

HURRICANE

QC150

OPERATIONS/ MAINTENANCE MANUAL

INDUSTRIAL VACUUM EQUIPMENT CORP.

N7959 BIRCH ROAD, IXONIA WI 53036

800-331-4832

OPERATION / MAINTENANCE MANUAL

HURRICANE QUIET CUBE ELECTRIC UNIT W/ HYDRAULIC LIFT PACKAGE

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 unit has a hydraulic power package to raise and lower the collection hopper.

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.





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 it weighing in excess of 10,000 lbs.
- 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 locked shut.

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 safety struts when the Hopper is in the raised position.
- Never stand under the raised Hopper unless the safety struts are pinned and secured in place.

Follow Safety Sticker Instructions

- Carefully read all safety stickers on unit. Keep safety stickers in good, readable condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety stickers. Replacement safety stickers 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.

Dispose of Waste Properly

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



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 operating.
- Maintain all parts in good operating condition. Replace worn or broken parts immediately.
- 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 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.
- Shut unit down and contact Industrial Vacuum Equipment Corp. before continuing.



E-STOP BUTTON INSTRUCTIONS

- Each day, before beginning vacuum operations, test the E-Stop button to make sure it is working properly. (Button “IN” – Vacuum OFF; Button “OUT” – Vacuum ON)
- 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” - Vacuum OFF

Figure 3



Button “OUT” - Vacuum ON

INSTRUMENTATION



Figure 4

INSTRUMENTATION

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

1. Main Power Service Disconnect Lever - Turns power ON/OFF to entire unit.
2. Baghouse ON/OFF Switch – Turns baghouse filter pulsing system ON/OFF.
3. Vacuum OFF/ON Switch – When the switch is in the ON position, the vacuum relief valve will close. (Vacuum relief valve is also located at microfilter housing on some unit configurations.)

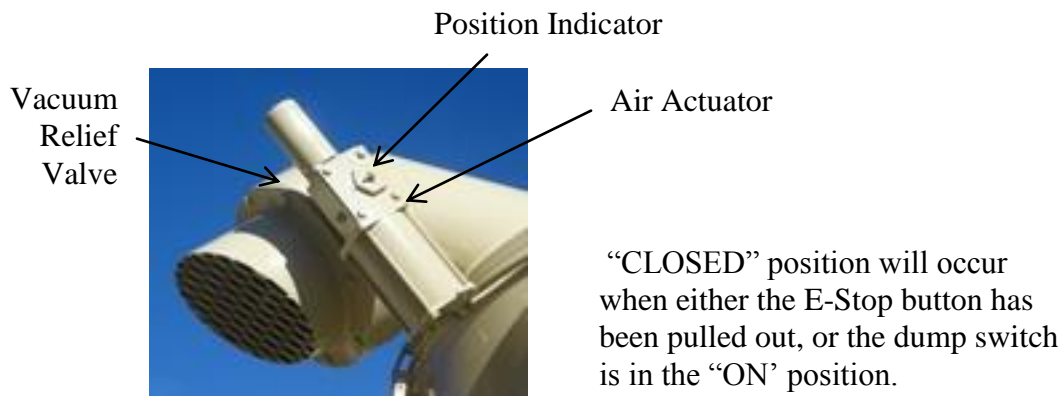


Figure 5

NOTE: E-Stop must be plugged in with twist lock connection and button pulled out for butterfly valve to close. With the button pushed down, the vacuum relief valve will be open.

4. Hydraulic Cylinder Switch – Momentary UP/DOWN. In the “UP” position, the baghouse will raise until it reaches the desired height. Upon release, the switch will revert to “OFF”. In the “DOWN” position, the baghouse will lower until the “cone hook” is engaged into its “stowed” position. Guide “cone hook” into lowered position to ensure engagement.
5. Motor Run Indicator Light (Green)
6. Local/Off/Remote Switch – Shall be indexed to the “Local” position.
7. Start Pushbutton (Green) – Turns motor/vacuum system ON.
8. Stop Pushbutton (Red) – Turns motor/vacuum system OFF.
9. Camlok connectors (Optional) – For electrical connection to incoming 480 volt power source.



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.

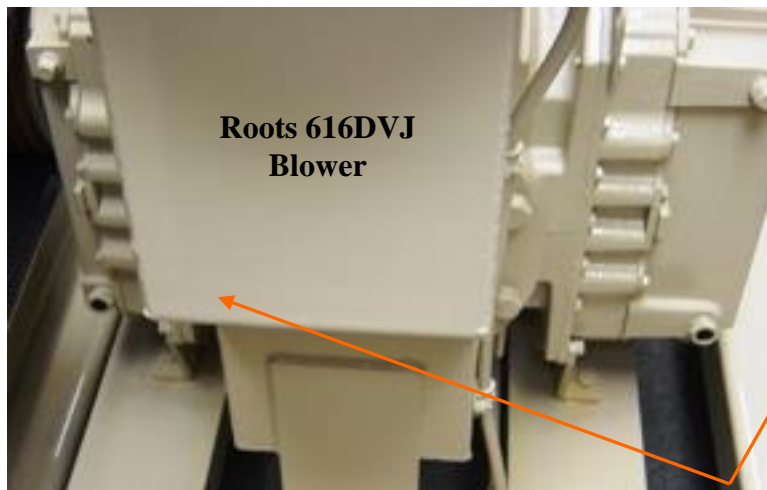


Figure 6

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

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

HYDRAULIC SYSTEM

1. Check oil level (at least 1/2 to 2/3 full).
2. Check for hydraulic leaks on the various hoses and connections.



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 90 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. Change blower safety filter. See spare parts list.
3. Change filter bags if needed. See maintenance procedures.

EVERY 1,000 HOURS

1. Check discharge door gasket for excessive wear.
2. Change hydraulic oil. See spec sheet.



MAINTENANCE PROCEDURES

Filter Bag Change

1. Disconnect air line that runs from vacuum relief valve to the solenoid.
2. Open all dome hold down clamps. (See Figure 7)



Figure 7

Hold Down Clamp
(in locked position)

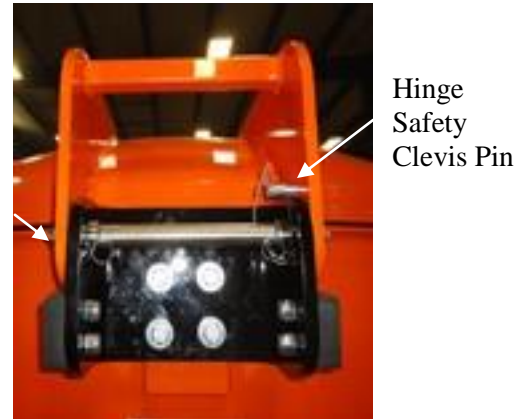


Figure 8

3. 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 8)
4. Locate blast pipe brackets, stud nuts and pipes and remove. (See Figure 9)
5. Lift cages out of filter bags and set aside.
6. 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. Clean all of the dust off filter area.
7. Install filters using the same method, only in reverse (filters in, cages, blast pipes, dome, and air line).

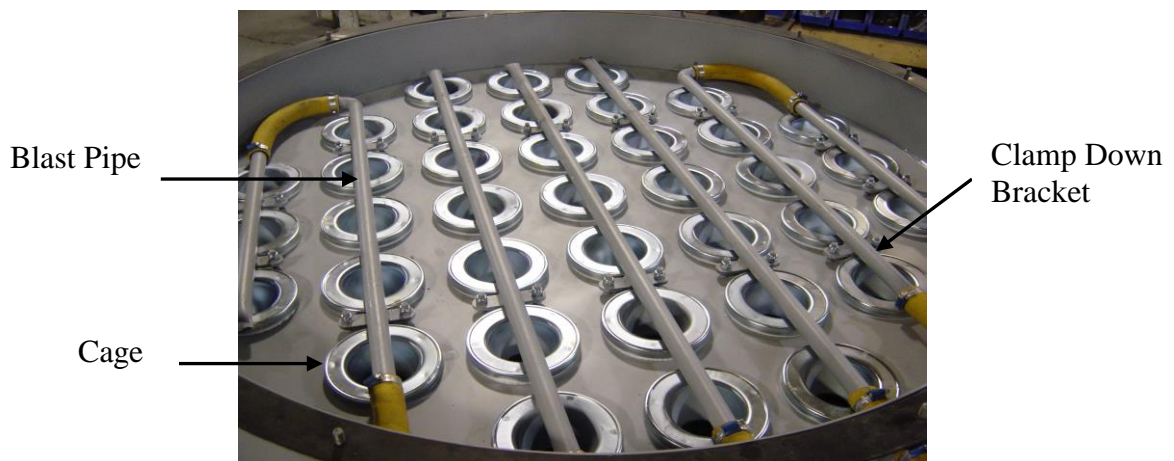


Figure 9



MAINTENANCE PROCEDURES

MOTOR

Maintenance instructions on the motor are included with this manual. The motor should be maintained per their 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 FACTORY.** The blower has a one-year warranty.

NOTE: When re-installing blower oil drain plug, apply pipe joint compound.

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 LUBRICANTS

MOTOR LUBRICATING GREASE

Use moisture resistant, polyurea-based grease.
Example: Chevron SRI #2

BLOWER LUBRICATING OIL

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

HYDRAULIC LUBRICATING OIL

Use hydraulic oil AW ISO 32.

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 planking shall be placed under steel skid rail base to prevent sinking.
2. Unit shall be level before operation.
3. Perform daily maintenance procedures.
4. Remove all shipping plastic from hopper inlet pipe, silencer inlets/outlets and around the dump door.
5. Connect 480 volt power to camlok connectors and 3/8" ground stud (by owner).
6. Close all air tank drains. Connect in-coming air, by owner (100 PSI minimum), to "air-in" plugged pipe fitting on side of collection hopper.
7. Attach vacuum hose to inlet pipe of collection hopper.
8. On the face of the soft start panel, index Service Disconnect Lever to the "ON" position. The "Power ON" light should illuminate.
9. Using "Cylinder UP/DOWN" switch, located on instrument panel, raise collection hopper to necessary height to clear the collection box, dump truck, or container.
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.
10. When the proper height is reached, place the pins in the closest hole on the hydraulic safety struts through the stop block just above the hydraulic cylinder top, and then gradually lower the hopper until it is resting on the safety block.
11. **DO NOT STAND UNDER THE COLLECTION HOPPER OR GET BETWEEN THE COLLECTION HOPPER AND THE SKID BASE WHEN THE CYLINDER IS IN THE RAISED POSITION WITHOUT THE HYDRAULIC SAFETY STRUTS PINNED IN PLACE.**
12. **DO NOT LEAVE THE COLLECTION CYLINDER IN THE RAISED POSITION WITHOUT ALL SAFETY PINS IN PLACE.**
13. Plug in E-Stop button using twist lock connections.

CAUTION: Unit is not structurally designed to lift when hopper contains vacuumed material. Empty hopper prior to lifting or moving.

VACUUM UNIT OPERATION

1. Index Main Power Service Disconnect Lever to the “ON” position.
2. Press (Green) Start pushbutton on face of the soft start panel.
3. Make sure there is at least 100 PSI of incoming air.
4. Pull E-Stop button out.
5. 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 10

6. Index Vacuum switch to the “ON” position.
7. Index Baghouse Switch to the “ON” position.
8. Start vacuuming.

VACUUM UNIT SHUT DOWN

1. Allow all material to clear suction hose and cone.
2. Index Vacuum switch to the “OFF” position.
3. Press (Red) Stop pushbutton. This will shut down entire system.
4. It helps to let the baghouse pulse for five minutes after shutdown. This will keep the filters clean and increase useful life. Index Baghouse switch to the “OFF” position.
5. Index Main Power Service Disconnect Power Lever to the “OFF” position.
6. Close valve at “Air In” connection and drain air tanks.

VACUUM UNIT TRANSPORTATION

1. Empty collection hopper prior to moving unit.
LIFT CAGE/PADEYES ARE NOT DESIGNED TO LIFT OR TRANSPORT UNIT WITH MATERIAL IN COLLECTION HOPPER.
2. Raise collection hopper using Cylinder Switch and unpin hydraulic safety struts.
3. Lower collection hopper using Cylinder Switch and guide the 6” hose down between the cross bracing on the towers.
CAUTION: Do not place arms or hands in or near the hopper extension arms while lowering.
4. Secure dump door closed.
5. Index main power disconnect lever to the OFF position, and disconnect incoming power connections at camlocks and ground stud. Consult electrician or certified personnel for any questions.
6. Disconnect air supply at “Air In” connection to unit.

MAJOR COMPONENT SPECIFICATIONS

MOTOR	150 HP Hyundai Electric Motor, 480 volt, 3 phase, 60 HZ, TEFC
BLOWER	Roots Model DVJ 616
BLOWER DRIVE	5 V-belt drive w/ adjustable motor mounts
CONTROL PANEL	NEMA 4 Soft-Start, 480 volt, 3 phase
HYDRAULIC SYSTEM	3 HP, 480 volt, 2200 PSI

RECOMMENDED SPARE PARTS

<u>PART NUMBER</u>	<u>QUANTITY</u>	<u>DESCRIPTION</u>
FN8014	37	Filter Bags
FN8065	37	Cages
FN8006H	1	Blower Safety Filter
ED0018-Q	5	Blower Drive Belts
MC6800	1 (gallon)	Blower Oil
EC2001	1	12 Volt Baghouse Timer
AR4015	1	12 Volt Solenoid Baghouse
AR4016	1	Diaphragm for Baghouse
MC7020	1	Removable Wear Plate
EC2027	1	E-Stop button w/50' cord
EC2000	1	12 volt dump timer
EC1008	1	Primary Fuse
EC1009	2	Secondary Fuse

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 Equipment Corp. stocks complete replacement parts for your <i>Hurricane</i> , including hose and filters. It is recommended that only Industrial Vacuum 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 ALL OF OUR PRODUCTS.

**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.