OTTAWA SOUNDPROOFING

HVAC & Mechanical Noise

Ductwork, plumbing, equipment vibration

14 Expert Answers from Sound IQ

ottawasoundproofing.com/construction-brain

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Q1

My outdoor AC unit vibrates against the house siding and the sound carries inside, what's the fix?

The fix is to eliminate the physical contact between your AC condenser unit and the house and then address the vibration path through the ground and refrigerant lines. When an outdoor AC unit vibrates against siding, it turns the entire wall into a sounding board — even light intermittent contact can produce a buzzing or rattling that carries through the wall assembly and sounds much louder inside than the unit does outdoors.First, check the clearance between the condenser and the siding. Most manufacturers recommend a minimum of 30 cm (12 inches) of clearance on all sides for airflow, but many Ottawa installations — especially in newer subdivisions in Barrhaven, Kanata, and Orleans where homes sit close together on narrow lots — place the unit as little as 15 cm (6 inches) from the wall. If the unit is too close, vibration can transmit through the air gap alone, and any slight shifting on the pad (common after Ottawa's spring thaw cycle) can bring it into direct contact with the siding.Isolating the Unit From Your HomeStart at the base. If your condenser sits on a concrete pad poured directly against the foundation, vibration transmits through the concrete into your basement walls and floor. Place rubber anti-vibration pads ($30 to $80 for a set of four) under the unit's feet to break this path. Products like DiversiTech iso-pads or heavy-duty neoprene pads rated for outdoor use work well in Ottawa's climate, but avoid cheap foam pads that compress and lose effectiveness after one or two freeze-thaw seasons. If the concrete pad is physically attached to the foundation, consider having a contractor saw-cut an isolation joint between them ($200 to $400) and fill it with closed-cell backer rod and flexible sealant.Next, address the refrigerant lines. The copper lines running from the condenser to the indoor evaporator coil are a direct rigid connection that transmits compressor vibration straight into the house. A qualified HVAC technician can install a vibration loop — a gentle U-bend in the refrigerant lines near the condenser — that acts as a flexible absorber. This is standard practice but is sometimes skipped during installation to save time. The refrigerant lines should also pass through the wall penetration with rubber grommets or foam sleeves rather than being wedged tightly against the framing, which creates another vibration bridge.If the unit is close to the wall and you hear siding panels buzzing or rattling, check whether the siding itself is loose. Vinyl siding in particular can vibrate in sympathy with an AC compressor running at certain speeds. Securing loose siding panels and adding foam backer strips behind any panels near the unit dampens this resonance. For persistent cases, installing a strip of mass loaded vinyl (MLV) on the interior side of the wall directly behind the AC unit ($50 to $100 in materials for a small section) adds mass that resists vibration transmission.The compressor itself can also be the problem — a failing or aging compressor develops hard starts and increased vibration that were not present when new. If your unit is more than 8 to 10 years old and the vibration has worsened recently, have a technician check the compressor mounts and assess whether a hard start kit ($80 to $150 installed) reduces the startup thump, or whether the compressor is simply wearing out.For a comprehensive solution, an experienced contractor can assess all the transmission paths — pad, refrigerant lines, electrical conduit, and wall assembly — and address

them systematically. A piecemeal approach often just shifts the dominant path from one route to another. Check the Ottawa Contractor Directory at justynrookcontracting.com/directory for professionals who handle both HVAC service and acoustic noise control.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:HomeupgradersJC CarpentryKitchens by Michael o/a Michael Francis Home ImprovementsRenovo ConstructionPrism ServicesView all contractors ?

Q2

How do I stop air rushing noise from my bathroom and kitchen exhaust ducts during Ottawa windstorms?

Air rushing noise from exhaust ducts during windstorms is caused by wind-driven air forcing its way backward through the duct and past the exterior vent cap, creating turbulence, whistling, and sometimes a deep roaring sound inside the room. The fix involves upgrading to a wind-resistant backdraft damper or vent cap and ensuring the duct itself is not amplifying the noise through resonance or loose connections.Ottawa is particularly prone to this problem because of the strong prevailing westerly winds that can gust above 80 km/h during fall and winter storms, combined with the pressure differentials that develop around buildings in cold weather. When it is -25°C outside and +21°C inside, the stack effect creates significant negative pressure on the windward side of your home, and exhaust ducts on that side become wind tunnels. Homes in exposed locations — Kanata South, Stittsville, Barrhaven, and parts of Orleans near open farm fields — experience this more severely than homes sheltered in mature-tree neighbourhoods like the Glebe or Alta Vista.Upgrading Your Exterior Vent CapThe standard builder-grade vent cap with a single flap damper is the weakest link. Wind easily forces the flap open and roars into the duct. Replace it with a wind-resistant vent cap designed to prevent backdraft — products like the Primex DRV (Dryer Vent) or Heartland 4-inch Wind Guard use gravity-weighted or spring-loaded mechanisms that resist wind pressure far better than a simple flap. These cost $25 to $60 and are a straightforward swap. For even better performance, a in-line spring-loaded backdraft damper installed inside the duct about 30 cm from the exterior wall adds a second line of defence for another $15 to $30.Check the duct connection at the vent cap — loose connections or gaps between the duct and the wall sleeve create turbulent whistling. Seal any gaps with acoustic caulk (not expanding foam, which is rigid and transmits vibration). If the duct passes through an exterior wall, the annular space around it should be insulated and sealed against both air infiltration and sound. In Ottawa's climate, an unsealed duct penetration also allows cold air infiltration and can cause condensation inside the wall cavity — a moisture problem on top of the noise problem.The duct material matters significantly for noise. Rigid smooth-wall metal duct is quieter than corrugated flex duct for normal exhaust operation, but during windstorms, rigid duct can actually amplify resonance. If you have a long run of rigid duct that hums or booms in wind, adding a short section (60 to 90 cm) of insulated flex duct near the exterior end breaks up the resonant path and absorbs some of the

wind-driven turbulence. This flex section should be kept as straight as possible to maintain airflow performance — your kitchen range hood and bathroom fan need adequate exhaust capacity to meet the Ontario Building Code's ventilation requirements under OBC Section 9.32.For bathroom exhaust fans, ensure the fan's own internal damper is functioning. Many homeowners do not realize that the small plastic flap inside the fan housing is a damper — if it is stuck open, cracked, or missing, wind has a clear path straight into your bathroom. Replacement damper flaps cost under $10 and are specific to the fan model. For kitchen range hoods, the built-in butterfly damper in the exhaust collar should close snugly when the hood is off — check by holding a tissue near the hood filters with it off to see if you feel air movement.If wind noise persists after addressing the vent cap, damper, and duct connections, you may be dealing with pressure-driven infiltration through other paths. A professional energy auditor or soundproofing contractor can use a blower door test to identify all the air leakage paths in your home. The Ottawa Contractor Directory at justynrookcontracting.com/directory can help you find the right professional to assess and resolve persistent wind-related noise issues.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:Luxe Painting and Renovations RenoMotion Inc.Green Property RestorationsDreamwood Construction & RenovationsBest Hand2Hand moving companyView all contractors ?

Q3

What's the best way to quiet a radon mitigation fan that creates a constant hum through my basement?

The best way to quiet a radon mitigation fan is to install vibration isolation mounts where the fan connects to the PVC pipe and, if the fan is mounted on or near your house, relocate it to an exterior location with rubber coupling isolators on both the inlet and outlet connections. Radon fans are designed to run continuously — 24 hours a day, 365 days a year — so even a modest hum becomes maddening over time, especially in finished Ottawa basements used as living spaces, home offices, or bedrooms.Most radon mitigation systems use an inline centrifugal fan mounted in the PVC exhaust pipe, typically in the basement, crawl space, attic, or exterior wall. The noise has two components: airborne sound from the fan motor and impeller, and structure-borne vibration transmitted through the rigid PVC pipe into your home's framing. The vibration component is usually the bigger problem indoors because it turns your walls and floors into speakers. A rubber flexible coupling (sometimes called a Fernco coupling) installed on both sides of the fan for $8 to $15 each breaks the rigid PVC-to-fan connection and can reduce structure-borne hum by 10 to 15 dB. This is the single most cost-effective fix.Fan Location and Mounting ImprovementsIf your radon fan is currently mounted inside the basement or attached directly to an interior wall, relocating it to an exterior location — ideally at least 1.5 metres above grade on an exterior wall or in the attic — removes the primary noise source from your living space. Relocation typically costs $300 to $800 when done by an Ottawa radon mitigation

contractor. The fan should be mounted on vibration-dampening brackets or pads rather than screwed directly to the structure. Neoprene isolation pads rated for outdoor use in Ottawa's -30°C winters cost $20 to $50 and make a significant difference.The fan model itself matters enormously. Cheaper fans like the basic RadonAway RP145 are noticeably louder than premium models like the RadonAway GP501 or Fantech HP220. Upgrading to a quieter fan costs $150 to $350 for the unit and is often worth it — the difference can be 10 to 20 sones. If your existing fan is more than five years old, it may also be wearing out and getting louder as bearings degrade. A fan swap is straightforward for a radon professional and takes about an hour.For the airborne sound component, wrapping the PVC pipe near the fan with mass loaded vinyl (MLV) at $1.50 to $3.00 per square foot reduces the pipe itself from radiating noise into the space. Apply one or two layers around the pipe for a distance of at least 1.5 metres on each side of the fan, securing with foil tape or zip ties. If the pipe passes through an interior wall, ensure the penetration is sealed with acoustic caulk — not rigid foam or cement, which transmit vibration.One important caution: never restrict the airflow in a radon system to reduce noise. Radon is a Class A carcinogen and the leading cause of lung cancer in non-smokers. Ottawa sits on the Canadian Shield, and many neighbourhoods — particularly in Kanata, Stittsville, Nepean, and parts of Orleans — have elevated radon levels. Health Canada's guideline is 200 Bq/m³, and your mitigation system must maintain adequate depressurization beneath the slab to keep levels safe. Any noise reduction work should maintain the system's suction performance, and a post-modification radon test is always a good idea.For a proper assessment of your radon fan noise and the most effective quieting strategy, a professional who understands both radon mitigation and acoustic isolation is ideal. The Ottawa Contractor Directory at justynrookcontracting.com/directory can help you find qualified contractors in your area who handle both aspects of the problem.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:HomeupgradersRenoMotion Inc.Green Property RestorationsGeerts Roofing IncTransitions RenovationsView all contractors ?

Q4

How do I reduce the noise from water hammer in my Ottawa home's plumbing when taps shut off?

Water hammer — that sharp bang or series of thuds when a tap, dishwasher valve, or washing machine solenoid shuts off quickly — is caused by the sudden stoppage of fast-moving water creating a pressure shock wave that slams through your pipes. The fix is to install water hammer arrestors at the offending fixtures and, in some cases, address pipe support and air chamber issues throughout the system. This is both a noise problem and a plumbing longevity concern, because repeated water hammer can loosen fittings and eventually cause leaks.The most direct solution is to install mechanical water hammer arrestors — small devices with an internal piston or bellows that absorbs the pressure spike. These screw onto the supply line near the fixture causing the problem, typically at washing machines, dishwashers, and quick-closing single-lever taps. Quality arrestors from brands like Sioux Chief, Watts, or SharkBite cost $15 to $40 each at Ottawa plumbing suppliers or home centres. For a washing machine, you will need two — one for hot and one for cold. Professional installation runs $100 to $250 per fixture, or a handy homeowner can install screw-on models in about 20 minutes per fixture.Why Water Hammer Is Worse in Ottawa HomesOttawa's municipal water pressure varies by neighbourhood — homes in lower-elevation areas like Vanier, Overbrook, and parts of downtown can see supply pressure of 80 to 100 PSI, well above the recommended maximum of 60 PSI for residential systems. High water pressure makes water hammer dramatically worse because the water is moving faster and carries more kinetic energy when a valve slams shut. If your home does not have a pressure reducing valve (PRV) where the city supply enters, installing one ($250 to $500 installed) will reduce water hammer, extend the life of your fixtures and appliances, and lower your water bill. You can test your pressure with a $10 to $15 hose bib gauge from any hardware store.Older Ottawa homes — particularly those in the Glebe, Old Ottawa South, and Centretown built before the 1970s — may have air chambers (short vertical pipe stubs) that were the original water hammer solution. These work by providing a cushion of air that compresses to absorb the shock. Over time, the air dissolves into the water, and the chambers fill with water and stop working. To restore them, shut off the main water supply, open the lowest tap in the house to drain the system, then close it and turn the supply back on. This allows air to re-enter the chambers. If this temporarily fixes your water hammer, you know the air chambers exist but need regular recharging — which is why mechanical arrestors are the preferred modern solution.Pipe support is another factor. Pipes that are loosely supported or running through oversized holes in joists will bang against the wood framing when water hammer pressure waves hit. Adding pipe clamps with rubber isolators every 1.2 to 1.5 metres ($2 to $5 each) prevents the pipes from physically striking the structure. In Ottawa basements where copper supply lines are exposed along the ceiling, this is often a quick fix that costs under $50 in materials and makes a noticeable difference.If water hammer persists after installing arrestors and checking pressure, you may have a more complex issue like a failing check valve, thermal expansion in a closed system (common in homes with backflow preventers required by Ottawa's plumbing code), or water velocity problems from

undersized piping. These situations warrant a professional plumber who can diagnose the root cause. For noise issues that extend beyond plumbing into walls and structure, a soundproofing specialist can assess whether additional pipe isolation is needed — the Ottawa Contractor Directory at justynrookcontracting.com/directory lists qualified professionals across both trades.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:HomeupgradersRenoMotion Inc.Prism ServicesGrunt Work 4 GruntsALTIOR CONSTRUCTIONView all contractors ?

Q5

What type of flex connector should I use between my furnace and the main trunk line to reduce noise?

You should use a canvas or fibreglass flexible duct connector (commonly called a flex connector, vibration isolator, or duct sock) between your furnace and the main trunk line to break the rigid metal-to-metal connection that transmits blower vibration into your ductwork. This is one of the most effective and affordable HVAC noise reduction measures available — a proper flex connector can reduce structure-borne vibration transmission by 10 to 20 dB for under $100 in materials.The standard product is a heavy-duty canvas or woven fibreglass duct connector, typically 3 to 6 inches wide, that bridges the gap between the furnace plenum and the sheet metal trunk line. These are available from HVAC suppliers across Ottawa for $15 to $50 depending on the duct size and material quality. Look for connectors rated for your system's temperature and pressure — supply-side connectors near the heat exchanger need to handle temperatures up to 90°C (200°F), so verify the product is rated accordingly. For Ottawa furnaces running at full capacity during January cold snaps, this temperature rating is not optional.Installation Details That MatterThe connector must be installed with enough slack to actually flex — this is where many installations fail. If the canvas is pulled taut between the furnace and trunk line, it becomes a rigid bridge and provides almost zero vibration isolation. Leave approximately 1 to 2 inches of slack so the material can absorb movement. Secure it with draw bands or worm-drive clamps on both ends, sealed with aluminum foil tape (not cloth duct tape, which degrades in heat). The connection should be airtight — any air leak at the flex connector will whistle and negate the noise benefit.For the return air side, which operates under negative pressure, ensure the connector material is stiff enough not to collapse inward. A neoprene-coated fibreglass connector works well here because it resists both the suction forces and the moisture that can accumulate in return ducts, particularly in Ottawa homes during spring when humidity levels rise and condensation is common on cool duct surfaces.If you are dealing with particularly stubborn low-frequency vibration — the kind you feel more than hear — consider upgrading to a double-wall flex connector with an internal acoustic lining. These cost $40 to $80 and combine vibration isolation with some sound absorption. Products from manufacturers like Duro Dyne, Ductmate, or Hart & Cooley are readily available through Ottawa HVAC suppliers. Some Ottawa contractors also fabricate custom

connectors using mass loaded vinyl sandwiched between two layers of canvas, which provides excellent vibration break plus added mass for low-frequency attenuation.A few important caveats for Ottawa homeowners: the flex connector alone will not solve all furnace noise — it specifically addresses vibration transmitted through the duct connection. If noise is also travelling through the furnace cabinet, through the concrete floor, or radiating from the duct walls further down the line, you will need additional measures. Also, flex connectors do deteriorate over time — the canvas can dry out and crack after 10 to 15 years, especially in the hot, dry air stream on the supply side. Inspect yours annually when you change your furnace filter and budget for replacement if it shows signs of cracking or tearing.While installing a flex connector is within the skill range of a handy homeowner, getting the tension, sealing, and temperature rating right matters. If you are already having your furnace serviced, ask your HVAC technician to install or upgrade the connector at the same time. For broader noise issues beyond the furnace connection, the Ottawa Contractor Directory at justynrookcontracting.com/directory can connect you with professionals who specialize in residential acoustic solutions.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:HomeupgradersJC CarpentryNLC Drywall ServicesScott Smirle (Smirle Elite Contracting)Grunt Work 4 GruntsView all contractors ?

Q6

My HVAC system creates a booming resonance in one specific room, what could be causing this?

A booming resonance in one specific room when your HVAC system runs is almost certainly a standing wave or resonance amplification problem where the dimensions of the room, the ductwork, or both happen to align with a frequency produced by your furnace blower or air handler. Essentially, your room is acting like a drum or an organ pipe, amplifying a narrow band of low-frequency sound that might be barely noticeable elsewhere in the house.The most common cause is duct resonance — when the length of a duct run between two reflection points (such as a bend and a register) matches the wavelength of a tone produced by the blower, that duct section amplifies the sound dramatically. A duct run of about 3 metres, for instance, resonates strongly around 55 to 60 Hz, which is right in the range that feels like a deep boom or throb. If your furnace blower operates near that frequency or one of its harmonics, the duct feeding that room will selectively amplify it. This is especially common in Ottawa homes built in the 1990s and 2000s in areas like Barrhaven, Orleans, and Kanata, where builders used long, straight sheet metal trunk lines with minimal sound attenuation.Other Contributing FactorsRoom dimensions play a role as well. Sound waves bounce between parallel walls, floor, and ceiling, and when a room dimension matches the wavelength of the noise, a room mode develops. A room that is roughly 3 metres (10 feet) in one dimension will have a strong mode around 57 Hz — the same low-frequency range where HVAC blower noise concentrates. If you notice the boom is louder in certain spots (typically corners or along one wall) and quieter in others, you are almost certainly

dealing with a room mode being excited by the HVAC system.Sheet metal ductwork itself can also be the culprit. Large, flat sections of rectangular duct act like speaker cones — the blower pressure fluctuations cause the sheet metal panels to flex in and out, radiating sound directly. This duct wall breakout noise is worse with thinner gauge metal and larger duct cross-sections. If you can see the duct in an unfinished basement and it visibly vibrates when the system runs, that is your smoking gun.To diagnose the specific cause, try these steps: change the blower speed — if the boom shifts pitch or disappears at a different speed, it confirms a resonance match. Temporarily block the register in the affected room (briefly, just for testing) — if the boom stops, the duct feeding that room is the resonant path. Stand in different spots in the room — if the boom is dramatically louder in corners and weaker in the centre, room modes are amplifying it.Fixes range from $200 to $2,000 depending on the cause. Adding acoustic duct liner inside the offending duct run ($300 to $800) breaks up the resonance. Installing a duct silencer inline ($400 to $1,000 installed) attenuates the specific frequency. For duct wall breakout, wrapping the duct exterior with mass loaded vinyl ($200 to $500) adds mass that damps the panel vibration. Adjusting blower speed via an ECM variable-speed motor upgrade ($800 to $1,500) can shift the excitation frequency away from the resonant point entirely.Because resonance problems involve the interaction between your specific equipment, ductwork layout, and room geometry, this is a situation where a professional assessment pays for itself. A soundproofing contractor with HVAC noise experience can pinpoint the cause in a single visit and recommend the most cost-effective fix. The Ottawa Contractor Directory at justynrookcontracting.com/directory lists professionals who can help diagnose and resolve mechanical noise issues in your home.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:Justyn Rook ContractingRenoMotion Inc.Green Property RestorationsComfort Zone InsulationALM Construction & Landscaping Inc.View all contractors ?

Q7

How do I dampen the vibration from a whole-house generator that transmits through the concrete pad?

To stop vibration from a whole-house generator transmitting through its concrete pad and into your home's structure, you need to isolate the generator from the pad using vibration-dampening mounts and, in some cases, isolate the pad itself from the foundation. Generator vibration is a structure-borne noise problem — the engine's low-frequency rumble travels through rigid connections far more efficiently than through air, which is why you can feel it in your floors and walls even when the airborne sound outside seems manageable.The most effective solution is installing spring-and-rubber isolation mounts (sometimes called anti-vibration mounts or AVM pads) between the generator and its mounting surface. Quality isolation mounts from manufacturers like Mason Industries or Kinetics Noise Control cost $40 to $120 each, and a typical whole-house generator needs four to six mounts, putting the materials at $200 to $700. These mounts are rated by weight capacity and natural frequency — you want mounts that achieve a natural frequency well below the generator's operating frequency, typically below 5 Hz for a generator running at 1800 or 3600 RPM. The general rule is that the mount's natural frequency should be less than one-third of the lowest disturbing frequency.Addressing the Pad-to-Foundation ConnectionIf your generator pad is poured directly against or connected to your home's foundation — common in Ottawa installations where contractors pour the generator pad at the same time as a patio or walkway — vibration will short-circuit even the best isolation mounts by travelling through the concrete. The fix is to cut a control joint or isolation gap between the generator pad and any connected concrete, then fill it with a closed-cell foam expansion joint or neoprene isolation strip. This break in the rigid path can reduce structure-borne transmission by 15 to 20 dB. A concrete cutting contractor in Ottawa typically charges $300 to $600 for this type of saw cut.For generators already in place, a practical intermediate solution is to set the generator on a secondary concrete inertia base with isolation mounts underneath. The added mass of the inertia base (typically two to three times the generator weight) absorbs vibration energy before it reaches the pad. This is more involved and costs $1,500 to $3,500 installed, but it is the gold standard for serious vibration isolation and is commonly specified for standby generators serving Ottawa medical facilities and home offices where vibration-free operation is critical.Do not overlook the exhaust pipe and fuel line connections — these rigid pipes act as vibration bridges. Flexible stainless steel connectors at the generator end (about $80 to $200 each) prevent vibration from bypassing your mounts entirely. Similarly, ensure the electrical conduit from the generator to your transfer switch includes a flexible liquid-tight section rather than running rigid conduit the entire distance.Ottawa's freeze-thaw cycles — over 100 per year — deserve special attention. Rubber isolation mounts exposed to the elements will degrade faster than in milder climates. Specify neoprene or EPDM rubber rated for outdoor use down to -40°C, and inspect mounts annually each spring. A cracked or compressed mount provides zero isolation. For a whole-house generator vibration issue, consulting with a soundproofing or vibration control specialist will ensure the solution is properly engineered for your specific

generator model and foundation conditions. Browse the Ottawa Contractor Directory at justynrookcontracting.com/directory to find professionals experienced with mechanical vibration isolation in residential settings.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:Luxe Painting and Renovations RenoMotion Inc.Scott Smirle (Smirle Elite Contracting)Whole Home Beauty (WHB)Steven Labelle - Your Complete Home RenovatorView all contractors ?

Q8

What's the best way to quiet a noisy return air duct that runs through my Ottawa bedroom wall?

The most effective way to quiet a noisy return air duct running through your bedroom wall is to line the interior of the duct with acoustic duct liner and, where possible, add a duct silencer or sound attenuator inline before the duct enters the bedroom. Return air ducts are particularly problematic because they are essentially large, hollow metal tubes that act as sound highways — carrying furnace blower noise, airflow turbulence, and even conversations from other rooms directly into your sleeping space.Start by identifying the type of noise you are dealing with. Airflow whoosh typically means the duct is undersized for the air volume being pushed through it, or there are sharp bends creating turbulence. Rumbling or vibration usually traces back to the furnace blower motor transmitting through rigid duct connections. Popping or banging during Ottawa's winter heating cycles is caused by thermal expansion of sheet metal ducts — a common complaint in Kanata and Barrhaven homes where long duct runs pass through exterior walls exposed to temperature swings from +20°C inside to -25°C outside.Practical Solutions From Least to Most InvasiveFor immediate improvement, install 1-inch acoustic duct liner (fibreglass with a foil face or neoprene-coated fibreglass) inside the return duct for at least six to eight feet before it enters the bedroom. This alone can reduce airflow noise by 8 to 15 dB depending on the frequency. Material cost runs $2 to $4 per square foot, and a typical bedroom return duct lining project costs $300 to $800 installed in Ottawa. If the duct runs straight from the furnace room to the bedroom with no turns, adding a lined 90-degree elbow or an S-bend offset forces sound waves to bounce off absorptive surfaces, dramatically reducing transmitted noise.For more serious noise, a rectangular duct silencer installed inline costs $150 to $400 for the unit itself and provides 15 to 25 dB of reduction across a broad frequency range. These are commonly used in commercial buildings but work beautifully in residential applications — they just need adequate space. If your return duct is sheet metal and the walls of the duct itself are vibrating, wrapping the exterior with mass loaded vinyl (MLV) at $1.50 to $3.00 per square foot adds mass that damps the panel resonance. Secure the MLV with foil tape rather than screws to avoid creating new vibration paths.One critical detail that Ottawa HVAC contractors sometimes overlook: when you add lining or a silencer to a return duct, you are slightly reducing the effective duct size, which increases air velocity and can actually make whoosh noise worse if the duct was already marginal. A qualified technician should measure static

pressure before and after to confirm the system is still balanced. The Ontario Building Code requires adequate ventilation and air exchange, so never restrict ductwork to the point where it compromises heating performance — especially important in Ottawa where your furnace is working hard for five to six months of the year.For a noisy return duct affecting your sleep, it is worth having a soundproofing professional assess whether the noise source is airflow, mechanical vibration, or sound transmission from other rooms through the duct. Each cause has a different optimal fix, and an experienced contractor can often solve the problem for $500 to $1,500 rather than the $3,000-plus that results from guessing wrong. The Ottawa Contractor Directory at justynrookcontracting.com/directory can help you connect with professionals who specialize in acoustic and HVAC noise solutions in your area.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:613BinsJC CarpentryScott Smirle (Smirle Elite Contracting)613PAINTING INCLeeds Property MaintenanceView all contractors ?

Q9

How do I reduce the noise my ductless mini-split makes on the interior wall it's mounted to?

Interior noise from a wall-mounted mini-split head typically falls into two categories: airflow noise from the fan and louvers (a whooshing or rushing sound) and vibration transfer into the wall (a hum or buzz that you feel as much as hear). The approach differs for each, and most Ottawa homeowners dealing with this problem can achieve a major improvement for $100 to $500 depending on which type of noise is dominant.For vibration-related noise — the hum or buzz that seems to come from the wall itself rather than the unit — the issue is that the mounting plate transfers motor vibration directly into the drywall and stud framing behind it. The fix is adding a vibration isolation layer between the mounting bracket and the wall. Remove the indoor unit from its mounting plate (it lifts off hooks — a straightforward process), then install 3 to 6 millimetre neoprene or EPDM rubber pads between the mounting plate and the wall surface. Cut the rubber to match the plate and reinstall, ensuring all mounting screws pass through the rubber. This costs under $30 in materials and takes about an hour. For stubborn vibration, you can also replace the standard mounting screws with rubber-bushed vibration-dampening fasteners at $2 to $5 each — these prevent the screw shaft itself from bridging vibration past the rubber pad.Addressing Airflow and Refrigerant NoiseIf the noise is more of a rushing or whooshing sound, check the fan speed setting first. Many mini-splits default to auto mode, which can ramp the fan to maximum speed in heating mode during Ottawa winters when the unit works hardest to maintain temperature at -20°C and below. Manually setting the fan to medium instead of auto reduces noise by 5 to 10 dB at the cost of slightly slower temperature recovery. Also inspect the air filters — dirty or clogged filters force the fan to work harder, increasing both noise and energy consumption. Ottawa homes near major roads like the Queensway or in areas with construction activity accumulate dust faster and may need monthly filter cleaning

during peak heating season.A less obvious but surprisingly common source of mini-split wall noise is the refrigerant line set running through the wall penetration. Refrigerant flowing through the copper lines can create a gurgling or hissing sound that transmits directly into the wall framing if the lines are in rigid contact with the structural members. Ensure the line set is wrapped in foam insulation sleeves everywhere it contacts wood framing, and that the wall penetration is sealed with acoustic caulk rather than rigid spray foam. Rigid spray foam creates a direct vibration bridge, while acoustic caulk at $8 to $15 per tube remains permanently flexible and absorbs vibration.For mini-splits mounted on bedroom walls — common in Ottawa homes where the unit serves a primary living space and the master bedroom shares the wall — consider whether the mounting location can be improved. Sometimes relocating the unit to an exterior wall or a wall adjacent to a hallway rather than a bedroom costs $300 to $600 for a professional to rerun the line set but eliminates the noise problem for good. The wall cavity behind the unit can also be filled with Rockwool Safe'n'Sound insulation to absorb vibration energy before it radiates into the room, a relatively simple improvement if you have access from the other side. For persistent mini-split noise that these steps do not fully resolve, an HVAC or soundproofing professional can assess whether the unit itself has a mechanical issue — the Ottawa Contractor Directory at justynrookcontracting.com/directory can connect you with local specialists.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:Reno's by Daniel FrauwallnerRenoMotion Inc.Renovo ConstructionNic’s D.U.C.T Works IncGeerts Roofing IncView all contractors ?

Q10

My new high-efficiency furnace produces a low hum that resonates through the whole house, how do I fix this?

A low-frequency hum from a new high-efficiency furnace that resonates through the house is almost always caused by mechanical vibration transferring from the furnace into the building structure through the floor, ductwork connections, or gas piping. New high-efficiency condensing furnaces — the 96 to 98 percent AFUE units now standard in Ottawa — use a different combustion process than older models, with sealed combustion chambers and induced-draft or condensing blower motors that can produce a persistent 60 to 120 Hz hum that older atmospheric furnaces simply did not generate.The first and most effective fix is vibration isolation at the furnace base. Most furnaces sit directly on a concrete floor or a sheet metal platform that transmits every vibration into the slab, which then radiates that hum through every floor and wall in the house. Installing anti-vibration pads under the furnace — neoprene isolation pads rated for the unit's weight — costs $60 to $150 in materials and can reduce structural vibration transfer by 80 percent or more. Cork and rubber composite pads at least 12 millimetres thick work well and remain effective through Ottawa's temperature range. This is a 30-minute job for an HVAC technician and should be your first step.Ductwork and Connection PointsIf the hum persists after isolating the base, the vibration is likely travelling through rigid duct connections. The supply and return plenums that connect to the furnace should include a flexible duct connector (sometimes called a vibration break or canvas connector) — a 4-to-6-inch section of flexible material between the furnace and the rigid ductwork. Many installers skip this step or install it incorrectly with the flexible section pulled taut instead of slightly loose. Proper flexible connectors cost $30 to $60 each and you need one on both the supply and return sides. Having an HVAC technician install or correct these costs $200 to $400 total.The gas line connection is another frequently overlooked vibration path. A rigid black iron gas pipe connected directly to the furnace acts like a tuning fork, transmitting vibration along its entire length — potentially 10 metres or more to wherever it contacts floor joists or wall framing. The fix is a flexible gas connector (a CSA-approved stainless steel flex line) between the rigid gas pipe and the furnace. Most Ottawa HVAC companies stock these, and installation costs $100 to $200. This alone eliminates the gas pipe as a vibration highway through your home.If you have addressed all three connection points and the hum remains, the issue may be ductwork resonance. Large rectangular sheet metal ducts can vibrate sympathetically at the furnace's operating frequency, amplifying the hum and broadcasting it through ceilings and walls — a problem particularly common in Barrhaven and Kanata homes with long trunk duct runs. Applying mass loaded vinyl (MLV) or duct-wrap insulation to the first 3 to 5 metres of supply and return trunk duct adds mass and damping that breaks the resonance. Materials cost $100 to $300 and professional installation adds $200 to $400. In rare cases, the blower motor itself may be defective or out of balance — if the furnace is new and under warranty, have the installer check motor balance with a vibration meter as this would be a warranty repair. For persistent furnace hum that basic isolation does not solve, a professional with combined HVAC and acoustic expertise can pinpoint the exact transmission

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Q11

What's the best duct silencer for a high-velocity forced air system in an older Ottawa home?

For high-velocity systems — typically using 2-inch to 4-inch round flexible ducts like those in SpacePak or Unico systems common in older Ottawa homes where conventional ductwork will not fit — the best silencer approach combines a sound attenuator plenum at the air handler with inline silencers on the noisiest individual supply runs. High-velocity systems are inherently louder than conventional forced air because they push air at 1,500 to 2,500 feet per minute versus 600 to 900 for standard systems, and that velocity creates significant turbulent noise.The most effective single upgrade is a factory-engineered sound attenuator plenum installed directly after the air handler. Both SpacePak and Unico sell dedicated sound attenuator plenums for their systems at $400 to $800 for the unit plus $300 to $500 for installation. These plenums use acoustic lining and chamber designs to absorb noise before it enters the distribution ductwork, and they can reduce system noise by 10 to 15 dB — a very significant improvement that roughly cuts perceived loudness in half. If your older Ottawa home in the Glebe, Sandy Hill, or Rockcliffe Park had a high-velocity system retrofitted during a renovation and the installer did not include an attenuator plenum, adding one is typically the single best investment you can make.Inline Silencers and Outlet TreatmentFor individual supply runs that remain noisy after the plenum upgrade — often bedrooms and quiet rooms where even moderate airflow noise is bothersome — inline duct silencers sized to the specific duct diameter are effective. For 2-inch round high-velocity ducts, a 24-inch inline silencer with acoustic lining costs $80 to $150 each and can be spliced into the flexible duct run, ideally within 3 to 5 feet of the outlet. For larger 3-inch or 4-inch runs, silencers cost $120 to $200 each. Installation labour runs $100 to $200 per silencer depending on accessibility. Plan on treating 3 to 6 runs in a typical home for a total cost of $600 to $1,800 for inline silencers alone.The supply outlet itself makes a significant difference in high-velocity systems. Standard outlets that came with many early installations can be upgraded to newer low-noise outlet designs that diffuse the air stream more gradually, reducing the rushing sound at the point of delivery. Replacement outlets cost $40 to $80 each and are a straightforward swap. Also check that every flexible duct run has gentle, sweeping bends rather than sharp kinks — a kinked high-velocity duct creates a jet-noise effect that no amount of inline silencing can fully overcome. Each kink or sharp bend adds approximately 3 to 5 dB of noise.One Ottawa-specific consideration: in older homes with plaster walls and minimal insulation in interior wall cavities, duct noise can resonate through wall cavities and sound

louder than the duct itself warrants. If you are hearing a low-frequency hum or rumble rather than high-pitched rushing, the duct may be vibrating against a joist or stud. Adding foam pipe insulation sleeves where ducts pass through structural members costs under $50 in materials and can eliminate this resonance completely. For a comprehensive approach to quieting a high-velocity system, a contractor with both HVAC and acoustic experience is ideal — the Ottawa Contractor Directory at justynrookcontracting.com/directory can help you find the right professional.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:Luxe Painting and Renovations JC CarpentryALTIOR CONSTRUCTIONDenys Builds Designs RenovationsCallandgoneView all contractors ?

Q12

What's the best way to isolate my heat pump compressor from the house foundation to stop vibration transfer?

The most effective approach is a three-layer isolation strategy: break the rigid mechanical connection between the compressor and the ground, break the connection between the ground and your foundation, and dampen any remaining vibration at the source. Most Ottawa homeowners can achieve a dramatic reduction in vibration transfer for $200 to $800 in materials and labour, and the difference is often night and day — especially in bedrooms adjacent to or above the outdoor unit.Start with the compressor mounting platform. If your heat pump sits on a concrete pad that is directly against or very close to your foundation wall, vibrations from the compressor travel through the pad, into the soil, and directly into your foundation. The single most effective fix is placing the unit on rubber anti-vibration pads rated for the unit's weight. Products like the DiversiTech EL-Series equipment pads or dedicated compressor isolation mounts cost $40 to $120 for a full set and reduce transmitted vibration by 70 to 90 percent. Make sure the pads are rated for Ottawa's freeze-thaw conditions — some rubber compounds become rigid and lose their damping properties below -20°C, which defeats the purpose exactly when your heat pump works hardest. Look for pads rated to -40°C or made from neoprene rather than natural rubber.Breaking the Ground-to-Foundation PathEven with proper mounting pads, vibration can still travel through the ground if the compressor pad sits close to the foundation. Ideally, the outdoor unit should be placed at least 60 to 90 centimetres away from the foundation wall. If your unit is currently right against the house — as is common in tight side yards in Centretown and Old Ottawa South — relocating it even 30 centimetres outward can make a noticeable difference. The refrigerant and electrical lines between the unit and the house should include a vibration loop — a gentle U-shaped bend in the copper refrigerant lines that absorbs mechanical vibration before it reaches the wall penetration. Most HVAC installers include this as standard practice, but older installations sometimes have rigid straight-line connections that transmit vibration directly.At the wall penetration point, ensure the line set passes through a rubber grommet or sleeve rather than being tightly packed with rigid foam or caulk. The penetration should be sealed for

air and moisture but flexible enough to absorb vibration — acoustic caulk ($8 to $15 per tube) is ideal here because it remains permanently flexible, unlike standard silicone or polyurethane caulk that hardens over time. Inside the house, if refrigerant lines run along floor joists or through wall cavities, they should be supported with rubber-lined pipe clamps rather than rigid metal hangers. Each rigid contact point between the line set and your home's structure is a potential vibration bridge.For persistent low-frequency vibration that you can feel more than hear — that subtle hum that resonates through bedroom floors in Barrhaven and Kanata homes where heat pumps are increasingly common — consider a concrete inertia base mounted on spring isolators. This is a heavier concrete pad (typically 2 to 3 times the unit weight) that sits on calibrated steel springs, costing $400 to $800 installed. It is the most effective isolation method available and is standard practice for commercial rooftop equipment. For help specifying and installing the right isolation system for your particular heat pump model, a soundproofing professional familiar with HVAC systems can ensure you get it right the first time — browse the Ottawa Contractor Directory at justynrookcontracting.com/directory for local options.Looking for experienced contractors? The Ottawa Construction Network connects homeowners with qualified professionals:Justyn Rook ContractingRenoMotion Inc.613PAINTING INCALM Construction & Landscaping Inc.Tiptop ContractingView all contractors ?

Q13

How do I reduce the whistling noise my HRV makes when the wind picks up during Ottawa winters?

Wind-induced HRV whistling is one of the most common winter noise complaints in Ottawa homes, and it happens because strong winds create pressure differentials across your exterior intake and exhaust hoods that force air through the unit at irregular velocities, causing turbulence and resonance in the ductwork. When Ottawa gets those brutal northwest winds off the Ottawa River at 40 to 60 km/h during January and February, even a well-installed HRV can start to whistle. The good news is that this is almost always fixable.The first thing to check is your exterior hoods. Standard builder-grade hoods with flat damper flaps are notorious for whistling in wind. Upgrading to a wind-resistant hood designed for high-wind applications — such as a Broan or Venmar wind hood with baffled internals — costs $80 to $150 per hood and can eliminate the problem entirely. You have two hoods (intake and exhaust), and both should be upgraded. While you are at the hoods, check that the damper flaps move freely and are not stuck partially open, which creates a reed effect that amplifies whistling. In Ottawa, ice buildup on damper flaps is common when temperatures stay below -15°C for extended periods — the condensation from warm exhaust air freezes the flap in a partially open position.Ductwork and Damper SolutionsIf new hoods do not solve the problem, the whistling is likely occurring inside the ductwork. The most common cause is undersized duct runs — when builders use 5-inch duct for an HRV that requires 6-inch, air velocity increases and whistling becomes much more likely at high wind speeds. Correcting undersized duct is a more involved fix at $500 to $1,200 depending on accessibility, but it permanently solves the problem. Another frequent culprit is flex duct with sharp bends. Flex duct should never be bent at more than a 45-degree angle, and sharp 90-degree turns create turbulence that whistles. Replacing sharp-bent flex duct with rigid metal duct and proper elbows costs $300 to $800 for a typical HRV installation.Installing an inline duct silencer on the intake side — the side most affected by wind — is an effective and relatively affordable fix at $150 to $300 for the silencer plus $100 to $200 for installation. A 6-inch silencer that is 24 to 36 inches long, lined with acoustic mineral wool, can reduce wind-driven noise by 15 to 25 dB without significantly affecting airflow. Make sure any silencer used in the cold-air intake path is rated for Ottawa's temperature extremes, as some acoustic liners can absorb moisture and degrade in freezing conditions.One often-overlooked solution is adjusting the HRV's balancing dampers. Every HRV has internal or external balancing dampers that set the ratio of supply to exhaust airflow. If these are set so that the unit runs with a slight positive or negative pressure imbalance, wind gusts can push the system past a resonance point and trigger whistling. Having an HVAC technician rebalance the HRV with a flow hood — typically a $150 to $250 service call — can reduce wind sensitivity significantly. If you have been chasing this problem through multiple Ottawa winters without success, a soundproofing or HVAC professional with specific HRV experience can diagnose the exact resonance point — the Ottawa Contractor Directory at justynrookcontracting.com/directory is a useful resource for finding specialists in your area.Looking for experienced contractors? The Ottawa Construction Network connects

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Q14

What's the best way to reduce noise from HVAC ducts that run through bedrooms?

HVAC duct noise in bedrooms can be significantly reduced through a combination of duct wrapping, vibration isolation, and strategic modifications to the ductwork itself. The most effective approach typically involves wrapping ducts with mass loaded vinyl (MLV) and acoustic insulation, isolating the ducts from direct contact with framing, and addressing airflow issues that create turbulence noise.

Duct Noise Sources and Solutions

HVAC noise travels through ducts in two main ways: airborne sound transmission through the duct walls themselves, and structure-borne vibration from the air handler that travels through rigid duct connections to the building frame. In Ottawa homes, this problem is especially common in newer construction where ducts run through bedroom ceiling cavities or in older homes where original ductwork wasn't designed with noise control in mind.

Duct wrapping is the most effective treatment for airborne noise transmission. Wrap exposed ducts with 1 lb/sqft mass loaded vinyl ($1.50-$3.00 per square foot) followed by a layer of acoustic mineral wool insulation like Roxul Safe'n'Sound. Secure the MLV with acoustic caulk at all seams — any gaps will significantly reduce performance. This combination blocks sound transmission through the duct walls while the mineral wool absorbs any remaining sound energy. For supply ducts in bedroom ceilings, budget $8-$15 per linear foot for professional wrapping.

Vibration isolation addresses structure-borne noise by breaking the rigid connection between ducts and the building frame. Install flexible duct connectors at the air handler to prevent vibration transmission into the ductwork. Use acoustic hangers or isolation pads where ducts contact ceiling joists or wall studs — never allow hard metal-to-wood contact. Neoprene or rubber isolation pads cost $3-$8 each and make a dramatic difference in vibration transmission.

Airflow modifications can eliminate turbulence noise caused by undersized ducts, sharp bends, or excessive air velocity. Register dampers should be fully open — partially closed dampers create turbulence and whistling. If ducts are undersized (common in Ottawa's older homes), consider upsizing the ductwork or adding additional return air paths to reduce velocity. Sharp 90-degree elbows near bedrooms should be replaced with long-radius elbows or flexible duct sections where possible.

The Ontario Building Code doesn't specifically regulate HVAC noise levels in residential construction, but the National Building Code recommends keeping mechanical noise below NC-35 in bedrooms (roughly equivalent to a quiet library). Ottawa's extreme temperature swings mean ductwork expands and contracts significantly, which can create additional noise if ducts are rigidly mounted — proper isolation becomes even more critical here than in milder climates.

Common mistakes include wrapping only visible ductwork while ignoring hidden sections, using standard fibreglass insulation instead of acoustic mineral wool, and failing to seal all joints in the duct wrapping. Many homeowners also overlook return air ducts, which can be just as noisy as supply ducts. Don't forget that ductwork modifications may require HVAC rebalancing to maintain proper airflow throughout the house.

For comprehensive duct noise reduction in Ottawa homes, expect to invest $1,500-$4,000 depending on the amount of ductwork and accessibility. The work often involves coordination between HVAC and soundproofing professionals, especially if ductwork modifications are needed. A qualified contractor can assess your specific situation, identify the primary noise sources, and recommend the most cost-effective combination of treatments for your bedroom comfort.
