Air Burst Screen Cleaning System Components

Compressor*:* Use of the air burst screen cleaning system is generally an intermittent event. The air burst system is operated once a shift, a day, a week or some longer period. For such systems, particularly with a single screen in the system, we suggest a 60% duty cycle splash lubricated compressor. In systems with multiple screens, timer based or automatic operation or where site conditions suggest a more aggressive cleaning program may be necessary we suggest a 100% duty cycle pressure lubricated machine. For remotely located or unattended systems and systems were maintenance of flow is critical dual compressors with an alternator can be used. The selection of motor type, ODP or TEFC, will depend on site conditions and owner preference. Some systems require filtration and/or moisture removal from the air. In such conditions an air cooled aftercooler must be used upstream of the filter.

Receiver We recommend the use of only ASME code receivers. The pressure rating on the receiver must be consistent with the intended working pressure and applicable codes.

Valves For sizes 2" and larger we recommend the use of lug type butterfly valves with ductile iron bodies and stainless steel disc and stem. Ductile iron is preferable to other cast irons for shock loading applications. The rapid release of air can cause wear problems on the valve internals. The use of stainless steel disc and stem minimizes these wear problems.

Actuators Manual systems should employ a two position lever handle. For valves larger than 4" we suggest the use of double acting pneumatic actuators. If pneumatic actuators are used the air for operation can be plant air if available or the air can be supplied as part of the air burst screen cleaning system from a controls air receiver fed from the primary receiver. A check valve is used to prevent backflow and the air is filtered to remove particulate.

Controls Control panel options are fairly self explanatory and are listed in the sample specification at the end of this chapter.

The table below provides a convenient format for assembling system information and choices.

<table>
<tr><th colspan="8">Design Information</th></tr>
<tr><td colspan="2">Screen Information</td><td colspan="2">Screen type S or T</td><td colspan="2">Screen Diameter</td><td></td><td>inches</td></tr>
<tr><td colspan="4">Depth of Water over the Screen at design high water</td><td></td><td>feet</td><td></td><td></td></tr>
<tr><td colspan="4">Distance from screens to ABSCS</td><td></td><td>ft</td><td></td><td></td></tr>
<tr><td colspan="8">Air Burst Screen Cleaning Information - System Preferences</td></tr>
<tr><td colspan="2">Control Level - Circle One choice</td><td>Manual</td><td>Push Button</td><td>Timer</td><td>Full Auto</td><td colspan="2">Full Auto with delta p cycle start input and remote contact</td></tr>
<tr><td colspan="8">Accessories and options - Circle Selection</td></tr>
<tr><td>valves</td><td colspan="3">compressor - circle selection in box</td><td colspan="3">Alarms – circle desired features</td><td></td></tr>
<tr><td rowspan="2">limit switch on valves and illuminated buttons</td><td rowspan="2">Duty Cycle 60% (splash lubricated)</td><td>ODP motor</td><td>air cooled aftercooler</td><td colspan="2">Pressure Gage in Panel</td><td colspan="2">Automatic shut down and alarm with major fault</td></tr>
<tr><td>TEFC motor</td><td>Dual Compressors</td><td colspan="2">minor fault auto alarm</td><td colspan="2">valve fail to open / close</td></tr>
<tr><td>manual override</td><td>100% (pressure lubricated)</td><td></td><td></td><td colspan="2">compressor run on light</td><td colspan="2">Fail to Start indicator light</td></tr>
<tr><td colspan="8">Control Features - circle desired features</td></tr>
<tr><td colspan="2">NEMA 4 enclosure</td><td colspan="2">Outdoor Hood and switches</td><td colspan="2">cycle ready light</td><td colspan="2">remote cycle start</td></tr>
<tr><td colspan="8">Other Features: Describe</td></tr>
</table>

For assistance in air burst system sizing and selection please contact your ***Lee Cook Intake Screens*** representative or Lee Cook at 513 247-9792

Lee Cook Intake Screen Co. from Chapter 5

Lee Cook Intake Screen Co. Air Burst Cleaning Systems are custom designed systems intended for use in conjunction with our Intake Screens**.** Our air burst cleaning systems provide an "insurance policy" against flow interruption due to debris accumulation.

Simple The systems consist of four main components, a compressor, an air receiver, air release valves, and a main control panel with lockable disconnect. They are supplied as complete systems -- ready to be positioned, plumbed, and powered. The systems are factory assembled and tested prior to shipment. When practical all components are mounted on a common skid.

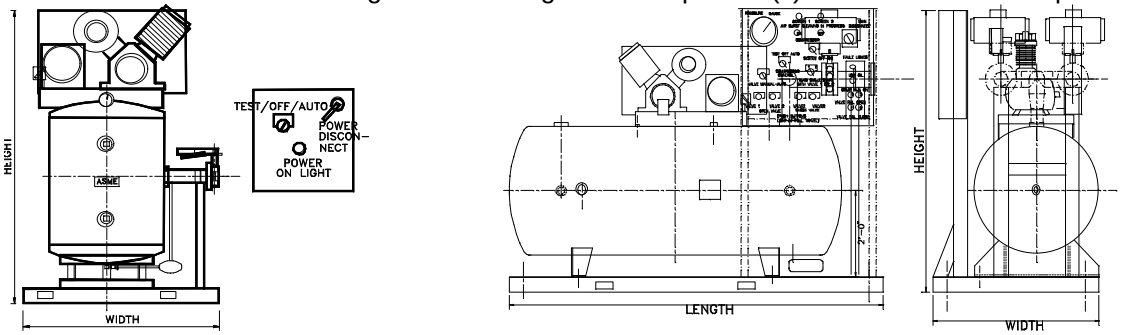
Reliable Air Burst Cleaning Systems are assembled using quality components, selected to match the service needs of the application. All moving parts are located in a common, readily accessible location. There are no moving components in or under the water to maintain.

System Protection They provide effective removal of debris from the surface of your Intake Screens. No debris is collected on shore. There are no debris handling or disposal problems to deal with. The system can even be operated while pumping when a wet well design is used for the pumps.

Screen Cleaning Lee Cook Intake Screen Co. Intake Screens are designed to minimize the accumulation of debris on the screen surface.

General Arrangements

Lee Cook Intake Screen Co. Air Burst Cleaning Systems are designed to meet the specific needs of the project. As shown below, for sizes through 400 gallons, compressor(s) are mounted on the tank. For sizes of 660 gallons and larger the compressor(s) are mounted on a separate



skid. If possible, the control panel and air release valves are mounted on a the same skid as the compressors. Standard motors are 230/460V, 3 phase, 60 Hz. The table provides information on the basic dimensions of air burst screen cleaning systems. Compressor sizes below 5 HP are not included because they are generally more expensive than the 5 HP units. Receiver sizes below 80 gallons are not included for the same reason. A sample specification is provided on the next page. For assistance in air burst system sizing, selection, and specification please contact your Lee Cook Intake Screens representative or Lee Cook at 513 247-9792.

Receiver Size	Orientation	Length	Width	Height	Horsepower	Recharge Time
80	vertical	48	48	74	**5**, 7 1/2	7 min
120	vertical	48	48	78	**5**, 7 1/2, 10	11 min
200	horizontal	96	48	72	5, **7 1/2**, 10	12 min
240	horizontal	96	48	72	5, **7 1/2**, 10	15 min
400	horizontal	120	48	84	7 1/2, **10**, 15	18 min
dimensions below are for receiver only -- recharge for Horsepower in **bold**						
660	vertical	48	48	128	10, **15**, 20	20 min
1,060	vertical	54	54	160	15, **20**, 30	22 min
1,550	vertical	60	60	180	15,20,**30**	25 min

Air Burst Screen Cleaning System Specification

General: The Air Burst Cleaning System shall be supplied by the intake screen manufacturer as a total system. The system shall be manufactured by Lee Cook Intake Screen Co. or an equal approved prior to bid by the engineer. The air burst screen cleaning system is to be installed in a weather protective shelter which will exclude rain and excessive dust and will also ensure the temperature range experienced by the system is between 40oF and 110oF. Sufficient air flow into the enclosure must exist to allow the compressors to perform properly.

Equipment:

The Compressor: Compressor choices include auto stop start pressure switch, inlet air filter, and low oil level or low oil pressure shutdown switch:

_____ 60% Duty Cycle splash lubricated or
_____100% Duty Cycle pressure lubricated, with
_____ Open Drip Proof Motor or _____ Totally Enclosed Fan Cooled Motor
_____ Dual Compressors with alternator _____ Air Cooled Aftercooler

The Receiver: All Receivers are ASME Code Vessels. Working Pressure is 150 PSIG unless otherwise noted. All receivers shall be equipped with a pressure relief valve sized to handle the full discharge pressure of the compressor, a 4" dial pressure gage, and a float type automatic drain.

The Valves: Valves shall be lug type with ductile iron body, 316 stainless steel stem and disc, and Buna-N seat. Valves shall be rated for 200 psi end of line liquid service. Manual valves shall have 2 position handle. Valve size shall be equal to connecting line size. Actuated valves are recommended for sizes greater than 6".

The Actuators: Actuators are pneumatic, double acting type. Air is supplied through a supplemental reservoir isolated from the main receiver with a check valve. Air supplied to the supplemental receiver is filtered to remove particulate.

The Control Panel: Controls are enclosed in a NEMA IV enclosure. Motor Starter(s) are mounted in the control panel. All panels have a power on light, a test/off/auto switch for compressor control, and a lockable disconnect. Optional equipment includes:

_____ push button valve initiation (includes control air receiver and pneumatic actuators with manual over-ride
_____ limit switch package and illuminated pushbuttons to indicate valve at full travel
_____ 4" diameter pressure gage in control panel
_____ Timer based valve actuation with adjustable timer, timer/manual valve operation selection switch, limit switch package and illuminated pushbuttons indicating valve at full travel, automatic interlock to prevent automatic valve operation with inadequate air pressure (includes automatic sequencer for multiple valve systems)
_____ remote cycle start input _____ differential pressure signal cycle start input
_____ compressor run on indicator light _____ compressor fail to start indicator light
_____ valve fail to open/close indicator lights _____ ready for backwash indicator light
_____ automatic shut down and alarm with major fault
_____ automatic alarm with minor fault

Submittals: The following submittals shall be provided:

Drawing showing interface dimensions, power requirements, and bolting requirements shall be provided for approval. Equipment literature on all major components. Installation, Operation and Maintenance instructions for the system.