Morehouse
THE FORCE IN CALIBRATION SINCE 1925

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OPERATION AND INSTRUCTION GUIDE

FORCE MEASUREMENT EQUIPMENT SAFETY GUIDE

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Instructions

To avoid situations that may cause personal injury, or equipment damage, when applying force to measuring instruments, read and understand the following instructions.

1- : When loading thru a steel ball, the instrument should have a conical ball seat of the recommended size (see figure 2), for the size of ball being used and the opposing surface should have a similar ball seat. Alternately, a soft steel pad of sufficient size and thickness may be used in place of a ball seat in the opposite surface for capacities of 200,000 lbs. and less. The force must be applied axially within one degree. The bottom boss of the load cell or other instrument must bear against a flat hardened steel surface, and if possible, should be restrained. See figure 1.

2- : When loading a load cell or other force measuring instrument thru a steel ball, be certain that the ball is made of hardened chrome alloy steel, and that it is the recommended size (see figure 2) to withstand the force applied. Never use a carbide ball... carbide is brittle and will shatter under load.

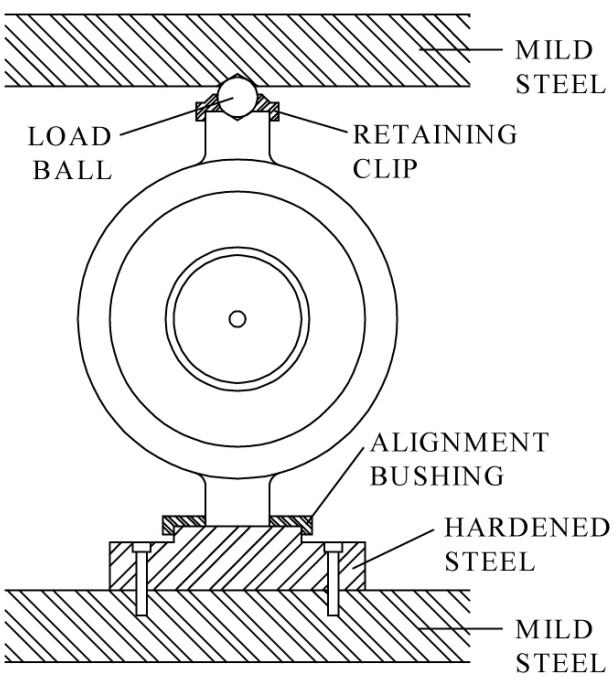
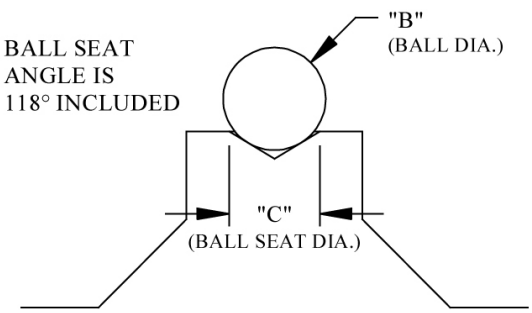


Figure 1



LOAD BALL MUST BE HARDENED CHROME ALLOY STEEL.

22,000 LBF.	10 mm.	17/64
220,000 LBF.	1 1/2	1
120,000 LBF.	7/8	3/4
66,000 LBF.	5/8	1/2
33,000 LBF.	7/16	3/8
MAX. CAP.	"B"	"C"

Figure 2

3- : Do not load between unstable surfaces. Under load, the instrument could be spewed from the machine with tremendous force. Never use a set-up where there are two spherical surfaces opposing another without making the appropriate adapters to contain the instrument. Morehouse has developed special adapters for this type of loading. Without the appropriate adapters the instrument could be thrown from the machine with tremendous force. See figure 3 above for an example of what **NOT** to do.

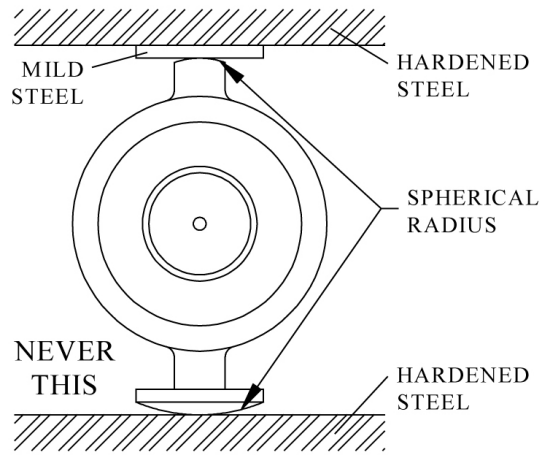


Figure 3

4- : Do **NOT** load between two steel balls unless the loading components are mechanically restrained to prevent any possible lateral movement when loaded. Additionally, the surfaces of the components must have properly sized ball seats, the ball seats of the components must be axially aligned, and ball retainer clips should be used. See figure 4

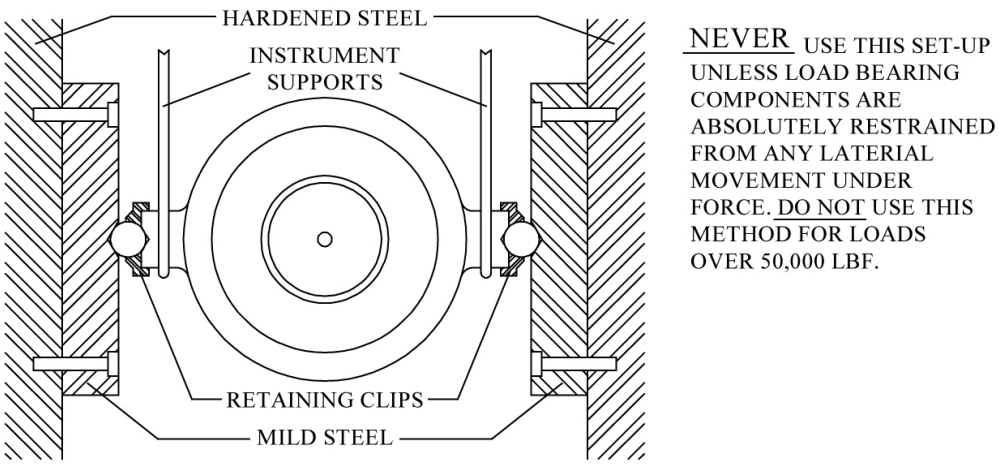


Figure 4

5- : When using tension member assemblies having mating spherical surfaces, be certain that they are properly installed. See figure 5. Morehouse Quick Change Tension members (pictured below) are designed to help eliminate eccentric loads, resulting in a more accurate and safer force application.

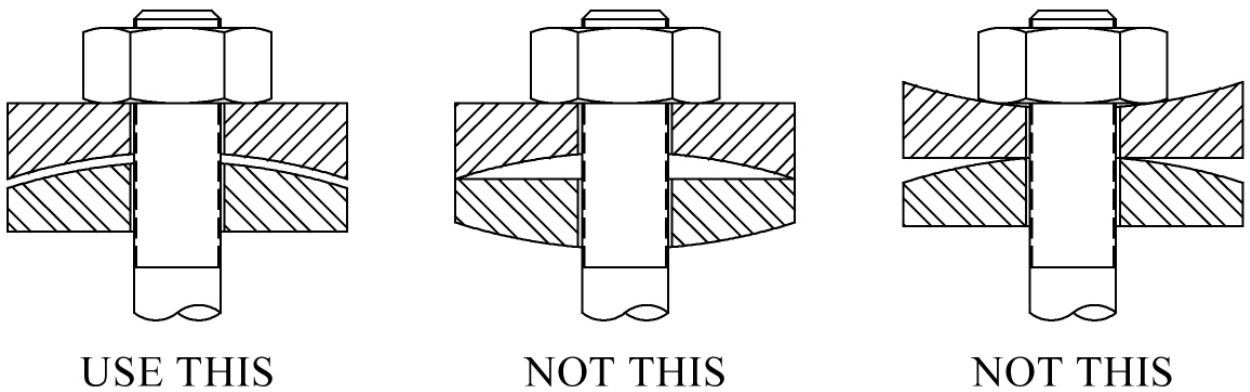
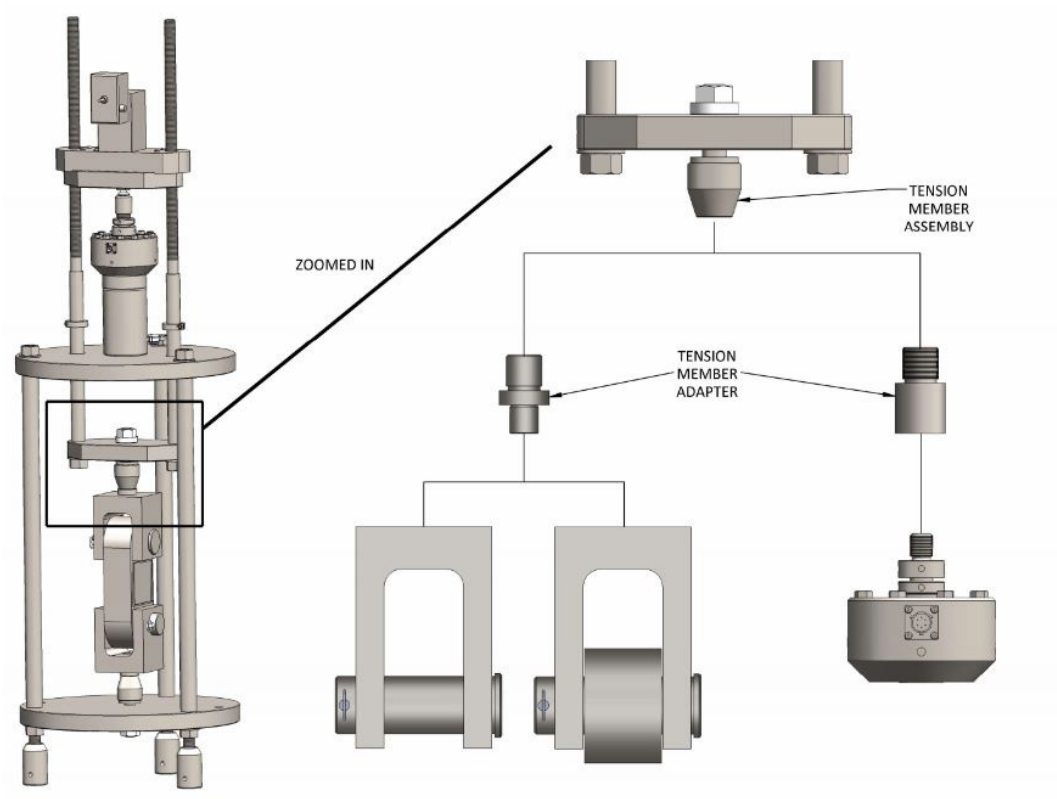


Figure 5



Morehouse Quick Change Tension Members

6- : Do not load between surfaces that exceed one-degree deviation from parallel. See figure 6.

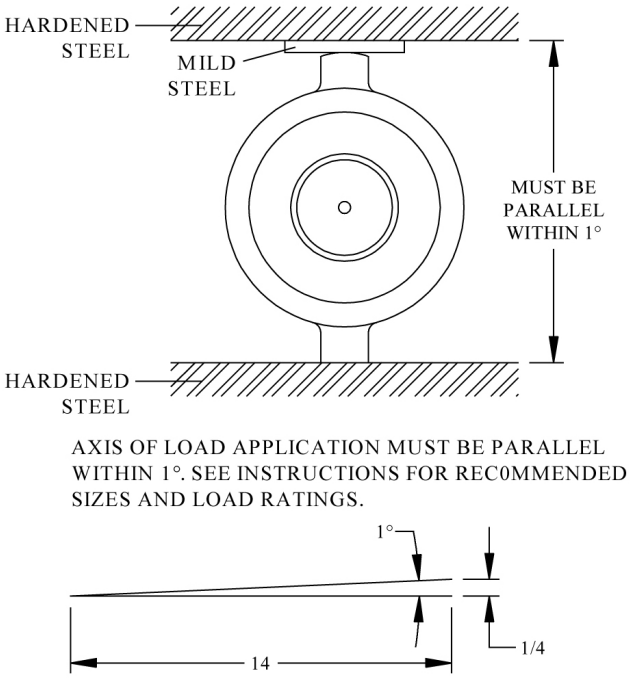


Figure 6

7- : Most Important... Any adapter or accessory you may design, make or purchase for use with a calibrating or force measuring instrument must be of proper design and made from steel of the proper strength to withstand the forces to which it is subjected. It is most important that adapters and accessories be test loaded under safe conditions prior to actual use with an instrument. Equipment should not be used beyond its maximum rated capacity. Failure to use the proper strength material may result in serious injury or death.

8- : Read and understand all instructions and precautions applicable to the use of the instrument and/or machines being used to apply the force.

9- : If there are questions or doubts at any time about the use of Load Cells, Proving Rings or other force measuring instruments, contact us by **telephone: 717-843-0081** or **email: info@mhforce.com**

10- : Applying forces, particularly large forces, to equipment and instruments is inherently dangerous. This document does not, and cannot, foresee all safety considerations in your testing and application environments. It is important to give careful consideration to any application of force.