

## DUCTS - SEALING

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### Mechanically Fasten Duct

Sections of metal duct should be mechanically fastened together after taping seams with UL 181 duct tape. Use sheet metal screws for rigid duct seams and compression straps for flex duct. Duct tape sealed with mastic is also acceptable.

**Code Reference:** 2013 Title 24, Part 6 Standards §120.4(a)

**CODE**



NR-H-DS2

### Sealed Openings

All openings need to be sealed with mastic, tape, aerosol sealant, or other duct-closure systems meeting requirements. Sealants should be non-toxic and water resistant, and must comply with UL 181.

Particularly check traverse joints, longitudinal seams and duct wall penetrations. Air handlers and filter boxes should also be checked.

**Code Reference:** 2013 Title 24, Part 6 Standards §120.4(a) and 120.4(b)

**CODE**



NR-H-DS3

### Drawbands

Drawbands on flexible ducts must be stainless steel worm-drive hose clamps or UV resistant nylon duct ties. Tighten as recommended by the manufacturer with adjustable tensioning tool.

**Code Reference:** 2013 Title 24, Part 6 Standards §120.4(b)2B

**CODE**



NR-H-DS4

### Reinforce Gaps and Seams with Mesh

Openings greater than ¼" must be sealed with either duct tape and mastic, or mesh and mastic. Duct tape may not be used to seal plenums or junction box joints.

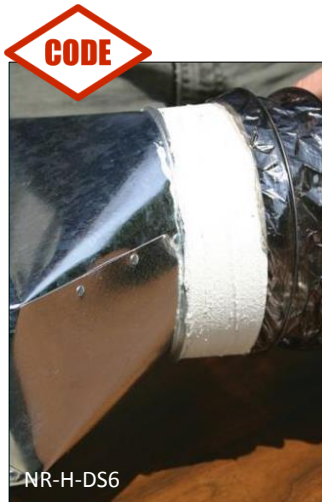
**Code Reference:** 2013 Title 24, Part 6 Standards §120.4(a) and 120.4(b)

## DUCTS – SEALING

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CEC Form NR-H-DS5 (Revised 06/13)	
CERTIFICATE OF ACCEPTANCE	
DUCT LEAKAGE	
Project Name:	Enforcement Agency:
Project Address:	City:
<small>Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance. HERS verification required.</small>	
<small>This form used for duct pressure test and to certify low leakage air handlers. Fill out to determine if this is a New Duct System (fill out Section B), an Altered Space Condition (Section C), or if the compliance software requires Low Leakage Air-Handling Unit Verification (Section D).</small>	
A. System Information	
01	HVAC System Identification or Name:
02	HVAC System Location or Area Served:
03	Was Low Leakage Air-handling Unit Credit taken on MECH-1C?
04	Duct System Construction Type:
05	Condenser Nominal Cooling Capacity (ton)
06	Heating Capacity (kBtu/h)

NR-H-DS5



### CMC Compliance

All air distribution system ducts and plenums are to be installed, sealed, and insulated to meet requirements of 2010 CMC.

**Code Reference:** California Mechanical Code §120.4.



### Seal Duct Boot to Subfloor

Duct boots can be completely sealed with mesh and mastic. Sealing is required around register boots if air could escape to unconditioned space. Foil tapes, butyl backed tapes or caulks can also be used.

### Notes:

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NR-H-DD1

### Factory Fabricated Duct Systems

Closure systems including collars, connections, and splices must comply with UL 181 and include a label showing compliance.

**Code Reference:** 2013 Title 24, Part 6 Standards §120.4(b)

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NR-H-DD2

### Pressure Sensitive Closure Systems

All pressure sensitive tapes, heat-activated tapes, mastics, aerosol sealants used in the manufacture or field fabrication of duct systems must be UL 181 compliant.

**Code Reference:** 2013 Title 24, Part 6 Standards §120.4(b)

### CODE



NR-H-DD3

### Securing Metal Ducts

**Horizontal:** Ducts need to be fastened in place at each change of direction.

**Code Reference:** 2013 California Mechanical Code §602.4

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NR-H-DD4

**Vertical:** Ducts need to be held in place by means of metal straps or angles and channels to secure the riser to the structure.

**Code Reference:** 2013 California Mechanical Code §602.4

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NR-H-DD5

### Joining Round Ducts

Crimp joints for round ducts need a contact lap of 1.5 inches or more and need to be secured by three or more mechanically fastened by 3 or more sheet-metal screws equally spaced around the joint (or equivalent fastening method).

**Code Reference:** 2013 California Mechanical Code §602.4

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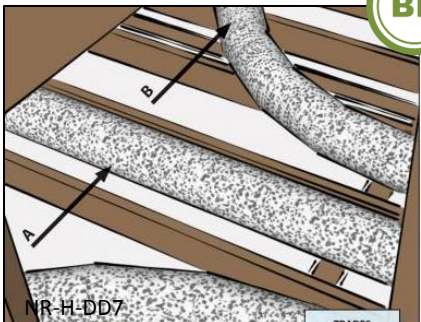
NR-H-DD6

### Automatic Dampers

Motorized or gravity dampers installed on large exhaust systems reduce infiltration by closing when the system is not in use. Dampers are required for exhaust systems with a design capacity greater than 300 cfm that operate intermittently.

**Code Reference:** 2013 Title 24, Part 6 Standards §120.1(e)1

### BP

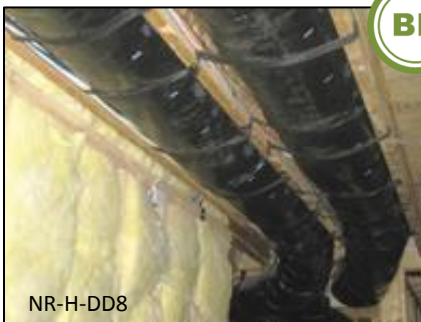


NR-H-DD7

### Short Duct Runs

Keep supply duct runs short and as straight as possible. Avoid sharp turns (such as around framing), which can cause a kink in ductwork. When using flex duct, use rigid elbows for sharp bends and seal appropriately to the flex duct. The more turns and longer the duct runs, the less efficient the system is at delivering conditioned air.

### BP

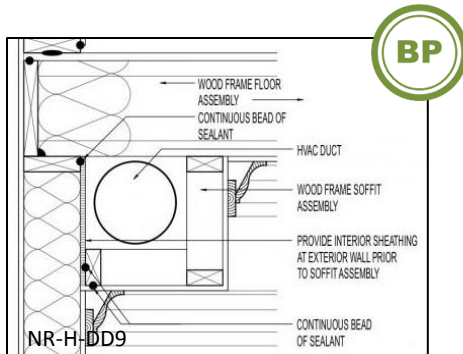


NR-H-DD8

### Support Ducts

**Flex Ducts:** Horizontal flex duct runs should be supported every 4ft and vertical flex runs every 6 ft. There should not be more than 2in of sag.

## DUCTS - DISTRIBUTION



### Conditioned Space

Keep ducts within the conditioned space if possible. Rather than run ducts in the unconditioned space, locate ducts in a fully enclosed dropped soffit or run ductwork through interim floor cavities with well sealed rim joists.



### Do Not Use Building Cavities used as Plenums

Do not use building cavities as plenums. Properly insulate and seal cavities if used for supply or return air.

## DUCTS – DISTRIBUTION

**Notes:** \_\_\_\_\_

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## DUCTS - INSULATION



### Insulation Protection

Protect duct insulation from damage, including sunlight, moisture, equipment maintenance and wind. When insulation will be exposed to weather, physically protect with aluminum, sheet metal, painted canvas, or plastic cover.

**Code Reference:** 2013 Title 24, Part 6 Standards §120.4(f)



### R-Values

Verify that supply and return ducts and plenums have been insulated to the specified R-value in accordance with the approved mechanical plans/schedule.

Use a minimum installed level of R-8 when supply-air and return-air ducts are located outdoors, between the roof and insulated ceiling, directly under a roof with fixed vents or openings to the outside or unconditioned spaces, unconditioned crawlspace, or other unconditioned spaces.

A value of R-4.2 is acceptable when supply air ducts are not in one of the above spaces, such as ducts buried in slab. Otherwise ducts must be enclosed in directly conditioned space.

**Code Reference:** 2013 Title 24, Part 6 Standards §120.4(a)



### Cellular Foam Insulation

Cellular foam insulation – Needs to be protected like other insulation or painted with a coating that is water retardant and provides shielding from solar radiation.

**Code Reference:** 2013 Title 24, Part 6 Standards §120.4(f)

## DUCTS – INSULATION

**Notes:**

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