

RECOMMENDED INSTALLATION PROCEDURES

Model F140, F141, & F142 Load Cells

MOUNTING SURFACES: The F140, F141, and F142 load cells should be mounted on a surface that is flat within 0.0002 inch and rigid enough so that it will not deform under full load. SensorData recommends that the optional tension plate be used with the F140, F141, and F142 load cells whenever practical. When it is not practical a hardened steel structure ($\geq R_c 45$) should be used. Shear beam load cells like the F140, F141, and F142 load cells respond linearly to forces applied vertically to the center of the load cell and in the axis that is perpendicular to the mounting surface. The load cell's response to a non vertical force applied to the center of the load cell is proportional to that force times the cosine of the angle that the applied force makes with the vertical loading axis of the load cell.

BOLTING: Grade 8 bolts should be used to attach the F140, F141, and F142 load cells to any mounting structure supplied by the user. The bolts should be tightened to the torque value listed for the respective load cell model in the table on the next page. When the optional tension plate is supplied and installed on the F140, F141, or F142 load cell by SensorData, Grade 8 bolts are used and tightened to the torque values listed in the table on the next page.

JAM NUTS: Jam nuts should be used on the threaded portion of any device that engages the center loading threads of the F140, F141, and F142 load cells. Turn the threaded device with the jam nut attached fully clockwise until the threaded device "bottoms" in the threaded loading hole. Then back-off the threaded device by turning it one full turn counter-clockwise. The jam nut can be tightened using one of two methods. **Method one** is to tighten the jam nut with a wrench to the torque value for the respective load cell model listed in the table on the next page. **Method two** is to apply a tension load of approximately 120% of the load cell's rated capacity, engage the jam nut until it is finger tight, and then release the tension load. The applied force on the load cell during normal operation should not exceed 100% of the load cell's rated capacity.

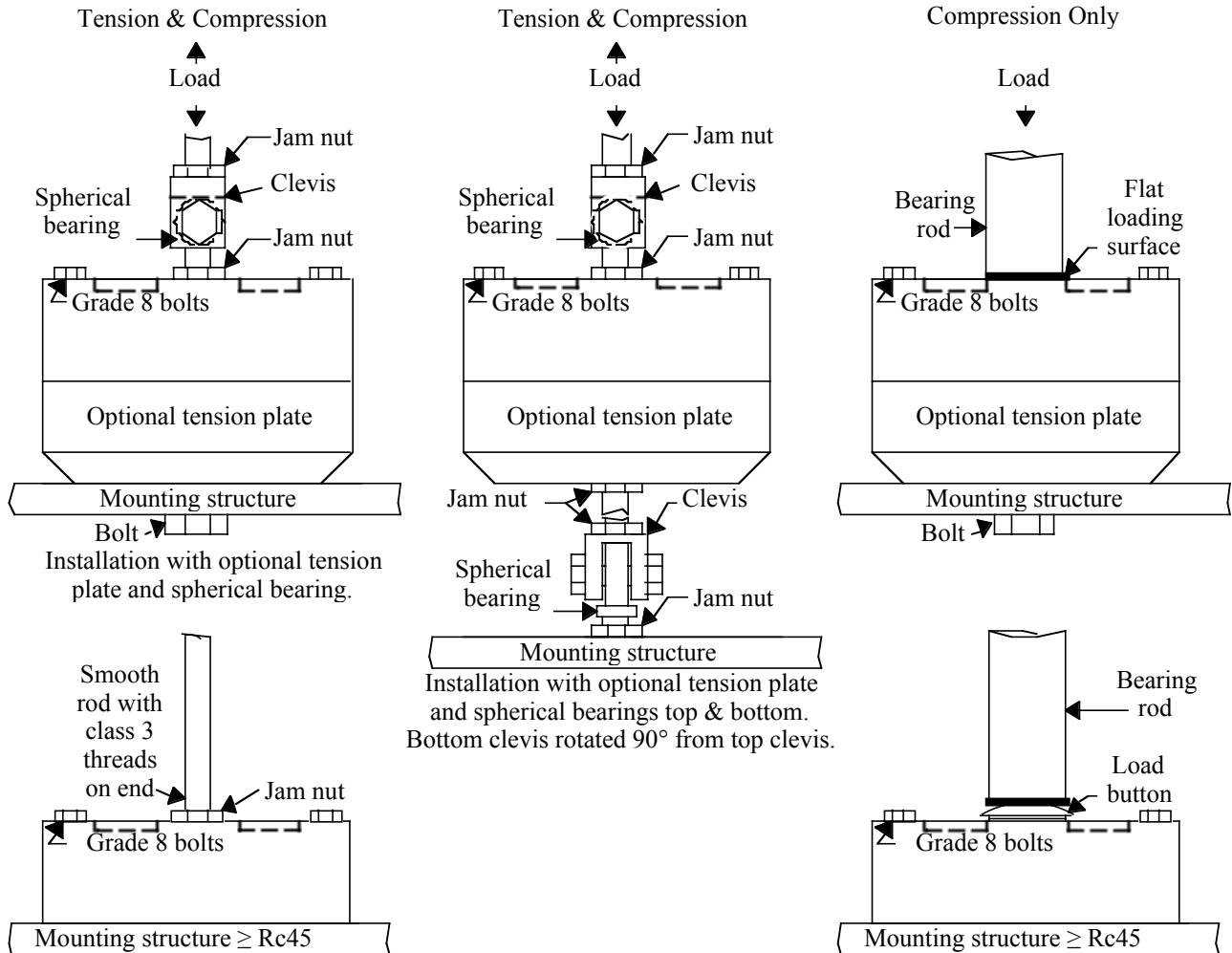
LOADING DEVICES: Spherical rod-end bearings and other threaded loading attachments should have "smooth" threads with a Class 3 fit. They should be installed and backed-off one turn before tightening the jam nut as described above. When a pair of spherical rod-end bearings are used the bottom clevis should be rotated 90° from the top clevis and the optional tension plate should be used to attach the second clevis. Hardened steel ($\geq R_c 45$) bearing rods and plates should be used for compression loading.

SUMMARY: SensorData Technologies recommends that the surface to which the F140, F141, & F142 load cells are mounted be flat to within 0.0002" and hardened to $\geq R_c 45$. Mounting bolts should be Grade 8 and should be tightened to the torque value listed in the table on the next page. Jam nuts should be tightened according to **Method one** or **Method two** in **JAM NUTS** above; whichever applies. Threaded loading devices should have a Class 3 fit, and when clevis pairs are used the bottom clevis should be rotated 90° from the top clevis.



TYPICAL INSTALLATION CONFIGURATIONS

Model F140, F141, & F142 Load Cells



Installation without optional tension plate. Mounting surface must be flat within 0.0002 inch, and perpendicular to load axis within 1 degree.

Model	Jam Nut for Threaded Center Loading Devices *		Grade 8 Bolt to Attach Load Cell to Mounting Structure	
	Thread Size	Torque; lb - in	Thread Size	Torque; lb - in
F140	3/8 - 24	750	1/4 - 28	180
F141	1/2 - 20	1,440	5/16 - 24	435
F142	1 - 14	12,800	3/8 - 24	750

* When a recommended torque value cannot be achieved with a wrench refer to **Method two** in the **JAM NUTS** section on the previous page.