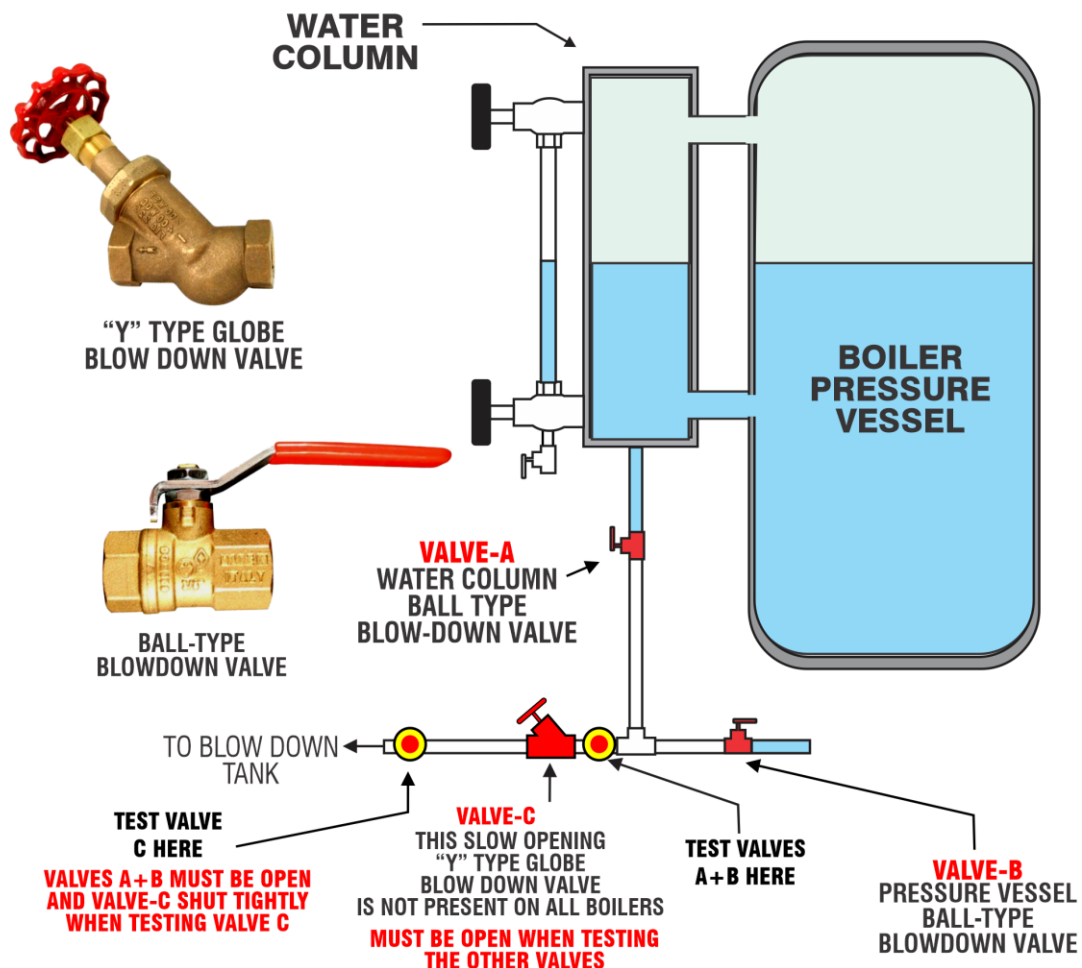


# TESTING BLOW DOWN VALVES



## USING A LASER THERMOMETER

The following is a short explanation of the operations of the laser thermometer:

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 the blackened area as the target spot of the surface to be tested.
2. The laser pointer is used to select the target area and illuminates the center of the target area. Since the sensor itself measures all of the infrared energy entering the lens its accuracy decreases the further you are from the target area because background heat is radiated from all over the boiler room. The sensor will become progressively more accurate the closer to the target area you measure it. 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 area being measured.

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## **STOP WASTING STEAM**

Your boiler's humble blow-down valves may be costing you big money. When these valves leak, superheated boiler water you've already burned a lot of expensive fuel to generate is flashing off as steam and venting to the atmosphere. About the only time anyone pays attention to these rugged valves is when they can't be opened or shut properly. It's a mistake to think if they just open or close, all is well; this is a very costly misconception. The very nature of what these valves are exposed to during their operation: debris, grit, and sandy detritus shoot across the valve disk and seats at velocities exceeding 60 mph. which is roughly equivalent to being sandblasted. It's not surprising after years of use, they lose their ability to seal properly and slowly begin to leak.

### **FINDING FAULTY BLOW-DOWN VALVES**

Fortunately, it's a simple process to determine the condition of these valves by performing simple temperature measurements with that ever-handy laser thermometer. The following test procedure will provide a reasonably accurate predictor of valve condition. Place a large black iron pipe fitting like a 1" tee on the boiler room floor that stays dry and isn't near direct heating from the boiler's burners, preferably near the blow-down valves. We will use this fitting to measure the ambient temperature of the boiler room and compare it to the temperature measured near the outlet of the blow-down valve.

First, measure the area's temperature about 2 feet downstream of the blow-down valve under test. Next, measure the temperature of 1" tee on the floor of the boiler room. There should be less than a 30-degree F. difference in temperature between the two points. If there is more, it's likely an indication the blow-down valve is leaking.

### **WHAT TO DO ABOUT A LEAKY BLOW-DOWN VALVE**

Some "Y" type globe blow-down valves have replaceable disks and seats. My experience has been that while it's relatively easy to replace the disks, replacing the seats in this type of valve is far more challenging. Limited damage to the seat may sometimes be overcome by using a new Teflon disk. This is worth trying since replacing this type of valve is often expensive. To my knowledge, if the blow-down valve is a ball type, it is non-repairable. So pray the pipefitter that installed the boiler located a union or two, enabling an easy valve replacement. Peruse the paragraphs below for the proper technique for using the laser thermometer.

### **USING THE LASER THERMOMETER**

The following paragraph explains the best technique to obtain accurate results.

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 blacken an area about the size of a quarter. Use this blackened area as the target spot on the surface to be tested.
2. The laser pointer is typically used to select the target area and illuminate the center of the sensed area. Since the sensor measures all of 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 these tests, be sure to position the lens of the

thermometer slightly above the surface of the area being measured; don't just aim it and use the laser pointer to take the temperature.

#### **A NOTE ON BOILER VALVES**

Valves used on boilers should be rated at the next higher level of the maximum rated boiler operating pressure. For example, if the rated operating pressure (usually found on the nameplate attached to the boiler) is 150 PSI, the valve would be steam-rated for at least 200 PSI. This rating usually appears on the valve's body after the SWP abbreviation for "steam working pressure" (you won't find these valves at Home Depot or Lowe's). **THE NUMBERS FOLLOWING THE ABBREVIATION WOG** stands for the pressure rated for use with water-oil-gas and is **NOT THE RATING FOR STEAM SERVICE.**