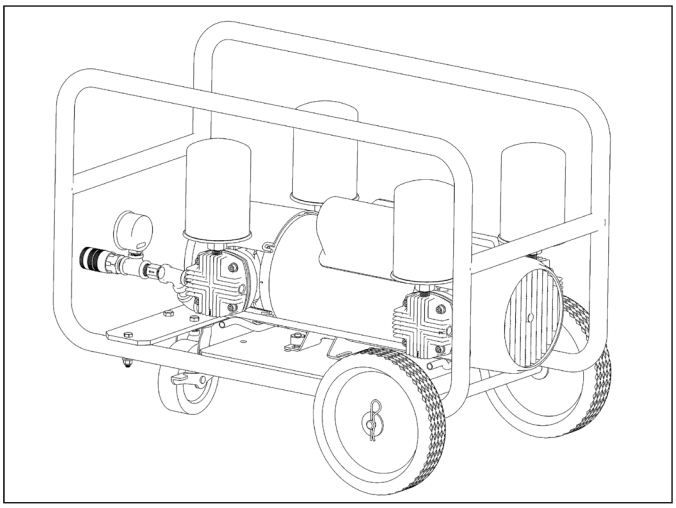
ICE Pump
User Manual

ICE Pump



GENERAL INFORMATION

Bullard ICE pumps transfer ambient air from a clean air environment containing at least Grade D breathable air to workers wearing Type C or CE continuous-flow supplied air respirator hoods, helmets or tight-fitting half or full face masks. Bullard ICE pumps MUST be located in an environment containing at least Grade D breathable air at all times. These pumps do NOT create Grade D breathable air.

The ambient air is filtered through a medium efficiency inlet air filter and an inline 90 micron outlet strainer before entering the respirator's air supply hose.

Bullard ICE pumps are oil-less and have reciprocating pistons. They produce no carbon monoxide, oil vapors, oil mist or moisture. They do not require expensive carbon monoxide monitors, high temperature alarms or associated equipment. No calibration is required.

The chart below describes the number of respirators each unit will supply and its maximum outlet pressure.

PUMP SPECIFICATION TABLE

Maximum Number of Respirators			
Pump Model No.	Hood Style	Full or Half-Mask	Maximum Air Pressure*
ICEPUMP11-115 V - 60 HZ	One	One	Approx. 60 psig (4.0 bar)
ICEPUMP11-230V-60HZ	One	One	Approx. 60 psig (4.0 bar)

* Not recommended for respirator systems requiring a minimum of 60 psig to operate.

TABLE OF CONTENTS

This Manual provides detailed instructions, warnings and other information for individuals using Bullard ICE Pump Series models.

⚠ WARNING

READ, UNDERSTAND AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL BEFORE USING ICE PUMP.

FAILURE TO OPERATE ANY OF THESE PUMPS IN ACCORDANCE WITH THE INSTRUCTIONS CONTAINED IN THIS MANUAL MAY RESULT IN DEATH OR SERIOUS INJURY TO THE RESPIRATOR WEARER. IMPROPER USE MAY ALSO CAUSE CERTAIN LIFE-THREATENING DELAYED LUNG DISEASES INCLUDING BUT NOT LIMITED TO SILICOSIS, PNEUMOCONIOSIS, OR ASBESTOSIS.

1. LOCATE THE PUMP'S INLET AIR FILTER IN A PLACE WHERE THERE IS A CONTINUOUS SUPPLY OF AT LEAST GRADE D BREATHABLE AIR, AS DEFINED BY THE COMPRESSED GAS ASSOCIATION COMMODITY SPECIFICATION G-7.1, AND AS SPECIFIED BY FEDERAL LAW 42 CFR PART 84, SUBPART J, 84.141(b), AND 29 CFR PART 1910, SUBPART I, 1910.134(i). THE PUMP DOES NOT REMOVE TOXIC GASES OR OTHER CONTAMINANTS FROM THE INCOMING AIR IT TRANSFERS TO THE RESPIRATOR WEARER.

   See the BREATHING AIR REQUIREMENTS section on page 3 for specific details on breathing air quality. THESE PUMPS DO NOT SUPPLY OXYGEN.

2. This pump will only supply the required volume of air [6-15 cfm (170-425 lpm) for hoods or 4-15 cfm (113-425 lpm) for tight-fitting half- or full- face masks] to continuous flow supplied air respirators approved by MSHA/NIOSH requiring less than 60psi.

   Be sure that the pump's outlet pressure, measured by the pressure gauge on the pump, is maintained above the minimum pressure setting required by the respirator manufacturer and approved by MSHA/NIOSH.

   To be assured your respirator can be used with this pump refer to:

   a) The Pump Specification Table on page 1 for the maximum outlet pressure of the pump model you are using.

   b) The section in the respirator's instruction manual for the respirator's approved pressure range and permissible air supply hose lengths.

      If you have any questions about whether or not your respirator is compatible with this pump, contact Bullard Customer Service Department at 877-285-5273 or 1-859-234-6616.

3. Supplied air respirators used with this pump must NOT be worn in any atmosphere Immediately Dangerous to Life or Health (IDLH) or from which the wearer cannot escape without the use of the respirator.

4. When connecting your NIOSH approved respirator assembly to the ICE pump, use only air supply hose and couplers approved by the respirator manufacturer.

   Use of non-approved hose or couplers will void the respirator's MSHA/NIOSH Approval and could reduce the air flow to the respirator, resulting in possible death or serious injury to the respirator wearer. The respirator wearer could also develop life-threatening delayed lung disease including but not limited to silicosis, pneumoconiosis or asbestosis.

   DO NOT use shutoff hoses with the ICE pump. Back pressure, resulting from an automatic shutoff coupler, can damage the pump when no respirator is connected and no air is flowing through the air supply hose.

5. DO NOT modify or alter this pump in any manner. Use only approved Bullard ICE pump components and replacement parts on the pump.

   Failure to use approved Bullard components and replacement parts invalidates all Bullard warranties, and may result in death or serious injury to the respirator wearer. The respirator wearer could also develop life-threatening delayed lung disease including but not limited to silicosis, pneumoconiosis or asbestosis.

6. If you have any questions concerning the use of this pump or your respirator, or you are not sure the inlet filter is in an environment containing a continuous supply of at least Grade D breathable air, ask your supervisor before using this product.

   All instructions for the use and care of this product must be supplied to you by your employer as recommended by the manufacturer and as required by Federal Law 29 CFR Part 1910, Subpart I, 1910.134.

For technical assistance or additional copies of this manual, call Bullard Customer Service or go to www.Bullard.com to download a copy.

Bullard
1898 Safety Way
Cynthiana, KY 41031-9303
www.bullard.com

Breathing Air Requirements

The ICE pump's inlet filters must be located in a clean air environment containing a continuous supply of at least Grade D breathable air at all times.

The breathable air drawn into the inlet filter must meet at least the requirements for a minimum of Grade D breathable air as described in the Compressed Gas Association Commodity Specifications G-7.1 and as specified by Federal Law 42 CFR Part 84, Subpart J, 84.141(b) and 29 CFR Part 1910, Subpart I, 1910.134(i).
The requirements of Grade D breathable air include:

* Oxygen .....19.5 - 23.0 %
* Hydrocarbons (condensed)
  in mg/m_3 of gas.....5 mg/m_3 maximum
* Carbon Monoxide.....10 ppm maximum
* Carbon Dioxide.....1,000 ppm maximum
* Odor..... No Detectable Odors
* No toxic contaminants at levels which would make the air unsafe to breathe.

Refer to the C.G.A. Commodity Specification G-7.1 for complete details. It is available from: Compressed Gas Association (WWW.CGANET.COM).

Unpacking the ICE Pump

1. Open the shipping carton and remove the ICE pump from the wood frame. We recommend storing the shipping pallet and case in the event the pump must be shipped in the future.

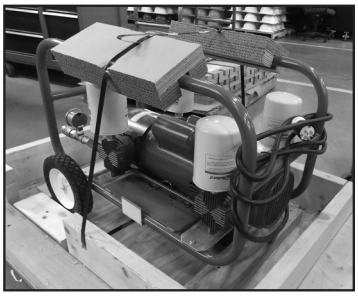


Figure 1

2. Check to insure that the ICE pump has no visible damage There is no other assembly required for the ICE pump.
3. Check to be sure that the inlet filters, pressure gauge and outlet couplings are all assembled tightly to the pump so that no air can escape.

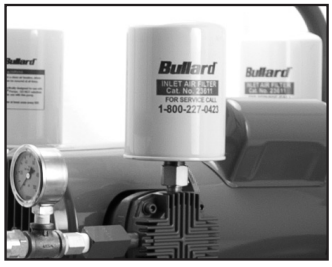


Figure 2

Pump Performance Specifications:

	ICE Pump
PUMP DESIGN:	Reciprocating Pistons
MAXIMUM PRESSURE:	Approx. 60 psig (4 bar)
TOTAL AIR FLOW:	8 cfm @ 60 psig (225 lpm @ 4 bar)
INLET FILTERS:	Four (4) Medium Efficiency Units
OUTLET FILTER:	Inline 90 micron strainer
DIMENSIONS:	
Width:	18 inches (46 cm)
Length:	28 inches (71 cm)
Height:	20.5 inches (52 cm)
WEIGHT: (Pump Only)	100 lbs. (approx.) (45 kg)
SHIPPING WEIGHT:	185 lbs. (84 kg)

Electric Motor Specifications:

	ICE Pump
ENCLOSURE:	Open, Drip-proof Meets UL Requirements CSA Approved
H.P.	2.0
PHASE:	Single
CYCLES:	60 Hz
VOLTS: (nameplate)	115 / 230
AMPS: (nameplate)	20 Amps @ 115V. / 10 Amps @ 230V
SERVICE FACTOR:	1.15
PROTECTOR:	Internal Thermal Overload
SOUND LEVEL:	84 dBa
NORMAL AMBIENT TEMPERATURE	+ 5°C to + 40°C
RELATIVE HUMIDITY	20% - 80&

⚠ WARNING

PROPER MOTOR SELECTION AND WIRING (IN ACCORDANCE WITH LOCAL AND NATIONAL ELECTRIC CODES) IS THE RESPONSIBILITY OF THE USER.

Operating the ICE Pump

⚠ WARNING

THE RESPIRATOR USER MUST NOT ENTER THE CONTAMINATED WORK AREA UNTIL ALL OF THE FOLLOWING STEPS HAVE BEEN COMPLETED.

THE MINIMUM LENGTH OF AIRLINE SUPPLY HOSE IS 100 FEET FOR THIS ICE PUMP. ANY SHORTER HOSE LENGTH COULD CAUSE THE COMPRESSED AIR TEMPERATURE TO BE TOO HIGH FOR THE RESPIRATOR SYSTEM TO BE PROPERLY USED BY THE WORKER.

FAILURE TO FOLLOW THESE INSTRUCTIONS COULD CAUSE DEATH OR SERIOUS INJURY OR LIFE-THREATENING DELAYED LUNG DISEASE INCLUDING BUT NOT LIMITED TO SILICOSIS, PNEUMOCONIOSIS OR ASBESTOSIS.

1. Analyze the atmosphere at the location of the air inlet and the pump itself to be sure the pump will not be operating in a contaminated or an explosive atmosphere.
2. Plug the pump into a 115 volt electrical outlet that is wired for 20 amp service. The pump's motor is equipped with a toggle switch and a 6 foot (1.8 m) grounded cord with a NEMA 5-20 three-prong plug.

For extension cords, 10 AWG (20 amps) or heavier duty gauge is recommended. Bullard also recommends that the distance be limited to 100 feet, the plug be three-prong grounded, and that only one extension cord be used.

Plug the pump into a 115 volt, 20 amp electrical outlet.

Avoid excessive lengths of extension cord, especially if running the pump continuously.

The pump's motor is equipped with a thermal overload protection.

⚠ WARNING

PROPER MOTOR SELECTION AND WIRING (IN ACCORDANCE WITH LOCAL AND NATIONAL ELECTRIC CODES) IS THE RESPONSIBILITY OF THE USER.

3. Each pump will operate sitting inside its Protection Frame with wheels attached for ease of mobility.
4. Make sure the pump's inlet filters are located in an ambient environment that can supply a minimum of Grade D breathable air at all times. (See BREATHING AIR REQUIREMENTS on page 3) (see Figure 3).

Figure 3

If the inlet filter cannot be placed in a clean air environment containing a continuous supply of at least Grade D breathable air, install Bullard's 50 foot (15 m) Inlet Extension Hose Kit (Cat. No. V50IN) to the pump's inlet ports. See the directions shipped with the Extension Hose Kit for assembly instructions.

If clean, at least Grade D breathable air cannot be guaranteed at all times within this 50 foot (15 m) reach, you may add up to five (5) additional lengths of 50 foot (15 m) Extension Hose (Cat. V50EX), per inlet.

Therefore, you may place your inlet filters up to 300 feet (90 m) away from the pump. **DO NOT ADD MORE THAN 300 FEET (90 M) OF INLET EXTENSION HOSE TO EACH INLET.**

5. Assemble your respirator by following the manufacturer's directions as described in the respirator's instruction manual. Be sure the pump's outlet pressure, measured by the pressure gauge on the pump, is greater than the minimum pressure required to operate the respirator assembly.

   The respirator's minimum MSHA/NIOSH approved pressure will be found in the respirator's User Manual. If you have any questions as to whether or not your respirator is compatible with this pump, call Bullard's Customer Service Department at 877-285-5273 or 1-859-234-6616.

⚠ WARNING

DO NOT USE SHUTOFF HOSES WITH THE ICE PUMP. BACK PRESSURE CAN DAMAGE THE PUMP WHEN NO RESPIRATOR IS CONNECTED. THE AUTOMATIC SHUTOFF COUPLERS ON THE AIR SUPPLY WILL RESTRICT THE AIR FLOW AND CAUSE THE UNWANTED BACK PRESSURE. FAILURE TO FOLLOW THESE INSTRUCTIONS COULD DAMAGE THE PRODUCT AND RENDER IT UNSAFE FOR USE.

6. Before connecting your respirator to the air supply hose, turn the pump on. Allow the air to flow through the pump and air supply hose for a few minutes to purge or expel any hose odors or moisture that may have accumulated inside the hose.

TIP: If pump is turned on without a respirator attached, the gauge will read zero because the gauge reads back pressure on the connected respirator system.

7. Connect the respirator to the air supply hose using the quick disconnect fittings.

8. With the air flowing, put on the respirator by following the directions in the respirator manufacturer's instruction manual.

9. Check that the pump's outlet pressure is within the respirator approved pressure range before proceeding into the work area.

YOU ARE NOW READY TO ENTER THE WORK AREA.

10. **When finished working, leave the work area wearing the respirator with the air still flowing. Once outside the contaminated area and in an environment containing at least Grade D breathable air, remove the respirator, turn the pump off, then disconnect the air supply hose using the quick disconnect couplers.**

    See the respirator's User Manual for proper inspection, maintenance and storage procedures for the respirator you are using.

Maintenance and Inspection

If pump or motor show evidence of overheating, or is excessively noisy, stop immediately for repairs. Regular inspection can prevent unnecessary damage and repairs. The rider thickness can be an indication of when rings need replacing. If a rider ring measures .055" or less in thickness, a change of all rings should be made. For a unit operated at sea level in fairly clean air at an ambient of 65-75ºF relative humidity of approximately 35%, and at maximum advertised duties, it is suggested that 4,000 hours of operation be used as an initial inspection point. As operating conditions on your particular application improve or worsen, your own experience can be used to determine whether this 4,000 hour figure can be lengthened or should be shortened.

Filter Inspection and Replacement

The inlet filters require periodic inspection and replacement. Initial inspection is suggested at 500 hours. Then, the user should determine the frequency. Most problems can be prevented by keeping filters clean. Dirty filters decrease pump performance and can decrease pump service life.

NOTE

Bullard recommends that the Inlet Filters be changed annually for best pump performance.

Make sure the pump is turned off and isolated from the power supply and all pressure and vacuum is released from the pump.

NOTE

NEVER LUBRICATE THIS OIL-LESS PUMP. THE MOTOR BEARINGS ARE GREASE PACKED AND SEALED. THEY REQUIRE NO FURTHER LUBRICATION.

ICE Pump Trouble Shooting Guide

If your Bullard ICE pump is not working satisfactorily, please follow the trouble shooting steps below:

Initial Checklist

1. You must use a minimum of 100 feet of air supply hose for ICE Pumps, per your respirator's approved assembly. Any shorter length of hose could cause the compressed air temperature to be too high for the respirator system to be used properly.
2. If using an extension cord, Bullard recommends 20 amp, 3-wire, 10 AWG grounded extension cord up to 100 feet. Do not overload the circuit with additional electrical equipment. If a generator is used to power the ICE Pump, then a minimum rating of 12 KW on the generator is needed.
3. If using a Bullard cool tube, the FRIGTRON2000 is approved for the ICE pump using only V20 air supply hose. The AC1000 may also be used only when combined with the Bullard Spectrum full facepiece, V10 hose, and a V15FT 1/4" Quick Disconnect coupler.

SYMPTOM: Pump Fails to Start or Hums

1. Turn pump switch off and disconnect from the power source.
2. Check for the correct electrical current as shown on the motor plate and in the Electric Motor Specification Chart on page 3 of this manual.
3. The pump is equipped with a thermal overload protector that turns the current off when subjected to electrical overloads. Check to be sure that the circuit is not overloaded by the pump and other electrical equipment.
4. Check to make sure that the pistons move freely. If not, service kit for piston rings may be necessary.
5. Wait 15 minutes and restart.

SYMPTOM: Outlet Air Pressure Too Low

1. Be sure you know the proper pressure range for the respirator - see the NIOSH Approved respirator's User Manual.
2. Be sure the respirator and air supply hose are connected when the gauge reading is taken.
3. Check to see that the pressure gauge is functioning properly. Replace the gauge if broken or malfunctioning.
4. Check for blockage of 90 micron outlet strainer.
5. Check to see that no air is escaping from the relief valve on pump.
6. Check that the inlet filters (Cat. No. 23611) and outlet strainer (Cat. No. ICEOF) are clean and replace if necessary. Dirty filters restrict air flow.
7. Make sure there is nothing obstructing the airline supply hose.

SYMPTOM: Outlet Pressure Too High

1. Ensure there isn't added back pressure on the ICE pump or a high pressure on the outlet pump gauge will occur. Be sure the outlet pressure remains in the proper range for the respirator as specified by the respirator manufacturer. See the respirator's User Manual.
2. Check the respirator's air supply hose for kinks or blockages.
3. Ensure that air supply hoses do not have automatic shutoff couplers. Back pressure can damage the ice pump when the air supply hose is not flowing properly and the ice pump is running.

SYMPTOM: Pump Overheating

1. 160° - 200°F (70°- 95° C) is normal output air temperature when the pump is continuously running. This heat is dissipated as it travels through the respirator's air supply hose until it reaches ambient air temperature.
2. Make sure that both the inlet filters and outlet strainer are clean. Replace if necessary.
3. Be sure the outlet pressure remains in the proper range for the respirator as specified by the respirator manufacturer - see the respirator's user manual.
4. The electrical circuit to which the pump is connected is overloaded. Check the amperage load of the circuit and disconnect other electrical equipment, if necessary, from that circuit.
5. Ensure that air supply hoses do not have automatic shutoff couplers. Back pressure can damage the ice pump when the air supply hose is not flowing properly and the ice pump is running.

TIP: If ambient air temperatures are high, place the Bullard ICE Pump in the shade. Do not lay airline hoses directly on blacktop. Also, be sure respirator assembly is approved for use with ambient air pumps at pressures less than 60 psig.

SYMPTOM: Outlet Air Temperature Too Warm

1. Be sure that at least the first 100 feet (30 m) of air supply hose closest to the pump is laid out (not coiled) to permit excess heat to dissipate from the hose.
2. Keep the air supply hose out of direct sunlight and off warm or hot surfaces.
3. Put a coiled section of the air supply hose in the bottom of a large container. Fill the container with water and ice and cover with a lid. For best results, locate the container as close to the worker as possible.

SYMPTOM: Outlet Air Temperature Too Cold

1. Let the pump warm up approximately 15 minutes before using.
2. Coil the first 50 feet (15 m) of air supply hose closest to the pump.
3. Keep the air supply hose off cold surfaces.

SYMPTOM: Moisture in Air Supply Hose Line

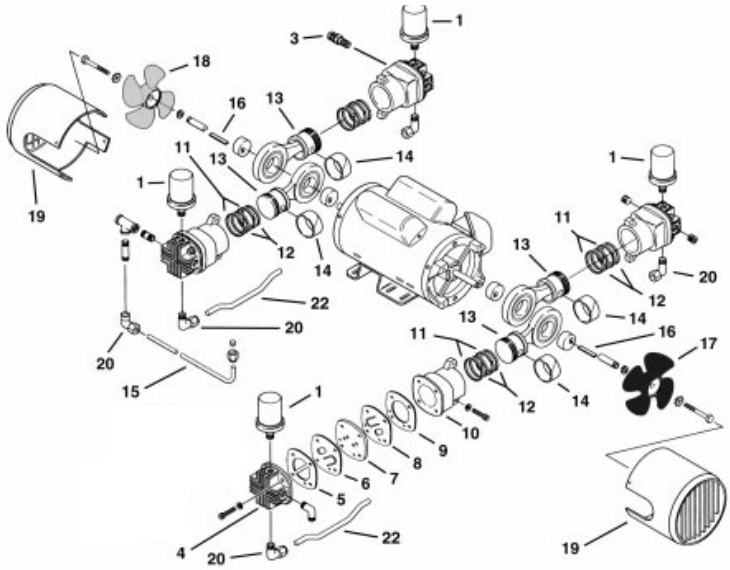
1. Locate the air inlet filter in a dry, clean air location, where breathable air can be assured at all times.
2. With the air supply hose connected to the pump, but not the respirator, turn the pump on and let it run for approximately 15 minutes to purge the hose of excessive moisture.
3. Between uses, hang the hoses so extra moisture may drain.

NOTE

If the Grade D breathable air is consistently at a high relative humidity when introduced into the ICE Pump, then compressing the high humidity Grade D breathable air will produce moisture inside the air supply hoses due to the compression factor of this ice pump.

IF THESE STEPS FAIL TO RESOLVE THE PROBLEM, CONTACT YOUR BULLARD DISTRIBUTOR OR BULLARD CUSTOMER SERVICE DEPARTMENT AT 877-285-5273 OR 859-234-6616.

EXPLODED PRODUCT VIEW - MODEL 8HDM



Replacement Parts List

REPLACEMENT PARTS AND ACCESSORIES FOR ICE PUMP

Cat. No.	Description
23611	Inlet Filter
ICEOF	Inline Outlet Filter
V50IN	Remote Inlet Air Hose Kit, 50 Feet (15 m) 1 per inlet
V50EX	Remote Extension Hose Kit, 50 Feet (15 m) 5 per inlet maximum
ICESK11	Service Kit for ICE Pump Rebuild
ICEPG	Pressure Gauge, 0-100 psig
V15FT	1/4" Flow Through QD Coupler
S16481	1/2" Flow Through QD Coupler

8HDM SERIES			
REF	DESCRIPTION	QTY	8HDM
1	INLET FILTER ASSEMBLY	4	23611
3	SAFETY VALVE	1	AS100F
4	CYLINDER HEAD	4/2 **	AF507
5 △	HEAD GASKET	4/2 **	AF520A
6 △	OUTLET VALVE	4/2 **	AF545
7	PLATE VALVE	4/2 **	AF543
8	INLET VALVE	4/2 **	AF544
9	CYLINDER GASKET	4/2 **	AF521
10	CYLINDER	4/2 **	AF509
11 △	PISTON RING	8/4 **	AF541
12 △	PISTON SEAL	8/4 **	AF540
13	PISTON ROD ASSEMBLY	4/2 **	AF561M
14 △	RIDER RING	4/2 **	AF595
15	MANIFOLD	1	AF659
16	SQUARE KEY	2/1 **	AB136F
17	FAN/FAN ASSEMBLY-CCW	1	AF748
18	FAN ASSEMBLY-CW	1	AF747
19	SHROUD	2/1 **	AF656
20	MANIFOLD SLEEVE	5	AF567A
22	MANIFOLD	2/1 **	AF550A
***	SERVICE KIT	1	ICESK11

*** Item not shown.
△ Denotes parts included in the Service Kit.
Parts listed are for stock models. For specific OEM models, please consult the factory. When corresponding or ordering parts, please give complete model and serial numbers.

Maintenance & Kit Installation for ICE Pump

NOTE

Bullard will not guarantee the performance of a field rebuilt pump. You can return the pump to a Bullard Authorized Service facility, or perform the rebuild procedures described.

NOTE

Regardless of running hours accumulated, servicing the ICE Pump with the ICESK11 service kit needs to be done every two years as preventative maintenance.

ICE Pump Service Kit (Bullard p/n ICESK11) contains most or all of the following: Head Gasket, Valves, Cylinder Gasket, Piston Ring, Piston Seal, Rider Ring, and Felts. Kits are used for several models and may contain extra parts not applicable for your specific model. Refer to exploded view.

⚠ WARNING

Disconnect electrical power supply cord before performing maintenance on this product. Some motors are thermally protected and will automatically restart when protector resets. If product is hard wired into system, disconnect electrical power at the circuit breaker or fuse box before performing maintenance on this product.
If the product is supplied with an electric power cord, protect it from twisting, cuts and abrasion. When not in use, store in a clean dry place.
Failure to follow these instructions can cause death, fire or serious injury including but not limited to electrical shock.

⚠ WARNING

THIS PRODUCT MUST BE PROPERLY GROUNDED.
Do not modify the plug provided. If it will not fit the outlet, have the proper outlet installed by a qualified electrician.
If repair or replacement of the cord or plug is necessary, do not connect the grounding wire to either flat blade terminal. The wire with insulation that is green or green with yellow stripes is the grounding wire.
Check the condition of the power supply wiring. Do not permanently connect this product to wiring that is not in good condition or is inadequate for the requirements of this product.
Failure to follow these instructions can cause death, fire or serious injury including but not limited to electrical shock.

Service Kit Installation Pump Disassembly

1. Disconnect the pump from the electrical power. You must disconnect the pump from electrical power before servicing.
2. Vent all airlines to the pump to remove pressure. You must vent all airlines to the pump to remove pressure before servicing. Do not remove the filters from the cylinder head as metal chips could be dislodged and enter the unit.

-Remove the shroud, cylinder head, and valve components. **DO NOT** rearrange the valve components.

-Remove the cylinder and rings. Make sure all parts are clean before reassembling. **DO NOT** use any chlorinated solvents to clean valves, or any liquids to flush units. **THE STAINLESS STEEL VALVES MAY BE CLEANED WITH WATER.** All parts, except the valves can be cleaned.

Assembly

1. Install piston seals, piston rings, and rider rings on the piston.
2. Locate ring joints approximately opposite each other.
3. Position piston into cylinder and attach cylinder to bracket with the cylinder screws and washers.
4. Tighten screws finger tight. Move pistons to top dead center position.
5. Adjust each cylinder flush with top of piston and torque cylinder screws to 150-160 inch lbs. Retorque second time.
6. Stack the valve components in order as originally assembled.
7. Install the cylinder head and head screws.

NOTE:
The exhaust ports in the cylinder heads have been marked by omitting the ends of two of the fins.

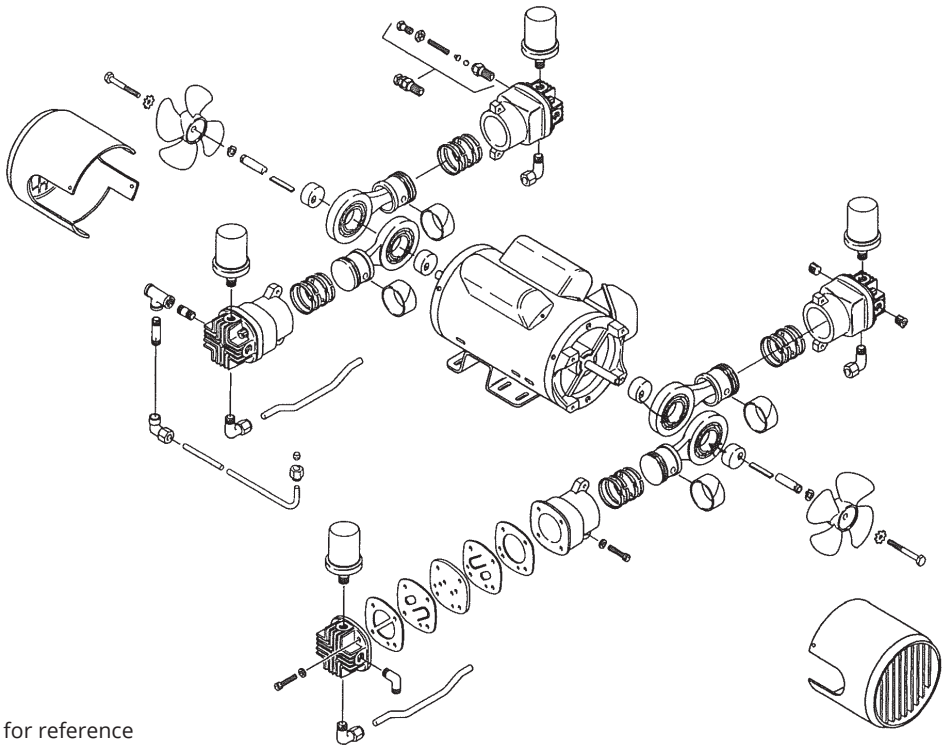
8. Do not tighten heads screws at this time. Install manifold nuts and seals on the manifold and assemble into the other cylinder head and manifold.
9. Torque all head screws to 150-160 inch lbs.
10. Turn fan by hand at this point to ensure that the rod assembly is not hitting the head.

NOTE:
If rod assembly does hit the head, loosen cylinders and readjust.

11. Position manifold and tighten manifold nut 1/2 to 3/4 turns beyond hand tight.
12. Retorque head screws again after running for 10 minutes.

⚠ WARNING

Disconnect electrical power supply cord before performing maintenance on this product. Some motors are thermally protected and will automatically restart when protector resets. If product is hard wired into system, disconnect electrical power at the circuit breaker or fuse box before performing maintenance on this product.
If the product is supplied with an electric power cord, protect it from twisting, cuts and abrasion. When not in use, store in a clean dry place.
Failure to follow these instructions can cause death, fire or serious injury including but not limited to electrical shock.



Exploded view shown for reference only.

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Air Filter Replacement Schedule

Regular inspection and replacement of the air filters will prevent extensive and costly pump repair. Dirty or clogged filters or strainers can be responsible for failure of the pump to build up outlet pressure and eventual overheating.

- Replace the 90 micron inline outlet strainer (Cat. No. ICEOF) at least once every 500 running hours or sooner if necessary.
- Replace the medium efficiency inlet filter (Cat. No. 23611) at least once every 500 running hours or sooner if necessary.

The inlet filter keeps moisture as well as particulates out of the air supply.

We recommend the following chart be used to monitor and maintain a routine air filter replacement schedule.

90 MICRON INLINE OUTLET STRAINER (Cat. No. ICEOF)			MEDIUM EFFICIENCY INLET FILTER (Cat. No. 23611)		
Cumulative Pump Operating Hours	Last Filter Replacement Date	Employee Responsible (Initial)	Cumulative Pump Operating Hours	Last Filter Replacement Date	Employee Responsible (Initial)
500			500		
1,000			1,000		
1,500			1,500		
2,000			2,000		
2,500			2,500		
3,000			3,000		
3,500			3,500		
4,000			4,000		
4,500			4,500		
5,000			5,000		

PUMP WARRANTY

ICE PUMP ONE YEAR LIMITED WARRANTY

Bullard warrants to the original purchaser that the ICE pump will be free of defects in material and workmanship under normal use and service for a period of one (1) year from the date of purchase. Bullard's obligation under this warranty is limited to repairing or replacing, as its option, parts that are returned within the warranty period and that are, after examination, shown to Bullard's satisfaction to be defective, subject to the following limitations:

a) ICE pump must be returned to Bullard with shipping charges prepaid.

b) ICE pump must not be altered from its original factory configuration.

c) ICE pump must not have been misused, subjected to negligent use, or damaged in transport.

d) The date of purchase is within the one (1) year warranty period.

(A copy of the purchaser's original invoice showing the date of purchase is required to validate warranty coverage).

In no event shall Bullard be responsible for damages for loss of use or other indirect, incidental, consequential or special costs, expenses or damages incurred by the purchaser, notwithstanding that Bullard has been advised of the possibility of such damages.

ANY IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE SPECIFICALLY EXCLUDED FROM THIS WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Return Authorization

The following steps must be completed before Bullard will accept any returned goods. Please read carefully.

Follow the steps outlined below to return goods to Bullard for repair or replacement under warranty or for paid repairs:

1.Contact Bullard Customer Service by telephone or in writing at:

Bullard 1898 Safety Way

Cynthiana, KY 41031-9303

Toll-free: 877-BULLARD (285-5273)

Phone: 859-234-6616

In your correspondence or conversation with Bullard's Customer Service, describe the problem as completely as possible. For your convenience, the representative will try to help you correct the problem over the phone.

2.Verify with your customer service representative that the product should be returned to Bullard. Customer Service will provide you with written permission and a return authorization number as well as the labels you will need to return the product.

3.Before returning the product, decontaminate and clean it in accordance with the instructions in the user manual to remove any hazardous materials which may have settled on the product during use. Laws and/or regulations prohibit the shipment of hazardous or contaminated materials. Products suspected to be contaminated will be professionally discarded at the customer's expense.

4. Ship returned products, including those under warranty, with all transportation charges pre-paid. Bullard cannot accept returned goods on a freight collect basis.

5. Returned products will be inspected upon delivery to the Bullard facility. Bullard Customer Service will contact you with a quote for required repair work which is not covered by warranty. If the cost of repairs exceeds the stated quote by more than 20%, your customer service representative will call you for authorization to complete repairs. After repairs are completed and the product has been returned to you, Bullard will invoice you for actual work performed.

BUILD YOUR Bullard
www.BuildYourBullard.com

ISO 9001 certified

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877-BULLARD (285-5273)
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