



Standard Practice for Inspection & Maintenance of Commercial Building HVAC Systems

Your HVAC System's Required Inspection & Maintenance

The HVAC system is the single largest user of energy in your building, making it one of your biggest monthly expenditures. If it is not maintained in proper working order you will be sacrificing indoor comfort while seeing increased power usage, and will likely incur higher repair costs and premature equipment replacement costs. That is why it is so important for you to utilize a quality contractor to regularly inspect and service your HVAC systems. But, how can you tell which contractor will do the best job? The maintenance plans that contractors offer vary in scope and pricing from all-inclusive to minimal inspection and filter change. The first step in choosing a contractor is to know what basic items are included in competing contractors' maintenance plans in order to effectively compare relative plan values.

USING THE QUALITY MAINTENANCE CHECKLIST

The checklist below will help you evaluate maintenance proposals. The questions found in the 'What to Ask the Contractor' column are designed to help you determine whether or not the contractor is complying with industry-recognized standard maintenance practices. When filling out the checklist, simply write a 'yes' or 'no' reflecting the contractors' response to each question in the box provided. After the interview, you will have an indication as to whether the contractors' proposed services meet the requirements in the *Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems* (ANSI/ASHRAE/ACCA Standard 180-2012). Always remember that before signing any agreement, you should compare the contractor's written maintenance agreement plan with the interview responses to make sure that they are the same. The time to clarify questions is before the contract is signed.

What to Ask the Contractor	Why the Question is Important	Contractor 1	Contractor 2	Contractor 3
If so required under your jurisdiction, is the company licensed to do the work?	You should only hire contractors that are compliant with your local licensing requirements.			
How long will the maintenance inspection take?	A complete HVAC system inspection will take approximately 60 minutes per HVAC system. (less time generally = less inspected)			
Did the contractor inquire how the system has been operating and whether you have any concerns or issues?	This understanding provides a better basis for assessing equipment operation and will better enable the contractor to meet your expectations.			
Does the maintenance agreement include a safety inspection to make sure the HVAC system is installed according to code?	Safety hazards that are not obvious to you will be immediately recognized by a trained technician and reported to you.			
Will the contractor review the Standard 180 based maintenance requirements for your varied HVAC systems with you? (For a sample list, see component list on next page.)	Maintenance plans are based on the type of equipment you have and the level of service you have contracted for. Additionally, some maintenance tasks like changing filters may need to be performed between contractor visits.			
Does the contractor's maintenance plan include evaluating the equipment's performance?	HVAC equipment performance must be checked for your HVAC equipment to operate efficiently.			
Will the contractor review the maintenance issues with you?	It is important for you to understand what was found during the scheduled maintenance visit especially if corrective action is needed.			

OTHER CONSIDERATIONS

A partial/low bid maintenance plan may seem appealing from an immediate economic point of view, but you should consider the hidden costs that come with one. Hidden costs can include higher operating expenses and an increased likelihood of early equipment failure and replacement. You will also want to make sure that you consider the unique characteristics and environmental concerns for your region of the country, as they will also influence your inspection task list. The original equipment manufacturer's instructions, municipal ordinances, applicable codes, and other industry standards provide further guidance on these possible regional considerations. The contractor you choose should take the time to tailor your inspection task list and maintenance plan to your particular situation.

A quality contractor will conduct an inspection of your systems and suggest corrective actions that are based on the industry-recognized ANSI/ASHRAE/ACCA 180-2012 (*Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems*). Maintenance information on varied commercial HVAC equipment is contained in that standard (see table below for examples):

Component / Equipment (Equipment Survey)	Examples of Components to be Inspected in Each Table	180 Sect.
Air Distribution System	Plenums, trunk ducts, fittings, branch ducts, boots, grilles, & diffusers	5-1
Air Handlers	Filters, fan belts, frequency drives, control systems, fans, & refrigerant	5-2
Boilers	Fuel filters, Chemical water testing, fuel pumps, controls & burners	5-3
Chillers-Absorption	Controls, steam traps, non-condensibles, chemical water testing, & flow	5-4
Chiller-Air Cooled	Controls, gearbox, freq. drives, refrigerant, oil level, & fluid flow	5-5
Chiller- Water Cooled	Drive alignment, refrigerant, oil level, chemical water testing, & flow	5-6
Coils and Radiators	Controls, metering device, P-Trap, condensate drain, coil fins, & tubing	5-7
Condensing Units	Controls, fan belts, frequency drives, fan blades, refrigerant, oil & pressure	5-8
Control Systems	Air pressure, RH and Temp. measurements, time of day, & backup battery	5-9
Cooling Towers and Evaporative-Cooled Devices	Chemical water testing, blow down control, fan operation, bearings, pumps, dampers, controls, fan belts, frequency drives, nozzles & exterior louvers	5-10
Dehumidification and Humidification Devices	UV lamps, fluid flow, fluid level, relative humidity, system traps, pumps, controls, strainers, drain pans, and inspection for biological growth	5-11
Economizers-Air-Side	Air filter particulate accumulation, controls, dampers, seals, & low limit	5-12
Engines, Microturbines	Controls, flex connections, fuel pump, exhaust system, oil level & pressure	5-13
Fans (e.g., Exhaust, Supply, etc.)	Belt Tension, alignment, fan blades, controls, duct, bearings & coil fins	5-14
Fan-Coils, Hot Water, and Steam Unit Heaters	UV lamps, steam traps, filters, controls, P-Traps, belts, fan blades, refrigerant/system temperatures, bearings, drain pan, & biological growth	5-15
Furnaces, Combustion Unit Heaters	Fuel pressure, controls, fan belt, filters, dampers, safety devices, & coils	5-16
HVAC Water Distribution Systems	Chemical water testing, controls, pumps, water flow, insulation, & strainers	5-17
Indoor Section Duct-Free Splits	Controls, filters, P-Trap, fan blades, refrigerant, bearings, coil fins, & drain	5-18
Outdoor Air Heat Exch. Systems	Air filters, RH and temp. controls, fan belts, bearings, & heat exchangers	5-19
PTACs/PTHPs	Fan blades & belts, air filters, refrigerant, P-Trap, drain pan, coils & fins	5-20
Pumps	Motor contactor, frequency Drives, controls, flow, pressure, & bearings	5-21
Rooftop Units	Refrigerant, filters, bearings, fan belts, P-Trap, coils, oil level, & fan blades	5-22
Steam Distribution Systems	Valves, chemical testing, traps, strainers, insulation, & safety devices	5-23
Terminal and Control Boxes	Fluid flow, air filter, fan blades, coils, filters, panels, & damper operation	5-24
Water-Source Heat Pumps	Drive alignment, motor contactor, coils/fins, flow, P-Trap, & fan blades	5-25

IN CONCLUSION

Up front interaction between the building owner/operator and the professional contractor is required by *Standard 180* protocols. Thus, your contractor should welcome your questions and integrate your operational needs to develop a maintenance plan specifically designed for your location, building schedules, equipment types, and budgetary needs.