

# Ruwac USA<sup>®</sup> Industrial Vacuums

## DS2 Series

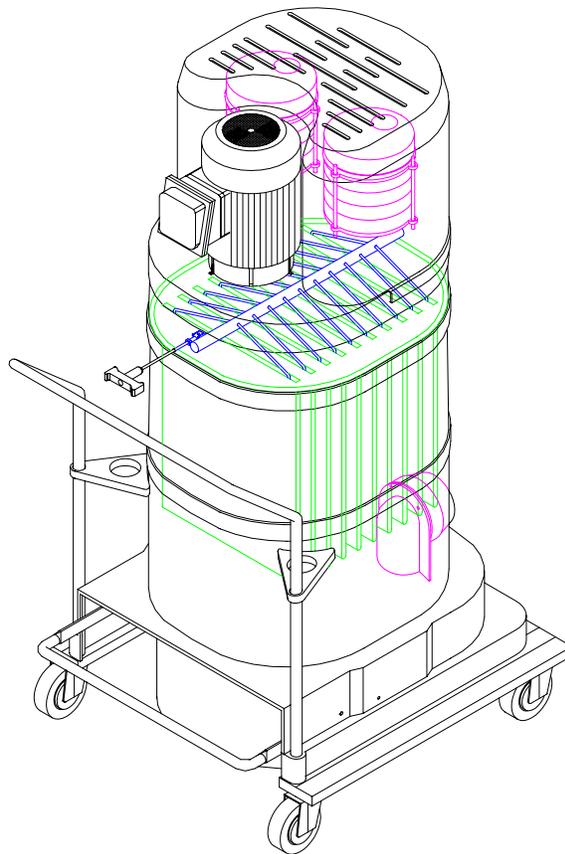
### Installation, Operation, Maintenance & Service

Model No.

Serial No.

Filter No.

Start-Up Date



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# I.

# Warranty

RUWAC warrants that new equipment which are complete units and are sold and/or manufactured by RUWAC, Inc. will be free from defects in material and workmanship for a period of 18 months from date of shipment or 12 months from date of start-up, whichever come first. RUWAC warrants that replacement parts sold hereunder will be free from defects in material or workmanship for a period of 120-days after the date of shipment. RUWAC machines that have been completely re-built at the factory will carry a 180-day warranty from date of shipment. All field repairs performed by authorized RUWAC service personnel are covered by a 120-day parts only warranty.

RUWAC, Inc. will not assume any responsibility under the terms of this limited warranty on equipment, which has not been paid in full. This warranty does not apply to any equipment that has been disassembled, repaired, or otherwise altered by any person without the written authorization of RUWAC'S service department, nor does it apply to any product that has been subjected to failure due to corrosive or abrasive attack, misused, damaged, or improperly installed, nor does it apply to motors, controls, and components not manufactured by RUWAC, Inc. Motors, controls, and other Sub vendor's components therefor are warranted only to the extent of the manufacturer's warranty. All warranty work on such products must be authorized by RUWAC, Inc. and must be performed in an authorized shop as designated by the manufacturer. RUWAC sole liability and buyer's sole and exclusive remedy hereunder is the replacement or repair at RUWAC'S option of products not complying with this warranty. Such repair or replacement shall be F.O.B. RUWAC'S factory, and RUWAC reserves the right to invoice all expenses incurred when repairs are made in the field at the request of the customer, except as specifically set forth herein, RUWAC makes no warranty express or implied, with respect to the products and/or service supplied hereunder, this warranty is in lieu of and excludes all other warranties, including without limitation, any warranty of merchantability, fitness for a particular purpose, or conformance to purchaser's specifications.

## II.

## Safety

CAUTION: Standard Ruwac DS2 series machines are not to be used for the removal of liquids or any volatile, viscous, flammable or explosive media. If you are unsure about your application requirements consult your Ruwac representative.

CAUTION: Standard Ruwac DS2 series machines are designed for continuous use, provided the vacuum is not held under constant stress. If you are unsure about your application requirements consult your Ruwac representative.

CAUTION: The components in this machine can be very heavy. Always follow safe lifting procedures.

CAUTION: A dust mask should be worn when working with fine materials.

CAUTION: Disconnect the machine from the power source before and during inspection and/or maintenance.

CAUTION: Machines equipped with a reverse pulse module must always be supplied adequately when the machine is on. The module is controlled by an electrical sequential timer (requires a 110 volt power supply) or differential pressure switch. The module itself requires a source of compressed air of 90 PSI at 2-4 CFM (depending on module). This device prevents the accumulation of material on the filter and therefore prevents the machine from being held under excessive stresses due to material blockage.

CAUTION: Machines equipped with a motorized shaker must be supplied with a three phase, 230-460 volt (depending on motor) power supply whenever the machine is on. The motorized shaker is controlled by an electrical sequential timer (requires a 110 volt power supply), a differential pressure switch or a manual switch. Manual switch models should be actuated before and after every use while the vacuum is off. This device prevents the accumulation of material on the filter and therefore prevents the machine from being held under excessive stresses due to material blockage.

## III.

## Start-Up

1. Pull up on the foot lever to release the dustpan. Check that the dustpan is completely empty then replace.
2. Connect the machine to the proper power source, as indicated on the machine's serial tag.

**CAUTION:** The electrical service at the installation site must supply the voltage stamped on the machine's serial tag. Most motors have multiple voltage capabilities that may appear on the motor serial tag but do not apply to the specific machine. Operating at an incorrect voltage may damage the machine.

**NOTE:** A qualified electrician in accordance with the National Electric Code and all local codes should perform all wiring and/or electrical adjustments during installation and servicing.

3. Start the machine by pushing the power switch to the ON/Closed position.
4. Turn the machine off by pushing the power switch to the OFF/Open position.
5. The filter should be shaken clean and the dustpan emptied before and after every use.

## IV.

## Inspection and Maintenance

### Standard Filter Inspection

1. Turn the machine off.
2. Knock material off the filter via the hand shaker, motorized shaker or reverse pulse.
3. Pull up on the foot lever to release the dustpan then remove and empty if necessary.
4. Lock the rear casters then carefully tip the machine back onto the push handle.
5. Remove any material between the pleats by hand.

**CAUTION:** Clogged material should only be removed by hand. Using an instrument to dislodge material may tear the filter. Consult your RUWAC representative if material blockage is excessive.

6. Inspect the pleats of the filter for tears and material blockage.
7. Carefully tip the machine back onto the casters and replace the dustpan.

### Standard Filter Removal

1. Follow the preceding filter inspection procedure to determine if removal is necessary.
2. Turn the machine on then block the inlet with a flat and rigid material to place the machine under vacuum pressure.
3. Remove all of the housing-component socket truss screws with a 5/32 hex-wrench.

4. Turn the machine off and disconnect the power source.
5. Remove the motor deck and silencer hood together.

**CAUTION:** The motor deck of this unit can be very heavy. Follow safe lifting procedures.

6. Disconnect the clear differential pressure gage tubes from their respective barbed fittings if so equipped.
7. Remove the HEPA filter housing spacer and HEPA adapter assembly if so equipped.
8. Remove the reverse pulse/motorized shaker assembly and housing spacer if so equipped.
9. Inspect the top of the filter for material.

**NOTE:** The presence of material on the top of the filter or in the exhaust is often the result of a misaligned seal or damaged filter. Consult your RUWAC representative if either is the case.

10. Remove the filter housing spacer assembly.
11. Turn the filter housing spacer assembly over on a table then carefully work the filter off the filter shaker insert.

### **Standard Filter Installation**

1. Turn the filter housing spacer assembly over on a table then fit the filter over the filter shaker insert; make sure that each pleat is fully supported.
2. Seat the filter housing spacer assembly on the base oriented as it was removed.
3. Seat each of the housing components and assemblies as removed.
4. Connect the clear differential pressure gage tubes to their respective barbed fittings if so equipped.
5. Turn the machine on then block the inlet with a flat and rigid material to place the machine under vacuum pressure.
6. Secure all of the housing-components then turn the machine off.

### **HEPA Filter Removal and Installation**

**NOTE:** All HEPA filter machines are equipped with a differential pressure gage. The gage measures the pressure above against the pressure below the filter, thereby measuring the restriction of airflow due to contamination. HEPA filters should be replaced when the gage consistently measures 4 inches W.C.

1. Turn the machine on then block the inlet with a flat and rigid material to place the machine under vacuum pressure.
2. Remove the motor deck socket truss screws.
3. Turn the machine off and disconnect the power source.
4. Remove the motor deck and silencer hood together.

5. Remove the four lock nuts retaining the two HEPA filter brackets.
6. Remove the HEPA filter brackets and HEPA filter.
7. Center the new filter on the HEPA adapter plate gasket side down.
8. Position the provided lengths of self-adhering flat gasket material on the HEPA filter frame (if not already done) to cushion the HEPA filter brackets.
9. Replace the HEPA filter brackets then thread the locking nuts over the rods and tighten.

**CAUTION:** Do not over tighten. The effectiveness of the filter may be compromised if its frame is bent.

10. Seat the motor deck on the HEPA filter housing spacer.
11. Connect the power source.
12. Turn the machine on then block the inlet with a flat and rigid material to place the machine under vacuum pressure.
13. Secure the motor deck then turn the machine off.

### **Motor Deck Inspection**

1. Turn the machine on then block the inlet with a flat and rigid material to place the machine under vacuum pressure.
2. Remove the motor deck socket truss screws.
3. Turn the machine off and disconnect the power source.
4. Remove the silencer hood assembly and motor deck separately.

**CAUTION:** The motor deck of this unit can be very heavy. Follow safe lifting procedures.

5. Turn the motor deck over on a table to inspect the belt for cracks, wear, melt, stretch and tension (make sure to support the motor and turbine equally).
6. Use a knife to clear the three turbine mounting slots of silicone.
7. Loosen the three nuts securing the turbine enough to slide the turbine forward.
8. Remove the belt.
9. Check the turbine and motor bearings for noise by hand.

### **Belt Installation**

1. After the preceding motor deck inspection.
2. Place the belt over both pulleys making sure to match the grooves in the belt with both pulleys.
3. Use a spanning device between the turbine and motor pulleys to tension the belt.
4. Maintain tension while tightening the three nuts that secure the turbine.

5. Check that the corresponding grooves on the turbine and motor pulleys are aligned using the motor deck as a reference plane.

NOTE: The pulleys are normally aligned at the factory, but if adjustment is needed remove the motor pulley to access to the relevant shims.

6. Seat the motor deck on the housing spacer.

CAUTION: The motor deck of this unit can be very heavy. Follow safe lifting procedures.

7. Fill the three turbine mounting slots with silicone. Allow silicone to set before proceeding.
8. Position the silencer assembly on the motor deck.
9. Reconnect the power source and turn the machine on. Observe the machine for noise. Reinstall the belt if any unusual noises are detected.
10. Block the inlet with a flat and rigid material to place the machine under vacuum pressure.
11. Secure the motor deck then turn the machine off.

## **Turbine Maintenance**

Turbine maintenance should only be performed in an authorized shop as designated by RUWAC due to the precision involved in balancing high rpm devices. This includes and is mainly specific to the replacement of bearing components.

# V.

# Trouble Shooting

<u>PROBLEM</u>	<u>POSSIBLE CAUSE</u>	<u>CORRECTIVE ACTION</u>
Insufficient Vacuum Pressure	- Dustpan improperly seated	- Remove dustpan, inspect seal, replace dustpan.
	- Filter clogged or improperly seated	- Follow filter inspection procedure, section IV.
	- Clogged hose	- Remove hose and re-inspect vacuum pressure, if vacuum pressure returns to normal snake hose.
	- Unit is improperly sealed	- Block the inlet with a flat and rigid material to place the unit under vacuum pressure then inspect for air leaks.
Air Leaks	- Worn or poorly seated seals, Fasteners improperly installed	- Block the inlet with a flat and rigid material to place the unit under vacuum pressure then remove fasteners and turn the unit off. Inspect all seals for completeness, then reseal and secure components, again under vacuum pressure.
Material In Exhaust/ On Top Side of Filter	- Poor filter seal or torn filter	- Follow filter inspection procedure, section IV.
Unusual or High Pitched Noises	- Motor bearing, turbine bearing	- Follow belt/turbine/motor inspection procedure, section IV. Check motor and turbine bearing for noise by hand.
	- Worn or poorly seated seals Fasteners improperly installed	- Block the inlet with a flat and rigid material the unit under vacuum pressure then remove fasteners and turn the unit off. Inspect the seals for damage, then reseal and secure components again under vacuum pressure.
	- Belt Worn, cracked,	- Follow belt/turbine/motor inspection procedure,

## VI.

## Terms and Conditions

**ACCEPTANCE:** The terms and conditions of sale set forth herein apply to any order accepted or acknowledged by RUWAC, Inc. Buyer's acceptance of RUWAC'S proposal or delivery of all or any part of the goods covered hereunder constitutes acceptance of the terms and conditions of sale contained herein, and RUWAC hereby rejects any additions to or modification to these terms and conditions. Any representations, promises, warranties, or statements by RUWAC or its agents that differ in anyway from these terms and conditions shall be given no force or effect. No contract is final until accepted in writing by RUWAC at its corporate office in Holyoke, Massachusetts.

**PRICES:** Prices quoted orally expire the same day they are made unless accepted in writing on that day or confirmed by written communication by RUWAC. Written price quotations are guaranteed for thirty (60) days after the date issued, but may be terminated by written notice within that period. After thirty (60) days, any written price quotations are subject to adjustment to reflect prices in effect at the time of shipment, including any changes in packing, storage, or shipping charges. This order or proposal includes only the equipment specified herein, and does not include freight or installation of RUWAC equipment. All prices are F.O.B. RUWAC'S plant in Holyoke, Massachusetts and are exclusive of all taxes, levies, and duties that may be assessed in connection with the sale or delivery of goods, and Buyer shall be responsible for all such taxes, levies, and duties. In the event RUWAC pays any such tax, levy, or duty, Buyer shall promptly reimburse RUWAC therefor. Any packaging requirements other than RUWAC'S standard packaging and commercial container will be invoiced as an extra charge.

**PAYMENT:** Payment is due in full thirty (30) days after the date of invoice. All invoices paid after the due date will be assessed a late payment charge of one and half percent (1.5%) per month or any portion thereof, or the maximum amount allowed by applicable law, whichever is less. Buyer shall be responsible for all costs of collection, including reasonable legal fees. Sales on the foregoing terms are subject to the approval of RUWAC'S credit department and may be changed at any time at RUWAC'S sole discretion. If RUWAC has reasonable grounds with respect to Buyer's ability or willingness to make timely payments for the goods. RUWAC may at any time suspend performance, decline to ship, or require advance payment in cash or other adequate assurance satisfactory to RUWAC.

**SHIPMENTS AND DELIVERY:** RUWAC shall use its reasonable efforts to meet all shipment or delivery dates recited in RUWAC'S proposal or in Buyer's order but any such dates are estimated only and are not guaranteed. RUWAC shall have no liability to Buyer for damages or penalties, direct or indirect, for any delay in shipment or delivery, whether such delay is minor or substantial, nor shall Buyer have the right to declare a breach of contract because of any such delay. In any event, delivery schedules are based upon the effective date of the order and are subject to prompt receipt by RUWAC of all necessary down payments, information and instructions from Buyer, including any required approval of drawings. RUWAC shall have the right to make partial shipments, and invoiced covering the same shall be payment terms hereof. RUWAC will attempt to ship in accordance with Buyer's instructions, but RUWAC will make the final selection of a method of shipment and a carrier unless Buyer clearly and conspicuously specifies that shipment must be by a particular method of carrier. RUWAC is not responsible for damage or loss in transit, and all such claims must be by Buyer directly against the carrier.

**CHANGE ORDERS:** RUWAC shall not be obligated to make any changes in or additions to the scope of the work which are initiated by Buyer or result from circumstances beyond RUWAC'S control unless there is an equitable adjustment in price and or delivery.

**CANCELLATION, SUSPENSION OR DELAY:** In the event Buyer requests or causes a cancellation, suspension or delay in any RUWAC'S work under this proposal or order based thereon, Buyer shall indemnify and pay to RUWAC all appropriate charges, including but not limited to any costs, expenses, and commitments incurred by RUWAC up to the date of receipt of notice of such cancellation, suspension or delay, plus RUWAC'S overhead and reasonable profit. If shipment is delayed on account of Buyer, the purchase price shall be due and payable as if delivery had been made. Additionally, all charges related to storage, disposition and/or resumption of work, at RUWAC'S plant or elsewhere, shall be for Buyer's sole account and Buyer thereto shall assume all risks incidental.

**CLAIMS: NOTICE OF DEFECTS:** Buyer shall give written notice of rejection of any shipment or portion thereof within thirty (30) days after the date of shipment specifying the reasons therefor. Failure to give such notice shall be deemed a waiver of any right of rejection and any claim with respect thereto (except as to claims under the warranty) and shall be deemed an acceptance of such shipment. Buyer shall set aside and hold rejected goods without further processing until RUWAC has an opportunity to inspect and advise of the disposition, if any, to be made of such goods. In no event shall any rejected goods be returned reworked, or scrapped by Buyer without the express written authorization of RUWAC.

**INSPECTION OF EQUIPMENT:** RUWAC shall have the right to inspect, after prior notices, the equipment supplied by it when in operation. If Buyer requires, RUWAC shall execute an appropriate secrecy agreement.

CONFIDENTIALITY: All proposals, drawings, diagrams, specification, pricing, and other materials relating to the goods included are the property and confidential information of RUWAC. Buyer shall not disclose such material or information without the written approval of RUWAC.

BACK CHARGE: RUWAC will pay claims for expenses of Buyer relating to labor and/or material supplied by Buyer only if (a) RUWAC is advise in writing before such expenses are incurred (2) RUWAC gives Buyer its prior written consent to the supply of such labor and/or material by buyer.

LIMITED WARRANTY: RUWAC warrants that new equipment which are complete units and are sold and/or manufactured by RUWAC, Inc. will be free from defects in material and workmanship for a period of 18 months from date of shipment or 12 months from date of start-up, whichever comes first. RUWAC warrants that replacement parts sold hereunder will be free from defects in material and workmanship for a period of 120-days after the date of shipment. RUWAC machines that have been completely re-built at the factory will carry a 180-day warranty from date of shipment. All field repairs by authorized RUWAC service personnel are covered by a 120-day parts only warranty. RUWAC, Inc. will not assume any responsibility under the terms of this limited warranty on equipment, which have not been paid for in full. This warranty does not apply to any equipment that has been disassembled, repaired, or otherwise altered by any person without the written authorization of RUWAC'S service department, nor does it apply to any product that has been subject to failure due to corrosive or abrasive attack, misused, damaged, or improperly installed, nor does it apply to motors, controls, and components not manufactured by RUWAC, Inc. Motors, controls, and other Sub vendor's components therefor are warranted only to the extent of the manufacturer's warranty. All warranty work on such products must be authorized by RUWAC, Inc. and must be performed in an authorized shop as designated by the manufacturer. RUWAC sole liability and buyer's sole and exclusive remedy hereunder is the replacement or repair at RUWAC'S option of products not complying with this warranty. Such repair or replacement shall be F.O.B. RUWAC'S factory, and RUWAC reserves the right to invoice all expenses incurred when repairs are made in the field at the request of the customer, except as specifically set forth herein, RUWAC makes no warranty express or implied, with respect to the products and/or service supplied hereunder, this warranty is in lieu of and excludes all other warranties, including without limitation, any warranty of merchantability, fitness for a particular purpose, or conformance to purchaser's specifications.

LIMITATION OF LIABILITY: RUWAC'S responsibility with respect to the goods and RUWAC'S obligations related thereto should in no event exceed the purchase price of the goods. RUWAC shall not be liable to Buyer for any special incidental, indirect, or punitive damages for any reason whatsoever, including, but without limitation damages in the form of (a) loss of profits, revenues, or anticipated savings resulting from the failure of the equipment to meet specifications or warranties (b) damages suffered by Buyer as a result of loss of production facilities or equipment (c) cost of replacement equipment (d) damages suffered by customers of the Buyer (e) any fines or penalties assessed for failure to comply with any law or government regulations.

REPAIR OF GOODS EXPOSED TO HAZARDOUS, TOXIC, OR INFECTIOUS MATERIAL: Buyer shall ensure that any goods submitted by Buyer or any of its customers to RUWAC for repairs or other service have been decontaminated and cleaned (including sterilization, if appropriate) of any hazardous, toxic or infectious materials, including without limitation any materials listed by the Environmental Protection Agency, OSHA, or any applicable state law as deserving or requiring special treatment. Upon RUWAC'S request, Buyer or its customer shall certify in writing that such goods contain no such hazardous, toxic, or infectious materials, and that such decontamination has taken place in accordance with accepted parties and in accordance with all applicable laws and regulations. If special safety equipment is required to protect RUWAC'S service personnel from any such hazardous, toxic, or infectious materials during field service work or otherwise. Buyer shall ensure that such safety equipment is provided and that the personnel are properly instructed. The provision of this paragraph shall apply to all work to be performed by RUWAC'S service personnel at any time, whether or not covered by warranty. Buyer shall defend and indemnify RUWAC for any and all losses, liabilities, expenses, and damages (including attorneys' fees) arising out of any failure of buyer or its customer to comply fully with the terms of this paragraph.

BUYER SUPPLIED DATA: Buyer acknowledges that RUWAC has relied upon all specifications and other data supplied by Buyer to RUWAC in the selection and design of the equipment and the preparation of this proposal. In the event the site operating conditions differ from those represented by Buyer and relied upon by RUWAC, any warranties or performance guarantees contained herein affected by such conditions shall be null and void, unless otherwise mutually agreed upon in writing.

REMEDIES OF SELLER: In addition to any other remedies of RUWAC provided hereby or by law, in the event Buyer becomes bankrupt, insolvent, assigns assets for the benefit of creditors or its financial condition has substantially deteriorated, RUWAC may, at its sole option, declare a breach of contract, stop all work hereunder or demand payments in advance as security for its performance hereunder.

FACTIONS: GOVERNING LAW: Any dispute, controversy, or claim against RUWAC with respect to the goods or any of RUWAC'S obligations related thereto must be commenced within one year from the date of shipment. All contract between Buyer and RUWAC shall be governed by and construed in accordance with the laws of the state of Massachusetts except that body of laws controlling conflict of laws.

BONDS: In addition to the price specified herein, Buyer shall pay the cost of any bonds, which Buyer requires RUWAC to obtain.

ENTIRE AGREEMENT: These terms and conditions, together with the provisions of the proposal constitute the entire agreement between the parties pertaining to the goods, and they supersede any prior or contemporaneous agreements, representations, or understandings between the parties. No waiver or modification of these terms and conditions is binding unless such waiver or modification is set out in writing signed by an authorized manager or officer of RUWAC. RUWAC'S failure to strictly enforce any right on one occasion does not constitute a waiver of that or any on any other occasion.