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Installation and Operation Manual
Type D MKV Straight Line Wiper
With
Series 2000 Control System
Issue 14

WARNING: A suitably qualified person should perform all installation and maintenance. All electrical wiring should be carried out in accordance with relevant regulations. Ensure all products are correctly earthed and all connections are made in accordance with the wiring diagram. Non-compliance may result in damage, malfunction or personal injury. Before commencing any installation or maintenance work, ensure that the electrical supply is disconnected.

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GENERAL INFORMATION AND SAFETY SUMMARY

As we will have no influence on the installation of complete windscreen wiper systems if installation is to be 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 Customer Service at B. Hepworth and Co Ltd 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 DRIVE BELT 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 off 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.

Wipers should be wrapped in protective material after installation to protect them from damage. Type of material depends on work done in the vicinity, for instance, if welding or grinding work needs to be done near the wipers then a fire resistant blanket should be used. If no welding or grinding work is required near the wipers then bubble is sufficient.

Introduction

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

TYPE D5 DESCRIPTION AND SPECIFICATION

The 'Type D MK V' is a Heavy Duty Straight Line Wiper with an electric motor mounted externally in a housing protected to IP67. The standard motor housing position is normally supplied on the left side of the unit (mounted above the window and viewed looking into the window).

All electric motors incorporate a worm reduction gearbox. Windings are to Class F insulation.

The DC motor option is suitable for single speed operation. Complies with the EMC Directive according to the following: EN 60945:2002

The AC 1-phase motor option is single speed operation. Complies with the EMC Directive according to the following: EN 60945:2002

The standard AC 3-phase motor option is for either 1 or 2 speed operation. Complies with the EMC Directive according to the following: EN 60945:2002

The variable frequency AC 3-phase motor option is for 3 speed operation and must be used with the 8000 Series Controller. Complies with the EMC Directive according to the following: EN 60945:2002

Motor Specifications

Motor	Type	Nominal Voltage	Full load current at 50/60 Hz	Fusing Value 50/60 Hz	Speed	Compass Safe Distance	Protection Rating
PM3M	Permanent Magnet	24V DC	4.5 A	6.0 A	1.4 m/s	2.4 m	IP54
PM3M (L)	Permanent Magnet	24V DC	4.5 A	6.0 A	0.7 m/s	2.4 m	IP54
PARV65	1 Phase Induction	115 V	2.3/2.6 A	2.5/3.15 A	1.4 m/s	0.5 m	IP20
PARV65L	1 Phase Induction	115 V	1.5/1.6 A	2.5/3.15 A	0.7 m/s	0.5 m	IP20
PARV64-T	1 Phase Induction	230 V	1.2/1.6 A	1.6/2.0 A	1.4 m/s	0.5 m	IP20
PARV64L	1 Phase Induction	230 V	0.75/0.95 A	1.0/1.6 A	0.7 m/s	0.5 m	IP20
PARV61	3 Phase Induction	115V AC	1.3/1.1 A	2.0/1.6 A	0.7/1.4 m/s	0.5 m	IP20
PARV62D+	3 Phase Induction	220V AC	0.6/0.6 A	1.0/1.0 A	0.7/1.4 m/s	0.5 m	IP20
PARV81	3 Phase Induction	115V AC	1.5 A	8000 Controller	0.7/1.1/1.4	0.5 m	IP20
PARV82	3 Phase Induction	220V AC	1.1 A	8000 Controller	0.7/1.1/1.4	0.5 m	IP20

For protection it is recommended that the wiper system have fuses fitted. The fuses will not blow in normal conditions, however if the wiper is jammed, then the fuses are designed to blow before the motor is damaged. Each wiper requires its own fuse. Fuse values shown above**.**

Compass safe distances, BSH (Germany) certified, have the values shown above. The distance quoted is the maximum figure for '*Magnet-Regelkompass'*.

Spray nozzles & water connections

A fresh water supply can be plumbed directly to the wiper into a 6mm overall diameter compression fitting. On stroke lengths below 1015mm (single wiper) 915mm (twin wiper), 1 nozzle is fitted, above 1015mm (single wiper) 915mm (twin wiper), 2 nozzles are fitted at ¼ stroke + 137mm from either end. The installer needs to provide pressurised water supply and the interconnecting plumbing. When the wash option is installed, the maximum pressure for the system is 8 bar or 118 PSI and the minimum pressure for adequate spray reach is 1 bar or 15 PSI. Example flow rates for a single spray jet are shown below.

Water System Pressure And Flow Rates

Pressure		**Flow rate**	
Bar	**Psi**	**Litres/min**	**Gallons/min**
1.0	15	0.95	0.20
1.5	22	1.20	0.25
2.0	29	1.40	0.30
3.0	44	1.75	0.40

De-icing Heaters

Optional de -icing heaters may be fitted inside the wiper case to ensure effective operation in cold conditions. As standard the heater cable is terminated inside the motor pod. Power consumption is according to the wiper stroke length, shown below.

Heater Power Ratings – Single Wipers

STROKE (mm)	**STROKE (inch)**	**HEATER SIZE**	**WATTS (24VDC)**	**STROKE (mm)**	**STROKE (inch)**	**HEATER SIZE**	**WATTS (24VDC)**
305 up to 430	12 up to 17	1	97	1500 up to 1800	59 up to 71	8	390 (186)
457 up to 735	18 up to 29	2	135	1930 up to 2100	76 up to 83	10	485 (150)
760 up to 1095	30 up to 42	4	211	2260	89	12	574 (123)
1118 up to 1450	43 up to 57	6	301 (238)				

Quoted Power is for nominal 115 or 230 Volts (bracketed values are for 24 Volts). For stroke lengths up to 1065 mm, power ratings are the same for all voltages.

Heater Power Ratings – Twin Wipers

OVERALL STROKE (mm)	**STROKE (inch)**	**HEATER SIZE**	**WATTS (24VDC)**	**OVERALL STROKE (mm)**	**STROKE (inch)**	**HEATER SIZE**	**WATTS (24VDC)**
585 up to 685	2 x 12 – 2 x 15	2	135	1855 up to 2165	2 x 37 – 2 x 43	10	485 (150)
735 up to 1042	2 x 16 – 2 x 21	4	211	2210 up to 2565	2 x 44 – 2 x 51	12	574 (123)
1091 up to 1445	2 x 22 – 2 x 29	6	301 (238)	2645 and above	2x 53 – 2 x 89	14	663 (106)
1495 up to 1805	2 x 30 – 2 x 36	8	390 186)				

Quoted Power is for nominal 115 or 230 Volts (bracketed values are for 24 Volts). For stroke lengths up to 1041 mm, power ratings are the same for all voltages.

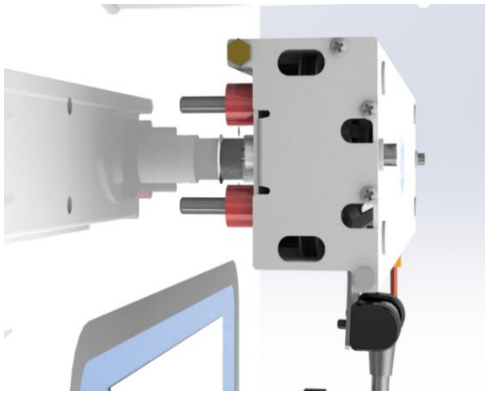
TYPE D5 WIPER INSTALLATION

CAUTION: Ensure that the correct wiper, blade and arms are selected for each window.

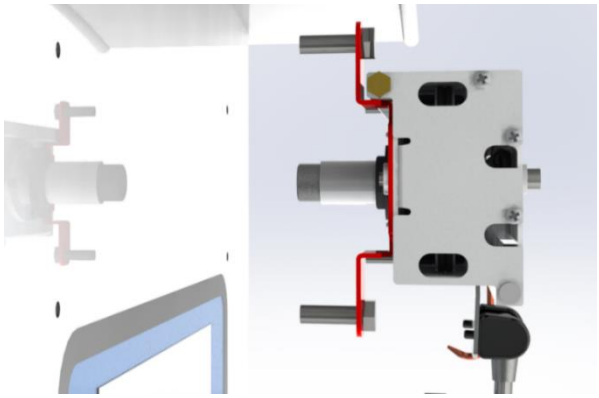
CAUTION: Before drilling, ensure that there are no obstructions / hazards at the chosen mounting position. The main frame should be mounted on a flat surface that will not bend or twist the casing, as this will prevent correct operation of the wiper.

CAUTION: Where more than one wiper unit is to be mounted close together, allow a distance of 75mm minimum between the wiper units.

Standard or Bracket Mounting



Standard Mounting



Bracket Mounting

1. Locate the self-adhesive template in the correct mounting position on the outside of bulkhead (stud mounting only).

   NOTE: For motors mounted at the opposite end, the template should be inverted.

2. Drill the wiper 2 off fixing holes (11 mm diameter).

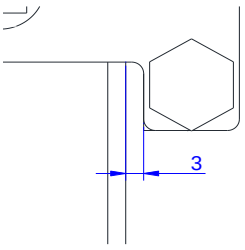
3. Detach the back casing from main unit. Hold the back casing in the required position and mark-out the remaining fixing holes, or calculate their position from the drawing i.e. stroke length plus 172 mm.

4. Drill the remaining wiper fixing & cable holes for the multi-way cable, ensuring that all holes are circular and carefully de-burred. Treat bare metal to prevent corrosion.

5. Fit the wiper case into position and secure with M10 bolts. Ensure that the bolts are sealed where they pass through the bulkhead.

6. Using the supplied M6 x 10mm screws, secure the wiper arm to the carriage plate.

CAUTION: Ensure the correct length screws are used, as supplied. Longer screws will cause the carriage assembly to jam.



7. Bolt the front case to the back case using the 2 off M8 bolts fitted.

CAUTION: Do not overtighten the cover bolts. There should be 3mm clearance between arm mounting plate and inside of wiper case.

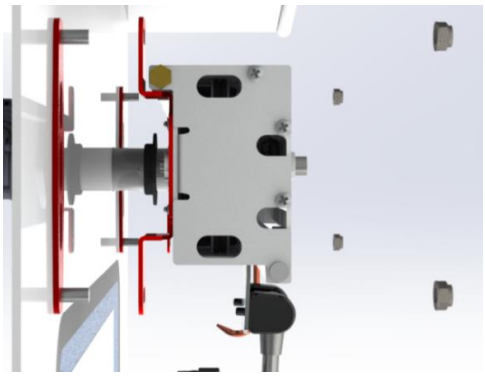
8. If necessary, slacken the screws on the wiper blade attachment clip, move the blade up or down for optimum position and then retighten screws.

9. Move the wiper arm/blade assembly over its full stroke and check that there is no restriction to movement (the motor will offer some resistance, but should not jam the wiper). Investigate and rectify any restrictions. If necessary adjust the wiper blade up or down on the arm to avoid the window frame.

10. Pass the cables through the bulkhead, leaving sufficient spare cable to allow the front assembly to be lifted away from the rear case during the maintenance period. Ensure the wiper is correctly earthed.

11. Ensure that wherever the cable passes through the bulkhead a suitable cable gland or seal is used to prevent water ingress and cable chaffing.

Universal Carrier & Bracket Mounting



Universal Carrier & Bracket Mounting

1. Carefully mark the position of the 2 (3 for longer wipers) off universal carrier plates.

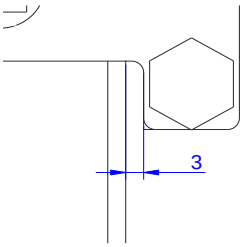
2. Prepare the bulkhead and universal carrier plates carefully and weld the 2 (or 3 for longer wipers) universal mounting brackets into position. Treat bare metal to prevent corrosion.

3. Drill the remaining wiper fixing & cable holes for the multi-way cable, ensuring that all holes are circular and carefully de-burred. Treat bare metal to prevent corrosion.

4. Fit the wiper case into position on the Universal Carrier studs and secure with supplied M10 spring washers, M10 flat washers and M10 nuts.

5. Using the supplied M6 x 10mm screws, secure the wiper arm to the carriage plate.

CAUTION: Ensure the correct length screws are used, as supplied. Longer screws will cause the carriage assembly to jam.



6. Bolt the front case to the back case using the 2 off M8 bolts fitted.

CAUTION: Do not overtighten the cover bolts. There should be 3mm clearance between arm mounting plate and inside of wiper case.

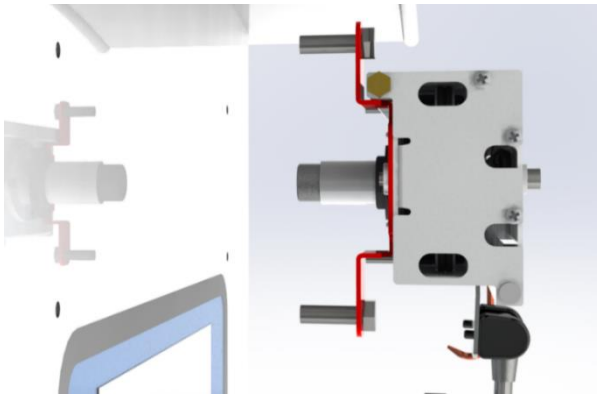
7. If necessary, slacken the screws on the wiper blade attachment clip, move the blade up or down for optimum position and then retighten screws.

8. Move the wiper arm/blade assembly over its full stroke and check that there is no restriction to movement (the motor will offer some resistance, but should not jam the wiper). Investigate and rectify any restrictions. If necessary adjust the wiper blade up or down on the arm to avoid the window frame.

9. Pass the cables through the bulkhead, leaving sufficient spare cable to allow the front assembly to be lifted away from the rear case during the maintenance period. Ensure the wiper is correctly earthed.

10. Ensure that wherever the cable passes through the bulkhead a suitable cable gland or seal is used to prevent water ingress and cable chaffing.

Bracket Mounting – Quick Release Arms

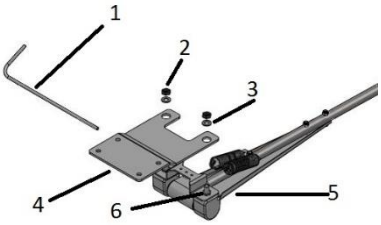


Bracket Mounting

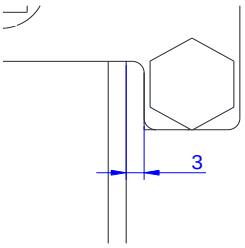
1. Mark out and drill the 4 (6 for longer wiper units) off fixing holes (11 mm diameter).

2. Mark out and drill the cable holes for the multi-way cable, ensuring that all holes are circular and carefully de-burred. Treat bare metal to prevent corrosion.

3. The wiper unit should be supplied with the arm mounting plate ***(4)*** already fitted. If it is not fitted, remove 2 x ¼ UNF Thin Nuts ***(2)*** and 2 x M6 washers ***(3)*** from the pivot block threads and remove the wiper arm sub assembly ***(5)*** from the arm mounting plate ***(4)***. Fit the arm mounting plate ***(4)*** to the wiper unit before installing the wiper unit using the supplied M6 x 10mm screws.



CAUTION: Ensure the correct length screws are used, as supplied. Longer screws will cause the carriage assembly to jam.



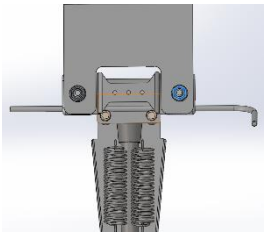
4. Fit the wiper blade to the wiper arm sub assembly ***(5)***, ensuring that the captive end of the wiper blade is at the top.

5. Bolt the front case to the back case using the 2 off M8 bolts fitted.

CAUTION: Do not overtighten the cover bolts. There should be 3mm clearance between arm mounting plate and inside of wiper case.

6. Fit the wiper case into position and secure with M10 bolts. Ensure that the bolts are sealed where they pass through the bulkhead.

7. Fit the wiper arm sub assembly ***(5)*** to the arm mounting plate ***(4)*** ensuring that the wiper arm sub assembly pivot block nuts ***(6)*** sit inside the holes in the arm mounting plate ***(4)***. Refit the 2 x M6 washers ***(3)*** and 2 x ¼ UNF Thin Nuts ***(2)*** to the pivot block threads and tighten.



8. Gently lift the wiper arm away from the window and remove the spring retaining pin ***(1)***. Keep safe for future use.

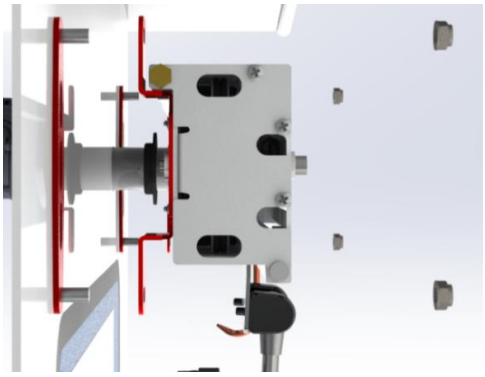
9. If necessary, slacken the screws on the wiper blade attachment clip, move the blade up or down for optimum position and then retighten screws.

10. Move the wiper arm/blade assembly over its full stroke and check that there is no restriction to movement (the motor will offer some resistance, but should not jam the wiper). Investigate and rectify any restrictions. If necessary adjust the wiper blade up or down on the arm to avoid the window frame.

11. Pass the cables through the bulkhead, leaving sufficient spare cable to allow the front assembly to be lifted away from the rear case during the maintenance period. Ensure the wiper is correctly earthed.

12. Ensure that wherever the cable passes through the bulkhead a suitable cable gland or seal is used to prevent water ingress and cable chaffing.

Universal Carrier & Bracket Mounting – Quick Release Arms



Universal Carrier & Bracket Mounting

1. Carefully mark the position of the 2 (3 for longer wipers) off universal carrier plates.

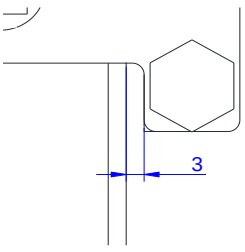
2. Prepare the bulkhead and universal carrier plates carefully and weld the 2 (or 3 for longer wipers) universal mounting brackets into position. Treat bare metal to prevent corrosion.

3. Drill the remaining wiper fixing & cable holes for the multi-way cable, ensuring that all holes are circular and carefully de-burred. Treat bare metal to prevent corrosion.

4. The wiper unit should be supplied with the arm mounting plate ***(4)*** already fitted. If it is not fitted, remove 2 x ¼ UNF Thin Nuts ***(2)*** and 2 x M6 washers ***(3)*** from the pivot block threads and remove the wiper arm sub assembly ***(5)*** from the arm mounting plate ***(4)***. Fit the arm mounting plate ***(4)*** to the wiper unit before installing the wiper unit using the supplied M6 x 10mm screws.

CAUTION: Ensure the correct length screws are used, as supplied. Longer screws will cause the carriage assembly to jam.

5. Fit the wiper blade to the wiper arm sub assembly ***(5)***, ensuring that the captive end of the wiper blade is at the top.



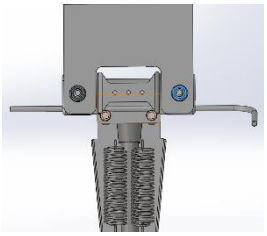
6. Bolt the front case to the back case using the 2 off M8 bolts fitted.

CAUTION: Do not overtighten the cover bolts. There should be 3mm clearance between arm mounting plate and inside of wiper case.

7. Fit the wiper case into position on the Universal Carrier studs and secure with supplied M10 spring washers, M10 flat washers and M10 nuts.

8. Fit the wiper arm sub assembly ***(5)*** to the arm mounting plate ***(4)*** ensuring that the wiper arm sub assembly pivot block nuts ***(6)*** sit inside the holes in the arm mounting plate ***(4)***. Refit the 2 x M6 washers ***(3)*** and 2 x ¼ UNF Thin Nuts ***(2)*** to the pivot block threads and tighten.

9. Gently lift the wiper arm away from the window and remove the spring retaining pin ***(1)***. Keep safe for future use.

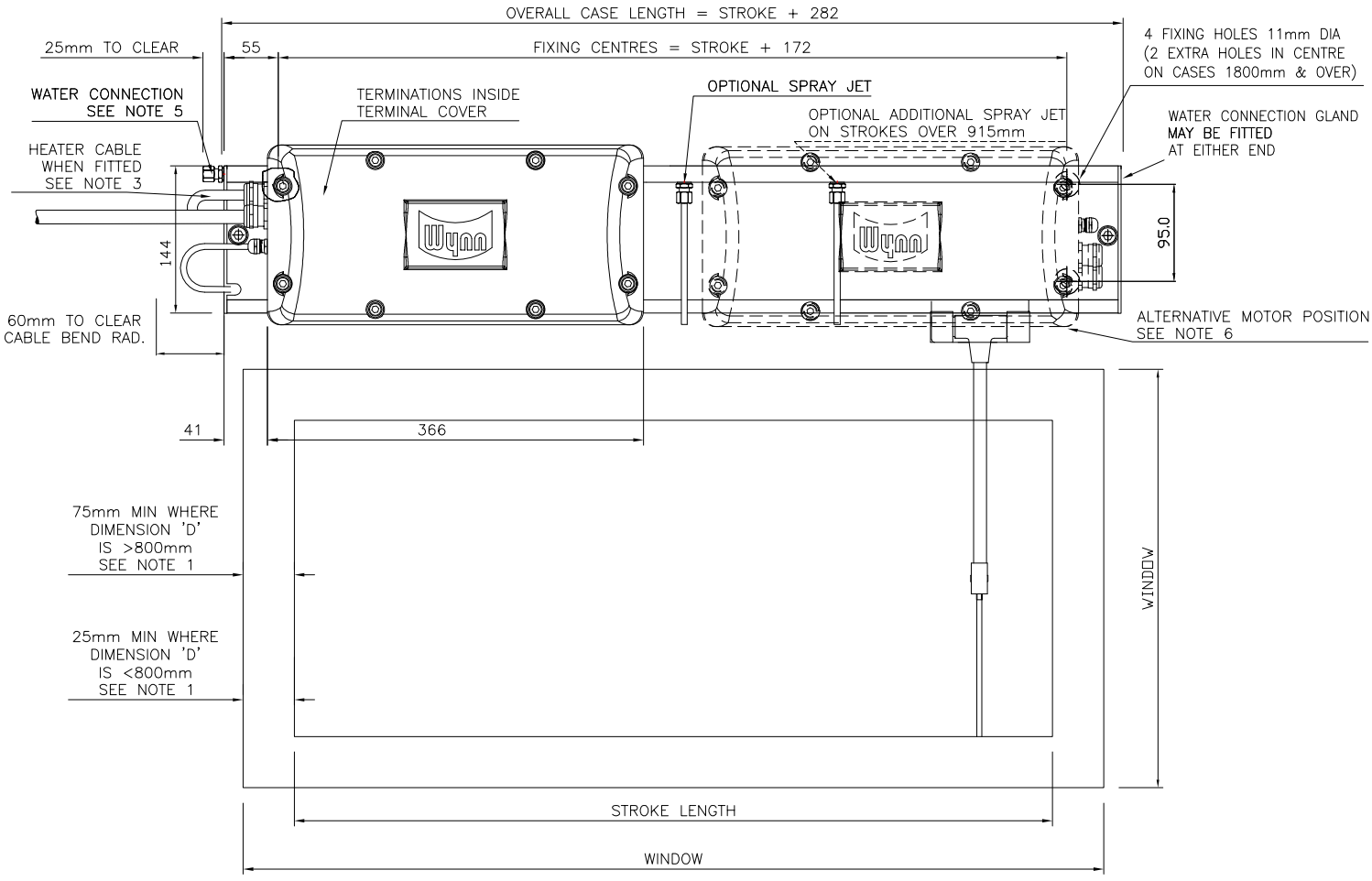


10. If necessary, slacken the screws on the wiper blade attachment clip, move the blade up or down for optimum position and then retighten screws.

11. Move the wiper arm/blade assembly over its full stroke and check that there is no restriction to movement (the motor will offer some resistance, but should not jam the wiper). Investigate and rectify any restrictions. If necessary adjust the wiper blade up or down on the arm to avoid the window frame.

12. Pass the cables through the bulkhead, leaving sufficient spare cable to allow the front assembly to be lifted away from the rear case during the maintenance period. Ensure the wiper is correctly earthed.

13. Ensure that wherever the cable passes through the bulkhead a suitable cable gland or seal is used to prevent water ingress and cable chaffing.



STANDARD ASSEMBLY VIEWED FROM OUTSIDE THE WINDOW

NOTES

1 THESE MINIMUM DIMENSIONS ARE LIMITED BY THE CORNER RADII OF THE WINDOW.

2 THE BLADE ARM MAY BE CRANKED WHERE DIMENSION 'R' IS GREATER THAN 75mm.

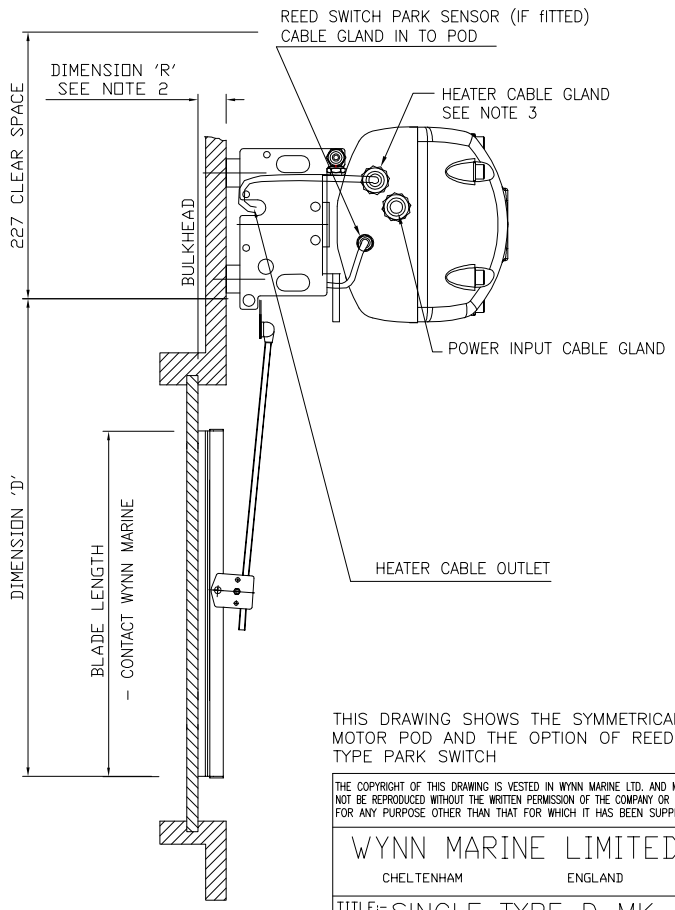
3 HEATER WHEN FITTED WILL BE WIRED INTO THE MOTOR TERMINAL BLOCK.

4 CUSTOMER TO ROUTE CABLING FROM MOTOR HOUSING AS REQUIRED.

5 CUSTOMER TO PIPE WATER DIRECTLY ONTO WATER SPRAY COUPLING.

6 MOTOR POSITION SHOWN AS STANDARD, OPPOSITE ORIENTATION AVAILABLE UPON REQUEST.

7 WHEN FITTED THE PARK SWITCH IS WIRED TO TERMINALS ON THE MOTOR TERMINAL BLOCK. PARKING IS AT THE MOTOR END.



ALL DIMENSIONS IN MM FOR REFERENCE ONLY

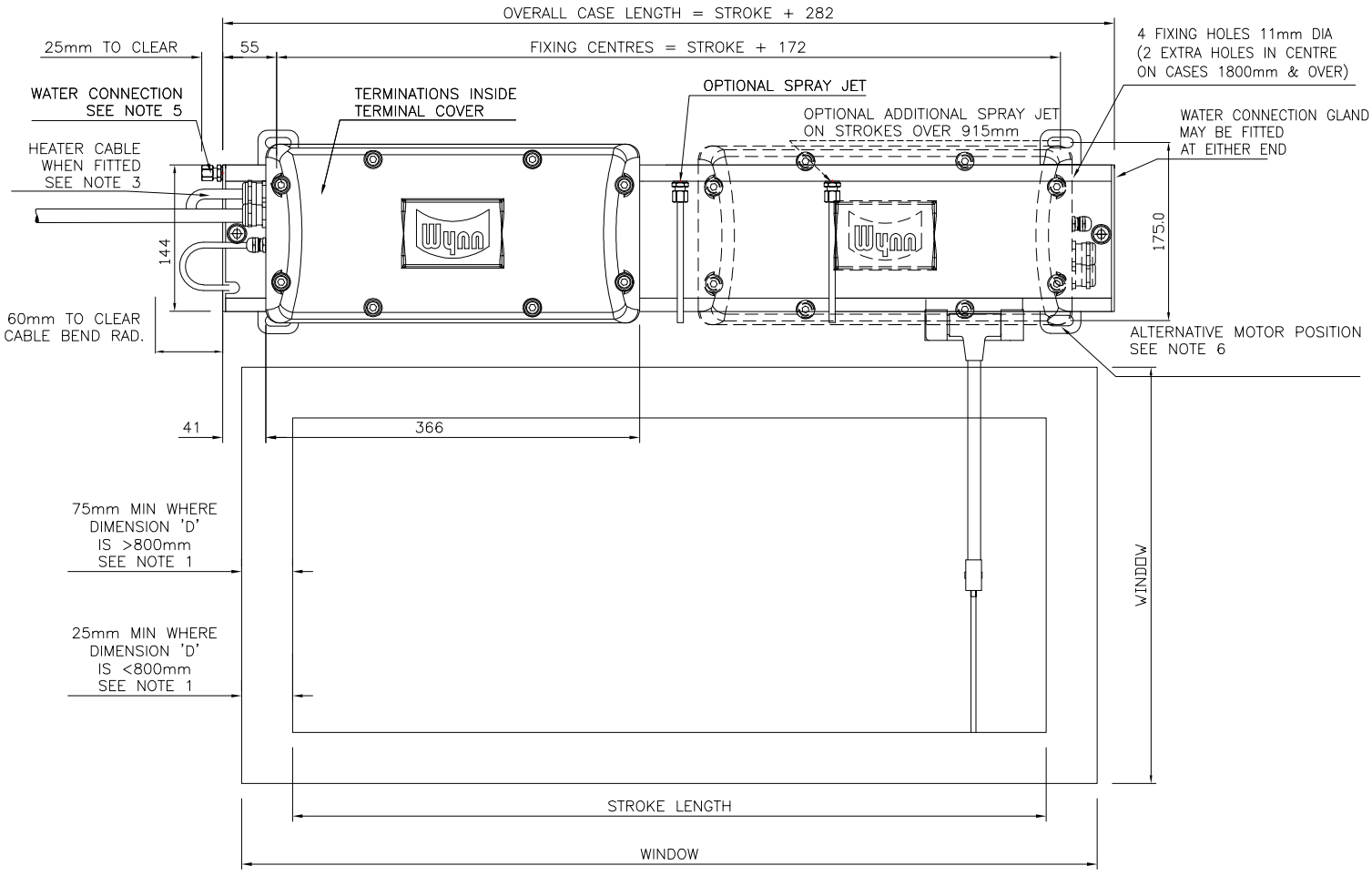
THIS DRAWING SHOWS THE SYMMETRICAL MOTOR POD AND THE OPTION OF REED TYPE PARK SWITCH

CAD FILENAME+DIRECTORY M:\DRAW\4030\4030-003-SYM										
3rd ANGLE PRO.							6		18.05.18
							5		23.01.14
							4		12.06.13
TOLERANCES UNLESS OTHERWISE STATED DECIMAL DIMS. TO 2 PLACES ± 0.1mm. DECIMAL DIMS. TO 1 PLACE ± 0.25mm NO DECIMAL PLACES ± 0.5mm ANGLES ± 1°							3		11.09.09
							2	224	11.10.07
							1	192	14.05.07
MAT'L:-	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE
FINISH:-	SCALE:- NTS		DRAWN:- DD		CHKD:-		CHANGED:-		

WYNN MARINE LIMITED
CHELTENHAM ENGLAND

TITLE:- SINGLE TYPE D MK 5 INSTALLATION DRG.

DRAWING No. 4030-003-SYM



STANDARD ASSEMBLY VIEWED FROM OUTSIDE THE WINDOW

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4 CUSTOMER TO ROUTE CABLING FROM MOTOR HOUSING AS REQUIRED.

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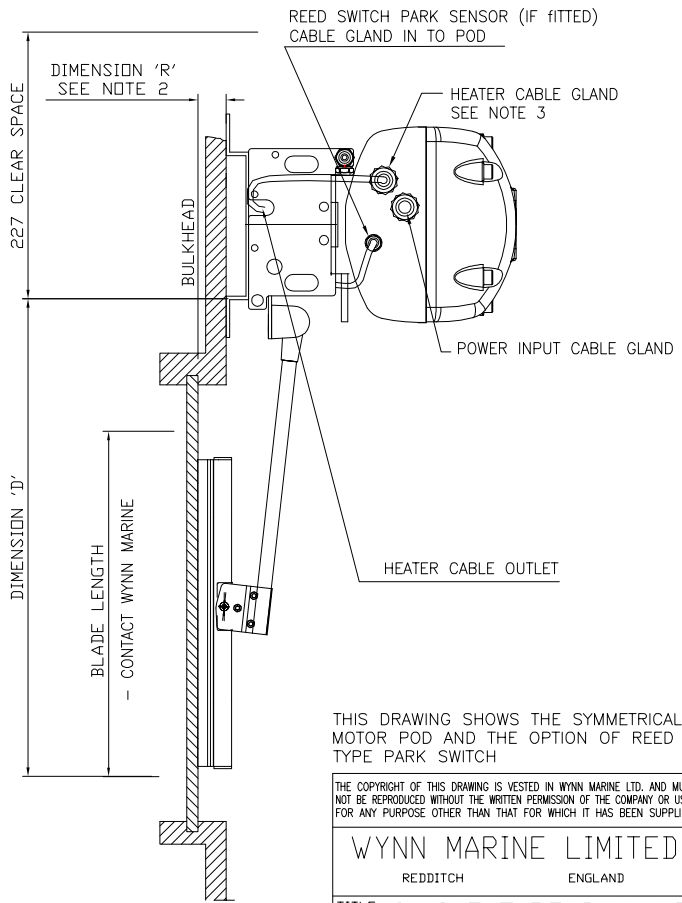
6 MOTOR POSITION SHOWN AS STANDARD, OPPOSITE ORIENTATION AVAILABLE UPON REQUEST.

7 WHEN FITTED THE PARK SWITCH IS WIRED TO TERMINALS ON THE MOTOR TERMINAL BLOCK. PARKING IS AT THE MOTOR END.

ALL DIMENSIONS IN MM FOR REFERENCE ONLY



THIS DRAWING SHOWS THE SYMMETRICAL MOTOR POD AND THE OPTION OF REED TYPE PARK SWITCH

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3rd ANGLE PRO.									
TOLERANCES UNLESS OTHERWISE STATED DECIMAL DIMS. TO 2 PLACES ± 0.1mm. DECIMAL DIMS. TO 1 PLACE ± 0.25mm NO DECIMAL PLACES ± 0.5mm ANGLES ± 1°							2		18.05.18
							1		21.07.14
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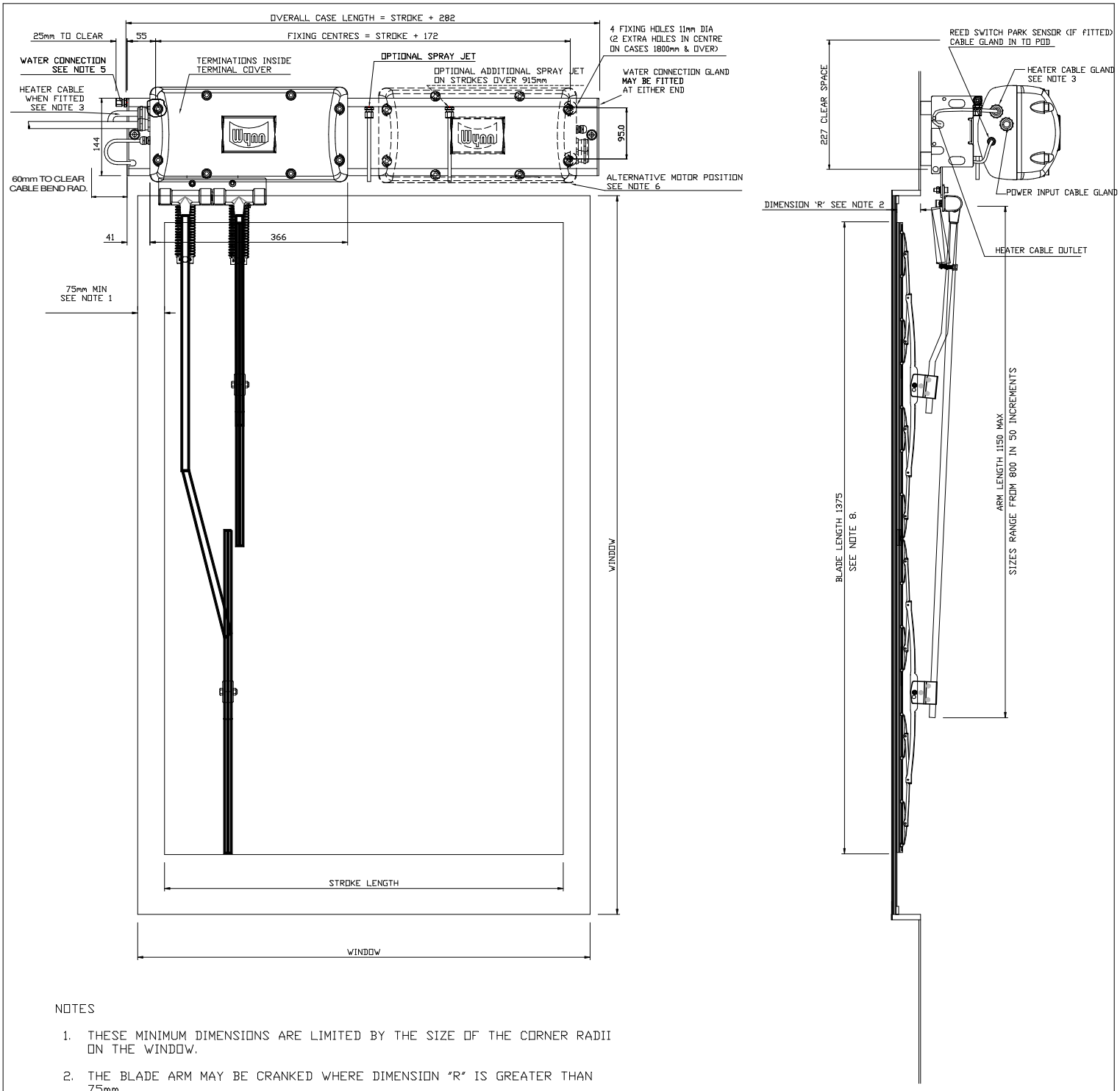
FINISH:-	SCALE:- NTS		DRAWN:- DD		CHKD:-		CHANGED:-		

WYNN MARINE LIMITED
REDDITCH ENGLAND

TITLE:- SINGLE TYPE D MK 5 INSTALLATION DRG.

DRAWING No. 4030-003-UNI



NOTES

1. THESE MINIMUM DIMENSIONS ARE LIMITED BY THE SIZE OF THE CORNER RADII ON THE WINDOW.
2. THE BLADE ARM MAY BE CRANKED WHERE DIMENSION "R" IS GREATER THAN 75mm.
3. HEATER WHEN FITTED WILL BE WIRED INTO THE MOTOR TERMINAL BLOCK.
4. CUSTOMER TO ROUTE CABLING FROM MOTOR HOUSING AS REQUIRED.
5. CUSTOMER TO PIPE WATER DIRECTLY ONTO WATER SPRAY COUPLING.
6. MOTOR POSITION SHOWN AS STANDARD, OPPOSITE ORIENTATION AVAILABLE UPON REQUEST.
7. WHEN FITTED THE PARK SWITCH IS WIRED TO TERMINALS ON THE MOTOR TERMINAL BLOCK. PARKING IS AT THE MOTOR END.
8. WIPER BLADE LENGTH 700 EACH, OVERALL 1375.
9. SEE MANUAL HEATER POWER RATINGS TABLE FOR STROKE OPTIONS AND HEATER DETAILS.

ALL DIMENSIONS IN MM FOR REFERENCE ONLY

CAD FILENAME+DIRECTORY	M:\DRAW\4030\4030-003-SYM Dbl Arm								
3rd ANGLE PRO.									
TOLERANCES UNLESS OTHERWISE STATED DECIMAL DIMS. TO 2 PLACES ± 0.1mm DECIMAL DIMS. TO 1 PLACE ± 0.25mm NO DECIMAL PLACES ± 0.5mm ANGLES ± 1°									
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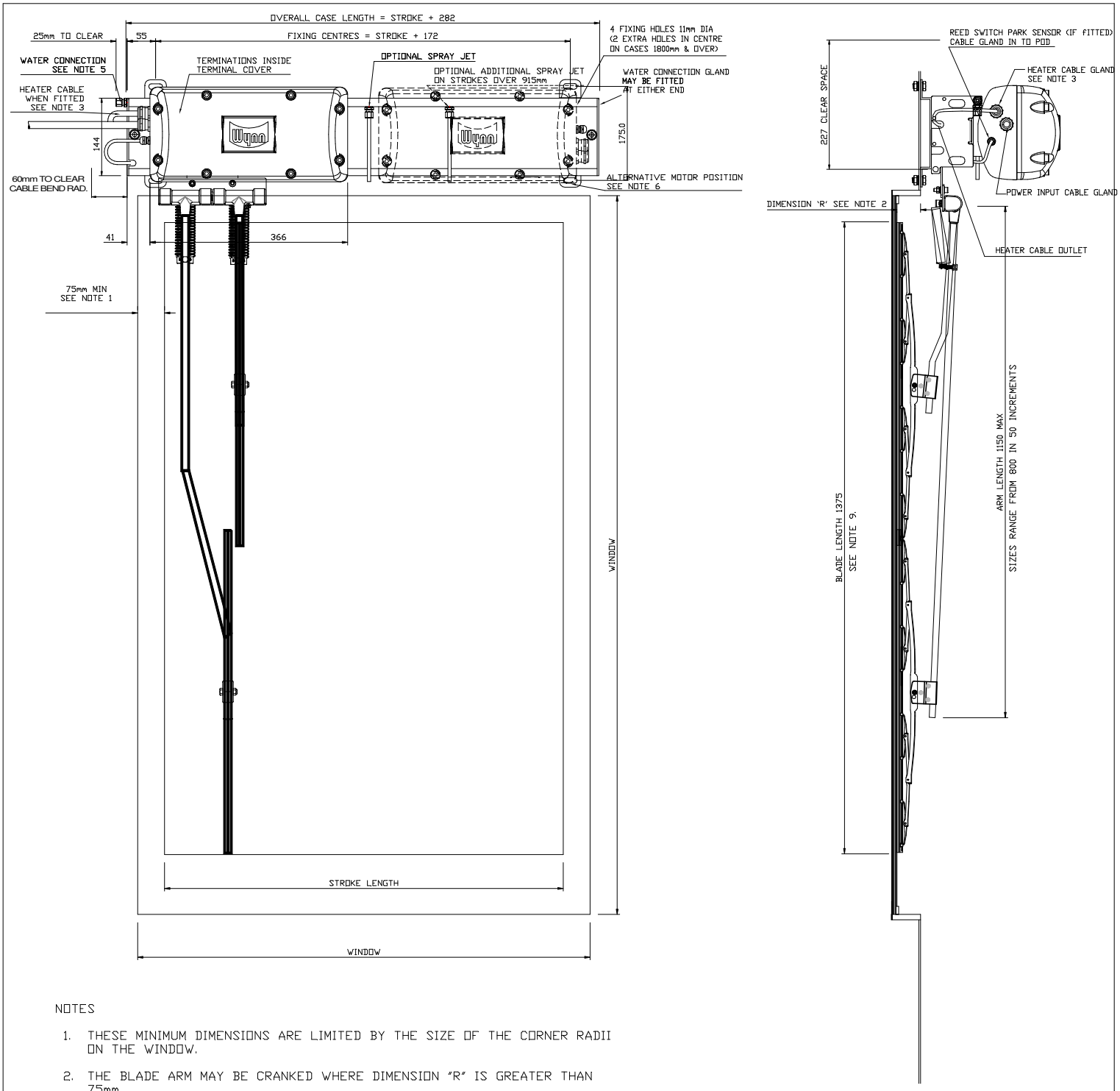
WYNN MARINE LIMITED
REDDITCH ENGLAND

TITLE:- SINGLE TYPE D MK5 INSTALLATION DRG.

DRAWING No. 4030-003-SYM Dbl Arm



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WYNN MARINE LIMITED
REDDITCH ENGLAND

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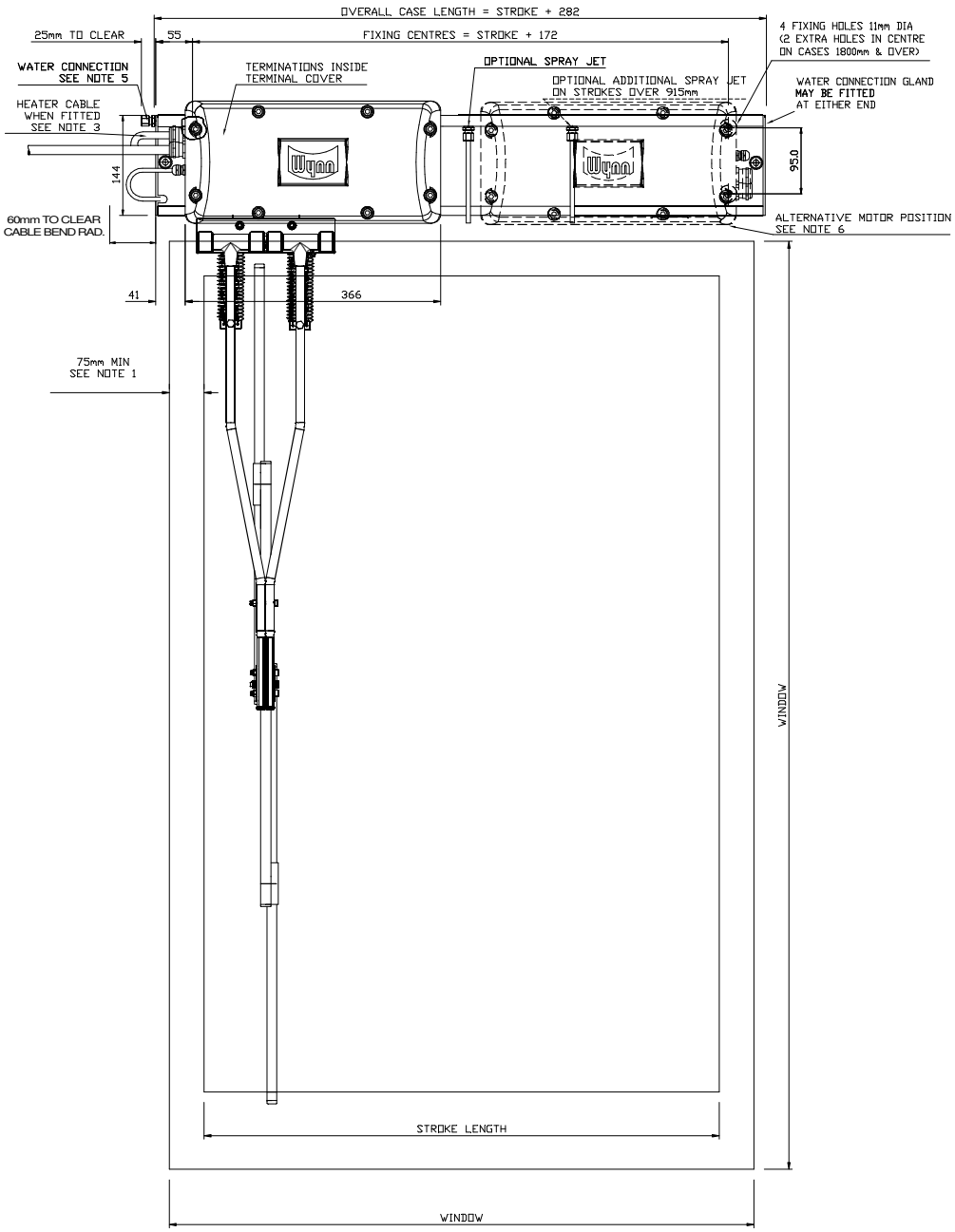
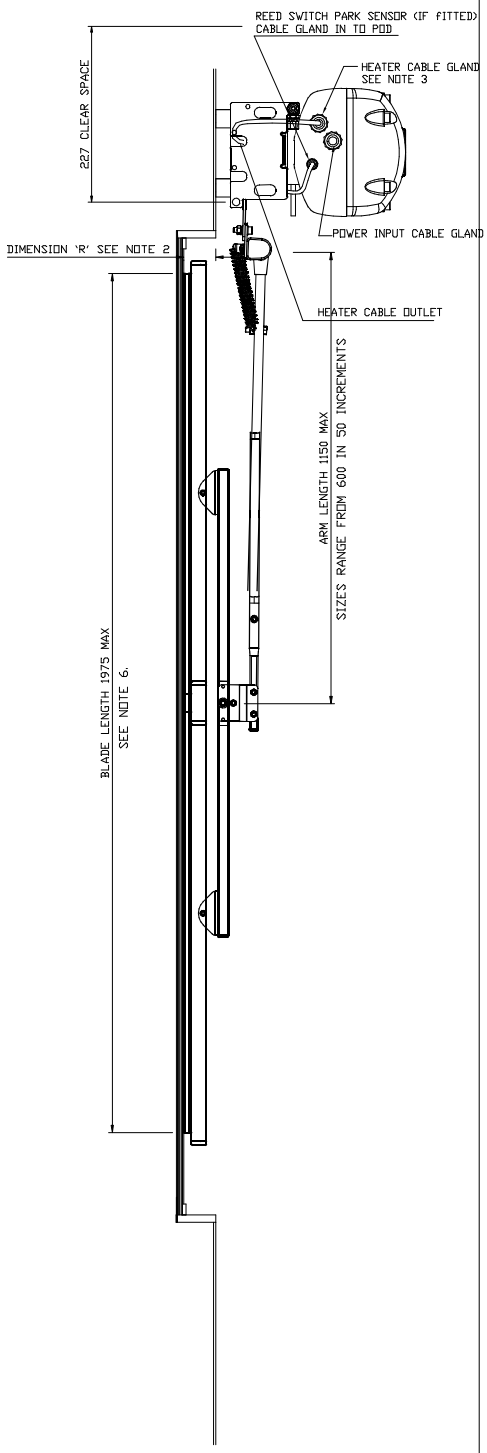
DRAWING No. 4030-003-UNI Dbl Arm





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8. DUAL WIPER BLADE LENGTHS RANGE FROM 1175 TO 1975 IN 100 INCREMENTS.
9. SEE MANUAL HEATER POWER RATINGS TABLE FOR STROKE OPTIONS AND HEATER DETAILS.

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CAD FILENAME+DIRECTORY M:\DRAW\4030\4030-003-SYM HD Arm									
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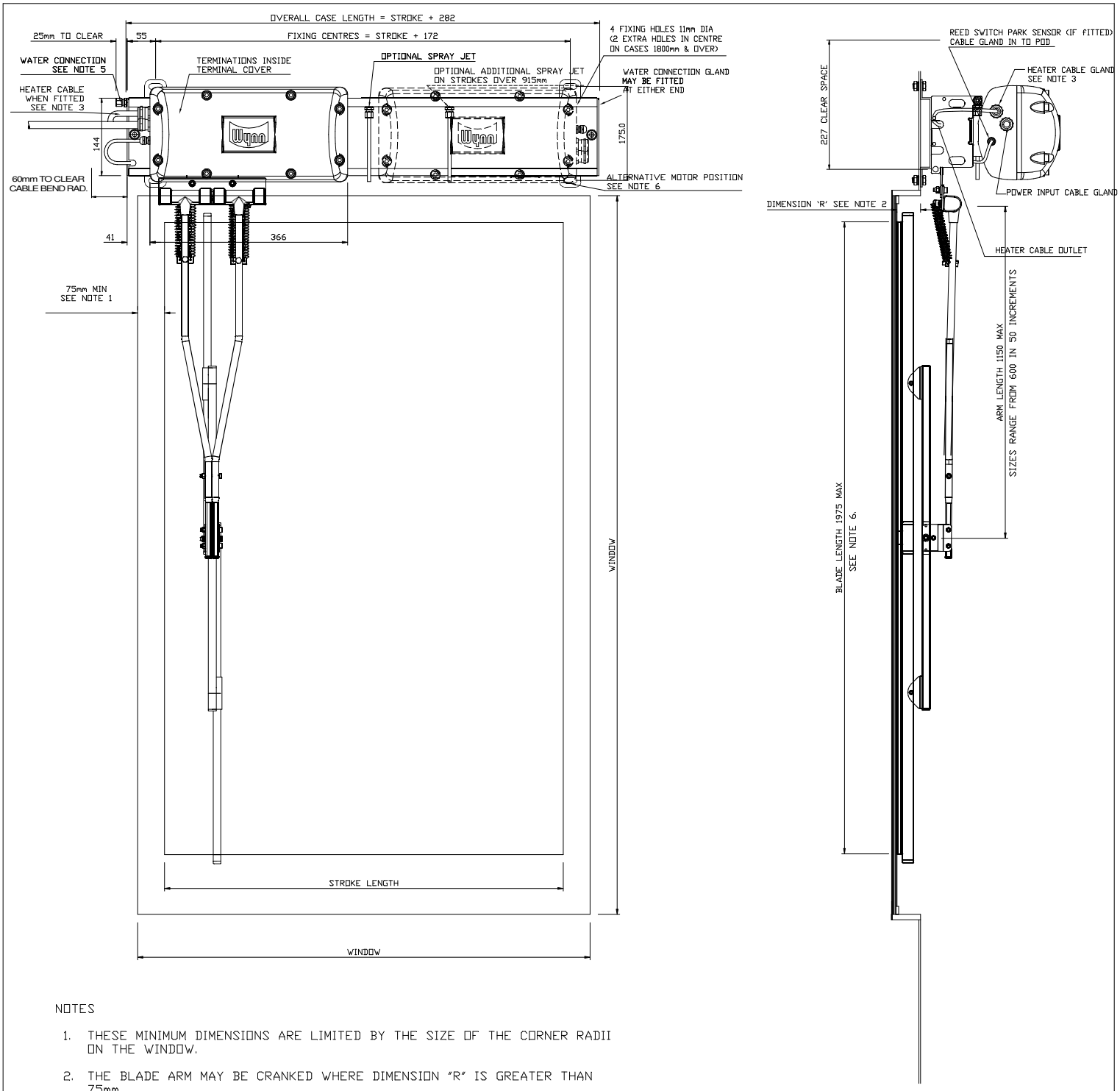
WYNN MARINE LIMITED
REDDITCH ENGLAND

TITLE:- SINGLE TYPE D MK5 INSTALLATION DRG.

DRAWING No. 4030-003-SYM HD Arm



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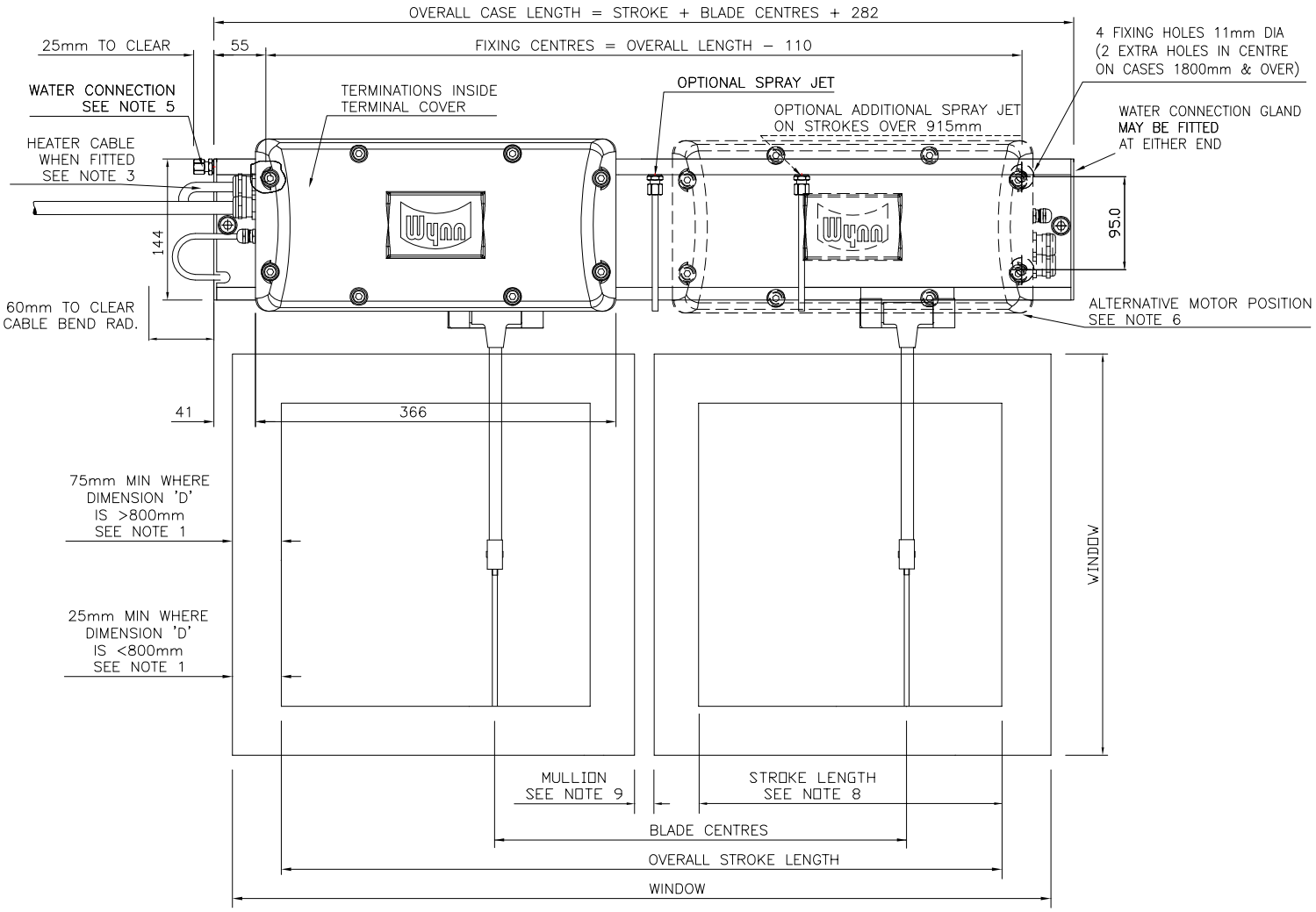
WYNN MARINE LIMITED
REDDITCH ENGLAND

TITLE:- SINGLE TYPE D MK5 INSTALLATION DRG.

DRAWING No. 4030-003-UNI HD Arm



STANDARD ASSEMBLY VIEWED FROM OUTSIDE THE WINDOW

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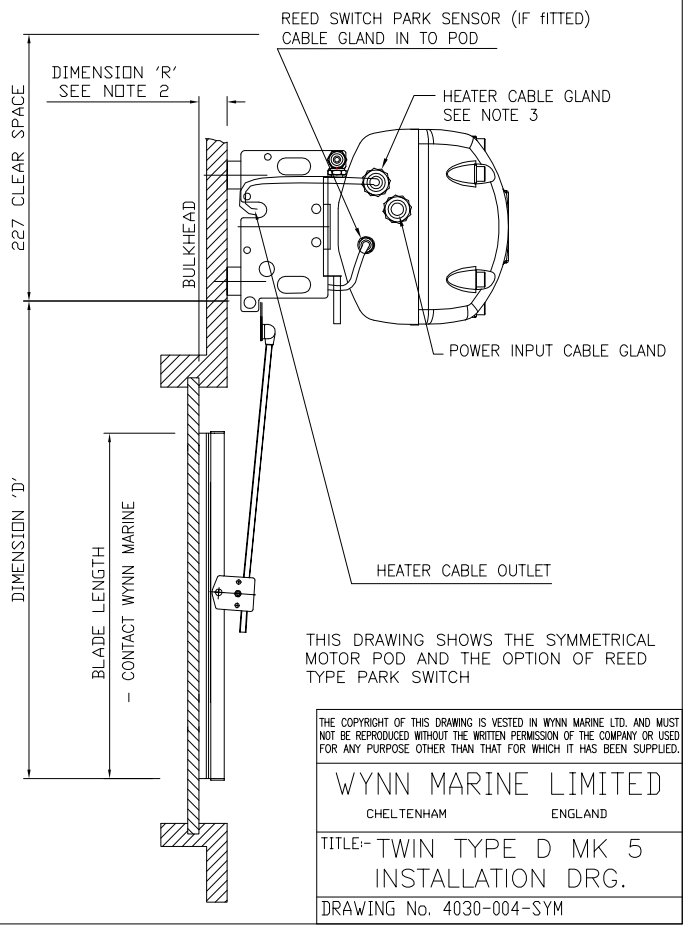
7 WHEN FITTED THE PARK SWITCH IS WIRED TO TERMINALS ON THE MOTOR TERMINAL BLOCK. PARKING IS AT THE MOTOR END.

8 WHEN TWIN WIPERS ARE USED ON SINGLE WINDOWS THE WIPER BLADES SHOULD BE SET TO OVERLAP BY 25mm.

9 WHEN TWIN WIPERS ARE USED ON ADJACENT WINDOWS, BLADE CENTRES SHOULD BE INCREASED BY THE WIDTH OF THE MULLION PLUS TWICE THE MINIMUM WINDOW EDGE CLEARANCE − SEE NOTE 1.



THIS DRAWING SHOWS THE SYMMETRICAL MOTOR POD AND THE OPTION OF REED TYPE PARK SWITCH

ALL DIMENSIONS IN MM FOR REFERENCE ONLY

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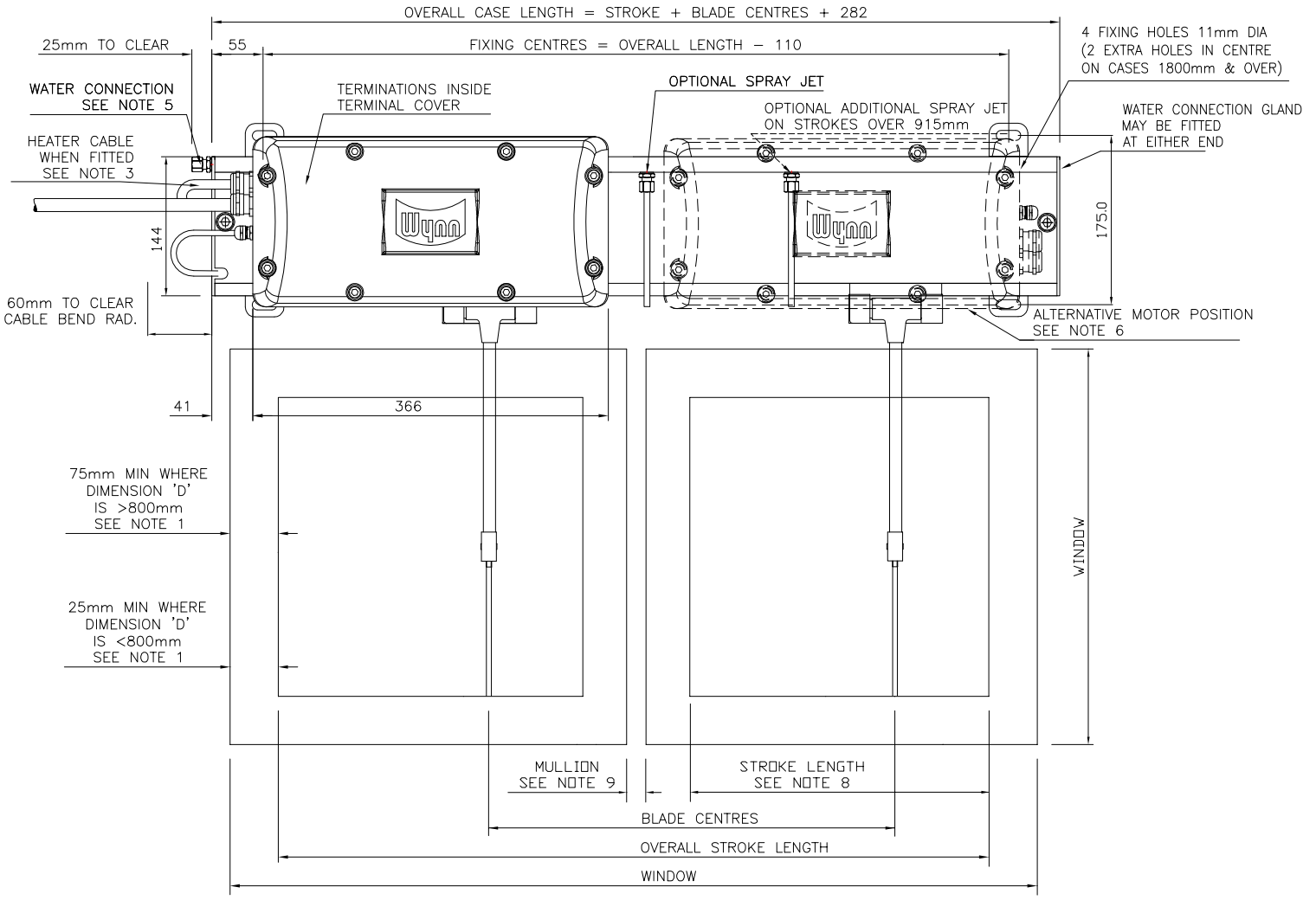
WYNN MARINE LIMITED
CHELTENHAM ENGLAND

TITLE:− TWIN TYPE D MK 5 INSTALLATION DRG.

DRAWING No. 4030-004-SYM



STANDARD ASSEMBLY VIEWED FROM OUTSIDE THE WINDOW

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5 CUSTOMER TO PIPE WATER DIRECTLY ON TO WATER SPRAY COUPLING. WATER CONNECTION CAN BE AT EITHER END.

6 MOTOR POSITION SHOWN AS STANDARD, OPPOSITE ORIENTATION AVAILABLE UPON REQUEST.

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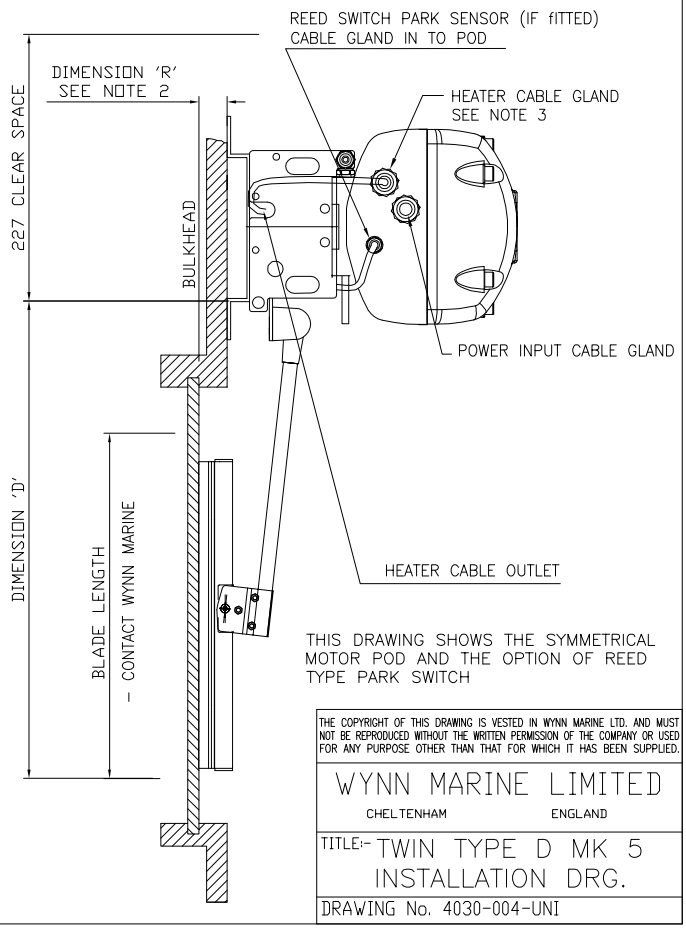

THIS DRAWING SHOWS THE SYMMETRICAL MOTOR POD AND THE OPTION OF REED TYPE PARK SWITCH

ALL DIMENSIONS IN MM FOR REFERENCE ONLY

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WYNN MARINE LIMITED
CHELTENHAM ENGLAND

TITLE:− TWIN TYPE D MK 5 INSTALLATION DRG.

DRAWING No. 4030-004-UNI

GENERAL FAULT FINDING GUIDE

NOTE: This fault finding guide assumes a reasonable level of technical ability and should be carried out by a suitably qualified person.

Problems: Control panel does not operate wiper.

Possible Cause	**Solution**
No Power.	Check power supply is on and working.
Power not reaching motor	Check ship's incoming supply fuses or circuit breakers. Check for wiring fault, broken wire or loose terminal. If possible confirm (with voltmeter) power is present at motor input and output terminals of control module.
Connections to motor incorrect.	Check wiring according to the appropriate electrical installation drawing.
Ship's voltage too low.	Check voltage as close to the motor as possible, with motor running. See relevant tables for acceptable values.
Motor Thermal Cut Out tripped. Single Phase AC motors only.	The 1 Ø AC motors have a thermal cut out embedded into the stator winding. If the motor gets too hot the thermal cut out disconnects the supply to the motor. Switch off and allow the motor to cool down. About 20 minutes later the cut out will reset allowing normal operation.
Motor brushes or commutator worn (DC motor only)	Check motor commutator and brushes
Motor burned out.	This should not be possible - could happen by incorrect voltage of motor, or a motor fault. The motor needs a reasonable amount of free space to provide sufficient cooling airflow – check. The motor should be protected by fuses, check type and rating.
Wiper motor not fully engaged on coupling.	Slacken pinch bolt, move motor and/or wiper arm to align coupling and push motor into engagement with coupling. Retighten pinch bolt. Make sure that the rubber coupling is fitted
Carriage motion jammed.	It should be possible by pushing the blade arm to move the mechanism over the stroke length. Remove cover and check for obstructions. Check the Blade Arm Screws.
Drive pulley turning but belt slipping.	Excessive friction - Check carriage rollers and motor drive coupling. Replace as required. Idler pulley springs broken or missing. Replace.
Drive belt broken or damaged.	Inspect belt for slip or burn damage. Belt at end of life. Replace.
Idler pulley jammed.	Damaged by impact, or bearing system failed. Replace assembly.
Corrosion.	If corroded, check for water ingress through seals and tightness of connections, Replace wiper unit if necessary

Problem: Wiper runs but at wrong speed

Possible Cause	Solution
Ship's voltage incorrect.	Check voltage as near as possible to the motor, with motor running.
Motor brushes worn (DC Only)	Inspect brushes and replace as necessary.
High / Low speed wiring incorrect (3 Phase 2 Speed models only)	Check wiring complies with appropriate drawing.
One phase missing (3 Phase 2 Speed models only)	Check controller. Check ships fuses.

Problem: Wiper runs but is noisy

Possible Cause	Solution
Wiper arm is obstructed by: - Window frame, spray jets, etc.	If necessary gently bend arms or spray jets out of path of wiper arm.
Incorrect arm attachment screws.	These must not be longer than the 10mm screws provided by Wynn
Vibration of wiper unit	Check the front cover fixing screws are secure.
Arm attachment plate fouling on wiper case	Attachment screws not fully tightened - check. Blade arm or bracket bent out of place - check.

Problem: Wiper does not clean the screen properly.

Possible Cause	Solutions
Blade not in contact with screen.	Blade or arm bent - inspect and replace. Arm pivots seized due to corrosion - replace. Heaters ineffective allowing ice build up.
Weak springs on blade arm.	Stronger springs may be required. Contact Agent/Distributor
Broken springs on blade arm.	Investigate reason of failure and replace. Springs are good down to -40℃.
Blade rubber missing or damaged.	Maintenance item. Replace as required.

Problem: Wiper does not park correctly

Possible Cause	Solution
Park Sensor failed.	Check reed sensor action, will need tester (meter).
Park Sensor Actuator missing.	Check magnet/spacer arrangement on carriage.

Problem: If fitted, heater does not become warm when switched on

Possible Cause	Solutions
Fuse blown or circuit breaker tripped (if fitted).	Check for short-circuited heater, will need tester (meter). Check for wiring damage or loose wires. Check connections are good.
Heater failed.	Check for continuity, will need tester (meter).
Earth leakage circuit breaker trips.	It is common for earth leakage to rise if a heater has not been used for a while - if possible allow heater the warm up so to dry out. The heater's water seal or cable may be damaged allowing ingress of water - check and replace.
No power.	Check Controller.

Problem: If fitted, little or no washer water comes out when button pressed.

Possible Cause	Solution
Pump or supply pressure too low.	Check Ship's water supply, or pump for output pressure.
On reservoir systems, empty.	Check - refill.
Water control valve faulty or not operating.	Check solenoid valve continuity. Replace if open circuit.
Supply lines or jets blocked.	Try air purge, if available. Dismantle and flush pipes.
Water frozen.	Switch on heaters.

TYPE D5 WIPER MAINTENANCE

Wynn products have been proven over many years to perform well under the harshest condition of use. No specialist tools are supplied. To maintain their performance the following schedule is recommended:

TOOLS REQUIRED:

I. TORQUE WRENCH WITH 6MM ALLEN KEY SOCKET
II. TORQUE WRENCH WITH 17MM SPANNER
III. TORQUE WRENCH WITH 22MM SPANNER
IV. TORQUE WRENCH WITH 24MM SPANNER
V. 4MM ALLEN KEY
VI. 5MM ALLEN KEY
VII. 6MM ALLEN KEY
VIII. 6MM SOCKET
IX. 8MM SPANNER
X. 10MM SPANNER
XI. 10MM SOCKET
XII. 11MM SPANNER
XIII. 14MM SPANNER
XIV. 3MM FLAT BLADE SCREWDRIVER
XV. NO2 CROSS POINT SCREWDRIVER

Every 6 Months

DC motors only

1. Inspect the motor brushes. Remove motor end cover. Prevent brushes from running down to less than 6mm height in service. Brushes can be lifted out of their holder after lifting off the springs. Replace brushes back into same holder and in the same orientation. Ensure that the brush 'pig tails' is free and that the springs are correctly replaced.

2. When replacing brushes, carefully clear out any residual carbon dust from the motor.

WARNING: DO NOT INHALE THE CARBON DUST.

3. Inspect the motor commutator – it should still be bright. If it is blackened the motor should be replaced or serviced. This can be done with light cleaning with 'flour' paper, but not 'emery' paper.

Every 12 Months

1. Check condition of the Articulated/Rigid Wiper Blade. Replace if necessary.

2. Check the motor pod case bolts are tightened to a torque of 12-14NM.

3. Check the cable entry gland nuts are tightened to the following torque:

   Motor - 5NM
   Heater - 4.2NM
   Sensor - 4.2NM

4. Check Heaters if fitted. If these have not been used for some time, then leave them on for approximately 2 hours.

   NOTE: If not used for long periods, some mineral insulated heaters will take up moisture and begin to show current leakage to ground. By running them for the stated time this process can be reversed and the insulation returned to near infinity values. When dry, insulation resistance is > 100 M ohm at 500V.

5. Check the drive belt for deterioration. Replace if necessary.

6. Check carriage is smooth and all guide rollers are free to rotate. Inspect ‘tyres’ on the guide rollers for splitting / perishing. Replace complete roller if necessary. Special spanner is supplied with set of 8 guide rollers.

Caution: Guide rollers have an integral dry bearing and MUST NOT be oil or grease lubricated.

7. Check for free movement of idler pulleys in response to belt tension. Lubricate as necessary with water resistant grease.

8. Ensure free movement of drive pulley. Replace if damaged or when showing signs of excessive wear.

   NOTE: The drive pulley is jig assembled and should not be dismantled.

9. Check for free blade arm spring movement. Dismantle, re-grease or replace if necessary.

TYPE D5 WIPER INSPECTION/RENEWAL OF PARTS

WARNING: To ensure health & safety**,** remove power from the control unit, before working on any parts of the wiper either inside or outside.

TOOLS REQUIRED:

I. TORQUE WRENCH WITH 6MM ALLEN KEY SOCKET
II. TORQUE WRENCH WITH 17MM SPANNER
III. TORQUE WRENCH WITH 22MM SPANNER
IV. TORQUE WRENCH WITH 24MM SPANNER
V. 4MM ALLEN KEY
VI. 5MM ALLEN KEY
VII. 6MM ALLEN KEY
VIII. 6MM SOCKET
IX. 8MM SPANNER
X. 10MM SPANNER
XI. 10MM SOCKET
XII. 11MM SPANNER
XIII. 14MM SPANNER
XIV. 3MM FLAT BLADE SCREWDRIVER
XV. NO2 CROSS POINT SCREWDRIVER

Blade Replacement

1. Loosen the 2 x 8mm nuts on the blade attachment clip.

2. Slide the blade attachment clip and blade assembly off the wiper arm.

3. Re-assembly is reversal of above instructions.

Arm Replacement

1. Remove the wash jets (if fitted) from the wiper unit.

2. Remove the 2 x M8 Cap head bolts at each end of the case and set aside. For longer units, clamps will also need to be removed.

3. Carefully lower the case so it hangs on the cover end plates.

4. Remove the 4 x M6x10mm screws securing the arm to the carriage plate. The arm and blade assembly are now free from the wiper, set both assembly and fasteners aside.

5. Slacken the blade clip bolts and remove blade. Set aside for reuse.

6. Re-assembly is reversal of above instructions.

Drive Belt

1. Remove the wash jets (if fitted) from the wiper unit.

2. Remove the 2 x M8 Cap head bolts at each end of the case and set aside. For longer units, clamps will also need to be removed.

3. Disengage front assembly from rear casing and support it without causing undue strain at the cables. Alternatively, open motor enclosure, disconnect wiring and draw cables out of glands. Lift off whole of front casing assembly.

4. Remove the 4 x M6x10mm screws securing the arm to the carriage plate. The arm and blade assembly are now free from the wiper, set both assembly and fasteners aside.

5. Slip the belt off the spring-loaded pulleys then slide the carriage/belt assembly out of the end of the case at the idler pulley end. Note: The assembly can be removed from the drive pulley end, but the park sensor will then need to be detached first (where fitted).

6. Inspect the drive belt and replace if damaged or worn. To detach the drive belt, note how the parts are assembled, then undo the 2 small nuts securing the belt to the clip.

7. Fit a new belt. Spare belts are supplied with nuts and clip plate. Refit and tighten nuts to the same height as the original and secure with Loctite thread lock (or similar).

8. Fit the carriage & belt assembly back into the casing and slip the belt onto the drive & idler pulleys.

9. Move the carriage by hand and ensure that it travels the full stroke length freely and without any obstruction. (Motion will feel restricted because the motor is being rotated if in doubt discount the motor). Refit the blade assembly with special screws removed.

10. Refit the front casing to the back casing and secure with the 2 off M8 cover bolts. Reconnect any cables that were removed at para 3.

11. If the motor enclosure has been opened silicone grease should be applied to the cork gasket face and the housing bolts tightened to a torque of 12-14NM. Check the cable entry gland nuts are tightened to the following torque:

    Motor - 5NM
    Heater - 4.2NM
    Sensor - 4.2NM

Guide Rollers

1. Follow the Drive Belt renewal instructions 1 to 5 above.

2. Remove the M5 Nylock nut & flat washer securing the guide roller and remove the guide roller. M5 Nylock nuts & flat washers supplied with set of 8 guide rollers.

3. Fit the new guide roller and secure with the M5 Nylock nut & flat washer. Ensure that M5 Nylock nut is tightened firmly.

4. Re-assembly is reversal of above instructions.

Caution: Guide rollers have an integral dry bearing and MUST NOT be oil or grease lubricated.

Motor Pod Replacement

1. Disconnect the motor pod from the ships wiring (motor, case heater, park sensor).

2. Open motor enclosure disconnect heater wiring and make a note of the connections.

3. Follow the Drive Belt renewal instructions 1 to 5 above.

4. Remove the 2 screws securing the park switch to the wiper case, withdrawing the cable through the slot in the case. Keep screws and fittings safe.

5. From inside the front casing remove the 3 x M6 bolts and washers securing the motor pod to the front casing.

6. Fit new motor pod using 3 x M6 bolts and washers removed above.

7. Pass the park switch cable though the slot in the case, ensure that the rubber grommet is pushed into place. Secure the parking switch in position using the 2 screws and fittings removed above.

8. Open new motor enclosure reconnect heater wiring. Tighten cable gland nut to 4.2NM.

9. Apply silicone grease to the motor pod cork gasket face, refit the motor pod cover and tighten the cover housing bolts to a torque of 12-14NM.

10. To re-assemble the wiper unit, follow the Drive Belt renewal instructions 8 to 9 above.

11. Reconnect the motor pod to the ships wiring (motor, case heater, park sensor).

Wiper Motor Replacement

1. Open motor enclosure disconnect motor wiring and make a note of the connections.

2. Loosen motor pinch bolt and remove motor.

3. Ensure new motor has a rubber coupling fitted to the dog gear. Line up motor dog gear with drive shaft dog gear and slide motor into position. Tighten pinch bolt.

4. Wire to motor terminal connections.

5. Apply silicone grease to the motor pod cork gasket face, refit the motor pod cover and tighten the cover housing bolts to a torque of 12-14NM.

Type D5 Wiper Spares List

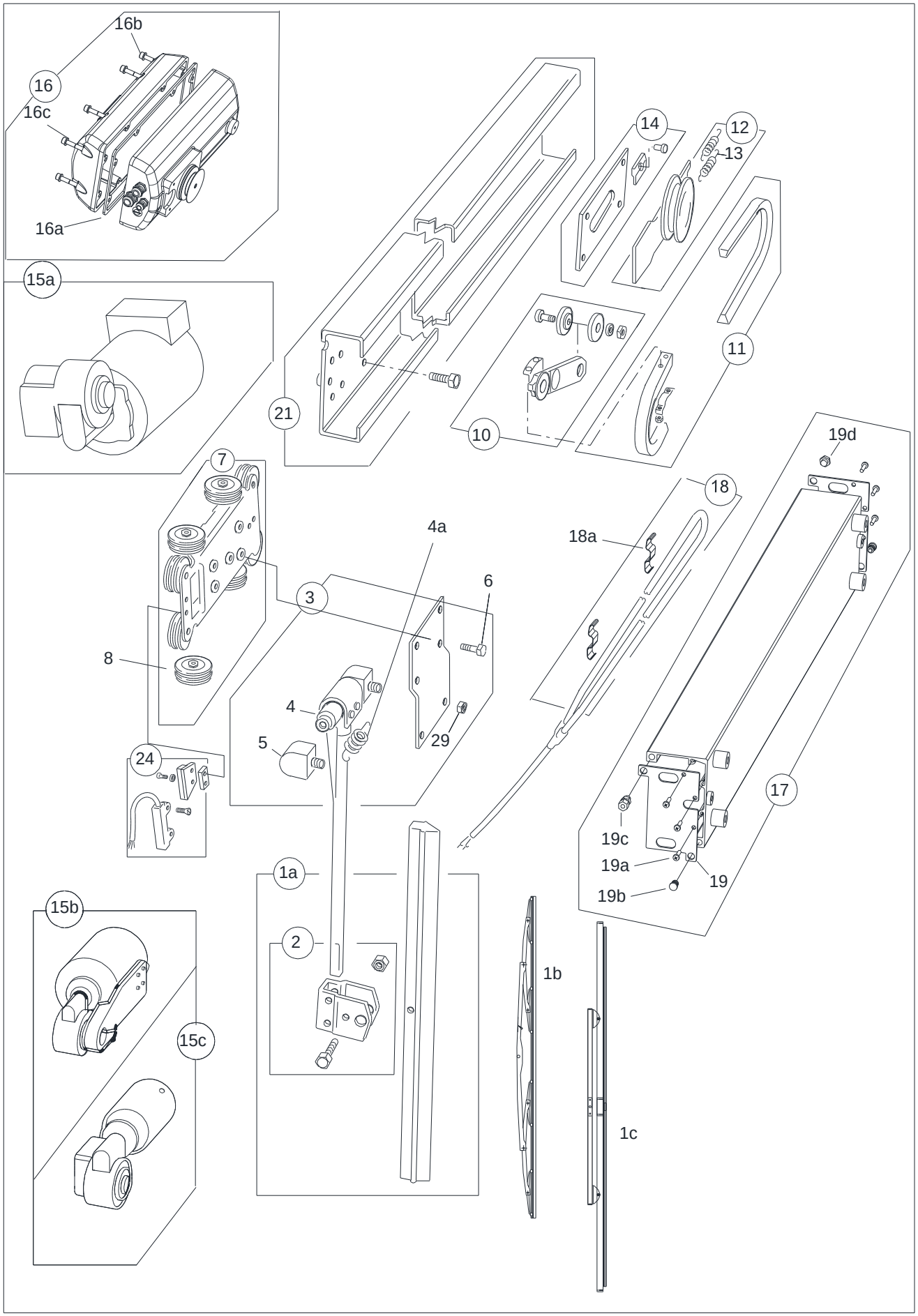
Ident	Description	Quantity	Part Number
1a	Flat Blade Assembly	1	FB WSL ***
1b	Articulated Blade Assembly	1	SP1279-553-***
1c	Heavy Duty Dual Blade Assembly	1	805201-***
2	Blade Attachment Clip (14mm Articulated Blade & FB)	1	SP1279-493
	Blade Attachment Clip (20mm Articulated Blade)	1	SP1279-532
3	Blade Arm Assembly	1	DD**#R
4	Blade Arm Torsion Spring	1	SP1292-221
4a	Arm Spring(s) - where fitted at top of arm ‡	A/R	1279-157
5	Blade Arm Pivot Blocks	1 Kit/arm	SP1279-486-#.#
6	Arm Attachment Screws	Set of 4	SP1588-488
7	Carriage Plate Assembly – Single Blade	1	SP1588-005-M
	Carriage Plate Assembly – Twin Blade	1	SP1588-312-***
8	8 Guide Rollers C/W Nuts	Set of 8	SP1588-117
	Guide Roller Assy	1	SP1588-006
10	Connecting Rod Assembly – Single Blade	1	SP1588-474
	Connecting Rod Assembly – Twin Blade	1	SP1588-474T
11	Vee-Belt	1	SP1279-106-###
12	Idler Pulley Assembly c/w Spring (Single Blade)	1	SP1588-452
	Idler Pulley Assembly c/w Spring (Twin Blade)	1	SP1588-452T
13	Idler Pulley Tension Spring (Single Blade)	Set of 2	SP1279-157
	Idler Pulley Tension Spring (Twin Blade)	Set of 2	SP1279-496
14	Idler Pulley Guide Assembly	1	SP1588-490
15a	Parvalux 61, 115V AC, 50/60Hz, 3-Ph, 2 Speed	1	SP1490-000GA61
	Parvalux 62D+, 230V AC, 50/60Hz, 3-Ph, 2 Speed	1	SP1490-000GA62D
	Parvalux 64-T, 230V AC, 50/60Hz, 1-Ph, 1 Speed	1	SP1490-000GA64
	Parvalux 64L, 230V AC, 50/60Hz, 1-Ph, Low Speed	1	SP1490-000GA64L
	Parvalux 65, 115V AC, 50/60Hz, 1-Ph, 1 Speed	1	SP1490-000GA65

Ident	Description	Quantity	Part Number
	Parvalux 65L, 115V AC, 50/60Hz, 1-Ph, Low Speed	1	SP1490-000GA65L
	Parvalux 81, 115V AC, 3 Speed	1	SP1490-000GA81
	Parvalux 82, 220V AC, 3 Speed	1	SP1490-000GA82
15c	PM3M 24Vdc Motor	1	SP1279-558-24
	PM3M 24Vdc Motor Slow Speed	1	SP1279-558L-24
16	Drive Pod Assembly	1	See calculator 1681-188
16a	Gasket Type D Mk5 Motor Pod	1	SP4030-066
16b	Pod Cover Bolt	8	zA0008-070S
16c	Cover Bolt Washer	8	SP1642-409
17	Rear Cover less Heater	1	See calculator 1681-161
18	Heater – Single Wiper	1	SP1588010$$$^^^
18a	Heater Clips	a/r	SP1588-056
19	End Cover Left Hand	each	SP1588-058L*
	End Cover Right Hand	each	SP1588-058R*
19a	Fixing Screw	6	zP00012S-1.0S
19b	Blanking Plug	2	1588-062
19c	Metric Pipe Fitting	1	1588-038
19d	Tubing Plug	1	1588-037
21	Main Frame	1	See calculator 1681-161
24	Self-Parking Assembly (Reed sw and Magnet) 0.6m	1	SP1588-012-T
	Self-Parking Assembly (Reed sw only) 0.6m	1	SP1587-034-T
29	Pivot Block Securing Nut	2	zNL0.25F-S
not shown	Spray Jet Kit Single	1	SP1642-481
not shown	Spray Jet Kit Twin	1	SP1642-482
not shown	Spray Jet Kit Long Single	1	SP1642-483
not shown	Cover Bolts	2	zA0008-090S

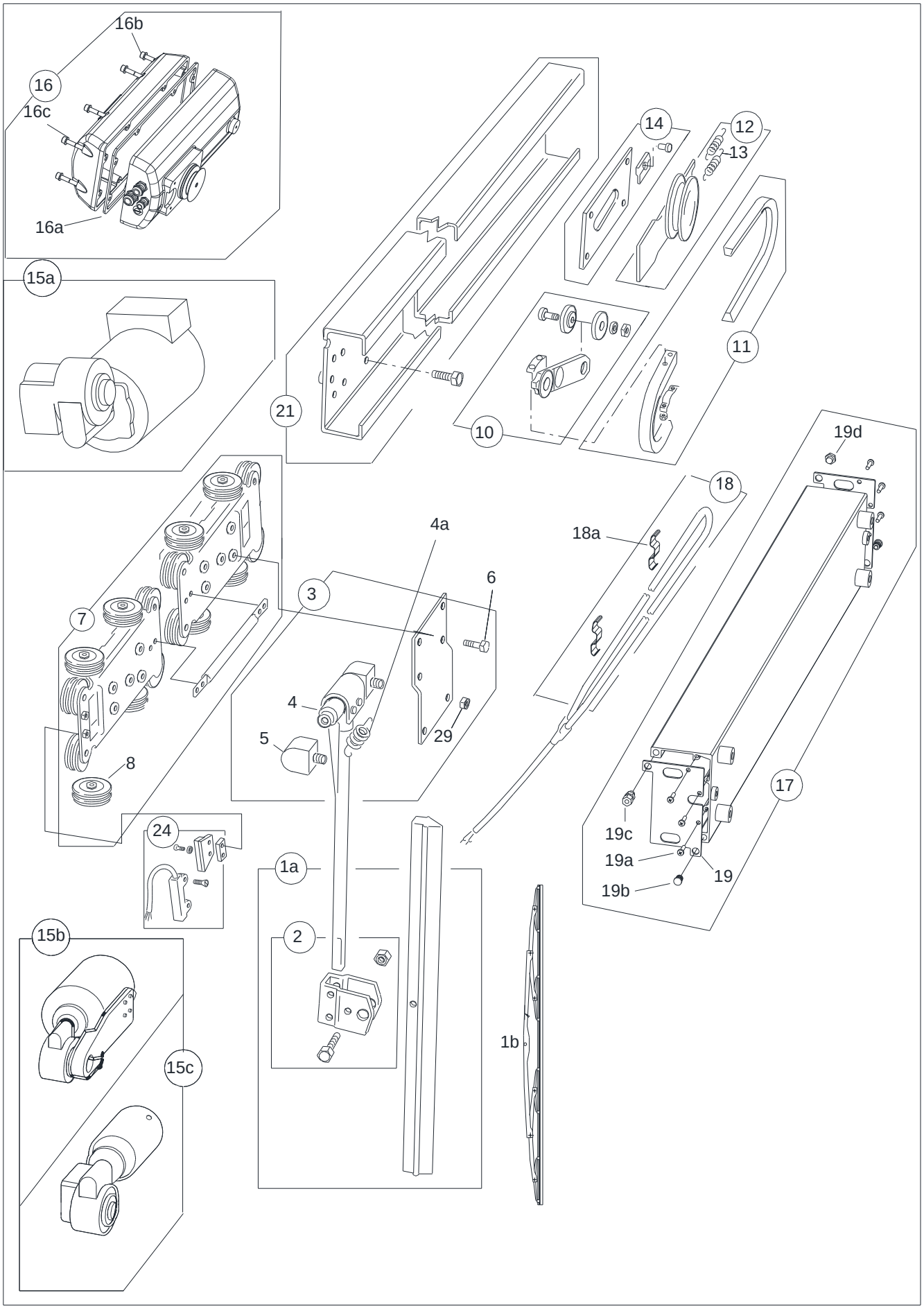
Ident	Description	Quantity	Part Number
not shown	Drive Coupling – fitted inside Drive Shaft	1	SP1279-250
not shown	L050 Rubber Spider – fitted to Drive Coupling	1	SP1279-252

*** In the Part Number means length in mm.
**# In the Part Number means length in cm and arm spring pressure code.
#.# In the Part Number means spring pressure in lb/ft. This is determined by Wynn according to arm and blade dimensions, together with any window rake angle from the vertical. This value can also be obtained from the original order documentation. See Wynn Agent for more details.
Belt length (written on belt as A###) in Inches.
‡ Where required, extra spring pressure is obtained by the addition of 1 or 2 springs to the wiper arm. Where fitted, order 1 or 2 as required. Contact Wynn Agent for more details.
$$$ Where $$$ is voltage (220,115 or 024)
^^^ Where ^ is heater length code.

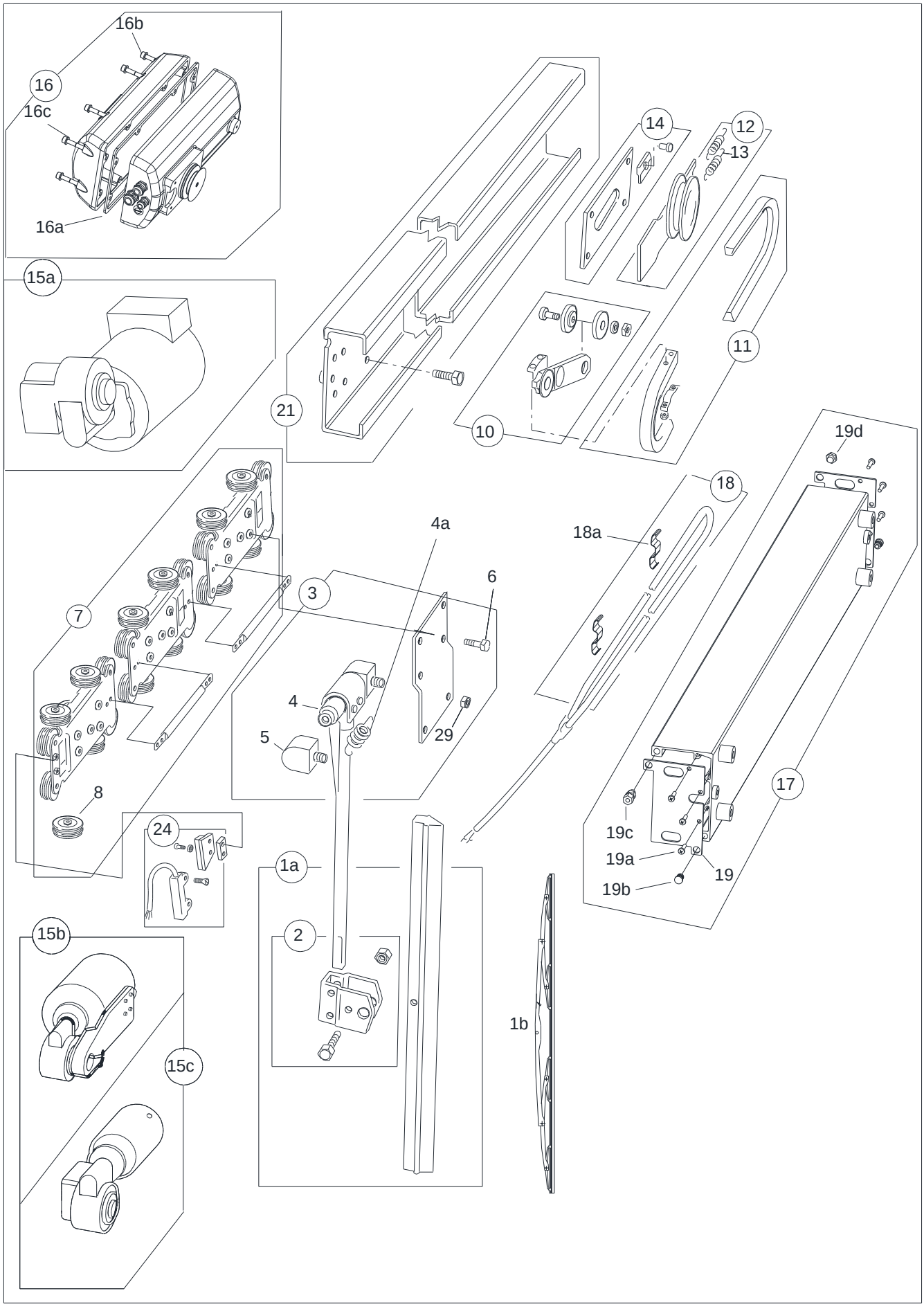
Type D5 Single Spare Parts Drawing



Type D5 Twin Spare Parts Drawing (Short)



Type D5 Twin Spare Parts Drawing (Long)



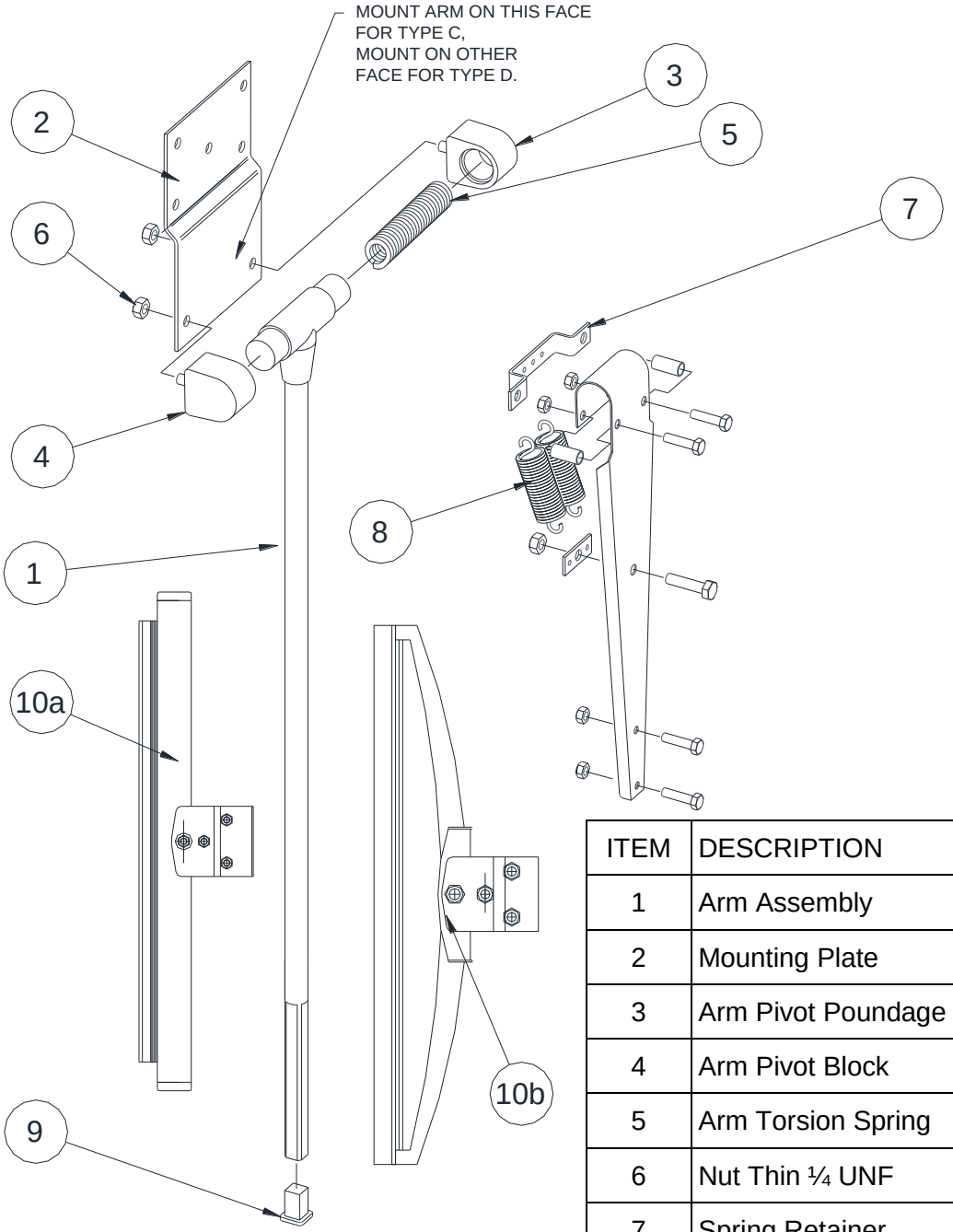
SLW Wiper Arm

The wiper arm is manufactured from stainless steel.

The wiper arm is shown below. One wiper arm assembly is used on a single bladed wiper, two wiper arm assemblies on a twin bladed wiper and three wiper arm assemblies on a triple bladed wiper unit.

The wiper arm assembly mounts on to the wiper assembly carriage plate. The wiper arm is secured to the carriage plate via four 10mm long mounting bolts.

The blade is secured to the arm assembly using the blade clip arrangement fitted to the wiper blade.



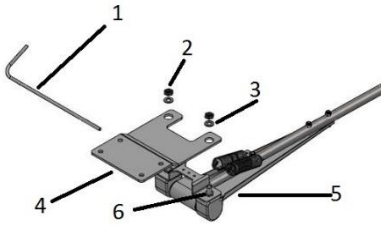
ITEM	DESCRIPTION	QTY
1	Arm Assembly	1
2	Mounting Plate	1
3	Arm Pivot Poundage Block	1
4	Arm Pivot Block	1
5	Arm Torsion Spring	1
6	Nut Thin ¼ UNF	2
7	Spring Retainer	1 (A/R)
8	Additional Spring	(0, 1, 2)
9	Sealing Plug	1
10a	Flat Blade	1
10b	Articulated Blade	

QUICK FIT SLW WIPER ARM INSTALLATION

CAUTION: Ensure that the correct wiper, blade and arms are selected for each window. The wiper arm should not be installed/removed without the spring retaining pin fitted.

Installation

NOTE: The wiper unit should be supplied with the arm mounting plate *(4)* already fitted. If it is not fitted, remove 2 x ¼ UNF Thin Nuts *(2)* and 2 x M6 washers *(3)* from the pivot block threads and remove the wiper arm sub assembly *(5)* from the arm mounting plate *(4)*. Fit the arm mounting plate *(4)* to the wiper unit before installing the wiper unit.

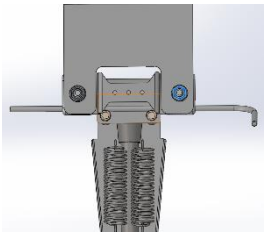


1. Remove 2 x ¼ UNF Thin Nuts ***(2)*** and 2 x M6 washers ***(3)*** from the pivot block threads.

2. Fit the wiper blade to the wiper arm sub assembly ***(5)***, ensuring that the captive end of the wiper is at the top.

3. Fit the wiper arm sub assembly ***(5)*** to the arm mounting plate ***(4)*** ensuring that the wiper arm sub assembly pivot block nuts ***(6)*** sit inside the holes in the arm mounting plate ***(4)***. Refit the 2 x M6 washers ***(3)*** and 2 x ¼ UNF Thin Nuts ***(2)*** to the pivot block threads and tighten.

4. Gently lift the wiper arm away from the window and remove the spring retaining pin ***(1)***. Keep safe for future use.



Arm Removal/Replacement

Removal

1. Gently lift the wiper arm away from the window and insert the spring retaining pin ***(1)***.

2. Remove 2 x ¼ UNF Thin Nuts ***(2)*** and 2 x M6 washers ***(3)*** from the pivot block threads. Keep safe for future use.

3. Remove the wiper arm sub assembly ***(5)*** from the arm mounting plate ***(4)***.

Replacement

1. Fit the wiper arm sub assembly ***(5)*** to the arm mounting plate ***(4)*** ensuring that the wiper arm sub assembly pivot block nuts ***(6)*** sit inside the holes in the arm mounting plate ***(4)***. Refit the 2 x M6 washers ***(3)*** and 2 x ¼ UNF Thin Nuts ***(2)*** to the pivot block threads and tighten.

2. Gently lift the wiper arm away from the window and remove the spring retaining pin ***(1)***. Keep safe for future use.

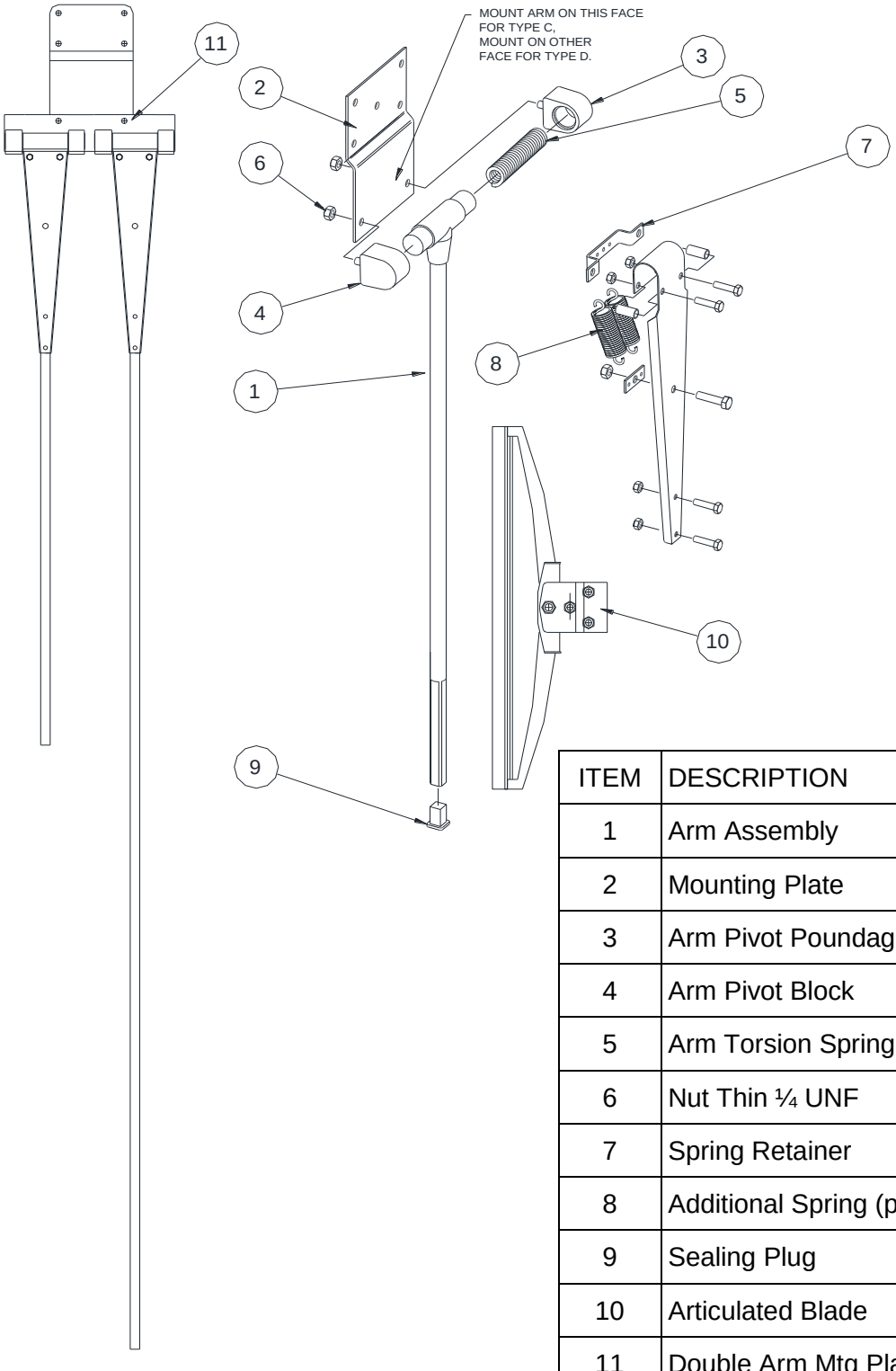
SLW Double Wiper Arm Assembly

The wiper arm is manufactured from stainless steel.

The wiper arm is shown below. One wiper arm assembly is used on a single bladed wiper, two wiper arm assemblies on a twin bladed wiper.

The double wiper arm mounting plate is secured to the wiper arm mounting plate with two bolts, washers and nuts. The complete wiper arm assembly mounts on to the wiper assembly carriage plate. The wiper arm is secured to the carriage plate via four 10mm long mounting bolts.

The blade is secured to the arm assembly using the blade clip arrangement fitted to the wiper blade.



ITEM	DESCRIPTION	QTY
1	Arm Assembly	2
2	Mounting Plate	1
3	Arm Pivot Poundage Block	2
4	Arm Pivot Block	2
5	Arm Torsion Spring	2
6	Nut Thin ¼ UNF	4
7	Spring Retainer	2(A/R)
8	Additional Spring (per arm)	(0, 1, 2)
9	Sealing Plug	2
10	Articulated Blade	2
11	Double Arm Mtg Plate	2

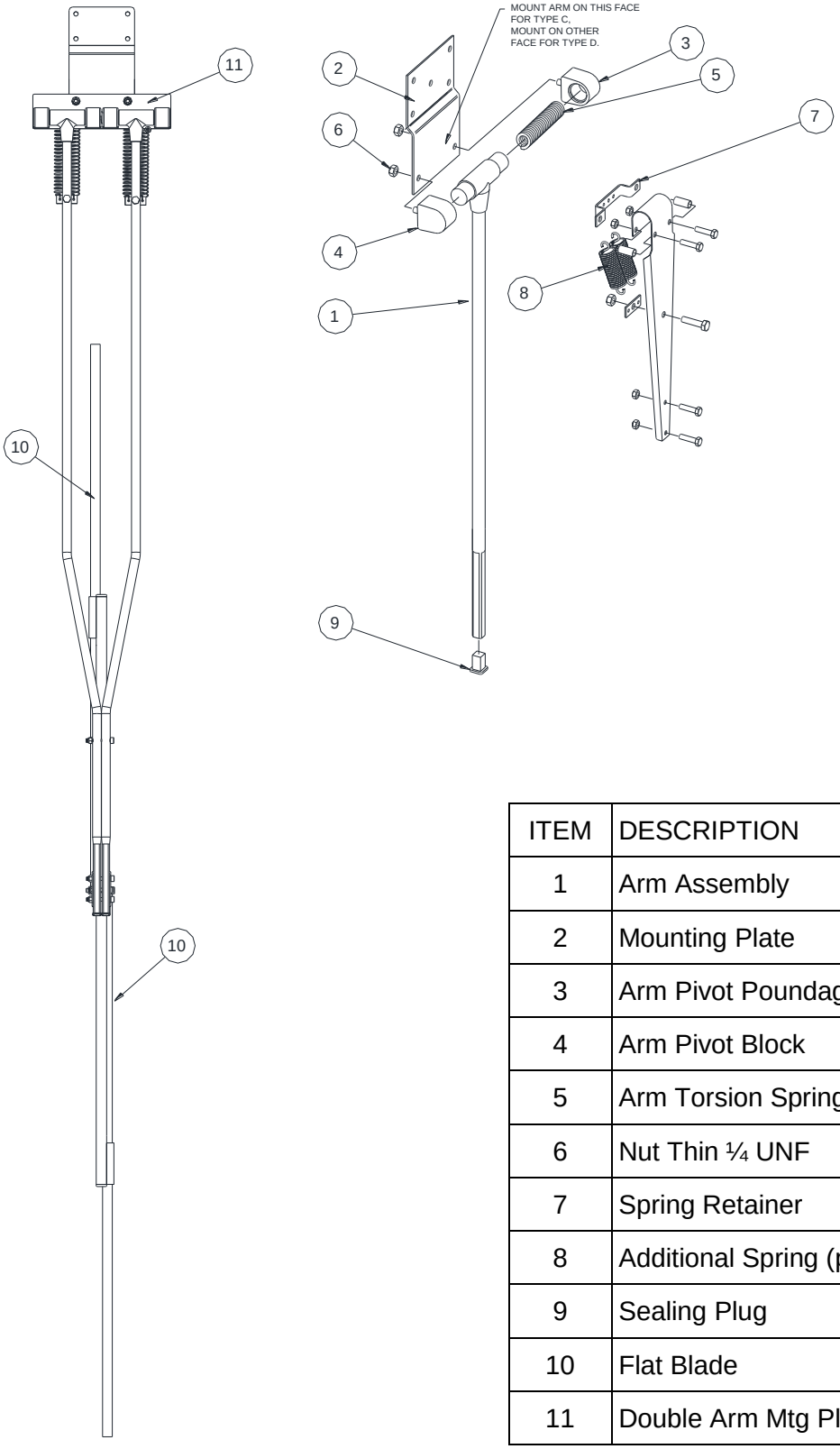
SLW Heavy Duty Wiper Arm Assembly

The wiper arm is manufactured from stainless steel.

The wiper arm is shown below. One wiper arm assembly is used on a single bladed wiper.

The heavy duty wiper arm mounting plate is secured to the wiper arm mounting plate with two bolts, washers and nuts. The complete wiper arm assembly mounts on to the wiper assembly carriage plate. The wiper arm is secured to the carriage plate via four 10mm long mounting bolts.

The blade is secured to the arm assembly using the blade clip arrangement fitted to the wiper blade.



ITEM	DESCRIPTION	QTY
1	Arm Assembly	2
2	Mounting Plate	1
3	Arm Pivot Poundage Block	2
4	Arm Pivot Block	2
5	Arm Torsion Spring	2
6	Nut Thin ¼ UNF	4
7	Spring Retainer	2(A/R)
8	Additional Spring (per arm)	(0, 1, 2)
9	Sealing Plug	2
10	Flat Blade	2
11	Double Arm Mtg Plate	2

FITTING THE WIPER BLADE CARRIER

The wiper blades should be changed every 12 months but this is dependent on use and operating conditions

Ref Figure – Dual Blade Clip

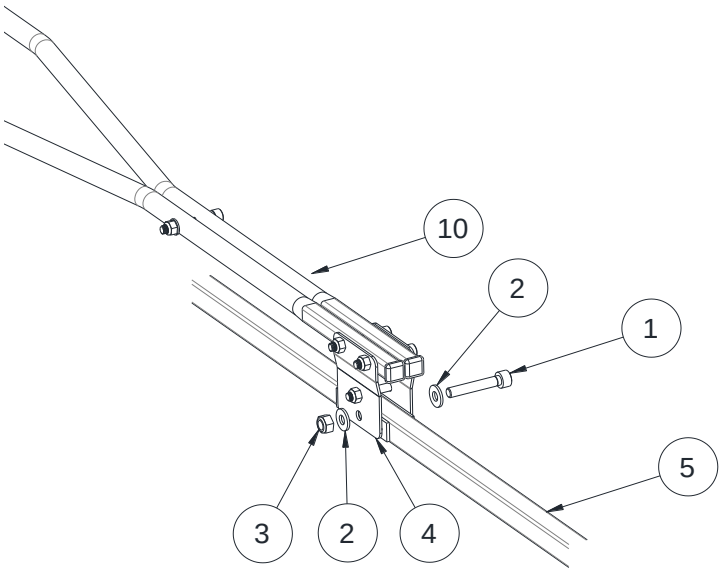
1. Remove one M6 blade retaining bolt ***(1),*** two M6 flat washers ***(2),*** and M6 Nylock nut ***(3),*** from blade clip on double wiper arm assy ***(10)***.

2. Place dual blade carrier assy ***(5)***, into blade clip on Arm ***(10)***.

3. Ensure that all fixing holes align.

4. Secure in place with one M6 blade retaining bolt ***(1),*** two M6 flat washers ***(2),*** and M6 Nylock nut ***(3).***

Figure – Dual Blade Clip

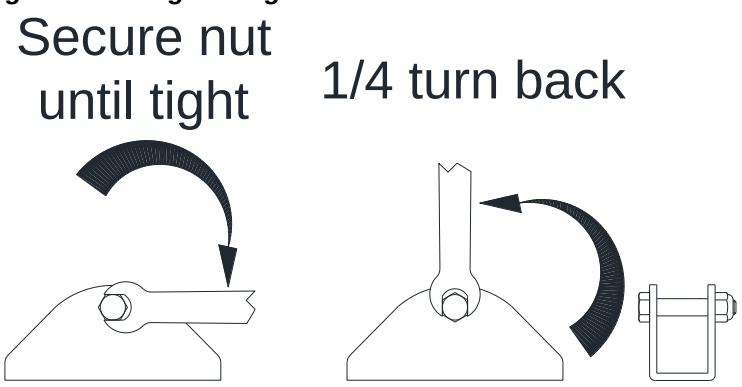


IMPORTANT
DO NOT over tighten blade carrier retaining bolt and nut, as blade carrier is required to pivot on glass.

Ref Figure – Nut Tightening

5. Secure nut until tight – then 1/4 turn back

Figure – Nut Tightening



NOTE
Pictorial representation only, May not be exact to supplied arm

EXAMPLE NUMBER

D	5	1	1	9	B	1	A	1	C	E	B	A	1	A	-	-

WIPER TYPE	CODE
D1	D1
D2	D2
D4	D4
D5	D5
C - 35mm Drive Shaft	C1
C - 84mm Drive Shaft	C2
C - 140mm Drive Shaft	C3
C - 200mm Drive Shaft	C4
C - 220mm Drive Shaft	C5
C - 84mm Gastight Drv Shft	C6
C - 140mm Gastight Drv Shft	C7
C - 200mm Gastight Drv Shft	C8

STROKE TYPE	CODE
Single	1
Twin	2
Special Twin Case (Non-std ctrs)	Q
Special Single (See Instructions)	S
Special Twin (See Instructions)	T
Type C Single Old Style Cse/Cvr	3
Type D Single Old Style Cse/Cvr	4
Type C Twin Old Style Cse/Cvr	5
Type D Twin Old Style Cse/Cvr	6
Type 76 Converted to Type D	7

TWIN STROKE LENGTH STANDARD 1 INCH (25MM) STROKE OVERLAP		
INCHES	MILLIMETRES	CODE
2 X 13	2 X 330	13
2 X 14	2 X 356	14
2 X 15	2 X 380	15
2 X 16	2 X 407	16
2 X 17	2 X 430	17
2 X 18	2 X 457	18
2 X 19	2 X 480	19
2 X 20	2 X 510	20
2 X 21	2 X 533	21
2 X 22	2 X 558	22
2 X 23	2 X 585	23
2 X 24	2 X 610	24
2 X 25	2 X 635	25
2 X 26	2 X 660	26
2 X 27	2 X 685	27
2 X 28	2 X 710	28
2 X 29	2 X 735	29
2 X 30	2 X 760	30
2 X 31	2 X 787	31
2 X 32	2 X 810	32
2 X 34	2 X 865	34
2 X 36	2 X 915	36
2 X 40	2 X 1015	40
2 X 41	2 X 1040	41
2 X 43	2 X 1095	43
2 X 45	2 X 1145	45
2 X 47	2 X 1195	47
2 X 49	2 X 1245	49
2 X 52	2 X 1335	52
2 X 57	2 X 1450	57
2 X 61	2 X 1560	61
2 X 67	2 X 1700	67
2 X 71	2 X 1800	71
2 X 76	2 X 1930	76
2 X 79	2 X 2005	79
SPECIAL TWIN		ST

(for twins , eg: 2x24" is shown as 24 with the 2 being stated at the previous part number digit)

LOW SPEED (L)

SINGLE STROKE LENGTH CODE	
INCHES	MM
12	305
13	330
14	356
15	380
16	407
17	430
18	457
19	480
20	510
21	533
22	558
23	585
24	610
25	635
26	660
27	685
28	710
29	735
30	760
31	787
32	810
33	840
34	865
35	890
36	915
37	940
38	965
39	990
40	1015
41	1040
43	1095
45	1145
47	1195
49	1245
51	1295
53	1335
55	1400
57	1450
59	1500
61	1560
63	1605
67	1700
71	1800
76	1930
79	2005
89	2260

HEATER	CODE
No Heater	0
24v Heater	A
115v Heater	B
220v Heater	C
SEE INST	S

HEATER CABLE LENGTH	CODE
Not Supplied	0
2 Metres	1
3 Metres	7
5 Metres	2
6 Metres	8
8 Metres	9
10 Metres	3
15 Metres	A
20 Metres	4
25 Metres	5
Terminated in Enclosure Junction Box	6 J

PARKING	CODE
Parking Not Fitted	0
Standard Drive End Parking	
Normally open) Reed Switch (TYPE D)	- A
Normally open) Reed Switch (TYPE C)	- B
Proximity Switch (TYPE D)	- J
Non-Standard Drive End Parking	
Proximity Switch (TYPE D)	- G
Reed Switch Change over (Special Type C)	- C
Standard Idler End Parking	
Normally open) Reed Switch (TYPE D)	- D
Normally Open) Reed Switch (Type C))	- E
Non-Standard Idler End Parking	
Proximity Switch (Type D)	- H
Reed Switch c/over (Special Type C)	- F

PARKING CABLE LENGTH	CODE
Not Supplied	0
2 Metres	1
3 Metres	7
5 Metres	2
6 Metres	8
8 Metres	9
10 Metres	3
15 Metres	A
20 Metres	4
25 Metres	5
Terminated in Enclosure Junction Box	6 J

Wiper Type	Motor Type	Code
MOTOR NOT SUPPLIED		MO
MOTOR SEPARATE		MM
NO POD		00
C/D	115vac 1ph 50/60hz 1Sp GA65	CA
C/D	115vac 1ph 50/60hz Low Sp GA65-L	CB
C/D	115vac 3ph 50/60hz 2Sp GA61	CE
C	115vac 3ph 50/60hz 2Sp IP23 GA61-IP23	CF
B/C/D	115vac 3ph 50/60hz 1Sp GA63	CG
C/D	230vac 1ph 50/60hz 1Sp GA64	CH
C/D	230vac 1ph 50/60hz Low Sp GA64L	CJ
C	230vac 1ph 50/60hz 1Sp IP23 GA64-IP23	CL
C/D	230vac 3ph 50/60hz 2Sp GA62D	CM
C/D	230vac 3ph 50/60hz 1Sp GA68	CN
C/D5	24vdc 320rpm 90W (1279-557) PM3	CS
C	230vac 3ph 50/60hz 2Sp GA62D-IP23-E (emc)	CV
C	100vac 1ph 1sp GA69	CW
C/D	414vac 3ph 50/60hz 2 Sp	CX
D5/C	24vdc **162rpm** SLOW (1279-557L) PM3	CY
C/D2	Pneumatic Drive Motor	PN
C/D	110V 360RPM (1279-559-01) PM3	CZ

For use **only** when replacing a Type B with a Type C			
C	115vac 1ph 50hz Var Sp	SD 11	CC
C	115vac 1ph 60hz Var Sp	SD11	CD
C	230vac 1ph 50/60hz Var Sp	SD11	CK

Motors for use with the 8000 series control system			
C/D	115vac 1 & 3ph 50/60hz	GA81	DA
C/D	230vac 1 & 3ph 50/60hz	GA82	DB

MOTOR CABLE LENGTH	MULTIPLE CABLES (D)	SINGLE CABLE (D)	TYPE C
Not Supplied	A	A	A
2 Metres	B	K	S
3 Metres	X	Y	G
5 Metres	C	L	T
6 Metres	6	Q	Z
7 Metres		7	
10 Metres	D	M	U
12 Metres		H	
15 Metres		R	J
20 Metres	E	N	V
25 Metres	F	P	W

PAINT FINISH	CODE
Standard White	A
Ad Light Grey BS381C/697	B
Munsell Green N7.5	C
R84890 Haze Grey	D
RAL 7001	E
Storm Grey	F
Int Paint H725	G
French Gry J724 BS381C/ 630	H
Light Grey BS381C/631	J
RAL 7000 Navy Grey) (Bruno Peter Type 76))	K
Cream 20320	L
Yellow RAL 1003	M
Int Paint E459	N
Black Dull RAL 9005	P
Canadian Grey CL1647	R
Lt W'work GRY BS381C676	T
SWEDISH NAVY GREY	- U
NC S5005-R808	
LIGHT GREY RAL 7035	-V
Special Paint (see special instructions)	S

SPRAY	CODE
No Spray	0
Std Spray Fitted	1
Spray Std + Banjo	2
Spray Jet S/Steel	3
150mm Spray Jet	4
SEE INST	S

MOTOR POSITION (viewed from outside)	CODE
Above Window Left	A
Above Window Right	B
Below Window Left	C
Below Window Right	D
Left Side Window Top	E
Right Side Window Top	F
Left Side Window Bttm *	G
Right Window Bottom *	H

*NOTE * = NOT RECOMMENDED

MOUNTING	CODE
Std Boss - 24 O/A (1588-057)	-
Boss - 26 O/A (1588-820)	B
Bracket (1588-870 - Type C) (1642-870 - Type D)	C
~~Universal Carrier~~ (DO NOT USE) ~~(4588-874 & BRACKET)~~	D
Boss - 64 O/A (1588-057-60)	E
Quick Release - No Plug (1642-468)	F
Quick Release and CVN Plug (1642-468) + (A-ELEC-701)	G
QUICK RELEASE ONLY (1588-647)	H
C-SHAPED BRACKET (1588-874 - Type C) (1642-874 - Type D)	J

Wheels	CODE
Standard	-
Solid	SW

COMPLETE WIPER PART NUMBERS

CAD FILENAME + DIRECTORY M:\DRAW\1681\1681-161.DWG

3rd ANGLE PRO.

TOLERANCES UNLESS OTHERWISE STATED
DECIMAL DIMS. TO 2 PLACES ± 0.1mm.
DECIMAL DIMS. TO 1 PLACE ± 0.25mm
NO DECIMAL PLACES ± 0.5mm
ANGLES ± 1°

										MOD STATUS
30	s1702	17.10.11	40	S21993	15.12.16	35	S7760	21.08.13		
29	S618	10.05.11	39	S21025	14.12.16	34	S6646	18.04.13		
28	S448	19.04.11	38	S21726	24.11.16	33	S6249	07.03.13		
27	11-134	08.03.11	37	S15178	30.07.2015	32	s2930	16.03.12		
41	S23510	03.05.17	36	S11968	16.10.2014	31	S2641	15.02.12		
MAT'L:-	ISS.	DIN DATE	ISS.	DIN	DATE	ISS.	DIN	DATE		
FINISH:-	SCALE:-	DRAWN:- DD	CHKD:-			CHANGED:- DD				

USED ON:

Wynn MARINE LIMITED
CHELTENHAM ENGLAND

TITLE:- STRAIGHT LINE WIPER UNIT PART NUMBER OPTIONS

DRAWING No. 1681-161

SPARES ORDERING

EXAMPLE NUMBER

D	5	1	1	1	9	B	1	A	1	1	A	1	-
*	*	*	*	*	*	*	*	*	*	*	*	*	*

WIPER TYPE	CODE
D1	-D1
D2	-D2
D4	-D4
D5	-D5
C	-C1

COVER / CASE	CODE
COVER	-1
CASE	-2
COVER old style C	-3
COVER old style D	4

STROKE TYPE	CODE
Single	1
Twin	2
Special Twin Case (Non-std ctrs)	Q
Special Single (See Instructions)	S
Special Twin (See Instructions)	T

SINGLE STROKE LENGTH CODE	
INCHES	MM
12	305
15	350
17	430
19	480
21	533
23	585
25	635
27	685
29	735
31	787
33	840
35	890
37	940
39	990
41	1040
43	1095
45	1145
47	1195
49	1245
51	1295
53	1335
55	1400
57	1450
59	1500
61	1560
63	1605
67	1700
71	1800
76	1930
79	2005
89	2260

TWIN STROKE LENGTH STANDARD 1 INCH (25MM) STROKE OVERLAP		
INCHES	MILLIMETRES	CODE
2 X 13	2 X 330	13
2 X 14	2 X 356	14
2 X 15	2 X 380	15
2 X 16	2 X 407	16
2 X 17	2 X 430	17
2 X 18	2 X 457	18
2 X 19	2 X 480	19
2 X 20	2 X 510	20
2 X 21	2 X 533	21
2 X 22	2 X 558	22
2 X 23	2 X 585	23
2 X 24	2 X 610	24
2 X 25	2 X 635	25
2 X 26	2 X 660	26
2 X 27	2 X 685	27
2 X 28	2 X 710	28
2 X 29	2 X 735	29
2 X 30	2 X 760	30
2 X 31	2 X 787	31
2 X 32	2 X 810	32
2 X 34	2 X 865	34
2 X 36	2 X 915	36
2 X 40	2 X 1015	40
2 X 41	2 X 1040	41
2 X 43	2 X 1095	43
2 X 45	2 X 1145	45
2 X 47	2 X 1195	47
2 X 49	2 X 1245	49
2 X 52	2 X 1335	52
2 X 57	2 X 1450	57
2 X 61	2 X 1560	61
2 X 67	2 X 1700	67
2 X 71	2 X 1800	71
2 X 76	2 X 1930	76
2 X 79	2 X 2005	79
SPECIAL TWIN		ST

(for twins , eg: 2x24" is shown as 24 with the 2 being stated at the previous part number digit)

HEATER	CODE
No Heater	-0
24v Heater	-A
115v Heater	-B
220v Heater	-C
SEE INST	-S

NOTE: HEATERS FITTED TO COVERS ONLY

HEATER CABLE LENGTH	CODE
Not Supplied	-0
2 Metres	-1
3 Metres	-7
5 Metres	-2
6 Metres	-8
8 Metres	-9
10 Metres	-3
15 Metres	-A
20 Metres	-4
25 Metres	-5
Terminated in Enclosure	-6

PARKING CABLE LENGTH	CODE
Not Supplied	-0
2 Metres	-1
3 Metres	-7
5 Metres	-2
6 Metres	-8
8 Metres	-9
10 Metres	-3
15 Metres	-A
20 Metres	-4
25 Metres	-5

PARKING	CODE
Parking Not Fitted	0
Standard Drive End Parking	
Normally open) Reed Switch (TYPE D)	- A
Normally open) Reed Switch (TYPE C)	- B
Proximity Switch (TYPE D)	- J
Non-Standard Drive End Parking	
Proximity Switch (TYPE D)	- G
Reed Switch Change over (Special Type C)	- C
Standard Idler End Parking	
Normally open) Reed Switch (TYPE D)	- D
Normally Open) Reed Switch (Type C))	- E
Non-Standard Idler End Parking	
Proximity Switch (Type D)	- H
Reed Switch c/over (Special Type C)	- F

PAINT FINISH	CODE
Standard White	- A
Admiralty Light Grey	- B
Munsell Green N7.5	- C
R84890 Haze Grey	- D
RAL 7001	- E
Storm Grey	- F
Int Paint H725	- G
French Grey J724	- H
Light Grey BS381C	- J
RAL 7000 Navy Grey (Bruno Peter Type 76)	- K
Cream 20320	- L
Yellow RAL 1003	- M
Int Paint E459	- N
Black Dull RAL 9005	- P
Canadian Grey CL1647	- R
RAL 7037 Dusty Grey	- T
SWEDISH NAVY GREY NC S5005-R808	- U
LIGHT GREY RAL 7035	-V
Special Paint (see special instructions)	- S

SPRAY	CODE
No Spray	- 0
Std Spray Fitted	- 1
Spray Std + Banjo	- 2
Spray Jet S/Steel	- 3
150mm Spray Jet	- 4
SEE INST	- S

NOTE: SPRAY FITTED TO COVERS ONLY. NO SPRAY ON 80, B OR 48

WINDOW HANDING	
Not Supplied	-0
LEFT	-1
RIGHT	-2

(above window)

MOUNTING	CODE
Std Boss - 24 O/A (1588-057)	-
Boss - 26 O/A (1588-820)	B
Bracket (1588-870 - Type C) (1642-870 - Type D)	C
~~Universal Carrier~~ (DO NOT USE) ~~(1588-874 & BRACKET)~~	D
Boss - 64 O/A (1588-057-60)	E
Quick Release - No Plug (1642-468)	F
Quick Release and CVN Plug (1642-468) + (A-ELEC-701)	G
QUICK RELEASE ONLY (1588-647)	H
C-SHAPED BRACKET (1588-874 - Type C) (1642-874 - Type D)	J

WIPER SPARE CASE/COVER PART NUMBERS

CAD FILENAME + DIRECTORY M:\DRAW\1681\1681-161.DWG

3rd ANGLE PRO.

TOLERANCES UNLESS OTHERWISE STATED
DECIMAL DIMS. TO 2 PLACES ± 0.1mm.
DECIMAL DIMS. TO 1 PLACE ± 0.25mm
NO DECIMAL PLACES ± 0.5mm
ANGLES ± 1°

30	s1702	17.10.11	40	S21993	15.12.16	35	S7760	21.08.13	MOD STATUS	
29	S618	10.05.11	39	S21025	14.12.16	34	S6646	18.04.13		
28	S448	19.04.11	38	S21726	24.11.16	33	s6249	07.03.13		
27	11-134	08.03.11	37	S15178	30.07.2015	32	s2930	16.03.12		
41	S23510	03.05.17	36	S11968	16.10.2014	31	S2641	15.02.12		
MAT'L:-	ISS.	DIN DATE	ISS.	DIN	DATE	ISS.	DIN	DATE		
FINISH:-	SCALE:-	DRAWN:- DD	CHKD:-			CHANGED:-				

USED ON:

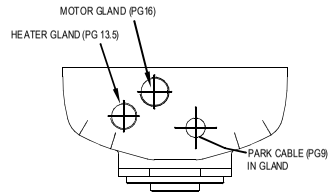
Wynn MARINE LIMITED
CHELTENHAM ENGLAND

TITLE:- STRAIGHT LINE WIPER COVER/CASE SPARES PART NUMBER OPTIONS

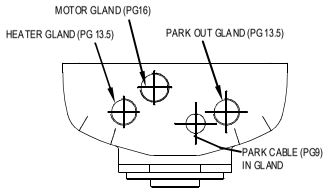
DRAWING No. 1681-161

CONTROLLED
07 April 2011 12:44:41

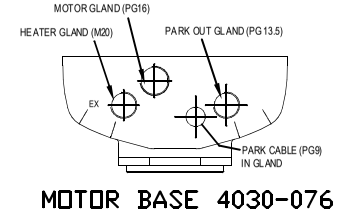
THIS GIVES THE PART No FOR A COMPLETE MOTOR POD



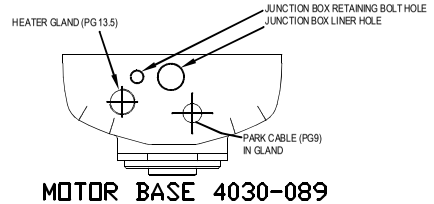
MOTOR BASE 4030-074



MOTOR BASE 4030-075



MOTOR BASE 4030-076



MOTOR BASE 4030-089

MP

WIPER TYPE	CODE
D2	D2
D4	D4
D5	D5

PARKING CABLE LENGTH	CODE
Not Supplied	0
2 Metres	1
5 Metres	2
10 Metres	3
20 Metres	4
25 Metres	5
Terminated in Enclosure	6

Wiper Type	Motor Type	Code
MOTOR NOT SUPPLIED		MO
115vac 1ph 50/60hz 1Sp	GA65	CA
115vac 1ph 50/60hz Low Sp	GA65-L	CB
115vac 3ph 50/60hz 2Sp	GA61	CE
115vac 3ph 50/60hz 1Sp	GA63	CG
230vac 1ph 50/60hz 1Sp	GA64	CH
230vac 1ph 50/60hz Low Sp	GA64L	CJ
230vac 3ph 50/60hz 2Sp	GA62D	CM
230vac 3ph 50/60hz 1Sp	GA68	CN
D2 24vdc 320rpm 90W (1279-051) PM3		CP
D2 24vdc 320rpm 150W (1279-513) PM5		CR
D5 24vdc 320rpm 90W (1279-557) PM3		CS
D5 24vdc 320rpm 150W (1279-555) PM5		CT
D5 24vdc **162rpm** SLOW (1279-557L) PM3		CY
D2 Pneumatic Drive Motor		PN

Motors for use with the 8000 series control system

C/D	230vac 1 & 3ph 50/60hz	GA81	DA
C/D	110vac 1 & 3ph 50/60hz	GA82	DB

PAINT FINISH	CODE
Standard White	A
Admiralty Light Grey	B
Munsell N9.5	C
R84890 Haze Grey	D
RAL 7001	E
Storm Grey	F
Int Paint H725	G
French Grey J724	H
Light Grey BS381C	J
RAL 7000 Navy Grey	K
Cream 20320	L
Yellow RAL 1003	M
Int Paint E459	N
Black Dull RAL 9005	P
Canadian Grey CL1647	R
Special Paint (see special instructions)	S

NOTE:
THESE DESCRIPTIONS ARE FOR REFERENCE ONLY AND ARE NOT EXHAUSTIVE.
OTHER OPTIONS ARE POSSIBLE Ie REED SWITCH PARKING OR TWIN HEATERS.

MOTOR TYPE	HEATER TERMINATED IN MOTOR POD	CABLE TYPE	PARKING TYPE	MOTOR GLAND	HEATER GLAND	PARK OUT GLAND	PARK IN GLAND	CODE
DC & 1PH	HEATER NOT TERMINATED	MULTIPLE CABLE	REED SW	PG 13.5	BLANK	BLANK	BLANK	001
3PH	HEATER TERMINATED	MULTIPLE CABLE	REED SW	PG 21	PG 13.5	BLANK	BLANK	002
DC & 1PH	HEATER NOT TERMINATED	SINGLE CABLE	REED SW	PG 16	BLANK	BLANK	PG 9	003
3PH	HEATER NOT TERMINATED	SINGLE CABLE	REED SW	PG 16	BLANK	BLANK	PG 9	003
DC & 1PH	HEATER TERMINATED	SINGLE CABLE	REED SW	PG 16	PG 13.5	BLANK	PG 9	004
3PH	HEATER TERMINATED	SINGLE CABLE	REED SW	PG 16	PG 13.5	BLANK	PG 9	004
3PH	HEATER NOT TERMINATED	MULTIPLE CABLE	REED SW	PG 16	BLANK	BLANK	BLANK	005
DC & 1PH	HEATER TERMINATED	MULTIPLE CABLE	REED SW	PG 16	PG 13.5	BLANK	BLANK	006
	OLD STYLE GLAND FORMAT	SINGLE CABLE	REED SW	PG 16	PG 13.5	BLANK	PG 9	004
				PG 16	BLANK	PG11		008
	SPECIAL	MULTIPLE CABLE	REED SW	PG 21	PG 16	PG 16	PG9	009
	TWIN HEATERS TERMINATED	SINGLE CABLE	REED SW	PG 16	PG 13.5	PG 13.5	PG9	010
DC & 1PH	OLD STYLE GLAND FORMAT	MULTIPLE CABLE	REED SW	PG 21	PG 16	PG 13.5	BLANK	011
DC & 1PH	HEATER NOT TERMINATED	MULTIPLE CABLE	PROX SW	BLANK	PG 13.5	PG 13.5	BLANK	012
3PH	HEATER TERMINATED	MULTIPLE CABLE	PROX SW	PG 21	PG 13.5	PG 13.5	BLANK	013
DC & 1PH	HEATER NOT TERMINATED	SINGLE CABLE	PROX SW	PG 16	BLANK	BLANK	BLANK	005
3PH	HEATER NOT TERMINATED	SINGLE CABLE	PROX SW	PG 16	BLANK	BLANK	BLANK	005
DC & 1PH	HEATER TERMINATED	SINGLE CABLE	PROX SW	PG 16	PG 13.5	BLANK	BLANK	006
3PH	HEATER TERMINATED	SINGLE CABLE	PROX SW	PG 16	PG 13.5	BLANK	BLANK	006
3PH	HEATER NOT TERMINATED	MULTIPLE CABLE	PROX SW	PG 16	BLANK	PG 13.5	BLANK	014
DC & 1PH	HEATER TERMINATED	MULTIPLE CABLE	PROX SW	PG 16	PG 13.5	PG 13.5	BLANK	015
	OLD STYLE GLAND FORMAT	SINGLE CABLE	PROX SW	PG 16	PG 13.5	BLANK	BLANK	006
				PG 16	BLANK	PG11		008
	SPECIAL	MULTIPLE CABLE	PROX SW	PG 21	PG 16	PG 16	BLANK	016
	TWIN HEATERS TERMINATED	SINGLE CABLE	PROX SW	PG 16	PG 13.5	PG 13.5	BLANK	015
DC & 1PH	OLD STYLE GLAND FORMAT	MULTIPLE CABLE	PROX SW	PG 21	PG 16	PG 13.5	BLANK	011
VARIOUS	'EX' HEATER TERMINATED	SINGLE CABLE	REED SW	PG 16	NONE	BLANK	PG 9	EX4
DC & 1PH	HEATER TERMINATED	MULTIPLE CABLE	PROX SW	PG 16	PG 13.5+ BLANK	PG 13.5	BLANK	020
3PH	HEATER TERMINATED	NONE	REED SW	PG 16	PG 13.5+ BLANK	PG 13.5 + BLANK	PG 9 + BLANK	021
DC & 1PH	HEATER TERMINATED	NONE	REED SW	PG 16	PG 13.5+ BLANK	PG 13.5 + BLANK	PG 9 + BLANK	022
DC & 1PH	HEATER NOT TERMINATED	MULTIPLE CABLE	PROX SW	PG 13.5	BLANK	PG 13.5	BLANK	023
DC & 1PH	HEATER TERMINATED	MULTIPLE CABLE	PROX SW	PG 16	PG 13.5+ BLANK	PG 13.5 + BLANK	BLANK	024
CONFIGURATION TO INCLUDE POD WITH JUNCTION BOX (4030-089)								025

HEATER FITTINGS LOOSE IN BAG FOR CUSTOMER FIT

ALL GLANDS AND PLUGS TO BE BAGGED AND ATTACHED EXCEPT MOTOR GLAND WHICH SHOULD BE FITTED.

ALL GLANDS AND PLUGS TO BE BAGGED AND ATTACHED EXCEPT MOTOR GLAND WHICH SHOULD BE FITTED.

ALL GLANDS AND PLUGS TO BE BAGGED AND ATTACHED EXCEPT MOTOR GLAND WHICH SHOULD BE FITTED.

PARKING	CODE
Parking Not Fitted	0
Standard Drive End Parking	
Normally open) Reed Switch (TYPE D)	A
Proximity Switch (Std D)	G
Non Standard Idler End Parking	
Normally open) Reed Switch (TYPE D)	D
Proximity Switch (Type D)	H

MOTOR CABLE LENGTH	MULTIPLE CABLES (D)	SINGLE CABLE (D)
Not Supplied	A	A
2 Metres	B	K
3 Metres	X	Y
5 Metres	C	L
6 Metres		
7 Metres		7
10 Metres	D	M
12 Metres		H
15 Metres		R
20 Metres	E	N
25 Metres	F	P

Issue	Changes/Mod No.	Date	Name
17.	S25963 - JB VARIENT ADDED	09/04/18	MB
16.	S12011 - GA8# MOTOR MOD	21/10/14	APG
15.	S6127 - 023 VARIANT MOD	21/02/13	J.E.E.
14.	S5407 - POD BASE VARIANTS	11/12/12	J.E.E.
13.	S4306 - NEW VARIANT ADDED	21/08/12	J.E.E.
12.	D.O REQ - S484. DRAWING RE-FRAMED FOR PDF PURPOSES OLD FORMAT NOT SUPPORTED.	07/04/11	D.G.H

1681-188

NOTE CRITICAL DIMENSIONS MARKED THUS 'CD'
SIGNIFICANT DETAILS MARKED THUS 'SD'

Matl. Type -
Matl. Part No. -
Matl. Size -
Finish 1 - REMOVE SHARP EDGES
Finish 2 -
Other info -

CONTROLLED | Issue Date - 07/04/2011

GENERAL TOLERANCES
unless otherwise stated

Dimension - No decimal place	± 1
Dimension - One decimal place	± 0.5
Dimension - Two decimal places	± 0.25
Dimension - Three decimal places	± 0.125
Dimension - Four decimal places	± 0.0625
Angular Dimension	± 1°

3RD ANGLE

All dimensions are in mm unless otherwise stated

DO NOT SCALE

A Division of B. Hepworth
B. Hepworth & Co. Ltd
2-4 Merse Road North Moons Moat
Redditch Worcestershire B98 9HL
tel 01527 63057 fax 01527 66836

IF IN DOUBT ASK

Drawing Log No.	Drawn by	Approved by	Drawing Date
025	D.D		08/12/05

'D' TYPE SLW
REF - COMPLETE MOTOR POD
REF - PART NUMBER OPTIONS

1681-188 | ISSUE No. 17

SERIES 2000 CONTROL UNIT

Series 2000 controllers are available in units from 1 – 6 ways. They allow direct connection of the wiper motor without the need for intermediate power supplies. Wipers can be individually controlled or Group controlled by the Master Control Switch. Wipers are synchronised when in intermittent mode.

AC supply voltages at the controller input with wiper running should be within +/- 10%. The DC supply for electronic components is either generated by an internal 24V power supply or from an external source (model dependent).

The system complies with all relevant safety and EMC regulations.

For 24VDC controllers (2-6 way) external contactors MUST be fitted between the controller and wiper case heaters.

Installation of Controller

Installation of the control unit and wiper must be done by a competent electrician.

1. Cut out and de-burr a hole in the console, relevant to the sizes shown in the table below.

Controller Type	Panel cut out (mm)	Overall size (mm)	Fixing Holes Location (mm)
1-way	86 x 107	95 x 135	81 x 121
2-way	167 x 107	175 x 135	161 x 121
3-way	167 x 107	175 x 135	161 x 121
4-way	167 x 222	175 x 270	159 x 254
5-way	167 x 222	175 x 270	159 x 254
6-way	167 x 222	175 x 270	159 x 254

2. Remove the connector(s) from the rear of the unit.

3. Fit the unit into the mounting hole and secure with 4 off M4 screws or similar.

4. Fit the DIN rail mounting wiper case heater contactors in a suitable location close to the control unit. (24VDC unit only, if supplied)

5. Connect wiring to the removed connectors according to the appropriate wiring diagram.

6. Connect wiring between wiper heater contactors, control unit and wiper unit.

7. Reconnect the connectors to the rear of the controller, taking care to fit into the correct channel.

Operating Instructions

To operate the wiper, turn the wiper operation switch clockwise one position to select Intermittent wipe, turn a further position for low speed or fully clockwise for high speed operation if it is a 3 phase 2 speed version.

To park the wipers, turn the switch fully anticlockwise. The wipers will complete their current wipe and then park.

The intermittent switch has 15 positions; each turn clockwise decreases the delay between wipes, from 32 seconds down to 4 seconds.

Functional Test

1. Set the wiper switch to the off position (fully anti-clockwise). Set the Intermittent switch to the shortest time increment (fully clockwise). Apply power to the system. Check each wiper switch in turn as follows:

2. Switch to Intermittent mode, the first clockwise position. The wiper will immediately make one wipe returning to the park position. After 4 seconds the wiper will make one wipe and park.

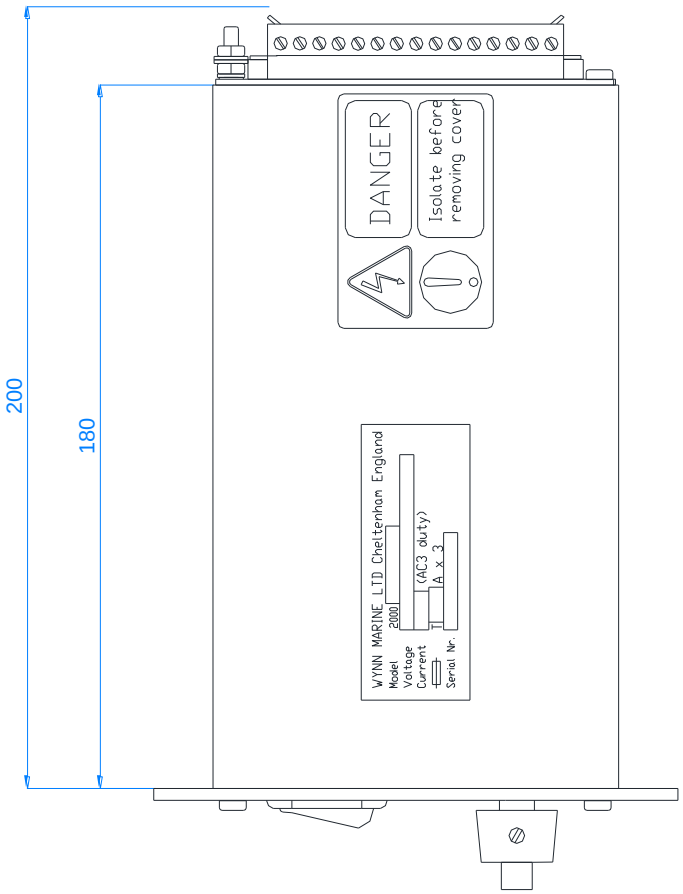
3. Switch control to continuous speed (second clockwise position). The wiper will operate continuously. Slow speed in 3-phase application. Fast speed in 1-phase applications.

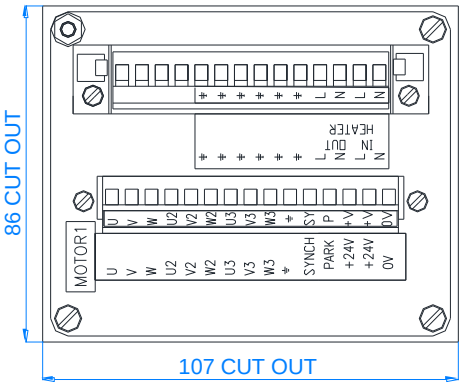
4. Switch into fully clockwise position. Fast speed in 3-phase 2 speed AC systems only.

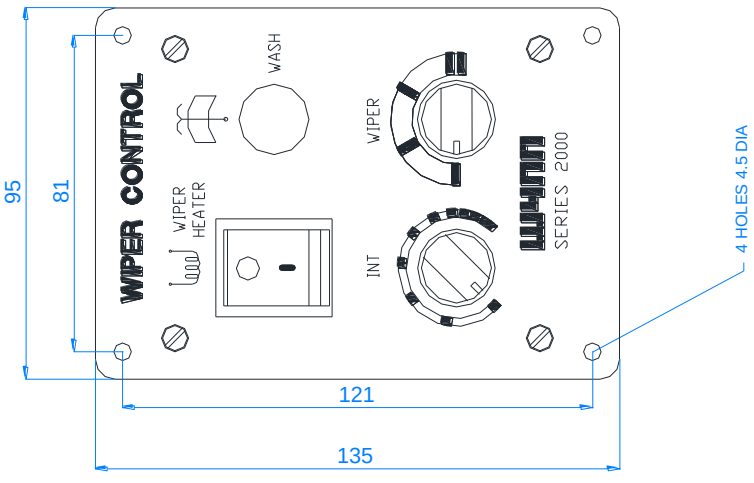
5. Heaters. Switch on and ensure that the wipers begin to heat up.

6. Wash / Wipe. Switch on and hold down and ensure water is sprayed through the system.

SERIES 2000 CONTROLLER ONE WAY DIMENSIONS







CONTROLLER OPTION			SWITCH FITTED AS DRAWN	BLANKING PLUG FITTED
2000-3X0-100	✓	✓	✓	x
2000-3X0-101	x	✓	✓	x
2000-3X0-102	✓	x	x	✓
2000-3X0-103	x	x	x	✓

CONTROLLER NOT FITTED WITH INTERNAL POWER SUPPLY UNIT

ADDITIONAL LABEL USED WHEN PSU FITTED

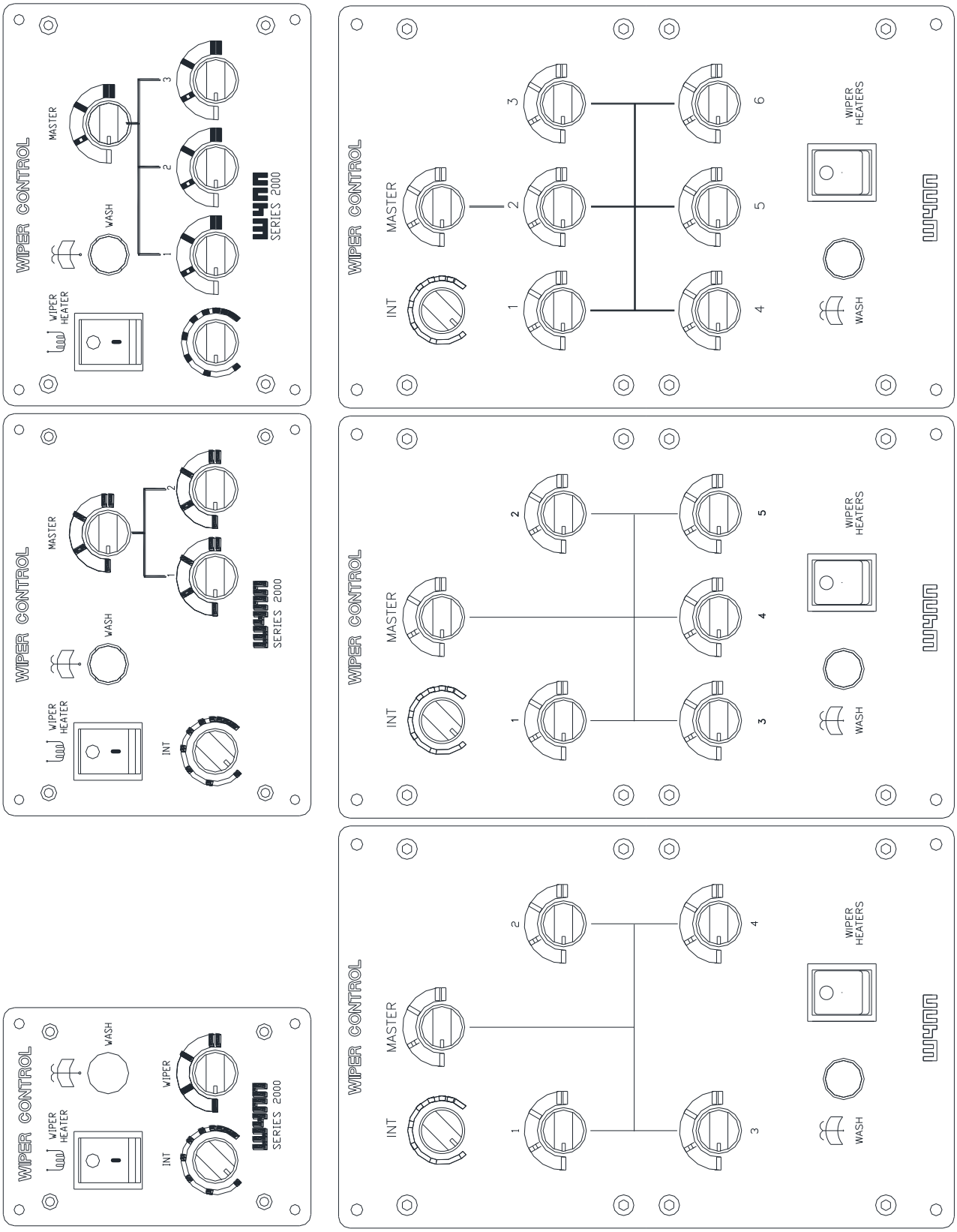
PARKSWITCH S +V 0V

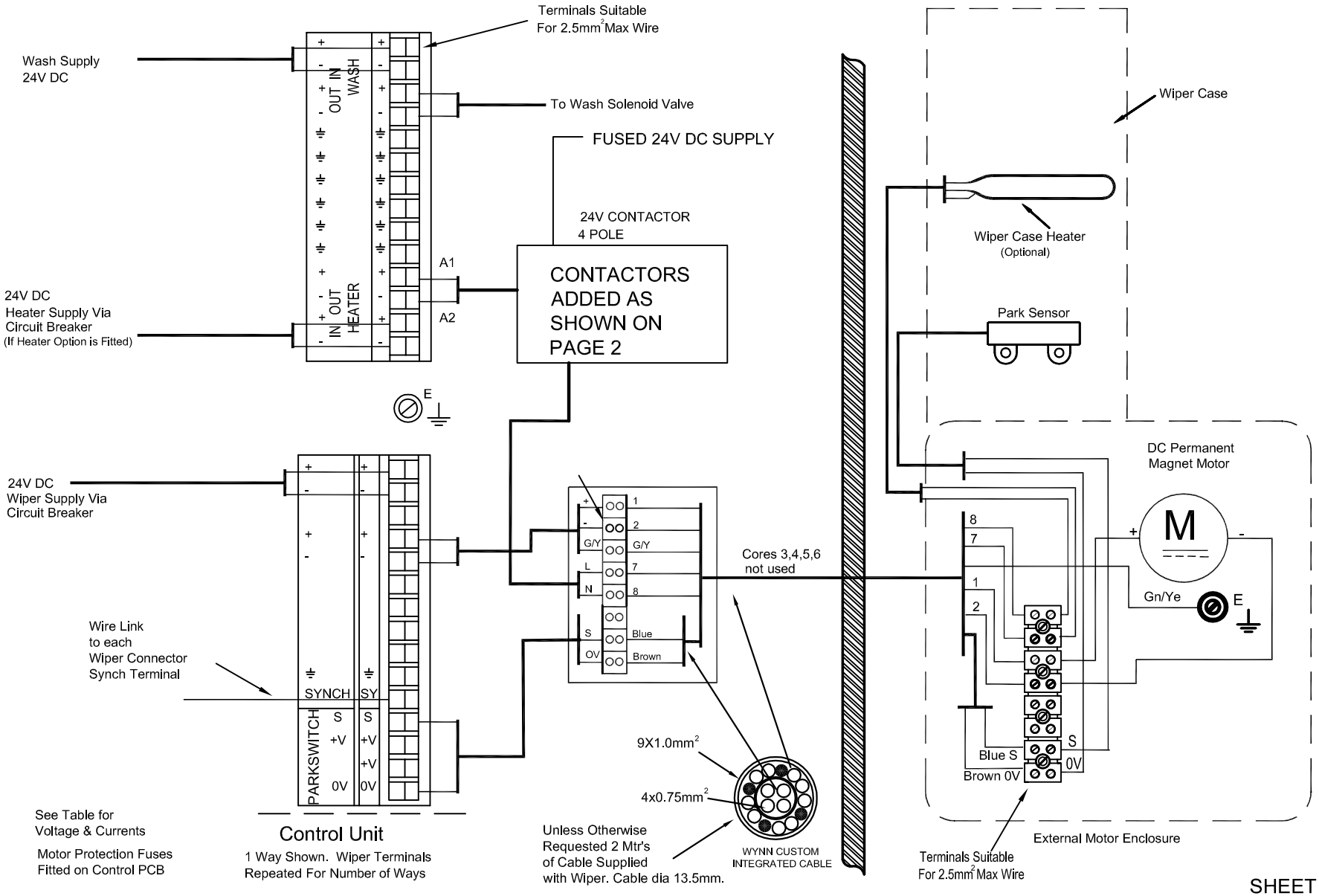
CONTROLLER OPTION			SWITCH FITTED AS DRAWN	BLANKING PLUG FITTED
2000-3X1-100	✓	✓	✓	x
2000-3X1-101	x	✓	✓	x
2000-3X1-102	✓	x	x	✓
2000-3X1-103	x	x	x	✓

CONTROLLER NOT FITTED WITH 24v DC INTERNAL POWER SUPPLY UNIT

WEIGHT OF UNIT 2.0KG

SERIES 2000 CONTROL PANEL VARIANTS

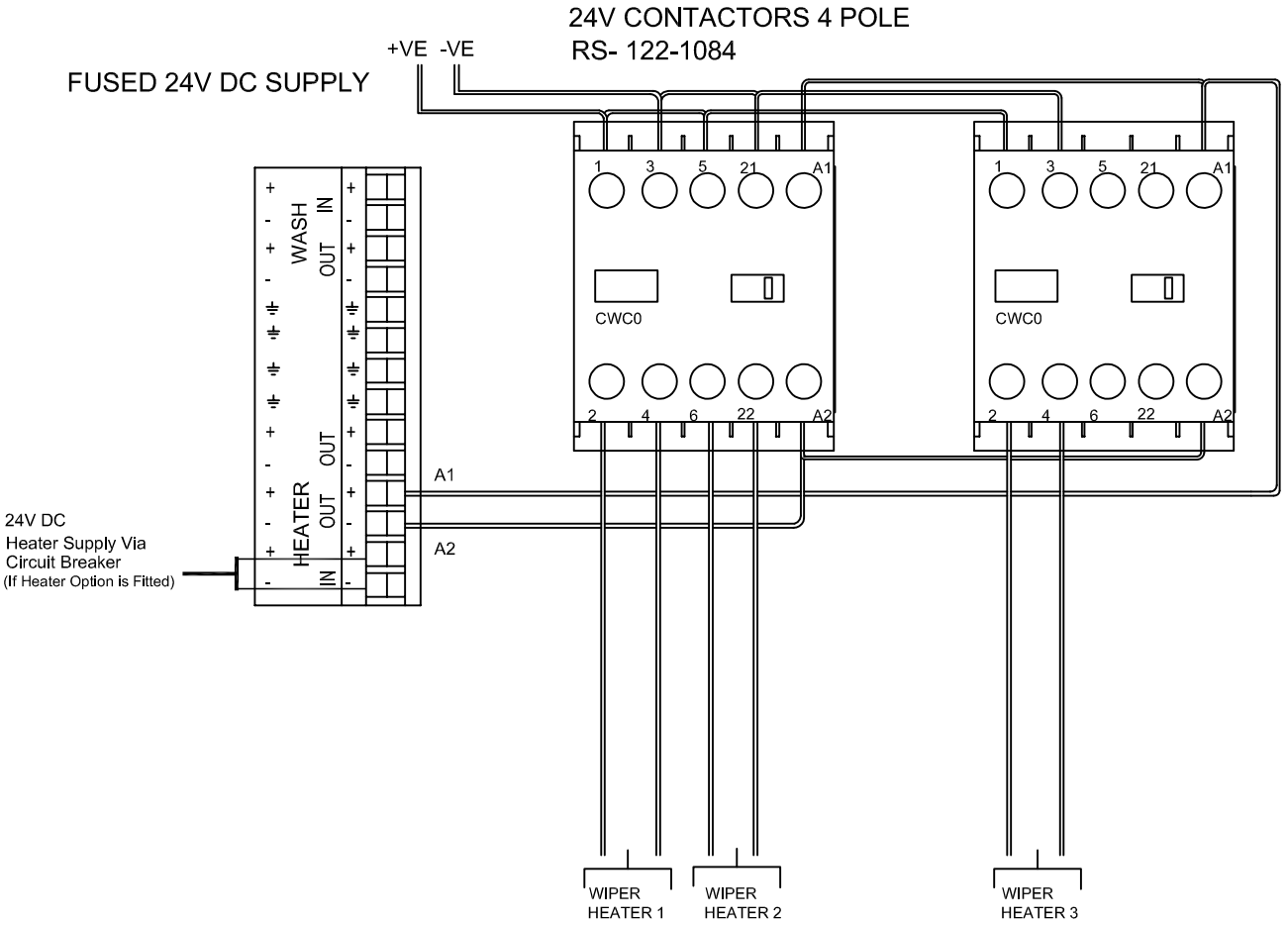




SHEET 1 OF 2

3rd ANGLE PRO.							6		09.02.21	MOD STATUS	THE COPYRIGHT OF THIS DRAWING IS VESTED IN WYNN MARINE LTD. AND MUST NOT BE REPRODUCED WITHOUT THE WRITTEN PERMISSION OF THE COMPANY OR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT HAS BEEN SUPPLIED.
							5		07.6.19		
TOLERANCES UNLESS OTHERWISE STATED DECIMAL DIMS. TO 2 PLACES ± 0.1mm. DECIMAL DIMS. TO 1 PLACE ± 0.25mm NO DECIMAL PLACES ± 0.5mm ANGLES ± 1°							4		28.7.10		WYNN MARINE LIMITED CHELTENHAM ENGLAND
							3		02.3.09		
							2		20.6.08		
				7		10.06.21	1		20.3.08		TITLE:- Connection Diagram for 2000 Series Controller to 'D5' Type Wiper with a DC Motor
MAT'L:-	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE		
CAD FILE M:\DRAW\4030\EL	SCALE:- NTS		DRAWN:- DCT		CHKD:-		CHANGED:-				DRAWING No. 2000-EL-DC-D5

NOTE: THE 24V CONTACTOR 4 POLE NEEDS TO BE WIRED BY CUSTOMER
CONTACTOR NOT REQUIRED FOR SINGLE WINDOW HEATER



24V CONTACTORS 4 POLE	
No, OF WINDOW HEATERS	No, OF CONTACTOR REQUIRED
1	0
2	1
3	2
4	2
5	3
6	3

SHEET 2 OF 2

						6		09.02.21	MOD STATUS	
						5		07.6.19		
						4		28.7.10		
						3		02.3.09		
						2		20.6.08		
			7		10.06.21	1		20.3.08		
MAT'L:-	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE	
CAD FILE M:\DRAW\4030\EL	SCALE:- NTS		DRAWN:- DCT		CHKD:-		CHANGED:-			

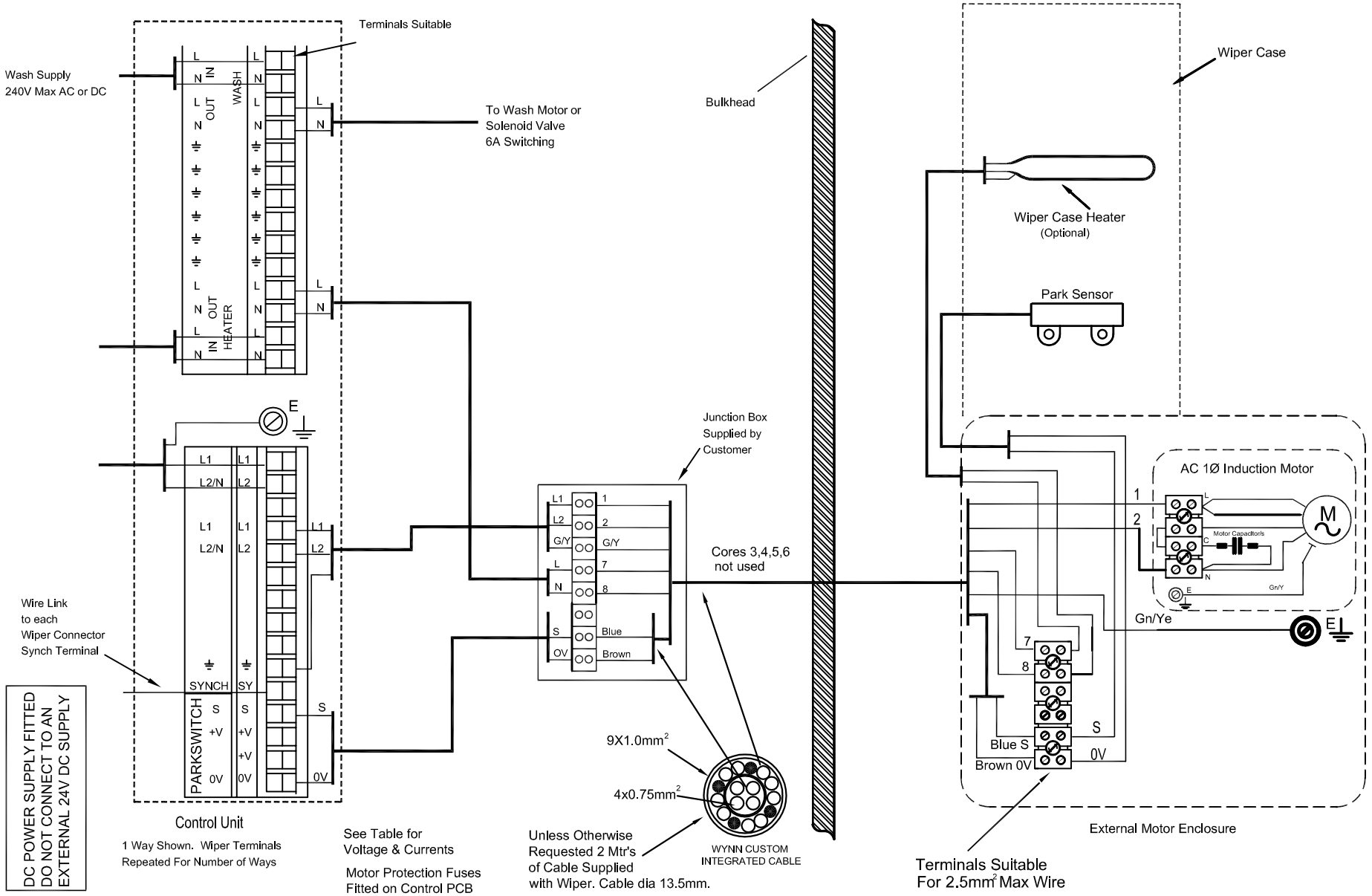
3rd ANGLE PRO.

TOLERANCES UNLESS OTHERWISE STATED
DECIMAL DIMS. TO 2 PLACES ± 0.1mm.
DECIMAL DIMS. TO 1 PLACE ± 0.25mm
NO DECIMAL PLACES ± 0.5mm
ANGLES ± 1°

WYNN MARINE LIMITED
CHELTENHAM ENGLAND

TITLE:- Connection Diagram for 2000 Series Controller to 'D5' Type Wiper with a DC Motor

DRAWING No. 2000-EL-DC-D5



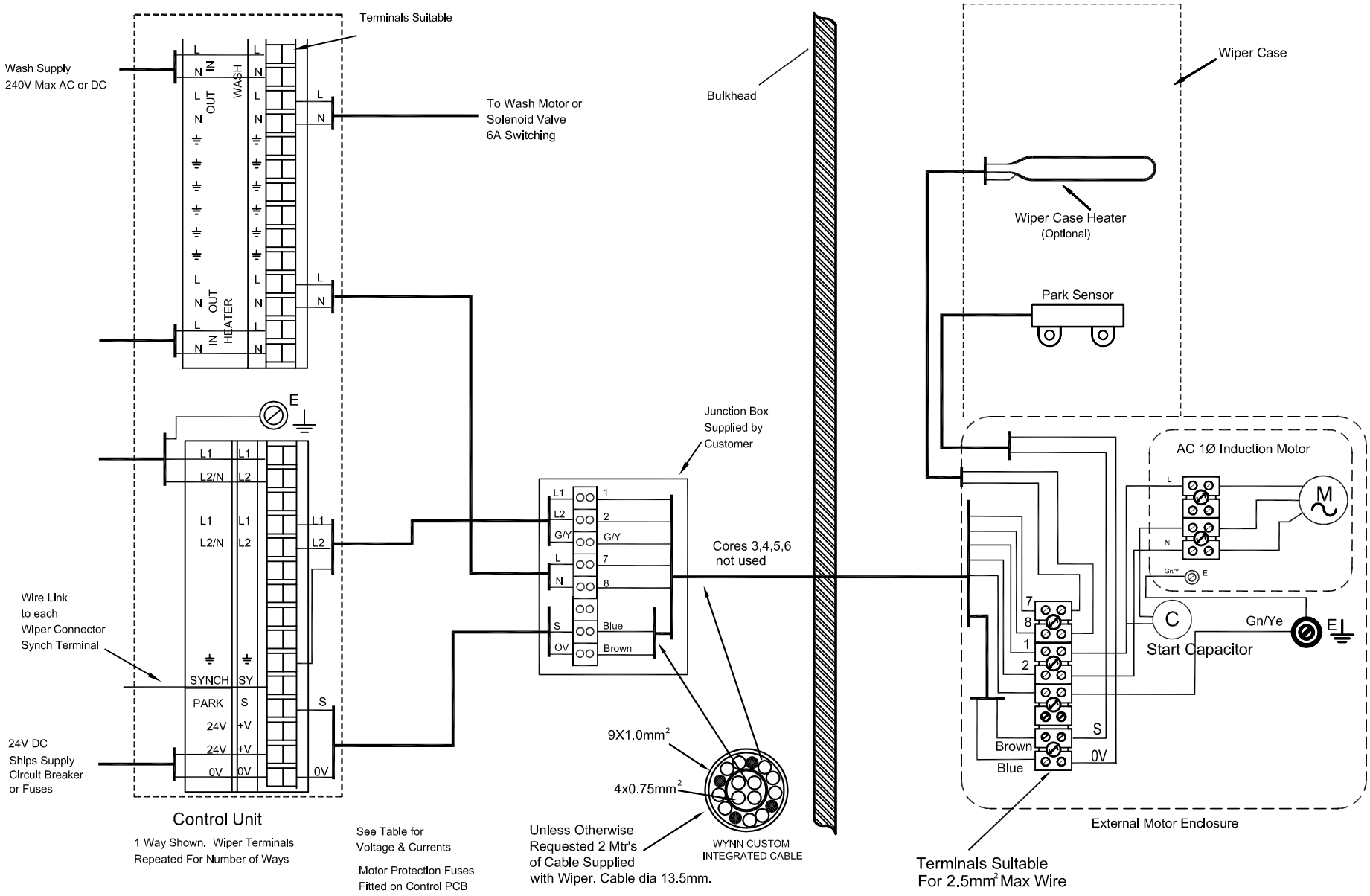
3rd ANGLE PRO.										MOD STATUS
							5		09.02.21	
							4		01.08.13	
TOLERANCES UNLESS OTHERWISE STATED DECIMAL DIMS. TO 2 PLACES ± 0.1mm. DECIMAL DIMS. TO 1 PLACE ± 0.25mm NO DECIMAL PLACES ± 0.5mm ANGLES ± 1°							3		28.7.10	
							2		20.6.08	
							1		20.3.08	
MAT'L:-	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE	
CAD FILE M:\DRAW\4030\EL	SCALE:- NTS		DRAWN:- DCT		CHKD:-		CHANGED:-			

WYNN MARINE LIMITED

CHELTENHAM ENGLAND

TITLE:- Connection Diagram for 2000 Series Controller with PSU to a 'D5' Type Wiper with a 1 Phase AC Motor Using Wynn Integrated Cable

DRAWING No. 2000-EL-1AC-DP5

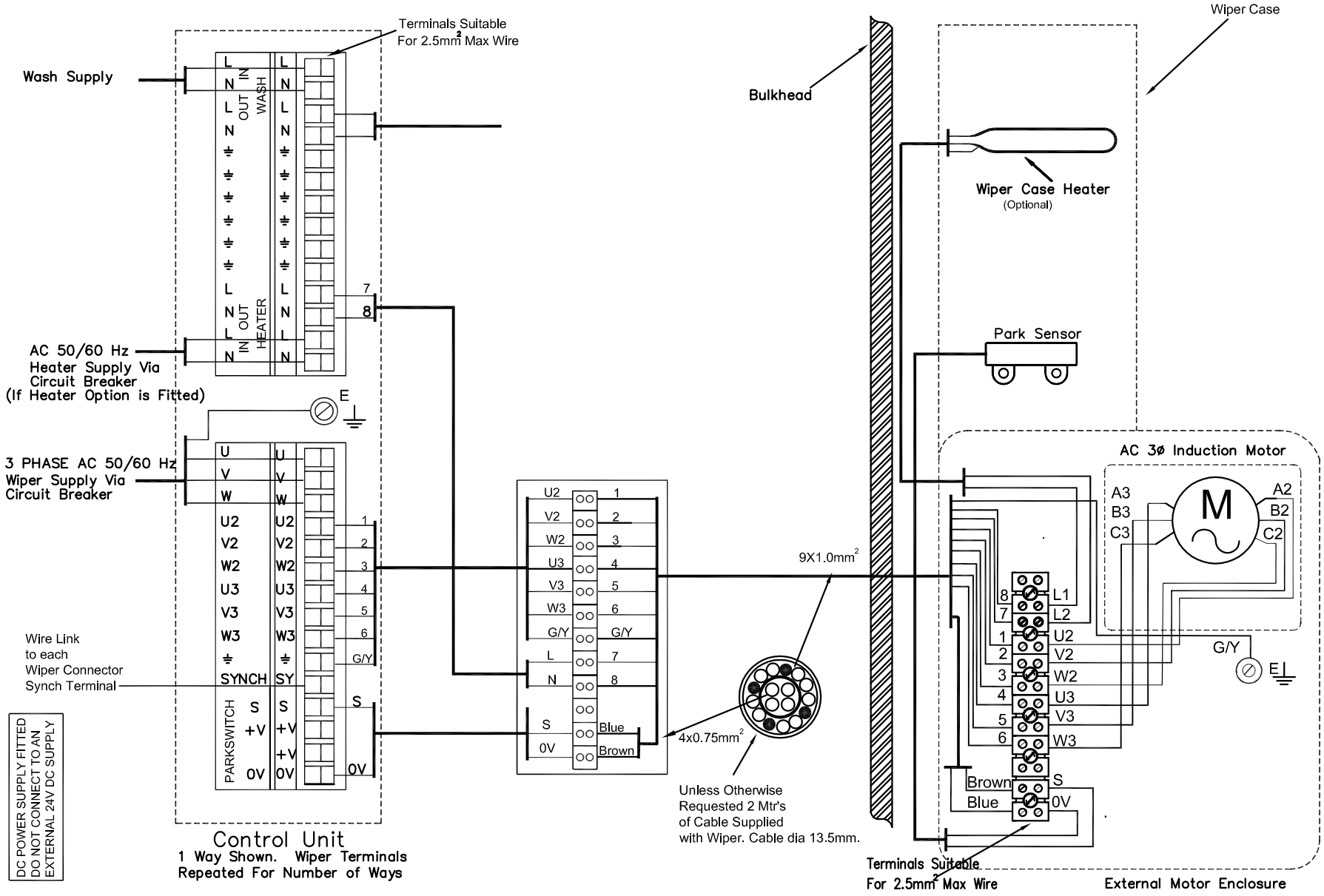


3rd ANGLE PRO.										MOD STATUS
							5		09.02.21	
							4		01.08.13	
TOLERANCES UNLESS OTHERWISE STATED DECIMAL DIMS. TO 2 PLACES ± 0.1mm. DECIMAL DIMS. TO 1 PLACE ± 0.25mm NO DECIMAL PLACES ± 0.5mm ANGLES ± 1°							3		28.7.10	
							2		20.6.08	
							1		20.3.08	
MAT'L:-	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE	
CAD FILE M:\DRAW\4030\EL	SCALE:- NTS		DRAWN:- DCT		CHKD:-		CHANGED:-			

WYNN MARINE LIMITED
CHELTENHAM ENGLAND

TITLE:- Connection Diagram for 2000 Series Controller without PSU to a 'D5' Type Wiper with a 1 Phase AC Motor Using Wynn Integrated Cable

DRAWING No. 2000-EL-1AC-D5



3rd ANGLE PRO.										MOD STATUS
TOLERANCES UNLESS OTHERWISE STATED DECIMAL DIMS. TO 2 PLACES ± 0.1mm. DECIMAL DIMS. TO 1 PLACE ± 0.25mm NO DECIMAL PLACES ± 0.5mm ANGLES ± 1°							4		09.02.21	
							3		28/07/10	
							2		19/06/08	
							1		20/03/08	
MAT'L:-	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE	
	SCALE:-NTS		DRAWN:- DCT		CHKD:-		CHANGED:-			

WYNN MARINE LIMITED

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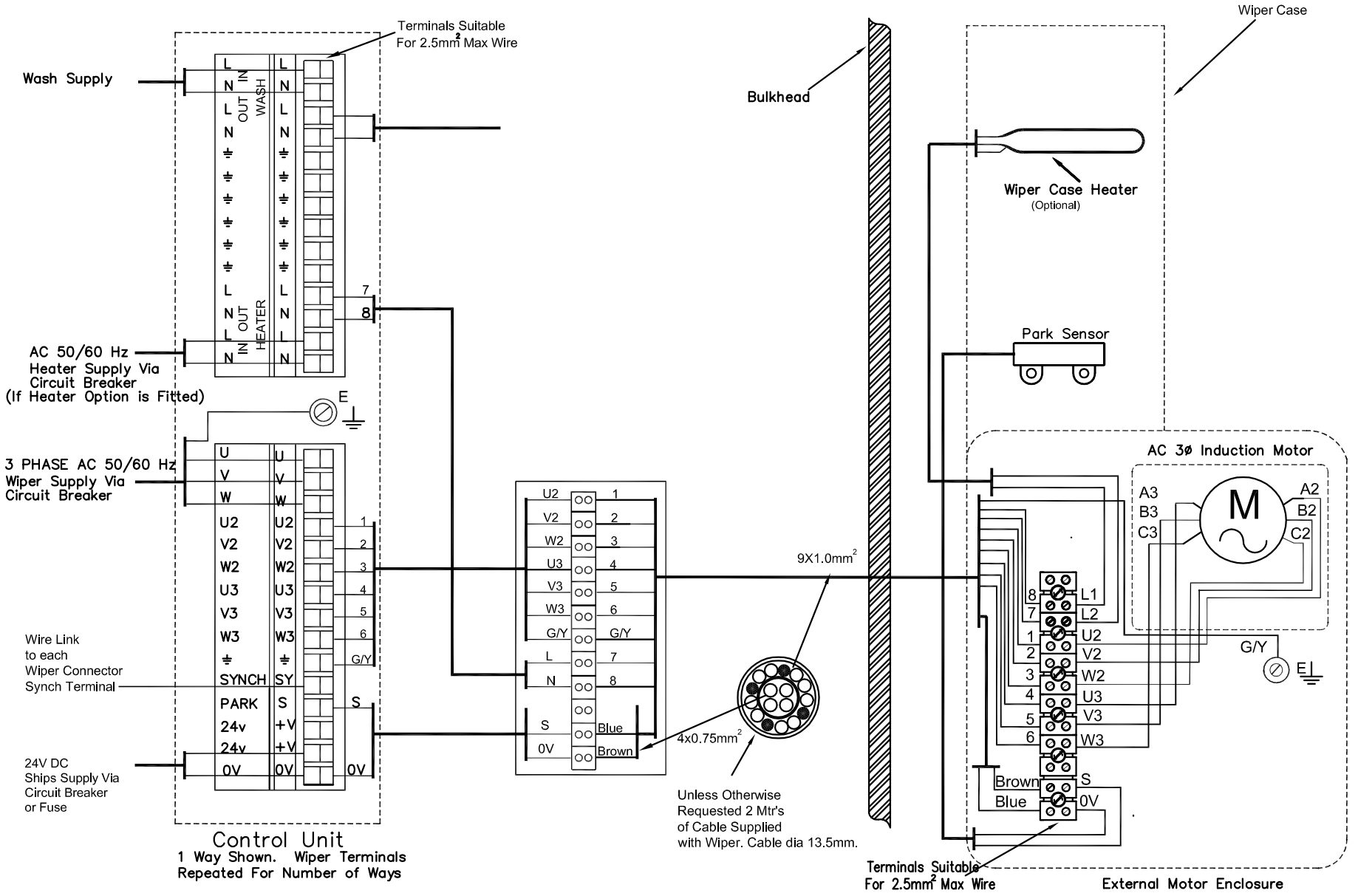
TITLE:- Connection Diagram for 2000 Series Controller with PSU to a 'D5' Type Wiper with a 3 Phase AC Motor Using Wynn Integrated Cable

DRAWING No. 2000-EL-3AC-DP5



3rd ANGLE PRO.										MOD STATUS
							4		09.02.21	
							3		28/07/10	
							2		19/06/08	
							1		20/03/08	
MAT'L:-	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE	
4030\EL\4030-EL-3AC-05-I1	SCALE:-NTS		DRAWN:- DCT		CHKD:-		CHANGED:-			

TOLERANCES UNLESS OTHERWISE STATED
DECIMAL DIMS. TO 2 PLACES ± 0.1mm.
DECIMAL DIMS. TO 1 PLACE ± 0.25mm
NO DECIMAL PLACES ± 0.5mm
ANGLES ± 1°

WYNN MARINE LIMITED
CHELTENHAM ENGLAND

TITLE:- Connection Diagram for 2000 Series Controller without PSU to a 'D5' Type Wiper with a 3 Phase AC Motor Using Wynn Integrated Cable

DRAWING No. 2000-EL-3AC-D5

SERIES 2000 CONTROLLER FAULT FINDING

WARNING: Ensure that all power is disconnected whilst working on the controller.

The controller contains few user serviceable items. The only items that may need to be accessed in the event of a fault are as follows:

1. Remove the 4 off screws from front panel. Carefully pull out the controller front panel as far as it will go (50 to 75 mm).

2. The wash and heat switches are now accessible. The wiper control switches are not serviceable. Refer to Wynn.

3. To replace heater switch, disconnect wires from rear of switch, depress the 2 lugs whilst pulling through from front.

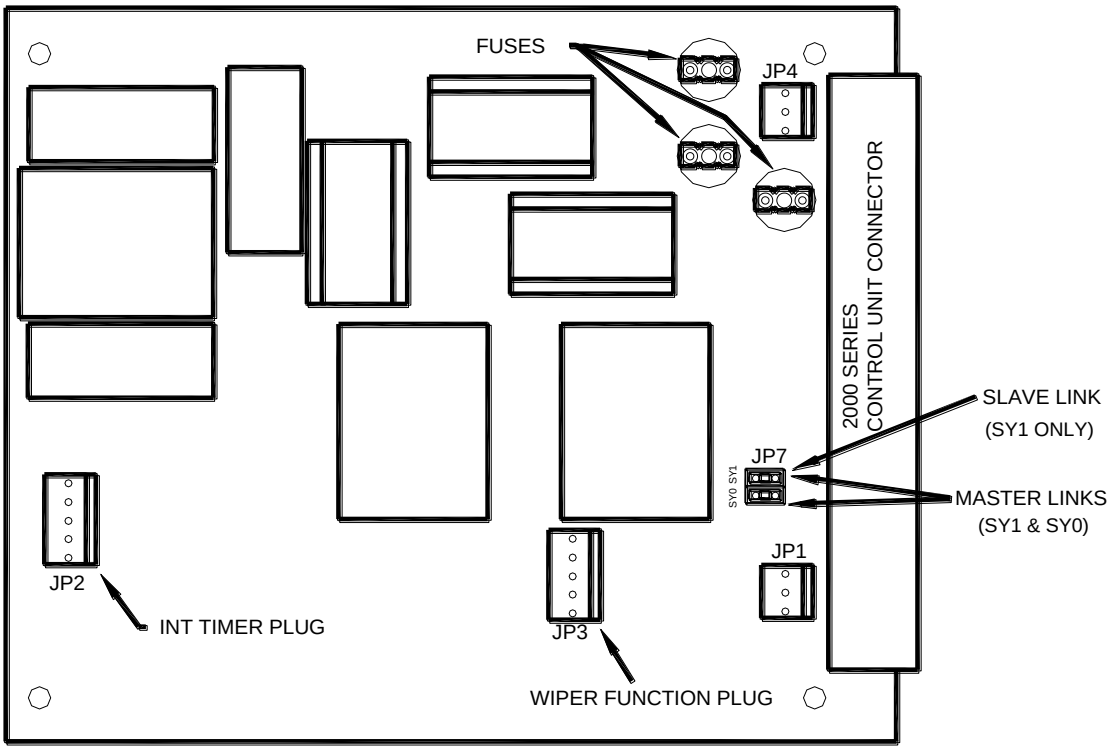
4. To replace wash wipe switch, release main switch body from rear of switch. Unscrew retaining ring before withdrawing switch from front.

5. To replace a PCB board, firstly note all connections (see drawing below), then remove 5 way header plugs and switch connections. Remove rear panel (4 off screws). Unscrew PCB boards from back panel and replace with new board. Refitting is reversal of removal.

6. Fuses are situated next to the rear connector strip on the PCB. Replace with sub miniature type PCB mounting Anti-surge TR5 250V series Wickmann fuse of the same value.

   NOTE: The correct fuse value is dependent on motor type and supply frequency and can be found in earlier in this manual.

Fuse and Header Plug Locations



DOCUMENTATION

Whilst every effort is made to provide accurate information in good faith, no responsibility can be accepted by Wynn for inaccuracies and Wynn reserves the right to alter and amend specifications and designs without prior notice in line with our policy of continued improvement.

Spares Parts

To enable technical troubleshooting and ordering of spare parts, this manual should be kept in a safe place on board. It is also advisable to keep one set of spare parts on board for emergency use. Please contact Wynn directly or your local distributor / service centre for all order requirements.

Maintenance Schedules

Plan your maintenance work according to the schedule in this manual.

Our Commitment

We are committed to a 10 year product support programme. This ensures that any spare part will be available for any wiper at least 10 years after its purchase. It is strongly recommended that only genuine replacement parts manufactured by WYNN be used. This will guarantee that only suitable materials have been used and will ensure interchangeability of parts.

Quality and Testing

We are committed to the principles of Total Quality Management, ISO 9000. We manufacture our range of marine products to the highest standard and quality. We therefore maintain an ongoing schedule of product improvement and testing. To help us sustain such standards we maintain a salt-water test rig on which our products are taken, at random from the production line, and subjected to 3,000 hour continuous testing. We are sure you will receive many years trouble-free service from your Wynn product and hope you find this information pack comprehensive.

Guarantee

All Wynn equipment is tested before despatch from our works. The Windscreen Wiper System supplied has a 1 year warranty period provided the installation of the system and the subsequent maintenance is in accordance with the installation/maintenance instructions.

We cannot accept any responsibility for the installation of equipment, or damage to the equipment during installation, or normal wear and tear. The guarantee is negated if the equipment is not installed strictly observing the instructions set out in this manual, or not maintained as specified.

The Wiper System is very reliable but to ensure its continued smooth running we recommend that the following guidelines are adhered to:-

Monthly

- Check for wear on all parts subject to friction

- Visual inspection should be made of the blades to ensure that they are still in good condition and replace as soon as there are signs of wear or damage

Annually

- It is recommended that the blades are changed every 12 months

After the Wiper System has been operating in severe weather conditions it is advisable to thoroughly check the unit for signs of wear or damage.

This warranty excludes the wiper blades which are a consumable item and any replacements that are detailed in the manual as part of any regular maintenance requirement.

This guarantee is expressly in lieu of all other guarantees expressed or implied and of all other obligations of liabilities on our part, and we neither assume nor authorise any other person to assume for us any other liability in connection with the sale of our equipment. Faulty equipment must be returned, carriage paid, to our works for examination. Any legal action must be settled in the English courts under English law.

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A worldwide network of agents supports Wynn's Marine product range. For details of the nearest Wynn agent please contact our Head Office. Wynn Agents operate in the following countries.

Algeria, Argentina, Australia, Brazil, Bulgaria, Canada, Chile, China, Columbia, Croatia, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hong Kong, Iceland, India, Israel, Italy, Japan, Latvia, Lithuania, Netherlands, New Zealand, Norway, Peru, Portugal, Romania, Russia, Singapore, South Africa, South Korea, Sweden, Taiwan, Thailand, Turkey, UAE, U.S.A.

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