



Installation and Operation Manual

Type D MKV Straight Line Wiper

With

Series 1000 Control System

Issue 12

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 vessel 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 vessel 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.

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 and motor, 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
PM5M	Permanent Magnet	24V DC	7.1 A	10.0 A	1.4 m/s	3.0 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	1	97	1500 up to 1800	67	8	390 (186)
457 up to 735	24	2	135	1930 up to 2100	83	10	485 (150)
760 up to 1065	36	4	211	2260	89	12	574 (123)
1095 up to 1450	51	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 735	2 x 12	2	135	1855 up to 1800	2 x 37	10	485 (150)
789 up to 1041	2 x 16	4	211	2211 up to 2100	2 x 44	12	574 (123)
1091 up to 1445	2 x 22	6	301 (238)	2645 and above	2 x 53	14	663 (106)
1495 up to 1805	2 x 30	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

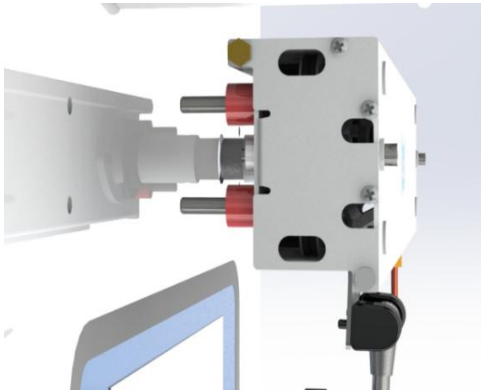


CAUTION: Ensure that the correct wiper, blade and arms are selected for each window.

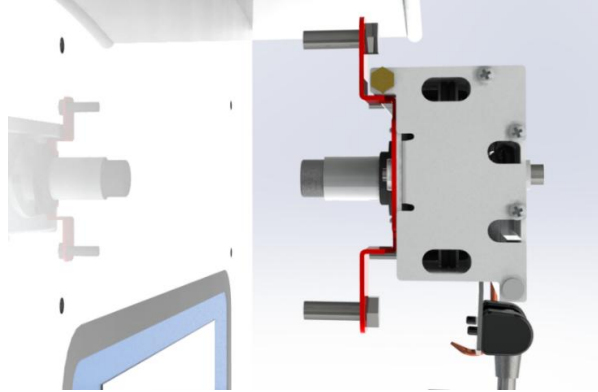
CAUTION: Before drilling, ensure that there are no obstructions / hazards at the chosen mounting position. The main frame should be mounted on a flat surface that will not bend or twist the casing, as this will prevent correct operation of the wiper.

CAUTION: Where more than one wiper unit is to be mounted close together, allow a distance of 70mm minimum between the wiper units.

Stud or bracket mounting



Stud Mounting



Bracket Mounting

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

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 blade arm to the carriage plate.

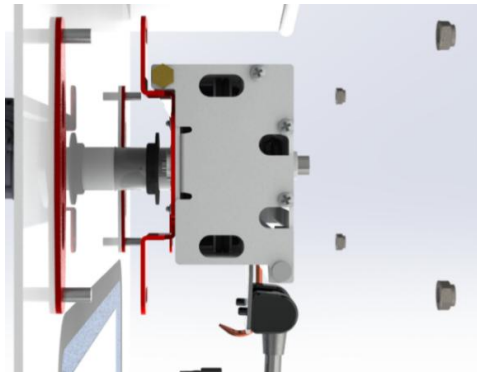


CAUTION: Ensure the correct length screws are used, as supplied. Longer screws will cause the carriage assembly to jam.

7. Bolt the front case to the back case using the 2 off M8 bolts fitted.
8. If necessary, slacken the screws on the blade attachment clip, move the blade up or down for optimum position and then retighten screws.
9. Move the 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 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 bracket mounting



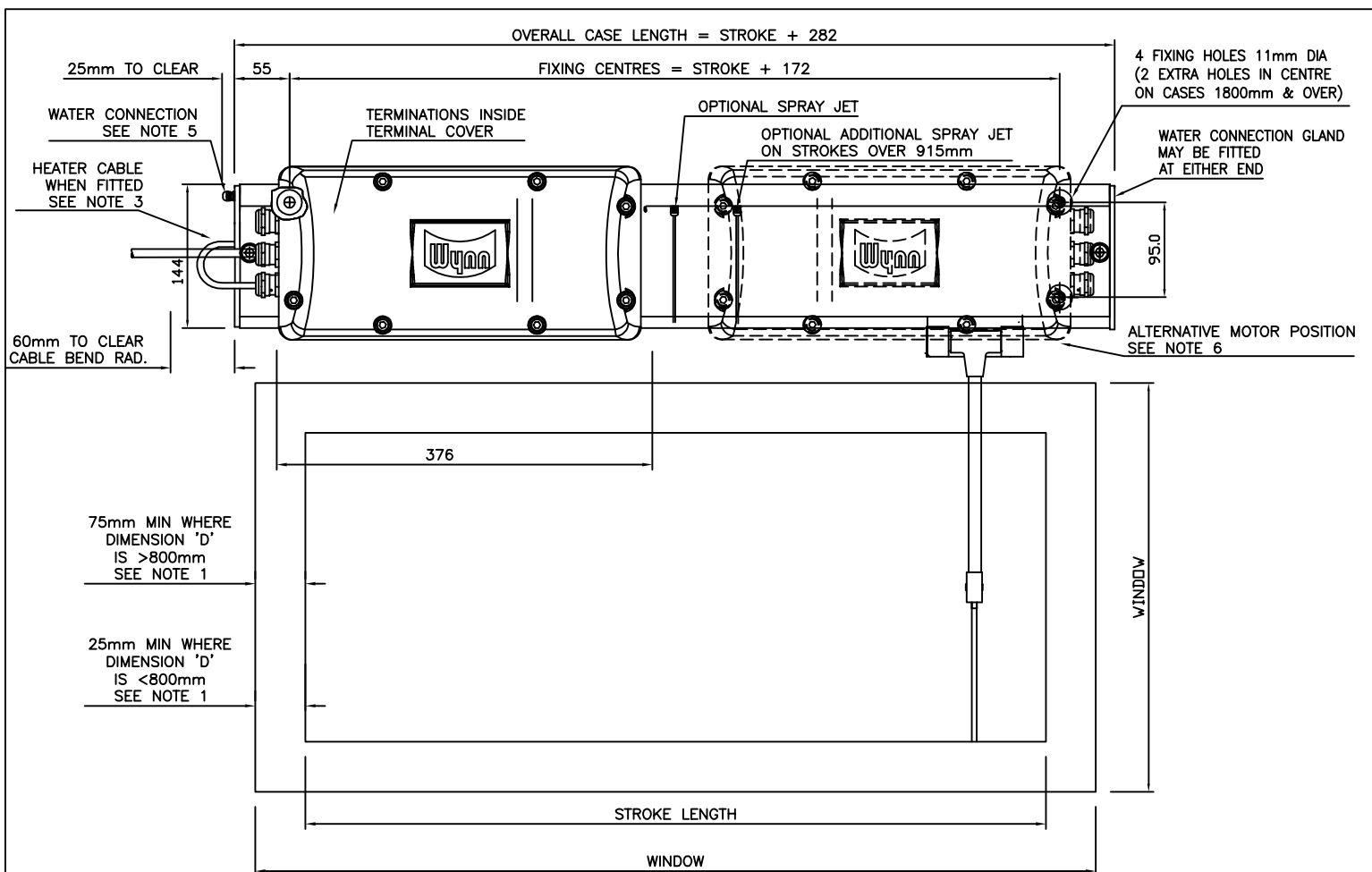
Universal Bracket Mounting

1. Carefully mark the position of the 2 (3 for longer wipers) 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 and secure with supplied M10 washers and nuts.
5. Using the supplied M6 x 10mm screws, secure the blade 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.
7. If necessary, slacken the screws on the blade attachment clip, move the blade up or down for optimum position and then retighten screws.
8. Move the 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 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.

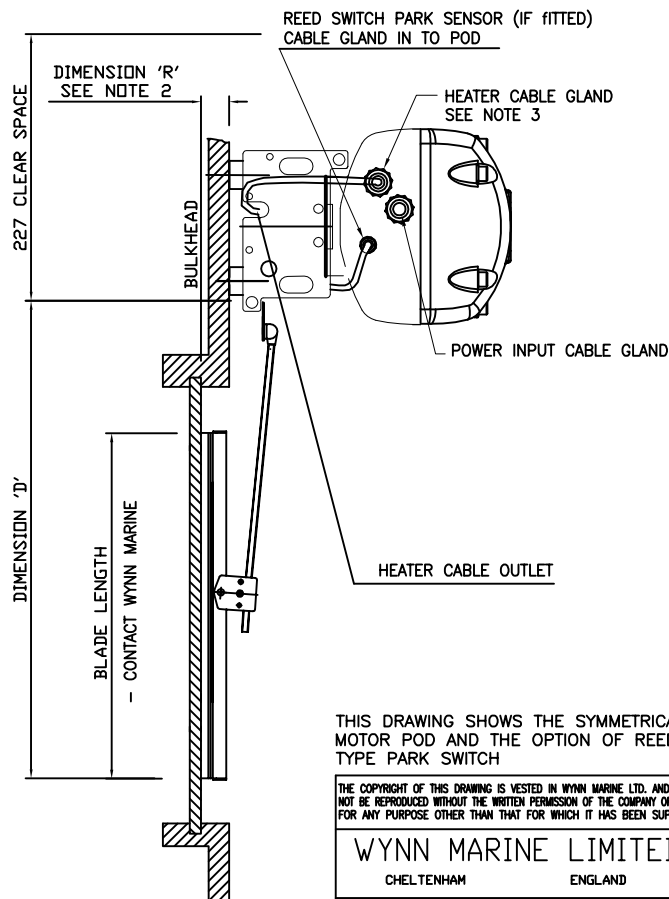


STANDARD ASSEMBLY VIEWED FROM OUTSIDE THE WINDOW

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

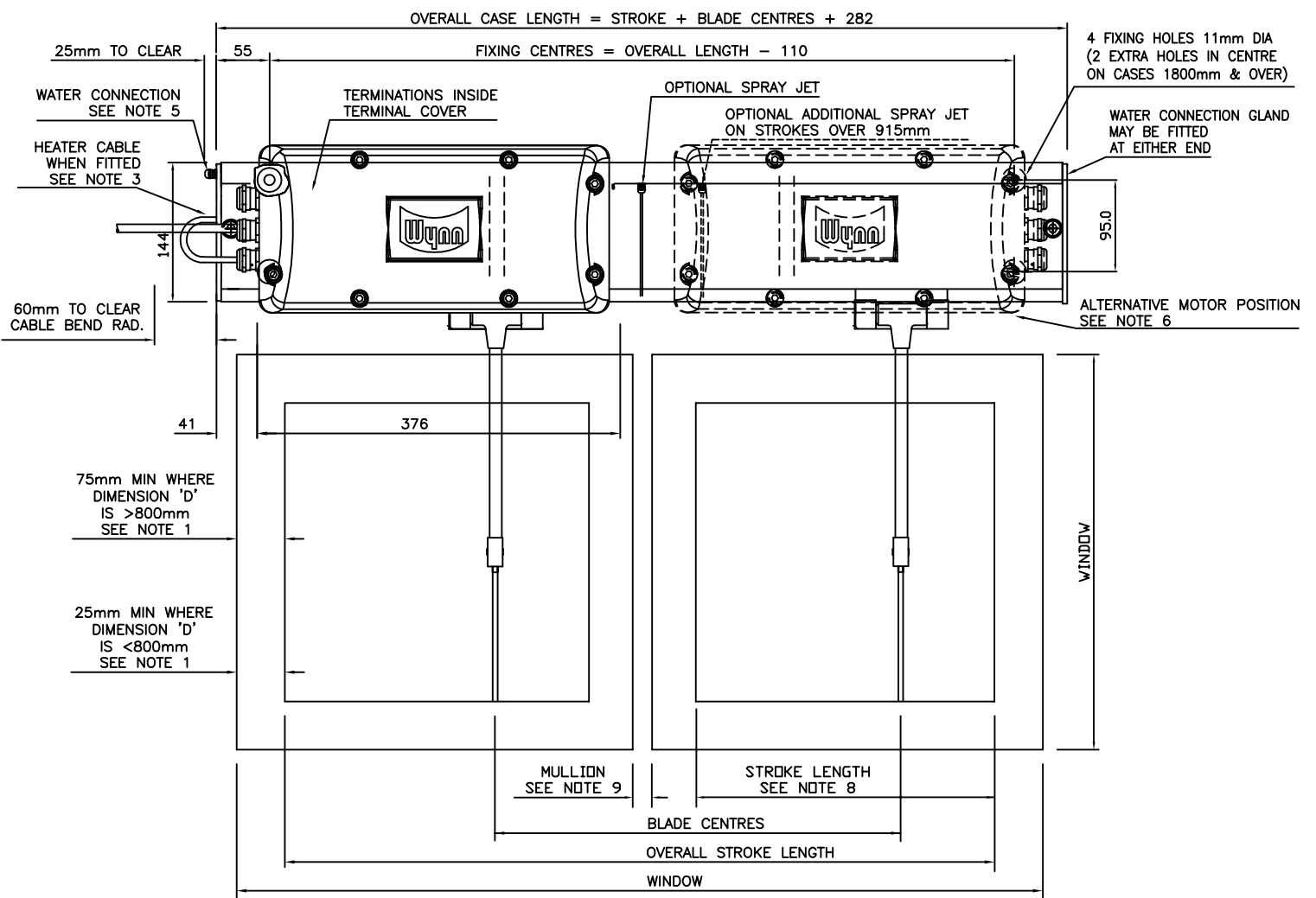
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WYNN MARINE LIMITED
CHELTENHAM ENGLAND

TITLE:- SINGLE TYPE D MK 5
INSTALLATION DRG.

DRAWING No. 4030-003-SYM

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TOLERANCES UNLESS OTHERWISE STATED DECIMAL DIMS. TO 2 PLACES ± 0.1mm NO DECIMAL PLACES ± 0.5mm ANGLES ± 1°							5		23.01.14
							4		12.06.13
							3		11.09.09
							2	224	11.10.07
							1	192	14.05.07
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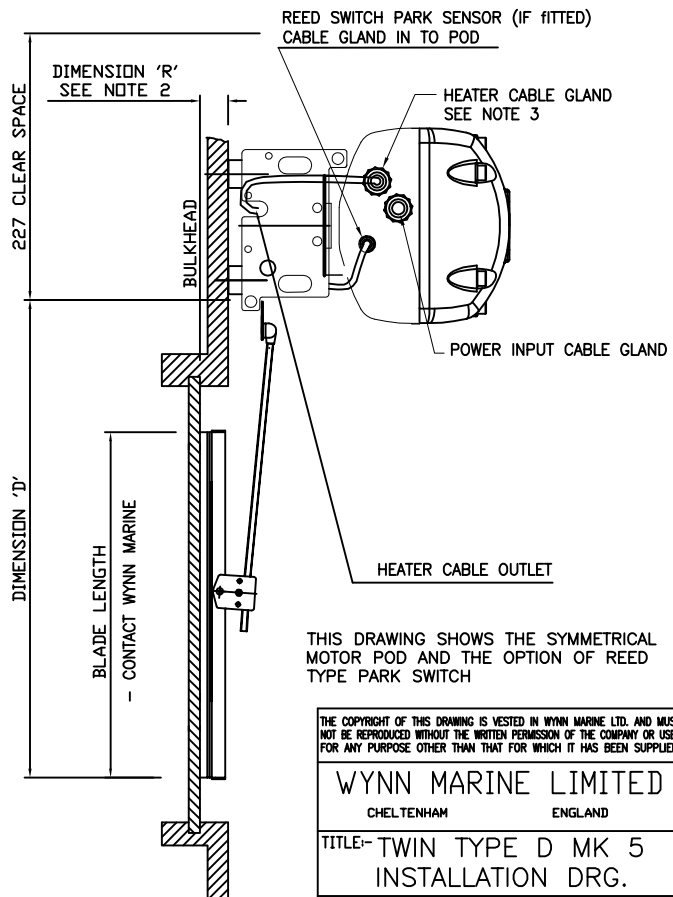


NOTES

STANDARD ASSEMBLY VIEWED FROM OUTSIDE THE WINDOW

- THESE MINIMUM DIMENSIONS ARE LIMITED BY THE CORNER RADII OF THE WINDOW.
- THE BLADE ARM MAY BE CRANKED WHERE DIMENSION 'R' IS GREATER THAN 75mm.
- HEATER WHEN FITTED WILL BE WIRED INTO THE MOTOR TERMINAL BLOCK.
- CUSTOMER TO ROUTE CABLING FROM MOTOR HOUSING AS REQUIRED.
- CUSTOMER TO PIPE WATER DIRECTLY ON TO WATER SPRAY COUPLING.
- MOTOR POSITION SHOWN AS STANDARD, OPPOSITE ORIENTATION AVAILABLE UPON REQUEST.
- WHEN FITTED THE PARK SWITCH IS WIRED TO TERMINALS ON THE MOTOR TERMINAL BLOCK. PARKING IS AT THE MOTOR END.
- WHEN TWIN WIPERS ARE USED ON SINGLE WINDOWS THE WIPER BLADES SHOULD BE SET TO OVERLAP BY 25mm.
- 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.

ALL DIMENSIONS IN MM FOR REFERENCE ONLY



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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°							5		23.01.14
							4		12.06.13
							3		11.09.09
							2	224	11.10.07
							1	192	15.05.07
MAT'L:-	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE
FINISH:-	SCALE:-	NTS	DRAWN:-	DD	CHKD:-		CHANGED:-		

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WYNN MARINE LIMITED
CHELTENHAM ENGLAND

TITLE- TWIN TYPE D MK 5
INSTALLATION DRG.

DRAWING No. 4030-004-SYM

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. Idle pulley springs broken or missing. Replace.
Drive belt broken or damaged.	Inspect belt for slip or burn damage. Belt at end of life. Replace.
Idle 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°C.
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:

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.

Blade Replacement

1. Loosen the 2 x 7mm 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 is 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 is 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 roller stub shaft securing the guide roller and remove the guide roller. Special spanner is supplied with set of 8 guide rollers.
3. Fit the new guide roller and secure with the roller stub shaft. Ensure that roller stub shaft 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. Follow the Drive Belt renewal instructions 1 to 5 above.
3. 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.
4. From inside the front casing remove the 3 x M6 bolts and washers securing the motor pod to the front casing.
5. Fit new motor pod using 3 x M6 bolts and washers removed above.
6. Pass the park switch cable through 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.
7. To re-assemble the wiper unit follow the Drive Belt renewal instructions 8 to 9 above.
8. 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
1	Heavy Duty Blade Assembly	1	SP1688-001-***
	Articulated Blade Assembly	1	SP1279-553-***
2	Blade Attachment Clip (Stainless Steel)	1	SP1279-443
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	Guide Rollers c/w Tyre & Spanner	Set of 8	SP1588-117
	Guide Rollers c/w Tyre	1	SP1588-006
9	Roller Stub Shaft	Set of 8	SP1588-113
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
	Parvalux 65L, 115V AC, 50/60Hz, 1-Ph, Low Speed	1	SP1490-000GA65L

Ident	Description	Quantity	Part Number
	Parvalux 81, 115V AC, 3-Ph, 3 Speed	1	SP1490-000GA81
	Parvalux 82, 220V AC, 3-Ph, 3 Speed	1	SP1490-000GA82
15b	SD11AM 115V AC, 50 Hz, 3-Phase, 2 Speed	1	SP1279-347
	SD11AM 115V AC, 60 Hz, 3-Phase, 2 Speed	1	SP1279-348
	SD11AM 230V AC, 50/60 Hz, 3-Phase, 2 Speed	1	SP1279-349
15c	PM3M 24Vdc Motor	1	SP1279-558-24
	PM3M 24Vdc Motor Slow Speed	1	SP1279-558L-24
	PM5M 24Vdc Motor	1	SP1279-513
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

Ident	Description	Quantity	Part Number
not shown	Spray Jet Kit Long Single	1	SP1642-483
not shown	Cover Bolts	2	zA0008-090S
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 mm 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.

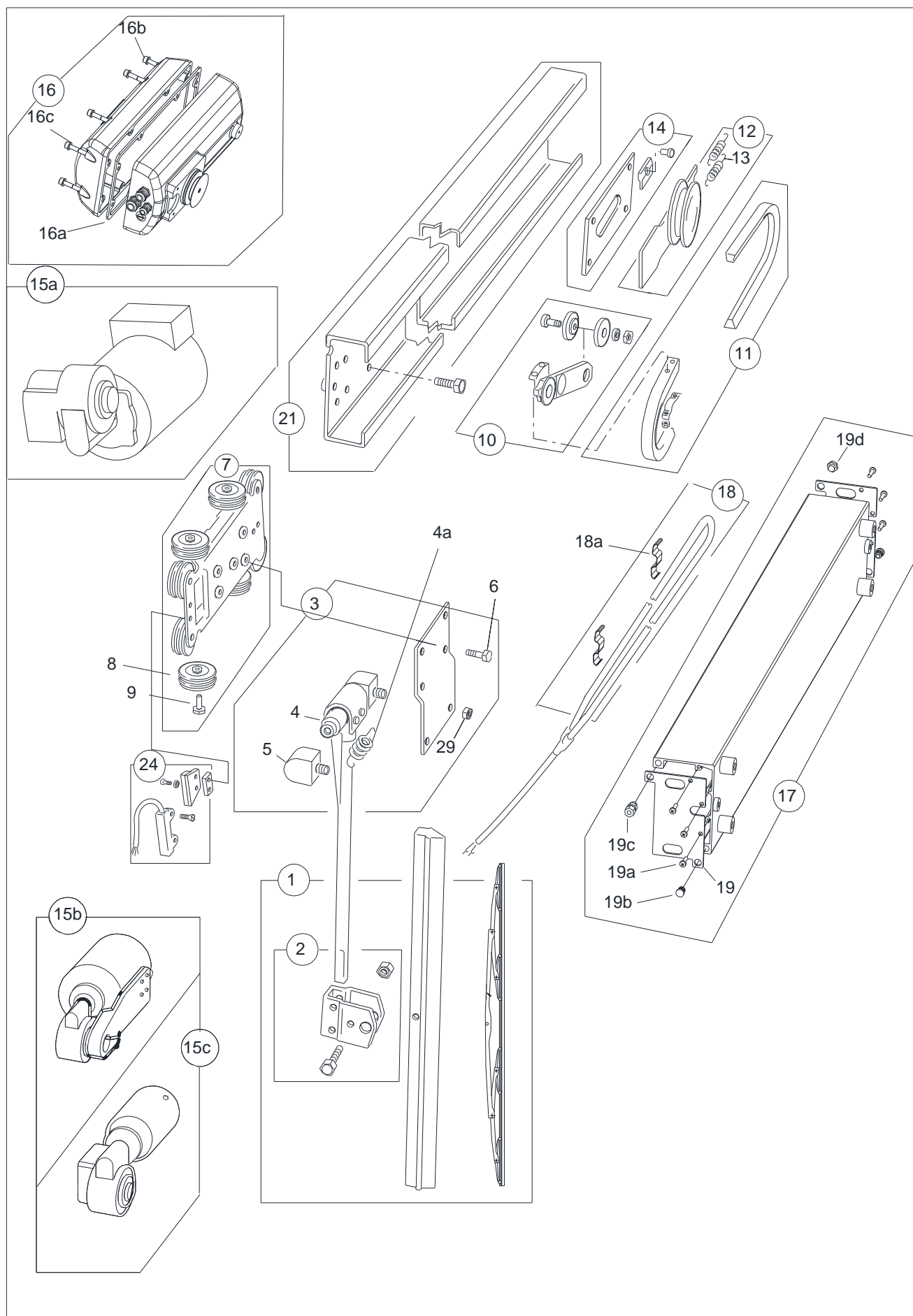
Belt length (written on belt as A###) in Inches.

‡ 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.

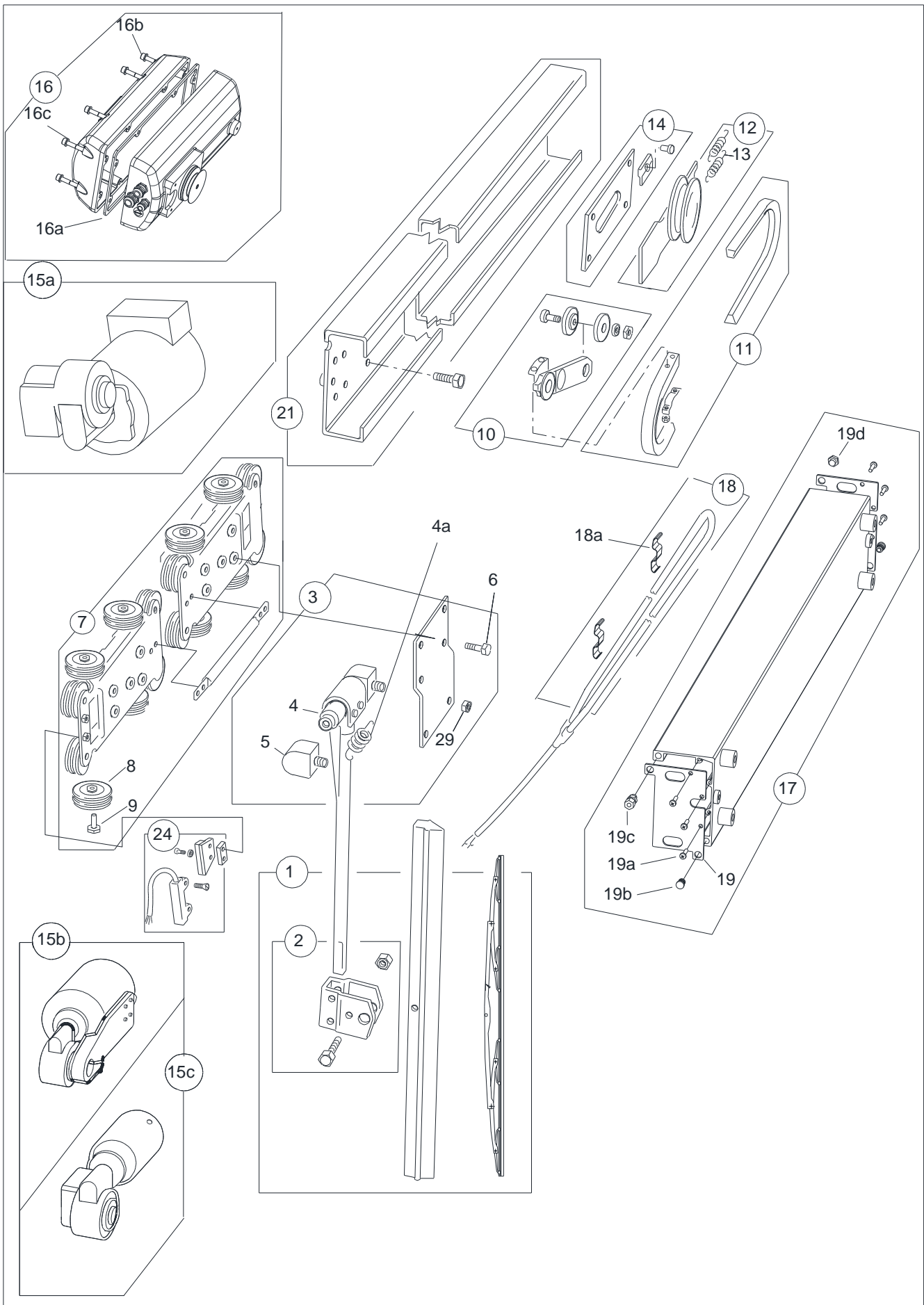
\$\$\$ Where \$\$\$ is voltage (220,115 or 024)

^^ Where ^ is heater length code.

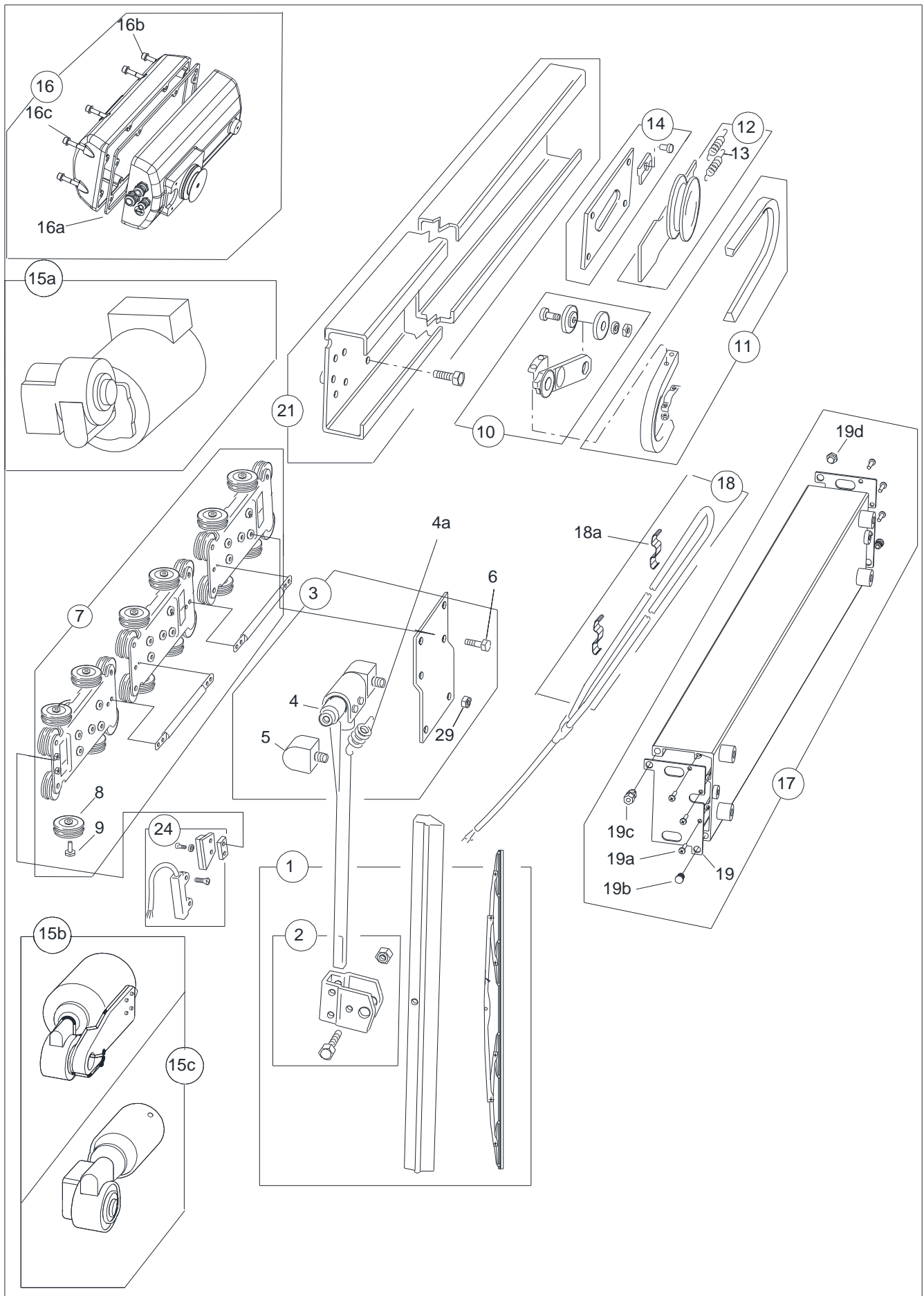
Type D5 Single Spare Parts Drawing



Type D5 Twin Spare Parts Drawing (Short)



Type D5 Twin Spare Parts Drawing (Long)



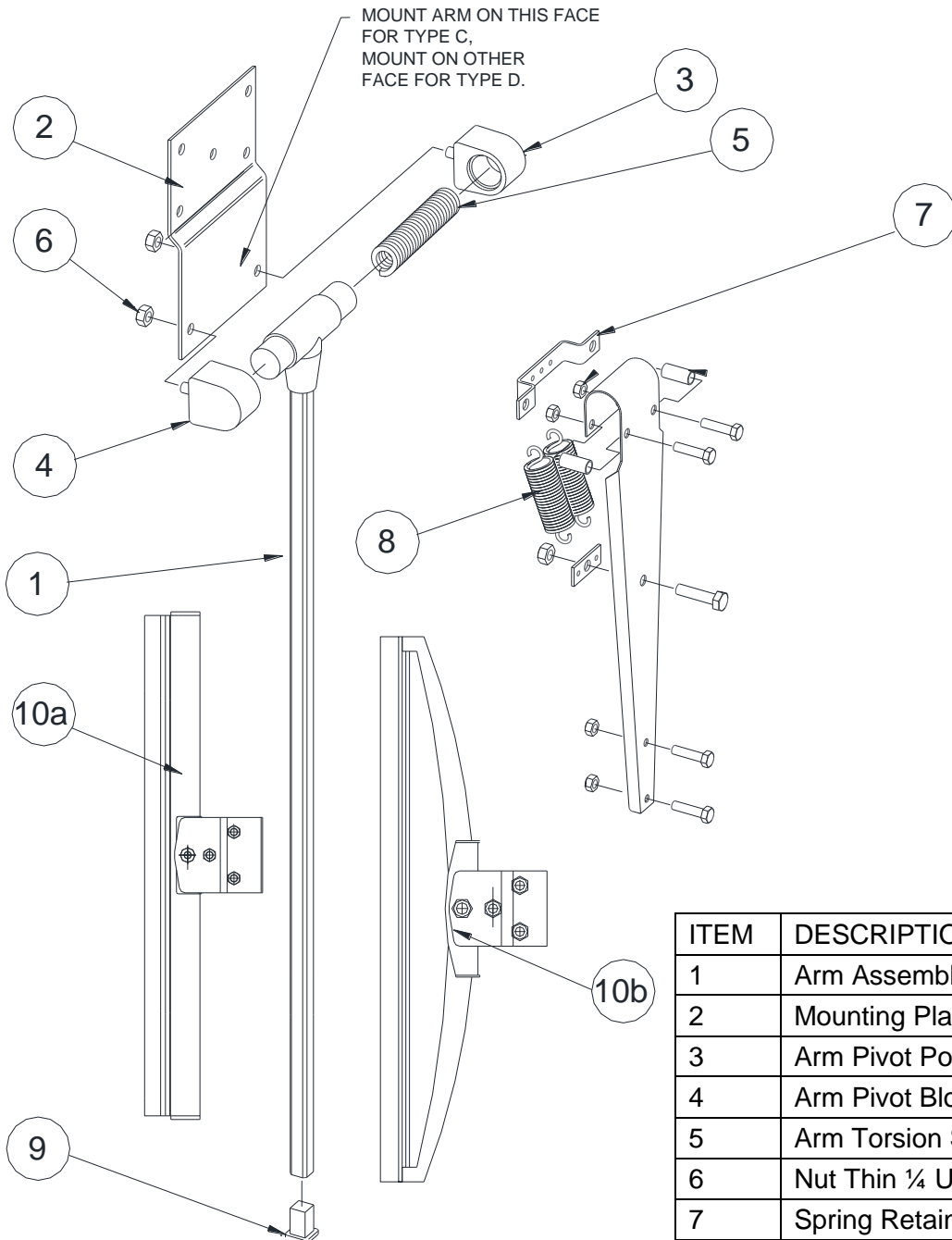
SLW Wiper Arm

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 1/4 UNF	2
7	Spring Retainer	1 (A/R)
8	Additional Spring	(0, 1, 2)
9	Sealing Plug	1
10a	Rigid Blade	1
10b	Articulated Blade	

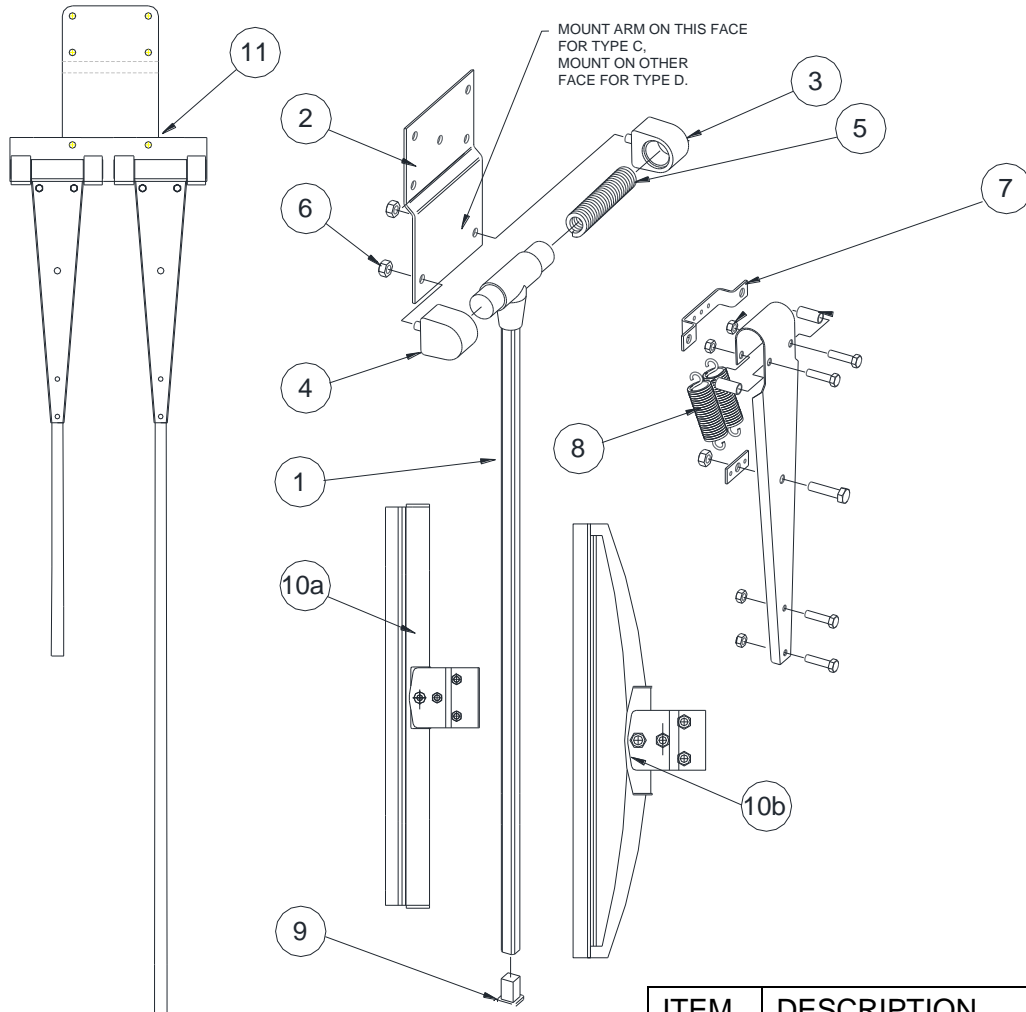
SLW Double Wiper Arm Assembly

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.



OUTSIDE LOOKING IN

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
10a	Rigid Blade	2
10b	Articulated Blade	
11	Double Arm Mtg Plate	2

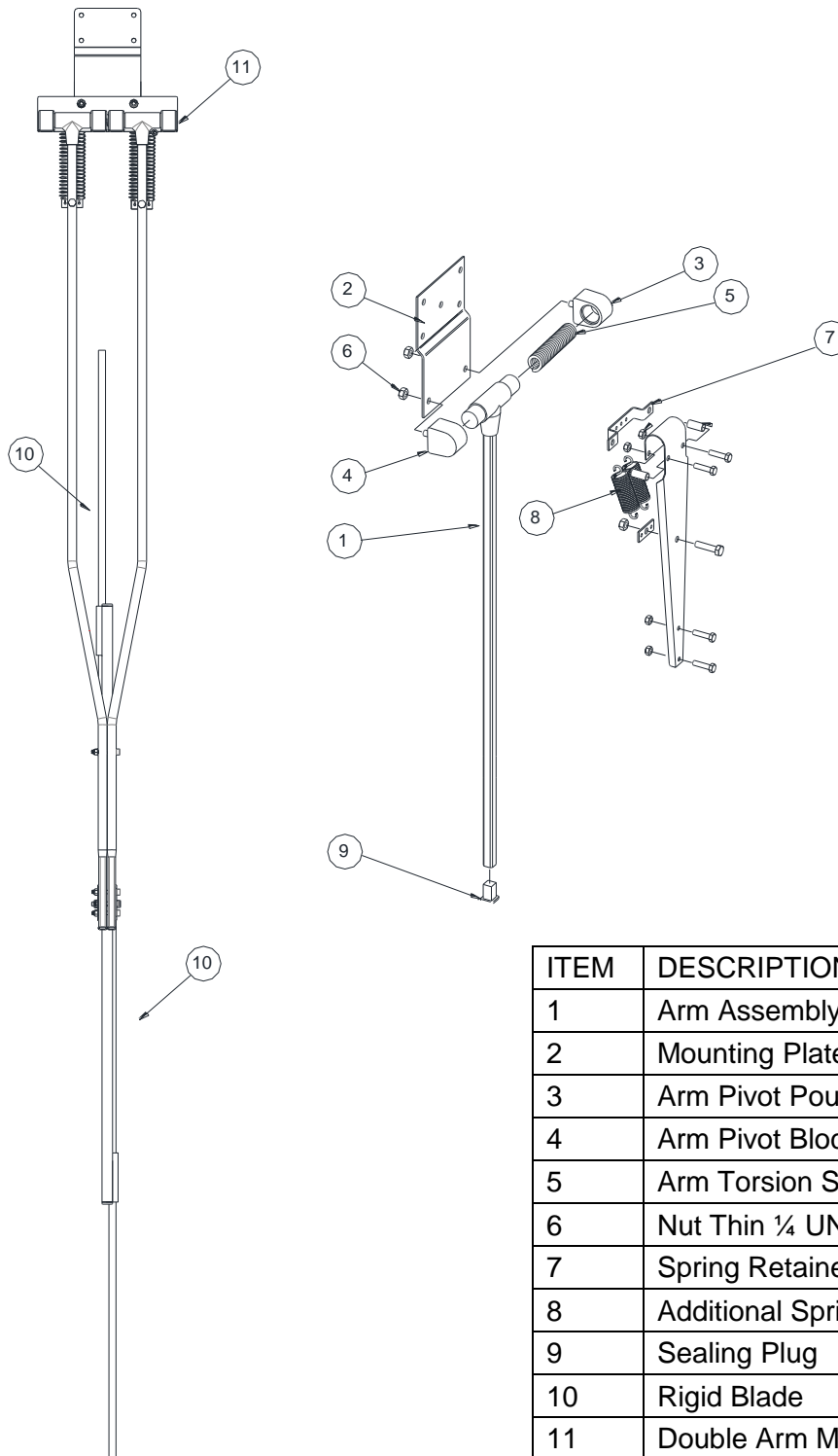
SLW Double Wiper Arm Assembly

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.

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.



OUTSIDE LOOKING IN

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	Rigid Blade	2
11	Double Arm Mtg Plate	2

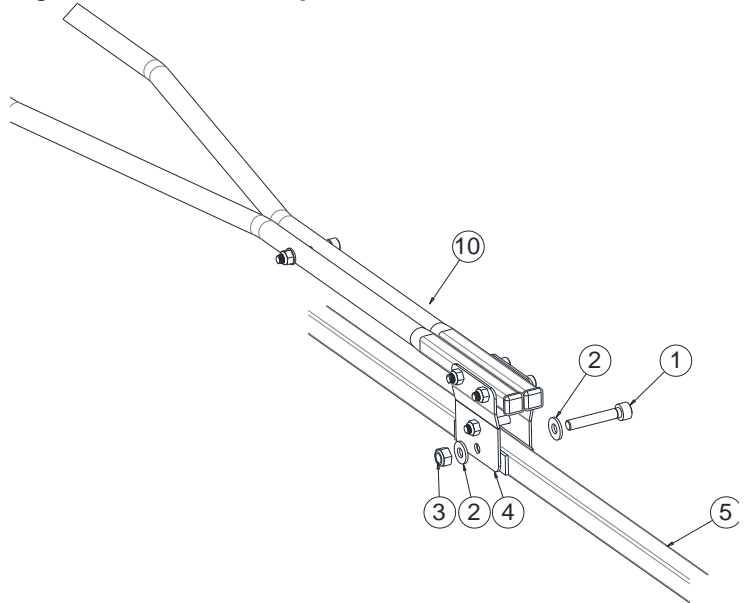
FITTING THE WIPER BLADE CARRIER

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

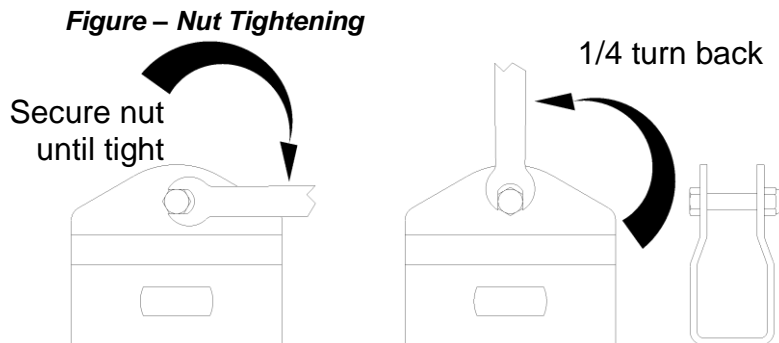


IMPORTANT

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.



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

MOUNTING	CODE
Std Boss - 24 O/A (1586-4057)	-
Boss - 26 O/A (1590-4220)	B
Bracket (1598-870 - Type C) (1642-870 - Type D)	C
Universal Carrier (1598-871 & BRACKET)	D
Boss - 64 O/A (1598-4057-460)	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

Wiper Type	Motor Type	Code
MOTOR NOT SUPPLIED		MO
NO POD		00
C/D	115vac 1ph 50/60hz 1Sp	GA85
C/D	115vac 1ph 50/60hz Low Sp	GA85-L
C/D	115vac 3ph 50/60hz 2Sp	GA81
C	115vac 3ph 50/60hz 2Sp	IP23 GA61-IP23
B/C/D	115vac 3ph 50/60hz 1Sp	GA63
C/D	230vac 1ph 50/60hz 1Sp	GA84
C/D	230vac 1ph 50/60hz Low Sp	GA64L
C	230vac 1ph 50/60hz 1Sp	IP23 GA64-IP23
C/D	230vac 3ph 50/60hz 2Sp	GA62D
C/D	230vac 3ph 50/60hz 1Sp	GA68
C/D5	24vdc 320rpm 90W (1279-557) PM3	
C	230vac 3ph 50/60hz 2Sp	GA62D-IP23-E (emo) CV
C	100vac 1ph 1sp	GA69
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

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 CABLE LENGTH		TYPE C	
MULTIPLE CABLES (D)	SINGLE CABLE (D)		
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

in Enclosure 6

12 Metres
15 Metres

USED ON:

USED ON:
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SERIES 1000 CONTROL UNIT

Series 1000 controllers are available in units from 1 – 4 ways. They allow direct connection to the wiper motor without the need for intermediate power supplies. Wipers are controlled in continuous or variable intermittent modes. Switches are fitted for Spray and Heater control. A park sensor allows the wiper to park at the motor end when it reaches the end of stroke.

The system complies with all relevant safety and EMC regulations.

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)
1-way	45 x 91	48 x 96
2-way	91 x 91	96 x 96
3-way	139 x 91	144 x 96
4-way	186 x 91	192 x 96

2. Remove the 2 fixing brackets from the side of the controller case, noting how these fit.
3. Fit the unit into the mounting hole and secure with the fixing brackets.
4. Connect the wiring as shown in the wiring diagram.

Functional Check of Controller

The wiper switch has 6 positions. Fully anti-clockwise parks the wiper, next are four settings are for Intermittent wipe and finally continuous speed operation when turned fully clockwise.

1. Set wiper switch to the off position (fully anti-clockwise) & apply power to the system. Check each wiper switch in turn as follows.
2. Turn wiper switch fully clockwise. The wiper should start and run continuously.
3. Turn the wiper switch fully anticlockwise. The wiper should park at the motor end of its stroke.
4. Turn the wiper switch clockwise one position. The wiper will make one wipe and park again. This position gives the longest intermittent time (20 seconds).
5. Turn the wiper switch clockwise one position at a time. Each time the switch is turned the wiper should wipe once and park again. At the last position, just before fully clockwise, the intermittent interval should be around 4 seconds.
6. Heater. Switch on and ensure that the wipers begin to heat up.
7. Wash. Switch on and hold down, ensure water is sprayed through the system.
8. Multi-way grouped controllers with only one control switch has all the wipers operating together.

Fusing

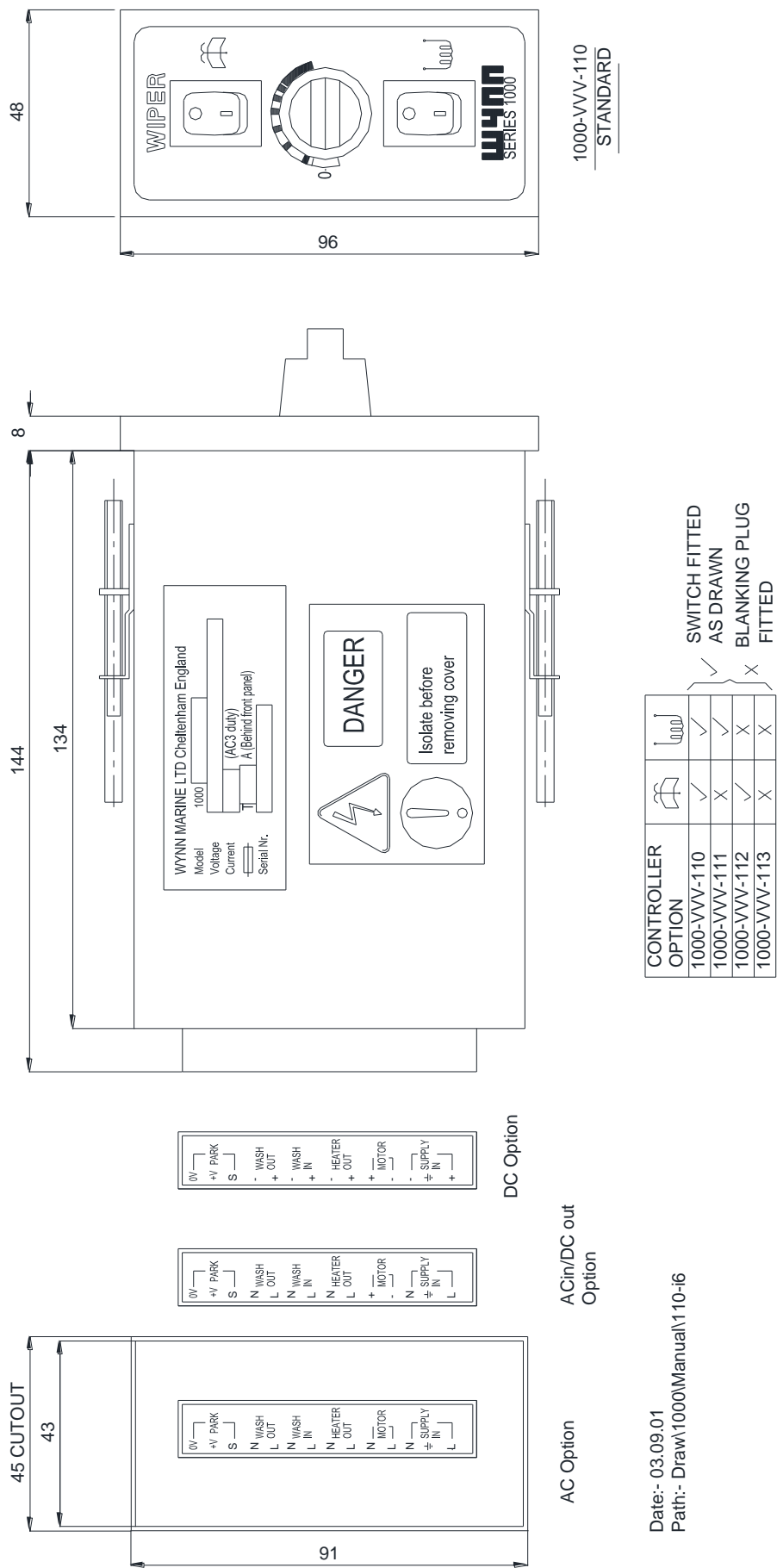


Remove power prior to working on controller.

The controller has fuses to protect the motor, wiring and controller. The fuses will not blow in normal use; however, if the wiper is jammed, then these fuses are designed to blow before the motor will sustain any damage. The fuses are located behind the front panel inside the control unit. To replace a fuse:

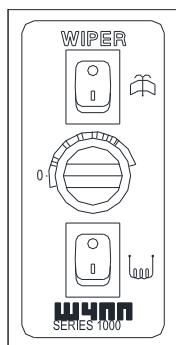
1. Use a small screwdriver to carefully lever off the front panel bezel.
2. Holding the control knob, carefully pull out the controller front panel.
3. Undo the fuse holder which is located at the bottom right of the relevant controller PCB.
4. Renew the fuse and carefully refit the fuse holder. Avoid excessive force. Refit front panel and bezel.

SERIES 1000 CONTROLLER SINGLE WAY DIMENSIONS

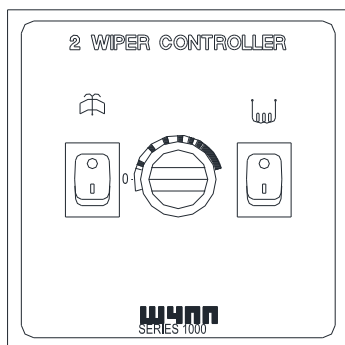


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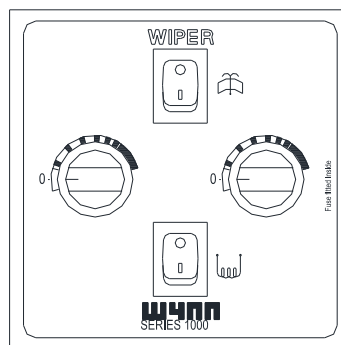
SERIES 1000 FRONT PANEL LAYOUTS



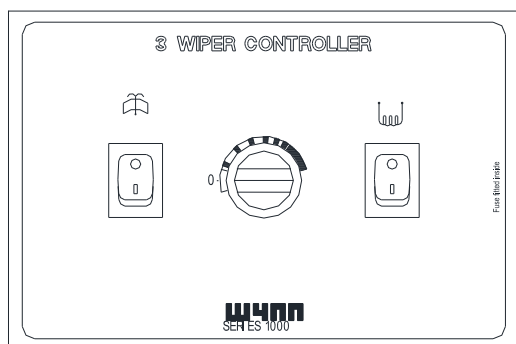
1 WAY



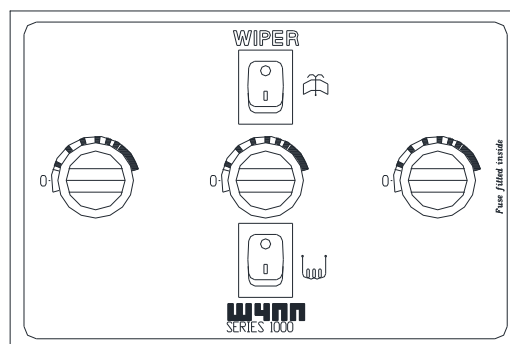
2 WAY GROUPED



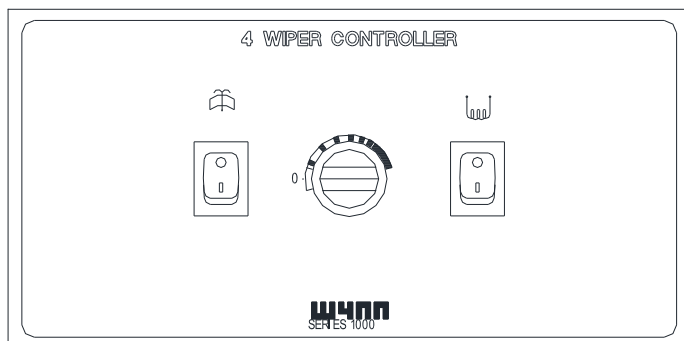
2 WAY INDEPENDENT



3 WAY GROUPED



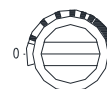
3 WAY INDEPENDENT



4 WAY GROUPED



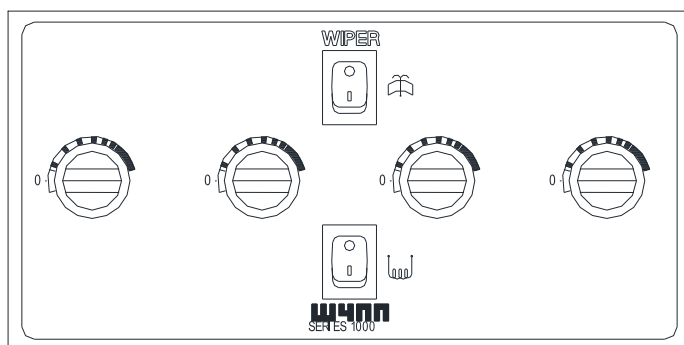
WASHER SWITCH



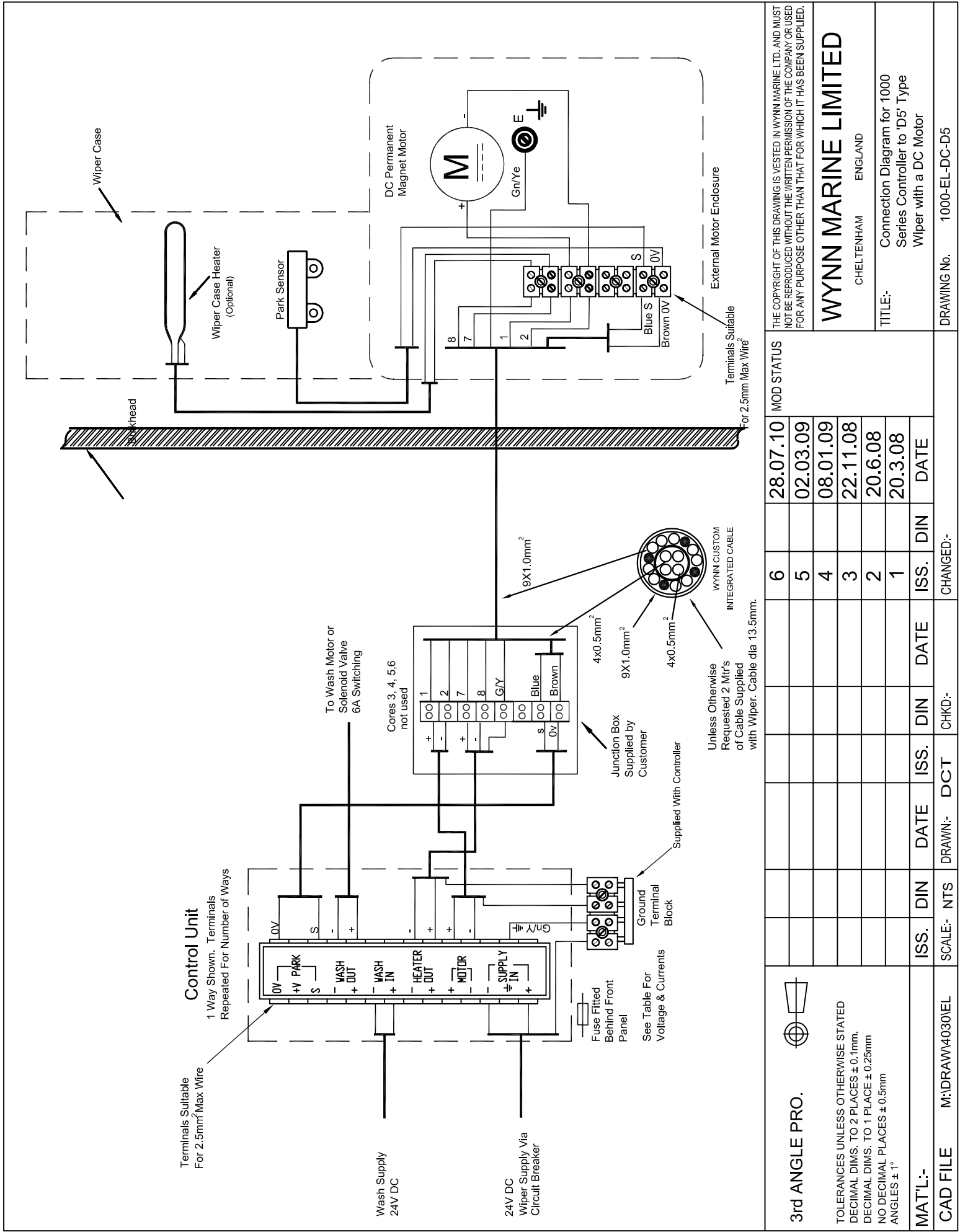
WIPER OPERATION
MODE SWITCH



HEATER SWITCH



4 WAY INDEPENDENT



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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									02.03.09
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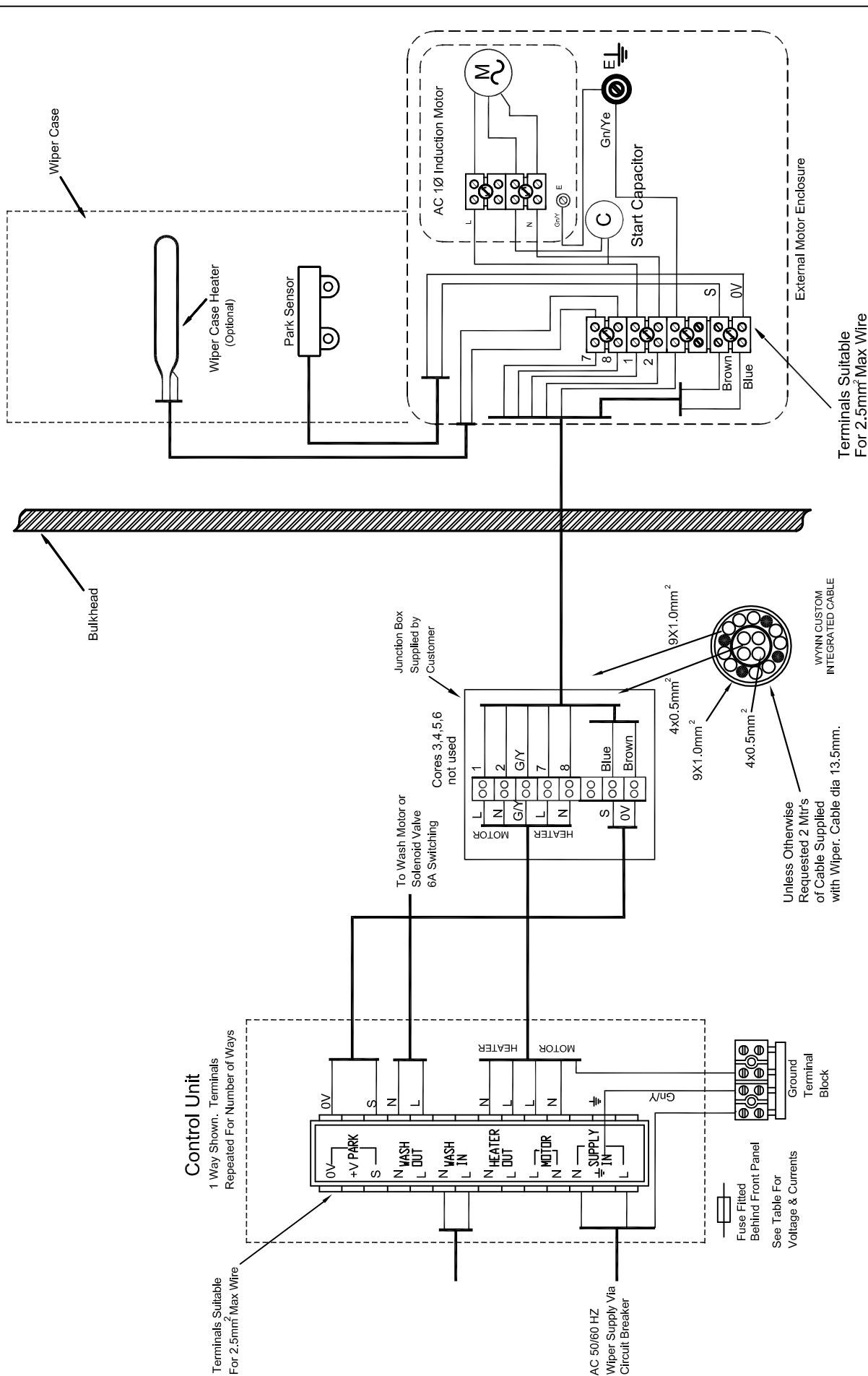
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WYNN MARINE LIMITED
CHELTENHAM ENGLAND

TITLE:- Connection Diagram for 1000 Series Controller to 'D5' Type Wiper with a DC Motor

DRAWING No. 1000-EL-DC-D5

These diagrams cover the vast majority of wiper installations. In the case that these diagrams do not cover your specific installation please contact customer services on +44 1527 61243



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°																																																											
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CAD FILE										M:\DRAW\4030\EL										SCALE:- NTS										CHKD:-										CHANGED:-																			
DRAWING No.										1000-EL-1AC-D5										TITLE:- Connection Diagram for 1000 Series Controller to a 'D5' Type Wiper with a 1 Phase AC Motor Using Wynn Integrated Cable										WYNN MARINE LIMITED										CHELTENHAM ENGLAND										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.									

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 or 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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