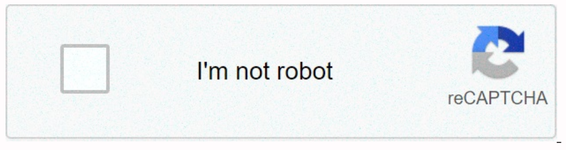


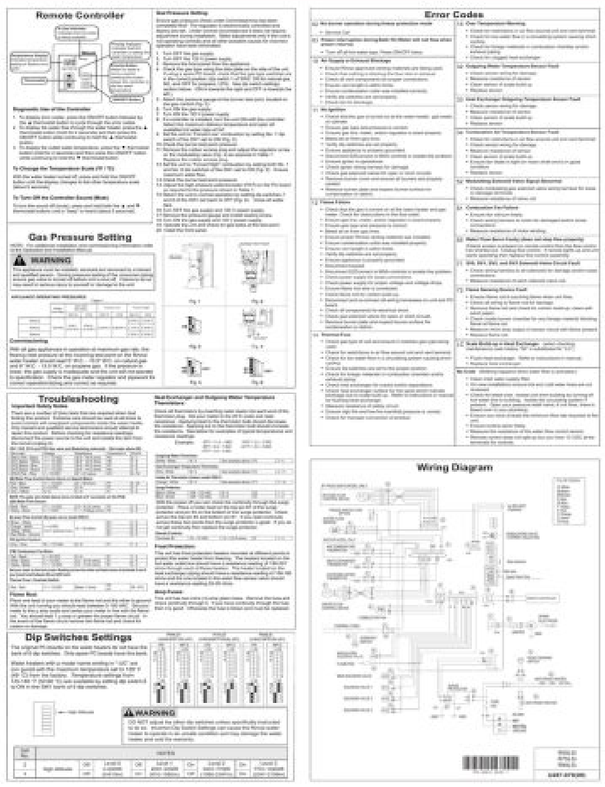
Continue

Rinnai r85 tankless water heater manual

Where is the filter on a rinnai tankless water heater. How do you reset a rinnai tankless water heater. How do you clean the filter on a rinnai tankless water heater.

INSTALLER'S INSTALLATION INSTRUCTIONS -Warnings- This manual must be followed exactly. The Rinnai Water Heater is not suitable for use in pool or spa applications.

Minimum clearances from combustible materials are listed below. Top of Heater 6 inches Back of Heater 0 inch Front of Heater 6 inches Sides of Heater 2 inches Floor 12 inches Vent/Air Intake 0 inch RECOMMENDED VENT/AIR INTAKE TERMINAL POSITION Terminals should be so positioned as to avoid products of combustion entering openings into buildings or other flues or vents. INSTALLER'S INSTALLATION INSTRUCTIONS Locating the vent terminal REF DESCRIPTION U.S. Installations A Clearance above grade, veranda, porch, deck, or balcony 1 foot B Clearance to window or door that may be opened **1 foot C Clearance to permanently closed window * D Vertical clearance to ventilated soffit, eaves or overhang 3 feet E Clearance to unventilated soffit, eaves or overhang 3 feet F Clearance to outside corner 1 foot G CIearance to inside corner 2 feet Clearance to each side of center line extended above H * meter/regulator assembly I Clearance to service regulator vent outlet * The vent pipe has a negative slope/grade to the outside of three degrees (3°) or 5/8" per foot of vent pipe. If the vent pipe is sloped back towards the appliance as some code may require, provisions SHALL be made to collect all condensation to drain off and away from the appliance to a proper drain source. See local code for details. You have no more than three bends in your vent system and the length does not exceed Rinnai specifications. COLD water inlet filter inlet GAS test port WATER OUTLET WATER INLET GAS (HOT) (COLD) GAS PRESSURE SETTING AND DIAGNOSTICS INFORMATION NOTE: For additional installation and commissioning information refer to Operation / Installation Manual THIS APPLIANCE MUST BE INSTALLED, SERVICED AND REMOVED BY AN AUTHORISED PERSON DURING PRESSURE TESTING OF THE CONSUMER PIPING ENSURE GAS COCK SITUATED BEFORE UNIT IS SHUT-OFF. WARNING FAILURE TO DO SO MAY RESULT IN SERIOUS DAMAGE TO THE APPLIANCE AND POSSIBLE INJURY. APPLIANCE OPERATING PRESSURES Table 1. Gas Inlet Forced Low Forced High Min./ Max. Water Inlet Min. Nat.G Prop.G Nat.G Prop.G Nat.G Prop.G REU-V2532FFUD REU-V2532FFUCD 6"W.C. 10"W.C. 150PSI 0.77"W.C. 0.93"W.C. 3.7"W.C. 4.2"W.C. REU-V2520FFUD 10.5"W.C. 13.5"W.C. REU-V2520FFUCD COMMISSIONING With all gas appliances in operation at maximum gas rate, the flowing inlet pressure at the incoming test point on the Rinnai Water Heater should read 6"W.C. - 10.5"W.C. on Natural Gas and 10"W.C. - 13.5"W.C. on Propane Gas. If the pressure is lower, the gas supply is inadequate and the appliance unit will not operate to specification. Check gas meter, regulator and pipework for correct operation/sizing and rectify as required. GAS PRESSURE SETTING (Ensure gas pressure check under Commissioning above has been completed first !) The regulator is electronically controlled and factory pre-set. Under normal circumstances it does not require adjustment during installation. Make adjustments only if the unit is not operating correctly and all other possible causes for incorrect operation have been eliminated. 1. Turn 'OFF' the gas supply. 2. Turn 'OFF' 120V power supply. 3. Remove the front cover from the appliance. 4.



Installer must install a Pressure relief valve. Pipe pressure relief discharge to a drain or outside environment. Maintain proper space around the unit for proper servicing and operation. Minimum clearances from combustible materials are listed below. Top of Heater 6 inches Back of Heater 0 inch Front of Heater 6 inches Sides of Heater 2 inches Floor 12 inches Vent/Air Intake 0 inch RECOMMENDED VENT/AIR INTAKE TERMINAL POSITION Terminals should be so positioned as to avoid products of combustion entering openings into buildings or other flues or vents. INSTALLER'S INSTALLATION INSTRUCTIONS Locating the vent terminal REF DESCRIPTION U.S. Installations A Clearance above grade, veranda, porch, deck, or balcony 1 foot B Clearance to window or door that may be opened **1 foot C Clearance to permanently closed window * D Vertical clearance to ventilated soffit, eaves or overhang 3 feet E Clearance to unventilated soffit, eaves or overhang 3 feet F Clearance to outside corner 1 foot G CIearance to inside corner 2 feet Clearance to each side of center line extended above H * meter/regulator assembly I Clearance to service regulator vent outlet * The vent pipe has a negative slope/grade to the outside of three degrees (3°) or 5/8" per foot of vent pipe. If the vent pipe is sloped back towards the appliance as some code may require, provisions SHALL be made to collect all condensation to drain off and away from the appliance to a proper drain source. See local code for details. You have no more than three bends in your vent system and the length does not exceed Rinnai specifications. COLD water inlet filter inlet GAS test port WATER OUTLET WATER INLET GAS (HOT) (COLD) GAS PRESSURE SETTING AND DIAGNOSTICS INFORMATION NOTE: For additional installation and commissioning information refer to Operation / Installation Manual THIS APPLIANCE MUST BE INSTALLED, SERVICED AND REMOVED BY AN AUTHORISED PERSON DURING PRESSURE TESTING OF THE CONSUMER PIPING ENSURE GAS COCK SITUATED BEFORE UNIT IS SHUT-OFF. WARNING FAILURE TO DO SO MAY RESULT IN SERIOUS DAMAGE TO THE APPLIANCE AND POSSIBLE INJURY. APPLIANCE OPERATING PRESSURES Table 1. Gas Inlet Forced Low Forced High Min./ Max. Water Inlet Min. Nat.G Prop.G Nat.G Prop.G Nat.G Prop.G REU-V2532FFUD REU-V2532FFUCD 6"W.C. 10"W.C. 150PSI 0.77"W.C. 0.93"W.C. 3.7"W.C. 4.2"W.C. REU-V2520FFUD 10.5"W.C. 13.5"W.C. REU-V2520FFUCD COMMISSIONING With all gas appliances in operation at maximum gas rate, the flowing inlet pressure at the incoming test point on the Rinnai Water Heater should read 6"W.C. - 10.5"W.C. on Natural Gas and 10"W.C. - 13.5"W.C. on Propane Gas. If the pressure is lower, the gas supply is inadequate and the appliance unit will not operate to specification. Check gas meter, regulator and pipework for correct operation/sizing and rectify as required. GAS PRESSURE SETTING (Ensure gas pressure check under Commissioning above has been completed first !) The regulator is electronically controlled and factory pre-set. Under normal circumstances it does not require adjustment during installation. Make adjustments only if the unit is not operating correctly and all other possible causes for incorrect operation have been eliminated. 1. Turn 'OFF' the gas supply.
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Rinnai

Demand Duo™ 80
Installation and Operation Manual

For Indoor Applications Only:

Commercial Applications:
CHS19980HEIP ..... 80 Gallon, 199,000 BTU
CHS19980HEIN ..... 80 Gallon, 199,000 BTU
CHS19980HEXIN ..... 80 Gallon, 192,000 BTU

Residential Applications:
RHS19980HEIP ..... 80 Gallon, 199,000 BTU
RHS19980HEIN ..... 80 Gallon, 199,000 BTU
RHS19980HEXIN ..... 80 Gallon, 192,000 BTU

The Commercial Hybrid System is assembled with multiple and separately certified components consisting of:

- RL94i / RLX94i Tankless Water Heater
- 80 Gallon Storage Tank
- Controller

READ ALL OF THE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR OPERATING THIS SYSTEM.
(This manual is a supplement to the RL94i Installation and Operation Manual)

This manual provides information on the installation, operation, and maintenance of the water heater. For proper operation and safety, it is important to follow the instructions and adhere to the safety precautions.

A licensed professional must install the water heater according to the exact instructions in this manual.

The consumer must read the entire manual to properly operate the water heater and to have regular maintenance performed.

⚠ WARNING

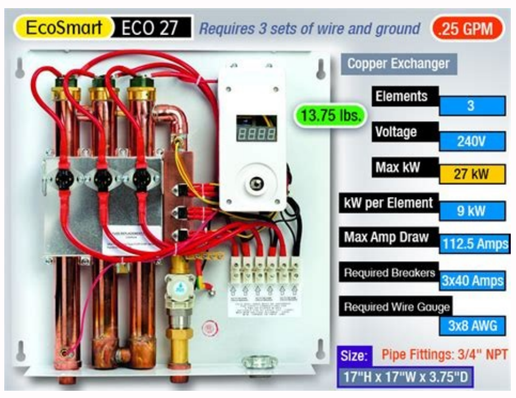
IF THE INFORMATION IN THESE INSTRUCTIONS IS NOT FOLLOWED EXACTLY, A FIRE OR EXPLOSION MAY RESULT CAUSING PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

— **Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**

— **WHAT TO DO IF YOU SMELL GAS**
- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

— **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**

Installer must install a Pressure relief valve. Pipe pressure relief discharge to a drain or outside environment. Maintain proper space around the unit for proper servicing and operation.



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Turn 'OFF' the gas supply. 2. Turn 'OFF' 120V power supply. 3. Remove the front cover from the appliance. 4. Check gas type switches (Fig.1) are in the correct position (dip switch 1 of SW2 'ON' = NG, 'OFF' = LPG) Note: 'ON' towards front, 'OFF' towards rear.
5. Attach pressure gauge to burner test point, located on the gas control. (Fig.2). 6. Turn 'ON' the gas supply. 7. Turn 'ON' 120V power supply. 8. If remote controllers are fitted, turn the unit 'ON' at the kitchen controller, select the maximum delivery temperature and open all available hot water taps full including the shower. (CAUTION: Ensure building occupants do not have access to hot water outlets during this procedure). REF DESCRIPTION Clearance to nonmechanical air supply inlet to building or the J combustion air inlet to any other appliance K Clearance to a forced air inlet into a building Clearance above paved sidewalk or paved driveway located on L public property Clearance under deck, veranda, porch, or balcony M (open on 3 sides) N Vent FIue from wall (FIat or Pitched Roof) Vertical between two terminals on the same wall above each O other P Clearance between two vertical flue on the same pIane Q Horizontal between two terminals on the same wall Clearance between two Vertical flue on pitched roof above R each other S Clearance from terminal facing a terminal * For clearances not specified in ANSI Z223.1 / NFPA 54 or CAN/CGA- B149, please use clearances in accordance with local installation codes and the requirement of the gas supplier. ** 4 feet for units other than Direct-Vent Appliance. INSTALLER'S INSTALLATION INSTRUCTIONS Remote Controllers- General The remote controls for the Rinnai Water Heater allow the customer to control the functions of the water heater and to diagnose certain fault conditions. Before installing the remote controllers, determine the most convenient location(s). When deciding on the best location for the remote controllers, please consider the following items: 1) Place the controllers out of reach of small children. 2) Avoid locations where the controller(s) will become hot. (over the stove, near the oven or a radiant heater. 3) Avoid direct sunlight. (The digital monitor can be difficult to read in direct sunlight) 4) Avoid areas where the remote can be splashed with cooking water, oil or sauce. 5) The remote controller cables carry low voltage, 12VDC digital.
Every installation is different The controllers can be wired in series or in parallel depending on the distance from the Rinnai Water Heater to the controllers. INSTALLER'S INSTALLATION INSTRUCTIONS Remote Controllers - Installation 1) Determine a suitable location for the controller. 2) Make three holes on the wall as shown.
Canadian 3) Run the cable between the controller Installations and the Rinnai Water Heater or the 1 foot controller and the other controller. 1 foot * 4) Remove the face plate from the remote controller. 3 feet 5) Connect the cable to the remote controller. 3 feet 6) Mount the controller to the wall using the holes drilled in step 2. 1 foot 7) Disconnect the power from the Rinnai Water Heater. 8) Remove the cover of the Rinnai Water Heater. 2 feet 9) Remove the plastic cover from the PCB and electrical connections. 3 feet within a height 15 feet. above the DO NOT ATTEMPT TO CONNECT THE REMOTE CONTROLLERS WITH meter/reguIator THE POWER ON, THERE'S 120 VOLT POTENTIAL, NEXT TO THE assembly REMOTE CONTROLLER CONNECTIONS INSIDE THE UNIT.
All service 3 feet and wiring should be performed by a certified installer. 1 9. Set the Infinity to 'Forced Low' combustion by setting No.7 dip switch of the (SW1) set of dip switches to 'ON'.(Fig.3). 10. Check the burner test point pressure. 11.
Remove rubber access plug and adjust the regulator screw on the modulating valve (Fig.4) as required in Table 1. Replace rubber access plug. 12. Set the Rinnai Water Heater to 'Forced High' combustion by setting both No. 7 and No. 8 dip switches of the bottom (SW1) set to 'ON'. (Fig.5). Ensure maximum water flow ! 13. Check the burner test point pressure. 14. Adjust the high pressure Potentiometer (POT) on the Printed Circuit Board (PCB) as required to the pressure shown in Table 1. IMPORTANT: Set dip switches 7 and 8 on the bottom (SW1) to 'OFF' to return the appliance to 'Normal' combustion. (Fig. 6). 15. Close hot water tap. 16. Turn 'OFF' the gas supply and 120V power supply. 17. Remove pressure gauge & replacing sealing screw. 18. Turn 'ON' the gas supply and 120V power supply. 19.
Operate unit and check for gas leaks at test point. 20. Replace the front cover of the appliance. Fig. 1 ON Fig. 3 SW1 ON Fig. 5 Rinnai Water Heaters Dip Switch Default Settings Residential Units Commercial Units Residential Units Dip Switch Settings Dip Switch Settings Dip Switch Settings LPG NAT.G LPG NAT.G LPG ON ON ON ON ON O O 1 O 1 O 1 1 O 1 F F 2 F 2 F 2 2 F 2 F F F F F 3 3 3 3 3 4 4 4 4 4 5 5 5 5 5 6 6 6 6 6 7 7 7 7 7 8 8 8 8 8 ON ON ON ON ON O O O O O 1 1 1 1 1 F 2 F 2 F 2 F 2 F 3 F 3 F 3 F 3 F 3 4 4 4 4 4 3 Candadian U.S. Installations Installations REMOTE CONTROL CABLE **1 foot 1 foot 3 feet 6 feet * 7 feet CLAMP 3 feet 3 feet 2 feet 2 feet 5 feet 5 feet 1 foot 1 foot 10) Thread the cable through the access hole at the base of the unit and 1 foot 1 foot connect the wires to the controller terminals on the right hand side 5 feet 5 feet bottom of the PCB. 11) Secure the controller cable using the clamp provided. 4 feet 4 feet 12) Replace plastic cover over PCB and then replace the front cover of the Rinnai Water Heater. REMOTE CONTROLLER OPERATION Digital Monitor Indicates the selected water temperature. Error messages flash in the event of a failure. Thermostat Increases or decreases the desired water temperature.
DIAGNOSTIC USE OF CONTROLLER 1. To Display Maintenance Codes: Press 'On/Off' button. To sequence through stored maintenance codes, press 'On/Off' followed by the thermostat button. 2. To Display Water Flow through water heater: Press button, hold for 2 seconds and simultaneously press 'On/Off' button. 3. To display Outlet Water Temperature: Press hold for 2 seconds and simultaneously press 'On/Off' button.
TO CHANGE TEMPERATURES FROM °F to °C 1. Press and hold 'On/Off' button for 5 seconds while water heater is OFF. 2. To change back from °C to °F, please repeat step 1. MUTE To eliminate the beeping sound, press and hold simultaneously until a 'beep' is heard (approximately 5 seconds).
GENERAL CONTROLLER INFORMATION 11 1 32 " 5 3 16 " Temperature controllers allows precise temperature control by the user. When used correctly, the hot water unit will deliver the selected temperature, even when the water flow is varied, or more than one tap is in use. Each Temperature Controller can be individually programmed, however the water heater unit can only deliver one set temperature at any time. The available temperatures (°F) are as follows: Temperature Table by Models model REU-V2532FFUD 98 100 REU-V2520FFUD(°F) REU-V2520FFUCD(°F) REU-V2532FFUCD(°F) 98 100 Approx. 37 38 temperature(°C) OFF/ON Vent/air intake piping length See Owner's manual for more in informd detail. WARNING In appropriate Dip Switch setting can damage the Rinnai water heater and may void the warranty of this unit Code Fault Displayed When checking maintenance code history, 00 "00" is substituted for "LC" No burner operation during freeze 02 protection mode Power interruption during Water Smart/Bath Fill 03 (Hot water will not flow when power returns) 10 Air intake supply or exhaust blockage 11 No Ignition Burner test point 12 Flame Failure, poor ground connection 14 Thermal Fuse 16 Over Temperature Warning Outlet water temperature sensor reading 32 out of expected range Heat exchanger outlet water temperature 33 faulty (Indoor Units Only) Combustion air sensor 34 reading out of expected range Fig. 2 52 Modulating Solenoid Valve signal abnormal Combustion Fan Failure 61 Water Flow Servo Faulty 65 (Does not stop flow properly) SV0, SV1, SV2 or SV3 71 Solenoid Valve Circuit Faulty 72 Flame Sensing Device Faulty Regulator adjustment screw access plug LC Scale build-up in Heat Exchanger Fig. 4 No code or Nothing happens when water blank flows through water heater. display SW1 ON Fig. 6 SERVICEMAN'S TROUBLESHOOTING INFORMATION for the RINNAI WATER HEATERS 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 agencies should attempt to repair this product. Remember, before checking for resistance readings, you should disconnect the power Commercial Units source to the unit and isolate the item to be checked from the circuit (unplug it). Dip Switch Settings (TR) Transformer: NAT.G LPG NAT.G ON ON ON Wire color Voltage O O 1 O 1 1 F Black ~ White 90 ~ 100 VAC F 2 F 2 2 F F F 3 3 3 Blue ~ Brown 108 ~ 132 VAC 4 4 4 5 5 5 (SV1, SV2, SV3 and POV) Gas valve and Modulating solenoids: (Set meter above 2K) 6 6 6 7 7 7 (Main) Pink ~ Black 80 ~ 100 VDC 8 8 8 (SV1) Black ~ Yellow 80 ~ 100 VDC ON ON ON O O O 1 1 1 (SV2) Black ~ Blue 80 ~ 100 VDC F 2 F 2 F 2 F 3 F 3 F 3 (SV3) Black ~ Brown 80 ~ 100 VDC 4 4 4 (POV) Pink ~ Pink 2 ~ 15 VDC Suggested temperatures are: REMOTE CONTROL Kitchen 120°F - 130°F, Shower 98°F - 110°F, Bath fill 102°F - 114°F CONNECTION TERMINALS These temperatures are suggestions only. You may find higher or lower temperatures more comfortable. Maintaining lower temperatures helps save energy. To obtain water temperatures lower than 98°F, simply add cold water. Deluxe Controllers are an optional extra. 'Controller' and 'Deluxe' Controllers can be installed together. Controllers allow temperature selection only. 'Deluxe' Controllers have temperature selection, bath fill and clock functions. Controllers allow the water temperature to be set from the various locations where they are installed.
The temperature selected will be available to all outlets. Below are the combination of Controllers that are offered by Rinnai: Controllers Combination Pattern 1 MC-91-1US 2 MC-91-1US 3 MC-91-1US 4 MC-91-1US 5 MC-91-1US 6 MC-91-1US **See controller manual in controller carton box for more infomation detail. Water Smart / Bath Fill Temperature Table In Use Indicator Indicates that a hot water tap is open and that control of the water smart/ temperature has been taken at bath fill temperature (°F) another controller. Approx.
temperature (°C) Priority Indicator Indicates whether this Water Smart / Bath Fill temperature cannot exceed 120°F for the following controller has priority commercial models with no by-pass : REU-V2520FFUCD control over the water temperature Attention Installer! - Have You Checked Everything? Priority For full details - Always Refer to Rinnai Installation Instructions Pressing takes control of the water temperature HOT (outlet) and COLD (inlet) water lines are not crossed to the unit by this controller. and are leak free. You have installed isolating valves, unions, and drain down vales on the ON/OFF cold water inlet line and hot water outlet lines.
(These components are Used to switch the used for servicing and/or removing the appliance quickly). water heater on and off COLD water inlet filter was cleaned after installation. (The filter MUST be cleaned after installing the unit) A pressure relief valve is installed and is rated for 200,000 Btu's at 150 PSI per local code. thermostat 120 VOLTS A.C. is connected to the unit, it is properly GROUNDED and circuit is turned on. 'thermostat button', Gas supply system is properly sized. All gas meters, regulators, gas line types, tanks, etc. have a BTU value. Please confirm that all components meet the gas requirements at this location.
Verify the system is functioning correctly by connecting your manometer to the gas pressure test port on the Rinnai unit. Operate all gas appliances in the facility. The inlet gas pressure must not drop below that listed in the ownerís manual specification sheet or appliance rating plate.
and button Proper gas type and pressure is supplied to the unit. (See owner's manual for correct inlet gas pressures in the specification section. Normal inlet gas pressures are 7" to 10" of water column for natural gas, and 11" to 13" of water column for propane gas). Gas supply pipe is purged of foreign material before connection. Proper model controllers are used, connected and functioning. Instructed the customer how to operate the Controllers. Verify proper clearances around the unit and all vents and air intakes. (See owner's manual for all clearance requirements.) temperature Explained to the customer to never store anything around the vent 102 104 106 108 110 115 120 125 130 135 140 terminals or block the air and/or exhaust ports to the unit. 120 125 130 135 140 150 160 185 For Internal models only 102 104 106 108 110 115 120 125 130 135 140 150 160 185 Ensure you used the proper venting materials for the unit you have 39 40 41 42 43 46 49 52 54 57 60 66 71 85 installed. 2 (M) Water Flow Control Device Servo or Geared Motor: Red ~ Blue Grey ~ Brown Grey ~ Yellow Grey ~ Orange NOTE: The grey wire listed above turns to black at B connector on the PCB, the orange wire turns to red. (QS) Water Flow Sensor: Black ~ Red Yellow ~ Black By-pass Flow Control: (REU-V2532FFU/FFUC ONLY) Brown ~ White Orange ~ White Yellow ~ White Red ~ White/ Ground (IG) Ignition System: Items to Inspect Build up of lime scale in heat exchanger - needs to be Grey ~ Grey flushed. (FM) Combustion Fan Motor: Verify that gas supply is turned on to the water heater and valve at meter or tank is open. Verify proper gas type and Red ~ Black supply pressure. Bleed air from gas line. Verify all ignition White ~ Black component/wires are connected. Yellow ~ Black Turn off all hot water taps. Press ON/OFF twice. Set your meter to the hertz scale. Reading across the red and yellow wires at terminals 2 and 3 Check for a restriction in exhaust or intake vent, verify proper you should read between 60 and 350 hertz. dip switch settings. Ensure only Rinnai approved venting Thermal Fuse: components are used. Verify that gas supply is turned on to the water heater and at Red ~ Red meter or tank. Verify proper gas type and supply pressure. Bleed air from gas line. Verify all ignition component/wires Overheat Switch: are connected.
Red ~ Red Make sure gas is turned on at the water heater; check for obstructions in exhaust vent. Ensure only Rinnai approved Flame Rod: venting components are used. Verify proper grounding. Place one lead of your meter to the flame rod and the other to earth or ground.
With the unit Check for debris or moisture in burner area. running you should read between 5 ~ 150 VAC. Set your meter to the µ amp scale, series your Ensure high and low fire manifold gas pressures are properly set.
Verify dip switch settings are correct. Measure meter in line with the flame rod. You should read 1µ or greater for proper flame circuit. In the resistance in ohms of safety circuit. event of low flame circuit remove the flame rod and check for carbon and/or damage. Verify dip switch settings, check manifold pressure and verify gas type for water heater. Check for clogged heat exchanger. Check for low water flow in a circulating system Heat Exchanger, Air Temperature, and Outgoing Water Temperature Thermistors: causing short-cycling. Check all thermistors by inserting meter leads into each end of the thermistor plug.
Set your Check outlet temperature sensor or wiring for damage. Measure resistance of sensor. Clean sensor of scale build - meter to the 20K scale and read resistance. You should be able to apply heat to the thermistor up.
bulb and see the resistance decrease.
Then apply some ice to the thermistor and the resistance Check H.E. outlet sensor or wiring. Measure resistance of should increase. See below for examples of temperatures and resistance reading at those sensor. Clean sensor of scale build-up Sensor or wiring faulty. Verify fan blade is mounted securely temperatures. to shaft. Check for airflow restrictions in venting system. Check gas control wiring harness and measure resistance of Example: 59°F = 11.4 ~ 14K valve coil in ohms. 86°F = 6.4 ~ 7.8K Combustion fan or wiring harness faulty. Make sure motor/fan turns freely. Measure resistance of motor winding. 113°F = 3.6 ~ 4.5K Water Flow Servo or wiring faulty. Check Water Flow Servo 140°F = 2.2 ~ 2.7K wiring harness conection. Measure resistance of Water Flow Servo wiring. 221°F = 0.6 ~ 0.8K Check all gas solenoid wiring harness and connections. Measure resistance of each solenoid valve coil. Outgoing Water Thermistor: Check flame rod and wiring harness connections. Measure White ~ White micro amp output of sensor circuit with flame present. Clean flame sensor of any build-up. Check for debris in burner chamber that may block flame from sensor. Heat Exchanger Temperature Thermistor: Build up of lime scale in heat exchanger ñ needs to be White ~ White flushed. Surge Protector: Clean inlet filter screen and ensure you have at least the minimum flow rate required to fire unit. Check for pipe dope Black ~ White inside water flow control turbine. Blue ~ Brown On new installations, ensure hot and cold water lines are not crossed. With the power off you can check the continuity through the surge protector. Place one meter Check for bleed over. Isolate unit from building by turning off lead on the top pin #1 of the surge protector and pin #2 on the bottom of the surge protector. hot water line to building. Then open your pressure relief valve, if unit fires, thereís a bleed over in your plumbing.
Then check across top pin #3 and bottom pin #1, if you read continuity across these two points If a circulating system is in use, it must be isolated also. the surge protector is good. If you do not get continuity, replace the surge protector. Remote control does not light up but you have 12 VDC at the Remote Controls: terminals for controls: Disconnect water flow control motor, then turn on hot water, Terminals D if unit fires replace water flow control assembly. Frost Protection: This unit has four frost protection heaters mounted at different points inside the unit, to protect the water heater from freeze ups. There are two heaters located on the outlet hot water line next to the thermistor. Using a voltage meter set on the 200 ohm scale, you should have a resistance reading of 26 ~ 30 ohms through each of these heaters. The heater located on the heat exchanger piping should have a resistance reading of 81 ~ 86 ohms and the one located in the water flow sensor valve has a resistance reading of 16 ~ 19 ohms. Voltage throughout this circuit should be 120 VAC. Amp Fuses: This unit has two inline (3) amp glass fuses. Remove the fuse and check continuity through it. If you have Continuity through the fuse, it is good. If you can not read continuity, the fuse is blown Resistance Connector # Pin #'s and must be replaced. 51 ~ 63 ohms F9 1 ~ 2 51 ~ 63 ohms F7 1 ~ 3 1.7K ~ 2K ohms E1 1 ~ 2 1.7K ~ 2K ohms E2 2 ~ 3 1.7K ~ 2K ohms E3 2 ~ 4 1.7K ~ 2K ohms E4 2 ~ 5 67 ~ 81 ohms C2 3 ~ 4 4 Remote and Deluxe Controllers MC-91-1US MC-91-1US MC-91-1US MC-91-1US MC-91-1US **MC-91-1US BC-100V MC-100V MC-91-1US BC-100V MC-100V temperature 98 100 102 104 106 108 110 112 114 116 118 120 37 38 39 40 41 42 43 44 46 47 48 49 11 ~ 13 VDC 22 ~ 26 ohms B2 9 ~ 10 4 ~ 6 VDC N / A B2 5 ~ 7 N / A N / A B2 5 ~ 8 11 ~ 14 VDC N / A B2 5 ~ 6 11 ~ 13 VDC 5.5K ~ 6.2K B4 5 ~ 6 4 ~ 7 VDC 1 meg ~ 1.4 meg B4 1 ~ 5 Unit in operating G4 ~ G5 4 ~ 5 2 ~ 6 VDC mode G2 ~ G5 2 ~ 5 G1 ~ G5 1 ~ 5 15 ~ 35K G3 ~ G5 3 ~ 5 90 ~ 100 VAC N/A A1 1 ~ 2 6 ~ 45 VDC N/A A1 1 ~ 2 5 ~ 10 VDC 9.2K ~ 9.4K A1 2 ~ 4 11 ~ 13 VDC 3.5K ~ 3.9K A1 2 ~ 3 12 VDC Below 1 ohm B ~ C B6 ~ C1 12 VDC Below 1 ohm B ~ C B6 ~ C1 N/A See example above B B3 ~ B4 N/A See example above B B3 ~ B12 108 ~ 132 VAC N/A Surge Protector D 1 ~ 3 1 108 ~ 132 VAC N/A Surge Protector D 1 ~ 2 2 , D 10 ~ 13 VDC digital 1.5K ~ 1.9K ohms H 1 ~ 3 1 2 070 00012 31445 7