



Testing Capabilities from Powerbrace and Miner

Thorough Testing Assures Quality Products

Powerbrace Corporation is dedicated to the best possible quality of all of its products. To achieve that end, we perform in-house testing of a variety of products. In addition, a large and well-equipped testing lab is located at Miner Enterprises, Inc., the parent company of Powerbrace. At this Research and Development facility, testing has been instrumental in creating Powerbrace products, including:

- *RRIG (Rear Impact Guard)*
- *Compression latch*
- *Polymer hinges*
- *Various cam and keeper models*
- *Hinge butts*

Test Machines Available

Both Powerbrace and the Miner Research and Development labs are staffed with experienced, knowledgeable engineers and technicians who know the value of accurate testing. They are dedicated to superior product performance, using a variety of test equipment.

The Powerbrace lab facility tests products on equipment such as a hinge cycle machine and an endwall test fixture.

The Miner Research & Development lab in Geneva, Illinois, contains test equipment to handle a variety of items, in many sizes, including very large products for the railroad industry, Miner's core business.

Test Machines Calibrated Annually

Test equipment at Miner Research & Development includes:

- Universal Tension/Compression Testers
- Drop Hammer
- Hydraulic Cycling Machines
- Railcar Impact Trac
- Thermal Chambers
- Experimental Stress Analysis
- 1,000,000-Pound Hydraulic Press

All test machines are calibrated annually and are traceable to the National Institute of Standards and Technology (formerly NBS).

Field Testing Available

Dynamic instrumentation is available for testing in the field. The portable digital data acquisition system, rugged enough for use in the field, records output from force, displacement, strain, acceleration and pressure sensors during impact testing. The system can stream data to magnetic tape at a rate of 20,000 samples per second for a single channel. Modular plug-in cards make this system expandable for future testing needs.

Testing Capabilities from Powerbrace and Miner *(continued)*

Universal Tension/Compression Tester

Maximum capacity:	160,000 lbs. (72,576 kg)
Maximum dimensions:	48" (1,219 mm) vertical tension/ compression 30" (762 mm) horizontal clearance
Specimen size:	Flats up to 1-1/2" x 3-3/4" (38 mm x 95 mm) Rounds from .5" to 2" (13 mm to 51 mm)
Loading rates:	.025 to 2.0 inches/min. (.6 to 51 mm/min.)
Stress/strain recorder ratios:	2.5, 5 & 10 to 1
Scale ranges:	0 – 160,000 lbs. (0 – 72,576 kg) 0 – 80,000 lbs. (0 – 36,288 kg) 0 – 40,000 lbs. (0 – 18,144 kg) 0 – 16,000 lbs. (0 – 7,257 kg) 0 – 8,000 lbs. (0 – 3,629 kg) 0 – 1,600 lbs. (0 – 726 kg)
Calibration:	ASTM E4

Universal Tension/Compression Tester

Maximum capacity:	1,000,000 lbs. (453,600 kg)
Maximum dimensions:	120" (3,048 mm) vertical tension 144" (3,658 mm) vertical compression 36" (914 mm) horizontal clearance
Specimen size:	Flats up to 3-1/2" x 6" (89 mm x 152 mm) Rounds from 1" to 6" (25 mm to 152 mm)
Loading rates:	.025 to 2.0 inches/min. (.6 to 51 mm/min.)
Calibration:	ASTM E4

Drop Hammer

Capacity:	27,000 lbs. (12,247 kg)
Free fall:	240" (6,096 mm) on 36" (914 mm) high specimen
Maximum dimensions:	48" (1,219 mm) horizontal 10' (3,048 mm) width of load cell
Load cell capacity:	2,000,000 lbs. (907,200 kg) dynamic reaction

Hydraulic Cycling Machine

Maximum capacity:	400,000 lbs. (181,440 kg) dynamic and static
Maximum dimensions:	72" (1,829 mm) vertical, using 400,000 lb. (181,440 kg) load cell and the 100,000 lb. (45,360 kg) load cell 30" (762 mm) horizontal clearance
Stroke:	18" (457 mm) power stroke
Dwell:	0 to 20 minutes
Cycling function can be set for a wide range of loading diagrams, frequency and strokes.	

Horizontal Cycler

Maximum load compression:	600,000 lbs. (272,154 kg)
Maximum load tension:	450,000 lbs. (204,226 kg)
Speed:	Max. compression = 2.0"/sec. (51 mm/sec.) Max tension = 2.7"/sec. (69 mm/sec.) Min. compression = <2"/min. (<51 mm/sec.) Min. tension = <2"/min. (<51 mm/sec.)
Throat size:	50" (1,270 mm)
Specimen size:	50" (1,270 mm) fixture size
Stroke:	16" (406 mm)

Laboratory Data Acquisition

The laboratory work stations digitize and process test data (primarily force and displacement) and print reports in the form of tables and graphs. The resulting data files are available to import into spreadsheets, database and SPC programs. Through programming, the software system provides digital signal processing, digital filters, numerical methods and statistics functions.



Impact Track Back Stop

Hydraulic and crushable media shock absorbing devices can be tested against this back stop, which is bolted to the impact track pad. Rolling mass weights from 13,000 to 90,000 pounds are available to match each test requirement.

Thermal Chambers

Four chambers of various sizes and ranges are available. Temperature ranges from -80 degrees F to +750 degrees F are possible, for items as large as a railcar coupler. A temperature of -100 degrees F is possible for smaller sized items.

1,000,000 Pound Hydraulic Press

Capacity:	1,000,000 lbs. (453,590 kg) compression
Size:	29" W x 29" D x 44" H (737 mm W x 737 mm D x 1,118 mm H)
Maximum stroke:	10" (254 mm)
Slow speed loading rate:	0.5"/min. (13 mm/min.)
Fast speed loading rate:	20"/min (508 mm/min.)

Railroad-related Test Equipment

Other test equipment at Miner R&D are specifically designed for the railroad industry.

High Incline Ramp

A 30' (9 m) high-incline ramp is capable of accelerating two 100-ton (90.7 metric tons) freight cars to speeds of up to 16 miles per hour. Features include a reinforced concrete pad and a car tripping device placed at 1-foot (0.3 m) intervals along the length of the ramp.

Railcar Compression Fixture

Fixturing for the 1,000,000-pound "squeeze" machine will accept test railcars up to 10.5' wide in lengths from 45 to 96 feet, providing accurate and repeatable test results. A system of five hydraulic pistons controlled by five flow control valves assures a uniformly applied compressive load.



Drop Hammer



1,000,000 Pound Hydraulic Press



Railroad-related Test Equipment

Additional Testing Capabilities

Other test machines at the Miner R&D lab include smaller-sized drop hammers from 100 to 600 pounds, dead weight load test machine for testing creep and set characteristics of spring elements, a 60,000-pound capacity cycle machine, and 60,000- and 300,000-pound capacity universal test machines. Miner will also do test machine and test fixture design and fabrication for custom testing, as well as Brinell and Rockwell hardness testing and Magnaflux testing.

We Can Handle Your Test Requirements

In addition to testing our own products, Powerbrace with its parent Miner, has the capability of testing products for you. Please call us for further information about our ability to perform testing for you.

What Is the Most Important Thing about Powerbrace and Miner Testing?

We have a wide range of state-of-the-art testing equipment along with highly trained personnel to test our own products and others. Both our knowledge and resources assure quality every step of the way.



For Further Information:

For additional information or questions about Powerbrace products, call our Customer Service Department at **262.697.5328**. For additional information on Miner R&D Testing, call **630.232.3100** or **630.232.3111**.



Check Our Web site

Additional information is available at www.powerbrace.com.

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