

# PILOT4

The NEW generation of **AUTOMATIC** compression testers

An efficient solution to increase **PRODUCTIVITY** while **SAVING ENERGY**

- ▶ Automatic test execution
- ▶ Silent operations
- ▶ High stability frame and spherical seat in oil bath
- ▶ Conforming to EN 12390-4 Class 1 and ASTM E74 Class A accuracy
- ▶ Simplified control by touch screen display

- ▶ 1 GB Memory card for data storage. USB and RS 232 ports for printer/PC connection

- ▶ For testing cubes up to 200 mm and cylinders up to dia. 160x320 mm
- ▶ Second frame option
- ▶ Wide range of accessories suitable for compression tests on blocks, cement, splitting tests on cubes or cylinders

**ENERGY SAVING**

test system



# PILOT4

Models 50-C4642, 2000 kN cap. and 50-C5642, 3000 kN cap.

## STANDARDS

**EN 12390-4, ASTM C39\*, AASHTO T22\*** For cylinders dia 6"x12" and over.

## INTRODUCTION

This **NEW** generation of **AUTOMATIC** compression testers is the result of our continuous application and research to upgrade testing machines with the latest technologies, taking into account client requirements and International Standards. **The PILOT 4** represents **the natural evolution of semi-automatic models** with the remarkable advantage of being **proposed at practically the same price**.

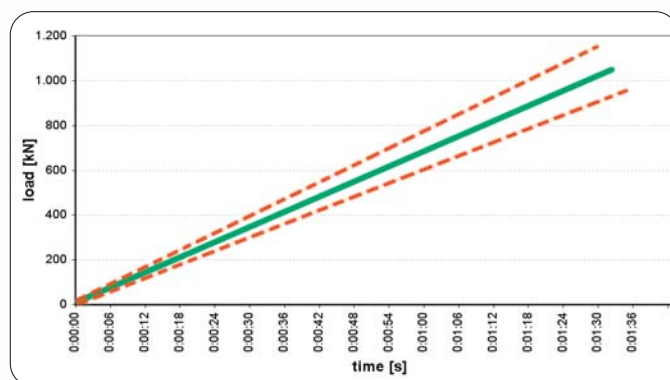
## AUTOMATIC ACCURATE LOAD RATE CONTROL FOR QUALITY TESTING

The measurement of the concrete strength is influenced by many factors, including the preparation of the sample, curing, test execution and the compression machine. The International Standards specify that during the test the load rate must be constant within a small allowable range (typically 10% of the preset value).

An accurate and constant load rate application without large fluctuations not only guarantees testing to Standards but also allows the test to be performed by operators who do not have a lot of experience.

## PILOT 4: THE BENEFITS OF AN AUTOMATIC MACHINE

This **NEW** generation series of compression machines featuring Energy Saving technology ("**ES technology**") has been developed to **satisfy Standard requirements** and **high quality of testing**. The test cycle with closed loop digital feedback is automatically performed by simply pressing the start button. The load-time graph and the actual load rate are displayed in real time during the test. Correct test execution according the selected Standard, is continuously and automatically controlled.



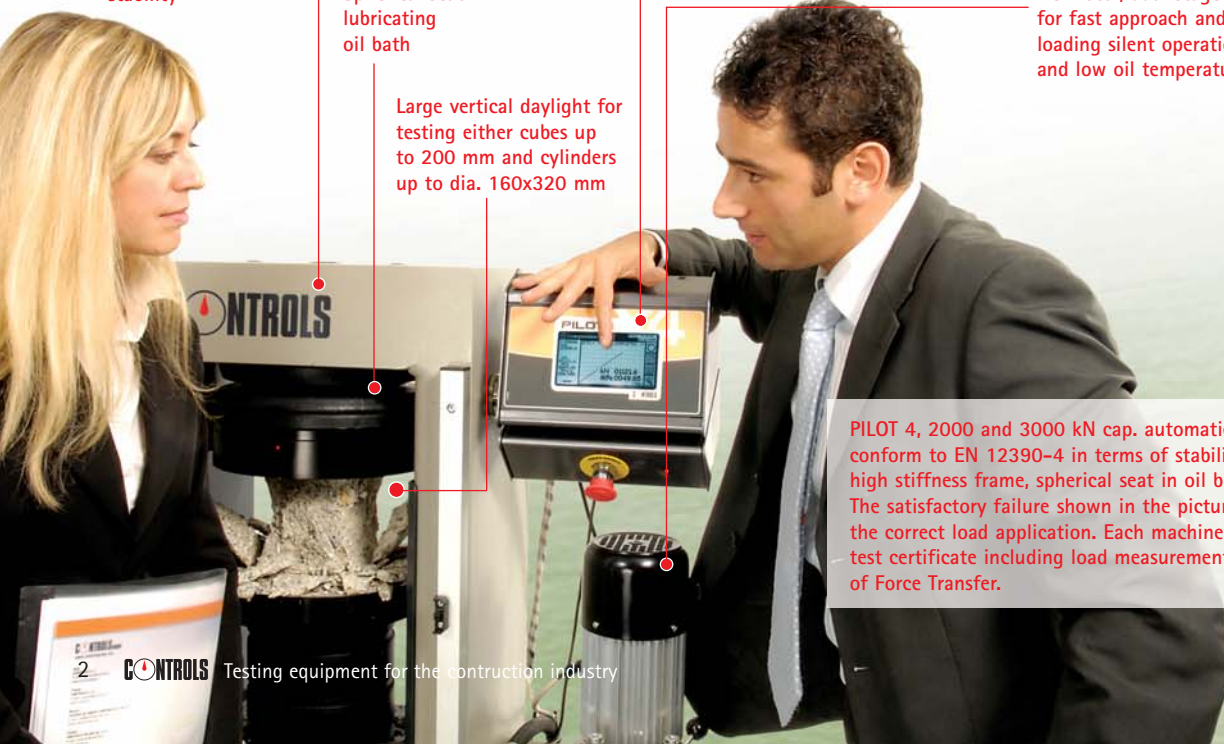
High stiffness frame, tested for stability

Spherical seat in lubricating oil bath

Large vertical daylight for testing either cubes up to 200 mm and cylinders up to dia. 160x320 mm

Digital control and load measurement

DC motor, dual stage pump for fast approach and loading silent operation and low oil temperature



PILOT 4, 2000 and 3000 kN cap. automatic compression testers fully conform to EN 12390-4 in terms of stability (force transfer) due to the high stiffness frame, spherical seat in oil bath and compression platens. The satisfactory failure shown in the picture is one of the indications of the correct load application. Each machine is supplied with traceable test certificate including load measurement accuracy and verification of Force Transfer.

## PILOT 4: The new AUTOMATIC testers which combine HIGH PRODUCTIVITY with ENERGY SAVING

### HIGH PRODUCTIVITY

- ▶ Dual stage pump driven by DC motor, centrifugal low pressure high delivery stage for fast ram approach (40 mm/min) and radial multipiston high pressure loading stage, automatically controlled by the system.

### ENERGY SAVING TEST SYSTEM

- ▶ "ES technology" features accurate oil flow control, conforming to Standards, resulting in **no oil dispersion, silent operation, cold oil temperature and low energy consumption** (save over 30% compared to traditional systems).



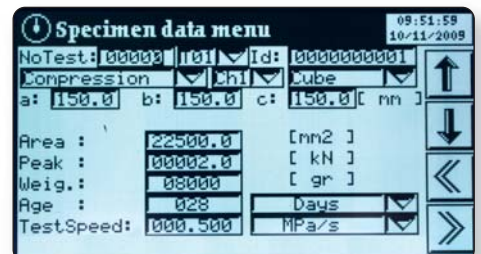
### AUTOMATIC TEST EXECUTION

Once the machine has been switched on, the specimen positioned and centered, the only required operations are:

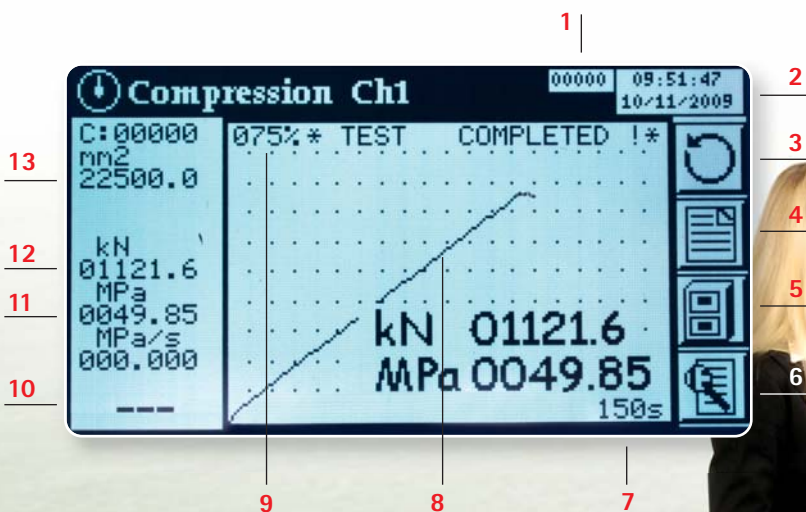
- ▶ Set test parameters, including load rate, on the touch screen (can be avoided by default for repetitive tests)
- ▶ Press the start button on the touch screen
- ▶ Move the oil delivery valve upwards
- ▶ The machine automatically: starts the rapid approach; switches to the test speed once the specimen comes into contact with the upper platen; releases the pressure upon specimen failure
- ▶ Save the test including data results and load-time graph. The test execution conforming to Standards can be easily proved.



Display of main menu.



Display of specimen data menu.



### PILOT 4, detail of the touch screen panel

1. Record number (number of tests stored in the memory) -
2. Date and Time -
3. START TEST command -
4. NEW TEST command -
5. TEST DATA BASE command -
6. Shortcut to SPECIMENT DESCRIPTION menu. -
7. Time axis -
8. Graph area -
9. Load axis -
10. Trend indicator of actual load rate with respect to theoretical load rate -
11. Stress -
12. Load -
13. Specimen area



# PILOT 4 (continued)

## SPECIFICATIONS

### ▶ FRAME

Four column high stiffness welded frame tested for stability conforming to EN 12390-4; spherical seat in oil bath; platens diameter 300 mm, surface hardness 600 HV30 (55 HRC), flatness tolerance 0.03 mm, roughness value in the range between 0.4 µm and 3.2µm. Traceable certificate of surface hardness available on request (see code 50-C0050/HRD4). Horizontal daylight 350 mm for 50-C4642 and 370 mm for 50-C5642.

Maximum vertical daylight 350 mm reduced with the suitable distance pieces (see accessories); piston travel 50 mm.

### ▶ HYDRAULIC GROUP

- Dual stage pump: centrifugal low pressure high delivery for fast approach and automatic switch to radial multipiston high pressure for loading
- DC motor, 720 W, 50-60 Hz.
- Max. working pressure 650 bar



### ▶ HARDWARE

- 32 bit processor
- 1 GB data storing capacity
- Analogical channels for connection to strain gauge transducers (pressure transducers or load cells), 130000 points real resolution for each channel
- RS 232 port and USB in built host controller for HP A4 printers
- Graphical display, touch screen 240x128 pixel



### ▶ FIRMWARE

- 12 languages
- Unit selection: kN, ton or lb
- Real time clock/date
- Simultaneous display of load, specific load, actual load rate and load time graph
- Serial port transmission in real time, during loading, of load and time values
- Large internal memory for thousands of tests (over 100,000) including load vs time graph
- Memory management with display of stored tests, download of data to serial printer or PC via RS 232 port, download to USB HP printer, delete single test or reset entire memory

### ▶ SAFETY FEATURES (CONFORMING TO CE)

- Max. pressure valves to avoid machine overloading
- Piston travel limit switch and emergency stop button
- Front and rear transparent guards

### ▶ MACHINE CLASS

All models are supplied in Class 1: EN 12390-4 (corresponding to ASTM E74 Class A) starting from 10% of full scale.

With a special calibration procedure identified by code **50-C0050/CAL** Class1 starts from 1% of the full scale.

### ▶ PHYSICAL SPECIFICATIONS

- Overall dimensions (lxdxh approx.):  
2000 kN model 850x385x1010 mm  
3000 kN model 940x445x1090 mm

- Weight approx.:  
2000 kN model 900 kg - 3000 kN model 1120 kg

## ORDERING INFORMATION

### ■ 50-C4642

PILOT 4, EN series, 2000 kN cap. Automatic compression testing machine. 220-240 V, 50-60 Hz, 1 ph.

### ■ 50-C5642

PILOT 4, EN series, 3000 kN cap. Automatic compression testing machine. 220-240 V, 50-60 Hz, 1 ph.

▼ **50-C0050/HRD4** Traceable certificate of surface hardness for upper and bottom compression platens 300 mm dia.

▼ **50-C0050/CAL** Special calibration procedure to obtain Class 1 from 1% of load full scale.

### NOTE :

PILOT 4, EN series, 4000 kN cap. available on request.



50-C4642 PILOT 4, 2000 kN cap. Automatic compression machine.

## UPGRADING MACHINE OPTIONS

The following options refer to the possibility to fit the machine for block testing and to upgrade the pump for controlling a second frame.

### ► BLOCK TESTING

STANDARD

EN 772-1, 12390-4

PILOT 4 testers can be factory upgraded with upper and lower block platens 310x510x50 mm instead of 300 mm round platens. This configuration, also tested for stability conforming to EN 12390-4, is suitable for testing either blocks or concrete cubes up to 200 mm and cylinders up to 160x320 mm using the suitable distance pieces.

This configuration can be completed with a block platen lifting device for easier placement of distance pieces between the piston and bottom platen to reduce vertical daylight (see code 50-C9060/A).

Block platens, can be supplied with a traceable certificate of surface hardness (see code 50-C0050/HRD7).

50-C4642 PILOT 4 compression machine, fitted with 50-C4600/UP4 Block platen assembly.



### ■ 50-C4600/UP4

Upgrading of 50-C4642 PILOT 4, 2000 kN cap. with upper and lower 310x510x50 mm platens, for a maximum vertical daylight of 350 mm. Fragment guard included.

### ■ 50-C5600/UP4

Upgrading of 50-C5642 PILOT 4, 3000 kN cap. with upper and lower 310x510x50 mm platens, for a maximum vertical daylight of 350 mm. Fragment guard included.

50-C4642 PILOT 4 compression machine mounted on Pedestal 50-C4600/1, fitted with 50-Q0004/UP1 device to also control the flexural frame 50-C0900/FR.

### ■ 50-C9060/A

Lifting device for bottom block platen for an easier placement of distance pieces.



50-C9060/A during operation

### ■ 50-C0050/HRD7

Traceable certificate of surface hardness for 310x510x50 mm block platens.

### ► SECOND FRAME OPTION

The hydraulic group can be factory upgraded with a distribution block for connection and non-simultaneous control of a compatible second frame (e.g. flexural frame or cement compression frame). See code 50-Q0004/UP1.

### ■ 50-Q0004/UP1

Upgrading of Pilot 4 tester for second frame connection.



# PILOT4 (continued)

## ACCESSORIES

### Distance pieces

■ **50-C9080** Distance piece dia. 200x30 mm

■ **50-C9081** Distance piece dia. 200x40 mm






■ **50-C9082** Distance piece dia. 200x50 mm

■ **50-C9083** Distance piece dia. 200x68 mm

■ **50-C9086** Distance piece dia. 200x100 mm



Distance pieces required for:

Machine series	4x8" and 100x200 mm cylinders 		6x12" 150x300 mm 160x320 mm cylinders 		100 mm cubes 		150 mm cubes 		200 mm cubes 	
	q.ty	code	q.ty	code	q.ty	code	q.ty	code	q.ty	code
50-C46XX 50-C56XX	2	50-C9083	1	50-C9080	2	50-C9082	1	50-C9082	2	50-C9083
					2	50-C9083	2	50-C9083	-	-

### Splitting test on concrete cylinders, cubes (EN 12390-6) and block pavers (EN 1338)

■ **50-C9000**

Splitting tensile test device for cylindrical specimens dia. 100x200 mm, 150x300 mm and 160x320 mm. Vertical clearance shall be adjusted with distance pieces considering that standard height is 325 mm when adjusted for 150 mm dia. specimen. Test shall performed inserting the hardboard packing strips between loading members and specimen. (See code 50-C9001).

▣ **50-C9001**

Hardboard packing strips 4x10x345 mm for cylinder splitting test. Pack of 50.

■ **50-C9070**

Splitting tensile test device for concrete cubes and block pavers (EN 12390-6, EN 1338)

The vertical clearance has to be adjusted using the suitable distance pieces according to the height of the specimen. The test has to be performed inserting the hardboard packing strips between the loading members and the specimen (see code 50-C9002).

▣ **50-C9002**

Hardboard packing strips 4x15x345 mm for concrete cubes and block pavers. Pack of 50.

### Frame pedestals

■ **50-C4600/1**

Pedestal for C46 series, 2000 kN cap. compression frame.

■ **50-C5600/1**

Pedestal for C56 series, 3000 kN cap. compression frame.

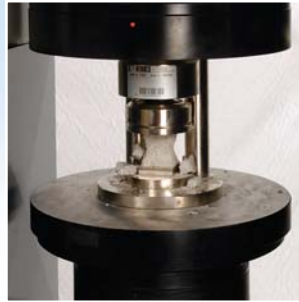


50-C9000 splitting test device fitted in the 50-C4642 tester. The large vertical daylight allows the application of various test accessories.

## Compression test on cement/mortar specimens (EN 196, ASTM C349, ASTM C109)

### ■ 50-C9030

50-C9030 Compression device to test portion of mortar prism (to EN 196) with the 50-C4642 PILOT 4 Automatic compression tester and distance pieces.



The high sensitivity of the load measuring system, further upgraded by the special calibration procedure code 50-C0050/CAL, assures Class 1 (EN 12390-4) starting from 1% of the full scale value, making compression tests on low strength or small specimens possible.

### ■ 50-C9032

Compression device to test 50 mm (2") mortar cubes conforming to ASTM C109.

The accessory can also be used for microcores 52 mm max height.

Total height approx. 190 mm.



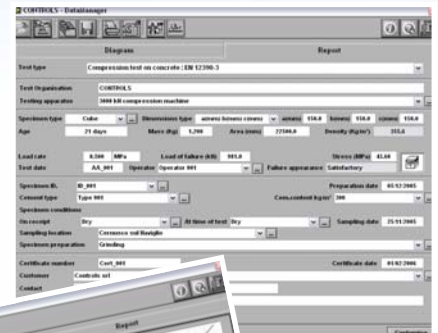
## Data Manager PC software

PILOT 4 can be connected to PC (RS232 or USB port of PC using RS232 - USB adapter) for real time acquisition and management of test data (see code 82-Q0800/3).

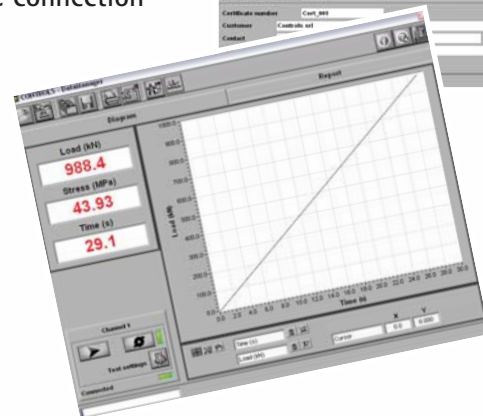
Test certificate includes all descriptive information, test results and load-time graph.

Test execution conforming to Standards can therefore be reported.

### ■ 50-C7022/SOF Data Manager PC software



### ■ 82-Q0800/3 Serial cable and USB adapter for PC connection



## PILOT 4 stand alone console to control separate machines/frames

The PILOT 4 system, can be housed in an appropriate control console. This configuration is ideal for the update of existing testers, obtaining a high performance automatic compression machine. (Hydraulic group, hardware and firmware are described on page 4).

### ■ 50-C4042

PILOT 4 stand alone control console for automation of compression or flexural testing frame.

220-240 V, 50-60 Hz, 1 ph.

## Voltages

All machine codes refer to 220-240 V, 50-60 Hz, 1 ph. The same models are available for 110 V, 60 Hz, 1 ph. (for example: 50-C4644 instead of 50-C4642).



50-C4042  
with 50-C0900/FR

**Italy**  
**CONTROLS S.R.L.**  
E-mail: controls@controls.it  
www.controlsitalia.it

**France**  
**CONTROLS S. à r.l.**  
E-mail: controls@controls.fr  
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**Mexico**  
**EQUIPOS DE ENSAYE CONTROLS S.A. de C.V.**  
E-mail: info@controls.com.mx  
www.controls.com.mx

**Poland**  
**CONTROLS POLSKA Sp. z o.o.**  
E-mail: controls@controls.pl  
www.controls.pl

**Spain**  
**EQUIPOS DE ENSAYO CONTROLS S.A.**  
E-mail: controls@controls.es  
www.controls.es

**United Kingdom**  
**CONTROLS TESTING EQUIPMENT LTD**  
E-mail: sales@controlstesting.co.uk  
www.controlstesting.co.uk

**WF** **Wykeham Farrance** since 1941  
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www.wfi.co.uk

The PILOT 4 Compression Testing Machines are just one of the versions from the vast range of models available from us, including standard Semi-Automatic, AUTOMAX 5, Automatic Testing Systems (SERCOMP 7, MCC 8, ADVANTEST 9, etc.) as well as more than 5000 items for Building Material testing.



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