

**ON-DEMAND "ATLANTIS" PLATFORM
FOR WATER MAZE SYSTEMS
USERS MANUAL**

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CHAPTER 1

Introduction

The On-Demand Platform, sometimes referred to as the “Atlantis Platform”, is a submersible platform that is designed to be used in a water maze. If it is being used in conjunction with the MED Associates Water Maze Video Tracking Software, it can be programmed to rise automatically when the animal swims to the platform location. It can also be raised manually using the pushbutton switch.

Users who utilize manual observation to conduct water maze studies can still take advantage of the MED Associates On-Demand Platform. If direct observation is used, the On-Demand Platform can be raised at the appropriate time using the supplied pushbutton switch. If the researcher is observing the water maze session on a closed circuit television system, or similar remote system, the On-Demand Platform controller should be located in the vicinity of the observation room, such that the observer can operate the pushbutton while watching the remote video feed.

Figure 1 - On-Demand Platform Lowered and Raised

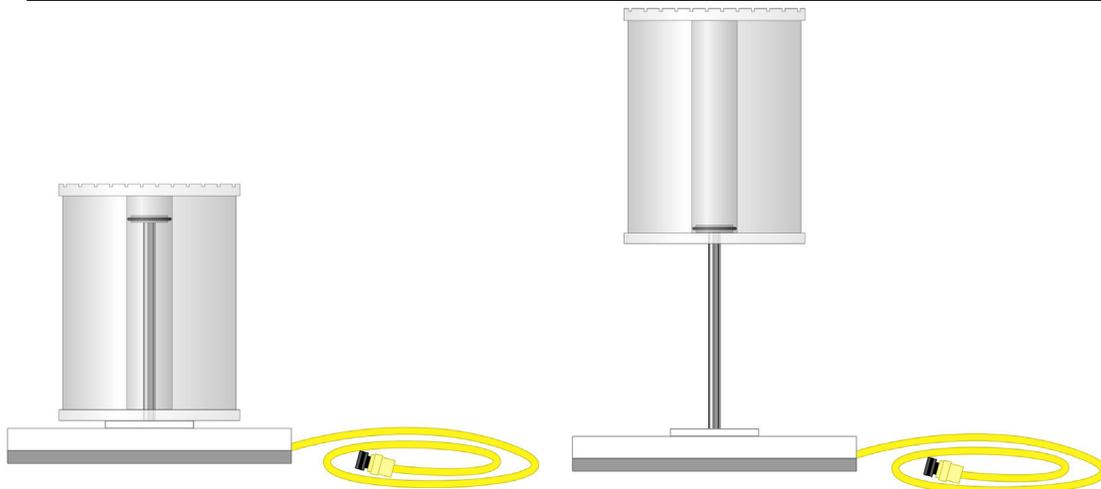


Table 1 - On-Demand Platform Specifications (approximate measurements)

	Rat (ENV-595R)		Mouse (ENV-595M)	
	<i>in</i>	<i>cm</i>	<i>in</i>	<i>cm</i>
Diameter	6¼ in	16	4¼	11
Platform Height (Raised)	14½	37	14½	37
Platform Height (Collapsed)	8½	22	8½	22
	<i>lb</i>	<i>kg</i>	<i>lb</i>	<i>kg</i>
Weight	12.8	5.8	7¼	3.3
Buoyancy	4.5	2	1¼	0.6
	<i>sec</i>		<i>sec</i>	
Rise Time (adjustable)	1-2		1-2	

Principles of Operation

The On-Demand Water Maze Platform is held submerged well below the water's surface using electromagnets. When properly connected, the electromagnets will be active as soon as the power switch on the SG-596MR-TTL On-Demand Platform Controller is turned on. The green MAGNET STATUS LED should be illuminated, indicating that the electromagnets are active.

The electromagnets can be deactivated, thus raising the platform, in two ways. First, the manual pushbutton may be depressed momentarily. Second, a 28 Volt Operate signal on the CONTROL INPUT connector will deactivate the electromagnets. When the pushbutton is depressed or a 28 Volt Operate signal is received by the SG-596MR-TTL Platform Controller, the green MAGNET STATUS LED will go out and output signal will be sent from the MAGNET STATUS MONITOR OUTPUT connector. This signal is monitored by the MED Associates Water Maze Video Tracking Software to indicate when the platform is submerged (electromagnets active) or when the platform has been released (electromagnets deactivated).

CHAPTER 2

Bulkhead Connector Installation

NOTE: It is only necessary to complete the steps in this chapter if the water maze pool being used was not purchased from MED Associates, Inc. Pools purchased from MED Associates, Inc. will arrive with the bulkhead connector installed.

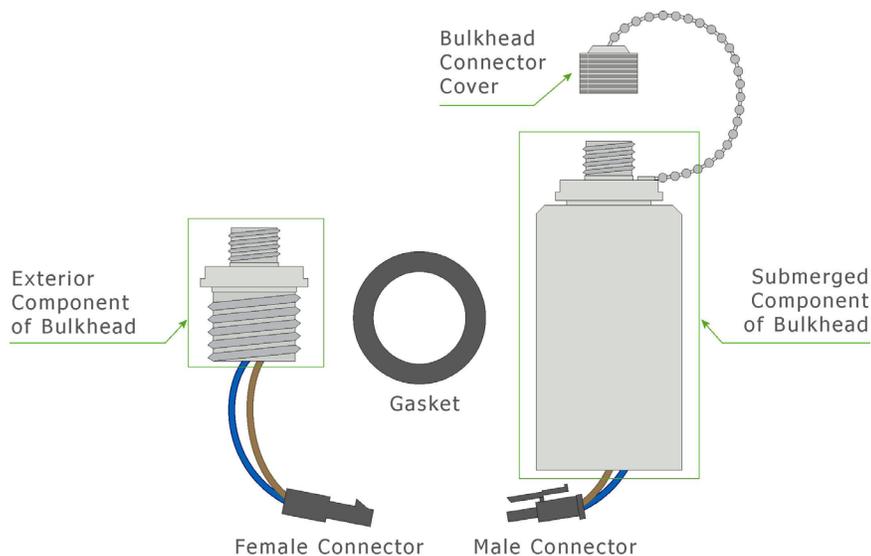
Required Tools and Supplies

- Power Drill
- 13/16-inch drill bit

Installation Instructions

1. Disconnect the submerged component of the bulkhead connector from the exterior component, as shown in Figure 2.

Figure 2 - Bulkhead Connector Components Separated



2. Drill a 13/16-inch diameter hole through the pool in the desired location for the bulkhead connector.

NOTE: The thickness of the pool cannot exceed 1/4-inch.

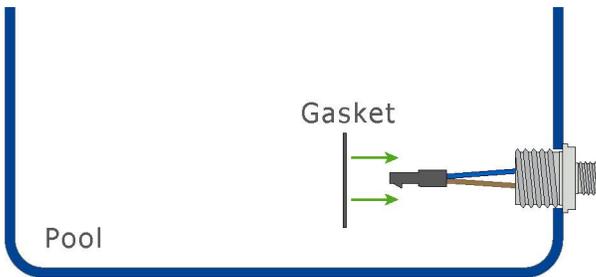
3. Thread the exterior component of the bulkhead connector through the hole in the pool, as shown in Figure 3.

Figure 3 - Thread Exterior Component Into Hole



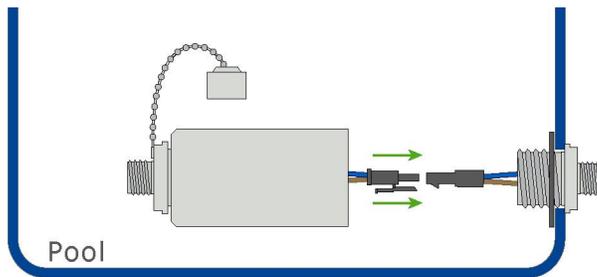
4. Slide the gasket over the connector as shown in Figure 4.

Figure 4 - Slide Gasket Over Connector



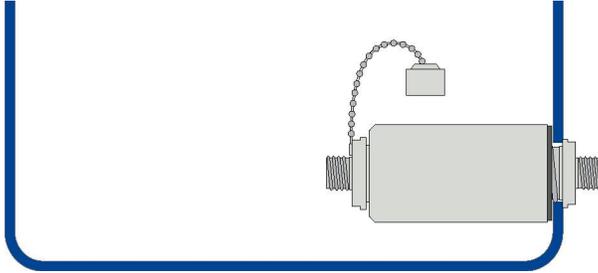
5. Fasten the male and female connectors as shown in Figure 5.

Figure 5 - Fasten Male and Female Connectors



6. Carefully push the wires into the chamber inside the submerged component of the bulkhead connector and thread the submerged and exterior components together, as shown in Figure 6. The bulkhead connector is now properly installed.

Figure 6 - Assembled Bulkhead Connector



7. It is advisable to leak-test the pool prior to filling to verify proper bulkhead connector installation. Thread the bulkhead connector cover over the submerged component cable port. Fill the pool to just above the bulkhead connector. Ensure the no leaks are present at the area surrounding the exterior component of the bulkhead connector. If there is a water leak, check the bulkhead connector gasket for damage and ensure that the submerged and exterior components of the bulkhead connector are tightly screwed together.

CHAPTER 3

Setup Instructions

NOTE: Do not fill the water maze pool with water unless either the On-Demand Platform cable (see Figure 1) or the included bulkhead connector cover (Figure 2) is applied to the bulkhead connector. Also, be sure to empty the pool before disconnecting the On-Demand Platform cable. This will prevent water from entering the connector, which may cause corrosion.

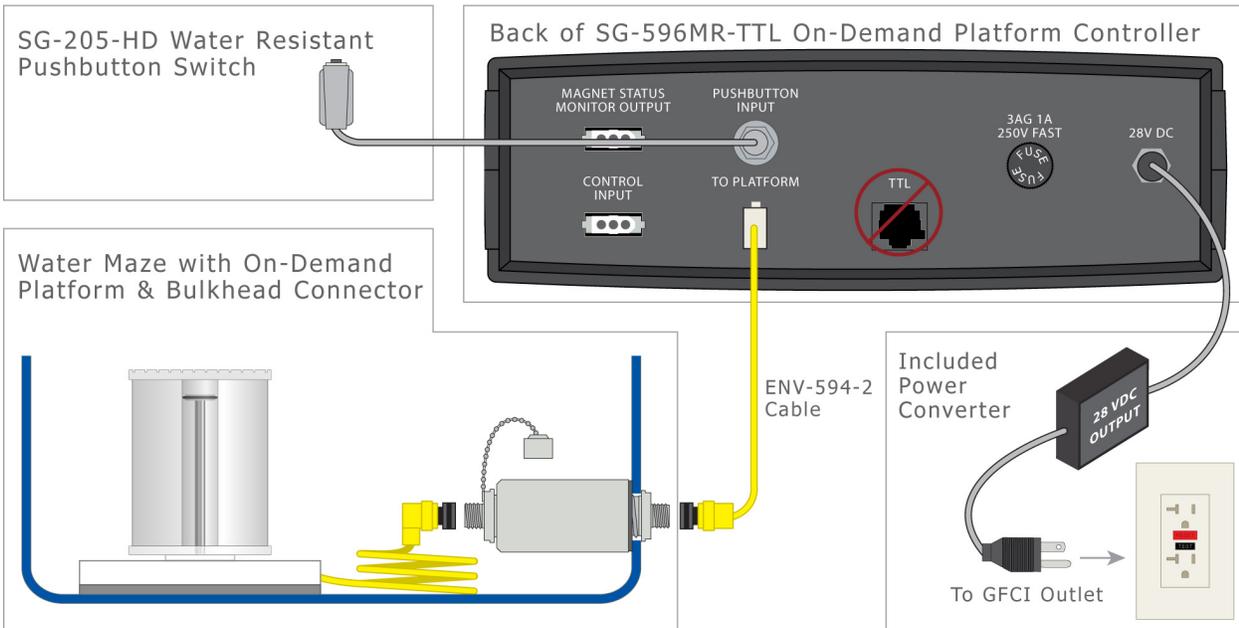
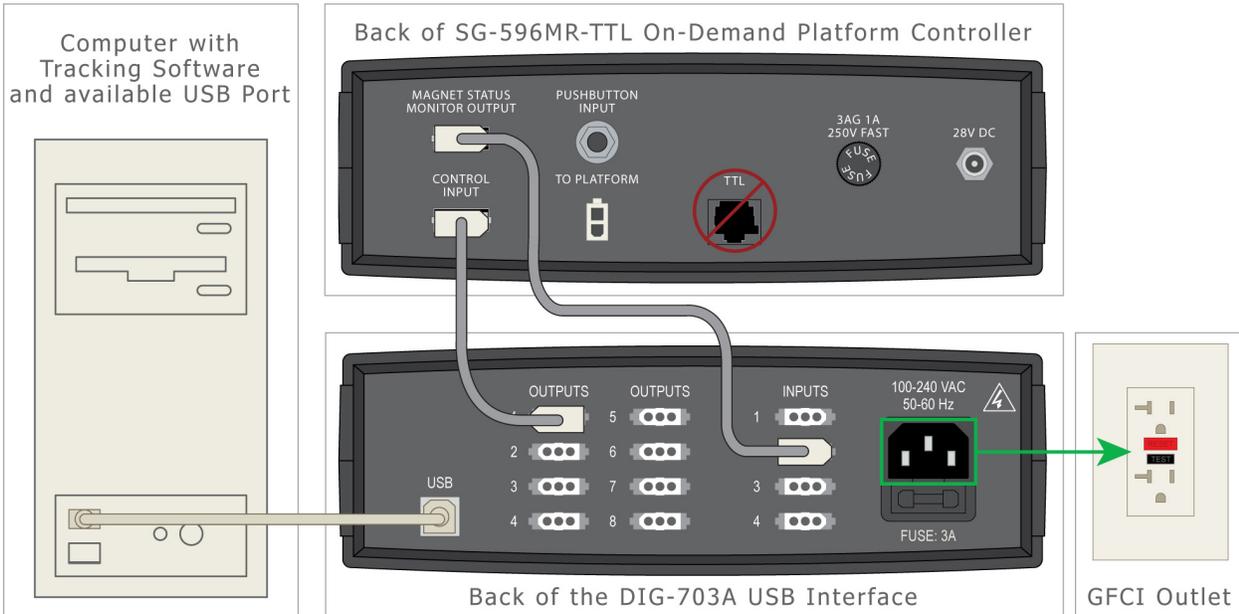
NOTE: Avoid energizing the On-Demand Platform magnets when it is not submerged. Doing so may cause the magnets to overheat and damage the platform.

1. When the On-Demand Platform is initially placed in the filled pool it will need to be purged. This is done by cycling the platform up and down several times until bubbles are no longer expelled from the holes in the center of the platform.
2. When returning the platform to the down position, be sure to press straight down on the center of the platform in order to prevent binding.

CHAPTER 4

Wiring Instructions

Quick Reference

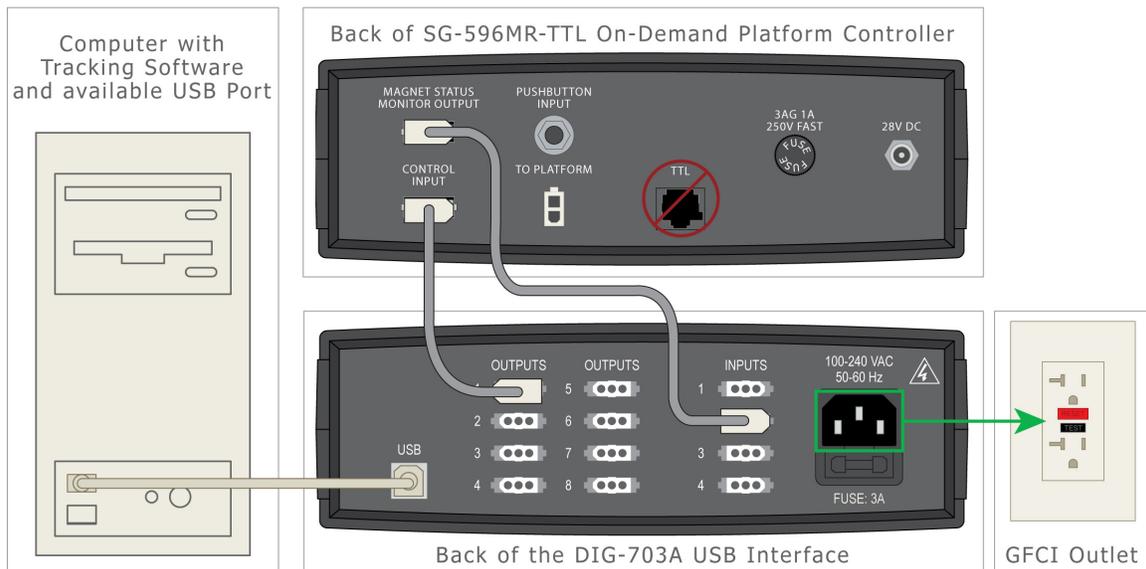


Step-by-Step Instructions

This section describes the set up procedure for researchers who are using the ENV-595 On-Demand Water Maze Platform with the Water Maze Video Tracking System from MED Associates. If the ENV-595 On-Demand Water Maze Platform is being used with a different system, please refer to Chapter 7.

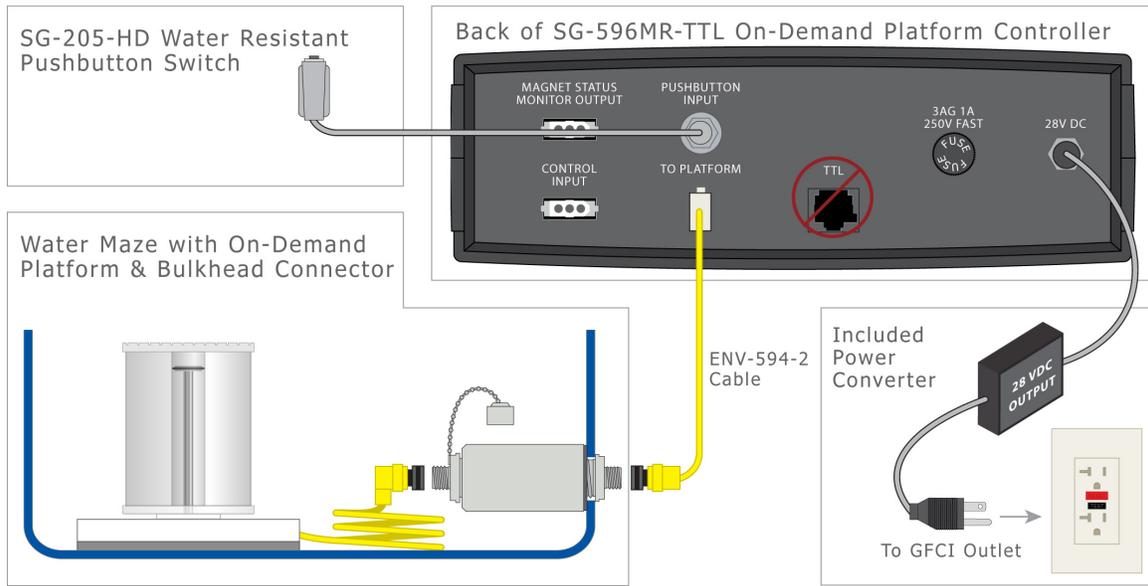
NOTE: The **TTL** connector on the back of the SG-596MR-TTL is not used in this application.

Figure 7 - Wiring Diagram 1



1. Using an SG-218A 3-pin Molex cable, connect the **CONTROL INPUT** connector on the back of the SG-596MR-TTL to **OUTPUT 1** on the back of the DIG-703A USB Interface, as shown in Figure 7.
2. Using an SG-218A 3-pin Molex cable, connect the **MAGNET STATUS MONITOR OUTPUT** connector on the back of the SG-596MR-TTL to **INPUT 2** on the back of the DIG-703A USB Interface, as shown in Figure 7.
3. Using the included USB cable, connect the **USB** port on the back of the DIG-703A USB Interface to the USB port on the computer that was used during the DIG-703A USB driver installation. Refer to the DIG-703A-USB User's Manual for further information regarding its operation.

Figure 8 - Wiring Diagram 2



4. Connect the SG-205-HD Pushbutton Switch to the **PUSHBUTTON INPUT** connector on the back of the SG-596MR-TTL, as shown in Figure 8*.
 5. Using the included cable (part number ENV-594-2), connect the bulkhead connector to the **TO PLATFORM** connector on the back of the SG-596MR-TTL, as shown in Figure 8.
 6. Use the included 28 VDC Power Converter to connect the **28V DC** port on the back of the SG-596MR-TTL to a GFCI outlet, as shown in Figure 8.
 7. Using the included power cord connect the DIG-703A USB Interface to a GFCI outlet, as shown in Figure 7.
- * If the hardware is being used in conjunction with the Med Associates Water Maze Video Tracking Software, refer to the Water Maze Video Tracking Software Manual (Part Number DOC-214) for Pushbutton Wiring Instructions.

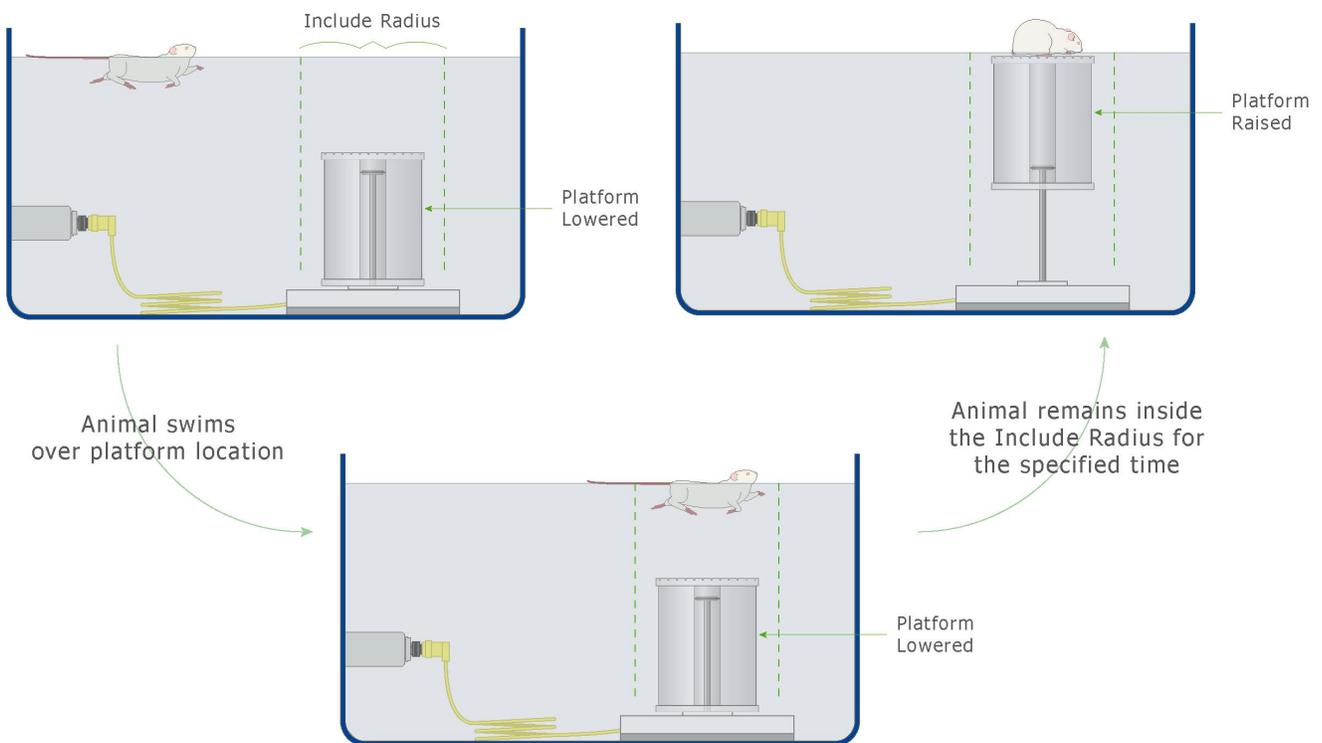
CHAPTER 5

Operating Instructions

Software Controlled Operation

The MED Associates, Inc. Water Maze Video Tracking Software tracks the animal's location in the water maze. The software can be programmed to raise the On-Demand Platform when the animal is within the Include Radius for a user-defined duration. Refer to the Water Maze Video Tracking User's Manual for detailed information regarding the software application.

Figure 9 - Principle of Water Maze Video Tracking Control of On-Demand Platform



Manual Operation

The On-Demand Platform may be raised manually by pressing the SG-205-HD pushbutton switch (shown in Figure 8). This interrupts the output to the magnets, deactivating them and allowing the platform to rise. The output is interrupted only as long as the pushbutton is depressed, so the platform may be lowered again immediately upon releasing the pushbutton.

CHAPTER 6

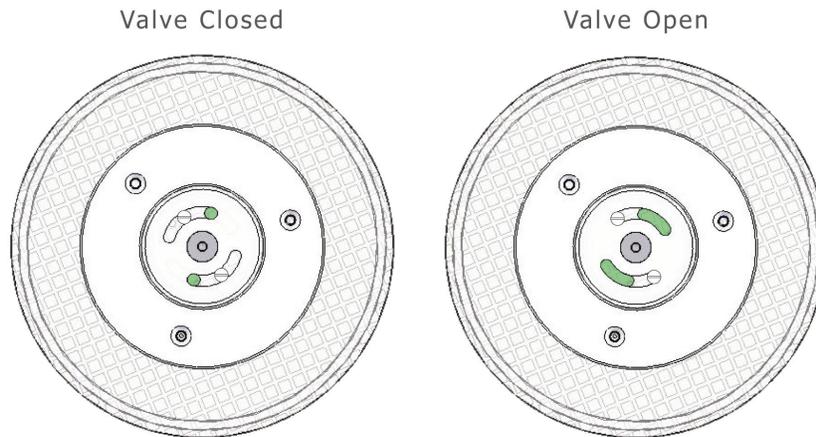
Adjusting the Rise Time of the On-Demand Platform

The rise time of the On-Demand Platform is adjustable from approximately one to approximately two seconds. This adjustment can be performed easily using a flat head screwdriver. Locate the valve on the underside of the platform, shown in Figure 10.

Adjust the valve by loosening the two nylon screws; moving the valve to the desired position and tightening the screws back down. Open the valve to decrease the rise time and close the valve to increase the rise time.

NOTE: Do not close the valve completely. Completely closing the valve will prevent the On-Demand Platform from functioning properly.

Figure 10 - Rise Time Adjustment Valve



CHAPTER 7

Using the On-Demand Platform with TTL Systems

Noldus Systems

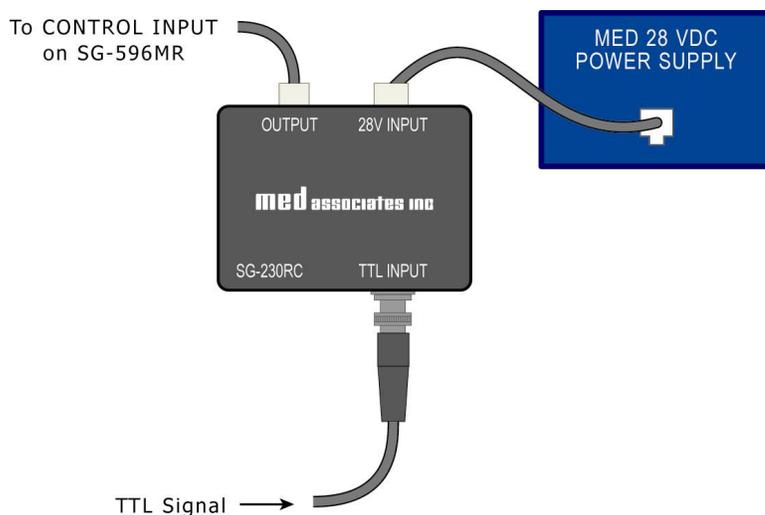
The SG-596MR-TTL On-Demand Platform Controller provides a connector that enables users to control the platform using hardware from Noldus Information Technology. To do this, complete Steps 4 – 6 of the Step-by-Step Instructions in this manual. Next, connect the **TTL** connector on the back of the SG-596MR-TTL to any **TTL control** connector on the front panel of the Noldus USB-IO box using an RJ45 cable. Refer to the Noldus USB-IO Box Reference Manual for instructions on connecting the USB-IO Box to the computer.

Other Systems

The MED Associates, Inc. On-Demand Water Maze Platforms are designed so that they may be used with other water maze systems. If the tracking system being used is capable of outputting a TTL signal to operate an On-Demand Platform, then the MED Associates SG-230RC TTL to 28V DC Adapter may be used. See the wiring diagram in Figure 11.

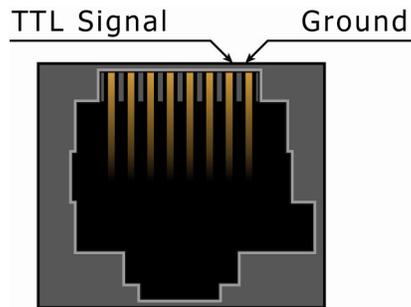
1. Connect the TTL signal from your water maze system to the **TTL INPUT** on the SG-230RC using a coaxial cable with BNC connectors.
2. Connect the **28V INPUT** on the SG-230RC to a 28V DC power supply (e.g. MED Associates part number SG-501).
3. Connect the **OUTPUT** on the SG-230RC to the **CONTROL INPUT** connector on the front of the SG-596MR-TTL Platform Controller (Figure 7). The On-Demand Platform will rise when the magnets are deactivated by a TTL signal from your water maze system.

Figure 11 - TTL Wiring Diagram



The pin-out of the **TTL** connector on the SG-596MR-TTL is shown below. The pins are numbered from left to right. Pins 1 – 6 are not used. Pin 7 connects to the TTL signal and Pin 8 connects to ground.

Figure 12 – TTL Connector Pin-Out



CHAPTER 8

Care Instructions

It is important that the On-Demand Platform only remain in a filled water maze for the duration of an experiment. The On-Demand Platform cable is long enough so that the platform may be removed from the filled maze without being disconnected from the bulkhead connector.

If necessary, the On-Demand Platform can be cleaned using a mild detergent. Do not use abrasives or highly alkaline cleansers, acetone or benzene. The platform should not be cleaned at high temperatures.