Automatic Turbo-Disc Side Stream Skid 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 (ATD) Side Stream Skid Systems

The Automatic Turbo-Disc Side Stream Skid System is a complete package of filters, valves, pumps, solenoids and controllers mounted on a stainless steel frame that can easily be installed to filter water from a reservoir or sump typically not under pressure.

II. ATD Side Stream Skid System Component Parts

A) 2" or 3" Automatic *Turbo-Disc* Filter
B) Bermad 350-2x2, 350-3x2, or 350-3x3 Backwash Valves (Air actuated)
C) Centrifugal Pump
D) Bermad 410 Flow Control Valve w/ Mechanical Throttling Stem
or Manual butterfly throttling valve
E) Inlet/Outlet Manifolds-Sch.10 304 Stainless Steel Pipe
F) Backwash Manifolds-2" Sch. 80 PVC or 2" Sch. 10 304 Stainless Steel w/ 2" (male) NPT connections.
G) Maxim Controller- Electric backwash controller actuates the backwash cycle by Pressure Differential, Timer or Manual actuation and operates on 110 VAC @ 1 AMP.
H) 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 when the filters are clean. PD has a 5 second delay before triggering a backwash.
I) Air Pressure Regulator-The air regulator is mounted on the solenoid manifold assembly and regulates the air pressure that is applied to the top of the filter pods during the backwash cycle.
J) Air-Override Check Valve Assembly is assembled to the top of each filter pod to allow regulated air to be applied to the pod during backwash.
K) Motor Starter with overload protection and reset button

III. Installation

A) Mechanical Connections
   i. *Inlet Flanged Connection*-The pump suction flange must be plumbed according to the recommendations of the pump manufacture. The instructions can be found on pages 6-10 of the Berkeley Owner's Manual. It is very critical that these installation instructions are followed. Please note that the pump suction piping does directly affect the performance of the pump.
   ii. *Outlet Flanged Connection*-The discharge plumbing should be no smaller than the discharge pipe size. A reduction in the discharge pipe will cause a restriction to the flow and affect the performance of the pump.
   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- 460 VAC, 3 Phase, Hard Wire (standard)
   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.

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. See page 15 of the Berkeley Pump Owner's Manual for directions about priming the pump.

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. If it is not then two of the three power lines 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: A standard ¼" male air fitting is located on the solenoid assembly for easy air hook-up. There is also an air regulator set to 15-30 PSI. This air is applied to the tops of the filter pods during backwash. It is important to the efficiency of the backwash that this air is present but must be regulated. Full air pressure is used to actuate the valves only.

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 Operation Modes

A) Filtration Mode: Water is supplied to the system at the design flow rate and pressure. The design conditions are achieved by throttling the discharge valve (most non-booster ATD skid systems have a green Bermad flow control valve with a mechanical throttling stem for throttling the flow to achieve the appropriate pressure) until the system pressure is the same as the design pressure. **See the pump performance curve for flow and pressure**. **Running the pump without backpressure will cause the pump to overload**.

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 filter at a time. (Some systems are sized to backwash two filters at a time). If the system is equipped with a Bermad 410 flow control valve then the valve will close completely during backwash to generate as much pressure as the pump will allow. If the system is equipped with a Bermad 430 flow control valve then the valve will only actuate partially to generate adequate pressure but the pressure is regulated with a pilot valve that is mounted to the flow control valve. The ATD systems have a maximum pressure rating of 125 PSI.

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