



Central Vacuum Systems



Owner's Manual

Sonny's Enterprises, LLC.
5605 Hiatus Road
Tamarac, Florida 33321

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SAFETY REQUIREMENTS

****WARNING****

1. All employees must be thoroughly trained in safe operation and standard maintenance practices. All employees must review this entire manual monthly.
2. Do not enter the wash tunnel when the equipment is operating. Death or dismemberment may occur.
3. Do not wear loose fitting clothing or jewelry around moving equipment. Do not allow any part of your body or other objects (including ladders, hoses or tools) to come in contact with moving equipment. Entanglement may result causing death or dismemberment.
4. Do not leave a ladder or any other items such as wash down hoses or tools in the wash tunnel while equipment is running. Vehicle damage and injury, including death, can occur.
5. Always exercise caution when walking (never run) through the wash tunnel as there may be slippery conditions. Be careful so you do not bump into or trip over equipment.
6. Only those employees specifically instructed and trained by the location management are permitted to enter the wash tunnel to perform inspections or maintenance. At least two qualified maintenance people must be present when performing equipment repairs or preventive maintenance.
7. Do not perform any maintenance or work on equipment unless you first perform Lock-Out Safety Precautions. All electrically powered equipment must have manually operated disconnects capable of being locked in the "OFF" position. Equipment that has been "locked out" for any reason must be restarted only by the person who performed the "lock out" operation.
8. When working on any equipment that is higher than your shoulders, always use a fiberglass ladder that is in good condition.
9. Do not attempt to repair or adjust any pressurized liquid or pneumatic part, hose, pipe or fitting while that equipment is in operation.
10. Electrical connections and repairs must be performed by a Licensed Electrician Only.
11. Emergency "STOP" buttons must be well marked and their location and proper use reviewed with all personnel. Any activated "STOP" button must be reset only by the person who activated it. Clear the wash tunnel of any people, ladders, hoses, tools and other loose items before restarting the equipment. An audible device must sound to warn people that the equipment is starting.

12. Do not operate any piece of equipment that requires safety covers with those covers removed or improperly installed. Do not operate any piece of equipment if any component of that piece is suspected to be defective or malfunctioning.
13. Store all cleaning and washing solutions and oils in a well-ventilated area. Clean up fluid spills immediately to prevent hazardous safety conditions. Be certain to follow all safety procedures on SDS Sheets for each chemical product used.
14. All hydraulic and electric systems in the wash tunnel equipped with a torque relief or overload should be checked and set at the minimum amount that will allow for proper functionality under normal washing conditions.
15. No unauthorized people should ever be permitted in the wash tunnel or near the equipment at any time.

* * *

!! CAUTION !!

When a piece of equipment must be in operation during inspection or maintenance, one qualified technician must stay at the power disconnect switch while another qualified technician performs the inspection or maintenance.

INTRODUCTION

This Manual contains information that is vital to the successful installation, operation and maintenance of your Sonny's vehicle washing equipment.

Please read, and understand, the full contents of this manual before installation and operation of the equipment. Keep this booklet in a location where it may be used for ongoing reference.

Should you have any questions on the operation or servicing of this equipment please contact:

**TECHNICAL SERVICES DEPT.
SONNY'S ENTERPRISES INC.
5605 Hiatus Road
TAMARAC, FLORIDA 33321**

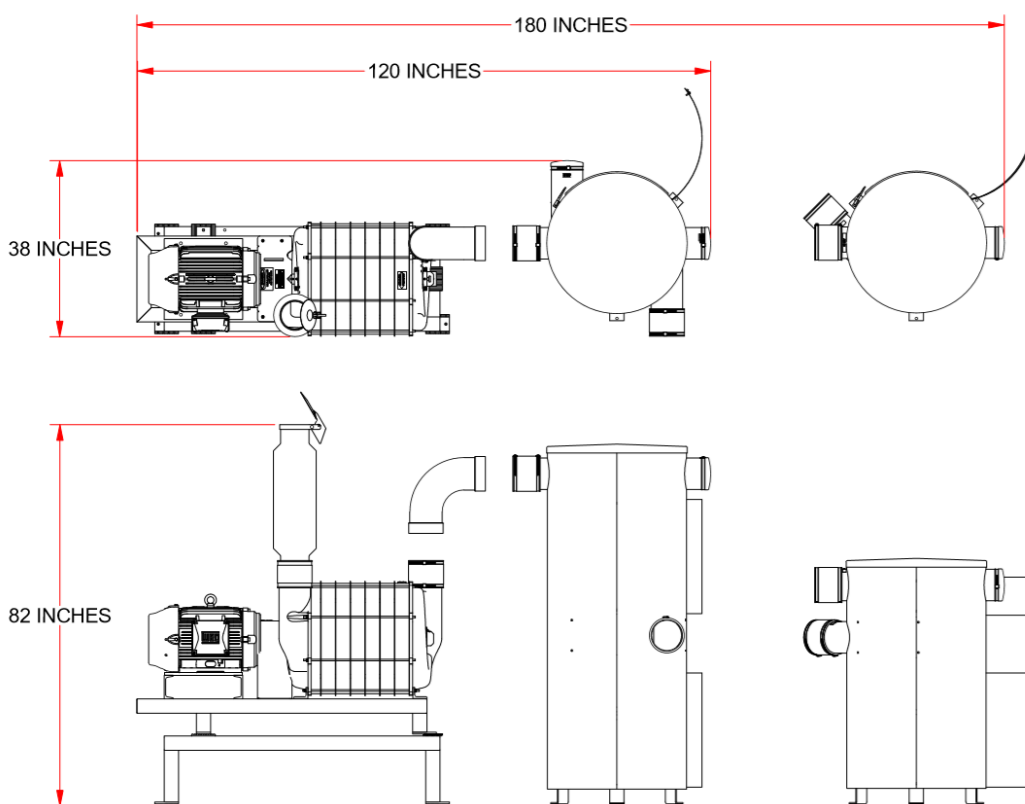
TELEPHONE: 800-327-8723 FAX: 800-495-4049

THANK YOU FOR YOUR CONFIDENCE IN SONNY'S!



Product Specifications

- **10HP** assembly capable of handling between **2 to 4** vacuum hose drops (assembly total weight is **494 lbs.**)
- **15HP** assembly capable of handling between **4 to 6** vacuum hose drops (**626 lbs.**)
- **20HP** assembly capable of handling between **6 to 8** vacuum hose drops (**705 lbs.**)
- **25HP** assembly capable of handling between **10 to 12** vacuum hose drops (**706 lbs.**)
- **9000 square inches of filter area** through **10 bags** in 10HP, 15HP, 20HP, & 25HP units
- **4 inch** standard inlet and outlet connections



For parts and accessories information, please refer to our catalog or visit our website at SonnysDirect.com.

Product Features

- Producer shaft bearings easily accessible for routine maintenance
- Snap-in filter bags have positive connections to the separator tank
- Filter bags will not mildew or rot
- Oversized dirt bucket is easy to remove, empty, and replace
- Electric motor and vacuum producer are direct coupled for efficient operation
- Shaft rotation arrows are part of the producer housing casting, not removable decals
- Precision factory impeller balancing and assembly assures efficient operation
- Stainless steel doors with adjustable hinge and rubber gasket for tight seal
- Wet separator tank available
- **15HP** and **20HP** versions are ideal for **high altitude** or **50Hz** electric operation
- An optional exhaust muffler is available to help reduce noise

Optional Equipment

Optional Silencer



For quiet operation of your SONNY'S vacuum system. Silencer's 4in outside diameter allows for an easy attachment to the exhaust of your turbine using a no hub coupler. The exhaust hood prevents rain from getting into exhaust muffler and turbine.

Optional Water Separation Tank



It's like buying insurance for your central vacuum system. Ideal for snow or other wet conditions and underground piping. Keeps filter in driest condition and prevents bags from clogging.

Optional Turbine Lift Kit



The Lift Kit raises the motor and turbine pedestal an additional 15in off the ground, ideal for areas with high water or snow.



Sonny's Cyclone Separator – creates a cyclonic effect which forces larger debris to the bottom of the separator, preventing clogged lines. . Sonny's recommends using the Cyclone Separator in addition to the included standard debris separator.

Hose, Cuffs, and Claws



Connector Cuffs - thread onto the end of vacuum hoses, for easy attachment.

Claw Vacuum Tool – combines the utility of both a crevice tool and claw in one attachment, with no loss of suction.



Vacuum Booms - provide customers with an inviting free vacuum area that doesn't require a lot of staff, or effort, to keep ready to serve the next customer. The boom design keeps hoses securely off the ground providing better access to both sides of the vehicle and reducing wear and tear. Choose from different boom styles, canopy colors, drop kits, attachments and piping.



INSTALLATION

Utilities Requirements

Utilities interconnection and the materials required for interconnection to Sonny's equipment are the responsibility of the customer.

Perform all trades work to all applicable local and national codes.

Electric

The Customer's Electrician is responsible for:

- Providing materials and installing single phase vacuum start-stop stations as required by the Customer that will provide power to the vacuum motor starter coil.
- Providing materials and installing single phase power through the Customer supplied Start/Stop stations to the vacuum motor starter coil.
- Properly sized interconnecting wiring from the 3-phase circuit breaker and motor starter to the 10HP, 15HP, 20HP or 25HP, vacuum motor for 208V, or 230V, or 460V power source.
- The Customer's Electrician is to provide materials and install 3-phase power (208V or 230V or 460V) to the 10HP or 15HP or 20HP or 25HP electric motor on the vacuum assembly through a properly sized 3-pole circuit breaker and motor starter with 3 thermal overloads. The use of copper wire is recommended. Earth grounding of the vacuum assembly is required.

NOTE: Be certain the electric motor is properly wired for the supply voltage! After wiring the motor check for proper rotation as stamped on the vacuum producer end castings.

Technical Disclaimer

- Although building codes have been considered in developing all drawings, verification of site-specific conditions and compliance with federal, state and local building codes is the exclusive responsibility of the customer and/or architect and engineer.

SPECIAL NOTE:

DO NOT USE WIRE NUTS TO CONNECT 3 PHASE WIRING AT THE ELECTRIC MOTOR TERMINAL BOX!!! ONLY USE SPLIT BOLT TYPE CONNECTORS WITH ELECTRICAL INSULATION TAPE AND RUBBER INSULATOR BOOTS!!!

Pictured is a split bolt connector available from Grainger.



Electrical Specifications – Vacuum Motors

All Motors are 3600 RPM

25HP Electric Motor

208V Amp Draw 62	230V Amp Draw 56	460V Amp Draw 28
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10, 15 & 20HP Electric Motors

10HP

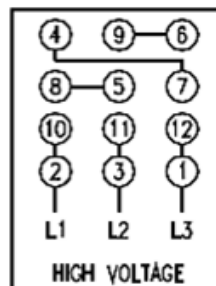
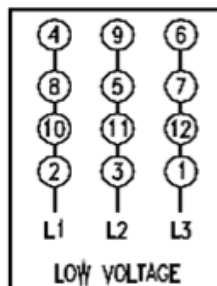
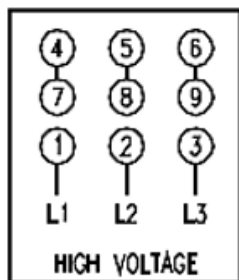
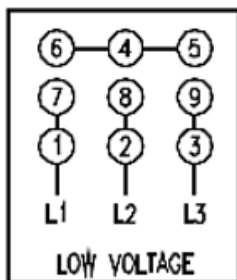
208V, Amp Draw 26.6	230V, Amp Draw 24	460V, Amp Draw 12
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15HP

208V, Amp Draw 38.9	230V, Amp Draw 35.2	460V, Amp Draw 17.6
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20HP

208V, Amp Draw 52	230V, Amp Draw 47	460V, Amp Draw 23.5
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NOTE: Drawings below are for illustrative purposes only. Always wire to the instructions shown on equipment name plate.

Plumbing

For the 10HP, 15HP, 20HP & 25HP assemblies the Customer's Plumber is responsible to provide materials and installing the following:

- Interconnect from the suction connection on the separator tank to the vacuum hose drop lines. The following pipe sizes should be used for vacuum main suction lines;
- Hose drops short runs 4".
- Hose drops long runs over 150 feet 6" for first 75' then drop to 4".
- All piping turns should be with long sweep elbows NOT 90 degree elbows. Minimize the number of turns from the main line to the separator tank.
- All turn down piping from the main line to the vacuum hose drops should be with Tee's and the hose fitting connection point on the "Y" shall be 2" for each drop.
- Vacuum producer exhaust piping should go to atmosphere when the vacuum assembly is located in an enclosed area not subject to cool free airflow. If exhaust piping to atmosphere is required it should be 4" in diameter and heat resistant for at least the first ten feet. Exhaust piping must be weather protected at its exit point.

Mechanical

- Place the assembled frame in the area planned for final connections. For the 10HP, 15HP, 20HP & 25HP assemblies the inlet fitting from the vacuum hose drops should face the direction of the hose drops.
- Be certain there is sufficient clear space around the vacuum assembly to allow free air flow and maintenance access. Do not locate the vacuum assembly in an area where customers may have direct access.
- For best results the 10HP, 15HP, 20HP & 25HP vacuum assemblies should be installed as close as possible to the vacuum hose drops.
- The OPTIONAL exhaust muffler is to be installed with the connectors provided on the producer exhaust pipe located on the producer toward the electric motor.

Vacuum Installation Instructions

The turbine and the motor are independent of each other and are connected by a super-duty coupler.

1. First, inspect the vacuum producer for any damage during shipping and handling.
2. Attach the rubber vibration isolators to the bottom of the base. There should be one nut on the top of the floor plate, and two underneath on the threaded stud, as shown here:



3. Place the assembled frame in the area planned for final connections.
4. Using a $\frac{3}{4}$ " wrench, loosen the top nut on the three rubber feet. This will give you some room to adjust the frame, so that it is level.



5. To adjust the level of the frame, use a $\frac{3}{4}$ " wrench to turn and raise the top nut of the two under the frame, which will allow you to slightly adjust the level, as needed. The lower nut of the two under the frame should not be loosened.



6. Use a Level to check in 3 different planes on the frame, as shown below. Adjust the height by turning the three top nuts under the frame, as needed. Depending on how level your surface is, you may end up with a small gap (about $\frac{1}{2}$ " or so) between the two lower nuts, under the frame.



7. Once the unit is in place and leveled, tighten the three top nuts on the feet to 55 ft-lbs. to prevent the nuts from loosening during operation.



8. **Do not tighten** the nuts on the anchors for the isolators.



Dura-Flex Coupling Installation Instructions

⚠ WARNING Lock out / tag out the power source before proceeding to avoid unexpected starts. Failure to observe these precautions could result in bodily injury.

⚠ WARNING Coupling element may be thrown from the assembly with substantial force if subjected to a severe shock load.

⚠ CAUTION Check operating speed against Maximum RPM value in Table 1.

For a basic installation overview, scan the QR code below:



Scan to Watch Installation Video
or visit our Dura-Flex product page
at www.TBWoods.com

Further component information available:

Specification sheets, 3D models
ecatalog.TBWoods.com

Coupling Selection Program
www.TBWoods.com/Select

Installation / Alignment

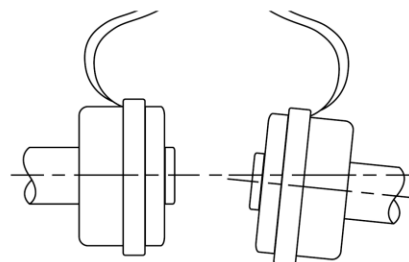
Installation / Alignment Tools

- Hex key set
- Socket set
- Torque wrench
- Straight-edge
- Caliper
- Feeler gauge set

1. Inspect all coupling components and remove any protective coatings, lubricants, paint or rust from bores, mating surfaces and fasteners. Remove any existing burrs, etc. from the shafts.
2. Slide one hub onto each shaft using keys where required. (When using QD or Taper-Lock hubs, follow the instructions furnished with the Sure-Grip or Taper-Lock bushings.)
3. When high speed rings are to be used for spacer couplings, loosely install one ring on each half element.

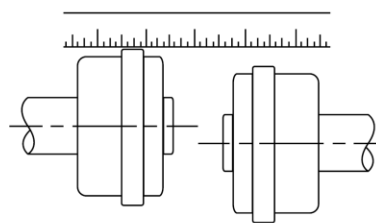
4. Hold one half element on the hubs to determine the appropriate hub spacing. If using spacer elements with high speed rings, hold both half elements on hubs to make sure that the hubs do not interfere with the rings. The hub may be installed with the hub extension facing in or out. Make sure that the shaft extends into the hubs at least .8 times the shaft diameter.
5. Lightly fasten hubs to shafts to prevent them from moving during alignment.

Angular Alignment



6. Angular Alignment: Without rotating the coupling, run a caliper around the hub and set the caliper to the widest point. Find the narrowest point with the caliper and feeler gauges. Reposition equipment until this value is as small as possible; reference Table 2 for maximum value/degree.

Parallel Alignment



7. Parallel Alignment: Using the misalignment value from the previous step, look up the maximum allowable parallel misalignment using Table 2 and Figure 1. Without rotating the shafts, run a straight-edge around the hub and find the maximum offset with feeler gauges. If necessary, realign the shafts. Recheck parallel alignment.

8. Tighten motor and driven equipment fasteners to manufacturer specifications; recheck parallel and angular alignment.
9. When parallel and angular alignment values are within service ratings, verify that all set screws, cap screws and other fasteners are tightened to values in Table 1. Recheck parallel and angular alignment after tightening.
10. Install coupling guard per applicable safety regulations.
11. Periodically check alignment, as settling will often change equipment position.

Table 1 - Maximum RPM and Fastener Torque Values

Coupling Size	Maximum RPM		Element & Ring Cap Screws				BTS Hubs Set Screws			
			Imperial Elements		Metric Elements**		Imperial Hubs		Metric Hubs**	
	Standard	Spacer* (HS Rings)	Screw Size	ft-lb	Screw Size	Nm	Screw Size	ft-lb	Scw Size	Nm
WE2/WES2	7500	7500	1/4-20	17	M6-1	23	1/4-20	7	M6-1	6
WE3/WES3							5/16-18	14	M8-1.25	19
WE4/WES4							3/8-16	23		
WE5/WES5							1/2-13	50	M10-1.5	32
WE10/WES10	6600	4800(6600)	3/8-16	30	M10-1.5	40	5/8-11	100		
WE20/WES20							1/2-13	75	M12-1.75	100
WE30/WES30	5800	4200(5800)	1/2-13	75	M12-1.75	100	3/4-10	167		
WE40/WES40	5000	3600(5000)								
WE50/WES50	4200	3100(4200)								
WE60/WES60	3800	2800(3800)								
WE70/WES70	3600	2600(3600)								
WE80/WES80	2000	1800(2000)								

*Maximum spacer element RPM = Maximum standard element RPM if using high speed rings. HS rings come standard with sizes 2-10 and are available as an option for sizes 20-80.

**Metric elements and hubs use metric hardware and are denoted by "M" in the part number, e.g. WE2M, WES2M, WE2HM28MM.

Table 2 - Angular Inch Gap

Hub Size		Degrees			
		1°	2°	3°	4°
WE2	in	0.03	0.07	0.10	0.13
	mm	0.8	1.7	2.5	3.3
WE3	in	0.04	0.08	0.12	0.16
	mm	1.0	2.1	3.1	4.1
WE4	in	0.05	0.09	0.14	0.18
	mm	1.1	2.3	3.5	4.6
WE5	in	0.06	0.11	0.16	0.22
	mm	1.4	2.8	4.2	5.5
WE10	in	0.06	0.13	0.19	0.22
	mm	1.6	3.2	4.9	5.5
WE20	in	0.08	0.16	0.23	
	mm	2.0	4.0	5.9	
WE30	in	0.10	0.19	0.28	
	mm	2.4	4.8	7.2	
WE40	in	0.12	0.23	0.35	
	mm	2.9	5.9	8.8	
WE50	in	0.14	0.28	0.43	
	mm	3.6	7.2	10.8	
WE60	in	0.15	0.31		
	mm	3.9	7.7		
WE70	in	0.16	0.32		
	mm	4.1	8.2		
WE80	in	0.20	0.39		
	mm	5.0	10.0		

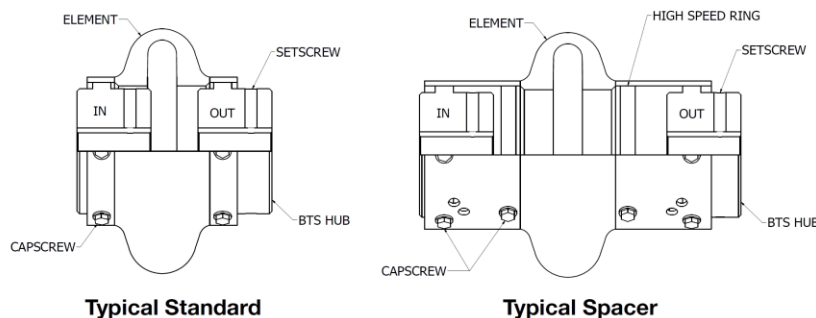
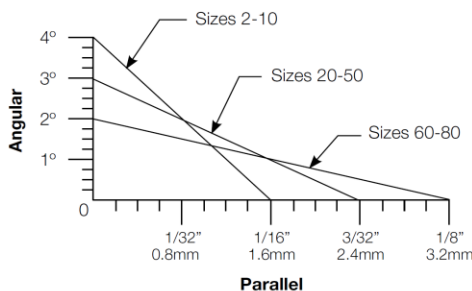


Figure 1 - Parallel Gap



GENERAL OPERATION

- When the Start/Stop control is activated the producer motor starts and reaches full speed in approximately 3 seconds.
- When the producer motor is at full speed all vacuum hose drops may be used.
- De-activating the Start/Stop control will stop the producer motor and cause vacuum operation to cease.
- Before beginning daily operation be certain that the dirt canister is empty.
- Double check that the dirt canister door and the filter bag access door are firmly secured before starting the vacuum.
- If air leaks are heard around the vacuum assembly when the vacuum reaches full speed, turn the vacuum off and adjust the dirt canister door and filter bag access door for proper fit against the rubber seals.
- Continuous vacuuming of wet substances without the optional wet separator tank may cause permanent damage to the vacuum filter bags, impellers, and electric motor. **NEVER WASH THE FILTER BAGS !!!**
- Unused vacuum hose drops must be firmly closed off at the vacuum tool mouth in order that in-use vacuum hose drops operate efficiently.
- Do not operate the vacuum with the dirt canister door or the filter bag access door open or not firmly sealed and closed !!!

MAINTENANCE

FOR THE FIRST MONTH OF OPERATION CHECK ALL HARDWARE AND FITTINGS FOR TIGHTNESS EACH WEEK!

DAILY MAINTENANCE

Empty collected trash from the dirt canister.

- Turn power off to the vacuum. Open the latches for the **dirt canister access door** (bottom door).
- Remove and empty the dirt canister. Clean the compartment around the canister. Replace the empty canister in the storage compartment against the alignment flange.
- Check the black rubber seal around the door. Check for any cracks, leaks or tears in the seal. If the seal is damaged, a replacement can be ordered.
- Close the access door. Press the center of the door before fastening the latches to assure a proper door gasket seal.
- Turn on the vacuum. Listen for any leaks around the door gasket. Re-seal if necessary.
- Clean the mesh filter located inside the separator. Do not remove the filter. Instead, wipe the filter down from inside the upper access door, where the filter bags are located.



Clean the filter bags.

- Turn power off to the vacuum. Open the latches for the **filter bags access door** (top door).
- If you have the Uni-Mount style frame, shake the filter bags with the handle on the side of the separator tank. If you have the Separate Mount style frame, manually shake the filter bags behind the upper door on the separator tank.
- **Inspect filter bags** for any damage, tearing or wetness, replacing damaged bags.
- **Inspect filter bags for proper seating.** If a bag is not properly seated, it may pop out of place, leading to dirt clogging the system. It is therefore extremely important to ensure that the filter bags are correctly seated in place. Details for replacing a filter bag are on the following page.



Example of an un-seated filter bag.

- Close the access door. Press the center of the door before fastening the latches to assure a proper door gasket seal.
- Turn on the vacuum. Listen for any leaks around the door gasket. Re-seal if necessary.
- Inspect vacuum hoses and tools for cuts, excessive wear, or trash blockage. Replace as necessary.
- Turn the vacuum on and check all hose drops for proper operation.

WEEKLY MAINTENANCE

- Inspect all filter bags for wetness or tears. Replace as necessary.
- **To replace a filter bag**, hold the ring at the bottom of the bag, then tuck the bag material down into the ring.



- With the bag material tucked inside, bend and fold the ring into a horseshoe shape, as shown below.



- Hold the ring between thumb and forefinger and place it inside of the bag opening.



- Release the ring into its natural round shape. You should hear it click in place, inside of the opening.
- Once snapped in place, the ring should fit tight inside of the opening. Test by pulling up on the bag. The bag should remain tightly attached inside of the hole when you pull up on it.
- Wrap the Velcro straps located on the top of the bag around the bar on the inside top of the vacuum separator.



WEEKLY MAINTENANCE (Continued)

- Check vacuum piping for pinhole leaks, cracks, or loose fittings.
- Inspect dirt canister and filter access door gaskets for cuts, excessive wear, or leaks. Replace as necessary.
- Clean the separator tank and producer housings.
- Grease impeller shaft bearings weekly. For each bearing, use **one pump of grease only (Mobil Polyrex EP2 – Part #10012823)**. This will provide the recommended grease to the bearings without over greasing them. **DO NOT OVER GREASE!** (**Note:** A temperature rise after lubrication, sometimes 30°F (17°C), is normal. Bearings should operate at temperatures less than 200°F (94°C) and should not exceed 250° (121°C) for intermittent operation.)



- Inspect the motor for damage or corrosion.

MONTHLY

1. Inspect all hardware for tightness.
2. Inspect hardware on the WE5 coupler (must use 17 foot LBS of torque on element hardware).
3. Check rubber coupler element for damage, replace as needed.

Note: Do not tighten the nut that is attached to the anchors. The nut should be loose or taken off.

SEMI-ANNUALLY

1. **Lubrication:** Re-lubricate the 2 motor bearings by removing the seal plate then cleaning and refilling the bearing and bracket cavity with the recommended grease. Sonny's recommends **Mobil Polyrex EM (Part #40012549)** grease for the motor ball bearings.

Replace one pipe plug on each motor end bracket with a grease fitting. Remove the other plug for grease relief. Be sure fittings are clean and free from dirt. Using a low pressure grease gun, pump in **1-2 pumps of grease** until new grease appears at the grease relief hole. After re-lubricating, allow motor to run for 10 minutes before replacing pipe plugs in end bracket.

ANNUALLY

1. Have an electrician inspect the amperage draw from the motor.

VACUUM COMPONENTS

To determine the HP of the turbine, count the diffuser plates (they protrude).



6 diffuser plates = 25HP VAC (#20015894)



5 plates = 20HP VAC (#20015893)

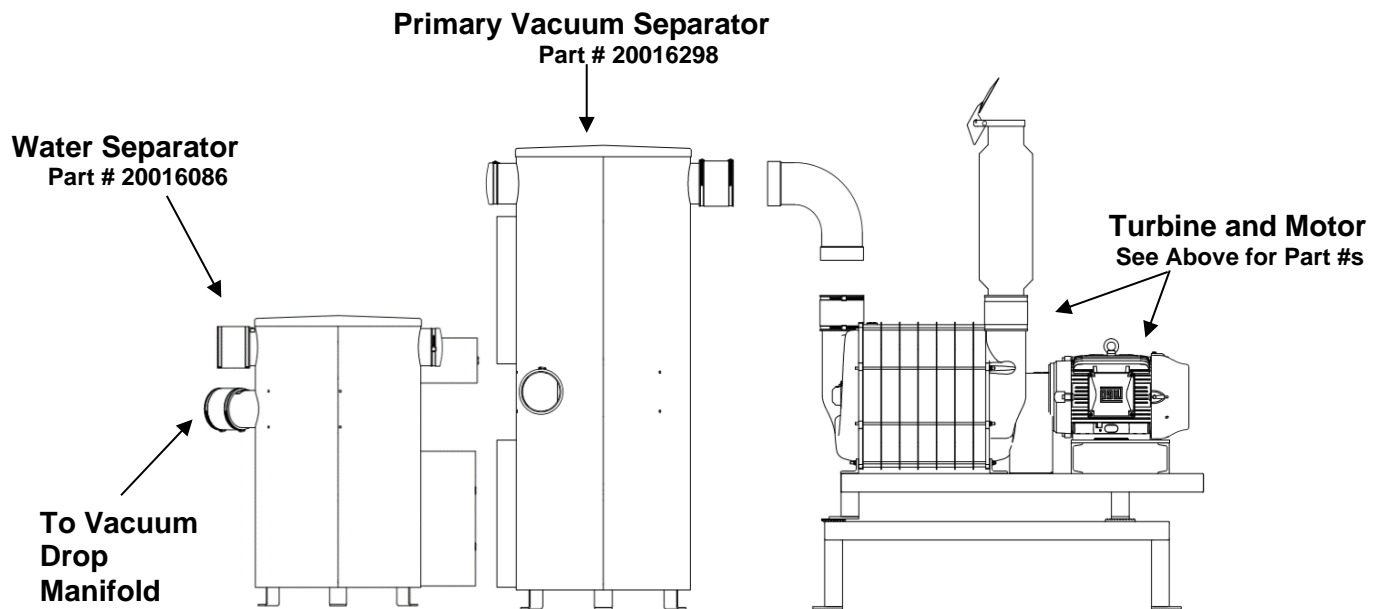


4 plates = 15HP VAC (#20015892)



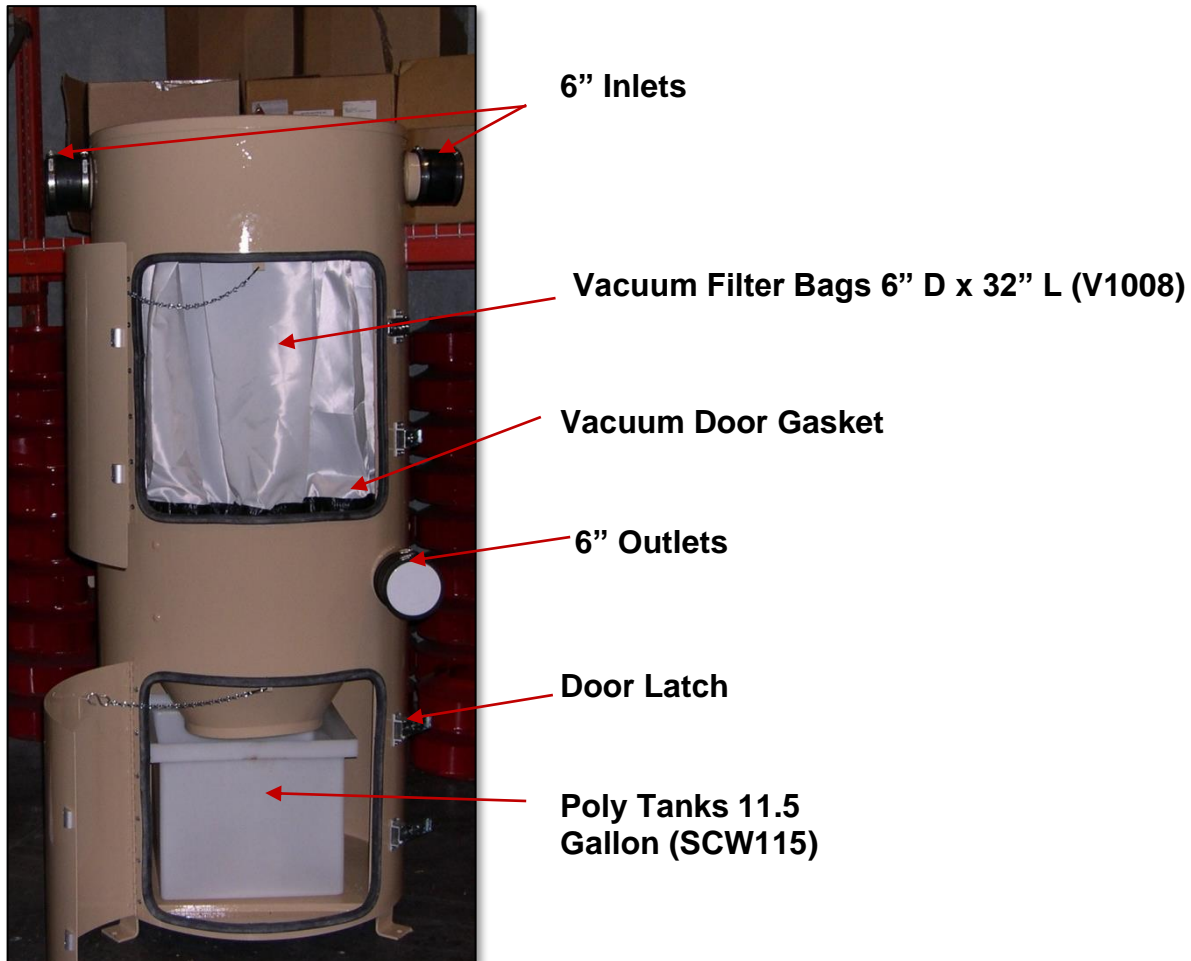
3 plates = 10HP VAC (#20015891)#

Installing A Water Separator To Your Vacuum System



When using the stainless steel **Water Separator**, it is installed inline between the **Primary Vacuum Separator** and the **Vacuum Drop Manifold**.

Vacuum Tank for 10HP, 15HP, 20HP & 25HP



CONTACT US

SONNY'S ENTERPRISES, INC.

Business Hours

Office: Monday – Friday 8:00 AM – 5:30 PM ET**Customer Service:** Monday – Friday 8:00 AM – 8:00 PM ET

FOR TECHNICAL SUPPORT:

Phone: 1-800-327-8723 EXT 234**Email:** SONNYS-SUPPORT@SONNYSDIRECT.COM**24/7 EMERGENCY SUPPORT AVAILABLE**

FOR PARTS:

Phone: 1-800-327-8723 EXT 200**Email:** CUSTOMERSERVICE@SONNYSDIRECT.COM

FOR EQUIPMENT SALES:

Phone: 1-800-327-8723 Option 3**Email:** SALES@SONNYSDIRECT.COM

WARRANTY

SONNY'S ENTERPRISES, INC. FACTORY LIMITED LIFETIME WARRANTY

Equipment manufactured by SONNY'S ENTERPRISES, INC. is warranted to be free from defect in material and workmanship. Welded metal framework and other non-moving, non-wearable fabricated metal components manufactured by Sonny's are warranted for the life of the equipment to the original purchaser. Fabricated metal wearable surface and moving components manufactured by Sonny's are warranted for a period of one (1) year to the original purchaser of the equipment.

All components assembled to Sonny's equipment that are manufactured by others are warranted by the appropriate manufacturer and subject to that manufacturer's limited warranty. Contact Sonny's for the specific information on other component manufacturer's warranty terms. All new cloth shipped with new Sonny's equipment is warranted for a period of one (1) year or 80,000, whichever occurs first.

This warranty is not assignable or transferable. The warranty period begins the first day following installation or 30 days from the original invoice date, whichever occurs first. The Seller's liability shall be limited to repair or replacement of materials found to be defective within the warranty period. In the event of repair or replacement this limited warranty is noncumulative. The Purchaser must supply the Seller with immediate written notice when any defects are found. The Seller shall have the option of requiring the return of defective material to establish the Purchaser's claim. Neither labor nor transportation charges are included in this warranty. Transportation damage claims are to be submitted to the carrier of the damaged materials.

This warranty is based upon the Purchaser's reasonable care and maintenance of the warranted equipment. It does not apply to any equipment which has been subject to misuse, including neglect, accident or exposure to harsh chemicals or chemicals that react violently with: water, organic acids (e.g. acetic acid), inorganic acids (e.g. hydrofluoric acid), oxidizing agents (e.g. peroxides), and metals (e.g. aluminum). Chemicals corrosive to: aluminum alloys, carbon steel, and other metals. Nor does it apply to any equipment which has been repaired or altered by anyone not so authorized by Sonny's. Further, the equipment must be properly installed with proper accuracy of all specified plumbing, electrical, and mechanical requirements. This warranty does not apply to normal wear and tear or routine maintenance components.

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