

Keep *Cool* without losing your *Cool*

Household Air Conditioner Noise

Do's *and* Don'ts

Air Conditioners can bring welcome relief during hot, steamy weather, but they can also add unwelcome noise to previously quiet neighbourhoods.

Noise inflicts stress, interrupts sleep, interferes with speech and generally leaves us feeling flustered and annoyed.

Today's trend toward building high density housing projects and the resulting close proximity of residential lots means that an air conditioner or a heat pump is often installed close to a neighbour's lot line.

In order to keep the peace and keep your cool, it's a good idea to select the suitable air conditioning equipment for your needs and to install it correctly.

Noise – there is a limit

Many municipalities regulate noise control of air conditioning devices through the Model Municipal Noise Control By-law using guidelines that were developed by the Ontario Ministry of the Environment. These guidelines basically state that the sound generated by an air conditioning device should not intrude significantly in neighbouring residential property.

How much noise is too much?

In general, the acceptable noise level for an air conditioner is the existing background sound level (due to road traffic noise, etc.) plus 5 dBA*. If the background noise level is low, the sound level should not exceed 45 dBA* and 50 dBA for locations in rural and urban areas respectively. Noise level measurements are usually taken at a location where neighbours are likely to complain about the noise – on a patio or outside a bedroom window, for example.

A separate limit of 55 dBA applies to urban locations where the air conditioning device was a mandatory requirement for noise control in new developments in a noisy environment, such as near a major roadway or railway tracks.

Manufacturers are also required to limit the noise level of the air conditioners they produce. A maximum ARI (Air conditioning and Refrigeration Institute) Standard sound rating of 8.0 bels* applies to air conditioning devices built during 1991, and 7.6 bels applies to air conditioning devices built after January 1, 1992.

When an air conditioner is installed, it must comply with both the sound level limit in dBA and the manufacturer's sound emission rating in bels.

* dBA (A-weighted decibels) and bels are standard units of measure.

How to keep things quiet

You can reduce noise from air conditioning devices by selecting a quiet unit, choosing the best location and following proper installation and maintenance procedures.

Know your air conditioner

Proper selection and installation of your air conditioner will go a long way toward preserving the peace in your neighbourhood.

Most of the noise produced by an air conditioner comes from the following components:

Fans

Noise from the fan is generated by the fan blades passing through the air. Sound levels from fan operation vary depending on the number of fan blades, fan speed and size, and the clearance between the fan and the cabinet.

Compressors

Noise from the compressor comes from the compressor valves and the electrical motor in the compressor.

Unit cabinet

Noise from the cabinet vibration should be negligible if the unit is properly installed and maintained.

In addition to choosing a quiet unit, you can further reduce the amount of noise produced by your air conditioner by building a barrier or other structure around it. This will separate the unit from noise sensitive areas such as a neighbour's patio or bedroom window by deflecting some of the noise away from the neighbour's property.

A barrier is most effective when:

- It is placed close to the air conditioner or heat pump without restricting airflow to or from the unit;
- It is without any gaps or cracks that would otherwise allow sound to escape;
- It is located where house walls will not reflect sound back over the top of the barrier. If sound is reflected back, surfaces facing the unit should be covered with sound absorbing material.

One of the simplest and most effective shielding structures is a suitably located garden shed.

Noise from an existing air conditioner

With careful planning, you can reduce the noise impact from air conditioners and heat pumps before they are installed. If, however, your existing air conditioner or heat pump is too noisy, you should consider relocation, or other measures for the unit with the assistance of a qualified contractor.

With the co-operation of the homeowner, municipality dealer and installer much can be done to eliminate excessive noise and preserve the peace in your neighbourhood.

Household Air Conditioner *Do's and Don'ts* for Installation **of residential air conditioner and heat pump units**

Do's

1. The unit should be positioned such that there are no windows or other openings along the direction of sound wave propagation. Any walls facing the unit should be solid.
2. A partial barrier can be provided for the unit to reduce noise that would otherwise be radiated towards the neighbour.
3. If possible, the unit should be placed in the front yard or side yard, away from the neighbour's outdoor living.
4. A water-cooled condensing unit can be located inside the house, when local municipal by-laws permit.

Don'ts

1. Do not place the unit where the radiated noise may be transmitted through the neighbour's window.
2. Avoid locating the unit close to hard reflective surfaces and especially near corners and multiple reflecting walls.
3. Do not position the unit near the neighbour's outdoor living area.

More information

For more detailed information on air conditioner noise, unit selection, installation principles and noise control techniques refer to: "Environmental Noise Guidelines for Installation of Residential Air Conditioning and Heat Pump Devices", available from Publications Ontario, 880 Bay Street, Toronto, Ontario M7A 1N2, (416) 326-5320, Mail order (416) 326-5300, Toll-free 1-800-668-9938.

This information was originally provided by the Advisory Committee on Air Conditioner and Heat Pump Noise, composed of: Ministry of the Environment, Consumers' Association of Canada, Ontario Hydro, Toronto Hydro, Heating, Refrigeration and Air Conditioning Institute of Canada, National Research Council of Canada, City of North York, Ministry of Housing, City of Toronto.