

# Atlas Copco

## Medical Air Systems



*Atlas Copco*



## Total capability, total responsibility

Right at the heart of your business, Atlas Copco delivers quality compressed air for superior operational capacity. From compressed air generation to point of use, you can choose from our wide range of products to create a complete compressed air system tailored to your specific needs. All Atlas Copco products are engineered to integrate seamlessly, ensuring the highest level of reliability and energy efficiency. As a result, Atlas Copco can take full responsibility for your compressed air infrastructure with a guarantee of best-in-class quality. With a global presence in over 150 countries, we can provide an unrivalled service to maintain and continually improve your compressed air system performance.

Backed by 100 years at the forefront of compressed air, Atlas Copco products offer the finest quality and efficiency. Our goal is to be First in Mind—First in Choice®. That is why Atlas Copco's pursuit of innovation never ceases, driven by the dedication to meet and exceed your demands. Always working with you, we are committed to providing the customized air solution that is the driving force behind your business.

***We are committed to your superior productivity through interaction and innovation.***

# Precision in critical environments

The critical field of patient care requires clean air delivered to operating theaters and hospital beds with absolute reliability. The MED series' unique multi-stage filtration converts regular compressed air from any type of compressor into internationally certified breathing air. The MED simultaneously provides clean air to power surgical air tools with maximum efficiency.



## ASSURED RELIABILITY

Built to exacting standards, the MED series is engineered to provide certified breathing air even in areas with high ambient pollution. The MED ensures high air quality in 'worst case' but real life pollution scenarios. With the assurance of worldwide after-sales service from Atlas Copco, the MED series offers the complete solution for critical air environments.



## CERTIFIED QUALITY

Pre-certified to international regulations including Pharmacopoeia and quality norms such as ISO 13485, the MED series meets medical air requirements. Pre-certification simplifies organization and inspection by regulatory bodies, saving the hospital time and money and reducing the risk of a rework of the system to satisfy requirements.



## COMPACT OPERATION

The MED series, with its small footprint and integrated design, fits into any space or setting. The MED comes pre-assembled and ready for use – ensuring minimal installation time and costs.



*Atlas Copco's MED series provides quality air for critical operating environments such as breathing air and operation of surgical air tools.*

# Meeting healthcare needs



*Surgical tools throughout the hospital operate reliably and smoothly on air supplied by the MED.*



*Patients receive breathing air, provided by the MED, that conforms to the most stringent international regulations.*



*The MED series can assume responsibility for a hospital's entire breathing and surgical air delivery.*



*Added to a new or existing compressed air system, the MED series produces reliable, cost efficient breathing and surgical air.*

## TOTAL RELIABILITY IN AIR QUALITY

A dependable flow of air is essential in medical environments. The MED is engineered and tested to provide clean air in polluted environments such as cities and industrial areas. With extensive research of medical air needs, Atlas Copco devised the Challenge Test (see below) to create a new standard in breathing and surgical air.

## COMPLETE COMPLIANCE

Today's medical arena is more regulated than ever. This increased certification can be costly and time-consuming. Atlas Copco's MED unit is pre-certified to simplify your certification process on installation. Atlas Copco and the MED meet the following directives and norms, which also provides compliance with MDD93/42/CE:

LEGISLATIONS AND DIRECTIVES	TECHNICAL NORMS	QUALITY NORMS
Pharmacopoeia Atlas Copco is a supplier of Medical Devices	EN737 ISO 14971	ISO 13485



Certified quality

## ERROR-FREE INSTALLATION

The MED comes pre-assembled to provide simple installation. The integrated design minimizes installation errors and costs.

## EASE OF MAINTENANCE AND GLOBAL SUPPORT

Durable engineering creates longer maintenance intervals to save time and servicing costs. The MED series can also come with the dedicated global back-up of the Atlas Copco worldwide service network. All of the MED series are provided in line with MDD93/42/CE, requiring suppliers to perform critical updates to the unit if required.

## ATLAS COPCO CHALLENGE TEST

Atlas Copco devised the Challenge Test to ensure the MED series meets international regulations. The test was designed to take into account the impurities in ambient air by subjecting the MED to the maximum concentrations reported by governments worldwide. Excelling in these 'worst case scenarios' in ambient air quality, the MED gives you peace of mind in real life conditions.

	European Pharmacopoeia	Medical Air System air quality
O <sub>2</sub>	20.4% < x < 21.4%	
<sup>1</sup> CO <sub>2</sub>	<500 ppm	<220 ppm
<sup>2</sup> CO	<5 ppm	<1 ppm
<sup>3</sup> SO <sub>2</sub>	<1 ppm	<0.2 ppm
<sup>4</sup> NO <sub>x</sub>	<2 ppm	<1 ppm
Water vapor	ADP -45°C (-49°F) / PDP -31°C (-23°F)	PDP -40°C / -40°F
Oil vapor	<0.1 mg/m <sup>3</sup>	<0.003 ppm
Dirt particles	not specified	<0.01 ppm
Taste and odor	taste and odor free	taste and odor free

1. When tested with 700 ppm (at inlet); 2. When tested with 50 ppm (at inlet);  
3. When tested with 5 ppm (at inlet); 4. When tested with 5 ppm (at inlet)



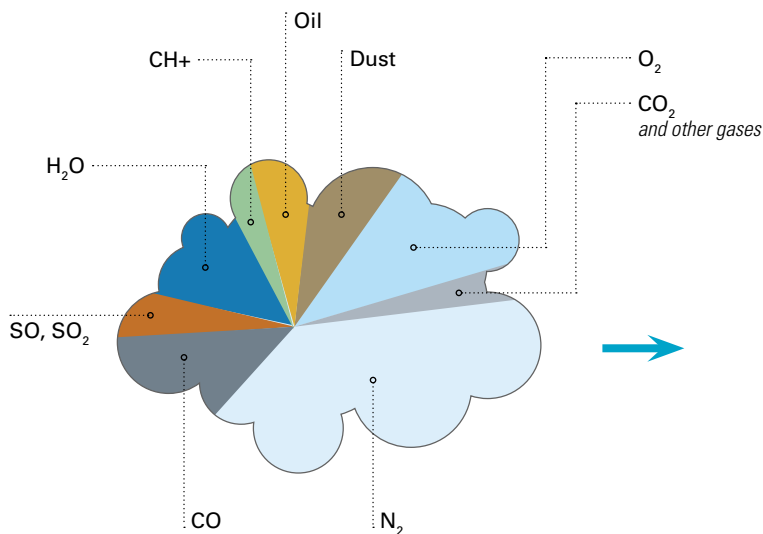
# Assured purity, complete endurance

Providing the standard of ultra clean air you require, installed in a space you decide, within a budget you demand, the MED series' innovative filtration system is the definitive medical air solution.

## FOUR STEPS TO QUALITY BREATHING AIR

The MED's multi-stage filtration offers unparalleled air purity:

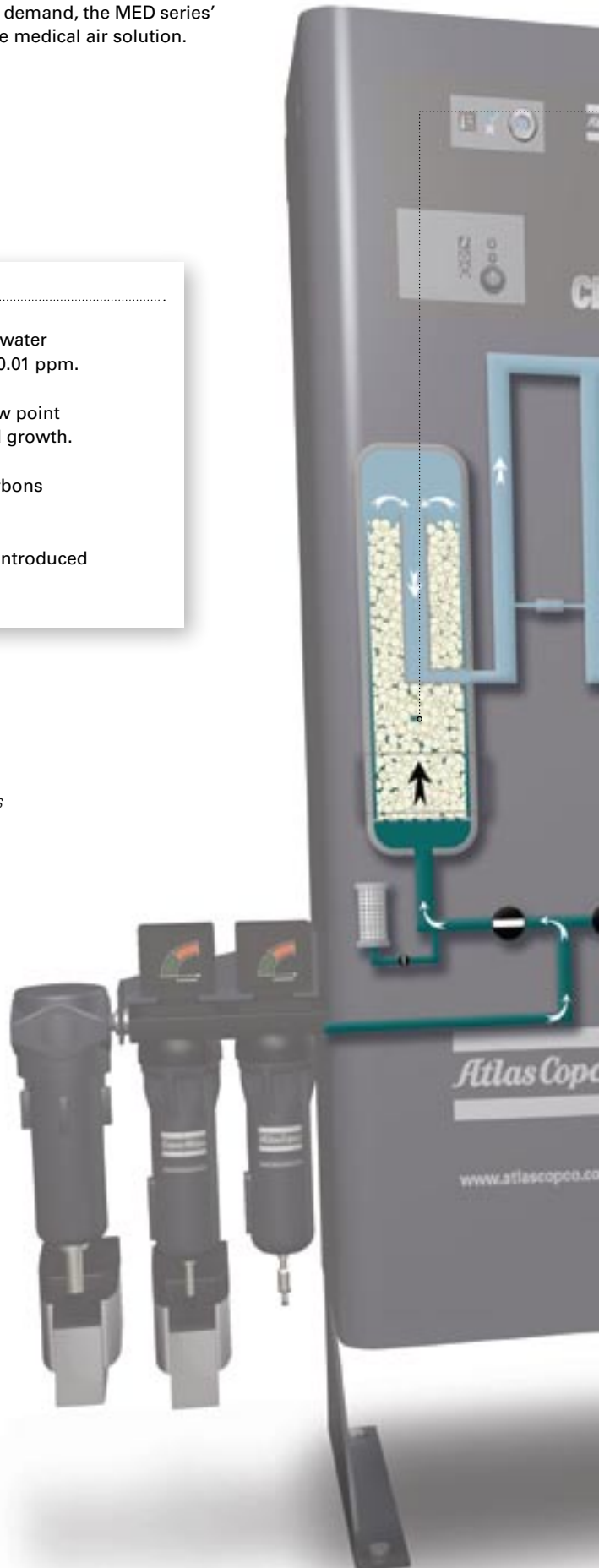
1. A WSD water separator and DD and PD coalescing filters remove free water and particles down to 0.01 micron and eliminate oil droplets down to 0.01 ppm.
2. A heatless desiccant dryer reduces moisture content to a pressure dew point of  $-40^{\circ}\text{C}/-40^{\circ}\text{F}$  – removing any risk of condensation, bacteria and mold growth.
3. A dual cleaning stage includes activated carbon to eliminate hydrocarbons (oil vapor, smells). A catalyst then converts CO into  $\text{CO}_2$ .
4. A particle PDP filter at the exit removes particles that may have been introduced in the desiccant stages down to 0.01 micron.



## THE AMBIENT AIR CHALLENGE

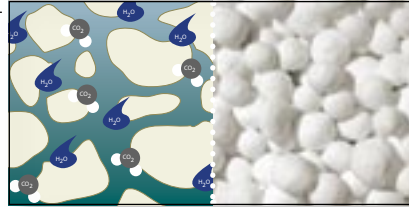
In a typical city or industrial environment, air can contain high levels of sulphur dioxide, carbon monoxide, carbon dioxide and moisture. The MED is designed to perform in worst case but real life conditions.

# untreated

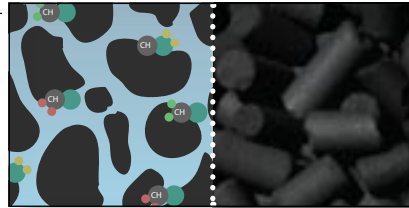




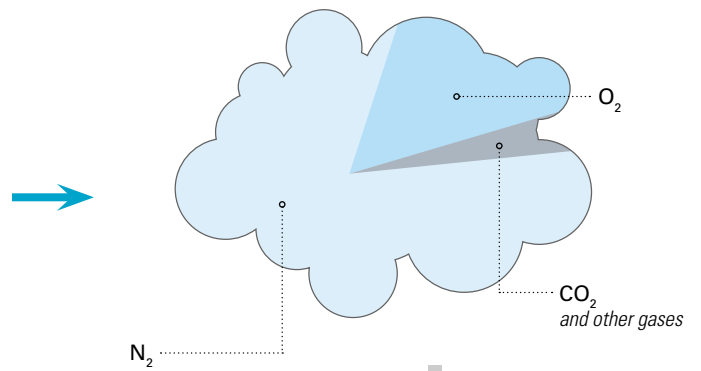
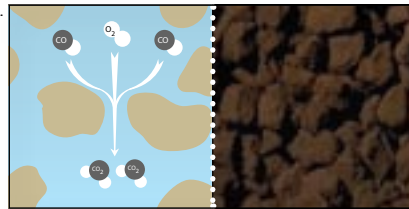
**Desiccant**



**Activated Carbon**



**Catalyst**



clean

**THE SOLUTION WE PROVIDE**

Air cleaned and dried by the MED offers the ability to administer breathing air and operate surgical tools simultaneously. Even in harsh ambient air environments, the MED provides air purity you can count on.

# Peace of mind

Atlas Copco's MED unit is simple to install and maintain. With our team of experts on-call 365 days a year across the globe and genuine Atlas Copco parts delivered directly to your facility, you can rest assured that your MED is in safe hands.

## GENUINE PARTS ORDERING & DELIVERY



*Hospitals are in direct contact with the Atlas Copco Service Center, which processes requests immediately for swift on-site service and maintenance.*



### TOTAL RESPONSIBILITY

With the Atlas Copco Service agreement, the MED receives complete coverage 24/7. Offering complete after-sales service, the service agreements can be adapted to suit your needs: from simple monitoring and preventative maintenance to complete responsibility for your entire system by highly trained Atlas Copco engineers.

### GLOBAL NETWORK

The medical profession requires total commitment to immediate service. That is why our customer centers are situated across all continents and in all time zones to ensure no time is spared to give you immediate support. Because our representatives are on-call 24/7, a direct response is ensured.

### ON-TIME DELIVERY

Atlas Copco guarantees short delivery lead times for its spare parts kits, but also for its machines and other compressed air equipment.



#### OPTIMIZED MONITORING

Atlas Copco provides a range of options to improve monitoring of the MED series to ensure complete peace of mind:

- Potential free contact on filter gauges.
- Electronic no waste drain (EWD) on filters and water separator with alarm signal.
- Gas sensors for CO, CO<sub>2</sub>, O<sub>2</sub>, SO<sub>x</sub> and NO<sub>x</sub>.
- Pressure dew point sensor.

#### OPTIMIZED ENERGY USE

- Pressure dew point control.

## Complete capability

#### COMPLETE INTEGRATION: THE MEDICAL AIR GENERATOR

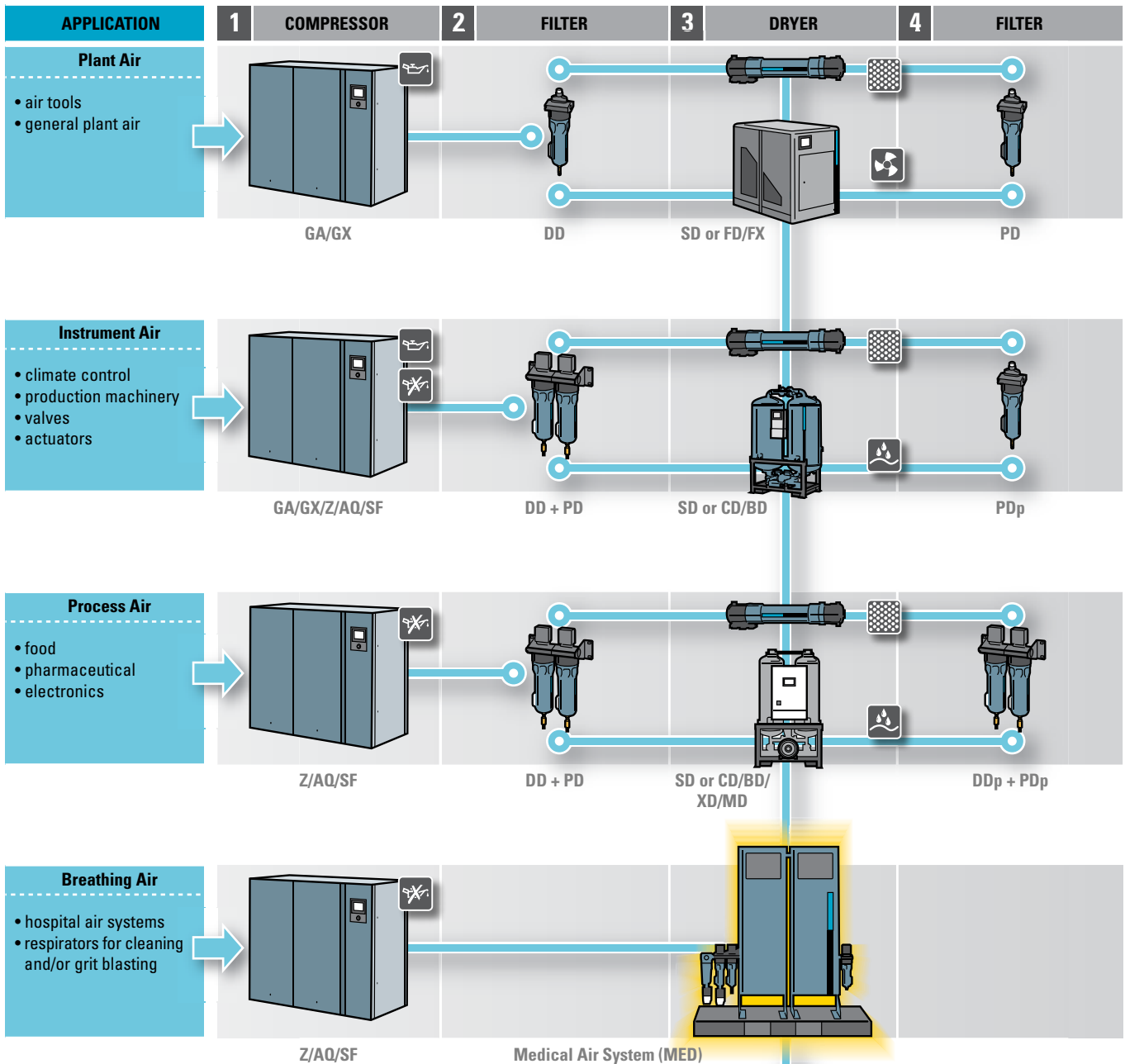
Atlas Copco can also provide the complete Medical Air Generator. This system offers total integration of cleaning and air generation in one, centrally monitored package. As a result, the Medical Air Generator is a one-stop solution for air generation and filtration.

- Multiple completely independent compressor/MED lines.
- Ability to regulate the two compressor/MED lines and a stand-by cylinder pack with one single control.
- Extensive visualization possibilities according to EN737-3 signal coding.
- Wealth of possibilities to include sensors for gases such as CO, CO<sub>2</sub>, O<sub>2</sub>, SO<sub>x</sub> and NO<sub>x</sub>.
- Step-up approach from local control and monitoring to AIRmonitor™ web based 24/7 service.



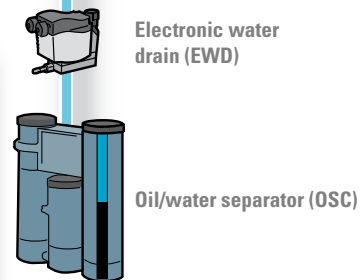
# Atlas Copco Quality Air Solutions

## FOUR STEPS TO QUALITY AIR



### QUALITY AIR SOLUTIONS

Type	Purpose/Principle	Oil removal	Particle removal
DD	coalescing filters for general purpose protection	0.1 ppm	1 µm
DDp	particle filter for dust protection	-	1 µm
PD	high efficiency coalescing filter	0.01 ppm	0.01 µm
PDp	high efficiency particle filter for dust protection	-	0.01 µm
QD	activated carbon filter for removal of hydrocarbons (oil vapor, odors)	0.003 ppm	-



### DRYERS



Refrigerant



Adsorption



Membrane



Lubricated



Oil-free

### COMPRESSORS

This diagram is intended as a general guide.  
 Please contact your Atlas Copco sales representative for a breakdown of your specific requirements.

# Technical specifications MED series

MED TYPE	Pressure			Max. inlet flow			Purge	Pressure drop		Connection*	Weight	
	Bar(e)	psig	l/s	m <sup>3</sup> /h	cfm	%	dP mbar	psi		kg	lbs	
MED 6	7.5	7.5	109	6.2	22.3	13.1	18	330	4.8	1/2"	135	298
	10	10	145	8.0	28.8	17.0	15	330	4.8	1/2"	135	298
	13	13	189	8.2	29.7	17.5	11	330	4.8	1/2"	135	298
MED 11	7.5	7.5	109	10.6	38.2	22.5	18	330	4.8	1/2"	135	298
	10	10	145	13.7	49.3	29.0	15	330	4.8	1/2"	135	298
	13	13	189	11.9	42.8	25.2	11	330	4.8	1/2"	135	298
MED 15	7.5	7.5	109	15.0	54.0	31.8	18	460	6.7	1/2"	150	332
	10	10	145	19.4	69.8	41.1	15	460	6.7	1/2"	150	332
	13	13	189	20.1	72.5	42.7	11	460	6.7	1/2"	150	332
MED 21	7.5	7.5	109	21.1	76.0	44.7	18	580	8.4	1/2"	185	409
	10	10	145	27.4	98.6	58.1	15	580	8.4	1/2"	185	409
	13	13	189	27.5	98.8	58.2	11	580	8.4	1/2"	185	409
MED 28	7.5	7.5	109	28.2	101.5	59.8	18	650	9.4	1/2"	200	442
	10	10	145	36.6	131.8	77.6	15	650	9.4	1/2"	200	442
	13	13	189	36.6	131.8	77.6	11	650	9.4	1/2"	200	442
MED 39	7.5	7.5	109	38.7	139.3	82.0	18	750	10.9	1"	265	586
	10	10	145	50.3	181.1	106.6	15	750	10.9	1"	265	586
	13	13	189	51.3	184.5	108.7	11	750	10.9	1"	265	586
MED 53	7.5	7.5	109	52.8	190.1	111.9	18	650	9.4	1"	295	652
	10	10	145	68.6	247.0	145.4	15	650	9.4	1"	295	652
	13	13	189	69.6	250.4	147.5	11	650	9.4	1"	295	652

\* 50 Hz: G; 60 Hz: NPT

Flow mentioned is the maximum inlet flow to the MED series.

Dryer unit performance measured according to ISO 7183, Ed. 1, 1996.

Quality of air measured according to ISO 8573-2, Ed. 1, 1996, ISO 8573-4, Ed.1, 2001 and ISO 8573-5, Ed.1, 2001 for filter used.

## Reference Conditions

Compressed air inlet temperature: 35°C/100°F

Ambient temperature: 25°C/77°F

Inlet relative humidity: 100%.

Nominal working pressure: 7.5 bar(e)/109 psig, 10 bar(e)/145 psig and 12.5 bar(e)/181 psig respectively.

## Limitations of operation

Maximum/minimum ambient temperature: 40°C/1°C, 104°F/34°F

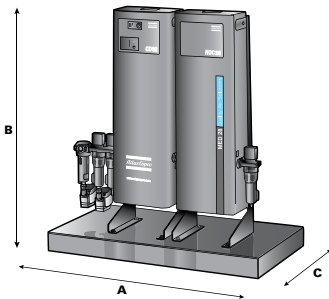
Maximum inlet compressed air temperature: 45°C/113°F

Maximum inlet pressure: 16 bar(e)/232 psig for 13 bar units.

Maximum pressure: 11 bar(e)/160 psig for 7.5 bar and 10 bar units.

## Outlet air quality

The Medical Air unit gives an outlet air quality compliant with Pharmacopoeia when offered a maximum inlet concentration of contaminations as displayed on page 5.



MODEL	Dimensions					
	A		B		C	
	mm	in	mm	in	mm	in
MED 6-15	980	38.6	1402	55.2	700	27.6
MED 21-53	1300	51.2	1395	55.0	700	27.6

## EXAMPLE:

What is the maximum inlet flow of a MED 15, working at 8 bar(e)/116 psig, with an inlet temperature of 40°C/104°F?

Find each correction factor:  $K_p = 1.1$ ,  $K_t = 0.84$ .

Actual capacity = nominal capacity \*  $K_p$  \*  $K_t = 15 * 1.1 * 0.84 = 14$  l/s

CORRECTION FACTORS									
INLET PRESSURE CORRECTION FACTOR $K_p$ 7 TO 10 BAR UNITS	bar(e)	4	5	6	7	8	9	10	11
	psig	58	73	87	102	116	131	145	160
	$K_p$	0.47	0.68	0.84	1	1.1	1.2	1.3	1.38
INLET PRESSURE CORRECTION FACTOR $K_p$ 11 TO 16 BAR UNITS	bar(e)	11	12.5	13	14	15	16		
	psig	160	181	189	203	218	232		
	$K_p$	0.89	1	1.04	1.11	1.19	1.24		
INLET TEMPERATURE CORRECTION FACTOR $K_t$	C°	25	30	35	40	45			
	F°	77	86	95	104	113			
	$K_t$	1	1	1	0.84	0.71			



In order to be First in Mind—First in Choice® for all your compressed air needs, Atlas Copco delivers the products and services that help increase your business' efficiency and profitability.

Atlas Copco's pursuit of innovation never ceases, driven by your need for reliability and efficiency. Always working with you, we are committed to providing you the customized quality air solution that is the driving force behind your business.



**Never use compressed air as breathing air without prior purification in accordance with local legislation and standards.**