Humboldt Concrete Compression Machines

11.2024

CONTENTS

Pump and Controller System
for concrete compression machines

HCM-5080 and HCM-5070 Automatic Pump and Controller Systems

ASTM C39, C78, C293, C469, C496, C1019, C109/C109M, BS EN 12390-32

Humboldt's Automatic Pump and Controller System is the most versatile, accurate and easy-to-use concrete compression machine controller available today.

It is designed to make fast work of testing cylinders, cubes and beams with any of Humboldt's concrete compression machines. It provides an easy-to-use automated testing workflow — just choose the test standard you wish to use from the menu, and you will be quickly guided through the test setup and testing process. It is the ideal automatic system whether you are purchasing a new concrete compression frame or upgrading an existing frame.

The system features a robust, reliable and cool-running 1hp, multi-piston pump, which works together with the controller for full operational control. The controller's high-resolution, 7-inch, color, touchscreen provides accurate, precision machine operation, setup and calibration. Setup and operation are simple with step-by-step procedures.

Calibration is also easy with the controller, allowing from 1 to 10 points to calibrate the machine in any increment chosen. It also provides an accurate motor-control knob, which allows calibrators to dial in precise calibration loads.

The system provides two channel inputs for load, which can be used to control two separate compression frames when using the HCM-HP4014 selector valve accessory. Two additional channels are provided for displacement, which provides an easy solution for determining Poisson's ratio and Young's modulus testing.

The controller also provides data acquisition capabilities of up to 1000 tests with 3000 points per test. This information can be exported via the front USB port and a flash drive.

Features:

- Provides two channel inputs for load, which allows for the control of two separate compression frames
- Provides two additional channel inputs for displacement, which allows performing extensometer and compressometer testing
- 7", high-resolution color touch-screen display with live readout, graphical and tabular display
- Easy test setup, just choose the standard you wish to test for and the controller will walk you through the complete setup
- Rapid approach, initial load and testing load are automated during test cycles
- Automatic control of test parameters
- Provides data acquisition of one reading per second
- Integral storage within the controller of up to 1000 tests and 3000 points per test

- Simple, Fast and accurate machine calibration with accurate, motor-control knob
- Displays in Imperial or metric numbers

Pre-programmed to run the following tests: ASTM C39, C78, C293, C469, C496, C1019, C109/C109M, BS EN 12390-3

HCM-5070 Console System

Humboldt's HCM-5070 is a console version of the HCM-5080 automatic controller system. The HCM-5070 Console System provides the same features as the HCM-5080, which includes our robust, reliable and cool-running 1hp, multi-piston pump, which works together with the controller for full operational control. The controller's high-resolution, 7-inch, color, touchscreen provides accurate, precision machine operation, setup and calibration. Machine setup and operation functions in the same fashion as the HCM-5080, with the ability to choose an ASTM specification and letting the controller guide you through the setup and testing function. The HCM-5070 can be used to control two separate compression frames when using the HCM-HP4014 selector valve accessory. This selector valve can be mounted directly to the console.

Controller System Specifications	
HCM-5080 HCM-5080.4F	120V 60Hz 220V 50/60HZ
HCM-5070 HCM-5070.4F	120V 60Hz 220V 50/60HZ
Display	7" (178mm) VGA (480 x 800) Resistive-touch screen
Processor	Dual 32-bit ARM
RAM	4GB
Analog to digital converter	24 bit
Data acquisition	4 Channels
Data Speed	1000Hz (1kH)
Logging speed	1 reading per second
Test storage	1000
Points per test	3000

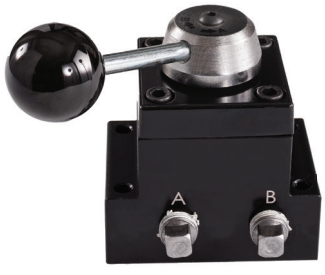
Both Humboldt Controllers are: 120/220V 50/60z. However, the pump is either 120V 60Hz or 220V 50/60Hz.

Humboldt Automatic Controller HCM-5080
Humboldt Automatic Controller HCM-5080.4F
Ship wt. 180lbs. (82kg)

Humboldt Auto Console Controller HCM-5070
Humboldt Auto Console Controller HCM-5070.4F
Ship wt. 200lbs. (91kg)

HCM-5070 Console System for two Compression Machines

The HCM-5070 Console Controller System set up for two separate compression frames, one for cylinders and one for low strength beams. The System can easily switch control between the two frames via the HCM-HP4014 Selector Valve.



HCM-HP4014

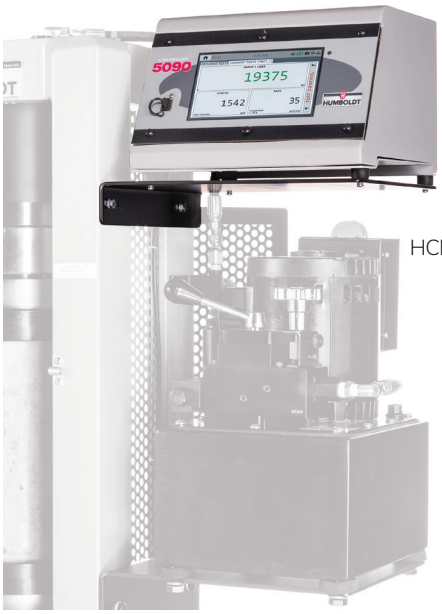

HCM-4177


HCM-4177.1


HCM-4177.4

HCM-005050

Accessories for HCM-5080 & HCM-5070	
HCM-HP4014	Frame Selector Valve
HCM-4177	Pressure Transducer, 10,000 psi with Cable and Plug
HCM-4177.1	Pressure Transducer, 10,000 psi
HCM-4177.4	Cable for Pressure Transducer 10,000 psi with Plug
HCM-005050	ISO VG 46 Hydraulic Oil, 1gal. (2gal. required)



HCM-5090

Automate your existing compression frame

Looking to automate your existing compression machine? Now you can easily upgrade it with one of Humboldt's automatic compression machine controllers — the HCM-5080 or the HCM-5070. Both controllers come with our robust, reliable and cool-running 1hp pump, which works together with the controller for full operational control of your compression machine. Both are pre-programmed to run the following tests: ASTM C39, ASTM C78, ASTM C293, ASTM C469, ASTM C496, ASTM C1019, ASTM C109/C109M, BS EN 12390-3.

The HCM-5080 upgrade kit comes with the necessary brackets and mounting hardware and both controllers are available with new compatible transducers, making these upgrade kits a quick and easy upgrade.

Don't want an automated controller? You can also upgrade your machine with the HCM-5090 digital indicator and use your existing pump or add one of our manual pumps as well. The HCM-5090 is also pre-programmed to run all the tests listed above.

HCM-5090 Digital Indicator

ASTM C39, C78, C293, C469, C496, C1019, C109/C109M; BS EN 12390-32

Humboldt's HCM-5090 digital indicator provides the same platform and many of the same features as the HCM-5080 and HCM-5070 except that it does not act as a controller, but works with a manually-operated pump.

Features:

- Provide two channel inputs for load, which allows for the control of two separate compression frames
- Provides two additional channel inputs for displacement, which allows performing extensometer and compressometer testing
- 7", high-resolution color touch-screen display with live readout, graphical and tabular display
- Easy test setup, just choose the standard you wish to test for and the controller will walk you through the complete setup
- Provides data acquisition of one reading per second
- Integral storage within the controller of up to 1000 tests and 3000 points per test
- Simple, Fast and accurate machine calibration
- Displays in Imperial or metric numbers
- Pre-programmed to run the following tests: ASTM C39, ASTM C78, ASTM C293, ASTM C469, ASTM C496, ASTM C1019, ASTM C109/C109M, BS EN 12390-3

The HCM-5090 is also available as a retrofit package.

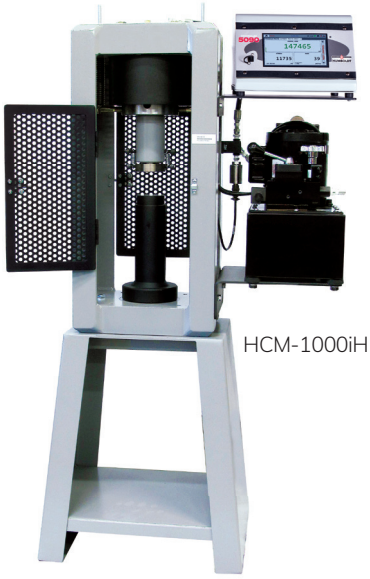
Humboldt Digital Indicator **HCM-5090.3F**

Ship wt. 13 lbs. (5.9kg)

Upgrade/Retrofit Accessories for HCM-5090	
Pressure Transducer, 10,000 psi with Cable and Plug	HCM-4177
Pressure Transducer, 10,000 psi	HCM-4177.1
Cable for Pressure Transducer with Plug	HCM-4177.4

HCM-0030iH

Shown with Optional Flexural Attachment for Beams.



HCM-1000iH

HCM-2500iHA

HCM-0030 Series Compression Machines

ASTM C39, E4, AASHTO T22

- Suitable for beams of standard strength concrete mixes
- 300 to 30,000 lbf (1.3 to 113.5kN) testing range with accuracy of ±0.5% of indicated load
- Standard configuration includes no platens. Order HCM-0119B for beam testing
- Choice of two digital controllers and two digital indicators (see page 187-189)
- Optional test platens and accessories available on pages 197-198
- Available as an auxiliary frame with no controller or pump. Order mounting stand, load frame selector valve and overload protection separately
- **Mounting stand: OPTIONAL,** order: HCM-0032

Specification	Value
Vertical Opening	18.5" (470mm)
Horizontal Opening	9.250" (235mm)
Piston Stroke	2.125" (54mm)
Lower Platen, Dia.	NA
Upper Platen, Dia.	NA
Oil Reservoir Cap.	2 gal (7.6 liter)
Overall Width	28.625" (727mm)
Overall Depth	16" (406mm)
Overall Height	51.50" (1308mm)

See Page 195-196 for models and ordering information.

HCM-0030 Series Compression Machines

Ship wt. 460 lbs. (208kg)

HCM-1000 Series Compression Machines

ASTM C39, E4, AASHTO T22, C109

The HCM-1000 has been custom-configured to be used for mortar applications like 2" and 4" cubes, beams and other low-strength materials, below 100,000 lbs. (445kN). These machines are based on HCM-2500 frames, which have been reconfigured for accurate readings of lower-strength materials. The machines are sold without platens, so be sure to order the appropriate set for your applications.

- Custom-configured for mortar applications like 2" and 4" cubes
- 1,000 to 100,000 (11 to 445kN) testing range with accuracy of ±0.5% of indicated load
- Choice of two digital controllers and two digital indicators (see page 187-189)
- Machine comes with no platens, order the appropriate set for your applications
- **Mounting stand: OPTIONAL,** order: HCM-0200

Specification	Value
Vertical Opening	19.375" (492mm)
Horizontal Opening	9.25" (235mm)
Piston Stroke	2.5" (63.5mm)
Lower Platen	NA
Upper Platen, Dia.	NA
Oil Reservoir Cap.	2 gal (7.6 liter)
Overall Width	30" (762mm)
Overall Depth	23.750" (603mm)
Overall Height	60.625" (1540mm)

See Page 195-196 for models and ordering information

HCM-1000 Series Compression Machines

Ship wt. 655lbs. (297kg)

HCM-2500 Series Compression Machines

ASTM C39, E4, AASHTO T22

- Suitable for cylinders, cubes, beams and cores of standard strength concrete mixes
- 2,500 to 250,000 lbf (11 to 1112kN) testing range with accuracy of ±0.5% of indicated load
- Suitable for concrete strength up to 7,000 psi for 6" diameter cylinders
- Standard configuration includes platens to test 6" x 12" (150mm x 300mm) cylinders.
- Choice of two digital controllers or two digital indicators (see page 187-189)
- Optional test platens and accessories available on pages 197-198
- Steel protective doors, not plastic.
- **Mounting stand: OPTIONAL,** order: HCM-0200

Specification	Value
Vertical Opening	19.375" (492mm)
Horizontal Opening	9.25" (235mm)
Piston Stroke	2.5" (63.5mm)
Lower Platen, Dia.	6.5" (165mm)ø
Upper Platen, Dia.	6.5" (165mm)
Oil Reservoir Cap.	2 gal (7.6 liter)
Overall Width	27" (686mm)
Overall Depth	17" (432mm)
Overall Height	56.312" (1430mm)

See Page 195-196 for models and ordering information

HCM-2500 Series Compression Machines

Ship wt. 885 lbs. (401kg)

NOTES

Frame opening dimensions are measured without test platens installed in machine.
Overall machine dimensions are measured with the stand, including machines where it is optional.

HCM-3000iH

HCM-4000iHA

HCM-5000iHP

HCM-3000 Series Compression Machines

ASTM C39, E4, AASHTO T22

- Suitable for cylinders, cubes, beams and cores of standard strength concrete mixes
- 3000 to 300,000 lbf (13.3 to 1334kN) testing range with accuracy of ±0.5% of indicated load
- Suitable for concrete strength up to 9,000 psi for 6" diameter cylinders
- Standard configuration includes platens to test 6" x 12" (150mm x 300mm) cylinders.
- Choice of two digital controllers and two digital indicators (see page 187-189)
- Optional test platens and accessories available on pages 197-198
- **Mounting stand: OPTIONAL,** order: HCM-0300

Specification	Value
Vertical Opening	18.5" (470mm)
Horizontal Opening	9.5" (241mm)
Piston Stroke	3" (76mm)
Lower Platen	9" x 12" (229 x 305mm)
Upper Platen, Dia.	6.5" (165mm)
Oil Reservoir Cap.	2 gal (7.6 liter)
Overall Width	31.5" (800mm)
Overall Depth	17" (432mm)
Overall Height	58.5" (1486mm)

See Page 195-196 for models and ordering information

HCM-3000 Series Compression Machines

Ship wt. 1078 lbs. (488kg)

HCM-4000 Series Compression Machines

ASTM C39, E4, AASHTO T22

- Suitable for cylinders, cubes, beams and cores of high-strength concrete mixes
- 4000 to 400,000 lbf (17.8 to 1780kN) testing range with accuracy of ±0.5% of indicated load
- Suitable for concrete strength up to 11,000 psi for 6" diameter cylinders
- Standard configuration includes platens to test 6" x 12" (150mm x 300mm) cylinders.
- Choice of two digital controllers and two digital indicators (see page 187-189)
- Optional test platens and accessories available on pages 197-198
- Large frame opening to allow easier loading of test specimens
- Mounting stand is **INCLUDED**

Specification	Value
Vertical Opening	18.375" (467mm)
Horizontal Opening	13.312" (338mm)
Piston Stroke	2.5" (63.5mm)
Lower Platen	12.5" x 18" (318 x 475mm)
Upper Platen, Dia.	6.5" (165mm)
Oil Reservoir Cap.	2 gal (7.6 liter)
Overall Width	39.875" (1013mm)
Overall Depth	20" (508mm)
Overall Height	61.250" (1556mm)

See Page 195-196 for models and ordering information

HCM-4000 Series Compression Machines

Ship wt. 1700 lbs. (771kg)

HCM-5000 Series Compression Machines

ASTM C39, E4, AASHTO T22

- Suitable for cylinders, cubes, beams and cores of high-strength concrete mixes
- 5000 to 500,000 lbf (22.2 to 2224kN) testing range with accuracy of ±0.5% of indicated load
- Suitable for concrete strength up to 14,000 psi for 6" diameter cylinders
- Standard configuration includes platens to test 6" x 12" (150mm X 300mm) cylinders.
- Choice of two digital controllers and two digital indicators (see page 187-189)
- Optional test platens and accessories available on pages 197-198
- Large frame opening to allow easier loading of test specimens
- Mounting stand is **INCLUDED**

Specification	Value
Vertical Opening	18.375" (467mm)
Horizontal Opening	14" (356mm)
Piston Stroke	2.5" (63.5mm)
Lower Platen	12.5" x 18" (318 x 475mm)
Upper Platen, Dia.	6.5" (165mm)
Oil Reservoir Cap.	2 gal (7.6 liter)
Overall Width	30" (762mm)
Overall Depth	23.750" (603mm)
Overall Height	60.625" (1540mm)

See Page 195-196 for models and ordering information

HCM-5000 Series Compression Machines

Ship wt. 2500 lbs. (1134kg)

NOTES

Frame opening dimensions are measured without test platens installed in machine.
Overall machine dimensions are measured with the stand, including machines where it is optional.

Concrete Compression Machine Ordering Matrix

HCM-4000 P iHA .2F

Load Capacity

Prism
Prism use P suffix

Controller
HCM-5080 use iHA suffix
HCM-5070 use iHAC suffix
HCM-5090 use iH suffix
HCM-720 use i7 suffix

Pump
1hp Automatic use A suffix
1/2hp use no suffix
3/4hp use P suffix

Electrical Configuration
110V 60Hz use no suffix
220V 60Hz use .2F suffix
220V 50Hz use .5F suffix

Concrete Compression Frame (ONLY)	
Compression Machine	Order Number
Compression Machine, 30,000 (133.5kN)	HCM-0030
Compression Machine, 100,000 (445kN)	HCM-1000
Compression Machine, 250,000 (1,112kN)	HCM-2500
Compression Machine, 300,000 (1,334kN)	HCM-3000
Compression Machine, 400,000 (1,780kN)	HCM-4000
Compression Machine, 500,000 (2,224kN)	HCM-5000
Compression Machine Prism Series, 500,000 (2,224kN)	HCM-5000P

NOTES
Frame only Compression machines does not include stand, order separately.

Compression Machine Capacities in PSI												
Load Capacity	Model	Cylinder			Cube			Brick	Beam		Block	
		3" x 6"	4" x 8"	6" x 12"	2"	6"	8"	2" x 4" x 8"	6"x 6"x 20"	4"x 4"x 14"	Single	Prism
30000	HCM-0030	3300	1910	849	6000	667	375	750	2200	3300	NA	NA
100000	HCM-1000	11300	6366	2800	20000	2200	1250	NA	7407	11100	NA	NA
250000	HCM-2500	28200	15915	7070	50000	5500	3100	6250	18500	27700	NA	NA
300000	HCM-3000	33900	19000	8488	60000	6600	3700	7500	22200	33300	NA	NA
400000	HCM-4000	45200	25400	11318	80000	8800	5000	10000	29600	44400	2500	2500
500000	HCM-5000	56500	31800	14147	NA	11100	6200	12500	37000	55500	3100	3100

Concrete Compression Machine Ordering Matrix

HCM-0030 Series: 30,000 lbs. (133.5 kN)			
Controller	Pump Size	Electrical	Order Number
HCM-5090.3F	1/2hp Manual	120V 60Hz	HCM-0030iH
HCM-5090.3F	1/2hp Manual	230V 60Hz	HCM-0030iH.2F
HCM-5090.3F	1/2hp Manual	230V 50Hz	HCM-0030iH.5F

HCM-1000 Series: 100,000 lbs. (445 kN)			
Controller	Pump Size	Electrical	Order Number
HCM-5080	1hp Automatic	120V 60Hz	HCM-1000iHA
HCM-5080.4F		230V 50-60Hz	HCM-1000iHA.4F
HCM-5070		120V 60Hz	HCM-1000iHAC
HCM-5070.4F		230V 50-60Hz	HCM-1000iHAC.4F
HCM-5090.3F	1/2hp Manual	120V 60Hz	HCM-1000iH
HCM-5090.3F	1/2hp Manual	230V 60Hz	HCM-1000iH.2F
HCM-5090.3F	1/2hp Manual	230V 50Hz	HCM-1000iH.5F

HCM-2500 Series: 250,000 lbs. (1,112 kN)			
Controller	Pump Size	Electrical	Order Number
HCM-5080	1hp Automatic	120V 60Hz	HCM-2500iHA
HCM-5080.4F		230V 50-60Hz	HCM-2500iHA.4F
HCM-5070		120V 60Hz	HCM-2500iHAC
HCM-5070.4F		230V 50-60Hz	HCM-2500iHAC.4F
HCM-5090.3F	1/2hp Manual	120V 60Hz	HCM-2500iH
HCM-5090.3F	3/4hp Manual		HCM-2500iHP
HCM-5090.3F	1/2hp Manual	230V 60Hz	HCM-2500iH.2F
HCM-5090.3F	3/4hp Manual		HCM-2500iHP.2F
HCM-5090.3F	1/2hp Manual	230V 50Hz	HCM-2500iH.5F
HCM-5090.3F	3/4hp Manual		HCM-2500iHP.5F

HCM-3000 Series: 300,000 lbs. (1,334 kN)			
Controller	Pump Size	Electrical	Order Number
HCM-5080	1hp Automatic	120V 60Hz	HCM-3000iHA
HCM-5080.4F		230V 50-60Hz	HCM-3000iHA.4F
HCM-5070		120V 60Hz	HCM-3000iHAC
HCM-5070.4F		230V 50-60Hz	HCM-3000iHAC.4F
HCM-5090.3F	1/2hp Manual	120V 60Hz	HCM-3000iH
HCM-5090.3F	3/4hp Manual		HCM-3000iHP
HCM-5090.3F	1/2hp Manual	230V 60Hz	HCM-3000iH.2F
HCM-5090.3F	3/4hp Manual		HCM-3000iHP.2F
HCM-5090.3F	1/2hp Manual	230V 50Hz	HCM-3000iH.5F
HCM-5090.3F	3/4hp Manual		HCM-3000iHP.5F

HCM-4000 Series: 400,000 lbs. (1,780 kN)			
Controller	Pump Size	Electrical	Order Number
HCM-5080	1hp Automatic	120V 60Hz	HCM-4000iHA
HCM-5080.4F		230V 50-60Hz	HCM-4000iHA.4F
HCM-5070		120V 60Hz	HCM-4000iHAC
HCM-5070.4F		230V 50-60Hz	HCM-4000iHAC.4F
HCM-5090.3F	3/4hp Manual	120V 60Hz	HCM-4000iHP
HCM-5090.3F	3/4hp Manual	230V 60Hz	HCM-4000iHP.2F
HCM-5090.3F	3/4hp Manual	230V 50Hz	HCM-4000iHP.5F
HCM-720	3/4hp Manual	120V 60Hz	HCM-4000i7P
HCM-720	3/4hp Manual	230V 60Hz	HCM-4000i7P.2F
HCM-720	3/4hp Manual	230V 50Hz	HCM-4000i7P.5F

HCM-5000 Series: 500,000 lbs. (2,224 kN)			
Controller	Pump Size	Electrical	Order Number
HCM-5080	1hp Automatic	120V 60Hz	HCM-5000iHA
HCM-5080.4F		230V 50-60Hz	HCM-5000iHA.4F
HCM-5070		120V 60Hz	HCM-5000iHAC
HCM-5070.4F		230V 50-60Hz	HCM-5000iHAC.4F
HCM-5090.3F	3/4hp Manual	120V 60Hz	HCM-5000iHP
HCM-5090.3F	3/4hp Manual	230V 60Hz	HCM-5000iHP.2F
HCM-5090.3F	3/4hp Manual	230V 50Hz	HCM-5000iHP.5F

HCM-5000P Masonry Prism Series: 500,000 lbs. (2,224 kN)			
Controller	Pump Size	Electrical	Order Number
HCM-5080	1hp Automatic	120V 60Hz	HCM-5000PiHA
HCM-5080.4F		230V 50-60Hz	HCM-5000PiHA.4F
HCM-5070		120V 60Hz	HCM-5000PiHAC
HCM-5070.4F		230V 50-60Hz	HCM-5000PiHAC.4F
HCM-5090.3F	3/4hp Manual	120V 60Hz	HCM-5000PiHP
HCM-5090.3F	3/4hp Manual	230V 60Hz	HCM-5000PiHP.2F
HCM-5090.3F	3/4hp Manual	230V 50Hz	HCM-5000PiHP.5F

Compression Machine Travel Limit Switch
An electrical switch that prevents the hydraulic piston from going beyond its maximum travel point.

Limit Switch, HCM-2500 Series	HCM-TM0101
Limit Switch, HCM-3000 Series	HCM-TM0106
Limit Switch, HCM-4000 Series	HCM-TM0100
Limit Switch, HCM-5000 Series	HCM-TM0102

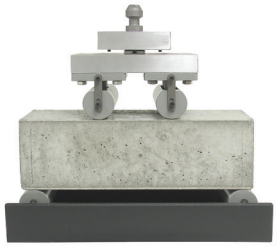
Ship wt. 3 lbs. (1.4kg)


HCM-0101


HCM-0113


HCM-0112A


HCM-0107P


HCM-0119B

Cylinder Platens
ASTM C39, AASHTO T22

Used when testing 6" (152 mm) or 4" (101 mm) diameter concrete cylinders in compression. Platen is manufactured from steel with all components plated for corrosion resistance.

Its bearing platen is 6.5" (165 mm) in diameter, through-hardened to HRC 55 or greater, plane to .0005" (.02 mm), has scribed concentric circles, and is hard nickel plated for wear resistance.

Note: An optional spacer is required for testing 4" (101 mm) diameter cylinders.

Machines	HCM-2500	HCM-3000
Platen	HCM-0101	HCM-0104
Machines	**HCM-4000**	**HCM-5000**
Platen	HCM-0101	HCM-0101

Cylinder Platens **see chart above**

Ship wt. 40 lbs. (18.1kg)

6" (152mm) Cube Platen Test Sets
ASTM C109, C1604, C39, AASHTO T22, T106

Used for testing 6" (152 mm) concrete cubes and cylinders in compression.

Cube test set consists of a 6.5" (165mm) square, spherically-seated upper platen assembly.

The platen bearing blocks are through-hardened to HRC 55 or greater, plane to .0005" (.012 mm) in any 6" (152 mm) area, has concentric circles for easier centering of cylinders and is hard nickel-plated for wear and corrosion resistance.

Kit includes; spherical seated platen assembly and spacer. Note: A 6.5" (152 mm) square lower platen is supplied with MA-0113 cube set for use in HCM-2500 series machines

Machines	HCM-2500	HCM-3000
Set	HCM-0113	HCM-0111
Platen, Upper	HCM-0113X	HCM-0111X
Machines	**HCM-4000**	**HCM-5000**
Set	HCM-0116	HCM-0116
Platen, Upper	HCM-0116X	HCM-0116X

6" (152mm) Cube Platen Set **see chart above**

2500 Platen — Ship wt. 38 lbs. (17.2kg)

3000 Platen — Ship wt. 116 lbs. (52.6kg)

4000 & 5000 Platen — Ship wt. 100 lbs. (45.3kg)

2" (50mm) Cube Platen Test Sets
ASTM C109, C1604, C39, AASHTO T22, T106

Used for testing 2" (50 mm) cubes and 3" (76 mm) diameter cylinders and cores in compression. Cube test set consists of a 3.125" (80mm) diameter, spherically-seated upper platen assembly and a lower pedestal with a 2.83" (72mm) diameter bearing block surface used for positioning the cube sample at the correct height for testing.

The bearing blocks of the upper platen are hardened to 60 HRC and plane to .0005" (.01 mm) and hard plated for corrosion resistance.

The upper bearing block is closely held in its spherical seat, but is free to tilt in any direction and seat securely under load. The bearing blocks are removable and replaceable.

The platen is easily installed in the upper crosshead of the load frame and is securely held in place by either the holding stem, hex bolt or draw rod system.

Spacers are required for testing 3" diameter cylinders or cores. Cube pedestal is not used when testing cylinders or cores.

Machines	HCM-0030	HCM-2500
Set	HCM-0112SA	HCM-0112A
Platen, Upper	HCM-0023L	HCM-0023L
Platen, Lower	HCM-0022SA	HCM-0022A
Machines	**HCM-3000**	**HCM-4000**
Set	HCM-0114A	HCM-0115A
Platen, Upper	HCM-0023N	HCM-0023
Platen, Lower	HCM-0022A	HCM-0022A
Machines	**HCM-5000**	
Set	HCM-0115A	
Platen, Upper	HCM-0023	
Platen, Lower	HCM-0022A	

2" (50mm) Cube Platen Set **see chart above**

Ship wt. 14lbs. (6.3kg)

Masonry Platens
ASTM C140, C1314

Masonry platens feature large diameter spherical disk and seat assemblies, and platen bearing surface plane to .001" (.025 mm) in any 6" (152 mm) direction, through hardened to HRC 60 and plated for wear and corrosion resistance. The bearing block is held securely in its seat assembly by a series of heavy duty springs and safety links which allow it to rotate freely and seat under load.

The HCM-0106 and HCM-0106.3 are used to test masonry units up to 8" (203 mm) wide. Both items are supplied with an 8" wide x 16" long bottom bearing plate through-hardened to HRC 60 and plated for corrosion resistance.

The HCM-0107P can be used to test masonry units up to 12" (305 mm) wide.

NOTE: HCM-0106 and HCM-0106.3 platens do not meet ASTM C140 and C1314 Specifications.

Machines	HCM-2500	HCM-3000
Platen	HCM-0106	HCM-0106.3
Machines	**HCM-4000**	**HCM-5000**
Platen	HCM-0107P	HCM-0107P

Masonry Platen **see chart above**

Ship wt. 135 lbs. (61.2kg)

Flexural Beam Attachment
ASTM C78, C293, AASHTO T97, T77

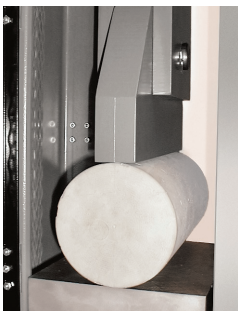
Used to determine the modulus of rupture of center or third-point beams with a depth of 6" (150 mm). The upper heads load bearing blocks are easily changed for either a center or third-point testing configuration. Bottom support blocks are set in the lower support channel with a fixed 18" (457 mm) span length.

Bearing blocks are spring-loaded to hold them in contact with the pivot balls and rod, as required by ASTM specifications. These beam attachments can be used with 4" x 4" x 16" and 6" x 6" x 18" beams.

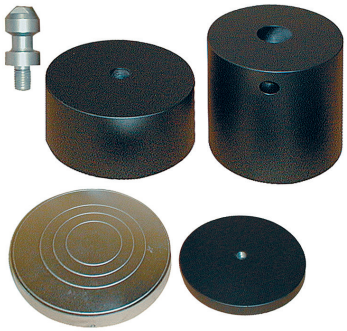
Machines	HCM-2500	HCM-3000
Attachment	HCM-0119B	HCM-0117B
Machines	**HCM-4000**	**HCM-5000**
Attachment	HCM-0119B	HCM-0119B
Machines	**HCM-0030**	
Attachment	HCM-0119B	

Flexural Beam Attachment **see chart above**

Ship wt.134 lbs. (60.7kg)



HCM-0120



HCM-00127

HCM-0135

HCM-HP4014

Cylinder Splitting Set

ASTM C496, AASHTO T198

The cylinder splitting head has a bearing contact area of 12" (304 mm) long by 2" (50 mm) wide, its surface is machined plane to .001" (.025 mm) and has a scribed center line of the face of the bar for easier centering of test samples.

- Used to determine the splitting tensile strength of concrete cylinders.

An optional splitter spacer assembly HCM-122A bolts to the top of the fixture, to allow testing of 4" x 8" cylinders (New models only).

Note: A lower bearing plate 12 ½" (317 mm) long by 7" (178 mm) wide is supplied with HCM-0120 Splitting Test Set for use in HCM-2500 series machines.

Machines	HCM-2500	HCM-3000
Splitting Set	HCM-0120	HCM-0124
Machines	**HCM-4000**	**HCM-5000**
Splitting Set	HCM-0123	HCM-0123

Cylinder Splitting Set — see chart above

HCM-0120 — Ship wt. 173 lbs. (69kg)

HCM-0123, HCM-0124 — Ship wt. 240 lbs. (108.8kg)

Splitter Spacer Assembly

An optional splitter spacer assembly bolts to the top of the fixture, to allow testing of 4" x 8" cylinders.

Note HCM-0122A spacer assembly can only be used on Cylinder Splitters purchased after 7-14-2022.

Splitter Spacer Assembly — HCM-0122A

Ship wt. 5lbs. (2.2kg)

Spacers for Platen Adjustment

Spacers are used with test platens to adjust the vertical working clearance height inside a machines load frame, for testing samples of various types and sizes to prevent over-extension of the load frames piston. They are manufactured from steel and machined plane on both ends to maintain a parallel alignment between spacers and test platens. Spacers are painted for corrosion resistance. Spacers are available in four model types; three model types for mounting against the machines upper crosshead by the holding stem, socket head bolt or draw rod methods, and one model type that sits on the machines lower crosshead used with a bearing platen.

Spacers — see chart below

Brick Platen Assembly

ASTM C39, C67, AASHTO T67

The brick platen assembly is designed for testing brick in compression. The set consists of an upper spherically-seated platen and a lower platen. The upper platen is 6.5" (165mm) wide x 8" (203mm) long x 1.875" (48mm) thick, through-hardened to HRC 60 or better, plane to .0005" (.02mm) and hard-plated for wear and corrosion resistance. The platen is closely held in its spherical seat, but in such a manner as to allow the contact platen to tilt freely and seat securely under load.

The bottom bearing block is used beneath the test specimen to minimize wear on the lower machine platen. It is 8" (203mm) long x 6.5" (165mm) wide x 1.875" (48mm) thick, through-hardened to HRC 60 or greater, plane to .0005" (.02mm) and is hard-plated for wear and corrosion resistance.

Optional spacers are required to close the vertical opening of the machine when testing bricks.

Brick Platen Assembly — HCM-00127

Ship wt. 100 lbs. (45kg)

Cylinder Loading Shelf

Auxiliary Cylinder Loading Shelf is available for use with HCM-2500 Series machines.

Cylinder Loading Shelf — HCM-0135

Ship wt. 40lbs. (18.4kg)

Feeler Gauge

Feeler gauges are used for precise alignment of the base and platen.

Feeler Gauge, .001 x 12" — HCM-CA0481

Feeler Gauge Set — HCM-CA0485

Ship wt. 6lbs. (2.7kg)

Selector Valve

The HCM-HP4014 selector valve accessory provides switching capabilities between two separate compression frames when using a single pump for both frames. This valve can be used with either the HCM-5080 or HCM-5070 Humboldt automatic controllers or our HCM-5090.3F digital indicator.

Selector Valve — HCM-HP4014

Ship wt. 7lbs. (3.2kg)

AbleCable (i7 Digital Indicator)

Serial/USB cable, which allows you to transfer load vs. time graph with test date, I.D. number and test data directly into a spread sheet program. This allows the user to transfer data from an individual test to a spread sheet to create a X-Y load vs. time graph with the graph wizard. Requires user to set initial column headings. For use with the i7 digital indicator only.

AbleCable — HCM-0718

Ship wt. 0.4lbs. (0.181g)

AbleCable Extension, 25' (7.6m) — HCM-0707.25

Ship wt. 5lbs. (2.2kg)

Compression Machine Travel Limit Switch

An electrical switch that prevents the hydraulic piston from going beyond its maximum travel point.

Limit Switch, HCM-2500 Series — HCM-TM0101

Limit Switch, HCM-3000 Series — HCM-TM0106

Limit Switch, HCM-4000 Series — HCM-TM0100

Limit Switch, HCM-5000 Series — HCM-TM0102

Ship wt. 3 lbs. (1.4kg)

Platens and Spacers for Concrete Compression Frames

Cylinders	Item	HCM-0030	HCM-1000	HCM-2500	HCM-3000	HCM-4000	HCM-5000	Ship Wt.
4 x 8 in.	Platen	NA	Supplied	Supplied	Supplied	Supplied	Supplied	39 lb/17.7kg
	Spacer	NA	HCM-0639	HCM-0639	HCM-0662	HCM-0653	HCM-0653	34.4 lb/15.6kg
3 x 6 in.	Platen	HCM-0023L	HCM-0023L	HCM-0023L	HCM-0023N	HCM-0023	HCM-0023	45 lb/20.1kg
	Spacer	HCM-0604 (2")*	HCM-0639	HCM-0639	HCM-0661	HCM-0654	HCM-0654	35 lb/15.8kg
2 x 4 in.	Platen	HCM-0023L	HCM-0023L	HCM-0023L	HCM-0023N	NR	NR	13 lb/5.8kg
	Spacer	HCM-0639 (4")*	HCM-0615	HCM-0615	HCM-0666	NR	NR	17 lb/3.1kg

*Also requires an HCM-0600 lower platen.

H-2912L

H-2911

H-2918D

Compressometer / Extensometers	Dial Gauge	Digital Indicator	LSCT
6" x 12" (152 x 305mm) cylinders	H-2912	H-2912D	H-2912L
4" x 8" (102 x 203mm) cylinders	H-2917	H-2917D	H-2917L
3" x 6" (76 x 152mm) cylinders	H-2919	H-2919D	H-2919L

Compressometers	Dial Gauge	Digital Indicator	LSCT
6" x 12" (152 x 305mm) cylinders	H-2911	H-2911D	H-2911L
4" x 8" (102 x 203mm) cylinders	H-2916	H-2916D	H-2916L
3" x 6" (76 x 152mm) cylinders	H-2918	H-2918D	H-2918L

Data Acquisition Upgrade for Existing Compression Machines and Compressometer-Extensometer Testing

Looking to upgrade your existing manually-operated compression machine or add compressometer/extensometer testing capabilities to it? Now you can easily upgrade your frame with Humboldt's HCM-5090 Digital Indicator. The HCM-5090's four, independent data acquisition channels provide you with enough options to control all your data needs with one digital indicator.

A typical setup would provide the logging of Load, Stress and Rate from one compression machine in Channel One. Channels Two and Three would provide inputs for measuring displacement— allowing you to perform extensometer and compressometer testing. Channel Four would provide another input for logging Load, Stress and Rate, perfect for an additional load frame set up for something like flexural testing or cubes. All this information can be simultaneously tracked by the HCM-5090.3F. For more information on the HCM-5090.3F, see page 187. **If you are interested in an automatic solution upgrade, you should look at the HCM-5080 and HCM-5070 automatic controllers on page 186.**

Digital Indicator, 120/220V 50/60Hz **HCM-5090.3F**

Ship wt. 6lbs. (2.7kg)

HCM-5090.3F

Strain Transducer

ASTM C469

Strain transducer: 0.4" (10mm)

Strain Transducer **HM-2310.04**

Ship wt. 1lbs. (453g)

HM-2310.04

Pressure Transducer

Pressure transducer: 10,000 psi with cable and plug for HCM-5090.3F

Pressure Transducer **HCM-4177**

Ship wt. 1lbs. (453g)

HCM-4177

Compressometer-Extensometers

ASTM C469

Compressometer-extensometers are used to determine Poisson's ratio and Young's modulus during a compression test. This device contains a third, center yoke with a hinge dividing it into two equal segments. The middle yoke is hinged to permit rotation of the two segments of the yoke in the horizontal plane. Indicator gives deformation readings. Second indicator is furnished for compressometer section. Unit measures changes in length and diameter. All H-2900 series compressometers may be ordered with dial gauges, digital indicators or strain transducers, see charts above. Digital indicators and LSCT models can be used with data acquisition systems through the use of our mini-loggers, see right.

Compressometer-Extensometers **see chart above**

Ship wt. 9.6 lbs. (4.3kg)

Compressometers

ASTM C469

The compressometer is used for evaluating the chord modulus of elasticity (Young's modulus) of concrete cylinders while undergoing compression testing. The compressometer includes two, cast-aluminum alloy yokes, mounting and central points, stainless steel control rods. Models are available with a dial gauge— with a range of 0.2" (5.08mm) and minimum graduations of .0001 (.0025mm), as well as with a digital indicator or a LSCT transducer. Digital indicators and LSCT models can be used with data acquisition systems through the use of our mini-loggers, see right.

Compressometers **see chart above**

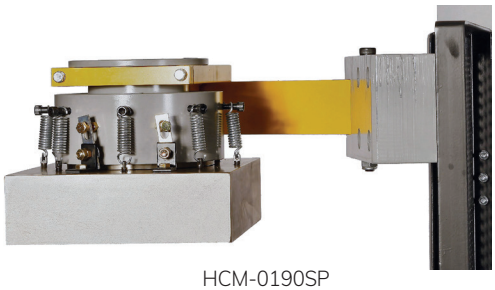
Ship wt. 10 lbs. (4.5kg)

Draw rod is not supplied with manually-controlled machines and must be ordered separately for automated machines.

shown with optional Platen Carrier Bracket

HCM-5000PiHP

HCM-0802



HCM-0190SP

Masonry Series Compression Machines
ASTM C39, C140, C1314, E4, AASHTO T22

Masonry series machines are available in a single capacity of 500,000 (2224kN) with a testing range from 1 to 100% of machine capacity, with an accuracy of ±0.5% of indicated load. These compression testing machines feature two-block masonry prism configuration of full-sized blocks up to 12" (304 mm) wide.

- Tests blocks, masonry prisms, pavers and retaining wall units
- 500,000 (2224kN) testing range with accuracy of ±0.5% of indicated load
- Machines up to 800,000 (3559kN) are also available, please inquire.
- Machines include platens for testing 6" x 12" (150 x 300mm) cylinders. Order appropriate platen set if 4" x 8" (100 x 200mm) cylinders testing is required.
- Draw rods are not included with manually-operated machines. For automated machines the draw rod is ordered separately.

The heavy-duty load frames use the same proven design and manufacturing process found in all of our machines, with a wide horizontal opening and large compression platen table for easier loading of heavy specimens. The machine's included mounting stand also places the lower platen at a convenient working height.

These machines' unique lower, dual-platen system features a wear platen through-hardened to 60 HRC or greater and is designed for fast and easy maintenance without the need for expensive rental equipment to remove the platen, unlike the cumbersome single-plate systems used in competitive units.

Changing test platens and spacers can be quick, easy, and safe with our draw rod accessory, used to adjust the load frame's inside vertical working height, as well as the optional carrier bracket system, which features a heavy-duty arm mounted on the rear left corner of the load frame that pivots on two hinged joints. When the block platen is not being used, it can be conveniently stored on the bracket's arm. Includes mounting stand and limit switch.

Optional test platens and accessories add to the versatility of these prism machines, see pages 197-198. See Page 196 for models and ordering information.

HCM-5000P Series Prism Machines

Ship wt. 1,700 lbs. (771kg)

Draw Rod Assembly

For machines with HCM-5080 and HCM-5070 the Draw Rod Assembly must be ordered separately. The draw rod system is used to adjust the inside vertical working height of the load frame, to allow for testing samples of different heights through the use of spacers and test platens. The system is made up of a steel hand wheel with internal ball bearings and a threaded rod that is easily raised or lowered inside the load frame for height adjustment. Spacers slide onto the rod, the rod is threaded into the test platen and the assembly is then tightened against the cross-head.

Draw Rod Assembly **HCM-0802**

Ship wt. 38 lbs. (17.3kg)

Platen Carrier Brackets

The Carrier Bracket is used for safer removal and mounting of the block platen assembly inside the load frame, and should be considered a must have option when testing masonry units.

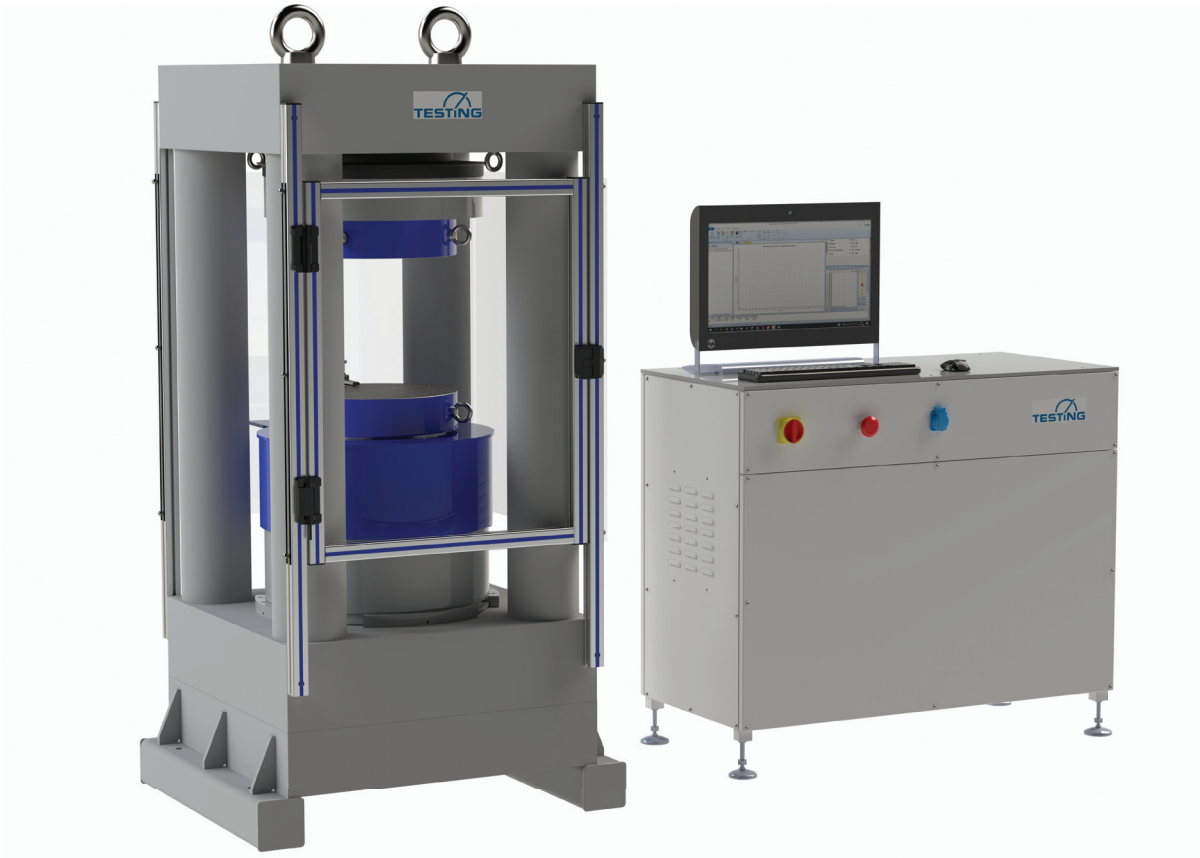
The brackets heavy-duty arm is mounted on the rear left hand corner of the load frame and pivots on two hinged joints, allowing the complete assembly to rotate smoothly into and out of the load frame. When not in use, platen and arm are conveniently stored on rear of machine.

HCM-4000 Carrier Bracket **HCM-0190SP**

Ship wt. 120 lbs. (54.4kg)

HCM-5000 Carrier Bracket **HCM-0190P**

Ship wt. 155 lbs. (70.3kg)



High-Performance 3000 / 4000 / 5000 / 6000kN Computer-Controlled Compression Machines ASTM C39, AASHTO T22; DIN EN 12390-3, 12504-1, 12390-6, EN 12390-13, EN 206

Compression testing machines for compressive strength testing of light, normal and heavy concrete, as well as ultra-high performance concrete (UHPC), according to DIN EN 7500-1 and EN 12390-4 in a very wide measuring range class 1.

- Extremely solid and stiff 4-column frame
- Large area test chamber protection made of polycarbonate, protects against specimen splinters caused by explosion fractures
- High-quality servo valve for pressure or volume flow control
- Powerful hydraulic unit
- Fast lift and bypass function for time-saving positioning of the test cylinder
- DOLI EDCi Control electronics fully-automatic test procedures suitable for force, displacemen-tor deformation controlled tests with predefined loading speeds
- Automatic break detection and free adjustable test end conditions
- Readout and export of measurement data

Test frame

Test frame with hydraulic cylinder for compression strength test in strain gauged column according to DIN EN 12390-4 and class 1 according to DIN EN 7500-1 in the specified measuring range. In the basic configuration, the framework is designed for force-controlled tests, whereby the force value is determined via a strain gauge pressure sensor. Optionally a position measuring system can be installed. The massive steel frame is extremely stiff, the columns are tensioned without any play. The hydraulic cylinder is made from solid material and is attached utilizing an external clamp holder. The end position is monitored by a mechanical limit switch.

Samples: Cubes (edge length): 200, 150, 100mm (auxiliary platens required) Cylinders (height) 320, 300, 200mm Devices (height) up to 330mm e.g. splitting tensile. Other samples possible.

Safety: The test frame with a control cabinet fulfills all requirements according to DIN EN 12390-4 and DIN EN ISO 7500-1.

The complete machine is delivered with an EC declaration of conformity and operating instructions according to the Machinery Directive 2006/42 / EG. Large area of the testing machine is equipped with an impact-resistant, transparent test room protection made of polycarbonate. The position of the protective door is monitored with a tamper-proof, 2-channel security hinge. When the door is open, the hydraulic unit is redundantly depressurized.

Control cabinet SV-EDCi

Control cabinet with main switch incl. under-voltage release and emergency stop switch, as well as a Schuko plug on the front panel. Electrical Connection: 1~240V, 50/60Hz, 3~480V, 50/60Hz.

Hydraulic system

The powerful hydraulic unit with oil tank incl. all necessary safety, control and directional valves according to DIN 4413. It generates a maximum system pressure of 350 bar A fine 3µm pressure filter in the pressure line is filtering the hydraulic oil and protecting the system components. Incl. filter pollution, oil level and temp switch (70 ° C) The hydraulic unit is inside of the control cabinet providing low noise operation <68 dB (A). A high-quality servo valve or variable-frequency drive for pressure or volume flow control enables the most precise force and stroke control (closed-loop control). An additional low-pressure pump for the quick stroke function and an oil-air cooler (for long test scenarios).

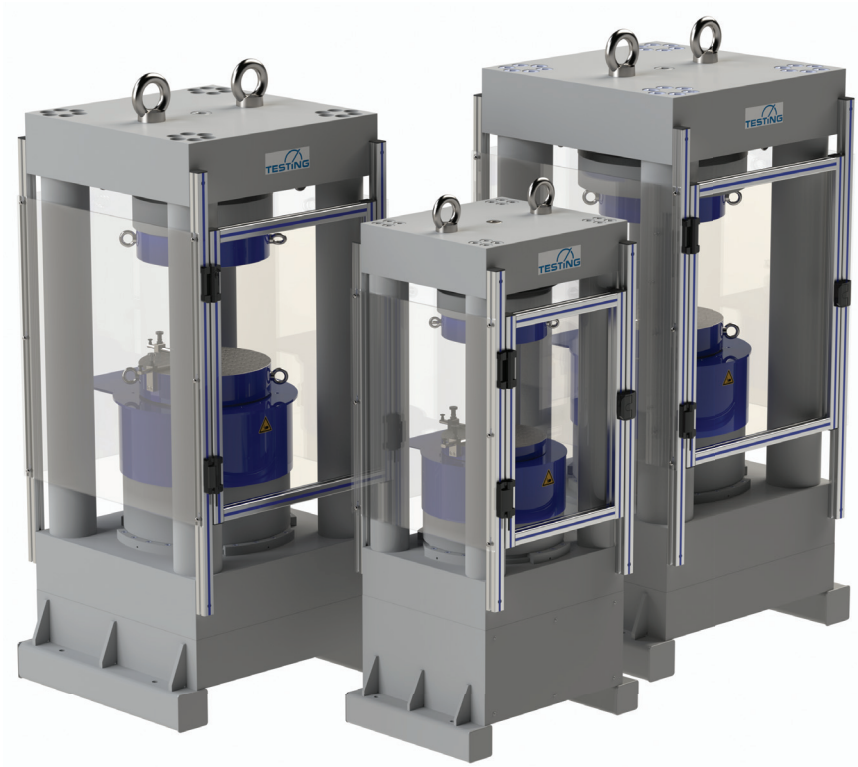
Measuring and control electronics

A Doli EDCi controller is used for universal digital measuring and control electronics for these testing machines. This is installed in the control cabinet and can optionally be operated with a remote control. The control electronics enables a fully automatic test execution with given loading speeds for force-controlled tests (position and strain controlled tests optional). With sensitive and adjustable break detection, the failure of the sample is detected early. Communication to the PC: Ethernet socket / USB 2.0 configuration Remote maintenance via TeamViewer function (PC required).

Technical data EDCi

Expansion option: min. 2 channels

Supply voltage + 24 VDC, 1.5 A Control output ± 10V A / B pulse train to control the subsequent electronics Automatic sensor detection by intelligent sensor connector SGS Calibration data is saved in the sensor plugs.



Specification	HCM-3100	HCM-4100
Capacity	674,426 lbf. (3000kN)	899,235 lbf (4000kN)
Force measuring range, class 1	13488 - 674426 lbf (60 – 3000 kN)	17984- 899235 lbf (80 – 4000 kN)
Stroke	3.93" (100mm)	3.93" (100mm)
Chamber height	12.4" (315mm)	13.39" (340mm)
Column spacing front	14.17" (360mm)	17.72" (450mm)
Column spacing side	10.63" (270mm)	17.72" (450mm)
Platen dimensions	12.6" (Ø320mm)	16.34" (Ø415mm)
Frame Dimensions	29.5" x 26" x 62.2" 750 x 660 x 1580 mm	36.6" x 33.9" x 77.2" 930 x 860 x 1960 mm
Control Cabinet Dimensions	47.25" x 22.45" x 41" 1200 x 570 x 1040 mm	47.25" x 22.45" x 41" 1200 x 570 x 1040 mm

Specification	HCM-5100	HCM-6100
Capacity	1,124,044 lbf (5000kN)	1,348,854 lbf (6000kN)
Force measuring range, class 1	22481- 1,124,044 lbf (100 – 5000 kN)	26977 - 1,348,854 lbf (120 – 6000 kN)
Stroke	3.93" (100mm)	3.93" (100mm)
Chamber height	13.39" (340mm)	13.39" (340mm)
Column spacing front	17.72" (450mm)	21.85" (555mm)
Column spacing side	17.72" (450mm)	17.72" (450mm)
Platen dimensions	16.34" (Ø415mm)	16.34" (Ø415mm)
Frame Dimensions	39" x 36.2" x 79.1" 990 x 920 x 2010 mm	39.4" x 35.4" x 66.9" 1000 x 900 x 1700 mm
Control Cabinet Dimensions	47.25" x 22.45" x 41" 1200 x 570 x 1040 mm	47.25" x 22.45" x 41" 1200 x 570 x 1040 mm

3000kN (674,426 lbs.) Compression Machines

ASTM C39, AASHTO T22; DIN EN 12390-3, 12504-1, 12390-6, EN 12390-13, EN 206

Compression testing machines for compressive strength testing of light, normal and heavy concrete, as well as ultra-high performance concrete (UHPC), according to DIN EN 7500-1 and EN 12390-4.

3000kN Compression Machine, Servo-controlled **HCM-3100.7F**

3000kN Compression Machine, Variable Drive **HCM-3101.7F**

Ship wt. 3640 lbs. (1650kg)

4000kN (899,235 lbs.) Compression Machine, Servo-controlled

ASTM C39, AASHTO T22; DIN EN 12390-3, 12504-1, 12390-6, EN 12390-13, EN 206

Compression testing machines for compressive strength testing of light, normal and heavy concrete, as well as ultra-high performance concrete (UHPC), according to DIN EN 7500-1 and EN 12390-4.

4000kN Compression Machine, Servo-controlled **HCM-4100.7F**

Ship wt. 8820 lbs. (4000kg)

5000kN (1,124,044 lbs) Compression Machine

ASTM C39, AASHTO T22; DIN EN 12390-3, 12504-1, 12390-6, EN 12390-13, EN 206

Compression testing machines for compressive strength testing of light, normal and heavy concrete, as well as ultra-high performance concrete (UHPC), according to DIN EN 7500-1 and EN 12390-4.

5000kN Compression Machine, Servo-controlled **HCM-5100.7F**

Ship wt. 11025 lbs. (5000kg)

6000kN (1,348,853 lbs.) Compression Machine

ASTM C39, AASHTO T22; DIN EN 12390-3, 12504-1, 12390-6, EN 12390-13, EN 206

Compression testing machines for compressive strength testing of light, normal and heavy concrete, as well as ultra-high performance concrete (UHPC), according to DIN EN 7500-1 and EN 12390-4.

6000kN Compression Machine, Servo-controlled **HCM-6100.7F**

Ship wt. 13230 lbs. (6000kg)

Intermediate Cube Platen Set, 200 and 150mm

DIN EN 12390-4

For cubes 200mm (7.87") and 150mm (5.9"): Includes (1) 210 x 210 x 50mm (8.26" x 8.26" x 1.97") and (1) 160 x 160 x 75mm (6.3" x 6.3" x 2.95"). To be place on lower machine platen, including sample centering hardened > 58 HRC flatness < 0,03mm roughness Ra 0,4 bis 3,2 µm contact surfaces are parallel < 0,05mm.

Inter. Cube Platen Set, 200 and 150mm **HCM-5100.5**

Ship wt. 14lbs. (6.3kg)

Intermediate Cube Platen Set, 100mm

DIN EN 12390-4

For testing cubes 100mm (3,93") (only in combination with 30,0700) hardened > 58 HRC flatness < 0,03mm roughness Ra 0,4 to 3,2 µm contact surfaces are parallel < 0,05mm.

Inter. Cube Platen Set, 100mm **HCM-5100.6**

Ship wt. 14lbs. (6.3kg)

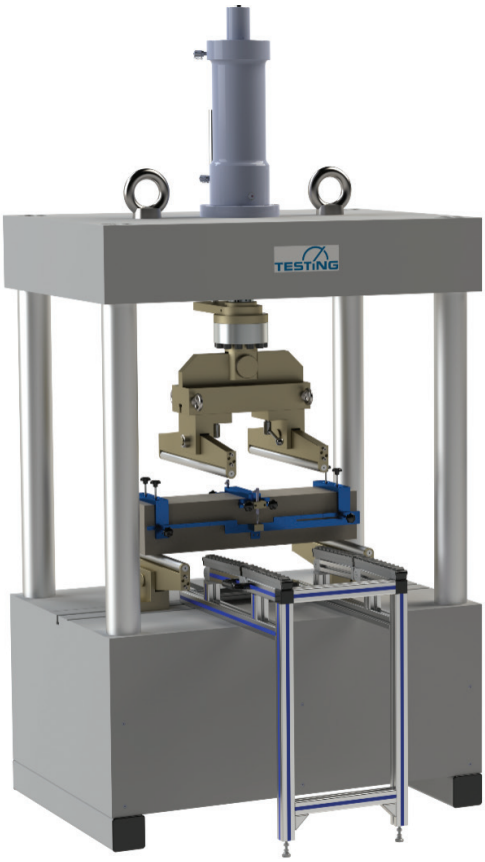
Tensile Splitting Device

EN 1338

Convex pressure cutting Test chamber height adjustable from 70 up to 170mm. Diameter of pressure blades 75mm. Length of pressure blades 330mm. Including distance piece 50mm (w/d/h) 350x245x285 max. mm.

Tensile Splitting Device **HCM-5100.7**

Ship wt. 25lbs. (11.3kg)



HCM-1200.7F.3

Specification	HCM-1200.7F.3
Capacity	67,443 lbf (300kN)
Force Measuring Range	675 – 67443 lbf (3 – 300kN) Class 1
Stroke	3.93" (250mm)
Column Spacing, Front	37.8" (960mm)
Column Spacing, Side	24.0" (610mm)
Bending Roll Dims	1.18" x 20.08" (ø30 x 510mm)
Distance, Upper Rolls	2.95 – 13.39" (75 –340mm)
Distance, Lower Rolls	3.15 – 40.16" (80 –1020mm)
Flex Machine (L x W x H)	47.3 x 33.5 x 96.5" (1200 x 850 x 2450mm)
Control Cabinet	47.25 x 22.45 x 41" (1200 x 570 x 1040mm)

Flexural Testing Machine For Fiber Reinforced Concrete

ASTM C496, C1550, C1609; EN 12390-5, EN 14651 CMOD, EN 14488-3, EN 14488-5

This 300kN (67443lbs.) Flexural Testing Machine is designed for the determination of the post-crack properties of steel fiber and fiber-reinforced concrete, concrete beams and shotcrete according to EN 7500-1 and EN 12390-4 in a very wide measuring range class 1.

- Suitable for high-precision force/displacement and deformation-controlled test procedures
- Automatic switching between the control modes in one test procedure
- Extremely solid and stiff 4-column frame with a maximal frame deformation of 2.8 MN/mm
- The upper bending roll is variable adjustable from 3- to 4-point bending
- Compression platens are adaptable

Double acting test cylinder in servo-slide quality with integrated displacement measurementIn the basic configuration, the framework is designed for force-, position- and strain-controlled tests, whereby the force value is determined via a strain gauge load cell (class 0.5). A position measuring system is installed in the cylinder by default. The massive steel frame is extremely stiff, the columns are tensioned without any play. A double-acting bending test cylinder with long piston stroke in servo-slide quality is mounted on the upper crossbeam. An anti-rotation lock prevents the twisting of the piston rod with the upper bending edge. The upper bending edge can easily convert from 3-Point to 4-point bending. Additional accessories like curb stamp, machine platens etc. can be adapted. The bending edges and beams for 3-point-bending and 4-point-bending are included.

Hydraulic system

The powerful hydraulic unit with 40L oil tank includes all necessary safety, control and directional valves according to DIN 4413. It generates a maximum system pressure of 350 bar and a volume flow of 1.2L / min. A fine 3µm pressure filter filters the hydraulic oil and protects system components. The hydraulic unit is inside the control cabinet producing very low noise levels (<66 dB). A high-quality servo valve for pressure or volume flow control enables the most precise force and stroke control (closed-loop control). An additional low-pressure pump for the oil-air cooler (for long test scenarios) provides 20 bar 6.2 L / min volume flow and fast lift function.

Measuring and Control Electronics

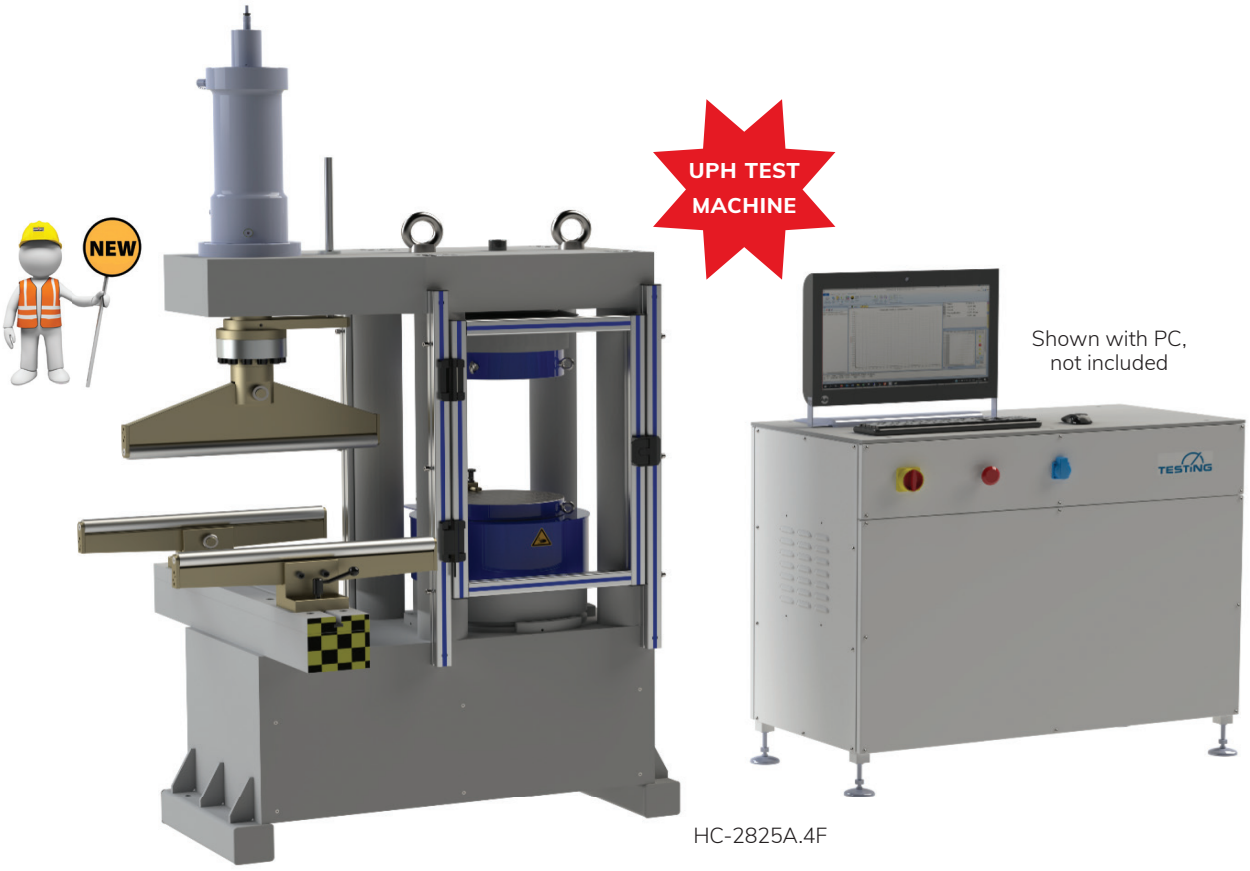
Machine uses a digital Doli EDCi20 controller. This is installed in the control cabinet and can optionally be operated with a remote control. The control electronics provide automatic testing with given loading speeds for force, displacement and strain-controlled tests with sensitive and adjustable break detection. Communication to the PC: Ethernet socket / USB 2.0 configuration. Remote configuration and remote maintenance via TeamViewer function (PC required).

Flexural Compression Machine for Testing Fiber-Reinforced Concrete

230V 50/60Hz, 3ph **HCM-1200.7F.3**

Ship wt. 9478lbs. (4300kg)

Description	Information	Part #
Machine Platen	Machine platen device for Ø215 acc. EN12390-4 spherical mounted	HCM-1200.5
Measuring Rods	For EN 14488-3, ASTM C1609 testing. Includes measuring probe.	HCM-1200.6
CMOD Clip-on Extensometer	For EN 14651 tests 5.0mm compressed gauge length +4mm/-1mm measuring range.	HCM-1200.7
Round Panel	For ASTM C1550, includes measuring sensor.	HCM-1200.8
Energy Absorption Device	For EN 14488-5, includes measuring sensor.	HCM-1200.9
Roller Conveyor	For sample insertion of concrete beams into the 4-column frame.	HCM-1200.10



HC-2825A.4F

Combined Compression/Flexural Compression Machine and Control Cabinet

ASTM C109, C348, C349, C39; DIN EN 12390-3, 12504-1, 12390-5, 12390-6, DIN EN 12390-13, EN 1338, 1339, 1340, EN 206

Combined compression/flexural machine for compressive and flexural strength testing of cement and concrete samples, as well as ultra-high performance concrete (UHPC). According to EN 7500-1 in a very wide measuring range class 1.

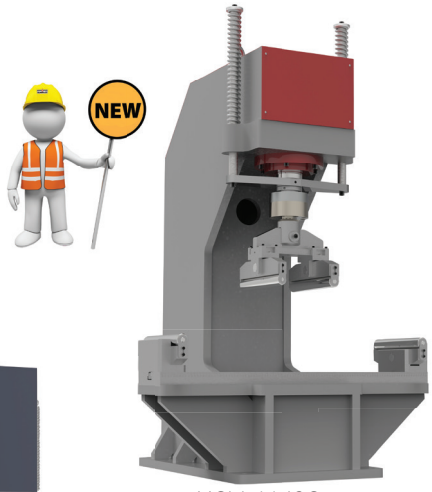
- Extremely solid and stiff, 4-column frame
- Space-saving unit consisting of compression and flexural test chamber
- Large area test chamber protection made of polycarbonate protects against specimen splinters caused by explosion fractures
- High-quality servo valve for pressure or volume flow control
- Powerful hydraulic unit
- Fast lift and bypass function for time-saving positioning of the test cylinder
- DOLI EDCi Control electronics, fully-automatic test procedures suitable for force, displacement or deformation controlled tests with predefined loading speeds
- Automatic break detection and free adjustable test end conditions
- Readout and export of measurement data
- Long piston stroke of 60mm with optimized test chamber height of 210mm for a wide range of application
- Force value detection via precise force transducers (DMS based)
- Various fixed test inserts or devices can be adapt into a machine to test according a large number of standards (ASTM / EN / BS etc.)
- DOLI EDCi Control electronics fully-automatic test procedures suitable for force, displacement or deformation controlled tests with predefined loading speeds
- Automatic break detection and free adjustable test end conditions
- Readout and export of measurement data
- **PC required, but not supplied**

Combined Compression/Flexural Compression Machine and Control Cabinet
3000kN/150kN – 230V 50/60Hz HC-2825A.4F

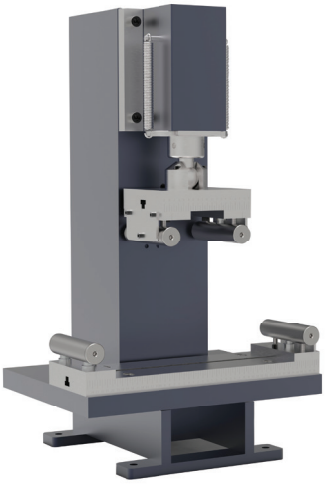
Ship wt. 1212.54 lbs. (550kg)

- * 3000/100kN, 3000/200kN and 3000/300kN options also available.

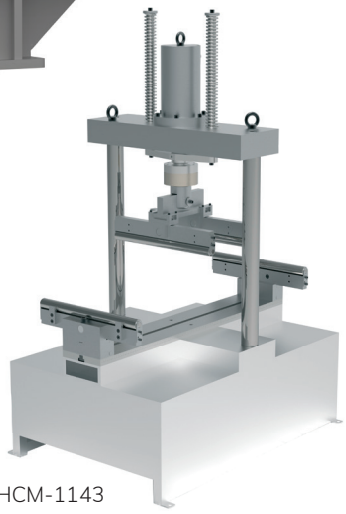
Combined Compression/Flexural Testing Machine and Control Cabinet	
Compression Side	
Capacity	674,426 lbf (3000kN)
Force measuring range, class 1	11240 - 674426 lbf (50 - 3000kN)
Stroke	3.93" (100mm)
Test chamber height	12.4" (315mm)
Column spacing front	14.1" (360mm)
Column spacing side	10.2" (260mm)
Machine platens dimension	12.6" (Ø320mm)
Bending Side	
Capacity	33,721 lbf (150kN)
Force measuring range, class 1	337 - 33,721 lbf (1.5 - 150kN)
Stroke	8.6" (220mm)
Distance between rolls	8.6" (220mm)
Dimension rolls	1.574" x 24.4" (Ø40 X 620mm)
Adjustable distance lower rolls	3.15" – 40.16" (80 - 850mm)
Dimensions: Frame Control cabinet	46.1" x 41" x 90.5" (1170 x 1040 x 2300mm) 47.25" x 22.45" x 41" (1200 x 570 x 1040mm)



HCM-1143C
HCM-1144C



HCM-1142



HCM-1143
HCM-1144

HCM-1144 Flexural Frame and a concrete compression machine controlled with a HCM-5070 Console Automatic Pump and Controller System.

HCM-1143 Flexural Frame controlled with a HCM-5080 Automatic Pump and Controller System mounted on a concrete compression machine.

Specification	HCM-1142	HCM-1143	HCM-1144
Capacity	(100kN)	(200kN)	(300kN)
Piston Stroke	2.95" (75mm)	1.96" (50mm)	8.66" (220mm)
Bending Roller Length	6.30" (160mm)	optional	20.10" (510mm)
Bending Roller Dia.	1.50" (38mm)	1.50 -0.78" (38-20mm)	1.6" (40mm)
Lower Roller Distance	29.50" (750mm)	35.40" (900mm)	40.1" (1020mm)
Overall Width	33.00" (840mm)	39.30" (1000mm)	26.40" (670mm)
Overall Depth	33.20" (845mm)	50.80" (1290mm)	53.90" (1370mm)
Overall Height	47.80" (1215mm)	50.80" (1290mm)	87.00" (2210mm)

Flexural Testing Frames

ASTM C78, C293; EN 12390-5,EN 1339, EN 1338

These Flexural Series Frames are designed to be used as auxiliary frames in conjunction with a concrete compression machine controlled by Humboldt's HCM-5080 or HCM-5070 Automatic Pump and Controller Systems. See page 187-196 for more information on Humboldt's Automatic Pump and Controller Systems.

These add-on flexural machines provide the optimum in testing performance and evaluation options, enabling you to get the best results from your test measurements.

They can be used to perform strength tests of beams and kerbs, splitting tests of cobblestone, and also three- or four-point tests. These frames support a hydraulic ram and upper sub-platen assembly incorporating a spherical seating. The upper and lower sub-platens will accept various specimen loading accessories, which are supplied separately, please inquire. The detached design of these flexural frames allows for enhanced setup options in the lab.

Flexural Machine, 100kN

Requires HCM-4177 Pressure Transducer, sold seperatly.

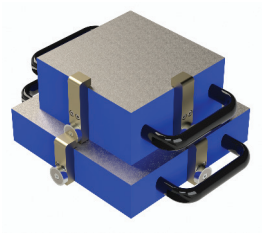
Flexural Machine, 100kN **HCM-1142**
Ship wt. 772lbs. (350kg)

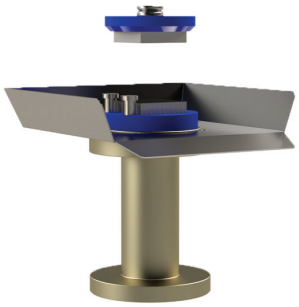
Flexural Machine, 200kN **HCM-1143**
Ship wt. 1014lbs. (460kg)

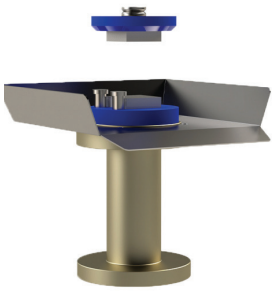
Flexural Machine, 300kN **HCM-1144**
Ship wt. 1102lbs. (500kg)

Flexural Machine, C-Type, 200kN **HCM-1143C**
Ship wt. 1014lbs. (460kg)

Flexural Machine, C-Type, 300kN **HCM-1144C**
Ship wt. 1102lbs. (500kg)


HC-2825A.8

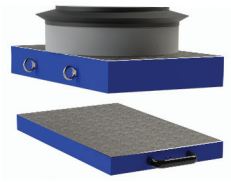

HC-2820A.4

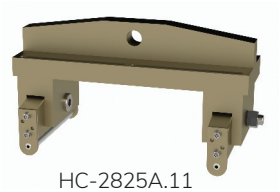

HC-2820A.6


HC-2820A.7


HC-2820A.5


HC-2825A.12


HC-2825A.9


HC-2825A.11


HC-2825A.13


H-3270

Intermediate Platens Set for 200mm and 150mm cubes (7.87", 5.9")
DIN EN 12390-4

Consists of (1) intermediate platen — 210 x 210 x 50mm (8.26" x 8.26" x 1.97") and (1) 160 x 160 x 575mm (6.3" x 6.3" x 2.95"). These hardened plates are placed on the lower machine platen, include a sample center ring and comply to DIN EN 12390-4. They are hardened >58 HRC with a flatness of <0.03mm, a roughness of Ra 0.4 bis 3.2µm and are parallel <0.05mm.

Intermediate Platens Set for Cubes 200mm & 150mm (7.87", 5.9") **HC-2825A.8**

Ship wt. 74.95 lbs. (34kg)

Intermediate platen for 100mm (3.93") Cubes
DIN EN 12390-4

Consists of (1) intermediate platen — 110 x 110 x 50mm (4.33" x 4.33" x 1.97"). These hardened plates are used in combination with HC-2825A.8 They are hardened >58 HRC with a flatness of <0.03mm, a roughness of Ra 0.4 bis 3.2µm and contact surfaces are parallel <0.05mm.

Intermediate Platen for 110mm (4.33")Cubes **HC-2825A.9**

Ship wt. 11.2 lbs. (5kg)

Machine Platen, Compression Side
Platen for use on the compression side. 20.4" x 13" (520 x 330mm)

Machine Compression Platen **HC-2825A.10**

Ship wt. 25 lbs. (11.3kg)

4-Point Bending Device
EN 12390-5

Adjustable from (2.8" to 9.8" (70-250mm). Height of specimen maximum: 7.8" (200mm). Blade dimensions: Length: 7" (180mm), Diameter: 0.78" (20mm).

4-Point Bending Device **HC-2825A.11**

Ship wt. 25 lbs. (11.3kg)

Machine Platen, Bending Side
EN 12390-4

Machine platen ø8.4" (215mm), spherical mounted for exchange with the upper bending edge.

Machine Platen, Bending Side **HC-2825A.12**

Ship wt. 25 lbs. (11.3kg)

Compression Device, 2" (50mm) cubes
ASTM C109

For testing 2" x 2" (50 x 50mm) cubes. Hardened >55 HRC.

Compression Device, Cubes **HC-2820A.4**

Ship wt. 25 lbs. (11.3kg)

Flexure Device, 6.3" (160mm) Prisms
ASTM C348

For testing 1.57" x 1.57" x 6.3" (40 x 40 x 160mm) prisms. Installation height: 185mm.

Flexure Device, Prisms **HC-2820A.5**

Ship wt. 25 lbs. (11.3kg)

Compression Device, 6.3" (160mm) Prisms
EN 196, EN 13892-2, EN 1012-11

For testing 1.57" x 1.57" x 6.3" (40 x 40 x 160mm) prisms. Hardened >55 HRC.

Compression Device, Prisms **HC-2820A.6**

Ship wt. 25 lbs. (11.3kg)

3-gang Mold
ASTM C348, ASTM C349

This mold is designed to produce 10" effective gauge length prism test bars. It features removable partitions, base, and end plates. The effective gauge length is measured from the inside end of the studs. The molds produce cement prism specimens that are 11.25" long. Including the studs, the outside to-outside length of the specimen is 11.625".

Material: Cold-rolled steel

3-gang Mold **H-3270**

Ship wt. 14.3 lbs. (6.5kg)

Flexure Device, 6.3" (160mm) Prisms
EN 196, EN 13892-2, EN 1012-11

For testing 1.57" x 1.57" x 6.3" (40 x 40 x 160mm) prisms.

Flexure Device, Prisms **HC-2820A.7**

Ship wt. 25 lbs. (11.3kg)

Curb Stone Stamp
EN 1340

Compression stamp, 1.6" (40mm) diameter with spherical bearing (calotte), hardened and ground.

Curb Stone Stamp **HC-2825A.13**

Ship wt. 25 lbs. (11.3kg)

CBR (California Bearing Ratio) Stamp
DIN EN 13286-47; TP BF-StB; SNV 670 320a

CBR stamp, 2" (50mm) diameter with hardened stamp.

CBR Stamp **HC-2825A.14**

Ship wt. 25 lbs. (11.3kg)

PC Software
PC software for machine operation.

PC Software **HC-2820A.9**

Ship wt. 25 lbs. (11.3kg)

H-3030A

H-3030CL

H-3031CL

Concrete Beam Tester for 6" x 6" Beams

Humboldt's Portable, Concrete Beam Testers are a great quality control tool for contractors, DOTs and consultants for quickly and accurately determining flexural strengths of concrete using 6" x 6" cross-section test beams. These Beam Breakers are hydraulically driven units using the center-point loading method and provide continuous readings to the beam breaking point while retaining the maximum reading for accuracy and to eliminate lost data. The gauge also resets to zero for testing multiple beams.

These beam breakers are constructed of lightweight aluminum, making them extremely portable for use at even the most remote of job-sites. Self-contained, portable concrete beam tester, which accurately and easily determines flexural strengths of 6" x 6" test beams of 16" and 18" lengths.

While not in full compliance with ASTM C293 since they do not provide a constant application of force, these beam testers can be used as an accurate quality control tool to determine whether curing concrete has met a specified flexural strength. In this type of application, a known flexural strength value is determined and is used as a go/no-go test parameter. Numerous government agencies including Illinois/Iowa DOT have found its results acceptable for their purposes.

These beam testers provide dual registration of modulus at rupture between 15,000 lbf. and 0–6,800 kgf. The unit is calibrated by measuring the load applied on a calibrated load cell. The factory calibration is supplied at gauge readings of 10% FS, FS and 3 readings in between. Three load cell readings are averaged at each point to establish the correction for each point.

Concrete Beam Tester

6" x 6" x 16", Single-Point	**H-3030A**
6" x 6" x 18", Single-Point	**H-3032A**
6" x 6" x 18", Third Point	**H-3033A**

Ship wt. 87lbs. (39.4kg)

Continuous-Load Concrete Beam Tester, 6" x 6"

Humboldt's Portable, Continuous-Load, Concrete Beam Testers are great quality control tools for contractors, DOTs and consultants, who can use them to quickly and accurately determine flexural strengths of 6" x 6" concrete test beams.

These Beam Testers incorporate a continuous, screw-jack micro pump to provide a constant application of force against the test beam. It can be used as an accurate quality control tool to determine whether curing concrete has met a specified flexural strength. In this type of application, a known flexural strength value can be determined and used as a go/no-go test parameter.

Humboldt's Portable, Concrete Beam Testers with Micro-pumps are a great quality control tool for contractors, DOTs and consultants for quickly and accurately determining flexural strengths of concrete using 6" x 6" cross-section test beams. These hydraulically driven units use the center-point loading method and provide continuous readings to the beam breaking point while retaining the maximum reading for accuracy and to eliminate lost data. The gauge will then reset to zero for continuous testing

These beam breakers are constructed of lightweight aluminum, making them extremely portable for use at even the most remote of job-sites. Self-contained, portable concrete beam tester, which accurately and easily determines flexural strengths of 6" x 6" test beams of 16" and 18" lengths.

Continuous-Load Concrete Beam Tester

6" x 6" x 16", Single-Point	**H-3030CL**
6" x 6" x 18", Single-Point	**H-3032CL**
6" x 6" x 18", Third-Point	**H-3033CL**

Ship wt. 90lbs. (40.8kg)

Continuous-Load Concrete Beam Tester, 4" x 14"

The Humboldt H-3031CL Portable, Continuous-Load, Concrete Beam Tester is a great quality control tool for contractors, DOTs and consultants for quickly and accurately determining flexural strengths of concrete using 4" x 4" x 14" test beams.

The H-3031CL incorporates a continuous, screw-jack micro pump to provide a constant application of force against the test beam. It can be used as an accurate quality control tool to determine whether curing concrete has met a specified flexural strength. In this type of application, a known flexural strength value can be determined and used as a go/no-go test parameter.

The H-3031CL beam breaker is constructed of lightweight aluminum, making it extremely portable for use at even the most remote of job-sites. Self-contained, this portable, concrete beam tester accurately and easily determines flexural strengths of 4" x 4" x 14" test beams, which are placed on rollers that are 12" apart.

The hydraulically driven unit uses a center-point loading method that provides continuous readings to the break point and retains the maximum reading to eliminate losing break-point data. The gauge will then reset to zero for continuous testing. The lightweight aluminum unit features an 8,000 lbf. x 100 lbf force pressure. The unit is calibrated by measuring the load applied on a calibrated load cell. The factory calibration is supplied at gauge readings of 10% FS, FS and 3 readings in between. Three load cell readings are averaged at each point to establish the correction for each point.

Continuous-Load Concrete Beam Tester

4" x 14" Beams	**H-3031CL**

Ship wt. 90lbs. (40.8kg)

Testing Equipment For Construction Materials

HUMBOLDT

Humboldt Mfg. Co.
875 Tollgate Road, Elgin, Illinois 60123
1.800.544.7220 toll free, 1.708.468.6300 main
1.708.456.0137 fax

Humboldt Scientific, Inc.
2525 Atlantic Avenue, Raleigh, North Carolina 27604
1.800.537.4183 toll free, 1.919.833.3190 main
1.919.833.5283 fax

www.humboldtmfg.com
1.800.544.7220