



Series 651 Environmental Chambers

A comprehensive solution for accurate and stable temperature control

be certain.

Versatile Chambers Simulate Real-World Conditions

MTS Series 651 Environmental Chambers enable test teams and researchers to perform a wide array of mechanical tests in conditions that closely replicate the temperatures that materials and components experience in their actual operating environments, providing confidence in the operating range of a material in the real-world.

To ensure accurate and consistent results, MTS chambers are designed to maintain a constant temperature within a few degrees of the desired setting and with very little temperature gradient across the specimen. Heating is achieved with electrical

heating elements and a motor-driven fan for diffused convection heat. Cooling is accomplished with liquid nitrogen. All chambers feature a built-in temperature controller and all-welded construction with Fiberglas™ insulation.

These chambers are engineered to integrate seamlessly with a wide variety of floor-standing and tabletop load frames from MTS, including the MTS Acumen™ Electrodynamic Test System and MTS Landmark® Servohydraulic Test Systems, and MTS controllers, grips and fixtures.

Performance

With a temperature range of at least 440°C (800°F), chambers in the 651 series can test as low as -150°C (-238°F) or as high as 540°C (1000°F). Forced convection heating ensures rapid heat transfer and overshoot protection, while liquid nitrogen provides efficient cooling.

Control

These chambers have precise temperature management and optional remote set-point control to regulate temperature from the system PC. The fan, its blades and a baffle help ensure uniform temperatures throughout the chamber while also shielding the specimen from direct exposure to radiant heat.

Flexibility

Series 651 chambers are ideal for research, reliability testing, quality control and production testing. Typical applications include body and engine mount tests, tire cord tests, vibration isolator tests and material studies of elastomers, plastics, polymer matrix composites and laminates.



651.05F-01 chamber for use on Acumen

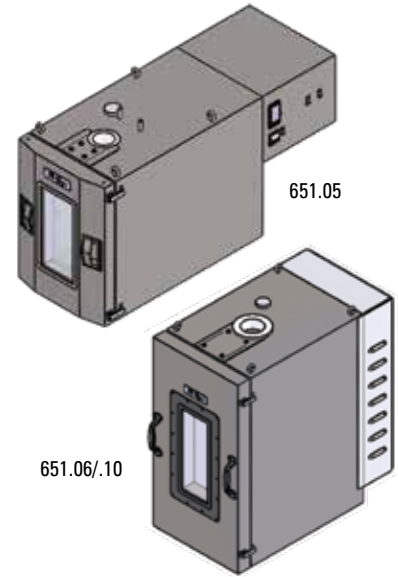
Cart stand for use with Acumen or Landmark tabletop units



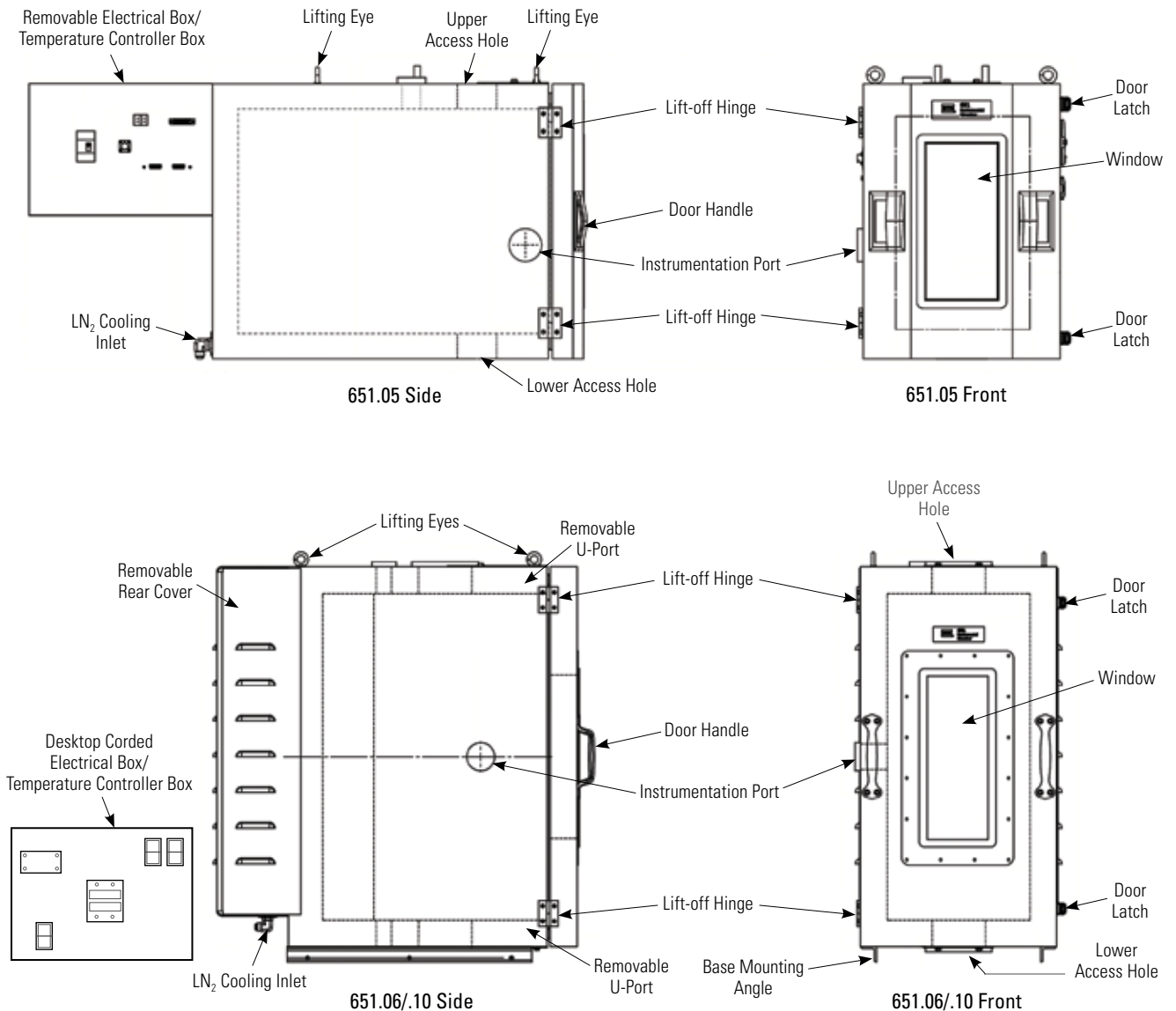
Engineered for Dependable Operation

Every aspect of Series 651 Environmental Chambers was designed using decades of MTS experience developing test systems for numerous industries. These environmental chambers may include:

- » Circulating fan helps ensure small specimen temperature gradients
- » Removable “U-plug” sections allowing chambers to be moved into place after the specimen is mounted and instrumented
- » Doors that open to 180° or can be lifted away for convenient specimen access
- » Multi-panel, tempered optical quality glass windows are sealed to reduce fogging and frosting. If required for non-contacting strain measurement solutions or video monitoring, the chambers can be provided with optional defrost elements
- » Internal light to illuminate the test area is supported by 651.05 & .06. 651.10 chambers have an external light mounted to the chamber window / door
- » Mobile carts to prevent interference between chambers and the load frame



Generic Series 651 Schematic



Choose from an Extensive Portfolio

Series 651 chambers support a wide range of tests, applications and test system configurations.

Model 651.05F-01 works in a variety of general materials testing applications -151°C (-238°F) up to 350°C (662°F) with floor-standing models of the MTS Acumen test system.

Model 651.05F-02 is ideal for general materials testing applications -151°C (-238°F) up to 350°C (662°F) with tabletop models of the MTS Acumen test system.

Model 651.06E-03 handles general materials testing -129°C (-200°F) up to 315°C (600°F) with floor-standing MTS Landmark test systems.

Model 651.10E-04 offers support for general materials testing -129°C (-200°F) up to 540°C (1000°F) with floor-standing MTS Landmark test systems.

Model 651.06E-04 is designed to accommodate large specimens or specimens that require large grips within the chamber. Works -129°C (-200°F) up to 315°C (600°F) with floor-standing MTS Landmark test systems.

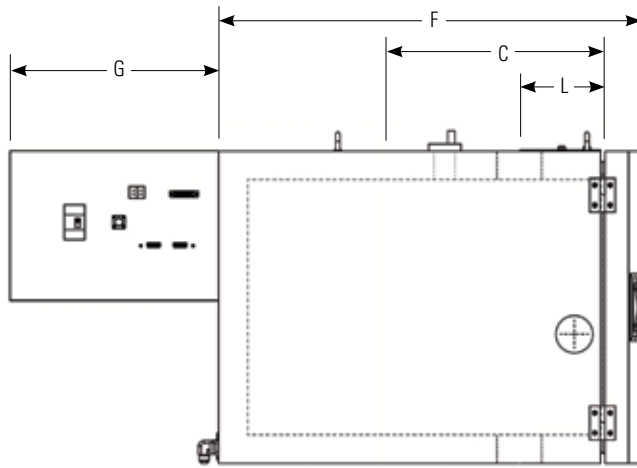
CUSTOM CHAMBER DESIGN

MTS can design and build custom chambers for use with mechanical refrigeration, humidity control, salt spray and other applications as well as in special sizes to suit unique testing requirements, including integration with other test systems. Contact MTS for more details.

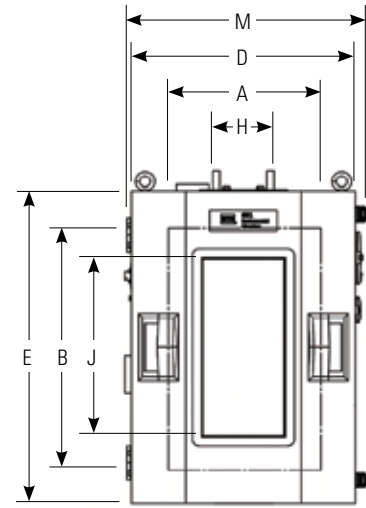


Sized to Accommodate any Specimen

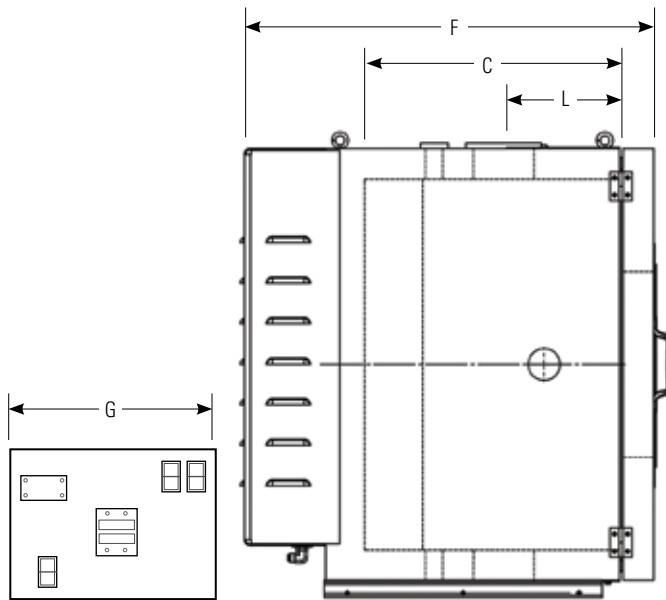
Series 651 chambers provide the sizes test teams need to perform accurate environmental testing on an array of specimens.



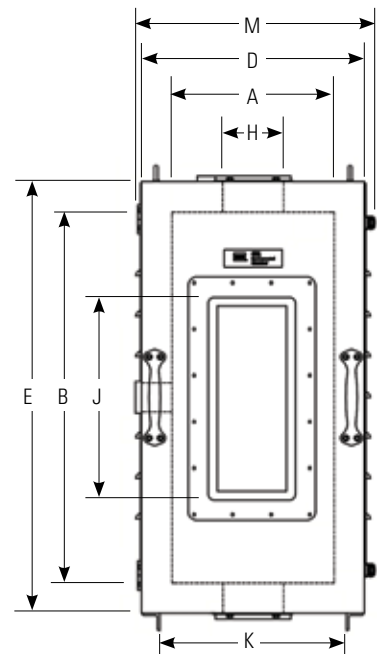
651.05 Side



651.05 Front



651.06/.10 Side



651.06/.10 Front

651 Dimensions

Model		A	B	C	D	E	F*	G*	H	J	K	L	M
651.05F-01	mm	216	228	228	343	356	968	254	64	152	—	122	381
	in	8.5	9	9	13.5	14	38.1	10	2.5	6	—	4.8	15
651.05F-02	mm	286	452	305	419	584	1173	388	78	330	—	152	457
	in	11.25	17.8	12	16.5	23	46.2	15.30	3.06	13	—	6	18
651.06E-03	mm	356	559	432	489	692	897	508	102	305	397	254	524
	in	14	22	17	19.25	27.25	35.31	20	4	12	15.64	10	20.63
651.06E-04	mm	356	813	432	489	946	897	508	102	406	397	254	524
	in	14	32	17	19.25	37.25	35.31	20	4	16	15.64	10	20.63
651.10E-04	mm	356	660	432	514	845	948	508	102	305	397	254	528
	in	14	26	17	20.25	33.25	37.31	20	4	12	15.64	10	20.79

* Dimensions shown are approximate Dimensions shown in millimeters are rounded to closest millimeter.

MTS reserves the right to change dimensions without notice.

651 Specifications

Model	651.05F-01	651.05F-02	651.06E-03	651.06E-04	651.10E-04
Load Frame	Acumen 1 Acumen 3	Landmark Bionix Acumen 3	Landmark	Landmark	Landmark
Chamber part number	058-052-704 (US Plug) 058-052-703 (WW Plug)	058-052-702 (Acumen, US Plug) 058-052-701 (Acumen, WW Plug) 058-052-602 (w/table top legs, US Plug) 058-052-601 (w/table top legs, WW Plug)	100-639-950 (works with 494 FlexTest Controller) 100-639-951 (works with 494 FlexTest Controller) <i>(will be supplied with defrosting elements for the window)</i>	100-639-952 (works with 494 FlexTest Controller) 100-639-953 (works with 494 FlexTest Controller) <i>(will be supplied with defrosting elements for the window)</i>	100-639-954 (works with 494 FlexTest Controller) 100-639-955 (works with 494 FlexTest Controller) <i>(will be supplied with defrosting elements for the window)</i>
Cart part number[¶]	100-294-319 [¶] 100-297-346	100-294-319 [¶] 100-297-346	100-160-646 100-213-156**	100-160-646 100-213-156**	100-160-646 100-213-156**
Test space (nominal)	216 mm W, 228 mm D, 228 mm H (8.5 in W, 9 in D, 9 in H)	286 mm W, 305 mm D, 457 mm H (11.25 in W, 12 in D, 18 in H)	356 mm W, 432 mm D, 559 mm H (14 in W, 17 in D, 22 in H)	356 mm W, 432 mm D, 813 mm H (14 in W, 17 in D, 32 in H)	356 mm W, 432 mm D, 660 mm H (14 in W, 17 in D, 26 in H)
Removable "U-Plug" sections	Not included	Included	Included	Included	Included
Typical application	Material testing, including fatigue and fracture, tension, compression, flex/bend, etc.				
Air temperature performance*					
<i>Temperature Values (min & max)</i>	-151°C (-238°F) to 350°C (662°F)	-151°C (-238°F) to 350°C (662°F)	-129°C (-200°F) to 315°C (600°F)	-129°C (-200°F) to 315°C (600°F)	-129°C (-200°F) to 540°C (1000°F)
<i>Heating</i>	Ambient to +350°C (+660°F) in 45 minutes	Ambient to +350°C (+660°F) in 45 minutes	Ambient to +315°C (+600°F) in 30 minutes	Ambient to +315°C (+600°F) in 30 minutes	Ambient to +540°C (+1000°F) in 70 minutes
<i>LN₂ cooling</i>	Ambient to -151°C (-238°F) in 45 minutes	Ambient to -151°C (-238°F) in 45 minutes	Ambient to -129°C (-200°F) in 26 minutes	Ambient to -129°C (-200°F) in 26 minutes	Ambient to -129°C (-200°F) in 26 minutes
<i>Temperature gradient^{†, ‡}</i>	±3°C or less	±3°C or less	±2°C (±5°F)	±2°C (±5°F)	±2°C (±5°F) from -129° to 260°C (-200° to 500°F) ±5°C (±10°F) from 260° to 540°C (500° to 1000°F)
<i>Temperature stability[†]</i>	±2°C (±5°F)	±2°C (±5°F)	±1°C (±3°F)	±1°C (±3°F)	±1°C (±3°F)
Cooling requirements					
<i>LN₂ cooling inlet fitting</i>	Male 1/2 in SAE 45° flare 90° angle tube fitting	Male 1/2 in SAE 45° flare 90° angle tube fitting	Male 1/2 in SAE 45° flare 90° angle tube fitting	Male 1/2 in SAE 45° flare 90° angle tube fitting	Male 1/2 in SAE 45° flare 90° angle tube fitting
<i>LN₂ pressure</i>	0.15 MPa (22 psi nominal) 0.21 MPa (30 psi max)	0.15 MPa (22 psi nominal) 0.21 MPa (30 psi max)	0.15 MPa (22 psi nominal) 0.21 MPa (30 psi max)	0.15 MPa (22 psi nominal) 0.21 MPa (30 psi max)	0.15 MPa (22 psi nominal) 0.21 MPa (30 psi max)
Heater circuit power	208/230 V AC	208/230 V AC	208/230 V AC	208/230 V AC	208/230 V AC
Requirements	50/60 Hz, single-phase; 20 A circuit	50/60 Hz, single-phase; 20 A circuit	50/60 Hz, single-phase; at least 25 A circuit	50/60 Hz, single-phase; at least 25 A circuit	50/60 Hz, single-phase; at least 35 A circuit
Weight	82 kg (180 lbs)	108 kg (250 lbs)	102 kg (225 lbs)	159 kg (350 lbs)	136 kg (300 lbs)
Light	None	120 V bulb (40 watt recommended)	115 V bulb (40 watt recommended)	115 V bulb (40 watt recommended)	External 115 V bulb (40 watt recommended)

* Performance data derived with chamber empty and access holes blocked. Consult MTS Systems Corporation for temperature performance for testing specimens having high thermal mass.

** For Landmark 370.50 only.

¶ Consult MTS for cart information specific to your configuration.

Cart stand for table top load units.

† After 30 minute stabilization time.

‡ Due to large variety of possible test setups an air gradient is given. Specimen gradient is much less.

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100-315-084c Chambers651 • Printed in U.S.A. • 09/21