Dentistry

Practice manager's guide
to clean compressed air

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100% Dry, Oil-free Air from the LFx MED Range

The Complete Dental Air Package

When the world leader in compressed air systems launches a compressor for dental applications you can be sure the result will be equipment designed to an exceptional standard.

Atlas Copco's position at the forefront of compressor development for over a century, plus research and development involving dental practitioners, ensures the LFx MED range meets their rigorous standards.

Models in the LFx MED range will supply from one to twelve chairs and the quality of air produced meets or exceeds the UK Health Technical Memorandum 2022 (HTM 2022) Supplement 1, and the scheduled new memorandum on dental air.

Atlas Copco understand dentists' need for a simple-to-use, reliable air system installed either in a central location or within the surgery itself. The LFx MED range's whisper-quiet operation allows this, effortlessly delivering clean, dry, 100% oil-free air with minimal maintenance that can be covered by a low cost ServiceCare package.

For more information on the Atlas Copco LFx MED range call 0800 181 085.

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Ethics and compliance

Being a dental professional requires intelligence, patience, a steady hand, unimpeachable ethics and good interpersonal skills: this counts for the qualified dentist and the practice manager.

Being an ethical professional requires a genuine concern for patients through their whole experience. Ethics is also about compliance with the rules and regulations from the key bodies like the General Dental Council, and of course - clinical governance.

Take compressed air for example: all practices need it. So it is no surprise that the systems for delivery and the quality of compressed air are subject to various regulatory procedures, some of them mandatory.

Dentistry magazine advises practice managers wishing to run compliant and ethical practices to apprise themselves of the relevant legal standards and requirements not only to protect the patients and staff, but to guard against the possibility of prosecution by default.

With so many mandatory requirements, Dentistry magazine has put together all the requirements and advice and recommendations to help any dental practice to conform.

This supplement should be relevant for years and we strongly recommend you hold on to it for when you next need to buy, replace or repair a compressor. At which point, this guide will be essential reading.
Guidelines and statutory requirements

To ensure the quality of compressed air used in a clinical context, systems and the air they deliver are subject to various regulatory procedures, some of them mandatory. Practice managers are advised to apprise themselves of the relevant legal standards and requirements not only to protect the patients and staff but to guard against the possibility of prosecution by default. Current regulations and associated literature include:

- Health and Safety Executive C.O.S.H.H (Control Of Substances Hazardous To Health) (Regulation 2002 INDG 136rev3)
- NHS HTM 2022/ supplement 1 (Published 2003) (Guidance on specific requirements for compressed air used within dental clinics, surgeries, teaching schools and hospitals.)
- PRESSURE SYSTEMS REGULATIONS 2000
- HSE leaflet: Pressure Systems: Safety and You and Pressure Safety
- Air quality must be tested at least annually and the certification retained within the practice.

With the above statutory requirements dental practice needs to be assured that to carry on its day-to-day business you need assurance that the air being used for clinical procedures is clean and bacteria free.

Your chosen supplier should be able to give you that assurance. Here is a typical certificate of compliance of clean air qualities such certification should be displayed within the surgery for the satisfaction of patients and staff.
The dangers associated with sub-standard compressors

The threats posed by contaminated compressed air are common to all types of practices. Unit specifications vary, and compressors must be ‘fit for purpose’ to meet the demands made on them and still eliminate risk. In the event of a breakdown or system corruption the clinician, as the person responsible, becomes liable not only for expensive maintenance costs but the possibility of third party legal action following avoidable infection or treatment failure.

**Contaminated air**

An inadequate specification, where the system struggles to deliver the required pressures and volumes in a multi-chair practice, for example, failure to observe recommended maintenance schedules, places air quality at risk and exacerbates the inherent dangers of the compression process. All air carries a percentage of moisture, which condensates infective bacteria, which may be unwittingly transported directly into the patient’s mouth.

**Wet air**

Wet air and the carbon breakdown from poorly serviced equipment represent a hidden danger to air driven instruments. The presence of moisture or other contaminants, under pressure and within a technically sophisticated instrument such as a handpiece, inevitably causes damage in the form of corrosion or physical impediment. Handpiece bearings are particularly susceptible to abrasive damage from carbon particulates. Costly repair bills and possible down time result.

Modern compressors are oil free and feature desiccant drying systems, which following the compression process, totally eliminate water.
This is a typical compressor in common use: old, oil dependent and with no air treatment system. It will guarantee contaminated air and unreliability. Not fit for purpose.

This is a typical legally compliant compressor: oil free, with a desiccant drying system and breathing air filtration. It guarantees clean, safe compressed air certificated to comply with legal standards.
Risk assess your current system

- Make sure your compressor is being serviced regularly and the service records are kept in a safe place, pending inspection by any third parties.
- Ensure your compressor is sited correctly with sufficient ventilation.
- If your compressor is an oil filled unit, commission an air quality test.
- Check that your machine is fitted with a drying device.
- Check your machine has an efficient filtration system which is checked and cleaned regularly. Disposable filters must be changed at the recommended intervals.
- Be sure that any condensate is regularly drained.
- Ensure that no dangerous fumes including CO₂ is escaping into the practice.

Make sure your practice’s compressed air is safe and legal
Equipment location

The location of the compressor within the practice should be determined by safety factors rather than convenience. Without adequate ventilation, the unit will under perform and its lifespan will be reduced. Inadequate ventilation will lead to:

- Overheating and increased wear of the major components
- Increased oil carry-over
- Seizure, or total breakdown
- During operation the unit will generate CO₂ gas, which must be dispersed to prevent a threat to health to all within the practice. Particular care should be exercised if the compressor is kept within the surgery.

If the compressor is placed in the proximity of a vacuum system without outside ventilation or breather pipes, its air intake will ingest the fumes from the vacuum system and potentially re-cycle patient waste, returning it to the chair and to the next patient.
The purchase, installation and maintenance of a new system

- Choose a supplier prepared to offer objective advice and not one tied to a particular manufacturer. They should be prepared to evaluate your practice requirements and survey your surgery environment; service and support should be included in the contract. Ask for local testimonials to verify the company’s reputation and reliability.

- Beware of bargains – the cheapest equipment is cheap for a reason, and is unlikely to be reliable or deliver air which meets the legal criteria. The latest compressors are oil free and incorporate desiccant drying technology and breathing air filtration.

(You don’t have to write out a big cheque to purchase the best equipment: there are alternative ways. Some companies offer fixed cost rental or leasing schemes, which include support and maintenance programmes and enable practices to adjust their budgets accordingly.)

- The compressor should be installed in an area that is well ventilated, so that the equipment is kept cool and with access to uncontaminated air. Air which is clean from the outset requires less purifying and helps to protect the equipment.

- Pipework systems must not degrade internally through use. Inappropriate materials will corrode and harbour contamination, which eventually will increase the risk of infection and pass damaging particulates through your expensive handpieces. The pipework system should also offer access points for routine cleaning, disinfection and air quality testing.

- Compressors are machines with moving parts and require regular servicing to function efficiently. Current guidelines advise at least annual servicing intervals, although it is expected that the Health and Safety Executive is about to shorten this period to six months.
The applications of compressed air in dental practice

Compressed air plays a vital role in almost every area of everyday dental treatment:
- Driving the drill turbine of the handpiece
- In 3-in-1 tools for drying preparation areas
- Laser technology
- Teeth whitening procedures
- Abrasion procedures.

The handpiece

Compressed air is the power source for the handpiece, one of the most expensive and sophisticated tools in the surgery and perhaps the most essential. A throughput of poor quality, moist or contaminated air will quickly damage its performance and components, shortening its life and leading directly to expensive repair bills.

3-in-1 tools

These instruments use compressed air as a drying agent to assist in the preparation of treatment areas. Exposing the patients to a contaminated airflow is an obvious and avoidable health risk, and the presence of moisture is known to compromise the integrity of many restoration bonding agents. Failed treatments which require the patients to return for remedial work, usually at no charge, are expensive for the practice and for the clinician’s reputation.

Laser technology

Impure air will corrupt every aspect of the process.

Teeth whitening procedures

Bleaching processes depend on clean, dry air.

Abrasion procedures

To function efficiently, abrasion media must remain dry during application. Water vapour in the air supply quickly saturates the medium, reducing its efficiency thus causing congestion at the point of delivery. Failed treatments result.
The history of compressed air

Primitive man first used compressed air when he blew on a flint-generated spark to start a fire, but it wasn't until the eighteenth century that mechanical means were devised to exploit the phenomenon. In the 1770s John Smeaton, believed to be the first professional engineer, devised a blowing cylinder driven by a water wheel, which became the forerunner of the compressors we know today.

Compressors use a cylinder to rapidly draw in air to an enclosed space, whose volume is then reduced to create a pressure vessel. The controlled release of the air creates a power source without the risks attendant of other forms of energy such as electricity or hydraulics.

Modern dentistry has adapted compressed air to assist clinicians across almost the entire spectrum of dental procedures. However, the reliable delivery of surgical quality compressed air is only achieved by ensuring the compressor and its ancillary equipment perform to recognised standards.

Hygiene

All dental procedures are invasive to a greater or lesser extent, and the patient's health is put at risk if contaminated air is introduced to his mouth.

Surgery compressed air must be clean and dry to protect the patient, the clinician and delicate instruments. Moist air encourages the proliferation of potentially harmful, infective bacteria, and both clinicians and patients must be confident the surgery environment is hygienic and safe.

Reliability

The smooth running of every practice depends on an uninterrupted flow of compressed air, and a reliable compressor is vital to ensure both the dentists' peace of mind and the business' cashflow. The nightmare scenario is a waiting room full of patients who cannot be treated because the compressor has broken down.
Clean air?

E-coli is one of many dangerous threats found in dental compressed air systems, which should be clean and compliant by law. It is imperative that clinical areas are clean and free from the risk of infection.

Dentalair compressors provide clean, 100% dry, oil-free air. We have a range of packages to suit you starting from only £12.50 per week for a 4 chair practice. We will provide you with clean air accreditation, ensuring that you meet all the required regulations, giving you and your clients peace of mind.

**CONTACT / SURVEY**
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**PACKAGES**
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