

**TO SPECIFYING ARCHITECT REGARDING
SECTION 11070
COUNTERWEIGHT RIGGING AND EQUIPMENT**

This specification is for counterweight sets only. This is not a complete stage system: tracks, drapery and other equipment are not included.

Among other uses this specification is appropriate to add counterweight sets to an existing stage.

Three or four counterweight sets may be needed to fly orchestra shell ceilings or to fly line-sets for electrical equipment over the stage.

Phone 800-548-8982 for clarification or assistance. No charge, of course.

**SECTION 11070
COUNTERWEIGHT RIGGING AND EQUIPMENT**

COUNTERWEIGHT RIGGING (T-Bar System)

- A. Furnish a total of 12 sets of multi-line counterweight rigging (T-bar channel system) firmly and securely attached to structure in the best and most workmanlike manner, fitted and arranged to clear all existing building construction, properly counterbalanced, adjusted, tensioned, and otherwise ready for operation in accordance with the requirements of the specifications and commonly accepted good practice for stage rigging. Each set shall contain the items listed below, which are catalog numbers of JR Clancy Co., Janson Industries, H & H Specialties, or approved equal. All hardware shall be shop painted.

<u>ITEM</u>	<u>CATALOG NO./SIZE</u>
Head block precision tapered roller bearings	#1255/1259
Loft blocks, ball bearing	#819
T-bar carriage	#15 x 5
Floor block, ball bearing	#855M
Rope lock	#533
Cable clips and copper ferrules	¼-inch
Lead cables (galvanized performed aircraft)	¼-inch 7 by 19
Hand line (Multi-line composite, non-stretch)	¾-inch
Pipe battens (schedule 40)	1½-inch ID steel pipe
Counterweights	800 lb per set

- B. Head blocks shall be of unit parallel type construction with heavy steel side plates extending above sheaves to accommodate three cross bolts and spacers to positively prevent cables escaping from grooves. All sheaves shall run on precision roller bearings of self-contained type operating in a ground cone independent of shaft and hub. Shaft shall be not less than one inch in diameter and shall be fitted with jam nut. Required: Class 30 gray iron (ASTM A-48); machined grooves; 1-inch steel shaft, keyed to side plate.
- C. Loft blocks shall be of full steel side construction with cross spacers to prevent cables escaping from grooves. Supply hook and clamp to fasten to beams without drilling. Loft blocks shall incorporate ball bearings. Required: Class 30 gray iron (ASTM A-48); machined grooves; 3/8-inch steel shaft, keyed to side plate. Loft block idler assemblies shall be provided to carry the weight of the cables and prevent rubbing against adjacent block side plates. Idler assemblies shall consist of one or more 2½-inch diameter, plastic idler pulleys mounted on the side of the loft block in a steel housing. The housing shall consist of a 12-gauge side plate and two ¼-inch bolts and pipe spacers to mount the housing and captivate the cables in the grooves. The sheaves shall have ball bearings, ¼-inch cable grooves and shall ride on a ¼-inch shaft. All nuts shall be of the nylon insert self-locking type. Furnish sheaves for all cables passing the corresponding loft block.
- D. Counterweight carriages shall have ¾-inch carriage side members. Guide blocks shall be of high molecular density hard durable plastic designed to work snugly and to operate smoothly and freely in the guide tracks. Provide double nuts at top and bottoms of rods. Furnish a 3-inch by ¼-inch back that extends from top to bottom to eliminate twisting. Furnish spreader plates on 2-foot centers and 2 locking collars for each carriage.
- E. Floor blocks shall be manufactured from gray iron as a one piece casting fitted with an 8-inch diameter sheave, lathe turned, for ¾-inch hand line, operating on ball bearings. Required: Class 30 gray iron (ASTM A-48); 5/8-inch steel shaft, keyed to side plate.
- F. Rope locks shall be manufactured as a unit casting of first grade gray ASTM ductile iron. Furnish cast iron jaws for clamping hand line. The jaws shall be mounted on smooth pins or rivets. Handles shall be at least nine inches in length and as an alternative shall consist of one piece steel fabrication. Each rope lock shall have a cadmium plated thumb screw for adjustment of jaw openings. Each lock shall be equipped with a steel oval retaining ring. Flanges with holes shall permit padlocking of individual sets.

- G. Lead line cable shall be of aircraft construction 7 by 19 (galvanized, performed) with breaking strength not less than 6000 pounds for ¼-inch cable.
- H. Handlines shall be of good quality composite non-stretch (multi-line) rope, not less than ¾-inches in diameter, free from slivers and foreign matter with polyester outer jacket.
- I. Counterweight pipe battens shall be 1-1/2 inch (inside diameter) standard schedule 40 pipe. All joints shall be sleeve spliced internally using not less than 18 inch splice pieces. Bolts or rivets shall connect each end of the internal splice pieces to the pipe batten. Use four 3/8-inch bolts at each splice with lock nuts.
- J. Counterweights shall be cut from steel plate free from rough edges or foreign matter, with slots at each end to accommodate the vertical rods of the counterweight carriages. All equipment shall be balanced and the surplus weight shall be neatly stacked. All counterweights shall be shop painted on all exposed surfaces in a smooth finish cost of black.
- K. Muling blocks, as required, shall be provided. Sets shall be installed in direct lines where practical but if required, due to physical location of stairs, doorways or obstructions, all muling blocks, extra head block and floor blocks necessary, together with supporting brackets, miscellaneous steel and additional cable and rope shall be furnished and installed to achieve a properly functioning system for each set.
- L. Locking rails shall be number 518/855M, or approved equal, fabricated in a continuous battery or individually for locating sets as required. Heavy steel upright frames shall be furnished for each set and shall be provided with holes for use in anchoring to the floor. Furnish anchor bolts with required nuts, washers and plates.

2.13 CRADLES AND LIFT LINES FOR ELECTRICAL FEED CABLE

- A. The stage equipment contractor and the electrical contractor shall have the joint responsibility of assuring that feed cables are not visible from any seat in the audience. The electrical contractor shall furnish and install the bar stock that connects the counterweight pipe (by stage equipment contractor) to the fixture pipe. The plug-in strip, the lighting instruments and the electrical cable shall be provided and installed by the electrical contractor. The stage equipment contractor shall furnish and install all loft blocks and steel cables required. The stage equipment contractor shall also furnish completely assembled fixture pipe battens for each counterweight set used for performance lighting plug-in strips and instruments. The installation of the fixture pipe batten and all electrical equipment shall be made by the electrical contractor.

2.14 T-BAR GUIDE SYSTEM

- A. Furnish a complete guide track system for each counterweight carriage and mount to the building wall construction. A pair of flanges shall guide the carriages for each counterweight set. The guide tracks for the counterweight carriages shall be erected vertically and shall extend from the locking rails to the head block to permit maximum movement (travel) by the carriages. The guide flanges shall be held parallel to within 1/16-inch. Provide wall knees (brackets) for supporting the guide track in a vertical plane regardless of irregularities in the masonry wall. Secure to masonry by means of suitable toggle bolts in masonry unit shells and expansive devices in mortar joints or solid masonry units. Horizontal angles shall be provided on five foot centers between the stage floor and the head block beam. Each of these angles shall extend for the full depth of the counterweight system wherever practical. One flange of the wall batten angles shall be bolted to the wall knee brackets and the other flange shall be bolted to each extruded channel. The purpose of the wall batten assembly is to assure a perfectly vertical plane for the counterweight carriage operation.

END OF SECTION