PROTECH PUMPS
Air Driven Pumps & Boosters

PB SERIES Air Driven Gas Booster

Single Acting Single 160mm Air Head

- Stainless steel wetted materials of construction
- Specialised construction materials available
- PTFE pressure seals as standard
- Built-in cooling of gas barrels (most models)
- Separation between gas & pneumatic seals
- No airline lubrication required
- 120mm stroke reduces cycle rate & Increases life
- Suitable for most hazardous areas
- Available as a complete packaged system (ProPak)

Model	Actual Pressure Ratio	Displacement cu ins / cc	Max Outlet Pressure PSI / BARG*	Connection Inlet A/Outlet B	Flow refer Page
PB02	2:1	73.62 / 1206.0	232 / 16	½" NPT / ½" NPT	7
PB04	4:1	36.81 / 603.0	465 / 32	½" NPT / ½" NPT	7
PB07	7:1	21.03 / 345.0	815 / 56	½" NPT / ½" NPT	7
PB10	10:1	14.72 / 241.0	1,160 / 80	½" NPT / ⅜" NPT	8
PB15	15:1	9.82 / 161.0	1,740 / 120	½" NPT / ⅜" NPT	8
PB25	25:1	5.89 / 97.0	2,900 / 200	½" NPT / ⅜" NPT	8
PB40	40:1	3.68 / 60.0	4,640 / 320	½" NPT / ⅜" NPT	9
PB60	60:1	2.45 / 40.0	6,960 / 480	½" NPT / ⅜" NPT	9
PB100	100:1	1.47 / 24.0	11,600 / 800	½" NPT / ⅜" NPT	9
PB130	130:1	1.13 / 19.0	15,080 / 1040	½" NPT / ¼" HP	10

* Maximum oultlet pressure at an air drive of 8 bar / 116 psi

NOMINAL AND ACTUAL RATIO EXPLAINED

ProTech Gas Booster model numbers reflect the pumps actual pressure ratio,

The outlet stall pressure is easily set by adjusting the air drive pressure through a simple air pressure regulator. By multiplying the actual pressure ratio by the available shop air pressure, the maximum outlet gas pressure (stall) can be calculated.

Example ProTech Gas Booster Model:

PB-60 gas booster

Air drive piston area (160mm Ø)= 20,108 sq.mm

Gas Piston area (20.65mm Ø)= 335 sq.mm

Actual ratio= 60:1

ProTech Gas Boosters are pneumatically driven reciprocating piston pumps and can be used at drive pressures of 2 to 8.3 bar (29 to125 psi).

* For extended life we recommend a maximum of 8 bar (120psig).

ProTech air driven gas boosters are ratio devices that utilize low pressure compressed air driving a larger diameter piston (area x pressure) which is linearly connected to a smaller gas piston. Using this ratio principal, a higher gas pressure can be generated.

AIR DRIVE SECTION

The air drive section consists of a light weight piston complete with seals running inside an aluminum barrel. The diameter of the air piston is 160mm.

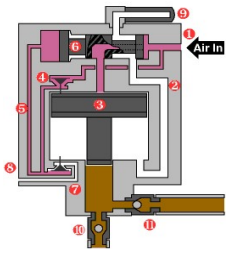
When compressed air is supplied to the pump the air pushes the air piston down (3) on a compression stroke (forces fluid out of the liquid end) (11).

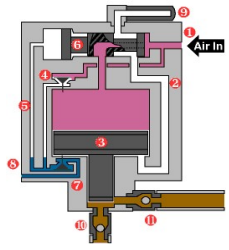
Under the control of pilot pins (poppet valves) (7 & 4) triggered at each end of the stroke, the air is then diverted by way of a flow tube (2) to drive the air piston up on a suction stroke (pulls fluid into the liquid end) (10).

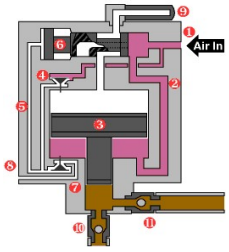
The booster's automatic cycling characteristics are enabled by use of an unbalanced, internally pilot operated spool (6) that directs the air through a 4-way cycling sleeve to either side of the air piston. The operation of the cycling spool is controlled by 2 pilot pins. The air is exhausted through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

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







GAS SECTION

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

The main high pressure seal is located on the gas piston and they seal against the gas barrel during operation. There are different materials and designs of high pressure seals depending on the gas being pumped and the maximum pressures of the pump, however the standard PTFE seals are suitable for both the vast majority of gases encountered.

Other materials of construction can be supplied to meet more aggressive services. The standard series of boosters are **NOT** suitable for underground coal mine applications. ProTech do manufacture models of Air Driven Gas Boosters that are suitable for underground coal mine applications.

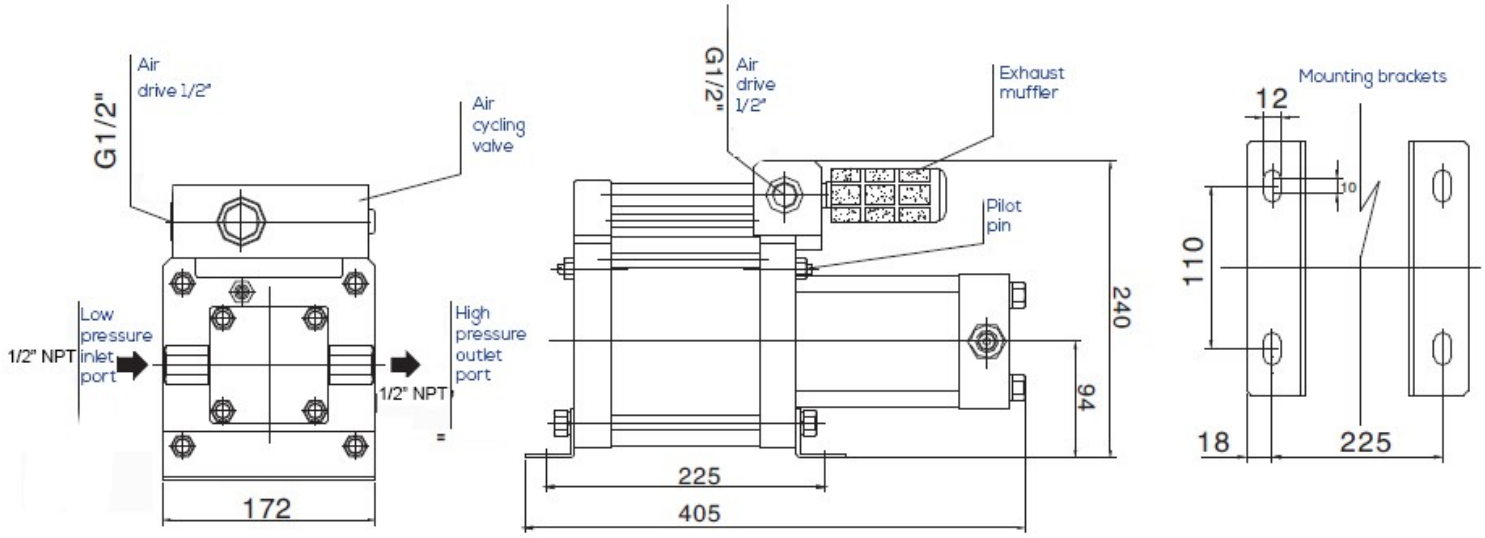
PROTECH air driven gas boosters cycle automatically, as the outlet pressure increases the resistance also increases and the cycle rate decreases until the pump stops automatically when the output pressure forces are equal. This is referred to as the stall condition. The pump will restart with a slight drop in the outlet pressure or an increase in the air drive pressure.

Booster 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 filers. When operating the boosters 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. ProTech gas boosters have a 120mm stroke thus reducing cycle rates at any given flow and pressure, as 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 and consult PROTECH for flow conditions not shown in charts.

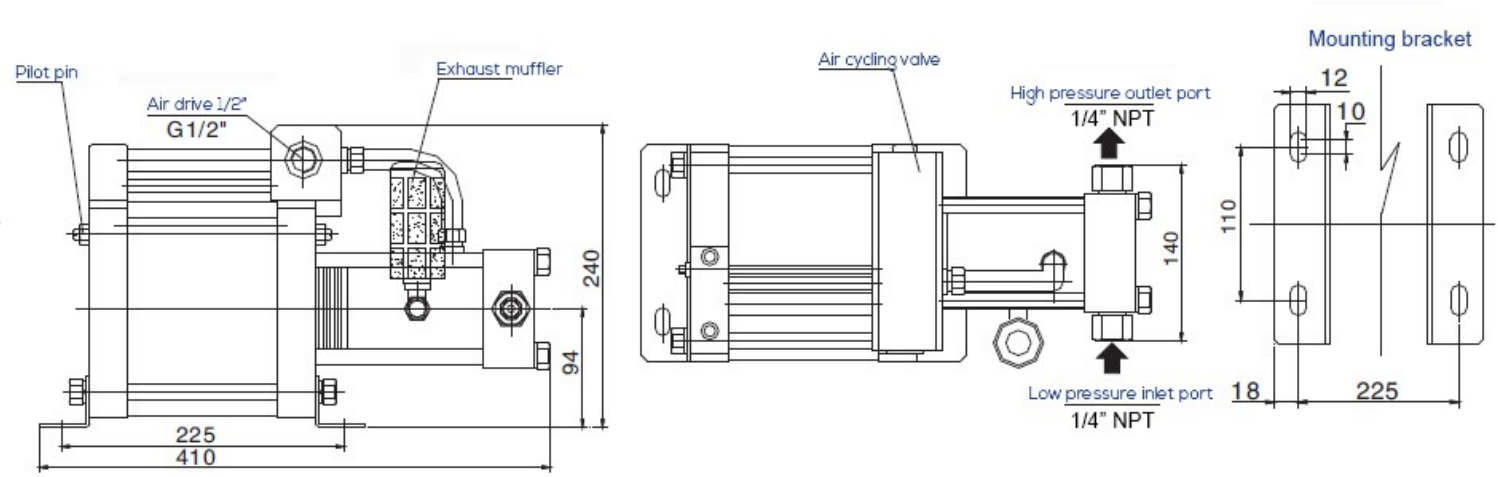
ProTech offers complete technical and service support for all ProTech Gas Boosters.

PB Series Dimensions



PB2, PB4, PB7, PB10

The ProTech air driven gas booster can be mounted in any orientation. However, vertically provides the best method and increases seal life and assists in preventing any leaking high pressure fluid entering the air drive



PB15, PB25, PB40, PB60, PG100, PG130

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The PROTECH Gas Booster range is available online at protechpumps.com

MODEL SELECTION

It is very important to remember that the performance of any air driven device is very dependent on the air supply conditions. Restrictions in the air supply can be caused by using a too small air compressor or airlines. The FLOW CHARTS shown in this technical sheet are based on good conditions so please do not "Design to the line". Allow for losses and inefficiencies.

The next question is whether you want the booster to stall when an outlet pressure is reached. If so, a simple airline pressure regulator will suffice, but remember, the flow drops off dramatically as the booster reaches a stall condition.

If you require flow at a particular pressure, then you need to read the flow charts carefully and conservatively. If you need the pump to stop at a certain pressure, prior to stall, then an air pilot switch needs to be installed. Please see the ProTech Valves and Accessories for selection.

AIR SUPPLY

To obtain maximum continuous performance from the PG Series ProTech Air Driven Gas Boosters we recommend the use of an air compressor with a minimum free air delivery (FAD), **to the booster,** corresponding to the pressure you wish to use. As a guide:

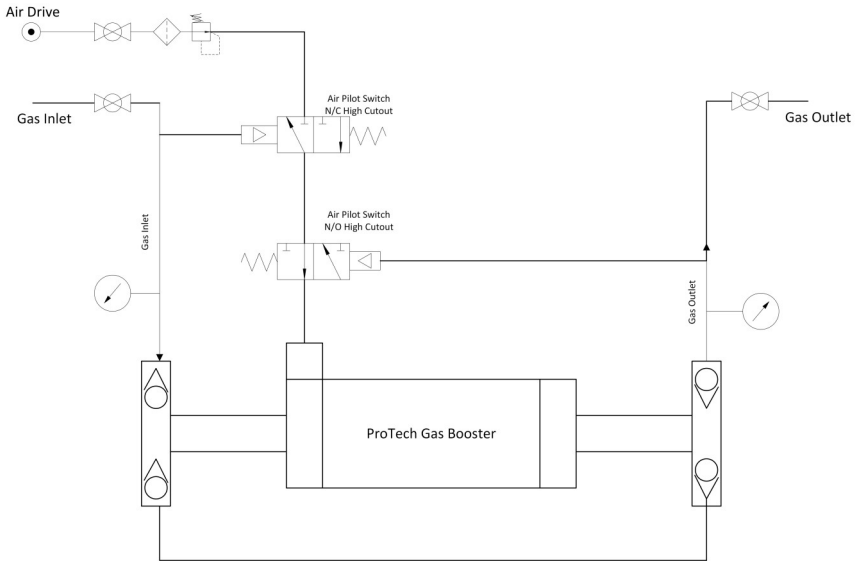
Drive Pressure required at the inlet of the pump	**FAD required at the inlet of the pump**
4 barg (60 psig)	800 nlpm (30 scfm)
6 barg (90 psig)	1200 nlpm (45 scfm)
8 barg (116 psig)	1600 nlpm (60 scfm)

PROTECH PUMPS

Air Driven Pumps & Boosters

PROPAK2 Standard Gas Booster System

Each PROPAK is a self contained Stainless Steel unit which incorporates the following items: Air pressure regulator, air filter, air pressure gauge and on/ off speed control valve; ProTech air driven liquid pump up to 3200 barg; Stainless Steel liquid tank with suction strainer or external connection, sight glass and filler/breather cap; outlet pressure gauge; return to tank valve and discharge outlet



WARRANTY

ProTech Pumps are fit for purpose providing they are used in accordance with instructions laid out within the related IOM. We warrant that they are free from defects and in the rare occasion that a product is defective, we will repair or replace the product within a period of 12 months from the purchase date. Please read our full warranty conditions on our web site.

PROTECH PUMPS has more than 50 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 PROTECH PUMPS at the forefront of the 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, such as oil, water and chemical applications.

ProTech Pumps

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