



# WEIL-McLAIN

## Indirect-Fired Water Heaters

### SERVICE TECHNICIAN'S TROUBLESHOOTING GUIDE



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## Plus Water Heaters Service Technician's Troubleshooting Guide

This guide is to be used in conjunction with all GOLD and ULTRA Plus 30/40/60/80 and PLUS 100/110/119/120 Indirect Fired Water Heater Technical Specification Manuals Maintenance Guide.

### Good Trouble Shooting Practices

Before leaving for the job site:

- Check your parts and tools.
    - Test equipment and tools that you will need:  
Electrical meter that can measure voltage and continuity  
Pressure gauge, Watts #276H300 test gauge  
Temperature gauge and Stopwatch  
Bucket, 1 gallon or larger with volume markings  
Thermostat (AquaStat) W-M P/N 633-900-130 for GOLD/Ultra Plus 30/40/60/80  
Thermostat (AquaStat) W-M P/N 635-100-010 for PLUS 100/110/119/120  
Drywell seal repair kit W-M P/N 635-600-150
  - Know the water heater model number.
  - Know boiler manufacturer and model number.
  - Have the Installation and Maintenance Manual and/or wiring and piping schematic readily available.
- Get the latest revisions from [www.Weil-McLain.com](http://www.Weil-McLain.com)

### Remember !!

Follow the Troubleshooting Guide step by step, always double checking your results. Skipping steps or not completing steps can lead to wrong conclusions, repeated visits to the job site, and unhappy customers.

INSUFFICIENT HOT WATER	→ Yes	<b><i>Insufficient Hot Water - page 3</i></b> <ul style="list-style-type: none"><li>- Undersized water heater</li><li>- Boiler system improperly sized</li><li>- Check component parts</li><li>- Boiler operating temperature</li><li>- Location of flow control devices</li><li>- Air in system</li><li>- Clean boiler system</li></ul>
EXCESSIVE DOMESTIC WATER TEMPERATURE	→ Yes	<b><i>Excessive Water Temperature - page 6</i></b> <ul style="list-style-type: none"><li>- Reduce Stacking</li><li>- Lowering boiler operating temperature</li><li>- Relocating T-stat bulb</li><li>- Reverse boiler piping</li><li>- Install thermostatic mixing valve</li><li>- Recirculation loop</li></ul>
BOILER RELIEF VALVE LIFTING OR WEEPING	→ Yes	<b><i>Boiler Relief Valve Lifting or Weeping - page 7</i></b> <ul style="list-style-type: none"><li>- Undersized boiler expansion tank</li><li>- Faulty boiler expansion tank</li><li>- Simulate maximum expansion</li><li>- Faulty boiler relief valve</li><li>- Faulty boiler fill valve</li><li>- Inner tank leak</li></ul>
TEMPERATURE/PRESSURE RELIEF VALVE LIFTING OR WEEPING	→ Yes	<b><i>T&amp;P Relief Valve Lifting or Weeping - page 8</i></b> <ul style="list-style-type: none"><li>- Undersized or missing domestic side expansion tank</li><li>- Faulty domestic expansion tank</li><li>- Faulty T&amp;P relief valve</li><li>- High domestic supply pressure</li><li>- Possible water hammering or pressure spikes</li><li>- Boiler operating temperature</li></ul>
WATER FOUND ON THE FLOOR NEAR THE TANK	→ Yes	<b><i>Water on the Floor - page 9</i></b> <ul style="list-style-type: none"><li>- From sources other than the water heater</li><li>- T&amp;P valve lifting and discharging</li><li>- Loose piping connections</li></ul>
TOP OF TANK/INSULATION WET	→ Yes	<b><i>Top of Tank / Insulation Wet - page 10</i></b> <ul style="list-style-type: none"><li>- From sources other than the water heater</li><li>- Loose piping connections</li><li>- Leakage from the drywell</li></ul>
WATER QUALITY PROBLEMS	→ Yes	<b><i>Water Smells / Taste Bad - page 11</i></b> <ul style="list-style-type: none"><li>- Water smells like "rotten eggs"</li><li>- Milky water</li><li>- Rusty discolored water</li></ul>

## Is the water heater undersized for the application? (Non-Warranty)

- There are many methods of sizing various applications, i.e. ASHRAE sizing tables, or ASPE domestic water heating design manual, re-confirm the water demand required for the application.
- Re-confirm the flow rates of the fixtures. Was the tank sized for shower heads at 2.0 gpm, when the actual heads are 5.0 gpm? Use a bucket and a stopwatch to determine fixture flow rates.
- Evaluate the hot water usage pattern for a day. Is the peak demand unusually high for the application?
- Has the demand for domestic hot water changed since the system was installed? A bathroom remodeling project with a newly installed whirlpool tub will drastically change the domestic water demand.

## Is the boiler system properly sized? (Non-Warranty)

- Is the boiler providing the required output of BTU's to meet the domestic water load?

$$\text{Domestic Demand gph} = \frac{\text{Blr Output BTU's}}{(\text{Temp. Rise } ^\circ\text{F} \times 8.33)}$$

Temp Rise °F = Desired Temp.°F - Incoming Temp.°F

8.33 = Density of Water lbs/gal. x 1 Btu/lbs °F

*Example: A single family home with a 3.0 gpm shower fixture and a 150,000 Btu/hr output boiler capacity. Is the boiler capacity adequate to deliver 115°F water for an extended period?*

$$\text{Domestic Demand gph} = \frac{150,000 \text{ Btu/hr}}{[(115^\circ\text{F} - 50^\circ\text{F}) \times 8.33]} = 277 \text{ gph}$$

The boiler capacity is capable of delivering 4.6 gpm continuously which is adequate for this application.

### Action Item:

- Measure the BTU input to the boiler by clocking the gas meter or finding the oil flow rate based on nozzle size and pump pressure.
- Does the hot water system need to be wired for domestic priority? For systems in which either the storage or BTU's available are marginal, it is recommended to wire the domestic water heater in a priority manner.
- Is the boiler piping to the water heater properly sized to allow the required flow rate for maximum BTU transfer? The temperature differential of the boiler supply and return water should be 20°F to 30°F.

# Insufficient Hot Water

- Is the circulator between the boiler and the water heater properly sized to provide adequate flow for maximum BTU transfer?

PIPE SIZE	FLOW RATE	BTU'S TRANSFER
3/4"	3 to 7 gpm	50 to 100 MBH
1"	4 to 11 gpm	100 to 180 MBH
1 1/4"	6 to 16 gpm	160 to 300 MBH
1 1/2"	9 to 23 gpm	200 to 450 MBH
2"	15 to 40 gpm	300 to 650 MBH

## Check component parts

- Is the domestic water thermostat functioning properly? With a electrical voltmeter check for continuity between terminals C and 1 on the snap-set connection.

### Action Item:

1. Disconnect the snap-set connector on the water heater.
2. Turn the thermostat knob to the highest setting - clockwise to initiate a call for heat.
3. Check for continuity between terminals C and 1 (end connectors on the snap-set). On a call for heat, these contacts should be in the close position.
4. Continue checking for continuity while turning the thermostat knob to the lowest setting - counter clockwise to satisfy the call for heat. The contacts should open, breaking the continuity.
5. If any of these steps fail (1-4 above), replace the thermostat. (Warranty)  
For 30/40/60/80 - P/N 633-900-130 for 100/110/119/120 - P/N 635-100-010.
6. Reconnect the snap-set.

- Is the thermostat setting too low? If the thermostat setting is too low, the boiler may not have the opportunity to deliver the maximum BTU's required to completely heat the entire volume of water stored in the tank.
- During a call for heat by the water heater, does the boiler circulator begin pumping, does the zone valve open, does the boiler fire? Check every component in the system to ensure they are properly functioning.
- Check the thermostat sensing bulb size and fit into the drywell. Some older units have a sensing bulb that is thinner and fits loose inside the drywell. The newer thermostats have a larger bulb which fits tighter in the drywell allowing better heat transfer for more accurate water temperature sensing.

### Action Item:

- If the sensing bulb does not slide into the drywell; remove burrs from top 1 1/2" inside the drywell with a 3/8" drill.

- What is the location of the thermostat bulb? A bulb inserted completely at the bottom of the drywell will initiate a quicker response for a call for heat. This is typically the position of the bulb required for applications in which there are large draws of domestic water.
- Remove and examine the dip tube located in the cold water inlet. Replace if damaged. A broken or melted dip tube will cause the cold water to discharge across the top of the tank, thus short cycling the water heater.

## **Check the operating temperature of the boiler (Non-Warranty)**

- If possible increase the boiler operating temperature to 200°F.
- Maintain a minimal temperature in the boiler during non-heating seasons. A boiler typically has a higher standby loss than the indirect water heater. After a long standby period, the colder boiler may absorb the stored energy within the water heater during the initial call for heat.

## **Check location of flow control devices (Non-Warranty)**

- Lab tests have shown that during long standby periods the boiler piping can act as a thermal siphon and draw stored heat from the domestic water. Locate flow control devices (zone valve, spring check valves...) or heat trap loops in the boiler piping close to the water heater. Insulate all boiler piping to and from the water heater.

## **Check for air in the system (Non-Warranty)**

- An air bound water heater or boiler will not circulate system water properly, resulting in a lack of heat transfer.

## **Clean the boiler system (Non-Warranty)**

- A dirty boiler system can cause deposits to form on the outer wall of the inner tank, which insulates the tank, affecting the heat transfer. Clean the boiler system per the boiler's manufacturer's instructions.

### **Action Item:**

- Install a strainer in the boiler piping on older installations or for systems prone to becoming dirty.

# Excessive Water Temperature

Excessive water temperature is usually the result of stacking within the water heater. Stacking is the occurrence of various water temperatures layering within the water heater with the hottest water in the uppermost layer. This layering or stacking effect typically occurs during small draws of hot water (typically less than 25% of the storage capacity) which are long enough to create a call for heat on the thermostat, but are short enough not to deplete the stored energy within the tank. Excessive stacking can occur when frequent short to moderate draws are taken in quick succession. During this type of situation, the temperature of the domestic water can approach the temperature of the boiler water.

**REMEMBER: All water heaters (direct and indirect) will stack.**

## Reducing stacking within the tank (Non-Warranty)

- Reduce the boiler operating temperature to 160°F - 170°F. This will limit the maximum domestic outlet water temperature during high stacking water usage.
- Raise the thermostat sensing bulb higher in the drywell. This will reduce the frequency of thermostat calls for heat during small draws of hot water. However, it will reduce the quantity of available hot water during a deep draw by delaying the call for heat to the boiler.
- Reverse the boiler side piping. The older installations have the boiler supply at the top of the water heater and return at the bottom. Reversing the piping, supply at the bottom and return at the top will:
  - a) Result in lower tank stacking by having the hottest boiler water closer to the cooler incoming domestic water.
  - b) Reduce the effect of “thermal overshoot” after the thermostat call for heat has been satisfied.
  - c) Provide a more uniform hot water delivery temperature during moderate to deep draws (25% to 100% of the tank’s storage capacity). Reversing the boiler piping will not affect the performance of the water heater.

## Install thermostatic mixing valve

- Installation of a thermostatic mixing valve will provide an uniform delivery temperature with minimal regard to water usage.

## Recirculation Loop

- Installation of a properly sized recirculation loop not only provides prompt delivery of hot water, but it provides circulation and mixing of the water within the tank.

## Is the expansion tank on the boiler side properly sized?

- The additional quantity of boiler water contained in the outer tank must be considered when sizing the boiler side expansion tank.

Weil-McLain Water Heater Model	Boiler Side Capacity Gal.
GOLD Plus 30	5
GOLD/Ultra Plus 40	6
GOLD/Ultra Plus 60	8
GOLD/Ultra Plus 80	8
Comm. PLUS 100 Series 2/Series 3	8/14
Comm. PLUS 110	25
Comm. PLUS 119/120	43

- Insufficient allowance for expansion on the boiler side can cause the boiler pressure relief valve to lift.

## Is the expansion tank defective, waterlogged or improperly charged?

(Non-Warranty)

- Check for failed gaskets or bladders, or a faulty Schraeder valve.
- Use a tire gauge to check the charged pressure of the tank.

### Action Item:

- Turn the boiler limit up to a higher setting and let the system run at a higher temperature. This will simulate maximum expansion in the boiler system.
- If the boiler relief valve lifts and/or there is a significant increase in the boiler system pressure, the expansion tank is flooded or undersized.

## Is the boiler pressure relief valve functioning properly? (Non-Warranty)

- Dirt and water deposits can accumulate under the valve seat.

## Check the boiler automatic fill valve for defects. (Non-Warranty)

- Is the valve filling to the correct pressure?

## Check for possible 'inner tank leak' *\*reason code 054*

- If possible, isolate the Plus tank from the boiler system for an extended period of time. Observe the boiler system pressure during that time.

*\* This may be a manufacturing defect. Please initiate a warranty claim with Weil-McLain noting the reason code listed.*



## **Is there a thermal expansion tank installed on the domestic supply piping and is it properly sized? (Non-Warranty)**

- A thermal expansion tank is required if the domestic supply piping includes a backflow preventer or pressure reducing valve.
- Ensure the potable water expansion tank is properly sized according to the water heater volume and supply pressure.
- During long periods when there are no draws from the tank (i.e. overnight), the T&P relief valve may lift or weep due to thermal expansion, but may function properly during normal periods of tank draws.

## **Is the expansion tank defective, water logged or improperly charged? (Non-Warranty)**

- Check for failed gaskets or bladders, or a faulty Schraeder valve.
- Use a tire gauge to check the charged pressure of the tank.

## **Is the temperature/pressure relief valve functioning properly?**

- Dirt and water deposits can accumulate under the valve seat.

## **Check the domestic supply pressure entering the water heater.**

### **(Non-Warranty)**

- If the pressure is over 70 psi, it is recommended to install a pressure reducing valve. This will prevent any pressure spikes or increases in pressure due to thermal expansion which may cause the T&P valve to lift or weep.

## **Check the domestic system for possible sources of water hammering or pressure spikes.**

- Some appliances, such as clothes washers and dishwashers, utilize fast acting valves which may cause water hammering or pressure spikes through the domestic water system.

### **Action Item:**

- Install water hammer arrestors as required per the manufacturer's instructions, or install flexible connectors to isolate the tank from the domestic system.

## **Check the operating temperature of the boiler.**

- If the boiler operating temperature is excessive, greater than 200°F, stacking can occur in the inner tank raising the domestic water temperature close to the boiler operating temperature.

### **Action Item:**

- Reduce the boiler operating temperature to 180°F.

**Is the source of water from the tank?**

- Check for possible water seepage through foundation cracks. Did the water appear after a heavy rain? (Non-Warranty)

**Is the source of water from the T&P relief valve?**

- Place a bucket under the discharge piping of the T&P relief valve and monitor it for a day or two. This is a procedure that can be done by the homeowner.
- If the T&P relief valve is the source, refer to the T&P Relief Valve section of this guide.

**Check all connections – boiler connections, domestic connections...**

- Check all the boiler connections to the water heater. A build-up of corrosion is a sure sign of a leak. (Non-Warranty)
- Check the boiler supply connections. Look at the welds where the spuds enter into the outer tank. These can be cracked by using excessive force when connecting piping. (Non-Warranty) If they are leaking and it is **NOT** related to an installation error or system problem—\*reason code 057.
- Check the domestic connections. Look at the welds where the spuds enter into the outer tank. Excessive water hammering in the domestic system may crack these welds. (Non-Warranty) If they are leaking and it is **NOT** related to an installation error or system problem.—\*reason code 058.
- Check the seal around the air vent for leaks.
- Check the drywell for leaks.

**Action Item:**

- To replace the drywell use the Replacement Kit. (See chart on Page 15, 17, 19 or 21)
- Apply sealant (i.e. Leaklok or Loctite) completely around threads in all applications.

*\* This may be a manufacturing defect. Please initiate a warranty claim with Weil-McLain noting the reason code listed.*

### Is the source of water from the tank?

- Check for possible overhead pipes leaking onto the tank. (Non-Warranty)

### Check all connections – boiler connections, air vent...

- Check the connections to the water heater. Are they loose? A build-up of corrosion around joints is a sure sign of a leak. (Non-Warranty)
- Check the seal around the air vent and drywell for leaks. Remove the drywell and check the O-ring gasket (if applicable) beneath it. (Non-Warranty) If they are leaking and it is not related to an installation error or system problem—\*reason code 058.
- Remove the thermostat sensing bulb from the drywell. If the bulb wet or is water visible at the top of the drywell?—\*reason code 059.

### Action Item:

- To replace the drywell use the Replacement Kit. (See chart on Page 15, 17, 19 or 21)
- Apply sealant (i.e. Leaklok or Loctite) completely around threads in all applications.

*\* This may be a manufacturing defect. Please initiate a warranty claim with Weil-McLain noting the reason code listed.*

### **The hot water smells like “rotten eggs” (Non-Warranty)**

The most common cause of water to smell like “rotten eggs” is a non-toxic sulfate reducing bacteria. The bacteria usually enters into the water system through a break in the supply piping or during construction/maintenance of the supply piping. The bacteria survives in the water system by converting sulfate (SO<sub>4</sub>) in the water to hydrogen sulfide (H<sub>2</sub>S) gas. It is this gas that creates the “rotten egg” smell. The presence of hydrogen sulfide can also affect the taste of the water as well. Along with the stench caused by this bacteria, black deposits (which typically indicate pipe and/or fitting corrosion) may also appear in the water.

## **WARNING!**

**In extremely high concentrations, hydrogen sulfide gas can be toxic. However, the gas is detectable prior to reaching harmful levels.**

The bacteria will thrive in any water system under the following conditions:

- High levels of sulfur in the water
- Activated hydrogen in the water from cathodic reactions within the tank
- Water with little or no dissolved oxygen
- Storing the domestic water below 140°F

### **Other causes of smelly water:**

- Chlorides of magnesium and calcium gives water a bitter taste
- Chloride of sodium will produce a salty tasting water
- Sulfates above 50 ppm in the water gives the water a medicinal taste
- Carbon dioxide in water with a low pH results in water that is fizzy
- Iron and tannic waters will produce water with a bad taste and odor

### **Action Item:**

- The treatment of this situation requires the water system to be shockchlorinated. Depending on the severity of the bacteria within the water system, several treatments may be needed.

### **Hot water from the faucet appears milky** (Non-Warranty)

When water is initially drawn from the faucet it appears to be milky or cloudy, but it becomes clear after the water is allowed to stand for several minutes. This is usually an indication that the water contains high levels of soluble gases such as oxygen, chlorine, carbon dioxide, hydrogen sulfide or others. As the water system pressure increases, the amount of gas that water can hold in a solution decreases. When air and gases are forced out of the heated water, the problem may be evident in one or both of the following conditions:

- Gases, in the form of small bubbles, may make the water appear milky from the tap, but clear after several minutes when those bubbles will separate. Similar to the reaction that occurs as air bubbles form on the walls of a pan shortly before the water begins to boil.
- The release of dissolved gas can also create air pockets and air locks in the water system piping. This can cause spurts of air or gases when opening the hot water faucet.

There is generally no cure for milky water caused by dissolved gases, although it can be reduced with aerated faucets. In some applications, the amount of air and gases precipitating out of the water will be reduced in time. It should be noted that these gases are not harmful to the end user.

## **Discolored water from the hot water faucet (Non-Warranty)**

The water from the hot water faucet appears discolored, either rusty, brown, black or yellow. Because the inner tank is stainless steel, which by its nature is resistant to corrosion, the problem is not tank related. The problem is usually a non-toxic iron reducing bacteria that is commonly found in soil, well water, water treatment plants and piping systems. The bacteria usually thrives in those systems in which the soluble iron exceeds 0.2 ppm. The bacteria will feed on the soluble iron in the water producing “rusty” color water as a by-product of the feeding process.

Variables in which the bacteria can thrive in:

- Elevated levels of iron and manganese in the water
- Water with little or no dissolved oxygen
- Water storage temperatures below 140°F

Items that can potentially increase the presence of the bacteria:

- Water softeners
- Well water
- Long periods of no water movement

### **Action Item:**

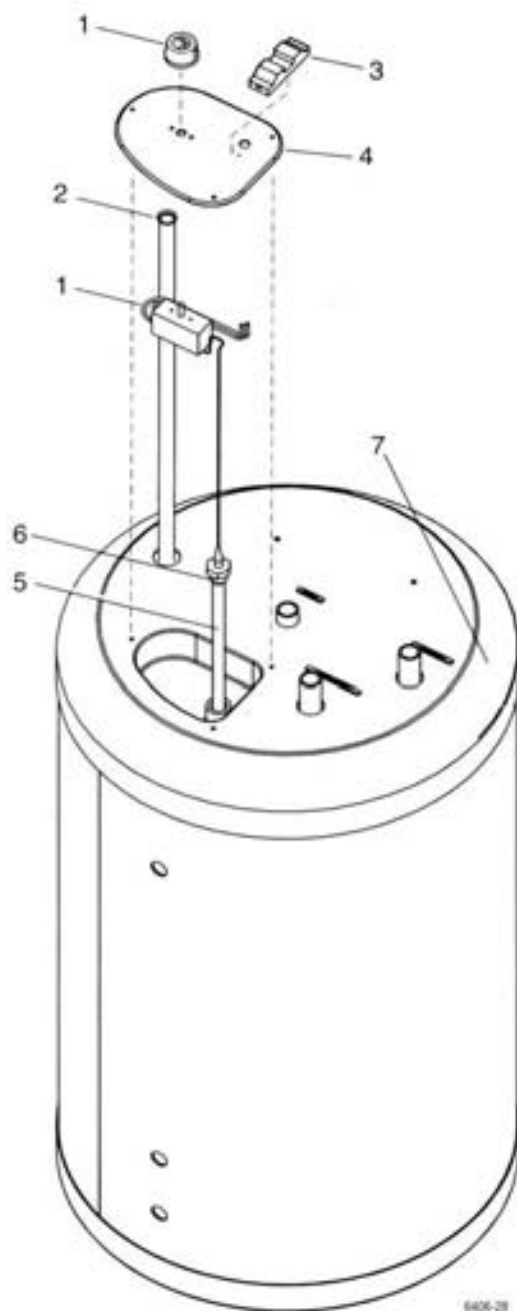
- The treatment of this situation requires the water system to be shockchlorinated. Depending on the severity of the bacteria within the water system, several treatments may be needed.

Check the pH and the Chlorides of the water in both the inner (domestic) tank and the outer (boiler) tank. Ph must be between 6 and 8. The chloride must be less than 80mg/l. Note the pH and Chloride readings on the RGA Paperwork.

Items that can affect the pH reading:

- 1) Water Softeners
- 2) Water treatment plants
  - a) Cl ( Chlorides) added, especially during the summer
  - b) Fl ( Fluorides) added in treatment in large cities
- 3) Elevated levels of iron, manganese, and sulfur

If the pH is out of range it has a big effect on the metal tanks, piping and heat transfer surfaces.



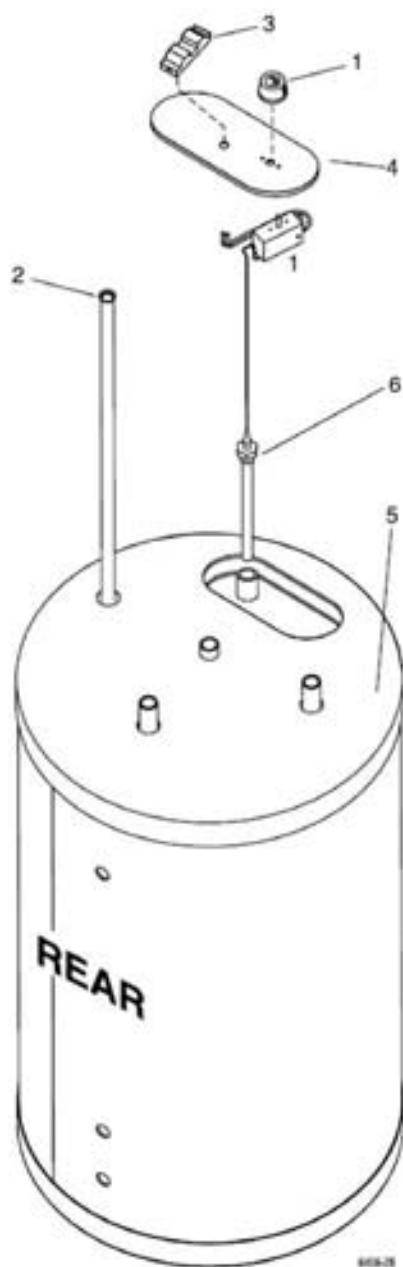
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# Replacement Parts: Gold/Ultra Plus 30/40/60/80 Series 2

Item	Description	Size	Manufacturer	Weil-McLain Part Number
1	Thermostat Kit with Knob - No Cover Plate		Weil-McLain	633-900-130
not shown	Air Vent, Automatic, # 400	1/4"	Taco	635-100-003
not shown	Drain Valve Kit		Weil-McLain	633-900-117
2	GOLD Plus 30 Dip Tube Kit	3/4"	Weil-McLain	633-900-118
	GOLD Plus 40 Dip Tube Kit	3/4"	Weil-McLain	633-900-119
	GOLD Plus 60 Dip Tube Kit	3/4"	Weil-McLain	633-900-120
	GOLD Plus 80 Dip Tube Kit	3/4"	Weil-McLain	633-900-125
3	Snap-Set with Wire Connector		Weil-McLain	635-600-145
4	Cover Plate and Plastic Fasteners		Weil-McLain	633-900-200
5	GOLD Plus 30 Drywell Replacement Kit		Weil-McLain	635-600-061
	GOLD Plus 40 Drywell Replacement Kit		Weil-McLain	635-600-062
	GOLD Plus 60 Drywell Replacement Kit		Weil-McLain	635-600-063
	GOLD Plus 80 Drywell Replacement Kit		Weil-McLain	635-600-064
6	Drywell Seal Repair Kit		Weil-McLain	635-600-150
not shown	Thermostat with Cover Plate Kit		Weil-McLain	633-900-102
7	Plastic Top Cover (specific to tank size)		Weil-McLain	Special Order

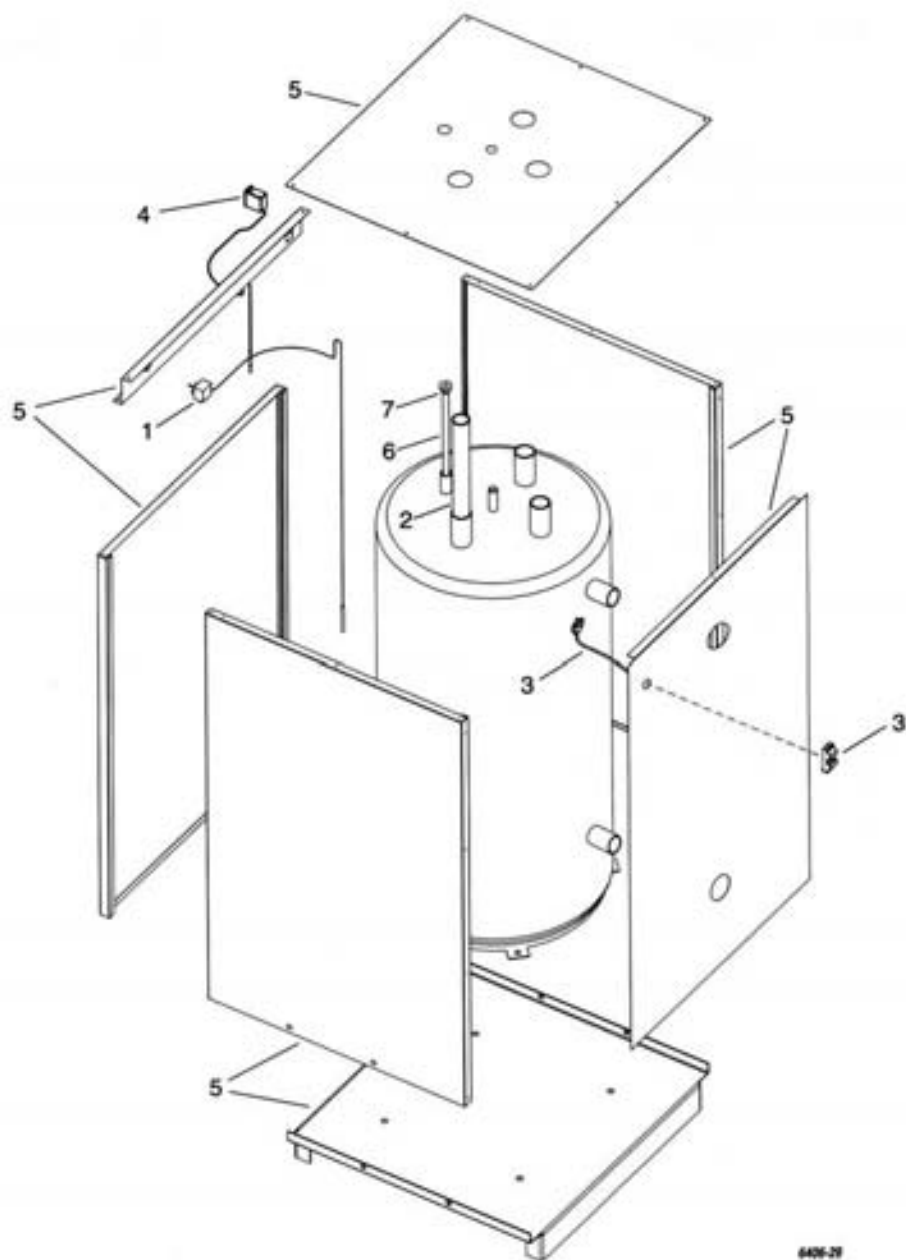






# Replacement Parts: Gold/Ultra Plus 30/40/60/80 Series 3

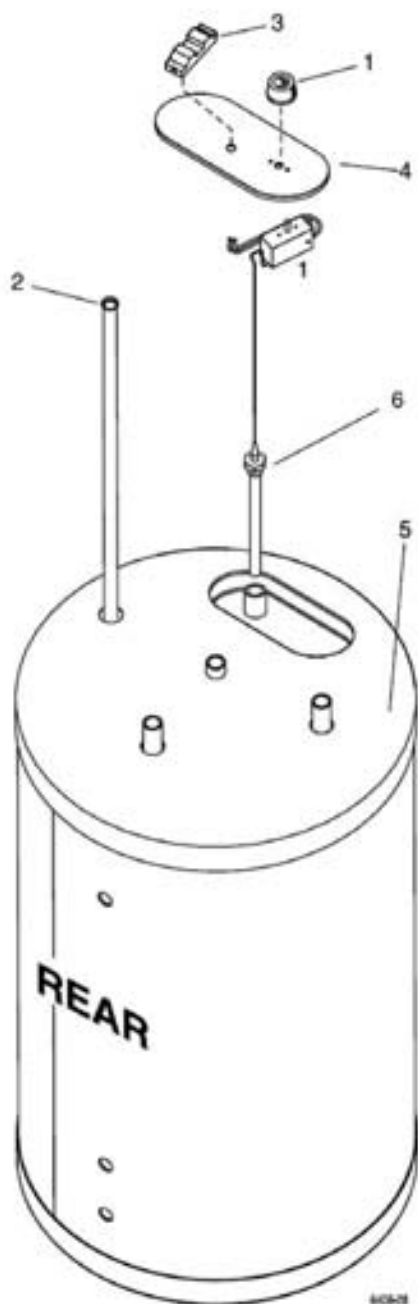
Item	Description	Size	Manufacturer	Weil-McLain Part Number
1	Thermostat Kit with Knob - No Cover Plate		Weil-McLain	633-900-130
not shown	Air Vent, Automatic, # 400	1/2"	Taco	635-100-003
not shown	Drain Valve Kit		Weil-McLain	633-900-117
2	GOLD/Ultra Plus 30 Dip Tube Kit	1/2"	Weil-McLain	633-900-118
	GOLD/Ultra Plus 40 Dip Tube Kit	1/2"	Weil-McLain	633-900-119
	GOLD/Ultra Plus 60 Dip Tube Kit	1/2"	Weil-McLain	633-900-120
	GOLD/Ultra Plus 80 Dip Tube Kit	1/2"	Weil-McLain	633-900-125
3	Snap-Set with Wire Connector		Weil-McLain	635-600-145
4	Cover Plate and Plastic Fasteners		Weil-McLain	633-900-200
not shown	Thermostat with Cover Plate Kit		Weil-McLain	633-900-102
5	Plastic Top Cover (specific to tank size)		Weil-McLain	633-800-440
6	Gold Plus 30 Drywell Replacement kit		Weil-McLain	635-600-061
	Gold Plus 40 Drywell Replacement kit		Weil-McLain	635-600-062
	Gold Plus 60 Drywell Replacement kit		Weil-McLain	635-600-063
	Gold Plus 80 Drywell Replacement kit		Weil-McLain	635-600-064



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# Replacement Parts: Commercial Plus 100/120 Series 2

Item	Description	Size	Manufacturer	Weil-McLain Part Number
1	Thermostat Kit		Weil-McLain	635-100-010
not shown	Air Vent, Automatic, # 400	1/4"	Taco	635-100-003
2	Plastic Dip Tube Kit	1 1/4"	Weil-McLain	633-600-115
3	Snap-Set with Wire Connector		Weil-McLain	635-600-080
4	Thermometer		Weil-McLain	635-600-084
5	PLUS 100 Jacket Replacement, Steel, Blue, Ser. 2		Weil-McLain	634-100-390
	PLUS 120 Jacket Replacement, Steel, Blue, Ser. 2		Weil-McLain	634-100-395
6	PLUS 100 Drywell Replacement Kit		Weil-McLain	635-600-065
	PLUS 120 Drywell Replacement Kit		Weil-McLain	635-600-066
7	Drywell Seal Repair Kit		Weil-McLain	635-600-150



# Replacement Parts: Plus 100/110/119 Series 3

Item	Description	Size	Manufacturer	Weil-McLain Part Number
1	Thermostat Kit with Knob - No Cover Plate		Weil-McLain	635-100-010
not shown	Air Vent, Automatic, # 400	1/2"	Taco	635-100-003
2	PLUS100 Dip Tube Kit	1/2"	Weil-McLain	633-900-115
	PLUS110 Dip Tube Kit	1/2"	Weil-McLain	633-900-115
	PLUS119 Dip Tube Kit	1/2"	Weil-McLain	633-900-115
3	Snap-Set with Wire Connector		Weil-McLain	635-600-080
4	Cover Plate and Plastic Fasteners		Weil-McLain	635-600-205
not shown	Thermostat with Cover Plate Kit		Weil-McLain	635-100-010
5	Plastic Top Cover (specific to tank size)	100 & 110 119	Weil-McLain Weil-McLain	633-800-441 633-800-442
6	Plus 100 Drywell Replacement Kit		Weil-McLain	635-600-065
	Plus 119 Drywell Replacement Kit		Weil-McLain	635-600-066
	Plus 120 Drywell Replacement Kit		Weil-McLain	635-600-066



## Weil-McLain Limited Warranties

### Residential & Commercial Cast Iron Boilers

- Residential Water Warranty — Limited Lifetime
- Residential Steam Warranty — Limited 10 Year
- Commercial Water Warranty — Limited 10 Year

**First Year — (All Residential & Commercial Cast Iron Boilers)** Weil-McLain warrants that its cast iron boilers are free from defects in material and workmanship for one year from date of installation. If any parts are found to be defective from such defects, Weil-McLain will provide replacement of such defective parts.

**Second Through Tenth Year — (Residential & Commercial Water/Steam)** Weil-McLain warrants that the cast iron sections of its water and steam boilers are free from defects in material and workmanship from the date of installation for the second through the tenth year. If, during such time, any section is found to be defective, Weil-McLain will provide replacement of such defective sections.

**Eleventh Year and Beyond — (Residential Water Only)** Weil-McLain warrants that the cast iron sections of its residential water boilers are free from defects in material and workmanship for the eleventh year and beyond from the date of installation. If, during such time period, any section(s) is found to be defective, Weil-McLain will provide replacement of such defective section(s) upon the payment of a proportionate charge based on the time the boiler has been in service. The proportionate charge will be equal to the appropriate percentage of the list price of such section(s) at the time the warranty claim is made, and will be determined as follows: 11th year-10%; 12th year-10%; 13th year-10%; 14th year-20%; 15th year-20%; 16th year-30%; 17th year-30%; 18th year-40%; 19th year-40%; 20th year-50%; 21st year-50%; 22nd year-60%; 23rd year-60%; 24th year-70%; 25th year & beyond -75%.

**These warranties do not cover** boilers operated with combustion air contained and externally by thermal vents or with improper fuel additives, or with water conditions which may have caused unusual deposits in the cast iron sections.

See section "For All Weil-McLain Products" for additional warranty information.

### Weil-McLain *W/We* Cast Aluminum Boilers

- Residential Water Warranty — Limited 15 Year (includes 5 Year Life Protection Plan)
- Commercial Water Warranty — Limited 15 Year (also NBT Inside 199)

**First Through Fifth Year —** Weil-McLain warrants that its cast aluminum boilers are free from defects in material and workmanship for one year from the date of installation and the heat exchanger is free from defects in material and workmanship for five years from the date of installation. If any parts in the first year, or the heat exchanger in the first five years are found to be defective from such defects, Weil-McLain will provide replacement of such defective parts or heat exchanger. In addition to the product warranty, Weil-McLain also provides a 5-Year "Life Protection Plan" (LPP) for residential applications only to cover parts and labor for five years from the date of installation. Covered only if the boiler is properly registered with the LPP Administrator within six months of the date of installation. LPP units that do not pass inspection directly through the Plan Administrator are not through Weil-McLain.

**Sixth Through Tenth Year —** Weil-McLain warrants that the heat exchanger(s) of its cast aluminum boilers are free from defects in material and workmanship for six years from the date of installation. If, during such time, the heat exchanger is found to be defective, Weil-McLain will provide replacement of such defective heat exchanger.

**Eleventh Through Fifteenth Year —** Weil-McLain warrants that the heat exchanger(s) of its cast aluminum boilers are free from defects in material and workmanship for the eleventh through fifteenth year from the date of installation. If, during such time period, the heat exchanger is found to be defective, Weil-McLain will provide replacement for such defective heat exchanger upon the payment of a proportionate charge based on the time the boiler has been in service. The proportionate charge will be equal to the appropriate percentage of the list price of such heat exchanger at the time the warranty claim is made, and will be determined as follows: 11th year - 10%; 12th year - 20%; 13th year - 40%; 14th year - 60%; 15th year - 80%; 16th year & beyond - 100%.

**This warranty does not cover** boilers operated with combustion air contained externally by thermal vents or with improper fuel additives, or with water system conditions which may have caused heat exchanger failure.

See section "For All Weil-McLain Products" for additional warranty information.

**For All Weil-McLain Products:** These warranties are subject to the condition that the Weil-McLain Products must have been installed in accordance with manufacturer's instructions by a heating contractor whose principal occupation is the sale and installation of plumbing, heating and/or air conditioning equipment. These warranties extend only to the first retail purchaser of the products and only to a product that has not been moved from its original installation site.

- In addition to each product warranty listed, Weil-McLain warranties do not cover:
1. Components that are part of the heating system (products) but were not furnished by Weil-McLain as a part of its heating system (products).
  2. The workmanship of any installer of Weil-McLain's products. In addition, the warranty does not assume any liability of any nature for unsatisfactory performance caused by improper installation.
  3. Any costs for labor for removal and reinstallation of the alleged defective part, transportation to Weil-McLain, if necessary, and any other materials necessary to perform the exchange.
  4. Any products that have a failure or malfunction resulting from improper or negligent operation, accident, abuse, freezing, misuse, unauthorized alteration or improper repair or maintenance.
  5. Improper adjustments (including burner/flame) control settings, care or maintenance. Information is in the installation, start-up, operation, service and manuals, service/maintenance instructions, and other printed technical information provided with the product or direct from Weil-McLain or call-center.com.

### Indirect-Fired Water Heaters

- Residential Water Heater Warranty — Limited Lifetime
- Commercial Water Heater Warranty — Limited 15 Year

**First Year — (Residential and Commercial Water Heaters)** Weil-McLain warrants that its indirect-fired water heaters are free from defects in material and workmanship for one year from the date of installation. If any parts are found to be defective from such defects, Weil-McLain will provide replacement of such defective parts.

**Second Year and Beyond — (Residential Only)**

**Second Through Fifth Years — (Commercial Only)**

Weil-McLain warrants that the tank assembly components of its indirect-fired water heaters are free from defects in material and workmanship for the second through the fifth year from the date of installation (commercial only), or for the second year from the date of installation and beyond (for residential only). If, during such time period, a leak in the tank assembly should occur, Weil-McLain will provide replacement for the original tank assembly.

**Sixth Year through Fifteenth Year — (Commercial Only)** Weil-McLain warrants that the tank assembly components of its commercial indirect-fired water heaters are free from defects in material and workmanship for the sixth year through the fifteenth year following the date of installation. If, during such time period, a leak in the tank assembly should occur, Weil-McLain will provide replacement for such defective tank assembly. Such replacement will be furnished with the nearest comparable model available from Weil-McLain at the time of such replacement and upon payment of a proportionate charge. Proportionate charges will be equal to the appropriate percentage of the current list price of such commercial indirect-fired water heater at the time warranty claim is made and will be determined as follows: 6th & 7th year-20%; 8th & 9th year-40%; 10th & 11th year-60%; 12th & 13th year-70%; 14th & 15th year-75%.

**These warranties do not cover:**

1. Any water heater that is not directly vented with a non-temperature-pressure relief valve bearing the listing of the American Society of Mechanical Engineers (A.S.M.E.) at the time of the water heater installation.
2. Any water heater that has a failure or malfunction resulting from a.) failure to keep the tank full of potable water; &.) failure to assure that water in the tank is free to circulate at all times; or c.) failure to keep the tank free of water sediment or scale deposits.
3. Any water heater that has potable water in the unit with a chloride-chlorine content higher than 80 mg/liter.
4. Any water heater installed in a residence containing any type of water softener system that is not installed and maintained in accordance with manufacturer's specifications.
5. Any water heater installation where non-metallic piping products without an oxygen barrier are used.
6. Any water heater used for non-potable application such as pool or process heating.

See section "For All Weil-McLain Products" for additional warranty information.

### Radiant Heating Products

- Radiant Heating Products Warranty — Limited 20 Year
- PIP & IPC Products Warranty — Limited 3 Year

Weil-McLain warrants that its *Radon-Pex* and *Qual-Pex* radiant heating products are free from defects in material and workmanship for thirty years (three years for PIP and IPC products) from the date of installation. If any parts are found to be defective from such defects during such time period, Weil-McLain will provide replacement of such defective parts. It is expressly understood that failure as a result of freezing of water within the pipes (during) does not constitute a defect in material or workmanship and shall not be covered by the warranty.

See section "For All Weil-McLain Products" for additional warranty information.

### Parts and Accessories

- Parts and Accessories Warranty — Limited 1 Year

Weil-McLain warrants that parts and accessories that were purchased through Weil-McLain are free from defects in material and workmanship for one year from the date of installation. If any parts and/or accessories are found to be defective from such defects during such time period, Weil-McLain will provide replacement of such defective parts. Parts and accessories covered under this warranty exclude only those items that are not covered under other Weil-McLain product warranties.

See section "For All Weil-McLain Products" for additional warranty information.

**NOTE:** Residential warranties do not cover any residential products installed in buildings other than one or two family dwelling units, unless they are buildings with individual residential products for each dwelling unit.

**THE WARRANTIES DESCRIBED HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY. WEIL-McLAIN EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT OR PUNITIVE DAMAGES FOR BREACH OF ANY EXPRESS WARRANTY.** For prompt product warranty claims, notify the installer who, in turn, will notify the Weil-McLain distributor from whom he purchased the boiler. If this action does not result in warranty resolution, contact Weil-McLain Consumer Relations Department, 500 Shawnee Street, Michigan City, Indiana 46360, with details in support of the warranty claim. Alleged defective part or parts must be returned through the same trade channel in accordance with the Weil-McLain procedure currently in force for handling returned goods for the purpose of inspection to determine cause of failure. Weil-McLain will furnish reports to an authorized Weil-McLain distributor who, in turn will furnish the next part (s) to the heating contractor who installed the boiler. If you have any questions about the coverage of the warranty, contact Weil-McLain at the address above.



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[www.weil-mclain.com](http://www.weil-mclain.com)