DENTAL BUYERS GUIDE - Air, you can't have too much of a good thing !

Introduction
The air compressor is the heart of the dental surgery and after the surgeon is arguably the most important piece of equipment.

Without ultra clean compressed air the handpieces, scalers, 3/1 syringe, delivery units or chair valves won't function.

Air is also used to dry the tooth surface, when bonding composites for example. If the surface isn't absolutely clean and dry the bonding process will not work and the patient will be back complaining ! Air abrasion uses air to gently blast abrasive onto the tooth surface, it could be disastrous if dirty or wet air clogged the abrasive medium together.

Consequently, the air must be of the very highest standard of cleanliness to protect the patient from infection, to ensure the correct adhesion of composites and long term performance of the dental equipment itself.

Industrial Compressors spell trouble
There are compressors for all sorts of applications the most common being industrial or "garage" compressors. These compressors are ideal for powering workshop machines or inflating car tyres, but they are totally unsuitable to provide air to put in your probably already nervous patient's mouth ! They are very noisy so they have to be located outside or tucked away in the cellar or outhouse which is very inconvenient.

In an industrial environment it doesn't matter too much if there is oil or water contamination in the air but in a dental surgery it could be a disaster – the last time amalgam came drift did your realise it was probably because of dirty compressed air ?

Or that those expensive handpiece repair bills could be down to dirty air contaminating the very delicate air bearings ?

Would you really want to put the same quality of air that goes into a road drill into your brand new fibre optic handpiece ?

Solution
Buy a Bambi Dental Oil Free Air Compressor !

Oil Free, how can that be ?
Oil free compressors as their name suggests have no lubricating oil to keep things moving, instead they rely on precision sealed bearings and friction free compression rings. This means there are significant benefits for you and your surgery -

- *No risk of oil contamination*
- *Have longer duty cycles – excellent when there is a peak demand like crown preps*
- *Can be fitted with air dryer for hygienic air quality*
- *Routine maintenance free when fitted with the air dryer option*
- *Uses smaller air receiver – saves space*

Silent Running Oil Free Compressors
When space is really limited and the compressor has to be adjacent to or in the surgery the ultra low noise when running of the VTS models makes this easy.

There is a model for every size of practice, the table at the end of this

introduction illustrates which one is right for you.

Breathing Air Filters
In the compression process contamination collects in the air receiver. This is normal but can be a big problem if it enters into the surgery airline. If the compressor is oil lubricated oil mist can enter the air supply. This contamination can easily be removed with a Breathing Air Filter. This advanced filter has two separate elements, the first removes particulates to 0.01 microns, the second removes odour.

To put this into perspective, the size of pollen is 10 microns, tobacco smoke is 0.1microns and virus just smaller than 0.01 microns. The Breathing Air Filter delivers air that is 400,000 times cleaner than the air in the room in which you are reading this introduction.

So when this filter is installed in the airline it will remove all these harmful contaminants.

Fit & Forget
The elements will need replacing from time to time and Bambi sends an annual reminder to you to check if these need doing. You don't even need an engineer, you can do it yourself.

Output – lpm v Bar
It's worth a quick mention about how to choose the right size compressor for your surgery. Most people think that it is the pressure - measured in Bar but in fact it is the air *volume* that is important – which is measured in litres per minute.

The compressor must have sufficient air output to power all the equipment in the surgery, the handpiece, air motor, electric motor (yes, it uses air as a coolant !), 3/1 syringe, air scaler, air abrasion and some delivery unit pinch valves. Probably more than you think.

Unfortunately all the manufacturers of handpieces specify different air demands so there is no absolute rule, but as a guide we recommend 50 litres per minute per surgery as a minimum. If the compressor output is too low it will not keep up with the demand of your surgery and probably run too hot. Additionally if the compressor is not producing enough air you will never achieve the correct cutting torque of your handpiece.

One thing worth considering, your practice will certainly grow, so bear that in mind when deciding what size you need. It could be better to install a two surgery compressor now rather than in a couple of years time when your practice has expanded and space is limited !.

The air receiver size is calculated by the compressor manufacturer for the optimum running of the compressor.

COMPRESSOR RANGE SELECTION CHART

Number Surgeries	Low Noise Range	Silent Running Range
1	VT75, VT75D,	VTS75, VTS75D
2	VT150, VT150D,	VTS150, VTS150D
3	VT150, VT150D,	VTS200, VTS200D
4	VT200, VT200D	n/a
5-6	VT300, VT300D	n/a
7-8	VT400, VT400D	n/a

"D denotes fitted with integral air dryer

The above is a guide only. We always recommend seeking the advice of your usual dental equipment dealer who will be familiar with the specific demands of your surgery

Air Dryers

Whenever air is compressed, moisture which is naturally present in the atmosphere, is squeezed out and condenses in the air receiver. This is why you must drain the receiver on a regular basis. Water in the air is a problem because it will effect composites especially when using air to dry a tooth surface. Because the air receiver will be wet & warm, Bacteria will grow inside the air receiver. Reducing the moisture content of the air will prevent this. The Dry quality of air is measured in Dewpoint. Bambi Air Dryers achieve a Dewpoint in excess of -40^{0}C, which is very efficient. To put this in perspective, Bacteria ceases to be active at -23^{0}C Dewpoint. Corrosion is stopped at -30^{0}C Dewpoint.

All Bambi oil free compressors can be specified with an integral desiccant air dryer. Inside the air dryer is a tower of desiccant crystals. The compressed air from the pump passes through an aftercooler which reduces the air temperature – cooler air contains less moisture and has larger water droplets which can be removed with a high quality coalescing filter. After the filter removes the collected moisture the air passes up through the desiccant bed which will adsorb all the moisture present.

Of course the desiccant must be dried out regularly, so at the end of each compression cycle a small amount of the dry air is slowly passed back through the tower which thoroughly dries out the desiccant. All accumulated moisture is drained off into a container. This is called "purging" and all Bambi dryers purge automatically.

Bambi oil free compressors with an air dryer are designated by the suffix "*D*"

Maintenance Free
A major advantage of the Bambi air dryer is that the air is dried *before* it is stored under pressure in the air receiver, so you never even have to drain the air receiver, eliminating the only regular maintenance.

Internally coated for hygiene
Significantly, all Bambi air receivers are protected internally with an anti corrosion coating to eliminate rusting and ensure the air is contamination free. Essential when ultra clean, hygienic air is required.

Ventilation saves money
A quick word about good ventilation. Always site your compressor in a cool, well ventilated place. As we have read, moisture is formed during the compression process, this happens with all compressors. But you can dramatically reduce the amount of moisture by ensuring the air is well ventilated. Each time the kettle boils steam is let out into the air, each time the autoclave door is opened steam escapes. Your water distillation unit is giving off steam and the central heating boiler and central suction pump all give off wet, warm air. In turn this gets drawn into your compressor's intake, condenses inside the air receiver and then has to be drained off. If you forget to do this it will work its way into the surgery. If you have a wet air problem, try opening a window by the compressor you could be amazed at the difference it makes !

Some of the most frequently asked questions about dental compressed air and how to select the right compressor for your practice

As I want ultra clean air would an oil free compressor be my best choice ?
Yes, modern compressor technology means they are now very reliable and because of their oil free design ensure you can never contaminate your surgery equipment, this is vital in a modern dental practice. In addition all Bambi air receivers are internally coated against corrosion so there is no possible risk of contamination of the air supply. If you choose a compressor with an air dryer you can achieve hygienic quality air.

My surgery is in an old Grade II listed building with rickety wooden floors. I don't want to hear the compressor running so can I still use n oil free compressor ?
Of course ! The VTS models are so quiet when running they can be located within the surgery itself. Its contemporary good looks means it will fit in with any décor or surroundings without causing any intrusion

I hate maintenance, what can you suggest ?
Bambi oil free air compressors require minimal maintenance, just drain the receiver periodically of moisture. To eliminate even this choose an oil free compressor with an air dryer. These compressors dry the air before it is stored in the air receiver eliminating the need to drain it. Totally "fit & forget".

What about Air Filters ?
Ask your engineer to fit a Breathing Air Filter to your surgery system, especially if you have an oil lubricated compressor. This will remove residual contamination from the air supply of oil mist, moisture and dust particles. Odour is removed by a charcoal element. In fact the air will be cleaner than the air you are breathing now !

Do the filter elements need changing ?
Yes, they are the part of the filter doing all the hard work. They have a tough life especially when used with an old compressor as they are filtering contamination from the compression process from the air supply.

To make life easy, we send you an annual reminder to check the elements, just tick the box, send the note back to us and a replacement will be on its way. Best of all, you can fit these yourself without any tools.

Do compressors really need servicing ?
Yes, just like any precision machine, your dental compressor is built to the most exacting standards, which need to be checked and maintained to ensure long life. When you think about it, the compressor is the heart of your surgery, if it breaks down the whole practice could be out of action. Remember, regular preventative maintenance is always cheaper than an emergency call out repair.

Who should I go to for servicing ?
Your usual dental equipment dealer will have been fully trained to carry out servicing on your Bambi compressor. Most dealers carry spares in stock and any parts urgently needed can be despatched Same Day from our Birmingham factory. If you are unsure who to ask just 'phone our factory and we will give you the names of some suggested service engineers you can contact.

Is it really necessary to have the air receiver inspected, it's just more money ?
Once again yes you should. This rule has been brought about to protect you, your employees and your patients from risk of injury.

If the air receiver has a capacity of more than 24 litres you must have it inspected every 24 months and produce a “Written Scheme of Examination”. This is a document which includes a specification of what your pressure system is. This is to comply with Health & Safety rules. However, you may find that your practice insurers will ask for an annual inspection regardless of capacity. We strongly advise you speak to them and ask their advice.

You may be able to incorporate this inspection with the annual check of your autoclave and X Ray. Ask your inspector for details.

Remember, all Bambi Air Receivers are internally coated against corrosion.

What is HTM2022, does it effect me ?

This is a guideline document that ensures dental air is supplied to a consistently high standard nationwide. In essence it states that the compressor must be oil free, have an integral air dryer with an internally coated air receiver and a Breathing Air & Bacteria Filter down stream of the compressor. It is primarily intended for dental surgeries located on NHS Estate sites so unless your practice is here you do not come under the scope of this and do not need to comply. However, it does contain some excellent recommendations and in the long term would be worthwhile aiming to comply with this. All Bambi Oil Free Compressors with Air dryers which have been fitted with Breathing Air & Bacteria Filters comply with HTM2022. You should check the exact air demand required by HTM for the number of surgeries being used.

Why should I buy a Bambi Air Compressor ?

By choosing a Bambi compressor you will be investing in a sophisticated Dental Compressor manufactured in the United Kingdom to the highest standards of quality control. You will be protected by a comprehensive warranty and a unique after-sales service covered by our own engineers. Bambi is the only Dental Compressor company to offer its customers this level of service.

Bambi compressors are available from all leading dental retailers who will supply, install, offer a service contract and arrange finance if desired.