

Washington State Department of Labor & Industries

Electrical Program



Electrical Laws & Rules

- *Licensing*
- *Work Scope*
- *Administrator Duties*
- *Certification*
- *Supervision*

- **RCW 19.28**
- **WAC 296-46B**

- *Permits*
- *Inspections*
- *Access*
- *Description*
- *Directions*
- *Comments*



Electrical Program



Washington State Department of
Labor & Industries
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RCW-The Law

Revised Code of Washington

**19.28 ELECTRICIANS AND ELECTRICAL
INSTALLATIONS**

WAC-The Rules

Washington Administrative Code

**296-46B ELECTRICAL SAFETY
STANDARDS, ADMINISTRATION, AND
INSTALLATION**



History

- **Pre 1985**
 - All HVAC work must be done by a licensed electrical contractor. Appropriate certifications were: 01, 02, 06, 07.
- **1985**
 - Electrical Board policy allows a registered HVAC contractor to install one thermostat in 1- and 2-family dwellings.



History

■ 1985-1997

- Revisions to Electrical Policy 85-04 allow registered HVAC/R contractors to install low voltage, Class 2 control circuit cables exclusively for HVAC/R equipment in buildings that do not exceed three floors.



History

■ 1998 - 1999

- Illegal policies abolished by the Electrical Board.
- HVAC industry chooses to create the Limited Energy HVAC Technician (06A) Effective March 15, 1999



History

■ 1999

– Original (06A) scope-of-work limited to:

- Components within HVAC equipment—both line and low voltage.
- Low voltage control systems in buildings that do not exceed three floors.



History

■ 2001

- HVAC/R Definitions added
- The HVAC/R scope-of-work expanded to allow the HVAC industry to disconnect and reconnect line voltage supply whips not over six feet in length.
- (Allows equipment to be replaced like-in-kind)



History

- **2003 – HVAC/R Scope Expands**
 - Some line voltage replacement work in external disconnecting means.
 - Repair and replacement of components regardless of number of floors in building.
 - Included work on equipment operating above 600 volts.



History

■ **2003 – HVAC/R 06B Scope**

- HVAC/R restricted (06B) created.
- One year (2000 hours) instead of two years experience required.
- Reduced training under supervision (1000 hours) before testing and working alone.
- Reduced scope (1Ø, 250 V, 120 A) and easier examinations.



History

- **2006 – HVAC/R 06A Scope**
 - **Added Scope—This specialty may:**
 - Install a bonding conductor for metal gas piping to an existing accessible grounding electrode conductor or grounding electrode only when terminations can be made external to electrical panelboards, switchboards, or other distribution equipment.



Scope of Work

WAC 296-46B-920(f)

Both 06A and 06B may:

- Install low voltage Class 2 HVAC wiring in all residential occupancies.
- Install, repair, replace, maintain line voltage components within HVAC/R equipment.
- Install, repair, replace, maintain line voltage components within HVAC/R external disconnects, not in a panelboard or motor control center.



Scope of Work

WAC 296-46B-920(f)

Both 06A and 06B may:

- Install short sections (not systems) of raceway for physical protection or access (sleeves) of LV cables.
- Repair, replace, maintain supply whips not over 6 feet, with same size wire. No restrictions on replacement wiring method.



Scope of Work

WAC 296-46B-920(f)

Both 06A and 06B may NOT:

- Install line voltage controllers or disconnects.
- Install, repair, replace, maintain:
 - Non-HVAC/R controls
 - Stand-alone line voltage heating equipment
 - Raceway systems
 - Services, feeders or branch circuits. (Conductors between split system outdoor and indoor unit is a branch circuit)



Washington State Department of
Labor & Industries
Electrical Program



Scope of Work

WAC 296-46B-920(f)

Both 06A and 06B may NOT:

Install panelboards, switchboards, motor control centers, or disconnects external to the HVAC/R unit.



Scope of Work

WAC 296-46B-920(f)

06A specialty:

- Not limited by voltage, phase, or amperage.
- Install HVAC/refrigeration Class 2 low-voltage control circuit wiring-components in non-residential occupancies that have no more than 3 stories above grade.



Scope of Work **WAC 296-46B-920(f)**

06A specialty:

No 3 story limit for install of HVAC/R Class 2
low- voltage control circuit wiring/components if:
It does not pass between stories, and
done in previously occupied space (i.e. tenant
improvement work)



Scope of Work **WAC 296-46B-920(f)**

06A specialty:

- Repair, replace, and maintain HVAC/R Class 2 low-voltage control circuit wiring-components in all occupancies regardless of the number of floors.
- No work in hazardous locations except inside the HVAC/R equipment.



Scope of Work

WAC 296-46B-920(f)

06B specialty:

Limited to HVAC/R systems 1Ø, 250 volt, 120 amps maximum.

Limited in non-residential occupancies to no more than 3 stories above grade.

No work in raceway systems.

No work in hazardous locations.



RCW 19.28.041-Contractor License Required

It is unlawful for any person, firm, partnership, corporation, or other entity to engage in, conduct, or carry on the business of installing or maintaining wires or equipment to convey electric current, or installing or maintaining equipment to be operated by electric current as it pertains to the electrical industry, without having an unrevoked, unsuspended, and unexpired electrical contractor license, issued by the department in accordance with this chapter. (Certified electricians are not allowed to do side jobs unless they are a licensed electrical contractor)



RCW 19.28.061-Administrator Duties and Requirements

- **Duties:**
 - Available during working hours.
 - Ensure all work complies with state electrical laws and rules.
 - Ensure proper electrical safety procedures are used.
 - Ensure all electrical labels, permits, and licenses are used.
 - Ensure all corrections are completed.
 - Notify department within 10 days of leaving a contractor.



Yellow Stripe

- Specialty certificates
 - No supervision required
 - Limited work scope

Green Stripe

- General certificates
 - No supervision required
 - Unlimited work scope

Red Stripe

- Training certificates
 - Supervision required
 - Work scope limited by supervising electrician



Issued by DEPARTMENT OF LABOR AND INDUSTRIES

Certified as provided by Law as:

Master Electrician

(ME06) - LIMITED ENERGY

(ME6A) - HVAC/RFRG LTD ENERGY

XXA*CCR961DD

Eff Date: 3/1/2004

Exp Date: 3/23/2013

Duck, Donald D

123 Storybook Lane

VANCOUVER, WA 98666



RCW 19.28.161-Certificates of Competency and Trainees

- Supervision means under the control and on the same jobsite as the certified electrician 75% of each working day.
 - Ratio for specialty work: 1 certified electrician to 2 trainees.
 - See WAC 296-46B-100 Definitions of “supervision” and “jobsite”.



WAC 296-46B-100 Definitions

- **“Supervision”** for the purpose of supervising electrical trainees, means that the appropriately certified supervising electrician is on the same jobsite as the trainee being supervised. The trainee is not considered to be on the same jobsite if the supervising electrician and the trainee are working:
 - (a) In separate buildings at a single address (e.g. a campus, multi-building industrial complex, multi-building apartment complex, etc.) except for a single family residence; or
 - (b) On an outdoor project (e.g. irrigation system, farm, street lighting, traffic signalization, etc.) where the trainee is more than 1,000’ from the supervising electrician or where the trainee is more than 200’ from the supervising electrician and out of sight.
- **“Jobsite”** means a specific worksite having a single address or specific physical location (e.g. a single family residence, a building, a structure, a marina, an individual apartment building with a specific address, etc.)



Washington State Department of
Labor & Industries

Electrical Program



Training certificate renewal:



Electrical trainees are required to have 48 hours of basic classroom education to renew.

<http://www.lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/Education/TraineeClasses/default.asp>



WAC 296-46B-945 Qualifying for examination

- (1)-(13) All details about qualifying for journeyman, specialty, and master electrician examinations have been grouped into this article.
- Qualifying experience for specialty examinations is detailed in Table 945-1.



Washington State Department of Labor & Industries

Electrical Program



Table 945-1 Experience Hours

| Specialty | Minimum Hours of Work Experience Required to be Eligible for Examination ^{(4) (5) (9)} | Minimum Hours of Work Experience Required for Certification ⁽⁸⁾ |
|---|---|--|
| Residential certificate (02) | 4,000 ⁽³⁾ | 4,000 |
| Pump and irrigation certificate (03) | 4,000 ⁽³⁾ | 4,000 |
| Domestic well certificate (03A) | 720 ^{(1) (2)} | 2,000 ⁽⁶⁾ |
| Signs certificate (04) | 4,000 ⁽³⁾ | 4,000 |
| Limited energy system certificate (06) | 4,000 ⁽³⁾ | 4,000 |
| HVAC/refrigeration certificate (06A) | 4,000 ⁽³⁾ | 4,000 ⁽⁷⁾ |
| HVAC/refrigeration-restricted certificate (06B) | 1,000 ^{(1) (2)} | 2,000 ⁽⁶⁾ |
| Nonresidential maintenance certificate (07) | 4,000 ⁽³⁾ | 4,000 |
| Nonresidential lighting maintenance and lighting retrofit certificate (07A) | 720 ^{(1) (2)} | 2,000 ⁽⁶⁾ |
| Residential maintenance certificate (07B) | 720 ^{(1) (2)} | 2,000 ⁽⁶⁾ |
| Restricted nonresidential maintenance certificate (07C) | 1,000 ^{(1) (2)} | 2,000 ⁽⁶⁾ |
| Appliance repair certificate (07D) | 720 ^{(1) (2)} | 2,000 ⁽⁶⁾ |
| Equipment repair certificate (07E) | 1,000 ^{(1) (2)} | 2,000 ⁽⁶⁾ |
| Door, gate, and similar systems certificate (10) | 720 ^{(1) (2)} | 2,000 ⁽⁶⁾ |



WAC 296-46B-970 Continuing education courses

- (1)-(21) All requirements for continuing education for administrators, master electricians, and electricians are located in this article.
- Certificate renewal requires:
 - 8 hours per year X 3 years = 24 hours
 - 8 hours must be National Electrical Code update
 - 4 hours must be RCW/WAC update
 - Remaining can be any approved industry related class



RCW 19.28.101-Corrections- Inspections-Entry-Permit Fees

- Corrections must be completed within 15 days, unless additional time is requested and approved.
- Inspectors may disconnect dangerous or unsafe wiring and must post notice.
- Illegal to reconnect until repaired and approved.



WAC 296-46B-901 Permits- responsibility

- Electrical work permits must be obtained and posted at the job site prior to beginning the installation or alteration.



WAC 296-46B-901 Permits- requirements for

- **Class A work exempt from permits**: the like-in-kind replacement of lamps; **a single set of fuses**; a single battery smaller than 150 amp hour; **contactors, relays, timers, starters, circuit boards, or similar control components**; one household appliance; circuit breakers; single family residential luminaires; a maximum of five snap switches, dimmers, receptacle outlets, **thermostats, heating elements**, luminaire ballasts with an exact same ballast; component(s) of electric signs, outline lighting, or skeleton neon tubing when replaced on-site by an appropriate electrical contractor and when the sign, outline lighting or skeleton neon tubing electrical system is not modified; **ten horsepower or smaller motor**.




WAC 296-46B-100 "Like in kind"

- "Like-in-kind" means having similar characteristics such as voltage requirement, current draw, circuit overcurrent and short circuit characteristics, and function within the system and being in the same location. Like-in-kind also includes any equipment component authorized by the manufacturer as a suitable component replacement part.



WAC 296-46B-908 Class B random electrical inspection

- Only sold to contractors, healthcare or large commercial/industrial facilities w/certified electricians.
- Validate the label online and affix on jobsite before beginning work.
- Sold in blocks of twenty.

| | | |
|---|--------|--|
|  | | Class B Basic Electrical Work Label |
| B 000400001 | | |
| Use permanent marker and write clearly. Clean and dry surface before adhering. | | |
| This label is only valid after user enters information for this jobsite into Electronic Permit & Inspection System (EPIS) using Secure Access Washington (SAW). | | |
| Validation Date | | |
| Date of work | | |
| Elec Contractor Name | | |
| Elec Contractor License # | | |
| Installing Electrician Certificate # | | |
| Site Address | | |
| City | County | |
| Job site owner name and phone #(to arrange inspection) | | |
| Description of work | | |
| F500-089-000 Class B Basic Electrical Work Label 03-2013 | | |



WAC 296-46B-908 Class B random electrical inspection

- Like-in-kind replacement of:
 - A motor over 10 HP.
 - Internal wiring of a furnace, AC unit, or refrigeration unit.
 - A furnace not over 240V, 100A. (Not a boiler).
 - An AC, heat pump, or refrigeration unit not over 240V, 40A.
 - Installation of devices or wiring for Class 2 or 3 thermostat.



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Our Website

www.ini.wa.gov

Verify a contractor's
or tradesperson's license.

Look up an employer's
workers' comp account.



Questions? Email ElectricalProgram@Ini.wa.gov

WAC 296-46B-100 General definitions.

HVAC/refrigeration specific definitions:

- (a) "**HVAC/refrigeration**" means heating, ventilation, air conditioning, and refrigeration.
- (b) "**HVAC/refrigeration component**" means electrical power and limited energy components within the "**HVAC/refrigeration system**," including, but not limited to: Pumps, compressors, motors, heating coils, controls, switches, thermostats, humidistats, low-voltage damper controls, outdoor sensing controls, outside air dampers, stand-alone duct smoke detectors, air monitoring devices, zone control valves and equipment for monitoring of HVAC/refrigeration control panels and low-voltage connections. This definition excludes equipment and components of non-"HVAC/refrigeration control systems."
- (c) "**HVAC/refrigeration control panel**" means an enclosed, manufactured assembly of electrical components designed specifically for the control of a HVAC/refrigeration system. Line voltage equipment that has low voltage, NEC Class 2 control or monitoring components incidental to the designed purpose of the equipment is not an HVAC/refrigeration control panel (e.g., combination starters).
- (d) "**HVAC/refrigeration control system**" means a network system regulating and/or monitoring a HVAC/refrigeration system. Equipment of a HVAC/refrigeration control system includes, but is not limited to: Control panels, data centers, relays, contactors, sensors, and cables related to the monitoring and control of a HVAC/refrigeration system(s).
- (e) "**HVAC/refrigeration equipment**" means the central unit primary to the function of the "HVAC/refrigeration system." HVAC/refrigeration includes, but is not limited to: Heat pumps, swamp coolers, furnaces, compressor packages, and boilers.
- (f) "**HVAC/refrigeration system**" means a system of HVAC/refrigeration: Wiring, equipment, and components integrated to generate, deliver, or control heated, cooled, filtered, refrigerated, or conditioned air. This definition excludes non-HVAC/refrigeration control systems (e.g., fire alarm systems, intercom systems, building energy management systems, and similar non-HVAC/refrigeration systems)

"**Jobsite**" means a specific worksite having a single address or specific physical location (e.g. a single family residence, a building, a structure, a marina, an individual apartment building with a specific address, etc.)

"**Supervision**" for the purpose of supervising electrical trainees, means that the appropriately certified supervising electrician is on the same jobsite as the trainee being supervised. The trainee is not considered to be on the same jobsite if the supervising electrician and the trainee are working:

- (a) In separate buildings at a single address (e.g. a campus, multi-building industrial complex, multi-building apartment complex, etc.) except for a single family residence; or
- (b) On an outdoor project (e.g. irrigation system, farm, street lighting, traffic signalization, etc.) where the trainee is more than 1,000' from the supervising electrician or where the trainee is more than 200' from the supervising electrician and out of sight.

WAC 296-46B-920 Electrical/telecommunications license/certificate types and scope of work.

(2)(f) HVAC/refrigeration systems:

- (i) See WAC [296-46B-100](#) for specific HVAC/refrigeration definitions.
- (ii) For the purposes of this section when a component is replaced, the replacement must be like-in-kind or made using the equipment manufacturer's authorized replacement component.
- (iii) The HVAC/refrigeration specialties described in (f)(v) and (vi) of this subsection **may**:
 - (A) Install HVAC/refrigeration: Telecommunications, Class 2 low-voltage control circuit wiring/components in all residential occupancies;
 - (B) Install, repair, replace, and maintain line voltage components within HVAC/refrigeration equipment. Such line voltage components include product illumination luminaires installed within and powered from the HVAC/refrigeration system (e.g., reach-in beverage coolers, frozen food cases, produce cases, etc.) and new or replaced factory authorized accessories such as internally mounted outlets;
 - (C) Repair, replace, or maintain the internal components of the HVAC/refrigeration equipment disconnecting means or controller so long as the disconnecting means or controller is not located within a motor control center or panelboard;
 - (D) Install, repair, replace, and maintain short sections of raceway to provide physical protection for low-voltage cables. For the purposes of this section a short section cannot mechanically interconnect two devices, junction boxes, or other equipment or components; and

- (E) Repair, replace, or maintain line voltage flexible supply whips not over six feet in length, provided there are no modifications to the characteristics of the branch circuit/feeder load being supplied by the whip. There is no limitation on the whip raceway method (e.g., metallic replaced by nonmetallic).
- (iv) The HVAC/refrigeration specialties described in (f)(v) and (vi) of this subsection **may not**:
- (A) Install line voltage controllers or disconnect switches external to HVAC/refrigeration equipment;
- (B) Install, repair, replace, or maintain:
- Integrated building control systems, other than HVAC/refrigeration systems;
 - Single stand-alone line voltage equipment or components (e.g., heat cable, wall heaters, radiant panel heaters, baseboard heaters, contactors, motor starters, and similar equipment) unless the equipment or component:
 - Is exclusively controlled by the HVAC/refrigeration system and requires the additional external connection to a mechanical system(s) (e.g., connection to water piping, gas piping, refrigerant system, ducting for the HVAC/refrigeration system, gas fireplace flume, ventilating systems, etc. (i.e., as in the ducting connection to a bathroom fan)). The external connection of the equipment/component to the mechanical system must be required as an integral component allowing the operation of the HVAC/refrigeration system; or
 - Contains a HVAC/refrigeration mechanical system(s) (e.g., water piping, gas piping, refrigerant system, etc.) within the equipment (e.g., "through-the-wall" air conditioning units, self-contained refrigeration equipment, etc.);
 - Luminaires that serve as a building or structure lighting source, even if mechanically connected to a HVAC/refrigeration system (e.g., troffer luminaire used as a return air device, lighting within a walk-in cooler/freezer used for personnel illumination);
 - Raceway/conduit systems;
 - Line voltage: Service, feeder, or branch circuit conductors. However, if a structure's feeder/branch circuit supplies HVAC/refrigeration equipment containing a supplementary overcurrent protection device(s), this specialty may install the conductors from the supplementary overcurrent device(s) to the supplemental HVAC/refrigeration equipment if the supplementary overcurrent device and the HVAC/refrigeration equipment being supplied are located within sight of each other; or
 - Panelboards, switchboards, or motor control centers external to HVAC/refrigeration system.

(v) HVAC/refrigeration (06A):

- (A) This specialty is not limited by voltage, phase, or amperage.
- (B) No unsupervised electrical trainee can install, repair, replace, or maintain any part of a HVAC/refrigeration system that contains any circuit rated over 600 volts whether the circuit is energized or deenergized.
- (C) This specialty may:
- Install HVAC/refrigeration: Telecommunications, Class 2 low-voltage control circuit wiring/components in other than residential occupancies:
 - That have no more than three stories on/above grade; or
 - Regardless of the number of stories above grade if the installation:
 - Does not pass between stories;
 - Is made in a previously occupied and wired space; and
 - Is restricted to the HVAC/refrigeration system;
 - Repair, replace, and maintain HVAC/refrigeration: Telecommunications, Class 2 low-voltage control circuit wiring/components in all occupancies regardless of the number of stories on/above grade.
 - Install a bonding conductor for metal gas piping to an existing accessible grounding electrode conductor or grounding electrode only when terminations can be made external to electrical panelboards, switchboards, or other distribution equipment.
- (D) This specialty may not install, repair, replace, or maintain: Any electrical wiring governed under article(s) 500, 501, 502, 503, 504, 505, 510, 511, 513, 514, 515, or 516 NEC (i.e., classified locations) located outside the HVAC/refrigeration equipment.

(vi) HVAC/refrigeration restricted (06B):

- (A) This specialty may not perform any electrical work where the primary electrical power connection to the HVAC/refrigeration system exceeds: 250 volts, single phase, or 120 amps.
- (B) This specialty may install, repair, replace, or maintain HVAC/refrigeration: Telecommunications, Class 2 low-voltage control circuit wiring/components in other than residential occupancies that have no more than three stories on/above grade.
- (C) This specialty may not install, repair, replace, or maintain:
- The allowed telecommunications/low-voltage HVAC/refrigeration wiring in a conduit/raceway system; or
 - Any electrical work governed under article(s) 500, 501, 502, 503, 504, 505, 510, 511, 513, 514, 515, or 516 NEC (i.e., classified locations).