

**SOTR FOR ELECTRICALLY ACTUATED  
REMOTE CONTROLLED VALVES**

**1. Electrically Actuated Valves**

**(a) Technical Requirements**

- i) Scope of supply will cover Design, Manufacture, Inspection, Testing, Packaging, forwarding & Satisfactory Operation on board ship for all the valves listed in this specification.
- ii) The supplied item shall be of proven design; Prototypes, new designs or extensive modifications of standard designs are unacceptable.
- iii) Each type of valve to be used in warship is to conform to specifications acceptable to the type approval authority (**TAA**).
- iv) All Valves shall be type tested

**(b) Types of valves covered by this specification are as follows;**

- i) Butterfly valves
- ii) Ball valves

**(c) Design Parameters:**

- |                           |                                  |
|---------------------------|----------------------------------|
| i) Design Code            | NES 375/international standards  |
| ii) Fluids handled        | Fresh water & Chilled water etc. |
| iii) Operating pressure   | 10 BAR                           |
| iv) Operating temperature | 120°C MAX                        |
| v) Fluid velocity         | 3-4 Meters / Sec                 |

**2. General Design Requirements.**

- (a) The valves are to be designed to offer minimum pressure drop during flow. Care is to be taken to avoid complications in operating or sudden change in section.
- (b) Valve body thickness wherever not specified in the standard shall be as per ANSI B16.34
- (c) An arrow to be embossed on the body to indicate the direction of flow (As applicable)
- (d) Stops shall be provided to ensure positive alignment of valves with the ports
- (e) Valve OPEN & CLOSED indicator shall be provided.
- (f) All valves shall be provided with locking arrangement.
- (g) All valves shall be field serviceable
- (h) In case of leakage through gland, the technicians/watch keeper on board the ship should be able to change the gland packing/seal even though the fluid is flowing through the valve under pressure (Back Seat provision)
- (i) The valve offered should operate smoothly under tropical marine conditions. It shall withstand contamination through air, oil, salt water & other contaminants associated with the marine environment.
- (j) The valves shall be designed suitably to withstand shock loading without any portion of the equipment coming adrift or creating a hazard to personnel or to any other equipment.
- (k) Rubber seats/seals used in to the valve body & penetrated by the valve spindle shall be adequately reinforced to prevent the seat from getting inflated by pressure behind the seat. Circumferential joints of the rubber seats shall be bonded together.

(l) Rubber components of Valve shall be designed such that it permits removal & replacement at the site of the installation. Rubber seats shall be clamped mechanically secured or bonded to the body or disc. Method of bonding shall be tested in accordance with ASTM D429.

(m) **Butterfly Valves:**

- i) All Butterfly valves shall comply with BS 5155 requirements.
- ii) All Butterfly valves shall be WAFER/MONO Flange type in design.
- iii) All Butterfly valves shall have back seat arrangement.
- iv) All Butterfly valves shall antistatic arrangement to ensure electrical continuity between stem & body of Valves.

(n) **Ball Valves:**

- i) All Ball valves shall comply with BS 5351 requirements.
- ii) All Ball valves shall be top entry or side entry type only. Split body type is not acceptable.
- iii) All Ball valves shall have back seat arrangement.
- iv) All Ball valves shall antistatic arrangement to ensure electrical continuity between stem & body of valves.
- v) In all Ball valve, Ball is to be PTFE coated.

3. **Specific Requirements.**

(a) **Service Application:** When used with liquids, these valves shall be suitable for flow velocities, with the valve fully open, of at least 5 m/sec at the valve inlet. The valves shall be suitable for tight shut off & regulating applications.

(b) **Noise Requirement:** The measurement & acceptance criteria should be as per type 2 of the "MIL-STD-740-2".

(c) **End Connections:**

- i) All valves 40NB & above shall have flange connections.
- ii) End flanges shall be cast or forged integral with the body.
- iii) Flanges are to conform to **BS 4504 SEC. 3.3 / BS 4504 SEC. 3.1** for pressure rating **PN 10**.
- iv) The flange face to face distance indicated in attachment is inclusive of flange thickness.
- v) The flange thickness shall be as per code 321 of BS 4504 part 3.3 / 3.1 for PN 10 rating.
- vi) All valves 32NB & below shall have screwed connections.
- vii) The threading shall internal type
- viii) The threading shall be female BSP parallel type conforming to BS 21.
- ix) The threading at valve ends shall be as specified in attachment no: 3B.
- x) All flanges shall be raised face.

(d) **Locking Arrangement:** All valves shall be provided with locking arrangement either with chain & pad lock or any other suitable arrangement

(e) **Anti Blow Out Stem:** All valves shall be designed to ensure that in the event of the gland being removed while the valve is under pressure, the stem does not blow out of the body.

- (f) **Antistatic Design:** All valves shall antistatic arrangement to ensure electrical continuity between stem & body of valves.
- (g) **Soft Seal Ring:** A soft seal ring is to be fitted in either the body seat or the disk seat. The ring shall be designed to give a full metal-to-metal seal if the soft seal is inoperative or removed.
- (h) **Fire Safe Design:** Where valves fitted in a system is required to be fire safe tested, and then the valves are to be designed to fire safe requirements of BS 5146. Fire safe testing is to be carried out as per BS 6755 Part II.
- (i) **Lifting Arrangements:** All valves 80 NB & above shall be provided with permanent lifting arrangement for ease of handling on board the ship.
- (j) **Galvanizing:** Galvanizing of any of the parts required shall be Hot Dip galvanized conforming to NES 764/BS 729.
- (k) **Passage of Flow:**
  - i) The body end port shall be circular & the numerical values of the diameter in millimeters shall be as close as possible to the value of DN.
  - ii) The passage for the flow of fluid shall be clear & smooth. The flow area shall be not less than 95% of bore area.
  - iii) The minimum seat bore diameters shall be strictly as per BS 5155.
  - iv) Vendor to provide Cv values of valves offered duly proved.
  - v) Vendor to provide pressure drop across the valve duly proved.
- (l) **Operation:**
  - i) All valves shall have manual override system in addition to electrical actuators.
  - ii) The actuators fitted on valves are to be considered as an integral part of the valve & designed to anti corrosion & shock requirements of the valve itself. All actuators are to be water tight .
  - iii) Vendor to provide the actual torque(CERTIFIED) required for the valve operation of the offered valves.
  - iv) All valves shall be provided with stops to prevent movement of the shaft beyond limit.
  - v) Valves shall be fitted with valves (open & close) position indicator.
  - vi) Valves shall be closed by turning the operating shaft in cckwise direction when facing end of the the operating shaft.