

Spray booths

EQUIPMENT GUIDE

Resident tutors on the airbrush courses at Missenden Abbey and Pendon Museum **TIM SHACKLETON** and **MICK BONWICK** look into the health and safety aspects of spray painting and provide their advice.

FOR MANY PEOPLE, painting their models is one of the most enjoyable aspects of this most creative of all hobbies. But working indoors – especially with an airbrush – creates a thick cloud of overspray and odour. It's not the fumes themselves that are the worry, so much as the airborne particles that, if not filtered out, can cause serious damage to your health.

You may have found yourself wheezing after a painting session, and there's nothing like a bad experience to teach you a lesson. If you can smell it, you're breathing it, and if you knew what the stuff you're hauling down into your lungs might be doing to you, you'd think twice about working in an unventilated space.

In the domestic setting in which most of us operate, the fumes can be unpleasant to others and this is something else we want to avoid. Immersed in our modelling, we may not notice the steady build-up of harmful nasties in the atmosphere around us and at the very least we can make ourselves feel distinctly woozy. In the worst-case scenario, where things have got completely out of hand, particle build-up can reach the stage where you run the risk of poisoning yourself or causing an explosion.

This isn't scaremongering – it almost happened some time ago on one of our courses. Now we know better than to allow cellulose thinners to be used unsupervised in an unventilated space.

The core issue is containment, and the management of risk. For this reason alone, you can solve a lot of problems by working outdoors in the garden, with the breeze blowing away from you, but in our climate we can't always guarantee suitable weather for airbrushing – even in summer! That's why it's better to invest in some form of indoor extraction/filtration system such as a spray booth, either portable or fixed. It makes for a much safer and more

pleasant working environment, it keeps the peace, you can use your airbrush whenever you like and it needn't cost an arm and a leg.

Many modellers, unfortunately, seem to think any old system will do. They'll spend serious money on new locomotives (and even on an airbrush) but a quality spray booth comes very low on their list of priorities. The upshot is that they don't bother, though this kind of thinking can, literally, have fatal consequences.

To be safe, stay healthy and avoid making enemies in your household you need a spray booth with a powerful fan system and effective filters. A domestic extractor such as a cooker hood is little use, and none whatsoever if it doesn't have a coreless motor – stray sparks from an exposed commutator can ignite solvent-laden fumes.

As ever, you get what you pay for – budget-priced 'hobby' spray booths, in our experience, are largely ineffective and make only a token effort at doing what they're supposed to do. You may have seen designs for home-made contraptions whose main plus-point appears to be that they cost peanuts – we doubt if they work very well, and our only hope is that their owners are still in reasonable health.

At the opposite end of the scale are high-end industrial systems designed for round-the-clock usage. They come with price tags well into four figures – great if you can afford it, but not strictly necessary for even the wealthiest model-maker. In this piece we're going to look at some of the off-the-shelf designs that sell at what might be considered – remembering that you really can't put a price on your health – to be a reasonable sum. Rather than revamp the suppliers' sales literature and use stock images, our review is based 100% on equipment we've used ourselves, photographed in its everyday working environment. 

PAINT PARTICLE INHALATION

• The paints that modellers use contain potentially harmful chemicals like solvents and volatile organic compounds (VOCs). Inhaled particles can contribute to, or exacerbate, respiratory problems, eye, nose and throat inflammation and worse.

When the airbrushed paint dries (and this process starts as soon as it leaves the airbrush nozzle) these chemicals evaporate into the air where they can

readily be breathed in. This risk is not just present for solvent-based paints; water-based paints such as acrylics also contain binders, pigments and solvents that are atomized by the airbrush. If a spray booth does not have a sufficiently powerful extractor fan, the atomised particles will swirl about in the booth and be inhaled rather than being immediately drawn through the filtration system.

A typical setup in Mick Bonwick's home workshop, with Hornby coaches being airbrushed. The shelf on top of the spray booth is a great place to park models, paints, tools, cups of tea and other essentials. Note the anglepoise lamp and the long outlet hose leading out through the window and into the garden.

HORNBY magazine

BEST VALUE!

This polypropylene spray booth is lightweight and easy to assemble. The translucent casing comes as a flat pack and can be put together within 30 minutes. The exhaust outlet is a standard-size 60mm diameter flexible hose and if the one supplied isn't long enough for your requirements, you can readily buy longer ones from DIY stores or online.

Though not really designed as a portable unit it is very sturdy – ours have been moved in and out of Missenden Abbey and Pendon Museum any number of times. The replaceable filter

GUIDE RATINGS

	1	2	3	4	5
Build quality					
Ease of use					
Effectiveness					
Customer support					

GraphicAir A300S Extractor

This unit – the most expensive we tested – features a highly efficient three-stage intake filter and a powerful 105w motor inside a robust steel shell. The fan draws air evenly through the filter beds at a quoted 255 m³/hr. If you've been on one of our weathering courses or tried our hands-on demonstrations at the Great Electric Train Show and elsewhere, this is probably the unit you'll have used.

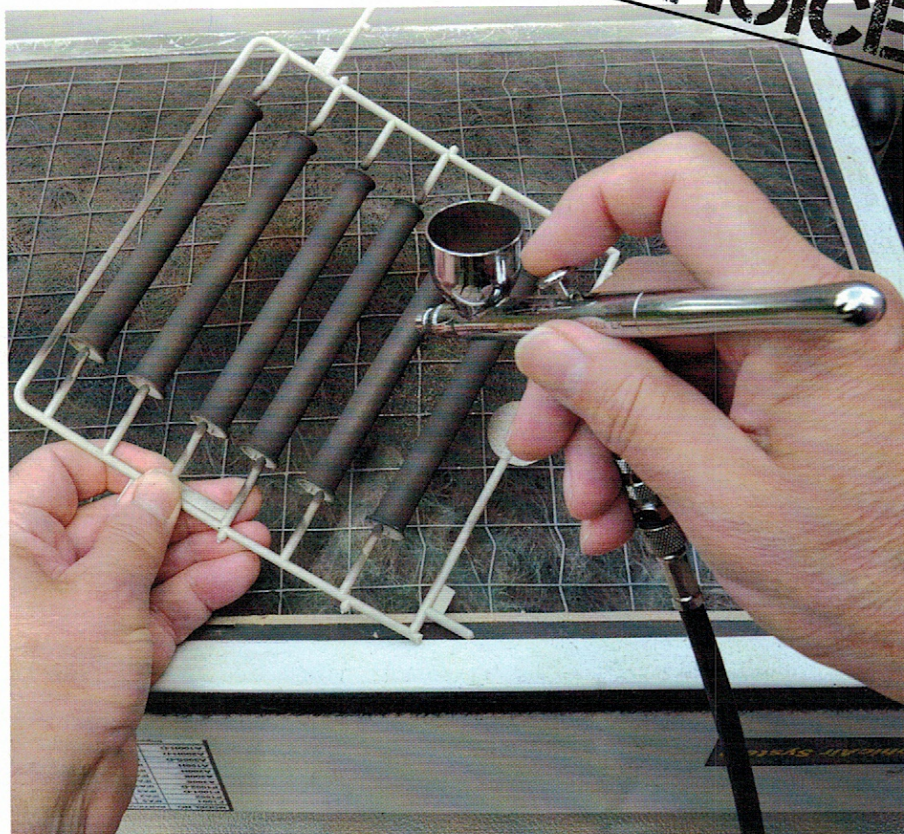
Along with its undeniable fitness for purpose the prime benefit of this particular design is that it functions as a self-contained, free-standing air-recirculatory unit and doesn't need an outside vent or positioning close to an open window. It's a tough, no-nonsense piece of kit that more than does the job it's designed for. Weighing around 10kg, the unit is readily portable and with its Velcro-fitted fold-up hood takes seconds to set up ready for use.

GUIDE RATINGS

	1	2	3	4	5
Build quality					
Ease of use					
Effectiveness					
Customer support					

THE DETAILS

Manufacturer	www.graphicair.com
Description	A300S Extractor
Price	£390.00



C3-E420K Spray Booth (also sold as B400DC)

This lightweight Chinese-made design is popular with modellers – it's cheap, portable and it certainly looks the part. The same basic model (some of them may be clones) is sold under a number of names and brandings at prices ranging from around £50 through to £200 and more.

However, we've had many reports of reliability issues with the motor, while the plastic hinges on the adjustable side panels can be affected by solvents and become alarmingly fragile.

The filter is nothing more than a thin layer of what looks like spun fibreglass, which is about as basic as you can get. It isn't going to do much filtering nor is it going to last particularly long before becoming clogged up.

The ventilation hose, meanwhile, is unusually short and inflexible and can't readily be extended – if you need to position the extractor by an open door or window, distancing yourself from potentially harmful fumes and paint particles could be a problem.

On test the 25w motor proved to be seriously underpowered and even with its claimed 3m³/minute airflow (which from personal observation we find hard to believe) the unit struggled to deal

GUIDE RATINGS

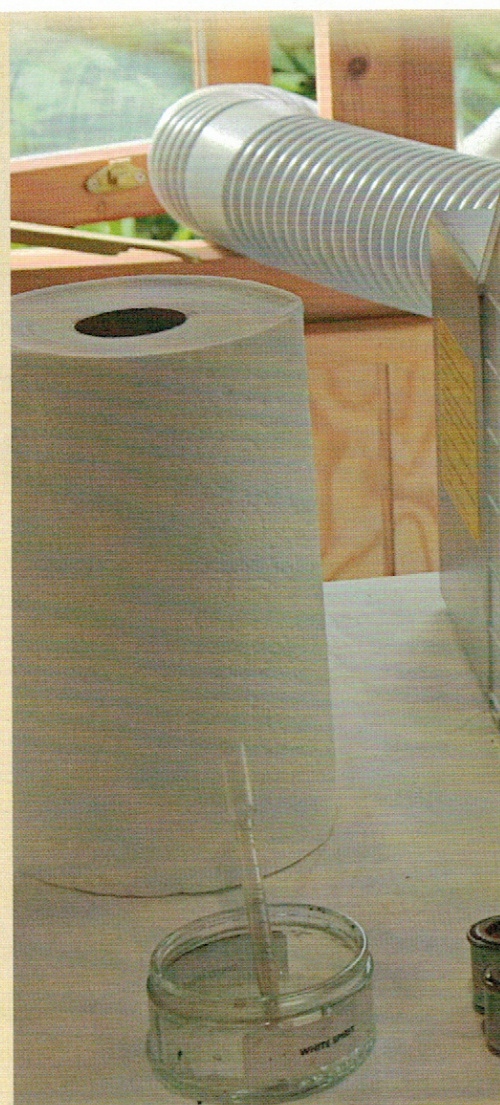
	1	2	3	4	5
Build quality					
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effectively with overspray and odours – away from the centre of the filter unit, the amount of 'pull' drops sharply.

The design of the plastic hood compounds the lack of a strong through draught by allowing fumes to escape upwards – and back into the room – rather than trapping them and funnelling them outside. One of the more honest advertisements we've seen for this unit advises: "It is intended to remove larger particles from the air. Not intended for use with hazardous materials, flammable or explosive paints or materials." From some online suppliers, we gather, after-sales service and spares are non-existent.

THE DETAILS

Distributor	Various
Description	C3-E420K spray booth
Price	£50.00-£200.00

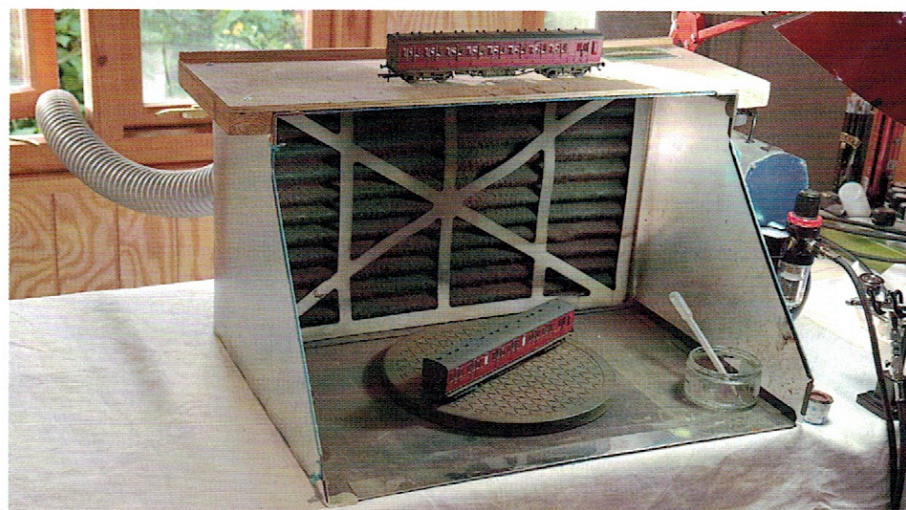




SB88 Hobby Spray Booth

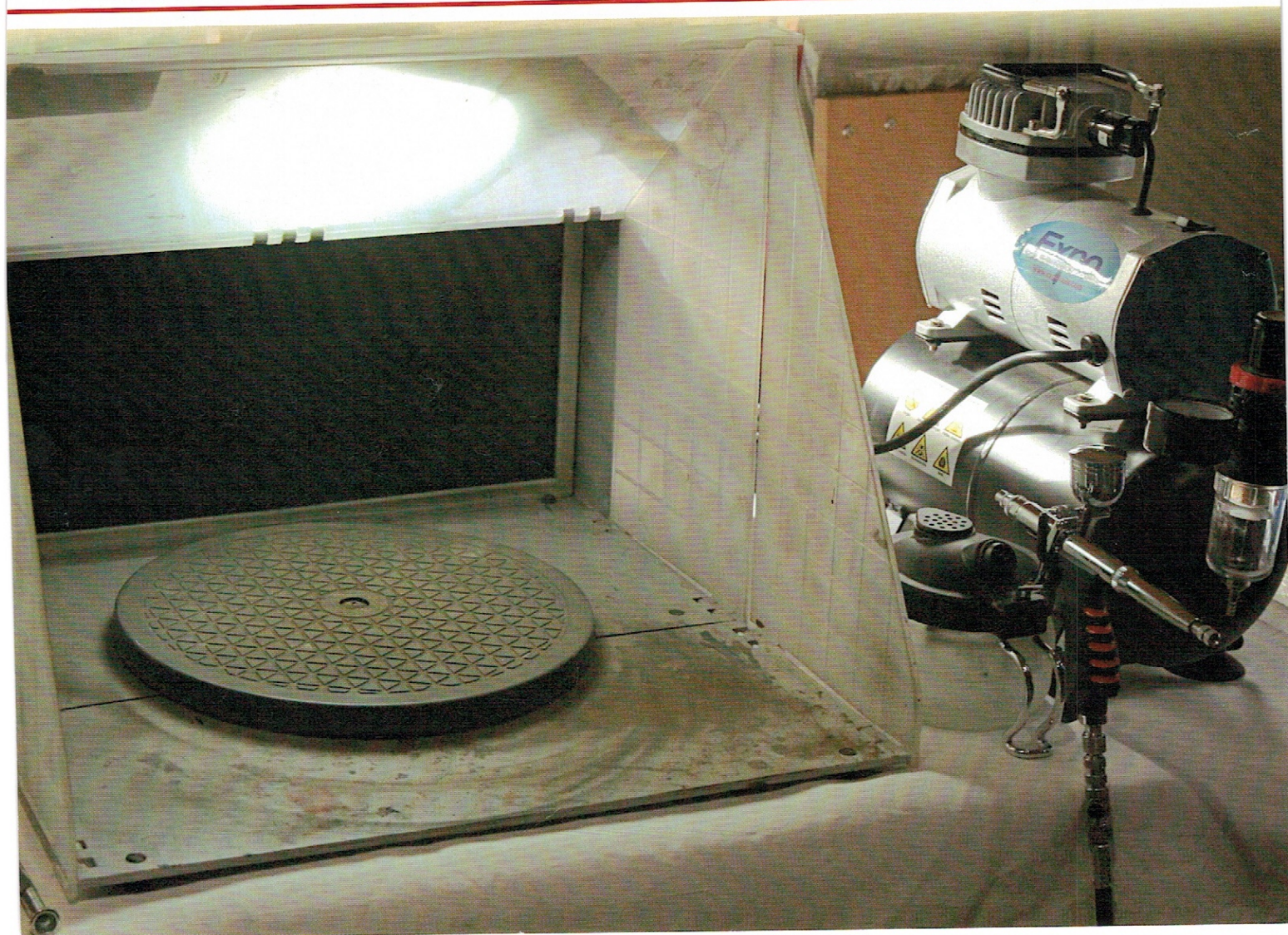
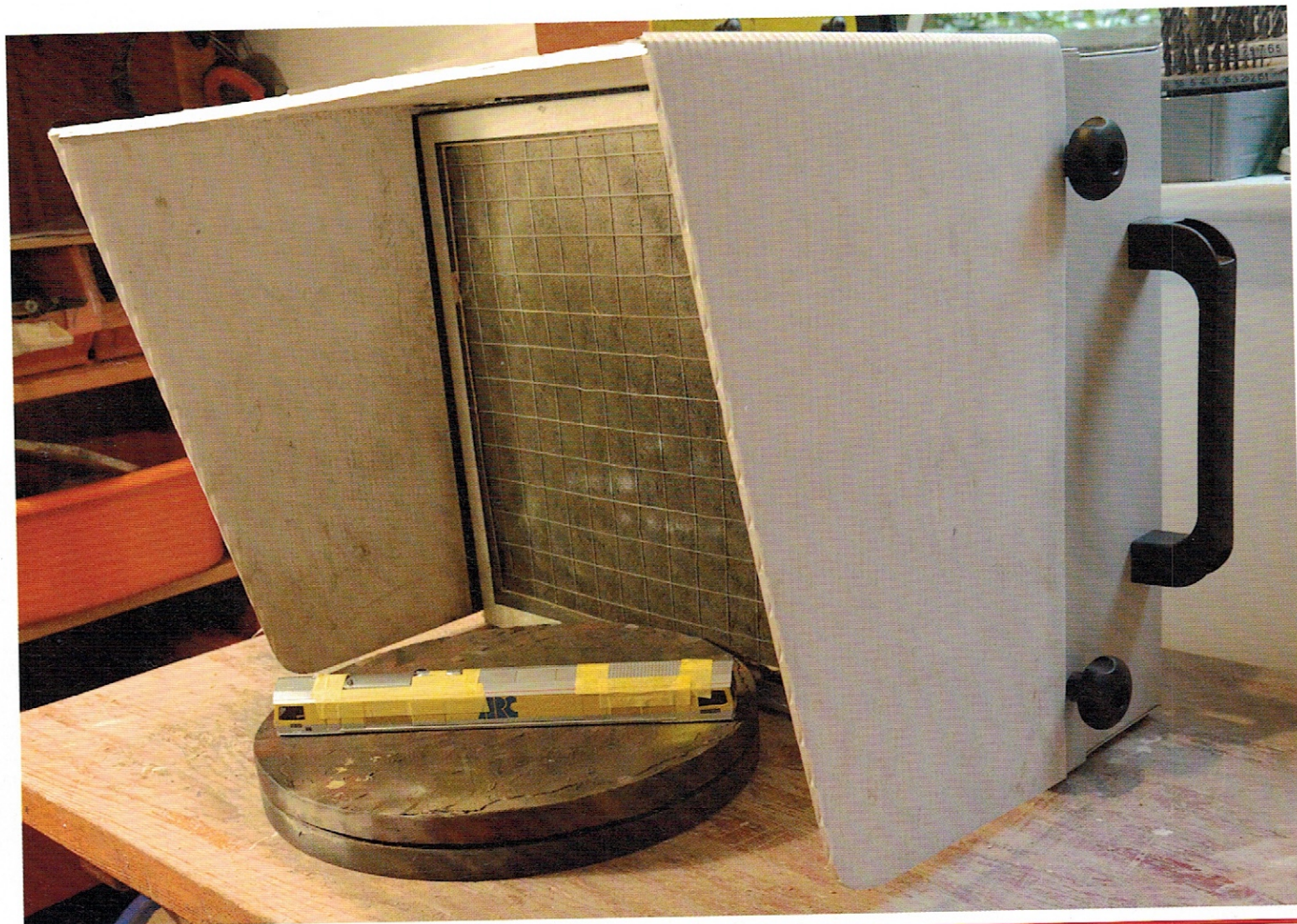
panels slot into the back of the casing while the drive unit comes in a separate bolt-on steel case and features a 65w exhaust fan that is very quiet in operation – you may have to remind yourself to switch it off when not in use as it can barely be heard above ambient room noise!

The manufacturer measures the exhaust airflow at 105-115m³ per hour and it certainly does the business in shifting overspray and paint particles. We teach airbrushing in some very health and safety-conscious places and the SB88 does a terrific job in eliminating heavy fumes and odours, especially when potentially toxic enamel paints are being used.



THE DETAILS

Distributor	www.airbrushes.com
Description	SB88 Hobby spray booth
Price	£125.00



GraphicAir A300S D Extractor

This unit is very similar to the A300S but, rather than containing the filtered particles, it exhausts them to the atmosphere through a 2m hose which, being a standard 100mm diameter, can

easily be extended using extra lengths from the DIY store, duct-taped together.

It's cheaper than the A300S because the filtration process is less complicated, but it's equally effective in operation – the inner workings such as the industrial-standard 105w motor appear to be identical.

Access to the filters is straightforward too and changing them takes less than a minute. Because it's not always convenient to use a spray booth in a

THE DETAILS

Manufacturer	www.graphicair.com
Description	A300S D extractor
Price	£290.00

GUIDE RATINGS

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Customer support					

desktop-type set-up, both units can also be used flat on their backs or tilted at any angle up to 90° from the horizontal.



Force™ Respirator Mask

Paint and other potentially harmful particles atomised in the air should not be going down into your lungs. This applies especially to solvent-based paints such as enamels, but also to acrylic paint which is water-based and theoretically non-toxic. Although a spray booth is far and away the best preventative, a proper respirator mask with filters is worth considering as a short-term solution for a quick airbrushing job (but never as a viable long-term alternative).

However, some are supremely uncomfortable, while others – especially the throwaway ones you buy in DIY stores – are worse than useless when confronted with paint fumes. With its four-way adjustable harness and thermoplastic rubber face piece, this particular design of mask is comfortable to wear and is surprisingly easy to breathe through. The filters are mounted low so you can see what you're doing and the cartridges (type A1P2, designed specifically for the kind of paints and solvents we use) are replaceable. It can never do the same job as a proper extractor unit though.

GUIDE RATINGS					
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THE DETAILS

Manufacturer	www.jsp.co.uk
Description	Twin-cartridge face mask
Price	£25.00

HINTS AND TIPS

- All spray booths use filters to remove paint particles from the extracted airstream, but some are far more efficient than others and not all of them necessarily have easily obtainable replacements. Make sure you know where you can find replacement filters before making your choice and better still, buy a couple of spares at the time of purchase.
- Follow manufacturers' guidelines

regarding the intervals between replacement. There may be some leeway in this but it doesn't mean you can carry on using the same filter indefinitely – it will long have ceased to function.

- For the extractor fan to work effectively, you need to have the model you're painting as far inside the spray booth as you can manage. If it's half-in and half-out of the enclosure, paint spray

will blow back into the room.

- The longer the outlet hose the better. If it barely reaches the open window, fumes will be blown straight back into the room you're working in!
- A shelf mounted on the top of the hood is a convenient place to keep models, tools, paints and other useful items. You can easily construct one from offcuts of plywood.

- A painting turntable placed inside the booth will allow airbrush work to be carried out without having to touch the model. Go for the largest size that will fit.
- Although most spray booths have translucent hood assemblies, use additional lighting to keep the subject sufficiently illuminated. Check that you have sufficient room within your workspace to include a work light.