



OWNER'S MANUAL

Convertible Jet Pump

Models FJPC-050, FJPC-075, FJPC-100



- | | |
|------------------------------|-------------------------------------|
| 1. Suction Port (1-1/4" NPT) | 6. Pressure Gauge Outlet (1/4" NPT) |
| 2. Drive Port (1" NPT) | 7. Pressure Switch |
| 3. Discharge Port (1" NPT) | 8. Terminal Box |
| 4. Priming Port (1/4" NPT") | 9. Ejector Kit |
| 5. Drain Port (1/4" NPT) | |

SAFETY GUIDELINES

This manual contains important safety, installation and maintenance information.

READ THIS MANUAL PRIOR TO INSTALLING AND OPERATING THE PUMP AND CAREFULLY FOLLOW ALL SAFETY RULES AND OPERATING INSTRUCTIONS.



CAUTION:

Review instructions before operating.



WARNING:

- Always employ a licensed electrician.
- All wiring, electrical connections, and system grounding must be in compliance with the National Electrical Code (NEC) and with any local codes and ordinances.
- This pump is non-submersible and intended for use with water only.



FOR DUAL-VOLTAGE MOTORS:

The FJPC series convertible pumps contain a dual voltage motor. For voltage changing instructions, see page 3 of this manual.



WARNING - RISK OF ELECTRICAL SHOCK:

- A licensed electrician must perform all wiring and electrical connections.
- For indoor use only. To reduce risk of electrical shock, install this pump and electrical components above the water level.
- Keep the motor operating area as dry as possible.
- Do not wash and/or immerse the motor.
- Install only on a ground fault interrupter (GFI) protected circuit.
- For recommended cable size see Table 1 Maximum Wire Length.
- To reduce risk of electrical shock, motor must be grounded and terminal cover must be bolted in place.

- Do not ground to gas line.
- Always disconnect power prior to servicing.
- Not investigated for use in swimming pool area.



WARNING – RISK OF EXPLOSION:

- Do not pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc.
- Do not use in atmosphere containing flammable or explosive gases or vapors.

UNPACKING

FloForce™ pumps are carefully packaged, tested and pass quality control to ensure safe operation and delivery. Upon delivery or purchase of your FloForce™ jet pump, always examine it carefully for any broken, damaged or missing parts. If any damage to the pump has occurred, contact and notify the company you purchased it from, so that they can assist you with repairing or replacing the pump, if needed.

APPLICATION

This convertible jet pump is well suited for a variety of fresh water supply needs, such as in rural homes, cabins, farms and many others. FJPC convertible jet pump can be used for shallow well applications (vertical water lift less than 25ft, or 8m) or deep well applications (vertical water lift is between 25ft and 82 ft (8m and 25m)). If used for shallow well applications, the injector must be mounted to the pump casing. If used for deep well applications, the injector must be mounted in the well. This convertible jet pump is designed for use with water only and is not tested for use in swimming pool areas. Not for use with salt water, brine or other liquids which contain or may contain caustic chemicals and/or foreign materials.

INSTALLATION

PUMP LOCATION:

The pump must be installed in a clean, dry and well ventilated location which provides protection from freezing temperatures and allows draining and priming the pump. The location must be accessible and have adequate room for servicing. The pump must be installed horizontally and bolted to a solid foundation, preferably concrete (see Fig. 1a). Position the pump as close to the water source as possible – doing so will reduce friction inside the pipes and pressure drop and will help the jet pump to perform at its’ maximum capacity.

PIPING:

It is highly recommended that only new and clean piping is used for installing this jet pump, adequate to handle flow rates, pressure rates, water quality and other conditions present in the system. The pump suction inlet is 1-1/4" and will require 1-1/4" piping. The pump drive outlet is 1" and will require 1" piping. In installations where water source is at a substantial distance from the pump, the piping may have to be increased to 1-1/2" to minimize pressure drop. Use pipe joint compound on all piping and fitting connections. Hand-tighten all joints to prevent leaks. To avoid air pockets, the piping should be sloped gradually upwards from the pump location to the water source. Independently support all piping to and from the jet pump (see Fig. 1b). If not properly supported, weight of the pipe may cause pump breakage and failure and will void the warranty.

A foot valve must be installed at the end of the suction line (see Fig. 2a) and must be located at least 5ft from the bottom of the well. The foot valve must be submerged at all times and positioned at least 10-20ft below the lowest water level when pump is operating. When water source is other than a drilled/dug well, such as pond, lake, etc. – a mesh screening must be used to protect the foot valve from clogging (see Fig. 1c). In case of a driven-point (sand-point) well, a foot valve cannot be used – instead, install a check valve next to the pump suction inlet.

⚠ This pump must be installed in compliance with national, state and local plumbing codes.

SINGLE PIPE INSTALLATION (SHALLOW WELL APPLICATIONS):

For installation of the pump in shallow well applications (well depth less than 25ft), the ejector remains attached to the pump (original configuration). For piping and foot valve installation, refer to Fig. 2a and follow the instructions in "Piping" section of this manual.

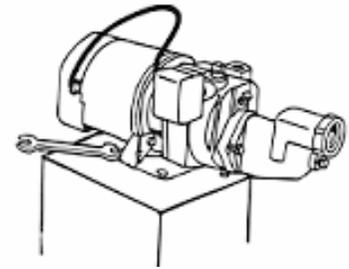


Figure 1a

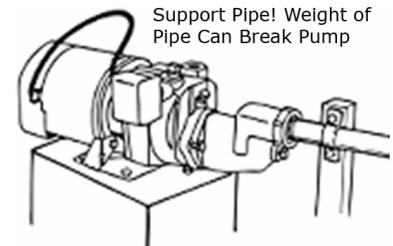


Figure 1b

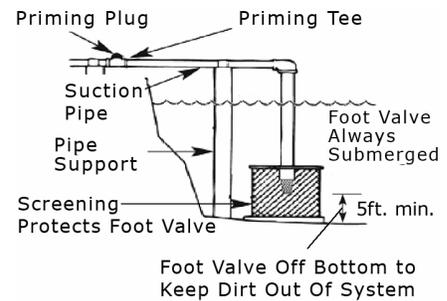


Figure 1c

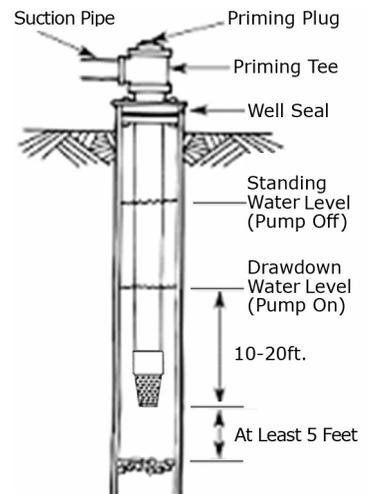


Figure 2a

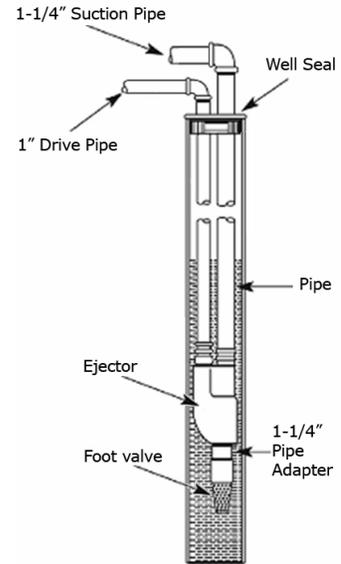
DEEP WELL EJECTOR ASSEMBLY (DEEP WELL APPLICATIONS):

FloForce™ jet pumps are capable of operating both in shallow well (less than 25ft) and deep well (25-82ft) applications. For installation in deep well applications, the ejector must be separated from the pump body and installed inside the well as shown on figure 2b.

To remove the ejector from the jet pump:

1. Loosen and unscrew bolts and washers that secure the ejector to the pump body.
2. Remove gasket and retain (optional) for future use in shallow well application.
3. Remove the hexagonal venturi (unscrew counter-clockwise).
4. Remove nozzle by using a 17mm socket and wrench (unscrew counter-clockwise).

Attach foot valve to ejector using a 1-1/4" NPT threaded pipe nipple (2" long). Make sure the foot valve operates freely. Install sufficient pipe in well casing to place ejector at the proper depth, as described in "Piping" section of this manual. Prime the pump as described in "Priming" section of this manual. Install the well seal as shown on figure 2b. All piping and fittings from the well seal to the pump must be steel.



PUMP TO TANK CONNECTIONS:

The piping from pump discharge to tank should be as short as possible and must be the same size as the pumps' discharge outlet. Never install a check valve between the tank and the jet pump.

DRAIN/SERVICE LINE:

If service line is installed, it must be between the tank and the pump. The service line must have adequate means of drainage that will prevent the water from contacting any electrical components.

PRESSURE RELIEF VALVE:

A pressure relief safety valve is required and is highly recommended to be installed in as close proximity to the pumps' discharge as possible. The pressure relief must have adequate means of drainage that will prevent the water from contacting the pump or any electrical components.

WELL TANK:

When selecting a well tank, use only diaphragm-type well tanks. Refer to tank manufacturer's instructions for sizing and proper installation.

WIRING:

⚠ WARNING - RISK OF ELECTRICAL SHOCK. A LICENSED ELECTRICIAN MUST PERFORM ALL WIRING AND ELECTRICAL CONNECTIONS.

The pump pressure switch is factory-wired to the motor and pump voltage specifications are stated on the product label. Always make sure that power supply to the motor conforms to the motor's electrical specifications. This pump is dual voltage (115V/230V). To check or change the voltage, remove terminal cover on the pump and move the switch to a desired position (115 or 230) – see Fig. 3a. Be sure to reassemble the terminal cover afterwards.

Power lines and ground leads must be connected to pressure switch terminals as shown on Fig. 3b

Pressure Switch adjustment instructions are located under the Pressure Switch Cover.



Figure 3a

For wire sizes and lengths, refer to Table 1.

TABLE 1 – MAXIMUM WIRE LENGTH (FT.)

MOTOR		WIRE GAUGE (AWG)				
HP	Volts	0-25 ft.	50 ft.	100 ft.	150 ft.	200 ft.
1/2	115	14	14	12	10	8
	230	14	14	14	14	14
3/4	115	14	14	10	8	8
	230	14	14	14	14	12
1	115	14	12	10	8	6
	230	14	14	14	14	12

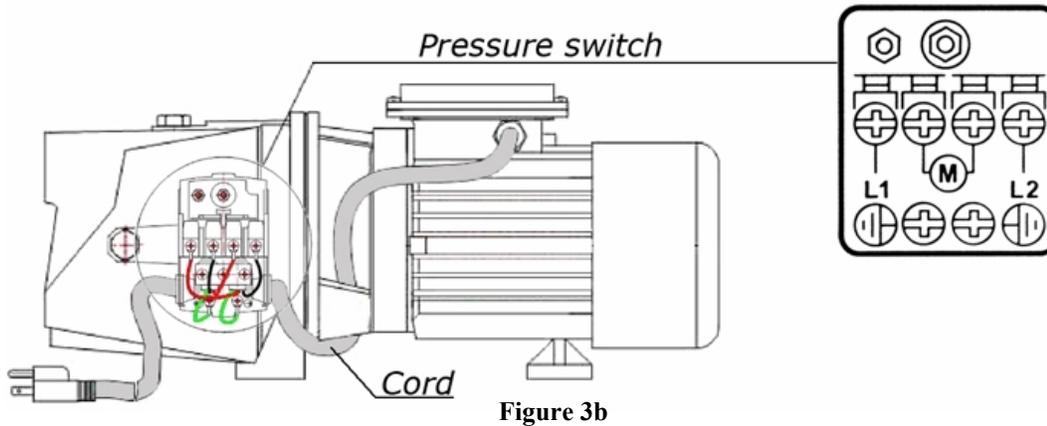


Figure 3b

OPERATION

⚠ WARNING: PUMP MUST BE PRIMED PRIOR TO RUNNING IT. FAILURE TO PRIME THE PUMP CAN DAMAGE IT AND WILL VOID THE WARRANTY.

PRIMING:

In order for the pump to function properly, you will need sufficient amount of water to fill the suction line (both lines if used in deep well application) and the pump itself.

1. Remove the priming plug on the pump.
2. If service line is installed, open the discharge (drain) valve. If not, open a tap to monitor the discharge of water.
3. Gradually fill the pump and suction line with clean water until it starts flowing out from the priming port. Use funnel when possible to prevent water from contacting any electrical components (See Fig. 4).
4. Re-install and hand-tighten the priming plug.
5. If using priming tee with a plug as shown on Fig. 2, also fill the suction line with clear water through this tee (until water starts to flow out) and reinstall the priming plug.
6. Start the pump and run it for 1.5 - 2 minutes. The unit should pump water continuously. If not, repeat steps 1 through 6.
7. During initial start-up, it may be necessary to repeat the priming procedure several times to insure that the pump and suction line(s) are free of air and completely filled with water. The number of priming cycles depends on the length of the suction line(s) and is usually anywhere from 3 to 6 times.
8. If the unit does not pump water after 6 priming cycles, shut it off and check the system for leaks.

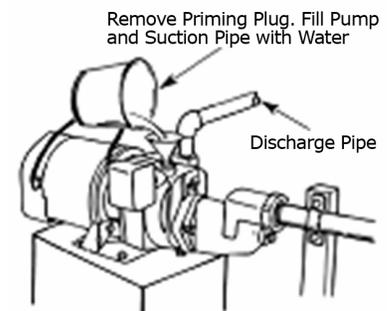


Figure 4

MAINTENANCE

⚠ WARNING – RISK OF ELECTRICAL SHOCK. ALWAYS SHUT OFF POWER TO THE PUMP AT THE MAIN ELECTRICAL PANEL AND DE-PRESSURIZE THE SYSTEM WHEN SERVICING THE PUMP.

WINTERIZING:

If unit will be subject to freezing temperatures, it will be necessary to drain the pump and other system components, such as well tank, etc. To drain the pump, shut off power to the pump at the main electrical panel first. Open service line or a water tap in the system to release pressure. Remove the priming and drain plugs from the pump.

REPLACING MECHANICAL SEAL:

Maintenance of the electrical and/or mechanical components must be performed by a qualified professional.

Disassembly:

- 1) Shut off the power to the pump at the main electrical panel.
- 2) Open a tap in the water system to release the pressure.
- 3) Remove the drain and priming plugs to allow the pump to drain.
- 4) Remove the 4 bolts.
- 5) Remove the mechanical seal assembly.
 - a. Using two flatbed screwdrivers, pry the rotary portion of the seal assembly (carbon ring, rubber gasket and spring) from the end of the shaft.



Figure 5a

b. Using two flatbed screwdrivers, pry the ceramic seal and rubber gasket from the recess of the mounting ring (Fig. 5a).

CAUTION: The precision lapped faces of the mechanical seal are easily damaged. Handle the replacement seal carefully. Nicked, scratched or dirty seal will significantly shorten its lifespan.

- 6) Clean the seal cavity of the motor bracket and the motor shaft thoroughly.
- 7) Wet outer edge of the rubber cup on ceramic seat with liquid soap solution. Use sparingly (one drop only).

NOTE: Liquid soap solution: one drop of liquid soap combined with one teaspoonful of water.

8) With thumb pressure, press ceramic seal firmly into seal cavity. Polished face of ceramic seat is up. If seal does not seat properly, remove it and clean cavity again. Seal should now seat properly (Fig. 5b).

9) If seal does not seat properly after cavity was cleaned, place a cardboard washer over polished seal face and carefully press into place using a piece of standard clean 3/4 in. pipe as a press. (Fig. 5c)

IMPORTANT: Do not scratch seal face.

10) Dispose of cardboard washer and check seal face again to ensure it is free of dirt, scratches and grease.

11) Inspect shaft to be sure it is free of nicks and scratches.

12) Apply a drop of liquid soap solution to the inside diameter of rubber rotating part.

13) Slide the rotating seal part (carbon face down, toward ceramic face) and spring over the shaft.

IMPORTANT: Be sure not to nick or scratch carbon face or seal when passing it over threaded shaft end of shaft shoulder. The carbon surface must remain clean, or the seal life will diminish.

14) Hold motor shaft with flatbed screwdriver and screw impeller onto shaft. Tightening impeller will automatically locate seal in correct position.

15) If removed for inspection, remount seal ring and diffuser to the motor mounting ring.

16) Reassemble the pump body to the motor mounting bracket.

17) Prime pump, start and check for leaks.

NOTE: Make sure to clean all the parts prior to assembly.

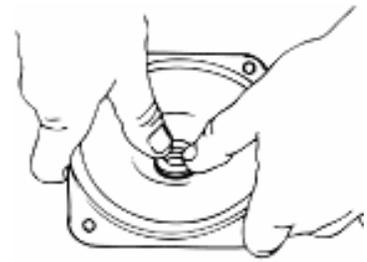


Figure 5b

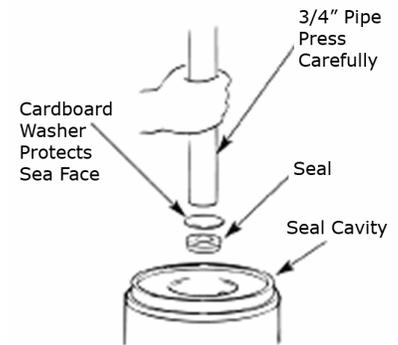


Figure 5c

TROUBLESHOOTING

⚠ WARNING – RISK OF ELECTRICAL SHOCK. ALWAYS SHUT OFF POWER TO THE PUMP AT THE MAIN ELECTRICAL PANEL AND DE-PRESSURIZE THE SYSTEM WHEN TROUBLESHOOTING THE PUMP.

1. Motor will not start:
 - a) Pressure switch is not working. Check wiring for loose connections, check for blown fuses.
 - b) No power to the pump. Check main electrical panel to insure the power is ON.
2. Motor overheats and overload kicks off:
 - a) Motor is wired improperly. See wiring instructions.
 - b) Voltage is insufficient (too low). Install proper gauge wiring – see wiring instructions.
3. Unit runs, but delivers no water:
 - a) Suction lift (total system head) is too high. If shallow well operation exceeds suction lift, it may be necessary to re-assemble the pump for deep-well application.
 - b) Pump is not properly primed. Re-prime the pump according to instructions.
 - c) Foot valve is leaking, not properly submerged or clogged. Check the foot valve, clean and replace if needed.
 - d) Pipes are frozen. Thaw the pipes.
4. Pump loses prime:
 - a) Air leaks in suction line(s). Check all connections on the suction line, air volume control, ejector and shaft seal.
 - b) Drawdown or standing water level is too low. The suction line must be extended and submerged into water as described in installation instructions.
 - c) Foot valve is malfunctioning. Check the valve and replace if needed.
5. Pump outputs lower than rated amount of water:
 - a) Piping system has leaks. Check all connections for leaks.
 - b) Foot valve is clogged. Check foot valve to ensure it's clean and operates freely.
 - c) Pump is wired improperly. Refer to wiring instructions.
 - d) Suction lift (system head) is higher than pump's rated head. It may be necessary to re-assemble the pump for deep well application or install a model with higher head parameters.

TABLE 2 – FRICTION LOSS CHART FOR PLASTIC PIPE (*For galvanized pipe, double the figures)

U.S. GPM	Nominal Pipe Size				
	3/4"	1"	1-1/4"	1-1/2"	2"
	Loss of head in ft, due to friction per 100 ft of pipe				
4	3.74	1.15	0.30	0.14	-
5	5.66	1.75	0.46	0.22	-
6	7.95	2.45	0.65	0.31	-
7	10.60	3.25	0.86	0.41	-
8	13.50	4.16	1.10	0.52	-
9	16.80	5.17	1.35	0.65	-
10	20.40	6.31	1.67	0.79	0.23
11	24.40	7.58	1.98	0.95	0.27
12	28.60	8.85	2.33	1.10	0.32
14	38.00	11.80	3.10	1.46	0.43
16	48.60	15.10	3.96	1.87	0.55
18	60.50	18.70	4.93	2.33	0.69
20	73.50	22.80	6.00	2.83	0.84

REPLACEMENT PARTS

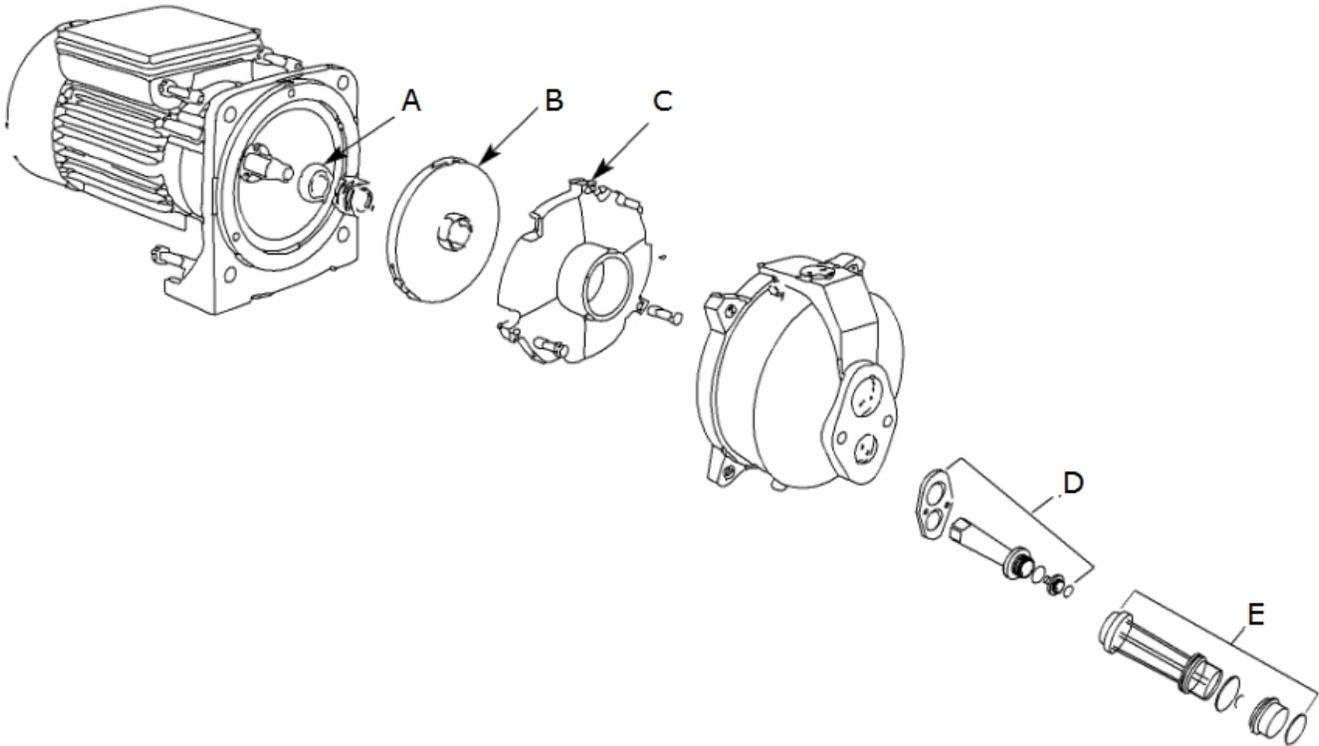


Figure 6

Repair Parts List for Convertible Jet Pumps

Ref.	Description
A	Mechanical Seal
B	Diffuser
C	Diffuser Plate
D	Shallow Ejector Kit
E	Deep Well Ejector Kit

LIMITED WARRANTY

FloForce™ (hereafter "Company") warrants the pumps (hereafter "Product" or "Products") in this warranty to be free from defects in material and workmanship. Company reserves the right to make changes and improvements to the Product design and packing, as well as discontinue them without obligation to replace or upgrade any older models with new ones.

Subject to limitations in this document, Company warrants the product for the period of 12 months from the date of purchase or 24 months from the date of manufacture – whichever occurs first. In order to be covered by this warranty, the Product must be installed in accordance with the instructions in this manual, only for the purpose(s) intended and in compliance with all national and local applicable plumbing, electrical and building codes. Company reserves the right to inspect any product returned under this warranty to confirm the presence of a defect in material, workmanship, or both.

The buyer should return the Product(s) to the place of purchase to initiate the return process. Within a reasonable time period, Company will determine whether this warranty applies. If the warranty applies, Company will, at its' sole discretion, decide whether to repair or replace the Product. In no event and under no circumstances, shall the Company be liable and/or held responsible for the costs of removing, replacing and affixing the Product or any part or component thereof.

Company DOES NOT WARRANT:

1. Damages caused by improper installation, storage, handling, maintenance, as well as damages from misuse, misapplication, tampering and/or abuse of the product
2. Damages from exposure to unauthorized temperature and pressure ratings.
3. Products installed by other than certified professional.
4. Any other component not sold by the Company.
5. Damages by disaster, such as fire, lightning, wind, etc.

NEITHER COMPANY NOR SELLER SHALL BE RESPONSIBLE AND HELD LIABLE FOR ANY INJURIES, DAMAGES OR LOSSES, WHETHER DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL (INCLUDING BUT NOT LIMITED TO DAMAGES FROM LOST PROFITS OR SALES, PROPERTY DAMAGE, PERSONAL INJURIES AND OTHER LOSSES) ARISING FROM USE OR INABILITY TO USE THE PRODUCT(S) AND THE BUYER AGREES THAT NO OTHER REMEDY SHALL BE AVAILABLE TO IT.

IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF PURCHASE, OR, IF NOT AVAILABLE, FROM THE DATE OF MANUFACTURE.

Some states do not allow the limitations of warranty duration and exclusion or limitation of incidental and consequential damages. Therefore, such limitations may not apply to you. This warranty gives you specific legal rights and depending on the state of residence/installation, you may have other legal rights.