



**A GUARANTEED SOLUTION TO  
FOOD GRADE COMPRESSED AIR**

## Food Grade Compressed Air

A new code of practice covering the use of compressed air in the food industry has been developed between the British Retail Consortium and the British Compressed Air Society. The code gives minimum quality standards for compressed air and defines allowable levels for dirt, water and total oil in line with quality levels specified in ISO8573.1 the international standard for compressed air quality.

### Quality Levels

Section 6 of the code of practice provides air quality standards for compressed air that is either in direct contact with food (specified in section 6.1 as contact) or air that could come in contact with food (specified in section 6.1 as non-contact).

Air Quality Recommendation	Dirt (Solid Particulate) Max Number of Particles per m <sup>3</sup>			Humidity (Water Vapour)	Total Oil (Aerosol + Vapour)	ISO8573.1 Equivalent
	0.1-0.5 micron	0.5 - 1 micron	1 - 5 micron			
<b>Contact</b>	100,000	1,000	10	-40°C PDP	< 0.01 mg/m <sup>3</sup>	Class 2.2.1
<b>Non - Contact</b>	100,000	1,000	10	+3°C PDP	≤ 0.01 mg/m <sup>3</sup>	Class 2.4.1
<b>Non - Contact High Risk</b>	100,000	1,000	10	-40°C PDP	≤ 0.01 mg/m <sup>3</sup>	Class 2.2.1

Reference Conditions from ISO8573.1 : Absolute atmospheric pressure 1 bar, Temperature = 20°C.  
Humidity is measured at air line pressure.

In addition, section 6.2 gives advice on assessing microbiological contamination.

### Lubricants

Section 5.4.4a of the Code of Practice states 'Where lubricated or oil-injected compressors are in use and non-food grade oil is used and the HACCP process identifies a risk, then the oil shall be replaced with food grade oils in line with the procedures identified in the EHEDG Document 23.'

## A Guaranteed Solution to Food Grade Compressed Air

### Compressed Air and its purification

#### General Systems

It is often believed that the compressed air purification equipment required is dependent upon the type of compressor used. In fact, the contamination in a compressed air system (dirt, water and oil) comes from many sources such as, the ambient air, compressor lubricants, corrosion of the distribution piping and microbiological growth in the warm, moist air.

A common misconception is that by installing an 'oil free' compressor there is no need for downstream filtration. However the term 'oil free' simply means that oil is not used in the compression chamber and therefore does not come into contact with the air being compressed. Even with an oil-free compressor, filtration will be required to remove dirt, condensed water & oil vapour drawn into the compressor intake as well as dirt present from the distribution system.

#### Coalescing Filters

Aerosols (droplets) of oil & water are removed using coalescing type filters which have the additional benefit of removing solid particulate to very low levels (as small as 0.01micron in size). In a typical oil lubricated compressed air system, up to 99.5% of the liquid removed by coalescing filters is water.

#### Adsorption Filters

Oil vapour will pass through the coalescing filter just as easily as the compressed air itself. Oil Vapour Removal (OVR) filters provide a large bed of activated carbon adsorbent for the removal of oil vapours and provide final protection against oil contamination.

#### Refrigeration Dryers

CRD Refrigeration dryers provide water vapour removal with a pressure dewpoint of +3°C. Ideal for general purpose compressed air and air not in direct contact with food.

#### Adsorption Dryers

PNEUDRI adsorption dryers provide water vapour removal with a pressure dewpoint of -40°C (-70°C optional). A compressed air dewpoint of less than -26°C will inhibit the growth of micro-organisms within the compressed air system.

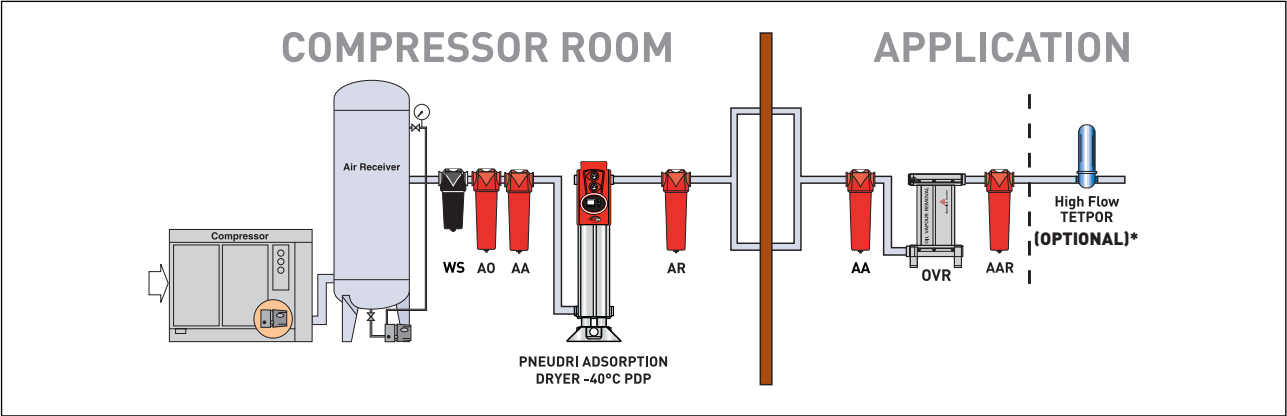
#### Microbiological Filters

Where HACCP has established a risk, specific filtration is available to provide sterile compressed air. Steam sterilisable High Flow Tetpor filters provide absolute removal of micro-organisms.

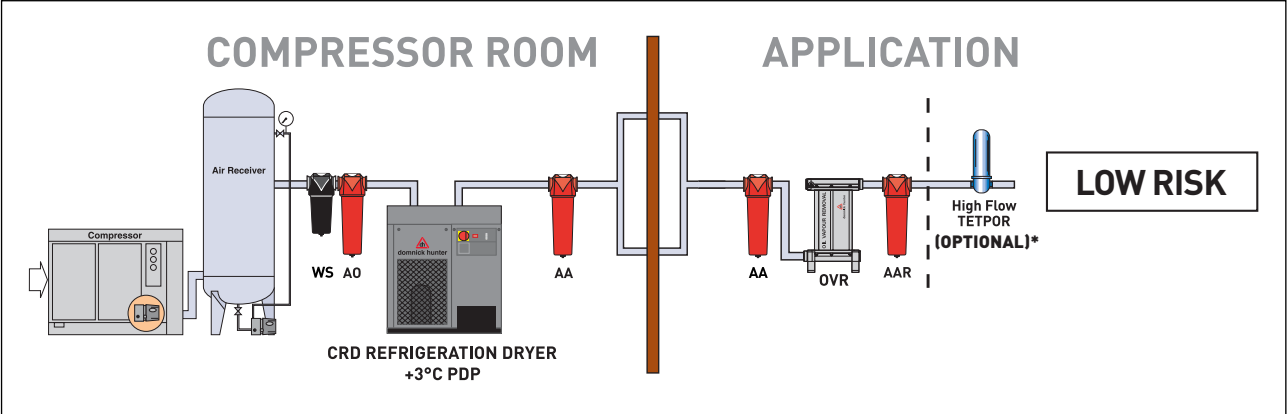
System Design

To achieve the stringent air quality levels required for food manufacture, a careful approach to system design, commissioning and operation must be employed. It is highly recommended that the compressed air is treated prior to entry into the distribution system as well as at each usage point or application. This approach to system design provides the most cost effective solutions to food grade compressed air as shown in the examples below.

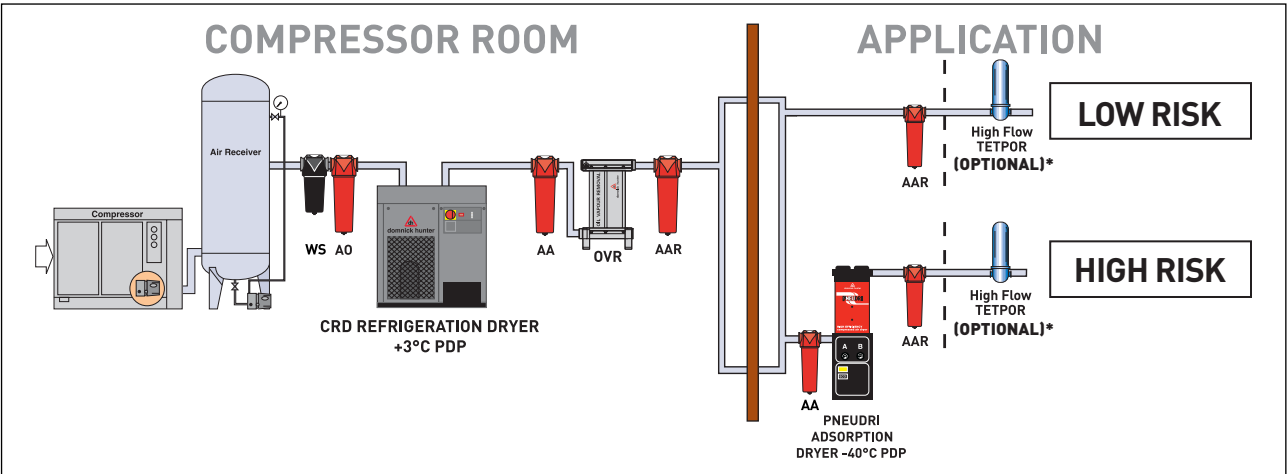
CONTACT



NON-CONTACT



NON-CONTACT



Air Quality Recommendation	Dirt (Solid Particulate)	Humidity (Water Vapour)	Total Oil (Aerosol & Vapour)
Contact	OIL-X EVOLUTION GRADE AO + AA or OIL-X EVOLUTION GRADE AR + AAR For dry particulate*	PNEUDRI -40°C PDP	OIL-X EVOLUTION GRADE AO + AA + OVR
Non - Contact Low Risk		CRD +3°C PDP	
Non - Contact High Risk		PNEUDRI -40°C PDP	

**KEY:**  
WS - BULK LIQUID REMOVAL / OIL-X EVOLUTION Grade AO - GENERAL PURPOSE COALESCING FILTER / OIL-X EVOLUTION Grade AA - HIGH EFFICIENCY COALESCING FILTER  
OIL-X EVOLUTION Grade AR - GENERAL PURPOSE DUST REMOVAL FILTER / OIL-X EVOLUTION Grade AAR - HIGH EFFICIENCY DUST REMOVAL FILTER /  
OVR - OIL VAPOUR REMOVAL FILTER / HIGH FLOW TETPOR - Optional Sterile Air Filter

\* HIGH FLOW TETPOR Steam sterilisable absolute particle retention filter (optional when specified by user).

## Guaranteed Air Quality

All air treatment products are supplied with a one year compressed air quality guarantee, when sized, installed and maintained in accordance with domnick hunter recommendations.

## Measurement and Testing

Section 7 of the code of practice requires systems to be tested twice per year by qualified personnel with specialised equipment. As a full customer service organisation, domnick hunter can carry out a complete compressed air system health check and provide a full range of cost effective, tailored maintenance programmes which will satisfy the testing requirements of the code.

## Compressed Air Health Check

For a complete system health check and details of maintenance programmes available, contact domnick hunter or a recognised domnick hunter distributor.



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