

	Bharat Heavy Electricals Ltd Boiler Auxiliaries Plant Ranipet-632 406	EDC/GATES & DAMPERS TECHNICAL SPECIFICATION
SPECIFICATION NO: GDQS:031	REV NO:00	PAGE NO 01 OF 05

01	Item	Pneumatic Driven - Knife Edge Gate Valve	Vendor / Acceptance / Comments
02	Scope of supply	Knife edge gate valve (KGV) with mating flanges, Air cylinder, filter cum regulator & lubricator, limit switches, solenoid valve, tubing, junction box with wirings termination	
03	Application	Valve is located in the seal air pipe and primary air duct for open close operation in the power plant. During the closed position of KGV one side of the disc is exposed to a column of hot air/ high ash content hot flue gas (approx 250°C). During the open position of the KGV, seal air from blower /primary air is passed through the valve. The valve will be either open/close position for prolonged period	
04	Mounting position	The valve will be mounted in the duct either vertically upward/downward directions or horizontal direction.	
05	Locking Device	Provision for mechanical locking is required both in the open position and in the closed position of the valve	
06	Working Environment & Life expectancy	Outdoor, Dusty, corrosive & highly polluted thermal power plant. The flow of seal air is at 16m/s with pressure of 1000 mm of water column. Hence vendor shall provide a measure to combat erosion of valve internals. Expected Service life of KGV is 20 years with routine maintenance	
07	Design temperature	The valve is to be designed to withstand minimum 250°C	
08	Design standard	The valve shall comply with the requirement of NFPA 85 for safe and reliable, dust tight valve operation as per subsection 9.4.6.1.1 & 9.4.6.1.2	
09	Hydro test and Leakage rate	a) Body: 11kg/sq.cm-leakage not permitted	
		b) Seat: At 2.8kg/sq.cm - without seal, vendor has to furnish expected leakage rate. It should be less than 40 cc / min/ inch of valve size (Ref MSS SP-81.)	
		c) Seat: At 2.8kg/sq.cm with seal, no visible leakage is permitted	
10	Valve Size	Either circular or Square /rectangular as per Indent/enquiry	

00	24-04-15	Fresh Release	sd	sd
			M.SURESH	V.KESAVAN
REV	DATE	DESCRPTION	PREPARED	APPROVED

SL. NO	Particulars	Description	Vendor / Acceptance / Comments
11	Body tapping	Tapping required to blow of dust before closing the valve. Vendor has to specify the requirement & number of tappings	
12	Body material	Carbon steel casting ASTM A216 Gr WCB	
13	Gate plate , Slide & Stem Material	All are Stainless steel 304, gate plate thickness as below	
		Valve size dia 200 350 450 550 650	
		Gate plate thickness Minimum (mm) 8 10 12 14 16	
14	Seat	Seat material to withstand 250°C - to be specified by the vendor	
15	Gasket	Non asbestos high temp(250°C) gasket sheet of 3mm to be provided on both side of valve to ensure leak tight joint between valve and mating flanges - Vendor to specify	
16	Gland Packing	PTFE withstand temperature up to 250C -	
17	Mating flange	Two numbers of mating flange minimum 10mm thickness with mounting fasteners are vendor's scope. The ID of the flange shall be equal ID of the valve. Circular duct will be but welded with the mating flanges.	
18	Depth of the valve	Face to Face dimension (depth of the valve) including mounting flanges will be furnished by the vendor for each valve size.	
19	Power cylinder	a)Double acting cylinder to be designed for minimum 3 kg/sq.cm (The instrument air pressure availability will be 3-7 kg/sq.cm)	
		b)Barrel:- Seamless steel tube , hard chrome plated & mirror finished. Material - ASME SA 106 GR B or better material	
		c)Piston:-Made up of one piece, fine grain alloy cast iron/ss 304/Aluminium.	
		d)Piston rod:- Material- BS 970 EN8 case hardened & chrome plated or better material.	
		e)Piston rod protection: Leather bellow and dust wiper to be provided.	
		f)Rod cartridge:- Material – IS2062 or IS210 FG220 with Bronze Bush or better material	
		g)Cushioning: fixed Cushing is preferable	
		h)Seals: VITON (Piston packing, Rod Packing, wipers & cushioning etc.)	
20	Solenoid Valve	a)4/2 or 5/2 Rotex / Asco / Festo make/Avcon	
		b)Seat and o-rings shall be Viton	
		c) Dual Coil with insulation Class - H	
		d) 24 V DC / 110V AC/ 230V AC which can operate with plus or minus 20% voltage. For voltage rating, refer Indent / Enquiry. Default 24 V DC if not specified in the indent/Enquiry.	
		e)Dust cap / silence muffler made of sintered bronze to be provided at exhaust port.	

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21	Filter cum lubricator	Suitably sized Metallic bowl with viewing glass, filter cum lubricator to be provided. The make shall be Plack/Airmatic/Nucon/Festo/GG pneumatics & Hydraulics	
		Element:- sintered bronze 25 or 40 micron as per the cylinder manufacturers recommendation	
22	Stainless steel tube	Suitable size & thickness, stainless steel tube, connecting filter cum lubricator, solenoid valve and cylinder ports to be laid and assembled by the vendor. (fittings may SS/brass but tube shall be SS) Tube size may be 1/4" or higher for valve dia upto 400mm, 1/2" or higher for above valve dia 400mm	
23	Limit switch	a)Omran / Honeywell /Bhartia Industries/Jaibalaji	
		b)Type: 2NO+2NC Double-Pole, Double-Throw (DPDT)	
		c)Protection class IP67 (with commet make cable gland 1619+1611 or equivalent	
		d)Rating: suitable for 5A,240V AC/0.5A 220DC	
		e)Quantity - 2 Nos to be provided for sensing open/close positions of KGV	
24	Junction Box	One termination junction box(JB) to be provided with 2 Rows x 12Nos of terminals. Cable from limit switches & solenoid to JB shall be laid with suitable brass cable glands. Finally wired JB has to meet IP 55.	
		Working voltage: 24V DC, 110 or 240V AC	
		Protection : IP55	
25	Leak proof Wiring	a)Wiring from limit switch to Junction box (cable 4pair x 0.5sqmm) or cable 10core x0.5sqmm & solenoid valve to junction box (cable 2corex1.5sqmm) to be done by the vendor as per the enclosed sketch enclosed in the Page 5 of 5	
		b) Suitable cable gland shall be used at limit switch & junction box (1619+1611 commet) and solenoid valve & to ensure water and dust proof wiring.	
		c)Wiring to be done with proper crimping lug & identification ferrules	
26	Name plate	Two name plates are to be riveted, It has to contain the following details. 1) Flow Direction Indicator 2) Manufactures name 3) KGV size (mm) 4) Drive cylinder bore/stroke (mm) 5) BHEL material code (Indent No / P.O.Ref.) 6) Year and month of manufacture and serial number. 7) KGV with cylinder weight in kgs	

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27	Documents needed along with offer	a) Point wise acceptance and deviations of this specification GDRS 002 latest version	
		b) GA drawing with BOM & material specification	
		c) List of Commissioning spares required & its make and model number. Its cost to be included in the main offer	
		d) Trouble free operational spares required for 2/3 years - to be quoted separately.	
		e) Latest Valve catalogue	
28	Quality plan & Drawing approval	a) Vendor shall submit quality plan to BHEL for review after the placement of order.	
		b) Drawing approval from BHEL/Ranipet to be obtained before manufacturing for the following items i) knife gate valve with BOM & material specification ii) Make and model of bought out items. iii) spare kit BOM. iv) Mating flange.	
29	Inspection	a) Inspection will be as per the approved drawing and specification By BHEL/BHEL's authorised agency at vendor works b) wiring as per clause 25 c) limit switch with cable gland 1916+1911 with	
30	Painting	Surface preparation – Blast cleaning of SA 2 1/2 to a surface profile of 35 to 50 micron. Epoxy primer – as per IS 13238 with film thickness of 30 micron. Epoxy finish paint as per IS 14209 with film thickness of 30 micron. Shade 692 of IS 5. Total DFT =60 micron. Note: suitable care to be taken to protect the machined surface during blast cleaning.	
31	Packing	Valve assembly shall be wrapped in polythene bag and packed in a strong rigid wooden crate. Limit switch packing: Rain water should not enter into limit switch during storage in the outer yard of power plant	
32	General Instruction	All Necessary material test certificates to be produced at the time of inspection for Valve body, Viton seals, Limit switch, Air Filter regulator, Air cylinder, Solenoid valve etc.	

