OWNER'S MANUAL

Little GIANT

EN English

VCMA-20-PRO Condensate Pump Series

This pump automatically removes condensate water that drips from an air conditioner evaporator coil, refrigeration equipment coil, condensing furnace, or condensing boiler. The pump is controlled by a float switch mechanism, which automatically starts and stops the pump.

Some models also include a high-water level switch, which opens a thermostat circuit when the pump reservoir is full, stopping production of condensate. Alternatively, this switch can be reconfigured to close a circuit, which can operate an external alarm or relay, (purchased separately).

This product is covered by a Limited Warranty for a period of 3 years from the date of original purchase by the consumer. For complete warranty information, refer to www.LittleGiant.com.

Specifications

Model	Volts	HZ	Amps	Watts	Shut Off
VCMA-20-PRO	115	60	1.5	93	21 ft (6.4 m)
	230	50/60	0.7/0.6	75	20 ft (6.1 m)

SAFETY INSTRUCTIONS

This equipment should be installed and serviced by technically qualified personnel who are familiar with the correct selection and use of appropriate tools, equipment, and procedures. Failure to comply with national and local electrical and plumbing codes and within Little Giant recommendations may result in electrical shock or fire hazard, unsatisfactory performance, or equipment failure.

Know the product's application, limitations, and potential hazards. Read and follow instructions carefully to avoid injury and property damage. Do not disassemble or repair unit unless described in this manual.

Failure to follow installation or operation procedures and all applicable codes may result in the following hazards:

⚠ DANGER

Risk of death, personal injury, or property damage due to explosion, fire, or electric shock.

- Do not use to pump flammable, combustible, or explosive fluids such as gasoline, fuel oil, kerosene, etc.
- Do not use in explosive atmospheres or hazardous locations as classified by the NEC, ANSI/NFPA70.
- Do not handle a pump or pump motor with wet hands or when standing on a wet or damp surface, or in water.
- When a pump is in its application, do not touch the motor, pipes, or water until the unit is unplugged or electrically disconnected.
- If the power disconnect is out of sight, lock it in the open position and tag it to prevent unexpected application of power.

⚠ WARNING

Risk of severe injury or death by electrical shock.

- To reduce risk of electrical shock, disconnect power before working on or around the system.
- Wire pump system for correct voltage.
- Be certain that this pump is connected to a circuit equipped with a ground fault circuit interrupter (GFCI) device if required by code.
- Check electrical outlets with a circuit analyzer to ensure power, neutral, and ground wires are properly connected.
- Some pumps are supplied with a grounding conductor and grounding-type attachment plug. To reduce risk of electric shock, be certain that it is connected only to a properly grounded grounding-type receptacle. Do not remove the third prong from the plug. The third prong is to ground the pump to help prevent possible electric shock hazard.
- Some pumps are supplied with lead wires and are intended to be hardwired using a junction box or other approved enclosure. The pumps include a grounding connector. To reduce risk of electric shock, be certain that it is properly connected to ground.
- In a 230 V direct wire installation, one side of the line going to the pump is always electrically energized, regardless of whether the liquid level control switch is open or closed. To avoid hazards when installing or servicing, install a double-pole disconnect near the pump installation.
- The flexible jacketed cord assembly mounted to the pump must not be modified in any way, with the exception of shortening the cord to fit into a control panel. Any splice between the pump and the control panel must be made within a junction box and comply with the National Electrical Code.
- Check local electrical and building codes before installation. The installation must be in accordance with their regulations as well as the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
- Do not use the power cord for lifting the pump.
- Do not use an extension cord.
- The pump should only be used with liquids compatible with pump component materials. If the pump is used with liquids incompatible with the pump components, the liquid can cause failure to the electrical insulation system resulting in electrical shock.

⚠ CAUTION

Risk of bodily injury, electric shock, or equipment damage.

- This equipment must not be used by children or persons with reduced physical, sensory or mental abilities, or lacking in experience and expertise, unless supervised or instructed. Children may not use the equipment, nor may they play with the unit or in the immediate vicinity.
- Equipment can start automatically. Lockout-Tagout before servicing equipment.
- An inoperative or malfunctioning pump could lead to flooding, resulting in personal injury or property damage.
- Operation of this equipment requires detailed installation and operation instructions provided in this manual. Read entire manual before starting installation and operation. End User should receive and retain manual for future use.

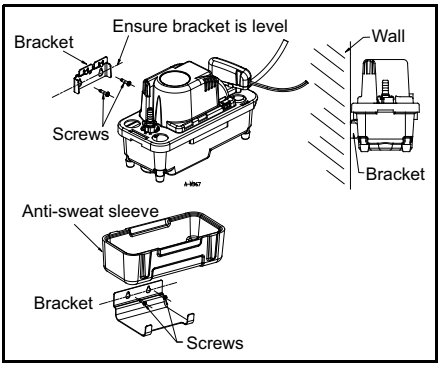
NOTICE

Risk of damage to pump or other equipment.

- Before installing pump, allow air conditioner to cycle several times, collecting condensate in a separate container to help flush any residual oils that may remain in the system. Failure to flush the system can result in damage to the pump and drain line plumbing components.
- When operating in a gas furnace environment, care must be taken to ensure acidity of condensate does not fall below the average pH of 3.4 (to prevent a localized pocket of acid that acts like a battery causing pitting) by routinely cleaning or flushing tank with fresh water.
- Support pump and piping when assembling and when installed. Failure to do so may cause piping to break, pump to fail, motor bearing failures, etc.
- Do not install the pump in a manner that will subject it to splashing or spraying.
- Periodically inspect pump and system components. Regularly check hoses for weakness or wear, making certain that all connections are secure.
- Schedule and perform routine maintenance as required and in accordance with the Maintenance section of this manual.
- Pump is for indoor use only.
- Do not use this pump inside an air plenum.

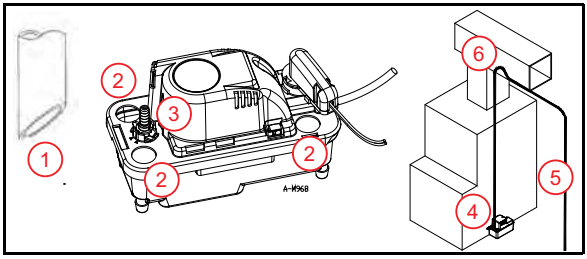
INSTALLATION

Physical Installation



1. Install the pump on a flat surface
   - Install the enclosed rubber feet onto the bottom of the tank.
   - Make sure the mounting surface will support the weight of the pump and water filled tank.
2. The pump can also be mounted onto a wall or the side of an air conditioner or furnace, using the enclosed mounting bracket. The tank has a mounting slot on each side so it can be positioned either way.
3. Pumps with an anti-sweat sleeve use a different bracket, but the mounting location holes are the same and the brackets are interchangeable.
4. Ensure that the pump is level and the inlet is below the coil drain.

Piping Connections



1. Cut end of pipe(s) from evaporator or furnace drain at a 45° angle as shown to prevent pipe(s) from sealing closed when sitting against the tank's floor.
2. The pump will accept up to three drain lines. However, take care to make sure that total inflow does not exceed the rated output of the pump to prevent overflow. Route drain pipe(s) downward into one or more pump inlet openings one to three inches, ensuring no interference with float operation. Keep any unused openings closed using the supplied cap plugs.
3. Install outlet tubing or piping onto outlet check valve and secure with hose clamp (not provided).
   - Use 3/8" inside diameter maximum tubing or piping to prevent excessive flow back to unit.
4. Route outlet tubing or piping from pump straight up as high as necessary.
   - Do not extend higher than 75% of the total dynamic head capacity of the pump.
5. From the high point, slope discharge line down slightly to a point above the drain area. Then, turn down and route to a suitable drain at a point below or approximately level with the bottom of the pump, if possible. This will produce a siphoning effect which will improve efficiency of the pump.
6. If it is not possible to slope the discharge line down, make an inverted "U" trap directly above the pump at the highest point.

Electrical Connections

Connect the power cord to a constant source of power matching the pump nameplate voltage.

- The pump should be connected or wired to its own circuit, with no other electric receptacles or equipment in the circuit. Do not connect to a fan or any device that runs intermittently.
- The fuses or circuit breaker should be of ample capacity.
- Connect to a circuit equipped with a ground fault circuit interrupter (GFCI) if required by code.

Some models are supplied with a stripped wire cord end. Power connections must be made within a junction box, and must comply with the National Electrical Code. Wires are color coded as follows:

- Green/yellow = Ground; Brown = Line; Blue = Line (230 V) or Neutral (115 V)

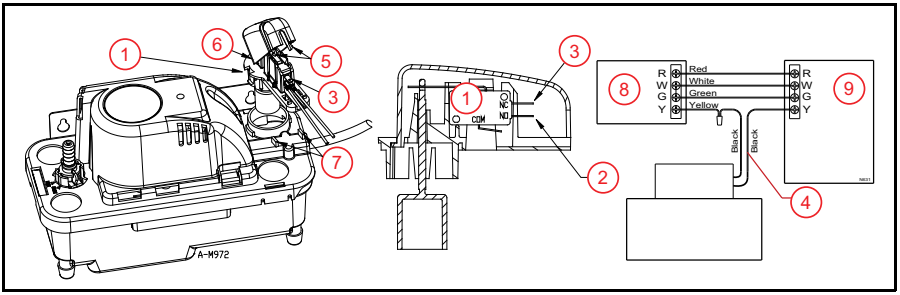
IMPORTANT: If the power cord is damaged, the whole unit must be replaced.

High Water Level Switch Connection

⚠ CAUTION

Risk of bodily injury or property damage.

- In applications where property damage and/or personal injury might result from an inoperative or leaking pump due to power outages, discharge line blockage, or any other reason, a backup system(s) (e.g. auxiliary switch) and/or alarm should be used and monitored.
- The high level switch should be connected to a Class II Low Voltage circuit. The two switch wires are black. Do not confuse these wires with the line voltage power conductors.
- The high level switch is placed in an orientation that reverses the normal function of normally open and normally closed terminals. Pay close attention to the following instructions.



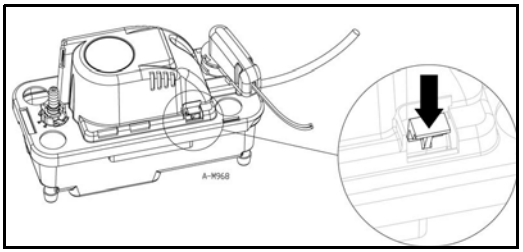
1. High Water Level Switch
2. NO terminal. Connect here to shut off the condensing unit of the heating/cooling system.
3. NC terminal. Connect here to activate an external alarm or relay.
4. High Water Level Switch wiring leads
5. Switch housing tabs
6. Hinge tab
7. Switch Mounting Ribs. When installing switch, make sure it is positioned between these ribs.
8. Thermostat
9. Air Conditioner/Furnace

There are two options for connecting the high level switch:

1. The switch is factory wired to the NO and COM terminals. This configuration will open (break) an electrical circuit when the switch is activated by a high water level in the reservoir, which can be used to stop the condensing unit(s) of the heating/cooling system.
   - Refer to the thermostat and heating/cooling unit's Operating Manual for expected switch operation and wiring connections. Connect the switch leads (4) in series with the low voltage thermostat circuit as specified in the heating/cooling unit's operating manual.
2. The installer can reconfigure this switch to the NC terminal to close a low voltage circuit in the event of high water level, which could activate an external alarm or relay (purchased separately). Use the following procedure if an NC configuration is required:
   - Squeeze the High Level Switch housing tabs at (5).
   - Rotate the housing upwards at hinge tab (6); or, remove the housing completely by lifting the housing hinge tab out of the slot.
   - Support the switch and carefully change the lead wire from the NO terminal to the NC terminal (3).
   - Return the Switch housing back to the switch base.
   - Squeeze the tabs together at (5) and insert into the switch base between ribs (7).
   - Connect the switch leads in series with the low voltage external component as specified in the component's manual.

Place the "Attention Service Technician" label included with the pump on the outside of the access panel in a visible location.

Operation Testing



1. Turn on power to the pump.
2. Test pump operating switch by pressing lightly on the external test/run lever to start the motor.
3. Test high level switch by raising high level switch float.
   - If wired to NO terminal, air handling device should shut down when float is raised.
   - If wired to NC terminal, external component (alarm or relay) should activate when float is raised.

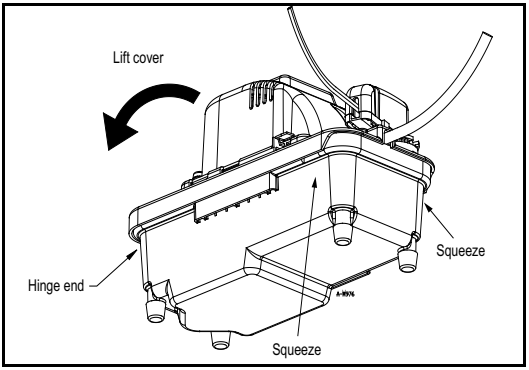
MAINTENANCE

⚠ CAUTION

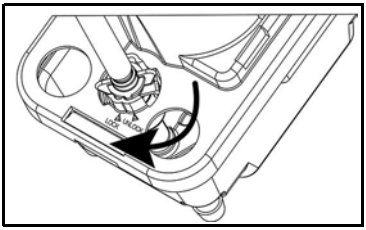
Risk of bodily injury or property damage.

- Do not allow the tank to overflow during this maintenance.
- Inspect and test the condensate removal system condition and operation every 6 months (more frequently in heavy-use applications).

1. Disconnect the pump from the power source.
2. Remove the ¼ turn check valve. Inspect the check valve and clean with warm water and mild soap if necessary.
3. Remove tank assembly from the pump by squeezing the reservoir at places indicated to release the latch.
   - Place a finger in one of the larger holes in the corner of the top and lift to remove the top part of the pump. The top hinges on the opposite end of the tank.



4. Be sure the floats move freely. Clean as necessary.
5. Clean the tank with warm water and mild soap.
6. Flush tank with fresh water. This helps to ensure that residual condensate does not create localized pockets of acid that could cause pitting.
7. Check inlet and outlet piping. Clean as necessary. Be sure there are no kinks in the line that would inhibit flow.
8. Replace the tank assembly to the pump.
9. Replace inlet and outlet piping.
   - Fully insert the check valve into the discharge line, ensuring that the O-ring and discharge line are free of debris.
   - Insert the check valve into the pump discharge hole and twist it by hand ¼ turn.
   - Check to ensure that the check valve is securely locked into position.
10. Test operation of the system.



Troubleshooting

Problem	Probable Causes	Corrective Action
Pump does not start when tank is full of condensate water.	Pump is not connected to electrical power.	Connect pump to a dedicated GFCI circuit.
	Circuit breaker off or fuse removed.	Turn on circuit breaker or replace fuse.
	Accumulation of debris or build-up on float.	Clean float; a dirty float could be too heavy to operate correctly.
	Float movement obstruction.	Remove the tank. Check float movement path. Remove any debris or obstruction.
	Defective switch.	Replace pump.
	Defective motor.	Replace pump.
Condensate is overflowing from the tank.	Pump is not connected to electrical power.	Connect pump to a dedicated GFCI circuit.
	Liquid inflow matches or exceeds pump output capacity.	Larger pump required. The high level switch should shut off the A/C unit or signal an alarm in this condition if connected in the circuit correctly. Check to ensure that the pump high level switch is connected to the A/C unit (or alarm circuit), and that the leads are connected to the correct switch terminals for the application. Refer to "High Water Level Switch Connection" on page 4.
	Pump is not level.	Check to ensure that the pump is level. If the pump is not level, it may not activate, causing water to overflow from the tank. Place unit on a flat and level surface.
	Accumulation of debris or build-up on float.	Clean float. A dirty float could be too heavy to operate correctly.
	Check valve stuck or plugged	Remove check valve and inspect for proper operation.
	Outlet flow is blocked.	Check outlet tubing to ensure that it is not kinked or blocked. Clear blocked tubing of slime and debris. Clean inlet and outlet piping.
	Pump impeller is not turning.	Clear any blockage in the impeller housing.
	Defective switch.	Replace pump.
	Defective motor.	Replace pump.
Pump will not shut off.	Float movement obstruction.	Remove the tank. Check float movement path. Remove any debris or obstruction.
	Liquid inflow matches or exceeds pump output capacity.	Larger pump required. The high level switch should shut off the A/C unit or signal an alarm in this condition if connected in the circuit correctly. Check to ensure that the pump high level switch is connected to the A/C unit (or alarm circuit), and that the leads are connected to the correct switch terminals for the application. Refer to "High Water Level Switch Connection" on page 4.
	Defective switch.	Replace pump.
Pump runs but does not discharge liquid.	Check valve stuck or plugged.	Remove check valve and inspect for proper operation.
	Lift too high for pump.	Check rated pump performance.
	Inlet to impeller plugged.	Pull pump and clean.
	Outlet flow is obstructed.	Check outlet tubing to ensure that it is not kinked or blocked. Clear blocked tubing of slime and debris. Clean inlet and outlet piping.
Pump does not deliver rated capacity.	Check valve stuck or plugged.	Remove check valve and inspect for proper operation.
	Lift too high for pump.	Check rated pump performance.
	Low voltage, speed too slow.	Check that supply voltage matches nameplate rating.
	Impeller or discharge pipe is clogged.	Pull pump and clean. Check pipe for scale or corrosion.
Pump cycles continually.	Check valve leaking.	Remove check valve and inspect for proper operation.