# Discovery Hybrid Rheometer


## Site Preparation Guide for HR 10/20/30 Series

Revision B Issued July 2020

# Table of Contents



# Ideal Setup

## IDEAL PLACEMENT AND BENCH MEASUREMENTS

Select a location with adequate floor space and a rigid laboratory bench that is level and is in a vibration-free environment. A marble table is recommended.

Bench width: 127 cm (50 in)

Marble table width: 60 cm (24 in)

Bench depth: 76 cm (30 in)

Marble table depth: 76 cm (30 in)

Distance from the wall: 30.5 cm (12 in) min.

# System Components

## MAIN SYSTEM COMPONENTS


**A. Instrument**

**B. Computer**

**C. Electronics Control Module**

# Instrument Measurements

## MAIN INSTRUMENT

Height: 91 cm (35.8 in)

Width: 34 cm (13.4 in)

Depth: 48 cm (18.5 in)

Weight: 42.4 kg (93.5 lbs)

## ELECTRONICS CONTROL MODULE

Height: 36 cm (14.2 in)

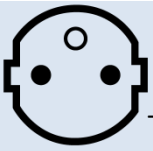
Width: 23 cm (9 in)

Depth: 40 cm (15.7 in)

Weight: 10.7 kg (23.6 lbs)

# Utility Requirements

## POWER

| Item | Requirement |
|---|---|
| Power | • 110–240 VAC, 47–63 Hz, 1.4 kW<br>• Neutral to Ground (NG) voltage max 0.5 volt<br>• Safety ground per local regulation |
| Power cords provided | • NEMA 5-15 plug<br>• Type F plug  Type F  NEMA 5-15 |

CAUTION **Use power cords with plugs appropriate for your circuit.**

CAUTION Supply voltages lower than indicated may result in a degradation of performance.

CAUTION Ensure that the mains assigned do not also supply power to noise generating equipment nearby, such as motors, welders, transformers, etc.

CAUTION An independent heavy GROUND wire must be provided through the power hookup. Improper grounding may cause severe damage for which the supplier will not accept responsibility. All power strips must be fully grounded and carry the ground through to the sockets into which the computer is plugged.

# Utility Requirements

## GAS

| | Air Bearing (Air or Nitrogen): |
|---|---|
| Gas Pressure | Compressed at 345–1034 kPa gauge (70–150 psig) |
| Flow Rate | Air flow volume capacity requirements are specific to the Temp Control Options purchased with the DHR instrument. Refer to the DHR Accessories Site Prep Guide for additional information. |
| Dew point | -20°C or better |
| Conditions | • Must be dry<br>• Must be free from oil and dirt[1] |
| Other | • ¼ NPT female connection required for DHR main air supply (not provided) |

| [1]Compressed Air Quality Requirements | |
|---|---|
| Dew point | Ideal: -40°C<br>Minimum: -20°C |
| Dirt particle | 5µm |
| Oil including vapor | 0.01 mg/m$^3$ |

## WATER

| Item | Requirement |
|---|---|
| Water | Fluid circulator with cooling ability for Peltier and UHP temperature systems |

# Computer Requirements

## HARDWARE REQUIREMENTS

| Description | Requirement |
|---|---|
| Processor | • Intel® Core™ i5 8400 or better<br>• 2.8 GHz with 9 MB L2 cache |
| Memory | ≥ 16 GB RAM DDR4 2666 SDRAM |
| Hard drive | ≥ 80 GB free space<br>• 1.5 GB required for Full version of TRIOS<br>• 675 MB required for Lite version of TRIOS (without Online help) |
| DVD (optional) | ≥ 48x CD-ROM or DVD (optional for installing TRIOS) |
| Screen resolution | Required: 1280 x 1024 with 24-bit colors<br>Recommended: 1920 x 1080 with 24-bit colors |
| Graphic memory | 128 MB |
| Screen (LCD) size | Required: 19” or greater<br>Recommended: 24” wide screen |
| USB II port | Required with ETC and Peltier Camera Viewer options, SALS accessory, and Automatic Asphalt calibration kit |
| Network card | Ethernet 10Base T/100 Base TX |
| Additional Ethernet card(s) | Necessary if connecting the instrument directly and access is needed to the Corporate LAN. Also required for Modular Microscope Accessory. |
| Ethernet Cabling | 10/100BaseTX Ethernet hub/switch. Must be EIA-568B Category 5+ UTP |
| Client-Server Protocol | DHCP |
| Image Capture (Camera Option) | DirectX 9.0 or higher |
| Second Monitor | Recommended for SALS Accessory image viewing and Modular Microscope Accessory |
| TCP/IP ports used | • TCP: 20010, 20011<br>• UDP: 5050, 5056 |

# Computer Requirements

## SOFTWARE REQUIREMENTS

| Item | TRIOS |
|---|---|
| Operating System | • Windows 7, 8, 10 Ultimate & Professional<br>• Home version not supported<br>• ≥ 64-bit version |
| Internet | **Internet connection is strongly recommended for ongoing support after installation** |
| Service Pack | Microsoft Operating System Service Pack |
| Updates | Windows Operating System and associated Microsoft updates must be up to date |
| Network | *A second network card for corporate connection is recommended.*<br><br>*TA Instruments is not responsible for resolving issues associated with connections to your corporate network.* |
| Conflicts | *TA Instruments is not responsible for resolving hardware/software conflicts created by the addition of third-party hardware or software to the computer.* |

# Temperature Systems

The cooling rate and minimum temperature will depend on the source of cooling.

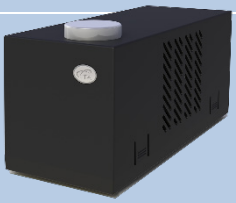
For accessory requirements not listed, refer to the DHR Accessory Requirements guide.

| Accessory | Smart Swap Requirements |
|---|---|
| Electrically Heated Plates (EHP) | • Purge flow of 5 L/min (305 $in^3$/min) inert gas<br>• Motor cooling gas flow of 10 L/min for temperatures above 250°C. Air pressure of 50–100 psig. |
| | • Optional controlled cooling with **GCA**. Refer to the DHR Accessories Requirement guide for GCA requirements.<br>• Crash cooling pressure of 50–100 psig and a flow of ~2.5 scfm (70 L/min) |
| Environmental Test Chamber (ETC) | Purge gas flow rate should be 10 L/min (610 $in^3$/min) at 206–690 kPa (30–100 psig) |
| Peltier Plate/ Peltier Concentric Cylinder | • Recirculating water bath (not supplied) at 0.5 L/min (30.5 $in^3$/min) |

Circulator Power Cooling Gas $LN_2$ Fluid Light Hardware Software Temp Lab Customer

# Temperature Systems

| Accessory | Smart Swap Requirements | |
|---|---|---|
| Upper Heated Plate (UHP) | | **Option 1: Standard Cooling (temps above 10°C)**<br>• Circulation fluid: Koolance (2 bottles)<br>• Fluid cooling: Supply should be 5°C below the minimum required temperature at minimum required flow rate through the system of 0.5 L/min |
| | | **Option 2: Standard Cooling Accessory**<br>• TA-supplied **Air-Cooled Circulator** (PN 403209.901)<br>• Recommended fluid: Koolance (2 bottles) |
| | | **Option 3: Low Temperature Cooling Accessory–TCube Edge**<br>• TA-supplied **TCube Edge Model 5A** (PN 404500.901)<br>• Fluid: Koolance (supplied with the TCube) |



Circulator Power Cooling Gas $LN_2$ Fluid Light Hardware Software Temp Lab Customer

# Temperature Systems

| Accessory | Smart Swap Requirements | |
|---|---|---|
| Upper Heated Plate (UHP) | | **Option 4: Low Temperature Cooling Accessory–Customer-supplied**<br>• Customer-supplied refrigerated and heating circulator and appropriate fluid (ie. silicone fluid)<br>WARNING DO NOT USE WATER AS CIRCULATION FLUID<br>• Supply: 5°C below the minimum required temperature at a minimum flow rate through the system of 0.5 L/min (12.2 $in^3$/min) |
| | | **Option 5: Low Temperature Cooling Accessory–Vortex**<br>• TA-supplied **Vortex Cooler** (PN 545809.901)<br>• Air: Clean, dry, oil-free, compressed air 200L/min at 552–690 kPa gauge (80–100 psig)<br>• Dew point: -30°C or better |

Circulator Power Cooling Gas $LN_2$ Fluid Light Hardware Software Temp Lab Customer

# Site Preparation Checklist

## Discovery Hybrid Rheometer – HR 10/20/30 Series

| | |
|---|---|
| | Enough bench space for instrument, computer, and Electronics Control Box<br>☐ Bench length: 127 cm (50 in)<br>☐ Bench depth: 76 cm (30 in) |
| | Instrument power is 110–230 VAC, 47–63 Hz, 1.4 kW |
| | ☐ Computer meets all hardware requirements<br>☐ I have two network cards installed on the computer to be able to connect to both the corporate LAN and the instrument.<br>☐ Computer meets all software requirements |
| | Air Bearing Gas Pressure (air or nitrogen)<br>☐ Pressure is 345–1034 kPa (70–150 psig)<br>☐ Dew point is -20°C or better<br>☐ Particle content is < 5µm and oil and vapor is < 0.01 mg/m$^3$ *<br>☐ ¼ NPT female connection to the main compressed air source<br><br>*TA filter/regulator assembly (P/N 250000.001) meets these requirements. |
| | Accessories used:<br>☐ EHP<br>☐ ETC<br>☐ Peltier Place/Peltier Concentric Cylinder<br>☐ Upper Heated Plate |
| | ☐ The Customer assumes responsibility for any damage that occurs when the instrument is moved by someone other than a trained TA Instruments Service Representative. |

I hereby acknowledge that all utility requirements have been met per the checklist above and that they will be ready at the agreed time of installation.

**<u>If all utility requirements are not met at the agreed time of installation, additional charges may be incurred for a return Service trip.</u>**

_____ ____/____/____

*Customer* *DD* *MM* *YYYY*

_____ _____ _____

*Company* *City* *State* *Country*

Please send a signed copy of the completed checklist to your local Service representative.

# TA Instruments Offices

For information on our latest products, contact information, and more, see our website at: http://www.tainstruments.com.

To find your local TA Instruments office and contact information, visit http://www.tainstruments.com/contact/ta-directory/

TA Instruments – Waters LLC
Corporate Headquarters
159 Lukens Drive
New Castle, DE 19720
USA

Telephone: 302-427-4000
Fax: 302-427-4001
Email: info@tainstruments.com