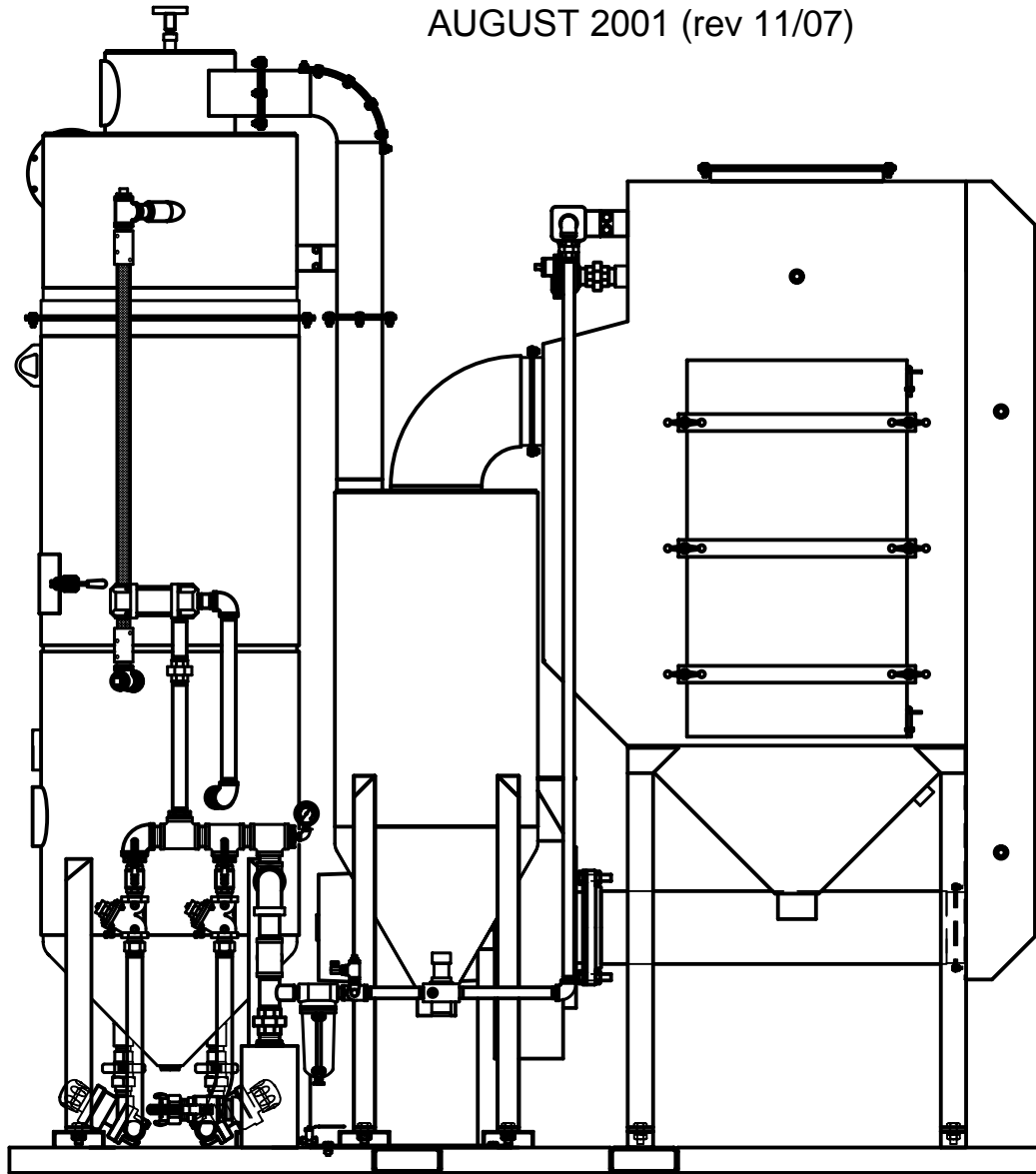


# INDUSTRIAL BLAST AND RECOVERY SYSTEM OWNER'S MANUAL

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# WARNING

- 1. Any person intending to operate this equipment or any person intending to be in the vicinity during its operation that cannot read or completely understand all of the warnings, operating procedures and instructions, and the rules for safer operation contained in this manual must receive proper training from their supervisor and/or employer. Consult Axxiom Manufacturing, Inc.**
- 2. Do not operate any abrasive blaster or blast equipment before reading and completely understanding all the warnings, operating procedures and instructions, and the rules for safer operation contained in this manual.**
- 3. Do not operate any abrasive blaster or blast equipment without following the rules for safer operation and all the operating procedures and instructions. Failure to properly use blast equipment could result in serious injury or death.**
- 4. Do not perform any maintenance while any abrasive blaster or blast equipment is pressurized. Always depressurize any vessel before loading media or performing any maintenance.**
- 5. Do not use abrasives containing free silica. Silica can cause silicosis or other related respiratory damage. You must wear personal protective equipment for all abrasive blasting operations. Observe all applicable local, state and federal safety regulations in conjunction with airline filters and respiratory protection. Reference OSHA (Occupational Safety and Health Administration).**
- 6. Do not enter areas during abrasive blasting operations without breathing protection. All personnel in the vicinity of abrasive blasting operations should wear NIOSH approved air fed respirators, hoods or helmets.**
- 7. Do not modify or alter any abrasive blaster, blast equipment or controls thereof without written consent from Axxiom Manufacturing, Inc.**
- 8. Do not use bleeder type deadman valves on any Schmidt® abrasive blasters. The use of A-BEC, Clemco or a similar bleeder type deadman valve can cause unintentional start-up without warning, which can result in serious personal injury.**
- 9. Do not sell, rent, or operate abrasive blasters without remote controls. OSHA regulations require remote controls on all blast machines. Failure to use remote controls can cause serious injury or death to the operator(s) or other personnel in the blasting area. (Reference OSHA regulations.)**
- 10. Do not repair or replace any portion of Schmidt equipment using components that are not Schmidt original replacement parts. Use of replacement components that are not Schmidt original replacement parts may result in equipment failure which can result in serious personal injury and will void all warranties.**

## 0.0 Rules for Safer Operation

### 0.1. KNOW YOUR EQUIPMENT.

Do Not operate this equipment in a manner other than its intended application (see Section 4.0). Do Not operate this equipment or any other Schmidt® equipment without following the *Rules for Safer Operation* and all the operating procedures and instructions. Learn the applications and limitations as well as the specific potential hazards related to this machine. Failure to do so could result in serious injury or death.

### 0.2. RECEIVE PROPER TRAINING.

Do Not operate this equipment unless you have received operational and maintenance training. Begin by thoroughly reading and understanding this operation and maintenance manual and all included information. Consult an authorized Schmidt distributor or Axxiom Manufacturing, Inc.

### 0.3. PROTECT YOUR FEET.

Do Not operate this equipment without wearing OSHA approved foot protection. Observe all applicable local, state and federal regulations. See OSHA 29 CFR 1910.136.

### 0.4. PROTECT YOUR EYES.

Do Not operate this equipment without wearing OSHA approved safety glasses. When filling the blast vessel abrasive can be blown in the face and eyes of operators. Observe all applicable local, state and federal safety regulations. See OSHA 29 CFR 1910.133.

### 0.5. PROTECT YOUR LUNGS.

Do Not operate this equipment without wearing OSHA approved respiratory protection. Abrasive blasting produces dust contaminated with toxic substances from the abrasive used, the coating being removed, and the object being blasted. This dust may contain Silica which can cause severe and permanent lung damage, cancer, and other serious diseases. Do Not breathe the dust. Do Not rely on your sight or smell to determine if dust is in the air. Silica and other toxic substances may be in the air without a visible dust cloud. If air-monitoring equipment for silica is not provided at the worksite, then all personnel MUST wear appropriate respiratory protection when using or servicing this equipment. Breathing air supplied to respirators must be of acceptable quality. Consult your employer and OSHA regarding the appropriate respiratory protection and breathing air quality. See OSHA 29 CFR 1910.134.

### 0.6. BREATHING AIR QUALITY.

Do Not use breathing air that does not meet OSHA Class D standards. Extreme caution must be taken when selecting a source of breathing air. Breathing air provided by an oil-lubricated air compressor can contain carbon monoxide and therefore requires the use of a carbon monoxide detector (See Section 3.9). Carbon monoxide can be in the compressed air produced by an oil-lubricated air compressor when it is operated at extremely high temperature; therefore a high temperature alarm is required to alert the operators when this condition exists. Reference OSHA 29 CFR 1910.134(i).

Extreme caution must be taken when connecting to factory air sources. Factories can have sources of compressed gases such as nitrogen which is fatal if used as a breathing air source. Verify that the air source is breathable air.

 **DANGER**

Breathing air must meet OSHA Class D standards. Use of breathing air sources that do not meet Class D standards can cause asphyxiation and result in death. Verify that all air sources are breathable quality and use a high-temperature alarm and a carbon monoxide monitor when required. See OSHA 29 CFR 1910.134(i).

Enclosed blast areas must be ventilated to reduce airborne dust to an acceptable level as required by OSHA 29 CFR 1910.1000.

**0.7. PROTECT YOUR HEARING.**

Do Not operate this equipment without wearing OSHA approved hearing protection. Loud noise is generated by the blast nozzle and the blowdown operation of this equipment. Observe all applicable local, state and federal safety regulations. See OSHA 29 CFR 1910.95.

**0.8. PROTECT YOUR PERSON**

Abrasive blasting produces dust contaminated with toxic substances from the abrasive used, the coating being removed, and the object being blasted. All blast operators and other personnel involved in the blast operation or in the vicinity of the blast operation should wear protective clothing. The protective clothing should be disposable or washable work clothes that should be removed at the worksite so that contaminated dust is not transferred into automobiles or homes. See OSHA 29 CFR 1910.94 and 1910.134.

**0.9. ADHERE TO ALL REGULATIONS.**

Do Not operate this equipment without observing all local, state, and federal safety regulations including, but not limited to, OSHA (Occupational Health and Safety Administration).

**0.10. STAY ALERT.**

Do Not operate this equipment when you are tired or fatigued. Use caution and common sense while operating and/or performing maintenance on this equipment.

**0.11. DO NOT USE DRUGS, ALCOHOL, or MEDICATION.**

Do Not operate this equipment while under the influence of drugs, alcohol, or any medication.

**0.12. PROTECT BYSTANDERS.**

Do Not allow blast equipment operators and other personnel to enter the vicinity of the blast operation without providing respiratory protective equipment that meets OSHA regulations. If dust concentration levels exceed the limitations set in OSHA 29 CFR 1910.1000 then respirators are required.

**0.13. KEEP CHILDREN AND VISITORS AWAY.**

Do Not allow children or other non-operating personnel to contact this equipment or the connecting hoses and cords. Keep children and non-operating personnel away from work area.

**0.14. AVOID DANGEROUS ENVIRONMENTS.**

Do Not operate this equipment without familiarizing yourself with the surrounding environment. The blast operation creates high level of noise which will prevent the operator from hearing other possible dangers (i.e. traffic or moving equipment). In such situations a stand-by watch person may be necessary to prevent injury to personnel.

**0.15. AVOID DANGEROUS ENVIRONMENTS.**

Do Not use this equipment in areas cluttered with debris. Debris in the work area can create tripping hazards which can cause the operator to loose control of the blast hose and result in injury to operating personnel. Keep work area clean and well lit. When working at an elevated location, pay attention to articles and persons below.

**0.16. AVOID DANGEROUS ENVIRONMENTS.**

Do Not operate this equipment in elevated areas without using fall protection equipment. Certain applications of this equipment may require the use of scaffolding. Use of scaffolding creates hazardous situations such as tripping and fall hazards which can result in serious injury or death to operating personnel. Consult OSHA 29 CFR 1910 Subpart D.

**0.17. AVOID DANGEROUS ENVIRONMENTS.**

Do Not blast objects that are not properly secured. The blast operation can cause the blasted object to shift or move. Extremely large objects to be blasted can create a crush hazard to operating personnel which can result in serious injury or death. Properly secure the object to be blasted.

**0.18. AVOID DANGEROUS ENVIRONMENTS.**

Do Not blast objects used to store flammable materials. The blast operation can cause sparks which can ignite fumes or residual flammable materials inside enclosed containers which can explode resulting in serious injury or death to operating personnel.

**0.19. ELECTRICALLY GROUND EQUIPMENT.**

Static electricity is generated by the abrasive flow through the blast hose. To prevent static electrical shock to operating personnel only use static dissipating blast hose and install a grounding strap on the abrasive blaster.

**0.20. MAINTAIN VESSEL INTEGRITY.**

Do Not operate this equipment with the pressure vessel damaged, or with any part of it worn or damaged. Do Not operate this equipment in a condition that may cause failure of the pressure vessel. See sections 0.21 through 0.31 below.



An abrasive blaster is a Pressurized Vessel. Alterations, damage, or misuse of the pressure vessel can result in rupturing. Damaged or incorrect components used on the abrasive blaster can result in rupturing. The compressed air inside a pressurized vessel contains a dangerously high level of energy which can propel objects and cause serious injury or death.

**0.21 NEVER OPERATE OVER MAXIMUM WORKING PRESSURE.**

Do Not operate this equipment above maximum allowable working pressure (MAWP) at maximum operating temperature (°F) shown on the ASME nameplate attached to the vessel. See Section 1.0.

**0.22 INSTALL PRESSURE RELIEF DEVICE.**

Do Not operate this equipment without a pressure relief device in place. The ASME Code requires that all vessels be equipped with pressure relief devices prior to installation. The pressure relief device must be set at the maximum allowable working pressure of the abrasive blaster (Typically 125 psig). See the ASME nameplate attached to the vessel typically located above the manway.

**0.23. NEVER OPERATE BEYOND ALLOWABLE TEMPERATURE RANGE.**

Do Not operate this equipment above the maximum allowable temperature at the allowable pressure or below the minimum design metal temperature (MDMT) shown on the pressure vessel nameplate. The characteristics of the pressure vessel metal are weakened when the temperature is outside the operating range. Operating the pressure vessel outside of allowable temperature range can result in rupturing and cause serious injury or death.

**0.24. ASME NAMEPLATE REQUIRED.**

Do Not operate this equipment if the ASME pressure vessel nameplate is missing. Contact Axxiom Manufacturing, Inc. for technical support.

**0.25. DO NOT MODIFY VESSEL.**

Do Not modify or alter any abrasive blaster, blast equipment, or controls thereof without written consent from Axxiom Manufacturing, Inc. Do Not weld, grind, or sand the pressure vessel. *It will not be safe to operate.* Non-authorized modifications could lead to serious injury or death. Non-authorized modifications will void the warranty and the ASME certification.

**0.26. DO NOT HAMMER ON VESSEL.**

Do Not hammer on or strike any part of the pressure vessel. Hammering on the pressure vessel can create cracks and cause rupturing.

**0.27. FIRE DAMAGE NOTICE.**

Do Not operate if the pressure vessel has been damaged by fire. If damaged, take out of service immediately and have it inspected and/or repaired by a qualified facility. Contact Axxiom Manufacturing, Inc. for technical support.

**0.28. INSPECT VESSEL REGULARLY.**

Do Not operate this equipment with damage to the pressure vessel. *It is not safe.* Inspect outside and inside of the pressure vessel regularly for corrosion or damage (i.e. dents, gouges or bulges). If damaged, take out of service immediately and have it inspected and/or repaired by a qualified facility. Contact Axxiom Manufacturing, Inc. for technical support.

**0.29. CHECK FOR LEAKS IN VESSEL.**

Do Not operate this equipment if there is a leak in the pressure vessel. If leaking, take out of service immediately and have it inspected and/or repaired by a qualified facility. Contact Axxiom Manufacturing, Inc. for technical support.

**0.30. NEVER MODIFY BLOWDOWN.**

Do Not connect the blowdown on this equipment onto a common header with any other unit of any description, or any other source of compressed air, without first making sure a check valve is used between the header and this unit. Do Not install this equipment sharing piping with another unit of higher discharge pressure and capacity. A safety hazard could occur in the form of a back-flow condition.

**0.31. DEPRESSURIZE VESSEL BEFORE PERFORMING MAINTENANCE.**

Do Not remove, repair, or replace any item on this equipment while it is pressurized. Do Not attempt to perform maintenance or load abrasive while this equipment is pressurized or is even capable of being pressurized. This means the inlet ball valve should be closed and the air supply should be shut off or disconnected. Anytime the manual blowdown valve is closed it should be assumed that the abrasive blast vessel is pressurized.



An abrasive blaster is a Pressurized Vessel. The compressed air inside a pressurized vessel contains a dangerously high level of energy which can propel objects and cause serious injury or death. Depressurize vessel before performing any maintenance.

**0.32. ALWAYS USE REMOTE CONTROLS.**

Do Not sell, rent, or operate abrasive blasters without remote controls. OSHA regulations require remote controls on all abrasive blasters. All abrasive blasters must be equipped with automatic (deadman) type remote controls (either pneumatic or electric). Failure to use remote controls can cause serious injury or death to the operator(s) or other personnel in the blasting area. Reference OSHA 29 CFR 1910.244(b).

**0.33. NEVER USE BLEEDER TYPE DEADMAN VALVES.**

Do Not use bleeder type deadman valves on any Schmidt® abrasive blaster. The use of A-BEC, Clemco, or a similar bleeder type deadman valve can, without warning, cause unintentional start-up which can result in serious personal injury. A particle of dirt from the air hose can plug the bleed hole in the deadman valve and cause the blast outlet to turn on.

**0.34. CHECK FOR DAMAGED PARTS.**

Do Not use this equipment with damaged components. Damaged components can fail during operation and result in serious injury or death to operating personnel. Periodically check all valves, hoses, and fittings to see that they are in good condition. Repair any component that shows any sign of wear or leakage.

**0.35. ALWAYS USE SAFETY PINS ON HOSE COUPLING CONNECTIONS.**

Do Not use this equipment without hose coupling safety pins in place and hose whip checks installed on all air and blast hoses. All blast hose couplings and air hose couplings have pin holes that must be safety pinned to prevent accidental disconnections. Accidental hose disconnection can cause serious injury or death.

**0.36. ALWAYS USE CORRECT REPLACEMENT PARTS AND ACCESSORIES.**

Do Not use replacement parts or accessories that are not rated for pressures equal to or higher than your abrasive blaster's operating pressure. Improper hoses and/or fittings used on, or connected to your abrasive blaster can rupture and cause serious injury or death.

Do Not use replacement parts that are not Schmidt original factory replacement parts. Non-original parts may not fit properly and can cause equipment damage and/or failure which can result in serious injury to operating personnel. Consult Axxiom Manufacturing, Inc.



Use of replacement components that are not Schmidt original factory replacement parts may result in equipment failure which can result in serious injury to operating personnel.

**0.37. ALWAYS USE CORRECT PRESSURE RATED ACCESSORIES.**

Do Not use air reservoirs or moisture separator tanks that are not rated for use in compressed air applications. Air reservoirs and moisture separator tanks larger than 6 inches inside diameter must have an ASME code stamp.



An air reservoir or moisture separator tank is a Pressurized Vessel. The compressed air inside a pressurized vessel contains a dangerously high level of energy which can explode propelling objects and result in serious injury or death to operating personnel. Air reservoir and moisture separator tanks must be ASME coded tanks.

**0.38. NEVER AIM BLAST NOZZLE TOWARDS ANY PERSON.**

Do Not aim the blast nozzle towards yourself or any person. System malfunction can cause accidental start up and result in injury to personnel.

**0.39. NEVER USE ABRASIVE NOT INTENDED FOR BLAST EQUIPMENT.**

Do Not use abrasive blast media containing free silica. Silica can cause silicosis or other related respiratory damage. Verify that the abrasive is intended for use in blasting equipment. Personal protective equipment, including airline filters and respirators, must be used for all abrasive blasting operations. Observe all applicable local, state and federal safety regulations. See OSHA 29 CFR 1910.134.

**0.40. CHECK ABRASIVE FOR DEBRIS.**

Do Not use blast abrasive that contains trash or other debris. Trash or debris can create a blockage and cause equipment malfunction. Screen recycled abrasive to remove trash.

**0.41. STOP OPERATION IMMEDIATELY IF ANY ABNORMALITY IS DETECTED.**

Do Not operate this equipment if anything abnormal is seen during operation. Stop operation immediately for inspection.

**0.42. DO NOT LIFT OVERLOAD LIFT EYES.**

Do Not load the lifting eyes above the rated capacity. Do Not lift the blast vessel by any point other than the lifting eyes.

**0.43. MAINTAIN WARNING DECALS.**

Do Not remove, cover, obstruct, or paint over any warnings, cautions, or instructional material attached. Warning decals must be installed, maintained, and located to be visible and with enough light for legibility.

**0.44. SAVE THIS OPERATION AND MAINTENANCE MANUAL.**

Refer to this operation and maintenance manual as needed as well as any additional information included from other manufacturers. Never permit anyone to operate this equipment without having him/her first read this manual and receive proper training. Make this manual readily available to all operating and maintenance personnel. If the manual becomes lost or illegible replace it immediately. This operation and maintenance manual should be read periodically to maintain the highest skill level; it may prevent a serious accident.

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## 1.0 GENERAL DATA

### 1.1 Industrial Blast & Recovery System (IBRS) Dimensional Specifications

Model No.	IBRS 6.5
Part Number	8032-063-10
Height	128"
Width	66"
Length	122"
Weight	3850 lbs.
Vessel volume	6.5 cu. ft.
Hopper volume	6.5 cu. ft.

### 1.2 Blast & Recovery System (BRS) Operational Specifications

Maximum Working Pressure	125 psi @ 250°F
Minimum Metal Temperature	-20°F @ 125 psi
Blast Hose Size	Up to 1 1/2" (see section 6.0 table 3)
Air Consumption	See section 6.0 table 1
Abrasive Consumption	See section 6.0 table 2

### 1.3 Warranty

All Schmidt products are guaranteed to be free of defects in material and workmanship at time of shipment. Schmidt will replace any of its products or component parts thereof which thus prove defective under proper use within three months of the date sold, provided that prompt notice has been given to Schmidt. However, Schmidt's liability is limited to replacement of such defective products or components and Schmidt shall have no liability for labor, consequential damages or special charges. This guarantee is in lieu of all other representations.

### 1.4 Return Merchandise Policy

In no case is merchandise to be returned to Schmidt for credit without authorization. At the time of authorization, Schmidt will issue a return authorization number which must be included on all packages and correspondence. Any material returned without prior authorization will remain the property of the sender and Schmidt will not be responsible for same.

All returns must be shipped prepaid freight. All returns may be exchanged for other equipment or parts of equal dollar value. If goods are not exchanged, they are subject to a 15% restocking charge. Any cost incurred by Schmidt to restore such goods to first class condition will be charged to the customer.

## 1.5 SYSTEM REQUIREMENTS

### 1.5.1 Compressed Air Requirements

#### **Blast nozzle**

The primary air expenditure of a blaster is by the blast nozzle(s). This expenditure can vary greatly depending upon the number of blast outlets, nozzle size of each outlet, and the blast pressure. See section 6.0 table 1 for air consumption by nozzle size at various pressures.

### 1.5.2 Air compressor size

The air compressor must be large enough to supply:

- i. The sum of blast air requirements for each nozzle at the highest pressure that will be used (see section 6.0 table 1).
- ii. The 12 CFM breathing air supplied to each operator blast hood.

### 1.5.3 Air Supply Line

The air supply hose from the air compressor to the blast unit should be at least the same diameter as the air inlet piping. This size hose will supply the necessary airflow to simultaneously operate the blast unit controls and each blast nozzle. **Note:** If other equipment will be using the same source of air as the blaster a check valve should be installed at the air inlet. This will prevent back flow, which would carry abrasive into the control system.

### 1.5.4 System Air Pressure

The maximum operating pressure for the blast unit is stamped on the vessel nameplate. This unit may or may not be equipped with a system air pressure regulator, but if a one is to be field installed it is important that the air supply to the control system be a minimum of 55 psi.

### 1.5.5 System Air Quality

Moisture condensation in a blast system causes abrasive flow problems. Condensation occurs when the hot vapor-filled compressed air cools as it reaches the blaster. Therefore a moisture removal device is recommended (i.e. coalescing moisture separator, air-cooled aftercooler or deliquescent dryer).

### 1.5.6 Electrical Requirements

The control system electrical requirement is pre-determined per customer request.

- |                     |                          |
|---------------------|--------------------------|
| Blast controls:     | 120VAC, 0.2 amps maximum |
| Pulse controls:     | 120VAC, 0.2 amps maximum |
| Centrifugal blower: | Refer to motor nameplate |

## **2.0 THEORY OF OPERATION**

The function of the IBRS unit is to blast and recover abrasive media. The IBRS is designed to blast using one or two outlets, then vacuum recover the abrasive when depleted. The unit is not intended for simultaneous blast and vacuum, but it is sufficiently powered to do so for (1)one outlet only. The media is contained in the pressure vessel for blasting. After blasting, media is recovered in the media reclaimer by means of a pneumatic vacuum system. Small particles are carried by the vacuum air stream through the air wash reclaimer and the secondary cyclone then into the dust collector. The media and large particles (paint chips, cigarette butts, etc) drop to the bottom of the media reclaimer. The media is reloaded at atmospheric condition from the media reclaimer into the pressure vessel after passing through a screen.

This manual contains part identification numbers (#) within the text that are found on the drawings in section 5.0, page #5-3 thru #5-11. Refer to these drawings as needed while reading this manual.

### **2.1 AIR SUPPLY**

Compressed air is supplied through a hose connection and passes through the inlet ball valve (#1). Then it goes through the moisture separator (#2). The moisture separator has a ball valve (#3) located at the bottom to drain the moisture collected. During operation this ball valve (#3) should be slightly open so that the moisture collected can drain. After passing through the moisture separator the air supply branches into various locations. The first location is the air supply for the pulse jet system. The second location is the air supply for the media vibrator (optional). The third location is the vessel pressurization piping which includes the combo valve and the blast air line.

### **2.2 VESSEL PRESSURIZATION PIPING**

#### **2.2.1 Combo Valve**

The vessel pressurization is controlled by the combo valve (#8). The combo valve is dual function valve that is essential in the blowdown and blasting operations. On one end, it is a valve that pinches a 3/4" blowdown hose (#7) to close the vessel and allow pressurization, and releases the hose to depressurize the vessel. The air released during depressurization escapes into the media reclaimer through the blowdown hose (#7). The other end of the combo valve is an on-off type valve for the air supply to pressurize the vessel and for blasting. The two functions operate simultaneously when the deadman lever (#17) is depressed, allowing remote vessel pressurization/blast initiation and vessel depressurization/blast termination. The minimum pressure to open the combo valve is 55 psig.

#### **2.2.2 Regulated Bypass Piping**

An optional feature of the IBRS is the regulated bypass piping whose function is to allow blasting at lower pressures. To activate the regulated bypass controls simply close ball valve (#6), then the vessel/blast pressure can be adjusted by the pressure regulator (#5) located upstream of the combo valve. Turn the knob clockwise to increase the pressure and counter-clockwise to reduce the pressure. To resume full pressure blasting open the ball valve (#6).

## **2.3 BLAST AIR LINE**

### **2.3.1 Choke Valve**

The choke valve (#11) is a ball valve located in blast air line upstream of the automatic air valve and Thompson Valve. The function of the choke valve is to aid in the removal of any obstruction that may, despite all effort, find its way into the blast pot. Whenever a large particle (paint chip, cigarette butt, etc.) obstructs the Thompson Valve the procedure is to open the Thompson Valve to the fully open position and then close the choke valve completely for about one second while the deadman lever (#17) is depressed. This should be sufficient to dislodge whatever foreign material that may have obstructed media flow through the Thompson Valve. The choke valve should be left in the full open position on all other occasions.

### **2.3.2 Automatic Air Valve**

The automatic air valve (#12) is a normally closed pneumatically operated air valve. The function of the air valve is the supply of blast air when the deadman lever (#17) is depressed.

### **2.3.3 Thompson Valve**

The Thompson Valve (#14) is a dual function valve. First, it is an abrasive metering valve. Second, it is an on-off valve that blocks or releases abrasive media into the blast air stream. When it is open the Thompson valve meters through an adjustable orifice. The degree to which this orifice is open is determined by the turning the knob at the top of the Thompson valve (CW-close, CCW-open). The Thompson valve is controlled by the deadman valve (#17) via control valve (#15).

### **2.3.4 Union End Ball Valve**

The union end ball valve (#13) is a manual media shut-off valve that allows removal of the Thompson valve from the system for servicing. Turn the handle to the closed position to stop media flow, and then break loose the union for Thompson valve removal.

### **2.3.5 Abrasive Cut-off**

At the time of manufacture this IBRS unit was not equipped the optional abrasive cut-off feature. The function of the abrasive cut-off is to allow blasting air without media. To blast with air only set the abrasive cut-off switch to the off-position then depress the deadman lever (#17). This will send a control signal to the combo valve and automatic air valve only. As a result only blast air will exit out of the nozzle. The abrasive cut-off feature necessitates the addition of a second control valve (#15), which provides the control signal to the Thompson valve independent to that of the combo valve and air valve.

## **2.4 VACUUM SYSTEM**

### **2.4.1 Centrifugal Blower**

The vacuum system is used for media recovery after blasting. The principal component of the vacuum system is the centrifugal blower (#26). The blower is powered by a 15hp electric motor. To activate the vacuum system push the start button on the motor starter (#50). The vacuum pressure is indicated on the pressure gauge (#51) located on the dust collector (#39). The vacuum blower exhausts air through a muffler (#52).

## **2.4.2 Media Reclaimer**

The function of the media reclaimer (#37) is to receive the media recovered by vacuuming. The media and other debris enter the media reclaimer at the tangential inlet (#44), which creates a cyclonic action on the incoming flow (refer to drawing on page #5-5). Large heavier particles spiral on the outer extreme and are carried to the bottom of the media reclaimer. Small lighter particles remain in the air stream and are carried from the media reclaimer into the secondary cyclone (#38) then to the dust collector (#39). Below the media reclaimer there is a screen (#21) that prevents debris (paint chips, cigarette butts, etc.) from passing into the pressure vessel (#36). When blasting is interrupted, the pressure vessel pop-up valve (#10) opens which allows the media accumulated in the media reclaimer to fall through the screen and enter the pressure vessel. The screen should be inspected and cleaned periodically. It can be accessed through the access door (#47) of the media reclaimer.

## **2.4.3 Adjustable Air Wash**

The media reclaimer is equipped with the adjustable air wash system (refer to drawing on page #5-5). The reclaimer with air wash is a two-stage media separator. The first stage operates as described above (section 2.4.2) where the primary media separation occurs at the bottom of the upper cylinder (a). The remaining debris and media falls downward through the conical orifice (b). At this point smaller particles are washed from the media by the vacuum flow into the cone tube (c) and flows into the secondary cyclone through the reclaimer outlet (d). The vacuum intensity at the cone tube is adjusted by the urethane cone tube plug (e)(#25). The adjustment is made by loosening the collar screw (f) and raising or lowering the urethane cone tube plug. Raising the urethane plug increases the air wash vacuum intensity, while lowering it decreases the intensity. This adjustment is necessary to optimize dust removal while also minimizing removal of good media. Below the media reclaimer there is a screen (#21) mounted on vibration isolators (#43) that prevents debris (paint chips, cigarette butts, etc.) from passing into the pressure vessel (#36). Located on the screen is a media vibrator (#19) to aid in media flow through the screen. The screen should be inspected and cleaned periodically. It can be accessed through the access door (#47) of the media reclaimer.

## **2.4.4 Secondary Cyclone**

The function of the secondary cyclone (#38) is to provide additional separation of dust particles prior to entering the dust collector. This separation of large and small dust particles will extend the life of the dust collector filters (#30). The secondary cyclone (#38) operates the same way as the first stage of the air wash reclaimer does. The air/dust flow enters the cyclone at the tangential inlet. As it enters the velocity is reduced causing the heavier particles to drop out of the air stream and down to the bottom of the cyclone. The cyclone is emptied through the butterfly valve (#34). Periodically open the butterfly valve (#34) to drain the accumulated dust.

## **2.4.5 Dust collector**

The dust-filled vacuum air stream from the secondary cyclone enters the dust collector (#39) where the dust particles are filtered out by the four pleated filter elements. The filters are held in position by winged knobs (#31), which seals them against the bottom of the tube sheet in the dust collector. The air filters can be accessed for removal or inspection through the hinged door (#32). To remove the filters loosen the winged knob to lower it so it can be unhooked at the end of the turnbuckle (#54). The filters must be pulsed regularly during operation to prevent clogging (see section 2.5). In addition, the filters must be periodically cleaned to insure long life (see section 4.4.2). The clean vacuum air stream is evacuated from the dust collector through the centrifugal

blower (#26). The dust removed from the air stream collects at the bottom of the dust collector cone. The dust can be drained by opening the butterfly valve (#56). Periodically open the butterfly valve (#56) to drain the accumulated dust.

## **2.5 PULSE JET SYSTEM**

The function of the pulse jet system is to prevent clogging of the dry filters (#30) by periodically providing a burst of air inside the filter to loosen dust particles from the pleated surface. This is accomplished by the automatic pulse jet controls. The required interval between pulses is determined by the blasting conditions. As the particles begin to clog the filter the differential pressure across the dust collector tube sheet will increase. This increase can be detected on the pressure gauge (#51). The pulsing air supply utilizes a reservoir (#45) to prevent pressure drops at the blast nozzle. Each pulse line contains a pneumatically operated pulse valve (#28). Each pulse valve is provided an air signal to open via solenoids (#41) in the pulse control box (#27). Refer to the drawing on page #5-6.

### **2.5.1 Automatic pulse jet controls**

The automatic pulse system provides operator-free pulsing of the air filters and operates continuously when electric power is connected. The automatic pulse is controlled by an electronic circuit board (#40) located in the pulse air control box (#27) (refer to drawing in section 5.0, page #5-6). Upstream of the pulse air reservoir is an air filter (#22) and an adjustable air regulator (#24), which are installed to maintain the clean air, of a maximum of 80 psig, required by the pulse controls. The pulse air control box sends a signal to the pulse air valve (#28), via the pulse control valve (#41), which opens providing the burst of air necessary to unclog the air filters (#30). The adjustment of the pulse air control box is dictated by the blasting conditions. The interval between pulses is adjusted by the **AOFF TIME**@knob on the circuit board (#40). The pulse length is adjusted by the **AON TIME**@knob. The pulse effect can be seen by a decrease in the vacuum reading on the pressure gauge (#51). The automatic pulse jet controls can be disabled by disconnecting the power cord to the pulse control box. **Caution:** An excessive “On Time” will cause the pulse air to overpower the vacuum resulting in reduced media recovery capabilities.

## **2.6 MEDIA VIBRATOR (vessel)**

The function of the media vibrator (#20) is to vibrate the media in the pressure vessel (#36), which creates better media flow characteristics. The level of vibration is controlled by the angle valve (#23), which can also turn off the vibration.

## **2.7 MEDIA VIBRATOR (media screen)**

The air wash media reclaiming is equipped with a screen mounted vibrator (#19) to increase flow through the screen. The level of vibration is controlled by the angle valve (#46), which can also turn off the vibration. The vibrator can be accessed by removing the screen through the access door (#33).

## 2.8 BLAST HOSE ASSEMBLY

The size of the blast hose is determined by the size nozzle to be used. Generally the blast hose inside diameter should be three times the nozzle throat diameter. For open cycle blasting (without simultaneous vacuum recovery) conditions and preference dictate the size nozzle/hose combination to be used. However, to utilize closed cycle blasting which requires the BRS vacuum head, only a 3/4" blast hose assembly can be used. This is due to the limitations inherent to this type of blasting which require size constraints designed into the BRS vacuum head. The use of a 3/4" blast hose implies that the largest size nozzle that can be used during closed cycle blasting is a #4 (1/4"), but a #5 (5/16") can also be used effectively. **Note:** The IBRS unit is not intended for simultaneous blast and recovery, but it is sufficiently powered to do so for (1) one outlet.

## 2.9 BLAST NOZZLE

While blasting, the blast air/media mixture flows through the blast hose (#49) to the blast nozzle(#48). The blast nozzle throat diameter directly affects the airflow rate, media flow rate, and surface removal rate. Nozzles come in several sizes, which can be identified by a small number visible on the nozzle. This number represents the nozzle throat diameter size in sixteenths of an inch; for example, a #5 nozzle has a throat diameter of 5/16". The best nozzle size for a particular application can be determined by several factors:

- i. How much compressed air is available? Refer to section 6.0, table 1 for the approximate air consumption for each size blast nozzle.
- ii. What type of surface is being blasted? Blasting small or intricate parts is usually done with a smaller nozzle.

### **3.0 OPERATING PROCEDURE**

This section contains part identification numbers (#) within the text that are found on the drawings in section 5.0, pages #5-3 thru #5-11. Refer to these drawings as needed while reading this manual. Prior to operating the IBRS unit, carefully read the safety warnings in section 0.0.

#### **3.1 Unit Setup**

- 3.1.1 To prevent static electricity shocks to operating personnel, the IBRS unit must be grounded.
- 3.1.2 Close the air inlet ball valve (#1), the media vibrator valve (#23) media screen vibrator valve (#46), and disconnect the pulse control box (#27).
- 3.1.3 Open the butterfly valve (#56) at the bottom of the dust collector (#39) to drain the spent media. Close butterfly valve (#56).
- 3.1.4 Empty the secondary cyclone by opening butterfly valve (#34).
- 3.1.5 Check that the dust collector filters (#30) are in place and in good condition.
- 3.1.6 Make sure the vessel handway (#18), the reclaim hopper doors (#33 and #47), the cyclone handway (#53), the dust collector door (#32) are closed and tightened.
- 3.1.7 Screw a standard long venturi nozzle (#48) into the nozzle holder (#49) of the blast hose assembly.
- 3.1.8 Connect the blast hose (#49) to the coupling on the Thompson valve (#14) and install safety clips to prevent accidental disconnection during operation.
- 3.1.9 Connect the twinline hose quick connects (#55) to the mating quick connects on the control valve (#15).
- 3.1.10 Connect a 120vac power supply to the male connector on the pulse control box (#27).
- 3.1.11 Connect an air supply hose to the air inlet crowfoot (#1) on the IBRS and install safety clips to prevent accidental disconnection during operation. Refer to section 3.4 to determine the compressed air requirements.
- 3.1.12 If the blast pot is already full of media skip to section 3.2. otherwise use the vacuum reclaim hose to fill the blast pot.



- 3.1.13 Make sure the handway and doors (#18, #33, #47, #53, & #32) on blast pot (#36), media reclaimer (#37), and dust collector (#39) are closed tight.
- 3.1.14 Open the air inlet valve (#1).
- 3.1.15 Push the AStart@button on the motor starter (#50) to turn on the centrifugal pump (#26).
- 3.1.16 Vacuum desired amount of media into the blast pot (#36). Do not overflow, for this will cause media overflow into the secondary cyclone and dust collector.
- 3.1.17 Push the AStop@button on the motor starter (#50) to turn off the centrifugal pump (#26).
- 3.1.18 Disconnect pulse control box (#27) power cord to disable pulsing.

## **3.2 Blast Operation:**

- 3.2.1 After completion of the procedures in section 3.1 the IBRS unit is ready for blasting.
- 3.2.2 Open the air inlet ball valve (#1).
- 3.2.3 Set your desired tank/blast pressure by turning the pressure regulator (#5) knob clockwise for higher pressure or counterclockwise for lower pressure. Remember that when blasting, the pressure indicated on the pressure gauge (#4) will drop slightly.
- 3.2.4 To operate at full pressure, without the regulator restriction, open ball valve (#6).
- 3.2.5 Partially open the drain ball valve (#3) at the bottom of the moisture separator (#2) to allow accumulated moisture to drain. This prevents moisture from entering the blast pot (#36) and dust collector (#39) during blasting.
- 3.2.6 Open the union end ball valve (#13) to allow media flow to the Thompson valve.
- 3.2.7 Open the Thompson Valve (#14) slightly. The best setting for this valve differs from one situation to another; therefore, it may take more than one adjustment to achieve the desired air/media mixture. Turn the Thompson Valve knob clockwise to decrease media flow or counterclockwise to increase media flow.
- 3.2.8 Turn on vessel media vibrator (#20) and set to the desired level of vibration by adjusting the angle valve (#23).
- 3.2.9 Turn on the media screen vibrator (#19) and set to the desired level of vibration by adjusting the angle valve (#46).
- 3.2.10 Open the choke valve (#11).
- 3.2.11 Depress the deadman lever (#17) to begin blasting.
- 3.2.12 Release the deadman lever (#17) to stop blasting.

3.2.13 After blasting is completed disconnect the quick connects (#55) at the control valve (#15), close the choke ball valve (#11), and the union end ball valve (#13) to disable blast operation.

### 3.3 Media vacuum recovery

- 3.3.1 To prevent static electricity shocks to operating personnel, the unit must be grounded.
- 3.3.2 Close the air inlet ball valve (#1), the vessel media vibrator valve (#23), media screen vibrator valve (#46).
- 3.3.3 Open the hinged door (#32) of the dust collector (#39). Check that the dust collector filters (#30) are in place and in good condition. If required, install the four dry filters in the dust collector and secure in position with the wing nut (#31). Close and latch the hinged door (#32).
- 3.3.4 Make sure the vessel handway (#18), the reclaim hopper doors (#33 and #47), the cyclone handway (#53), and the dust collector door (#32) are closed and tightened.
- 3.3.5 Connect the vacuum hose assembly to the vacuum inlet (#44).
- 3.3.6 Connect an air supply hose to the air inlet crowfoot (#1) on the IBRS and install safety clips to prevent accidental disconnection during operation. Refer to section 3.4 to determine the compressed air requirements.
- 3.3.7 Connect a 120vac power supply to the male connector on the pulse control box (#27).
- 3.3.8 Open the air inlet valve (#1).
- 3.3.9 Push the AStart@button on the motor starter (#50) to turn on the centrifugal pump (#26).
- 3.3.10 Vacuum desired amount of media into the blast pot (#36). Do not overfill, for this will cause media overflow into the secondary cyclone and dust collector. If you are recovering blasted media loaded in the vessel per section 3.1 (unit setup) there should be no concern for overfilling. After a few blast and recovery cycles it may become necessary to add some new media into the system.
- 3.3.11 Adjust the pulse cycle as required during media reclaim. The interval between pulses is adjusted by the AOFF TIME@knob on the circuit board (#40) located in the pulse control box (#27). The pulse length is adjusted by the AON TIME@knob. The pulse effect can be seen by a decrease in the vacuum reading on the pressure gauge (#51). The automatic pulse jet controls can be disabled by disconnecting the power cord to the pulse control box. **Caution:** An excessive “On Time” will cause the pulse air to overpower the vacuum resulting in reduced media recovery capabilities.
- 3.3.12 Push the AStop@button on the motor starter (#50) to turn off the centrifugal pump (#26).
- 3.3.13 Disconnect pulse control box (#27) power cord to disable pulsing

## **3.4 COMPRESSED AIR REQUIREMENTS**

### **3.4.1 Blast nozzle**

The primary air expenditures are by the blast nozzles. This expenditure can vary greatly depending upon the nozzle size and the blast pressure. See section 6.0 table 1 for air consumption by nozzle size at various pressures.

### **3.4.2 Air compressor size**

The air compressor must be large enough to supply:

- i. Blast air for the largest nozzles and the highest pressure that will be used (see section 6.0 table 1).
- ii. The 12 CFM breathing air supplied to the blast hood when open blasting.

The air supply hose from the air compressor to the IBRS unit should be at least 2" in diameter. This size hose will supply the necessary air flow for the two blast outlet to operate simultaneously.

## **4.0 NORMAL MAINTENANCE**

This section covers maintenance that should be performed at regular intervals to insure proper operation of the IBRS unit. All the procedures discussed in this section should be performed with the IBRS unit completely depressurized and the air supply hose disconnected. Refer to the drawings in section 5.0 to aid in the completion of any maintenance.

### **4.1 Combo valve**

The black hose (#7) that passes through the combo valve (#8) is a 3/4" blast hose. Media carry-over can abrade a hole through the wall of the hose. Simply replace the hose with another section of hose, but make sure that the hose does not make any tight bends anywhere between the blast pot and the cyclone because this will cause the wear to be much more rapid.

### **4.2 Thompson valve**

If a blast nozzle will not shut off completely, it is probably because of a worn Thompson valve seat. It is replaced by unbolting the base of the valve (when the IBRS unit is depressurized).

### **4.3 Cyclone/Air wash media reclaimer**

The media screen inside the media reclaimer can accumulate debris therefore it should be periodically checked and cleaned. It can be accessed through the access door (#47).

### **4.4 Secondary cyclone**

When vacuum recovering the depleted media accumulates in the bottom of the dust collector (#38), therefore each must be drained periodically. Place a container below the dust collector then open the butterfly valve (#34) to drain the accumulated dust.

### **4.5 Dust collector**

#### **4.5.1 Vacuum recovery**

When vacuum recovering the depleted media accumulates in the bottom of the dust collector (#39), therefore each must be drained periodically. Place a container below the dust collector then open the butterfly valve (#56) to drain the accumulated dust.

#### **4.5.2 Dry filter cleaning**

To achieve the longest life of the dry filter it is important that they be serviced regularly. The following methods are recommendations to assist in cleaning IBRS dry filters. The first three are for both paper element filters and polyester element filters. However, be aware that the washing method is for polyester element filters only.

##### **4.5.2.1 Air pulsing**

The first cleaning step should be air pulsing. This is done by activating the automatic pulse system to provide a burst of air inside the filters to loosen dust particles from the pleated surface. It is not necessary to run the centrifugal blower for this operation.

##### **4.5.2.2 Vacuuming method**

The second cleaning method to utilize is vacuuming. A commercial duty vacuum cleaner is recommended, but a common household type may also be used. Vacuum the filter from the air intake (contaminated) side only. This procedure will remove the majority of the large particles and surface contaminants that have accumulated and may be sufficient for the first cleaning of the filter. This step should also be performed prior to progressing to

any subsequent cleaning method.

#### **4.5.2.3 Compressed air method**

The third cleaning step is by use of compressed air. The air flow must be directed from the opposite direction of the normal air flow through the filter. The air flow should be directed up and down the pleats. Do not direct the flow in a criss-crossing pattern across the direction of the pleats this could cause damage to paper element filters and decreases cleaning efficiency.

#### **4.5.2.4 Washing method (polyester element filter only)**

The washing process is for polyester element filters only. The final cleaning process may be necessary to reduce the static pressure to an acceptable level when the filter has fine particles that have become imbedded in the filter element. For this procedure a mild low sudsing detergent should be used with clean warm water. Soak the filter for 5-10 minutes, and then gently agitate the filter for several minutes. The filter should then be thoroughly rinsed with clean water to remove the detergent. It may require a second or third washing to obtain satisfactory filtration. However, the dirt holding capacity of the filter decreases after each washing.

**Critical:** Do not attempt to wash dry filters with paper elements, this will render them useless. If you are not certain of the type of element seek assistance.

**Note:** Polyester element filters can be washed and reused under proper conditions. However, Schmidt has no control over the washing process and cannot guarantee that it has been performed properly and effectively, therefore our warranty does not apply to washed filters.

#### **4.5.2.5 Inspection**

Inspecting the filter after each cleaning is vital. A simple method of inspection is to use a light bulb. Light passing through the filter will reveal fatigued paper or dirt accumulations. Inspection should also include the end plates to check for possible damages during handling. Inspect for damage that could allow contaminated air to bypass the filter element.

### **4.6 Remaining Components**

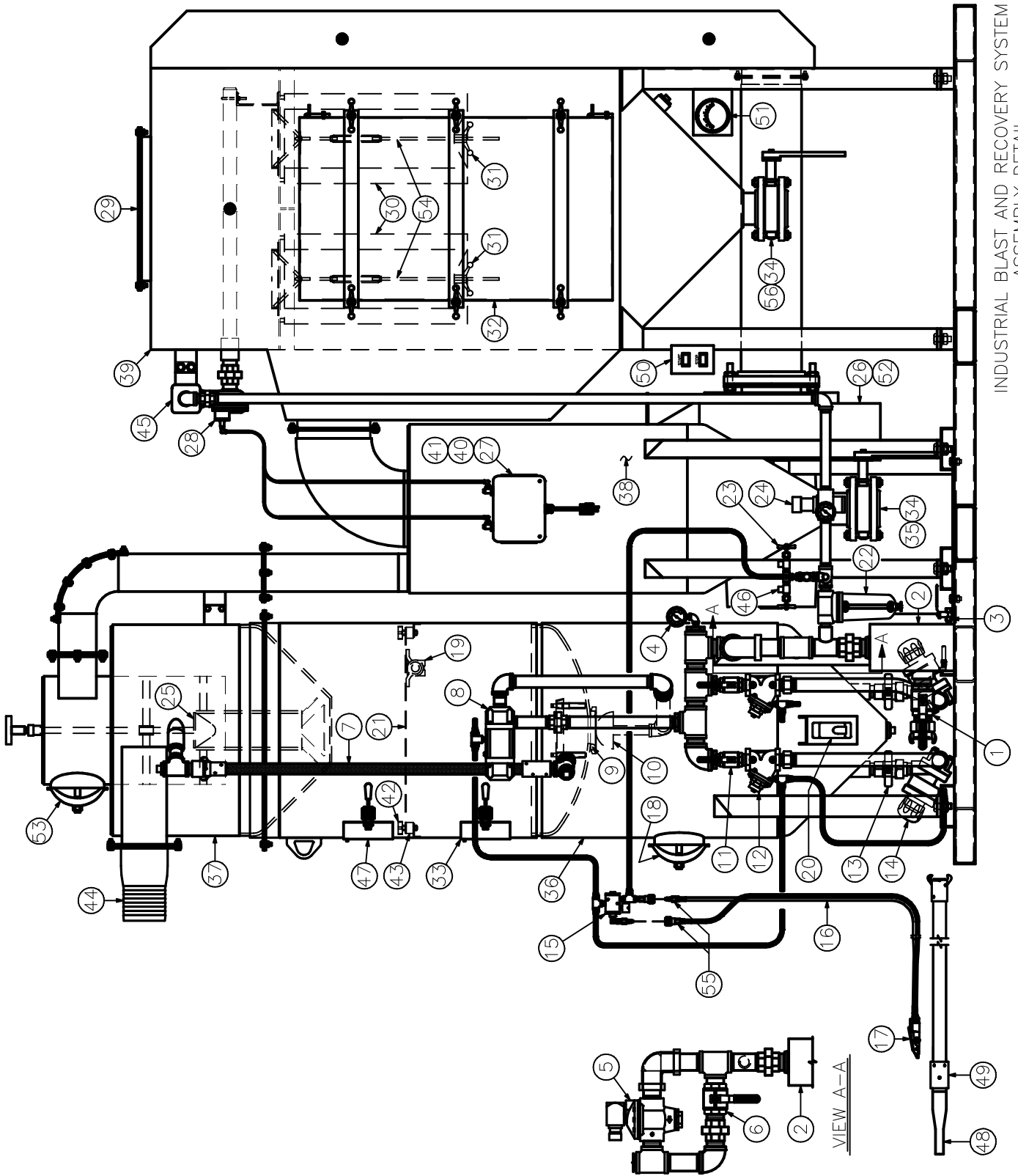
Most of the IBRS components are subject to wear and therefore it is expected that they will eventually require maintenance, but those not mentioned above should not need to be part of a periodic maintenance program.

## 5.0 PARTS LIST

This section contains a parts breakdown covering all the major components which may require maintenance during operation of the IBRS. The major items identified in the parts list are found on the drawings on pages #5-3 thru #5-11. Refer to these drawings as needed while reading this manual. In addition, repair kits to rebuild these items are identified and drawings are provided to aid in disassembly and installation of the new parts.

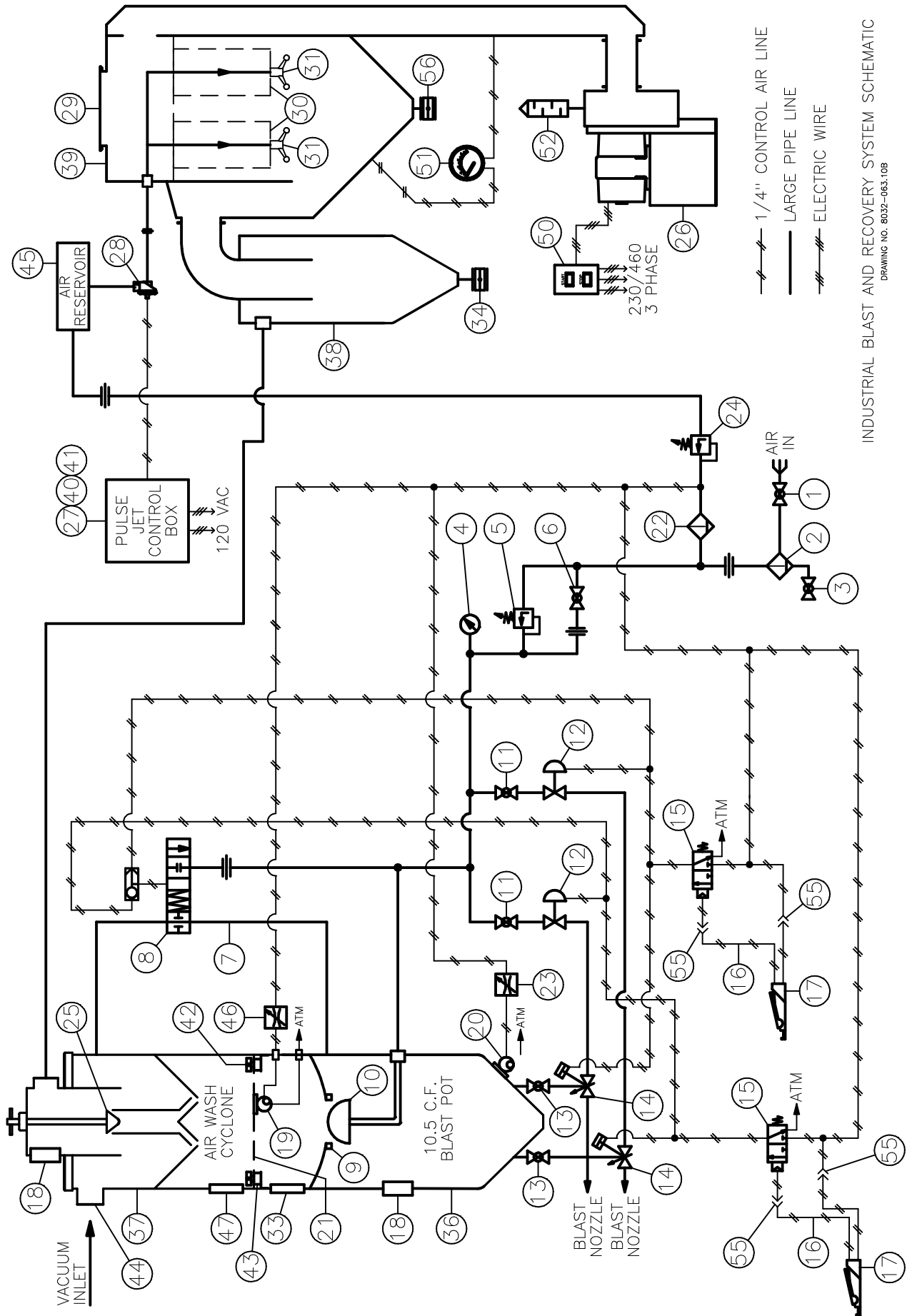
<u>ITEM</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1.	2401-509	Ball valve, full port 2"
2.	1200-999-23	Moisture separator, 2" x 2"
3.	2401-502	Ball valve, full port 1/4"
4.	2010-009-01	Pressure gauge, 0-160 psi
5.	2000-008	Regulator, 2" slave
6.	2401-509	Ball valve, full port 2"
7.	4104-005	Hose, 4-ply 3/4" (specify length)
8.	2223-000	Combo valve, 1 1/4"
9.	2100-011	Pop-up gasket
10.	2100-010	Pop-up head w/stem
11.	2401-507	Ball valve, full port 1-1/4"
12.	2123-107	Automatic air valve, n.c. 1 1/4"
13.	2408-907	Union ball valve, 1-1/4"
14.	2149-107	Thompson valve, urethane 1-1/4"
15.	2229-000	Control valve, pneumatic
16.	4100-501	Twinline hose assembly, 55 ft.
17.	2263-000	Deadman valve, pneumatic
18.	7000-001-11	Handway crab assembly, 6" x 8"
	7000-001-06	Handway gasket, 6" x 8"
19.	2020-013	Vibrator, model 13
20.	2020-025	Vibrator, model 25
21.	8031-000-93	Media screen
22.	2302-206-05	Air filter, 1" 5 micron
23.	2430-804	Angle valve, 1/4"
24.	2003-006	Regulator, 1" non-relieving
25.	8710-22100	Cyclone cone tube plug
26.	7223-022-17E	Electric blower, 15hp 230/460/3ph 60hz
27.	8032-000-37	IBRS pulse control box 120 VAC
28.	8032-000-36	Pulse valve, 1 1/2"
29.	8032-000-14	Dust collector plate flange, 20"
	7003-120-01	Angle flange gasket, 20"
30.	8031-000-24	Dry filter, 12" paper element
	8031-000-09	Dry filter, 12" polyester element
	8031-000-83	Dry filter, 12" high output
31.	8031-001-11	Dry filter knob
32.	8031-000-20	Dust collector door gasket
33.	8031-000-94	Hopper door gasket
34.	4224-813	Butterfly valve, 4"
35.	7003-313	Slip-on flange 4" 150#
36.	8032-063-01	IBRS 6.5 c.f. vessel
37.	8032-060-04	IBRS 6.5 c.f. reclaiming

38.	8032-100-05	IBRS 6.5/10.5 c.f. cyclone
39.	8032-100-02	IBRS 6.5/10.5 c.f. dust collector
40.	7135-018	Timer board, 120 VAC
41.	8032-000-45	Pulse control valve 120 VAC
42.	8031-000-42	Screen knob
43.	8031-000-46	Screen isolator
44.	---	6" Vacuum inlet nipple
45.	8032-000-32	Pulse manifold
46.	2430-804	Angle valve, 1/4"
47.	8031-000-94	Hopper door gasket
48.	5000-xxx	Blast nozzle (specify size)
49.	4104-40x-0x	Blast hose (specify size and length)
	8031-000-32	BRS threaded nozzle holder
50.	8032-000-56	IBRS motor starter control box
	7135-026	Motor starter contactor, 15h.p.
	7135-027	Motor starter overload relay
51.	2010-013-10	Differential pressure gauge
52.	2011-017	Muffler, 8" flanged
53.	7000-001-11	Handway crab assembly, 6" x 8"
	7000-001-06	Handway gasket, 6" x 8"
54.	8082-000-37	BRS2 filter turnbuckle
55.	4224-300-02	Quick connect plug, 1/4"
	4224-301-02	Quick connect socket, 1/4"
56.	4224-813	Butterfly valve, 4"

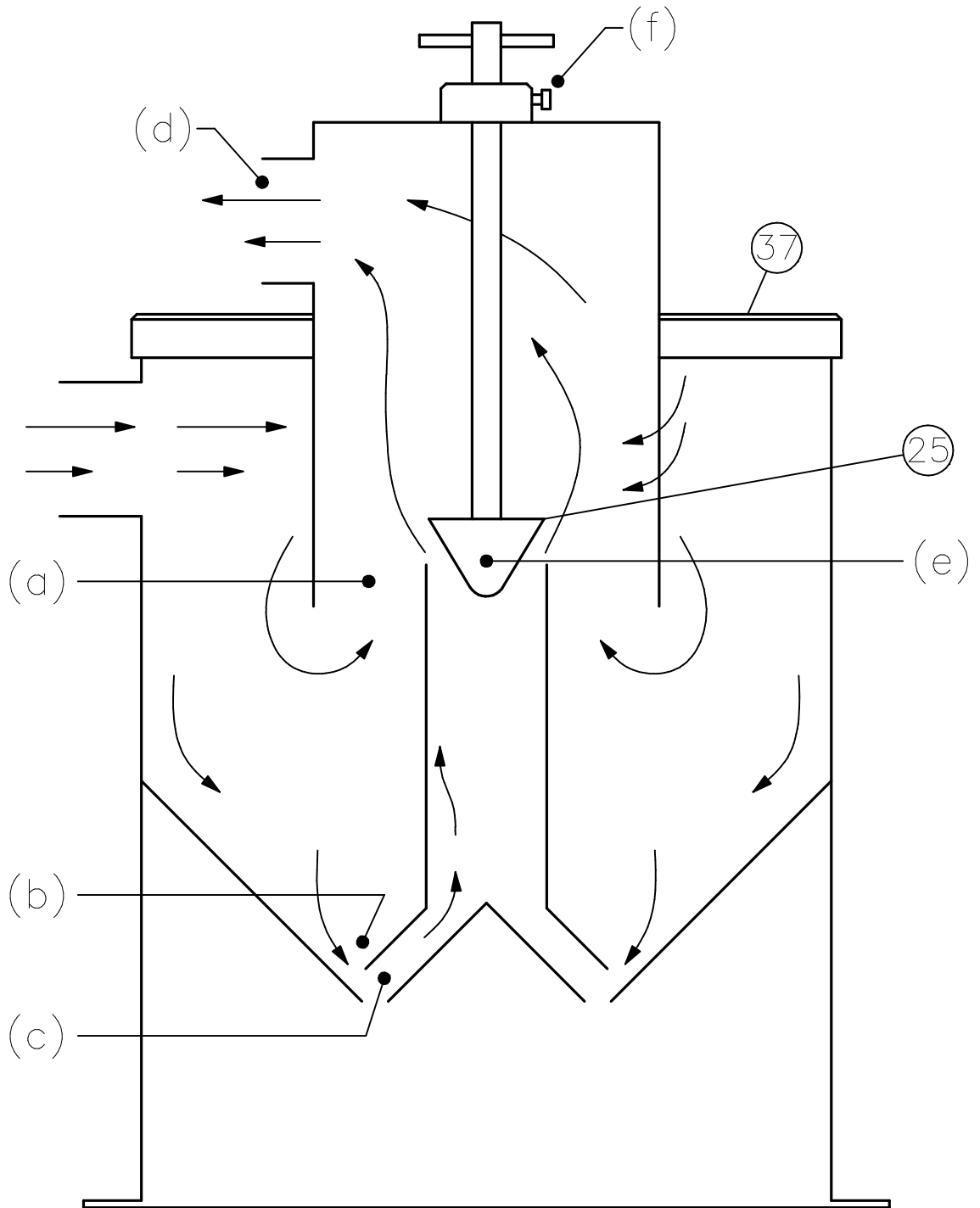


INDUSTRIAL BLAST AND RECOVERY SYSTEM  
 ASSEMBLY DETAIL  
 DRAWING NO. 8032-063.10A

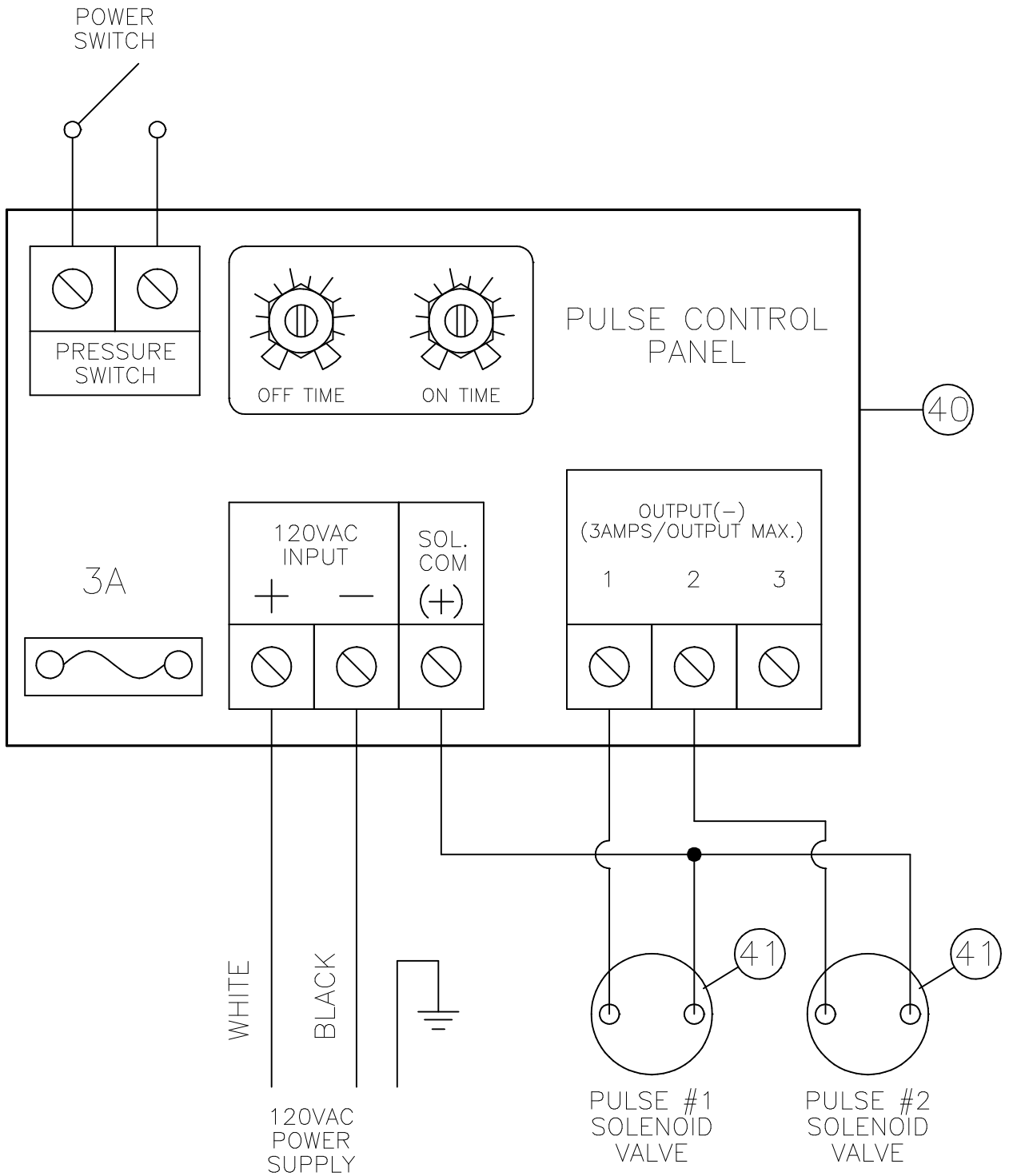




INDUSTRIAL BLAST AND RECOVERY SYSTEM SCHEMATIC  
DRAWING NO. 8032-063.108

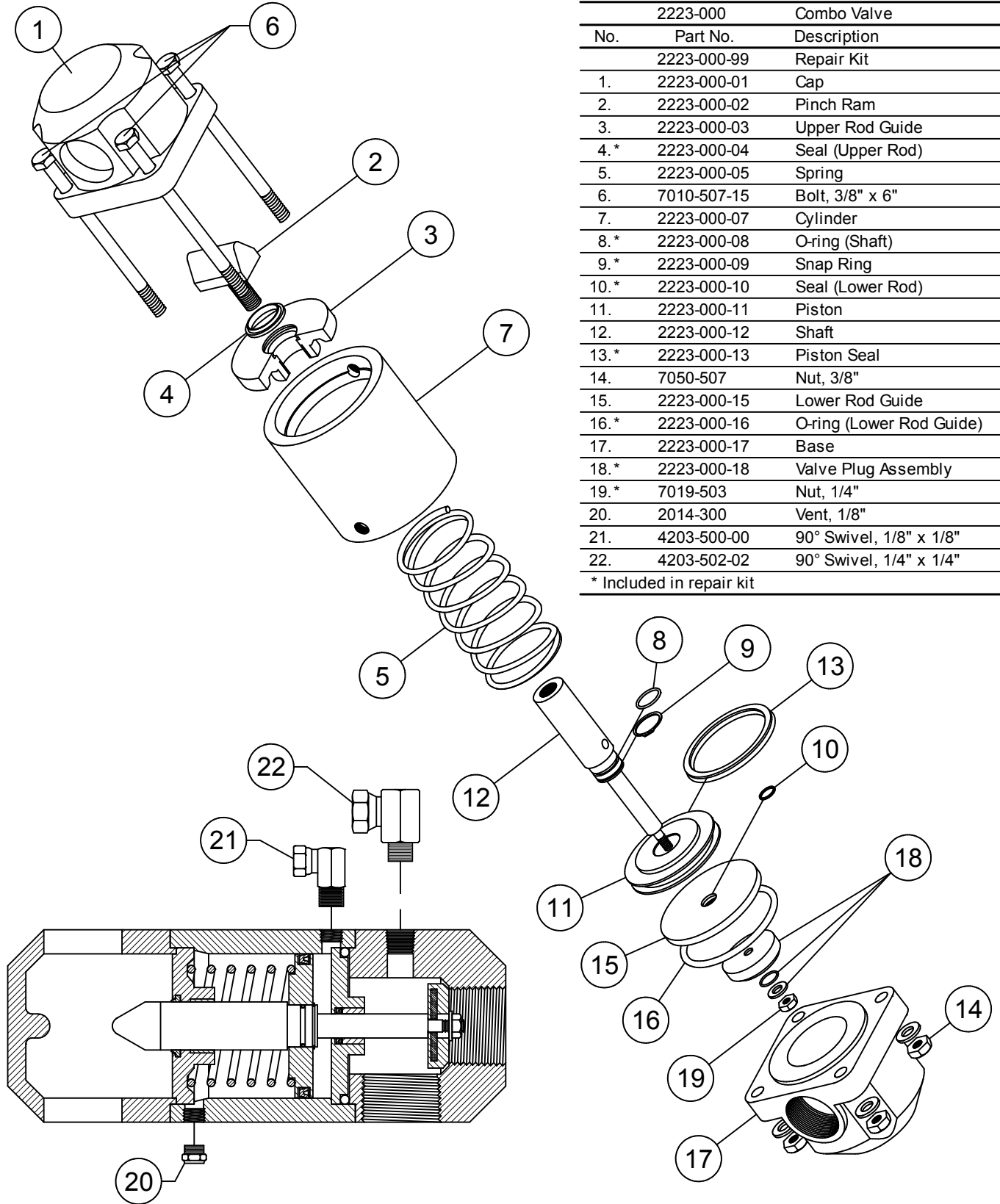


INDUSTRIAL BLAST AND RECOVERY SYSTEM  
 ADJUSTABLE AIRWASH RECLAIMER  
 DRAWING NO. 8032-063.10C



INDUSTRIAL BLAST AND RECOVERY SYSTEM  
 AUTOMATIC PULSE AIR CONTROL BOX  
 DRAWING NO. 8032-000.37

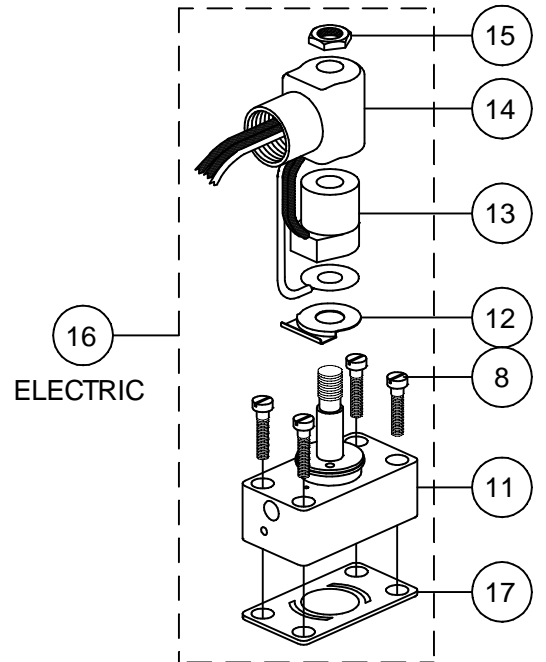
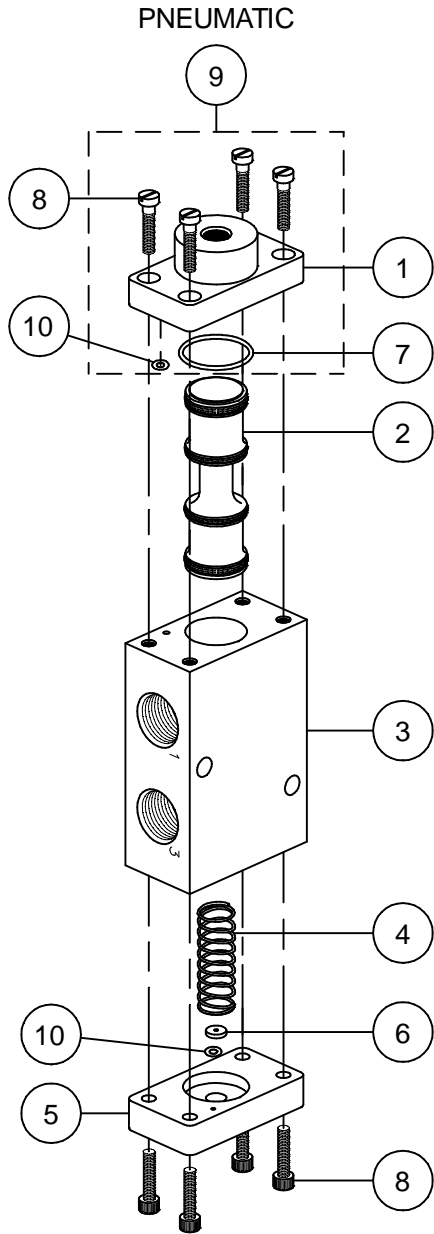
# Combo Valve



2223-000		Combo Valve
No.	Part No.	Description
2223-000-99		Repair Kit
1.	2223-000-01	Cap
2.	2223-000-02	Pinch Ram
3.	2223-000-03	Upper Rod Guide
4.*	2223-000-04	Seal (Upper Rod)
5.	2223-000-05	Spring
6.	7010-507-15	Bolt, 3/8" x 6"
7.	2223-000-07	Cylinder
8.*	2223-000-08	O-ring (Shaft)
9.*	2223-000-09	Snap Ring
10.*	2223-000-10	Seal (Lower Rod)
11.	2223-000-11	Piston
12.	2223-000-12	Shaft
13.*	2223-000-13	Piston Seal
14.	7050-507	Nut, 3/8"
15.	2223-000-15	Lower Rod Guide
16.*	2223-000-16	O-ring (Lower Rod Guide)
17.	2223-000-17	Base
18.*	2223-000-18	Valve Plug Assembly
19.*	7019-503	Nut, 1/4"
20.	2014-300	Vent, 1/8"
21.	4203-500-00	90° Swivel, 1/8" x 1/8"
22.	4203-502-02	90° Swivel, 1/4" x 1/4"

\* Included in repair kit

# Control Valves

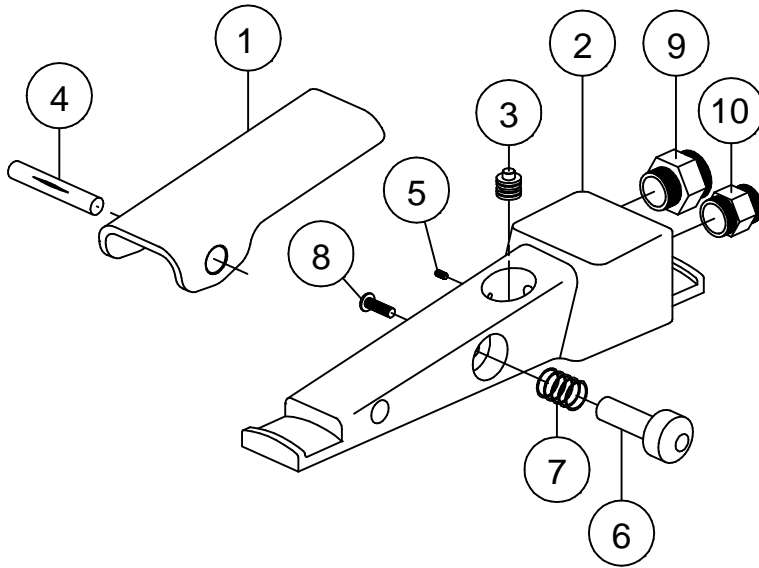


	2229-000	Pneumatic Control Valve
	2229-100	Electric Control Valve-12 Volt D.C.
	2229-101	Electric Control Valve-12 Volt A.C.
	2229-102	Electric Control Valve-24 Volt D.C.
	2229-103	Electric Control Valve-24 Volt A.C.
	2229-105	Electric Control Valve-120 Volt A.C.
No.	Part No.	Description
	2229-000-99	Repair Kit (Pneumatic)
	2229-100-99	Repair Kit (Electric)
1.	Not Available	Air Operator Cap
2.	+ 2229-000-02	Plunger w/O-Ring
3.*	Not Available	Valve Body
4.	+ 2229-000-04	Spring
5.*	Not Available	Spring Retainer
6.	+ 2229-000-06	Filter Disk
7.*	2229-000-07	O-Ring
8.*	Not Available	Screw (8)
9.	2229-000-09	Air Operator Assembly
10.	+ 2229-000-10	O-Ring (2 ea)
11.*	Not Available	Electric Operator Cap
12.	Not Available	Coil Cover Bottom
13.	2229-100-03	Coil 12 Volt D.C.
	2229-101-03	Coil 12 Volt A.C.
	2229-102-03	Coil 24 Volt D.C.
	2229-103-03	Coil 24 Volt A.C.
	2229-105-03	Coil 120 Volt A.C.
14.	Not Available	Coil Cover
15.	Not Available	Nut
16.	2229-100-06	Solenoid Pilot Assembly-12 Volt D.C.
	2229-101-06	Solenoid Pilot Assembly-12 Volt A.C.
	2229-102-06	Solenoid Pilot Assembly-24 Volt D.C.
	2229-103-06	Solenoid Pilot Assembly-24 Volt A.C.
	2229-105-06	Solenoid Pilot Assembly-120 Volt A.C.
17.+	2229-100-07	Gasket (Electric Only)

\* Included In Repair Kit-Pneumatic

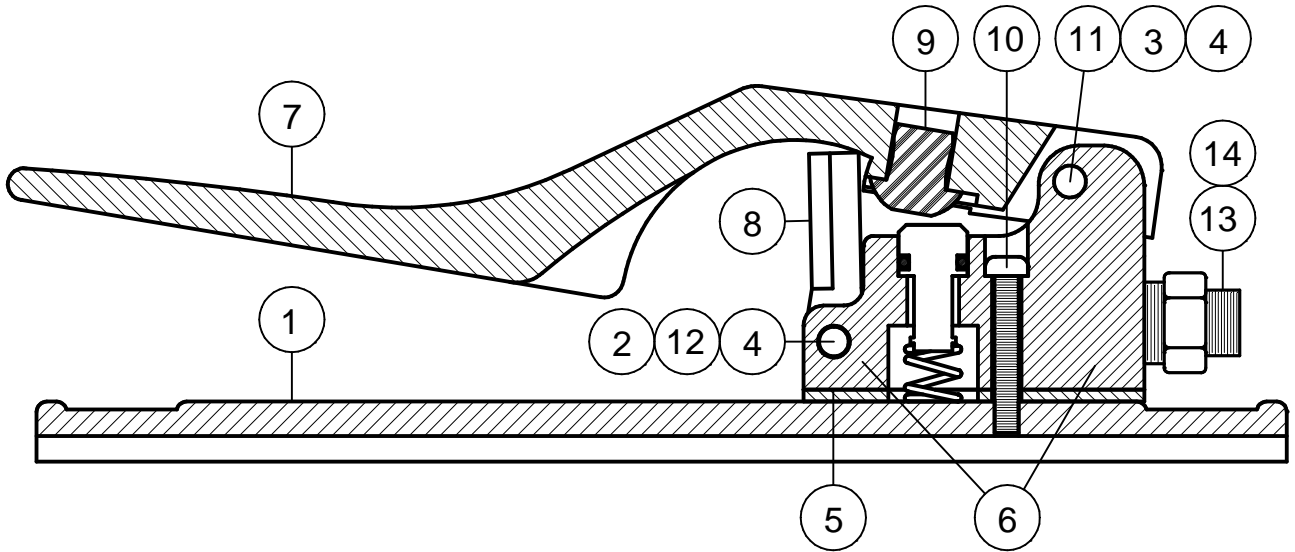
+ Included In Repair Kit-Electric

# Pneumatic Deadman Controls



2263-000 Pneumatic Deadman		
No.	Part No.	Description
2263-000-99 Repair Kit		
1.	2263-000-01	Lever
2.	2263-000-02	Body
3.*	2263-000-03	Cartridge
4.	2263-000-04	Hinge Pin
5.*	2263-000-05	Set Screw
6.	2263-000-06	Button
7.*	2263-400-07	Spring
8.*	2263-400-08	Screw for Button
9.	3031-302-00	Hex Nipple, 1/8" x 1/4"
10.	3031-300-00	Hex Nipple, 1/8" x 1/8"

\* Included in repair kit



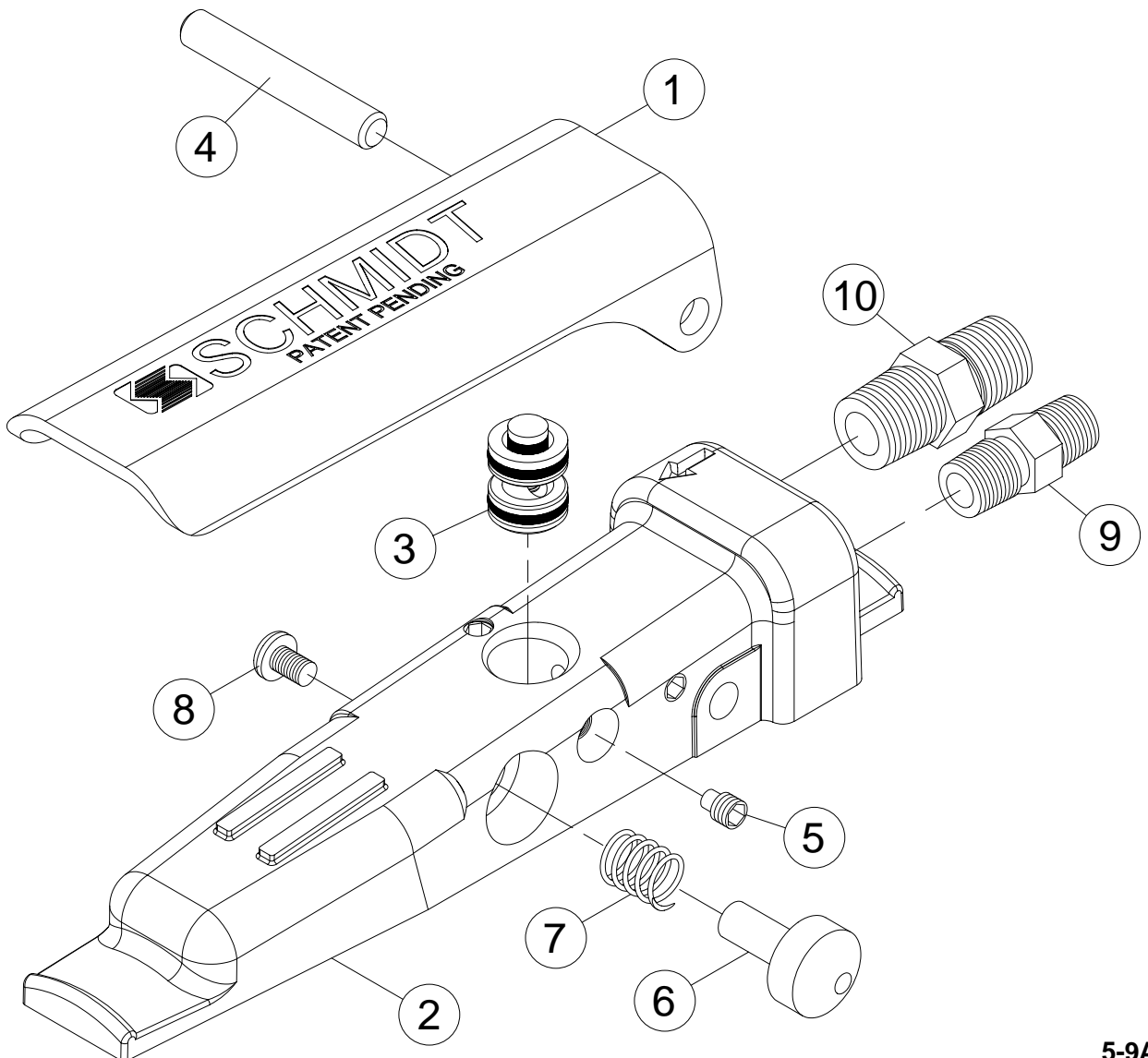
2263-000			Pneumatic Deadman II		
No.	Part No.	Description	No.	Part No.	Description
2263-001-99 Repair Kit					
1.	2263-001-01	Base	8.	2263-001-08	Safety Flap
2.	2263-001-02	Safety Flap Spring	9.*	2263-001-09	Plunger Screw
3.	2263-001-03	Lever Hinge Screw	10.	2263-001-10	Body Mounting Screw
4.	2263-001-04	Hinge Pin Nut	11.	2263-001-11	Lever Spring
5.*	2263-001-05	Body Gasket	12.	2263-001-12	Flap Hinge Screw
6.*	2263-001-06	Valve Body Assembly	13.	3031-302-00	Hex Nipple, 1/8" x 1/4"
7.	2263-001-07	Lever	14.	3031-300-00	Hex Nipple, 1/8" x 1/8"

\* Included in repair kit

# G2 PNEUMATIC DEADMAN

Item	Part No.	Description
	2263-002	G2 Pneumatic Deadman
	2263-002-99	G2 Replacement Parts Kit
1.	2263-002-01	G2 Deadman Lever
2.	2263-002-02	G2 Deadman Body
*3.	2263-002-03	G2 Deadman Cartridge Assembly
4.	2263-002-04	G2 Deadman Hinge Pin
*5.	2263-002-05	G2 Deadman Cartridge Set Screw
6.	2263-002-06	G2 Deadman Button
*7.	2263-002-07	Deadman Spring
*8.	2263-000-08	Deadman Screw For Button
9.	3031-300-00	Hex Nipple, 1/8" x 1/8" With Ball Seat
10.	3031-302-02	Hex Nipple, 1/4" x 1/4" With Ball Seat

\*Items included in Replacement Parts Kit



# Automatic Air Valve (Normally Closed)

2123-106 1" Valve		
No.	Part No.	Description
	2123-006-99	Repair Kit
1.*	2123-006-01	Gasket
2.*	2123-006-02	Diaphragm
3.*	2123-006-03	O-ring
4.	2123-006-04	Retainer Bushing
5.*	2123-006-05	O-ring
6.	2123-006-06	Disk Retainer
7.*	2123-006-07	O-ring
8.	2123-006-08	Seat
9.	2123-006-09	Disc Plate
10.	"Deleted"	Lock Washer, Internal
11.*	2123-006-11	Lock Nut
12.	2123-106-12	Cap
13.*	2123-006-13	Lock Nut
14.	2123-006-14	Cap Screw
15.	2123-006-15	Diaphragm Plate
17.	2123-006-17	Lock Nut
18.	2123-006-18	Body, 1"
19.	2123-006-19	Shaft
20.*	2123-006-20	Gasket
21.*	2123-006-21	Disc
22.	2123-106-22	Gasket
23.	2123-106-23	Spring Retainer
24.	2123-106-24	Spring
25.	2014-300	Vent, 1/8" (not included)

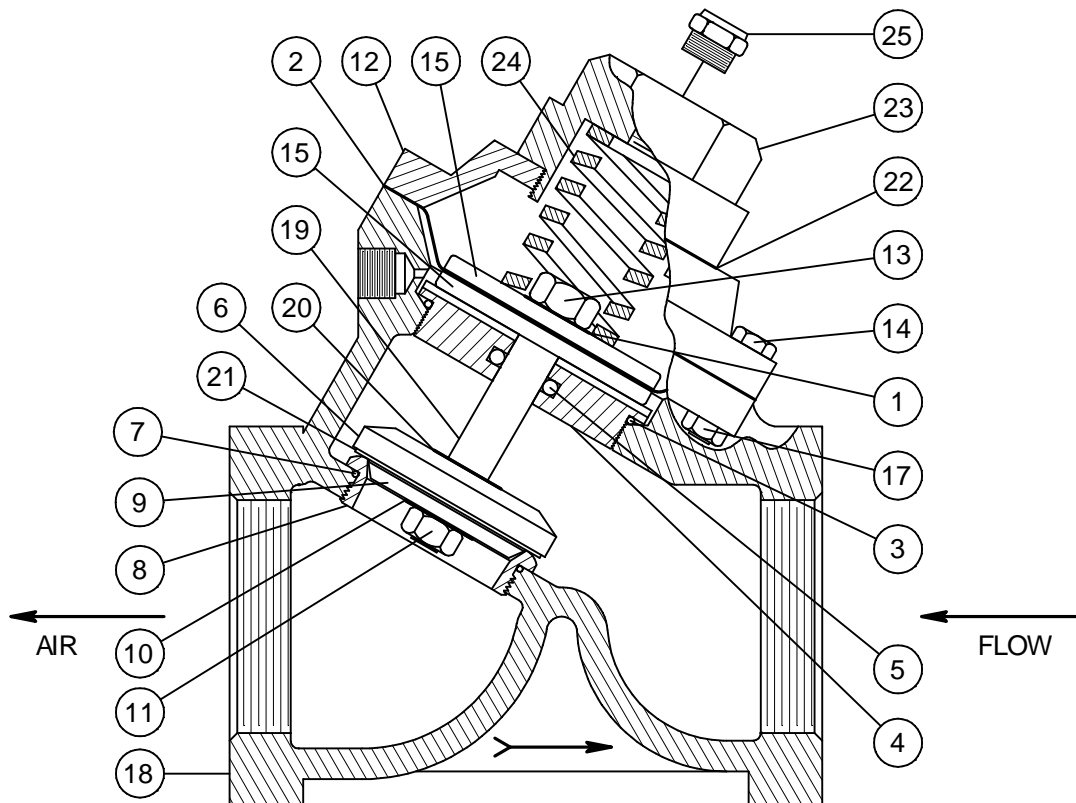
\* Included In Repair Kit

2123-107 1 1/4" Valve		
No.	Part No.	Description
	2123-108	1 1/2" Valve
	2123-007-99	Repair Kit
1.*	2123-007-01	Gasket
2.*	2123-007-02	Diaphragm
3.*	2123-007-03	O-ring
4.	2123-007-04	Retainer Bushing
5.*	2123-007-05	O-ring
6.	2123-007-06	Disk Retainer
7.*	2123-007-07	O-ring
8.	2123-007-08	Seat
9.	2123-007-09	Disc Plate
10.	"Deleted"	Lock Washer, Internal
11.*	2123-007-11	Lock Nut
12.	2123-107-12	Cap
13.*	2123-007-13	Lock Nut
14.	2123-007-14	Cap Screw
15.	2123-007-15	Diaphragm Plate
17.	2123-007-17	Lock Nut
18.	2123-007-18	Body, 1 1/4"
	2123-008-18	Body, 1 1/2"
19.	2123-007-19	Shaft
20.*	2123-007-20	Gasket
21.*	2123-007-21	Disc
22.	2123-107-22	Gasket
23.	2123-107-23	Spring Retainer
24.	2123-107-24	Spring
25.	2014-300	Vent, 1/8" (not included)

\* Included In Repair Kit

2123-109 2" Valve		
No.	Part No.	Description
	2123-009-99	Repair Kit
1.*	2123-009-01	Gasket
2.*	2123-009-02	Diaphragm
3.*	2123-009-03	O-ring
4.	2123-009-04	Retainer Bushing
5.*	2123-009-05	O-ring
6.	2123-009-06	Disk Retainer
7.*	2123-009-07	O-ring
8.	2123-009-08	Seat
9.	2123-009-09	Disc Plate
10.	"Deleted"	Lock Washer, Internal
11.*	2123-009-11	Lock Nut
12.	2123-109-12	Cap
13.*	2123-009-13	Lock Nut
14.	2123-009-14	Cap Screw
15.	2123-009-15	Diaphragm Plate
17.	2123-009-17	Lock Nut
18.	2123-009-18	Body, 2"
19.	2123-009-19	Shaft
20.*	2123-009-20	Gasket
21.*	2123-009-21	Disc
22.		Not Needed
23.	2123-109-23	Spring Retainer
24.	2123-109-24	Spring
25.	2014-300	Vent, 1/8" (not included)

\* Included In Repair Kit

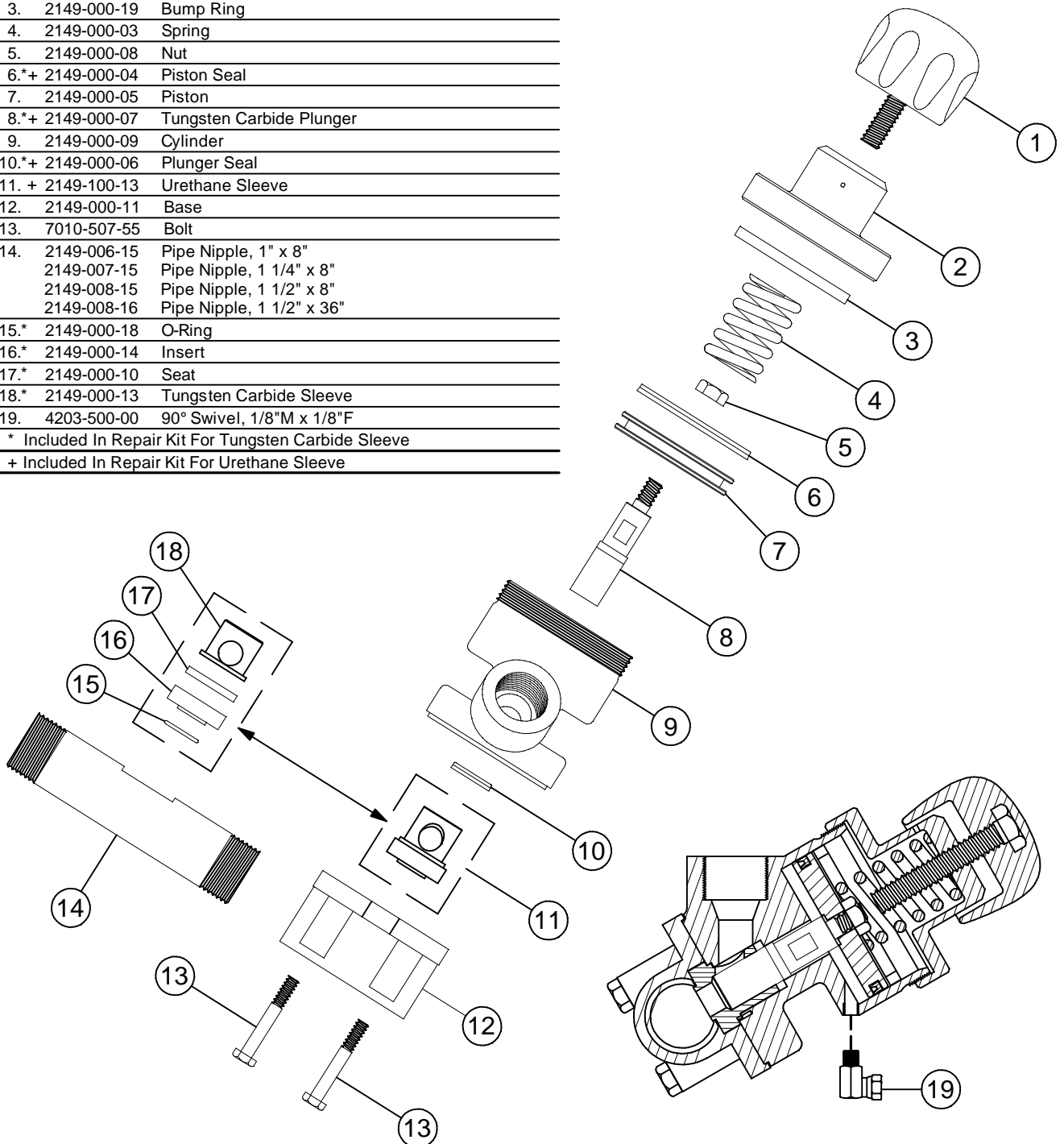


NOTE: With spring closed valve air flow is in opposite direction from arrow on valve body.



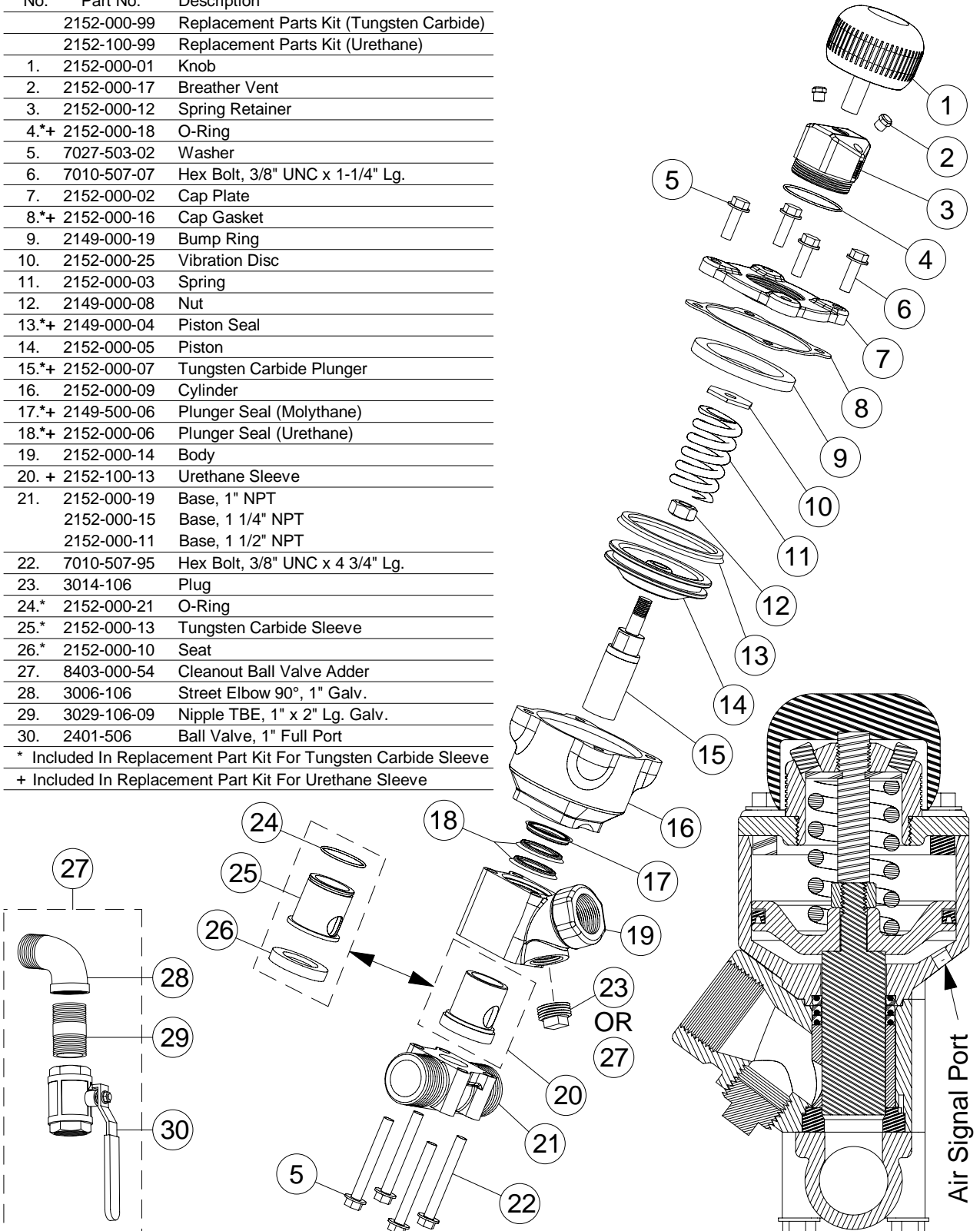
# Thompson Valve

	2149-006	1" Valve With Tungsten Carbide Sleeve
	2149-106	1" Valve With Urethane Sleeve
	2149-007	1 1/4" Valve With Tungsten Carbide Sleeve
	2149-107	1 1/4" Valve With Urethane Sleeve
	2149-008	1 1/2" Valve With Tungsten Carbide Sleeve
	2149-108	1 1/2" Valve With Urethane Sleeve
No.	Part No.	Description
	2149-000-99	Repair Kit With Tungsten Carbide Sleeve
	2149-100-99	Repair Kit With Urethane Sleeve
1.	2149-000-01	Knob
2.	2149-000-02	Cap
3.	2149-000-19	Bump Ring
4.	2149-000-03	Spring
5.	2149-000-08	Nut
6.*	2149-000-04	Piston Seal
7.	2149-000-05	Piston
8.*	2149-000-07	Tungsten Carbide Plunger
9.	2149-000-09	Cylinder
10.*	2149-000-06	Plunger Seal
11. +	2149-100-13	Urethane Sleeve
12.	2149-000-11	Base
13.	7010-507-55	Bolt
14.	2149-006-15	Pipe Nipple, 1" x 8"
	2149-007-15	Pipe Nipple, 1 1/4" x 8"
	2149-008-15	Pipe Nipple, 1 1/2" x 8"
	2149-008-16	Pipe Nipple, 1 1/2" x 36"
15.*	2149-000-18	O-Ring
16.*	2149-000-14	Insert
17.*	2149-000-10	Seat
18.*	2149-000-13	Tungsten Carbide Sleeve
19.	4203-500-00	90° Swivel, 1/8"M x 1/8"F
		* Included In Repair Kit For Tungsten Carbide Sleeve
		+ Included In Repair Kit For Urethane Sleeve



# Thompson Valve® II

	2152-006	1" Valve With Tungsten Carbide Sleeve
	2152-106	1" Valve With Urethane Sleeve
	2152-007	1 1/4" Valve With Tungsten Carbide Sleeve
	2152-107	1 1/4" Valve With Urethane Sleeve
	2152-008	1 1/2" Valve With Tungsten Carbide Sleeve
	2152-108	1 1/2" Valve With Urethane Sleeve
No.	Part No.	Description
	2152-000-99	Replacement Parts Kit (Tungsten Carbide)
	2152-100-99	Replacement Parts Kit (Urethane)
1.	2152-000-01	Knob
2.	2152-000-17	Breather Vent
3.	2152-000-12	Spring Retainer
4.*+	2152-000-18	O-Ring
5.	7027-503-02	Washer
6.	7010-507-07	Hex Bolt, 3/8" UNC x 1-1/4" Lg.
7.	2152-000-02	Cap Plate
8.*+	2152-000-16	Cap Gasket
9.	2149-000-19	Bump Ring
10.	2152-000-25	Vibration Disc
11.	2152-000-03	Spring
12.	2149-000-08	Nut
13.*+	2149-000-04	Piston Seal
14.	2152-000-05	Piston
15.*+	2152-000-07	Tungsten Carbide Plunger
16.	2152-000-09	Cylinder
17.*+	2149-500-06	Plunger Seal (Molythane)
18.*+	2152-000-06	Plunger Seal (Urethane)
19.	2152-000-14	Body
20. +	2152-100-13	Urethane Sleeve
21.	2152-000-19	Base, 1" NPT
	2152-000-15	Base, 1 1/4" NPT
	2152-000-11	Base, 1 1/2" NPT
22.	7010-507-95	Hex Bolt, 3/8" UNC x 4 3/4" Lg.
23.	3014-106	Plug
24.*	2152-000-21	O-Ring
25.*	2152-000-13	Tungsten Carbide Sleeve
26.*	2152-000-10	Seat
27.	8403-000-54	Cleanout Ball Valve Adder
28.	3006-106	Street Elbow 90°, 1" Galv.
29.	3029-106-09	Nipple TBE, 1" x 2" Lg. Galv.
30.	2401-506	Ball Valve, 1" Full Port
* Included In Replacement Part Kit For Tungsten Carbide Sleeve		
+ Included In Replacement Part Kit For Urethane Sleeve		



**BLOWER DATA**

Refer to the following pages for any blower reference and maintenance information.

# US FILTER SCHMIDT MFG

**PURCHASE ORDER : 10832**

**TAG :**

### FAN INFORMATION

QUANTITY : 1  
FAN TYPE : Pressure Blower - AL  
FAN SIZE : 2208A  
FAN CLASS : NONE  
ROTATION : CW  
DISCHARGE : UB  
ARRANGEMENT : 4  
INLET TYPE : FLANGED

### MOTOR INFORMATION

ENCLOSURE : TEFC  
HORSEPOWER : 15  
RPM : 3500  
ELECT. DATA : 3-60-230/460  
FRAME SIZE : 254T  
MOTOR BY : NYB  
MOUNT BY : NYB

### FAN PERFORMANCE DATA

MAX SAFE SPEED : 3900 RPM at 70 Deg.

CAP	TYPE	CFM	SP	RPM	BHP	TEMP	ALT	DENSITY
2	OPER	1750.0	37.31	3500	14.26	95	0.0	0.0720

### CERTIFIED DRAWING PACKET\*

FAN CERTIFIED DRAWING..... Dwg# U01515-100-2  
SILENCER - OUTLET..... Dwg# U01515-101-3

### ADDITIONAL ACCESSORIES

DRAIN  
FLUSH BOLTED CLEAN-OUT DOOR LOCATED AT 3:00 O'CLOCK

### ADDITIONAL INFORMATION

NUMBER OF DRAWING SETS : 3  
ESTIMATED SHIPPING WT. : 679 lbs.  
(includes fan, motor, & pertinent accessory weights)

\* DRAWINGS ARE FOR CONSTRUCTION PURPOSES

**nyb** The  
New York Blower  
Company

7660 Quincy Street, Willowbrook, IL 60521

**Pressure Blower - AL**  
**SIZE 2208A**

Date 10/29/99 Certified KJW

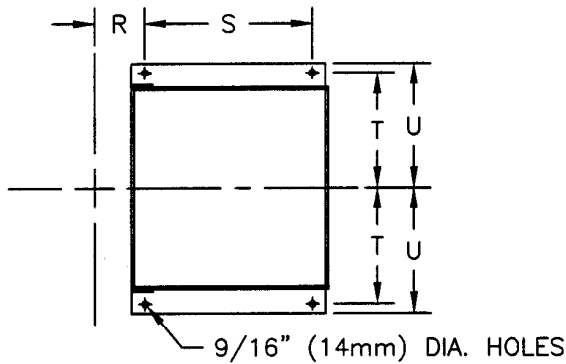
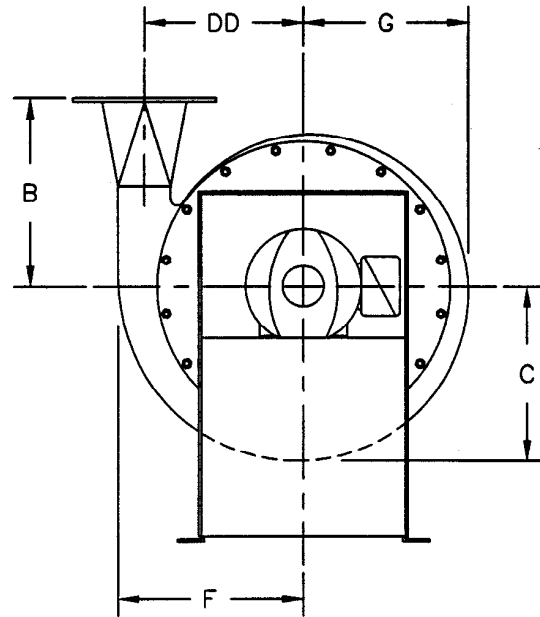
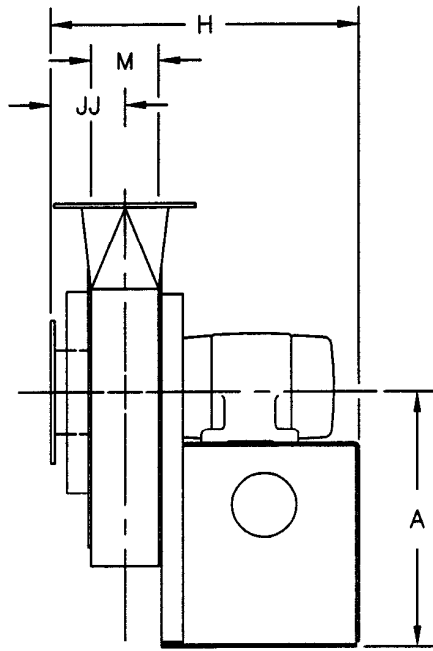
Drawing No. U01515-100-1 Rev.     

HDCOVER

**US FILTER SCHMIDT MFG**

**PURCHASE ORDER: 10832**

**TAG:**



PRESSURE BLOWERS ARE ROTATABLE IN THE FIELD BY 22 1/2° INCREMENTS.

MAXIMUM TEMPERATURE: 180°F (82°C)

FURNISHED WITH FLANGED INLET AND OUTLET WHICH FITS ANSI 150 PIPE FLANGES.

ITEM	DIMENSIONS	
	in	mm
A	26	660
B	17 3/4	451
C	16 1/2	419
F	17 1/2	445
G	15 1/2	394
H	32 1/4	819
M	6 1/4	159
R	4 1/2	114
S	19 1/2	495
T	10 7/8	276
U	11 3/4	298
DD	14 7/8	378
JJ	6 3/4	171

FLANGED OUTLET	DIMENSIONS	
	in	mm
I.D.	8	203
B.C.	11 3/4	298
O.D.	13 1/2	343
NO. HOLES	8	-
DIA. HOLES	7/8	22

FLANGED INLET	DIMENSIONS	
	in	mm
I.D.	8	203
B.C.	11 3/4	298
O.D.	13 1/2	343
NO. HOLES	8	-
DIA. HOLES	7/8	22

TOLERANCE: ±1/8" (±3mm)

**nyb** The New York Blower Company

7660 Quincy Street, Willowbrook, IL 60521

**PRESSURE BLOWER  
SIZE 2208 CW UB**

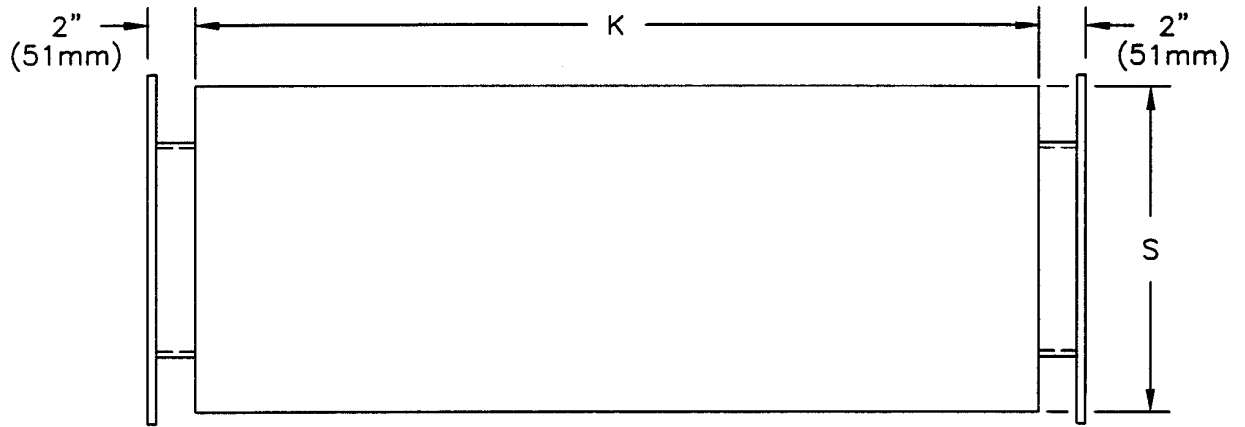
Date 10-29-99 Certified KJW

Drawing No. U01515-100-2 Rev.

**US FILTER SCHMIDT MFG**

**PURCHASE ORDER: 10832**

**TAG:**



FAN SILENCERS ARE OF HEAVY WELDED STEEL CONSTRUCTION FILLED WITH HIGH DENSITY ACOUSTICAL ABSORPTION MATERIAL.

ITEM	DIMENSIONS	
	in	mm
K	36	914
S (DIA.)	14	356

MAXIMUM TEMPERATURE: 800°F (427°C)

TOLERANCE: ±1/8" (±3mm)

ITEM	DIMENSIONS	
	in	mm
I.D.	8	203
O.D.	13 1/2	343
B.C.	11 3/4	298
NO. HOLES	8	-
HOLE DIA.	7/8	22

**nyb** The New York Blower Company

7660 Quincy Street, Willowbrook, IL 60521

**PRESSURE BLOWER  
SILENCER SIZE 8**

Date 10-29-99 Certified KJW

Drawing No. U01515-101-3 Rev.

7660 Quincy Street, Willowbrook, IL 60521

To determine Performance at another RPM multiply

CFM x K  
SP x K<sup>2</sup>  
BHP x K<sup>3</sup>

where K is new RPM divided by RPM shown at right.

CUST. NO : 10832  
CUSTOMER : US FILTER SCHMIDT MFG  
TAGGING :  
FAN TYPE : Pressure Blower - AL  
FAN SIZE : 2208A  
CFM : 1750  
SP : 37.3  
RPM : 3500  
BHP : 14.27

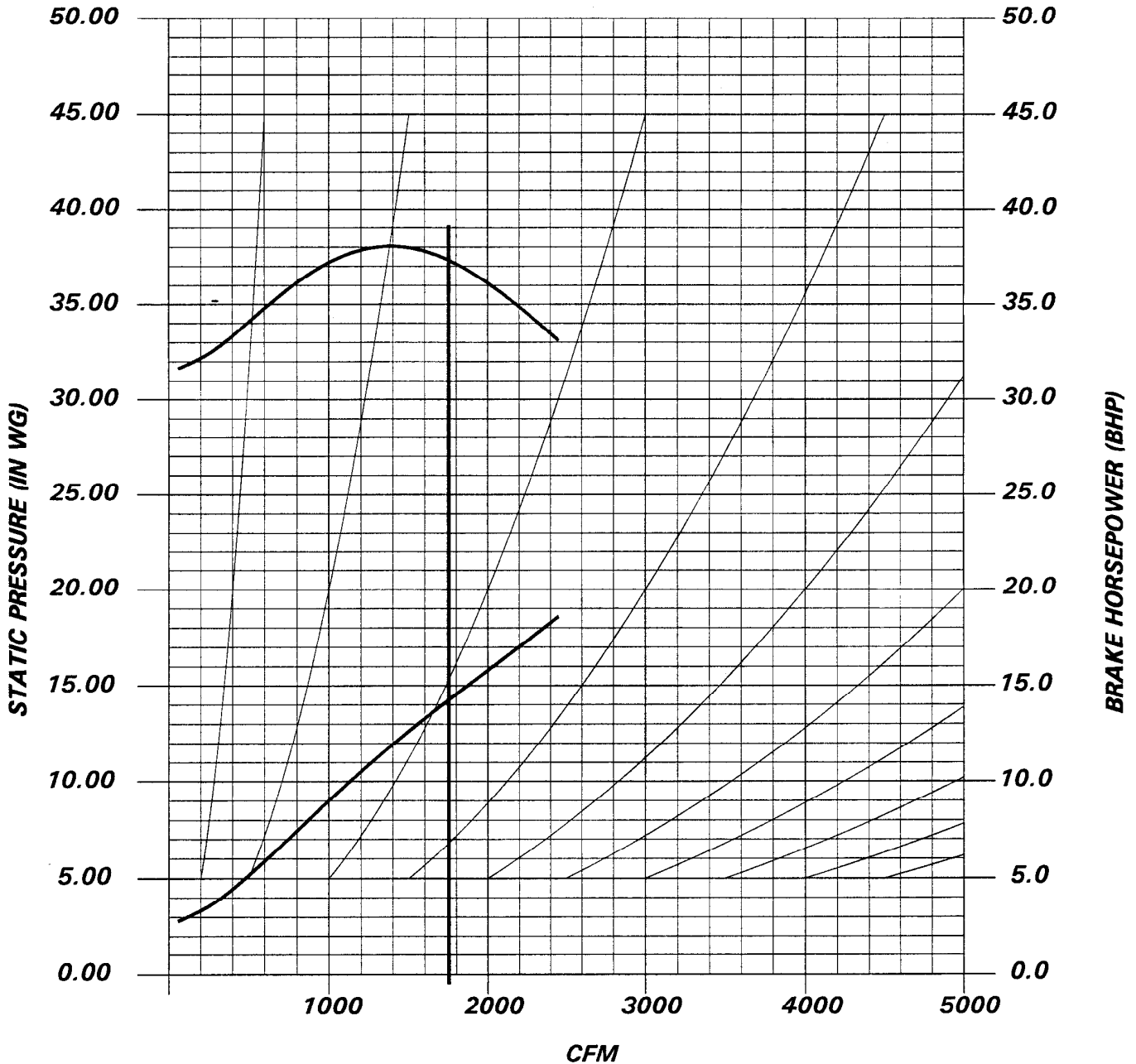
CAPACITY TYPE: OPER  
TEMP : 95 deg F  
DENS : 0.072 LB/FT<sup>3</sup>

DATE : Oct 29 1999

FILE : U01515 - 100

KJW

PERFORMANCE OPTIONS :





The  
**New York Blower**  
Company®

7660 QUINCY STREET—WILLOWBROOK, ILLINOIS 60521-5596  
TEL: (630) 794-5700 • FAX: (630) 794-5776 • WEB: <http://www.nyb.com> • E-MAIL: [nyb@nyb.com](mailto:nyb@nyb.com)

INSTALLATION  
MAINTENANCE,  
OPERATING  
INSTRUCTIONS

IM-140

## PRESSURE BLOWERS TYPE HP PRESSURE BLOWERS

### **WARNING**

**THIS FAN HAS MOVING PARTS THAT CAN CAUSE SERIOUS BODILY INJURY. BEFORE OPERATING OR STARTING MAINTENANCE READ THE INSTALLATION AND MAINTENANCE INSTRUCTIONS AND THE AMCA SAFETY PRACTICES MANUAL PROVIDED WITH THIS FAN.**

#### **DURING OPERATION**

**1. KEEP BODY, HANDS, AND FOREIGN OBJECTS AWAY FROM THE INLET, THE OUTLET, AND THE OTHER MOVING PARTS OF THE FAN SUCH AS SHAFTS, BELTS, AND PULLEYS.**

**2. DO NOT OPERATE AT EXCESSIVE SPEEDS OR TEMPERATURES.**

#### **BEFORE STARTING MAINTENANCE WORK:**

**LOCK POWER SUPPLY IN OFF POSITION AND IMMOBILIZE FAN WHEEL**

98-0250

#### **A WORD ABOUT SAFETY**

The above **WARNING** decal appears on all **nyb** fans. Air moving equipment involves electrical wiring, moving parts, sound, and air velocity or pressure which can create safety hazards if the equipment is not properly installed, operated and maintained. To minimize this danger, follow these instructions as well as the additional instructions and warnings on the equipment itself.

All installers, operators and maintenance personnel should study AMCA Publication 410, "Recommended Safety Practices for Air Moving Devices", which is included as part of every shipment. Additional copies can be obtained by writing to New York Blower Company, 7660 Quincy St., Willowbrook, IL 60521.

#### **ELECTRICAL DISCONNECTS**

Every motor driven fan should have an independent disconnect switch to isolate the unit from the electrical supply. It should be near the fan and must be capable of being locked by maintenance personnel while servicing the unit, in accordance with OSHA procedures.

#### **MOVING PARTS**

All moving parts must have guards to protect personnel. Safety requirements vary, so the number and type of guards needed to meet company, local and OSHA standards must be determined and specified by the user. Never start a fan without having all safety guards installed. Check regularly for damaged or missing guards and do not operate any fan with guards removed. Fans can also become dangerous because of potential "wind-milling", even though all electrical power is disconnected. Always block the rotating assembly before working on any moving parts.

#### **SOUND**

Some fans can generate sound that could be hazardous to exposed personnel. It is the responsibility of the system designer and user to determine sound levels of the system, the degree of personnel exposure, and to comply with applicable safety requirements to protect personnel from excessive noise. Consult **nyb** for fan sound power level ratings.

#### **AIR PRESSURE AND SUCTION**

In addition to the normal dangers of rotating machinery, fans present another hazard from the suction created at the fan inlet. This suction can draw materials into the fan where they become high velocity projectiles at the outlet. It can also be extremely dangerous to persons in close proximity to the inlet, as the forces involved can overcome the strength of most individuals. Inlets and outlets that are not ducted should be screened to prevent entry and discharge of solid objects.

#### **ACCESS DOORS**

### **DANGER**

**DO NOT OPEN UNTIL THE POWER SUPPLY HAS BEEN LOCKED OFF AND THE SHAFT HAS STOPPED ROTATING.  
FAILURE TO DO THIS CAN RESULT IN SERIOUS BODILY INJURY. 98-0249**

The above **DANGER** decal is placed on all **nyb** cleanout doors. These doors, as well as access doors to the duct system, should never be opened while the fan is in operation. Serious injury could result from the effects of air pressure or suction.

Bolted doors must have the door nuts or fasteners securely tightened to prevent accidental or unauthorized opening.

#### **RECEIVING AND INSPECTION**

The fan and accessories should be inspected on receipt for any shipping damage. Turn the wheel by hand to see that it rotates freely and does not bind. If dampers or shutters are provided, check these accessories for free operation of all moving parts.

F.O.B. factory shipping terms require that the receiver be responsible for inspecting the equipment upon arrival. Note damage or shortages on the Bill of Lading and file any claims for damage or loss in transit. **nyb** will assist the customer as much as possible; however, claims must be originated at the point of delivery.



## HANDLING AND STORAGE

Fans should be lifted by the base, mounting supports, or lifting eyes only. Never lift a fan by the wheel, shaft, motor, motor bracket, housing inlet, outlet, or any fan part not designed for lifting. A spreader should always be used to avoid damage.

On a direct drive Arrangement 8 fan, lifting holes are provided in the motor base to assist in handling the fan assembly. These lifting holes should be used in conjunction with the lifting eyes when lifting and positioning the fan onto its foundation. A heavy round steel bar or appropriate fixture can be passed through the lifting holes to simplify attachment of the lifting device. Be sure to follow all local safety codes when moving heavy equipment.

Whenever possible, fans and accessories should be stored in a clean, dry location to prevent rust and corrosion of steel components. If outdoor storage is necessary, protection should be provided. Cover the inlet and outlet to prevent the accumulation of dirt and moisture in the housing. Cover motors with waterproof material. Refer to the bearing section for further storage instructions.

Check shutters for free operation and lubricate moving parts prior to storage. Inspect the stored unit periodically. **Rotate the wheel by hand every two weeks to redistribute grease on internal bearing parts.**

## FAN INSTALLATION

**nyb** wheels are dynamically balanced when fabricated. Complete assembled fans are test run at operating speeds to check the entire assembly for conformance to **nyb** vibration limits. Nevertheless, all units must be adequately supported for smooth operation. **Ductwork or stacks should be independently supported as excess weight may distort the fan housing and cause contact between moving parts.** Where vibration isolators are used, consult the **nyb** certified drawing for proper location and adjustment.

### Slab-Mounted Units

A correctly designed and level concrete foundation provides the best means of installing floor-mounted fans. The mass of the base must maintain the fan/driver alignment, absorb normal vibration, and resist lateral loads. The overall dimensions of the concrete base should extend at least six inches beyond the base of the fan. The weight of the slab should be two to three times the weight of the rotating assembly, including the motor. The foundation requires firmly anchored fasteners such as the anchor bolts shown in Figure 1.

Move the fan to the mounting location and lower it over the anchor bolts, leveling the fan with shims around the bolts. Fasten the fan securely. When grout is used, shim the fan at least 3/4-inch from the concrete base. (See Figure 1.) When isolation is used, check the **nyb** certified drawing for installation instructions.

### Elevated Units

When an elevated or suspended structural steel platform is used, it must have sufficient bracing to support the unit load and prevent side sway. The platform should be of welded construction to maintain permanent alignment of all members.

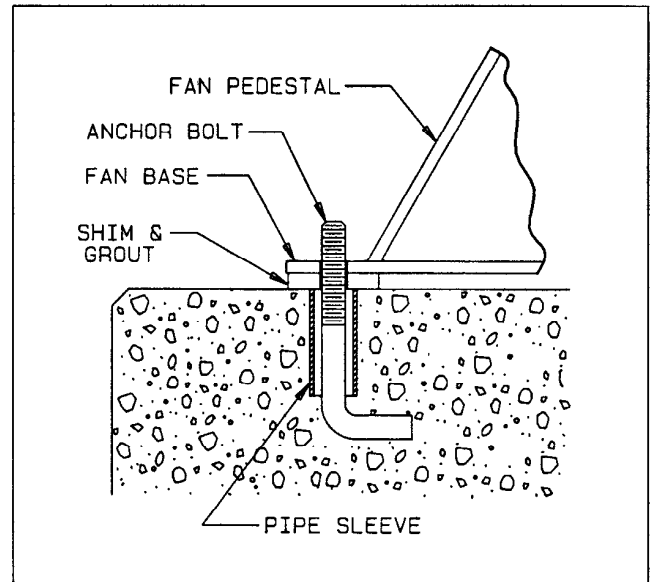


Figure 1

## V-BELT DRIVE

### Installation

1. Remove all foreign material from the fan and motor shafts. Coat shafts with machine oil for easier mounting. Mount the belt guard backplate at this time if partial installation is required prior to sheave mounting.
2. Mount sheaves on shafts after checking sheave bores and bushings for nicks or burrs. Avoid using force. If resistance is encountered, lightly polish the shaft with emery cloth until the sheave slides on freely. Tighten tapered bushing bolts sequentially so that equal torque is applied to each.
3. Adjust the motor on its base to a position closest to the fan shaft. Install belts by working each one over the sheave grooves until all are in position. Never pry the belts into place. On **nyb** packaged fans, sufficient motor adjustment is provided for easy installation of the proper size belts.
4. Adjust sheaves and the motor shaft angle so that the sheave faces are in the same plane. Check this by placing a straightedge across the face of the sheaves. Any gap between the edge and sheave faces indicates misalignment. Important: This method is only valid when the width of the surface between the belt edge and the sheave face is the same for both sheaves. When they are not equal, or when using adjustable-pitch sheaves, adjust so that all belts have approximately equal tension. Both shafts should be at the right angles to the center belt.

### Belt Tensioning

1. Check belt tension with a tensioning gage and adjust using the motor slide base. Excess tension shortens bearing life while insufficient tension shortens belt life, can reduce fan performance and may cause vibration. The lowest allowable tension is that which prevents slippage under full load. Belts may slip during start-up, but slipping should stop as soon as the fan reaches full speed. For more precise tensioning methods, consult the drive manufacturer's literature.
2. Recheck setscrews, rotate the drive by hand and check for rubbing, then complete the installation of the belt guard.

- Belts tend to stretch somewhat after installation. Recheck tension after several days of operation. Check sheave alignment as well as setscrew and/or bushing bolt tightness.

### COUPLING

Coupling alignment should be checked after installation and prior to start up. Alignment is set at the factory, but shipping, handling, and installation can cause misalignment. Also check for proper coupling lubrication. For details on lubrication and for alignment tolerances on the particular coupling supplied, see the manufacturer's installation and maintenance supplement in the shipping envelope.

### Installation

Most **nyb** fans are shipped with the coupling installed. In cases where the drive is assembled after shipping, install the coupling as follows:

- Remove all foreign material from fan and motor shafts and coat with machine oil for easy mounting of coupling halves.
- Mount the coupling halves on each shaft, setting the gap between the faces specified by the manufacturer. Avoid using force. If mounting difficulty is encountered, lightly polish the shaft with emery cloth until the halves slide on freely.

### Alignment

- Align the coupling to within the manufacturer's limits for parallel and angular misalignment (see Figure 2). A dial indicator or laser can also be used for alignment where greater precision is desired. Adjustments should be made by moving the motor to change shaft angle, and by the use of foot shims to change motor shaft height. Do not move the fan shaft or bearing.
- When correctly aligned, install the flexible element and tighten all fasteners in the coupling and motor base. Lubricate the coupling if necessary.
- Recheck alignment and gap after a short period of operation, and recheck the tightness of all fasteners in the coupling assembly.

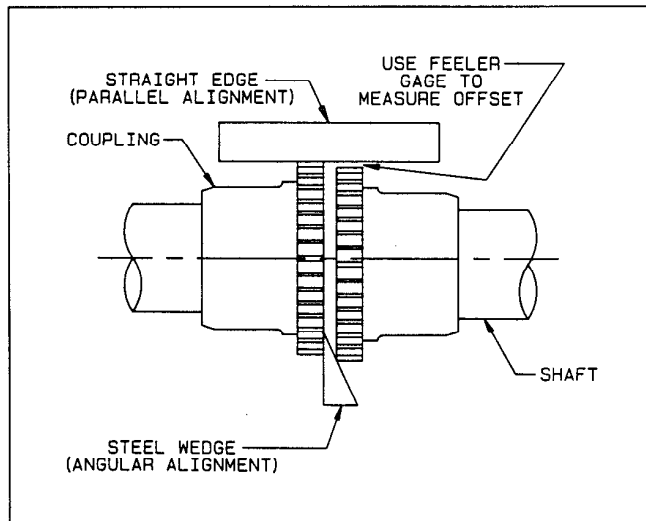


Figure 2

### START-UP

Safe operation and maintenance includes the selection and use of appropriate safety accessories for the specific installation. This is the responsibility of the system designer and requires consideration of equipment location and accessibility as well as adjacent components. All safety accessories must be installed properly prior to start-up.

Safe operating speed is a function of system temperature and wheel design. Do not under any circumstances exceed the maximum safe fan speed published in the **nyb** engineering supplement, which is available from your **nyb** field sales representative.

**⚠ CAUTION**

**BEFORE INITIAL OPERATION:**

1. TIGHTEN ALL SET SCREWS IN FAN WHEEL.
2. TIGHTEN ALL SET SCREWS IN BEARINGS.
3. REPEAT AFTER 8 HOURS OF OPERATION.
4. REPEAT AGAIN AFTER TWO WEEKS OPERATION.

98-0271

### Procedure

- If the drive components are not supplied by **nyb**, verify with the manufacturer that the starting torque is adequate for the speed and inertia of the fan.
- Inspect the installation prior to starting the fan. Check for any loose items or debris that could be drawn into the fan or dislodged by the fan discharge. Check the interior of the fan as well. Turn the wheel by hand to check for binding.
- Check drive installation and belt tension.
- Check the tightness of all setscrews, nuts and bolts. When furnished, tighten hub setscrews with the wheel oriented so that the setscrew is positioned underneath the shaft.
- Install all remaining safety devices and guards. Verify that the supply voltage is correct and wire the motor. "Bump" the starter to check for proper wheel rotation.
- Use extreme caution when testing the fan with ducting disconnected. Apply power and check for unusual sounds or excessive vibration. If either exists, see the section on Common Fan Problems. To avoid motor overload, do not run the fan for more than a few seconds if ductwork is not fully installed. On larger fans, normal operating speed may not be obtained without motor overload unless ductwork is attached. Check for correct fan speed and complete installation. Ductwork and guards must be fully installed for safety.
- Setscrews should be rechecked after a few minutes, eight hours and two weeks of operation (see Tables 1 & 2 for correct tightening torques).

**NOTE: Shut the fan down immediately if there is any sudden increase in fan vibration.**

**Table 1 - WHEEL SETSCREW TORQUES**

Setscrew Size Diameter (in.)	Carbon Steel Setscrew Torque*	
	lb.-in.	lb.-ft.
1/2	600	50
5/8	--	97
3/4	--	168

\* Stainless Steel setscrews are not hardened and should not be tightened to more than 1/2 the values shown.

**Table 2 - BEARING SETSCREW TORQUE, lb.-in.**

Setscrew Diameter	Manufacturer				
	Link-Belt	Sealmaster	SKF	McGill	Dodge
1/4	90	65	50	85	--
5/16	185	125	165	165	160

**Note: Split pillow block bearings are fixed to the shaft with tapered sleeves and generally do not have setscrews.**

**FAN MAINTENANCE**

nyb fans are manufactured to high standards with quality materials and components. Proper maintenance will ensure a long and trouble-free service life.

**Do not attempt any maintenance on a fan unless the electrical supply has been completely disconnected and locked.** In many cases, a fan can windmill despite removal of all electrical power. The rotating assembly should be blocked securely before attempting maintenance of any kind.

The key to good fan maintenance is regular and systematic inspection of all fan parts. Inspection frequency is determined by the severity of the application and local conditions. Strict adherence to an inspection schedule is essential.

Regular fan maintenance should include the following:

1. Check the fan wheel for any wear or corrosion, as either can cause catastrophic failures. Check also for the build-up of material which can cause unbalance resulting in vibration, bearing wear and serious safety hazards. Clean or replace the wheel as required.
2. Check the V-belt drive for proper alignment and tension (see section on V-belt drives). If belts are worn, replace them as a set, matched to within manufacturer's tolerances. Lubricate the coupling of direct-drive units and check for alignment (see section on couplings).
3. Lubricate the bearings, but do not over lubricate (see the bearing section for detailed specifications).
4. Ceramic-felt shaft seals require no maintenance, although worn seals should be replaced. When lip-type shaft seals are provided, lubricate them with "NEVER-SEEZ" or other anti-seize compound.
5. During any routine maintenance, all setscrews and bolts should be checked for tightness. See the table for correct torques.
6. When installing a new wheel, the proper wheel-to-inlet clearance must be maintained (see Figure 3).

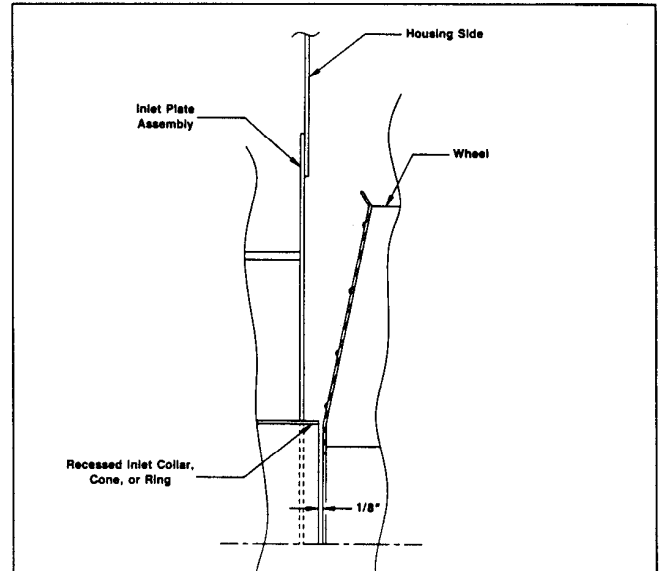
**WHEEL BALANCE**

Airstreams containing particulate or chemicals can cause abrasion or corrosion of the fan parts. This wear is often uneven and can lead to significant wheel unbalance over time. When such wear is discovered, a decision must be made as to whether to rebalance or replace the wheel.

The soundness of all parts should be determined if the original thickness of components is reduced. Be sure there is no hidden structural damage. The airstream components should also be cleaned to remove any build-up of foreign material. Specialized equipment can be used to rebalance a cleaned wheel that is considered structurally sound.

Balance weights should be rigidly attached at a point that will not interfere with the housing nor disrupt airflow. Remember that centrifugal forces can be extremely high at the outer radius of a fan wheel. Welding is the preferred method of balance weight attachment. Be sure to ground the welder directly to the fan wheel. Otherwise, the welding current could pass through the fan bearings and damage them.

**WHEEL-INLET CLEARANCE**



**Figure 3**

**BEARINGS**

**Storage**

Any stored bearing can be damaged by condensation caused by temperature variations. Therefore, nyb fan bearings are filled with grease at the factory to exclude air and moisture. Such protection is adequate for shipment and subsequent immediate installation.

For long term or outdoor storage, mounted bearings should be greased and wrapped with plastic for protection. **Rotate the fan wheel by hand at least every two weeks to redistribute grease on internal bearing parts.** Each month the bearings should be purged with new grease to remove condensation, since even a filled bearing can accumulate moisture. Use caution when purging, as excessive pressure can damage the seals. Rotate the shaft while slowly adding grease.

**Operation**

Check the setscrew torque before start-up (see table for correct values). Since bearings are completely filled with grease at the factory, they may run at an elevated temperature during initial operation. Surface temperatures may reach 180°F. and grease may bleed from the bearing seals. This is normal and no attempt should be made to replace lost grease. Bearing surface temperatures will decrease when the internal grease quantity reaches a normal operating level. Relubrication should follow the recommended schedule.

## Lubrication

Use the table for relubrication scheduling according to operating speed and shaft diameter. Bearings should be lubricated with a premium quality lithium-based grease conforming to NLGI Grade 2 or 3. Examples are:

Mobil	-	Mobilith AW2
Texaco	-	Premium RB
Gulf Oil	-	Gulf Crown #2 or #3
Shell	-	Alvania #2 or #3


Do not use "high temperature" greases, as many are not formulated to be compatible with fan bearings.

Add grease to the bearing while running the fan or rotating the shaft by hand. Be sure all guards are in place if lubrication is performed while the fan is operating. Add just enough grease to cause a slight purging at the seals. Do not over lubricate.

Split pillowblock bearings (Link-Belt P-LB6800 & P-LB6900, SKF SAF 22500, Dodge SAF-XT) should be cleaned and repacked at approximately every eighth lubrication interval. This requires removal of the bearing cap. Clean out old grease and repack the bearing with fresh grease. Pack the bearing fully and fill the housing reservoir to the bottom of the shaft on both sides of the bearing. Replace the bearing cap, being careful not to mix caps as they are not interchangeable from one bearing to another.

**BEARING LUBRICATION INTERVAL [months]**

RPM Shaft	1 - 500	501- 1000	1001- 1500	1501- 2000	2001- 2500	2501- 3000	3001- 3500	3501- 4000
1 7/16	6 6	6 4	5-6 4	4-6 2	4-6 2	3-5 1	2-4 1	2-4 1
1 11/16	6 6	6 4	4-6 2	4-6 1	2-4 1	2-4 1	2 1-2	1-2 1-2
2 3/16			6	4-6	4	2-4	2	--
2 7/16			6	4-6	4	2-4	2	--
2 15/16			4-6	4-6	2-4	2	1-2	--

Ball Bearings →  ← Roller Bearings

### NOTE:

- These are general recommendations only; specific manufacturer's recommendations may vary slightly.
- Assumes clean environment, 0°F. to 120°F.
  - Consult The New York Blower Company for operation below 0°F. ambient.
  - Ambient temperatures greater than 120°F. will shorten bearing life.
  - Under extremely dirty conditions, lubricate more frequently.
- Assumes horizontal mounting configuration. For vertically mounted applications, lubricate twice as frequently.

## COMMON FAN PROBLEMS

### Excessive Vibration

A common complaint regarding industrial fans is "excessive vibration". **nyb** is careful to ensure that each unit is precisely balanced prior to shipment; however, there are many other causes of vibration including:

- Loose mounting bolts, setscrews, bearings or couplings.
- Misalignment or excessive wear of couplings or bearings.
- Misaligned or unbalanced motor.
- Bent shaft due to mishandling or material impact.
- Accumulation of foreign material on the wheel.
- Excessive wear or erosion of the wheel.
- Excessive system pressure or restriction of airflow due to closed dampers.
- Inadequate structural support, mounting procedures or materials.
- Externally transmitted vibration.

### Inadequate Performance

- Incorrect testing procedures or calculations.
- Fan running too slowly.
- Fan wheel rotating in wrong direction or installed backwards on shaft.
- Wheel not properly centered relative to inlet cone.
- Damaged or incorrectly installed cut off sheet or diverter.
- Poor system design, closed dampers, air leaks, clogged filters, or coils.
- Obstructions or sharp elbows near inlets.
- Sharp deflection of airstream at fan outlet.

### Excessive Noise

- Fan operating near "stall" due to incorrect system design or installation.
- Vibration originating elsewhere in the system.
- System resonance or pulsation.
- Improper location or orientation of fan intake and discharge.
- Inadequate or faulty design of supporting structures.
- Nearby sound reflecting surfaces.
- Loose accessories or components.
- Loose drive belts.
- Worn bearings.

### Premature Component Failure

- Prolonged or major vibration.
- Inadequate or improper maintenance.
- Abrasive or corrosive elements in the airstream or surrounding environment.
- Misalignment or physical damage to rotating components or bearings.
- Bearing failure from incorrect or contaminated lubricant or grinding through the bearings while arc welding.
- Excessive fan speed.
- Extreme ambient or airstream temperatures.
- Improper belt tension.
- Improper tightening of wheel setscrews.

### REPLACEMENT PARTS

It is recommended that only factory-supplied replacement parts be used. **nyb** fan parts are built to be fully compatible with the original fan, using specific alloys and tolerances. These parts carry a standard **nyb** warranty.

When ordering replacement parts, specify the part name, **nyb** shop and control number, fan size, type, rotation (viewed from drive end), arrangement and bearing size or bore. Most of this information is on the metal nameplate attached to the fan base.

For assistance in selecting replacement parts, contact your local **nyb** representative or visit: <http://www.nyb.com>.

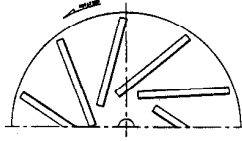
Example: Part required: Wheel/shaft assembly  
Shop/control number: B-10106-100  
Fan description: Size 750 Series 60  
Rotation: Clockwise  
Arrangement: 1

Suggested replacement parts include:

Wheel •	Component parts: Damper
Shaft •	Motor
Bearings	Coupling
Shaft Seal	Sheaves
	V-Belts

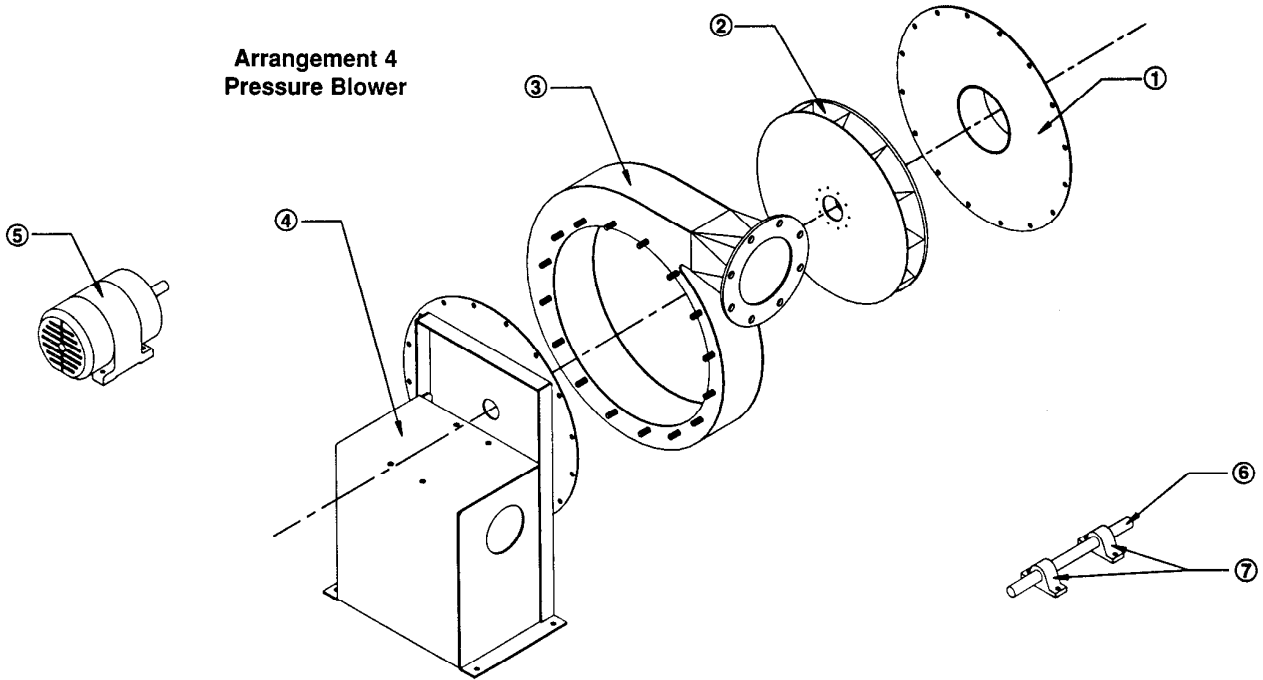
- For Arrangement 1 and 8 fans, wheel and shaft available as an assembly only.

SPECIFY ROTATION AS VIEWED FROM DRIVE SIDE

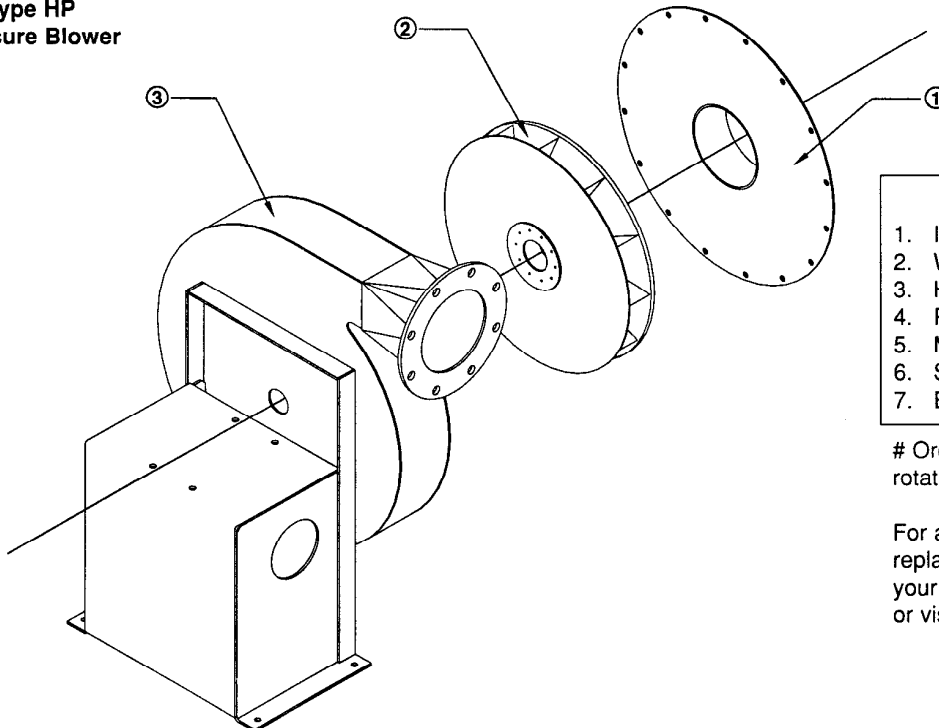


ARROW INDICATES COUNTER CLOCKWISE ROTATION

Arrangement 4  
Pressure Blower



Arrangement 4  
Type HP  
Pressure Blower



**Parts List**

1. Inlet Plate Assembly
2. Wheel #
3. Housing #
4. Pedestal Assembly
5. Motor
6. Shaft
7. Bearings

# Order for parts must specify rotation.

For assistance in selecting replacement parts, contact your local **nyb** representative or visit: <http://www.nyb.com>.