

34 California Bearing Ratio (CBR)

Immediate Bearing Index (IBI)
Loading frames and presses (continued)
Multispeed

SOIL TESTING

MULTISPEED TESTER

STANDARD

CBR

pr EN 13286-47

ASTM D1883, BS 1377:4, NF P94-078,
UNI CNR 10009

Marshall

pr EN 12697-34

ASTM D1559, BS 598, NF P98-251,
DIN 1996, CNR No. 30

■ 34-T0107

Multispeed compression tester 50 kN capacity, testing speeds adjustable from 0.1 to 51 mm/min.

Frame only. 230 V, 50-60 Hz, 1 ph.⁽¹⁾

General description

The machine features a very rigid two-column frame with the upper crossbeam, which can be adjusted in height and locked in position with locknuts. The base cabinet houses the load jack, D.C. motor and electronic controls. The machine, which is suitable for wide range of tests such as CBR, MARSHALL, QUICK TRIAXIAL, UNCONFINED, SPLITTING TENSILE TESTS, etc. can be completed with accessories in the analogic and digital version as shown in the pictures.

In the digital version, the load and displacement transducers have to be connected to the Digimax Plus 76-Q0802/C. Furthermore, the displacement transducer to measure the penetration (CBR) and flow (Marshall) can be fitted in two different ways:

- Internally to the machine (see Upgraded option 34-T0107/UP)
- Externally (see accessories 82-P0332 and 34-T0104/8).

The internal option is more suitable for general use including CBR and Marshall tests but has to be factory installed and specified at time of order.

The external option can be fitted at any time to all CBR machines without arrangements and/or modifications.

A limit cut-off switch stops the machine at the maximum platen travel.

(1) For the 110 V, 60 Hz model add the suffix /Z to the code (e.g. 34-T0107/Z).

Specifications

Max. capacity: 50 kN

Testing speed range: infinitely variable from 0.1 to 51 mm/min

Max. ram travel: 100 mm

Horizontal span: 380 mm

Max. vertical span:
800 mm (without accessories)

Power rating: 1100 W

Dimensions approx.:
500x570x1300 mm (dxwxh)

Weight approx.: 110 kg

Important note

Using the Multispeed 34-T0107 for the Marshall test too, to avoid accessories duplication see page 355.



Detail of upgrading 34-T0107/UP

Internal transducer option:

The internal displacement transducer

As specified in the general description, the machine can be upgraded when used in the digital version, by a displacement transducer which has to be factory installed. Choosing this option please specify when ordering:

■ 34-T0107/UP

Installation of the displacement transducer, 100 mm travel, internally on the machine base cabinet

This option has to be factory installed.

- Ideal for Road Testing labs
- Suitable for CBR, Marshall and various other tests
- Fully variable test speed from 0.1 to 51 mm/min
- High versatility: full range of accessories available
- Digital or analogic sensors
- Digital versions connectable to PC
- Various testing software available



34-T0107

34-T0107 with accessories and mould conforming to ASTM and pr EN standards

Multispeed 34-T0107 – CBR configurations / Accessories

Standards	Analogic mode	Digital mode
	Accessories	Accessories for all standards including BS 1377-4
pr EN 13286-47 ASTM D1883 AASHTO T193 NF P94-078 NLT 111 CNR-UNI 10009	82-T1009 50 kN load ring 34-T0103/3 CBR penetration assembly including 34-T0103/1 Adjustable penetration piston, 34-T0104/7 Dial gauge holder, and 82-D1257 Dial gauge	a) Version with internal displacement transducer 34-T0107/UP Installation of the displacement transducer 34-T0103/10 Guide bracket and ball seating 82-P0375/C Adapter to fit load cell 82-P0375 Load cell 50 kN cap. 34-T0108/2 Connector load cell/accessory 70-T0103/1 Adjustable CBR penetration piston 76-Q0802/C ⁽¹⁾ Digimax Plus data acquisition and processing system 76-S0110/C CBR test, PC software (optional) b) Version with external displacement transducer Same as the above version except for the 34-T0107/UP, which is substituted by the following: 34-T0104/8 Adjustable transducer holder 82-P0332 25 mm displacement transducer
BS 1377-4	34-T0103/10 Guide bracket and ball seating 82-T1009 50 kN load ring 34-T0103/3 CBR penetration assembly including 34-T0103/1 Adjustable penetration piston, 34-T0104/7 Dial gauge holder, and 82-D1257 Dial gauge	

(1) For more information on the 76-Q0802/C Digimax Plus data acquisition and processing see page 122.



34-T0107 with accessories and mould conforming to BS standard

34-T0107 digital version fitted with accessories and mould (see above) conforming to all standards

Immediate Bearing Index (IBI)

Data acquisition and processing
for 34-T0106 and 34-T0107 CBR testing machines

Introduction

The digital versions of the above CBR machines include the 76-Q0802/C Digimax Plus system, which is fully described below. The digital version can be completed by the 76-S0110/C CBR software for use with PC.

76-Q0802/C

Digimax Plus, CBR/Marshall version

As specified in the general description, the Multispeed 34-T0106 and the 34-T0107 can be fitted with load cell and displacement transducer connected to the Digimax Plus data acquisition and processing system. Load and penetration are displayed in real time on the large graphic screen together with the curve. The Digimax Plus can be connected, by the RS 232 port, to a PC and printer to provide, using the specific software (code 76-S0110/C), the calculation of test parameters, the completion of the test data (client name, weight and density of the specimen) and the test certificate.



76-Q0802/C

Hardware specifications

- Microprocessor Hitachi
- Chip clock calendar
- 8 KB large permanent memory to store test data and results
- No. 2 RS 232 serial ports for connection to PC and printer for real time transmission of data
- No. 4 analogic channels: No. 2 for strain gauge transducers and No. 2 for linear transducers
- Resolution of each channel: 130000 points
- Large graphic display 240x128 pixel
- No. 10 keys membrane keyboard: No. 4 of which interactive with the specific software

Firmware

- Choice of language: English, French, Spanish, German, and Italian
- Input of operator name
- Automatic or manual zeroing option. Displacement reading taken only above the pre-load input value and simultaneous display of load and displacement
- Simultaneous display of load, displacement and graph option
- CBR real time transmission of load and displacement by the RS 232 port (38400 band) at 14 readings per second. Same as for general tests.

Marshall test: differed data transmission at the end of test

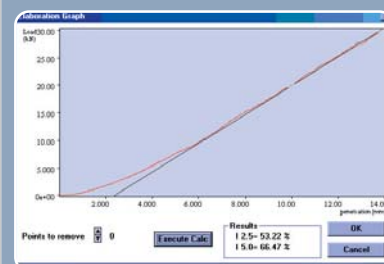
- Permanent memory to store up to 30 CBR (or general) tests or 12 Marshall tests including date, time, test number, operator, test type, load and displacement, and curves
- File management including test display, print, test certificate to printer by the dedicated serial port, downloading data to PC by the RS 232 port, delete single or all files
- Calibration function using different coefficient for the two channels

76-S0110/C

PC, CBR test software

The Digimax Plus 76-Q0802/C can be connected to a PC by the RS 232 port and this specific software is provided to process all data producing the test certificate and tables as shown in the examples. The software is suitable for use with Windows 95/98/ME 2000 and M2000/XP.

The Elaboration Menu allows to move the straight line on the graph (to set the origin of the penetration) and to discard a certain number of acquisitions at the beginning of the test if containing non-significant data



The Test Data Menu allows to enter the client name, the specimen volumetric and swelling data

Print preview

Sample Data	Before saturation	After saturation
Sample height (mm)	127.00	7.420
Dial gauge reading (mm)	000000	24.000
Time of swelling (h)	00:00	
Mould tare+com. sample (g)	5390.0	5543.0
Mould tare (g)	2450.0	2450.0
Compacted sample volume (cc)	1245.0	1302.0
Tare + Wet sample (g)	55.000	67.000
Tare + Dry sample (g)	52.000	62.000
Tare (g)	20.000	20.000