

# 2008 Rack Cabinet for 2008 Chillers

*January 2007*

*User Manual*





# User Manual

2008 Rack





**A message to our customers:**

Originally founded in 1985, our Company has grown into a recognized leader in providing temperature control systems to the global semiconductor industry.

Today, Noah Precision, LLC is a privately held, employee owned and managed company. We are guided in our belief that prosperity in this competitive industry stems from providing customers with highly engineered new products and world class customer service.

We know that great products are often the result of great customer feedback and the application of innovative technology. We strive to create value for our customers through a process that lets the customer influence our goals, objectives, product developments and business practices.

We embrace personal accountability and accept responsibility for prudent risk taking. We encourage personal values, which guide us to consistently meet the commitments we make and we endeavor to treat those with whom we interact with respect as we wish to be treated ourselves.

Sincerely,

A handwritten signature in black ink that reads "Peter Adams". The signature is written in a cursive, flowing style.

Peter Adams, President  
Noah Precision, LLC



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### **DANGER:**

**Read this entire manual and all other publications pertaining to the work to be performed before installing, operating, or maintaining this equipment. Practice all plant and product safety instructions and precautions. Failure to follow instructions can cause personal injury and/or property damage. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. All personnel who work with or who are exposed to this equipment must take precautions to protect themselves against serious or possibly fatal bodily injury.**

**Noah Precision, LLC, provides information on its products and associated hazards, but it assumes no responsibility for the after-sale operation of the equipment or the safety practices of the owner or user. This equipment produces or uses potentially lethal high-voltage, high-current, electrical power. NEVER DEFEAT INTERLOCKS OR GROUNDS.**

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Noah Precision's technical writing staff has carefully developed this manual using research-based document design principles. However, improvement is ongoing, and the writing staff welcomes and appreciates customer feedback. Please send any comments on the content, organization, or format of this user manual to

- [tech.writing@noahprecision.com](mailto:tech.writing@noahprecision.com)

To order a manual, please contact Noah Precision (see “[Customer Support Locations](#)” on [page 6-3](#) for contact information).

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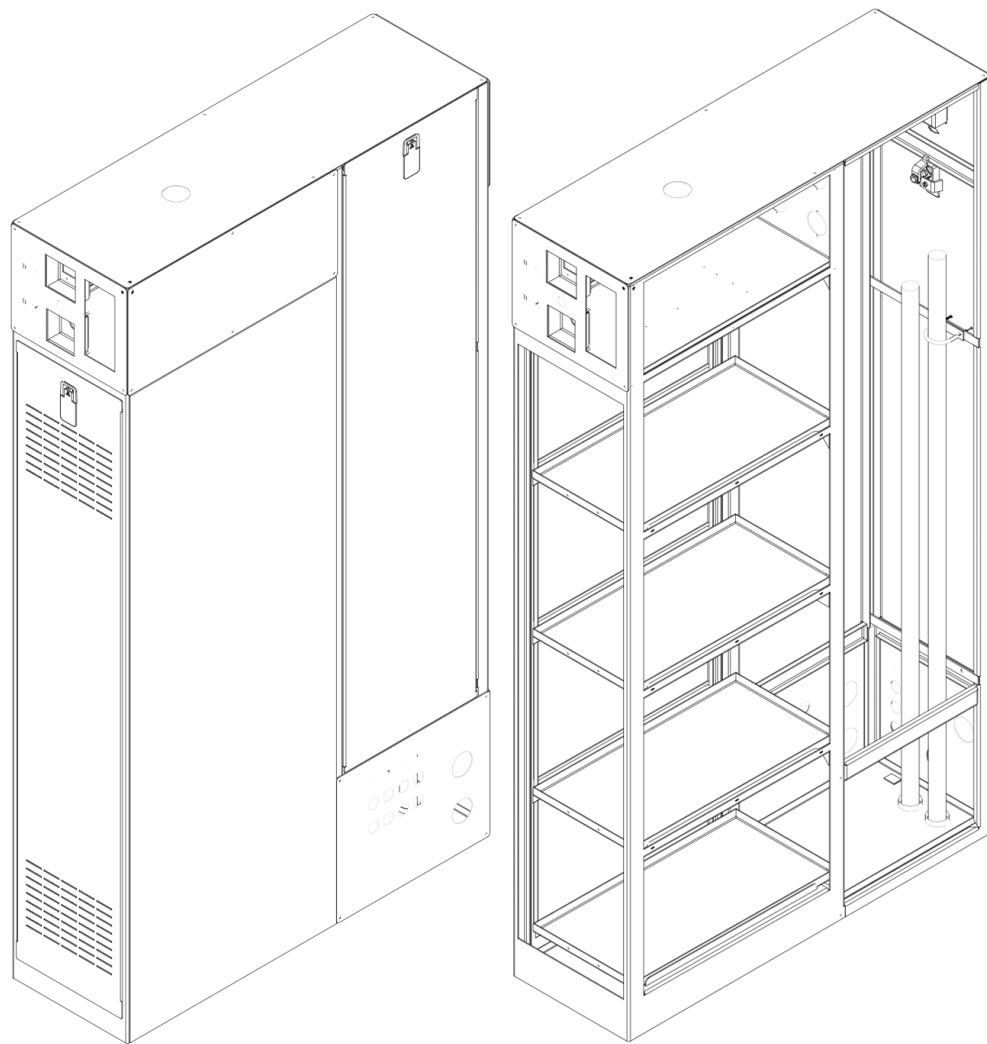
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# Chapter 1 - Introduction

## CORE COMPONENTS

The 2008 Rack serves the purpose of housing Noah Precision 2008 chillers. There is room for up to four 2008 chillers. These racks supply house cooling water, electrical and communication to the 2008 chillers.



**Figure 1-1.** 2008 Rack with and without panels

The 2008 Rack is made up of the following core components: Rack, Electrical Wiring and PCW. Below you will find each core component expanded.

## Rack

The rack is comprised of the following components:

- Frame
- Trays
- Screwed Panels
- Removable Panels

## Electrical Wiring

The electrical wiring is comprised of the following components:

- Controller
- Communication Bus
- Electrical Cabinet

## PCW

The PCW is comprised of the following components:

- Water Manifold
- Connectors
- Hose

## SAFETY

When there are four 2008 chillers loaded into the rack, it can become prone to tipping side to side. There are four triangular tabs welded into the bottom of the 2008 rack. It is strongly recommended that appropriate hardware (M10 or Larger) be used thru the holes of these triangular tabs securing the rack to the floor.

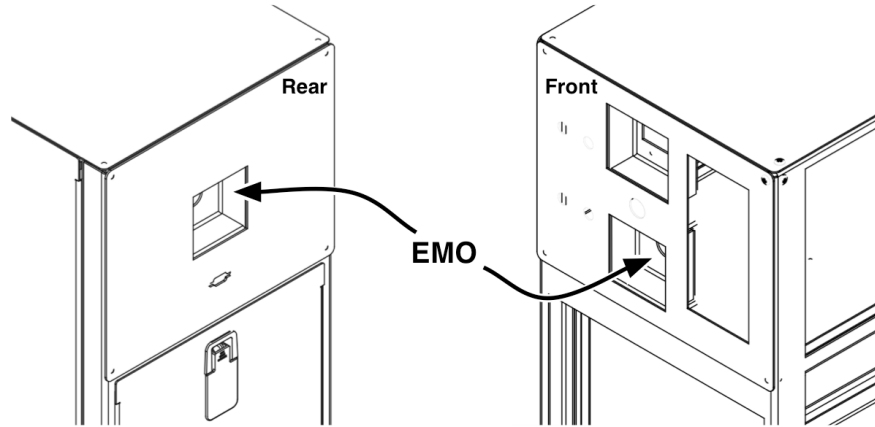


### **DANGER:**

**High voltage is active in the system. Safety covers provide protection for the user and the machine. Only authorized and qualified personnel should repair or test the system.**

Due to the electrical and water combination that resides on these racks, proper precautions need to be taken. One must be very careful in ensuring that leaks are detected, monitored, and properly repaired.

There are two EMO buttons on the rack, one each on the front and the back, see [Figure 1-2](#). These EMO buttons should be used to shut down the rack or any of the chillers if leaks, sparks, or fire is detected.



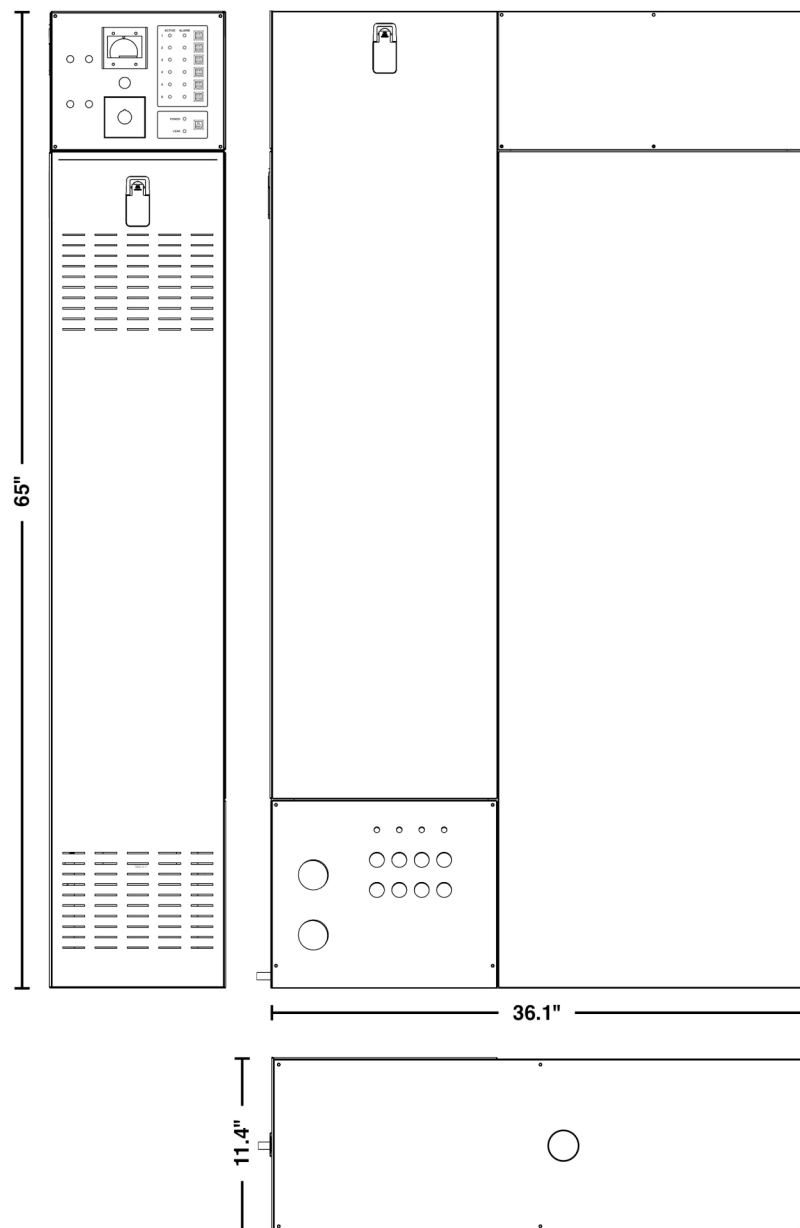
**Figure 1-2.** Front and Rear EMO switch of the 2008 Rack



# Chapter 2 - Specifications

## PHYSICAL SPECIFICATIONS

Physical specifications of the 2008 Rack are shown below in [Figure 2-1](#) and [Table 2-1](#).



**Figure 2-1.** Physical dimensions of the 2008 Rack

**Table 2-1. Physical Specifications for the 2008 Rack**

Description	Specification
Size	11.4" [W] x 65" [H] x 36.1" [D]
Weight	Approx. 275 lbs.
Materials	Stainless Steel

## ELECTRICAL SPECIFICATIONS

**Table 2-2. Electrical Specifications for the 2008 Rack**

Description	Specification
Power	220 Volts – 40 Amps
Connectors	25 pin D-Sub, NEMA 5-20 receptacle

## PCW (PROCESS COOLING WATER)

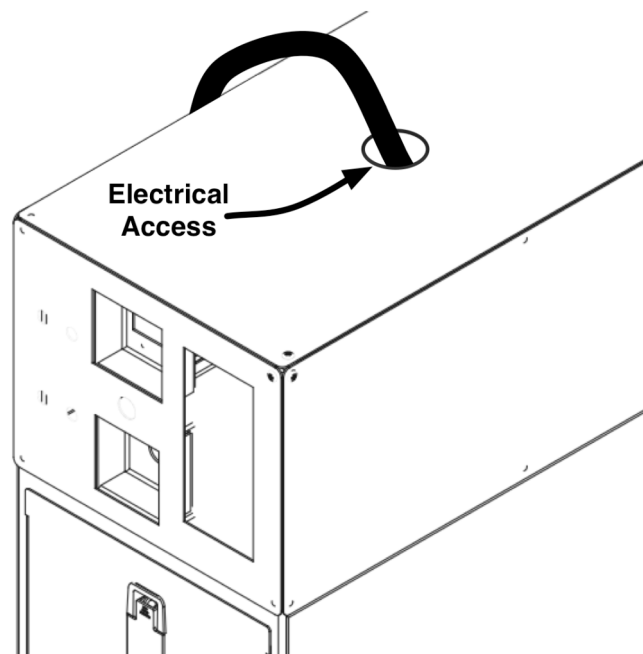
**Table 2-3. PCW (Process Cooling Water) Specifications**

Description	Specification
Flow rate	4 gpm (15 lpm), minimum
Temperature	15° to 35° C
Water Pressure	50 to 80 psi (30 psi min delta) 344.7 to 551.6 kPa (206.8 kPa min delta)
Filtering	5 micron particle filtered water recommended
Fittings	Incoming: 3/4" NPT pipe interfacing to house side Outgoing: 3/8" FTG, SS, QC-6, Stem

# Chapter 3 - Installation/Operation

## INSTALLATION REQUIREMENTS

Power is supplied to the cabinet and must be routed through the electrical access hole located at the top of the 2008 Rack, see [Figure 3-1](#).



**Figure 3-1.** *Electrical Access atop the 2008 Rack*

## INSTALLATION

### Unpacking

Follow the procedure below to properly unpack the unit:

1. Carefully remove rack from crate
2. Move rack close to location of installation
3. Remove shrink wrap material
4. Remove panels and set them aside
5. Move into location and install floor mounting hardware

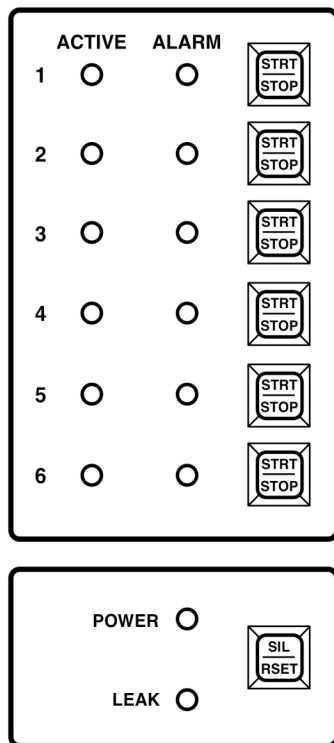
## Hook up

Follow the procedure below to properly hook up the unit:

1. Run the 220 Volt 40 AMP power line through the top and fasten appropriate connection points in electrical cabinet.
2. Connect house water to the stainless steel water manifold either through the floor or one of the three bulkheads. Loosen manifold mounting hardware to adjust the height of the water manifold.
3. Install 2008 stand-alone chiller units into rack.
4. Connect electrical, water lines and communication.
5. Leave chiller power switches in the ON position.

## OPERATION

There are seven buttons on the 2008 Rack control panel, see [Figure 3-2](#). Each of the buttons is a 'Tactile Feel' switch. Buttons 1-4 are used to change the mode of the connected 2008 chillers. These buttons are labeled STRT/STOP (Start/Stop) and toggle the mode of the 2008 controller from ACTIVE to IDLE. Buttons 5-6 are disabled. The seventh button is labeled SIL/RSET (Silence/Reset) and is used to eliminate the audio portion of the LEAK alarm.



**Figure 3-2.** 2008 Rack control panel

## STRT/STOP and SIL/RSET Buttons

The following is a description of the buttons and their functions.

**STRT/STOP** - This is a multifunction toggle button. Its purpose is to both START and STOP the system operation of a particular 2008 chiller.

### IDLE MODE

If the system is in IDLE mode, pressing this button will activate the appropriate outputs and place the system in ACTIVE mode.

### ACTIVE MODE

If the system is in ACTIVE mode, pressing this button will turn off all of the outputs and place the system in IDLE mode.

### ALARM MODE

If the system is in ALARM mode with active alarms, pressing the STRT/STOP button will not place the system in ACTIVE mode. All 'CLEAR' alarms will be eliminated and any 'ACTIVE' alarms will be 'RESOUNDED'.

*Note:* If the system is in the ALARM mode with inactive, but un-cleared alarms, an automatic ALARM SIL/RSET will be performed on all outstanding alarms. The appropriate outputs will then be activated, and the system will be placed in the ACTIVE mode.

**SIL/RSET** - This button is provided to allow for the elimination of the audio portion of the LEAK alarm. If the LEAK alarm is silenced, but not cleared, pressing the SIL/RSET button will reactivate the alarm.

Below in [Table 3-1](#) you find descriptions of the control panel LEDs:

**Table 3-1. Description of control panel LEDs**

LED	Description
ACTIVE	Indicates which 2008 controller is in ACTIVE mode
ALARM	Indicates which 2008 controller has an ACTIVE alarm
POWER	Indicates that power is applied to the control panel, however the control panel status LEDs and buttons will work without direct power, as they will draw power from the 2008 controller
LEAK	Indicates that a leak has been detected by the LEAK SENSOR or the LEAK SENSOR has malfunctioned

## Basic Operation

The 2008 Rack control panel has two independent sections. The upper section has control status LEDs and buttons. These LEDs and buttons are arranged to provide for monitoring and control of up to four 2008 chillers (5 and 6 are disabled). The ACTIVE LEDs indicate that the respective 2008 controller is in ACTIVE mode. The LED will go out when the controller is placed in IDLE mode. The ALARM LED indicates that the respective controller has an ACTIVE alarm. The STRT/STOP button may be used to place any particular 2008 controller in ACTIVE mode or to restart a control after an ALARM has stopped the controls operation.

The lower section of the 2008 Rack control panel has two LEDs and one button. The POWER LED indicates that the control panel is powered. The LEAK LED indicates that the LEAK SENSOR has detected a leak. When a leak is detected, an external buzzer is activated. This buzzer may be turned off by pressing the SIL/RSET button. The LEAK LED will stay lit until the leak is no longer sensed. The LEAK alarm does not affect operation of any connected 2008 controller.

Follow the procedure below for basic operation:

1. Turn breakers to the ON position to start the rack
2. Use the control panel to start and stop the chillers individually
3. Change set points on the chillers using individual chiller controllers

*Note:* Error conditions in the chillers are relayed up to the control panel. Central alarm occurs if a leak is detected in the bottom of the rack. The main breakers can be used to shut down the rack and chillers. EMO switches on the front and back can be used to also shut down the rack and chillers.

# Chapter 4 - Troubleshooting

## TYPES OF ALARMS

### Active Alarm

If the system is in ALARM mode with active alarms, pressing the STRT/STOP button will not place the system in ACTIVE mode. All 'CLEAR' alarms will be eliminated and any 'ACTIVE' alarms will be 'RESOUNDED'.

*Note:* If the system is in the ALARM mode with inactive, but un-cleared alarms, an automatic ALARM SIL/RSET will be performed on all outstanding alarms. The appropriate outputs will then be activated, and the system will be placed in the ACTIVE mode.

### Leak Alarm

When a leak is detected, a Leak Alarm is activated through an external buzzer. This buzzer may be turned off by pressing the SIL/RSET button. The LEAK LED will stay lit until the leak is no longer sensed. The LEAK alarm does not affect operation of any connected 2008 controller.

## TROUBLESHOOTING

This section discusses the following topics to help troubleshoot any problems that might occur when operating the 2008 Rack. A troubleshooting guide is provided in [Table 4-1](#). If following these procedures does not solve the problem, do not hesitate to call Noah Precision Customer Support.

## Troubleshooting Guide

**Table 4-1. Troubleshooting**

<b>Problem</b>	<b>Probable Cause</b>	<b>Corrective Action</b>
Alarm LED is lit.	2008 Chiller has encountered a Soft or Hard alarm.	Refer to the 2008 manual to resolve Soft or Hard alarms.
Leak LED is lit.	1. A leak has been detected. 2. The leak sensor has malfunctioned.	1. Shut down all systems and repair all leaks. 2. Replace/Repair 2008 Rack.
System won't power up when Power switch is toggled to ON.	1. Power source does not meet specifications. 2. Power line breaker has been tripped.	1. Check that power meets requirements. Page 2-2. 2. Check 2008 Rack breaker. 3. Replace/Repair 2008 Rack.

## Noah Precision World Wide Web Site

For additional product information, consult Noah Precision's World Wide Web site at: <http://www.noahprecision.com>

## NOAH PRECISION CUSTOMER SUPPORT

Please contact one of the following offices in [Table 4-2](#) for technical support.

*Note:* When calling Noah Precision Customer Support, make sure to have the unit serial number and part number. These numbers are available on unit labels.

**Table 4-2. Customer Support locations**

Office	Contact
Noah Precision, LLC 2501 SE Columbia Way Suite 140 Vancouver, WA 98661	Phone: +1 360 993 1395 Fax: +1 360 993 1399 Email: sales@noahprecision.com service@noahprecision.com Web: www.noahprecision.com
Teltec SA 224 Boulevard John Kennedy Batiment B1 - Room 401-403 91105 Corbeil-Essonnes FRANCE	Phone: +33 1 60 88 73 00 Fax: +33 1 64 96 44 03
Teltec SA Le Hameau du Parc - Batiment D Rousset Parc Club 13790 Rousset FRANCE	Phone: +33 4 42 53 23 82 Fax: +33 4 42 53 26 89
Teltec Gmbh Am Moosbach 6 74535 Mainhardt GERMANY	Phone: +49 7903 91 44-0 Fax: +49 7903 91 44-11
MCU Via Borgazzi, 13 Monza (MI) ITALY	Phone: +39 039 322351 Fax: +39 039 322351
Muramatsu Integrated Technology 102, 3-14-9, Aoki Kawaguchi-shi, Saitamaken 332-0031 JAPAN	Phone: +81 48 259 1203 Fax: +81 48 259 1203
Challentech No. 1, Lane 9, Pateh Road Hsin-Chu TAIWAN 300	Phone: +886 3 5614211 Fax: +886 3 5614210
APP Systems Services, PTE LTD 11 Toh Guan Road East #03-01 APP Enterprise Building Singapore 608603	Phone: +65 6425 6611 Fax: +65 6560 6616

## RETURNING UNITS FOR REPAIR

**Detailed information regarding returns, repairs and warranty can be found at:**

[http://www.noahprecision.com/support/RMA\\_info.shtml](http://www.noahprecision.com/support/RMA_info.shtml)

**An RMA Request Form can be completed at:**

[http://www.noahprecision.com/support/form\\_RMA.shtml](http://www.noahprecision.com/support/form_RMA.shtml)

BEFORE returning any product for repair or adjustment, **follow all troubleshooting procedures**. If, after following these procedures, the problem still exists, or if the procedure instruction advises contacting Noah Precision Customer Support, call and discuss the problem with a representative or visit the links listed above. Be prepared to give the model number and serial number of the unit, as well as the reason for the proposed return. This consultation call allows Noah Precision Customer Support to determine whether the problem can be corrected in the field or if the unit must be returned. Such technical consultation is always free of charge.

**If a unit is returned without first getting authorization from Noah Precision Customer Support and that unit is found to be functional, there is a re-test and calibration fee plus shipping charges.**

To ensure years of dependable service, Noah Precision products are thoroughly tested and designed to be among the most reliable and highest quality systems available worldwide.

## WARRANTY

Noah Precision, LLC products are warranted to be free from failures due to defects in material and workmanship after they are shipped from the factory (please see warranty statement below, for details) for the period of time defined in the purchase order.

To claim shipping or handling damage, inspect the delivered goods and report such damage to Noah Precision within 30 days of receipt of the goods. Please note that failing to report any damage within this period is the same as acknowledging that the goods were received undamaged.

For a warranty claim to be valid, it must:

- Be made within the applicable warranty period
- Include the product serial number and a full description of the circumstances giving rise to the claim
- Have been assigned return material authorization number (see below) by Noah Precision Customer Support

All warranty work will be performed at an authorized Noah Precision service center (see list of contacts at the beginning of this chapter). You are responsible for obtaining authorization to return any defective units, prepaying the freight costs, and ensuring that the units are returned to an authorized Noah Precision service center.

## Warranty Statement

The seller makes no express or implied warranty that the goods are merchantable or fit for any particular purpose except as specifically stated in printed Noah Precision specifications. The sole responsibility of the Seller shall be that it will manufacture the goods in accordance with its published specifications and that the goods will be free from defects in material and workmanship. The seller's liability for breach of an expressed warranty shall exist only if the goods are installed, started in operation, and tested in conformity with the seller's published instructions. The seller expressly excludes any warranty whatsoever concerning goods that have been subject to misuse, negligence, or accident, or that have been altered or repaired by anyone other than the seller or the seller's duly authorized agent. This warranty is expressly made in lieu of any and all other warranties, express or implied, unless otherwise agreed to in writing. The warranty period is defined in the purchase order and begins on the date the goods are shipped from Noah Precision. In all cases, the seller has sole responsibility for determining the cause and nature of the failure, and the seller's determination with regard thereto shall be final. The Noah Precision Warranty Statement may be superseded by a service agreement entered into between Noah Precision and the buyer.