BOILER OPERATION CHECK LIST



A. WATER LEVEL IN SIGHT GLASS- The water level should be between the PUMP ON and PUMP OFF marks on the water column sight glass ①.

B. WATER LEVEL IN RETURN TANK- The level of water in the RETURN TANK ② should be within an inch of both the upper and lower ends

of the sight glass. Higher or lower levels will usually indicate a faulty MAKE UP WATER BALL FLOAT VALVE.

C. RETURN TANK TEMPERATURE- The RETURN TANK temperature ③ should be 160-195 degrees F. (most pumps will start to cavitate at around 180 degrees F.). If the temperature is higher it's likely leaky CHECK VALVES or STEAM TRAPS blowing through.

D. CHECK VALVE PERFORMANCE- When the pump stops normally shut off the pump switch. Wait 90-120 seconds then measure across the check valve or valves. The difference in temperature between (4) and (5) should be at least 30 degrees F. If it's less the check valve is probably faulty. Turn on the pump switch. E. TEMPERATURE OF CONDENSATE RETURN LINE- The temperature of the CONDENSATE RETURN LINE (6) should be under 200 degrees F. If it's above there are likely several steam traps blowing through. F. RETURN TANK OVERFLOW- Visually check (7) to see if there is a continuous flow of water from the RETURN TANK OVERFLOW. If there is and the temperature is at about the same temperature as the return tank it's likely a leaky MAKE UP WATER BALL FLOAT VALVE. If it's higher it's likely several bad steam traps.

G. SUCTION STRAINER- Once a year the cap on the SUCTION STRAINER **(B)** should be removed and the strainer removed and cleaned.

H. BLOW DOWN VALVE- The temperature after the BLOW DOWN VALVES (9) should be less than 140 degrees F. If the temperature is higher it usually indicates a faulty blow down valve. The temperature will be higher closest to the faulty valve.

WHEN THE BOILER IS OPERATING PROPERLY RUN THE CHECKS LISTED ABOVE AND RECORD FOR FUTURE REFERENCE

BOILER OPERATION CHECK LIST

WHAT'S NORMAL?

THE MOST IMPORTANT PART OF TROUBLESHOOTING IS KNOWING WHAT'S HAPPENING WHEN A MACHINE IS OPERATING OK. MAKE A CHART RECORDING THE TEMPERATURES, MARK WATER LEVELS ON SIGHT GLASSES AND SHOOT A VIDEO OF THE INDICATOR LIGHTS INSIDE THE CONTROL PANEL.

LASER THERMOMETER



USE OF THE LASER THERMOMETER

First, a short explanation of the operations of the thermometer. The frequency of infrared radiation (a form of light) emitted by a target object depends on the object's temperature. A sensor in the thermometer measures that frequency and translates it into numbers in degrees that correspond to what we call temperature. However, the infrared sensor that measures it has its limitations.

1. The surface of the target should NOT be a highly reflective color like silver or white or have a highly polished finish like chrome or stainless. If it does, take a black Sharpie marker and shade an area about the size of a quarter black; use this blackened area as the target spot on the surface to be tested.

2. The laser pointer is used to select the target area and illuminate the center of the sensed area. Since the sensor measures all the infrared energy entering the lens, it becomes progressively more accurate the closer you place the sensor to the target area. When using the laser thermometer to run the tests shown on this chart, be sure to position the lens of the thermometer slightly above the surface of the measured area.

READINGS WHEN BOILER OK		
	WHAT TO DO	RESULT
1	CHECK LEVEL	
2	CHECK LEVEL	
3	TAKE TEMPERATURE	
4	TAKE TEMPERATURE	
5	TAKE TEMPERATURE	
6	TAKE TEMPERATURE	
7	VISUALLY CHECK	
8	VISUALLY CHECK	
9	TAKE TEMPERATURE	

READINGS WHEN BOILER HAS A PROBLEM		
	WHAT TO DO	RESULT
1	CHECK LEVEL	
2	CHECK LEVEL	
3	TAKE TEMPERATURE	
4	TAKE TEMPERATURE	
5	TAKE TEMPERATURE	
6	TAKE TEMPERATURE	
1	VISUALLY CHECK	
8	VISUALLY CHECK	
9	TAKE TEMPERATURE	