# DESIGN GUIDELINE 230015
# FAN COIL UNITS AND BLOWER COIL UNITS

## General

This section describes definitions, applications and design requirements for fan coil units and blower coil units.

For purposes of this section:

- Fan coil units (FCUs) refer to a variety of relatively small, unducted, floor or ceiling mounted units, used for cooling and/or heating the room in which they are located.
- Blower coil units (BCUs) refer to small to moderate-sized, ducted, floor or ceiling mounted units, used for cooling and/or heating the room in which they are located, and/or adjacent areas.

Fan coil units are one of the least preferred methods of providing air conditioning at the University. Blower coil units are generally preferred over FCUs, but less preferred than central HVAC systems.

## Related Sections

**U-M Master Specification Sections:**
230900 - Mechanical Systems Controls
238219 - Floor Mounted Fan Coil Units (Un-ducted)
238220 - Horizontal Fan Coil Units
238221 - Blower Coil Units

## Design Requirements

The U-M specifications listed above are typically recommended for use as the starting basis for fan coil and blower coil specifications on U-M projects. The A/E shall edit the specifications to make them project specific, in particular in the area of controls. The specification for floor mounted fan coils (238219) includes controls often used on U-M Housing projects, which may not be the appropriate choice for other projects. Turn on hidden text and read all spec. editor's notes when editing specifications.

For FCUs and BCUs, pay close attention to acoustic requirements of space served. FCUs and BCUs are generally not acceptable in classrooms, conference rooms.

Consider possible requirements for future additional capacity, and redundancy.

All FCUs and BCUs shall be individually scheduled and identified on the drawings.

Consider seasonal requirements and capabilities of chilled water, steam, and heating hot water.

Indicate maintenance requirements on drawings, for filter access. Account for access to all components requiring regular maintenance, including all valves.

For FCUs:

- Provide IAQ drain pan and code cpmpliant method of over-flow protection
- Insulate cold piping inside and outside housing.
- Provide removable, replaceable filter.
- Provide multi-speed direct drive fans.
- Generally install floor mounted, non-recessed type. Low profile units are not acceptable due to difficulty in maintaining.
- Do not provide with integral outside air connection. Provide separate minimum ventilation air where required.

For BCUs:

- Provide IAQ drain pan, and code cpmpliant method of over-flow protection
- Insulate cold piping inside and outside housing.
- Provide removable, replaceable filter: 2" pleated, minimum 30% efficiency.
- Provide belt drive fans with adjustable sheaves.
- Floor mounted, non-recessed type or ceiling mounted is acceptable, depending on project requirements, provided maintenance access requirements are met.
- Do not provide with integral outside air connection. Provide separate minimum ventilation air where required. If required, outside air for minimum ventilation load may be ducted to BCU return duct, provided outside air is filtered and includes an integral damper interlocked to BCU operation. BCUs should not be used for 100% economizer cooling.
- Use of BCUs should be limited to systems below 3,000 to 5,000 cfm, and should not be used in conjunction with VAV boxes.
- The generally preferred location of ceiling mounted BCUs is above corridors to allow service without disrupting the occupied space.

For FCU and BCU controls:

- See specification 230900 for control valve and actuator options.
- Do not provide factory-mounted, manufacturer DDC controls. Pneumatic or electronic thermostats, and manually controlled FCU fan speed are generally acceptable where there is little energy savings associated with reset controls. If networking or more complex control strategies are justifiable, provide U-M DDC controls.

## Installation Requirements

Specify on the construction documents that the units must be installed to allow for maintenance of all serviceable components within the unit through without removing ducts, piping or other adjacent systems such as light fixtures.

Unions and isolation valves should be installed at all water service points to facilitate unit removal without disruption of service to the remainder of the building.