

Controller

In Use Indicator
Indicates that hot water is being supplied.

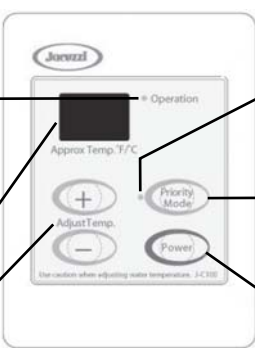
Temperature Display
Indicates temperature setting or flashes diagnostic code.

Thermostat

Priority Indicator
Indicates that this controller is setting the water temperature.

Priority Mode Button
When no water is being supplied, pressing this button allows this controller to set the water temperature.

Power Button



Diagnostic Use of the Controller

- To display the most recent diagnostic codes press and hold the power button for 2 seconds on the J-C100 controller.
- To enter or exit the maintenance monitor information mode press and hold the minus button for 2 seconds and without releasing it press the power button.

No.	Data	Unit
01	Water flow rate	0.1 gal/min
02	Outgoing water temperature	Degrees Fahrenheit

To Change the Temperature Scale (°F / °C)

With the water heater turned off, press and hold the power button until the display changes to the other temperature scale (about 5 seconds).

To Turn Off the Controller Sound (Mute)

To turn the sound off (mute), press and hold both the + and - thermostat buttons until a “beep” is heard (about 5 seconds).

Locking the Controller

The J-C100 controller can be locked or unlocked by pressing the Priority button and the plus button together for 5 seconds. A beep will sound confirming that the controller is locked. The display will alternately show “LOC”, the temperature setting, and a diagnostic code if one has been activated. All of the controllers in the system are also locked.

To unlock the controller press the Priority button and the plus button together for 5 seconds.

Gas Pressure Setting

NOTE: For additional installation and commissioning information refer to the Operation and Installation Manual.

WARNING

This appliance must be installed, serviced and removed by a trained and qualified person. During pressure testing of the consumer piping, ensure gas valve is turned off before unit is shut off. Failure to do so may result in serious injury to yourself or damage to the unit.

APPLIANCE OPERATING PRESSURES

Table 1

	Water Inlet Max.	Gas Inlet Min./Max		Forced Low		Forced High	
		NAT.G	LPG	NAT.G	LPG	NAT.G	LPG
J-S199W	150 PSI	5"W.C.	8"W.C.	0.61"W.C.	0.93"W.C.	2.69"W.C.	4.49"W.C.
J-S180W		10.5"W.C.	13.5"W.C.	0.61"W.C.	0.93"W.C.	2.19"W.C.	3.41"W.C.

Commissioning

With all gas appliances in operation at maximum gas rate, the flowing inlet pressure at the incoming test point on the Jacuzzi water heater should read 5" W.C. - 10.5" W.C. on natural gas and 8" W.C. - 13.5 W.C. on propane gas. If the pressure is lower, the gas supply is inadequate and the unit will not operate to specification. Check the gas meter regulator and pipework for correct operation/sizing and correct as required.

Troubleshooting

Important Safety Notes

There are a number of (live) tests that are required when fault finding this product. Extreme care should be used at all times to avoid contact with energized components inside the water heater. Only trained and qualified service technicians should attempt to repair this product. Before checking for resistance readings, disconnect the power source to the unit and isolate the item from the circuit (unplug it).

(SV1, SV2, SV3, SV4 and POV) Gas valve and Modulating solenoids: (Set meter above 2K)

Wire color	Voltage	Resistance	Connector #	Pin #'s
(Main) Black - Grey	11 ~ 13 VDC	24 ~ 28 ohms	D1	B3 - B4
(SV1) Black - Blue	11 ~ 13 VDC	36 ~ 42 ohms	B3	4 - 6
(SV2) Black - Yellow	11 ~ 13 VDC	36 ~ 42 ohms	B2	4 - 7
(SV3) Black - Red	11 ~ 13 VDC	36 ~ 42 ohms	B4	4 - 5
(SV4) Black - Orange	11 ~ 13 VDC	35 ~ 41 ohms	B1	4 - 8
(POV) Pink - Pink	2 ~ 15 VDC	67 ~ 81 ohms	D1	1 - 2

(M) Water Flow Control Device Servo or Geared Motor:

Red - Pink	5 ~ 8 VDC	44 ~ 52 ohms	G2	3 - 4
White - Blue	5 ~ 8 VDC	44 ~ 52 ohms	G2	1 - 2
Grey - Brown	N / A	N / A	G2	5 - 7
Grey - Orange	N / A	N / A	G2	6 - 7

NOTE: The grey wire listed above turns to black at G connector on the PCB.

(QS) Water Flow Sensor:

Black - Red	11 ~ 13 VDC	5.5 ~ 6.2 K ohms	L3	E10 - G7
Yellow - Black	4 ~ 7 VDC	1 ~ 1.4 Mega ohms	L3	E1 - G7

By-pass Flow Control:

Red - Pink	2 ~ 6 VDC	44 ~ 52 ohms	G1	12 - 13
White - Blue			G1	10 - 11

(IG) Ignition System:

Grey - Grey	90 ~ 110 VAC	N / A	C1	1 - 3
-------------	--------------	-------	----	-------

(FM) Combustion Fan Motor:

Red - Black	6 ~ 45 VDC	N / A	L2	5 - 6
White - Black	5 ~ 10 VDC	N / A	L2	3 - 5
Yellow - Black	11 ~ 13 VDC	N / A	L2	4 - 5

Set your meter to the hertz scale. Reading across the white and black wires at terminals 3 and 5 you should read between 60 and 420 hertz.

Thermal Fuse / Overheat Switch:

White - White	11 ~ 13 VDC	Below 1 ohms	B8 B7	B1 - E10
---------------	-------------	--------------	----------	----------

Dip Switches Settings

Adjust switches 2 and 3 of Dip SW1 (upper side) depending on your altitude according to the table below.

Dip SW1

High Altitude

WARNING

DO NOT adjust the other dip switches unless specifically instructed to do so. Incorrect Dip Switch Settings can cause the Jacuzzi water heater to operate in an unsafe condition and may damage the water heater and void the warranty.

Dip SW No.	NOTES								
2	High Altitude	Off	Level 0 0-2000 ft (0-610 m)	Off	Level 1 2001-5200 ft (610-1585 m)	On	Level 2 5201-7700 ft (1585-2347 m)	On	Level 3 7701-10200 ft (2347-3109 m)
3		Off		On		Off		On	

Diagnostic Codes

03 Power interruption during Bath fill (Water will not flow when power returns)

- Turn off all hot water taps. Press ON/OFF twice.

10 Air Supply or Exhaust Blockage

- Ensure approved venting materials are being used.
- Check that nothing is blocking the flue inlet or exhaust.
- Check all vent components for proper connections.
- Ensure vent length is within limits.
- Verify dip switches are set properly.
- Check fan for blockage.

11 No Ignition

- Check that the gas is turned on at the water heater, meter, or cylinder.
- If the system is propane, make sure that gas is in the tank.
- Ensure appliance is properly grounded.
- Ensure gas type and pressure is correct.
- Ensure gas line, meter, and/or regulator is sized properly.
- Bleed all air from gas lines.
- Verify dip switches are set properly.
- Ensure igniter is operational.
- Check igniter wiring harness for damage.
- Check gas solenoid valves for open or short circuits.
- Remove burner cover and ensure burners are properly seated.
- Remove burner plate; inspect burner surface for condensation/debris.

12 No Flame

- Check that the gas is turned on at the water heater, meter, or cylinder.
- Check for obstructions in the flue outlet.
- If the system is propane, make sure that gas is in the tank.
- Ensure gas line, meter, and/or regulator is sized properly.
- Ensure gas type and pressure is correct.
- Bleed all air from gas lines.
- Ensure proper venting material was installed.
- Ensure condensation collar was installed properly.
- Ensure vent length is within limits.
- Verify dip switches are set properly.
- Check power supply for loose connections.
- Check power supply for proper voltage and voltage drops.
- Ensure flame rod wire is connected.
- Check flame rod for carbon build-up.
- Disconnect and reconnect all wiring harnesses on unit and PC board.
- Check for DC shorts at components.
- Check gas solenoid valves for open or short circuits.
- Remove burner plate; inspect burner surface for condensation/debris.
- Check the ground wire for the PC board.

14 Thermal Fuse

- Check for restrictions in air flow around unit and vent terminal.
- Check gas type of unit and ensure it matches gas type being used.
- Check for low water flow in a circulating system causing short-cycling.
- Ensure dip switches are set to the proper position.
- Check for foreign materials in combustion chamber and exhaust piping.
- Check heat exchanger for cracks or separations.
- Check heat exchanger surface for hot spots which indicate blockage due to scale build-up. Refer to instructions in manual for flushing heat exchanger. Hard water must be treated to prevent scale build up or damage to the heat exchanger.
- Measure resistance of safety circuit.
- Ensure high fire and low fire manifold pressure is correct.
- Check for improper conversion of product.

16 Over Temperature Warning

- Check for restrictions in air flow around unit and vent terminal.
- Check for low water flow in a circulating system causing short-cycling.
- Check for foreign materials in combustion chamber and exhaust piping.
- Check for blockage in the heat exchanger.

19 Electrical Grounding

- Check all components for electrical short.

32 Outgoing Water Temperature Sensor

33 Heat Exchanger Outgoing Temperature Sensor

41 Outside Temperature Sensor

51 Inlet Water Temperature Sensor (J-S199 only)

- Check sensor wiring for damage.
- Measure resistance of sensor.
- Clean sensor of scale build-up.
- Replace sensor.

52 Modulating Solenoid Valve Signal

- Check modulating gas solenoid valve wiring harness for loose or damaged terminals.
- Measure resistance of valve coil.

61 Combustion Fan

- Ensure fan will turn freely.
- Check wiring harness to motor for damaged and/or loose connections.
- Measure resistance of motor winding.

65 Water Flow Servo

- The water flow control valve has failed to close during the bath fill function. Immediately turn off the water and discontinue the bath fill function. Contact a licensed professional.

70 PC Board

- Check PC board DIP switches for correct positons.
- Check the connection harness at the connection on the PC board.
- Replace PC board.

71 Solenoid Valve Circuit

- Replace the PC Board.

72 Flame Sensing Device

- Verify flame rod is touching flame when unit fires.
- Check all wiring to flame rod.
- Remove flame rod;check for carbon build-up; clean with sand paper.
- Check inside burner chamber for any foreign material blocking flame at flame rod.
- Measure micro amp output of sensor circuit with flame present.
- Replace flame rod.

79 Water leakage detected

- Turn off water supply and contact licenced professional.

LC# Scale Build-up in Heat Exchanger

(when checking maintenance code history "00" is substituted for "LC")

- LC0~LC9 indicates that there is scale build up in the heat exchanger and that the heat exchanger needs to be flushed to prevent damage. Refer to the flushing instructions in the manual. Hard water must be treated to prevent scale build up or damage to the heat exchanger.
- To operate the water heater temporarily until the heat exchanger can be flushed, push the power button on the temperature controller 5 times. Repeated LC# codes will eventually lock out the water heater.

FF Maintenance Performed

- Indicates a service provider performed maintenance or repair. Enter this code by pressing plus button, minus button, and power simultaneously.

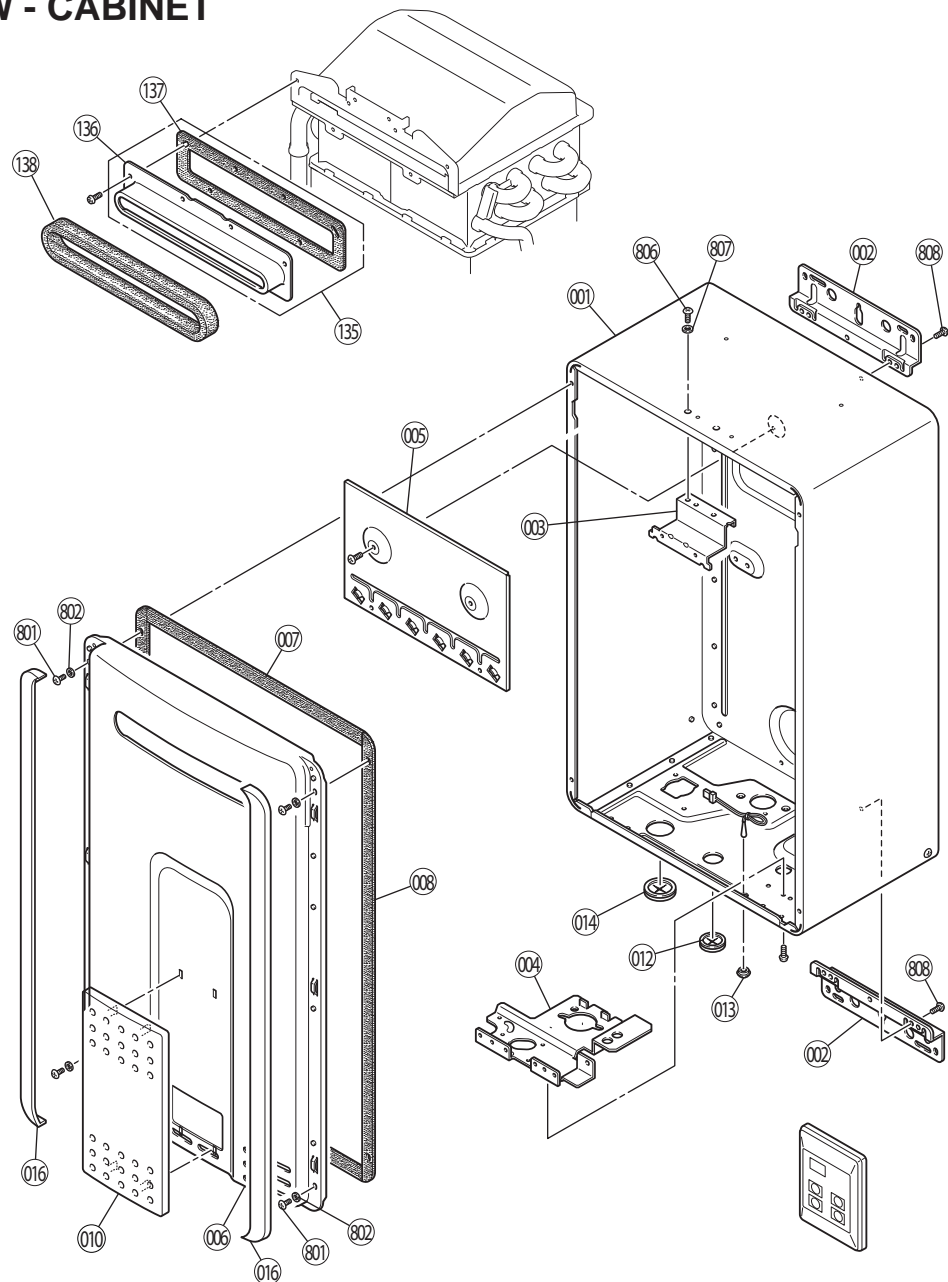
No Code

(Nothing happens when water flow is activated.)

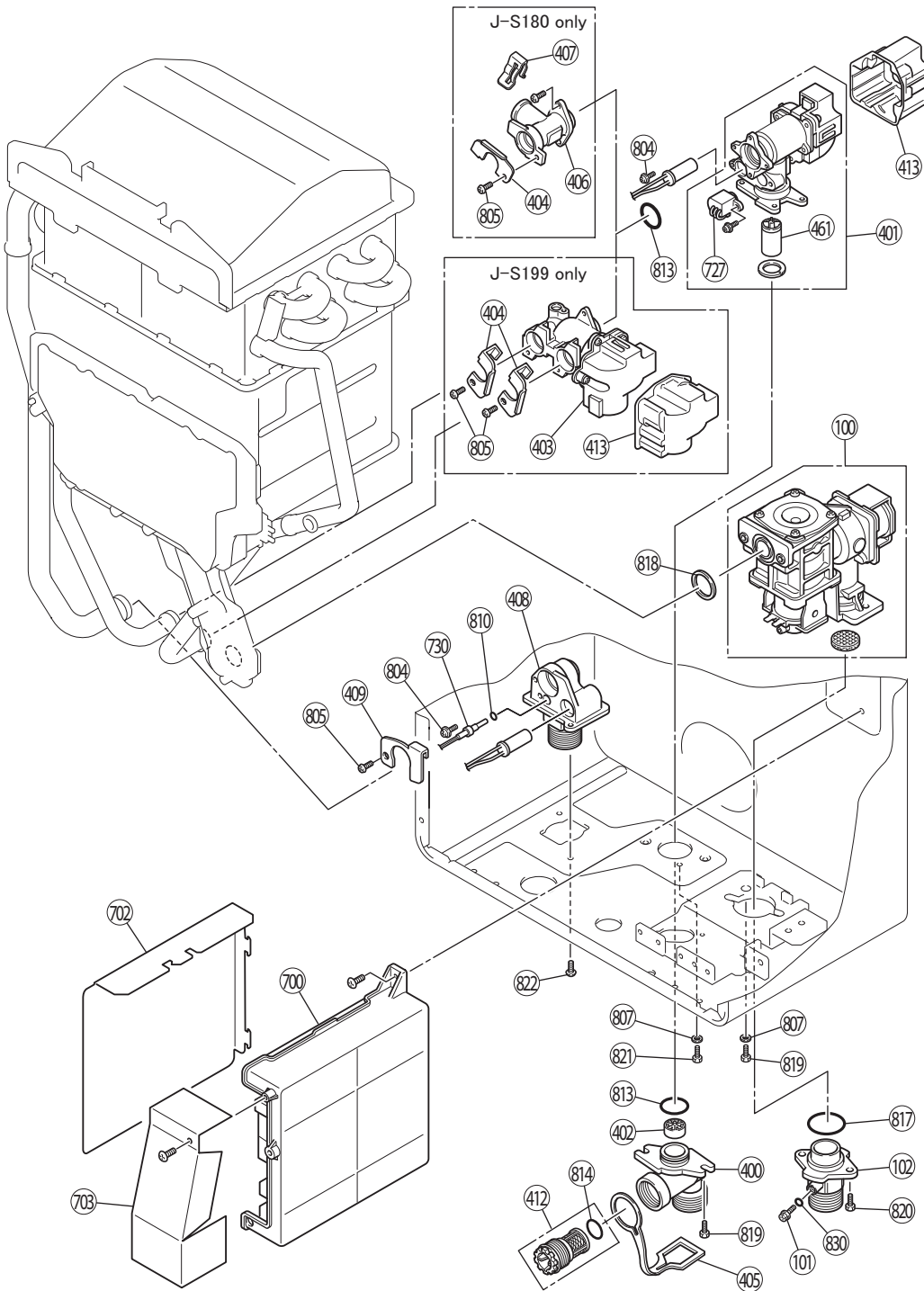
- Clean inlet water supply filter.
- On new installations ensure hot and cold water lines are not reversed.
- Verify you have at least the minimum flow rate required to fire unit.
- Check for cold to hot cross over. Isolate circulating system if present.
- Turn off cold water to the unit, open pressure relief valve; if water continues to flow, there is bleed over in your plumbing.
- Verify turbine spins freely.
- Measure the resistance of the water flow control sensor.
- If the display is blank and clicking is coming from the unit, disconnect the water flow servo motor (GY, BR, O, W, P, BL, R). If the display comes on then replace the water flow servo motor.

Wire Diagram

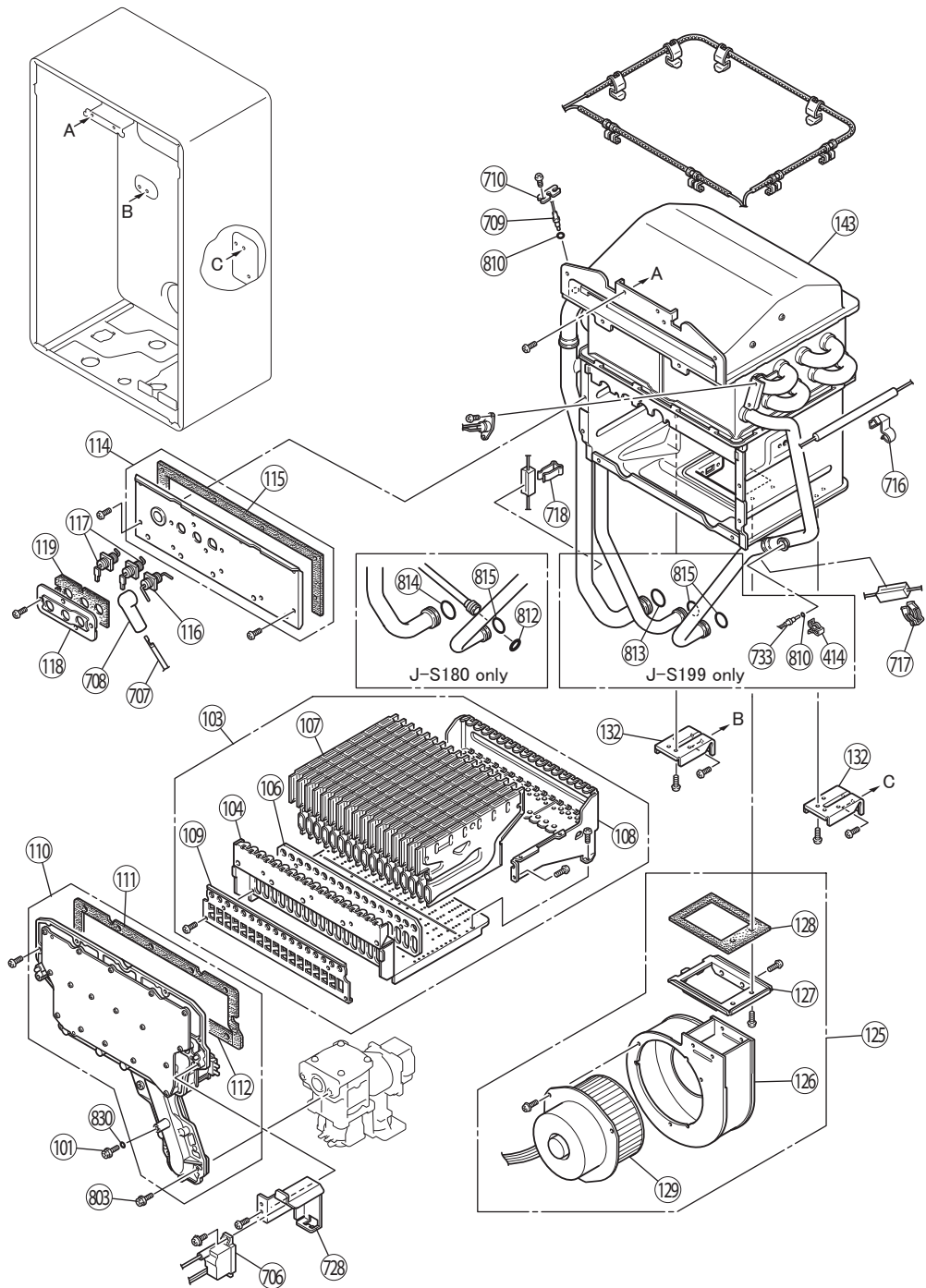
EXPLODED VIEW - CABINET



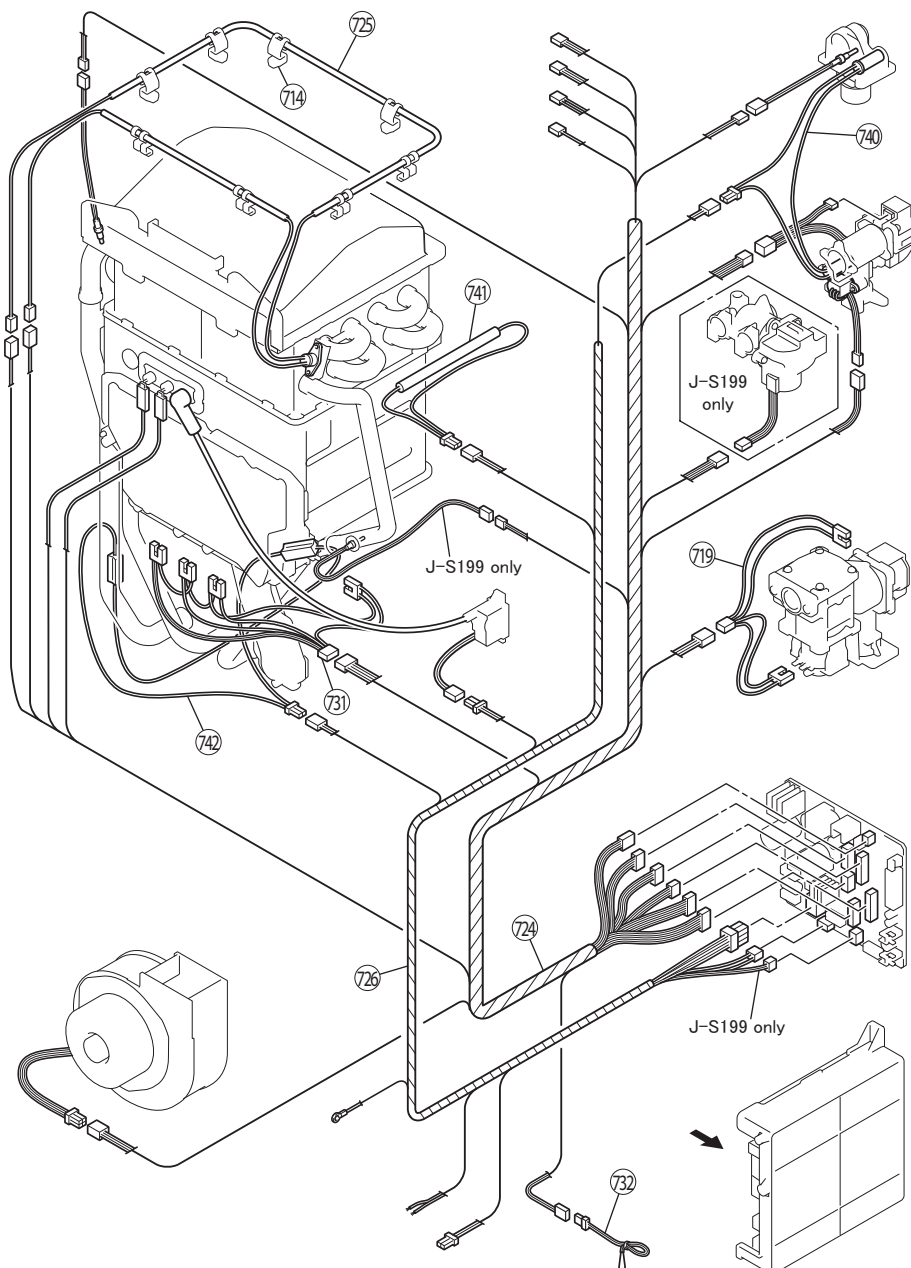
EXPLODED VIEW - INTERNALS



EXPLODED VIEW - INTERNALS



EXPLODED VIEW - ELECTRICAL



Item Description		Part Number	J-S199W Qty	J-S180W Qty	Item Description		Part Number	J-S199W Qty	J-S180W Qty	Item Description		Part Number	J-S199W Qty	J-S180W Qty	
001 MAIN BODY		109000286	1	1	129 FAN MOTOR		108000050	1	1	719 AWG18 HARNESS		105000162	1	1	
002 WALL BRACKET		109000281	2	2	132 HEAT EXCHANGER BRACKET		109000277	2	2	724 SENSOR HARNESS-2		105000164	1		
003 TOP SIDE REINFORCEMENT		109000260	1	1	135 FLUE OUTLET ASSEMBLY		108000065	1	1	724 SENSOR HARNESS-4		105000166		1	
004 CONNECTION REINFORCEMENT		109000261	1	1	136 FLUE OUTLET		108000066	1	1	725 FUSE HARNESS		105000167	1	1	
005 HEAT PROTECTION PLATE		109000275	1	1	137 FLUE OUTLET PACKING		108000067	1	1	726 POWER SUPPLY HARNESS		105000181	1		
006 FRONT PANEL		109000287	1	1	138 SEAL PACKING		AH24-653-6	1	1	726 POWER SUPPLY HARNESS		105000182		1	
008 FRONT PANEL PACKING		U245-3185-2	2	2	143 HEAT EXCHANGER ASSEMBLY		107000100	1		727 WATER FLOW SENSOR		105000176	1	1	
008 FRONT PANEL PACKING		109000077	2	2	143 HEAT EXCHANGER ASSEMBLY		107000102		1	728 IGNITOR BRACKET		109000272	1	1	
010 PANEL LOGO		100000230	1	1	400 WATER INLET		H73-501-2	1	1	730 TWIN THERMISTOR		105000108	1	1	
012 RUBBER STOP		CF79-41020-A	1	1	401 WATER FLOW SERVO & SENSOR		107000090	1	1	731 SOLENOID HARNESS		105000168	1	1	
013 THERMISTOR STOP		109000276	1	1	402 RECTIFIER		M8D1-15	1	1	732 THERMISTOR		105000187	1	1	
014 RUBBER STOP		U245-125	1	1	403 BY-PASS SERVO ASSEMBLY		107000091	1		733 THERMISTOR		H111-650	1		
016 SCREW COVER		109000197	2	2	404 PIPE BRACKET		AH69-310	2	1	740 HEATER		105000154	1	1	
100 GAS CONTROL ASSEMBLY		106000085	1	1	405 PLUG BAND		109000018	1	1	741 HEATER		105000169	1	1	
101 TEST PORT SET SCREW		C10D-5	2	2	406 FIXED BYPASS		107000103		1	742 HEATER		105000170	1	1	
102 3/4 GAS INLET		106000065	1	1	407 CLIP		109000278		1	801 TRUSS SCREW		CP-30580	4	4	
103 BURNER UNIT ASSY (LPG)		106000072	1	1	408 HOT WATER OUTLET (3/4 NPT)		107000092	1		802 NYLON WASHER		AU33-184X01	4	4	
103 BURNER UNIT ASSY (NG)		106000073	1	1	408 HOT WATER OUTLET (3/4 NPT)		107000104		1	803 SCREW		109000280	2	2	
104 BURNER CASE FRONT PANEL		106000074	1	1	409 STOP BRACKET		U211-322	1		804 SCREW		U217-449	2	2	
106 PACKING		109000264	1	1	409 STOP BRACKET		AU162-1876		1	805 SCREW		CP-20883-410UK	3	2	
107 BURNERS		106000054	17	17	412 FILTER ASSEMBLY		H98-510-S	1	1	806 SCREW		109000025	2	2	
108 BURNER CASE BACK PANEL		106000075	1	1	413 COVER		107000093	2	1	807 PLASTIC WASHER		AU48-174	4	4	
109 DAMPER(LPG)		106000076	1	1	414 CLIP		105000090	1		808 SCREW		CP-30580	4	4	
109 DAMPER (NG)		106000077	1	1	461 WATER FLOW TURBINE		107000088	1	1	810 O-RING		M10B-2-4	3	2	
110 MANIFOLD ASSEMBLY (LPG)		106000078	1	1	700 PC BOARD		105000159	1		812 O-RING		M10B-2-10		1	
110 MANIFOLD ASSEMBLY (NG)		106000079	1	1	700 PC BOARD		105000161		1	813 O-RING		M10B-2-18	3	2	
111 COMB CHAMBER PACKING UPPER		106000080	1	1	702 COVER		109000247	1	1	814 O-RING		M10B-2-16	1	2	
112 COMB CHAMBER PACKING LOWER		106000081	1	1	703 EC COVER		109000248	1	1	815 O-RING		M10B-2-14	2	1	
114 COMB CHAMBER FRONT PANEL		106000082	1	1	706 IGNITOR		105000180	1	1	817 O-RING		M10B-1-24	1	1	
115 COMB CHAMBER PACKING - 2		106000083	1	1	707 HIGH TENSION CORD		BH38-710-240	1	1	818 PACKING		109000181	1	1	
116 ELECTRODE		105000179	1	1	708 ELECTRODE SLEEVE		AU206-218	1	1	819 HEXAGON HEAD SCREW		ZQAA0512UK	3	3	
117 FLAME ROD		105000093	2	2	709 THERMISTOR		105000114	1	1	820 HEXAGON HEAD SCREW		ZQAA0514UK	2	2	
118 ELECTRODE BRACKET		105000156	1	1	710 RETAINER (THERMISTOR)		CP-90172	1	1	821 HEXAGON HEAD SCREW		ZQAA0508UK	1	1	
119 ELECTRODE PACKING		105000157	1	1	714 FUSE HOLDER		U250-670X01	8	8	822 SCREW		CP-30580	2	2	
125 FAN MOTOR ASSEMBLY		108000060	1	1	716 HEATER CLIP		109000271	2	2	830 O-RING		M10B-13-4	2	2	
127 FAN CONNECTING BRACKET		108000062	1	1	717 HEATER CLIP		AU100-721	1	1	888 MANUAL		100000247	1	1	
128 FAN CONNECTING BRACKET PACKING		108000063	1	1	718 HEATER CLIP		AU124-618	1		889 TECH SHEET		100000248	1	1	
					718 HEATER CLIP		109000282		1						