

Force Calibration Simplified

The Universal Calibrating Machine (UCM) is a versatile, easy-to-use hydraulic-force calibration system. The machine is designed for ultimate accuracy and reliability. Capabilities include:

- Available in capacities from 10,000 to 2,250,000 lbf (50 to 10 000 kN)
- Calibrates both tension and compression force instruments
- Calibrates a wide range of force instruments
- Customizable features and dimensions based on the user's specifications and needs
- Able to calibrate instruments in accordance with ASTM E74, ISO 376, and other force standards

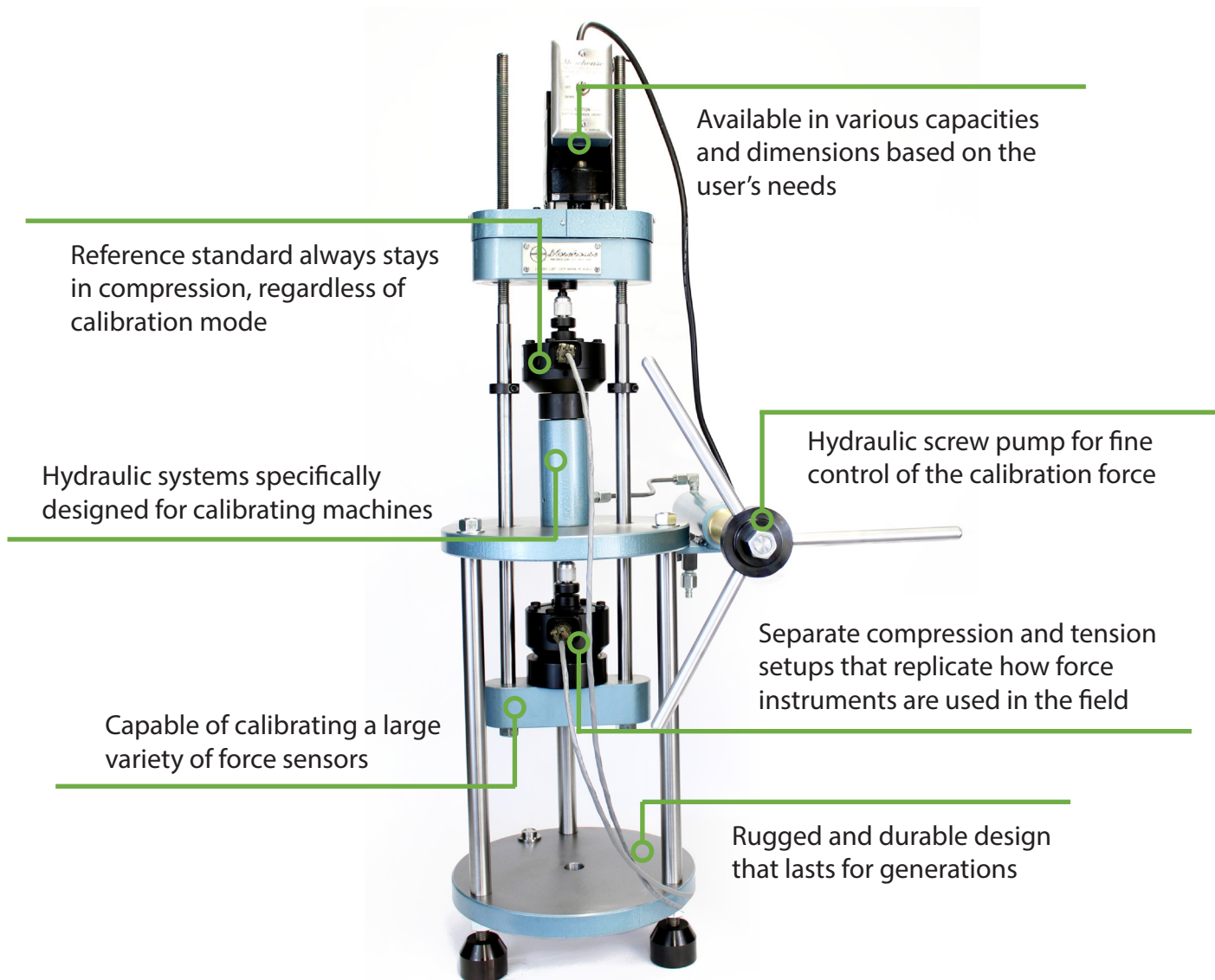


Figure 1: Morehouse Universal Calibrating Machine (UCM)



Tension and Compression Calibration

Compression calibration

- Reference standard is positioned between the jack and upper yoke
- Unit under test is placed between the upper machine platen and lower yoke

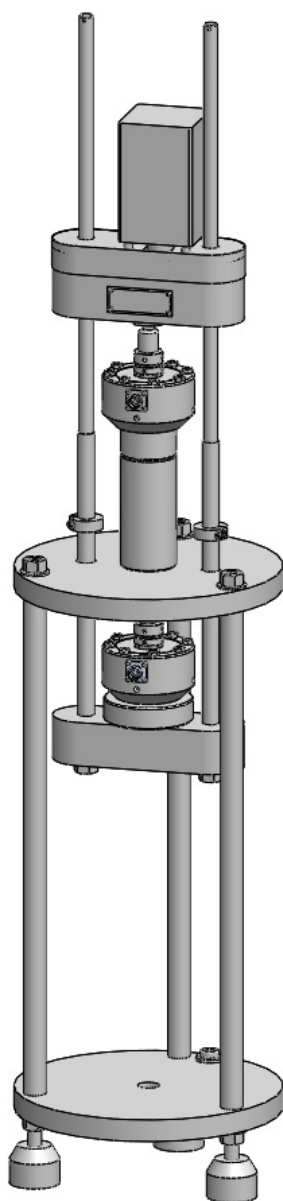


Figure 2: Typical Compression Setup

Tension calibration

- Reference standard is positioned between the jack and upper yoke
- Unit under test is connected by tension members between the lower yoke and lower platen

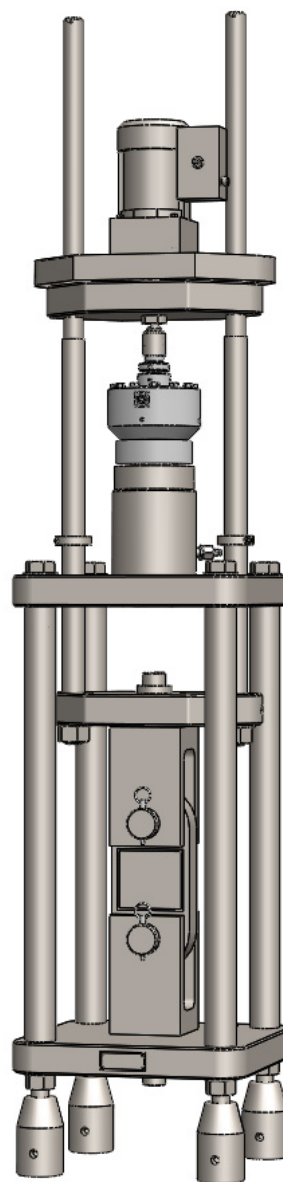


Figure 3: Typical Tension Setup

Technical Specifications

- Machine consists of three major parts: stationary frame, movable frame or yoke, and hydraulic jack
- Available in capacities from 10,000 to 2,250,000 lbf (50 to 10 000 kN)
- Two height options (01 and 02) are available for smaller capacity machines (10,000 to 100,000 lbf; 50 to 500 kN)
- Calibration is in accordance with ASTM E74, ISO 376 and other internationally recognized force standards
- Calibrates a variety of different force instruments such as load cells (general purpose, button, washer, universal, low capacity, multi-axis, miniature, S-beam, strain gage), force gauges (general purpose, digital, hand-held), proving rings, force transducers, dynamometers, crane scales, load links, and more
- Machines under 200,000 lbf (1 000 kN) capacity are supplied with a ball seat adapter
- A variety of reference standards are available to achieve the desired accuracy, quoted separately

| Mechanical | |
|----------------------------|--|
| Capacities | 10,000 to 2,250,000 lbf (50 to 10 000 kN) ¹ |
| Calibration Mode | Both compression and tension |
| Maximum Misalignment | 1/16th in. (1.6mm) over max yoke length |
| Unit Under Test Area | Adjustable (see dimensions) |
| Maximum Jack Stroke | 1.0 in. (25.4 mm) |
| Maximum Hydraulic Pressure | 5,000 psi (34 473.79 kPa) |
| Yoke Adjustment Speed | Approx. 2 in/min. (50.8 mm/min.) |

| Standard Power Requirements | | |
|-----------------------------|---------------|------------------------------|
| lbf Capacities | kN Capacities | Power |
| 10,000 - 600,000 | 50 - 3 000 | 115 or 220 VAC, single phase |
| 1,000,000 | 5 000 | 230 or 460 VAC, three phase |

¹ Contact Sales for more information on capacities above 1,000,00 lbf (5 000 kN)

Table 1: UCM Specifications

Don't see what you need? Not a problem.

We make custom machines with features and dimensions to meet your requirements.

An Automated Force Calibration System is available for the UCM.

Technical Specifications

| Order code ² | Max Capacity | Units | A | L Max ¹ | L Min ¹ | M Max ¹ | M Min ¹ | Machine Weight | Yoke Tare Weight ³ | Min. Capacity Reference Loadcell | Max Weight for UUT + Adapters If Using Min. Recommended Cell |
|-------------------------|---------------|-------|-------|--------------------|--------------------|--------------------|--------------------|----------------|-------------------------------|----------------------------------|--|
| UCM-10K | 11,500 lbf | in | TBD | TBD | TBD | TBD | TBD | 130 lbf | 40 lbf | 2,500 lbf | 10 lbf |
| UCM-50kN | 50 kN | mm | TBD | TBD | TBD | TBD | TBD | 59 kgf | 18 kgf | 11 kN | 5 kgf |
| UCM-30K | 30,000 lbf | in | 48.0 | 22.0 | 3.0 | 43.5 | 24.5 | 510 lbf | 120 lbf | 7,000 lbf | 20 lbf |
| UCM-100 kN | 133 kN | mm | 2,438 | 559 | 76 | 1,105 | 622 | 231 kgf | 54 kgf | 30 kN | 9 kgf |
| UCM-60K | 60,000 lbf | in | 105.0 | 22.5 | 3.0 | 46.0 | 26.5 | 1010 lbf | 220 lbf | 12,500 lbf | 30 lbf |
| UCM-250kN | 266kN | mm | 2,667 | 572 | 76 | 1,168 | 673 | 458 kgf | 100 kgf | 55 kN | 14 kgf |
| UCM-100K | 112,500 lbf | in | 112.5 | 24.0 | 3.0 | 46.5 | 25.5 | 1300 lbf | 250 lbf | 15,000 lbf | 50 lbf |
| UCM-500kN | 500kN | mm | 2,858 | 610 | 76 | 1,181 | 648 | 590 kgf | 113 kgf | 65 kN | 23 kgf |
| UCM-200K | 225,000 lbf | in | 120.0 | 28.5 | 7.0 | 36.5 | 14.5 | 2400 lbf | 740 lbf | 50,000 lbf | 260 lbf |
| UCM-1000kN | 1,000 kN | mm | 3,048 | 724 | 178 | 927 | 368 | 1089 kgf | 336 kgf | 220 kN | 118 kgf |
| UCM-300K | 338,000 lbf | in | 132.0 | 29.5 | 8.0 | 41.5 | 19.5 | 3300 lbf | 1,340 lbf | 100,000 lbf | 660 lbf |
| UCM-1500kN | 1500 kN | mm | 3,353 | 749 | 203 | 1,054 | 495 | 1496 kgf | 607 kgf | 425 kN | 300 kgf |
| UCM-600K | 675,000 lbf | in | 158.0 | 34.5 | 10.0 | 50.5 | 26.0 | 8700 lbf | 3,400 lbf | 200,000 lbf | 600 lbf |
| UCM-3000kN | 3,000 kN | mm | 4,013 | 876 | 254 | 1283 | 660 | 3946 kgf | 1,542 kgf | 850 kN | 272 kgf |
| UCM-1,000K | 1,125,000 lbf | in | 192.5 | 40.0 | 11.0 | 54.0 | 25.0 | 18900 lbf | 6,900 lbf | 400,000 lbf | 1100 lbf |
| UCM-5000kN | 5,000 kN | mm | 4,013 | 876 | 254 | 1283 | 660 | 8573 kgf | 3,130 kgf | 1,750 kN | 499 kgf |

Table 2: UCM Dimensions

Notes:

1. Referenced dimensions are configured with the use of Morehouse load cells as the standards.
2. These Order Codes are for our Standard frames. Morehouse offers customisation to allow machines to be placed in labs with lower ceilings etc. Contact Morehouse sales for more information.
3. Tare weight is <2%

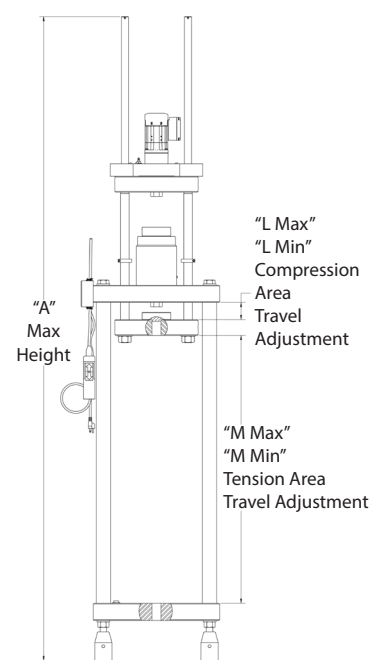


Figure 4: UCM Dimensions