

**ITEM 10604.6550 M - MANUALLY OPERATED KNIFE GATE VALVE-750 mm
DIAMETER**

DESCRIPTION

This work shall consist of furnishing and installing manually operated knife gate valve in accordance with the Plans and Specifications and as directed by the Engineer.

MATERIALS

The knife gate valve shall be manually operated, non-rising stem type valve.

The Contractor shall furnish new knife gate valves. The new knife gate valves shall have solid cast bodies of 100% cast iron, fully flanged with ANSI class 125/150 bolt holes, tapped or bored through bolting. Body assembly shall not have a liner, and body fastening bolts shall be separate from and not associated with ANSI flange bolting areas. Valve shall have a full bore, with no lower cavity to entrap media or debris.

Knife gate valves shall have a solid stainless steel non-rising stem, with a high tensile stem nut. This nut will be coated for lubricity. Stem shall utilize thrust bearings on both the top and bottom. Stem assembly shall be enclosed in and supported by heavy-duty topworks of fabricated design. Top structure shall be fully enclosed except for visual indicate areas on each side, covered by clear plates, and shall incorporate a high-strength pin passing entirely through the structure and gate to provide an OSHA-compliant lockout in fully open or closed positions.

Top structure shall be of a universal bolted design, allowing for field retrofit or replacement of actuator. Top structure shall be silver powder coated, with a corrosion resistant epoxy. Gate shall be of solid stainless steel, conforming to AISI 316, ground on all sides, with a beveled lower edge utilizing a minimum radius designed to match the lower seat geometry. Valve body shall have a machined port seal groove, incorporating pinholes at 25mm spacing to retain port seal. Port seal shall be mechanically locked into place, out of the flowstream.

All knife gate valve parts shall have accurately machined mounting and bearing surfaces so that they can be assembled without fitting, chipping or machining. All parts shall conform accurately to the design dimensions and shall be free of all defects in workmanship or material that will impair their service. The knife gate shall be completely shop-assembled to insure the proper fit and adjustment of all parts.

The knife gate shall be opened and closed with the use of a valve key. The knife gate shall be furnished with a manual gear reduction unit. The non-rising stem shall be formed into a standard ANSI hex head, and shall be operable using a "T" type hex wrench, operated from valve box at grade. The installed valve shall be fully operable from outside the drainage structure, without having to enter the structure.

The knife gate valve shall be tested to 1,724 KPa. The manufacturer shall certify that the valve can withstand an operating head of 12 m and will be fully operable under 0-12m of Total Dynamic Head (TDH).

The gate valves will be equipped with a manual gear reduction unit and ANSI hexagonal tipped

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non-rising stem as indicated in the plans. The operating effort shall not exceed a 180 N pull. Positive mechanical seals will be provided on the operating nut to exclude moisture and dirt and prevent leakage of lubricant out of the hoist. Lubricating fittings shall be provided for the lubrication of all bearings. This arrangement will allow for operation by a "T" handle wrench supplied by the Knife Gate manufacturer.

Shaft support assemblies shall conform the requirements of ASTM A-575, Grade 1015 and 1020. Anchors at shaft supports shall meet or exceed the requirement of U.S. Government, G.S.A. Specifications No. FS-S-325 Group I, Type I, Class I. Nuts and bolts at shaft support shall conform to the requirements of ASTM A307 or F567 Class 4.6. Nuts and bolts shall be galvanized in accordance with Section 719-01, Type II.

CONSTRUCTION DETAILS:

Before starting work, the Contractor shall submit three (3) copies of working drawings of the knife gate and shaft support assemblies for approval by the Engineer.

All gates shall be shop tested for leakage against a 12.2 m unseating head and certified to meet guidelines set by AWWA C501. The Engineer shall be notified at least two (2) weeks in advance of the test. Attendance will be at the option of Engineer. All expenses of testing shall be borne by the Contractor. Certified reports of all tests shall be submitted to the Engineer by the Contractor thereafter.

Knife gate valve shall be high-strength bolted to steel jacking pipe flange. Center gaskets conforming to the specification for the jacking pipe shall be installed between knife gate valve and jacking pipe flange as shown on the drawings.

METHOD OF MEASUREMENT:

Manually Operated Knife Gate Valves will be measured by the number of units furnished and installed.

BASIS OF PAYMENT:

The unit price bid for each shall include the cost of furnishing all labor, materials and equipment necessary to furnish and install the knife gate valve and shop test to complete the work, including the cost of furnishing and installing shaft support assemblies.