



## MECHANICAL CHECKLIST FOR PART J5 OF BCA2014 – AIR-CONDITIONING & VENTILATION SYSTEMS

Property location:

Project description:

Job Reference Number:

Requirement	Yes	No	N/A
<b>BCA PART J5.2 AIR-CONDITIONING AND VENTILATION SYSTEMS</b>			
<b>The air-conditioning unit or system must:</b>			
▪ Be capable of being deactivated when the SOU, building or part of the building served is not occupied; and	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ Where there is motorized outside air and return dampers – dampers close when unit or system is deactivated; and	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ When serving a SOU of a Class 3 building, not operate when any external door including a door opening to a balcony, patio, courtyard or the like is open for more than 1 minute; and	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ Have any supply and return ductwork insulated & sealed to <b>Specification J5.2</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ If serves more than one SOU or AC zone or area with different heating & cooling needs: <ul style="list-style-type: none"><li>○ thermostatically control temp in each SOU, zone or area</li><li>○ not control the temp by mixing actively heated air &amp; actively cooled air</li><li>○ limit reheating to not more than a 7.5 K rise in temp for fixed air supply rate and, for a variable supply rate limit reheating to not more than 7.5 K rise in temp at the nominal supply air rate but increased or decreased at the same rate respectively increase or decreased</li></ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ Other than where a packaged air-conditioning unit is used, have a variable speed fan when its supply air quantity is varied	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ Where the air-conditioning system provides the required mechanical ventilation, in other than process related applications where humidity control is needed, have an outdoor air economy cycle: <ul style="list-style-type: none"><li>○ In climate zone 2 &amp; 3, where air-conditioning capacity is over 50 kW<sub>r</sub></li><li>○ In climate zones 4, 5, 6, 7 &amp; 8 when the air-conditioning unit capacity is over 35 kW<sub>r</sub></li></ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ In a Class 3 building be capable of controlling the temp of a SOU at a different temp during sleeping periods than during other periods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
▪ Is designed so that the total fan power of the air-conditioning supply air and return air fans in the building, divided by the floor area served by those fans is, in accordance with Table J5.2 - except for the following not need comply with this requirement: <ul style="list-style-type: none"><li>○ Fans in inducted air-conditioning units with a supply air capacity of less than 1000 l/s</li><li>○ The power for a fan in an energy reclaiming system that preconditions outdoor air</li><li>○ The power for process related components such as high efficiency particulate air filters</li></ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**A system that provides mechanical ventilation to other than a SOU in a Class 2 building or a Class 4 part of a building, either as part of an air-conditioning system or as a separate ventilation system, must**

- Be capable of being deactivated when the building or part of the building served is not occupied (other than a SOU in a Class 2 or 4 part of a building)
  - When serving a conditioned space not provide mechanical ventilation in excess of the minimum quantity required by **Part F4** for a mechanical ventilation system, where relevant, by not more than 20% other than where there is:
    - Additional unconditioned outside air supplied to provide free cooling or to balance process exhaust ventilation such as from a health-care building or laboratory
    - Additional exhaust ventilation needed to balance the required mechanical ventilation, or
    - An energy reclaiming system that preconditions outside air
- 
- In other than climate zone 2, where the number of square metres per person is 1 or less as specified in D1.13 and the air flow rate is more than 1000 L/s, have:
    - an energy reclaiming system that preconditions outside air, or
    - the ability to automatically modulate the mechanical ventilation required by Part F4 in proportion to the number of occupants

**When the mechanical ventilation is provided by means other than an air-conditioning system and the air flow rate is more than 1000 L/s have -**

- **\*exemptions apply – See (d) of J5.2**
- have a fan power to air flow rate ratio of 0.65 W/(L/s) without filters or 0.98 W/(L/s) with filters for a general mechanical ventilation system; and
- for carpark exhaust, when serving over 40 vehicles—
  - be controlled by an atmospheric contaminant monitoring system in accordance with AS 1668.2.

**The requirements of an air-conditioning system and a system that provides mechanical ventilation to other than a SOU in a Class 2 building or a Class 4 part of a building, either as part of an air-conditioning system or as a separate ventilation system must not inhibit -**

- the smoke hazard management operation of air-conditioning and mechanical ventilation systems; and
- essential ventilation such as for a garbage room, lift motor room, gas meter enclosure or gas regulator enclosure or the like

**\*Exemptions apply to (b)iii**

- the power for an energy reclaiming system that preconditions outside air.
- the power for process related components such as high efficiency particulate air filters.
- the power for a miscellaneous exhaust system complying with J5.5
- the power for a mechanical ventilation system for a Class 8 electricity network substation.



## BCA PART J5.3 TIME SWITCH

A time switch in accordance with Specification J6 must be provided to control each of the following:

- |  |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|
| ▪ An air conditioning system of more than 10kW <sub>r</sub> ; or       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ▪ A ventilation system with an air flow rate of more than 1000 L/s; or | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ▪ Heating systems of more than 10 kW <sub>heating</sub>                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Exemptions apply where it serves only one SOU:

- Within a Class 2, 3 building, Class 4 part of a building or Class 9c aged care building; or
- A building where air-conditioning or ventilation is needed for 24hr occupancy such as manufacturing process or emergency services; or
- A Class 8 electricity network substation.

## BCA PART J5.4 HEATING AND COOLING SYSTEMS

Systems that provide heating and chilling for air-conditioning systems must:

- |   |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|
| ▪ Have piping, vessels, heat exchangers or tanks containing heated or chilled fluid, other than those with insulation levels insulated in accordance with Specification J5.4  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ▪ Where water is circulated by pumping at greater than 2 L/s: <ul style="list-style-type: none"><li>○ Be designed so that the total of the motor shaft power to the air conditioning pump does not exceed the requirements of Table J5.4a:</li><li>○ Have the pump* capable of varying its speed in response to varying load when it is rated at more than 3 kW of pump power, except where the pump is needed to run at full speed for a safe or efficient operation</li></ul> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ▪ If system contains more than one water heater used for heating a building, chiller or coil, be capable of stopping the flow of water to those not operating.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

A heater for heating a space via water, such as a boiler, that is part of an air-conditioning system must:

- |   |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|
| ▪ Achieve a thermal efficiency complying with Table J5.4b when tested in accordance with BS 7190  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ▪ Use reticulated gas where it is available at the allotment boundary   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| ▪ For heating a space other than via water, must be - <ul style="list-style-type: none"><li>○ Solar heater; or</li><li>○ Gas heater; or</li><li>○ Oil heater if reticulated gas is not available at the allotment boundary; or</li><li>○ Heat pump heater; or</li><li>○ A heater using reclaimed heat from another process such as reject heat from refrigeration plant</li><li>○ Electric only:<ul style="list-style-type: none"><li>▪ If the heating capacity is not more than<ul style="list-style-type: none"><li>• 10 W/m<sup>2</sup> of the floor area of the conditioned space in CZ1, or</li><li>• 40 W/m<sup>2</sup> of the floor area of the conditioned space in CZ2, or</li><li>• The value specified in Table J5.4c where reticulated gas is not available at the allotment boundary</li></ul></li><li>▪ If the annual energy consumption for heating is not more than 15 kWh/m<sup>2</sup> of the floor area in CZ 1-5<ul style="list-style-type: none"><li>▪ If for an in-duct heater complying with J5.5(a)(v)(C)</li></ul></li></ul></li><li>○ Or a combination of all the above</li></ul> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



- For heating a bathroom in a Class 3 or Class 9c aged care building, may be electric if the heating capacity is not more than 1.2 kW.

- A heater that is a fixed space heating appliance installed outdoors, must be controlled to automatically turn off when not needed by an outdoor air temperature sensor, timer, motion detector, or the like.

**Package air conditioning equipment over 65kW capacity, including a split unit and a heat pump must:**

- have an EE ratio complying with **Table J5.4c** when tested in accordance with AS/NZS 3823.1.2 at test condition T1.

**A refrigerant chiller up to 350 kW capacity must:**

- have and EE ratio complying with **Table J5.4e** when determined in accordance with **ARI 550/590**.

**An air cooled condenser fan motor that is part of an air-conditioning system, other than one which is part of a package air-conditioning equipment must:**

- not use more than 42 W of fan power for each kW of heat rejected from the refrigerant when determined in accordance with **ARI 460 or AHRI 460**

**The fan of a cooling tower that is part of an air-conditioning system**

- must not use more than:   
  - If a propeller or axial fan - 310 W of fan power for each L/s of cooling water circulated; and
  - If a centrifugal fan - 590 W of fan power for each L/s of cooling water circulated

**The fan of a closed circuit cooler that is part of an air-conditioning system**

- must not use more than:   
  - If a propeller or axial fan, 500 W of fan power for each L/s of cooled fluid circulated; and
  - If a centrifugal fan, 670 W of fan power for each L/s of cooled fluid circulated

**The fan of an evaporative condenser that is part of an air-conditioning system**

- must not use more than   
  - If a propeller or axial fan, 18 W fan power for each kW of heat rejected; and
  - If a centrifugal fan, 22 W of fan power for each kW of heat rejected.

**The spray water pump of a closed circuit cooler or evaporative condenser must:**

- not use more than 150 W of pump motor shaft power for each L/s of spray water circulated.

**BCA PART J5.5 MISCELLANEOUS EXHAUST SYSTEMS**

**Miscellaneous exhaust systems with an air flow rate of more than 1000L/s that is associated with equipment having a variable demand such as a stove in a commercial kitchen or a chemical bath in a factory must:**

- Have the means for the operator to:   
  - Reduce the energy used (such as a variable speed fan) and,
  - Stop the motor when the system is not needed; and
- Be designed to minimize the exhausting of conditioned air.

**\*Exemptions apply:**

- Within a SOU of Class 2, 3 building, Class 4 part of a building or Class 9c aged care building; or
- Where additional exhaust ventilation is needed to balance the required outside air for ventilation; or
- Where the air flow must be maintained for safe operation; or
- To a Class 8 electricity network substation.



**STATEMENT OF COMPLIANCE:**

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**Building practitioner:**

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Qualification / title:

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Company:

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I have reviewed the design (specifications, drawings and any supporting calculation), completed the attached checklist and certify that, if installed or carried out in accordance with the documentation referred to above, the air-conditioning and ventilation systems (as applicable) will comply with the BCA 2014 Section J5. I also confirm that I have appropriate qualification/ expertise to assess the compliance of the air-conditioning and ventilation systems.

Signed: ..... Dated: .....