

Automatic Marshall Stability  
Test Machine



ASPHALT

## Automatic Marshall Stability Test Machine



### PRODUCT MODEL

B1710	Automatic Marshall Stability Test Machine, 50 kN, 220-240 V 50-60 Hz
B1710/110	Automatic Marshall Stability Test Machine, 50 kN, 110 V 60 Hz
B1710/01	Marshall Stability Test Frame
B1710/02	Load Cell, 50 kN
B1710/03	Linear Potentiometric Displacement Transducer, 25x0.001 mm
B1710/04	Data acquisition and control System TCM304 and Pc Software
B1710/05	Breaking Head (Stability Mould) 4"
B1710/06	Breaking Head (Stability Mould) 6"
B1710/07	Indirect Tensile Splitting Device for Compacted Bituminous Samples 100 mm (4") Dia

### STANDARDS

Standards EN 12697-34 | ASTM D1559 | AASHTO T245-T2833 | BS 598 | NF P98-252-2 | DIN 1996

### INFORMATION

Manufacturer	TESTMAK INS.LAB.MAK.SAN.VE TİC. PAZ. İTH. İHR. LTD. STİ
Country of Origin	TURKEY
Product name	Automatic Marshall Stability Test Machine

## Automatic Marshall Stability Test Machine

### DESCRIPTION

The Automatic Marshall Stability Test Machine is used to determine the maximum load and flow values of bituminous mixtures. Capacity is 50 kN. The machine comprises compact two column frame with adjustable upper cross beam. Platen speed is 50.8 mm/min. For safety, the up and down travel of the lower platen is limited the use of limit switches. Rapid adjustment of the platen is controlled using the up and down buttons on the front panel of the machine.

The measuring system consists of a 50 kN capacity strain gauge load cell fitted to the upper cross beam to read stability values and the 25 x 0.001 mm linear potentiometric displacement transducer fitted to the breaking head. The machine is supplied complete with marshall breaking head.

#### **Data acquisition and processing: by TCM readout unit featuring;**

- Large graphic touch screen display 240 X 128 pixel,
- Effective resolution 16 bit ,
- Effective sampling rate 40 Hz ,
- Communication port

#### **The Automatic Marshall Stability Test Machine is supplied complete with;**

- Load Cell, 50 kN
- Linear Potentiometric Displacement Transducer with Bracket, 25 x 0.001 mm
- Data acquisition and processing: by TCM readout unit featuring
- PC Software
- Connection Cable
- Breaking Head, 4"

#### **Data Acquisition and Control Unit**

- 3 universal analog input sockets (ADC)
- Each analog input with 18 bit precision (1/256000)
- 1 replacement analog input
- A total of 4 analog high-precision measuring capacities
- 2 analog output sockets (DAC)
- Analog outputs generate a 0-10V DC output signal
- Motor speed control devices, servo valves with this output signal, proportional valves, etc. reference signal is produced.
- PULSE / DIR outputs (PULSE / DIR / ENA) to control the servo and stepper motor drives
- 5 digital outputs for general purpose (can pull relays and control different electrical units)
- 5 digital inputs for general purpose (receives and evaluates input signals like limit contacts from the environment)
- Potentiometer input (reference signal input for calibration and remote control)
- 2 RS232 serial communication signal outputs (communicates with computers)

## Automatic Marshall Stability Test Machine

- It also connects to motor drives via serial communication via MODBUS connection
- USB communication signal output (communicates with computers)
- Connects to local networks and the Internet with Ethernet 10/100 network connection output (optional)
- Connects to portable devices via Bluetooth wireless connection (optional)
- 500 test results can be stored in internal memory
- Due to the SD (memory) card connection, a large number of test results can be stored in the device memory (40,000 test results).
- In addition, the results can be taken from the device memory and transferred to the computer as an Excel table. (Optional)
- Color TFT display supports 16 lar and 7 800 screen sizes, supports 16M colors and supports 800x480 pixel screen resolution
- Resistive touch screen allows easy operation of device functions by touching the screen
- Access to frequently used functions with 6 membrane keypads
- The industrial standard operates with 24V DC supply voltage. Built-in voltage filter and regulator protects against input signal fluctuations
- Sensor modules are compatible with loadcell (load cell), pressure sensor (4-20 / 0-20 mA), potentiometric distance sensors, strain washers, thermocouples and all kinds of mV output sensors.
- Provides precise calibration with multi-point calibration (up to 10 points)
- Setting and calibration menus are password protected and prevent unauthorized use
- Allows testing with a computer or device
- There are many test sample information screens and test methods in the device memory and tests can be performed easily
- Different menu languages can be selected via the device via language support
- Speed control algorithm is closed loop PID control and all parameters can be adjusted on user side.
- The device can switch between one-touch load and deformation control modes Cihaz farklı makinelere kolayca adapte edilebilir ve en uygun kontrol sağlanır
- The graphical field that visualizes the test results on the screen has the ability to change the scale automatically and automatically adjusts the optimal scale as the values change
- Firmware updates can be made via USB input. In addition, via the computer allows remote or internet update.

### Data Acquisition & PC Software

Marshall Test Software is developed for both EN 12697-34 and ASTM D5581 Marshall Tests. Marshall Test Software includes control of machine, acquisition of load and displacement data, saving them and reports. The Marshall Test Software accepts specimen diameter and height as an input parameter. It automatically calculates correction factor coming from the standarts respect to specimen size. The stability value is calculated regarding to this factor. The software continuously updates load and displacement until the end of test. When the test is completed, the sharpest slope of the graph is calculated. The point that this line crosses displacement axis is commented as an offset. This offset is subtracted from the displacement value at peak point and called as flow. Graphical outputs and reports can be saved as a MS Excel worksheet


## Automatic Marshall Stability Test Machine



### Marshall Test on Bituminous Samples (In accordance with TS EN 12697-4 and ASTM 1559 standard)

When this test method is selected, the sample size screen is displayed first.

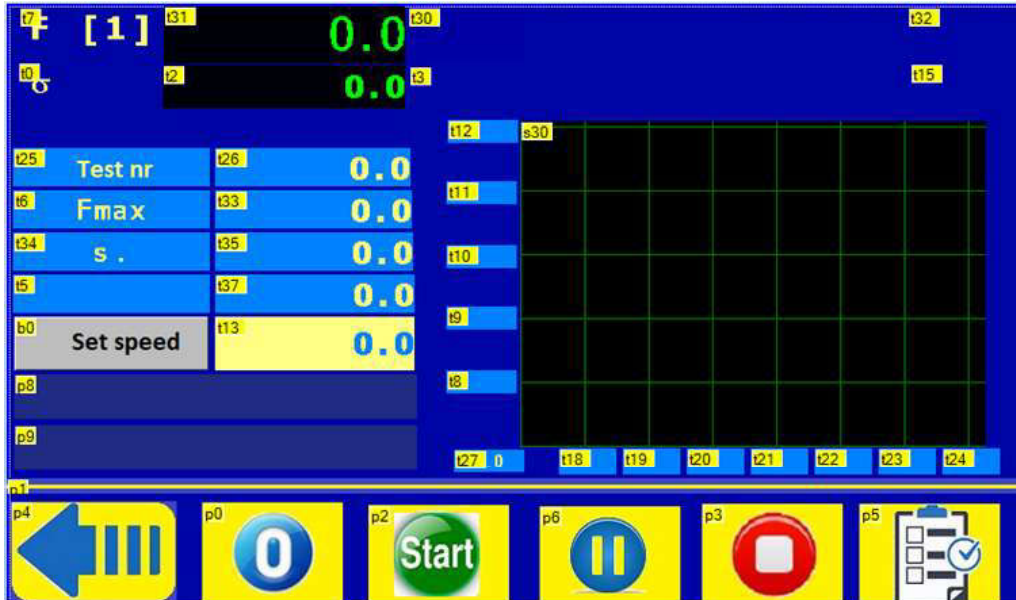


The  NEXT button is used to proceed to the next step.

The next step will be to determine the test parameters related to the selected test method.



## Automatic Marshall Stability Test Machine



**Start the Test    Pause on Load    End of test**

### Start the Test

Press (START) to start the test. First, the device performs a bit of fast loading up to the boot value. When the boot value is reached, the speed is automatically set to the test speed level and kept constant at this level until the end of the test.


### Pause on Load

If you want to stabilize the load at any load level during the test (PAUSE), press the hold button. In this case, the load is fixed at the load value level when the hold button is pressed and the device starts to wait. If this button is pressed again, the load will resume.

### Pause on Load

The device automatically terminates the test when the condition specified for the end of the test occurs.

This condition is usually a decrease in the load as a result of the breakage of the test specimen, but sometimes the test can be completed when a certain load or deformation value is reached.

The user can also end the test at any time by pressing the STOP key at any time  (STOP). The unit automatically terminates the test to protect the machine and the sensors when the device detects that the specified loading capacity has been reached.

## Automatic Marshall Stability Test Machine

### Test Results

The test results are saved as a table in the device memory. To access this table, press the test button on the test screen. In this case, the test results are displayed.



### Test Results

When the test results are displayed in a table, the test result is displayed on each page. Use the up / down arrow keys to scroll through the pages. This allows switching between 500 test results in the device memory.

Test Sonuclari					1	Ara
No	Numune	Fmax	σ (Mpa)	(s.)		
t50	t51	t52	t53	t54		
t55	t56	t57	t58	t59		
t60	t61	t62	t63	t64		
t65	t66	t67	t68	t69		
t70	t71	t72	t73	t74		
t75	t76	t77	t78	t79		
t2	t3	t4	t5	t6		
t7	t8	t9	t10	t11		
t12	t13	t14	t15	t16		
t17	t18	t19	t20	t21		

The table is displayed on a screen with a navigation bar at the bottom containing buttons for back, down, up, Micro SD, delete, and forward.



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