

Form No:	 PE&SD	BHARAT HEAVY ELECTRICALS LIMITED PROJECT ENGINEERING & SYSTEMS DIVISION		PY 52219
		TECHNICAL SPECIFICATION		Rev. No. 01
		KNIFE GATE VALVE, CAST IRON		Page 1 of 4

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KNIFE GATE VALVE CAST IRON

1.0 SCOPE

1.1 This specification specifies the requirements of Knife gate valve from NPS 2 to NPS 24 sizes confirming to all the requirements of latest edition of MSS-SP-81 or AWWA C520

1.2 This standard shall be supplemented by BHEL specification "AA0851403" for Technical delivery conditions of valves.

1.3 APPLICATION

For raw sewage applications

2.0 DESIGNATION

A hand operated Knife gate valve of NPS 6 inch, cast iron body material, with wafer lug type body construction, flat faced and flange drilling standard conforming to PN10 rating of IS 1536, IS 1538, IS 9523 & IS 8329 shall be designated as

KNIFE VALVE HO 6" CI WAFER LUG PN10 FF

A hand operated Knife gate valve of NPS 6 inch, cast iron body material, with wafer lug type body construction, flat faced and flange drilling standard conforming to 150# rating of ASME B16.5 shall be designated as

KNIFE VALVE HO 6" CI WAFER LUG 150# FF

3.0 MATERIAL OF CONSTRUCTION:

3.1 Body: Cast Iron FG 260 as per IS 210

3.2 Knife gate: AISI:304 Gr. ASTM A240

3.3 Retainer ring: SS:304 ASTM A351 Gr. CF:8

3.4 Inlet Seal: EPDM

3.5 Spindle: AISI:410 Gr. ASTM A276

3.6 Spindle Nut: Cast Iron Gr. FG 200 as per IS 210

3.7 Stuffing plate: Cast Steel ASTM A216 Gr. WCB

3.8 Stuffing seal: Synthetic yarn with PTFE

In case of **superior material** (other than those indicated above) being offered, bidder shall submit all the supporting documents during the offer stage itself for BHEL's review & approval.

Refer Doc	LAYOUTS & PIPING ENGINEERING PROJECT ENGINEERING & SYSTEMS DIVISION	PREPARED	CHECKED	APPROVED	DATE
		 IMRAN AHMAD	 G.KALYN	 SRIKANTH G	12.08.17

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4.0 TECHNICAL REQUIREMENTS & ORDERING INFORMATION

CL	REQUIREMENTS	COMPLIANCE
4.1	Size	As indicated in material description
4.2	Maximum rated working pressure/Design pressure	150 psig at 150 deg F; 10.5 kgf/cm ² (g) at 65.5 deg C
4.3	Material of construction	As indicated in material description and clause no.3 as indicated above
4.4	Construction	MSS SP 81 or AWWA C520 and clause no.5 as indicated below
4.5	Mode of Operation Hand Operated (HO) Gear Operated (GO) Motor Operated (MO)	As indicated in material description (see note-2)
4.6	Body Construction type & End Connections : a) Flanged Connection drilling standard b) Flange Facing	As indicated in material description. Shall be one of: WAFFER WAFFER LUG (see note-1) DOUBLE FLANGED(DF) As indicated in material description Either one of PN10 - As per IS 1536,IS 1538,IS 8329 or IS 9523 150# - As per ASME B16.5 Unless otherwise specified, the facing of cast iron flanged ends shall be flat face (FF)
4.7	Dimensions	MSS SP 81 or AWWA C 520
4.8	Testing	As per MSS SP 81 or AWWA C 520
4.9	Marking	As per MSS SP 81 or AWWA C 520 & AA0851403

Note:

1. The wafer lug type knife gate valve shall be full lugged type and supplied with **full lugs**.
2. Unless otherwise specified all Hand operated valve of size 350 NB & above shall be Gear Operated (GO).

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5.0 DESIGN & CONSTRUCTIONAL REQUIREMENTS

- 5.1 Knife gate valves shall be suitable for use at suction and delivery side of pumps in a sewage pumping station. The valve shall be provided with gate made of stainless steel and the gate should have bevelled knife-edge at the bottom to cut through and easily enter in the solids settled in the bottom and ensure **positive shut-off / closure** in sewage environment.
- 5.2 The valve should be of bonnet-less type construction.
- 5.3 The valve shall be suitable for **uni-directional applications**.
- 5.4 The valve shall be provided with replaceable type flexible sealing seals to offer drop tight shut off. The seals should be made of EPDM rubber and should be held in place by an easily removable type seal retainer ring. The seal retainer ring should be designed in a manner so that the flow of the fluid should be away from the sealing perimeter and towards the centre of the valve.
- 5.5 The valve housing should have integral as cast tapered lugs provided for pushing the gate towards the flexible rubber seal only at the verge of closure with a view to avoid seal wear and achieve drop tight shut off. The surface of the gate coming in contact with the seal should be polished & buffed.
- 5.6 The valve shall be provided with sufficient ply of stuffing seals in the in built stuffing box to seal the rear opening. The stuffing box should have internal tappers for pushing the seals on to the gate. The seals should be of non-asbestos PTFE to reduce the friction and offer higher life. Provision shall be made to enable tighten the stuffing seals by means of a pusher arrangement to minimize the leakage through the back of the valve. The valves shall be designed in such a way that **the replacement of stuffing seals is possible and can be done in installed condition of the valve itself**.
- 5.7 The spindle should be double start threaded and **non-rising type for compact & safe operation**. The gate movement area should be covered by protection shields. **Gate opening indicating arrangement/position indicator shall be provided** to find out the extent of gate opening /closing.

6.0 PAINTING:

Unless otherwise specified during the inquiry, the painting for the valve shall be as below:

Surface Preparation: Blast clean to near white blast finish (SSPC.SP10 / SSI- Sa2 1/2)

Finish Painting: Suitable coats of epoxy paint to achieve minimum DFT 200 microns inclusive of primer coat.

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7.0 DOCUMENTATION:

7.1 Along with the offer:

One copy of each of the following documents shall be submitted along with the offer:

- G.A. drawings/ leaflets/ catalogues for the item with binding dimensions, material specification details, weight etc.
- Signed and stamped copy of this specification accepting the scope of supply as indicated in the specification.

7.2 After PO Placement:

Four copies each of the following documents shall be submitted for approval.

G.A. Drawings for the offered item with binding dimensions, material specification details, tests to be conducted, weight etc.

Schedule for document submissions:

S.no	Description	Schedule
1	Submission of GA drawing by vendor	7 days from the date of P.O.
2	Approval GA drawing by BHEL	14 days from drawing submission *

* The GA drawing submitted by vendor shall be strictly in compliance to all applicable standards and specification. The approval of GA drawing in no way absolves the supplier from meeting this specification requirement

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RECORD OF REVISIONS:

Rev No	Date	Revision Detail	Revised by	Approved by
00	12.08.2017	FIRST ISSUE	 G.KALYAN	 SRIKANTH G
01	23.11.2017	Clause no. 4.5 revised	 U. PRADEEP	 G. KALYAN