

SINGAPORE STANDARD
SS 553 : 2009
(ICS 91.140.30)

CODE OF PRACTICE FOR
**Air-conditioning and
mechanical ventilation in
buildings**

(Formerly CP 13)

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Foreword

This Singapore Standard Code of Practice was prepared by the Working Group under the direction of the Technical Committee on Building Maintenance and Management. The Technical Committee is under the purview of the Building and Construction Standards Committee. This code is a revision of CP 13 : 1999 and has been re-numbered as SS 553 : 2009.

The purpose of this revision is to keep abreast of international standards in the design, construction, installation, testing and commissioning, operation and maintenance of air-conditioning and mechanical ventilation systems (ACMV) in all commercial, office and institutional buildings except hospitals.

This code represents a standard of good practice for air-conditioning and mechanical ventilation systems with particular emphasis on indoor air quality, energy efficiency, fire safety and maintainability. Some graphical symbols relating to ACMV are given in Annex A.

The changes include:

- a) Grouping of clauses into the main sections of air-conditioning system, mechanical ventilation system, auxiliary equipment, and operation and maintenance.
- b) Aligning general guidance on energy efficiency requirements for ACMV systems with national and international standards. In particular, a new clause on general guidance in energy recovery for ACMV systems (Clause 12) has been introduced.
- c) Expanding the requirements for maintenance

This code is intended to complement Singapore Standard 'Code of practice for indoor air quality for air-conditioned buildings (SS 554)'.

The values in Tables 1 to 13 of this Singapore Standard are based on the following ASHRAE standards:

- a) ANSI/ASHRAE/IESNA Standard 90.1 : 2007 'Energy standard for buildings except low-rise residential buildings (SI Edition)',
- b) ANSI/ASHRAE 62.1 : 2007 'Ventilation for acceptable indoor air quality',
- c) BSR/ASHRAE//USGBC/IESNA Standard 189P 'Proposed standard for the design of high-performance green buildings except low-rise residential buildings'.

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Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. SPRING Singapore shall not be held responsible for identifying any or all of such patent rights.

NOTE

1. *Singapore Standards are subject to periodic review to keep abreast of technological changes and new technical developments. The revisions of Singapore Standards are announced through the issue of either amendment slips or revised editions.*
2. *Compliance with a Singapore Standard does not exempt users from legal obligations.*

Code of practice for air-conditioning and mechanical ventilation in buildings

Section One – General

1 Scope

1.1 This code of practice provides general guidance in the design, construction, installation, testing and commissioning, operation and maintenance of air-conditioning and mechanical ventilation systems in all commercial, office, and institutional buildings except hospitals. The purpose of this code is to establish minimum requirements in mechanical ventilation and air-conditioning engineering practice such that an acceptable indoor thermal environment can be attained in an energy efficient manner with general consideration for the indoor air quality (IAQ), and maintainability of the equipment.

1.2 This code does not address specific indoor air quality concerns for minimizing potential health hazards. Users should refer to the SS 554 for specific / more complete IAQ requirement guidelines.

1.3 This code does not address the design requirements of fire protection. Users should refer to the Code of Practice for Fire Precautions in Buildings for the purpose of design requirements of fire protections, including smoke purging system.

1.4 This code does not address heating installations as the majority of mechanical ventilation and air-conditioning systems in Singapore do not require any form of heating.

1.5 This code does not apply to industrial ventilation in control of specific air contaminants inside workplace as such requirements are separately covered by a different set of regulations.

NOTE 1 – It is not intended that this code should impose unnecessary restrictions on design and installations of systems, nor on the development and use of new improved or unusual materials, design or methods of constructions or installation not covered by this code. However, in the event that this code is applied as a requirement by regulations of regulatory authorities, any departure from this code will require the specific approval of the regulatory authority. It is good practice that all parties involved in the project are informed through a process of exchange of information. The recommended procedure can be found in Annex B.

NOTE 2 – Neither this code nor Singapore Standard SS 554 prescribes specific ventilation rate requirements for zones that include smoking. ASHRAE 62.1: 2007 may be referred to if smoking zones are present or if there are zones that do not meet the requirements for separation from zones that include smoking.

2 Normative references

The following documents are referenced for the application of this code. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- | | | |
|----|--------------------|---|
| 1. | ARI Standard 1060 | Rating air-to-air energy recovery ventilation heat exchangers |
| 2. | ASHRAE 55 : 2004 | Thermal environmental conditions for human occupancy |
| 3. | ASHRAE 62.1 : 2007 | Ventilation for acceptable indoor air quality |
| 4. | ASHRAE 90.1 : 2007 | Energy standard for buildings except low-rise residential buildings |