

BRIHANMUMBAI MUNICIPAL CORPORATION

(HYDRAULIC ENGINEER'S DEPARTMENT)

“EXPRESSION OF INTEREST (EOI)”

FOR

**“Empanelment of Original Equipment manufacturer of Butterfly valves
on BMC's approval list”**

Prepared By	Checked By	Recommended By	Approved By
Sd/-	Sd/-	Sd/-	Sd/-
AE (Maint) WW City-I	EE (Maint) MW	Dy HE (Maint)	HE

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BRIHANMUMBAI MUNICIPAL CORPORATION

(HYDRAULIC ENGINEER'S DEPARTMENT)

NOTICE FOR INVITING EXPRESSION OF INTEREST (EOI)

Notice is hereby issued for eligible Manufacturers for submission of applications for "**Empanelment of Original Equipment Manufacturer of Butterfly valves on BMC's approval list**", subject to conditions & eligibility of EOI document. Kindly note the following:

Sr	Description	Details
1	Start date for sale of Eol	01/10/ 2026
2	Last Date of Submission of Eol	30/11/ 2026
3	Mode of Submission of Eol Application	To be submitted physically at following office address.
4	Eol Application & document will be sold, accepted & opened at the office of	Office of Executive Engineer (Meter Workshop) City, 3 rd floor, BMC Water Deptt. Plot No 566, N. M. Joshi Marg, Byculla (West) Mumbai – 400011. (Opp to 'S' Briddge)
5	Processing Fee	Rs 42,160/- for initial approval.

NOTE –

- The **Butterfly valve Manufacturers** i.e. Original Equipment Manufacturers (OEM) are **only eligible to apply** under this EOI. Applications received from other than OEM will not be accepted.
- The applicant shall satisfy conditions mentioned in EOI document.
- EOI application shall be physically submitted at above mentioned address only. Applications received through post / courier / e-mail will not be accepted.
- This EOI does not offer any guarantee of business by BMC.
- The Schedule indicated above is tentative and BMC may change any or the entire schedule under intimation to participants.
- The Municipal Commissioner Reserve rights to reject all or any applications without assigning any reason thereof.

Sd/-

Hydraulic Engineer

Chapter 1

Services Provided by BMC

The piped water supply is one of the earliest civic services provided by Hydraulic Engineer's Department, one of the oldest departments of Brihanmumbai Municipal Corporation (BMC). It was established under Section 73A of the MMC Act 1888. The main objective of Hydraulic Engineer's department is to operate, maintain and provide water and related services to the citizens of Mumbai. It is also committed to the important task of constantly improving and upgrading the water distribution system of Mumbai. The water supply for Mumbai is sourced from seven (7) different lakes and is treated at 4-Water Treatment Plants as per drinking water standards before being distributed to the citizens. The water is distributed from 2-Master Balancing Reservoirs, 27- Service Reservoirs across the city of Mumbai and through the maze of 6,000 km long distribution network spread all over the city. The complex water supply system of Mumbai has another unique feature that most of water supply distribution is by gravity due to typical terrain geography of Mumbai.

Mumbai Water Supply system is one among the largest in the World and perhaps second largest in Asia. The Bhandup Water Treatment facility is the largest (by capacity) such facility at single location in Asia. BMC uses under-ground water supply tunnels & pipelines ranging from diameter 2200 mm to 5500 mm totalling in length of approx. 100 Km to convey raw / treated water. Daily more than 1000 number of valves are operated to regulate water supply in **256** water supply zones. The water supply of BMC network is in intermittent in nature.

The Citizen Services provided by Hydraulic Engineer department are –

Water Distribution

BMC is committed to distribute **4000 MLD** water to the 1.35 Crore population in the BMC operational limit. Daily BMC ensure that the quality of water supplied to our Connection holder is in compliance with the desired standard.

Disruptions of Water Supply

BMC delivers uninterrupted water supply to all citizens of Mumbai. However, there are times when citizens may experience some disruptions of supply mainly due to sudden network breakdown, leakages and network repair & maintenance etc. In such a scenario, citizens are kept informed through all possible channels such as SMS / news channels and / or newspaper notifications etc. Also, in such

cases, importance is given for timely restoration of supply and to adopt all possible means to minimize the interruption periods.

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Chapter 2

The Need of Approval of Valve in BMC

The BMC wishes to optimize the water supply system with a broad objective of providing equitable water to the citizens of Mumbai and reducing the unaccounted water to the barest minimum possible. Since the control valves play vital role in water supply network, it is felt absolutely necessary to review the entire control valve aspect and revamp of water supply network, in view of the latest technologies of advancements of control valves.

The entire operation and maintenance of the water network is under Hydraulic Engineer's Department. For proper distribution and regulation of water supply, the entire network is divided into various zones and sub-zones with the help of various sizes of valves.

Valves play a major role in Hydraulic Engineer's Department. Valves are installed in network by Hydraulic Engineer's department as well as by Water Supply Project department. Total 2000 numbers of valves (approximately) are in network of Hydraulic Engineer's department. Out of these almost 50% of valves are operated daily. In order to ensure that only technically qualified, reliable and experienced manufacturers participate in the tender process, it is considered necessary to undertake a pre-qualification exercise. Accordingly, it is proposed to invite an Expression of interest (EOI) from reputed Butterfly Valve manufacturers.

The objective of EOI is to assess the technical capabilities, past performance, manufacturing standards, and compliance with applicable specifications of the participating manufacturers. Based on the evaluation of the submitted credentials and technical data, a list of approved makes will be finalized.

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Chapter 3

Scope & Process of EOI

A. Scope :-

Under this EOI, applications are hereby called for empanelment on BMC's approval list of Butterfly Valve Manufacturers. The Applicant shall submit the necessary information and certifications as requested under this EOI and submit the same along with application mentioning the specific Butterfly Valve type, size or size range for which he seeks approval for empanelment.

The Technical Approval Committee (TAC) appointed by BMC, will evaluate such applications, certifications, technical parameters and samples, etc, submitted by the applicant. Also, TAC may conduct the factory visit of Butterfly Valve manufacturer; in this regard the cost of factory visit (Cost of To & Fro Journey & 2 days accommodation for appointed BMC officers) will be borne by the applicant.

After approval the approved makes will be included in the Approved Manufacturer's List of BMC. This EOI does not offer any guarantee of business by BMC.

B. EOI Empanelment Process :-

1. BMC will publicly notify for empanelment of the manufacturers for Butterfly Valves to be used in BMC, as per the technical specifications.
2. The applicant will purchase the EOI document offline from BMC office address as mentioned in EOI Notice, on the specified dates & time.
3. The applicant will submit application along with the processing fees mandatory documents, certifications & samples at the address mentioned in the EOI Notice. Manufacturers shall apply in the format prescribed by BMC along with credentials.
4. The Technical Approval Committee under the Chairmanship of Hydraulic Engineer will scrutinize the Applications, test certificates and documents submitted by the applicant. Shortfalls, if any, will be communicated to the concerned applicant. It will be responsibility of applicant to submit the documents, certifications & samples as mentioned in this EOI, within the specified time period. TAC will visit the manufacturer place to ascertain the capacity & quality of manufacturer.
5. The authority reserves right to accept minor deviations in specifications, provided that the offered product meets all functional, operational, and performance requirements and is suitable for the intended service conditions

6. **Period of Approval & Renewal** – After successful evaluation, the Butterfly Valve manufacturers shall be empaneled on BMC's approved list, initially for a period of **Three (3) years**, from the date of issue of approval letter. Further, after completion of three years, the renewal of approval will be done on the basis of site and laboratory performance & user department feedbacks & complaints resolved, etc. During the approval period of 3 years, feedback from user department & performance of approved Butterfly Valves at site will be checked on periodical basis (Approx. once in a six month). Such feedback / performance will be the criteria for issuance of continuation or discontinuation of approved makes.

Note: In case of failure to adhere to delivery schedules / non-compliance of specifications / non-attendance of complaints received from user department and if guarantee period is not complied with the period mentioned, in such situation / circumstances the BMC can hold applicant responsible for such acts & deeds and shall reserve the right to initiate actions deemed fit, like Blacklisting, removal from the approval list, penalize the manufacturer (limited up to the cost damage). BMC reserves right to review, suspend, or cancel the approval at any time without prior intimation & without giving any reason thereof.

C. EOI Processing Fees :-

The processing fee for subject EOI to be paid amounting to **₹42,160/- for initial approval** (Circular of HE u/no HE/01/EEWW(P&R)/Cir dated 25.03.2026). The scrutiny fee shall be paid in cash / online or in the form of Demand Draft (DD) drawn on any Nationalized Bank, duly discharged in favour of Brihanmumbai Municipal Corporation, payable at Mumbai.

Note: The processing fee is non-refundable & non-transferable.

Type of Butterfly Valve category proposed as per Policy : -

Sr No	Type of Butterfly Valve
1	Double Flanged Long body type

Chapter 4

Technical Eligibility Criteria

Content

Sr No	Description
	Butterfly Valve
	Gear Box
A	General
A.1	Scope
A.2	Definition
A.3	Pressure Rating
B	Requirement
B.1	Material
B.2	General Design
B.3	Coating
B.4	Workmanship
C	Testing
D	Marking

A. General

A.1. Scope :

The Butterfly valves manufacturer who meets following technical requirements are eligible to apply for this EOI.

Following are the technical requirement of Butterfly valves:-

1. The Butterfly valves manufacturer in their own name should have satisfactorily executed the manufacture / supply of 300 mm dia & above size Butterfly valves in BMC / Semi Govt. / Govt. & Public Sector Organizations during last seven (7) years.
2. Documentary proof of Work Orders & performance certificates should be submitted for same. Past performance certificates in respect of above should be issued from the officer not below the rank of Executive Engineer.
3. Manufacturer has carried out Proof of Design (POD) test of similar type 300 mm dia & above size Butterfly valves, necessary documents shall be submitted.
4. The Butterfly valves should be installed and working satisfactorily in last seven years in BMC/ Semi Govt. / Govt. & public sector organization's water supply network. Documentary proof of the same shall be submitted.

There are various types of valves body:

1. Double flanged (Long or Short body)
2. Wafer body
3. Mechanical joint ends

This EOI is called for Double Flanged Long body Butterfly Valves:

Butterfly valves shall be suitable for fresh water having pH range from 6 to 12 and temperature range from 0.6 °C to 52°C

A.2 Definition

1. Gear box: Device attached to the valve for the purpose of rotating valve disc to an open, close, or intermediate position; preventing discover travel; and maintaining the disc in position.
2. Bearing: The cylindrical journal located in the body hub that is used to support the valve shaft and transmit disc forces to the valve body while minimizing friction and wear.
3. Valve Body: The primary pressure retaining structure of valve that forms a portion of a pipeline that has tends adapted for connecting to the pipe i.e. flanges.
4. Butterfly valve: A valve that uses a disc rotatable through an angle of approximately 90° as a closure member. The valve is closed when the edge of the disc is perpendicular to the flow way, open when parallel to the flow way, or used for throttling when positioned between open and closed.
5. Disc: The closure member that is positioned in the flow stream to permit flow or to obstruct flow (depending on closure position) and that rotates through an angle of 90° from fully open to fully closed.
6. Fluid working pressure: The internal hydrostatic pressure for which the valve body is designed without regard to disc position or actuator capacity.
7. Hub: A structural raised-area (boss) member cast integrally on the valve body and used to support the valve-shaft bearing and valve shaft.
8. Long body flanged valve: A flanged valve designed to be installed between, and attached to, pipe flanges.
9. Mating surface: The metal ring around the inside of the valve body or the outside edge of the valve disc that seals with the rubber seat when the disc is closed.
10. O-ring seal: A type of seal consisting of an elastomer in the shape of a torus, i.e., a circular shape with a circular cross section

11. Outboard thrust bearing: A bearing that is provided on the shaft outboard of the shaft seal or in the actuator housing to protect the shaft seal from side-thrust forces induced by the actuator.
12. Rubber seat: A rubber ring around the outside edge of the valve disc or the inside of the valve body to effect a seal against the metal seating surface when the disc is closed.
13. Shaft: A bar extending through the body hubs and into the disc to support the disc and transmit operating torque to the disc-closure member.
14. Shaft seal: A circular seal between the valve shaft and the inside cylindrical surface of the body hub that prevents the pressurized water from exiting and outside contaminants from entering the valve body in the area.
15. Rated differential pressure: In each case, the numeric designation represents the pressure rating (the maximum steady-state fluid working pressure, in pounds per square inch gauge) and also the maximum steady-state differential pressure, in pounds per square inch, for which the valve is designed. All valves shall be rated for a **maximum fluid flow velocity of 4.8 m/s** in the piping section upstream and downstream of the valve.

A.3 Pressure rating

Pressure rating is a numerical designation which is convenient round number for reference purpose. All the equipment of same nominal size (DN) designated by the same pressure rating number shall have compatible mating direction. The pressure rating designation are (PN) designations for valves specified by nominal size (DN) shall be PN 10, PN 16.

Note: the PN designation of valve is number representing the primary service values of valve.

B. Requirement

B.1 Material

Material shall comply with the requirement of safe drinking water act and other federal requirements for potable water as applicable.

Physical & chemical properties – Material shall be in conformance with physical and chemical properties as mentioned:

Ductile Iron – ASTM A536 Grade 70-50-05 / IS 1865 – GR 500/7 / ISO 1083, 500/7 / EN 1563- Gr 500/7 or IS 1865 – GR 400/15 (EN-GJS – 1040-15 / GGG-40).

Stainless steel – ASTM A276 S31600 / SS AISI 316 EN 1.4401 (X5CrNiMo 17-12-2) or IS6603 – Gr. X20Cr19 (SS 420).

Corrosion resistant metals - Corrosion resistant metals used for clamping & retaining rubber seats, shafts and disc connection hardware, thrust bearing and O-ring are wetted by line content shall be made of stainless steel , nickel copper, bronze etc.

B.2 General Design

B.2.1. Valve Bodies:

Laying length (Flange to flange dimension) for PN 10 & PN 16

Table 'A'

Sr No	Nominal size (In mm)	Long Body (In mm)	Tolerance (In mm)
1	300	270	± 5
2	450	330	± 5
3	600	390	± 5
4	750	450	± 5
5	900	510	± 5
6	1200	630	± 5
7	1500	750	± 5
8	1800	870	± 5
9	2200	1030	± 5

Note: Laying length shall be according to $0.4D+150$ mm where D = nominal size

B.2.2. Shell thickness:

Minimum body shell thickness shall confirm to the requirement listed in following table:

Table 'B'

Sr No	Nominal size (In mm)	Double flanged valve (In mm)	Tolerance (In mm)
1	300	14.7	+ 5 mm
2	450	20.1	
3	600	23.6	
4	750	27.9	
5	900	31.0	
6	1200	37.6	
7	1500	48.0	
8	1800	60.3	
9	2200	Shall be specified by BFV manufacturer	

OR

However, shell thickness designed and manufactured as per EN 12516-4 shall also be acceptable, and fulfils the requirements of BMC specifications. The manufacturer shall provide the design calculations of shell thickness of BFV.

The manufacturer shall ensure that the valve designed as per the alternative standard is capable of safely withstanding the specified operating and test pressures. Relevant design calculations and supporting documents shall be submitted for review and approval by the BMC Engineer.

B.2.3. Valve shaft dia. in mm**Table 'C'**

Sr No	Nominal size (In mm)	Shaft diameter (In MM)
1	300	30 to 39
2	450	45 to 58
3	600	50 to 77
4	750	65 to 93
5	900	80 to 111
6	1200	130 to 143
7	1500	160 to 184
8	1800	200 to 216
9	2200	230 to 240

Note: All dimensions are in MM.

B.2.4. End Flange: The dimension of flange for BFV having pressure ration PN10**Table 'D'**

Sr No	Nomin al size (In mm)	Outside diamete r (D)	Diamete r of bolt circle – PCD (K)	Diamete r of bolt hole (Ø)	No. of bolts (N)	Bolt size	Flange thickness (T)	Corner radius (I)
1	300	445	400	22	12	M20	26	10
2	450	615	565	26	20	M20	28	12
3	600	780	725	30	20	M27	28	12
4	750	960	900	31	24	M27	34	12
5	900	1115	1050	33	28	M30	34	12
6	1200	1455	1380	39	32	M36	38	12
7	1500	1785	1700	44	36	M39	47.5	12
8	1800	2115	2020	48	44	M45	50	15
9	2200	2550	2440	56	52	M52	58	18

Note: Dimensions in MM and as per Standard BS 4504

The dimension of flange for BFV having pressure ration PN16

Sr No	Nominal size (In mm)	Outside diameter (D)	Diameter of bolt circle – PCD (K)	Diameter of bolt hole (Ø)	No. of bolts (N)	Bolt size	Flange thickness (T)	Corner radius (I)
1	300	460	410	26	12	M24	28	10
2	450	640	585	30	20	M27	34	12
3	600	840	770	36	20	M33	36	12
4	750	960	900	31	24	M27	34	12
5	900	1125	1050	39	28	M36	40	12
6	1200	1485	1390	48	32	M45	48	12
7	1500	1820	1710	57	36	M52	62.5	12
8	1800	2130	2020	56	44	M52	62	15

Note: Dimensions in MM and as per Standard BS 4504

- The End flanges shall be raised face flanges and provide required Radius as mentioned above.
- The Flanges shall have full size bolt holes through the body holes and threading (internal) on valve flanges are not acceptable.

B.2.5. Stub Shaft : Each BFV shall have stubbed shaft arrangement as described below:

1. Stub shaft comprises 2 separate shaft inserted into valve disc hub. Each stub shaft shall be inserted into the valve disc hub at a distance of 1.5 times shaft diameter.
2. Valve shaft shall have minimum diameter extending through valve bearing and into the valve disc.
3. Connection. The connection between the shaft and the disc shall be designed to transmit shaft torque equivalent to at least 75 percent of the torsion strength of the minimum required shaft diameters.
4. Rigid shaft restraint shall be provided.
5. Hardware used in connecting the shaft to the disc shall be of corrosion-resistant metals. Dry shaft design to prevent corrosion .No water particles allowed inside the Disc bore area.
6. The disc shall be mechanically secured to the shaft by a process such as bolting, threading, upsetting, or cross-pinning. Key and Keyways connections shall be implemented at Valve Shaft and Disc Bore Area.
7. Chemical bonding, adhesives, or welding shall not be used.
8. The shaft shall be designed to separate from the disc without damaging the disc.
9. Size. The portion of the shaft that extends through the valve bearings shall not be less than the diameter specified in Table 'C'.
10. Where the valve-shaft diameter is reduced to fit connections to the valve operating mechanism, the smaller portion shall have fillets with radii equal to the offset.
11. Valve shaft stresses in the full-size portion of the shaft shall not exceed the lesser of 1/ 5 of the tensile strength or 1/ 3 of the yield strength of the material used. The minimum tensile and yield strengths for the materials used in these calculations shall be specified as per the standards AWWA C504-2010, EN 593:2017.
12. The reduced area of the shaft shall be designed to transmit the maximum calculated valve-operating torque without the torsion shear stress exceeding 40 percent of the yield strength of the shaft material.

13. Valve-shaft material. Valve shafts shall be wrought stainless steel of grade ASTM A276 S31600 Or SS AISI 316 EN 1.4401 (X5CrNiMo 17-12-2), or IS6603 – Gr. X20Cr19 (SS 420).

B.2.6. Valve Disc

1. Disc material – Valve disc shall be ASTM A536 Grade 70-50-05 / IS 1865 – GR 500/7 / ISO 1083, 500/7 / EN 1563- Gr 500/7 or IS 1865 – GR 400/15 (EN-GJS – 1040-15 / GGG-40).
2. Disc design - The disc shall be designed to withstand full differential pressures across the closed valve disc without exceeding a stress equivalent to one fifth of the tensile strength of the material.
3. Disc thickness. The thickness of the valve disc shall not be more than 2 1/4 times the shaft diameter listed in Table 'C'.
4. External ribs shall not be provided, and disc surface shall be flat or curved on both / either sides or specified by the manufacturer.

B.2.7. Valve seat

1. Pressure classes. Valve seats shall be designed to be leak-tight in both directions at differential pressures up to, and including, the rated pressure of the valve class.
2. Rubber seats: Rubber seats shall be applied to the disc, be of new natural or synthetic rubber, and are permitted to be reinforced.
3. Rubber seats shall be clamped, mechanically secured disc.
4. Rubber seats applied to the valve body and penetrated by the valve shaft is not acceptable.
5. Circumferential joints of rubber seats shall be bonded together.
6. The design of the seat shall provide tight shutoff with flow in either direction, according to the tests mentioned in testing section.
7. Rubber compounds shall contain no more than 8 ppm of copper ion and shall include copper inhibitors to prevent copper degradation of the rubber material.
8. Rubber compounds shall be free of vegetable oils, vegetable-oil derivatives, animal fats, and animal oils.
9. Reclaimed rubber shall not be used.
10. Rubber compounds shall contain no more than 1.5 parts of wax per 100 parts of rubber hydrocarbon.
11. Rubber compounds shall have less than 2 percent positive volumetric tolerance.
12. All Rubber components used in valves shall have WRAS approved Rubber compounds or IS 5832 which is suitable for Drinking water and other food materials (Non-toxic)

B.2.8. Mating surfaces:

1. Rubber seats shall mate with the following acceptable seat surfaces i.e. stainless steel; alloy grey iron.
2. The width of the seat surface shall, at a minimum, cover the entire surface wiped by, or in contact with, the rubber seat.
3. Mating surfaces shall not be plated.
4. Mating-seat surfaces are permitted to be sprayed when applied by the plasma non transferred arc, sprayed-and-fused process, or a high-velocity oxygen fuel spray.
5. Spraying processes shall be in accordance with the following:
 - a. Mating seats applied by the plasma non transferred arc, sprayed-and-fused, high-velocity oxygen fuel spray shall have a final surface with a minimum thickness of 7 mil (0.18 mm).
 - b. ~~The wear resistance of the seating surface material shall be demonstrated as capable of 100,000 opening and closing cycles under full rated pressure in water without damage.~~
 - c. Impregnation of mating-seat surfaces shall not be permitted.

6. Clamps and retaining rings. Clamps and retaining rings for rubber seats shall be made of corrosion-resistant metallic material and clamp and retaining ring shall be divided in 4 or lesser segments or single piece ring is accepted.
7. Nuts, screws, and hardware used with clamps and retaining rings shall be of stainless steel.
8. Sealing on seat face shall be obtained by T profile, segmented ring or single piece resilient sealing ring which is held on the periphery of the disc shall be fastened by a bolting method with suitable size and heads of the fasteners shall be flush to the disc body.

B.2.9. Valve bearings.

1. Sleeve bearings: Valves shall be fitted with sleeve-type bearings contained in the hubs of the valve body. Split type plain bearing is not accepted.
2. Bearings shall be designed to withstand the rated pressure.
3. Thrust bearings. The valve shaft shall be secured in the centre of the valve seat with either one or two thrust bearing providing support and positioning of the valve shaft. Sleeve type bearing is not acceptable
4. Self-lubricating materials. Sleeve and other bearings fitted into the valve body or actuator gear case shall be of self-lubricated materials that are compatible with rubber seals and have a coefficient of friction less than or equal to 0.25 at the maximum bearing load.

B.2.10. Shaft seals

1. Requirement. A shaft seal shall be provided where shafts project through the valve bodies for actuator connection i.e. drive side & non drive side.
2. Seal design. Shaft seals shall be designed for the use of standard V-type packing, O-ring seals, O-ring loaded U-cup seals, or a pull-down packing.
3. O-rings. O-rings shall be contained in a removable cartridge constructed of corrosion-resistant metallic materials referenced in AWWA C504-2010, EN 593:2017 or non-metallic materials.
4. Seal replacement: ~~Shaft seals shall be designed to allow replacement of seals without removing the valve shaft in case of failure of shaft seal.~~

B.3. Coating

1. Flange faces: Flange faces shall not be coated except for protection from atmospheric corrosion with full body internal & external powder coated.
4. Surface preparation shall be in accordance with the requirements of Steel Structures Painting Council SSPC SP-10. Sand / Shot Blasting Process shall be done by fully automatic sand blasting machining in accordance with EN ISO 8501 standard SA2 ½ or SA3. All valves surface to be coated shall be cleaned up from oil, salt, dirt and foreign materials. Only the use of steel grid shall be permitted in sand blasting process. Used steel grid shall not be implemented on valve surface once again. Dust assessment control in accordance with EN ISO 8502-3 shall be applied on sand blasted surfaces. Evaluation result of dust assessment control shall be ≤ Class 2. In case of an incompatible result shall not be accepted. Manually sand blasting process shall not be permitted.

The internal and external coating of valve shall be Fusion Bonded Epoxy (FBE) as a minimum 300 Microns in accordance with ISO 8501 standard for Ductile Cast Iron Material. (Two pack epoxy shall not be accepted when the valve size is less than DN1600 PN16). All valves' surface to be coated shall be heated up to minimum 200°C and fusion bonded epoxy shall be carried on equally on surface. Coating shall have WRAS certification. Coating process and result shall prove with coating certificate that comply ISO 8502-4 or equivalent standard. Flange faces shall be coated with 100 microns maximum.

COATING PERFORMANCE TESTS

TEST	STANDARD
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Impact Test	DIN 30677-2
Adhesion Test	ASTMD 4541
Coating Thickness Test	ISO 19840
Holiday & Spark Test	ASTM 4752
Cross-Linking Test / 1Drop MIBK	ASTM D5162-A & ASTM D5162-B

B.4. Workmanship

1. Tolerances: Valve parts shall be designed with manufacturing tolerances to provide **interchangeability** of parts between units of the same size and model.
2. Operation: When assembled, valves manufactured in accordance with this standard shall operate smoothly.
3. Tightness: The body and shaft seal shall be watertight.

C. Testing: As per IS standard following test will be conducted on BFV.

1. Performance test: Valve and gearbox for valves shall be subjected to a shopfloor operation test consisting of operating the valve from the fully closed to the fully opened position and the reverse under no-flow conditions with two times Manual Hand wheel Operation and one time Electrical Actuator operation.

2. Leakage test:

- a) Valves shall be subject to leakage tests.
- b) Disc position. The test shall be conducted with the disc in the horizontal plane.
- c) Applying high-pressure air (equal to valve ratings like PN10 or PN16) for a seat test creates a significant pneumatic safety hazard on the shop floor. Low-pressure air testing (around 5–7 bar) is only used as a supplementary bubble test, not at full class pressure.
- d) The test pressure shall be applied for at least 10 min.
- e) There shall be no indication of leakage past the valve disc as indicated in the form of bubbles in the water pool on top of the disc, during the test period.
- f) Double-flanged long-body butterfly valves (especially those used in municipal water or pumping systems) are typically bidirectional. To ensure a positive shut-off in both directions, the seat test must be conducted from both sides independently. Testing on only one side should be restricted to strictly unidirectional valves.

3. Hydrostatic test:

- a) Valve bodies shall be subjected to an internal hydrostatic pressure equivalent to 1.5 times to 2 times the rated pressure at ambient temperature.
- b) Leakage. During the application of the hydrostatic test pressure, there shall be no leakage through the metal, or shaft seal, also there shall not be any part have permanent visible deformation.
- c) The test is to be performed on each side of the disc, and, in the case of flanged valves, the valve body shall be bolted to a flanged test apparatus.
- d) During the hydrostatic test, the manufacturer shall be permitted to make special provisions to prevent leakage past the seats.

4. Valve test cycles:

Following number of open/close cycles will be applied during test. All the following tests shall be cleared by the BFV.

Size of Valve (In mm)	Number of cycles
300-450	10,000
600-900	5,000

- 5. Proof-of-design tests:** The adequacy of each basic type of valve offered by a manufacturer to perform, under design pressures, and within the applicable rating of the valve for a sufficient number of operations to simulate a full service life.
- Representative valve:** Representative valves shall be selected for each basic type of seat design in each applicable size group and in a pressure class or classes equal to or greater than the valves are purchased.
 - Cycles:** The sample valves shall be subjected to the number of cycles specified in Table 4(A).
 - Each cycle shall consist of applying the rated differential pressure to the disc in the closed position, then opening the valve (relieving the pressure) to the wide-open position, and then closing the disc.
 - On completion of the cycle test, the valve shall not show any evidence of leakage when subjected to the rated differential pressure applied on both sides of the valve.
 - Certified statement of proof-of-design:** When required in the purchase documents, the manufacturer shall provide a certified statement that proof-of-design tests were performed as described in the standard, and compliance with all applicable requirements.
 - Parts of the valve or disc shall not exhibit permanent visible deformation resulting from the application of the test pressure.
- 6. Submergence test** for gear box. The gearbox will be submerged under water for 48 hours. After completion of 48 hours, the visual inspection of gear box will be observed for ingress of water & same will be noted.
- 7. Overload test** (torque test at 1.5 times rated torque)
- 8. Foundry / Pouring Witness Test** – The Manufacture's Foundry will be visited by the Technical Approval Committee (TAC) members, for witnessing of pouring of molten metal from foundry.
- 9. Embossing** – Every BFV supplied to BMC shall bear embossing of name prescribed as 'BMC' with year.

Inspection and Testing Criteria	
Sr. No.	Description
A)	The manufacturers shall be carried out all inspection and testing as per IS / AWWA C504 / BS 5155 / EN 1074 - 1 or equivalent for all sizes of butterfly valve and gear box under which the manufacturer intended to get registered. Details is given in (Annexure-XVII)
B)	Gear Box :-
i)	Submergence test
ii)	Overload tests (torque test at 1.5 times rated torque)

C)	Butterfly Valves :- (Following Tests shall be carried out after assembly of the valve components)
i)	Final dimensional measurement & weight
ii)	Movement tests
iii)	Seat Leakage test
iv)	Operating Torque Test
v)	Hydrostatic & leakage test
vi)	Disc strength test
vii)	Any other test as required by the relevant standard.

Gear Box

A) Scope :

The gear box or multi-turn valve actuator is a device designed to provide operation of the valve by transmitting the torque to the valve for a least one revolution and shall be capable of withstanding the thrust. The section deal with the basic requirements / dimensions for the attachment of Gear Box or Multi-Turn Valve Actuator in order to define the interface between actuator and valve. This section broadly specifies the required flange dimensions, torque and thrust values, position of holes, and general designations.

B) Requirements :

The Gear Box or Multi-Turn Valve Actuator shall comply the following requirements;

1. The attachments shall be designed and complied strictly with **the ISO 5210:2017 (E) standard.**
2. The primary and secondary gear box shall have **keys and key slots** as per **IS 2048:1983.**
3. Clearance holes for bolts and screws shall be according to **ISO 273, and required Fasteners** shall be used as per **IS 1364-1 (2002), ISO 4762, ISO 10642, ISO 3506** (Only Metric fasteners shall be used).
4. All cast iron parts shall be protected with a coating suitable for tropics as per standard **ISO 8501-1:2007.**
5. The gearbox shall be completely enclosed, dust-proof and vermin-proof, **with IP 68 protection class (min) (3 mtr, 48 hrs).**
6. The gear box shall have a **primary gear box with worm – worm shaft gear mechanisms (up to BFV sizes of 2200 mm dia) or 360 °turn mechanism (for 1500 mm to 2200 mm BFV)** and a secondary gear box mechanism with spur – pinion reduction gears trains with single or double reductions.
7. Gear Box or Multi-Turn Valve Actuator and accessories to be supplied shall be designed for potable water and a pressure rating of **10 bars or 16 bars** (where 1 bar = 1 atmosphere) & normal flow velocity of **4.8 m/s.** All valve operators and accessories shall be designed for flows and pressures in both directions.
8. Gear Box or Multi-Turn Valve Actuator shall be designed that clockwise rotation of the hand wheel or electric actuator (INPUT) shall give Clockwise Rotation of quadrant / sector i.e. **clockwise rotation of the INPUT gives OPENING** of the valve, **anti-clockwise rotation of the INPUT gives CLOSING** of the valve.

Terms & Conditions :

1. The gear operators shall be designed for maximum total input force on the hand wheel limit to the range of **175 - 180 Newton** to develop the required operator torque i.e. the torque exerted shall not exceed 175 – 180 Newton multiplied by the hand wheel diameter.
2. The rated torque capability of each operator shall be sufficient to seat, unseat and rigidly hold, in any intermediate position, the valve disc and its controls under the **15% overload conditions**.
3. The manufacturer's characteristics curves of Torque VS Angle of Disc Opening & Headloss (% flow) VS Angle of Disc Opening for the specified sized gear boxes or multi turn valve actuators of butterfly valves.
4. The manufacturer shall provide the co-efficient of friction (μ) value.
5. The manufacturer shall provide the calculations of Static Torque, Bearing Torque, Offset Torque and Unseating Torque for the specified sized gear boxes or multi turn valve actuators of butterfly valves. Such calculations shall be submitted for each size of BFV, if asked by BMC.
6. The calculations of coefficient of dynamic torque, coefficient of flow, and bearing friction coefficient, shall be submitted for verification of the value of seating and unseating torque at the time of approval of the drawings.
7. The gear box shall be equipped with mechanical, **two-stopper stop-limiting devices** to prevent over travel of the valve disc in the open and closed positions.
8. Sleeve type primary gear box is strictly prohibited.
9. The gear box housing supports and connections to the valve shall be designed with a **minimum safety factor of 3**, based on the yield strength of materials used.
10. Water proof indicating window fitted with clear transparent acrylic sheet shall be provided on the gear box for displaying valve disc Position. The indicator shall be graduated at an interval of 10 degrees each.
11. Gear Boxes for all the valves shall be permanently packed with grease and shall be watertight. The grease shall be of a quality which will not deteriorate shall maintain its physical and chemical properties for minimum period of 5 years.
12. The gear assembly shall have minimum possible backlash
13. Gear boxes shall be tested by supplier for submergence in water for a period of 3.5 hours at a head of 1 meter of water column to test the water tightness.
14. For easy removal of gear operator suitable tap holes for jacking bolts shall be provided.
15. Each valve operator shall bear identification plate as per following;

a)	Size of Valve	b)	Pressure rating
c)	Year of manufacture	d)	B. M. C.
e)	Gear Box Total Ratio	f)	Flange Type / Standard
g)	Torque input	h)	Torque output
i)	Thrust (in kN)	j)	Shaft Diameter (mm)

- 16.** All materials used in the Gear box shall be most suitable for the duty concerned and shall be new and of first class commercial quality, free from imperfections and selected for long life and minimum maintenance.
- 17.** Sufficient bearings shall be provided to withstand the thrust and axial loads developed in primary and secondary gear box or Multi-Turn Valve Actuators.
- 18.** The cost of the offer quoted by the bidder shall be inclusive of transport cost. Transport cost quoted separately will not be taken into consideration while evaluating the offer.
- 19.** All the materials shall be properly packed in case with necessary markings & labelling, etc. Bidder shall fill in all the schedule of particulars & data sheets as detailed under heading, Data Sheets to be filled in" by furnishing the complete information. Otherwise the offer shall be liable for rejection without assigning any reason.

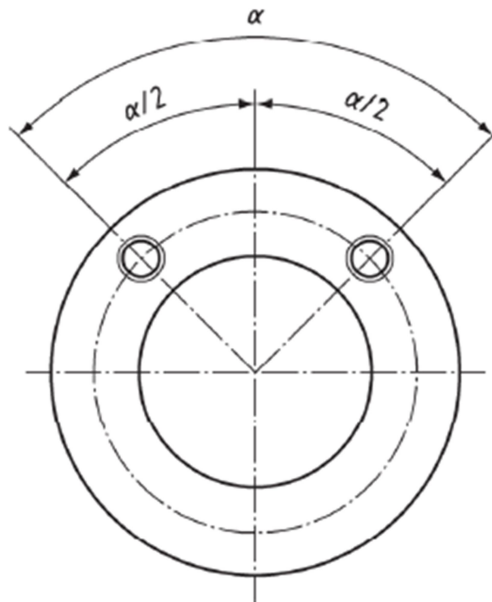
TABLE - A MATERIAL OF CONSTRUCTION OF GEARBOX

Sr.	Description of Component	Material	Tests
1)	Gear Case & Cover (Worm Gearbox)	ASTM A536 Grade 70-50-05 Or IS 1865 – GR 500/7 Or Gr 400/15 Or EN 1563- Gr 500/7	Micro Structure etc. Chemical Composition of individual components
	Quadrant	S. G. Iron IS 1865 Gr. SG 600/3	
2)	Worm	BS 970 Gr. EN19	Chemical Composition
	Spur / Bevel Gear & Pinion	Alloy steel - BS 970 Gr. EN19	
3)	Shaft	Stainless steel - AISI-304	Chemical Composition
	Fasteners / Dowels	Stainless steel	
4)	Bearings	SKF or equivalent - Relevant IS / BS	Physical tests, chemical tests & shore hardness test.

Table 1: Flange Dimensions

Sr .	Size of B.F. Valve in mm	Flange type	PCD	Stud Dimension	Number of studs
1	300	F14	Ø 140	M 16	4
2	450	F16	Ø 165	M 20	4
3	600	F25	Ø 254	M 16	8
4	750	F30	Ø 298	M 20	8
5	900	F35	Ø 356	M 30	8
6	1200	F40	Ø 406	M 36	8
7	1500 & 1800	F48	Ø 483	M 36	12
8	2200	F60	Ø 603	M 36	20

Table 2 : Orientation of holes for studs :



Flange Type	$\alpha / 2$
F 05 to F 16	45 °
F 25 to F 40	22.5 °
F 48	15 °
F 60	9 °

Note:

The above technical specifications are indicative in nature. Final technical specifications shall be provided at the time of quotation / tender.

Manufacturers offering butterfly valves that are similar or equivalent to the above indicative technical specifications are encouraged to participate in this EOI. Minor variations may be considered subject to technical evaluation and acceptance by BMC.

BMC reserves the right to modify, amend, or revise the technical specifications, scope of work, and other terms and conditions at any stage of the EOI without prior notice.

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Chapter 5

After Approval

1. **Guarantee** - The manufacturers shall sale the Butterfly Valves with a guarantee of minimum **3 (three) years**. During the said guarantee period, if any manufacturing defects are observed then same shall be rectified by the Butterfly Valve manufacturer and if necessary, the Butterfly Valve shall be replaced by the manufacturer without any additional cost to consumer.
2. If the manufacturers fail to protect the user department interest and / or breach the guarantee period condition then he shall be delisted from the empanelment.
3. The repair / Maintenance facilities shall be locally made available by the approved Butterfly Valve manufacturers at reasonable rates. This shall be one of the criteria while empanelment of the Butterfly Valve manufacturer.
4. A Technical Approval Committee will periodically i.e. half yearly scrutinize the new applications and performance of approved makes and shall notify inclusion / exclusion in the approved list of makes / brands.

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Chapter 6

Annexure

• The eligible applicant shall submit the list of documents / information as per the table mentioned below:

Sr · N o	Description	Annexure No
1	Factory Information	Annexure I
2	Manufacturing Process	Annexure II
3	List of Clients during last Five years	Annexure III
4	List of Man Power	Annexure IV
5	List of Machineries / Lab Equipment / Measuring Instruments	Annexure V
6	List of In House Material Handling Facilities	Annexure VI
7	List of Testing Facilities	Annexure VII
8	List of suppliers of Raw Material	Annexure VIII
9	Drawings of BFV and gearbox	Annexure IX
10	Design Aspects (BFV & Gear Box)	Annexure X
11	Table A, B, C & D (Shaft dia, Shell thickness, Torque, Mounting Flange type)	Annexure XI
12	Dimensions and specification (BFV)	Annexure XII
13	Material Of Construction (BFV)	Annexure XIII
14	Specifications (Gear Box)	Annexure XIV
15	Material Of Construction (Gear Box)	Annexure XV
16	General design of gear box	Annexure XVI
17	POD test	Annexure XVII
18	Indicative price list of BFV from manufacturer	ANNEXURE –XVIII

**Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in
BMC**

ANNEXURE -I

E.O.I./ ____ / ____ / ____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

Factory Information			
Sr No	Description		Offered Details Enclosed / not enclosed
1	Name of the Factory	:	
2	Type of Organization	:	
3	Nature of Business	:	
4	Year of Commencement of Manufacture	:	
5	GST Registration Certificate	:	
6	PAN	:	
7	Address (Factory)	:	
	Address (Office)	:	
8	Factory Contact Details	:	
	Email	:	
	Website	:	
	Telephone (Office)	:	
	Telephone (Factory)	:	
	Fax	:	

Sr. No .	Description		Offered Details Enclosed / not enclosed
9	Name of Person to be contacted	:	
	Designation	:	
	Contact Number (Office/Residence)	:	
	Postal Address	:	
10	Nature of the Company/Firm	:	
	Is it partnership concern? If so, name of each partner	:	1. _____ 2. _____ 3. _____ 4. _____
	Partner sheep deed and copy of registration certificate (To be enclosed, if any)	:	
	Power of Attormey (To be enclosed, if any)	:	
	Memorandum of Association and Article of Association (To be enclosed)	:	
11	Area of the Factory Premises	:	
	Land Area (In Sq. Mtr)	:	
	Built up Area (In Sq. Mtr)	:	
12	ISO Registration Certificate (To be enclosed)	:	
13	SSI Registration Certificate (To be enclosed)	:	
14	NSIC Registration Certificate (To be enclosed)	:	
15	BIS Registration Certificate (To be enclosed)	:	

Sr. No .	Description		Offered Details Enclosed / not enclosed
16	Approved EHS (Environment Health and Safety) Plan (To be enclosed)		
17	Details of License obtained (ISI, ISO etc.) (To be enclosed)	:	
18	Factory License (To be enclosed)	:	
19	Details of Shop floor, office, Store, Laboratory buildings etc.	:	
20	Annual Production Capacity	:	
21	Details of Electric Power: (Sanctioned and Installed)	:	
22	Water Supply and Sewerage Facilities	:	
23	Fire Fighting/ Escape	:	
24	Ventilation / Lighting	:	
25	Security	:	
26	ISO 9001 certificate for vender (foundry)		
27	Details of Furnace (if any) capacity, type etc. (Inhouse or Outsource)	:	
28	Present / similar jobs in hand (with name of organization) (To be enclosed)	:	
29	An average annual financial turnover of three years as certified by "Chartered Accountant" (To be enclosed)	:	
30	Bankers (Name of Bank & Branch name)	:	
31	Remarks / other information, if any.	:	

Note : Separate sheet/s can be attached for detail submission

Manufacturers Signature & Office Stamp

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC**ANNEXURE -II**

E.O.I./ ____ / ____ / ____

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

Manufacturing Process			
Sr. No	Description		Offered Details Enclosed / not enclosed
1	Organization Chart (To be enclosed)	:	
2	Process Layout Sketch (To be enclosed)	:	
3	Manufacturing Flow Chart (To be enclosed)	:	
4	Product Catalogues (To be enclosed)	:	
5	Product Certificate (To be enclosed)	:	
6	Product range with applicable standard (To be enclosed)	:	
7	Quality Assurance Plan for bought out items (To be enclosed)	:	
8	Quality Assurance Plan for manufactured items (To be enclosed)	:	
9	List of Clients (To be enclosed as per Annexure-III in EOI)	:	
10	List of Man Power / Staff (To be enclosed as per Annexure-IV in EOI)	:	
11	List of machineries used & Capacity / details of each (To be attached as per Annexure-V in EOI)	:	
12	List of Inspection and Testing facilities / equipments used (To be attached as per Annexure-VII in EOI)	:	
13	List of Material Handling Equipments used & capacity / details of each (To be enclosed as per Annexure-VI in EOI)	:	
14	List of Sources of raw material and availability (To be enclosed as per Annexure-VIII in EOI)	:	
15	Third party inspection if any	:	
16	Quality Checks adopted :-	:	
	i) For Raw Materials	:	
	ii) For Materials in process	:	
	iii) For Finished Items	:	
Manufacturers Signature & Office Stamp			

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC
ANNEXURE -III

E.O.I./ ____ / ____ / ____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

List of clients during last Five years									
Sr. No.	Name of client	Location	Govt	Semi Govt	Public Sector	Pvt Sector	Cost of Purchase Order in Rs.	Purchase Order Enclosed?	Completion / Performance Certificate Enclosed ?
			Yes / No	Yes / No	Yes / No	Yes / No		Yes / No	Yes / No
Manufacturers Signature & Office Stamp									

**Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in
BMC**

ANNEXURE -IV

E.O.I./ ____ / ____ / ____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

List of Man Power				
Sr. No.	Name	Qualification	Designation	Department
Manufacturers Signature & Office Stamp				

**Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in
BMC**

ANNEXURE -V

E.O.I./ ____ / ____ / ____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

List of Machineries / Lab Equipment / Measuring Instruments				
Sr. No.	Description of Machine / Equipment / Measuring Instruments	Range / Size / Capacity	OEM	Quantity
Manufacturers Signature & Office Stamp				

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC

ANNEXURE -VI

E.O.I./ ____ / ____ / ____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

List of In House Material Handling Facilities				
Sr. No.	Item Description	Capacity	OEM	Quantity
Manufacturers Signature & Office Stamp				

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC

ANNEXURE -VII

E.O.I./ ____ / ____ / ____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

List of Testing Facilities									
Sr. No.	Item Description	Method of Testing	Capacity	OEM	Quantity	Procedure for Calibration of Test Equipment	Authority from which calibration are done	Frequency of calibration (Latest Certificate of Calibration is to be enclosed)	Standard (IS/ BS etc)
Manufacturers Signature & Office Stamp									

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC
ANNEXURE -VIII

E.O.I./____/ ____ /_____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

List of suppliers of raw material			
Sr. No	Description of raw material	Name of supplier	Location
Manufacturers Signature & Office Stamp			

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC
ANNEXURE -IX

E.O.I./____/____/____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

Drawings of Butterfly valve & Gearbox			
Sr. No	Description	Submission (Yes / No)	
1	To submit drawings & technical details, etc. of each size of valve	PN 10	PN 16
	300 mm		
	450 mm		
	600 mm		
	750 mm		
	900 mm		
	1200 mm		
	1500 mm		
	1800 mm		
	Above 1800 mm		
Manufacturers Signature & Office Stamp			

**Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in
BMC**

ANNEXURE -X

E.O.I./____/____/____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

Design Aspects (BFV & Gear Box)			
Sr. No	Description	Offered Details (Yes/No)	
1	The valve manufacturer must be in existence for at least seven years	PN 10	PN 16
2	Experience: Manufacturer must have manufactured the quantity of valves as mentioned below in last ten years. (Including both PN 10 & 16)	PN 10	PN 16
	300 mm & Upto 600 mm - Minimum quantity in numbers	100	
	Above 750 mm & below 1200 mm - Minimum quantity in numbers	100	
	1200 mm & above - Minimum quantity in numbers	50	
3	The performance certificate from the user client for quantity 25% for valve referred above shall be submitted. (The supply should be on or before 31st Dec 2021. The email id, contact no & name of the authorised person should be enclosed for verification)	PN 10	PN 16
	300mm & Upto 600 - Minimum quantity in numbers	25	
	Above 750 & below 1200 mm - Minimum quantity in numbers	25	
	1200 mm & above - Minimum quantity in numbers	13	
Manufacturers Signature & Office Stamp			

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC

E.O.I./ ____ / ____ / ____

ANNEXURE -XI

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

Table "A"			
Shaft Dia. of BFV (Minimum)			
Sr. No.	Size of B.F. Valve in mm.	Offer Details (PN 10)	Offer Details (PN 16)
1	300		
2	450		
3	600		
4	750		
5	900		
6	1200		
7	1500		
8	1800		
9	2200		

Table "B"			
Body Shell Thickness of BFV (Minimum)			
Sr. No.	Size of valve in mm	Offer Details (PN 10)	Offer Details (PN 16)
1	300		
2	450		
3	600		
4	750		
5	900		
6	1200		
7	1500		
8	1800		
9	2200		

Table "C"**Torque Capabilities of Gear Operators**

Sr. No.	Size of B.F. Valve in mm.	Max. valve Torque in NM	Offer Details
1	300	1000	
2	450	3450	
3	600	5500 - 6900	
4	750	9520 - 10000	
5	900	24600 - 30000	
6	1200	40000 - 55000	
7	1500	67800 - 80000	
8	1800	112000 - 150000	
9	2200	178000 - 200000	

Table "D"**Mounting Flange types**

Sr. No.	Size of B.F. Valve in mm.	Flange type	Torque Nm	Offer Details
1	300	F14	400	
2	450	F16	700	
3	600	F25	1200	
4	750	F30	2500	
5	900	F35	5000	
6	1200	F40	10000	
7	1500 & 1800	F48	20000	
8	2200	F60	40000	

Manufacturers Signature & Office Stamp

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC

ANNEXURE -XII

E.O.I./____/____/____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

Dimensions and specification (BFV)												
Sr N o	Description		BMC Requirement	Offer Details (For PN 10)								
				300	450	600	750	900	1200	1500	1800	2200
1	Standard	:	To be specified									
2	Fluid handled	:	Water									
3	Max velocity	:	4.8 Mtr / Sec									
4	Temperature	:	Ambient									
5	Leak Tightness / Duty											
	Tight Shut Off / Low Leakage	:	Tight Shut Off									
	Regulation / inch / On-Off	:	On - Off									
6	Moder Of Operation	:	Manual / Electrical									

Sr N o	Description		BMC Requirement	Offer Details								
				300	450	600	750	900	1200	1500	1800	2200
7	Valve size and pressure rating	:	To be specified									
9	Constructional Features As Specified											
a)	Governing Standard	:	To be specified									
b)	Type	:	Double Flanged									
c)	Valve feet	:	Integral									
d)	Valve Axis	:	Horizontal									
e)	Eccentricity	:	Double/Triple									
f)	Flow Direction	:	Bidirectional									
g)	Flange drilling	:	As per 8/9 EN/1092-2:2023									
h)	Position of seal on disc.	:	To be specified									
i)	Valve shaft	:	Two stub shafts									
j)	Shaft Dia in mm	:	To be specified									

Sr N o	Description		BMC Requirement	Offer Details								
				300	450	600	750	900	1200	1500	1800	2200
k)	Flange to Flange dimension	:	(Long Body) 0.4 D + 150 mm & double flanged									
10	Max Flow velocity in m/sec	:	To be specified									
11	Disc locking arrangement at N.D.E. as per drawing	:	Must									
12	Direction of operation at hand wheel for opening of valve – Clockwise Open Anti-clockwise Close	:	Must									
Manufacturers Signature & Office Stamp												

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Dimensions and specification (BFV)

Sr N o	Description		BMC Requirement	Offer Details (For PN 16)								
				300	450	600	750	900	1200	1500	1800	2200
1	Standard	:	To be specified									
2	Fluid handled	:	Water									
3	Max velocity	:	4.8 Mtr / Sec									
4	Temperature	:	Ambient									
5	Leak Tightness / Duty											
	Tight Shut Off / Low Leakage	:	Tight Shut Off									
	Regulation / inch / On-Off	:	On - Off									
6	Moder Of Operation	:	Manual / Electrical									
Sr N o	Description		BMC Requirement	Offer Details								
				300	450	600	750	900	1200	1500	1800	2200
7	Valve size and pressure rating	:	To be specified									
9	Constructional Features As Specified											
a)	Governing Standard	:	To be specified									

b)	Type	:	Double Flanged									
c)	Valve feet	:	Integral									
d)	Valve Axis	:	Horizontal									
e)	Eccentricity	:	Double/Triple									
f)	Flow Direction	:	Bidirectional									
g)	Flange drilling	:	As per 8/9 EN/1092-2:2023									
h)	Position of seal on disc.	:	To be specified									
i)	Valve shaft	:	Two stub shafts									
j)	Shaft Dia in mm	:	To be specified									

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC**ANNEXURE -XIII**

E.O.I./ ____ / ____ / ____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

Material Of Construction (BFV)			
Sr. No.	Description		Offer Details
	Component	Material specified by BMC	PN 10
1	Valve Body	ASTM A536 Grade 70-50-05 / IS 1865 – GR 500/7 / ISO 1083, 500/7 / EN 1563- Gr 500/7 or IS 1865 – GR 400/15 (EN-GJS – 1040-15 / GGG-40).	
2	Disc	ASTM A536 Grade 70-50-05 / IS 1865 – GR 500/7 / ISO 1083, 500/7 / EN 1563- Gr 500/7 or IS 1865 – GR 400/15 (EN-GJS – 1040-15 / GGG-40)	
3	Shaft	ASTM A276 S31600 Or SS AISI 316 EN 1.4401 (X5CrNiMo 17-12-2), or IS6603 – Gr. X20Cr19 (SS 420).	
4	Seat Ring	ASTM A276 S31600 Or SS AISI 316 EN 1.4401 (X5CrNiMo 17-12-2), or IS6603 – Gr. X20Cr19 (SS 420).	
5	Bush	SS backed PTFE or Bronze LTB2 / FHTB2	
6	Clamping ring segments, Clamping ring bolts & non-drive end locking arrangement	SS AISI 316 Or ASTM 276 S31600 Or EN 1.4401X5CrNiMo 17-12-2	
7	Disc Seal	EPDM Rubber having properties equal or superior to the following 1) Tensile strength Min.130 Kg/cm ² 2) Elongation at break :Min375% 3) Tear resistance : Min.35 Kg/cm ² 4) Compression set at 1000° C for 72 hours : Max.20%	
8	Drilling of valve flange	Drilling of the flange shall be as per Table 8/9 EN/1092-2:2023 and thickness of the flange as per the pressure rating of the valve.	
9	Internal & External Hardware	SS AISI 316 Or ASTM 276 S31600 Or EN 1.4401X5CrNiMo 17-12-2)	
10	Hand wheel	Powder coating necessary	

11	O ring	EPDM	
12	Valve bearing	Thrust bearing	
Manufacturers Signature & Office Stamp			

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC
ANNEXURE -XIV

E.O.I./ ____ / ____ / ____

Date:-.....

NOTE:Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

APPENDIX – A
Specification of Gear Box of BFV

Sr.No	Description	BMC Requirement	Offer Details								
			300 Ø	450 Ø	600 Ø	750 Ø	900 Ø	1200 Ø	1500 Ø	1800 Ø	2200 Ø
1)	Make / Brand / Model of Gear Box	To be specified									
2)	Gear ratio	To be specified									
3)	GB torque capability / rating in Nm	To be specified									
4)	Weight of Gear Box in Kg.	To be specified									
5)	Type of gear box Enclosure (IP68)	Quarter Turn Gear Box									
6)	No of Gear stages	Maximum 2									

APPENDIX – B
DIMENSIONAL AND TECHNICAL PARAMETERS OF GEAR BOX as per ISO 5210:2017 (E)

Manufacturer shall note that dimensions and technical parameters of the Gear Box shall be identical to existing Gear Box mounted on Butterfly valves

Sr.	Parameters	BMC requirement	300 mm Ø	450 mm Ø	600 mm Ø	750 mm Ø	900 mm Ø	1200 mm Ø	1500 mm Ø	1800 mm Ø	2200 mm Ø
1)	Gear box Flange PCD (mm)	To be specified									
2)	Gear box Mounting Flange Type	To be specified									
3)	Gear Box Total Ratio	To be specified									
4)	Shaft Diameter (mm)	To be specified									
5)	Max Torque (N-m) transmitted through mounting flange	To be specified									
6)	Input Torque (N-m)	To be specified									
7)	Output Torque (N-m)	To be specified									
8)	Key slot Position considering Open & Close Operation (Must)	Open position: At 135° 3 rd quadrant isometric view									
		Close position: At 225° 4 th quadrant isometric view									
9)	Keyway dimension (as per	To be specified									

	ISO 2048-1983)										
10)	Enclosure Protection (IP 68)	To be specified									
11)	PCD Orientation	To be specified									

Manufacturers Signature & Office Stamp

Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC

ANNEXURE -XV

E.O.I./_____/_____/_____

Date:-.....

NOTE:Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

Material of Construction of (Gear Box)			
SR NO	Description		Offer Details
	Component	Material specified by BMC	
1	Gear Case & Cover	ASTM A536 Grade 70-50-05 Or IS 1865 – GR 500/7 OR Gr 400/15 / GGG40 Or EN 1563- Gr 500/7.	
2	Worm	BS 970 Gr. EN19 or BS 970 Gr. EN24	
3	Quadrant	S. G. Iron IS 1865 Gr. SG 600/3	
4	Spur/ Bevel Gear & Pinion	Alloy steel - BS 970 Gr. EN19 or BS 970 Gr. EN24	
5	Fasteners/ Dowels	Stainless steel - AISI-316	
6	Bearing	SKF or equivalent - Relevant IS / BS	
Manufacturers Signature & Office Stamp			

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**Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP
department in BMC**

ANNEXURE - XVI

E.O.I./_____/_____/_____

Date:-.....

NOTE: Following information to be submitted along with EOI as detailed herein below on the letter head of the Applicant. Fill the necessary information. Put a tick mark where applicable. Write N.A. where not applicable. All fields are necessary

General design of Gear box			
Sr .	Description	BMC Requirement	Offer Details
	GEAR BOX GENERAL DESIGN AND OTHER FEATURES	The gear operator shall be designed / selected for the torque values for respective sizes of valves considering 15% overload. It shall be designed based on various torques offered by valve. The enclosure of Gear Box shall be designed for I.P.68 protection (3 mtrs, 72 hours).	
		Each manual operator shall have all gearing totally enclosed. The rated torque capability of each operator shall be sufficient to seat, unseat and rigidly hold, in any intermediate position, the valve disc and its controls. The gear box shall have 90 degree quadrant type worm and worm gear arrangement and shall be of self-locking design to transmit at least 2.0 times the rated torque (i.e. Gear Box shall be capable of holding the valve disc in any intermediate position)	

		without damage to the faces of gear teeth or the contact faces. The gearbox shall be equipped with adjustable mechanical two-stopper arrangement incorporated in it.	
		Two independent bearings shall be provided to take worm shaft thrust in open and closed position. Only the primary gear box on valve shaft shall be of worm type and the secondary gear boxes shall be of spur or bevel gear type. Ball/ Roller, bearings shall be provided on all the shafts of spur or bevel gear boxes for ease of operation	
		All the fasteners on the gear box covers shall be tamper proof and of non-corrosive stainless steel material, as per Appendix. A. Bolt heads or nuts shall be flush with the surface to make them inoperable with conventional spanners. Water proof indicating window fitted with clear transparent acrylic sheet shall be provided on the gear box for displaying valve disc Position. The indicator shall be graduated at an interval of 10 degrees each.	

Manufacturers Signature & Office Stamp

**Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in
BMC**

ANNEXURE –XVII

E.O.I./ ____ / ____ / ____

POD test Certificate

Sr No	Size of BFV (In mm)	Valve Sr No	Pressure Rating (PN) 10 / 16	POD test (As per specification) YES / No					Type of test (Third Party Inspection only) Mention name of TPI	Test Certificate No	Date of POD test	Remarks
				Performance test	Leakage test	Hydrostatic test	Submergence test for gearbox	Overload test for gearbox				
1	600											
2	1200											
3	1800											
4	2200											
5	2400											

Manufacturers Signature & Office Stamp

Note:-

- 1. Manufacturers shall submit Proof of Design (POD) test certificate, duly conducted as per relevant standards such as IS / AWWA C504 / BS 5155 or equivalent, for all sizes of butterfly valves along with its gear box.**
- 2. The manufacturer shall have carried out POD testing for the offered BFV and shall be bound to the approved design. Any subsequent supply in BMC shall strictly conform to the same type and design of the BFV.**
- 3. The manufacturer shall strictly adhere to the approved design for all subsequent supplies. Any deviation shall be treated as non-compliance, leading to rejection of the supplied material, removal from the approved make list without prior notice.**
- 4. The offered valve shall have successfully undergone a POD test within the preceding ten (10) years from publish date of EOI.**

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Expression of Interest (EOI) for Butterfly Valve Approval in HE & WSP department in BMC**ANNEXURE –XVIII**

E.O.I./ ____ / ____ / ____

Indicative price list of BFV from manufacturer

Sr No	Size of Butterfly Valve	Unit Price in Rs	
		PN 10	PN 16
1	300		
2	450		
3	600		
4	750		
5	900		
6	1200		
7	1500		
8	1800		
9	2200		
10	2400		

Manufacturers Signature & Office Stamp

Note: The OEM shall submit an indicative price list for all offered valve sizes. The prices submitted are for information and budgetary assessment only and prices shall not be considered for evaluation or create any financial commitment. BMC reserves the right to use the information received for market assessment, preparation / revision of cost estimates, Schedule of Rates (SOR), and other procurement related purposes only, without creating any obligation on either party.

Chapter 7

Undertaking to be issued by the Original Manufacturer to BMC

(To be executed on a non-judicial Stamp Paper of Rs 500 & original copy of the same shall be submitted on the letterhead of original meter manufacturer and same shall be signed in blue ink.)

We, the undersigned manufacturer, do hereby solemnly affirm and declare that the information, documents and particulars furnished by us in response to this Expression of Interest (EOI) are true, complete and correct in all respects to the best of our knowledge and belief.

We further undertake that the Butterfly Valves offered by us shall strictly comply with the technical specifications, applicable Indian/International standards and performance requirements stipulated by the Brihanmumbai Municipal Corporation (BMC).

We agree to strictly follow the approved design for all future supplies in BMC.

We further undertake that any change or modification in the design, materials or performance parameters of the offered Butterfly Valves shall not be carried out without prior intimation to and written approval from the Brihanmumbai Municipal Corporation (BMC).

We confirm that we have the requisite experience, technical expertise, manufacturing facilities and quality assurance systems for design, manufacture, testing and supply of the Butterfly Valves as specified in this EOI.

We undertake to ensure reliable and satisfactory performance of the supplied Butterfly Valves under continuous operation conditions and shall be fully responsible and liable for any defects arising due to faulty design, inferior material, poor workmanship or non-performance during the stipulated period.

We further agree that in the event of any information submitted by us being found false, incorrect or misleading at any stage, our application shall be liable for rejection/termination and we shall be liable for appropriate action, including blacklisting, as deemed fit by BMC.

We hereby unequivocally accept that the Brihanmumbai Municipal Corporation (BMC) reserves the absolute right to accept or reject any or all applications without assigning any reason thereof and reserves the right to modify, amend or cancel the EOI process at any stage without prior notice and without any liability whatsoever.

We agree to abide by all the terms and conditions stipulated in this EOI and shall have no claim whatsoever against MCGM in respect of the EOI process or its outcome.

This Undertaking shall not be revoked till the Approval Period or Guarantee period, whichever is later is successfully completed.

Signature Details

For and on behalf of Manufacturer

Authorized Signatory: _____

Name: _____

Designation: _____

Contact No.: _____

Email ID: _____

Date: _____

Place: _____

(Company Seal / Stamp)