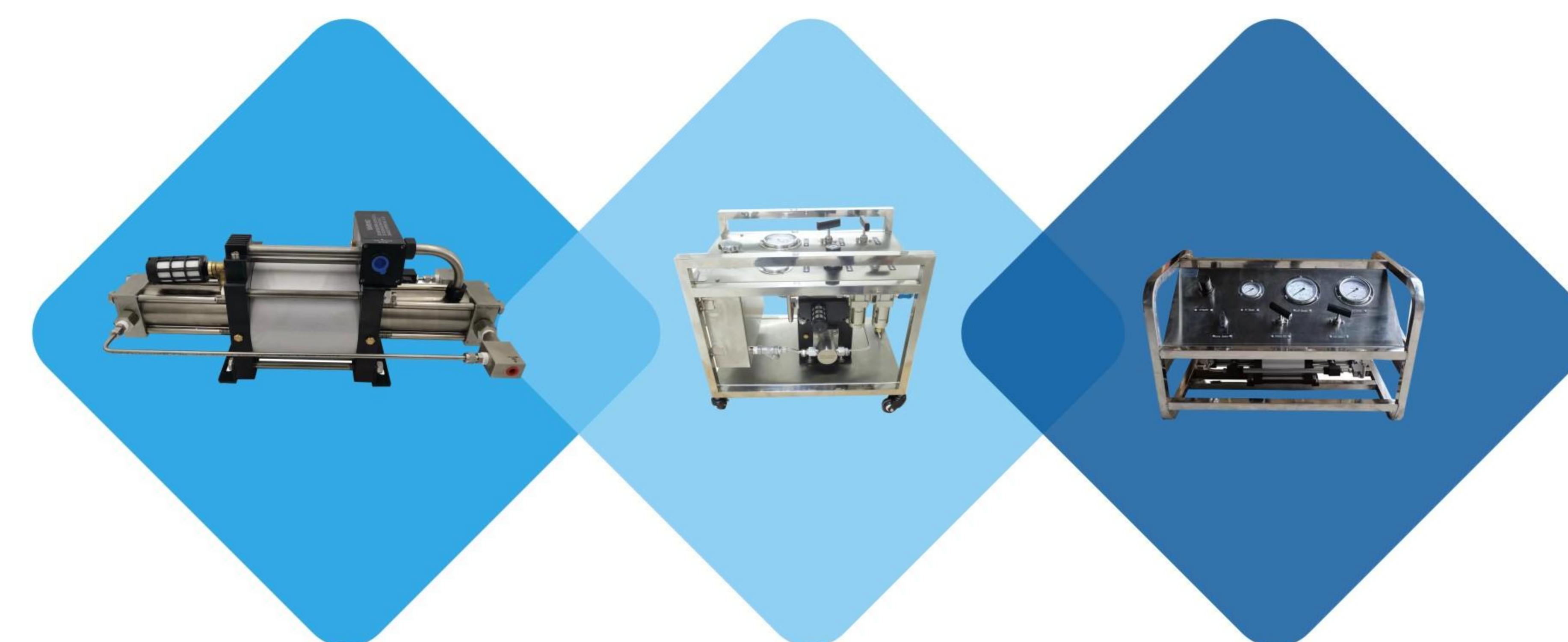


USUN[®]

DONGGUAN

USUN FLUID CONTROL EQUIPMENT CO LTD



USUN[®]

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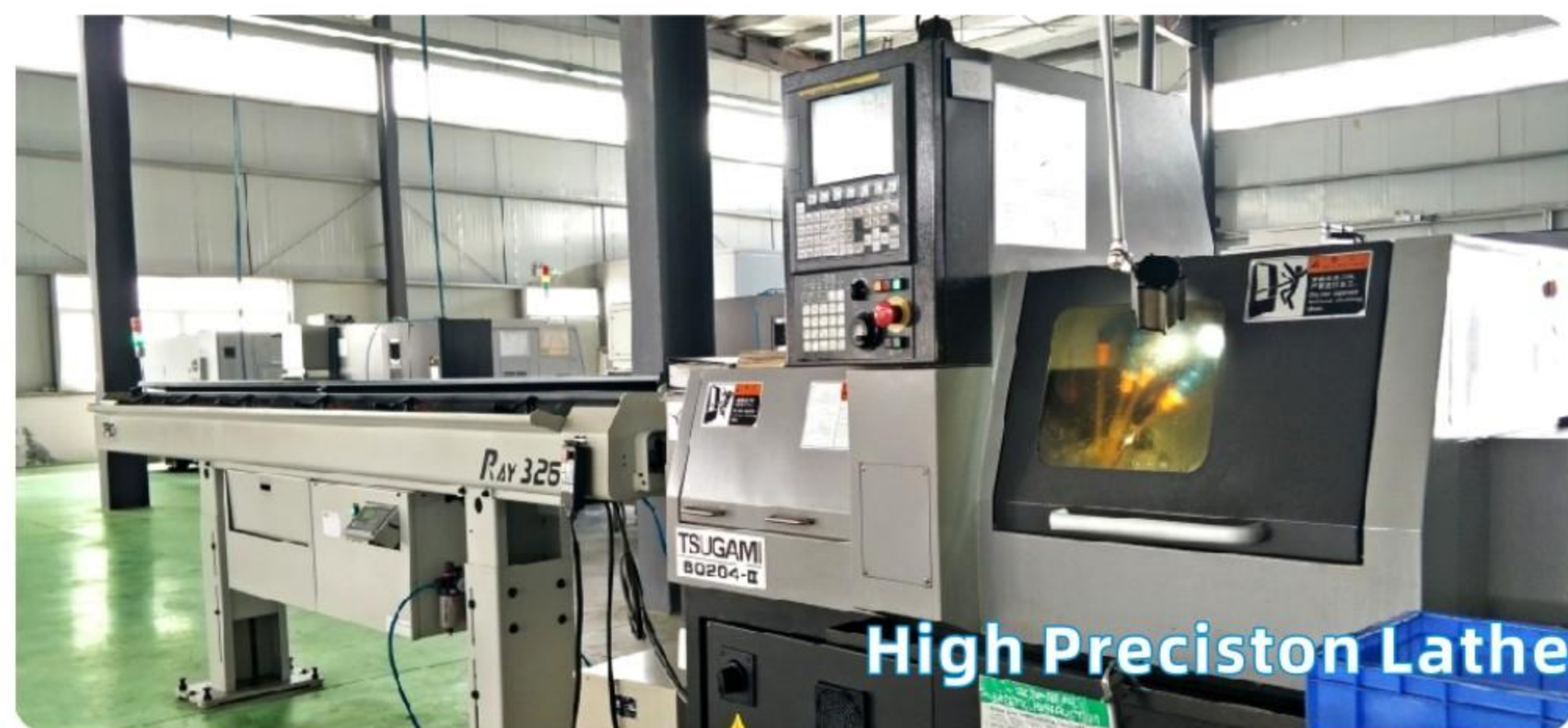
E-mail : jason@u-sun.cn

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2024 version



A corner of workshop



High Precision Lathe



Warehouse



Three Coordinate Measuring Machine



VMC



COMPANY PROFILE

USUN Pumps has more than 10 years of hydraulic and pneumatic engineering experience in the design and manufacture of pumps and systems for pressure testing and chemical injection. Continuous investment in new machinery and advanced technology keeps USUN Pumps at the forefront of our field.

We offer one of the most complete range of Air Driven Pumps & Boosters in the industry measured for:

- Capability of ultimate pressure, flow or output

horsepower.

- Compatibility with a broad variety of liquids and gases.

With a predominately online sales channel that allows us to keep costs down, we provide full technical support for via:

- Online selection guides (liquid pumps & gas boosters) and product comparison charts
- 24/7 technical email support system
- Phone-based technical support
- Web-based technical chat facility

OUR HISTORY

USUN Pumps is a famous Brand, Usun Fluid Control Equipment Co Ltd has manufactured high quality chemical injection pumps and high pressure fittings and valve for more than 8 years. Prior to becoming a high-pressure pump manufacturer, USUN roots go back over 10 years,

mainly as the technical distributor for Haskel Air Driven Liquid Pumps, Gas Booster High Pressure Valves and Fittings. USUN have designed numerous high and low pressure hydraulic, chemical, liquid and gas booster systems as well as many off-shore wellhead systems.

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A Note on Ratios

All USUN Air Driven Air Amplifiers, Gas Boosters and Liquid Pumps operate using the RATIO principal. The ratio is that between a larger diameter (area) lower pressure compressed air drive piston (within the air drive) and a mechanically connected higher pressure but smaller diameter (area) piston or plunger within the liquid/gas section. They all reach a stall condition when the opposing forces, created between the lower pressure air drive and the higher pressure fluid outlet, become balanced. This stall pressure is the maximum that can be attained for the given actual ratio of the device and the compressed air drive pressure used. At this stall point, the pump can hold the stall pressure but delivers zero flow. The ratio referred to in the part numbering system (nominal ratio) for most liquid pumps is generally about 10% lower than the actual ratio. This allows slightly higher stall pressures to be reached and allows the unit to continue to cycle and deliver fluid past the pressure reached when the nominal ratio is multiplied by the air drive pressure.

As an example, a Model M25 liquid pump driven with 8 Bar air supply has an actual ratio of 25:1 and will stall at a fluid outlet pressure of 200 Bar rather than 176 Bar as the nominal ratio implies. By using an air pressure regulator on the air drive supply line, the desired stall pressure can be set to any point less than the maximum air supply pressure multiplied by the actual ratio of the pump.

It stands to reason that the higher the nominal ratio of the device, the higher fluid or gas outlet pressure can be achieved. The USUN range includes a number of different series of pumps and boosters each having larger diameter air drives. Each series has numerous nominal ratios so that, with careful selection, the correct unit can be selected for a given flow vs pressure application.

All USUN Pumps consist of a lower pressure (<10 Bar) linear reciprocating air motor (air drive) directly connected to a higher pressure fluid end. In the case of most liquid pumps, the fluid ends mainly use plungers while all gas boosters use pistons.

A Note on Air Consumption & Air Quality

To obtain maximum continuous performance of our pumps and boosters, we recommend the use of an air compressor with a minimum free air delivery

(FAD) to the pump that corresponds to the pressure you wish to use. The table below can be used as a guide.

Series	FAD required at the inlet of the pump
M	30 scfm (48 nm3/hr)
XH/XT	45 scfm (72 nm3/hr)
AH/AT/ZB GB/GBD/GBT	70 scfm (113 nm3/hr)
2AH/2AT 2GB/2GBD/2GBT	85 scfm (137 nm3/hr)
GT/GH	225 scfm (362 nm3/hr)

Air line filters are recommended and should be installed to ensure clean, dry air is supplied to the pump or booster. Additionally, air line pressure regulators should be used to ensure the air drive pressure is not higher than is recommended or required.

How the Air Drive Section Works

The air drive section consists of a light weight piston complete with seals running inside an aluminum barrel.

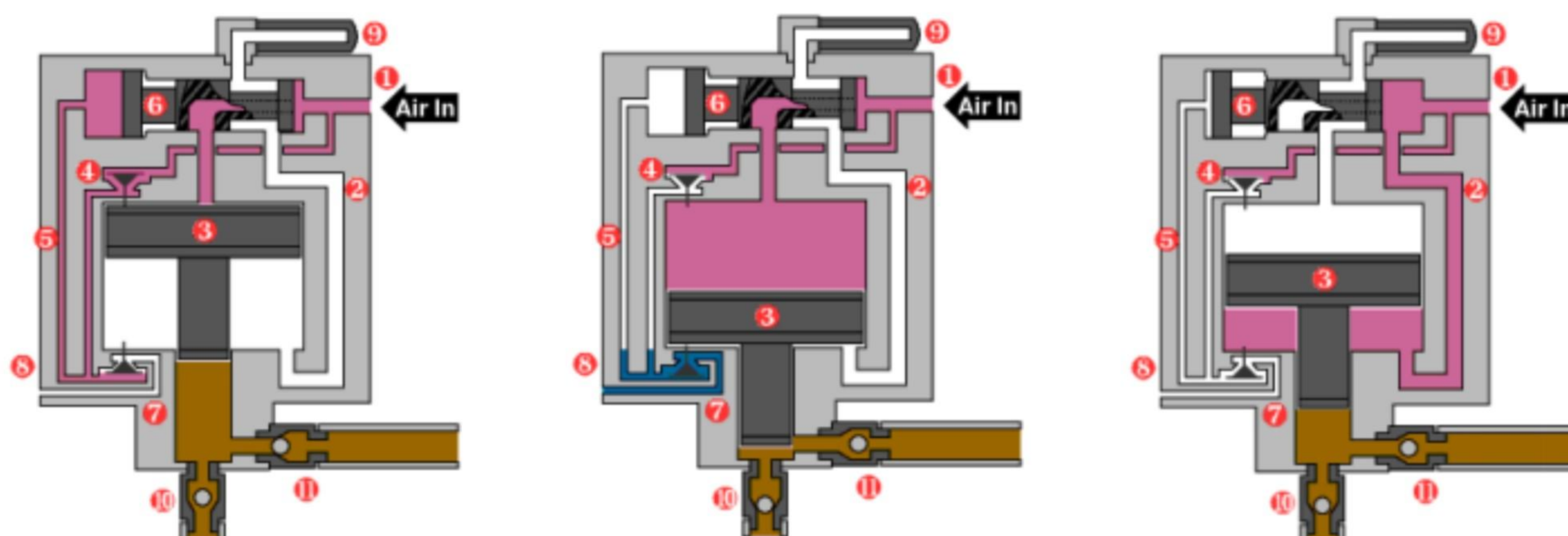
When compressed air is supplied to the pump, the air pushes the air piston (3) down on a compression stroke, which forces fluid out of the liquid end for Liquid Pumps; or gas out of the gas end for Gas Boosters and Air Amplifiers (11).

Under the control of pilot pins (7 & 4) triggered at each end of the stroke, the air is then diverted by way of a flow tube (2) to drive the air piston up on a suction stroke, which pulls fluid into the liquid end

for Liquid Pumps; or gas into the gas end for Gas Boosters and Air Amplifiers (10).

The automatic cycling characteristics are enabled by use of an unbalanced, internally pilot operated spool (6) that directs the air through a 4-way cycling sleeve to either side of the air piston. The operation of the cycling spool is controlled by 2 pilot pins. The air is exhausted through the spool and then to atmosphere via the provided muffler (9).

The air drive section of the pump is pre-lubricated at assembly and as such, air line lubrication is neither required nor recommended.



How the Gas Section Works (Gas Boosters)

The air drive section consists of a light weight piston complete with seals running inside an aluminum barrel.

When compressed air is supplied to the pump, the air pushes the air piston (3) down on a compression stroke, which forces fluid out of the liquid end for Liquid Pumps; or gas out of the gas end for Gas Boosters and Air Amplifiers (11).

Under the control of pilot pins (7 & 4) triggered at each end of the stroke, the air is then diverted by way of a flow tube (2) to drive the air piston up on a suction stroke, which pulls fluid into the liquid end

for Liquid Pumps; or gas into the gas end for Gas Boosters and Air Amplifiers (10).

The automatic cycling characteristics are enabled by use of an unbalanced, internally pilot operated spool (6) that directs the air through a 4-way cycling sleeve to either side of the air piston. The operation of the cycling spool is controlled by 2 pilot pins. The air is exhausted through the spool and then to atmosphere via the provided muffler (9).

The air drive section of the pump is pre-lubricated at assembly and as such, air line lubrication is neither required nor recommended.

How the Hydraulic Section Works (Liquid Pumps)

The hydraulic section of a USUN air driven liquid pump consists of 4 main pieces, the hydraulic body, the piston/plunger, the check valves and the main high pressure seal. The hydraulic piston/plunger is directly linked to the air piston and it is housed inside the hydraulic body and its movement up and down creates the liquid flow into and out of the pump through the check valves. The check valves are spring loaded and on the suction stroke the inlet check valve opens to the maximum allowing fluid into the hydraulic body and on the compression stroke the inlet check valve closes and the discharge check valve opens forcing the pumped fluid into the process.

The main high pressure seal is located within the hydraulic body and the piston/plunger seals against

this during operation. There are different materials and designs of high pressure seals depending on the fluid being pumped and the maximum pressures of the pump, however the standard seals are suitable for both water and hydraulic fluid use. All wetted materials are of stainless steel and are suitable for water and hydraulic fluid applications in their standard form.

Other materials of construction can be supplied to meet more aggressive services. The standard series of pumps are NOT suitable for underground coal mine applications. USUN do manufacture models of air driven liquid pumps that are suitable for underground coal mine applications including a range suitable for chemical injection, please enquire with our technical staff.

The liquid pump cycles automatically. As the outlet pressure increases, the resistance also increases and the cycle rate decreases until the output pressure forces are equal and the pump stops automatically. This is referred to as the stall condition. The pump will restart with a slight drop in the outlet pressure or an increase in the air drive pressure. Pump performance can be affected by a number of conditions, such as freezing of the exhaust muffler or pilot valves (which is caused by moisture in air lines), inadequate inlet air line sizes and dirty filters. When operating the pumps on a continuous basis, we recommend you use a maximum cycle rate of

50-60 cycles per minute. This will both increase service intervals and assist in preventing ice forming at the exhaust. An air supply dryer will also assist in reducing icing up.

USUN pumps have an 80mm stroke, which reduces cycle rates at any given flow and pressure when compared with most other brands. This lower respective cycle rate results in a reduction in freeze-up condition.

To obtain best overall performance, do not reduce the indicated port sizes.

We offer complete technical and service support for all USUN Liquid Pumps.

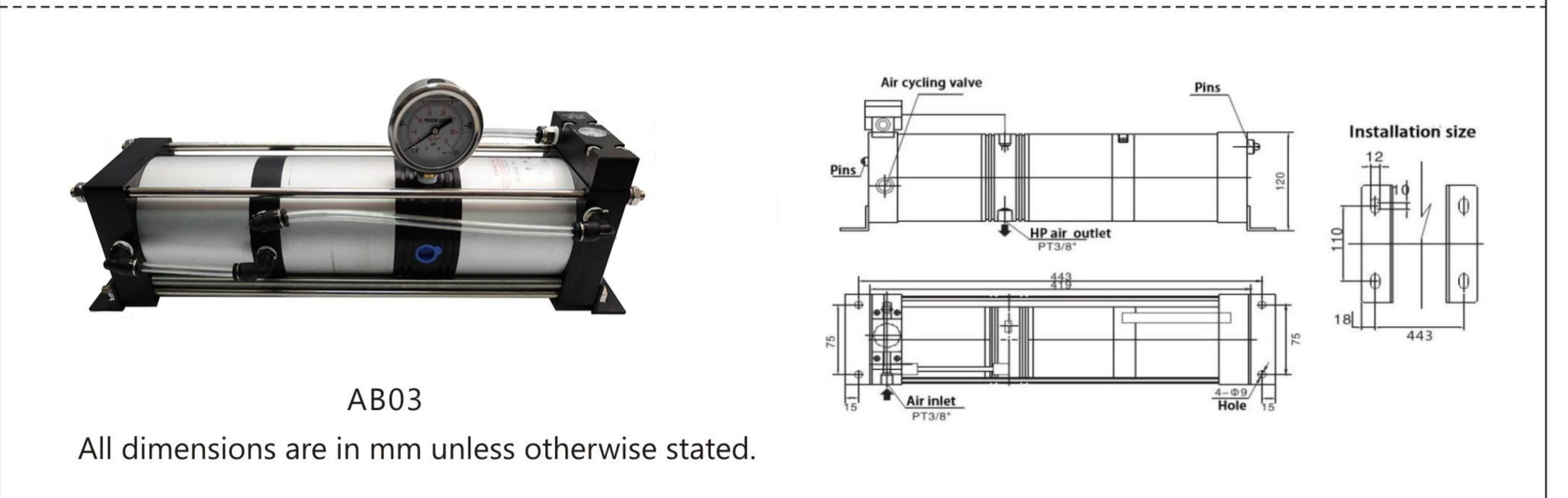
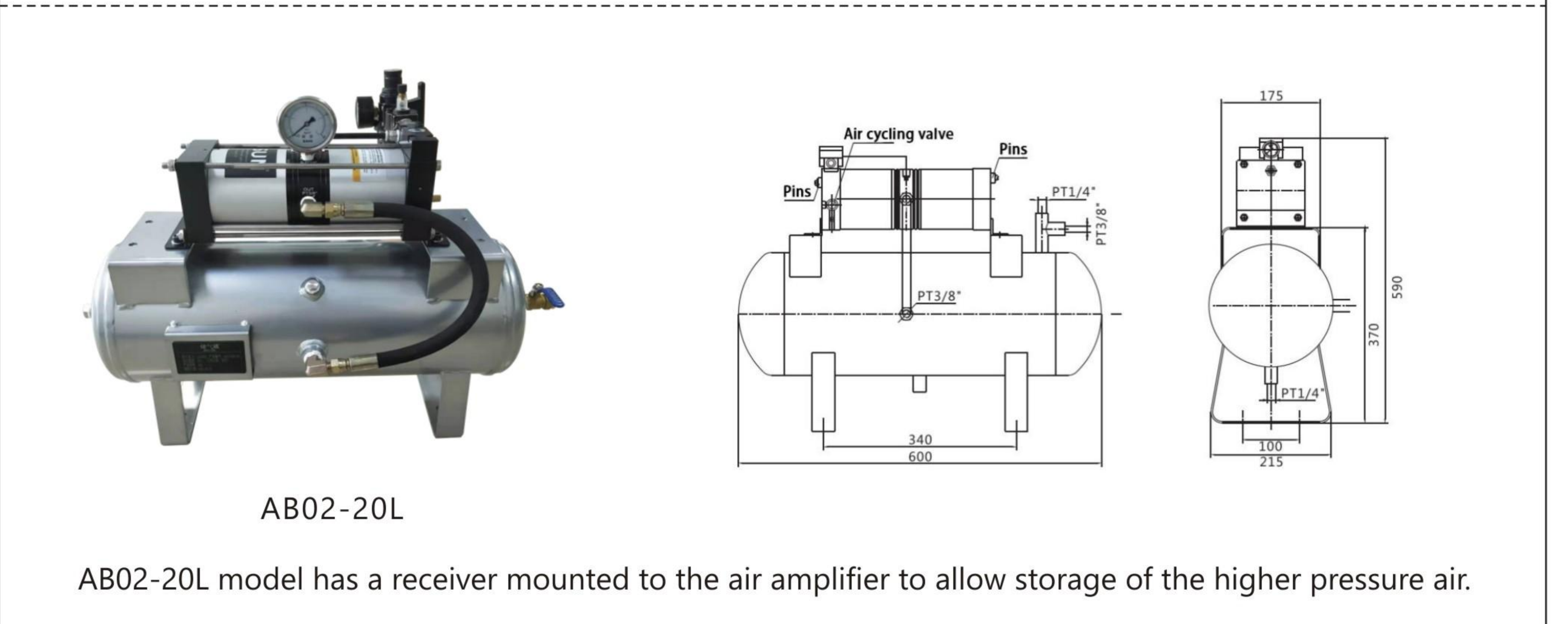
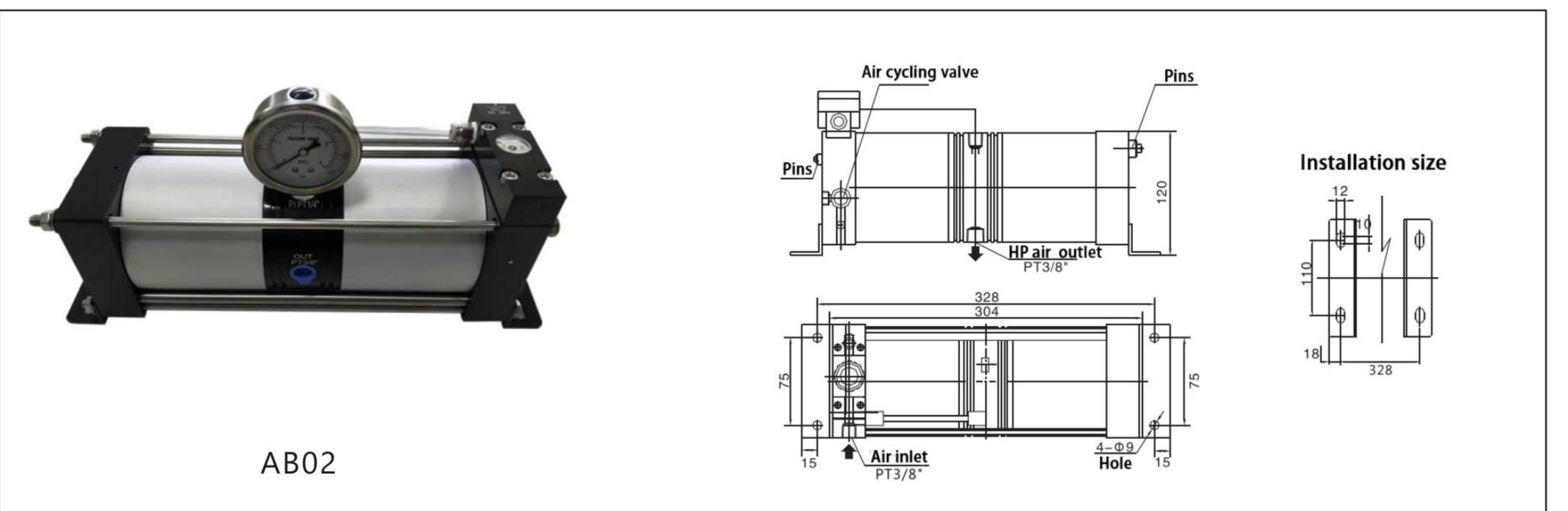
Air Pressure Amplifiers

- **Intrinsically safe** - no heat, sparks or flames produced
- **No Contamination** - separation between gas and pneumatic seals
- **No Lubrication Required** - on air/gas drive section
- **Built-in Cooling of Gas Barrels** - available on most models
- **Increased Life** - 120mm stroke reduces cycle rate
- **Hazardous Area Suitability** - for most applications




AB Series - Air Pressure Amplifiers

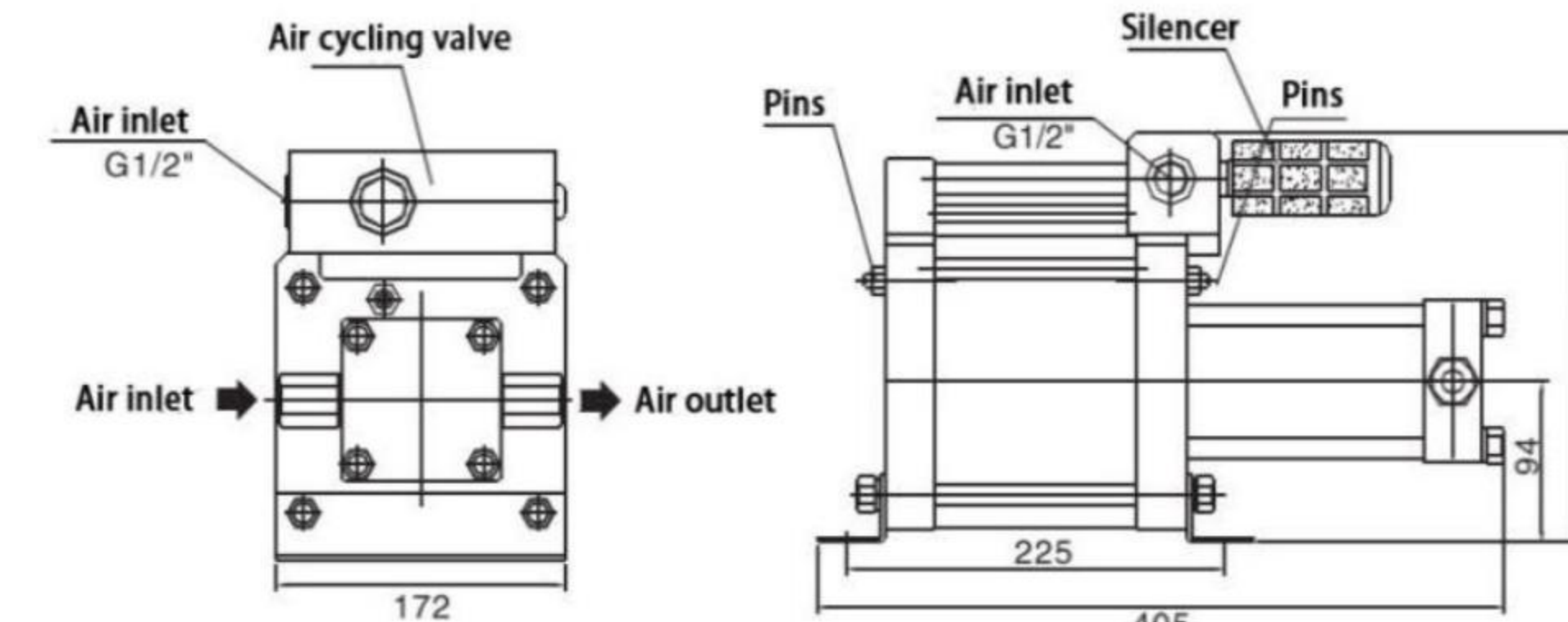
The USUN Air Amplifier is designed to increase (boost) the drive air pressure that is applied to the unit within the scope of the nominal ratio of the particular model. Many machines require a supply pressure greater than the "plant" air supply and amplifiers offer a simple inexpensive solution. No airline lubrication is required for the air amplifier and its outlet pressure can be regulated with a simple air line pressure regulator. simple air line pressure regulator.



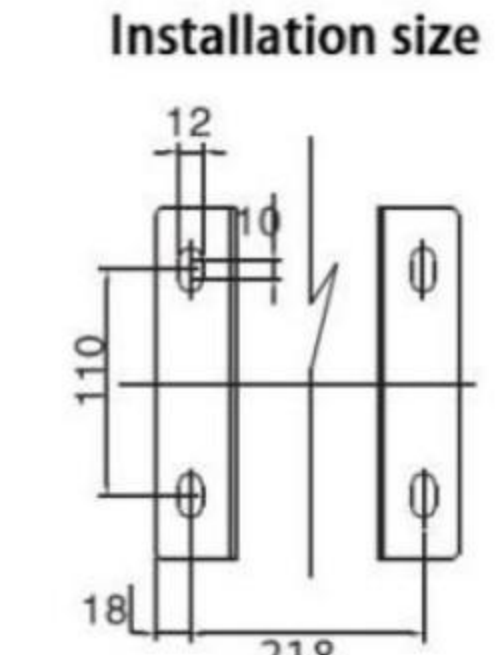
AB Series - Air Pressure Amplifiers




AB04/AB07/AB10/AB15

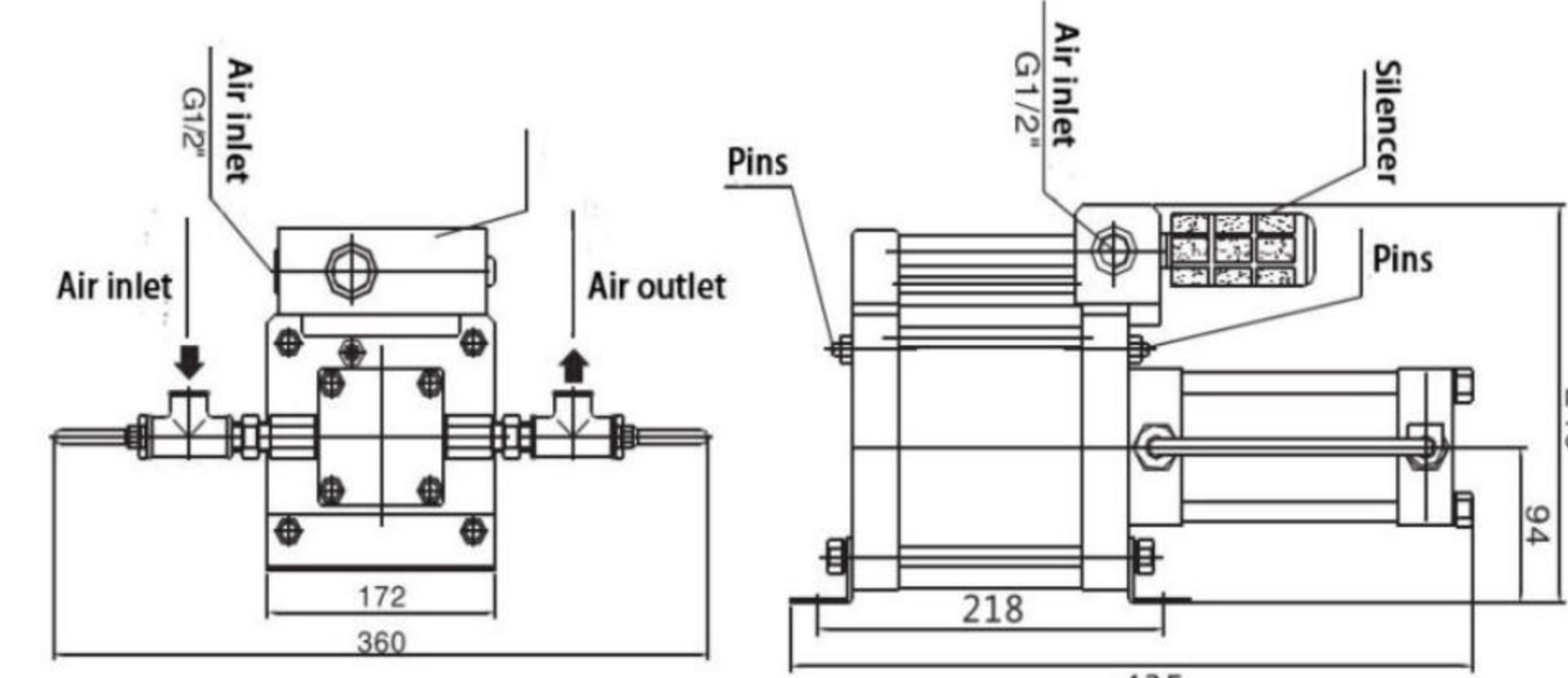


Installation size

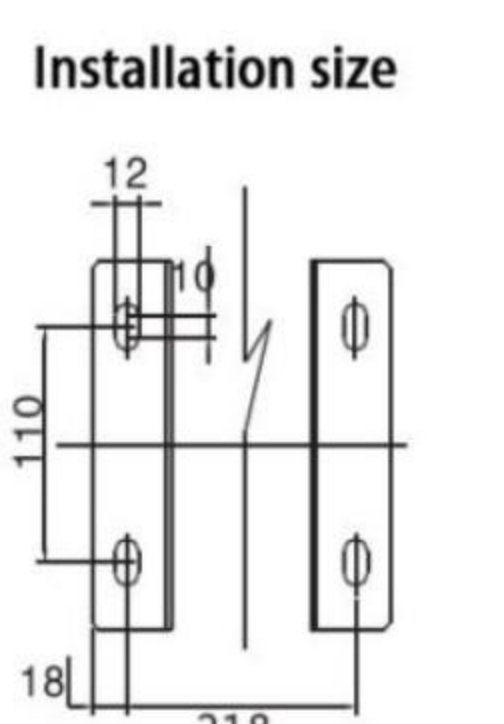





AB05T/AB08T

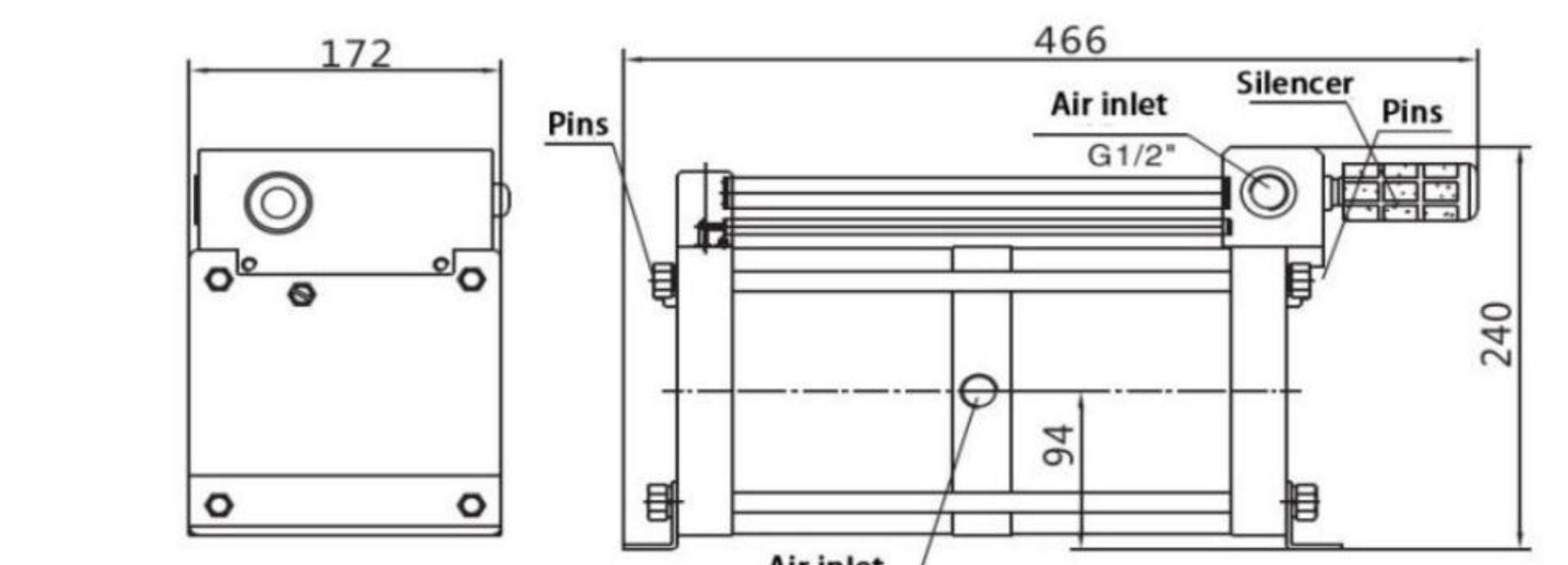


Installation size

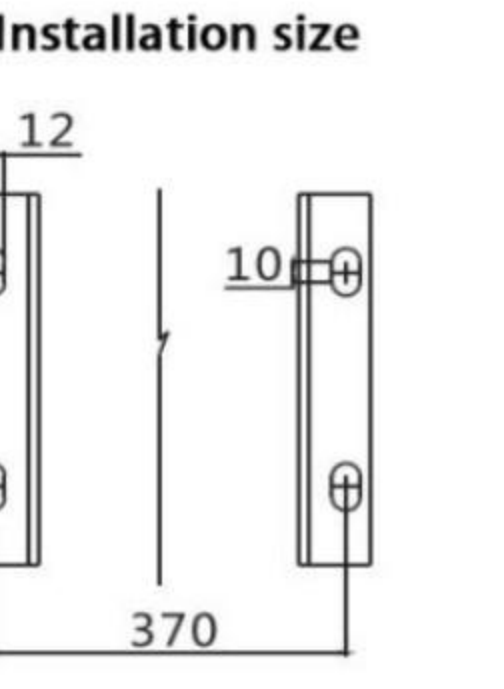




4AB02



Installation size



AB Series Technical Data

Model	Actual Ratio	Displacement Per Cycle -ml	Minimum Gas Inlet Pressure (Pi)-Bar	maximum Gas Outlet Pressure (Po)- Bar	Po Formula (where Pa=air drive pressure)	Gas Inlet	Gas Outlet	Flow(where Pa = 7 Bar) - NL/min
AB02	2:1	235	1.0	16.6	2Pa	PT3/8"	PT3/8"	513@ Pi=7
AB03	3:1	402	1.0	24.9	3Pa	PT3/8"	PT3/8"	420@ Pi=7
4AB02	2:1	1963	1.0	16.6	2Pa	PT1/2"	PT1/2"	1450@ Pi=7
AB04	4:1	402	1.7	33.2	4Pa	NPT3/8"	NPT3/8"	382@ Pi=7
AB05T	5:1	321	1.7	41.5	4Pa+Pi	NPT1/2"	NPT1/2"	710@ Pi=7
AB07	7:1	229	3.4	58.1	7Pa	NPT3/8"	NPT3/8"	274@ Pi=7
AB08T	8:1	201	3.4	66.4	7Pa+Pi	NPT3/8"	NPT3/8"	482@ Pi=7
AB10	10:1	241	3.4	83.0	10Pa	NPT3/8"	NPT3/8"	225@ Pi=7
AB15	15:1	160	8.1	124.5	15Pa	NPT3/8"	NPT3/8"	185@ Pi=7

The maximum acceptable air drive pressure (Pa) is 8.3 Bar.

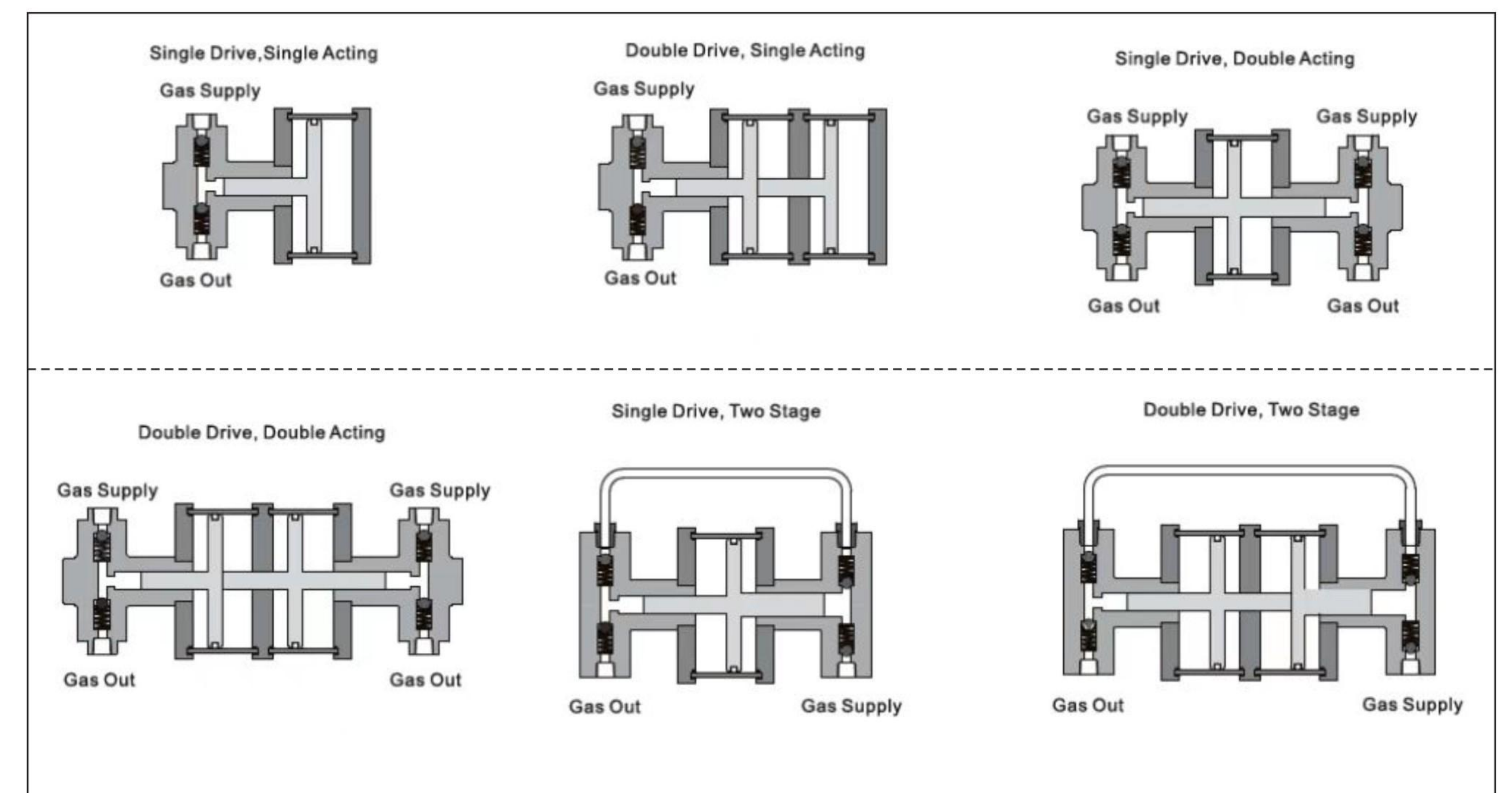
GAS Boosters

Our broad range of air driven gas boosters require no airline lubrication; have separation between the air drive supply and the gas being boosted, ensuring clean gas outlet flow; and are reliable and easy to maintain.




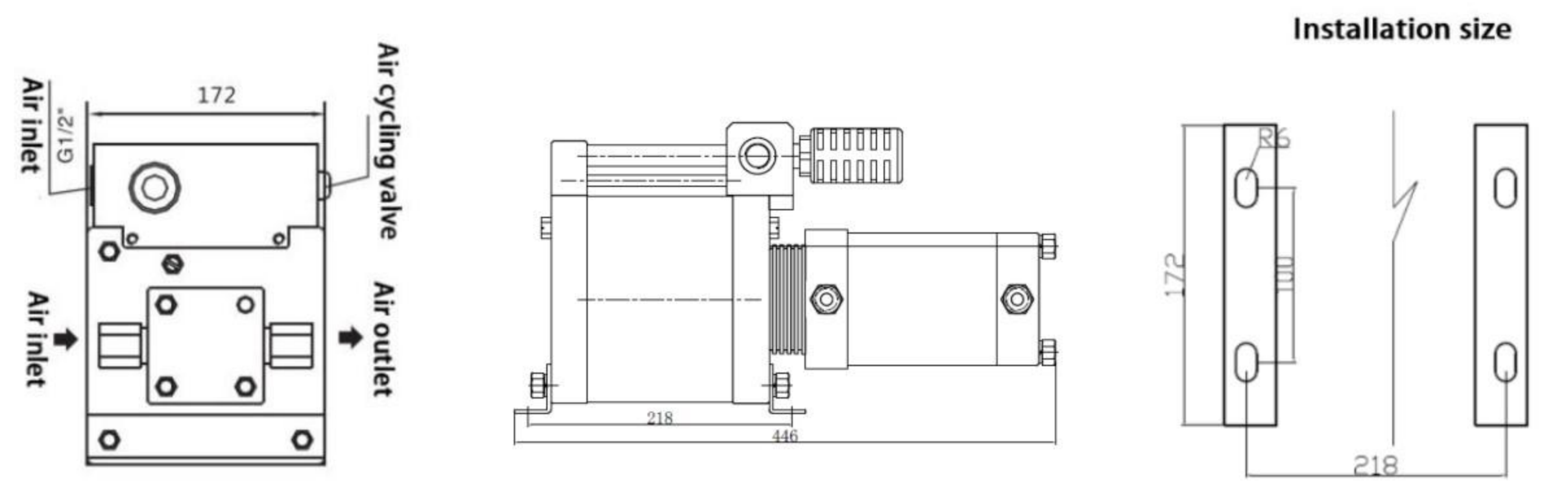

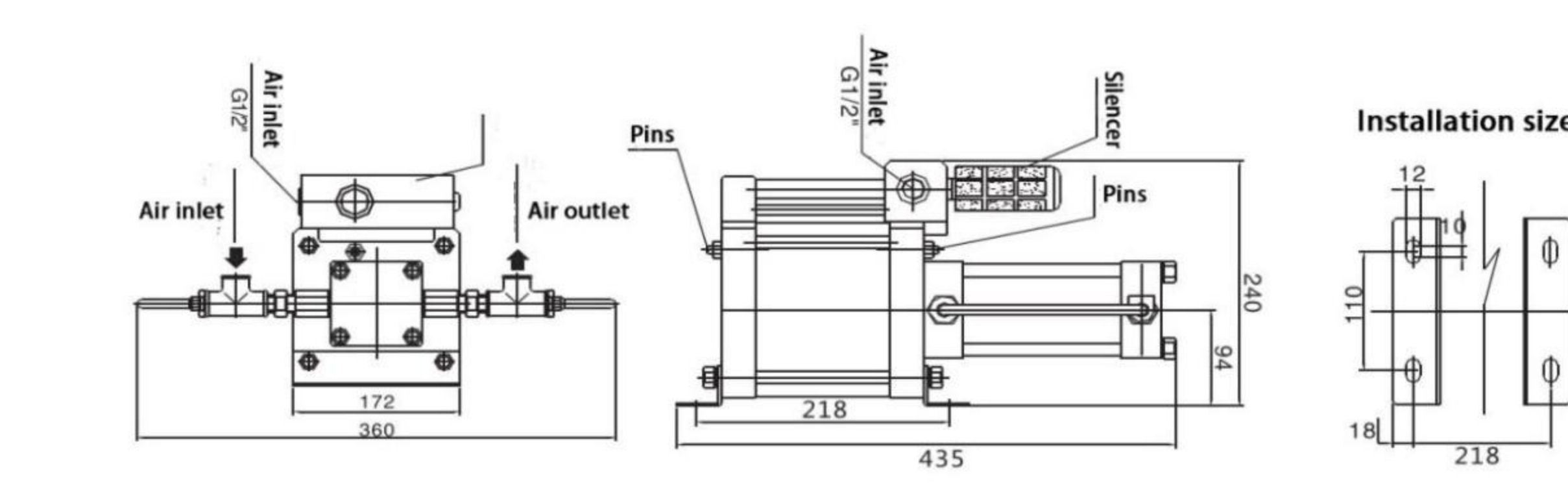

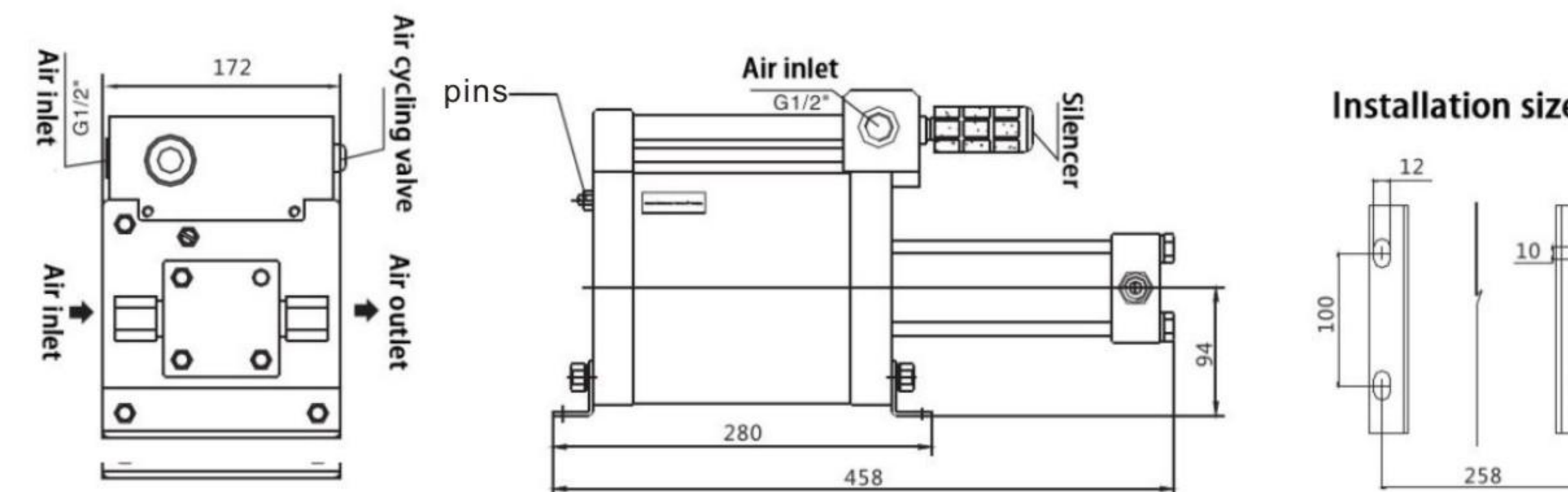

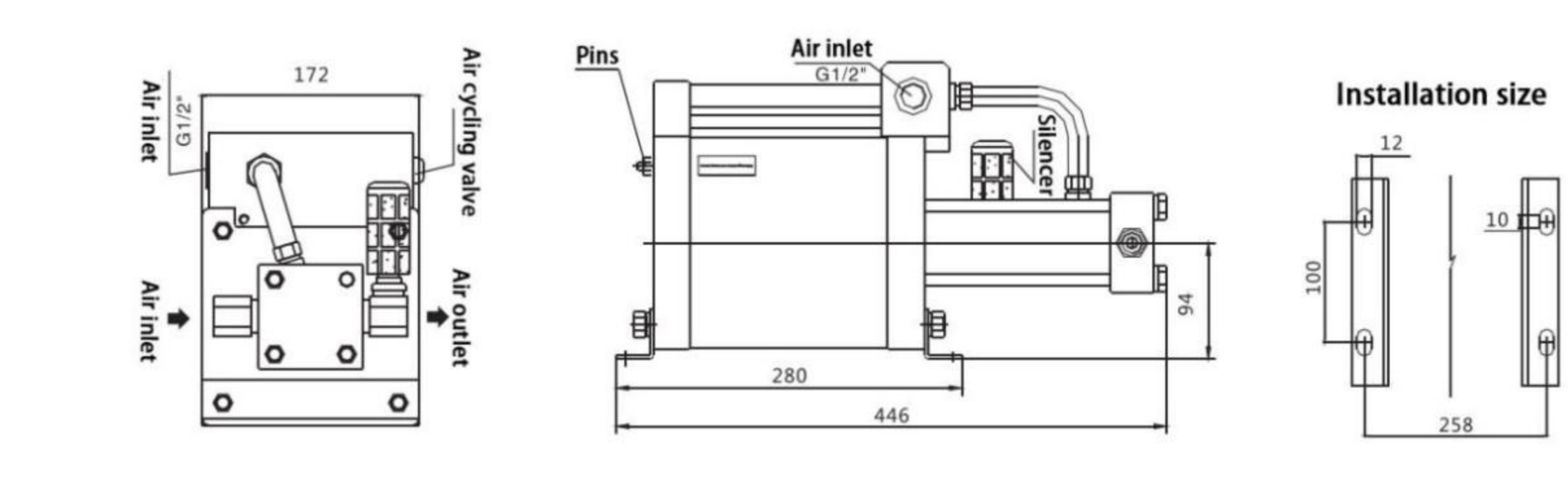
- **Intrinsically safe** - no heat, sparks or flames produced
- **No Contamination** - complete separation between gas and pneumatic seals
- **No Lubrication Required** - on air/gas drive section
- **Built-in Cooling of Gas Barrels** - available on most models
- **Increased Life** - 120mm stroke reduces cycle rate
- **Suitable for Hazardous Area** - for most applications and environments
- **Suitable for Breathing and Diving Gases** - can be supplied "Oxygen Use Cleaned"

Types of the boosters



GB Series - Single Acting Single Stage Gas Boosters

A flexible and efficient air-driven gas booster for delivering high-pressure gases. The GB Series offers a method of economically boosting pressures where flow rates and a high compression ratio are not key factors. Its material are alloy and stainless steel end and have a 160mm drive barrel.

 <p>GB02T</p>	
 <p>GB05T/GB08T</p>	
 <p>GB07/GB10/GB15</p>	
 <p>GB25/GB30/GB40/GB60/GB100</p> <p>All dimensions are in mm unless otherwise stated.</p>	

GB Series - Single Acting Single Stage Gas Boosters

GB Series Technical Data

Model	Actual Ratio	Displacement Per Cycle -ml	Gas Piston Diameter -mm	Minimum Gas Inlet Pressure (Pi)-Bar	maximum Gas Outlet Pressure (Po)- Bar	Po Formula (where Pa=air drive pressure)	Gas Inlet	Gas Outlet	Flow(where Pa = 7 Bar) - 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

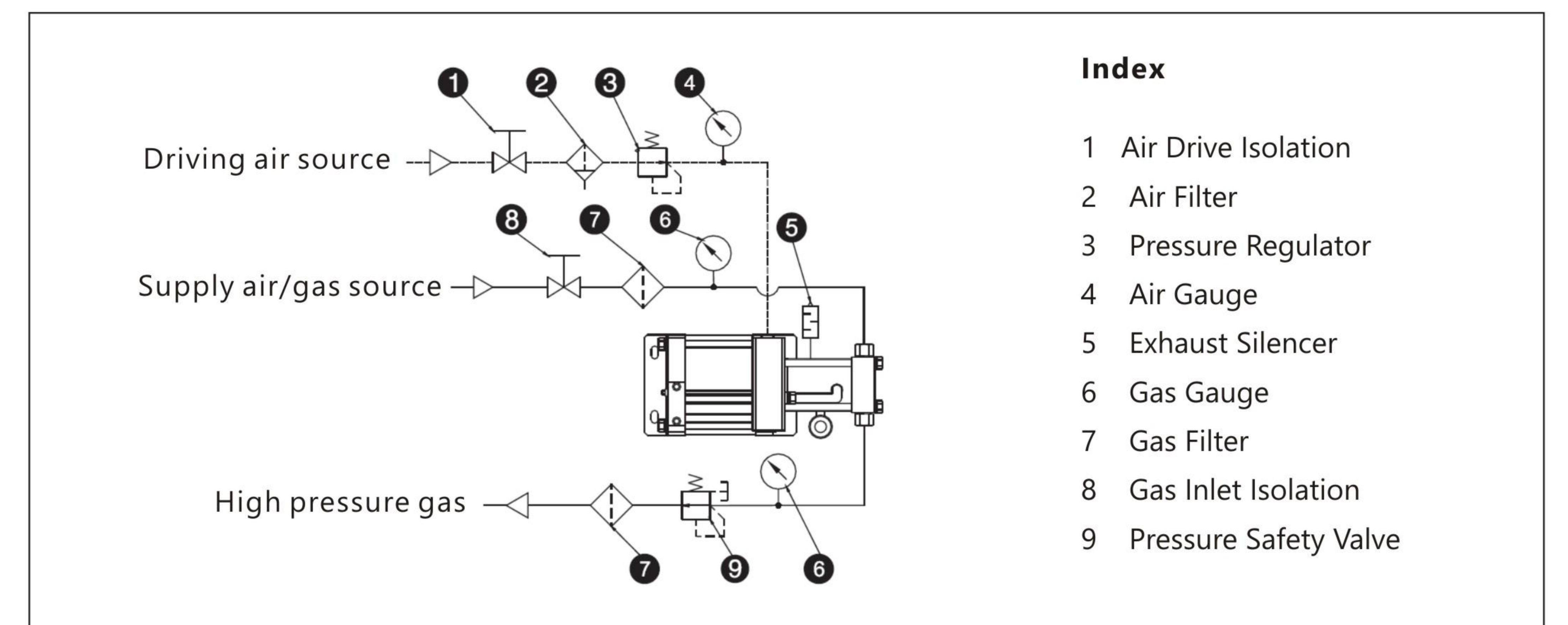
Type T is able to be turned into double acting or two stage units .

The maximum acceptable air drive pressure (Pa) is 8.3 Bar

All model code listed are standard , Oxygen gas service add "OL" after the model codes .

Hydrogen gas service add "H2" after the model codes,CO2 gas service add "CO2" after the model codes.

GB Series Typical Installation Circuit Drawing




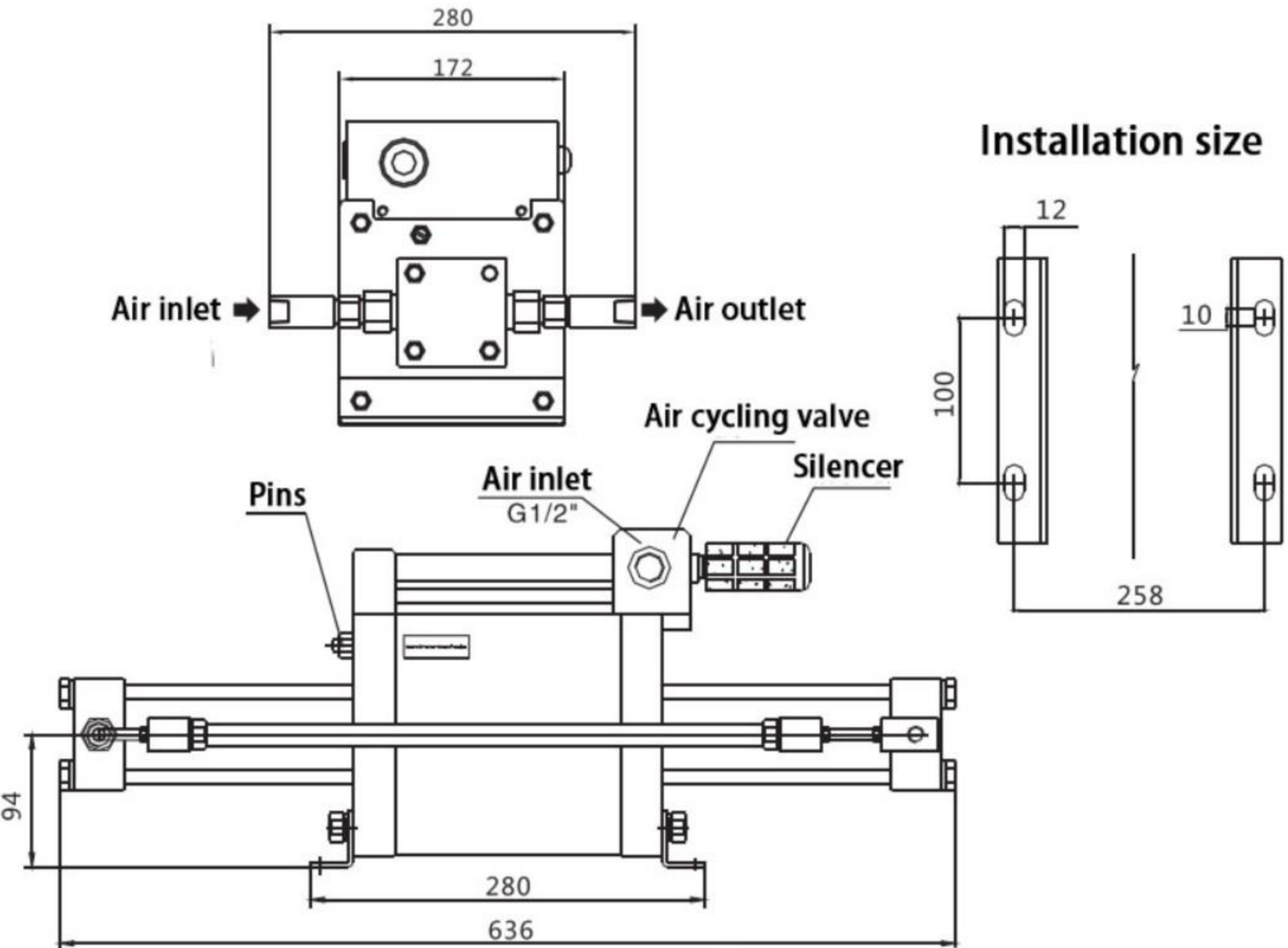
Optional extras such as HP release (vent) valve, HP pressure isolation valve, HP gas filter, air/gas pilot switches (APS) for auto stop/start purposes and other accessories can be included in our design and supply to accommodate your precise needs.

Details of the inclusions in our standard USUN Gas Booster Systems can be found on page 41.


GBD Series - Double Acting Single Stage Gas Boosters

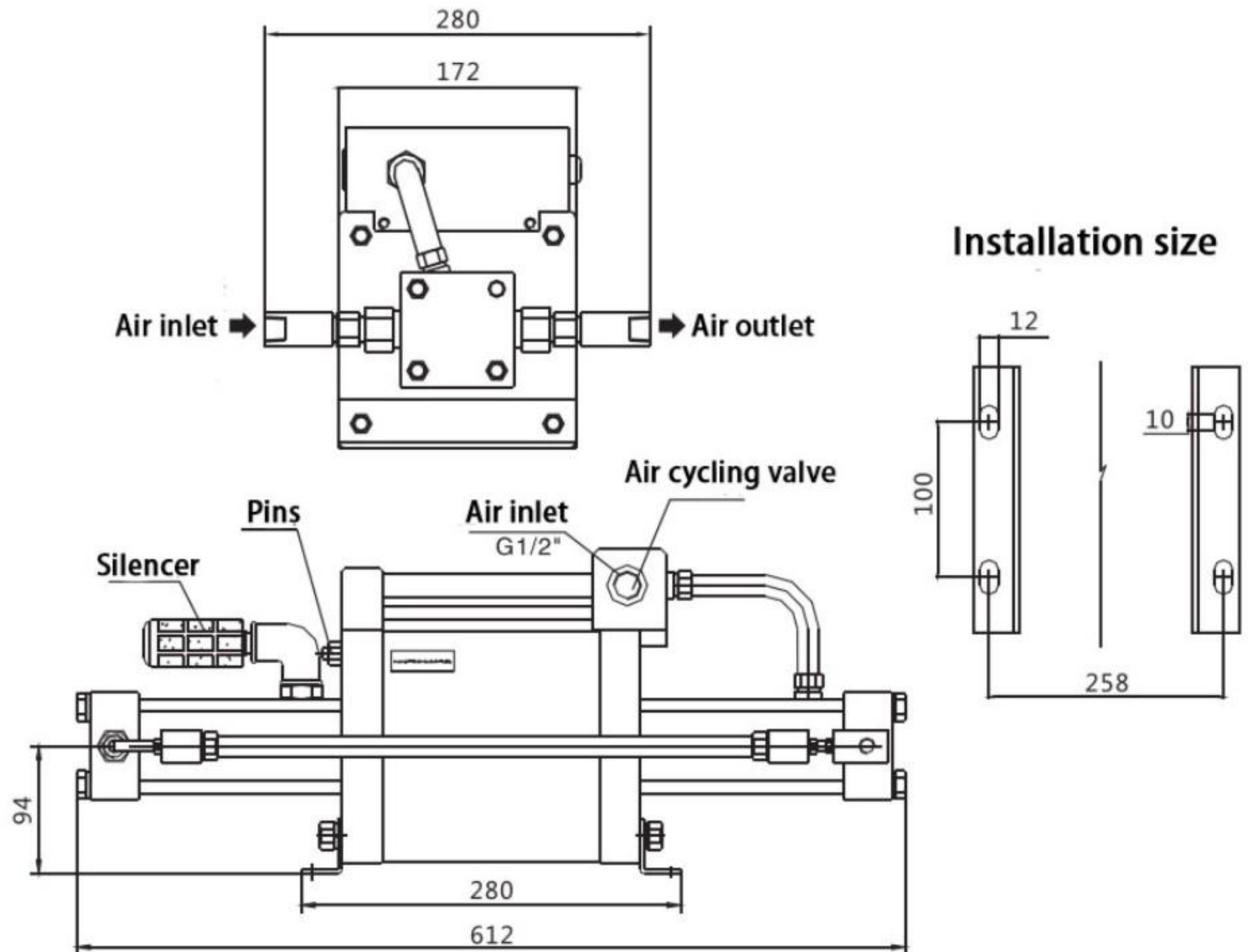
The USUN Double Acting Gas Booster is twice as efficient as the single acting unit because it delivers gas flow in both directions of the air drive reciprocating motor. All the benefits of the single acting booster, including barrel cooling and no requirements for airline lubrication, can be found in the double acting models.





GBD07/GBD10/GBD15





GBD25/GBD30/GBD40
GBD60/GBD100

All dimensions are in mm unless otherwise stated.

GBD Series - Double Acting Single Stage Gas Boosters

GBD Series Technical Data

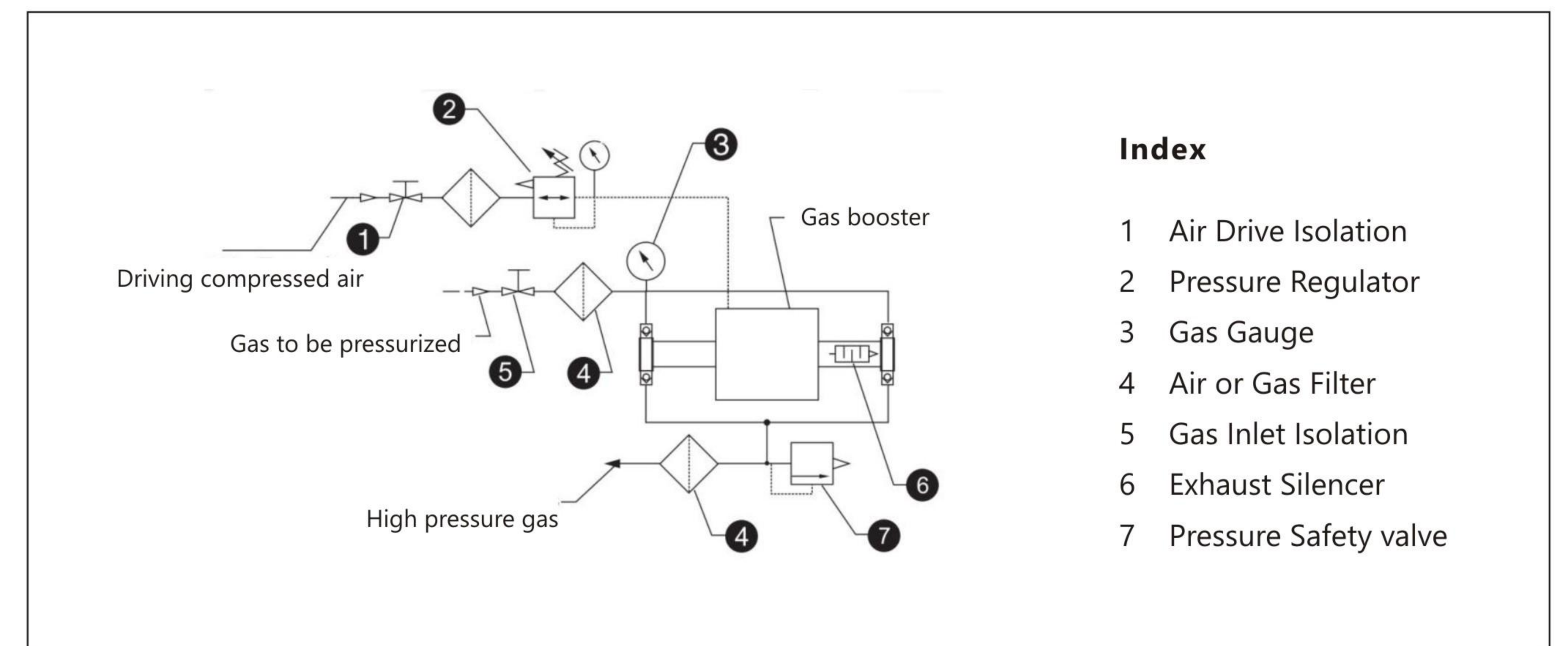
Model	Actual Ratio	Displacement Per Cycle -ml	Gas Piston Diameter -mm	Minimum Gas Inlet Pressure (Pi)-Bar	maximum Gas Outlet Pressure (Po)- Bar	Po Formula (where Pa=air drive pressure)	Gas Inlet	Gas Outlet	Flow (where Pa = 7 Bar) - NL/min
GBD07	7:1	689	63	3.4	58	7Pa+Pi	NPT3/8"	NPT3/8"	392@Pi=7
GBD10	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

The maximum acceptable air drive pressure (Pa) is 8.3 Bar.

All model code listed are standard , Oxygen gas service add "OL" after the model codes .

Hydrogen gas service add "H2" after the model codes, CO2 gas service add "CO2" after the model codes.

GBD Series Typical Installation Circuit Drawing

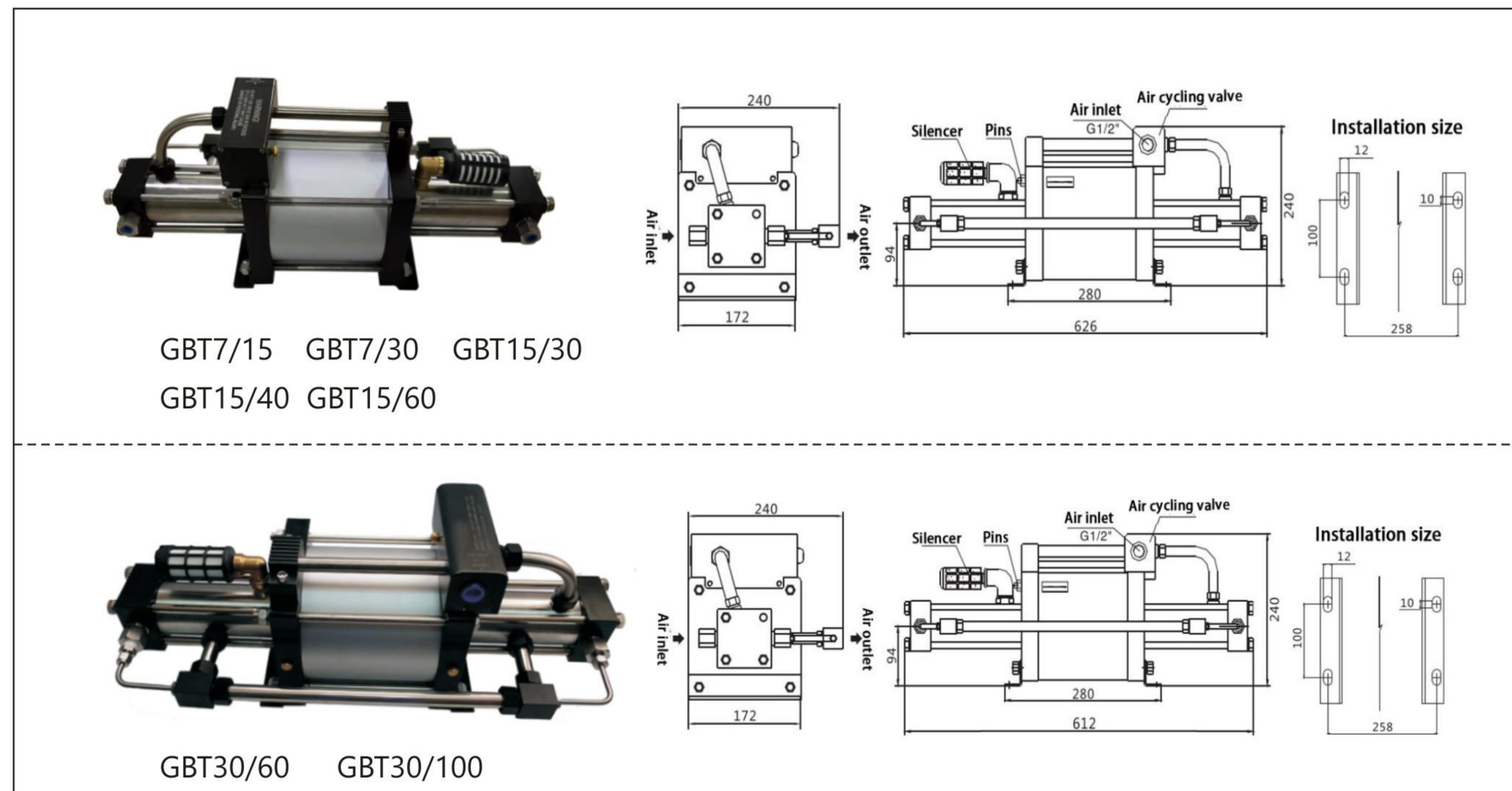


Optional extras such as HP release (vent) valve, HP pressure isolation valve, HP gas filter, air/gas pilot switches (APS) for auto stop/start purposes and other accessories can be included in our design and supply to accommodate your precise needs.

Details of the inclusions in our standard USUN Gas Booster Systems can be found on page 36.

GBT Series - Two Stage SINGLE ACTION Gas Boosters

The USUN Two Stage Gas Booster is an efficient booster that allows gas to be boosted to higher compression ratios (and usually higher outlet gas pressures) than the single stage boosters. Although best practice suggests the use of boosters with the lowest nominal ratios, USUN two stage boosters can effectively and efficiently boost pressure up to 40 times the inlet gas pressure. In addition to all the benefits of single stage gas boosters, the two stage gas booster utilises an intercooler between gas stages.



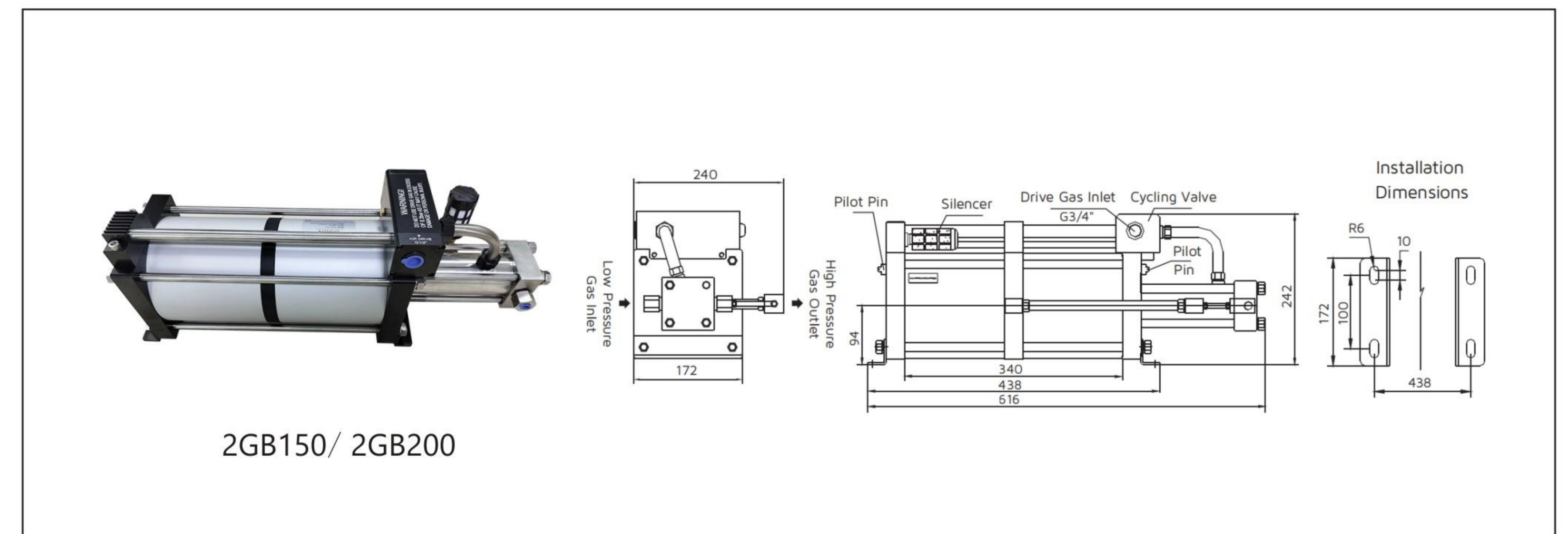
GBT Series Technical Data

Model	Actual Ratio	Displacement Per Cycle -ml	Gas Piston Diameter -mm	Minimum Gas Inlet Pressure (Pi)-Bar	Maximum gas inlet pressure (Pi)- Bar	Maximum Gas Outlet Pressure (Po)- Bar	Po Formula (where Pa=air drive pressure)	Gas Inlet	Gas Outlet	Flow (Where Pa=7 Bar) -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.
 All model code listed are standard , Oxygen gas service add "OL" after the model codes .
 Hydrogen gas service add "H2" after the model codes, CO2 gas service add "CO2" after the model codes.

2GB Series - Single Acting Single Stage Double Air Drive Gas Boosters

The 2GB Series offers the same economical pressure boosting as the GB series , but with a greater flow capability. As with the GB series , the 2GB Series are single stage, so are limited to effectively boosting inlet gas pressures to around 6 times the gas supply pressure (referred to as the 6:1 Compression Ratio).



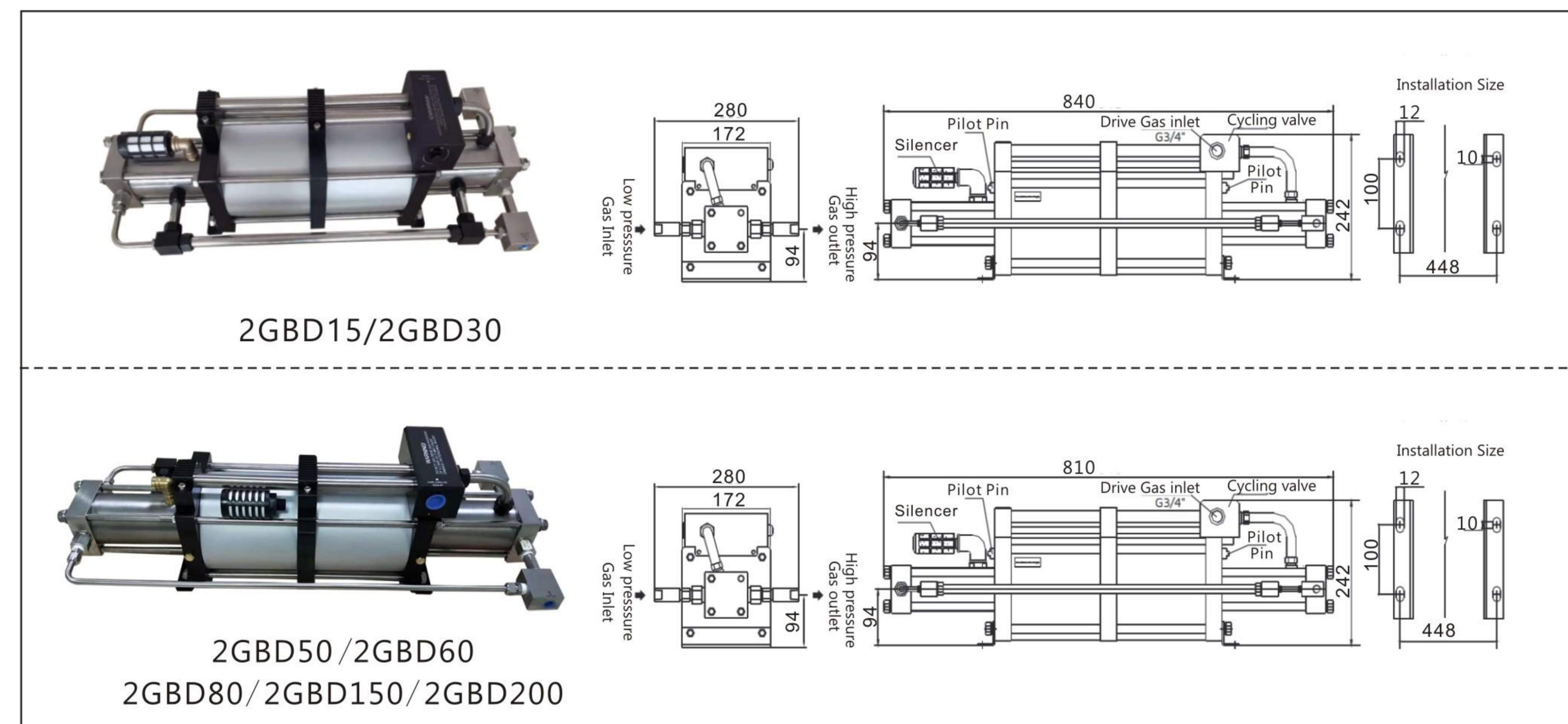
2GB Series Technical Data

Model	Actual Ratio	Displacement Per Cycle -ml	Gas Piston Diameter -mm	Minimum Gas Inlet Pressure (Pi)-Bar	maximum Gas Outlet Pressure (Po)- Bar	Po Formula (where Pa=air drive) pressure)	Gas Inlet	Gas Outlet	Flow (where Pa = 7 Bar) - NL/min
2GB150	150:1	37	18	60	1245	150Pa	NPT1/4"	HF4	132@ Pi=100
2GB200	200:1	24	16	80	1660	200Pa	NPT1/4"	HF4	95@ Pi=100

The maximum acceptable air drive pressure (Pa) is 8.3 Bar.
 Hydrogen gas service add "H2" after the model codes
 CO2 gas service add "CO2" after the model codes.

2GBD Series - Double Acting Single Stage Double Air Drive Gas Boosters

The USUN 2GBD series gas booster pump is a double air drive, single stage gas booster pump. The series has two driving air pistons, with a diameter of 160mm, effectively doubling the area ratio from standard GBD series gas boosters. The 2GBD series gas boosters are primarily used in high-pressure gas filling, and pressure maintenance. E.g. high pressure nitrogen plastics moulding, CO2, wire cables, foams and pressure testing.



2GBD Series Technical Data

Model	Actual Ratio	Displacement Per Cycle -ml	Gas Piston Diameter -mm	Minimum Gas Inlet Pressure (Pi)-Bar	maximum Gas Outlet Pressure (Po)- Bar	Po Formula (where Pa=air drive pressure)	Gas Inlet	Gas Outlet	Flow(where Pa = 7 Bar) - NL/min
2GBD07	7:1	1378	80	3.4	66	7Pa+Pi	NPT1/2"	NPT1/2"	774@ Pi=7
2GBD15	15:1	643	56	3.4	99	15Pa+Pi	NPT1/2"	NPT1/2"	614@ Pi=7
2GBD30	32:1	321	40	7.5	265	32Pa+Pi	NPT3/8"	NPT3/8"	530@ Pi=10
2GBD50	50:1	193	32	25	415	50Pa+Pi	NPT3/8"	NPT3/8"	353@ Pi=25
2GBD60	65:1	160	28	25	539	65Pa+Pi	NPT3/8"	NPT3/8"	327@ Pi=25
2GBD80	82:1	120	25	40	680	82Pa+Pi	NPT1/4"	NPT1/4"	385@ Pi=40
2GBD150	150:1	74	20	60	1245	150Pa+Pi	NPT1/4"	HF4	297@ Pi=100
2GBD200	200:1	48	16	80	1660	200Pa+Pi	NPT1/4"	HF4	187@ Pi=100

The maximum acceptable air drive pressure (Pa) is 8.3 Bar.

All dimensions are in mm unless otherwise stated.

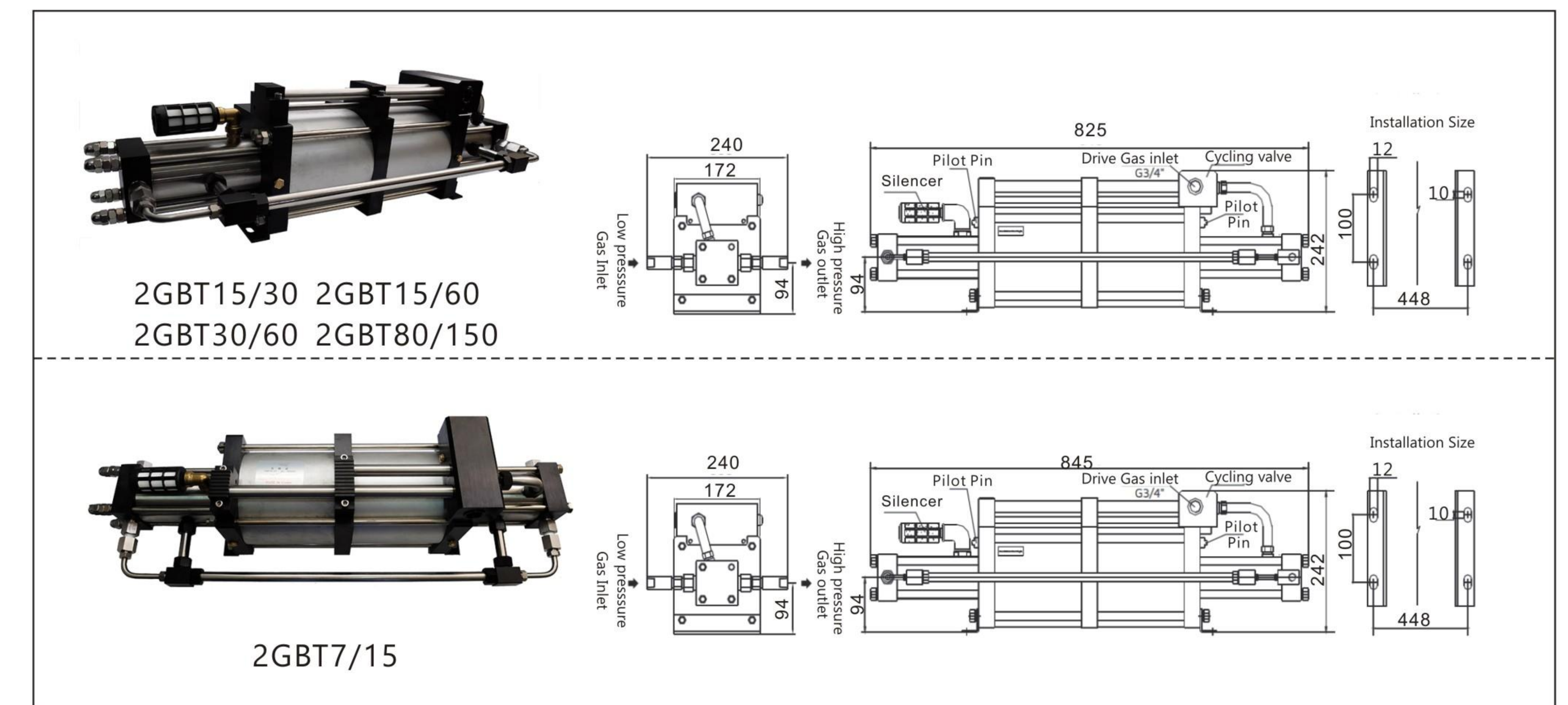
All model code listed are standard , Oxygen gas service add "OL" after the model codes .

Hydrogen gas service add "H2" after the model codes,CO2 gas service add "CO2" after the model codes.

2GBT Series - Two Stage Double Air Drive Gas Boosters

The 2GBT Two Stage Double Air Drive Gas Boosters are two stage units with two air drives connected in series thus, effectively, doubling the area ratio between the low pressure air drive and the higher outlet pressure gas pistons. This allows for even higher gas outlet pressures although the overall Compression Ratio of 36:1 is best not exceeded, for efficiency reasons.

The double air drive boosters have all the benefits and features of the single acting two stage booster.



2GBT Series Technical Data

Model	Actual Ratio	Displacement Per Cycle -ml	Gas Piston Diameter -mm	Minimum Gas Inlet Pressure (Pi)-Bar	maximum Gas Outlet Pressure (Po)- Bar	Po Formula (where Pa=air drive pressure)	Gas Inlet	Gas Outlet	Flow(where Pa = 7 Bar) - NL/min
2GBT7/15	15:1	689	80/56	3.4	125	15Pa+2Pi	NPT3/8"	NPT3/8"	390@Pi=10
2GBT7/30	32:1	689	80/40	3.4	240	32Pa+4Pi	NPT3/8"	NPT3/8"	240@Pi=10
2GBT15/30	32:1	321	56/40	7	240	32Pa+2Pi	NPT3/8"	NPT3/8"	286@Pi=10
2GBT15/60	60:1	321	56/28	7	498	60Pa+4Pi	NPT3/8"	NPT3/8"	165@Pi=10
2GBT30/60	60:1	160	40/28	30	498	60Pa+2Pi	NPT3/8"	NPT3/8"	455@Pi=40
2GBT80/150	150:1	160	25/18	45	1200	150Pa+2Pi	NPT3/8"	HF4	146@Pi=40
2GBT80/200	200:1	80	25/16	60	1600	200Pa+3Pi	NPT3/8"	HF4	70 @ pi=40

The maximum acceptable air drive pressure (Pa) is 8.3 Bar.

All dimensions are in mm unless otherwise stated

All model code listed are standard , Oxygen gas service add "OL" after the model codes .

Hydrogen gas service add "H2" after the model codes,CO2 gas service add "CO2" after the model codes.

Air Driven Liquid Pumps

Our broad range of air driven liquid pumps require no airline lubrication; are reliable and easy to maintain and can achieve pressure to 6,640 bar.



- **Intrinsically safe** - no heat, sparks or flames produced
- **No Contamination** - complete separation between driving gas and compressed liquids No Lubrication
- **Required** - on air/gas drive section
- **High Fluid Compatibility** - hydraulic oil, water and corrosive gasses and liquids
- **Start & Stop Against Load** - stall occurs when pressure balance is achieved
- **Driven with Air or other Gases** - including nitrogen, CO2 and natural gas
- **Suitable for Hazardous Area** - with models for underground coal mines and offshore

Applications for USUN Air Driven Liquid Pumps

First and foremost, it is paramount to consider the inherent advantages of USUN air driven liquid pumps.

These are:

- No requirement for electricity and can be driven by any inert gas.
- Can be stalled and started on full load indefinitely without heat build-up or power usage .
- Stay cool when working hard due to drive air expansion at the exhaust .
- These advantages make USUN air driven liquid pumps excellent Pressure Test Pumps in that they can sustain high pressures indefinitely.

Models fitted with liquid end pistons, rather than plungers, can efficiently pump gaseous liquids (Gliquids) such as refrigerant and fire-fighting media and can achieve a high level of vacuum (negative) pressure.

Plunger models can achieve and hold very high liquid (hydraulic) pressures.

Industries that have Pressure Testing Applications:

- Diving Industry with requirements for certifying Divers' Air Bottles and equipment .
- LPG/CNG Industry with requirements for certifying storage bottles, tanks and associated equipment.
- Fire Fighting Industry with requirements to certify extinguishers and associated equipment .
- Industrial Gas Manufacturers and Suppliers with requirements to certify gas storage bottles, tanks and associated pipework and equipment.
- Manufacturers of Pressure Vessels that require certification and testing .
- Installers of Oil and Gas Pipelines that require testing and certification prior to use .
- Manufacturers of Tubes, Pipes and Fittings .
- Manufacturers and Suppliers of Hydraulic (and other types) Hoses.

Industries that have Fluid Transfer Applications:

- Fire Fighting Industry with the filling of extinguishers with CO2 .
- Refrigeration and Air-Conditioning Industry with the evacuating and re-filling of refrigerant systems.
- Defence Industries.

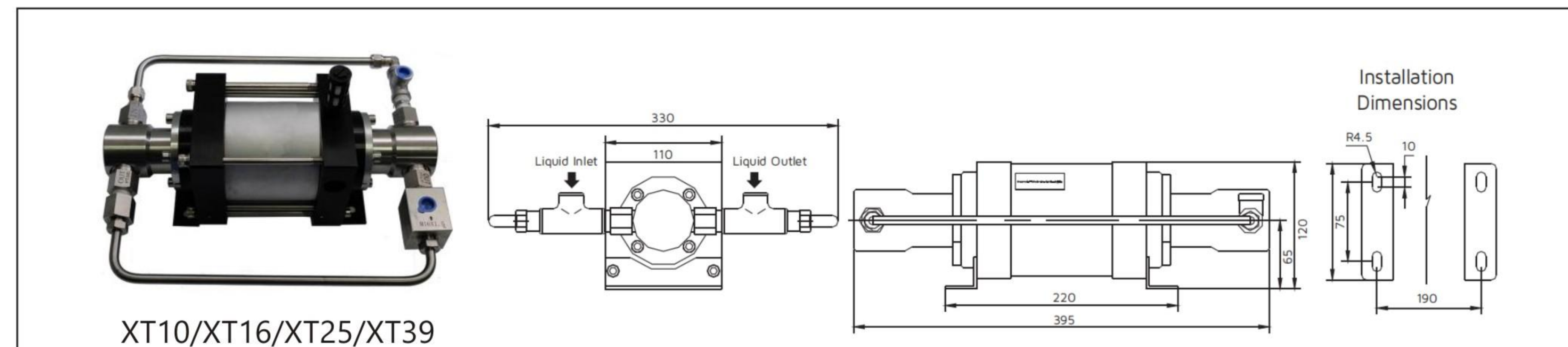
Other Applications:

- Fluid Power applications where a non-electric high pressure hydraulic source is required.
- High and very high applications for hydraulic and isostatic presses .
- Off-shore Oil and Gas Platforms for an emergency non-electric high pressure hydraulic source is required.
- To pump fluids in Hazardous Areas .
- To pump Hazardous Fluids .
- For supplying hydraulic pressure for many kinds of in-field jacking applications .
- Supplying Dust Suppressant Fluids in Open and Underground Mining
- As Chemical Injection Pumps for Upstream Oil and Gas Gathering Systems .
- As Chemical Injection Pumps in Downstream Oil and Gas Plants.

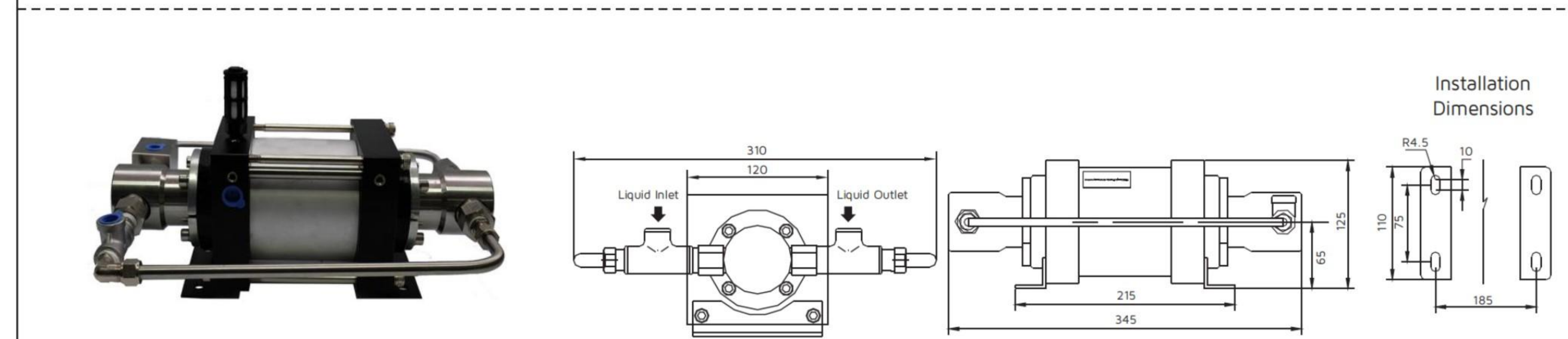
XT Series-100mm Double Acting Liquid Pumps

The USUN AIR DRIVEN is a medium sized unit that uses a 100 mm diameter double acting air drive with a liquid end connected to each end of the air drive. Due to the two liquid ends, the pump is double acting and delivers high pressure liquid outlet on both strokes of the reciprocating air drive. This makes the XT Series most twice as efficient as the XH Series. These pumps can be supplied with interconnecting tubing that connects both liquid inlets to a common port and both liquid outlets to a common port making for a simple installation.

XT pumps are generally used when more flow is required than that delivered by it corresponding XH unit.



XT10/XT16/XT25/XT39



XT64/XT100/XT130/XT156

XT Series Technical Data


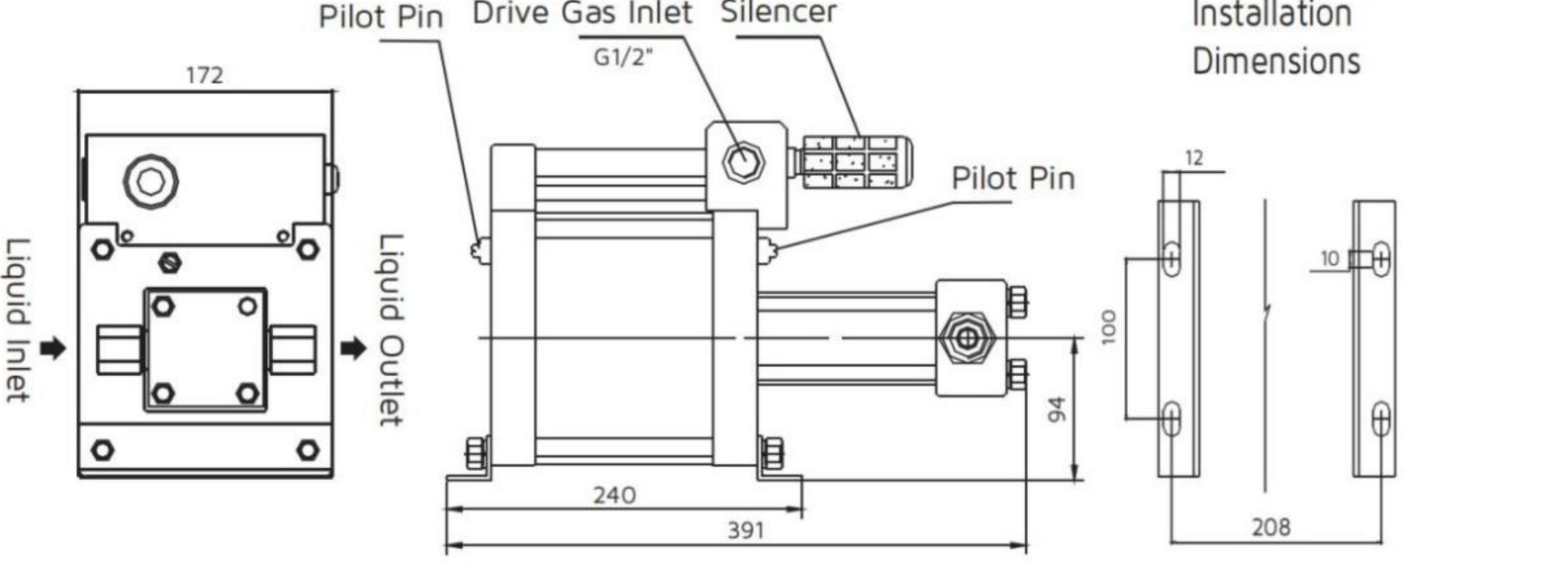

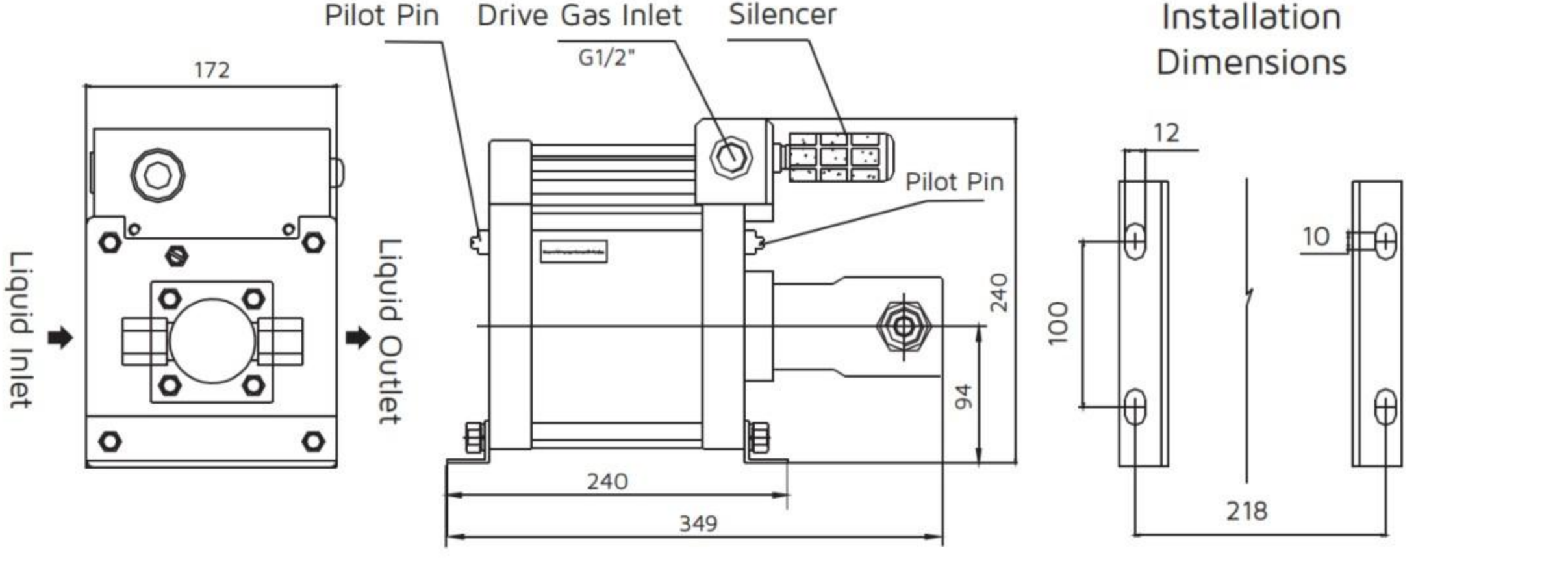

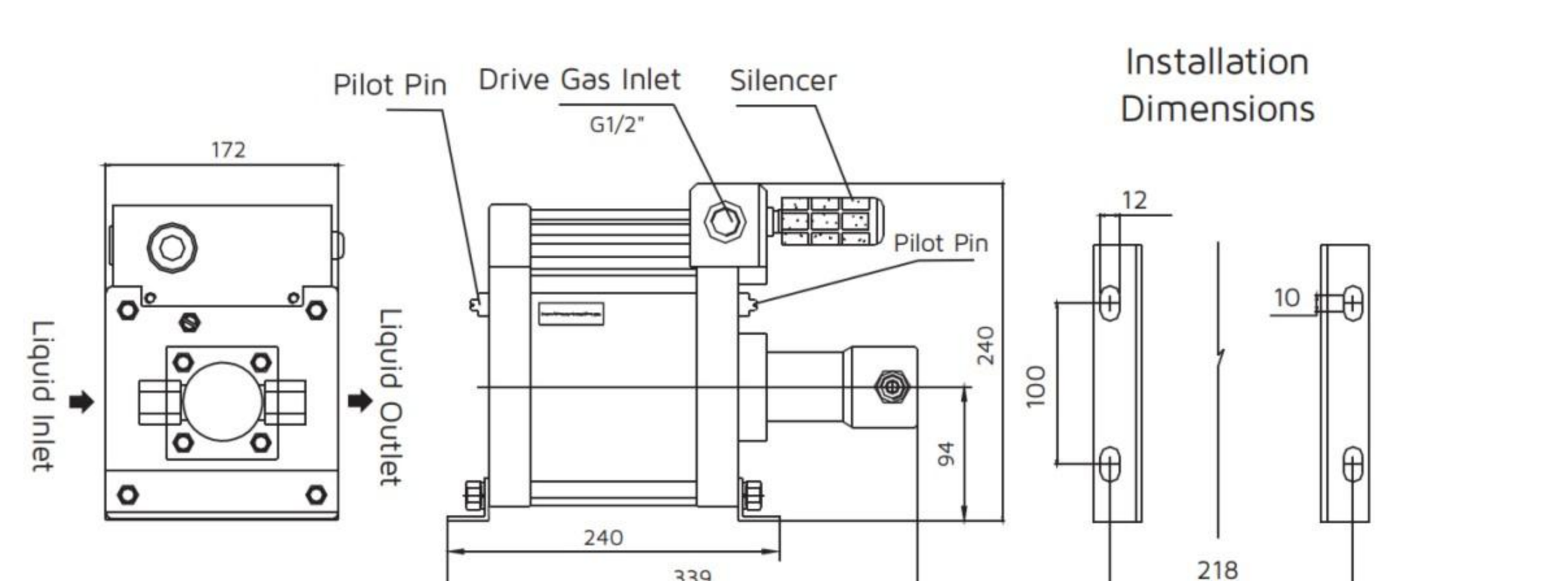

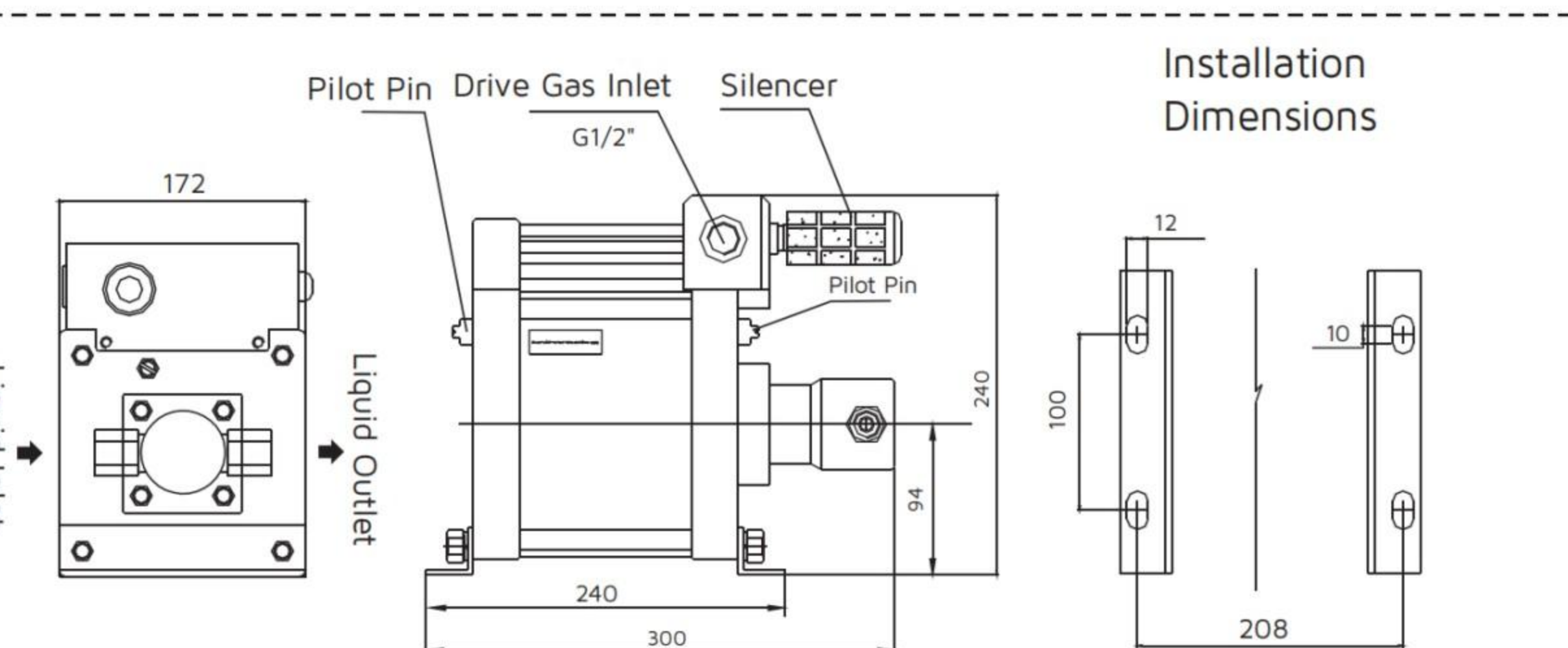
Model	Piston/ Rod Diameter -mm	Flow per Cycle -ml	Liquid Inlet -NPT	Liquid Outlet -NPT	Maximum Output Pressure Bar@ Drive 8.3 Bar	Output Fluid Pressure (Bar) 1 Bar=0.1 Mpa=1.019 Kg/cm ²														
						0	25	50	75	100	150	175	200	250	300	350	400	700		
XT10	30	56	3/8"	3/8"	83	13.57	11.31	8.48	2.83											
XT16	25	54	3/8"	3/8"	132.8	12.96	11.88	10.80	8.10	6.48										
XT25	20	34	3/8"	3/8"	207.5	8.29	7.60	6.91	6.22	5.53	4.84	3.46								
XT39	16	22	3/8"	3/8"	323.7	5.31	4.87	4.42	3.98	3.54	3.10	2.65	2.43	2.21						
XT64	12	12	3/8"	3/8"	531.2	2.99	2.74	2.49	2.36	2.24	2.11	1.99	1.87	1.74	1.62	1.49	0.62			
XT100	10	8	3/8"	3/8"	830	2.07	1.99	1.90	1.81	1.64	1.56	1.47	1.38	1.30	1.21	1.21	1.04			
XT130	9	7	1/4"	1/4"	1079	1.68	1.61	1.54	1.47	1.33	1.26	1.19	1.12	1.05	0.98	0.91	0.84	0.56		
XT156	8	5	1/4"	1/4"	1294	1.33	1.27	1.22	1.16	1.05	1.00	0.94	0.88	0.83	0.77	0.72	0.66	0.61		

The maximum acceptable air drive pressure (Pa) is 8.3 Bar.

AH Series - 160mm Single Acting Liquid Pumps

The USUN AH Series Pump is the most commonly used series pump, capable of delivering very high outlet pressure at low flow rates; or high flow rates at lower pressures depending on the nominal ratio selected. They use a 160mm double acting air drive with a single liquid end.

There are numerous standard modifications available for this series, such as a single-stroke mod, remote control and off-shore trim, making it the most versatile air driven liquid pump available.

 <p>AH02/AH04/AH07/AH10</p>	
 <p>AH16/AH20</p>	
 <p>AH28/AH40/AH64/AH80/AH100/AH130</p>	
 <p>AH170/AH240/AH300/AH400</p>	

AH Series - 160mm Single Acting Liquid Pumps

AH Series Technical Data

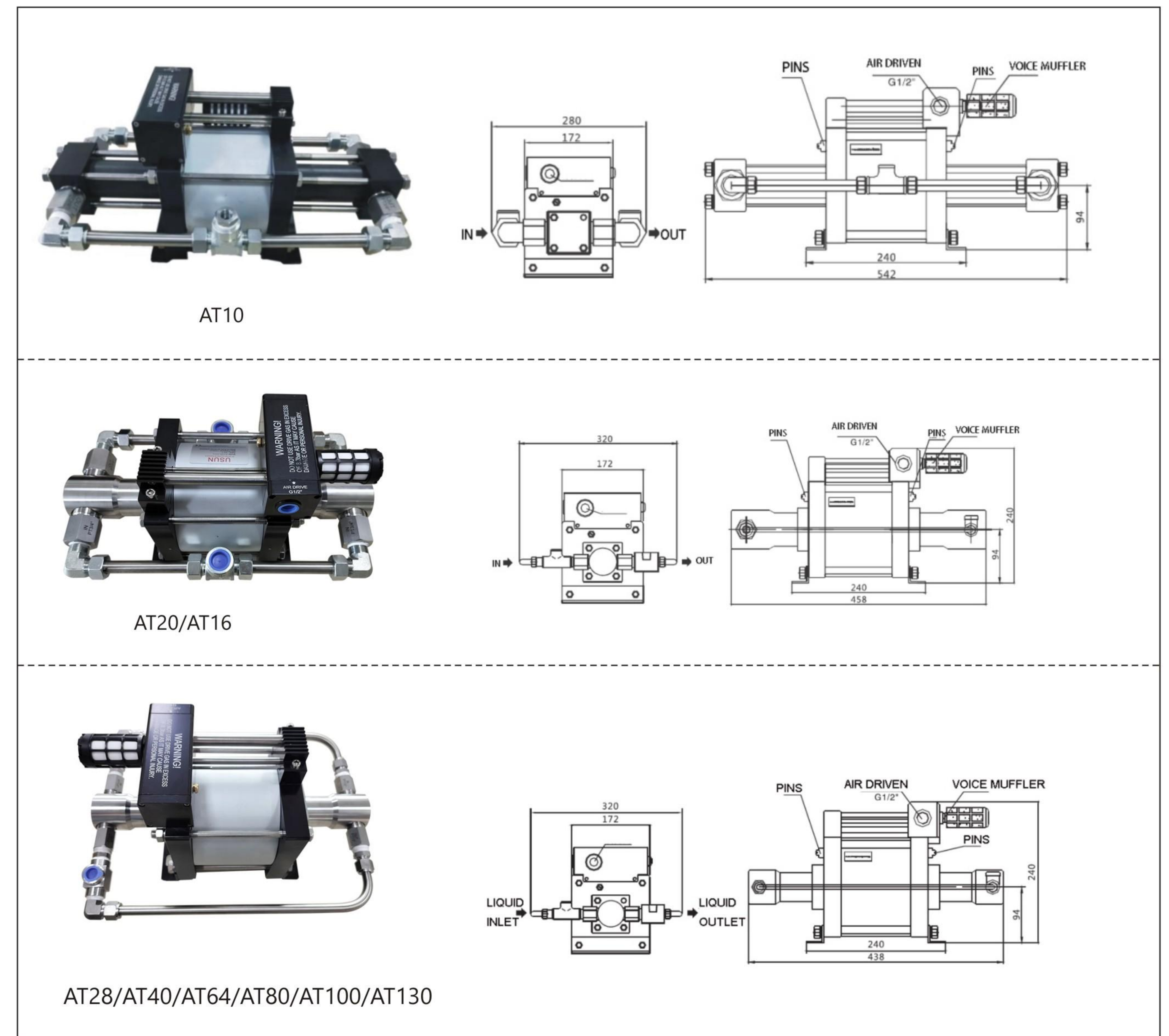
Model	Piston/Rod Diameter -mm	Flowper Cycle -ml	Liquid Inlet -NPT	Liquid Outlet -NPT	Maximum Output Pressure Bar@ Drive 8.3 Bar
AH02	100	471	NPT3/4"	NPT3/4"	16.6
AH04	80	402	NPT3/4"	NPT3/4"	33.2
AH07	63	249	NPT3/4"	NPT3/4"	58.1
AH10	50	157	NPT3/4"	NPT3/4"	83.0
AH16	40	100	NPT3/4"	NPT3/4"	132.8
AH20	35	76	NPT3/4"	NPT3/4"	166.0
AH28	30	56	NPT1/2"	NPT1/2"	232.4
AH40	25	39	NPT1/2"	NPT1/2"	332.0
AH64	20	25	NPT3/8"	NPT3/8"	498.0
AH80	18	20	NPT3/8"	NPT3/8"	664.0
AH100	16	16	NPT3/8"	NPT3/8"	830.0
AH130	14	12	NPT3/8"	NPT3/8"	1079.0
AH170	12	6	NPT3/8"	NPT3/8"	1411.0
AH240	10	4	NPT3/8"	NPT1/4"	1992.0
AH300	9	3.8	NPT1/4"	HF4	2490.0
AH400	8	3.0	NPT1/4"	HF4	3320.0

Model	Output Fluid Pressure (Bar) 1 Bar=0.1 Mpa=1.019 Kg/cm2															
	0	20	40	70	100	150	200	300	400	500	600	700	900	1200	1700	2350
Flow Rate/Minute (L/min)																
AH02	56.55	0.00														
AH04	48.25	16.08														
AH07	29.93	9.98	4.99													
AH10	18.85	12.57	9.42	0.00												
AH16	12.06	9.05	7.04	6.03	4.02											
AH20	9.24	7.70	6.93	6.16	5.39	0.00										
AH28	6.79	5.66	5.09	4.52	3.96	3.39	0.00									
AH40	4.71	3.93	3.53	3.14	2.75	2.36	1.96	0.00								
AH64	3.02	2.51	2.26	2.01	2.75	1.51	1.26	1.01	0.75							
AH80	2.44	2.04	1.83	1.63	1.43	1.22	1.02	0.81	0.71	0.61						
AH100	1.93	1.77	1.61	1.53	1.37	1.21	0.96	0.80	0.64	0.56	0.48	0.00				
AH130	1.48	1.42	1.36	1.23	1.11	0.99	0.86	0.74	0.62	0.49	0.43	0.37	0.12			
AH170	0.81	0.78	0.75	0.71	0.68	0.61	0.54	0.48	0.41	0.34	0.27	0.24	0.20	0.07		
AH240	0.57	0.54	0.52	0.49	0.47	0.42	0.38	0.33	0.28	0.24	0.19	0.16	0.14	0.12	0.09	
AH300	0.46	0.44	0.44	0.42	0.40	0.38	0.34	0.31	0.27	0.23	0.19	0.17	0.15	0.12	0.10	
AH400	0.36	0.35	0.35	0.33	0.32	0.30	0.27	0.24	0.21	0.18	0.15	0.14	0.12	0.11	0.11	0.08

The maximum acceptable air drive pressure (Pa) is 8.3 Bar.

AT Series - 160mm Double Acting Liquid Pumps

The USUN AT Pump that uses a 160 mm diameter double acting air drive with a liquid end connected to each end of the air drive. Due to the two liquid ends the pump is double acting and delivers high pressure liquid outlet on both strokes of the reciprocating air drive. This makes the AT Series almost twice as efficient as the AH Series. These pumps can be supplied with interconnecting tubing that connects both liquid inlets to a common port and both liquid outlets to a common port making for a simple installation. A pumps are generally used when more flow is required than that delivered by it corresponding AH unit.



AT28/AT40/AT64/AT80/AT100/AT130

ZB Series - 160mm Liquefied Gas Pumps

ZB Series Technical Data

Model	Actual Ratio	Displacement Per Cycle -ml	Minimum Inlet Pressure (Pi)-Bar	Maximum Outlet Pressure(Po) - Bar	Refrigerant Outlet Pressure Calculation Formula (Po)	Inlet	Outlet	1g/cm standard density flow rate g/s
ZB05	4:1	779	0.1	33.2	4Pa+Pi	NPT1/2"	NPT1/2"	400
ZB07	7:1	473	3.4	56	7Pa	NPT1/2"	NPT1/2"	280
ZB10	10:1	402	3.4	83	10Pa	NPT3/8"	NPT3/8"	160
4ZB06	6:1	1636	3.4	48	6Pa+Pi	NPT3/4"	NPT3/4"	1600
4ZB10	10:1	981	3.4	83	10Pa+Pi	NPT3/4"	NPT3/4"	900

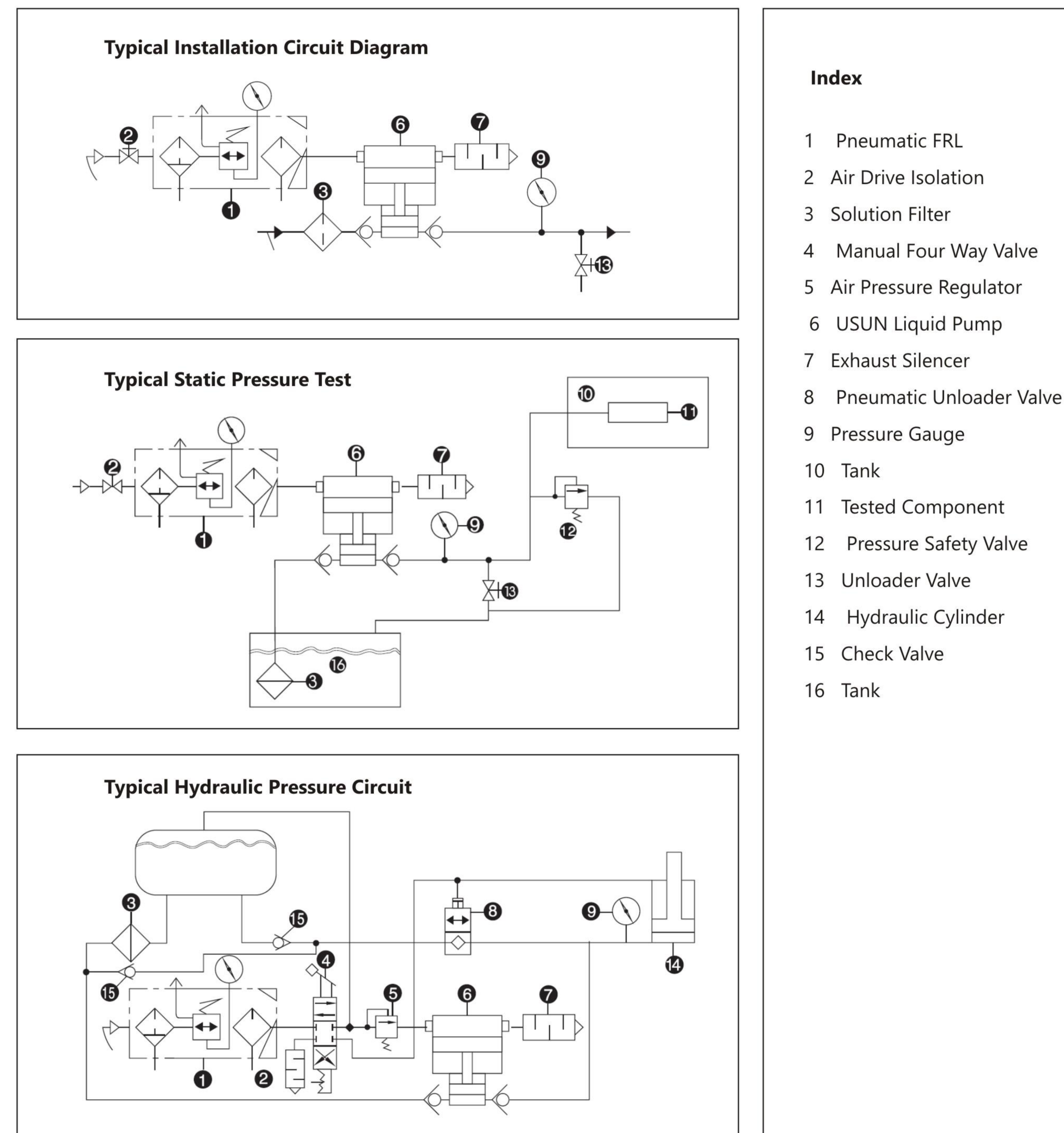
Type D is isolated (completely isolated between the drive chamber and the boost chamber).
The maximum acceptable air drive pressure (Pa) is 8.3 Bar.

ZB serial Air refrigerant pump working medium

Working Medium type	Refrigerant types	Product name	Critical Pressure/MPa	Critical temperature/ °C	boiling point/ °C
	R12	methyl chlorofluoride	4.14	111.97	-29.8
	R22	monochlorodifluoromethane	4.91	96.15	-40.8
	R32	difluoromethane	5.808	78.52	-51.7
	R134A	Tetrafluoroethane	4.07	101.1	-26.5
	R410A	R410A	4.95	72.5	51.6
	R407C	difluoromethane	4.619	86.74	36.1-43.4
	R290	Propane	4.25	96.67	42.2

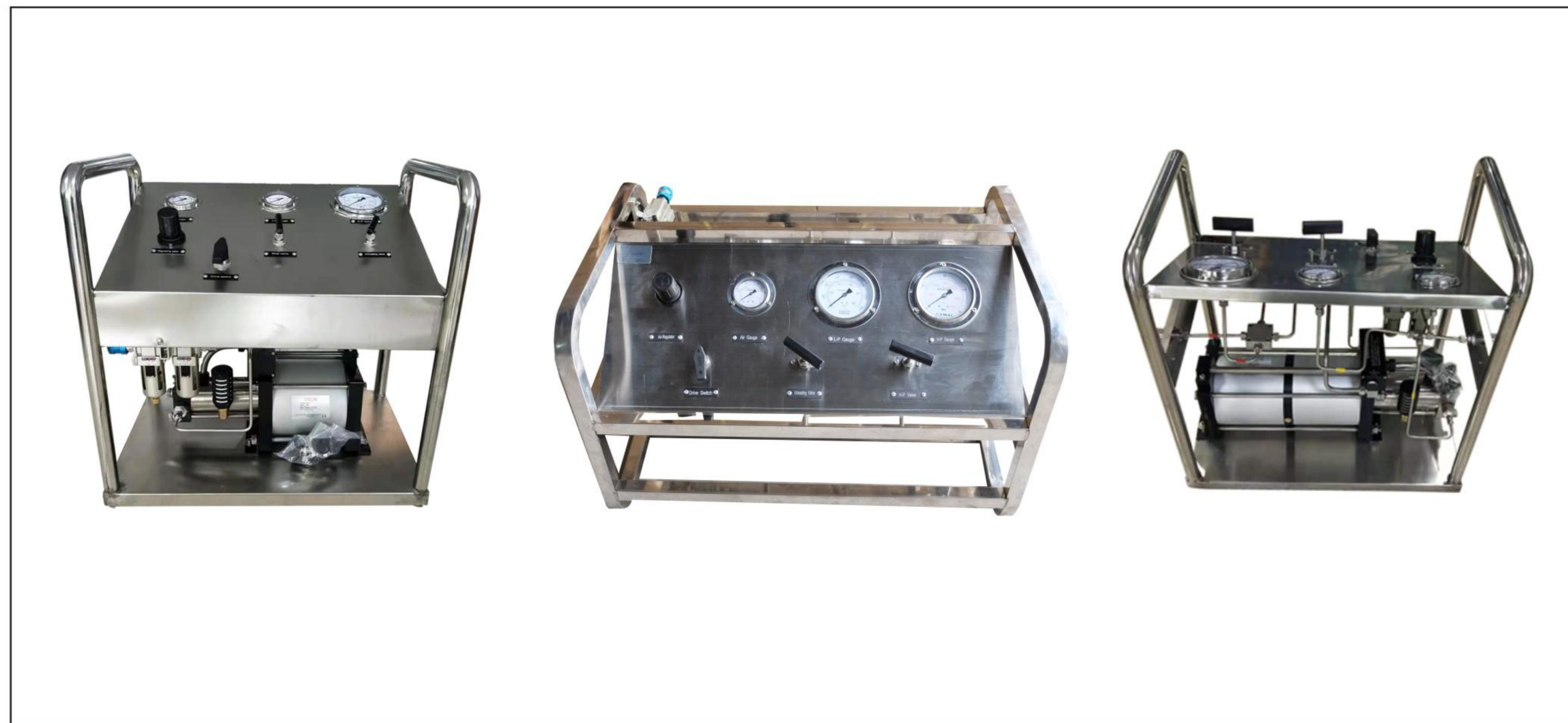
We always recommend seeking advice when using the pump on gases and liquids that are potentially explosive or toxic to ensure that proper venting is considered during design.

Typical Air Driven Liquid Pumps Typical Circuit Diagram



USUN gas booster systems

Pneumatic booster system is an off-the-shelf range of rollbar systems that include all the valves, fittings and gauges as standard. We can also customise these units to meet your application's exact requirements.



- **Intrinsically safe** - no heat, sparks or flames produced
- **No Contamination** - complete separation between driving gas and compressed liquids
- **No Lubrication Required** - on air/gas drive section
- **High Fluid Compatibility** - hydraulic oil, water and corrosive gasses and liquids
- **Start & Stop Against Load** - stall occurs when pressure balance is achieved
- **Driven with Air or other Gases** - including nitrogen, Co2 and natural gas
- **Suitable for Hazardous Area** - with models for underground coal mines and offshore

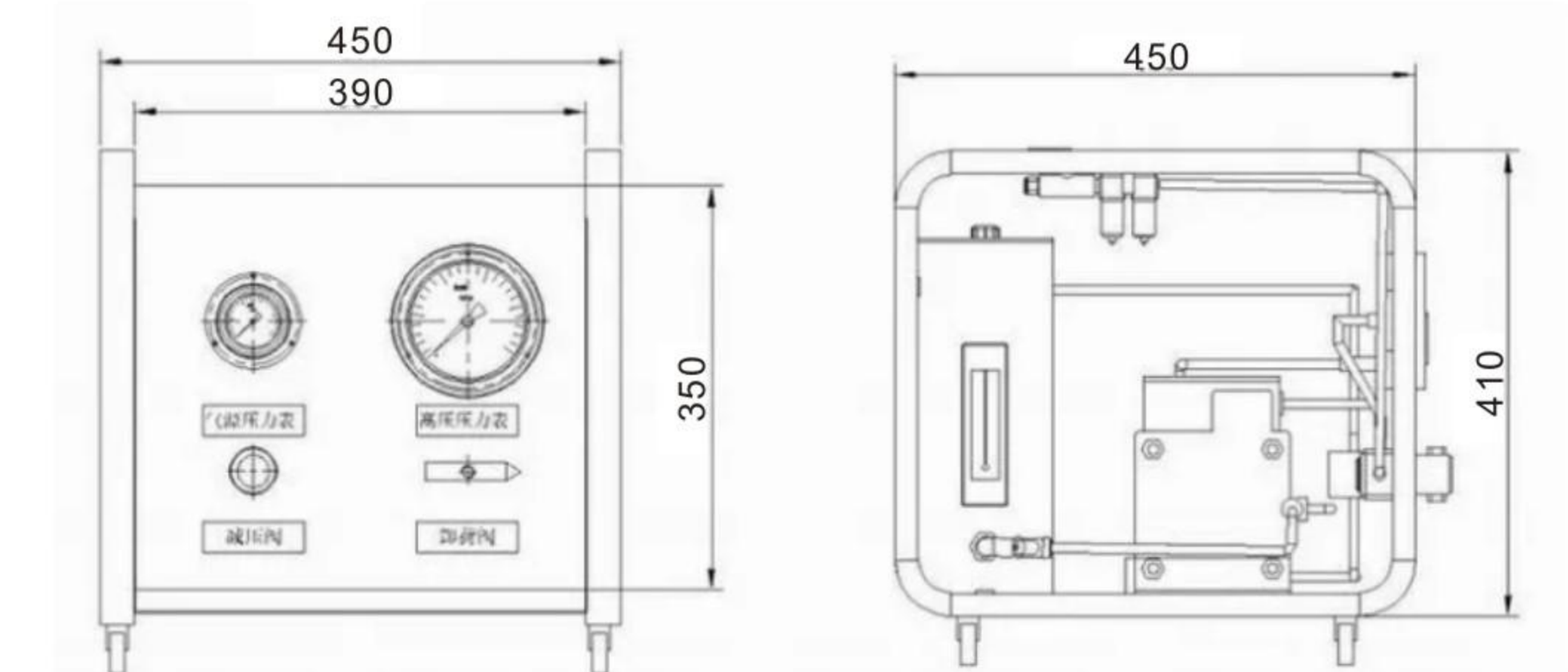
USUN Customised booster system

Standard Inclusions:

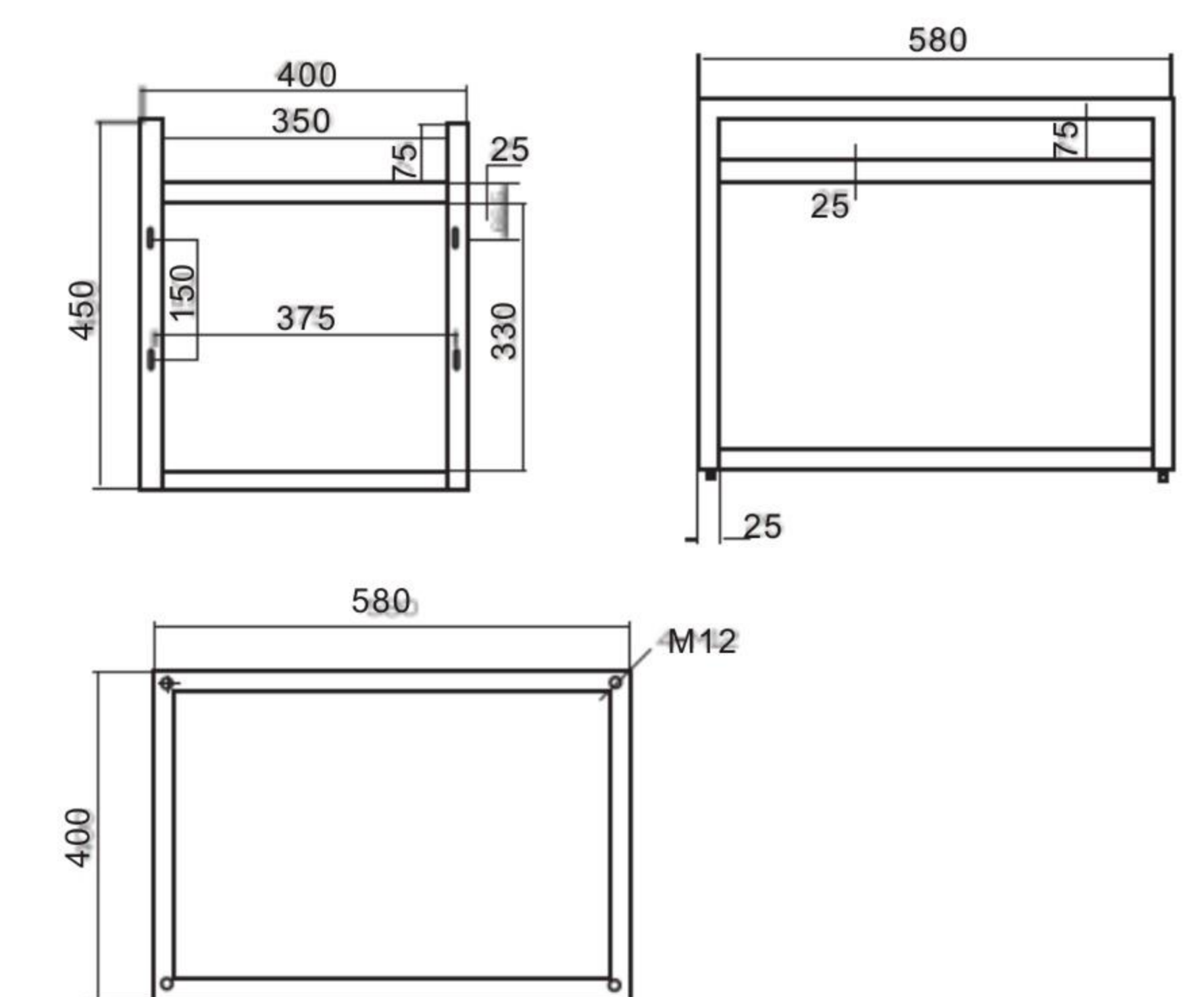
- Air pressure regulator
- Air filter
- Air pressure gauge
- On/Off speed control valve
- USUN air driven liquid pump
- Stainless steel tank with suction strainer or external connection
- Sight Glass and filler/breather cap
- Outlet pressure gauge
- Return to tank valve
- Discharge outlet connection



WS-M Series
Tank Size: 4L
Overall Dimensions: 450x350x410



WS-XH, XT, AH, AT Series
Tank Size: 10L
Overall Dimensions: 580x400x450



GT and GH series pumps are also available on request.

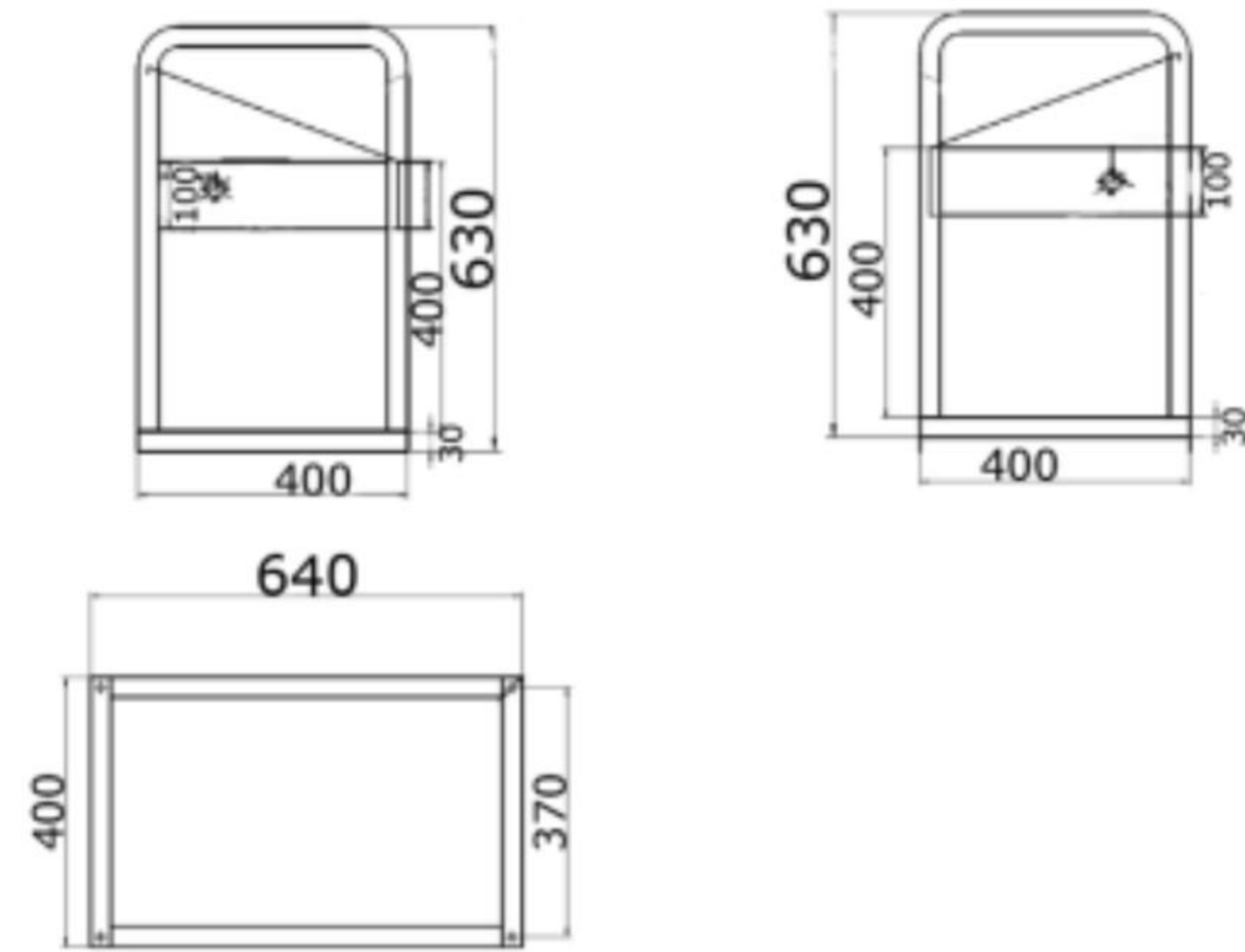
USUN Gas Boosters System

Standard Inclusions:

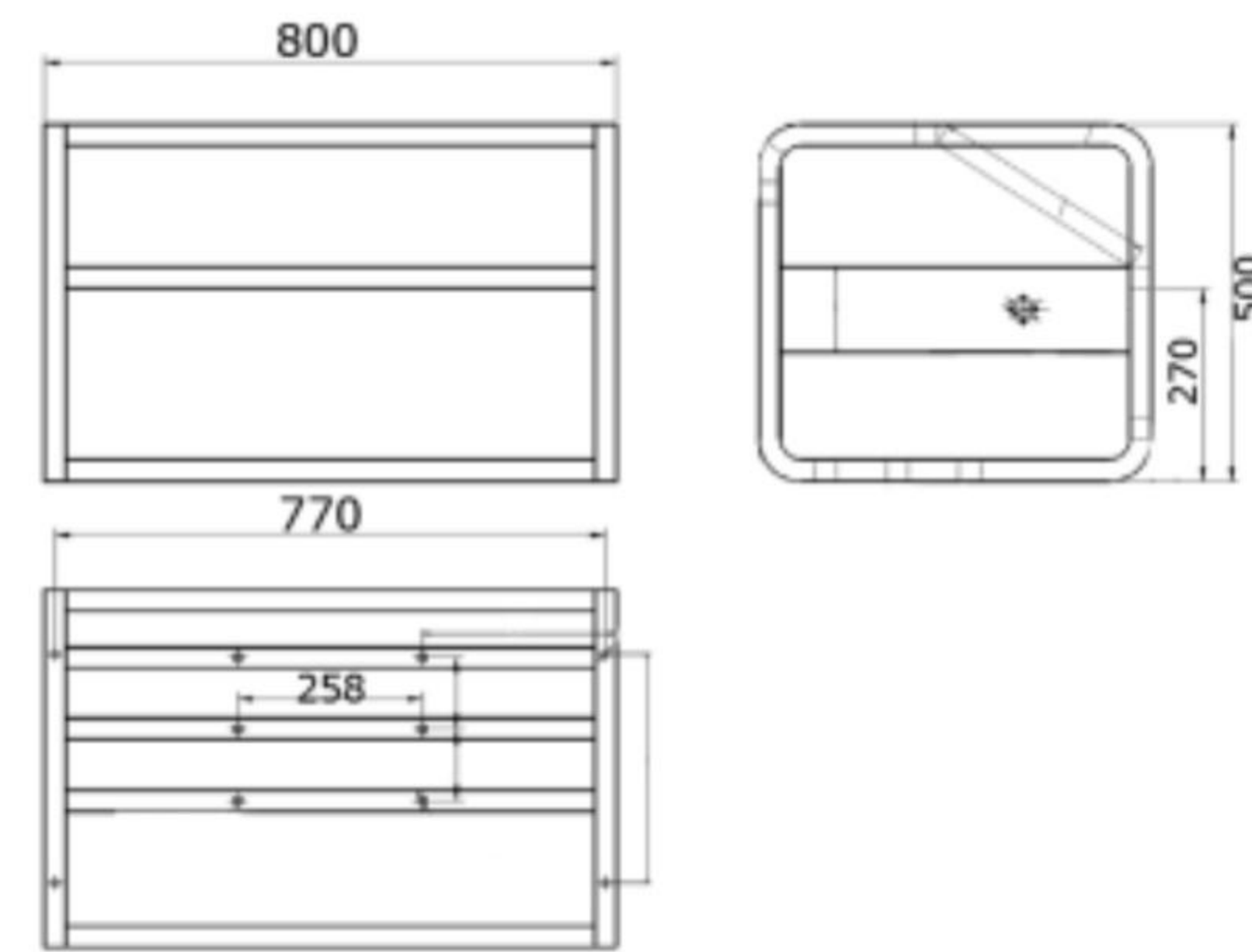
- Air pressure regulator
- Air filter
- Air pressure gauge
- On/Off speed control valve
- USUN air driven gas booster
- Inlet and outlet gas filter
- Inlet and outlet pressure gauge
- Safety relief valve
- Inlet and outlet isolation valves



US-GB Series
Tank Size: No Tank
Overall Dimensions: 640x400x630



US-GBD, GBT Series
Tank Size: No Tank
Overall Dimensions: 800x550x500

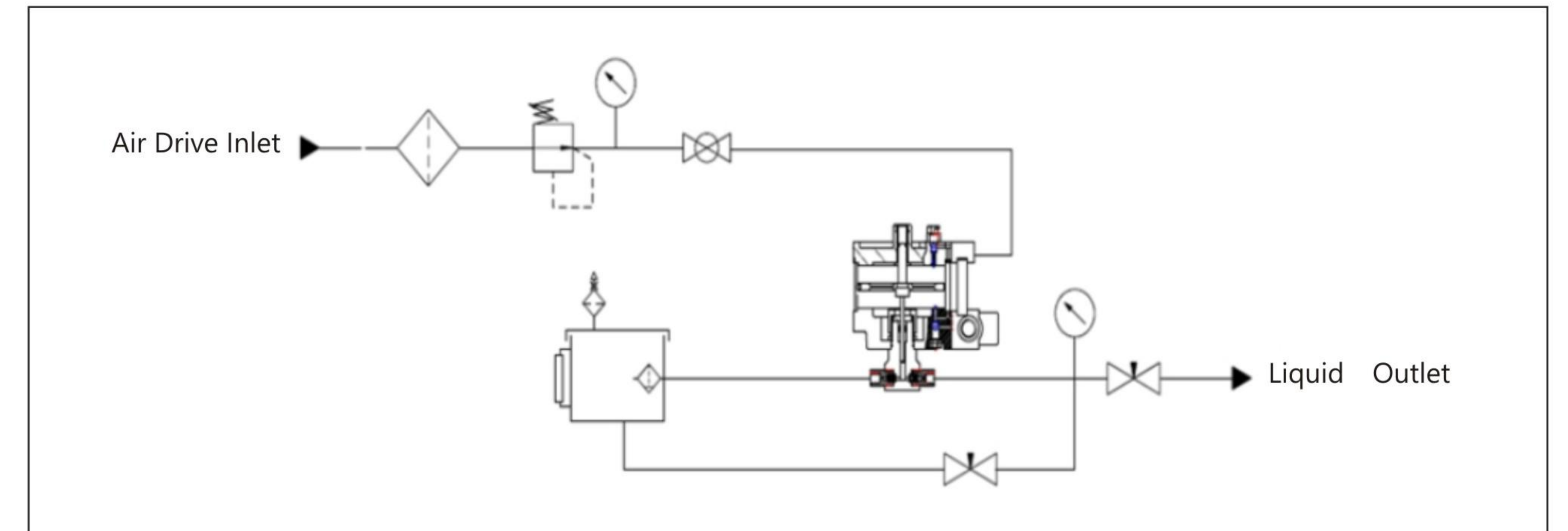


All dimensions are in mm unless otherwise stated.

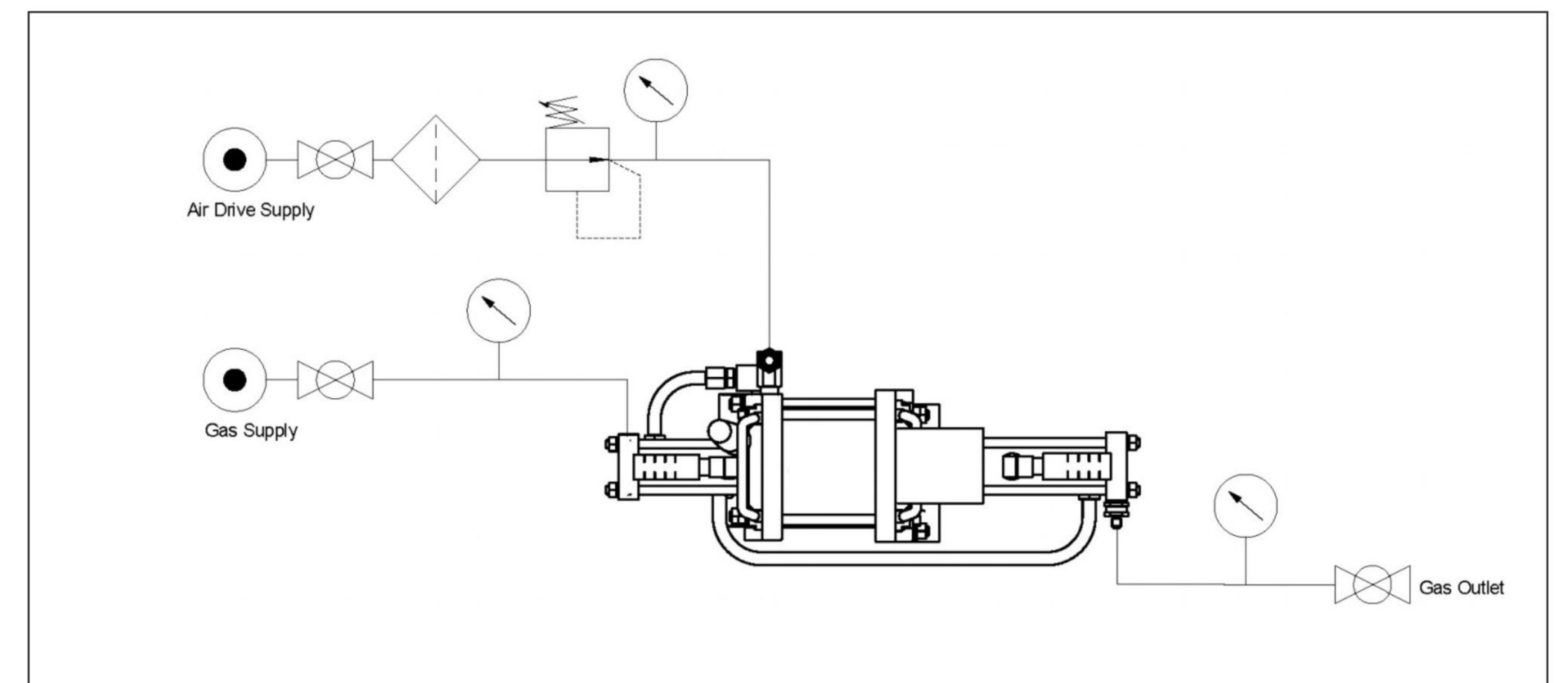
USUN Customised booster system

For more complex applications, we can design and build fully customised skids: Custom Liquid Pumps system and Custom Gas Boosters.

USUN standard air driven liquid pump circuit diagram:



USUN standard Gas Booster Circuit Diagram:



All dimensions are in mm unless otherwise stated.