

PW2C

WIDE BODY FRONT LOADING WAREWASHER
C/W HEAT RECOVERY UNIT
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.

The machine is designed solely for cleaning crockery (porcelain, glass, ceramic, temperature-resistant plastics, stainless steel or similar) from the food industry.

This machine is not intended for washing: containers that do not come into contact with foodstuffs, animals, textiles or foodstuffs intended for further consumption.

We have checked that the contents of this document correspond to the model described. There may be discrepancies nevertheless, and no guarantee can be given that they are completely identical. The information contained in this document is reviewed regularly and any necessary changes will be included in the next edition. We welcome suggestions for improvement.

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 the author / publisher.

Contents

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. Notes



Safety Instructions

Installation

- Use qualified, skilled personnel.
- Follow installation instructions.
- Connect to correct voltage and supply current.
- 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 not intended for use as a stepladder – do not stand on open door.

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



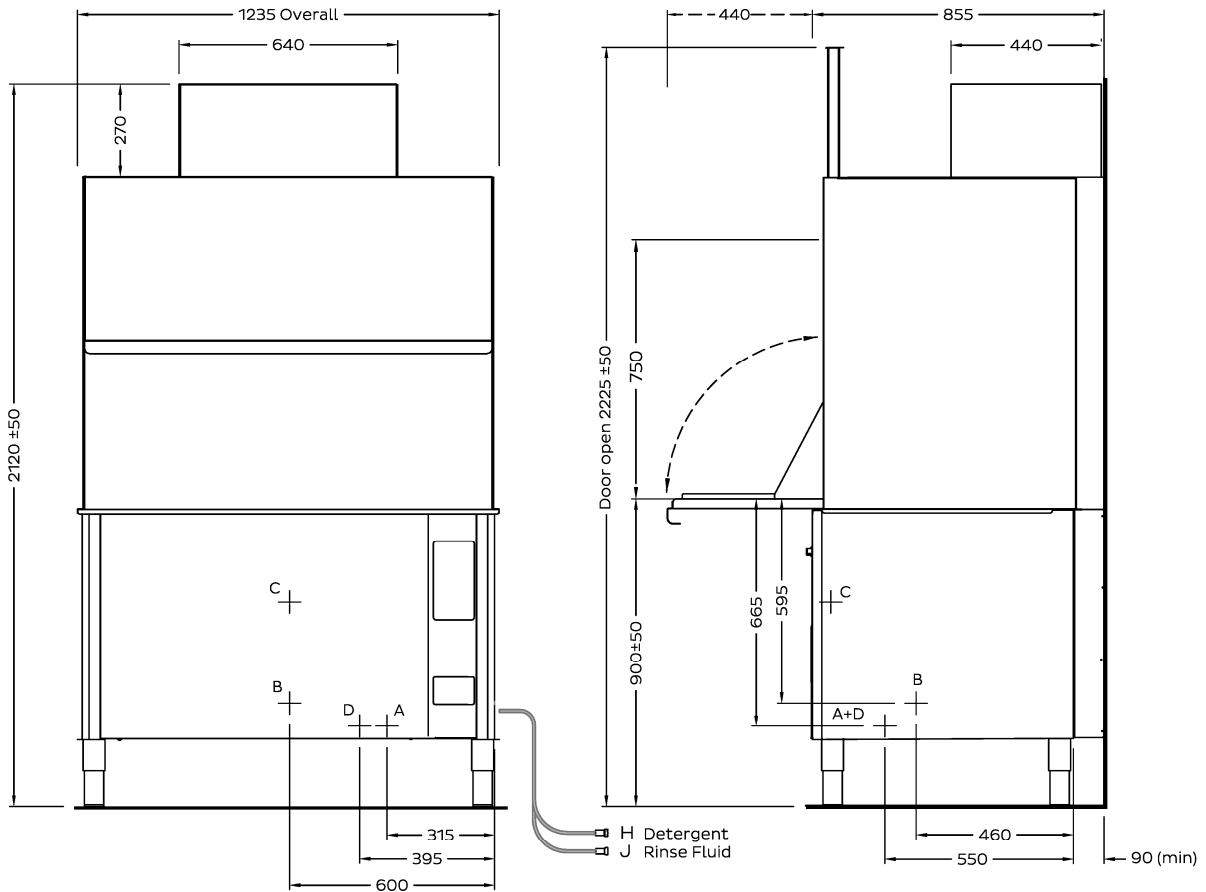
Equipment contains dangerous voltages and can be hazardous if installed or operated incorrectly. Non-compliance with Warnings or failure to follow the instructions contained in this manual can result in loss of life, severe personal injury or serious damage to property.

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.

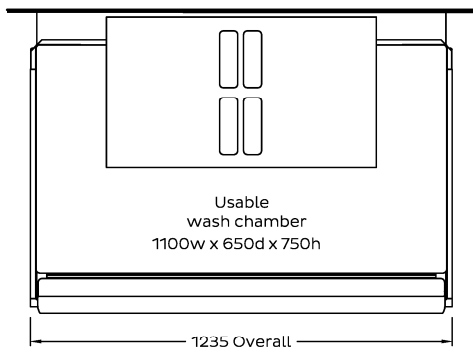
Installation Diagram

PW2C Installation Diagram

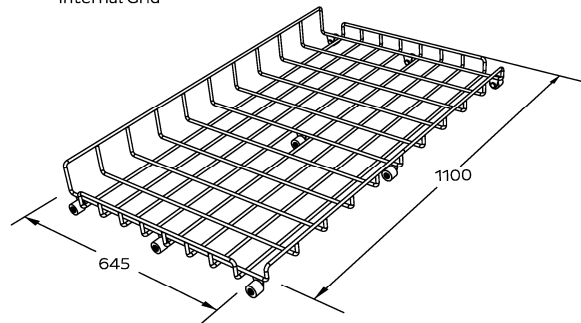
- Part #: SPW20021
- Date: 25/09/2018
- Version: 3-C



Bench Detail



Internal Grid



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-	30A
D	Cold water 20°C	200-350 kPa	3/4"

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 Operation - Cold

Incoming water should be within the following standard requirements:

- Temperature: 20°C.
- 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: no greater than 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 4.0 litres per cycle.
- Backflow prevention: Atmospheric Vacuum Breaker (AVB) fitted standard.

Inlet Water Fill - Hot

Incoming water should be within the following standard requirements:

- Temperature: 65°C.



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 20 litres per minute.
- Pressure: no greater than 350 kPa.

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

- Backflow prevention: Atmospheric Vacuum Breaker (AVB) fitted standard.

Installation Instructions

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/30A 400V 50Hz via switched outlet adjacent to machine.

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 installation diagrams – run waste directly behind the machine or through open base.
- An S&P trap will need to be fitted at the drain waste – refer point B on the installation diagram.
- With a standard S&P trap the drain connection height will be no less than 600mm below the bench height on the model (or no higher than 300mm if installed in standard 900mm high benching).



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 sink 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"/> HIGH TEMP SOLENOID IF ABOVE RANGE
PRESSURE CORRECT (< 350 kPa)?	<input type="checkbox"/> LIMITER FITTED IF ABOVE RANGE, RINSE PUMP IF BELOW
FLOW RATE CORRECT?	<input type="checkbox"/> RINSE PUMP FITTED IF BELOW REQUIREMENT
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/30A 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.

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/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 the model or the WI-200 Service Manual.

Operator Use Guide

START

- Turn on at wall.
- Ensure the Upstand (2) and Wash Pump Filters (3) are firmly in place.
- Check the Scrap Trays (1) 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 (2.5 minutes), II (4.5 minutes) or III (6.5 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 (1) and Upstand (2) to drain the Wash Tank.
- Once the Wash Tank is fully drained remove and rinse Wash Pump Filters (3) and Scrap Trays (1) before replacing back into the machine along with the Upstand (2).

CLEANING – AT LEAST ONCE A WEEK

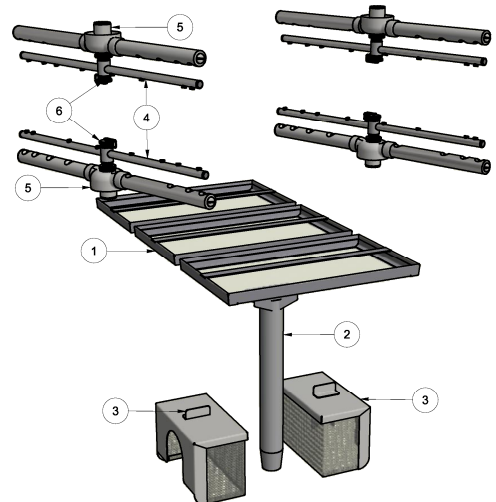
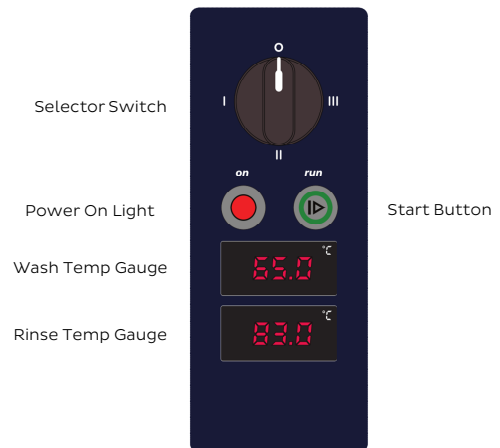
Remove, rinse and replace when machine has cooled down:

Scrap Trays	1
Drain Upstand	2
Wash Pump Filters	3
Rinse Arms	4
Wash 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.

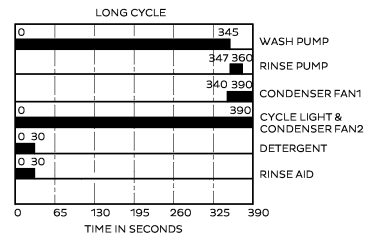
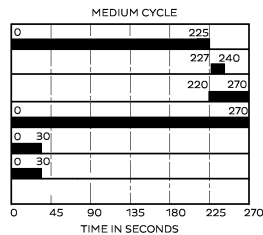
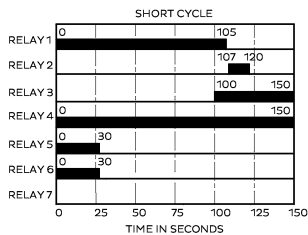
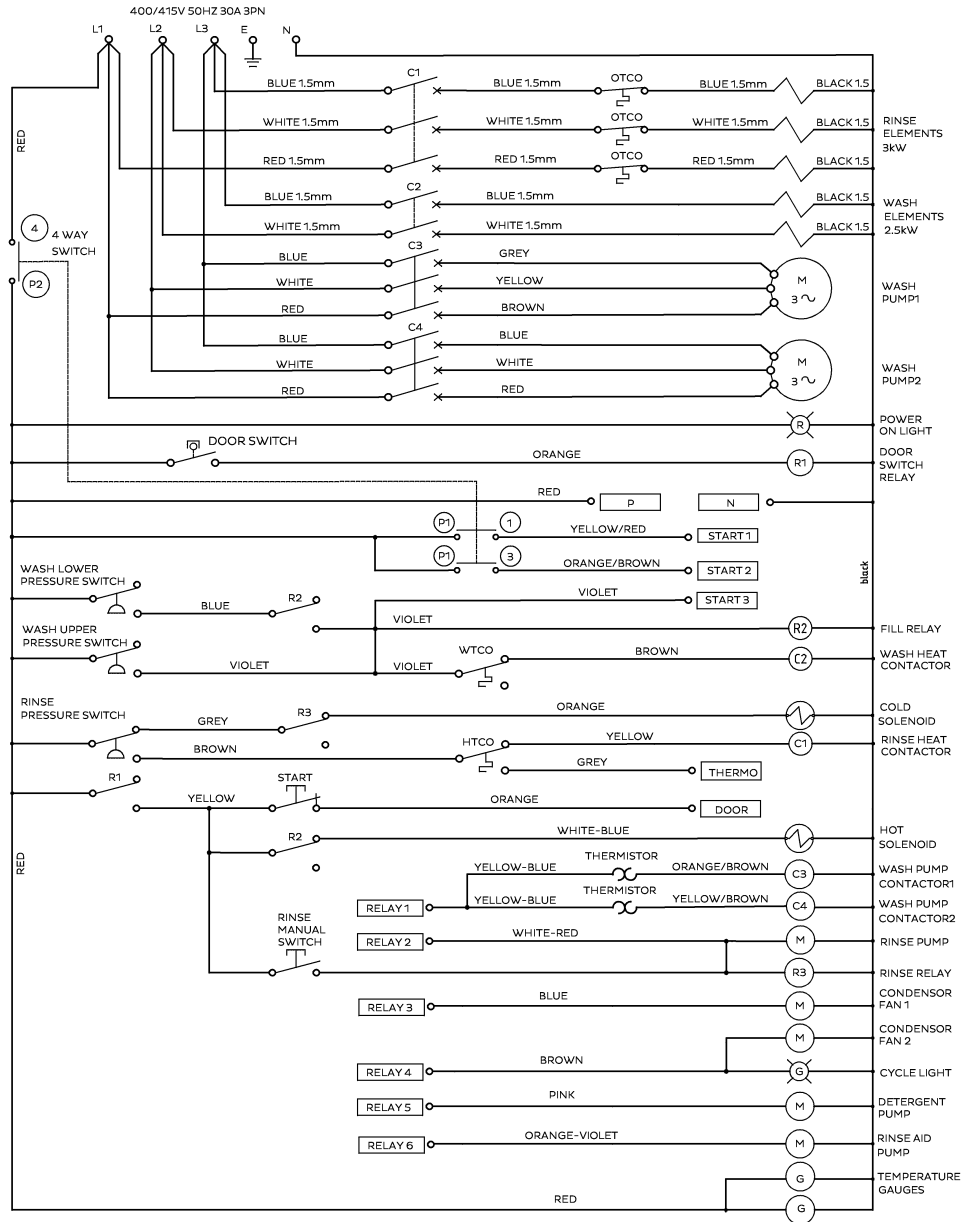
** For issues that are likely due to poor water quality (scale building up, filters being required on other kitchen equipment etc.), we recommend you consult a local water specialist prior to calling in a dishwasher technician.

IF PROBLEMS PERSIST CONTACT STARLINE SERVICE ON 0800 STARLINE

Schematic Diagram

PW2C / PW3C(S) Schematic Diagram

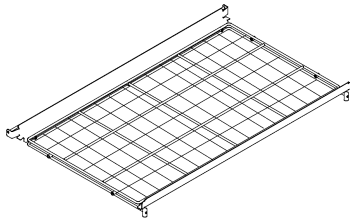
- Part #: 010182
- Date: 28/09/2017
- Version: 1-A



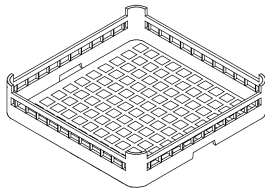
Accessories

PW2C Accessories

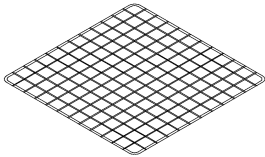
- Part #: PW2C ACW
- Date: 13/12/2017
- Version: 1-C



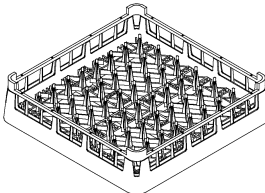
825 10004
ASSY PW2 POTWASHER RACK GRID



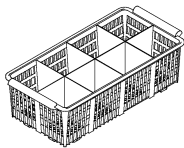
600 70029
CUPRACK CB 500mm X 75mm high



K0452
CUP COVER W/P 435mm FOR 500mm RACK



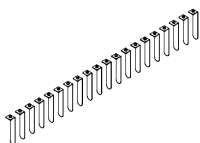
600 70028
DISHRACK



C660508
CUTLERY BASKET CP8



826 10230
PW2 TINE BAR



824 10229
TINES x 20

Spare Parts

DESCRIPTION	PART NO	REC. STOCK
Cabinet & Door		
• Control Panel Sub-Assembly	354 14008	1
• Control Panel Label	400 70204	1
• Front Panel	826 25138	1
• Left Side Panel	826 20150	1
• Right Side Panel	824 20149	1
• Lower Rear Panel	824 20153	1
• Upper Rear Panel	824 20152	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	600 30478	1
• Pressure Switch Wash	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 -6	1
• Test Switch	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 roll
• Pressure Switch Hose	3067	500mm
• Rinse Hose	600 60073	2000mm
• Upper Wash Hose	6195	100mm
• Lower Wash Hose	6195	145mm
• Lower Wash Casting Hose	6195	50mm
• Left Wash Pump Inlet Hose	C200359	1
• Left Wash Pump Outlet Hose	61941	140mm
• Right Wash Pump Outlet Hose	200315C	1
• Right Wash Pump inlet Hose	61942	80mm
• Break Tank Hose	400 10361	1

Spare Parts

DESCRIPTION	PART NO	REC. STOCK
Pumps and Solenoids		
• Detergent Pump	600 30094	1
• Detergent Squeeze Tube	600 30134	1
• Rinse Aid Pump	600 30400	1
• AVB	400 0010	1
• Solenoid Valve	3342	1
• Wash Pump	3906	1
• Rinse Pump	600 30400	1
• Condenser Fan	600 30503	1
• Condenser Coil	600 90160	1
Wash Tank Components		
• Drain Upstand	400 10145	1
• Rack Slide Assembly	825 10004	1
• Locknut Wash Arm	280409C	2
• Rinse Arm Assembly	815 10013	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	827 12003	1
• Slip Ring AL(3) Black Acetal	400 30191	2
• Temperature Gauge Probe Clamp	400 20066	1
• 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