

DATA SHEET

GENERAL UTILITY - PILOT PRO - Automatic compression testers for cylinders

PILOT PRO

MAIN FEATURES

Smart automatic and connected concrete Power and Control System for standard failure testing.

PILOT PRO is the best choice for Quality Control laboratories to carry out a high throughput of routine failure tests including compression, flexure and indirect tensile tests.

- **Huge boost in efficiency and error elimination:** LinK-LAB – Integrated testing station solution for seamless connection and data inputs from many ancillary devices for dimensional measurement, weight, bar code, etc.
- **Automatic – time saving:** test-cycle automation maximizes productivity and ensures tests are performed accurately according to pre-set methods, eliminating operator variables.
- **Highly accurate and energy saving:** Our DC motor technology quietly and efficiently delivers super accurate load control at both low-speed and low-loads.
- **Intuitive, quick and simple operation:** The integrated control system features an intuitive 5.1" color graphical display, which works like a tablet or smart-phone, and makes PILOT PRO quick and simple to operate.
- **Standards compliant – peace of mind:** Hardware and firmware are in total compliance with all the main international concrete testing standards including ASTM C39 and EN 12390-3.
- **Multilingual functionality:** The system is available in multiple languages and is fully compatible with non-Latin characters for Chinese, Cyrillic (and more).

GENERAL DESCRIPTION

PILOT PRO is the best choice for Quality Control laboratories to carry out a high throughput of routine failure tests including compression, flexure and indirect tensile tests.

PILOT PRO introduces new features and capabilities that will revolutionize the operations of any progressive construction quality testing laboratories.

LinkLAB is CONTROLS' new proprietary Laboratory Connectivity Package.

It allows your PILOT PRO to be a connected part of your laboratory infrastructure by taking inputs from any number of ancillary measuring systems and devices increasing efficiency and eliminating transposing errors.

The machines consist of:

Frame

Rigid welded steel construction. Spherical seat allows free alignment at the initial contact with the specimen.

Compression platens

See table. Traceable certificate of surface hardness available on request.

PILOT PRO, Automatic power and control system

See technical specifications.

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Safety features

Includes: Max. pressure valve to avoid machine overloading; piston travel limit switch; emergency stop button; front and rear transparent flexible fragment guard.

TECHNICAL SPECIFICATIONS

PILOT PRO AUTOMATIC POWER AND CONTROL SYSTEM

Hydraulics

- Dual-stage pump: centrifugal low pressure for fast approach automatically switches to radial multi-piston high pressure for loading
- DC motor, 720W, 50-60Hz
- Maximum working pressure 700 bar
- Load/unload valve
- Second/third frame selection valve available as option

Hardware

- 524,000 points high-resolution/stability analog channels
- 3 channels for load sensors
- Control frequency 250 Hz
- Sampling frequency 250 Hz
- 5.1", 800 x 480 pixel, 16 M colours, icon-driven capacitive sensing touchscreen graphic display
- Unlimited storage capacity for test data on internal 8 GB SD card
- USB port for test data storage on external USB memory stick and for firmware upgrade
- Ethernet port for PC / Internet /network communication
- Optional integrated graphic printer including Load-Time plot
- RS 232 port for data downloading in ASCII format

Firmware

- Execution of compression, flexure, indirect tensile, ACV tests in automatic mode with load rate controlled by a closed-loop P.I.D. system
- Execution of loading ramps with the possibility to manually increase or decrease the test speed during the test
- Possibility to reach at controlled speed a load target and to keep a steady loading phase.
- Simultaneous display of load, specific load, actual load rate, load/time graph
- Saving of the specimen failure type (to EN or ASTM) in the test results
- Download data to internal printer (optional) or to PC via RS 232 port or to USB memory stick
- PC / network communication via Ethernet
- Multi-coefficient linearization of the calibration curve for better accuracy at low loads thus avoiding the use of a second pressure transducer
- Recording facility for up to 10 test profiles for each channel including: type of test (e.g. compression, flexural, indirect tensile), specimen size and shape, load rate, test standard and other general information. Each one of the recorded test profiles can be recalled automatically to save time
- Improved PID algorithm and Multi PID selection. Up to 3 different PID settings can be tuned for a variety of materials (ACV, flexure, compression with neoprene pads, etc.)
- Compatible with the newly released Datamanager software, tailored for construction material testing laboratories, for real-time data acquisition, display and management
- Peripheral devices integration and web services available as option (see page...)
- Automatic load measurement verification procedure, by connecting suitable load cells and our digital readout unit to PC
- Language selection (including Cyrillic and Chinese)
- Unit selection (kN, ton, lbf)
- USB port for firmware upgrade and safe backup of the original configuration data (PID, calibration, etc.), in case of loss and/or data corruption. The restore of the machine to the factory settings is easy avoiding the need of any technical support.

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PHYSICAL SPECIFICATION TABLE

Model 50-	C13P02 C13P04	C23P02 C23P04	C34P02 C34P04
Capacity kN (lbf)	1500	2000	3000
Max vertical daylight, mm*	340	350	350
Horizontal daylight, mm	265	340	370
Max. piston travel**, mm	50	50	50
Platen dimensions, mm	dia. 216	dia. 220	dia. 300
Platen surface hardness	55.5 HRC (600 HV)	55.5 HRC (600 HV)	55.5 HRC (600 HV)
Platens flatness toll, mm	0.03	0.03	0.03
Overall dimensions, mm	760 x 370 x 1085	835 x 440 x 1090	765 x 450 x 1160
Weight approx., kg	315	530	760

*With accessory 50-C50/CYL vertical clearance is increased by 20 mm. See test accessories.

**Use distance pieces conforming to the specimen size to avoid piston overtravel

ORDERING INFO

50-C13P02

PILOT PRO Automatic Compact-Line Gen. Util. compression tester, 1500 kN cap., for cubes up to 150 mm and cylinders up to dia. 160 x 320 mm. 230 V, 50-60 Hz, 1 ph.

50-C13P04

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

50-C23P02

PILOT PRO Automatic Compact-Line Gen. Util. compression tester, 2000 kN cap., for cubes up to 150 mm and cylinders up to dia. 160 x 320 mm. 230 V, 50-60 Hz, 1 ph.

50-C23P04

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

50-C34P02

PILOT PRO Automatic Compact-Line Gen. Util. compression tester, 3000 kN cap., for cubes up to 200 mm and cylinders up to dia. 160 x 320 mm. 230 V, 50-60 Hz, 1 ph.

50-C34P04

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

Note: front door is not included but available as accessory.

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ACCESSORIES

CONNECTIVITY PACKAGES

Link-LAB Laboratory connectivity package

50-KLAB/L

Link-LAB Local connectivity package for AUTOMAX Pro testers

50-KLAB/E

Link-LAB Enterprise connectivity package for machines controlled by PC via Datamanager Software.

11-D0630/24K

24000 g cap. x 0.1g resolution, digital balance.

230V/50-60Hz/1ph.

82-D1655/K

Digital caliper 300 x 0,05 mm

82-D1950/K

Barcode reader

MACHINE ACCESSORIES

Distance pieces to adjust the vertical daylight

50-C9080

Distance piece dia. 200x30 mm

50-C9082

Distance piece dia. 200x50 mm

50-C9083

Distance piece dia. 200x68 mm

50-C9086

Distance piece dia. 200x100 mm

Note: The above distance pieces are also available with threaded centering pin which are recommended for testing high strength/explosive failures specimens. They are identified adding the suffix /P after the code number.

Software

50-SW/DM

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Datamanager PC Software suitable for remote control of the machine, data acquisition, processing and filing. Allows printout of customized test certificates.

Fragment guard lock switch

50-C50/P1

Fragment guard lock switch. To prevent test execution with the front door open.

Frame pedestal

Accessories suitable for 50-	C13xxx	C23xxx	C34xxx
Frame pedestal (optional)	50-A19/B	50-C29/B	50-C39/B

Front door

Accessories suitable for 50-	C13xxx	C23xxx	C34xxx
Front door (optional)	50-A19/FG	50-C29/FG	50-C39/FG

Steel platen for capped cylinders

50-C50/CYL

Lower compression platen dia.165 x 30 mm for testing capped cylinders dia.150 x 300 mm (6"x12"). Resulting compression machine vertical clearance is increased by 20 mm.

TEST ACCESSORIES

Splitting tensile test devices

50-C9000/C

Splitting tensile test device for cylinders up to dia. 160x320 mm (6.3"x12.6").Conforming to EN 12390-6 and ASTM C496

50-C9002

Hardboard strips 4 x 14 x 345 mm for 50-C9000/C conf. to EN Standards. Pack of 50.

50-C9002/A

Hardboard strips 4 x 14 x 345 mm for 50-C9000/C conf. to ASTM Standards. Pack of 50.

50-C9070/C

Splitting tensile test device for concrete block pavers and concrete cubes. Conforms to EN 1338 and EN 12390-6.

50-C9002

Hardboard packing strips 4 x 15 x 345 mm, to EN 1338 and 12390-6.

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Pack of 50.

Compression devices for cement and mortars

50-C9030

Compression device to test portions of 40x40x160 prisms broken in flexure to EN 196-1.

Total height 195mm.

50-C9030/H

Compression device to test portions of 40x40x160 prisms broken in flexure to EN 196-1. High stiffness model.

Total height 225mm.

50-C9032

Compression device to test 50 mm and 2" mortar cubes to ASTM C109

Total height 195mm.

50-C9032/H

Compression device to test 50mm (2") cubes to ASTM C109. High stiffness model.

Total height 225mm.

50-C9030/A

Compression device to test portions of 40x40x160 prisms broken in flexure to ASTM C349. High stiffness model. Total height 225mm.

Flexural test device for concrete beams

50-C9010/C

Flexural test device for concrete beams 100x100x400/500 and 150x150x600/750 mm, to EN 12390-5, ASTM C78, ASTM C293 and AASHTO T97

50-C9010/CA

Same as above but with:

- distance between upper rollers 4" or 6" or single
- distance between lower rollers 12" or 18"

Capping retainers

55-C0122/A4

Capping retainers (couple) for 4" dia. concrete cylinders

55-C0122

Capping retainers (couple) for 150 mm (6") dia. cylinders

55-C0122/B

Capping retainers (couple) for 160 mm dia. cylinders

Neoprene pads

55-C0122/A44

Neoprene pads for 4" dia. cylinders. Set of two.

55-C0122/2

Neoprene pads for 6" dia. cylinders. Set of two.

55-C0122/4

Neoprene pads for 160 mm dia. cylinders. Set of two.

GENERAL UTILITY - PILOT PRO - Automatic compression testers for cubes, cylinders and blocks

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Compression platens

See table. Traceable certificate of surface hardness available on request.

PILOT PRO, Automatic power and control system

See technical specifications.

Safety features

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Includes: Max. pressure valve to avoid machine overloading; piston travel limit switch; emergency stop button; front and rear transparent flexible fragment guard.

TECHNICAL SPECIFICATIONS

PILOT PRO AUTOMATIC POWER AND CONTROL SYSTEM

Hydraulics

- Dual-stage pump: centrifugal low pressure for fast approach automatically switches to radial multi-piston high pressure for loading
- DC motor, 720W, 50-60Hz
- Maximum working pressure 700 bar
- Load/unload valve
- Second/third frame selection valve available as option

Hardware

- 524,000 points high-resolution/stability analog channels
- 3 channels for load sensors
- Control frequency 250 Hz
- Sampling frequency 250 Hz
- 5.1", 800 x 480 pixel, 16 M colors, icon-driven capacitive sensing touchscreen graphic display
- Unlimited storage capacity for test data on internal 8 GB SD card
- USB port for test data storage on external USB memory stick and for firmware upgrade
- Ethernet port for PC / Internet /network communication
- Optional integrated graphic printer including Load-Time plot
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Firmware

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- Download data to internal printer (optional) or to PC via RS 232 port or to USB memory stick
- PC / network communication via Ethernet
- Multi-coefficient linearization of the calibration curve for better accuracy at low loads thus avoiding the use of a second pressure transducer
- Recording facility for up to 10 test profiles for each channel including: type of test (e.g. compression, flexural, indirect tensile), specimen size and shape, load rate, test standard and other general information. Each one of the recorded test profiles can be recalled automatically to save time
- Improved PID algorithm and Multi PID selection. Up to 3 different PID settings can be tuned for a variety of materials (ACV, flexure, compression with neoprene pads, etc.)
- Compatible with the newly released Datamanager software, tailored for construction material testing laboratories, for real-time data acquisition, display and management
- Peripheral devices integration and web services available as option (see page...)
- Automatic load measurement verification procedure, by connecting suitable load cells and our digital readout unit to PC
- Language selection (including Cyrillic and Chinese)
- Unit selection (kN, ton, lbf)
- USB port for firmware upgrade and safe backup of the original configuration data (PID, calibration, etc.), in case of loss and/or data corruption. The restore of the machine to the factory settings is easy avoiding the need of any technical support.

PHYSICAL SPECIFICATION TABLE

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Model 50-	C25P02 C25P04	C35P02 C35P04
Capacity kN (lbf)	2000	3000
Max vertical daylight, mm*	350	350
Horizontal daylight, mm	340	370
Max. piston travel**, mm	50	50
Platen dimensions, mm	310 x 510 x 50	310 x 510 x 50
Platen surface hardness	55.5 HRC	55.5 HRC
Platens flatness toll, mm	0.05	0.05
Overall dimensions, mm	785 x 555 x 1090	765 x 600 x 1160
Weight approx., kg	620	820

*With accessory 50-C50/CYL vertical clearance is increased by 20 mm. See test accessories.

**Use distance pieces conforming to the specimen size to avoid piston overtravel

ORDERING INFO

50-C25P02

PILOT PRO Automatic Compact-Line Gen. Util. compression tester, 2000 kN cap., for blocks, cubes up to 200 mm and cylinders up to dia. 160 x 320 mm. 230 V, 50-60 Hz, 1 ph.

50-C25P04

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

50-C35P02

PILOT PRO Automatic Compact-Line Gen. Util. compression tester, 3000 kN cap., for blocks, cubes up to 200 mm and cylinders up to dia. 160 x 320 mm. 230 V, 50-60 Hz, 1 ph.

50-C35P04

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

ACCESSORIES

CONNECTIVITY PACKAGES

Link-LAB Laboratory connectivity package

50-KLAB/L

Link-LAB Local connectivity package for AUTOMAX Pro testers

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50-KLAB/E

Link-LAB Enterprise connectivity package for machines controlled by PC via Datamanager Software.

11-D0630/24K

24000 g cap. x 0.1g resolution, digital balance.

230V/50-60Hz/1ph.

82-D1655/K

Digital caliper 300 x 0,05 mm

82-D1950/K

Barcode reader

MACHINE ACCESSORIES

Distance pieces to adjust the vertical daylight

50-C9080

Distance piece dia. 200x30 mm

50-C9082

Distance piece dia. 200x50 mm

50-C9083

Distance piece dia. 200x68 mm

50-C9086

Distance piece dia. 200x100 mm

Note: the above distance pieces are also available with threaded centering pin which are recommended for testing high strength/explosive failures specimens. They are identified adding the suffix /P after the code number. In case of use of these distance pieces please contact us.

Steel platen for capped cyliders

50-C50/CYL

Lower compression platen dia.165 x 30 mm for testing capped cylinders dia.150 x 300 mm (6"x12"). Resulting compression machine vertical clearance is increased by 20 mm.

Software

50-SW/DM

Datamanager PC Software suitable for remote control of the machine, data acquisition, processing and filing. Allows printout of customized test certificates.

Fragment guard lock switch

50-C50/P1

Fragment guard lock switch. To prevent test execution with the front door (optional) open

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Frame pedestal

Accessories suitable for 50-	C25xxx	C35xxx
Frame pedestal (optional)	50-C29/B	50-C39/B

Front door

Accessories suitable for 50-	C25xxx	C35xxx
Front door (optional)	50-C25/FG	50-C35/FG

TEST ACCESSORIES

Splitting tensile test devices

50-C9000/C

Splitting tensile test device for cylinders up to dia. 160x320 mm (6.3"x12.6"). Conforming to EN 12390-6 and ASTM C496

50-C9002

Hardboard strips 4 x 14 x 345 mm for 50-C9000/C conf. to EN Standards. Pack of 50.

50-C9002/A

Hardboard strips 4 x 14 x 345 mm for 50-C9000/C conf. to ASTM Standards. Pack of 50.

50-C9070/C

Splitting tensile test device for concrete block pavers and concrete cubes. Conforms to EN 1338 and EN 12390-6.

50-C9002

Hardboard packing strips 4 x 15 x 345 mm, to EN 1338 and 12390-6.

Pack of 50.

Compression devices for cement and mortars

50-C9030

Compression device to test portions of 40x40x160 prisms broken in flexure to EN 196-.
Total height 195mm.

50-C9030/H

Compression device to test portions of 40x40x160 prisms broken in flexure to EN 196-1. High stiffness model.
Total height 225mm.

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50-C9032

Compression device to test 50 mm and 2" mortar cubes to ASTM C109
Total height 195mm.

50-C9032/H

Compression device to test 50mm (2") cubes to ASTM C109. High stiffness model.
Total height 225mm.

50-C9030/A

Compression device to test portions of 40x40x160 prisms broken in flexure to ASTM C349. High stiffness model. Total height 225mm.

Flexural test device for concrete beams

50-C9010/C

Flexural test device for concrete beams 100x100x400/500 and 150x150x600/750 mm, to EN 12390-5, ASTM C78, ASTM C293 and AASHTO T97

50-C9010/CA

Same as above but with:

- distance between upper rollers 4" or 6" or single
- distance between lower rollers 12" or 18"

Capping retainers

55-C0122/A4

Capping retainers (couple) for 4" dia. concrete cylinders

55-C0122

Capping retainers (couple) for 150 mm (6") dia. cylinders

55-C0122/B

Capping retainers (couple) for 160 mm dia. cylinders

Neoprene pads

55-C0122/A44

Neoprene pads for 4" dia. cylinders. Set of two.

55-C0122/2

Neoprene pads for 6" dia. cylinders. Set of two.

55-C0122/4

Neoprene pads for 160 mm dia. cylinders. Set of two.

ADDITIONAL INFORMATION

Force verification

The conformity of the compression tester to the stringent requirements of the relevant International Standards is precisely verified using specific traceable apparatus (load cells 82-E0100 series and 82-P0801/E digital tester).

UPGRADING

(To be specified at time of order: these items has to be factory installed.)

Serial printer

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50-Q60P/PR

Upgrade of PILOT PRO system to incorporate a serial graphic printer in the rear panel, allowing results (including a load/time plot) to be printed at the end of test

Second and third frame connection

The PILOT PRO System can be upgraded with a hydraulic valve for controlling (not simultaneously) a second and third frame.

Note: when connecting a low capacity frame (i.e. flexural or cement) pressure regulator 65-L1400/X5 may be necessary. Please ask our technical department.

50-C10C/2F

Two-way valve for PILOT PRO System to control a second frame. This item must be factory installed.

50-C10C/3F

Three-way valve for PILOT PRO System to control a second and third frame. This item must be factory installed.

Special calibration procedure

50-C0050/CAL

Special calibration of compression testers assuring Class 1 (EN) and Class A (ASTM), from 1% to full load range.

Traceable certificate of surface hardness

50-C0050/HRD7

Supply of the compression machine/frame complete with traceable certificate of hardness of 310 x 510 x 50 mm platen surfaces



PILOT PRO Automatic compression testers for cubes, cylinders and blocks 1500 kN cap.



PILOT PRO Automatic compression testers for cubes, cylinders and blocks 2000 kN cap.



Main menu



Specimen type selection



Splitting tensile test device for cylinders (50-C9000/C)



Compression device to test portions of 40x40x160 prism (50-C9030/H)



Compression device to test 50mm (2") cubes (50-C9032/H)



Flexural test device for concrete beams (50-C9010/C)

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Unbonded caps: steel cap retainers
and neoprene pads

All testers are verified and delivered
with traceable certificate of the
verification of force transfer