

PW1

FRONT LOADING WAREWASHER OPERATOR MANUAL



STARLINE[®]
PROFESSIONAL WASH SYSTEMS

Warnings



Before installation and commissioning, you must read the safety instructions and warnings carefully and all the warning labels attached to the equipment.

Equipment contains dangerous voltages and can be hazardous if installed or operated incorrectly. Non-compliance with warnings or failure to follow the instructions contained in this manual can result in loss of life, severe personal injury or serious damage to property.

Before installation or repair, you must read the instructions and warnings carefully and all the warning labels attached to the equipment.

All service/repair work must be carried out by qualified personnel only and ensure compliance with all local codes and standards including AS/NZS 3500.1.

Important Information



Failure to comply (even partially) with the instructions given in this manual will invalidate the product warranty and relieves the manufacturer of any responsibility.

The alteration of machine operation, design or the replacement of parts not approved by the manufacturer may void warranties and approvals.

This machine is intended for commercial use only.

This machine is designed for the cleaning of fresh food waste from crockery, cutlery, containers and food preparation and manufacturing equipment. Consult the manufacturer regarding suitability of the machine for other applications. It is not a waste disposal unit, and it is essential that significant loose soil or waste is removed from washware by pre-rinsing or scraping, before it is placed in the machine.

The information contained in this document is checked, reviewed and updated regularly to ensure that it is accurate and relevant to the model described. However discrepancies and errors can occur. We welcome your feedback.

Document subject to change without prior notice.

Information supplied in this manual is copyright. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical without the express permission of Washtech.

Contents

2. Warning
3. Contents
4. Safety Instructions
5. Installation Diagram
6. Installation Instructions
8. Installation Checklist
9. Installation Troubleshooting
10. Operator Use Guide
11. Operator Troubleshooting
12. Schematic diagram
13. Accessories
14. Spare parts list



Safety Instructions

Installation

- Use qualified, skilled personnel.
- Follow installation instructions.
- Connect to correct voltage and supply current, and check that the phase rotation is correct.
- Provide fully accessible Electrical Isolation Switch & water supply valves.

Training and Supervision

- Read and Understand the Operating instructions and train all staff.
- This appliance must not be operated by children or infirm persons.
- Machine panels must only be removed by suitably qualified and trained personnel – internal hazards include live electrics and very hot surfaces.
- No part of this appliance is intended for use as a stepladder.

Hot Surfaces

- Some surfaces may be hot or very hot.

Chemicals

- Commercial dishwashing detergents are hazardous – handle with care.
- Read and follow the safety information found on the labels of detergent containers and Material Safety Data Sheets.
- Use protective eyewear and clothing if decanting containers.

Hot Water

- Do not put hands in wash water which may be over 60°C and contain hazardous caustic detergent.
- Rinse water can be over 90°C.
- Door safety switches are designed for emergency use only.

Cleaning

- Do not hose down the machine or splash water over the exterior.
- Watch for broken glass etc. when cleaning the inside of the machine.

Warnings



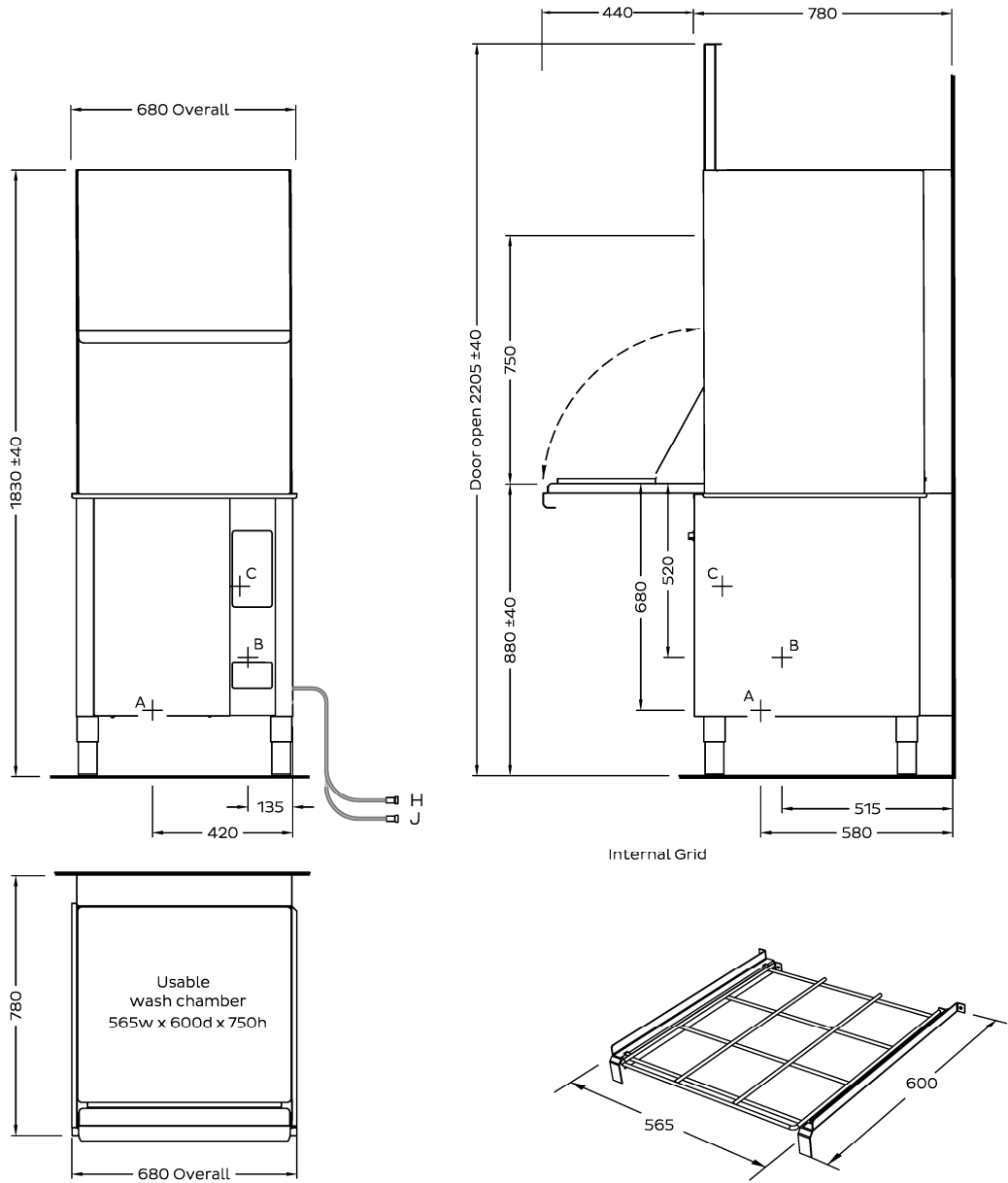
Equipment contains dangerous voltages and can be hazardous if installed or operated incorrectly. Non-compliance with Warnings or failure to follow the instructions contained in this manual can result in loss of life, severe personal injury or serious damage to property.

Installation and servicing must be carried out by a suitably qualified person in compliance with all local codes and standards including AS/NZS 3500.1.

Installation Diagram

PW1 Installation Diagram

- Part #: SPW10020
- Date: 12/02/2019
- Version: 3-B



Services

- | | | | |
|---|-----------------------------|-------------------------|-------------|
| A | Hot water 65°C | 200-350 kPa | 3/4" |
| B | Waste - tank drainage point | 1.5" BSP | 40mm |
| C | Electrical connection | 400-415V, 50HZ, 3P-N+E~ | 25A |
| H | Detergent | | Tube\filter |
| J | Rinse Fluid | | Tube\filter |

Note: Isolating switch must be within 1m of, and not directly behind the machine. Isolating water valve must be readily accessible

Installation Instructions

Machine Positioning

- Unpack machine, check for damage and complete delivery.
- Install machine on sound waterproof self-draining floor and use adjustable feet to level machine.



NOTE: Failure to level the machine correctly may result in leaking during the cycle, overflowing from the door sill, poor hygiene through the wash tank not being able to drain correctly, and/or visibly uneven door.

- Allow room for detergent to one side of machine or in adjacent cupboard. 20 litre container requires approximately W 250mm x D 350mm x H 450 mm, but smaller containers are available from many suppliers.

Inlet Water

Incoming water should be within the following standard requirements:

- Temperature: 65°C.



NOTE: Low temperatures will increase the recovery time between cycles and depending on the chemical being used, may result in excessive foaming if the machine is started before the wash water is up to a suitable temperature.

NOTE: Excessively high temperatures may damage the solenoid which can result in flooding should this component fail. High temperature solenoids are available and can be retrofitted if necessary.

- Connection: 20 mm (3/4" BSP) male – flexible hose supplied.



NOTE: Flush supply line before connection. Poor quality supply or excessive water hardness may affect performance or damage machine – filtration and/or softening is recommended.

- Flow rate: minimum 5 litres per minute.
- Pressure: between 200 and 350 kPa.



NOTE: This machine is equipped with a rinse booster pump as standard and does not rely on incoming water pressure to drive the rinse cycle.

NOTE: If above 350kPa fit pressure limiter valve (LPV). Do not use small diameter plastic supply lines.

- Consumption: Approximately 2.6 litres per cycle.
- Backflow prevention: Atmospheric Vacuum Breaker (AVB) fitted standard.

Water Quality Requirements

The incoming water should also be within the following parameters:

| | | | | | | |
|----------|-----|-----------------|-----|-----|------|-----------------|
| Hardness | ppm | pH | | | | |
| min | 20 | 7 | | | | |
| max | 100 | 8 | | | | |
| Ions | Cl- | SO ₄ | Fe | Mn | Cu | Cl ₂ |
| Max mg/L | 100 | 400 | 0.1 | 0.5 | 0.05 | 0.1 |



NOTE: Levels above or below the stated requirements can be expected to increase component wear and reduce the expected useful life of the dishwasher. If in doubt, it is best to consult a water specialist and have the incoming water professionally tested and treated if necessary.

Power

- Electrical supply required is 3p/25A 400V 50Hz via switched outlet adjacent to machine.



NOTE: Equipment contains dangerous voltages and can be hazardous if installed or operated incorrectly. Non-compliance with warnings or failure to follow the instructions contained in this manual can result in loss of life, severe personal injury or serious damage to property.

Installation Instructions

Chemical

- This dishwasher is supplied with Detergent and Rinse Fluid injector pumps.
- To connect to chemicals, insert pump inlet hose into container of commercial low foam detergent and rinse fluid.



NOTE: Externally adjustable chemical pumps are fitted and pre-set at an average level, these need to be calibrated on site according to the chemical being used and site specific conditions such as the water quality and how the machine is being used. Failure to do so may result in excessive dosing which can result in foaming and overflowing, or insufficient dosing which can cause inferior wash results and impact components through a build up of grease. If in doubt, contact your chemical company for assistance.

NOTE: Commercial detergents can be hazardous – read instructions, store safely and handle with care. Care needs to be taken when changing chemicals, ensuring that the detergent is not accidentally connected to the rinse fluid inlet line.

NOTE: If uncertain, please consult a chemical specialist for assistance in selecting the right chemicals and calibrating machine settings to suit this along with your unique site conditions and requirements.

Waste

- 40 mm gravity drain – refer point B on the installation diagram – run waste directly behind the machine or through base.
- An S&P trap will need to be fitted at the drain waste – refer point B on the installation diagram.
- With a standard trap the drain connection height will be about 600mm below the bench height on the model (300mm above floor with door open height at 900mm).



NOTE: Either copper or PVC may be used for the waste connection – PVC is more resistant to some harsh detergents. Some authorities however suggest that copper is required because the machine rinses at up to 90°C. It is important to note that rinse water mixes with the 65°C wash water before discharge and then flows into the trap where the water is further cooled before entering the drainage plumbing. We recommend consulting your local authority to ensure your site remains compliant.

Installation Checklist

- Complete attached Installation Checklist to ensure machine is installed and running correctly, and operator is familiar with operating procedures.

Installation Checklist

| Check | Notes |
|---|---|
| DELIVERY | |
| SUPPLIED COMPLETE? | <input type="checkbox"/> CHECK THERE HAS NOT BEEN ANY TRANSIT DAMAGE |
| POSITION | |
| LEVEL AND STABLE? | <input type="checkbox"/> ON SOUND, WATERPROOF, SELF-DRAINING FLOOR |
| WATER | |
| ISOLATOR VALVE FITTED? | <input type="checkbox"/> ACCESSIBLE, ALL FITTINGS SOUND, AND NO LEAKS |
| TEMPERATURE CORRECT (65°C)? | <input type="checkbox"/> HOT WATER INLET 65 °C |
| PRESSURE CORRECT (<350 kPa)? | <input type="checkbox"/> LIMITER FITTED IF ABOVE RANGE |
| FLOW RATE CORRECT (≥ 5L PER MIN)? | <input type="checkbox"/> FLOW RATE AT OR ABOVE MINIMUM RANGE |
| QUALITY WITHIN REQUIREMENTS? | <input type="checkbox"/> FILTER OR SOFTENER IN PLACE IF OUTSIDE REQUIREMENTS |
| POWER | |
| ISOLATING SWITCH? | <input type="checkbox"/> FITTED, FUNCTIONAL AND ACCESSIBLE |
| CORRECT SUPPLY (3p/25A 400V 50Hz)? | <input type="checkbox"/> VOLTAGE, CURRENT, CIRCUIT BREAKER ALL CORRECT |
| WASTE | |
| 40MM CONNECTION (1.5" BSP)? | <input type="checkbox"/> HARD PLUMBED, NO LEAKS |
| SUITABLE AIR GAP? | <input type="checkbox"/> REFER OPERATOR MANUAL. |
| CHEMICALS | |
| | CHEMICAL NAME CONTAINER NO LEAKS PRIMED CALIBRATED |
| DETERGENT | _____ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| RINSE FLUID | _____ <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| MACHINE OPERATION | |
| MACHINE RUNNING CORRECTLY? | <input type="checkbox"/> MULTIPLE CYCLES RUN, NO ISSUES |
| CHEMICAL DOSAGE CORRECT? | <input type="checkbox"/> CORRECTLY FLOWING INTO MACHINE, NO FOAMING |
| ALL OPERATIONS CORRECT? | <input type="checkbox"/> FILL LEVEL CORRECT, NO DRAINAGE ISSUES |
| OPERATOR TRAINING | |
| ENSURE THAT THE CUSTOMER HAS BEEN GIVEN THE OPERATION MANUAL AND WALL CHART, AND IS AWARE OF THE IMPORTANCE OF BOTH USING AND CLEANING THE MACHINE CORRECTLY. | |
| START UP | <input type="checkbox"/> |
| PRE-RINSE AND RACKING | <input type="checkbox"/> BETTER TO RINSE PLATES THAN REMOVE WASTE FROM MACHINE |
| MACHINE USE AND CYCLE SELECTION | <input type="checkbox"/> USE LONG CYCLE WHERE POSSIBLE |
| DRAINING THE MACHINE | <input type="checkbox"/> DRAIN THE MACHINE DAILY |
| SHUT-DOWN AND DAILY CLEANING | <input type="checkbox"/> CHECK WASH ELEMENTS HAVE COOLED BEFORE CLEANING |
| WEEKLY MAINTENANCE | <input type="checkbox"/> FULL MACHINE CLEAN INCLUDING WASH/RINSE ARMS |
| PLANNED SERVICNG | <input type="checkbox"/> IMPORTANCE OF HAVING MACHINE SERVICED REGULARLY |

Installation Troubleshooting

Door not closing properly

- Level the dishwasher.

Machine not starting or filling

- Ensure water supply to machine is turned on.
- Ensure power supply to machine is turned on.
- Check that the water inlet hose isn't twisted or kinked.

Cycle taking too long

- This machine ships with Thermostop enabled, which allows a cycle to be started at any time, even if the rinse water is not up to required temperature. To ensure a hygienic result, the wash cycle continues to run until the rinse temperature reaches the required 83 °C. At this stage washing will stop and the machine will begin rinsing to complete the cycle.
- Check inlet water temperature is not too low as per our specifications.

Poor wash results

- Check that there are adequate pre-rinse processes in place and staff use longer cycle options for more heavily soiled items.
- Ensure high quality non-foaming commercial dishwasher detergent has been connected at the correct dosage for your site, water quality and application. If uncertain, [consult a chemical specialist](#).
- Check that the wash arm is spinning freely and is not being obstructed.
- Ensure that the wash temperature is between 60°C and 65°C.

Chemical residue on items after the cycle

- Check that nothing is obstructing the wash & rinse arms from rotating.
- Check the rinse fluid dosage is not too high. If uncertain, please [consult a chemical specialist](#).
- Check detergent dosage is within the requirements.

Dishwasher is foaming

- Ensure there is no other soap being transferred into the machine from the sink.
- Ensure high quality non-foaming commercial dishwasher detergent has been connected at the correct dosage for your site and application. If uncertain, please [consult a chemical specialist](#).
- Allow wash water to heat to at least 60 °C prior to starting the first cycle as some commercial dishwasher chemical will foam at low temperatures.

Other equipment in the kitchen has needed filters or has scale

- Due to the high temperatures in dishwashers, scale will build up in the wash tank, on the arms and in the rinse tank. The incoming water should be treated. If uncertain, please [consult a water specialist](#).
- As with the combi-ovens, high chloride levels will do irreversible damage to a number of the components inside a commercial dishwasher. The incoming water should be appropriately treated. If uncertain, please [consult a water specialist](#).

Cycle times not suitable for items being washed

- Some sites may require longer or shorter cycles depending on the items being washed and the soil levels. Cycle lengths can be adjusted by a qualified service agent accessing the WI-200 Electronic timer. For adjustment instructions refer to the adjustment section of the service manual for this model or the WI-200 Timer service manual.

Operator Use Guide

START

- Turn on at wall.
- Ensure the Upstand (2) and Wash Pump Filter (1) are firmly in place.
- Check the Scrap Trays (3) are in place and shut door.
- Turn the Selector Switch to any Cycle (I, II or III).
- Power light glows red and machine fills automatically.
- Once full, rinse heating starts.

OPERATION

- Select required Cycle of I (2 minutes) , II (4 minutes) or III (6 minutes).
- Load items into the machine and shut door.
- Press Start Button to start machine.
- Start Button glows green while machine operates.
- When Start Button goes out, the cycle is complete.

NOTE: The machine may be started while the rinse water is being heated – the machine will continue to run the wash cycle until the rinse water is up to temperature.

SHUT DOWN - EVERY NIGHT

- Turn Cycle Selector to 0 and turn off the power from the wall.
- Remove Scrap Trays (3) and Upstand (2) to drain the Wash Tank.
- Once the Wash Tank is fully drained remove and rinse Wash Pump Filter (1) before replacing back into the machine along with the Upstand (2) and Scrap Trays (3).

CLEANING – AT LEAST ONCE A WEEK

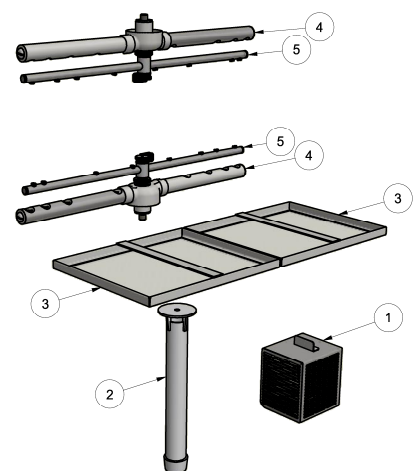
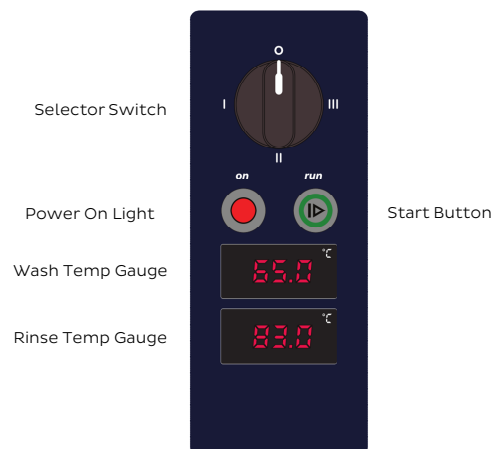
Remove, rinse and replace when machine has cooled down:

| | |
|-------------------|---|
| Wash Pump Filters | 1 |
| Drain Upstand | 2 |
| Scrap Trays | 3 |
| Wash Arms | 4 |
| Rinse Arms | 5 |

Inspect and clear all jets in the upper and lower Wash/Rinse Arms using a small object such as a toothpick where necessary to remove any blockages prior to rinsing.

SUGGESTED BEST PRACTICE

- | | |
|-----------|---|
| Pre-rinse | Scrape and/or rinse trays, plates & glasses in cool water. |
| Chemical | Use a good quality non foaming commercial detergent and drying agent – do not use domestic detergents which will cause the wash tank to foam. |



Operator Troubleshooting

| Issue | Cause | | | | | | | | | |
|----------------------------|-------------------|------------------------------|-------------------|---------------------|------------------------------|-------------------------|------------------------------|----------------------------|------------------------------|----------------------|
| | POOR PRE-SCRAPING | CARRY OVER OF SOAP FROM SINK | OVERLOADING RACKS | INADEQUATE CLEANING | DRAIN UPSTAND NOT PLUGGED IN | WASH/RINSE JETS BLOCKED | WASH/RINSE ARMS NOT ROTATING | DETERGENT DOSAGE LOW/HIGH* | RINSE FLUID DOSAGE LOW/HIGH* | POOR WATER QUALITY** |
| DISHES NOT CLEAN | ● | | ● | ● | | ● | ● | ● | | ■ |
| STAINING | ● | | | | | ● | ■ | ● | | ■ |
| FOAMING | | ● | | ■ | | | | ■ | ■ | |
| PROTEIN BLOOM | ■ | | ■ | ● | | ■ | ■ | ■ | | |
| DIRTY MACHINE | ● | | | ● | | ■ | ■ | ■ | | ■ |
| FOOD RESIDUE ON WARE | ■ | | ● | ■ | | ■ | ■ | ● | | |
| FILM/SPOTS ON WARE | | | ■ | ■ | | ■ | ● | ● | | ■ |
| DETERGENT RESIDUE | | | | | | ■ | ● | ● | | |
| GREASY FILM/NO FIZZ | | | ■ | | | | | | ● | ■ |
| HIGH DETERGENT USE | | | | ■ | ● | | | ● | | |
| HIGH RINSE FLUID USE | | | | ■ | | | | | ● | |
| WET WASHWARE | | | ● | ■ | | | | | ● | |
| SCALE BUILD UP IN MACHINE | | | | ● | | | | ■ | | ● |
| FILTERS ON OTHER EQUIPMENT | | | | | | | | | | ● |

● Likely cause ■ Possible cause

* For issues most likely due to incorrect chemical dosages or other chemical issues, we recommend you consult your chemical supplier and/or a local chemical expert prior to calling in a dishwasher technician.

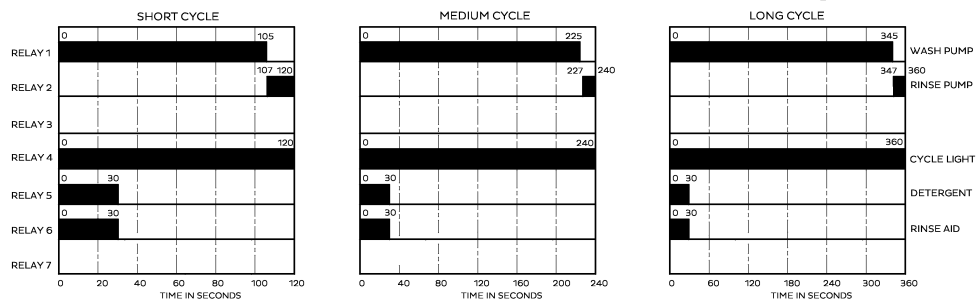
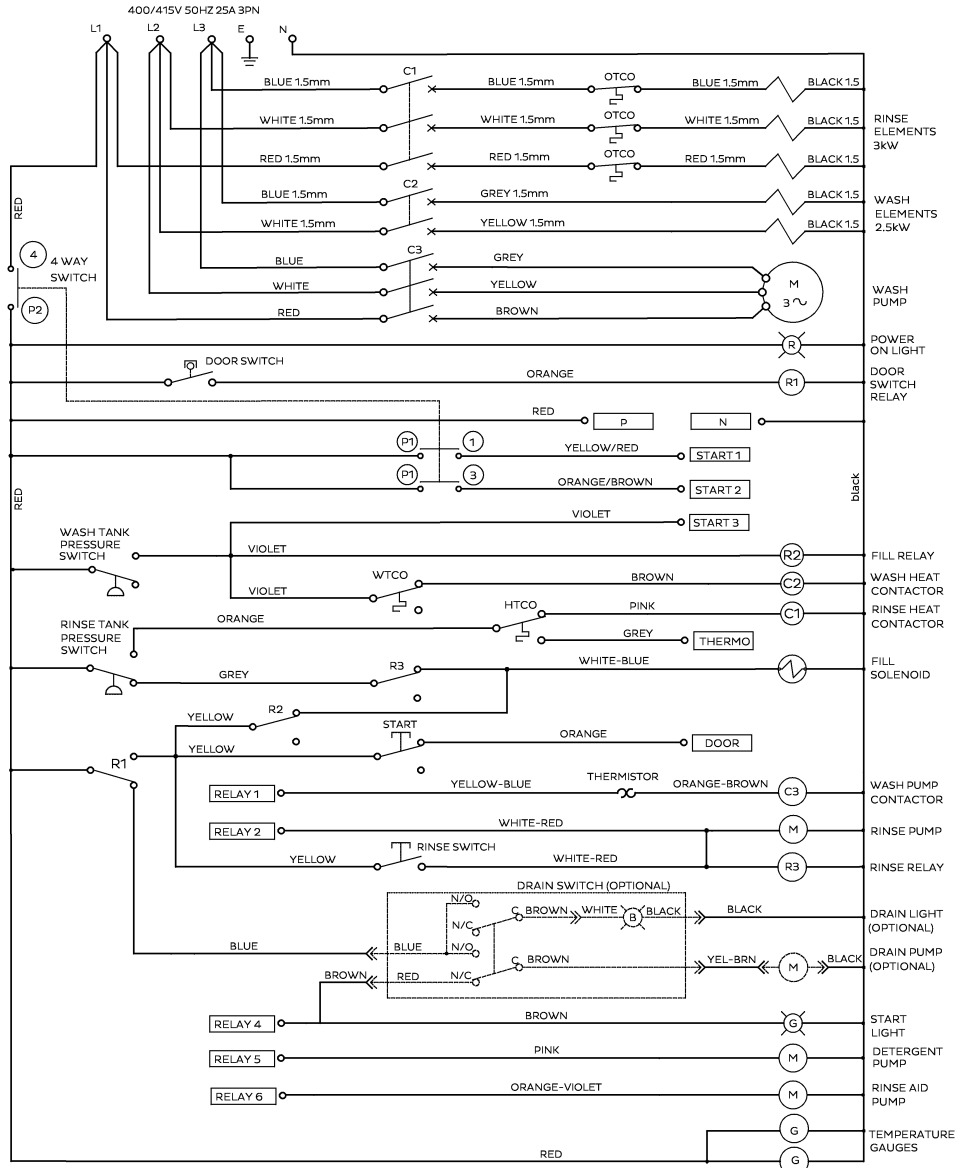
** For issues that are likely due to poor water quality (scale building up, filters being required on other kitchen equipment etc.), we recommend you consult a local water specialist prior to calling in a dishwasher technician.

IF PROBLEMS PERSIST CONTACT STARLINE SERVICE ON 0800 STARLINE

Schematic Diagram

AL8-4(S) / PW1-4 Schematic Diagram

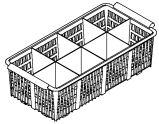
- Part #: 010183
- Date: 19/07/2018
- Version: 1-B



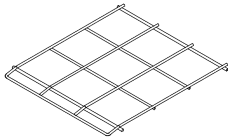
Accessories

PW1 Accessories

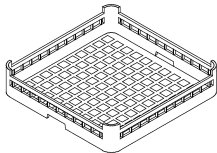
- Part #: PW1 AC
- Date: 26/11/2018
- Version: 1-C



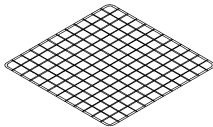
C660508
CUTLERY BASKET CP8



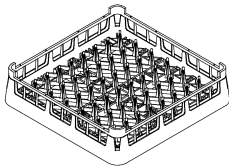
824 30001
PW1 RACK



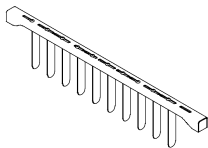
600 70029
CUPRACK CB 500mm X 75mm high



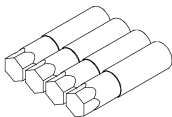
0452
CUP COVER W/P 435mm FOR 500mm RACK



600 70028
DISHRACK



824 10130
PW1 TINE BAR ASSEMBLY



600 90023
SS LEG (63D x 180-250mm x M12)



600 60080
2m HOSE ANGLE END

Spare Parts

| DESCRIPTION | PART NO | REC. STOCK |
|----------------------------------|-----------|------------|
| Cabinet & Door | | |
| • Control Panel Sub-Assembly | 354 14008 | 1 |
| • Control Panel Label | 400 70189 | 1 |
| • Front Panel | 351 21030 | 1 |
| • Lower Rear Safety Panel | 824 20136 | 1 |
| • Upper Rear Safety Panel | 824 20135 | 1 |
| Controls & Indicators | | |
| • Contactor | 600 30337 | 1 |
| • Door Reed Switch | 600 30183 | 1 |
| • Knob 4 Position | 600 30524 | 1 |
| • Power Light | 600 30529 | 1 |
| • Pressure Switch Rinse Tank | 600 30478 | 1 |
| • Pressure Switch Wash Tank | 600 30479 | 1 |
| • Relay 2 pole 240V | 600 30080 | 1 |
| • Relay Base | 600 30081 | 1 |
| • Start Button | 600 30566 | 1 |
| • Switch 4 Position | 600 30269 | 1 |
| • Temperature Gauge | 600 30546 | 1 |
| • Terminal Strip 6 Way | 3229 | 1 |
| • Switch Single Pol Biased Black | 3035 | 1 |
| • Timer Electronic | 600 30513 | 1 |
| Heating Components | | |
| • Over Temperature Thermostat | 600 30088 | 1 |
| • Rinse Element 6 kW | 600 30496 | 1 |
| • Rinse Tank Assembly | 400 10351 | 1 |
| • Rinse Thermostat | 30201 | 1 |
| • Wash Element 2.5 kW | 600 30159 | 1 |
| • Wash Thermostat | 30201 | 1 |
| Hoses | | |
| • Detergent Hose | 600 30148 | 1 |
| • Pressure Switch Hose | 3067 | 500mm |
| • Rinse Hose | 600 60073 | 3000mm |
| • Upper Wash Hose | 6195 | 140mm |
| • Lower Wash Hose | 6195 | 60mm |
| • Wash Pump Inlet Hose | C200359 | 1 |
| • Wash Pump Outlet Hose | 61941 | 140mm |
| • UHB25 Hose Bend | 600 90074 | 1 |

Spare Parts

| DESCRIPTION | PART NO | REC. STOCK |
|-----------------------------------|-----------|------------|
| Pumps and Solenoids | | |
| • Detergent Pump | 600 30526 | 1 |
| • Detergent Squeeze Tube | 600 30134 | 1 |
| • Rinse Aid Pump | 600 30480 | 1 |
| • Rinse Aid Squeeze Tube | 600 30119 | 1 |
| • AVB | 600 60053 | 1 |
| • Solenoid Valve | 3342 | 1 |
| • Wash Pump | 3906 | 1 |
| • Rinse Pump | 600 30400 | 1 |
| Wash Tank Components | | |
| • Drain Upstand | 400 10145 | 1 |
| • Rack Assembly | 824 10005 | 1 |
| • Locknut Wash Arm | 280409C | 2 |
| • Rinse Arm Assembly | 400 10239 | 1 |
| • Rinse Arm Bush | C190624 | 2 |
| • Rinse Arm Cap Screw | 261004C | 2 |
| • Rinse Arm End Plug | 400 30200 | 1 |
| • Rinse Arm Spring Retainer Screw | C450218 | 2 |
| • Scrap Tray | 351 12003 | 1 |
| • Slip Ring AL(3) Black Acetal | 400 30191 | 2 |
| • Wash Arm Assembly | 815 10007 | 1 |
| • Wash Arm Bush | 190621C | 4 |
| • Wash Arm End Screw | 600 80072 | 4 |
| • Wash Pump Inlet Filter | 352 10026 | 1 |
| • Wash Spindle AL | 400 30362 | 1 |

Information supplied in this manual is copyright. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical without the express permission of the author/publisher

Manufactured in New Zealand by Washtech Ltd.

WASHTECH

414 Rosebank Road
Avondale
Auckland 1026
New Zealand

PO Box 90548, Auckland

24HR Service 0800 Starline

Tel 09 829 0930

Fax 09 829 0935

E-mail info@washtech.co.nz

web www.starline.co.nz

ISO9001

All Washtech products are designed and manufactured by Washtech using the internationally recognised ISO9001 quality management system, covering design, manufacture and final inspection, ensuring consistent high quality at all times.

In line with policy to continually develop and improve its products, Washtech Ltd reserves the right to change specifications and design without prior notice.

an Ali Group Company



The Spirit of Excellence