3/8"	NPT3/8"	362@Pi=7
GB10	10:1	241	50	6.5	83	10Pa	NPT3/8"	NPT3/8"	196@Pi=7
GB15	15:1	160	40	8.1	124.5	15Pa	NPT3/8"	NPT3/8"	164@Pi=10
GB25	25:1	96	32	15	207.5	25Pa	NPT1/4"	NPT1/4"	114@Pi=20
GB30	32:1	80	28	18	265.6	32Pa	NPT1/4"	NPT1/4"	91@Pi=20
GB40	40:1	60	25	25	332	40Pa	NPT1/4"	NPT1/4"	156@Pi=40
GB60	60:1	40	20	32	498	60Pa	NPT1/4"	NPT1/4"	112@Pi=40
GB100	100:1	24	16	40	830	100Pa	NPT1/4"	NPT1/4"	65@Pi=40

**GBD Series - Double Acting Single Stage Gas Boosters**

GBD Series Technical Data

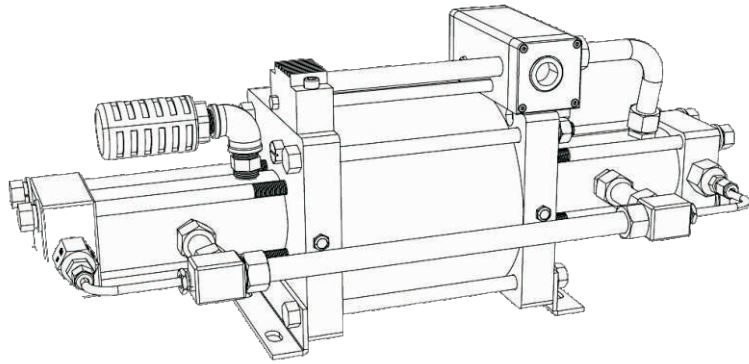


Model	Displacement		Gas Piston	Minimum Gas	maximum Gas Po Formula	Gas	Gas	Flow(where	
	Actual	Per Cycle	Diameter	Inlet Pressure	Outlet Pressure (where Pa=air	Inlet	Outlet	Pa = 7 Bar)	
	Ratio	-ml	-mm	(Pi)-Bar	(Po)- Bar	drive pressure)		- NL/min	
GBD07	7:1	689	63	3.4	58	7Pa+Pi	NPT3/8"	NPT3/8"	392@Pi=7
GBD10	10:1	482	50	6.5	83	10Pa+Pi	NPT3/8"	NPT3/8"	352@Pi=7
GBD15	15:1	321	40	8.1	124.5	15Pa+Pi	NPT3/8"	NPT3/8"	289@Pi=10
GBD25	25:1	193	32	15	207.5	25Pa+Pi	NPT1/4"	NPT1/4"	186@Pi=20
GBD30	32:1	160	28	18	265.6	32Pa+Pi	NPT1/4"	NPT1/4"	165@Pi=20
GBD40	40:1	120	25	25	332	40Pa+Pi	NPT1/4"	NPT1/4"	273@Pi=40
GBD60	60:1	80	20	32	498	60Pa+Pi	NPT1/4"	NPT1/4"	175@Pi=40
GBD100	100:1	48	16	40	830	100Pa+Pi	NPT1/4"	NPT1/4"	136@Pi=60



## GBT Series - Two Stage SINGLE ACTION Gas Boosters

### GBT Series Technical Data



Model	Displacement		Gas Piston	Max gas	Max gas	Max gas	Po Formula	Gas	Gas	Flow(when
	Actual	Per Cycle	Diameter	Inlet Pressure	Inlet Pressure	Outlet Pressure	(where Pa=air	Inlet	Outlet	Pa = 7 Bar)
	Ratio	-ml	-mm	(Pi)- Bar	(Pi)- Bar	(Po)- Bar	drive pressure)			- NL/min
GBT7/15	15:1	344	63/40	3.4	12	124.5	15Pa+2Pi	NPT3/8"	NPT3/8"	215@Pi=7
GBT7/30	32:1	324	63/28	3.4	14	249	32Pa+3Pi	NPT3/8"	NPT1/4"	118@Pi=7
GBT15/30	32:1	160	40/28	7	63	249	32Pa+2Pi	NPT3/8"	NPT1/4"	156@Pi=10
GBT15/40	40:1	160	40/25	7	68	332	40Pa+2.5Pi	NPT3/8"	NPT1/4"	125@Pi=10
GBT15/60	60:1	160	40/20	7	25	498	60Pa+4Pi	NPT3/8"	NPT1/4"	92@Pi=10
GBT15/100	100:1	160	40/16	7	45	800	100Pa+4Pi	NPT1/4"	NPT1/4"	50@Pi=10
GBT30/60	60:1	80	28/20	30	48	498	60Pa+2Pi	NPT1/4"	NPT1/4"	245@Pi=40
GBT30/100	100:1	80	28/16	30	165	830	100Pa+3Pi	NPT1/4"	NPT1/4"	192@Pi=40

The maximum acceptable air drive pressure (Pa) is 8.3 Bar. To avoid inter-stage stall. Full outlet pressure can pass through the booster. All dimensions are in mm unless otherwise stated.

- ★ Oxygen gas service add "OL" after the model codes,
- ★ Hydrogen gas service add "H<sub>2</sub>" after the model code
- ★ CO<sub>2</sub> gas service add "CO<sub>2</sub>" after the model codes.

## 9.1 Transport and storage

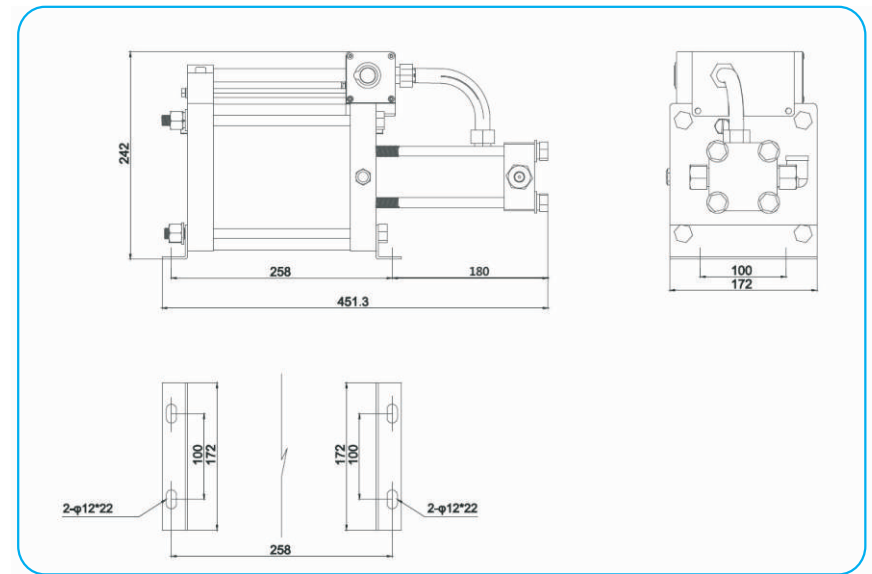
USUN products are precision machinery equipment and during transport they must be appropriately fastened, Tilting is strictly prohibited, please gently lift and put down, do not turn upside down.

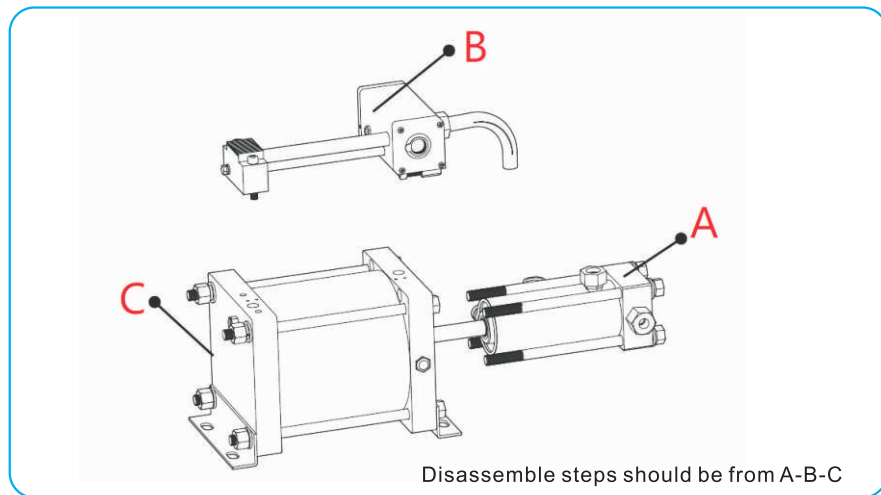
- When storing please protection against moisture, rust and dust.
- When stored, do not tilt or stack on other products.

## 10.0 Partial break down and supplementary data

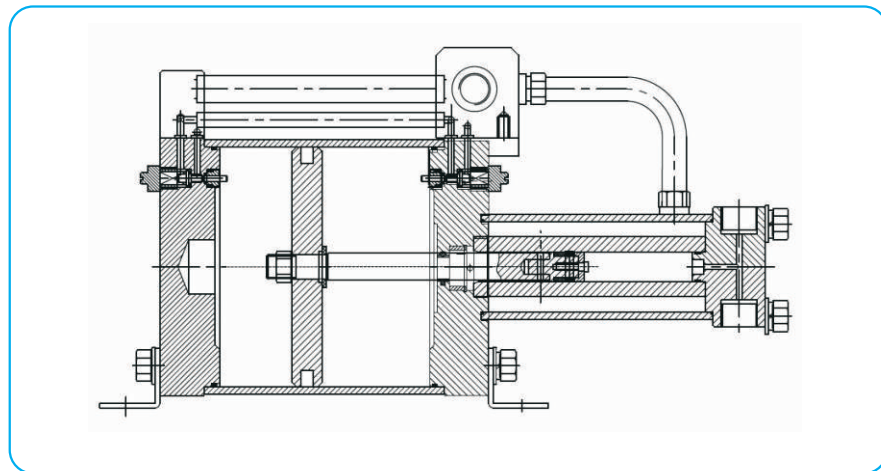
### 10.1 Outside view

#### GB serial gas booster Outline drawing





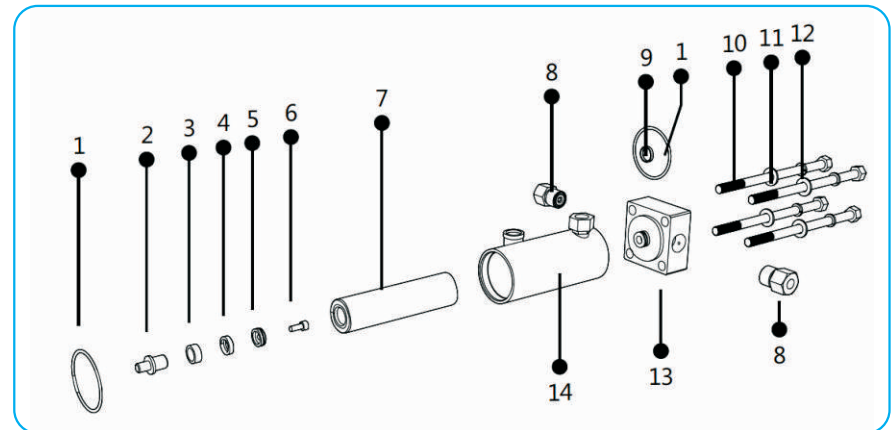
Disassemble steps should be from A-B-C



**GB serial Gas booster Main Components**

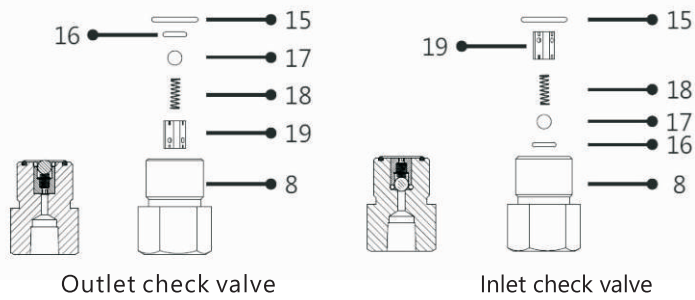
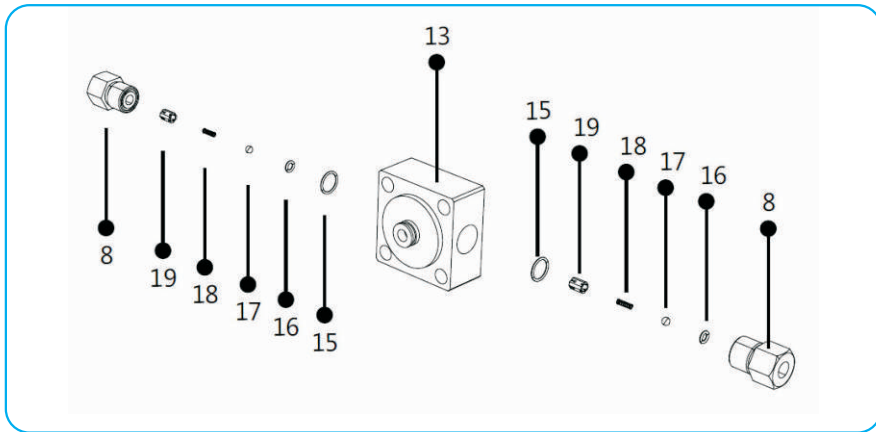
Part Code	Part name	Unit	Quantity	Remark
A	High pressure components	Set	1	Should check each part carefully before repairing it
B	Air cycling valve components	Set	1	
C	Air driven components	Set	1	

**GB exploded view**



**High pressure components item list**

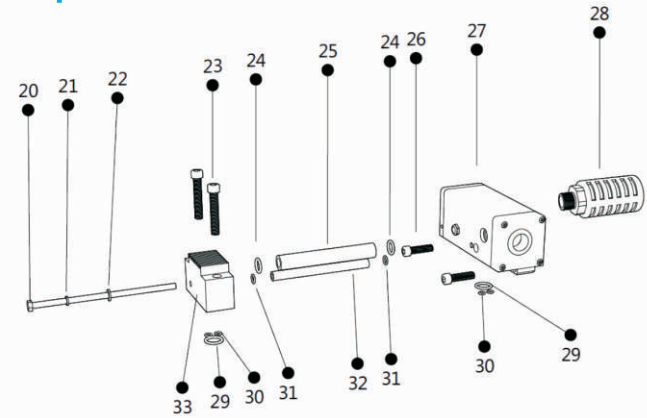
number	Serial code	Part name	Unit	Quantity	Remark
1	OXQ50*1.8	O ring seals	PC	2	* Easy broken seals
2	HT020033-001	High pressure piston	PC	1	
3	VF020014-002	High pressure Guide Ring	PC	1	* Easy broken seals, size will change base on different models
4	GYF053-25-HNBR-90	High pressure seals	PC	1	
5	OT025007-001	High pressure bronze Sleeve	PC	1	
6	NL J6*20	Inner hexagon Bolt	PC	1	
7	AHO25155-001	High pressure cylinder	PC	1	
8	VB2702-NPT	NPT check valve body	PC	2	
9	SBDQ21*25*2.8	SBD O ring	PC	1	* This size suits for Model: GB40, size will change base on different models
10	WLJ12*210(304)	Outer hexagon bolt	PC	4	
11	PD12	Flat washer	PC	4	
12	TD12	Spring washer	PC	4	
13	CH080050-001	High pressure cylinder cap	PC	1	
14	CJ060155-001-L	Cooling Jacket	PC	1	



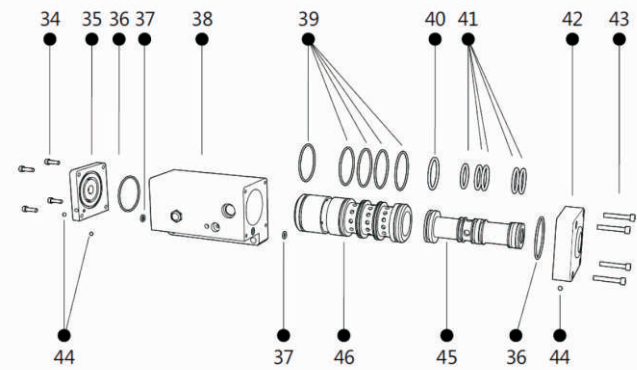
**GB serial Check valve components list**

Item number	Serial code	Part name	Unit	Quantity	Remark
15	OXQ15*1.8-90°	O ring seals	PC	2	*Easy broken seals , size suits for 40:1 /60:1/100:1 ratio Size will change for low ratio models ( Such as15:1,10:1 and 5:1 etc)
16	OXQ5*2-90°	O ring seals	PC	2	*Easy broken seals ,size will change same as item 15
17	TCOD5.953	Ceramic ball	PC	2	
18	YSTH1/4	Pressurized spring	PC	2	* Easy broken seals , size will change same as item 15
19	VS2702-002	1/4 valve core	PC	2	

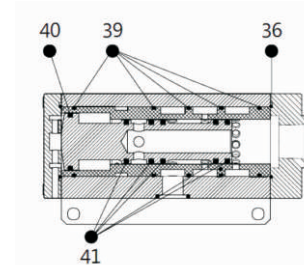
**GB exploded view**



Air cycling valve with gas distribution block

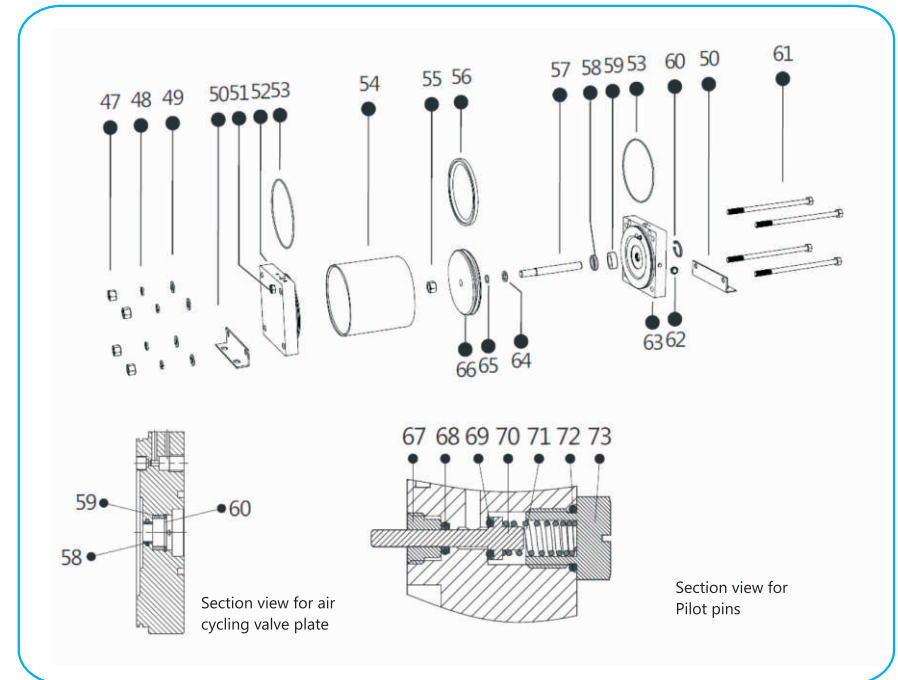


Air cycling valve with break parts



**GB serial 1/2" size Air Cycling valve components list**

number	Serial code	Part name	Unit	Quantity	Remark
20	WLJ6*150(304)	Outer hexagon bolt	PC	1	
21	TD6	Spring washer	PC	1	
22	PD6	Flat washer	PC	1	
23	NLJ 8*40	Inner hexagon bolt	PC	2	
24	O rings	O rings	PC	2	*Easy to get broken
25	G0020	Steel tube	PC	2	
26	NLJ8*30	Inner hexagon bolt	PC	2	
27	VA040120	1/2" air cycling valve set	Set	1	
28	XYO12-HB	Black voice muffler	PC	1	
29	OXQ15*2.65	O rings	PC	2	*Easy to get broken
30	OXQ4.5*1.8	O rings	PC	4	*Easy to get broken & Easy to get broken
31	OXQ6.9*1.8	O rings	PC	2	
32	G0019	Metal tube	PC	1	
33	DBO75045-001	Air distribution block	PC	1	
34	NUJ4*16(304)	Inner hexagon bolt	PC	4	
35	VCO40120-001	Valve cap	PC	1	
36	OXQ40*1.8	O rings	PC	2	*Easy to get broken parts
37	OXQ4.5*1.8	O rings	PC	2	*Easy to get broken parts
38	VBO40120-001	1/2" valve body	PC	1	
39	OXQ36.5*1.8	O rings	PC	5	*Easy to get broken
40	OXQ28*2.65	O rings	PC	1	*Easy to get broken
41	OXQ20*2.65	O rings	PC	5	*Easy to get broken
42	VCO40120-002	Valve cap	PC	1	
43	NLJ4*20	Inner hexagon bolt	PC	4	
44	304GQ4	Steel tube	PC	3	
45	VS040120-001	1/2" valve core	PC	1	
46	VEO40120-001	1/2" valve sleeve	PC	1	



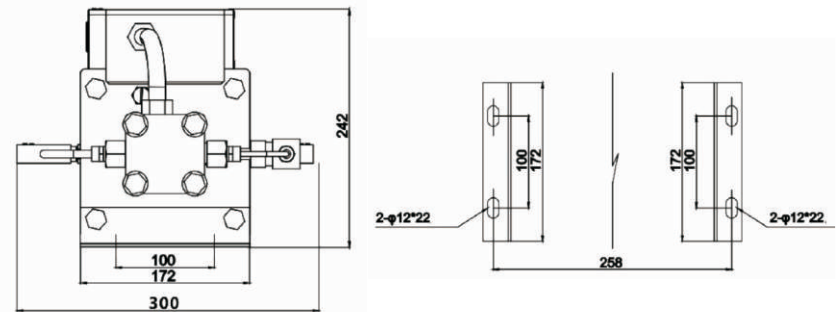
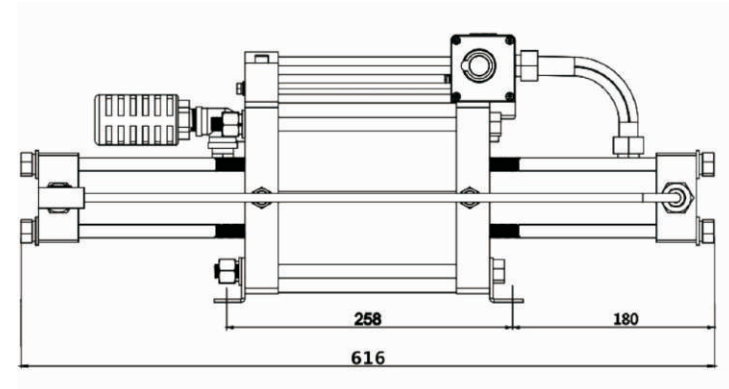
**GB serial Air driven part components list**

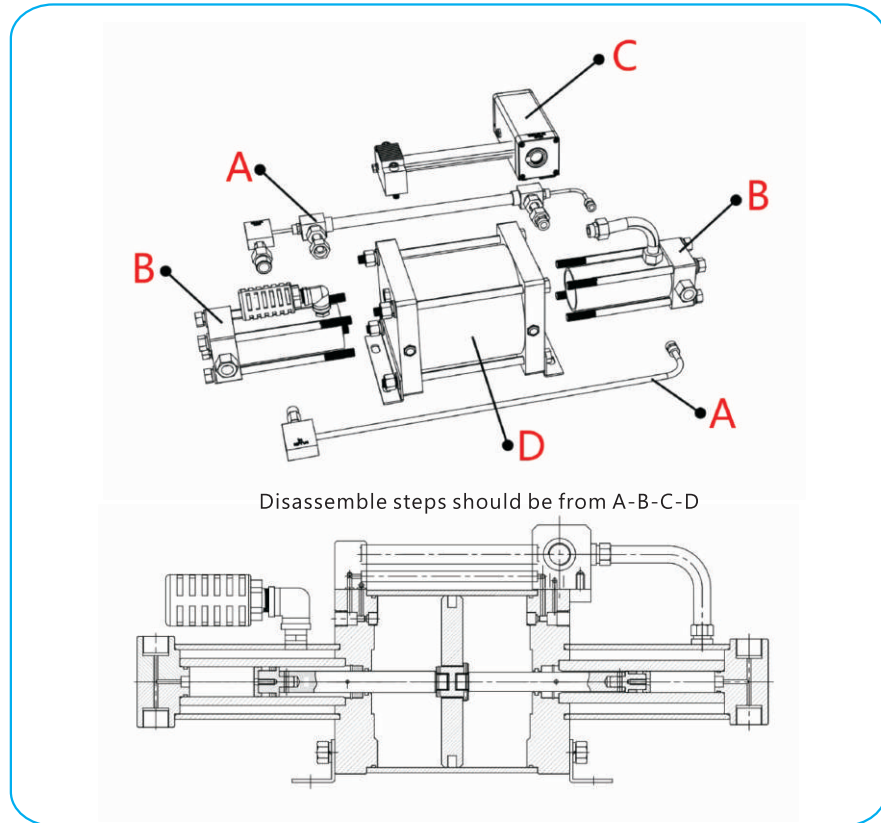
number	Serial code	Part name	Unit	Quantity	Remark
47	LM12	Gland	PC	4	
48	TD12	Spring washer	PC	4	
49	PD12	Flat washer	PC	4	
50	HL160-001	Black bracket	PC	2	
51	FP1000	Pilot pins set	PC	1	
52	CF160040-001	160 Blind cap	PC	1	
53	OXQ152*2.65	O rings	PC	2	
54	AL160160-001	Driving cylinder	PC	1	
55	LM16	Nuts	PC	1	
56	GLD160	GLD Rings	PC	1	# Easy to get broken

**GB Air driven part components list**

number	Serial code	Part name	Unit	Quantity	Remark
57	PR020189-001	Piston rod	PC	1	
58	ZFO72-20	Shaft seals	PC	1	
59	VFO30014-001	&30 Guide ring	PC	1	
60	KY30	Hole Circlip	PC	1	
61	WLJ12*200( 304 )	Outer hexagon bolt	PC	1	
62	XYQ1/8"-HT	Bronze voice muffler	PC	2	
63	CB160040-002	Drive cylinder cap	PC	2	
64	VFO25016-001	Piston washer	PC	1	
65	OXQ15*2.65	O rings	PC	1	# Easy to get broken
66	PT160020-001	Driving piston	PC	1	
67	FP1000-003	Pilot sleeve	PC	1	
68	OXQ4.0*1.8	O rings	PC	2	# Easy to get broken
69	OXQ5.6*1.8-90°	O rings	PC	2	# Easy to get broken
70	FP1000-002	Pilot pins	PC	2	# Easy to get broken
71	YSTHD7	Spriing	PC	2	# Easy to get broken
72	OXQ11.8*1.8	O rings	PC	1	
73	FP1000-004	Pilot Gland	PC	2	

**10.2 GBD serial Double head gas booster Outline drawing**



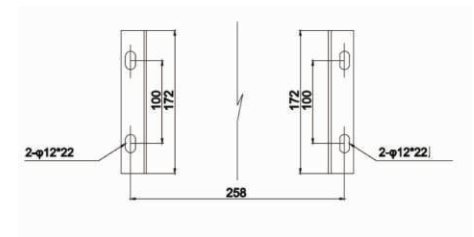
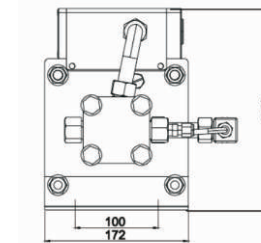
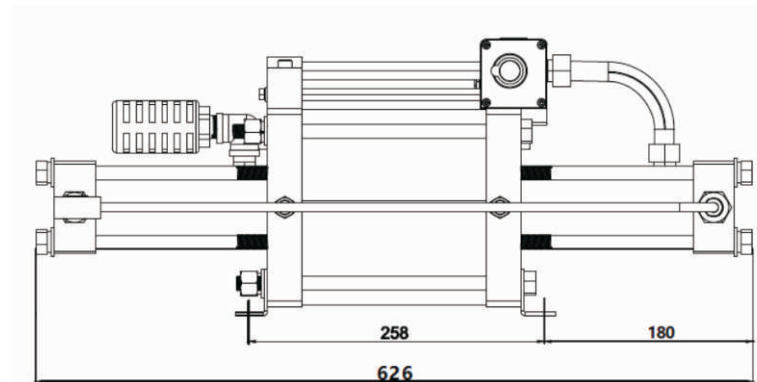


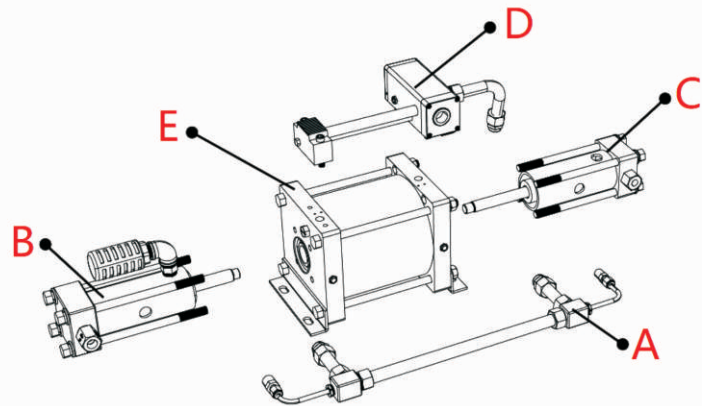
**GBD Double Head Gas booster Main Assembly parts**

number	Part name	Unit	Quantity	Remark
A	Inlet & outlet connection pipes and Cooling pipe	Set	1	Should check each part carefully before repairing it
B	High pressure assembly	Set	1	
C	Directional valve and gas distribution block	Set	1	
D	Air driven assembly	Set	1	

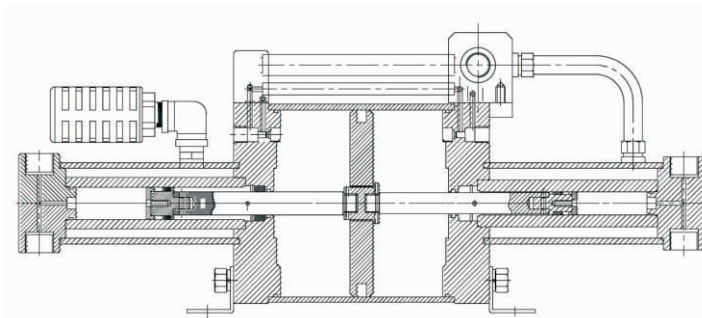
★ A , B , C , D Gas booster assembly parts are exactly same as GB serial . Just double the A,B quantities . ( Two A, Two B )See page 17-22

**10.3 GBT serial Two stage gas booster Outline drawing**





Disassemble steps should be from A-B-C-D-E

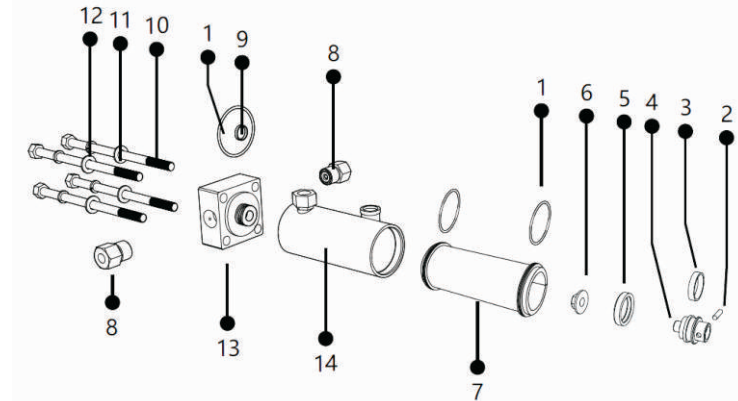


**GBT Gas booster Main Assembly parts**

number	Part name	Unit	Quantity	Remark
A	Inlet & outlet connection pipes and Cooling pipe	Set	1	Should check each part carefully before repairing it
B	First stage High pressure assembly	Set	1	
C	Second stage high pressure assembly	Set	1	
D	Directional valve and gas distribution block	Set	1	
E	Air driven assembly	Set	1	

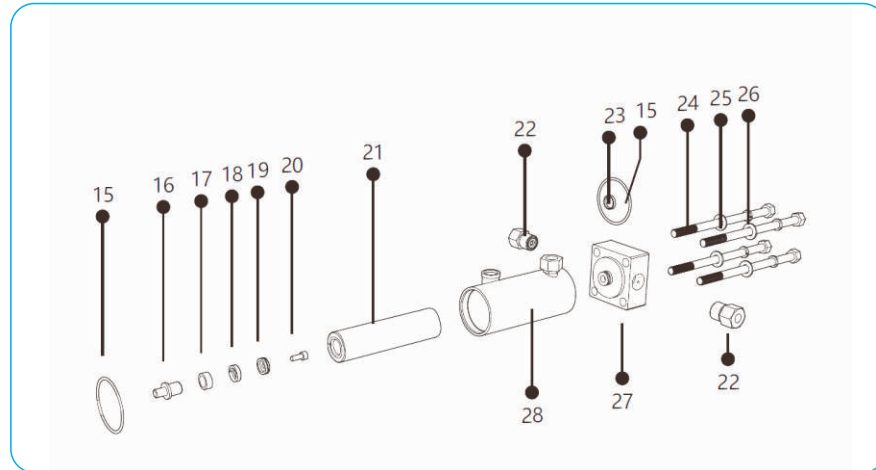
★ D,E gas booster assembly parts are same as GB serial . See page 19-22

**10.2 GBT serial gas booster Outline drawing**



**First stage High pressure assembly parts**

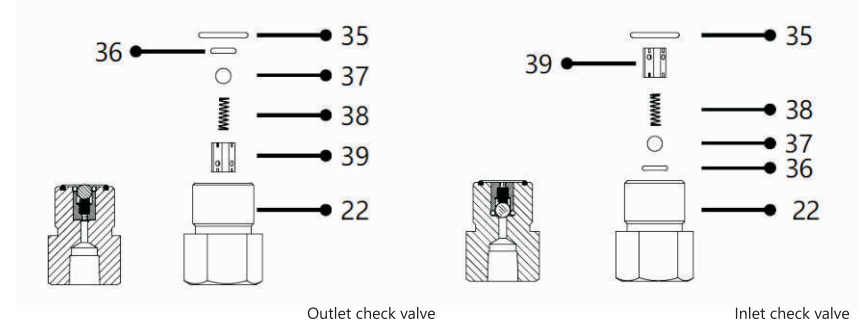
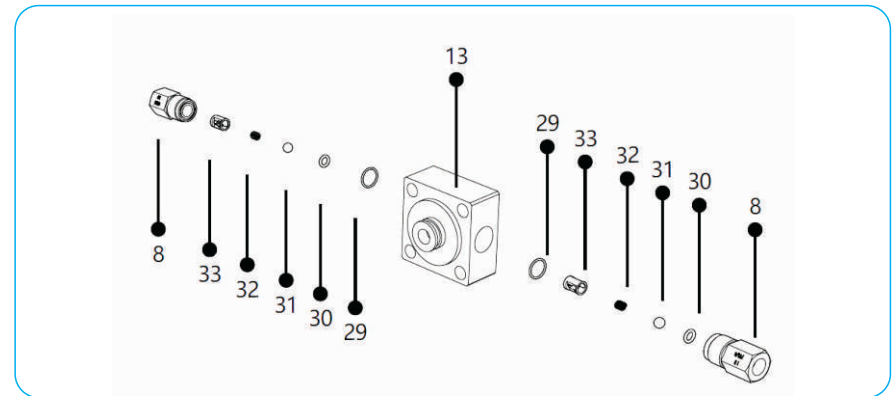
number	Serial code	Part name	Unit	Quantity	Remark
1	OXQ50*1.8	O ring seals	PC	2	* Easy broken seals
2	TXX 6*28	Spring pin	PC	1	
3	VFO40035-001	High pressure Guide Ring	PC	1	* Easy broken seals ,size will change base on different models
4	HTO40050-001	High pressure piston	PC	1	
5	GYF053-40	High pressure seals	PC	1	* Easy broken seals ,size will change base on different models (Size suits for Model:GBT15/60)
6	OT039013-001	Metal nuts	PC	1	
7	AHO40155-001	High pressure cylinder	PC	1	
8	VB2702-NPT	3/8 "check valve body	PC	2	
9	OXQ35*2.65-90-HNBR	O rings	PC	1	* This size suits for Model: GBT 15/60 ,size will change base on different models
10	WLJ12*210(304)	Outer hexagon bolt	PC	4	
11	PD12	Flat washer	PC	4	
12	TD12	Spring washer	PC	4	
13	CH080050-002	High pressure cylinder cap	PC	1	
14	CJ060155-002-L	Left Cooling Jacket	PC	1	



Second stage High pressure assembly parts

number	Serial code	Part name	Unit	Quantity	Remark
15	OXQ50*1.8	O ring seals	PC	2	* Easy broken seals
16	HT020033-001	High pressure piston	PC	1	
17	VFO20014-001	High pressure Guide Ring	PC	1	* Easy broken seals, size will change base on different models
18	GYFO53-20-PU-90	High pressure seals	PC	1	* Easy broken seals, size will change base on different models
19	OTO20006-001	Bronze sleeve	PC	1	
20	NIU6*16	Inner hexagon bolt	PC	1	
21	AHO20155-001	High pressure cylinder	PC	1	
22	VB2702-NPT	1/4"check valve body	PC	1	* Easy broken seals
23	SBDQ17.5*20*3	SBD O Ring	PC		
24	WLJ12*210(304)	Outer hexagon bolt	PC	4	
25	PD12	Flat washer	PC	4	
26	TD12	Spring washer	PC	4	
27	CH080050-001	High pressure cylinder cap	PC	1	
28	CJ060155-002-L	Right Cooling Jacket	PC	1	

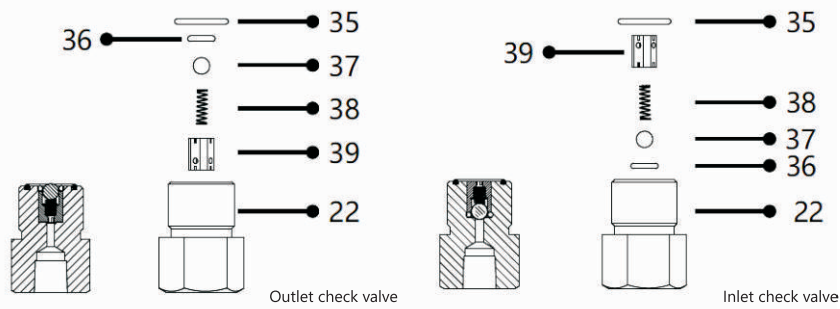
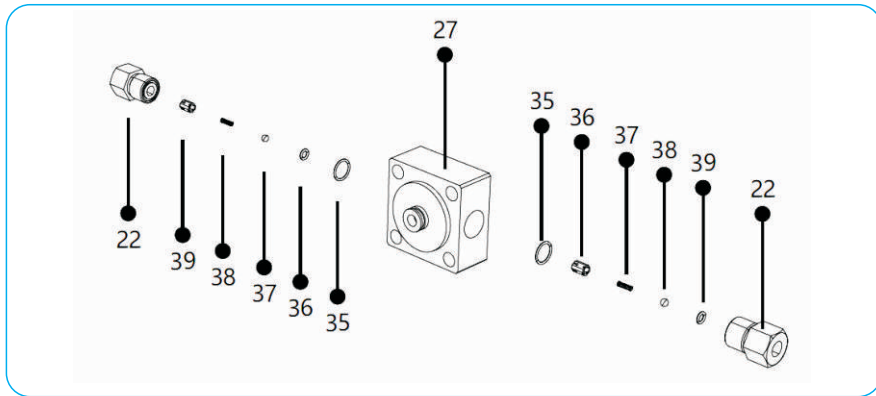
10.3 GBT serial gas booster Outline drawing



First stage Check valve components list

Item number	Serial code	Part name	Unit	Quantity	Remark
29	OXQ18*1.8-90°	O ring seals	PC	2	* Easy broken seals, size will change for different ratios
30	OXQ8*2.65-90°-H	O ring seals	PC	2	* Easy broken seals, size will change for different ratios
31	304GQ10	Metal Ball	PC	2	
32	YSTHD7.6	Pressurized spring	PC	2	* Easy broken parts
33	VS2703-001	3/8 valve core	PC	2	
34	YSTHD8	Pressurized spring	PC	1	* Easy broken parts





**Second stage Check valve components list**

Item number	Serial code	Part name	Unit	Quantity	Remark
35	OXQ15*1.8-90°	O ring seals	PC	2	* Easy broken seals , Size will change for different ratios
36	OXQ5*2-90°	O ring seals	PC	2	* Easy broken seals , size will change for different ratios
37	TCQD5.953	White ceramic ball	PC	2	
38	YSTH1/4	Pressurized spring	PC	2	* Easy broken parts
39	VS2702-002	1/4 valve core	PC	2	