

ELITE SERIES DIRECT SHEAR

Machines and Accessories



Automated Direct Shear Apparatus

ASTM: D3080; AASHTO: T236, BS:1377:7

The Humboldt HM-5760 Direct/residual shear apparatus, utilizes pneumatic loading to apply vertical loads to a soil sample— eliminating the need for loading weights used in dead weight-type systems.

The HM-5760 is a microprocessor-based machine featuring a stepper-motor drive system and a 7" touch-screen display that allows the operator to control and monitor all test functions. Like all Humboldt Elite series machines, the HM-5760 is built with durable, high-quality components and features the use of a stepper motor, precision gears and gear box to ensure smooth and reliable operation, as well as precise results.

The HM-5760 is built around Humboldt's integral, 4-channel data logger with touch-screen control, which allows the HM-5760 to be used as a standalone device capable of full test control and data logging. It can also be controlled by a networked computer at any location with access to the network.

In stand-alone mode, the HM-5760 direct shear machine provides a 7" (178mm) touch-screen controller, giving you finger-tip control of your testing processes, as well as providing real-time, visual views of your data in both tabular and graphic formats. The waterproof, touch screen provides colorful, at-a-glance monitoring of testing functions without the use of a computer. Operators can see all the data in several formats at the machine while the test is running. Data can then

be viewed simultaneously or downloaded later to a computer in the lab, in the next room or at a different location, while also providing report generation capabilities from within Humboldt's NEXT software or our enhanced HM-5700SW Direct Shear Reporting Software.

When operated from a networked computer the NEXT software provides robust machine and test control, and report generation. It also provides the ability to control and monitor multiple machines from a single computer.

The HM-5760 is supplied complete with (2) 2,000 lbf (10kN) capacity load cells; 1" (25.4mm) horizontal strain transducer, and a 0.4" (10.2mm) vertical strain transducer. Humboldt's HM-5700SW NEXT Direct Shear software module is also included.

Shear box assemblies and related accessories are not included and should be ordered separately.

Humboldt's exclusive, counter-balance device for ASTM D3080 compliance is included with the HM-5760.

Automated Direct Shear

HM-5760.3F



Shipping wt. 168 lb (76kg)

HM-5760.3F Specifications:

Horiz. movement	1" (25mm) Maximum
Horiz. shear force	2000 lbf (10kN)
Vertical load	2000 lbf (10kN)
Data Channels	4
Speed Range	0.00001 to 0.49999 in./min. 0.00001 to 12.9999 mm/min.
Dimensions (L x D x H)	30" x 15.5" x 22" (760 x 394 x 558mm)
Voltage	110/220V 50/60Hz - 6.5amps

Pneumatic Direct Shear System Requirements

AC Supply	110/220 VAC 50/60 Hz 5 Amp
Air Supply	Clean and dry (air filter, water trap), minimum: 100psi (700kps) continuous air supply 4.2CFM (0.12m ³ /min)*

* Larger compressor may be required if used with additional equipment or larger-sized labs.



NOTES

Counter-balance device for ASTM D3080 compliance. Not available anywhere else. Also available as a retrofit kit. HM-2560A.1

Controller Specifications:	
Display (Resistive Touch)	7" (178mm) VGA (480 x 800)
Real-time test data	Graphic and tabulation
Processor	Dual 32-bit ARM
RAM	64MB
Memory, non-volatile	4GB
Analog to digital converter	24 bit
Data acquisition	4 Channels
Logging Rate	effective rate of 320 readings per second
Multi-test storage	1000
Points per test	3000
USB port (front)	export data, import/export calibration data
USB port (back)	provides external power for wireless access point
Ethernet connection	for network connectivity
24-bit differential analog to digital converter	4
Ambient temperature sensor	1
Firmware Update	Flash drive

Computer Control

NEXT software and the enhanced Direct Shear module, HM-5700SW, is included with the HM-5760 pneumatic direct-shear machine. This software provides robust machine control, data acquisition and report generation for those using a computer to control direct shear testing operations.

In addition, operators have the ability to view and control testing operations from a PC in the lab, in the next room or at a different location, while also providing report generating capabilities using the direct shear test-specific software module.

So, whether you are controlling a single direct-shear machine, controlling multiple machines or even a complete geotechnical lab, Humboldt's NEXT software, in conjunction with Humboldt's HM-5760 Direct-shear machine, provides a complete solution for acquisition, recording and presentation of direct-shear testing data in tabular and graphic chart formats.

- Machine control, and data acquisition via a networked computer
- Provides the ability to use Humboldt's Next Software's, advanced test-specific modules
- Real-time graphical chart and numerical display of tests via computer display
- Effective sampling rate of 320 readings per second
- Stores 1000 tests with up to 3000 points per test



Typical Test Setup for HM-5760

Description	Part #
Fully-Automatic Pneumatic Direct Shear (includes (2) 2,000 lbf (10kN) capacity load cells; 1" (25.4mm) horizontal strain transducer, and a 0.4" (10.2mm) vertical strain transducer)	HM-5760.3F
NEXT Direct Shear software module (included with HM-5760)	HM-5700SW
Shear box assembly (specify size)	HM-2751.XX(S/D)
Shear box cutter (specify size)	HM-2702.XX(S/D)
Dolly/tamper (specify size)	HM-2703.XX(S/D)
* XX Requires a sample size designation, see page 125 for choices	
Additional Items Required	
PC computer	not supplied
Direct Shear/Consolidation Installation Kit	HM-4168
Desiccant Dryer, Silica Gel	HM-4222
Filter/Regulator	HM-4223



- Up to 255 individual tests can be run simultaneously from a single PC
- Provides advanced graphing capabilities
- Provides full-unit customization
- Reports can also be exported to Excel or a CSV file, if desired, and, we can provide custom integration/export solutions for LIMS, EQuIS, gINT, etc.

Semi-Automatic Direct Shear Apparatus

ASTM: D3080; AASHTO: T236, BS:1377:7

The HM-5755 is a semi-automatic pneumatic loading machine, which with its touch-screen monitor provides test control and live test monitoring in either a stand-alone or computer-controlled configuration. With the HM-5755, pneumatic loads are controlled by manual valve controls located on the front panel for easy use. The HM-5755 also provides four (4) integral and independent data acquisition channels, which can be utilized in stand-alone configurations or accessed through a LAN-networked computer using Humboldt's Next Software.

In stand-alone mode, the HM-5755 direct shear machine provides a 7" (178mm) touch-screen controller, giving you finger-tip control of your testing processes, as well as providing real-time, visual views of your data in both tabular and graphic formats. These new waterproof, touch screens provide colorful, at-a-glance monitoring of testing functions without the use of a computer. Operators can see all the data in several formats at the machine while the test is running. Data can then be viewed simultaneously or downloaded later to a computer in the lab, in the next room or at a different location, while also providing report generation capabilities from within Humboldt's NEXT software or our enhanced HM-5700SW Direct Shear software module.

When operated from a networked computer the NEXT software provides robust machine and test control, and report generation. It also allows the

ability to control and monitor multiple machines from a single computer.

The HM-5755 is supplied complete with a 2,000 lbf (10kN) capacity load cell; 1" (25.4mm) horizontal strain transducer, a 0.4" (10.2mm) vertical strain transducer and Humboldt's NEXT software. Shear box assemblies, **Humboldt's NEXT Direct Shear module and related accessories are not included and should be ordered separately.**

Semi-Automated Direct Shear HM-5755.3F

 Shipping wt. 200 lb (90.7kg)



NOTES

Counter-balance device for ASTM D3080 compliance. Not available anywhere else. Also available as a retrofit kit. HM-2560A.1



HM-5755.3F Specifications:

Horiz. movement	1" (25.4mm) maximum
Horiz. shear force	2000 lbf (10kN)
Vertical load	2000 lbf (10kN)
Data Channels	4
Speed Range	0.00001 to 0.49999 in./min. 0.00001 to 12.9999 mm/min.
Voltage	110/220 VAC 50/60HZ
Current	6.5 amps
Dimensions (L x D x H)	30" x 15.5" x 22" (760 x 394 x 558mm)

Pneumatic Direct Shear System Requirements

AC Supply	110/220 VAC 50/60 Hz 5 Amp
Air Supply	Clean and dry (air filter, water trap), minimum: 100psi (700kps) continuous air supply 4.2CFM (0.12m ³ /min)

* Larger compressor may be required if used with additional equipment or larger-sized labs.



NOTES

This machine does not include HM-5700SW Software, order separately.

Controller Specifications:

Display (Resistive Touch)	7" (178mm) VGA (480 x 800)
Real-time test data	Graphic and tabulation
Processor	Dual 32-bit ARM
RAM	64MB
Memory, non-volatile	4GB
Analog to digital converter	24 bit
Data acquisition	4 Channels
Logging Rate	effective rate of 320 readings per second
Multi-test storage	1000
Points per test	3000
USB port (front)	export data, import/ export calibration data
USB port (back)	provides external power for wireless access point
Ethernet connection	for network connectivity
24-bit differential analog to digital converter	4
Ambient temperature sensor	1
Firmware Update	flash drive

Computer Control

NEXT software and the enhanced Direct Shear module, HM-5700SW, can be used to enhance the operation of the HM-5755 Semi-automated direct-shear machine. This software provides robust machine control, data acquisition and report generation for those using a computer to control consolidation testing operations. However, pneumatic loads are still controlled by the manual valve controls located on the front panel.

In addition, operators have the ability to view and control testing operations from a PC in the lab, in the next room or at a different location, while also providing report generating capabilities using the consolidation test-specific software module.

So, whether you are controlling a single direct-shear machine, controlling multiple machines, or even a complete geotechnical lab, Humboldt's NEXT software, in conjunction with Humboldt's HM-5760 Direct-shear machine, provides a complete solution for the calibration, acquisition, recording and presentation of direct-shear testing data in data tabulation and graphic chart formats.

- Machine control, and data acquisition via a networked computer
- Provides the ability to use Humboldt's Next Software's, advanced test-specific modules
- Real-time graphical chart and numerical display of tests via computer display
- Effective sampling rate of 320 readings per second
- Stores 1000 tests with up to 3000 points per test.
- Up to 255 individual tests can be run simultaneously from a single PC
- Provides advanced graphing capabilities
- Provides full-unit customization
- Reports can also be exported to Excel or a CSV file, if desired, and, we can provide custom integration/export solutions for LIMS, EQuIS, gINT, etc.



Typical Test Setup for HM-5755

Description	Part #
Pneumatic Direct Shear with analog inputs (includes a 2,000 lbf (10kN) capacity load cell; 1" (25.4mm) horizontal strain transducer, and a 0.4" (10.2mm) vertical strain transducer)	HM-5755.3F
NEXT Direct Shear software module	HM-5700SW
Shear box assembly (specify size)	HM-2751.XX(S/D)*
Shear box cutter (specify size)	HM-2702.XX(S/D)*
Dolly/tamper (specify size)	HM-2703.XX(S/D)*

Additional Items Required

PC Computer	not supplied
Direct Shear/Consolidation Installation Kit	HM-4168
Desiccant Dryer, Silica Gel	HM-4222
Filter/Regulator	HM-4223

* XX Requires a sample size designation,
see page 129 for choices and (S/D) refers to square or round sample.



- Provides advanced graphing capabilities
- Provides full-unit customization
- Reports can also be exported to Excel or a CSV file, if desired, and, we can provide custom integration/export solutions for LIMS, EQuIS, gINT, etc.

Dead-Weight Direct Shear



U P G R A D E

Counter-balance device for ASTM D3080 compliance. Not available anywhere else. Also available as a retrofit kit. HM-2560A.1



HM-5750A.3F



HM-5750D.3F



HM-5750.3F

The HM-5750 Series of Dead-weight Direct-shear machines, come in three configurations—analog, digital and manual gauge measuring devices. These machines feature Humboldt's touch-screen monitor for test control. In addition, Models HM-5750A and HM-5750D provide three (3) integral and indepen-

dent data acquisition channels, which can be utilized in stand-alone configurations or accessed through a LAN-networked computer using Humboldt's Next Software for control and data collection.

Direct/Residual Shear Apparatus, Analog

ASTM: D3080; AASHTO: T236, BS:1377:7

The HM-5750A Direct Shear machine is an economical choice for performing direct/residual shear tests utilizing the dead-weight method and analog measuring devices. The microprocessor-based system features a stepper-motor drive system and a 7" touch-screen display that allows the operator to control and monitor all test functions.

Like all Elite Series machines, the HM-5750A is built around Humboldt's integral, multi-channel data logger with touch-screen control, which allows the HM-5750A to be used as a standalone device capable of full test control and data logging. It can also be controlled by a networked computer at any location with access to the network. The carriage accepts shear boxes up to 4.0" (100mm) internal dimension. Forward and reverse measurements permit residual shear testing as standard. A built-in safety feature prevents the overloading of the load measuring system.

The HM-5750A is supplied complete with a 2,000 lbf (10kN) capacity load cell; 1" (25.4mm) horizontal strain transducer, and a 0.4" (10.2mm) vertical strain transducer. Shear box assemblies and related accessories are not included and should be ordered separately. (See page 129)

Direct Shear Apparatus, Analog HM-5750A.3F



Shipping wt. 330 lb (149kg)

Direct/Residual Shear Apparatus, Digital

ASTM: D3080; AASHTO: T236, BS:1377:7

The HM-5750D Direct Shear machine is an economical choice for performing direct/residual shear tests utilizing the dead-weight method and digital measuring devices. The microprocessor-based system features a stepper-motor drive system and a 7" touch-screen display that allows the operator to control and monitor all test functions.

Like all Elite Series machines, the HM-5750D is built around Humboldt's integral, multi-channel data logger with touch-screen control, which allows the HM-5750D to be used as a standalone device capable of full test control and data logging. It can also be controlled by a networked computer at any location with access to the network. The carriage accepts shear boxes up to 4.0" (100mm) internal dimension. Forward and reverse measurements permit residual shear testing as standard. A built-in safety feature prevents the overloading of the load measuring system.

The HM-5750D is supplied complete with a 2,200 lbf (10kN) capacity load ring and two 1.0" x 0.001" (25.4 x 0.01mm) and 0.5" x 0.0001" (12 x 0.002mm) dial indicators. Shear box assemblies and related accessories are not included and should be ordered separately. (See page 129)

Direct Shear Apparatus, Digital HM-5750D.3F



Shipping wt. 330 lb (136kg)

Direct/Residual Shear Apparatus, Manual

ASTM: D3080; AASHTO: T236, BS:1377:7

The HM-5750 and HM-5750M Direct Shear machines are an economical choice for performing direct/residual shear tests utilizing the dead-weight method with load rings and dial gauges.

These models include the carriage, stand, vertical load hanger and a balanced lever loading arm with a 10:1 ratio that reduces the weight required to perform tests. The micro-processor-based system features a stepper motor drive system and 7" touch-screen display.

The carriage accepts shear boxes up to 4.0" (100mm) internal dimension. Forward and reverse measurements permit residual shear testing as standard. A built-in safety feature prevents the over travel of the load measuring system.

The HM-5750 and HM-5750M are supplied complete with a 2,000 lbf (10kN) capacity load ring, 1.0" x 0.001" (25.4 x 0.01mm) and 0.5" x 0.0001" (12 x 0.002mm) dial indicator. Shear box assemblies and related accessories are not included and should be ordered separately. (See page 129)

Direct Shear Apparatus, Manual HM-5750.3F

Direct Shear Apparatus, Manual Metric HM-5750M.3F



Shipping wt. 300 lb (149kg)



NOTES

The machines on this page do not include HM-5700SW Software.

Dead-Weight Direct Shear

Specifications:	HM-5750A	HM-5750D	HM-5750	HM-5750M
Horizontal movement		2" (50mm) Maximum		
Horizontal shear force		2000 lbf (10kN)		
Vertical load		2000 lbf (10kN)		
Data Channels	3	3	0	0
Speed Range		0.00001 to 0.49999 in./min. (0.00001 to 12.9999 mm/min.)		
Data storage	1000 tests and up to 3000 readings per test	1000 tests and up to 3000 readings per test	—	—
Dimensions (L x D x H)		40" x 10" x 45" (1016 x 254 x 1143mm)		
Voltage		110/220V 50/60Hz - 6.5amps		

Typical Test Setup for HM-5750A

Description	Part #
Dead-weight Direct Shear with analog inputs (includes a 2,000 lbf (10kN) capacity load cell; 1" (25.4mm) horizontal strain transducer, and a 0.4" (10.2mm) vertical strain transducer)	HM-5750A.3F
NEXT Direct Shear software module	HM-5700SW
16 TSF or 50 kg weight set	HM-1120 † or HM-1125 †
Shear box assembly	HM-2751.XX(S/D)*
Shear box cutter	HM-2702.XX(S/D)*
Dolly/tamper	HM-2703.XX(S/D)*



Typical Test Setup for HM-5750D

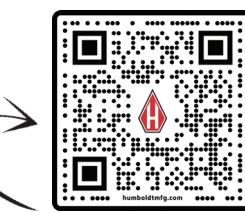
Description	Part #
Dead-weight Direct Shear with digital inputs (a 2,200 lbf (10kN) capacity load ring and two 1.0" x 0.0001" (25.40 x 0.002mm) digital indicators)	HM-5750D.3F
NEXT Direct Shear software module	HM-5700SW
16 TSF or 50 kg weight set	HM-1120 † or HM-1125 †
Shear box assembly	HM-2751.XX(S/D)*
Shear box cutter	HM-2702.XX(S/D)*
Dolly/tamper	HM-2703.XX(S/D)*



Typical Test Setup for HM-5750 & HM-5750M

Description	Part #
Dead-weight Direct Shear with load ring (a 2,200 lbf (10kN) capacity load ring, 1.0" x 0.001" (25.4 x 0.01mm) and 0.5" x 0.0001" (12 x 0.002mm) dial indicator)	HM-5750.3F or HM-5750M.3F
16 TSF or 50 kg weight set	HM-1120 † or HM-1125 †
Shear box assembly	HM-2751.XX(S/D)*
Shear box cutter	HM-2702.XX(S/D)*
Dolly/tamper	HM-2703.XX(S/D)*





Scan to view more info online!

Humboldt's HM-5750A and HM-5750D Dead-weight Direct Shear machines provide test control and live test monitoring in either a stand-alone or computer-controlled configuration. While weights must still be loaded manually, the rest of the operation can be directed from the touch-screen monitor or a networked computer.

Stand-Alone Test Monitoring

The touch-screen controller provides you with full, graphical monitoring of testing functions in a stand-alone application. The seven-inch, water-

proof screen on these Direct Shear machines provides at-a-glance monitoring of testing functions, in a real-time graphical display, without the use of a computer, building upon Humboldt's dedication to modular, stand-alone data acquisition.

Now, in a stand-alone application, you will be able to run tests and display results while viewing tabulation, basic x-y graphs and instrument readings in real-time during the test, using user-defined, basic data acquisition. Test data is stored in the device and can be downloaded to a USB drive via the machine's FRONT USB port or the data can be transferred to a computer via the LAN port.

- 3-channel data acquisition
- Hi-res, 7", waterproof, touch-screen provides total control and real-time graphical display of tests
- Machine/Test control and data acquisition via touch-screen



Weight Sets for Consolidation and Direct Shear Testing

Weight Set	Set Includes	Model No.	Ship. Wt.
16 TSF Set	includes: (2) .125 TSF, (1) .25 TSF, (1) .50 TSF, (1) 1.0 TSF, (1) 2.0 TSF, (3) 4.0 TSF weights	HM-1120	140 lbs. (64kg)
32 TSF Set	includes: (2) .125 TSF, (1) .25 TSF, (1) .50 TSF, (1) 1.0 TSF, (1) 2.0 TSF, (7) 4.0 TSF weights	HM-1121	275 lbs. (125kg)
32 kg Set	includes: (4) 1 kg, (3) 4 kg, (2) 8 kg weights	HM-1122	73 lbs. (33.1kg)
50 kg Set	includes: (3) 1 kg, (1) 2 kg, (1) 5 kg, (4) 10 kg weights	HM-1125	110 lbs. (50kg)
64 kg Set	includes: (4) 1 kg, (5) 4 kg, (5) 8 kg weights	HM-1123	150 lbs. (68kg)
88 kg Set	includes: (4) 1 kg, (5) 4 kg, (8) 8 kg weights	HM-1124	130 lbs. (59kg)

Controller Specifications:

Display (Resistive Touch)	7" (178mm) VGA (480x800)
Real-time test data	Graphic and tabulation
Processor	Dual 32-bit ARM
RAM	64MB
Memory, non-volatile	4GB
Analog to digital converter	24 bit
Data acquisition	3 Channels
Logging Rate	effective rate of 320 readings per second
Multi-test storage	1000
Points per test	3000
USB port (front)	export data, import/export calibration data
USB port (back)	provides external power for wireless access point
Ethernet connection	for network connectivity
24-bit differential analog to digital converter	4
Ambient temperature sensor	1
Firmware Update	flash drive

Computer Test Monitoring

Humboldt's NEXT Basic software can be downloaded from: <https://www.humboldtmfg.com/support/software.php> for use with these Humboldt Direct Shear machines. This software provides basic data acquisition and report generation for those using a computer for this purpose.

In addition, you can purchase Humboldt's HM-5700SW Direct Shear module for direct shear test-specific set up and monitoring of the testing function, as well as advanced test reporting capabilities.

Individual Weights for Consolidation and Direct Shear Testing

Individual Weights: Kg		Individual Weights: TSF	
Weight	Model No.	Weight	Model No.
0.5kg	HM-1122.05	0.125 (1/8)	HM-1120.125
1.0kg	HM-1122.1	0.25 (1/4)	HM-1120.250
2.0kg	HM-1122.2	0.50 (1/2)	HM-1120.500
4.0kg	HM-1122.4	1.0	HM-1120.1
5.0kg	HM-1122.5	2.0	HM-1120.2
8.0kg	HM-1122.8	4.0	HM-1120.4
10.0kg	HM-1122.10		

**Shear Box Assemblies for
HM-5760, HM-5755, HM-5750**

Size	Square	Round
2.0"	HM-2751.20S	HM-2751.20D
2.42"	HM-2751.24S	HM-2751.24D
2.5"	HM-2751.25S	HM-2751.25D
4.0"	HM-2751.40S	HM-2751.40D
50mm	HM-2751.50S	HM-2751.50D
60mm	HM-2751.60S	HM-2751.60D
100mm	HM-2751.100S	HM-2751.100D



NOTES

Shearbox assemblies include: sample box, (2) porous plates, (1) loading pad, and (1) grid plate. All shearboxes feature mounting screws for use with the HM-2750 ASTM D3080-compliant counter-balance device.



HM-2703.25S



HM-2703.25D



HM-2702.S



HM-2702.25D



HM-2755.25S



HM-2704.25S



HM-2704.25D



HM-1220.25.4

Dolly Tamper		
Size	Square	Round
2"	HM-2703.20S	HM-2703.20D
2.42"	HM-2703.24S	HM-2703.24D
2.5"	HM-2703.25S	HM-2703.25D
4.0"	HM-2703.40S	HM-2703.40D
50mm	HM-2703.50S	HM-2703.50D
60mm	HM-2703.60S	HM-2703.60D
100mm	HM-2703.100S	HM-2703.100D

Cutter		
Size	Square	Round
2"	HM-2702.20S	HM-2702.20D
2.42"	HM-2702.24S	HM-2702.24D
2.5"	HM-2702.25S	HM-2702.25D
4.0"	HM-2702.40S	HM-2702.40D
50mm	HM-2702.50S	HM-2702.50D
60mm	HM-2702.60S	HM-2702.60D
100mm	HM-2702.100S	HM-2702.100D

Calibration Disk		
Size	Square	Round
2"	HM-2755.20S	HM-1220.20.4
2.42"	HM-2755.24S	HM-1220.24.4
2.5"	HM-2755.25S	HM-1220.25.4
4.0"	HM-2755.40S	HM-1220.40.4
50mm	HM-2755.50S	HM-1220.50.4
60mm	HM-2755.60S	HM-1220.60.4
100mm	HM-2755.100S	HM-1220.100.4

Porous Plate		
Size	Square	Round
2"	HM-2704.20S	HM-2704.20D
2.42"	HM-2704.24S	HM-2704.24D
2.5"	HM-2704.25S	HM-2704.25D
4.0"	HM-2704.40S	HM-2704.40D
50mm	HM-2704.50S	HM-2704.50D
60mm	HM-2704.60S	HM-2704.60D
100mm	HM-2704.100S	HM-2704.100D



HM-001076



HM-003274



HM-003275A



Installation and Spare Parts Kit HM-4168

Direct Shear Installation and Spare Parts Kit provides tubing, fasteners and tools to complete an installation of pneumatic direct shear equipment.

Installation and Spare Parts Kit HM-4168

5 lb (2.3kg)

*Red Head Screws are used to hold the shear box together and are made with plastic heads, which will shear off before shear box can be damaged.

Humboldt Mfg. Co.

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