

Bulletin 2-9-4
Working space about electrical equipment
Rules 2-308, 2-310 and 2-312

Issued April 2010
 Supersedes Bulletin 2-9-3

Scope

- (1) Minimum working space around electrical equipment
 (2) Questions and answers about working space around electrical equipment
 (3) Entrance to and exit from the working space around electrical equipment

(1) Minimum working space around electrical equipment

The requirements of Rules 2-308 & 2-310 are particular to certain types of equipment (i.e. equipment with or without draw-out parts). To assist in application, the following table, Table B1 summarizes the application of each rule.

Table B1 – Minimum Working Space In Front of Equipment (Rules 2-308 and 2-310)

EQUIPMENT RATING	EQUIPMENT WITH DRAW-OUT PARTS	EQUIPMENT WITH NO DRAW-OUT PARTS
Below 1200 amps AND at 750 volts or less	1 m plus depth of all drawout parts of the equipment (see Note 1) Subrule 2-308(2)	1 m Subrule 2-308(1)
Either: At or above 1200 amps (regard- less of operating Voltage) OR Above 750 volts (regardless of Amperage rating)	1.5 m plus depth of all drawout parts of the equipment (see Note 1) Subrules 2-308(2) and 2-310(2)	1.5 m Subrule 2-310(2)
	1 m plus depth of all drawout parts of the equipment where possible to leave the room or space around the equipment without passing a potential failure point on path to exit (see Notes 1 & 2) Subrules 2-308(2) and 2-310(2)	1 m where possible to leave the room or space around the equipment without passing a potential failure point on path to exit (see Note 2) Subrule 2-308(2)

Note:

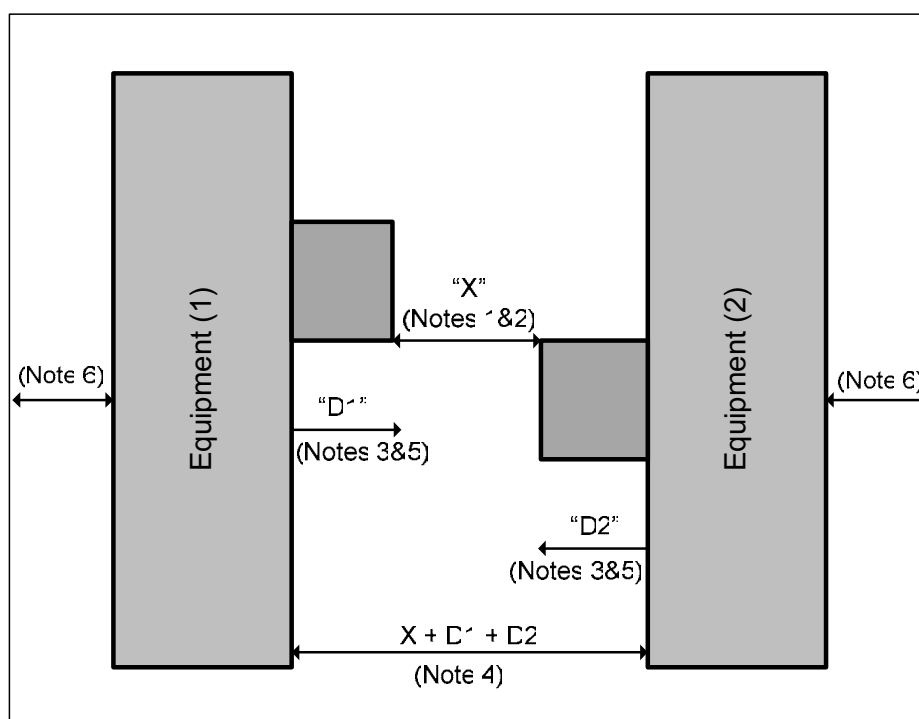
- The depth of draw-out parts required in the table above is based on the additional space that is required for the operation of draw-out type equipment in either the connected, test, or fully disconnected position and shall be sufficient for the opening of enclosure doors and hinged panels to at least 90°.

If the design of the equipment allows the draw-out parts to be in the connected, test, or fully disconnected position without opening the cell door, then no additional space shall be required for equipment draw-out and the measurements required by Rules 2-308 and 2-310 can be measured from the front face of the equipment.

- For equipments rated 1200A and higher or over 750V, Rule 2-310(2) requires the minimum working space about electrical equipment mentioned in Rule 2-308(1) to be increased from 1 m to 1.5 m if a person inside an electrical room or the space around electrical equipment can NOT leave the space without passing a potential failure point on path to exit.

Where space is restricted and the working space cannot be increased to 1.5 m, as mentioned in Appendix B, then a second exit (or more if needed) in the room in different locations shall be provided such that an individual can leave the space without passing a potential failure point on path to exit. Subrule 2-310(3) clarifies that the potential failure point is any point within or on the equipment

Figure B1 - Clarification of Table B1, Minimum required space around electrical equipment



Notes:

- Distance "X" shall be determined based on conditions shown on Table B1 above.
- In a case where equipments are installed facing each other, then distance "X" shall be considered the largest of clearances required by Table B1 (i.e. if "Equipment 1" has current and/or voltage ratings different than "Equipment 2" such that the required minimum clearance around each of them, based on Table B1, is different, the largest clearance measurement is required).
- Equipment manufacturer shall be consulted to get the distances of equipment draw out parts (referred to as "D1" and "D2").
- The total clearance (space) in front of the electrical equipment shall be the addition of distance "X" and both the depths of "D1" and "D2".
- If the equipment has no draw-out parts, no additional space shall be required, as referenced in Subrule 2-308(2).

- (6) No minimum dimension is required behind or on the side of electrical equipments if working space is not required by Subrule 2-308(1).

(2) Questions and answers about working space around electrical equipment

Question 1

Can a dry core transformer be installed (floor mounted) under a disconnect and panelboard fed from it?

Answer 1

No, the Code requires a minimum working space of 1 m (39") with secure footing be provided and maintained in front of electrical equipment such as panelboards (Rule 2-308(1)).

Question 2

Can a dry core transformer be installed (floor mounted) under a splitter that has disconnects located above and fed from it?

Answer 2

No, the Code requires a minimum working space of 1 m (39") with secure footing be provided and maintained in front of electrical equipment (Rule 2-308(1)).

Question 3

Can a dry core transformer be installed (floor mounted) under a splitter?

Answer 3

Yes. The Code requires a minimum working space of 1 m (39") with secure footing be provided and maintained in front of electrical equipment (Rule 2-308(1)). However, this requirement can be eased for equipments which have no renewable parts (such as fuses or switches) as in the case of a splitter installed above a floor mounted transformer, with no other switches or panelboards above the splitter.

Question 4

Does the Code permit placing an appliance such as a clothes dryer in front of an electrical panel?

Answer 4

No. The Code requires a minimum working space of 1 m (39") with firm footing be provided and maintained in front of electrical equipment such as panelboards. The Code also requires that working space around electrical equipment be kept clear of all obstructions. (Rules 2-308 and 2-310).

Question 5

When switchboard is used as service entrance equipment, what are the OESC minimum requirements for the headroom clearance? Is it 2.2 m as per Rule 2-308 or 2 m as per Rule 6-206?

Answer 5

OESC requires the headroom clearance to be at least 2 m for consumer's service equipment (as per Subrule 6-206(1)(c)). However, if that service equipment is a switchboard, where bare live parts are exposed at any time, then Subrule 2-308(4) shall apply and a headroom of 2.2 m is the minimum required.

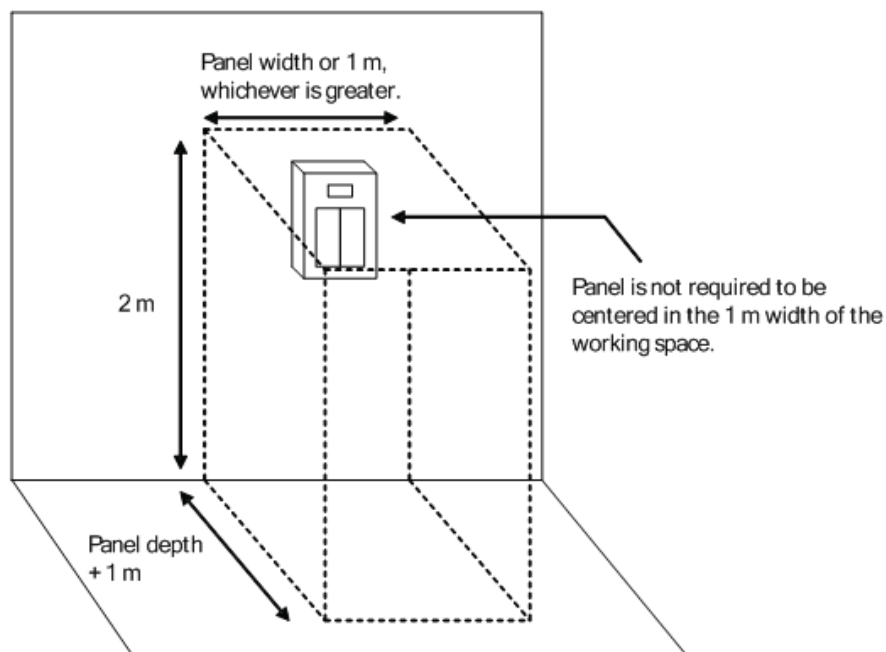
Question 6

What is meant by Rule 2-308 (1) requirements "A minimum working space of 1 m with secure footing..." when applied to panel boards that are mounted on or in a wall and require access from only the front?

Answer 6

This is interpreted as meaning a space that is at least 1 m in depth in front of the panel and at least 1 m in width or the width of the panelboard, whichever is greater. In addition, OESC requires the headroom clearance to be at least 2 m for consumer's service equipment (as per Subrule 6-206(1)(c)). The panelboard does not have to be centered in the width of the working space; it can be off center. (See Figure B2)

Figure B2 - Space requirements around panelboards

**Note (Height / headroom clearance requirements for panelboards):**

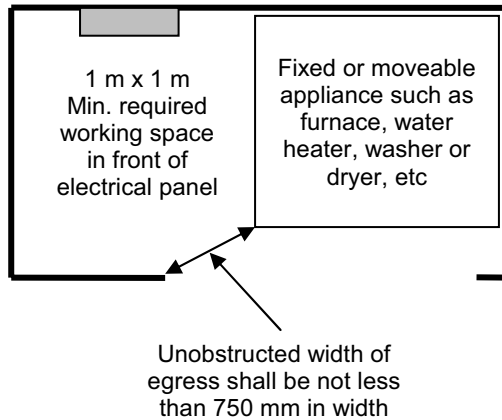
The 2 m required minimum headroom clearance shown in the figure above is required by Subrule 6-206(1) for service entrance panels. Also, in a dwelling unit, Subrule 26-402(2) requires mounting the panel as high as possible but with no overcurrent device handle positioned over 1.7 m above finish floor level. The panelboard does not have to be centered in the width of the working space. See also Bulletin 26-20-* for additional information regarding the location of panel boards.

(3) Entrance to and Exit from the working space around electrical equipment

Subrule 2-310(1) requires that each room or space containing electrical equipment (such as transformers, overcurrent devices, switchgear, disconnecting means, panelboards, etc.) to have unobstructed means of egress in compliance with Ontario Building code (OBC). The purpose of this rule is to ensure that personnel have ready means of exit from an electrical room in case of an accident.

OBC requires a minimum width of 750 mm with no obstruction for egress means (OBC Articles 3.3.1.22 and 9.9.5.4.). Also, Rule 2-312 requires that passageway (exit path) and working space around electrical equipment to be kept clear of obstruction as shown in Figure B3.

Figure B3. Illustration of Rule 2-312



Below are two examples of installations that do not provide a clear egress means of 750 mm and hence do not comply with 2-310 and 2-312.

Photo B1- Hot water tank and furnace encroaches on the egress from the working space around electrical panel

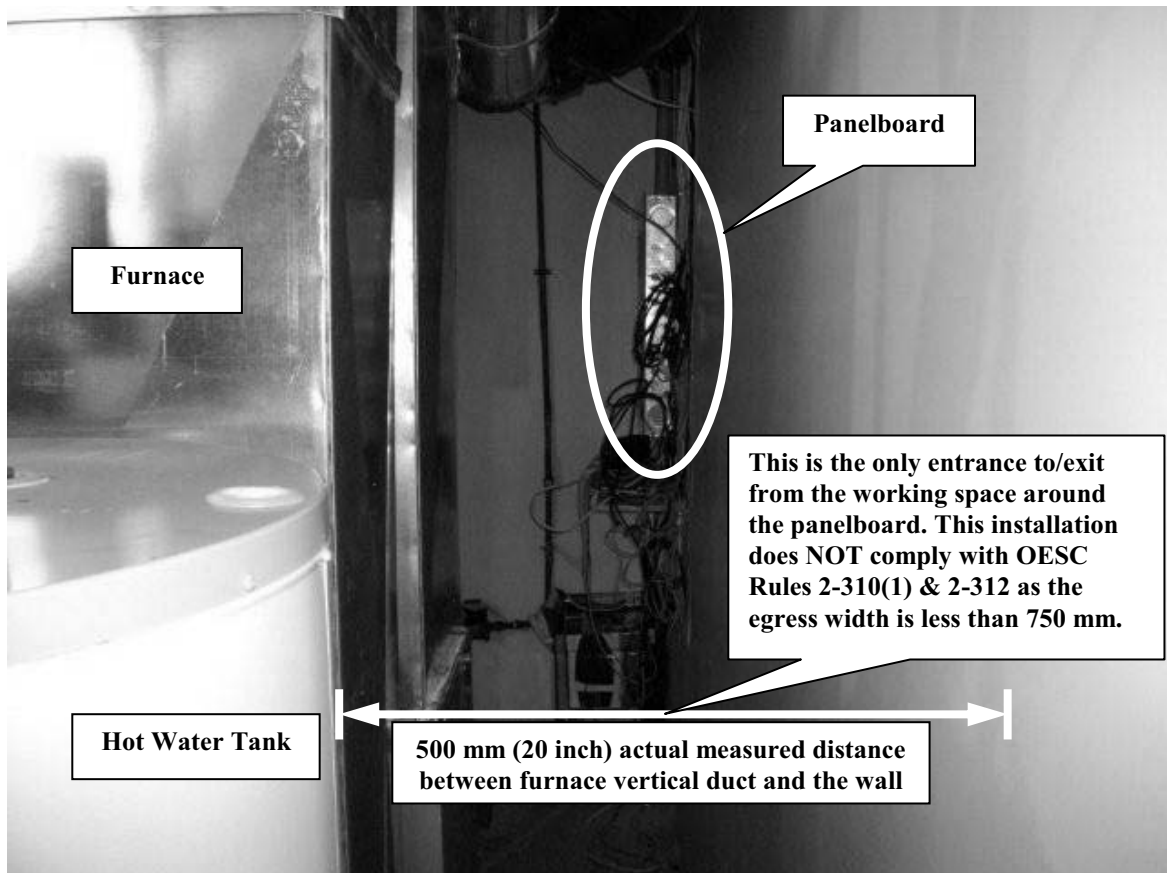


Photo B2- Washer/dryer stack encroaches on the egress from the working space around electrical panel



Note:

Installing the washer/dryer stack in the position shown violates OESC Rule 2-312 which requires the passageways and the working spaces around electrical equipment to be free of obstruction and arranged to give persons ready access / egress to and from the working space.

Bulletin 2-10-7
Electrical equipment near combustible gas equipment
Rule 2-322

Issued January 2010
Supersedes Bulletin 2-10-6

Rule 2-322 states that arc producing electrical equipment shall not be installed within 1 metre of the discharge of a combustible gas relief device or vent.

Questions have been asked regarding the specific types of electrical equipment covered by the rule.

The electrical equipment includes, but is not limited to, receptacles and switches, an air conditioning unit and related disconnecting means (which must be located within 3 m of the AC unit as per Rule 28-604(5)). This interpretation is consistent with the rules concerning the use of electrical equipment in Class 1 Zone 2 locations.

Permanently installed electric metering equipment (other than metering equipment with integral internal contacts for recording or remote reading) is permitted to be located within 1 metre of the combustible gas relief vent.

Figures B1 & B2 illustrate two examples of installations that comply with the minimum requirements.

Figure B1

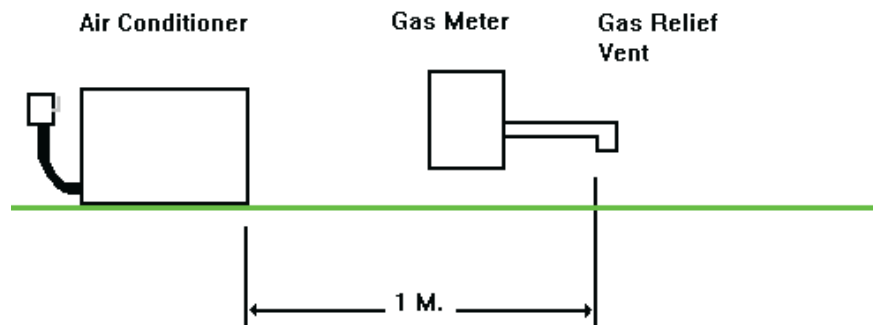


Figure B2

