OPERATING INSTRUCTIONS FOR

MOREHOUSE RING FORCE GAUGES

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The Ring Force Gauge is relatively simple to operate. If maximum accuracy is desired the Ring Force Gauge should be placed near the location where it is to be used and allowed to stabilize at the ambient temperature that will prevail during use. Deviations from the temperature at which the Ring Force Gauge was calibrated will cause errors of approximately 1% for every 70 degrees F.

PREPARATION FOR LOADING

COMPRESSION: If the Ring Force Gauge is to be loaded against the spherical surface on the top boss a piece of cold rolled steel should be inserted between the button and the upper surface against which it will bear. This will prevent the button from causing an indentation in the upper surface. Following is a list of recommended sizes for the cold rolled steel to be used:

Capacities through 50,000 lbf – 2" X 2" X 0.5" Thick
Capacities 50,001 through 100,000 lbf – 3" X 3" X 0.5" Thick
Capacities 100,0001 through 200,000 lbf – 4" X 4" X 0.75" Thick
Capacities 200,001 through 500,000 lbf – 4" X 4" X 1.5" Thick
Capacities 500,0001 through 1,000,000 lbf – 5" X 5" X 2.0" Thick

The surface on which the lower boss will bear should be flat to minimize non-axial loading.

If the Ring Force Gauge is to be loaded through balls in place of the spherical surface on the top boss and/or the flat surface of the lower boss the surfaces opposing the balls in the ring should have ball seats approximating the dimensions shown on the attached drawing numbered A-99331. Do not load between two steel balls unless the loading components are mechanically restrained to prevent any lateral movement when loaded, the surfaces of the components have properly sized ball seats, and the ball seats of the components are axially aligned. When loading through a steel ball be certain the ball is made of hardened chrome alloy steel and it is the recommended size to withstand the force applied. **Never use a carbide ball… carbide is brittle and will shatter under load.**

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TENSION: There are no special instructions applicable to mounting the tension type Ring Force Gauges that are not obvious except to keep any special attachments or adaptors in as close alignment as possible.

OPERATION

After mounting the Ring Force Gauge in the press or other assembly in which the mechanical forces are to be measured, the force gauge should be exercised two or three times to stabilize it. That is: load the Ring Force Gauge to its capacity or the force to which it is to be used, whichever is lower, and release it. After exercising the Ring Force Gauge reset it to zero, if necessary, by rotating the bezel of the indicator.

When loading a force gauge that has tension capabilities, be sure the indicator is not sticking or "hanging-up" and it is properly following the loading of the force gauge so that it is not accidentally overloaded.

CARE AND MAINTENANCE

Since the accuracy of the Ring Force Gauge is directly dependent upon the dial indicator, the Ring Force Gauge should be handled with reasonable care. Occasionally, as with most dial indicators, a slight "hanging-up" of the pointer may be noticeable. A light tapping of the indicator with a pencil will free the pointer. If it is desired to use the Ring Force Gauge to its highest degree of accuracy the indicator should be tapped at each load to be sure friction in the indicator is not causing an error.

Do not oil the indicator. If the indicator sticks after a period of inactivity working the spindle up and down several times will usually free the movement. The spindle may be worked up and down by inserting a piece of shim stock between the contact point of the indicator spindle and the lower anvil of the ring and then alternately lifting and releasing the spindle over its entire range.

FREQUENCY OF CALIBRATION

The question, **"How often should a Ring Force Gauge be calibrated?",** is difficult to answer. Some specifications require gauges of any nature used to check or calibrate production or general inspection devices and gauges be recalibrated annually or bi-annually. However, where there is no particular specification that must be complied with

the following general rules may be used as a guide to determine the frequency of calibration:

1. When the Ring Force Gauge is used on a daily basis under conditions where it may be subjected to vibration and infiltration of dirt and grit, and the utmost in accuracy within its limits is desired, semi-annual recalibration is suggested. If the force gauge is not subjected to possible infiltration or contamination under the above conditions or the highest possible degree of accuracy is not required annual recalibration is suggested.

2. If the Ring Force Gauge is used two or three times a week to make general force measurements to the highest possible degree of accuracy, within its limits, annual recalibration is suggested.

3. If the Ring Force Gauge is used four or five times a month to check or calibrate another force measuring device or machine such as presses, testing machines, load cells, etc., bi-annual calibration is suggested.

REMARKS

We do not know all the applications for which Ring Force Gauges can be used, nor do we know what the limitations are with respect to adaptors that can be attached to them… they both appear to be limitless. Please do not hesitate to contact us if you have any questions about how the Ring Force Gauges can be applied or about adaptors you may want to make and attach to them.

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