

PW1

Series 3

HIGH PERFORMANCE POTWASHER



Service Manual

Foreword

User documentation

Please read this manual and keep it in a safe place for future reference.



WARNING

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



IMPORTANT

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



IMPORTANT

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

Warranty Registration

Complete the information below for quick reference.

Model Number _____ Serial Number _____

Purchased from _____ Date of Purchase _____

If you require further information regarding authorised service providers or recommended detergent suppliers in your region, or have any other queries, please do not hesitate to contact us.

**IMPORTANT**

TO VALIDATE YOUR WARRANTY, PLEASE COMPLETE AND RETURN THE WARRANTY REGISTRATION CARD WITHIN 30 DAYS FROM THE DAY OF PURCHASE.

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Contents

Safety Instructions	4
Installation	5
Installation Diagram	6
Installation Checklist	7
Maintenance Checklist	8
Operating Instructions	9
Dishwashing Procedures	10
Troubleshooting Chart	12
Components	14
Location and Access	14
Timer.....	15
Rinse Thermostat	16
Wash Thermostat.....	17
Pressure Switch.....	18
Wash Pump.....	19
Rinse Pump.....	20
Detergent Pump.....	21
Assembly Diagrams	22
Wiring Tray Assembly.....	22
Control Panel Assembly.....	23
Wash Assembly	24
Rinse Assembly	25
Rinse Tank Assembly	26
Solenoid Valve Assembly.....	27
Schematic Diagram	28
Wiring Diagram.....	30
Spare Parts	32
Accessories	34
Appendices	35
Rinse Aid Injector Retrofit	35
Drain Pump Retrofit	36
Revisions	37

Safety Instructions



WARNING

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

- ◆ 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
- ◆ This appliance is not 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

Service/Repair

- ◆ Under no circumstances the user should attempt to carry out repairs
- ◆ All service/repair work must be carried out by qualified personnel only

Installation



WARNING

Installer must be suitably qualified and ensure compliance with all codes and standards including AS/NZS3500.1.



Failure to comply even partially with installation instructions may void the warranty.

Positioning

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

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

Water Supply

Hot water temperature	65°C ± 5°C
Connection	15 mm (1/2" BSP Male)
Flow rate minimum	20 litres per minute
Consumption per cycle	3.5 litres approximately
Backflow prevention	Atmospheric Vacuum Breaker
Pressure	200-350 KPa = 30-50 Psi.

Above this range fit pressure limiter. Don't use small diameter plastic supply lines. FLUSH supply line before connection. Poor quality supply or excessive water hardness may affect performance or damage machine – filtration and/or softening is recommended.

Waste

40 mm gravity drain – refer to point B on the installation diagram – run waste directly behind the machine or through open side panels or base.

Power

Machine requires 3 Phase, Neutral and Earth, 400/415V, 15A/ph, 50Hz, permanently wired via wall switch mounted adjacent to machine. Wash pump rotation must be checked after installation to ensure correct direction (excessive noise and damage with incorrect direction).

Detergent

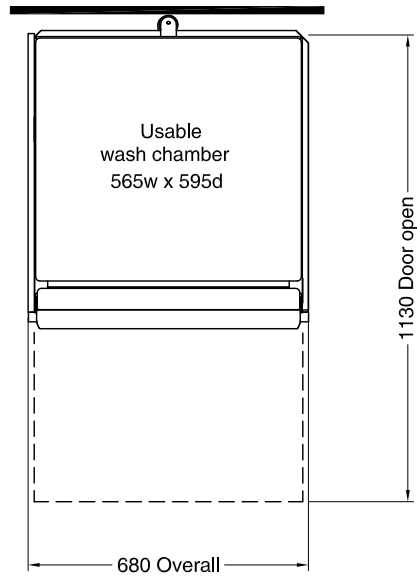
Insert pump inlet hose into container of commercial low foam detergent. Open machine door and switch machine on. Press and hold detergent prime switch behind front cover until chemical flows into machine.
Commercial detergents can be hazardous – read instructions and handle with care.

Installation Checklist

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

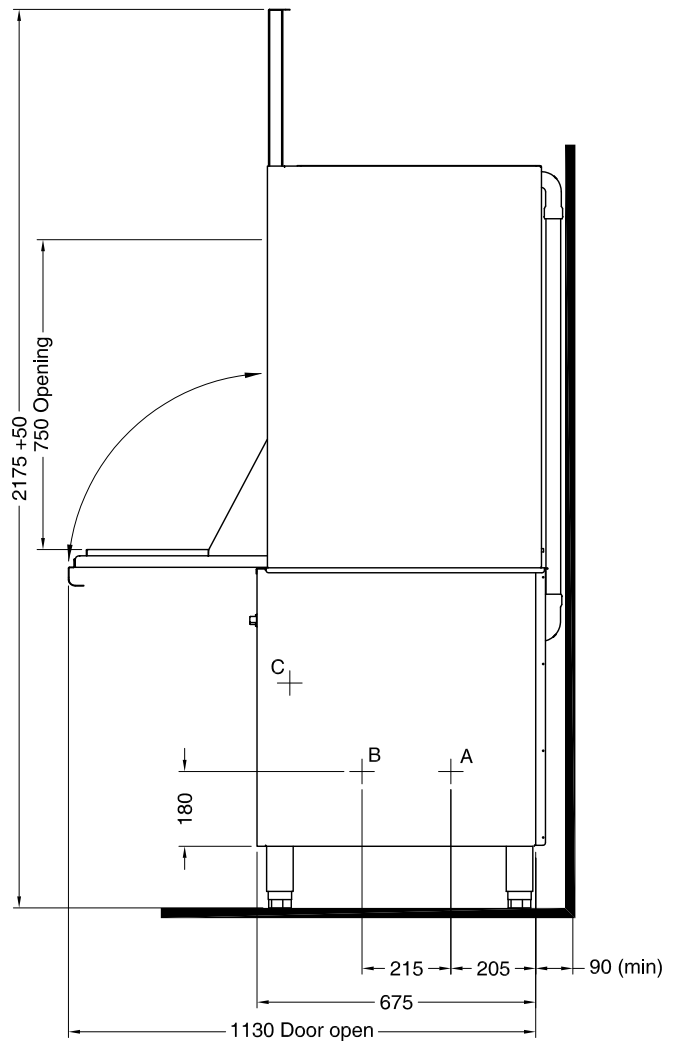
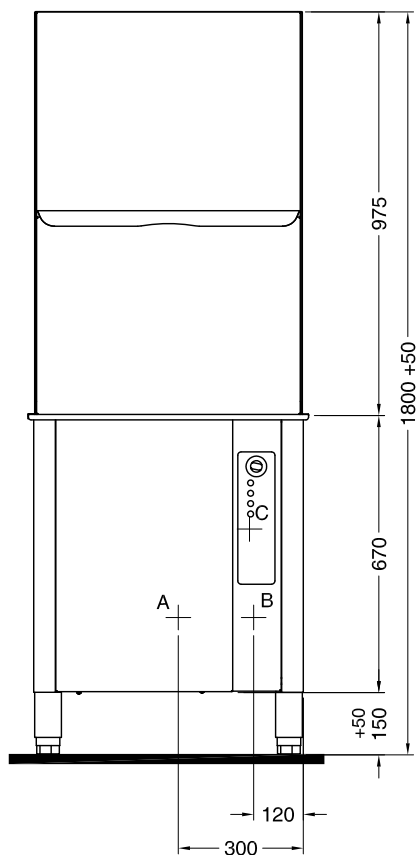
PW1S INSTALLATION DIAGRAM

PW1S INST 19-2-15 3 A



- A Hot water supply
- B Waste
- C Power supply

All Dimensions in mm



Installation Checklist

CHECK	OK / NOTES				
Delivery					
Supplied complete		no transit damage			
Position					
Level and stable		on sound, waterproof, self draining floor			
Water					
Isolator valve fitted		Accessible, all fittings sound, no leaks			
DCVs fitted (Washtech only)		Correct direction			
Temperature		65 ± 5°C			
Flow rate		Minimum 20 litres per minute			
Pressure		200-350 kpa, limiter fitted if above this range			
		Booster fitted if below this range			
Cold water when required		Pressure not above 350 kpa			
Hardness		Filter or softening if required			
Power					
Isolating switch		Fitted, functional and accessible			
Supply as specified		Voltage, current, circuit breaker			
Waste					
Usually 40 mm		Sound, no leaks			
Air gap on pumped drain					
Chemicals					
	product name	container	no leaks	primed	conc.OK
Detergent					
Rinse Aid					
Machine operation					
Run several cycles					
Confirm correct operation		Including correct fill levels			
Operator training					
Confirm Operator has copy of Operator Manual and is familiar with procedures					
Start-up			Model / Serial		
Pre-rinse and racking			Owner		
Machine operation			Location		
Drain			Technician		
Clean			Date		
Shut-down			Signed		

Maintenance Checklist

CHECK

OK / NOTES

Installation – use Installation Checklist on previous page to check all services, operator training and chemical issues

Services		water, power, drain etc.
Operator		trained / has instructions
Chemicals		squeeze tube checked – replacement recommended every 6 months, product type, container, leaks etc.

General conditions

Cleanliness of machine		daily maintenance
Presence of pests		
Leaks		

Operation

			Temp °C	Amps
Elements	Wash		60	
	Rinse		83	
Pumps	Wash		n/a	
	Rinse		n/a	
	Drain		functional	n/a
Water Flow	Wash arms and jets		jets clear, good rotation, bushes OK	
	Rinse arms and jets		jets clear, good rotation, bushes OK	
Cycle	Fill levels		pressure switch settings	
	Drain operation		upstand/pump	
	Noise		sounds OK	
	Recovery between cycles			
Controls	Door switch		including auto start if fitted	
	Switches, lights, gauges		all sound and functional including door/s	
Performance	Wash and rinse		effective	

Electrical

Safety test		if required
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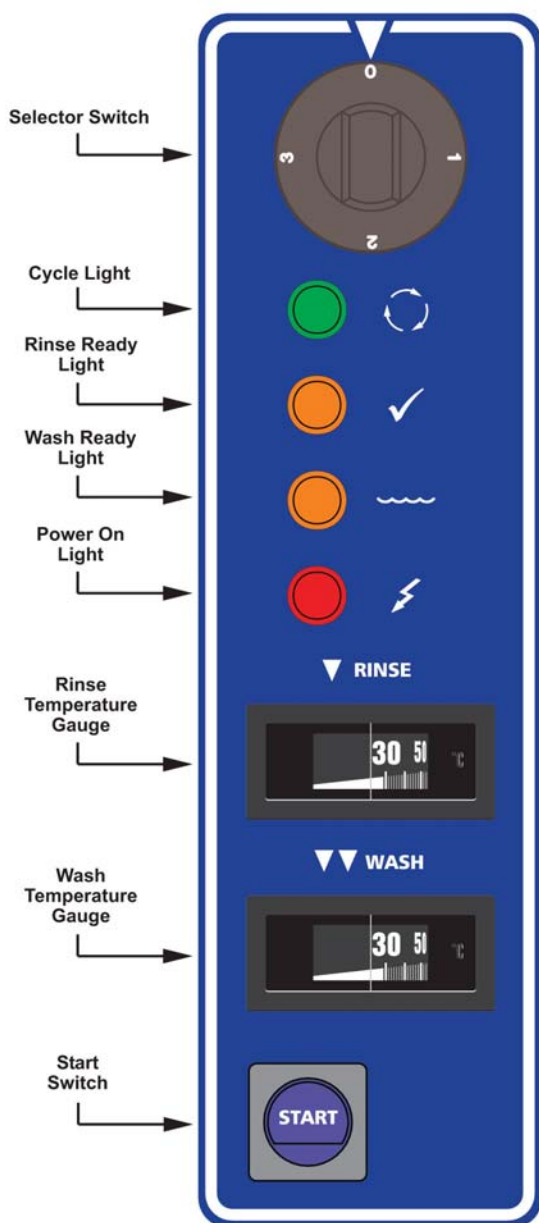
Cabinet

Door / Handle / Catch		operational
Rack slide		good rack entry / withdrawal

Comment / Action Required

Model / Serial		Technician	
Owner		Signed	
Location		Date	

Operating Instructions



Start up

Fit drain upstand, wash pump filter, scrap trays and shut door.

Turn wall power switch on and select any cycle (1, 2 or 3).

Power light glows red and machine fills automatically.

Wash Ready light (water symbol) glows amber when wash tank is ready.

Rinse Ready light (tick symbol) glows amber when the machine is up to required temperature and ready to run.

Operation

Select required cycle (1, 2 or 3 for 2, 4 or 6 minutes cycle accordingly).

Try cycle 3 initially and switch to faster cycles only if necessary.

Load rack into machine and close door.

Press Start button to start the machine.

Cycle light glows green while machine operates.

When Cycle light goes out, cycle is complete.

Open door and remove rack.

NOTE: Machine will not operate unless Ready lights are on.

Shut down every night

Turn machine and wall power switches off.

Remove drain upstand to drain wash tank.

Remove scrap trays and wash pump filter and rinse clean.

Replace drain upstand, filter and scrap trays.

Dishwashing Procedures

for best results

Note: these are general instructions to assist in getting the best performance from Starline dishwashers – some comments and / or illustrations may not apply to every unit.

Installation

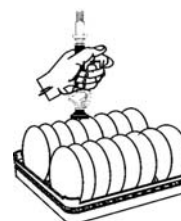


Read the Operator Manual. Correct installation, including an adequate supply of water at the correct temperature and pressure is essential for effective operation of your machine. Refer installation instructions for details. Drain hose outlet height is important on some models. Always install on a sound self-draining floor. Water softening is recommended in hard water areas - especially for glasswashing.

Pre-rinsing



Pre-scraping of dishes is required by hygiene regulations. The best method is to pre-rinse with a pre-rinse spray unit - or alternatively by scraping or dunking in water.



Cutlery Procedures

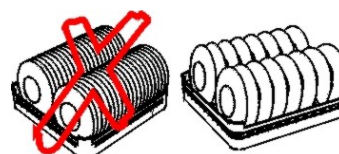


Pre-soak cutlery in warm water, preferably containing cutlery pre-soak compound - refer your chemical supplier.

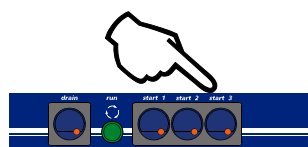
Do not overfill cutlery containers. Cutlery should be loose with handles down. Sort after washing rather than before. Cutlery of only one type nests together and obscures wash water.

Racking Procedures

Do not overload racks, minimize the overlap of crockery. Cycle times are short and water consumption per cycle low - so there is no advantage in overloading racks.



Cycle Times



For multi-cycle machine use the longest cycle whenever possible. Note that water consumption does not increase with longer cycles. Only choose shorter, faster cycles when necessary.



Detergent

Use of correct type and quantity of low foaming commercial grade detergent is essential to the performance of the machine. We strongly recommend that you use a professional dishmachine chemical supplier - and will be pleased to recommend a supplier in your region. Discuss with them the use of cutlery pre-soak solution, detergent and drying agent.



Dishwashing Procedures

for best results

Drying

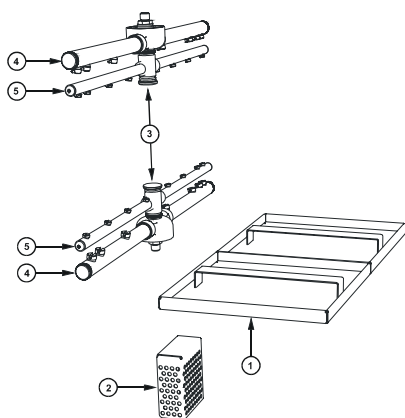


Single tank commercial dishwashers do not have a drying cycle. However, the machines do rinse at high temperatures which promote fast drying particularly when drying agents are used. We recommend prompt removal of the rack from the machine - leave the rack on the bench for 2 to 3 minutes before emptying. This time will be reduced with correct use of drying agent (rinse fluid) which reduces water surface tension and allows water to drain quickly from washware. For advice on drying agents and injectors refer to your chemical supplier.

Daily Cleaning

It is essential that the machine is drained and cleaned at the end of each day. Drain the machine then remove, clean and replace filters as per the operating instructions. Regularly check the wash and rinse jets and clean them if necessary – see below.

Regular Cleaning



Remove scrap trays① and wash pump inlet filter②, where fitted, and rinse or brush clean.

Remove wash and rinse arms by undoing the central thumbscrews③. If necessary, remove the end cap screws④ from the wash arms and the end screws⑤ from the rinse arms and flush the arms with water and/or use a toothpick or paperclip to clear jets.

Note: arms and filters vary with model and may appear different from this illustration e.g. those models with plastic wash arms have removable jets for ease of cleaning.

Regular Servicing

Regular servicing of the dishwasher is absolutely essential to keep the machine in top working condition and obtain the best performance.

Please contact Washtech or your Authorised Service Provider to organize regular servicing of the dishwasher - discuss a Preventative Maintenance Agreement for optimum performance and long machine life.



Note: these are general instructions to assist in getting the best performance from Starline dishwashers – some comments and / or illustrations may not apply to every unit.

Troubleshooting Chart

PROBLEM	POSSIBLE CAUSES	REMEDY (Check/Adjust/Replace)
Filling		
Not filling	Water supply valve shut Door switch faulty Solenoid valve faulty Rinse lines blocked Pressure switch faulty	Water supply valve Door switch Solenoid valve Rinse pump, solenoid valve filter Pressure switch
Won't stop filling	Solenoid valve faulty Pressure switch set too high/faulty Pressure bell blocked, hose broken	Solenoid valve Pressure switch Pressure bell, hose, hose connections
Filling during wash cycle	Pressure switch refill level too high Upstand does not fit properly	Pressure switch Drain upstand
Heating		
Rinse not heating	Over-temp thermostat tripped Rinse thermostat settings or fault Rinse element faulty	Over-temp thermostat, rinse element Rinse thermostat Rinse element
Overheating	Thermostat adjustment Thermostat probe out of pocket	Thermostat Insert & secure probe
Wash water cold	Wash thermostat set too low Wash element faulty Machine not rinsing Rinsing but not hot Rinsing cycle too short	Wash thermostat Wash element Solenoid valve, water supply Thermostats & elements, water supply Timer
Cycle start		
Does not start	Not up to temperature Rinse thermostat faulty Door switch faulty	Give machine reasonable time initially Rinse thermostat Door switch
Cycle finish		
Rinse doesn't stop	Solenoid jammed open Timer stuck Pressure switch faulty	Solenoid valve Timer Pressure switch
Wash continues	Timer jammed	Timer / Timer motors
Cycle time		
Cycle too long	Timer faulty	Timer / Timer motors
Cycles selection (for multi-cycle machines)		
Time not changed	Selector switch faulty Advance timer motor faulty Timer micro switches faulty	Selector switch 6 sec advance timer motor T4 or T5 timer micro switches
Delays		
At start or between cycles	Rinse element faulty Water supply cold Water supply pressure excessive Rinse cycle too long	Rinse element Supply hot water Restrict supply pressure Timer

Troubleshooting Chart

PROBLEM	POSSIBLE CAUSES	REMEDY (Check/Adjust/Replace)
Drainage		
Flooding	Drain waste blocked	Drain waste
Leaks		
Leak from pumps	Seal failure	Pump seal
Leak from hoses	Hose damage	Hoses
	Hose clamp loose	Hose clamps
Splash from door	Wash arm end caps missing	End caps
	Wash jets blocked	Wash arm jets
	Wash jets missing	Wash arm jets
	Arms not rotating	Arms and bushes
	Arms not level	Arms
Wash Arms		
Not rotating	Wash jets not clean	Wash jets
	Arm bushes worn	Bushes
	Wash pump not working	Wash pump
Rinse Arms		
Not rotating	Rinse jets not clean	Rinse jets
	Arm bushes worn	Bushes
	Water supply pressure low	Water supply
	Rinse pump not working (if fitted)	Rinse pump (if fitted)
Noise		
Noisy rinse cycle	Rinse pump squeals	Low pressure / blocked water supply
Noisy wash cycle	Wash pump noisy	Wash pump including inlet filter
Performance		
Poor wash result	Detergent not used	Use quality low foam product
	Detergent pump faulty	Detergent pump
	Squeeze tube to be replaced	Detergent pump squeeze tube
	Overloading racks	Do not overload racks
	Not pre-rinsing	Use Fisher pre-rinse
	Wash arms not rotating	Remove and clean arms/check bushes
	Wash jets blocked	Remove arms and clean jets
	Low wash pressure through arms	Wash pump impellor
	Wash temperature low	Check wash /rinse heating
	Excessive soiling	Pre-rinse/use long cycle
	Unrealistic expectation	E.g. baked on soiling requires pre-soaking
Poor rinse results	Rinse jets blocked	Remove arms and clean jets
	Rinse arms not turning	Remove arms, clean jets, check bushes
	Poor racking procedures	Do not overload racks
	Excessive wash tank soil build up	Pre-rinse, change wash water regularly
Not drying	Poor wash/rinse performance	Refer above
	Low temperatures	Check heating systems
	Drying agent not used	Use quality drying agent/rinse fluid

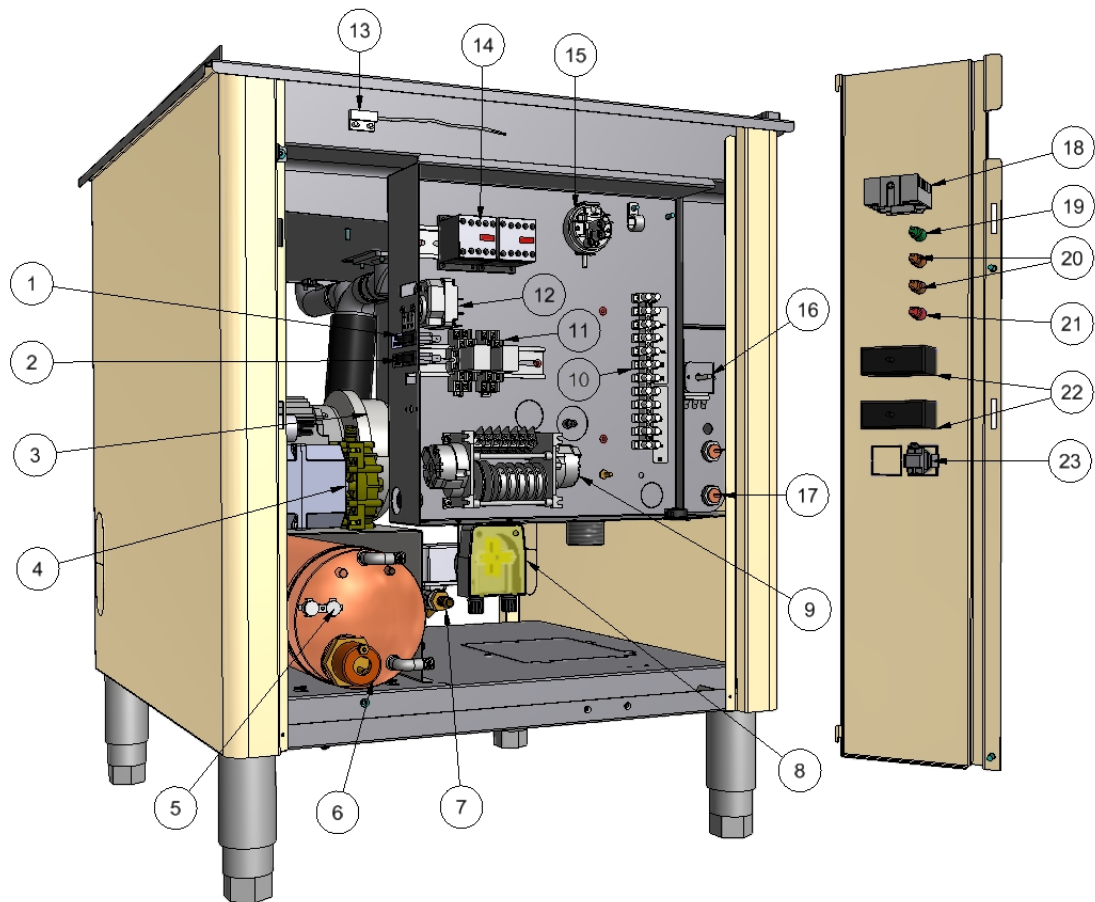
Components



WARNING

All service/repair work must be carried out by qualified personnel only.

Location and Access



- | | |
|---------------------------------|---------------------------------|
| 1. Test Switch | 13. Magnetic Door Switch |
| 2. Detergent Prime Switch | 14. Contactors |
| 3. Wash Pump | 15. Pressure Switch |
| 4. Rinse Pump | 16. Wash Thermostat |
| 5. Over Temperature Thermostats | 17. Wash Heating Element |
| 6. Rinse Heating Element | 18. Power/Cycle Selector Switch |
| 7. Fill/Rinse Solenoid Assembly | 19. Cycle Light Green |
| 8. Detergent Pump | 20. Ready Lights Amber |
| 9. Timer | 21. Power Light Red |
| 10. Power/Chemical Terminal | 22. Temperature Gauges |
| 11. Relays | 23. Start Button |
| 12. Rinse Thermostat | |

Timer

Part Number

32787

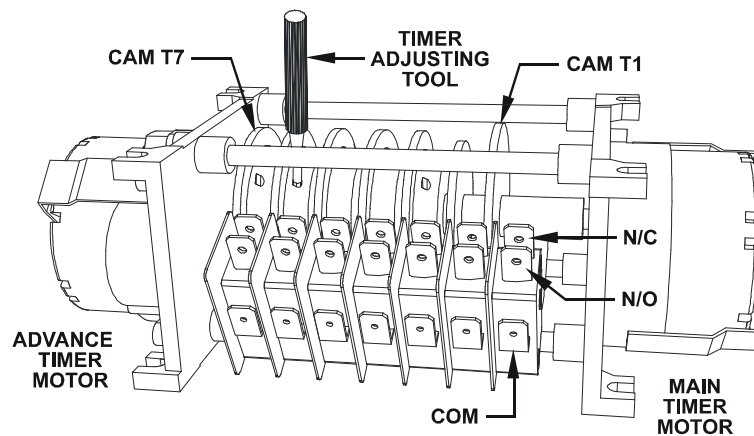
Function

Provides an automatic timing sequence of the wash, rinse, detergent and rinse aid injection stages in a dishwashing cycle.

Description

The electromechanical timer has a main drive motor and gearbox which produce a full rotation of the seven cams in 360 seconds. The advance motor and gearbox speed the rotation of the timer to produce shorter cycles of 120 and 240 seconds. The timer cams operate individual changeover switches in sequence during the rotation. The cams are numbered from the main motor end. T1 controls the main motor, T2 – wash, T3 – rinse, T4 – rapid advance motor for 120s cycle, T5 – rapid advance motor for 240s cycle, T6 – detergent injector if fitted, T7 – may be used for electric rinse fluid injector if required.

Diagram



Replacement

To replace the timer take note of the position of each connection, preferably on paper. Disconnect all wires and remove the timer from the tray. Compare the cam setting of the old and new timer to ensure that special settings are duplicated. Fit new timer taking care to locate cam T1 in the same relative position. Reconnect the wires ensuring that no termination is under strain. Test the machine to confirm correct operation.

Adjustment

The timer cams T2, T3, T6 and T7 are adjustable. The time settings on these cams can be increased by making the gap in a cam wider, or reduced by reducing the gap. Use a timer adjusting tool, supplied with the machine to modify a gap in the timer cams.



IMPORTANT

The factory setting of the cam T3 allows for a 15 sec hot rinse. Reduction of this time is prohibited by Health regulations. Extending this setting will increase hot water consumption of the machine and may result in delays between the cycles as this additional water is heated.

Rinse Thermostat

Part Number

3020

Function

Controls the rinse heating elements and prevents operation of machine if the rinse temperature is below that required.

Description

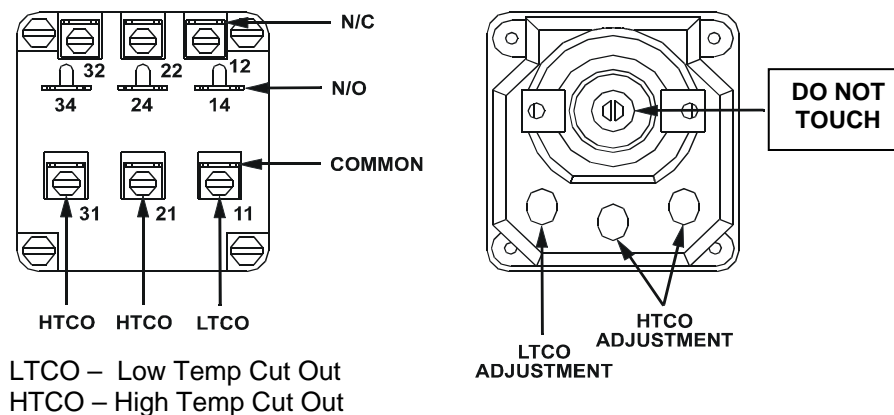
The rinse thermostat is a specially calibrated 3 pole capillary type temperature operated device. The thermostat does not have a control knob and it is factory set to the temperatures required by Hygiene Regulations. The first pole's LTCO changeover contact is set to operate at $83 \pm 3^\circ\text{C}$, the other two poles HTCO contacts are set to $90 \pm 3^\circ\text{C}$. Switching capacity: 16(4) A 380 V.



IMPORTANT

Do not break the seal or attempt to adjust the central multi pole adjusting screw that is sealed with red compound.

Diagrams



Replacement

Take note of the connections to the wiring loom before disconnecting. Remove the capillary bulb from the rinse tank pocket. Select a new thermostat and carefully unwind enough capillary to reach from the pocket to the thermostat mounting position. Carefully position the tube with no kink or stress on the tube, also have due regard for the protection of the tube against contact with live electrical terminals – secure or insulate as appropriate.

Adjustment

The thermostat is factory set to the specified above settings and it should not normally be adjusted. If you are **sure** adjustment is required, remove the grey tape covering three adjusting screws for LTCO and HTCO settings (one or both HTCO poles are used depends on model – check which HTCO terminals are wired before making adjustments). Insert the thermo junction into the rinse tank pocket for the machine's temperature gauge. Energize the elements and check all temperatures on temperature rise. Clockwise rotation of the screws increases the setting, anticlockwise – decreases it. **Every half turn of the adjusting screw changes the settings by approximately 6 degrees.**



IMPORTANT

To make adjustments to the thermostat you will need a good quality thermometer fitted with a “type K” thermo junction. The use of a stainless steel probe is not permitted as slow response time in the device will cause inaccurate settings.

Wash Thermostat

Part Number

30201

Function

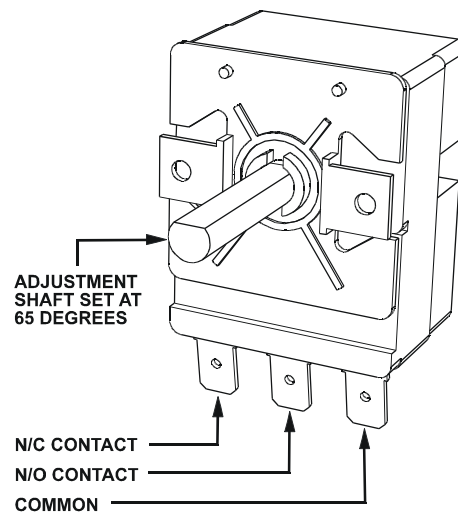
Controls the wash element

Description

The wash thermostat is a single pole capillary type device. It has a single changeover contact and a rotating shaft for a manual temperature adjustment.

Factory default setting is 65°C.

Contact switching capacity: 16(4) A 380 V.

Diagram**Replacement**

Drain the wash tank. Take note of the connections to the wiring loom before disconnecting. Release thermostat's gland nut, move the capillary bulb out of the mounting bracket inside the tank and remove the bulb from the wash tank (remove the probe from the pocket in the wash tank on the models supplied with a pocket for the thermostat probe). Replace in reverse order.

Adjustment

Insert the probe of a digital thermometer into the wash tank. Check the thermostat settings on a temperature rise. Adjustment is performed by rotating the adjustment shaft of the thermostat. Clockwise rotation of the shaft increases the setting, anticlockwise— decreases it.

NOTE: the adjustment shaft in a flat horizontal position is a factory default setting corresponding to 65°C (see the diagram).

Pressure Switch

Part Number

600 30308

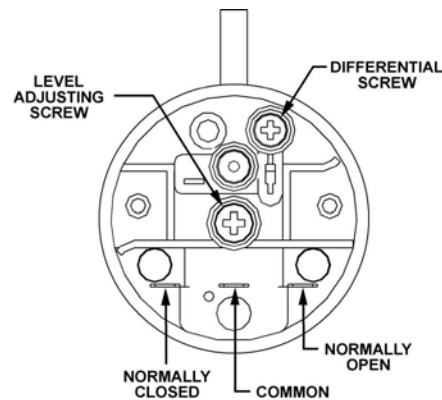
Function

Controls filling of wash tank and protects wash elements.

Description

The pressure switch is attached to the pressure bell. As the water level in the wash tank rises air is trapped in the bell and increasing pressure is transmitted to the pressure switch. When the tank is full the pressure switch shuts off the fill solenoid valve and switches on the wash element. It allows a water level differential so that the tank level may drop with the operation of the wash pump, without causing refilling of the machine.

Diagram



LEVEL ADJUSTING SCREW

CW rotation increases upper level setting

DIFFERENTIAL SCREW

CW rotation increases differential and reduces lower level settings

Adjustment

Before making any adjustments drain wash tank, remove pressure tube from pressure bell, blow gently into tube to check switching of pressure switch and then fit tube back.

Turn the power switch on, machine should start to fill. The machine should cease filling when the water attains a level about 10mm below an overflow level of the upstand. Adjust fill level if necessary by Level adjusting screw on the pressure switch.

Remove drain upstand to begin draining the wash tank. Fit back the upstand when Wash Ready light goes off and measure the refill water level. A refill level should be set 10-20mm above the wash element. Adjust if necessary by Differential screw on the pressure switch. Close door to refill the wash tank and re-check the fill level.

Replacement

To remove the switch take note of the electrical connections and remove the wires. Slide the switch from the mounting bracket and remove the rubber tube from the switch connector. Replace in reverse order. Whilst in the process of replacing the pressure switch, ensure that the pressure tube is in good order and clear of obstruction.



IMPORTANT

Ensure the tube from the air bell always goes up to the pressure switch.
Do not use thin wall vacuum tube for replacement.

Wash Pump

Part Number

3906

Function

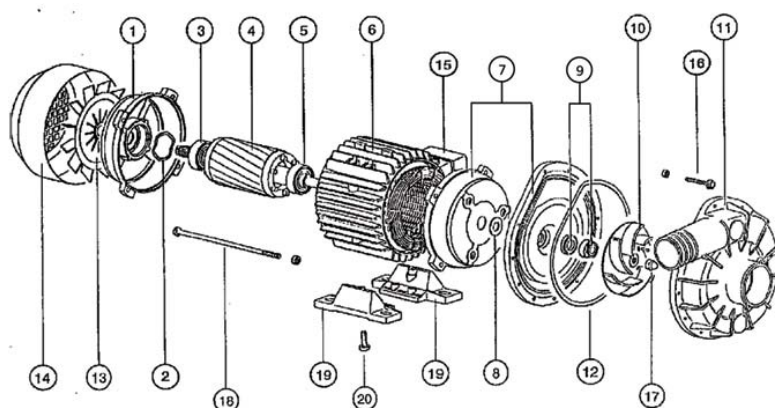
Pumps water from the wash tank to the wash arms providing a recirculating wash cycle.

Description

Electric Pump FIR

Power:	HP 2 Kw 1.4	Speed:	2800 rpm
Voltage:	415 V	Amperes:	3.1 A
Frequency:	50 Hz	Construction:	IP44

Diagram



ITEM	DESCRIPTION	FIR CODE	WASHTECH CODE
1	Pump Complete 2HP Housing	1204	3906
2	Compensation Ring	LMKAS 40	-
3	Ball Bearing	6203-2Z	6203
4	Rotor	-	-
5	Ball Bearing	6203-2Z	6203
6	Stator	-	-
7	Pump Support	1204320	C630223
8	Water Protect.Ring	1200316	-
9	Seal	12-24-14/13-26-8	C630501
10	Impeller	1204315	C631618
11	Volute	1204303	C630114
12	Gasket	1200317	C630411
13	Fan	141404213	C630306
14	Fan Protection	1414041	C630216
15	Terminal Box Cover	1486090	-
16	Pump Housing Screw	TE M4x25	-
17	Impeller Nut	M8 Autobloc.INOX	-
18	Tie Rod	TE M5x138	-
19	Foot	1484001	-
20	Foot Screw	-	-

Replacement

Drain the wash tank and switch off the power.
 Disconnect the wires from the wiring connectors inside the pump junction box.
 Remove two M8 bolts that fasten the pump to the platform.
 Release the hose clamps on the inlet and outlet pump hoses and remove the pump.
 Replace in reverse order.

Rinse Pump

Part Number

600 30400

Function

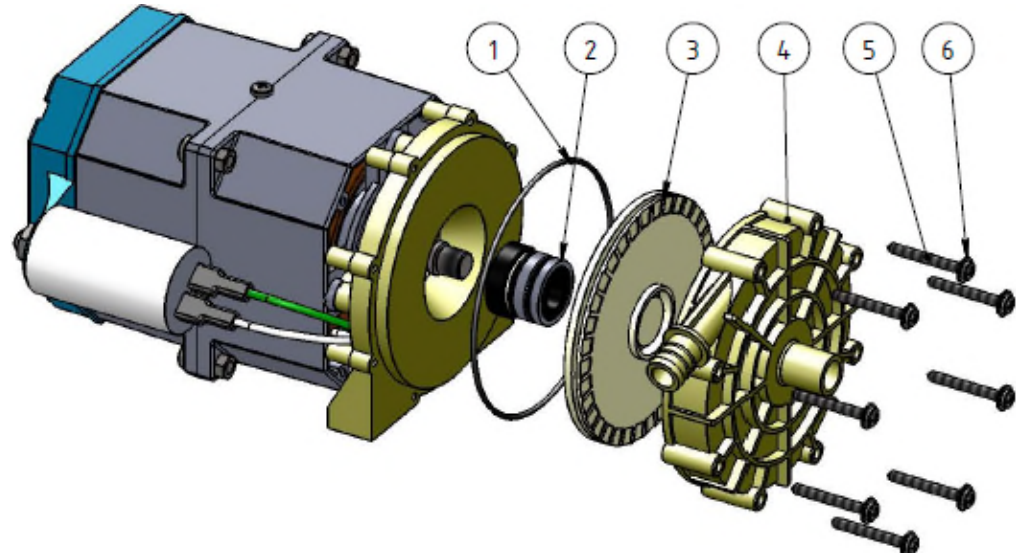
The pump is fitted after a hot water inlet solenoid valve to boost the pressure of hot water supply. It pumps hot water through the boiler to the rinse arms, providing a hot rinse cycle.

Description

Electric Pump R63

Power:	0.33Hp / 0.25kW	Amperes:	1.2 A
Voltage:	230 V	Capacitor:	8 uF
Frequency:	50 Hz	Speed:	2800 rpm

Diagram



ITEM	PART	DESCRIPTION
1	600 41181	O Ring
2	600 41182	Mechanical Seal
3	600 41183	Impeller
4	600 41203	Pump Housing
5		Screw
6		Washer

Replacement

Switch off the power to the machine.

Disconnect the wires from the pump connectors.

Remove M6 bolt that fastens the pump to the floor of the machine.

Release the hose clamps on the inlet and outlet pump hoses and remove the hoses.

Replace in reverse order.

Detergent Pump

Part Number

600 30094

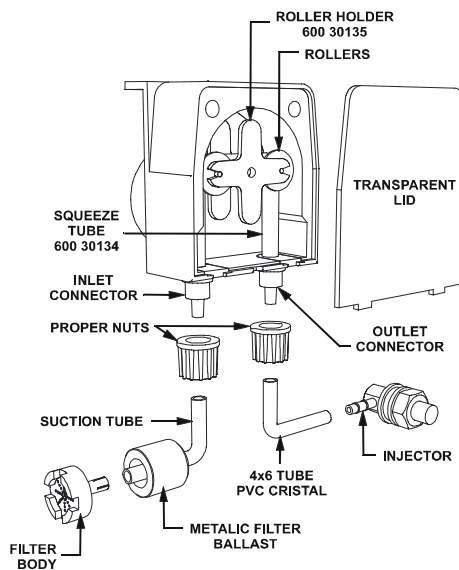
Function

When fitted the pump automatically injects detergent into wash tank during filling of the machine and at the start of each wash cycle.

Description

Peristaltic pump with flow rate of 0.33 ml per second, 230 V / 50 Hz.

Replacement



Peristaltic pumps provide reliable and accurate detergent dosing. However over time the squeeze tube in the pump will flatten and become ineffective, and/or split and leak. We therefore recommend quarterly inspection of the squeeze tube and replacement every six months in high use situations, particularly when chlorinated detergents are used.

To replace squeeze tube – wear safety glasses and gloves, switch machine off, remove the transparent lid, ease the squeeze tube off rollers and replace the new one.

CAUTION – caustic based detergents are hazardous.

To replace complete pump – disassemble the pump after unscrewing two screws from the support bracket; assemble the new pump in reverse order. To prime pump on electromechanical machines, press and hold detergent prime switch - either on top control panel or behind front cover. On electronic machines, drain and refill the machine - detergent will come up to full strength after several cycles.

Adjustment

Standard machine controls operate the detergent pump continuously during filling of the wash tank. The concentration during fill is equal to the detergent dosed (ml/min) / the water filling rate (L/min).

The detergent pump is also set to operate during the wash cycle. Factory timer settings in seconds of pump operation per wash are as follows:

Model(s)	GM, XG	GL, GLV, UD, UE, M1, M2	AL, AL8, PW1, TW	PW2, PW3
Dosing Time	10 sec	15 sec	20 sec	30 sec

If the recommended concentration of your detergent differs from 2ml/L then the dosing time should be adjusted – refer to instructions on the Timer page for electromechanical machines or Electronic Controller pages for electronic machines.

Dosing Time Equation: $T = 3V \times C$, where **T** = Dosing time (sec),

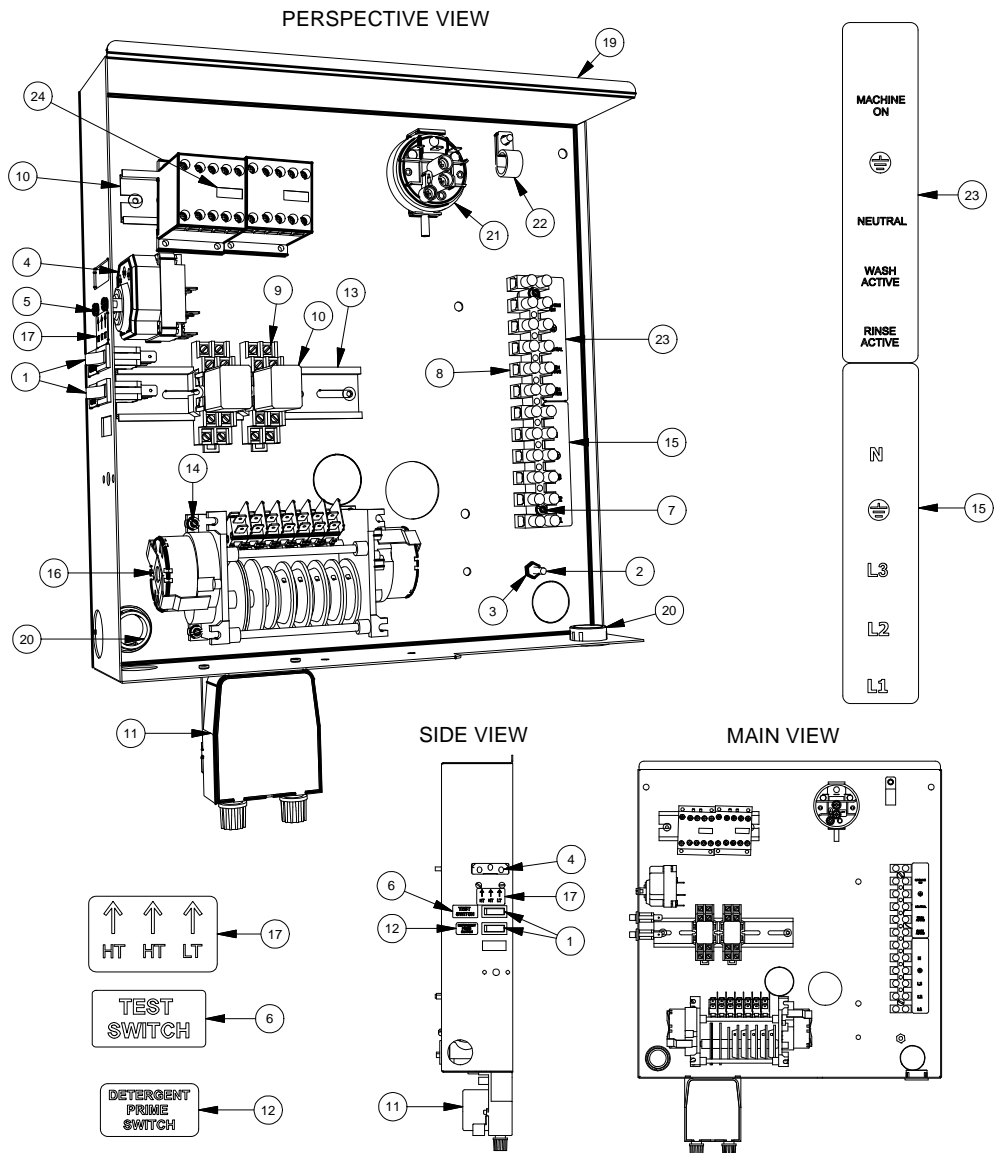
V = Water used per cycle (L), **C** = Detergent concentration (ml/L).

On glasswashers where cold final rinse is used longer injection times are required to compensate for the dilution of wash water by the cold rinse.

Assembly Diagrams

PW1(3) WIRING TRAY ASSY

824 10221 25/10/2011 REV 3-C

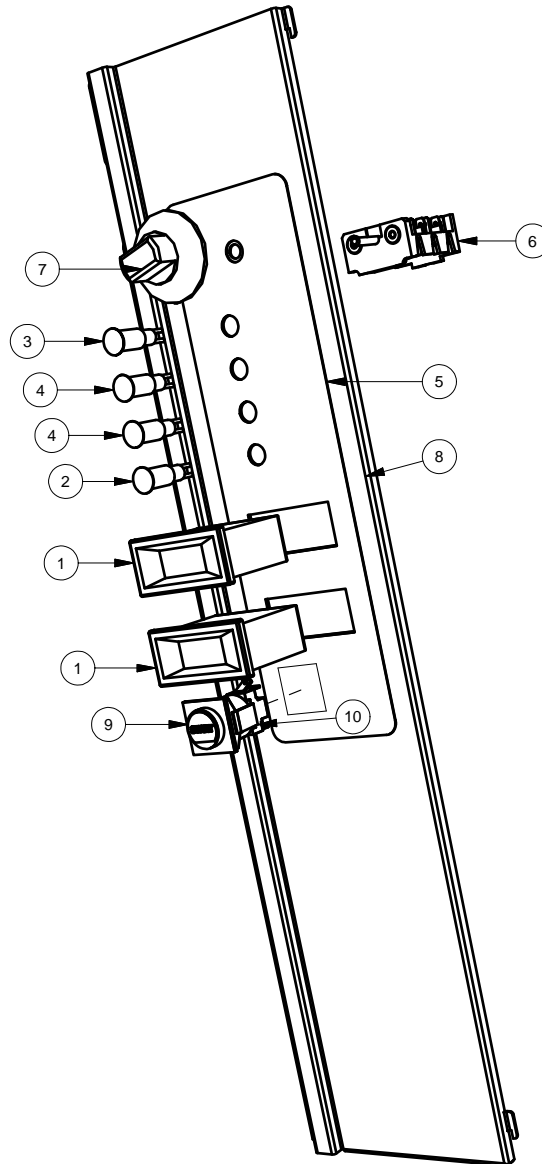


Parts List				Parts List			
ITEM	PART NUMBER	DESCRIPTION	QTY	ITEM	PART NUMBER	DESCRIPTION	QTY
1	3035	SWITCH SINGLE POLE BIASED BLACK	2	13	3231-150	DIN RAIL ONLY	1
2	8816	MS RH BRASS 3/16 X 3/4	1	14	8801	MS PAN POZI ZP M4x12	4
3	8151	NUT HX BRASS 3/16" PRESSED	1	15	label det 3	POWER CONNECTIONS LABEL	1
4	3020	3 POLE THERMOSTAT	1	16	32787	TIMER 32822 FITTED WITH 6 MIN GEAR SET	1
5	8800	MS PAN POZI ZP M4x6	2	17	REF	LABEL THERMOSTAT ADJUSTMENT	1
6	REF	LABEL TEST SWITCH	1	18	3231-120	DIN RAIL ONLY	1
7	8802	MS PAN POZI ZP M4x25	2	19	824 10223	AL8(3)/PW1 WIRING TRAY SUB ASSEMBLY	1
8	3229	TERMINAL STRIP 12 WAY	1	20	600 30089-1	BUSH SNAP - IN 25mm	2
9	600 30081	BASE 2 POLE RELAY	2	21	600 30250	PRESSURE SWITCH 140/70mm	1
10	600 30080	RELAY 2 POLE (240VAC)	2	22	600 30131	P CLIP 20.8mm	1
11	600 30094-2	PERI PUMP 1.5L/H SEKO-KIT	1	23	REF	CHEMICAL CONNECTIONS LABEL	1
12	REF	LABEL DETERGENT PRIME SWITCH	1	24	600 30337	CONTACTOR 20A 3NO/NC 230-240V	2

AL8(M)/PW CONTROL PANEL ASSEMBLY

400 10139 5/07/2009 REV 3-D

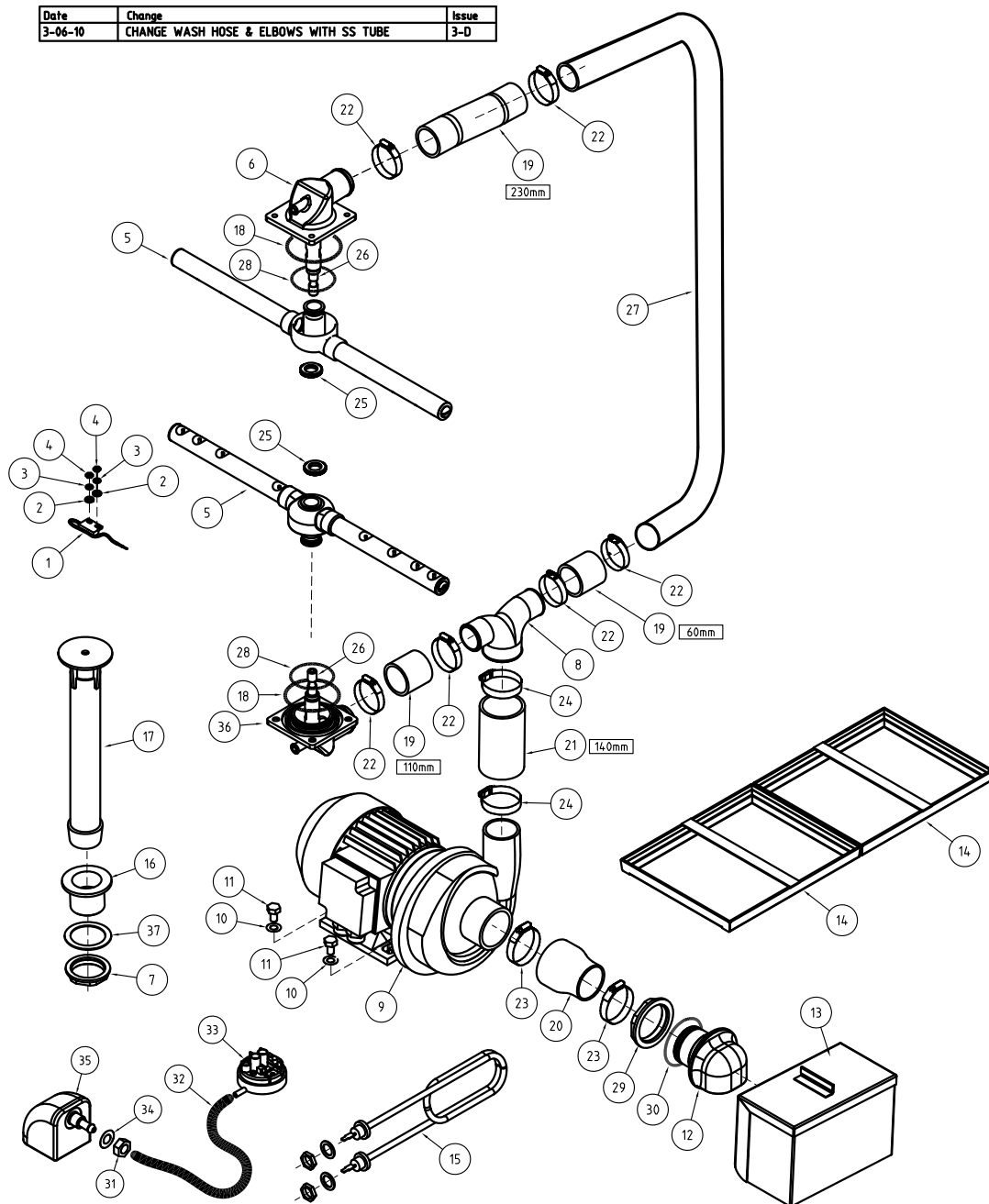
EXPLODED PERSPECTIVE



Parts List			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	600 90080	TEMP GAUGE RECTANGULAR 58x25	2
2	600 30161	LENS & NEON ASSY (RED) 12mm	1
3	600 30163	LENS & NEON ASSY (GREEN) 12mm	1
4	600 30162	LENS & NEON ASSY (AMBER) 12mm	2
5	400 70079	M2 - AL CONTROL LABEL	1
6	600 30269	SWITCH 4 WAY QUICK CONNECT	1
7	30415	KNOB 4 POSITION	1
8	400 10140	M2 THROUGH TO PW3 CONTROL PANEL SUB-ASSY	1
9	600 30244	BUTTON ROLD "START" PRINTED	1
10	600 30101	SWITCH START ROLD-SP MOMENTARY	1

PW1(3) WASH SYSTEM

PW1 30002 3-06-10 3D

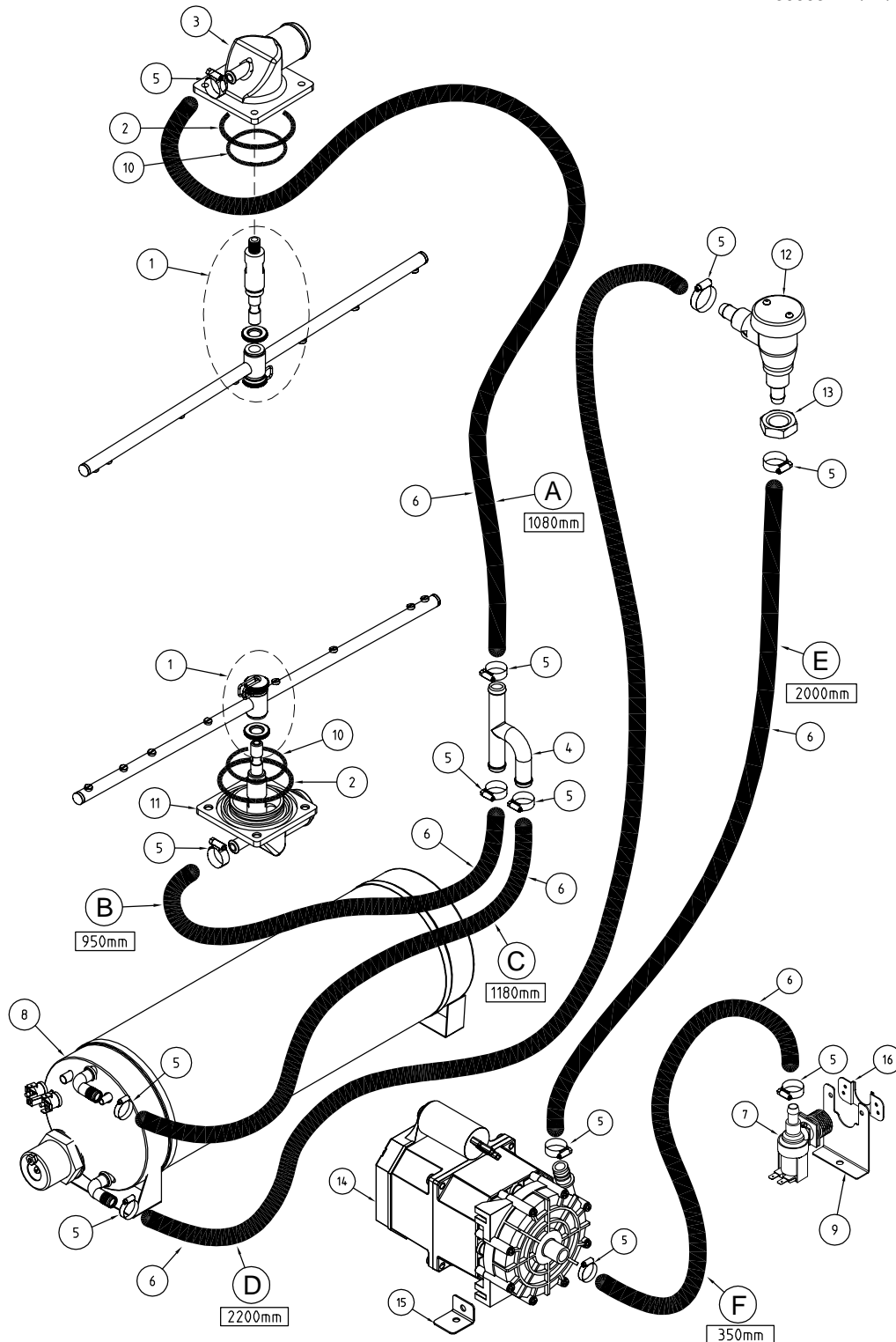


ITEM	CODE	DESCRIPTION	QTY
1	600 30183	REED SWITCH STEM	1
2	600 80081	M4 WASHER 304	2
3	8567	WASHER SPRING SS 304 MS	2
4	8112	NUT HEX SS 304 M4	2
5	815 10007	ASSY POTWASHER WASHARM	2
6	400 90106	AL WASH TEE	1
7	6037	BACKNUT 126 x 40mm	1
8	400 90126	53mm x 38mm REDUCER TEE	1
9	3906	PUMP WASH AL 2HP 3PH	1
10	600 80022	WASHER FL SS 304 M8 x16 x 125	1
11	600 80029	MS HX SS 304 M8x12	2
12	400 90139	2" AL WASH PUMP COLLECTOR	1
13	351 11026	AL INLET FILTER ASSY	1
14	351 12003	ASSEMBLY SCRAP TRAY POTWASHER	2
15	600 30159	ELEMENT 2500W STRAIGHT ELEMENT	1
16	400 30042	WASTE DRAIN PLASTIC 40mm PLASTIC	1
17	400 10145	305mm LONG UPSTAND "M"	1
18	ARP333	O-RING	2
19	6195	HOSE 38mm 2 PLY RADIATOR	1

ITEM	CODE	DESCRIPTION	QTY
20	400 90153	HOSE 2HP WASH PUMP INLET	1
21	61941	HOSE 50mm 2 PLY RADIATOR	1
22	ASS24	HOSECLIP ASS24	6
23	ASS44	HOSECLIP ASS44	2
24	ASS36	HOSECLIP ASS36	2
25	280409C	LOCKNUT M18	2
26	400 30014	SPINDLE AL WASH	2
27	824 30012	WASH PIPE PW1 & PW2	1
28	400 30191	AL(3) BLACK ACETAL SLIP RING	2
29	6039	50mm BACKNUT	1
30	ARP336	ARP336 O-RING	1
31	600 80009	NUT SS 304 HEX M10	1
32	3067	HOSE PRESSURE SW VACUUM 4mm	1
33	600 30308	PRESSURE SWITCH METAFLEX 140/60mm	1
34	ARP205	O RING 205	1
35	400 90135	SQUARE PRESSURE BELL CASTING	1
36	400 90140	AL LOWER WASH TEE	1
37	1896	GASKET FOR 40mm DRAIN WASTE	1

PW1-3(S) RINSE SYSTEM

PW1 30003 12/12/16 3F



ITEM	CODE	DESCRIPTION	QTY	ITEM	CODE	DESCRIPTION	QTY
1	400 10244	RINSE ARM 494mm ASSY w SPINDLE & NUT	2	9	400 20038	SOLENOID MOUNTING BRACKET	1
2	ARP333	O-RING	2	10	400 30191	AL(3) BLACK ACETAL SLIP RING	2
3	400 90106	AL WASH TEE	1	11	400 90140	AL LOWER WASH TEE	1
4	400 90076	SS RINSE TEE	1	12	400 10125	VACUUM BREAKER ASSY	1
5	ASS06	HOSECLIP ASS06	12	13	1955	NUT BULKHEAD 1/2"	1
6	600 60073	HOTOTAL HOSE 11mm x 19mm	7.4m	14	600 30400	PUMP RINSE 0.33HP 230V 50HZ	1
7	3342	SOLENOID VALVE 1 WAY 90 DEG	1	15	273 20013	PUMP MOUNTING BRACKET	1
8	400 10122	ASSY RINSE TANK	1	16	1247	SOLENOID SUPPORT BRACKET	1

010160 3/12/10 3 C

See PW1-3 Wiring Diagram 010235 for wiring layout and parts

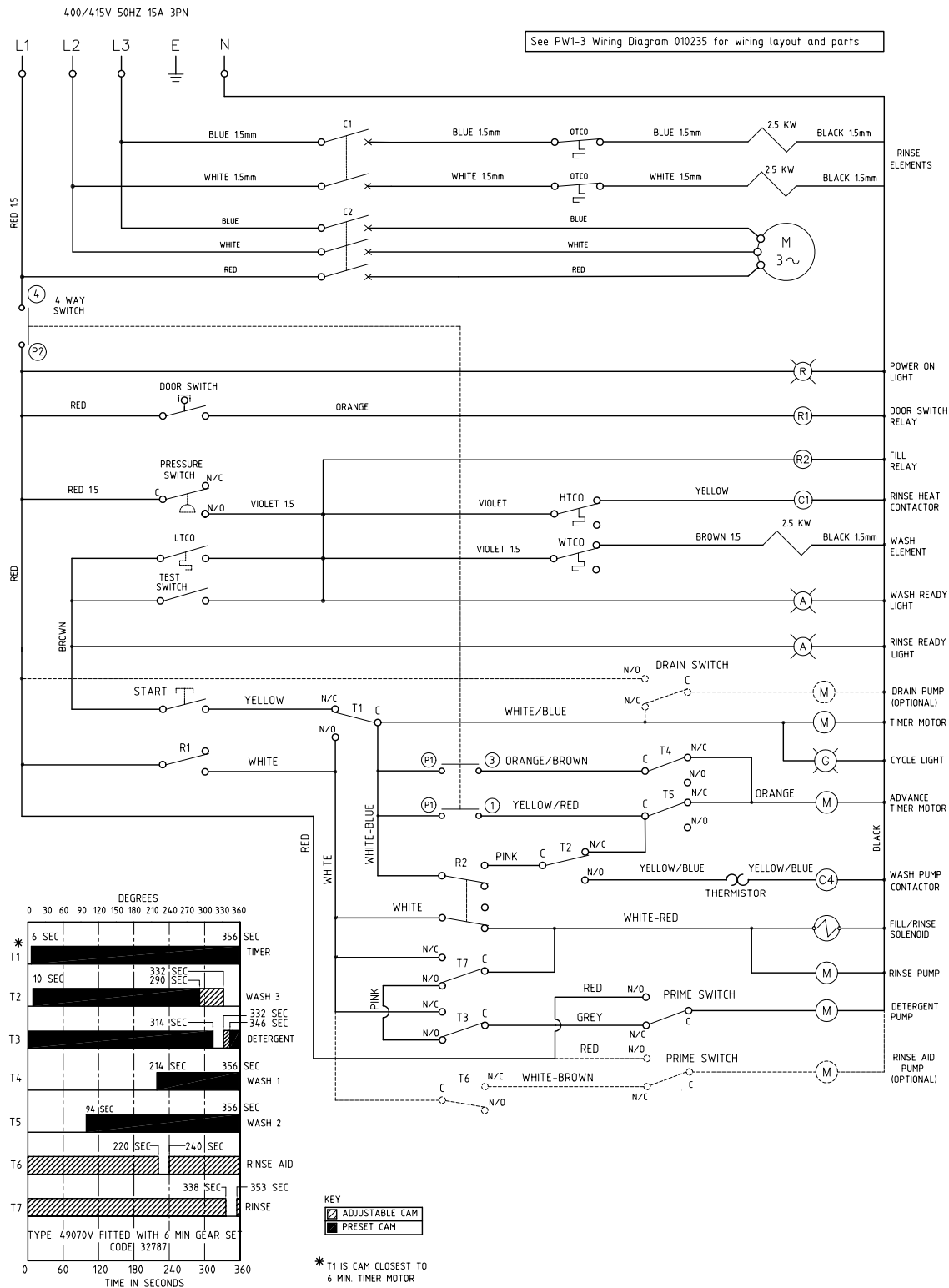


1. Cycle active feed
 - refer main terminal block for all connections
2. Timer cam controlled feed
 - Main Power Active - refer main terminal block
 - Neutral & Earth - refer main terminal block
 - Rinse Aid Active - refer R - connection wire provided

For rinse aid injection, Washtech part # C620120 is recommended and operates hydraulically.

PW1-3 SCHEMATIC DIAGRAM

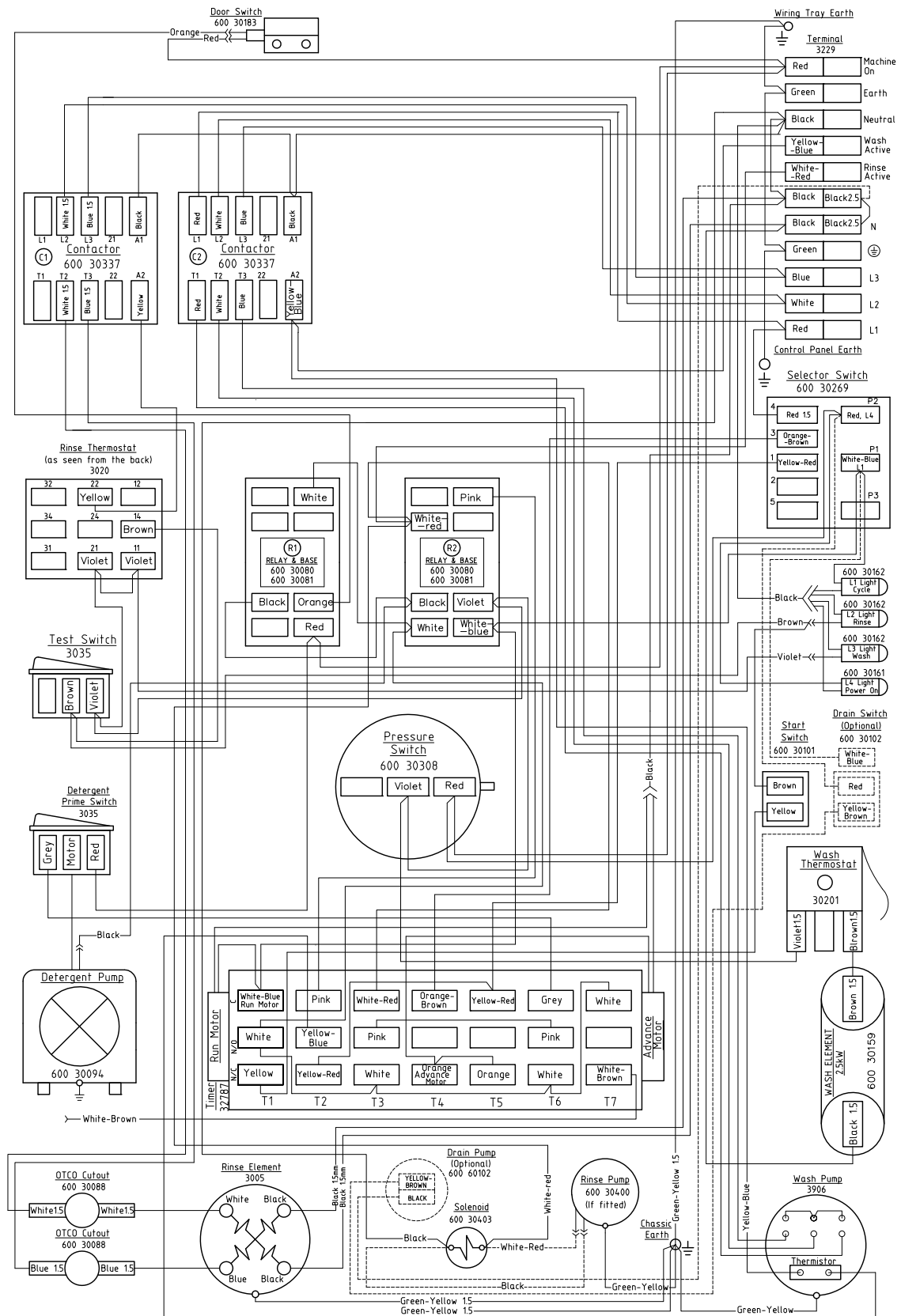
010160 14/02/08 3 A



PW1-3 WIRING DIAGRAM

010235 12/10/11 3 E

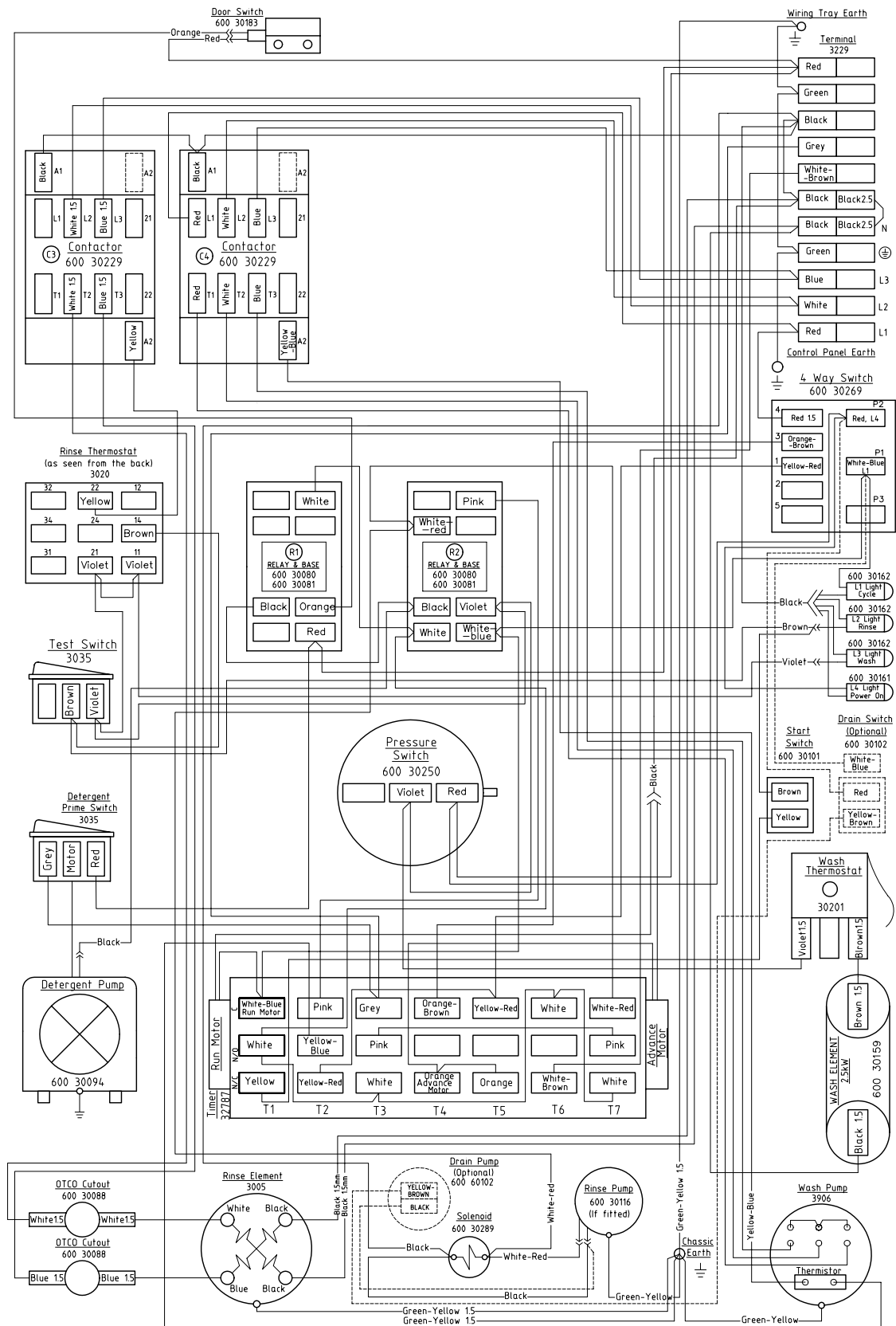
Refers to PW1-3 Schematic Diagram 010160



PW1-3 WIRING DIAGRAM

010235 14/02/08 3 A

Refers to PW1-3 Schematic Diagram 010160



Spare Parts PW1-3(S)

DESCRIPTION	PART NO	REC. STOCK
Controls & Indicators		
Contactora	600 30337	1
Door Reed Switch	600 30183	1
Knob 4 Position	30415	
Power Light	600 30161	1
Pressure Switch	600 30308	1
Relay 2 pole 240V	600 30080	1
Relay Base	600 30081	1
Ready Light	600 30162	1
Run Light	600 30163	1
Start Button	600 30244	1
Switch 4 Position	600 30269	1
Temperature Gauge	600 90080	
Terminal Strip 12 Way	3229	
Test Switch	3035	
Timer 2/4/6 Min	32787	1
Heating Components		
Over Temperature Thermostat	600 30088	1
Rinse Element 5 KW	3005	1
Rinse Tank Assembly	400 10122	
Rinse Thermostat	3020	1
Wash Element 2.5 KW	600 30159	1
Wash Thermostat	30201	1
Hoses & Fittings		
Lower & Upper Wash Connection Hose	6195	200mm
Pressure Switch Hose	3067	500mm
Rinse Hose	600 60073	2000mm
Rinse Tee SS	400 90076	
Upper Wash Hose	6194	650mm
Wash Pump Inlet Hose	61942	100mm
Wash Pump Outlet Hose	61941	150mm

Spare Parts PW1-3(S)

DESCRIPTION	PART NO	REC. STOCK
Pumps & Valves		
Detergent Pump	600 30094	1
Detergent Pump Hose	600 30148	1
Detergent Squeeze Tube	600 30134	2
Rinse Pump	600 30400	1
Solenoid Valve Assembly	1672	
Solenoid Valve	600 30403	1
Strainer Line 1/2"	600 60104	
Wash Pump	3906	1
Wash Tank Components		
Drain Upstand	400 10145	1
Locknut Wash Arm	280409C	1
Rack Slide Assembly	351 11025	
Rinse Arm Assembly (from s/n 145404)	400 10239	
Rinse Arm Assy & Spindle (before s/n 145404)	400 10244	
Rinse Arm Bush	C190624	4
Rinse Arm Cap Screw	261004C	2
Rinse Arm End Plug	400 30200	2
Rinse Arm Jet	400 30087	2
Rinse Arm Spring Retainer Screw	C450218	2
Scrap Tray	351 12003	
Slip Ring AL(3) Black Acetal	400 30191	2
Temperature Gauge Probe Clamp	400 20066	
Wash Arm Assembly	400 10077	
Wash Arm Bush	190621C	4
Wash Arm End Plug	400 30101	2
Wash Arm End Screw	600 80072	2
Wash Pump Inlet Filter	351 11026	

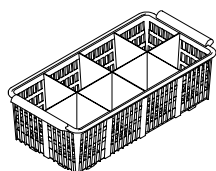
Note:

For more parts look in the section "Assembly Diagrams".

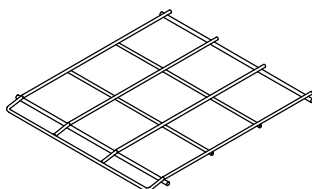
Accessories

PW1(3) ACCESSORIES

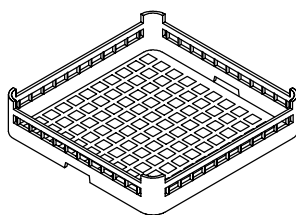
PW1(3) AC 06/12/11 1 C



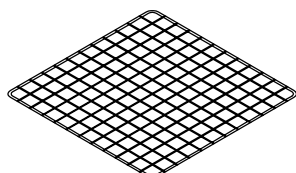
**C660508
CUTLERY BASKET CP8**



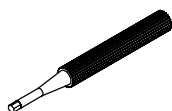
**824 30001
PW1 RACK**



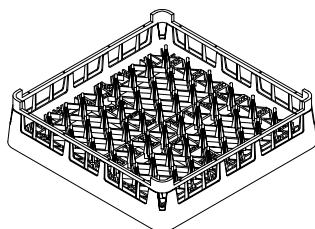
**600 70029
CUPRACK CB 500mm X 75mm high**



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



TIMER ADJUSTMENT TOOL

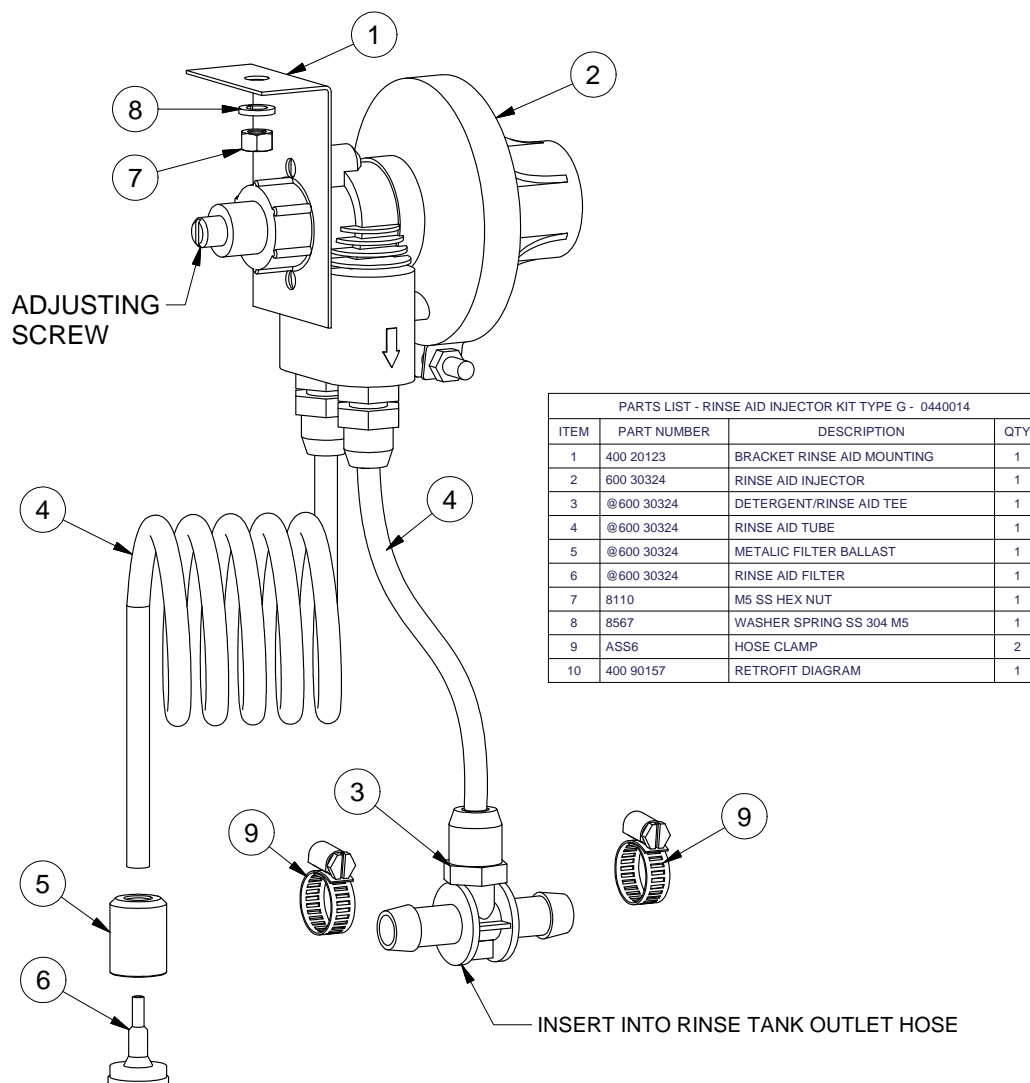


**600 70028
DISHRACK**

Appendices

R/AID INJECTOR KIT TYPE G - P/N 0440014

400 90157 9/03/2010 REV 1-A

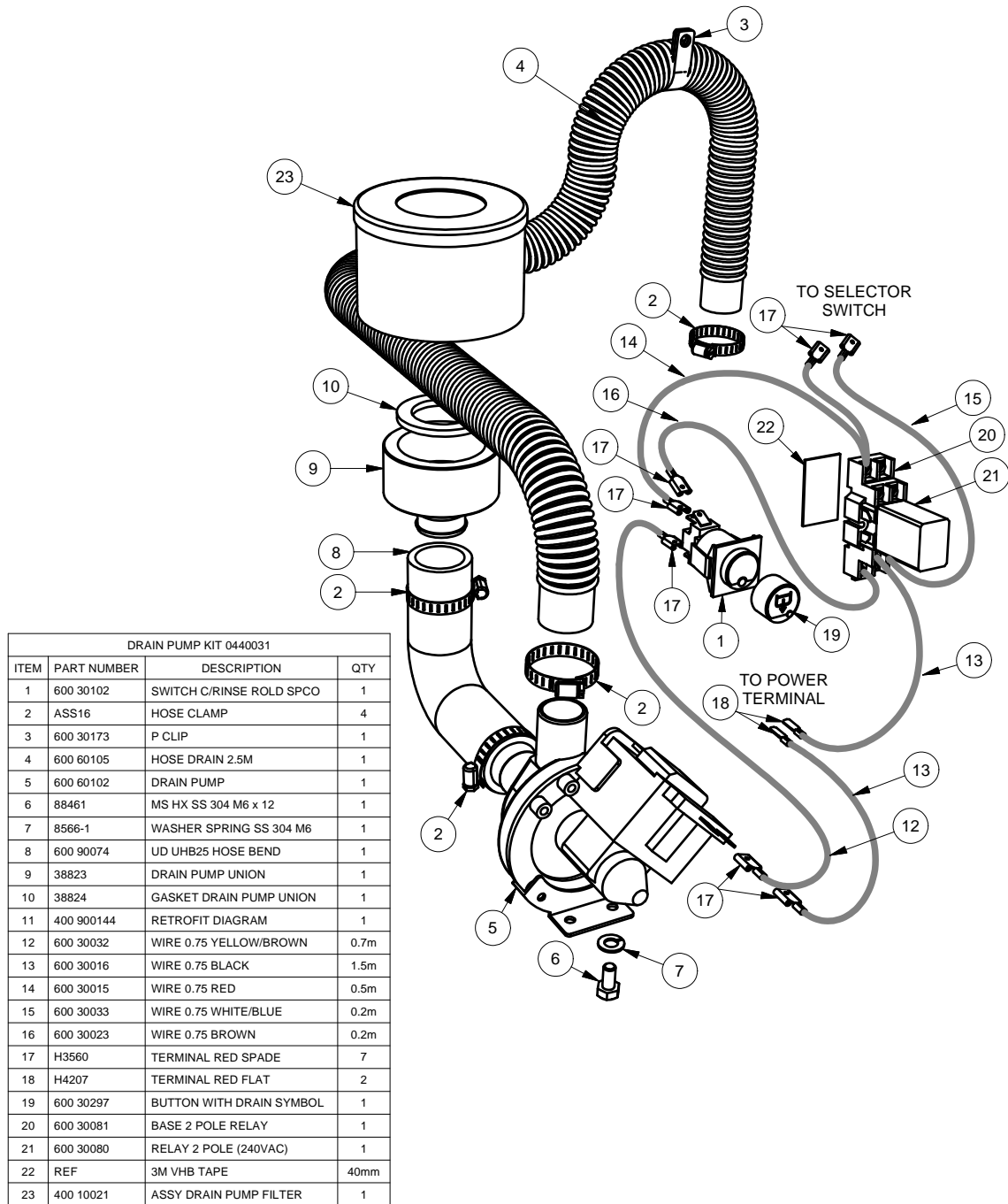


INSTALLATION

1. MOUNT BRACKET 1 & INJECTOR 2 UNDERNEATH THE WASH TANK OF MACHINE ON THE STUD PROVIDED.
2. CUT RINSE TANK OUTLET HOSE AT AN APPROPRIATE POINT, INSERT PLASTIC TEE 3 BETWEEN HOSE ENDS AND SECURE WITH HOSE CLAMPS 9.
3. ASSEMBLE ALL COMPONENTS AS SHOWN ABOVE AND INSERT INJECTOR INLET TUBE INTO CHEMICAL CONTAINER.
4. RUN THE MACHINE. CHECK THE AMOUNT OF THE FLUID RISING UP INSIDE THE INLET TUBE DURING THE PULSE AT THE START OF THE RINSE CYCLE - A 75mm RISE WITHIN THE TUBE CORRESPONDS TO THE VOLUME OF 1 ml OF RINSE AID FLUID PER CYCLE. ROTATE ADJUSTING SCREW CLOCKWISE TO REDUCE FLOW AND ANTICLOCKWISE TO INCREASE FLOW. EVERY TURN OF THE ADJUSTING SCREW WILL INCREASE/DECREASE THE DOSE OF RINSE AID FLUID BY 0.4ml MORE/LESS. THE VOLUME OF RINSE AID FLUID WILL DEPEND ON FACTORS SUCH AS PRODUCT TYPE, WATER HARDNESS, ETC, BUT TYPICALLY 0.5ml PER LITRE OF WATER IS REQUIRED - REFER INSTALLATION INSTRUCTION FOR THE VOLUME OF RINSE WATER CONSUMED BY THE MACHINE PER CYCLE.

DRAIN PUMP KIT 0440031 - XP/AL3/AL8/PW1

400 90144 19/11/2013 REV 1-G



1. Pre-assemble the drain pump with the flexible outlet hose #4, the inlet hose #8, the drain pump union #9. Secure the hoses with the supplied hose clamps #2.
2. Secure drain pump to base with M6 bolt #6 and the spring washer #7, provided in the kit.
3. Fit the drain union gasket #10 into the drain pump union #9. and screw the drain pump union #9 on to the drain waste of the machine.
4. Secure drain outlet hose above the water level using P clip #3 supplied in the kit.
5. Cut out the right side hole below the wash temperature gauge in the control panel label (if see from the front). and fit the drain switch #1. Fit the base and the relay #20 & 21 at the back of control panel using double-sided adhesive tape provided.
6. Wire the drain pump, the drain switch and the drain relay according to electrical diagrams, provided in service manual or schematic diagram, supplied with the machine.

Revisions

Manual Revisions

REVISION STATUS	REVISION DATE	FROM SERIAL NO:	CHANGE DESCRIPTION
1A	10/03/08	113946	
1B	28/10/08	115216	Change chemical terminal wiring, Timer configuration and settings.
1C	23/02/09	114966	Change s/s upstand to plastic. Add drain pump retrofit kit.
1D	6/07/09		New pressure switch 140/60mm.
1E	25/11/11		Change solenoid and rinse pump
1F	4/03/15		Update Components/Assy/Spares
1G	22/12/16	145404	Rinse Arm assembly with shorter hub and shorter spindle

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