

Multifamily Facility Management Services

ZONE VALVE MAINTENANCE

Description:

Most post World War II multifamily and some small commercial buildings were designed with hot water heating systems that have multiple zones. (For example, in multifamily buildings, each apartment unit is typically its own zone.) Each zone has some independent control over the heat that is delivered to it, since each of these areas has its own thermostat, typically controlling a zone valve. The zone valve is a small 24 volt motorized control device installed in the return side piping of each zone's radiation sub-loop. Sometimes the zone valves can be found in the boiler room, hallways, or beneath stairways instead. Otherwise, the zone valves are found within the radiation of the zone itself. Upon a call for heat from a zone's thermostat, the zone valve opens fully; when the thermostat becomes satisfied, the zone valve closes to stop the flow of boiler water into the zone sub-loop.

Certain types of zone valves have mechanisms with very close tolerances. These types are prone to sticking and/or motor burnout. Zone valves that stick in the closed position will result in under-heating and eventually complaints from the occupants of the zone. Conversely, zone valves that stick in the open position will result in over-heating. This may cause tenant complaints as well and potentially could result in open windows and much wasted heat.

Zone valves may fail because:

- the actuator becomes seized (usually in the summer)
- the 24-volt motor burns out (possibly as a result of a seized actuator)
- the thermostat-to-zone valve wiring breaks
- the thermostat malfunctions

If properly maintained, zone valves rarely fail and will last indefinitely. As a result, it is important to check zone valve operation before the heating season.

How to Implement:

Maintenance staff should be given the responsibility of observing and confirming proper operation of all zone valves and thermostats. If building maintenance staff is unable to perform this function, a contractor can be hired to complete it. This service should be performed at the beginning of the heating season, when any sticking valve can be freed up. Zone valve inspection is a two person job but, if well-planned, the testing only takes five to ten minutes per apartment.

Prior to completing the test, the maintenance staff should:

- Select a day to perform the test which is not predicted to be hot. (If the day is too warm, it may be difficult to set the thermostat high enough to get the valve to open.)
- Inform tenants of the time and date of zone valve inspection.
- On the day of the test, turn on the boiler and make sure the pump is operating.

The Test:

Zone valve inspections are best conducted by two people—one at the thermostat and one watching the valve:

1. Turn down the thermostat to its lowest possible setting, and check the valve to observe whether or not it closes.
2. Turn up the thermostat to its highest possible setting, and check the valve to observe whether or not it opens.

If the zone valve does not open and close properly, it may simply be stuck. Most zone valves have a means by which they can be opened and closed manually. Simply opening and closing the valve manually a few times may unstick the mechanism (or dislodge the crud that is preventing proper operation). If proper operation cannot be restored by this means, further inspection of the valve, wiring and thermostat should be conducted by a qualified, licensed contractor to determine the problem.

In some cases, zone valves themselves may need to be replaced. In that case, a valve with a spring-loaded ball closure mechanism (rather than a slide plate closure) is recommended since the former type of valve tends to operate more trouble free and last longer.