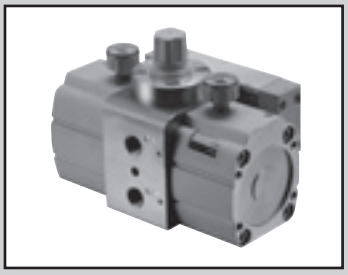
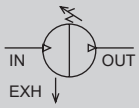


Air booster (Air booster)

ABP2-HP1 Series

JIS symbol



RoHS CAD

Specifications

Item	ABP2-HP1
Working fluid	Compressed air
Max. working pressure MPa	0.99
Min. working pressure MPa	0.2
Set pressure MPa	From a primary pressure of + 0.1MPa to twice the primary pressure (max.0.99 MPa)
Proof pressure MPa	1.5
Flow rate m^3/min(ANR)	Refer to the flow characteristics in the graph on the right
Boosting ratio	Max. twice (or equivalent)
Ambient temperature°C	0 to 50 (no freezing)
Lubrication	Not available
Port size	Rc1/4 (bottom, back Rc1/8)
Weight kg	2.0
Durability	10 million cycles (nominal) (Refer to page 163)

How to order

ABP2 - 02 R - N N N - HP1

- ABP2: Air booster
- 02
- A R: Body piping thread
- B N: Pressure gauge option
- C N: Silencer option
- D N: Bracket option
- HP1

Code	Description	
A Body port thread		
R	Rc thread	
N	NPT thread (made to order)	*1
G	G thread (made to order)	*1
B Pressure gauge option		
N	No	
G	Pressure gauge (2 included)	
C Silencer option		
N	No	
S	Silencer (2 pcs. included)	
H	High performance silencer (2 pcs. included)	
D Bracket option		
N	No	
B	Foot bracket (2 included)	
T	Tank mounting base (included)	

*1: IN, OUT gauge port, and EXH port are Rc threads

Functions

● Primary pressure from IN passes through the check valve on IN side, and flows into booster chambers A and B. The primary pressure passes through the pressure adjustment section and switching valve, and flows into the driving chamber A. The piston moves to the left due to the pressure of the driving chamber A. Air in booster chamber A is compressed, passes through the check valve on the OUT side, and goes to the OUT side.

● When the piston reaches the stroke end, the changeover switch will be pushed, causing compressed air to be supplied to the switching valve pilot chamber and causing the switching valve to change over. Then the air in drive chamber A is exhausted, and the air is delivered to drive chamber B.

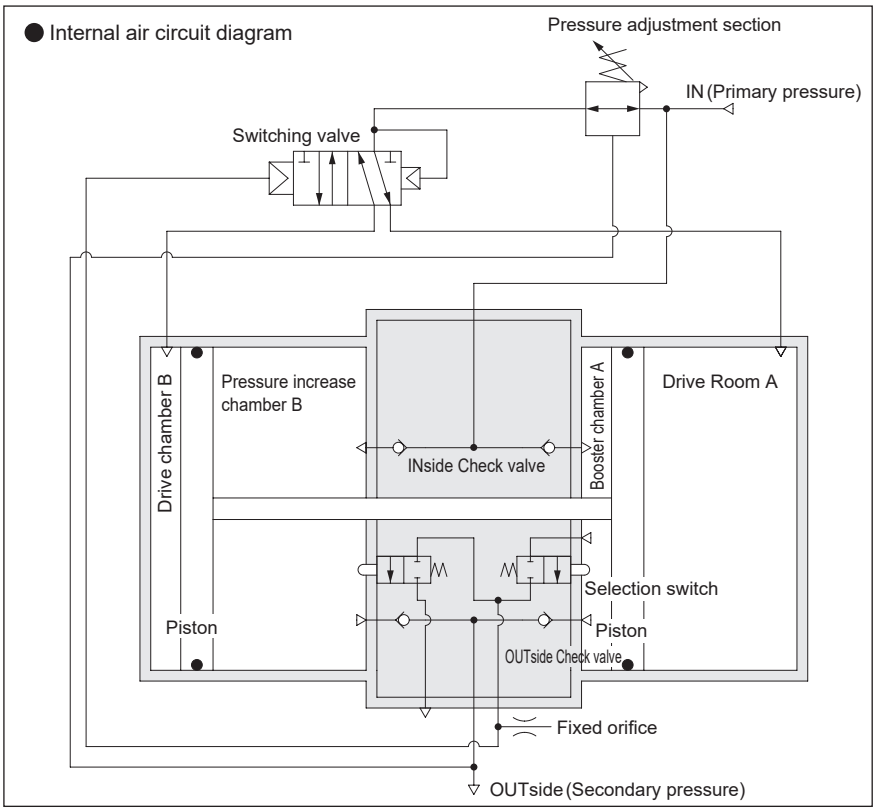
● Therefore, the piston moves to the right and air in booster chamber B is compressed, passes through the check valve at the OUT side and moves OUT.

● Boosting on the OUT side is compressed if the operations above are repeated. Feedback pressure is transmitted to the pressure adjustment section due to the OUT side pressure, and boosting is continued until the pressure adjustment spring pressure is balanced.

[Example of model No.]
ABP2-02R-GSN-HP1
Model: Air booster

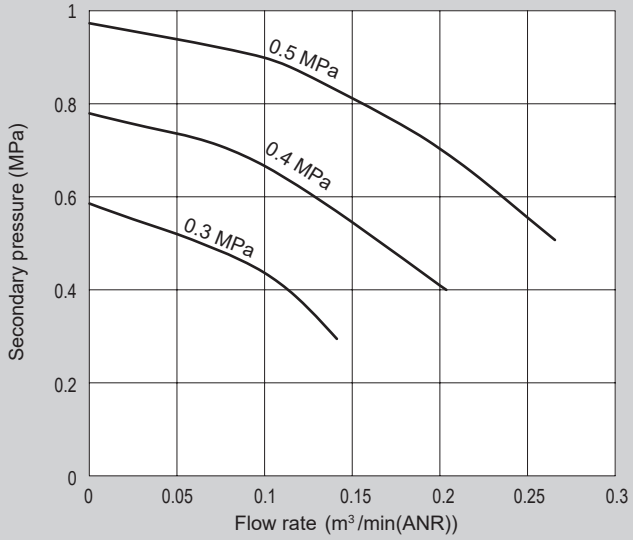
- A Body piping thread: Rc thread
- B Pressure gauge option: Pressure gauge (2 included)
- C Silencer option: Silencer (2 pcs. included)
- D Bracket option: None

● Internal air circuit diagram



Refer to "Air booster ABP2-HP1 Series (No.CC-1533A)" for dimentions.

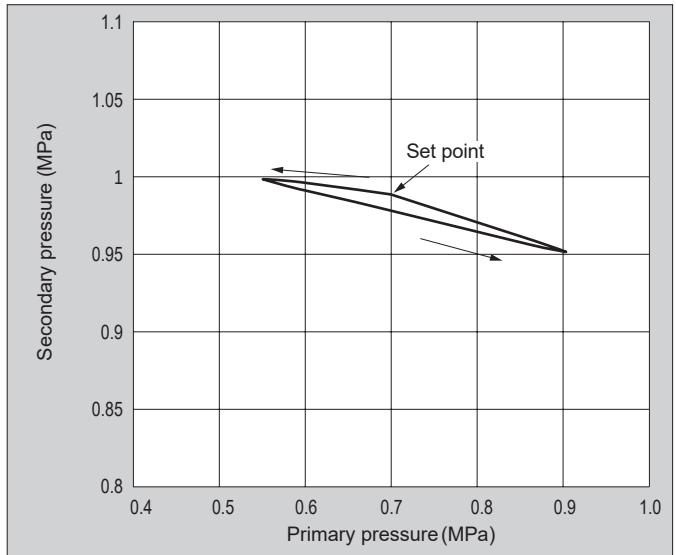
Flow characteristics (Air tank 5L, at twice the pressure



Fluid characteristics show max. flow rate of air booster. If primary pressure is constant and secondary side flow rate is increased, max. secondary pressure decreases.

Pressure characteristics

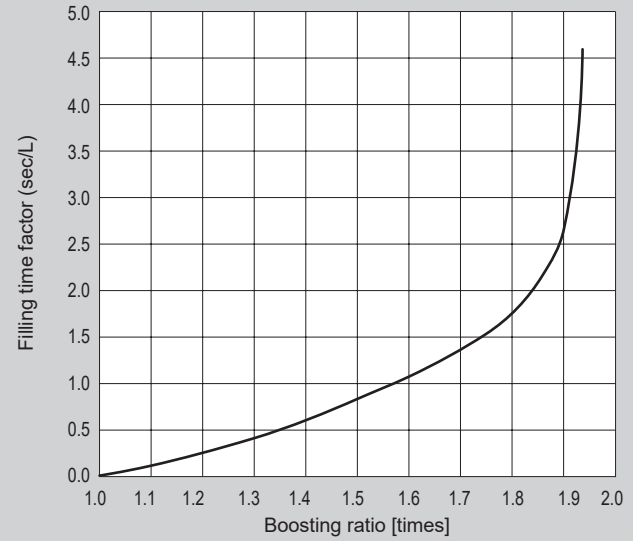
(Setting: Primary pressure: 0.7MPa Secondary pressure: 0.99MPa Flow rate: 0.02m³/min (ANR))



Pressure characteristics show variation of set secondary pressure according to primary pressure variation.

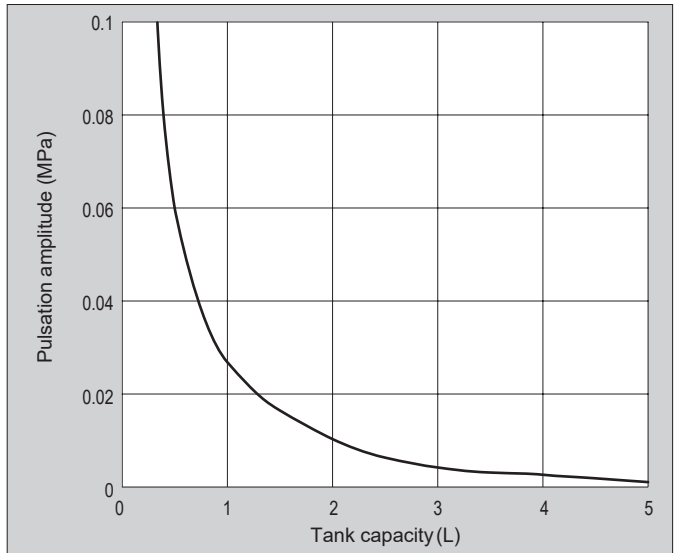
Note) Air booster needs approx. twice secondary side flow rate (max.) for primary side due to structure.
Confirm that the instantaneous flow rate is within the curve.

Filling characteristics (when the boosting ratio is equivalent to 2 times)



Filling characteristics show relations between boosting ratio and filling time, if tank etc., filled with compressed air.

Pulsation



Pulsation shows width of pulsation if air tank is installed onto secondary side of air booster.

The time required to fill the tank with air can be calculated as follows. With the primary side pressure P_0, inner tank pressure before filling P_1, inner tank pressure after filling P_2, pre-filling ratio between primary side pressure and inner tank pressure k_1, and post-filling ratio between primary side pressure and inner tank pressure k_2, the formula will be $k_1=\frac{P_1}{P_0}$, $k_2=\frac{P_2}{P_0}$. Calculate k_1 and k_2, find the filling time factors t_1 and t_2 at the boosting ratio points k_1 and k_2 in the graph and substitute the values into $t = (t_2 - t_1) A$ to obtain the filling time t of the tank capacity A (L).

Formula for air booster operational cycle

$$N=\frac{Q\times10^3}{0.95P+0.096}$$

N: Operational cycle
Q: Required flow rate (m³/min(ANR))
P: Primary pressure (MPa)

Formula for air booster service life

Since the nominal life of the operation cycle is 10 million cycles

$$T=\frac{10{,}000{,}000}{N\times60}$$

T: Service life (Time)

The characteristics above are typical examples, not guaranteed values.