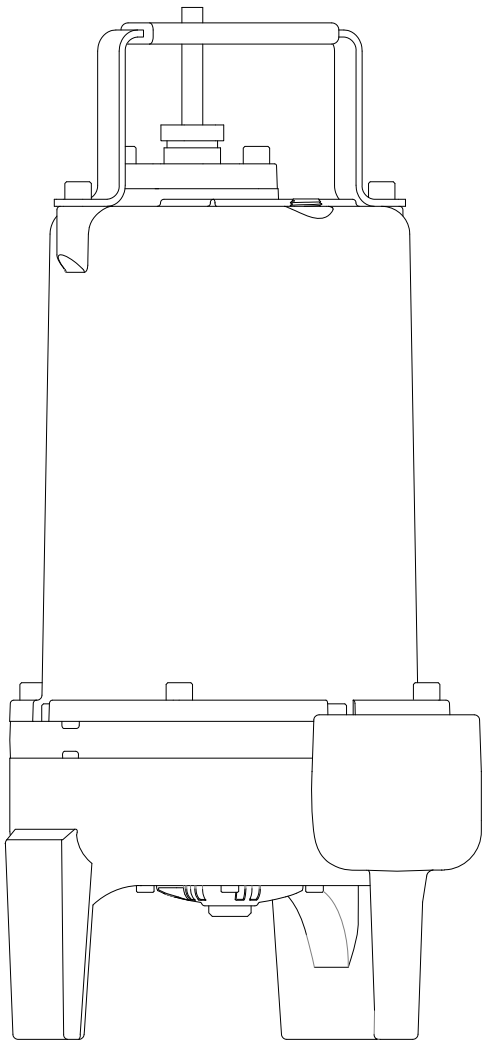
PENTAIR

MYERS®



VR1 SERIES
GRINDER PUMPS

INSTALLATION AND SERVICE MANUAL

1 HP Grinder Pump for Residential Applications.

NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.

Part # 23833A700 | © 2018 Pentair plc | 05/21/18

USAGE

The VR1 Series is a submersible wastewater grinder pump designed specifically for individual residential applications. The pumps are to be used for domestic sewage only and are not to be used for pumping commercial or industrial sewage such as from motels, schools, apartments, factories, etc. **THIS PUMP IS NOT FOR USE IN HAZARDOUS LOCATIONS!**

INSPECTING PUMP

Before making any piping or electrical connections, check the pump for shipping damage or cracks. Insert allen key into cutter retaining bolt and turn clockwise to ensure cutters and impellers do not rub. Do not turn cutter with fingers.

POWER SUPPLY

The VR1 Series grinder pump should be connected to a 115 or 230 volt, single-phase, 60 Hz power source. The pump will draw approximately 7.4, 5.3 amperes at minimum flow and 12.5, 7.6 full load amperes. The pump must be connected to a grounded power socket. **DO NOT** cut off the ground pin from the power cord plug.

POWER CORD

A 20 foot power cord is attached to the grinder pump via two insulated quick-disconnect terminals and a ground terminal. To replace a cord, begin by slightly loosening cord nut in the cord cap plate. Remove cord cap plate from the motor housing and carefully pull the power leads up out of the motor housing and disconnect them from the motor leads. Disconnect the ground wire from the cap plate and continue to completely loosen the cord nut from the cap.

To install new cord, feed terminals through cord cap plate and reconnect power terminals. Reconnect ground terminal to the bottom side of the cap plate. Carefully feed wires back into the motor housing and fasten the cord cap plate to the motor housing. Lastly, tighten the cord nut into the cap plate. Tighten firm, do not overtighten.

The power cord should be replaced if it has been damaged in any way or the cord jacket has become brittle.

MOTOR TYPE

The VR1 Series grinder pump contains a 3/4 frame, 1 hp, single-phase, 60 Hz, 3450 rpm, capacitor start, capacitor run motor with Class F insulation and built-in, on-winding overload protection. Motor has upper and lower ball bearings and is oil-cooled and lubricated.

⚠ CAUTION!

THE VR1 SERIES GRINDER PUMP SHOULD NEVER BE WORKED ON WITHOUT FIRST DISCONNECTING THE POWER CORD.

OIL TYPE

The motor housing contains dielectric transformer oil to provide good heat transfer and lubrication of ball bearings; no other lubrication is required. Oil level may be checked by removing the oil plug from the top of the motor housing. The oil level should be filled to the bottom of the end shield. **Do not overfill with oil.** Only dielectric transformer oil obtained from a Myers® authorized service center should be used.

PUMP SWITCH INSTALLATION INSTRUCTIONS

NOTE: In accordance with third party approval, pump must be submerged a minimum of 8-5/8" from bottom of the legs on volute case during operation.

Mounting the Switch

1. Determine pumping range for installation. Do not tether less than 3-1/2" from pipe.
2. Tighten strap around discharge pipe keeping switch cable between strap and pipe to prevent slippage.
3. Space small ties at least 1" apart. To readjust ties, press small tie tabs down.
4. To lock releasable tab, run remaining strap between tab and head. Tuck strap back through head.

Piggyback Plug Install

⚠ Electrical outlet must not be located in pump chamber.

⚠ Electrical outlet voltage, piggyback plug voltage, and pump voltage must match.

1. Follow steps 1 through 4 of “Mounting the Switch.”
2. Insert switch’s piggyback plug into outlet.
3. Plug pump into piggyback plug.
4. Check installation. Allow system to cycle to ensure proper operation.

SAFETY WARNINGS

⚠ **WARNING!** Risk of electrical shock. Pumps are supplied with a grounding conductor and grounding-type attachment plug on the power cord. To reduce the risk of electrical shock, be certain that it is connected only to properly grounded, grounding-type receptacle. **DO NOT** cut off ground pin or use an adapter fitting. **DO NOT** use an extension cord

with this pump. When wiring this pump follow all local electrical, safety codes and ordinances as well as most recent National Electric Code (NEC-ANSI/NFPA).

The VR1 Series grinder pumps have a GROUND WIRE that is connected to a screw in the metal motor housing. This wire goes to the receptacle or control box which must be connected to a good outside GROUND such as a metal water pipe or GROUND STAKE driven at least 8 feet into the ground.

CALIFORNIA PROPOSITION 65 WARNING:

⚠ WARNING This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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DISMANTLING PUMP FOR REPLACEMENT PARTS

Before dismantling pump for replacement parts, clean pump thoroughly.

REPLACING STATIONARY CUTTER PLATE AND ROTATING CUTTER

All repairs must be done at the factory or at an authorized Myers service facility.

⚠ CAUTION!

DISCONNECT ALL POWER AND CONTROL WIRES TO MOTOR AT CONTROL PANEL BEFORE STARTING DISASSEMBLY OPERATIONS. NEVER RELY ON OPENING CIRCUIT BREAKER ONLY.

DISASSEMBLY OF STATIONARY CUTTER PLATE AND ROTATING CUTTER

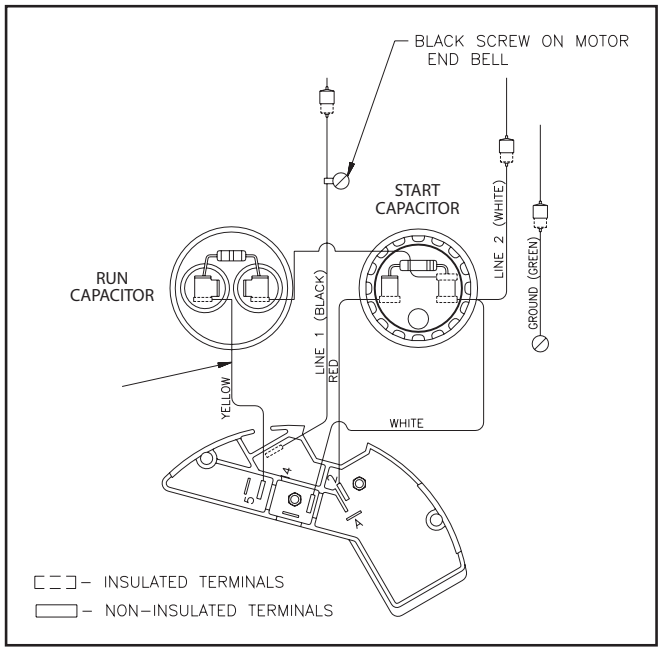
1. Remove retaining washer and screw from end of shaft. A screwdriver can be used to hold the shaft in place by wedging it between one of the four socket head cap screws and the rotating cutter while loosening the screw.
2. Using a rubber mallet, or soft metal hammer, bump rotating cutter in counterclockwise direction as thread is right-hand. Unthread rotating cutter from shaft. Be careful to not lose ring shims that space the rotating cutter from the stationary cutter plate.
3. Remove four socket head cap screws holding the stationary cutter plate to the volute. Remove stationary cutter from volute. If stationary cutter is stuck, the socket head cap screws can be threaded into tapped back-off hole in plate. Tighten screws to remove plate from volute.
4. Inspect rotating cutter and stationary cutter plate for wear and replace if worn.
5. Make sure pocket in volute is clean and reinstall stationary cutter plate using the four socket head cap screws. Apply blue Loctite® to the threads. Do not overtighten cap screws.
6. Replace ring shims (if removed from the shaft) and thread rotating cutter onto shaft. Make sure threads on shaft are clean and use Never-Seez® or other graphite compound on threads before replacing rotating cutter.
7. Using a rubber mallet, or soft metal hammer, bump rotating cutter in clockwise direction to make sure it is seated on the impeller.
8. To ensure proper operation of the cutter mechanism, the gap between the stationary cutter plate and rotating cutter must be no more than .008". To check the gap use a .008" feeler gauge. If the .008" feeler gauge does not fit between the surface of the stationary cutter and rotating cutter and the motor shaft turns freely, the gap is set correctly. If the .008" feeler gauge fits between the surfaces, shims must be removed to close the gap
9. Replace retaining washer and screw in the end of the shaft. Be sure screw is tight. A screwdriver can be used to hold the shaft in place by wedging it between one of the four socket head cap screws and the rotating cutter while tightening the screw.
10. Be sure shaft turns freely after reassembly. Some drag will occur due to the seal, but there should be no binding or tight spots when turning the rotating cutter.
11. If rotating cutter rubs or drags on stationary cutter plate, recheck gap and re-shim rotating cutter.

TO REPLACE CAPACITORS ONLY

1. Remove oil fill plug near the top of motor housing and pour oil out.
2. Loosen the cord nut on power cord until cord is loose enough to push cord down into motor housing.
3. Remove four bolts from motor housing and bump housing with a plastic hammer to loosen. Lay pump on its side.
4. Remove the housing carefully to be sure that enough cord is pushed into the housing so as not to create tension on cord.
5. Slide motor housing up far enough to expose the capacitors and to be able to lay the housing down.
6. Disconnect wiring from capacitor and loosen capacitor clamp and slide capacitor out. Replace with new capacitor, tighten clamp and reconnect.
7. Check all wiring connectors to be sure they are secure.
8. Be sure O-ring is in place.
9. Slide motor housing back onto pump while pulling the cord out slowly. Assemble motor housing with four bolts.
10. Reassemble cord nut. Be sure washers are seated and cord is pulled up against the washers. Tighten nut securely.

11. Put pump upright and refill motor with Myers submersible pump oil. **DO NOT OVERFILL WITH OIL.** Replace oil plug. Retighten plug firmly, but do not overtighten.
12. Be sure pump turns freely before connecting power. Turn pump on side and turn impeller, using screwdriver in slotted shaft. Plug pump into receptacle to test operation. Pump must run quietly and free of vibration.

WIRING DIAGRAM – MARATHON®



TROUBLESHOOTING GUIDE

Pump does not run or hum.
See A, B, C, D, E or F.

Pump runs but does not deliver water.
See G, H, I, J, K or L.

Pump runs and pumps out sump but does not stop.
See M.

Pump runs but delivers only small amount of water.
See I, J, K, L or N.

Fuse blows or circuit breaker trips when pump starts.
See K, L, N, O or P.

Motor runs for short time then stops. Then after short period starts again. Indicates tripping overload caused by symptom shown.
See K, L, N or P.

For any other symptoms contact a Myers authorized service facility.

A. Line circuit breaker may be off; or fuse, if used, may be blown or loose.

B. Water level in sump may be too low. Run in more water.

C. Pump cord plug may not be making contact in receptacle.

D. If pump is using the series cord plug, the two plugs may not be plugged tightly together.

E. Float may be stuck. Be sure float operates freely in basin. Check tether length of switch.

F. If all symptoms check OK, motor winding may be open; take to service center for repair.

G. Check valve may be installed backward. Arrow on valve points in direction of flow.

H. Discharge shut-off valve, if used, may be closed.

I. Pump may be air locked. Start and stop several times by plugging and unplugging cord. Check vent hole on pump case for plugging.

J. Pump head may be too high. Horizontal distance does not affect pumping, except loss due to friction.

K. Inlet holes in pump base may be clogged. Remove pump and clean out openings.

L. Impeller or volute openings may be plugged or partially plugged. Remove pump and clean. Check tether length of switch.

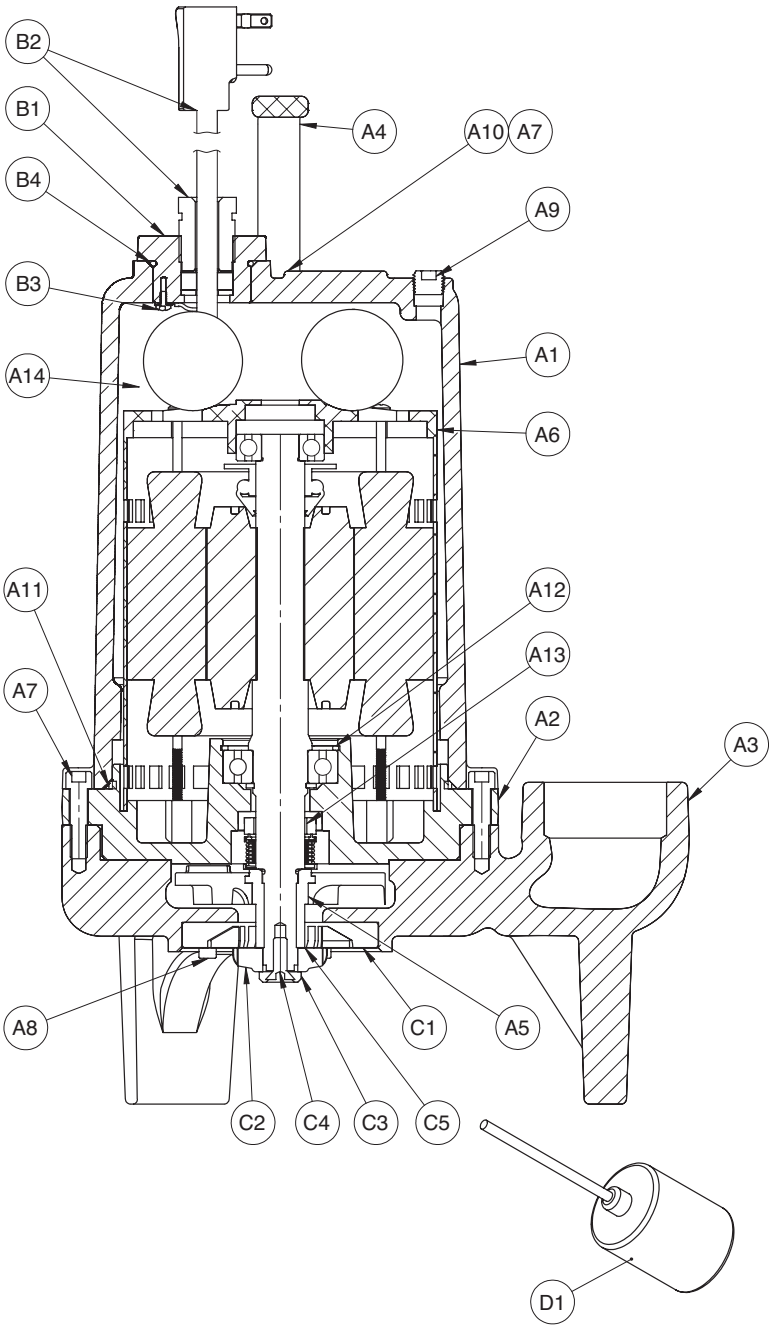
M. Float is stuck in up position. Be sure float operates freely in basin.

N. Pump impeller may be partially clogged causing motor to run slow, resulting in motor overload.

O. Fuse size or circuit breaker is too small. Must be 20 amps.

P. Defective motor stator. Return to Myers service center.

MOTOR END PARTS



COMMON PARTS LIST

For use with product built with Marathon® motor.

Item #	Description	Qty	Component Part #
A1	Motor Housing	1	28132B000
A2	Bearing/Seal Housing	1	28169B000
A3	Case, Volute	1	28170D001
A4	Handle, Neoprene Grip	1	28196B000
A5	Impeller, Thermoplastic	1	28185B000
A6	Canned Motor Assembly	1	CHARTED
A7	5/16 -18 x 1" Screw	12	001780041
A8	10-24 Screw	4	048200061
A9	1/4 Pipe Plug	1	05022A088
A10	Washer	2	05030A020
A11	O-ring 1/8 x 5.859	1	05876A125
A12	Retaining Ring, Internal	1	009740081
A13	Seal 7/8 Shaft 21/BF501C1	1	21576A011
A14	Oil, Transformer	.625 gal	24709110000
B1	Plate, Cord Cap	1	28193B000
B2	Cord; 14/3 with Moulded Plug	1	CHARTED
B3	Ground Screw	1	000630021
B4	O-ring	1	05876A244
C1	Stationary Cutter	1	28168B000
C2	Rotating Cutter	1	28187B000
C3	Retaining Washer	1	21583A000
C4	Retaining Screw	1	07597A013
C5	Shim; 1.00 O.D. x .625 I.D. x .002	1	006280571
	Shim; 1.00 O.D. x .625 I.D. x .020	1	006280591
	Shim; 1.00 O.D. x .625 I.D. x .030	1	006280601
	Shim; 1.00 O.D. x .625 I.D. x .005	1	006280581
D1	Float Switch, Wide Angle 20' (VRS10A-21)	1	145950201
	Float Switch, Wide Angle 20' (VRS10A-11)	1	145951201

Pump Catalog Number	Pump Engineering Number	Pump Type	Cord Number	Cord Length	Motor Number
VRS10A-11	28172D000	Automatic	25338B000	20'	28167B000
VRS10M-11	28172D001	Manual	25338B000	20'	28167B001
VRS10A-21	28172D002	Automatic	25338B001	20'	28167B000
VRS10M-21	28172D003	Manual	25338B001	20'	28167B001

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MYERS® V AND VR SERIES
LIMITED WARRANTY

Pentair Myers® warrants its V and VR series grinders against defects in material and workmanship for a period of 24 months from the manufacturing date, or 36 months from the manufacturing date with completion of a start-up report within 30 days of installation. Product must be properly installed, serviced and operated in compliance with the manufacturer's instruction manuals.

During the warranty period and subject to the conditions set forth, Pentair Myers, at its discretion, will repair or replace to the original user, the parts that prove defective in materials and workmanship. Pentair Myers reserves the right to change or improve its products or any portions thereof without being obligated to provide such a change or improvement for prior sold and/or shipped units.

Start-up reports and electrical schematics may be required to support warranty claims. Submit at the time of start- up through the Pentair Myers website: http://forms.pentairliterature.com/startupform/startupform.asp?type=m. All seal fail and heat sensing devices must be connected, functional and monitored or this warranty will be void. Pentair Myers will cover only the lower seal and labor thereof for all dual seal pumps. Under no circumstance will Pentair Myers be responsible for the cost of field labor, travel expenses, rented equipment, removal/reinstallation costs or freight expenses to and from the factory or an authorized Pentair Myers service facility.

This limited warranty will not apply:

a) To defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with the printed instructions provided;
b) To failures resulting from abuse, accident or negligence;
c) To failures resulting from excessive sand, lime, cement, gravel or other abrasive materials
d) To failures caused by scale or corrosion build-up due to excessive hydrocarbons or chemical content
e) To normal maintenance services and parts used in connection with such service;
f) To units that are not installed in accordance with applicable local codes, ordinances and good trade practices;
g) If the unit is moved from its original installation location;
h) If unit is used for purposes other than for what it is designed and manufactured;
i) To any unit that has been repaired or altered by anyone other than Pentair Myers or an authorized Pentair Myers service provider;
j) To any unit that has been repaired using non factory specified/OEM parts.

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