

## Spring Assist System

**Control System:** Adjustment-free system shall be provided that is controlled by a nickel-plated, steel ball chain (45-lb. test). The system shall be comprised of various components including a modified clutch and spring assist components. The clutch portion shall be comprised of multi-banded steel springs that create the pressure necessary to keep the shade in the desired position. All plastic components to be made of injected molded parts. All plastic clutch components to be made of glass reinforced polyester thermopolymer (PBT) conforming to military specification MIL M-24519. The clutch shall develop no more than 1/2 pound drag for easy lift. The Spring Assist assembly components shall be constructed from following materials.

- 1/4 inch Square Rod: 6061 Aluminum
- Rod Retainer: Actel plastic such as Delrin 500
- Coiled Steel Spring Pin
- End Cap: Polyester based plastic such as GE Valox 420 or equal quality
- Sleeve: Low density polyethylene
- Actuator: Polyester based plastic such as GE Valox 420 or equal quality
- Spring: ASTM A 228 Stress Relieved High Carbon Steel

There shall be separate springs assist assemblies; one for left-hand control and one for right-hand control in two lengths each to accommodate a wide range of shade weight options.

The System to be adaptable for left or right hand installation and can be adapted for either standard or reverse roll shades. The system shall require utilization of proprietary computer software to calculate appropriate spring size, tube diameter and pre-rotation tension. Utilizing proprietary computer software, the Spring Assist assembly shall ensure even lift and lowering forces of approximately 6 lbs or less on any weight fully assembled shade up to the maximum shade weight of 30 lbs.

**End Plug:** End plug to consist of an outside sleeve rotating freely on a center shaft, providing the bearing surfaces on which the roller rides. Outside sleeve and center shaft to be made of heat stabilized fiber reinforced plastic to ensure smooth, wear resistant operation.

**Brackets:** Brackets to be constructed of 0.07 inch thick painted or nickel-plated, C1008/1010 cold rolled steel. Painted brackets are finished with high quality baked enamel coating. End plug bracket shall have a lock down retainer device.

**Shade Mounting System:** The tube shall be a minimum 1-1/2" OD extruded aluminum with .050 wall thickness. (sentence deleted)

**Alternative mounting options:**

- The tube shall be 2" OD aluminum extruded alloy 6063TS tube with .065 wall thickness.
- The tube shall be 1-1/2" OD aluminum extruded alloy 6063TS tube with .050 wall thickness.

**Internal Hembar:** The Hembar shall be extruded aluminum weighing 1/4 lb. per linear foot.

**Warranty:** All components are warranted for ten years from the date of installation, subject to warranty