Bulletin 2-9-9
Working space around electrical equipment
Rules 2-308, 2-310, 2-312, 2-314, 6-206, and 26-600

Issued May 2025
Supersedes Bulletin 2-9-8

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

Rule 2-310 requires the minimum working space around electrical equipment to be based on the **Equipment Nameplate Rating** rather than the overcurrent setting. The requirements of Rules 2-308 and 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)

<table>
<tr><th>EQUIPMENT NAMEPLATE RATING</th><th>EQUIPMENT WITH DRAW-OUT PARTS</th><th>EQUIPMENT WITH NO DRAW-OUT PARTS</th></tr>
<tr><td>Below
1200 amps
AND at
750 volts or less</td><td>1 m plus depth of
all draw-out parts of the equipment
(see Note 1)
Rule 2-308 3)</td><td>1 m
Rule 2-308 1)</td></tr>
<tr><td rowspan="2">Either:

At or above
1200 amps
(regardless of operating Voltage)

OR

Above
750 volts (regardless of Amperage rating)</td><td>1.5 m plus depth of all draw-out parts of the equipment (see Note 1)

Rules 2-308 3) and 2-310 2)</td><td>1.5 m

Rule 2-310 2)</td></tr>
<tr><td>1 m plus depth of all draw-out 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 and 2)

Rules 2-308 3) and 2-310 2)</td><td>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)

Rule 2-308 3)</td></tr>
</table>

Note

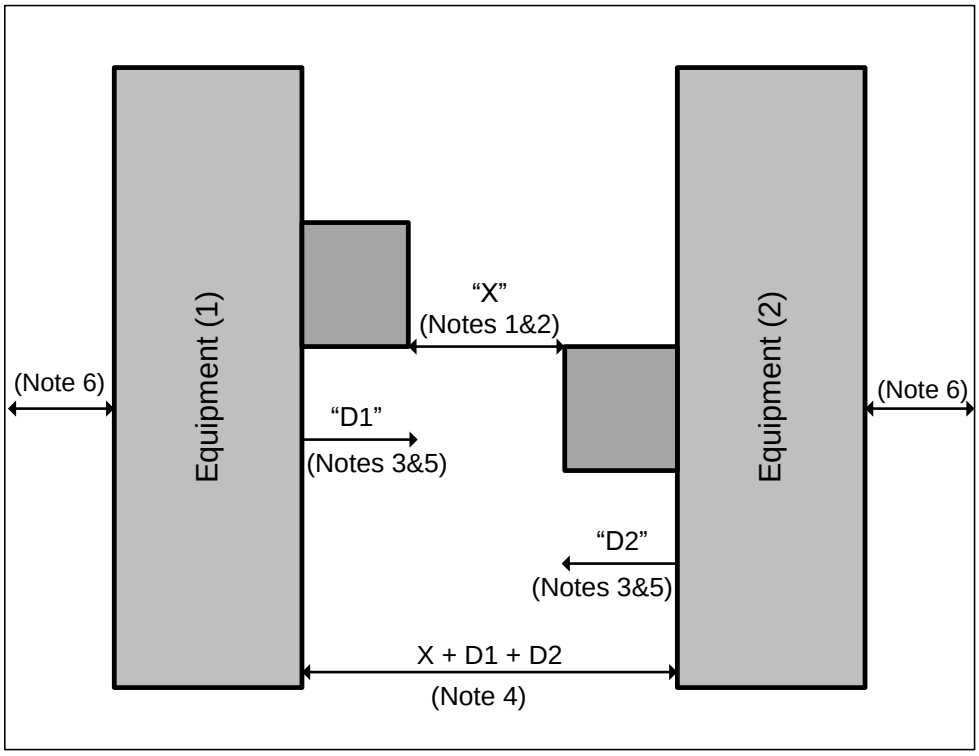
1. The depth of draw-out parts required in the table above is based on the additional space that is required for the operation of draw-out type equipment in either the connected, test, or fully disconnected position and shall be sufficient for the opening of enclosure doors and hinged panels to at least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

2. For equipment that has a nameplate rating of 1200 A and higher or over 750 V, 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. Rule 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

1. Distance “X” shall be determined based on conditions shown on Table B1 above.
2. In a case where equipment 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).
3. Equipment manufacturer shall be consulted to get the distances of equipment draw out parts (referred to as “D1” and “D2”).
4. 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”.
5. If the equipment has no draw-out parts, no additional space shall be required, as referenced in Rule 2-308 2).
6. No minimum dimension is required behind or on the side of electrical equipment if working space is not required by Rule 2-308 2).

2) Questions and answers about working space around electrical equipment

Question 1
If a 600 V, 1200 A switchboard has a 1000 A main breaker, what will the minimum working space in front of equipment?

Answer 1
1.5 m.

Rationale 1
Rule 2-310 2) requires the minimum working space to be based on the equipment nameplate rating rather than the overcurrent setting**.**

Question 2
Can a dry core transformer be installed (floor mounted) under a disconnect and/or a panelboard?

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 such as panelboards (Rule 2-308 1)).

Question 3
Can a dry core transformer be installed (floor mounted) under a splitter that has disconnects located above it?

Answer 3
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 4
Can a dry core transformer be installed (floor mounted) under a splitter?

Answer 4
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 equipment 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 5
Does Rule 2-308 1) require a minimum working space of 1 m **with secure footing** to be provided and maintained about a dry core transformer that is not an integral part of other equipment?

Answer 5
No, Rule 2-308 1) does not apply to dry core transformer that is not an integral part of other equipment. However Rule 2-312 requires a minimum of 1 m to the sides that provide access to conductor terminations of a transformer, rated above 50 kVA..

Rationale 5
Rule 2-308 1) states the minimum requirements for working space around electrical equipment. The examples listed in the Rule include switchboards, panelboards, control panel and motor control centres (MCCs), which all are protection and control equipment that normally contains renewable / switchable components that need frequent access for maintenance and operation. A stand-alone transformer is not a type of protection or control equipment.

Note
Rule 26-246 contains minimum clearances for ventilation of dry core open ventilated type transformers. The transformer manufacturer’s installation instructions must also be followed.

Question 6
Does the Code permit placing an appliance, such as a clothes dryer, in front of an electrical panel?

Answer 6
No. The Code requires a minimum working space of 1 m 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).

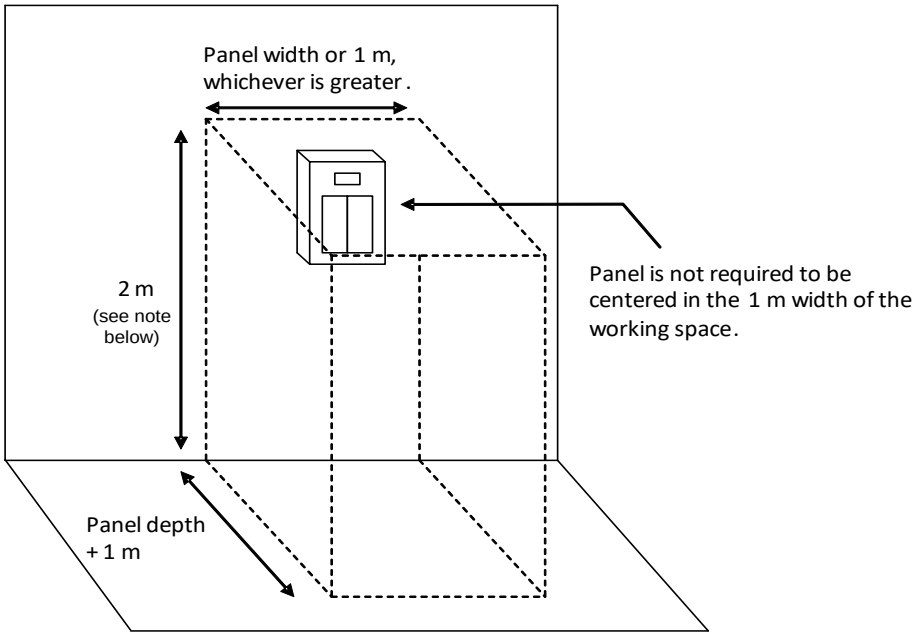
Question 7
When a switchboard is used as service entrance equipment, what are the Ontario Electrical Safety Code (OESC) minimum requirements for the headroom clearance? Is it 2.2 m as per Rule 2-308 or 2 m as per Rule 6-206 1) c) iv)?

Answer 7
OESC requires the headroom clearance to be at least 2 m for consumer's service equipment (as per Rule 6-206 1) c) iv)). However, if that service equipment is a switchboard, **where bare live parts are exposed at any time**, then Rule 2-308 5) shall apply and a headroom of 2.2 m is the minimum required.

Question 8
What is meant by Rule 2-308 1) requirement "A minimum working space of 1 m with secure footing..." when applied to panelboards that are mounted on or flush mounted in a wall and requires access from only the front?

Answer 8
This is interpreted as meaning an unobstructed 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 Rule 6-206 1) c) iv)). 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 Rule 6-206 1) c) iv) for service entrance panels. Also, in a dwelling unit, Rule 26-600 2) requires mounting the panel as high as possible but with no overcurrent device handle positioned over 1.7 m above finished 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 panelboards.

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

Rule 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 emergency.

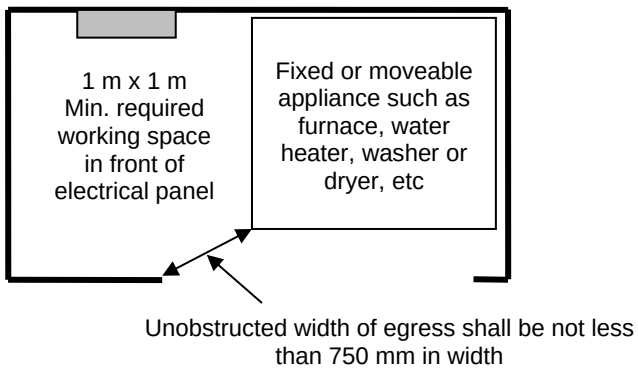
Doors in the unobstructed means of egress from the working space needs to open in the direction of exit travel. In cases where electrical rooms are large enough so the door is located 7.6 m away from the working space, the OBC allows the door to open in either direction (see Appendix B note to Rule 2-310)

Rule 2-310 4) requires the exit door from the working space around electrical equipment to open readily from equipment side without the use of a key or a tool. Panic-bar door hardware (examples in Photo B1) is considered to meet this requirement. Refer to Appendix B note to this Rule for more information.

Photo B1 - Examples of Panic-Bar door hardware

OBC requires a minimum width of 750 mm with no obstruction for egress means (OBC Articles 3.3.1.22 and 9.9.5.5.). Also, Rule 2-314 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 2-314



Below are two examples of installations that do **not** provide a clear egress means of 750 mm and hence do not comply with Rules 2-310 and 2-314.

Photo B2 - Hot water tank and furnace encroaches on the egress from the working space around electrical panel

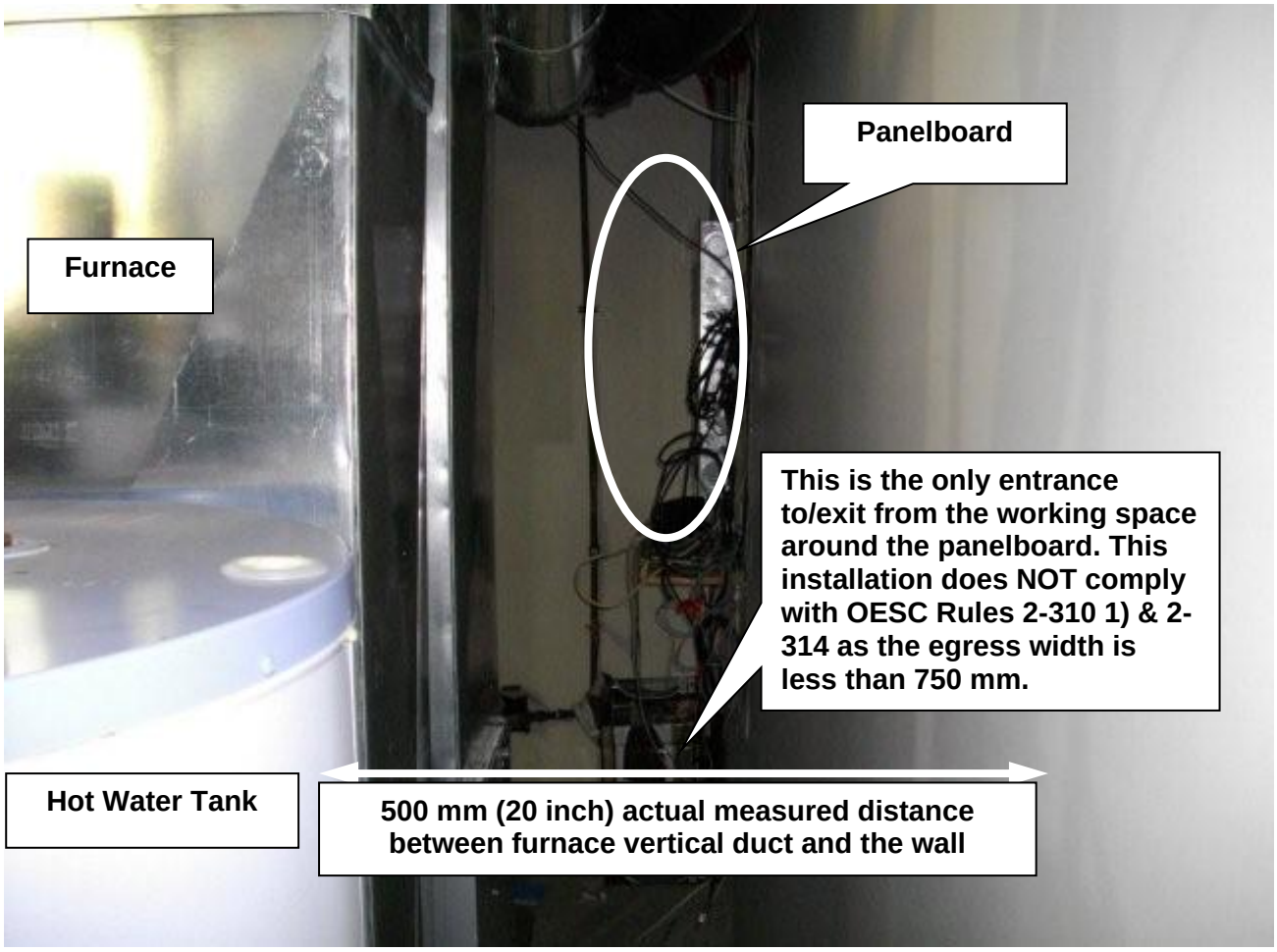
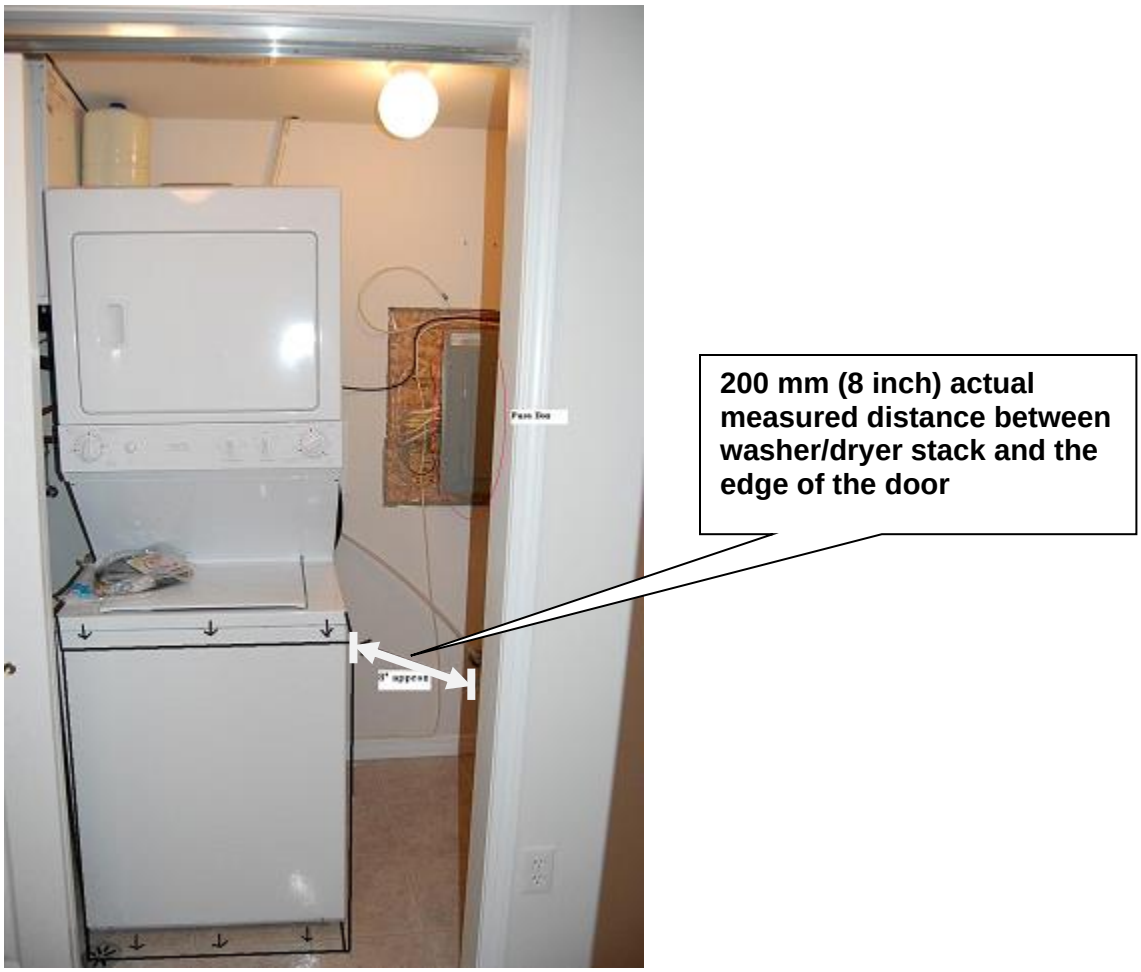


Photo B3 - Washer/dryer stack encroaches on the egress from the working space around electrical panel



Note

Installing the washer/dryer stack in the position shown violates OESC Rule 2-314 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.