



1. General

A pilot operated pressure regulating valve allows for the user to set a maximum header pressure that is not to be exceeded. It is generally used where more than one blower is connected to a common discharge header - each blower package being equipped with its own discharge check valve or occasional to even consistent pressure spikes occur in the air pipe.

The AEROPRESS10S is especially useful in all applications where a minimum header of 2PSIG cannot be achieved during the time of blower start-up. Especially pneumatic conveying applications are often prone to pressure spikes during normal blower operation, yet may not have sufficient air pressure in the air delivery pipe at time of blower start-up to guarantee the normal operation of the standard AEROPRESS (See document B-6-0209).

Alternatively, the AEROPRESS10S may be installed directly on a common blower header and therefore serve as a pressure regulating valve for multiple blowers. The start-up unloading functionality for individual blowers would not apply however.

Once the pilot valve is set to the not to be exceeded header pressure the AEROPRESS10S will automatically blow-off any excess air and maintain the set pressure. It is designed to handle the full air volume of the blower and can safely allow continuous blower operation in the event the blower package is operated with a fully closed discharge air pipe.

In its standard design (without solenoid valve), the AEROPRESS10S pressure regulating valve operates completely independent & without any electrical requirement.



Aerzen USA Corporation

108 Independence Way, Coatesville, PA 19320
 Tel: (610) 380-0244 Fax: (610) 380-0278
www.aerzenusa.com

AEROPRESS10S –Pressure Regulating and Start / Unloading Valve for Rotary Positive Displacement Blowers

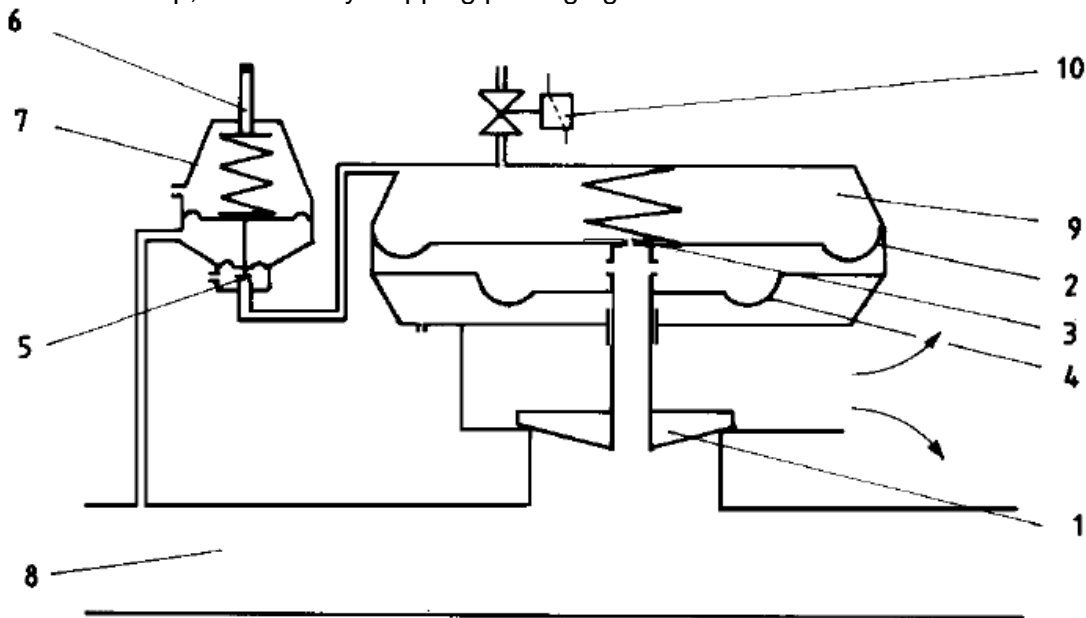
Date	Doc #	Page
12/10/08	B-6-0221 revision “-”	1 of 4

2. Installation of the AEROPRESS10S

The AEROPRESS10S is to be installed between the check valve and the blower. On all Aerzen packages, the AEROPRESS10S has been installed at the correct location. A 750 mm (»2.4 ft. long) hose and a G 3/8" male thread fitting are supplied with the valve for the control pressure connection of the pilot valve. The connection is made to sense the main process piping system pressure. All of the AEROPRESS10S valves come with metric flange connections (DN-80, 150 or 200 depending on the model). Optional flange connections may be available – please contact Aerzen After-Sales / Service for details.

The valve may be installed in any orientation except flange side up.

Before start up, remove any shipping/packaging materials.



1. housing / valve seat
2. upper diaphragm
3. spring / spindle with nozzle
4. lower diaphragm
5. pilot valve seat
6. pilot valve adjustment screw
7. pilot valve
8. process piping
9. upper valve muscle pressure cavity
10. solenoid



Aerzen USA Corporation

108 Independence Way, Coatesville, PA 19320
Tel: (610) 380-0244 Fax: (610) 380-0278
www.aerzenusa.com

AEROPRESS10S –Pressure Regulating and Start / Unloading Valve for Rotary Positive Displacement Blowers

Date

12/10/08

Doc #

B-6-0221 revision “-”

Page

2 of 4

11. Operation without solenoid valve (standard)

Pressure control function

The valve is normally closed and therefore air from the blower is being conveyed into the process piping (8). The installed pilot valve pressure sensing line delivers the process piping pressure to the pilot valve (7). The adjusting screw (6) sets the set pressure of the pilot valve seat (5). Once the process pipe pressure overcomes the pilot valve set pressure, the valve seat (5) lifts and allows air from the upper diaphragm (2+9) area to escape through the pilot valve vent. This continues to happen until equilibrium is reached between the pilot valve set pressure and the diaphragm area pressure. Valve seat (1) lift is assisted by allowing process air pressure to enter the lower diaphragm (4) area by ways of the nozzles in the valve spindle (3).

12. Operation with solenoid valve (optional)

In absence of a start-unloading valve, the motor has to start the blower and to drive it up to its operating speed against the line pressure.

While starting, a squirrel cage induction motor typically draws 6 to 7 times its nominal current. To reduce this current peak, one can choose between several types of motor starters that start the motor at reduced voltage.

The most common type is the Y / Δ starter. While starting in the "Y" position, the starting torque of the motor is reduced to approximately 30 % of the full voltage starting torque.

By using a solenoid valve, the blower can be started unloaded, allowing the motor to bring it to speed with reduced torque while in the "Y" position of the starter.

The starting torque for the fully unloaded blower amounts typically to approximately 5 – 10 % of the operating torque.

Operation of this system is the same as the "standard", except that a solenoid valve (10) is installed, venting the top of the diaphragm, keeping the unloading valve open as long as the solenoid valve remains open. This allows the blower to run unloaded allowing the unloading cycle to be controlled by an electrical signal from the operator.

The standard solenoid valve (10) is normally closed, thus requiring electric current to energize the coil and open the solenoid valve, venting the top chamber of the valve allowing the AEROPRESS10S valve to open. An optional normally open valve can also be purchased, however the reason for the normally closed version is in case of failure of the solenoid valve (valve fails closed) the AEROPRESS10S would still function as a "standard" unit.



Aerzen USA Corporation

108 Independence Way, Coatesville, PA 19320
Tel: (610) 380-0244 Fax: (610) 380-0278
www.aerzenusa.com

AEROPRESS10S –Pressure Regulating and Start / Unloading Valve for Rotary Positive Displacement Blowers

Date

12/10/08

Doc #

B-6-0221 revision "-"

Page

3 of 4

13. Maintenance

The AEROPRESS10S unloading valve does not require any particular maintenance. It is important to make sure that the discharge opening is unobstructed with foreign material or paint.

14. Adjusting the set pressure of the AEROPRESS10S pilot valve

Remove the black plastic cap. The required system pressure maybe set by turning the adjusting screw of the pilot valve with a screwdriver (see picture below) upon loosening its locknut. After reaching the desired set pressure, tighten the lock nut and replace the cap. AEROPRESS10S valves are shipped with un-adjusted pilot valves and need to be field set. The set pressure is set to the minimum.



**Increase
set pressure**

**Decrease
set pressure**

15. Performance

Type	Air flow CFM	Delta P at Qmax (PSI)	Temp range °F		P range PSI		Weight in lbs	Flange	Aerzen Part Number
			min	max	min	max			
2	71 - 424	4	5	266	2.0	15	17.1	G2" threaded	91-0005-02-G2
2	71 - 424	4	5	266	2.0	15	18.7	square 150mm / 6"	91-0005-02-SQ
3	353 - 883	3	5	266	2.0	15	17.6	G3" threaded	91-0005-03-G3
3	353 - 883	3	5	266	2.0	15	19.2	square 150mm / 6"	91-0005-03-SQ
4	706 - 1766	3	5	266	2.0	15	22.0	G4" threaded	91-0005-04-G4
4	706 - 1766	3	5	266	2.0	15	22.7	square 150mm / 6"	91-0005-04-SQ
4	706 - 1766	3	5	266	2.0	15	24.3	DN100	91-0005-04-DN100



Aerzen USA Corporation

108 Independence Way, Coatesville, PA 19320
Tel: (610) 380-0244 Fax: (610) 380-0278
www.aerzenusa.com

AEROPRESS10S –Pressure Regulating and Start / Unloading Valve for Rotary Positive Displacement Blowers

Date
12/10/08

Doc #
B-6-0221 revision “-”

Page
4 of 4