

## ***Automatic Turbo-Disc Booster System*** **Addendum to Owner's Manual**

Please refer to the *Automatic Disc Filter Owner's Manual* for an introduction to disc filtration and for a basic operation and instruction guide.

### **I. Introduction to the Automatic Turbo-Disc Booster System**

In an effort to employ the Turbo-Disc filters in a wide range of applications it has been determined that by increasing the backpressure (as high as 100 PSI), the cleaning process is more efficient and the backwash duration decreases substantially resulting in less backwash water. This was the motivation to develop the automatic *Turbo-Disc Booster Systems* and the *Turbo-Disc Air Assist Systems*.

The booster systems are equipped with a booster pump that draws filtered water from the outlet manifold and directs it through the booster manifolds to backwash the filters. The advantage of this type of system is to produce adequate pressure for the backwash cycle with a relatively small pump that only operates for short periods of time. The booster pump is sized according to the conditions of the main system, primarily the flow and pressure that are supplied to the filter system.

### **II. Booster System Component Parts**

- A) 2" or 3" Automatic *Turbo-Disc* Filters
- B) Bermad 350-2x2 or 350-3x3 Backwash Valves (Air actuated)
- C) Centrifugal Pump (Booster)
- D) Centrifugal (Full-flow) Pump (if applicable)
- E) Inlet/Outlet Manifolds- Sch. 10 304 stainless steel manifolds, 304 SS Flanges, Sch.10 pipe caps and 2" or 3" Sch.10 inlet/outlet pipe stubs.
- F) Backwash Manifolds-2" Sch.10 304 stainless steel manifolds w/ 2" (male) NPT connections.
- G) Booster Manifolds-2" S10 T304 stainless steel manifolds
- H) Burkert 5470 Solenoid Manifold- Solenoids are equipped with a manual override lever. Turn red lever clockwise to actuate manually. Turn counterclockwise to resume normal operation.
- I) MAXIM Backflush Controller- 4, 8 or 12 Station electric backwash controller actuates the backwash cycle by PD, Timer or Manual actuation and operates on 110 VAC/24VDC/12VDC.
- J) Pressure Differential (PD) Switchgauge-Adjusted by turning the knob on the face of the gauge. PD should be set for approximately 1-2 PSI greater than the operating PD. PD has a 15 second delay before triggering a backwash.
- K) Air Override Regulator-The air regulator is mounted above the solenoid manifold assembly and regulates the air pressure that is applied to the top of the filter pods during the backwash cycle.
- L) Air-Override Check Valve Assembly is assembled to the top of each filter pod to allow air to be inserted into the pod during backwash. This air is regulated air.
- M) Motor Starter- 460 VAC that must be hard wired to the system during installation.

### III. Installation

#### A) Mechanical Connections

- i. Inlet: Flange
- ii. System Discharge: Flange
- iii. Backwash/Drain: The 2" (male) NPT drain line should be plumbed to drain to atmosphere. If there is a restriction in this drain line it will prevent the filters from flushing properly. Do not reduce the drain size below 2" pipe.

#### B) Electrical Connections

- i. Pump Motor Starter: Hard-wired for 460 VAC (standard). The booster pump motor starter must be in the "AUTO" position when the filter is in operation.
- ii. Compressor: 110 VAC, 14.5 AMP, standard 3-prong plug (optional)

#### C) Controller Settings

- i. Power On: The power switch/circuit breaker is located on the front of the controller inside the enclosure. **See *MAXIM controller attachment for operating details*.**
  - ii. Controller Actuation: The controller can be set to actuate by various methods, individually or simultaneously.
    - a. Periodic: The time interval between backwashes is set per application requirements.
    - b. Manual: Manually turning on the cycle within the controller menu (see MAXIM control manual).
    - c. Pressure Differential: The pressure differential gauge must be set to the desired differential. It is recommended to start with approximately 1-2 PSI higher than the "when clean" differential.
  - iii. Dwell: The dwell setting is to control the duration of time between stations.
  - iv. Counter Reset: This allows the user to reset the backwash count to zero.
- D) Air Requirements: Typically ATD filter systems include the air override feature and the valves are pneumatically actuated.
- i. 80-120 PSI @ 4CFM is the required air pressure and volume.
  - ii. The air connection is a standard 1/4" male air connector.

**IV. Start Up**

- A) Prime the Pump: A pump is primed when all the air in the suction line and pump volute has been evacuated and replaced with water. If the main flow pump does not have a flooded suction then a foot valve is required to maintain a prime after shutoff.
- B) Impeller Rotation: At initial start up it is critical to verify that the impeller is rotating in the correct direction. When looking at the suction of the pump the impeller should be rotating counter clockwise. When looking at the fan from the back of the motor, the blades should rotate in the clockwise direction. If it is not then two of the three power lines (3 phase) wired into the starter must be switched. If the flow and pressure are achieved according to the pump performance curve then the direction is correct.
- C) Air pressure: If the unit is not equipped with an air compressor a standard ¼" male air fitting is located on the solenoid/regulator assembly for easy air hook-up.
- D) Controller Settings: It is recommended that the operator manually cycle through several backwash cycles to insure proper set up and to become familiar with the system. This will help determine what settings (periodic, pressure differential) are needed for your system.

**V. System Modes**

- A) Filtration Mode
- B) Backwash Mode: Backwash is initiated by pressure differential, timer or manually via an electric controller. When the controller is energized to start a backwash cycle all the filters will consecutively backwash one or two filters at a time. The booster pump is actuated by a relay that is wired to the master switch on the controller so it will automatically run when the controller initiates a backwash cycle.

If you have any questions or need assistance with any part of the installation or operation please call 800-881-0320.