



Garden Reach Shipbuilders & Engineers Ltd.
(A Government of India Undertaking)
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CIN No. L35111WB1934GOI007891

**“EXPRESSION OF INTEREST”
FOR
“SHORT LISTING OF SUPPLIER FOR DEVELOPING
MARINE VALVES FOR INDIAN DEFENCE INDUSTRY UNDER GRSE BRAND NAME”**

SECTION A

1. Ref. No.	: TU/VALVES/23-24/EOI-014
2. Date of Issue of EOI	: 11.00 hrs on 18.08.2023.
3. Date of interactive session	: 14.00 hrs on 28.08.2023
4. Last date for Submission of EOI	:14.00 hrs on 08.09.2023
5. Contact Person	: Mr Manas Kumar Naskar, DGM(S&M), DKMC e-mail: naskar.manaskumar@grse.co.in Tel: 033-2469 8138/39, M-9163361820 Address: (Deck Machinery-Taratala Unit, P 2/2 Taratala Road, Kolkata- 700088)
6. Validity of Offer	: 180 days from bid opening against the EOI
EOI / Bid formats are to be downloaded from our e-portal https://www.eprocuregrse.co.in and Offers / response are to be uploaded using Digital Signature Certificate (DSC). The EOI can also be view of from www.grse.in . GRSE reserve the rights not to consider any offer submitted, other than the e-portal as indicated above.	
This Notice comprises Section A and Section B along with Enclosure 1, 2, 3 & 4 and Annexures 1, 2, 3A, 3B & 4.	
<u>N.B:</u> <ul style="list-style-type: none">➤ <u>GRSE reserved the right to cancel this EOI at any stage</u>➤ <u>Whether GRSE will open the offer against the EOI on closing due date or extend the due date, is completely under purview of GRSE.</u>➤ <u>No proposal shall be admissible after due date/extended due date and time (as stated above).</u>➤ <u>Decision of GRSE shall be final and binding in this regard.</u>	

SECTION B

Introduction

1. Garden Reach Shipbuilders & Engineers Ltd (GRSE), is a premier Warship building Company in India, under the administrative control of Ministry of Defence and enjoys 'Mini Ratna' status. Since 1960, GRSE has built and delivered 108 warships for various roles, starting from state-of-the-art Frigates & Corvettes to Fast Patrol Boats. GRSE, as a premier Defence Public Sector Shipyard, has played a very important role in the defence preparedness of the country and has always spearheaded the national mission of indigenous design and construction of warships.

2. GRSE has a strong manufacturing capability and has multiple products like deck machinery, winches, cranes, prime movers, etc under its portfolio. All these products are also sold to other shipyards and dockyards. To support the current shipbuilding plan and to avoid the bottle neck in the supply chain, GRSE is expanding its product portfolios with the introduction of newer quality products.

3. **Objective of this Notice Inviting EOI.** GRSE intends to enter into a long-term agreement and rate contract with ***reputed Indian Valve Manufacturers*** to leverage their infrastructure and technical know-how for manufacturing marine valves under GRSE's brand name. Towards achieving this, GRSE will also provide necessary technical support. Minimum indigenous content should be 60%. GRSE would like to shortlist firms of repute, meeting the pre-qualification criteria through this EOI, for entering into rate contract by means of an alliance for: -

- (a) New Product Design & Type Testing (under GRSE branding), if required as per Specification of each Project
- (b) Bid Formulation/assist GRSE in final bid preparation (for external customer) /Establishment of rate contract (for internal customer)
- (c) Formulation of Quality Acceptance Plan
- (d) Assistance in on-board installation, onboard tests and trials
- (e) Product support including maintaining minimum spares and sourcing of required spares within Product guarantee and product support periods
- (f) Supply of valves on rate contract basis.

The shortlisted firm(s) would be submitting price for each category of valve (as per attached list) for the raw material inputs, test equipment consumables, installations services, product royalty charges (if applicable), documentation charges so on based on the following factors or criteria of:-

- a) Minimum overall product cost
- b) Maximum indigenization percentage in terms of cost

4. The timely availability of the underwater marine valves is essential to avoid delays in the launching of a new construction vessel. Once the vessel is launched the pace of plumbing works decides the progress of outfitting of the vessel and in turn increases the demand of line valves. The essence of this EOI is to shortlist the valve manufacturers who are interested in association with GRSE to enable prompt response to manufacturing of marine valves, get them type tested and supplied to shipyard in time bound manner based on rate contract between the supplier and GRSE. GRSE intends

to leverage the infrastructure, workforce and facilities available with the valve manufacturer to manufacture high quality marine valves at a competitive rate not only to meet the captive requirements but also to emerge as a potential supplier to other shipyards. Expression of interest is invited for shortlisting valve manufacturers for supply of marine valves to GRSE. GRSE is approaching the firms shortlisted through this process to manufacture, type test and deliver valves for the Scope of Work (SoW) mentioned at **Enclosure 1**. This EoI is intended for creating pool of technically sound and financially stable valve manufacturers with exclusive agreement to build marine valves **only in GRSE's brand name**. Final selection will be done by inviting bids from qualified and short-listed bidders against this present EoI. Detailed Terms and Conditions (T&C) shall be finalized with the qualified bidder /bidders in this EOI through collaboration agreement /MOU/MOA. GRSE also reserves the right to engage with firms even outside of this shortlisting process for furthering its business objectives , if required in future.

Procedure

5. Expression of interest (EOI) is invited from eligible, capable and reputed valve manufacturers for empanelling them in GRSE's vendor data base and short listing them for the supply as listed in Scope of Work at **Enclosure 1**. Firms which respond to this EOI and subsequently get qualified would be considered for collaboration agreement /MOA/MOU with GRSE and establishing rate contract through a tendering process.

6. Short listing of the valve manufacturers shall be limited to the marine valve category only and the decision on short listing of the firm will solely be decided by the 'Empowered Committee' (EC) appointed for that purpose at GRSE whose decision shall be final and binding. No communication whatsoever in this regard shall be entertained.

7. After receipt of due response (as per requisite mode and format) the firm(s) shall be assessed by GRSE through a committee constituted by it based on the prescribed assessment criterion and thereafter shortlisted / selected. GRSE reserves the right to **reject any or all** of the responses/applications received for this EoI, without assigning any reason whatsoever and also to stop further proceedings under this EOI at any given point in time. GRSE's **decision in this regard shall be Final**. However, submission of any response to this EoI or selection of firm(s) pursuant to this EoI does not guarantee/assure any business to the firm(s) **and no claims or demands in this regard of any firm shall be entertained** (Please note that GRSE Empowered EC is at liberty to reduce / freeze total number of empanelled firms against a specific product category, based on the ranking / Qualification criterion).

8. Bidders responding to the EOI and selected by the GRSE committee, upon submission of all relevant documents, shall qualify to be short listed to proceed with collaboration agreement /MOU/MOA with GRSE and thereafter for trial order and rate contract. In case where more than one firm qualifies to be empanelled under a particular category, the selection of a firm for proceeding with collaboration agreement /MOA/MOU and finalization of rate contract will be based upon existing commercial practises of GRSE and furthering of GRSE's business objectives and solely at the discretion of GRSE considering its requirements and commercial interests.

9. The procedure is furnished below: -

- (a) Bidders will submit their bids in accordance with the requirement and as specified in this EOI.
- (b) It is mandatory to submit the capacity details of production per month basis certified by the auditor /proprietor of the company against this EOI.
- (c) The offer of the bidder(s) will be evaluated by Empowered Committee' (EC) appointed for that purpose at GRSE. The qualified bidder(s) after short-listing by the EC will be invited to proceed with signing of techno-commercial terms through Collaboration agreement /MOA/MOU. Conclusion of terms & condition is completely under purview of GRSE. The offers of firm(s) with whom Collaboration agreement /MOA/MOU remain inconclusive will not be considered for further proceedings with a given notice period of 01 week.
- (d) GRSE will issue a formal limited tender to shortlist firms in order to obtain price offer for proceeding with rate contract. The shortlisted and cleared firms as specified above will only be considered eligible to participate in short & single part bid / combined bid tender (as deemed fit) based on GRSE requirement. The firms which fail to submit their offer with a specified time frame as decided by GRSE may not be considered for further process
- (e) The bidder has to submit their price offer indicating the base rate against each line items.
- (f) The L-1 will be determined on item wise basis including all parameters like Type test charges as per enclosed sample price bid format at **Enclosure 2** (for reference only and not to be filled). GST will be excluded for ranking of bids.
- (g) In order to ensure timely availability of the items, GRSE reserves the right to enter into 2 Nos. rate contracts for the same items with L-1 bidder and other qualified firms participated in the tender subject to match the L-1 rate. For that purpose, L-2 will be given chance to match the L-1 price first, if L-2 does not agreed to match the L-1 price then next bidders according to ranking of bids upto H-1 will be provided that chance.
- (h) After evolution of the ranking of the bid, the L-1 bidder as well as the other bidder who agreed to match the L-1 price will be required to execute a trial order. The methodology of execution of the trial order will be finalized during conclusion of Collaboration agreement /MOA/MOU.
- (i) After successfully execution of the trial order the successful firm(s) will be awarded a rate contract at the base /finalised price valid for a period of two years.
- (j) In case the bidders(s) fail to successfully execute the trial order within the specified time period, the already agreed collaboration agreement /MOU/MOA will stand cancelled /terminated with a notice period of 1 week completely at bidder(s) risk and GRSE will proceed with selection of alternative firms as deemed fit.
- (k) On requirement of the items, GRSE will place a formal P.O for regularization purpose with already agreed terms and conditions through collaboration agreement/MOA/MOU at the base rate, the delivery schedule of the items will be finalised based on the required quantity /Capacity of production per month or as agreed by bidder whichever is earlier.
- (l) The option for distribution of quantity as described at para (g) above will be opted when required quantity within the specific time frame exceed the capacity of the firm and on the following situations: -
 - (i) GRSE will 1st intimate the L-1 bidder about required quantity and required delivery date. Firm to inform GRSE within 03 days from the intimation, whether they can meet the delivery

requirement of GRSE. In case non-receipt of any response or not able to meet the requirement, GRSE will directly approach to other firm with whom GRSE has already entered into another rate contract for the same item(s) to supply the balance quantity of the items not exceeding 40% of the required quantity within the specific time period.

(ii) After placement of P.O, if progress of firm(s) is not found satisfactory, the entire or partial quantity of the items will be deleted from scope of supply of the firm(s) and will be awarded to another firm.

(iii) The decision of GRSE on above distribution or non-distribution will be final and binding on the firms.

(m) Though the P.O will be placed on base rate, however payment will be made as per price variation formula to be finalized during MOU on mutual agreement.

10. No formal invitation shall be extended to the firms for the purpose of opening of this Notice Inviting EOI.

11. The participated bidder has to submit the integrity pact in enclosed GRSE format (**Annexure 3A**) within 01 week from the EOI closing date. Bidder has to also upload the same along with their offer against his EOI. For non-submission of Integrity Pact, GRSE reserve the right not to consider the offer of the firm for further processing.

12. Either or both of the following Independent External Monitors (IEMs) will have the power to access the entire project document and examine any complaints received by him.

FOR GRSE: -

Shri Bam Bahadur Singh, Height-7; Flat No.1802, Uniworld City, New Town, Rajarhat, Kolkata-700160
bbsinghbeml@gmail.com

Shri Pidatala Sridhar, IRS (Retd.) Flat 2C, Kanaka Lakshmi Apartments 3-6-467 & 468 Street Number-6, Himayatnagar, Hyderabad-500029 sridharpidatala@gmail.com

13. The firms responding to this Eoi must be willing for signing of the relevant NDA (Reference copy attached- **Annexure 3 B**) and the Non-Compete clause (Format to be provided at MoU stage) towards proceeding with empanelment at GRSE.

14. GRSE would be committed to provide 'Performance Warranty' on its products and also product support ranging from 5 to 25 years including obsolescence support for the entire life cycle of the vessel/platform. The firms responding to this Eoi must be willing to agree to such a back to back commitment where required/sought by GRSE.

15. However, it is to be noted that **GRSE doesn't guarantee/assure any business to the empanelled firms post signing of MoU and no claims or demands in this regard of any firm shall be entertained.**

16. The general and commercial terms & conditions of GRSE is placed at **Enclosure 3** and compliance matrix /deviation list is enclosed at **Enclosure 4**, firm has to indicate their compliance/deviation w.r.t to GRSE terms which will be discussed and mutually agreed during finalization of agreement / MOU/MOA.

17. AMENDMENT OF EOI DOCUMENT & CORRIGENDUM:

- i) GRSE reserves the right to amend this EOI document by issuing addendum/ addendum. The addendum will be posted at (<https://eprocuregrse.in> and also on GRSE website) and shall be treated as a part of the EOI Document. GRSE may, at its discretion, extend the deadline for the submission of Applications.
- ii) GRSE reserves the right to conduct changes to this notice anytime at its own discretion by a corrigendum. The corrigendum (if any) shall be posted at <https://eprocuregrse.in> and also on GRSE website. Any such corrigendum shall be deemed to be incorporated into this EOI.
- iii) Bidder should take into account the corrigendum published before submitting the bid online.
- iv) It is construed that the bidder has read all the terms and conditions before submitting their offer. Bidder should go through the EOI schedules carefully and upload the offer accordingly; otherwise, the bid will be liable for rejection.

18. DISCLAIMER:

- i) This Expression of Interest (EOI) is not an offer by GRSE but an invitation to receive offers from interested parties for empanelling and shortlisting them in GRSE vendor panel for supplying marine valves and does not entail/guarantee any business. The purpose of this Notice is to provide the necessary information that may be useful to such interested parties in formulating their proposals for empanelment in response to this Notice.
- ii) GRSE reserves the right to modify or even not to proceed with the proposed EOI at any stage.

Scope of Work

1. GRSE intends to develop and shortlist vendors for manufacturing of various hull and line valves for marine vessels on behalf of the shipyard. The valves shall be manufactured with the logo of GRSE and shall be marketed by the shipyard for Naval / Defence uses.

2. This EOI relates to the design, manufacture and supply of following Hull and Line Valves(not limited to): -

[A] Hull Valves - NAB hull valves with following criterion.

(i) MOC: NAB TO NES 747 Part-II.

(ii) Type Approved by IACS (Class) or DQA(WP).

(iii) Shock qualified for IN Shock Grade-A.

(iv) The valves are to be designed & tested as per DME 463 for "Manually Operated Ship's System Valves for Low Pressure Fluids" promulgated by IHQ MoD(N). Vendors are requested to refer to DME 463 for Hull Valves.

a) NAB Right Angle SDNR Valve.

b) NAB Right Angle SDSL Valve.

c) NAB Straight Type SDNR Valve

d) NAB Gate Valve.

e) NAB Storm Valves (Angle Type) With Positive Closing.

f) NAB Triple Offset Double Flange Type Butterfly Valve with Gear Box.

g) NAB Ball Valve with Gear Box

h) SS Ball Float Check Valve

[B] Line Valves –

(i) The valves are to be designed & tested as per DME 463 for "Manually Operated Ship's System Valves for Low Pressure Fluids" promulgated by IHQ MoD(N). Vendors are requested to refer to DME 463 for Line Valves.

a) Ball Valve

b) Butterfly Valve

c) SDSL Valve (Angle & Straight Type)

d) SDNR Valve (Angle & Straight Type)

e) 3 Way Plug Valve

f) NR Check Valve (swing & lift type)

g) Pressure Reducing Valve

h) Pressure Relief Valve

- i) Fire hydrant valve with IHC
- j) Quick closing valve
- k) Self-closing sounding cock
- l) Ball float check valve
- m) Diaphragm valve
- n) Self-closing drain valve

(a) The specification relates to design, manufacture, supply, Inspection, Testing, Preservation, Packaging, Forwarding & satisfactory operation on board the ship of Hull and Line Valves for LP fluid systems to be used in Naval Vessels. Scope of supply will cover Design, Manufacture, for all the valves listed in this specification.

(b) The specification defines naval duties & details pertaining to evaluation & testing of the equipment. This document is prepared as a guidance document for the Vendor to ensure that their products meet the standards of Installation on naval ships.

(c) The details of the valves are placed at **Appendix - A**

3. The participation in the subsequent tenders for the end-customer will be carried out by GRSE as required and the consequent orders towards manufacturing of valves would be placed by GRSE. Initial preparatory work towards responding to NIT/RFP etc. from prospective customers is envisaged to be done on a NC ('No Cost) basis by the firm /collaborator for GRSE.

4. The rate contract awarded firm(s) are also required to assist GRSE for the following:

STAGE	Activity	Description	Remarks
I	Product Design as per Tender Specification of each Project	Each Project is a specific type. Whilst the generic specifications may remain same, there will be ship specific /product specific features like geometry, weight, etc. which would require specific tailoring. The collaborator would be required to provide available / new product designs (external design agencies can be involved) and give various design documentations as required specifically for the project to GRSE from time to time.	During the product design stage, there will be a requirement of interface visits by either or both sides /premises (based on mutual agreement /consent). Interaction may also be through Video Conferencing.
II	Bid Formulation	As per the finalized product design for each project, the work plan would be finalized thereafter comprising: - i) Bill of Material & sourcing thereof towards product manufacture. ii) Work plan of tests and trials, installation and commissioning	Participation in meetings either by Video Conferencing or visit need to be considered and catered for.

		<p>iii) Product Support as required by end customer. Based on the above the price bid for the project would be prepared. During the Bid Formulation the Payment stages along with Terms & Conditions for each of the above sub-serials to be made by GRSE to collaborator would also be firmed up and committed by GRSE & collaborator mutually. The Collaborator would have to give a binding undertaking towards execution of project as per mutually agreed SoW (Scope of Work). Based on the comprehensive proposal by the collaborator, encompassing all points as mentioned above, the final bid will be submitted to the End customer by GRSE.</p>																												
III	Technical Drawings & Documentations	<p>Firm(s) would provide the following drawings and documentations along with the valves</p> <table border="1"> <thead> <tr> <th>SL NO.</th> <th>Type of Documents/Drawings</th> <th>QNTY</th> </tr> </thead> <tbody> <tr> <td>(a)</td> <td>As Fitted Drawings (FINAL GA & MANUFACTURING DRGs)</td> <td>4</td> </tr> <tr> <td>(b)</td> <td>Soft Copy of Drawings (AutoCAD 2010/latest) on CD</td> <td>2</td> </tr> <tr> <td>(c)</td> <td>Material Test Certificate</td> <td>4</td> </tr> <tr> <td>(d)</td> <td>Inspection Certificate</td> <td>4</td> </tr> <tr> <td>(e)</td> <td>Valve Type Approval Certificates</td> <td>4</td> </tr> <tr> <td>(f)</td> <td>Shock qualification certificate</td> <td>4</td> </tr> <tr> <td>(g)</td> <td>Weight Certificates</td> <td>4</td> </tr> <tr> <td>(h)</td> <td>Certificate of Compliance of items</td> <td>2</td> </tr> </tbody> </table>	SL NO.	Type of Documents/Drawings	QNTY	(a)	As Fitted Drawings (FINAL GA & MANUFACTURING DRGs)	4	(b)	Soft Copy of Drawings (AutoCAD 2010/latest) on CD	2	(c)	Material Test Certificate	4	(d)	Inspection Certificate	4	(e)	Valve Type Approval Certificates	4	(f)	Shock qualification certificate	4	(g)	Weight Certificates	4	(h)	Certificate of Compliance of items	2	Requirement of interface interactions /visits required for the formulation of the same are to be firmed at Stage II itself.
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IV	Technical specifications for product components to be made in GRSE or sourced by GRSE from local vendors in India	Firm(s) would provide detailed drawings required for the Fabrication and Manufacture /Sourcing of products. The requisite specifications with acceptable equivalent and tolerances would be given to facilitate the same and enhance the indigenization percentage of spares.	The quality standards for the sourced products and the norms for the same are to be mutually drawn up. Endeavour to be towards delivery of technically robust product with enhanced level of indigenization.																											

V.	Formulation of Quality Acceptance Plan	QAP for product would be forwarded by Firm(s)	Changes made by inspecting agency if any are to be accommodated.
VI	Product support including maintaining min spares in India and sourcing of required spares within product guarantee and product support periods	The firm would provide assistance in initial stages by means of direct employee presence and /or authorized reps.	

5. **Technology Transfer.**

(a) Phase-I. Firm(s) would be required to execute a trial order of valves which will include manufacturing, all mandatory testing and certification by class / QA authorities. All mandatory drawings / documentations are also required to be produced and submitted.

(b) Phase II. Firm(s) would, particularly for multi-ship projects, identify mutually with GRSE, the material and components that would be amenable for local sourcing and facilitate the same by means of sharing the required specifications, drawings and quality standards.

(c) Phase III. GRSE being the prime agency on whom the order would be placed is bound to provide (on placement of order) Product Support for 20 years and Obsolescence support to Indian Defence vessels for its entire life time. While it is noted that there may be a few components wherein the collaborator would retain its supply in scope, in the event of change of ownership of the collaborator or collaborator being declared insolvent or, any such circumstances wherein the collaborator is not able to support GRSE in meeting its commitment of Product and Obsolescence support, the detailed technical drawings, specifications & all other necessary details would be passed onto GRSE by the Collaborator for support to Indian Navy and Indian Coast Guard.

6. Firm(s) shall not have any 'Intellectual Property Rights (IPR)' on any design once the same is developed specifically for any project under the collaboration agreement /MOA/MOU and all Intellectual Property rights in the product shall vest in GRSE. However, the collaborator while developing any design shall ensure that GRSE should be completely absolved from any infringement of patent or any Intellectual property rights.

7. The QUALIFYING CRITERIA MATRIX for the purpose of short-listing of bidder is placed at **Annexure-2**. The prospective bidder shall submit the relevant documents to support the requirements as per aforementioned matrix. The same shall inter alia also include if not already indicated in the matrix the following:

- (a) Bidder Company/firm's Profile and experience
- (b) Overview of the Technical personnel employed by the Company.
- (c) All other required statutory compliance.
- (d) Company Registration Certificate
- (e) ISO Standard Certificate (if available)
- (f) Audited Balance Sheet of the Company for the preceding 03 Financial Years.
- (g) Documents to prove past experience in supply of valves. List of Orders executed by the firm for valves of last 05 years.
- (h) For the purpose of this EOI 'Firm' means a partnership/LLP firm /company under Indian laws. (Decision towards acceptance of offer by Proprietorship firm shall be decided by the GRSE Empowered committee)
- (j) The said legal entity should have been in existence for a period of at least 3 years on the date of submission of proposal as evidenced by the documents submitted by such entity in its proposal.

8. The firm should have an inhouse quality assurance program. Further, GRSE reserve the right to inspect and ensure that supplied valves by the firm(s) conform to the specifications and product is capable of meeting committed performance as per Customer requirement/order. This could be done through GRSE's own inspectors or through 'Class' representatives. The presence or absence of GRSE representative does not relieve the firm(s) of its responsibility for quality control.

9. The Technical inputs handed over mutually by both parties to each other shall be the Intellectual Property of the respective parties and shall be returned (if requested for) without copying into any form. The same data shall not be used in any other project by a party without prior written permission of the other (discloser).

10. Bidders who have been served with Tender Holiday or Risk Purchased by any Government (Central/State) or any Government Agency/Entity shall not be eligible to participate in the EOI. All firms are required to submit a certificate /declaration in their letter head as per format given in **Annexure-1**. The firm(s) or its Directors should not be barred by any Judicial/Quasi-Judicial orders from doing business. The firm would be required to disclose its ongoing litigations and/or any enquiry proceedings ongoing against it.

11. Bidders not meeting /complying the qualifying criteria at **Annexure-2** and not submitting documents as above, shall not be considered further.

12. A Team from GRSE may visit premises of the firms and interact/seek information to assess capability and capacity of the firm, if considered necessary (post examination of the response to the EOI by the particular firm under reference).

13. It is stated that GRSE reserves the right to enter into individual agreements for each of the valves listed in "List of Products Para" in parallel.

14. The EOI shall be submitted which shall inter alia cover the following: -

- i. Clearly state category viz types of valves as per para 2 (list of products).
- ii. The firm's willingness (in their letter head) to participate and offer their services for collaboration.
- iii. A broad approach and methodology (Project Plan) for the services to be provided.
- iv. Supporting documents as sought above.
- v. Specific answers to the questionnaire placed at **Annexure-4**.
- vi. Any other information considered relevant.

(Note: - The firms interested in responding to this EOI are encouraged to attend interactive session as per para 3 of Section A of this Notice)

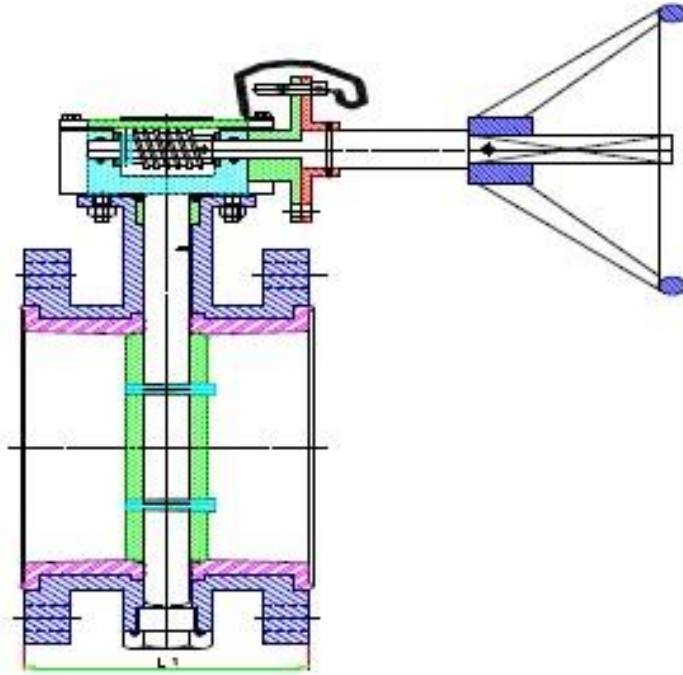
15. Queries, if any, are to be sent immediately and at least 7 (Seven) days before the due date of closure of EOI. No other query shall be entertained after the said period.

16. In case any document is being submitted in hard copy the envelope should be super-scribed with EOI No. and title of the EOI and shall be submitted on or before the due date. Information/documents in response to this EOI may also be forwarded in e-mail to the addressee mentioned in Section A of this EOI.

APPENDIX – A

VALVE DATA SHEET					
NICKEL ALUMINIUM BRONZE BUTTERFLY VALVES					
1	GENERAL SPECIFICATION				
1.1	FLUID HANDLED	SEA WATER/BILGES	1.7	BORE TYPE	FULL BORE
1.2	OP. PRESSURE	10 Kg / Cm ²	1.8	END CONN.	FLANGED
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 1B
1.4	SIZE RANGE	As per RFQ	1.10	FLANGE FACE	BS4504–3.3
1.5	MATING PIPE SPECN.	90-10 Cu-Ni as per NES 779 Part III	1.11	BODY TYPE	SINGLE PIECE
1.6	VALVE REF.DOC.	NES 375 / BS 5155	1.12	VALVE OPERATION	GEAR BOX WITH RG
2	MATERIAL SPECIFICATION				
	PART	MATERIAL		SPECIFICATION	
2.1	BODY /COVER	NICKEL ALUMINIUM BRONZE		NES PART 747 II	
2.2	DISC	NICKEL ALUMINIUM BRONZE (SOLID)		NES PART 747 II	
2.3	SHAFT/SPINDLE	NICKEL ALUMINIUM BRONZE		NES 833 PART II	
2.4	CLAMP RING	NICKEL ALUMINIUM BRONZE		NES 747 PART II	
2.5	DISC PIN	NICKEL ALUMINIUM BRONZE		NES 833 PART II	
2.6	SOFT SEAT	REINFORCED PTFE		REINFORCED WITH 90/10 Cu-Ni	
2.7	BODY SLEEVE	REINFORCED PTFE		REINFORCED WITH 90/10 Cu-Ni	
2.8	BEARING	PHOSPHOR BRONZE		BS 2874 PB 102	
2.9	GLAND FLANGE	NICKEL ALUMINIUM BRONZE		NES 833 PART II	
2.10	GLAND PACKING	GRAPHITE			
2.11	BODY GASKET	ASBESTOS FREE		BS 7531	
2.12	BOLTS	NICKEL ALUMINIUM BRONZE		NES 862	
2.13	NUTS	NICKEL ALUMINIUM BRONZE		NES 862	
2.14	HANDLE/HANDWHEEL	STAINLESS STEEL(WITH PVC GRIP)		ASTM A105/ASTM A216 WCB.	
2.15	ANTISTATIC DEVICE	STAINLESS STEEL		ASTM A 276 Gr.304	
2.16	GEAR BOX CASING	GUN METAL		BS 1400 LG 4C	
2.17	GEARS	PHOSPHOR BRONZE		BS 2874 PB 102	
2.18	WORM &WORM WHEEL SPINDLE	NICKEL ALUMINIUM BRONZE		NES 833 PART II	
3	STATUTORY REQUIREMENTS				
3.1	PAINTING/ SURFACE FINISH	SMOOTH SURFACE WITH METAL FINISH			
3.2	INSPECTION & TESTING	API 598			
3.3	TESTING HYDROSTATIC	AS PER BS 6755 PART I for RATE 'A'			
3.4	HYDROSTATIC TEST PRESSURE	BODY – 15 BAR SEAT – 11 BAR			
3.5	PNEUMATIC TEST PRESSURE	7 BAR WITH VALVE CLOSED			
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST	ACROSS VALVE			
3.7	REPEATABILITY TEST	25 CYCLE MINIMUM FOLLOWED BY HYDROTEST			
3.8	RUBBER BONDING TESTING	ASTM D 429			
3.9	ANTISTATIC TEST	AS PER BS 5146 (* IF APPLICABLE)			
3.10	NOISE MEASUREMENT	MIL-STD-740-2			
3.11	GEAR BOX TESTING	5 METRES OF WATER COLUMN			
3.12	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED CLASS			
3.13	INSPECTION	IACS RECOGNISED CLASS AUTHORITY			
(* if applicable)					

TRIPPLE OFFSET FLANGE TYPE BUTTERFLY VALVE



L1 - VALVE FLANGE TO FLANGE DIMENSIONS

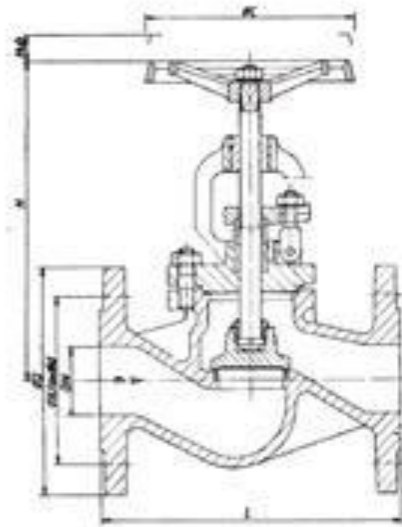
SR. NO.	NOMINAL SIZE	FLANGE TO FLANGE DIMENSIONS L1	QTY. / SYSTEM	TOTAL QTY.
01	80	114		
02	100	127		
03	125	140		
04	150	140		
05	200	152		
06	250	165		
07	300	178		
08	350	190		
09	400	216		

VALVE DATA SHEET

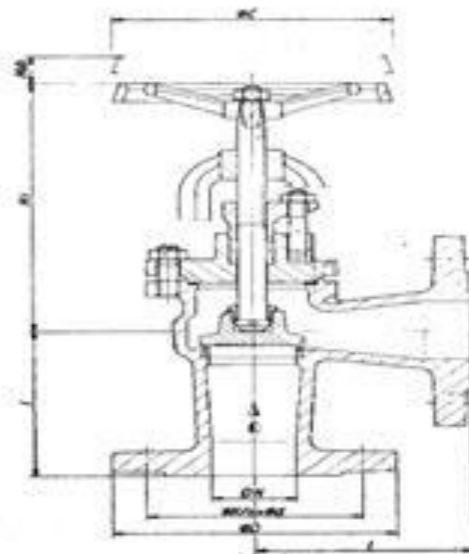
NICKEL ALUMINIUM BRONZE STRAIGHT & ANGLE TYPE SDNR / SDSL AND GATE VALVES

1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	SEA WATER/BILGES	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED						
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE 2C & 2D						
1.4	SIZE RANGE	As per RFQ	1.10	FLANGE FACE	BS4504-3.3						
1.5	MATING PIPE SPECN.	90-10 Cu-Ni as per NES 779 Part III	1.11	BODY TYPE	BOLTED BONNET TYPE						
1.6	VALVE REF. DOC.	NES 375 / BS 5154	1.12	VALVE OPERATION	HAND WHEEL WITH RG						
2						MATERIAL SPECIFICATION					
PART		MATERIAL				SPECIFICATION					
2.1	BODY /BONNET	NICKEL ALUMINIUM BRONZE				NES 747 PART II					
2.2	DISC/GATE	NICKEL ALUMINIUM BRONZE				NES 747 PART II					
2.3	SPINDLE	NICKEL ALUMINIUM BRONZE				NES 833 PART II					
2.4	BACK SEAT	NICKEL ALUMINIUM BRONZE				NES 747 PART II					
2.5	DISC SEAT	NICKEL ALUMINIUM BRONZE				NES 747 PART II					
2.6	SOFT SEAT	REINFORCED PTFE				REINFORCED WITH 90/10 CuNi					
2.7	YOKE/YOKE SLEEVE	NICKEL ALUMINIUM BRONZE				NES 747 PART II					
2.8	BEARING (BUSH)	PHOSPHOR BRONZE				BS 2874 PB 102					
2.9	GLAND FLANGE END	NAB				NES 747 PART II CLASS I					
2.10	GLAND PACKING	GRAPHITE(IMPREGNATED)									
2.11	BODY GASKET	ASBESTOS FREE				BS 7531					
2.12	BOLTS	NICKEL ALUMINIUM BRONZE				NES 862					
2.13	NUTS	NICKEL ALUMINIUM BRONZE				NES 862					
2.14	HAND WHEEL	CAST STEEL (GALVANIZED)				ASTM A 216 Gr. WCB					
2.15	TAB WASHER	STAINLESSSTEEL				IS 8062 / ASTM A 240 Gr. 304					
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH			SMOOTH SURFACE WITH METAL FINISH							
3.2	INSPECTION & TESTING			API 598							
3.3	TESTING HYDROSTATIC			AS PER BS 6755 PART I for RATE 'A'							
3.4	HYDROSTATIC TEST PRESSURE			BODY – 15 BAR SEAT – 11 BAR							
3.5	PNEUMATIC TEST PRESSURE			7 BAR WITH VALVE CLOSED CONDITION							
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST			ACROSS VALVE							
3.7	ANTISTATIC TEST			AS PER BS 5146 (* IF APPLICABLE)							
3.8	RUBBER BONDING TESTING			ASTM D 429							
3.9	REPEATABILITY TEST			25 CYCLE MINIMUM FOLLOWED BY HYDROTEST							
3.10	CERTIFICATION			IACS RECOGNISED CLASS							
3.11	INSPECTION			INSPECTION BY IACS RECOGNISED CLASS							

SDNR / SDSL VALVE STRAIGHT TYPE



SDNR / SDSL VALVE ANGLE TYPE



**FACE -TO- FACE DISTANCE
SDNR / SDSL / (STRAIGHT)**

L-VALVE FACE TO FACE DIMENSIONS (Inclusive of FLANGE THICKNESS)

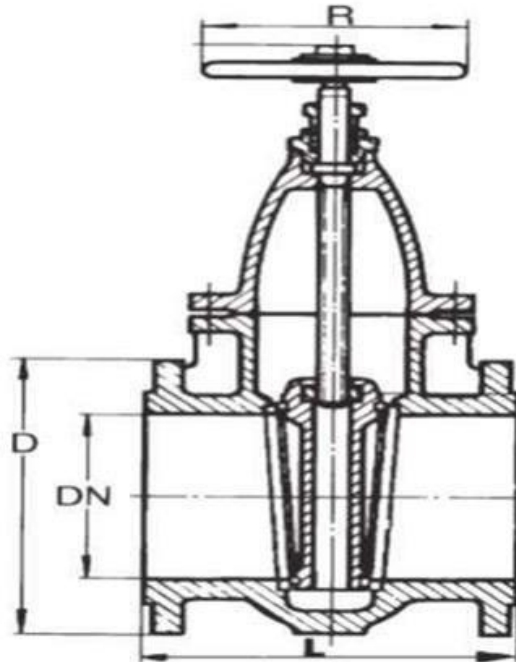
SR. NO.	NOMINAL SIZE	DIMENSIONS	END CONNECTION DETAILS	QTY. / SYSTEM	TOTAL QTY.
		L			
01	10	108	SCREWED		
02	15	108	SCREWED		
03	20	117	SCREWED		
04	25	127	SCREWED		
05	32	146	SCREWED		
06	40	159	FLANGED		
07	50	190	FLANGED		
08	65	216	FLANGED		
09	80	254	FLANGED		
10	100	292	FLANGED		
11	125	330	FLANGED		
12	150	356	FLANGED		
13	200	495	FLANGED		
14	250	622	FLANGED		
15	300	698	FLANGED		
16	350	787	FLANGED		

**FACE -TO- FACE DISTANCE
SDNR / SDSL VALVE DIMENSIONS (ANGLE)**

L -VALVE FACE TO FACE DIMENSIONS (Inclusive of FLANGE THICKNESS)

SR. NO.	NOMINAL SIZE	DIMENSIONS	END CONNECTION DETAILS	QTY. / SYSTEM	TOTAL QTY.
		L			
01	10	70	SCREWED		
02	15	70	SCREWED		
03	20	75	SCREWED		
04	25	85	SCREWED		
05	32	95	SCREWED		
06	40	100	FLANGED		
07	50	115	FLANGED		
08	65	126	FLANGED		
09	80	135	FLANGED		
10	100	146	FLANGED		
11	125	178	FLANGED		
12	150	203	FLANGED		
13	200	248	FLANGED		
14	250	311	FLANGED		
15	300	349	FLANGED		
16	350	394	FLANGED		

GATE VALVE



**FACE -TO- FACE DISTANCE
GATE VALVE DIMENSIONS**

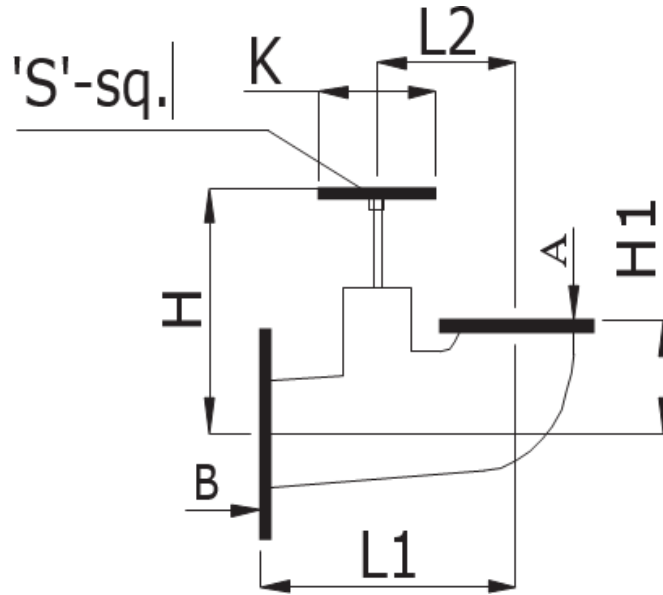
L-VALVE FLANGE FACE TO FACE DIMENSIONS (Inclusive of FLANGE THICKNESS)

SR. NO.	NOMINAL SIZE	DIMENSIONS	END CONNECTION DETAILS	QTY. / SYSTEM	TOTAL QTY.
		L			
01	50	178	FLANGED		
02	65	190	FLANGED		
03	80	203	FLANGED		
04	100	229	FLANGED		
05	125	254	FLANGED		
06	150	267	FLANGED		
07	200	292	FLANGED		
08	250	330	FLANGED		
09	300	356	FLANGED		
10	350	381	FLANGED		

**VALVE DATA SHEET STORM VALVES
(HULL VALVE)**

1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	WATER	1.6	TYPE	POSITIVE CLOSING/ LOCKING						
1.2	OP. PRESSURE	10 Kg/Cm2	1.7	END CONN.	FLGD. BS 4505, Sec. 3.3, Code 321(PN-10)						
1.3	OP. TEMPERATURE	80°C MAX	1.8	O/A DIMN.	Annexure-3B						
1.4	SIZE RANGE	As per RFQ	1.9	VALVE OPERATION	HAND WHEEL OPERATED (FOR POSITIVE CLOSING) & RG						
1.5	VALVE REF. DOC.	NES 360/BS 5155/DME 422/ ECON STD.	1.10	BODY TYPE	Annexure-3B						
2						MATERIAL SPECIFICATION					
		PART	MATERIAL			SPECIFICATION					
2.1	BODY	NICKEL ALUMINIUM BRONZE			NES 747 PART II/IV						
2.2	BONNET	NICKEL ALUMINIUM BRONZE			NES 747 PART II/IV						
2.3	DISC	NICKEL ALUMINIUM BRONZE			NES 747 PART II/IV OR NES 833 PART II/IV						
2.4	SPINDLE	NICKEL ALUMINIUM BRONZE			NES 833 PART II						
2.5	DISC SEAT	VITON-B or VIRGIN PTFE									
2.6	DISC FACE RETAINER	MONEL-400			BS-3076 NA 13						
2.7	BONNET GASKET	FLEXIBLE GRAPHITE / NON ASBESTOS GASKET									
2.8	GLAND/GLAND FLANGE	NICKEL ALUMINIUM BRONZE			NES 747 PART II/IV						
2.9	GLAND BUSH	PHOSPHOR BRONZE			BS 1490-LM6 LM25 TF						
2.10	BOLTS	NICKEL ALUMINIUM BRONZE			NES 833 PART II/IV						
2.11	NUTS	NICKEL ALUMINIUM BRONZE			NES 833 PART II/IV						
2.12	HANDLE WHEEL	CAST STEEL (GALVE)			ASTM A 216 WCB						
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/S. TREATMENT		SMOOTH METAL SURFACE								
3.2	TESTING HYDROSTATIC		AS PER BS 6755 PART I								
3.3	HYDROSTATIC TEST PRESSURE		BODY – 15 BAR SEAT – 11 BAR								
3.4	PNEUMATIC TEST PRESSURE		7 BAR WITH VALVE CLOSED CONDITION								
3.5	SHOCK REQUIREMENT (HULL Vv)		I.N. SHOCK CURVE "A" (ATTACHMENT NO-03)								
3.6	CERTIFICATION		IACS RECOGNISED CLASS AUTHORITY								
3.7	INSPECTION		IACS RECOGNISED CLASS AUTHORITY								

NAB STORM VALVE STRAIGHT TYPE



A (NB)	B (NB)	L1	L2	H	H1	K	S Sq.
50	65	180	106	333	90	140	14
65	80	200	118	341	99	140	14
80	100	215	135	352	108	160	16
100	125	250	154	413	130	200	20
125	150	290	188	438	152	250	20
150	200	330	210	465	176	315	24

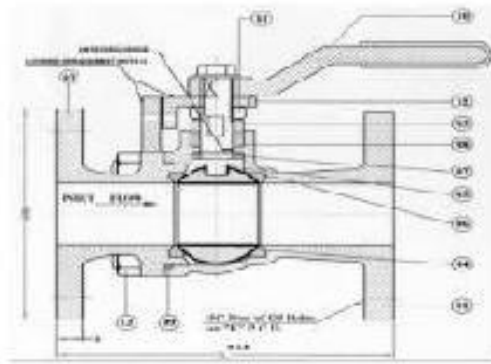
NOTE: ALL STORM VALVES TO BE PROVIDED WITH PROVISION FOR CLEANING & VALVES SIZES 80 NB & ABOVE ARE PROVIDED WITH INSPECTION / CLEANING COVER.

VALVE DATA SHEET

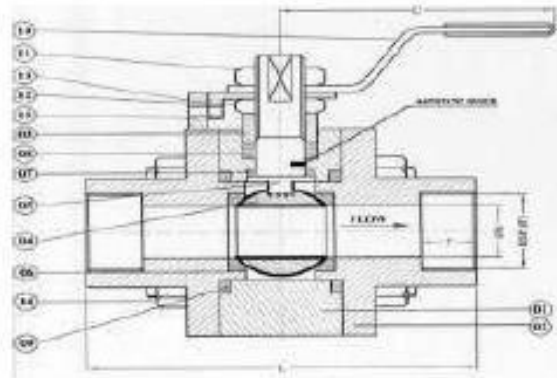
NICKEL ALUMINIUM BRONZE BALL/PLUG VALVES

1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	SEA WATER/BILGES	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg / Cm2	1.8	END CONN.	FLANGED						
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 4C						
1.4	SIZE RANGE	As per RFQ	1.10	FLANGE FACE	BS4504-3.3						
1.5	MATING PIPE SPECN.	90-10 Cu-Ni as per NES 779 Part III	1.11	BODY TYPE	SINGLE PIECE						
1.6	VALVE REF.DOC.	NES 375 / BS 5351	1.12	VALVE OPERATION	GEAR BOX WITH RG						
2						MATERIAL SPECIFICATION					
PART		MATERIAL		SPECIFICATION							
2.1	BODY /COVER	NICKEL ALUMINIUM BRONZE		NES PART 747 II							
2.2	INSERT	NICKEL ALUMINIUM BRONZE		NES PART 747 II							
2.3	BALL/PLUG	NICKEL ALUMINIUM BRONZE (SOLID)		NES PART 747 II							
2.4	STEM/SPINDLE	NICKEL ALUMINIUM BRONZE		NES 833 PART II							
2.5	GLAND	NICKEL ALUMINIUM BRONZE		NES 747 PART II							
2.6	GLAND NUT	PHOSPHOR BRONZE		BS 2874/ PB 102							
2.7	GLAND BUSH	NAB		NES 747 PART II/ NES 833 PART II							
2.8	SEAT	REINFORCED PTFE		REINFORCED WITH 90/10 Cu-Ni							
2.9	STEM SEAL	VITON B		WITH 68%FLUORINE							
2.10	BODY SEAL	VITON B		WITH 68%FLUORINE							
2.11	GLAND PACKING	GRAPHITE									
2.12	COVER SEAL	VITON B		BS 7531							
2.13	BOLTS	NICKEL ALUMINIUM BRONZE		NES 862							
2.14	NUTS	NICKEL ALUMINIUM BRONZE		NES 862							
2.15	HANDLE/HANDWHEEL	STAINLESS STEEL(WITH PVC GRIP)		ASTM A 240 Gr. 304							
2.16	ANTISTATIC DEVICE	STAINLESS STEEL		ASTM A 276 Gr.304							
2.17	GEAR BOX CASING	NICKEL ALUMINIUM BRONZE		NES 747 PART II							
2.18	GEARS	PHOSPHOR BRONZE		BS 2874 PB 102							
2.19	WORM &WORM WHEEL SPINDLE	NICKEL ALUMINIUM BRONZE		NES 833 PART II							
2.20	TAB WASHER	STAINLESS STEEL		IS 8062/ ASTM A 240 Gr. 304							
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH	SMOOTH SURFACE WITH METAL FINISH									
3.2	INSPECTION & TESTING	API 598									
3.3	TESTING HYDROSTATIC	AS PER BS 6755 PART I for RATE 'A'									
3.4	HYDROSTATIC TEST PRESSURE	BODY - 15 BAR SEAT - 11 BAR									
3.5	PNEUMATIC TEST PRESSURE	7 BAR									
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST	ACROSS VALVE									
3.7	REPEATABILITY TEST	25 CYCLES MINIMUM FOLLOWED BY HYDROTEST									
3.8	RUBBER BONDING TESTING	ASTM D 429									
3.9	ANTISTATIC TEST	AS PER BS 5146 (IF APPLICABLE)									
3.10	NOISE MEASUREMENT	MIL-STD-740-2									
3.11	GEAR BOX TESTING	5 METRES OF WATER COLUMN									
3.12	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED CLASS									
3.13	INSPECTION	IACS RECOGNISED CLASS AUTHORITY									
(* if applicable)											

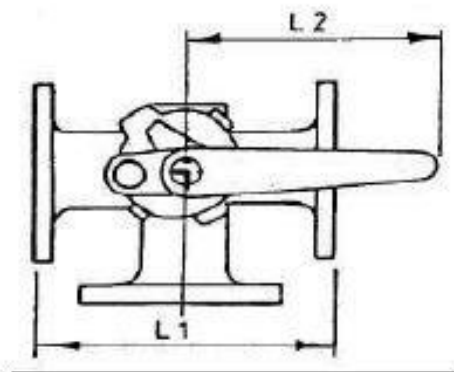
BALL VALVE (FLANGED ENDED)



BALL VALVE (SCREWED ENDED)



L-PORTED VALVE (FLANGED ENDED)



DIMENSIONS REQUIREMENT

BALL/PLUG VALVE DIMENSIONS (FLANGED)

L-VALVE FACE TO FACE DIMENSIONS

SR. NO.	NOMINAL SIZE(DN)	DIMENSIONS		END CONNECTIONS	QTY. / SYSTEM	TOTAL QTY.
		BALL	PLUG			
01	10	102	102	FLANGED		
02	15	108	108	FLANGED		
03	20	117	117	FLANGED		
04	25	127	127	FLANGED		
05	32	140	140	FLANGED		
06	40	165	165	FLANGED		
07	50	178	178	FLANGED		
08	65	190	222	FLANGED		
09	80	203	241	FLANGED		
10	100	229	305	FLANGED		
11	125	254	356	FLANGED		
12	150	267	394	FLANGED		

BALL VALVE DIMENSIONS (SCREWED)

SR. NO.	NOMINAL SIZE(DN)	DIMENSIONS (L)	END CONNECTIONS	QTY. / SYSTEM	TOTAL QTY.
01	10	70	1/2" BSP		
02	15	75	3/4" BSP		
03	20	75	1" BSP		
04	25	96	1 1/4" BSP		
05	32	130	1 1/2" BSP		

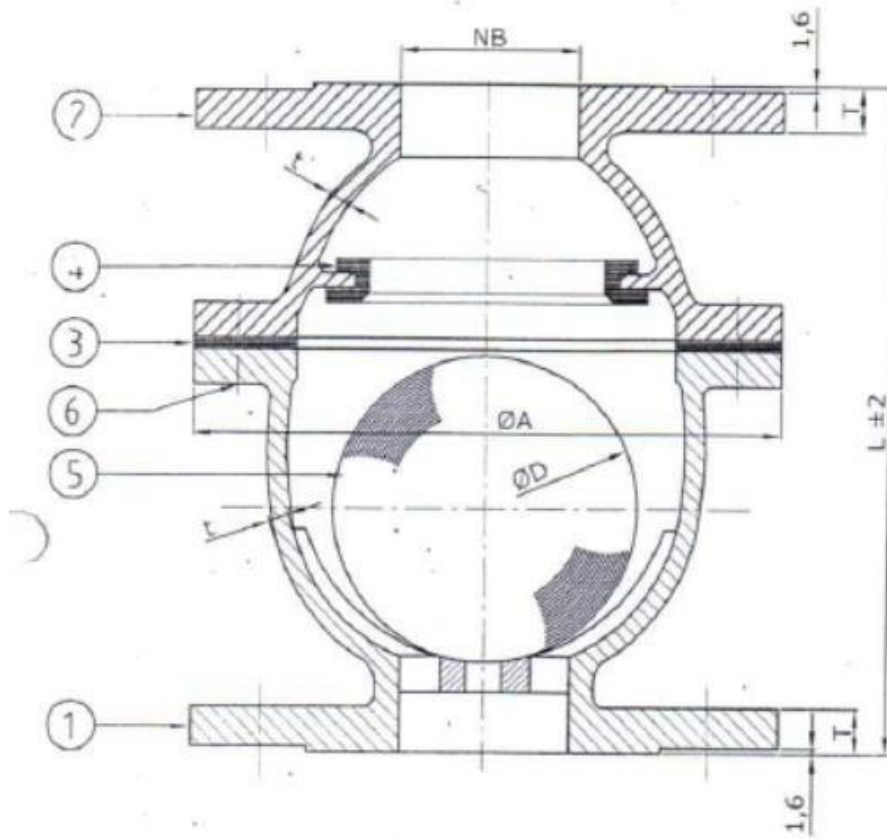
SR. NO.	NOMINAL SIZE (DN)	DIMENSIONS			END CONNECTIONS	QTY. / SYSTEM	TOTAL QTY.
		L1	H*	L2			
01	25	165	158	140	FLANGED		
02	40	221	200	215	FLANGED		
03	50	241	215	235	FLANGED		
04	65	267	235	265	FLANGED		
05	80	305	250	285	FLANGED		
06	100	356	270	305	FLANGED		

* NOTE: H- Approximate dimension to top of locating pin.

VALVE DATA SHEET**SS BALL FLOAT CHECK VALVE BOTH END FLANGED FIRE SAFE**

1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	EXHAUST GAS	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED						
1.3	OP. TEMPERATURE.	500 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEX-5B						
1.4	SIZE RANGE	As per RFQ	1.10	FLANGE FACE	BS4504-3.1 (FLAT FACE)						
1.5	MATING PIPE SPECN.	MS ASTM GR.B A106	1.11	BODY TYPE	BOLTED BONNET TYPE						
1.6	VALVE REF. DOC.	NES 375 / BS 5154	1.12	VALVE OPERATION	-						
2						MATERIAL SPECIFICATION					
PART		MATERIAL				SPECIFICATION					
2.1	UPPER BODY	STAINLESS STEEL				AISI 304					
2.2	LOWER BODY	STAINLESS STEEL				AISI 304					
2.3	BALL	STAINLESS STEEL				AISI 316					
2.4	SEAT	STAINLESS STEEL				AISI 316					
2.5	GASKET	CERAMIC HEAT RESISTANT PACKING				-					
2.6	BOLTS	STAINLESS STEEL				AISI 304					
2.7	NUTS	STAINLESS STEEL				AISI 304					
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH				SMOOTH SURFACE WITH METAL FINISH						
3.2	INSPECTION & TESTING				API 598						
3.3	TESTING HYDROSTATIC				AS PER BS 6755 PART I for RATE 'A'						
3.4	HYDROSTATIC TEST PRESSURE				BODY - 15 BAR SEAT - 11 BAR						
3.5	PNEUMATIC TEST PRESSURE				7 BAR WITH VALVE CLOSED CONDITION						
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST				ACROSS VALVE						
3.7	ANTISTATIC TEST				AS PER BS 5146 (* IF APPLICABLE)						
3.8	RUBBER BONDING TESTING				ASTM D 429						
3.9	REPEATABILITY TEST				25 CYCLE MINIMUM FOLLOWED BY HYDROTEST						
3.10	CERTIFICATION				CLASS(IACS)						
3.11	INSPECTION				CLASS(IACS)						
3.12	FIRE SAFE TEST				BS 6755 PART II/API 607						

**SS BALL FLOAT CHECK VALVE FIRE SAFE FLANGED END
(GUIDANCE DRG)**



ASSEMBLY.

FACE -TO- FACE DISTANCE BALL FLOAT CHECK VALVE						
L-VALVE FACE TO FACE DIMENSIONS (INCLUDING FLANGE THICKNESS)						
SR. NO.	NOMINAL SIZE	DIMENSIONS	END CONNECTION DETAILS	QTY. /SYSTEM	TOTAL QTY.	
		L				
01	40	125	FLANGED			
02	50	180	FLANGED			
03	125	325	FLANGED			
04	150	400	FLANGED			

VALVE DATA SHEET
GUNMETAL BALL/PLUG VALVE FIRE SAFE

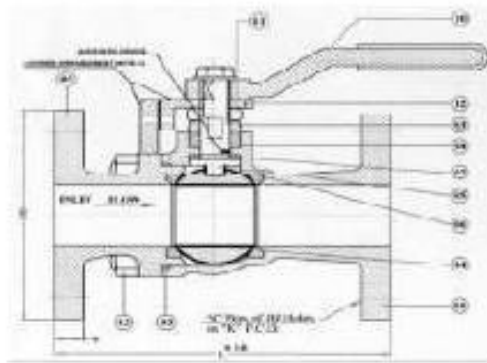
1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED						
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 1D						
1.4	SIZE RANGE	REF. ANNEXURE: 1F	1.10	FLANGE FACE	BS4504-3.3(RAISED FACE) /SCREWED BS21						
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)/ ASTM A106 GR.B	1.11	BODY TYPE	SINGLE PIECE						
1.6	VALVE REF. DOC.	DME 463 and NES 375/ BS 5351	1.12	VALVE OPERATION	LEVER / GEARBOX						
2						MATERIAL SPECIFICATION					
PART		MATERIAL		SPECIFICATION							
2.1	BODY /COVER	GUN METAL		BS 1400 LG 4C							
2.2	INSERT	GUN METAL		BS 1400 LG 4C							
2.3	BALL/PLUG	NICKEL ALUMINIUM BRONZE (SOLID)		NES 747 PART II							
2.4	STEM	NICKEL ALUMINIUM BRONZE		NES 833 PART II							
2.5	GLAND NUT	PHOSPHORBRONZE		BS 2874 PB 102							
2.6	GLAND/GLAND BUSH	NICKEL ALUMINIUM BRONZE		NES 747 PART II							
2.7	SEAT	REINFORCED PTFE		REINFORCED WITH 90/10 CuNi							
2.8	STEM SEAL	VITON B		WITH 68% FLOURINE							
2.9	BODY SEAL	VITON B		WITH 68% FLOURINE							
2.10	GLAND PACKING	GRAPHITE									
2.11	COVER SEAL	VITON B		WITH 68% FLOURINE							
2.12	BOLTS	NICKEL ALUMINIUM BRONZE		NES 862							
2.13	NUTS	NICKEL ALUMINIUM BRONZE		NES 862							
2.14	HANDLE	STAINLESS STEEL (WITH PVC GRIP)		ASTM A 240 Gr.304							
2.15	ANTISTATIC DEVICE	STAINLESSSTEEL		ASTM A 240 Gr.304							
2.16	GEAR BOX CASING	GUN METAL		BS 1400 LG 4C							
2.17	GEARS	PHOSPHORBRONZE		BS 2872 PB 102							
2.18	WORM &WORM WHEELSPINDLE	NICKEL ALUMINIUM BRONZE		NES 833 PART II							
2.19	TAB WASHER	STAINLESS STEEL		IS 8062/ASTM A 240 Gr. 304							
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH			SMOOTH SURFACE WITH METAL FINISH							
3.2	INSPECTION & TESTING			API 598							
3.3	TESTING HYDROSTATIC			AS PER BS 6755 PART I for RATE 'A'							
3.4	HYDROSTATIC TEST PRESSURE			BODY – 15 BAR SEAT – 11 BAR							
3.5	PNEUMATIC TEST PRESSURE			7 BAR							
3.6	ANTISTATIC TEST			AS PER BS 5146							
3.7	REPEATABILITY TEST			25 CYCLE MINIMUM FOLLOWED BY HYDROTEST							
3.8	RUBBER BONDING TESTING			ASTM D 429							
3.9	PRESSURE DROP TEST/FLOW MEASUREMENT TEST			ACROSS VALVE							
3.10	NOISE MEASUREMENT			MIL-STD-740-2							
3.11	CERTIFICATION			CERTIFICATION BY IACS RECOGNISED TPIA							
3.12	INSPECTION			INSPECTION BY IACS RECOGNISED TPIA							
3.13	FIRE SAFE TEST			AS PER BS 6755 PART III/API 607							

VALVE DATA SHEET
NICKEL ALUMINIUM BRONZE BALL/PLUG VALVE

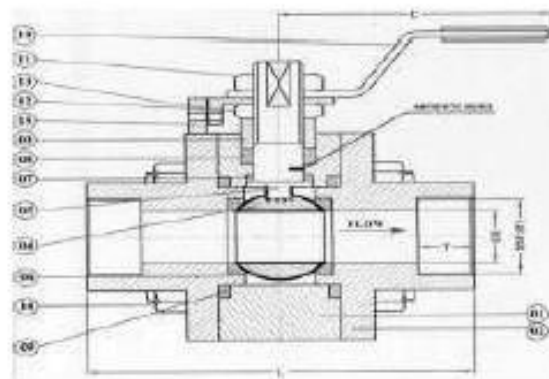
1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	SEA WATER/BILGES	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED						
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 1D						
1.4	SIZE RANGE	REF. ANNEXURE: 1F	1.10	FLANGE FACE	BS4504-3.3(RAISED FACE) /SCREWED BS21						
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)/ ASTM A106 GR.B	1.11	BODY TYPE	SINGLE PIECE						
1.6	VALVE REF. DOC.	DME 463 and NES 375/ BS 5351	1.12	VALVE OPERATION	LEVER / GEARBOX						
2						MATERIAL SPECIFICATION					
PART		MATERIAL		SPECIFICATION							
2.1	BODY /COVER	NICKEL ALUMINIUM BRONZE		NES 747 PART II/ NES 833 PART II							
2.2	INSERT	NICKEL ALUMINIUM BRONZE		NES 747 PART II/ NES 833 PART II							
2.3	BALL/PLUG	NICKEL ALUMINIUM BRONZE (SOLID)		NES 747 PART II/ NES 833 PART II							
2.4	STEM	NICKEL ALUMINIUM BRONZE		NES 833 PART II							
2.5	GLAND	NICKEL ALUMINIUM BRONZE		NES 747 PART II							
2.6	GLAND NUT	PHOSPHORBRONZE		BS 2874 PB 102							
2.7	GLAND/GLAND BUSH	NICKEL ALUMINIUM BRONZE		NES 747 PART II/ NES 833 PART II							
2.8	SEAT	REINFORCED PTFE		REINFORCED WITH 90/10 CuNi							
2.9	STEM SEAL	VITON B		WITH 68% FLOURINE							
2.10	BODY SEAL	VITON B		WITH 68% FLOURINE							
2.11	GLAND PACKING	GRAPHITE									
2.12	COVER SEAL	VITON B		WITH 68% FLOURINE							
2.13	BOLTS	NICKEL ALUMINIUM BRONZE		NES 862							
2.14	NUTS	NICKEL ALUMINIUM BRONZE		NES 862							
2.15	HANDLE	STAINLESS STEEL (WITH PVC GRIP)		ASTM A 240 Gr.304							
2.16	ANTISTATIC DEVICE	STAINLESSSTEEL		ASTM A 240 Gr.304							
2.17	GEAR BOX CASING	NICKEL ALUMINIUM BRONZE		NES 833 PART II							
2.18	GEARS	PHOSPHORBRONZE		BS 2872 PB 102							
2.19	WORM &WORM WHEELSPINDLE	NICKEL ALUMINIUM BRONZE		NES 833 PART II							
2.20	TAB WASHER	STAINLESS STEEL		IS 8062/ASTM A 240 Gr. 304							
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH			SMOOTH SURFACE WITH METAL FINISH							
3.2	INSPECTION & TESTING			API 598							
3.3	TESTING HYDROSTATIC			AS PER BS 6755 PART I for RATE 'A'							
3.4	HYDROSTATIC TEST PRESSURE			BODY – 15 BAR SEAT – 11 BAR							
3.5	PNEUMATIC TEST PRESSURE			7 BAR							
3.6	ANTISTATIC TEST			AS PER BS 5146							
3.7	REPEATABILITY TEST			25 CYCLE MINIMUM FOLLOWED BY HYDROTEST							
3.8	RUBBER BONDING TESTING			ASTM D 429							
3.9	PRESSURE DROP TEST/FLOW MEASUREMENT TEST			ACROSS VALVE							
3.10	NOISE MEASUREMENT			MIL-STD-740-2							
3.11	CERTIFICATION			CERTIFICATION BY IACS RECOGNISED TPIA							
3.12	INSPECTION			INSPECTION BY IACS RECOGNISED TPIA							

VALVE DATA SHEET					
FIRE SAFE BALL/PLUG VALVE (STAINLESS STEEL)					
1	GENERAL SPECIFICATION				
1.1	FLUID HANDLED	F.O/L.O/AVCAT	1.7	BORE TYPE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 1D
1.4	SIZE RANGE	REF. ANNEXURE: 1F	1.10	FLANGE FACE	BS4504-3.1(RAISED FACE) /SCREWED BS21
1.5	MATING PIPE SPECN.	STAINLESS STEEL	1.11	BODY TYPE	SINGLE PIECE
1.6	VALVE REF. DOC.	DME 463 and NES 375/ BS 5351	1.12	VALVE OPERATION	LEVER / GEARBOX
2	MATERIAL SPECIFICATION				
	PART	MATERIAL	SPECIFICATION		
2.1	BODY /COVER	STAINLESS STEEL	ASTM A 351 Gr CF8M/ASTM A276 Gr 316		
2.2	INSERT	STAINLESS STEEL(SOLID)	ASTM A 351 Gr CF8M/ASTM A276 Gr 316		
2.3	BALL/PLUG	STAINLESS STEEL(SOLID)	ASTM A 351 Gr CF8M/ASTM A276 Gr 316		
2.4	STEM	STAINLESS STEEL	ASTM A276 Gr 316		
2.5	GLAND	STAINLESS STEEL	ASTM A 351 Gr CF8M		
2.6	GLAND NUT	STAINLESS STEEL	ASTM A276 Gr 304		
2.7	SEAT	REINFORCED PTFE	REINFORCED		
2.8	STEM SEAL	VITON B	WITH 68% FLOURINE		
2.9	BODY SEAL	VITON B	WITH 68% FLOURINE		
2.10	GLAND PACKING	GRAPHITE			
2.11	COVER SEAL	VITON B	WITH 68% FLOURINE		
2.12	BOLTS	ALLOY STEEL	ASTM A194 Gr B7 (HDG)		
2.13	NUTS	ALLOY STEEL	ASTM A194 Gr 2H (HDG)		
2.14	HANDLE	STAINLESS STEEL (WITH PVC GRIP)	ASTM A 240 Gr.304		
2.15	ANTISTATIC DEVICE	STAINLESSSTEEL	ASTM A 240 Gr.304		
2.26	TAB WASHER	STAINLESS STEEL	IS 8062/ASTM A 240 Gr. 304		
3	STATUTORY REQUIREMENTS				
3.1	PAINTING/ SURFACE FINISH	SMOOTH SURFACE WITH METAL FINISH			
3.2	INSPECTION & TESTING	API 598			
3.3	TESTING HYDROSTATIC	AS PER BS 6755 PART I for RATE 'A'			
3.4	HYDROSTATIC TEST PRESSURE	BODY – 15 BAR SEAT – 11 BAR			
3.5	PNEUMATIC TEST PRESSURE	7 BAR			
3.6	ANTISTATIC TEST	AS PER BS 5146			
3.7	REPEATABILITY TEST	25 CYCLE MINIMUM FOLLOWED BY HYDROTEST			
3.8	RUBBER BONDING TESTING	ASTM D 429			
3.9	PRESSURE DROP TEST/FLOW MEASUREMENT TEST	ACROSS VALVE			
3.10	NOISE MEASUREMENT	MIL-STD-740-2			
3.11	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED TPIA			
3.12	INSPECTION	INSPECTION BY IACS RECOGNISED TPIA			
3.13	FIRE SAFE TEST	AS PER BS 6755 PART II/API 607			

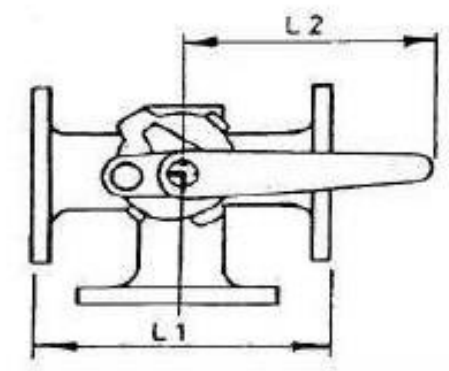
BALL VALVE (FLANGED ENDED)



BALL VALVE (SCREWED ENDED)



L-PORTED VALVE (FLANGED ENDED)



DIMENSIONS REQUIREMENT
BALL/PLUG VALVE DIMENSIONS (FLANGED)

L-VALVE FACE TO FACE DIMENSIONS

SR. NO.	NOMINAL SIZE(DN)	DIMENSIONS		END CONNECTIONS	QTY. / SYSTEM	TOTAL QTY.
		BALL	PLUG			
01	10	102	102	FLANGED		
02	15	108	108	FLANGED		
03	20	117	117	FLANGED		
04	25	127	127	FLANGED		
05	32	140	140	FLANGED		
06	40	165	165	FLANGED		
07	50	178	178	FLANGED		
08	65	190	222	FLANGED		
09	80	203	241	FLANGED		
10	100	229	305	FLANGED		
11	125	254	356	FLANGED		
12	150	267	394	FLANGED		

BALL VALVE DIMENSIONS (SCREWED)

SR. NO.	NOMINAL SIZE(DN)	DIMENSIONS (L)	END CONNECTIONS	QTY. / SYSTEM	TOTAL QTY.
01	10	70	½" BSP		
02	15	75	¾" BSP		
03	20	75	1" BSP		
04	25	96	1 ¼" BSP		
05	32	130	1 ½" BSP		

L-PORTED VALVE DIMENSIONS (FLANGED)

SR. NO.	NOMINAL SIZE (DN)	DIMENSIONS			END CONNECTIONS	QTY. / SYSTEM	TOTAL QTY.
		L1	H*	L2			
01	25	165	158	140	FLANGED		
02	40	221	200	215	FLANGED		
03	50	241	215	235	FLANGED		
04	65	267	235	265	FLANGED		
05	80	305	250	285	FLANGED		
06	100	356	270	305	FLANGED		

* NOTE: H- Approx dimension to top of locating pin.

VALVE DATA SHEET GUN METAL BUTTERFLY VALVES					
1	GENERAL SPECIFICATION				
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE TYPE	FULL BORE
1.2	OP. PRESSURE	10 Kg / Cm ²	1.8	END CONN.	FLANGED
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 2D
1.4	SIZE RANGE	REF. ANNEXURE: 2F	1.10	FLANGE FACE	BS4504-3.3(RAISED)
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)/ ASTM A106 GR.B	1.11	BODY TYPE	SINGLE PIECE
1.6	VALVE REF.DOC.	DME 463 and BS 5155	1.12	VALVE OPERATION	HANDLE/GEAR
2	MATERIAL SPECIFICATION				
	PART	MATERIAL	SPECIFICATION		
2.1	BODY /COVER	GUN METAL	BS 1400 LG 4C		
2.2	DISC	NICKEL ALUMINIUM BRONZE	NES PART 747 II		
2.3	STEM/SPINDLE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.4	CLAMP RING	NICKEL ALUMINIUM BRONZE	NES 747 PART II		
2.5	DISC PIN	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.6	SOFT SEAT	REINFORCED PTFE	REINFORCED WITH 90/10 Cu-Ni		
2.7	BODY SLEEVE	REINFORCED PTFE	REINFORCED WITH 90/10 Cu-Ni		
2.8	BEARING	PHOSPHOR BRONZE	BS 2872 PB 102		
2.9	GLAND FLANGE	NICKEL ALUMINIUM BRONZE	NES747 PART II		
2.10	GLAND PACKING	GRAPHITE			
2.11	BODY GASKET	ASBESTOS FREE	BS 7531		
2.12	BOLTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.13	NUTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.14	HANDLE/HANDWHEEL	FORGED STEEL/CAST STEEL (GALVANIZED)	ASTM A105/ASTM A216 WCB		
2.15	ANTISTATIC DEVICE	STAINLESSSTEEL	ASTM A 276 Gr.304		
2.16	GEAR BOX CASING	GUN METAL	BS 1400 LG 4C		
2.17	GEARS	PHOSPHOR BRONZE	BS 2872 PB 102		
2.18	WORM &WORM WHEELSPINDLE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
3	STATUTORY REQUIREMENTS				
3.1	PAINTING/ SURFACE FINISH	SMOOTH SURFACE WITH METAL FINISH			
3.2	INSPECTION & TESTING	API 598			
3.3	TESTING HYDROSTATIC	AS PER BS 6755 PART I for RATE 'A'			
3.4	HYDROSTATIC TEST PRESSURE	BODY – 15 BAR SEAT – 11 BAR			
3.5	PNEUMATIC TEST PRESSURE	7 BAR WITH VALVE CLOSED			
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST	ACROSS VALVE			
3.7	REPEATABILITY TEST	25 CYCLE MINIMUM FOLLOWED BY HYDROTEST			
3.8	RUBBER BONDING TESTING	ASTM D 429			
3.9	ANTISTATIC TEST	AS PER BS 5146 (* IF APPLICABLE)			
3.10	NOISE MEASUREMENT	MIL-STD-740-2			
3.11	GEAR BOX TESTING	LEAK TEST AT 5 METRES OF WATER COLUMN			
3.12	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED TPIA			
3.13	INSPECTION	INSPECTION BY IACS RECOGNISED TPIA			

**VALVE DATA SHEET
GUN METAL BUTTERFLY VALVES FIRE SAFE**

1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg / Cm ²	1.8	END CONN.	FLANGED						
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 2D						
1.4	SIZE RANGE	REF. ANNEXURE: 2F	1.10	FLANGE FACE	BS4504-3.3(RAISED)						
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)/ ASTM A106 GR.B	1.11	BODY TYPE	SINGLE PIECE						
1.6	VALVE REF.DOC.	DME 463 and BS 5155	1.12	VALVE OPERATION	HANDLE/GEAR						
2						MATERIAL SPECIFICATION					
PART		MATERIAL				SPECIFICATION					
2.1	BODY /COVER	GUN METAL				BS 1400 LG 4C					
2.2	DISC	NICKEL ALUMINIUM BRONZE				NES PART 747 II					
2.3	STEM/SPINDLE	NICKEL ALUMINIUM BRONZE				NES 833 PART II					
2.4	CLAMP RING	NICKEL ALUMINIUM BRONZE				NES 747 PART II					
2.5	DISC PIN	NICKEL ALUMINIUM BRONZE				NES 833 PART II					
2.6	SOFT SEAT	REINFORCED PTFE				REINFORCED WITH 90/10 Cu-Ni					
2.7	BODY SLEEVE	REINFORCED PTFE				REINFORCED WITH 90/10 Cu-Ni					
2.8	BEARING	PHOSPHOR BRONZE				BS 2872 PB 102					
2.9	GLAND FLANGE	NICKEL ALUMINIUM BRONZE				NES747 PART II					
2.10	GLAND PACKING	GRAPHITE									
2.11	BODY GASKET	ASBESTOS FREE				BS 7531					
2.12	BOLTS	NICKEL ALUMINIUM BRONZE				NES 862					
2.13	NUTS	NICKEL ALUMINIUM BRONZE				NES 862					
2.14	HANDLE/HANDWHEEL	FORGED STEEL/CAST STEEL (GALVANIZED)				ASTM A105/ASTM A216 WCB					
2.15	ANTISTATIC DEVICE	STAINLESSSTEEL				ASTM A 276 Gr.304					
2.16	GEAR BOX CASING	GUN METAL				BS 1400 LG 4C					
2.17	GEARS	PHOSPHOR BRONZE				BS 2872 PB 102					
2.18	WORM &WORM WHEELSPINDLE	NICKEL ALUMINIUM BRONZE				NES 833 PART II					
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH			SMOOTH SURFACE WITH METAL FINISH							
3.2	INSPECTION & TESTING			API 598							
3.3	TESTING HYDROSTATIC			AS PER BS 6755 PART I for RATE 'A'							
3.4	HYDROSTATIC TEST PRESSURE			BODY – 15 BAR SEAT – 11 BAR							
3.5	PNEUMATIC TEST PRESSURE			7 BAR WITH VALVE CLOSED							
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST			ACROSS VALVE							
3.7	REPEATABILITY TEST			25 CYCLE MINIMUM FOLLOWED BY HYDROTEST							
3.8	RUBBER BONDING TESTING			ASTM D 429							
3.9	ANTISTATIC TEST			AS PER BS 5146 (* IF APPLICABLE)							
3.10	NOISE MEASUREMENT			MIL-STD-740-2							
3.11	GEAR BOX TESTING			LEAK TEST AT 5 METRES OF WATER COLUMN							
3.12	CERTIFICATION			CERTIFICATION BY IACS RECOGNISED TPIA							
3.13	INSPECTION			INSPECTION BY IACS RECOGNISED TPIA							
3.14	FIRE SAFE TEST			AS PER BS 6755 PART II/API 607							

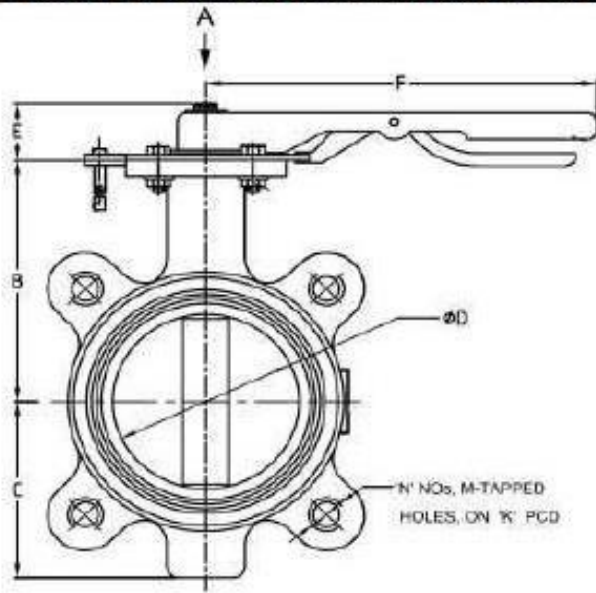
**VALVE DATA SHEET
NICKEL ALUMINIUM BRONZE BUTTERFLY VALVES**

1					
GENERAL SPECIFICATION					
1.1	FLUID HANDLED	SEA WATER/BILGES	1.7	BORE TYPE	FULL BORE
1.2	OP. PRESSURE	10 Kg / Cm2	1.8	END CONN.	FLANGED
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 2D
1.4	SIZE RANGE	REF. ANNEXURE: 2F	1.10	FLANGE FACE	BS4504-3.3(RAISED FACE)
1.5	MATING PIPE SPECN.	90-10Cu-Ni as per NES 779 Part III	1.11	BODY TYPE	SINGLE PIECE
1.6	VALVE REF.DOC.	DME 463 and BS 5155	1.12	VALVE OPERATION	HANDLE/GEAR
2					
MATERIAL SPECIFICATION					
	PART	MATERIAL	SPECIFICATION		
2.1	BODY /COVER	NICKEL ALUMINIUM BRONZE	NES 747 PART II		
2.2	DISC	NICKEL ALUMINIUM BRONZE(SOLID)	NES PART 747 II		
2.3	STEM/SPINDLE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.4	CLAMP RING	NICKEL ALUMINIUM BRONZE	NES 747 PART II		
2.5	DISC PIN	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.6	SOFT SEAT	REINFORCED PTFE	REINFORCED WITH 90/10 Cu-Ni		
2.7	BODY SLEEVE	REINFORCED PTFE	REINFORCED WITH 90/10 Cu-Ni		
2.8	BEARING	PHOSPHOR BRONZE	BS 2872 PB 102		
2.9	GLAND FLANGE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.10	GLAND PACKING	GRAPHITE			
2.11	BODY GASKET	ASBESTOS FREE	BS 7531		
2.12	BOLTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.13	NUTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.14	HANDLE/HANDWHEEL	STAINLESS STEEL (WITH PVC GRIP)	ASTM A105/ASTM A216 WCB		
2.15	ANTISTATIC DEVICE	STAINLESS STEEL	ASTM A 276 Gr.304		
2.16	GEAR BOX CASING	GUN METAL	BS 1400 LG 4C		
2.17	GEARS	PHOSPHOR BRONZE	BS 2872 PB 102		
2.18	WORM &WORM WHEELSPINDLE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
3					
STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH	SMOOTH SURFACE WITH METAL FINISH			
3.2	INSPECTION & TESTING	API 598			
3.3	TESTING HYDROSTATIC	AS PER BS 6755 PART I for RATE 'A'			
3.4	HYDROSTATIC TEST PRESSURE	BODY - 15 BAR SEAT - 11 BAR			
3.5	PNEUMATIC TEST PRESSURE	7 BAR WITH VALVE CLOSED			
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST	ACROSS VALVE			
3.7	REPEATABILITY TEST	25 CYCLE MINIMUM FOLLOWED BY HYDROTEST			
3.8	RUBBER BONDING TESTING	ASTM D 429			
3.9	ANTISTATIC TEST	AS PER BS 5146 (* IF APPLICABLE)			
3.10	NOISE MEASUREMENT	MIL-STD-740-2			
3.11	GEAR BOX TESTING	LEAK TEST AT 5 METRES OF WATER COLUMN			
3.12	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED TPIA			
3.13	INSPECTION	INSPECTION BY IACS RECOGNISED TPIA			

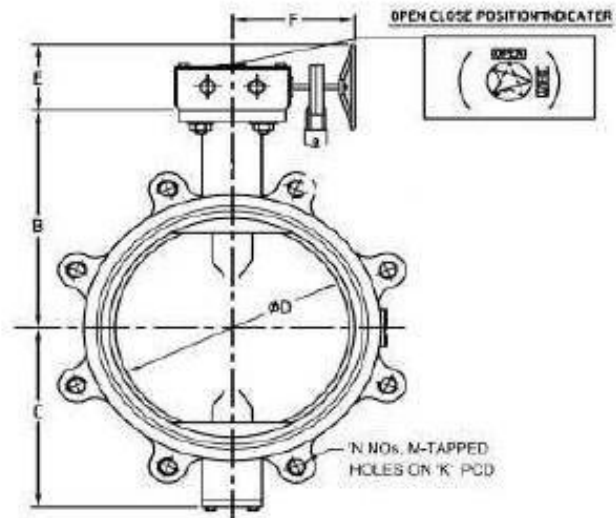
**VALVE DATA SHEET
STAINLESS STEEL FIRE SAFE BUTTERFLY VALVES**

1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,AVCAT			1.7	BORE TYPE	FULL BORE				
1.2	OP. PRESSURE	10 Kg / Cm ²			1.8	END CONN.	FLANGED				
1.3	OP. TEMPERATURE.	120 °C MAX.			1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 2D				
1.4	SIZE RANGE	REF. ANNEXURE: 2F			1.10	FLANGE FACE	BS4504-3.3(RAISED)				
1.5	MATING PIPE SPECN.	90-10Cu-Ni /ASTM 106 GR B			1.11	BODY TYPE	SINGLE PIECE				
1.6	VALVE REF.DOC.	DME 463 and BS 5155			1.12	VALVE OPERATION	HANDLE/GEAR				
2						MATERIAL SPECIFICATION					
PART		MATERIAL				SPECIFICATION					
2.1	BODY /COVER	STAINLESS STEEL				ASTM A 351 Gr CF8M					
2.2	DISC	STAINLESS STEEL				ASTM A 351 Gr CF8M					
2.3	STEM/SPINDLE	STAINLESS STEEL				ASTM A276 Gr 316					
2.4	CLAMP RING	STAINLESS STEEL				ASTM A 351 Gr CF8M					
2.5	DISC PIN	STAINLESS STEEL				ASTM A276 Gr 316					
2.6	SOFT SEAT	REINFORCED PTFE				REINFORCED WITH 90/10 Cu-Ni					
2.7	BODY SLEEVE	REINFORCED PTFE				REINFORCED WITH 90/10 Cu-Ni					
2.8	BEARING	SS 304 PTFE COATED									
2.9	GLAND FLANGE	STAINLESS STEEL				ASTM A 351 Gr CF8M					
2.10	GLAND PACKING	GRAPHITE									
2.11	BODY GASKET	ASBESTOS FREE				BS 7531					
2.12	BOLTS	ALLOY STEEL				ASTM A194 Gr B7 (HDG)					
2.13	NUTS	ALLOY STEEL				ASTM A194 Gr 2H (HDG)					
2.14	HANDLE/HANDWHEEL	STAINLESS STEEL				ASTM A105/ASTM A216 WCB					
2.15	ANTISTATIC DEVICE	STAINLESS STEEL				ASTM A 276 Gr.304					
2.16	GEAR BOX CASING	S.G. IRON				BS 2789					
2.17	GEARS	FORGED STEEL				BS 970-316					
2.18	WORM & WORM WHEELS/SPINDLE	FORGED STEEL				BS 970-316					
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH				SMOOTH SURFACE WITH METAL FINISH						
3.2	INSPECTION & TESTING				API 598						
3.3	TESTING HYDROSTATIC				AS PER BS 6755 PART I for RATE 'A'						
3.4	HYDROSTATIC TEST PRESSURE				BODY - 15 BAR SEAT - 11 BAR						
3.5	PNEUMATIC TEST PRESSURE				7 BAR WITH VALVE CLOSED						
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST				ACROSS VALVE						
3.7	REPEATABILITY TEST				25 CYCLE MINIMUM FOLLOWED BY HYDROTEST						
3.8	RUBBER BONDING TESTING				ASTM D 429						
3.9	ANTISTATIC TEST				AS PER BS 5146 (* IF APPLICABLE)						
3.10	NOISE MEASUREMENT				MIL-STD-740-2						
3.11	GEAR BOX TESTING				LEAK TEST AT 5 METRES OF WATER COLUMN						
3.12	CERTIFICATION				CERTIFICATION BY IACS RECOGNISED TPIA						
3.13	INSPECTION				INSPECTION BY IACS RECOGNISED TPIA						
3.14	FIRE SAFE TEST				AS PER BS 6755 PART II/API 607						

BUTTERFLY VALVE (LEVER OPERATED TYPE)



BUTTERFLY VALVE (GEAR OPERATED TYPE)



DIMENSIONS REQUIREMENT
BUTTERFLY VALVE DIMENSIONS

L-VALVE FACE TO FACE DIMENSIONS

SR. NO.	NOMINAL SIZE(DN)	FACE TO FACE DIMENSIONS (L)	QTY. / SYSTEM	TOTAL QTY.
01	80	64		
02	100	64		
03	125	70		
04	150	76		
05	200	89		
06	250	114		
07	300	114		
08	350	127		
09	400	140		

VALVE DATA SHEET					
GUN METAL SDNR /SDSL/GATE VALVES					
1	GENERAL SPECIFICATION				
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE TYPE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE 3E/F/G
1.4	SIZE RANGE	REF. ANNEXURE 3F & 3G	1.10	FLANGE FACE	BS4504-3.3 (RAISED FACE) /SCREWEDBS21
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)/ ASTM A106	1.11	BODY TYPE	SINGLE PIECE BONNET TYPE
1.6	VALVE REF. DOC.	DME 463 and NES 375 / BS 5154	1.12	VALVE OPERATION	HANDWHEEL/ROD GEARING
2	MATERIAL SPECIFICATION				
	PART	MATERIAL	SPECIFICATION		
2.1	BODY /BONNET	GUN METAL	BS 1400 LG 4C		
2.2	DISC/GATE	NICKEL ALUMINIUM BRONZE	NES PART 747 PART II		
2.3	STEM / SPINDLE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.4	BACK SEAT	NICKEL ALUMINIUM BRONZE	NES PART 747 PART II		
2.5	DISC SEAT	NICKEL ALUMINIUM BRONZE	NES PART 747 PART II		
2.6	SOFT SEAT	REINFORCED PTFE	REINFORCED WITH 90/10 Cu Ni		
2.7	YOKE/YOKE SLEEVE	GUN METAL	BS 1400 LG 4C		
2.8	BEARING (BUSH)	PHOSPHOR BRONZE	BS 2872 PB 102		
2.9	GLAND FLANGE END	NICKEL ALUMINIUM BRONZE	NES 747 PART II		
2.10	GLAND PACKING	GRAPHITE			
2.11	BODY GASKET	ASBESTOS FREE	BS 7531		
2.12	BOLTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.13	NUTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.14	HANDWHEEL	CAST STEEL (GALVANIZED)	ASTM A 216 Gr. WCB		
3	STATUTORY REQUIREMENTS				
3.1	PAINTING/ SURFACE FINISH	SMOOTH SURFACE WITH METAL FINISH			
3.2	INSPECTION & TESTING	API 598			
3.3	TESTING HYDROSTATIC	AS PER BS 6755 PART I for RATE 'A'			
3.4	HYDROSTATIC TEST PRESSURE	BODY – 15 BAR SEAT – 11 BAR			
3.5	PNEUMATIC TEST PRESSURE	7 BAR WITH VALVE CLOSED CONDITION			
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST	ACROSS VALVE			
3.7	ANTISTATIC TEST	AS PER BS 5146 (* IF APPLICABLE)			
3.8	RUBBER BONDING TESTING	ASTM D 429			
3.9	REPEATABILITY TEST	25 CYCLE MINIMUM FOLLOWED BY HYDROTEST			
3.10	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED TPIA			
3.11	INSPECTION	INSPECTION BY IACS RECOGNISED TPIA			

VALVE DATA SHEET

GUN METAL SDNR /SDSL/GATE VALVES FIRE SAFE

1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED						
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE 3E/F/G						
1.4	SIZE RANGE	REF. ANNEXURE 3F & 3G	1.10	FLANGE FACE	BS4504-3.3(RAISED FACE) /SCREWEDBS21						
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)/ ASTM A106	1.11	BODY TYPE	SINGLE PIECE BONNET TYPE						
1.6	VALVE REF. DOC.	DME 463 and NES 375 / BS 5154	1.12	VALVE OPERATION	HANDWHEEL/ROD GEARING						
2						MATERIAL SPECIFICATION					
PART		MATERIAL		SPECIFICATION							
2.1	BODY /BONNET	GUN METAL		BS 1400 LG 4C							
2.2	DISC/GATE	NICKEL ALUMINIUM BRONZE		NES PART 747 PART II							
2.3	STEM / SPINDLE	NICKEL ALUMINIUM BRONZE		NES 833 PART II							
2.4	BACK SEAT	NICKEL ALUMINIUM BRONZE		NES PART 747 PART II							
2.5	DISC SEAT	NICKEL ALUMINIUM BRONZE		NES PART 747 PART II							
2.6	SOFT SEAT	REINFORCED PTFE		REINFORCED WITH 90/10 Cu Ni							
2.7	YOKE/YOKE SLEEVE	GUN METAL		BS 1400 LG 4C							
2.8	BEARING (BUSH)	PHOSPHOR BRONZE		BS 2872 PB 102							
2.9	GLAND FLANGE END	NICKEL ALUMINIUM BRONZE		NES 747 PART II							
2.10	GLAND PACKING	GRAPHITE									
2.11	BODY GASKET	ASBESTOS FREE		BS 7531							
2.12	BOLTS	NICKEL ALUMINIUM BRONZE		NES 862							
2.13	NUTS	NICKEL ALUMINIUM BRONZE		NES 862							
2.14	HANDWHEEL	CAST STEEL (GALVANIZED)		ASTM A 216 Gr. WCB							
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH			SMOOTH SURFACE WITH METAL FINISH							
3.2	INSPECTION & TESTING			API 598							
3.3	TESTING HYDROSTATIC			AS PER BS 6755 PART I for RATE 'A'							
3.4	HYDROSTATIC TEST PRESSURE			BODY – 15 BAR SEAT – 11 BAR							
3.5	PNEUMATIC TEST PRESSURE			7 BAR WITH VALVE CLOSED CONDITION							
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST			ACROSS VALVE							
3.7	ANTISTATIC TEST			AS PER BS 5146 (* IF APPLICABLE)							
3.8	RUBBER BONDING TESTING			ASTM D 429							
3.9	REPEATABILITY TEST			25 CYCLE MINIMUM FOLLOWED BY HYDROTEST							
3.10	CERTIFICATION			CERTIFICATION BY IACS RECOGNISED TPIA							
3.11	INSPECTION			INSPECTION BY IACS RECOGNISED TPIA							
3.12	FIRE SAFE TEST			AS PER BS 6755 PART II/API 607							

VALVE DATA SHEET

STAINLESS STEEL SDNR /SDSL/GATE VALVES FIRE SAFE

1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FO / LO / AVCAT	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED						
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE 3E/3F/3G						
1.4	SIZE RANGE	REF. ANNEXURE 3F & 3G	1.10	FLANGE FACE	BS4504-3.1(RAISED FACE) /SCREWEDBS21						
1.5	MATING PIPE SPECN.	STAINLESS STEEL	1.11	BODY TYPE	SINGLE PIECE BONNET TYPE						
1.6	VALVE REF. DOC.	DME 463 and NES 375 / BS 5154	1.12	VALVE OPERATION	HANDWHEEL/ROD GEARING						
2						MATERIAL SPECIFICATION					
PART		MATERIAL		SPECIFICATION							
2.1	BODY /BONNET	STAINLESS STEEL		ASTM A 351 Gr CF8M / ASTM A276 Gr 316							
2.2	DISC/GATE	STAINLESS STEEL (SOLID)		ASTM A 351 Gr CF8M / ASTM A276 Gr 316							
2.3	STEM / SPINDLE	STAINLESS STEEL		ASTM A 351 Gr CF8M / ASTM A276 Gr 316							
2.4	BACK SEAT	STAINLESS STEEL		ASTM A276 Gr 316							
2.5	DISC SEAT	STAINLESS STEEL		ASTM A276 Gr 316							
2.6	SOFT SEAT	REINFORCED PTFE		REINFORCED WITH 90/10 Cu Ni							
2.7	YOKE/YOKE SLEEVE	STAINLESS STEEL		ASTM A276 Gr 316							
2.8	BEARING (BUSH)	STAINLESS STEEL		ASTM A276 Gr 316							
2.9	GLAND FLANGE END	STAINLESS STEEL		ASTM A276 Gr 316							
2.10	GLAND PACKING	GRAPHITE									
2.11	BODY GASKET	ASBESTOS FREE		BS 7531							
2.12	BOLTS	ALLOY STEEL		ASTM A194 Gr 2H (HDG)							
2.13	NUTS	ALLOY STEEL		ASTM A194 Gr 2H (HDG)							
2.14	HANDWHEEL	STAINLESS STEEL		ASTM A 240 Gr 304							
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH		SMOOTH SURFACE WITH METAL FINISH								
3.2	INSPECTION & TESTING		API 598								
3.3	TESTING HYDROSTATIC		AS PER BS 6755 PART I for RATE 'A'								
3.4	HYDROSTATIC TEST PRESSURE		BODY – 15 BAR SEAT – 11 BAR								
3.5	PNEUMATIC TEST PRESSURE		7 BAR WITH VALVE CLOSED CONDITION								
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST		ACROSS VALVE								
3.7	ANTISTATIC TEST		AS PER BS 5146 (* IF APPLICABLE)								
3.8	RUBBER BONDING TESTING		ASTM D 429								
3.9	REPEATABILITY TEST		25 CYCLE MINIMUM FOLLOWED BY HYDROTEST								
3.10	CERTIFICATION		CERTIFICATION BY IACS RECOGNISED TPIA								
3.11	INSPECTION		INSPECTION BY IACS RECOGNISED TPIA								
3.12	FIRE SAFE TEST		AS PER BS 6755 PART II/API 607								

VALVE DATA SHEET

NICKEL ALUMINIUM BRONZE SDNR /SDSL/GATE VALVES

1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	SEA WATER /BILGES	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED						
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE 3E/F/G						
1.4	SIZE RANGE	REF. ANNEXURE 3F &3G	1.10	FLANGE FACE	BS4504-3.3(RAISED FACE) /SCREWEDBS21						
1.5	MATING PIPE SPECN.	90-10Cu-Ni NES779 Part III	1.11	BODY TYPE	SINGLE PIECE BONNET TYPE						
1.6	VALVE REF. DOC.	DME 463 and NES 375 / BS 5154	1.12	VALVE OPERATION	HANDWHEEL/ROD GEARING						
2						MATERIAL SPECIFICATION					
PART		MATERIAL		SPECIFICATION							
2.1	BODY /BONNET	NICKEL ALUMINIUM BRONZE		NES PART 747 PART II							
2.2	DISC/GATE	NICKEL ALUMINIUM BRONZE		NES PART 747 PART II							
2.3	STEM / SPINDLE	NICKEL ALUMINIUM BRONZE		NES 833 PART II							
2.4	BACK SEAT	NICKEL ALUMINIUM BRONZE		NES PART 747 PART II							
2.5	DISC SEAT	NICKEL ALUMINIUM BRONZE		NES PART 747 PART II							
2.6	SOFT SEAT	REINFORCED PTFE		REINFORCED WITH 90/10 Cu Ni							
2.7	YOKE/YOKE SLEEVE	NICKEL ALUMINIUM BRONZE		NES PART 747 PART II							
2.8	BEARING (BUSH)	PHOSPHOR BRONZE		BS 2872 PB 102							
2.9	GLAND FLANGE END	NICKEL ALUMINIUM BRONZE		NES 747 PART II CLASS I							
2.10	GLAND PACKING	GRAPHITE									
2.11	BODY GASKET	ASBESTOS FREE		BS 7531							
2.12	BOLTS	NICKEL ALUMINIUM BRONZE		NES 862							
2.13	NUTS	NICKEL ALUMINIUM BRONZE		NES 862							
2.14	HANDWHEEL	CAST STEEL (GALVANIZED)		ASTM A 216 Gr. WCB							
2.15	TAB WASHER	STAINLESS STEEL		IS 8062 /ASTM A 240 Gr. 304							
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH		SMOOTH SURFACE WITH METAL FINISH								
3.2	INSPECTION & TESTING		API 598								
3.3	TESTING HYDROSTATIC		AS PER BS 6755 PART I for RATE 'A'								
3.4	HYDROSTATIC TEST PRESSURE		BODY - 15 BAR SEAT - 11 BAR								
3.5	PNEUMATIC TEST PRESSURE		7 BAR WITH VALVE CLOSED CONDITION								
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST		ACROSS VALVE								
3.7	ANTISTATIC TEST		AS PER BS 5146 (* IF APPLICABLE)								
3.8	RUBBER BONDING TESTING		ASTM D 429								
3.9	REPEATABILITY TEST		25 CYCLE MINIMUM FOLLOWED BY HYDROTEST								
3.10	CERTIFICATION		CERTIFICATION BY IACS RECOGNISED TPIA								
3.11	INSPECTION		INSPECTION BY IACS RECOGNISED TPIA								

**FACE -TO- FACE DISTANCE
SDNR / SDSL / (STRAIGHT)**

L-VALVE FACE TO FACE DIMENSIONS (Inclusive of FLANGE THICKNESS)

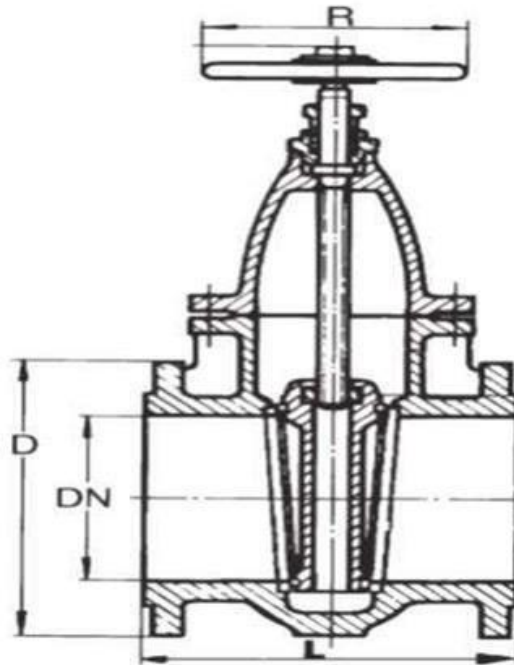
SR. NO.	NOMINAL SIZE	DIMENSIONS	END CONNECTION DETAILS	QTY. / SYSTEM	TOTAL QTY.
		L			
01	10	108	SCREWED		
02	15	108	SCREWED		
03	20	117	SCREWED		
04	25	127	SCREWED		
05	32	146	SCREWED		
06	40	159	FLANGED		
07	50	190	FLANGED		
08	65	216	FLANGED		
09	80	254	FLANGED		
10	100	292	FLANGED		
11	125	330	FLANGED		
12	150	356	FLANGED		
13	200	495	FLANGED		
14	250	622	FLANGED		
15	300	698	FLANGED		
16	350	787	FLANGED		

**FACE -TO- FACE DISTANCE
SDNR / SDSL VALVE DIMENSIONS (ANGLE)**

L -VALVE FACE TO FACE DIMENSIONS (Inclusive of FLANGE THICKNESS)

SR. NO.	NOMINAL SIZE	DIMENSIONS	END CONNECTION DETAILS	QTY. / SYSTEM	TOTAL QTY.
		L			
01	10	70	SCREWED		
02	15	70	SCREWED		
03	20	75	SCREWED		
04	25	85	SCREWED		
05	32	95	SCREWED		
06	40	100	FLANGED		
07	50	115	FLANGED		
08	65	126	FLANGED		
09	80	135	FLANGED		
10	100	146	FLANGED		
11	125	178	FLANGED		
12	150	203	FLANGED		
13	200	248	FLANGED		
14	250	311	FLANGED		
15	300	349	FLANGED		
16	350	394	FLANGED		

GATE VALVE



**FACE -TO- FACE DISTANCE
GATE VALVE DIMENSIONS**

L-VALVE FLANGE FACE TO FACE DIMENSIONS (Inclusive of FLANGE THICKNESS)

SR. NO.	NOMINAL SIZE	DIMENSIONS	END CONNECTION DETAILS	QTY. / SYSTEM	TOTAL QTY.
		L			
01	50	178	FLANGED		
02	65	190	FLANGED		
03	80	203	FLANGED		
04	100	229	FLANGED		
05	125	254	FLANGED		
06	150	267	FLANGED		
07	200	292	FLANGED		
08	250	330	FLANGED		
09	300	356	FLANGED		
10	350	381	FLANGED		

VALVE DATA SHEET

GUN METAL SWING CHECK VALVES

1 GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE TYPE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 4C
1.4	SIZE RANGE	REF. ANNEXURE 4E	1.10	FLANGE FACE	BS4504-3.3(RAISED FACE)/SCREWED BS21
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)/ ASTM A106 GR.B	1.11	BODY TYPE	SINGLE PIECE
1.6	VALVE REF. DOC.	DME 463 and NES375/BS 5352/BS1868	1.12	VALVE OPERATION	N. A
2 MATERIAL SPECIFICATION					
	PART	MATERIAL	SPECIFICATION		
2.1	BODY	GUNMETAL	BS 1400 LG 4C		
2.2	COVER	GUNMETAL	BS 1400 LG 4C		
2.3	DISC	NICKEL ALUMINIUM BRONZE (SOLID)	NES PART 747 PART II		
2.4	DISC SEAT	NICKEL ALUMINIUM BRONZE	NES PART 747 PART II		
2.4	SEAT RING	NICKEL ALUMINIUM BRONZE	NES PART 747 PART II		
2.5	DISC RETAINING NUT& PIN	NICKEL ALUMINIUM BRONZE	NES 862		
2.6	HINGE	NICKEL ALUMINIUM BRONZE	NES PART 747 PART II		
2.7	HINGE PIN	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.8	SOFT SEAT	REINFORCED PTFE	REINFORCED WITH 90/10 CuNi		
2.9	COVER SEAL	ASBESTOS FREE	BS 7531		
2.10	BOLTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.11	NUTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.12	TAB WASHER	STAINLESSSTEEL	IS 8062 / ASTM A 240 Gr. 304		
3 STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH	SMOOTH SURFACE WITH METAL FINISH			
3.2	INSPECTION & TESTING	API 598			
3.3	TESTING HYDROSTATIC	AS PER BS 6755 PART I for RATE 'A'			
3.4	LOW PRESSURE TEST	15 psi			
3.5	HYDROSTATIC TEST PRESSURE	BODY - 15 BAR SEAT - 11 BAR			
3.6	PNEUMATIC TEST PRESSURE	7 BAR WITH VALVE CLOSED CONDITION			
3.7	PRESSURE DROP TEST/FLOW MEASUREMENT TEST	ACROSS VALVE			
3.8	ANTISTATIC TEST	AS PER BS 5146 (* IF APPLICABLE)			
3.9	RUBBER BONDING TESTING	ASTM D 429			
3.10	REPEATABILITY TEST	25 CYCLE MINIMUM FOLLOWED BY HYDROTEST			
3.11	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED TPIA			
3.12	INSPECTION	INSPECTION BY IACS RECOGNISED TPIA			
NOTE:-THE VALVE FLAP SHALL OPEN AT MINIMUM OF 0.5 BAR					

VALVE DATA SHEET
GUN METAL FIRE SAFE SWING CHECK VALVE (FLANGED)

1					
GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.5	VALVE OPERATION	HAND WHEEL
1.2	DESIGN PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLGD. BS 4505, Sec.3.3, Code 321
1.3	OP TEMP.	120°C MAX	1.7	VALVE REF. DOC.	DME 463 and NES 360/BS 5159/ ECON STANDARD
1.4	SIZE RANGE	As per Annexure – 4E	1.8	O/A DIMN.	Refer Sheet-2
2					
MATERIAL SPECIFICATION					
		MATERIAL		SPECIFICATION	
2.1	BODY	GUN METAL		BS 1400 LG 4C	
2.2	COVER	GUN METAL		BS 1400 LG 4C	
2.3	DISC	NICKEL ALUMINIUM BRONZE (SOLID)		NES 747 PT-II	
2.4	DISC SEAT	NICKEL ALUMINIUM BRONZE		NES 747 PT-II	
2.5	SEAT RING	NICKEL ALUMINIUM BRONZE		NES 747 PT-II	
2.6	DISC RETAINING NUT/PIN	NICKEL ALUMINIUM BRONZE		NES 862	
2.7	HINGE	NICKEL ALUMINIUM BRONZE		NES 747 PT-II	
2.8	HINGE PIN	NICKEL ALUMINIUM BRONZE		NES 833 PT-II	
2.9	SOFT SEAT	REINFORCED PTFE		REINFORCED 90/10 CUNI	
2.10	COVER SEAL	ASBESTOS FREE		BS 7531	
2.11	BOLT	NICKEL ALUMINIUM BRONZE		NES 862	
2.12	NUT	NICKEL ALUMINIUM BRONZE		NES 862	
2.13	TAB WASHER	STAINLESS STEEL		IS 8062 / ASTM A 240 Gr. 304	
3					
STATUTORY REQUIREMENTS					
3.1	PAINTING/S. TREATMENT		SMOOTH SURFACE		
3.2	TESTING HYDROSTATIC		AS PER BS 6755 PART I		
3.3	HYDROSTATIC TEST PRESSURE		BODY -15 Kg/Cm ² SEAT -11 Kg/ Cm ² (max)// 0.5 Kg/ Cm ² (min) [Hyd Test at min Pr. when Pr. Applied in the direction tending to close the Seat to check NR function]		
3.4	PNEUMATIC TEST PRESSURE		7 bar		
3.5	FIRE SAFE TEST		AS PER BS 6755 PART II/ DOS(E) 422		
3.6	CERTIFICATION		TPIA (IACS)		
3.7	INSPECTION		TPIA (IACS)		
3.8	FIRE SAFE TEST		AS PER BS 6755 PART II/API 607		

VALVE DATA SHEET

NICKEL ALUMINIUM SWING CHECK VALVES

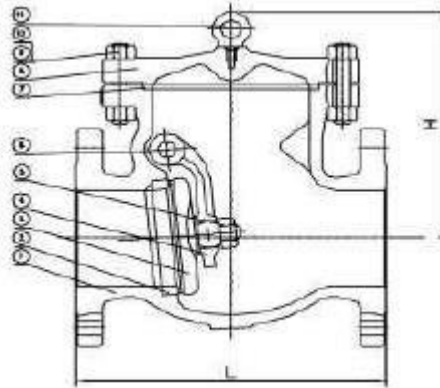
1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	SEA WATER /BILGES	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED						
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 4C						
1.4	SIZE RANGE	REF. ANNEXURE 4E	1.10	FLANGE FACE	BS4504-3.3(RAISED FACE)/SCREWED BS21						
1.5	MATING PIPE SPECN.	90-10Cu-Ni as per NES 779 Part III	1.11	BODY TYPE	SINGLE PIECE						
1.6	VALVE REF. DOC.	DME 463 and NES375/BS 5352/BS1868	1.12	VALVE OPERATION	N. A						
2						MATERIAL SPECIFICATION					
		PART	MATERIAL			SPECIFICATION					
2.1	BODY	NICKEL ALUMINIUM BRONZE			NES PART 747 PART II						
2.2	COVER	NICKEL ALUMINIUM BRONZE			NES PART 747 PART II						
2.3	DISC	NICKEL ALUMINIUM BRONZE (SOLID)			NES PART 747 PART II						
2.4	DISC SEAT	NICKEL ALUMINIUM BRONZE			NES PART 747 PART II						
2.4	SEAT RING	NICKEL ALUMINIUM BRONZE			NES PART 747 PART II						
2.5	DISC RETAINING NUT& PIN	NICKEL ALUMINIUM BRONZE			NES 862						
2.6	HINGE	NICKEL ALUMINIUM BRONZE			NES PART 747 PART II						
2.7	HINGE PIN	NICKEL ALUMINIUM BRONZE			NES 833 PART II						
2.8	SOFT SEAT	REINFORCED PTFE									
2.9	COVER SEAL	ASBESTOS FREE			NES 862						
2.10	BOLTS	NICKEL ALUMINIUM BRONZE			NES 862						
2.11	NUTS	NICKEL ALUMINIUM BRONZE			NES 862						
2.12	TAB WASHER	STAINLESSSTEEL			IS 8062 / ASTM A 240 Gr. 304						
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH	SMOOTH SURFACE WITH METAL FINISH									
3.2	INSPECTION & TESTING	API 598									
3.3	TESTING HYDROSTATIC	AS PER BS 6755 PART I for RATE 'A'									
3.4	LOW PRESSURE TEST	15 psi									
3.5	HYDROSTATIC TEST PRESSURE	BODY - 15 BAR SEAT - 11 BAR									
3.6	PNEUMATIC TEST PRESSURE	7 BAR WITH VALVE CLOSED CONDITION									
3.7	PRESSURE DROP TEST/FLOW MEASUREMENT TEST	ACROSS VALVE									
3.8	ANTISTATIC TEST	AS PER BS 5146 (* IF APPLICABLE)									
3.9	RUBBER BONDING TESTING	ASTM D 429									
3.10	REPEATABILITY TEST	25 CYCLE MINIMUM FOLLOWED BY HYDROTEST									
3.11	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED TPIA									
3.12	INSPECTION	INSPECTION BY IACS RECOGNISED TPIA									

VALVE DATA SHEET

STAINLESS STEEL FIRE SAFE SWING CHECK VALVES

1						GENERAL SPECIFICATION					
1.1	FLUID HANDLED	F.O.L.O. & AVCAT	1.7	BORE TYPE	FULL BORE						
1.2	OP. PRESSURE	10 Kg/Cm ²	1.8	END CONN.	FLANGED /SCREWED						
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 4C						
1.4	SIZE RANGE	REF. ANNEXURE 4E	1.10	FLANGE FACE	BS4504-3.3(RAISED FACE)/SCREWED BS21						
1.5	MATING PIPE SPECN.	90-10Cu-Ni / ASTM A 106 GR B	1.11	BODY TYPE	SINGLE PIECE						
1.6	VALVE REF. DOC.	DME 463 and NES375/BS 5352/BS1868	1.12	VALVE OPERATION	N. A						
2						MATERIAL SPECIFICATION					
PART		MATERIAL			SPECIFICATION						
2.1	BODY	STAINLESS STEEL			ASTM A216 Gr WCB/A105						
2.2	COVER	STAINLESS STEEL			ASTM A216 Gr WCB/A105						
2.3	DISC	STAINLESS STEEL			ASTM A 351 Gr CF8M/ASTM A276 Gr 316						
2.4	DISC SEAT	STAINLESS STEEL			ASTM A 351 Gr CF8M/ASTM A276 Gr 316						
2.4	SEAT RING	STAINLESS STEEL			ASTM A 351 Gr CF8M/ASTM A276 Gr 316						
2.5	DISC RETAINING NUT& PIN	STAINLESS STEEL			ASTM A 351 Gr CF8M/ASTM A276 Gr 316						
2.6	HINGE	STAINLESS STEEL			ASTM A 351 Gr CF8M/ASTM A276 Gr 316						
2.7	HINGE PIN	STAINLESS STEEL			ASTM A 351 Gr CF8M/ASTM A276 Gr 316						
2.8	SOFT SEAT	REINFORCED PTFE			PTFE						
2.9	COVER SEAL	ASBESTOS FREE			BS 7531						
2.10	BOLTS	ALLOY STEEL			ASTM A 351 Gr CF8M/ASTM A276 Gr 316						
2.11	NUTS	ALLOY STEEL			ASTM A 351 Gr CF8M/ASTM A276 Gr 316						
2.12	TAB WASHER	STAINLESSSTEEL			IS 8062 / ASTM A 240 Gr. 304						
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH			SMOOTH SURFACE WITH METAL FINISH							
3.2	INSPECTION & TESTING			API 598							
3.3	TESTING HYDROSTATIC			AS PER BS 6755 PART I for RATE 'A'							
3.4	LOW PRESSURE TEST			15 psi							
3.5	HYDROSTATIC TEST PRESSURE			BODY – 15 BAR SEAT – 11 BAR							
3.6	PNEUMATIC TEST PRESSURE			7 BAR WITH VALVE CLOSED CONDITION							
3.7	PRESSURE DROP TEST/FLOW MEASUREMENT TEST			ACROSS VALVE							
3.8	ANTISTATIC TEST			AS PER BS 5146 (* IF APPLICABLE)							
3.9	RUBBER BONDING TESTING			ASTM D 429							
3.10	REPEATABILITY TEST			25 CYCLE MINIMUM FOLLOWED BY HYDROTEST							
3.11	CERTIFICATION			CERTIFICATION BY IACS RECOGNISED TPIA							
3.12	INSPECTION			INSPECTION BY IACS RECOGNISED TPIA							
3.13	FIRE SAFE TEST			AS PER BS 6755 PART II/API 607							

SWING CHECK VALVE



NOMENCLATURE

NO.	PART DESCRIPTION	NO.	PART DESCRIPTION
1	BODY	7	GASKET
2	SEAT	8	BONNET
3	DISC	9	BOLT
4	HINGE	10	NUT
5	NUT	11	EYEBOLT
6	PIN		

***NOTE:**

Drawings attached in SOTR are for reference and clear understanding of valve only

**FACE -TO- FACE DISTANCE
CHECK VALVE DIMENSIONS**

L-VALVE FLANGE FACE TO FACE DIMENSIONS (Inclusive of FLANGE THICKNESS)

SR. NO.	NOMINAL SIZE	DIMENSIONS L	END CONNECTION DETAILS	QTY. / SYSTEM	TOTAL QTY.
01	25	127			
02	32	146			
03	40	165			
04	50	203			
05	65	216			
06	80	241			
07	100	292			
08	125	330			
09	150	356			
10	200	495			
11	250	622			
12	300	698			

VALVE DATA SHEET

GUN METAL PRESSURE RELIEF VALVE

1					
GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 5B
1.4	SIZE RANGE	REF. ANNEXURE: 5D	1.10	FLANGE/ SCREWED FACE	BS4504-3.3(RAISED FACE)/SCREWED BS21
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)/ ASTM A106	1.11	BODY TYPE	BONET TYPE
1.6	VALVE REF. DOC.	DME 463 and NES 360 /API 527/ASME PTC25	1.12	VALVE OPERATION	SPRINGLOADED
2					
MATERIAL SPECIFICATION					
	PART	MATERIAL	SPECIFICATION		
2.1	BODY	GUN METAL	BS 1400 LG 4C		
2.2	BONNET	GUN METAL	BS 1400 LG 4C		
2.3	BODY SEAT	NICKEL ALUMINIUM BRONZE	NES 747 PART II		
2.4	SPINDLE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.5	SPRING	SPRING STEEL	IS 4454		
2.6	SPINDLE NUT	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.7	SEAT SECURING SCREW	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.8	WASHER	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.9	PISTON	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.10	BOLTS	NICKEL ALUMINIUM BRONZE	NES 863		
2.11	NUTS	NICKEL ALUMINIUM BRONZE	NES 863		
2.12	TAB WASHER	STAINLESSSTEEL	IS 8062 / ASTM A 240 Gr. 304		
3					
STATUTORY REQUIREMENTS					
3.1	PAINING/ S. TREATMENT	SMOOTH SURFACE WITH METAL FINISH			
3.2	TESTING HYDROSTATIC	AS PER API 527			
3.3	HYDROSTATIC TESTPRESSURE	BODY – 15 BAR SEAT – 11 BAR			
3.4	PNEUMATIC TESTPRESSURE	7 BAR			
3.5	POP UP & SEAT TIGHTNESS TEST	+/- 10 % OF SET PRESSURE			
3.6	REPEATABILITY TES	25 CYCLES			
3.7	VALVE COEFFICIENT	AS INDICATED IN APPROVED DRAWING			
3.8	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED TPIA			
3.9	INSPECTION	INSPECTION BY IACS RECOGNISED TPIA			
<p>Note:-<u>Supplier to specify spring constant & spring life</u></p>					

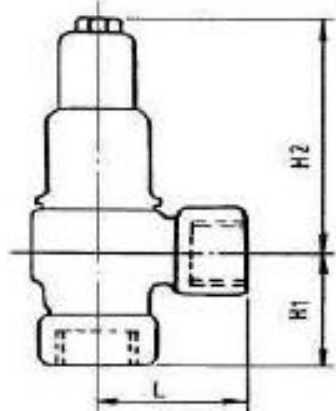
VALVE DATA SHEET

NICKEL ALUMINIUM BRONZE PRESSURE RELIEF VALVE

1						GENERALSPECIFICATION					
1.1	FLUID HANDLED	S.W ,F.O,F.W,L.O,AVCAT	1.7	BORE	FULL BORE						
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED						
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 5B						
1.4	SIZE RANGE	REF. ANNEXURE: 5D	1.10	FLANGE/ SCREWED FACE	BS4504-3.3(RAISED FACE)/SCREWED BS21						
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (BS2871-II)	1.11	BODY TYPE	BONET TYPE						
1.6	VALVE REF. DOC.	DME 463 and NES 360 /API 527/ASME PTC25	1.12	VALVE OPERATION	SPRINGLOADED						
2						MATERIAL SPECIFICATION					
	PART			MATERIAL			SPECIFICATION				
2.1	BODY		NICKEL ALUMINIUM BRONZE		NES 747 PART II						
2.2	BONNET		NICKEL ALUMINIUM BRONZE		NES 747 PART II						
2.3	BODY SEAT		NICKEL ALUMINIUM BRONZE		NES 747 PART II						
2.4	SPINDLE		NICKEL ALUMINIUM BRONZE		NES 833 PART II						
2.5	SPRING		SPRING STEEL		IS 4454						
2.6	SPINDLE NUT		NICKEL ALUMINIUM BRONZE		NES 833 PART II						
2.7	SEAT SECURING SCREW		NICKEL ALUMINIUM BRONZE		NES 833 PART II						
2.8	WASHER		NICKEL ALUMINIUM BRONZE		NES 833 PART II						
2.9	PISTON		NICKEL ALUMINIUM BRONZE		NES 833 PART II						
2.10	BOLTS		NICKEL ALUMINIUM BRONZE		NES 863						
2.11	NUTS		NICKEL ALUMINIUM BRONZE		NES 863						
2.12	TAB WASHER		STAINLESSSTEEL		IS 8062 / ASTM A 240 Gr. 304						
3						STATUTORY REQUIREMENTS					
3.1	PAINTING/ S. TREATMENT		SMOOTH SURFACE WITH METAL FINISH								
3.2	TESTING HYDROSTATIC		AS PER API 527								
3.3	HYDROSTATIC TESTPRESSURE		BODY – 15 BAR		SEAT – 11 BAR						
3.4	PNEUMATIC TESTPRESSURE		7 BAR								
3.5	POP UP & SEAT TIGHTNESS TEST		+/- 10 % OF SET PRESSURE								
3.6	REPEATABILITY TES		25 CYCLES								
3.7	VALVECOEFFICIENT		AS INDICATED IN APPROVED DRAWING								
3.8	CERTIFICATION		CERTIFICATION BY IACS RECOGNISED TPIA								
3.9	INSPECTION		INSPECTION BY IACS RECOGNISED TPIA								

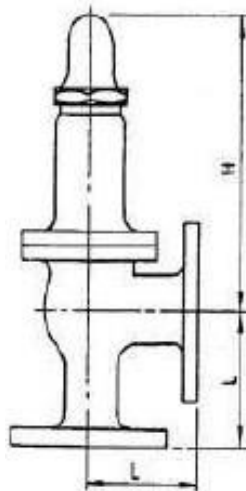
VALVE DATA SHEET					
GUN METAL PRESSURE RELIEF VALVE					
1	GENERAL SPECIFICATION				
1.1	FLUID HANDLED	FO, LO, AVCAT	1.7	BORE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED /SCREWED
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 5B
1.4	SIZE RANGE	REF. ANNEXURE: 5D	1.10	FLANGE/ SCREWED FACE	BS4504-3.1(RAISED FACE)/SCREWED BS21
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)/ ASTM A106	1.11	BODY TYPE	BONET TYPE
1.6	VALVE REF. DOC.	DME 463 and NES 360 /API 527/ASME PTC25	1.12	VALVE OPERATION	SPRING LOADED
2	MATERIAL SPECIFICATION				
	PART	MATERIAL	SPECIFICATION		
2.1	BODY	STAINLESSSTEEL	ASTM A 351 CF8M		
2.2	BONNET	STAINLESSSTEEL	ASTM A 351 CF8M		
2.3	BODY SEAT	STAINLESSSTEEL	ASTM A 351 CF8M		
2.4	SPINDLE	STAINLESSSTEEL	ASTM A276 Gr. 316		
2.5	SPRING	SPRING STEEL	IS 4454		
2.6	SPINDLE NUT	STAINLESSSTEEL	ASTM A276 Gr. 316		
2.7	SEAT SECURING SCREW	STAINLESSSTEEL	ASTM A276 Gr. 316		
2.8	WASHER	STAINLESSSTEEL	ASTM A276 Gr. 316		
2.9	PISTON	STAINLESSSTEEL	ASTM A276 Gr. 316		
2.10	BOLTS	ALLOY STEEL	ASTM A193 Gr.B7 (HDG) & A194 Gr.2H (HDG)		
2.11	NUTS	ALLOY STEEL	ASTM A193 Gr.B7 (HDG) & A194 Gr.2H (HDG)		
2.12	TAB WASHER	STAINLESSSTEEL	IS 8062 / ASTM A 240 Gr. 304		
3	STATUTORY REQUIREMENTS				
3.1	PAINTING/ S. TREATMENT	SMOOTH SURFACE WITH METAL FINISH			
3.2	TESTING HYDROSTATIC	AS PER API 527			
3.3	HYDROSTATIC TEST PRESSURE	BODY – 15 BAR SEAT – 11 BAR			
3.4	PNEUMATIC TEST PRESSURE	7 BAR			
3.5	POP UP & SEAT TIGHTNESS TEST	+/- 10 % OF SET PRESSURE			
3.6	REPEATABILITY TES	25 CYCLES			
3.7	VALVE COEFFICIENT	AS INDICATED IN APPROVED DRAWING			
3.8	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED TPIA			
3.9	INSPECTION	INSPECTION BY IACS RECOGNISED TPIA			

Angle Screwed Type - Pressure Relief Valves



Valve Diameter (mm)	Dimensions (mm)		
	L	H1	H2
15	44	44	124
20	48	48	124
25	67	67	191
32	83	83	191
40	89	89	228

Angled Flanged Type - Pressure Relief Valves



Valve Diameter (mm)	Dimensions (mm)		
	L	H1	H2
15	76	76	124
20	76	76	124
25	83	83	190
32	90	90	190
40	102	102	228
50	114	114	276
65	127	127	294
80	133	133	349
100	146	146	390
150	203	203	560

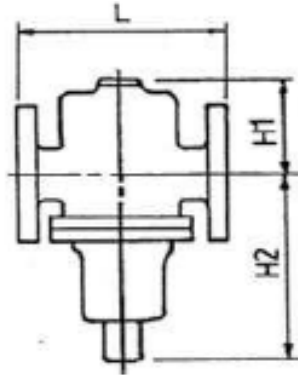
***NOTE:**

Drawings attached in SOTR are for reference and clear understanding of valve only

VALVE DATA SHEET					
GUN METAL PRESSURE REDUCING VALVE (FLANGED)					
1	GENERAL SPECIFICATION				
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 6B
1.4	SIZE RANGE	REF. ANNEXURE: 6C	1.10	FLANGE FACE	BS 4504- 3.3(RAISED FACE)
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)/ ASTM A106	1.11	BODY TYPE	SINGLE PIECE
1.6	VALVE REF. DOC.	DME 463 and NES 360 / NES375	1.12	VALVE OPERATION	SPRING LOADED/DIAPHRAGM
2	MATERIAL SPECIFICATION				
	PART	MATERIAL	SPECIFICATION		
2.1	BODY	GUN METAL	BS 1400 LG 4		
2.2	BONNET	GUN METAL	BS 1400 LG 4		
2.3	BODY SEAT	NICKEL ALUMINIUM BRONZE	NES 747 PART II		
2.4	SPINDLE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.5	SPRING	SPRING STEEL	IS 4454		
2.6	SPINDLE NUT	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.7	SEAT SECURING SCREW	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.8	WASHER	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.9	PISTON	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.10	BOLTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.11	NUTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.12	TAB WASHER	STAINLESSSTEEL	IS 8062 / ASTM A 240 Gr. 304		
3	STATUTORY REQUIREMENTS				
3.1	PAINTING/ S. TREATMENT	SMOOTH SURFACE WITH METAL FINISH			
3.2	TESTING HYDROSTATIC	AS PER BS 6755 PART I			
3.3	HYDROSTATIC TESTPRESSURE	BODY – 15 BAR SEAT – 11 BAR			
3.4	PNEUMATIC TESTPRESSURE	7 BAR WITH VALVE CLOSED CONDITION			
3.5	LIFT CHARACTERISTICS	CHECK LINEARITY, ACCURACY, REPEATIBILITY & HYSTERESIS			
3.6	VALVE COEFFICIENT	AS INDICATED IN APPROVED DRAWING			
3.7	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED TPIA			
3.8	INSPECTION	INSPECTION BY IACS RECOGNISED TPIA			

VALVE DATA SHEET					
NICKEL ALUMINIUM BRONZE PRESSURE REDUCING VALVE (FLANGED)					
1	GENERAL SPECIFICATION				
1.1	FLUID HANDLED	SW, BILGES	1.7	BORE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. ANNEXURE: 6B
1.4	SIZE RANGE	REF. ANNEXURE: 6C	1.10	FLANGE FACE	BS 4504- 3.3(RAISED FACE)
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES837I)	1.11	BODY TYPE	SINGLE PIECE
1.6	VALVE REF. DOC.	DME 463 and NES 360 / NES375	1.12	VALVE OPERATION	SPRING LOADED/DIAPHRAGM
2	MATERIAL SPECIFICATION				
	PART	MATERIAL	SPECIFICATION		
2.1	BODY	NICKEL ALUMINIUM BRONZE	NES 747 PART II		
2.2	BONNET	NICKEL ALUMINIUM BRONZE	NES 747 PART II		
2.3	BODY SEAT	NICKEL ALUMINIUM BRONZE	NES 747 PART II		
2.4	SPINDLE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.5	SPRING	SPRING STEEL	IS 4454		
2.6	SPINDLE NUT	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.7	SEAT SECURING SCREW	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.8	WASHER	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.9	PISTON	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.10	BOLTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.11	NUTS	NICKEL ALUMINIUM BRONZE	NES 862		
2.12	TAB WASHER	STAINLESSSTEEL	IS 8062 / ASTM A 240 Gr. 304		
3	STATUTORY REQUIREMENTS				
3.1	PAINTING/ S. TREATMENT	SMOOTH SURFACE WITH METAL FINISH			
3.2	TESTING HYDROSTATIC	AS PER BS 6755 PART I			
3.3	HYDROSTATIC TEST PRESSURE	BODY – 15 BAR SEAT – 11 BAR			
3.4	PNEUMATIC TEST PRESSURE	7 BAR WITH VALVE CLOSED CONDITION			
3.5	LIFT CHARACTERISTICS	CHECK LINEARITY, ACCURACY, REPEATIBILITY & HYSTERESIS			
3.6	VALVE COEFFICIENT	AS INDICATED IN APPROVED DRAWING			
3.7	CERTIFICATION	CERTIFICATION BY IACS RECOGNISED TPIA			
3.8	INSPECTION	INSPECTION BY IACS RECOGNISED TPIA			

Pressure Reducing Valve



Valve Diameter (mm)	Dimensions (mm)		
	L	H1	H2
15	158	76	155
20	174	92	162
25	177	92	162
32	212	100	237
40	280	148	290
50	304	174	354
65	305	165	412
80	305	162	536
100	406	222	655
125	460	240	675
150	508	248	672

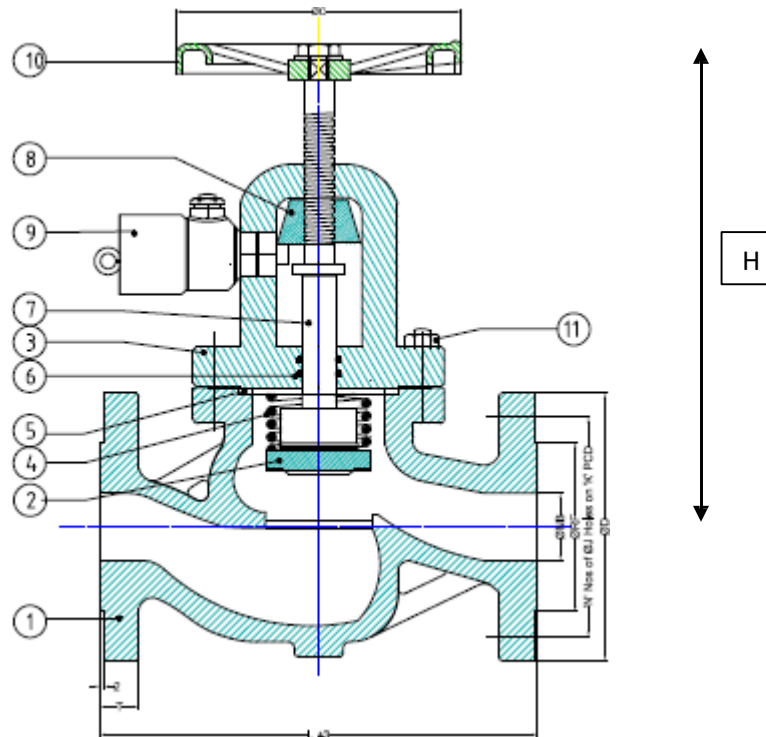
VALVE DATA SHEET
GUN METAL FIRE SAFE QUICK CLOSING VALVE (FLANGED)

1 GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.5	VALVE OPERATION	Release Mechanism / HAND WHEEL (Emergency)
1.2	DESIGN PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLGD. BS 4504, Sec.3.3, Code 321
1.3	OP TEMP.	120°C MAX	1.7	VALVE REF. DOC.	DME 463 and NES 360/BS 5159/ NES 375
1.4	SIZE RANGE	As per size datasheet			
2 MATERIAL SPECIFICATION					
	PART	MATERIAL		SPECIFICATION	
2.1	BODY	GUN METAL		BS 1400 LG 4	
2.2	DISC	NICKEL ALUMINIUM BRONZE		NES 747 PART II	
2.3	BONNET	GUN METAL		BS 1400 LG 4	
2.4	SPRING	STEEL (CAD PLATED)		BS 970 -- EN 44	
2.5	O- RING	RUBBER		VITON B 68% FLUORINE	
2.6	BODY GASKET	RUBBER		VITON B 68% FLUORINE	
2.7	SPINDLE	NICKEL ALUMINIUM BRONZE		NES 833 PART II	
2.8	SETTING NUT	GUN METAL		BS 1400 LG 4	
2.9	BOLT	NAB		NES 862	
2.10	NUT	NAB		NES 862	
2.11	HAND WHEEL	CAST STEEL (GALVE)		ASTM A 216 WCB	
2.12	SHAFT FOR WIRE CONTROL/ RELEASE MECHANISM	STAINLESS STEEL		SS 316	
3 STATUTORY REQUIREMENTS					
3.1	PAINTING/S. TREATMENT	SMOOTH SURFACE			
3.2	TESTING HYDROSTATIC	AS PER BS 6755 PART I			
3.3	HYDROSTATIC TEST PRESSURE	BODY -15 Kg/Cm ² SEAT - 11Kg/Cm ² (Seat manually closed by Hand Wheel) // 2 Kg/Cm² (Spring Loaded Shut off Condition)			
3.4	PNEUMATIC TEST PRESSURE	7 BAR			
3.5	CERTIFICATION	TPIA (IACS)			
3.6	INSPECTION	TPIA (IACS)			
3.7	FIRE SAFE TEST	AS PER BS 6755 PART II/API 607			

VALVE DATA SHEET
STAINLESS STEEL FIRE SAFE QUICK CLOSING VALVE (FLANGED)

1					
GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FO/LO/ AVCAT	1.5	VALVE OPERATION	Release Mechanism / HAND WHEEL (Emergency)
1.2	DESIGN PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLGD. BS 4504, Sec.3.1, Code 1 21
1.3	OP TEMP.	120°C MAX	1.7	VALVE REF. DOC.	DME 463 and NES 360/BS 5159/ NES 375
1.4	SIZE RANGE	As per size datasheet			
2					
MATERIAL SPECIFICATION					
	PART	MATERIAL		SPECIFICATION	
2.1	BODY	STAINLESS STEEL		ASTM A 351 Gr CF8M / ASTM A276 Gr 316	
2.2	DISC	STAINLESS STEEL (SOLID)		ASTM A 351 Gr CF8M / ASTM A276 Gr 316	
2.3	BONNET	STAINLESS STEEL		ASTM A 351 Gr CF8M / ASTM A276 Gr 316	
2.4	SPRING	STEEL (CAD PLATED)		BS 970 -- EN 44	
2.5	O- RING	RUBBER		VITON B 68% FLUORINE	
2.6	BODY GASKET	RUBBER		VITON B 68% FLUORINE	
2.7	SPINDLE	STAINLESS STEEL		ASTM A276 Gr 316	
2.8	SETTING NUT	STAINLESS STEEL		ASTM A276 Gr 316	
2.9	BOLT	ALLOY STEEL		ASTM A194 Gr 2H (HDG)	
2.10	NUT	ALLOY STEEL		ASTM A194 Gr 2H (HDG)	
2.11	HAND WHEEL	STAINLESS STEEL		ASTM A 240 Gr 304	
2.12	SHAFT FOR WIRE CONTROL/ RELEASE	STAINLESS STEEL		SS 316	
3					
STATUTORY REQUIREMENTS					
3.1	PAINTING/S. TREATMENT	SMOOTH SURFACE			
3.2	TESTING HYDROSTATIC	AS PER BS 6755 PART I for Rate 'A'			
3.3	HYDROSTATIC TEST PRESSURE	BODY -15 Kg/Cm ² SEAT - 11Kg/Cm ² (Seat manually closed by Hand Wheel) // 2 Kg/Cm² (Spring Loaded Shut off Condition)			
3.4	PNEUMATIC TEST PRESSURE	7 BAR			
3.5	CERTIFICATION	TPIA (IACS)			
3.6	INSPECTION	TPIA (IACS)			
3.7	FIRE SAFE TEST	AS PER BS 6755 PART II/API 607			

RE SAFE QUICK CLOSING VALVE



NB	L1	H (Closed Condition.)	K
15	130	230	100
20	150	230	100
25	160	235	100
32	180	240	125
40	200	280	140
50	230	295	140
65	290	365	140
80	310	375	160
100	350	435	200
125	400	490	250
150	480	525	315

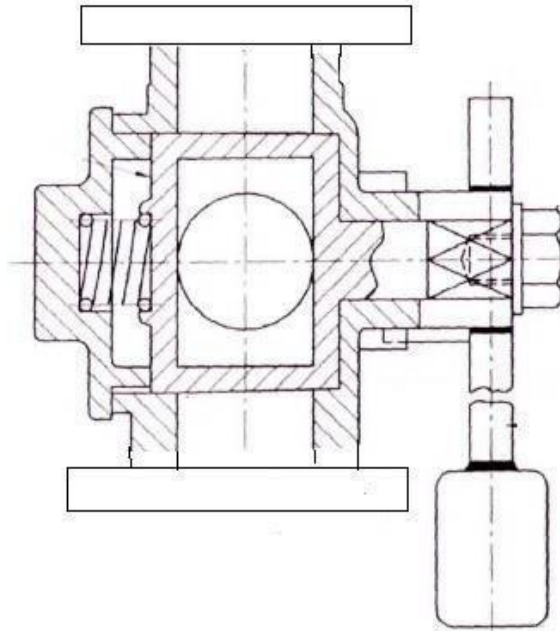
VALVE DATA SHEET
GUN METAL SELF CLOSING SOUNDING COCK (FLANGED) FIRE SAFE

1 GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE TYPE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. NEXT PAGE
1.4	SIZE RANGE	REF. ANNEXURE: 8C	1.10	FLANGE FACE	BS4504-3.3 (RAISED)
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES8371)/ASTM A106 GR.B	1.11	BODY TYPE	BOLTED BONNET TYPE
1.6	VALVE REF. DOC.	DME 463 and NES 375 / BS 5154	1.12	VALVE OPERATION	SELF CLOSING HANDLE
2 MATERIAL SPECIFICATION					
	PART	MATERIAL	SPECIFICATION		
2.1	BODY	GUN METAL	BS 1400 LG 4C		
2.2	PLUG	GUN METAL	BS 1400 LG 4C		
2.3	BOTTOM CAP	GUN METAL	BS 1400 LG 4C		
2.4	LEVER & WEIGHT	STAINLESS STEEL	SS-304		
2.5	SET SCREW	NICKEL ALUMINIUM BRONZE	NES 862		
2.6	BOLT-NUT	NICKEL ALUMINIUM BRONZE	NES 862		
2.7	SPRING	STEEL (CAD PLATED)	BS 970 -- EN 44		
2.8	TEST COCK	BRASS	IS 410		
3 STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH		SMOOTH SURFACE WITH METAL FINISH		
3.2	INSPECTION & TESTING		API 598		
3.3	TESTING HYDROSTATIC		AS PER BS 6755 PART I for RATE 'A'		
3.4	HYDROSTATIC TEST PRESSURE		BODY – 15 BAR SEAT – 11 BAR		
3.5	PNEUMATIC TEST PRESSURE		7 BAR WITH VALVE CLOSED CONDITION		
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST		ACROSS VALVE		
3.7	ANTI-STATIC TEST		AS PER BS 5146 (* IF APPLICABLE)		
3.8	RUBBER BONDING TESTING		ASTM D 429		
3.9	REPEATABILITY TEST		25 CYCLE MINIMUM FOLLOWED BY HYDROTEST		
3.10	CERTIFICATION		TPIA(IACS)		
3.11	INSPECTION		TPIA(IACS)		
3.12	FIRE SAFE TEST		AS PER BS 6755 PART II/API 607		

VALVE DATA SHEET
STAINLESS STEEL SELF CLOSING SOUNDING COCK (FLANGED) FIRE SAFE

1 GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE TYPE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. NEXT PAGE
1.4	SIZE RANGE	REF. ANNEXURE: 8C	1.10	FLANGE FACE	BS4504-3.3 (RAISED)
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES8371)/ ASTM A106 GR.B	1.11	BODY TYPE	BOLTED BONNET TYPE
1.6	VALVE REF. DOC.	DME 463 and NES 375 / BS 5154	1.12	VALVE OPERATION	SELF CLOSING HANDLE
2 MATERIAL SPECIFICATION					
	PART	MATERIAL	SPECIFICATION		
2.1	BODY	STAINLESS STEEL	ASTM A 351 CF8M		
2.2	PLUG	NICKEL ALUMINIUM BRONZE	NES 747 PART II		
2.3	BOTTOM CAP	STAINLESS STEEL	ASTM A 351 CF8M		
2.4	LEVER & WEIGHT	STAINLESS STEEL	SS-304		
2.5	SET SCREW	NICKEL ALUMINIUM BRONZE	NES 862		
2.6	BOLT-NUT	NICKEL ALUMINIUM BRONZE	NES 862		
2.7	SPRING	STEEL (CAD PLATED)	BS 970 -- EN 44		
2.8	TEST COCK	BRASS	IS 410		
3 STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH	SMOOTH SURFACE WITH METAL FINISH			
3.2	INSPECTION & TESTING	API 598			
3.3	TESTING HYDROSTATIC	AS PER BS 6755 PART I for RATE 'A'			
3.4	HYDROSTATIC TEST PRESSURE	BODY – 15 BAR SEAT – 11 BAR			
3.5	PNEUMATIC TEST PRESSURE	7 BAR WITH VALVE CLOSED CONDITION			
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST	ACROSS VALVE			
3.7	ANTI STATIC TEST	AS PER BS 5146 (* IF APPLICABLE)			
3.8	RUBBER BONDING TESTING	ASTM D 429			
3.9	REPEATABILITY TEST	25 CYCLE MINIMUM FOLLOWED BY HYDROTEST			
3.10	CERTIFICATION	TPIA(IACS)			
3.11	INSPECTION	TPIA(IACS)			
3.12	FIRE SAFE TEST	AS PER BS 6755 PART II/API 607			

BOTH END FLANGED TYPE SELF CLOSING SOUNDING COCK

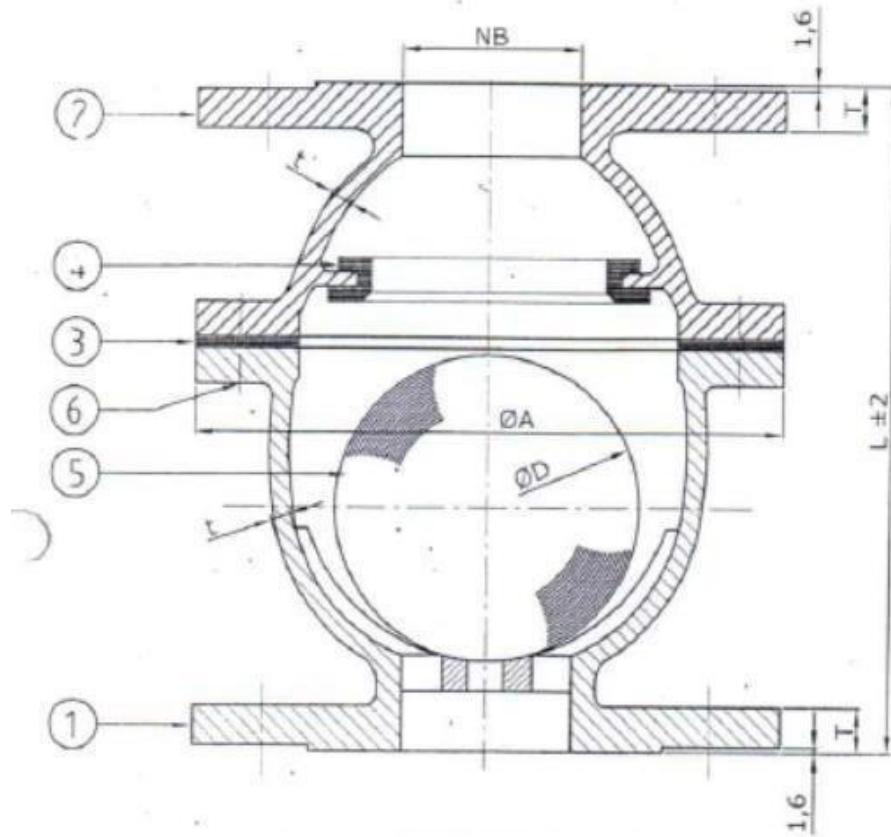


THIS SKETCH IS STRICTLY FOR GUIDANCE

VALVE DATA SHEET

GM BALL FLOAT CHECK VALVE

1					
GENERAL SPECIFICATION					
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE TYPE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED
1.3	OP.TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. NEXT PAGE
1.4	SIZE RANGE	REF. NEXT PAGE	1.10	FLANGE FACE	BS4504-3.3 (RAISED)
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES8371)/ ASTM A106 GR.B	1.11	BODY TYPE	BOLTED BONNET TYPE
1.6	VALVE REF. DOC.	DME 463 and NES 375/ BS 5154	1.12	VALVE OPERATION	-
2					
MATERIAL SPECIFICATION					
	PART	MATERIAL			SPECIFICATION
2.1	UPPER BODY	GUN METAL			BS 1400 LG 4C
2.2	LOWER BODY	GUN METAL			BS 1400 LG 4C
2.3	BALL	PVC			-
2.4	SEAT	REINFORCED PTFE			REINFORCED PTFE
2.5	GASKET	ASBESTOS FREE			-
2.6	BOLTS	NICKEL ALUMINIUM BRONZE			NES 862
2.7	NUTS	NICKEL ALUMINIUM BRONZE			NES 862
3					
STATUTORY REQUIREMENTS					
3.1	PAINTING/ SURFACE FINISH		SMOOTH SURFACE WITH METAL FINISH		
3.2	INSPECTION & TESTING		API 598		
3.3	TESTING HYDROSTATIC		AS PER BS 6755 PART I for RATE 'A'		
3.4	HYDROSTATIC TEST PRESSURE		BODY - 15 BAR SEAT - 11 BAR		
3.5	PNEUMATIC TEST PRESSURE		7 BAR WITH VALVE CLOSED CONDITION		
3.6	PRESSURE DROP TEST/FLOW MEASUREMENT TEST		ACROSS VALVE		
3.7	ANTISTATIC TEST		AS PER BS 5146 (* IF APPLICABLE)		
3.8	RUBBER BONDING TESTING		ASTM D 429		
3.9	REPEATABILITY TEST		25 CYCLE MINIMUM FOLLOWED BY HYDROTEST		
3.10	CERTIFICATION		TPIA(IACS)		
3.11	INSPECTION		TPIA(IACS)		



ASSEMBLY.

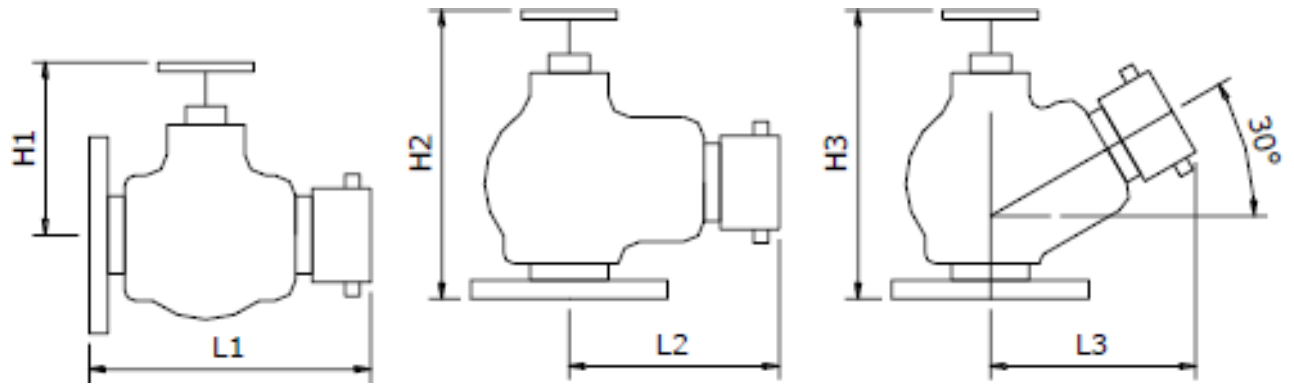
FACE-TO-FACE DISTANCE BALL FLOAT CHECK VALVE						
L-VALVE FACE TO FACE DIMENSIONS (INCLUDING FLANGE THICKNESS)						
SR. NO.	NOMINAL SIZE	DIMENSIONS L	END CONNECTION DETAILS	QTY. / SYSTEM	TOTAL QTY.	
01	40	125	FLANGED			
02	50	180	FLANGED			
03	125	325	FLANGED			
04	150	400	FLANGED			

VALVE DATA SHEET
GM FIRE HYDRANT (STRAIGHT/ ANGLED) VALVE

1					
GENERAL SPECIFICATION					
1.1	FLUID HANDLED	SEA WATER	1.5	O/A DIMN	REF. SHT. 2
1.2	OP. PRESSURE	10 Kg/Cm2	1.6	END CONN.	FLGD. BS 4505, Sec.3.3, Code 321
1.3	OP. TEMPERATURE	100°C MAX	1.7	SIZE RANGE	Refer RFQ
1.4	VALVE REF. DOC.	DME 463 and NES 360/BS 5159/ ECON STANDARD	1.8	VALVE OPERATION	HAND WHEEL
2					
MATERIAL SPECIFICATION					
	PART	MATERIAL	SPECIFICATION		
2.1	BODY	GUN METAL	BS 1400 LG 4C		
2.2	BONNET	GUN METAL	BS 1400 LG 4C		
2.3	DISC	NICKEL ALUMINIUM BRONZE	NES 747 PART II/IV OR NES 833 PART II/IV		
2.4	SPINDLE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.5	DISC SEAT	VITON- B or REINFORCED PTFE			
2.6	DISC FACE RETAINER	MONEL-400	BS-3076 NA 13		
2.7	BONNET GASKET	FLEXIBLE GRAPHITE/ NON ASBESTOS GASKET			
2.8	GLAND PACKING	GRAPHITE MOULDED RINGS WITH BRAIDED TOP & BOTTOM RINGS			
2.9	GLAND/GLAND FLANGE	GUN METAL	BS 1400 LG 4C		
2.10	GLAND BUSH	PHOSPHOR BRONZE	BS 1490-LM6 LM25 TF		
2.11	BOLTS	NICKEL ALUMINIUM BRONZE	NES 833 PART II/IV		
2.12	NUTS	NICKEL ALUMINIUM BRONZE	NES 833 PART II/IV		
2.13	HOSE ADAPTOR (Instantaneous Female Coupling)	GUN METAL (WITH TWO PULL OUT TYPE LUGS)	BS 1400 LG 4C (Dimensions As per IS: 5290, Fig-3, But With Two Lugs)		
2.14	BLANK CAP [ON IFC] (To be supplied with each Valve)	GUN METAL	BS 1400 LG 4C (Dimn. as per IS: 5290, Fig-4)		
2.15	RING INSIDE IFC	SYNTHETIC RUBBER	BS 2751 BA 5		
2.16	SPRING INSIDE IFC	PHOSPHOR BRONZE	IS 7608 OR EQV.		
2.17	HANDLE WHEEL	CAST STEEL (GALVE)	ASTM A 216 WCB		
3					
STATUTORY REQUIREMENTS					
3.1	PAINTING/S. TREATMENT		SMOOTH SURFACE		
3.2	TESTING HYDROSTATIC		AS PER BS 6755 PART I		
3.3	HYDROSTATIC TEST PRESSURE		BODY -15 Kg/Cm ² SEAT -11 Kg/ Cm ²		
3.4	PNEUMATIC TEST PRESSURE		7 Kg/Cm ²		
3.5	CERTIFICATION		TPIA (IACS)		
3.6	INSPECTION		TPIA (IACS)		

VALVE DATA SHEET
NAB FIRE HYDRANT (STRAIGHT/ ANGLED) VALVE

1 GENERAL SPECIFICATION					
1.1	FLUID HANDLED	SEA WATER	1.5	O/A DIMN	REF. SHT. 2
1.2	OP. PRESSURE	10 Kg/Cm2	1.6	END CONN.	FLGD. BS 4505, Sec.3.3, Code 321
1.3	OP. TEMPERATURE	100°C MAX	1.7	SIZE RANGE	Refer RFQ
1.4	VALVE REF. DOC.	NES 360/BS 5159/ ECON STANDARD	1.8	VALVE OPERATION	HAND WHEEL
2 MATERIAL SPECIFICATION					
	PART	MATERIAL	SPECIFICATION		
2.1	BODY	NICKEL ALUMINIUM BRONZE	NES 747 PART II/IV OR NES 833 PART II/IV		
2.2	BONNET	NICKEL ALUMINIUM BRONZE	NES 747 PART II/IV OR NES 833 PART II/IV		
2.3	DISC	NICKEL ALUMINIUM BRONZE	NES 747 PART II/IV OR NES 833 PART II/IV		
2.4	SPINDLE	NICKEL ALUMINIUM BRONZE	NES 833 PART II		
2.5	DISC SEAT	VITON- B or REINFORCED PTFE			
2.6	DISC FACE RETAINER	MONEL-400	BS-3076 NA 13		
2.7	BONNET GASKET	FLEXIBLE GRAPHITE/ NON ASBESTOS GASKET			
2.8	GLAND PACKING	GRAPHITE MOULDED RINGS WITH BRAIDED TOP & BOTTOM RINGS			
2.9	GLAND/GLAND FLANGE	NICKEL ALUMINIUM BRONZE	NES 747 PART II/IV OR NES 833 PART II/IV		
2.10	GLAND BUSH	PHOSPHOR BRONZE	BS 1490-LM6 LM25 TF		
2.11	BOLTS	NICKEL ALUMINIUM BRONZE	NES 833 PART II/IV		
2.12	NUTS	NICKEL ALUMINIUM BRONZE	NES 833 PART II/IV		
2.13	HOSE ADAPTOR (Instantaneous Female/male Coupling)	NICKEL ALUMINIUM BRONZE (WITH TWO PULL OUT TYPE LUGS)	NES 747 PART II/IV OR NES 833 PART II/IV (Dimensions As per IS: 5290, Fig-3, But With Two Lugs)		
2.14	BLANK CAP [ON IFC] (To be supplied with each Valve)	NICKEL ALUMINIUM BRONZE	NES 747 PART II/IV OR NES 833 PART II/IV (Dimn. as per IS: 5290, Fig-4)		
2.15	RING INSIDE IFC	SYNTHETIC RUBBER	BS 2751 BA 5		
2.16	SPRING INSIDE IFC	PHOSPHOR BRONZE	IS 7608 OR EQV.		
2.17	HANDLE WHEEL	CAST STEEL (GALVE)	ASTM A 216 WCB		
3 STATUTORY REQUIREMENTS					
3.1	PAINTING/S. TREATMENT		SMOOTH SURFACE		
3.2	TESTING HYDROSTATIC		AS PER BS 6755 PART I		
3.3	HYDROSTATIC TEST PRESSURE		BODY -15 Kg/Cm ² SEAT -11 Kg/ Cm ²		
3.4	PNEUMATIC TEST PRESSURE		7 Kg/Cm ²		
3.5	CERTIFICATION		TPIA (IACS)		
3.6	INSPECTION		TPIA (IACS)		



NB	L1(MAX)	H1(Open)	L2(Max)	H2 (Open)	L3 (Max)	H3 (Open)
40	215	200	140	240	200	190
50	245	200	160	260	200	190
65	270	230	165	290	260	220

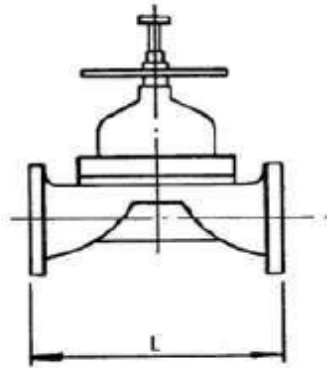
VALVE DATA SHEET

DIAPHRAGM VALVE

NAME OF PART	VALVE MATERIAL SPECIFICATION			
	NAB	GUNMETAL	STAINLESS STEEL	CARBON STEEL
BODY & BONNET	NAB NES 747 Part 2	Gun metal BS 1400 LG 4C	Stainless Steel ASTM A351 Gr CF8M	Carbon Steel ASTM A216 Gr WCB /A105
COMPRESSOR	NAB NES 833 Part 2	NAB NES 833 Part 2	Stainless Steel ASTM A 276 Gr T410	Stainless Steel ASTM A 276 Gr T410
SPINDLE	NAB NES 833 Part 2	NAB NES 833 Part 2	Stainless Steel ASTM A 276 Gr T410	Stainless Steel ASTM A 276 Gr T410
DIAPHRAGM	Butyl reinforced with Nylon BS 3227 Gr B-70	Butyl reinforced with Nylon BS 3227 Gr B-70	Butyl reinforced with Nylon BS 3227 Gr B-70	Butyl reinforced with Nylon BS 3227 Gr B-70
THRUST BEARING	Steel	Steel	Steel	Steel
PAD LOCK PLATE	Brass BS 2871 CZ 121 3 Pb	Brass BS 2871 CZ 121 3 Pb	Brass BS 2871 CZ 121 3 Pb	Brass BS 2871 CZ 121 3 Pb
DIAPHRAGM STUD	NAB NES 833 Part 2	NAB NES 833 Part 2	Stainless Steel ASTM A 276 Gr T410	Stainless Steel ASTM A 276 Gr T410
HAND WHEEL PIN	NAB NES 833 Part 2	NAB NES 833 Part 2	Stainless Steel ASTM A 276 Gr T410	Stainless Steel ASTM A 276 Gr T410
BOLTS & NUTS	NAB NES 862	NAB NES 862	Alloy Steel ASTM A193 Gr B7 (HDG) ASTM A194 Gr 2H(HDG)	Alloy Steel ASTM A193 Gr B7 (HDG) ASTM A194 Gr 2H(HDG)
HANDLE/ HANDWHEEL	Forged Steel ASTM a276 T410/ Cast Steel ASTM A351 Gr CF8M	Forged Steel ASTM a276 T410/ Cast Steel ASTM A351 Gr CF8M	Forged Steel ASTM a276 T410/ Cast Steel ASTM A351 Gr CF8M	Forged Steel ASTM a276 T410/ Cast Steel ASTM A351 Gr CF8M

Note:- Casting Quality Class 1 & 2 shall be applicable in accordance with NES 747 Part 2 for valves based on utilization in Hull and Line duties respectively.

DIAPHRAGM VALVE



***NOTE:**

Drawings attached in SOTR are for reference and clear understanding of valve only

DIMENSIONS AND QUANTITY REQUIREMENT
DIAPHRAGM VALVE DIMENSIONS

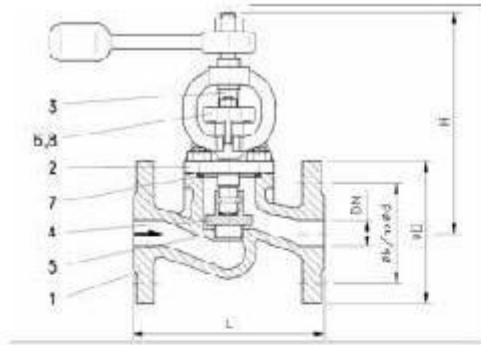
L-VALVE FACE TO FACE DIMENSIONS

SR. NO.	NOMINAL SIZE	DIMENSIONS	END CONNECTION	QTY. / SYSTEM	TOTAL QTY.
		L			
01	32	146			
02	40	159			
03	50	190			
04	65	216			
05	80	254			
06	100	305			

VALVE DATA SHEET					
GUN METAL SELF CLOSING VALVE					
1	GENERAL SPECIFICATION				
1.1	FLUID HANDLED	FW,CW,SW,FO,LO etc	1.7	BORE TYPE	FULL BORE
1.2	OP. PRESSURE	10 Kg/Cm2	1.8	END CONN.	FLANGED
1.3	OP. TEMPERATURE.	120 °C MAX.	1.9	FACE-TO-FACE DIST.	REF. NEXT PAGE
1.4	SIZE RANGE	REF. NEXT PAGE	1.10	FLANGE FACE	BS4504-3.3 (RAISED)
1.5	MATING PIPE SPECN.	90-10Cu-Ni (NES779)/CU (NES8371)/ASTM A106 GR.B	1.11	BODY TYPE	BOLTED BONNET TYPE
1.6	VALVE REF. DOC.	NES 375 / BS 5154	1.12	VALVE OPERATION	SELF CLOSING HANDLE
2	MATERIAL SPECIFICATION				
	PART	MATERIAL		SPECIFICATION	
2.1	BODY	GUN METAL		BS1400 LG4C	
2.2	COVER	GUN METAL		BS1400 LG4C	
2.3	STEM/SPINDLE	NICKEL ALUMINIUM BRONZE		BS 2874-CA 104/BS 2872 CA 102	
2.4	DISC/PLATE	NICKEL ALUMINIUM BRONZE		NES 747 PART II	
2.5	GLAND FLANGE	NICKEL ALUMINIUM BRONZE		NES 833 PART II	
2.6	GLAND PACKING	VITON B		WITH 68% FLUORINE	
2.7	BODY GASKET	ASBESTOS FREE		BS7531	
2.8	SPRING	MONEL/EQUIVALENT		K400	
2.9	GASKET	ASBESTOS FREE			
2.10	BOLTS/NUTS	NICKEL ALUMINIUM BRONZE		BS 2874-CA 104/BS 2872 CA 102	
2.11	SEAT RING	ALUMINIUM BRONZE		BS 1400 AB2	
3	STATUTORY REQUIREMENTS				
3.1	PAINTING/ SURFACE FINISH	SMOOTH SURFACE WITH METAL FINISH			
3.2	INSPECTION & TESTING	API 598			
3.3	TESTING HYDROSTATIC	AS PER BS 6755 PART I for RATE 'A'			
3.4	HYDROSTATIC TEST PRESSURE	BODY – 15 BAR SEAT – 11 BAR			
3.5	PNEUMATIC TEST PRESSURE	7 BAR WITH VALVE CLOSED CONDITION			
3.6	PRESSURE DROP TEST/ FLOW MEASUREMENT TEST	ACROSS VALVE			
3.7	CERTIFICATION	TPIA(IACS)			
3.8	INSPECTION	TPIA(IACS)			

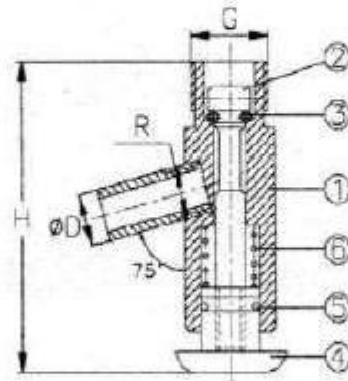
ANNEXURE-12B

SELF-CLOSING VALVE (FLANGED END)



Valve Diameter (NB)	Dimensions (mm)		
	L	D	H
15	130	95	195
20	150	105	195
25	160	115	195
32	180	200	200

SAMPLING VALVE



DIMENSION REQUIREMENT

Sr. No.	Valve Dia(NB)	H	D	END CONNECTION
1	15	195	9	¾" BSP
2	20	195	14	1" BSP
3	25	195	18	1 ¼" BSP
4	32	200	24	1 ½" BSP

***NOTE:**

Drawings attached in SOTR are for reference and clear understanding of valve only.

**FORMAT OF UNDERTAKING, TO BE FURNISHED ON COMPANY LETTER HEAD,
WITH REGARD TO BLACKLISTING/ NON- DEBARMENT, BY ORGANISATION**

UNDERTAKING REGARDING BLACKLISTING / NON – DEBARMENT

To,
Additional General Manager (TU)
Deck Machinery-Taratala Unit
P2/2 Taratala Road.
Kolkata 700088

1. This is to notify you that our Firm/Company/Organization <provide Name of the Firm/Company/Organization> intends to submit a proposal in response to invitation for EOI No: dated for providing In accordance with the above we declare that:

- a. We hereby confirm and declare that we, M/s -----
-----, have not been served Tender Holiday/Risk Purchase/blacklisted / De-registered/ debarred by any Government department/ Public Sector Undertaking/ Private Sector/ or any other agency for which we have Executed/ Undertaken the works/ Services during last 02 years.
- b. We are not involved in any major litigation that may have an impact of affecting or compromising the delivery of services as required under this assignment.

Sincerely,
[BIDDERS NAME]

Name

Title

Signature -----

Authorized Signatory /Date:

QUALIFYING CRITERIA MATRIX

TECHNICAL EVALUATION CRITERIA. Bidder(s) are required to submit all necessary documents indicated above. The technical proposal will be evaluated on the basis of the documents submitted along with the proposal. The Start-up firms and MSME firms will be given priority as per policy of MSME. Due preference (if any) will be given to ISO certified firm(s). The technical proposal will be evaluated on the basis of the Firm's experience along with its key personnel.

In the first stage, the technical proposal will be evaluated on the basis of the Firm's experience along with its key personnel. Only those Firms who secure 60 marks or more as per the technical evaluation criteria mentioned in Table below shall be declared as qualified for further proceeding of offer. Firms who have secured less than 60 marks are liable to be rejected. The details of as per Technical Evaluation criteria are tabulated below: -

Technical Evaluation Criteria				
Ser	Evaluation Criteria	Credit	Description	Remarks
1.	Production capacity	4 points in each sub Category (mentioned in Description column herein) (Total-32)	i. Covered fabrication shed ii. Material Handling Eqpt. iii. Secured Store / Warehouse iv. Foundry with induction furnace v. Facility for machine casting vi. Physical & Chemical Laboratory vii. Machine Shop viii. Rubber manufacturing facility	Details of each sub conditions to be furnished. The facility needs to be owned by the firm. Hired facilities will not attract any point.
2.	Production Experience with proof of supply	3 points in each sub Category (mentioned in Description column herein) (Total-24)	Experience of the firm in design and Manufacturing of following types of valves. Evaluation will be based on proof of supply of diversified valves of different categories during last 05 Years. At least proof of one order in each segment is to be produced for valves as below: - a) Butterfly valves b) Non-return valves c) Diaphragm valve d) Ball Valve e) Gate Valve f) Check Valve g) Pressure Relief Valve h) Any other category manufactured by collaborator also may be included from time to time if found suitable in the opinion of GRSE.	Details of valves along with certification from Client and relevant Purchase Orders/ documental proof of delivery are to be attached with the proposal

3.	Clients	2 + 2 points in each sub Category (mentioned in Description column herein)	i. Supply of valves for Marine applications ii. Supply of valves for Defence applications	Min. of 01 Purchase Order for each category.
4.	ISO 9000 or equivalent Certified Organization	5	Class Approved/ certified Production facility, ISO Certification.	Certificate copy to be given. Acceptable if certification for parent group is in order and the subject group is covered in the relevant ISO or equivalent certification
5.	No. of Employees	10	Min 50 Direct employees	Self-certification, company annual report copies may be furnished in support
6.	MSME	5	As per the Govt. of India guidelines for MSME.	Attach certification duly signed by authorized signatory
7.	Business profile	2+2 points in each sub Category (mentioned in Description column herein)	i) Business comfort over anywhere in India with evidential proof (versatility in projects executed). ii) Available resources to do business in overseas	Details of projects along with certification from Client to be attached with the bid.
8.	Financial Criteria	8+8 points in each sub Category	i) Positive net worth as per last audited balance sheet ii) Average turnover of more than Rs.15 cr in last three years	Audited balance sheets / annual reports are to be enclosed.
Min Qualifying Marks > 60, duly qualifying in each Essential Qualifying Criteria				

TO BE EXECUTED ON NON-JUDICIAL STAMP PAPER OF Rs. 110

INTEGRITY PACT

Between M/s. Garden Reach Shipbuilders & Engineers Limited (GRSE) hereinafter referred to as “The Principal”

and

..... hereinafter referred to as “ the Bidder / Contractor”

The Principal intends to award, under laid down organizational procedures, contract for..... The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness /transparency in its relations with its Capital Bidder(s)/ or Contractors(s).

In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principals mentioned above.

Section 1 - Commitments of the Principal

[1] The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles :-

- a. No employee of the Principal, personally or through family members, will in connection with the tender for , or the execution of a contract, demand, take a promise for or accept for self or third person, any material or immaterial benefit which the person is not legally entitled to.
- b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
- c. The principal will exclude from the process all known prejudiced persons

[2] If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2 – Commitments of the Bidder(s)/ Contractor(s)

[1] The Bidder(s) /Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

a. The Bidder(s) / Contractor(s) will not, directly or through any other person or Bidder(bidder), offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

b. The Bidder(s)/Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

c. The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s)/Contractor(s) will not use improperly, for purpose of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

d. The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly the Bidder(s) /Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s) /Contractor(s). Further as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only, copy of the "Guidelines on Indian agent of foreign Supplier" is annexed and marked as annex.

e. The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

[2] The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 – Disqualification from tender process and exclusion from future contracts.

If the Bidder(s)/Contractor(s) before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s) /Contractor(s) from the tender process or take action as per the extant procedure of the company.

Section 4 – Compensation for Damages.

- (1) If the *Principal* has disqualified the Bidder(s) from the tender process prior to the award according to section 3, the Principal is entitled to demand and recover the damages equivalent to earnest Money Deposit /Bid Security.
- (2) If the principal has terminated the contract according to section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent to Performance Bank Guarantee.

Section 5, - Previous Transgression

- (1) The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- (2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in “Guidelines on Banning of business dealing”.

Section 6 - Equal treatment of all Bidders / Contractors / Sub-contractors.

- (1) The Bidder(s) /Contractor(s) undertake(s) to demand from all sub-contractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.
- (2) The Principal will enter into agreements with identical conditions as this one with all Bidders, Contractors and Sub-contractors.
- (3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 – Criminal charges against violating Bidder(s) Contractor(s) / Sub-contractor(s)

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8 – Independent External Monitor /Monitors

- (1) The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- (2) The Monitor is not subject to instructions by the representative of the parties and perform his functions neutrally and independently. He reports to the Chairman GRSE.
- (3) The Bidder(s) /Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The

same is applicable to Subcontractors. The monitor is under contractual obligation to treat the information and documents of the Bidder(s) /Contractor(s) /Subcontractor(s) with confidentiality.

- (4) The Principal will *provide* to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor, The parties offer to the Monitor the option to participate in such meetings.
- (5) As soon as the Monitor notices, or supplier/ies to notice, a violation of this agreement, he will so inform the Manae-protalent of the Principal and request the Manae-protalent to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations.

Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

- (6) The Monitor will submit a written report to the Chairman, GRSE within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.
- (7) Monitor shall be entitled to compensation on the same terms as being extended to / provided to Independent Directors on the GRSE Board.
- (8) If the Monitor has reported to the Chairman GRSE a substantiated suspicion of an offence under relevant IPC/PC Act, and the Chairman GRSE has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.
- (9) The word '**Monitor**' would include both singular and plural.

Section 9 – Pact Duration:

This pact begins when both parties have legally signed it. It expires for the Contractor 18 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded.

If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by Chairman of GRSE.

Section 10 – Other provisions:

- 1) This agreement is subject to Indian Law. Place of performance and jurisdiction is the Registered Office of the Principal i.e. Kolkata.
- 2) Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- 3) If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

- 4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

(For & On behalf of the Principal)

(For & On behalf of Bidder/Contractor)

(Office Seal)

(Office Seal)

Place.....

Date.....

Witness 1:

(Name & Address)

.....

.....

Witness 2:

(Name & Address)

NON – DISCLOSURE AGREEMENT

This Non-Disclosure Agreement executed thisDay of2021.

Between

GARDEN REACH SHIPBUILDERS & ENGINEERS LIMITED, a company incorporated under the provisions of the Companies Act, 1956, having its Registered Office at 43/46, Garden Reach Road, Kolkata – 700024, hereinafter referred to as “**GRSE**” (which expression shall unless excluded by or repugnant to the subject or context be deemed to mean and include its successors-in-interest, administrators and assigns) of the **FIRST PART**.

AND

M/s _____ (with full address)., (which expression shall unless excluded by or repugnant to the subject or context be deemed to mean and include its successors-in-interest, administrators and assigns) of the **SECOND PART**.

WHEREAS

For purpose of this Agreement, GRSE that discloses confidential information is herein after referred to as the “Disclosing Party” and M/s _____, that receives and or accesses confidential information here under is herein after referred to as ‘Recipient’

WHEREAS _____ - being considered inter alia for the purpose of _____ and as such some of the drawings/documents in connection with the said work are required to be disclosed which shall be treated as confidential and the said _____, shall not disclose or part with such drawings/documents to any other third party, without prior written consent from GRSE.

AND WHEREAS the said M/s _____, is obliged to execute an undertaking in the form of “Non-Disclosure Agreement” on handing over of GRSE and/or Designated Buyer owned data drawings/ documents and also confidential/proprietary drawings or technical information of any other party, as the case may be, to them by GRSE, duly promising and/or undertaking to keep and treat such data, drawings/documents as strictly ‘confidential’.

NOW THEREFORE both GRSE and M/s _____, do hereby agree as follows in the premises aforesaid:-

1. In the Premises aforesaid it is agreed as follows :
 - a) During all discussion and subsequent agreement if any between the parties herein, if any, for execution of the job and also for a period of 10 years from the date of Expiry and/or foreclosure and/or termination of the said agreement, M/s _____, the recipient, undertakes that the data, drawings/ documents so received in any form whatsoever shall be:
 - i) Protected and kept as strictly confidential by them.
 - ii) Disclosed to and used only by the persons within the organization of M/s _____, who have a need to know solely for the purpose as described above and for execution of the work if awarded by GRSE

subsequently subject to their taking due care and protection of the system and data.

- iii) Used in whole or in part solely for the purpose intended and for execution of the work if awarded by GRSE subsequently in the manner as ordered by GRSE or to be ordered from time to time exclusively and shall not be exploited for any other purpose or customers.
 - iv) Neither disclosed nor cause to be disclosed directly or indirectly to any third party.
 - v) Neither be copied nor otherwise be reproduced, in whole or in part without prior express consent from GRSE.
 - vi) Returned to GRSE forthwith on demand at any point of time and upon immediate foreclosure /expiry of the contract if subsequently entered.
2. Nothing in this agreement or the disclosure of the information or data or systems, to be intended to be granted or shall be construed as granting to M/s _____, any rights, title, interest or license other than the right to use such data, drawings/documents etc for the purpose intended and for the execution of the contract/job if subsequently awarded by GRSE and shall not be exploited for any other purpose or customers and the property in all the information/data/drawings or documents disclosed by GRSE to M/s _____. In this regard for the purpose of post-bid meeting/discussions or for execution of job if any, to be subsequently awarded by GRSE shall, subject to the rights of the owner, rest with GRSE.
 3. Neither party shall resort to any publicity or advertising in respect of this agreement or the subject matter thereof and the subject matter of PO and/ or _____ any Agreement, if any, to be entered into subsequently.
 4. M/s _____. shall not make any copies or duplicate in anyway in whole or part any information without the prior written consent of GRSE and where such copies or reproductions are permitted in accordance with this clause, M/s _____. shall treat them strictly confidential in accordance with the provisions of this agreement and comply with the instructions of GRSE with regard to the protection and disposal of them.
 5. Expiry, foreclosure or termination of PO or any or all of the subsequent agreements entered into by GRSE and the said M/s _____, if any, in pursuance of the agreed scope, shall not relieve M/s _____ of their obligations under these presents which shall be effective and remain effective and in full force, for a period of 10 years from the date of such expiry/foreclosure/termination.
 6. In the event of expiry, foreclosure or termination, M/s _____. shall forthwith return to GRSE, all data and drawings/documents as received by them during tenure of the PO and/or subsequent agreements.
 7. Neither party shall assign any PO and / or any Agreement, if any, to be subsequently entered into, without the written consent of the other and should there be any re-organization, merger, take over or the like, its successor-in-interest shall be bound by the conditions of this Agreement.

8. Failure to enforce any provision of this agreement and/or failure to initiate timely action, will not construe to be waiver and GRSE shall be freely entitled to enforce the provisions of this agreement at any appropriate time thereafter.
9. M/s _____. shall indemnify and hold harmless GRSE from and against any action, claim or proceeding and any loss, damage, costs, expenses or liabilities arising out of such action, claim or proceedings, brought by any third party pursuant to any unauthorized disclosure or use of any data/document/drawings/information by M/s _____, or by any person for whom M/s _____ is responsible under this agreement, or pursuant to any breach of any undertaking, warranty or representation contained in this Agreement.
10. This agreement shall be governed under the Indian Laws and the Courts in the city of Kolkata shall have exclusive jurisdiction to try determine and adjudicate any disputes arising between the parties in relation to this agreement.
11. GRSE' standard arbitration clause as contained in Annexure – I shall apply to this agreement for resolution of disputes between the parties.

IN WITNESS WHEREOF the parties have hereunto set and subscribed their respective hands and seals on the day, month and year first above written.

FOR GARDEN REACH SHIPBUILDERS & ENGINEERS LTD	FOR M/s _____,
Signature :	Signature :
Name :	Name :
Address :	Address :

WITNESS 1	WITNESS 2
Signature :	Signature :
Name :	Name :
Address :	Address :

CHECK LIST FOR PARTICIPATING FIRM

Sr. No	Question	Bidder's response (YES/NO)
1	Is the bidder a registered company in India?	
2.	Is the bidder registered in any other country?	
3	Does the bidder have the requisite experience available to execute the quantum of job indicated in the EOI document?	
4	Does the bidder have past experience in executing orders for valves?	
5	Does the bidder have an average annual turnover of more than 15 Cr. INR in the last three financial Years?	
6	Is the firm presently having a positive net worth?	
7	Is the firm have been served 'Tender Holiday/Risk Purchase/Blacklisted' by any Govt. or Indian State Govt. agency for any reason, whatsoever?	
8	Is the firm submitting an approach and methodology for the services to be provided?	
9	Is the firm already supplying valves to GRSE?	

Sample Price Bid Format
(Not to be filled)

S.No.	Item Description	Material	Size	MOQ	Rate per piece Without taxes / duties	Taxes / Duties

GENERAL Terms and Conditions

1. Offer against this EOI should be submitted along with prescribed documents only.
2. Offer against this EOI received after due date and time shall not be accepted under any circumstances and shall be returned unopened. No further correspondence on such responses shall be entertained.
3. Respondents, if so desire, may be present in 'Offer against this EOI Opening' on production of authorization / Identity certificate. Only one person from each firm will be allowed to be present. However, no separate intimation shall be sent by GRSE in this aspect.
4. Offer against this EOI submitted should be free from correction, over-writing, use of white Ink etc. However, if any correction is inevitable, the same be authenticated with signature and seal of the firm.
5. All the information/details required to be properly filled in Offer against this EOI and no column should be left blank or should not be filled with ambiguous/ incorrect details.
6. Each page of Offer against this EOI (**including Annexure**) should be dated and signed along with seal of the firm.
7. Canvassing in any form shall render the submitted Offer against this EOI liable for rejection.
8. The firm has to comply with mutually agreed non-disclosure agreement in the event of placement of order.
9. **Standard Note:** -
 - I. For the purpose of this EOI 'Firm' or collaborator means a proprietary/partnership/LLP/Rate Contract firm with a legal entity recognized under Indian laws, and in case of a foreign company, should be registered under the laws of such foreign country and eligible to participate in Government of India bid process.
 - II. The firm shall not be in the list of entities blacklisted/ barred from participating in any tender of Government of India or any PSUs.
 - III. Applicants may regularly visit the above website to keep themselves updated regarding clarification/amendments/ time extension etc, if any against the above EOI.
 - IV. The bidder / interested Party must have a valid GST registration certificate.

For any query please contact:

Mr Manas Kumar Naskar, DGM(S&M), DKMC ; Tel: 033-2469 8138/39,
M-9163361820; or email at naskar.manaskumar@grse.co.in.

All queries are to be sent within the shortest possible time but not later than 7 (Seven) days before the due date of closure of EOI.

10. **Evaluation Process**

- i) Response from the vendors will be shortlisted based on the evaluation/qualifying criteria given in this document.
- ii) The minimum evaluation process is to identify the capable firm for empanelling them in GRSE vendor list.
- iii) GRSE Committee (Evaluation Committee) shall evaluate proposals of the Vendors and all supporting documents & documentary evidence. The committee may seek additional documents as it deems necessary.
- iv) The decision of the GRSE Evaluation Committee in the evaluation of proposals to the Expression of Interest shall be final. No correspondence will be entertained outside the evaluation process of the Committee.
- v) The Evaluation Committee reserves the right to reject any or all proposals.

11. **Cost of Response To EOI**

The bidder shall bear all the costs associated with the preparation and submission of its proposal, and GRSE will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the evaluation process including cancellation of the EOI.

12. **Content of Response to EOI Documents**

The bidder is expected to examine the EOI documents carefully, including all instructions, forms, terms and specifications. Failure to furnish all required information may result in rejection of the vendors. GRSE decision in this regard is final.

13. **Clarification on Response**

To assist in examination, evaluation and comparison of applications, GRSE may at its discretion, seek from the bidder individual clarification if so required. The request for clarification and the response shall be in writing, fax or e-mail.

14. **GRSE Right to Accept or To Reject Applications**

GRSE reserves the right to accept or reject any or all the Applications, either in part or full, or the right not to accept the Response, without assigning any reasons thereof, whatsoever. In case of any dispute GRSE Evaluation Committee decision in the matter shall be final and legally binding on the Vendors.

15. Response: The bidder's response to GRSE and any annotations or accompanying documentation shall be in **English** Language only.

16. All copies of documents submitted along with EOI should be clear, legible and self-certified by the Authorized representative of the Applicant.

17. GRSE reserves the right to physically check the original documents / certificates, the copies of which are submitted along with EOI.

18. The Response shall be signed by a duly authorized person of the firm which is responding to the EOI, and in the case of a corporation, seal, or otherwise appropriately executed under seal.

19. Bidder shall clearly indicate their legal constitution and furnish documentary evidence thereof by way of authenticated copies of relevant documents and the person signing the proposal shall state his capacity and also the source of his authority to bind the vendors. The power of Attorney or authorization, or any other document constituting adequate proof of the authority of the signatory to bind the vendors, shall be annexed to the proposal submitted. GRSE may reject out- right any Response unsupported by adequate proof of the signatory's authority.

20. The documents of response must be uploaded in GRSE portal / sent through Speed Post / Courier in complete in all respects. Incomplete/ late Responses are liable to be rejected. Physical documents (if any) are to reach to the contact person within the due date / time of offer submission. Same is the responsibility of the bidder / responder.

21. GRSE may nominate reputed members of the Industry/ Academia to assist the Evaluation Committee in scrutinizing the response/application to the EOI.

22. The mode of delivering questions is **through E-Mail only**. No other mode of query shall be entertained. The queries may be raised in the following format.

S. No.	Page No of EOI	Clause of the EOI	Clarification required

N.B: GRSE will endeavour to provide timely response to all queries. However, GRSE makes no representation or warranty as to the completeness or accuracy of any response made in good faith, nor does GRSE undertake to answer all the queries that have been posed by the applicants. The responses to the queries from all Applicants may be posted online /published.

23. **Patent and Copyrights**

Collaborator should assure GRSE that there is no infringement of any patent or industrial or intellectual property right occasioned by the supply, transfer of designs, documents and connected materials, which are the subject matter the Supply / Purchase order or Contract materials, which is likely to be concluded in case your firm is selected.

An undertaking by the service provider to indemnify GRSE against all costs, expenses and claims of damages made by the third party arising from any alleged infringement of patent or industrial/ intellectual property rights arising or resulting from use of the materials is to be provided. All documentation, results/reports/data used for the respective Cases will be the sole property of GRSE.

Commercial terms & conditions: -

1. **Scope of Supply:** Will be as per requirement of GRSE.
2. **Term of Prices:** Price is to be firm and fixed till execution of the order. No price escalation will be allowed at any stage during contract period. Quoted price to be in INR only.
3. **Terms of Delivery:** Material is to be delivered GRSE Store Kolkata / Destination places as decided by GRSE on case to case basis, on free Door Delivery basis ("Delivered at Place"-DAP Basis-Incoterm 2010). Packing, Forwarding, Freight and Insurance charge is to be borne by the supplier. Prior confirmation for delivery store location to be obtained from ordering department.

4. **Dispatch:** Before dispatch, firm is to ensure incorporation of material code provided by GRSE. While despatching, each item and boxes should be identified with Code No. provided by GRSE properly. Packing list will also indicate GRSE provided Code No(s). against each item and respective Box No. and LOT no. Item of different LOTS is mandatorily required to be packed in separate box. Material should be packed properly to prevent any damage, rusting, ingress of water, dust etc. Each consignment is to be supplied along with the following 05 copies of documents (not for Payment) as applicable:

- (i) GST invoices
- (ii) Delivery challan
- (iii) Packing list
- (iv) Copy of Pre-Despatch Inspection clearance certificate issued by relevant inspection agency
- (v) Copy of Warranty certificate
- (vi) Packing list

5. **Delivery schedule:** Required delivery date will be provided by GRSE on case to case basis.

6. **Inspection Authority:** Required pre-despatch inspection authority, if any will be provided by GRSE on case to case basis. Wherever there is any inspection by Third-party or Class the inspection charges will be borne by GRSE at actual or will be paid by GRSE directly to TPI agency. The inspection certificates will be made in the name of GRSE.

7. Payment Terms:

For Supply:

- (a) 90% of supply value as reduced by any deductibles and / or the amount leviable towards liquidated damages, if any plus 100% taxes, duties etc as applicable will be paid through ECS/NEFT against receipt and acceptance of material at GRSE .
- (b) Balance 10% payment will be made through ECS/NEFT on submission of bill supported with clear receipt inspection certificate (ICGRN) with Performance Bank Guarantee (PBG) of 10% as per GRSE format, which shall remain valid

till expiry of the guarantee period or balance 10% will be made after guaranty period.

The benefits for start-up /MSE will be provided by GRSE and payment terms will be mutually agreed during finalization of MOA/MOU.

8. Type test charges: The type test charges, if any, for a particular item to a particular supplier is payable for one time. 100% of the Type test charges will be paid to the firms as per finalized price or at actual whichever is lower after completion of all required type test against submission of invoice along with Type completion certificate and proof of payment documents to the concern lab. The type test certificate will be issued in the name of GRSE.

9. Submission of Bills by supplier and payment mode :- Suppliers/vendors to submit bills for payment complete in all respects along with all relevant documents as required as per terms of order, to the bill receiving counter located at the gate of each unit of GRSE. For submission, of each Bill is to be packed in sealed envelope superscribing the following details on the envelope:

- i. Purchase Order No.
- ii. Vendor Code (As per PO)
- iii. Bill No/ Invoice No.
- iv. Name of the person/ employee to whom bill is addressed for processing
- v. A transition fee of Rs. 500/- will be charged in case of first return of bill(s) due to inappropriate/incomplete/faulty submission of documents. A transition fee of Rs. 1000/- will be charged in case of each subsequent return of the bill(s) for the same.

All the payments to indigenous bidders due shall be made through Real Time Gross Settlement (RTGS) / National Electronic Fund Transfer (NEFT).

10. Guarantee/ Warrantee Clause:

(a) The required warranty period (not exceeding 48 months) will be provided by GRSE on case to case basis against improper design, defective materials and faulty workmanship. During guarantee/ warrantee period any equipment or component thereof supplied by the vendor, suffers due to defective material and or due to improper design and or due to defective drawing or due to faulty workmanship the vendor will assume full responsibility of rectification of such defective equipment or component thereof including direct expenses related to removal and re-positioning of the replacement/repaired equipment or component thereof and subsequent test & trial, incurred thereon without any financial implication to GRSE. Issues/Defects related to Guarantee/Warranty shall have to be liquidated at the location of vessel and/or as desired by the Purchaser / Owner, at no extra cost. Warranty shall be applicable in accordance with scheduled delivery of items as per tender / PO. Warrantee period will be applicable on LOT basis and date of receipt of last item of LOT shall be reckoned for warrantee period.

During warrantee period, firm has to confirm within 5 days of intimation, their action plan and arrange liquidation of Guarantee Defect within 25 days, failing which GRSE may invoke Risk Purchase and may arrange liquidation of GD/replacement of items from alternative source at risk and cost of firm. However, warrantee period will be

remaining intact as per T&C of P.O. even after liquidation of GD from alternative Source.

The supplier cannot absolve their responsibility for warranty of materials even though it is inspected & approved by the inspection authorities. If the defects are not remedied within a reasonable /stipulated time, GRSE may proceed to rectify the defects at Supplier's risk & cost, but without prejudice to GRSE's rights under the contract.

11. Liquidated Damage (L.D):

In the event of delay in supply beyond the contractual delivery period, Liquidated Damages will be imposed @ ½% per week or part thereof, subject to a maximum of 5% of the undelivered portion of the order of the delayed part. The liquidated damage would be deducted from the invoice of supplier / vendor at the time of release of the payment. However, LD percentage may vary on case to case basis.

12. CANCELLATION OF ORDER:

- a) The Purchaser reserves the right to cancel an order forthwith without any financial implications on either side, if on completion of 50% of the scheduled delivery/Completion period the progress of manufacture/Supply is not to the satisfaction of Purchaser and failure on the part of the Bidder/Supplier/Contractor to comply with the delivery schedule is inevitable. In such an event the Supplier shall repay all the advances together with interest at prevailing bank rates from the date of receipt of such advances till date of repayment. The title of any property delivered to Purchaser will be reverted to the Supplier at his cost.
- b) In case of breach / non-compliance of any of the agreed terms & conditions of order / contract. GRSE reserves the right to recover consequential damages from the Supplier on account of such premature termination of contract.
- c) In case of delay beyond agreed period for liquidated damages or 10 weeks from contractual delivery period or unsatisfactory progress before contractual delivery period, GRSE reserves the right to cancel the order and procure the order items / services from any available source at GRSE's option & discretion and entirely at your risk and cost. Extra expenditure incurred by GRSE in doing will be recoverable from Supplier.

13. Risk Purchase:

For unsatisfactory progress even before contractual delivery date or delay in delivery, GRSE shall have the right to cancel the part order/ whole contract and procure materials & services from alternative source completely at the suppliers risk and cost.

14. Option Clause:

GRSE retains the right to place order for additional quantities up to a maximum of 100% of the tendered quantity against this tender, at the same rate and Terms and Conditions. Such an option shall be available during the finalization of contracts.

15. Non- Disclosure Agreement of the contract Document:

Except with the written consent of the Buyer/Indian Navy, other party shall not disclose the contract or any provision, specification, plan, design, pattern, sample or information thereof to any third Party. Bidder has to execute the NDA signing during

the EOI stage.

16. Additional Information:

GRSE shall not be bound by any conditions or provisions in the sellers bid form or acknowledgement of contract, invoices, packing list and any other documents which purport to impose any conditions at variance with the EOI/MOA/MOU/PO terms. Wherever bidders provide additional information/requirements in their response bid/offer to this EOI, GRSE may consider the same only if these are in line with EOI requirements, discussed by bidder and recorded in relevant Minutes of Meeting.

17. Indigenization:

OEM/Suppliers while participating in bid shall clearly indicate the indigenous content in % terms in their letter head along with bid document . Bidders shall provide details on list of items being imported, proposed indigenization content, model and plan towards indigenization in their offer. The proposed indigenization plan shall be formulated in such a manner that there is a progressive increase towards indigenization as well as items from first ship set to the last.

18. Taxes & Duties:

Taxes applicable at the time of delivery. Firm to confirm that GST rate and HSN/SAC Code for the quoted items indicated in their offer.

19. Exchange Rate Variation and Custom Duty :

Is not reimbursable and not payable .

20. Goods and Service Tax(GST):

- i. Firm shall follow all the provisions/requirements/timelines promulgated by the Government of India from time to time with reference to GST compliance. GST as per GST laws shall be payable extra as agreed.
- ii. Firm shall be responsible for the financial and non-financial consequences in case of non-compliance of GST provisions/requirements/timelines on their part.
- iii. The HSN code to informed by the firm and GST rate will be incorporated in P.Os.) The code must be in accordance with GST Laws. GRSE shall not be responsible for any error in HSN code for goods & /or services specified by supplier / contractor. Supplier / contractor shall pay penalty and / or interest imposed on GRSE or any loss due to delay in availing ITC by GRSE or any loss of Input Tax Credit (ITC) to GRSE due to errors by vendors at any stage. GRSE reserves right to recover any such interest, penalty or loss from any amount due to supplier / contractor or otherwise.
- iv. In case, GRSE is unable to avail ITC, supplier / contractor at their own cost shall rectify the shortcoming in the returns to be filed immediately thereafter. Further, if the ITC is delayed / denied to GRSE / reversed subsequently as per GST Laws due to non / delayed receipt of goods and / or services and / or tax invoice or expiry of timelines prescribed in GST Laws of availing ITC, non-payment of taxes or non-filing of returns or any other reason not attributable to GRSE, supplier / contractor shall pay any loss of amount along with interest and penalty on GRSE under GST Laws for the number of days the ITC was delayed. If the short coming is not rectified by supplier / contractor and GRSE ends up in reversal of credits and / or payments, supplier / contractor is fully

- liable for making good all the loss incurred by GRSE. GRSE reserves right to recover any interest, penalty or loss from any amount due to Supplier / contractor or otherwise.
- v. GRSE GSTIN is 19AAACG9371K1Z4 and vendor shall mention the same while invoicing and avoid any data entry error on GST portal.
 - vi. Vendor shall ensure timely submission of invoice as per the provisions / requirement / timeline promulgated by GOI in relation to GST Law with all required supporting documents to enable GRSE to avail input tax credit promptly. The vendors invoice inter alia should contain GSTIN of vendor, GSTIN of GRSE (i.e 19AAACG9371K1Z4), GST tax rate separately, HSN code wise goods or services, place of supply, signature of vendor, etc. Original invoice needs to be submitted to Bill Receipt Centre at GRSE , Main Unit, and a copy of the invoice should be given to the goods receiving section (GRS).
 - vii. Vendor shall file all applicable returns under GST Laws in the stipulated time & any losses of tax credit to GRSE arising due to delay in filing will be recovered from their invoice wherever GRSE is eligible to avail tax credit. Any default towards payment of tax and / or uploading of monthly returns by supplier / contractor, GRSE retains right to withhold payments towards tax portion until the same is corrected & complied by the supplier / contractor with the requirement of GST along with satisfactory evidence.
 - viii. Supplier will not be entitled to any increase in rate of taxes & duties occurring during the period of extended delivery completion schedule if there is delay in supplies/completions attributed to him. However , if there is a decrease in in Taxes & Duties , the same must be passed on to GRSE.
 - ix. Wherever all-inclusive prices are quoted by the supplier without bifurcation of tax element , no escalation can be considered in respect of any variation in statutory levies arising subsequently because of the absence of the required base figures in the purchase order.
 - x. Income tax applicable on cost of services rendered in India in relation to the P.O , shall be payable by supplier.
TDS on GST or any other charges will be deducted as per Govt. guidelines.

21. Earnest Money Deposit :

EMD will be 2% of tender value subject to maximum **Rs. 5,00,000(Five Lac only)**. Vendor need to submit EMD in form of bank D.D. in favour of Garden Reach Shipbuilders & Engineers Limited payable at Kolkata. The EMD submitted by the successful bidder will be converted to SDBG, the successful bidder required to submit balance SDBG amount separately. IF the EMD is submitted in form of BG , the same is required to valid upto 06 month from bid opening date. The bidder submitted MSE registered firms having the tendered items listed in their MSE documents will be eligible for exemption from submitting EMD . Non-submission of EMD or a valid MSE certified may lead to offer rejection.

22. **Security Deposit Bank Guarantee (SDBG): On case to case and being decided by GRSE**

- (a) Seller will submit SDBG in GRSE format 5% of total order value excluding Taxes , Duties, freight etc. payable in Indian Rupees for Indian supplier .
- (b) SDBG shall be submitted within 25 days of date of transmission of P.O .
- (c) SDBG shall be shall be from Bank of International repute (Excluding Co-operative Bank) as updated by SBI from time to time.

(d) Seller should advise their banker to send BG directly to Finance Department of GRSE in Bank's sealed envelope to dispense with additional step of verification of authenticity of signatories.

(e) In case of failure to submit the Security Deposit within 25 days of transmission of the order, GRSE reserves the right to cancel the order invoking the risk purchase clause.

(f) SD will be returned without interest within 15 days after satisfactory execution of order for all line items in all respects. Hence, SD should be kept valid till completion of contract plus one month for settlement period

(g) In case delivery completion is likely to be delayed, the validity of the SDBG shall be extended suitably till the completion of delivery on instruction from GRSE. In case of non extension/ non renewal as requested, GRSE shall encash the BG before expiry of its validity period.

(h) In the event of failure to submit the Security Deposit within 25 days of transmission of the order, but commenced the work, interest will be levied for the delayed period of submission @ LIBOR plus 2%. Also, the same shall be applicable for delayed period of extension of validity.

(i) In the event of failure to execute the order satisfactorily, the Security Deposit will be encashed by GRSE after notification of 14 days.

(j) In case of non-extension / non-renewal as requested as per P.O terms, GRSE shall encash the BG before expiry of its validity period after notification of 14 days.

23. Performance Bank Guarantee (PBG): On case to case and being decided by GRSE

- (a) Separate PBGs for supply value for 10% of each part order value excluding taxes, duties shall be submitted along with the claim for balance payment of 10%.
- (b) PBGs shall be kept valid till completion of respective warranty period plus one month. In case supply of items is delayed, PBG to be extended accordingly. GRSE also reserve the right to encash the PBGs for non-compliance of contractual obligation.
- (c) GRSE shall release balance 10% payment against submission of PBG(s) of 10% or after expiry of respective warranty period with no pending warranty obligation certificate issued by concern berth officer of GRSE.
- (d) The Performance Bank Guarantee in favour of Garden Reach Shipbuilders & Engineers Limited shall be from Nationalised / Scheduled Banks or Banks of International repute excluding Co-operative banks.
- (e) PBG shall be submitted after completion of Delivery of Equipment.

24. Progress Report

Supplier will submit progress report/ bar chart as decided by GRSE on case to case basis. GRSE team will also visit on-site to monitor progress on as required basis.

25. Packing & Forwarding :

Shall be arranged by Supplier at their cost. However, Supplier to ensure that all materials are properly packed (Spares in PIP in a separate box) to withstand transit damage / pilferage during transit.

All OB Spares and B&D Spares are to be supplied in PIP Packing. OB Spares, B&D Spares and tools are to be supplied in separate boxes with clear identification and part numbers in metallic or plastic tag with identical description in the respective packing list(s). Each box shall have a separate packing list attached with the detailed description mentioned and marking done on it. Supplier's representative is required during receipt inspection of loose items, accessories, spares and tools for easy identification and detection of shortfall.

Packing List of Supplier shall compulsorily indicate the item codes provided by GRSE and respective Supplier Item codes for each of the supplied items.

26. Dispute resolution mechanism (DRM):-

(a) Any dispute/differences between the parties arising out of and in connection with the contract shall be settled amicably by mutual negotiations.

(b) In case of non-settlement by (a) above, if at any time, before, during or after the contract period any unsettled claim, dispute or difference arose between the parties, upon or in relation to or in connection with or in any way touching or concerning this tender/agreement/order/contract, the same shall be referred to the concerned Functional Director.

(c) The Functional Director shall then nominate an Executive of the rank of General Manager whom he thinks fit and competent or a Committee of Executives who/which shall then scrutinize the claims/disputes that have been referred to the concerned functional Director and make efforts for amicable settlements by mutual discussions/negotiations.

(d) In case no amicable settlement is arrived by (b) above within a period of three months, then the Supplier/Contractor shall approach Public Grievance Cell and address the disputes as per the provisions made under the relevant clause of the contract.

(e) In case the issues/disputes do not get settled within a period of six months from the date of submission of the dispute to the Grievance Cell, then the Supplier/Contractor may invoke Arbitration Clause of the contract

27. Arbitration:

a) If at any time, before during or after the contract period, any unsettled claim, question, dispute or difference arises between the parties, upon or in relation to or in connection with or in any way touching or concerning this order, the same shall be settled/adjudicated through Arbitration to be conducted by a Sole Arbitrator, to be appointed by the parties on mutual consent, in accordance with the provisions of the Arbitration and Conciliation Act, 1996.

b) In the event the parties fail to mutually appoint a Sole Arbitrator within 30 days from the receipt of a request by one party from the other, then either of the parties may approach the Hon'ble High Court at Calcutta under the provisions of the Arbitration and Conciliation Act, 1996 for appointment of a Sole Arbitrator by the Hon'ble Court.

c) Such arbitration shall, in all respects, be conducted in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and the rules framed there under or any statutory modification or re-enactment thereof for the time being in force.

d) The Award of the Sole Arbitrator shall be final, conclusive and binding upon the parties.

e) In the event of the death or resignation or incapacity or whatsoever of the said Sole Arbitrator if appointed by the parties mutually the said parties may again appoint a suitable Substitute Arbitrator in place of the erstwhile Sole Arbitrator to continue with the proceedings. In the event of appointment of the Sole Arbitrator by the Hon'ble High Court at Calcutta on death or resignation or incapacity or whatsoever of the said Sole Arbitrator, either of the parties in this behalf, may make an application to the Hon'ble High Court at Calcutta for appointment of a Substitute Arbitrator and the Hon'ble Court may pass such orders as it deems fit and proper.

f) Also in the event an Arbitration award is set aside by a competent court the parties may appoint a Sole Arbitrator mutually or on failing to appoint a Sole Arbitrator mutually within the statutory period then either of the parties may file an application before the Hon'ble High Court at Calcutta under the provisions of the Arbitration and Conciliation Act, 1996 for appointment of a Sole Arbitrator by the Hon'ble Court in accordance with the provisions of the Arbitration and Conciliation Act.

g) The cost of the arbitration, fees of the arbitrator, remuneration of the stenographer and clerk, stamp paper etc. shall be shared equally by the parties, unless otherwise directed by the Sole Arbitrator. The venue of arbitration shall be at Kolkata and unless otherwise decided by the parties or by the Sole Arbitrator himself, the venue shall be the premises of Garden Reach Shipbuilders & Engineers Ltd. located at 43/46, Garden Reach Road, Kolkata 700 024.

h) The language of the proceeding shall be in English."

28. Force Majeure:

Should any force majeure circumstances arise, each of the contracting party shall be excused for the non-fulfilment or for the delayed fulfilment of any of its contractual obligations, if the affected party within 15 days of its occurrence informs the other party in writing.

Force majeure shall mean fires, floods, natural calamities or other acts such as war, turmoils, strikes (as not limited to be establishment of the seller), sabotage, explosions, quarantine restrictions beyond the control of either party.

It is understood and agreed between the parties hereto that the rights and obligations of the parties shall be deemed to be in suspension during the continuance of the force majeure event as aforesaid and the said rights and obligations shall automatically revive upon the cessation of the intervening force majeure event. The period within which the rights and obligations of the parties shall be in suspension due to force majeure event shall not be considered as a delay with respect to the period of delivery and / or acceptance of delivery under the contract or otherwise to the detriment of either party.

Notwithstanding the provisions of the immediately foregoing clauses it is further understood and agreed between the parties hereto that in the event of any force majeure persisting for an uninterrupted period exceeding 6 (six) months, either party hereto reserves the right to terminate this contract upon giving prior written notice of 30 (thirty) days to the other party of the intention to terminate without any liability other than reimbursement on the terms provided in this agreement for the goods received.

29. Foreclosure:

If at any time after acceptance of the order and during execution of Contract, GRSE may decide to abandon/reduce the scope of the supply for any reason whatsoever and hence not require the whole or part of the supply to be carried out, GRSE shall give notice in writing to that effect to the Supplier and the Supplier shall act accordingly in the matter. The Supplier/contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the supply in full, but which he did not derive in consequence of the foreclosure of the whole or part of the Contract/Order. The Supplier shall be paid at contract rates full amount for supply executed till the date of issue of foreclosure notice.

Provided always that against any payments due to the contractor on this account or otherwise, GRSE shall be entitled to recover or be credited with any outstanding material due from the Supplier for advance paid in respect of any materials and any other sums which at the date of termination were recoverable by GRSE from the contractor under the terms of the contract.

30. Rejection Replacement:

Any equipment found defective/rejected, Supplier will collect the same, all incidental charges to be borne by them, within 30 days from the date of intimation to Supplier of such rejection.

GRSE/IN reserves the right to dispose of the rejected items at the end of a total period of 40 days in any manner to the best advantage to GRSE /IN & recover storage charges and any consequence damage from sale proceeds of such disposal.

31. Individuality of Contract:

Each order shall be treated as an individual contract under umbrella of collaboration agreement /MOA/MOU, shall not allow any general lien to the portions and shall not get any prejudice in execution due to situation arising out of some other contract that supplier may have entered into with GRSE.

32. Governing Jurisdiction:

All contracts shall be deemed to have been wholly made in Kolkata and all claims there under are payable in Kolkata City and it is the distinct condition of the order that no suit or action for the purpose of enforcing any claim in respect of the order shall be instituted in any Court other than that situated in Kolkata City, West Bengal State, India.

33. Indemnity:

Bidder shall hold harmless and keep GRSE indemnified against all claims arising as a result of infringement of any patent rights on account of manufacture sale or use of articles covered by this order.

34. Purchasers property:

All property (such as materials, drawings, documents etc. issued by GRSE or any other individual or firm on behalf of GRSE in connection with the contract shall remain confidential, being the property of GRSE and you shall undertake to return all such property so issued and will be responsible for any or all loss thereof and damage thereto resulting from whatever causes and shall reimburse GRSE the full amount of loss and damage. On completion of work in compartment of Ship you must ensure that the place is left in a reasonably clean state and all scrap is transferred to nearby scrap-bins.

35. Immunity of Government of India:

It is expressly understood and agreed by and between bidder and GRSE that GRSE is entering into this contract solely on its own behalf and not on behalf of any other person or entity. In particular, it is expressly understood and agreed that Govt. of India is not a party to this agreement and has no liabilities, obligations or rights hereunder. It is expressly understood and agreed that GRSE is an independent legal entity with power and authority to enter into contracts solely in its own behalf under applicable Laws of India and general principles of Contract Law. You expressly agree, acknowledge and understand that GRSE is not an agent, representative or delegate of the Govt. of India. It is further understood and agreed that the Govt. of India is not and shall not be liable for any acts, Omissions and Commissions, breaches or other wrongs arising out of the contract. Accordingly you hereby expressly waive, release and forego any and all actions or claims, including cross claims, impleader claims or counter claims against the Govt. of India arising out of this contract and covenants not to sue the Govt. of India as to any manner, claim, and cause of action or thing whatsoever arising of or under this agreement.

36. Undue Influence:

The Seller undertakes that he has not given, offered or promised to give, directly or indirectly any gift, consideration, reward, commission, fees brokerage or inducement to any person in service of the Buyer or otherwise in procuring the Contracts or forbearing to do or for having done or for borne to do any act in relation to the obtaining or execution of the Contract or any other Contract with the Government for showing or forbearing to show favour or disfavour to any person in relation to the Contract or any other Contract with the Government. Any breach of the aforesaid undertaking by the seller or any one employed by him or acting on his behalf (whether with or without the knowledge of the seller) or the commission of any offence by the seller or anyone employed by him or acting on his behalf, as defined in Chapter IX of the Indian Penal Code, 1860 or the Prevention of Corruption Act,

1988 or any other Act enacted for the prevention of corruption shall entitle the Buyer to cancel the contract and all or any other contracts with the seller and recover from the seller the amount of any loss arising from such cancellation. A decision of the buyer or his nominee to the effect that a breach of the undertaking had been committed shall be final and binding on the Seller.

Giving or offering of any gift, bribe or inducement or any attempt at any such act on behalf of the seller towards any officer/employee of the buyer or to any other person in a position to influence any officer/employee of the Buyer for showing any favour in relation to this or any other contract, shall render the Seller to such liability/penalty as the Buyer may deem proper, including but not limited to termination of the contract, imposition of penal damages, forfeiture of the Bank Guarantee and refund of the amounts paid by the Buyer.

37. Firm confirm whether they have registered with SSI / NSIC / MSME / GRSE / NONE.
If yes, request indicate category along with supporting certificate.

38. STACS: All other terms and conditions will be applicable are as per GRSE's latest STACS.

