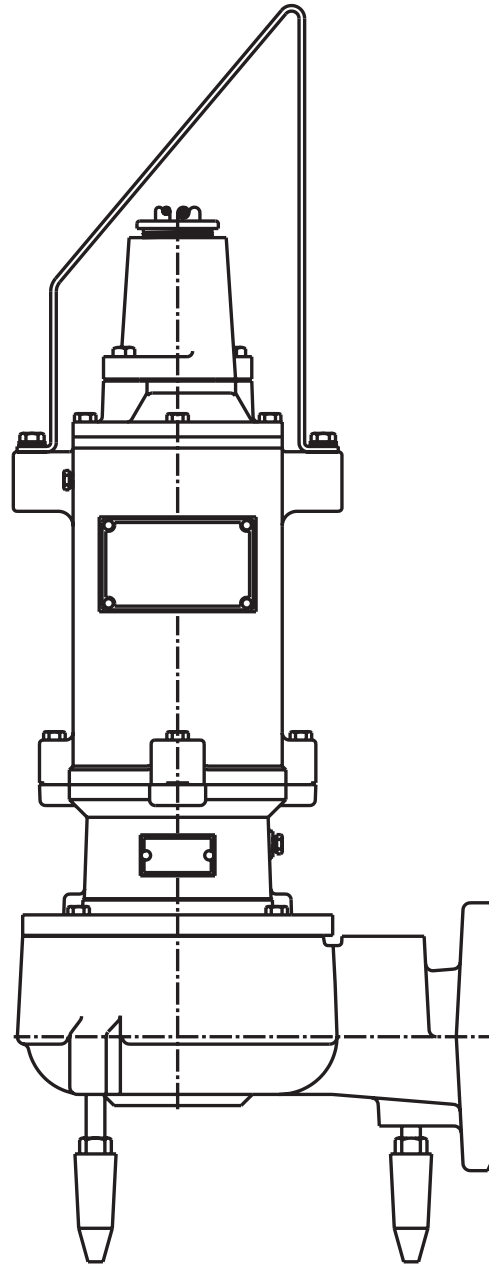




**MYERS®**



# AG3 and AG5 SERIES **AGRICULTURAL PUMPS**

## **INSTALLATION AND SERVICE MANUAL**

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.

## BEFORE INSTALLATION

This manual contains important information for the safe use of this product. Read this manual completely and follow the instructions carefully. Reasonable care and safe methods relating to the installation and operation of this product should be practiced. Check local codes and requirements before installation.

- ⚠ **DANGER: Risk of Electrical Shock or Electrocutation.** May result in serious injury or death or fire hazard. Installer must disconnect all electrical sources prior to installation, handling or servicing. Only qualified personnel may install this system. NFPA 70/National Electric Code (NEC) or local codes must be followed. System must be properly grounded according to NEC. Do not lift pump by power cord.
- ⚠ **DANGER: Biohazard Risk.** Once wastewater source has been connected to system, biohazard risk exists. Installer(s) and/or service personnel must use proper personal protective equipment and follow handling procedures per OSHA 29 CFR 1910.1030 when handling equipment after wastewater source has been connected to system.
- ⚠ **DANGER: Risk of Asphyxiation.** Installer(s) and/or service personnel must use proper personal protective equipment and follow OSHA 29 CFR 1910.146 or OSHA 29 CFR 1926. Pump may be installed in a location classified as a confined space.
- ⚠ **DANGER: Risk of Fire or Explosion.** Do not smoke or use open flames in or around this system. This system is not intended for use in hazardous locations per NFPA 70 National Electric Code. Do not pump flammable liquids. Consult factory for optional equipment rated for hazardous location use.
- ⚠ **DANGER: Cutting Risk.** Risk of serious cutting or amputation exists. Disconnect all power sources prior to servicing pump. Pump may start without warning.
- ⚠ **DO NOT** run the pump dry. Dry running can overheat the pump (causing burns to anyone handling it) and will void the warranty.

### 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.

## APPLICATION

These pump systems are designed for pumping effluent or sewage water with a pH ranging from 5 to 9, specific gravities from 0.9 to 1.1, viscosities ranging from 28 to 35 S.S.U. and temperatures up to 140°F.

## UNPACKING PUMP

Remove pump from carton. When unpacking unit, check for concealed damage. Claims for damage must be made at the receiving end through the delivery carrier. Damage cannot be processed from the factory.

## PUMP MODELS

These instructions cover the installation of the AG3 and AG5 series of agricultural pumps. The pumps are designed for handling raw agricultural sewage and wastewater.

The AG3 and AG5 series are made with a recessed impeller. All models will pass 3" diameter solids and have a 4" standard flange discharge.

## VOLTAGES

All single phase motors are for 230 volts only.

## ELECTRICAL

To reduce risk of electrical shock, disconnect the pump from the power source before handling or servicing.

Never operate a pump with a power cord that has frayed or brittle insulation. Never let cords or plugs lie in water or handle connected power cords with wet hands.

## PUMPS

Pump builds up heat and pressure during operation. Allow time for pump to cool before handling or servicing. Make sure lifting handles are securely fastened each time before lifting and do not lift pump by the power cord.

Do not exceed manufacturer's recommendation for maximum performance, as this could cause the motor to overheat.

Submersible solids handling pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common.

Do not operate pump without safety devices in place.

**IMPORTANT!** Myers is not responsible for losses, injury or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

## SEAL FAILURE

All motors have a probe installed in seal chamber near the bottom so that any leakage past the lower seal into seal chamber is detected.

A red warning light at the control panel comes on if water enters seal chamber. This is an indicator only and does not stop motor, but warns that seal should be replaced immediately. **RUNNING WITHOUT SEAL REPLACEMENT COULD DAMAGE MOTOR.**

## HEAT SENSOR

All motors have a heat sensing thermostat installed in top winding of motor. Any motor winding temperature above 248°F will open thermostat and stop motor. Thermostat will automatically reset as soon as it has cooled.

**CAUTION: WITH AUTOMATIC RESET, MOTOR CAN START AT ANY TIME AFTER THERMOSTAT IS TRIPPED, SO NEVER DO SERVICE WORK ON PUMP UNLESS POWER SUPPLY IS DISCONNECTED.**

**IMPORTANT: BE SURE HEAT SENSOR WIRES AND SEAL FAILURE WIRES ARE CONNECTED AT PANEL TERMINAL BLOCK. WARRANTY IS VOID IF WIRES ARE NOT CONNECTED OR ARE JUMPED.**

## MOTOR POWER CABLE AND CONTROL CABLE

Each power cord has 4 conductors – white, black, red and green. Interchanging any two leads reverses the motor on 3ø only.

The white and black leads connect to the two line terminals and the red connects to the start winding terminal. The green is for ground and must be connected per national or local code requirements.

The control cable has 5 conductors – black, white, red, orange and green. White and black connect to heat sensor terminals; red and orange connect to the seal failure terminals and green connects to the ground terminal.

## SINGLE PHASE MOTORS

Single phase motors are for 230 volts only. A special control panel with start and run capacitors and start relay are required for these pumps.

These control panels must be obtained from F.E. Myers or must be approved by Myers or warranty is void.

## OIL FILLED

Motor chamber and seal chamber are oil filled for coolest running, best heat transfer and best lubrications for bearings and seals. Motor requires no oiling or greasing. Motor is sealed for life of bearings.

## POWER CORD SIZES

Power cord size depends on motor hp size and voltage. Motors are furnished for single voltage.

**CAUTION:** NEVER PULL PUMP OR WORK ON CONTROL BOX UNTIL INCOMING POWER IS DISCONNECTED. NEVER RUN MOTOR UNTIL GREEN GROUND CONDUCTOR IS PROPERLY CONNECTED.

## MAKING ELECTRICAL CONNECTIONS

Level controls are held by support bracket and cords are adjusted for proper depth.

Lower turnoff control should be set so that pump stops when water level is about at top of check valve or straight through casting. Upper turn-on control is set to start pump when level is at height specified above pump. Override control is set at height specified above upper turn-on control. Alarm control is set about 6" to 12" above override control. No control should be set above inlet invert.

If control panel is mounted directly on basin top, the power and control wires are taken directly to control box and are sealed in the cord plate with cord grip connectors.

If panel is installed remote from basin, the cords can be taken through a conduit to control panel, or junction box can be used in the basin to make connections. The Myers junction box has a built-in sealing connector to seal the outgoing wires.

## REMOVING PUMP CASE AND IMPELLER

In case of wear, damage, plugged pump or replacing a defective motor, the pump volute case and impeller can be removed in the field.

Remove bolts between seal housing flange and volute case. The motor and impeller can now be lifted off as a unit. If necessary to remove impeller, lay pump on its side. With a screwdriver bend the tabs of the lock washer away from the head of the hex head bolt.

Loosen and remove the bolt by turning counter-clockwise. Impeller is mounted by a straight fit with driving key. Pry evenly on opposite impeller sides behind the impeller. Set motor on end with shaft up after removing impeller so that oil will not drain past the seal.

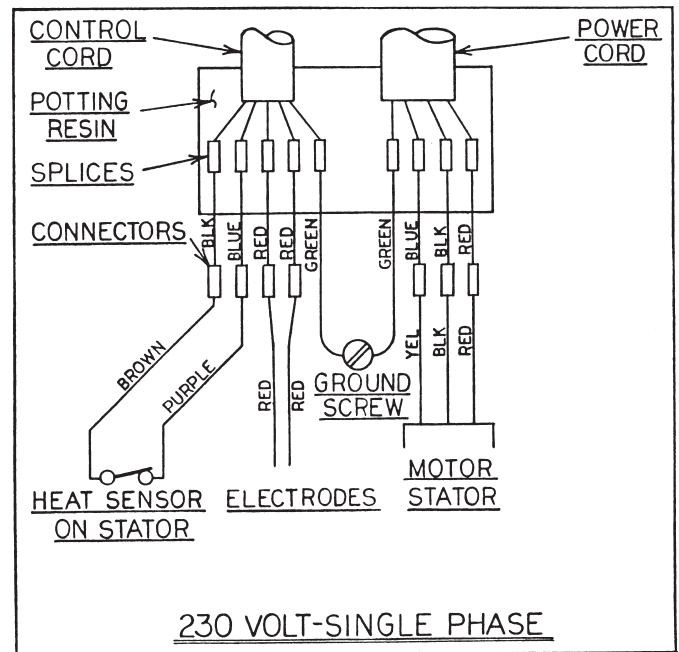
## REPLACING IMPELLER AND PUMP CASE

Apply Loctite® in keyway, impeller bore and on the threads of the hex head cap screw. Before placing the impeller on the shaft, be sure the mechanical seal and its spring are in place. Position retaining washer with long pin extension in keyway.

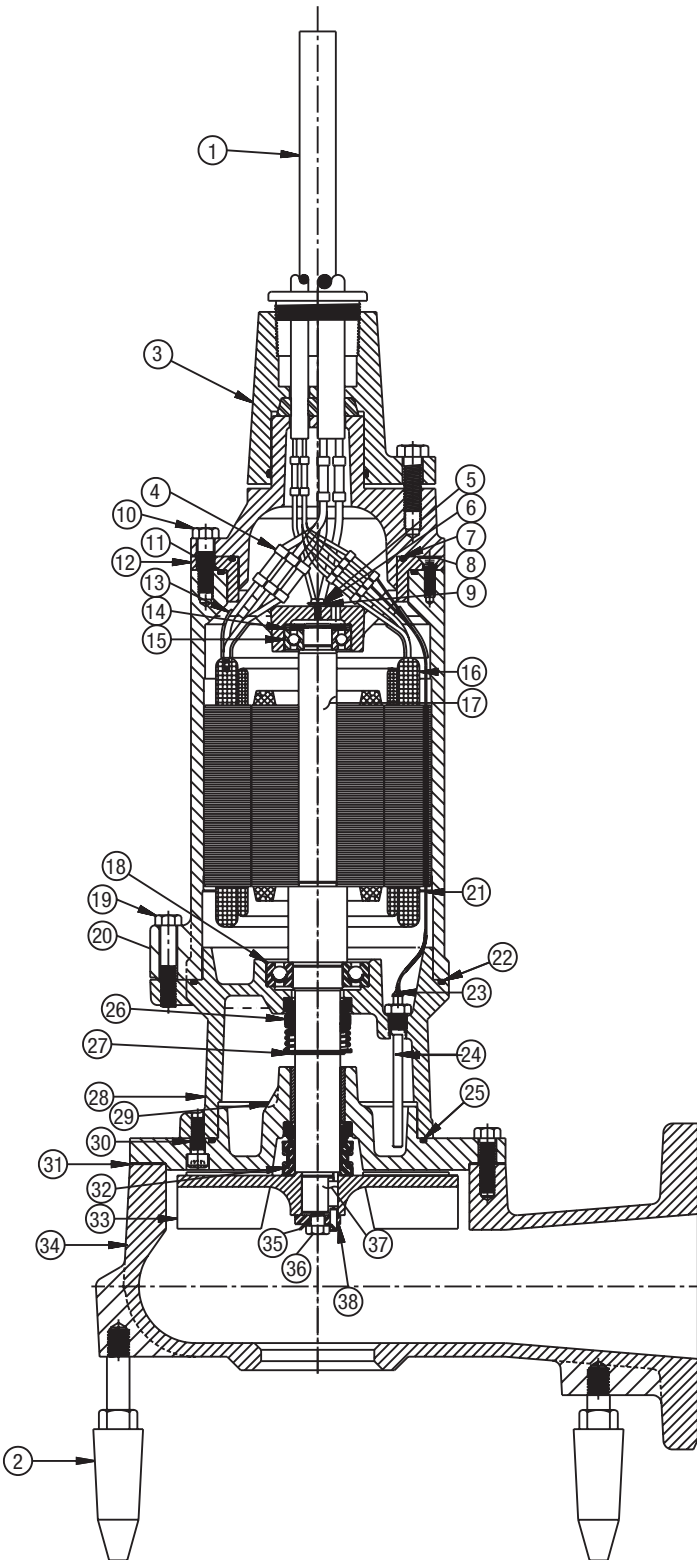
Obtain a new lock washer and flatten two tabs located 180° from the locking projection on the inner edge of the washer. There should be one flattened tab on each side of the pin extending from the retaining washer.

Assemble hex head cap screw and tighten securely. Bend lock washer tabs up against hex head on the bolt. Do not bend up the two tabs flattened on each side of the pin in the retaining washer.

## AG SERIES CONNECTION DIAGRAMS



## AG SERIES 3-5 HP REPAIR PARTS LIST



Ref.	Part Number	Description	Qty.
1	25371A010	BAIL, LIFTING, COMPLETE	1
	25371B000	BAIL, LIFTING	1
	05484A016	WASHER, LOCK 1/2"	2
	19103A052	HEX SCREW, 1/2" x 1-1/4"	2
2	23768A020	SUPPORT LEG-625	1
3	22569B031	CORD CAP 35'	1
4	15781A007	CONNECTOR	3
5	05434A043	MACH. SCREW, #10-24 x 3/8" LG.	1
6	05030A126	WASHER, 7/16" x 13/64" x 1/32"	1
7	05876A123	O-RING, 4-7/8" x 4-5/8" x 1/8"	1
8	07597A017	MACH. SCREW, SOCKET FLAT HD., 5/16"-18 x 1"	2
9	06107A015	LOCK WASHER, #10	1
10	19102A006	CAP SCREW, HEX HD., 7/16"-14 x 1-1/2"	8
11	05876A112	O-RING, 5-1/2" x 5-1/4" x 1/8"	1
12	22590B000	CAP, UPPER BEARING	1
13	10649A102	TUBE, PLASTIC, 1-1/4" LG.	2
	10649A116	TUBE, PLASTIC, 3" LG.	2
14	19331A006	WASHER, FINGER SPRING	2
15	08565A022	BEARING, BALL	1
16	24407C200	STATOR (AG3)	1
	24407C200	STATOR (AG5)	1
17	22846C100	ROTOR W/SHAFT	1
18	08565A023	BEARING, BALL	1
19	19102A023	CAP SCREW, HEX HD., 7/16"-14 x 2-1/4"	4
20	22571D000	HOUSING, MOTOR	1
21	22578A100	WIRE, ELECTRODE	2
22	05876A114	O-RING, 7" x 6-3/4" x 1/8"	1
23	05434A025	SCREW, MACHINE	2
24	25343A100	PROBE, SEAL LEAK	2
25	05876A113	O-RING, 6" x 5-3/4" x 1/8"	1
26	22577A000	SEAL, 1-1/4" SHAFT (UPPER)	1
27	12558A008	RING, RETAINING	1
28	22576D010	HOUSING, SEAL (UPPER)	1
29	22853C001	HOUSING, LOWER SEAL W/BEARING	1
30	06106A028	CAP SCREW, SOCKET HD., 3/8"-16 x 1"	4
31	05231A079	GASKET, VELLUMOID	1
32	27067A001	SEAL, 1-1/4" SHAFT (LOWER)	1
33	22855C010	IMPELLER (AG3)	1
	22855C020	IMPELLER (AG5)	1
34	22854D001	CASE, VOLUTE	1
35	08001A007	WASHER, BEARING LOCK	1
36	19101A017	CAP SCREW, HEX HD., 3/8"-16 x 1-1/4"	1
37	05818A074	KEY, 1/4" SQUARE x 1-1/16" LG.	1
38	23609A001	WASHER, IMPELLER RETAINER W/PIN	1

CAP SCREW	TORQUE VALUE
3/8-16	20 ft.-lbs.
1/2-13	43 ft.-lbs.
5/8-11	93 ft.-lbs.
3/4-10	128 ft.-lbs.

## CHECKING FOR MOISTURE IN MOTOR

Use ohmmeter and set on highest scale. Readings on the large power cord between any of the conductors should be more than 500,000 ohms. If reading is below 500,000 ohms, the motor housing and stator should be serviced at an authorized service facility.

## RESISTANCE OF WINDINGS

Every motor winding has a fixed resistance. Winding must check close to the specification values to operate properly. This winding resistance also shows if motor is connected for voltage being used. Use ohmmeter for this test and set on scale to read directly in ohms.

## TROUBLESHOOTING

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### CONDITION

Pump runs but does not pump liquid from basin.

### PROBABLE CAUSE

Pump impeller may be air locked; this occasionally occurs on a new installation. Start and stop pump several times to purge air. Be sure air vent hole in volute case is clean.

Run additional water into basin so that pump will be submerged deeper to clear air.

If pump is three phase, rotation may be wrong.

If pump has been installed for some time and does not pump, it may be clogged at inlet.

Discharge gate valve may be closed.

Discharge check valve may be clogged or have a broken clapper or spring.

Discharge head may be too high. Check elevation.

If above checks do not locate trouble, motor rotor may be loose on shaft, which allows motor to run but will not turn impeller or only at low RPM.

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Red light comes on at control box.

This indicates some water has leaked past the lower seal and has entered the seal chamber and made contact with the electrode probe. Pump must be removed from basin for immediate replacement of lower seal.

## CONDITION

Overload trips at control box and alarm buzzer or flashing red light comes on due to high water level in basin.

## PROBABLE CAUSE

Push in on red reset button to reset overload. If overload trips again after short run, pump has some damage and must be removed from basin for checking.

Trouble may be from clogged impeller causing motor to overload or could be from failed motor.

Trouble may be from faulty component in control box. Always check control box before removing pump.

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Yellow run light stays on continuously.

Indicates H-O-A switch may be in the Hand position.

Level control switch may have failed, causing pump to continue to operate when water is below lower control.

Impeller may be partially clogged, causing pump to operate at very reduced capacity.

Gate valve or check valve may be clogged, causing low pump flow.

Pump may be air logged.

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Circuit breaker trips.

Reset breaker by pushing clear down on handle, then back to On position. If breaker trips again in a few seconds, it indicates excessive load probably caused by a short in the motor or control box. Check out instructions given with control box before pulling pump.

If this condition happens after an electrical storm, motor or control box may be damaged by lightning.

Resistance reading of the motor with lead wires disconnected from the control box can determine if trouble is in motor or control box.

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Pump is noisy and pump rate is low.

Impeller may be partially clogged with some foreign objects, causing noise and overload on the motor.

Impeller may be rubbing on wear ring due to dent shaft or misalignment.

Pump may be operating too close to shut-off. Check head.

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Grease and solids have accumulated around pump and will not pump out of basin.

Lower control switch may be set too high.

Run pump on Hand operation for several minutes with small amount of water running into basin to clean out solids and grease. This allows pump to break suction and surge, which will break up the solids. If level switch is set properly this condition generally will not occur.

Trash and grease may have accumulated around floats, causing pump to operate erratically.

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## STANDARD LIMITED WARRANTY

Pentair Myers® warrants its products against defects in material and workmanship for a period of 12 months from the date of shipment from Pentair Myers or 18 months from the manufacturing date, whichever occurs first – provided that such products are used in compliance with the requirements of the Pentair Myers catalog and technical manuals for use in pumping raw sewage, municipal wastewater or similar, abrasive-free, noncorrosive liquids.

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>. Warranty is effective only if Pentair Myers authorized control panels are used. All seal fail and heat sensing devices must be hooked up, 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 normal maintenance services and parts used in connection with such service; (d) to units that are not installed in accordance with applicable local codes, ordinances and good trade practices; (e) if the unit is moved from its original installation location; (f) if unit is used for purposes other than for what it is designed and manufactured; (g) to any unit that has been repaired or altered by anyone other than Pentair Myers or an authorized Pentair Myers service provider; (h) to any unit that has been repaired using non factory specified/OEM parts.

Warranty Exclusions: PENTAIR MYERS MAKES NO EXPRESS OR IMPLIED WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. PENTAIR MYERS SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE.

Liability Limitation: IN NO EVENT SHALL PENTAIR MYERS BE LIABLE OR RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES RESULTING FROM OR RELATED IN ANY MANNER TO ANY PENTAIR MYERS PRODUCT OR PARTS THEREOF. PERSONAL INJURY AND/OR PROPERTY DAMAGE MAY RESULT FROM IMPROPER INSTALLATION. PENTAIR MYERS DISCLAIMS ALL LIABILITY, INCLUDING LIABILITY UNDER THIS WARRANTY, FOR IMPROPER INSTALLATION. PENTAIR MYERS RECOMMENDS INSTALLATION BY PROFESSIONALS.

Some states do not permit some or all of the above warranty limitations or the exclusion or limitation of incidental or consequential damages and therefore such limitations may not apply to you. No warranties or representations at any time made by any representatives of Pentair Myers shall vary or expand the provision hereof.



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Warranty Rev. 12/13