

HURRICANE 500EM OPERATION/MAINTENANCE MANUAL



INDUSTRIAL VACUUM EQUIPMENT CORP.
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OPERATION / MAINTENANCE MANUAL

HURRICANE 500 SKID ELECTRIC UNIT

INTRODUCTION

The *Hurricane* is designed for rugged, reliable operation featuring powerful vacuuming capability with very minimum daily maintenance. The *Hurricane* will pneumatically convey material from distances in excess of 1000 feet. Any material that is flowable, whether liquid, slurry or solid, or able to move through a 4", 5" or 6" diameter hose, can be handled with this equipment.

DANGER

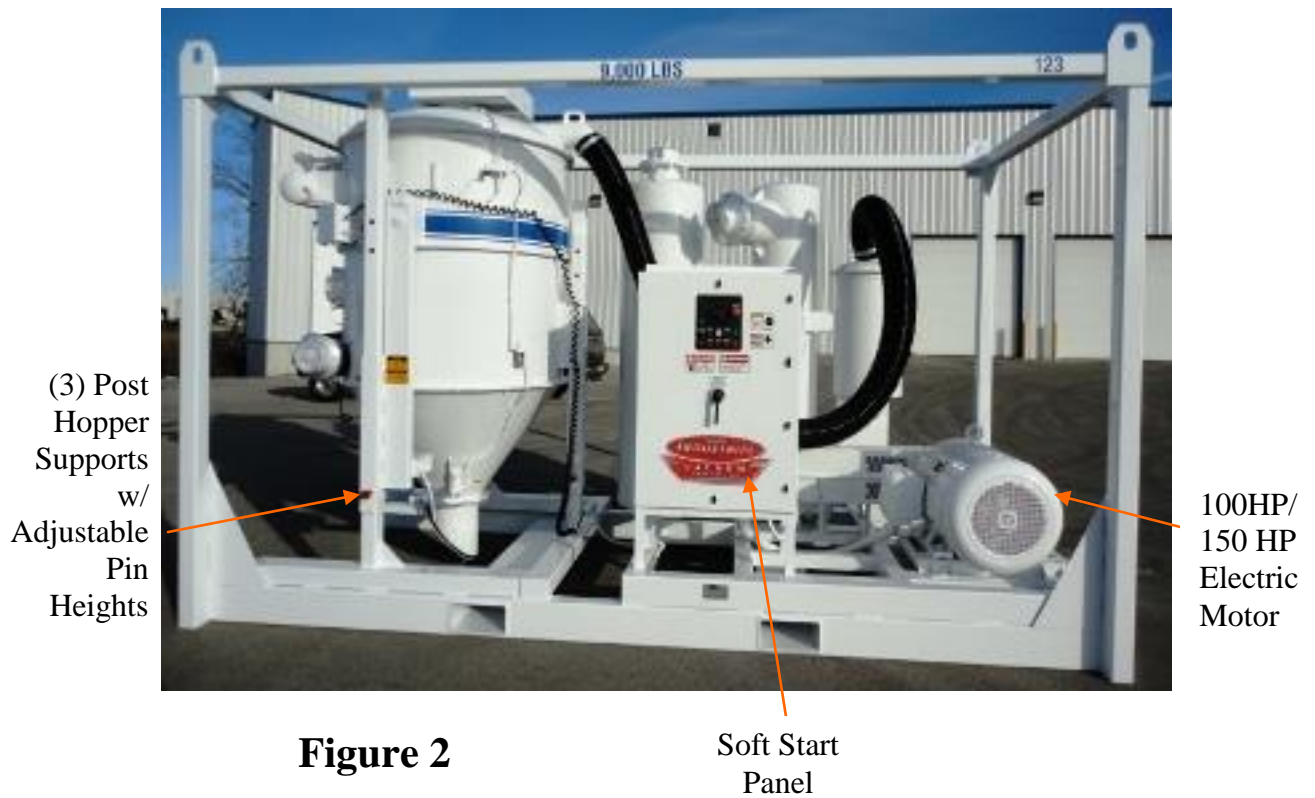
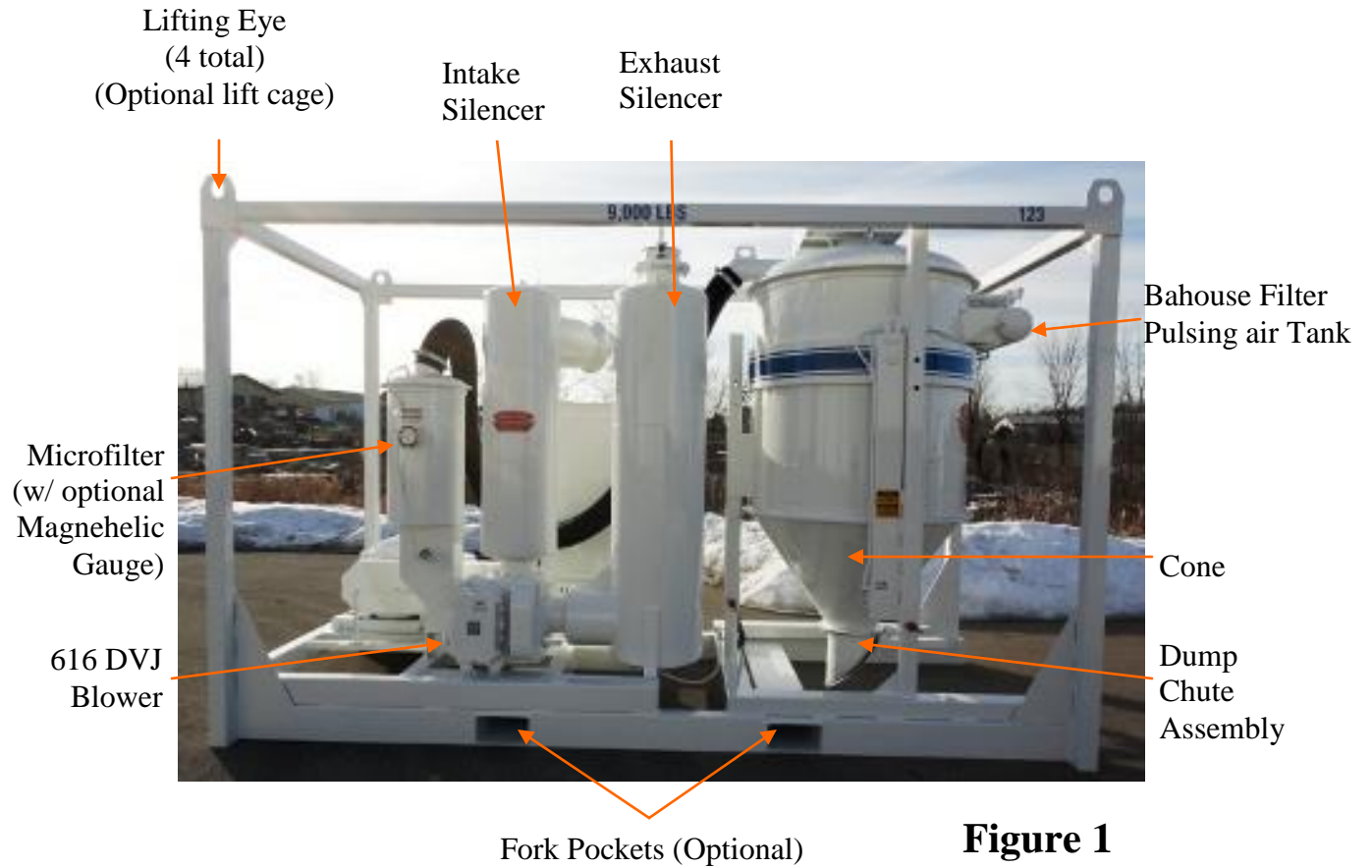
**THE HURRICANE SHALL NOT BE USED TO VACUUM/CONVEY
FLAMMABLE OR COMBUSTIBLE HYDROCARBON LIQUIDS.**

**THE HURRICANE SHOULD NEVER BE USED OR MOVED WITHOUT
REFERENCE TO THE SAFETY PROCEDURES NOTED BELOW.**

This equipment is self-contained and powered by an electric motor. It will provide excellent service if properly maintained. There are no unique or complicated parts that require sophisticated maintenance procedures under normal operation. The electric motor is equipped with a soft start package to reduce start-up current.

The Hurricane Skid is equipped with fork tubes and lifting eyes. The *Hurricane* can easily be picked up and maneuvered with a fork truck or lifted with a crane.

Because of its ease of set-up and maneuverability, the *Hurricane* is a very flexible and effective piece of industrial vacuum cleaning equipment. You will find its value to you will only be limited by your imagination.



NOTE: Figures are for reference, and may differ from actual unit.



SAFETY PROTOCOL

Failure to follow the safety rules in this manual can result in personal injury, death or property damage. Please observe the same common sense precautions used with any machine, where carelessness, inattention or poor maintenance could be hazardous to people or property. Carefully read the safety precautions below and within this manual.

Moving Safety Instructions

- Caution must be used when moving the *Hurricane* due to its weight.
- Before lifting the *Hurricane*, inspect the lifting eyes to be sure they are not defective in any way.
- Before moving the *Hurricane*, make sure the Hopper is in the lowered and locked position.
- Before moving the unit the Hopper should be completely empty and the discharge door secured closed.

Set-up Safety Instructions

- Always position the unit on solid ground. If the unit must be set-up on soft ground, make sure there are planks underneath the side rails to distribute the weight of the machine evenly.
- Always position the unit so that it is sitting no more than 5 degrees off level in any direction.
- Never raise the Hopper on the unit under electrical wires or near any power cables of any kind.
- Always pin the support posts when the Hopper is in the raised position
- Never stand under the raised Hopper unless the safety pins are secured in place.

Follow Safety Instructions

- Carefully read all safety messages on your machine. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available through the manufacturer.

Prepare For Emergencies

- Be prepared if a fire starts.
- Keep a first aid kit and fire extinguisher handy.
- Keep emergency numbers for doctors, ambulance service, hospital and fire department near your telephone.



SAFETY PROTOCOL

Wear Protective Clothing

- Wear close fitting clothing and safety equipment appropriate to the job.
- Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.

Protect Against Noise

- Prolonged exposure to loud noise can cause impairment or loss of hearing.
- Wear OSHA approved personal protective equipment to protect against objectionable or uncomfortable noise.

Handle Chemical Products Safely

- Direct exposure to hazardous chemical can cause serious injury. Potentially hazardous chemicals used with this unit include such items as lubricants, coolants, paints and adhesives.
- Refer to Material Safety Data Sheet (MSDS) for specific details on chemical products: physical and health hazards, safety procedures and emergency response information.
- Review each MSDS before you begin using unit.

Stay Clear of Rotating Components

- Keep rotating shields in place at all times.
- Always operate the machine with access doors closed and locked.
- Shut unit down and be sure all moving parts have stopped rotating before make adjustments or performing service on machine.
- Keep hands, feet and clothing from power driven parts.

Avoid High-Pressure Fluids

- Escaping fluid under pressure can penetrate the skin causing serious injury.
- Avoid the hazard by relieving pressure before disconnecting hydraulic hoses or other lines. Tighten all connections before applying pressure.
- Refer to MSDS for emergency information.



SAFETY PROTOCOL

Practice Safe Maintenance

- Understand service procedure before performing work. See specific components service manual, located in *Hurricane's* owner manual for instructions and additional safety requirements.
- Vacuum creates VERY HIGH SUCTION—EXTREME CAUTION IS REQUIRED when handling suction end points.
- When vacuuming certain materials static electricity can be generated. PROPER STEPS SHOULD BE TAKEN TO PROPERLY BOND AND GROUND HOSES, UNIT, ETC.
- Never lubricate, service, or adjust machine while it is moving.
- Keep hands, feet and clothing from power driven parts.
- Disengage all power and operate controls to relieve pressure.
- Securely support any machine elements that must be raised for service work.
- Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts.
- Do not look into the discharge door or the hopper inlet pipe when unit is operating.
- Always wear safety glasses or goggles when performing maintenance on the unit.
- Whenever vacuuming sticky materials, such as thick slurry, check the hopper often to verify all the material is discharging and not building up on the inside. Utilize vibrator often to minimize material build-up.

Blower Discharge Dust

- DO NOT operate the unit if dust is visible at the blower discharge.
- Contact Industrial Vacuum Equipment Corp. before continuing.

Dispose of Waste Properly

- Follow OSHA, State and Federal guidelines pertaining to the disposal of waste associated with vacuum process.



SAFETY PROTOCOL

E-Stop Button Instructions

- Each day, before beginning vacuum operations, test the E-Stop button to make sure it is working properly.
- Whenever the vacuum is in operation, the E-Stop button **MUST** be within reach of the vacuum hose operator, or must be attended by another operator.
- Whenever adding/removing hose and/or pipe, the E-Stop button should be used to stop vacuum suction until all connections are completed.



Button “IN” - Vacuuming stopped

Figure 3



Button “OUT” - Vacuum is operating

INSTRUMENTATION

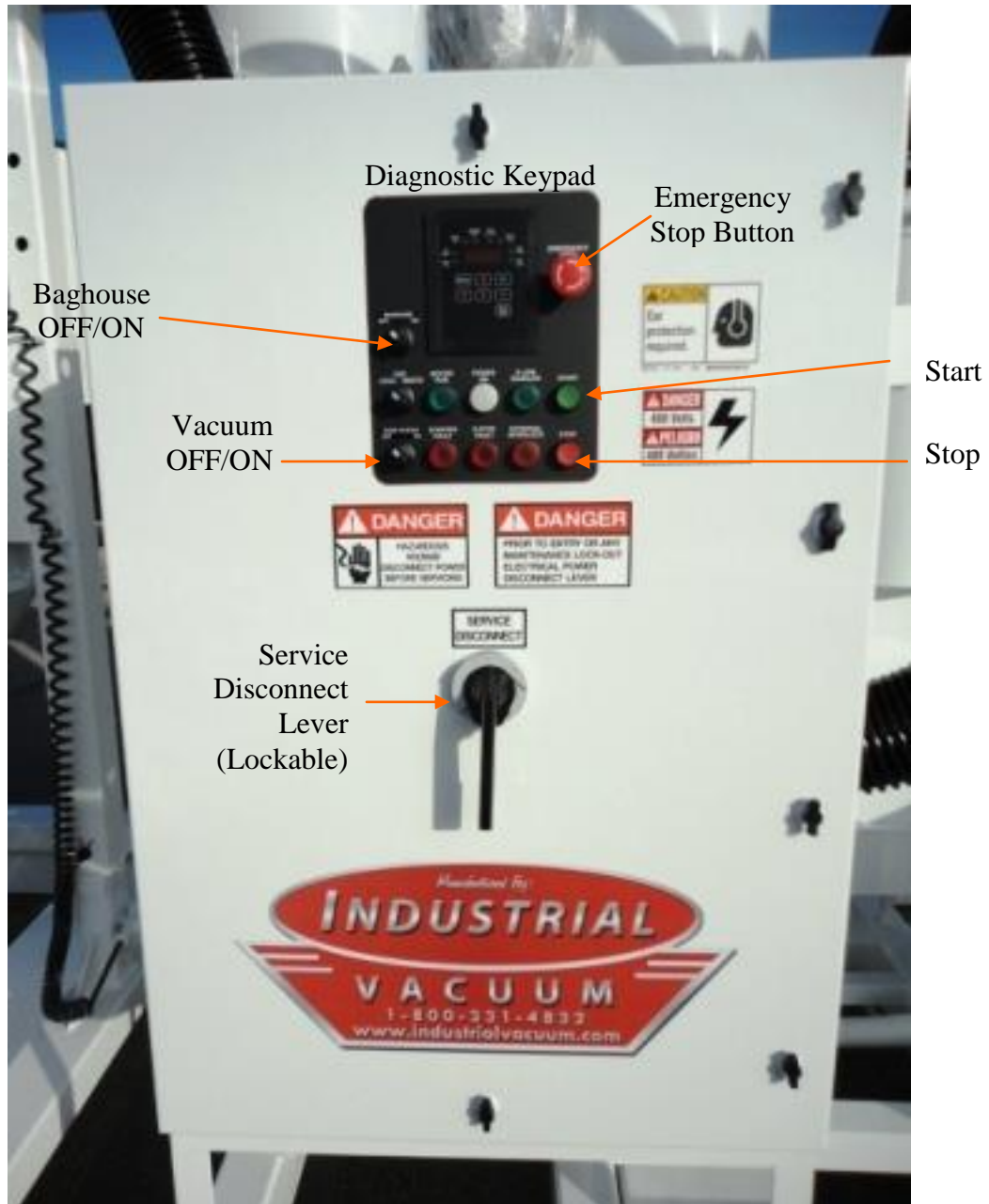


Figure 4

INSTRUMENTATION

The instrument panel on the *Hurricane* contains the following items:

1. Main Power Disconnect Lever - Turns power OFF to entire unit.
2. Baghouse OFF/ON Switch – When the switch is in the ON position, the baghouse timer will start, pulsing the filters in a factory-set sequence.
3. Vacuum OFF/ON Switch – When the switch is in the ON position, the dump timer will start working and ramp engine to full RPM's.
Note: The Emergency Stop Button must be pulled out.
Note: The dump timer always starts its cycle in the dump mode, or OFF time.
4. Motor Run Indicator Light
5. Off/Local/Remote – “Local” position will start motor/vacuum system with Soft Start controls.
6. Start Pushbutton (Green) – Indexes vacuum system ON.
7. Stop Pushbutton (Red) – Indexes vacuum system OFF.



DAILY MAINTENANCE

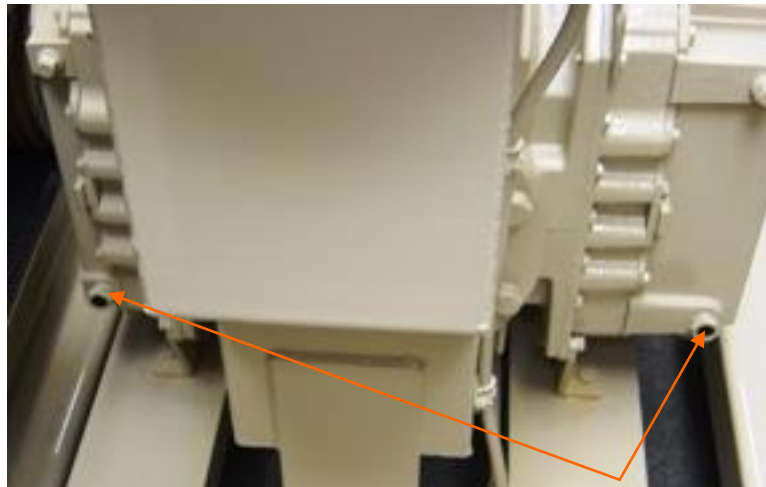
***ALL INSPECTION PROCEDURES SHOULD BE ACCOMPLISHED WITH MOTOR OFF
AND DISCONNECT POWER SWITCH OFF!***

MOTOR

1. Inspect fins for dirt and obstructions on the fan side. Keep hands and loose clothing away from fan, belts and pulleys.

BLOWER

1. Check oil level at both ends of blower.



**Roots 616DVJ
Blower**

Figure 5

Blower Oil level sight glasses –
maintain at **half** full level

2. Check belt tension.
3. Check Vibrator Oiler level.



GENERAL MAINTENANCE

1. Make general inspection for leaks and loose bolts.
2. Drain water from all air tanks.
3. Check the inside of the collection hopper to be sure no material is collecting on the walls of the cone.
4. When the unit is running and the air pressure is up to 100 PSI, listen for the bag pulsing sequence.



EXTENDED MAINTENANCE

EVERY THREE MONTHS

1. Grease motor zerks, two points. Refer to Motor Manual.

EVERY 200 HOURS

1. Check for belt tension on motor.
2. Check upper deflector plate inside collection hopper for excessive wear.
3. Check condition of removable wear plate for excessive wear.

EVERY 500 HOURS

1. Change blower oil in both ends. Refer to Blower Manual.
2. **NOTE: Apply pipe joint compound sealant to blower oil threaded plug before re-installation.**
3. Change blower safety filter. See spare parts list.
4. Change filter bags if needed. See maintenance procedures.

EVERY 1,000 HOURS

1. Check discharge door gasket for excessive wear.



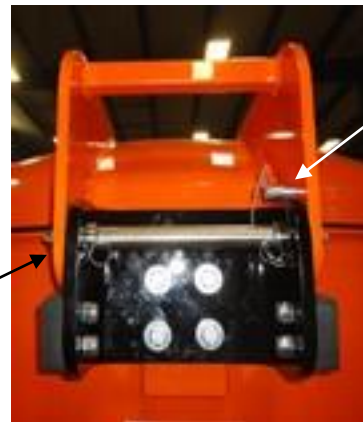
MAINTENANCE PROCEDURES

FILTER BAG CHANGE

1. Open all dome hold down clamps. (See Figure 6)



Hold Down Clamp
(in locked position)



Locking
Safety Pin

Dome hinge,
closed position

Figure 6

Figure 7

2. Carefully open hinged dome. Remove hinge safety clevis pin prior to opening dome. Re-install clevis pin after dome is in the open position. (See Figure 7)
3. Disconnect dinn cable from diaphragm solenoid. (See Figure 8)
4. Disconnect air/draw hose from air cannon. (See Figure 8)
5. Remove clip from both hold down pins. (See Figure 8)
6. Remove blast pipe safety clevis pin from bracket. (See Figure 8)
7. Lift hinged blast pipe assembly into vertical position and secure safety pin.
8. Lift cages out of filter bags and set aside.

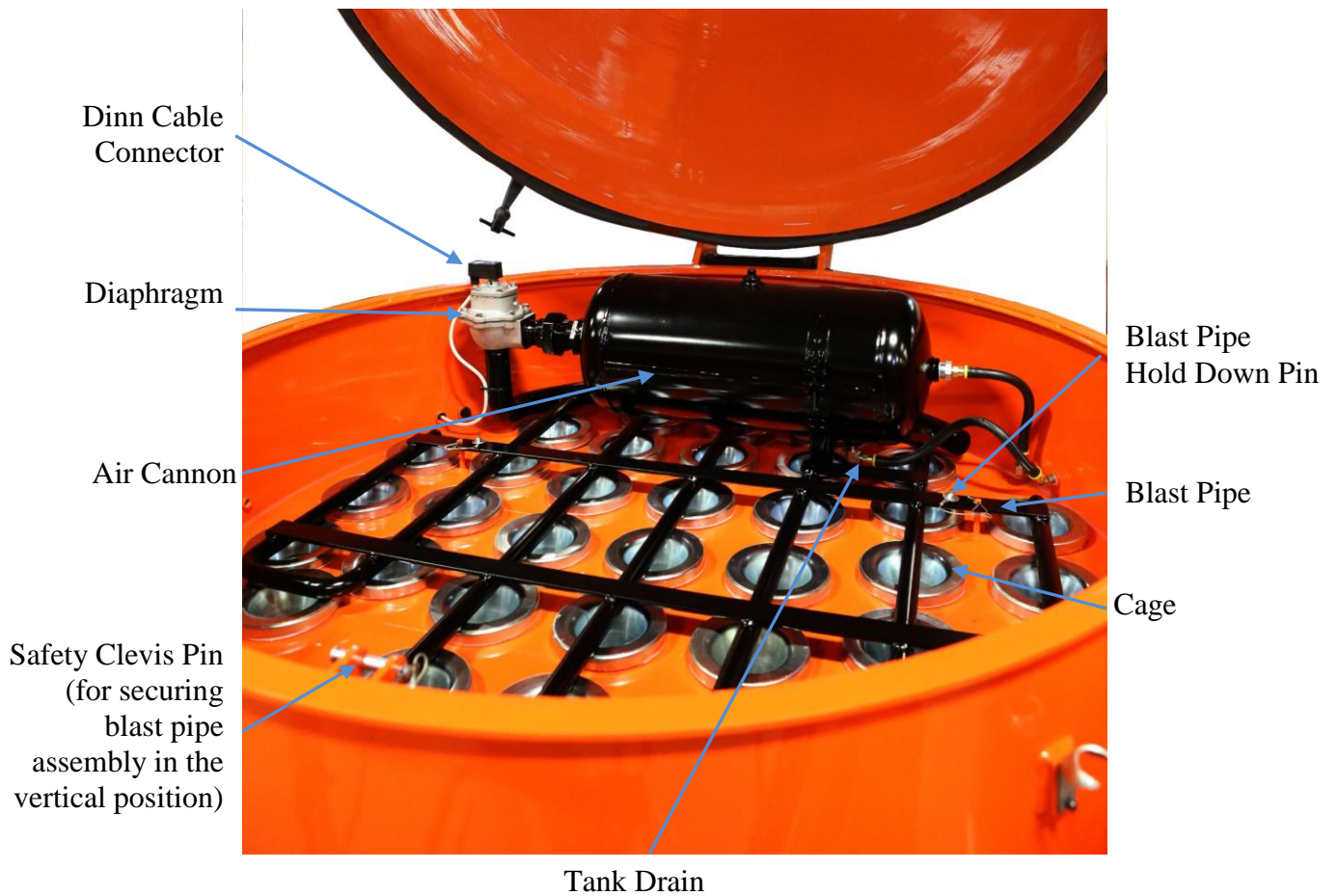


Figure 8

9. Using a large screwdriver, press in on the top part of the filter and pop it out of place. Let the filter fall down and through the cone.
10. Remove all filters. Clean all of the dust off filter area.
11. Install filters using the same method, only in reverse.
12. Completed



MAINTENANCE PROCEDURES

MOTOR

Maintenance instructions on the motor are included with this manual. The motor should be maintained per motor manufacturer requirements.

BLOWER

Maintenance instructions on the blower are included with this manual. This blower is a precision piece of equipment, and service should not be attempted by other than qualified personnel. The blower needs little maintenance other than checking oil levels and changing oil as required. If the blower begins to “knock”, **SHUT DOWN THE UNIT IMMEDIATELY AND CONSULT MANUFACTURER.** The blower has a one-year warranty.

BAGHOUSE TIMER

This component cannot be serviced in the field. All that can be checked are voltage to unit, fuse and output. If the fuse is good and power is present at the input leads and the unit fails to operate, replace the entire circuit board.

VACUUM RELIEF VALVE

If applicable to this unit, this valve is factory set and should not be tampered with. Serious damage may result if unqualified personnel improperly adjust valve.

GREASE AND LUBRICANT SPECIFICATIONS

MOTOR LUBRICATING GREASE

Only Exxon Polyrex® EM Polyurea Grease should be used.

BLOWER LUBRICATING OIL

The required blower lubricant is Amsoil Synthetic R&O, AW Gear & Bearing ISO 220 (RCM)

VIBRATOR LUBRICATING OIL

General purpose 10 weight oil.

VACUUM UNIT SET-UP

1. Make sure skid is sitting on a concrete surface; if positioned on soft ground, heavy planks that will not sink into the ground should be placed under structural steel base rails.
2. When the unit is properly set, it should be level before raising collection hopper.
3. Perform daily maintenance procedures.
4. Connect incoming 480 volt power to panel via cam-lok connectors. Verify correct phasing to prevent motor operating in reverse.

NOTE: If unit is provided without camlok connectors, field power connection by customer is required.

5. Connect in-coming air (100 PSI) to side of collection hopper, make sure all tank drains are closed.
6. Attach vacuum hose to inlet pipe of collection hopper.
7. CAUTION: Do not proceed or raise hopper unless area around and above unit is inspected and found to be free of electrical wires or other obstructions.
8. Using fork tubes or lifting eyes, raise collection hopper to highest hole and pin, then gradually lower the hopper until it is resting on the safety pins.
9. DO NOT LEAVE THE COLLECTION HOPPER IN THE RAISED POSITION WITHOUT ALL SAFETY PINS IN PLACE.
10. Plug in E-Stop button using twist lock connections.

VACUUM UNIT OPERATION

1. Index main power disconnect lever to the “ON” position.
2. Start the motor by pressing the (GREEN) Start Pushbutton.
3. Make sure there is at least 100 PSI of incoming air.
3. Pull E-Stop button out.
4. Set desired time on dump timer (“ON” time and “OFF” time).
NOTE: In case of emergency, pushing E-Stop button IN will stop suction to inlet pipe.

DUMP TIMER



Figure 9

5. Index Vacuum OFF/ON switch to the ON position.
6. Index baghouse switch to the ON position.
7. Start vacuuming.

VACUUM UNIT SHUT DOWN

1. Allow all material to clear suction hose.
2. Index Vacuum Switch to the OFF position.
3. Press Stop Button (RED). This will shut down the entire system.
4. Allow filter pulsing system to operator for five minutes after shutdown. This helps keep the filters clean. Index baghouse switch to the OFF position.
5. Index main power disconnect lever to the OFF position.
6. Index manual incoming air valve to the OFF position. Drain filter pulsing tank.

VACUUM UNIT TRANSPORTATION

1. Using fork truck or crane, raise collection hopper and remove safety pins.
2. Lower collection hopper to the lowest position and insert safety pins.
3. Secure dump chute discharge door in the closed position.
4. Index main power disconnect lever to the OFF position, and disconnect incoming power connections at cam-lok fittings. Consult electrician or certified personnel for any questions.

MAJOR COMPONENT SPECIFICATIONS

	<u>100HP</u>	<u>150HP</u>
MOTOR	100 HP Electric Motor, 480 volt, 3 phase, 60 HZ, TEFC	150 HP Electric Motor, 480 volt, 3 phase, 60 HZ, TEFC
BLOWER	Roots Model DVJ 616	Roots Model DVJ 616
BLOWER DRIVE	5 V-belt drive w/adjustable motor mounts	5 V-belt drive w/adjustable motor mounts
CONTROL PANEL	NEMA4 Soft-start panel, 480 volt, 3 Phase	NEMA4 Soft-start panel, 480 volt, 3 Phase

RECOMMENDED SPARE PARTS FOR 500EM

<u>PART NUMBER</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
FN8014	37	Filter Bags
FN8065	37	Cages
FN8006H	1	Blower Safety Filter
ED0019	5	Blower Drive Belts
MC6800	1 (gallon)	Blower Oil
AR5207	1	Filter Pulsing Diaphragm/Solenoid
AR5208	1	Dinn Cable
EC6000	1	Filter Pulsing Timer
EC6001	1	12 – 24 VDC Converter
MC7020	1	Removable Wear Plate
EC2027	1	E-Stop button w/50' cord
EC2000	1	12 volt dump timer

Prices and availability are subject to change without notice.

OPTIONAL EQUIPMENT

Industrial Vacuum Equipment Corp. offers a variety of accessories and optional equipment to complement your *Hurricane*, including:

- | | |
|------------------------|--|
| Floor Nozzles | Attach to the end of the vacuum hose to pick up material spread across bare floors or decks. |
| Removable Bulk Nozzles | Lightweight nozzle for attachment to the end of the vacuum hose. Provides a rigid handle and suction tube to vacuum material from bare floors and enhances the operator's ability to vacuum hard to reach areas. |
| Replacement Parts | Industrial Vacuum Industrial Equipment Corp. stocks complete replacement parts for your <i>Hurricane</i> , including hose and filters. It is recommended that only Industrial Vacuum Industrial Equipment Corp. supplied replacement parts be used for your <i>Hurricane</i> . |

INDUSTRIAL VACUUM EQUIPMENT CORP. ALSO MANUFACTURES A WIDE LINE OF VACUUM AND COLLECTION DEVICES AND HOPPERS FOR HAZARDOUS AND NON-HAZARDOUS APPLICATIONS. CONSULT YOUR FACTORY REPRESENTATIVE FOR INFORMATION ON OUR ENTIRE PRODUCT LINE.

**INDUSTRIAL VACUUM EQUIPMENT CORP.
LIMITED WARRANTY**

Seller warrants each new product to be free from defects in material and workmanship under normal use and maintenance as herein described. This warranty does not apply to commercial items manufactured by others, which are covered by existing warranties of the respective manufacturers thereof. Seller's sole obligation under this warranty shall be limited to repairing, replacing or allowing credit for, at Seller's option, any part which under normal and proper use and maintenance proves defective in material or workmanship within twelve (12) months after delivery to Buyer. In the event of defects developing within that period, the Seller will furnish, F.O.B. its plant, without charge, parts required to replace material found defective. Beyond this, the Seller assumes no responsibility.

This warranty is in lieu of all other warranties (except of title), expressed or implied, and there is not an implied warranty of merchantability or fitness for a particular purpose. In no event shall Seller be liable for consequential or special damages.

Used products are sold on an "as is" basis and there is no implied warranty of merchantability or of fitness for a particular purpose, unless otherwise expressly stated on the face of this form.

**HYUNDAI
MOTOR WARRANTY POLICY**

This motor has a limited five (5) year warranty. Please contact Hyundai Heavy Industries Co., Ltd. for additional information.

**DRESSER ROOTS
GENERAL TERMS OF SALE/WARRANTY INFORMATION**

Please refer to GTS-5001 (General Terms of Sale) and WP-5020 (Warranty Policy and Procedure) which are both included in this binder.