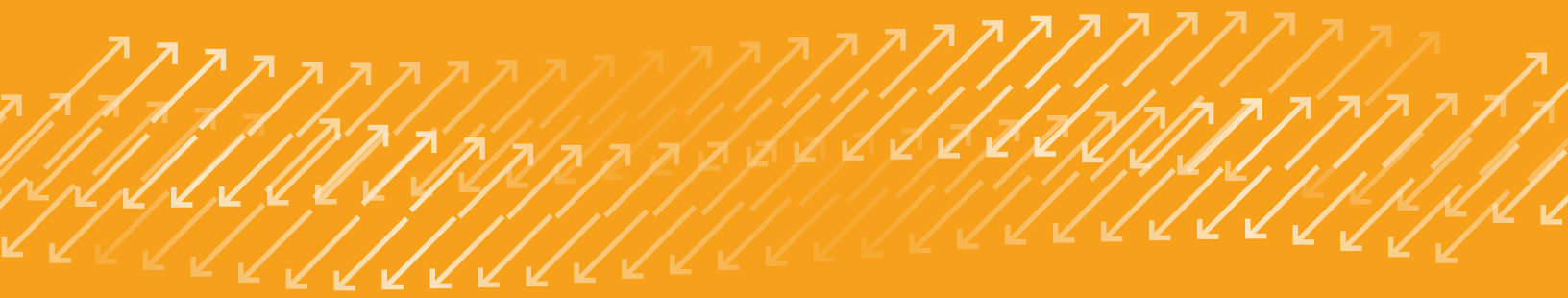
Series 651 Environmental Chambers

A comprehensive solution for accurate and stable temperature control

be certain.

MTS SERIES 651 ENVIRONMENTAL CHAMBERS ENABLE THE TESTING OF MATERIALS AND COMPONENTS WITHIN A WIDE RANGE OF TEMPERATURES. THESE VERSATILE, RELIABLE CHAMBERS ARE SPECIFICALLY DESIGNED TO WORK WITH A VARIETY OF MTS LOAD FRAMES.



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 (-200°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

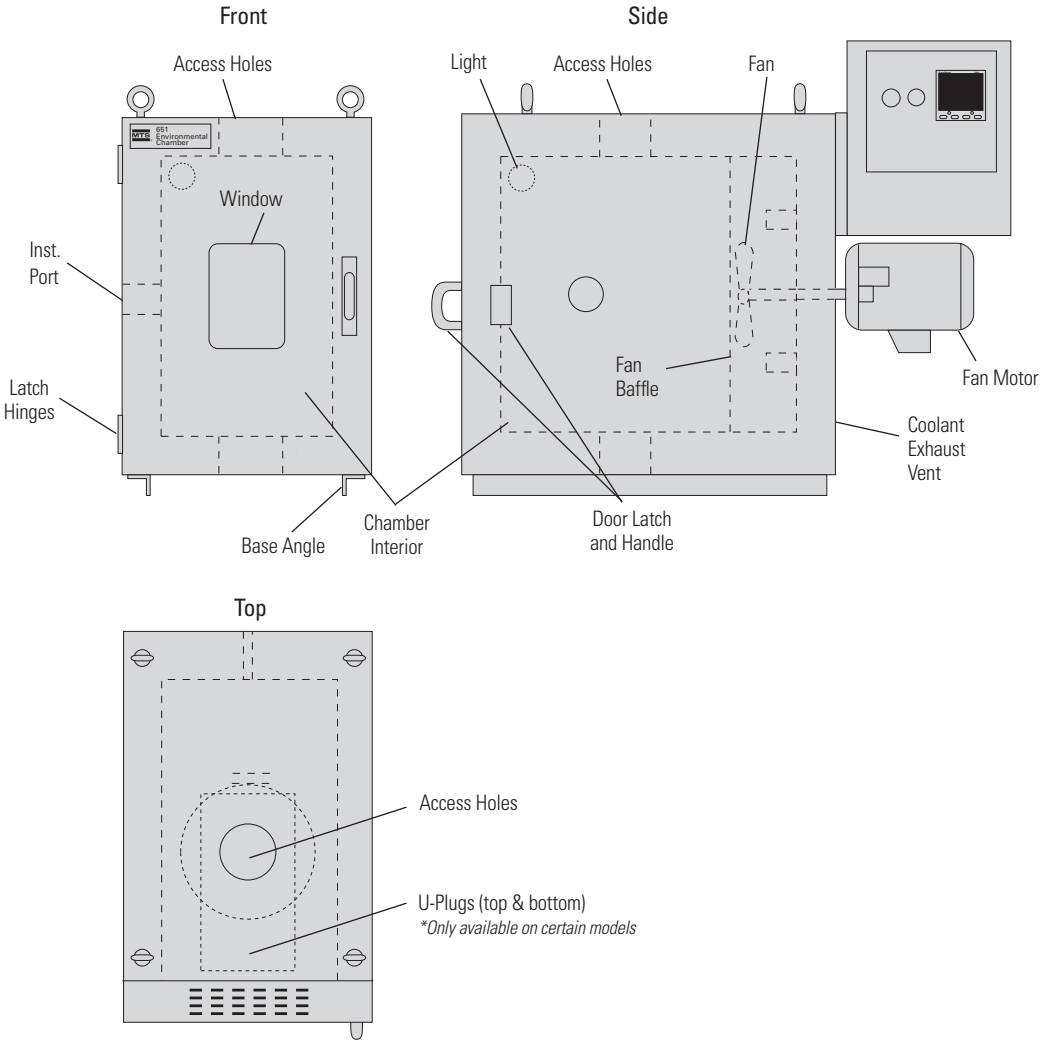
Cart stand for use with Acumen or Landmark tabletop units

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 ensures 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 glass windows are sealed to reduce fogging and frosting
- Internal light to illuminate the test area
- 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 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 up to 350°C (662°F) with tabletop models of the MTS Acumen test system.

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

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

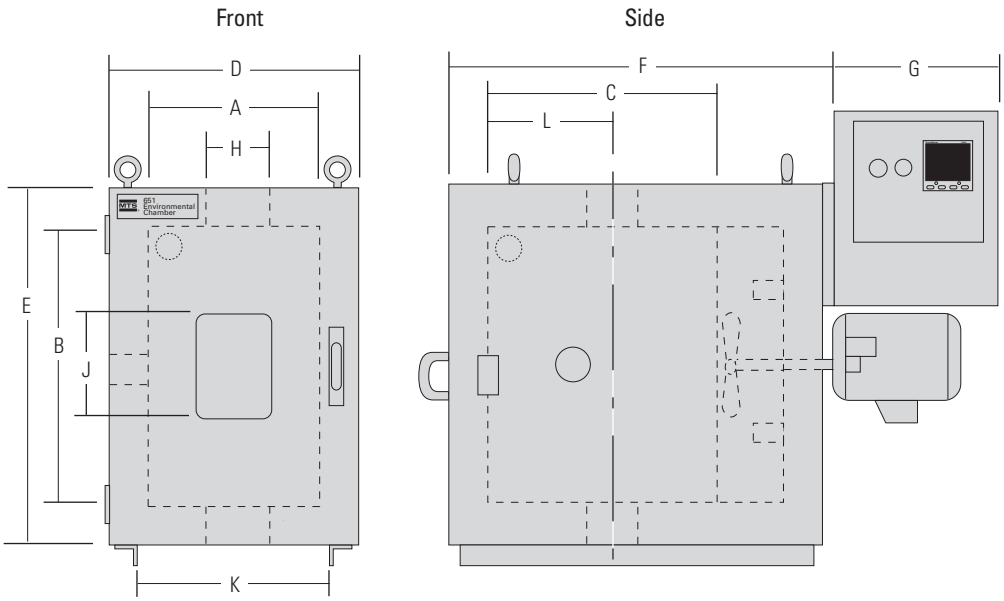
Model 651.06E-04 is designed to accommodate large specimens or specimens that require large grips within the chamber. Works up to 315°C (600°F) with floor-standing MTS Landmark test systems.

CUSTOM CHAMBER DESIGN

MTS can design and build custom Series 651 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 Dimensions

Model		A	B	C	D	E	F*	G*	H	J	K	L
651.05F-01	mm	216	228	228	343	356	635	279	64	152	–	122
	in	8.5	9	9	13.5	14	25	11	2.5	6	–	4.8
651.05F-02	mm	286	452	305	419	584	716	406	78	330	–	152
	in	11.25	17.8	12	16.5	23	28.2	16	3.06	13	–	6
651.06E-03	mm	356	559	432	508	711	762	356	102	203	406	254
	in	14	22	17	20	28	30	14	4	8	16	10
651.06E-04	mm	356	813	432	508	965	762	356	102	203	406	254
	in	14	32	17	20	38	30	14	4	8	16	10
651.10-04	mm	356	660	432	508	813	845	356	102	203	406	254
	in	14	26	17	20	32	33.25	14	4	8	16	10

** 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 Number	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, US Plug)	056-097-206 (works with FlexTest SE Controller) 056-097-205 (works with FlexTest GT Controller) 056-097-207 (works with 494 FlexTest Controller)	056-097-005 (works with FlexTest SE Controller) 056-097-004 (works with FlexTest GT Controller) 056-097-008 (works with 494 FlexTest Controller)	056-097-105 (works with FlexTest SE Controller) 056-097-104 (works with FlexTest GT Controller) 056-097-106 (works with 494 FlexTest Controller)
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, 453 mm H (11.25 in W, 12 in D, 17.8 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[*]					
Heating	Ambient to +177°C (+350°F) in 45 minutes	Ambient to +177°C (+350°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
LN_2 cooling	Ambient to -101°C (-150°F) in 45 minutes	Ambient to -101°C (-150°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
Temperature gradient [†, ‡]	±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
Temperature stability[†]	±2°C (±5°F)	±2°C (±5°F)	±1°C (±3°F)	±1°C (±3°F)	±1°C (±3°F)
Cooling requirements					
LN_2 pressure	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) 0.34 MPa (50 psi max)	0.15 MPa (22 psi nominal) 0.34 MPa (50 psi max)	0.15 MPa (22 psi nominal) 034 MPa (50 psi max
Recovery time to set point temperature					
Door open 1 minute			5 minutes	4 minutes	8 minutes
Door open 2 minutes			6 minutes	5 minutes	10 minutes
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;	50/60 Hz, single-phase;	50/60 Hz, single-phase;
Weight	82 kg (180 lbs)	108 kg (250 lbs)	191 kg (4200 lbs)	200 kg (440 lbs)	195 kg (430 lbs)
Internal light	None	Internal 120 V bulb (40 watt recommended)	Internal 110 V bulb (220 V optional) (40 watt recommended)	Internal 110 V bulb (40 watt recommended)	Internal 110 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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