

2008 Title 24 Requirements for HVAC Alterations to Existing Homes (i.e., Change-outs and Cut-ins)

Title 24 Requirement Applies in	Split Systems Only – Package Units Exempt						
	¹ Mandatory Measures	² Setback T-Stat	³ Duct R-value	⁴ Duct Sealing*	⁵ Refrigerant Charge*	⁶ Minimum Airflow*	⁷ Maximum Fan Wattage*
Scope of Alteration(s)	All Climate Zones			CZ's 2, 9-16	CZ's 2, 8-15	If AC installed: CZ's 10-15	
Install a “completely new” system*** (equipment, ducts, etc.)	✓	✓	Package D min	✓ <6%	✓	350 CFM/ton	0.58 Watts/CFM
Add or replace package unit (gas or heatpump)	✓	✓	N/A	✓ <15%**	N/A	N/A	N/A
Add or replace air handler (furnace, fan coil, etc.)	✓	✓	N/A	✓ <15%**	✓	N/A	N/A
Add or replace condenser	✓	✓	N/A	✓ <15%**	✓	N/A	N/A
Add or replace cooling coil	✓	✓	N/A	✓ <15%**	✓	N/A	N/A
Add or replace heating coil (e.g., hydronic coil)	✓	✓	N/A	✓ <15%**	✓	N/A	N/A
Replace furnace heat exchanger	✓	✓	N/A	✓ <15%**	✓	N/A	N/A
Add or replace more than 40' of ducts in unconditioned space	✓	N/A	Package D min	✓ <15%**	N/A	N/A	N/A
Add or replace less than 40' of ducts in unconditioned space	✓	N/A	R-4.2 or higher	N/A	N/A	N/A	N/A

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✓ = Required if not exempt, see notes on next page.

* Requires third party verification by a certified HERS rater.

** Or alternative method (10% to outside, 60% reduction, Sealing All Accessible Leaks)

*** A “completely new” system (e.g., a cut-in or complete replacement) can include leftover parts of the original duct system if they are accessible and can be sealed (e.g., register boots) See Residential Compliance Manual (CEC-400-2008-016-CMF) Section 8.4.2

IMPORTANT: SEE NUMBERED NOTES ON NEXT PAGE.

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Notes:

1. **Mandatory Measures:** Any altered components of the heating and cooling system must meet the same mandatory requirements that apply to new construction. For more information see the appropriate sections of the 2008 Residential Compliance Manual (CEC-400-2008-016-CMF) and the MF-1R Form. These mandatory requirements include some or all of the following:
 - a. Equipment efficiency (enforced at time of sale)
 - b. Special heat pump controls
 - c. Heating and cooling load calculations (ACCA, ASHRAE or SMACNA)
 - d. Standby losses and pilot lights (water heaters)
 - e. Pipe insulation and refrigerant line insulation
 - f. Minimum duct insulation
 - g. Duct connections and closures (UL tapes and mastics, no unducted cavities)
 - h. Product markings for flexible ducts
 - i. Dampers to prevent air leakage (exhaust fans)
 - j. Protection of insulation
 - k. Setback thermostats (see # 2 below)
2. **Setback T-Stats:** Existing thermostats must be changed out to approved digital setback type thermostats when certain major components are changed out in an existing system.
3. **Duct R-Value:** When more than 40 feet of duct is installed or replaced in unconditioned space the insulation requirement is consistent to “Component Package D” (Table 151-D), which requires the following: R-4.2 in climate zones 6, 7, and 8. R-6 in climate zones 1-5 and 9-13. R-8 in climate zones 14, 15, and 16.
4. **Duct Sealing:** Target duct leakage is expressed as a percent of total system fan flow (400 cfm per ton of the condenser is one approved way to estimate system fan flow). Note: Table 8-3 Alternative to duct sealing that provided for upgrading equipment efficiency in lieu of sealing the ducts is no longer allowed. This test requires completion of a CF-6R-MECH-20-HERS when the target leakage is <6% or the CF-6R-MECH-21-HERS when the target leakage is <15%. **Exemptions include: systems with less than 40 of ducts in UNconditioned space, systems with a previous CF-4R for duct testing, ducts insulated or sealed with asbestos.**
5. **Refrigerant Charge:** Proper refrigerant charge must be verified by a HERS rater. If the installing contractor is concerned about a HERS rater checking refrigerant on a system that they installed, the CEC has developed a non intrusive way to check refrigerant charge that uses temperature probes (pre-installed by the contractor) rather than a pressure gauge, these are mandatory for completely new systems, but not change outs. For more information see the 2008 Reference Appendices Section RA3.2 (CEC-400-2008-004-CMF) and 2008 Res Compliance Manual Section 4.3.2. This test requires completion of a CF-6R-MECH-25-HERS when the outside temperature is ≥ 55 degF or the CF-6R-MECH-26-HERS when the outside temperature is < 55 degF. **Exemptions include: unducted systems, systems without A/C, package units, systems with a charge indicator display (CID) installed.**
6. **Minimum Airflow:** This is an important part of air conditioning efficiency and performance. Measurement of airflow is done at the return. There are three approved methods for measuring airflow. The simplest and most common method is by using a flow hood. For more information see 2008 Reference Appendices Section RA3.3 (CEC-400-2008-004-CMF). This test requires completion of a CF-6R-MECH-22-HERS. **Exemptions include: unducted systems, systems without A/C, package units.**
7. **Air Handler Fan Watt Draw:** This is another important factor affecting air conditioning efficiency and performance. Fan watt draw is measured and divided by the measure airflow. The resulting watts/cfm must be less than 0.58. For more information see 2008 Reference Appendices Section RA3.3 (CEC-400-2008-004-CMF). This test requires completion of a CF-6R-MECH-22-HERS. **Exemptions include: unducted systems, systems without A/C, package units.**