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This manual must only be used by a qualified heating installer/servicetechnician. Failure to comply could result in severe personal injury, death or substantial property damage. Part No. 550-141-705/060078 78Boiler For Gas, Light Oil, Gas/Light Oil Fired BurnersBoiler Manual Installation Start-Up Maintenance PartsInstaller: Leave all documentation
received with boiler and burnerwith unit for future reference. User: Boiler and burner must be installed and service technician. Part No. 550-141-705Weil-McLain 78 Boiler For Gas, Light Oil, Gas/Light Oil Fired Burners Contents 1. Before Installing Boiler......
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                                                                                                                                                                                                        Back Cover2Hazard DefinitionsThe following defined terms are used throughout this manual to bring attention to the presence of hazards of ovarious risk levels, or to important information concerning the
page 2917. Ratings.
                                                                                                     .. page 31Warranty.....
life of the product.Indicates presence of hazards that will cause severe personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will or can cause minor personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will or can cause minor personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will or can cause minor personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will or can cause minor personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will or can cause minor personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will or can cause minor personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will or can cause minor personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will or can cause minor personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will or can cause minor personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will or can cause minor personal injury, death or substantial property damage if ignored. Indicates presence of hazards that will be added to the personal injury and injury and injury are not also as a substantial property damage.
substantial property damage if ignored. Indicates special instructions on installation, operation or maintenance that are important but notrelated to personal injury. When Calling or Writing about the Boiler Please have model and series from boiler rating label and CP number(s) from boiler jacket or controls. Read all instructions beforeinstalling. Failure
to follow allinstructions in proper order cancause severe personal injury, deathor substantial property damage. Installation Start-Up Maintenance PartsBefore Installing Boiler1aInstallation
must comply with: State, provincial and local plumbing, heating and electrical codes. Regulations of serving utilities. National codes where applicable. Before selecting boiler location: Check for nearby connections to: fuel supply electrical power system water or steam piping venting systems - see page 23 combustion and ventilation air supply -
seeProvide combustion and ventilation airsupply openings below Check area around boiler for and remove anycombustible materials, gasoline and otherflammable liquids and vapors can result in severepersonal injury, death and
substantial propertydamage. Provide combustion and ventilationair openings: Do not install an exhaust fan in boiler room. Adequate combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure proper combustion and ventilation air must be provided to assure provide
with state, provincialor local codes. In their absence, use the followingwhen boiler is in a confined room: Provide two permanent openings in boilerroom - one within 12 inches of floor. Minimum dimensionof each opening should be at least one
squareinch/1,000 Btuh boiler input and freelyconnect with areas having adequateinfiltration from outdoors, eachopening should connect directly or by ductsfrom outdoors, eachopening should connect with areas having adequateinfiltration from outdoors, eachopening should connect with outdoors and sized aslisted below:- through outside wall or vertical ducts - atleast one square
inch/4,000 Btuh boilerinput- through horizontal ducts - at least onesquare inch/2,000 Btuh boiler input- where ducts are used, they should be samecross-sectional area as free area ofopenings they are connected to- compensate for louver, grille or screenblockage when calculating free airopenings. Refer to their manufacturers instructions for size. If
unknown, use:- wood louvers - 20-25% free air- metal louvers or grilles - 60-75% free air- screens - not less than 1/4 inch meshLock louvers in open position, or interlockwith equipment to prove open beforeboiler operation. Part No. 550-141-705 3 Figure 1 Combustion and Ventilation AirOpenings Boiler Room Below Grade Figure 2 Combustion and
For Gas, Light Oil, Gas/Light Oil Fired BurnersBefore Installing Boiler1bProvide clearances for servicing and burnerinstallation. See burner literature for length. Clearance from
vent pipe to combustiblematerials:- singlewall vent pipe - 18 inches- doublewall vent pipe - refer to vent pipemanufacturers recommendations for ventpipe clearancesLay a foundation, if needed:Floor construction and condition must be suitable for weight of boiler when filled withwater. See page 31 for boiler weight/waterweight. A level concrete or
brick foundation is required when: A floor could possibly become flooded Non-level conditions existPart No. 550-141-7054Boiler Foundation Length TableBoiler L Boiler LModel Inches Model Inches Model Inches 378 23 878 58478 30 978 65578 37 1078 72678 44 1178 79778 51 1278 862" Min.L30" Figure 3 Boiler Foundation Installation Start-Up Maintenance
PartsSet Packaged Boiler or Block Assembly in Place2aFor packaged boiler:1. Remove top jacket panel. Set aside until afterboiler is piped.2. Remove boiler from skid. Cables are alreadyattached to block assembly. See Lifting WeightChart. Using crane - hook middle of each cable toeye of
crane. Using hoist - hook middle of each cable tohoist. Raise boiler off skid. Use pipe rollersunder skid angles to roll boiler. Shim under skid angles, ifnecessary.6. Cut off cables. Cables are not intended for long-term usage. Cables may corrode inside boiler, weakening
theirlifting strength. Failure to remove cables carresult in severe personal injury, death orsubstantial property damage. 7. Proceed to 4a: Perform Hydrostatic PressureTest, page 12. For block assembly: 1. Remove lag screws (2 in front, 2 in rear) from shipping rails. 2. Remove boiler from skid. Cables are alreadyattached to block assembly: 1. Remove lag screws (2 in front, 2 in rear) from shipping rails. 2. Remove boiler from skid. Cables are alreadyattached to block assembly. 1. Remove lag screws (2 in front, 2 in rear) from shipping rails. 2. Remove boiler from skid. Cables are alreadyattached to block assembly. 1. Remove lag screws (2 in front, 2 in rear) from shipping rails. 2. Remove boiler from skid. Cables are alreadyattached to block assembly. 1. Remove lag screws (2 in front, 2 in rear) from skid. 2. Remove lag screws (2 in front, 2 in rear) from skid. 2. Remove lag screws (3 in front, 2 in rear) from skid. 3. Remove lag screws (4 in front, 2 in rear) from skid. 3. Remove lag screws (4 in front, 2 in rear) from skid. 3. Remove lag screws (4 in front, 2 in rear) from skid. 3. Remove lag screws (4 in front, 2 in rear) from skid. 3. Remove lag screws (4 in front, 2 in rear) from skid. 3. Remove lag screws (4 in front, 2 in rear) from skid. 3. Remove lag screws (4 in front, 2 in rear) from skid. 3. Remove lag screws (4 in front, 2 in rear) from skid. 3. Remove lag screws (4 in front, 2 in front, 3 in fron
WeightChart. Using crane - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - attach free end of cables to eyeof crane. Using hoist - att
long-term usage. Cables may corrodeinside boiler, weakening their lifting strength. Failure toremove cables can result insevere personal injury, death or substantial property damage. Inspect block assembly for disjointed sections. Check gas-tight seal of flue collector hood, fluecollar and cleanout plates. Gas tight seal must be maintained to prevent
possibleflue gas leakage and carbonmonoxide emissions, resultingin severe personal injury ordeath. a. Open damper in flue collar. b. Check inside section assembly for any lightpassing through unsealed areas. c. Mark all unsealed areas. d. At unsPage 2Please donate to us. Your money will make a difference - improve the quality of our file sharing
 community to help more people. 2015-02-02: Weil-Mclain Weil-Mclain Weil-Mclain-Gold-Cga-Users-Manual-454268 weil-mclain-gold-cga-users-manual-454268 weil-mclain pdf Open the PDF directly: View PDF directly: View PDF in BrowserView PDF Boiler Manual Please read before proceeding Installer • • User Read all instructions before
installing. Follow all instructions in • proper order to prevent personal injury or death. Consider piping and installation when determining boiler location. Any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee. • • This manual is for use only by your qualified heating
installer/service technician. Please refer to the User's Information Manual for your reference. We recommend regular service by a qualified service technician, at least annually. When calling or writing about the boiler model number from the boiler model number from the boiler model number from the boiler please have the boiler model number from the boiler model
number in the space provided on the Installation and service certificate found on page 33. Failure to adhere to the guidelines on this page can result in severe personal injury, death or substantial property damage. When servicing boiler — • • To avoid electric shock, disconnect electrical supply before performing maintenance. To avoid severe burns,
allow boiler to cool before performing maintenance. Boiler operation — • • Do not block flow of combustion or ventilation air to boiler. Should overheating occur or gas supply fail to shut off, do not turn off or disconnect electrical supply to circulator. Instead, shut off the gas supply at a location external to the appliance. Do not use this boiler if any
part has been under water. Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control that has been under water. Boiler water — • • Do not use petroleum-based cleaning or sealing compounds in boiler system. Water seal deterioration will occur, causing leakage between
 sections. This can result in substantial property damage. Do not use "homemade cures" or "boiler patent medicines". Serious damage to boiler, personnel Part Number 550-110-593/1099 • • and/or property may result. Continual fresh makeup water will reduce boiler life. Mineral buildup in sections reduces heat transfer, overheats cast iron, and
causes section failure. Addition of oxygen and other gases can cause internal corrosion. Leaks in boiler or piping must be repaired at once to prevent makeup water. Do not add cold water to hot boiler. Thermal shock can cause sections to crack. Glycol — potential fire hazard — All glycol is flammable when exposed to high temperatures. If glycol is
 allowed to accumulate in or around the boiler or any other potential ignition source, a fire can develop. In order to prevent potential severe personal injury, death or substantial property damage from fire and/or structural damage: • • • Never store glycol of any kind near the boiler or any potential ignition source. Monitor and inspect the system and
boiler regularly for leakage. Repair any leaks immediately to prevent possible accumulation of glycol. Never use automotive antifreeze or ethylene glycol in the boiler system. 5 GOLD CGa Gas-Fired Water Boiler How it works . . . ① Control module The control module (used on
spark-ignited pilot boilers) responds to signals from the room thermostat and boiler limit circuit to operate the boiler circulator, pilot burner, gas valve and vent damper (causing it to drive open). When the vent damper has opened
completely, the control module opens the pilot valve and activates pilot ignition spark. The control module will turn off the gas valve, flash the Flame light, and immediately start a new cycle. This will continue indefinitely until pilot flame is
established or power is interrupted. Once pilot flame is proven, the control module opens the gas valve and deactivates the vent damper (causing it to close). The control module indicator lights show normal sequence when the lights are on
steady. When a problem occurs, the control module flashes combinations of lights to indicate the most likely reason for the problem. See page 52 for details. Standing pilot boilers (controls not shown) use the pilot thermocouple is ② ③ ④ ⑤ satisfied, the gas valve and vent damper will open on a call for heat and
close afterwards. Transformer The control transformer reduces line voltage to 24 volts for the gas valve and limit circuit. Draft hood The draft hood provides a minimum draft for the boiler, assuring adequate air for combustion if installed in accordance with manual and not modified in any way. Spill switch The spill switch will shut down the boiler
(requiring manual reset of the switch reset button) if the vent system becomes blocked. Water temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns off the gas valve if the temperature limit switch turns of the gas valve if the temperature limit switch turns of the gas valve if the temperature limit switch turns of the gas valve if the gas valve if the gas valve if the temperature limit switch turns of the gas valve if the ga
circulates water through the external (system) piping. The circulator is shipped loose, and can be mounted on either the boiler is not operated for 30 days, the
control module will power the circulator for 30 seconds, then turn off. Vent damper The vent damper closes during off cycles to reduce heat loss from the house up the vent. Other boiler components: a b c d e 2 supply to system return from system flue outlet burner manifold gas valve f g h i j pressure/temperature gauge relief valve air vent
connection flame rollout switch burner orifice k l m n o pilot burner, typical stainless steel burners cast iron boiler sections flue collector junction box Part Number 550-110-593/1099 GOLD CGa Gas-Fired Water Boiler Contents Standing pilot Spark-ignited pilot 2-3 How it works Hazard definitions 4 Please read before proceeding 5 1. Prepare boiler
location 6-11 2. Prepare boiler 12-15 3. Water piping 16-25 4. Gas piping 26 5. Field wiring 27 28-32 6. Start-up 33 7. Check-out procedure 8. Operation — spark-ignited pilot boilers 44-49 10. Service and maintenance 11. Troubleshooting 49-50, 51 49-50, 51-59 12. Replacement parts 60-65 13.
Dimensions and ratings 66-67 Hazard definitions The following defined terms are used throughout this manual to bring attention to the presence of hazards that will cause severe personal injury, death or substantial property damage.
Indicates presence of hazards that can cause severe personal injury, death or substantial property damage. Indicates special instructions on installation, operation or maintenance that are important but not related to personal injury or property damage. 4
Part Number 550-110-593/1099 GOLD CGa Gas-Fired Water Boiler 1a Prepare boiler location — codes & checklist Installations must follow these codes: • Local, state, provincial, and national codes, laws, regulations and ordinances. • National Fuel Gas Code, ANSI Z223.1-latest edition. • Standard for Controls and Safety Devices for Automatically
Fired Boilers, ANSI/ASME CSD-1, when required. • National Electrical Code. • For Canada only: B149.1 or B149.2 Installation Code, CSA C22.1 Canadian Electrical Code Part 1 and any local codes. Before locating the boiler, check the following: • • Check for nearby connection to: • System water piping • Venting connections • Gas supply piping • Venting connection to: • Check for nearby connection to: • System water piping • Venting connections • Gas supply piping • Venting connection to: • System water piping • Venting connections • Gas supply piping • Venting connection to: • System water piping • System water piping connection to: • System water piping connection to: • System
Electrical power • Boiler must be installed so that gas control system components are protected from dripping or spraying water or rain during operation or service. • If new boiler will replace existing boiler, check for and correct system problems, such as: 1. System leaks causing oxygen corrosion or service. • If new boiler will replace existing boiler, check for and correct system problems, such as: 1. System leaks causing oxygen corrosion or service. • If new boiler will replace existing boiler, check for and correct system problems, such as: 1. System leaks causing oxygen corrosion or service.
Incorrectly-sized expansion tank. 3. Lack of antifreeze in boiler water causing system and other flammable liquids. Failure to keep boiler area clear and free of combustible materials, gasoline and other flammable liquids and vapors can result in
severe personal injury, death or substantial property damage. Figure 1 6 Minimum clearances (see page 7) 35 7 Fresh air opening 7 2 6 6 3 59305 Top view 6 Side elevation Part Number 550-110-593/1099 Boiler Manual 1b Prepare boiler location — clearances Service clearances Flooring and foundation 1. Provide the following clearances for
cleaning and servicing the boiler and for access to controls and components: Flooring Clearance from: Top (for cleaning and servicing) Right side The CGa boiler is approved for installation on combustible flooring, but must never be installed on carpeting. Minimum
Do not install boiler on carpeting even if foundation is used. Fire can result, causing severe personal injury, death or substantial property damage. 35" 18" 7" Foundation 2. Provide at least screwdriver clearance to jacket front panel for inspection and minor service. If unable to provide at least screwdriver
clearance, install unions and shutoff valves in system so boiler can be moved for servicing. 1. Provide a solid brick or minimum 2-inch thick concrete foundation pad if any of the following is true: • • floor can become flooded. the boiler mounting area is not level. 2. The minimum foundation size is: Boiler model Small space installations 1. Provide the
following clearances to combustible material for small space installations. (See Figure 1, page 6): Clearance from combustible materials (closet installations): Top (for cleaning flueways) Front (provide means of access) Back Left side (provide means of access) Right side Minimum 35" 3" 7" 6" 2" 2. Hot water pipes must be at least ½" from
combustible material. 3. Single-wall vent pipe must be at least 6 inches from combustible material. 4. Type B double-wall metal vent pipe — refer to vent manufacturer's recommendation for clearances to combustible material. 4. Type B double-wall metal vent pipe — refer to vent manufacturer's recommendation for clearances to combustible material. 4. Type B double-wall metal vent pipe — refer to vent manufacturer's recommendation for clearances to combustible material.
25" 25" Minimum foundation width 12" 12" 15" 18" 21" 24" 27" Residential garage installation Take the following special precautions when installing the boiler in a residential garage, per ANSI Z223.1, paragraph 5.1.9: • Mount the boiler a minimum of 18 inches above the floor of the garage to assure
the burner and ignition devices will be no less than 18 inches above the floor. • Locate or protect the boiler so it cannot be damaged by a moving vehicle. 7 GOLD CGa Gas-Fired Water Boiler 1c Prepare boiler location — vent system Failure to follow all instructions can result in flue gas spillage and carbon monoxide emissions, causing severe personal
injury or death. Inspect existing chimney before installing boiler. Failure to clean or replace perforated pipe or tile lining will cause severe personal injury or death. Do not alter boiler draft hood or place any obstruction or non-approved vent damper in breeching or vent system. CSA certification will become void. Flue gas spillage and carbon
monoxide emissions will occur causing severe personal injury or death. When removing boiler from existing common vent system: At the time of removal of an existing boiler, the following steps shall be followed with each appliances remaining
connected to the common venting system are not in operation. a. Seal any unused openings in the common venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion or other deficiencies which could cause an unsafe condition. c. Test vent system —
Insofar as is practical, close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system. Turn on any exhaust fans, such as range hoods
and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers. d. Place in operation the appliance will operate continuously. e. Test for spillage at draft hood relief opening after 5 minutes of
main burner operation. Use the flame of a match or candle. f. After it has been determined that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers, and any other gas-burning appliance to their previous conditions of use. Any
improper operation of common venting system should be corrected so the installation conforms with the National Fuel Gas Code, ANSI Z223.1-latest edition. Correct by resizing to approach the minimum size as determined using the appropriate tables in Part 11 of that code. Canadian installations must comply with B149.1 or B149.2 Installation Code
8 Chimney or vent requirements 1. Venting must be installed according to Part 7, Venting of Equipment, of National Fuel Gas Code, ANSI Z223.1-latest edition and applicable building codes. Canadian installations must comply with B149.1 or B149.2 Installation Codes. 2. See Ratings table on page 67 for minimum chimney or vent sizes. A chimney or
vent without a listed cap should extend at least 3 feet above the highest point where it passes through a roof of a building within a horizontal distance of 10 feet. A chimney or vent must not extend less than the distances stated above. 3. A lined chimney is preferred and must be used when
required by local, state, provincial and national codes, laws, regulations and ordinances. Vitreous tile linings with joints that prevent retention of moisture and linings can be obtained from local gas utility. Type B doublewall metal vent pipe or single-wall vent
pipe may be used as a liner. 4. Cold masonry chimneys, also known as outside chimneys, typically have one or more walls exposed to outside air. When any atmospheric gas-fired boiler with automatic vent damper is vented through this type of chimney, the potential exists for condensation to occur. Condensation to occur. Condensation to occur.
McLain recommends the following to prevent possible damage. a. Line chimney with corrosion-resistant metal liner such as AL29-4C® single-wall stainless steel or B-vent. Size liner per National Fuel Gas Code ANSI Z223.1-latest edition. b. Provide drain trap to remove any condensate. 5. Where two or more gas appliances vent into a common
chimney or vent, equivalent area should be at least equal to area of vent outlet on largest appliance plus 50 percent of vent outlet area on additional appliance. Part Number 550-110-593/1099 Boiler Manual 1d Prepare boiler location — air contamination Please review the following information on potential combustion air contamination problems
Refer to Table 1 for products and areas which may cause contaminants are found: • remove contaminants permanently — OR — • isolate boiler and provide outside combustion air. See
national, provincial or local codes for further information. Table 1 Corrosive contaminants and likely locations Products to avoid Areas likely to have contaminants Spray cans containing chloro/fluorocarbons Dry cleaning/laundry areas and establishments Permanent wave solutions Swimming pools Chlorinated waxes/cleaners Metal fabrication plants
Chlorine-based swimming pool chemicals Beauty shops Calcium chloride used for thawing Refrigerant leaks Auto body shops Paint or varnish removers Plastic manufacturing plants Hydrochloric acid/muriatic acid Furniture refinishing areas and
9 GOLD CGa Gas-Fired Water Boiler 1c Prepare boiler location — air openings Combustion air and ventilation, of National Fuel Gas Code ANSI Z223.1-latest edition, or applicable local building codes. Canadian installations must comply with B149.1 or B149.2 Installation
Codes. Provide adequate combustion and ventilation air to assure proper combustion and reduce the risk of severe personal injury, death or substantial property damage caused by flue gas spillage and carbon monoxide emissions. Air from inside building (boiler in interior room - Figure 2) 1. Tightly constructed buildings must be provided with
openings to outside for combustion and ventilation air. These openings must be sized to handle all fuel burning appliances, exhaust or ventilation air openings to boiler room, which are adequate to handle the
provide a minimum free area of 1 square inch per 4,000 Btuh of input of all appliances in room plus requirements for any exhaust fans in room. 2. When openings to boiler room are taken to interior spaces, provide two permanent openings to boiler room are taken to interior spaces, provide two permanent openings must
provide a minimum free area of 1 square inch per 1,000 Btuh of input of all appliances in room, The interior space supplying combustion and ventilation air must have adequate infiltration from outside. MODEL CGi 10 Part Number 550-110-593/1099 Boiler Manual Special considerations Tight
areas such as joints around windows and door frames, between wall-ceiling joints, between wall-ceiling joints, between wall panels, at penetrations for plumbing, electrical, and gas lines, and in other openings. For buildings with such construction, provide air openings into the building from outside, sized per the appropriate case in Figure 3 if
 appliances are to use inside air for combustion and ventilation. Air opening 0 to 12" CGa boiler Air opening Other appliances 0 to 12" Part Number 550-110-593/1099 11 GOLD CGa Gas-Fired Water Boiler 2a Prepare boiler — placement and setup Place boiler/crate near position 1. Leave boiler in crate and on pallet until installation site is ready. 2.
Move entire crate and pallet next to selected location. 3. Remove crate. Leave boiler on pallet as follows: a. Tilt left side of boiler up and place a board under right legs. c. Slide boiler backwards off pallet and into position. Do not drop boiler or bump jacket on
floor or pallet. Damage to boiler can result. 5. Check level. a. Shim legs, if necessary. b. Do not alter legs. Inspect orifices and burners 1. Remove front jacket door. Remove base access panel (See Figure 32, item 4, page 62). 2. Check for correctly-sized manifold orifices. See Table 2 below for sizing. (The orifice size is stamped on the orifice spud
barrel.) burner. Failure to properly seat burners will result in severe personal injury, death or substantial property damage. 4. Reinstall access panel secured in place. Failure to comply could cause momentary flame rollout on ignition of main flame, resulting in possible fire or personal injury hazard. Orifice
replacement procedure (when required) 1. Remove access panel. 2. On gas manifold, mark location of main burner with attached pilot assembly from manifold. S. Apply a small amount of pipe dope to
each of the new orifices and install in the manifold. Make sure the orifices are aligned correctly, not cross-threaded in the manifold tappings. Correctly-sized manifold orifices must be used. Failure to do so will result in severe personal injury, death or substantial property damage. Use only pipe dope compatible with propane gas, even if boiler is to be
operated on natural gas. Failure to comply could result in severe personal injury, death or substantial property damage. 3. Level and straighten burner orifices must inject down center of 6. Reinstall main burner with attached pilot assembly at location
marked on gas manifold. Reinstall all remaining burners. 7. Follow check-out procedure, section 7, page 33. Table 2 Manifold orifice sizing Location Natural gas Propane gas 0-2,000 ft 2,000-4,500 2.00 mm 1.90 mm 1.20 mm 1.20 mm U. S.
Canada Note 1: For elevations above 2,000 feet, contact your local Weil-McLain sales office for details. 12 Part Number 550-110-593/1099 Boiler Manual 2b Prepare boiler — pressure test Perform hydrostatic pressure test Pressur
Remove the shipping nipple (from CGa supply tapping) and remove the boiler relief valve. Temporarily plug the relief valve tapping with a ¾" NPT pipe plug. 2. Remove 1¼" nipple, reducing tee and drain valve from accessory bag. Install in boiler return connection as shown on page 3 or in Figure 34, item 3, page 64. Install circulator on either the
return or supply. 3. Remove 1¼" nipple, 1¼" tee, bushing and pressure/ temperature gauge from accessory bag. Pipe to boiler supply connected to a fresh water supply. Make sure hose can also be used to drain boiler after test
5. Connect a nipple and shutoff valve to system supply connection on the 11/4" tee. This valve will be used to bleed air during the fill. (Valve and nipple are not included with boiler.) 6. Connect a nipple are not included with boiler.) 6. Connect a nipple are not included with boiler.)
(Valve and nipple are not included with boiler.) 3. When water flows from shutoff valves, close boiler drain valve. 4. Close shutoff valves. 5. Slowly reopen boiler drain valve until test pressure of not more than 45 psi is reached on the pressure/ temperature gauge. 6. Test at no more than 45 psi for no more than 10 minutes. Do not leave boiler
unattended. A cold water fill could expand and cause excessive pressure, resulting in severe personal injury, death or substantial property damage. 7. Make sure constant gauge pressure has been maintained throughout test. Check for leaks. Repair if found. Leaks must be repaired at once. Failure to do so can damage boiler, resulting in substantial
property damage. Do not use petroleum-based cleaning or sealing compounds in boiler system. Severe damage to boiler will occur, resulting in substantial property damage. Drain and remove fittings 1. Disconnect fill water hose from water source. Fill and pressure test 2. Drain boiler at drain valve or out hose, whichever provides best access to
drain. Remove hose after draining if used to drain boiler. 1. Open the shutoff valves you installed on supply and return connections. 3. Remove nipples and valves unless they will remain for use in the system piping. See Section 3.
to replace relief valve. Part Number 550-110-593/1099 13 GOLD CGa Gas-Fired boilers with vent damper installation These systems are used on gas-fired boilers with vent damper sas shipped from factory. Boiler will not operate without vent damper installed. Only vent dampers
listed in the Replacement parts list on page 61 are certified for use with CGa boilers. Any other vent damper installed could cause severe personal injury or death. Damper blade Standing pilot boilers only, install plug
with 3/8" diameter hole in vent damper hole. Spark-ignited pilot systems— Refer to vent manufacturer's instructions to install plug (shipped with no hole in veper Figure 8 Vent damper assemblies 4. Read and apply the harness plug warning label (shown above) so that it is
visible after installation. 5. Plug damper harness receptacle into damper harness plug. Bypassing (jumpering) vent damper will cause severe personal injury or death. After boiler has operated once, if either end of harness is disconnected, the system safety shutdown will
occur. The boiler will not operate until harness is reconnected. Effikal damper — Damper hold open switch must be in Automatic Operation position for system to operate properly. Part Number 550-110-593/1099 15 GOLD CGa Gas-Fired Water piping — general information General piping information If installation is to comply with
ASME or Canadian requirements, an additional high temperature limit is needed. Install control in supply piping between boiler and isolation valve. Set second control to minimum 20 °F above setpoint of first control. Maximum allowable setpoint of first control to minimum 20 °F. See page 34 or 38, for wiring. A low water cutoff device is required when boiler is installed.
 above radiation level or by certain state or local codes or insurance companies. Use low water cutoff designed for water installations. Electrode probe-type is recommended. Purchase and install in tee in supply piping above boiler. Use backflow check valve in cold water supply as required by local codes. Pressure/temperature gauge System water
piping Install pressure/temperature gauge in tee on supply piping (as shown in drawing on page 3). The gauge well is a self-closing valve, allowing removal of the gauge without draining the system. See Figure 9 (diaphragm-type or bladder-type expansion tank) or Figure 10 (closed-type expansion tank) on page 21, and Table 3 below, for near-boiler
and single-zone systems designed for return water at least 130 °F. See pages 18-19 to complete multiple-zone piping or pages 20-25 to complete multiple-zone piping or pages 20-25 to complete multiple-zone piping or side of boiler. See
to eliminate possibility of severe burns should the valve discharge line must be as short as possible and be the same size as the valve discharge line must pitch downward from the valve and terminate at least 6" above the floor drain where any discharge will be clearly visible. The
valve shall be installed between the relief valve and boiler, or in the discharge line. Do not plug or place any obstruction in the discharge line. Failure to comply with the above guidelines could result in failure of the relief valve to operate, resulting in possibility of severe personal injury, death or substantial property damage. Test the operation of the
valve after filling and pressurizing system by lifting the lever. Make sure the valve discharges freely. If the valve fails to operate correctly, replace it with a new relief valve. To system ¾" 1" 1" 4" 1 ½" • Chilled medium from entering boiler.
Consult I=B=R Installation and Piping Guides. If boiler is connected to heating coils located in air handling units where they can be exposed to refrigerated air, use flow control valves or other automatic means to prevent gravity circulation during cooling cycle. Circulation of cold water through the boiler could result in damage to the heat exchanger
causing possible severe personal injury, death or substantial property damage. Part Number 550-110-593/1099 Boiler Manual 3b Water piping — single-zone system Expansion tank — Figure 9 1. Ensure expansion tank — Figure 9 1. Ensure expansion tank boiler and system water
 Figure 10 only for single-zone systems designed for return water at least 130 °F. For systems with low return water temperature possible, such as converted gravity systems and radiant heating systems, refer to the special piping suggestions of pages 20-25. Failure to prevent low return water temperature to the boiler could cause corrosion of the
boiler sections or burners, resulting in severe personal injury, death or substantial property damage. Figure 9 Diaphragm-type expansion tank Piping to single-zone system using diaphragm-type expansion tank Piping to single-zone system.
using closedtype expansion tank. See Table 3 for piping sizes. Cold water fill CLOSED-type expansion tank To DIAPHRAGM expansion tank and fittings Isolation valve From system Circulator* Automatic air vent Relief valve Circulator* GOLD CGa GOLD C
Circulator Drain valve Drain valve Circulator 59306 Part Number 550-110-593/1099 *Alternate location 59307 *Alternate location 17 GOLD CGa Gas-Fired Water piping — multiple zones Failure to prevent low return water temperature to the boiler could cause corrosion of the boiler sections or burners, resulting in severe personal
temperature. If radiant system tubing has no oxygen barrier, a heat exchanger must be used. 18 Part Number 550-110-593/1099 Boiler Manual Typical piping — multiple-zone installations Figure 12 Zoning with circulators — return water 130 °F or higher. ZONE 2 ZONE 2 ZONE 2 ZONE 3 ZONE 2 ZONE 2 ZONE 3 ZONE
ZONE 1 1 1 1 2 2 1 13 5 3 1 6 1 6 6 6 1 13 1 Alternate circulator location 9 Cold water fill CGa 10 11 12 GOLD CGa 59309 59308 1 2 3 5 6 9 10 9 10 11 Boiler isolation (balancing) valves Flow/check valve System or zone circulator Zone valve Drain valve Relief valve Automatic air vent (with diaphragm-type expansion tank), or
connect to tank fitting (closed-type expansion tank). DO NOT use an automatic air vent when using closed-type expansion tank. It would allow air to leave the system, causing waterlogging of the expansion tank, pipe from top of air separator to
tank fitting as in Figure 10.) 13 Air separator and automatic vent, if used (Note that the fill valve must always be connected to the expansion tank, regardless of location of expansion tank circulator or air separator. For systems and heat pump
systems), refer to the special piping suggestions of Figures 13 - 17, as applies. Failure to prevent sustained low return water temperature to the boiler sections, resulting in severe personal injury, death or substantial property damage. Part Number 550-110-593/1099 19 GOLD CGa Gas-Fired Water Boiler 3d
Primary/secondary (preferred) bypass piping method Water piping — low temp systems Primary/secondary bypass piping is preferred because the flow rate and temperature drop in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a change in the heating circuit will not cause a ch
circuit rate and temperature distribution. Figures 13 and 14 show suggested bypass arrangements using primary/secondary bypass piping (preferred) for low temperature systems or converted gravity systems. For alternatives, see pages 22 through 25. The bypass valves (items 7a and 7b) provide mixing of hot boiler
outlet water with cooler system return water — set to assure a minimum return water temperature (at least 130 °F) to the boiler. Set the valves as explained below. Temperature gauges Gauge 4a is suggested, but optional on any systems — to display the
water temperature being supplied to the radiant tubing. Gauge 8 is required on all systems to assure the return water temperature is accurately set for a minimum of 130 °F. If this gauge is not available however, adjust the valves such that the boiler-mounted temperature/pressure gauge reads at least 150 °F when the system return water is cold
(approximately 60 °F water temperature). Valve adjustment (Figure 13 and 14 only) 1. Set the valves while the system is cool, setting for the coldest expected water temperature (usually 60 °F since the system will often drop to room temperature between cycles). 2. Start with valve 7a fully closed and 7b fully open. 3. Gradually open valve 7a while
boiler could cause corrosion of the boiler sections or burners, resulting in severe personal injury, death or substantial property damage. Radiant heating system piping should include a means of regulating the boiler return water temperature and the system piping should include a means of regulating the boiler return water temperature and the system piping should include a means of regulating the boiler return water temperature.
temperature will be adequately controlled using the methods shown in this manual provided the system is equipped with an outdoor reset control. Instead, provide controls and piping which can regulate the boiler return water temperature at no less
Alternate circulator location 9 4b 7a 7a 8 12" MAX. 3 10 11 Cold water fill 10 11 GOLD 12 CGa GOLD 12 
tank. It would allow air to leave the system, causing waterlogging of the expansion tank, if used (Note that the fill valve must always be connected
to the expansion tank, regardless of location of expansion tank, circulator or air separator.) 21 GOLD CGa Gas-Fired Water piping method is called a boiler-bypass because part of the circulator flow is bypassed around the boiler (through valve 7a). This method reduces the
flow rate throughout the boiler, in order to raise the average water temperature in the boilers — including to the instructions following. Figures 15 and 16 are alternative piping suggestions for converted
gravity (large water content or steam systems) or radiant heating system — for use when primary/secondary piping can't be applied. (Figure 17 however, is not suitable for radiant heating applications because it does not protect the radiant system from possible
high water temperature.) Boiler-bypass piping keeps system flow rate as high as possible and temperature drop as low as possible, helping to equalize the building heat distribution. Temperature gauges Gauge 4a is optional if the bypass valves will be adjusted using cold (or room temperature) return water to the boiler. (When setting the valves
 without gauge 4a installed — using cold or room temperature water — assume the return water temperature to be 60 °F. Set the valves so gauge 8 reads at least 120 °F. Gauge 4b is optional on converted gravity systems, but required on radiant heating systems — to display the water temperature being supplied to the radiant tubing. Gauge 8 is
required on all systems to assure reliable adjustment of the bypass valves. The boiler-mounted temperature gauge is not installed. Valve adjustment 1. Start with valve 7a fully open. 2. Gradually open valve 7a while closing valve 7b until the temperature at gauge 8 reads 60 °F
temperature/pressure gauge may be used in place of a separate gauge 8. Failure to prevent low return water temperature to the boiler sections or burners, resulting in severe personal injury, death or substantial property damage. Radiant heating system piping should include a means of regulating the boiler return
 water temperature and the system supply temperature (such as provided by an injection pumping control). Boiler return water temperature will be adequately constant. DO NOT apply the methods of this manual if the system is equipped with an
damage to the sections or burners, resulting in possible severe personal injury, death or substantial property damage. 22 Part Number 550-110-593/1099 Boiler Manual Boiler-bypass (alternate) piping — for radiant heating or converted gravity systems Figure 15 Boiler-bypass piping Figure 16 Boiler-bypass piping Zoning with circulators Zoning with
zone valves (Alternative to primary/secondary piping Figures 13 and 14) (Alternative to primary/secondary piping Figures 13 an
temperature gauge 9 Relief valve Part Number 550-110-593/1099 tank), or connect to tank fitting (closed-type expansion tank). DO NOT use an automatic air vent when using closed-type expansion tank. It would allow air to leave the system, causing waterlogging of the expansion tank. If used (For closed-type expansion tank) are to leave the system, causing waterlogging of the expansion tank. It would allow air to leave the system, causing waterlogging of the expansion tank. It would allow air to leave the system, causing waterlogging of the expansion tank. It would allow air to leave the system are to 
separator to tank fitting as in Figure 10.) 13 Air separator and automatic vent, if used (Note that the fill valve must always be connected to the expansion tank, regardless of location of expansion tank, regardless of location t
 some low pressure drop systems in order to cause enough flow through valve 7a. Figure 17 is an alternative piping method that provides return water temperature control for boilers installed on converted gravity systems. It provides no method converted gravity systems (large water control for boilers installed on converted gravity systems). Do not apply the piping of Figure 17 on radiant heating systems. It provides no method converted gravity systems (large water control for boilers installed on converted gravity systems).
regulating the water temperature provided to the system and could result in excessive water temperature in the radiant tubing. System-bypass piping as shown in Figure 17 can be used with circulator zoning, when used with circulator zoning however, the boiler circulator (item 3), must be piped as shown. It cannot be used as
one of the zoning circulators. Do not apply system-bypass piping if the reduced flow in the system and increases the water temperature supplied to the system and increases the flow in the system and increases the water temperature supplied to the system. This can cause increased heat from radiators at the beginning of the system and reduced heat
from radiators near the end of the system. Valve 7a fully closed and 7b fully open. 2. Gradually open valve 7a regulates the amount of boiler supply water mixed with return water. Valve 7b causes a pressure drop in the
system needed to balance flow through valve 7a and the systems or high mass radiant systems). Failure to prevent low return water temperature to the boiler could cause corrosion of the boiler sections or burners,
resulting in severe personal injury, death or substantial property damage. Radiant heating system piping should include a means of regulating the boiler return water temperature will be adequately controlled using the methods
shown in this manual provided the system supply temperature is relatively constant. DO NOT apply the methods of this manual if the system supply temperature at no less than 130 °F regardless of system supply temperature. Contact
your Weil-McLain representative for suggested piping and control methods. Failure to prevent cold return water temperature to the boiler could cause corrosion damage to the sections or burners, resulting in possible severe personal injury, death or substantial property damage. 24 Part Number 550-110-593/1099 Boiler Manual 3f System-bypass
(alternate) piping — for converted gravity (or steam) systems From system 7b 7a Zoning with zone valve or circulators, return water 130 °F or higher. Alternative to boiler-bypass piping Figures 15 and 16) 3 System or zone circulator 7
System temperature valves (see instructions to the left for adjusting valves) 8 Blend temperature gauge 9 Relief valve 10 Automatic air vent (with diaphragm-type expansion tank), or connect to tank fitting (closed-type expansion tank), or connect to tank fitting (closed-type expansion tank).
causing waterlogging of the expansion tank. 11 Fill valve 12 Diaphragm-type or bladder-type expansion tank, if used (For closed-type expansion tank, pipe from top of air separator to tank fitting as in Figure 10.) 59314 3g Water piping — Refrigeration systems Expansion tank. 11 Fill valve 12 Diaphragm-type or bladder-type expansion tank, pipe from top of air separator to tank fitting as in Figure 10.) 59314 3g Water piping — Refrigeration systems Expansion tank.
chilled medium is piped in parallel with the heating boiler. Use appropriate valves to prevent chilled medium from entering boiler. See Figure 18 for typical installation of balancing valve and check valve. Shut-off valve Circulator Water from
entering boiler Balancing valve Boiler GOLD CGa If boiler is connected to heating coils located in air handling units where they can be exposed to refrigerated air, use flow control valves or other automatic means to prevent gravity circulation during cooling cycle. 25 GOLD CGa Gas-Fired Water Boiler 4 Gas piping Natural Gas: 1. Refer to Table 4 for
pipe length and diameter. Base on rated boiler input (divide by 1,000 to obtain cubic feet per hour). Table 4 is only for gas with specific gravity 0.60, with a pressure drop through the gas piping of 0.30" w.c. For additional gas pipe sizing information, refer to ANSI Z223.1 (or B149.1 or B149.2 for Canadian installations). 2. Inlet pressure required at
gas valve inlet: • Maximum: 13" w.c. • Minimum: 5" 
provided by gas supplier for 13" w.c. maximum pressure. 3. Inlet pressure required at gas valve inlet: • Maximum: 13" w.c. • Minimum: 11" w.c. • M
Capacity of pipe for pipe size of: (Capacity in cubic feet gas per hour) Gas pipe length (feet) ½" ¾" 1" 1½" 10 132 278 520 1050 1600 20 92 190 350 730 1100 30 73 152 285 590 860 Nipple 40 63 130 245 500 760 Cap 50 56 115 215 440 670 26 75 45 93 175 360 545 100 38 79 150 305 460 150 31 64 120 250 380 Tee 59322 Part Number 550-
110-593/1099 Boiler Manual 5 Field wiring For your safety, turn off electrical power supply at service entrance panel before making any electrical connections to avoid possible electrical power supply at service entrance panel before making any electrical connections to avoid possible electrical power supply at service entrance panel before making any electrical connections to avoid possible electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making any electrical power supply at service entrance panel before making and electrical power supply at service entrance panel before making and electrical power supply at service entrance panel before making and electrical power supply at service entrance panel before making and electrical power supply at service entrance panel before making and electrical power supply at service entrance panel before making and electrical power supply at service entrance panel before making and electrical power supply at service entrance panel before making and electrical power supply at service entrance panel before making and electrical power supply at service entrance panel before making and electrical power supply at service entrance panel before entrance panel before entrance
must be replaced, type 200 °C wire or equivalent must be used. If other original wiring as supplied with boiler must be electrical Code and Electr
any other national, state, provincial or local codes or regulations. 2. In Canada, CSA C22.1 Canadian Electrical Code Part 1, and any local codes. Wiring diagrams shown on page 34 for standing pilot ignition boiler or page 38 for spark-
ignited pilot boiler. Figure 20 Field wiring Field wiring Field wiring fixtures, television, sunrays or
fireplaces. 3. If thermostat has a heat anticipator, set heat anticipator, set heat anticipator in thermostat to match power requirements of equipment connected to it. If connected directly to boiler, set for 0.1 amps plus gas valve current. See information on the wiring diagram shown in Figure 25b, page 39. For other devices, refer to manufacturer's specifications. Wiring
diagram on boiler gives setting for control module and gas valve. Also see instructions with thermostat. Junction box (furnished) 1. Connect 120 VAC power wiring (Figure 20). 2. Fused disconnect or service switch (15 amp. recommended) may be mounted on this box. For those installations with local codes which prohibit installation of fused
disconnect or service switch on boiler, install a 2 x 4 cover plate on the boiler junction box and mount the service switch remotely as required by the code. Wiring multiple zones Refer to zone valve manufacturer's literature for wiring and application. A separate transformer is required to power zone valves. Zoning with circulators requires a relay for
each circulator. Service switch Neutral Ground (not provided) Thermostat or end switch (not provided) Service switch (not provided) Thermostat or end switch (not provided) Thermostat (not provided) Thermostat (not provided) Thermostat (not provid
593/1099 27 GOLD CGa Gas-Fired Water Boiler 6a Start-up — preparation Check for gas leaks Before starting the boiler, and during initial operation, smell near the floor and around the boiler for gas odorant or any unusual odor. Do not proceed with start-up if there is any indication of a gas leak. Repair any leak at once. Propane boilers only — Your
propane supplier mixes an odorant with the propane to make its presence detectable. In some instances, the odorant can fade and the gas may no longer have an odor. • Propane gas can accumulate at floor level. Smell near the floor for the gas may no longer have an odor. • Propane gas can accumulate at floor level. Smell near the floor for the gas may no longer have an odor. • Propane gas can accumulate at floor level.
attempting to light the propane pilot. This should be done by a qualified service technician, particularly if pilot outages are common. • Periodically check the odorant level of your gas. • Inspect boiler and system at least yearly to make sure all gas piping is leak-tight. • Consult your propane supplier regarding installation of a gas leak detector. There
are some products on the market intended for this purpose. Your supplier may be able to suggest an appropriate device. Determine if water treatment is needed Do not use petroleum-based cleaning or sealing compounds in boiler system. Severe damage to boiler will occur, resulting in substantial property damage. Eliminate all system leaks.
Continual fresh makeup water will reduce boiler life. Minerals can build up in sections, reducing heat transfer, overheating cast iron, and causing section failure. Verify water chemistry Consult local water treatment companies for unusually hard water areas (above 7 grains hardness) or low pH water chemistry Consult local water pH of 7.0 to
8.5 is recommended. Freeze protection (when used) Use antifreeze made especially for hydronic systems. Inhibited propylene glycol is recommended. Do not use ethylene glycol, automotive or undiluted antifreeze made especially for hydronic systems. Inhibited propylene glycol is recommended. Do not use ethylene glycol, automotive or undiluted antifreeze. Severe personal injury or death can result. 1. Determine antifreeze made especially for hydronic systems.
listed on page 67. Remember to include expansion tank water content. 2. Follow antifreeze manufacturer's instructions. 3. A 50% solution of propylene glycol/water provides maximum protection to about -30 °F. 4. Local codes may require back flow preventer or actual disconnect from city water supply. 5. When using antifreeze in a system with
automatic fill, install a water meter to monitor water makeup. Glycol will leak before the water begins to leak, causing glycol level to drop. Added water will dilute the antifreeze, reducing the freeze protection level. 28 Part Number 550-110-593/1099 Boiler Manual Fill the system with water 1. Close manual and automatic air vents and boiler drain
cock. 2. Fill to correct system pressure. Correct pressure will vary with each application. Typical cold water fill pressure for a residential system is 12 psi. 3. Purge air from system: a. Connect a hose to the purge valve (see drain valves, item 6, in suggested piping diagrams on pages 17 through 23, Figure 9 through Figure 16). Route hose to an area
where water can drain and be seen. b. Close the boiler or system isolation valves and fill connection to the system. c. Close zone at a time, open the isolation valves. Allow water to run through the zone, pushing out the air. Run
until no noticeable air flow is present. Close the zone isolation valves and proceed with the next zone. Follow this procedure until all zones are purged. g. Close the quick-fill water valve and proceed with the next zone isolation valves. Watch that system pressure rises to correct cold-fill pressure. h. After the system has operated for a
while, eliminate any residual air by using the manual air vents located throughout the system. i. If purge valves are not installed in system one at a time, beginning with lowest floor. Close vent when water squirts out. Repeat with remaining vents. 4. Open automatic air vent (diaphragm-type or bladder-type expansion
tank systems only) one turn. 5. Open other vents: a. Starting on the lowest floor, open air vents one at a time until water piping After filling the boiler and system with water, inspect all piping throughout the system for leaks. If found, repair immediately.
Repeat this inspection after the boiler has been started and the system has heated up. Leaks must be repaired at once. Failure to do so can damage the boiler system. Severe damage to boiler will occur, resulting in substantial property
damage. Part Number 550-110-593/1099 29 GOLD CGa Gas-Fired Water Boiler 6a Start-up — preparation continued Inspect base insulation The boiler contains ceramic fiber and fiberglass materials. Use care when handling these materials per instructions on page 68 of this manual. Failure to comply could result in severe personal injury. Failure to
replace damaged insulation or reposition insulation can result in a fire hazard, causing severe personal injury, death or substantial property damage. Check to make sure insulation is secure against all four sides of the base. If insulation is damaged or displaced, do not operate boiler. Replace or reposition insulation. 6b Start-up — operate boiler DO
NOT proceed with boiler operation unless boiler and system have been filled with water and all instructions and procedures of previous manual sections have been completed. Failure to do so could result in severe personal injury, death or substantial property damage. Before starting the boiler . . . • Read manual Section 8/9 and the
Lighting/Operating instruction procedure (see Table 5, below). • Verify the boiler and system are full of water. • Verify the Start-up preparation procedures of Section 6 have been completed. Table 5 Lighting/Operating instruction procedures of Section 6 have been completed. Table 5 Lighting/Operating instruction procedures of Section 6 have been completed.
Honeywell VR8200/VR8300 Propane 35 Robertshaw 7200 36 Natural 40 Robertshaw 7200 36 Natural 40 Robertshaw 7200 36 White-Rodgers 36C 43 Natural Natural Part Number 550-
110-593/1099 Boiler Manual 6b Start-up — operate boiler continued Start the boiler of Follow the Lighting/Operating Instruction which applies to this gas valve (see Table 5, page 30).
(The lighting instruction label on the boiler provides the same information.) • See Section 6c, below, if boiler fails to start. Check system and boiler fliminate all system leaks. Continual fresh makeup water will reduce boiler life. Minerals can build up in sections, reducing heat transfer, overheating cast iron, and causing section failure. If you discover
evidence of any gas leak, shut down the boiler at once. Find the leak source with bubble test and repair immediately. Do not start boiler again until corrected. Failure to comply could result in severe personal injury, death or substantial property damage. Do not use petroleum-based cleaning or sealing compounds in boiler system. Severe damage to
boiler will occur, resulting in substantial property damage. 1. Check system piping for leaks. If found, shut down boiler and repair immediately. 6c 2. Vent air from system thoroughly for signs of deterioration from
corrosion, physical damage or sagging. Verify that masonry chimney liners are in good condition, with no obstructions, and there are no openings into the chimney. 4. Check around the boiler for gas odor following the procedure in section
7, page 33, and fill in the Installation and service switch off? 4. Gas not turned on at meter or boiler? 2. High limit switch set below boiler water temperature? 5. Incoming gas pressure less than: 5" w.c. for natural gas? 11" w.c. for propane gas? 3.
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Thermostat set below room temperature? 6. If none of the above corrects the problem, refer to Troubleshooting, section 11, page 49 of this manual. Part Number 550-110-593/1099 31 GOLD CGa Gas-Fired Water Boiler 6d Start-up — verify operation The boiler model suffix will be "SPD". For spark-ignited pilot boilers (suffix "PID"), see Section 8 or 9 for operation and lighting/operating information. 32 Figure 21 Typical pilot burner flame Fart Number 550-110-593/1099 Boiler Manual 7 Check-out procedure — checklist \square Boiler and heat distribution units filled with water? \square Automatic air vent, if used, open one full turn? \square Air purged from system? \square Air

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system temperature requirements. Adjust balancing valves and controls to provide design temperature to system. 🗆 Correctly sized manifold orifices must be used. Failure to do so will cause severe personal injury, death or substantial property damage. For multiple zones, adjust flow so it is about the same in each zone. 🗆 Followed lighting/operating
instructions on boiler or in manual section 8, page 34 or section 9, page 37 for proper start-up? Verify thermostat (s). 

Cycle boiler with thermostat — Raise to highest setting and verify boiler goes through normal start-up cycle. Lower to lowest
setting and verify boiler goes off. Defente to use one cubic foot of gas. d. Calculate gas input: Proper burner flame observed? Refer to Check burner flame, manual section 6d, page 32. Test limit control—
other controls, test for operation as outlined by manufacturer. Burners should pe operating and should go off when controls are restored, burners should reignite. 

Botton on spill switch pushed in? 

Test ignition system safety device: a. Standing pilot — Turn gas cock knob to PILOT position and extinguish pilot flame. Pilot flame.
gas flow should stop in less than 3 minutes. Put system back into operation (see section 6, pages 28-32). b. Spark-ignited pilot — Connect manometer to outlet side of gas valve. Start boiler, allowing for normal startup cycle to occur and main burners to ignite. With main burners on, manually shut off gas supply at manual main shutoff gas valve.
Burners should go off. 3600 x 1000 = Btuh number of seconds from step c e. 🗆 Btuh calculated should be 3.5" w.c. and for propane gas should be 10" w.c. 🗆
Observe several operating cycles for proper operation. 

Review all instructions to desired room thermostat to desired room temperature. 

Review all instructions to envelope and give to owner or place in pocket inside front panel in boiler.
B. Before LIGHTING, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. See below. C. Use only your hand to push down the reset button or turn the gas control knob. Never use tools. If the knob or reset button will not operate by hand, don't try to repair it, call
a qualified service technician. Force or attempted repair may result in a fire or explosion. D. Do not use this appliance and to replace any part of the control system and any gas control, which has been under water. WHAT TO DO IF YOU SMELL
GAS • Do not try to light any appliance. • Do not touch any electric switch; do not use any phone in your gas supplier from a neighbor's phone. Follow the gas supplier from a neighbor's phone in your gas supplier from a neighbor f
on this label. 2. Set the thermostat to lowest setting. 3. When equipped with Effikal vent damper Model RVGP, place service switch in Hold Damper Open position. 4. Turn off all electrical power to the appliance. 5. When equipped with Johnson Controls vent damper Model M35, manually rotate damper blade in direction of arrow to Open position
indicated on damper assembly. to OFF. 6. Turn gas control knob clockwise 7. When equipped with vent damper, verify damper blade is in full open position. 8. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above. If you don't smell gas, go to the next
step. 9. Remove access panel located above burners. 10. Find pilot — follow metal tube from gas control. The pilot is between two burners behind the access panel. 11. Turn gas control knob counterclockwise to PILOT. 12. Push in red reset button and hold. Immediately light the pilot with a match. Continue to hold reset button in for about one (1)
minute after the pilot is lit. 13. Release reset button. Pilot should remain lit. If pilot goes out, repeat steps 6 through 13. • If reset button stays depressed after release, stop and immediately call your service technician or gas supplier. • If the pilot will not stay lit after several tries, turn the gas control knob clockwise to OFF and call your service
technician or gas supplier. 14. Replace access panel. to ON. 15. Turn gas control knob counterclockwise 16. Turn on all electric power to the appliance. 17. When equipped with Effikal vent damper, place service switch in Automatic Operation position. 18. Set thermostat to desired setting. 19. Replace front panel. TO TURN OFF GAS TO THE
APPLIANCE 1. Set the thermostat to lowest setting. 3. Remove front panel. 2. Turn off all electric power to the appliance if service is to be performed. 4. Turn gas control knob clockwise Part Number 550-110-593/1099 to OFF. 5. Replace front panel. 35 GOLD CGa Gas-Fired Water Boiler 8b Lighting instructions — CGa-25 to CGa-8 • Standing pilot
Gas valve manufacturer — Robertshaw • Natural gas • Gas valve model(s) — 7200 FOR YOUR SAFETY READ BEFORE LIGHTING If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life. A. This appliance has a pilot, which must be lighted by hand. When lighting the pilot,
follow these instructions exactly. B. Before LIGHTING, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will not move by hand, don't try to repair it, call a
qualified service technician. Force or attempted repair may result in a fire or explosion. D. Do not use this appliance and to replace any part has been under water. Immediately call a qualified service technician to inspect the appliance if any part has been under water. WHAT TO DO IF YOU SMELI
GAS • Do not try to light any appliance. • • Do not touch any electric switch; do not use any phone in your gas supplier from a neighbor's phone. Follow the gas supplier from a neighbor's phone in your gas supplier from a neighbor's phone in your gas supplier from a neighbor's phone in your gas supplier from a neighbor's phone.
on this label. 2. Set the thermostat to lowest setting. 3. When equipped with Effikal vent damper Model RVGP, place service switch in Hold Damper Open position. 4. Turn off all electrical power to the appliance. 5. When equipped with Johnson Controls vent damper Model M35, manually rotate damper blade in direction of arrow to Open position
indicated on damper assembly. to OFF. 6. Depress and move selector arm left 7. When equipped with vent damper, verify damper blade is in full open position. Position indicator Selector arm (shown in OFF position) 59332 8. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in
the safety information above. If you don't smell gas, go to the next step. 9. Remove access panel located above burners behind the access panel located above burners. 10. Find pilot — follow metal tube from gas control right to SET position. 12. Hold selector arm in SET position and immediately light
the pilot with a match. Continue to hold selector arm to SET for about one-half (1/2) minute after the pilot will not stay lit after several tries, move to OFF and call your service selector arm left technician or gas supplier. 14. Replace access panel. 15. Turn
selector arm left to ON. 16. Turn on all electric power to the appliance. 17. When equipped with Effikal vent damper, place service switch in Automatic Operation position. 18. Set the thermostat to lowest setting. 3. Remove front panel. 2. Turn off all
electric power to the appliance if service is to be performed. 4. Depress and move selector arm left 36 to OFF. 5. Replace front panel. Part Number 550-110-593/1099 Boiler Manual 9a Operating the boiler. Failure to do so could result in
severe personal injury, death or substantial property damage. 1. Standby: With no call for heat, the vent damper and circulator are deenergized. No gas flows to pilot or main gas valve. 2. Call for heat (thermostat circuit closes): a. Vent damper and circulator are deenergized if pilot status acceptable. Vent damper drives open. When vent damper end switch
makes circuit, ignition control begins pilot ignition control begins pilot ignition control will lockout, requiring reset procedure as given in Figure 24. 3. Pilot ignition: Control module sparks the pilot and opens pilot valve in main gas valve. a. If pilot
does light and control module senses flame current, spark generator is turned off. Control module waits 5 minutes, then attempts to ignite pilot again. This cycle will continue indefinitely if pilot ignition control does not
sense pilot flame. 4. Main burner operation: a. Control module monitors pilot flame current. If signal is lost, main valve closes, spark generator activates and sequence returns to step 4. b. If power is interrupted, control system shuts off pilot and main gas valves and restarts at step 1 when power is restored. c. In the event the limit control shuts down
              — The control module closes the main gas valve, but keeps the circulator operating and the vent damper open. 5. Thermostat satisfied (thermostat circuit opens) — Pilot and main gas valve, but keeps the circulator operating and the vent damper open. 5. Thermostat
anticipator setting: Set thermostat heat anticipator as instructed in Figure 25b, page 39. Ignition control module sequence of operation — status light indications Steps Call for heat? POWER TSTAT CIRC LIMIT DAMPER FLAME Timing (Following step 7, cycle goes back to step 1.) 1. Standby · Waiting for call for heat NO — 2. Call for heat · Circulator
on YES — 3. Limit circuit · Limit circuit · Limit controls closed YES — 4. Damper circuit · Damper proven open YES — 5. Pilot flame proven * · Gas valve open · Pilot remains on · Boiler producing heat YES — 8. Thermostat satisfied · Circulator off NO 15
sec 9. Circulator exercise routine · Circulator turns on for 30 seconds if boiler not operated for 30 days NO 30 sec 15 sec or = "ON" = "OFF" * If pilot flame is not proven in 15 seconds, control module will not lockout on a failure to
establish flame. It will lockout if line voltage polarity is reversed, stray voltage is sensed on thermostat line, or if flame is sensed when it shouldn't be there. The boiler will reset after these lockouts if any of the following occurs: • 1 hour waiting period • Opening and closing of thermostat circuit • Removal of 120 VAC power for at least 45 seconds.
59340 Part Number 550-110-593/1099 37 GOLD CGa Gas-Fired Water Boiler 9a Operation — spark-ignited pilot system continued Figure 25a Schematic wiring diagram — Spark-ignited pilot system White Plug-in Red connectors OFF ON 38 Part Number 550-110-593/1099 Boiler Manual Figure 25b Ladder wiring diagram — Spark-ignited pilot system
              shock hazard — can cause severe injury or death. Disconnect power before installing or servicing. Hot Neutral Gnd 120 VAC SERVICE SWITCH Legend for ladder wiring Low voltage factory wiring High voltage spark ignition wiring Ground
connectors PILOT IGNITION ELECTRODE CONTROL MODULE 120 VAC SECTION 120 VAC SEC
36C gas valve. Anticipator amps 0.6 0.8 0.55 0.7 1. All wiring must be installed in accordance with: A. U.S.A. — N.E.C. And any other national, provincial, or local code requirements. 2. Pilot lead wires are not field replaceable. Replace pilot assembly if
zoning, use either zone valves or circulators. Refer to the component manufacturer's instructions and this manual for application information. 7. Wire any additional limit controls (low water cutoff, additional high limit, etc.) in series with boiler for application and wiring suggestions. 6. Refer to control component instructions packed with the boiler for application and wiring suggestions.
limit control as shown. Part Number 550-110-593/1099 CIRCULATOR 24 VAC G POWER THERMOSTAT R TSTAT/CIRC Additional limits (note 7) 24VAC CONSTANT VENT DAMPER 24VAC CONSTANT VENT DAMPER 24VAC CALL FOR HEAT SPILL SWITCH R LIMIT ROLLOUT TFE WATER TEMPERATURE LIMIT SWITCH CONTROL MODULE LOW VOLTAGE SECTION PILOT GAS
property damage, personal injury or loss of life. A. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand. B. Before OPERATING, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. See below
C. Use only your hand to turn the gas control knob. Never use tools. If the knob will not turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion. D. Do not use this appliance
and to replace any part of the control system and any gas control, which has been under water. WHAT TO DO IF YOU SMELL GAS • Do not try to light any appliance. • • Do not touch any electric 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. OPERATING INSTRUCTIONS 1. Stop! Read the safety information above on this label. 2. Set the thermostat to lowest setting. 3. When equipped with Effikal vent damper Model RVGP, place service switch in Hold Damper Open position. 4. Turn off all electrical power to the appliance. 5. When
equipped with Johnson Controls vent damper Model M35, manually rotate damper blade in direction of arrow to Open position indicated on damper assembly. 6. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand. 7. Turn gas control knob clockwise to OFF. 8. When equipped with
vent damper, verify damper blade is in full open position. 9. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you don't smell gas, go to the next step. to ON. 10. Turn gas control knob counterclockwise 11. Turn on all electric power to the
appliance. 12. When equipped with Effikal vent damper, place service switch in Automatic Operation position. 13. Set thermostat to desired setting. 14. If the appliance and call your service technician or gas supplier. 15. Replace front panel. TO TURN OFF GAS TO THE
APPLIANCE 1. Set the thermostat to lowest setting. 2. Turn off all electric power to the appliance if service is to be performed. 4. Turn gas control knob clockwise force. to OFF. Do not 5. Replace front panel. 3. Remove front panel. 40 Part Number 550-110-593/1099 Boiler Manual 9b Operating instructions — CGa-25 to CGa-6 • Spark pilot • Gas
valve manufacturer — Robertshaw • Natural gas • Gas valve model(s) — 7200 FOR YOUR SAFETY READ BEFORE OPERATING If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life. A. This appliance is equipped with an ignition device which automatically lights the pilotomatically lights the pilotomati
Do not try to light the pilot by hand. B. Before OPERATING, smell all around the appliance area for gas. Be sure to smell next to the floor. See below. C. Use only your hand to depress or move the selector arm. Never use tools. If the selector arm will not depress or move by hand, don't
try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion. D. Do not use this appliance and to replace any part of the control system and any gas control, which has been under water. WHAT TO
DO IF YOU SMELL GAS • Do not try to light any appliance. • • Do not touch any electric switch; do not use any phone in your gas supplier from a neighbor's phone. Follow the gas supplier from a neighbor's phone in your building. Immediately call your gas supplier from a neighbor's phone in your building. Immediately call your gas supplier from a neighbor's phone in your building. Immediately call your gas supplier from a neighbor's phone in your building. Immediately call your gas supplier from a neighbor's phone in your gas supplier from a neighbor's phone in your building. Immediately call your gas supplier from a neighbor's phone in your gas supplier from a neighbor fro
safety information above on this label. 2. Set the thermostat to lowest setting. 3. When equipped with Effikal vent damper Model RVGP, place service switch in Hold Damper Open position. 4. Turn off all electrical power to the appliance. 5. When equipped with Johnson Controls vent damper Model M35, manually rotate damper blade in direction of
damper, verify damper blade is in full open position. 9. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you don't smell gas, go to the next step. 10. Move selector arm to ON. 11. Turn on all electric power to the appliance. 12. When equipped
with Effikal vent damper, place service switch in Automatic Operation position. 13. Set thermostat to desired setting. Position indicator Selector arm (shown in OFF position) 14. If the appliance will not operate, follow the instructions To Turn Off Gas To The Appliance and call your service technician or gas supplier. 15. Replace front panel. 59332 TO
TURN OFF GAS TO THE APPLIANCE 1. Set the thermostat to lowest setting. 4. Depress and move selector arm to OFF. Do not force. 2. Turn off all electric power to the appliance if service is to be performed. 5. Replace front panel. Part Number 550-110-593/1099 41 GOLD CGa Gas-Fired Water Boiler FOR YOUR SAFETY
READ BEFORE OPERATING If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life. A. This appliance is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand. B. Before OPERATING, smell all around the appliance area for
gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. See below. C. Use only your hand to turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion. D. Do not use this
building. Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier from a neighbor's phone. Follow the gas supplier, call the fire department. OPERATING INSTRUCTIONS 1. Stop! Read the safety information above on this label. 2. Set the thermostat to lowest setting. 3. When equipped with Effikal vent damper Model
RVGP, place service switch in Hold Damper Open position. 4. Turn off all electrical power to the appliance. 5. When equipped with Johnson Controls vent damper assembly. 6. This appliance is equipped with an ignition device which automatically
lights the pilot. Do not try to light the pilot by hand. 7. Turn gas control knob clockwise to OFF. 8. When equipped with vent damper, verify damper blade is in full open position. 9. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above. If you don't smell for gas, including near the floor.
gas, go to the next step. to ON. 10. Turn gas control knob counterclockwise 11. Turn on all electric power to the appliance will not
operate, follow the instructions To Turn Off Gas To The Appliance and call your service technician or gas supplier. 15. Replace front panel. 59333 TO TURN OFF GAS TO THE APPLIANCE 1. Set the thermostat to lowest setting. 2. Turn off all electric power to the appliance if service is to be performed. 4. Turn gas control knob clockwise force. to OFF
automatically lights the pilot. Do not try to light the pilot by hand. B. Before OPERATING, smell all around the appliance area for gas. Be sure to smell next to the floor. See below. C. Use only your hand to depress or turn the gas control knob. Never use tools. If the knob will not depress
under water. WHAT TO DO IF YOU SMELL GAS • Do not try to light any appliance. • • Do not touch any electric switch; do not use any phone in your gas supplier's instructions. • If you cannot reach your gas supplier, call the fire department. OPERATING
INSTRUCTIONS 1. Stop! Read the safety information above on this label. 2. Set the thermostat to lowest setting. 3. When equipped with Johnson Controls vent damper Model M35, manually
Do not force. 8. When equipped with vent damper, verify damper blade is in full open position. 9. Wait five (5) minutes to clear out any gas. Then smell gas, go to the next step. 10. Turn gas control knob counterclockwise to ON. 11.
Turn on all electric power to the appliance and call your service switch in Automatic Operation position. 13. Set thermostat to desired setting. 14. If the appliance will not operate, follow the instructions To Turn Off Gas To The Appliance and call your service technician or gas supplier. 15. Replace front panel. TO
Service and maintenance — schedule Table 6 Service and maintenance (see following pages for instructions) • Check boiler area Inspect: • Reported problems Daily • Check air openings • Check boiler pressure/
temperature gauge • Boiler area • Air openings • Flue gas vent system • Check boiler interior piping • Pilot and main burner flames • Check boiler relief valve • Burners and base • Check automatic air vents (if used) Service: • Oiled-
bearing circulators Start-up: Periodically • Test low water cutoff (if used) • Perform start-up per manual Check/test: Every 6 months • Operate relief valve End of season • Shut down procedure • Gas piping • Cold fill and operating pressures • Air vents and air elimination • Limit controls and cutoffs • Expansion tank • Boiler relief valve Review: •
Review with owner Follow the Service and maintenance could result in damage to the boiler or system. Failure to perform the service and maintenance could result in severe personal
injury, death or substantial property damage. 44 Part Number 550-110-593/1099 Boiler Manual 10b Service & maintenance and care of the beginning of the heating season, only by a qualified service technician. In addition, the maintenance and care of the boiler designated in Table 6 and
any problems reported by owner and correct before proceeding. 1. Visually inspect entire flue gas venting system for blockage, deterioration or leakage in accordance with vent manufacturer's instructions. Boiler area 1. Verify that boiler area is free of any combustible materials, gasoline and other
flammable vapors and liquids. 2. Verify that boiler area (and air intake) is free of any of the contaminants listed in Table 1 on page 9 of this manual. If any of these are present in the boiler in accordance with national, provincial or local formula to the boiler intake air vicinity, they must be removed. If they cannot be removed, install combustion air piping to the boiler in accordance with national, provincial or local formula to the boiler intake air vicinity, they must be removed. If they cannot be removed, install combustion air piping to the boiler in accordance with national, provincial or local formula to the boiler intake air vicinity, they must be removed. If they cannot be removed, install combustion air piping to the boiler in accordance with national, provincial or local formula to the boiler in accordance with national formula to the boiler in accordance with nation
codes. Air openings 1. Verify that combustion air dampers, if used. 2. Verify that masonry chimneys are lined, lining is in good condition, and there are not openings into the chimney. Failure to inspect for
the above conditions and have them repaired can result in severe personal injury or death. Pilot and main burner flames as directed under section 6d, page 32 of this manual. Water piping 1. Check the boiler interior piping and all system piping for signs of leaks. 2. Repair any leaks before
proceeding. The boiler contains ceramic fiber and fiberglass materials. Use care when handling these materials per instructions on page 68 of this manual. Failure to comply could result in severe personal injury. Part Number 550-110-593/1099 45 GOLD CGa Gas-Fired Water Boiler 10b Service & maint. — annual start-up Inspect . . . . . . . . . . . .
Electrical shock hazard — Turn off power to the boiler except as noted otherwise in this instruction manual. Failure to turn off electrical shock, causing severe personal injury or death. Do not use petroleum-based cleaning or sealing compounds in boiler system. Severe damage
to boiler will occur, resulting in substantial property damage. Eliminate all system or boiler leaks. Continual fresh makeup water will reduce boiler life. Minerals can build up in sections, reducing heat transfer, overheating surfaces 1.
Disconnect the vent pipe at the boiler draft hood after turning off power to the boiler flue collector and heating surfaces. 3. If the vent pipe or boiler interior surfaces show evidence of soot, follow Cleaning boiler heating surfaces in this manual section. Remove the flue collector and
clean the boiler if necessary after closer inspection of boiler surfaces, check the water piping and control system to make sure the boiler return water temperature is properly maintained (per this manual). 5. Reconnect vent and draft hood. Replace all boiler continued
components before returning to service. 6. Check inside and around boiler for evidence of leaks and repair. Burners and base 1. After turning off power to the boiler, remove the jacket door and base access panel (Figure 32, item 4, page 62). 2. Inspect burners and all other components in the boiler.
base. 3. If burners must be cleaned, raise rear of each burner to release from support slot, slide forward and remove. Then brush and vacuum the burners thoroughly, making sure all burners are upright (ports up). 4.
Inspect the base insulation a. Pay attention to the WARNINGS on page 68 regarding working with insulation is intact and secure against all four sides of the base. If insulation is intact and secure against all four sides of the base. If insulation is damaged insulation is damaged insulation as necessary. Failure to replace damaged insulation
can result in a fire hazard, causing severe personal injury, death or substantial property damage. The boiler contains ceramic fiber and fiberglass materials. Use care when handling these materials per instructions on page 68 of this manual. Failure to comply could result in severe personal injury. 

Service . . . . . . . . . Oiled-bearing circulators 1. The
section 6, pages 28-32, including procedure to verify operation of burners and vent damper on page 32. 4. Check gas piping, per manual sections 4 and 6, verifying no indications of leakage and all piping and connections are in good condition. 2. Verify cold fill pressure is correct and that fill system is working properly. 5. Read the Lighting or
Operating instructions (manual section 8 or 9) applying to the boiler. 3. Verify antifreeze level (if used) is at the right concentration and that inhibitor level is correct. 6. Start the boiler should cycle off. Return dial to original setting. Gas
While the system is cold, note the pressure reading on the boiler and system heat up to ensure ressure rise is normal. Too high a rise would indicate a waterlogged or undersized expansion tank. 59342 Air vents and air elimination Expansion tank.
1. Inspect automatic air vents (if used). Also inspect air separators to ensure they are operational. 1. Expansion tanks provide space for water to move in an out as the heating system water expands due to temperature increase or contracts as the water cools. Tanks may be open, closed or diaphragm or bladder type. See section 3, page 16 of this
manual for suggested best location of expansion tanks and air eliminators. Open-type — located above highest radiator or baseboard unit, usually in the attic or closet. Has a gauge glass and overflow pipe to a drain. Closed-type — welded gas tight and located above boiler. Tank is partially filled with water, leaving an air cushion for expansion. • Make
sure this type of tank is fitted with a tank fitting, such as the B & G Tank-Trol or Taco-Trol. This fitting reduces gravity 2. The cap must be unscrewed one turn to allow air to escape. 3. See Figure 26. If the air vent is leaking, remove cap A and briefly push valve B and then release to clean the valve seat. 4. Replace cap A by twisting all the way
onto valve B and then unscrewing one turn. Limit controls and cutoffs 1. Inspect and test the boiler limit control. Verify operation by turning control set point below boiler Part Number 550-110-593/1099 47 GOLD CGa Gas-Fired Water Boiler 10b  Service & maint. — annual start-up continued Check/test . . . . . . . . circulation of air-saturated tank
water back to the system and prevents the air from bubbling up through the water as it returns from the system. • Do not use automatic air vents in systems with closed-type tanks. The air will escape from the system instead of returning to the tank. Eventually, the tank will waterlog and no longer control pressurization. The boiler relief valve will
weep frequently. Diaphragm- or bladder-type — welded gas tight with a rubber membrane to separate the tank pressurizing air and the water. May be located at any point in the system, but most often found near the boiler. • Systems with this type of expansion tank require at least one automatic air vent, preferably located on top of an air
eliminator, as shown in examples in manual section 3, pages 16-25. 2. If relief valve has tended to weep frequently, the expansion tank may be waterlogged. Install a tank fitting if not already installed. Then check fill level per fitting manufacturer's instructions. If fill level is correct
check tank size against manufacturer's instructions. Replace with a larger tank if necessary. Diaphragm- or bladder-type — first, check tank size to be sure it is large enough for the system. If size is too small, add additional tank(s) as necessary Figure 27 Relief valve, typical 59343 48 Part Number 550-110-593/1099 Boiler Manual 

Review with
owner . . . . . . . 1. Review the User's Information Manual with the owner. 2. Emphasize the need to perform the maintenance schedule specified in the User's Information Manual (and in this manual as well). 3. Remind the owner of the need to call in a licensed 

Cleaning boiler heating surfaces 1. Shut down boiler: • Follow "To Turn Off Gas to
Appliance "instructions on boiler and Lighting or Operating instructions. • Do not drain boiler unless it will be exposed to freezing temperatures. If using antifreeze in system, do not drain boiler unless it will be exposed to freezing temperatures. If using antifreeze in system, do not drain boiler unless it will be exposed to freezing temperatures. If using antifreeze in system, do not drain boiler unless it will be exposed to freezing temperatures. If using antifreeze in system, do not drain boiler unless it will be exposed to freezing temperatures.
sealant from assembly and sections. 6. Remove radiation plates hanging between sections. 7. Remove burners from base. Brush and vacuum burners to remove all dust and lint. Verify that all burner ports are free of debris. 8. Place newspapers in base of boiler to collect soot. 9. Clean between sections with wire flue brush. 10. Remove newspaper and
soot. Vacuum or brush base 11a contractor should the boiler or system exhibit any unusual behavior. 4. Remind the owner to follow the proper shutdown procedure and to schedule an annual start-up at the beginning of the next heating season. and surrounding area. 11. Reinstall radiation plates. 12. Replace collector box/transition assembly. Seal
with sealant. Obtain gas-tight seal to prevent flue gas spillage and carbon monoxide emissions, resulting in severe personal injury or death. 13. Replace insulation and jacket top panel. 14. Start up boiler following section 6, pages 28-32 of this manual and the boiler Lighting or Operating instructions. Excessive sooting indicates improper gas
combustion. If found, check for proper combustion and make any necessary adjustments. The boiler contains ceramic fiber and fiberglass materials. Use care when handling these materials per instructions on page 68 of this manual. Failure to comply could result in severe personal injury. Troubleshooting — procedure Label all wires prior to
disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Never jumper (bypass) rollout thermal fuse element or any other device except for momentary testing as outlined in Troubleshooting Charts. Severe personal injury, death or substantial property damage can result. Burner access panel must be in
position during boiler operation to prevent momentary flame rollout on ignition of main flame. Severe personal injury or substantial property damage will result. See pages 50 through 59 for additional troubleshooting information. Part Number 550-110-593/1099 Before troubleshooting: 1. Have the following items: a. Voltmeter that can check 120
VAC and 24 VAC. b. Microammeter with a minimum 102 VAC to boiler. 3. Make sure thermostat is calling for heat and contacts (including appropriate zone controls) are closed. Check for 24 VAC between thermostat wire nuts and
ground. 49 GOLD CGa Gas-Fired Water Boiler 50 Part Number 550-110-593/1099 Boiler Manual 11b Troubleshooting — standing pilot boilers Chart 1 — Standing pilot boiler
substantial property damage. Yes Is 24VAC present across transformer terminal? No Yes Is vent damper rotated open? Yes No Check/repair out of round stack section. Does vent damper rotated open? Yes No Yes Is vent damper rotated open? Yes No Yes Is vent damper rotated open? No Is 24VAC present across gas valve terminals? No Yes Is vent damper rotated open? Yes No Check/repair out of round stack section.
now? No Open thermostat contacts for 30 seconds. Vent damper will rotate to open position. Is 24VAC present across gas valve terminals? Yes No Check continuity of each wire? See Table below. Yes No Replace damper wiring
harness. Retest. Remove damper harness from damper harness from damper harness from damper harness from damper between terminal 5 on damper plug in boiler wiring harness. See figure, right. Does boiler fire? No Replace gas valve cock turned to
ON position? No Yes Turn gas valve cock to ON position. Retest. Replace gas valve. Retest Damper harness Continuity Table 6 Pin Molex Pin Number 4 Pin Molex Pin Number 1 2 3 4 5 6 1 3 4 N/C 2 N/C Pin side of connectors 59341 51 GOLD CGa Gas-Fired Water Boiler 11c Troubleshooting — spark-ignited pilot boilers The information on this page
and pages 53 through 59 apply only to spark-ignited pilot CGa boilers. These boilers are equipped with an ignition control module that has indicator lights to show control status. Charts 2 through 7, pages 54-59, help you identify problems based on indicator lights to show control status. Charts 2 through 7, pages 54-59, help you identify problems based on indicator lights to show control status.
extremely important for proper operation. Solder or water splatter between plugs and circuit board can cause improper operation of control module. Place a shield over the boiler internal controls and components during installation. Failure to comply could result in severe personal injury, death or substantial property damage. Figure 29 CGa Ignition
control module Control indicator lights — lockout modes See Charts 2 through 7, pages 54-59 in this section, for detailed troubleshooting procedures. To reset control after a lockout, turn off power at the 120 VAC service switch or turn down all thermostats. Wait 45 seconds. Then restore power or call for heat. POWER light flashing alone Usually
indicates reversed polarity of 120 VAC power wires. POWER and TSTAT CIRC lights flashing Usually indicates stray voltage on external thermostat circuit wires (usually due to miswired 3-wire zone valve). POWER and DAMPER lights flashing Usually indicates vent damper failed to open within 5 minutes. POWER and FLAME lights flashing Usually indicates vent damper failed to open within 5 minutes.
indicates false flame sense or flame sense or flame sensed when it shouldn't be there. Control indicator lights — non-lockout modes FLAME light flashing alone Usually indicates pilot flame was not established or problem is corrected
DAMPER light flashing alone Usually indicates damper opened during run cycle. Boiler will not lockout, but won't heat unless problem is corrected. Troubleshooting the control module. Part Number 550-110-593/1099 Boiler Manual Figure 30, page 53, for location of harness plug receptacles and plugs on the control module. Part Number 550-110-593/1099 Boiler Manual Figure 30
Control module connections Black 120 VAC H High voltage to pilot spark electrode Black 120 VAC N Red wire to gas valve MV 120 VAC IN Black wires to thermostat circuit Yellow wires to limit control and rollout switch
Brown Red White wire to gas valve MV/PV Blue wire to gas valve PV 24 VAC 24 VAC from transformer Indicator lights 24 VAC control circuits FLAME (Constant) 3 1 4 2 DAMPER LIMIT TSTAT CIRC 24 VAC from end switch Red Jumpered to pin "4"
Green POWER 24 VAC to vent damper High voltage to spark electrode 120 VAC to transformer Yellow 120 VAC to circulator 24 VAC vent damper connections 120 VAC to circulator 59345 Part Number 550-110-593/1099 Sense wire to flame sensor Flame
sense wire to pilot 53 GOLD CGa Gas-Fired Water Boiler 11c Troubleshooting — Spark-ignited pilot boilers Chart 2 — Spark-ignited pilot boilers Chart 3 — Spark-ignited pilot boilers Cha
Failure to follow instructions could result in severe personal injury, death or substantial property damage. Is POWER light flashing Chart 3 DAMPER light flashing Chart 4 FLAME light flashing Chart 4 FLAME light flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not flashing Chart 5 Does voltmeter indicate 120 VAC? On steady (not
light Make sure service switch or circuit breaker is on or fuses are good. Remove 120 VAC IN plug (Figure 30, Item 3, page 53) on control module. Using voltmeter, check across top and bottom pins of 120 VAC IN plug (Figure 30, Item 3, page 53) on control module.
problem, go to Chart 7 if POWER light is on steady, with no other light flashing. • • Reconnect 120 VAC IN plug. Remove 120 VA
polarity on incoming 120 VAC power line is wrong. ATURN OFF POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch or breaker, then reverse the HOT and NEUTRAL wires entering the boiler in the J-box. Restore POWER at service switch at the power at the power
 Remove 24 VAC transformer plug (Figure 30, Item 5, page 53) on control module. Using voltmeter, check across pins of receptacle. Does voltmeter indicate 120 VAC? No Boiler should now operate normally. 54 Have system checked by a licensed electricain. If problem persists, call your local Weil-McLain sales representative. Replace transformer.
verifying there is no longer a voltage reading under any condition in the external thermostat circuit. • Turn on power and allow boiler to cycle. Do the TSTAT and POWER lights still flash? No • Boiler should now operate per the normal sequence of operation shown in Figure 24, page 37. Part Number 550-110-593/1099 Yes • Replace control module.
Retest. 55 GOLD CGa Gas-Fired Water Boiler 11c Troubleshooting — spark-ignited pilot boilers Chart 4 — Spark-ignited pilot — DAMPER light is steady: Usually indicates vent damper closed during run cycle — Electrical
shock hazard — Wherever you see ATURN OFF POWER, follow the instructions. Failure to follow instructions. Failure to follow instructions. Failure to follow instructions could result in severe personal injury, death or substantial property damage. • Reset boiler control by turning off power at service switch or turning down thermostat for at least 45 seconds. • Thermostat should call for heat and appropriate
zone valves open. The TSTAT CIRC and LIMIT lights should come on. Does vent damper operate? No Yes • Wait 45 seconds. Does vent damper operate? No Yes • Remove DAMPER plug (Figure 30, Item 6, page 53) from plug receptacle of control module. • Place voltmeter leads across the top two pins (1 and 4) of the DAMPER receptacle. • Wait 5
minutes. Is DAMPER light flashing? No Yes Does the voltmeter indicate 24 VAC? No Yes • Try reseating plug in module receptacle and restart. • If vent damper assembly or actuator. • Retest. • Boiler should be in normal operating sequence. • Observe operation until thermostat is satisfied. Does vent damper
actuator indicator show damper is open? No Yes Are the TSTAT CIRC and LIMIT lights on steady? Yes • Replace control module. • Retest. 56 No • Make sure thermostat is calling for heat. If lights still don't come on, see Chart 7. • Replace control module. • Retest. 56 No • Make sure thermostat is calling for heat. If lights still don't come on, see Chart 7.
 Recheck boiler operation. • If problem persists, replace vent damper assembly or actuator. Part Number 550-110-593/1099 Boiler Manual continued Chart 5 — Spark-ignited pilot — FLAME & POWER lights flashing — Usually indicates flame sensed when it shouldn't be there — Electrical shock hazard — Wherever you see ATURN OFF POWERA
follow the instructions. Failure to follow instructions could result in severe personal injury, death or substantial property damage. Are manual main shutoff valve and gas valve open? No • • • • Yes Leave main manual gas valve closed. Turn of power to boiler. Restart
and POWER lights still flash? No Is pilot burning? Yes No Yes • Replace control module. • Retest. • Allow boiler to continue cycling. Are FLAME and POWER ights flashing? No • ATURN OFF POWERA to boiler at service switch or breaker. • Restart boiler per
operating instructions. • Perform start-up procedures in boiler manual to verify proper operation. Yes • Replace gas valve. • Retest boiler. Are FLAME and POWER lights flashing? No Yes • Replace
control module. • Boiler should now operate normally. • Replace control module. • Retest. • Original flashing FLAME light caused by gas valve not operating properly. • Retest. • See normal sequence of operation. Figure 24, page 37, 57 GOLD CGa Gas-Fired Water Boiler 11c Troubleshooting — spark-ignited pilot boilers Chart 6 — Spark-ignited pilot
- FLAME light flashing and POWER light on steady ALSO — Troubleshooting failure to establish main flame Electrical shock hazard — Wherever you see ATURN OFF POWER, follow the instructions. Failure to follow instructions could result in severe personal injury, death or substantial property damage. • Are main manual shutoff valve and boiler
gas valve open? No Yes • ATURN OFF POWER to boiler at service switch or breaker. • Open main manual shutoff valve and boiler gas valve (per Operating instructions in this manual). Wait at least 45 seconds. • Turn on power at service switch or breaker. Allow boiler to cycle. Does FLAME light flash now? No Yes • Boiler should be in normal
operating sequence. • Observe operation until thermostat is satisfied and blower has completed its post-purge cycle. • Verify inlet gas pressure at gas valve inlet and within above range? Yes No • Is pilot flame visible through inspection
port? No Yes • Check the voltage across main gas valve terminal is securely fastened to control module to gas valve terminal is securely fastened to control module. • Retest. • Check the voltage across main gas valve
terminals of the gas valve. Is 24 VAC present there? No Yes • Verify inlet gas pressure at gas valve: Natural gas — 5.0" w.c. min/14.0" w.c. max • ATURN OFF POWERA to boiler at service switch or breaker. • Remove base access panel (see Figure 32, page 62 for location). • • • • • 58 Verify pilot gas line is not kinked, obstructed or damaged and is
correctly attached to pilot and gas valve. Verify pilot ignition electrode ceramic and spark lead wire from control are in good condition. Spark gap should be approximately 1/8". Correct any above problems, replacing pilot if burner or wiring is damaged. Reinstall base access panel to operate boiler for retest after any changes or corrections.
If none of the above corrects problem, then replace the control module, reinstall base access panel, and retest. Propane — 11.0" w.c. max Is gas present at gas valve inlet and within above range? • Contact gas supplier to correct pressure or gas 
access panel (see Figure 32, page 62 for location). • • Verify pilot burner is securely attached to pilot bracket, bracket is securely attached to ross tie, and there is no corrosion on the parts which would affect the ground path for flame rod are in good
condition. Correct any above problems, replacing pilot if burner or wiring is damaged. No Yes • ATURN OFF POWERA to boiler at service switch or breaker. • Check flame signal — Detach sense lead from igntion control (Figure 30, item 8, page 53).
Connect positive lead of MICROAMMETER to sense wire. • DISCONNECT red wire connected to man gas valve terminal of the gas valve. • Turn on power to boiler and allow to cycle. As soon as pilot is burning, the MICROAMMETER should read at least 1.0 microamp? No Yes • If none of the previous steps
(including replacing pilot) corrects problem, then replace the control module, reinstall base access panel and retest. • If the wiring from the control module to gas valve is intact, replace the control module and retest. • If the wiring from the control module and retest. Part Number 550-110-593/1099 Boiler Manual continued Chart 7 — Spark-ignited pilot — Insufficient heat or no heat (POWER light on
steady) Electrical shock hazard — Wherever you see ATURN OFF POWERA, follow the instructions could result in severe personal injury, death or substantial property damage. • Has it been at least 5 minutes since setting thermostat to call for heat? If not, wait 5 minutes. Is system heating? • Is thermostat set to call for
heat? Remove thermostat wires at boiler and check continuity across the two wires. If circuit isn't closed, check external thermostat circuit closed (continuity across wires)? No Is boiler System circulator operating? No • Remove
CIRCULATOR harness plug from CIRCULATOR plug receptacle (Figure 30, Item 7, page 53). Check with voltmeter across pins? Yes Are all red lights off? No Yes Wait 30 seconds. Are all red lights off? No • Boiler is in standby. • Set thermostat to call for heat and recheck
operation. • Verify Sequence of operation, Figure 24, page 37. Yes No Yes • Replace control module. • Retest. • Repair/replace wiring. Retest. • Retest. • Repair/replace wiring. Retest. • Retest. •
sequence of operation, Figure 24, page 37.) • If you have less than sufficient heat — Is vent or combustion air piping free of blockage? No Yes • Correct conditions and recheck operation. • See Figure 24, page 37 for normal sequence of operation.
°F lower than temperature set on limit switch. No Are limit switch contacts closed? Yes • Replace limit switch. • Retest. • Boiler water temperature exceeded setting on limit switch. No Are limit switch contacts closed? Yes • Replace limit switch. • Retest. • Boiler water temperature exceeded setting on limit switch.
Number 550-110-593/1099 No Is LIMIT light on? No Yes • Replace control module. • Retest. Check spill switch contacts with continuity — are switches closed? No Yes • Reset spill switch, or replace rollout switch. If rollout thermal fuse element or
spill switch has opened, determine cause and correct condition. Failure to do so will cause severe personal injury, death or substantial property damage. • Check any other limit controls wired into the limit circuit. If all are OK, then replace control module. • Retest. 59 GOLD CGa Gas-Fired Water Boiler 12a Replacement parts Section assembly
                                                                                                    . 62 Jacket assembly ....
                                                                                                                                                                 ... 63 Trim assembly ...
                                                                                                                                                                                                                                  .. 64 Gas control assembly — standing pilot ................. 65 Gas control assembly — spark-ignited pilot ........ 65 Replacement parts must be purchased through a local Weil-
McLain distributor. When ordering, specify boiler model and size and include description and part number of replacement part. Results from using modified or other manufactured parts will not be covered by warranty and may damage boiler or impair operation. Weil-McLain part numbers are found in Weil-McLain Boilers and Controls Repair Parts
Lists. The boiler contains ceramic fiber and fiberglass materials. Use care when handling these materials per instructions on page 68 of this manual. Failure to comply could result in severe personal injury. 60 Part Number 550-110-593/1099 GOLD CGa Gas-Fired Water Boiler 13a Dimensions Figure 36 Dimensional drawing — ALL DIMENSIONS IN
INCHES 61/4 T OP VIEW Note 1: Boiler supply and return piping sizes. Note 2: Boiler circulator may be mounted on either boiler supply and return piping. Circulator flange provided with boiler is same size as recommended pipe
size in Table 3, page 16. A D 2% 13¼ 4¾ 4¾ MODEL H CGi NOTE 2 28% NOTE 2 19 19 13¹¹¹₁6 12 23¼ L EFT SIDE 66 15% 9 W F RONT R IGHT SIDE Part Number Ratings Input (Btuh) DOE Heating capacity (Btuh) (Note 1) DOE 0-2,000 feet altitude Input (Btuh) Output (Btuh) 2,000-4,500
feet altitude Input (Btuh) Output (Btuh) Output (Btuh) Output (Btuh) (Note 2) Net Boiler I=B=R water ratings content (Btuh) (gallons) DOE Seasonal efficiency (% A.F.U.E) SPDN SPDL PIDN Chimney and breeching size (Note 3) CGa-25 52,000 44,000 52,000 44,000 52,000 44,000 52,000 44,000 52,000 44,000 52,000 44,000 52,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,000 59,00
1.5 81.6 83.7 84.0 4"I.D. x 20' CGa-4 105,000 88,000 105,000 88,000 105,000 88,000 94,500 79,000 77,000 2.1 81.7 83.7 84.0 5"I.D. x 20' CGa-5 140,000 117,000 146,000 175,000 146,000 157,500 131,000 127,000 3.3 81.9 83.6 83.2 6"I.D. x 20' CGa-7 210,000 175,000 210,000
175,000 189,000 157,000 152,000 3.8 82.0 83.6 83.0 7"I.D. x 20' CGa-8 245,000 204,000 245,000 204,000 220,500 183,000 177,000 4.4 82.1 83.6 82.7 7"I.D. x 20' Notes 1. See Table 7 for available pilot systems. The suffix shown in the table is added to the boiler model number. (Not available for millivolt systems.) 2. Based on standard test
procedures prescribed by the United States Department of Energy. 3. Net I=B=R ratings are based on net installed radiation of sufficient quantity for the requirements of the building and nothing need be added for normal piping and pickup. Ratings are based on a piping and pickup allowance of 1.15. An additional allowance should be made for
unusual piping and pickup loads. Table 7 Ignition system Matural gas Propane gas Standing pilot SPDN SPDL Spark-ignited pilot PIDN Not available Install CGa boilers for residential radiant panel systems, converted gravity heating systems or other low water temperature applications per instructions in this
manual to avoid damage due to condensation. CGa boilers are CSA design certified for installation on combustible flooring. CGa boilers are ASME rated for 50 psig working pressure. Part Number 550-110-593/1099 Source Exif Data: File Type: PDF File Type
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