

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

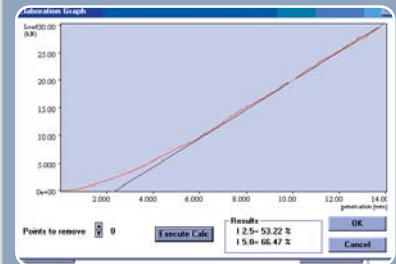
- Choice of language: English, French, Spanish, Germany, and Italian
- Input of operator name
- Automatic or manual zeroing option. Displacement reading taken only above the pre-load input value and simultaneous display of load and displacement
- Simultaneous display of load, displacement and graph option
- 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

Before saturation		After saturation
Sample height (mm)	127.00	
Dial gauge reading (mm)		7.420
Time of swelling (h)		24.000
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

Print preview

Parametro	Valore	Unità	Descrizione
Tempo di saturazione	24.000	h	Tempo di saturazione
Legg. penetrometro	127.00	mm	Legg. penetrometro
Legg. dial gauge	7.42	mm	Legg. dial gauge
Tempo di gonfiore	24.00	h	Tempo di gonfiore
Mould tare+com. sample (g)	5390.00	g	Mould tare+com. sample (g)
Mould tare (g)	2450.00	g	Mould tare (g)
Compacted sample volume (cc)	1245.00	cc	Compacted sample volume (cc)
Tare + Wet sample (g)	55.00	g	Tare + Wet sample (g)
Tare + Dry sample (g)	52.00	g	Tare + Dry sample (g)
Tare (g)	20.00	g	Tare (g)

WATER SENSITIVITY INDIRECT TENSILE STRENGTH MARSHALL TEST

STANDARD

EN 12697-12 Determination of water sensitivity of bituminous specimens

EN 12697-23 Determination of the indirect tensile strength of bituminous specimens

pr EN 12697-34 Marshall test

Introduction

The above standards have been grouped because they require, as basic apparatus, the same compression tester used for the Marshall test, to be completed by the specific accessory/apparatus as indicated below.

We propose the 76-B0038/CB Marshall tester in the digital version only as the above standards require a test graph which, with this model, is easy to obtain by connecting the Digimax Plus unit to a PC and printer. See page 353.

EN 12697-12

This standard describes a procedure for determination of the effect of saturation and accelerated water conditioning on the indirect tensile strength of cylindrical specimens of bituminous mixtures. This method can be used to evaluate the effect of moisture with or without antistripping additives including liquids, such as amines, and fillers, such as hydrated lime or cement.

EN 12697-23

This standard specifies a test method for determining the (splitting) indirect tensile strength of cylindrical specimens of bituminous mixtures. Determination of the water sensitivity of bituminous specimens in accordance with EN 12697-12 is based on determination of the indirect tensile strength in accordance with this test method.

pr EN 12697-34

This test procedure is used to determine the stability, the flow and the Marshall quotient values of specimens of bituminous mixtures mixed according to pr EN 12697-35 and prepared using the impact compactor method of test pr EN 12697-30



76-B0038/CB Digital Marshall Tester with Digimax Plus, fitted with stability head to perform pr EN 12697-34 Marshall test

Main features

- 50 kN capacity
- Large digital graphic display with real time graph
- High resolution: 130000 points
- Large permanent memory
- RS 232 port for connection to PC at 38400 baud
- Language selection: English, French, Spanish, German, and Italian
- Software package available for data processing and print including data-base



76-B0078/C tensile splitting device with 76-B0078/C1 and 76-B0078/C2 used to perform EN 12697-12 and EN 12697-23. See also page 352

COMPRESSION TESTING MACHINE

76-B0038/CB

50 kN digital Marshall tester.
230 V, 50 Hz, 1 ph.

76-B0038/CBZ

Same as above but 110 V, 60 Hz, 1 ph.

76-B0038/CBY

Same as above but 220 V, 60 Hz, 1 ph.

STANDARD

EN 12697-12, 23, 34 – BS 598:108 – ASTM D1559 – AASHTO T245 – NF P98-251-2 – DIN 1996 – CNR No. 30

General description

The machine features a robust two-column frame with motor and worm gear housed within the base unit producing a platen speed of 50.8 mm/min. The measuring system consists of a strain gauge load cell and displacement transducer applied externally connected to the Digimax Plus unit with large graphical display and standard software covering either the Marshall or the Indirect tensile test, as specified successively.

Technical specifications (load frame)

Capacity (kN)	50
Safety features	emergency stop button
Accuracy	± 1%
Test speed (mm/min)	50.8
Max. travel lower crossbeam (mm)	100
Power rating (W)	750
Horizontal span (mm)	270
Max. vertical span (mm) (without accessories)	544
Weight approx. (kg)	85
Dimensions (lxdxh) (mm)	560x392x1028

Accessories

See pages 352 and 354.