

# Small Commercial HVAC Alterations

## Packaged Units — Single-zone, Constant Air Volume (CAV) — and Split Systems

Change this (and nothing else)	Mandatory Measures								Prescriptive Requirements					
	Tstat §110.2(c) §120.2 (a), (b), (c) & (e)	Supply & Exhaust Dampers (ventilation provided by HVAC) §120.2(f)	Min. Cooling Efficiency §110.2(a)	Min. Heating Efficiency §110.2(a)	Ventilation Calcs (NRCC- MCH-03-E) §120.1	Demand Control Ventilation <sup>A</sup> §120.1(c) 3 & 4	Duct Insulation §120.4	Demand Shed Controls <sup>B</sup> §120.2	Cooling Load Calcs §140.4(b)	Heating Load Calcs §140.4(b)	Equipment Sizing (per load calcs) §140.4(a)	Fan Power <sup>C</sup> §140.4(c)	Econo- mizer <sup>D</sup> §140.4(e)	Duct Seal & Test <sup>E</sup> §140.4(l), 140.9(b)2E
Whole Pkg Unit Or split system NO DUCTS	YES	YES	YES	YES	YES	YES <sup>A</sup>	NO	YES <sup>B</sup>	YES	YES	YES	YES <sup>C</sup>	YES <sup>D</sup>	YES <sup>E</sup>
Cooling Coil of Packaged System	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES <sup>E</sup>
Split System, Outdoor Unit	YES	NO	YES	YES <sup>F</sup>	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES
Split System, Indoor Unit	YES	NO	YES	YES <sup>F</sup>	NO	NO	NO	NO	NO	NO	YES	NO	NO	YES
Ductwork <sup>G</sup>	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	YES <sup>E</sup>
≥75% new ducts and Whole Pkg Unit and Split System	YES	YES	YES	YES	YES	YES <sup>A</sup>	YES	YES <sup>B</sup>	YES	YES	YES	YES <sup>C</sup>	YES <sup>D</sup>	YES <sup>E</sup>

**NOTE:** ✦ For Nonresidential HVAC systems, a change in blower motor, compressor, condenser coil, or plenum is considered a repair and does not trigger the Title 24, Part 6 Standards.

- <sup>A</sup> If system is single-zone with any controls or multi-zone with direct digital control, and has airside economizer, and serves a high-density space (≥25 people per 1,000 ft<sup>2</sup>)
- <sup>B</sup> Only required if the altered unit has direct digital controls (DDC) to the zone level.
- <sup>C</sup> If total system fan power is >25 hp
- <sup>D</sup> If >54,000 Btu/h cooling capacity (4.5 tons)
- <sup>E</sup> If CAV single-zone system and serves <5,000 ft conditioned floor area and >25% duct surface in unconditioned space including under a roof that does not meet current prescriptive insulation requirements.
- <sup>F</sup> If split system operates as a heat pump, heating efficiency must meet mandatory requirements in §110.2.
- <sup>G</sup> Check with your local building department to see if changes to duct work only will require a permit.

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## Acceptance Tests: Packaged Units — Single-zone, Constant Air Volume (CAV) — and Split Systems

Change this (and nothing else)	2013-NRCA-MCH-02-A: Ventilation Systems  Adequate OSA (when ventilation provided by HVAC)	2013-NRCA-MCH-03-A: Constant-volume, Single- zone Unitary A/C and HP Temperature Scheduling & Controls for DX units  Proper system temperature scheduling & controls for DX units	2013-NRCA-MCH-04-H: Air Distribution Systems  Duct leakage rate	2013-NRCA-MCH-05-A: Air Economizer Controls  Proper operation of economizer controls	2013-NRCA-MCH-06-A: Demand Control Ventilation  Proper operation of DCV controls	2013-NRCA-MCH-11-A: Demand Shed Controls  Demand response
Whole package unit	YES	YES	YES <sup>A</sup>	YES <sup>B</sup>	YES <sup>C</sup>	YES <sup>D</sup>
Cooling coil	NO	NO	YES	NO	NO	NO
Entire Split System	YES	YES	YES	YES	YES	YES
Ductwork <sup>E</sup>	NO	NO	YES <sup>A</sup>	NO	NO	NO
≥75% new ducts and Whole Pkg Unit and Split System	YES <sup>B</sup>	YES	YES <sup>A</sup>	YES <sup>B</sup>	YES <sup>C</sup>	YES <sup>D</sup>

**NOTE:** ✦ For Nonresidential HVAC systems, a change in blower motor, compressor, condenser coil, or plenum is considered a repair and does not trigger the Title 24, Part 6 Standards.

<sup>A</sup> If ducts are for a single-zone CAV unit serving <5,000 ft, and if >25% duct surface area in unconditioned space

<sup>B</sup> If the system has an economizer, and it is NOT factory installed and CEC certified

<sup>C</sup> If system is single-zone with any controls or multi-zone with direct digital control, and has airside economizer, and serves a high-density space (≥25 people per 1,000 ft<sup>2</sup>)

<sup>D</sup> The acceptance test requirement only applies if the unit has DDC controls.

<sup>E</sup> Check with your local building department to see if changes to duct work only will require a permit.