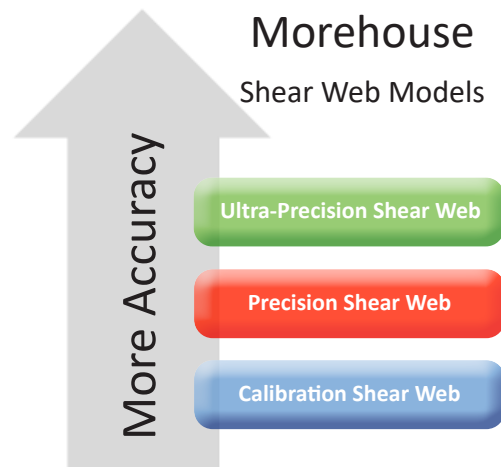




Morehouse offers three grades of high accuracy shear web load cells with varying design and performance characteristics for use wherever a high level of confidence is required. High accuracy load cell systems will use fewer load cells than most competing systems, lowering calibration costs, reducing cycle time, and requiring fewer setups.

## High Accuracy Shear-Web Load Cells

- » Capacities from 300 – 120K lbf, or equivalent kgf/Newton.
- » Compression and/or tension modes.
- » Accredited calibration, ASTM E74 or ISO 376 available.
- » Calibration by deadweight primary standards for capacities up to 120K lbf (534 kN). This is required for ASTM E74 Class AA & ISO 376 Class 00 calibrations.
- » Load cell indicators, adapters, and accessories available.
- » Custom-cut system cases available for storage and secure shipping.



## Ultra-Precision Load Cell

- » ASTM E74 Lower Limit Factor (LLF) better than 0.005 % of capacity
- » ASTM E74 Class AA lower limit typically around 10 % of capacity when used only in a single direction <sup>1,2,3,6</sup>
- » ASTM E74 Class A lower limit around 2 % of capacity when used only in a single direction <sup>1,2,4,6</sup>
- » ISO 376 Class 00
- » Calibrated using deadweight primary standards for ASTM E74 Class AA & ISO 376 Class 00
- » Shear-web design available in capacities from 100 – 120K lbf



## Precision Load Cell

- » ASTM E74 Lower Limit Factor (LLF) better than 0.01 % of capacity
- » ASTM E74 Class A lower limit typically around 4 % of capacity when used only in a single direction <sup>1,2,4,7</sup>
- » ISO 376 Class 0.5 or better
- » Direct reading calibration accuracy typically around 0.05 % of capacity <sup>5</sup>
- » Single or multi-column design load cells also available in capacities 120K – 2M lbf



## Calibration Load Cell

- » ASTM E74 Lower Limit Factor (LLF) better than 0.02 % of capacity
- » ASTM E74 Class A lower limit typically around 8 % of capacity when used only in a single direction <sup>1,2,4,8</sup>
- » ISO 376 Class 1 or better
- » Direct reading calibration accuracy typically around 0.1 % of capacity <sup>5</sup>
- » Single or multi-column design load cells also available in capacities 120K – 2M lbf



## Notes:

1. ISO Class is for Case C only. Case D varies by capacity.
2. When calibrated in mV/V or with a high precision indicator such as Morehouse 4215, HADI, or DSC-USB.
3. Lower Limit is defined by ASTM E74 as the smallest force at which an instrument can be used.
4. ASTM E74 defines Class AA Lower Limit as 2000 x LLF.
5. ASTM E74 defines the Class A Lower Limit as 400 x LLF.
6. When the directions are combined, there may be a reduction in the loading range. The reduction varies by capacity, and the Class A and AA verified range of forces could double.
7. When the directions are combined, there may be a reduction in the loading range. The reduction varies by capacity, and the verified range of forces could increase to 20 % of capacity.
8. When the directions are combined, there may be a reduction in the loading range. The reduction varies by capacity, and the verified range of forces could increase to 40 % of capacity.

## Technical Specifications

| Specifications                    | Model - Capacity (lbf / kN) |                  |               |                  |               |                  |
|-----------------------------------|-----------------------------|------------------|---------------|------------------|---------------|------------------|
|                                   | Ultra-Precision             |                  | Precision     |                  | Calibration   |                  |
|                                   | 300-2K / 1-10               | 5K-200K / 25-900 | 300-2K / 1-10 | 5K-200K / 25-900 | 300-2K / 1-10 | 5K-100K / 25-500 |
| <b>Accuracy</b>                   |                             |                  |               |                  |               |                  |
| Static Error Band, % R.O.         | ±0.02                       | ± 0.03           | ± 0.02        | ± 0.03           | ± 0.04        | ± 0.05           |
| Non-Linearity, % R.O.             | ±0.02                       | ± 0.03           | ± 0.03        | ± 0.03           | ± 0.04        | ± 0.05           |
| Hysteresis, % R.O.                | ± 0.02                      | ± 0.04           | ± 0.02        | ± 0.04           | ± 0.03        | ± 0.05           |
| Non-Repeatability, % R.O.         | ± 0.005                     | ± 0.005          | ± 0.01        | ± 0.01           | ± 0.01        | ± 0.01           |
| Creep, % Rdg / 20 Min.            | ± 0.015                     | ± 0.015          | ± 0.03        | ± 0.03           | ± 0.03        | ± 0.03           |
| Off-Center Load Sensitivity, %/in | ±0.05                       | ± 0.05           | ±0.10         | ± 0.10           | ± 0.25        | ± 0.25           |
| Side Load Sensitivity, %          | ± 0.05                      | ± 0.05           | ±0.10         | ±0.10            | ± 0.25        | ± 0.25           |
| Zero Balance, % R.O.              | ± 1.0                       | ± 1.0            | ± 1.0         | ± 1.0            | ± 1.0         | ± 1.0            |
| <b>Temperature</b>                |                             |                  |               |                  |               |                  |
| Range, Compensated, °F            | +15 to +115                 | +15 to +115      | +15 to +115   | +15 to +115      | +15 to +115   | +15 to +115      |
| Range, Operating, °F              | -65 to +200                 | -65 to +200      | -65 to +200   | -65 to +200      | -65 to +200   | -65 to +200      |
| Sensitivity Effect, % Rdg / 100°F | 0.08                        | 0.08             | 0.08          | 0.08             | 0.08          | 0.08             |
| Zero Effect, % R.O. / 100°F       | 0.08                        | 0.08             | 0.08          | 0.08             | 0.08          | 0.08             |
| <b>Electrical</b>                 |                             |                  |               |                  |               |                  |
| Recommended Excitation, VDC       | 10                          | 10               | 10            | 10               | 10            | 10               |
| Input Resistance, Ω               | 350 +40/-3.5                | 350 +40/-3.5     | 350 +40/-3.5  | 350 +40/-3.5     | 350 +40/-3.5  | 350 +40/-3.5     |
| Output Resistance, Ω              | 350 ± 3.5                   | 350 ± 3.5        | 350 ± 3.5     | 350 ± 3.5        | 350 ± 3.5     | 350 ± 3.5        |
| Sensitivity (R.O.), mV/V, Nominal | 2                           | 4                | 2             | 4                | 2             | 4                |
| Insulation Bridge/Case, MegΩ      | 5000 @50 VDC                | 5000 @50 VDC     | 5000 @50 VDC  | 5000 @50 VDC     | 5000 @50 VDC  | 5000 @50 VDC     |
| <b>Mechanical</b>                 |                             |                  |               |                  |               |                  |
| Safe Overload, % R.O.             | 150                         | 150              | 150           | 150              | 150           | 150              |
| Flexure Material                  | Aluminum                    | Steel            | Aluminum      | Steel            | Aluminum      | Steel            |

| Specification | Load Cell Capacity |                |                   |           |            |            |
|---------------|--------------------|----------------|-------------------|-----------|------------|------------|
|               | 300-2K / 1-10      | 5K-10K / 20-50 | 25K-50K / 100-250 | 60K / 300 | 100K / 500 | 200K / 900 |
| Weight, lbs   | 3.8                | 8.0            | 23.5              | 26.0      | 58.0       | 171.0      |



## Load Cell Part Numbers

### Ultra-Precision Load Cell

|                       |            |            |              |              |              |               |               |               |               |                |                |
|-----------------------|------------|------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|----------------|----------------|
| <b>Capacity (lbf)</b> | <b>300</b> | <b>500</b> | <b>1,000</b> | <b>2,000</b> | <b>5,000</b> | <b>10,000</b> | <b>25,000</b> | <b>50,000</b> | <b>60,000</b> | <b>100,000</b> | <b>200,000</b> |
| <b>Capacity (kN)</b>  | <b>1</b>   | <b>2.5</b> | <b>5</b>     | <b>10</b>    | <b>25</b>    | <b>50</b>     | <b>100</b>    | <b>250</b>    | <b>300</b>    | <b>500</b>     | <b>900</b>     |
| Part No.              | UPC-300    | UPC-500    | UPC-1K       | UPC-2K       | UPC-5K       | UPC-10K       | UPC-25K       | UPC-50K       | UPC-60K       | UPC-100K       | UPC-200K       |

### Precision Load Cell

|                       |            |            |              |              |              |               |               |               |               |                |                |
|-----------------------|------------|------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|----------------|----------------|
| <b>Capacity (lbf)</b> | <b>300</b> | <b>500</b> | <b>1,000</b> | <b>2,000</b> | <b>5,000</b> | <b>10,000</b> | <b>25,000</b> | <b>50,000</b> | <b>60,000</b> | <b>100,000</b> | <b>200,000</b> |
| <b>Capacity (kN)</b>  | <b>1</b>   | <b>2.5</b> | <b>5</b>     | <b>10</b>    | <b>25</b>    | <b>50</b>     | <b>100</b>    | <b>250</b>    | <b>300</b>    | <b>500</b>     | <b>900</b>     |
| Part No.              | PC-300     | PC-500     | PC-1K        | PC-2K        | PC-5K        | PC-10K        | PC-25K        | PC-50K        | PC-60K        | PC-100K        | PC-200K        |

### Calibration Load Cell

|                       |            |            |              |              |              |               |               |               |               |                |                |
|-----------------------|------------|------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|----------------|----------------|
| <b>Capacity (lbf)</b> | <b>300</b> | <b>500</b> | <b>1,000</b> | <b>2,000</b> | <b>5,000</b> | <b>10,000</b> | <b>25,000</b> | <b>50,000</b> | <b>60,000</b> | <b>100,000</b> | <b>200,000</b> |
| <b>Capacity (kN)</b>  | <b>1</b>   | <b>2.5</b> | <b>5</b>     | <b>10</b>    | <b>25</b>    | <b>50</b>     | <b>100</b>    | <b>250</b>    | <b>300</b>    | <b>500</b>     | <b>900</b>     |
| Part No.              | C-300      | C-500      | C-1K         | C-2K         | C-5K         | C-10K         | C-25K         | C-50K         | C-60K         | C-100K         | C-200K         |

Load cells for other capacities are available. Contact Morehouse for more information.