

HURRICANE

QC200

OPERATION/MAINTENANCE MANUAL



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OPERATION / MAINTENANCE MANUAL

HURRICANE QC200 QUIET CUBE

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.

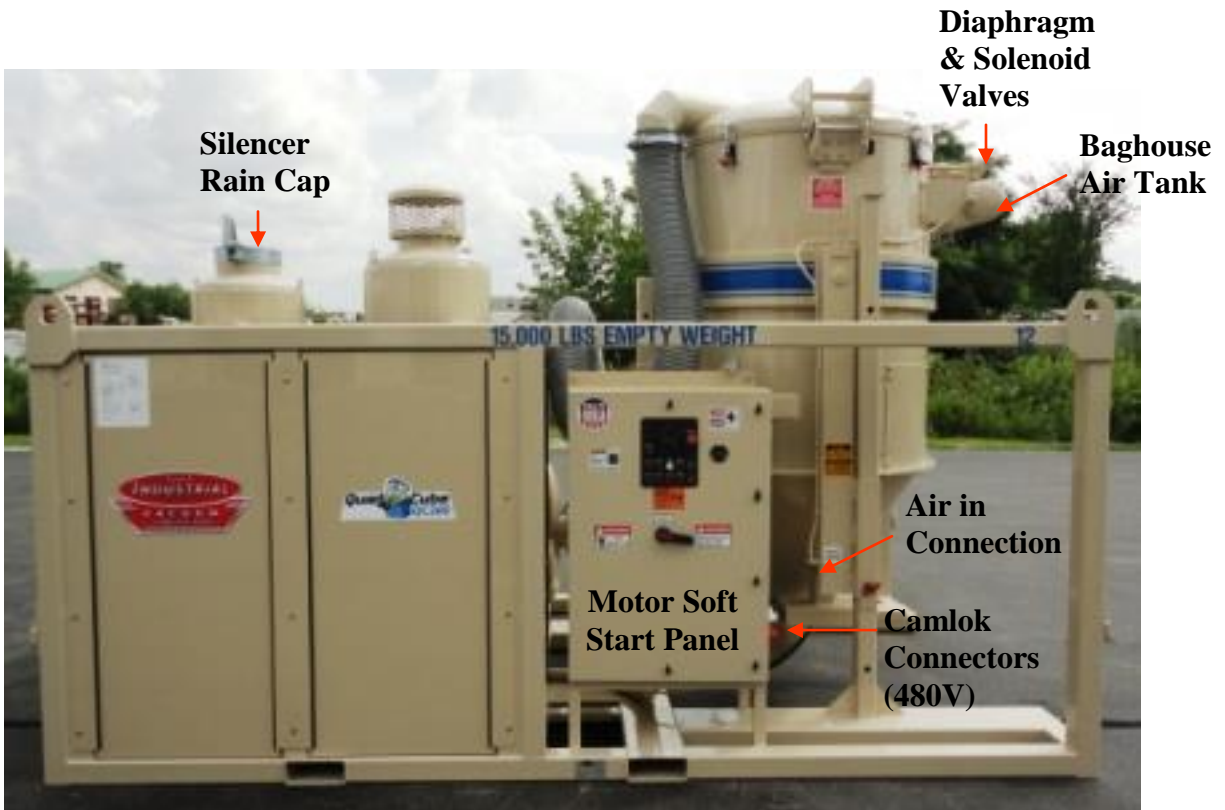


Figure 1

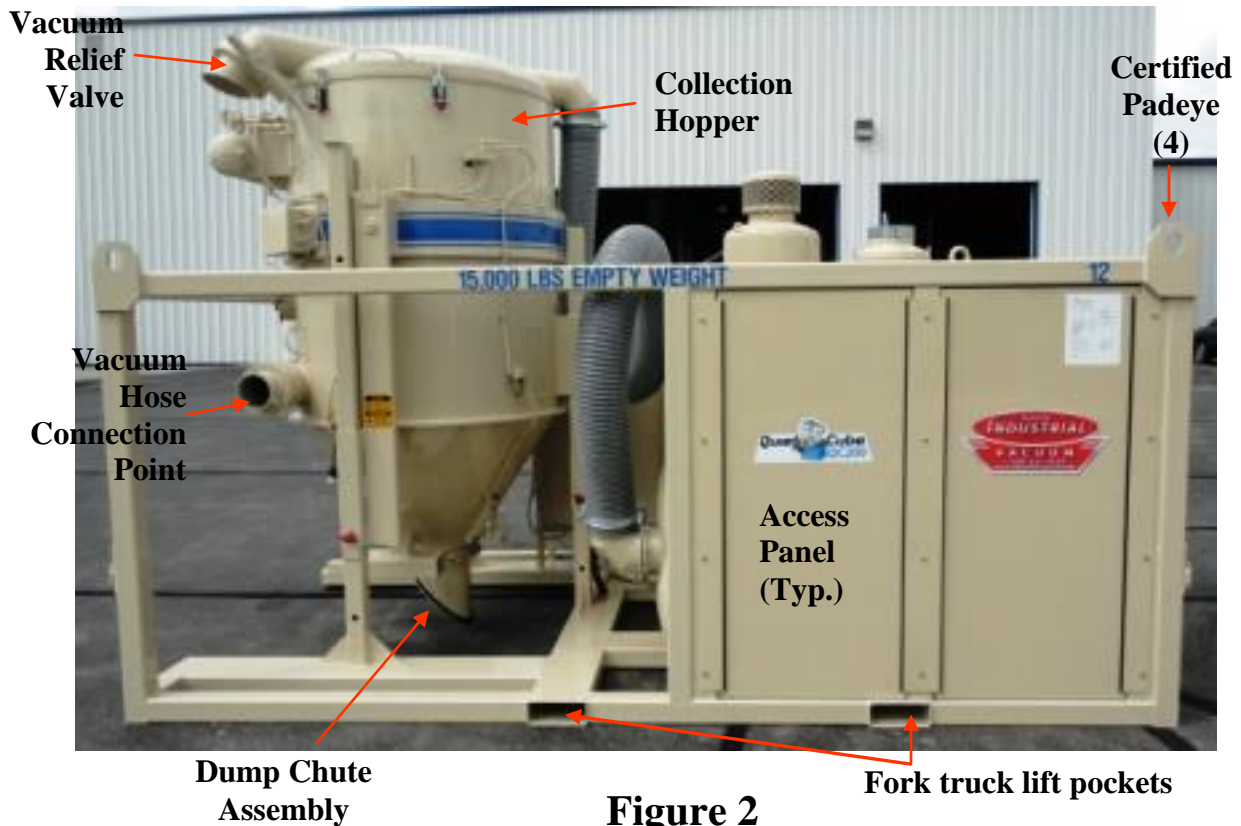


Figure 2



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 unit 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 in the closed position.

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.
- Never stand under the raised Hopper unless the safety pins are in place.
- Always install the safety pins when the Hopper is in the raised position.

Follow Safety 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 appropriate 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

- Entanglement in rotating driveline can cause serious injury or death.
- 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 inlet locations..
- 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.
- Maintain all parts in good operating condition. Replace worn or broken parts immediately.
- Disengage all power and operate controls to relieve pressure.
- Lower equipment to the ground. Stop the machine. Allow machine to cool.
- Securely support any machine elements that must be raised for service work.
- Disconnect battery ground cable (-) before making adjustment on electrical systems or welding on machine.
- 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 a thick slurry, check 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.

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” - Vacuum OFF

Figure 3



Button “OUT” - Vacuum ON

INSTRUMENTATION

The instrument control panel on the *Hurricane QC200* contains the following items:

1. Diagnostic Key Pad.
2. Start Push Button (Green) – Indexes System ON.
3. Stop Push Button (Red) – Indexes System OFF.
4. Dump System ON/OFF Switch – When the switch is in the ON position, the dump timer begins the “OFF” time sequence; after “OFF” time has elapsed, “ON” time sequence begins. (The vacuum relief valve will close at this time to create suction at the inlet pipe.) NOTE: E-Stop must be pulled out for vacuum relief valve to close. With button pushed in, vacuum relief valve will be open so there will be no suction at the inlet pipe. When the switch is OFF, it will divert the air so there will be no suction at the inlet pipe, and dump timer will be OFF. E-Stop and dump timer are on a 12VDC system.
5. Baghouse ON/OFF Switch – Indexes Baghouse Filter Pulsing System ON.
6. Local/Off/Remote Switch – “LOCAL” position will allow system control from this unit mounted panel.
7. Emergency Stop Button.
8. Power Service Disconnect Lever – Disconnects 480 Volt power to unit.
9. Dump System Timer Board Enclosure – The dump timer is equipped with an “ON” time (Vacuum Mode) which is adjustable from 1 to 10 minutes; the “OFF” Time (Dump Mode) is adjustable from 10 to 100 seconds.



Figure 4



DAILY MAINTENANCE

ALL INSPECTION PROCEDURES SHOULD BE PERFORMED WITH POWER OFF AND POWER SERVICE DISCONNECT LEVER OFF AND LOCKED.

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.
2. Check belt tension.

GENERAL

1. Make general inspection for leaks and loose bolts.
2. Check the inside of the collection hopper to be sure no material is collecting on the walls of the cone.
3. When the unit is running and the air pressure is up to 90 PSI, listen to verify that the bag pulsing sequence is operating properly.



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.
NOTE: Apply pipe joint compound sealant to blower oil threaded plug before re-installation.
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.



MAINTENANCE PROCEDURES

Filter Bag Change

1. Disconnect air line that runs from butterfly relief valve to the solenoid.

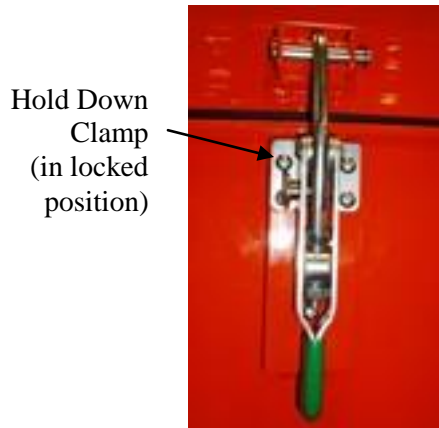


Figure 5

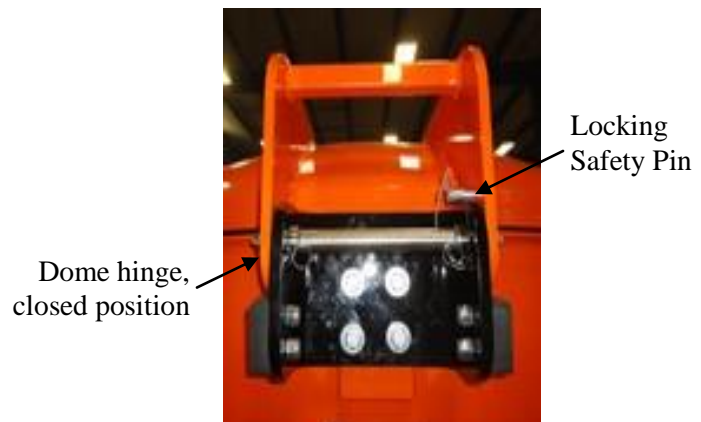


Figure 6

2. Open all dome hold down clamps. **(Figure 5)**
3. Carefully open hinged dome and install locking safety pins. **(Figure 6)**
4. Locate blast pipe brackets, stud nuts and pipes and remove. **(Figure 7)**
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.
7. Remove all filters. Clean all of the dust off filter area.
8. Install filters using the same method, only in reverse (filters in, cages, blast pipes, lid, and air cylinders).



Figure 7



MAINTENANCE PROCEDURES

MOTOR

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

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

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

Use moisture resistant, polyurea-based grease.

Example: Chevron SRI #2

BLOWER LUBRICATING OIL

The recommended oil is a synthetic oil with P.A.O. (poly alpha olefine) additives; recommended viscosity grade is ISO-VG 220. (Please see manufacturer's requirements in Section 3 of this manual for further information.)

VIBRATOR LUBRICATING OIL

General purpose 10 weight oil.

VACUUM UNIT SET-UP

1. Make sure skid is sitting on a concrete surface; if on soft ground, heavy planks that will not sink into the ground should be placed under side rails.
2. When the unit is properly set, it should be level before raising Hopper.
3. Perform daily maintenance procedures.
4. Connect 480 Volt power/ground to cam-lok connectors (white, red, black) and ground stud.
5. Connect “customer” air supply to plugged pipe fitting on side of Collection Hopper at (“Air In”). Make sure drains are closed.
6. Attach vacuum hose to inlet pipe on 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.**

VACUUM UNIT OPERATION

1. Verify electrical power connections are correctly attached in the proper phase order. Index Power Service Disconnect Lever to the “ON” position.
2. Start System via “GREEN” start push button.
3. Make sure there is at least 100 PSI of incoming air to the Collection Hopper.
4. Plug in E-Stop button on Collection Hopper near inlet pipe. Pull RED button out.
5. Set desired time on Dump Timer for vacuum cycle.
6. Index Dump System ON/OFF switch to the “ON” position.
6. Index Baghouse switch to the “ON” position.
7. Start vacuuming.

NOTE: All controls on collection hopper are 12V DC.

VACUUM UNIT SHUT DOWN

1. Allow all material to clear suction hose.
2. Push E-Stop button in. (See Figure 2)
3. Index Dump System switch to “OFF”.
4. Stop system via “RED” stop push button.
5. Allow the Baghouse Pulse System to operate for five minutes after shutdown to clean filters. Then index Baghouse switch “OFF”.
6. Index Power Service Disconnect Lever to the “OFF” position.
7. Index “Air In” valve (at customer connection) to the CLOSED position.

VACUUM UNIT TRANSPORTATION

1. Raise Collection Hopper and remove safety pins.
2. Lower Collection Hopper to the lowest position and re-install safety pins.
3. Secure discharge door at bottom of cone closed.
4. Disconnect 480 Volt power by indexing Power Service Disconnect Lever to the “OFF” position. Remove customer power cables at cam-lok connectors.
5. Disconnect customer “Air In” line serving unit.

MAJOR COMPONENT SPECIFICATIONS

MODEL QC200

MOTOR	200 HP Electric Motor, 480 volt, 3 phase, 60 HZ, TEFC, 1800 RPM
BLOWER	Robuschi RB-DV 125
BLOWER DRIVE	5 V-Belt drive
CONTROL PANEL	NEMA 4 Enclosure Soft-Start, 480 volt, 3 Phase

RECOMMENDED SPARE PARTS FOR QC200

<u>PART #</u>	<u>QTY</u>	<u>DESCRIPTION</u>
FN8014	37	Filter Bags
FN8065	37	Filter Bag Cages
FN8006H	2	18" Primary Filter
MC6800	1(gal)	Blower Oil
ED0018-QC200	5	Blower Drive Belts
EC2001	1	12VDC Baghouse Timer
AR4015	1	12VDC Baghouse Solenoid
AR4201-1	1	12VDC Vacuum Relief Solenoid
AR4018	1	Solenoid Rebuild Kit
AR4016	1	Baghouse Diaphragm
MC7020-1	1	Removable Wear Plate.
MC7007	1	Dump Door Gasket
FAB0017	1	8" x 6" Inlet Pipe
EC2000	1	12VDC 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.

ROBUSCHI BLOWER
WARRANTY POLICY

See "Warranty Conditions: described in the Operating & Maintenance Instructions manual included in Section 3 of this manual.