

ND BOILER INSPECTION PROGRAM - INSTALLATION MATRIX - MARCH 2024

LOW PRESSURE BOILERS, WATER HEATERS, & POOL HEATERS - (DOES NOT INCLUDE OBJECTS IN APARTMENT HOUSES LESS THAN SIX UNITS)

BOILER INSTALLATION ITEM:	CAST IRON BOILER		FIRE TUBE BOILER		WATER TUBE BOILER		WATER HEATERS		POOL HEATER
	HWH	STM	HWH	STM	HWH	STM	STG WT HTR	F COIL & WT	F COIL & WT
STEAM PRESSURE GAUGE	NO	YES	NO	YES	NO	YES	NO	NO	NO
WATER PRESSURE GAUGE - 1.5 TO 3.5 X SAFETY VALVE SET	YES	NO	YES	NO	YES	NO	NO	NO	NO
GAUGE GLASS	NO	YES	NO	YES	NO	YES	NO	NO	NO
2 PRESSURE CONTROLS - 1 MANUAL RESET REQUIRED	NO	YES	NO	YES	NO	YES	NO	NO	NO
2 TEMPERATURE CONTROLS -1 MANUAL RESET REQUIRED	YES	NO	YES	NO	YES	NO	NO	YES	YES
1 LOW-WATER FUEL CUTOFF - MANUAL RESET/LOCKOUT REQ	YES	NO	YES	NO	NO	NO	NO	NO	NO
2 LOW-WATER FUEL CUTOFFS - 1 MANUAL RESET REQUIRED	NO	YES	NO	YES	NO***	YES	NO	NO	NO
FLOW SWITCH	NO	NO	NO	NO	YES***	NO	NO	YES	YES
TEMPERATURE GAUGE	YES	NO	YES	NO	YES	NO	NO	YES	YES
PROPER ELECTRICAL WIRING	YES	YES	YES	YES	YES	YES	YES	YES	YES
EMERGENCY SHUTDOWN SW - REQ'D OVER 400,000 INPUT	YES	YES	YES	YES	YES	YES	NO	NO	YES
BOILER ELECTRICAL SW - REQUIRED ON OR NEAR BOILER	YES	YES	YES	YES	YES	YES	NO	YES	YES
SAFETY VALVE	NO	YES	NO	YES	NO	YES	NO	NO	NO
SAFETY RELIEF VALVE	YES	NO	YES	NO	YES	NO	YES (T&P)	YES	YES
PROPER PIPING SUPPORTS	YES	YES	YES	YES	YES	YES	YES	YES	YES
EQUALIZING LOOP	NO	YES	NO	YES	NO	YES	NO	NO	NO
CLEAN OUTS	NO	NO	NO	YES	NO	YES	YES	NO	NO
FEEDWATER PIPING	NO	YES	NO	YES	NO	YES	NO	NO	NO
FEEDWATER STOP & CHECK (BOILER, STOP VLV, CHECK VLV)	NO	YES	NO	YES	NO	YES	NO	NO	NO
MAKEUP WATER PIPING	YES	NO	YES	NO	YES	NO	NO	NO	NO
MAKEUP STOP VALVE (BETWEEN BOILER & F/W REGULATOR)	YES	NO	YES	NO	YES	NO	NO	NO	NO
RPZ BACK FLOW PREVENTER	YES	NO	YES	NO	YES	NO	NO	NO	NO
SUPPLY & RETURN VALVES - RATED FOR SYSTEM PRESSURE	YES	NO	YES	NO	YES	NO	YES	YES	OPTIONAL
EXPANSION TANK - ASME IF OVER 30 PSI S.R. VALVE	YES	NO	YES	NO	YES	NO	NO	NO	NO
EXPANSION TANK STOP VALVE	YES	NO	YES	NO	YES	NO	NO	NO	NO
BLOWOFF VALVE - SIZED TO SAFETY VALVE CAPACITY	NO	YES	NO	YES	NO	YES	NO	NO	NO
DRAIN VALVE	YES	YES	YES	YES	YES	YES	YES	YES	YES
FEED WATER REGULATOR WITH PIPED BYPASS	YES	NO	YES	NO	YES	NO	NO	NO	NO
SUITABLE FOR FLOOR MATERIAL	YES	YES	YES	YES	YES	YES	YES	YES	YES
BOILER CLEARANCES - 36 INCHES ALL AROUND	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROPER COMBUSTION AIR & VENTING	YES	YES	YES	YES	YES	YES	YES	YES	YES
CHIEF BOILER INSPECTOR NOTIFIED OF INSTALLATION	YES	YES	YES	YES	YES	YES	YES, IF OVER 200,000 BTU INPUT		
INSTALLATION FORM SUBMITTED TO CHIEF INSPECTOR	YES	YES	YES	YES	YES	YES	YES, IF OVER 200,000 BTU INPUT		
CARBON MONOXIDE DETECTOR/ALARM	YES	YES	YES	YES	YES	YES	YES, IF OVER 200,000 BTU INPUT		

***some large HWH water tube boilers may have a low water cutoff instead of a flow switch for low water protection, please consult your inspector

NOTES

- A)** The International Mechanical Code (IMC) and the Boiler Rules require that the High-Limit Temperature Controller be a Manual Reset Type per ASME CSD-1.
- B)** The IMC and the Boiler Rules require that the High-Limit Pressure Controller be a Manual Reset Type per ASME CSD-1.
- C)** The IMC and the Boiler Rules require that the Low-Water Fuel Cutoff on hot water heating boilers be a Manual Reset Type with Lockout feature per ASME CSD-1.
- D)** The IMC and the Boiler Rules require that low pressure steam heating boilers have two (2) Low-Water Fuel Cutoff devices. The functioning of the lower of the two cutoff controls shall cause safety shutdown and lockout per ASME CSD-1.
- E)** A manually operated Remote Shutdown Switch or circuit breaker shall be located just outside the main boiler room door and be marked for easy identification. This is required for boilers exceeding 400,000 Btu input (includes modular boilers). (As some local jurisdictions may have more restrictive requirements, please check this with your local building official.)
- F)** Safety and safety relief valves require a full size discharge pipe to within six inches of the floor. If the discharge pipe exceeds $\frac{3}{4}$ inch size, a union or flange is required next to the safety or safety relief valve. No more than three ninety degree bends are permitted, unless the discharge pipe is upsized. If two or more safety relief valves are piped together, the common discharge pipe area must be upsized. Piping two or more safety relief valves into a common discharge is not recommended. To avoid water damage, the discharge pipe must be run to a safe place of disposal.
- G)** A stop valve is required on the line to an overhead expansion tank to permit servicing of the tank. This includes bladder type tanks.
- H)** Expansion tanks must be sized per ASHRAE handbook.
- I)** If major changes to a boiler system are made, these changes must comply with new installation codes.
- J)** Pressure gauge ranges must be in line with safety relief valve settings. [For example; if a 100 psi rated boiler comes equipped with a 0–200 psi gauge, and the boiler is equipped with a 30 psi safety relief valve then the pressure gauge must be changed to one with a dial range of at least one and one half times the safety relief valve setting and not more than three and one half times this setting. (45 psig minimum to 105 psig maximum.)] A contractor may be liable for a safety relief valve change if the boiler was not ordered trimmed for the lesser pressure.
- K)** Feed Water Regulators with piped bypasses are optional for hot water heating boilers with approved low-water fuel cutoffs and/or flow switches installed. Alternative methods of providing make-up water or hydronic fluids are permitted. Back-flow protection to meet State Plumbing Code is required.
- L)** If more than one boiler is connected to a system, they must each be equipped with main stops on the discharge and return side, in such a manner not affecting operation of any other boiler.
- M)** A condensate neutralizer kit is strongly recommend on all exhaust drains from high efficiency boilers and water heaters.
- N)** To notify the Boiler Inspection Department of a new installation, please submit the Boiler or Water Heater Installation Form (SFN59530) available on our website. <https://deq.nd.gov/Director/BIP/>
- O)** The owner or user shall install a carbon monoxide (CO) detector/alarm in equipment rooms where fuel fired boilers and/or pressure vessels are located in accordance with the authority having Jurisdiction.
- If you have questions please call: Chief Inspector Trevor Seime-Bismarck (701)-220-4723, Deputy Inspector Nicolle Fowler-Fargo (701) 541-2113, Deputy Inspector Karissa Albaugh-Bismarck (701) 400-1043, Deputy Inspector Craig Machart-Grand Forks (701) 781-0528