CONTROL SYSTEM

PRESSURE CONTROL PANEL

Each pneumatic conveying system requires a control panel. The control panel consists of two air pressure operated mercury (Mercoid) switches and one pressure gauge. These control panels are built into the system for two very important reasons:

1. To prevent an overload of product from plugging the system.
2 To prevent damage to the blower by running the blower at pressures beyond its design rating.

The two pressure switches are to be wired into the control circuits of the blower motor and an infeed device motor (feeder, conveyor or surge bin). The pressure switch wired into the blower circuit is a normally closed switch, which opens at pressure rise and is set to open and therefore stop the blower.

If pressure builds up above the rating of the blower, the overload relays in the starter take several seconds to several minutes to trip out. With the blower pressure switch wired into the circuit, then the instant the system is plugging, the blower will trip out and therefore not be damaged. The pressure switch for the infeed control circuit is set to open when the quantity of product being handled is above that which the system was originally designed for (closing again when pressure drops enough).

The amount of work done in a pneumatic conveying system is indicated by pressure at which the blower is operating. When no product is being fed into the line, the pressure gauge will show the **free running pressure**, an indication of line resistance to air flow for that particular system. As product is fed into the line, the pressure rises. Baum Pneumatics systems are designed so that when the required quantity of product is being handled, the pressure in the line is within the pressure rating of the blower. There are occasions, however, when the motor driving the blower will be overloaded before the maximum pressure is reached on the blower. For this reason, these switches must be set before the equipment is started.

Pressure switches to be set as follows:

1. Trip out point on infeed approx. **1 psi** above calc. **operating pressure**. (System is overloaded)
2. Reset in point on infeed approx. **½ psi** above **free running pressure**. (System is almost empty)
3. Trip out point of blower approx. **2 psi** above calc. **operating pressure**. (System is plugged)
4. Reset in point of blower approx**. ¼ psi** (this reset does not start anything, **unplug and manual restart**)

Example: if normal operating pressure is 3 psi and (empty) free running pressure is 1 psi then set as follows:
Infeed out 4psi, infeed in 1 ½ psi Blower out 5 psi, blower in ¼ psi

OPERATION / SEQENCING

A. The system should be interlocked so this equipment starts in a similar sequence.

1.	Check Status	Receiving bin/silo/railcar indicator status (bins full or not)
2.	Check Status	Diverter valve(s) port selection chosen. (If system is equipped with diverter valve(s))
3.	Start	Discharge (receiving) equipment airlocks, augers, dust collectors, etc.
4.	Start	Blower
5.	Start	Feeder
6.	Start	Conveyors or equipment delivering product to feeder.

B. When no product is being conveyed, the pressure gauge will show only free running pressure.

C. As product is conveyed into the system, pressure will rise. When rated tonnage / volume of material is reached, then maximum running pressure will also be reached.

D. If too great a rate of product is fed into the system, or if discharging arrangements become congested, pressure will rise above normal maximum running pressure and infeed pressure switch will trip out.