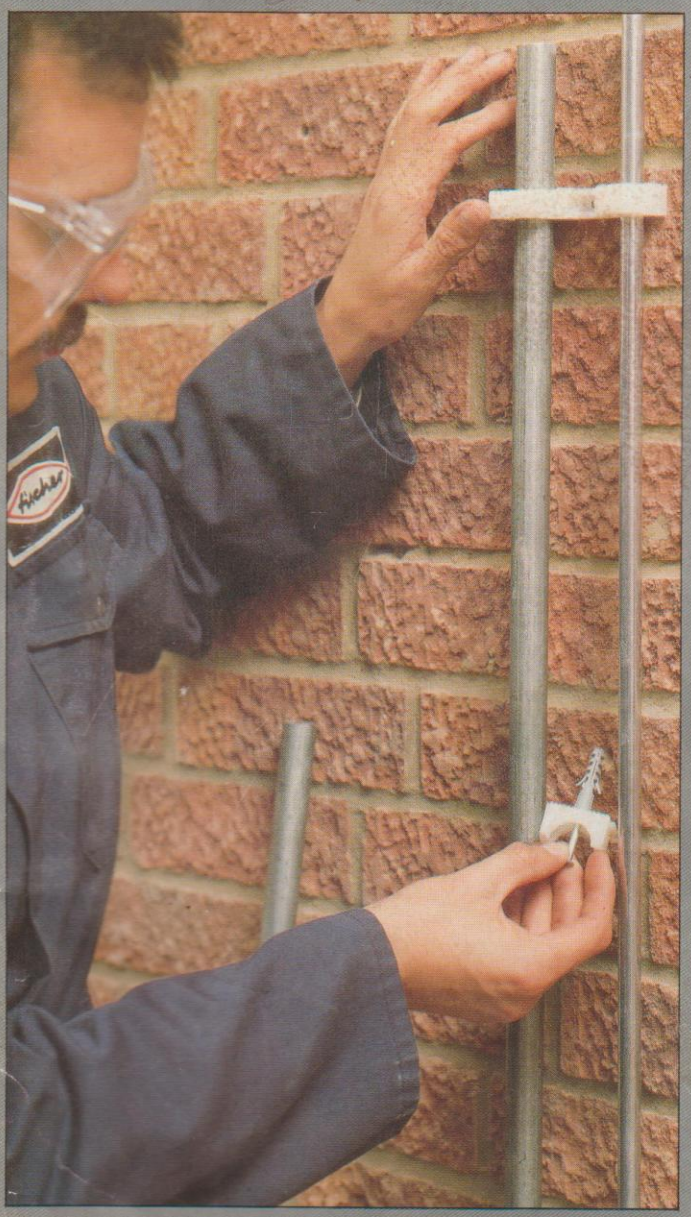
# Professional ELECTRICIAN AND INSTALLER

FREE! TO THE TRADE

THE BUSINESS JOURNAL FOR THE ELECTRICAL TRADE NOVEMBER 1989



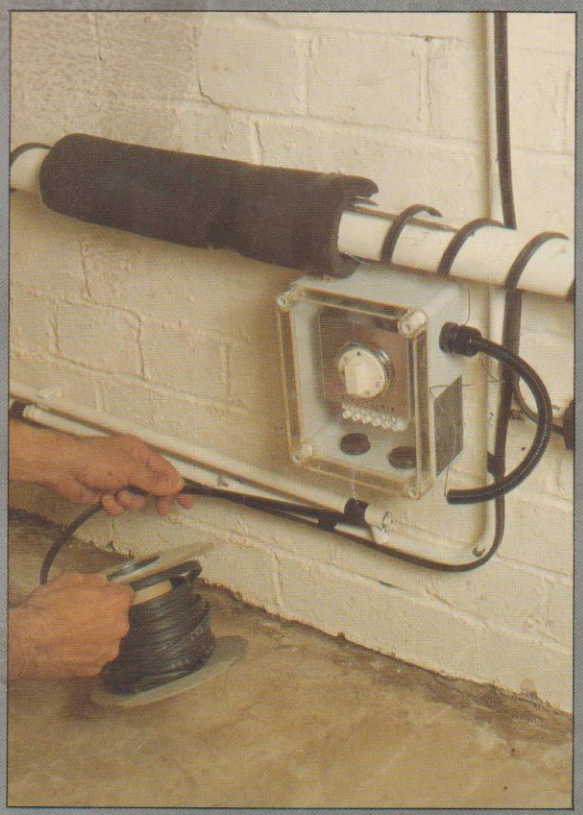
One for the fixture list — The SCH Saddle and S Plug from Fischer Fixings.

## VENTILATION & AIR CONDITIONING

## FIXINGS & ACCESSORIES

## FROST PROTECTION

## PE OF THE YEAR



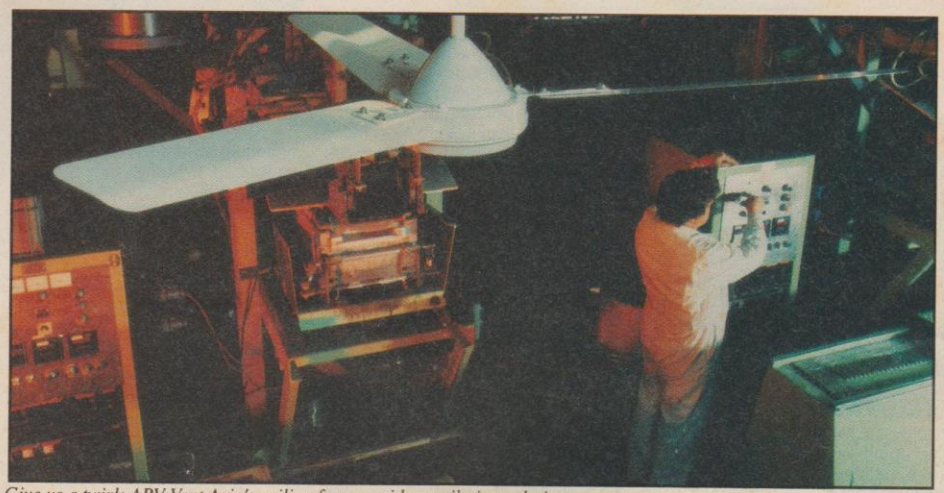
Avoid any thaw points this winter with Jimi Heat's Anti-Freeze.

NOVEMBER 1989 VOL.5 NO.9

Professional ELECTRICIAN AND INSTALLER

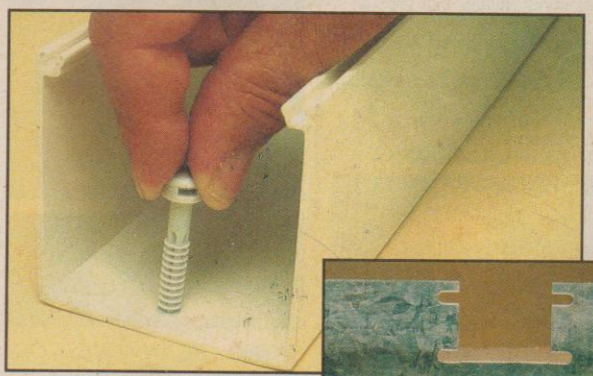
# CONTENTS



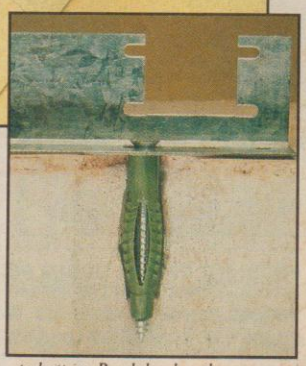


*Give us a twirl: APV Vent Axia's ceiling fans provide ventilation solutions.*





*From top ...*



*...to bottom, Rawlplug has the answers.*

*Professional*

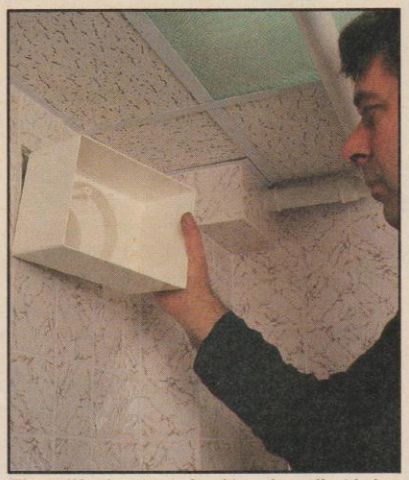
# VENTILATION & AIR CONDITIONING

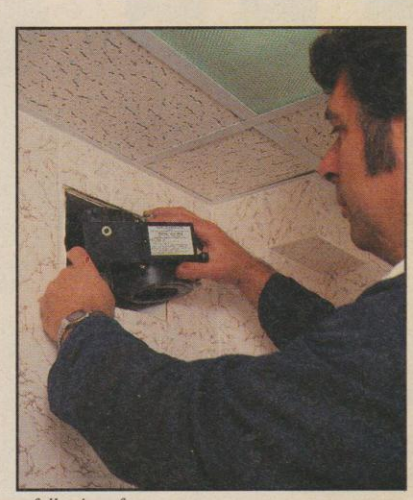
PROFESSIONAL ELECTRICIAN SUPPLEMENT— NOVEMBER 1989


Ensuring the sweet smell of success: installing the Aidelle Loovent 07.

# Nose zone layer

*Without adequate ventilation kitchens and bathrooms can raise a stink. Cherie Haywood of Airflow clears the air over domestic fans.*





*The wallfan housing is fitted into the wall with the motor following after.*

When installing a domestic fan, it is crucial to pick an appropriate unit for the job in hand. A fan badly sized or used for the wrong purpose will give the customer unsatisfactory results, often leading to the fan not being used.

The requirement for domestic fans is, in kitchens to remove cooking smells, and, in bathrooms and toilets, to remove odours. When used in conjunction with adequate heating and insulation, they can also go a long way to prevent condensation by removing moisture laden air at source.

There are now alternative arrangements for general ventilation for domestic applications, including fans with built-in or remote humidistats where condensation is a major consideration. These fans, which can be used in kitchens or bathrooms, usually have a manual-boost high speed, with a lower speed controlled automatically from the humidistat. It operates when a set moisture level is reached, or will override the manual boost if it is switched off before the moisture has cleared.

Another arrangement is to 'in-line' the fan, so it can be mounted outside the room, with simply an exhaust grille visible.

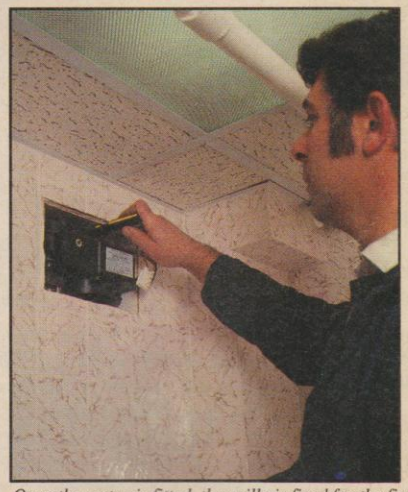
Consideration must also be given to the maintenance of the fan, wherever it is sited. Units will often attract grease, dirt, and other airborne matter which will increase the noise level of the fan and may prevent it from functioning at optimum efficiency. Therefore, choose a unit that can be basically disassembled to allow cleaning of the impeller (or driving blades) and maybe the casing of the motor unit also.

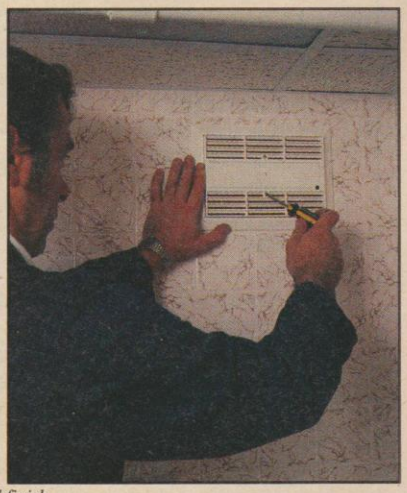
Safety is also a prime issue. We have seen some particularly dangerous situations, especially where fans are being used in showers. Generally, bathroom fans will cope with the level of moisture laden air as generated by a shower; nothing would cope, however, with the example we saw where the jet from the shower nozzle was directed straight into the fan. Another fan was wired directly from the 30A supply to an electric shower.

In an elderly persons sheltered housing scheme fans had been positioned in the wall adjacent to the bath. They were at such a low level that not only was water being splashed into the units likely, but it was also conceivable that people may have used them to pull themselves out of the bath. This could have had the effect of dislodging the unit from the wall, injuring the elderly person in the fall, or worse still, delivering a live unit into the bath.

There is good profit to be had in these areas, but as in all things, common sense and care must be exercised.

**Details. Circle readerlink 327**





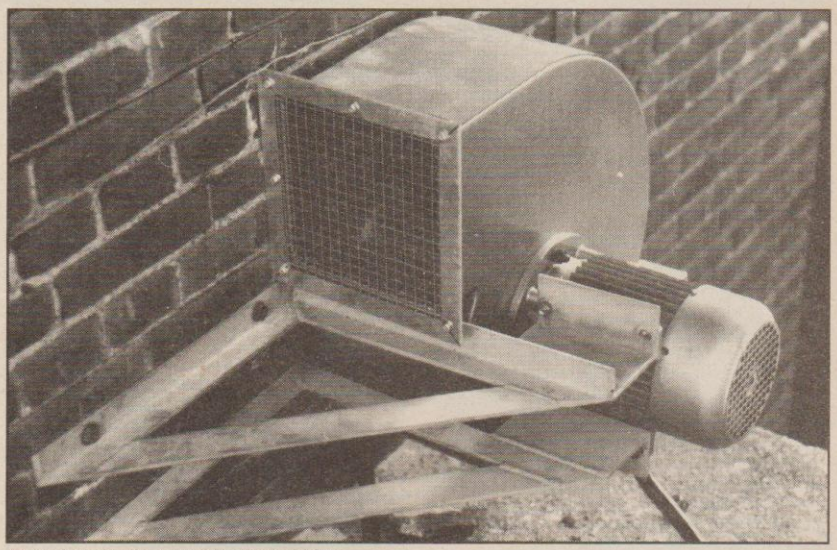
*Once the motor is fitted, the grille is fixed for the final finish.*

# Air styles

*When installing a ventilation system, make sure you choose the right fan for the job. Geoff Robson, general manager at Vortice blows hot and cold.*

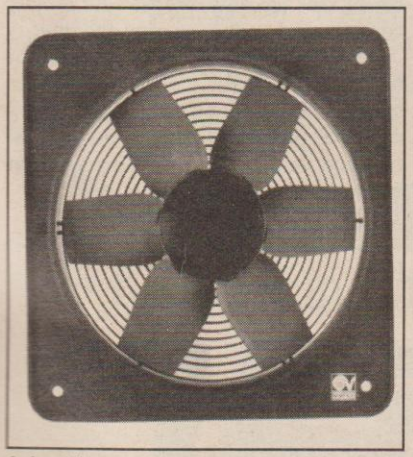
Commercial and industrial buildings need adequate ventilation, not only to keep the workforce comfortable but also to clear damaging fumes and condensation. A vast stock of inadequately ventilated buildings, not to mention new work, means that the electrical contractor more and more is required to include ventilation on his long list of skills.

There are various all singing, all dancing ventilation systems but it will be extract and ceiling fans that the electrician will be most probably required to supply and fit, so it is worth summarising the basic applications envisaged.



*Typical externally mounted centrifugal fan.*

● General ventilation in buildings where natural ventilation is not easily obtained, possibly due to double glazing restricting air entering the building, is provided by a wall- or window-mounted extract fan. Also, regulations dictate that a room without a window, such as a toilet, wash-



*Industrial extract fan.*

room or kitchenette, must have a fan to aid ventilation during and immediately after the room's use.

● Combating the effects of bad ventilation, and subsequent condensation and mould growth, requires special humidity control fans which operate when humidity levels reach a certain point — usually about 60 to 65% relative humidity.

● Cooling and energy conservation is also provided by fans. Desk and ceiling fans are mainly used in the summer months — and to great effect this year — but ceiling fans operated at slower speeds can also conserve heating energy in the winter months.

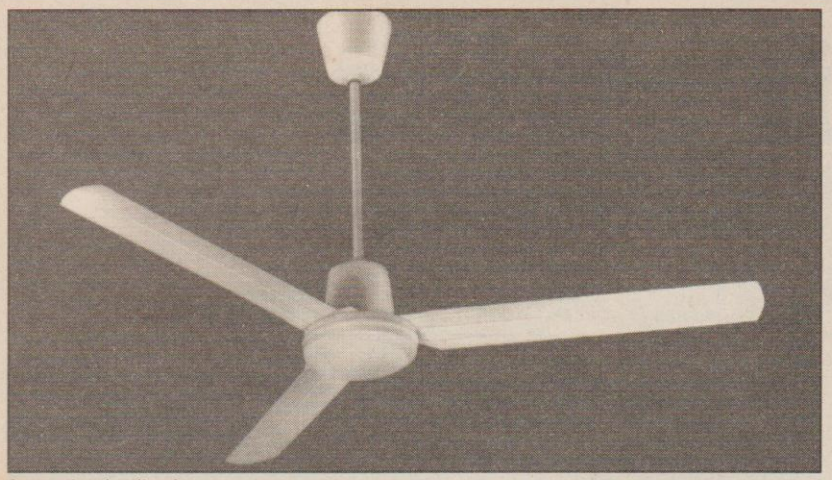
To ensure satisfactory ventilation in any situation it is vital to choose the correct fan; but the choice of fan is dependent on many factors, so the answers to a few simple questions will enable the right choice to be made.

Axial or centrifugal? The extract fan has to produce a certain amount of pressure to combat air movement resistance and thus perform effectively. In a room with an external wall and with an adequate air supply entering it, the air extracted by the fan will not meet any significant resistance so a unit developing relatively low air pressure will suffice. Therefore, an axial fan can be specified.

However, when ventilation is required for a room without external walls, the air must be pushed through suitable ducting. If this ducting is lengthy and contains bends, the resistance produced could be considerable, thus requiring a fan capable of producing sufficient pressure to overcome resistance. Therefore, a centrifugal fan must be specified.

Having assessed the type of fan necessary, the size and model is chosen by considering several other factors. The most important of these is the volume of air to be replaced; so you must know the size of room and the number of air changes per hour, depending on the use the room is put to. The total air movement required can then be calculated by multiplying the room's volume by the number of air changes. Example: room 3 by 5 by 3m = 45m$^3$, number of air changes needed is 12, total air movement required is 45 by 12 = 540m$^3$/hour. In very large rooms it may be necessary to consider several fans.

Other factors include: Position; to ensure a uniform flow of air throughout any room it is important to position the fan



*International ceiling fan.*

on the opposite side of the room to the source of incoming air. Where this is not practical the distance between the fan and air inlet must be kept as large as possible.

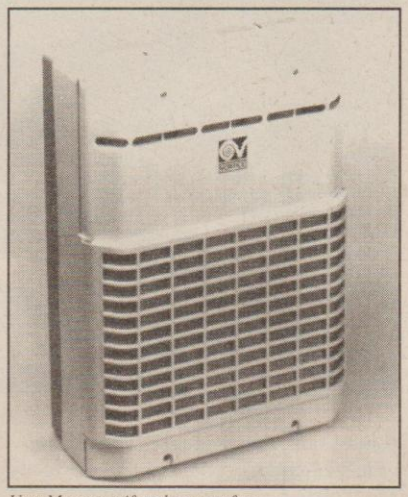
Temperature. If a fan is sited immediately above a cooker, or other heat source, it is quite likely that its temperature limit will be exceeded. This will operate the unit's thermal cut-out, resulting in on/off cycling. Certain units, however, are designed to cope with higher temperatures.

Use of ducting. Ducting connected to a fan must always be routed horizontally, with a gentle slope away from the fan to ensure that any condensation formed is carried away. Also, ducting must not be routed vertically unless a reliable condensation trap is fitted.

Airborne materials. Due to the volume of air passing over the fan blade, it is inevitable that deposits will form on the blade in time. To prevent these causing fan noise, inefficiency and even damage, regular cleaning is recommended. If it is known that there will be a high degree of airborne material — grease, dust, paint, *etc.* — a filtration system should be considered.

Ceiling fans are used for two distinct purposes. Firstly for cooling. It is usually recommended that, to feel the full benefit of the cooling effect, it is necessary to be within a circle approximately 2.5 times the diameter of the fan blade.

Secondly, they may be used for heat recovery. In any heated room, especially those with high ceilings, the air tends to stratify — the warmer air rises to the ceiling and the colder air settles at ground level. Logically, if the warmer air could be recirculated back to ground level so that an even temperature was produced from floor to ceiling then the amount of heating necessary to maintain a comfortable level could be reduced.



*Vort Max centrifugal extract fan.*

As with axial or centrifugal fans, we need to know the three basic room dimensions. However, in this case the total volume is not calculated, just the floor area. The vertical dimension is measured to the height of the fan blade and is used only to determine the number of fans for a given floor area. Table 1 provides this data.

As an example, how many fans are required in a factory with dimensions 50 by 35m and a height to the blades of 7m? Floor area is 1,750m²; by looking at the column indicating the height (Table 1), at 7m a total of 1,750m² requires 10 + 5 + 3 = 18 fans with a 1.4m blade diameter. Ceiling fans should be located symmetrically, but building design will dictate the practical layout.

*Vortice Record for toilets and bathrooms.*

One final point, when faced with difficult installations remember that a number of fans are now offered with remote control which reduces wiring and time.

Many customers will ask for fans to be fitted in specific places but the customer, contrary to folklore, is not always right. Be prepared to advise on ventilation and you will be providing an even better service.

**Details. Circle readerlink 300**

**TABLE 1**

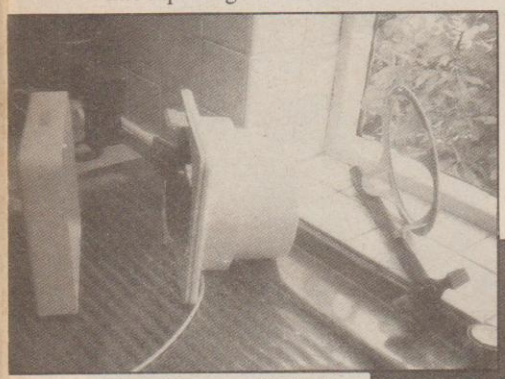
| Fan diameter | Height to blade (metres) | Quantity required | | | |
|---|---|---|---|---|---|
| | | Every 1000m² | Every 500m² | Every 250m² | Every 100m² |
| 900mm | 3 | 28 | 14 | 7 | 3 |
| | 4 | 20 | 10 | 5 | 2 |
| 1.4m | 5 | 15 | 8 | 4 | 2 |
| | 6 | 12 | 6 | 3 | 1 |
| | 7 | 10 | 5 | 3 | 1 |
| 1.6m | 8 | 9 | 4 | 2 | 1 |
| | 9 | 8 | 4 | 2 | 1 |
| | 10 | 7 | 3 | 2 | 1 |
| | 11+ | 6 | 3 | 1 | 1 |



**Details. Circle readerlink 467 ►**

## *PE's Johnny Dobbyn extracts his digit and breezes through an installation of Airflow's CR6 extractor fan.*

Years and years of kitchen grime, and what must have been burning tyres and cigar smoke or something had left the original fan a greasy yellow on the outside and coated with a black furry sludge on the inside. The lady of the house (well, flat actually) wanted it out and wanted it out yesterday. Removing the old fan was easy, aided by the fact that I didn't have to be too careful, as the previous installer had cracked the window pane tightening the mounting ring and I'd been press-ganged into replacing that too.



*Above: The nuts and bolts of extraction in three stages.*

*Right: Installation made easier by one sided access.*

So, as Mrs Beeton would say, first take your hole. My friendly neighbourhood glazier cut this for me when I got the glass for the window. The centre of the hole should be at least 120mm from the edges to maintain as much of the structural strength of the pane as possible. If cutting the hole in situ yourself, the circle to be punched out cannot be scored across its diameter often enough, as it has to be knocked out piecemeal.

Once the window had been glazed, and the putty had been given time to 'go off a bit', the installation of the new fan couldn't have been simpler. A tip the glazier gave me for seating the glass in the frame, was to use a bit of board to

*The final screw goes home.*

push against the glass around the hole. This spreads the load around the hole area and lessens the chance of breaking the glass.

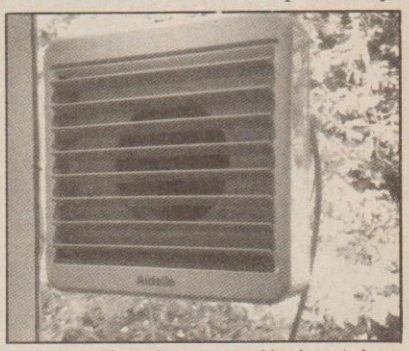
The fan chosen for the job was an Airflow Aidelle CR6 6in. model. It was roughly the same size as the old fan, and the choice of colours allowed it to blend in with the newly decorated kitchen. It has an optional speed controller and a bezel for through-the-wall mounting, if required. It comes in three basic pieces: the cover, the motor unit and the mounting ring.

The mounting ring was fitted into the hole in a trice. Gloves should be worn for this part of the job. I know, I could have written this in blood. An important plus for the ring is that it can be fitted from the inside only. Handy if you're working three floors up.

The motor unit is then guided into the ring and the screw holes aligned. This is made slightly easier if you do have access from the outside of the window, as the ring can push out to the limit of the lugs as the unit is pushed in. Take the (easily removed) impeller out first too, so you can get a better grip on the unit. Being able to take out the impeller also makes the insides easy to clean after the fan has been in service for a while.

After that, it is simply a matter of screwing in four screws. A tip here: as you might hope, the screws are very (very) tight into the ring and life is made a bit easier if you thread the ring with the screws before setting it into the hole. At this point choose whether you want the fan to be switch or pull-cord operated. I went for switch operated, so stowed the cord inside the unit around the pegs provided for the purpose. And snap. On went the cover and the fan was in.

It was wired into an MK 1091 WHI fused flex outlet, which leads to a 1060 WHI fused switch with a pilot lamp.



*And it's in. The grille is operated by the switch.*

These are from the company's Logic range. The fan is double insulated and fused to 2A.

All in all, as simple an installation as you are ever likely to do. Although the glazing took a bit of time the whole job, not including that but including the clearing up, must have taken an hour.

**Airflow CR6 extractor.**
**Details. Circle readerlink 366**
**MK Logic range.**
**Details. Circle readerlink 367**

### A cut above

**One tool used on the job was the Flex and Wire Stripper from Toggle Tools. The stripper is a neat little tool that fits into the palm of the hand. At one end it has two colour coded holes. One is for stripping and one for cutting wire. To strip, the wire is inserted into the appropriate hole and the stripper is rotated; the direction depending on the thickness of the wire. To cut, the wire is inserted into the other hole and the tool simply closed in the fist.**

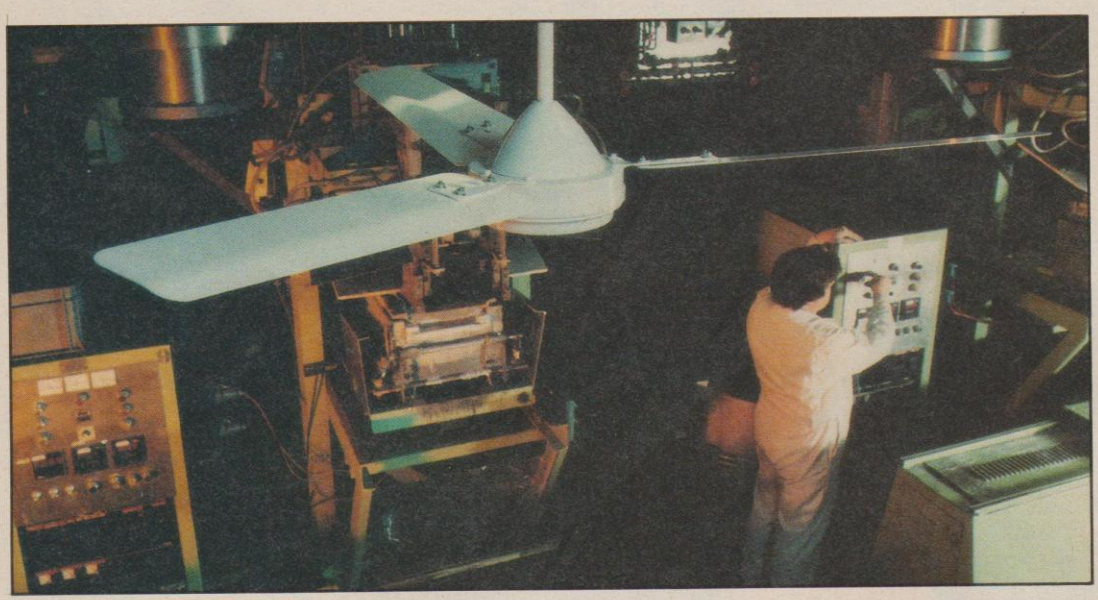
**Not necessarily the first thing you'd think about when equipping the tool box, but a cheap and cheerful addition to your kit, and probably something you'd miss if it wasn't there.**
**Details. Circle readerlink 368**



Details. Circle readerlink 468 ►

# In over your head

*Energy saving and heating systems unnecessarily leave people in a spin. APV Vent-Axia's technical director, David Vincent, goes round in circles over ceiling fans.*



*Using oveheads to cut them.*

We all know that warm air rises, but the opportunity to apply this simple knowledge and improve the efficiency of heating systems in large occupied spaces — particularly factories and warehouses — is often overlooked.

Most heating systems either directly or indirectly heat the air within a building in order to keep occupants warm. And the considerable heat gains from plant, machinery and processes do the same. The warmed air, being more buoyant, rises into the building roof space where temperatures can typically reach 30 to 40°C.

The result is a waste of valuable warmth, whilst the people who need it just a few metres below either remain cold, or require yet more heat in order to be comfortable.

It's the start of a vicious spiral. The more heat that's put in, the hotter the roof space becomes, and the greater the heat loss through the roof fabric because of the higher temperature difference between inside and outside — so the bigger the energy bill.

The effect is particularly marked in taller buildings — indeed it's the reason why overhead radiant heating is often used in such spaces in an attempt to keep people warm who would otherwise be cold almost regardless of the heat input via a warm air system. Nevertheless conventional radiant systems create a lot of warm air too, so there's still scope to make use of it to improve comfort at working level. The question is: How?

## In a spin

One answer is to use ceiling sweep fans. Arranged in a simple array, ceiling sweep fans act against the natural buoyancy of warm air and keep it exactly where it's needed — down at working level. By reducing the roof space temperature to just one or two degrees above the floor level temperature, the same installation reduces heat losses through the roof — it has been said that heating bill savings of up to 25% have been made.

The fans themselves use very little energy — less than 70W each at full speed, or a total of around 1.5kW in a typical 3,000m² factory area. Heat savings are largely dependent on the difference between the roof level and the working level temperatures, the ventilation rate and the geographical location. An approximation of possible heat savings can be made for a typical factory, assuming a ventilation rate of three air changes per hour and average standard of insulation by using the Heating Savings Calculator shown in figure 1.

## Through the roof

Firstly, just measure the temperature in the roof void and at working level on a typical winter's day with the installed heating working, and calculate the difference. The working level temperature should be between around 18 to 21°C. Next identify the degree days for the geographical location from the table shown. Where the degree days and temperature difference values intersect on the Heat

Savings Calculator, simply read off the savings.

For energy conservation, fan selection is dependent upon floor area and mounting height. Estimate the height at which the fan can be mounted — ideally not less than 0.75m below the roof — then read off from figure 2 the floor area per fan. Divide this figure into the overall floor area and this gives the number of fans required.

Note that more fans are generally needed for summer cooling — they should be placed between 4.5 and 6m apart. Variable speed control is a feature to look for when selecting ceiling sweep fans, so that users can adjust the performance of the system to meet their summer and wintertime requirements.

Being relatively light in weight — around 6 to 7kg — no special strengthening of support points is required when using roof steelwork for example. Nevertheless, care must be taken to ensure a secure attachment, and to keep fans at least 1.5 diameters away from walls or pillars, and 2.75 above floor level.

Electrical wiring is quite straightforward — look for a fan range which offers group controllers as individual switching is always appropriate.

Unlike some of the more sophisticated energy saving equipment — integrated building management systems for example — ceiling sweep fans offer comparatively large savings for a relatively small investment, so payback periods are short. It all adds up to satisfied customers for the electrical contractors who take the initiative to sell and install these highly cost-effective fan installations.

**Details. Circle readerlink 333**

*Degree days table*

Heating season September/May inclusive (based on figures supplied by the Department of Energy).

| | | | |
|---|---|---|---|
| Thames Valley | 2020 | North Western | 2330 |
| South Eastern | 2260 | East Pennines | 2210 |
| Southern | 2100 | East Anglia | 2270 |
| South Wesrern | 1820 | West Scotland | 2360 |
| Severn Valley | 2080 | East Scotland | 2460 |
| Midland | 2320 | NE Scotland | 2600 |
| West Pennines | 2210 | Wales | 2050 |
| North Eastern | 2340 | Northern Ireland | 2300 |
| Borders | 2460 | | |

Figure 1

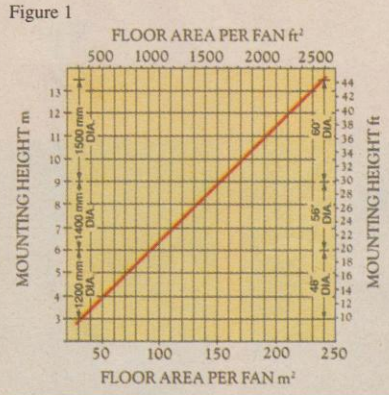
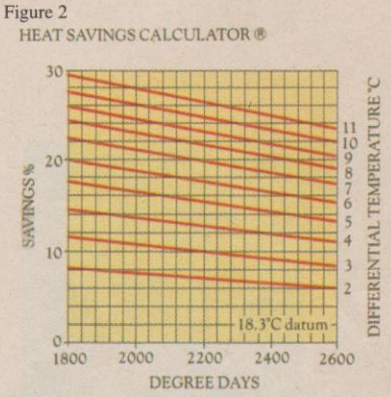



Figure 2



## PE travelled up the M1 to Luton to find another sort of contra-flow.

Excessive condensation in buildings is a problem which affects residential and commercial properties alike.

There are several contributing factors. These include changes in building design, techniques and materials. But most often, particularly in the home, it is the need to conserve expensive heating by the use of double glazing, insulation and draught excluders which causes most of the trouble.

If the moisture load generated is not extracted to the outside it is constantly absorbed into the heated air and the fabric of the building, to emerge as condensation when the heating is turned off and the building cooled down.

The result can be damp, condensation on windows and other cold surfaces, and in severe cases, mildew, allergy-causing mould spores and damage to fabrics and soft furnishings. Damage to electrical and mechanical equipment can also be caused and in extremely severe cases lasting damage can be done to the fabric of the building.

The answer to this increasing problem is improved ventilation. For residential and light commercial properties the answer may lie with Toshiba's Freshman ventilating fans.

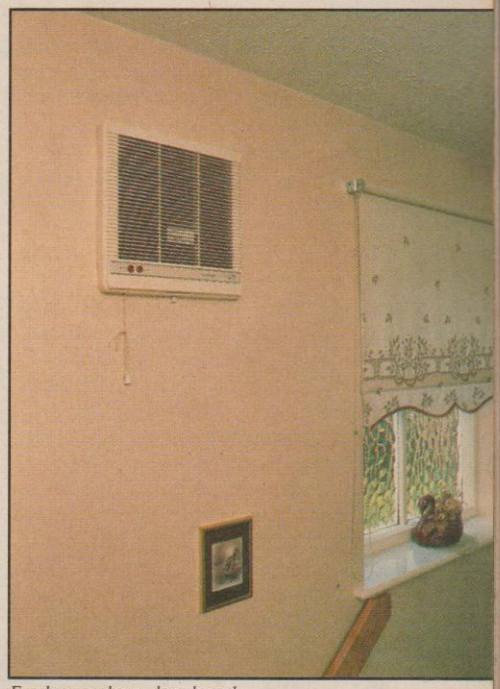
These units have certainly worked and proved their worth for the Keene family, who live in a 4 year old detached house on a spec-built housing estate in the home counties.

From almost the first day they moved in, the enjoyment of their new home has, until recently, been marred by heavy condensation forming on every window of the house.

Except on the warmest of days, Mrs Keene had to go round the house mopping-up the condensation that had formed with a sponge.

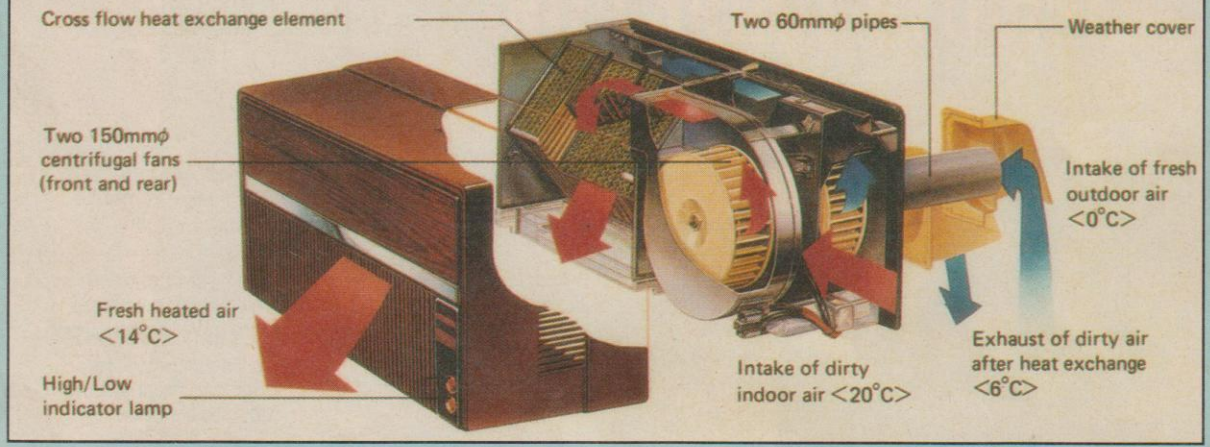
The housebuilder said typically, 'not to worry', it's simply a case of the house drying out, the condition will gradually improve.'

But it didn't. Eventually Mrs. Keene persuaded a rather reluctant builder to inspect the property with a representative from the NHBC, to try to pin-point the cause of the problem. The findings were, that, condensation was not due to rising damp, the central heating system was adequately sized and as the ground floor was not of open plan design moisture laden air produced by cooking was mainly confined to the kitchen and dining areas.



*Freshman takes a deep breath.*

The condensation problem in this instance was finally put down to the house being particularly well insulated, with the cooling effect of the single glazed windows aggravating the problem.




**Freshman, it was explained, is not an ordinary fan. Unlike a conventional extractor fan of ventilator, which draws air in or out at any one time, a Freshman unit performs both of these functions simultaneously. This is achieved by two perfectly matched, quiet running, centrifugal fans. One pulls air in from the outside while the other fan discharges air from the room to the outside.**

**Both air streams have independent flow paths, which pass separately through a filtered cross-flow heat exchanger, which in winter, reclaims up to 80% of the heat normally consigned to waste. In summer unwanted heat is discharged and fresh filtered air brought in.**

**As both air volumes are always the same there are no draughts and stable ventilation is assured.**

◄ Details. Circle readerlink 473

### End to drudgery

Tired of the daily routine of leaving windows open and the drudgery of mopping-up, Mrs. Keene purchased a portable dehumidifier from her local electricity board showroom.

This did the trick insofar that it reduced the amount of condensation, but the capacity of the humidifier was too small and so therefore it failed to give a totally satisfactory result.

To add insult to injury, the electricity showroom, who didn't at the time of purchase ask about the size of the condensation problem of the Keene home, refused a refund. Mrs. Keene's next step was to contact Toshiba, who suggested that its Freshman ventilating fans might offer a solution. Their offer to send someone to assess the problems was gratefully taken-up.

Two Freshman VFE-25K units, each giving an air delivery of 92m³/h, were installed at Mr. & Mrs. Keene's house, in the dining area, and at the top of the stairway.

With condensation now firmly under control, the Keene family, not surprisingly, speak highly of the product. The units they say, 'are so quiet we don't know they're on - and also, there's no noise penetration through them from the outside'.

*The Keene's house is now as dry as toast.*

Running costs, claim the company, are equivalent to a 60W light bulb. This low cost operation means the fans can be kept running while the house is unoccupied and with complete security, unlike open windows or apertures which encourage intruders.

**Details. Circle readerlink 373**





**Details. Circle readerlink 475 ►**

## West end swirls

The Mayfair 2000 is a new extraction fan from Silavent. The fan is designed to cover the full range of applications, say the company, from the smallest internal toilet to the largest kitchen. It extracts air at a rate of 70m³/h to 150m³/h and will be available with a wide range of options.

The company is also offering a new shower pack with adjustable timer alongside its range of ducting, wall-grilles, roof cowls and Curzon fans.

**Details. Circle readerlink 355**

## Open the dialogue

Dialogue has added the Papst range of ac equipment cooling fans to its range of components and ancillary equipment. The range comprises 21 high precision fans in a variety of styles and power ratings to suit.

All are axial types, ranging from small skeleton units capable of moving air at a rate of 15cfm to others in square or cylindrical housings with air moving capabilities extending to 94cfm, and designed to operate at equipment voltages of 12 or 24V or off 110 and 220V mains.

Metal surfaces are protected against corrosion by impact- and abrasion-proof black baked-on enamel. They use ball or sleeve bearing depending on application. Ac fans use shaded pole motors using either external rotor or external capacitor technology. They are suitable for use at either 50Hz or 60Hz and will function with supply variations of +6% of their rated voltage. Overload protection is built-in to most types.

**Details. Circle readerlink 357**

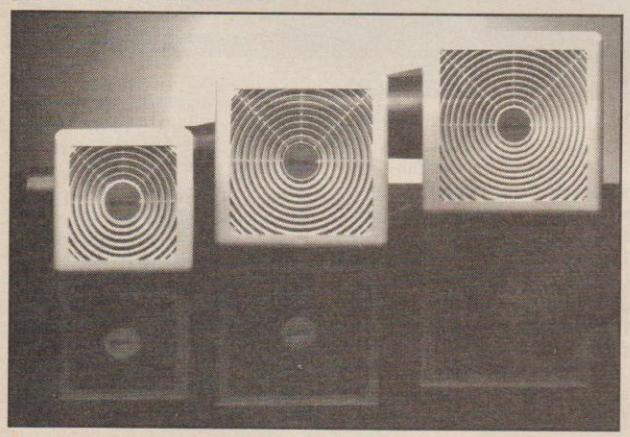
## Attic fan

GEC-Xpelair has introduced a range of extractor fans and heaters. The CMF fans are designed to provide discreet ventilation wherever a loft space or void above the ceiling exists. There are three models: the CMF170 which extracts at 71m³/h (2,500 cfh); CMF240 at 181m³/h (6,400 cfh); and the CMF270 at 278m³/h (9,800 cfh).

Standard models can be converted to either a built-in delay timer version or a humidistat/timer version by means of a plug-in ancillary. The fan is of cassette style which allows all ducting to be fitted during building, leaving the fan to be the last item to install. These ceiling mounted units are single speed.

The DX100 fan range has been extended with the launch of three humidistat models. Activated at 70% relative humidity and including and over-run timer which can be set to nine or 21 minutes, all models now have four motor mounting supports instead of two and three fixing holes on the back plate in place of two.

**Details. Circle readerlink 359**



## Air dryer

***A dehumidifier, known as the Arida Hi-Dri, has been launched by The Domestic Appliance Company. The unit's double interleaf evaporator draws up to 200ml of water vapour per hour from the air, which is collected in a three litre bucket.***

***When full, an infra-red device automatically switches the machine off and activates a pulsating light to inform the user. The noise level of the running motor is said to be less then 40dbA.***

***A pcb provides full function control, having three dedicated microchips which, say the company, improve performance by up to 15% by determining when and how long to defrost.***

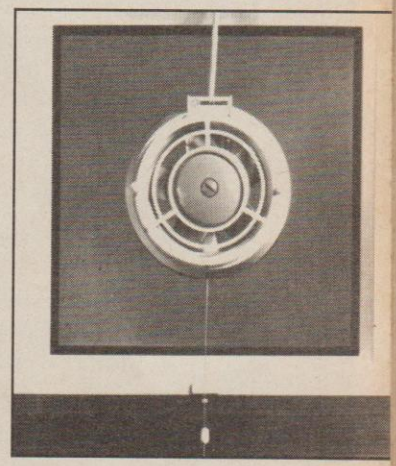
**Details. Circle readerlink 354**

## Mounting guard

A safety guard has been developed for R W Simon's general purpose electric extractor fan. The guard has been produced as an optional accessory for the Vent-a-Matic JMS 150 model. It is available in addition to a thermal cut on the motor and double insulation, fitted as standard.

The new guard, like the fan, is injection moulded in high impact polystyrene to meet standard industry dimensions and is fitted by simply removing the fan's existing support bar, threading the guard into position and replacing plastic inserts.

**Details. Circle readerlink 363**



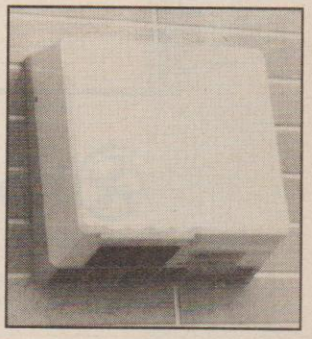
## Look, no hands

A fully-automatic electric warm-air hand drier has just been launched by Dudley Industries.

The unit, which is said to dry hands in less than 35 seconds, incorporates an infra-red sensor to ensure fault-free non-touch operation — essential in commercial environments where negligible maintenance plus a high standard of hygiene control is required.

The hand drier is rated 220-240V 50Hz with a nominal output of 1.6 kilowatts at 240V. The size is 268mm wide by 261mm high by 140mm deep and the unit weights 2.5kgs.

**Details. Circle readerlink 361**



◄ **Details. Circle readerlink 476**

## Slimline axials

The Sanyo range of slimline axial fans is available from Highland Distribution. The fans measure 20mm thick and 60 or 80 mm square.

The fans use ball bearings on the rotor shaft which are said, combined with the motor, to contribute to a life expectancy well in excess of that of competitive products. Life expectancy at 95% relative humidity is 80,000 hours at 25°C and 60,000 hours at 40°C.

The high-efficiency motor also contributes to the fan's low noise level of 31dbA maximum and high air-flow characteristics (0.42m³ at 4,200 for the 60mm frame version and 0.84m³ at 2,900 for the 80mm frame).

**Details. Circle readerlink 356**

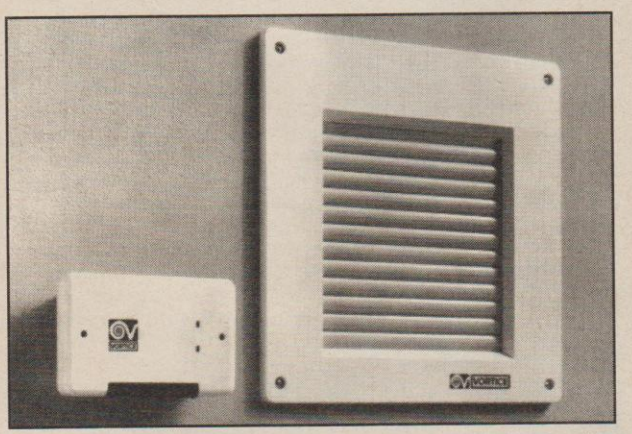
## Beat the fan-dals

The TVF vandal-proof ventilation fan, for use in kitchens, larger toilet/cloakrooms, laundry rooms, offices and workshops, is available from Silavent.

Finished in white enamelled zintect steel, the centrifugal model is said to offer good performance against high resistance extracting 130m³/h in free air and 85m³/h against a pressure of 6.25mm wg.

It is suitable for use both with long vertical ducting and the company's 12 by 1in. Flatduct, a slim horizontal discharge system. The fan runs at a speed of 1,475 rpm from a 220-240V 50Hz supply, consuming 55W.

**Details. Circle readerlink 358**



## Remote extraction

Vortice has introduced TeleVortice infra-red remote control for its V range of extract fans. The separate unit, which can be mounted in any convenient position, is an option with new fans but can also be retrofitted to existing units. The handset provided selects three speeds and controls the fan's extract or intake function.

The V range comprises 6, 9 and 12 in. axial units, including flush fitting versions. They have been designed for easy installation in standard or double glazed windows or solid or cavity walls, and are offered with a wide range of fitting kits and accessories. Units are manufactured in accordance with BS 3456.

**Details. Circle readerlink 362**

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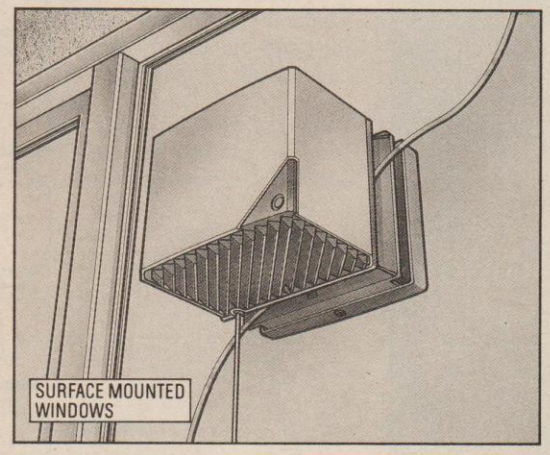
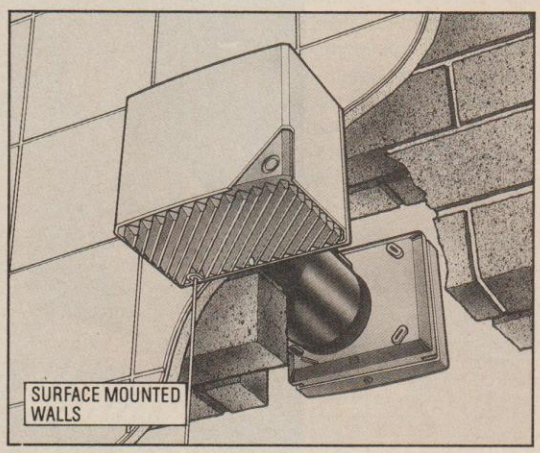
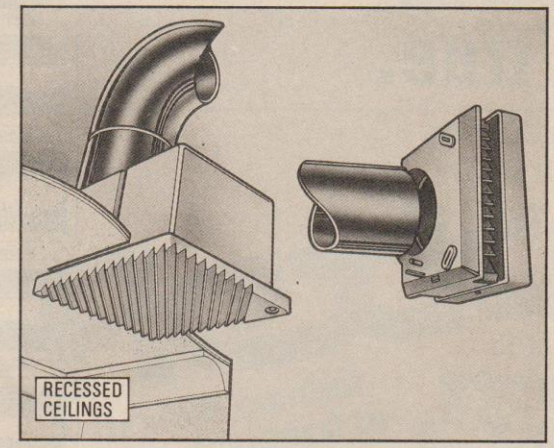
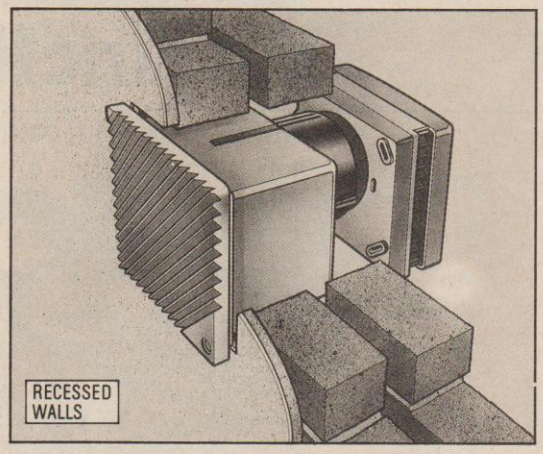
# THE MOST VERSATILE EXTRACT FAN SYSTEM ON THE MARKET




*Until now, you've probably been shackled by the inadequacies of available ventilation systems. Forced to bend your needs to fit the systems, rather than the other way round.*

*As we've said, that's until now.*

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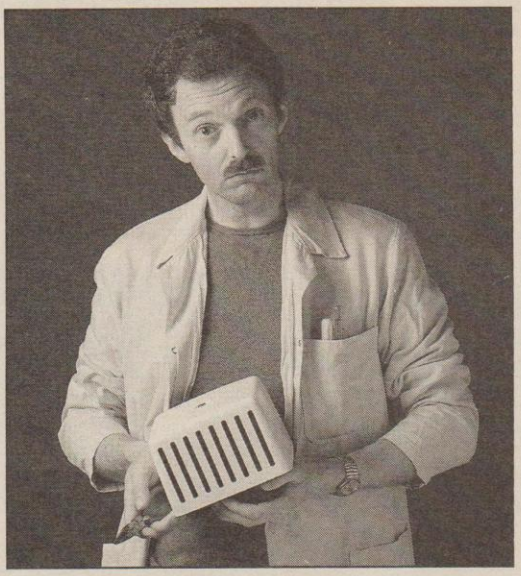
**HAS · THE · ANSWER**

**Details. Circle readerlink 469**

# The one and only Aidelle Loovent.



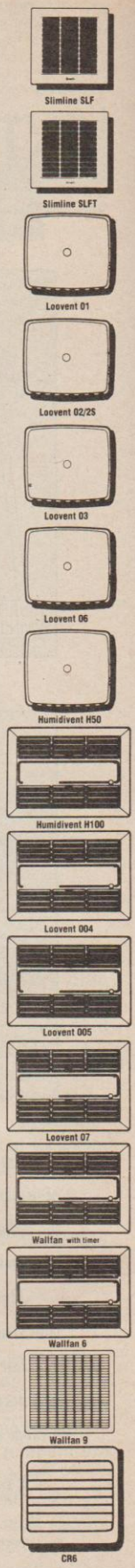
# Not strictly true.

Airflow Aidelle have been producing the now famous Loovent extractor fan for over 20 years.

Recognised as the Number One best seller for small bathrooms and toilets, it may surprise you to know Aidelle actually have a range of 15 Loovents and Wallfans supported by a wide range of accessories.

With their modern aesthetic appearance all incorporate efficient fan blade design which gives a quiet, powerful and reliable performance - whilst installation is simplicity itself. As a registered company of Assessed Capability to BS5750 all products are individually tested to ensure the highest standards.

So remember, Aidelle not only for Loovents but a lot more besides.

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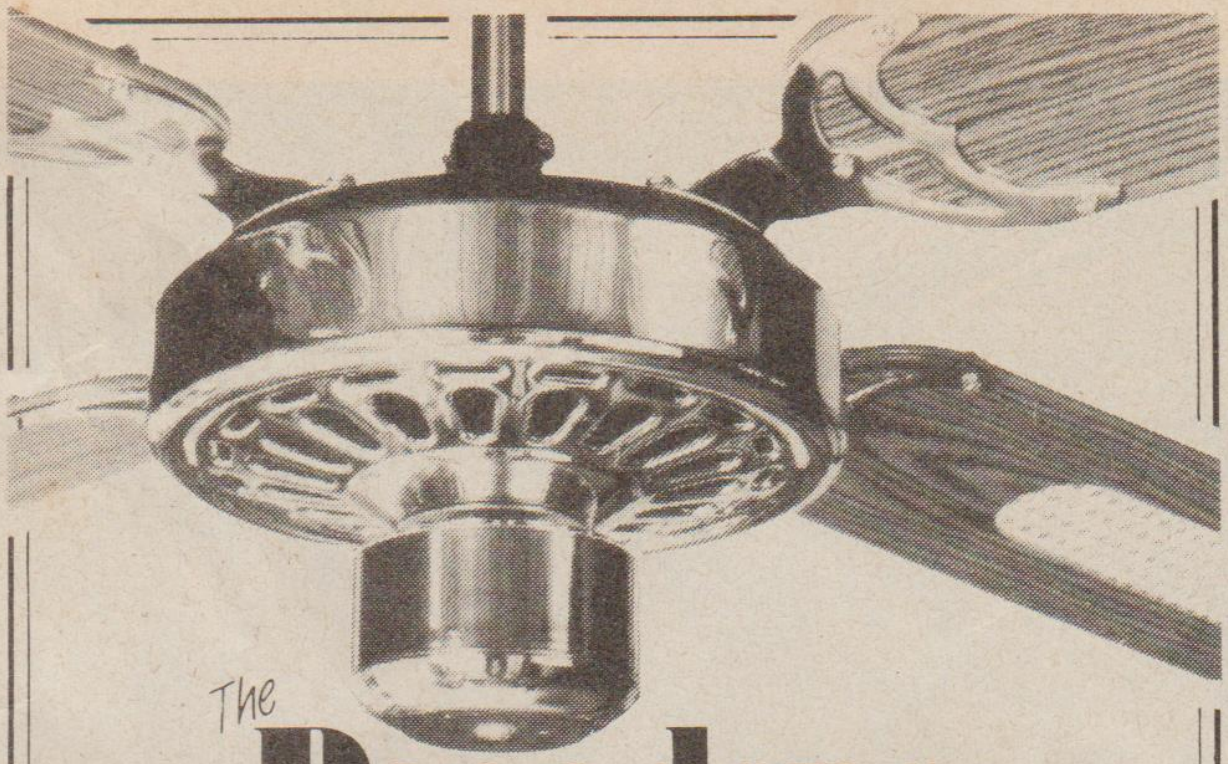

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