

**GYROMECH | GYRORESEARCH**  
**GYRATORY COMPACTORS**

STANDARDS: EN 12697 10, EN 12697 31 | ASTM D6925 | AASHTO T312, TP4 | SHRP M 002 | AS/NZS 2891 | NT BUILD 427

These Gyrotory Compactors, which are entirely developed and manufactured by Matest, have multiples uses both for concrete and asphalt fields. They are used:

- To simulate and reproduce real compaction condition and actual road paving to determine the compaction properties of asphalts in compliance with ASTM, EN and AS standards.
  - To simulate and reproduce kneading action of concrete mixes and compaction in precast production lines according to NT build 427.
- Electro-pneumatic or electro-mechanical, we provide several models, including for research purposes.



**MAIN FEATURES**

- Rigid steel frame ensuring excellent angle control.
- Full color 7" touch screen control unit, running like a standard PC.
- Software for PC control data acquisition and processing.
- Electronic angle positioning.
- Dual angle option with double calibration AASHTO, EN and AS at 2 and 3.
- Automatic adjustment of the gyratory angle is defined by the user (GYRORESEARCH).
- Shear stress measurement (GYRORESEARCH).
- Optional integrated electromechanical extruder.
- Optional integrated balance.

**TECHNICAL SPECIFICATIONS**

**Gyratory speed**

From 3 to 60 cycles/min  
 (other speeds up to 120 cycles/min available on request)

**Gyratory angle**

From 0° to 3°

**Consolidation pressure**

Up to 1100 kPa for Ø 150 mm specimen  
 Up to 2300 kPa for Ø 100 mm specimen

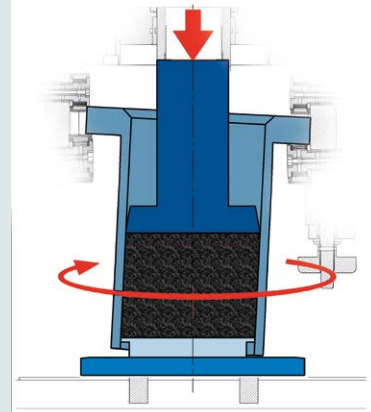
**Dimensions:** 640x500x1400 mm  
 with supporting bench: 640x900x2100 mm

**Power supply:** 230V 50-60Hz 1200W

**Weight:** 240 Kg approx.

## BASED ON U.S. DOT CONCEPT

Compaction is achieved by the simultaneous action of a low static compression, and of the shearing action resulting from the motion of the axis of the mould which generates a conical surface of revolution. The Matest Gyrotory Compactor is designed according to the international standards. Perfect and precise compaction occurs through a stable mechanism, integrated in a solid and robust frame.



## DETAILS MAKE THE DIFFERENCE

Test description:	[Description]	➔
Angle:	1,160 °	⬅
Load:	10,600 kN	▶
Speed:	30,000 Rpm	▶
Cycles:	100	▶
Mould:	Ø150	▶
B041 2.0.0	Profile: 1	2/2/2012 9:06 AM

### SPEED OF GYRATION:

From 3 to 60 cycles/min  
(other speeds available on request)

### NUMBER OF GYRATIONS:

Up to 12999



Automatic angle adjustment with double calibration AASHTO and EN or AS at 2 and 3  
Automatic final flattening cycles (0°)  
(GYROMECC)



Higher load measurement accuracy thanks to a load cell mounted in axis with the vertical actuator:

### CONSOLIDATION PRESSURE:

Up to 1100 kPa for Ø 150 mm specimen  
Up to 2300 kPa for Ø 100 mm specimen



Automatic adjustment of the gyrotory angle is defined by the user  $0-3^\circ \pm 0.005^\circ$   
Shear stress measurement  
(GYRORESEARCH)



Integrated electromechanical extruder and balance

**AVAILABLE MODELS**

**B045  
GYROELECTRONIC**

Electromechanical gyratory compactor. The load is applied by an electro-mechanical cylinder with a load cell positioned directly on the vertical actuator for precise load measurement. The machine can also be configured as requested by EN Specifications (**model B045EN**)

**B045-01  
GYRORESEARCH**

Used for research purposes, this electromechanical compactor allows for the **adjustment of the gyratory angle, selectable in a range between 0° and 3°**, during compaction, real time direct shear and torque measurement.

**ACCESSORIES to perform the test: (for all Gyratory models)**

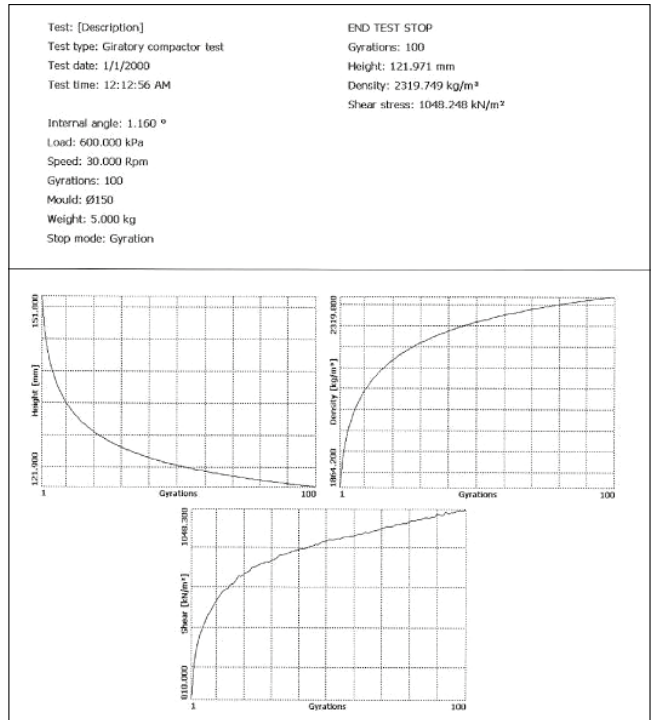
- B041-05** HARDENED SPECIMEN CYLINDER Ø 100 mm complete with bottom plate
- B041-06** HARDENED SPECIMEN CYLINDER Ø 150 mm complete with bottom plate
- B041-08** HARDENED SPECIMEN CYLINDER Ø 100 mm with holes for cold mix compaction, complete with bottom plate
- B041-09** HARDENED SPECIMEN CYLINDER Ø 150 mm with holes for cold mix compaction, complete with bottom plate
- B041-11** TOP PENETRATION PISTON Ø 100 mm
- B041-12** TOP PENETRATION PISTON Ø 150 mm

Metallic discs, to make easier the handling of specimens after the test, strongly recommended accessory for low-cohesion mixtures, such as draining asphalts:

- B041-13** METALLIC DISC for Ø 100 mm moulds. Pack of 2
- B041-14** METALLIC DISC for Ø 150 mm moulds. Pack of 2

Paper discs, to prevent asphalt from sticking to the piston and the mould's base plate, and to absorb bitumen in excess:

- B041-15** FILTER PAPER for Ø 100 mm moulds. Pack of 100
- B041-16** FILTER PAPER for Ø 150 mm moulds. Pack of 100



Final report

**Hollow Punches for Gyratory Compactor:**

Used to maintain the core in the right shape and store cohesive asphalt or concrete samples after compaction. Some asphalt and concrete mixes can be very unstable due to their high void ratio and large particle size. Wrapping the sample around the hollow punch will prevent it from crumbling down or receiving physical deformations once it is ejected from the mould. The material will then settle down and assume its stiff properties once it cools down after compaction:

- B041-17** HOLLOW PUNCH to stabilize and to mature the sample Ø 100 mm
- B041-18** HOLLOW PUNCH to stabilize and to mature the sample Ø 150 mm



**ACCESSORIES for all Gyratory Compactor:**

**B041-20** WORKTOP for B041, B041EN, B045 and B045EN it can also accept the pneumatic specimen extruder (B041-23) and the integrated balance (B041-26)

or:

**B041-19** WORKTOP for B041-01, B041-01EN and B045-01 it can also accept the pneumatic specimen extruder (B041-23) and the integrated balance (B041-26)

**B045-23** ELECTROMECHANICAL AUTOMATIC SPECIMEN EXTRUDER, it can be fixed to the worktop B041-19, B041-20, or to any bench.

**B041-21** WHEELS (kit of 4) with brake, for an easy displacement of the Compactor in the laboratory.

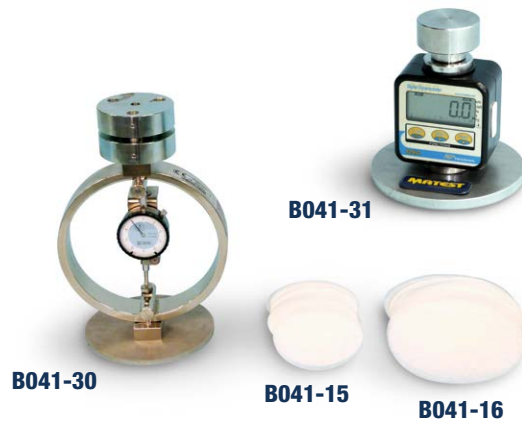
**B041-30** VERTICAL FORCE TESTING DEVICE with load ring.

As alternative:

**B041-31** VERTICAL FORCE TESTING DEVICE with digital dynamometer.

**B041-33** KIT OF 2 DISTANCE PIECES of 105 and 115 mm high for the control of the height values measured by the linear transducer.

**B041-34** ACCREDIA official vertical load calibration certificate.



B041-30

B041-31

B041-15

B041-16



B041-33



B041-21

**WEIGHTING SOLUTIONS****B041-26**

**BALANCE, INTEGRATED** into the worktop, to facilitate the sample and the mould weightings, by avoiding the stress of lifting them.

The weighting reading values are directly and automatically displayed on the control panel of the Compactor.

Capacity: 30 kg

Accuracy:  $\pm 6$  g



B041-26

**OR B041-27**

**BENCH** for lateral bearing of a weighting balance.

Suggested balance:

V075-13 Capacity 30 kg div. 0.5 g

or:

**B041-24** Capacity 30 kg div. 0.1g as requested by EN (or a balance of the customer)



B041-06

V075-13

B041-27