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Every small detail matters...

LABORTECH series temperature chambers

TK – -180 to +450 °C

LABORTECH temperature chambers are designed as an integral part of modern test systems for mechanical testing of materials at a controlled temperature. They allow precise temperature control of test specimens in a wide range of positive and negative temperatures, both before and during the test (conditioning).

A key benefit is the ability to faithfully simulate the real-world operating conditions to which materials and components are subjected. This allows the temperature dependence of mechanical properties such as strength, yield strength, ductility, modulus of elasticity or fracture characteristics to be reliably determined.

LABORTECH temperature chambers are designed to support tests according to international standards, for example:

- ISO 6892-2 – Tensile Test of Metals at Elevated Temperatures
- ISO 6892-3 – Tensile Test of Metals at Low Temperatures
- ASTM E21 – tensile tests of metals at elevated temperatures
- ASTM E1450 – Tensile Tests at Low Temperatures
- ISO 527-2 / ASTM D638 - Tensile Tests for Plastics
- other standards according to the specific application and material

Thanks to the well-thought-out design and advanced control system of the TC 22, the chambers ensure **a homogeneous temperature field in the work area**, which is essential for achieving **repeatable, auditable and standard-compliant results**. Stable temperature conditions throughout the test eliminate environmental influences and minimize measurement uncertainties. A big advantage is **full integration into the testing process**. The temperature can be controlled directly from the Test & Motion software, and its progress is automatically recorded in the test report. This makes it much easier to document the results, meet the requirements of the standards and the subsequent audits.

LABORTECH temperature chambers thus represent a reliable solution for all applications where it is necessary **to combine mechanical loads with precisely defined temperature conditions** – with an emphasis on accuracy, reproducibility and full compliance with international standards.

Designed for precision. Proven in practice. Temperature stability, flexibility and long-term

Industry

- **Automotive** – Validation of Materials and Components in real operating temperatures
- **Aerospace** – testing under extreme conditions
- **Energy** – Testing of materials subjected to thermal stress
- **Research and development** – development of new materials and optimization of structures

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Key features and advantages of the TK series

We use new technologies and emphasize safety...

Test frames

The chambers are made of high-quality stainless steel class 17 240, which ensures high corrosion resistance. The structure is designed with long-term thermal and mechanical stress in mind. The device is suitable for continuous operation in harsh industrial conditions. This minimizes service interventions and operating costs. A long service life is a security of investment for the customer.

Precise control and homogeneous temperature field

The advanced PID control system ensures accurate and stable temperature control with an accuracy of up to ±1°C. In conjunction with the optimised circulation system, the temperature is evenly distributed throughout the work area. The test specimen is thus exposed to identical conditions without local deviations. This homogeneity is crucial for the correct interpretation of results and their repeatability. The result is accurate data that fully complies with the requirements of international standards.

Wide temperature range and dynamic system response

Temperature chambers allow testing under extreme conditions from deep negative temperatures to high temperatures. Efficient cooling with liquid nitrogen (LN_2) ensures that the desired temperature is reached quickly . Ahigh-performance control system guarantees its stable maintenance even duringlong-termtests. The system's fast responseshortens test times and increases laboratory productivity. The chambers are thus ideal for dynamic and long-term testing of materials.

Full integration into the test process – Test & Motion

The chambers are fully integrated into the Test & Motion software, allowing them to be operated intuitively. The temperature can be controlled directly from the test program and synchronized with the load distribution. The system automatically records the temperature curves in the test report. This ensures full traceability and documentation of the results. At the same time, the integration minimizes operator errors and increases testing efficiency.

Compatible with advanced measurement systems

The design of the chamber is optimized for the use of modern optical and mechanical extension meters. Heated three-layer glass eliminates condensation and ensures perfect visibility. This enables accurate non-contact deformation measurements even at extreme temperatures. At the same time, the possibility of using mechanical sensors is retained. The user is not limited by the choice of measurement technology.

Ergonomic solution and easy handling

The well-thought-out design allows the chamber to be easily positioned in the working position. The height-adjustable rail tripod ensures precise adjustment to the test machine. The chamber can be easily moved out of the work area without complicated handling. A secure locking system guarantees stability during the test. The optional electric departure further increases operator comfort.

Security and flexibility for different applications

The chambers meet all relevant CE requirements and are equipped with safety features. The design takes into account work with extreme temperatures and cryogenic media. Emphasis is placed on the protection of the operator and the reliability of operation. The modular solution allows adaptation to specific customer requirements. The chambers will thus find employment from standard exams to specialized research.

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Temperature chamber specifications for temperatures +20 to +450 °C

Technical data	Units	TK1-20	TK2-20	TK3-20	TK4-20
Product code		2.06010117	2.06010217	2.06010317	2.06010417
Temperature range – basic	°C	+20 to +280	+20 to +280	+20 to +280	+20 to +280
Temperature range – extended[1]	°C	+20 to 450	+20 to +450	+20 to +450	+20 to +450
Workspace – Internal Dimensions					
Workspace width	mm	220	550	420	500
Height of the test area	mm	580	580	800	800
Test Chamber Depth	mm	226	550	500	500
Internal chamber lighting		YES	YES	YES	YES
External dimensions and parameters					
Workspace width	mm	360	690	560	640
Height of the test area	mm	720	720	1040	1040
Test Chamber Depth	mm	475	801	851	851
Dimensions of glazing at the door H x W	mm	320x130	350x200	350x200	320x130
Removable wedges for easier handling[2]		YES	YES	YES	YES
Cooling and heating system					
Average heat output[3]	°C/min	8	9,5	9	9
Average cooling ratio[3]	°C/min	-	-	-	-
Cooling system		-	-	-	-
Cooling system operating pressure	Bar	-	-	-	-
Temperature Chamber Hose Connection	"	-	-	-	-
Electrical connection					
Supply voltage/frequency	V / Hz	3Ph/N/PE/400V/50-60Hz			
Machine power consumption	kVA	2,3	4,6	4,6	4,6
Temperature Controller		TC 22 - SIEMENS			
Other parameters					
Base Chamber Weight[4]	kg	65	85	110	110
Chamber noise max[5]	dB	55	55	55	55
Color combination	RAL	Stainless steel design			
Controller interface		Ethernet			
Environmental conditions					
Working Environment Temperature	°C	+10 ... +35			
Humidity of the working environment	%	<90			
Other accessories and accessories					
Special hinges with front extension, the width of the chamber does not change when the door is opened					
Split tripod for no restriction of test space					
Hole for connecting the strain gauge to complete deformation					
Special glass for deformation sensing with non-contact strain gauges					
Thermocouple on sample – on request					

[1] Temperature ranges are: 20 to 80 °C, 20 to 350 °C and 20 to 450 °C – please specify more with the manufacturer LABORTECH, 20 °C room temperature
[2] Removable wedges are up to 450 °C
[3] Average heat output and average cooling capacity are calculated for an empty temperature chamber without jaws
[4] The basic weight of the chamber is calculated without a tripod and accessories
[5] The measurement of the noise level of the chamber is in accordance with the standard ČSN EN ISO 3745 - Acoustics – Determination of sound power levels ...
Subject to technical changes

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Temperature chamber specifications for temperatures from -180 to +450 °C

Technical data	Units	TK1-180	TK2-180	TK3-180	TK4-180
Product code		2.06020425	2.06020525	2.06020625	2.06020725
Temperature range – basic	°C	-80 to +280	-80 to +280	-80 to +280	-80 to +280
Temperature range – extended[1]	°C	-180 to +450	-180 to +450	-180 to +450	-180 to +450
Workspace – Internal Dimensions					
Workspace width	mm	220	550	420	500
Height of the test area	mm	580	580	800	800
Test Chamber Depth	mm	226	550	500	500
Internal chamber lighting		YES	YES	YES	YES
External dimensions and parameters					
Workspace width	mm	360	690	560	640
Height of the test area	mm	720	720	1040	1040
Test Chamber Depth	mm	475	801	851	851
Dimensions of glazing at the door H x W	mm	320x130	350x200	350x200	320x130
Removable wedges for easier handling[2]		YES	YES	YES	YES
Cooling and heating system					
Average heat output[3]	°C/min	on request	on request	on request	on request
Average cooling ratio[3]	°C/min	on request	on request	on request	on request
Cooling system		LN2	LN2	LN2	LN2
Cooling system operating pressure	Bar	0.3 to 0.5	0.3 to 0.5	0.3 to 0.5	0.3 to 0.5
Temperature Chamber Hose Connection	"	3/8, male thread	3/8, male thread	3/8, male thread	3/8, male thread
Electrical connection					
Supply voltage/frequency	V / Hz	3Ph/N/PE/400V/50-60Hz			
Machine power consumption	kVA	2,3	4,6	4,6	4,6
Temperature Controller		TC 22 - SIEMENS			
Other parameters					
Base Chamber Weight[4]	kg	67	87	112	112
Chamber noise max[5]	dB	55	55	55	55
Color combination	RAL	Stainless steel design			
Controller interface		Ethernet			
Environmental conditions					
Working Environment Temperature	°C	+10 ... +35			
Humidity of the working environment	%	<90			
Other accessories and accessories					
Special hinges with front extension, the width of the chamber does not change when the door is opened					
Split tripod for no restriction of test space					
Hole for connecting the strain gauge to complete deformation					
Special glass for deformation sensing with non-contact strain gauges					
Thermocouple on sample – on request					

[1] Temperature ranges are: -80 to 280 °C, -80 to 350 °C, -80 to 450 °C, -180 to 280 °C, -180 to 350 °C, -180 to 450 °C for more details from the manufacturer LABORTECH
[2] Removable wedges are up to 450°C and -80°C
[3] Average heat output and average cooling capacity are calculated for an empty temperature chamber without jaws
[4] The basic weight of the chamber is calculated without a tripod and accessories
[5] The measurement of the noise level of the chamber is in accordance with the standard ČSN EN ISO 3745 - Acoustics – Determination of sound power levels ...
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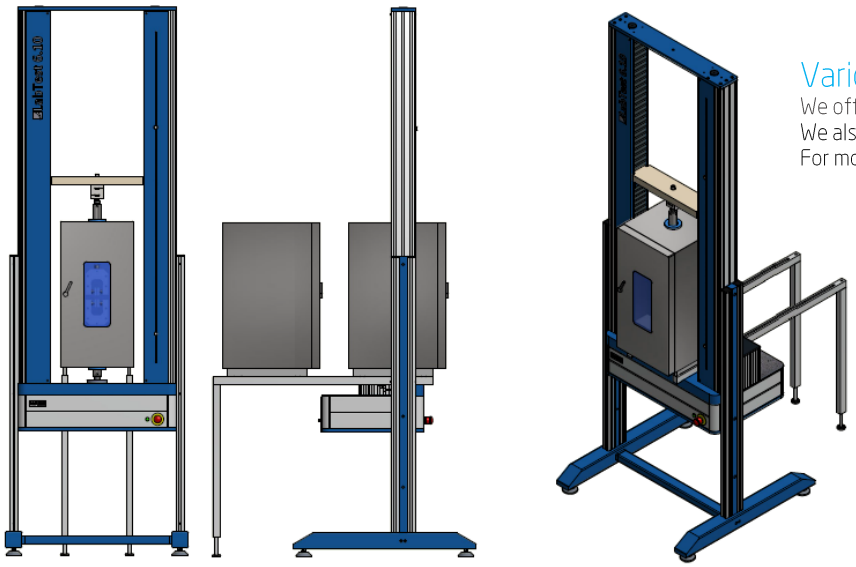
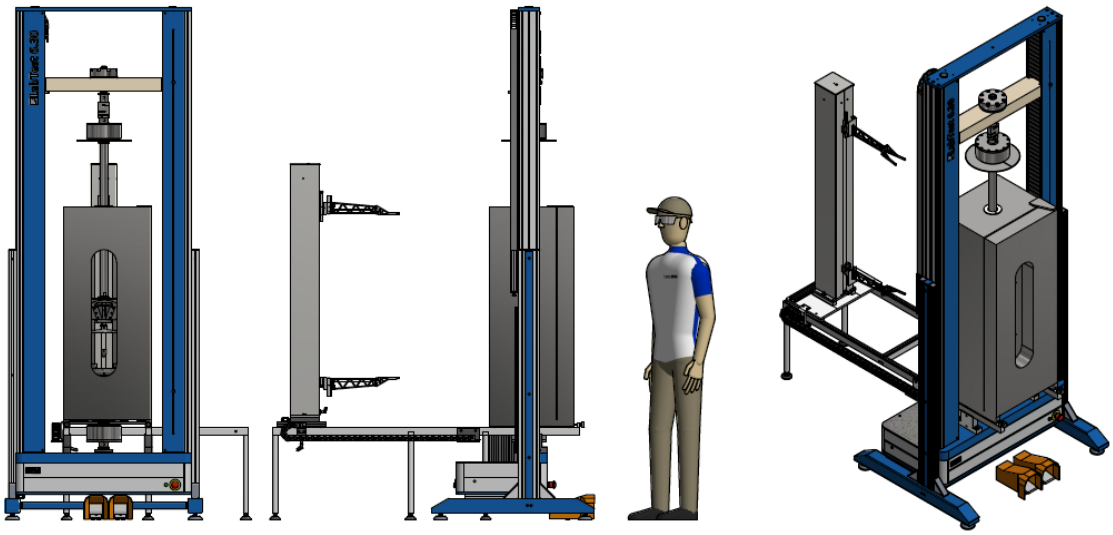
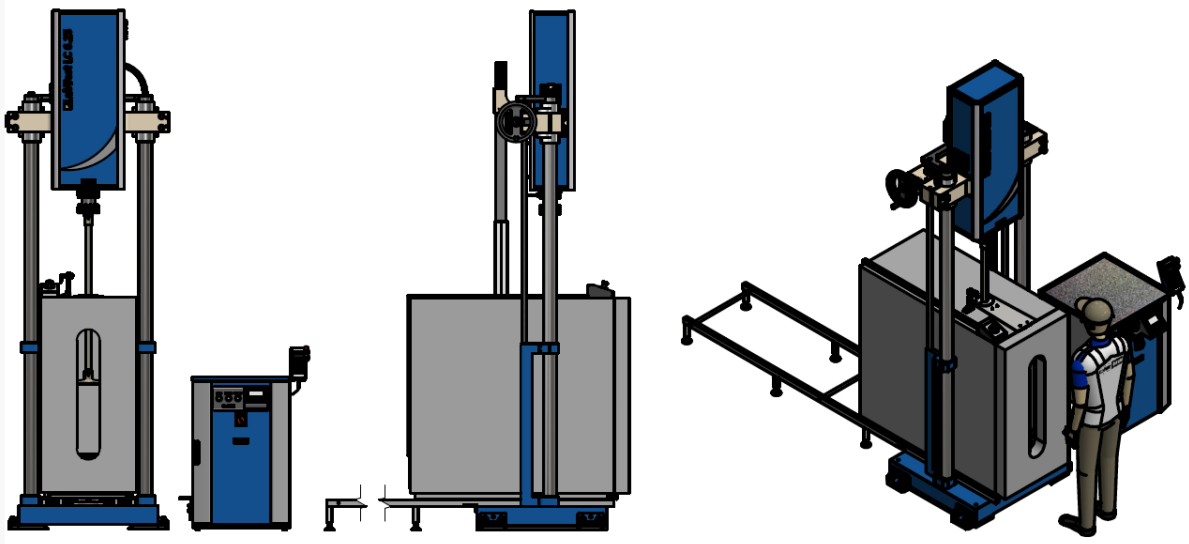
Examples of temperature chamber placement in testing machines



Various customer variants

We offer more than 50 customer variants as standard
We also supply customized applications
For more information, please contact our sales representative





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The elements that characterize us...

We offer everything from development to implementation and listen to your needs...

Warranty and post-warranty service

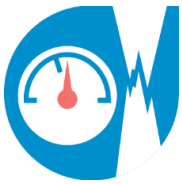
From the moment our machines are delivered, our commitment does not end. We pride ourselves on standing by our products and customers even after they leave our company. In order to ensure maximum satisfaction and peace of mind with our equipment, we provide complete online warranty and post-warranty service. With our dedicated team of experts, we are here for you to provide you with the best possible support throughout the lifecycle of our products. With our online warranty and post-warranty service, you are safe, aware of our support whenever you need it.

Ecological approach

We are proud to be a company that not only develops and manufactures quality testing machines and equipment, but also cares seriously about the environment. For us, ecology is not just a phrase, but an essential aspect of our business. We are committed to minimal environmental impact and sustainable working practices. Our commitment to the environment does not end with the possession of ISO 14001:2016 certification. We believe that every step towards sustainability is crucial for the future of our planet.

Simple operation

In the company, our company emphasizes quality training and training for the operation of our machines. We are convinced that professional competence and the ability to be easy to use are key factors in achieving optimal results and customer satisfaction. When developing our equipment, we focus not only on performance and innovation, but also on ease of use. This allows for quick adaptation and efficient work even for less experienced users. We are here to ensure that our technologies are not only powerful, but also easy to use for all users.



Reliability, accuracy and repeatability of measurements

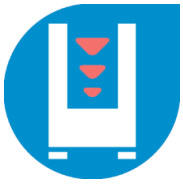
With LabTest test machines, the accuracy and repeatability of force and path measurements are our top priority. We have combined these key aspects with the high dynamics of electronics to guarantee a more affordable and efficient way to set up our devices. Thanks to the innovative approach to electronics in our testing machines, we have achieved excellent accuracy and repeatability in the testing process. The reliability of our equipment is important not only for research and development, but also for industrial and testing applications.

Versatility and versatility

Our LabTest test machines have a dual advantage: versatility and intuitive operation that brings efficiency to the tests themselves. By combining our high-quality testing machines with highly functional accessories, we offer versatility for a wide range of testing needs. This flexibility allows our customers to perform different types of tests and measurements with a single device, which is an economical and practical benefit. Thanks to these features, you can rely on precise results and trouble-free operation in everyday practice.

Security at the highest level

We strongly promote safety at the highest level, in accordance with the latest Directives 2006/42/EC and 2023/1230 and industry standards such as IEC 60947. Every product we create is the result of many years of experience, research and experimentation in the field of mechanical testing of materials. Our compliance with standards is documented by the EC and EU declaration of conformity, which is why we leave nothing to chance.



Mechanical resistance and maintenance-free operation

When developing our products, we emphasize that LabTest machines have robustness, rigidity, long life, mechanical durability and maintenance-free operation – these are our key priorities. Our offer includes professional engineering and consulting services, which are harmoniously intertwined in the design of systems and the implementation of the tests

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