

# ElectroForce™ Apex 1



## Site Preparation Guide

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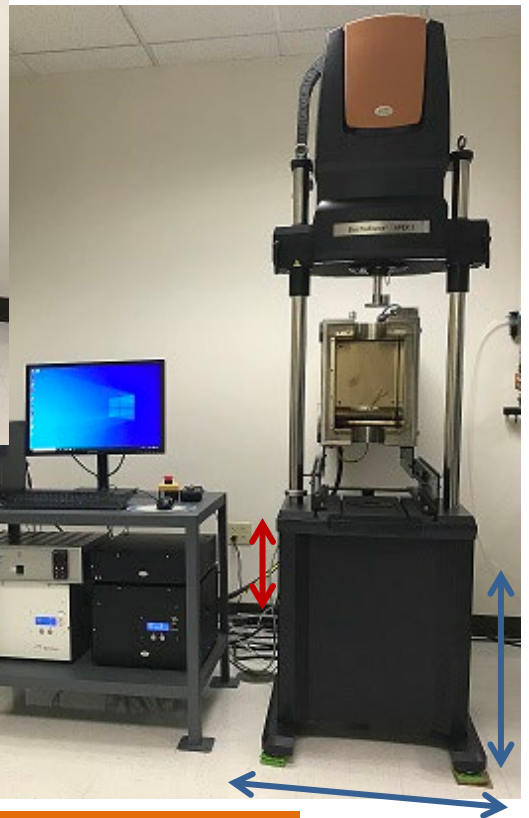


# Ideal Setup



## IDEAL PLACEMENT AND BENCH MEASUREMENTS

Select a location with adequate floor and ceiling space and a rigid laboratory bench that is level and is in a vibration-free environment. Bench must be rated to support several hundred pounds.



Distance from the wall:  
15.24 cm (0.5 ft) min.

Allow additional 86.36 cm  
(34 in) from the wall for  
optional hot/cold chamber

Table width: 152.4 cm (5 ft)

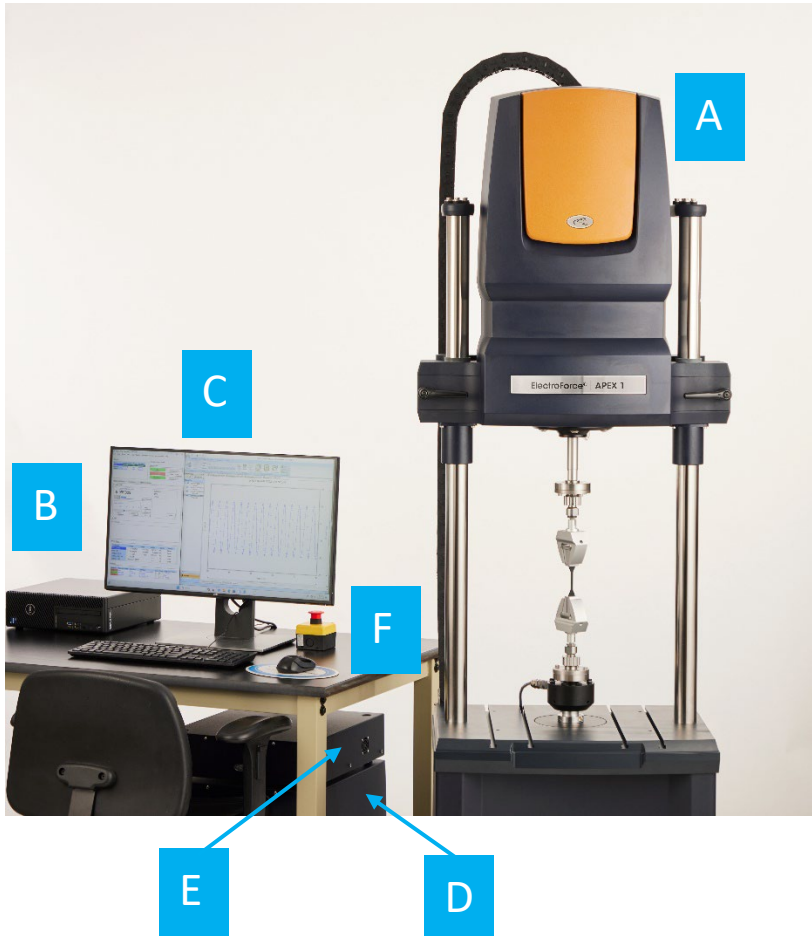
Table depth: 121.92 cm (4 ft)

Floor space: 91.44 cm x  
91.44 cm (3 ft x 3 ft)

# System Components



## MAIN SYSTEM COMPONENTS



A Test Instrument

D Power Supply

B Computer Tower

E Controller

C Computer Monitor

F Emergency Stop

# Instrument Measurements



## APEX 1 – FLOOR STANDING FRAME



Max Height: 247.65 cm (97.5 in)  
Min Height: 203.2 cm (80 in)

Width: 68.58 cm (27 in)

Depth: 68.58 cm (27.0 in)

Weight (Axial only): 257 kg (567 lbs)  
Weight (Axial-Torsion): 290 kg (639 lbs)



## APEX 1 – BENCHTOP

Max Height: 179.1 cm (70.5 in)  
Min Height: 134.6 cm (53 in)

Width: 62 cm (27 in)

Depth: 53.3 cm (21 in)

Weight: 201 kg (443 lbs)



# Instrument Measurements



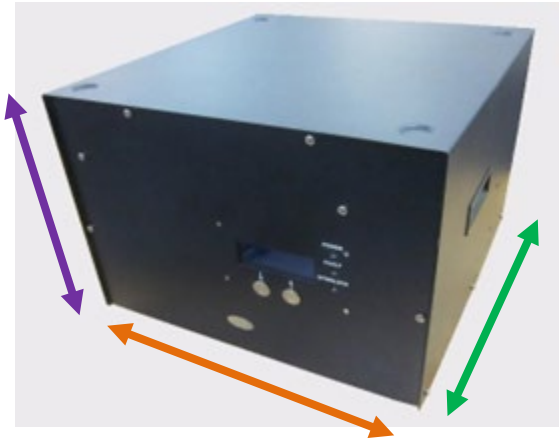
## AXIAL POWER SUPPLY FOR APEX 1

Height: 40.64 cm (16 in)

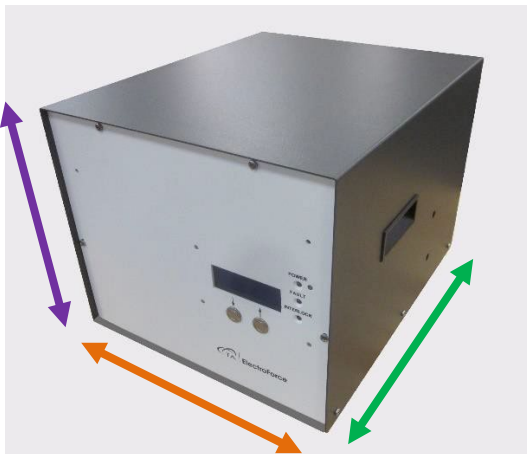
Width: 38.1 cm (15 in)

Depth: 40.64 cm (16 in)

Weight: 21.8 kg (48 lbs)



## TORSION POWER SUPPLY FOR APEX 1



Height: 30.48 cm (12 in)

Width: 33 cm (13 in)

Depth: 40.64 cm (16 in)

Weight: 14.3 kg (31.5 lbs)

# Instrument Measurements



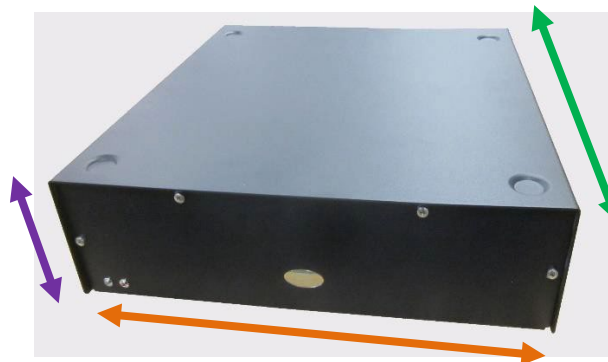
## CONTROLLER FOR APEX 1

Height: 11.43 cm (4.5 in)

Width: 38 cm (15 in)

Depth: 40.64 cm (16 in)


Weight: 4.1 kg (9 lbs)



# Utility Requirements



## POWER

Item	Requirement
Power Supply	<ul style="list-style-type: none"><li>• Axial: 208–230V, 50–60 Hz, 10A</li><li>• Torsion: 208–230V, 50–60 Hz, 2A</li><li>• Neutral to Ground (NG) voltage max 0.5 volt</li><li>• Safety ground per local regulation</li><li>• Single phase</li></ul>
Controller Power	<ul style="list-style-type: none"><li>• 207–230V, 50–60 Hz Hz, 1.2A</li></ul>
Power cords provided	<ul style="list-style-type: none"><li>• 6-20P plug for 230V systems in North America and Japan</li><li>• International: Line power cord provided is based on country</li></ul>  <p>6-20P</p>



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



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



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



Circulator



Power



Cooling



Gas



LN<sub>2</sub>



Fluid



Light



Hardware



Software



Temp



Lab



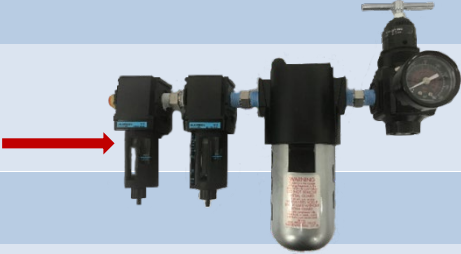
Customer



# Utility Requirements



## GAS

Item	Requirement
System gas	Air
Pressure	552–621 kPa (80–90 psig) <b>NOTE:</b> Air gauge provided with system 
Flow	45.3 L/min (1.6 CFM)
Connections	¼-inch push-to-connect or ¼-inch NPT female to filter/dryer/regulator with ¼-inch push-to-connect removed <sup>1</sup>
Conditions	<ul style="list-style-type: none"><li>• Filtered to 5 µm</li><li>• Must be free from oil and dirt</li><li>• Dew point ≤ 10°C</li></ul>

<sup>1</sup> Interconnection between the system and the supplied filter/regulator equipment is via ¼-inch push-to-connect fittings; use supplied tubing.



Circulator



Power



Cooling



Gas



LN<sub>2</sub>



Fluid



Light



Hardware



Software



Temp



Lab

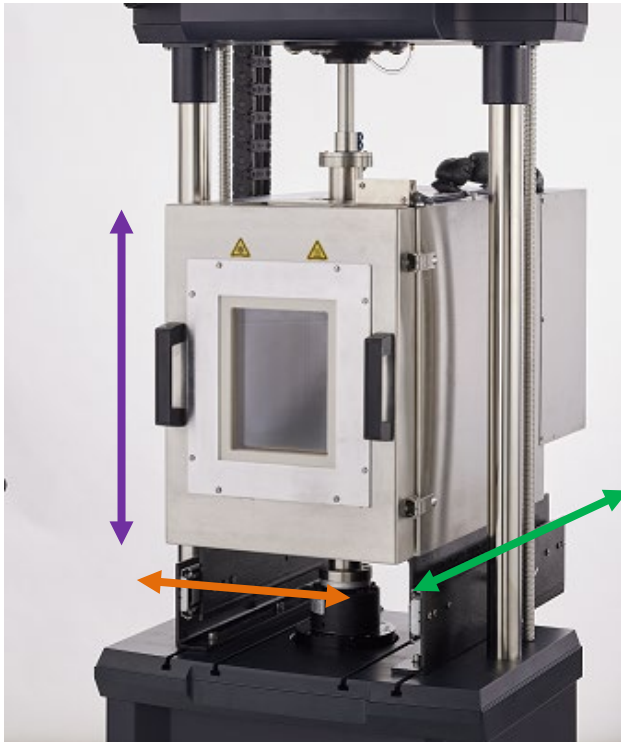


Customer

# Accessories



## HOT/COLD CHAMBER MEASUREMENTS



Height: 30.48 cm (12 in)

Width: 33 cm (13 in)

Depth: 40.64 cm (16 in)

Weight: 14.3 kg (31.5 lbs)



## HOT/COLD CHAMBER CONTROLLER MEASUREMENTS

Height: 14 cm (5.5 in)

Width: 45.2 cm (17 in)

Depth: 35 cm (13 in)

Weight: 2.26 kg (5 lbs)



# Accessories



## HOT/COLD CHAMBER REQUIREMENTS

Item	Requirement
Gas	Liquid nitrogen
Pressure	152–345 kPa (22–50 psig)
Connections	½ -inch SAE, 45 degree flare fitting
Power	230V, 50–60 Hz Hz,9.6A/2200W, 1 ph



Circulator



Power



Cooling



Gas



LN<sub>2</sub>



Fluid



Light



Hardware



Software



Temp



Lab

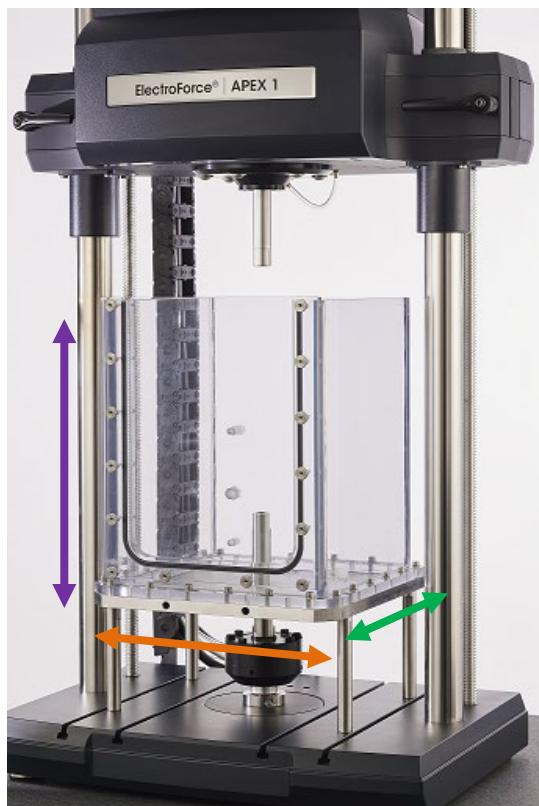


Customer

# Accessories



## ENVIRONMENTAL BATH MEASUREMENTS



Height: 30.48 cm (12 in)

Width: 33 cm (13 in)

Depth: 40.64 cm (16 in)

Weight: 14.3 kg (31.5 lbs)



## ENVIRONMENTAL BATH CONTROLLER MEASUREMENTS

Height: 14 cm (5.5 in)

Width: 36.58 cm (14 in)

Depth: 27 cm (10 in)

Weight: 1.36 kg (3 lbs)



# Accessories



## ENVIRONMENTAL BATH REQUIREMENTS

Item	Requirement
Power	207–230 VAC, 50/60 Hz, 3.0A



Circulator



Power



Cooling



Gas



LN<sub>2</sub>



Fluid



Light



Hardware



Software



Temp



Lab



Customer

# Accessories



## AIR CHILLER SYSTEM (ACS-3) MEASUREMENTS



Height: 112 cm (44 in)

Width: 37 cm (14.5 in) WITHOUT Chiller Panel

Width: 56 cm (22 in) WITH Chiller Panel

Depth: 56 cm (22 in)

Weight: 121 kg (267 lbs) WITHOUT Chiller Panel

Weight: 128 kg (282 lbs) WITH Chiller Panel



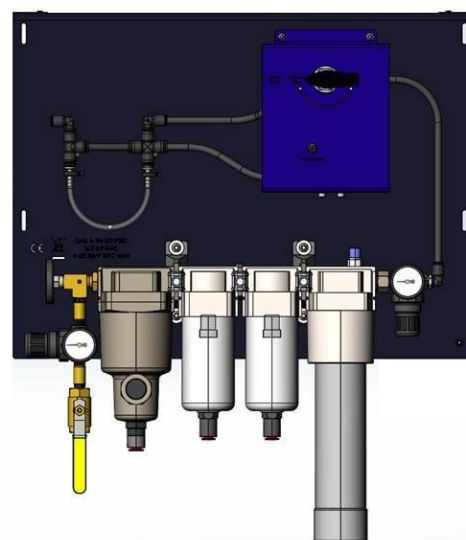
## CHILLER PANEL MEASUREMENTS

Height: 64 cm (25 in)

Width: 56 cm (22 in)

Depth: 38.1 cm (15 in)

Weight: 7.25 (16 lbs)



# Accessories



## AIR CHILLER SYSTEM (ACS-3) REQUIREMENTS

### Requirements



- 50 Hz: 207–252 VAC (refer to the serial number plate on the rear of the unit. The ACS is line frequency specific.)
- 60 Hz: 216–252 VAC (refer to the serial number plate on the rear of the unit. The ACS is line frequency specific.)
- 8A, 9A, 9.1A, or 11A (refer to the serial number plate on the rear of the unit)
- US sites require an L6-20 single-phase outlet



- Gas:
  - Air or nitrogen
  - Pressure: 6.9 bar (100 psig)
  - Flow rate: 200 SLPM
  - Temperature: 20–30°C
  - Dew point: -40°C (-40°F) **NOTE:** Dew point is specified at operating pressure. Supplying dryer air at a lower dew point will extend continuous operation.



NEMA L6-20 plug



- Lab Environment (must be below 25°C): 21°C–24°C = Ideal
- Leave 20 cm (8 in) of space in the front and back of the ACS for ventilation



Circulator



Power



Cooling



Gas



LN<sub>2</sub>



Fluid



Light



Hardware



Software



Temp



Lab









Customer

# Site Preparation Checklist



## ElectroForce Apex 1

	<p>Enough bench/floor space for instrument and computer</p> <ul style="list-style-type: none"><li><input type="checkbox"/> Table width: 1.5 m (5 ft)</li><li><input type="checkbox"/> Table depth: 1.2 m (4 ft)</li><li><input type="checkbox"/> Floor space (for floor standing frame): 91.44 cm x 91.44 cm (3 ft x 3 ft)</li><li><input type="checkbox"/> If optional Hot/Cold Chamber purchased, allow an additional 87.8 cm (34 in) from the wall so the system can slide back when not in use</li></ul>
	<p>Power supply is:</p> <ul style="list-style-type: none"><li><input type="checkbox"/> Axial: 208–230V, 50–60 Hz, 10A</li><li><input type="checkbox"/> Torsion: 208–230V, 50–60 Hz, 2A</li></ul> <p>Controller power is:</p> <ul style="list-style-type: none"><li><input type="checkbox"/> 207–230V, 50–60 Hz, 1.2A</li></ul>
	<p>Purge gas</p> <ul style="list-style-type: none"><li><input type="checkbox"/> Air: 552–621 kPa (80–90 psig)</li><li><input type="checkbox"/> Flow rate: 45.3 L/min (1.6 CFM)</li><li><input type="checkbox"/> 5 µm filtered</li><li><input type="checkbox"/> Dew point ≤ 10°C</li></ul>
	<p>Optional Hot/Cold Chamber:</p> <ul style="list-style-type: none"><li><input type="checkbox"/> Gas: Liquid nitrogen</li><li><input type="checkbox"/> Pressure: 152–345 kPa (22–50 psig)</li></ul>
	<p>Optional ACS-3:</p> <ul style="list-style-type: none"><li><input type="checkbox"/> Gas: Air or nitrogen</li><li><input type="checkbox"/> Pressure: 6.9 bar (100 psig)</li><li><input type="checkbox"/> Flow rate: 200 SLMP</li><li><input type="checkbox"/> Dew point: -40°C (-40°F)</li><li><input type="checkbox"/> L6-20 single phase outlet for US sites</li></ul>
	<ul style="list-style-type: none"><li><input type="checkbox"/> The Customer assumes responsibility for any damage that occurs when the instrument is moved by someone other than a trained TA Instruments Service Representative.</li></ul>

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.

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

\_\_\_\_\_  
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

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<http://www.tainstruments.com>.

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