



# RJE International, Inc.

YOUR SOURCE FOR DIVER NAVIGATION AND UNDERWATER RELOCATION EQUIPMENT



## **DPR-275 & PRS-275** **Diver Pinger Receiver and Pinger Receiver System** **User Manual**

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# Preface

This manual describes the installation, operation and maintenance of the DPR-275 Diver Pinger Receiver and PRS-275 Pinger Receiver System. This manual is divided into the following six sections:

**Description**  
**Specifications**  
**Checkout and Deployment**  
**Maintenance**  
**Return Procedures**  
**Warranty**

## Proprietary Information

The information, description, and illustrations in this manual are the property of RJE International, Inc. Materials may not be reproduced or disseminated without the prior written consent of RJE International, Inc.

## Changes

RJE International, Inc. reserves the right to make changes to meet new specifications at any time without incurring any obligation to modify previously installed units. This manual is provided for informational and reference purposes only and is subject to change without notice.

## Notes and Warnings

Where applicable, special notes and warnings are presented as follows:

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**NOTE:** A reminder to check that certain criteria are met before proceeding further in a step or sequence.



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**WARNING:** A reminder that dangerous consequences could result if certain recommended procedures are not followed.

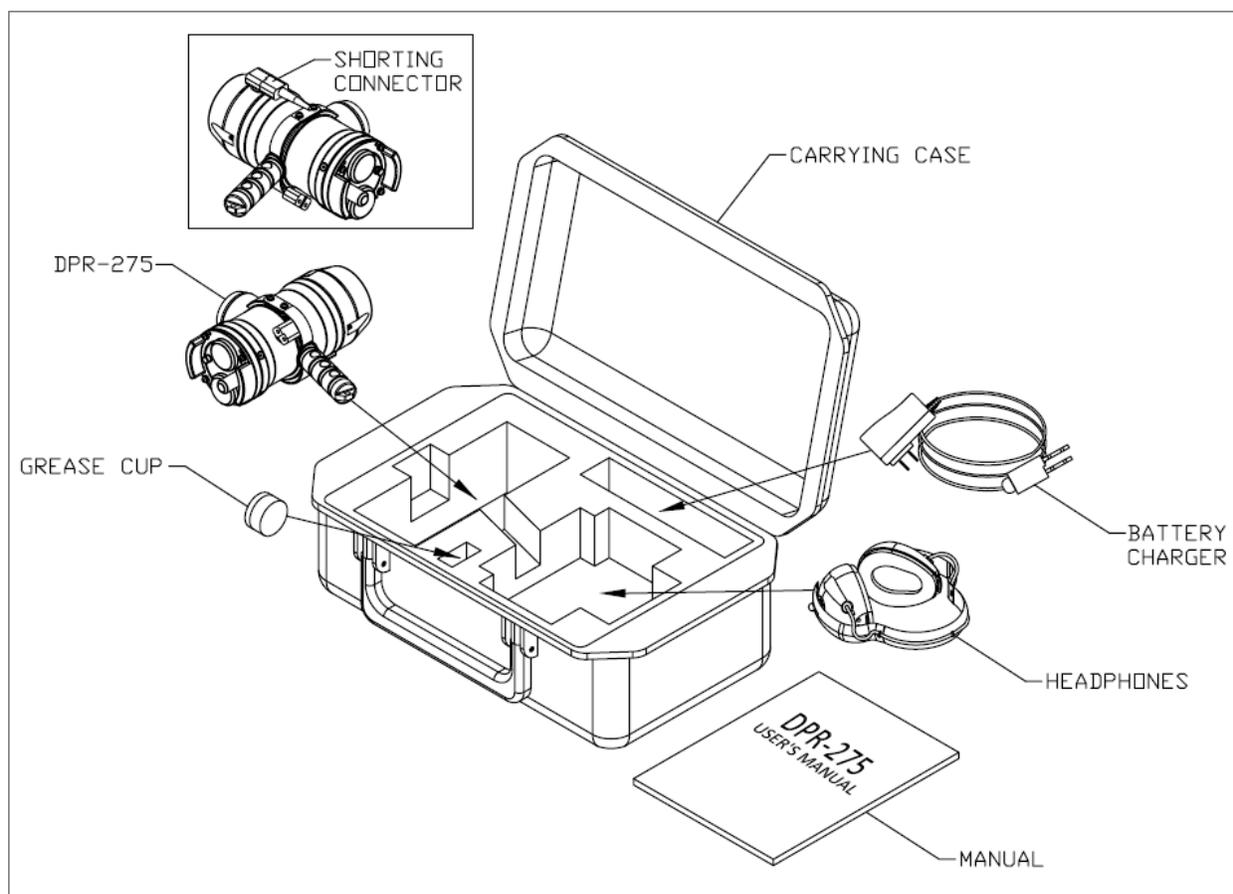
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# 1 Description

The **DPR-275 Diver Pinger Receiver** is a durable acoustic receiver, capable of detecting and locating an underwater sound source emitting a signal in the 5 to 80 kHz range. The DPR-275 is a portable hand held device, powered by a rechargeable Lithium ion battery. The DPR-275 and its accessories are packed in a rugged watertight foam lined carrying case.

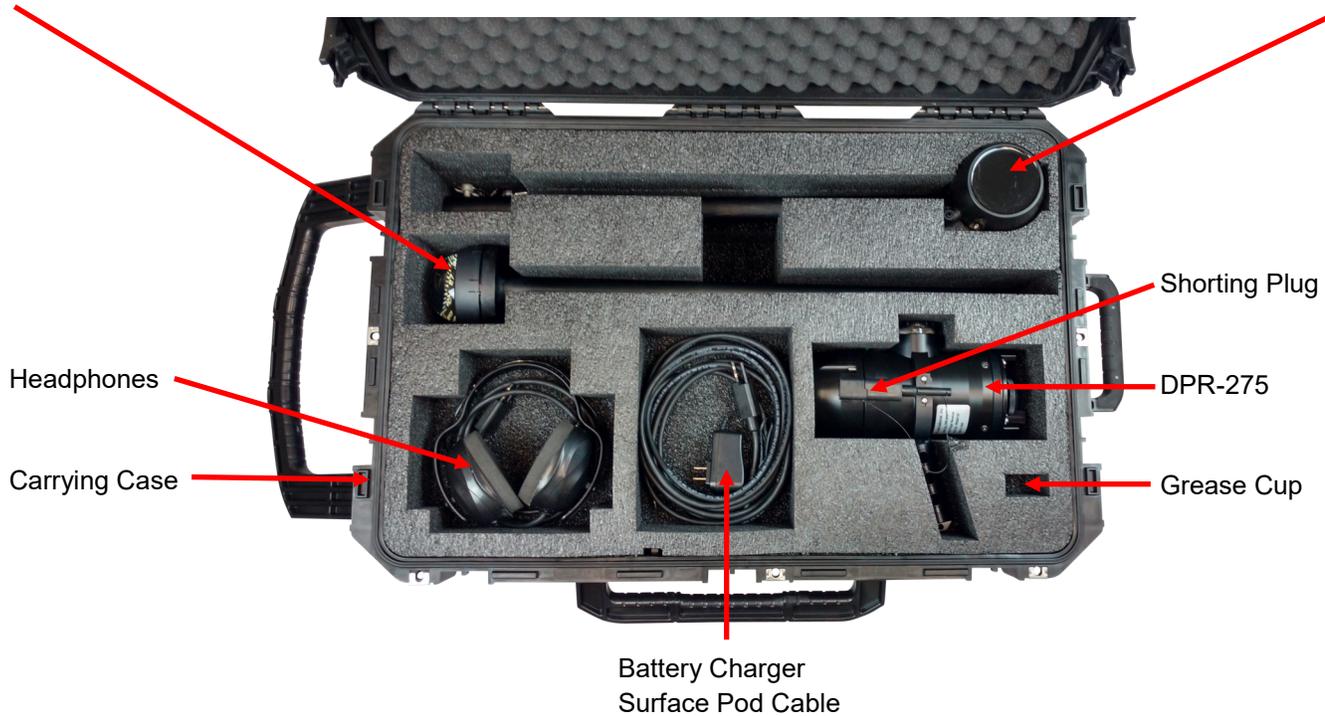


DPR-275 Accessories and Carrying Case

The **PRS-275 Pinger Receiver System** allows the DPR-275 receiver to be operable from a small boat, when used with auxiliary hydrophone and staff assembly. The PRS-275 and its accessories are packed in a rugged, watertight, foam lined carrying case.

Staff Assembly Compass with  
Staff Assembly Center Section below

Staff Assembly Hydrophone with  
Staff Assembly Center Section below



PRS-275 Accessories and Carrying Case

## Construction

The DPR-275 receiver assembly is designed to operate at any depth up to 200 meters (650 feet) and possesses slight positive buoyancy. The receiver housing is constructed of black Acetal resin and hard anodized T6 Aluminum, and will withstand prolonged exposure to salt water. The PRS-275 Staff assembly and hydrophone are constructed of black Acetal and T6 hard anodized Aluminum with Stainless Steel hardware, and will withstand daily use & exposure to the elements.

## Displays & Controls

**Signal Strength Bar.** Provides visual indication of signal strength of ping emitted by a beacon, 1 bar the lowest and 10 bars the highest strength. The LEDs will flash with each acoustic output pulse emitted by a beacon or similar sound source.

The signal strength bar also provides visual feed back to the intensity setting of the volume and sensitivity controls. When first turned on the volume and sensitivity controls will be at their lowest level 0 bars on the signal strength bar. Turning either control one notch clockwise will cause the signal strength bar to momentarily display one bar. Turning the controls one notch further will cause the signal strength bar to momentarily display two bars, and so on until ten notches equals ten bars. Turning either control counter clockwise one notch will decrease the number of bars by one.

**LED Number Display.** Displays frequency DPR-275 is set to, in kilohertz.

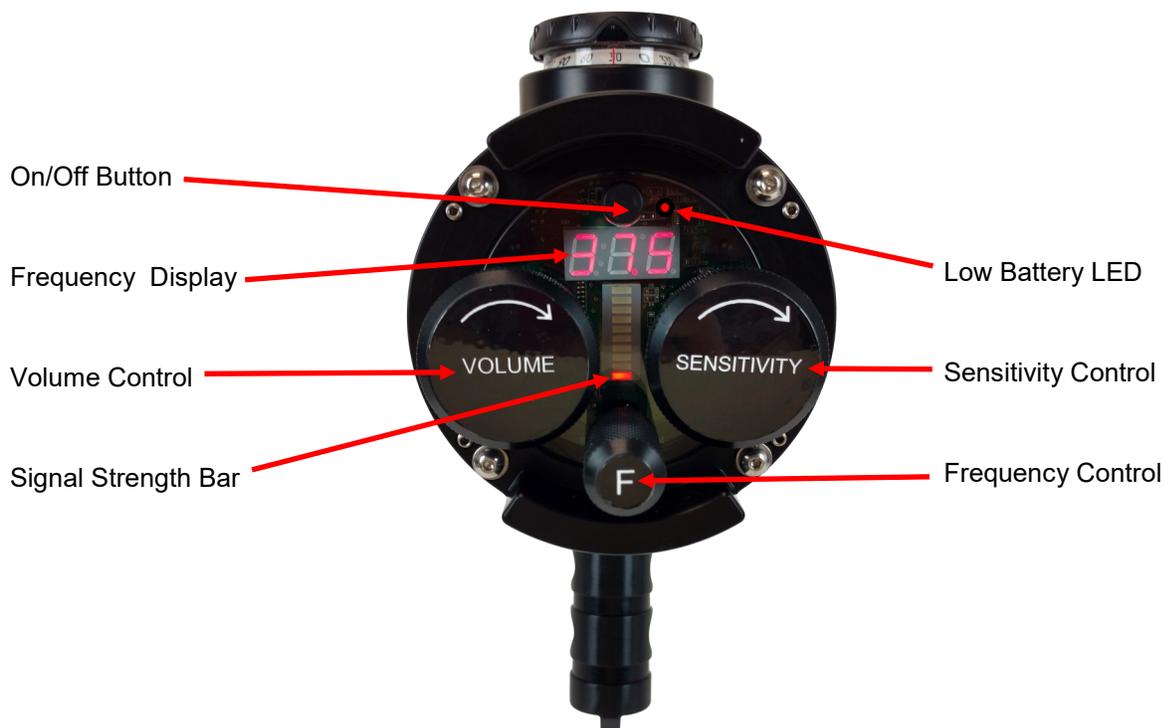
**Low Battery LED.** Illuminates when internal battery needs recharging.

**On/Off Button.** Turn the DPR-275 on or off by pressing the On/Off button.

**Volume Control.** Rotate the knob clockwise to increase volume to the headphones and counterclockwise to decrease volume to the headphones. Set the volume control until a signal or background noise of comfortable level is heard in the headphone.

**Sensitivity Control.** Rotate the knob clockwise to increase sensitivity to the headphones and counterclockwise to decrease sensitivity to the headphones. As the DPR-275 approaches the signal source, the audio level will increase. At long range increase sensitivity of DPR-275 to increase volume at the headphones. At very close range reduce the sensitivity setting in order to prevent saturation and apparent loss of directivity.

**Frequency Control.** Set the control to frequency of signal source you are searching for. Rotate the knob clockwise to increase, or counterclockwise to decrease, the frequency. Frequency control permits reception of an acoustic signal operating anywhere within the 5 to 80 kHz frequency range. If signal source is a 37.5 kHz beacon, the DPR-275 operator should vary the frequency control slowly through the 35 to 40 kHz range until the desired signal is heard. Adjust the frequency control for best audio response.



**Directionality.** The DPR-275 hydrophone is designed to provide directionality to the target beacon. When aimed 30° away from the target the signal strength will be approximately 10 dB lower than when aimed directly at the target.

# 2 Specifications

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## General Specifications

SPECIFICATIONS

Frequency Range	5 kHz to 80 kHz
Power Source	9 Volt Rechargeable LI_ION Battery
Operating Temperature	-18°C to 54°C (0°F to 130°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Dimensions	Dia. 4.0" (10.2 cm), Length 10" (25.4 cm)
Weight	4.7 lbs. (2.1 kg)
Case Material	HDPE
Operating Depth	200 Meters (650 ft)

# 3 Checkout and Deployment

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## **Theory of Operation**

The DPR-275 is a battery-operated underwater acoustic signal receiver that detects the underwater acoustic pulse generated by a beacon in the range of 5 kHz to 80 kHz by means of a hydrophone attached to its housing. The incoming signal from the hydrophone is amplified by a tunable preamplifier, which is tracked with the local oscillator at a frequency difference of approximately 1.7 kHz. The mixer combines the two signals and amplifies the difference frequency which is fed into the audio amplifier where additional gain is provided. The receiver is provided with a sensitivity control in order to prevent overload of the preamplifier at high signal levels.

### **Pre-Deployment in air test.**

Connect the headphones to the DPR-275 and turn the unit on. Set frequency control to frequency of test beacon. Rotate volume and sensitivity controls 5 notches clockwise. Activate test beacon by placing the beacon's water switch in a dish with a wet sponge. Place DPR-275's hydrophone 1 to 2 inches from the test beacon. Observe signal strength bar flash at the beacon's repetition rate, and hear tone in DPR-275's headphones.

## Setup and Operation from a boat.

The DPR-275 is operable from a small boat when used with the PRS-275 staff assembly. The hydrophone attached to the staff assembly is immersed from a boat during preliminary search operations. When the maximum signal area is located, the receiver is reassembled for use by the diver in order to pinpoint the target. The directional characteristics of the receiver provide bearing determination. Upon arrival at maximum signal area, a diver then follows the signal to the submerged item to effect recovery.

## Assemble the staff assembly.

Remove clevis pin from one of the staff assembly center sections, insert the staff handle/compass section into the coupler on the center section, connect together with clevis pin, and secure with wire lock. Repeat for the other center section. Attach surface pod to already assembled center sections and secure with clevis pin and wire lock. When assembled, the handle will be opposite the surface pod's hydrophone's face. The handle will then serve as a visible bearing indicator to the maximum received signal when the surface pod is not visible to the operator. The length of the assembled staff is approximately 2.7 meters (9 feet).



Staff Assembly Compass & Handle



Staff Assembly Hydrophone



Staff Assembly Center Sections



Surface Pod Cable



Sections Connected



Pod Cable in "S" Hook

## Connect Staff Assembly to DPR-275.

For boat use, the submersible headphones should be connected to the DPR-275 headphone connector. To install the surface pod cable, first remove the shorting connector from the hydrophone connector on the DPR-275's hydrophone, and plug the 2-prong connector from the surface pod cable into the connector on the hydrophone. Plug the other end of the surface pod cable in to the connector on the surface pod. Apply a small amount of lubricant from grease cup to the mating surfaces of the connectors to facilitate assembly. Secure hydrophone cable to staff assembly with latching S hooks located at each clevis pin.



Connecting the Surface Pod Cable to Staff Assembly



Removing Short Plug from DPR-275



Connecting Surface Pod Cable to DPR-275



Headphones



Connecting Headphones to the DPR-275

## Preliminary Search.

Lower the hydrophone into the water and turn the DPR-275 on. Set frequency control to match target beacon frequency. Adjust sensitivity and volume controls to maximum or to a comfortable listening level. With the handle rotate the staff assembly 360° scanning the area for a beacon signal. Upon detecting a beacon signal, peak the frequency control and readjust the volume and sensitivity controls for comfortable listening level. As the signal source is approached, it is necessary to reduce the sensitivity to maintain directionality. If no beacon signal is heard on the first rotation conduct subsequent rotations while slowly tuning the DPR-275 for more sensitivity.

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**NOTE:** Verification of DPR-275 operation, evaluation of ambient conditions and anticipated detection range may be established by the use of a spare test beacon on the site before starting actual search operations.

**NOTE:** If the boat has a deep hull or keel it will be necessary to search for beacon signals on both the port and starboard sides of the boat. A deep hull or keel can cast an acoustic shadow and cause the beacon signal to be inaudible.

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**Setup and Operation by a Diver.**

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**NOTE:** When the operation from the boat is concluded, proceed with diver operation.

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Remove the hydrophone extension cable from the connector on the DPR-275's hydrophone. Replace it with the shorting connector. Plug the Submersible Headphone into the DPR-275's headphone connector. Apply a small amount of lubricant from grease cup to the mating surfaces of the connectors to facilitate assembly. The DPR-275 is now ready for submerged operation by the diver. While the volume control is preset at minimum, the sensitivity control is preset at maximum. Turn respective knobs for suitable volume and/or flashing of the signal strength bar when signal is received. If the frequency has previously been set for best reception and left undisturbed, no retuning should be necessary. The DPR-275 should be rotated to establish the bearing to the strongest signal. As the diver approaches the bottom, he should also make vertical scans. The beacon may be in wreckage above the bottom. The directivity of the hydrophone is conical, similar to the beam of a flashlight. Again, remember to reduce the sensitivity as the beacon is approached to avoid overload of the DPR-275 and apparent loss of directionality.



DPR-275 with Short Plug Installed



Headphones



Connecting Headphones to DPR-275

# 4 Maintenance

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**WARNING:** Do Not Allow black acoustic window of hydrophone to be cut, punctured or otherwise damaged.

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## Maintenance Precautions

Perform all maintenance procedures in a clean and dry environment.

Always turn off unit before recharging the batteries.

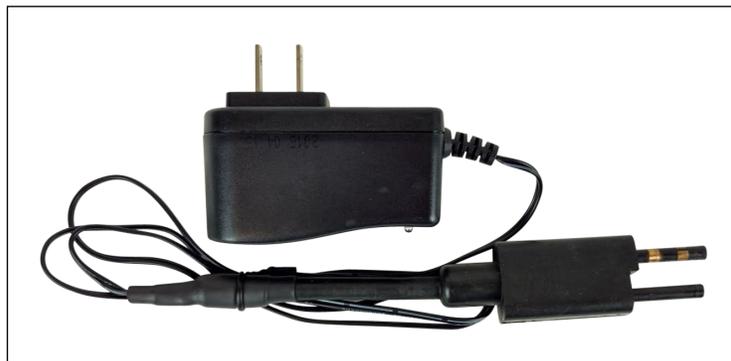
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**WARNING:** There are no user serviceable parts inside the DPR-275. Refer servicing to qualified service personnel.

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## Battery Recharging



Battery Charger

If the DPR-275's battery low LED is on the internal battery needs to be recharged. The battery charger requires input voltage from 100 VAC to 240 VAC, 50 to 60 Hz. An AC plug adapter may be required outside the United States. Turn DPR-275 to off by pressing the on/off button. Remove headphones from connector and plug in battery charger. Plug battery charger into AC outlet. The battery charger LED will be red when charging, green when battery is full.

Battery operating life is approximately 16 hours.

# Cleaning

The DPR-275 system is constructed of corrosion resistant materials. After each usage rinse the unit and system components with fresh water to prevent accumulation of salt or other contaminants. Periodically wash the system components with a mild detergent, rinse with fresh water and dry thoroughly.

# Storage

When long term storage of the system is required, clean the unit thoroughly and place it in the transit case. Make sure it is stored in a cool, dry environment.

# 5 Return Procedures

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Before returning any equipment to RJE, you must contact RJE and obtain a Case number. The Case number assists RJE in identifying the origin and tracking the location of returned items.

You will need to provide the following information to obtain a Case number.

- **Reason for return**
- **Model Number**
- **Serial Number**
- **Shipping method, if applicable**

When returning items to RJE from outside the United States, follow the checklist presented below to prevent any delays or additional costs.

- Include with all shipments two copies of your commercial invoice showing the value of the items and the reason you are returning them. Whenever possible, send copies of the original export shipping documents with the consignment.
- Route via courier (FedEx or UPS).
- If there is more than one item per consignment, include a packing list with the shipment. It is acceptable to combine the commercial invoice and packing list with the contents of each carton clearly numbered and identified on the commercial invoice.
- If it is necessary to ship via airfreight, contact RJE for specific freight forwarding instructions.
- You will be charged for customs clearance and inbound freight.
- Insure the items for their full value.
- Refer to the RJE issued Case number on all documents and correspondence.
- Prepay the freight.

## **TITLE**

Title shall pass to buyer on delivery to carrier at Irvine, CA. Risk of damage or loss following such delivery shall be to the buyer and RJE International shall in no way be responsible for safe arrival of the shipment. Title shall so pass to buyer regardless of any provision for payment of freight or insurance by RJE International or of the form of shipping documents. If shipment is consigned to RJE International, it shall be for the purpose of securing buyer's obligations under the contract.

# **6 Warranty**

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RJE International, Inc. (RJE) guarantees its products to be free from defects in materials and workmanship for a period of one year from the date of shipment. In the event a product malfunctions during this period, RJE's obligation is limited to the repair or replacement, at RJE's option, of any product returned to the RJE factory. Products found defective should be returned to the factory freight prepaid and carefully packed, as the customer will be responsible for any damage during shipment.

Repairs or replacements, parts, labor, and return shipment under this warranty will be at no cost to the customer. This warranty is void if, in RJE's opinion, the product has been damaged by accident or mishandled, altered, or repaired by the customer, where such treatment has affected its performance or reliability. In the event of such mishandling, all costs for repair and return freight will be charged to the customer. All products supplied by RJE that are designed for use under hydrostatic loading have been certified by actual pressure testing prior to shipment. Any damage that occurs as a direct result of flooding is NOT covered by this warranty.

If a product is returned for warranty repair and no defect is found, the customer will be charged a diagnostic fee plus all shipping costs. Incidental or consequential damages or costs incurred as a result of a product's malfunction are not the responsibility of RJE.

All returned products must be accompanied by a CASE number issued by RJE International. Shipments without a CASE number will not be accepted.

## **LIABILITY**

RJE shall not be liable for incidental or consequential damages, injuries, or losses as a result of the installation, testing, operation, or servicing of RJE products.