

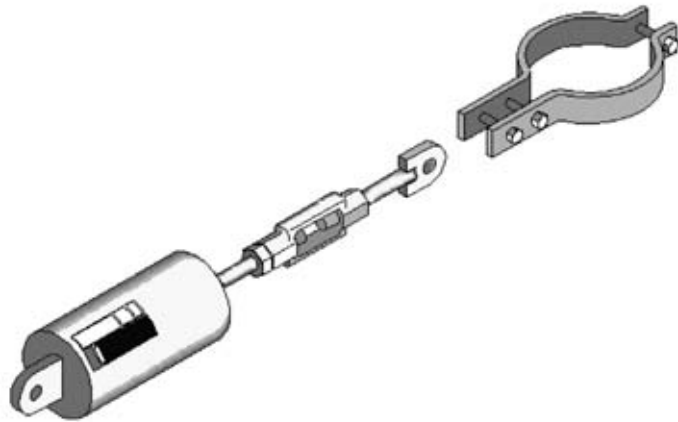


DYNAMIC RESTRAINTS

Piping Technology & Products, Inc. offers a variety of dynamic restraints which guide/restrain the movement of piping systems during transient events while simultaneously allowing for the unimpeded thermal growth of the system. Some types are also ideal for controlling vibration while others can be tailored specifically for absorbing abnormal, unidirectional shock loadings. These restraint assemblies are generally categorized as follows:

- Vibration Control & Sway Braces
- Hydraulic Shock & Sway Suppressors
- Mechanical Snubbers
- Sway Strut Assemblies

In addition to PT&P's well established line of Sway Braces and Struts, PT&P offers an extended selection of the following mechanical and hydraulic snubbers and rigid restraints through one of its wholly owned subsidiaries - **Fronek Anchor/Darling Enterprises, Inc.**, an ASME "NS" Certificate Holder.



- **B-P Style:** A proven hydraulic snubber design (formerly by Bergen-Paterson®) built in accordance with the requirements of the ASME Boiler and Pressure Vessel Code. Its manifold configuration eliminates external tubing and its pressurized reservoir allows installation in any spatial orientation.
- **dynA/Damp®:** A highly responsive, non-locking mechanical snubber design with corrosion resistant construction, also built in accordance with ASME Code requirements. These devices offer dependable service over a wide range of load capacities and seismic frequencies.
- **Custom Designed Compensating Strut Assemblies:** Along with the dynA/Damp® mechanical snubber, Fronek Anchor/Darling Enterprises, Inc. can also provide locking-type mechanical snubbers for use as whip restraints for large pipes and vessels, as well as restraints for relief valve reaction forces. This type of restraint is available in load capacities ranging between 10 and 125 Kips, with stroke and end connections to fit customer specified applications.



CLAMP AND SWAY STRUT ASSEMBLIES



HYDRAULIC SNUBBER EXTENSION ROD ENDS



TESTING A SWAY BRACE



FIG. 550 & 555

VIBRATION CONTROL & SWAY BRACE

- SIZE RANGE:** For pipe sizes 2" through 24".
- SERVICE:** Recommended for controlling vibration, absorbing shock loadings; guiding or restraining the movement of pipe resulting from thermal expansion; bracing a pipe line against sway.
- INSTALLATION:** The vibration control and sway brace is shipped ready for installation. The rod coupling rotates with slight resistance and the tension test collar can be rotated by hand while holding the rod stationary.
- ADJUSTMENT:** The sway brace should be in the neutral position when the system is hot and operating, at which time the tension test collar should be hand tight. If it is not, the sway brace should be adjusted to the neutral position by use of the load coupling. The screws in the tension test collar need not be loosened, since they serve only to secure it to the load coupling.
- FEATURES:**
- Vibration is opposed with an instantaneous counter force bringing the pipe back to normal position.
 - A single energy-absorbing pre-loaded spring provides two way action.
 - One spring saves space and simplifies design.
 - Spring has 3" travel in either direction.
 - Accurate neutral adjustment assured.
 - Enclosed spring excludes dirt and gives a clean, compact appearance.
- SIZE SELECTION:**
- The vibration control and sway brace gives full deflection forces from 200 lb. to 1,800 lb. and has initial pre-compressed spring forces from 50 lb. to 450 lb. to dampen vibrations, oppose pipe sway and absorb shock forces.
- The exact amount of energy needed to control piping should be in proportion to the mass, amplitude of movement, and nature of disturbing forces acting on the pipe. When it is possible to calculate the exact restraining force required, the size of the vibration control and sway brace capable of providing this force should be selected.
- To simplify the selection of size, engineers have designed the vibration control and sway brace in three sizes that are readily related to nominal pipe size. For pipe sizes 3 1/2" and smaller, the small size is recommended; for 4" to 8", the medium size; and for 10" and larger, the large size.
- SPECIFICATION:** Fulfills the requirements of the ASA Code for Pressure Piping as to fabrication details and materials.
- IMPORTANT:**
- Rod lengths should be cut and final tension of adjustments made for the hot or operating position of the pipe. If, with the pipe in its hot position, the tension test collar cannot be turned by hand, loosen the jam nut adjacent to the rod coupling and rotate the coupling until the collar can just be turned by hand. Retighten the jam nut.
- When correct tension adjustments are completed, the brace exerts no force on the pipe in its operating position. Under shutdown conditions, the brace allows the pipe to assume its cold position. It exerts a nominal cold strain force equal to the pre-load force plus the amount of travel from the hot to cold position, times the spring scale of the particular size of the vibration control and sway brace.
- ORDERING:** Specify figure number, size, description and overall dimension.