



TENDER NOTICE

MAT/CSH4/006/20-21

13th June 2020

Dear Sirs,

Tender for Supply of Valves and Fittings under Rate Contract

1. Sealed tenders are invited in duplicate for Supply of Valves and Fittings under Rate Contract for various vessels at Cochin Shipyard Limited, Cochin. The Bidder shall read and imbibe the technical specification, CSL requirements, prequalification criteria and instructions to bidder in full. Submission of offer shall be only after full understanding of the tender requirements.
2. A Pre-bid meeting shall be held at office of the General Manager (Materials) at CSL. The purpose of the meeting will be to clarify or address doubts / suggestions, modifications, if any on the bid document and to address queries on any issues that may be raised at that stage. Any modification of the tender documents which may become necessary as a result of the pre-bid meeting shall be issued by CSL through the issuance of amendment/corrigendum. Any modification of the tender documents which may become necessary as a result of the pre- bid meeting shall be made by CSL exclusively through the issuance of an amendment/corrigendum against tender. The amendment will be notified only on CSL/Govt websites and no separate paper advertisements will be issued.

3. Mode of submission of offers

- a) Offers should be submitted in two separate sealed covers superscribed as PART-I "TECHNO-COMMERCIAL" & PART-II "PRICE" each indicating the tender number (MAT/CSH4/006/20-21 dated 13th June 2020), due date and name & address of the bidders with Title - Tender for Supply of Valves and Fittings under Rate Contract. **Only Hard copies of offers in duplicate are expected to be submitted and soft copy of offers will not be entertained.** Tenders are to be addressed to The Assistant General manager (Materials), Materials Department, Cochin Shipyard Limited, Cochin, and are to be deposited in the tender box at Materials Department, Cochin Shipyard Limited., Cochin.
- b) Following to be noted/complied/submitted with regard to the tender in addition to general tender requirements.
 - i. Submission of EMD along with offer (Please refer clause No (32) of Annexure- 2 for details.
 - ii. Pre-bid meeting (refer clause (30) of Annexure- 2)
 - iii. Prequalification criteria as per clause (29) of Annexure-2 & Annexure-5
 - iv. Price Format (Unpriced format) as per Annexure-4.
 - v. Filled General Terms & Conditions as per Annexure-2.
 - vi. Agreement to CSL concept of valve rate contract as per below
 - a) Valid rate contract with fixed rates for 3 years
 - b) Acceptance of rate contract with no limitation on order value /quantity/group of valve during the tenure of the contract
 - c) Agreement to entering into contract with no estimation on requirement quantities
 - d) Acceptance of partial contracts for various groups/ sizes
 - e) Agreement to standard lead times during the tenure of the contract irrespective of quantity
 - vii. The types of valves with technical details proposed to be covered in this rate contract are listed in Annexure 2.



- viii. The Methodology of Lowest Bidder (L1) arrival:
The comparison of rates shall be based on total unit cost quoted for each valve for 3 years.ie (Year 1+Year 2+Year 3) excluding taxes. However, contracts shall be awarded for each group of valve to a single firm. ("Type" refers to category of valve viz. Butterfly valve, Globe valve etc. "Group" refers to valves of various sizes/pressure rating/ orientation under a type eg: Remote operated Butterfly valve, manual operated butterfly valve etc.)
4. Offers received without EMD, Prequalification Criteria (with supporting documents), Price format (unpriced format) and filled General Terms & Conditions as stipulated will not be considered for the further process of tender. Offers meeting the pre qualification criteria are only eligible and those offers only shall be considered for techno commercial evaluation. Offers received without complying the prequalification criteria will be summarily rejected without any further communication from CSL side.
5. Cardinal dates of the tender are as below:
- Date of Pre-Bid Meeting : **26th June 2020 at 03:00 PM** Indian Standard Time
- Last date of submission of offers : **14th July 2020 at 11:00 AM** Indian Standard Time
(Techno commercial bids including price bid)
- Tender opening date and time : **14th July 2020 at 11:30 AM**, Indian Standard Time
(Techno commercial offer only).

Only Techno –commercial (Part I) bids will be opened on scheduled tender opening date and time.

6. Firm's representative will not be permitted to attend the techno commercial bid opening. Price bid opening shall be intimated to techno commercially acceptable bidders and shall be opened in presence of authorized representative of techno commercially accepted bidders who wish to be present.
7. The bidder shall be familiar with the various rules and regulations, provisions and requirements (including tax related, import related etc.) in India for effecting material supply to Cochin, India.
8. Contact person for any queries related to the tender.
Mr. Lalin T Divan, Deputy Manager (Materials Department)
Phone No : +91484 2501249
Mobile : 8138917186

List of Annexures :-

- Annexure-1 – Purchase Technical Specification
Annexure-2 – General Terms & Conditions.
Annexure-3 – Bank Guarantee Format
Annexure-4 – Price bid format
Annexure-5 – Prequalification Criteria.
Annexure-6 – Integrity Pact
Annexure-7 – Earnest Money Deposit format.


Assistant General Manager
Materials Department
रोबी वर्गीस/ROBY VARGHESE
सहायक महा प्रबंधक
Assistant General Manager
कोचीन शिपयार्ड लिमिटेड
Cochin Shipyard Ltd.
कोच्ची / Kochi - 682 015

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COCHIN SHIPYARD LIMITED
TECHNICAL SPECIFICATION FOR SUPPLY OF VALVES AND MUD BOXES

1. SCOPE OF SUPPLY

Rate contract to be established for Valves and fittings as per TECHNICAL SPECIFICATION (Annexure -A) and PRICE FORMAT (Annexure -B) for various vessels to be constructed by COCHIN SHIPYARD.

2. RULES AND REGULATION

The fittings shall comply with the requirements of respective rules and regulations details of which will be furnished with the respective Purchase Orders.

3. CONDITIONS OF SUPPLY

- a) Valves shall be as per specification attached. Any deviation shall be clearly mentioned in the quotation itself.
- b) Preliminary drawings/catalogue showing dimensions, material and weight shall be furnished with quotation. List of standard spares shall be furnished with the offer.
- c) Within two weeks after placement of order, manufacturer shall submit detailed dimensional drawings for our approval.
- d) All valves shall be manufactured and tested in accordance with the rules and regulations of classification society, in the presence of surveyor as indicated in the requirement of each project.

Classification society(s) assigned for each project will be mentioned in the respective Purchase order. Certification charges shall be quoted separately.

- e) The certificate of survey shall be submitted together with the test records.
- f) All other items shall be inspected by Cochin shipyard's representative or a third party authorized by Cochin shipyard, confined to the following aspects.
 - 1) General soundness of casting and dimensional accuracy as per approved drawing.
 - 2) Hydraulic pressure test on body and seat.
- g) Manufacture test certificate & material feasibility shall be included in the documentation. Original plus 3 copies of material and hydraulic test certificates shall be furnished at the time of supply of the item.
- h) There shall be no trace of Asbestos in items supplied. Maker should provide asbestos free certificate.
- i) All valves are to be supplied with non tearable metal/plastic tags showing Yard No, Tag No. & Material code punched on them for easy identification. Details of which will be

furnished along with respective P.O s and List of valves. These tags are to be securely attached to prevent same from being lost during transportation & handling.

- j) For S.D.N.R (Non return) valves the hand wheel shall be painted in red.
- k) Unit price for following items for each size of valves shall be submitted.
 - i. Pneumatic actuators for Ball valves (refer spec. A.8 & A.8A).
 - ii. Ex. proof double acting actuator with single solenoid and limit switch (refer spec. B.1, B.1A, B.2, B.3, B.4, B.4A, B.5 & B.6) with explosion proof certification (ATEX) for Zone 1, EEx d. In case of valves to be located in hazardous zone, explosion proof actuator required. In that cases normal actuator is to be replaced with explosion proof, this will be specified in P.O.
 - iii. Double acting actuator with single solenoid.
 - iv. Hand lever for Butterfly valves.
 - v. Stainless steel lever for butterfly valves. In special cases stainless steel lever may be required.
 - vi. Gearbox with hand wheel for butterfly valves.
 - vii. Electrical actuators (Digital Interface) with a hand wheel and limit switches (Potential free contact) for remote indication of Open & Close conditions suitable for valves coming in specs B.1, B.1A, B.2, B.3, B.4, B.4A, B.5 & B.6
- l) The following markings shall be cast/ forged integrally with the body:
 - 1) Nominal bore
 - 2) Direction of flow
 - 3) Flange rating shall be punched on the flanges After Machining.
 - 4) Direction of opening and closing on the hand wheel.
- m) All documents and markings shall be in **ENGLISH** and in **metric** system.
- n) Valves shall be suitable for service conditions indicated in each specification. Wherever sea water mentioned in service special care shall be taken for selection of material, which should be suitable for sea water application in order to avoid any kind of failure in valves and its components like pin, spring etc.
- o) Hand wheels/ Levers for operation of valves shall be suitable for marine environment.
- p) Coatings for valves shall be clearly mentioned in the offer.

4. PRESERVATION

Recommended method of preservation, if applicable, and name of preservatives shall be indicated. (Relative humidity at Cochin is around 80%).

5. WARRANTY

Manufacturer shall guarantee all the items for any defect in design, material and workmanship for a period as mentioned on the commercial terms and conditions. Any item found defective during this period shall be replaced free of cost.

A.1 STAINLESS STEEL BALL VALVE – PN16/PN40 (SCREWED)**A1.1 SCOPE**

Full bore, two pieces, Ball valves with BSPP female threaded ends shall be supplied. Valve shall have anti blow out stem.

A1.2 HYDRAULIC INSPECTION

	PN16	PN40
SEAT	17.6 KG/CM ²	45 KG/CM ²
BODY	24 KG/CM ²	51 KG/CM ²

A1.3 MATERIAL

PART	MATERIAL	
BODY	STAINLESS STEEL- ASTM A351 CF8M	OR EQUIVALENT
BALL	STAINLESS STEEL -ASTM A351 CF8M	
STEM	AISI 316	
SEAT	P.T.F.E	

A1.4 DIMENSIONS

Dimensions as per MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A1.5 SERVICE CONDITIONS.

Service	SEWAGE/Comp. Air / Sea water/oil
Design Working pressure	9 Bar/30 Bar
Working temperature	<60°C

Note:

Rating	Size of the valves (NB)					
	3/8"	1/2"	3/4"	1"	1 ¼"	1 ½"
PN16	(10NB)	(15NB)	(20NB)	(25NB)	(32NB)	(40NB)
PN40	(10NB)	(15NB)	(20NB)	(25NB)	(32NB)	(40NB)

A.1A STAINLESS STEEL BALL VALVE – PN16 (SCREWED)**A1A.1 SCOPE**

Full bore, two piece design **having metal seating** with BSPP female threaded ends shall be supplied. Valve shall have anti blow out stem.

A1A.2 HYDRAULIC INSPECTION

	PN16
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A1A.3 MATERIAL

PART	MATERIAL	
BODY	STAINLESS STEEL- ASTM A351 CF8M	OR EQUIVALENT
BALL	STAINLESS STEEL -ASTM A351 CF8M	
STEM	AISI 316	

A1A.4 DIMENSIONS

Dimensions as per MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A1A.5 SERVICE CONDITIONS.

Service	Exhaust
Design Working pressure	6 Bar
Working temperature	450°C

Note:

Rating	Size of the valves (NB)					
	3/8"	1/2"	3/4"	1"	1 ¼"	1 ½"
PN16	(10NB)	(15NB)	(20NB)	(25NB)	(32NB)	(40NB)

A. 2 BRASS BALL VALVE – PN16 (SCREWED)**A2.1 SCOPE**

Full bore, two piece, Ball valves with BSPP female threaded ends shall be supplied. Valve shall have anti blow out stem.

A2.2 HYDRAULIC INSPECTION

SEAT	18 KG/CM ²
BODY	24 KG/CM ²

A2.3 MATERIAL

PART	MATERIAL
BODY	BRASS - BS2872 CZ132 / CZ122
BALL	HARD CROMATED BRASS BS2872 CZ132 / CZ122
STEM	BRASS - BS2872 CZ132 / CZ122
SEAT	P.T.F.E

A2.4 DIMENSIONS

Dimensions as per MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A2.5 SERVICE CONDITIONS.

Service	DRINKING WATER/ F.O
Design Working pressure	9 Bar
Working temperature	Normal to 90°C

Note:

Rating	Size of the valves (NB)					
	3/8"	1/2"	3/4"	1"	1 ¼"	1 ½"
PN16	(10NB)	(15NB)	(20NB)	(25NB)	(32NB)	(40NB)

A.3 BALL VALVE 64 KG/CM² (SCREWED)**A3.1 SCOPE**

Full bore, two piece, side entry type, Ball valves with BSPP female threaded ends shall be supplied. Valve shall have anti blow out stem.

A3.2 HYDRAULIC INSPECTION

As per maker standard.

A3.3 MATERIAL

PART	MATERIAL
BODY	STAINLESS STEEL ASTM A351 CF8M
BALL	STAINLESS STEEL ASTM A351 CF8M
SEAT & GLAND	P.T.F.E
STEM	AISI 316

A3.4 DIMENSIONS

Dimensions as per makers standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A3.5 SERVICE CONDITIONS.

Service	Hydraulic oil.
Working temperature	Normal.
Design Working pressure	63 Bar.

Note:

Rating	Size of the valves (NB)					
	3/8"	1/2"	3/4"	1"	1 ¼"	1 ½"
PN64	(10NB)	(15NB)	(20NB)	(25NB)	(32NB)	(40NB)

A.4 STAINLESS STEEL BALL VALVE – PN16 (FLANGED)

A4.1 SCOPE

Full bore, two-way Ball valves of design having anti blow out stem with integral flanged ends shall be supplied. Flanges shall be as per **DIN 2501 PN16** (Flat faced) drilled off center.

A4.2 HYDRAULIC INSPECTION

ITEM	BALL VALVE (PN16)
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A4.3 MATERIAL

PART	MATERIAL
BODY	STAINLESS STEEL 1.4408 (AISI 316)
BALL	STAINLESS STEEL 1.4408 (AISI 316)
STEM	STAINLESS STEEL 1.4401 (AISI 316)
SEAT	P.T.F.E

A4.4 DIMENSIONS

Face to Face dimensions shall be as per EN 558 Series 27. Detailed drawing including weight of the valve shall be submitted along with the offer.

A4.5 SERVICE CONDITIONS.

Service	SEWAGE/Comp. Air/SEA WATER
Design Working pressure	6 bar/ 9 bar
Working temperature	Normal

Note:

Rating	Size of the valves (NB)											
	15	20	25	32	40	50	65	80	100	125	150	200

A.4A STAINLESS STEEL BALL VALVE – PN40 (FLANGED)**A4A.1 SCOPE**

Full bore, two-way Ball valves of design having anti blow out stem with integral flanged ends shall be supplied. Flanges shall be as per **DIN 2501 PN40** (Flat faced) drilled off center.

A4A.2 HYDRAULIC INSPECTION

ITEM	BALL VALVE (PN40)
SEAT	44 KG/CM ²
BODY	60 KG/CM ²

A4A.3 MATERIAL

PART	MATERIAL
BODY	STAINLESS STEEL 1.4408 (AISI 316)
BALL	STAINLESS STEEL 1.4408 (AISI 316)
STEM	STAINLESS STEEL 1.4401 (AISI 316)
SEAT	P.T.F.E

A4A.4 DIMENSIONS

Face to Face dimensions shall be as per EN 558 Series 27. Detailed drawing including weight of the valve shall be submitted along with the offer.

A4A.5 SERVICE CONDITIONS.

Service	Comp.Air
Design Working pressure	33 bar
Working temperature	Normal

Note:

Rating	Size of the valves (NB)										
	15	20	25	32	40	50	65	80	100	125	150

A. 5A DUCTILE CAST IRON BALL VALVE – PN16 (FLANGED)**A5A.1 SCOPE**

Full bore two-way Ball valves of design having anti blow out stem, integral flanged ends and non-ferrous internals shall be supplied. Flanges shall be as per DIN 2501-PN16 (Flat faced) drilled off center.

A5A.2 HYDRAULIC INSPECTION

ITEM	BALL VALVE (PN16)
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A5.3 MATERIAL

PART	MATERIAL
BODY	GGG- 40.3
BALL	HARD CROMATED BRASS BS 2872 CZ122
STEM	BRASS - BS 2872 CZ122
SEAT	P.T.F.E

A5A.4 DIMENSIONS

Face to Face dimensions shall be as per EN 558 Series 14/15. Detailed drawing including weight of the valve shall be submitted along with the offer.

A5A.5 SERVICE CONDITIONS.

Service	BILGE/ LUB OIL/SEWAGE
Design Working pressure	7.5 Bar
Working temperature	Normal

Note:

Rating	Size of the valves (NB)											
	15	20	25	32	40	50	65	80	100	125	150	200

A.6 FORGED STEEL BALL VALVE - PN64 (FLANGED)**A6.1 SCOPE**

Full bore Ball valves having; anti blow out stem, integral flanged ends drilled as per **DIN 2636-PN64** off Center shall be supplied.

A6.2 SERVICE CONDITIONS.

Service LUB OIL.

A6.3 HYDRAULIC INSPECTION

As per maker standard.

A6.4 MATERIAL

PART	MATERIAL	
BODY	A 105	OR EQUIVALENT
SEAT RING	P.T.F.E	
STEM	AISI 316	
BALL	AISI 316	
Lever	C.S + Vinyl	

A6.5 DIMENSIONS

Dimensions as per makers standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A6.6 SERVICE CONDITIONS.

Service Hydraulic Oil.
Design Working pressure 64 Bar.

Note:

Rating	Size of the valves (NB)									
	PN64	15	20	25	32	40	50	65	80	100

A. 7 GUNMETAL BALL VALVE – PN16 (FLANGED)

A7.1 SCOPE

Full bore, two-way Ball valves of design having anti blow out stem, integral flanged ends and non-ferrous internals shall be supplied. Flanges shall be as per **DIN 2501 PN16** (Flat faced) drilled off center.

A7.2 HYDRAULIC INSPECTION

ITEM	BALL VALVE (PN16)
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A7.3 MATERIAL

PART	MATERIAL
BODY	GUNMETAL BS 1400 LG2 / Rg5
BALL	HARD CROMATED BRASS BS 2872 CZ122
STEM	BRASS - BS 2872 CZ122
SEAT	P.T.F.E

A7.4 DIMENSIONS

Face to Face dimensions shall be as per EN 558 Series 14/15. Detailed drawing including weight of the valve shall be submitted along with the offer.

A7.5 SERVICE CONDITIONS.

Service Oil/Fresh water/Bilge/Sea water
 Design Working pressure 6 bar/ 9 bar
 Working temperature Normal

Note:

Rating	Size of the valves (NB)											
	15	20	25	32	40	50	65	80	100	125	150	200

A. 8 REMOTE OPERATED GUNMETAL BALL VALVE – PN16 (FLANGED)

A8.1 SCOPE

Full bore, two-way remote operated Ball valves of design having anti blow out stem, integral flanged ends and non-ferrous internals shall be supplied. Actuators shall be double acting pneumatic actuator & single acting solenoid valve type. The actuator unit has to be provided with limit switches for remote indication of Open & Close conditions of the valve in the ship's centralized monitoring system. The circuit voltage is 24V DC. Local operation provision on power failure on solenoid valve (manual override) must be provided. Flanges shall be as per **DIN 2501 PN16** (Flat faced) drilled off center.

A8.2 HYDRAULIC INSPECTION

ITEM	BALL VALVE
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A8.3 MATERIAL

PART	MATERIAL
BODY	GUNMETAL BS 1400 LG2 / Rg5
BALL	HARD CROMATED BRASS BS 2872 CZ122
STEM	BRASS - BS 2872 CZ122
SEAT	P.T.F.E

A8.4 DIMENSIONS

Face to Face dimensions shall be as per EN 558 Series 14/15. Detailed drawing including weight of the valve shall be submitted along with the offer.

A8.5 SERVICE CONDITIONS

Service	Tank Wash
Design Working pressure	12 Bar
Working temperature	10°C to 120°C
Control Air Pressure	7 Bar

Note:

Rating	Size of the valves (NB)											
	15	20	25	32	40	50	65	80	100	125	150	200
PN16												

A. 8A REMOTE OPERATED STAINLESS STEEL BALL VALVE – PN16 (FLANGED)**A8A.1 SCOPE**

Full bore, two-way remote operated Ball valves of design having anti blow out stem, integral flanged ends and non-ferrous internals shall be supplied. Actuators shall be double acting pneumatic actuator & single acting solenoid valve type. The actuator unit has to be provided with limit switches for remote indication of Open & Close conditions of the valve in the ship's centralized monitoring system. The circuit voltage is 24V DC. Local operation provision on power failure on solenoid valve (manual override) must be provided. Flanges shall be as per **DIN 2501 PN16** (Flat faced) drilled off center.

A8A.2 HYDRAULIC INSPECTION

ITEM	BALL VALVE
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A8A.3 MATERIAL

PART	MATERIAL
BODY	STAINLESS STEEL 1.4408 (AISI 316)
BALL	STAINLESS STEEL 1.4408 (AISI 316)
STEM	STAINLESS STEEL 1.4401 (AISI 316)
SEAT	P.T.F.E

A8A.4 DIMENSIONS

Face to Face dimensions shall be as per EN 558 Series 14/15. Detailed drawing including weight of the valve shall be submitted along with the offer.

A8A.5 SERVICE CONDITIONS

Service	Tank Wash
Design Working pressure	12 Bar
Working temperature	10°C to 120°C
Control Air Pressure	7 Bar

Note:

Rating	Size of the valves (NB)												
	15	20	25	32	40	50	65	80	100	125	150	200	
PN16													

A.9 CAST STEEL 3-WAY BALL VALVE PN 16 (FLANGED)

A9.1 SCOPE

Marine steel 3-way ball valves having 'L' port with floating ball and integral flanged ends shall be supplied. Valve shall have anti blow out stem. Flanges shall be as per DIN 2501 PN16 (Flat faced) drilled off center.

A9.2 HYDRAULIC INSPECTION

SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A9.3 MATERIAL

PART	MATERIAL
BODY	CAST STEEL – GSC25
BALL	HARD CROMATED BRASS BS 2872 CZ122
SEAT	P.T.F.E
STEM & GLAND	Brass CZ122

A9.4 DIMENSIONS

Dimensions as per maker standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A9.5 SERVICE CONDITIONS.

Service	Bilge/Fuel
Design Working pressure	6 Bar
Working temperature	10°C to 120°C

Note:

Rating	Size of the valves (NB)												
	15	20	25	32	40	50	65	80	100	125	150	200	
PN16													

A.10 GUNMETAL 3-WAY BALL VALVE PN 16 (SCREWED)**A10.1 SCOPE**

Gunmetal 3-way ball valves having 'L' port with floating ball and BSPP female threaded connection on each ends shall be supplied. Valve shall have anti blow out stem.

A10.2 HYDRAULIC INSPECTION

SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A10.3 MATERIAL

PART	MATERIAL
BODY	GUNMETAL BS 1400 LG2 / Rg5
BALL	HARD CROMATED BRASS BS 2872 CZ122
SEAT	P.T.F.E
STEM & GLAND	Brass CZ122

A10.4 DIMENSIONS

Dimensions as per maker standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A10.5 SERVICE CONDITIONS.

Service	Fuel oil
Design Working pressure	3 Bar
Working temperature	10°C to 120°C

Note:

Rating	Size of the valves (NB)					
PN16	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)	1 ½" (40NB)

A.11 MARINE CAST IRON GATE VALVE (BRONZE TRIM)-PN10/PN16

A11.1 SCOPE

Marine cast iron gate (sluice) valves shall be supplied. The valves shall have flanged ends, bolted bonnet, inside screw non-rising stem, renewable seat ring and open-shut indicator. Valve shall be provided with back seat arrangement/ integral collar on the spindle. Flanges shall be as per DIN 2501 PN10/PN16 (**Flat faced**) drilled off centre and back side of bolt holes shall be spot faced. For valves 100 NB and above drain plug shall be provided at the bottom.

A11.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	VALVE (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A11.3 MATERIAL

PART	MATERIAL		
	JIS	ASTM	OR EQUIVALENT
BODY, BONNET & WEDGE	G5501 FC 20	ASTM A48 CLS40	
WEDGE RING & SEAT RING	H5111 BC 6	ASTM B 505 C836	
SPINDLE	C3771 BD	ASTM B 139 ALOY521	
GLANDPACKING	MAKER STD.		
HAND WHEEL	G5501 FC 20	MALLEABLE IRON	

A11.4 DIMENSIONS

Face to face dimensions shall be DIN 3202 F4 / ISO 5752 Series 14 Standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A11.5 SERVICE CONDITIONS.

Service SOIL / SEWAGE/ SEA WATER
 Design Working pressure 6 bar
 Working temperature Max. 120°C

Note:

Rating	Size of the valves (NB)							
PN10								200
PN16	40	50	65	80	100	125	150	200

A.11A DUCTILE CAST IRON GATE VALVE (BRONZE TRIM)-PN10/PN16**A11A.1 SCOPE**

Marine ductile cast Iron Gate (sluice) valves shall be supplied. The valves shall have flanged ends, bolted bonnet, inside screw non-rising stem, renewable seat ring and open-shut indicator. Valve shall be provided with back seat arrangement/ integral collar on the spindle. Flanges shall be as per DIN 2501 PN10/PN16 (**Flat faced**) drilled off centre and back side of bolt holes shall be spot faced. For valves 100 NB and above drain plug shall be provided at the bottom.

A11A.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	VALVE (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A11A.3 MATERIAL

PART	MATERIAL		OR EQUIVALENT
	JIS	ASTM	
BODY, BONNET & WEDGE	G 5502 FCD 45	ASTM A536 65-45-12	
WEDGE RING & SEAT RING	H5111 BC 6	ASTM B 505 C836	
SPINDLE	C3771 BD	ASTM B 139 ALOY521	
GLANDPACKING	MAKER STD.		
HAND WHEEL	G5501 FC 20	MALLEABLE IRON	

A11A.4 DIMENSIONS

Face to face dimensions shall be DIN 3202 F4 / ISO 5752 Series 14 Standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

Note: Heavy duty limit switches taking open/close remote indication suitable for 220V AC/24V DC shall be quoted separately for these valves.

A11A.5 SERVICE CONDITIONS.

Service SOIL / SEWAGE/ SEA WATER
 Design Working pressure 6 bar
 Working temperature Max. 120°C

Note:

Rating	Size of the valves (NB)															
									200	250	300	350	400	450	500	600
PN10																
PN16	40	50	65	80	100	125	150	200								

A.12 MARINE GUNMETAL GATE VALVE (BRONZE TRIM)-PN10/PN16

A12.1 SCOPE

Marine gunmetal gate (sluice) valves shall be supplied. The valves shall have flanged ends, bolted bonnet/Union bonnet, inside screw non-rising stem, open and shut indicator and renewable seat ring for valves above 25 NB. Valve shall be provided with back seat arrangement/ integral collar on the spindle. Flanges shall be as per DIN 2501 PN10/PN16 (**Flat faced**) drilled off centre. For valves 100 NB and above drain plug shall be provided at the bottom.

A12.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	VALVE (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A12.3 MATERIAL

PART	MATERIAL		
	JIS	ASTM	OR EQUIVALENT
BODY, BONNET & WEDGE	H5111 BC 6	ASTM B 505 C836	
WEDGE RING & SEAT RING	H5111 BC 6	ASTM B 505 C836	
SPINDLE	C3771 BD	ASTM B 139 ALOY521	
GLANDPACKING	MAKER STD.		
HAND WHEEL	G5501 FC 20	MALLEABLE IRON	

A12.4 DIMENSIONS

Face to face dimensions shall be DIN 3202 F4 / ISO 5752 Series 14 Standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A12.5 SERVICE CONDITIONS.

Service SOIL / SEWAGE/ SEA WATER
 Design Working pressure 6 bar
 Working temperature Normal

Note:

Rating	Size of the valves (NB)									
	PN10								200	250
PN16	40	50	65	80	100	125	150			

A.13 MARINE BRONZE GLOBE VALVE - PN16 (SCREWED)**A13.1 SCOPE**

Marine bronze screw down screw lift (S.D.S.L) metal seated globe straight way valve having union bonnet, outside screw, rising stem, regulation valve disc and screwed BSPP female ends shall be supplied.

A13.2 HYDRAULIC INSPECTION

ITEM	S.D.S.L VALVES
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A13.3 MATERIAL

PART	MATERIAL	
	BS	ASTM
BODY, BONNET	BS 1400 LG2 / Rg5	B 505 C 836
DISC	BS 1400 LG2 / Rg5	B 505 C 836
STEM	BS 2872 CZ 122	B124 C37700
GLANDPACKING	MAKER STD.	
HAND WHEEL	CAST IRON	

A13.4 DIMENSIONS

Dimensions shall be as per relevant MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A13.5 SERVICE CONDITIONS.

Service Fresh Water/ Oil.
Design Working pressure 6 Bar.

Note:

Rating	Size of the valves (NB)						
PN16	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)	1 ½" (40NB)	2" (50NB)

A.14 MARINE FORGED STEEL GLOBE VALVE – PN40 (SCREWED)**A14.1 SCOPE**

Forged steel, screw down screw lift (S.D.S.L) metal seated globe valves, straight way, union / Bolted bonnet, rising stem having regulation disc shall be supplied. End connections shall be screwed BSPP female.

A14.2 HYDRAULIC INSPECTION

ITEM	S.D.S.L VALVE
SEAT	45 KG/CM ²
BODY	51 KG/CM ²

A14.3 MATERIAL

PART	MATERIAL
BODY, BONNET	A 105
DISC	A217-CA15
SPINDLE	A276-410
GLAND PACKING	PTFE
HAND WHEEL	Aluminum

A14.4 DIMENSIONS

Dimensions shall be as per relevant MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A14.5 SERVICE CONDITIONS.

Service	Compressed Air
Design Working pressure	30 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)					
PN40	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)	1 ½" (40NB)

A.15 MARINE GUNMETAL GLOBE VALVE – PN40 (SCREWED)**A15.1 SCOPE**

Gunmetal screw down screw lift (S.D.S.L) metal seated globe straight way valve having union / Bolted bonnet, outside screw, rising stem and screwed BSPP female ends shall be supplied.

A15.2 HYDRAULIC INSPECTION

ITEM	S.D.S.L VALVES
SEAT	45 KG/CM ²
BODY	51 KG/CM ²

A15.3 MATERIAL

PART	MATERIAL
BODY, BONNET	GUN METAL LG2 / Rg5
DISC	STAINLESS STEEL
SEAT	STAINLESS STEEL/ Stellite
SPINDLE	STAINLESS STEEL
GLAND PACKING	PTFE
HAND WHEEL	CAST IRON

A15.4 DIMENSIONS

All Dimensions shall be as per manufacturer's standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A15.5 SERVICE CONDITIONS.

Service Compressed Air
Design Working pressure 30 Bar

Note:

Rating	Size of the valves (NB)					
	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)	1 ½" (40NB)
PN40						

A.16 STAINLESS STEEL GLOBE VALVE – PN16/PN40 (SCREWED)**A16.1 SCOPE**

Marine stainless steel S.D.S.L (screw down screw lift) union bonnet globe stop valves having screwed BSPP female ends, outside screw, rising stem and valve disc shall be supplied.

A16.2 HYDRAULIC INSPECTION

	PN16	PN40
SEAT	17.6 KG/CM ²	45 KG/CM ²
BODY	24 KG/CM ²	51 KG/CM ²

A16.3 MATERIAL

PART	MATERIAL
	ASTM
BODY, BONNET	STAINLESS STEEL 1.4408 (AISI 316)
DISC, SPINDLE	STAINLESS STEEL 1.4436 (AISI 316)
GLAND PACKING	MAKER STD.
HAND WHEEL	NODULAR CAST IRON

A16.4 DIMENSIONS

Dimensions as per relevant MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A16.5 SERVICE CONDITIONS.

Service	Sea Water/ Compressed Air
Design Working pressure	7 Bar / 30 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)					
	PN16	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)
PN40	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)	1 ½" (40NB)

A.17 MARINE CAST IRON REGULATING GLOBE VALVE – PN16/PN10 (FLANGED)

A17.1 SCOPE

Marine cast iron screw down screw lift (S.D.S.L) globe regulation valve with bronze internals shall be supplied. The valve shall have flanged ends, bolted yoke type bonnet, outside screw, rising stem, open and shut indicator, renewable seat ring and regulating disc. Flanges shall be as per DIN 2501 PN16 / PN10 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. **Supplier may quote for both angle and straight type.**

A17.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	VALVE (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A17.3 MATERIAL

PART	MATERIAL	
	BS	ASTM
BODY, BONNET	CAST IRON Grade 250	A 48 CLS 40
REGULATING DISC & SEAT RING	BS1400 LG 2 / Rg5	B 505 C 836
SPINDLE	Special Brass – CW710R (SoMs59)	
GLANDPACKING	MAKER STD.	
HAND WHEEL	CAST IRON	

A17.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A17.5 SERVICE CONDITIONS.

Service LUB OIL/ Fresh Water/ Sea Water/FO / STEAM
 Design Working pressure 9 Bar
 Working temperature Normal to 180°C

Note:

Rating	Size of the valves (NB)											
	PN10										200	250
PN16	25	32	40	50	65	80	100	125	150			

A.18 MARINE GUNMETAL REGULATING GLOBE VALVE – PN16 (FLANGED)**A18.1 SCOPE**

Marine gunmetal screw down screw lift (S.D.S.L) globe regulation valve with bronze internals shall be supplied. The valve shall have flanged ends, bolted yoke type bonnet, outside screw, rising stem, open and shut indicator and regulating disc. Flanges shall be as per DIN 2501 PN16 (Flat faced) drilled off center. **Supplier may quote for both angle and straight type.**

A18.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN16)
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A18.3 MATERIAL

PART	MATERIAL	
	BS	ASTM
BODY, BONNET	GUN METAL LG2 / Rg5	B 505 C 836
REGULATING DISC & SEAT RING	BS1400 LG 2 / Rg5	B 505 C 836
SPINDLE	Special Brass – CW710R (SoMs59)	
GLANDPACKING	MAKER STD.	
HAND WHEEL	CAST IRON	

A18.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A18.5 SERVICE CONDITIONS.

Service LUB OIL/ Fresh Water/ Sea Water HFO & STEAM
 Design Working pressure 9 Bar
 Working temperature Normal to 180°C

Note:

Rating	Size of the valves (NB)											
	15	20	25	32	40	50	65	80	100	125	150	
PN16												

A.19 MARINE NODULAR CAST IRON GLOBE VALVE – PN16 / PN10 (FLANGED)**A19.1 SCOPE**

Marine Nodular cast iron, screw down screw lift (S.D.S.L) globe valves with bronze internals shall be supplied. The valve shall have flanged ends, bolted yoke type/Union bonnet, outside screw, rising stem, open and shut indicator, renewable seat ring and regulating valve disc. Flanges shall be as per DIN 2501 PN16 / PN10 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. **Supplier may quote for both angle and straight type.**

A19.2 HYDRAULIC INSPECTION

ITEM	S.D.S.L VALVES
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A19.3 MATERIAL

PART	MATERIAL	
	BS	ASTM
BODY, BONNET	BS 2789 Gr.420/12	ASTM A536 65-45-12
DISC & SEAT RING	BS 1400 LG2	ASTM B 505 C836
SPINDLE	Special Brass – CW710R (SoMs59)	
GLAND PACKING	MAKER STD.	
HAND WHEEL	CAST IRON	

A19.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A19.5 SERVICE CONDITIONS.

Service	Fresh Water/ Sea Water/ FO/ STEAM
Design Working pressure	9 Bar
Working temperature	Normal to 180°C

Note:

Rating	Size of the valves (NB)														
PN10													200	250	300
PN16	15	20	25	32	40	50	65	80	100	125	150	200	250	300	

A.20 MARINE BRONZE SWING CHECK VALVES PN16 (SCREWED)**A20.1 SCOPE**

Marine bronze metal seated swing check valves having screwed **BSPP** female ends shall be supplied.

A20.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (16KG)
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A20.3 MATERIAL

PART	MATERIAL	
	BS	ASTM
BODY, COVER	BS 1400 LG2 / Rg5	B 505 C 836
DISC	BS 1400 LG2 / Rg5	B 505 C 836
SEAT	BS 1400 LG2 / Rg5	B 505 C 836
PIN	BS 2872 CZ 122	B124 C37700

A20.4 DIMENSIONS

Dimensions as per MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A20.5 SERVICE CONDITIONS.

Service	Fuel oil/ Lub oil.
Working Temp.	Normal to 180°C
Design Pressure	3 Bar

Note:

Rating	Size of the valves (NB)					
	3/8"	1/2"	3/4"	1"	1 ¼"	1 ½"
PN16	(10NB)	(15NB)	(20NB)	(25NB)	(32NB)	(40NB)

A.21 MARINE STAINLESS-STEEL LIFT CHECK VALVES PN40 (SCREWED)**A21.1 SCOPE**

Marine stainless-steel spring-loaded lift check valves, Y-type free flow pattern with female BSP threaded ends shall be supplied.

A21.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (PN40)
BODY	45 KG/CM ²
SEAT	51 KG/CM ²

A21.3 MATERIAL

PART	MATERIAL	
BODY	ASTM A 351-CF8M	OR EQUIVALENT
DISC & SPRING	AISI 316	
DISC RING	PTFE	

A21.4 DIMENSIONS

Dimensions as per relevant MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A21.5 SERVICE CONDITIONS.

Service	Com.Air
Design Working pressure	30 Bar.
Working Temp.	Normal to 120°C

Note:

Rating	Size of the valves (NB)					
PN40	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)	1 ½" (40NB)

A.22 MARINE CAST IRON DUO CHECK VALVES PN10/PN16/PN25

A22.1 SCOPE

Marine ductile cast iron **short face-to-face**, wafer type butterfly check (duo check) valves suitable for fitting between DIN 2501 flanges, with bronze internals shall be supplied.

A22.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (PN10)	CHECK VALVES (PN16)	CHECK VALVES (PN25)
SEAT	11 KG/CM ²	18 KG/CM ²	26 KG/CM ²
BODY	15 KG/CM ²	24 KG/CM ²	35 KG/CM ²

A22.3 MATERIAL

PART	MATERIAL
BODY	DIN GGG-40
DISC	Aluminum Bronze(BS 1400AB2)
SEAL	NBR
SPRING	AISI 316
PIN	AISI 316
BEARING	TEFLON

A22.4 DIMENSIONS

Face to Face dimension shall be as per DIN 3202-K3. Detailed drawing including weight of the valve shall be submitted along with the offer.

A22.5 SERVICE CONDITIONS.

Service	Oil/Sea Water/Mud/Brine.
Design Working pressure	9 Bar/ 18 BAR
Working Temp.	Normal.

Note:

Rating	Size of the valves (NB)									
	PN10								200	250
PN16	40	50	65	80	100	125	150	200	250	300
PN25	40	50	65	80	100	125	150	200	250	300

A.23 MARINE CAST IRON RUBBER LINED DUO CHECK VALVES PN16

A23.1 SCOPE

Marine cast iron short face-to-face, **rubber lined** wafer type butterfly check (duo check) valves suitable for fitting between DIN 2501 flanges, with bronze internals shall be supplied.

A23.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (PN10)	CHECK VALVES (PN16)
SEAT	11 KG/CM ²	18 KG/CM ²
BODY	15 KG/CM ²	24 KG/CM ²

A23.3 MATERIAL

PART	MATERIAL
BODY	DIN GGG-40 (DN40-65) DIN GG-25 (DN80-300)
DISC	Aluminum Bronze(BS 1400AB2) / B148C95800 (ALBC3)
RUBBER LINING	NBR VULCANISED
SPRING	INCONEL
SHAFT	MONEL

A23.4 DIMENSIONS

Face to Face dimension shall be as per DIN 3203-K3. Detailed drawing including weight of the valve shall be submitted along with the offer.

A23.5 SERVICE CONDITIONS.

Service	Sea Water.
Working Temp.	Normal.
Design Pressure	7 Bar

Note:

Rating	Size of the valves (NB)										
PN10									200	250	300
PN16	40	50	65	80	100	125	150	200	250		

A.25 CAST STAINLESS STEEL DUO CHECK VALVES PN16

A25.1 SCOPE

Marine cast stainless steel **short face-to-face**, wafer type butterfly check (duo check) valves suitable for fitting between DIN 2501 PN10/PN16 flanges, with S.S internals shall be supplied.

A25.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (PN10)	CHECK VALVES (PN16)
SEAT	11 KG/CM ²	18 KG/CM ²
BODY	15 KG/CM ²	24 KG/CM ²

A25.3 MATERIAL

PART	MATERIAL
BODY, DISC	ASTM A 351 – CF8M
SEAL	NBR
SPRING	AISI 316
SHAFT	AISI 316
BEARING	TEFLON

A25.4 DIMENSIONS

Face to Face dimension shall be as per DIN 3202-K3. Detailed drawing including weight of the valve shall be submitted along with the offer.

A25.5 SERVICE CONDITIONS.

Service	Sea Water / Fresh Water / Methanol.
Design Working pressure	7.5 Bar
Working Temp.	Normal.

Note:

Rating	Size of the valves (NB)									
	PN10								200	250
PN16	40	50	65	80	100	125	150			

A.26 STAINLESS STEEL WAFER SWING CHECK VALVES PN10**A26.1 SCOPE**

Wafer type swing check valves (sandwich type), with detachable eye bolt, suitable for fitting between DIN 2501-PN10 flanges shall be supplied.

A26.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (PN10)
SEAT	15 KG/CM ²
BODY	11 KG/CM ²

A26.3 MATERIAL

PART	MATERIAL
BODY	AISI 316
DISC	AISI 316
DISC RING	NBR
Flange Seal	NBR
SHAFT	AISI 316

A26.4 DIMENSIONS

Dimensions as per MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A26.5 SERVICE CONDITIONS.

Service	Fresh Water/ F.O.
Working Temp.	Normal.
Design Pressure	3.5 Bar

Note:

Rating	Size of the valves (NB)									
	40	50	65	80	100	125	150	200	250	300
PN10										

A.27 BRONZE WAFER SWING CHECK VALVES PN10**A27.1 SCOPE**

Wafer type swing check valves (sandwich type), with detachable eye bolt, suitable for fitting between DIN 2501- PN10 (Flat faced) flanges shall be supplied.

A27.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)
SEAT	15 KG/CM ²
BODY	11 KG/CM ²

A27.3 MATERIAL

PART	MATERIAL	
BODY	BRONZE BS 1400 PB4-C	OR EQUIVALENT
DISC	Aluminum Bronze(BS 1400 AB2)	
DISC SEAL	NBR VULCANISED	

A27.4 DIMENSIONS

All Dimensions shall be as per manufacturer's standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A27.5 SERVICE CONDITIONS.

Service	GRAY WATER / BILGE.
Working Temp.	Normal.
Design Pressure	6 Bar

Note:

Rating	Size of the valves (NB)									
	PN10	40	50	65	80	100	125	150	200	250

A.28 MARINE BRONZE SWING CHECK VALVES PN10 (FLANGED)**A28.1 SCOPE**

Marine bronze bolted bonnet (for valves above 32 NB) straight pattern swing type metal seated check valves having flanged ends shall be supplied. Flanges shall be as per DIN 2501-PN10 drilled off-center.

A28.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (10KG)
SEAT	11 KG/CM ²
BODY	15 KG/CM ²

A28.3 MATERIAL

PART	MATERIAL	
	BS	ASTM
BODY, COVER	BS 1400 LG2 / Rg5	B 505 C 836
DISC & Hinge Arm	BS 1400 LG2 / Rg5	B 505 C 836
BODY SEAT	BS 1400 LG2 / Rg5	B 505 C 836
Gasket	Maker STD	
PIN	BS 2872 CZ 122	B124 C37700
Stem	BS 1400 LG2 / Rg5	B 505 C 836

A28.4 DIMENSIONS

Face to Face dimension shall be as per EN558, series 48. Detailed drawing including weight of the valve shall be submitted along with the offer.

A28.5 SERVICE CONDITIONS.

Service	Bilge/Sea water.
Working Temp.	Max. 180°C
Design Pressure	7.5 Bar

Note:

Rating	Size of the valves (NB)										
PN10	15	20	25	32	40	50	65	80	100	125	150

A.29 MARINE CAST IRON SWING CHECK VALVES PN10 (FLANGED)**A29.1 SCOPE**

Marine cast iron bolted bonnet straight pattern swing type metal seated check valves having flanged ends shall be supplied. Flanges shall be as per DIN 2501-PN10 drilled off-centre.

A29.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (10KG)
SEAT	11 KG/CM ²
BODY	15 KG/CM ²

A29.3 MATERIAL

PART	MATERIAL
BODY, COVER	CAST IRON GG-25
SEAT	Bronze BS 1400 LG2 / Rg5
DISC	Bronze BS 1400 LG2 / Rg5
Gasket	Maker std.
PIN	BRASS BS 2872 CZ 122
Hinge Arm	Bronze BS 1400 LG2 / Rg5

A29.4 DIMENSIONS

Face to Face dimension shall be as per EN558, series 48. Detailed drawing including weight of the valve shall be submitted along with the offer.

A29.5 SERVICE CONDITIONS.

Service	Bilge/Sea water.
Working Temp.	Max. 120°C
Design Pressure	7.5 Bar

Note:

Rating	Size of the valves (NB)										
PN10	32	40	50	65	80	100	125	150	200	250	300

A.29A MARINE CAST STEEL SWING CHECK VALVES PN16/ PN10 (FLANGED)**A29A.1 SCOPE**

Marine cast steel full bore, bolted bonnet metal seated swing type check valves having flanged ends shall be supplied. Flanges shall be as per DIN 2501-PN16/PN10 drilled off-center.

A29.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	CHECK VALVES (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A29.3 MATERIAL

PART	MATERIAL
BODY, COVER	CAST STEEL – GSC25
SEAT	Bronze BS 1400 LG2 / Rg5
DISC	Bronze BS 1400 LG2 / Rg5
Gasket	Maker std.
PIN	BRASS BS 2872 CZ 122
Hinge Arm	Bronze BS 1400 LG2 / Rg5

A29.4 DIMENSIONS

Face to Face dimension shall be as per EN558, series 48. Detailed drawing including weight of the valve shall be submitted along with the offer.

A29.5 SERVICE CONDITIONS.

Service	Bilge/Sea water/Fuel oil.
Working Temp.	Max. 180°C
Design Pressure	9 Bar

Note:

Rating	Size of the valves (NB)																
										200	250	300	350	400	450	500	600
PN10																	
PN16	32	40	50	65	80	100	125	150									

A.30 MARINE BRONZE N.R GLOBE VALVE – PN16 (SCREWED TYPE)**A30.1 SCOPE**

Marine Bronze S.D.N.R (screw down non return) globe stop valves having screwed BSPP female ends, union bonnet and outside screw rising stem shall be supplied.

Note: Hand Wheel to be of RED colour.

A30.2 HYDRAULIC INSPECTION

ITEM	S.D.N.R VALVE
SEAT	18 KG/CM ²
BODY	24 KG/CM ²

A30.3 MATERIAL

PART	MATERIAL	
	BS	ASTM
BODY, BONNET	BS 1400 LG2 / Rg5	B 505 C 836
DISC, SEAT RING	BS 1400 LG2 / Rg5	B 505 C 836
SPINDLE	BS 2872 CZ 122	B124 C37700
GLAND PACKING	UNIVERSAL	
HAND WHEEL	G5501 FC 20	MALLEABLE IRON

A30.4 DIMENSIONS

Dimensions as per relevant MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A30.5 SERVICE CONDITIONS.

Service	Fresh Water/Com.Air/OIL
Design Working pressure	7 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)					
	PN16	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)

A.31 MARINE GUNMETAL N.R GLOBE VALVE – PN40 (SCREWED TYPE)**A31.1 SCOPE**

Gunmetal, screw down non-return (S.D.N.R) valves, straight way, union bonnet type, having screwed BSPP female ends, union bonnet and outside screw rising stem shall be supplied.

Note: Hand Wheel to be of RED colour.

A31.2 HYDRAULIC INSPECTION

ITEM	S.D.N.R VALVE
SEAT	45 KG/CM ²
BODY	51 KG/CM ²

A31.3 MATERIAL

PART	MATERIAL
BODY, BONNET	GUN METAL LG2 / Rg5
DISC	STAINLESS STEEL / Rg5
SEAT	STAINLESS STEEL
SPINDLE	STAINLESS STEEL
GLAND PACKING	PTFE
HAND WHEEL	STAINLESS STEEL / CAST IRON

A31.4 DIMENSIONS

Dimensions as per relevant MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A31.5 SERVICE CONDITIONS.

Service	Compressed Air
Design Working pressure	30 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)						
	1/4" (8NB)	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)	1 ½" (40NB)
PN40							

A.32 STAINLESS STEEL N.R GLOBE VALVE – PN40 (SCREWED TYPE)**A32.1 SCOPE**

Marine stainless-steel S.D.N.R (screw down non return) union bonnet globe stop valves having screwed BSPP female ends, outside screw rising stem, open & shut indicator shall be supplied.

A32.2 HYDRAULIC INSPECTION

ITEM	S.D.N.R VALVE
SEAT	45 KG/CM ²
BODY	51 KG/CM ²

A32.3 MATERIAL

PART	MATERIAL
	ASTM
BODY, BONNET	STAINLESS STEEL 1.4408 (AISI 316)
DISC, SPINDLE	STAINLESS STEEL 1.4436 (AISI 316)
GLAND PACKING	PTFE
HAND WHEEL	NODULAR CAST IRON / STAINLESS STEEL /

A32.4 DIMENSIONS

Dimensions as per relevant MAKER standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A32.5 SERVICE CONDITIONS.

Service	Com.Air
Design Working pressure	30 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)					
PN40	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)	1 ½" (40NB)

A.33 MARINE GUNMETAL N.R GLOBE VALVE PN 16 (FLANGED)**A33.1 SCOPE**

Marine gunmetal S.D.N.R (screw down non return) globe valves having flanged ends, bolted yoke type bonnet, outside screw, rising stem and open and shut indicator shall be supplied. **Supplier may quote for both angle and straight type.** Flanges shall be as per DIN2501 PN10 (Flat faced) drilled off center.

Note: Hand Wheel to be of RED colour.

A33.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN16)
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

A33.3 MATERIAL

PART	MATERIAL
BODY, BONNET	GUN METAL LG2 / Rg5
DISC, SEAT RING	GUN METAL LG 2 / Rg5
STEM	Special Brass – CW710R (SoMs59)
GLAND PACKING	MAKER STD.
HAND WHEEL	CAST IRON

A33.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A33.5 SERVICE CONDITIONS.

Service	Bilge/ Sea Water/ Fresh water / HFO & STEAM
Design Working pressure	9 Bar
Working temperature	Normal to 180°C

Note:

Rating	Size of the valves (NB)											
	15	20	25	32	40	50	65	80	100	125	150	
PN16												

A.34 MARINE DUCTILE CAST IRON N.R GLOBE VALVE PN10/PN16 (FLANGED)**A34.1 SCOPE**

Marine ductile cast iron S.D.N.R (screw down non return) globe valves having flanged ends, bolted yoke type bonnet, outside screw, rising stem, open and shut indicator and renewable seat ring shall be supplied. **Supplier may quote for both angle and straight type.** Flanges shall be as per DIN 2501 PN16 (Flat faced) drilled off center.

Note: Hand Wheel to be of RED colour.

A34.2 HYDRAULIC INSPECTION

ITEM	S.D.N.R VALVE
SEAT	11 KG/CM ²
BODY	15 KG/CM ²

A34.3 MATERIAL

PART	MATERIAL
BODY, BONNET	DUCTILE CAST IRON GGG-40.3
DISC, SEAT RING	GUN METAL LG 2 / Rg5
STEM	Special Brass – CW710R (SoMs59)
GLAND PACKING	MAKER STD.
HAND WHEEL	CAST IRON

A34.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A34.5 SERVICE CONDITIONS.

Service	Sea Water/ Fuel oil/ STEAM
Design Working pressure	7.5 Bar
Working temperature	Normal to 180°C

Note:

Rating	Size of the valves (NB)												
											200	250	300
PN10													
PN16	25	32	40	50	65	80	100	125	150				

A.35 MARINE CAST IRON N.R GLOBE VALVE PN 16/ PN 10 (FLANGED)**A35.1 SCOPE**

Marine Cast iron S.D.N.R (screw down non return) globe valves having flanged ends, bolted yoke type bonnet, outside screw, rising stem, open and shut indicator, and renewable seat ring shall be supplied. **Supplier may quote for both angle and straight type.** Flanges shall be as per DIN 2501 PN10/PN16 (Flat faced) drilled off center.

Note: Hand Wheel to be of RED colour.

A35.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	VALVE (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A35.3 MATERIAL

PART	MATERIAL
BODY, BONNET	Cast iron GG – 25
DISC, SEAT RING	GUN METAL LG 2 / Rg5
STEM	Special Brass – CW710R (SoMs59)
GLAND PACKING	MAKER STD.
HAND WHEEL	CAST IRON

A35.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8 / as per drawing. Detailed drawing including weight of the valve shall be submitted along with the offer.

A35.5 SERVICE CONDITIONS.

Service	Bilge/ Sea Water/ Fresh water/ STEAM
Design Working pressure	7.5 Bar
Working temperature	Normal to 180°C

Note:

Rating	Size of the valves (NB)											
	PN10										200	250
PN16	25	32	40	50	65	80	100	125	150			

A.36 MARINE CAST IRON DIAPHRAGM VALVE – PN10 (FLANGED)

A36.1 SCOPE

Marine cast iron, weir type diaphragm valves **with hard rubber lined body**, enclosed diaphragm, and position indicator with integrated stem protector and rising hand wheel shall be supplied. Flanges shall be as per DIN 2501 PN10 (Flat faced) drilled off center and backside of bolt holes shall be spot faced.

A36.2 HYDRAULIC INSPECTION

SEAT	11 KG/CM ²
BODY	15 KG/CM ²

A36.3 MATERIAL

PART	MATERIAL
BODY, BONNET	Cast iron GG – 25
DISC	Cast iron GG – 25
STEM	CAST STEEL A 216 Grade WCC
DIAPHRAGM	NBR
HAND WHEEL	Cast iron GG – 25

A36.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1. Detailed drawing including weight of the valve shall be submitted along with the offer.

A36.5 SERVICE CONDITIONS.

Service	Sea Water
Design Working pressure	3 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)														
	15	20	25	32	40	50	65	80	100	125	150	200	250	300	
PN10															

A.37 MARINE BRONZE BITE TYPE GLOBE V/V**A37.1 SCOPE**

Marine bronze stop valves (for instrumentation piping) having union bonnet, inside screw shall be supplied. End connections shall be bite type union joint suitable for copper pipes at both ends.

A37.2 HYDRAULIC INSPECTION

ITEM	GLOBE VALVE
SEAT	30 KG/CM ²
BODY	42 KG/CM ²

A37.3 MATERIAL

PART	MATERIAL		
	JIS	ASTM	OR EQUIVALENT
BODY,BONNET	H 51111 – BC6	ASTM B 505 C836	
DISC	H 3250 C3771BD	B 139 ALLOY 521	
SPINDLE	H 3250 C3771BD	B 139 ALLOY 521	
GLANDPACKING	MAKER STD.		
HAND WHEEL	JISH3422 BsBMD2	BRASS	

A37.4 DIMENSIONS

Dimensions as per JIS F 7388/ Maker standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A37.6 SERVICE CONDITIONS.

Service Compressed Air/ FO Service.
Design Working pressure 20 Bar.

Note:

Rating	Connecting pipe (OD)			
20K	8	10	12	15

A.38 MARINE CAST IRON STORM FLAP VALVE - PN10 (FLANGED)**A38.1 SCOPE**

Marine cast iron St.way / angle type (90° & 135°) ship side back balanced storm valve with bronze internals and closing devices shall be supplied. The valve shall have flanged ends & bolted cover. Flanges shall be as per DIN 2501 PN10 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. Supplier may quote for both straight way and angle type.

A38.2 HYDRAULIC INSPECTION

ITEM	STORM VALVE
SEAT	5 KG/CM ²
BODY	10 KG/CM ²

A38.4 MATERIAL

BODY, BONNET	Ductile Cast iron GGG – 40.3
DISC	Bronze LG2 / Rg5
SEAL	NBR
PIN	BRASS SM2065 / Stainless steel AISI 316
STEM	BRASS

A38.5 DIMENSIONS

Face to Face dimension shall be as per DIN 87101/ DIN HNA Sr6. Detailed drawing including weight of the valve shall be submitted along with the offer.

A38.6 SERVICE CONDITIONS.

Service	Sewage
Design Working pressure	2 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)								
	50	65	80	100	125	150	200	250	300
PN10									

A.38A MARINE CAST STEEL STORM FLAP VALVE - PN10 (FLANGED)**A38.1 SCOPE**

Marine cast steel St.way / angle type (90⁰ & 135⁰) ship side back balanced storm valve with bronze internals and closing devices shall be supplied. The valve shall have flanged ends & bolted cover. Flanges shall be as per DIN 2501 PN10 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. Supplier may quote for both straight way and angle type.

A38.2 HYDRAULIC INSPECTION

ITEM	STORM VALVE
SEAT	5 KG/CM ²
BODY	10 KG/CM ²

A38.4 MATERIAL

BODY, BONNET	CAST STEEL – DIN GS-C25N / ASTM A 216 Gr.WCC
DISC	Bronze LG2 / Rg5
SEAL	NBR
PIN	BRASS SM2065 / Stainless steel AISI 316
STEM	BRASS

A38.5 DIMENSIONS

Face to Face dimension shall be as per DIN 87101/ DIN HNA Sr6. Detailed drawing including weight of the valve shall be submitted along with the offer.

A38.6 SERVICE CONDITIONS.

Service	Sewage
Design Working pressure	3 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)								
PN10	50	65	80	100	125	150	200	250	300

A.39 MARINE GUNMETAL STORM FLAP VALVE - PN10 (FLANGED)**A39.1 SCOPE**

Marine gun metal St.way / angle type (90⁰ & 135⁰) ship side back balanced storm valve with bronze internals and closing devices shall be supplied. The valve shall be flanged ends & bolted cover. Flanges shall be as per DIN 2501 PN10 (Flat faced) drilled off center. Supplier may quote for both straight way and angle type.

A39.2 HYDRAULIC INSPECTION

ITEM	STORM VALVE
SEAT	5 KG/CM ²
BODY	10 KG/CM ²

A39.4 MATERIAL

BODY, BONNET	Bronze BS1400 LG 2 / CC491K (Rg5)
DISC	Bronze LG2 / Rg5
SEAL	NBR
PIN	BRASS SM2065 / Stainless steel AISI 316
STEM	BRASS

A39.5 DIMENSIONS

Face to Face dimension shall be as per DIN 87101/ DIN HNA Sr6. Detailed drawing including weight of the valve shall be submitted along with the offer.

A39.6 SERVICE CONDITIONS.

Service	Sewage
Design Working pressure	2 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)						
PN10	50	65	80	100	125	150	200

A.40 MARINE SELF CLOSING DRAIN VALVE PN 16 (SCREWED TYPE)**A40.1 SCOPE**

Marine bronze straight type spring loaded self-closing drain globe valves straight way type with lever having BSPP female end, renewable PTFE disc ring and spring return mechanism shall be supplied.

A40.2 HYDRAULIC INSPECTION

ITEM	GLOBE VALVE
SEAT	11 KG/CM ²
BODY	15 KG/CM ²

A40.3 MATERIAL

PART	MATERIAL
BODY, BONNET & PEDAL	GUN METAL LG2 / Rg5
DISC	BRASS SM 2065
STEM	BRASS SM 2065
SPRING	STAINLESS STEEL
WEIGHT	CAST IRON

A40.4 DIMENSIONS

Dimensions as per maker's standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A40.5 SERVICE CONDITIONS.

Service	Fuel Oil / Lub Oil
Design Working pressure	4 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)					
PN16	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)	1 ½" (40NB)

A.41 MARINE GUN METAL SELF CLOSING DRAIN VALVE- PN10 (FLANGED)**A41.1 SCOPE**

Marine gun metal spring loaded self-closing drain valves angle type and straight type, normally in closed position having screwed bonnet shall be supplied. Flanges shall be as per DIN 2501 PN10 (Flat faced) drilled off center. Supplier may quote for both angle and straight type.

A41.2 HYDRAULIC INSPECTION

ITEM	GLOBE VALVE
SEAT	2 KG/CM ²
BODY	5 KG/CM ²

A41.3 MATERIAL

PART	MATERIAL		OR EQUIVALENT
	JIS	ASTM	
BODY,BONNET	H5111 BC 6	ASTM B 505 C836	
DISC	H5111 BC 6	ASTM B 505 C836	
SPINDLE	BsBFD 2	ASTM B 139 ALOY521	
GLANDPACKING	GRAPHITE		
HAND WHEEL	G5501 FC 20	MALLEABLE IRON	
SPRING	G 3522 – SWP-A		

A41.4 DIMENSIONS

Dimensions shall be as per maker standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A41.5 SERVICE CONDITIONS.

Service	Fuel oil/ Lub oil.
Design Working pressure	4 Bar.
Working temperature	Normal to 180°C

Note:

Rating	Size of the valves (NB)												
	15	20	25	32	40	50	65	80	100	125	150	200	
PN10													

A.42 MARINE CAST IRON SELF CLOSING DRAIN GLOBE VALVE PN 10 (FLANGED)**A42.1 SCOPE**

Marine cast iron weighted lever type self-closing drain globe valve straightway and angle type with bronze internals shall be supplied. The valve shall be normally in close position when not in operation. The valve shall be of flanged ends & bolted cover. Flanges shall be as per DIN 2501 PN10 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. **Supplier may quote for both angle and straight type. Valves orientation (Horizontal / vertical) for straight valves will be mentioned in the purchase order.**

A42.2 HYDRAULIC INSPECTION

ITEM	GLOBE VALVE
SEAT	11 KG/CM ²
BODY	15 KG/CM ²

A42.3 MATERIAL

PART	MATERIAL
BODY, BONNET	Cast iron GG – 25
DISC, SEAT RING	GUN METAL LG 2 / Rg5
STEM	BRASS
GLAND PACKING	GRAPHITE
WEIGHT	CAST IRON

A42.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A42.5 SERVICE CONDITIONS.

Service	Bilge
Design Working pressure	7 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)								
PN10	15	20	25	32	40	50	65	80	100

A.43 MARINE GUN METAL SELF CLOSING DRAIN GLOBE VALVE PN 10 (FLANGED)**A43.1 SCOPE**

Marine Gun Metal weighted lever type self-closing drain globe valve straightway and angle type with bronze internals shall be supplied. The valve shall be normally in close position when not in operation. The valve shall be of flanged ends & bolted cover. Flanges shall be as per DIN 2501 PN10 (Flat faced) drilled off center. **Supplier may quote for both angle and straight type. Valves orientation (Horizontal / vertical) for straight valves will be mentioned in the purchase order.**

A43.2 HYDRAULIC INSPECTION

ITEM	GLOBE VALVE
SEAT	11 KG/CM ²
BODY	15 KG/CM ²

A43.3 MATERIAL

PART	MATERIAL
BODY, BONNET	GUN METAL LG2 / Rg5
DISC, SEAT RING	GUN METAL LG 2 / Rg5
STEM	BRASS
GLAND PACKING	GRAPHITE
WEIGHT	CAST IRON

A43.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A43.5 SERVICE CONDITIONS.

Service	Bilge
Design Working pressure	7 Bar
Working temperature	Normal to 50°C

Note:

Rating	Size of the valves (NB)								
	15	20	25	32	40	50	65	80	100
PN10									

A.44 MARINE CAST IRON MUD BOX - PN10

A44.1 SCOPE

Marine cast iron mud boxes straight way and angle type shall be supplied. Mud boxes shall be provided with drain plugs. Strainer plate shall be stainless steel and have 8mm holes. Flanges shall be as per DIN 2501-PN10 drilled off-centre. Backside of bolt holes shall be spot faced. Cover shall be yoke type. Flow area of filter element shall be minimum 4 times of inlet cross-section area. **Supplier may quote for both straight way and angle type.**

A44.2 HYDRAULIC INSPECTION

ITEM	MUD BOX
DESIGN WORKING PRESSURE	6 BAR
TEST PRESSURE	2.5 bar

A44.3 MATERIAL

PART	MATERIAL	
	JIS	ASTM
BODY, COVER	FC 20	ASTM A48 CLS20
YOKE	S 25 C	ASTM A536 GR 45 / CI
FILTER PLATE	SUS 316	AISI 316
DRAIN PLUG & JACK BOLT	H 3250 C3771BD	BRASS
GASKET	NBR	

A44.4 DIMENSIONS

Dimensions shall be as per DIN 87151 straight/ angle. Detailed drawing including weight of the valve shall be submitted along with the offer.

A44.5 SERVICE CONDITIONS.

Service	Bilge/Sea water.
Working Temp.	Normal.
Design Pressure	7.5 Bar

Note:

Rating	Size of the valves (NB)														
	15	20	25	32	40	50	65	80	100	125	150	200	250	300	
PN10															

A.45 MARINE CAST IRON FOOT VALVE – PN10**A45.1 SCOPE**

Marine Cast Iron foot check valves with stainless steel strainer basket and rubber disc ring shall be supplied. The valves shall have flanged end. Flanges shall be as per **DIN 2501 PN10** (Flat faced) drilled off center. Backside of bolt hole shall be spot faced.

A45.2 HYDRAULIC INSPECTION

As per maker standard.

A45.3 MATERIAL

PART	MATERIAL
BODY & DISC	CAST IRON GG-25
BONNET	CAST IRON GG-25
STRAINER BASKET	STAINLESS STEEL – AISI 316
DISC RING & GASKET	Neoprene

A45.4 DIMENSIONS

All Dimensions shall be as per manufacturer's standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A45.5 SERVICE CONDITIONS.

Service	Bilge
Design Working pressure	6 bar
Working temperature	Normal

Note:

Rating	Size of the valves (NB)									
PN10	40	50	65	80	100	125	150	200	250	300

A.46 MARINE CAST STEEL BLIND FLANGE VALVE PN 25 / PN16**A46.1 SCOPE**

Marine Cast Steel Blind Flange Valve straight Pattern shall be supplied. The valve flanges shall be as per DIN 2501 PN25 / PN16 / PN10 drilled off center as per attached list of item.

A46.2 HYDRAULIC INSPECTION

ITEM	BLIND FLANGE VALVES (PN16 & PN10)	BLIND FLANGE VALVES (PN25)
SEAT	18 KG/CM ²	26 KG/CM ²
BODY	24 KG/CM ²	35 KG/CM ²

A46.3 MATERIAL

PART	MATERIAL
BODY, COVER	A216 Gr WCB / SM Steel St 52
DISC, Tightening Nut	A351 CF8M
SPRING	St.Steel
DISC SEAL	P.T.F.E
Cover Bolt/Nut	AISI 316

A46.4 DIMENSIONS

As per Makers standard (Straight Pattern). Detailed drawing including weight of the valve shall be submitted along with the offer.

A46.5 SERVICE CONDITIONS.

Service	MUD/BRINE / FUEL OIL / FRESH WATER / SEA WATER
Working temperature	Normal -40 to 120°C
Design Pressure	9 Bar / 18 Bar

Note:

Rating	Size of the valves (NB)													
PN10											200	250	300	350
PN16	25	32	40	50	65	80	100	125	150	200	250	300	350	
PN25	25	32	40	50	65	80	100	125	150	200	250	300	350	

- Type approval Certificate from 'CLASS' shall be submitted.

A.47 MARINE BRONZE EMER. SHUT-OFF V/V - PN10**A47.1 SCOPE**

Marine remote operated (Release by either hydraulic fluid, pneumatic or wire pull), spring loaded, emergency shut-off valves (Quick closing valves) having bronze body & internals shall be supplied. Valves shall have bolted yoke type bonnet, outside screw, open & shut indicator, renewable seat ring and hand wheel for local manual operation. The valves shall be of remote / mechanical pull to close type. Valves shall have flanged ends. Flanges shall be as per **DIN 2501-PN10** (Flat faced) drilled off-centre. **Supplier may quote for both angle and straight type.**

A47.2 HYDRAULIC INSPECTION

SEAT	2 KG/CM ²
BODY	7 KG/CM ²
NON LEAK TESTWITH SPRING LOADED	0.1 TO 1.5 KG/CM ²
CNTRL.AIR PRESS.	6.0 TO 9.0 KG/CM ²

A47.3 MATERIAL

PART	MATERIAL	
BODY,BONNET	GUNMETAL BS 1400 LG2	OR EQUIVALENT
DISC & SEAT	BS 1400 LG2	
SPINDLE	HT Brass	
GLANDPACKING	ASBESTOSE FREE	
HAND WHEEL	MALLEABLE IRON	

A47.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing shall be submitted along with the offer.

A47.5 SERVICE CONDITIONS.

Service	FUEL OIL
Design Working pressure	3 Bar

Note:

Rating	Size of the valves (NB)										
	PN10	15	20	25	32	40	50	65	80	100	125

A.48 MARINE CAST STEEL EMERGENCY SHUT-OFF VALVE - PN16 (FLANGED)

A48.1 SCOPE

Marine remote operated (Release by either hydraulic fluid, pneumatic or wire pull), spring loaded, emergency shut-off valves (Quick closing valves) having cast steel body, stainless steel internals shall be supplied. Valves shall have bolted yoke type bonnet, outside screw, open & shut indicator, renewable seat ring and hand wheel for local manual operation. The valves shall be of remote / mechanical pull to close type. Valves shall have flanged ends. Flanges shall be as per **DIN 2501-PN16** (Flat faced) **drilled off-centre**, Backside of bolt holes shall be spot faced. Supplier may quote for both angle and straight type. **Supplier may quote for both angle and straight type.**

A48.2 HYDRAULIC INSPECTION

SEAT	2 KG/CM ²
BODY	7 KG/CM ²
NON LEAK TEST WITH SPRING LOADED	0.1 TO 1.5 KG/CM ²
CNTRL.AIR PRESS.	6.0 TO 9.0 KG/CM ²

A48.3 MATERIAL

PART	MATERIAL		OR EQUIVALENT
BODY	Cast Carbon steel	1.6220 (GS-C25)	
BONNET	Nodular cast iron	GGG40	
DISC & SEAT RING	Stainless steel	AISI 304	
SPINDLE	Stainless steel	AISI 304	
O-ring	Viton		
HAND WHEEL	Cast Iron	GG25	
RELEASE CYLINDER	Brass	Ms 58	

A48.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing shall be submitted along with the offer.

A48.5 SERVICE CONDITIONS.

Service FUEL OIL
 Design Working pressure 3 Bar
 Working temperature Normal to 50°C

Note:

Rating	Size of the valves (NB)										
	PN16	15	20	25	32	40	50	65	80	100	125

A.49 AIR RESERVOIR, CONTROL CABINET & ACCESSORIES FOR EMERGENCY SHUT OFF VALVES

A49.1 SCOPE

Vertical type air reservoir, Pneumatic control panel and cabinet for multiple groups air operated quick closing valves (As per Spec. No. A.47 & A.48) with necessary accessories shall be supplied. The entire unit supplied should satisfy the class requirement for the vessel. Air reservoir shall have sufficient capacity to operate all the valves connected. The reservoir shall have standard accessories including inlet and outlet valves, drain valve, safety relief valve, pressure switch for low pressure alarm for the air reservoir as per class rules, pressure gauges with root valve and non-return valve adjacent to the air receiver in the air supply line. Air reservoir shall be painted with two coats of anti-corrosive paint inside and outside. Valve group name shall be written over each control unit. Valve group name will be given in purchase order. **Air reservoir shall be manufactured under survey of classification society.** Caution plate shall be fitted at control panel. The inlet air supply is from main airline (12 O.D, 2Thk. Precision steel pipe- 30 bar). The unit shall be provided with inlet and outlet bite type compression couplings of suitable size to connect the on board pneumatic tubes.

A49.2 CONSTRUCTION AND SHAPE

The air reservoir and Control cabinet with accessories are to be supplied to suit the operation as per marine practice. A detailed dimensional drawing of cabinet assembly with accessories including the clamping, inlet & outlet connections and foundation arrangement should be furnished with quick closing valve arrangement manual.

A49.3 HYDRAULIC INSPECTION

ITEM	WORKING PRESS.	CAPACITY	TEST PRESS
AIR RESERVOIR	30 KG/CM ²	5, 10 liters	Maker / class Requirement
VALVES	6.0 TO 9.0 KG/CM ²	--	Maker / class Requirement
CONTROL PANEL ASSEMBLY	6.0 TO 9.0 KG/CM ²	--	Maker / class Requirement

Note: Scope of supply includes 4,5,6,8 & 10 levers for both 5L & 10L air capacity cabinets.

B. 1 REMOTE OPERATED (DOUBLE ACTING) BUTTERFLY VALVE - PN16/PN10

B1.1 SCOPE

Marine Lug type, Remote operated, Ductile Cast Iron butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN2501 PN16 / PN10 Shall be supplied. Open & shut indicator and fully open & shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow. Valve actuator shall be Double acting pneumatic with single acting solenoid valve. The actuator unit has to be provided with limit switches for remote indication of Open & Close conditions of the valve in the ship's centralized monitoring system. The circuit voltage is 24V DC. Local operation provision on power failure on solenoid valve (manual override) must be provided.

B1.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B1.3 MATERIAL

PART	MATERIAL
BODY	GGG- 40.3
DISC	Aluminium Bronze(BS 1400AB2)
SEAT	VITON
STEM & DISC PIN	Stainless Steel AISI-316

B1.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B1.5 SERVICE CONDITIONS.

Service	Fuel Oil & Base oil
Working temperature	-40 to +70°C
Design Working pressure	9 Bar
Control Air Pressure	7 Bar

Note:

Rating	Size of the valves (NB)														
PN10									200	250	300	350	400	500	600
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 1A REMOTE OPERATED (DOUBLE ACTING) BUTTERFLY VALVE - PN16**B1A.1 SCOPE**

Marine Lug type, Remote operated, Ductile Cast Iron butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN2501 PN16 Shall be supplied. Open & shut indicator and fully open & shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow. Valve actuator shall be Double acting pneumatic with single acting solenoid valve. The actuator unit has to be provided with limit switches for remote indication of Open & Close conditions of the valve in the ship's centralized monitoring system. The circuit voltage is 24V DC. Local operation provision on power failure on solenoid valve (manual override) must be provided.

B1A.2 HYDRAULIC INSPECTION

SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

B1A.3 MATERIAL

PART	MATERIAL
BODY	GGG- 40.3
DISC	Aluminium Bronze(BS 1400AB2)
SEAT	EPDM
STEM & DISC PIN	Stainless Steel AISI-316

B1A.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short).

B1A.5 SERVICE CONDITIONS.

Service	TANK WASHING
Working temperature	70°C
Design Working pressure	9 Bar
Control Air Pressure	7 Bar

Note:

Rating	Size of the valves (NB)														
									200	250	300	350	400	500	600
PN10															
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 2 REMOTE OPERATED (DOUBLE ACTING) BUTTERFLY VALVE – PN25

B2.1 SCOPE

Marine Lug type, Remote operated, Ductile Cast Iron butterfly valve with non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN2501 PN25 Shall be supplied. Open & shut indicator and fully open & shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow. Valve actuator shall be Double acting pneumatic with single acting solenoid valve. The actuator unit has to be provided with limit switches for remote indication of Open & Close conditions of the valve in the ship's centralized monitoring system. The circuit voltage is 24V DC. Local operation provision on power failure on solenoid valve (manual override) must be provided.

B2.2 HYDRAULIC INSPECTION

SEAT	27.5 KG/CM ²
BODY	37.5 KG/CM ²

B2.3 MATERIAL

PART	MATERIAL
BODY	GGG- 40.3
DISC	Aluminium Bronze (BS 1400AB2)
SEAT	NBR
STEM & DISC PIN	Stainless Steel AISI-316

B2.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B2.5 SERVICE CONDITIONS.

Service	BRINE & LIQUID MUD
Working temperature	-40 to +80°C
Design Working pressure	18 Bar
Control Air Pressure	7 Bar

Note:

Rating	Size of the valves (NB)											
	40	50	65	80	100	125	150	200	250	300	350	
PN25												

B. 3 REMOTE OPERATED (DOUBLE ACTING) BUTTERFLY VALVE - PN16/PN10

B3.1 SCOPE

Marine Lug type, Remote operated, Ductile Cast Iron butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN2501 PN16 / PN10. Open & shut indicator and fully open & shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow and suitable for use as dead-end valve. Valve actuator shall be Double acting pneumatic with single acting solenoid valve. The actuator unit has to be provided with limit switches for remote indication of Open & Close conditions of the valve in the ship's centralized monitoring system. The circuit voltage is 24V DC. Local operation provision on power failure on solenoid valve (manual override) must be provided.

B3.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B3.3 MATERIAL

PART	MATERIAL
BODY	GGG- 40.3
DISC	Aluminium Bronze (BS 1400AB2)
SEAT	NBR
STEM & DISC PIN	Stainless Steel AISI-316

B3.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B3.5 SERVICE CONDITIONS.

Service	Sea Water
Working temperature	Normal
Design Working pressure	9 Bar
Control Air Pressure	7 Bar

Note:

Rating	Size of the valves (NB)														
									200	250	300	350	400	500	600
PN10									200	250	300	350	400	500	600
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 4 REMOTE OPERATED (DOUBLE ACTING) BUTTERFLY VALVE - PN16/PN10

B4.1 SCOPE

Marine Lug type, Remote operated Ductile Cast Iron butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN2501 PN10/PN16. Open & shut indicator and fully open & shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow. Valve actuator shall be Double acting pneumatic actuator & double acting solenoid valve. The actuator unit has to be provided with limit switches for remote indication of Open & Close conditions of the valve in the ship's centralized monitoring system. The circuit voltage is 24V DC. Local operation provision on power failure on solenoid valve (manual override) must be provided.

B4.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B4.3 MATERIAL

PART	MATERIAL
BODY	GGG- 40.3
DISC	Aluminium Bronze (BS 1400AB2)
SEAT	EPDM
STEM & DISC PIN	Stainless Steel AISI-316

B4.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B4.5 SERVICE CONDITIONS.

Service	Fresh water / Sea water
Working temperature	Normal
Design Working pressure	9 Bar
Control Air Pressure	7 Bar

Note:

Rating	Size of the valves (NB)													
	PN10								200	250	300	350	400	500
PN16	40	50	65	80	100	125	150	200	250	300	350			

B. 4A REMOTE OPERATED (DOUBLE ACTING) BUTTERFLY VALVE - PN16/PN10**B4A.1 SCOPE**

Marine Lug type, Remote operated, Ductile Cast Iron butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN2501 PN16/PN10. Open & shut indicator and fully open & shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow. Valve actuator shall be Double acting pneumatic actuator & double acting solenoid valve. The actuator unit has to be provided with limit switches for remote indication of Open & Close conditions of the valve in the ship's centralized monitoring system. The circuit voltage is 24V DC. Local operation provision on power failure on solenoid valve (manual override) must be provided.

B4A.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B4A.3 MATERIAL

PART	MATERIAL
BODY	GGG- 40.3
DISC	Aluminium Bronze (BS 1400AB2)
SEAT	NBR
STEM & DISC PIN	Stainless Steel AISI-316

B4A.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B4A.5 SERVICE CONDITIONS.

Service	Fresh water / Sea water
Working temperature	Normal
Design Working pressure	9 Bar
Control Air Pressure	7 Bar

Note:

Rating	Size of the valves (NB)														
									200	250	300	350	400	500	600
PN10									200	250	300	350	400	500	600
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 5 REMOTE OPERATED (SINGLE ACTING) BUTTERFLY VALVE - PN16/PN10

B5.1 SCOPE

Marine Lug type, Remote operated Ductile Cast Iron body, butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN2501 PN16/PN10. Open & shut indicator and fully open & shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow and suitable for use as dead end valve. Valve shall be single acting pneumatic actuator with spring return (Air fail close) & single acting solenoid valve. The actuator unit has to be provided with limit switches for remote indication of Open & Close conditions of the valve in the ship's centralized monitoring system. The circuit voltage is 24V DC. Local operation provision on power failure on solenoid valve (manual override) must be provided.

B5.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B5.3 MATERIAL

PART	MATERIAL
BODY	GGG- 40.3
DISC	Aluminium Bronze (BS 1400AB2)
SEAT	NBR
STEM & DISC PIN	Stainless Steel AISI-316

B5.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B5.5 SERVICE CONDITIONS.

Service	Sea water
Working temperature	Normal
Design Working pressure	9 Bar
Control Air Pressure	7 Bar

Note:

Rating	Size of the valves (NB)														
									200	250	300	350	400	500	600
PN10															
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 6 REMOTE OPERATED (DOUBLE ACTING) BUTTERFLY VALVE - PN16/PN10

B6.1 SCOPE

Marine Lug type, Remote operated Ductile Cast Iron butterfly valve with bonded liner and non-ferrous (Aluminium Bronze) suitable for flange drilled as per DIN2501 PN 10. Open and shut indicator and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow and suitable for use as dead end valve. Valve actuator shall be Double acting pneumatic actuator with single acting solenoid valve .The actuator unit has to be provided with limit switches for remote indication of Open & Close conditions of the valve in the ship's centralized monitoring system. The circuit voltage is 24V DC. The valve to be supplied with declutchable gear box with hand wheel fixed between valve and actuator for manual operation.

B6.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B6.3 MATERIAL

PART	MATERIAL
BODY	GGG 40.3
DISC	Aluminium Bronze (BS 1400AB2)
SEAT	NBR
STEM & DISC PIN	Stainless Steel AISI-316

B6.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B6.5 SERVICE CONDITIONS.

Service	Sea Water
Working temperature	Normal
Design Working pressure	8 Bar
Control Air Pressure	7 Bar

Note:

Rating	Size of the valves (NB)													
	PN10								200	250	300	350	400	500
PN16	40	50	65	80	100	125	150	200	250	300	350			

B. 7 REMOTE OPERATED (DOUBLE ACTING) BUTTERFLY VALVE – PN16/PN10 (HYDRAULIC ACTUATED by a hand pump)

B7.1 SCOPE

Marine Lug type, Remote operated Ductile Cast Iron butterfly valve with bonded liner and Stainless steel disc suitable for flange drilled as per DIN2501 PN16 shall be supplied. Remote operation shall be stand-alone hydraulic system consists of double acting hydraulic actuator and manual hand pump (With flame screen) suitable for mounting on bulkhead complete with necessary oil reserve tank and accessories. Open and shut indicator (on pump) and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow.

Valve and remote operating system (excluding connecting pipes) with necessary spares shall be included in the scope of supply. Nominal size of connecting tubes and design pressure of hydraulic system shall be specified.

B7.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B7.3 MATERIAL

PART	MATERIAL
BODY	GGG 40.3
DISC	AISI 316
SEAT	EPDM
STEM	Stainless Steel AISI-420

B7.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short).

B7.5 SERVICE CONDITIONS.

Service	Methanol
Working temperature	<+43°C
Design Working pressure	9 Bar

Note:

Rating	Size of the valves (NB)														
									200	250	300	350	400	500	600
PN10									200	250	300	350	400	500	600
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 8 MANUAL OPERATED BUTTERFLY VALVE - PN16 / PN10

B8.1 SCOPE

Marine Lug type Ductile Cast Iron butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze)suitable for flange drilled as per DIN 2501 PN 16/ PN10 .Open and shut indicator and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow.

LEVER operated valve for size up to DN 125 and below.

GEAR operated valve for size DN 150 and above.

B8.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B8.3 MATERIAL

PART	MATERIAL
BODY	GGG 40.3
DISC	Aluminium Bronze(BS 1400AB2)
SEAT	VITON
STEM & DISC PIN	Stainless Steel AISI-316

B8.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short).

B8.5 SERVICE CONDITIONS.

Service	Base Oil & Fuel Oil
Working temperature	<60°C
Design Working pressure	9 Bar

Note:

Rating	Size of the valves (NB)														
									200	250	300	350	400	500	600
PN10									200	250	300	350	400	500	600
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 8A MANUAL OPERATED BUTTERFLY VALVE - PN16 / PN10

B8A.1 SCOPE

Marine Lug type Cast steel butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN 2501 PN 16/ PN10. Open and shut indicator and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow.

LEVER operated valve for size up to DN 125 and below.

GEAR operated valve for size DN 150 and above.

B8A.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B8A.3 MATERIAL

PART	MATERIAL
BODY	CAST STEEL – DIN GS-C25N / ASTM A 216 Gr.WCC
DISC	Aluminium Bronze(BS 1400AB2)
SEAT	VITON
STEM & DISC PIN	Stainless Steel AISI-316

B8A.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short).

B8A.5 SERVICE CONDITIONS.

Service	Base Oil & Fuel Oil
Working temperature	<60°C
Design Working pressure	9 Bar

Note:

Rating	Size of the valves (NB)														
									200	250	300	350	400	500	600
PN10									200	250	300	350	400	500	600
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 9 MANUAL OPERATED BUTTERFLY VALVE - PN10 / PN16

B9.1 SCOPE

Marine Lug type Ductile Cast Iron butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN 2501 PN 16. Open and shut indicator and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow.

LEVER operated valve for size up to DN 125 and below.

GEAR operated valve for size DN 150 and above.

B9.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B9.3 MATERIAL

PART	MATERIAL
BODY	GGG 40.3
DISC	Aluminium Bronze(BS 1400AB2)
SEAT	EPDM
STEM & DISC PIN	Stainless Steel AISI-316

B9.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short).

B9.5 SERVICE CONDITIONS.

Service Methanol / Cement / Fresh Water / Sea Water
 Working temperature -40 to +70°C
 Design Working pressure 7BAR & 12 Bar

Note:

Rating	Size of the valves (NB)													
								200	250	300	350	400	500	600
PN10								200	250	300	350	400	500	600
PN16	40	50	65	80	100	125	150	200	250	300	350			

B. 9A MANUAL OPERATED BUTTERFLY VALVE - PN10 / PN16**B9A.1 SCOPE**

Marine Lug type Cast steel butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN 2501 PN 16. Open and shut indicator and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow.

LEVER operated valve for size up to DN 125 and below.

GEAR operated valve for size DN 150 and above.

B9A.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B9A.3 MATERIAL

PART	MATERIAL
BODY	CAST STEEL – DIN GS-C25N / ASTM A 216 Gr.WCC
DISC	Aluminium Bronze(BS 1400AB2)
SEAT	EPDM
STEM & DISC PIN	Stainless Steel AISI-316

B9A.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short).

B9A.5 SERVICE CONDITIONS.

Service Methanol / Cement / Fresh Water / Sea Water
 Working temperature -40 to +70°C
 Design Working pressure 7BAR & 12 Bar

Note:

Rating	Size of the valves (NB)													
								200	250	300	350	400	500	600
PN10								200	250	300	350	400	500	600
PN16	40	50	65	80	100	125	150	200	250	300	350			

B. 10 MANUAL OPERATED BUTTERFLY VALVE – PN25**B10.1 SCOPE**

Marine Lug type Ductile Cast steel butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN2501 PN 25. Open and shut indicator and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow.

LEVER operated valve for size up to DN 80 and below.

GEAR operated valve for size DN 100 and above.

B10.2 HYDRAULIC INSPECTION

SEAT	27.5 KG/CM ²
BODY	37.5 KG/CM ²

B10.3 MATERIAL

PART	MATERIAL
BODY	CAST STEEL – DIN GS-C25N / ASTM A 216 Gr.WCC
DISC	Aluminium Bronze(BS 1400AB2)
SEAT	NBR
STEM & DISC PIN	Stainless Steel AISI-316

B10.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short).

B10.5 SERVICE CONDITIONS.

Service MUD / Brine water
 Working temperature -40 to +120°C
 Design Working pressure 18 Bar

Note:

Rating	Size of the valves (NB)								
	40	50	65	80	100	125	150	200	250
PN25									

B. 11 MANUAL OPERATED BUTTERFLY VALVE - PN10/ PN16**B11.1 SCOPE**

Marine Lug type Ductile Cast Iron butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN 2501 PN10/16. Open and shut indicator and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow.

LEVER operated valve for size up to DN 125 and below.

GEAR operated valve for size DN 150 and above.

B11.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B11.3 MATERIAL

PART	MATERIAL
BODY	GGG- 40.3
DISC	Aluminium Bronze (BS 1400AB2)
SEAT	NBR
STEM & DISC PIN	Stainless Steel AISI-316

B11.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B11.5 SERVICE CONDITIONS.

Service	Bilge/ Sea water /Fuel Oil
Working temperature	Normal
Design Working pressure	7.5 Bar

Note:

Rating	Size of the valves (NB)														
PN10									200	250	300	350	400	500	600
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 11A MANUAL OPERATED BUTTERFLY VALVE - PN10/ PN16**B11A.1 SCOPE**

Marine Lug type Cast steel butterfly valve with bonded liner and non-ferrous disc (Aluminium Bronze) suitable for flange drilled as per DIN 2501 PN10/16. Open and shut indicator and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow.

LEVER operated valve for size up to DN 125 and below.

GEAR operated valve for size DN 150 and above.

B11A.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B11A.3 MATERIAL

PART	MATERIAL
BODY	CAST STEEL – DIN GS-C25N / ASTM A 216 Gr.WCC
DISC	Aluminium Bronze (BS 1400AB2)
SEAT	NBR
STEM & DISC PIN	Stainless Steel AISI-316

B11A.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B11A.5 SERVICE CONDITIONS.

Service	Bilge/ Sea water /Fuel Oil
Working temperature	Normal
Design Working pressure	7.5 Bar

Note:

Rating	Size of the valves (NB)														
									200	250	300	350	400	500	600
PN10															
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 12 MANUAL OPERATED BUTTERFLY VALVE - PN10/16**B12.1 SCOPE**

Marine lug type cast stainless steel butterfly valve with bonded liner and stainless-steel disc suitable for flange drilled as per DIN 2501 PN10/16. Open and shut indicator and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow.

LEVER operated valve for size up to DN 125 and below.

GEAR operated valve for size DN 150 and above.

B12.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B12.3 MATERIAL

PART	MATERIAL
BODY	A 351 - CF8M
DISC	A 351 - CF8M
SEAT	EPDM
STEM & DISC PIN	Stainless Steel AISI-420

B12.4 DIMENSIONS

Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B12.5 SERVICE CONDITIONS.

Service	Fresh Water
Working temperature	Normal
Design Working pressure	8 Bar

Note:

Rating	Size of the valves (NB)														
	PN10									200	250	300	350	400	500
PN16	40	50	65	80	100	125	150	200	250	300	350				

B. 13 MANUAL OPERATED BUTTERFLY VALVE - PN16/PN10

B13.1 SCOPE

Marine Lug type Cast steel butterfly valve with stainless steel disc suitable for flange drilled as per DIN 2501 PN16. Open and shut indicator and fully open and shut stoppers shall be provided. All tapping on the valve shall be provided with suitable studs. Valve shall be suitable for both way flow.

Butterfly valve shall be of Fire Safe design.

LEVER operated valve for size up to DN 125 and below.

B13.2 HYDRAULIC INSPECTION

	PN16	PN10
SEAT	17.6 KG/CM ²	11 KG/CM ²
BODY	24 KG/CM ²	15 KG/CM ²

B13.3 MATERIAL

PART	MATERIAL
BODY	CAST STEEL – DIN GS-C25N / ASTM A 216 Gr.WCC
DISC	A 351 - CF8M
STEM	Stainless Steel X4CrNiMo 16-5-1

B13.4 DIMENSIONS

Dimensions shall be as per MAKER standard. Face to face dimensions shall be as per BS 5155 Table 6 (Wafer short)

B13.5 SERVICE CONDITIONS.

Service	Sea water
Working temperature	Normal
Design Working pressure	7.5 Bar

Note:

Rating	Size of the valves (NB)														
									200	250	300	350	400	500	600
PN10															
PN16	40	50	65	80	100	125	150	200	250	300	350				

A.50 MARINE CAST STEEL GLOBE VALVE – PN16/PN10 (FLANGED)**A50.1 SCOPE**

Marine cast steel screw down screw lift (S.D.S.L) globe regulation valve with bronze internals shall be supplied. The valve shall have flanged ends, bolted yoke type bonnet, outside screw, rising stem, open and shut indicator and renewable seat ring. Flanges shall be as per DIN 2501 PN16 / PN10 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. **Supplier may quote for both angle and straight type.**

A50.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	VALVE (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A50.3 MATERIAL

PART	MATERIAL
BODY & BONNET	CAST STEEL – DIN GS-C25N / ASTM A 216 Gr.WCC
DISC & SEAT RING	GUN METAL - DIN Rg 5/ ASTM B62 C83600
STEM	BRASS – CW710R (SoMs59)
GLAND PACKING & GASKET	GRAPHITE
HAND WHEEL	CAST IRON

A50.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A50.5 SERVICE CONDITIONS.

Service	Sea Water / Bilge / HFO & Steam
Design Working pressure	9 Bar
Working temperature	Max. 180°C

Note:

Rating	Size of the valves (NB)																		
PN10													200	250	300	350	400	450	500
PN16	15	20	25	32	40	50	65	80	100	125	150								

A.50A MARINE CAST STEEL GLOBE VALVE – PN40(FLANGED)**A50A.1 SCOPE**

Marine cast steel screw down screw lift (S.D.S.L) globe regulation valve with bronze internals shall be supplied. The valve shall have flanged ends, bolted yoke type bonnet, outside screw, rising stem, open and shut indicator and renewable seat ring. Flanges shall be as per EN 1092-1 PN40 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. **Both angle and straight type valves to be included in scope of supply.**

A50A.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN40)
SEAT	44 KG/CM ²
BODY	60 KG/CM ²

A50A.3 MATERIAL

PART	MATERIAL
BODY & BONNET	CAST STEEL – GSC25
DISC	Stainless Steel - AISI 420
SEAT RING	Stainless Steel - AISI 304
STEM	Stainless Steel - AISI 420
GLAND PACKING & GASKET	GRAPHITE
HAND WHEEL	CAST IRON

A50A.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A50A.5 SERVICE CONDITIONS.

Service	Comp. Air & STEAM
Design Working pressure	40 Bar & 10 BAR
Working temperature	Mx.180°C

Note:

Rating	Size of the valves (NB)										
	PN40	15	20	25	32	40	50	65	80	100	125

A.51 STAINLESS STEEL GLOBE VALVE – PN16/PN10 (FLANGED)**A51.1 SCOPE**

Marine stainless steel screw down screw lift (S.D.S.L) globe valve with stainless steel internals shall be supplied. The valve shall have flanged ends, bolted yoke type bonnet, outside screw, rising stem, open and shut indicator and renewable seat ring. Flanges shall be as per DIN 2501 PN16 / PN10 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. **Supplier may quote for both angle and straight type.**

A51.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	VALVE (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A51.3 MATERIAL

PART	MATERIAL
BODY & BONNET	STAINLES STEEL – AISI 316
DISC & SEAT RING	STAINLES STEEL – AISI 316
STEM	STAINLES STEEL – AISI 316
GLAND PACKING & GASKET	GRAPHITE
HAND WHEEL	CAST IRON

A51.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A51.5 SERVICE CONDITIONS.

Service	Sea Water/FO/ HFO & Steam
Design Working pressure	9 Bar
Working temperature	Max. 180°C

Note:

Rating	Size of the valves (NB)																
												200	250	300	350	400	450
PN10																	
PN16	15	20	25	32	40	50	65	80	100	125	150						

A.52 MARINE CAST STEEL N.R GLOBE VALVE – PN16/PN10 (FLANGED)

A52.1 SCOPE

Marine cast steel Screw Down Non-Return (S.D.N.R) globe valve with bronze internals shall be supplied. The valve shall have flanged ends, bolted yoke type bonnet, outside screw, rising stem, open and shut indicator and renewable seat ring. Flanges shall be as per DIN 2501 PN16 / PN10 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. **Supplier may quote for both angle and straight type.**

A52.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	VALVE (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A52.3 MATERIAL

PART	MATERIAL
BODY & BONNET	CAST STEEL – DIN GS-C25N / ASTM A 216 Gr.WCC
DISC & SEAT RING	GUN METAL - DIN Rg 5/ ASTM B62 C83600
STEM	BRASS – CW710R (SoMs59)
GLAND PACKING & GASKET	GRAPHITE
HAND WHEEL	CAST IRON

A52.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A52.5 SERVICE CONDITIONS.

Service	Sea Water / Bilge / HFO & Steam
Design Working pressure	9 Bar
Working temperature	Max. 180°C

Note:

Rating	Size of the valves (NB)																		
PN10													200	250	300	350	400	450	500
PN16	15	20	25	32	40	50	65	80	100	125	150								

A.52A MARINE CAST STEEL N.R GLOBE VALVE – PN40(FLANGED)**A52A.1 SCOPE**

Marine cast steel Screw Down Non-Return (S.D.N.R) globe valve with bronze internals shall be supplied. The valve shall have flanged ends, bolted yoke type bonnet, outside screw, rising stem, open and shut indicator and renewable seat ring. Flanges shall be as per EN 1092-1 PN40 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. **Both angle and straight type valves to be included in scope of supply.**

A52A.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN40)
SEAT	44 KG/CM ²
BODY	60 KG/CM ²

A52A.3 MATERIAL

PART	MATERIAL
BODY & BONNET	CAST STEEL – GSC25
DISC	Stainless Steel - AISI 420
SEAT RING	Stainless Steel - AISI 304
STEM	Stainless Steel - AISI 420
GLAND PACKING & GASKET	GRAPHITE
HAND WHEEL	CAST IRON

A52A.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A52A.5 SERVICE CONDITIONS.

Service	Comp. Air & STEAM
Design Working pressure	40 Bar & 10 BAR
Working temperature	Mx.180°C

Note:

Rating	Size of the valves (NB)										
	PN40	15	20	25	32	40	50	65	80	100	125

A.53 STAINLESS STEEL N.R GLOBE VALVE – PN16/PN10 (FLANGED)**A53.1 SCOPE**

Marine stainless-steel Screw Down Non-Return (S.D.N.R) globe valve with stainless steel internals shall be supplied. The valve shall have flanged ends, bolted yoke type bonnet, outside screw, rising stem and open and shut indicator. Flanges shall be as per DIN 2501 PN16 / PN10 (Flat faced) drilled off center and backside of bolt holes shall be spot faced. **Supplier may quote for both angle and straight type.**

A53.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	VALVE (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A53.3 MATERIAL

PART	MATERIAL
BODY & BONNET	STAINLES STEEL – AISI 316
DISC & SEAT RING	STAINLES STEEL – AISI 316
STEM	STAINLES STEEL – AISI 316
GLAND PACKING & GASKET	GRAPHITE
HAND WHEEL	CAST IRON

A53.4 DIMENSIONS

Face to Face dimension shall be as per ISO 5752 series 1 / series 8. Detailed drawing including weight of the valve shall be submitted along with the offer.

A53.5 SERVICE CONDITIONS.

Service Sea Water/FO/ HFO & Steam
 Design Working pressure 9 Bar
 Working temperature Max. 180°C

Note:

Rating	Size of the valves (NB)																		
													200	250	300	350	400	450	500
PN10																			
PN16	15	20	25	32	40	50	65	80	100	125	150								

A.54 CAST STEEL GATE VALVE (S.S TRIM)-PN10/PN16

A54.1 SCOPE

Marine cast steel Gate (sluice) valves shall be supplied. The valves shall have flanged ends, bolted bonnet, inside screw non-rising stem, renewable seat ring and open-shut indicator. Valve shall be provided with back seat arrangement/ integral collar on the spindle. Flanges shall be as per DIN 2501 PN10/PN16 (**Flat faced**) drilled off centre and back side of bolt holes shall be spot faced. For valves 100 NB and above drain plug shall be provided at the bottom.

A54.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN10)	VALVE (PN16)
SEAT	15 KG/CM ²	17.6 KG/CM ²
BODY	11 KG/CM ²	24 KG/CM ²

A54.3 MATERIAL

PART	MATERIAL
BODY, BONNET & WEDGE	CAST STEEL – DIN GS-C25N / ASTM A 216 Gr.WCC
WEDGE SEAT & SEAT RING	Stainless Steel – X20Cr13 /AISI 420 (1.4021)
STEM	Stainless Steel – X20Cr13 /AISI 420 (1.4021)
GLAND PACKING & GASKET	Graphite (SS insert)
HAND WHEEL	CAST IRON

A54.4 DIMENSIONS

Face to face dimensions shall be DIN 3202 F4 / ISO 5752 Series 14 Standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

Note: Heavy duty limit switches taking open/close remote indication suitable for 220V AC/24V DC shall be quoted separately for these valves.

A54.5 SERVICE CONDITIONS.

Service SOIL / SEWAGE/ SEA WATER / HFO & Steam
 Design Working pressure 10 bar
 Working temperature 150 DegC & 180 DegC

Note:

Rating	Size of the valves (NB)															
									200	250	300	350	400	450	500	600
PN10																
PN16	40	50	65	80	100	125	150									

A.54A FORGED STEEL GATE VALVE (S.S TRIM)-PN40**A54a.1 SCOPE**

Forged steel Gate (sluice) metal seated valves shall be supplied. The valves shall have flanged ends, bolted bonnet with yoke, outside screwed rising stem, renewable seat ring, position indicator and open-shut indicator. Valve shall be provided with back seat arrangement/ integral collar on the spindle. Flanges shall be as per DIN 2501 PN40 (**Flat faced**) drilled off centre and back side of bolt holes shall be spot faced. For valves 100 NB and above drain plug shall be provided at the bottom.

A54a.2 HYDRAULIC INSPECTION

ITEM	VALVE (PN40)
SEAT	44 KG/CM ²
BODY	60 KG/CM ²

A54a.3 MATERIAL

PART	MATERIAL
BODY & BONNET	FORGED STEEL – ASTM A 105
WEDGE	Stainless Steel – AISI 420
BODY SEATS	Stainless Steel – AISI 304
STEM	Stainless Steel – AISI 420
GLAND PACKING & GASKET	Graphite (SS insert)
HAND WHEEL	Steel

A54a.4 DIMENSIONS

Face to face dimensions shall be DIN 3202 F1 (Up to 40nb)/ EN 558 Series 15 (50nb and Above) Standard. Detailed drawing including weight of the valve shall be submitted along with the offer.

A54a.5 SERVICE CONDITIONS.

Service	Comp.Air
Design Working pressure	33 bar
Working temperature	Normal

Note:

Rating	Size of the valves (NB)										
	PN40	15	20	25	32	40	50	65	80	100	125

C.5 BRONZE LIFT CHECK VALVES PN16 (FLANGED)**C5.1 SCOPE**

Bronze lift check type check valves having flanged ends shall be supplied. Flanges shall be as per EN1092-1 PN10 drilled off-center.

C5.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (16KG)
SEAT	17.6 KG/CM ²
BODY	24 KG/CM ²

C5.3 MATERIAL

PART	MATERIAL
BODY, COVER	BRONZE – CuSn5Zn5Pb (Rg5)
SEATS	BRONZE – CuSn5Zn5Pb (Rg5)
BONNET GASKET	GRAPHITE
SPRING	Stainless Steel - 1.4310 (AISI 301)

C5.4 DIMENSIONS

Face to Face dimension shall be as per EN558, series 1. Detailed drawing including weight of the valve shall be submitted along with the offer.

C5.5 SERVICE CONDITIONS.

Service	HFO / STEAM
Working Temp.	Max. 180 DegC.
Design Pressure	9 Bar

Note:

Rating	Size of the valves (NB)										
PN16	15	20	25	32	40	50	65	80	100	125	150

C.6 STAINLESS STEEL LIFT CHECK VALVES PN40 (FLANGED)

C6.1 SCOPE

Stainless Steel Y-type spring loaded lift check type check valves having flanged ends shall be supplied. Flanges shall be as per EN1092-1 PN40 drilled off-center.

C6.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (PN40)
SEAT	44 KG/CM ²
BODY	51 KG/CM ²

C6.3 MATERIAL

PART	MATERIAL
BODY, COVER	STAINLESS STEEL 1.4401 (AISI 316)
SEATS	STAINLESS STEEL 1.4401 (AISI 316)
BONNET GASKET	GRAPHITE
SPRING	Stainless Steel - 1.4401 (AISI 316)

C6.4 DIMENSIONS

Face to Face dimension shall be as per EN558, series 1. Detailed drawing including weight of the valve shall be submitted along with the offer.

C6.5 SERVICE CONDITIONS.

Service	Compressed Air
Working Temp.	Normal.
Design Pressure	33 Bar

Note:

Rating	Size of the valves (NB)										
PN40	15	20	25	32	40	50	65	80	100	125	150

C.8 STAINLESS STEEL SWING CHECK VALVES PN40 (FLANGED)

C8.1 SCOPE

Stainless Steel metal seated swing check globe valves having flanged ends shall be supplied. Flanges shall be as per EN1092-1 PN40 drilled off-center.

C8.2 HYDRAULIC INSPECTION

ITEM	CHECK VALVES (PN40)
SEAT	44 KG/CM ²
BODY	51 KG/CM ²

C8.3 MATERIAL

PART	MATERIAL
BODY, COVER	STAINLESS STEEL 1.4401 (AISI 316)
DISC, HINGE ARM	STAINLESS STEEL 1.4401 (AISI 316)
HINGE PIN	STAINLESS STEEL - 1.4301 (AISI 304)

C8.4 DIMENSIONS

Face to Face dimension shall be as per EN558, series 48. Detailed drawing including weight of the valve shall be submitted along with the offer.

C8.5 SERVICE CONDITIONS.

Service	Compressed Air
Working Temp.	Normal.
Design Pressure	33 Bar

Note:

Rating	Size of the valves (NB)										
	PN16	15	20	25	32	40	50	65	80	100	125

C.15 SOUNDING COCK WITH INTEGRAL TEST COCK - PN10

C15.1 SCOPE

Self-closing (weighted lever) parallel plug cock type sounding cock with integral test cock (JIS F 3018-1975), having lower end BSP female threaded connection and upper end screwed male with cap and chain shall be supplied.

Note: This self-closing sounding cock shall be provided with suitable provision for the purpose of ascertaining that the content of the tank is not present before the sounding cock is opened.

C15.2 HYDRAULIC INSPECTION

TEST PRESSURE BODY	3 KG/CM ²
TEST PRESSURE SEAT	2 KG/CM ²

C15.3 MATERIAL

BODY & CAP	Bronze CC491K (Rg5)
PLUG	Bronze CC491K (Rg5)
CHAIN	BRASS
LEVER	Cast iron GG25

C15.4 DIMENSIONS

Dimensions shall be as per JIS F 3018-1975

C14.5 SERVICE CONDITIONS.

Service	Fuel oil / Lub oil
Design Working pressure	3 Bar
Working temperature	<70°C

Note:

Rating	Size of the valves (NB)							
	PN16	3/8" (10NB)	1/2" (15NB)	3/4" (20NB)	1" (25NB)	1 ¼" (32NB)	1 ½" (40NB)	2" (50NB)

Annexure 02/A GENERAL TERMS AND CONDITIONS

SL NO	Description	Compliance by Supplier (YES/NO) In case of non compliance, please provide remarks.
1	Tenderers are to carefully go through the terms and conditions and the technical specification of the items for which offers are called for. Tenderers have to adhere to above and supply full technical scope of items along with compliance of commercial conditions. CSL have full right upon deviations, if any, including rejecting the partial scope/ complied offers.	
2	Offers are to be furnished in duplicate and should be free from overwriting. Corrections and additions, if any, must be attested. In the case of E tender offers shall be submitted only through CSL E procurement portal. Incomplete/ambiguous/conditional offers are likely to be rejected.	
3	Technical checklist, if applicable and current general terms & conditions of enquiry duly filled and signed and technical specifications of items offered (refer clause5), should be submitted alongwith part-1 techno-commercial bid in the case of two bid tenders and along with the bid documents in the case of single bid. Non receipt of the document may lead to rejection of offers. In the case of E tender filling up of GTC check list in the portal itself is sufficient.	
4	SPECIFICATIONS:- a) Manufacturer's name, their trade mark and brand, if any, should invariably be mentioned and illustrative leaflets giving technical particulars (technical details of items offered including technical literature) etc., should be attached to the offer.	
	b) Materials offered shall conform to CSL specifications and drawings.	
	c) Samples are to be supplied free of cost in the event of requirement by CSL. The detailed working drawing, if called for, is also to be furnished for approval before commencement of manufacture.	
5	All valves shall be labeled according Supplier's standard. However the label shall also include vessel number, valve tag number and material code, which will be given by Yard. The label/tag shall be properly secured to each valve to prevent it from being lost in transportation and handling. Packing materials should be eco friendly.	
6	Supplier should follow the statutory requirements of product offered.	
7	Products supplied shall be non toxic and harmless to health. In case of toxic materials, Materials Safety Data Sheet may be furnished along with the material.	
8	Taxes and duties, if any, payable extra are to be indicated in the price part for single bid and in techno commercial part and price part (in the case of 2 bid tender). In case of increase/decrease in taxes and duties due to Govt: orders, the same shall be paid by CSL as per prevailing rates at the time of supply.	

9	<p>MSEs, Startups and Make in India</p> <p>Local Suppliers, MSME firms and Startups will be eligible for various Relaxation in pre-qualification criteria and other Benefits as per the orders promulgated by Government of India. Bidders are advised to refer the details of various Benefits and Relaxation in pre-qualification criteria as published at CSL website (www.cochinshipyard.com) under the Tenders tab for further reference. Further Make in India provisions as promulgated by Govt. of India shall also be applicable. Specific mention on category of bidder and benefits claimed with provisions for relaxation is to be specified in the offer, failing which there will be no consideration under above provisions during offer evaluation.</p>	Applicable for Indian bidders for material supply.
10	<p>a. Yard's intention in proposing a concept of rate contract is mostly to have better lead-times. Standard leadtime acceptable for yard needs to be indicated for each group of valve. This shall be followed for all orders within the contract irrespective of the quantity of the valves ordered.</p> <p>b. Delivery time required for supplies should be indicated in the offer (including time frame for drawing preparation, class approvals, manufacture etc.).</p> <p>Note – The standard leadtime as above shall not be applicable for rejections/short supplies reported by yard. Replacements are to be positioned within the shortest time frame on air freight as per Clause 25.</p>	
11	<p><u>SHIPMENT</u></p> <p>a. Supplier shall intimate CSL the readiness of the Equipment/ Machinery/ Components and Parts prior to fourteen days of shipment.</p>	
	<p>b. A minimum 14 days free detention period is to be granted for clearance of the goods at Cochin seaport, as applicable for full containers.</p>	
12	<p><u>PAYMENT TERMS:</u></p> <p>Mode of freight shall be by sea/air and the payment terms shall be in accordance. The proposed payment terms of yard are as below and is under assumption that bulk/heavy cargoes will be dispatched by sea and others by air mode:-</p> <p>Sea Consignments: 100% of order value by Irrevocable Letter of Credit/CAD/TT (with 60 days credit). LC shall be opened 30 days prior to shipment.</p> <p>Air Consignments: T/T 100% payment within 35 days after readiness. AWB to be drawn in the name of yard.</p> <p>The following documents are to be forwarded through Supplier' bank for realizing the payment against LC:</p> <ol style="list-style-type: none"> a) Bill of lading-Original+4 Non negotiable copies b) Invoice and packing list- 3 Nos original +3 non-negotiable copies c) Certificate of Country of origin d) Guarantee Certificate 	

	e) Material and Hydraulic test certificate/Class certificate (provisional /original)	
	For Indian Firms: CSL payment term is 100% within 30 days of receipt and acceptance of materials at CSL stores after inspection.	
	c) Variations from payment terms, if any, shall be appropriately loaded for tender comparison purposes for arriving the lowest bid. Bank charges (including LC charges/in respect of any payment/guarantee to be made by CSL, if any) inside India will be to CSL account and outside India to supplier's account (In the case of import shipments). The charges for LC amendment, if any, shall be borne by the parties by whom the same is attributed/ necessitated.	
	d) For deviation in Payments terms from CSL standard terms, if any, interest at the base rate of SBI {applicable on the date of price bid opening} + 1% will be loaded on quoted item prices, for tender comparison purposes for arriving lowest bid.	
	e) Part payment shall be considered only if specifically agreed against partial supplies.	
13	<u>Security Deposit/ Warrantee Bank Guarantee:</u> a. The successful bidder must remit a security deposit by way of Bank Guarantee as per Yard format as per Annexure 3 from a International Bank as per approved list of banks available in CSL website (for overseas supplier) & Scheduled Indian bank (for Indian supplier) if valid contract is issued towards satisfactory performance of the contract and for enforcement of the Guarantee clause. The Bank Guarantee shall be valid for a period till completion of supplies towards the last order placed within the period of the contract and further extended to cover the guarantee period plus 90 days. Value of the bank guarantee to be submitted shall be EUR 71,000.00 or USD 80,170.00 or it's equivalent in INR (Exchange rate on the day of price bid opening shall be applicable). Bank guarantee value to be submitted by the firms on issuance of contract shall be firmed up based on number of individual specifications of valves proposed to be awarded on the firms proportioned against total BG value of EUR 71,000.00 or USD 80,170.00 and shall be freezed during tender finalization. Bank guarantee is to be extended, if applicable, based on delivery schedule/ guarantee period. For sake of clarity, completion of (supplies /item delivery) will be reckoned as date of supply of last item under scope.	
	b) BG to be submitted within 2 weeks of receipt of contract from yard.	
	c) Format of bank guarantee along with enquiry to be agreed	
	d) Mode of receipt of bank guarantee is strictly through SWIFT mode from supplier bank to CSL designated bank (for overseas bidders)	
14	If the supplier fails to supply the items ordered in good quality as per contract specification and fails to deliver within the delivery date or violate any of the terms and conditions of the contract, CSL shall have the following rights.	
	a.. To cancel the order partially or full with 15 days notice and to forfeit the security deposit, if any.	
	b To impose tender holiday for the vendor for an appropriate period as decided by CSL	
	c Risk Purchase To initiate alternate procurement action at the risk and cost of the supplier.	

15	<p><u>Liquidated Damage:</u> In case of delay in supply of ordered materials beyond the stipulated delivery period, which is not attributable to CSL, supplier is to pay Liquidated Damages (and not by way of penalty) a sum equivalent to ½% (half percent) per week or part of the week of the total basic price of materials delayed, subject to a maximum of 10% of the total basic price of undelivered material (Total basic price is the order value excluding freight, taxes, other charges etc.). Further, GST will be applicable upon LD and the same also will be deducted along with LD. However LD applicability is without prejudice to CSL right to terminate contract for delayed delivery or other actions as per clause 14.</p>	
16	<p><u>Guarantee</u> a) The valves supplied shall be guaranteed for rated performance and against damage or failure due to faulty design, defective materials and bad workmanship for 12 months from the date of delivery of the ship to Owners OR 24 months from delivery of items to Yard, whichever is earlier. Should such damage/failure occurred within the Guarantee period, the Supplier should immediately rectify the failure by repair/replacement of any such part/ or in full found to be under performing/ defective, at his own expenses.</p>	
	<p>b) Further to equipment guarantee, replaced/repared items shall be guaranteed for 12 months from date of repair/replacement.</p>	
17	<p><u>Jurisdiction:</u> All questions, disputes or difference arising under, out of, or in connection with contracts shall be subject to the exclusive jurisdiction of the Courts at Cochin, India. Alternate dispute resolution mechanism can also be considered.</p>	
18	<p><u>Force Majeure condition:</u> Should failure in performance of the contract or part thereof arise from war insurrection, restraint imposed by Government, Act of Legislature or other Statutory Authority or illegal strike, riot, legal lock-out, flood, fire, explosion, act of God or any inevitable or unforeseen event beyond human control which may be construed as reasonable ground for an extension of time, CSL may allow such additional time as is mutually agreed, to be justified by the circumstances of the case. The occurrence/cessation of force majeure situation is to be informed with documentary evidence within 15 days from the date of occurrence/ cessation.</p>	
19	<p><u>Indian Agent:</u> a) Cochin Shipyard Ltd, prefers to deal directly with the supplier. However, if the supplier appoints an Indian Agent to deal with Cochin Shipyard Ltd., the Agency commission payable by the supplier to such an agency shall be intimated and will be paid by CSL in INR.</p>	
	<p>b) If manufacturers effect the supply through Agents only, authorization in writing from manufacturers in favour of the Agent for supply to CSL shall be furnished.</p>	
	<p>c) In case where an Agent participates a tender on behalf of a Foreign manufacturer Indian agent should submit specific authorization (mentioning the tender number) from the authorized person of foreign manufacturer.</p>	
	<p>d) In a tender, either the Indian agent on behalf of the Principal/ OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/ product in the same tender. If an agent submits bid on behalf of principal/OEM, the same agent shall not submit a bid on behalf of another principal/OEM in the same tender for the same item/product.Indian agents cannot represent more than one firm or quote on their behalf for any particular</p>	

	tender.	
	e) Clarifications, either technical or commercial, should be submitted to points specially asked for only. The opportunity so given should not be used for correcting/changing/amending the data/conditions already submitted with the tender	
20	<u>PRICING:</u>	
	The proposed rate contract shall be valid for “3” years from the date of issuance.	
	The types of valves with technical details proposed to be covered in this rate contract are listed in Annexure 1.	
	Methodology of Lowest Bidder (L1) arrival: The comparison of rates shall be based on total unit cost quoted for each valve for 3 years.ie (Year 1+Year 2+Year 3) excluding taxes. However, contracts shall be awarded for each group of valve to a single firm. (“Type” refers to category of valve viz. Butterfly valve, Globe valve etc. “Group” refers to valves of various sizes/pressure rating/ orientation under a type eg: Remote operated Butterfly valve, manual operated butterfly valve etc.)	
	Supplier shall submit fixed (unit) price for each valve listed in price format in Annexure 2 ’ for First year (1 year from date of issuance) and a fixed escalation on price if any for subsequent 2 years. The rate shall be fixed for the period, the contract is issued and no enhancement of rate for whatsoever cause will be allowed once the offer is accepted and a contract is placed. Withdrawal of the quotation after it is accepted(ie. after opening of tender) or failure to make the supply within the stipulated delivery period, will entail cancellation of the order and forfeiture of Earnest Money Deposit/Security deposit, if any and/or risk purchase, without prejudice to other penal actions, including tender holiday after serving show cause notices, as deemed fit.The applicability of the second & third year rate shall also be indicated specifically (FOB date readiness/orders within “period”/orders beyond “period”) etc.	
	Yard reserves the right to order the number of valves in each category (groups and sizes) based on requirement during the contract period. The tender Enquiry/contract (if issued) does not guarantee the minimum number of valves/order for any/all of the categories into the contract during this period. Separate orders will be placed against the requirement arising during this period. There shall be no minimum order value applicable for the individual orders into the contract.	
	a. Overseas firms should quote unit prices on C&F Cochin Seaport terms. Indigenous bidders should quote prices for delivery of materials at CSL stores. Insurance shall be to CSL scope. In case of Overseas firms FOB airport price shall also be indicated, however L1 comparison will be on C&F Prices Cochin Seaport. For all import consignments directly imported in CSL's name/or on High Seas Sale agreement, customs duty is not applicable at import clearance. Customs clearance at Cochin port and transport till CSL stores shall be to CSL account.	
	b. Air freight arrangement for the valves shall be undertaken by yard with our forwarder at CSL costs where FOB option is chosen by CSL during order placement (for overseas firms)	

	c. Exchange rate variation will not be applicable and the prices shall be fixed for an order within validity period in the case of indigenous orders.	
	d. Unloading at CSL shall be at CSL scope.	
	e. Comparison of prices will be in INR only. All foreign currencies will be converted to INR for comparison and Exchange rate as on date of price bid opening shall be considered for arriving lowest bid	
	f. Prices should be valid for acceptance for a period of four months from the date of tender opening for contract issuance.	
	g. Conditional discounts, if any, will not be reckoned for tender evaluation/ comparison purpose. However, if the bidder becomes L1 at original offer, conditional discount shall also be considered.	
	h. Unpriced bid (price bid without price) duly signed is to be submitted alongwith techno-commercial offer in the price format, provided. Price should be quoted separately for each item shown in the format. In the event price bid is different from the unpriced format already submitted, yard reserves the right to reject the offer at our discretion without any further discussions. Details of optional items, if any, should be indicated under separate heading in the Techno commercial bid and the respective price details should also be given in the price bid. Combining of figures against more than one item and ambiguous clauses will lead to rejection of the bid.	
	i. If, in the price structure quoted for the required material/ item, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected. If there is a discrepancy between words and figures, amount in words of respective figures shall prevail. If the bidder does not agree to the observation of the CSL, the tender is liable to be rejected and the same shall be intimated.	
	j. After submission of quotation/price offer no unsolicited correspondence will be entertained.	
	k.Cochin Shipyard Limited does not bind itself to accept the lowest or any tender but reserves to itself the right to reject any or all or a part of any tender at its discretion.	
	l. CSL reserves the right to place order to the techno-commercially qualified lowest bidder in full or individual items to the respective lowest bidders in the tender.(except in cases where basis of L1 arrival is declared specifically in enquiry). Also please refer loading applicable for split order of value less than 20 lakhs (Clause 15 b)	
	m. In the case of part quantity order, the quoted freight charges applicable for the entire quantity as per enquiry shall be apportioned and allocated.	
21	<u>Integrity Pact:</u> As per Government of India (Central Vigilance Department), CSL and the SUPPLIER have to sign an Integrity Pact for the high value contracts, for ensuring transparency, equity and competitiveness in public procurement. The Tenderer has to sign Pre-Contract Integrity Pact as per format enclosed and to submit along with your offer.	

22	<p><u>Grievance Redressal Committee:</u> As an alternate dispute redressal or reconciliation mechanism (other than arbitration clause), Cochin Shipyard has constituted Grievance Redressal Committee. Currently following executives of the committee may be contacted for the settlement of disputes, if any, arising out of all contracts.</p> <p>a) Mr. Harikrishnan S, GM (Materials) b) Mr.Subramanian K K, Assistant General Manager (HR) c) Mr. Shibu John, Deputy General Manager (Finance)</p>	
23	<p><u>General:</u> a. Prior to price bid opening, CSL is at liberty to take the credit rating of bidders at our cost on case to case basis, and to include the same during the evaluation of the tender. If the credit rating is found to be satisfactory/ average , the offers shall be considered for further process. However, if credit rating report indicates/remarks that there is a risk in doing business, the offer will not be considered.</p>	
	<p>b. Deviations, if any in the techno-commercial offer from that of the tender enquiry in any form should be clearly furnished in a separate document titled as “List of Deviations”, failing which it will be presumed that all the terms and conditions are acceptable.</p>	
	<p>c. The techno-commercial part alone will be opened initially on the due date of tender. The price part will be opened only after evaluation of the Techno commercial part. Date of opening of the price part will be intimated to those firms whose Techno- commercial bids would be acceptable after the evaluation. Suppliers are allowed to depute their authorized representative with valid authorization letter to be present at the time of opening of Price Bid of their tender only.</p>	
24	<p><u>W.O:-</u> a. In the event supplier's offer leads to an agreement to effect supplies, a formal contract shall be issued by CSL on the basis of agreed terms and conditions of tender. Subsequent Purchase Orders based on contract terms shall be issued as and when required by CSL.</p>	
	<p>b. Upon placement of order (by post or mail) the supplier shall submit the acknowledgement (ie: signed and stamped original/ scanned soft copy by mail) as a token of acceptance of order within 15 days. In case CSL doesn't receive the above, it will be deemed as accepted.</p>	
25	<p><u>SUPPLY:</u> - a) CSL reserve the right to inspect the goods after receipt at CSL store / prior to dispatch (by CSL or CSL authorized agency at yard cost). Short supply / Mismatch / Replacement of Defective items / those not meeting agreed / contractual specification/ Items failing during commissioning shall be sent on air freight/ DDP basis courier freight prepaid/delivered at CSL store. The customs clearance charges of above shall be to supplier account.</p>	
	<p>b) Replacements during guarantee period to be sent on Duty and all taxes paid basis to location as required by yard/vessel owner with all expenses to supplier account.</p>	

	<p>c) Defective items, if any, after receipt shall be sent back on cost, carriage, handling and insurance prepaid basis including re-export (wherever desired by supplier) to be arranged by supplier. Defective items shall be returned after receipt of replacement item. Supplier, shall replace all/ part of items as applicable, in case of rejection, within 4 weeks of reporting the defect, without any additional cost to CSL. In case the defective materials are not taken back within the said period, CSL reserves the right to dispose the same without further intimation.</p>	
	<p>d) The supplier shall compensate CSL for loss on account of shortage in quantity and number of pieces received than that indicated in the bill of lading provided the CSL's claim is rejected by the insurance due to any fault of supplier. Such claims, if any, shall be supported by recognized surveyors report. The supplier shall also compensate for losses, if any sustained by the CSL due to defective packing and/or marking of the goods not in accordance with the terms of contract. The time limits for filing claims under clauses above shall be generally 180 days from the date of complete discharge of goods.</p>	
26	<p>Inspection and Certification</p> <p>a) All valves shall be of good quality material. Workshop test certificate alongwith material test and certification shall be provided for all valves. All valves are subject to inspection by CSL and, where stipulated by any other inspection agency nominated by CSL for this purpose at our stores. Rejected goods will be returned to the supplier (after obtaining appropriate replacement) at supplier's cost. The scope of inspection upon receipt of goods at yard stores is limited to physical/visible inspection and review of certificates furnished. All requisite documentation including packing list, certificates etc are to be submitted to Materials department in advance for enabling inspection.</p>	
	<p>b) It may be noted that discrepancies, if any on the functioning of valves, shall be indicated not necessarily on receipt at yard and physical inspection, but also after ascertaining functional acceptance for use onboard the respective vessels.</p>	
	<p>c) Individual Class inspection certificate for relevant valves shall be issued based on requirements stipulated into the individual orders placed post contract. The certification for Class valves shall comprise of individual stamping and a correlation of the test certificate with the individual valve.</p>	
	<p>d) Based on various projects, Classification requirements for valves would differ. Yard requirement is that the supplier would liaise and obtain the certification from different agencies (DNV/Lloyd's/IRS/ABS etc) based on yard requirement.</p>	

27	<p>Classification expenses shall be reimbursed by yard upon submission of documentary proof and submission of respective Class certificates in original. The documentary proof shall be copy of invoices from respective classification societies and shall have correlation with yard's order number/ test certificate number etc. However the Class charges have to be compulsorily included in the corresponding invoices from the supplier during valve supplies. Claims pertaining to class charges shall be in same currency as that of order.</p>	
28	<p>Extension of the contracts</p> <p>a) The contract shall be valid for a period of additional 3 months from agreed contract term of 3 years and yard may place order with rates as per contract during this period also.</p> <p>b) Additionally yard shall at its own discretion, consider extension of the rate contract after the expiry of the contract period. This shall be on mutually agreed terms between CSL and the supplier.</p>	
29	<p>PREQUALIFICATION CRITERIA</p> <p>a) Response issued to pre qualification criteria at Annexure-5</p>	
	<p>b) Prequalification supporting will be verified appropriately to ensure authenticity of documents submitted.</p>	
	<p>c) Offers meeting the pre qualification criteria are only eligible and those offers only shall be considered for techno commercial evaluation. Offers received without complying the prequalification criteria will summarily be rejected without any further communication from CSL side.</p>	
30	<p>Pre-bid meeting</p> <p>a. The bidder or his official representative is advised to attend a Pre-bid meeting which will be convened at the office of General Manager (Materials)) at CSL. The meeting shall be attended by techno-commercially competent senior representative(s) of the bidder duly authorized. Date of the pre-bid meeting is 26th June 2020 at 03:00 PM (IST).</p>	
	<p>b. All bidders are advised to study the bid document thoroughly and come prepared for the meeting.</p>	
	<p>c. The purpose of the meeting will be to clarify or address doubts / suggestions, modifications, if any on the bid document and to address queries on any issues that may be raised at that stage. Minutes of meeting will be prepared.</p>	
	<p>d. Any bidder requiring a clarification of the proposal document must notify CSL in writing, at least four (4) days in advance to the pre-bid date. Any request for clarification in writing must be addressed to lalin.divan@cochinshipyard.com</p>	
	<p>e. The compilation of all clarifications sought / queries raised during the pre-bid meeting and its replies shall be issued as a corrigendum. Any modification of the tender documents which may become necessary as a result of the pre-bid meeting shall be made by CSL exclusively through the issuance of an addendum/corrigendum against tender.</p>	

	f. At any time before the submission of proposals, CSL may, for any reasons, whether at its own initiative or in response to a clarification requested by a bidder, modify the documents by amendment.	
	g. The correigendums will be notified only on CSL/Govt websites.	
31	Unpriced format of price as per Annexure-4 shall be submitted alongwith techno commercial bid with clear mention wherever prices are quoted.	
32	Earnest Money Deposit (EMD) drawn in favour of Cochin Shipyard Limited in the form of bank guarantee, through any International Bank as per approved list of banks available in CSL website for a value of EUR 35,435.00 or USD 40,000.00(In case of foreign suppliers) or scheduled bank in India for a value of Rs 30 Lakhs (Thirty Lakh only) (In case of Indian firms) is to be submitted along with technical bid as per format at Annexure-7 . Demand Draft instead of Bank Guarantee is also acceptable in case Indian firms. MSEs are exempted from payment of EMD , supporting documents to verify MSME status are to be submitted to avail the same.	
	In case of bidders from outside India, Bank guarantee shall be in the form of an authenticated swift message to CSL's bank as per details below. In the event of bidder withdrawing his proposal before the expiry of 120 days from the due date of tender submission, EMD shall be forfeited. If the successful bidder fails to acknowledge the order or fails to furnish the required security deposit within the specified time limits, then also EMD shall be forfeited. EMD furnished by all bidders except the successful bidder will be released after finalisation of the tender and issuing orders and its acceptance. EMD in respect of successful party will be released after furnishing of the necessary Security Deposit/Performance Guarantee as per terms of order or the same shall be adjusted against value of Performance Bank guarantee and PBG shall be furnished for the balanced amount.	
	Validity of EMD shall be 4 months from date of submission plus grace period of 28 days	
	However EMD validity shall be extended in the event tender finalization extends beyond above period till period as mentioned above.	
	CSL Bank details for transfer of EMD as Bank Guarantee is: "IDBI BANK LTD, PANAMPILLY NAGAR, KOCHI - 682036 Swift Code: IBKLINBB027 Account No: 084103000002318 IFS CODE: IBKL0000084 AD Code : 6910461"	
	Note: i) Original EMD is to be submitted along with technical bid in a separate cover, in case of bidders who submit hard copy of EMD as a bank guarantee. Copy of EMD shall be made available to CSL in advance of tender opening.	
	ii) EMD is to be submitted as a swift copy through CSL's designated bank in the case of foreign bidders . Copy of swift message to be made available to CSL in advance of tender opening .	

	Acceptance of technical bids shall be after verification and confirmation of EMD submitted as a bank guarantee.	
33	CSL reserves the right to alter, modify the scope of supply at its discretion and in consistent with the policy of the Government of India and statutory bodies under them as applicable to the contract from time to time.	
34	CSL reserves the right to commercially reject the offer if compliance is not issued to terms at Sl. No.12, 13, 14, 15 & 16 without any further clarification / notice / communication in this regard from M/s. Cochin Shipyard Ltd., even though the offer is technically acceptable.	

Annexure B

**BANK GUARANTEE IN LIEU OF SECURITY DEPOSIT/WARRANTY
GUARANTEE**

To

COCHIN SHIPYARD LTD

(GOVT. OF INDIA ENTERPRISE,)

PO BAG No. 1653 , PERUMANOOR PO, COCHIN 682 015.

WHEREAS (Name & Address of Supplier) (hereinafter called "**the Supplier**") has undertaken, in pursuance of Contract.....

No..... Dated: to execute (Name of Contract and brief description of works) (hereinafter called "**the Contract**").

AND WHEREAS it has been stipulated by **COCHIN SHIPYARD LTD** (The Buyer - hereinafter called "**CSL**") in the said contract that the Supplier shall furnish **CSL** with a Bank Guarantee for the sum specified therein as security for compliance with the Supplier's obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Supplier such a Bank Guarantee.

NOW THEREFORE we (Name of the Bank) having its Head Office at

.....(Address of Head Office) and acting through its branch office at

..... (Address of the executing branch) (hereinafter called "the Bank")

hereby affirm that we are the Guarantor and responsible to **CSL**, on behalf of

the Supplier up to a total of (amount of Guarantee)

.....in words).

We, the bank, hereby irrevocably undertake to pay you any amount not exceeding in total the Guarantee Amount upon receipt by us of your demand in writing accompanied by the following documents:

1. Your signed statement certifying that the Supplier is in breach of his obligation(s) under the Contract and the respect in which the Supplier is in breach.
2. Your signed statement certifying that the Supplier has been given a prior written notice by email from you to make good the aforesaid breach and that the Supplier still failed to fulfill the Contract within 30 days of such notice. A copy of such notice given by email to the Supplier shall be attached to the demand for payment.

Any demand for payment should contain your authorized signatures which must be authorized by your bankers or by a notary public.

We, the Bank, further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between **CSL** and the Supplier shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification. We, the Bank, further agree that any change in the constitution of the said contractor or the said bank shall not discharge our liability hereunder.

Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed
(..... only).
2. This Bank Guarantee shall be valid up to (date) and
3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if **CSL** serve upon us a written claim or demand on or before(validity date) .

Any demand for payment under this guarantee must be received by us at this office during working hours on or before the validity date. Should we receive no claim from you by the validity date, our liability to you will cease and the guarantee will definitely become null and void whether returned to us or not.

Yours truly,

Signature and seal of the

guarantor:.....

Name of Bank:.....

Address:

Date:.....

~~[1] An amount shall be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract and denominated in respective Dollars / Indian Rupees/Other Currency.~~

Annexure 04 PRICE FORMAT

Tag No. for each valve will be provided at the time of placement of order

SL.NO.	SPEC.N O.	Size (NB)	Thread size (BSP)	Flange Drilling (DIN)	Equipment/Valve type	QUANTITY / VESSEL (Nos)	UNIT PRICE - (USD / EUR / INR)FIRST YEAR (FOR SUPPLY UP TO -----)	UNIT PRICE - (USD / EUR / INR)FIRST YEAR (FOR SUPPLY UP TO -----)	UNIT PRICE - (USD / EUR / INR)FIRST YEAR (FOR SUPPLY UP TO -----)	Service	Remarks
1	A.1	10	3/8"	PN16	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
2	A.1	15	1/2"	PN16	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
3	A.1	20	3/4"	PN16	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
4	A.1	25	1"	PN16	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
5	A.1	32	1 1/4"	PN16	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
6	A.1	40	1 1/2"	PN16	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
7	A.1	10	3/8"	PN40	BALL VALVE (SCREWED)					Comp.Air	
8	A.1	15	1/2"	PN40	BALL VALVE (SCREWED)					Comp.Air	
9	A.1	20	3/4"	PN40	BALL VALVE (SCREWED)					Comp.Air	
10	A.1	25	1"	PN40	BALL VALVE (SCREWED)					Comp.Air	
11	A.1	32	1 1/4"	PN40	BALL VALVE (SCREWED)					Comp.Air	
12	A.1	40	1 1/2"	PN40	BALL VALVE (SCREWED)					Comp.Air	
13	A.1A	10	3/8"	PN16	BALL VALVE (SCREWED)					Exhaust	
14	A.1A	15	1/2"	PN16	BALL VALVE (SCREWED)					Exhaust	
15	A.1A	20	3/4"	PN16	BALL VALVE (SCREWED)					Exhaust	
16	A.1A	25	1"	PN16	BALL VALVE (SCREWED)					Exhaust	
17	A.1A	32	1 1/4"	PN16	BALL VALVE (SCREWED)					Exhaust	
18	A.1A	40	1 1/2"	PN16	BALL VALVE (SCREWED)					Exhaust	
19	A.2	10	3/8"	PN16	BALL VALVE (SCREWED)					DRINKING WATER/ F.O	
20	A.2	15	1/2"	PN16	BALL VALVE (SCREWED)					DRINKING WATER/ F.O	
21	A.2	20	3/4"	PN16	BALL VALVE (SCREWED)					DRINKING WATER/ F.O	
22	A.2	25	1"	PN16	BALL VALVE (SCREWED)					DRINKING WATER/ F.O	
23	A.2	32	1 1/4"	PN16	BALL VALVE (SCREWED)					DRINKING WATER/ F.O	
24	A.2	40	1 1/2"	PN16	BALL VALVE (SCREWED)					DRINKING WATER/ F.O	
25	A.3	10	3/8"	PN64	BALL VALVE (SCREWED)					Hydraulic oil	
26	A.3	15	1/2"	PN64	BALL VALVE (SCREWED)					Hydraulic oil	
27	A.3	20	3/4"	PN64	BALL VALVE (SCREWED)					Hydraulic oil	
28	A.3	25	1"	PN64	BALL VALVE (SCREWED)					Hydraulic oil	
29	A.3	32	1 1/4"	PN64	BALL VALVE (SCREWED)					Hydraulic oil	
30	A.3	40	1 1/2"	PN64	BALL VALVE (SCREWED)					Hydraulic oil	
31	A.4	15	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
32	A.4	20	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
33	A.4	25	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
34	A.4	32	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
35	A.4	40	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
36	A.4	50	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
37	A.4	65	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
38	A.4	80	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
39	A.4	100	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
40	A.4	125	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
41	A.4	150	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
42	A.4	200	--	PN16	BALL VALVE (FLANGED)					SEWAGE/Comp. Air/S.W	
43	A.4A	15	--	PN40	BALL VALVE (FLANGED)					Comp. Air	
44	A.4A	20	--	PN40	BALL VALVE (FLANGED)					Comp. Air	
45	A.4A	25	--	PN40	BALL VALVE (FLANGED)					Comp. Air	
46	A.4A	32	--	PN40	BALL VALVE (FLANGED)					Comp. Air	

SL.NO.	SPEC.N O.	Size (NB)	Thread size (BSP)	Flange Drilling (DIN)	Equipment/Valve type	QUANTITY / VESSEL (Nos)	UNIT PRICE - (USD / EUR / INR)FIRST YEAR (FOR SUPPLY UP TO -----)	UNIT PRICE - (USD / EUR / INR)FIRST YEAR (FOR SUPPLY UP TO -----)	UNIT PRICE - (USD / EUR / INR)FIRST YEAR (FOR SUPPLY UP TO -----)	Service	Remarks
47	A.4A	40	--	PN40	BALL VALVE (FLANGED)					Comp. Air	
48	A.4A	50	--	PN40	BALL VALVE (FLANGED)					Comp. Air	
49	A.4A	65	--	PN40	BALL VALVE (FLANGED)					Comp. Air	
50	A.4A	80	--	PN40	BALL VALVE (FLANGED)					Comp. Air	
51	A.4A	100	--	PN40	BALL VALVE (FLANGED)					Comp. Air	
52	A.4A	125	--	PN40	BALL VALVE (FLANGED)					Comp. Air	
53	A.4A	150	--	PN40	BALL VALVE (FLANGED)					Comp. Air	
54	A.5	25	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
55	A.5	32	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
56	A.5	40	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
57	A.5	50	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
58	A.5	65	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
59	A.5	80	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
60	A.5	100	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
61	A.5	125	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
62	A.5	150	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
63	A.5	200	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
64	A.5A	15	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
65	A.5A	20	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
66	A.5A	25	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
67	A.5A	32	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
68	A.5A	40	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
69	A.5A	50	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
70	A.5A	65	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
71	A.5A	80	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
72	A.5A	100	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
73	A.5A	125	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
74	A.5A	150	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
75	A.5A	200	--	PN16	BALL VALVE (FLANGED)					BILGE/ LUB OIL/SEWAGE	
76	A.6	15	--	PN64	BALL VALVE (FLANGED)					Hydraulic oil	
77	A.6	20	--	PN64	BALL VALVE (FLANGED)					Hydraulic oil	
78	A.6	25	--	PN64	BALL VALVE (FLANGED)					Hydraulic oil	
79	A.6	32	--	PN64	BALL VALVE (FLANGED)					Hydraulic oil	
80	A.6	40	--	PN64	BALL VALVE (FLANGED)					Hydraulic oil	
81	A.6	50	--	PN64	BALL VALVE (FLANGED)					Hydraulic oil	
82	A.6	65	--	PN64	BALL VALVE (FLANGED)					Hydraulic oil	
83	A.6	80	--	PN64	BALL VALVE (FLANGED)					Hydraulic oil	
84	A.6	100	--	PN64	BALL VALVE (FLANGED)					Hydraulic oil	
85	A.6	125	--	PN64	BALL VALVE (FLANGED)					Hydraulic oil	
86	A.7	15	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
87	A.7	20	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
88	A.7	25	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
89	A.7	32	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
90	A.7	40	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
91	A.7	50	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
92	A.7	65	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
93	A.7	80	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
94	A.7	100	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
95	A.7	125	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	

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96	A.7	150	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
97	A.7	200	--	PN16	BALL VALVE (FLANGED)					Oil/Fresh water/Bilge/S.W	
98	A.8	15	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
99	A.8	20	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
100	A.8	25	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
101	A.8	32	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
102	A.8	40	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
103	A.8	50	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
104	A.8	65	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
105	A.8	80	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
106	A.8	100	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
107	A.8	125	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
108	A.8	150	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
109	A.8	200	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
110	A.8A	15	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
111	A.8A	20	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
112	A.8A	25	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
113	A.8A	32	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
114	A.8A	40	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
115	A.8A	50	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
116	A.8A	65	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
117	A.8A	80	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
118	A.8A	100	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
119	A.8A	125	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
120	A.8A	150	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
121	A.8A	200	--	PN16	BALL VALVE, REMOTE OPERATED (FLANGED)					Tank Wash	
122	A.9	15	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
123	A.9	20	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
124	A.9	25	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
125	A.9	32	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
126	A.9	40	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
127	A.9	50	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
128	A.9	65	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
129	A.9	80	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
130	A.9	100	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
131	A.9	125	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
132	A.9	150	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
133	A.9	200	--	PN16	3-WAY VALVE (FLANGED)					Bilge/Fuel	L-TYPE
134	A.10	10	3/8"	PN16	3-WAY VALVE (SCREWED)					Bilge/Fuel	L-TYPE
135	A.10	15	1/2"	PN16	3-WAY VALVE (SCREWED)					Bilge/Fuel	L-TYPE
136	A.10	20	3/4"	PN16	3-WAY VALVE (SCREWED)					Bilge/Fuel	L-TYPE
137	A.10	25	1"	PN16	3-WAY VALVE (SCREWED)					Bilge/Fuel	L-TYPE
138	A.10	32	1 1/4"	PN16	3-WAY VALVE (SCREWED)					Bilge/Fuel	L-TYPE
139	A.10	40	1 1/2"	PN16	3-WAY VALVE (SCREWED)					Bilge/Fuel	L-TYPE
140	A.11	200	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
141	A.11	40	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
142	A.11	50	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
143	A.11	65	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
144	A.11	80	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	

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145	A.11	100	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
146	A.11	125	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
147	A.11	150	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
148	A.11	200	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
149	A.11A	200	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
150	A.11A	250	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
151	A.11A	300	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
152	A.11A	350	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
153	A.11A	400	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
154	A.11A	450	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
155	A.11A	500	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
156	A.11A	600	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
157	A.11A	40	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
158	A.11A	50	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
159	A.11A	65	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
160	A.11A	80	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
161	A.11A	100	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
162	A.11A	125	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
163	A.11A	150	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
164	A.11A	200	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
165	A.12	40	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
166	A.12	50	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
167	A.12	65	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
168	A.12	80	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
169	A.12	100	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
170	A.12	125	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
171	A.12	150	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
172	A.12	200	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
173	A.12	250	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
174	A.12	300	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
175	A.13	10	3/8"	PN16	GLOBE VALVE(SCREWED)					Fresh Water/ Oil	
176	A.13	15	1/2"	PN16	GLOBE VALVE(SCREWED)					Fresh Water/ Oil	
177	A.13	20	3/4"	PN16	GLOBE VALVE(SCREWED)					Fresh Water/ Oil	
178	A.13	25	1"	PN16	GLOBE VALVE(SCREWED)					Fresh Water/ Oil	
179	A.13	32	1 1/4"	PN16	GLOBE VALVE(SCREWED)					Fresh Water/ Oil	
180	A.13	40	1 1/2"	PN16	GLOBE VALVE(SCREWED)					Fresh Water/ Oil	
181	A.13	50	2"	PN16	GLOBE VALVE(SCREWED)					Fresh Water/ Oil	
182	A.14	10	3/8"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
183	A.14	15	1/2"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
184	A.14	20	3/4"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
185	A.14	25	1"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
186	A.14	32	1 1/4"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
187	A.14	40	1 1/2"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
188	A.15	10	3/8"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
189	A.15	15	1/2"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
190	A.15	20	3/4"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
191	A.15	25	1"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
192	A.15	32	1 1/4"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	
193	A.15	40	1 1/2"	PN40	GLOBE VALVE(SCREWED)					Compressed Air	

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194	A.16	10	3/8"	PN16	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
195	A.16	15	1/2"	PN16	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
196	A.16	20	3/4"	PN16	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
197	A.16	25	1"	PN16	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
198	A.16	32	1 1/4"	PN16	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
199	A.16	40	1 1/2"	PN16	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
200	A.16	10	3/8"	PN40	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
201	A.16	15	1/2"	PN40	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
202	A.16	20	3/4"	PN40	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
203	A.16	25	1"	PN40	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
204	A.16	32	1 1/4"	PN40	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
205	A.16	40	1 1/2"	PN40	GLOBE VALVE(SCREWED)					Compressed Air / S.W	
206	A.17	25	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
207	A.17	25	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
208	A.17	32	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
209	A.17	32	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
210	A.17	40	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
211	A.17	40	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
212	A.17	50	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
213	A.17	50	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
214	A.17	65	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
215	A.17	65	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
216	A.17	80	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
217	A.17	80	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
218	A.17	100	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
219	A.17	100	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
220	A.17	125	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
221	A.17	125	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
222	A.17	150	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
223	A.17	150	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
224	A.17	200	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
225	A.17	200	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
226	A.17	250	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
227	A.17	250	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
228	A.17	300	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
229	A.17	300	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
230	A.18	15	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
231	A.18	15	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
232	A.18	20	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
233	A.18	20	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
234	A.18	25	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
235	A.18	25	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
236	A.18	32	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
237	A.18	32	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
238	A.18	40	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
239	A.18	40	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
240	A.18	50	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
241	A.18	50	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
242	A.18	65	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight

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243	A.18	65	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
244	A.18	80	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
245	A.18	80	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
246	A.18	100	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
247	A.18	100	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
248	A.18	125	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
249	A.18	125	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
250	A.18	150	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
251	A.18	150	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
252	A.19	15	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
253	A.19	15	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
254	A.19	20	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
255	A.19	20	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
256	A.19	25	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
257	A.19	25	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
258	A.19	32	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
259	A.19	32	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
260	A.19	40	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
261	A.19	40	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
262	A.19	50	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
263	A.19	50	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
264	A.19	65	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
265	A.19	65	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
266	A.19	80	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
267	A.19	80	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
268	A.19	100	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
269	A.19	100	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
270	A.19	125	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
271	A.19	125	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
272	A.19	150	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
273	A.19	150	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
274	A.19	200	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
275	A.19	200	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
276	A.19	250	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
277	A.19	250	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
278	A.19	300	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
279	A.19	300	--	PN16	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
280	A.19	200	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
281	A.19	200	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
282	A.19	250	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
283	A.19	250	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
284	A.19	300	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Straight
285	A.19	300	--	PN10	GLOBE REGULATING VALVE (FLANGED)					LUB OIL/ Fresh Water/ S.W/FO/S	Angle version
286	A.20	10	3/8"	PN16	SWING CHECK NR VALVE (SCREWED)					Fuel oil / Lub oil	
287	A.20	15	1/2"	PN16	SWING CHECK NR VALVE (SCREWED)					Fuel oil / Lub oil	
288	A.20	20	3/4"	PN16	SWING CHECK NR VALVE (SCREWED)					Fuel oil / Lub oil	
289	A.20	25	1"	PN16	SWING CHECK NR VALVE (SCREWED)					Fuel oil / Lub oil	
290	A.20	32	1 1/4"	PN16	SWING CHECK NR VALVE (SCREWED)					Fuel oil / Lub oil	
291	A.20	40	1 1/2"	PN16	SWING CHECK NR VALVE (SCREWED)					Fuel oil / Lub oil	

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292	A.21	10	3/8"	PN40	LIFT CHECK NR VALVE (SCREWED)					Compressed Air	
293	A.21	15	1/2"	PN40	LIFT CHECK NR VALVE (SCREWED)					Compressed Air	
294	A.21	20	3/4"	PN40	LIFT CHECK NR VALVE (SCREWED)					Compressed Air	
295	A.21	25	1"	PN40	LIFT CHECK NR VALVE (SCREWED)					Compressed Air	
296	A.21	32	1 1/4"	PN40	LIFT CHECK NR VALVE (SCREWED)					Compressed Air	
297	A.21	40	1 1/2"	PN40	LIFT CHECK NR VALVE (SCREWED)					Compressed Air	
298	A.22	40	--	PN16	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
299	A.22	50	--	PN16	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
300	A.22	65	--	PN16	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
301	A.22	80	--	PN16	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
302	A.22	100	--	PN16	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
303	A.22	125	--	PN16	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
304	A.22	150	--	PN16	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
305	A.22	200	--	PN16	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
306	A.22	200	--	PN10	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
307	A.22	250	--	PN16	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
308	A.22	250	--	PN10	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
309	A.22	300	--	PN16	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
310	A.22	300	--	PN10	BUTTERFLY CHECK VALVE					Oil/Sea Water/Mud/Brine	
311	A.22	40	--	PN25	BUTTERFLY CHECK VALVE					Brine/Mud	
312	A.22	50	--	PN25	BUTTERFLY CHECK VALVE					Brine/Mud	
313	A.22	65	--	PN25	BUTTERFLY CHECK VALVE					Brine/Mud	
314	A.22	80	--	PN25	BUTTERFLY CHECK VALVE					Brine/Mud	
315	A.22	100	--	PN25	BUTTERFLY CHECK VALVE					Brine/Mud	
316	A.22	125	--	PN25	BUTTERFLY CHECK VALVE					Brine/Mud	
317	A.22	150	--	PN25	BUTTERFLY CHECK VALVE					Brine/Mud	
318	A.22	200	--	PN25	BUTTERFLY CHECK VALVE					Brine/Mud	
319	A.22	250	--	PN25	BUTTERFLY CHECK VALVE					Brine/Mud	
320	A.22	300	--	PN25	BUTTERFLY CHECK VALVE					Brine/Mud	
321	A.23	40	--	PN16	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
322	A.23	50	--	PN16	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
323	A.23	65	--	PN16	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
324	A.23	80	--	PN16	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
325	A.23	100	--	PN16	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
326	A.23	125	--	PN16	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
327	A.23	150	--	PN16	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
328	A.23	200	--	PN16	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
329	A.23	200	--	PN10	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
330	A.23	250	--	PN16	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
331	A.23	250	--	PN10	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
332	A.23	300	--	PN10	BUTTERFLY CHECK VALVE-RUBBER LINED					Sea Water	
333	A.25	40	--	PN16	BUTTERFLY CHECK VALVE					S.W/ Fresh Water / Methanol	
334	A.25	50	--	PN16	BUTTERFLY CHECK VALVE					S.W/ Fresh Water / Methanol	
335	A.25	65	--	PN16	BUTTERFLY CHECK VALVE					S.W/ Fresh Water / Methanol	
336	A.25	80	--	PN16	BUTTERFLY CHECK VALVE					S.W/ Fresh Water / Methanol	
337	A.25	100	--	PN16	BUTTERFLY CHECK VALVE					S.W/ Fresh Water / Methanol	
338	A.25	125	--	PN16	BUTTERFLY CHECK VALVE					S.W/ Fresh Water / Methanol	
339	A.25	150	--	PN16	BUTTERFLY CHECK VALVE					S.W/ Fresh Water / Methanol	
340	A.25	200	--	PN10	BUTTERFLY CHECK VALVE					S.W/ Fresh Water / Methanol	

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341	A.25	250	--	PN10	BUTTERFLY CHECK VALVE					S.W/ Fresh Water / Methanol	
342	A.25	300	--	PN10	BUTTERFLY CHECK VALVE					S.W/ Fresh Water / Methanol	
343	A.26	40	--	PN10	SANDWICH TYPE WAFER SWING CHECK					Fresh water / F.O	
344	A.26	50	--	PN10	SANDWICH TYPE WAFER SWING CHECK					Fresh water / F.O	
345	A.26	65	--	PN10	SANDWICH TYPE WAFER SWING CHECK					Fresh water / F.O	
346	A.26	80	--	PN10	SANDWICH TYPE WAFER SWING CHECK					Fresh water / F.O	
347	A.26	100	--	PN10	SANDWICH TYPE WAFER SWING CHECK					Fresh water / F.O	
348	A.26	125	--	PN10	SANDWICH TYPE WAFER SWING CHECK					Fresh water / F.O	
349	A.26	150	--	PN10	SANDWICH TYPE WAFER SWING CHECK					Fresh water / F.O	
350	A.26	200	--	PN10	SANDWICH TYPE WAFER SWING CHECK					Fresh water / F.O	
351	A.26	250	--	PN10	SANDWICH TYPE WAFER SWING CHECK					Fresh water / F.O	
352	A.26	300	--	PN10	SANDWICH TYPE WAFER SWING CHECK					Fresh water / F.O	
353	A.27	40	--	PN10	SANDWICH TYPE WAFER SWING CHECK					GRAY WATER / BILGE	
354	A.27	50	--	PN10	SANDWICH TYPE WAFER SWING CHECK					GRAY WATER / BILGE	
355	A.27	65	--	PN10	SANDWICH TYPE WAFER SWING CHECK					GRAY WATER / BILGE	
356	A.27	80	--	PN10	SANDWICH TYPE WAFER SWING CHECK					GRAY WATER / BILGE	
357	A.27	100	--	PN10	SANDWICH TYPE WAFER SWING CHECK					GRAY WATER / BILGE	
358	A.27	125	--	PN10	SANDWICH TYPE WAFER SWING CHECK					GRAY WATER / BILGE	
359	A.27	150	--	PN10	SANDWICH TYPE WAFER SWING CHECK					GRAY WATER / BILGE	
360	A.27	200	--	PN10	SANDWICH TYPE WAFER SWING CHECK					GRAY WATER / BILGE	
361	A.27	250	--	PN10	SANDWICH TYPE WAFER SWING CHECK					GRAY WATER / BILGE	
362	A.27	300	--	PN10	SANDWICH TYPE WAFER SWING CHECK					GRAY WATER / BILGE	
363	A.28	15	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
364	A.28	20	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
365	A.28	25	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
366	A.28	32	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
367	A.28	40	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
368	A.28	50	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
369	A.28	65	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
370	A.28	80	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
371	A.28	100	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
372	A.28	125	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
373	A.28	150	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
374	A.29	32	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
375	A.29	40	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
376	A.29	50	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
377	A.29	65	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
378	A.29	80	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
379	A.29	100	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
380	A.29	125	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
381	A.29	150	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
382	A.29	200	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
383	A.29	250	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
384	A.29	300	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
385	A.29A	32	--	PN16	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
386	A.29A	40	--	PN16	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
387	A.29A	50	--	PN16	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
388	A.29A	65	--	PN16	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
389	A.29A	80	--	PN16	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	

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390	A.29A	100	--	PN16	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
391	A.29A	125	--	PN16	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
392	A.29A	150	--	PN16	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
393	A.29A	200	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
394	A.29A	250	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
395	A.29A	300	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
396	A.29A	350	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
397	A.29A	400	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
398	A.29A	450	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
399	A.29A	500	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
400	A.29A	600	--	PN10	SWING CHECK NR VALVE (FLANGED)					Bilge/Sea water	
401	A.30	10	3/8"	PN16	NON RETURN STOP VALVE(SCREWED)					Fresh Water/Com.Air/OIL	
402	A.30	15	1/2"	PN16	NON RETURN STOP VALVE(SCREWED)					Fresh Water/Com.Air/OIL	
403	A.30	20	3/4"	PN16	NON RETURN STOP VALVE(SCREWED)					Fresh Water/Com.Air/OIL	
404	A.30	25	1"	PN16	NON RETURN STOP VALVE(SCREWED)					Fresh Water/Com.Air/OIL	
405	A.30	32	1 1/4"	PN16	NON RETURN STOP VALVE(SCREWED)					Fresh Water/Com.Air/OIL	
406	A.30	40	1 1/2"	PN16	NON RETURN STOP VALVE(SCREWED)					Fresh Water/Com.Air/OIL	
407	A.31	8	1/4"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
408	A.31	10	3/8"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
409	A.31	15	1/2"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
410	A.31	20	3/4"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
411	A.31	25	1"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
412	A.31	32	1 1/4"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
413	A.31	40	1 1/2"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
414	A.32	10	3/8"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
415	A.32	15	1/2"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
416	A.32	20	3/4"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
417	A.32	25	1"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
418	A.32	32	1 1/4"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
419	A.32	40	1 1/2"	PN40	NON RETURN STOP VALVE(SCREWED)					Compressed Air	
420	A.33	15	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
421	A.33	15	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
422	A.33	20	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
423	A.33	20	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
424	A.33	25	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
425	A.33	25	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
426	A.33	32	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
427	A.33	32	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
428	A.33	40	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
429	A.33	40	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
430	A.33	50	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
431	A.33	50	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
432	A.33	65	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
433	A.33	65	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
434	A.33	80	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
435	A.33	80	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
436	A.33	100	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
437	A.33	100	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
438	A.33	125	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight

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439	A.33	125	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
440	A.33	150	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
441	A.33	150	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
442	A.34	25	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
443	A.34	25	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
444	A.34	32	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
445	A.34	32	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
446	A.34	40	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
447	A.34	40	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
448	A.34	50	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
449	A.34	50	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
450	A.34	65	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
451	A.34	65	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
452	A.34	80	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
453	A.34	80	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
454	A.34	100	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
455	A.34	100	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
456	A.34	125	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
457	A.34	125	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
458	A.34	150	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
459	A.34	150	--	PN16	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
460	A.34	200	--	PN10	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
461	A.34	200	--	PN10	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
462	A.34	250	--	PN10	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
463	A.34	250	--	PN10	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
464	A.34	300	--	PN10	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Straight
465	A.34	300	--	PN10	NON RETURN STOP VALVE(FLANGED)					Sea Water/ Fuel oil	Angle version
466	A.35	25	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
467	A.35	25	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
468	A.35	32	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
469	A.35	32	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
470	A.35	40	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
471	A.35	40	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
472	A.35	50	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
473	A.35	50	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
474	A.35	65	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
475	A.35	65	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
476	A.35	80	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
477	A.35	80	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
478	A.35	100	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
479	A.35	100	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
480	A.35	125	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
481	A.35	125	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
482	A.35	150	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
483	A.35	150	--	PN16	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
484	A.35	200	--	PN10	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
485	A.35	200	--	PN10	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
486	A.35	250	--	PN10	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
487	A.35	250	--	PN10	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version

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488	A.35	300	--	PN10	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Straight
489	A.35	300	--	PN10	NON RETURN STOP VALVE(FLANGED)					Bilge/ S.W/ Fresh water	Angle version
490	A.36	15	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
491	A.36	20	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
492	A.36	25	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
493	A.36	32	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
494	A.36	40	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
495	A.36	50	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
496	A.36	65	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
497	A.36	80	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
498	A.36	100	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
499	A.36	125	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
500	A.36	150	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
501	A.36	200	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
502	A.36	250	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
503	A.36	300	--	PN10	REGULATING DIAPHRAGM VALVE (FLANGED)					Sea Water	
504	A.37	8 OD	--	20K	BITE TYPE GLOBE V/V					Compressed Air/ FO Service	
505	A.37	10 OD	--	20K	BITE TYPE GLOBE V/V					Compressed Air/ FO Service	
506	A.37	12 OD	--	20K	BITE TYPE GLOBE V/V					Compressed Air/ FO Service	
507	A.37	15 OD	--	20K	BITE TYPE GLOBE V/V					Compressed Air/ FO Service	
508	A.38	50	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
509	A.38	65	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
510	A.38	80	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
511	A.38	100	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
512	A.38	125	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
513	A.38	150	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
514	A.38	200	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
515	A.38	250	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
516	A.38	300	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
517	A.38	50	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
518	A.38	65	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
519	A.38	80	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
520	A.38	100	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
521	A.38	125	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
522	A.38	150	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
523	A.38	200	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
524	A.38	250	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
525	A.38	300	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
526	A.38	50	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
527	A.38	65	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
528	A.38	80	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
529	A.38	100	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
530	A.38	125	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
531	A.38	150	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
532	A.38	200	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
533	A.38	250	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
534	A.38	300	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
535	A.38A	50	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
536	A.38A	65	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	

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537	A.38A	80	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
538	A.38A	100	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
539	A.38A	125	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
540	A.38A	150	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
541	A.38A	200	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
542	A.38A	250	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
543	A.38A	300	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
544	A.38A	50	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
545	A.38A	65	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
546	A.38A	80	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
547	A.38A	100	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
548	A.38A	125	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
549	A.38A	150	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
550	A.38A	200	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
551	A.38A	250	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
552	A.38A	300	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
553	A.38A	50	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
554	A.38A	65	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
555	A.38A	80	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
556	A.38A	100	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
557	A.38A	125	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
558	A.38A	150	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
559	A.38A	200	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
560	A.38A	250	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
561	A.38A	300	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
562	A.39	50	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
563	A.39	65	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
564	A.39	80	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
565	A.39	100	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
566	A.39	125	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
567	A.39	150	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
568	A.39	200	--	PN10	STRAIGHT STORM FLAP VALVE (FLANGED)					Sewage	
569	A.39	50	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
570	A.39	65	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
571	A.39	80	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
572	A.39	100	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
573	A.39	125	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
574	A.39	150	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
575	A.39	200	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 90 DEG					Sewage	
576	A.39	50	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
577	A.39	65	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
578	A.39	80	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
579	A.39	100	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
580	A.39	125	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
581	A.39	150	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
582	A.39	200	--	PN10	ANGLE STORM FLAP VALVE (FLANGED)- 135 DEG					Sewage	
583	A.40	10	3/8"	PN16	SELF CLOSING VALVE, SPRING RETURN					Fuel Oil / Lub Oil	
584	A.40	15	1/2"	PN16	SELF CLOSING VALVE, SPRING RETURN					Fuel Oil / Lub Oil	
585	A.40	20	3/4"	PN16	SELF CLOSING VALVE, SPRING RETURN					Fuel Oil / Lub Oil	

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586	A.40	25	1"	PN16	SELF CLOSING VALVE, SPRING RETURN					Fuel Oil / Lub Oil	
587	A.40	32	1 1/4"	PN16	SELF CLOSING VALVE, SPRING RETURN					Fuel Oil / Lub Oil	
588	A.40	40	1 1/2"	PN16	SELF CLOSING VALVE, SPRING RETURN					Fuel Oil / Lub Oil	
589	A.41	15	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
590	A.41	20	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
591	A.41	25	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
592	A.41	32	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
593	A.41	40	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
594	A.41	50	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
595	A.41	65	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
596	A.41	80	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
597	A.41	100	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
598	A.41	125	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
599	A.41	150	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
600	A.41	200	--	PN10	SELF CLOSING VALVE, SPRING RETURN- STRAIGHT					Fuel Oil / Lub Oil	
601	A.41	15	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
602	A.41	20	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
603	A.41	25	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
604	A.41	32	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
605	A.41	40	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
606	A.41	50	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
607	A.41	65	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
608	A.41	80	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
609	A.41	100	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
610	A.41	125	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
611	A.41	150	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
612	A.41	200	--	PN10	SELF CLOSING VALVE, SPRING RETURN- ANGLE					Fuel Oil / Lub Oil	
613	A.42	15	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
614	A.42	20	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
615	A.42	25	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
616	A.42	32	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
617	A.42	40	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
618	A.42	50	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
619	A.42	65	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
620	A.42	80	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
621	A.42	100	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
622	A.42	15	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
623	A.42	20	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
624	A.42	25	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
625	A.42	32	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
626	A.42	40	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
627	A.42	50	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
628	A.42	65	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
629	A.42	80	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
630	A.42	100	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
631	A.43	15	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
632	A.43	20	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
633	A.43	25	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
634	A.43	32	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	

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635	A.43	40	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
636	A.43	50	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
637	A.43	65	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
638	A.43	80	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
639	A.43	100	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-STRAIGHT					Bilge	
640	A.43	15	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
641	A.43	20	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
642	A.43	25	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
643	A.43	32	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
644	A.43	40	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
645	A.43	50	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
646	A.43	65	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
647	A.43	80	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
648	A.43	100	--	PN10	SELF CLOSING VALVE, WEIGHT RETUR-ANGLE					Bilge	
649	A.44	15	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
650	A.44	15	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
651	A.44	20	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
652	A.44	20	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
653	A.44	25	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
654	A.44	25	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
655	A.44	32	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
656	A.44	32	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
657	A.44	40	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
658	A.44	40	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
659	A.44	50	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
660	A.44	50	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
661	A.44	65	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
662	A.44	65	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
663	A.44	80	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
664	A.44	80	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
665	A.44	100	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
666	A.44	100	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
667	A.44	125	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
668	A.44	125	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
669	A.44	150	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
670	A.44	150	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
671	A.44	200	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
672	A.44	200	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
673	A.44	250	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
674	A.44	250	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
675	A.44	300	--	PN10	MUD BOX STRAIGHT					Bilge / Sea Water	Straight
676	A.44	300	--	PN10	MUD BOX ANGLE					Bilge / Sea Water	Angle version
677	A.45	40	--	PN10	FOOT VALVE					Bilge	
678	A.45	50	--	PN10	FOOT VALVE					Bilge	
679	A.45	65	--	PN10	FOOT VALVE					Bilge	
680	A.45	80	--	PN10	FOOT VALVE					Bilge	
681	A.45	100	--	PN10	FOOT VALVE					Bilge	
682	A.45	125	--	PN10	FOOT VALVE					Bilge	
683	A.45	150	--	PN10	FOOT VALVE					Bilge	

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684	A.45	200	--	PN10	FOOT VALVE					Bilge	
685	A.45	250	--	PN10	FOOT VALVE					Bilge	
686	A.45	300	--	PN10	FOOT VALVE					Bilge	
687	A.46	25	--	PN16	BLIND FLANGE VALVE					Fuel Oil / Base	
688	A.46	32	--	PN16	BLIND FLANGE VALVE					Fuel Oil / Base	
689	A.46	40	--	PN16	BLIND FLANGE VALVE					Fuel Oil / Base	
690	A.46	50	--	PN16	BLIND FLANGE VALVE					Fuel Oil / Base	
691	A.46	65	--	PN16	BLIND FLANGE VALVE					Fuel Oil / Base	
692	A.46	80	--	PN16	BLIND FLANGE VALVE					Fresh Water	
693	A.46	100	--	PN16	BLIND FLANGE VALVE					Fuel Oil / Base	
694	A.46	125	--	PN16	BLIND FLANGE VALVE					Fuel Oil / Base	
695	A.46	150	--	PN16	BLIND FLANGE VALVE					Fuel Oil / Fresh Water/Sea Water	
696	A.46	200	--	PN10	BLIND FLANGE VALVE					Fuel Oil	
697	A.46	200	--	PN16	BLIND FLANGE VALVE					Fuel Oil	
698	A.46	250	--	PN10	BLIND FLANGE VALVE					Fuel Oil	
699	A.46	250	--	PN16	BLIND FLANGE VALVE					Fuel Oil	
700	A.46	300	--	PN10	BLIND FLANGE VALVE					Fuel Oil	
701	A.46	300	--	PN16	BLIND FLANGE VALVE					Fuel Oil	
702	A.46	350	--	PN10	BLIND FLANGE VALVE					Fuel Oil	
703	A.46	350	--	PN16	BLIND FLANGE VALVE					Fuel Oil	
704	A.46	25	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
705	A.46	32	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
706	A.46	40	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
707	A.46	50	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
708	A.46	65	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
709	A.46	80	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
710	A.46	100	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
711	A.46	125	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
712	A.46	150	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
713	A.46	200	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
714	A.46	250	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
715	A.46	300	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
716	A.46	350	--	PN25	BLIND FLANGE VALVE					Brine / Mud	
717	A.47	15	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
718	A.47	15	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
719	A.47	20	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
720	A.47	20	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
721	A.47	25	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
722	A.47	25	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
723	A.47	32	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
724	A.47	32	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
725	A.47	40	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
726	A.47	40	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
727	A.47	50	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
728	A.47	50	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
729	A.47	65	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
730	A.47	65	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
731	A.47	80	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight

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732	A.47	80	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
733	A.47	100	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
734	A.47	100	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
735	A.47	125	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
736	A.47	125	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
737	A.47	150	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
738	A.47	150	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
739	A.48	15	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
740	A.48	15	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
741	A.48	20	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
742	A.48	20	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
743	A.48	25	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
744	A.48	25	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
745	A.48	32	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
746	A.48	32	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
747	A.48	40	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
748	A.48	40	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
749	A.48	50	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
750	A.48	50	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
751	A.48	65	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
752	A.48	65	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
753	A.48	80	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
754	A.48	80	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
755	A.48	100	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
756	A.48	100	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
757	A.48	125	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
758	A.48	125	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
759	A.48	150	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Straight
760	A.48	150	--	PN16	QUICK CLOSING VALVE (FLANGED)					FUEL OIL	Angle version
761	A.49		--		CONTROL CABINET - 5 Liters with 4 lever						
762	A.49		--		CONTROL CABINET - 5 Liters with 5 lever						
763	A.49		--		CONTROL CABINET - 5 Liters with 6 lever						
764	A.49		--		CONTROL CABINET - 5 Liters with 8 lever						
765	A.49		--		CONTROL CABINET - 5 Liters with 10 lever						
766	A.49		--		CONTROL CABINET - 10 Liters with 4 lever						
767	A.49		--		CONTROL CABINET - 10 Liters with 5 lever						
768	A.49		--		CONTROL CABINET - 10 Liters with 6 lever						
769	A.49		--		CONTROL CABINET - 10 Liters with 8 lever						
770	A.49		--		CONTROL CABINET - 10 Liters with 10 lever						
771	B.1	40	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
772	B.1	50	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
773	B.1	65	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
774	B.1	80	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
775	B.1	100	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
776	B.1	125	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
777	B.1	150	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
778	B.1	200	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
779	B.1	200	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
780	B.1	250	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	

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781	B.1	250	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
782	B.1	300	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
783	B.1	300	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
784	B.1	350	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
785	B.1	350	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
786	B.1	400	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
787	B.1	500	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
788	B.1	600	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fuel Oil & Base oil	
789	B.1A	40	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
790	B.1A	50	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
791	B.1A	65	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
792	B.1A	80	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
793	B.1A	100	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
794	B.1A	125	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
795	B.1A	150	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
796	B.1A	200	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
797	B.1A	200	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
798	B.1A	250	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
799	B.1A	250	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
800	B.1A	300	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
801	B.1A	300	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
802	B.1A	350	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
803	B.1A	350	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
804	B.1A	400	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
805	B.1A	500	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
806	B.1A	600	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					TANK WASHING	
807	B.2	40	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
808	B.2	50	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
809	B.2	65	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
810	B.2	80	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
811	B.2	100	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
812	B.2	125	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
813	B.2	150	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
814	B.2	200	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
815	B.2	250	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
816	B.2	300	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
817	B.2	350	--	PN25	BUTTERFLY VALVE, REMOTE OPERATED					Brine / Mud	
818	B.3	40	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
819	B.3	50	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
820	B.3	65	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
821	B.3	80	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
822	B.3	100	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
823	B.3	125	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
824	B.3	150	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
825	B.3	200	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
826	B.3	200	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
827	B.3	250	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
828	B.3	250	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
829	B.3	300	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	

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830	B.3	300	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
831	B.3	350	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
832	B.3	350	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
833	B.3	400	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
834	B.3	500	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
835	B.3	600	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea Water	
836	B.4	40	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
837	B.4	50	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
838	B.4	65	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
839	B.4	80	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
840	B.4	100	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
841	B.4	125	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
842	B.4	150	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
843	B.4	200	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
844	B.4	200	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
845	B.4	250	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
846	B.4	250	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
847	B.4	300	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
848	B.4	300	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
849	B.4	350	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
850	B.4	350	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
851	B.4	400	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
852	B.4	500	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
853	B.4	600	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
854	B.4A	40	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
855	B.4A	50	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
856	B.4A	65	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
857	B.4A	80	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
858	B.4A	100	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
859	B.4A	125	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
860	B.4A	150	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
861	B.4A	200	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
862	B.4A	200	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
863	B.4A	250	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
864	B.4A	250	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
865	B.4A	300	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
866	B.4A	300	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
867	B.4A	350	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
868	B.4A	350	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
869	B.4A	400	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
870	B.4A	500	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
871	B.4A	600	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Fresh water / Sea water	
872	B.5	40	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
873	B.5	50	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
874	B.5	65	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
875	B.5	80	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
876	B.5	100	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
877	B.5	125	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
878	B.5	150	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	

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879	B.5	200	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
880	B.5	200	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
881	B.5	250	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
882	B.5	250	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
883	B.5	300	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
884	B.5	300	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
885	B.5	350	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
886	B.5	350	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
887	B.5	400	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
888	B.5	500	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
889	B.5	600	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
890	B.6	40	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
891	B.6	50	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
892	B.6	65	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
893	B.6	80	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
894	B.6	100	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
895	B.6	125	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
896	B.6	150	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
897	B.6	200	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
898	B.6	200	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
899	B.6	250	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
900	B.6	250	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
901	B.6	300	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
902	B.6	300	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
903	B.6	350	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
904	B.6	350	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
905	B.6	400	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
906	B.6	500	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
907	B.6	600	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					Sea water	
908	B.7	40	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
909	B.7	50	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
910	B.7	65	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
911	B.7	80	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
912	B.7	100	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
913	B.7	125	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
914	B.7	150	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING

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915	B.7	200	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
916	B.7	200	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
917	B.7	250	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
918	B.7	250	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
919	B.7	300	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
920	B.7	300	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
921	B.7	350	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
922	B.7	350	--	PN16	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
923	B.7	400	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
924	B.7	500	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
925	B.7	600	--	PN10	BUTTERFLY VALVE, REMOTE OPERATED					METHANOL	HYDRAULIC ACTUATOR. PROVIDED WITH MANUAL HAND PUMP. FOR SUBMERGING
926	B.8	40	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
927	B.8	50	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
928	B.8	65	--	PN 16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
929	B.8	80	--	PN 16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
930	B.8	100	--	PN 16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
931	B.8	125	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
932	B.8	150	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
933	B.8	200	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
934	B.8	200	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
935	B.8	250	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
936	B.8	250	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
937	B.8	300	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
938	B.8	300	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
939	B.8	350	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
940	B.8	350	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
941	B.8	400	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
942	B.8	500	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
943	B.8	600	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
944	B.8A	40	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
945	B.8A	50	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	

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946	B.8A	65	--	PN 16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
947	B.8A	80	--	PN 16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
948	B.8A	100	--	PN 16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
949	B.8A	125	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
950	B.8A	150	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
951	B.8A	200	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
952	B.8A	200	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
953	B.8A	250	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
954	B.8A	250	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
955	B.8A	300	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
956	B.8A	300	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
957	B.8A	350	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
958	B.8A	350	--	PN16	BUTTERFLY VALVE					Base Oil & Fuel Oil	
959	B.8A	400	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
960	B.8A	500	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
961	B.8A	600	--	PN10	BUTTERFLY VALVE					Base Oil & Fuel Oil	
962	B.9	40	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
963	B.9	50	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
964	B.9	65	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
965	B.9	80	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
966	B.9	100	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
967	B.9	125	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
968	B.9	150	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
969	B.9	200	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
970	B.9	200	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
971	B.9	250	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
972	B.9	250	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
973	B.9	300	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
974	B.9	300	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
975	B.9	350	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
976	B.9	350	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
977	B.9	400	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
978	B.9	500	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
979	B.9	600	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
980	B.9A	40	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
981	B.9A	50	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
982	B.9A	65	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
983	B.9A	80	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
984	B.9A	100	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
985	B.9A	125	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
986	B.9A	150	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
987	B.9A	200	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
988	B.9A	200	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
989	B.9A	250	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
990	B.9A	250	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
991	B.9A	300	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
992	B.9A	300	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
993	B.9A	350	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
994	B.9A	350	--	PN16	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	

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995	B.9A	400	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
996	B.9A	500	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
997	B.9A	600	--	PN10	BUTTERFLY VALVE					Methanol / Cement / Fresh Water / Sea Water	
998	B.10	40	--	PN25	BUTTERFLY VALVE					BRINE/ MUD	
999	B.10	50	--	PN25	BUTTERFLY VALVE					BRINE/ MUD	
1000	B.10	65	--	PN25	BUTTERFLY VALVE					BRINE/ MUD	
1001	B.10	80	--	PN25	BUTTERFLY VALVE					BRINE/ MUD	
1002	B.10	100	--	PN25	BUTTERFLY VALVE					BRINE/ MUD	
1003	B.10	125	--	PN25	BUTTERFLY VALVE					BRINE/ MUD	
1004	B.10	150	--	PN25	BUTTERFLY VALVE					BRINE/ MUD	
1005	B.10	200	--	PN25	BUTTERFLY VALVE					BRINE/ MUD	
1006	B.10	250	--	PN25	BUTTERFLY VALVE					BRINE/ MUD	
1007	B.11	40	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1008	B.11	50	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1009	B.11	65	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1010	B.11	80	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1011	B.11	100	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1012	B.11	125	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1013	B.11	150	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1014	B.11	200	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1015	B.11	200	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1016	B.11	250	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1017	B.11	250	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1018	B.11	300	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1019	B.11	300	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1020	B.11	350	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1021	B.11	350	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1022	B.11	400	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1023	B.11	500	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1024	B.11	600	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1025	B.11A	40	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1026	B.11A	50	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1027	B.11A	65	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1028	B.11A	80	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1029	B.11A	100	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1030	B.11A	125	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1031	B.11A	150	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1032	B.11A	200	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1033	B.11A	200	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1034	B.11A	250	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1035	B.11A	250	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1036	B.11A	300	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1037	B.11A	300	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1038	B.11A	350	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1039	B.11A	350	--	PN16	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1040	B.11A	400	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1041	B.11A	500	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1042	B.11A	600	--	PN10	BUTTERFLY VALVE					Bilge/ Sea water /Fuel Oil	
1043	B.12	40	--	PN16	BUTTERFLY VALVE					Fresh Water	

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1044	B.12	50	--	PN16	BUTTERFLY VALVE					Fresh Water	
1045	B.12	65	--	PN16	BUTTERFLY VALVE					Fresh Water	
1046	B.12	80	--	PN16	BUTTERFLY VALVE					Fresh Water	
1047	B.12	100	--	PN16	BUTTERFLY VALVE					Fresh Water	
1048	B.12	125	--	PN16	BUTTERFLY VALVE					Fresh Water	
1049	B.12	150	--	PN16	BUTTERFLY VALVE					Fresh Water	
1050	B.12	200	--	PN10	BUTTERFLY VALVE					Fresh Water	
1051	B.12	200	--	PN16	BUTTERFLY VALVE					Fresh Water	
1052	B.12	250	--	PN10	BUTTERFLY VALVE					Fresh Water	
1053	B.12	250	--	PN16	BUTTERFLY VALVE					Fresh Water	
1054	B.12	300	--	PN10	BUTTERFLY VALVE					Fresh Water	
1055	B.12	300	--	PN16	BUTTERFLY VALVE					Fresh Water	
1056	B.12	350	--	PN10	BUTTERFLY VALVE					Fresh Water	
1057	B.12	350	--	PN16	BUTTERFLY VALVE					Fresh Water	
1058	B.12	400	--	PN10	BUTTERFLY VALVE					Fresh Water	
1059	B.12	500	--	PN10	BUTTERFLY VALVE					Fresh Water	
1060	B.12	600	--	PN10	BUTTERFLY VALVE					Fresh Water	
1061	B.13	40	--	PN16	BUTTERFLY VALVE					Sea water	
1062	B.13	50	--	PN16	BUTTERFLY VALVE					Sea water	
1063	B.13	65	--	PN16	BUTTERFLY VALVE					Sea water	
1064	B.13	80	--	PN16	BUTTERFLY VALVE					Sea water	
1065	B.13	100	--	PN16	BUTTERFLY VALVE					Sea water	
1066	B.13	125	--	PN16	BUTTERFLY VALVE					Sea water	
1067	B.13	150	--	PN16	BUTTERFLY VALVE					Sea water	
1068	B.13	200	--	PN16	BUTTERFLY VALVE					Sea water	
1069	B.13	200	--	PN10	BUTTERFLY VALVE					Sea water	
1070	B.13	250	--	PN16	BUTTERFLY VALVE					Sea water	
1071	B.13	250	--	PN10	BUTTERFLY VALVE					Sea water	
1072	B.13	300	--	PN10	BUTTERFLY VALVE					Sea water	
1073	B.13	300	--	PN16	BUTTERFLY VALVE					Sea water	
1074	B.13	350	--	PN10	BUTTERFLY VALVE					Sea water	
1075	B.13	350	--	PN16	BUTTERFLY VALVE					Sea water	
1076	B.13	400	--	PN10	BUTTERFLY VALVE					Sea water	
1077	B.13	500	--	PN10	BUTTERFLY VALVE					Sea water	
1078	B.13	600	--	PN10	BUTTERFLY VALVE					Sea water	
1079	A.50	15	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1080	A.50	15	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1081	A.50	20	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1082	A.50	20	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1083	A.50	25	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1084	A.50	25	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1085	A.50	32	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1086	A.50	32	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1087	A.50	40	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1088	A.50	40	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1089	A.50	50	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1090	A.50	50	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1091	A.50	65	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1092	A.50	65	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version

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1093	A.50	80	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1094	A.50	80	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1095	A.50	100	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1096	A.50	100	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1097	A.50	125	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1098	A.50	125	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1099	A.50	150	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1100	A.50	150	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1101	A.50	200	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1102	A.50	200	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1103	A.50	250	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1104	A.50	250	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1105	A.50	300	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1106	A.50	300	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1107	A.50	350	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1108	A.50	350	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1109	A.50	400	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1110	A.50	400	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1111	A.50	450	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1112	A.50	450	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1113	A.50	500	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Straight
1114	A.50	500	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ BILGE	Angle version
1115	A.50A	15	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1116	A.50A	15	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1117	A.50A	20	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1118	A.50A	20	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1119	A.50A	25	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1120	A.50A	25	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1121	A.50A	32	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1122	A.50A	32	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1123	A.50A	40	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1124	A.50A	40	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1125	A.50A	50	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1126	A.50A	50	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1127	A.50A	65	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1128	A.50A	65	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1129	A.50A	80	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1130	A.50A	80	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1131	A.50A	100	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1132	A.50A	100	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1133	A.50A	125	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1134	A.50A	125	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1135	A.50A	150	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1136	A.50A	150	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1137	A.51	15	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1138	A.51	15	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1139	A.51	20	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1140	A.51	20	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1141	A.51	25	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight

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1142	A.51	25	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1143	A.51	32	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1144	A.51	32	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1145	A.51	40	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1146	A.51	40	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1147	A.51	50	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1148	A.51	50	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1149	A.51	65	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1150	A.51	65	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1151	A.51	80	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1152	A.51	80	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1153	A.51	100	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1154	A.51	100	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1155	A.51	125	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1156	A.51	125	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1157	A.51	150	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1158	A.51	150	--	PN16	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1159	A.51	200	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1160	A.51	200	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1161	A.51	250	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1162	A.51	250	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1163	A.51	300	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1164	A.51	300	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1165	A.51	350	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1166	A.51	350	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1167	A.51	400	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1168	A.51	400	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1169	A.51	450	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1170	A.51	450	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1171	A.51	500	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1172	A.51	500	--	PN10	GLOBE VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1173	A.52	15	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1174	A.52	15	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1175	A.52	20	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1176	A.52	20	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1177	A.52	25	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1178	A.52	25	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1179	A.52	32	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1180	A.52	32	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1181	A.52	40	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1182	A.52	40	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1183	A.52	50	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1184	A.52	50	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1185	A.52	65	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1186	A.52	65	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1187	A.52	80	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1188	A.52	80	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1189	A.52	100	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1190	A.52	100	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version

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1191	A.52	125	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1192	A.52	125	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1193	A.52	150	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1194	A.52	150	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1195	A.52	200	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1196	A.52	200	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1197	A.52	250	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1198	A.52	250	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1199	A.52	300	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1200	A.52	300	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1201	A.52	350	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1202	A.52	350	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1203	A.52	400	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1204	A.52	400	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1205	A.52	450	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1206	A.52	450	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1207	A.52	500	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Straight
1208	A.52	500	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ BILGE	Angle version
1209	A.52A	15	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1210	A.52A	15	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1211	A.52A	20	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1212	A.52A	20	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1213	A.52A	25	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1214	A.52A	25	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1215	A.52A	32	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1216	A.52A	32	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1217	A.52A	40	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1218	A.52A	40	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1219	A.52A	50	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1220	A.52A	50	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1221	A.52A	65	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1222	A.52A	65	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1223	A.52A	80	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1224	A.52A	80	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1225	A.52A	100	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1226	A.52A	100	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1227	A.52A	125	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1228	A.52A	125	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1229	A.52A	150	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Straight
1230	A.52A	150	--	PN40	GLOBE VALVE (FLANGED)					Comp.Air / Steam	Angle version
1231	A.53	15	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1232	A.53	15	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1233	A.53	20	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1234	A.53	20	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1235	A.53	25	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1236	A.53	25	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1237	A.53	32	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1238	A.53	32	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1239	A.53	40	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight

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1240	A.53	40	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1241	A.53	50	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1242	A.53	50	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1243	A.53	65	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1244	A.53	65	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1245	A.53	80	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1246	A.53	80	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1247	A.53	100	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1248	A.53	100	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1249	A.53	125	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1250	A.53	125	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1251	A.53	150	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1252	A.53	150	--	PN16	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1253	A.53	200	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1254	A.53	200	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1255	A.53	250	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1256	A.53	250	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1257	A.53	300	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1258	A.53	300	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1259	A.53	350	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1260	A.53	350	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1261	A.53	400	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1262	A.53	400	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1263	A.53	450	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1264	A.53	450	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1265	A.53	500	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Straight
1266	A.53	500	--	PN10	GLOBE NON RETURN VALVE (FLANGED)					Sea water/ Fuel oil	Angle version
1267	A.54	200	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1268	A.54	250	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1269	A.54	300	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1270	A.54	350	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1271	A.54	400	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1272	A.54	450	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1273	A.54	500	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	

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1274	A.54	600	--	PN10	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1275	A.54	40	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1276	A.54	50	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1277	A.54	65	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1278	A.54	80	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1279	A.54	100	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1280	A.54	125	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1281	A.54	150	--	PN16	GATE VALVE					SOIL / SEWAGE/ SEA WATER	
1282	A.54A	15	--	PN40	GATE VALVE					Comp.air	
1283	A.54A	20	--	PN40	GATE VALVE					Comp.air	
1284	A.54A	25	--	PN40	GATE VALVE					Comp.air	
1285	A.54A	32	--	PN40	GATE VALVE					Comp.air	
1286	A.54A	40	--	PN40	GATE VALVE					Comp.air	
1287	A.54A	50	--	PN40	GATE VALVE					Comp.air	
1288	A.54A	65	--	PN40	GATE VALVE					Comp.air	
1289	A.54A	80	--	PN40	GATE VALVE					Comp.air	
1290	A.54A	100	--	PN40	GATE VALVE					Comp.air	
1291	A.54A	125	--	PN40	GATE VALVE					Comp.air	
1292	A.54A	150	--	PN40	GATE VALVE					Comp.air	
1293	C.5	15	--	PN16	LIFT CHECK VALVE					Comp.air	
1294	C.5	20	--	PN16	LIFT CHECK VALVE					Comp.air	
1295	C.5	25	--	PN16	LIFT CHECK VALVE					Comp.air	
1296	C.5	32	--	PN16	LIFT CHECK VALVE					Comp.air	
1297	C.5	40	--	PN16	LIFT CHECK VALVE					Comp.air	
1298	C.5	50	--	PN16	LIFT CHECK VALVE					Comp.air	
1299	C.5	65	--	PN16	LIFT CHECK VALVE					Comp.air	
1300	C.5	80	--	PN16	LIFT CHECK VALVE					Comp.air	
1301	C.5	100	--	PN16	LIFT CHECK VALVE					Comp.air	
1302	C.5	125	--	PN16	LIFT CHECK VALVE					Comp.air	
1303	C.5	150	--	PN16	LIFT CHECK VALVE					Comp.air	
1304	C.6	15	--	PN40	LIFT CHECK VALVE					Comp.air	
1305	C.6	20	--	PN40	LIFT CHECK VALVE					Comp.air	
1306	C.6	25	--	PN40	LIFT CHECK VALVE					Comp.air	
1307	C.6	32	--	PN40	LIFT CHECK VALVE					Comp.air	
1308	C.6	40	--	PN40	LIFT CHECK VALVE					Comp.air	
1309	C.6	50	--	PN40	LIFT CHECK VALVE					Comp.air	
1310	C.6	65	--	PN40	LIFT CHECK VALVE					Comp.air	
1311	C.6	80	--	PN40	LIFT CHECK VALVE					Comp.air	
1312	C.6	100	--	PN40	LIFT CHECK VALVE					Comp.air	
1313	C.6	125	--	PN40	LIFT CHECK VALVE					Comp.air	
1314	C.6	150	--	PN40	LIFT CHECK VALVE					Comp.air	
1315	C.8	15	--	PN40	SWING CHECK VALVE					Comp.air	
1316	C.8	20	--	PN40	SWING CHECK VALVE					Comp.air	
1317	C.8	25	--	PN40	SWING CHECK VALVE					Comp.air	
1318	C.8	32	--	PN40	SWING CHECK VALVE					Comp.air	
1319	C.8	40	--	PN40	SWING CHECK VALVE					Comp.air	
1320	C.8	50	--	PN40	SWING CHECK VALVE					Comp.air	
1321	C.8	65	--	PN40	SWING CHECK VALVE					Comp.air	
1322	C.8	80	--	PN40	SWING CHECK VALVE					Comp.air	

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1323	C.8	100	--	PN40	SWING CHECK VALVE					Comp.air	
1324	C.8	125	--	PN40	SWING CHECK VALVE					Comp.air	
1325	C.8	150	--	PN40	SWING CHECK VALVE					Comp.air	
1326	C.15	10	3/8"	PN10	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
1327	C.15	15	1/2"	PN10	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
1328	C.15	20	3/4"	PN10	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
1329	C.15	25	1"	PN10	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
1330	C.15	32	1 1/4"	PN10	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
1331	C.15	40	1 1/2"	PN10	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
1332	C.15	50	2"	PN10	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	
1333	C.15	65	2 1/2"	PN10	BALL VALVE (SCREWED)					SEWAGE/Comp. Air/SW/oil	

Note : Unit price for following items for each size of valves shall be submitted

- i. Pneumatic actuators for Ball valves (refer spec. A.8 & A.8A).
- ii. Ex. proof double acting actuator with single solenoid and limit switch (refer spec. B.1, B.1A, B.2, B.3, B.4, B.4A, B.5 & B.6) with explosion proof certification (ATEX) for Zone 1, EEx d. In case of valves to be located in hazardous zone, explosion proof actuator required. In that cases normal actuator is to be replaced with explosion proof, this will be specified in P.O.
- iii. Double acting actuator with single solenoid.
- iv. Hand lever for Butterfly valves.
- v. Stainless steel lever for butterfly valves. In special cases stainless steel lever may be required.
- vi. Gearbox with hand wheel for butterfly valves.
- vii. Electrical actuators (Digital Interface) with a hand wheel and limit switches (Potential free contact) for remote indication of Open & Close conditions suitable for valves coming in specs B.1, B.1A, B.2, B.3, B.4, B.4A, B.5 & B.6
- viii. Heavy duty limit switches taking open/close remote indication suitable for 220V AC/24V DC shall be quoted separately for valves coming in spec A.54

Pre qualification criteria

Sl No	Description	Category	Compliance of bidder
1	Bidder shall possess experience with respect to supply of Marine quality valves- Document requirement - Copies of orders in the last two years(FY 2017-18,2018-19 executed in India/Overseas)-self attested copies of relevant purchase order/contract	Mandatory	
2	Bidder shall be a Manufacturer or Authorized dealer/Agent of a Manufacturer for Valves - Butterfly/Ball/Quick closing/Safety relief valve/Check valve/Globe/Pressure reducing valve. Document requirement - Details of manufacturing facility / Authorization letter quoting the tender number to be submitted (Range shall comprise atleast Butterfly valves)	Mandatory	
3	Type Approvals for valves /Manufacturing survey arrangements (copy of approvals to be attached)		
4	Agreement to CSL concept of valve rate contract as per below		
	a) Valid rate contract with yearwise fixed rates for 3 years		
	b) Acceptance of rate contract with no limitation on order value /quantity/group of valve during the tenure of the contract	Mandatory	
	c) Agreement to entering into contract with no estimation on requirement quantities		
	d) Acceptance of partial contracts for various groups/ sizes -		
	e) Agreement to standard lead times during the tenure of the contract irrespective of quantity		
5	Bidders shall not be under a declaration of ineligibility issued by Govt. of India /Any States in India / Public Sector Undertakings/consulates/Ministry/Banks/ Shipyards/Trading Countries/Ship owners etc (self certified copy in company letter head as per format alongwith enquiry).	Mandatory	
6	Total turnover of Rs.12 crores (3 years together) during preceeding three financial years. Auditor certified copy of balance sheet/ financial statement as supporting document for above.	Mandatory	
	Note : - Prequalification supportings will be verified appropriately to ensure authenticity of documents submitted. Signed doc evidences in support of each eligibility criteria is to be mentioned For arriving at financial figures with respect to PQ criteria , wherever foreign currency is applicable, Exchange rate of financial year closing date of the respective country will be considered for conversion to INR Offers meeting the pre qualification criteria are only eligible and those offers only shall be considered for techno commercial evaluation. Offers received without compliance to prequalification criteria will summarily be rejected without any further communication from CSL side		



COCHIN SHIPYARD LIMITED

MATERIALS DEPARTMENT

PRE CONTRACT INTEGRITY PACT

General

This pre-bid pre-contract Agreement (hereinafter called the Integrity Pact) is made on day of the month of , between, on one hand, the President of India acting through Shri Roby Varghese, Assistant General Manager, Cochin Shipyard Ltd (CSL) having its registered office at Cochin, Kerala India (hereinafter called the “PRINCIPAL”, which expression shall mean and include, unless the context otherwise requires, his successors in office and assigns) of the First part and M/s.....represented by Shri....., Chief Executive Officer (hereinafter called the “BIDDER/Seller” which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the second part.

WHEREAS the PRINCIPAL proposes to procure and the BIDDER/Seller is willing to offer/has offered the stores and

WHEREAS the BIDDER is a private company / public company / Government undertaking / partnership/registered export agency, constituted in accordance with the relevant law in the matter and the PRINCIPAL is a Government of India PSU performing its functions on behalf of The President of India.

NOW, THEREFORE,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to:-

Enabling the PRINCIPAL to obtain the desired said stores/equipment/item at a competition price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling BIDDERS to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the PRINCIPAL will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:-

Commitments of the PRINCIPAL

- 1.1 The PRINCIPAL undertakes that no official of the PRINCIPAL, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or

through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting on implementation process related to the contract.

- 1.2 The PRINCIPAL will, during the pre-contract stage, treat all BIDDERS alike and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to other BIDDERS.
 - 1.3 The officials of the PRINCIPAL will report to the appropriate Government office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.
- 2 In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER to the PRINCIPAL with full and verifiable facts and the same is prima facie found to be correct by the PRINCIPAL, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the PRINCIPAL and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by the PRINCIPAL the proceedings under the contract would not be stalled.

Commitments of BIDDERS

3. The BIDDER commits itself to take all measures necessary to prevent corrupt practices, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following:-
 - 3.1 The BIDDER will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the PRINCIPAL, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.
 - 3.2 The BIDDER further undertakes that it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the PRINCIPAL or otherwise in procuring the Contract or forbearing to do or having done any act in relation to the obtaining or execution of the contract of any other contract with the government for showing or forbearing to show favour or disfavor to any person in relation to the contract of any other contract with the Government.

- 3.3 BIDDERS of foreign origin shall disclose the name and address of their Indian agents and representatives, if any and Indian BIDDERS shall disclose their foreign principals or associates, if any.
- 3.4 BIDDERS shall disclose the payments to be made by them to their Indian agents/brokers or any other intermediary, in connection with this bid/contract and the payments have to be in Indian Rupees only.
- 3.5 The BIDDER further confirms and declares to the PRINCIPAL that the BIDDER is the original manufacturer/ integrator/authorized agent of the stores/equipment/items and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the PRINCIPAL or any of its functionaries, whether officially or unofficially to the award of the contract to the BIDDER, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.
- 3.6 The BIDDER, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the PRINCIPAL or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.
- 3.7 The BIDDER will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
- 3.8 The BIDDER will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.9 The BIDDER shall not use improperly, for purposes of competition or personal gain, pass on to others, any information provided by the PRINCIPAL as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The BIDDER also undertakes to exercise due and adequate care lest any such information is divulged.
- 3.10 The BIDDER commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.11 The BIDDER shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
- 3.12 If the BIDDER or any employee of the BIDDER or any person acting on behalf of the BIDDER, either directly or indirectly, is a relative of any of the officers of the PRINCIPAL, or alternatively, if any relative of an officer of the PRINCIPAL has

financial interest/stake in the BIDDER's firm, the same shall be disclosed by the BIDDER at the time of filing of tender.

The term 'relative' for this purpose would be as defined in section 6 of the Companies Act 1956.

- 3.13 The BIDDER shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee or the PRINCIPAL.

4. Previous Transgression

- 4.1 The BIDDER declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify; BIDDER's exclusion from the tender process.
- 4.2 The BIDDER agrees that if it makes incorrect statement on this subject, BIDDER can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

5. Earnest Money (Security Deposit)

- 5.1 While submitting commercial bid, the BIDDER shall deposit an amount **NIL** (to be specified in RFP) as Earnest Money as applicable/Security Deposit, with the PRINCIPAL through any of the following instruments:
- (i) Bank Draft of Pay Order in favor of CSL.
 - (ii) A confirmed guarantee by an Indian Nationalized Bank, promising payment of the guaranteed sum to the PRINCIPAL on demand within three working days without any demur whatsoever and without seeking any reasons whatsoever. The demand for payment by the PRINCIPAL shall be treated as conclusive proof of payment.
 - (iii) Any other mode or through any other instrument (to be specified in the RFP).
- 5.2 The Earnest Money if applicable/Security Deposit shall be valid upto the complete conclusion of the contractual obligations to the complete satisfaction of both the BIDDER and the PRINCIPAL, including warranty period.
- 5.3 In case of the successful BIDDER a clause would also be incorporated in the Article pertaining to Performance Bond in the Purchase Contract that the provisions of sanctions for Violation shall be applicable for forfeiture of Performance Bond in case of a decision by the PRINCIPAL to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.

5.4 No interest shall be payable by the PRINCIPAL to the BIDDER on Earnest Money/Security Deposit for the period of its currency.

6 Sanctions for Violations

6.1 Any breach of the aforesaid provisions by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER) shall entitle the PRINCIPAL to take all or any one of the following actions, wherever required:-

- (i) To immediately call off the pre contract negotiations without assigning any reason or giving any; compensation to the BIDDER. However, the proceedings with the other BIDDER(s) would continue.
- (ii) The Earnest Money Deposit (in pre-contract stage) and/or Security Deposit/ Performance Bond (after the contract is signed) shall stand forfeited either fully or partially, as decided by the PRINCIPAL and the PRINCIPAL shall not be required to assign any reason therefore.
- (iii) To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.
- (iv) To recover all sums already paid by the PRINCIPAL, and in the case of an Indian BIDDER with interest thereon at 2% above the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India with interest thereon at 2% above the LIBOR (London Inter Bank Offer Rate). If any outstanding payment is due to the BIDDER from the PRINCIPAL in connection with any other contract for any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.
- (v) To encash the advance bank guarantee and performance bond/warranty bond, if furnished by the BIDDER, in order to recover the payments, already made by the PRINCIPAL, along with interest.
- (vi) To cancel all or any other contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the PRINCIPAL resulting from such cancellation/recession and the PRINCIPAL shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER.
- (vii) To debar the BIDDER from participating in the future bidding processes of CSL for a minimum period as deemed appropriate, which any be further extended at the discretion of the PRINCIPAL.

- (viii) To recover all sums paid in violation of this Pact by BIDDER(s) to any middleman or agent or broker with a view to securing the contract.
 - (ix) In cases where irrevocable Letters of Credit have been received in respect of any contract signed by the PRINCIPAL with the BIDDER, the same shall not be opened.
 - (x) Forfeiture of Performance Bond in case of a decision by the PRINCIPAL to forfeit the same without assigning any reason for imposing sanction for violation of this pact.
- 6.2 The PRINCIPAL will be entitled to take all or any of the actions mentioned at para 6.1(i) to (x) of this pact also on the Commission by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER), of an offence as defined in chapter IX of the Indian Penal code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.
- 6.3 The decision of the PRINCIPAL to the effect that a breach of the provisions of this pact has been committed by the BIDDER shall be binding on the BIDDER. However, the BIDDER can approach the Independent Monitor(s) appointed for the purposes this Pact.

7 Fall Clause

- 7.1 The BIDDER undertakes that it has not supplied/is not supplying similar product/systems/items or subsystems at a price lower than that offered in the present bid in respect of any other Ministry/Department of the Government of India or PSU and if it is found at any stage that similar product/systems or sub systems/items was supplied by the BIDDER to any other Ministry/Department of the Government of India or PSU at a lower price, then that very price, with due allowance for elapsed time, will be applicable to the present case and the difference in the cost would be refunded by the BIDDER to the PRINCIPAL, if the contract has already been concluded.

8 Independent Monitors

- 8.1 The PRINCIPAL has appointed Independent Monitor (hereinafter referred to as Monitor) for this Pact in consultation with the Central Vigilance Commission.

Mr. P.K. Vijayakumar, IRS (Retd)
Madhavam, Vaniyan Lane
Punkunnam P.O
Thrissur 680002
Mobile: 8547381122
Email: vkmenon78@gmail.com

- 8.2 The task of the Monitors shall be to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact.
- 8.3 The Monitors shall not be subject to instructions by the representatives of the parties and perform their functions neutrally and independently.
- 8.4 Both the parties accept that the Monitors have the right to access all the documents relating to the project/procurement, including minutes of meetings.
- 8.5 As soon as the Monitor notices, or has reason to believe, a violation of this pact, he will so inform the Authority designated by the PRINCIPAL.
- 8.6 The PRINCIPAL accepts that the Monitor has the right to access without restriction to all Project documentation of the BUYER including that provided by the BIDDER. The BIDDER will also grant the Monitor, upon his request and demonstration of a valid interest, unlimited access to his project documentation. The same is applicable to Subcontractors. The Monitor shall be under contractual obligation to treat the information and documents of the BIDDER/Subcontractor(s) with confidentiality.
- 8.7 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 parties. The parties will offer to the Monitor the option to participate in such meetings.
- 8.8 The Monitor will submit a written report to the designated Authority of PRINCIPAL /Secretary in the Department/ within 8 to 10 weeks from the date of reference or intimation to him by the PRINCIPAL /BIDDER and, should the occasion arise, submit proposals for correcting problematic situations.

9 Facilitation of Investigation

In case of any allegation of violation of any provisions of this pact or payment of commission, the PRINCIPAL or its agencies shall be entitled to examine all the documents including the Books of Accounts of the BIDDER. The BIDDER shall provide necessary information and documents in English and shall extend all possible help of the purpose of such examination/inspection.

10 Law and Place of Jurisdiction

This Pact is subject to Indian Law. The place of performance and jurisdiction is the seat of the PRINCIPAL.

11 Other Legal Actions

The actions stipulated in this Integrity Pact are without prejudice to any other legal action that may follow in accordance with the provisions of the extent law in force relating to any civil or criminal proceedings.

12 Validity

12.1 The validity of this Integrity Pact shall be from date of its signing and extend upto 5 years or the complete execution of the contract to the satisfaction of both the PRINCIPAL and the BIDDER/Seller, including warranty period, whichever is later. In case BIDDER is unsuccessful, this Integrity Pact shall expire after six months from the date of the signing of the contract.

12.2 Should one or several provisions of this Pact turn out to be invalid; the remainder of this pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

13 The parties hereby sign this Integrity Pact at.....on.....

PRINCIPAL

BIDDER

Name of the Officer

CHIEF EXECUTIVE OFFICER

Designation

Deptt./MINISTRY/PSU

Witness

Witness

1.....

1.....

2.....

2.....

* Provisions of these clauses would need to be amended/deleted in line with the policy of the BUYER in regard to involvement of Indian agents of foreign suppliers.

BANK GUARANTEE TOWARDS EMD

To
COCHIN SHIPYARD LTD
(GOVT. OF INDIA ENTERPRISE,)
PO BAG No. 1653 , PERUMANOOR PO, COCHIN 682 015.

This deed of Guarantee made on Day ofTwo Thousandbetween CSL on one part and (Name and address of the bank) of the other part is as follows:

In consideration of CSL having allowed M/s.(herein after referred to as ‘the Contractor’) to submit Tender No.....without Earnest Money according to the conditions of such Tender Notification, we... (Name of the Bank) (hereinafter referred to as ‘the bank’) undertake to pay to CSL on demand the sum of money payable as Earnest Money in respect of the Tender Number.....made by the contractor in case the contractor withdraws from the tender before the date of firmness stipulated or when the tender is accepted by CSL, the contractor makes default in furnishing the Security Deposit or in entering into an agreement as required by CSL or otherwise commits any breach of the terms and conditions of the tender.

We, the bank, hereby irrevocably undertake to pay you any amount not exceeding in total the Guarantee Amount upon receipt by us of your demand in writing accompanied by the following documents:

Your signed statement certifying that the Contractor is in breach of his obligation(s) under the Contract and the respect in which the Contractor is in breach.

Any demand for payment should contain your authorized signatures which must be authorized by your bankers or by a notary public.

The guarantee shall remain in full force and effect during the period that would be taken for the finalization of the tender and till CSL certifies that the terms and conditions of the said tender have been fully and properly carried out by the said contractor and accordingly discharges this guarantee or for 6 months from the date of issue of this guarantee whichever is earlier. A notice of the claim under this guarantee may be served on the bank within 3 months after the said period in which case the same shall be enforceable.

We, the Bank, further agree that any change in the constitution of the said contractor or the said bank shall not discharge our liability hereunder. This guarantee shall not be avoided, released or affected by any variation in the terms of the tender, acceptance of the contract between the contractor and CSL or any neglect, indulgence or forbearance by CSL.

Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed -----only).
2. This Bank Guarantee shall be valid up to (date) (9 months from the date of issuing the BG)
and

3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if you serve upon us a written claim or demand on or before(validity date).

Any demand for payment under this Guarantee must be received by us at this office during working hours on or before the validity Date. Should we receive no claim from you by the validity Date, our liability to you will cease and the guarantee will definitely become null and void whether returned to us or not.

Yours truly,
Signature and seal of the
guarantor:.....

Name of
Bank:.....

Address:
Date:.....

3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if you serve upon us a written claim or demand on or before(validity date).

Any demand for payment under this Guarantee must be received by us at this office during working hours on or before the validity Date. Should we receive no claim from you by the validity Date, our liability to you will cease and the guarantee will definitely become null and void whether returned to us or not.

Yours truly,
Signature and seal of the
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Name of
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Date:.....