

## SOTR FOR SHIP'S WINDOW WIPERS

### **1. Scope Of Supply**

(a) Manufacturing, testing, supply & commissioning of good quality straight line window wipers with single phase, continuous, three speed motor controls with zeroing mechanism & defrosting heater arrangement.

(b) The window wiper system should have the following features:

- i. Suitable worm reduction gearbox for reducing the drive from motor to the drive pulley.
- ii. Blade arm assembly complete with blade for transmitting the drive pulley to the wiping blade.
- iii. Centralized control panel for individual compartments with 3-speed switches and individual local switches should be provided for all the windows.
- iv. Integrated Heaters and RCU should be provided for all windows and individual centralized control panels should be provided for all the compartments Quantity of items required per ship is tabulated as below

<u>S.NO</u>	<u>Compartment</u>	<u>RCU/J.B</u>	<u>CONTROL PANEL</u>	<u>HEATERS</u>
a	Enclosed bridge	11	1	11
b	Flag bridge	10	1	10
c	E.C.Position	8	1	8
d	Flyco	3	1	3
<b>Quantity per ship</b>		32	4	32

### **2. Performance Requirement:**

- (a) Window wiper assembly shall be suitable for fitment to the outer side of glass window to be wiped.
- (b) Window wiper motor and heater supply shall be suitable to 230V, 50Hz, 1 Ph, 3 speeds and enclosed surface cooled type and of S-1 duty.
- (c) Enclosure of motor & wiper Assembly should be IP-57/56 and for control unit it should be IP-56.
- (d) Weight of the window wiper should not exceed 4.5 kg.
- (e) The material of enclosure of Control panel shall be of 14SWG MS (continuous speed) shall have three speed control-slow, intermittent and fast.

- (f) Suitable wiper assembly shall be used which have automatic stopping at right end or left end and able to wipe 90% of glass in every sweep.
- (g) LFH (Limited Fire Hazard) cable is to be used for internal wiring only. Cable identification no. Shall be used for all cables.
- (h) Two nos. double ended threaded M 10 Earthing Studs are to be fitted on both sides of the control panel.(left and right bottom side)
- (i) The electrical components such as Motor, centralised control panel, Local switch etc. shall conform to EMI/EMC requirement as per spec. MIL-461-F.
- (j) All the components should be accessible and can be removed from the front of the cubicle. There shall be no hidden connection.
- (k) Firm should indicate value of blade pressure.
- (l) Water nozzle sprays system for window screen to be indicated. Water nozzle spray system for window screen should be provisioned as part of window wiper unit.
- (m) Centralized control panel and its components shall be of reputed make confirming to EED-Q-264.
- (n) Effective defrosting heating arrangements needs to be provided as an integral part for all the windows and a control switch for the same needs to be provided on a centralized control panel.
- (o) The noise level of the motor to be kept minimum.
- (p) The Wiper assembly should be designed to wipe 80-90% of Glass in every sweep.
- (q) Zeroising mechanism of wiper blades should be met.
- (r) Motor and control panel shall generally confirm to EED-Q-71(R3).
- (s) Length of the Reinforcing tube which connects the wiper assembly and blade has to be supplied as per motor fitment location On-board ship.
- (t) The maximum overall dimensions of control panel should not exceed 200 X 150 X 150mm.
- (u) Motor should be enclosed surface cooled type and of S-1 duty.

### 3. **General Requirements**

- (a) Power Supply: The following shall be available from the ship support systems:
  - i. 380 V AC, 50 Hz, 3 phase
  - ii. 230 V AC, 50 Hz, 1 phase
  - iii. The supply on-board will be with insulated neutral.

- (b) Maximum linear speed of the wiper blade is to be within 1.2 to 1.5 m/Sec.  
A 1/15 HP, 230V, 50HZ, 3 PH electric motor giving lower speed of half the maximum speed is to be provided. The motor is to be designed for an ambient temperature of 60 °C and Class "F" insulation.
- (c) The blade arm is to be spring loaded in an approved manner such that a suitable wiping pressure (1 Kg./mm<sup>2</sup> approx.) between the blade and window glass is maintained. The blade arm should be capable of being raised clear of and at 90 °C to the glass.
- (d) The motor is to be squirrel cage type, of not more than 1/15 HP, continuously rated with Class F insulation and specially designed / manufactured to Naval requirements conforming to EED-Q-071-R3. Shaft material to be EN 57 OR AISI 304 or AISI 316. Thermistor to be incorporated in each winding of motor along with suitable provision in starter, if required.
- (e) The supplier to provide motor for window wipers as per clause 1 It may also be noted that water and gas tightness to be maintained. The window wiper unit should conform to shock grade 'A' with mounting (NSS-II inherent).
- (f) The water spraying arrangement is to be suitable for water of temperature up to 160° F. The rubber lining and other components should withstand this temperature.
- (g) The control unit comprising a 3-pole, 3 position rotary switch (off – fast-slow) and terminal blocks is to be housed in an aluminium casing and mounted on a suitable base plate.
- (h) Cable glands as per specification NES 514/DGS/EED/VI/1535/R6 is to be provided on all the units.
- (i) Suitable crimping lugs for cable patt. Nos. mentioned above, to be provided by the firm.
- (j) The window wiper is to have a single aluminium base plate such that it can be readily bolted into position over the window or removed for maintenance purposes. The length of the base plate is not to exceed 'length of stroke of the wiper plus 250mm'. All other dimensions and weights are to be kept minimum.
- (k) The window wipers are to be watertight to 0.42 Kg/Sq.Cm. and control units are to have drip proof construction.
- (l) Enclosure of motor should be IP-56/57 and for control unit it should be IP-56.
- (m) All similar components are to be interchangeable. All parts are to be suitably protected against weather. The casing and covers are to be painted Admiralty grey as per approved painting procedures. All M.S. screws, washers, bolts, nuts are to be cadmium plated. Painting should conform to DGS 251.  
Terminals of motor and control unit are to be suitably spaced and marked for ease of connection and suitable electrolytic copper crimping sockets are to be provided for connecting ship's cables, high speed and low speed marking with phase identification to be provided in both motor and control unit.

- (n) Internal wiring is to be done by approved type of wires and suitable cable identification markers. Low toxicity/LFH cables to be used for internal wiring.
- (o) Earthing bolt is to be provided on the unit at both sides.
- (p) Shock/vibration mounts as required to be provided to dampen the vibration.
- (q) Motor and control panel shall generally confirm to EED-Q-71(R3).
- (r) Only the following protections are to be provided on control panel :-
  - i. Single phase protection
  - ii. Overload protection.
  - iii. Earth fault protection.
- (s) The following control and facilities are to be provided on the control panel.
  - i. Start Push Button – Green
  - ii. Stop Push Button – Red
  - iii. Indicating Lamp (white/clear) – Power `ON`
  - iv. Indicating Lamp (Green) – Motor Running
  - v. Indicating Lamp (Red) – Motor overheat/over current trip
- (t) The Window wiper assembly should be designed to meet JSS 5555-CLASS N2 specifications.
- (u) Switch & control gear shall generally confirm to EED-Q-264.
- (v) Material and finish are to be normally in accordance with NES 507 and NES 1005.
- (w) All tallies and diagram plates shall be of anodized aluminium alloy. Size of tally plate and diagram plate and their lettering to be as per NES-723.
- (x) Painting shall be Admiralty grey confirming to DGS-251. It shall be powder coated.