



# Installation & Operation Manual

## Type C Straight Line Wiper

### With

## Series 2000 Control Unit

### Issue 10

**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 C WIPER DESCRIPTION AND SPECIFICATION

The 'Type C' is a Heavy Duty Straight Line Wiper with an electric motor mounted internally. The wiper can be mounted either above or below the window. The motor can be positioned at either end simply by reversing the front cover of the wiper case.

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	2.5/3.15 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'.

Drive shaft lengths are optional. These are available in standard and gas tight versions. The standard length is 84 mm. Other lengths available are 35mm, 140mm, 200mm and 220mm. The Certificate of Conformity will advise which option has been fitted.



## *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, 1 nozzle is fitted, above 1015mm, 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. Standard cable length is 2M. Optional lengths are 5M, 10M, 15M and 20M. 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 C WIPER INSTALLATION

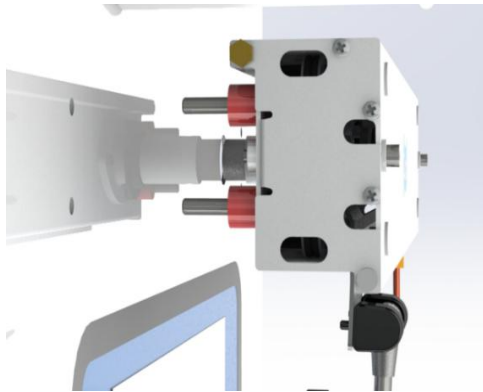


**CAUTION:** Ensure that the correct wiper, blade and arms are selected for each window.

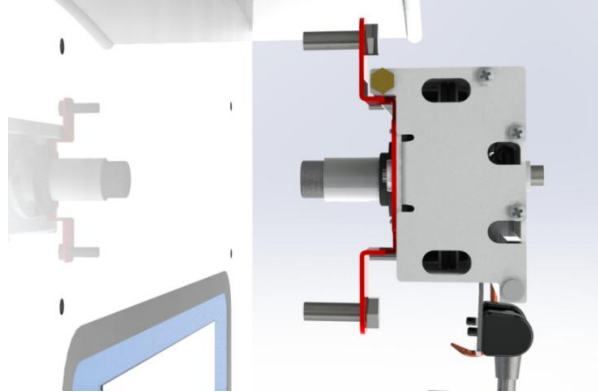
**CAUTION:** Before drilling, ensure that there are no obstructions / hazards at the chosen mounting position. The main frame should be mounted on a flat surface that will not bend or twist the casing, as this will prevent correct operation of the wiper.

**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) and the drive shaft housing hole (57mm diameter).
3. Hold the wiper casing in the required position and mark-out the remaining fixing holes, or calculate their position from the drawing i.e. stroke length plus 266 mm.
4. Drill the remaining wiper fixing & cable holes for the heater and park sensor, 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. Push the drive shaft seals into place. It is advisable to use a suitable sealant to prevent water ingress.
7. 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.

8. Bolt the front case to the back case using the 2 off M8 bolts fitted.
9. If necessary, slacken the screws on the blade attachment clip, move the blade up or down for optimum position and then retighten screws.
10. 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



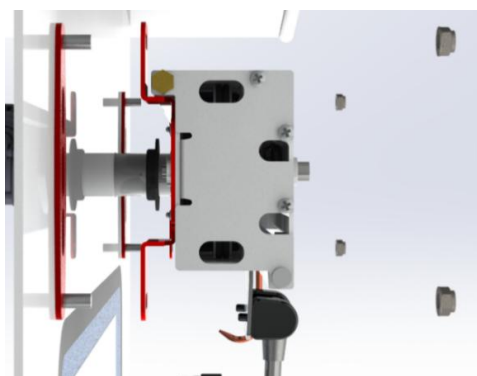
and rectify any restrictions. If necessary adjust the blade up or down on the arm to avoid the window frame.

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.

**NOTE:** If a heater is fitted pass the heater cable through the bulkhead, leaving a loop as required, and seal.

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.
13. Fit the motor to the drive shaft.

### *Universal bracket mounting*



Universal Bracket Mounting

1. Carefully mark the position of the drive shaft housing hole and 2 (3 for longer wipers) universal carrier plates.
2. Drill the drive shaft housing hole (57mm diameter).
3. 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.
4. Drill the remaining wiper fixing & cable holes for the heater and park sensor, 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 supplied M10 washers and nuts.
6. Push the drive shaft seals into place. It is advisable to use a suitable sealant to prevent water ingress.
7. 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.

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



10. 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.
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.

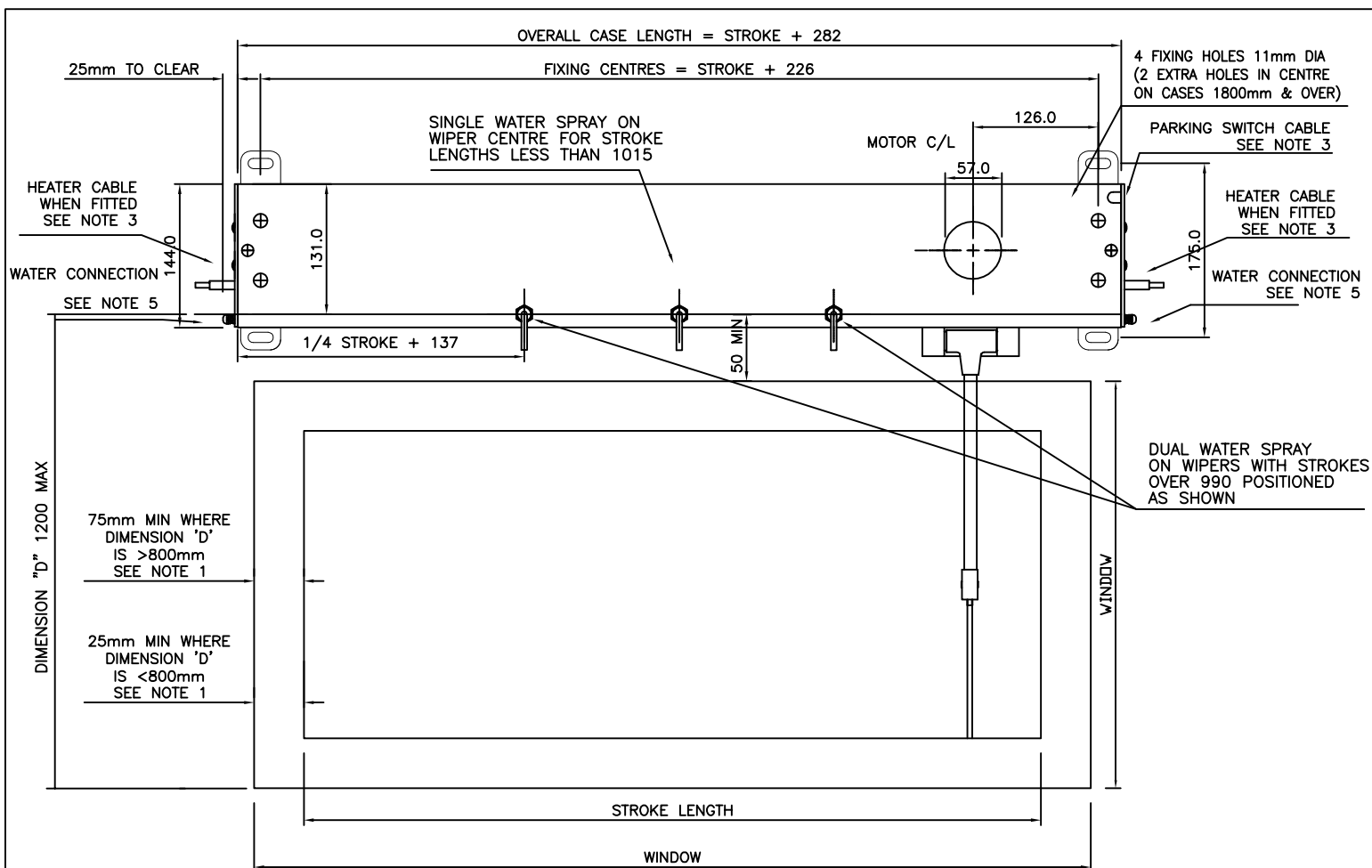
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13. Fit the motor to the drive shaft.





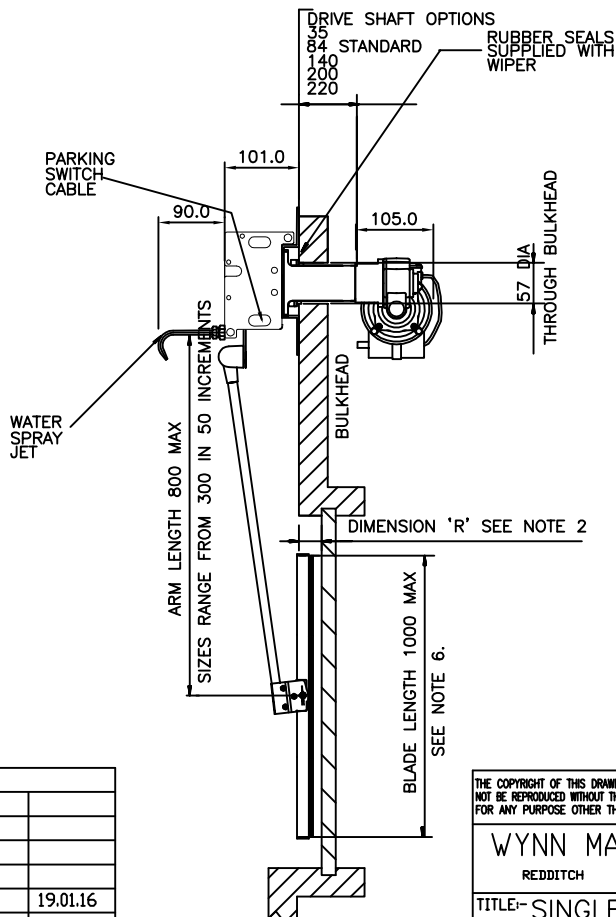




## NOTES

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 75.
3. OPTIONAL HEATER AND PARKING SWITCH STANDARD CABLE LENGTH 2 METRES. PARKING SWITCH POSITIONED AT MOTOR END WHEN FITTED.
4. THE HEATER AND PARK SWITCH CABLING TO RUN THROUGH THE BULKHEAD.
5. THE WATER CONNECTION BLANKING PLUG CAN BE FITTED AT EITHER END.
6. RIGID WIPER BLADE LENGTHS RANGE FROM 300 TO 800 AND ARTICULATED WIPER BLADE LENGTHS RANGE FROM 500 TO 1000 BOTH IN 50 INCREMENTS.
7. SEE MANUAL HEATER POWER RATINGS TABLE FOR STROKE OPTIONS AND HEATER DETAILS.
8. THE MOTOR CAN BE POSITIONED RADIALLY THROUGH 360 DEGREES AROUND THE DRIVE SHAFT CENTRE-LINE TO SUIT THE INSTALLATION. ENSURE THAT THE ACCESS SPACE AROUND THE MOTOR SHOWN ON THE DRAWING IS MAINTAINED.

ALL DIMENSIONS IN MM FOR REFERENCE ONLY



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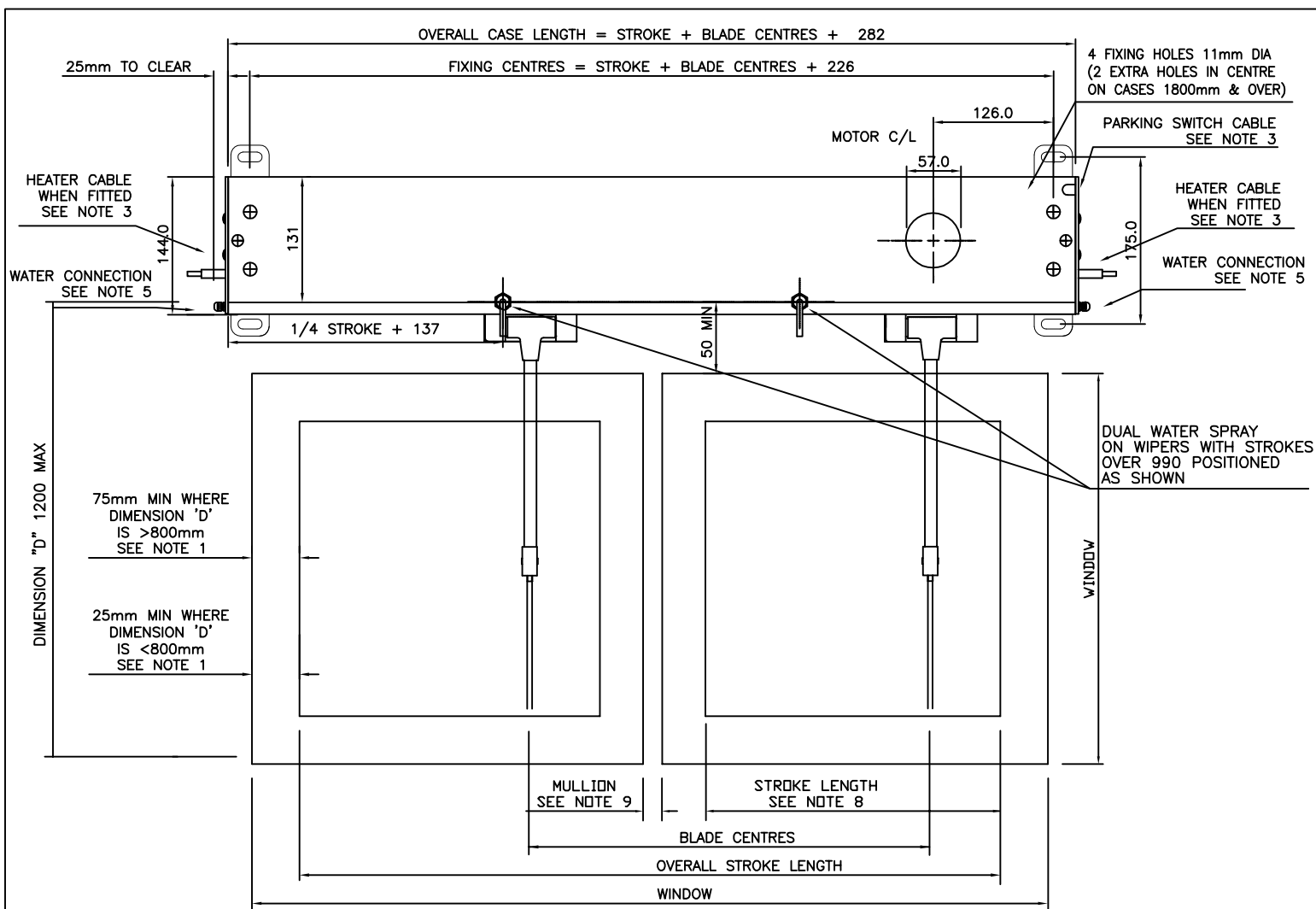
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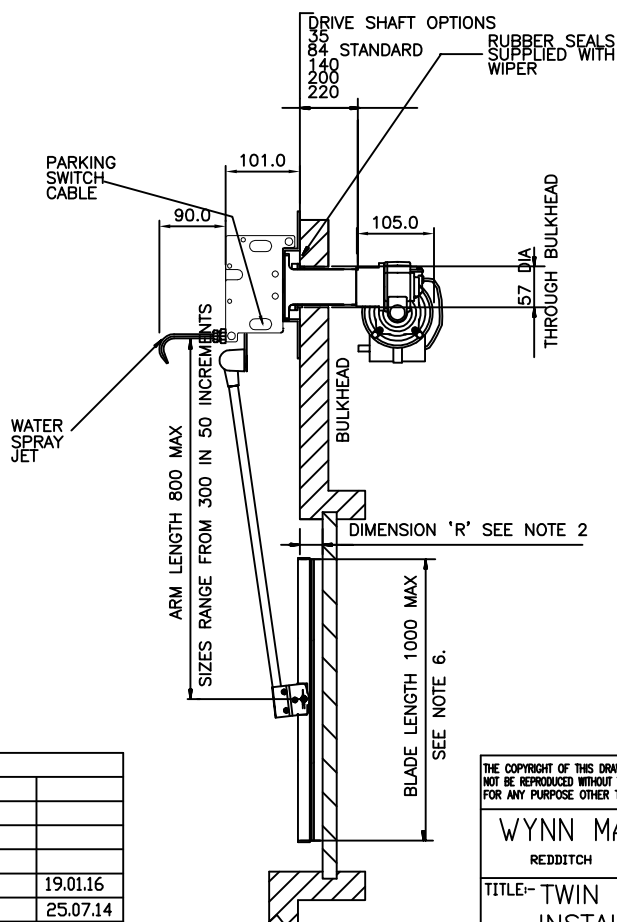




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ALL DIMENSIONS IN MM FOR REFERENCE ONLY



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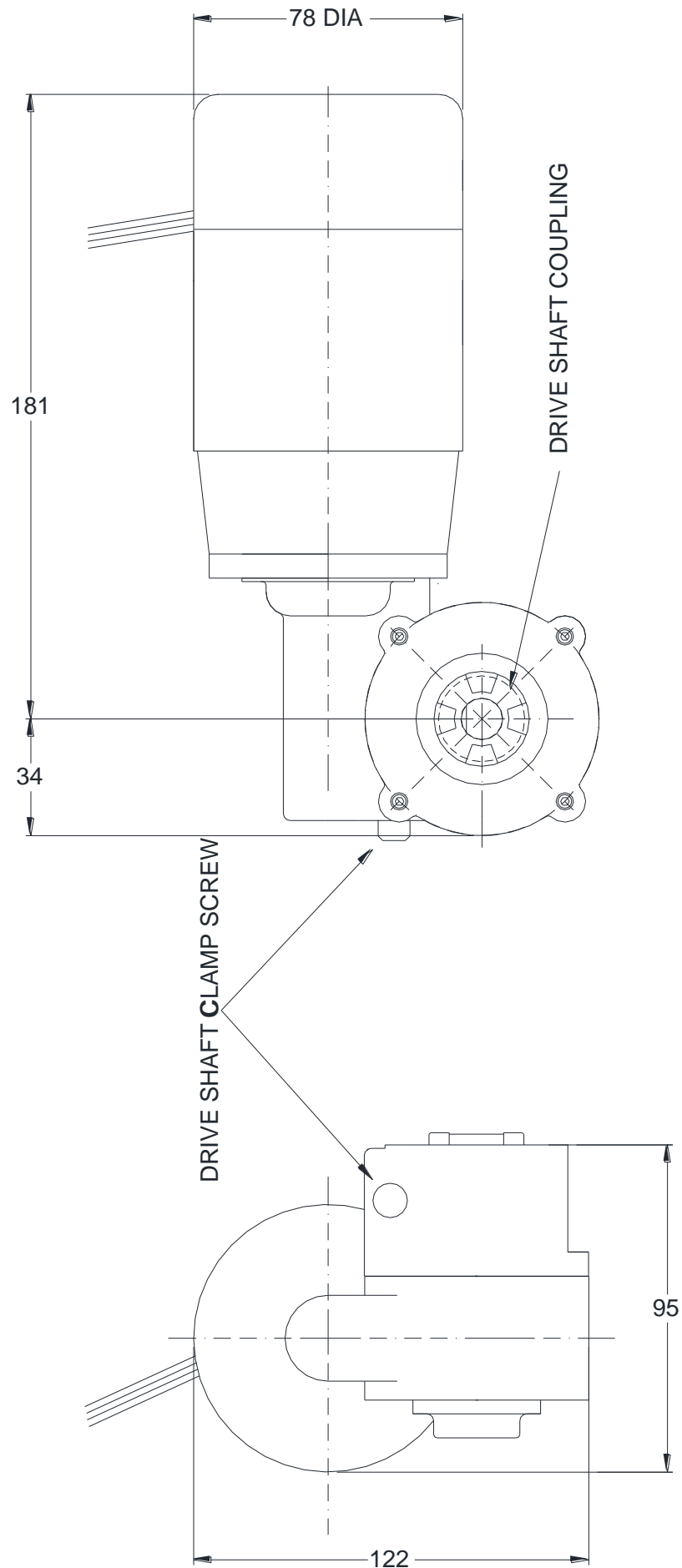
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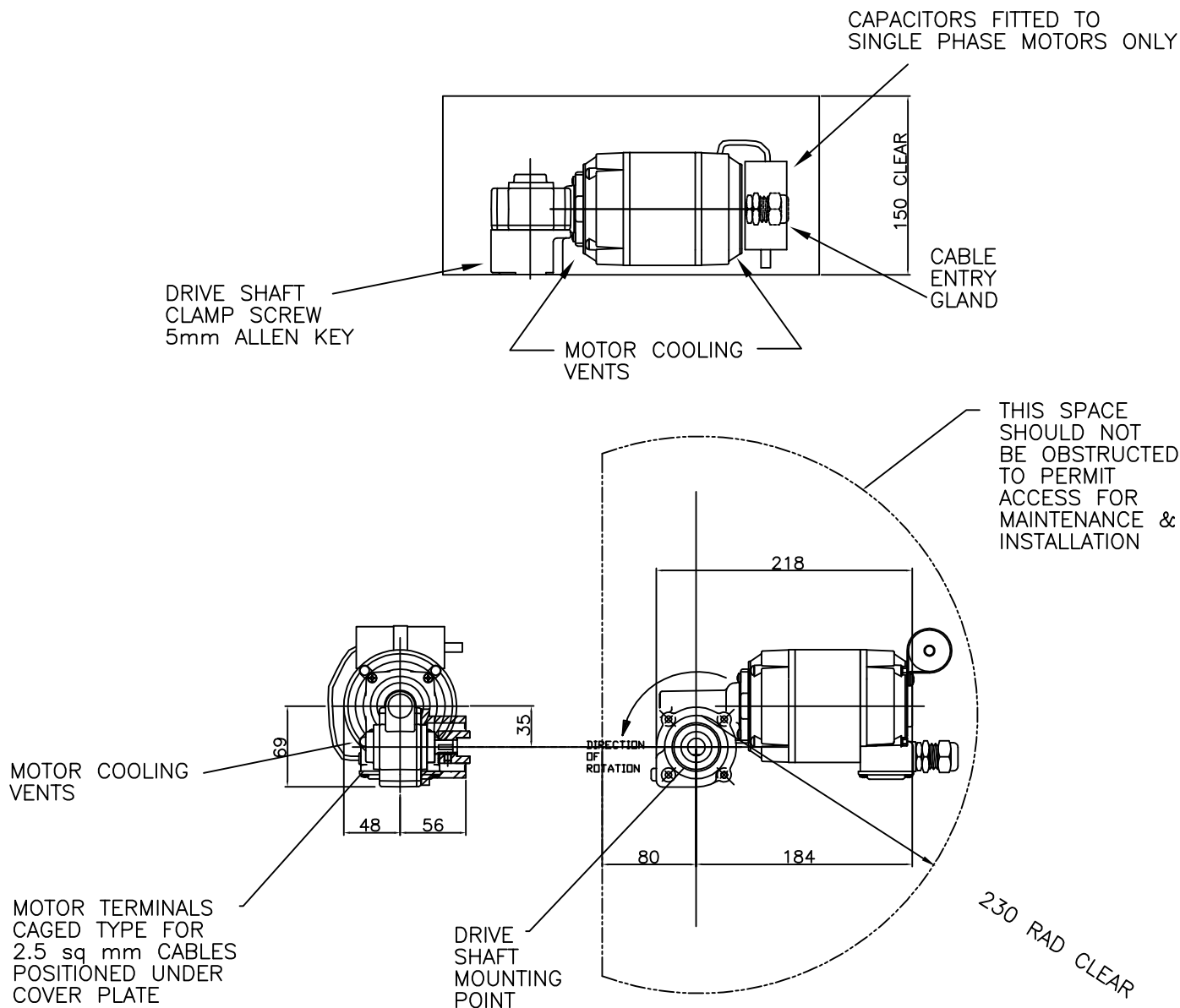
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# DC MOTOR DIMENSIONS







## NOTES

1. USE T RATED FUSES.
2. EARTH BONDING TO CONFORM TO APPROPRIATE NATIONAL CODES AND STANDARDS.
3. CUSTOMER TO WIRE FROM MOTOR CABLES OR TERMINATIONS TO TERMINALS ON THE CONTROLLER WHEN SUPPLIED.
4. ALL MOTORS CAN BE ROTATED THROUGH 360 DEGREES AROUND THE DRIVE SHAFT CENTRE-LINE. NOTE THE ACCESS SPACE WILL ROTATE WITH THE MOTOR.

PARVALUX MOTORS WEIGHT 4.5Kg

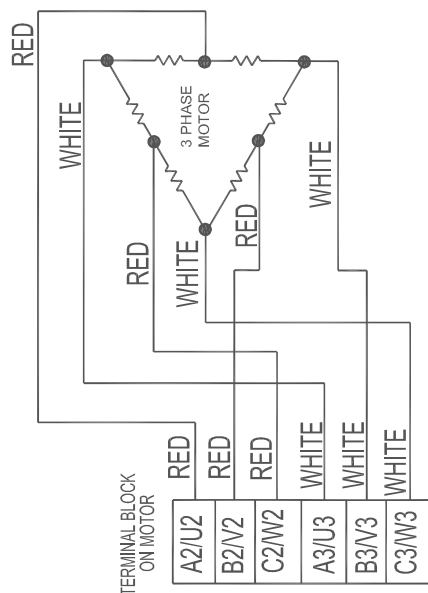
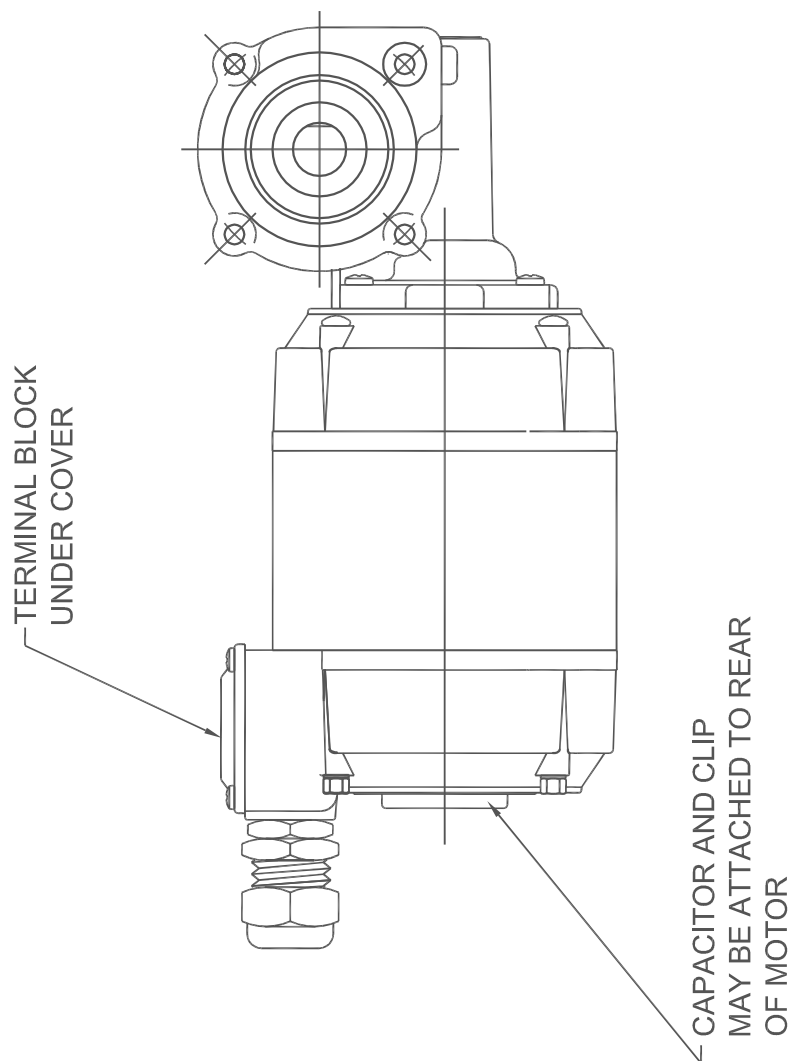
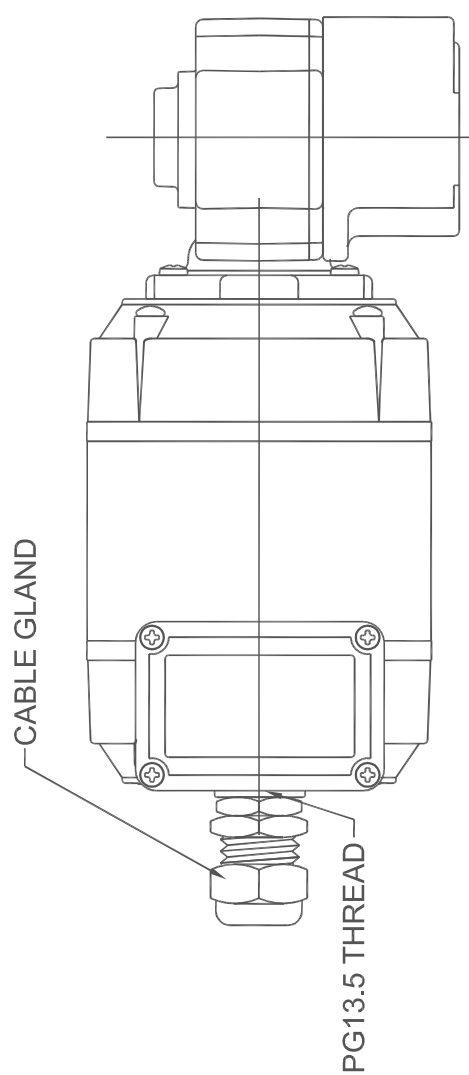
## MOTOR OPTIONS

MOTOR TYPE	VOLTAGE	Hz	PHASE	SPEED	SAFE COMPASS DISTANCE MIN	RUN CURRENT 50Hz	RUN CURRENT 60Hz	FUSE RATING 50Hz	FUSE RATING 60Hz	CAPACITOR
PARV61	115AC	50/60	3	2	0.5M	1.3A	1.1A	2.0A	1.6A	—
PARV62D	230AC	50/60	3	2	0.5M	0.6A	0.6A	1.0A	1.0A	—
PARV64	230AC	50/60	1	1	0.5M	1.2A	1.6A	1.6A	2.0A	8.4uF M-MISC-098PARV
PARV64L	230AC	50/60	1	1	0.5M	0.75A	0.95A	1.0A	1.6A	5uF M-MISC-095PARV
PARV65	115AC	50/60	1	1	0.5M	2.3A	2.6A	2.5A	3.15A	28uF M-MISC-099PARV
PARV65L	115AC	50/60	1	1	0.5M	1.5A	1.6A	2.0A	3.15A	28uF M-MISC-099PARV
PARV81	115AC	50	3	V	0.5M	1.5A		CONTROLLER		—
PARV82	220AC	50	3	V	0.5M	1.1A		CONTROLLER		—

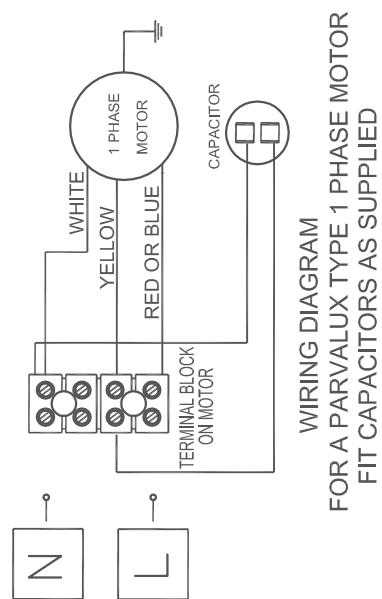
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## MOTOR TERMINAL BLOCK WIRING DIAGRAM 3 PHASE PARVALUX TYPE MOTORS





# 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 C WIPER MAINTENANCE

Wynn products have been proven over many years to perform well under the harshest condition of use. 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 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.

3. Check the drive belt for deterioration. Replace if necessary.
4. 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.



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

5. Check for free movement of idler pulleys in response to belt tension. Lubricate as necessary with water resistant grease.
6. 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.

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



# TYPE C 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. If Heaters are fitted disconnect from terminals to allow the cover to be removed from the wiper.

### OUTSIDE

2. Remove any pipework fittings / blanking plugs from both ends of the wiper.
3. Slacken cable glands and withdraw heater cable from bulkhead.
4. Remove the 2 x M8 Cap head bolts at each end of the cover and set aside.
5. Carefully remove the cover and set aside.
6. 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.
7. Slacken the blade clip bolts and remove blade. Set aside for reuse.
8. Re-assembly is reversal of above instructions.

## *Drive Belt*

1. If Heaters are fitted disconnect from terminals to allow the cover to be removed from the wiper.

### OUTSIDE

2. Remove any pipework fittings from both ends of the wiper.
3. Slacken cable glands and withdraw heater cable from bulkhead.
4. Remove the 2 x M8 Cap head bolts at each end of the cover and set aside.
5. Carefully remove the cover and set aside.
6. 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.
7. 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).



8. In multi wiper installations, if there is insufficient space between adjacent wipers to remove the carriage, then it will be necessary to draw the carriage / belt assembly through adjacent wiper cases, detaching park sensors where necessary.
9. 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.
10. 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).
11. Fit the carriage & belt assembly back into the casing and slip the belt onto the drive & idler pulleys.
12. 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.
13. Refit the front cover and secure with the 2 off M8 cover bolts. Reconnect any pipework fittings removed in para 2, and heater cable if removed at para 1.

### *Guide Rollers*

1. Follow the Drive Belt renewal instructions 1 to 7 above.
2. Remove the roller stub shaft securing the guide roller and remove the guide roller.
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.

### *Drive Shaft and Pulley Assembly*

1. Slacken the clamping bolt securing the motor to the drive shaft assembly, withdraw the motor from the shaft and set aside ensuring the black coupling is kept with the motor.
2. Follow the Drive Belt renewal instructions 1 to 6 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. Dismount wiper from bulkhead and set aside fixings.
5. Unbolt drive shaft and pulley assembly from the main body of the wiper and set the fixings aside.
6. Withdraw the assembly from the wiper body and discard.
7. Insert the new assembly onto the body. Re-assembly is reversal of the above instructions and in accordance with the standard wiper installation instructions elsewhere in the manual.



## *Wiper Motor Replacement*

1. 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.



### Type C Common Cover 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	CC**#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 with Tyre & spanner	Set of 8	SP1588-117
	Guide Rollers c/w with Tyre	1	SP1588-006
9	Roller Stub Shaft	Set of 8	SP1588-113
10	Connecting Rod Assembly – Single	1	SP1588-474
	Connecting Rod Assembly – Twin Blade	1	SP1588-474T
11	Vee-Belt	1	SP1279-106-###
12	Idler Pulley Assembly c/w Springs (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
15	Drive Shaft and Pulley Assembly - 84mm Std	1	SP1588-009-117
	Drive Shaft and Pulley Assembly - 140mm	1	SP1588-009-173
	Drive Shaft and Pulley Assembly - 200mm	1	SP1588-009-233
	Drive Shaft and Pulley Assembly - 220mm	1	SP1588-009-253
	Drive Shaft and Pulley Assembly - 240mm	1	SP1588-009-273



Ident	Description	Quantity	Part Number
	Drive Shaft and Pulley Assembly - 310mm	1	SP1588-009-310A
	Drive Shaft and Pulley Assembly - 35mm	1	SP1642-003
	Gas Tight Drive Shaft and Pulley Assembly Std	1	SP1588-030-117
	Gas Tight Drive Shaft and Pulley Assembly 140mm	1	SP1588-030-173
	Gas Tight Drive Shaft and Pulley Assembly 200mm	1	SP1588-030-233
17a	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
	Parvalux 81, 115V AC, 3-Ph, 3 Speed	1	SP1490-000GA81
	Parvalux 82, 220V AC, 3-Ph, 3 Speed	1	SP1490-000GA82
17b	SD11AM 115V AC, 50 Hz Variable Speed	1	SP1279-347
	SD11AM 115V AC, 60 Hz Variable Speed	1	SP1279-348
	SD11AM 230V AC, 50/60 Hz Variable Speed	1	SP1279-349
17c	PM3M 24Vdc Motor	1	SP1279-558-24
	PM3M 24Vdc Motor Slow Speed	1	SP1279-558L-24
	PM5M 24Vdc Motor	1	SP1279-513
18	Front Cover - Less Heater	1	See calculator 1681-161
19	Heater - Single Wiper	1	SP1588010\$\$\$^
19a	Heater Clip	A/R	SP1588-056
20	Spray Tube Assembly	1	SP1588-418
21	Cover Bolts	each	zA0008-090S
22	End Cover Left Hand	each	SP1588-058L*
	End Cover Right Hand	each	SP1588-058R*
23a	Fixing Screw	6	zP00012S-1.0S



Ident	Description	Quantity	Part Number
23b	Blanking Plug	2	1588-062
23c	Metric Pipe Fitting	1	1588-038
23d	Tubing Plug	1	1588-037
24	Self-Parking Assembly (Reed sw and magnet) 2m	1	SP1588-012-1
	Self-Parking Assembly (Reed sw only) 2m	1	SP1587-034-1
25	Main Frame	1	See calculator 1681-161
26	Motor Housing Nut	each	10015100
27	Motor Housing Washer	each	10025306B
28	Motor Housing Bolt	each	zA0006-020S
29	Pivot Block Securing Nut	2	zNL0.25F-S
not shown	Wash Fittings SLW Single	1	SP1588-672
not shown	Wash Fittings SLW Twin	1	SP1588-673
not shown	Wash Fittings SLW Single Long	1	SP1588-674
not shown	Drive Coupling – fitted inside Drive Shaft	1	SP1279-250
not shown	L050 Rubber Spider – fitted to Drive Coupling	1	SP1279-252
not shown	Sealing Grommet – fitted around Drive Shaft	1	SP1279-137
not shown	Sealing Grommet Spacer– fitted around Drive Shaft	1	SP1588-745

\*\*\* 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.

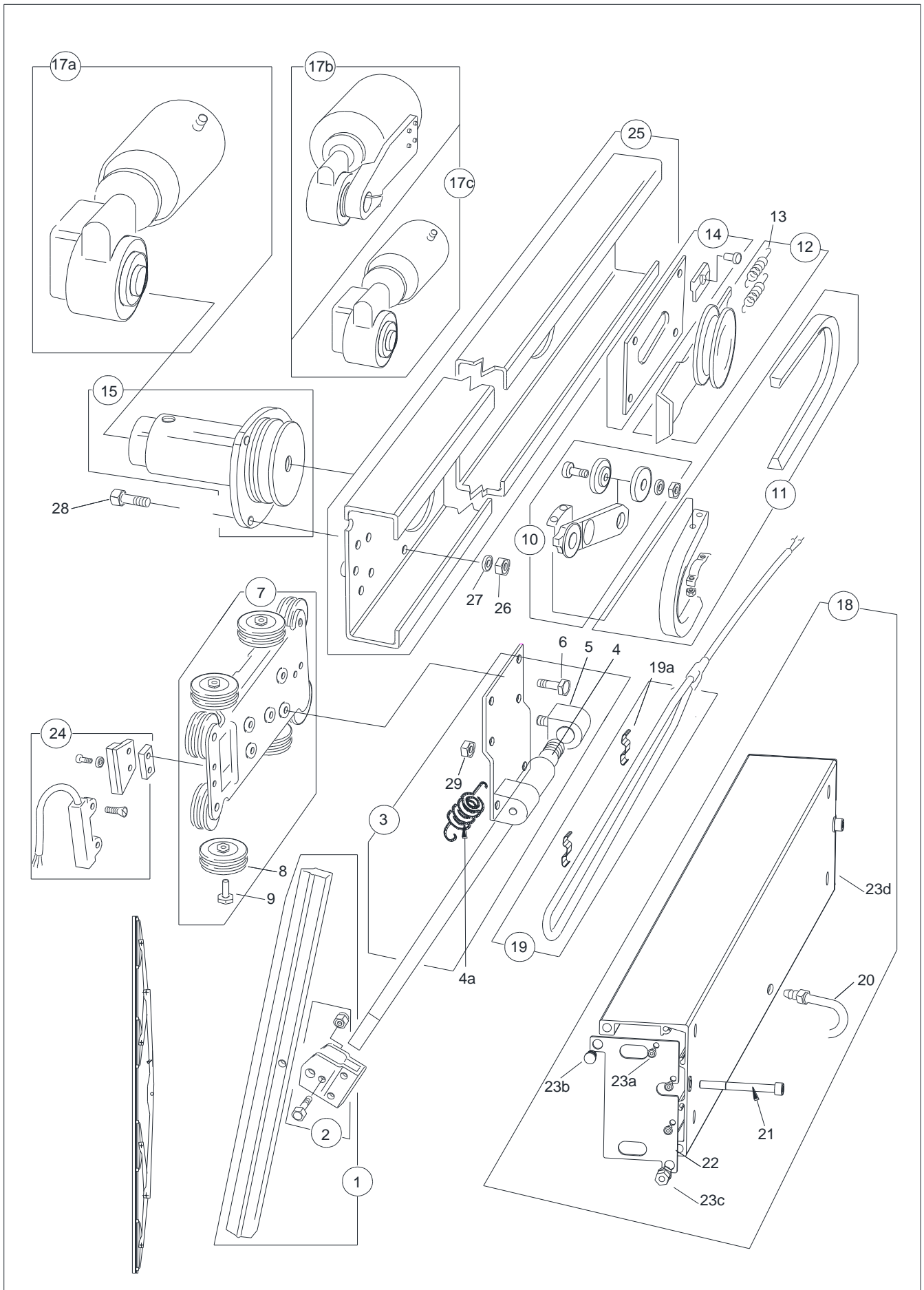
‡ Where required, extra spring pressure is obtained by the addition of 1 or 2 springs to the wiper arm. Where fitted, order 1 or 2 as required. Contact Wynn Agent for more details.

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

^^ Where ^ is heater length code.

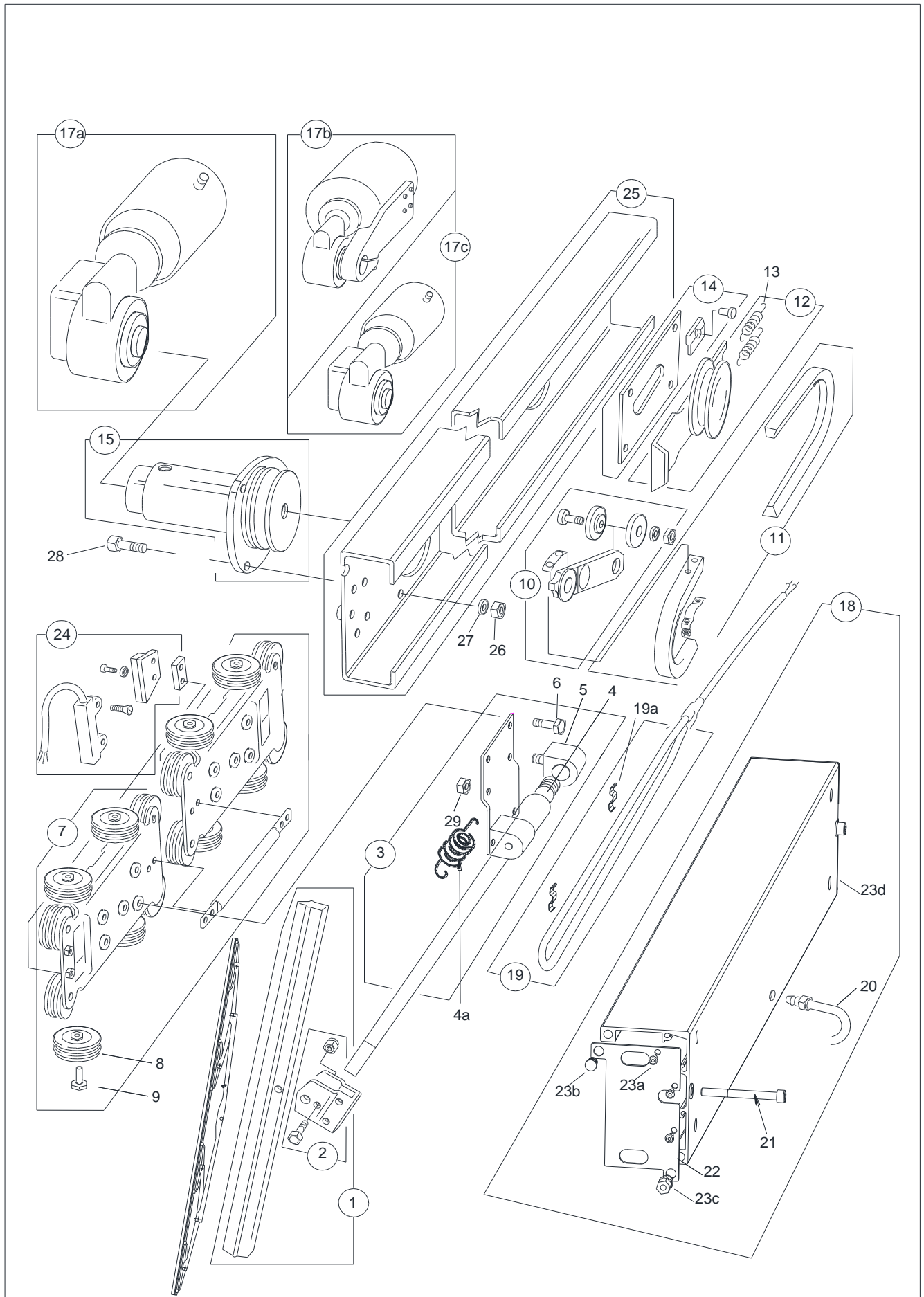


# Type C Common Cover Single Spare Parts Drawing



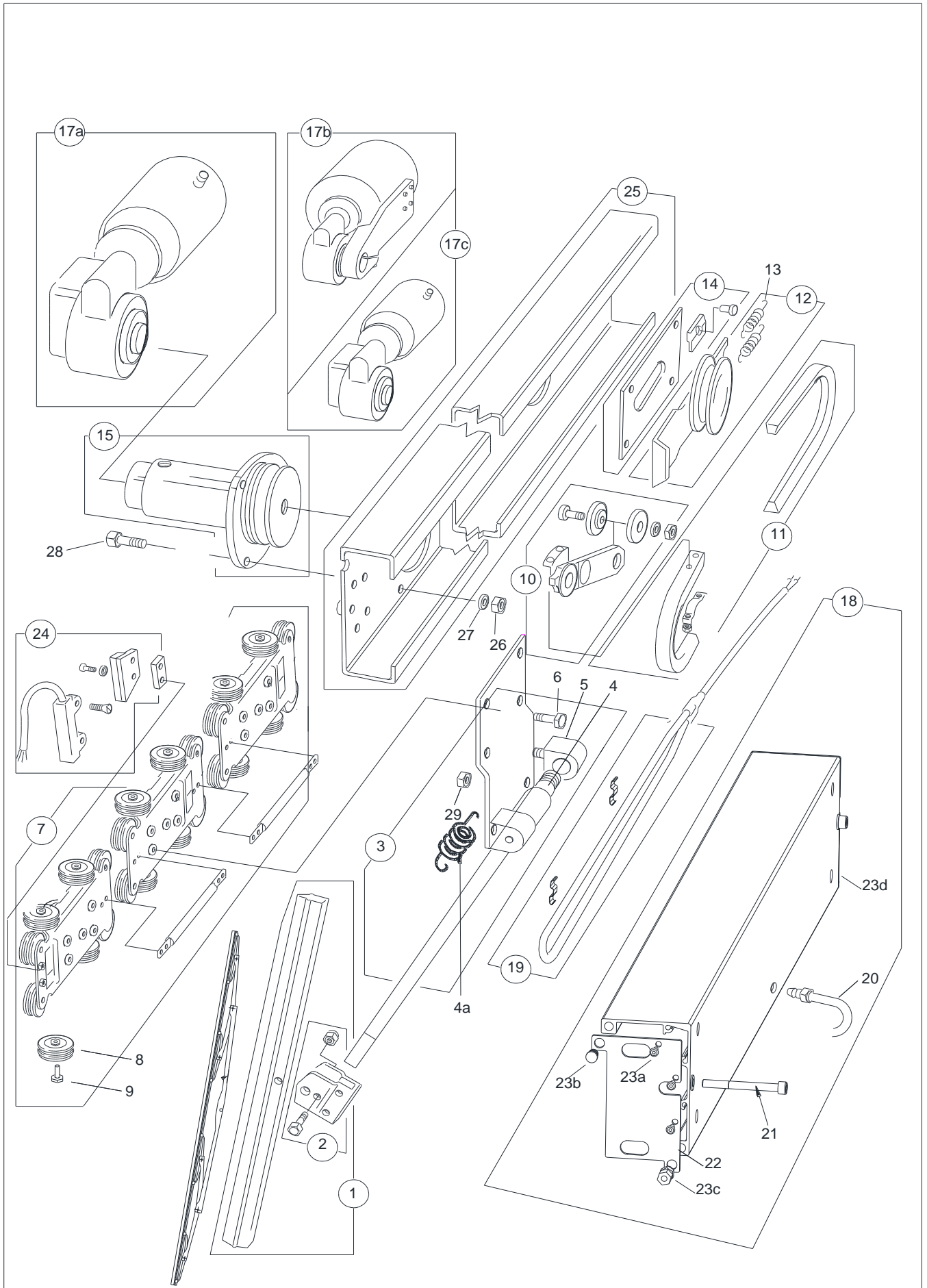


# *Type C Common Cover Twin Spare Parts Drawing (Short)*





## Type C Common Cover Twin Spare Parts Drawing (Long)





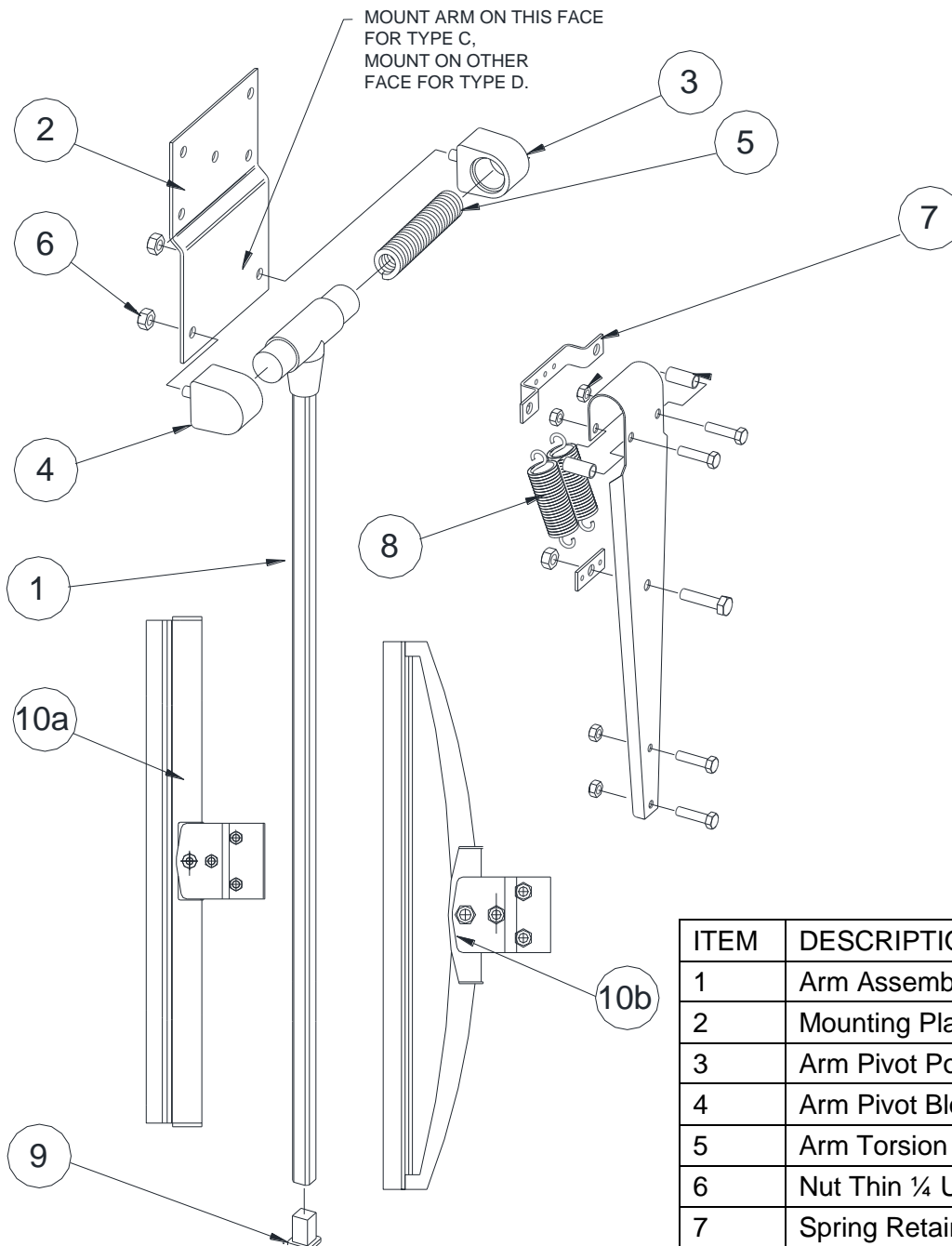
## SLW Wiper Arm

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	



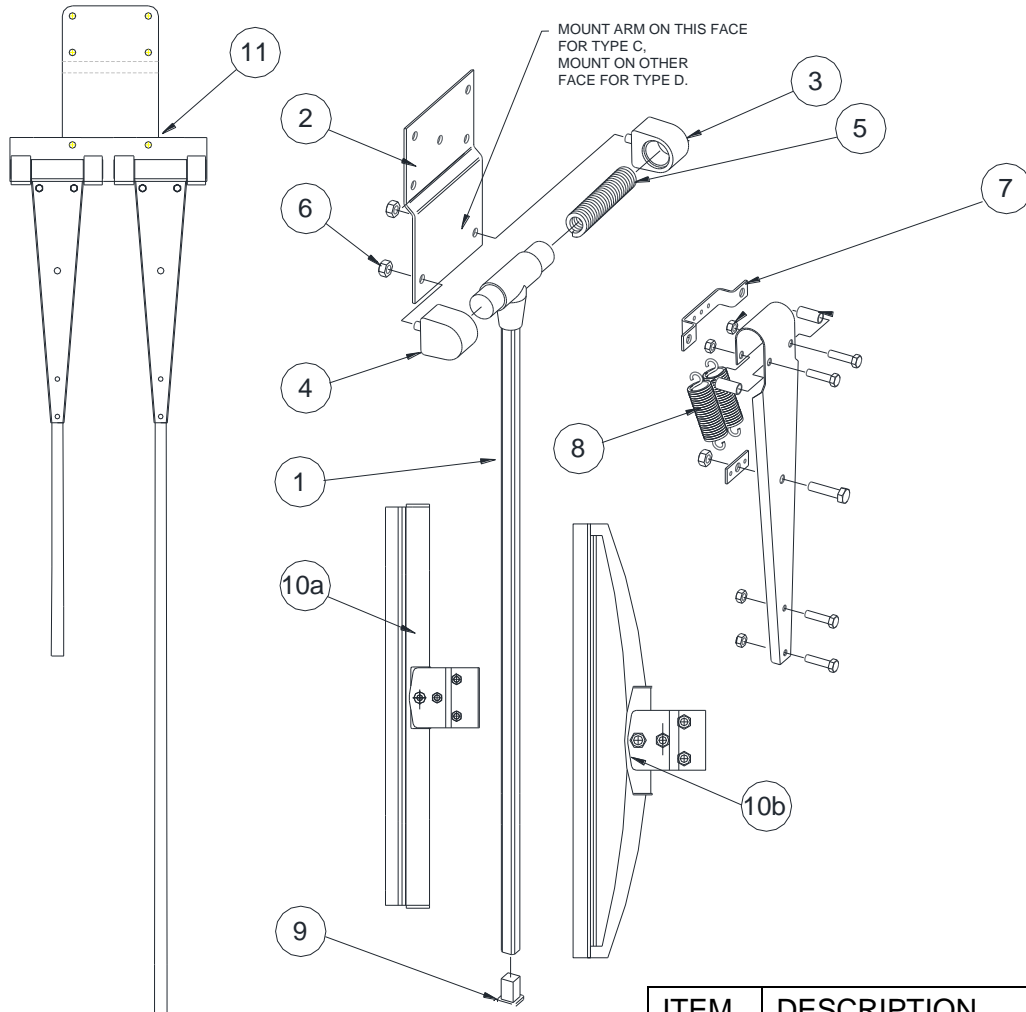
## SLW Double Wiper Arm Assembly

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



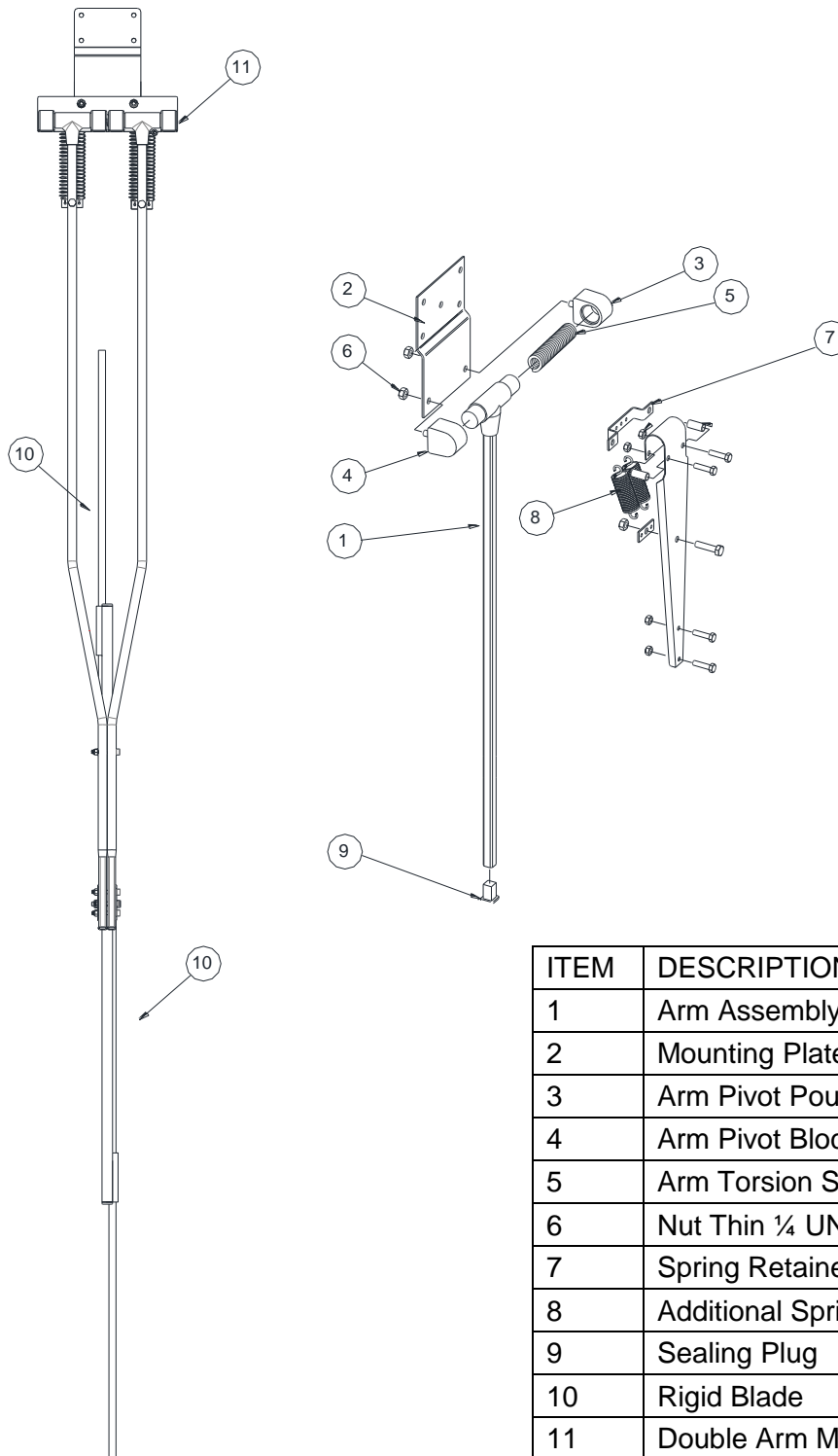
## SLW Double Wiper Arm Assembly

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.



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



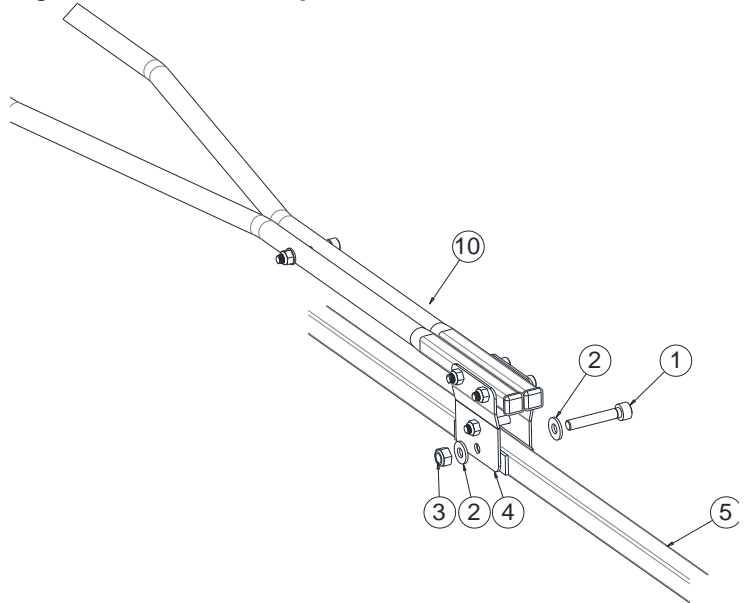
# FITTING THE WIPER BLADE CARRIER

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

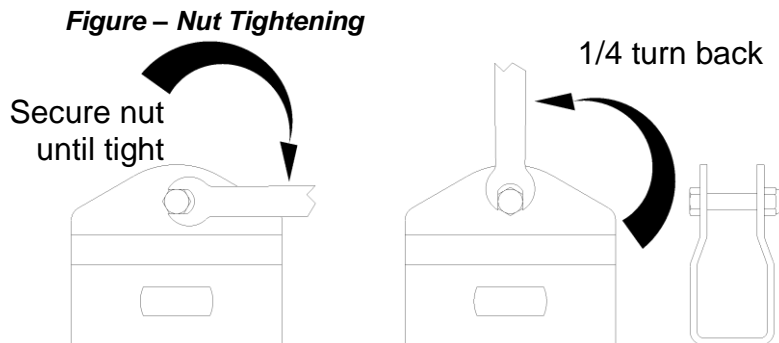


## IMPORTANT

**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	-
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

WIPER TYPE	CODE	STROKE TYPE	CODE	PARKING	CODE	Wiper Type	Motor Type	Code	Wiper Type	Motor Type	Code	PAINT FINISH	CODE	MOUNTING	CODE
D1	D2	D3	D4	D5	C1	Single	1	Parking Not Fitted	0	C/D	115vac 1ph 50/60hz 1Sp	GA65	CA	Sld Boss - 24 O/A	-
D6	D7	D8	D9	D10	C2	Twin	2	Standard Drive End Parking		C/D	115vac 1ph 50/60hz Low Sp	GA65-L	CB	(1589-457)	
D11	D12	D13	D14	D15	C3	Special Twin Case (Non-sld ctrs)	Q			C/D	115vac 3ph 50/60hz 2Sp	GA61	CE	Boss - 26 O/A	B
D16	D17	D18	D19	D20	C4	Special Single (See Instructions)	S			C	115vac 3ph 50/60hz 2Sp	IP23 GA61-4P23	CF	(1589-460)	
D21	D22	D23	D24	D25	C5	Special Twin (See Instructions)	T	Normally open	- A	B/C/D	115vac 3ph 50/60hz 1Sp	GA63	CG	Bracket	C
D26	D27	D28	D29	D30	C6	Type C Single Old Style Cse/Cvr	3	Reed Switch (TYPE D)		C/D	230vac 1ph 50/60hz 1Sp	GA64	CH	(1588-870 - Type C)	
D31	D32	D33	D34	D35	C7	Type D Single Old Style Cse/Cvr	4	Normally open	- B	C/D	230vac 1ph 50/60hz Low Sp	GA64L	CJ	(1588-870 - Type D)	
D36	D37	D38	D39	D40	C8	Type C Twin Old Style Cse/Cvr	5	Reed Switch (TYPE C)		C/D	230vac 1ph 50/60hz 1Sp	IP23 GA64-4P23	CL	Universal Carrier	D
D41	D42	D43	D44	D45		Type D Twin Old Style Cse/Cvr	6	Proximity Switch (TYPE D) - J		C/D	230vac 1ph 50/60hz 2Sp	GA62D	CM	(1588-871 & BRACKET)	
D46	D47	D48	D49	D50		Type 76 Converted to Type D	7	Proximity Switch (TYPE D) - J		C/D	230vac 1ph 50/60hz 2Sp	GA68	CN	Boss - 64 O/A	E
D51	D52	D53	D54	D55				Non-Standard Drive End Parking		C/D	24vdc 320rpm 90W (1279-557) PM3	GA62D-IP23-E (emc)	CV	(1588-457-40)	
D56	D57	D58	D59	D60				Proximity Switch (TYPE D) - G		C/D5	100vac 1ph 1Sp	GA69	CW	Quick Release - No Plug	F
D61	D62	D63	D64	D65				Reed Switch Change over - C		C	24vdc 320rpm 90W (1279-557) PM3	GA69	CX	(1642-468)	
D66	D67	D68	D69	D70				(Special Type C)		C	100vac 1ph 1Sp	GA69	CW	Quick Release and CVN Plug	G
D71	D72	D73	D74	D75				Standard Idler End Parking		C/D	24vdc 162rpm SLOW (1279-557) PM3	GA69	CY	(1642-468) + (A-ELEC-701)	
D76	D77	D78	D79	D80						D5/C	162rpm SLOW (1279-557) PM3	GA69	CY	QUICK RELEASE ONLY	H
D81	D82	D83	D84	D85						D5/C	162rpm SLOW (1279-557) PM3	GA69	CY	(1589-647)	A

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 Btm *	G
Right Window Bottom *	H

\*NOTE \* = NOT RECOMMENDED

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

use **only** when replacing a Type B with a Type C

Condition	Control	115vac	115vac	230vac
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		SINGLE CABLE (D)		TYPE C
MULTIPLE CABLES (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	7		
10 Metres	D	M		U
12 Metres		H		
15 Metres		R		J
20 Metres	E	N		V
25 Metres	F	P		W


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	6

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


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

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

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 1 INCH (25MM) STROKE OVERLAP				SINGLE STROKE LENGTH	
INCHES	MILLIMETRES	CODE	LOW SPEED (L)	INCHES	MM
2 X 13	2 X 330	13		12	305
2 X 14	2 X 356	14		13	330
2 X 15	2 X 380	15		14	356
2 X 16	2 X 407	16		15	380
2 X 17	2 X 430	17		16	407
2 X 18	2 X 457	18		17	430
2 X 19	2 X 480	19		18	457
2 X 20	2 X 510	20		19	480
2 X 21	2 X 533	21		20	510
2 X 22	2 X 558	22		21	533
2 X 23	2 X 585	23		22	558
2 X 24	2 X 610	24		23	585
2 X 25	2 X 635	25		24	610
2 X 26	2 X 660	26		25	635
2 X 27	2 X 685	27		26	660
2 X 28	2 X 710	28		27	685
2 X 29	2 X 735	29		28	710
2 X 30	2 X 760	30		29	735
2 X 31	2 X 787	31		30	760
2 X 32	2 X 810	32		31	787
2 X 34	2 X 865	34		32	810
2 X 36	2 X 915	36		33	840
2 X 40	2 X 1015	40		34	865
2 X 41	2 X 1040	41		35	890
2 X 43	2 X 1095	43	36	915	
2 X 45	2 X 1145	45	37	940	
2 X 47	2 X 1195	47	38	965	
2 X 49	2 X 1245	49	39	990	
2 X 52	2 X 1335	52	40	1015	
2 X 57	2 X 1450	57	41	1040	
2 X 61	2 X 1560	61	43	1095	
2 X 67	2 X 1700	67	44	1125	
2 X 71	2 X 1800	71	45	1145	
2 X 76	2 X 1930	76	47	1195	
2 X 79	2 X 2035	79	49	1245	
SPECIAL TWIN ST (for twins, eg: 2x24 <sup>1</sup> is shown as 24 with the 2 being stated at the previous part number digit)				51	1295
				53	1335
				55	1400
				57	1450
				59	1500
				61	1560
				63	1605
				67	1700
				71	1800
				76	1930
				79	2005
				89	2260

# COMPLETE WIPER PART NUMBERS

CAD FILENAME + DIRECTORY M:\DRAW\1681\1681-161.DWG										USED ON:											
<div>3rd ANGLE PRO. </div> <div>TOLERANCES UNLESS OTHERWISE STATED</div> <div>DECIMAL DIMS. TO 2 PLACES ± 0.1mm.</div> <div>DECIMAL DIMS. TO 1 PLACE ± 0.25mm</div> <div>NO DECIMAL PLACES ± 0.5mm</div> <div>ANGLES ± 1°</div>										MOD STATUS											
										30	\$1702	17.10.11	25	10-454	30.11.10	35	\$7760	21.08.13			
										29	\$618	10.05.11	24	6478	13/09/10	34	\$6646	18.04.13			
										28	\$448	19.04.11	23	NONE	18.11.05	33	\$6249	07.03.13			
										27	11-134	08.03.11	37	\$15178	30.07.2015	32	\$2930	16.03.12			
										26	6953	08.03.11	36	\$11968	16.10.2014	31	\$2641	15.02.12			
MAT'L:-		ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE											
FINISH:-		SCALE:-	DRAWN:-	DD	CHKD:-	DD	CHANGED:-	DD													
										DRAWING No. 1681-161										SHEET 1 OF 2	

SHEET 1 OF 2







# 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.

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

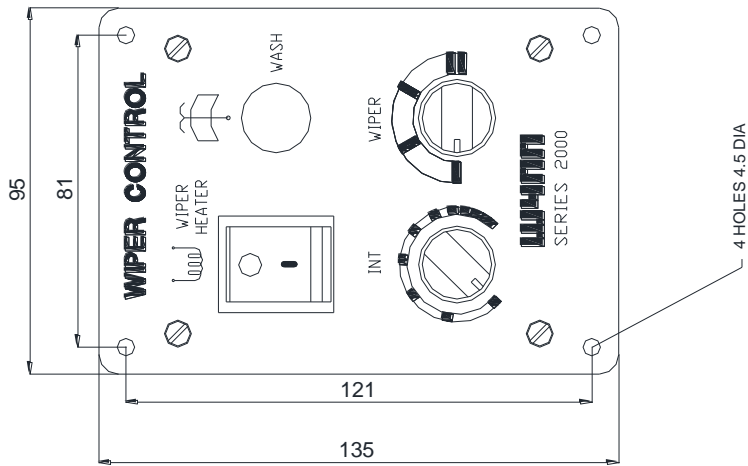
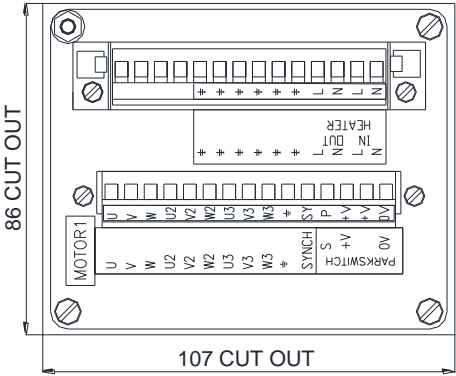
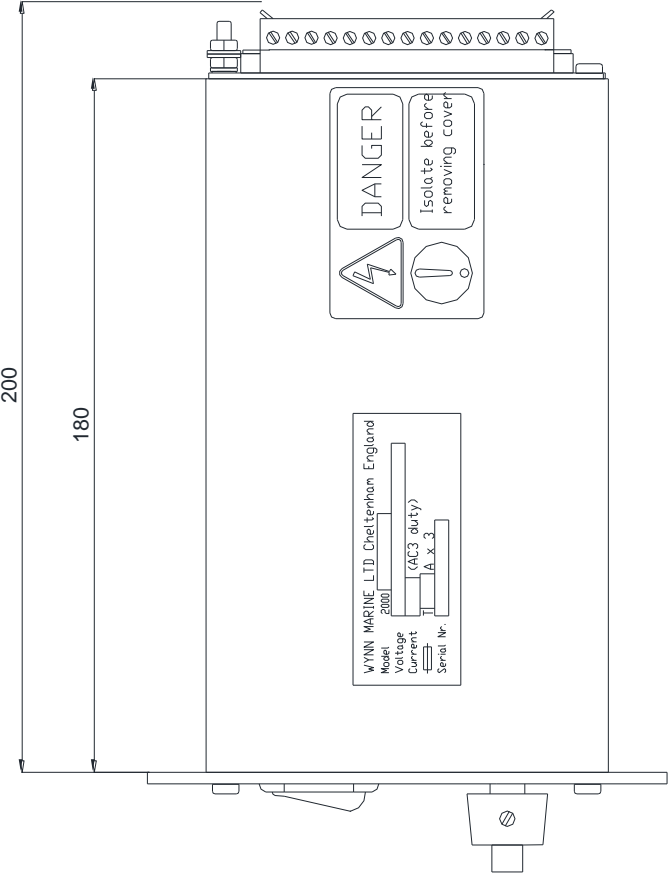
1. Set the wiper switch to the off position (fully anti-clockwise). Set the Intermittent switch to the shortest time increment (fully clockwise). Apply power to the system. Check each wiper switch in turn as follows:



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



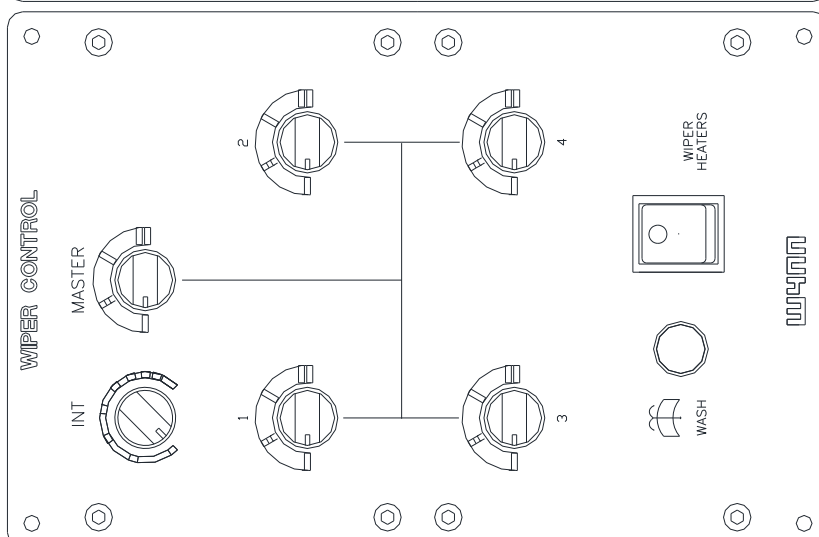
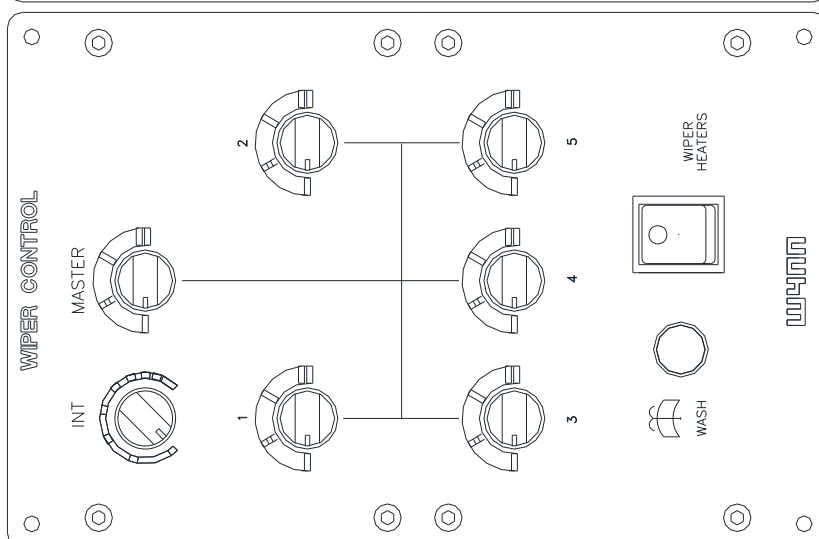
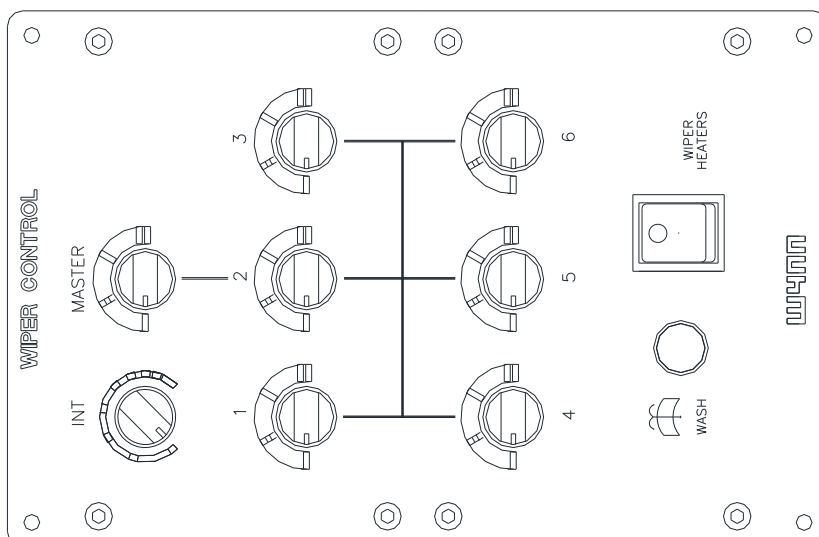
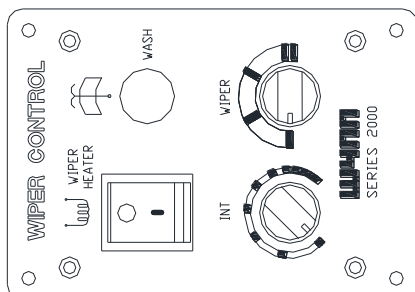
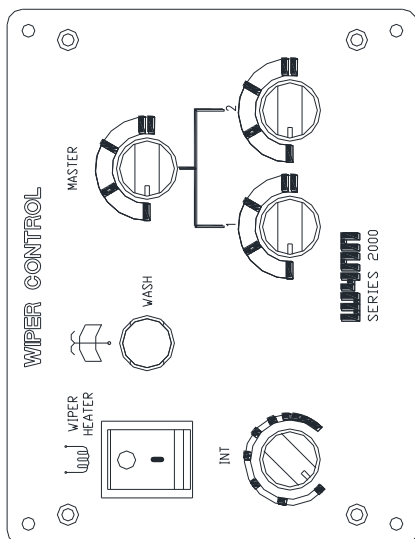
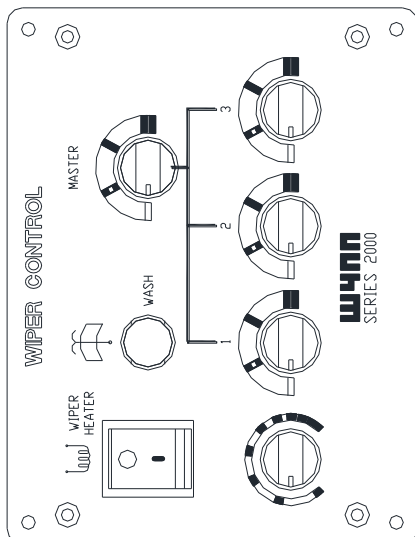
CONTROLLER NOT FITTED WITH INTERNAL POWER SUPPLY UNIT	CONTROLLER OPTION			SWITCH FITTED AS DRAWN BLANKING PLUG FITTED		
				✓	✓	×
	2000-3X0-100	✓	✓	✓	✓	×
	2000-3X0-101	×	×	×	×	×
	2000-3X0-102	✓	×	×	×	×
	2000-3X0-103	×	×	×	×	×

CONTROLLER NOT FITTED WITH 24V DC INTERNAL POWER SUPPLY UNIT	CONTROLLER OPTION			SWITCH FITTED AS DRAWN BLANKING PLUG FITTED		
				✓	✓	×
	2000-3X1-100	✓	✓	✓	✓	×
	2000-3X1-101	×	×	×	×	×
	2000-3X1-102	✓	×	×	×	×
	2000-3X1-103	×	×	×	×	×

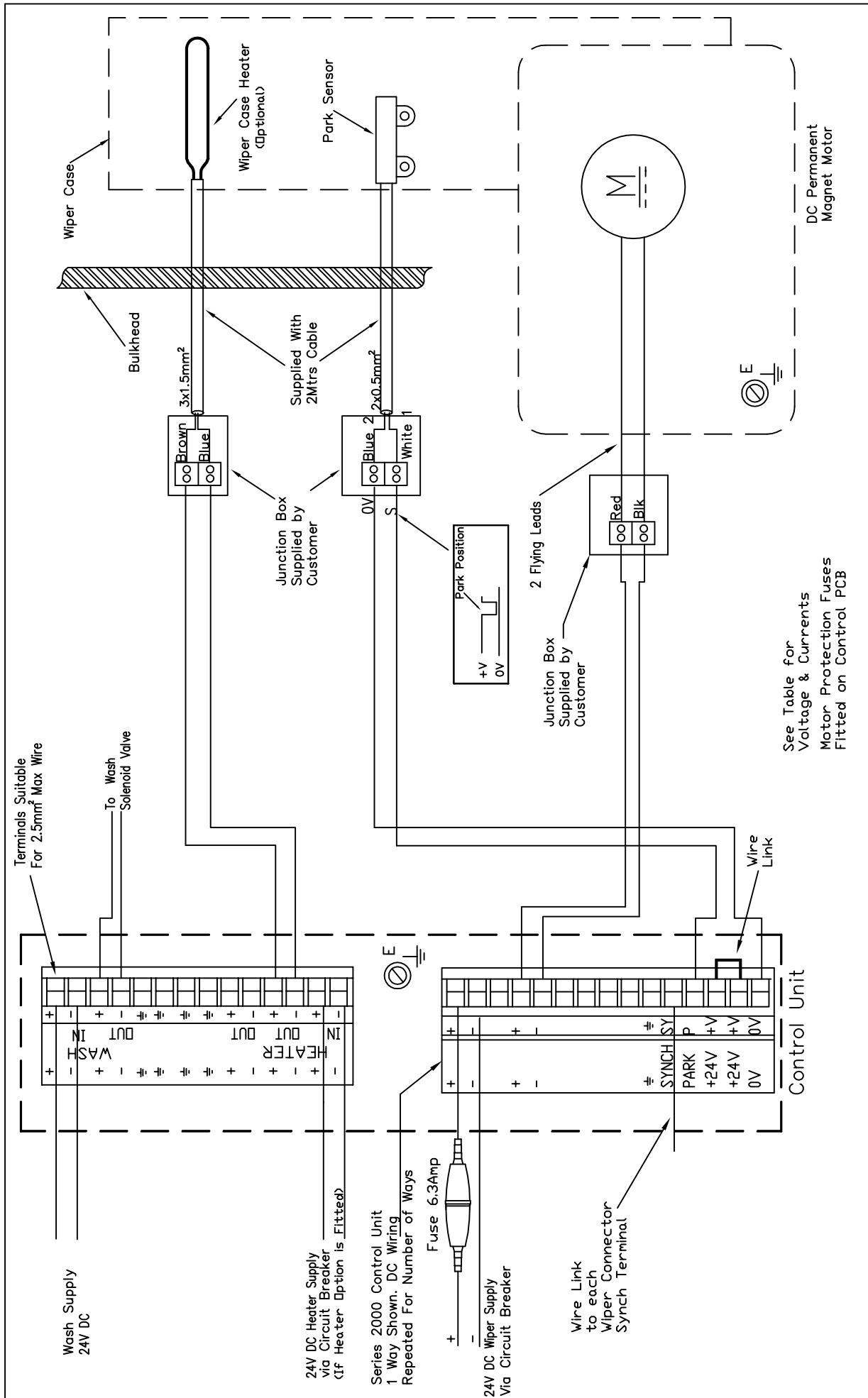
WEIGHT OF UNIT 2.0KG



# SERIES 2000 CONTROL PANEL VARIANTS







3rd ANGLE PRO.	MOD STATUS									
	5	02.03.09								
	4	30.06.08								
	3	14.51								
	2	13.92								
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°	1	13.27								
	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE	
	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE	
	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE	
	ISS.	DIN	DATE	ISS.	DIN	DATE	ISS.	DIN	DATE	
MAT'L:-	CHANGED:-									
	DRAWN:- DCT									
	SCALE:- NTS									
	2000-EL-DC-C-3									
	DRAWING No. 2000-EL-DC-C									

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**WYNN MARINE LIMITED**  
CHELTENHAM  
ENGLAND

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

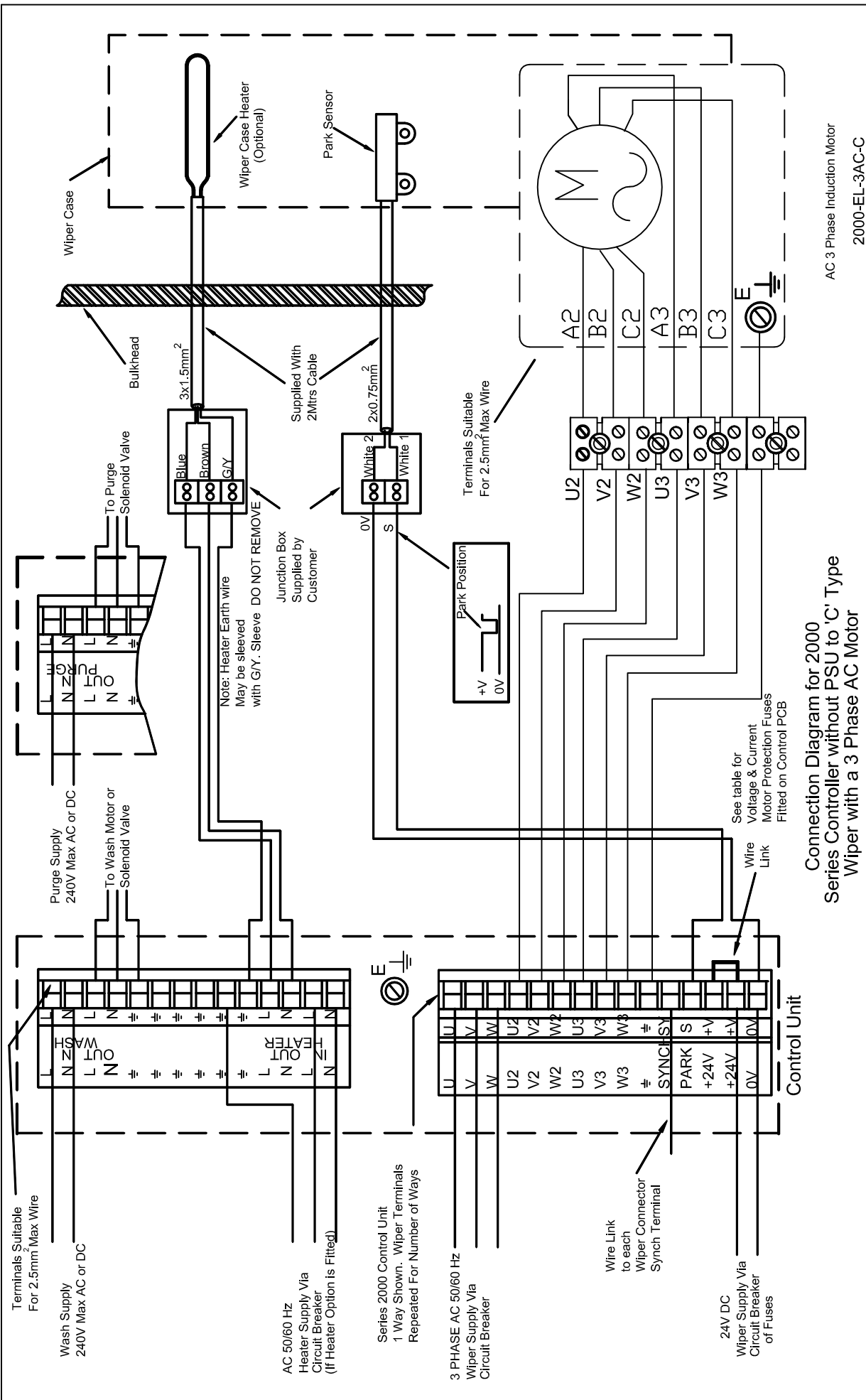













AC 3 Phase Induction Motor  
2000-EL-3AC-C

3rd ANGLE PRO. 	TOLERANCES UNLESS OTHERWISE STATED DECIMAL DIMS. TO 2 PLACES $\pm 0.1\text{mm}$ . DECIMAL DIMS. TO 1 PLACE $\pm 0.25\text{mm}$ NO DECIMAL PLACES $\pm 0.5\text{mm}$ ANGLES $\pm 1^\circ$										MIDD STATUS									
MAT'L:-																				
	SCALE-N/T5	DRAWN-DCT	CHKD:-	CHANGED:-										DRAWING No. 2000-EL-3AC-C						







# SERIES 2000 CONTROLLER FAULT FINDING



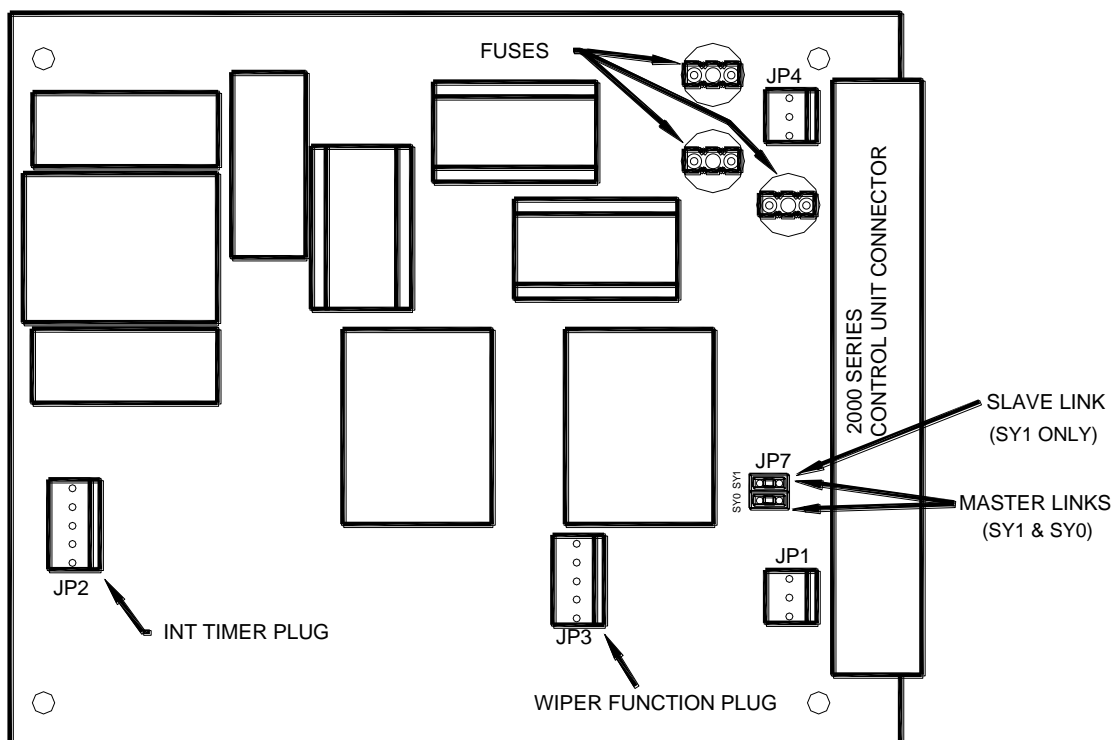
**WARNING:** Ensure that all power is disconnected whilst working on the controller.

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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