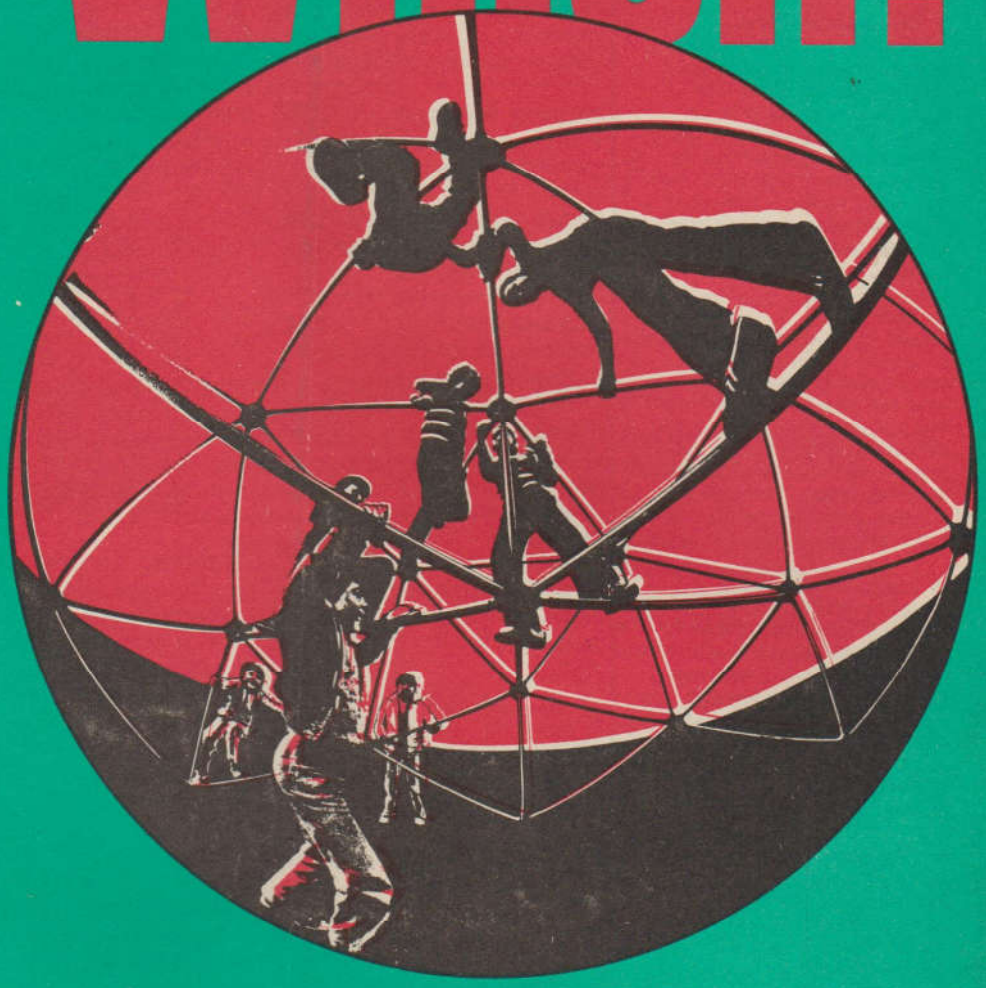
With Handyman Which?

May 1981

Which?



CLIMBING FRAMES

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And how do children rate them?

Cameras and projectors
breakdowns – and repairs

Chest freezers
tests and verdicts

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Woodturning lathes
tests and verdicts

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Which? May 1981 with Handyman Which?

Putting the theory into practice

Our example is a small compact two-bedroom flat on the ground floor of a purpose-built block. The walls are cavity brick but there is asbestos and timber panelling below the large picture windows in the living room and bedrooms. The largest proportion of the external wall area is therefore of 'cold' construction – glass and thin walling. The flat is all-electric and heat is provided by four storage radiators. There's an internal bathroom with a small extractor fan operated by the light switch. An air-brick in the small internal hall appears to be blocked.

A married couple and their two-year-old son live in the flat. The mother is at home most of the day with the young child. There's no really suitable place outside the flat to dry clothes (other than a small balcony).

Condensation occurs on all the windows in the flat and, on most mornings, water streams down the glass making puddles on the sills and dripping down the walls below. The windows are misted for most of the day. Condensation also appears on the thin poorly-insulated walls beneath the windows and black mould stains the decorations here and around the windows. The atmosphere in the flat is warm but slightly muggy and an acute nose can smell the mould. The bedclothes on one bed, which is not used regularly, are damp to the touch.

Our consultants' specific advice was this:

- give the flat a daily airing. Start by opening the windows for as much as half an hour at a time, so that the wet air is cleared out and the damp bedclothes and furnishings get a chance to dry out. As the flat becomes drier, decrease the time the windows are open to about ten minutes each morning
- dry clothes outside – or shut the kitchen door and open the window when using the tumble-drier (which has no venting kit)
- run the small extractor fan for up to half an hour after a bath. Also run it if clothes are dried over the bath
- dry line the external walls, particularly beneath the windows
- move beds and heavy furniture away from outside walls so that the air doesn't stagnate
- fit an extractor fan in the kitchen.

Extractor fans

Extractor fans can be installed in one of three places: in a hole cut in the glass of a suitable window; in a hole made in an external wall or in a false wall or ceiling with a duct to the outside air. Generally, you choose the type of fan to suit the location, though some fans can be adapted for fitting in a wall or a window and some are suitable for use with a duct. Fans for ducts need to be powerful enough to overcome the resistance to airflow created by the duct, although most wall fans could physically be fitted to a duct. A ***centrifugal*** fan, which has an impeller like a paddle wheel is usually better at opposing high pressures than a similarly-sized ***axial-flow*** fan which has the more familiar vaned impeller. Centrifugal fans are deeper than axial-flow ones and can't be fitted in windows.

A window fan may be 20 per cent (or more) cheaper than a similar wall fan and is simpler to install. But you have more choice about where to position a fan in a wall (or duct) and so have a better chance of extracting water vapour near its source.

For this reason, we chose mainly to test wall fans; we opted for models suitable for kitchens. However, some of the axial-flow fans could also be installed in a window – or were made in similar models for windows – and we tested one window-only fan. Several of our test fans claimed to be suitable for use with a duct and others are available in versions with a different casing for use in a duct. As they're supposed to be more efficient, we've tested as many centrifugal fans as we could find. In the Summaries starting on page 298, we detail the possible locations for each fan and give the basic fan price (they range from £18 to £115) and the price of any extra bits and pieces needed for installing the fan in an 11in cavity wall.

The fans

Most of our fans have a single speed and are switched on and off by a wall switch or by cord (or cords) fitted on the fan. Several of the single-speed fans have a separate variable-speed controller available as an optional extra.

The Vent-Axia Standard and Universal fans can be controlled to give three forward speeds and one reverse. The Philips window fan is also reversible. Reversing a fan means that the air is drawn into the room and could have a cooling effect in the summer.

The Thermor Turbinex and Ventwall 611 fans had two-speed cord controls: with the Ventwall you can opt instead for a one-speed fan either with cord control or for wiring to a wall switch; with the Thermor, you can opt for a one-speed fan with a wall switch. The Aidelle fans are also two-speed but are switched on and off by a wall switch. For some of the fans you can get a time delay switch which switches the fan off automatically after a set time.

When you choose a fan you want to know:

- what it looks like
- how much air it can move
- how much it costs to run
- how much noise it makes
- how easy it is to clean and maintain.

What the fans look like

On page 297 we illustrate the fans – the centrifugal ones are at the top. As usual, our drawings are in proportion to one another so that you can see the relative size of the fans – we've drawn the fans as they would look when they're running so that the inside is visible. In the Summaries, we tell you whether the fan can be fitted flush with the wall. Most of the axial-flow fans have some sort of front grille. The ***louvre*** type of grille often also acts as a back-draught shutter by closing automatically when the fan is switched off (and then opening when it's switched on). An ***iris*** shutter is usually behind a front grille, but still hides the fan when closed. Iris shutters work like the aperture adjustment in a camera lens. The circular flap shutter in the Vent-Axia Universal springs closed when the fan is off, and is opened by the airflow when the fan is running. You can get an airflow shutter for the Vent-Axia Standard, too, or a similar shutter which locks open (for reverse flow) or an iris one. A ***hood*** shutter is a hinged flap which is raised while the fan is working and drops down when the fan is switched off. Our centrifugal fans all had flaps closing the back outlet of the fan. Apart from the Thermor Popular, all our shutters worked automatically.

In the Summaries, we give a rating for the degree of back-draught protection you're likely to get with the shutter closed. None of the axial-flow fans would be satisfactory in a very windy situation. The answer to this problem is to fit a centrifugal fan, to fit a fan in the ceiling extracting through the roof or to install the fan on the leeward side of the house (if there is one).

Performance

Manufacturers often quote the volume of air that a fan can move when there is no opposition to the airflow. But, in practice, a fan usually has to work against a wind blowing on to the fan or has to develop a strong suction to draw air through the air bricks and cracks around door and windows in a well draughtproofed (and perhaps double-glazed) house. So you need to know how well a fan will cope under these adverse conditions. Conversely, a fan may be assisted by a wind blowing in the same direction or along the house wall.

A fan that's fitted with a duct also has to work against the resistance created by the duct – even the thickness of a wall will create an additional back pressure. As a rough guide, you can assume that each metre (39in) length of a 100mm (4in) duct will cause a reduction in flow of around 10 per cent. Sharp bends in a duct increase the reduction significantly – a right-angle bend is equivalent to around 5 metres of straight ducting.

We measured the amount of air that each fan could move under a range of pressure conditions. This test (based on British Standard 848, method 8) involves fitting the fan in a sealed chamber, which is controlled for pressure. Apart from the Philips, our fans were installed as they would be in an 11in cavity wall, with any internal and external grilles in place and a short length of ducting if this was necessary – see ***Installation.***

In the Summaries, we give the amount of air each fan could move from a well draughtproofed house in '***free field***' conditions (no pressure difference), in ***fairly still weather*** and also ***against a strong wind*** of about 20mph. We've given performance at the highest and lowest speeds for fans with more than one speed. Any fan that can be fitted to a window will perform better there than in a wall.

Ten to fifteen air changes an hour are usually recommended to keep a kitchen clear of condensation and free from cooking smells. For a very small kitchen around 1.5m (5ft) by 2m (6ft 6in) with a ceiling 2.5m (about 8ft) high, that means an airflow of between 75 and 115 cubic metres an hour. All the fans could move that much air with a breeze helping and all but the small Indola KV-10 could move that much air in fairly still weather, but many would labour against a strong wind.

A small to medium-sized kitchen, around 2m (6ft 6in) by 3m (9ft 9in) with a 2.5m ceiling, requires an airflow of 150 cubic metres an hour to give 10 air changes. Less than half the fans would be able to move this much air from a well-sealed house in fairly still weather and only four – the Aidelle Wallfan 9, Indola KVBM – 21C and Vent-Axia Standard and Universal – could move enough air in these conditions to give 15 air changes an hour.

Running an extractor fan

Extractor fans use very little electricity: ours ran at between 12 and 120 watts – but were usually around 40 watts, which costs less than 1p for each hour. They cost a little more in lost heat, but still only a few pence for every 150 cubic metres of warm air extracted.

So the cost of running a fan isn't likely to put you off, but you might find that the ***noise*** it makes is more disagreeable – especially as you'll probably be working in the kitchen while the fan's on.

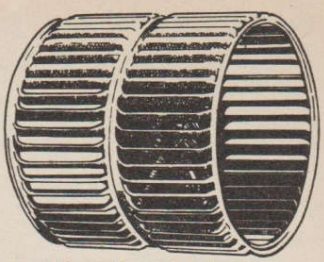
All the fans made a noticeable hum when they were running but some are more obtrusive than others. For fans which operate at more than one speed we've given the low-speed noise level. Most were worse on their high settings: the Aidelle Wallfan 6 was exceptionally quiet on its low setting. The Indola KV-10 and KV-20M were noisiest.

All the fans had induction motors so none will cause radio or TV interference.

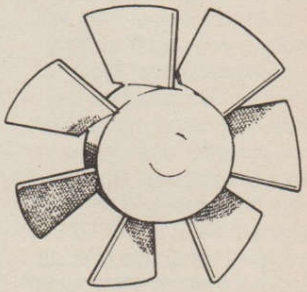
Ease of cleaning

The Thermor Turbinex and Indola WKV-150 fans have filters which can easily be removed for cleaning and these fans were therefore the easiest to deal with. To clean the other fans meant some dismantling, removing at least the front grille, and sometimes the impeller, to separate them from the electrical parts of the fan which must not be allowed to get wet – you can brush these parts clean. Dismantling was usually fairly simple – only the Indola KVBM-21C and the Vent-Axia Universal were at all difficult but, to be fair, Vent-Axia had explicit instructions for how to do it.

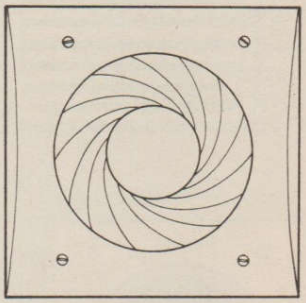
When it was mentioned at all, manufacturers recommended that the fan impeller be cleaned every three months or so – this is worth doing because accumulated dirt and grease will eventually affect the fan's performance. Grilles, particularly the louvre



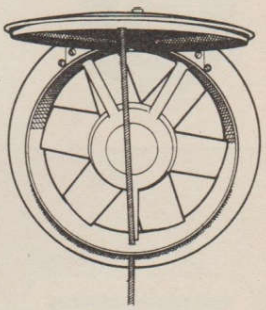
centrifugal fan impeller



axial-flow fan impeller



an iris shutter



a hood shutter

Buying extractor fans

You might expect electrical appliance retailers to sell extractor fans but, in our shopping survey, most didn't. Our shoppers found that electrical wholesalers (who will normally supply individuals) and Electricity Board showrooms are the most likely places to find fans, although builders' merchants sometimes sell them – you might also try glass merchants. Most discount houses also sell fans and many mail-order houses offer one or two in their catalogues. But there's very little choice from any of these outlets: in our survey, we found only five brands – Aidelle, Philips, Vent-Axia, Vortaer and Xpelair. The Ventwall fan is mail order only from:
R W Beach & Co Ltd, Crescent Works, 16-17 The Crescent, Hockley, Birmingham B18 5LY
£3 postage and package.

Help wanted

Smoke detectors

Do you have a smoke detector in your house? If you do, and would be prepared to fill in a questionnaire for us, send your name and address on a postcard, marked SMOKE DETECTORS to: Dept WP, Which?, 14 Buckingham Street, London WC2N 6DS

sort, can be wiped over occasionally, with a damp cloth and detergent, without dismantling, ***when the fan is switched off.***

In the Summaries, we give the guarantee period for each fan. Durability shouldn't be a problem.

Electrical safety

Four fans are BEAB approved. We tested the others to clauses of the relevant British Standard. Most were satisfactory – only the Ventwall had serious faults, the worst of which were inadequate provision for earthing and for protection against electric shock. R W Beach, who make this fan, tell us that they intend to amend these faults.

Installation

The first job for installing a wall fan is to cut the hole in the wall. It's easier if the hole is based on brick sizes – see Summaries. The standard brick size is 225mm (9in) wide by 75mm (3in) high. Knocking a hole in the wall needn't be difficult but, if you find it daunting, you may prefer to install the fan in a window (if this is possible). A fan can be installed in a smallish pane of glass, provided there is at least 10mm of glass around the fan; if the window is small, it's usually easiest and cheapest to buy a new pane of glass and ask the glass merchant to cut the hole for you – old window glass will have become brittle and can easily break. In a small survey of glass merchants we found that they typically charge about £1.20 for cutting the hole. You can cut the hole yourself – see *Handyman Which?* November 1977 – but you need a special glass cutter. If you ask a glass merchant to come to your house and cut a hole in an existing window, he will probably charge from around £8. A few fans can be fitted in double-glazed windows – see Summaries. If the glazing is the secondary window type, you have to have a hole cut in each window pane; if it's the sealed unit type, you have to buy a specially-prepared window from the manufacturer.

Many of our fans were complicated to install – you needed to dismantle the fan from its casing, fix the casing into the hole and then reassemble the fan. The Myson and Ventwall 611 didn't need dismantling and, along with the Indola KV-20M, were the easiest wall fans to install. The Philips HR3408 window fan was very easy to install and the Vent-Axia VA 150 was easy to install as a window fan, but about average in a wall.

Three fans gave us more problems than most – the Aidelle Wallfan 6, the Indola KVBM-21C and the Vent-Axia Standard. The last two had fiddly back-draught shutters which had to be assembled.

With many of the fans, you have to improvise some sort of duct to cross the cavity wall. Aidelle recommend using 100mm (4in) plastic soil pipe and Xpelair recommend a rolled-up sheet of thin plastic or metal. You can get flexible ducting lengths (from a metre upwards) for around £5 a metre or PVC tube for around £3 a metre. An old chimney flue which is still open at the top makes an ideal duct because there's a natural draught up the chimney which assists the fan. Several manufacturers recommend that their fans are installed in this way, but you need to fit a baffle to direct the airflow upwards.

The amount of electrical wiring expertise that you need to wire up the fans varies a great deal. The Myson Hellix 17 and the Vent-Axia Standard come with a flex fitted ready to wire to a switched fuse connection unit or a 13A plug for use in a nearby switched socket outlet. Most of the others are just as simple, but you provide the flex (2-core pvc insulated and sheathed for double-insulated fans, 3-core, pvc insulated and sheathed for ones that require earthing) and wire it to the fan as well as to the plug or fused connection unit. The fans that we found most difficult to wire up were those that needed 4-core flex for their special two-speed or three-speed controls: both Aidelles and the Vent-Axia Standard and Universal. These four fans all came with good instructions but, unless you've some knowledge and confidence, the wiring isn't simple.

Value for money

Not surprisingly, the largest fan that we tested – the *Aidelle Wallfan 9* (£114.05) – was the most powerful. It moved the most air in free field conditions and, like most of the centrifugal fans, it was hardly affected at all by back pressures equivalent to strong winds or a long duct. If a fan has got to work under these conditions, you should choose one which is scarcely affected. The Wallfan 9 would be too large for many kitchens, but the *Aidelle Wallfan 6* (£64.48) could extract enough air to give efficient ventilation in a small to medium-sized kitchen in most situations. The *Indola WKV-150* (£49.34) and *Thermor Turbinex TX2* (£53.48) would be adequate for a small kitchen even if used with a duct or in an exposed position. Both these fans have the additional advantage of being easy to clean.

In sheltered situations – such as built-up areas in towns – where a fan can be vented straight to the outside air, an axial-flow fan should be adequate. For under £40 there are five which can move enough air to ventilate a small kitchen. The *Vent-Axia VA 150* (£29 to £37.95) is the most powerful. The *Vortaer 6 XW6* (£25 to £34.39) can extract less air in still weather, but copes as well with the sorts of back pressures which are unavoidable even in sheltered sites. Of the two, the Vent-Axia is quieter and easier to fit.

Correction

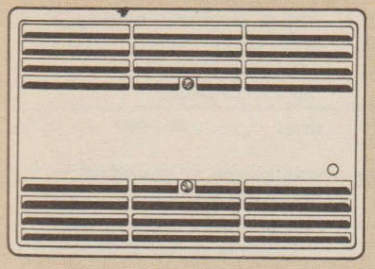
Ladders and ladder accessories, February 1981

In the Table on page 84, the Everyhome 731-12 (made by Gravity-Randall Ltd) should have had ●●● for strength. We are very sorry about this omission.

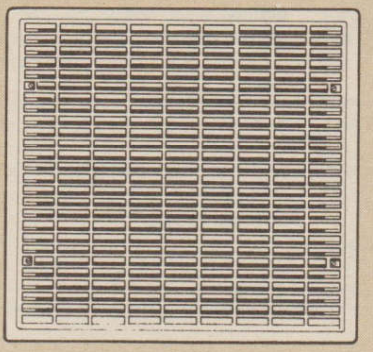
Since our report, we have heard from the manufacturers of the Levelmatic levelling device (Levelmatic Ltd, 46 High Lane, Ridgeway, Sheffield S12 3XF). They tell us that the device has been modified – the cable (which we had trouble with) now has properly finished ends. The latest version (with improved feet) costs £27.02.

Extractor fans

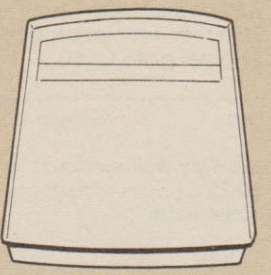
Aidelle Wallfan 6



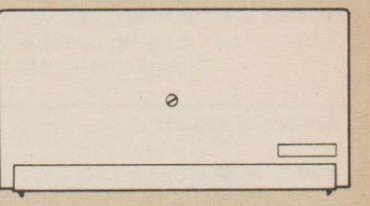
Aidelle Wallfan 9 [1]



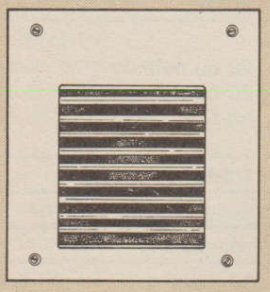
Thermor Extractair Canopy



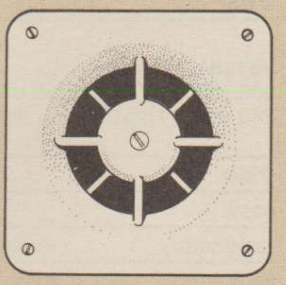
Indola WKV-150



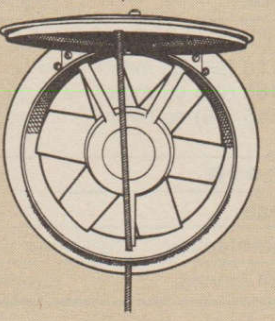
Xpelair WX6



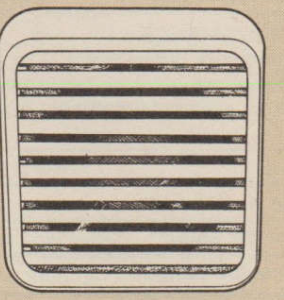
Vent-Axia Standard S6/PL



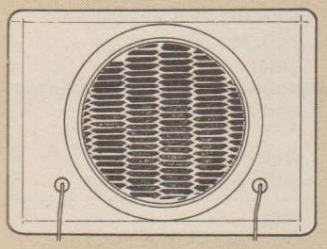
Thermor Popular



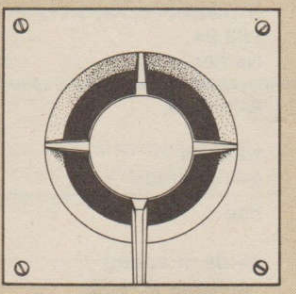
Xpelair GX6



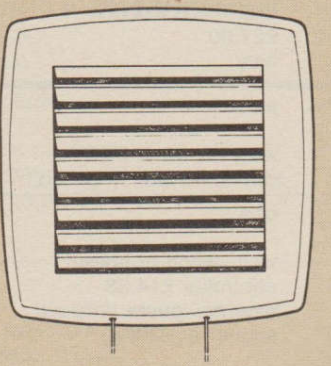
Ventwall 611 (XVB)



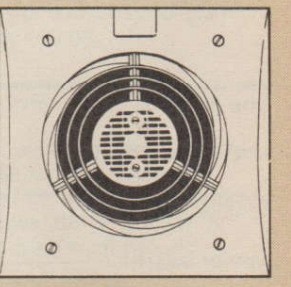
Vent-Axia Universal U6/PL



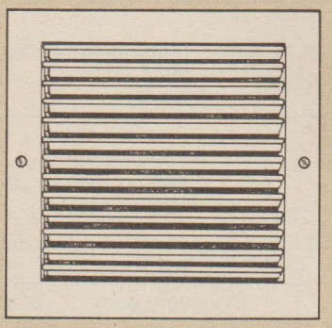
Indola KVBM-21C



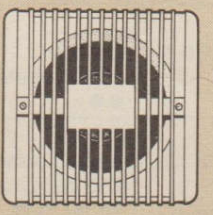
Vortaer XW6



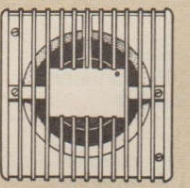
Myson Hellix wall model 17



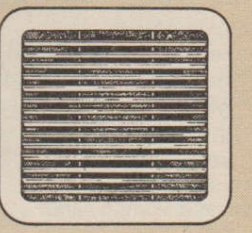
Indola KV-20M



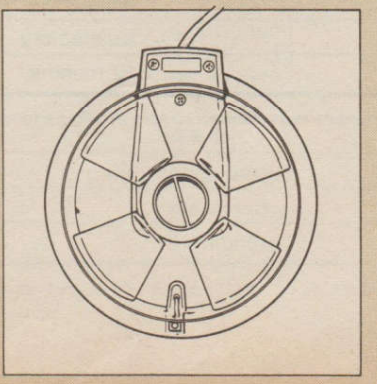
Indola KV-10



Vent-Axia VA 150



Philips HR 3408 (window mounting only)



[1] The Thermor Turbinex TX2 is not illustrated: it looks similar to the Aidelle Wallfan 9

Extractor fans

	Aidelle Wallfan 6 £64.48 UK	Aidelle Wallfan 9 £114.05 UK	Indola KV-10 £14.72 Italy
type of fan	centrifugal	centrifugal	axial-flow
where it can be fitted	wall or duct; fits 25mm or 145mm proud external grille £2.50	wall or duct; fits 20mm proud	wall or duct with external grille £3.74; KV-10M £20.70 complete for walls; fits 25mm proud
number of speeds	two	two	one
type of switch	two-way wall switch £9.22	two-way wall switch £20.36	wall switch or speed controller £14.38
type of shutter	outlet flaps	internal louvre	louvre shutter incorporated in optional external grille
back draught protection	●●●●	●●●	(not tested)
INSTALLATION			
shape and size of hole (width × height) (mm)	rectangular 228 × 156 – 1 by 2 bricks	rectangular 350 × 307 – 1½ by 4 bricks	circular 100 diameter
ease of fitting in wall	●●	●●●	●●●
PERFORMANCE			
no pressure difference	170 (95) cu m/hr	365 (340) cu m/hr	20 cu m/hr
fairly still air	165 (90) cu m/hr	335 (320) cu m/hr	20 cu m/hr
against a 20mph wind	145 (85) cu m/hr	240 (270 [1]) cu m/hr	no flow
noise	●●●●	●●●	●●●
ease of cleaning	easy	easy	easy
electrical safety	satisfactory	satisfactory	satisfactory
guarantee period	24 months	24 months	12 months

	Indola KV-20M £27.60 Italy	Indola KVBM-21C £63.94 Netherlands	Indola WKV-150 £49.34 Italy
type of fan	axial-flow	axial-flow	centrifugal with filter
where it can be fitted	wall; KV-20 £20.12 for ducts; fits 50mm proud	wall; fits 44mm proud	wall or duct; fits 240mm proud
number of speeds	one	one	one
type of switch	wall switch or speed controller £14.38	cords or speed controller £14.38	cord or speed controller £14.38
type of shutter	external louvre (internal shutter available)	front louvre	outlet flap
back draught protection	●●●	●●●●●	●●●●
INSTALLATION			
shape and size of hole (width × height) (mm)	circular 125 diameter	circular 235 diameter	rectangular 85 × 60
ease of fitting in wall	●●●●	●●	●●●
PERFORMANCE			
no pressure difference	155 cu m/hr	300 cu m/hr	140 cu m/hr
fairly still air	135 cu m/hr	255 cu m/hr	135 cu m/hr
against a 20mph wind	50[1] cu m/hr	75 cu m/hr	120 cu m/hr
noise	●●	●●● (now modified)	●●●
ease of cleaning	easy	difficult	very easy
electrical safety	satisfactory	satisfactory	satisfactory
guarantee period	12 months	12 months	12 months

Key to ratings: the more blobs the better. [1] no flow at pressure equivalent to 20mph: this figure for wind around 15mph.

	Myson Hellix wall model 17 £62.10 UK	**Philips HR3408 6in** £15 to £18 UK	**Thermor Turbinex TX2** £53.48 France
type of fan	axial-flow	axial-flow	centrifugal with filter
where it can be fitted	wall or duct; window model 17 £36.80 or £46 with hood shutter; fits flush	single-glazed window; fits 77mm proud	wall or duct with external grille £3.74; fits 118mm proud
number of speeds	one	one and reverse	two
type of switch	on/off wall switch	cord for on/off, lever for reverse	cord (TX1 £45.83 has one speed and is used with a wall switch)
type of shutter	front louvre	hood	outlet flap
back-draught protection	●●	●●	●●●●●
INSTALLATION			
shape and size of hole (width × height)	rectangular 240 × 230mm – 1 by 3 bricks	circular 195mm diameter	circular 105mm diameter
ease of fitting in wall	●●●●	●●●●●	●●●
PERFORMANCE			
no pressure difference	210 cu m/hr	160 cu m/hr	230 (140) cu m/hr
fairly still air	130 cu m/hr	115 cu m/hr	220 (135) cu m/hr
against a 20mph wind	no flow	no flow	200 (130) cu m/hr
noise	●●●	●●●	●●●●
ease of cleaning	easy	easy	very easy
electrical safety	satisfactory	BEAB approved	satisfactory
guarantee period	24 months	12 months	12 months

	Thermor Kleenair Popular £25.01 France	**Thermor Extractair Canopy** £37.66 France	**Vent-Axia Standard S6/PL** £43 to £60.95 UK
type of fan	axial-flow	centrifugal	axial-flow
where it can be fitted	wall (can use telescopic tube £8.97) or single glazed window; fits 69mm proud	wall or duct with external grille £2.87; fits 195mm proud	panel walls and duct; S6/WL £72.68 for walls; S6/WW £53.82 for single/double-glazed windows; S6/RF £65.09 for roofs; fits 14mm proud
number of speeds	one	one	three and reverse
type of switch	wall switch	wall switch or speed regulator £13.30	as Vent-Axia Universal
type of shutter	hood	outlet flap	basic fan has no shutter
back-draught protection	●●	●●●●	can choose airflow shutter, cord-operated shutter which can be locked open for reverse flow or cord-operated iris shutter all £16.10 extra
INSTALLATION			
shape and size of hole (width × height)	circular 230mm diameter – 1 brick wide	circular 115mm diameter – ½ brick wide	circular 254mm diameter – 1 brick wide
ease of fitting in wall	●●●	●●●	●●
PERFORMANCE			
no pressure difference	350 cu m/hr	140 cu m/hr	330 (230) cu m/hr
fairly still air	125 cu m/hr	130 cu m/hr	290 (170) cu m/hr
against a 20mph wind	no flow	95 cu m/hr	85 (no flow) [1] cu m/hr
noise	●●●●	●●●	●●●●
ease of cleaning	easy	fairly easy	easy
electrical safety	satisfactory	satisfactory	satisfactory
guarantee period	12 months	12 months	12 months

Key to ratings: the more blobs the better. [1] no flow at pressure equivalent to 20 mph: this figure for wind around 15 mph.

Extractor fans

	Vent-Axia Universal U6/PL £65 to £93.38 UK	Vent-Axia VA 150 £29 to £41.69 UK ▲	Ventwall 611 (XVB) £32 UK
type of fan	axial-flow	axial-flow	axial-flow
where it can be fitted	panel walls and ducts; U6/WL £108.33 for walls; U6/WW £85.56 for windows; U6/RF £94.53 for roofs; fits 50mm proud	wall with wall-fitting kit £1.15 and single/ double-glazed window; fits 28mm or 96mm proud	wall; Ventwin 611(WVB) £28 for single/double-glazed window; 611 RWB Duct £26 for ducts; fits flush
number of speeds	three and reverse	one	one (or two)
type of switch	wall switch or surface *mounting 3-speed and* reverse controller £24.61 (flush mounting £29.67) time delay control (1½ – 35mins) £33.35	cords	wall switch or cord *for on/off (£1.50 extra)* or cord for two-speed (£3.00 extra)
type of shutter	autospring shutter	iris	outlet flap
back-draught protection	●●●	●●●	●●●●
INSTALLATION			
shape and size of hole (width × height)	circular 260mm diameter – 1 brick wide	circular 184mm diameter	rectangular 230 × 180mm – 1 by 2 bricks
ease of fitting in wall	●●●	●●●●	●●●●
PERFORMANCE			
no pressure difference	355 (285) cu m/hr	230 cu m/hr	105 cu m/hr
fairly still air	325 (88) cu m/hr	200 cu m/hr	85 cu m/hr
against a 20mph wind	135 (26 [1]) cu m/hr	135 [1] cu m/hr	45 cu m/hr
noise	●●●	●●●●	●●●●
ease of cleaning	difficult but good instructions	easy	fairly easy
electrical safety	satisfactory	BEAB approved	see text
guarantee period	12 months	12 months	12 months

	Vortaer XW6 £25-£34.39 Italy	Xpelair GX6 £39 to £57.27 UK	Xpelair WX6 £50 to £73.07 UK
type of fan	axial-flow	axial-flow	axial-flow
where it can be fitted	wall with extension rods £1.36, short duct and single/double-glazed window; fits 60mm proud	wall with ladder strips £1.32, and single/ double-glazed window; fits/ 118mm proud	wall; fits 8mm proud
number of speeds	one	one	one
type of switch	cords	wall switch (GXC6 £40.69▲ has cord)	wall switch
type of shutter	iris	front louvre	front louvre
back-draught protection	●●●	●●●	●●●
INSTALLATION			
shape and size of hole (width × height)	circular 190mm diameter	circular 184mm diameter	rectangular 254 × 279mm
ease of fitting in wall	●●●	●●●	●●●
PERFORMANCE			
no pressure difference	170 cu m/hr	175 cu m/hr	250 cu m/hr
fairly still air	175 cu m/hr	110 cu m/hr	170 cu m/hr
against a 20mph wind	70 cu m/hr	50 [1] cu m/hr	50 [1] cu m/hr
noise	●●●	●●●	●●●
ease of cleaning	fairly easy	easy	fairly easy
electrical safety	satisfactory	BEAB approved	BEAB approved
guarantee period	12 months	24 months	24 months

Key to ratings: the more blobs, the better [1] no flow at pressure equivalent to 20 mph wind: this figure for wind around 15 mph.