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INSTALLATION AND MAINTENANCE

INSTRUCTIONS FOR THE

1850 EXTERNAL SERIES

SINGLE STATION

WINDSCREEN WIPER SYSTEM

WITH WIRING FOR

MULTI-SPEED CONTROL SWITCH.

CONTENTS

GENERAL INFORMATION AND SAFETY SUMMARY

As we will have no influence over installation of complete windscreen wiper systems if carried out by the customer, we are unable to accept liability for installation errors.

If you require any additional information or any special problems arise which the installation - maintenance instructions do not treat in sufficient detail, please contact us directly.

Safety Precautions

CAUTION! BEWARE OF INJURY!

BEFORE WORKING ON THE WIPER SYSTEM, OBSERVE THE FOLLOWING REMARKS WITHOUT FAIL!

Most wiper motors have a park setting, which permits them to default to the parked position if connected to the vehicle electrical system, even when 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 motors 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 (i.e. when connecting the wiper motor to the vehicle 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.

Please ensure the equipment is handled with care. Do not drop or bang the equipment down on a hard surface taking extra care around the area where the motor shaft is situated. Do not hammer the motor shaft when installing the equipment, as this will cause the motor gear plate to deform causing premature failure of the unit.

Introduction

The Windscreen Wiper system utilised is detailed on the following pages. The primary components that form the Windscreen Wiper System are the wiper motor linkage, the wiper arm assemblies and wiper blades.

Functional and Equipment Description of System

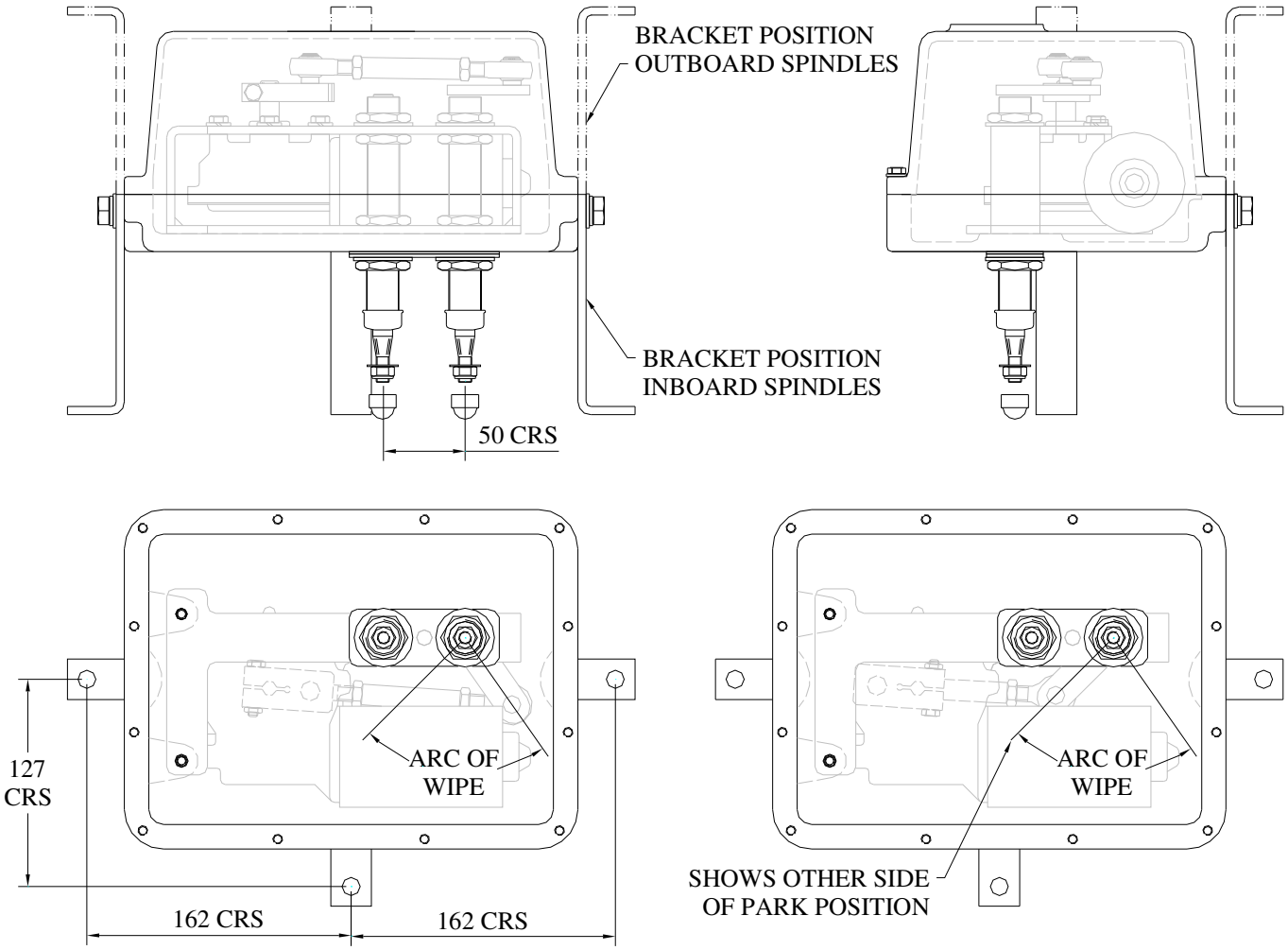
The wiper motor/bracket unit fitted inside the sealed external mounting box. The electric wiper motor forms the central part of the windshield wiper system. The motor is mounted on a fabricated mild steel bracket which is polyester powder coated to prevent corrosion.

The drive lever is secured to the wiper motor shaft and connected through a tie bar, to the spindle lever assembly. The drive mechanism provided transfers the rotary output from the motor; to a reciprocating motion of the spindles, this mechanism is zinc plated and is sized to give the correct angle of arc for the windscreen wiper arm being driven.

The Spindles that drive the wiper arms pass through the external mounting box, connecting the drive mechanism to the wiper arm; these are manufactured from stainless steel, to prevent corrosion.

CHAPTER 1

Wiper Motor Assembly



1850 L *** * *** ** *

L DENOTES LINKAGE

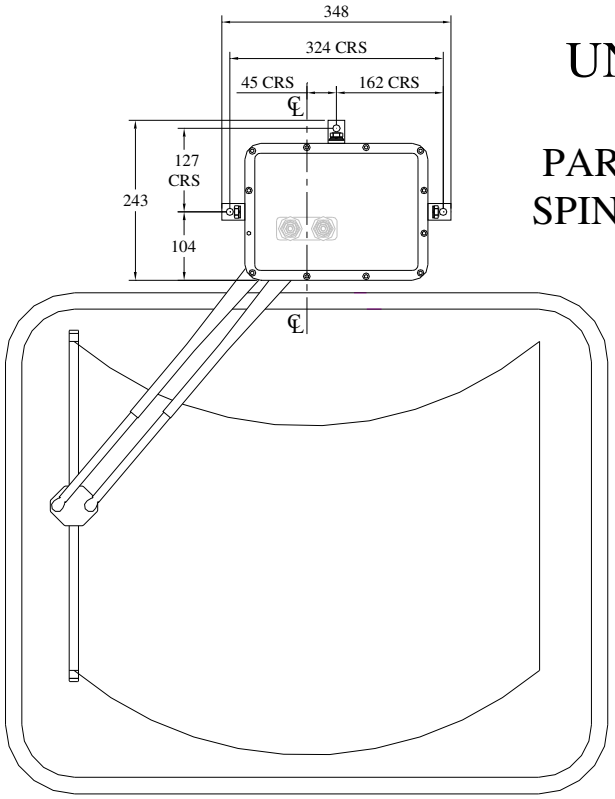
MOTOR	vDC	Code
100860/3	12v	12V
100865/2	24v	24V

(OUTSIDE LOOKING IN) PARK POSITION	Code
PARK ABOVE LEFT	A
PARK ABOVE RIGHT	B
PARK BELOW LEFT	C
PARK BELOW RIGHT	D

ANGLE OF ARC Angle	Code
45°	45
50°	50
55°	55
60°	60
65°	65
70°	70
75°	75
80°	80
85°	85
90°	90

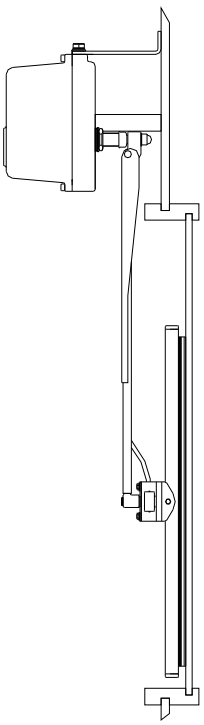
FACING (SPINDLES)	Code
INBOARD	1B
OUTBOARD	0B

M DENOTES INMAR

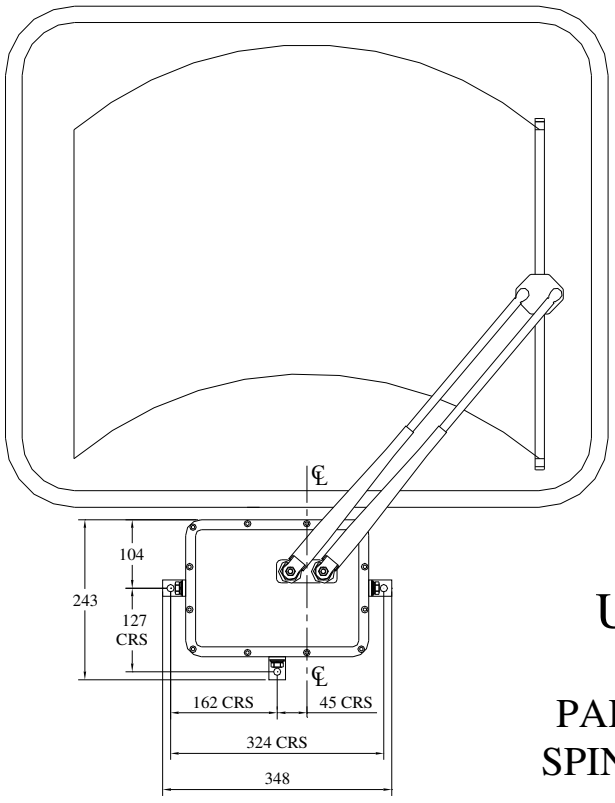


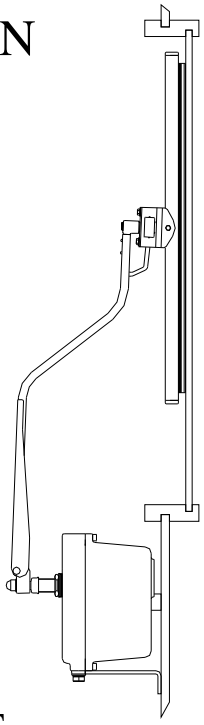
UNIT SHOWN

PARK ABOVE LEFT
SPINDLES INBOARD



VIEW ON
OUTSIDE
LOOKING IN



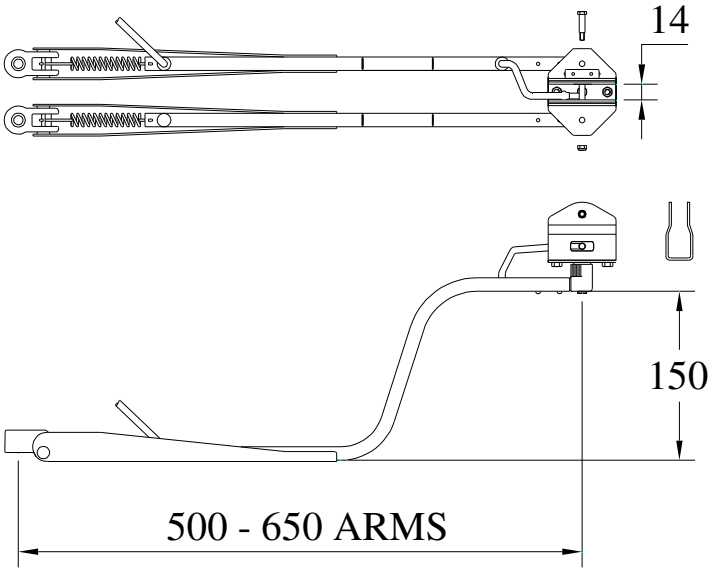


UNIT SHOWN

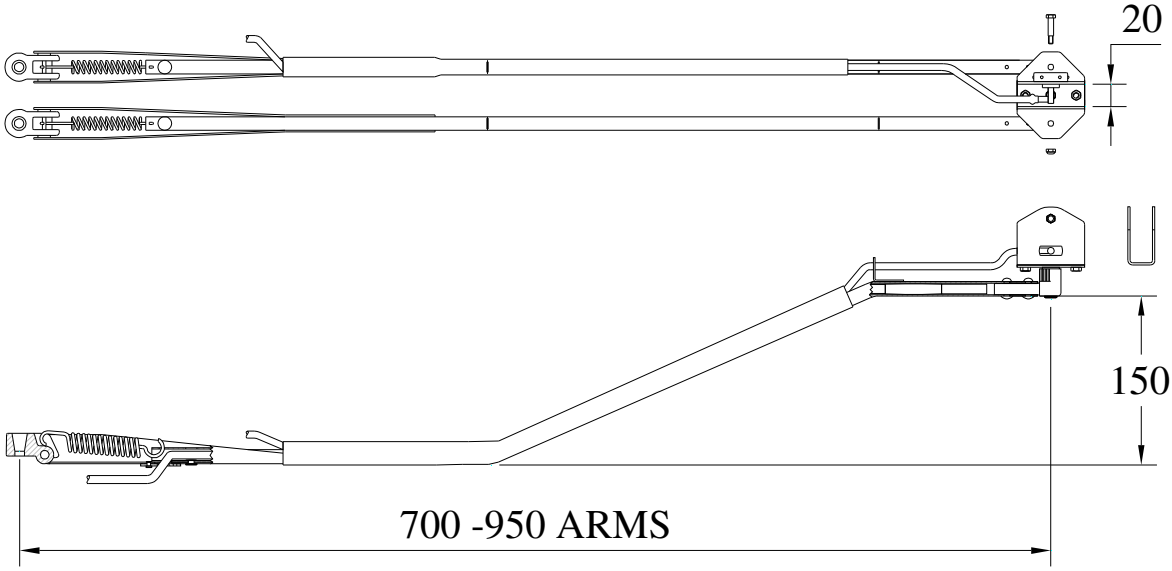
PARK BELOW RIGHT
SPINDLES OUTBOARD

1850 0 – RANGE ARMS

Cranked Arms – Outboard Facing Spindles



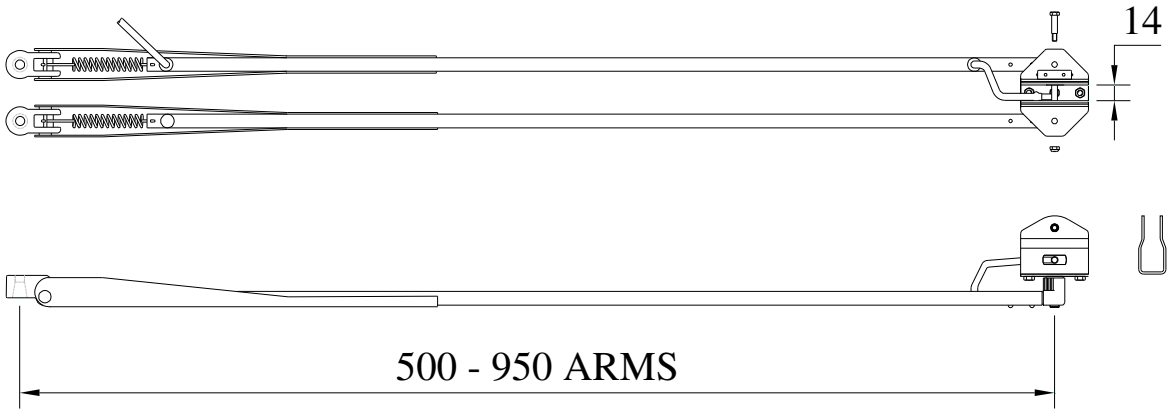
Showing - Wash Jet



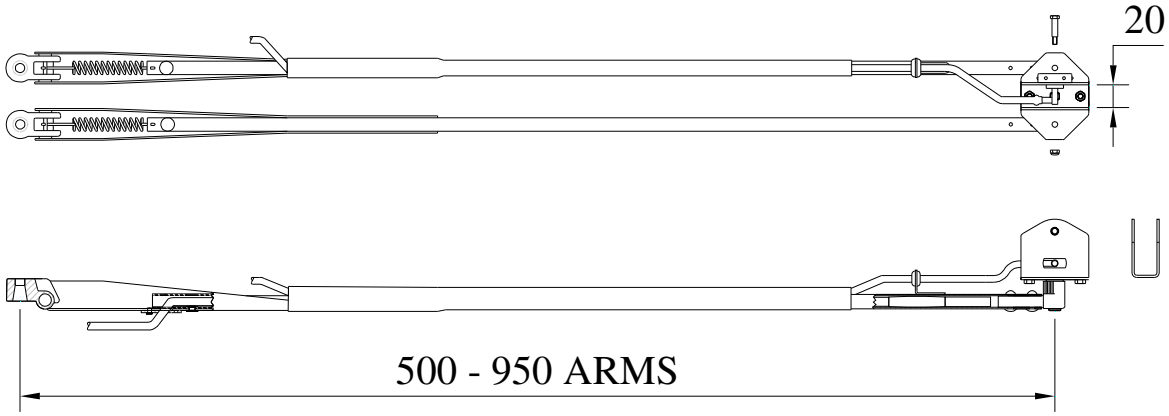
Showing - Heater & Wash Jet

1850 1 – RANGE ARMS

Straight Arms – Inboard Facing Spindles



Showing - Wash Jet



Showing - Heater & Wash Jet

1850 * * ***** **** **

Arm Type	Code
In Board (Straight)	1
Out Board (set in 150mm)	0

Spring	Colour	Code
80012000	Blue	C
80012100	Red	D
80012200	Black	E

Length	Code
500mm	0500
550mm	0550
600mm	0600
650mm	0650
700mm	0700
750mm	0750
800mm	0800
850mm	0850
900mm	0900
950mm	0950

Heater / Jet	Code
Heater Fitted	HT0
Jet Fitted	
-Left (15032300)	LTJ
-Right (15032400)	RTJ
Heater and Jet Fitted	
-Left	LHJ
-Right	RHJ
Neither	N0N

Blade Clip	Code
14 MM (80348800)	14
20 MM (80349000)	20

Code Reference:
All '0' & '1's are numbers not letters.

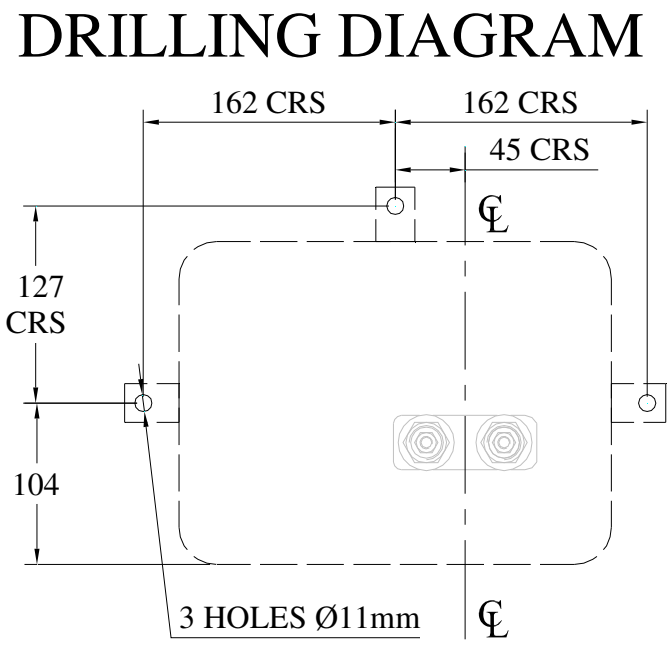
CHAPTER 2

Installation Instructions

These instructions are meant as a guide. If you experience any difficulty in the fitting of these units, please do not hesitate to contact us for advice.

Drilling Diagram

NOTE - Drilling Diagram is NOT to size and is for reference only



Fitting the Wiper Motor Assembly

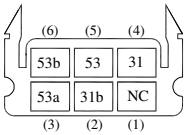
When the mounting holes have been drilled in the bulkhead, the following procedures apply.

1. Fit the Motor Unit and fix in place through the predrilled mounting holes (Fixing bolts not supplied)

2. ENSURE a proprietary sealant (Not supplied) is used around all points of entry through the bulkhead.

3. Connect the Ship's wiring to the Motor.

CONNECTOR(REAR VIEW)



INSULATED EARTH RETURN

WIRING CONNCTION CODE		
PLUG		MOTOR
(5)	53	SLOW SPEED
(3)	53a	+VE SUPPLY & SELF-PARK FEED
(6)	53b	FAST SPEED
(2)	31b	SELF-PARK REVERSAL FEED
(4)	31	-VE SUPPLY
(1)		NOT CONNECTED

4. Remove the M8 Nut caps, M8 Nylock Nuts and M8 Flat Washers, from the spindles, prior to fitting the Arms, and keep safe.

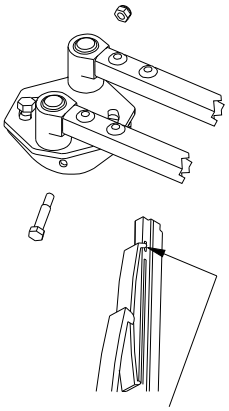
Fitting the Wiper Blade

1. Remove the Blade Retaining Screw and Nut from the Blade Clip on the Main Arm.

2. Place the Wiper Blade into the Blade Clip.
   (Note If only one end of blade rubber captive, it must be at top of the screen.)

3. Ensure that all the fixing holes align. Secure in place with the Blade Retaining Screw and Nut. Important DO NOT over tighten the Blade Retaining Screw and Nut, as the Blade is required to pivot on the glass.

4. The wiper blades should be changed every 6 months but this is dependent on use and operating conditions.
   (Wiper Blades - Ref Table1, Page 10 & Table 2 – continued, Page 12)



CAPTIVE CLIP
TO BE AT THE
TOP OF SCREEN

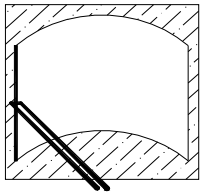
Fitting the Wiper Arm Assembly

IMPORTANT: - the Blade must be fitted to the Arm prior to the Arm being fitted. (This is to prevent the Blade Clip damaging the screen,)

1. Run the Motor to insure it is parked correctly, and then disconnect all Electrical Power.

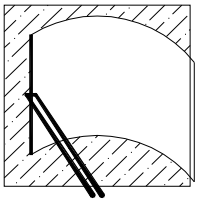
2. While the Unit is being run, it is IMPORTANT to observe the direction the drive spindle rotates in immediately before it stops. This direction will give the PARK POSITION.

3. Fit the Arm onto the Spindle allowing the Blade to lie approx 50-75mm from the edge of the glass in the PARKED POSITION.



4. Fit a M8 Flat Washer on to the spindle next to the Arm Head, then a M8 Nylock Nut.

5. Only tighten the Nut sufficiently to allow the Arm and Blade to travel across the glass when the Motor is run to see if the positioning is correct.



6. 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, resulting in the Arm and Blade slipping in operation.

7. To correct alignment errors, - loosen the Nut and gently pull the Arm up the Spindle, realign and repeat stages above.
   (Arm Extractor Tool is available see Page 13 for instructions)

8. When correctly aligned, tighten the M8 Spindle Nut 20Nm. Then fit the Weather Cap supplied with the Linkage.

CHAPTER 3

Maintenance

Introduction

This chapter contains all preventative maintenance and removal and replacement procedures for the windscreen wiper components. Preventative maintenance procedures include the information required to replace the wiper blades.

Safety Precautions

Always disconnect the power when servicing the Windscreen Wiper System, or on any ancillary components. Serious damage to the Equipment and/or Personal Injury may occur if the power is not disconnected.

Scheduled Maintenance Action Check

Table 1 is a Scheduled Maintenance Action Index. The index provides a list of all performance tests if applicable and preventative maintenance procedures. The table has three columns: Periodicity, Equipment and Task
The Periodicity column indicates the intervals between the maintenance tests and preventative maintenance procedures.
The equipment column lists the equipment, assembly or subassembly that corresponds to the maintenance action.
The task column lists the maintenance task to be performed.

Table 1

PERIODICITY	EQUIPMENT	TASK
Daily	Wiper Blades	Inspect the wiper blades for damage, torn or missing rubber blades. Replace wiper blades as required
Daily	Windscreen Wiper System	Perform function test of wiper washer system. Do not carry out the function test on a dry screen
Daily	Washer Tubing and Spray Nozzle	Inspect tubing for damage or loose connection on nozzle. Check operation of spray nozzle on windscreen
Daily	Wash Tank	Insure wash tank is filled with washer fluid to prevent the wipers being used on a dry screen
3 Monthly	Fixings of wiper arm to wiper spindle	Check torque settings M8 = 20Nm
Six Monthly or As required	Wiper Blades	Replace wiper blades

CHAPTER 4

Troubleshooting

Introduction

This chapter provides all the instructions and information necessary to locate problems and conduct tests on the windscreen wiper system components. The trouble-shooting chart is provided for logical isolation of faults.

Safety Precautions

Always disconnect the power when servicing the Windscreen Wiper System, or on any ancillary components. Serious damage to the Equipment and/or Personal Injury may occur if the power is not disconnected.

Troubleshooting Procedures

Typical windshield wiper system troubleshooting procedures are contained in Table 2. These troubleshooting and repair procedures should be followed when encountering operational problems with the windshield wiper system

Please note

Items marked in *Italic* require access to the enclosure. Any of these operations will require the unit to be resealed using a suitable proprietry Mastic.

Table 2

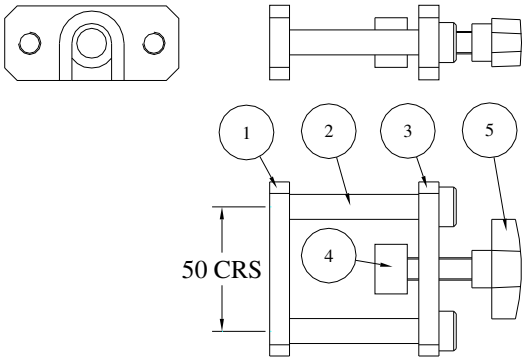
SYMPTOM	PROBABLE CAUSE	TESTS AND CHECKS	CORRECTIVE ACTION
Wiper motor fails to start	On/off switch	Check position of switch	Turn switch to the on position
	Voltage Level	Check supply voltage to switch. Check wiring and switch connections	Replace switch. Correct loose wiring connections. Replace broken wires
	System Jammed	*Check wiper linkage*	*Release linkage. Release wiper arm*
	Defective wiper motor		*Replace motor*
Motor shaft turns but linkage & arm remain static	*Defective or loose drive crank*	*Check linkage for a loose drive crank*	*Secure or replace the drive crank.* *Clean motor output shaft with wire brush before replacing*
System operates but wiper arm remains static	Wiper arm	Check for loose wiper arm connection onto the drive spindle	Secure or replace the wiper arm after cleaning the spindles. Torque to M8 = 20Nm

Table 2 - Continued

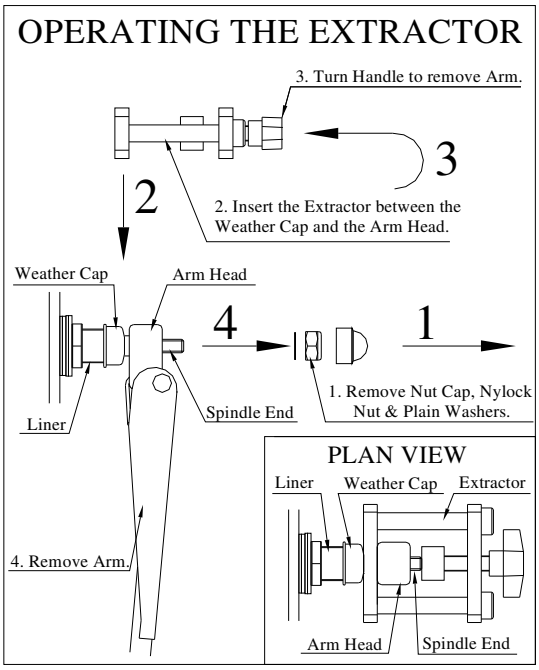
SYMPTOM	PROBABLE CAUSE	TESTS AND CHECKS	CORRECTIVE ACTION
Slow Motor Operation	Voltage Level	Check for ***12v*** or ***24v DC*** supply to wiper system	Correct voltage supply problem
	Switch		Replace faulty switch
	Motor Bracket	Check for broken bracket	Replace defective bracket
	Linkage	Check to see if the Linkage is free moving	Free linkage replace worn or damaged components
	Defective Wiper Motor		*Replace Wiper Motor*
Erratic Motor	Voltage level	Check for ***12v*** or ***24v DC*** supply to wiper system	Correct voltage supply problem
	Switch	Check for loose or broken wires	Replace faulty switch
	Wiring		Repair or replace wiring up to the motor. *Replace motor if this wiring is damaged*
Arm and Blade not operating correctly or over sweep operation	Voltage level	Check for ***12v*** or ***24v DC*** supply to wiper system	Correct voltage supply problem
	Linkage	*Check for worn or broken linkage*	*Replace Linkage*
	Spindle	Check for excessive wear in spindle	Replace Spindle
	Arm	Check that arm is not loose on the spindle	Re-tighten Spindle
		Check for excessive wear on arm	Replace Arm After cleaning spindle spline with wire brush.
	Blade	Check fixing for wear	Replace Blade
		Check blade for wear	Replace Blade
		Check for excessive smearing on the screen	Replace Blade
Washer system not working correctly	No water from jets	Check water level in tank	Fill tank
		Check for damage to tank	Replace tank
		Check Pump is operational	Replace pump if faulty
Excessive wear on blade.	Spring pressure.	Use spring balance on centre of blade clip till blade begins to lift off glass. 1 – 1.1/2 kg	Replace spring/arm.

CHAPTER 5

The Extractor



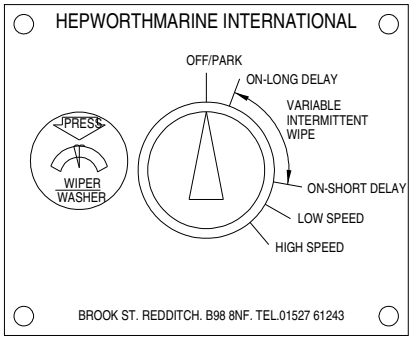
Item	Description	Qty
1	Back Plate	1
2	Stripper Bolt	2
3	Top Plate	1
4	Foot	1
5	Hand Wheel	1



Switch Operation – Multi-Switch

1. Check switch is in the off position before starting. ***(OFF/PARK)***

IMPORTANT DO NOT RUN WIPERS ON A DRY SCREEN.



2. To apply water to the screen, press the knob. ***(WIPER WASHER)*** This will apply water for the duration of pressing the button. The wiper will also operate for 3-4 wipes at normal speed after the water stops.

3. Turn the knob CLOCKWISE it will (CLICK) which turns the wipers on. The switch is now in the area of variable intermittent wipe cycle time. Which is between the ***(ON-LONG DELAY)*** and ***(ON-SHORT DELAY)*** positions.

4. The further clockwise the knob is turned between the two positions shorter the delay between the wipes.

5. Turn the knob CLOCKWISE to the next (CLICK) ***(LOW SPEED)*** gives a continuous wipe across the screen at a standard speed, with no delay between the wipes.

6. Turn the knob CLOCKWISE to the last (CLICK) ***(HIGH SPEED)*** gives a continuous wipe across the screen at a faster speed, with no delay between the wipes.

7. Turn the knob ANTI-CLOCKWISE to the off position when finished. ***(OFF/PARK)***

SPARES LIST

(Ref Extractor.)

Part No.	*Description*	*Qty*
60680600	Arm Extractor Tool - All Head Types	As Required

Fittings for M20 Liners and 12mm Spindles protruding outside Bulkhead

Part No.	*Description*	*Qty*
60267900	Idler Gasket	1 per unit
60119600	Idler Plate	1 per unit
10027801	20mm Washer	1 per liner
10011900	M20 Hex Nut	1 per liner
60034600	20mm Weather Cap	1 per liner
10022500	M8 Plain Washer	1 per liner
10013900	M8 Nylock Nut	1 per liner
10060300	8mm Nut Cap	1 per liner

Fittings for Arm and Blade

Part No.	*Description*	*Qty*
80205600	Blade Retaining Screw	1 per arm
10011400	M4 Nylock Nut	1 per arm

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