



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

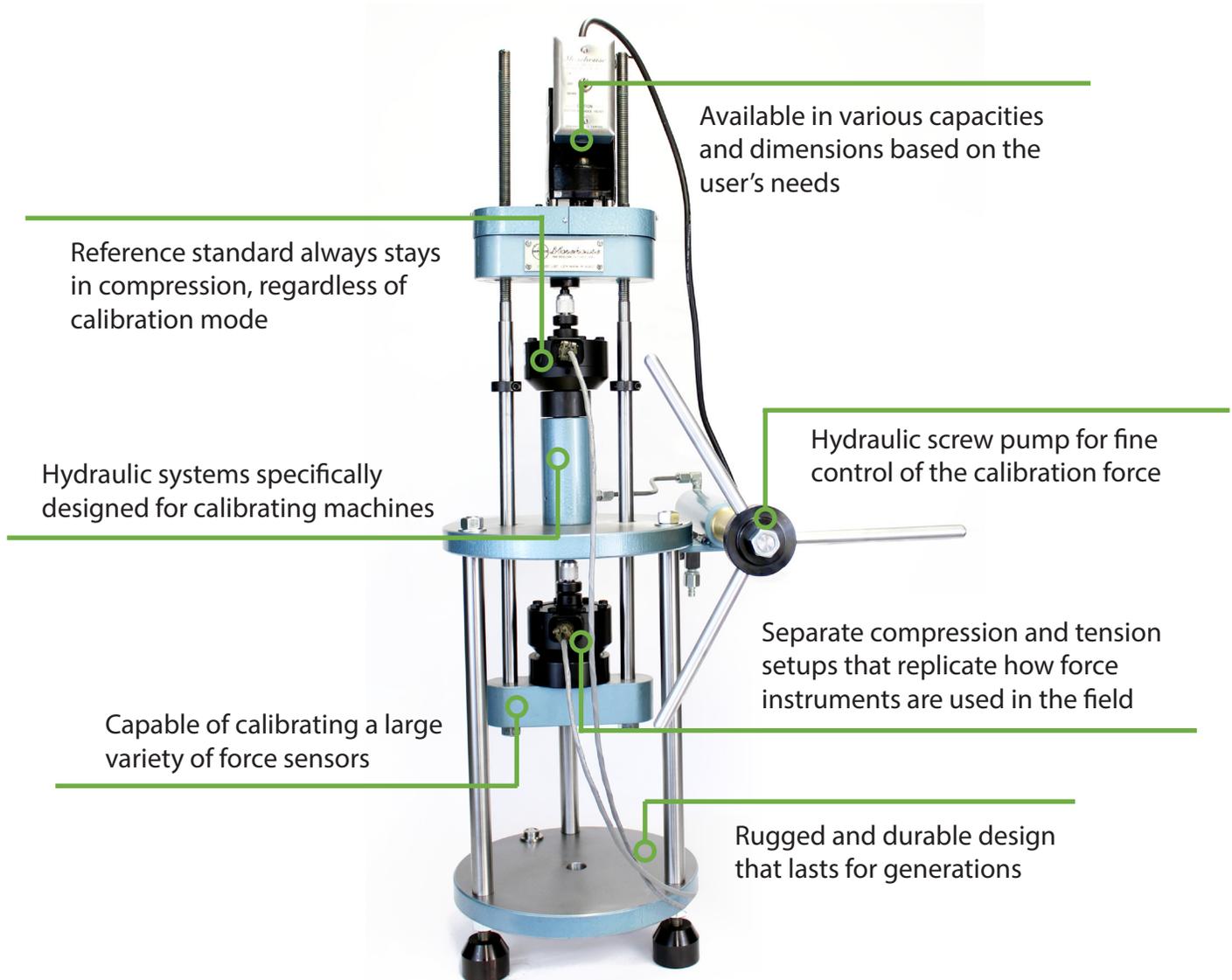


Figure 1: Morehouse Universal Calibrating Machine (UCM)



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

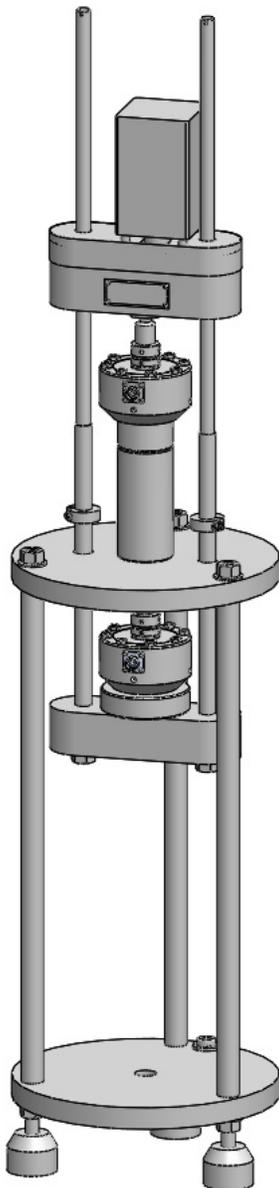


Figure 2: Typical Compression Setup

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

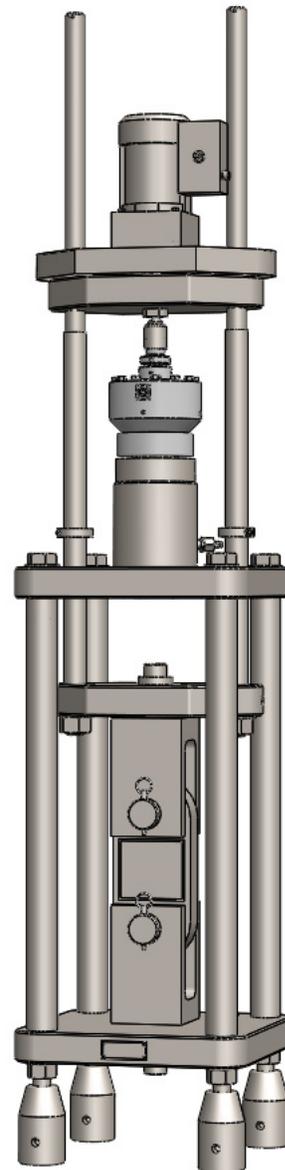


Figure 3: Typical Tension Setup

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%

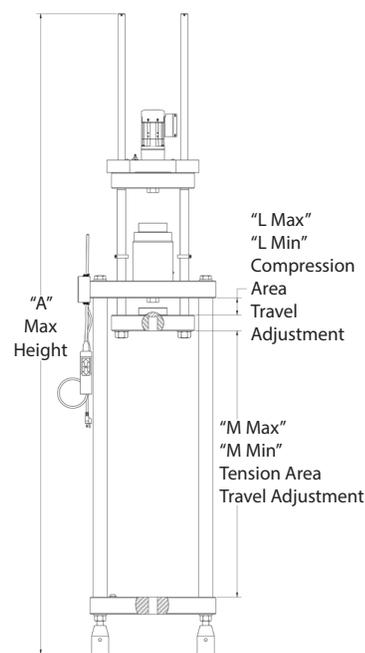


Figure 4: UCM Dimensions