

Why an air conditioning with bulkhead solution beats exposed units every time

When I first moved into a 1960s brick veneer house in Canberra, the living room had a split system air conditioner mounted high on the wall. It worked, but it stuck out like a sore thumb. Every time I walked past, I noticed the plastic casing, the visible refrigerant lines, and the way the unit collected dust on top. That experience stuck with me. Years later, working with ducted reverse cycle air conditioning systems, I started to understand why so many homeowners and commercial clients prefer a cleaner approach. The answer often comes down to one choice: an air conditioning with bulkhead solution.

A bulkhead is a boxed-in section of ceiling that hides the indoor unit and the connecting pipework. It can run along a wall, across a room, or even span the entire length of a hallway. The air handler sits inside that cavity, and only the supply and return grilles are visible. For anyone who cares about how a room looks, that alone is a big improvement over a wall-mounted split system air conditioner. But the benefits go well beyond appearance.

How a bulkhead changes the installation game

Most people imagine a ducted reverse cycle air conditioning installation as something that requires a full ceiling cavity. In new homes, that is usually available. But in existing buildings, especially older Canberra houses with slab-on-ground construction or limited roof space, the lack of a ceiling void can stop a ducted system before it starts. A bulkhead solves that. By building a shallow enclosure directly under the ceiling, you create the space needed for the air handler, the ductwork, and the refrigerant lines. The result is an [air conditioning with bulkhead solution](#) that fits where a traditional ducted system never could.

I have seen this approach used in heritage-listed properties where you cannot touch the original ceiling. I have also seen it work in apartments with concrete slabs where there is no roof cavity at all. The bulkhead becomes the dedicated pathway for conditioned air. It also provides a clean route for zoning, which is one of the strongest arguments for ducted reverse cycle air conditioning in the first place.

Zoning gives you control where you need it

With a zoned temperature control setup, you decide which rooms get cooling or heating and which ones do not. That is hard to do with individual split systems, because each unit runs independently. With a ducted system and a bulkhead, you can run a single outdoor unit, say, a Daikin or Mitsubishi Electric model with inverter technology, and then direct airflow to the

bedrooms during the night and to the living areas during the day. The bulkhead houses the duct runs and the zone dampers, keeping everything out of sight.

I remember a project where the client wanted to cool three bedrooms and a home office, but the ceiling space was only about 200 millimetres. That is not enough for standard ductwork. We designed a bulkhead that ran along the corridor ceiling, with branch ducts feeding each room through ceiling grilles. The client chose an ActronAir unit with an RC-8 controller, which gave them individual thermostat control in each zone. They now run the office zone during working hours and the bedrooms only at night. Their energy efficiency rating improved because they stopped conditioning empty rooms.

Split systems vs. ducted with bulkhead

A split system air conditioner is simple and relatively cheap. You mount an indoor unit on the wall, run refrigerant lines to an outdoor unit, and you are done. But that indoor unit is always visible. It takes up wall space, it can interfere with curtains or furniture placement, and the airflow pattern is fixed by where you mount the bracket. With a ducted reverse cycle air conditioning system that uses a bulkhead, the indoor unit is completely hidden. The air enters the room through a linear slot grille or a round diffuser, and you can place those grilles exactly where the room needs them.

There is also the noise factor. A wall-mounted split system has the fan and the motor right there in the room. Even the quietest models produce some sound at the indoor unit. With a bulkhead solution, the air handler is remote, usually in the ceiling cavity or in a cupboard. The only noise you hear is the gentle whoosh of air from the grille. For a bedroom or a home theatre, that difference matters.

What to look for in a bulkhead design

Not every bulkhead is built the same. A good one needs to be sized correctly for the airflow, insulated properly to prevent condensation, and accessible for maintenance. A licensed installer should handle the design and the build. In Canberra, where the climate swings from minus five in winter to forty in summer, the insulation around the bulkhead is critical. If it is not done right, you get sweating ducts and eventually mould.

The choice of refrigerant also matters. Modern systems use R32, which has a lower global warming potential than older refrigerants. The bulkhead must be able to accommodate the larger line sets that some inverter technology systems require. I have seen installations where the installer tried to squeeze a Mitsubishi Electric heavy-duty unit into a bulkhead that was too tight, and the result was restricted airflow and a noisy system. The bulkhead dimensions should be matched to the equipment from the start.

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Real-world applications in Canberra homes

Canberra has a mix of housing types. There are 1970s townhouses with flat roofs and no ceiling space. There are modern duplexes where the builder used every centimetre of the roof for storage. There are commercial fit-outs where the ceiling is a suspended grid and you cannot just drop a duct anywhere. In all of those cases, an air conditioning with bulkhead solution provides a way to install ducted reverse cycle air conditioning without compromising the building structure.

One of the more interesting jobs I worked on involved a two-storey house where the upper floor had a steep pitched roof. The only way to get conditioned air to the top floor bedrooms was to run a bulkhead along the roofline inside the room. The homeowner was initially worried about the look, but once the bulkhead was finished and painted to match the ceiling, it looked like a design feature rather than an afterthought. They used a Fujitsu system with a heat pump, and the zoning was set up so the upstairs could run independently from the downstairs. That kind of flexibility is hard to beat.

Licensed installer requirements and practical considerations

In Australia, any work involving refrigerant lines must be done by an licensed installer with an Air Conditioning & Refrigeration Installers licence. That is not negotiable. But beyond the legal requirement, the installer's experience with bulkhead construction makes a real difference. A bulkhead that is not sealed properly will leak air into the ceiling space. A bulkhead that is not

insulated will cause condensation on the outside surface. And a bulkhead that is not accessible will make future repairs expensive.

I recommend talking to your installer about access panels before the bulkhead is closed up. Even a small panel gives a technician room to reach the drain pan or the filter. Capital Climate Solutions, for example, includes access panels as standard in their bulkhead designs. That kind of forethought saves headaches later.

Is a bulkhead right for your space?

If you are building new or doing a major renovation, a bulkhead is usually not needed because you have a full ceiling cavity. But if you are retrofitting ducted reverse cycle air conditioning into an existing building, the bulkhead often becomes the most practical option. It allows you to run ductwork, hide the equipment, and still get the benefits of zoning and zoned temperature control.

There is a trade-off. A bulkhead reduces your ceiling height slightly. In a room with a 2.4 metre ceiling, losing 200 millimetres can feel noticeable. But in most cases, the bulkhead runs along a wall or above a doorway, so the impact on usable space is minimal. And the visual cleanliness of having no wall-mounted unit is worth the compromise for many homeowners.

If you are still unsure, visit a showroom where you can see both options side by side. Look at a split system air conditioner mounted on the wall, then look at a bulkhead installation with only the grille visible. For most people, the choice becomes obvious. The air conditioning with bulkhead solution gives you better aesthetics, better zoning, and better use of your floor and wall space. It is not always the cheapest option upfront, but for the right project, it is the one that works best.