

PURCHASE DESCRIPTION  
TEST REQUIREMENTS FOR LIBRARY BOOKSTACKS

This purchase description covers the test requirements applicable to metal cantilever style library bookstacks.

The contractor is responsible for conducting performance test requirements as specified herein. The contractor may use his own or any other facilities suitable for the performance of the tests. The Government reserves the right to witness any tests where such inspections are deemed necessary to assure that the test units meet all test requirements.

**General Test Requirements.**

Evidence of compliance with the following test requirements shall be provided as specified in "Certification Requirements" under "General Technical Requirements" in the "Technical Requirements" document of the solicitation.

**Tests.**

The following tests shall be performed on all selected test units. One (1) upright frame of each size offered shall be tested. The single face test unit shall consist of the upright shelving (approximately 1065 mm high frame), four (4) adjustable shelves for the medium high shelving (approximately 1675 mm high frame), and six (6) adjustable shelves for the 2285 mm high frame. The double face test units shall consist of the selected upright frame and twice the quantity of base and adjustable shelves specified for the single face unit. Failure of any test unit to pass all the tests shall be sufficient cause to reject the unit. The Government reserves the right to use additional equipment, information or methods deemed necessary to determine compliance with the requirements of the specification. The maximum calibration of all measuring devices, other than the dial indicators, used in conjunction with the tests shall be 0.254 mm. Dial indicators shall be calibrated in increments of 0.0254 mm or less. Loads are applied using weights measured in kg of mass.

1. **BEND TEST FOR STEEL SHEETS.** The steel sheets used for parts with up to 0.15 percent carbon content shall withstand 130 degree flat bend onto itself, at room temperature, in any direction without showing any cracks or fractures on the outside of the bend. The steel sheets used for parts with 0.15 percent to 0.25 percent carbon content shall withstand 180 degree bend at room temperature, in any direction around and into a thickness equal to that of the specimen, without evidence of any defects stated above.

2. SPOT, PROJECTION, AND SEAM WELD TEST. Welded specimens representing spot, projection, or seam welding process utilized in the construction of the shelving units shall be offered for test. The specimens shall be subjected to the representative test in subparagraphs of 7.3 of MIL-W-12332.
3. FINISHING TESTS. A steel panel shall be prepared in accordance with commercial practice, and 50 mm wide test specimens cut from the panel shall be subjected to the following tests.
  - A. Flexibility test. The dry film shall show no evidence of cracking, or flaking under seven (7) power magnification after the test specimen has been bent 130 degrees over a 6.35 mm diameter mandrel.
  - B. Hardness test. The dry film on the test specimen and on the shelving unit components shall withstand the firm stroke of a 2H pencil, held at a 45 degree angle and pushed across the film surface, without evidence of marring when viewed at an oblique angle in a strong light.
  - C. Adhesion test. The dry film shall not be removed from the test specimen and shelving unit components when the film has been scored with a razor to the base metal, forming a grid of 3 mm squares, and a 25 mm wide piece of cellophane tape (Scotch Brand No. 600 or equal), is firmly applied to the grid surface and quickly pulled therefrom.
4. SHELF DEFLECTION TEST. All adjustable flat shelves with end brackets shall be subjected to this test. The test unit shall be one (1) assembled unit of the components specified in paragraph 1. The units shall be set on a firm base and the unit shall be leveled so that the upright posts are reasonably close to a true vertical position. The base shelf or shelves shall be loaded with 45 kg of weight. Two (2) of the adjustable shelves shall be selected for test. The remainder of the shelves may be removed from the unit. The shelves selected for test shall be conveniently located on the upright frame, one (1) on each side of the frame or both on one side of the frame. The test shall be performed on one (1) shelf at a time. Each end of the shelf shall be loaded with 2.25 kg of weight to position the shelf on the frame. A dial indicator shall be set on the bottom of the front flange of the shelf, at each end of the flange (ends of shelf) and at a point approximately equal distance from the ends of the shelf. A total load of 43 kg shall be uniformly placed on the 200 mm deep shelf, a total load of 54.5 kg placed on the 305 mm deep shelf, a total load of 61 kg shall be placed on the 280 mm deep divider shelf, and a total load of 80 kg shall be placed on the 355 mm divider shelf. The load shall consist of no less than five (5) individual weights, including the 2.25 kg weights. The dial indicators shall be checked for shelf deflection, after the load has been applied for ten (10) minutes. Deflection in excess of 4.7 mm shall be sufficient cause to reject the test unit. All of the load, except the 2.25 kg weights shall be removed from the shelf. After five (5), minutes, the indicators shall be checked for permanent deflection. Permanent deflection in excess of 0.78 mm shall

be sufficient cause to reject the units.

5. **PERIODICAL SHELF TEST.** The test unit shall be as specified in either, except two (2) sloping periodical shelves and two (2) flat storage shelves shall be positioned on the upright frame. A load of 32 kg shall be uniformly distributed on the sloping shelf. The shelf shall be visually examined, after ten (10) minutes, for weld or metal fractures, component failure, and component deformation in excess of 0.8 mm. Evidence of any of these defects shall be sufficient cause to reject the unit. The flat storage shelves shall be tested for deflection as specified in paragraph eight for the flat adjustable shelves. The load shall be 45 kg. Evidence of deflection in excess of the values specified in paragraph 4 shall be sufficient cause to reject the unit.
6. **LOAD TEST.** The test unit shall be one (1) assembled unit (periodical shelves excluded) of the components specified in paragraph 1. The test unit shall be positioned on a firm base and leveled as specified in paragraph 4. The base and adjustable shelves shall be loaded with the respective load specified in paragraph 4. The total load shall be applied to the unit for fifteen (15) minutes. After fifteen (15) minutes, the unit shall be visually examined, under load for weld or metal fractures, component failure, and examined without the load for permanent deflection in excess of 0.8 mm. Evidence of any of the above defects shall be sufficient cause to reject the unit.
7. **STABILITY TEST.** This test shall be performed on two (2) assembled and ranged shelving units. Each unit shall consist of the highest upright frame and the base shelves. The two (2) unit range shall be leveled as specified in paragraph 4. The base shelf of shelves of each unit shall be loaded with 90 kg of weight. The position of the top of a post on either end of the range shall be established by dial indicators positioned on two (2) adjacent sides of the post. The indicators shall be supported by test stands or by other stable objects. A 445 N force shall be applied to the positioned post, perpendicular to the longitudinal axis of the range and parallel with the supporting surface (floor) of the range. The force shall be applied to the top of the post of the low unit and applied to the post of all other units, 1220 mm above the supporting surface (floor) of the units. The force shall be applied for fifteen (15) minutes. The unit shall be visually examined, under load for component deformation in excess of 0.8 mm. At the end of fifteen (15) minutes, the force shall be released. After a period of five (5) minutes, the dial indicators shall be checked for the position at the top of the post. The 445 N force shall be applied to the same post, at the same elevation on the post, parallel with the longitudinal axis of the range, parallel with the supporting surface, for fifteen (15) minutes. The unit shall be visually examined for the defects stated above. At the end of fifteen (15) minutes, the force shall be released and after a period of five (5) minutes the dial component failure, permanent deflection in excess of 0.8 mm, failure of the top of the post of the high unit to return to within 1.9 mm (either indicator reading) of its original position, the top of the post of the medium unit to return to within 1.4 mm of its original position, and the top of the post of the low unit to return to within 0.8 mm of the original position, shall be

sufficient cause to reject the unit.

8. WIRE BOOK SUPPORT TEST PROCEDURE.

- A. Lay wire book support on flat surface.
- B. Measure space between legs (at ends of legs).
- C. Compress legs (by hand) 50 mm and release.
- D. Repeat this procedure in succession 10 times total.
- E. Re-measure space between legs (at ends of legs).
- F. Maximum permanent set shall not exceed 3 mm.