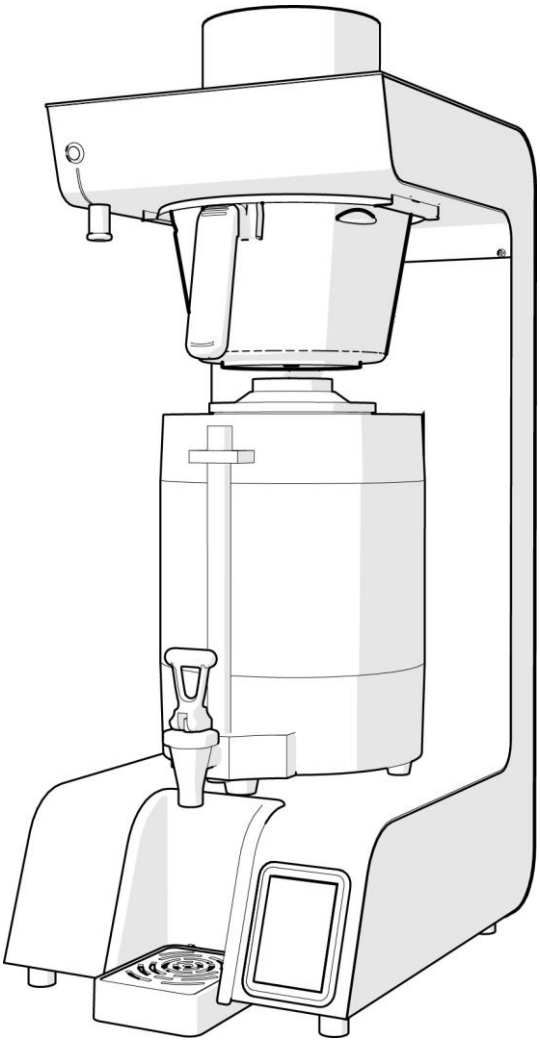
Jet 6

SERVICE MANUAL



Marco Beverage Systems Ltd. 63d Heather Road, Sandyford Industrial Estate, Dublin 18, Republic of Ireland	Ireland Tel: (01) 295 2674 Ireland Fax: (01) 295 3715
	UK Tel: (0207) 274 4577 UK Fax: (0207) 978 8141

CONTENTS

	PAGE
INTRODUCTION	3
SERIAL NUMBER & MACHINE MODEL INFORMATION	3
GENERAL DESCRIPTION	4
ASSEMBLY & PARTS DRAWINGS	
FRONT PANEL REMOVAL	5
TOP PANEL & BACK PANEL REMOVAL	6
ELEMENT REMOVAL	7
SPARE PARTS LOWER & DESCALING	8
SPARE PARTS UPPER & DISPENSE VALVE REMOVAL	9
TROUBLESHOOTING –LCD DIAGNOSTIC GUIDE	10
TROUBLESHOOTING –GENERAL DIAGNOSTIC GUIDE	12
WIRING DRAWINGS	
WIRING SCHEMATIC 5.6kW (2 ELEMENTS OPERATING)	13
WIRING SCHEMATIC 2.8kW (1 ELEMENT OPERATING)	14
WIRING SCHEMATIC 3.6kW JM VERSION	15
WIRING SCHEMATIC 5.6kW US VERSION	16
WIRING SCHEMATIC 2.8kW US VERSION	17
GENERAL SPARE PARTS LIST	18

INTRODUCTION

The information provided in this manual is intended to assist in the maintenance of the Marco Jet 6 Brewers. For basic user information & operation of the machine please consult the User Manual which comes with the machine.

This manual is not a substitute for any safety instructions or technical data affixed to the machine or its packaging. All information in this manual is current at the time of publication and is subject to change without notice.

Only technicians or service providers authorised by Marco should carry out installation and maintenance of these machines.

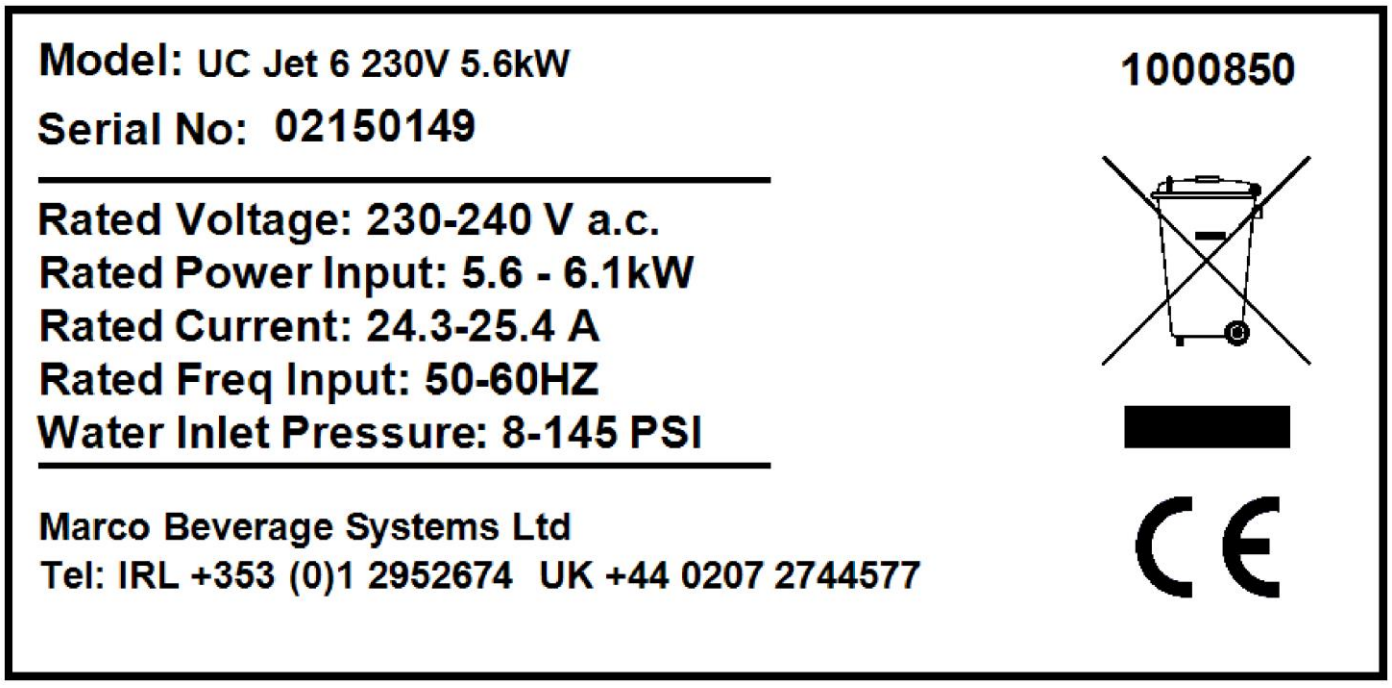
Marco accepts no responsibility for any damage or injury caused by incorrect or unreasonable installation and operation.

SERIAL NUMBER & MACHINE MODEL INFORMATION

Every unit will have a rating plate with a machine serial number. The format is MMYYXXXX

The first four digits of the serial number denote the month and year of manufacture. The remaining four digits represent a factory assigned identification number.

See example below. This machine was made in June 2014 and was machine number 1234.



GENERAL DESCRIPTION

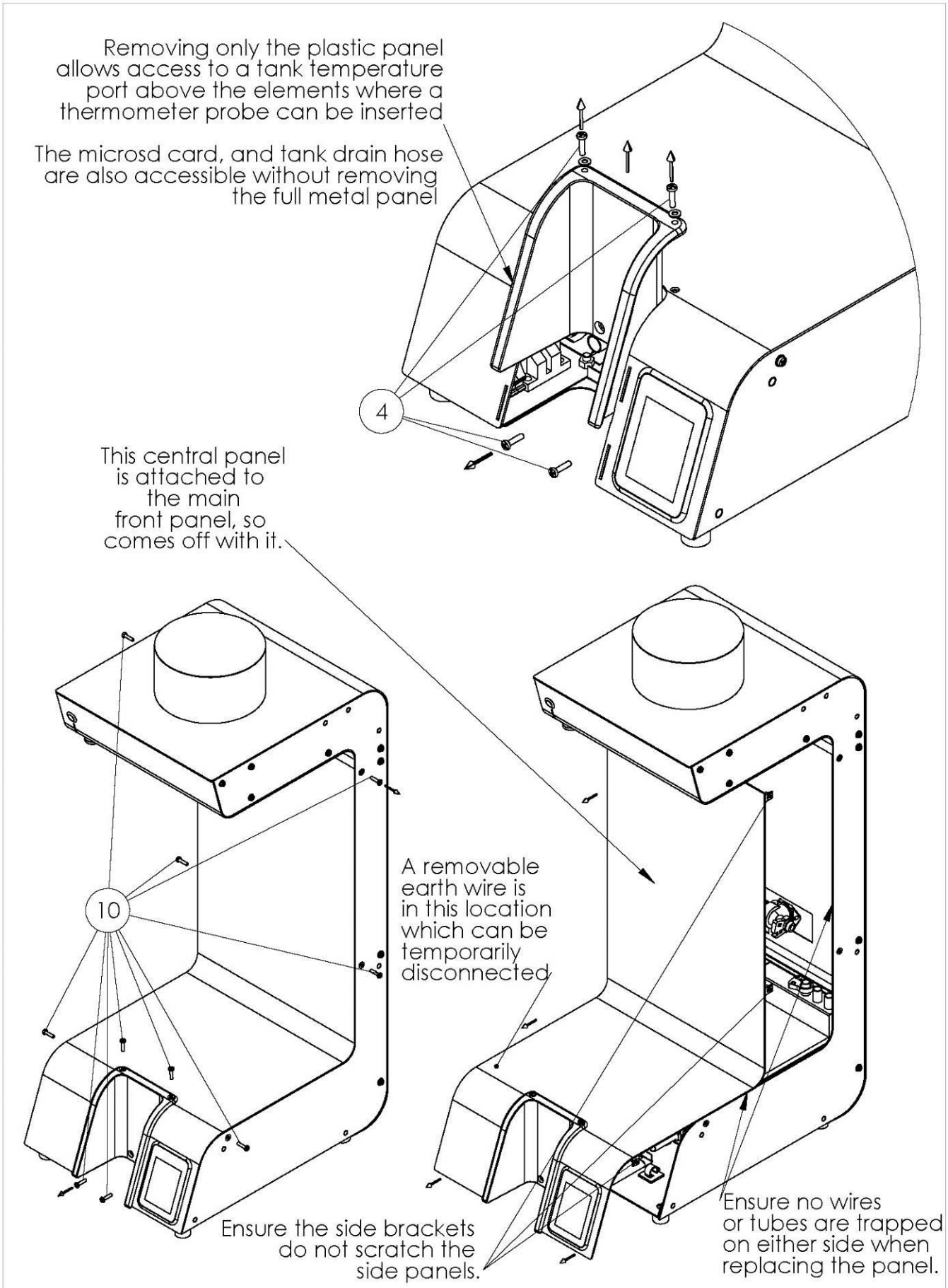
1000850# Jet 6 5.6kW		
Electrical	Connection	5.6kW, 230Vac (US:200-230Vac) c/w 1.5m flex
Plumbing	Fittings Pressure	0.75” BSP (US: Inlet hose 3/4" WRC) Food grade inlet hose supplied 8-145 psi (55-1000 kPa) Standard inlet hose protrudes out 47mm measured from the flat back panel.
Dimensions	Height Width Depth (no plumbing or driptray) Depth (including plumbing fitting, no driptray) Depth (including plumbing fitting & including driptray) Tap Height to counter Tap Height to driptray	840mm 310mm 410mm 445mm 490mm 162mm 132mm
Performance	<u>Hot Water (if tap is installed):</u> Immediate Draw Off Total Recovery rate at 5.6KW	 Approx. 5L + 0.9 litres/minute 0.9 litres/minute

1000851# Jet 6 2.8kW		
Electrical	Connection	2.8kW,230Vac c/w 1.5m flex & moulded plug
Plumbing	As above	
Dimensions	As above	
Performance	<u>Hot Water:</u> Immediate Draw Off Total Recovery rate at 2.8KW	 Approx. 5L + 0.45 litres/minute 0.45 litres/minute

1000851# Jet 6 2.8kW		
Electrical	Connection	2.8kW,230Vac c/w 1.5m flex & moulded plug
Plumbing	As above	
Dimensions	As above	
Performance	<u>Hot Water:</u> Immediate Draw Off Total Recovery rate at 2.8KW	 Approx. 5L + 0.45 litres/minute 0.45 litres/minute

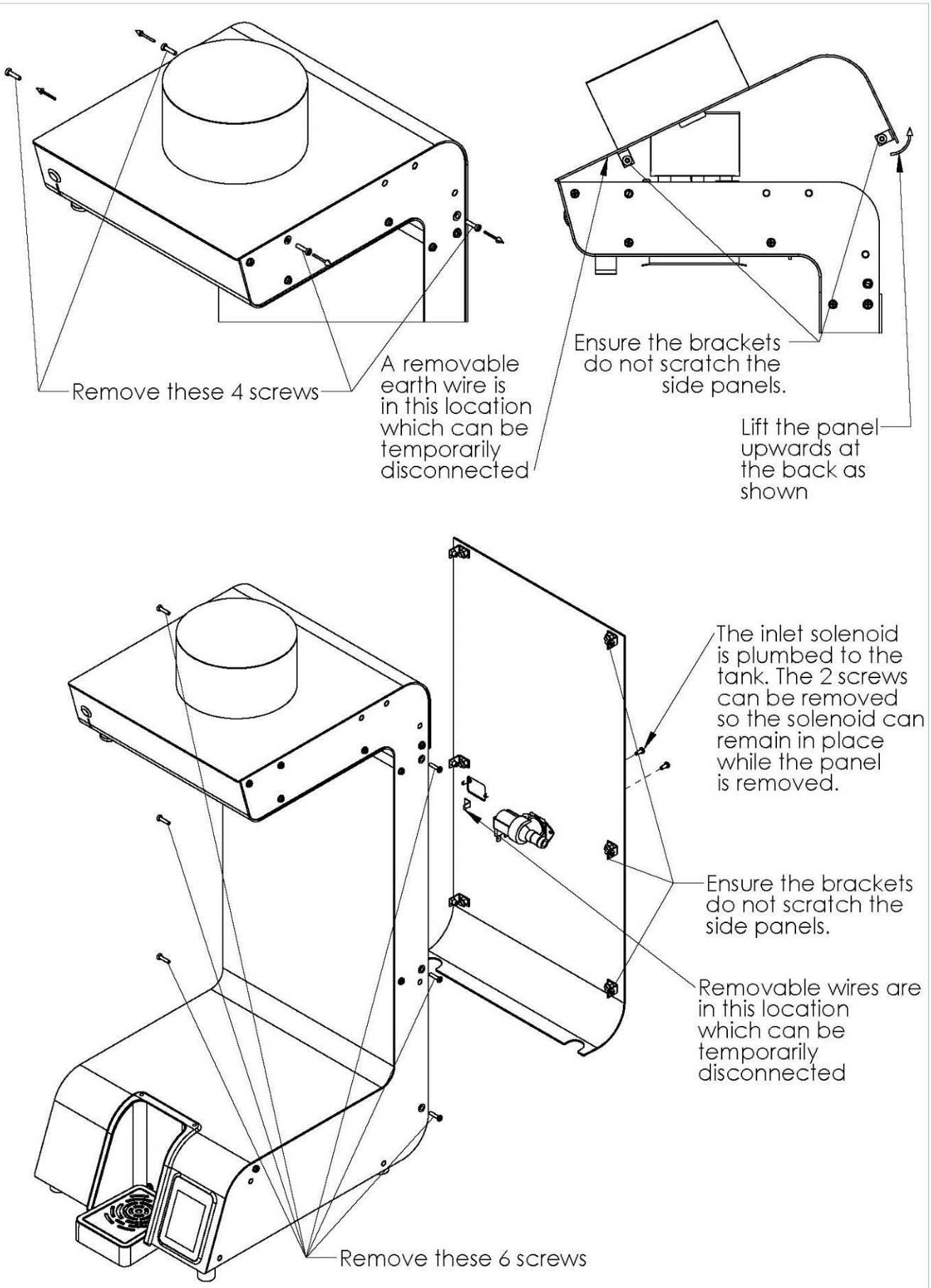
1000850JM Jet 6 3.6kW		
Electrical	Connection	3.6kW,200Vac c/w 1.5m flex
Plumbing	As above	
Dimensions	As above	
Performance	<u>Hot Water:</u> Immediate Draw Off Total Recovery rate at 3.6KW	 Approx. 5L + 0.6 litres/minute 0.6 litres/minute

1000852 Jet 6 400V 5.6kW 3PH		
Electrical	Connection	5.6kW, 400Vac c/w 1.5m flex
Plumbing	As above	
Dimensions	As above	
Performance	Hot Water: Immediate Draw Off Total Recovery rate at 3.6KW	 Approx. 5L + 0.9 litres/minute 0.9 litres/minute



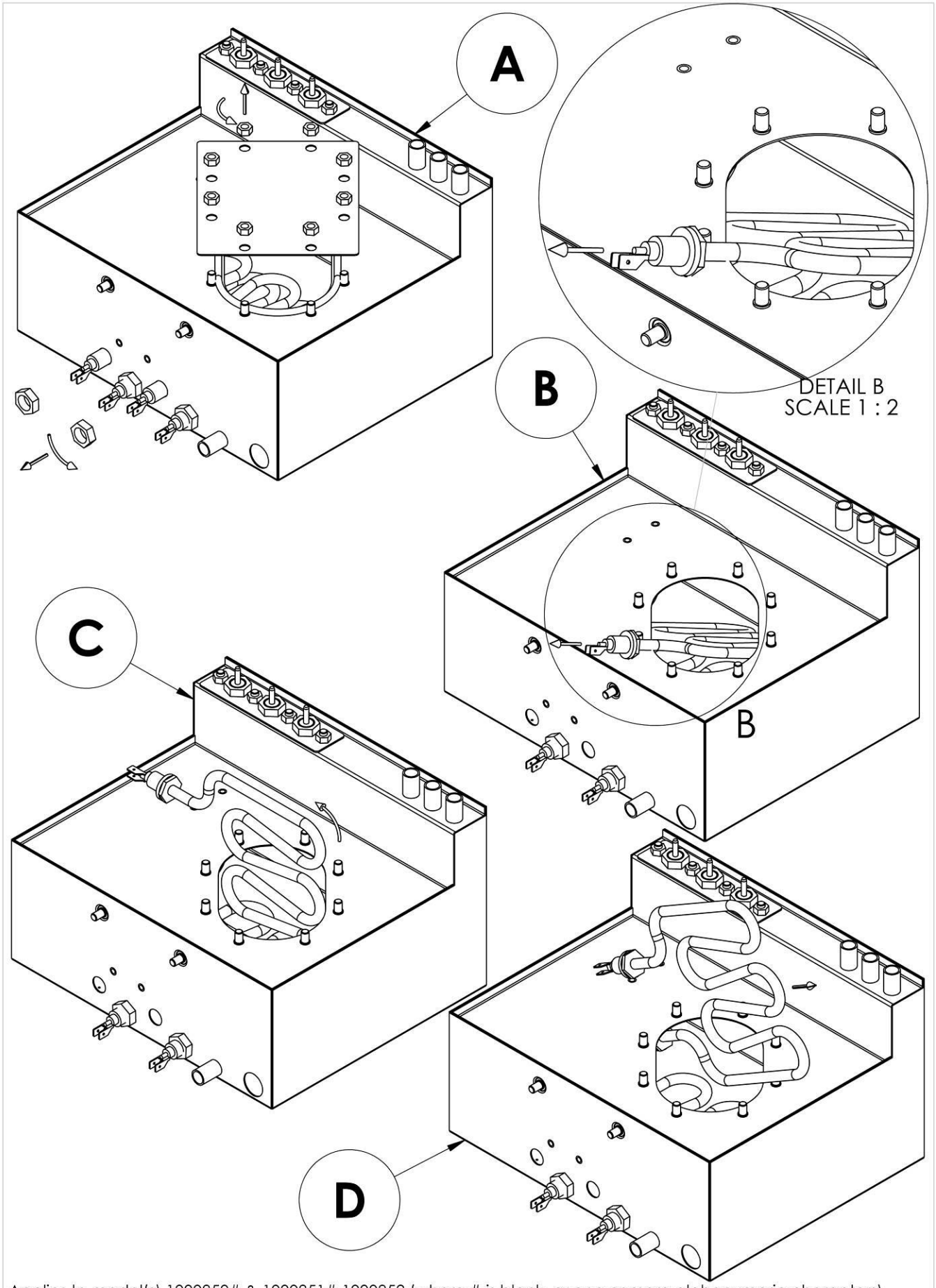
Applies to model(s) 1000850# & 1000851# 1000852 (where # is blank, or one or more alphanumeric characters)

DESCRIPTION:	FRONT PANEL REMOVAL	DWG NO.:	JET6-030A-d	DRAWN BY	BB	25-09-19	C.O.	522



Applies to model(s) 1000850# & 1000851# (where # is blank, or one or more alphanumeric characters)

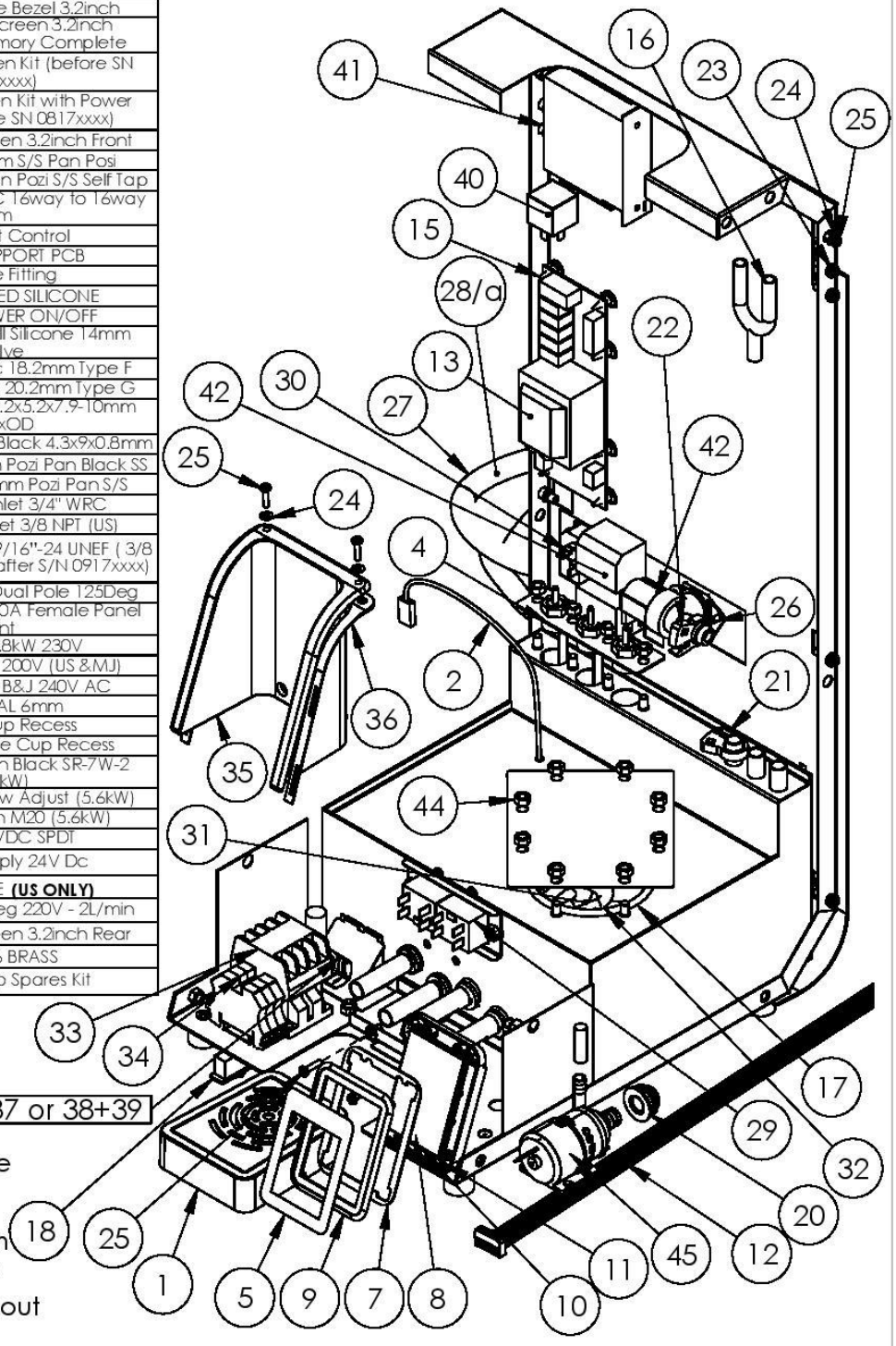
DESCRIPTION:	TOP PANEL & BACK PANEL REMOVAL	DWG NO.:	JET6-031A-c	DRAWN BY	BB	25-09-19	C.O.	522



Applies to model(s) 1000850# & 1000851# 1000852 (where # is blank, or one or more alphanumeric characters)

DESCRIPTION:	ELEMENT REMOVAL	DWG NO.:	JET6-032A-b	DRAWN BY	BB	24-07-17	C.O.	348

ITEM NO.	PART NUMBER	DESCRIPTION
1	2300277	Driptray Complete JET
2	1600691	THERMISTOR ASSEMBLY
4	2301338	Probe Triple 120mm/65mm/no tab
5	1900225	Label Touchscreen 3.2inch
7	1800337	Gasket Silicone Bezel 3.2inch
8	1600202C	P.C.B. Touchscreen 3.2inch Integrated Memory Complete
8A	1600202K	Jet PCB & Screen Kit (before SN 0817xxxx)
8b	1600202KP	Jet PCB & Screen Kit with Power Supply (before SN 0817xxxx)
9	2200627	Bezel Touchscreen 3.2inch Front
10	1401723	Screw M2x6mm S/S Pan Posi
11	1401727	Screw M3.5x10 Pan Pozi S/S Self Tap
12	1501183	Cable Ribbon IDC 16way to 16way 1m
13	1600201	P.C.B Jet Control
15	1801230	PILLAR SUPPORT PCB
16	1402202	Y Piece Fitting
17	1800770	O RING 4" RED SILICONE
18	1501216	SWITCH POWER ON/OFF
20	1502159	Mount Tank Wall Silicone 14mm Valve
21	1800540	Clip Hose Plastic 18.2mm Type F
22	1800550	Clip Hose Plastic 20.2mm Type G
23	1401877	Spacer Flange 9.2x5.2x7.9-10mm LxIDxOD
24	1402442	Washer M4 Nylon Black 4.3x9x0.8mm
25	1401767	Screw M4 x 16mm Pozi Pan Black SS
26	1401760	Screw M4 X 10mm Pozi Pan S/S
27	1800690	Hose Water Inlet 3/4" WRC
28	1800692	Hose Water Inlet 3/8 NPT (US)
28a	1800693	Hose Water Inlet 9/16"-24 UNEF (3/8 Compression) (US after S/N 0917xxxx)
29	1502075	Thermal Switch Dual Pole 125Deg
30	1501157	Socket IEC C13 10A Female Panel Mnt
31	1500985	ELEMENT 2.8kW 230V
32	1500987	Element 1.8kW 200V (US &MJ)
33	1500840	CONTACTOR B&J 240V AC
34	1502000	TERMINAL 6mm
35	1801575	Plastic Cup Recess
36	1800336	Gasket Silicone Cup Recess
37	1801200	Strain Relief Bush Black SR-7W-2 (2.8kW)
38	1801202	Strain Relief Screw Adjust (5.6kW)
39	1800356	Locknut Nylon M20 (5.6kW)
40	1600496	Relay 24VDC SPDT
41	1601000	Power Supply 24V Dc
42	1501094	FNM-6 FUSE **(US ONLY)**
42	1502171	Valve Inlet 90 Deg 220V - 2L/min
43	2200628	Bezel Touchscreen 3.2inch Rear
44	1401150	NUT M6 BRASS
45	1501562K	Muller Pump Spares Kit



Descale solution can be poured into the top of the tank through the probe holes using a funnel. For heavy scaling remove the cleanout door and remove scale by hand. The machine can be drained via the drain at the bottom of the tank near the pump

37 or 38+39

When replacing the cleanout door be careful not to overtighten the nuts as it could break the threaded studs on the tank.

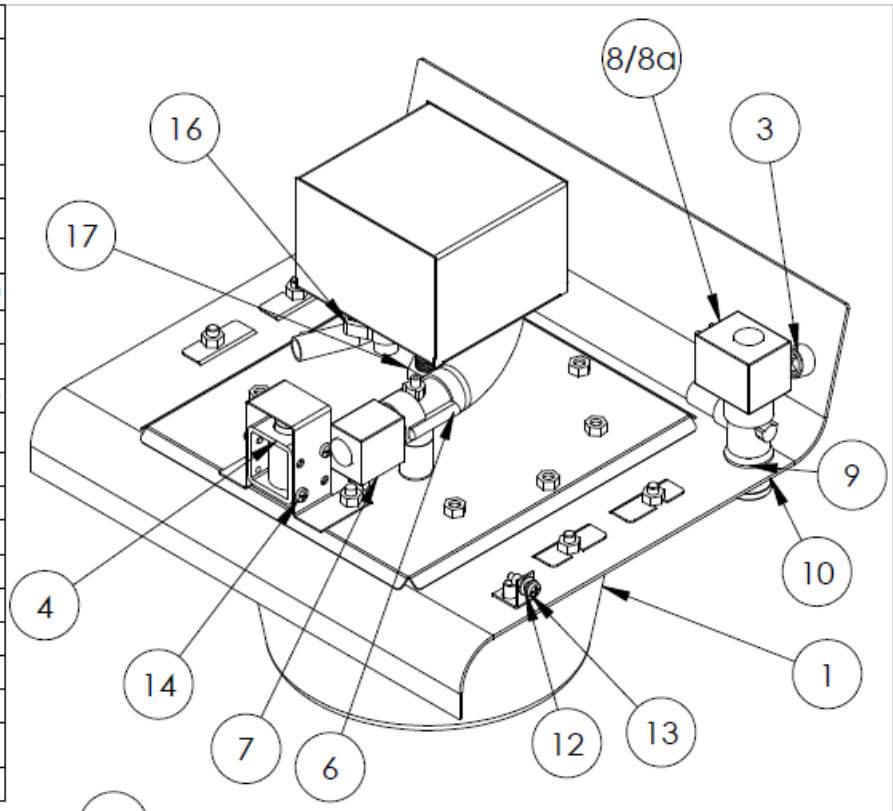
To remove the probes take off the 4 nuts and lift the probe assembly upwards out of the tank. Heavy scaling on the high level probe can cause the tank to overfill and may cause the overflow probe to be triggered

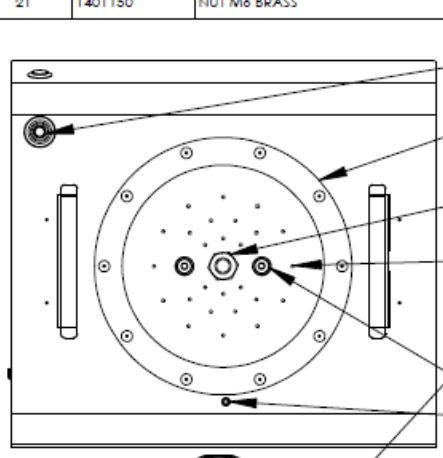
The pump is held in place by a friction fit in the silicone mount. To remove the pump drain the machine fully, hold the silicone mount against the tank & pull the pump directly out of the tank.

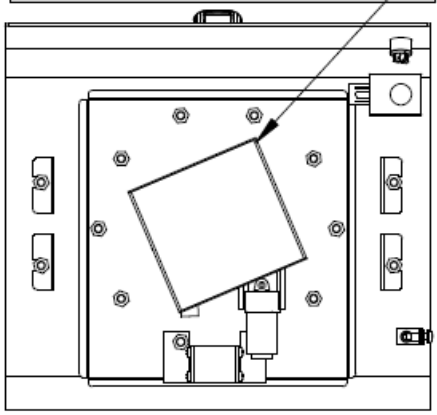
Applies to model(s) 1000850# & 1000851 # 1000852 (where # is blank, or one or more alphanumeric characters)

DESCRIPTION:	SPARE PARTS LOWER & DESCALING	DWG NO.:	JET6-033A-k	DRAWN BY	BB	22-09-20	C.O.	592

ITEM NO.	PART NUMBER	DESCRIPTION
1	2300023	Basket Complete 233*136mm with syphon
2	1800301	GASKET SPRAYHEAD 186x146x6mm
3	1501218	Push Button Metal Domed 16mm DIA
4	1502260	Solenoid 24VDC Basket Lock
5	1800402	Grommet Silicone 4mmID 7mmPanel dia
6	1502147	Valve Dispense Solenoid Plug M00849
7	1502161	Valve 12mm Bore 230V 40E Vent Vend
8	1502151	VALVE DUMP 240Vac
8a	1502164	Valve 12mm Bore 230V U35E (US ONLY)
9	1502162	Mount Panel Silicone Red 14mm Valve
10	2301219	Tube 22.2mmOD x19.8mmID x15mm 304SS
11	1400088	Adapter 1/4BSP M x 9.5mm 304SS
12	1402442	Washer M4 Nylon Black 4.3x9x0.8mm
13	1401767	Screw M4 x 16mm Pozi Pan Black SS
14	1401830	Screw M4 X 6mm S/S Pan Pozi
16	1800545	Clip Hose Plastic 13mm Type E
17	1401000	LOCKNUT 1/4" BSP BRASS
18	2301204	Tube 9mmOD x7mmID x18mmL 304SS
19	1800630	Hose Silicone 8mm I.D. X 12mm O.D
20	1801175	Sprayhead Disc 156mm with grommets
21	1401150	NUT M6 BRASS





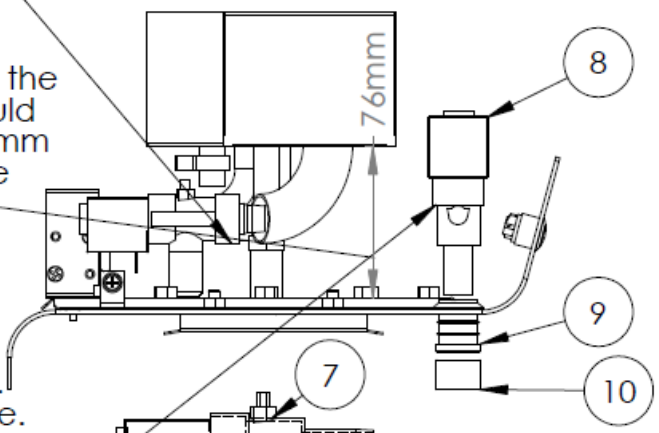


To change the sprayhead dispense valve first loosen the lock nut and twist the circulation chamber as shown.

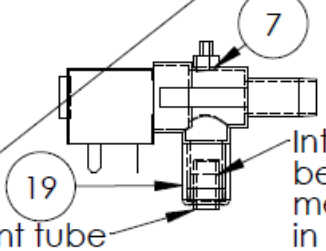
Place some absorbent material under the solenoid and peel back the solenoid plug. A small amount of retained water will drain out of the chamber

The solenoid can now be pulled up vertically off its metal mounting tube. When replacing the valve place the plug on the valve and peel it back, then twist the chamber into position and pull the plug over the large metal elbow.

the bottom of the chamber should be approx 76mm away from the spray head



The water dispense valve is held in place by a compression fit into the silicone mount. To remove the valve pull it upwards with force. The metal shroud can come off and should be in place on the mount before reinsertion of the solenoid



Internal Silicone below top of metal tube when in place.

Metal mount tube

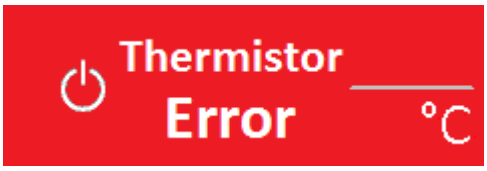
Applies to model(s) 1000850# & 1000851# &1000852 (where # is blank, or one or more alphanumeric characters)

DESCRIPTION:	SPARE PARTS UPPER & DISPENSE VALVE REMOVAL	DWG NO.:	JET6-034A-g	DRAWN BY	SN	12-09-24	C.O.	994

TROUBLESHOOTING – LCD DIAGNOSTIC GUIDE:

The Jet 6 uses an electronic diagnostic system to help determine faults. If an error is detected a message is displayed through the LCD screen.

THERMISTOR ERROR



Electronic check:

- This indicates that the thermistor is possibly measuring such a large resistance that it assumes the thermistor circuit is open.
- This indicates that the thermistor is possibly measuring zero resistance. It assumes the thermistor has failed sort circuit.
- The element and inlet valve are turned OFF when this error is detected
- This is a recoverable error. When the correct range of resistance is measured, normal operation resumes

Probable causes:

1. The thermistor probe is unplugged from the 4way connector on the PCB or the thermistor has failed open circuit.
2. The thermistor has failed in a closed circuit manner.

Action required:

1. Check that the thermistor is plugged in to the PCB correctly. If it is, replace the thermistor.

OVERFILL ERROR



Electronic check:

- This indicates that the overflow water level probe has been reached
- The element and inlet valve are turned OFF when this error is detected
- This is a recoverable error. When the water drops off the overflow water level probe, normal operation resumes.

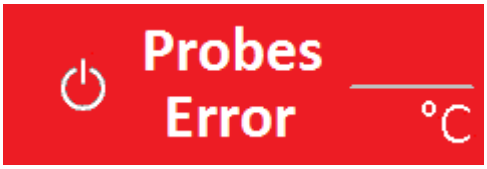
Probable causes:

1. The machine is wired incorrectly, e.g. the high level probe wire is connected to the overflow probe.
2. The tank has overfilled since the inlet solenoid has failed or is “weeping”. If the machine is turned off for a long time but still plumbed in this can cause it to fill.
3. The high level probe may have become coated in limescale and is allowing too much water in before it registers to stop.
4. If a brew is cancelled water circulating in the plumbing will return to the tank and possibly cause it to reach the low level probe (this is also more likely if the high level probe is scaled up)
5. Bubbles from the element can cause splashing inside the small tank which can trigger the overflow probe momentarily.

Action required:

1. Dispense some water via the hot water outlet and see if the problem recurs.
2. Descale the tank paying special attention to the high level probe.
3. Check water pressure, if it is too low the solenoid may allow small amounts of water in.
4. Check the solenoid for debris which may cause it to jam partially open.

PROBES ERROR



Electronic check:

- This indicates that the high level probe has been reached but the low level probe has not been detected.
- The element and inlet valve are turned OFF when this error is detected
- This is a recoverable error. If the low level probe is detected, normal operation resumes.

Probable causes:

1. The low level probe is disconnected or has a faulty wiring connection. The probe will not function and so the machine will fill until the high level probe is reached.
2. The probes are connected incorrectly, so the water reaches the first/lowest probe but it is incorrectly wired as the high level probe.
3. The low level probe may have become coated in limescale and is not being detected so water continues to fill the machine until the high level probe is detected.

Action required:

1. Re-wire the probes correctly.
2. Repair the faulty probe/connectors/wiring
3. Descale the low level probe.

HEATER ERROR



Electronic check:

- This indicates that the tank temperature has not risen in 20mins

Probable causes:

1. The element is disconnected or has failed.

Action required:

1. Replace the element.
2. Re-wire the elements correctly, 2.8kW machines should have the lower element connected.

WAIT LOW PRESSURE



Electronic check:

- This indicates that the tank temperature has not dropped in 6mins while the inlet solenoid is trying to allow in water.
- This is a recoverable error. When water is allowed in a temperature drop will occur and normal operation resumes

Probable causes:

1. The water supply has been cut off or is lower than 2L/min. This could be a temporary event if some other appliances on the same water line is taking in a lot of water.
2. The inlet solenoid may have failed or is has a wiring error.

Action required:

1. Replace the solenoid.
2. Check incoming the water supply.

TROUBLESHOOTING –GENERAL DIAGNOSTIC GUIDE:

The Jet 6 may have problems which the electronics are unable to detect.

LOW WATER OUTPUT

The brew water should exit the sprayhead at approximately 2.1L/minute. During water calibration it should discharge 1000-1200g of hot water (960-1150ml).

Probable causes:

1. The hose exiting the pump is kinked which restricts flow.
2. Other hoses exiting the upper circulation chamber are kinked which can effect flow.
3. The pump is faulty or is clogged/jammed.
4. Incorrectly calibrated.

Action required:

1. Check for kinks in all hoses.
2. Check pump operation. Although the pump may function it may not be outputting an adequate supply. During calibration it should output 1000-1200g of water, or if dispensing using the hot water dispense outlet it should be approximately 2L per minute. The tube coming from the pump may be temporarily removed from the metal Y piece and fed directly into the basket, this can rule out any plumbing issues, a higher flow rate of 4-6L/min will be expected from the pump when operated in this way.
3. Recalibrate the water dispense. If a faulty scales is used the volume will be incorrect.

HIGH WATER OUTPUT

The brew water should exit the sprayhead at approximately 2.1L/minute. During most brew cycles the solenoid valve feeding the sprayhead should close at which time no water should exit the sprayhead after a draining time of approx. 10 seconds after the solenoid closes.

Probable causes:

1. The valve feeding the sprayhead is faulty. The valve mounts onto a metal tube with some silicone tube. If too much tube is used it can rise up over the top of the metal mounting tube and cause the valve's plunger to be forced into an open position. As both the valve and silicone tube are transparent it may be possible to see if the silicone tube is past the top of the metal tube.
2. Kinks in any tubes can cause flow problems in the machine which could cause unusually high flowrates.
3. Incorrectly calibrated.

Action required:

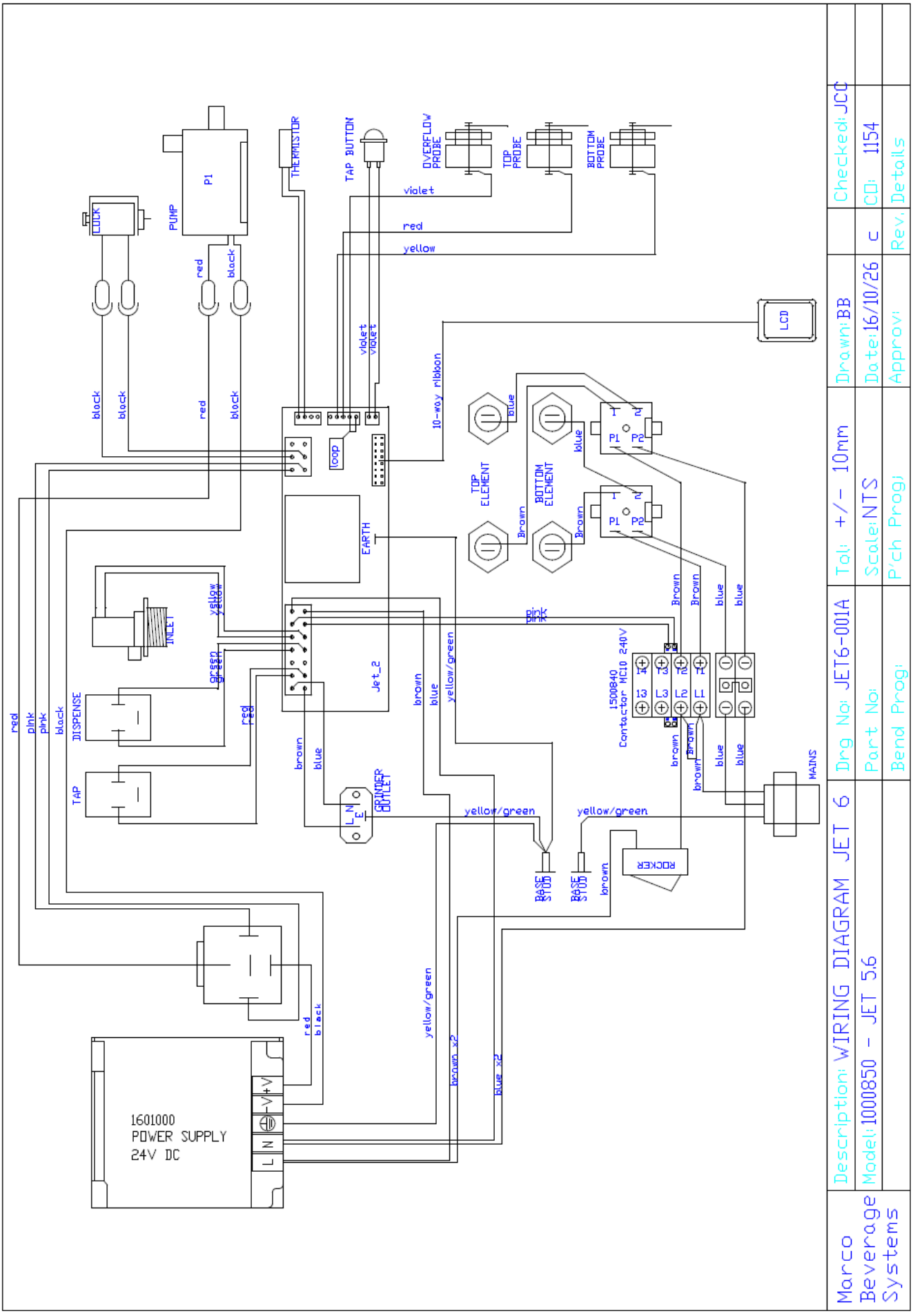
1. Check the valve and remove and reseat it if necessary.
2. Check for kinks in all hoses.
3. Recalibrate the water dispense. If a dry basket is used during calibration then some water may be retained in the basket giving a lower estimate. If hot water is left to stand then some may evaporate giving a lower weight when weighed, so the machine will dispense too much as it thinks it has a lower flowrate than it actually has.

GRINDER OUTPUT

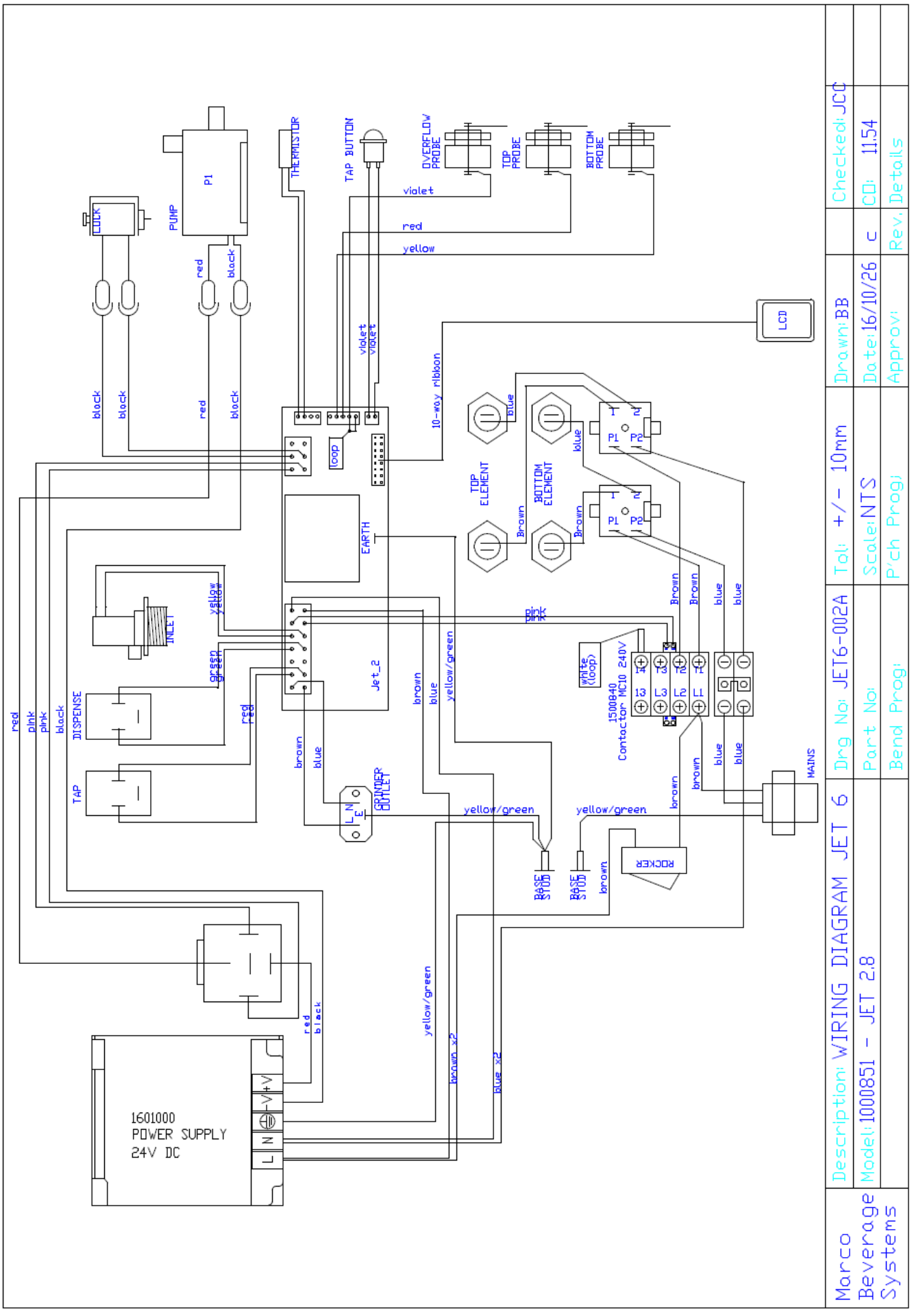
The grinder works on a timed basis, estimating how many grams are dispensed per second. During calibration if the grinder is empty and clean then grinds will cling to the grinder components and the 10 second calibration grind will dispense a lower weight than if the machine was in normal operation running for 10 seconds. So before calibrating a small amount of beans should be passed through the grinder.

Adjusting bean type, roast, humidity, grinder settings etc. can also result in higher/lower weights than expected.

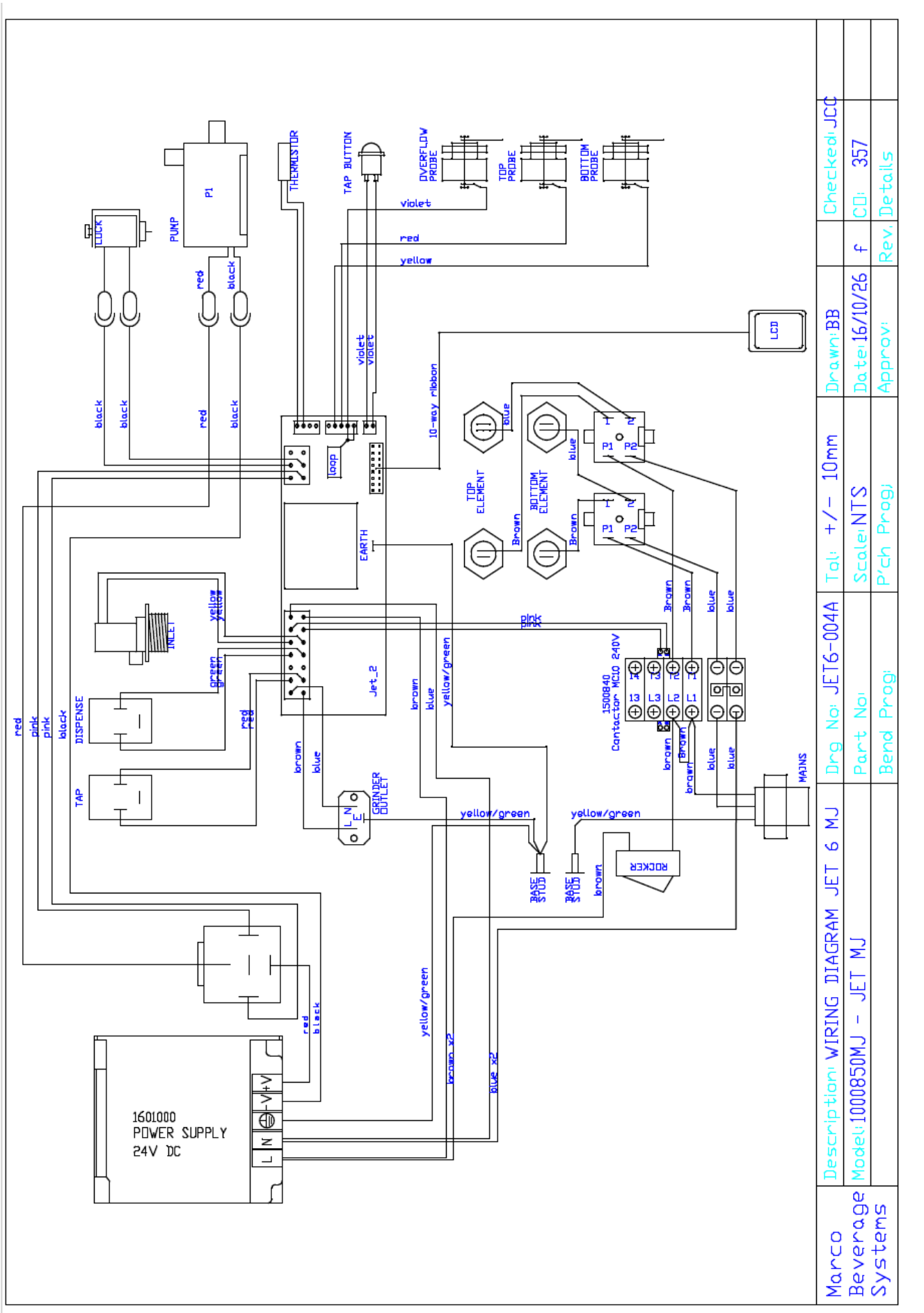
WIRING SCHEMATIC 5.6kW (2 ELEMENTS OPERATING)



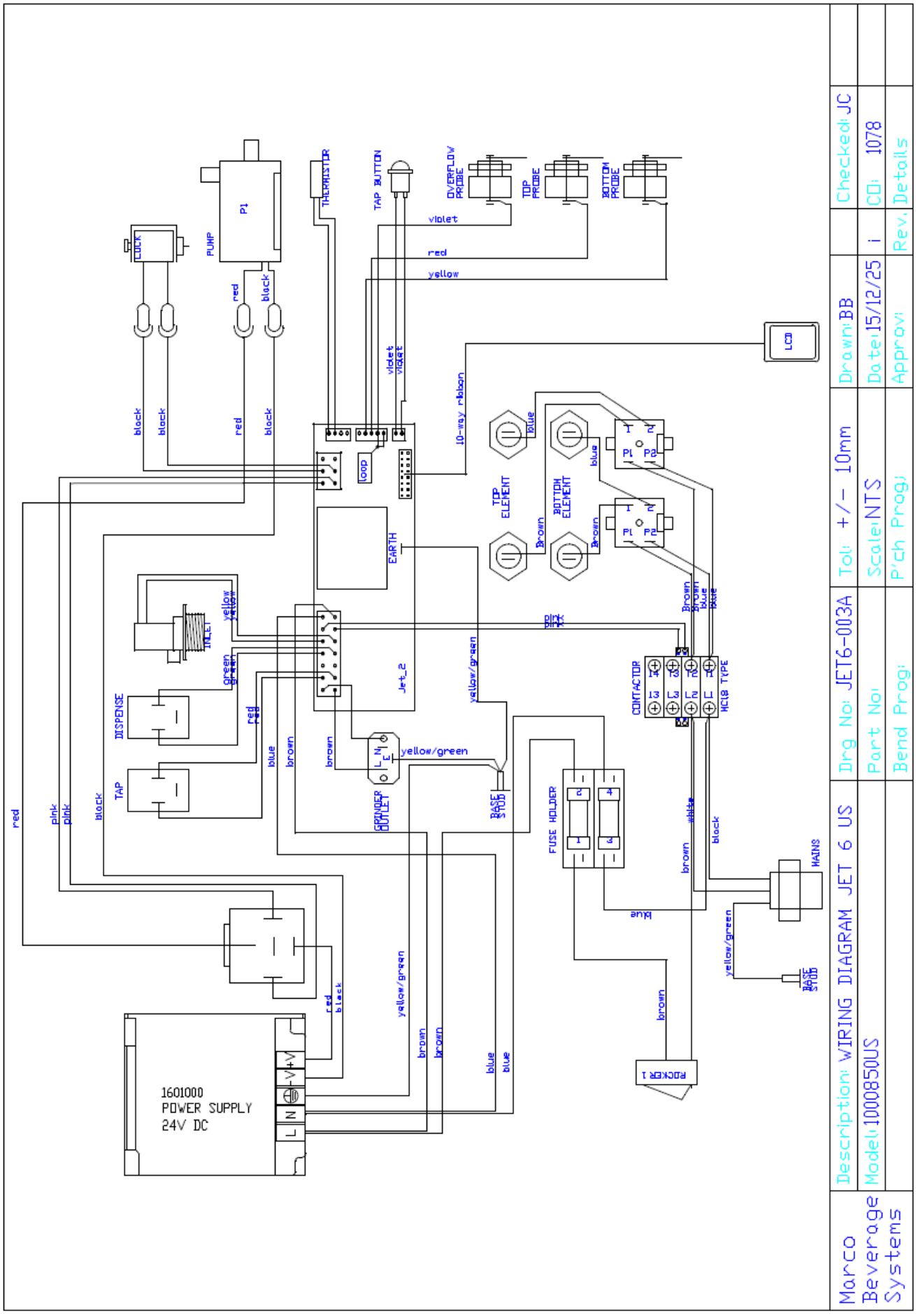
WIRING SCHEMATIC 2.8kW (1 ELEMENT OPERATING)



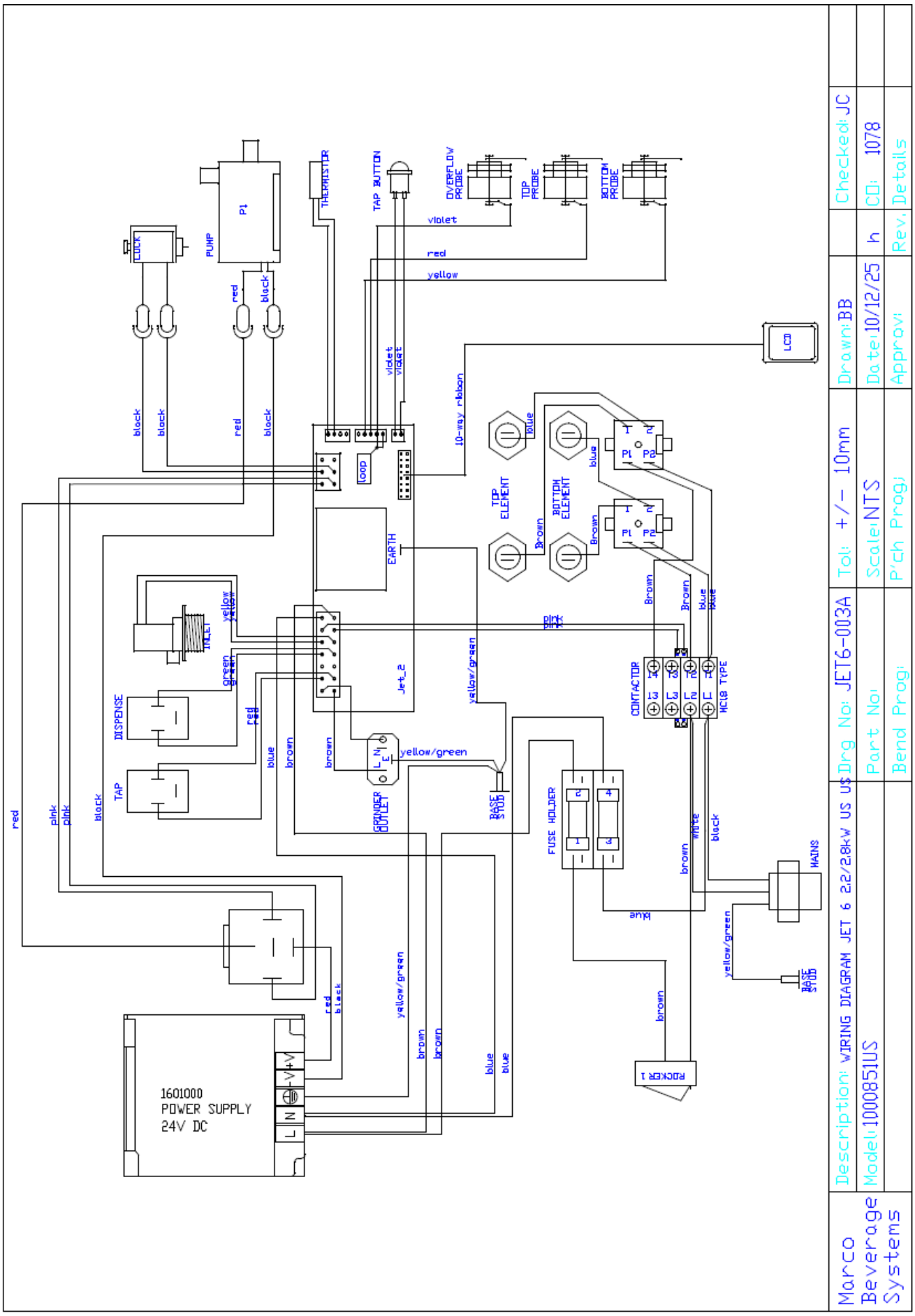
WIRING SCHEMATIC 3.6kW MJ VERSION



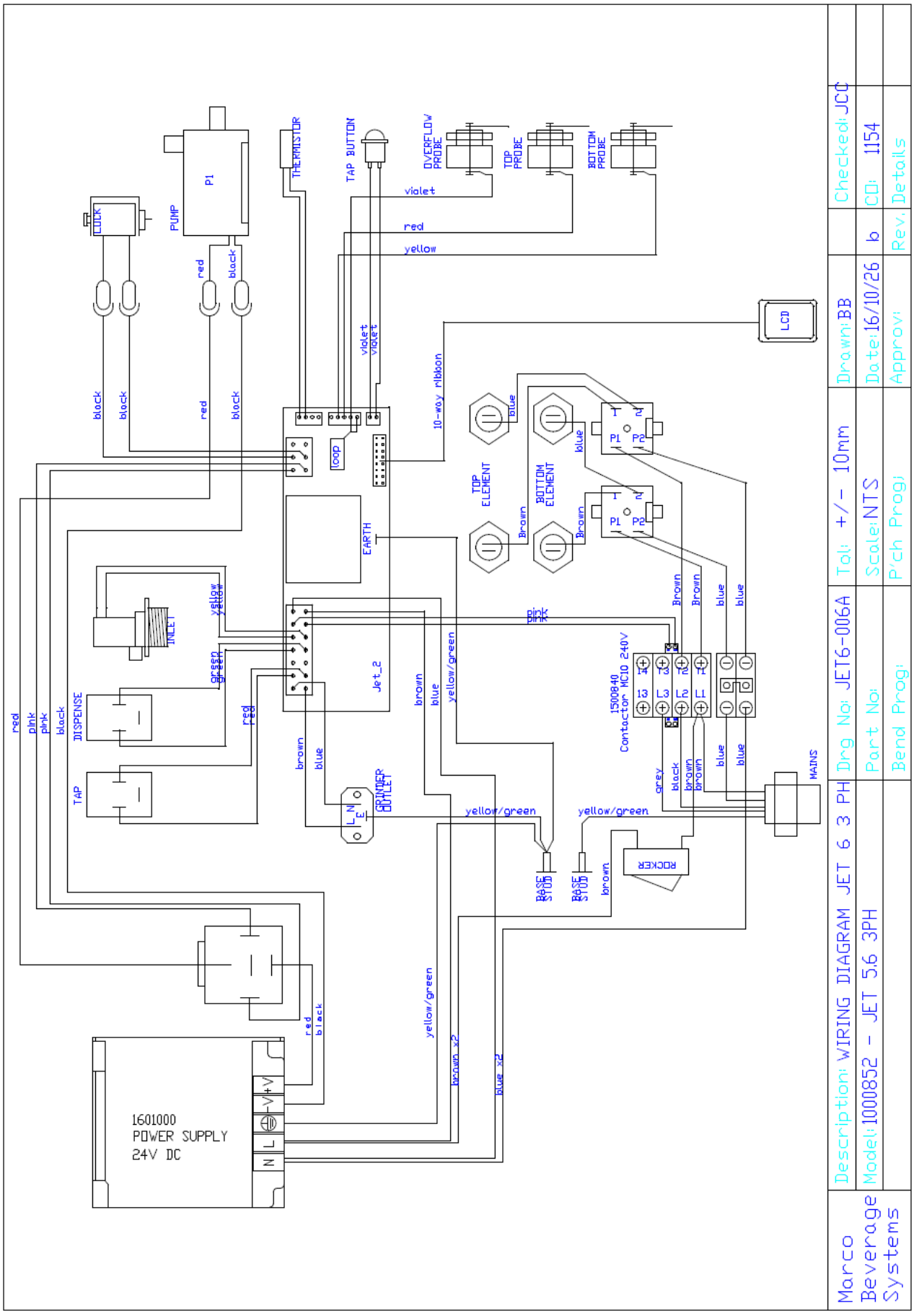
WIRING SCHEMATIC 5.6kW US VERSION



WIRING SCHEMATIC 2.8kW US VERSION



WIRING SCHEMATIC 3-Phase VERSION



GENERAL SPARE PARTS LIST
(refer to earlier drawings for further parts listing)

Part Number	Description
1500985	ELEMENT 2.8kW 230V
1500987	Element 1.8kW 200V **(US & MJ)**
1600691	Thermistor Assembly
1502260	Solenoid 24VDC Basket Lock
1502161	Valve 12mm Bore 230V 40E Vent Vend
1502151	VALVE DUMP 240Vac
1502164	Valve 12mm Bore 230V U35E
1502171	Valve Inlet 90 Deg 220V - 2L/min
1800301	Gasket Sprayhead 186x146x6mm
1801175	Sprayhead Disc 156mm with grommets
1800690	Water Inlet Hose WRC
1800692	Hose Water Inlet 3/8 NPT **(only for US)**
1800693	Hose Water Inlet 9/16”-24 UNEF (3/8 Compression) **(only for US after S/N 0817xxxx)**
1501562k	Muller Pump Spares kit
1600201	P.C.B Jet Control
1600200C	P.C.B. Touchscreen 3.2inch Complete
1501182	Cable Ribbon IDC 10way to 16Way 1m
1500840	CONTACTOR B&J 240V AC
1800770	O RING 4" RED SILICONE
2300023	Basket Complete 233x136mm (with syphon)
2300277	Driptray Complete JET
1800402	Grommet Silicone 4mmID 7mmPanel dia
2301338	Probe Triple 120mm/65mm/no tab
1700169	Insulated Urn 6L
8000151	Filter Paper Jet 380-152 (52gsm)
8000240	Urn Cleanser (800g Tub)

