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Data sheet

Temperature Shock Test Chamber ShockEvent T

weiss-technik.com

STANDARDS | ShockEvent T

Shock operation
IEC 60068-2-14 Na
MIL-STD-810H, Method 503.7
MIL-STD-883L-1, Method 1010.9
Severity levels A,B,C,D,F
JASO D 014-4

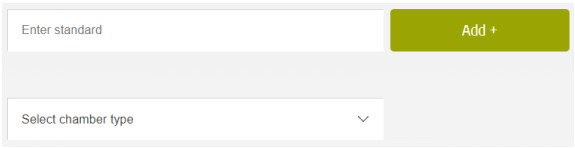
Single chamber operation[1]
IEC 60068-2-1, Test A
JEDEC JESD22-A119
MIL-STD-810H, Method 502.7
ETSI EN 300019-2-4, Test Ab/Ad

By selecting increased / reduced temperatures in the hot / cold chamber, the adjustment times can be shortened.

OUR STANDARD FINDER

The right support for every test.
Various industry and factory standards are safely met. You can find a selection of test specifications and standards by using the specially developed standards finder on our website. The standards finder will help you find the right product to suit your needs.

Click here to find the right support:



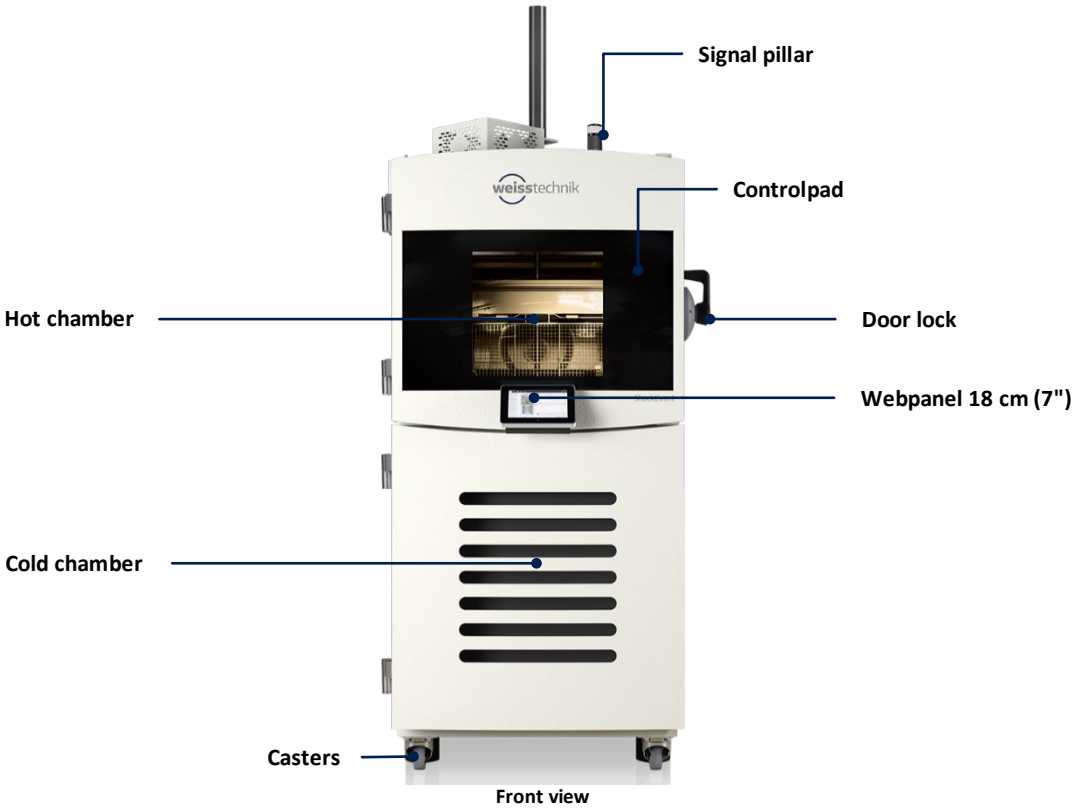
The temperature values specified in the standards (severity levels) are limited by the highest and lowest test space temperature. The choice of the appropriate test system depends on the temperature change rates during alternating tests. The requirements are met if the test system capacity is large enough to compensate for the influence of the specimen and its heat dissipation in the relevant capacity range. Please contact us to test the feasibility with your test specimen.

The reference point for test values and tolerance specifications is the middle of the test space. Verifying documentation for individual test values is optionally available at additional cost.

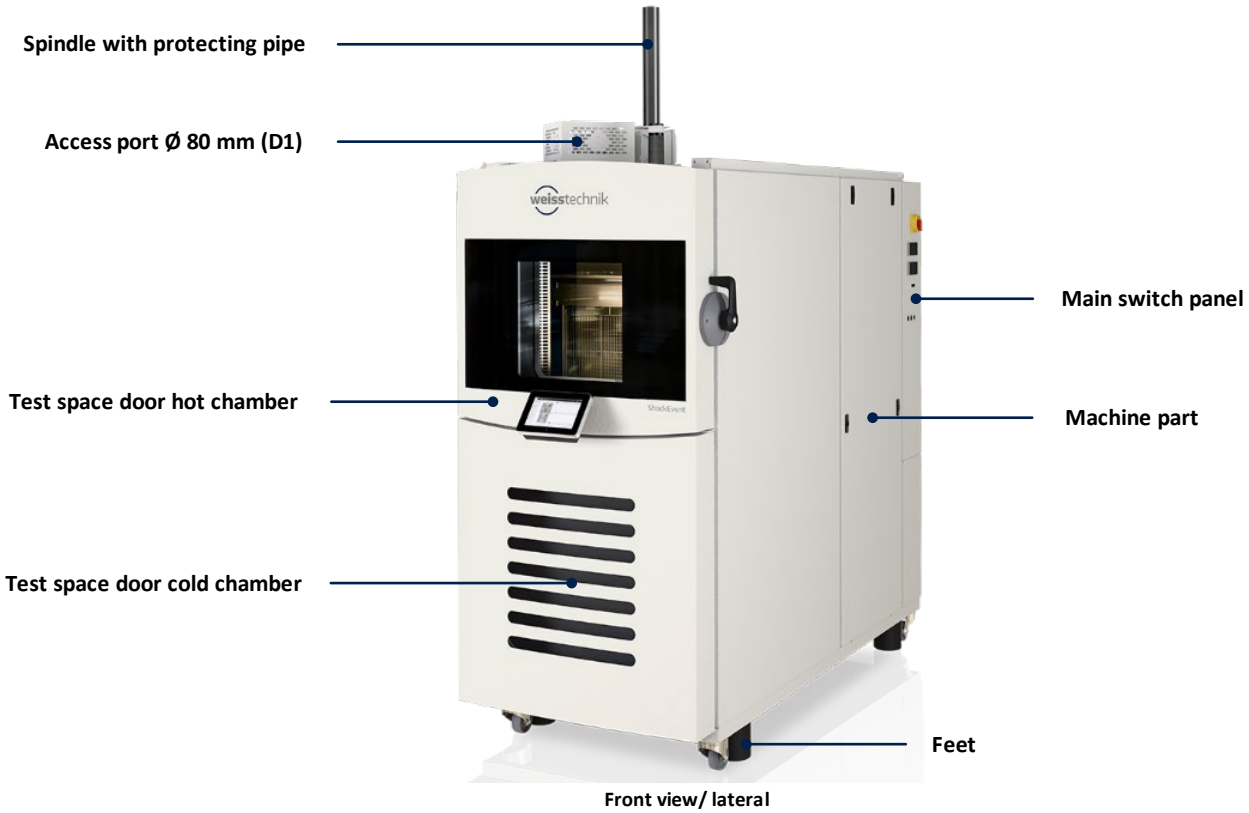
Do you not see your testing standard? Contact us!

[1] Only valid in the cold chamber within the limited temperature range and with limited temperature change rates.

STRUCTURE | ShockEvent T

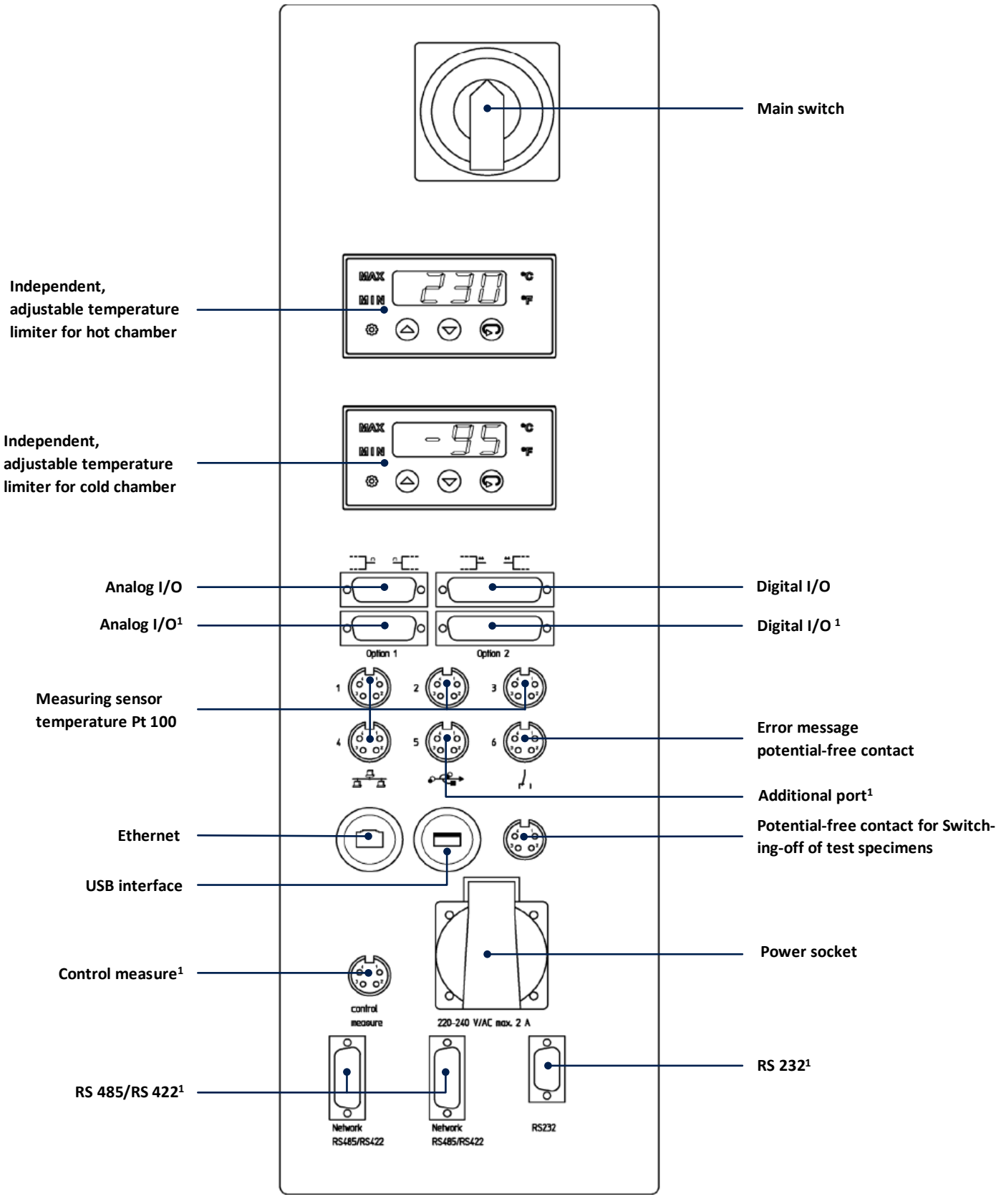


Front view



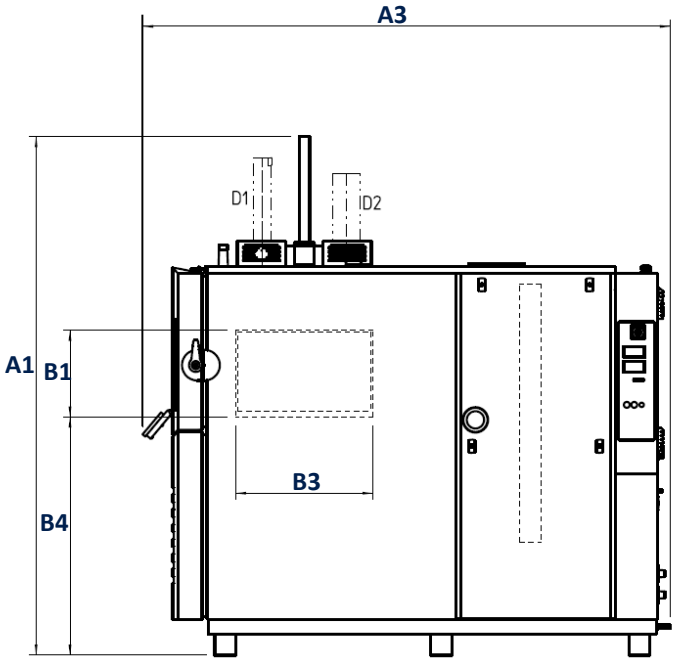
Front view/ lateral

STRUCTURE | Master switch panel

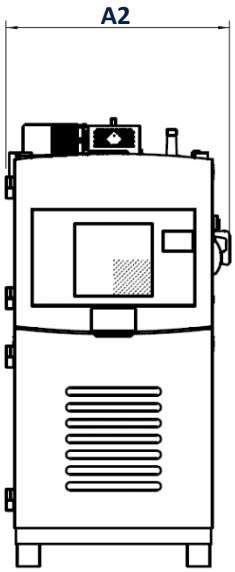


[1] *Option/ Additional equipment*

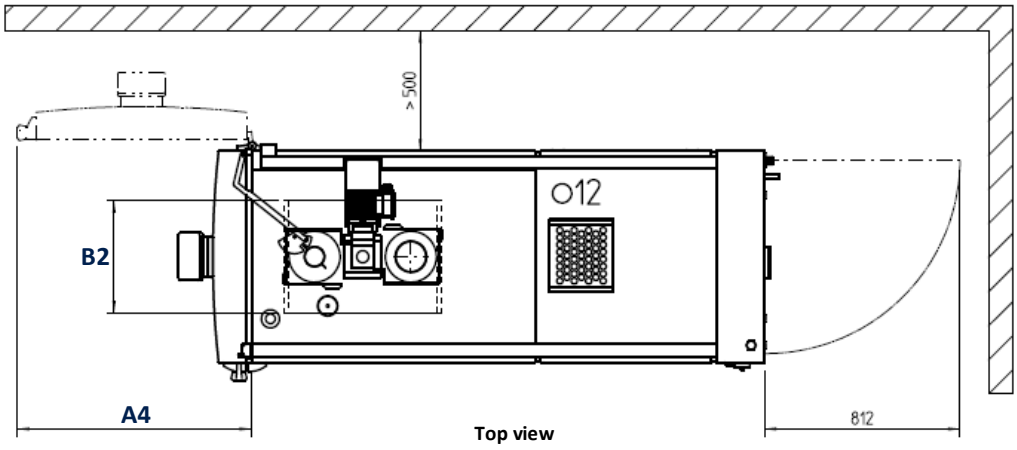
INSTALLATION DRAWINGS | Sizes 60 l and 120 l



View right



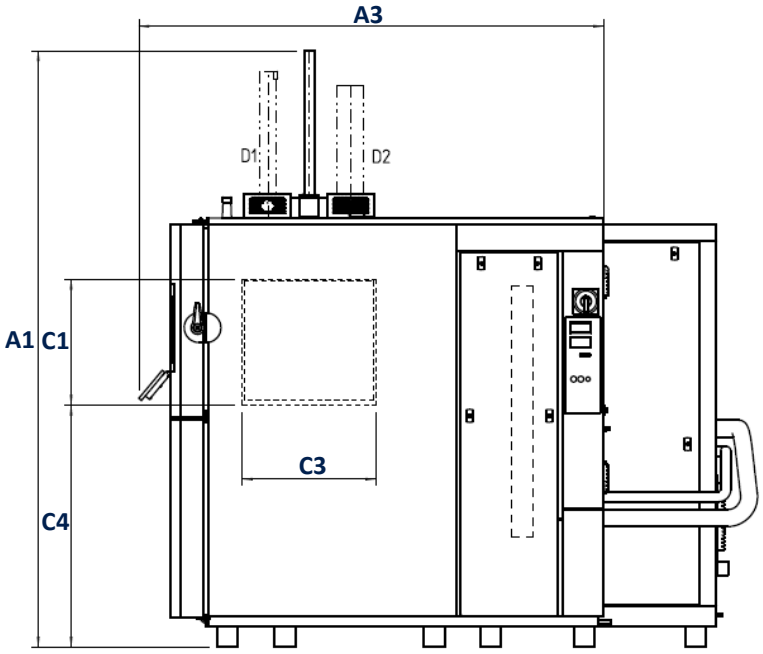
Front view



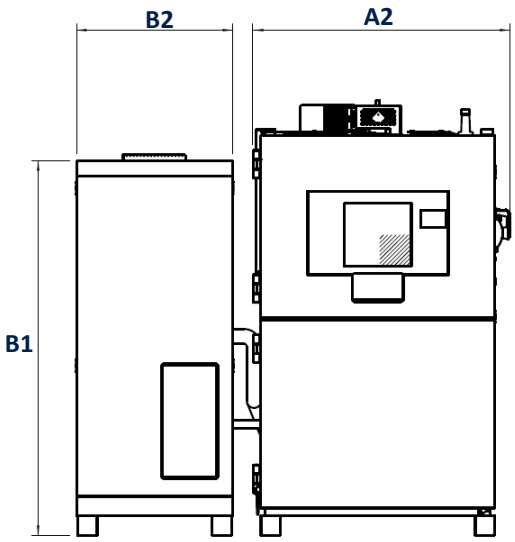
Top view

	A1	A2	A3	A4	B1	B2	B3	B4
	Test chamber[1)]				Test space			
ShockEvent	Dimensions in mm							
T/60/V2	2330	900	2150	885	370	380	430	1045
T/120/V2-32	2450	1000	2530	980	410	470	650	1125
T/120/V2	2450	1000	2530	980	410	470	650	1125
T/120/V2/P	2450	1000	2805	980	410	470	650	1125

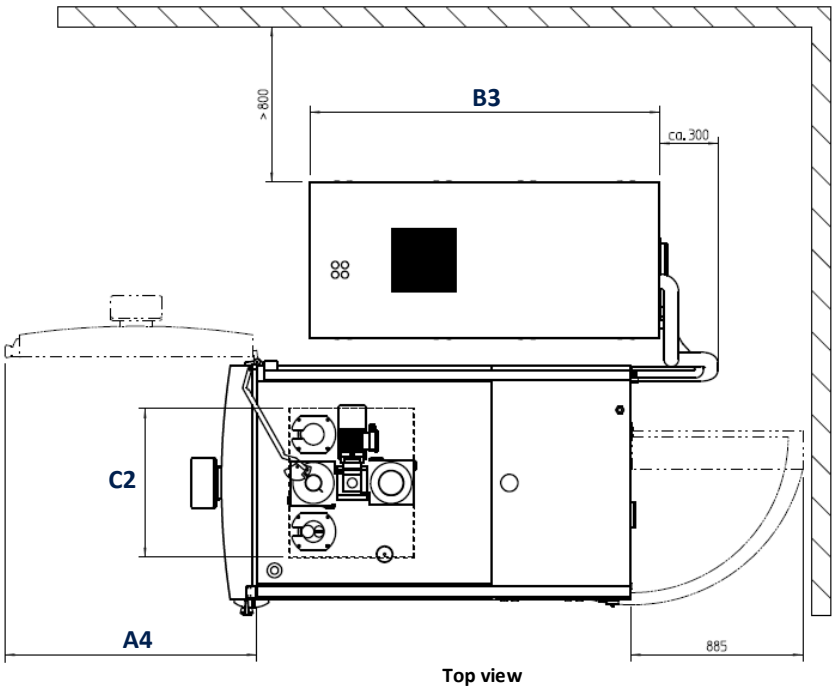
INSTALLATION DRAWINGS | Size 300 l



View right



Front view



Top view

	A1	A2	A3	B1	B2	B3	C1	C2	C3
	Test chamber[1)]			Machine unit			Test space		
ShockEvent	Dimensions in mm								
T300/V2	2900	1320	2380	1950	800	450	610	770	650
T300/V2/P	2900	1320	2380	2050	1000	750	610	770	650

1) Overall external dimensions when installed; for size 300 l excluding machine unit.

TECHNICAL DATA | ShockEvent T

			T/60/V2	T/120/V2-32	T/120/V2	T/120/V2/P	T/300/V2	T/300/V2/P
DIMENSIONS, LOAD, WEIGHT								
External dimensions[1]	Height	mm	2330	2450			2900	
	Width	mm	900	1000			1320	
	Depth	mm	2150	2530		2805	2380	
Test space dimensions	Height	mm	370	410			610	
	Width	mm	380	470			770	
	Depth	mm	430	650			650	
Machine unit[2]	Height	mm	-	-	-	-	1950	2080
	Width	mm	-	-	-	-	800	1000
	Depth	mm	-	-	-	-	2100	2400
Test space capacity		l	60	120			300	
Maximum load per insert basket		kg	2,5	4				
Maximum load insert basket		kg	20	50			100	
Maximum number of insert baskets		St.	4	5			8	
Spacing grid between insert baskets		mm	20					
Rear wall clearance[3]		mm	835	930				1050
Side wall clearance[4]		mm	500				800	
Weight[5]		kg	800	1000		1200	950	940
Weight machine unit / control cabinet		kg	-	-	-	-	680	850/250
PERFORMANCE DATA								
Temperature deviation, in time[6]		K	±0,3 bis ±1,0					±1,0
Temperature homogeneity[7]		K	±0,5 bis ±2,0			±1,0 bis ±2,0		±2,0
Transfer time between cold and hot chamber		sec.	<10				<12	
Temperature recovery time		min	<15[8]	<15[9]		<12[10]	<15[11]	<15[12]
PERFORMANCE DATA HOT CHAMBER								
Maximum temperature		°C	+220					
Minimum temperature		°C	-50					
Temperature change rate[14], Heating		K/min	17	14		18	11	23
Hot chamber calibration value[15]		°C	+125					
PERFORMANCE DATA COLD CHAMBER								
Maximum temperature		°C	+100					
Minimum temperature		°C	-80					
Temperature change rate[14], Cooling		K/min	3,7	6,3		7,5	5	12
Temperature change rate[14], Heating		K/min	3,2	2,0			1,5	
Cold chamber calibration value[15]		°C	-40					
Max. heat compensation of cold chamber		kW	2	3			6	8

			T/60/V2	T/120/V2-32	T/120/V2	T/120/V2/P	T/300/V2	T/300/V2/P
CONSUMPTION AND CONNECTION DATA								
Nominal voltage [16]		V	3/N/PE AC 400 V ±10 % 50 Hz					
Nominal power		kW	8,5	18,5	19	30		62
Nominal current[17]		A	25	32	33	50		115
Connector			CEE plug, 32 A		CEE plug, 63 A			Fixed connection
Fuse protection by customer		A gG	32		63			125
Protection class electrical compartment			IP 54					
Sound pressure level[18]		dB(A)	58	62		69	58	72
Heat dissipation to the installation room max.[19]		kW	0,7	0,8		2		3
Heat dissipation to the cooling water max.[19]		kW	7	15		30		64
Cooling water supply rate [19, 20]		m^3/h	1	2,6		5,2		11
Cooling water connection (supply& return)[19, 21]			Rp 3/4"			Rp 1"		Rp 2"
Refrigerant filling quantity	R449A	kg	1,4[19]	1,7		5	6,5	16
	R23	kg	0,8	1,4		2,6	3,5	6
Refrigerant CO_2 equivalent	R449A	t	2,0[19]	2,4		7	9,1	22,4
	R23	t	11,8	20,7		38,5	51,8	88,8

[1] Overall dimensions when installed. For size 300 l excluding machine unit. Deviating delivery dimensions; components for delivery can be dismantled (service performance).

[2] Individual only for 300 l

[3] for Service

[4] For test space door

[5] Basic device, excluding additional equipment

[6] In the middle of the usable space in a steady state.

[7] Relating to the preset set point; in the temperature range -65 °C to +70 °C

[8] MIL-STD-883L, method 1010.9, severity level D with 4.5 kg ICs distributed over 2 insert baskets, measurement in test object.

[9] MIL-STD-883L, method 1010.9, severity level D with 12 kg ICs distributed over 3 insert baskets, measurement in test object.

[10] MIL-STD-883L, method 1010.9, severity level D with 20 kg ICs distributed over 3 insert baskets, measurement in test object.

[11] MIL-STD-883L, method 1010.9, severity level F with 25 kg ICs distributed over 3 insert baskets, measurement in test object.

[12] MIL-STD-883L, method 1010.9, severity level F with 50 kg ICs distributed over 3 insert baskets, measurement in test object.

[13] Temperatures >+5 °C can be run in continuous operation, temperatures <+5 °C can be run intermittently or with additional equipment in the form of a compressed air dryer.

[14] According to IEC 60068-3-5

[15] Factory calibration.

[16] Other voltages and frequencies optional

[17] Neutral conductor burdened

[18] Measured at 1.6 m height and 1 m away from front; free-field measurement in accordance with DIN EN ISO 11201.

[19] With water cooling option

[20] For a cooling water supply temperature of +28 °C and Δt = 5K

[21] Supply and return

All stated performance data refer to +25 °C ambient temperature, 400 V/50 Hz nominal voltage, without additional equipment.

Subject to technical modifications!

BASIC EQUIPMENT

EXTERIEUR

Casing	Material	Galvanised sheet steel
	Paint	Powder coating color: RAL 9002, grey-white
Test space door	hot chamber	Door with window for placing test objects, with hinges on the left side, one-handed operation, lockable
	cold chamber	Service door without a window, hinges on left side, screwed
Installation	Size 60 l	Fixed; on feet, Movable on casters
	Size 120 l	Fixed; on feet
	Size 300 l	Fixed; on feet
Refrigeration unit		Low-noise refrigerating unit with gradual power adjustment through S!MPAC®
Cooling	Size 60 l	Air cooling (optional water cooling)
	Size 120 l	Water cooling
	Size 300 l	Water cooling
Refrigerant		R449a (main cooling) R23 (deep cooling)
Heating		Tedlar bag: Prevents icing of the cold chamber, endurance tests with over 1000 cycles possible without defrosting. (See page 10

INTERIEUR

Test space[1]	Material	Stainless steel 1.4301, surface III D glossy Floor: stainless steel 1.4404, surface II B matt
Lighting		Test space lighting, hot chamber
Access ports		Inner dimension[2]: Ø 50 mm, Ø 80 mm in the ceiling
Insert Basket		Stainless steel Driven by an electric motor and ball screw
Specimen support		1 stainless steel insert basket
Ventilation equipment		Air inflow via air circulation walls Air outflow at back
Air circulation conditioning		At rear wall With a radial flow fan

COMMUNICATION

Interfaces	Ethernet interface 100/1000 megabit USB interface[3]
Switch outputs	4 potential-free outputs for activation of the customer's own equipment Max. load 24 V-DC; 0.5 A.
Switch inputs	4 digital inputs for responses from the customer's own equipment. Max. load 24 V-DC; approx. 30 mA

REGULATION & CONTROL

S!MPAC®	Digital measuring and control system with I/O unit and WEBSeason® control software, can be controlled remotely through integration into a network Operating/programming and monitoring unit with web panel placed on the door 18 cm, 7“ (60 l/120 l) und 25,4 cm, 10“ (300 l)	
Operating modes	Single chamber operation:	Cold chamber operated like a temperature chamber
	Shock operation:	Switch of basket between hot and cold chambers
Operating modes in shock operation	Normal operation:	The unused chamber can be pre-tempered to a higher or lower setpoint. When the chamber is changed, the temperature is adjusted more quickly.
	Time optimized operation:	Target value offset for reaching the required temperature in the test object more quickly
	Energy saving operation:	Temporary switch-off of cold or hot chamber in programs with long down-times.
Temperature range hot chamber		+50 °C to 220 °C
Temperature probe		Control probe in the hot and cold chambers Platinum temperature sensor Pt 100

SAFETY

Test specimen protection t_{min}/t_{max}	Independent temperature limiter t_{min}/t_{max} for hot and cold chamber • Thermal safety class 2 in accordance with EN 60519-2, 2006 • Individually adjustable fixed values • with temperature probe in the test chamber • Shutdown of the test chamber and error message if temperature is too high or too low
Switching-off of test specimens	Potential-free contact specifically for heat-emitting test objects; connected to a socket, max. load 24 V; 0.5 A Software temperature limiter t_{min}/t_{max}, individually adjustable fixed values in hot and cold chambers

[1] Due to the use of annealed silicone parts, the test space is low in emissions. If the test space is to be emission-free, this will require technical clarification, which can be offered on request.

[2] Production-related tolerances of up to ±3 mm are possible.

[3] USB stick is not included in the scope of delivery. Before recording data, make sure that the USB storage medium is working.

Subject to technical modifications!

DEFROST FUNCTION

Shock tests involve pure temperature testing. But the air humidity also plays a role here starting with the air in the set-up room. Gases contract or expand with changing temperature. Changing gas volumes can be a problem for temperature shock tests – but not for the ShockEvent T!

When the door is opened (e.g., to introduce the specimen), the same conditions prevail in the chamber as in the installation room. The air in the laboratory has a certain temperature and contains a certain amount of water. After closing the test space door, this moisture is trapped in the ShockEvent.

The test is now started, and the hot chamber heats up while the cold chamber cools down.

1. The basket then moves into the cold chamber.
2. The air contracts and creates a negative pressure that must be compensated.
3. The moisture contained in the air condenses on the evaporator (below the dew point).
4. The basket moves in the hot chamber, the air expands, and the excess pressure must be compensated.
5. A pressure relief valve enables compensation of the excess pressure. The negative pressure can be compensated by drawing in air from outside and conditioning it.

However, this would introduce new moisture into the system. This would then freeze at the evaporator. The ice layer grows over the number of cycles, and the cooling capacity effectively decreases.

1. The Tedlar bag is connected to the hot and cold chamber. When the air expands (the basket moves into the hot chamber), the air is pushed into the Tedlar bag.
2. As soon as the basket moves into the cold chamber, the air is sucked out of the Tedlar bag.
3. With this solution, the air remains in the system – no additional moisture!

It absorbs the air and releases it again. The air remains in the system, allowing the chamber to operate up to 1000 cycles without a defrost cycle or compressed air dryer.

Advantages of the Tedlar bag

- **Lower operating costs**
- **No compressed air needed at set-up location**
- **Up to 1000 cycles without a defrosting cycle and without a compressed air dryer**

Other solutions:

Defrost cycle: By heating elements and interruption of the test run, the ice on the evaporator of the cold chamber can be melted. However, this solution must be able to allow the test cycle and the total test time. If this is not the case, another solution must be used.

Compressed air dryer: Only dry air is used to balance the negative pressure. This does not freeze the evaporator but does increase the operating costs of the chamber. Compared with the defrosting cycle, no interruption is necessary.

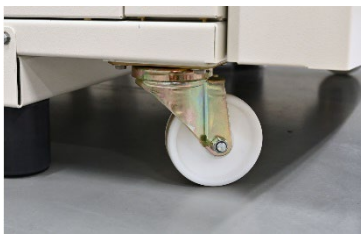
OPTIONS

INSTALLATION

Mobile version

Mobile base with swivel castors and lockable fixed casters.
(Not for Type P)

Note:
Only possible with 120 l variant, with 60 l standard!



ACCESS PORTS

Access port in lift car

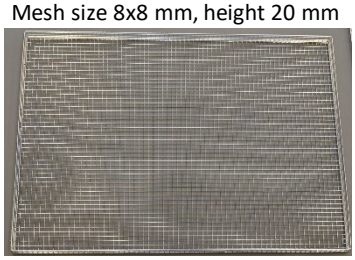
Fitting located behind the lifting gear. The standard access port (Ø 80 mm) remains installed. (For 120 l and 300 l)

Additional Access ports:
- Ø 125 mm: 120 l and 300 l
- Ø 80 mm: 60l

TEST OBJECT SUPPORT

Stainless steel insert basket,

Mesh size 8x8 mm, height 20 mm



Stainless steel insert basket without perforations

For heavy specimens, a closed, stainless steel sheet basket can be used, max. load:
- 10 kg for 60 l
- 20 kg for 120 l
- 50 kg for 300 l

DEHUMIDIFICATION

Compressed air dryer unregulated for dew points of down to -30 °C

Dried air is fed into the test space to prevent condensation on the test object. Operation of the compressed air dryer is unregulated. Switching on and off is performed via a digital switching channel. The unit is auto-regenerating. An increased sound pressure level of approx. 2 dB(A) can be expected when operating the dryer.

Note:
Not possible in conjunction with the GN²/compressed air connector option.

GN_2/ Compressed air connection

For operation with a customer-supplied compressed air dryer or for feeding an inert gas into the test space.

CALIBRATION / STANDARDS

Modification for Bosch

The adaptation includes the use of the main switch as EMERGENCY OFF, the installation of various information signs, the installation of a protective cover, as well as 1 program CD.

Similar to image

AUDI regulations

Marking in accordance with the operating equipment regulations, proof of tightness of the refrigeration circuit, test certificate in accordance with DGUV 3, control cabinet with an E1 lock, heating of the test space for 72 hours at 180 C, a program CD with control data backup, documentation in duplicate on the CD and a single copy in paper form.

Standards on request

Various versions are available to meet specific standards.

TEST SPACE INSTALLATIONS

Extended temperature range in the hot chamber up to +250 °C

The test chamber is extended for a temperature range up to +250 °C. A regular check with the necessary service work is thus mandatory.

LN_2 shock cooling

Additional cooling for the customer-provided connection to a LN_2 supply for cold shock assistance.

SENSORS

Temperature measurement on the test object

Movable temperature sensor Pt 100 with a flexible cable for temperature measurement at any point in the test space or on the specimen.

Other possibilities:

- by means of sheath thermocouple NiCrNi
- by means of thermocouple wire NiCrNi
- via transmitter by means of thermocouple NiCrNi
- switchable as lifting cage control sensor *18 LZ2

SPECIAL VOLTAGE

Special voltage on request

Various special voltages are available.

CONTROL SYSTEM

Analog measuring card 4 PT100 inputs and 5 outputs (set-points and actual values)

For processing and output of analog measuring signals, 5 outputs 0 to 10 V and 4 inputs for Pt 100 are available. The measuring value card enables the output of 5 analog signals to a recorder as well as the connection of 4 free measuring sensors.

Analog measuring card 4 thermocouples NiCrNi inputs and 5 outputs (setpoints and actual values)

Movable Pt 100 temperature sensor with flexible cable for temperature measurement in the car or on the test material. Measured value can be called up via interfaces and displayed on the operating unit.

Note:
The temperature sensors are inserted into the car by the bushing.

Transfer time, variable

The lift car moves in 5 steps between the hot and cold chambers. The resting time at each stop can be varied between 3 and 120 seconds.

Energy meter

Professional energy analysis with a calibrated energy meter. Also in conjunction with data acquisition via the optional **S!M**PATI® software. For all units with > 63 A.
Note: Not for typ P

SAFETY EQUIPMENT

Emergency stop switch on the test space housing

The emergency stop switch is located on the outside of the test chamber. When it is pressed, the test is stopped.

Electric door tumbler, normally open

The components of the electric door tumbler are mounted on the test chamber and the test chamber door. When the test chamber door is opened, the message "Door open" appears on the control panel. The test space door is unlocked at the end of a test, when a test is stopped, in the event of a power failure and when the main switch is turned off.

Fault signal on potential-free switching contact

If a fault occurs in the test chamber, a potential-free switching contact is actuated.

Electric door tumbler, normally closed

The test space door cannot be opened during a test, during a power failure and when the main switch is turned off.

COOLING

Hose set for cooling water network

Two flexible hoses are supplied for connection to a cooling water network with a G 1" connection and a length of 2.5 m or 5 m.

Insulation of the water inlet pipe for water flow temperature < +12 °C

Pipes carrying cooling water in the test chamber are also insulated in order to maintain the water supply temperature.

Electronic cooling water controller

By using an electronically controlled valve, the adjustment to different flow temperatures and pressure differences can be made within certain limits.

Coolant line

Extension to a total of 3 m clearance. Flexible coolant lines are used between the external condenser and the test chamber.

Note: This option can only be ordered in conjunction with an externally air-cooled condenser.

Air cooled condenser

Waste heat routed to external condenser.
The condenser is on the same level behind the test chamber, horizontal block position with vertical air flow. Cable length about 1.5 m, extendable up to a maximum of 5 m.

Note:
Adequate air supply and exhaust must be provided by the customer.
For:

- T/60/V2
- T/120/V2 and T/120/V2/P
- T/300/V2

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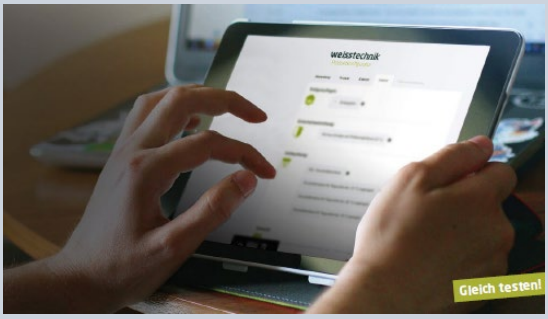

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