



INSTALLATION INSTRUCTIONS

50NM PNEUMATIC MARINE UNIT

These instructions are meant as a guide, and apply to the majority of installation requirements typically found on board vessels. If you experience any difficulty in the fitting of these units, please do not hesitate to contact us for advice.

FITTING THE 50NM PNEUMATIC UNIT

- 1) Establish a suitable area to install the Pneumatic Unit.
- 2) NOTE the Pneumatic Unit is MOUNTED from INSIDE the bulkhead.
- 3) Drill 1 hole Dia 26.5 - 27mm, for the Main Drive Liner/Spindle, position on bulkhead as shown on the relevant SWS drawing if supplied. Contact SWS if you are unsure about hole positions.
- 4) Drill 1 hole Dia 20.5 - 21mm, for the Idler Liner/Spindle, at 50 Crs to the Drive Liner/Spindle.
- 5) Drill 2 holes Dia 10mm, using the pre-drilled holes in the Pneumatic Mounting Bracket as a Template, and 1 hole Dia 10mm, centrally between liner holes. Note: only required if bulkhead connectors fitted. (It is normal to mount the bracket at right angles to the window.)
- 6) ENSURE a proprietary sealant is used around all points of entry through bulkhead. (Not supplied)
- 7) Inside the bulkhead - Fit the Pneumatic Unit. (Fixing bolts not supplied.)
- 8) Outside the bulkhead, - Fit the M26 nuts, washers, and weather cap to the Main Liner, and the M20 nuts, washers, and weather cap to the Idler Liner (Torque M26 - 78/82 Nm & M20 - 56/62Nm.)

FITTING THE WIPER ARM

- 1) Inside the bulkhead, - Connect power to the Pneumatic Unit, run Unit and switch off.
- 2) Outside the bulkhead, - While the Unit is being run, it is IMPORTANT to observe the direction the drive spindle rotates in immediately before it stops. This direction will give the PARK POSITION.
- 3) Fit the Arm onto the Spindle(s) allowing the Blade to lie approx. 50mm from the edge of the glass in the PARKED POSITION.
- 4) Only tighten the Spindle Nut sufficiently to allow the Arm & Blade to travel across the glass when the Pneumatic unit is run to see if the positioning is correct.
- 5) If incorrectly positioned - **DO NOT ATTEMPT TO ROTATE OR TWIST THE ARM ON THE SPINDLE** this will damage the splined end of the drive spindle and as a result the Arm/Blade may slip in operation.
- 6) To correct alignment errors, - remove the Spindle Nut and gently pull the Arm off the Spindle, realign and repeat from stage 3. above. (Arm Extractor is available)
- 7) When correctly aligned, tighten the Spindle Nut and serrated washer. (Torque M10 - 26/28Nm & M8 - 18/22 Nm)

FITTING THE WIPER BLADE

- 1) Remove the Blade Retaining Screw and Nut from the blade clip. (Fit spacer over Blade if required.)
 - 2) Push the spacer and/or the Blade into the Blade Clip on the Wiper Arm.
 - 3) Ensure that all the fixing holes align. Secure in place with the Blade Retaining Screw & Nut. (Torque 10/14 Nm)
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DESIGN CRITERIA OF THE PNEUMATIC SYSTEM

- 1) Air consumption is approximately 2.0 litres/second at 6.8 bar.
 - a) A Mains Filter regulator with a theoretical flow rate of approximately 15 litres/second has been selected for the Pneumatic unit
 - b) It was originally intended to operate with one filter regulator per unit, and it is strongly recommended that one filter regulator operate a MAXIMUM of three units.
 - c) The recommended airflow through 8mm pipe is only 5.7 litres/second at 6.3 bar, and 7.1 litres/second at 8 bar. In theory this does not take into consideration the typical system losses and pipe restrictions, which effect airflow.
 - 2) It is vital to define stall force, and therefore the MINIMUM system pressure required
 - a) The sensor switches on the actuator (cylinder) are operated by sensing pressure decay.
 - b) If pressure is insufficient, snow or ice on the window may stall the actuator. This will cause the sensors to change the valve state and effectively short stroke the actuator.
 - c) IMPORTANT this will only happen if the system pressure is too low.
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MAINTAINANCE OF THE PNEUMATIC SYSTEM

The only routine maintenance required is on the filter regulator. The filter element should be replaced every three to six months. Failure to ensure that the filter is working effectively will allow water and oil particles to enter the wiper pneumatic circuit and eventually cause the valve to seize.

- 1) Isolate the system.
 - 2) Unscrew the filter bowl.
 - 3) Remove the filter element retaining screw.
 - 4) Remove the old filter element.
 - 5) Fit the new filter element.
 - 6) Replace the filter element retaining screw.
 - 7) Refit the filter bowl.
 - 8) Restore the system.
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TO REPLACE LINER/LEVER ASSEMBLY

DISASSEMBLY

- 1) Outside the bulkhead, - Remove the following parts ONLY. The Nut Cap, Spindle Nut, Split and Plain Washers, The Arm (refer to fitting instructions for removal), the Liner Weather Cap, Liner Nut, Steel and Rubber Washers.
- 2) Check Liner protrusion length from front of Bulkhead.
- 3) Inside the bulkhead, - Unclip the Clevis pin, and remove from the holder. (It is important to keep the pin safe as required on reassembly.)
- 4) Remove the Tie bar from the Holder.
- 5) It is now possible to remove the Liner/Lever Sub Assembly, by unscrewing the Liner from the bracket.

REASSEMBLY

- 1) Inside the bulkhead, - To fit the new Liner/Lever Sub Assembly, screw the Liner into the bracket.
- 2) Replace the Tie bar into the Holder.
- 3) Align the holes in the Tie Bar and Holder, insert the Clevis pin and clip into place.
- 4) Outside the bulkhead, - Check Liner protrusion length from front of Bulkhead.
- 5) Replace in the following order- the Rubber and Steel Washers, Liner Nut, Liner Weather Cap, The Arm (refer to fitting instructions for replacement), the Plain and Split Washers, Spindle Nut and the Nut Cap.

TO REPLACE IDLER LINER ASSEMBLY

DISASSEMBLY

- 1) Outside the bulkhead, - Remove the following parts ONLY. The Nut Cap, Spindle Nut, Split and Plain Washers, The Arm (refer to fitting instructions for removal), the Liner Weather Cap, Liner Nut, Steel and Rubber Washers.
- 2) Check Liner protrusion length from front of Bulkhead.
- 3) Inside the bulkhead, - It is now possible to remove the Idler Liner Sub Assembly, by unscrewing the Liner from the bracket.

REASSEMBLY

- 6) Inside the bulkhead, - To fit the new Idler Liner Sub Assembly, screw the Liner into the bracket.
- 7) Outside the bulkhead, - Check Liner protrusion length from front of Bulkhead.
- 8) Replace in the following order- the Rubber and Steel Washers, Liner Nut, Liner Weather Cap, The Arm (refer to fitting instructions for replacement), the Plain and Split Washers, Spindle Nut and the Nut Cap.

GENERAL

As we have no influence on the installation of complete windscreen wiper systems, we are unable to accept liability for installation errors.

The composition and installation of freely selected wiper systems lie within the sole responsibility of the customer. We are therefore unable to accept liability.

CAUTION! BEWARE OF INJURY!

BEFORE WORKING ON THE WIPER SYSTEM,

OBSERVE THE FOLLOWING REMARKS WITHOUT FAIL!

Most wiper systems have a park setting, which permits them to operate in the parked position if connected to the vessels electrical system, even if the wiper is switched off. **FOR THIS REASON, AT THIS POINT IN TIME, NEITHER MAY THE WIPER ARM BE MOUNTED, NOR MAY ANY PERSON HAVE HANDS, FINGERS ETC ANYWHERE NEAR THE WIPER SYSTEM.** Even small wiper systems can neither be braked nor stopped by hand.

NEVER REACH INTO THE AREA OF THE ROD LINKAGE WHEN THE SYSTEM IS RUNNING!

When putting into service (ie. when connecting the wiper motor to the vessels electrical system, even if the wiper switch is in the 0 position), never leave any loose items such as screwdrivers in the area of the wiper system, as flying objects could lead to injury.