

# *Heat of compression rotary drum dryers*



MD series (200-4000 l/s, 424-8480 cfm)  
ND series (300-4000 l/s, 636-8480 cfm)  
MDG series (450 l/s, 954 cfm)

*Atlas Copco*





## ***Cost-effective dry air for your application***

Clean and dry compressed air is vital to power up your busy production environment. Containing moisture, aerosols and dirt particles, untreated compressed air poses a substantial risk as it can damage your air system and end product. Yet it must be produced reliably, energy-efficiently and cost-effectively. Atlas Copco's heat-of-compression rotary drum dryers protect your systems and processes. Their robust design ensures they operate with total reliability and deliver the desired quality of air.



## **Protecting your reputation and production**

By removing moisture from compressed air with a pressure dewpoint as low as  $-45^{\circ}\text{C}/-49^{\circ}\text{F}$ , MD, MDG and ND heat-of-compression rotary drum dryers eliminate system failures, production downtime and costly repairs.

## **Keeping your production up and running**

Atlas Copco's proven rotary drum technology ensures maximum reliable process continuity thanks to the use of high-quality materials. In addition, its simple design eliminates any risk of losses and advanced control and monitoring is available for optimal energy efficiency.

## **Driving down energy costs**

As the heat-of-compression is used to dry the desiccant, limited energy is required for drying. The energy required to rotate the drum is negligible. Furthermore, there is no loss of compressed air, ensuring 100% flow capacity at output. The rotary drum dryers are characterized by zero purge by design, an extremely low pressure drop and no filtration requirements.

## **Easy installation and long maintenance intervals**

The combination of an easy-to-service vessel, minimal maintenance downtime and long service intervals reduces your maintenance time and costs. The dryers have a small footprint thanks to an innovative all-in-one design. Installation is straightforward, minimizing costly production downtime.

## **Assuring your peace of mind**

Through continuous investment in our competent, committed and efficient service organization, Atlas Copco ensures superior customer value by maximizing productivity. With a presence in over 180 countries, we offer professional and timely service through interaction and involvement. Uptime is guaranteed by dedicated technicians and 24/7 availability.





# *Cost-effective dry air for your application*

Dry and clean compressed air is essential for a broad range of industrial applications. Yet it must be produced reliably, energy-efficiently and cost-effectively. Atlas Copco's heat-of-compression rotary drum dryers protect your systems and processes. Their robust design ensures they operate with total reliability and deliver the desired quality of air.

## **Food & Beverage**

### A RELIABLE SUPPLY OF DRY AIR

The presence of moisture during the preparation of foods and beverages can cause contamination of end products. Processing machinery can also be affected by moisture, which interferes with their operation and obstructs the free and easy movement of the ingredient or item of food.

## **Power generation**

### A FOCUS ON PRODUCTIVITY

All kinds of power plants rely on compressed air to operate pneumatically controlled valves and other components. High-quality dry air can be the key to achieving plant productivity and cost savings when you need them most, and keeping an operation running effectively during a period of maintenance or emergency.

## **Pharmaceuticals**

### A TIGHT CONTROL ON QUALITY

Strict moisture control is a key factor in the manufacture of most pharmaceuticals. Many materials used to produce pharmaceuticals have a physical affinity for moisture, which can cause powdered material to aggregate. Other powders that are formed into a tablet under high pressures will adhere only when in a dry state. Humidity can cause a tablet to crumble or the drug to decompose and diminish in its therapeutic value. To assure consistently high-quality drugs, the presence of dry air in the processing area and machinery is therefore vital.

## **Process air**

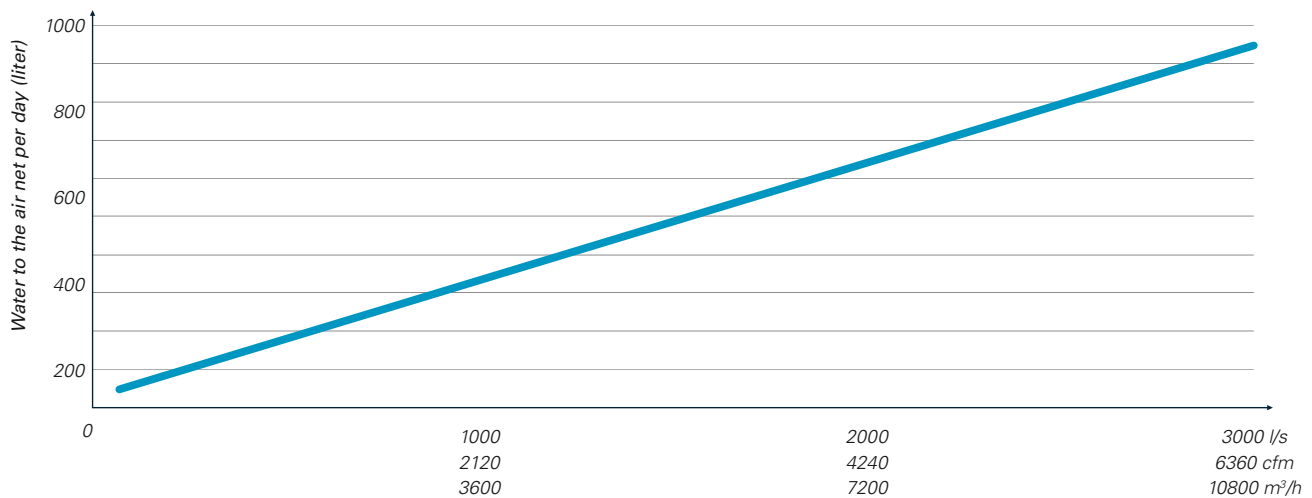
### A CONTINUOUS FLOW OF DRY AIR

For process industries, high-quality dry air is vital for efficient pneumatic and instrumentation control. A dependable stream of high-quality dry air is essential to keep the production up and running at all times.

# Why rotary drum dryers?

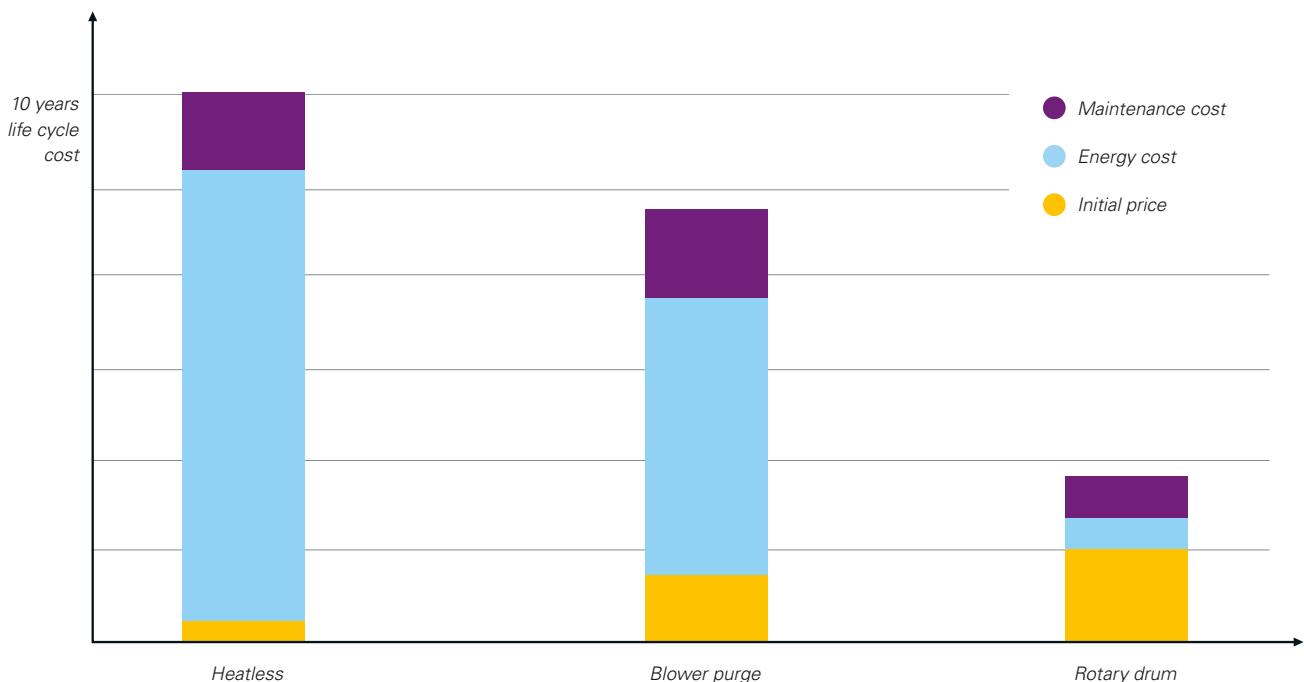
A dry compressed air system is essential to maintain the reliability of production processes and the quality of end products. Untreated air can cause corrosion in pipe work, premature failure of pneumatic equipment, and product spoilage. Heat of compression is a by-product of a compressor. It is typically wasted, because there is no use for it. Rotary drum dryers use this heat to regenerate the desiccant. Little to no additional heat is needed to reach an acceptable dewpoint. This is what makes rotary drum dryers extremely energy efficient.

## Water to the air net if no dryer installed



## Lifecycle cost

Energy can constitute up to 80% of the total lifecycle cost of a dryer. You therefore need to look closely at energy efficiency when selecting a dryer. The illustration compares the lifecycle cost of heatless, blower purge and rotary drum dryers.



The heatless desiccant dryer is the most expensive to operate as 15-20% of its rated flow capacity is consumed as purge air. The rotary drum dryer can lead to significant energy savings because of its unique design and controls. Even compared to a blower purge dryer, rotary drum dryers can save up to 50% of the lifecycle cost.

# Superior energy efficiency

## Zero purge by design

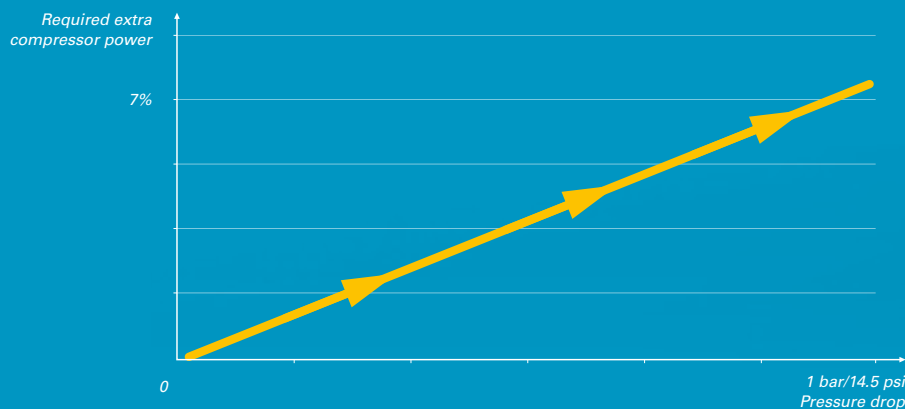
Whereas other desiccant dryer types can consume up to 20% of the compressed air, the rotary drum dryers guarantee 100% flow capacity at the output.

## No filtration requirements

Rotary drum dryers need no pre-filters, no after-filters and no dust filters, all of which can cause pressure drops. Typically a set of pre- and after-filters can have an average pressure drop exceeding 0.5 bar and lead to an extra 3.5% energy consumption.

## Smart heating and best performance (ND only)

The controller adapts the heating power to the required minimum to achieve the requested performance.



## Low pressure drop

If a desiccant dryer experiences a high internal pressure drop, the compressor discharge pressure must be set higher than required, which wastes energy and increases operating costs. Atlas Copco has therefore put considerable efforts into minimizing pressure drops in its dryers. Compared to twin tower dryers, the system pressure drop is very low.



## Low maintenance

The combination of an easy-to-service vessel, minimal maintenance downtime and long service intervals reduces your maintenance time and costs. In addition, there is no need to change filter cartridges.

## Complete, compact package

The small footprint of rotary dryers means they take up minimal space in your facility. They come in a completely integrated package; all piping and connections are included as standard. A convenient lifting eye makes them easy to maneuver.

## Environmentally friendly

Rotary drum dryers are totally oil-free and use no Freon or CFCs, and a minimal amount of desiccant (only 5-10% of conventional adsorption dryers). 95% of all components can be recycled, and the units have very low noise levels.

## Choice of rotary drum adsorption dryer

	MD	MDG	ND
Pressure Dew Point (PDP)	0°C...-30°C	-40°C/°F and lower	0°C...-45°C
	32°F...-22°F		32°F...-49°F
Efficiency	Ultimate performance at almost zero cost		Smart heater regulation to achieve requested performance



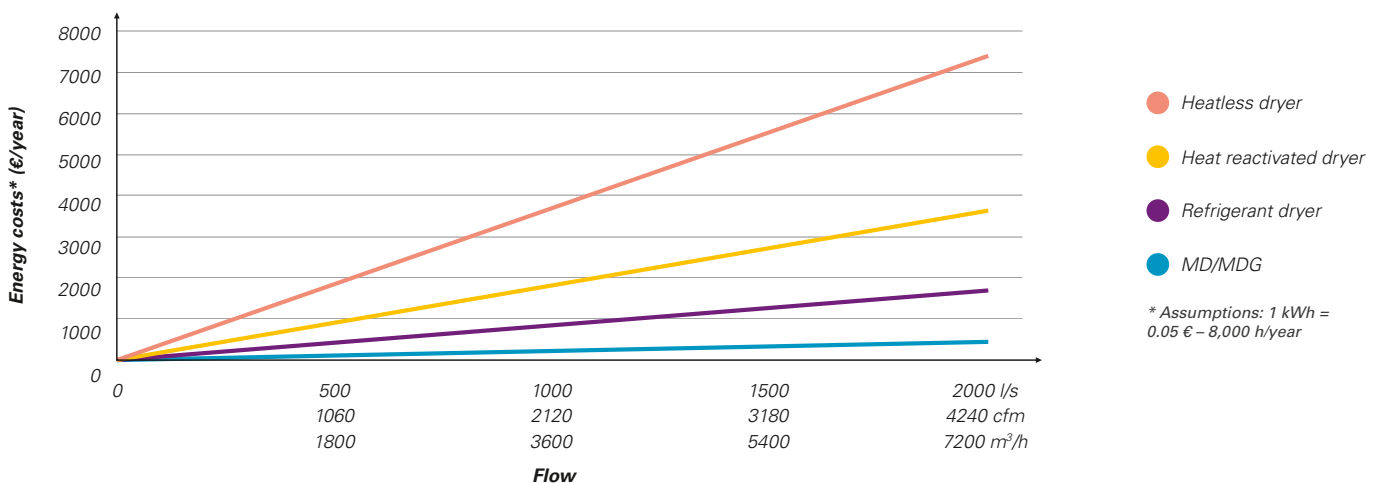
# Constant dry air at extreme low power consumption

Thanks to their pioneering technology, rotary drum dryers ensure the lowest pressure drop and lowest energy consumption for the highest possible efficiency – saving you time and money throughout the production process. The uniqueness of the rotary drum dryers lies in the fact that the loss of compressed air is completely avoided. Due to the usage of the generated heat from the compression process, a minimal amount of power is required to achieve very low dewpoints.

## Highly efficient at almost no cost

- The only energy needed is the power to rotate the drum, a mere 0.12 kW
- 100% flow capacity at the output
- Temperature, pressure and dewpoint peaks are eliminated

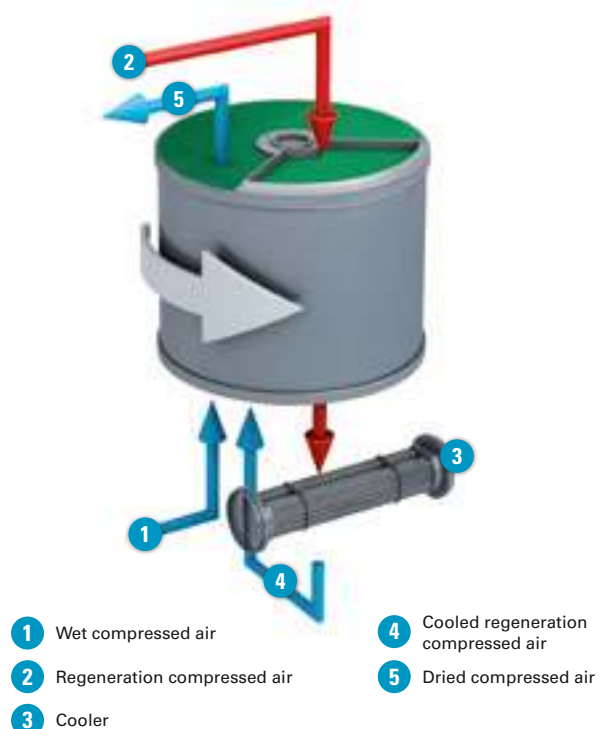
## Savings when selecting the right drying method



## MD Working principle

The MD's working principle is based on using hot compressed air from the compressor to regenerate the desiccant. The single pressure vessel is divided into two sectors: drying (75%) and regenerating (25%). Desiccant, impregnated on a honeycomb glass fiber drum, slowly rotates through these two sectors.

Hot air leaving the last stage of the compressor is divided into two streams, 1 and 2. The main stream – branch 1 – passes through the compressors after cooler (not visible in the image) and enters the dryer for drying. The regeneration stream – branch 2 – (hot unsaturated air) is headed for desiccant regeneration. It passes through the regeneration section of the drum, removes the moisture through desorption and regenerates the desiccant. The now saturated regeneration air flow is cooled in the regeneration cooler (3), and then mixed with the main stream (branch 1).

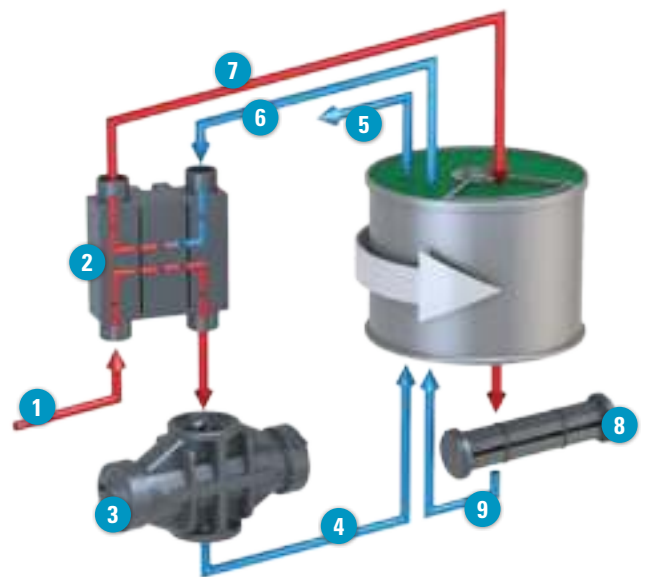




# MDG Working principle

The full flow of hot compressed air leaves the last stage of the compressor and passes through the MDG's heat exchanger (2) and the water-cooled cooler (3). Cooled compressed air (branch 4) enters the drum for drying. Dry air comes out at the top, where it leaves the MDG at point 5.

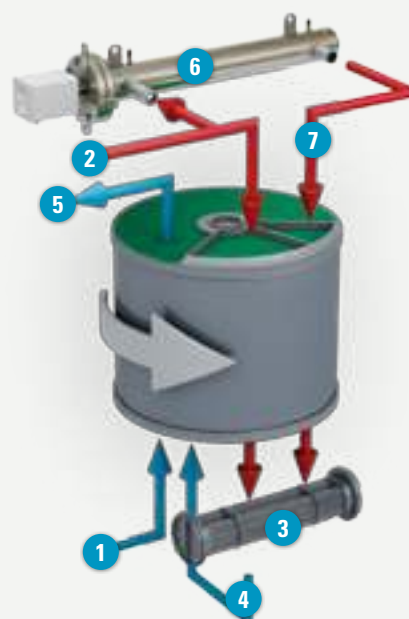
Part of the dry air (branch 6) goes into the heat exchanger (2), where it picks up the heat from incoming compressed air (branch 1). Dry and hot regeneration air (branch 7) passes through the regeneration section of the drum, where the moisture is removed. Wet and hot regeneration air is cooled in the regeneration cooler (8) and then mixed with the incoming cooled compressed air (branch 4).



- |                             |                                      |
|-----------------------------|--------------------------------------|
| 1 Hot wet compressed air    | 6 Regeneration compressed air        |
| 2 Heat exchanger            | 7 Heated regeneration compressed air |
| 3 Water-cooled cooler       | 8 Water-cooled cooler                |
| 4 Cooled wet compressed air | 9 Cooled regeneration compressed air |
| 5 Dried compressed air      |                                      |

# ND Working principle

The difference with the MD working principle is that the regeneration stream – branch 2 – (hot unsaturated air) is split in two, the first part passes directly through the regeneration sector of the desiccant drum. The second part passes through the regeneration heater 6, is further heated and moves to the regeneration sector of the drum, removing the moisture through desorption; the desiccant is regenerated. The saturated regeneration air flow is cooled in the regeneration cooler 3 and then mixed with the main stream (branch 1). The controller adapts the heating power to the minimum required to achieve the requested performance.



- |                                      |                                      |
|--------------------------------------|--------------------------------------|
| 1 Wet compressed air                 | 5 Dried compressed air               |
| 2 Regeneration compressed air        | 6 Heater                             |
| 3 Cooler                             | 7 Heated regeneration compressed air |
| 4 Cooled regeneration compressed air |                                      |

# Reliable and compact

## Regeneration air cooler

- Stainless steel for water-cooled versions; aluminium for air-cooled versions
- Efficient heat transfer and high reliability
- Integrated in the dryer

## Stainless still pipes (MDG only)

- Resistant to corrosion without special protective coating
- High strength at reduced weight

## Controls

- User-friendly interface in 32 languages
- Comprehensive maintenance display

## Compressed air cooler (MDG only)

- Stainless steel keeps performance over the lifetime of the dryer
- Requires minimum maintenance
- Easy to clean

## Electric motor

- Drives the rotating drum, consuming minimal power (Variable Speed Drive is optional on selected models)
- Greased for life



## Electronic water drains

No loss drains with superior reliability for efficient condensate removal





## Compact design

Minimal floor space required

## Rotary drum technology

- No loose desiccant, compared to twin tower dryers
- No need for pre-filtration of compressed air
- Long lifetime



## Low wattage heater (ND only)

- Stainless steel design ensures long lifetime
- Nickel-plated heater pipe protects against corrosion
- Double thermostat protection

# A step ahead in monitoring and controls

Atlas Copco's Elektronikon® control and monitoring system takes continuous care of your dryers to ensure optimal productivity and efficiency at your site.

## User-friendly interface

Available in 32 languages, this graphical 3.5-inch high-definition color display with pictograms and LED indicators for key events is easy to use. The keyboard is durable to resist tough treatment in demanding environments.

## Comprehensive maintenance display

Valuable items of information displayed include the ServicePlan indicator and preventive maintenance warnings.



## Online & mobile monitoring

The Elektronikon® system monitors and displays key parameters such as dewpoint, vessel pressure and inlet temperature, and includes an energy-savings indicator. Internet-based visualization of your dryer is possible by using a simple Ethernet connection.

## SMARTLINK\*

- Remote monitoring system that helps you optimize your compressed air system and save energy and costs
- Provides a complete insight in your compressed air network
- Anticipates on potential problems by warning you up-front

\* Please contact your local sales representative for more information





# Optimize your system

## Scope of supply

Air circuit	Integrated no loss drains
	Integrated air cooler
Connections	DIN-flanges / ANSI-flanges
Electrical components	Pre-mounted electrical control panel
	Elektronikon control and monitoring system
	IP54 protected
	Voltage free contacts for remote alarm and warning signals
Mechanical approval	PED approval
	ASME approval
	CRN approval
	ML approval
	MHLW approval
	AS1210 approval
	MDM approval

## Options

	MD 200-400 VSD	ND 300-400 VSD	MD 600-800 VSD	ND 600-800 VSD	MD 1000-2500 VSD	ND 1000-2500 VSD	MD 2000-4000	ND 2000-4000	MDG 450
Interconnecting piping	✓	✓	✓	✓	✓	✓	-	-	•
Stainless steel interconnecting piping	-	-	-	-	•	•	•	•	-
Pressure dew point sensor	-	•	-	-	•	•	•	•	✓
By-pass	✓	•	•	-	✓	✓	-	-	-
Silicone free rotor	•	•	•	•	•	•	•	•	•
Extra heater	-	-	-	-	-	-	-	•	-

✓ : Standard    • : Optional    - : Not available



# Technical specifications

## Rotary drum adsorption dryers MD 200-4000

Type	Inlet flow FAD 7 bar(e) / 100 psig			Pressure drop		Outlet connections  DIN PN16 ANSI 150#	Dimensions						Weight	
	l/s	m <sup>3</sup> /h	cfm	bar	psi		mm			inch			kg	lbs
						L	W	H	L	W	H			
MD 200 A	200	720	424	0.18	2.6	-	1433	852	1347	56	34	53	460	1015
MD 200 W	200	720	424	0.18	2.6	-	990	819	1347	39	32	53	410	905
MD 300 A	300	1080	636	0.14	2	-	1442	852	1545	57	34	61	500	1103
MD 300 W	300	1080	636	0.14	2	-	997	819	1545	39	32	61	440	970
MD 400 A	400	1440	848	0.26	3.8	-	1442	852	1545	57	34	61	500	1103
MD 400 W	400	1440	848	0.26	3.8	-	997	819	1545	39	32	61	440	971
MD 400 VSD A	400	1440	848	0.26	3.8	-	1469	1160	1650	58	46	65	570	1258
MD 400 VSD W	400	1440	848	0.26	3.8	-	1069	1026	1650	42	60	65	520	1146
MD 600 A	600	2160	1271	0.22	3.2	DN 80 / 3"	1571	1586	1554	62	62	61	860	1897
MD 600 W	600	2160	1271	0.22	3.2	DN 80 / 3"	1611	1000	1554	63	39	61	700	1544
MD 800 VSD A	600	2160	1271	0.22	3.2	DN 80 / 3"	1571	1586	1554	62	62	61	860	1897
MD 800 VSD W	600	2160	1271	0.22	3.2	DN 80 / 3"	1611	1000	1554	63	39	61	700	1544
MD 1000 W	800	2880	1695	0.26	3.8	DN 100 / 4"	1407	1157	2058	55	46	81	1000	2204
MD 1100 VSD W	1 000	3600	2119	0.26	3.8	DN 100 / 4"	1407	1157	2058	55	46	81	1000	2204
MD 1300 VSD W	1 000	3600	2119	0.26	3.8	DN 100 / 4"	1407	1157	2058	55	46	81	1000	2204
MD 1800 W	1 800	6480	3814	0.27	3.9	DN 125 / 5"	1721	1576	2283	68	62	90	1525	3362
MD 2000 W	1 800	6480	3814	0.27	3.9	DN 125 / 5"	1880	1290	2890	74	51	114	1525	3362
MD 2100 VSD W	1 800	6480	3814	0.27	3.9	DN 125 / 5"	1721	1576	2283	68	62	90	1525	3362
MD 2500 VSD W	1 800	6480	3814	0.27	3.9	DN 125 / 5"	1721	1576	2283	68	62	90	1525	3362
MD 4000 W	3 600	12960	7628	0.27	3.9	DN 200 / 8"	3225	2150	2492	127	85	98	4330	9546

## Rotary drum adsorption dryer MDG 450

Type	Inlet flow FAD 7 bar(e) / 100 psig			Pressure drop		Outlet connections  DIN PN16 ANSI 150#	Dimensions						Weight	
	l/s	m <sup>3</sup> /h	cfm	bar	psi		mm			inch			kg	lbs
						L	W	H	L	W	H			
MDG 450 W	400	1440	847	0.25	3.6	DN80/3"	1800	1530	1950	71	60	77	1450	3196



# Technical specifications

## Rotary drum adsorption dryers ND 300-4000

Type	Inlet flow FAD 7 bar(e) / 100 psig			Pressure drop		Outlet connections  DIN PN16 ANSI 150#	Dimensions						Weight	
	l/s	m <sup>3</sup> /h	cfm	bar	psi		mm			inch			kg	lbs
						L	W	H	L	W	H			
ND 300 A	300	1080	636	0.14	2	-	1515	1293	1701	60	51	67	440	970
ND 300 W	300	1080	636	0.14	2	-	1293	1162	1701	51	46	67	440	970
ND 400 A	400	1440	848	0.26	3.8	-	1515	1293	1701	60	51	67	440	970
ND 400 W	400	1440	848	0.26	3.8	-	1293	1162	1701	51	46	67	440	970
ND 400 VSD A	400	1440	848	0.26	3.8	-	1515	1293	1701	60	51	67	440	970
ND 400 VSD W	400	1440	848	0.26	3.8	-	1293	1162	1701	51	46	67	520	1146
ND 600 A	600	2160	1271	0.22	3.2	DN 80 / 3"	1835	1586	1622	72	62	64	1050	2315
ND 600 W	600	2160	1271	0.22	3.2	DN 80 / 3"	1611	1191	1675	63	47	66	870	1918
ND 800 VSD A	600	2160	1271	0.22	3.2	DN 80 / 3"	1835	1586	1622	72	62	64	1050	2315
ND 800 VSD W	600	2160	1271	0.22	3.2	DN 80 / 3"	1611	1191	1675	63	47	66	870	1918
ND 1000 W	800	2880	1695	0.26	3.8	DN 100 / 4"	1407	1455	2058	55	57	81	1225	2700
ND 1100 VSD W	1000	3600	2119	0.26	3.8	DN 100 / 4"	1407	1455	2058	55	57	81	1225	2700
ND 1300 VSD W	1000	3600	2119	0.26	3.8	DN 100 / 4"	1407	1455	2058	55	57	81	1225	2700
ND 1800 W	1800	6480	3814	0.27	3.9	DN 125 / 5"	1497	1879	2322	59	74	91	1750	3858
ND 2000 W	1800	6480	3814	0.27	3.9	DN 125 / 5"	2410	1947	2890	9	77	114	1600	3530
ND 2100 VSD W	1800	6480	3814	0.27	3.9	DN 125 / 5"	1497	1879	2322	59	74	91	1750	3858
ND 2500 VSD W	1800	6480	3814	0.27	3.9	DN 125 / 5"	1497	1879	2322	59	74	91	1750	3858
ND 4000 W	3600	12960	7628	0.27	3.9	DN 200 / 8"	3225	2150	2492	127	85	98	4950	10913



## ***COMMITTED TO SUSTAINABLE PRODUCTIVITY***

We stand by our responsibilities towards our customers, towards the environment and the people around us. We make performance stand the test of time. This is what we call – Sustainable Productivity.



[www.atlascopco.com](http://www.atlascopco.com)

The Atlas Copco logo, consisting of the brand name 'Atlas Copco' in a stylized font, flanked by two horizontal bars above and below it.