SERVICE&OPERATINGMANUAL

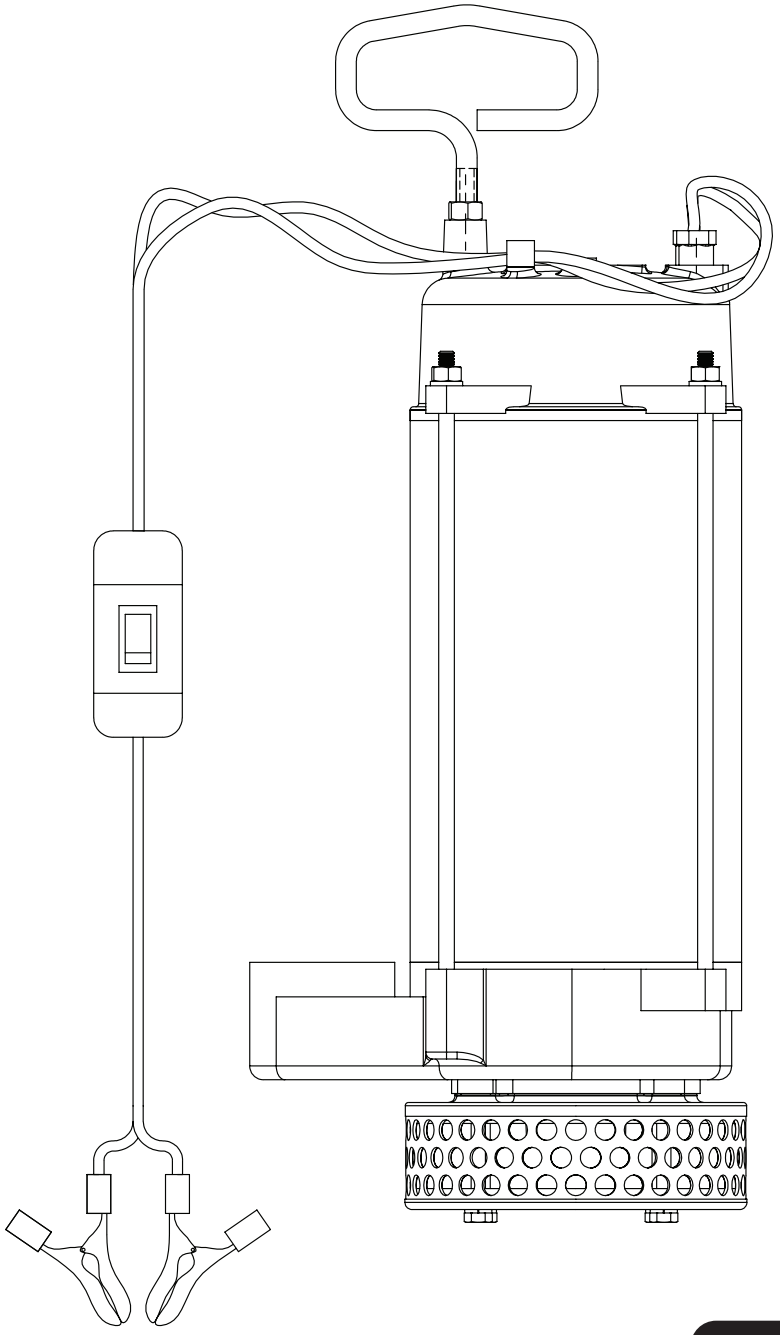
ORIGINAL INSTRUCTIONS

PortaPump Model SPA15 Model SPA15-BSP

Design Level 3

intertek
Total Quality. Assured.

ISO 9001 Certified
ISO 14001 Certified



VERSAMATIC®

VERSAMATIC®
Warren Rupp, Inc. • A Unit of IDEX Corporation

800 North Main Street, Mansfield, OH 44902 USA
Phone: (419) 526-7296 • **www.versamatic.com**

Safety Information

⚠ IMPORTANT

Read the safety warnings and instructions in this manual before pump installation and start-up. Failure to comply with the recommendations stated in this manual could damage the pump and void factory warranty.

When the pump is used for materials that tend to settle out or solidify, the pump should be flushed after each use to prevent damage. In freezing temperatures the pump should be completely drained between uses.

⚠ CAUTION

Before pump operation, inspect all fasteners for loosening caused by gasket creep. Retighten loose fasteners to prevent leakage. Follow recommended torques stated in this manual.

Nonmetallic pumps and plastic components are not UV stabilized. Ultraviolet radiation can damage these parts and negatively affect material properties. Do not expose to UV light for extended periods of time.

WARNING
Pump not designed, tested or certified to be powered by compressed natural gas. Powering the pump with natural gas will void the warranty.

WARNING
The use of non-OEM replacement parts will void (or negate) agency certifications, including CE, ATEX, CSA, 3A and EC1935 compliance (Food Contact Materials). Warren Rupp, Inc. cannot ensure nor warrant non-OEM parts to meet the stringent requirements of the certifying agencies.

⚠ WARNING

When used for toxic or aggressive fluids, the pump should always be flushed clean prior to disassembly.

Before maintenance or repair, shut off the compressed air line, bleed the pressure, and disconnect the air line from the pump. Be certain that approved eye protection and protective clothing are worn at all times. Failure to follow these recommendations may result in serious injury or death.

Airborne particles and loud noise hazards. Wear eye and ear protection.

In the event of diaphragm rupture, pumped material may enter the air end of the pump, and be discharged into the atmosphere. If pumping a product that is hazardous or toxic, the air exhaust must be piped to an appropriate area for safe containment.

Take action to prevent static sparking. Fire or explosion can result, especially when handling flammable liquids. The pump, piping, valves, containers and other miscellaneous equipment must be properly grounded.

This pump is pressurized internally with air pressure during operation. Make certain that all fasteners are in good condition and are reinstalled properly during reassembly.

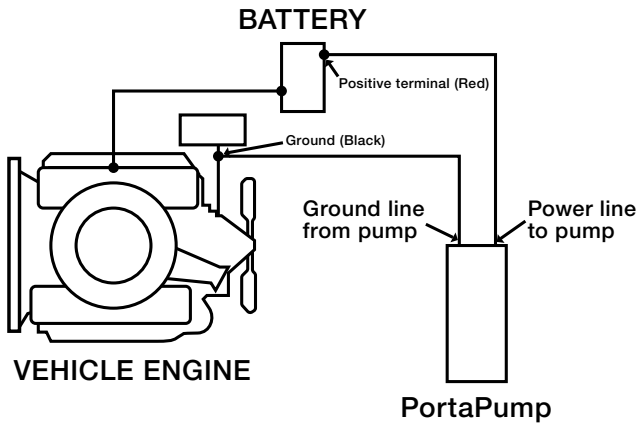
Use safe practices when lifting

Safety Information

THE PUMP: This pump is a totally enclosed, submersible dewatering unit. It is powered by a 1/3 HP, 12 volt DC 30 AMP motor. Battery clips on the power cord allow easy connection to any 12 volt vehicle battery.

SWITCHING: The on-off switch is located on the power cord.

CONNECTING TO BATTERY: When connecting the clips to a battery, arcing is eliminated by keeping the on-off switch in the "off" position. Connect the red battery clamp to the positive (+) battery terminal. Connect the black battery clamp to ground: preferably on the vehicle's engine to a solid, metallic, stationary point. The connection should be at least 18 inches (480mm) from the battery.



Safety Information

HOSE: Since the pump develops relatively low pressure, it is recommended that non-collapsible hose be used for maximum pumping rates.

HOISTING & LOWERING: An eye at the top of the unit is provided for attaching a line for hoisting or lowering. Do not use power cable for handling unit.

TO OPERATE: Lower unit into liquid to be pumped and activate switch. Pump can be run for a few minutes without liquid, however, do not run completely dry for extended periods. Damage to shaft seal may result.

RUNNING TIME: This unit draws about 30 amperes and can be operated about 1 hour on a fully charged 55 AMP-hour battery and still permit starting of vehicle under normal conditions. Caution should be used when running time exceeds 30 or 40 minutes without engine running to recharge battery, particularly in cold weather when battery efficiency is lowered. Battery size (AMP-hour rating) and the use of other accessories such as lights and radios, etc., must be taken into consideration for practical running periods without engine running.

OVERLOAD PROTECTION is provided by means of a 40 amp automatic reset circuit breaker, located under top cover.

TROUBLESHOOTING

NOTE: Most common cause of failure to run is due to hardened mud and sand at impeller. Remove strainer to check.

MOTOR WILL NOT RUN:

1. Poor connection at battery.
2. Impeller locked with foreign material.
3. Insufficient impeller clearance.
4. Damaged power cable or loose connection internally in motor assembly.
5. Bad switch or circuit breaker. Connect power leads direct to motor leads to check.
6. Worn motor brushes or out of position to make contact with armature.

PERFORMANCE LOW:

1. Strainer screen partially plugged.
2. Impeller rubbing. Check freeness of rotation with screwdriver inserted through hole in base plated into slotted end of shaft.
3. Battery not fully charged.
4. Discharge restriction such as kinked hose or excessive discharge head.

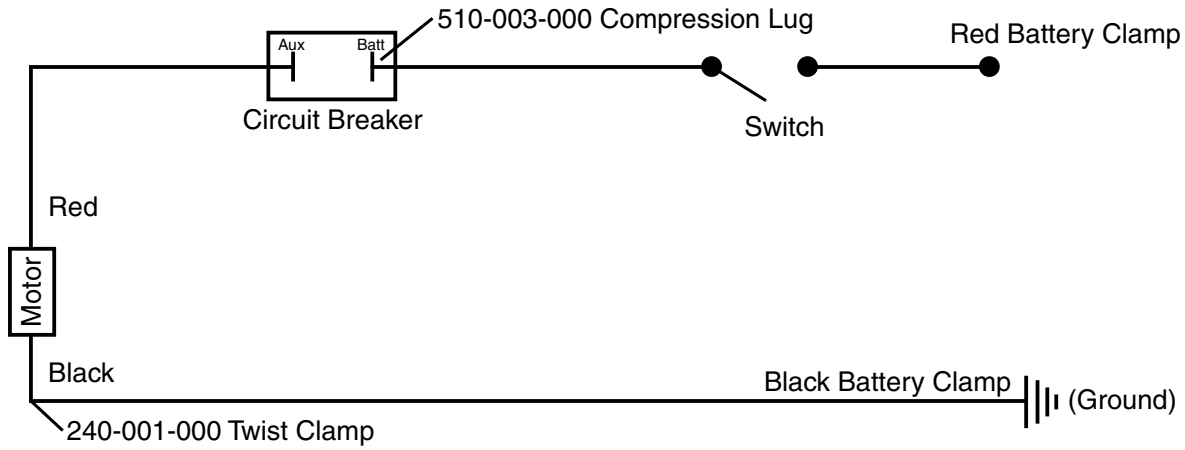
SERVICE AND REPAIR INSTRUCTION DISASSEMBLY:

Impeller and shaft seal can be inspected and serviced from lower end of pump by removal of 4 capscrews securing base plate, strainer screen, and suction cover. Screwdriver slot is provided in end of motor shaft to turn shaft while holding impeller for removal. This permits removal of impeller without disassembly of upper motor housing to hold motor shaft.

To service motor remove 4 hex nuts and bump top cover free from housing tube. Raise sufficiently to disconnect power cable connections. Slide housing tube up from pump casing and motor will be exposed for service or removal.

IMPORTANT: Make certain that wire leads are installed per diagram below. Install top cover as indicated by arrow and instruction on top of cover.

1. Make sure the vehicle and the pump are not in contact during connection.
2. Do not use power cable for handling unit.
3. Do not run completely dry for extended periods. Damage to shaft seal may result.



WARRANTY: This unit is guaranteed for a period of 5 years against defective material and workmanship.

Materials

Material Profile:	Operating Temperatures:	
⚠ *CAUTION! Operating temperature limitations are as follows:*	Max.	Min.
Conductive Acetal: Tough, impact resistant, ductile. Good abrasion resistance and low friction surface. Generally inert, with good chemical resistance except for strong acids and oxidizing agents.	190°F 88°C	-20°F -29°C
EPDM: Shows very good water and chemical resistance. Has poor resistance to oils and solvents, but is fair in ketones and alcohols.	280°F 138°C	-40°F -40°C
FKM: (Fluorocarbon) Shows good resistance to a wide range of oils and sovents; especially all aliphatic, aromatic and halogenated hydrocarbons, acids, animal and vegetable oils. Hot water or hot aqueous solutions (over 70°F) will attack FKM.	350°F 177°C	-40°F -40°C
Hytrel®: Good on acids, bases, amines and glycols at room temperatures only.	220°F 104°C	-20°F -29°C
Neoprene: All purpose. Resistance to vegetable oils. Generally not affected by moderate chemicals, fats, greases and many oils and solvents. Generally attacked by strong oxidizing acids, ketones, esters and nitro hydrocarbons and chlorinated aromatic hydrocarbons.	200°F 93°C	-10°F -23°C
Nitrile: General purpose, oil-resistant. Shows good solvent, oil, water and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and MEK, ozone, chlorinated hydrocarbons and nitro hydrocarbons.	190°F 88°C	-10°F -23°C
Nylon: 6/6 High strength and toughness over a wide temperature range. Moderate to good resistance to fuels, oils and chemicals.	180°F 82°C	32°F 0°C
Polypropylene: A thermoplastic polymer. Moderate tensile and flex strength. Resists stong acids and alkali. Attacked by chlorine, fuming nitric acid and other strong oxidizing agents.	180°F 82°C	32°F 0°C
PVDF: (Polyvinylidene Fluoride) A durable fluoroplastic with excellent chemical resistance. Excellent for UV applications. High tensile strength and impact resistance.	250°F 121°C	0°F -18°C
Santoprene®: Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.	275°F 135°C	-40°F -40°C
UHMW PE: A thermoplastic that is highly resistant to a broad range of chemicals. Exhibits outstanding abrasion and impact resistance, along with environmental stress-cracking resistance.	180°F 82°C	-35°F -37°C
Urethane: Shows good resistance to abrasives. Has poor resistance to most solvents and oils.	150°F 66°C	32°F 0°C
Virgin PTFE: (PFA/TFE) Chemically inert, virtually impervious. Very few chemicals are known to chemically react with PTFE; molten alkali metals, turbulent liquid or gaseous fluorine and a few fluoro-chemicals such as chlorine trifluoride or oxygen difluoride which readily liberate free fluorine at elevated temperatures.	220°F 104°C	-35°F -37°C

Maximum and Minimum Temperatures are the limits for which these materials can be operated. Temperatures coupled with pressure affect the longevity of diaphragm pump components. Maximum life should not be expected at the extreme limits of the temperature ranges.

Metals:

Alloy C: Equal to ASTM494 CW-12M-1 specification for nickel and nickel alloy.

Stainless Steel: Equal to or exceeding ASTM specification A743 CF-8M for corrosion resistant iron chromium, iron chromium nickel and nickel based alloy castings for general applicaitons. Commonly referred to as 316 Stainless Steel in the pump industry.

For specific applications, always consult the Chemical Resistance Chart.

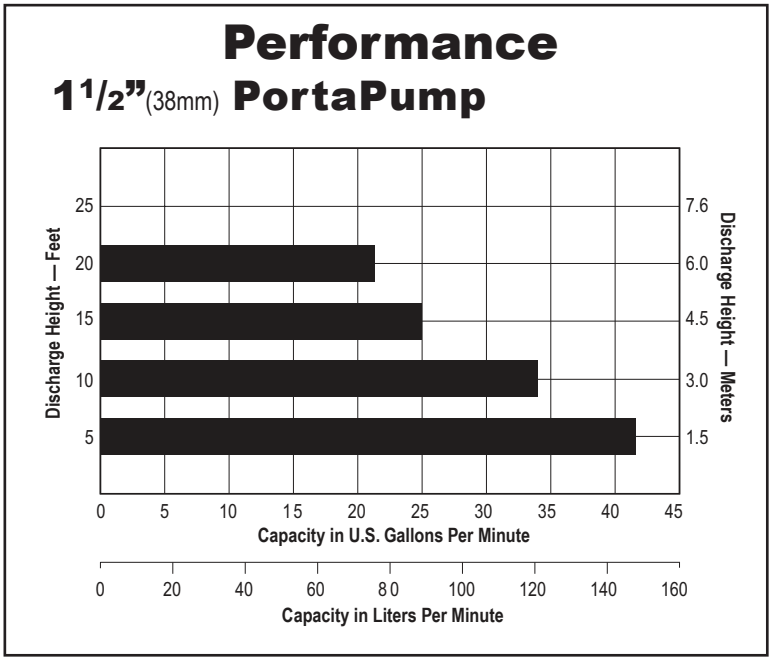
Note: This document is a high level guide. Please be aware that not all model and or material combinations are possible for all sizes. Please consult factory or your distributor for specific details.

Performance

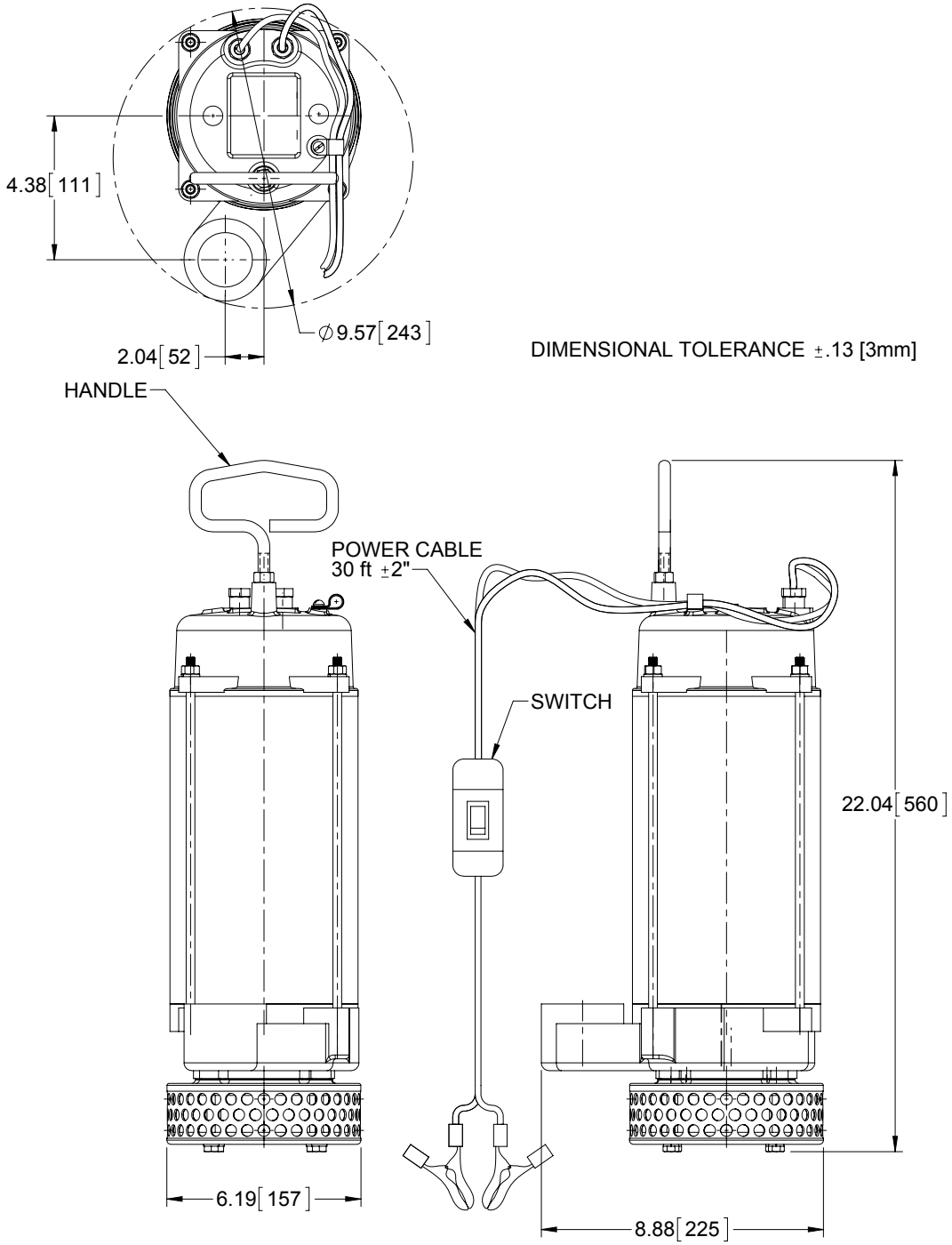
PortaPump Model SPA15
Model SPA15-BSP

Dimensions in inches (mm dimensions in brackets)

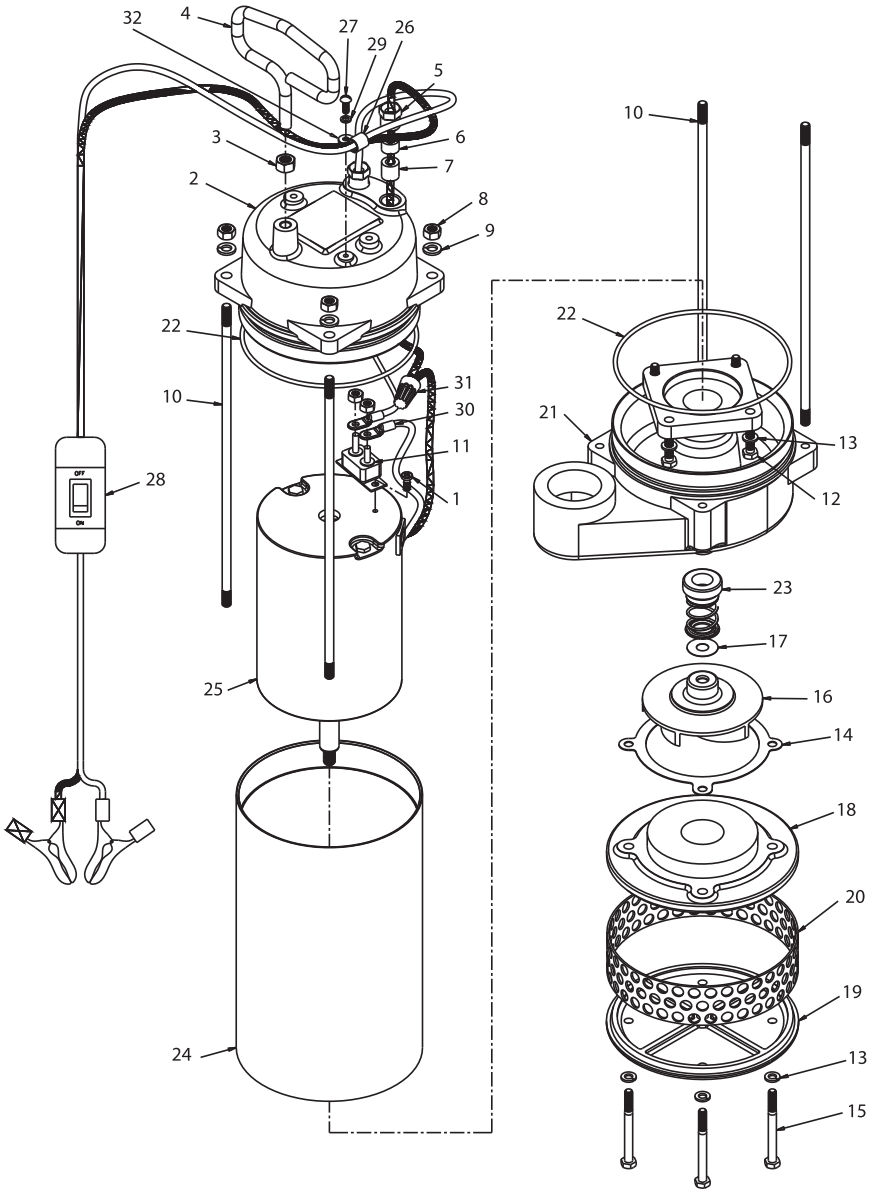
The dimensions on this drawing are for reference only.
A certified drawing can be requested if physical dimensions are needed.



Dimensional Drawings



Composite Repair Parts Drawing



Composite Repair Parts List

Air Valve Assembly			
Item #	**Qty.**	**Description**	**Part Number**
1	3	Screw, Self-Tapping	710-004-330
2	1	Cover, Motor	258-017-157
3	1	Hex Nut	545-005-330
4	**1**	**Handle**	**405-001-000**
5	2	Nut, Gland	543-001-162
6	2	Spacer, Gland	770-007-162
7	**2**	**Ring, Sealing**	**675-016-360**
8	4	Hex Nut	545-004-330
9	4	Lock Washer	900-004-330
10	4	Stud	807-011-330
11	**1**	**Circuit Breaker**	**270-001-000**
12	4	Capscrew, Hex Head	170-028-330
13	8	Lock Washer	900-001-330
14	**5**	**Gasket, Casing**	**360-001-440**
15	4	Capscrew, Hex Head	170-003-115
16	**1**	**Impeller**	**444-001-010**
17	**As. Req***	**Shim**	**740-001-115**
18	1	Cover, Suction	258-001-157
19	1	Plate, Strainer	612-001-156
20	1	Screen, Strainer	700-001-330
21	1	Casing, Volute, 1½ NPT	181-001-155
	1	Casing, Volute, 1½ BSPT (tapered)	181-001-155E
22	**2**	**O-Ring**	**560-022-360**
23	**1**	**Seal**	**720-005-000**
24	1	Tube, Casing	860-011-150
25	1	Motor	525-005-000
26	1	Clamp, Cable	200-063-000
27	1	Screw, Machine	706-007-330
28	1	Power Cable Assembly Complete	150-036-000
29	1	Washer, Lock	900-002-330
30	1	Lug, Compression	510-003-000
31	1	Nut, Insulated Wire	240-001-000
32	1	Flat Washer	901-001-330
For Models SPA153F, 12 DC3 and SPa15BSP3F, 12DC3: (Not Shown)			
Item #	**Qty.**	**Description**	**Part Number**
10	2	Stud	807-011-330
	2	Stud (replaces 2 807-011-330)	807-012-330
	2	Foot, Mounting	325-001-330
	2	Stop Nut 5/16-18 Vac	547-001-330
	2	Washer	904-001-330
		Design Level 2 to Design Level 3 Conversion Kit	475-220-000
Additional Options			
Item #	**Qty.**	**Description**	**Part Number**
33	1	Power Cable Assembly Complete (Connector SB175A, Gray)	150-043-000
34	1	1 1/2 NPT Cam & Groove, Male Adaptor	429-002-156
	1	1 1/2 BSPT Cam & Groove, Male Adaptor	429-004-156
35	1	10x9x24 Carrying Case, Aluminum	177-014-000
36	1	30' Standard Duty (Blue) Hose, 1 1/2 Cam & Groove	426-064-000

* Typically 7 ** Items 10 & 24 available as a kit #475-132-000

Repair Parts shown in **bold face (darker)** type are more likely to need replacement after extended periods of normal use. They are readily available from most Warren Rupp distributors. The pump owner may prefer to maintain a limited inventory of these parts in his own stock to reduce repair downtime to a minimum.

IMPORTANT: When ordering repair parts always furnish pump model number, serial number and type number.

Notes:

1.) The outer diaphragm plate material is to match the water chamber material (cast iron uses SV302B or SVB307)

2.) The seat material is to match the water chamber material. In addition to this seat, (4) o-rings are needed. p/n V356T

Material Codes - The Last 3 Digits of Part Number

000.....Assembly, sub-assembly;
and some purchased items
010.....Cast Iron
015.....Ductile Iron
020.....Ferritic Malleable Iron
080.....Carbon Steel, AISI B-1112
110.....Alloy Type 316 Stainless Steel
111.....Alloy Type 316 Stainless Steel
(Electro Polished)
112.....Alloy C
113.....Alloy Type 316 Stainless Steel
(Hand Polished)
114.....303 Stainless Steel
115.....302/304 Stainless Steel
117.....440-C Stainless Steel (Martensitic)
120.....416 Stainless Steel
(Wrought Martensitic)
148.....Hardcoat Anodized Aluminum
150.....6061-T6 Aluminum
152.....2024-T4 Aluminum (2023-T351)
155.....356-T6 Aluminum
156.....356-T6 Aluminum
157.....Die Cast Aluminum Alloy #380
158.....Aluminum Alloy SR-319
162.....Brass, Yellow, Screw Machine Stock
165.....Cast Bronze, 85-5-5-5
166.....Bronze, SAE 660
170.....Bronze, Bearing Type,
Oil Impregnated
180.....Copper Alloy
305.....Carbon Steel, Black Epoxy Coated
306.....Carbon Steel, Black PTFE Coated
307.....Aluminum, Black Epoxy Coated
308.....Stainless Steel, Black PTFE Coated
309.....Aluminum, Black PTFE Coated
313.....Aluminum, White Epoxy Coated
330.....Zinc Plated Steel
332.....Aluminum, Electroless Nickel Plated
333.....Carbon Steel, Electroless
Nickel Plated
335.....Galvanized Steel
337.....Silver Plated Steel
351.....Food Grade Santoprene®
353.....Geolast; Color: Black
354.....Injection Molded #203-40
Santoprene® Duro 40D +/-5;
Color: RED
356.....Hytrel®
357.....Injection Molded Polyurethane
358.....Urethane Rubber
(Some Applications)
(Compression Mold)
359.....Urethane Rubber
360.....Nitrile Rubber Color coded: RED
363.....FKM (Fluorocarbon)
Color coded: YELLOW
364.....EPDM Rubber
Color coded: BLUE
365.....Neoprene Rubber
Color coded: GREEN
366.....Food Grade Nitrile
368.....Food Grade EPDM
371.....Philthane (Tuftane)
374.....Carboxylated Nitrile
375.....Fluorinated Nitrile
378.....High Density Polypropylene
379.....Conductive Nitrile
408.....Cork and Neoprene
425.....Compressed Fibre
426.....Blue Gard
440.....Vegetable Fibre
500.....Delrin® 500
502.....Conductive Acetal, ESD-800
503.....Conductive Acetal, Glass-Filled
506.....Delrin® 150
520.....Injection Molded PVDF
Natural color
540.....Nylon
542.....Nylon
544.....Nylon Injection Molded
550.....Polyethylene
551.....Glass Filled Polypropylene
552.....Unfilled Polypropylene
555.....Polyvinyl Chloride
556.....Black Vinyl
558.....Conductive HDPE
570.....Rulon II®
580.....Ryton®
600.....PTFE (virgin material)
Tetrafluorocarbon (TFE)
603.....Blue Gylon®
604.....PTFE
606.....PTFE
607.....Envelon
608.....Conductive PTFE
610.....PTFE Encapsulated Silicon
611.....PTFE Encapsulated FKM
632.....Neoprene/Hytrel®
633.....FKM/PTFE
634.....EPDM/PTFE
635.....Neoprene/PTFE
637.....PTFE, FKM/PTFE
638.....PTFE, Hytrel®/PTFE
639.....Nitrile/TFE
643.....Santoprene®/EPDM
644.....Santoprene®/PTFE
656.....Santoprene® Diaphragm and
Check Balls/EPDM Seats
661.....EPDM/Santoprene®
666.....FDA Nitrile Diaphragm,
PTFE Overlay, Balls, and Seals
668.....PTFE, FDA Santoprene®/PTFE

- Delrin and Hytrel are registered tradenames of E.I. DuPont.
- Nylatron is a registered tradename of Polymer Corp.
- Gylon is a registered tradename of Garlock, Inc.
- Santoprene is a registered tradename of Exxon Mobil Corp.
- Rulon II is a registered tradename of Dixion Industries Corp.
- Ryton is a registered tradename of Phillips Chemical Co.
- Valox is a registered tradename of General Electric Co.