Oil-injected rotary screw compressors

GA 11+-30 (50 Hz)
(11-30 kW / 15-40 hp)

Sustainable Productivity

Atlas Copco

The industry-leading performer

Advanced connectivity and control, ground-breaking efficiency, superior reliability, ... the GA 11+-30 meets and exceeds the highest expectations. In addition, it comes with the widest range of options so you can tailor the unit to your specific requirements. If you need the very best, the GA 11+-30 delivers without compromise.

FEATURES AND BENEFITS

Superior performance
- State-of-the-art compression element coupled with a maintenance-free gearbox.
- 100% continuous duty cycle.
- Motor and drive train are greased for life to avoid improper re-greasing.
- Reduced electrical cubicle temperature doubles electrical component lifetime.
- Integrated dryer with heat exchanger and integrated water separator for dry, quality air.
- Best-in-class low noise levels.

Supreme energy efficiency
- IE4 efficiency rated motor.
- Free Air Delivery increased by 6-10%.
- Power consumption reduced by 3-8%.

Quick installation & maintenance
- Delivered plug & play.
- Easy transportation.
- Main components are easily accessible.

State-of-the-art monitoring & control
- High-tech Elektronikon® Touch controller with high-definition color display, easy to use and built to perform in the toughest conditions.
- Week timer, remote monitoring and maintenance scheduling.
- Built-in phase sequence relay for motor control and protection.
- Standard SMARTLINK remote monitoring to maximize air system performance and energy savings.
- Optional multiple compressor control.

DIMENSIONS

OPTIONS

- Integrated filter
- Dryer bypass
- Motor thermistors and anti-condensation heaters
- Tropical thermostat
- Freeze protection
- Heavy duty air inlet filter
- Fan Saver Cycle
- Compressor inlet pre-filter
- Rain protection
- Lifting device
- Nema 4 & Nema 4X cubicle
- EQi central control license for 4 or 6 machines (available on Elektronikon® Touch only)
- Food-grade oil
- Roto-Xtend duty oil
- Energy recovery
- Modulating control
- High ambient temperature versions (55°C/131°F for pack, 50°C/122°F for FF)
- Dryer Save Cycle

TECHNICAL SPECIFICATIONS

Compressor type	Max. working pressure				Capacity FAD*			Installed motor power		Noise level**	Weight	
	WorkPlace		WorkPlace Full Feature								Work-Place	WorkPlace Full Feature
	bar(e)	psig	bar(e)	psig	l/s	m³/hr	cfm	kW	hp	dB(A)	kg	kg
GA 11+												
7.5	7.5	109	7.3	105	37.2	133.9	78.8	11	15	68	411	451
8.5	8.5	116	8.3	120	35.7	128.5	75.6	11	15	68	411	451
10	10	145	9.8	141	32.3	116.3	68.4	11	15	68	411	451
13	13	189	12.8	185	26.7	96.1	56.6	11	15	68	411	451
GA 15+												
7.5	7.5	109	7.3	105	51.7	186.1	109.5	15	20	69	427	483
8.5	8.5	116	8.3	120	46.1	166.0	97.7	15	20	69	427	483
10	10	145	9.8	141	41.1	148.0	87.1	15	20	69	427	467
13	13	189	12.8	185	36.9	132.8	78.2	15	20	69	427	467
GA 18+												
7.5	7.5	109	7.3	105	62.6	225.4	132.6	18.5	25	69	428	484
8.5	8.5	116	8.3	120	58.2	209.5	123.3	18.5	25	69	428	484
10	10	145	9.8	141	51.3	184.7	108.7	18.5	25	69	428	484
13	13	189	12.8	185	45.8	164.9	97.0	18.5	25	69	428	484
GA 22+												
7.5	7.5	109	7.3	105	72.6	261.4	153.8	22	30	67	487	545
8.5	8.5	116	8.3	120	69.7	250.9	147.7	22	30	67	487	545
10	10	145	9.8	141	62.6	225.4	132.6	22	30	67	487	545
13	13	189	12.8	185	55.1	198.4	116.8	22	30	67	487	545
GA 26+												
7.5	7.5	109	7.3	105	87.2	313.9	184.8	26	35	68	490	548
8.5	8.5	116	8.3	120	83.7	301.3	177.4	26	35	68	490	548
10	10	145	9.8	141	76.5	275.4	162.1	26	35	68	490	545
13	13	189	12.8	185	66.2	238.3	140.3	26	35	68	490	545
GA 30												
7.5	7.5	109	7.3	105	94.0	338.4	199.2	30	40	70	509	567
8.5	8.5	116	8.3	120	93.1	335.2	197.3	30	40	70	509	567
10	10	145	9.8	141	86.4	311.0	183.1	30	40	70	509	567
13	13	189	12.8	185	77.0	277.2	163.2	30	40	70	509	567

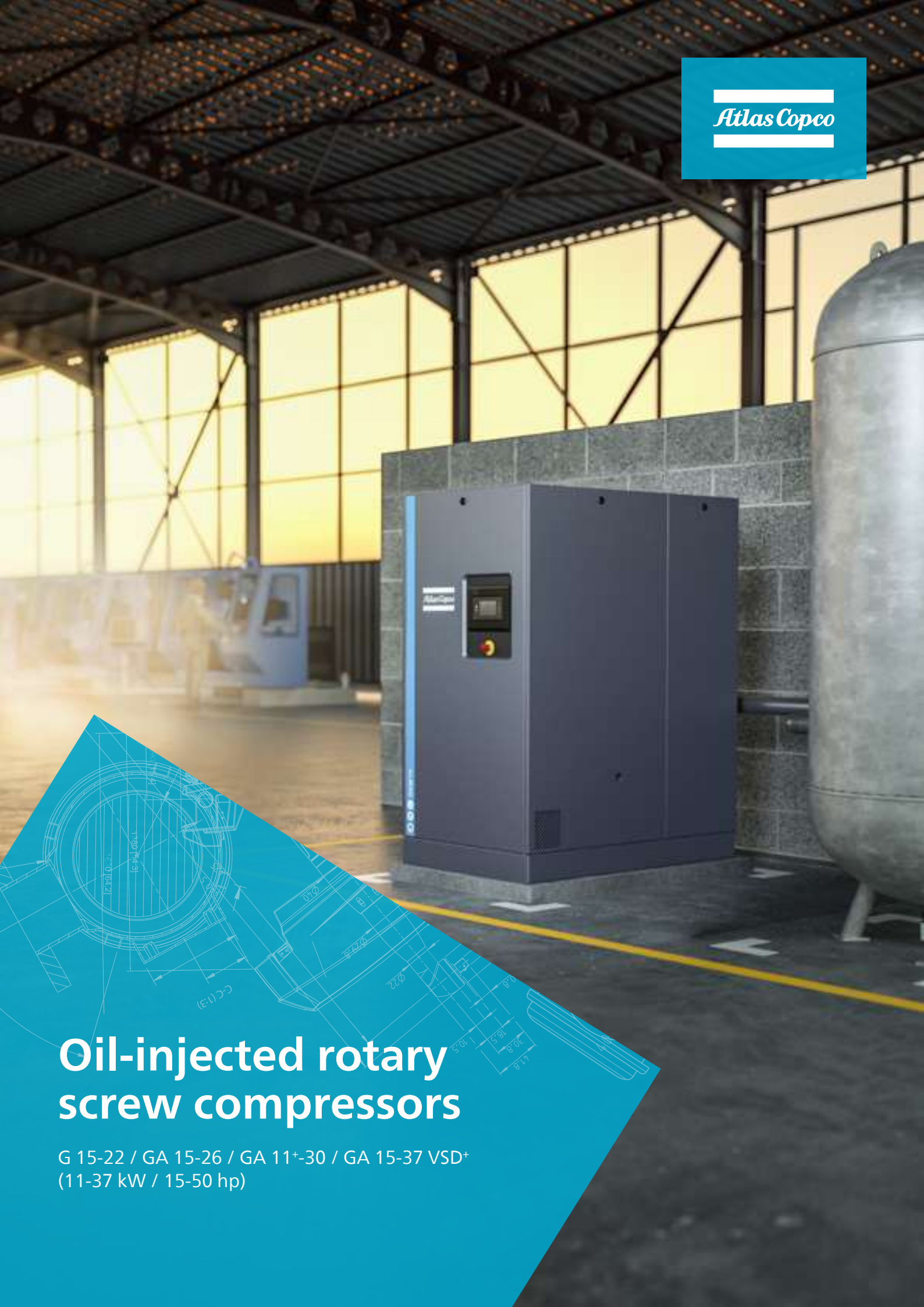
* Unit performance measured according to ISO 1217, Annex C, latest edition.
** Mean noise level measured according to ISO 2151/Pneuro/Cagi PN8NTC2 test code; tolerance 2 dB(A).

Reference conditions:
- Absolute inlet pressure 1 bar (14.5 psi)
- Intake air temperature 20°C/68°F

FAD is measured at the following working pressures:
- 7.5 bar versions at 7 bar
- 8 bar versions at 8 bar
- 10 bar versions at 9.5 bar
- 13 bar versions at 12.5 bar

Pressure dewpoint of integrated refrigerant dryer of GA 11+ - GA 15+ - GA 18+ - GA 22+ - GA 26+ - GA 30 at reference conditions 2°C to 3°C/36°F to 37°F.

Atlas Copco



Oil-injected rotary screw compressors

G 15-22 / GA 15-26 / GA 11+-30 / GA 15-37 VSD+
(11-37 kW / 15-50 hp)

Meeting your every need for compressed air

Atlas Copco's G, GA, GA+, and GA VSD+ oil-injected screw compressors provide you with industry-leading performance, reliability and low cost of ownership. The G 15-22 is a high-quality, reliable air compressor with the lowest initial investment cost. The GA 15-26 provides all-in-one technology and reduced sound levels. The GA 11+-30 delivers top quality and efficiency in the fixed speed compressor segment. Our premium product, the GA 15-37 VSD+, is a unique state-of-the-art air compressor with unparalleled performance and energy savings.

G 15-22
Robust economical compressors

- Atlas Copco premium quality and reliability at the lowest initial investment cost.
- Easy installation and maintenance.
- User-friendly, simplified BASE controller.

GA 15-26
Compact industrial air systems

- Premium GA quality and optimal serviceability at a low initial investment cost.
- Quality, dry air thanks to the integrated dryer.
- Total control and assured efficiency with the Elektronikon® Swipe controller.

GA 11+-30
Industry-leading performers

- Exceptional Free Air Delivery and efficiency.
- Best-in-class power consumption and noise emission.
- Thanks to the integrated dryer, high quality dry air is guaranteed.
- Easy control and maintenance with the Elektronikon® Touch controller with high-definition color display.

GA 15-37 VSD+
Ultimate energy savers

- On average 50% energy savings compared to traditional fixed speed compressors.
- Excellent-quality, dry air at the lowest energy cost with the new, integrated dryer range.
- Easy monitoring and maintenance thanks to the Elektronikon® Touch controller with high-definition color display.
- Innovative vertical design minimizes the required floor space while improving serviceability.

G 15-22:
Robust economical compressors

The all new G 15-22 belt-driven compressor from Atlas Copco is quiet, efficient, powerful and reliable. In short, it checks all the boxes that matter most to small business owners with limited running hours. And what's even better, this robust quality comes with the lowest initial investment cost.

1
Belt-driven element & motor

- Atlas Copco's patented rotary screw element allows for a 100% duty cycle.
- The complete unit is designed to operate at ambient temperatures of up to 46°C/115°F.
- Reduced noise levels and low vibration.

2
Control & monitoring

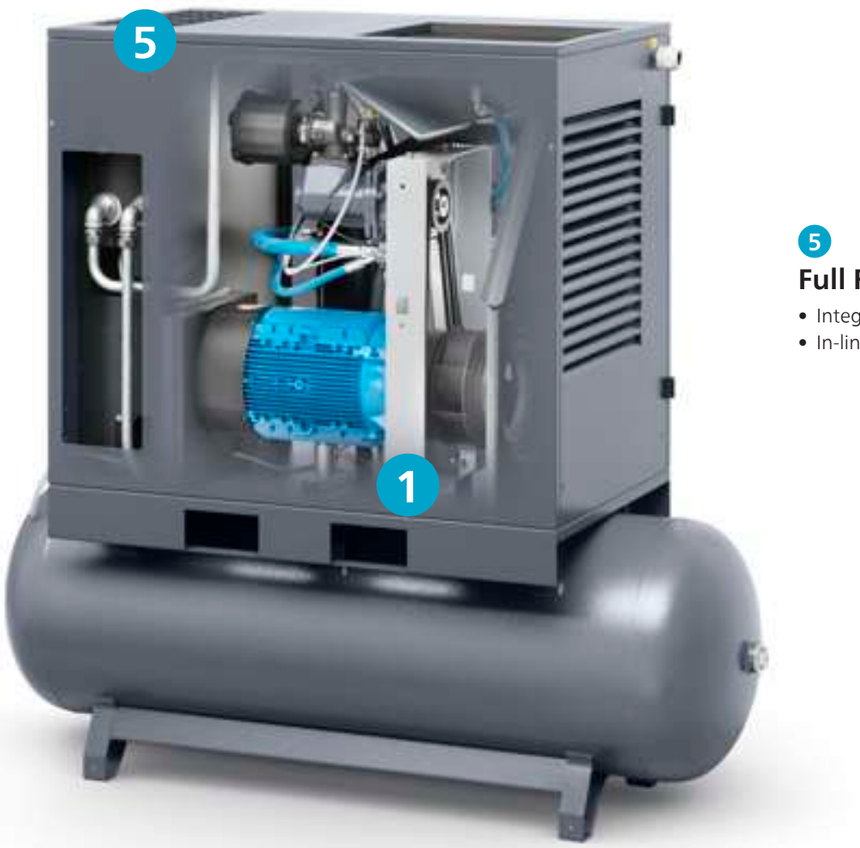
- New BASE controller offers straightforward monitoring and control.
- Icon-based display, pressure settings, temperature reading.
- Running hours/hours working @ load.
- Service warnings.
- Outlet pressure setting directly on the controller.
- Pressure and element outlet temperature reading.

3
Cost-efficient maintenance

All the main components, the oil separator and oil filter are easily accessible, ensuring fast and simple maintenance.

4
Easy installation

- Available in multiple configurations – including floor or tank-mounted and with or without integrated dryer.
- Extremely small footprint and cooling air discharge from the top allow for placement against a wall or even in a corner.



5
Full Feature (FF)

- Integrated refrigerant air dryer.
- In-line air filters.

GA 15-26:
Compact industrial air systems

Atlas Copco's all-in-one GA 15-26 compressor is always ready to supply high-quality air and help you tackle your daily challenges. Beating any workshop solution, the GA 15-26 keeps your air network clean and your production up and running.

3
High-tech oil vessel

- Protection from oil contamination: very low oil carry-over thanks to the vertical design of the oil vessel.
- Extremely low air losses during load/unload cycle thanks to minimized oil vessel size.

1
Robust element & motor

- The GA 15-26's new compression element is combined with an IE3 efficiency motor.
- 5-6% higher efficiency compared to belt-driven systems.
- Gear-driven drive train for best-in-class reliability and limited maintenance.

4
Integrated quality air solutions

- The integrated dryer avoids condensation and corrosion in the network. Optional filters for air quality up to ISO Class 1 level (<0.01 ppm).
- Standard included water separator.
- Additional energy savings with the dryer's electronic no-loss drain.

2
Advanced monitoring

- State-of-the-art monitoring thanks to the Elektronikon® Swipe with built-in connectivity.
- Service and warning indications, error detection and compressor shut-down.
- Standard SMARTLINK remote monitoring to maximize air system performance and energy savings.
- Optional Elektronikon® Touch controller for enhanced remote monitoring features and service time indications.

5
Easy installation

- A true plug-and-play solution for installation companies and OEMs.
- Optional integrated dryer, air filters and factory-mounted 500L receiver.
- Easy transportation by forklift.
- Remarkably compact footprint.

GA 11+-30:
Industry-leading performers

Advanced connectivity and control, ground-breaking efficiency, superior reliability, … the GA 11+-30 meets and exceeds the highest expectations. In addition, it comes with the widest range of options so you can tailor the unit to your specific requirements. If you need the very best, the GA 11+-30 delivers without compromise.

3
Advanced control

- High-tech Elektronikon® Touch controller with warning indications, compressor shut-down and maintenance scheduling.
- Easy to use and designed to perform in the toughest conditions.
- Built-in phase sequence relay for motor control and protection.
- Standard SMARTLINK remote monitoring to maximize air system performance and energy savings.
- Optional multiple compressor control (2, 4 or 6 compressors).

1
Reliable motor & drive train

- At the heart of the GA11+-30 is Atlas Copco's state-of-the-art compression element.
- The element is coupled with a maintenance-free and highly efficient gearbox.
- The IE4 efficiency rated motor and drive train are greased for life to avoid improper re-greasing.
- Free Air Delivery is increased by 6-10% and power consumption is reduced by 3-8% thanks to packaging and the high-performance compression element.

2
Electrical cubicle

- Reduced cubicle temperature doubles the lifetime of the electrical components.

4
Quality air solutions

- Integrated dryer range with counterflow heat exchanger, integrated water separator and optional Dryer Saver Cycle.
- The integrated dryer can be outfitted with optional DD or UD+ filters, resulting in oil carry-over as low as 0.01 ppm.
- Water separation of nearly 100% in all conditions with the standard electronic no-loss drain and integrated water separator in the aftercooler.

5
Innovative fan

- Based on the newest technologies.
- Highly efficient, compliant with ERP2015.
- Low noise levels.

GA 15-37 VSD+: Ultimate energy savers

With its innovative vertical design, Atlas Copco's GA 15-37 VSD+ is a game changer in the compressor industry. It offers Variable Speed Drive as standard, a compact motor and small footprint thanks to its in-house design and iPM (permanent magnet) technology. The GA VSD+ reduces energy consumption by on average 50%, with uptimes assured even in the harshest conditions.

1
Interior Permanent Magnet (iPM) motor

- Very high efficiency: matches IE5 standards.
- Compact, customized design for optimal cooling by oil.
- Designed in-house in Belgium.
- IP66 protection rating.
- No cooling air flow required.
- Oil-lubricated motor bearing: no grease/re-greasing for increased uptime.

2
Element

- The new, Atlas Copco-made compression element provides unparalleled energy savings.
- Robust and silent.

3
Direct drive

- Vertical design, fewer parts.
- Oil-cooled, pressure-tight.
- No gears or belts, no shaft seal.
- Compact: footprint down 60%.

5
Robust oil filter/separator

- Integrated bypass valve with the oil filter.
- Easy maintenance.

6
Electronic no-loss water drain

- Included as standard.
- Efficient removal of condensate without loss of compressed air.
- Manual integrated bypass for effective condensate removal in case of power failure.

7
Elektronikon® Touch controller

- Integrated smart algorithms reduce system pressure and energy consumption.
- Warning indications, maintenance scheduling and online status visualization.
- Graphic display of key parameters (day, week, month) and 32 language settings.
- Standard SMARTLINK remote monitoring to maximize air system performance and energy savings.
- Optional multiple compressor control (2, 4 or 6 compressors).

4
Innovative fan

- Based on the newest technologies.
- Compliant with ERP2015.
- Low noise levels.

9
VSD+ cubicle

- VSD+ is superior to idling machines.
- Electrical components remain cool, enhancing their lifetime.
- Dedicated drive for iPM technology motors.
- 5% DC choke as standard.
- Heat dissipation of inverter in separate compartment.

8
Sentinel inlet valve

- No inlet arrestor.
- No blow-off losses.
- Maintenance-free.

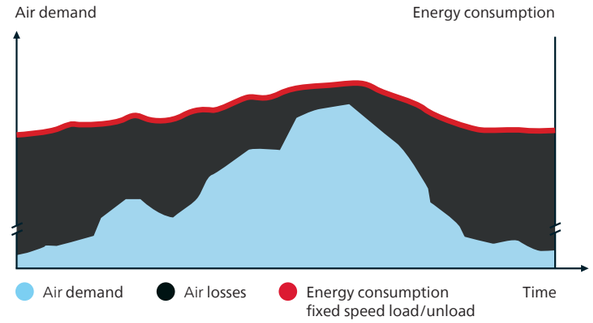
VSD+ for 50% average energy savings*

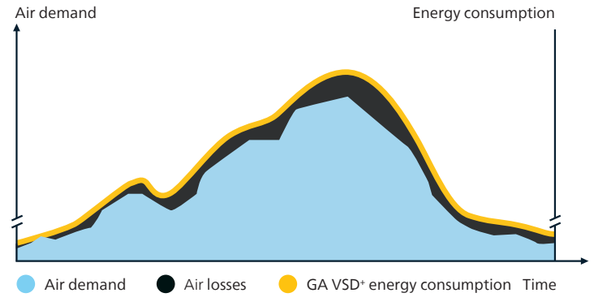
Atlas Copco's GA Variable Speed Drive+ (VSD+) technology closely matches the air demand by automatically adjusting the motor speed. Combined with the innovative design of the iPM (Permanent Magnet) motor, this results in average energy savings of 50% and an average reduction of 37% in the lifecycle cost of a compressor.

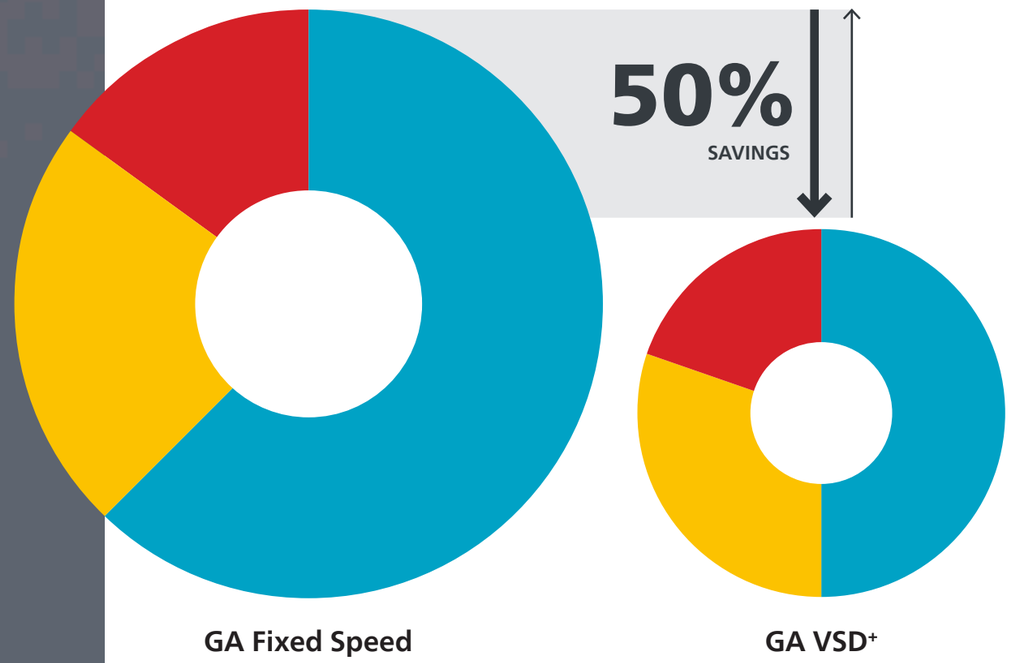
Why Atlas Copco Variable Speed Drive+ technology?

- On average 50% energy savings with an extensive flow range (20-100%).
- Integrated Elektronikon® Touch controls the motor speed and high-efficiency frequency inverter.
- No wasted idling times or blow-off losses during operation.
- Compressor can start/stop under full system pressure without the need to unload.
- Eliminates peak current penalty during start-up.
- Minimizes system leakage due to a lower system pressure.
- EMC compliance to directives (2004/108/EG).

In almost every production environment, air demand fluctuates depending on different factors such as the time of the day, week or even month.







* Compared to fixed speed compressors, based on measurement performed by an independent energy audit agency.

A step ahead in monitoring and controls

The next-generation Elektronikon® operating system offers a great variety of control and monitoring features that allow you to increase your compressor's efficiency and reliability. To maximize energy efficiency, the Elektronikon® controls the main drive motor and regulates system pressure within a predefined and narrow pressure band.

GA 15-26: Elektronikon® Swipe

- Improved ease of use: intuitive navigation system with clear pictograms and extra 4th LED indicator for service.
- Visualization through web browser using a simple Ethernet connection.
- Easy to upgrade.

Key features:

- Automatic restart after voltage failure.
- Delayed Second Stop function.
- Dual pressure set point.
- Built-in SMARTLINK online monitoring.
- Option to upgrade to the advanced Elektronikon® Touch controller

GA 11+-30 & GA 15-37 VSD+: Advanced Elektronikon® Touch controller

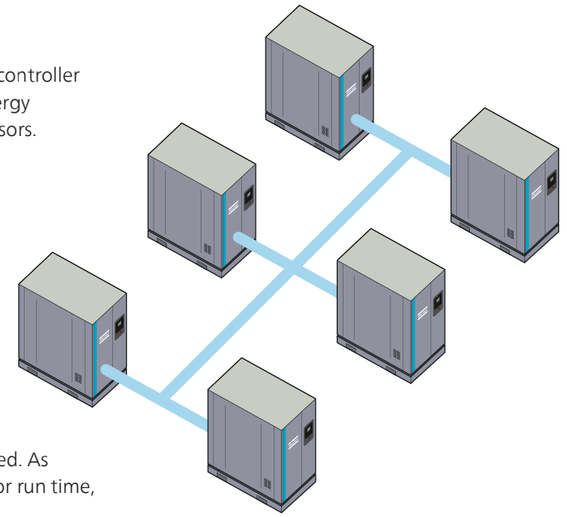
- Improved user-friendliness: 4.3-inch high-definition color display with clear pictograms and service indicator.
- Internet-based compressor visualization using a simple Ethernet connection.
- Increased reliability: new, user-friendly, multilingual user interface.

Key features:

- Automatic restart after voltage failure.
- Built-in SMARTLINK online monitoring.
- Dual pressure set point.
- More flexibility: four different week schedules that can be programmed for a period of 10 consecutive weeks.
- On-screen Delayed Second Stop function and VSD savings indication.
- Graphical service plan indication.
- Remote control and connectivity functions.
- Software upgrade available to control up to 6 compressors by installing the optional integrated compressor controller.

Optional integrated compressor controller

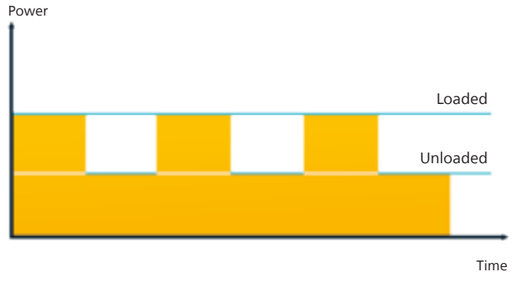
Install, with a simple license, the optional integrated compressor controller and get simple, central control to reduce system pressure and energy consumption in installations of 4 (EQ4i) or 6 (EQ6i) VSD+ compressors.



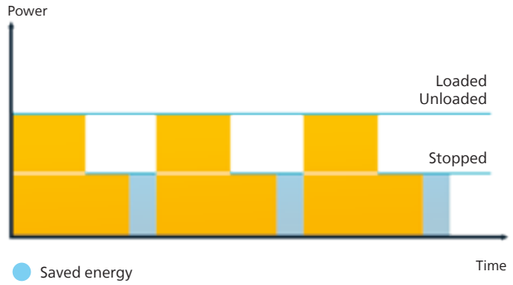
Dual pressure set point & delayed second stop

Most production processes create fluctuating levels of demand which, in turn, can create energy waste in low use periods. Using either an Elektronikon® Swipe or Touch controller, you can manually or automatically create two different system pressure bands to optimize energy use and reduce costs at low use times. In addition, the sophisticated Delayed Second Stop (DSS) runs the drive motor only when needed. As the desired system pressure remains steady at minimal drive motor run time, energy consumption is kept at a minimum.

Without DSS

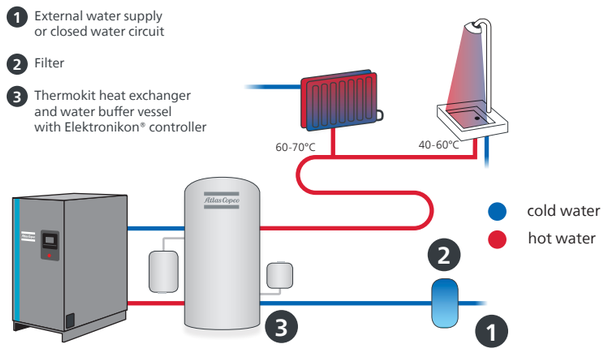


With DSS



Recover and save energy

As much as 90% of the electrical energy used by a compressed air solution is converted into heat. Using Atlas Copco's integrated energy recovery systems, it is feasible to recover up to ≈ 75% of that power input as hot air or hot water without any adverse influence on the compressor's performance. Through efficient usage of the recovered energy, you generate important energy cost savings and a high return on investment.

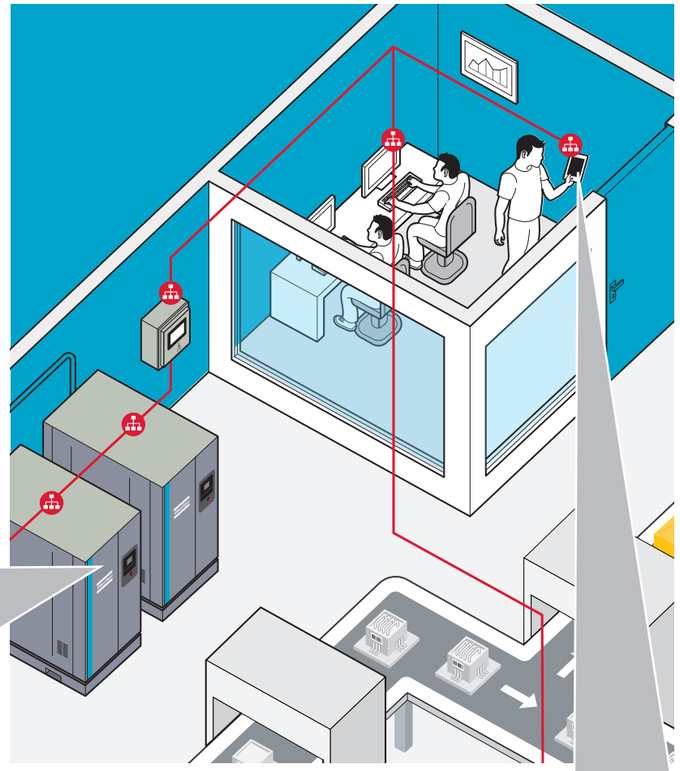


Applications

- Auxiliary or main heating of warehouses, workshops…
- Industrial process heating.
- Water heating for laundries, industrial cleaning and sanitary facilities.
- Canteens and large kitchens.
- Food industry.
- Chemical and pharmaceutical industries.
- Drying processes.

Ready for Industry 4.0

Do you operate a smart factory or Industry 4.0 production environment? Atlas Copco's GA, GA+, and GA VSD+ compressors will fit right in. Their advanced monitoring, control and connectivity features allow you to optimize performance and efficiency.



CONTROL

The Elektronikon® operating system gives you numerous control and monitoring options to optimize compressor performance.

CONNECT SMARTLINK*: Data Monitoring Program

- 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 potential problems by warning you up-front.

* Please contact your local sales representative for more information.

Always at your service

Atlas Copco is a truly global organization with support available in more than 160 countries. As a result, one of our 4850 field service engineers is never far away. We pride ourselves on the swift assistance that keeps your Atlas Copco compressed air system performing reliably and efficiently.

Service plan

Our service plans keep your Atlas Copco compressed air system in excellent shape.

Stand-by solutions

Atlas Copco help is available 24/7. We keep spare parts in stock so you are up and running again as quickly as possible.

Rental

Our specialty rental services meet your temporary compressed air needs. With Customer Centers strategically located around the globe, Atlas Copco Rental can provide a solution for virtually any application.

Excellence in quality air

Untreated compressed air contains moisture, aerosols and dirt particles that can damage your air system and contaminate your end product. The resulting maintenance costs can far exceed air treatment costs. GA compressors provide the clean, dry air that improves your system's reliability, avoiding costly downtime and production delays, and safeguarding the quality of your products.

Integrated purity

Many Atlas Copco compressors (Full Feature option) come with an integrated dryer that efficiently removes moisture, aerosols and dirt particles to protect your investment. This quality air expands the life of your equipment, increasing efficiency and ensuring quality of your final product.

Main benefits of the new, integrated dryer solutions

- Thanks to the Saver Cycle and its extra ambient sensor, the dryer will shut down when a normal dewpoint is reached, allowing 2/3 of the dryer's power to be recuperated (standard on GA VSD+, optional for GA+).
- Available in several variants, allowing you to gain high-quality air in all ambient conditions.
- The heat exchanger with integrated water separator minimizes the energy required to reach a certain air quality.
- Pressure dewpoint at 3°C/37°F on GA+ and GA VSD+ (100% relative humidity at 20°C/68°F, 5°C/41°F on GA).
- The dryer's global warming potential has been reduced by 44% on average. This not only results from the refrigerant's environmentally-friendly characteristics, but also from the smaller volume that is needed (valid for both GA+ and GA VSD+).
- Can be outfitted with optional UD+ filters to obtain the exact air quality you need.

	ISO QUALITY CLASS*	DIRT PARTICLE SIZE	WATER PRESSURE DEWPOINT GA**	WATER PRESSURE DEWPOINT GA+**	OIL CONCENTRATION
Pack unit	3.-.4	3 microns	-	-	3 ppm
Full Feature unit	3.4.4	3 microns	+5°C/41°F	+3°C/37°F	3 ppm
Full Feature unit with Class 2 integrated filter	2.4.2	1 micron	+5°C/41°F	+3°C/37°F	0.1 ppm
Full Feature unit with Class 1 integrated filter	1.4.1	0.01 microns	+3°C/37°F	+3°C/37°F	0.01 ppm

* The table values are maximum limits according to the respective ISO quality class.
** Water pressure dewpoint based on 100% RH at 20°C/68°F.

Tailored to your needs

Some applications may need or may benefit from additional options, more refined control or air treatment systems. To meet these needs, Atlas Copco has developed options and easily integrated compatible equipment providing the lowest cost compressed air.

	G 15-22	GA 15-26	GA 11+-30	GA 15-37 VSD+
Integrated filter (DD+ or UD+)	•	•	•	•
Dryer bypass	-	•	•	•
Gear/Direct Driven	-	✓	✓	✓
Electronic Water Drains (EWD) on coolers	•	•	✓	✓
Air receiver drain EWD	•	•	N/A	N/A
Motor space heater + thermistors	-	•	•	-
Phase sequence relay	-	✓	✓	✓
Tropical thermostat	•	•	•	•
Freeze protection	-	•	•	-
Heavy duty air inlet filter	-	•	•	•
Fan Saver Cycle	-	•	•	•
Compressor inlet pre-filter	-	•	•	•
Wooden package	•	•	•	•
Rain protection	-	-	•	-
Lifting device	-	-	•	-
Nema 4 & Nema 4X cubicle	-	-	•	-
Central control license 4 (EQ4i) or 6 (EQ6i) machines	-	•	•	•
Elektronikon® Touch*	-	•	✓	✓
FoodGrade oil	•	•	•	•
Roto Synthetic Xtend oil	•	•	•	•
Energy recovery	-	•	•	•
Modulating control	-	-	•	-
Main power isolator switch	-	•	•	•
High ambient temperature versions (55°C/131°F for pack, 50°C/122°F for FF)	-	-	•	N/A
Dryer Save Cycle	-	-	•	•
Performance certificates	•	•	•	•

* Except on GA 30.

✓: Standard • : Optional - : Not available

Technical specifications G 15-22

Compressor type		Max. working pressure: Work Place bar(e)	Work Place psig	WorkPlace Full Feature bar(e)	WorkPlace Full Feature psig	Capacity FAD* l/s	Capacity FAD* m³/hr	Capacity FAD* cfm	Installed motor power kW	Installed motor power hp	Noise level** dB(A)	Weight*** FM kg	Weight*** FM FF kg	Weight*** TM kg	Weight*** TM FF kg
50 Hz version															
G 15	7.5	7.5	108.8	7.3	105	32.4	116.7	68.7	15	20	67	205	268	270	340
	10	10	145.0	9.8	141	29.1	104.8	61.7	15	20	67	205	268	270	340
	13	13	188.5	12.8	185	22.8	82.1	48.3	15	20	67	205	268	270	340
G 15L****	7.5	7.5	108.8	7.3	105	42.5	153.0	90.1	15	20	67	313	371	493	537
	10	10	145.0	9.8	141	38.5	138.6	81.6	15	20	67	313	371	493	537
	13	13	188.5	12.8	185	31.2	112.3	66.1	15	20	67	313	371	493	537
G 18	7.5	7.5	108.8	7.3	105	52.1	187.6	110.4	18	25	69	328	392	508	545
	10	10	145.0	9.8	141	45.1	162.4	95.6	18	25	69	328	392	508	545
	13	13	188.5	12.8	185	38.5	138.6	81.6	18	25	69	328	392	508	545
G 22	7.5	7.5	108.8	7.3	105	62.0	223.2	131.4	22	30	70	344	408	524	561
	10	10	145.0	9.8	141	54.1	194.7	114.5	22	30	70	344	408	524	561
	13	13	188.5	12.8	185	46.4	167.1	98.3	22	30	70	344	408	524	561
60 Hz version															
G 15	100	7.4	107	7.2	104	33.1	119.3	70.2	15	20	68	205	268	270	340
	125	9.1	132	8.9	129	29.6	106.7	62.8	15	20	68	205	268	270	340
	150	10.8	157	10.6	154	27.3	98.4	57.9	15	20	68	205	268	270	340
	175	12.6	182	12.3	178	23.1	83.3	49.9	15	20	68	205	268	270	340
G 15L****	100	7.4	107	7.2	104	44.0	158.4	93.2	15	20	67	313	371	493	537
	125	9.1	132	8.9	129	38.8	139.7	82.2	15	20	67	313	371	493	537
	150	10.8	157	10.6	154	37.0	133.2	78.4	15	20	67	313	371	493	537
	175	12.6	182	12.3	178	32.7	117.7	69.3	15	20	67	313	371	493	537
G 18	100	7.4	107	7.2	104	51.8	186.5	109.8	18	25	69	328	392	508	545
	125	9.1	132	8.9	129	46.9	168.8	99.4	18	25	69	328	392	508	545
	150	10.8	157	10.6	154	43.3	155.9	91.7	18	25	69	328	392	508	545
	175	12.6	182	12.3	178	39.9	143.6	84.5	18	25	69	328	392	508	545
G 22	100	7.4	107	7.2	104	60.5	217.8	128.2	22	30	70	344	408	524	561
	125	9.1	132	8.9	129	53.7	193.3	113.8	22	30	70	344	408	524	561
	150	10.8	157	10.6	154	48.6	175.0	103.0	22	30	70	344	408	524	561
	175	12.6	182	12.3	178	46.0	165.6	97.5	22	30	70	344	408	524	561

* Unit performance measured according to ISO 1217 ed. 4 2009, annex C, latest edition.
** Mean noise level measured at a distance of 1 m according to ISO 2151: 2004 using ISO 9614/2 (sound intensity method); tolerance 3 dB(A).
*** **FM:** Floor-mounted, **FM FF:** Floor-mounted Full Feature, **TM:** Tank-mounted, **TM FF:** Tank-mounted Full Feature.
**** **L = larger drivetrain. This model is part of a different series with different specifications and additional benefits: more energy savings, higher FAD, and a lower noise level.**

Reference conditions:
- Absolute inlet pressure 1 bar (14.5 psi).
- Intake air temperature 20°C/68°F.

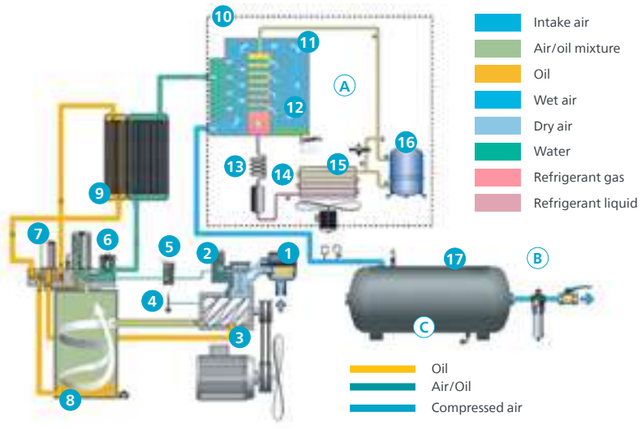
FAD is measured at the following effective working pressures:
7 bar(e), 9.5 bar(e), 12.5 bar(e)

Maximum working pressure:
13 bar(e) (188 psig)

FM Standard
L: 1130 mm, 44.5”
W: 833 mm, 32.8”
H: 1220 mm, 48.0”

FM Full Feature
L: 1280 mm, 50.4”
W: 833 mm, 32.8”
H: 1220 mm, 48.0”

TM
L: 1921 mm, 75.6”
W: 833 mm, 32.8”
H: 1832 mm, 72.1”



1 Inlet air filter
2 Inlet valve
3 Compression element
4 Temperature probe
5 Air suction solenoid valve
6 Minimum pressure valve
7 Oil separator element
8 Oil reservoir
9 Oil cooler
10 Aftercooler
11 Evaporator
12 Water separator
13 Capillary tube
14 Condenser
15 Electronic automatic drain
16 Refrigerant compressor
17 Air receiver
A Full Feature
B High efficiency air filter
C Electronic receiver drain

Technical specifications GA 15-26

Compressor type		Max. working pressure				Capacity FAD*			Installed motor power		Noise level**	Weight (kg)***			
		Work Place		WorkPlace Full Feature								FM	FM FF	TM	TM FF
		bar(e)	psig	bar(e)	psig	l/s	m³/hr	cfm	kW	hp	dB(A)	kg	kg	kg	kg
50 Hz version															
GA 15	7.5	7.5	108.8	7.3	105	46.9	168.8	99.4	15	20	67	455	529	645	718
	8.5	8.5	123.3	8.3	120	43.5	156.6	92.2	15	20	67	455	529	645	718
	10	10	145.0	9.8	141	39.3	141.5	83.3	15	20	67	455	529	645	718
	13	13	188.5	12.8	185	33.3	119.9	70.6	15	20	67	455	529	645	718
GA 18	7.5	7.5	108.8	7.3	105	59.6	214.6	126.3	18	25	68	464	559	654	749
	8.5	8.5	123.3	8.3	120	57.0	205.2	120.8	18	25	68	464	559	654	749
	10	10	145.0	9.8	141	49.5	178.5	105.0	18	25	68	464	559	654	749
	13	13	188.5	12.8	185	40.0	144.0	84.8	18	25	68	464	559	654	749
GA 22	7.5	7.5	108.8	7.3	105	65.6	236.2	139.0	22	30	69	480	575	670	765
	8.5	8.5	123.3	8.3	120	63.3	227.9	134.1	22	30	69	480	575	670	765
	10	10	145.0	9.8	141	55.3	199.1	117.2	22	30	69	480	575	670	765
	13	13	188.5	12.8	185	49.3	177.5	104.5	22	30	69	480	575	670	765
GA 26	7.5	7.5	108.8	7.3	105	72.5	260.9	153.6	26	35	70.2	490	585	680	775
	8.5	8.5	123.3	8.3	120	66.6	239.7	141.1	26	35	70.2	490	585	680	775
	10	10	145.0	9.8	141	64.3	231.4	136.2	26	35	70.2	490	585	680	775
	13	13	188.5	12.8	185	56.6	203.9	120.0	26	35	70.2	490	585	680	775
60 Hz version															
GA 15	100	7.4	107.0	7.1	103	47.6	171.4	100.9	15	20	67	455	529	645	718
	125	9.1	132.0	8.9	128	43.3	155.9	91.7	15	20	67	455	529	645	718
	150	10.8	157.0	10.6	153	40.0	144.0	84.8	15	20	67	455	529	645	718
	175	12.6	182.0	12.3	178	33.5	120.6	71.0	15	20	67	455	529	645	718
GA 18	100	7.4	107.0	7.1	103	60.3	217.1	127.8	18	25	68	464	559	654	749
	125	9.1	132.0	8.9	128	57.7	207.7	122.3	18	25	68	464	559	654	749
	150	10.8	157.0	10.6	153	49.5	178.2	104.9	18	25	68	464	559	654	749
	175	12.6	182.0	12.3	178	39.4	141.8	83.5	18	25	68	464	559	654	749
GA 22	100	7.4	107.0	7.1	103	67.2	241.9	142.4	22	30	69	480	575	670	765
	125	9.1	132.0	8.9	128	63.2	227.5	133.9	22	30	69	480	575	670	765
	150	10.8	157.0	10.6	153	60.2	216.7	127.6	22	30	69	480	575	670	765
	175	12.6	182.0	12.3	178	49.9	179.6	105.7	22	30	69	480	575	670	765
GA 26	100	7.4	107.0	7.1	103	69.1	248.8	146.4	26	35	70.3	490	585	680	775
	125	9.1	132.0	8.9	128	66.5	239.4	140.9	26	35	70.3	490	585	680	775
	150	10.8	157.0	10.6	153	63.7	229.3	135.0	26	35	70.3	490	585	680	775
	175	12.6	182.0	12.3	178	56.6	203.8	119.9	26	35	70.3	490	585	680	775

* Unit performance measured according to ISO 1217 ed. 4 2009, annex C, latest edition.
** Mean noise level measured at a distance of 1 m according to ISO 2151: 2004 using ISO 9614/2 (sound intensity method); tolerance 3 dB(A).
*** **FM:** Floor-mounted, **FM FF:** Floor-mounted Full Feature, **TM:** Tank-mounted, **TM FF:** Tank-mounted Full Feature.

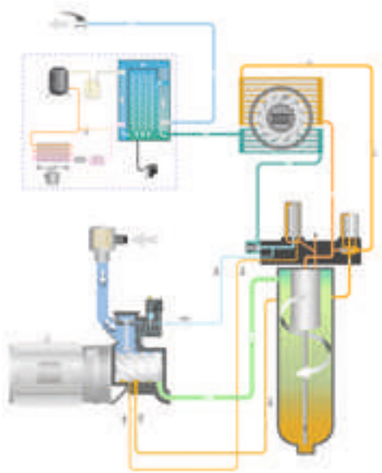
Reference conditions:
- Absolute inlet pressure 1 bar (14.5 psi).
- Intake air temperature 20°C/68°F.

FAD is measured at the following effective working pressures:
7 bar(e), 8 bar(e), 9.5 bar(e), 12.5 bar(e)

Maximum working pressure:
13 bar(e) (188 psig)

Standard
H TM: 1832 mm, 72”
H FM: 1220 mm, 48”
L TM: 1904 mm, 74”
L FM: 1280 mm, 50”
W: 833 mm, 33”

Full Feature
H TM: 1832 mm, 72”
H FM: 1220 mm, 48”
L TM: 1904 mm, 74”
L FM: 1775 mm, 69”
W: 833 mm, 33”



- Intake air
- Air/oil mixture
- Oil
- Wet compressed air
- Condensate
- Dry air
- Gaseous coolant
- Liquid coolant
- Compressed air without free water
- Dry compressed air
- Water
- Refrigerant gas/liquid mixture
- High pressure, hot refrigerant gas
- Low pressure, cool refrigerant gas
- High pressure refrigerant liquid
- Low pressure refrigerant liquid

Technical specifications GA 15-37 VSD+

Compressor type	Max. working pressure WorkPlace		Capacity FAD* min-max			Installed motor power		Noise level**	Weight (kg)	
	bar(e)	psig	l/s	m³/h	cfm	kW	hp	dB(A)	WorkPlace	WorkPlace Full Feature
GA 15 VSD+	5.5	80	7.2-42.3	25.9-152.3	15.2-89.6	15	20	64	199	288
	7	102	7.1-41.8	25.6-150.5	15.0-88.6	15	20	64	199	288
	9.5	138	6.8-35.5	24.5-127.8	14.4-75.2	15	20	64	199	288
	12.5	181	7.3-27.9	26.3-100.4	15.5-59.1	15	20	64	199	288
GA 18 VSD+	4	58	15.1-63.9	54.4-230.0	32.0-135.4	18	25	67	367	480
	7	102	14.9-62.5	53.6-225.0	31.6-132.4	18	25	67	367	480
	9.5	138	17.1-53.6	61.6-193.0	36.2-113.6	18	25	67	367	480
	12.5	181	16.4-43.5	59.0-156.6	34.7-92.2	18	25	67	367	480
GA 22 VSD+	4	58	15.3-76.9	55.1-276.8	32.4-162.9	22	30	67	363	485
	7	102	15.0-75.1	54.0-270.4	31.8-159.1	22	30	67	363	485
	9.5	138	17.3-65.2	62.3-234.7	36.7-138.2	22	30	67	363	485
	12.5	181	17.1-54.1	61.6-194.8	36.2-114.6	22	30	67	363	485
GA 26 VSD+	4	58	14.9-86.3	53.6-310.7	31.6-182.9	26	35	67	373	490
	7	102	14.5-85.5	52.2-307.8	30.7-181.2	26	35	67	373	490
	9.5	138	17.0-78.4	61.2-282.2	36.0-166.1	26	35	67	373	490
	12.5	181	16.4-64.5	59.0-232.2	34.7-136.7	26	35	67	373	490
GA 30 VSD+	4	58	15.1-98.0	54.4-352.8	32.0-207.7	30	40	67	376	500
	7	102	15.0-97.4	54.0-350.6	31.8-206.4	30	40	67	376	500
	9.5	138	17.1-85.6	61.6-308.2	36.2-181.4	30	40	67	376	500
	12.5	181	16.7-72.0	60.1-259.2	35.4-152.6	30	40	67	376	500
GA 37 VSD+	4	58	15.3-116.5	55.1-419.4	32.4-246.8	37	50	67	376	500
	7	102	14.8-115.0	53.3-414.0	31.4-243.7	37	50	67	376	500
	9.5	138	17.1-102.3	61.6-368.3	36.2-216.8	37	50	67	376	500
	12.5	181	16.4-86.7	59.0-312.1	34.7-183.7	37	50	67	376	500
GA 37L VSD+***	4	58	25.9-131.5	93.2-473.4	54.9-278.6	37	50	67	860	1060
	7	102	25.8-130.4	92.9-469.4	54.7-276.3	37	50	67	860	1060
	9.5	138	24.8-115.0	89.3-414.0	52.5-243.7	37	50	67	860	1060
	12.5	181	38.2-98.0	137.5-352.8	80.9-207.7	37	50	67	860	1060

* Unit performance measured according to ISO 1217 ed. 4 2009, annex E, latest edition.
** Mean noise level measured at a distance of 1 m according to ISO 2151: 2004 using ISO 9614/2 (sound intensity method); tolerance 3 dB(A).
***** L = larger drivetrain. This model is part of a different series with different specifications and additional benefits: more energy savings, higher FAD, and a lower noise level.**

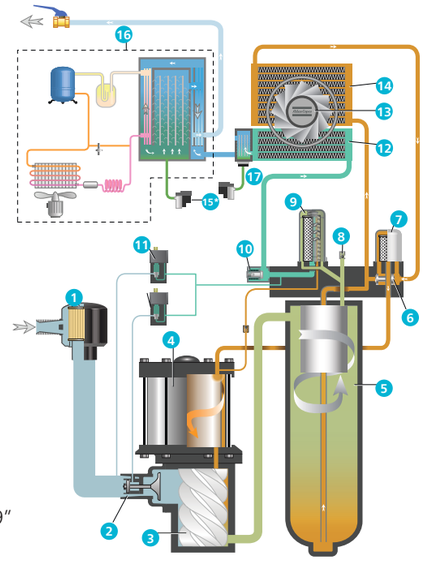
Reference conditions:
- Absolute inlet pressure 1 bar (14.5 psi).
- Intake air temperature 20°C/68°F.

FAD is measured at the following effective working pressures:
5.5 bar(e), 7 bar(e), 9.5 bar(e), 12.5 bar(e)

Maximum working pressure:
13 bar(e) (188 psig)

GA 15 VSD+ (Standard/ Full Feature)
H: 1420 mm, 56”
L: 630 mm, 25”
W: 610/985 mm, 24/39”

GA 18-37 VSD+ (Standard/ Full Feature)
H: 1590 mm, 63”
L: 780 mm, 31”
W: 811/1273 mm, 32/50”

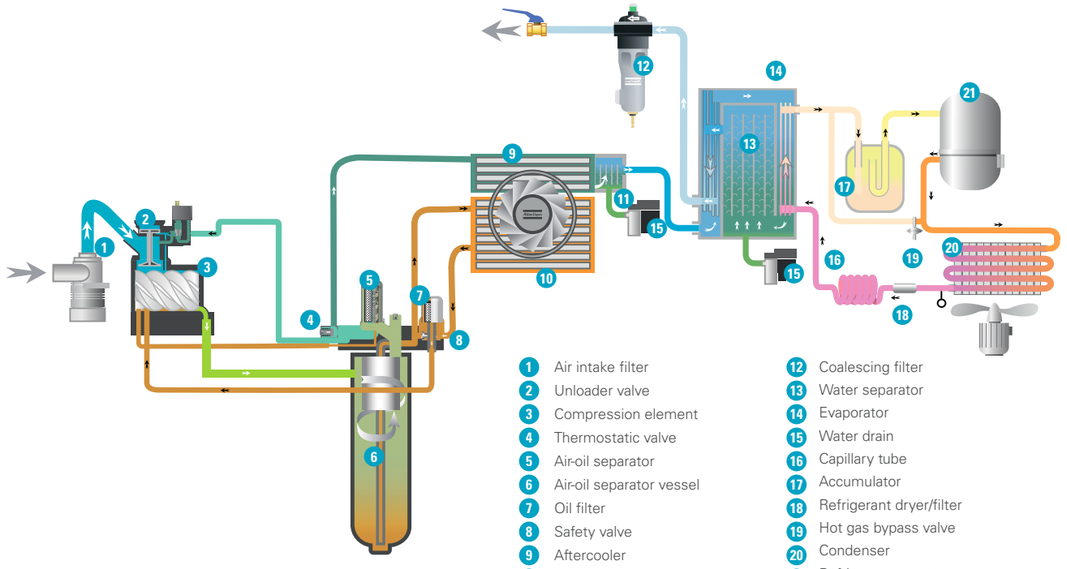


- Wet compressed air
- Condensate
- Dry compressed air
- Intake air
- Air/oil mixture
- Oil

1. Inlet filter
2. Sentinel valve
3. Screw element
4. Interior permanent magnet motor (iPM)
5. Air/oil vessel
6. Thermostatic bypass valve
7. Oil filter
8. Safety valve
9. Oil separator
10. Minimum pressure valve
11. Solenoid valve
12. After-cooler
13. Fan
14. Oil-cooler
15. Electronic drain (* mounted on after-cooler on models without dryer)
16. Dryer (Full Feature option)
17. Condensation prevention cycle

Technical specifications
GA 11⁺-30 (50 Hz version)

Compressor type		Max. working pressure				Capacity FAD*			Installed motor power		Noise level**	Weight	
		WorkPlace		WorkPlace Full Feature								WorkPlace	WorkPlace Full Feature
		bar(e)	psig	bar(e)	psig	l/s	m³/hr	cfm	kW	hp	dB(A)	kg	kg
GA 11⁺	7.5	7.5	109	7.3	105	37.2	133.9	78.8	11	15	68	411	451
	8.5	8.5	116	8.3	120	35.7	128.5	75.6	11	15	68	411	451
	10	10	145	9.8	141	32.3	116.3	68.4	11	15	68	411	451
	13	13	189	12.8	185	26.7	96.1	56.6	11	15	68	411	451
GA 15⁺	7.5	7.5	109	7.3	105	51.7	186.1	109.5	15	20	69	427	483
	8.5	8.5	116	8.3	120	46.1	166.0	97.7	15	20	69	427	483
	10	10	145	9.8	141	41.1	148.0	87.1	15	20	69	427	467
	13	13	189	12.8	185	36.9	132.8	78.2	15	20	69	427	467
GA 18⁺	7.5	7.5	109	7.3	105	62.6	225.4	132.6	18.5	25	69	428	484
	8.5	8.5	116	8.3	120	58.2	209.5	123.3	18.5	25	69	428	484
	10	10	145	9.8	141	51.3	184.7	108.7	18.5	25	69	428	484
	13	13	189	12.8	185	45.8	164.9	97.0	18.5	25	69	428	484
GA 22⁺	7.5	7.5	109	7.3	105	72.6	261.4	153.8	22	30	67	487	545
	8.5	8.5	116	8.3	120	69.7	250.9	147.7	22	30	67	487	545
	10	10	145	9.8	141	62.6	225.4	132.6	22	30	67	487	545
	13	13	189	12.8	185	55.1	198.4	116.8	22	30	67	487	545
GA 26⁺	7.5	7.5	109	7.3	105	87.2	313.9	184.8	26	35	68	490	548
	8.5	8.5	116	8.3	120	83.7	301.3	177.4	26	35	68	490	548
	10	10	145	9.8	141	76.5	275.4	162.1	26	35	68	490	545
	13	13	189	12.8	185	66.2	238.3	140.3	26	35	68	490	545
GA 30	7.5	7.5	109	7.3	105	94.0	338.4	199.2	30	40	70	509	567
	8.5	8.5	116	8.3	120	93.1	335.2	197.3	30	40	70	509	567
	10	10	145	9.8	141	86.4	311.0	183.1	30	40	70	509	567
	13	13	189	12.8	185	77.0	277.2	163.2	30	40	70	509	567



Technical specifications
GA 11⁺-30 (60 Hz version)

Compressor type		Max. working pressure				Capacity FAD*			Installed motor power		Noise level**	Weight	
		WorkPlace		WorkPlace Full Feature								WorkPlace	WorkPlace Full Feature
		bar(e)	psig	bar(e)	psig	l/s	m³/hr	cfm	kW	hp	dB(A)	kg	kg
GA 11⁺	100	7.4	107	7.2	104	39.4	141.8	83.5	11	15	68	411	451
	125	9.1	132	8.9	128	34.3	123.5	72.7	11	15	68	411	451
	150	10.8	157	10.6	153	30.4	109.4	64.4	11	15	68	411	451
	175	12.6	183	12.3	179	26.1	94.0	55.3	11	15	68	411	451
GA 15⁺	100	7.4	107	7.2	104	51.9	186.8	110.0	15	20	69	427	483
	125	9.1	132	8.9	128	46.1	166.0	97.7	15	20	69	427	483
	150	10.8	157	10.6	153	40.5	145.8	85.8	15	20	69	427	467
	175	12.6	183	12.3	179	36.0	129.6	76.3	15	20	69	427	467
GA 18⁺	100	7.4	107	7.2	104	63.6	229.0	134.8	18.5	25	69	428	484
	125	9.1	132	8.9	128	56.6	203.8	119.9	18.5	25	69	428	484
	150	10.8	157	10.6	153	51.2	184.3	108.5	18.5	25	69	428	484
	175	12.6	183	12.3	179	45.3	163.1`	96.0	18.5	25	69	428	484
GA 22⁺	100	7.4	107	7.2	104	73.8	265.7	156.4	22	30	67	487	545
	125	9.1	132	8.9	128	69.2	249.1	146.6	22	30	67	487	545
	150	10.8	157	10.6	153	63.0	226.8	133.5	22	30	67	487	545
	175	12.6	183	12.3	179	58.1	209.2	123.1	22	30	67	487	545
GA 26⁺	100	7.4	107	7.2	104	85.3	307.1	180.7	26	35	68	490	548
	125	9.1	132	8.9	128	80.6	290.2	170.8	26	35	68	490	548
	150	10.8	157	10.6	153	72.7	261.7	154.0	26	35	68	490	545
	175	12.6	183	12.3	179	66.1	238.0	140.1	26	35	68	490	545
GA 30	100	7.4	107	7.2	104	93.8	337.7	198.8	30	40	70	509	567
	125	9.1	132	8.9	128	90.4	325.4	191.5	30	40	70	509	567
	150	10.8	157	10.6	153	83.7	301.3	177.4	30	40	70	509	567
	175	12.6	183	12.3	179	75.8	272.9	160.6	30	40	70	509	567

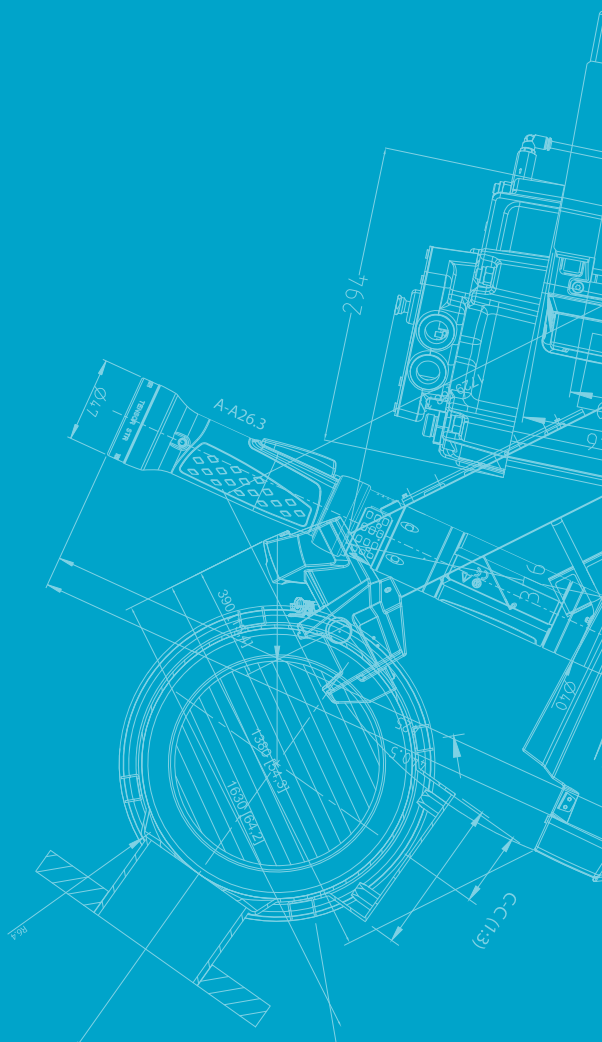
* Unit performance measured according to ISO 1217, Annex C, latest edition.
** Mean noise level measured according to ISO 2151/Pneuro/Cagi PN8NTC2 test code; tolerance 2 dB(A).

Reference conditions:
- Absolute inlet pressure 1 bar (14.5 psi)
- Intake air temperature 20°C, 68°F

FAD is measured at the following working pressures:
- 7.5 bar versions at 7 bar
- 8 bar versions at 8 bar
- 10 bar versions at 9.5 bar
- 13 bar versions at 12.5 bar

Pressure dewpoint of integrated refrigerant dryer of GA 11⁺ - GA 15⁺ - GA 18⁺ - GA 22⁺ - GA 26⁺ - GA 30 at reference conditions 2°C to 3°C, 36°F to 37°F.

Dimensions



LLOYD'S REGISTER · LRQA
ISO 9001 • ISO 14001
OHSAS 18001

Atlas Copco

atlascopco.com

DD DDp PD PDp QD

ATLAS COPCO COMPRESSED AIR FILTER

Atlas Copco offers a range of filters to reduce all types of contamination in compressed air process. Designed for maximum contaminant removal and minimal pressure drop, Atlas Copco filters offer significant energy savings in the compressed air system as well as minimising the problems that result from poor air quality.

The +range filters, which comply with ISO 12500-1:2007 and ISO 8573-2:2007 standards, do not only offer an industry leading air purity, but also focus on lifecycle cost.

DD & DD+ refer to coalescing filters for general purpose protection, removing solid particles, liquid water and oil aerosol. Total mass efficiency 0.01 µm 99.93 %.

DDp & DDp+ refer to particle filters for dust protection. Total mass efficiency 0.01 µm 99.93 %.

PD & PD+ refer to high efficiency coalescing filters, removing solid particles, liquid water and oil aerosol. Total mass efficiency 0.01 µm 99.99 %.

PDp & PDp+ refer to high efficiency particle filter for dust protection. Total mass efficiency 0.01µm 99.99 %.

QD & QD+ refer to active carbon filters for removal of oil vapours and hydrocarbon odours with a maximum remaining oil content of 0.003 mg/m3 (0,003ppm). Should be installed after a PD or PD+ filter.

Your benefits

Excellent reliability

Enhanced perforated stainless steel cores ensure ultimate strength and terminates the risk of implosion. The filter will never generate rust particles itself.

Obvious energy saving

A unique internal design of Atlas Copco equips filters an ideal flow path and hence a low pressure drop.

Easy installation

Compact size of Atlas Copco filters require minimum installation space and minimal free space for cartridge change.

Low maintenance cost

A special rotating system for the bottom cover helps our service technician for an easy maintenance.

Quality and reliability

Double O-rings ①

- Reduce leakage risks for a high reliability

Push-on element ②

- Simplify installation and maintenance and increases reliability

Stainless steel filter cores ③

- Ultimate strength and no risk for implosion

Protection paper ④

- Avoid damaging glass fibers

New enhanced glass fiber media and impregnated activated carbon layers ⑤

- Work together to remove oil coalescence and dust and oil vapor

Open foam (not for QD and QD+) ⑥

- Drain liquid

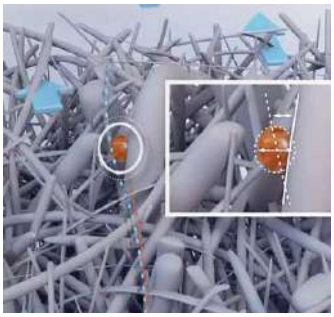
Epoxy sealed caps ⑦

- Reduce leakage risks

Working principle

Inertial Impaction

Large particles travel in a straight line and impact the filter media. Air travels around and through the filtration media.



Interception

Smaller particles follow air but when the particle size is greater than the gap of the fibers, the contamination is trapped and removed from the air flow.

Diffusion

The smallest particles do not follow the air flow but move randomly, which is called Brownian motion. As the particles move around they impact the filter media and are removed from the air flow.

Standard scope of supply

- Head
- Bowl
- Filter element(s)
- Differential pressure gauge
- Automatic drain (not for QD, QD+, DDp, DDp+, PDp, PDp+)
- Manual drain (not for QD, QD+, DDp, DDp+, PDp, PDp+)
- Sight glass (cast versions only)ss

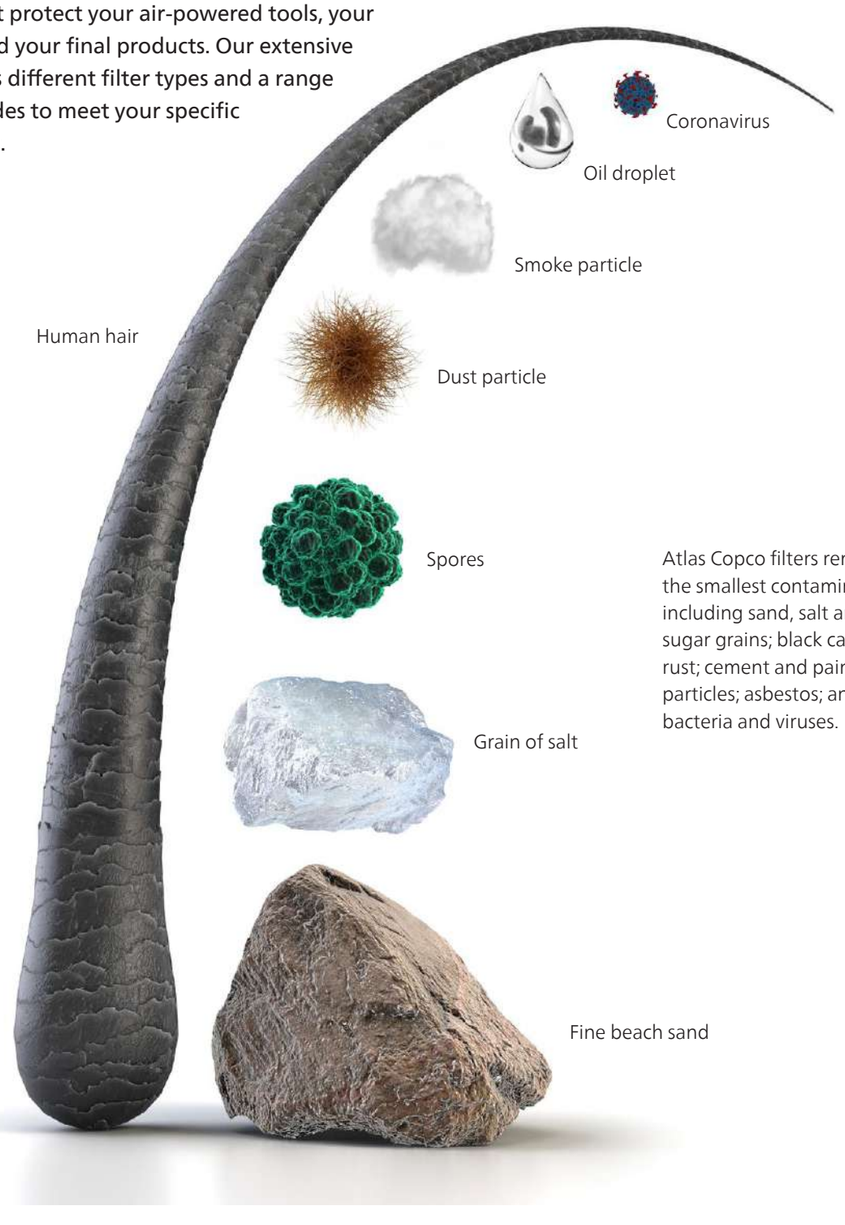
Features and benefits

- Differential pressure gauge
    - Indicates optimum replacement time and minimizes pressure drop in system
- Internally and externally coated
    - Prevents corrosion and ensures extra-long lifetime
- EWD automatic drain prevents condensate build up in filter
    - Automatically drains collected liquid and can be easily piped away to condensate management system

Compressed air filters

Committed to superior productivity

Untreated compressed air can be contaminated by dust, water and oil. This makes filtration a crucial component of your air system. Atlas Copco has developed filtration solutions that protect your air-powered tools, your processes, and your final products. Our extensive offer includes different filter types and a range of purity grades to meet your specific requirements.



Atlas Copco filters remove the smallest contaminants, including sand, salt and sugar grains; black carbon; rust; cement and paint particles; asbestos; and bacteria and viruses.

Unsurpassed filtration quality

In-house expertise

Because filtration is so important, Atlas Copco's dedicated engineering team works in close collaboration with universities, regulatory authorities and premium filter material suppliers. Our scientists and engineers are therefore knowledgeable on the latest advances and innovations in the industry. Every step of the engineering process is meticulously executed, from basic research to prototype designs and end-of-life analysis.

Rigorous quality control

To ensure top performance and reliability, all Atlas Copco filters are subjected to rigorous internal and external certification and quality control. Thanks to our testing facility, we conduct all certification in-house, including testing witnessed by independent parties. Capable of testing filters according to all relevant standards and under real-life conditions, our competence continues to grow with every new development in the filtration business.

Engineered and built in Europe

Our entire filter range is designed and produced in Atlas Copco's European facilities, using state-of-the art production lines and quality controls. This geographic proximity allows us to keep R&D, engineering, production, and testing close together and streamline their collaboration.

Certified peace of mind

Atlas Copco's filters are certified to meet the following ISO standards:

- ISO 8573-1:2010: Compressed air - Contaminants and purity classes
- ISO 8573-2:2018: Compressed air - Test method for oil aerosol content
- ISO 8573-4:2019: Compressed air - Test method for particles
- ISO 8573-5: 2001: Compressed air - Test method for oil vapor and organic solvent content
- ISO 12500-1:2007: Filters for compressed air - Test methods - Oil aerosols
- ISO 12500-2:2007: Filters for compressed air - Test methods - Oil vapors
- ISO 12500-3:2009: Filters for compressed air - Test methods - Particulates

Advanced filtration technology

Filtration technology matters if you need constant air quality with low maintenance requirements. Over the years, Atlas Copco has innovated filter types, design, processes and media to give you best-in-class performance, reliability and lifetime.

Filtration technologies

Choose the best filtration technology for your application to improve your air system performance:

- **Wet particles: wrapped media**

  Wrapped media are known for their durability in wet and oil-contaminated environments. Our patented Nautilus technology combines multiple wrapped layers to offer constant air quality at the lowest pressure drop, even in the harshest working conditions.

- **Solid particles: pleated media**

  Pleating is the optimal technology for capturing dry particulates in compressed air. Pleated media have a large surface area and therefore ensure a longer filter service lifetime and lower pressure drop.

- **Oil vapors: macro-structured activated carbon**

  Macro-structured activated carbon has a larger surface compared to the typical carbon filter media, giving it a superior adsorption capacity and a steady performance over a longer time.

- **Water: cyclone**

  The use of centrifugal forces secures a proper separation of liquid water droplets in the air flow.

Anodized aluminum housing with powder coating to maximize corrosion protection

Element bottom cap (UD+, PD+ & DD+)

A patented drainage system facilitates the removal of oil from the filter element, eliminating the “wet band” at the bottom of the element that can compromise filter performance and lifetime.

Service indicator

To ensure constant air quality, the service indicator allows for an easy check of the filter’s running hours, differential pressure, and maintenance status. It can even send a remote alert.

Element top cap

The top cap guides the air flow optimally into the cartridge and to the outlet to reduce pressure drop and the overall energy use of the filter.

inPASS™ bypass

Atlas Copco’s revolutionary built-in bypass can be used to reroute the air during filter service to ensure an uninterrupted air flow. It’s an invisible invention that will give you big investment and operational savings:

- Service your filters at any time, even during working hours.
- Secured air flow for your production during maintenance.
- Reduced maintenance time as your air system doesn’t need to be shut down.
- Eliminates the huge cost of an external piping bypass.
- Lowers the risk of leakages, resulting in lower energy costs.

Strong and durable stainless-steel cylinders

Differently colored end caps to easily recognize the filtration grade

Easy-service float drain

Our non-stick float drain automatically expels all captured oil and water. To save you time and money, our drains can easily be serviced without removing the filter bowl. The threaded drain connection to the bowl also makes it easy to replace the float drain with an external manual or automatic drain.

Complete filtration

Dirt, water and oil are no match for Atlas Copco's filters. They are designed to remove one or more of the following contaminants:

- DIRT: dust, solid particles, rust particles, micro-organisms.
- WATER: condensed liquid water, water aerosols, acidic condensates.
- OIL: liquid oil, oil aerosol, hydrocarbon vapor.

Flanged design
6 grades
12 sizes
550 → 8,000 l/s
1,200 → 17,000 cfm

Threaded design
7 grades
14 sizes
7 → 630 l/s
14 → 1,335 cfm

Flanged design
850 → 1,100 l/s
1,801 → 2,331 cfm

Tower design
1 grade
9 sizes
20 → 1,800 l/s
42 → 3,814 cfm

20 bar / 290 psi
50 bar / 725 psi
100 bar / 1,450 psi
350 bar / 5,075 psi

Threaded design
5 grades
9 sizes
15 → 944 l/s
32 → 2,000 cfm

Threaded design
5 grades
11 sizes
9 → 520 l/s
19 → 1,102 cfm

Name	DDp+	PDp+	DD+	PD+	UD+	QD+	QDT+	H High-pressure			SFA Silicone-free		
Grade	Rough	Fine	Rough	Fine	Ultimate	Basic	Optimal	Rough & fine	Rough & fine	Basic	Rough & fine	Rough & fine	Basic
Contaminant	Dry dust		Oil aerosol/wet dust			Oil vapor							
	General applications							Special applications					

A solution for every application

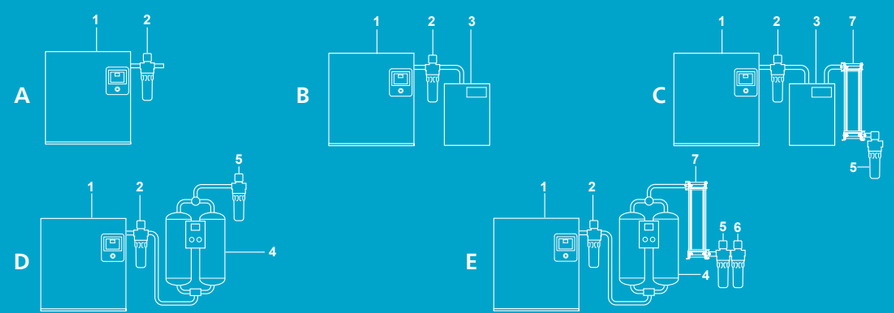
Depending on point of use and application, different compressed air purities might be needed. The table below shows the various ISO 8573-1:2010 air purity classes and the Atlas Copco filter and dryer-combinations that meet these classes.

ISO 8573-1:2010 class	Solid particles		Water	Oil (aerosol, liquid, vapor)	
	Wet conditions	Dry conditions			
0	As specified by the customer*			Oil-free compressor	
1	DD+ & PD+	DDp+ & PDp+	Desiccant dryer	DD+ & PD+	& QD+/QDT
	UD+			UD+	& QD+/QDT
2	DD+	DDp+	Desiccant dryer, rotary drum dryer	DD+ & PD+	
				UD+	
3	DD+	DDp+	Desiccant dryer, membrane dryer, rotary drum dryer	DD+	
4	DD+	DDp+	Membrane dryer, refrigerant dryer	DD+	
5	DD+	DDp+	Membrane dryer, refrigerant dryer	-	
6	-	-	Membrane dryer, refrigerant dryer	-	

* Please contact your Atlas Copco sales representative.

Examples of typical installations

A	Compressor - UD+	Air purity class ISO 8573-1:2010 [1:-:2]
B	Compressor - UD+ - Refrigerant dryer	Air purity class ISO 8573-1:2010 [1:4:2]*
C	Compressor - UD+ - Refrigerant dryer - QDT - DDp+	Air purity class ISO 8573-1:2010 [2:4:1]
D	Compressor - UD+ - Desiccant dryer - DDp+	Air purity class ISO 8573-1:2010 [2:2:2]
E	Compressor - UD+ - Desiccant dryer - QDT - DDp+ - PDp+	Air purity class ISO 8573-1:2010 [1:2:1]



1. Compressor
2. UD+ filter
3. Refrigerant dryer
4. Desiccant dryer
5. DDp+ filter
6. PDp+ filter
7. QDT filter

* Particle class 1 is reached directly after UD+. As downstream piping & vessels can add particles, it is advised to install particle filters DDp+ and PDp+ just before the application to reach particle class 1 at point of use.

The compressor should be equipped with a liquid water separation system such as an aftercooler including a drain or a water separator (WSD). If this is not the case, install a water separator in front of a coalescence filter. For critical applications, install extra air treatment products at the point of use for the removal of pipeline contamination and condensation.

DD+/PD+/UD+ Series

Oil coalescence filters with patented Nautilus technology

Compressor element lubrication and your compressor installation itself can release oil aerosols and wet dust in your air system. DD+, PD+ and UD+ filters efficiently remove these contaminants to protect your equipment and your processes. These innovative filtration solutions are engineered to cost-effectively provide the best air purity and meet today's increasingly stringent quality requirements.

Your benefits:

- **Maximum oil aerosol, wet dust and water droplet filtration and drainage** - High-efficiency glass fiber Nautilus technology ensures a low pressure drop.
- **Patented drainage technology** - A coarse 3D-structured layer/barrier provides efficient oil drainage and prevents re-entry of oil droplets into the air stream.
- **Minimal operating costs** - Optimal design and filter technology allow for low pressure losses.
- **Cost-saving maintenance** - Ribbed housing ensures easy removal of the filter bowl. The push-in element and drain connection were designed for effortless replacement. The service indicator shows (preventive) maintenance alerts.

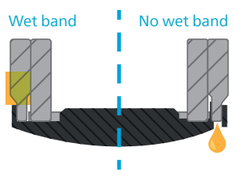
Certification

- ISO 8573-2:2018
- ISO 12500-1:2007

3 patented innovations

1. **Nautilus technology for energy savings**

   The Nautilus multi-wrap technology was specifically developed to improve the oil aerosol coalescing process. That means you get optimal filtration results at a lower pressure drop to minimize your operational costs.



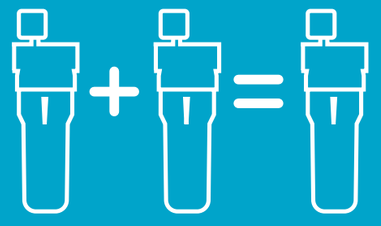
2. **Enhanced drainage channels for pure air**

   The bottom cap of the filter is designed to increase the drainage rate of the oil from the barrier by optimizing the contact between the barrier and drainage routes. This ensures no wet band is formed in the barrier and the re-entrainment risk is significantly diminished, resulting in cleaner air.

3. **Superior drainage technology for a strong performance & long lifetime**

   A unique coarse 3D-structured layer/barrier ensures efficient oil drainage and prevents re-entry of oil droplets into the air flow. The 3D structure also offers a service life of 8,000 hours.

UD+ 2-in-1 concept saves money and space



The UD+ combines two filtration steps (DD+ and PD+) into one, a unique technology to meet the quality requirements of diverse applications and offer superior energy savings. The UD+ filter provides the same air purity as a DD+-PD+ filter train with a lower pressure drop.

- Save up to 50% in space: The 2-in-1 concept is ideal for applications where space is at a premium, reducing your environmental footprint, system complexity, and installation space.
- Save money: Install UD+ filters to enjoy significant installation and maintenance (cost) savings compared to conventional filters.

Performance

	DD+	PD+	UD+
Contaminant	Oil aerosol/wet dust		
Filtration technology	Wrapped		
Test method	ISO 8573-2:2018, ISO 12500-1:2007		
Maximum oil carry-over (mg/m³)*	0.08*	0.008*	0.001
ISO class 8573-1	[2:-:3]	[1:-:2]	[1:-:2]
Average wet pressure drop (mbar)	119	132	220
Element service	After 8,000 operating hours or 1 year For flanged filters: after 4,000 operating hours or 1 year or 350 mbar pressure drop		
Precede with	Water separation	Water separation & DD+	Water separation

* Inlet oil concentration = 10 mg/m³. Oil = oil aerosol and liquid.

DDp+/PDp+ Series

Optimal dry dust filtration

DDp+ and PDp+ filters efficiently prevent dust, corrosion particles, micro-organisms, dirt and adsorption material from entering your compressed air stream. These innovative filtration solutions are engineered to cost-effectively provide the best air purity and meet today's strict quality demands.

Your benefits:

- **Maximum dirt, solid particle, micro-organism and rust particle removal**
  High-efficiency pleated glass fiber media with coarse pre-filter fleece ensure a high dust-holding capacity.
- **Minimal operating costs** - Optimal pleated design and filter technology allow for low pressure losses.
- **Cost-saving maintenance** - Ribbed housing ensures easy removal of the filter bowl. The push-in element and drain connection were designed for effortless replacement. The service indicator shows (preventive) maintenance alerts.

Performance

	DDp+	PDp+
Contaminant	Dry dust	
Filtration technology	Pleated	
Test method	ISO 8573-4:2001, ISO 12500-3:2009	
Particle removal efficiency (% at MPPS)	99.92	99.98
ISO class 8573-1	[2:-:3]	[1:-:2]
Element service	After 8,000 operating hours or 1 year or 350 mbar pressure drop For flanged filters: after 4,000 operating hours or 1 year or 350 mbar pressure drop	
Precede with	Dryer	Dryer & DDp+

Certification

- ISO 8573-4:2019
- ISO 12500-3:2009

QD+ Series

High-performance oil vapor filters

QD+ filters efficiently reduce hydrocarbons, odors and oil vapor in your compressed air to protect your investment, equipment and processes. The macro-structured activated carbon will reduce the residual oil content through adsorption to less than 0.003 mg/m³. The pressure drop is low and remains constant during the lifetime of the filter.

Your benefits:

- **Maximum oil vapor removal**
  The macro-structured activated carbon is specifically designed to efficiently and completely remove oil vapors from compressed air with minimal dust release.
- **Minimal operating costs** - Low pressure losses thanks to an optimal flow design.
- **Low-cost maintenance** - Ribbed housing ensures easy removal of the filter bowl. The push-in element and drain connection were designed for effortless replacement. The service indicator shows (preventive) maintenance alerts.

Performance

	QD+
Contaminant	Oil vapor
Filtration technology	Macro-structured activated carbon
Test method	ISO 8573-5:2001
Maximum oil carry-over (mg/m³)*	0.003*
ISO class 8573-1	[2:-:1]
Average dry pressure drop (mbar)	75
Element service	After 2,000 operating hours or 1 year For flanged filters: after 1,000 operating hours or 1 year
Precede with	Water separation UD+ or DD+/PD+ Dryer

* In a typical installation with refrigerant dryer and UD+ filter.

Options
DD+/PD+/UD+/DDp+/PDp+/QD+

- Potential-free alarm contact for gauge.
- Smart indicator.
- External wiring kit for smart indicator (alarm/ power supply).
- Interconnection kit.
- Wall mounting kit.
- EWD including connection kit.

		DD+/PD+/UD+		DDp+/PDp+		QD+	
		Standard	inPASS™	Standard	inPASS™	Standard	inPASS™
	Standard						
Drain	Floater drain	X	X				
	Manual drain			X	X	X	X
Indicator	Sliding indicator	size 7-25		size 7-25			
	Gauge	> size 25		> size 25			
	Smart indicator		X		X		
	Bypass		X		X		X
	Options						
	Smart indicator	X		X		X	X
	External wiring kit (for smart indicator)	X	X	X	X	X	X
	Potential-free alarm for gauge	X		X			
	Filter connection kit	X	X	X	X	X	X
	Wall mounting kit	X	X	X	X	X	X
	EWD drain with connection kit	X	X				

Correction factors

When working with other pressures than the nominal pressure, the actual FAD capacity is calculated by multiplying the correction factor with the rated AML capacity. The calculated actual flow capacity corresponds to the AML-stated pressure drop.

Working pressure in bar(g)	1	2	3	4	5	6	**7**	8	10	12	14	16
Correction factor	0.38	0.53	0.65	0.75	0.83	0.92	**1**	1.06	1.20	1.31	1.41	1.50

Sizing & dimensions
DD+/PD+/UD+/DDp+/PDp+/QD+

Filter size with or without inPASS™	Nominal capacity		Reference pressure		Maximum pressure		Connections		Dimensions						Free space for cartridge replacement		Weight	
									A		B		C		D			
	l/s	cfm	bar(e)	psig	bar(e)	psig	G	NPT	mm	inch	mm	inch	mm	inch	mm	inch	kg	lbs
7+	7	15	7	102	16	232	G 1/2	NPT 1/2	106	4.17	90	3.54	362.6	14.3	90	3.54	1.18	2.60
15+	15	32	7	102	16	232	G 1/2	NPT 1/2	106	4.17	90	3.54	362.6	14.3	90	3.54	1.24	2.73
25+	25	53	7	102	16	232	G 1/2	NPT 1/2	106	4.17	90	3.54	415.1	16.3	90.5	3.56	1.45	3.20
45+	45	95	7	102	16	232	G 3/4	NPT 3/4	135	5.31	110	4.33	442.6	17.4	110	4.33	2.35	5.18
75+	75	159	7	102	16	232	G 1	NPT 1	135	5.31	110	4.33	527.6	20.8	110	4.33	2.8	6.17
110+	110	233	7	102	16	232	G 1 1/2	NPT 1 1/2	175	6.89	143	5.63	559.1	22.0	130.5	5.14	5.4	11.91
145+	145	307	7	102	16	232	G 1 1/2	NPT 1 1/2	175	6.89	143	5.63	629.1	24.8	130.5	5.14	5.93	13.08
180+	180	381	7	102	16	232	G 1 1/2	NPT 1 1/2	175	6.89	143	5.63	699.1	27.5	130.5	5.14	6.45	14.22
240+	240	509	7	102	16	232	G 2	NPT 2	222	8.74	171	6.73	729.6	28.7	175	6.89	9.54	21.04
300+	300	636	7	102	16	232	G 2	NPT 2	222	8.74	171	6.73	822.6	32.4	175	6.89	10.71	23.62
							G 2 1/2	NPT 2 1/2									10.43	23.00
With inPASS™																		
380+	380	805	7	102	16	232	G 3	NPT 3	250	9.84	191	7.52	927.1	36.5	200.5	7.89	13.6	29.99
425+	425	901	7	102	16	232	G 3	NPT 3	250	9.84	191	7.52	1043.1	41.1	200.5	7.89	14.95	32.96
510+	630	1081	7	102	16	232	G 3	NPT 3	250	9.84	191	7.52	1281.1	50.4	200.5	7.89	19.6	43.22
Without inPASS™																		
360+	360	763	7	102	16	232	G 2 1/2	NPT 2 1/2	222	8.74	171	6.73	812.7	32.0	175	6.89	10.2	22.49
430+	430	911	7	102	16	232	G 3	NPT 3	250	9.84	191	7.52	917.2	36.1	200.5	7.89	13.98	30.83
525+	525	1112	7	102	16	232	G 3	NPT 3	250	9.84	191	7.52	1033.2	40.7	200.5	7.89	15.32	33.78
630+	630	1335	7	102	16	232	G 3	NPT 3	250	9.84	191	7.52	1271.2	50.0	200.5	7.89	19.24	42.42
Flanged							**Flanged connection**											
550+F/630+F	550	1165	7	102	16	232	DN 80		370	14.6	280	11.0	1295	51.0	1375	54.1	76.0	167.6
850+F/970+F	850	1801	7	102	16	232	DN 100		510	20.1	410	16.1	1360	53.5	1500	59.1	141.0	310.9
850+T	850	1801	7	102	16	232	DN 100		510	20.1	418	16.5	796	31.3	200	7.9	35.2	77.6
1100+F/1260+F	1100	2331	7	102	16	232	DN 100		510	20.1	410	16.1	1360	53.5	1500	59.1	143.0	315.3
1100+T	1100	2331	7	102	16	232	DN 100		510	20.1	418	16.5	966	38.0	200	7.9	37.4	82.4
1400+F/1600+F	1400	2967	7	102	16	232	DN 150		620	24.4	485	19.1	1480	58.3	1560	61.4	210.0	463.0
1800+F/2200+F	1800	3814	7	102	16	232	DN 150		640	25.2	490	19.3	1555	61.2	1640	64.6	176.0	388.0
2200+F/2400+F	2200	4662	7	102	16	232	DN 150		640	25.2	490	19.3	1555	61.2	1640	64.6	178.0	392.4
3000+F/3600+F	3000	6357	7	102	16	232	DN 200		820	32.3	650	17.7	1745	68.7	1710	67.3	420.0	925.9
4000+F	4000	8476	7	102	16	232	DN 200		820	32.3	650	17.7	1745	68.7	1710	67.3	428.0	943.6
5000+F	5000	10595	7	102	16	232	DN 200		820	32.3	650	17.7	1745	68.7	1710	67.3	432.0	952.4
6000+F	6000	12714	7	102	16	232	DN 250		920	36.2	815	32.1	2085	82.1	1625	64.0	671.0	1479.3
7000+F	7000	14833	7	102	16	232	DN 250		920	36.2	815	32.1	2085	82.1	1625	64.0	675.0	1488.1
8000+F	8000	16952	7	102	16	232	DN 300		1040	40.9	930	36.6	2070	81.5	1625	64.0	900.0	1984.2

Non-inPASS™ variant: height “C” decreases by 51 mm (2”) for sizes 7-25 and by 10 mm (0.4”) for sizes 45-300.

Temperature correction factors QD+

At higher temperatures, more compressor oil evaporates. When the actual working air inlet temperature differs from the reference, divide the filter capacity by the corresponding correction factors to obtain the correct capacity.

Inlet temperature °C	20	25	30	35	40	45	50	55	60
Inlet temperature °F	68	77	96	95	104	113	122	131	140
Correction factor oil-free	1	1	1	1	1	1	**1**	1	1
Correction factor oil-lubricated	1	1	1	1.2	1.5	1.7	**2.1**	2.4	2.6

Some environmental or process aspects could cause a higher amount of hydrocarbons or other volatile organic compounds in the compressed air. Contact Atlas Copco when higher concentrations can be expected.

QDT Series

Activated carbon towers for optimal oil vapor filtration

The high-efficiency activated carbon tower is capable of removing hydrocarbons, odors and oil vapor from compressed air. The activated carbon will, through adsorption, reduce the residual oil content to lower than 0.003 mg/m³. The pressure drop is low and stays minimal during the filter's lifetime.

Your benefits:

- **Maximum oil vapor removal**
  Superb activated carbon material.
- **Low pressure drop** - Optimal internal flow path.
- **High reliability** - The QDT's robust design and rigorous quality control of the activated carbon optimize filter reliability.
- **Long service intervals** - The high volume of activated carbon material ensures a long lifetime, even in very harsh working conditions.

Options

- Oil indicator ensures pure air.
- Wall mounting kit for easy installation (20-185 l/s).

Performance

	QDT
Contaminant	Oil vapor
Test method	ISO 8573-5:2001, ISO 12500-2:2007
Maximum oil carry-over (mg/m³)*	0.003
Average dry pressure drop (mbar)	125 (QDT 20-310) 72 (QDT 425-1800)
Element service	After 4,000 operating hours or 1 year (up to QDT 310) After 8,000 operating hours or 1 year (from QDT 425)
Precede with	Water separation UD+ or DD+/PD+ Dryer

* After UD+ or DD+/PD+.

QDT 20-310

QDT 425-1800

Certification

ISO 8573-5:2001

Sizing & dimensions

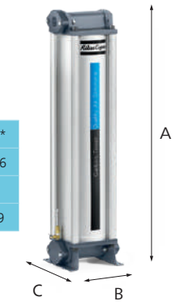
Filter size	Nominal capacity		Connections G or NPT	Dimensions						Weight	
				A		B		C			
	l/s	cfm	in	mm	in	mm	in	mm	in	kg	lbs
20	20	42	1/2	490	19	223	9	190	7	7	22
45	45	95	1	715	28	223	9	190	7	15	33
60	60	127	1	840	33	223	9	190	7	18	40
95	95	210	1	715	28	387	15	190	7	29	64
125	125	265	1 1/2	840	33	387	15	190	7	34	75
150	150	318	1 1/2	715	28	551	22	190	7	42	93
185	185	392	1 1/2	840	33	551	22	190	7	50	110
245	245	519	1 1/2	840	33	715	28	190	7	67	148
310	310	657	1 1/2	840	33	879	35	190	7	84	185
425	425	901	DN 80 3"	2148	85	710	28	600	24	264	581
550	550	1165	DN 80 3"	2190	86	710	28	670	26	302	664
850	850	1801	DN 100/4"	2320	91	724	29	805	32	391	860
1100	1100	2331	DN 100/4"	2450	97	934	37	820	32	602	1324
1800	1800	3814	DN 150/6"	2612	103	1046	41	980	39	882	1940

Correction factors

For other compressed air inlet temperatures, divide the filter capacity by the following correction factor (Kt):

Inlet temperature °C	10	15	20	25	30	35	40	45	50	55	60	65	70*	75*	80*
Inlet temperature °F	50	59	68	77	96	95	104	113	122	131	140	149	158	167	176
Correction factor oil-free	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Correction factor oil-lubricated	1	1	1	1	1	1	1.2	1.5	1.7	2.1	2.4	3	3.5	4.1	4.9

* For QDT flanged only.



For other compressed air inlet pressures, multiply the filter capacity by the following correction factor (Kp):

Inlet pressure bar	3	4	5	6	7	8	9	10	11	12	13
Inlet pressure psi	44	58	73	87	102	116	131	145	160	174	193
Correction factor	0.57	0.77	0.83	1	1	1	1	1.05	1.05	1.11	1.18

UD+ & QDT: the winning combination

The Atlas Copco UD+ - QDT filter train meets the requirements of air purity class 1 for total oil, according to ISO 8573-1:2010, in a typical compressed air installation:

UD+	QDT
Liquid oil & oil aerosol removal	Oil vapor removal
Guaranteed 0.0009 mg/m³ aerosol and liquid	Guaranteed 0.003 mg/m³ vapor
40% pressure drop reduction compared to DD+/PD+	65% pressure drop reduction compared to previous QDT
50% footprint reduction	Extremely compact compared to vessel designs

Certified filter trains

Filter train	Purity class according to ISO 8573-1:2010	Certified
UD+ - QDT - DDp+	[2:-:1]	yes
UD+ - QDT - DDp+ PDp+	[1:-:1]	yes
UD+ - QD+	[2:-:1]	yes

SFA Series

Silicone-free removal of oil aerosol, dust and oil vapor

Superb air purity is a prerequisite to safeguard your instruments and end products. Our silicone-free SFA filters efficiently prevent dry and wet dust, particulates, oil aerosol and water droplets from entering your compressed air system. The SFA series is manufactured and treated according to the high standards of silicone-free equipment, and certified by the Fraunhofer Institute as guaranteed silicone-free.

Your benefits:

- **Maximum contaminant removal** - Removal of dry and wet dust, particulates, oil aerosol and water droplets with high-efficiency glass fiber and fleece media.
- **Significant energy savings & limited system operating costs** - Optimal design and filter media allow for a low pressure drop.
- **High reliability** - Stainless-steel cores, double O-rings, epoxy-sealed caps and filter housing with anti-corrosive coating.
- **Easy maintenance** - External ribbing on the threaded housing and push-on elements.
- **Monitoring of energy use** - Differential pressure indication (indicator for sizes 9-32 l/s, gauge for sizes 44-520 l/s – optional).

Options

Filter connection kit (9-520 l/s).
Wall mounting kit (9-520 l/s).
Quick coupling (DD+ & PD+ only).
EWD no-loss electronic drain (DD+ & PD+ only).
Voltage-free contact mounted in the differential gauge (not for QD+).

Certification

Paint compatibility certificate (Fraunhofer Institute)

Sizing & dimensions

Filter size	Nominal capacity*		Maximal capacity*		Connections G or NPT	Dimensions						Free space for cartridge replacement		Weight	
						A		B		C		D			
DD+, DDp+, PD+, PDp+, QD+	l/s	cfm	l/s	cfm	in	mm	in	mm	in	mm	in	mm	in	kg	lbs
9	9	19	11	23	3/8	90	3.54	61	2.40	268	10.55	75	2.95	1	2.2
17	17	36	21	45	1/2	90	3.54	61	2.40	268	10.55	75	2.95	1.1	2.4
32	32	68	40	85	1/2	90	3.54	61	2.40	323	12.72	75	2.95	1.3	2.9
44	44	93	55	117	3/4 & 1	110	4.33	98.5	3.88	374	14.72	75	2.95	1.9	4.2
60	60	127	75	159	1	110	4.33	98.5	3.88	414	16.3	75	2.95	2.1	4.6
120	120	254	150	318	1-1/2	140	5.51	105	4.13	520	20.47	100	3.94	4.2	9.3
150	150	318	188	399	1-1/2	140	5.51	105	4.13	603	23.47	100	3.94	4.5	9.9
175	175	371	219	464	1-1/2	140	5.51	105	4.13	603	23.47	100	3.94	4.6	10.1
280	280	594	350	742	2 & 2-1/2	179	7.05	121	4.76	689	27.13	150	5.91	6.9	15.2
390	390	827	488	1035	3	210	8.27	128	5.04	791	31.14	200	7.87	11	24.2
520	520	1102	650	1378	3	210	8.27	128	5.04	961	37.83	200	7.87	12.6	27.8

* Nominal pressure: 7 bar(e)/102 psig; temperature: 20°C/68°F.

WSD Series

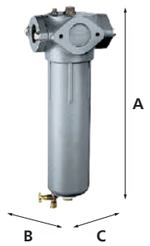
High-performance water separators

Atlas Copco's WSD prevents condensed water from building up in your air system. The water separator comes as standard with Atlas Copco's aftercoolers and can also be installed at any point in your system. Made entirely of corrosion-proof material, these cyclone-based separators remove water aerosols to protect system components such as dryers and filters. Maintenance-free and without moving parts, they come with an automatic or a manual drain.

Your benefits:

- **A reliable air system** - The corrosion-proof drain prevents condensed water from building up in your air system.
- **Minimal maintenance** - The water separator does not have moving parts and is thus maintenance-free. It comes with an automatic and a manual drain.
- **Energy savings** - The intelligent drain function monitors condensate build-up with liquid level sensors. It drains the condensate only when required to avoid using compressed air inefficiently.
- **Flexible installation** - WSD water separators can be installed at any point in your air net.

Sizing & dimensions



Type	Capacity range		Maximum working pressure		Connections	Dimensions						Weight	
						A		B		C			
	l/s	cfm	bar(e)	psi	inlet/outlet	mm	inch	mm	inch	mm	inch	kg	lbs
WSD 25	7-60	15-127	20	290	G 1	332	13.0	130	5.1	185	7.3	1.1	2.4
WSD 80	50-150	106-318	20	290	G 1½	432	17.0	130	5.1	185	7.3	3.5	7.7
WSD 250	125-350	265-742	20	290	G 2½	532	20.9	160	6.3	230	9.0	12.5	27.6
WSD 750	300-800	636-1695	20	290	83 mm*	532	20.9	160	6.3	230	9.0	14.0	30.9

* Blind flange to be machined up to this diameter.

H Series

Guaranteed air purity up to 350 bar

High-pressure filters efficiently reduce oil aerosol, dust and wet dust, particulates, water droplets and oil vapor in your compressed air stream to protect your investment, equipment and processes. Our innovative high-pressure filtration solutions are engineered to cost-effectively provide the best air purity and meet today's increasing quality demands for working pressures of up to 350 bar. All high-pressure filter housings are hydraulically tested to ensure safe and reliable operation at all times. A pressure test certificate accompanies each filter.

Your benefits:

- **Maximum contaminant removal (dry & wet dust, particulates, oil aerosol and water droplets)** - High-efficiency glass fiber and fleece media.
- **Significant energy savings & limited system operation costs** Optimal design and filter media allow for low pressure losses.
- **High reliability** - Strong and durable stainless-steel cores, double O-rings, epoxy-sealed caps and filter housing with anti-corrosive coating.

Applications

- Chemical
- Food & beverage
- Manufacturing
- Military
- Oil & gas

Performance

	DDHp+	PDHp+	DDH+	PDH+	QDH+
Contaminant	Dry dust		Oil aerosol/wet dust		Oil vapor
Test method	ISO 8573-4:2019 ISO 12500-3:2009		ISO 8573-2:2018 ISO 12500-1:2007		ISO 8573-5:2001
Maximum oil carry-over (mg/m^3)	-	-	0.08*	0.007*	0.003**
Particle removal efficiency (% at MPPS)	99.92 (0.1)	99.98 (0.06)	N/A	N/A	N/A
ISO class 8573-1	[2:-:-]	[1:-:-]	[2:-:3]	[1:-:2]	[3:-:1]
Dry pressure drop (mbar)	85	100	N/A	N/A	140
Wet pressure drop (mbar)	N/A	N/A	180	215	N/A
Element service	After 4,000 operating hours or 1 year or 350 mbar pressure drop		After 4,000 operating hours or 1 year		After 1,000 operating hours or 1 year
Precede with	N/A	DDHp+	N/A	DDH+	DDH+/PDH+

Always install a liquid water separation system in front of a filter. Water separation is not needed in the high-pressure line if there is a sufficiently low PDP in the low-pressure line (e.g. nitrogen skid, low-pressure line with adsorption dryer).

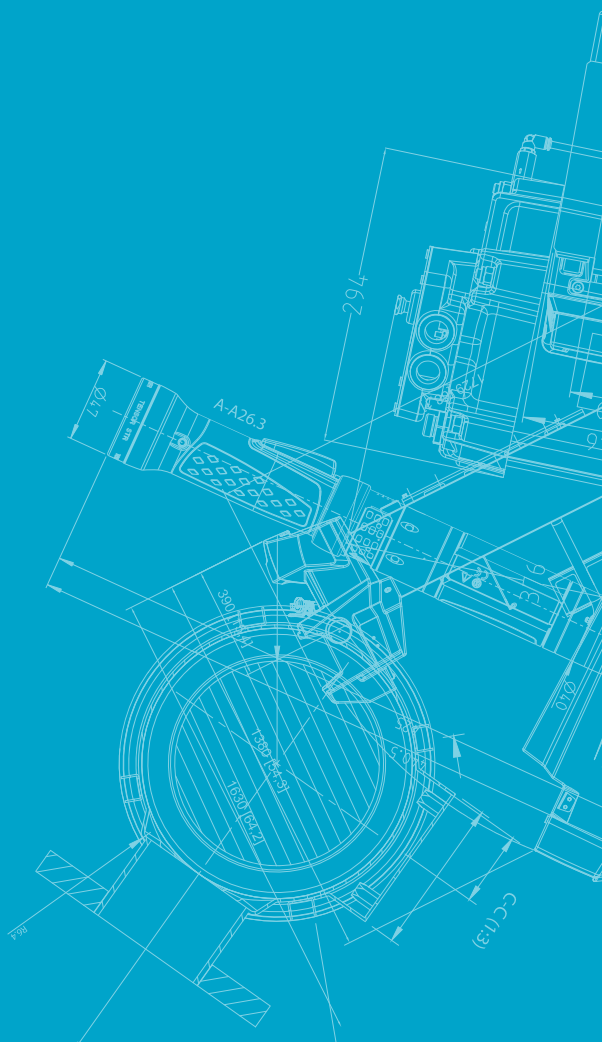
* Inlet oil concentration = 10 mg/m^3. Oil = oil aerosol and liquid.
** After DD+/PD+ with inlet oil concentration of 10 mg/m^3.

Sizing & dimensions

Filter size	Nominal capacity			Connections	Dimensions						Weight	
					A		B		C			
DDH, DDHp, PDH, PDHp, QDH	m^3/h	l/s	cfm	in	mm	in	mm	in	mm	in	kg	lbs
20 bar aluminum												
15+	54	15	32	3/8	90	3.5	80	3.1	185	7.3	1.0	2.2
32+	115	32	68	1/2	90	3.5	80	3.1	185	7.3	1.1	2.4
55+	198	55	117	1/2	90	3.5	80	3.1	240	9.4	1.3	2.9
80+	288	80	170	3/4 & 1	110	4.3	100	3.9	260	10.2	1.6	3.5
110+	396	110	233	1	110	4.3	100	3.9	300	11.8	2.1	4.6
200+	720	200	424	1 1/2	140	5.5	131	5.2	410	16.1	4.2	9.3
270+	972	270	572	1 1/2	140	5.5	131	5.2	490	19.3	4.5	9.9
330+	1188	330	699	1 1/2	140	5.5	131	5.2	490	19.3	4.6	10.1
490+	1764	490	1038	2 & 2 1/2	179	7	166	6.5	575	22.6	6.9	15.2
50 bar aluminum												
160+	160	44	94	1/4	63	2.5	63	2.5	150	5.9	0.3	0.7
250+	250	69	147	3/8	63	2.5	63	2.5	190	7.5	0.3	0.7
450+	450	125	265	1/2	114	4.5	114	4.5	305	12.0	2.6	5.7
550+	550	153	324	3/4	114	4.5	114	4.5	305	12.0	2.6	5.7
835+	835	232	491	1	114	4.5	114	4.5	395	15.6	3.3	7.3
1250+	1250	347	736	1 1/2	146	5.8	146	5.8	435	17.1	7.5	16.5
1725+	1725	479	1015	1 1/2	146	5.8	146	5.8	435	17.1	7.5	16.5
1925+	1925	535	1133	2	146	5.8	146	5.8	435	17.1	7.5	16.5
3200+	3200	889	1883	2	146	5.8	146	5.8	635	25.0	10	22.0
50 bar stainless steel												
100+	100	28	59	1/4	85	3.4	85	3.4	202	8.0	1.7	3.7
200+	200	56	118	3/8	85	3.4	85	3.4	227	8.9	2	4.4
340+	340	94	200	1/2	85	3.4	85	3.4	257	10.1	2.2	4.8
500+	500	139	294	3/4	110	4.3	110	4.3	270	10.6	4	8.8
1000+	1000	278	589	1	110	4.3	110	4.3	422	16.6	5	11.0
1700+	1700	472	1000	1 1/2	150	5.9	150	5.9	517	20.4	15	33.1
2040+	2040	567	1200	2	150	5.9	150	5.9	517	20.4	15	33.1
3400+	3400	944	2000	2	150	5.9	150	5.9	817	32.2	21	46.3
100 bar stainless steel												
100+	100	28	59	1/4	65	2.6	65	2.6	135	5.3	3.2	7.1
315+	315	88	185	1/2	65	2.6	65	2.6	250	9.8	5.6	12.3
460+	460	128	271	3/4	88	3.5	88	3.5	275	10.8	6.1	13.4
680+	680	189	400	1	135	5.3	135	5.3	265	10.4	10.5	23.1
1200+	1200	333	706	1	135	5.3	135	5.3	480	18.9	14.7	32.4
1700+	1700	472	1000	1 1/2	150	5.9	150	5.9	525	20.7	22	48.5
3400+	3400	944	2000	2	150	5.9	150	5.9	815	32.1	28	61.7
350 bar stainless steel												
48+	48	13	28	1/4	41	1.6	41	1.6	103	4.0	1.6	3.5
111+	111	31	65	1/4	65	2.6	65	2.6	135	5.3	3.2	7.1
255+	255	71	150	1/2	88.5	3.5	88.5	3.5	210	8.2	5.6	12.3
510+	510	142	300	3/4	88.5	3.5	88.5	3.5	280	10.9	6.1	13.4
750+	750	208	441	1	150	5.9	150	5.9	330	12.9	14.5	32.0
1330+	1330	369	783	1	150	5.9	150	5.9	480	18.7	17.4	38.3

Correction factors

20 bar aluminum										
Operating pressure	barg	-	-	-	-	-	14	16	18	20
	psig	-	-	-	-	-	203	232	261	290
Correction factor							0.9	0.95	1	1.05
50 bar aluminum & stainless steel										
Operating pressure	barg	4	6	8	10	15	20	30	40	50
	psig	58	87	116	145	218	290	435	581	726
Correction factor		0.14	0.22	0.28	0.34	0.47	0.56	0.7	0.85	1
100 bar stainless steel										
Operating pressure	barg	20	30	40	50	60	70	80	90	100
	psig	290	435	581	726	871	1016	1161	1306	1451
Correction factor		0.45	0.57	0.68	0.8	0.84	0.88	0.92	0.96	1
350 bar stainless steel										
Operating pressure	barg	-	-	50	100	150	200	250	300	350
	psig	-	-	726	1451	2177	2903	3628	4354	5080
Correction factor				0.73	0.78	0.82	0.87	0.91	0.96	1



LLOYD'S REGISTER · LRQA
ISO 9001 • ISO 14001
OHSAS 18001

Atlas Copco

atlascopco.com

The ultimate filtration & drying technology

Medical Sterile Filters

16 models specifically designed and manufactured to exceed the requirements of UK Health Technical Memorandum 02-01 for medical gas pipeline systems.

The Alpha Series medical sterile filters offer connections from ¼" to 3", flows of up to 1500 SCFM (2550 Nm³/h) and feature the Walker E-Coat™ finish for corrosion protection. The optimised modular design allows for multiple close coupling and is easy to install and maintain. The range is manufactured from cast aluminium alloy offering enhanced strength and robustness.

Intelligent, unique design for optimised performance

Medical sterile elements are guaranteed for a minimum of 100 sterilisations at 120°C (248°F), each element must be autoclaved before commencement of duty.

Elements are 100% integrity tested

Elements are constructed with stainless steel endcaps for compatibility with autoclave sterilisation. 100% integrity tested, each element is supplied with an Air Sterilisation certificate to guarantee the highest quality to our customers.

Tested and validated to international standards

Applications include

- Dental
- Medical
- Veterinary

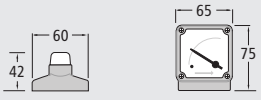
www.walkerfiltration.com

WALKER FILTRATION

Technical Specification

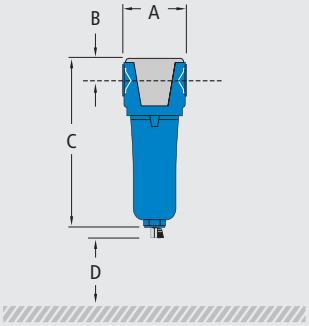
filter model	pipe size	flow rate*		dimensions (mm)				weight Kg	element model
		Nm³/h	SCFM	A	B	C	D		
A019 MS	¼	25.5	15	50	18	152	75	0.5	E0305 SR
A028 MS	¼	42.5	25	70	25	191	85	0.8	E0407 SR
A038 MS	⅜	59.5	35	70	25	191	95	0.8	E0407 SR
A058 MS	½	85.0	50	70	25	232	135	0.9	E0413 SR
A059 MS	½	119	70	100	35	276	155	2.0	E0613 SR
A078 MS	¾	144	85	100	35	276	155	2.0	E0613 SR
A109 MS	1	297	175	100	35	396	275	2.4	E0625 SR
A128 MS	1¼	476	280	122	42	460	320	3.3	E0730 SR
A158 MS	1½	545	320	122	42	460	320	3.3	E0730 SR
A159 MS	1½	680	400	146	52	482	325	4.9	E0830 SR
A208 MS	2	765	450	146	52	482	325	4.9	E0830 SR
A209 MS	2	1190	700	146	52	785	630	7.0	E0860 SR
A254 MS	2½	1445	850	210	66	595	410	9.6	E1140 SR
A340 MS	3	1530	900	210	66	595	410	9.6	E1140 SR
A360 MS	3	2125	1250	210	66	815	630	11.6	E1160 SR
A390 MS	3	2550	1500	210	66	975	785	13.1	E1175 SR

* Rated flow at 7 barg, reference conditions 1 bar (a) 20°C



65DPUGA

65DPIG



A019 MS to A390 MS

	SR	
DOP efficiency**	>99.9999%	
Particle removal	0.01 micron	
Maximum operating temperature (recommended)	120°C (50°C)	248°F (122°F)
Pressure loss - clean	100 mbar	1.5 psi
Pressure loss - change element	400 mbar	6 psi
Maximum autoclave temperature	134°C	273°F
Maximum working pressure	16 barg	232 psig
Element end cap material	stainless steel	

** as specified in HTM 02-01 medical gas pipeline systems

pressure correction factors

for maximum flow rate, multiply model flow rate by the correction factor corresponding to the minimum operating pressure

Operating pressure barg (psig)	4 (58)	5 (72)	6 (87)	7 (100)	8 (115)	10 (145)	12 (174)	14 (203)	16 (232)
7 barg - correction factor	0.76	0.84	0.92	1.00	1.07	1.19	1.31	1.41	1.51

technical notes

1	Filter element endcaps are stainless steel.
2	Direction of air flow is outside to in through the filter element.
3	Pop up indicators (65DPUG) are fitted to models A028 MS, A038 MS and A058 MS as standard. Differential pressure indicators (65DPIG) are fitted to models A059 MS to A390 MS as standard.
4	Manual drain valves are fitted to all models. Models A059 MS to A390 MS can be adapted to use ¼" drains with a reducer.
5	Medical sterile filter elements must not operate in water or oil saturated conditions.
6	Maximum steam sterilising temperature refers to the filter element ONLY. Grade SR filter elements can be steam sterilised 100 times. Each element must be autoclaved before commencement of duty.
7	Pre filtration should be used in conjuction with 0.01 micron sterile filters.
8	Threaded filters are manufactured from cast aluminium alloy and are PED 97/23/EC compliant for group 2 gases.
9	Threaded connections are Rp (BSP parallel) to ISO 7/1 or NPT to ANSI B2.1 if supplied within North America.
10	For NPT connections, add the suffix N e.g. A018MSN.
11	Filter elements should be changed every 6 months / 1000 hours (whichever comes first).
12	Filters are suitable for use with mineral and synthetic oils, plus oil-free compressed air applications.

WALKER FILTRATION

Walker Filtration Ltd Birtley Road, Washington, Tyne & Wear, NE38 9DA, UK
tel +44 (0) 191 417 7816 **fax** +44 (0) 191 415 3748 **email** sales@walkerfiltration.co.uk **web** www.walkerfiltration.com

Medical Oxygen Plant

Atlas Copco's Medical Oxygen Plant offer a cost-effective means for on-site gas generation. Thanks to PSA technology, you can generate your own, on-site oxygen of the highest purity compliant with medical standards.

Medical oxygen is an irreplaceable requirement for many basic medical procedures and treatments, and an invaluable adjunct to many other treatments. It is one of the drugs medical facilities cannot be without.

Cylinder Oxygen is bulky, which makes transportation difficult and even dangerous. Oxygen in liquid form is both voluminous and has very limited storage life.

A solution of these inconveniences is to produce oxygen on site using Atlas Copco’s new Medical Oxygen Plant (Oxyplant).

- **Medical Oxygen Plant**

Key Features & Customer Benefits

- Consisting of two independent oxygen generation lines, bank of cylinders and high pressure booster
- Plant setup according to ISO10083
- Oxygen quality according to European Pharmacopeia Oxygen 93%
- Modules are individually controlled and monitored for simplex or duplex PSA arrangements.
- Full electronic controls display output and all control parameters.
- Standard installed oxygen analyzers continuously monitor oxygen quality giving you peace of mind.

Oxygen Standards

Atlas Copco Medical Oxygen Plant is able to produce oxygen compliant with the European Pharmacopeia (EurPh) monograph for Oxygen 93 or the United States Pharmacopeia (USP) monograph for Oxygen 93. Both standards were created explicitly to permit the use of PSA produced oxygen.

Parameters	Eur Ph Oxygen 93%	ISO10083	USP Oxygen 93%	Laboratory Assay of Oxyplant
Oxygen	93.0% ± 3	>90%	>90.0 < 96.0%	90-95%
Carbon monoxide	5 ppm	5 ppm	0.001 %	0,11 ppm
Carbon dioxide	300 ppm	300 ppm	0.03 %	0,82 ppm
Water	67 ppm	67 ppm	N/S	3 ppm

Atlas Copco

On-site Industrial Gases
Nitrogen & Oxygen Generators

Sustainable Productivity

Atlas Copco

A secure supply of nitrogen and oxygen

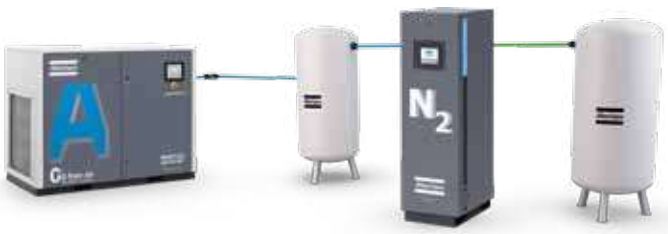
Whether your company is specialized in chemical manufacturing, electronics, laser cutting or food and beverage, a dependable supply of industrial gas is crucial. Compared to the on-demand delivery of gas bottles or tanks, on-site production of gas offers a wealth of advantages ranging from cost savings to continuous availability. This is exactly what Atlas Copco provides. Our advanced nitrogen and oxygen generators offer you the ultimate solution: flexible on-site production of industrial gas at the lowest possible cost.

BENEFITS OF ON-SITE NITROGEN AND OXYGEN

- Your own independent supply of industrial gas.
- Non-stop availability: 24 hours a day, 7 days a week.
- Significant economies of scale and lower operational costs: no rental charges, transport expenses and bulk user evaporation losses.
- No safety hazards when handling high-pressure cylinders.
- Easy integration within existing compressed air installations.

HIGH RELIABILITY

- Proven technology: simple, reliable and durable.
- The exact purity your application demands.
- Low operating costs for extra cost-efficiency.
- World-class expertise in a unique market offer from compressed air to gas.



MEETING ANY NEED

Atlas Copco's nitrogen and oxygen generators offer a cost-effective means for on-site gas generation. Including models sized for a wide range of flow rates and product purities, these generators are renowned for their exceptional versatility and efficiency. Generators based on both Pressure Swing Absorption (PSA) and membrane technologies are available.

WIDE RANGE OF APPLICATIONS

- Food & beverage (storage & packaging).
- Pharmaceutical applications.
- Plastic injection molding.
- Electronics.
- Laser cutting.
- Semiconductor manufacturing.
- Chemical applications.
- Metal heat treatment.
- Cable & optical fiber industries.
- Glass industries.
- Fire prevention.
- Aquaculture.

Membrane: Efficient all-in-one N_2 supply

Atlas Copco NGM Nitrogen Generators utilize proprietary membrane separation technology. The membrane separates compressed air into two streams: one is 95-99% pure nitrogen, and the other is oxygen enriched with carbon dioxide and other gases.

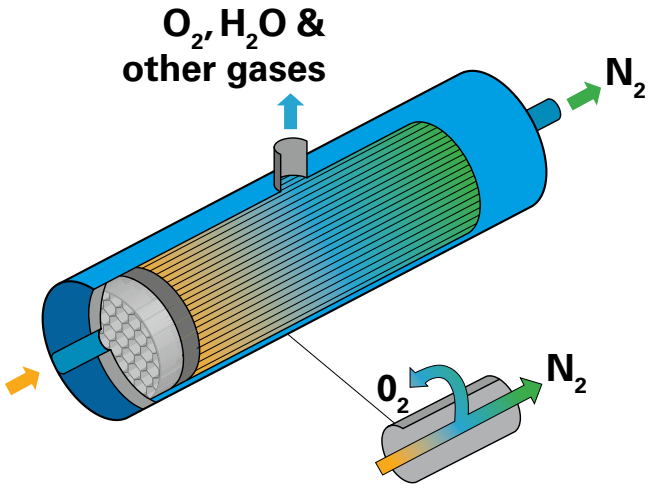
INSTANT SUPPLY OF NITROGEN BETWEEN 95% AND 99%

The generator separates air into component gases by passing inexpensive compressed air through semi-permeable membranes consisting of bundles of individual hollow fibers. Each fiber has a perfectly circular cross-section and a uniform bore through its center.

Because the fibers are so small, a great many can be packed into a limited space, providing an extremely large membrane surface area that can produce a relatively high volume product stream.

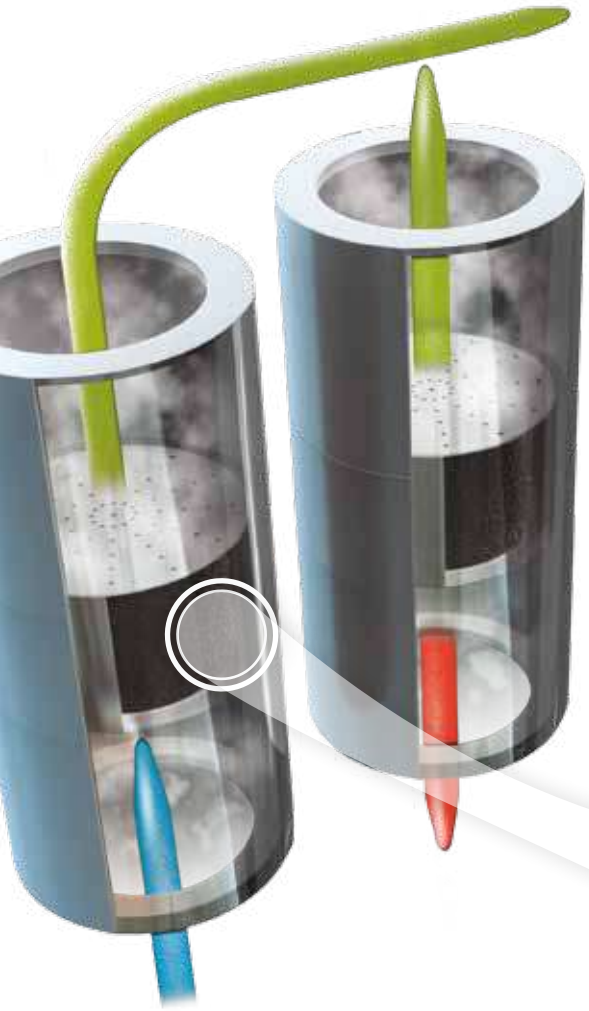
OUTSTANDINGLY DRY NITROGEN

Compressed air is introduced into the center of the fibers at one end of the module and contacts the membrane as it flows through the fiber bores. Oxygen, water vapor and other trace gases easily permeate the membrane fiber and are discharged through a permeate port while the nitrogen is contained within the membrane and flows through the outlet port. Since water vapor permeates through the membrane as well, the nitrogen gas stream is very dry, with dewpoints as low as -40°C (-40°F).



PSA: Reliable and proven

Based on Pressure Swing Adsorption (PSA) technology, Atlas Copco's NGP Nitrogen Generators and OGP Oxygen Generators provide a continuous flow of nitrogen and oxygen at desired purity.



HIGH PURITY NITROGEN SUPPLY UP TO 99.999%

Atlas Copco's NGP Nitrogen Generators use Pressure Swing Adsorption technology to isolate nitrogen molecules from other molecules in compressed air. Oxygen, CO_2, water vapor and other gases are adsorbed. The result is virtually pure nitrogen at the outlet of the generator. The NGP Series is a very cost-efficient source of nitrogen used in various industries like food and beverage, metal processing, electronics, and many others.

Clean and dry compressed air (pressurized)

Nitrogen gas (pressurized)

Oxygen exhaust (depressurized)

Adsorbent

1. Adsorbent.
2. Nitrogen (or oxygen) molecules trapped in the adsorbent.
3. Oxygen (or nitrogen) molecules passing through.

FOR ALL YOUR OXYGEN NEEDS

The OGP Oxygen Generator works in a similar way, using Pressure Swing Adsorption technology to isolate oxygen molecules from other molecules in compressed air to leave high purity oxygen at the outlet of the generator. The OGP Series provides cost-efficient oxygen for applications such as waste water treatment, ozone production, health care, and the glass industry.

Total solutions from Atlas Copco

With a full range of nitrogen and oxygen generators to choose from, Atlas Copco brings you the right supply of nitrogen and oxygen to meet your specific needs and optimize your production process at the same time.

A UNIQUE OFFER

On-site nitrogen and oxygen generation requires the most reliable and efficient compressed air solution. Drawing on vast experience, Atlas Copco has been leading the industry in compressed air technology for decades. From advanced compressors and quality air solutions over a complete range of nitrogen and oxygen generators to aftermarket and financing services, Atlas Copco brings you its world-class expertise in a unique offer.

Typical installation: compressor with integrated dryer, receiver, NGM nitrogen generator, receiver.

NGM (Membrane)

OIL-FREE COMPRESSORS

Atlas Copco, pioneer in the development of oil-free air technology, offers a full range of premium compressors delivering 100% oil-free, clean air to protect the membrane or absorbent in nitrogen generators. There is no need for extra filtration, making sure the pressure drop is kept to a minimum.

OIL-INJECTED COMPRESSORS

Integrated onto the production floor, Atlas Copco's oil-injected compressors provide a dependable flow of compressed air directly to the point of use. Built to perform in harsh environments, Atlas Copco compressors keep your production running smoothly and reliably: a very economical solution in combination with nitrogen and oxygen generators.

AIR TREATMENT

Atlas Copco has innovatively developed and improved air compression and drying techniques. Whatever your installation, application or quality requirements, Atlas Copco can offer the right air treatment solution, such as dryers (desiccant, refridgerant, membrane) and filters (coalescing, particle, active carbon).

NGP (PSA)

Typical installation: compressor with integrated dryer, pre-filters, Active Carbon Tower QDT, receiver, NGP nitrogen PSA generator, after-filter, receiver.

NGM nitrogen generators

Based on innovative membrane technology, Atlas Copco's NGM Nitrogen Generators are flexible enough to adapt to your specific applications. And with low operating costs they offer an excellent return on investment.

Ready to use

- Robust design.
- No specialist installation or commissioning.
- Fitted with pre-filtration, pressure gauges and flow meter to ensure accurate system monitoring at all times.

Cost savings

- Low operating expenses.
- No additional costs such as order processing, refills and delivery charges.
- Limited maintenance costs.

Exceptional convenience

- Continuous availability (24 hours a day, 7 days a week).
- Risk of production breakdown due to gas running out is eliminated.

All-in-one

- Fully integrated package.
- Filters and oxygen sensor as standard.

High flow capacity

Ideal for applications such as fire prevention, tire inflation, oil & gas, marine, packaging and many more.

NGP (nitrogen) & OGP (oxygen)

Atlas Copco's NGP and OGP nitrogen and oxygen generators are easy to install and use. They offer the required purity with a high flow capacity, making them suitable for a range of applications.

High flow capacity

The wide product range and gas flows exceeding 2,000 Nm^3/h (NGP) make these generators ideal for a variety of demanding applications.

Exceptional reliability

- Robust design.
- Continuous availability (24 hours a day, 7 days a week).
- Potential risk of production breakdown due to gas running out is eliminated.

Desired purity

- NGP: nitrogen concentrations from 95% to 99.999%.
- OGP: oxygen concentrations from 90% to 95%.

Ready to use

- Only requires a supply of dry compressed air.
- Plug-and-play.
- No specialist installation or commissioning.
- Fully automated and monitored including oxygen sensor as standard.
- Service-friendly.

Cost savings

- Low operating expenses.
- No additional costs such as order processing, refills and delivery charges.
- Limited maintenance costs.

Superior monitoring and control

You can rely on Atlas Copco's nitrogen and oxygen generators to perform efficiently day in, day out. To guarantee maximum uptime, continuous surveillance is a must.

PEACE OF MIND

By properly monitoring your nitrogen/oxygen system you cannot only decrease downtime but also save energy and reduce maintenance. The nitrogen and oxygen generators come with the following advanced control unit:

- 3.5-inch high-definition color display with clear pictograms and extra 4th LED indicator for service.
- 2 analogue parameters (Purity & Pressure), with the opportunity to expand with more analogue components.
- Increased reliability: user-friendly, multilingual user interface and durable keyboard.
- Graphical indication Serviceplan.
- Password protected operation parameters.
- Graphic log view on analogue parameters.
- Process illustration with valve cycle indication, graph showing pressure and current operation values.
- Remote control and connectivity functions.

Your one-stop shop for O_2 and N_2

From custom designed equipment to rental contracts, and from financing solutions to service kits, Atlas Copco is your one-stop global shop for all your compressed air, nitrogen and oxygen requirements.

CUSTOM*Design*

Atlas Copco's Custom*Design* provides bespoke compressors and systems to operate, often in remote locations, at extreme temperatures or in harsh environments. These teams draw on over 100 years of compressor development geared to creating efficient, innovative and value-packed products.

RENT YOUR EQUIPMENT

Atlas Copco Specialty Rental offers the largest fleet of 100% oil-free diesel and electric compressors in the world. In addition you can rent a wide range of generators as well as nitrogen and oxygen equipment to meet your requirements.

SINGLE SOURCE SPARE PARTS

From now on you can rely on one single source for all your spare parts. When installed by an Atlas Copco technician, his experience and training will keep downtime to the minimum and ensure your equipment is kept in top condition.

CUSTOMER FINANCING SOLUTION

Offering a one-stop solution, Atlas Copco Customer Finance makes it easier for you to complete your investment in Atlas Copco equipment. We provide competitive rates and the possibility to choose from flexible solutions to suit your needs.

IDEAL FOR A WIDE RANGE OF APPLICATIONS

- Marine
- Oil and gas
- Power generation
- Food

Options

Some applications may require or benefit from additional options and more refined control and nitrogen/oxygen treatment systems. To meet these needs, Atlas Copco has developed options and easily integrated compatible equipment providing the lowest cost nitrogen and oxygen generation.

NGM SERIES

- Permeate vent kit.
- Oil indicator.
- PDP sensor.
- Flow sensor.

NGP SERIES

- N_2 flow meter.
- Inlet PDP measurement/alarm.

OGP SERIES

- O_2 flow meter.
- Inlet PDP measurement/alarm.

NGM Series: Technical Specifications

NGM TYPE	Nitrogen purity				Dimensions (W x D x H)		Weight	
		95%	96%	97%	mm	in	kg	lbs
NGM 1	FND l/s	0.9	0.8	0.6	820 x 772 x 2090	32.3 x 30.4 x 82.3	259	571
	FND m³/h	3.3	2.7	2.1				
	FND cfm	1.9	1.7	1.3				
NGM 2	FND l/s	1.9	1.5	1.2	820 x 772 x 2090	32.3 x 30.4 x 82.3	268	591
	FND m³/h	6.7	5.4	4.2				
	FND cfm	4	3.2	2.5				
NGM 3	FND l/s	3.3	2.7	2.1	820 x 772 x 2090	32.3 x 30.4 x 82.3	285	628
	FND m³/h	11.7	9.6	7.6				
	FND cfm	7.0	5.7	4.4				
NGM 4	FND l/s	6.5	5.4	4.2	820 x 1470 x 2090	32.3 x 57.9 x 82.3	445	981
	FND m³/h	23.3	19.3	15.2				
	FND cfm	13.8	11.4	8.9				
NGM 5	FND l/s	9.7	8.0	6.3	820 x 1470 x 2090	32.3 x 57.9 x 82.3	497	1096
	FND m³/h	35.0	28.9	22.8				
	FND cfm	20.5	16.9	13.3				
NGM 6	FND l/s	13.0	10.7	8.4	820 x 1470 x 2090	32.3 x 57.9 x 82.3	535	1179
	FND m³/h	46.7	38.5	30.3				
	FND cfm	27.5	22.7	17.8				
NGM 7	FND l/s	16.2	13.3	10.5	820 x 1470 x 2090	32.3 x 57.9 x 82.3	571	1259
	FND m³/h	58.3	48.1	37.9				
	FND cfm	34.3	28.2	22.2				

FND: Free Nitrogen Delivery
Reference conditions:
Compressed air effective inlet pressure: 8 bar(g)/116 psi(g).
Nitrogen outlet pressure: 6.5 bar(g)/94 psi(g).
Ambient air temperature: 20°C/68°F
Pressure dewpoint inlet air: 3°C/37°F.
Pressure dewpoint nitrogen: -40°C/-40°F.
Unit inlet air quality 1.4.1 according to ISO 8573-1:2010.
Minimum refrigerant dryer required to precondition inlet air.
Typical nitrogen quality 1.2.1 according to ISO 8573-1:2010.

Operating limits:
Minimum ambient temperature: 5°C/41°F.
Maximum ambient temperature: 50°C/122°F.
Maximum compressed inlet air pressure 13 bar(g)/189 psi(g).

NGM 1-7

Please check the table above for detailed dimensions.

NGP Series: Technical Specifications

NGP TYPE		Nitrogen purity FND (Free Nitrogen Delivery)									Dimensions (W x D x H)		Weight	
		95%	97%	98%	99%	99.50%	99.90%	99.95%	99.99%	99.999%	mm	in	kg	lbs
NGP 4	FND l/s	2.8	2.2	1.8	1.4	1.2	0.8	0.5	0.5	0.2	720 x 600 x 1530	28.3 x 26.6 x 60.2	100	220
	FND m³/h	10.0	7.9	6.6	5.0	4.3	2.7	2.3	2.3	0.7				
	FND cfm	5.9	4.7	3.8	3.0	2.5	1.7	1.1	1.1	0.4				
NGP 9	FND l/s	5.8	4.4	4.0	2.8	2.5	1.7	1.1	0.8	0.5	720 x 600 x 1530	28.3 x 26.6 x 60.2	140	308
	FND m³/h	20.9	15.8	14.2	10.2	9.2	6.1	5.0	3.1	1.6				
	FND cfm	12.3	9.3	8.5	5.9	5.3	3.6	2.3	1.7	1.1				
NGP 11	FND l/s	7.9	6.2	5.7	4.2	3.2	2.4	1.4	1.3	0.7	720 x 600 x 1550	28.3 x 26.6 x 61.0	160	353
	FND m³/h	28.5	22.4	20.3	15.3	11.4	8.6	6.2	4.7	2.5				
	FND cfm	16.7	13.1	12.1	8.9	6.8	5.1	3.0	2.8	1.5				
NGP 15	FND l/s	8.8	7.1	6.4	4.8	4.2	2.5	2.0	1.6	0.8	750 x 750 x 1811	28.3 x 28.3 x 71.3	230	507
	FND m³/h	31.5	25.4	22.9	17.3	15.3	9.2	8.7	5.6	3.1				
	FND cfm	18.6	15.0	13.6	10.2	8.9	5.3	4.2	3.4	1.7				
NGP 21	FND l/s	12.7	10.2	9.0	7.1	5.9	3.5	2.5	1.7	1.0	750 x 750 x 1811	28.3 x 28.3 x 71.3	230	507
	FND m³/h	45.8	36.6	32.6	25.4	21.4	12.7	11.2	7.4	4.3				
	FND cfm	26.9	21.6	19.1	15.0	12.5	7.4	5.3	3.6	2.1				
NGP 30	FND l/s	20.4	16.7	14.3	11.0	8.5	5.5	4.0	2.4	1.2	800 x 850 x 1620	31.5 x 33.5 x 63.8	400	882
	FND m³/h	73.3	59,0	51.4	39.7	30.5	19.8	17.5	8.6	4.3				
	FND cfm	43.2	35.4	30.3	23.3	18.0	11.6	8.5	5.1	2.5				
NGP 40	FND l/s	25.4	20.6	17.9	13.9	11.3	6.9	5.1	3.4	1.7	800 x 850 x 2105	31.5 x 33.5 x 82.9	440	970
	FND m³/h	91.6	74.1	64.3	50.1	40.7	24.8	22.4	12.2	6.1				
	FND cfm	53.8	43.6	37.9	29.4	23.9	14.6	10.8	7.2	3.6				
NGP 47	FND l/s	29.7	23.5	20.6	16.1	13.3	8.2	5.9	3.7	1.9	800 x 1120 x 2000	31.5 x 44.1 x 78.7	750	1653
	FND m³/h	106.8	84.4	74.3	58.0	47.8	29.5	26.0	13.2	6.9				
	FND cfm	62.9	49.8	43.6	34.1	28.2	17.4	12.5	7.8	4.0				
NGP 62	FND l/s	36.7	31.1	26.9	20.9	17.5	10.5	7.6	4.8	2.1	800 x 1120 x 2000	31.5 x 44.1 x 78.7	750	1653
	FND m³/h	132.3	111.9	96.6	75.3	63.1	37.6	33.5	17.3	7.6				
	FND cfm	77.7	65.9	57.0	44.3	37.1	22.2	16.1	10.2	4.4				
NGP 73	FND l/s	43.8	36.2	31.4	24.6	20.6	12.2	9.0	5.7	3.1	860 x 1190 x 2299	33.9 x 46.9 x 90.5	900	1984
	FND m³/h	157.7	130.2	112.9	88.5	74.3	43.7	39.7	20.3	11.2				
	FND cfm	92.8	76.7	66.5	52.1	43.6	25.8	19.1	12.1	6.6				
NGP 92	FND l/s	56.5	47.2	41.0	32.5	26.0	15.5	11.3	7.1	4.0	860 x 1330 x 2299	33.9 x 52.4 x 90.5	1150	2535
	FND m³/h	203.5	169.9	147.5	117.0	93.6	56,0	49.6	31.0	17.3				
	FND cfm	119.7	100.0	86.8	68.8	55.1	32.8	23.9	15.0	8.5				
NGP 112	FND l/s	67.8	55.1	48.0	37.9	31.7	18.7	14.1	9.9	5.7	1000 x 1640 x 2480	39.4 x 64.6 x 97.6	1850	4079
	FND m³/h	244.2	198.4	173.0	136.3	113.9	67.1	62.1	35.6	20.3				
	FND cfm	143.6	116.7	101.7	80.3	67.1	39.6	29.9	21.0	12.1				
NGP 185	FND l/s	113.0	90.4	79.1	61.6	52.3	36.7	31.1	19.2	8.5	1000 x 1765 x 2530	39.4 x 69.5 x 99.6	2150	4740
	FND m³/h	406.9	325.6	284.9	221.8	188.2	132.3	136.3	69.2	30.5				
	FND cfm	239.3	191.5	167.5	130.5	110.8	77.7	65.9	40.7	18.0				
NGP 250	FND l/s	161.1	127.2	102.0	86.2	70.7	48.0	35.3	24.0	10.2	1000 x 1965 x 2970	39.4 x 77.4 x 117.0	3200	7055
	FND m³/h	579.9	457.8	367.3	310.3	254.3	173,0	155.7	86.5	36.6				
	FND cfm	341.2	269.4	216.0	182.6	149.7	101.7	74.8	50.8	21.6				
NGP 420	FND l/s	274.1	214.8	175.2	147.0	118.7	79.1	57.9	39.6	17.2	1240 x 2520 x 3160	48.8 x 99.2 x 124.4	4200	9259
	FND m³/h	986.8	773.2	630.8	529.0	427.3	284.9	254.3	142.2	62.1				
	FND cfm	580.5	454.9	371.1	311.3	251.4	167.5	122.6	83.9	36.4				
NGP 550	FND l/s	353.2	279.8	233.2	195.0	154.0	107.4	82.0	54.3	22.9	1420 x 2880 x 3330	55.9 x 113.4 x 131.1	4900	10803
	FND m³/h	1271.7	1007.2	839.3	702.0	554.5	386.6	360.1	195.3	82.4				
	FND cfm	748.1	592.6	493.9	413.0	326.2	227.5	173.7	115.0	48.5				
NGP 900	FND l/s	551.1	409.8	353.3	296.7	254.3	163.9	121.5	84.8	34.5	2480 x 2520 x 3160	97.6 x 99.2 x 124.4	8400	18519
	FND m³/h	1983.9	1475.2	1271.7	1068.2	915.6	590.1	534.1	305.2	124.1				
	FND cfm	1167.2	868.0	748.3	628.4	538.6	347.1	257.3	179.6	73.1				
NGP 1100	FND l/s	734.8	565.2	452.2	381.5	310.9	197.8	144.1	107.4	36.7	2840 x 2880 x 3330	111.8 x 113.4 x 131.1	9800	21605
	FND m³/h	2645.1	2034.7	1627.8	1373.4	1119.1	712.2	632.8	386.6	132.3				
	FND cfm	1556.3	1197.1	957.8	808.0	658.5	418.9	305.2	227.5	77.7				

FND: Free Nitrogen Delivery
Reference conditions:
Compressed air effective inlet pressure: 7.5 bar(g)/108 psi(g).
Nitrogen outlet pressure: 6 bar(g)/87 psi(g).
Ambient air temperature: 20°C/68°F.
Pressure dewpoint inlet air: 3°C/37°F.
Pressure dewpoint nitrogen: -50°C/-58°F.
Unit inlet air quality 1.4.1 according to ISO 8573-1:2010.
Minimum refrigerant dryer required to precondition inlet air.
Typical nitrogen quality 1.2.1 according to ISO 8573-1:2010.

Operating limits:
Minimum ambient temperature: 5°C/41°F.
Maximum ambient temperature: 45°C/113°F.
Maximum compressed inlet air pressure 10 bar(g)/145 psi(g).

NGP 4-1100

Please check the table above for detailed dimensions.

OGP Series: Technical Specifications

OGP TYPE	Oxygen purity FOD (Free Oxygen Delivery)				Dimensions (W x D x H)		Weight	
		90%	93%	95%	mm	in	kg	lbs
OGP 2	FOD. l/s	0.6	0.5	0.4	600 x 600 x 1550	23.6 x 23.6 x 61.0	100	220
	FOD. m³/h	2.1	1.6	1.5				
	FOD cfm	1.3	1.1	0.8				
OGP 3	FOD. l/s	0.9	0.7	0.7	600 x 600 x 1600	23.6 x 23.6 x 63.0	150	331
	FOD. m³/h	3.2	2.5	2.5				
	FOD cfm	1.9	1.5	1.5				
OGP 4	FOD. l/s	1.1	1,0	0.9	600 x 600 x 1650	23.6 x 23.6 x 65.0	180	397
	FOD. m³/h	4,0	3.6	3.2				
	FOD cfm	2.3	2.1	1.9				
OGP 5	FOD. l/s	1.3	1.2	1.1	700 x 700 x 1900	27.6 x 27.6 x 74.8	230	507
	FOD. m³/h	4.7	4.3	4,0				
	FOD cfm	2.8	2.5	2.3				
OGP 6	FOD. l/s	1.8	1.6	1.5	800 x 900 x 1750	31.5 x 35.4 x 68.9	400	882
	FOD. m³/h	6.5	5.8	5.4				
	FOD cfm	3.8	3.4	3.2				
OGP 8	FOD. l/s	2.2	2,0	1.9	800 x 900 x 1750	31.5 x 35.4 x 68.9	700	1543
	FOD. m³/h	7.9	7.2	6.8				
	FOD cfm	4.7	4.2	4.0				
OGP 10	FOD. l/s	2.7	2.5	2.3	900 x 1200 x 2100	35.4 x 47.2 x 82.7	950	2094
	FOD. m³/h	9.7	9,0	8.3				
	FOD cfm	5.7	5.3	4.9				
OGP 14	FOD. l/s	4,0	3.7	3.4	900 x 1200 x 2100	35.4 x 47.2 x 82.7	950	2094
	FOD. m³/h	14.4	13.3	12.2				
	FOD cfm	8.5	7.8	7.2				
OGP 18	FOD. l/s	4.3	5.1	5.1	900 x 1300 x 2400	35.4 x 51.1 x 94.5	1150	2535
	FOD. m³/h	15.5	18.4	18.4				
	FOD cfm	9.1	10.8	10.8				
OGP 20	FOD. l/s	5.7	5.4	5.1	1000 x 1300 x 2400	39.4 x 51.1 x 94.5	1150	2535
	FOD. m³/h	20.5	19.4	18.4				
	FOD cfm	12.1	11.4	10.8				
OGP 23	FOD. l/s	6.5	5.9	5.7	1000 x 1300 x 3200	39.4 x 51.1 x 126.0	1350	2976
	FOD. m³/h	23.4	21.2	20.5				
	FOD cfm	13.8	12.5	12.1				
OGP 29	FOD. l/s	8.1	7.7	7.3	1000 x 2000 x 2500	39.4 x 78.7 x 98.4	1850	4079
	FOD. m³/h	29.2	27.7	26.3				
	FOD cfm	17.2	16.3	15.5				
OGP 35	FOD. l/s	9.8	9.2	8.8	1000 x 2000 x 2500	39.4 x 78.7 x 98.4	2150	4740
	FOD. m³/h	35.3	33.1	31.7				
	FOD cfm	20.8	19.5	18.6				
OGP 45	FOD. l/s	12.6	11.9	10.9	1000 x 2000 x 3400	39.4 x 78.7 x 134.0	3500	7716
	FOD. m³/h	45.4	42.8	39.2				
	FOD cfm	26.7	25.2	23.1				
OGP 55	FOD. l/s	15.5	14.4	13.6	1000 x 2000 x 3400	39.4 x 78.7 x 134.0	3500	7716
	FOD. m³/h	55.8	51.8	49,0				
	FOD cfm	32.8	30.5	28.8				
OGP 65	FOD. l/s	18.4	17.8	15.8	1000 x 2000 x 3400	39.4 x 78.7 x 134.0	3500	7716
	FOD. m³/h	66.2	64.1	56.9				
	FOD cfm	39.0	37.7	33.5				
OGP 84	FOD. l/s	23.7	22.0	20.6	2400 x 2200 x 3200	94.5 x 86.6 x 126.0	4200	9259
	FOD. m³/h	85.3	79.2	74.2				
	FOD cfm	50.2	46.6	43.6				
OGP 105	FOD. l/s	29.7	28.3	26,0	2400 x 2400 x 3300	94.5 x 94.5 x 130.0	4900	10803
	FOD. m³/h	106.9	101.9	93.6				
	FOD cfm	62.9	59.9	55.1				
OGP 160	FOD. l/s	43.8	43.0	39.9	4000 x 4000 x 3200	157.5 x 157.5 x 126.0	8000	17637
	FOD. m³/h	157.7	154.8	143.6				
	FOD cfm	92.8	91.1	84.5				
OGP 200	FOD. l/s	56.6	52.3	48.6	4000 x 4000 x 3300	157.5 x 157.5 x 130.0	9400	20723
	FOD. m³/h	203.8	188.3	175.0				
	FOD cfm	119.9	110.8	102.9				

FOD: Free Oxygen Delivery
Reference conditions:
Compressed air effective inlet pressure: 7.5 bar(g)/108 psi(g).
Oxygen outlet pressure: 5 bar(g)/72 psi(g).
Ambient air temperature: 20°C/68°F.
Pressure dewpoint inlet air: 3°C/37°F.
Pressure dewpoint oxygen -50°C/-58°F.
Unit inlet air quality 1.4.1 according to ISO 8573-1:2010.
Minimum refrigerant dryer required to precondition inlet air.
Typical oxygen quality 1.2.1 according to ISO 8573-1:2010.

Operating limits:
Minimum ambient temperature: 5°C/41°F.
Maximum ambient temperature: 45°C/113°F.
Maximum compressed inlet air pressure 10 bar(g)/145 psi(g).

OGP 2-200
Please check the table above for detailed dimensions.

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Генераторы азота и кислорода

ГАРАНТИРОВАННОЕ СНАБЖЕНИЕ АЗОТОМ И КИСЛОРОДОМ

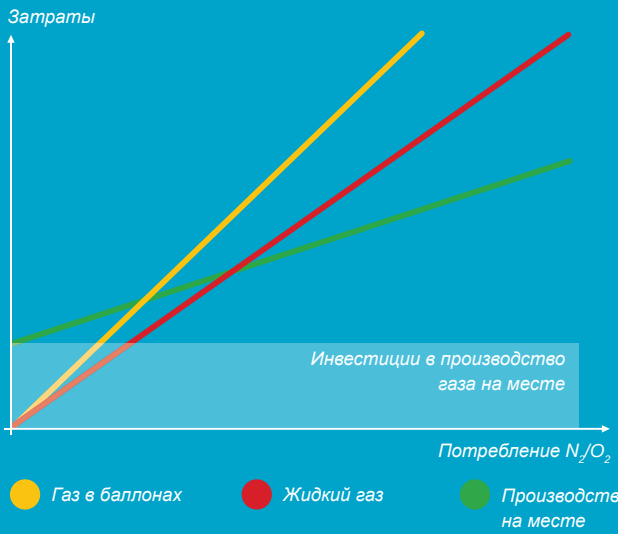
Надёжная подача промышленного газа играет критически важную роль в химической и электронной промышленности, лазерной резке или при производстве пищевых продуктов и напитков. Производство газа на месте обладает множеством преимуществ по сравнению с использованием газовых баллонов или резервуаров с сжиженным газом: от снижения затрат до постоянной готовности к работе. Высокотехнологичные азотные и кислородные генераторы от компании «Атлас Копко» — это оптимальное решение: гибкое производство промышленных газов при наименьших затратах.

Сравнение стоимости производства газа на месте потребления с жидким газом или газом в баллонах

- Ваше независимое производство промышленного газа.
- Постоянная готовность к работе: круглосуточно, 7 дней в неделю.
- Значительная экономия и уменьшение эксплуатационных расходов: нет расходов на аренду, транспорт, отсутствие потерь из-за испарения при хранении.
- Безопасное использование баллонов под высоким давлением.
- Простая интеграция с имеющимися на предприятии системами сжатого воздуха.

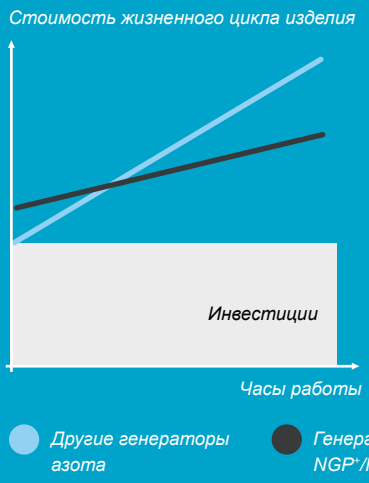
Жидкий газ/ газ в баллонах	Производство азота на месте потребления
Аренда ёмкости	Инвестиции
N_2	Энергозатраты
Транспортировка	Обслуживание
0.1-0.8 евро/м³(*)	0.02-0.15 евро/м³(**)
N_2: 99.999%	N_2: 95-99.999%

(*) Среднее по рынку, может применяться другое ценообразование.
(**) В зависимости от чистоты и стоимости электроэнергии.



Высокая надёжность

- Проверенная технология: простая, надёжная и долговечная.
- В точном соответствии с требованиями чистоты азота для вашего применения.
- Дополнительная выгода благодаря низким расходам на эксплуатацию.
- Опыт мирового уровня в уникальном предложении: от сжатого воздуха до производства газа.



Показатель производительности азота от 1,8 (при 95%) до 5,5 (при 99, 999%) и специальный алгоритм управления продолжительностью цикла позволяют снизить эксплуатационные расходы на 50% по сравнению с другими генераторами азота.

Новое поколение мембранных генераторов и генераторов с технологией PSA

Новейшие генераторы мембранного типа и генераторы с технологией короткоцикловой адсорбции (PSA) от компании «Атлас Копко» обладают дополнительными преимуществами по сравнению с существующей линейкой. В стоимость жизненного цикла изделия входят затраты на первоначальные инвестиции при установке независимого производства газа, стоимость сервисных работ и электроэнергии. Серия NGP/NGM отличается самым низким уровнем инвестиций. Однако при увеличении времени работы оборудования рекомендуется перейти на линейку NGP+/NGM+, чтобы снизить расходы на электроэнергию.

Широкий диапазон применения

- Производство пищевых продуктов и напитков (хранение и упаковка).
- Фармацевтика.
- Литье пластмассы под давлением. Заливка пластмассы в форму под давлением.
- Электронная промышленность.
- Лазерная резка.
- Производство полупроводников.
- Химическая промышленность.
- Металообработка.
- Производство кабелей и оптоволокна.
- Стекольная промышленность.
- Пожаротушение.
- Аквакультура.

ГЕНЕРАТОРЫ АЗОТА МЕМБРАННОГО ТИПА: КОМПАКТНОЕ РЕШЕНИЕ ДЛЯ ПРОИЗВОДСТВА АЗОТА, ВКЛЮЧАЮЩЕЕ ВСЕ НЕОБХОДИМОЕ

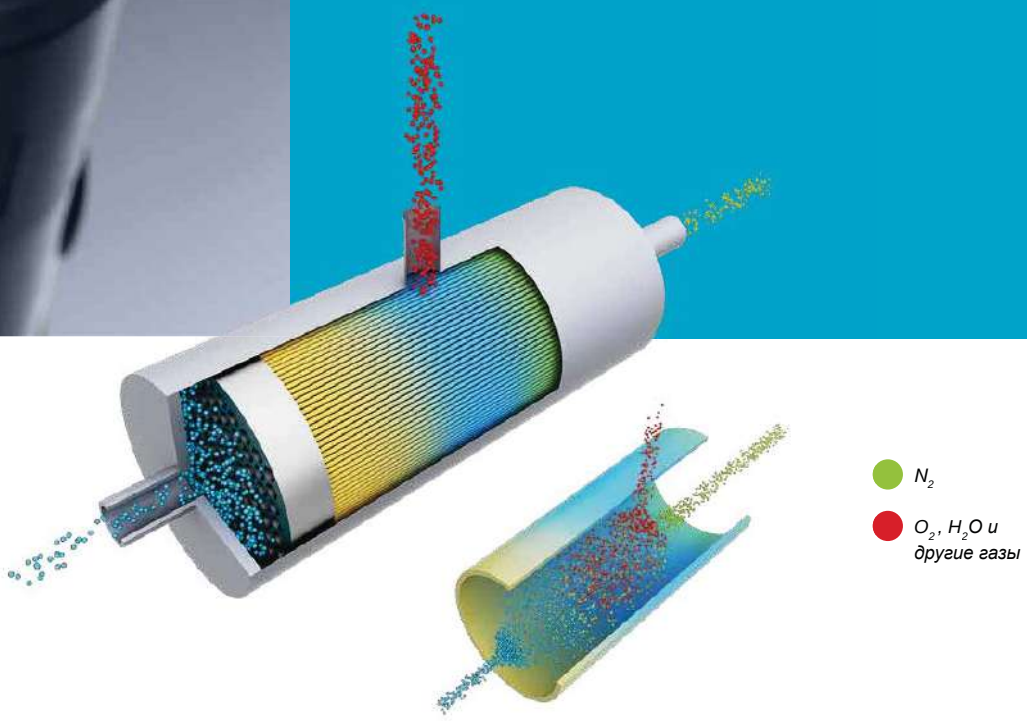
В генераторах азота серии NGM/NGM+ от компании «Атлас Копко» используется запатентованная технология разделения воздуха с помощью мембраны. Мембрана разделяет сжатый воздух на два потока: азот с чистотой 95-99% и кислород, насыщенный углекислым и другими газами.

Мгновенное производство азота чистотой от 95% до 99%

Генератор разделяет воздух на компоненты, пропуская недорогой сжатый воздух через полупроницаемые мембраны, которые состоят из групп полых волокон. Все волокна имеют абсолютно круглое сечение с одинаковым отверстием по центру. За счёт малого размера большое количество волокон может быть размещено в ограниченном пространстве, что обеспечивает очень большую площадь мембранной поверхности, благодаря чему можно создать относительно высокий объём потока продукта.

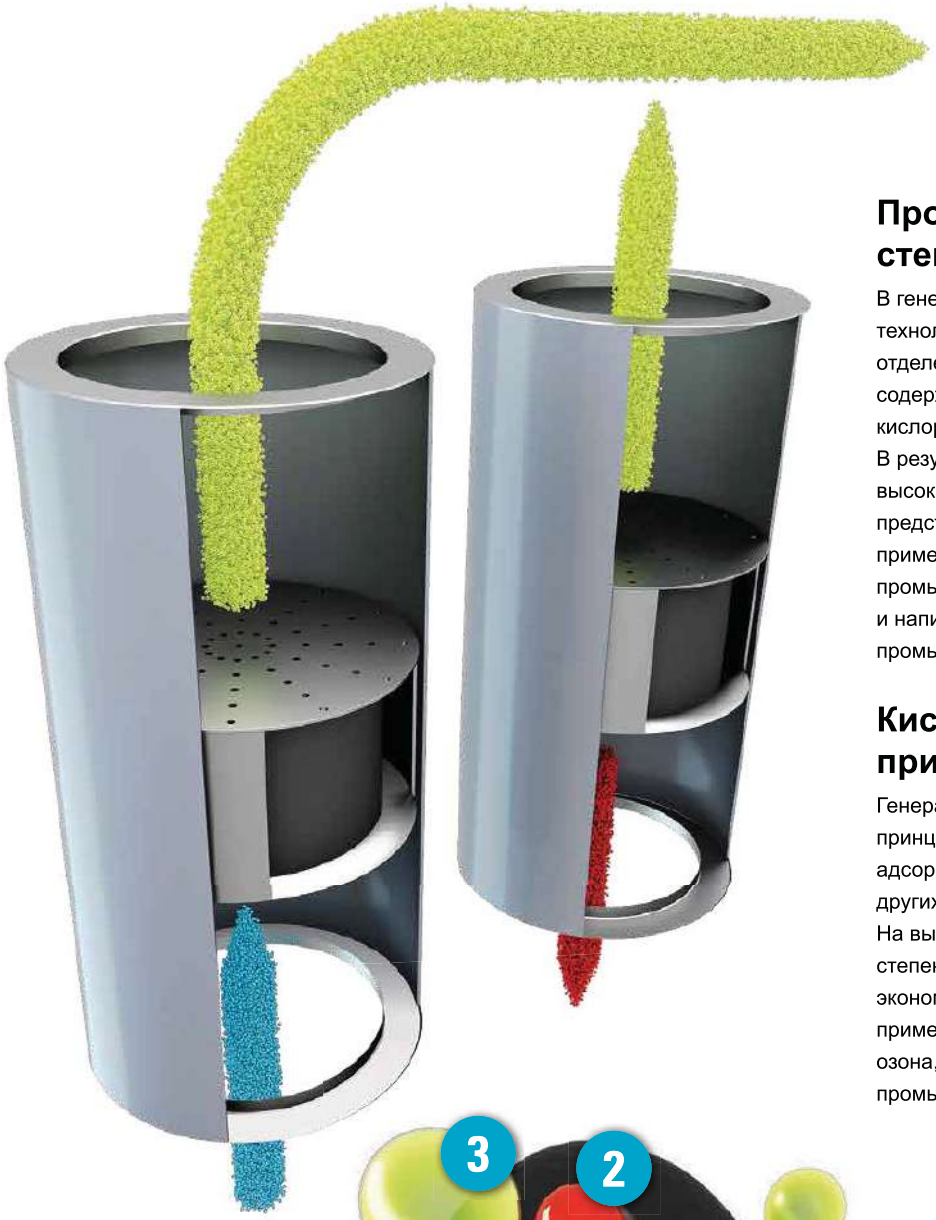
Исключительно сухой азот

Сжатый воздух с одной стороны модуля мембраны поступает в центр волокона и контактирует с мембраной по мере прохождения через неё. Кислород, пары воды и другие газы легко проникают сквозь поры волокна мембраны и выводятся через специальное отверстие, а азот удерживается внутри мембраны и выходит через выходное отверстие. Поскольку пары воды также проникают сквозь поры волокна мембраны, азот осушается и имеет точку росы -40°C.



ТЕХНОЛОГИЯ PSA: НАДЁЖНАЯ И ПРОВЕРЕННАЯ

Генераторы азота NGP/NGP⁺ и генераторы кислорода OGP с технологией короткоцикловой адсорбции (PSA) от компании «Атлас Копко» обеспечивают постоянный поток азота и кислорода с необходимым уровнем чистоты.



Производство азота высокой степени чистоты до 99.999%

В генераторах азота NGP/NGP⁺ используется технология короткоцикловой адсорбции для отделения молекул азота от других молекул, содержащихся в сжатом воздухе. Адсорбируются кислород, углекислый газ, пары воды и другие газы. В результате на выходе установки получается азот высокой степени чистоты. Серия NGP/NGP⁺ представляет собой экономичный источник азота, применяемый в различных отраслях промышленности: производство пищевых продуктов и напитков, металлообработка, электронная промышленность и прочие.

Кислород для ваших применений

Генератор кислорода OGP работает по тому же принципу, используя технологию короткоцикловой адсорбции для отделения молекул кислорода от других молекул, содержащихся в сжатом воздухе. На выходе установки получается кислород высокой степени чистоты. Серия OGP представляет собой экономичный источник кислорода, который применяется в очистке сточных вод, производстве озона, здравоохранении и стекольной промышленности.

- *Чистый и сухой сжатый воздух (под давлением)*
- *Газообразный азот (под давлением)*
- *Выход кислорода (не под давлением)*
- *Адсорбент*

1. *Адсорбент*
2. *Молекулы азота (или кислорода), оставшиеся в адсорбенте*
3. *Отфильтрованные молекулы азота (или кислорода)*

КОМПЛЕКСНЫЕ РЕШЕНИЯ ОТ «АТЛАС КОПКО»

За счёт широкого выбора генераторов кислорода и азота компания «Атлас Копко» может предложить вам подходящий вариант производства азота и кислорода в соответствии с индивидуальными требованиями, оптимизируя производственный процесс.

Уникальное предложение

Для производства азота и кислорода на месте необходимо наиболее надёжные и эффективные компрессорные решения. Благодаря богатому опыту «Атлас Копко» десятилетиями занимает лидирующее положение на рынке технологий сжатого воздуха. «Атлас Копко» представляет вам экспертные знания мирового уровня в виде уникального предложения: от передовых компрессоров и решений для получения качественного воздуха, полного ассортимента генераторов азота и кислорода до сервсиного обслуживания и финансовых услуг.

Типовая установка: компрессор с встроенным осушителем, фильтр грубой очистки UD+, фильтр с активированным углём QDT, пылевой фильтр, ресивер, азотный генератор NGP с технологией PSA, ресивер.

Безмасляные компрессоры

Компания «Атлас Копко» является новатором в разработке технологий для подготовки безмасляного воздуха. Результатом этого стал полный ассортимент компрессоров, обеспечивающих подачу 100% безмасляного и чистого воздуха для защиты мембран и адсорбента в азотных генераторах. Дополнительная фильтрация не требуется, что гарантирует минимальное падение давления.

Маслосмазываемые компрессоры

На производственной площадке маслосмазываемые компрессоры компании «Атлас Копко» гарантируют надёжную подачу сжатого воздуха непосредственно на место его использования. Компрессоры компании «Атлас Копко» предназначены для работы в тяжёлых условиях и обеспечивают бесперебойность и надёжность вашего производственного процесса. Это очень экономичное решение в сочетании с азотными и кислородными генераторами.

NGP⁺ (PSA)

Подготовка воздуха

Компания «Атлас Копко» разработала и усовершенствовала технологии сжатия и осушения воздуха. Независимо от установки, области применения и требований к качеству компания «Атлас Копко» способна предложить подходящее решение по подготовке воздуха: осушители (адсорбционные, рефрижераторные холодильные и мембранные) и фильтры (коалесцирующие, тонкой очистки и с активированным углём).

NGM⁺ (мембранный)

Типовая установка: компрессор с встроенным осушителем, ресивер, азотный генератор NGM⁺, ресивер.

ГЕНЕРАТОРЫ АЗОТА МЕМБРАННОГО ТИПА (NGM, NGM+)

За счёт применения мембранной технологии генераторы азота от «Атлас Копко» достаточно легко адаптировать к конкретному применению. При низких расходах на эксплуатацию они отличаются превосходными показателями окупаемости инвестиций.

Простота эксплуатации

- Достаточно только обеспечить подачу сухого сжатого воздуха.
- Нет необходимости в вызове специалиста для установки и ввода в эксплуатацию.
- Оснащены фильтром грубой очистки и измерителем расхода азота для точного системного контроля при любых условиях.

Снижение затрат

- Низкие расходы на эксплуатацию.
- Отсутствие дополнительных затрат на обработку заказа жидкого или газообразного азота, дозаправки и доставку.
- Незначительные расходы на техническое обслуживание.

Исключительное удобство

- Постоянная готовность к работе (круглосуточно, 7 дней в неделю).
- Исключается риск остановки производства из-за дефицита газа.

Необходимая чистота

- Подача азота согласно вашим потребностям: содержание кислорода от 5% до 0.5%.
- Очень простая настройка для других уровней чистоты.

«Всё в одном»

- Интегрированный блок фильтров грубой и тонкой очистки.
- Датчик кислорода в стандартной комплектации.

Высокая производительность

Идеально подходит для применения в системах пожаротушения, накачивания шин, в нефтегазовой отрасли, на морских судах, при упаковке и многих других отраслях.

Долгий срок службы

- Без износа.
- Без нагревателя.
- Стабильная (неизменная) эффективность в течение длительного времени.

ГЕНЕРАТОРЫ АЗОТА И КИСЛОРОДА С ТЕХНОЛОГИЕЙ PSA (NGP, NGP⁺, OGP)

Азотные и кислородные генераторы серии NGP, NGP⁺ и OGP от «Атлас Копко» просты в установке и в работе. Они обеспечивают необходимую чистоту при высокой производительности, что позволяет использовать их в большом количестве областей применения.

Высокая производительность

Широкий ассортимент продукции и производительность газа более 2,000 Нм³/ч (NGP/NGP⁺) делают эти генераторы идеальным решением для различных областей применения с высокими требованиями к оборудованию.

Готовность к эксплуатации

- Достаточно только обеспечить подачу осушенного сжатого воздуха.
- Технология "Подключи и работай".
- Нет необходимости в вызове специалиста для установки и ввода в эксплуатацию.
- Полная автоматизация и контроль, датчик остаточного содержания кислорода входит в стандартную комплектацию.
- Удобство в обслуживании.

Необходимая чистота

- NGP/NGP⁺: чистота азота от 95% до 99.999%.
- OGP: чистота кислорода от 90% до 95%.

Исключительное удобство

- Надёжная конструкция.
- Постоянная готовность к работе (круглосуточно, 7 дней в неделю).
- Исключается риск остановки производства из-за дефицита газа.

Снижение затрат

- Низкие расходы на эксплуатацию.
- Отсутствие дополнительных затрат на обработку заказа жидкого или газообразного азота, дозаправки и доставку.
- Незначительные расходы на техническое обслуживание.

НОВОЕ ПОКОЛЕНИЕ ГЕНЕРАТОРОВ АЗОТА NGP+

1

Контроль качества подаваемого воздуха с автоматическими защитными функциями

- Температура.
- Давление.
- Точка росы под давлением.
- Автоматическое стравливание воздуха в случае загрязнения. (отклонений от требуемых параметров)

2

Исключительная энергоэффективность

Коэффициент воздух/азот от 1,8 (при 95% N_2) до 5.5 (при 99.999% N_2).

3

Автоматический запуск

- Клапан минимального давления и байпасное сопло для быстрого запуска.
- Исключается риск избыточного потока и повреждения угольного молекулярного сита.

4

Угольное молекулярное сито (УМС) высочайшего качества

- Высокая плотность адсорбента.
- Компактная подпружиненная загрузка.
- Выравнивание давления азота сверху и снизу колонны.
- Защита обеспечивается специальным датчиком давления.

9

Наиболее полная комплектация поставки

- Расходомер азота в стандартной комплектации.
- Датчик кислорода циркониевого типа с длительным сроком службы.
- Редукционный клапан давления азота на выходе из генератора.

8

Автоматическая регулировка и постоянный уровень чистоты

- Автоматическая регулировка под заданное давление и чистоту азота.
- Максимально простое изменение уровня чистоты азота.
- Сброс некондиционного азота.

7

Управление и мониторинг

- Удалённый запуск-останов.
- Modbus, Profibus и Ethernet.
- **SMART**LINK.

6

Повышение давления обратным потоком

- В фазе повышения давления в колонне генератора вместо воздуха используется азот.
- Угольное молекулярное сито не загрязняется кислородом перед началом фазы адсорбции.

5

Максимальная экономия энергии

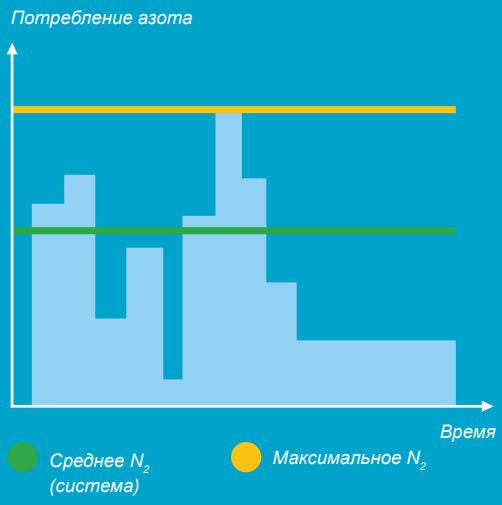
- В случае отсутствия потребления азота включается режим ожидания.
- Алгоритм управления продолжительностью цикла:
  - увеличение продолжительности цикла при низком потреблении азота
  - снижение потребления воздуха при низком потреблении азота.

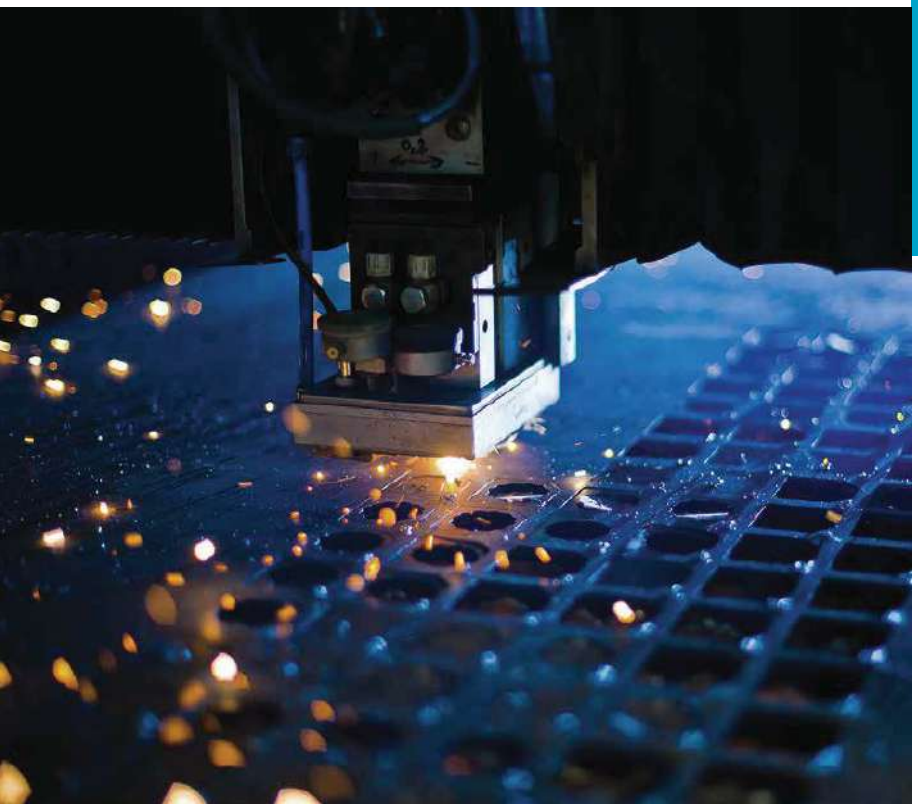
КОМПЛЕКСНАЯ СИСТЕМА ПРОИЗВОДСТВА АЗОТА ПОД ВЫСОКИМ ДАВЛЕНИЕМ

Комплексная система производства азота под высоким давлением — новейшее дополнение линейки оборудования, специально разработанного компанией «Атлас Копко». Это настоящая альтернатива решениям с поставкой жидкого азота или газа в баллонах. Наша уникальная система производства азота действительно выделяется среди других благодаря малой занимаемой площади, простому монтажу, высокой надёжности и максимальной энергоэффективности.

Идеальное решение при переменном потреблении азота

Инновационная азотная система позволит вам хранить азот в ресиверах на 40 бар или баллонах на 300 бар. Таким образом вы можете распоряжаться азотом согласно вашему среднему уровню потребления вместо максимального потребления при любых условиях. Это снижает уровень первоначальных инвестициях и значительно сокращает затраты на эксплуатацию.





Лазерная резка и литье пластмассы под давлением

Новая комплексная система производства азота поможет во многих областях применения, но в первую очередь она предназначена для использования в лазерной резке и литье под давлением. При применении азота в качестве газа для резки лазерный луч плавит материал, а азот выдувает расплавленный материал из разреза.

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ СЕРИИ NGM

МОДЕЛЬ	Чистота азота				Габаритные размеры (ширина x длина x высота)	Вес
		95%	96%	97%	мм	кг
NGM 1	Производительность азота, Нм³/ч	11.9	9.7	7.6	820 x 772 x 2090	259
	Показатель производительности азота	2.6	3	3.5		
NGM 2	Производительность азота, Нм³/ч	24.1	19.4	15.1	820 x 772 x 2090	268
	Показатель производительности азота	2.6	3	3.5		
NGM 3	Производительность азота, Нм³/ч	42.1	34.6	27.4	820 x 772 x 2090	285
	Показатель производительности азота	2.6	3	3.5		
NGM 4	Производительность азота, Нм³/ч	83.9	69.5	54.7	820 x 1470 x 2090	445
	Показатель производительности азота	2.6	3	3.5		
NGM 5	Производительность азота, Нм³/ч	126.0	104.0	82.1	820 x 1470 x 2090	497
	Показатель производительности азота	2.6	3	3.5		
NGM 6	Производительность азота, Нм³/ч	168.1	138.6	109.1	820 x 1470 x 2090	535
	Показатель производительности азота	2.6	3	3.5		
NGM 7	Производительность азота, Нм³/ч	209.9	173.2	136.4	820 x 1470 x 2090	571
	Показатель производительности азота	2.6	3	3.5		

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ СЕРИИ NGM+

МОДЕЛЬ	Чистота азота				Габаритные размеры (ширина x длина x высота)	Вес
		95%	97%	99%	мм	кг
NGM 1+	Производительность азота, Нм³/ч	24.3	16.5	8.5	820 x 772 x 2090	259
	Показатель производительности азота	2.2	2.7	4.2		
NGM 2+	Производительность азота, Нм³/ч	48.6	33.0	17.0	820 x 772 x 2090	268
	Показатель производительности азота	2.2	2.7	4.2		
NGM 3+	Производительность азота, Нм³/ч	72.9	49.5	25.5	820 x 772 x 2090	285
	Показатель производительности азота	2.2	2.7	4.2		
NGM 4+	Производительность азота, Нм³/ч	97.2	66.0	34.0	820 x 1470 x 2090	445
	Показатель производительности азота	2.2	2.7	4.2		
NGM 5+	Производительность азота, Нм³/ч	145.8	99.0	51.0	820 x 1470 x 2090	497
	Показатель производительности азота	2.2	2.7	4.2		
NGM 6+	Производительность азота, Нм³/ч	194.4	132.0	68.0	820 x 1470 x 2090	535
	Показатель производительности азота	2.2	2.7	4.2		
NGM 7+	Производительность азота, Нм³/ч	243.0	165.0	85.0	820 x 1470 x 2090	571
	Показатель производительности азота	2.2	2.7	4.2		

FND: Производительность азота
Стандартные условия
Эффективное давление сжатого воздуха на входе: 8 бар.
Давление азота на выходе: 6,5 бар.
Температура окружающей среды: 20°C.
Точка росы сжатого воздуха на входе: 3°C.
Точка росы азота на выходе: -40°C.
Качество воздуха на входе в генератор по классу 1.4.1 согласно ISO 8573-1:2010.
Минимальные требования: рефрижераторный осушитель для предварительной обработки воздуха на входе.
Стандартное качество азота по классу 1.2.1 согласно ISO 8573-1:2010.

Ограничения по эксплуатации
Минимальная температура окружающей среды: 5°C.
Максимальная температура окружающей среды: 50°C.
Максимальное давление сжатого воздуха на входе: 13 бар.

NGM/NGM+

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ СЕРИИ NGP

МОДЕЛЬ	Чистота азота FND (Производительность азота)									Габаритные размеры (ширина x длина x высота)	Вес
		95%	97%	98%	99%	99.50%	99.90%	99.95%	99.99%	99.999%	мм	кг
NGP 10	Производительность азота Нм³/ч	22.3	17.4	14.6	11.3	5.4	5.9	4.4	3.1	1.7	798 x 840 x 2022	244
NGP 12	Производительность азота, Нм³/ч	28.8	22.4	18.8	14.5	11.7	7.6	5.7	3.9	2.2	798 x 840 x 2022	257
NGP 15	Производительность азота, Нм³/ч	35.2	27.4	23.0	17.7	14.3	9.3	7.0	4.8	2.7	798 x 840 x 2022	270
NGP 20	Производительность азота, Нм³/ч	44.7	34.9	29.3	22.5	18.2	11.8	8.9	6.1	3.4	798 x 840 x 2022	306
NGP 25	Производительность азота, Нм³/ч	57.5	44.9	37.6	29.0	23.4	15.2	11.4	7.9	4.4	798 x 840 x 2022	339
NGP 30	Производительность азота, Нм³/ч	70.3	54.9	46.0	35.5	28.6	18.6	14.0	9.7	5.3	798 x 840 x 2022	360
NGP 35	Производительность азота, Нм³/ч	86.3	67.3	56.5	43.5	35.1	22.8	17.1	12.4	7.1	798 x 840 x 2022	559
NGP 40	Производительность азота, Нм³/ч	105.5	82.3	69.1	53.2	42.9	27.9	20.9	15.2	8.7	798 x 840 x 2022	627
NGP 50	Производительность азота, Нм³/ч	115.0	89.7	75.3	58.0	46.8	30.4	22.8	16.5	9.5	798 x 840 x 2022	663
NGP 60	Производительность азота, Нм³/ч	140.7	109.8	92.1	70.9	57.2	37.2	27.9	20.2	11.6	798 x 840 x 2022	716
NGP 70	Производительность азота, Нм³/ч	159.7	121.2	102.7	87.0	70.2	45.6	32.5	23.1	14.2	798 x 840 x 2022	805
NGP 85	Производительность азота, Нм³/ч	-	148.3	125.6	106.4	85.8	55.8	39.8	28.3	17.4	798 x 840 x 2022	1018
NGP 100	Производительность азота, Нм³/ч	-	-	138.1	108.8	91.2	59.1	46.5	34.0	20.5	798 x 840 x 2022	1191
NGP 115	Производительность азота, Нм³/ч	-	-	-	126.5	104.2	64.7	53.0	37.7	23.3	798 x 840 x 2022	1191
NGP 185	Производительность азота, Нм³/ч	406.9	325.6	284.9	221.8	188.2	132.3	136.3	69.2	30.5	1000 x 1765 x 2530	2150
NGP 250	Производительность азота, Нм³/ч	579.9	457.8	367.3	310.3	254.3	173.0	155.7	86.5	36.6	1000 x 1965 x 2970	3200

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ СЕРИИ NGP⁺

МОДЕЛЬ	Чистота азота FND (Производительность азота)										Габаритные размеры (ширина x длина x высота)	Вес
		95%	97%	98%	99%	99.50%	99.90%	99.95%	99.99%	99.999%	мм	кг
NGP 8⁺	Производительность азота, Нм³/ч	17.7	13.6	11.7	9.4	7.9	5.5	4.1	3.0	1.7	775 x 840 x 2015	264
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 10⁺	Производительность азота, Нм³/ч	22.8	17.6	15.0	12.1	10.1	7.1	5.3	3.9	2.2	775 x 840 x 2015	277
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 12⁺	Производительность азота, Нм³/ч	27.8	21.5	18.4	14.7	12.4	8.7	6.5	4.7	2.7	775 x 840 x 2015	290
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 15⁺	Производительность азота, Нм³/ч	35.4	27.3	23.4	18.7	15.7	11.0	8.3	6.0	3.5	775 x 840 x 2015	326
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 20⁺	Производительность азота, Нм³/ч	45.5	35.1	30.1	24.1	20.2	14.2	10.7	7.7	4.5	775 x 840 x 2015	359
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 25⁺	Производительность азота, Нм³/ч	55.7	43.0	36.8	29.5	24.7	17.3	13.0	9.4	11.8	775 x 840 x 2015	380
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 30⁺	Производительность азота, Нм³/ч	68.3	52.7	45.1	36.2	30.3	21.3	16.0	11.8	7.7	1400 x 840 x 2015	619
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	5.57		
NGP 35⁺	Производительность азота, Нм³/ч	83.5	64.5	55.2	44.2	37.1	26.0	19.6	14.4	9.4	1400 x 840 x 2015	647
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	5.57		
NGP 40⁺	Производительность азота, Нм³/ч	91.0	70.3	60.2	48.2	40.5	28.4	21.3	15.7	10.3	1400 x 840 x 2015	683
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	5.57		
NGP 50⁺	Производительность азота, Нм³/ч	111.3	85.9	73.6	59.0	49.5	34.7	26.1	19.2	12.6	1400 x 840 x 2015	736
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	5.57		
NGP 60⁺	Производительность азота, Нм³/ч	125.2	96.5	83.5	66.1	55.8	39.6	32.0	23.6	15.4	1400 x 970 x 2015	865
	Показатель производительности азота	1.89	2.08	2.21	2.43	2.66	3.33	3.51	4.33	5.57		
NGP 70⁺	Производительность азота, Нм³/ч	153.1	118.0	102.1	80.9	68.3	48.4	39.1	28.8	18.9	1400 x 970 x 2015	1038
	Показатель производительности азота	1.89	2.1	2.21	2.43	2.66	3.33	3.51	4.33	5.57		
NGP 85⁺	Производительность азота, Нм³/ч	-	149.5	118.9	96.8	84.8	60.1	47.3	35.3	22.1	1400 x 970 x 2015	1211
	Показатель производительности азота	-	2.04	2.15	2.45	2.60	3.18	3.26	3.94	5.46		
NGP 100⁺	Производительность азота, Нм³/ч	-	157.3	136.1	107.8	91.0	64.5	52.1	38.4	25.2	1400 x 970 x 2015	1211
	Показатель производительности азота	-	2.08	2.21	2.43	2.66	3.33	3.51	4.33	5.57		

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ СЕРИИ OGP

МОДЕЛЬ	Чистота FOD (Производительность кислорода)				Габаритные размеры (ширина x длина x высота)	Вес
		90%	93%	95%	мм	кг
OGP 2	Производительность азота Нм³/ч	2.1	1.6	1.5	600 x 600 x 1550	100
OGP 3	Производительность азота Нм³/ч	3.2	2.5	2.5	600 x 600 x 1600	150
OGP 4	Производительность азота Нм³/ч	4.0	3.6	3.2	600 x 600 x 1650	180
OGP 5	Производительность азота Нм³/ч	4.7	4.3	4.0	700 x 700 x 1900	230
OPG 6	Производительность азота Нм³/ч	6.5	5.8	5.4	800 x 900 x 1750	400
OGP 8	Производительность азота Нм³/ч	7.9	7.2	6.8	800 x 900 x 1750	700
OGP 10	Производительность азота Нм³/ч	9.7	9.0	8.3	900 x 1200 x 2100	950
OGP 14	Производительность азота Нм³/ч	14.4	13.3	12.2	900 x 1200 x 2100	950
OGP 18	Производительность азота Нм³/ч	15.5	18.4	18.4	900 x 1300 x 2400	1150
OGP 20	Производительность азота Нм³/ч	20.5	19.4	18.4	1000 x 1300 x 2400	1150
OGP 23	Производительность азота Нм³/ч	23.4	21.2	20.5	1000 x 1300 x 3200	1350
OGP 29	Производительность азота Нм³/ч	29.2	27.7	26.3	1000 x 2000 x 2500	1850
OGP 35	Производительность азота Нм³/ч	35.3	33.1	31.7	1000 x 2000 x 2500	2150
OGP 45	Производительность азота Нм³/ч	45.4	42.8	39.2	1000 x 2000 x 3400	3500
OGP 55	Производительность азота Нм³/ч	55.8	51.8	49.0	1000 x 2000 x 3400	3500
OGP 65	Производительность азота Нм³/ч	66.2	64.1	56.9	1000 x 2000 x 3400	3500
OGP 84	Производительность азота Нм³/ч	85.3	79.2	74.2	2400 x 2200 x 3200	4200
OGP 105	Производительность азота Нм³/ч	106.9	101.9	93.6	2400 x 2400 x 3300	4900
OGP 160	Производительность азота Нм³/ч	157.7	154.8	143.6	4000 x 4000 x 3200	8000
OGP 200	Производительность азота Нм³/ч	203.8	188.3	175.0	4000 x 4000 x 3300	9400

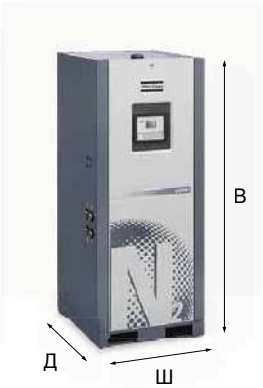
FND: Производительность азота
Стандартные условия
Эффективное давление сжатого воздуха на входе: 7,5 бар для NGP, 7 bar для NGP⁺.
Давление азота на выходе: 6 бар.
Температура окружающей среды: 20°C.
Точка росы сжатого воздуха на входе: 3°C.
Точка росы азота на выходе: -50°C.
Качество воздуха на входе в генератор по классу 1.4.1 согласно ISO 8573-1:2010
Минимальные требования: рефрижераторный осушитель для предварительной обработки воздуха на входе.
Стандартное качество азота по классу 1.2.1 согласно ISO 8573-1:2010.

Ограничения по эксплуатации
Минимальная температура окружающей среды: 5°C.
Максимальная температура окружающей среды: 45°C для NGP, 60°C для NGP⁺.
Максимальное давление сжатого воздуха на входе: 10 бар для NGP, 13 бар для NGP⁺.

FOD: Производительность кислорода
Стандартные условия
Эффективное давление сжатого воздуха на входе: 7,5 бар.
Давление кислорода на выходе: 5 бар.
Температура окружающей среды: 20°C.
Точка росы сжатого воздуха на входе: 3°C.
Точка росы кислорода на выходе: -50°C.
Качество воздуха на входе в генератор по классу 1.4.1 согласно ISO 8573-1:2010
Минимальные требования: рефрижераторный осушитель для предварительной обработки воздуха на входе.
Стандартное качество кислорода по классу 1.2.1 согласно ISO 8573-1:2010.

Ограничения по эксплуатации
Минимальная температура окружающей среды: 5°C.
Максимальная температура окружающей среды: 45°C.
Максимальное давление сжатого воздуха на входе: 10 бар.

NGP 185-250

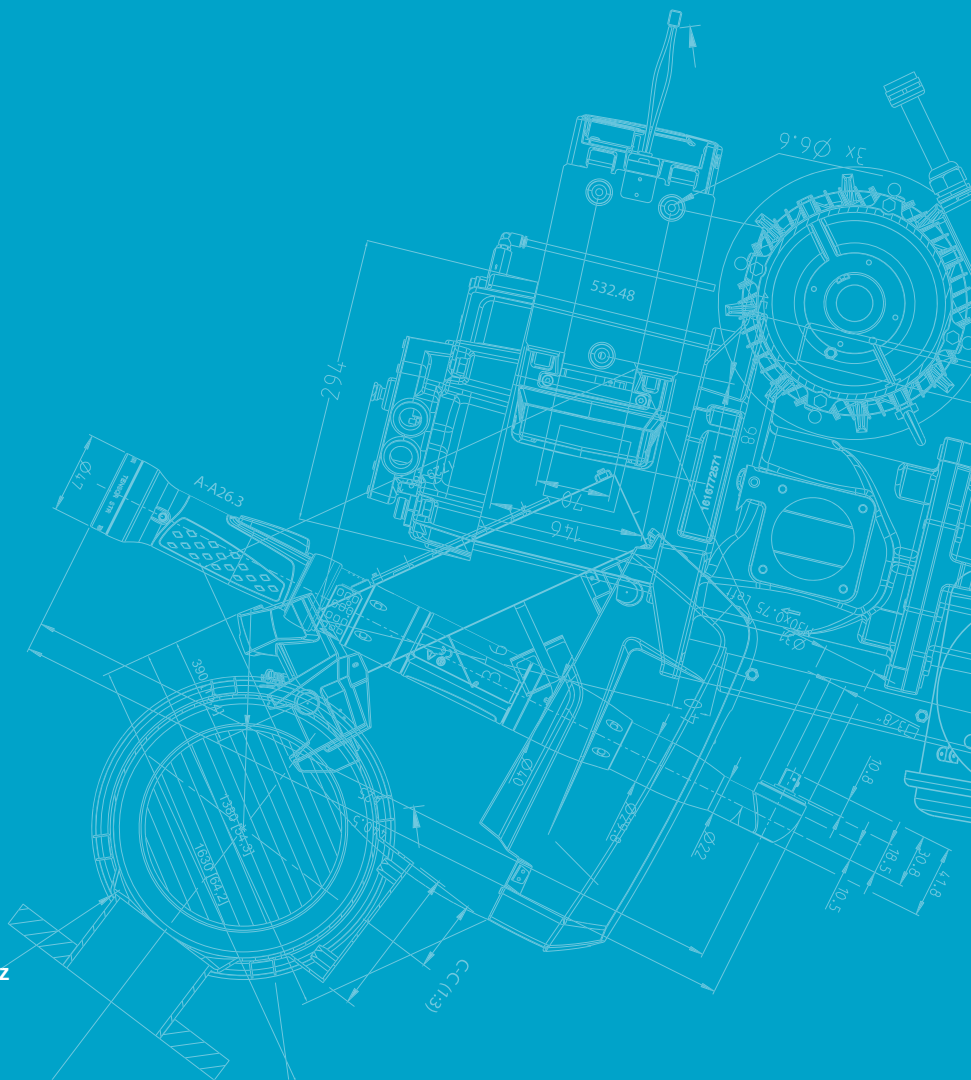


NGP 8-100⁺
NGP 10-115

OGP

Atlas Copco

www.atlascopco.kz



Генераторы азота и кислорода

ГАРАНТИРОВАННОЕ СНАБЖЕНИЕ АЗОТОМ И КИСЛОРОДОМ

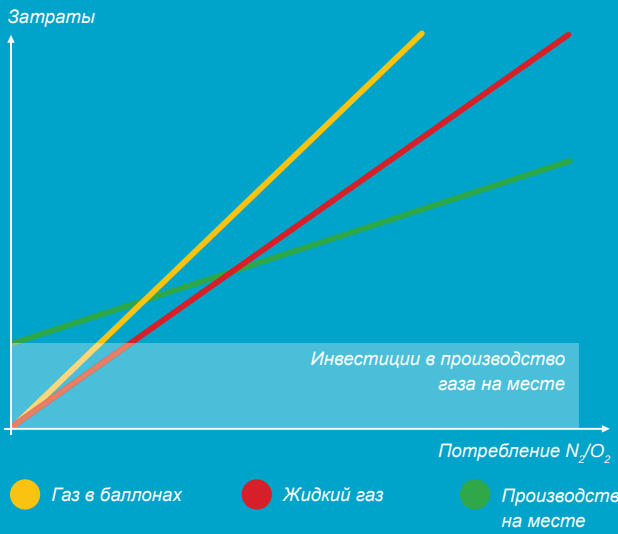
Надёжная подача промышленного газа играет критически важную роль в химической и электронной промышленности, лазерной резке или при производстве пищевых продуктов и напитков. Производство газа на месте обладает множеством преимуществ по сравнению с использованием газовых баллонов или резервуаров с сжиженным газом: от снижения затрат до постоянной готовности к работе. Высокотехнологичные азотные и кислородные генераторы от компании «Атлас Копко» — это оптимальное решение: гибкое производство промышленных газов при наименьших затратах.

Сравнение стоимости производства газа на месте потребления с жидким газом или газом в баллонах

- Ваше независимое производство промышленного газа.
- Постоянная готовность к работе: круглосуточно, 7 дней в неделю.
- Значительная экономия и уменьшение эксплуатационных расходов: нет расходов на аренду, транспорт, отсутствие потерь из-за испарения при хранении.
- Безопасное использование баллонов под высоким давлением.
- Простая интеграция с имеющимися на предприятии системами сжатого воздуха.

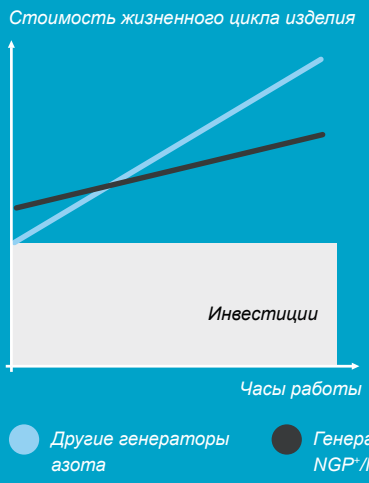
Жидкий газ/ газ в баллонах	Производство азота на месте потребления
Аренда ёмкости	Инвестиции
N_2	Энергозатраты
Транспортировка	Обслуживание
0.1-0.8 евро/м³(*)	0.02-0.15 евро/м³(**)
N_2: 99.999%	N_2: 95-99.999%

(*) Среднее по рынку, может применяться другое ценообразование.
(**) В зависимости от чистоты и стоимости электроэнергии.



Высокая надёжность

- Проверенная технология: простая, надёжная и долговечная.
- В точном соответствии с требованиями чистоты азота для вашего применения.
- Дополнительная выгода благодаря низким расходам на эксплуатацию.
- Опыт мирового уровня в уникальном предложении: от сжатого воздуха до производства газа.



Показатель производительности азота от 1,8 (при 95%) до 5,5 (при 99, 999%) и специальный алгоритм управления продолжительностью цикла позволяют снизить эксплуатационные расходы на 50% по сравнению с другими генераторами азота.

Новое поколение мембранных генераторов и генераторов с технологией PSA

Новейшие генераторы мембранного типа и генераторы с технологией короткоцикловой адсорбции (PSA) от компании «Атлас Копко» обладают дополнительными преимуществами по сравнению с существующей линейкой. В стоимость жизненного цикла изделия входят затраты на первоначальные инвестиции при установке независимого производства газа, стоимость сервисных работ и электроэнергии. Серия NGP/NGM отличается самым низким уровнем инвестиций. Однако при увеличении времени работы оборудования рекомендуется перейти на линейку NGP+/NGM+, чтобы снизить расходы на электроэнергию.

Широкий диапазон применения

- Производство пищевых продуктов и напитков (хранение и упаковка).
- Фармацевтика.
- Литье пластмассы под давлением. Заливка пластмассы в форму под давлением.
- Электронная промышленность.
- Лазерная резка.
- Производство полупроводников.
- Химическая промышленность.
- Металообработка.
- Производство кабелей и оптоволокна.
- Стекольная промышленность.
- Пожаротушение.
- Аквакультура.

ГЕНЕРАТОРЫ АЗОТА МЕМБРАННОГО ТИПА: КОМПАКТНОЕ РЕШЕНИЕ ДЛЯ ПРОИЗВОДСТВА АЗОТА, ВКЛЮЧАЮЩЕЕ ВСЕ НЕОБХОДИМОЕ

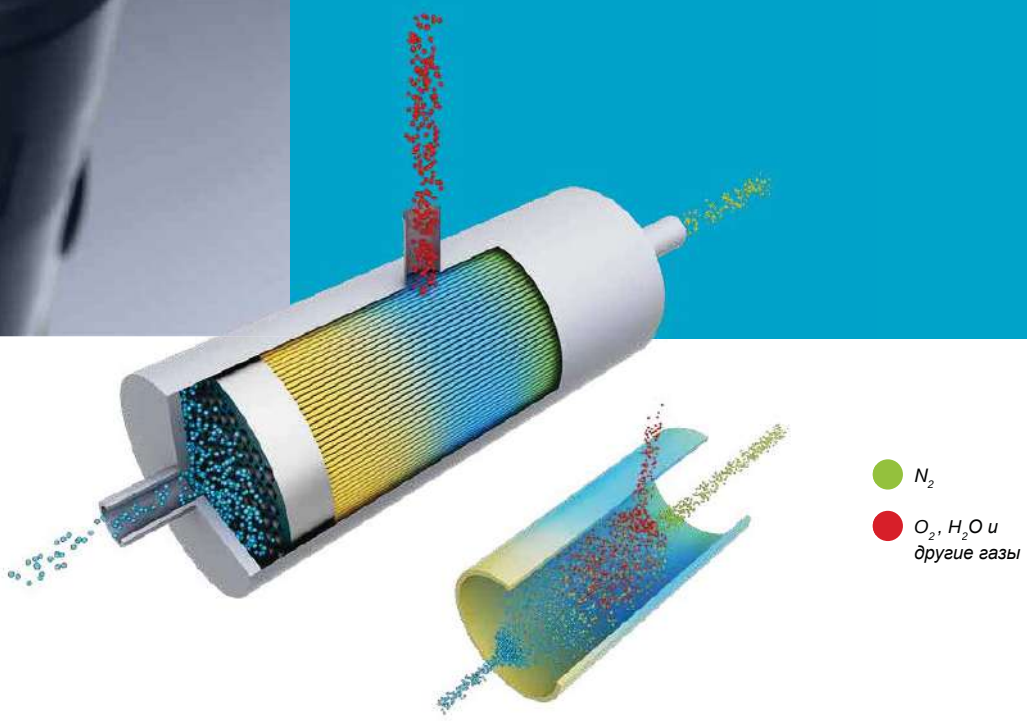
В генераторах азота серии NGM/NGM+ от компании «Атлас Копко» используется запатентованная технология разделения воздуха с помощью мембраны. Мембрана разделяет сжатый воздух на два потока: азот с чистотой 95-99% и кислород, насыщенный углекислым и другими газами.

Мгновенное производство азота чистотой от 95% до 99%

Генератор разделяет воздух на компоненты, пропуская недорогой сжатый воздух через полупроницаемые мембраны, которые состоят из групп полых волокон. Все волокна имеют абсолютно круглое сечение с одинаковым отверстием по центру. За счёт малого размера большое количество волокон может быть размещено в ограниченном пространстве, что обеспечивает очень большую площадь мембранной поверхности, благодаря чему можно создать относительно высокий объём потока продукта.

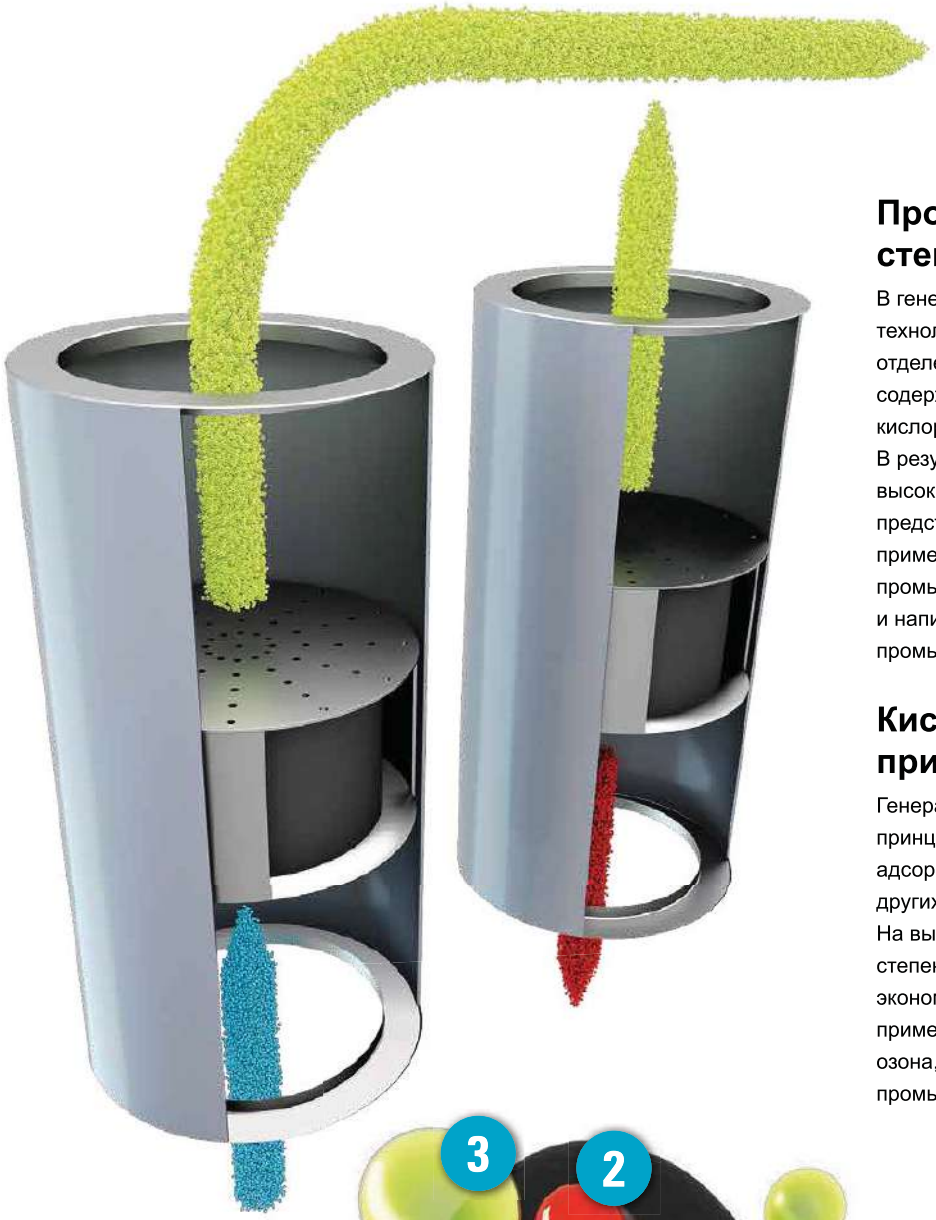
Исключительно сухой азот

Сжатый воздух с одной стороны модуля мембраны поступает в центр волокона и контактирует с мембраной по мере прохождения через неё. Кислород, пары воды и другие газы легко проникают сквозь поры волокна мембраны и выводятся через специальное отверстие, а азот удерживается внутри мембраны и выходит через выходное отверстие. Поскольку пары воды также проникают сквозь поры волокна мембраны, азот осушается и имеет точку росы -40°C.



ТЕХНОЛОГИЯ PSA: НАДЁЖНАЯ И ПРОВЕРЕННАЯ

Генераторы азота NGP/NGP⁺ и генераторы кислорода OGP с технологией короткоцикловой адсорбции (PSA) от компании «Атлас Копко» обеспечивают постоянный поток азота и кислорода с необходимым уровнем чистоты.



Производство азота высокой степени чистоты до 99.999%

В генераторах азота NGP/NGP⁺ используется технология короткоцикловой адсорбции для отделения молекул азота от других молекул, содержащихся в сжатом воздухе. Адсорбируются кислород, углекислый газ, пары воды и другие газы. В результате на выходе установки получается азот высокой степени чистоты. Серия NGP/NGP⁺ представляет собой экономичный источник азота, применяемый в различных отраслях промышленности: производство пищевых продуктов и напитков, металлообработка, электронная промышленность и прочие.

Кислород для ваших применений

Генератор кислорода OGP работает по тому же принципу, используя технологию короткоцикловой адсорбции для отделения молекул кислорода от других молекул, содержащихся в сжатом воздухе. На выходе установки получается кислород высокой степени чистоты. Серия OGP представляет собой экономичный источник кислорода, который применяется в очистке сточных вод, производстве озона, здравоохранении и стекольной промышленности.

- *Чистый и сухой сжатый воздух (под давлением)*
- *Газообразный азот (под давлением)*
- *Выход кислорода (не под давлением)*
- *Адсорбент*

1. *Адсорбент*
2. *Молекулы азота (или кислорода), оставшиеся в адсорбенте*
3. *Отфильтрованные молекулы азота (или кислорода)*

КОМПЛЕКСНЫЕ РЕШЕНИЯ ОТ «АТЛАС КОПКО»

За счёт широкого выбора генераторов кислорода и азота компания «Атлас Копко» может предложить вам подходящий вариант производства азота и кислорода в соответствии с индивидуальными требованиями, оптимизируя производственный процесс.

Уникальное предложение

Для производства азота и кислорода на месте необходимо наиболее надёжные и эффективные компрессорные решения. Благодаря богатому опыту «Атлас Копко» десятилетиями занимает лидирующее положение на рынке технологий сжатого воздуха. «Атлас Копко» представляет вам экспертные знания мирового уровня в виде уникального предложения: от передовых компрессоров и решений для получения качественного воздуха, полного ассортимента генераторов азота и кислорода до сервсиного обслуживания и финансовых услуг.

Типовая установка: компрессор с встроенным осушителем, фильтр грубой очистки UD+, фильтр с активированным углём QDT, пылевой фильтр, ресивер, азотный генератор NGP с технологией PSA, ресивер.

Безмасляные компрессоры

Компания «Атлас Копко» является новатором в разработке технологий для подготовки безмасляного воздуха. Результатом этого стал полный ассортимент компрессоров, обеспечивающих подачу 100% безмасляного и чистого воздуха для защиты мембран и адсорбента в азотных генераторах. Дополнительная фильтрация не требуется, что гарантирует минимальное падение давления.

Маслосмазываемые компрессоры

На производственной площадке маслосмазываемые компрессоры компании «Атлас Копко» гарантируют надёжную подачу сжатого воздуха непосредственно на место его использования. Компрессоры компании «Атлас Копко» предназначены для работы в тяжёлых условиях и обеспечивают бесперебойность и надёжность вашего производственного процесса. Это очень экономичное решение в сочетании с азотными и кислородными генераторами.

NGP⁺ (PSA)

Подготовка воздуха

Компания «Атлас Копко» разработала и усовершенствовала технологии сжатия и осушения воздуха. Независимо от установки, области применения и требований к качеству компания «Атлас Копко» способна предложить подходящее решение по подготовке воздуха: осушители (адсорбционные, рефрижераторные холодильные и мембранные) и фильтры (коалесцирующие, тонкой очистки и с активированным углём).

NGM⁺ (мембранный)

Типовая установка: компрессор с встроенным осушителем, ресивер, азотный генератор NGM⁺, ресивер.

ГЕНЕРАТОРЫ АЗОТА МЕМБРАННОГО ТИПА (NGM, NGM+)

За счёт применения мембранной технологии генераторы азота от «Атлас Копко» достаточно легко адаптировать к конкретному применению. При низких расходах на эксплуатацию они отличаются превосходными показателями окупаемости инвестиций.

Простота эксплуатации

- Достаточно только обеспечить подачу сухого сжатого воздуха.
- Нет необходимости в вызове специалиста для установки и ввода в эксплуатацию.
- Оснащены фильтром грубой очистки и измерителем расхода азота для точного системного контроля при любых условиях.

Снижение затрат

- Низкие расходы на эксплуатацию.
- Отсутствие дополнительных затрат на обработку заказа жидкого или газообразного азота, дозаправки и доставку.
- Незначительные расходы на техническое обслуживание.

Исключительное удобство

- Постоянная готовность к работе (круглосуточно, 7 дней в неделю).
- Исключается риск остановки производства из-за дефицита газа.

Необходимая чистота

- Подача азота согласно вашим потребностям: содержание кислорода от 5% до 0.5%.
- Очень простая настройка для других уровней чистоты.

«Всё в одном»

- Интегрированный блок фильтров грубой и тонкой очистки.
- Датчик кислорода в стандартной комплектации.

Высокая производительность

Идеально подходит для применения в системах пожаротушения, накачивания шин, в нефтегазовой отрасли, на морских судах, при упаковке и многих других отраслях.

Долгий срок службы

- Без износа.
- Без нагревателя.
- Стабильная (неизменная) эффективность в течение длительного времени.

ГЕНЕРАТОРЫ АЗОТА И КИСЛОРОДА С ТЕХНОЛОГИЕЙ PSA (NGP, NGP⁺, OGP)

Азотные и кислородные генераторы серии NGP, NGP⁺ и OGP от «Атлас Копко» просты в установке и в работе. Они обеспечивают необходимую чистоту при высокой производительности, что позволяет использовать их в большом количестве областей применения.

Высокая производительность

Широкий ассортимент продукции и производительность газа более 2,000 Нм³/ч (NGP/NGP⁺) делают эти генераторы идеальным решением для различных областей применения с высокими требованиями к оборудованию.

Готовность к эксплуатации

- Достаточно только обеспечить подачу осушенного сжатого воздуха.
- Технология "Подключи и работай".
- Нет необходимости в вызове специалиста для установки и ввода в эксплуатацию.
- Полная автоматизация и контроль, датчик остаточного содержания кислорода входит в стандартную комплектацию.
- Удобство в обслуживании.

Необходимая чистота

- NGP/NGP⁺: чистота азота от 95% до 99.999%.
- OGP: чистота кислорода от 90% до 95%.

Исключительное удобство

- Надёжная конструкция.
- Постоянная готовность к работе (круглосуточно, 7 дней в неделю).
- Исключается риск остановки производства из-за дефицита газа.

Снижение затрат

- Низкие расходы на эксплуатацию.
- Отсутствие дополнительных затрат на обработку заказа жидкого или газообразного азота, дозаправки и доставку.
- Незначительные расходы на техническое обслуживание.

НОВОЕ ПОКОЛЕНИЕ ГЕНЕРАТОРОВ АЗОТА NGP+

1

Контроль качества подаваемого воздуха с автоматическими защитными функциями

- Температура.
- Давление.
- Точка росы под давлением.
- Автоматическое стравливание воздуха в случае загрязнения. (отклонений от требуемых параметров)

2

Исключительная энергоэффективность

Коэффициент воздух/азот от 1,8 (при 95% N_2) до 5.5 (при 99.999% N_2).

3

Автоматический запуск

- Клапан минимального давления и байпасное сопло для быстрого запуска.
- Исключается риск избыточного потока и повреждения угольного молекулярного сита.

4

Угольное молекулярное сито (УМС) высочайшего качества

- Высокая плотность адсорбента.
- Компактная подпружиненная загрузка.
- Выравнивание давления азота сверху и снизу колонны.
- Защита обеспечивается специальным датчиком давления.

9

Наиболее полная комплектация поставки

- Расходомер азота в стандартной комплектации.
- Датчик кислорода циркониевого типа с длительным сроком службы.
- Редукционный клапан давления азота на выходе из генератора.

8

Автоматическая регулировка и постоянный уровень чистоты

- Автоматическая регулировка под заданное давление и чистоту азота.
- Максимально простое изменение уровня чистоты азота.
- Сброс некондиционного азота.

7

Управление и мониторинг

- Удалённый запуск-останов.
- Modbus, Profibus и Ethernet.
- **SMART**LINK.

6

Повышение давления обратным потоком

- В фазе повышения давления в колонне генератора вместо воздуха используется азот.
- Угольное молекулярное сито не загрязняется кислородом перед началом фазы адсорбции.

5

Максимальная экономия энергии

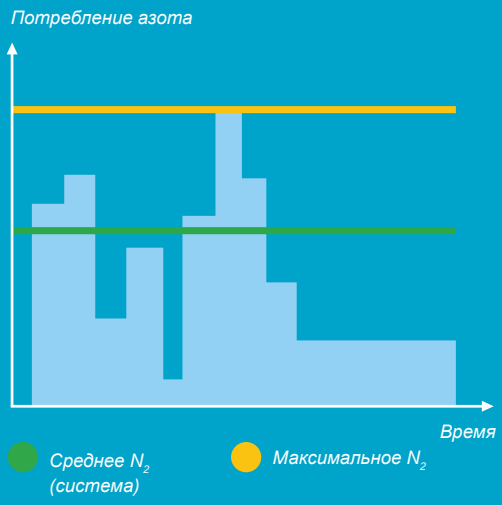
- В случае отсутствия потребления азота включается режим ожидания.
- Алгоритм управления продолжительностью цикла:
  - увеличение продолжительности цикла при низком потреблении азота
  - снижение потребления воздуха при низком потреблении азота.

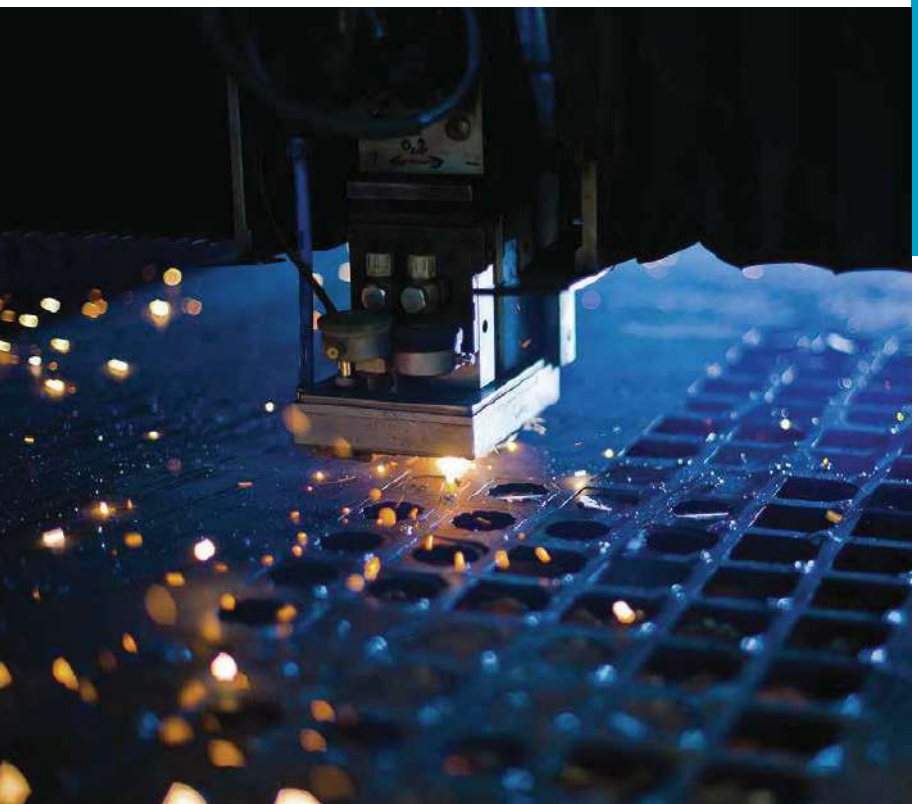
КОМПЛЕКСНАЯ СИСТЕМА ПРОИЗВОДСТВА АЗОТА ПОД ВЫСОКИМ ДАВЛЕНИЕМ

Комплексная система производства азота под высоким давлением — новейшее дополнение линейки оборудования, специально разработанного компанией «Атлас Копко». Это настоящая альтернатива решениям с поставкой жидкого азота или газа в баллонах. Наша уникальная система производства азота действительно выделяется среди других благодаря малой занимаемой площади, простому монтажу, высокой надёжности и максимальной энергоэффективности.

Идеальное решение при переменном потреблении азота

Инновационная азотная система позволит вам хранить азот в ресиверах на 40 бар или баллонах на 300 бар. Таким образом вы можете распоряжаться азотом согласно вашему среднему уровню потребления вместо максимального потребления при любых условиях. Это снижает уровень первоначальных инвестициях и значительно сокращает затраты на эксплуатацию.





Лазерная резка и литье пластмассы под давлением

Новая комплексная система производства азота поможет во многих областях применения, но в первую очередь она предназначена для использования в лазерной резке и литье под давлением. При применении азота в качестве газа для резки лазерный луч плавит материал, а азот выдувает расплавленный материал из разреза.

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ СЕРИИ NGM

МОДЕЛЬ	Чистота азота				Габаритные размеры (ширина x длина x высота)	Вес
		95%	96%	97%	мм	кг
NGM 1	Производительность азота, Нм³/ч	11.9	9.7	7.6	820 x 772 x 2090	259
	Показатель производительности азота	2.6	3	3.5		
NGM 2	Производительность азота, Нм³/ч	24.1	19.4	15.1	820 x 772 x 2090	268
	Показатель производительности азота	2.6	3	3.5		
NGM 3	Производительность азота, Нм³/ч	42.1	34.6	27.4	820 x 772 x 2090	285
	Показатель производительности азота	2.6	3	3.5		
NGM 4	Производительность азота, Нм³/ч	83.9	69.5	54.7	820 x 1470 x 2090	445
	Показатель производительности азота	2.6	3	3.5		
NGM 5	Производительность азота, Нм³/ч	126.0	104.0	82.1	820 x 1470 x 2090	497
	Показатель производительности азота	2.6	3	3.5		
NGM 6	Производительность азота, Нм³/ч	168.1	138.6	109.1	820 x 1470 x 2090	535
	Показатель производительности азота	2.6	3	3.5		
NGM 7	Производительность азота, Нм³/ч	209.9	173.2	136.4	820 x 1470 x 2090	571
	Показатель производительности азота	2.6	3	3.5		

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ СЕРИИ NGM+

МОДЕЛЬ	Чистота азота				Габаритные размеры (ширина x длина x высота)	Вес
		95%	97%	99%	мм	кг
NGM 1+	Производительность азота, Нм³/ч	24.3	16.5	8.5	820 x 772 x 2090	259
	Показатель производительности азота	2.2	2.7	4.2		
NGM 2+	Производительность азота, Нм³/ч	48.6	33.0	17.0	820 x 772 x 2090	268
	Показатель производительности азота	2.2	2.7	4.2		
NGM 3+	Производительность азота, Нм³/ч	72.9	49.5	25.5	820 x 772 x 2090	285
	Показатель производительности азота	2.2	2.7	4.2		
NGM 4+	Производительность азота, Нм³/ч	97.2	66.0	34.0	820 x 1470 x 2090	445
	Показатель производительности азота	2.2	2.7	4.2		
NGM 5+	Производительность азота, Нм³/ч	145.8	99.0	51.0	820 x 1470 x 2090	497
	Показатель производительности азота	2.2	2.7	4.2		
NGM 6+	Производительность азота, Нм³/ч	194.4	132.0	68.0	820 x 1470 x 2090	535
	Показатель производительности азота	2.2	2.7	4.2		
NGM 7+	Производительность азота, Нм³/ч	243.0	165.0	85.0	820 x 1470 x 2090	571
	Показатель производительности азота	2.2	2.7	4.2		

FND: Производительность азота
Стандартные условия
Эффективное давление сжатого воздуха на входе: 8 бар.
Давление азота на выходе: 6,5 бар.
Температура окружающей среды: 20°C.
Точка росы сжатого воздуха на входе: 3°C.
Точка росы азота на выходе: -40°C.
Качество воздуха на входе в генератор по классу 1.4.1 согласно ISO 8573-1:2010.
Минимальные требования: рефрижераторный осушитель для предварительной обработки воздуха на входе.
Стандартное качество азота по классу 1.2.1 согласно ISO 8573-1:2010.

Ограничения по эксплуатации
Минимальная температура окружающей среды: 5°C.
Максимальная температура окружающей среды: 50°C.
Максимальное давление сжатого воздуха на входе: 13 бар.

NGM/NGM+

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ СЕРИИ NGP

МОДЕЛЬ	Чистота азота FND (Производительность азота)									Габаритные размеры (ширина x длина x высота)	Вес
		95%	97%	98%	99%	99.50%	99.90%	99.95%	99.99%	99.999%	мм	кг
NGP 10	Производительность азота Нм³/ч	22.3	17.4	14.6	11.3	5.4	5.9	4.4	3.1	1.7	798 x 840 x 2022	244
NGP 12	Производительность азота, Нм³/ч	28.8	22.4	18.8	14.5	11.7	7.6	5.7	3.9	2.2	798 x 840 x 2022	257
NGP 15	Производительность азота, Нм³/ч	35.2	27.4	23.0	17.7	14.3	9.3	7.0	4.8	2.7	798 x 840 x 2022	270
NGP 20	Производительность азота, Нм³/ч	44.7	34.9	29.3	22.5	18.2	11.8	8.9	6.1	3.4	798 x 840 x 2022	306
NGP 25	Производительность азота, Нм³/ч	57.5	44.9	37.6	29.0	23.4	15.2	11.4	7.9	4.4	798 x 840 x 2022	339
NGP 30	Производительность азота, Нм³/ч	70.3	54.9	46.0	35.5	28.6	18.6	14.0	9.7	5.3	798 x 840 x 2022	360
NGP 35	Производительность азота, Нм³/ч	86.3	67.3	56.5	43.5	35.1	22.8	17.1	12.4	7.1	798 x 840 x 2022	559
NGP 40	Производительность азота, Нм³/ч	105.5	82.3	69.1	53.2	42.9	27.9	20.9	15.2	8.7	798 x 840 x 2022	627
NGP 50	Производительность азота, Нм³/ч	115.0	89.7	75.3	58.0	46.8	30.4	22.8	16.5	9.5	798 x 840 x 2022	663
NGP 60	Производительность азота, Нм³/ч	140.7	109.8	92.1	70.9	57.2	37.2	27.9	20.2	11.6	798 x 840 x 2022	716
NGP 70	Производительность азота, Нм³/ч	159.7	121.2	102.7	87.0	70.2	45.6	32.5	23.1	14.2	798 x 840 x 2022	805
NGP 85	Производительность азота, Нм³/ч	-	148.3	125.6	106.4	85.8	55.8	39.8	28.3	17.4	798 x 840 x 2022	1018
NGP 100	Производительность азота, Нм³/ч	-	-	138.1	108.8	91.2	59.1	46.5	34.0	20.5	798 x 840 x 2022	1191
NGP 115	Производительность азота, Нм³/ч	-	-	-	126.5	104.2	64.7	53.0	37.7	23.3	798 x 840 x 2022	1191
NGP 185	Производительность азота, Нм³/ч	406.9	325.6	284.9	221.8	188.2	132.3	136.3	69.2	30.5	1000 x 1765 x 2530	2150
NGP 250	Производительность азота, Нм³/ч	579.9	457.8	367.3	310.3	254.3	173.0	155.7	86.5	36.6	1000 x 1965 x 2970	3200

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ СЕРИИ NGP⁺

МОДЕЛЬ	Чистота азота FND (Производительность азота)										Габаритные размеры (ширина x длина x высота)	Вес
		95%	97%	98%	99%	99.50%	99.90%	99.95%	99.99%	99.999%	мм	кг
NGP 8⁺	Производительность азота, Нм³/ч	17.7	13.6	11.7	9.4	7.9	5.5	4.1	3.0	1.7	775 x 840 x 2015	264
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 10⁺	Производительность азота, Нм³/ч	22.8	17.6	15.0	12.1	10.1	7.1	5.3	3.9	2.2	775 x 840 x 2015	277
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 12⁺	Производительность азота, Нм³/ч	27.8	21.5	18.4	14.7	12.4	8.7	6.5	4.7	2.7	775 x 840 x 2015	290
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 15⁺	Производительность азота, Нм³/ч	35.4	27.3	23.4	18.7	15.7	11.0	8.3	6.0	3.5	775 x 840 x 2015	326
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 20⁺	Производительность азота, Нм³/ч	45.5	35.1	30.1	24.1	20.2	14.2	10.7	7.7	4.5	775 x 840 x 2015	359
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 25⁺	Производительность азота, Нм³/ч	55.7	43.0	36.8	29.5	24.7	17.3	13.0	9.4	11.8	775 x 840 x 2015	380
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	6.3		
NGP 30⁺	Производительность азота, Нм³/ч	68.3	52.7	45.1	36.2	30.3	21.3	16.0	11.8	7.7	1400 x 840 x 2015	619
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	5.57		
NGP 35⁺	Производительность азота, Нм³/ч	83.5	64.5	55.2	44.2	37.1	26.0	19.6	14.4	9.4	1400 x 840 x 2015	647
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	5.57		
NGP 40⁺	Производительность азота, Нм³/ч	91.0	70.3	60.2	48.2	40.5	28.4	21.3	15.7	10.3	1400 x 840 x 2015	683
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	5.57		
NGP 50⁺	Производительность азота, Нм³/ч	111.3	85.9	73.6	59.0	49.5	34.7	26.1	19.2	12.6	1400 x 840 x 2015	736
	Показатель производительности азота	1.86	2.02	2.13	2.36	2.59	3.19	3.51	4.33	5.57		
NGP 60⁺	Производительность азота, Нм³/ч	125.2	96.5	83.5	66.1	55.8	39.6	32.0	23.6	15.4	1400 x 970 x 2015	865
	Показатель производительности азота	1.89	2.08	2.21	2.43	2.66	3.33	3.51	4.33	5.57		
NGP 70⁺	Производительность азота, Нм³/ч	153.1	118.0	102.1	80.9	68.3	48.4	39.1	28.8	18.9	1400 x 970 x 2015	1038
	Показатель производительности азота	1.89	2.1	2.21	2.43	2.66	3.33	3.51	4.33	5.57		
NGP 85⁺	Производительность азота, Нм³/ч	-	149.5	118.9	96.8	84.8	60.1	47.3	35.3	22.1	1400 x 970 x 2015	1211
	Показатель производительности азота	-	2.04	2.15	2.45	2.60	3.18	3.26	3.94	5.46		
NGP 100⁺	Производительность азота, Нм³/ч	-	157.3	136.1	107.8	91.0	64.5	52.1	38.4	25.2	1400 x 970 x 2015	1211
	Показатель производительности азота	-	2.08	2.21	2.43	2.66	3.33	3.51	4.33	5.57		

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ СЕРИИ OGP

МОДЕЛЬ	Чистота FOD (Производительность кислорода)				Габаритные размеры (ширина x длина x высота)	Вес
		90%	93%	95%	мм	кг
OGP 2	Производительность азота Нм³/ч	2.1	1.6	1.5	600 x 600 x 1550	100
OGP 3	Производительность азота Нм³/ч	3.2	2.5	2.5	600 x 600 x 1600	150
OGP 4	Производительность азота Нм³/ч	4.0	3.6	3.2	600 x 600 x 1650	180
OGP 5	Производительность азота Нм³/ч	4.7	4.3	4.0	700 x 700 x 1900	230
OPG 6	Производительность азота Нм³/ч	6.5	5.8	5.4	800 x 900 x 1750	400
OGP 8	Производительность азота Нм³/ч	7.9	7.2	6.8	800 x 900 x 1750	700
OGP 10	Производительность азота Нм³/ч	9.7	9.0	8.3	900 x 1200 x 2100	950
OGP 14	Производительность азота Нм³/ч	14.4	13.3	12.2	900 x 1200 x 2100	950
OGP 18	Производительность азота Нм³/ч	15.5	18.4	18.4	900 x 1300 x 2400	1150
OGP 20	Производительность азота Нм³/ч	20.5	19.4	18.4	1000 x 1300 x 2400	1150
OGP 23	Производительность азота Нм³/ч	23.4	21.2	20.5	1000 x 1300 x 3200	1350
OGP 29	Производительность азота Нм³/ч	29.2	27.7	26.3	1000 x 2000 x 2500	1850
OGP 35	Производительность азота Нм³/ч	35.3	33.1	31.7	1000 x 2000 x 2500	2150
OGP 45	Производительность азота Нм³/ч	45.4	42.8	39.2	1000 x 2000 x 3400	3500
OGP 55	Производительность азота Нм³/ч	55.8	51.8	49.0	1000 x 2000 x 3400	3500
OGP 65	Производительность азота Нм³/ч	66.2	64.1	56.9	1000 x 2000 x 3400	3500
OGP 84	Производительность азота Нм³/ч	85.3	79.2	74.2	2400 x 2200 x 3200	4200
OGP 105	Производительность азота Нм³/ч	106.9	101.9	93.6	2400 x 2400 x 3300	4900
OGP 160	Производительность азота Нм³/ч	157.7	154.8	143.6	4000 x 4000 x 3200	8000
OGP 200	Производительность азота Нм³/ч	203.8	188.3	175.0	4000 x 4000 x 3300	9400

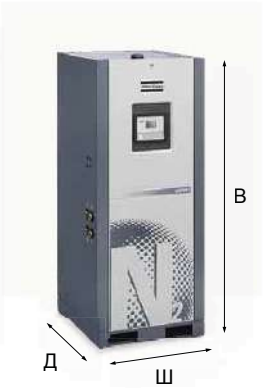
FND: Производительность азота
Стандартные условия
Эффективное давление сжатого воздуха на входе: 7,5 бар для NGP, 7 bar для NGP⁺.
Давление азота на выходе: 6 бар.
Температура окружающей среды: 20°C.
Точка росы сжатого воздуха на входе: 3°C.
Точка росы азота на выходе: -50°C.
Качество воздуха на входе в генератор по классу 1.4.1 согласно ISO 8573-1:2010
Минимальные требования: рефрижераторный осушитель для предварительной обработки воздуха на входе.
Стандартное качество азота по классу 1.2.1 согласно ISO 8573-1:2010.

Ограничения по эксплуатации
Минимальная температура окружающей среды: 5°C.
Максимальная температура окружающей среды: 45°C для NGP, 60°C для NGP⁺.
Максимальное давление сжатого воздуха на входе: 10 бар для NGP, 13 бар для NGP⁺.

FOD: Производительность кислорода
Стандартные условия
Эффективное давление сжатого воздуха на входе: 7,5 бар.
Давление кислорода на выходе: 5 бар.
Температура окружающей среды: 20°C.
Точка росы сжатого воздуха на входе: 3°C.
Точка росы кислорода на выходе: -50°C.
Качество воздуха на входе в генератор по классу 1.4.1 согласно ISO 8573-1:2010
Минимальные требования: рефрижераторный осушитель для предварительной обработки воздуха на входе.
Стандартное качество кислорода по классу 1.2.1 согласно ISO 8573-1:2010.

Ограничения по эксплуатации
Минимальная температура окружающей среды: 5°C.
Максимальная температура окружающей среды: 45°C.
Максимальное давление сжатого воздуха на входе: 10 бар.

NGP 185-250



NGP 8-100⁺
NGP 10-115

OGP

Atlas Copco

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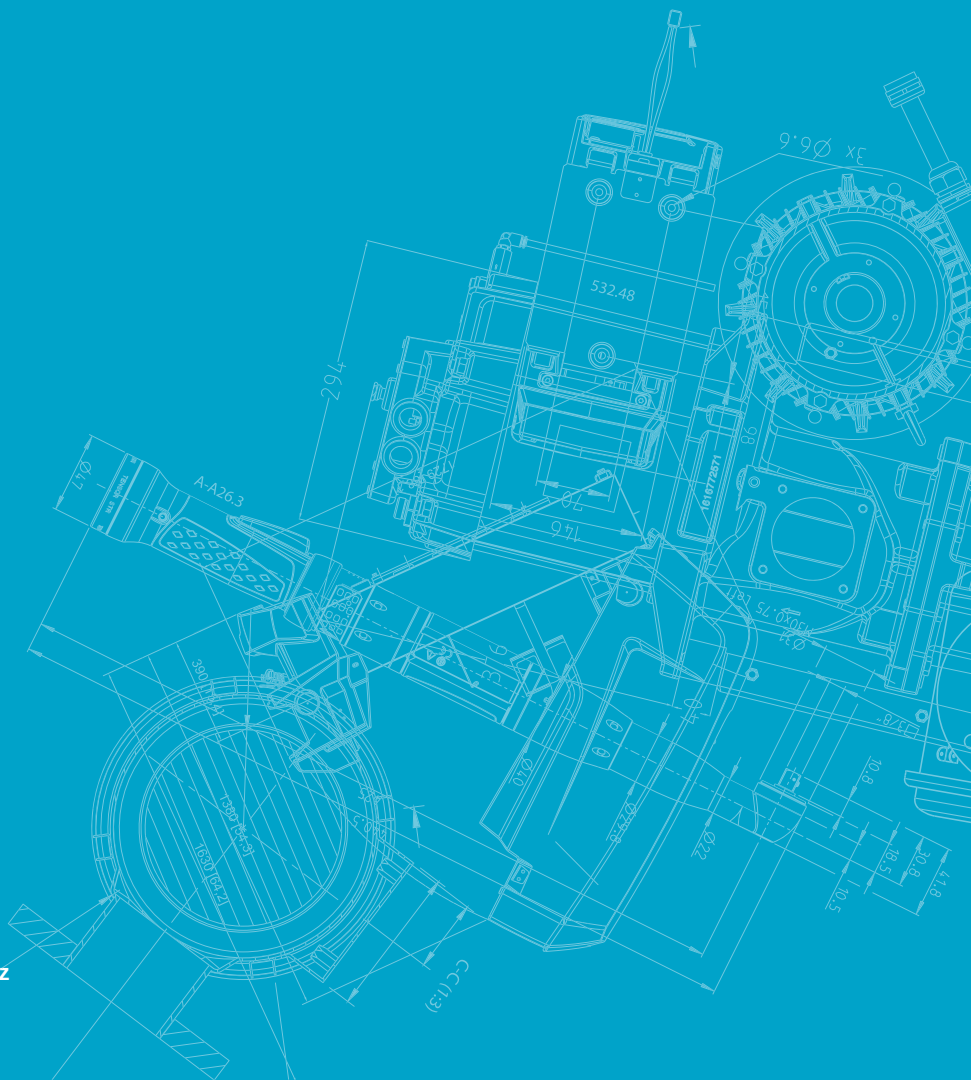
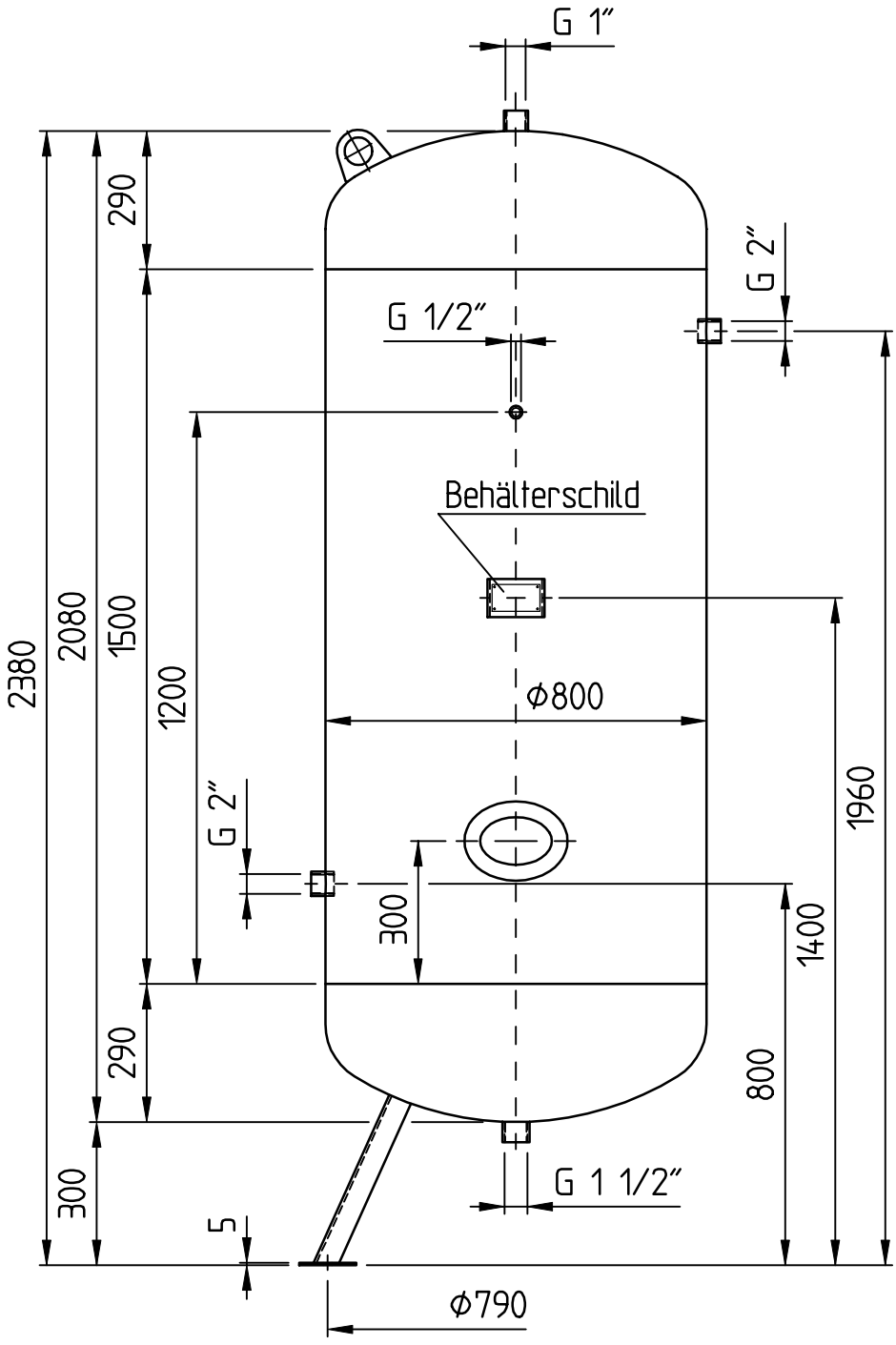
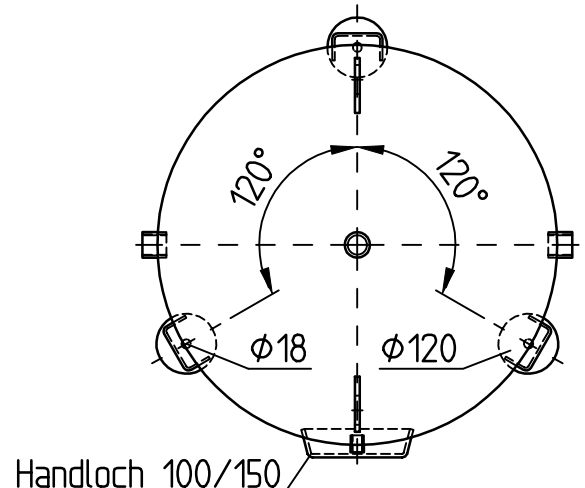






20.10.2006

Zchng. Nr.: St/1000/HL Rev. c

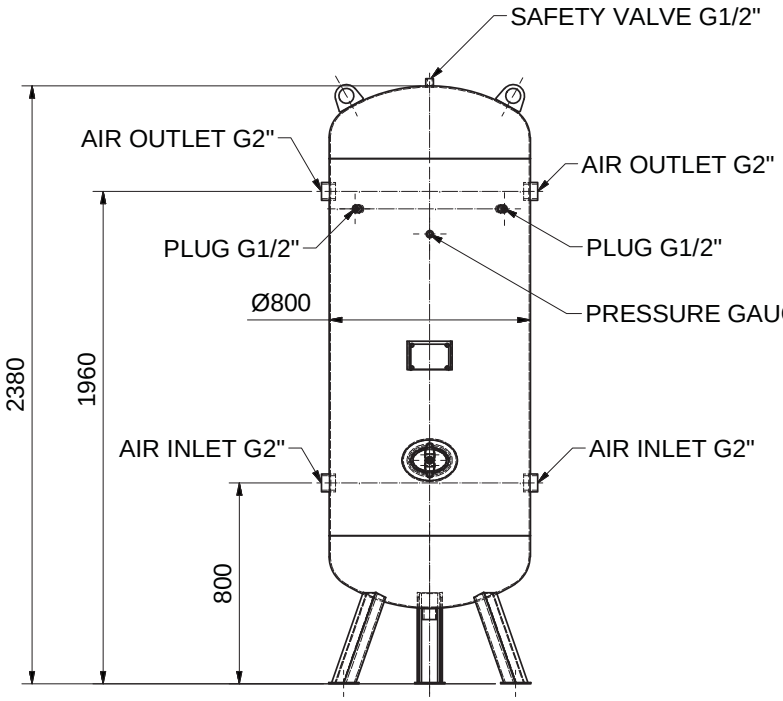
Druckluftbehälter 1000 ltr. Inhalt

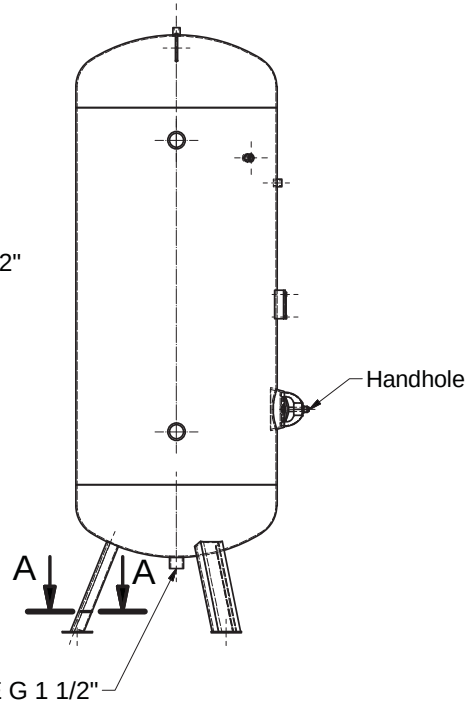
mit Handloch

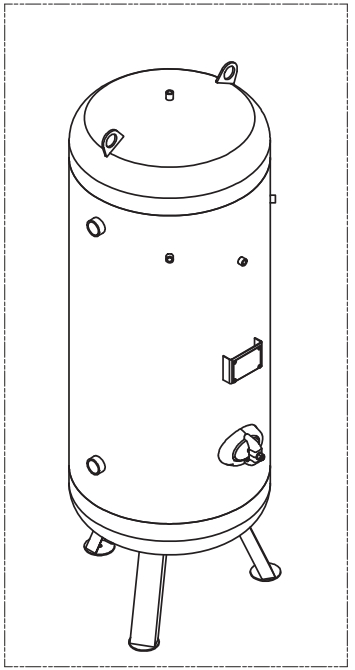
Lohenner
GmbH & Co
Postfach 1364 - 57204 Kreuztal
Telefon 02732/5852-0
Telefax 02732/5852-40

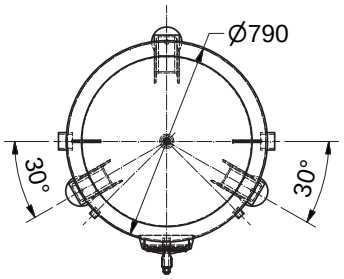
Maßblatt St1000HL 07/02

All materials supplied are in compliance with the requirements of the List of Prohibited Substances

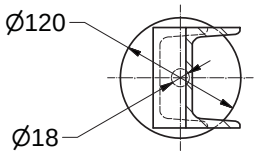








A-A (1 : 5)(3x)



Type Name	Product Nr	Pressure	Vessel Set
LV1000	8101 0207 02	11 bar	8101 0241 00
LV1000	8101 0208 01	16 bar	8101 0241 42

00			21/01/2016		1629007811	-
Ed	Posi-tion	Modified from	Date	Intr./Appd.	Parent 3D model	Edition 3D

Tolerances, if not indicated, according to: ATLAS COPCO STANDARD CLASS

Name: PRESSURE VESSEL DIMENSION DRWG — LV1000

Material: Not Applicable

Treatment: Not Applicable

Confidentiality Class acc. to 1102 K: Confidential

INV

Atlas Copco

STATUS: Approved

Scale 1 : 20 | Drawn by INEvak | Drawing format A3 | Blank wt Kg | Fini wt. 30.253 kg

Family | Blank nr.

Compare | Replaces

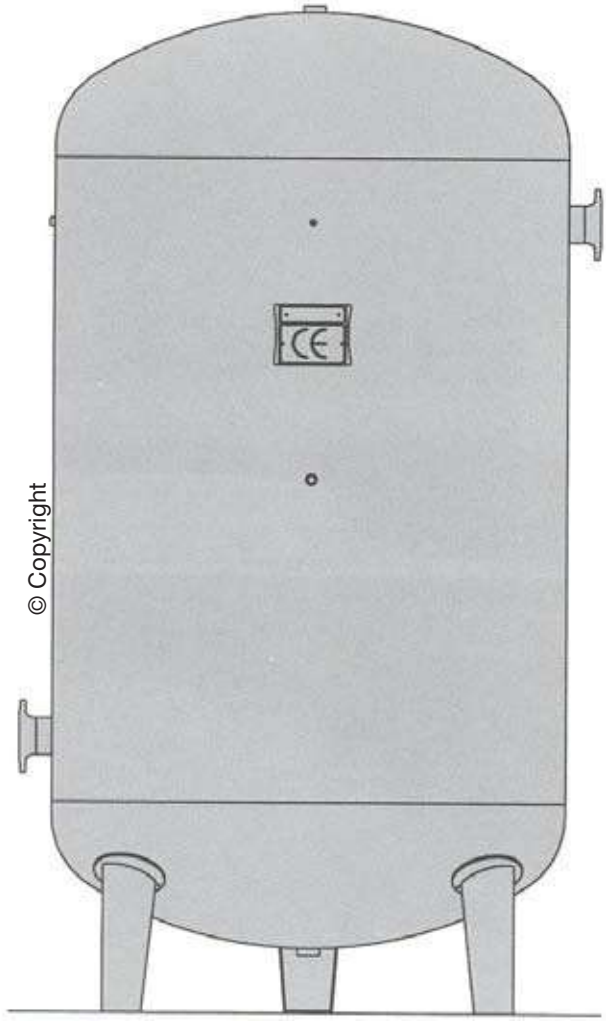
Drawing owner: API

Des checked. | Prod checked. | Approved. | Date 19/11/2015

Designation: 9820920004

Sheet 1 / 1

DANA-TANK A/S
Produktdatablad



CE-mærkede
Trykbeholdere
Vertikale
Standardstørrelser
1000-15000 liter
Max. drifttryk og temp.
11 eller 16 bar og 50 °C

DANA-TANK standard trykbeholdere fremstilles CE-mærkede efter direktiv PED 97/23/EC & AD 2000 og godkendes normalt af bemyndiget organ til EU-landene.

CE-mærkning efter PED 97/23/EC & EN 286-1 gældende for standardbeholdere under 1000 l. dog bar x L < 10000, se datablad 2002-1.

IPL GROUP
Nylandsvej 9 · DK-6940 Lem St.
Tlf. 97 34 22 00 · Fax 97 34 26 26
www.ipl.dk

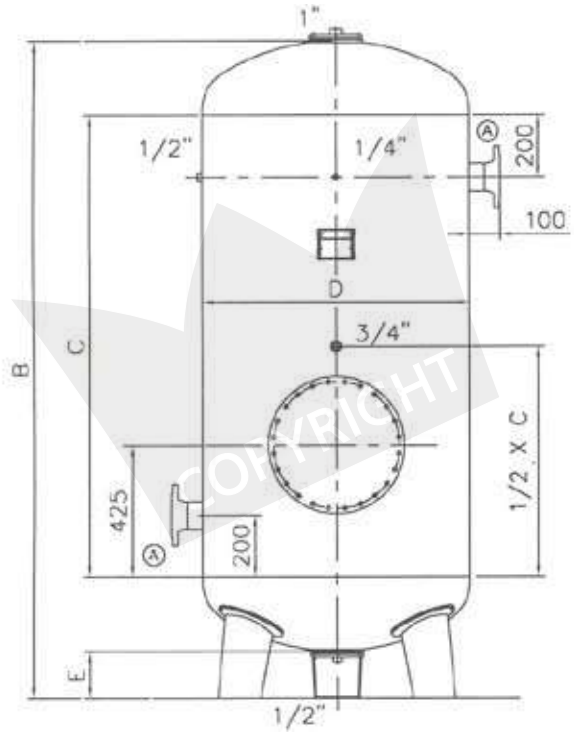
DANA-TANK A/S

Datablad 2002-2/Rev.1 Trykbeholdere – lodrette 1000-15000 ltr.

Volume	Besigtigelsesmuligheder			Mål og tilslutninger					Vægt i kg.	
Liter	Ø100 (2 stk.) standard	Ø420/Ø500 soecial	Ø100x150 (2 stk.) special	A	B	C	D	E	11 bar	16 bar
1000	x	x	x	2"	2115	1485	863	150	277	315
1500	x	x	x	2"	2630	2000	863	150	374	435
2000	x	x	x	DN65	2840	2000	1100	200	660	720
3000	x	x	x	DN80	2920	2000	1280	200	790	870
4000	x	x	x	DN80	3000	2000	1450	200	905	1100
5000		x		DN100	3100	2000	1600	200	1050	1300
6000		x		DN100	3150	2000	1700	200	1200	1400
7000		x		DN100	4100	3000	1600	200	1000	1250
8000		x		DN100	4150	3000	1700	200	1600	1800
9000		x		DN100	5100	4000	1600	200	1260	1500
10000		x		DN100	5150	4000	1700	200	2000	2200
11000		x		DN100	6100	5000	1600	200	1550	1800
12000		x		DN100	6150	5000	1700	200	2400	2600
15000		x		DN100	5310	4000	2000	200	3100	

Vejledende skema

Målskitse 1000-15000 liter



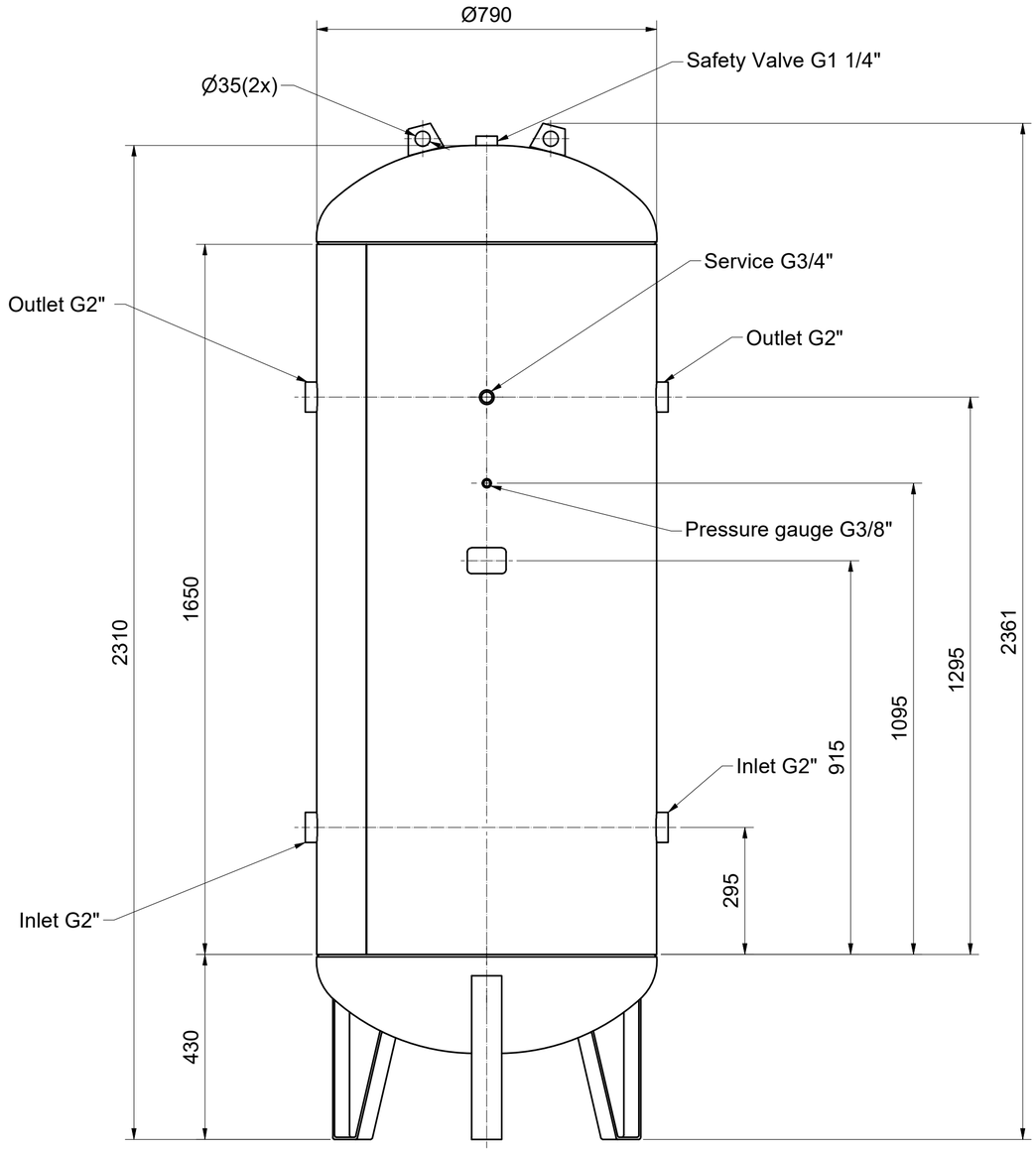
DANA-TANK standard lodrette trykbeholdere - med volumen fra 1000-15000 kan leveres for drifttryk som anført ovenfor.
Beholderne udføres med én af de angivne besigtigelsesmuligheder, der er udtryk for gældende regler for inspektion af trykbeholdere for installering i EU.

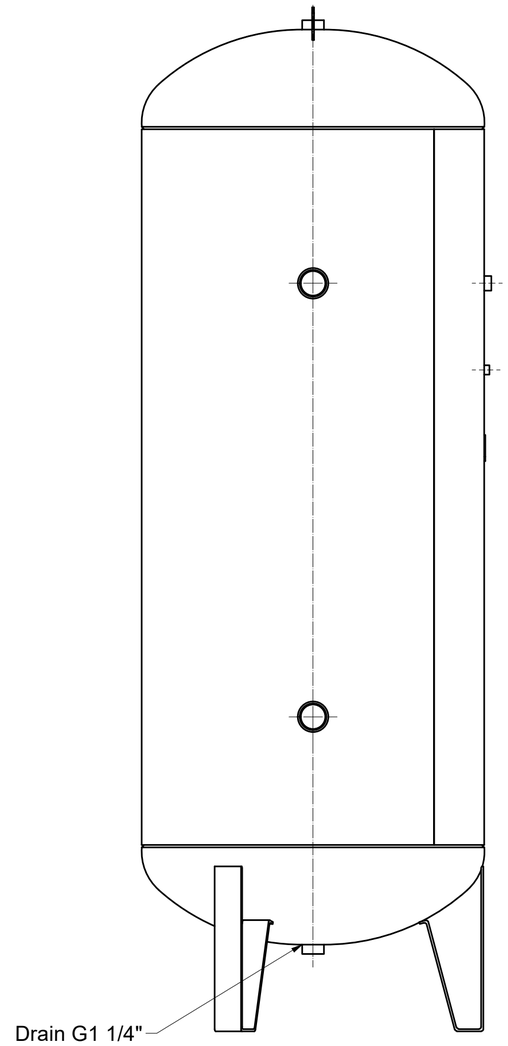
Ret til ændringer forbeholdes.

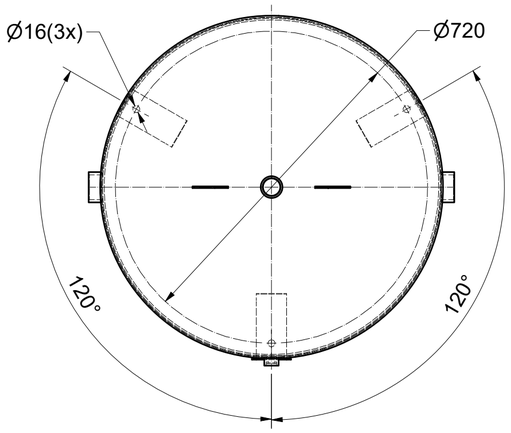
I øvrigt fremstilles trykbeholdere efter opgave.

Nogle modeller lagerføres, øvrige modeller produceres efter ordre.
DANA-TANK trykbeholdere kan leveres med udvendig maling i.h.t. DS/EN ISO 12944.
Rekvirer i øvrigt følgende datablade fra DANA-TANK:
Datablad 2002-1 for lodrette beholdere 50-800 l.
Datablad 2002-3 for vandrette beholdere 18-800 l.
Datablad 2002-6 for beholdere 20-70 bar.
Beskrivelse over alternativ overfladebehandling.

IPL GROUP
Nylandsvej 9 · DK-6940 Lem St.
Tlf. 97 34 22 00 · Fax 97 34 26 26
www.ipl.dk







Notes:-
- Suited for oxygen use according to specification 9828 5303 00.
- External treatment: painted RAL 7047.
- Internal treatment: VITROFLEX coating.
- Weight : 204 kg.

Designed, built, tested, certified and marked according European Directive: 2014/68/EU:	CAT IV
Medium	OXYGEN
Design pressure	11,5 bar
Min. Design temperature	-10 °C
Max. Design temperature	120 °C
Nominal Diameter (DN)	790
Volume	1000 L
Test pressure	16.5 bar
Testing according SQA plan:	Sample test: / 100% test: X

Tolerances, if not indicated, according to:				
ATLAS COPCO STANDARD CLASS				

Name	DIMENS. DRWG	LV1000 OXYGEN	Confidentiality Class acc. to 1102 K	
Material	See Drawing		Confidential	
Treatment	See Drawing		INV	
Atlas Copco	Scale 1 : 10	Family	A2	Compare
	Drawn by INEEXTVIP	Blank nr.		Replaces
STATUS	Version Drwg	Blank wt Kg	Fini wt. 160,623 kg	Designation
Pending	Des checked.	Prod checked.	Approved.	Date 17/06/2021

Drawing owner: API

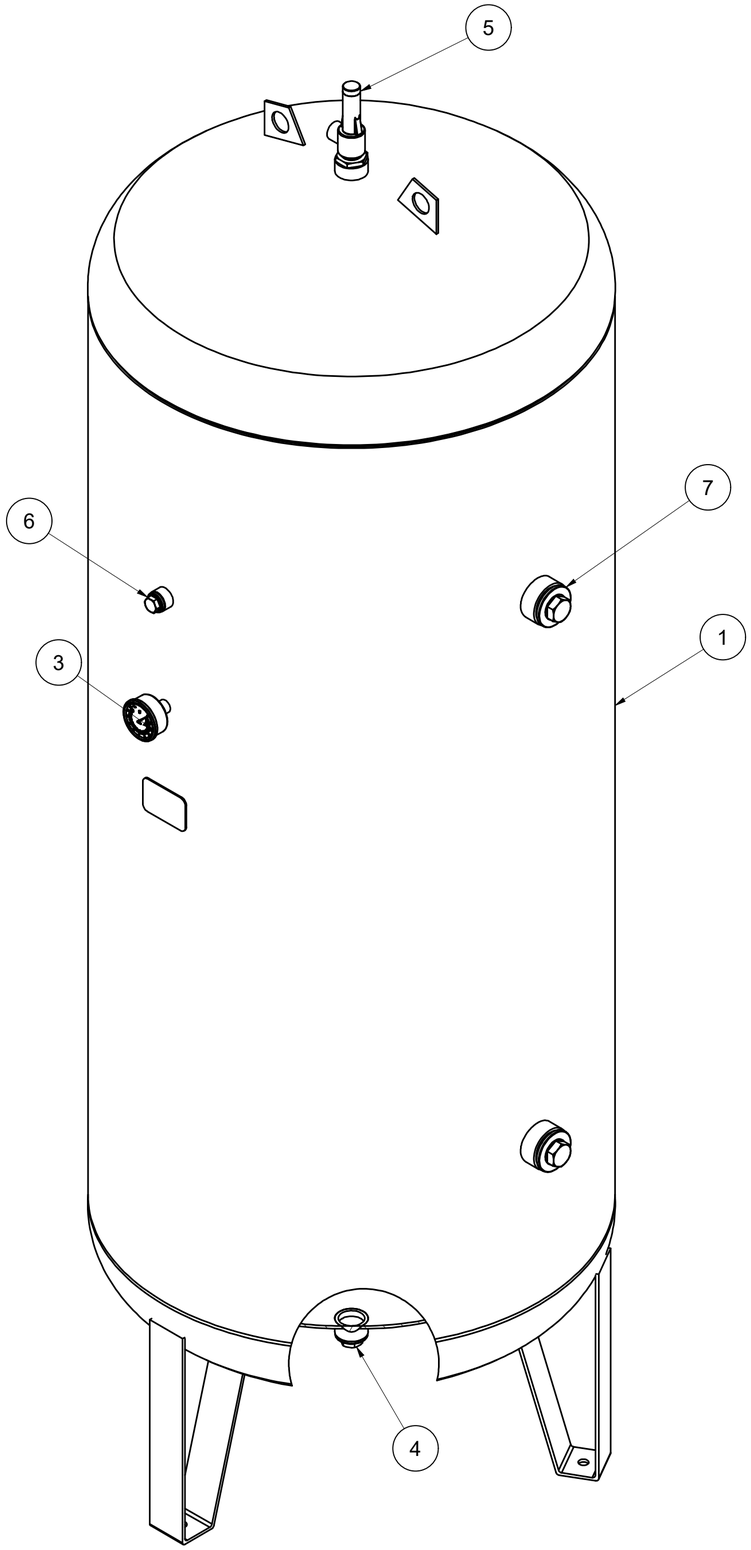
Sheet 1 / 1

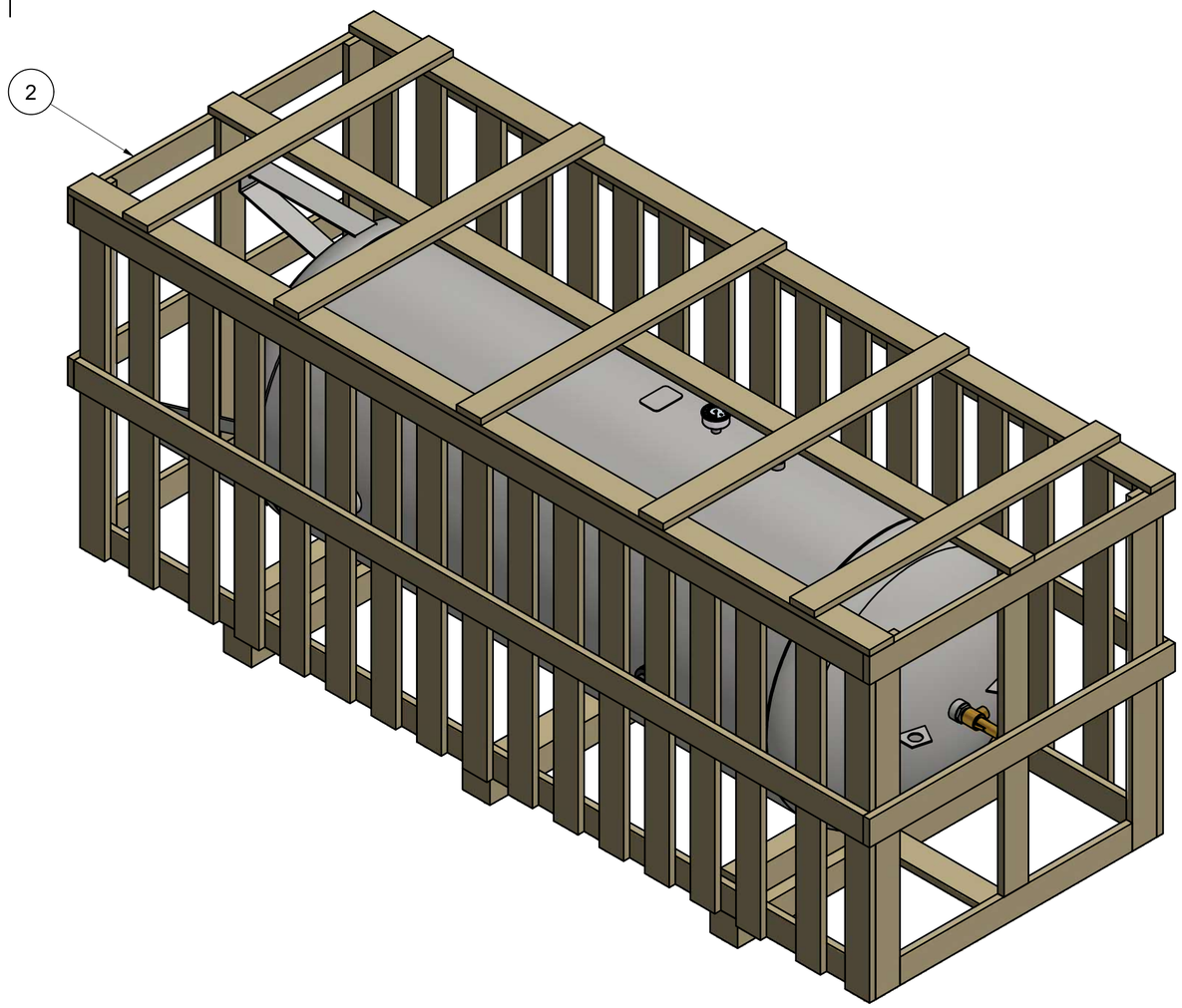
1629240202-01

1629240202-M1	1
Parent 3D model	Ed . Version 3D

Ed	Position	Modified from	Date	Intr./Appd.
1				

All materials supplied are in compliance with the requirements of the List of Prohibited Substances





Notes:-
- Suited for oxygen use according to specification 9828 5303 00.
- Shipping weight : 255 kg.
- Metal plugs to seal vessel from contamination during transport.

Parts List						
Pos	Qty	Partnumber	R/S	Name	Material	Description
1	1	1629240212	R	VESSEL AIR	See Drawing	LV1000 OXYGEN
2	1	1629240222	R	PACKAGING	See Drawing	LV1000 OXYGEN
3	1	0872100132	S	GAUGE PRESS	See Standards	PRESSURE GAUGE
4	1	0686420900	S	PLUG	See Standards	
5	1	0832100273	S	SAFETY VALVE	See Standards	
6	1	0686371662	S	PLUG	See Standards	
7	4	0686371673	S	PLUG	See Standards	

Tolerances, if not indicated, according to:
ATLAS COPCO STANDARD CLASS

Name VESSEL AIR — LV1000 OXYGEN ASSEMBLY
Material See Drawing
Treatment Not Applicable
Confidentiality Class acc. to 1102 K: Confidential
INV

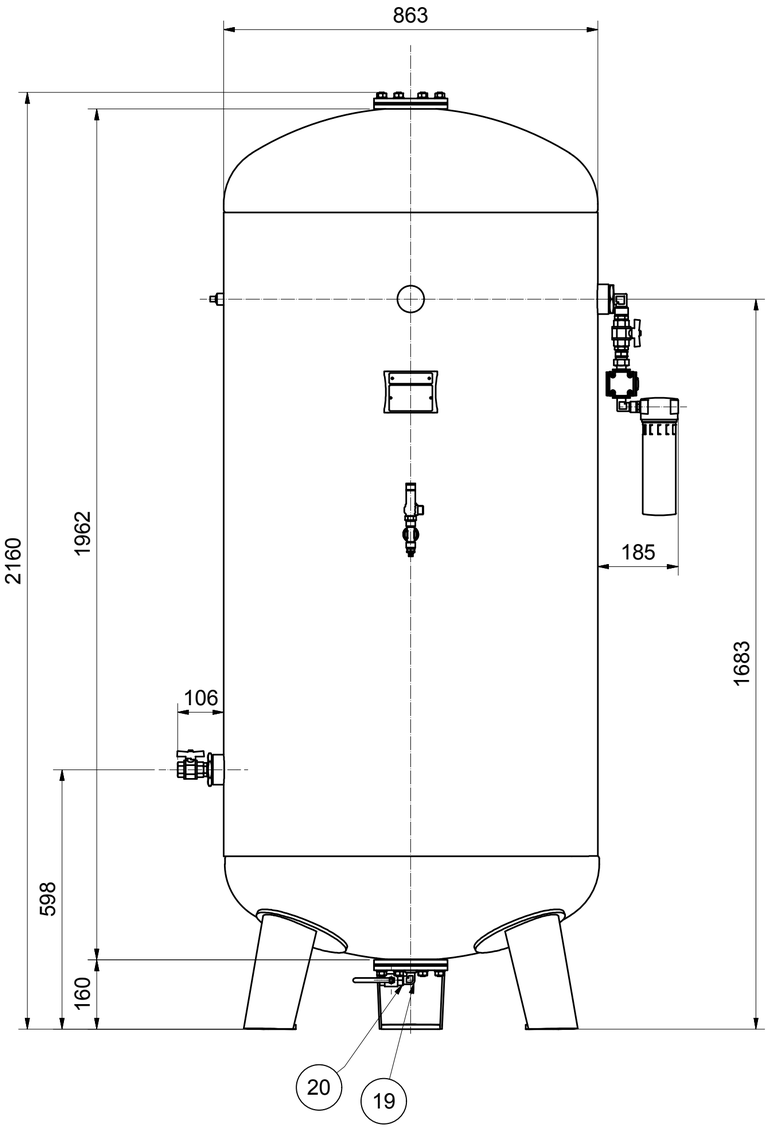
Atlas Copco
STATUS: Pending

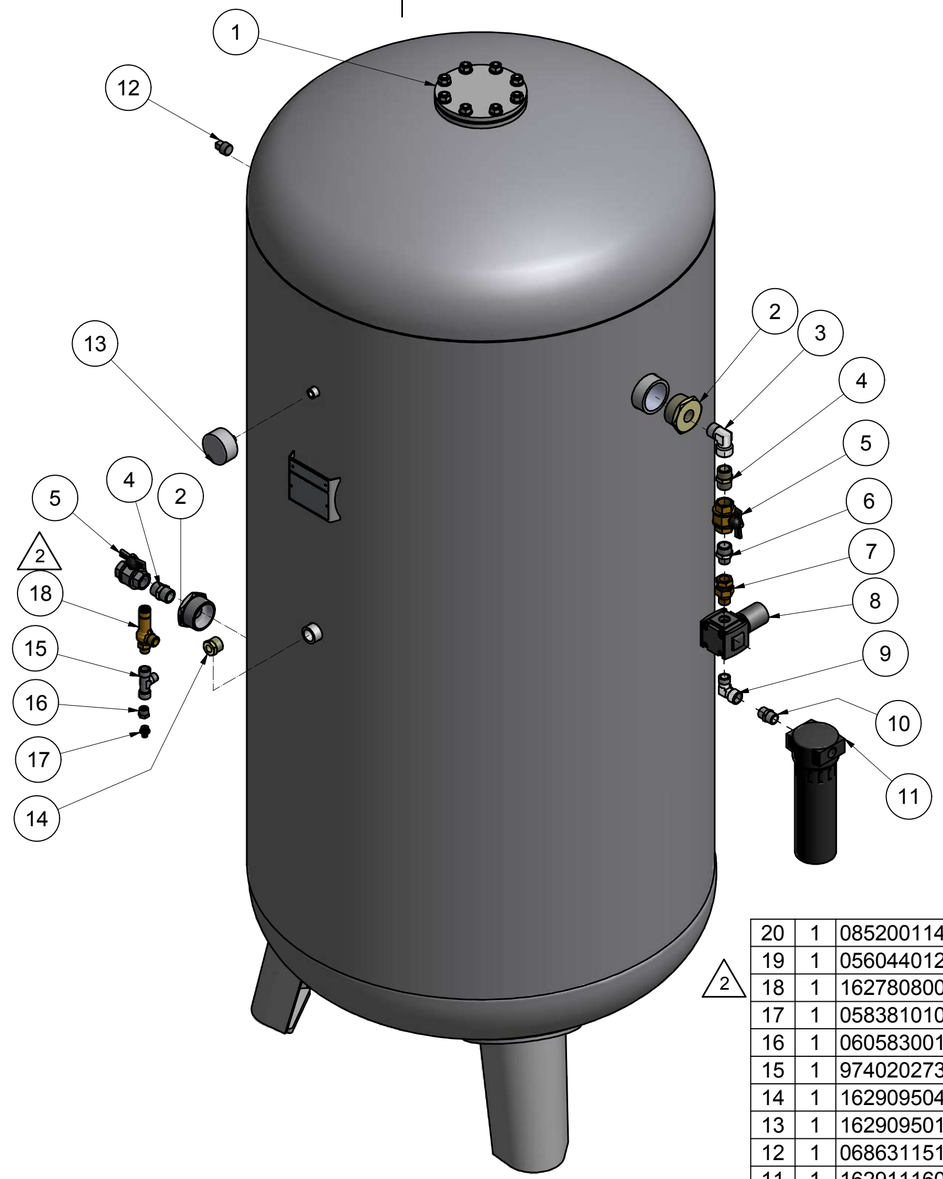
Scale 1 : 5 | Family | A2 | Compare | Drawing owner: API
Drawn by INEEXTVIP | Blank nr. | Replaces
Version Drwg | Blank wt Kg | Fini wt. 255.000 kg | Designation | Sheet 1 / 1
Des checked. | Prod checked. | Approved. | Date 17/06/2021

1629240212-01

Ed	Position	Modified from	Date	Intr./Appd.
1				

1629240212-M1	1
Parent 3D model	Ed . Version 3D





Pos	Qty	Partnumber	R/S	Name	Comments
20	1	0852001144	S	BALL VALVE	G1/2"
19	1	0560440123	S	ELBOW	G1/2"
18	1	1627808009	R	VALVE SAFETY	ISO 7-R3/8"
17	1	0583810109	S	STRAIGHT COUPL.	G1/4" x Ø4
16	1	0605830012	S	BUSHING	ISO 7-R3/8" x RP1/4"
15	1	9740202733	S	TEE	RP3/8" x ISO7-R 3/8 x RP3/8"
14	1	1629095049	R	BUSHING	ISO 7-R3/4" x G3/8"
13	1	1629095018	R	GAUGE PRESS	G 1/4" (0-12BAR)
12	1	0686311511	S	PLUG	ISO7-R1/2"
11	1	1629111600		FILTER	G 1/2"
10	1	9740202144	S	NIPPLE	G 1/2"
9	1	0605950016	S	ELBOW	G1/2" x G1/2"
8	1	0837154000	S	REGULATOR	G1/2"
7	1	0586100080	S	UNION	RP 1/2" x ISO 7-R1/2"
6	1	0603410050	S	NIPPLE	ISO 7-R 1/2" x ISO 7-R 3/4"
5	2	0852001154	S	BALL VALVE	G3/4" (T-HANDLE)
4	2	0603410036	S	NIPPLE	ISO 7-R3/4"
3	1	0605950017	S	ELBOW	G3/4"
2	2	1629111587	R	BUSHING	ISO 7-R2" x RP3/4"
1	1	1629091100	R	BUFFER VESSEL	1000 Ltr

Note: All components should be cleaned as per cleaning procedure 9829500380

Ed	Position	Modified from	Date	Intr./Appd.
2		POS 18 UPDATED	15/05/2017	User Agent

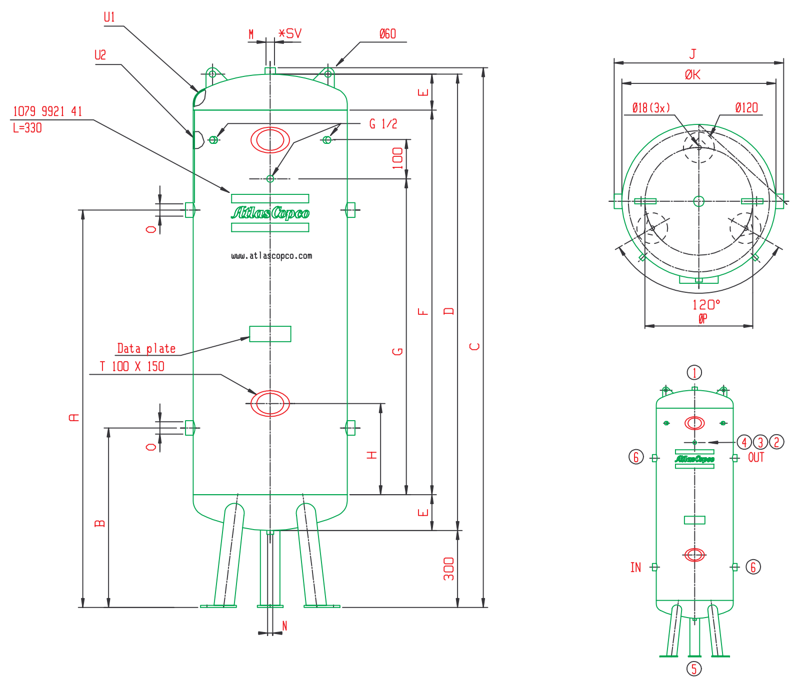
1629091485-M1	
Parent 3D model	Ed . Version 3D

Tolerances, if not indicated, according to:	General tolerances			
ATLAS COPCO STANDARD CLASS	1350K - m			

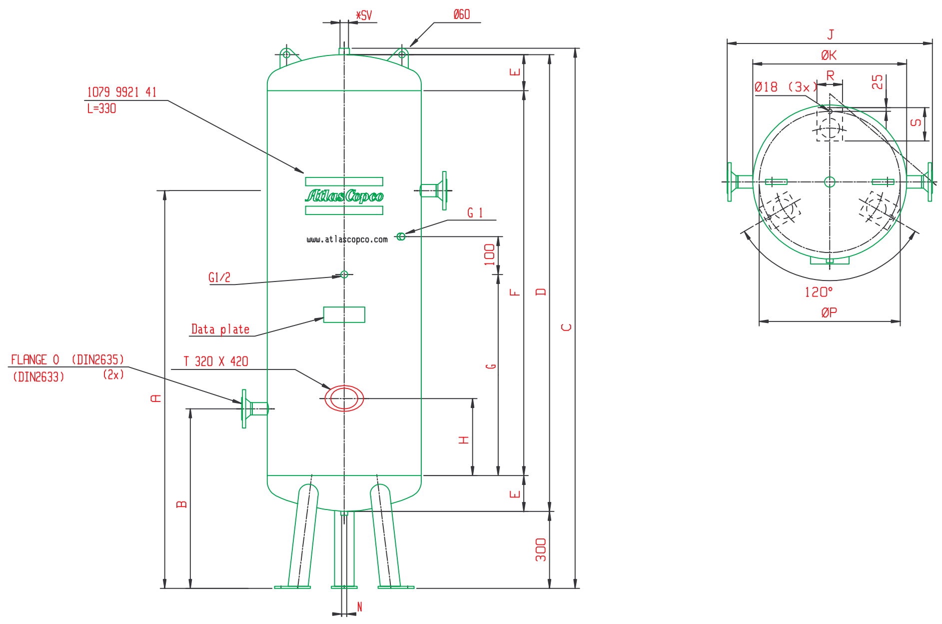
Name	VESSEL AIR	BUFFER VESSEL OGP 20-35 (1000 Ltr)	Confidentiality Class acc. to 1102 K: Confidential
Material	NOT APPLICABLE		
Treatment	See Drawing		INV

Atlas Copco	Scale 1:10	Family	A2	Compare	Drawing owner: NLY
	Drawn by INESWL	Blank nr.		Replaces	
STATUS	Version Drwg	Blank wt Kg	Fini wt. 251.931 kg	Designation	Sheet 1 / 1
Released	Des checked.	Prod checked.	Approved.	Date 5/05/2014	1629091485-01

TYPE I



TYPE II



CE

A.C. PRODUCT NR.	TYPE I	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T	U1	U2
8101 0212 05	LV 1011 HT	1960	800	2400	2080	290	1500	1200	300	.	860	800	.	G 1/2	G 1/2	G 2	790	-	-	1	6	6
8101 0212 13	LV 1511 HT	1700	800	2380	2060	280	1500	900	370	.	1060	1000	.	G 1/2	G 1/2	G 2	930	-	-	2	6	6.7
8101 0212 21	LV 2011 HT	1760	900	2460	2140	320	1500	900	380	.	1210	1150	.	G 1	G 1/2	G 3	1030	-	-	2	6.7	7.5
8101 0212 39	LV 3011 HT	2700	900	3440	3120	320	2480	1300	380	.	1210	1150	.	G 1	G 1/2	G 3	1030	-	-	2	6.7	7.5
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A.C. PRODUCT NR.	**TYPE II**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**R**	**S**	**T**		
....		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8101 0212 54	LV 5011 HT	3000	1500	3820	3500	320	2860	1600	650	.	1600	1400	.	G 11/2	G 1/2	DN 80	1330	180	220	1	11.1	9
....	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
8101 0212 70	LV 8011 HT	3250	1800	4500	4180	360	3460	1600	650	.	1800	1600	.	G 2	G 1/2	DN 100	1420	220	280	1	13	10
8101 0212 88	LV 10011 HT	4000	1800	5500	5180	360	4460	1600	650	.	1800	1600	.	G 2	G 1/2	DN 100	1420	220	280	1	13	10
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VOLUME (l)	WEIGHT (kg)	DESIGN PRESSURE (bar)	TEST PRESSURE (bar)	SAFETY VALVE *SV
1000	304	11	15.73	G 1/2
1500	445	11	15.73	G 1/2
2000	557	11	15.73	G 1
3000	780	11	15.73	G 1
.	.	.	.	.
.	.	.	.	.
4000	1270	11	15.73	G1 1/2
5000	1470	11	15.73	G1 1/2
6000	1857	11	15.73	G 2
8000	2284	11	15.73	G 2
10000	2660	11	15.73	G 2
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.

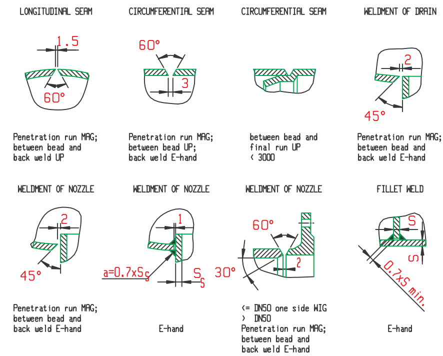
- CONSTRUCTION AND TEST ACCORDING CE

- SURFACE TREATMENT : HOT DIP GALVANISED (In- and outside 70 μmin.)
- DESIGN TEMPERATURE : -10°C + 120°C (1)
- AFTER GALVANISED , ALL SOCKETS TO BE ADJUSTED AND FITTED WITH PLASTIC PLUGS.
- PRODUCT NUMBER ON DATA PLATE

VESSEL SUPPLIED WITH
- SAFETY VALVE ☐
- MANOMETER ☐
- TEST FLANGE
- DRAIN VALVE
- 2 X PLUG FOR O BY TYPE I

SET DRGW. 9820 2655 00 R

WELDING DATA



Toleranties, indien niet aangegeven, zijn volgens: Tolerances, if not indicated, according to:	Bew. opp./Gaten Mach.surf./Holes	Plaatwerk Sheet metal	Snijbranden Flame cutting	Lassen Welding
ATLAS COPCO STANDARD/Klasse/Class	1350K / 2	1350:01K	1355K / C	1356K / B

Benaming / Name: VESSEL LV CE 11 bar 120 C° HT. (1) 14025

Geheimh.klasse / Secrecy Class: 1102 K/ 2

Materiaal / Material: SEE DRAWING

Behandeling / Treatment:

CAD

Atlas Copco

Schaal / Scale: 1:10 | Familie / Family: | A1 | Vergelijk / Compare:

Getekend / Drawn by: AIR9389 | Ruw nr. / Blank nr.: | Vervangt / Replaces:

Eigenaar / Drawing owner: AII

Overgemaakt/Transferred from

Std gez./chd. | Ruw gew. / Blank wt. Kg | Afg gew. / Fini wt. Kg

Des gez./chd. | Prod gez./chd. | Goedg./Appd. | Datum/Date: 2002-04-09

APPROVED

Identificatie/Designation: 9820 3591 00

Blad/Sheet 01 (01)

Bijhorende tekeningen en documenten / Appurtenant drawings and documents

01	120 C° was 100 C°	2002-04-09	
Nota / Note	Posi- / tion	Gewijzigd van / Modified from	Datum / Date	Ingev./Goedg. / Intr./Appd.

Refrigerant air dryers

FD VSD 100-300, FD 5-95 and FX 5-300
(5-300 l/s/11-636 cfm)

Why dry your compressed air?

Compressed air contains oil, solid particles and water vapors. It is the inherent result of the compression process, which concentrates the natural water vapors and particles in the air that surrounds us. This untreated compressed air poses a substantial risk to your air system and end products. Its moisture content alone can cause corrosion in pipe work, premature failure of pneumatic equipment, product spoilage and more. An air dryer is therefore essential to protect your systems and processes.

Refrigerant dryers by Atlas Copco

Atlas Copco's refrigerant dryers provide the clean, dry air you need to expand the life of your equipment and ensure the quality of your products. Our FD and FX dryers are designed in-house and tested using the most stringent methods. They meet or exceed the international standards for compressed air purity and are tested according to ISO 7183:2007.

FX 5-300

Quality Performance

- Available in 16 sizes from 6 to 300 l/s/15 to 636 cfm.
- Pressure dew point as low as +3°C/+37.4°F.
- Electronic no-loss drain with safety function.
- Controller with pressure dew point display.
- Easy installation.
- Minimal maintenance.

FD 5-95

First-Rate Efficiency

- Available in 11 sizes from 6 to 95 l/s/13 to 201 cfm.
- Pressure dew point as low as +3°C/+37.4°F.
- Electronic no loss drain with safety function.
- Controller with pressure dew point display, energy saving option, alarm contacts, …
- Quiet operation.
- Constant purity class -;4 - according ISO 8573-1:2010.

FD VSD 100-300

Unrivalled Energy Savings

- Available in 6 sizes from 100 to 300 l/s/212 to 636 cfm.
- Supreme energy savings: up to 50% on indirect energy costs and up to 70% on direct energy costs.
- Low pressure drop, typically below 0.2 bar/2.9 psi.
- Pressure dew point as low as +3°C/+37.4°F.
- Advanced touchscreen controller: visualization, alarm history, remote control,…
- All-in-one design with very small footprint.
- Delivered ready for use.
- Quiet operation.
- Constant purity class -;4;- according ISO 8573-1:2010.

VSD

Extending your VSD energy savings to your quality air

The introduction of Atlas Copco's VSD (and later VSD+) compressor technology was an industry milestone. By automatically adjusting its motor speed as air demand fluctuates depending on production flow or time, a VSD compressor offers double digit reductions in energy use and in lifecycle costs. With the FD VSD, Atlas Copco is extending this energy-saving principle to your quality air equipment.

FD VSD 100-300:
Unrivalled Energy Savings

1

VSD inverter

Controls the speed of the compressor to match your air demand and ensure the highest possible energy savings.

2

High-efficiency heat exchanger

Counter-flow compact brazed plate or aluminum heat exchanger, with air-to-air side for optimum cooling efficiency and the lowest possible pressure drop.

3

Integrated water separator

Low velocity with high separation efficiency, even in low flow conditions.

4

Electronic no-loss condensate drain

Opens the drain only when needed to eliminate unnecessary loss of compressed air during timed draining.

5

Elektronikon® Touch controller

Provides advanced control and allows for remote monitoring.

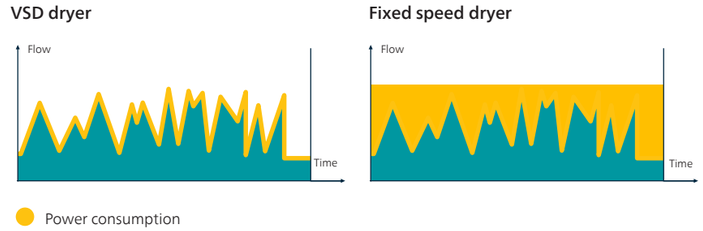
6

Single electrical connection

Ensures plug-and-play installation.

VSD for superior energy savings

Atlas Copco's in-house developed VSD technology matches your FD dryer's power consumption to your production's actual air flow. While a traditional refrigerant dryer can only be turned on or off, Atlas Copco's FD VSD mirrors your production's demand for compressed air as it fluctuates during the day, week or year. This ensures supreme energy savings as well as a stable dew point.



Minimal environmental impact

FD VSD dryers use the CFC-free R410A refrigerant, which has an ozone depletion potential (ODP) of zero. The refrigerant meets the strict F-Gas regulations and, due to its low power consumption, has an an outstanding TEWI (Total Equivalent Warming Impact) performance.

Optimum performance and safety in all conditions

- Hot gas bypass valve prevents freezing at lower loads.
- The extremely reliable R410A rotary compressor provides the best performance with minimum environmental impact. Capillary tubes cope with all conditions – no moving parts for extra reliability.
- Condenser with louvered fin technology for improved performance in dusty environments.

Advanced remote monitoring and control

- High-tech Elektronikon® Touch controller with warning indications, dryer shutdown and maintenance scheduling.
- Standard SMARTLINK remote monitoring to maximize air system performance and energy savings.

Robust and compact design

- Forklift opening for smooth transport.
- Easy front and side panel access.
- No bulky thermal mass heat exchanger needed to save on energy.

Filters

If your production requires higher levels of air quality and filtration, UD+ filters can be added on to your FD VSD dryer.

FD 5-95:
First-Rate Efficiency

1

Low-noise compressor with liquid separator

Lasts longer thanks to limited vibrations, minimal moving parts, and reduced risk of leakage.

2

High-efficiency heat exchanger

Counter-flow compact brazed plate or aluminum heat exchanger, with air-to-air side for optimum cooling efficiency and the lowest possible pressure drop.

3

Integrated water separator

Low velocity with high separation efficiency even in low flow conditions.

4

Electronic no-loss condensate drain

With level sensor, backup manual drain and drain alarm.

6

Hot gas bypass valve

Ensures stable pressure dew point and prevents freezing at lower loads.

5

Fan switch

Reduces energy consumption and optimizes the pressure dew point at very low temperatures.

7

Refrigerant separator

Eliminates the chance of moisture entering the compressed air system.

8

Single electrical connection

Allows for plug-and-play installation.

Supreme energy efficiency

- The FD offers a low pressure drop – typically below 0.2 bar/2.9 psi – and minimal energy consumption.
- The compact brazed plate or aluminum heat exchanger was designed specifically to provide optimal pre-cooling and the lowest possible pressure drop.
- The electronic no-loss condensate drain comes with a level sensor to open the drain only when needed, preventing unnecessary loss of compressed air.

Comprehensive control and monitoring options

- The Elektronikon® Alpha controller displays the pressure dew point and relative humidity.
- Remote alarm and start/stop control through voltage-free contact.
- Additional features such as alarm history and standard remote visualization.

Easy installation and long maintenance intervals

- Small footprint thanks to an innovative all-in-one design.
- Delivered ready for use, minimizing costly production downtime.

Low environmental impact

FD dryers use CFC-free refrigerants (R134A and R410A) with an ozone depletion potential (ODP) of zero.

Reliable performance in tough conditions

- Hot gas bypass valve prevents freezing at lower loads.
- R134A piston compressor with high coefficient of performance (extremely reliable R410A rotary compressor for models FD 60-FD 95) provides the best performance with minimum environmental impact. Capillary tubes cope with all conditions – no moving parts for extra reliability.
- Condenser with louvered fin technology for improved performance in dusty environments.

FX 5-300: Quality Performance

1

Refrigerant separator

No chance of moisture entering the compressed air system.

2

Hot gas bypass

Ensures stable pressure dew point and eliminates the possibility of condensate freezing.

3

Digital display

Provides peace of mind through precise monitoring of pressure dew point.

4

Single electrical connection

Allows for plug-and-play installation.

5

Easy access to key components

For straightforward servicing.

6

Water separator

Offers high efficiency for better pressure dew point.

7

Compact design

For a small footprint.

8

Low-noise rotary compressor with integrated liquid separator

Lasts longer thanks to limited vibrations, minimal moving parts, and reduced risk of leakage.

Pressure dew point precision

The FX comes in a wide range of sizes (6-300 l/s or 13 -636 cfm) to offer a steady pressure dew point as low as +3°C/+37.4°F. Its easy to use digital display precision-measures and monitors the pressure dew point and dryer performance.

Digital display

- Pressure dew point: exact measurement and visual monitoring.
- Status: refrigerant compressor and fan.
- Alarms: high/low pressure dew point and probe failure.
- Service warning.

Reliable

Built according to the stringent Atlas Copco standards, the FX is made of high quality, generously sized components.

Hot environments

High ambient temperatures can put your equipment to the test. The FX range offers several high temperature models that ensure dependable performance in conditions up to 46°C/115°F.

Significant cost savings

- Increased reliability and lifetime of tools and equipment.
- Reduced pipe work leaks and thus a lower energy bill.
- Less equipment breakdowns and operational interruptions.
- Minimal chance of product damage as a result of moisture carryover.

Sustainable refrigerant

The FX range comes with refrigerant that is compliant with F-Gas regulations to ensure the lowest possible carbon footprint and energy consumption.

VSD:
a game-changer in energy savings

When purchasing a refrigerant dryer, the main focus is usually on the initial cost. However, this only represents approximately 10% of the lifecycle cost of the dryer. Energy, maintenance and installation make up the bulk of your actual dryer costs. Direct and indirect (pressure drop) energy costs are the most important.

Indirect energy costs

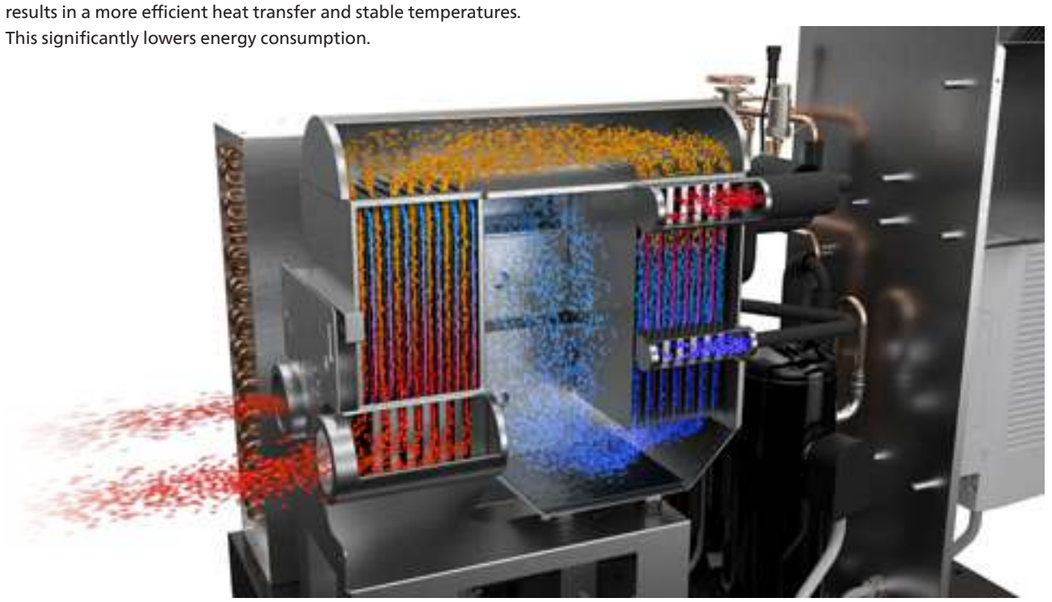
Indirect energy costs are related to the extra energy your air compressor must consume to overcome the pressure drop that takes place in the air dryer. By design, Atlas Copco FD VSD dryers offer a low pressure drop and efficient heat transfer – both of which contribute to a reduction of the indirect energy costs.

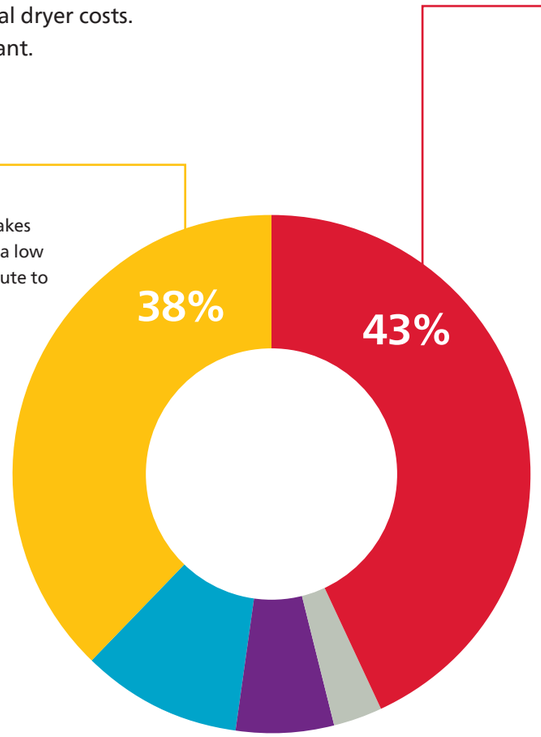
Low pressure drop

If a refrigerant dryer has a high internal pressure drop, the compressor needs to run at a higher pressure. This wastes energy and increases operating costs. Atlas Copco has designed our refrigerant dryers to minimize pressure drop. A pressure drop typically below 0.2 bar/2.9 psi at full flow is ensured by the heat exchanger technology, an integrated low velocity water separator, and generously sized components.

Efficient heat exchanger technology

Atlas Copco's refrigerant dryers use a counter flow heat exchanger on both the air-to-air and air-to-refrigerant side. Compared to a cross flow heat exchanger, the counter flow design results in a more efficient heat transfer and stable temperatures. This significantly lowers energy consumption.





Lifecycle cost

- Direct energy costs
- Indirect energy costs
- Investment
- Maintenance
- Installation

Direct energy costs

Direct energy costs are related to the power that the dryer consumes. Atlas Copco's FD VSD dryers match their energy usage to the actual compressed air demand. This reduces energy consumption by as much as 70% compared to conventional dryers.

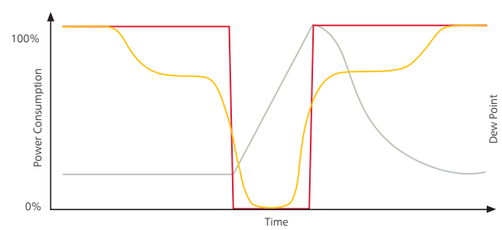
Reduce your total lifecycle cost by up to 50% with Atlas Copco's VSD dryers

- Up to 50% savings on indirect energy costs
- Up to 70% savings on direct energy costs

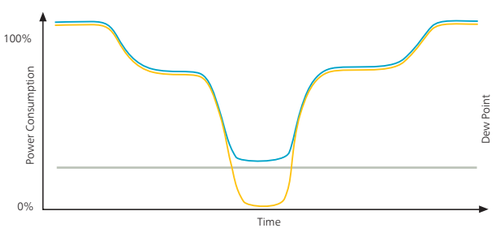
VSD outperforms thermal mass technology

Many conventional dryers rely on thermal mass technology to reduce energy costs. Also called cycling dryers, these units come with thermal mass storage which can be used to dry the air with the dryer's compressor temporarily switched off. While thermal mass technology certainly generates energy savings, these are offset by the additional energy these dryers require to cool the thermal mass. In addition, as the refrigerant compressor's operation is controlled by the thermal mass, the compressed air dew point rises and falls significantly. This can compromise your air quality by up to 2 purity classes. Finally, thermal mass dryers offer only limited or no energy savings in environments with high ambient temperatures. VSD technology has proven to deliver superior results in terms of energy use, dew point stability and service costs.

**Thermal mass:
some energy savings and unstable dew point**



**VSD:
superior energy savings and stable dew point**



Flow · Power Consumption thermal mass · Power Consumption VSD · Dew point

Advanced control

Atlas Copco's refrigerant dryers are built to reliably and efficiently deliver quality air. But in the end, it's all about how they perform on your work floor, meeting your individual needs and responding to your specific conditions. That is why the FD VSD, FD and FX come with comprehensive control options to allow you to get the best performance from your Atlas Copco dryer.

FD VSD 100-300: Elektronikon® Touch controller

- 4.3-inch high-definition color display with clear pictograms and service indicator.
- Internet-based dryer visualization using a simple Ethernet connection.
- Automatic restart after voltage failure.
- Built-in SMARTLINK online monitoring.
- More flexibility: four different week schedules.
- Graphical service plan indication.
- Remote control and connectivity functions.

FD 5-95: Elektronikon® Alpha controller

- Exact measurement and visual monitoring of pressure dew point and ambient temperature.
- High/low pressure dew point alarm.
- Relative humidity indicator.
- Energy saving mode.
- Switch off at freezing alarm.
- Alarm history and standard remote visualization.

FX 5-300: Digital display

- Pressure dew point: exact measurement and visual monitoring.
- Energy saving mode.
- Alarms: high/low pressure dew point and probe failure.
- Service warnings.

Remote monitoring

SMARTLINK: Data Monitoring Program

SMARTLINK captures live data from your compressed air equipment and translates it in clear insights. At a glance, you can check uptime, energy efficiency and machine health.

- Remote monitoring that helps you optimize your compressed air system and save energy and costs.
- Provides a complete insight in your compressed air network.
- Anticipates potential problems by warning you upfront.
- Efficient service planning and parts handling to give you improved uptime.

SMARTLINK & Total Responsibility

Get the most out of SMARTLINK as part of a Total Responsibility Plan. Step back, relax, and let our service engineers monitor your compressed air system. We know exactly when to service your machines, diagnose any issues and be there on time to fix them.

Technical specifications FD VSD 100-300

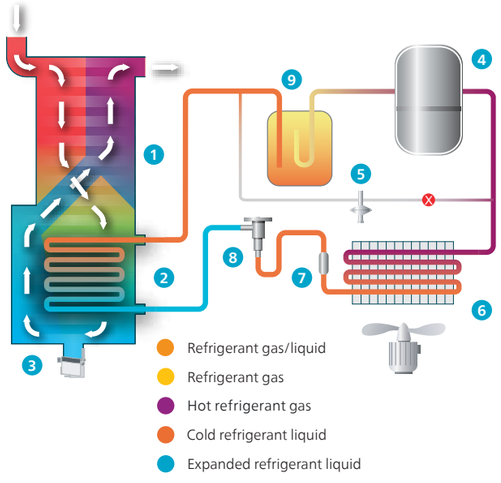
Model	Maximum inlet conditions at full flow (ambient/ inlet)	Inlet flow with a pressure dew point of 3°C/37.4°F		Pressure drop at full flow		Power consumption		Max. working pressure		Compressed air connections	Dimensions						Weight	
											Length		Width		Height			
	°C	l/s	cfm	bar	psi	kW	hp	bar	psi		mm	in	mm	in	mm	in	kg	lb
FD 100 VSD	60	100	212	0.16	2.3	0.66	0.90	14.5	210	G 1 1/2 F (NPT for UL version)	805	31.69	962	37.87	1040	41	130	287
FD 140 VSD	60	140	297	0.11	1.6	1.04	1.41	14.5	210	G 2 F (NPT for UL version)	805	31.69	962	37.87	1040	41	130	287
FD 180 VSD	60	180	381	0.18	2.6	1.54	2.09	14.5	210	G 2 F (NPT for UL version)	805	31.69	962	37.87	1040	41	134	295
FD 220 VSD	60	220	466	0.14	2	1.77	2.41	14.5	210	G 2 1/2 F (NPT for UL version)	805	31.69	962	37.87	1040	41	143	315
FD 260 VSD	60	260	551	0.1	1.5	1.9	2.58	14.5	210	G 2 1/2 F (NPT for UL version)	805	31.69	962	37.87	1040	41	150	331
FD 300 VSD	60	300	636	0.18	2.6	2.64	3.59	14.5	210	G 2 1/2 F (NPT for UL version)	805	31.69	962	37.87	1040	41	165	364

Technical specifications FD 5-95 50 Hz & 60 Hz

Model	Maximum inlet conditions at full flow (ambient/ inlet)	Inlet flow with a pressure dew point of 3°C/37.4°F		Pressure drop at full flow		Power consumption		Max. working pressure		Compressed air connections	Dimensions						Weight	
											Length		Width		Height			
	°C	l/s	cfm	bar	psi	kW	hp	bar	psi		mm	in	mm	in	mm	in	kg	lb
FD 5	60	6	13	0.07	1.02	0.2	0.27	16 (1)	233 (1)	R 3/4	525.5	20.7	390	15.4	530	20.9	27	60
FD 10	60	10	21	0.11	1.6	0.2	0.27	16 (1)	233 (1)	R 3/4	525.5	20.7	390	15.4	530	20.9	27	60
FD 15	60	15	32	0.12	1.75	0.33	0.45	16 (1)	233 (1)	R 3/4	525.5	20.7	390	15.4	530	20.9	32	70
FD 20	60	20	42	0.12	1.75	0.41	0.56	16 (1)	233 (1)	R 3/4	525.5	20.7	390	15.4	530	20.9	34	75
FD 25	60	25	53	0.17	2.47	0.41	0.56	16 (1)	233 (1)	R 3/4	525.5	20.7	390	15.4	530	20.9	34	75
FD 30	60	30	64	0.25	3.64	0.41	0.56	16 (1)	233 (1)	R 3/4	525.5	20.7	390	15.4	530	20.9	34	75
FD 40	60	40	85	0.2	2.91	0.57	0.76	16 (1)	233 (1)	R 1	716	28.2	389	15.3	679	26.8	57	125
FD 50	60	50	106	0.2	2.91	0.54	0.72	16 (1)	233 (1)	R 1	716	28.2	389	15.3	679	26.8	58	128
FD 60	60	60	127	0.22	3.2	0.63	0.84	13	189	R 1	795	31.3	482	19.0	804	31.7	80	176
FD 70	60	70	148	0.22	3.2	0.87	1.17	13	189	R 1	795	31.3	482	19.0	804	31.7	81	178
FD 95	60	95	201	0.22	3.2	1.18	1.58	13	189	R 1	795	31.3	482	19.0	804	31.7	87	192

How refrigerant dryers work

A refrigerant dryer uses a refrigerant circuit and heat exchanger(s) to pre-cool air, refrigerate it to condense out moisture vapor, and then re-heat the air to prevent pipe sweating downstream.



Air circuit

1. Air-to-air heat exchanger: Incoming air is cooled down by the outgoing dry, cold air
2. Air-to-refrigerant heat exchanger: The air is cooled to the required dew point by the refrigerant circuit. The water vapor condenses into water droplets
3. Integrated water separator: The moisture is collected and evacuated by the electronic drain

Refrigerant circuit

4. Refrigerant compressor: Compresses the gaseous refrigerant to a higher pressure
5. Regulation device: The hot gas bypass valve regulates the dryer to prevent freezing at lower load conditions
6. Refrigerant condenser: Cools the refrigerant so that it changes from a gas to a liquid
7. Refrigerant filter: Protects the expansion device from harmful particles
8. Thermostatic expansion valve: The expansion process reduces the pressure and cools the refrigerant further
9. Liquid separator: Ensures that only refrigerant gas enters the compressor

Technical specifications FX 5-300 50& 60Hz

Model	Inlet capacity		Pressure drop		Maximum working pressure		Electrical supply		Dimensions						Weight		Compressed air connections
							voltage/phase/frequency		Length		Width		Height				
	l/s	cfm	bar	psi	bar	psi			mm	inch	mm	inch	mm	inch	kg	lb	
FX5	6	13	0.15	2.18	16	232	230/1/50Hz	115-230/1/60Hz	493	19.41	350	13.78	450	17.72	19	42	3/4" M
FX10	10	21	0.25	3.63	16	232	230/1/50Hz	115-230/1/60Hz	493	19.41	350	13.78	450	17.72	19	42	3/4" M
FX15	14	30	0.25	3.63	16	232	230/1/50Hz	115-230/1/60Hz	493	19.41	350	13.78	450	17.72	20	44	3/4" M
FX20	20	42	0.25	3.63	16	232	230/1/50Hz	115-230/1/60Hz	493	19.41	350	13.78	450	17.72	25	55	3/4" M
FX30	30	64	0.3	4.35	16	232	230/1/50Hz	115-230/1/60Hz	493	19.41	350	13.78	450	17.72	27	60	3/4" M
FX40	39	83	0.14	2.03	14	203	230/1/50Hz	115-230/1/60Hz	497	19.57	370	14.57	764	30.08	51	112	1" F
FX50	50	106	0.2	2.90	14	203	230/1/50Hz	115-230/1/60Hz	497	19.57	370	14.57	764	30.08	51	112	1" F
FX60	60	127	0.18	2.61	14	203	230/1/50Hz	115-230/1/60Hz	557	21.93	460	18.11	789	31.06	62	137	1 1/2" F
FX70	68	144	0.18	2.61	14	203	230/1/50Hz	115-230/1/60Hz	557	21.93	460	18.11	789	31.06	62	137	1 1/2" F
FX90	87	184	0.25	3.63	14	203	230/1/50Hz	115-230/1/60Hz	557	21.93	460	18.11	789	31.06	62	137	1 1/2" F
FX110	108	229	0.2	2.90	14	203	230/1/50Hz	230/1/60Hz	557	21.93	580	22.83	899	35.39	82	181	1 1/2" F
FX130	128	271	0.26	3.77	14	203	230/1/50Hz	230/1/60Hz	557	21.93	580	22.83	899	35.39	82	181	1 1/2" F
FX170	167	354	0.16	2.32	14	203	400/3/50Hz	460/3/60Hz	1040	40.94	805	31.69	962	37.87	145	320	2" F
FX200	200	424	0.23	3.34	14	203	400/3/50Hz	460/3/60Hz	1040	40.94	805	31.69	962	37.87	158	348	2" F
FX250	250	530	0.18	2.61	14	203	400/3/50Hz	460/3/60Hz	1040	40.94	805	31.69	962	37.87	165	364	2 1/2" F
FX300	300	636	0.18	2.61	14	203	400/3/50Hz	460/3/60Hz	1040	40.94	805	31.69	962	37.87	164	362	2 1/2" F

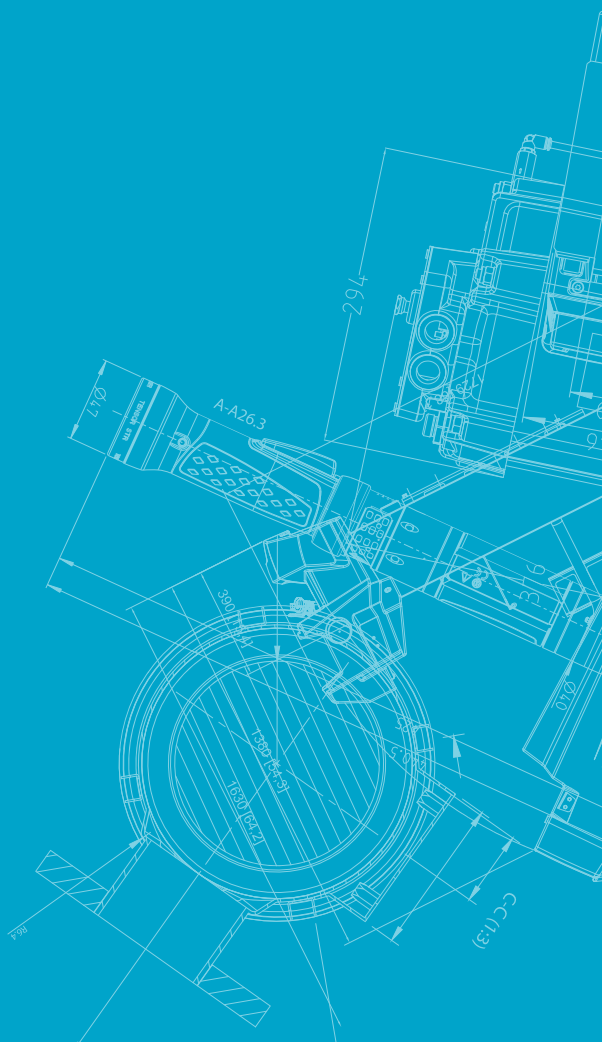
Reference conditions Limitations

		Reference conditions		Limitations	
		Standard	UL-approved	Standard	UL-approved
FX 5-300	Ambient temperature	25°C	100°F	5°C-43°C (1)	41°F-109°F (1)
	Inlet temperature	35°C	100°F	5°C-55°C	41°F-131°F
	Operating pressure	7 bar	100 psi	6-14 bar (2)	87-203 psi (2)
FD 5-95	Ambient temperature	25°C	100°F	1°C-46°C	34°F-131°F
	Inlet temperature	35°C	100°F	5°C-60°C	41°F-115°F
	Operating pressure	7 bar	100 psi	6-14 bar (3)	87-203 psi (3)
FD VSD 100-300	Ambient temperature	25°C	100°F	5°C-46°C	41°F-131°F
	Inlet temperature	35°C	100°F	5°C-60°C	41°F-140°F
	Operating pressure	7 bar	100 psi	6-14 bar	87-203 psi

Tested according to ISO 7183:2007 (1) FX 170-300: 46°C/131°F (2) FX 5-30: 16 bar/232 psi (3) FD 5-50:16 bar/232 psi

Notes

Refrigerant types:	R513A for FX 5-50, FD 5-50
	R410A for FX 60-300, FD 60-95, FD VSD



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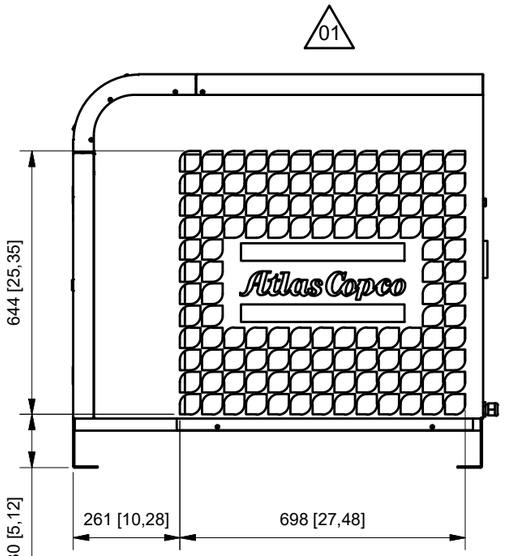
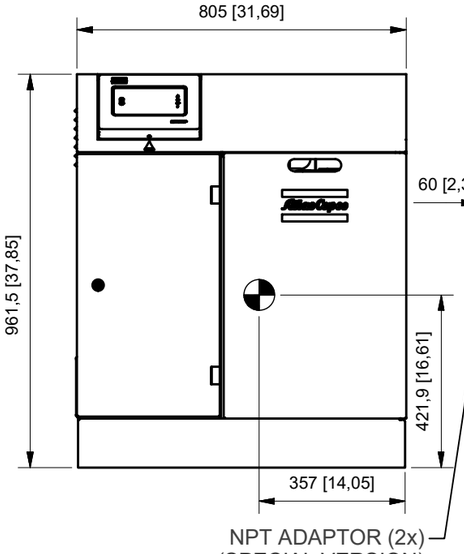
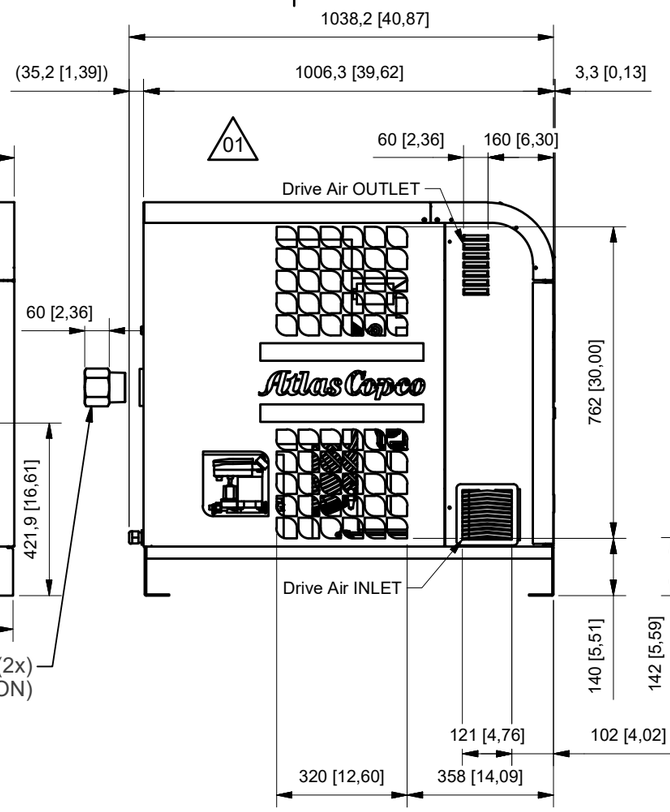
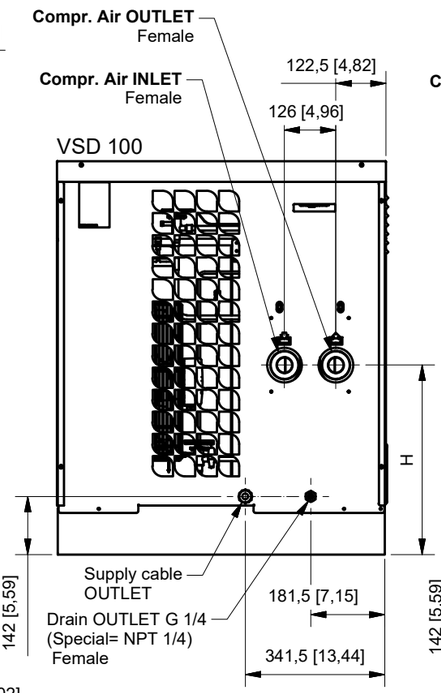
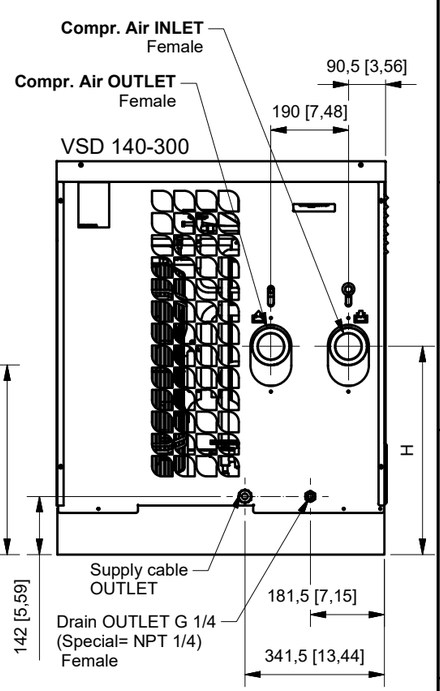


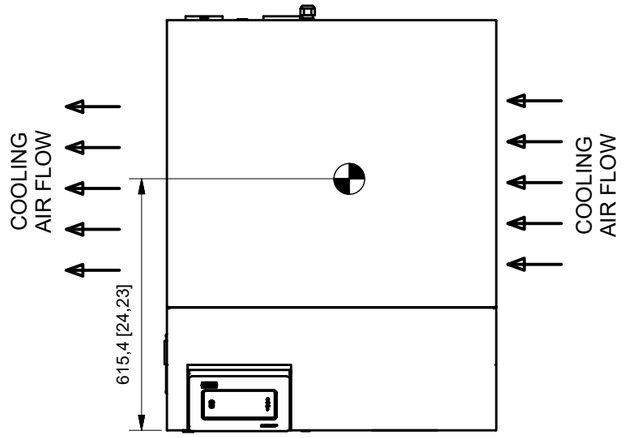


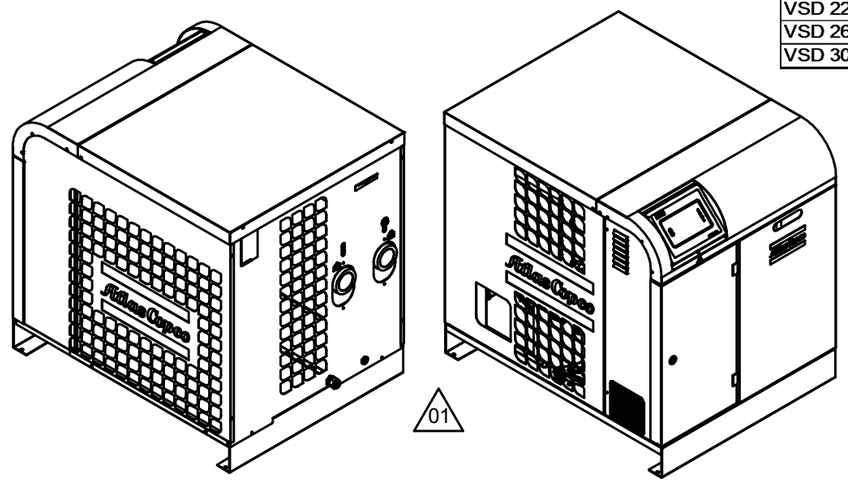






DRYER type	Air connection dryers				
	IN	OUT	IN (SPECIAL)	OUT (SPECIAL)	H
VSD 100	G 1 1/2	G 1 1/2	NPT 1 1/2	NPT 1 1/2	463
VSD 140-180	G 2	G 2	NPT 2	NPT 2	461
VSD 220	G 2 1/2	G 2 1/2	NPT 2 1/2	NPT 2 1/2	489
VSD 260	G 2 1/2	G 2 1/2	NPT 2 1/2	NPT 2 1/2	509
VSD 300	G 2 1/2	G 2 1/2	NPT 2 1/2	NPT 2 1/2	509





Center of gravity

ALL DIMENSIONS: mm [inch]

Ed	Position	Modified from	Date	Intr./Appd.	Parent 3D model	Ed . Version 3D
01		Atlas Copco logo reduced. CID.27550, DN20054120	11-03-20	asavio	9828083947	

Tolerances, if not indicated, according to:				
ATLAS COPCO STANDARD CLASS				

Name	DIMENS. DRAWING			VSD100-300 AC	Confidentiality Class acc. to 1102 K	
Material	Not applicable				Confidential	
Treatment	Not Applicable				INV	
STATUS	Scale 1 : 20	Family DRYERS		Compare	Drawing Owner	Transferred from
	Drawn by INEabhp	Blank nr.		Replaces	CAI	
Approved	Drawing format A3	Blank wt 0 Kg	Fini wt. 165,000 kg	Designation 9828083947	Sheet 1 / 1	
	Des checked.	Prod checked.	Approved.	Date 23/07/2019		

PRODUCT CATALOG

FORANO

GREGGERSEN 1924

www.greggersen.com

Our Terminal Units

FOR MEDICAL GASES

GENERAL

Terminal units provide the connection of medical equipment to the gas supply system. Our award-winning FORANO Terminal units enable flexible installation in all conceivable variants. Simple handling guarantees smooth operation in everyday hospital life. Our anaesthetic gas delivery system (AGSS) ensures the safe use of anaesthetic gases. Our Airmotor system supplies the drive energy for your compressed air-operated tools.

USAGE

For the withdrawal of compressed medical gases and vacuum from a central medical gas supply system according to ISO 7396-1 & 7396-2; accommodation of low pressure hose assemblies and medical equipment with connectors according to specific norms and standards.

DESIGN & FUCTION

The terminal units consists of a gas type-specific basic block (rear part) and a plug socket (front part),

which are connected to each other. The front part can be aligned in different positions. All moving and gas-carrying parts are made of metallic materials. The Forano is thus designed to be very low-wear overall. All wear parts are combined in a maintenance-friendly assembly, the cartridge, which can be replaced easily by removing the front part. The cartridge is marked with a LOT number, so that the age of the sealing elements can be identified immediately. In the plug receptacle, the removal plug is locked either in the parking position or in the operating position.

DESIGN

Pearlescent chrome-plated all-metal version with parking and operating position, release via actuator, one-hand operation when engaging and disengaging, manually lockable maintenance valve.

INSTALLATION TYPES

- Surface mounting
- Concealed & hollow wall
- Bed head units
- Ceiling pendants

OPERATING PRESSURE

400 kPa to 500 kPa - Compressed gases

700 kPa to 1000 kPa - Air motor

800 kPa – AIR800

‹ 60 kPa (absolute pressure) - Vacuum

MARKING

Print: Chemical symbol + gas type in English + CE mark + Logo

COLOUR CODING

Neutral or according to DIN EN ISO 5359.

BEAUTY MEETS TECHNOLOGY

Our FORANO terminal unit has been awarded the most prestigious design prizes worldwide.

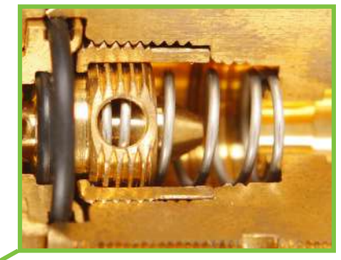
Terminal unit Forano

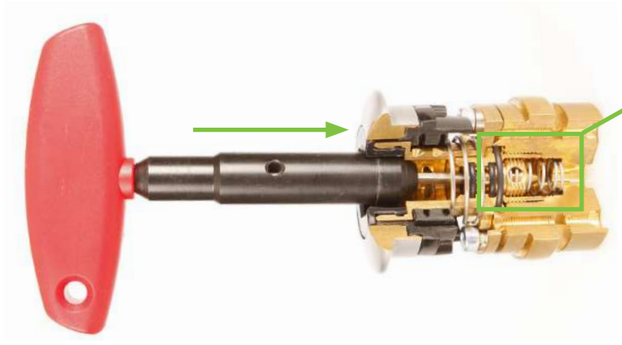
THE INTELLIGENT LOCKING SYSTEM

SAFE & SIMPLE

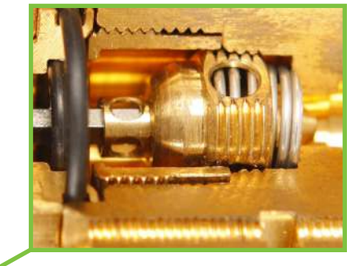
1. The terminal unit closes when the plug is disconnected.
2. The front part of the terminal unit can be removed for maintenance without interrupting the gas supply.
3. The Forano can be locked using a special key without having to remove the front part.

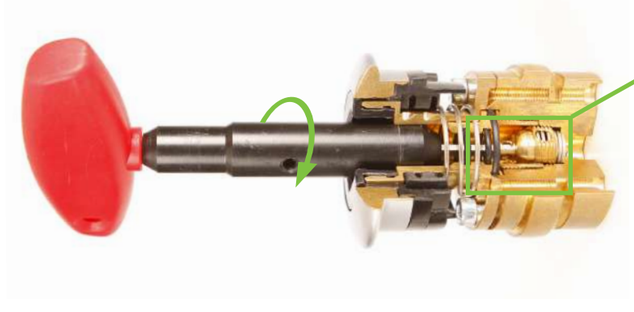
This means that each terminal unit can be shut off individually,so that there is no need to take individual areas or entire wards of the hospital out of service.





Forano terminal unit in unlocked condition. The special tool with centring aid for shutting off the extraction point is already inserted.





After approx. 3-4 turns the rear part of the terminal unit is closed gastight. Maintenance work, such as the replacement of the sealing cartridge or the entire front part can be carried out without any problems under operating pressure.

i

"Out of service" sticker

When shutting off a terminal unit or entire supply sections, the corresponding units must be clearly marked. We offer warning stickers for our FORANO.

See page 16 TOOLS AND ACCESSORIES

TEST KIT FOR GAS TERMINAL UNITS
according to DIN EN ISO 7396-1/2

CONSISTING OF:

- Check sequence with flow tube for compressed gases
- Check sequence with flow tube for vacuum, NGA & AGSS
- Air motor tester
- Tightness measuring device
- Particle tester
- Filter paper
- Gas type specific connectors
- Plug for oxygen (O2)
- Plug for compressed air (AIR)
- Plug for vacuum (VAC)
- Plug for carbon dioxide (CO2)
- Plug for nitrous oxide (N2O)
- AGSS test device with panel for 50 l/min
- AGSS test device with panel for 25 l/min
- AGSS connection test kit according to 7396-2

- Test equipment case with insert

Optional accessories:

1. O2 measuring devices for gas type testing
2. Pressure gauge for leakage testing of the pipeline

Test kit for gas terminal units acc. 7396-1/2 DIN	902.114
Test kit for gas terminal units acc. to British standard	902.128
Test kit for gas terminal units acc. to AGA / Scandinavian standard	902.129

Terminal unit Forano
FOR SURFACE & CONCEALED / HOLLOW WALL INSTALLATION

DIN BS NF AGA

FORANO SURFACE INSTALLATION (FRONT PART MUST BE ORDERED SEPARATELY)

Forano, O2, surface installation, DIN	903.240
Forano, AIR, surface installation, DIN	903.241
Forano, VAC, surface installation, DIN	903.242
Forano, N2O, surface installation, DIN	903.243
Forano, CO2, surface installation, DIN	903.245
Forano, N2, surface installation, AGA	903.246
Forano, Ar, surface installation, DIN	903.247
Forano, O2/N2O, surface installation, AGA	903.248

FORANO CONCEALED / HOLLOW WALL (FRONT PART MUST BE ORDERED SEPARATELY)

Forano, O2, for concealed / hollow wall installation, DIN / AGA / NF	903.250
Forano, AIR, for concealed / hollow wall installation, DIN / AGA / NF	903.251
Forano, VAC, for concealed / hollow wall installation, DIN / AGA / NF	903.252
Forano, N2O, for concealed / hollow wall installation, DIN / AGA / NF	903.253
Forano, CO2, for concealed / hollow wall installation, DIN / AGA / NF	903.255
Forano, N2, for concealed / hollow wall installation, AGA	903.256
Forano, Ar, for concealed / hollow wall installation, DIN	903.257

ACCESSORIES

Forano front plate, design with wave lines	903.258
Forano front plate, design with wave lines (packaging unit 6 pcs.)	903.259

The Forano DIN terminal unit front parts can be found in this brochure on page 9.

Our complete portfolio of international standards for the Forano can be found in the Greggersen CEGA price list.

Terminal unit Forano
FOR BED HEAD UNIT INSTALLATION

DIN BS NF AGA

FORANO,INPUT UP (FRONT PART MUST BE ORDERED SEPARATELY)

Forano, O2, BHU, input up, DIN / AGA / NF	903.200
Forano, AIR, BHU, input up, DIN / AGA / NF	903.201
Forano, VAC, BHU, input up, DIN / AGA / NF	903.202
Forano, N2O, BHU, input up, DIN / AGA / NF	903.203
Forano, CO2, BHU, input up, DIN / AGA / NF	903.205
Forano, N2, BHU, input up, AGA	903.206
Forano, Ar, BHU, input up, DIN	903.207
Forano, O2/N2O, BHU, input up, AGA	903.208

FORANO, INPUT BACK (FRONT PART MUST BE ORDERED SEPARATELY)

Forano, O2, BHU, input back, DIN / AGA / NF	903.260
Forano, AIR, BHU, input back, DIN / AGA / NF	903.261
Forano, VAC, BHU, input back, DIN / AGA / NF	903.262
Forano, N2O, BHU, input back, DIN / AGA / NF	903.263
Forano, CO2, BHU, input back, DIN / AGA / NF	903.265
Forano, N2, BHU, input back, AGA	903.266
Forano, Ar, BHU, input back, DIN	903.267
Forano, O2/N2O, BHU, input back, AGA	903.268

The Forano DIN terminal unit front parts can be found in this brochure on page 9.

Our complete portfolio of international standards for the Forano can be found in the Greggersen CEGA price list.

Terminal unit Forano

FOR CEILING PENDANTS & BHU VS100M

DIN BS NF AGA

FORANO DIN CEILING PENDANTS (FRONT PART MUST BE ORDERED SEPARATELY)

Forano, O2, ceiling pendants, DIN / AGA / NF	903.230
Forano, AIR, ceiling pendants, DIN / AGA / NF	903.231
Forano, VAC, ceiling pendants, DIN / AGA / NF	903.232
Forano, N2O, ceiling pendants, DIN / AGA / NF	903.233
Forano, CO2, ceiling pendants, DIN / AGA / NF	903.235
Forano, N2, ceiling pendants, AGA	903.236
Forano, Ar, ceiling pendants, DIN	903.237
Forano, O2/N2O, ceiling pendants, AGA	903.238

FORANO DIN BHU VS100M (A) RIGHT (FRONT PART MUST BE ORDERED SEPARATELY)

Forano, O2, VS100M (A) Typ DIN / AGA / NF	903.210
Forano, AIR, VS100M (A) Typ DIN / AGA / NF	903.211
Forano, VAC, VS100M (A) Typ DIN / AGA / NF	903.212
Forano, N2O, VS100M (A) Typ DIN / AGA / NF	903.213
Forano, CO2, VS100M (A) Typ DIN / AGA / NF	903.215
Forano, N2, VS100M (A) Typ AGA	903.216
Forano, Ar, VS100M (A) Typ DIN	903.217
Forano, O2/N2O, VS100M (A) Typ AGA	903.218

FORANO DIN BHU VS100M (B) LEFT (FRONT PART MUST BE ORDERED SEPARATELY)

Forano, O2, VS100M (B) Typ DIN / AGA / NF	903.220
Forano, AIR, VS100M (B) Typ DIN / AGA / NF	903.221
Forano, VAC, VS100M (B) Typ DIN / AGA / NF	903.222
Forano, N2O, VS100M (B) Typ DIN / AGA / NF	903.223
Forano, CO2, VS100M (B) Typ DIN / AGA / NF	903.225
Forano, N2, VS100M (B) Typ AGA	903.226
Forano, Ar, VS100M (B) Typ DIN	903.227
Forano, O2/N2O, VS100M (B) Typ AGA	903.228

The Forano DIN terminal unit front parts can be found in this brochure on page 9.

Our complete portfolio of international standards for the Forano can be found in the Greggersen CEGA price list.

Terminal unit Forano

FRONT PARTS

DIN BS NF AGA

SCOPE OF DELIVERY

The DIN front parts are supplied with the following components:

- Forano metal actuator
- Cartridge
- Gas type specific connector holder
- Warning sticker (out of service)

FRONT PART FORANO DIN, NEUTRAL COLOUR CODING (BACK PART MUST BE ORDERED SEPARATELY)

Forano, O2, front part, DIN	905.110
Forano, AIR, front part, DIN	905.111
Forano, VAC, front part, DIN	905.112
Forano, N2O, front part, DIN	905.113
Forano, CO2, front part, DIN	905.115
Forano, Ar, front part, DIN	905.117

FRONT PART FORANO DIN, COLOUR CODING ACCORDING TO DIN EN ISO 5359 (BACK PART MUST BE ORDERED SEPARATELY)

Forano, O2, front part, DIN	905.100
Forano, AIR, front part, DIN	905.101
Forano, VAC, front part, DIN	905.102
Forano, N2O, front part, DIN	905.103
Forano, CO2, front part, DIN	905.105

Our complete portfolio of international standards for the Forano can be found in the Greggersen CEGA price list.

Terminal unit Forano AGSS

ANESTHESIA GAS SCAVENGING SYSTEM

USAGE

For the transfer of excess residual gases during inhalation anaesthesia to a suitable disposal point.

All-metal design, display sign for operational control, with ejector for vacuum generation.
One-handed operation during coupling and uncoupling, unlocking via plug sleeve.
Completely mounted in stainless steel housing, with stainless steel front panel
(for flush or hollow wall mounting).
Design of the terminal unit complies with DIN EN ISO 9170-2.

TECHNICAL DATA

Material:	Brass; housing and front plate stainless steel
Capacity:	min. 50 l/min (500 kPa)
Inlet:	Copper tube 8x1 mm / flexible hose PA 6 mm
Outlet:	Copper tube 15x1 mm / corrugated tube 15 mm
Marking:	Colour coding according to DIN EN ISO 9170-2 (standard magenta)

FORANO AGSS

Forano AGSS, concealed/hollow wall	902.073
Forano AGSS, ceiling pendants, with external ejectoror	902.074
Forano AGSS, bed-head units	902.075
Forano AGSS,surface mounting	902.076

Surface mounting 130 x 174* x 80 mm
(*+ 200 mm Cu pipe)

Concealed 175 x 175 mm

Terminal unit Forano Air-motor

FOR COMPRESSED AIR DRIVEN TOOLS

USAGE

For driving compressed air-driven tools in closed rooms; relaxed compressed air is led outside via an exhaust air pipe.
A non-return valve in the disposal system prevents the return flow of the used air.
Design of the extraction point complies with DIN EN ISO 9170-1.
Fitting of plugs and devices with plug connections according to DIN 13260-2

TECHNICAL DATA

Material:	Brass; housing and front plate stainless steel
Capacity:	min. 350 l/min (800 kPa)
Inlet:	Copper tube 8x1 mm / flexible hose PA 6 mm
Outlet:	Copper tube 15x1 mm / corrugated tube 15 mm
Marking:	Colour coding according to DIN EN ISO 9170-1
Operating pressure:	700 to 1000 kPa

FORANO AIR-MOTOR

Forano Air-motor, concealed/hollow wall	902.090
Forano Air-motor, ceiling pendants	902.091
Forano Air-motor, bed-head units	902.092
Forano Air-motor, surface mounting	902.093

Concealed 175 x 175 mm

Surface mounting 130 x 174* x 80 mm
(*+ 200 mm Cu pipe)

Terminal unit Forano

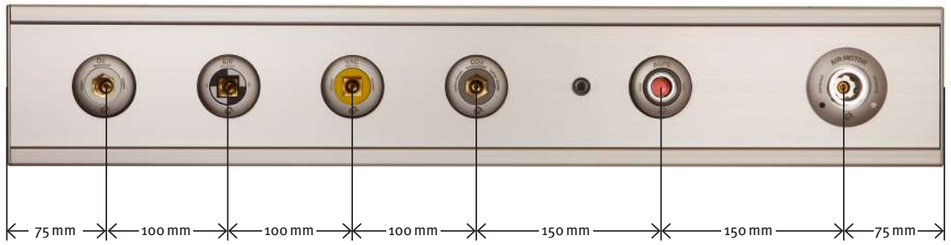
WALL DUCT

USAGE

Duct for surface mounting, completely equipped with terminal units according to DIN EN ISO 9170-1, Airmotor and/or anaesthetic gas delivery system (model AGSS according to DIN EN ISO 9170-2 with integrated ejector, model Airmotor according to DIN EN ISO 9170-1) in aluminium duct.
The length of the duct can be designed individually. The terminal units are already installed and piped.
The feed can be from the left, right, top, bottom or rear.

TECHNICAL DATA

Inlet:	8 mm (1 terminal unit per gas)
	12 mm (2-3 terminal units per gas)
Colour coding:	Colour neutral or according to DIN EN ISO 5359



WALL DUCT (PLEASE SPECIFY GAS TYPES FOR THE TERMINAL UNITS!)

Wall duct Forano, 2 terminals	903.400
Wall duct Forano, 3 terminals	903.401
Wall duct Forano, 4 terminals	903.402
Wall duct Forano, 5 terminals	903.403
Wall duct Forano, additional terminal	903.404
Wall duct Forano, extension 1 x AGSS	903.405
Wall duct Forano, extension 1 x Airmotor	903.406
Wall supply unit, sold by the meter	902.040

Our complete portfolio of International Standards for the Forano can be found in the Greggersen CEGA price list.

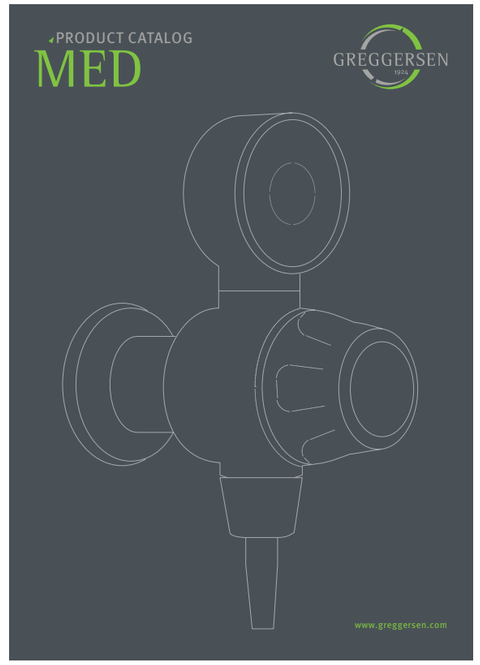
TERMINAL UNIT BLOCK

Block with 2 or 3 terminal units according to DIN EN ISO 9170-1 for receiving plugs and medical devices with plug connections according to DIN 13260-2. Fastening by means of rail claw with knurled nut on a standard equipment rail according to DIN EN ISO 19054 (25x10mm).

You can find the terminal unit block in our MED catalog.

find more information under:

www.greggersen.com



Terminal unit Forano
TOOLS AND ACCESSORIES

FORANO HEIGHT ADJUSTMENT TOOL
In the variant for concealed / hollow wall installation, the basic block is seated in a ring follower. After installation of the housing, the mounting tool can subsequently be used to adjust the mounting depth of the basic block.

Mounting tool for concealed / hollow wall installation – height adjustment	903.300

FORANO BLIND FLANGE FOR PRESSURE TEST
For performing the leak test in line with DIN EN ISO 7396-1. The blind flange is screwed to the basic block and closes up the terminal unit. The test pressure can then be used to check the pipe system for leaks.

Forano blind flange, brass, for pressure test	903.301

FORANO DISMOUNTING TOOL
Special tool used to remove the actuator without damaging the terminal unit.

Forano actuator dismounting tool	903.302

FORANO MOUNTING AID
Mounting aid used to place a maximum of 3 or 4 concealed FORANO units next to each other. The mounting aid can be expanded, as required, by being combined with additional mounting aids. The Forano units can be quickly, easily and accurately aligned with each other using this tool. Spacing from Forano centre to Forano centre: 100 mm and 150 mm

Forano mounting aid	903.303
Forano mounting aid add-on for AGSS + Airmotor	903.306

“OUT OF SERVICE” STICKER FOR FORANO
Sticker to paste over the actuator when shutting off the terminal unit or sections of the mains supply.

“Out of service” sticker for Forano (25 pcs.)	903.309

FORANO CHILD SAFETY LOCK
To secure the FORANO gas terminal units against unauthorized use or for temporary shut-down of a terminal unit, we developed a “child safety lock”. This is intended to prevent inadvertent or unauthorized use of the terminal unit.

Forano child safety lock O_2, AIR, DIN	903.380
Forano child safety lock VAC, N_2O, CO_2, DIN	903.381

FORANO SPANNER FOR CHILD SAFETY LOCK
The child safety lock can be removed from the terminal unit using the key.

Forano spanner for child safety lock	903.308

FORANO DIAPHRAGM RING
The diaphragm ring made of POM is clicked into a 44 mm hole. It is delivered as standard with the Forano wave screen. However, the diaphragm ring can also be obtained as a separate component (e.g. for installation into media supply units).

Forano diaphragm ring	802.842

FORANO ALLEN KEY
Allen key SW 3 with an additional, removable plastic sleeve. This sleeve guides the key in the front part of the terminal unit, virtually ruling out any “tilting” of the closing cone.

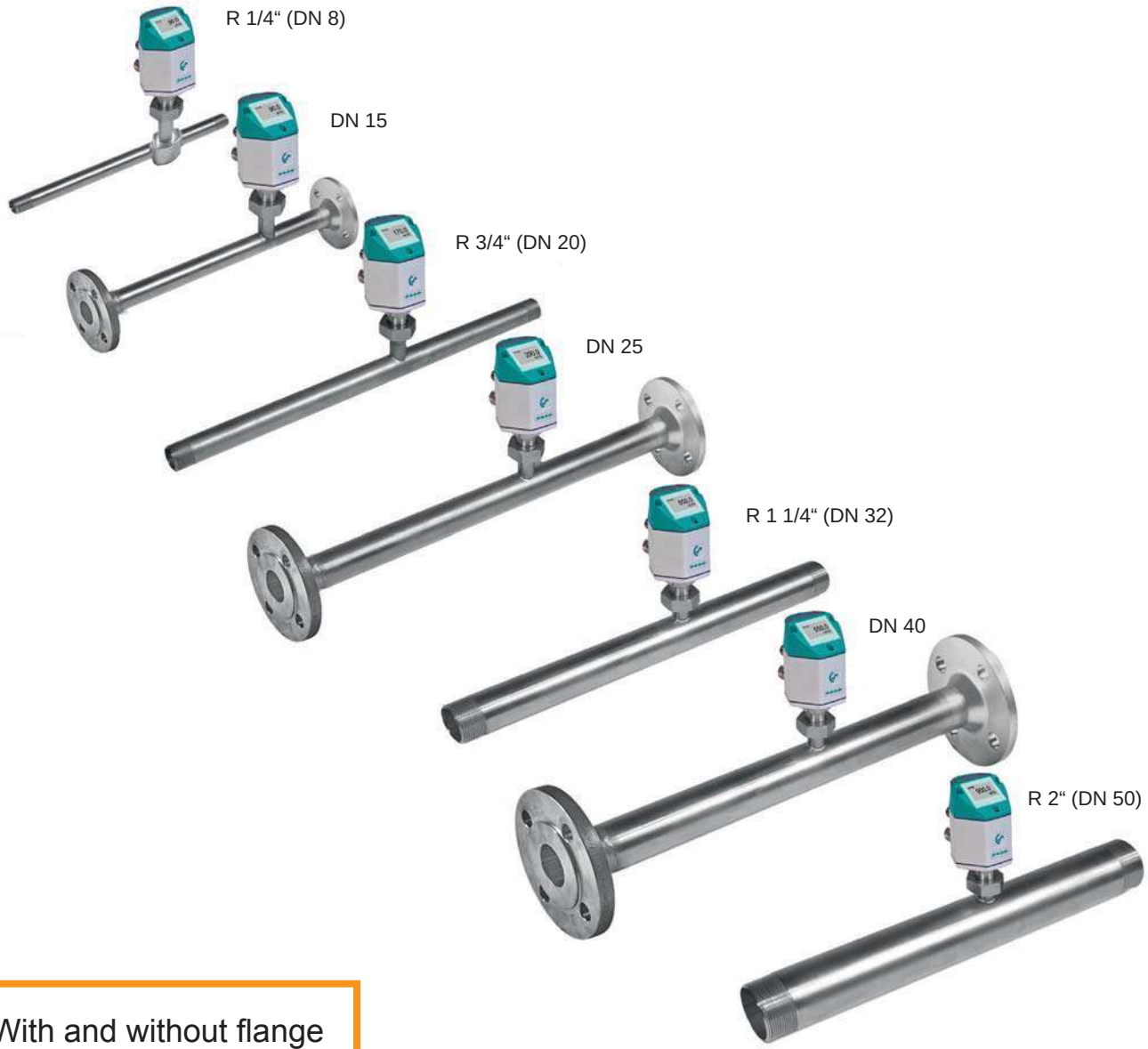
Forano closing cone Allen key	903.305

FORANO SPANNER FOR SEALING CONE RETAINING SCREW

Forano spanner for sealing cone retaining screw	903.304

GREGGERSEN GASETECHNIK GmbH
BODESTRASSE 27-29 | 21031 HAMBURG

VA 420
The affordable flow meter for compressed air and gases



With and without flange

Intelligent solutions for accurate flow measurement for compressed air and gases

The new affordable flow meters VA 420 work according to the approved calorimetric measuring principle. In this process a heated sensor is cooled down by the gas circulating around it. The flow dependent cooling-down is used as a measuring effect while the degree of cooling-down is directly depending on the passing air resp. gas mass. Therefore, an additional pressure and temperature compensation is not necessary.

Due to its compact design it is possible to monitor all compressed air systems from the compressor to the smallest compressed air tool (1/4“ to 2 inch) with the affordable flow meter VA 420. VA 400 flow sensors are available for larger pipe diameters from DN 50 to DN 300. Apart from compressed air also other gases like e.g. nitrogen, oxygen and CO2 can be measured.

The installation of the compressed air flow meter VA 420 can be done easily and quickly. A special advantage is the removable measuring device. The measuring device can be demounted quickly and easily for calibration or cleaning purposes without removing the complete measuring section.

Removal of the measuring device without complete dismounting of the measuring section

In most cases the compressed air in not free from oil, condensate, dirt and particles. In the course of time this leads to a soiling of the flow meters which may cause errors in measurement or even a total breakdown. The flow meters which have been on the market up to now generally cannot be cleaned and will be exchanged if they are soiled. In case of compressed air meters with integrated measuring section the „measuring device“ cannot be removed. For this reason an expensive bypass line is necessary.
The design of **VA 420** enables the removal and cleaning of the „measuring device“ with e.g. soap water without any dismounting of the measuring section. A closing cap grants a continuous use of the line for the duration of the cleaning. A bypass line is not necessary. The alignment pin grants an accurate installation of the measuring device.

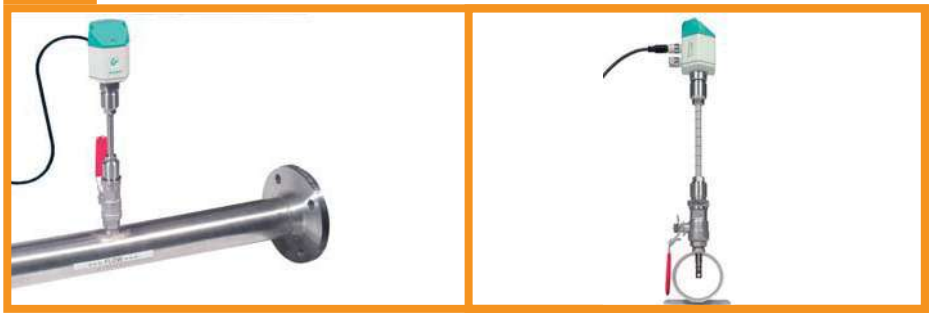
2 Stationary use

For stationary use there are the following outputs available for the data transfer to a building management system or PLC:
4...20 mA for actual flow.
Pulse output (galvanically separated) for the total consumption.

3 Mobile use

By means of quick couplings the flow meter can be integrated quickly into the feed hose of a machine. During the shutdown of the machine it is possible to determine the leak rate, the actual flow can be obtained when the machine is running. The power supply is effected via the power socket by means of the mains unit. For data recording over a longer period of time we recommend to use the compressed air analyzer DS 400 mobile

4 Solution for large pipe diameters



The approved flow sensor VA 400 is available for pipe diameters of 2“ to DN 300. Its constructively sophisticated design enables the installation into pipes with nominal diameters up to DN 300 even under pressure. The installation is effected by means of standard 1/2“ ball valve.

VA 420 - The advantages at a glance

Display twistable by 180 °

4...20 mA output for actual flow

Pulse output for total flow (counter reading)

Display shows 2 values:
Actual flow in m³/h, l/min,...
Total consumption (counter reading) in m³, l

Values indicated in the display turnable by 180 °, e.g. in case of overhead installation

Measuring device removable:
Dismounting of the whole measuring section is not necessary, no bypass required

Screw-in thread:
Easy installation into the existing pipeline due to integrated measuring section (suitable for 1/4“, 1/2“, 3/4“, 1“, 1 1/4“, 1 1/2“ or 2“ lines)

High measuring accuracy due to defined measuring section (inlet and outlet section)

At the touch of a button:

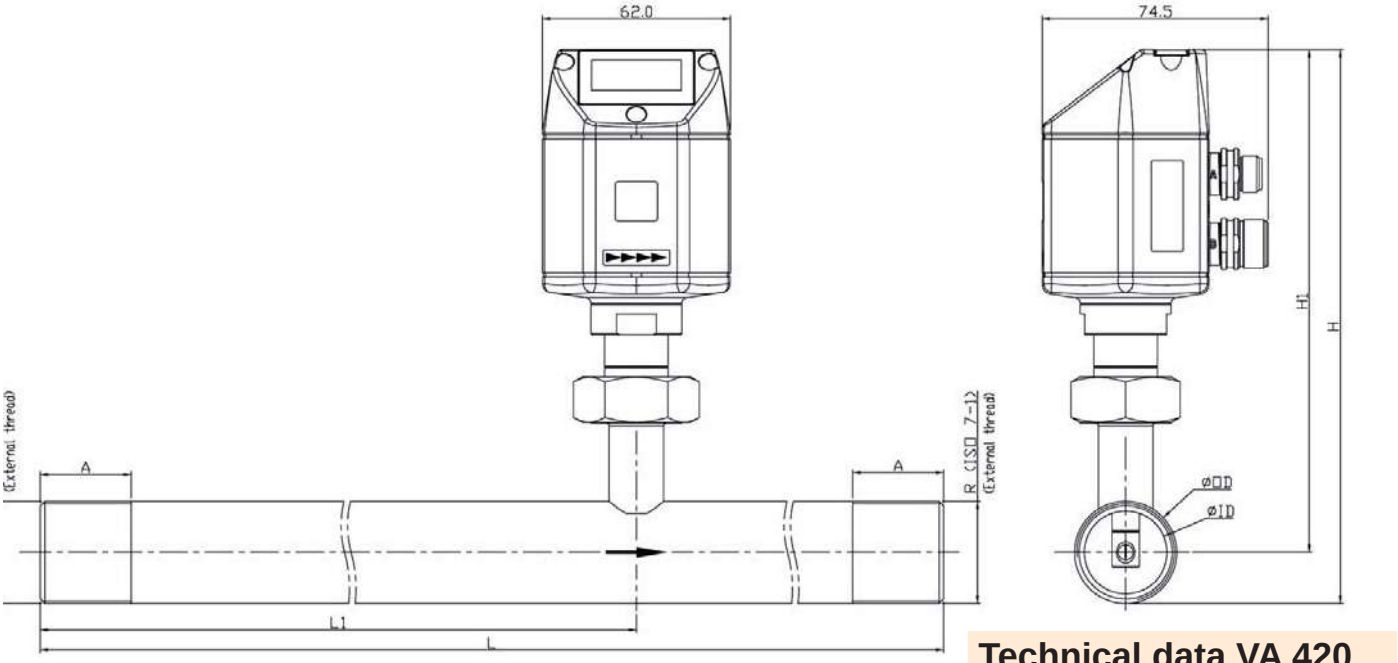
- reset of counter reading
- selection of units

Application-technological features of the flow meters VA 420:

- Easy and affordable installation
- Units freely selectable via keypad m³/h, m³/min, l/min, l/s, kg/h, kg/min, kg/s, cfm
- Compressed air counter up to 1,999,999,999 m³, Resetable to „zero“ via keypad
- Analogue output 4...20 mA, pulse output (galvanically separated)
- High measuring accuracy also in the lower measuring range (ideal for leakage measurement)
- Negligibly small loss of pressure
- Calorimetric measuring principle, no additional pressure and temperature measurement necessary, no mechanically moved parts
- Gas types adjustable via software (nitrogen, oxygen, CO2, nitrous oxide, argon)

Application range of VA 420:

- Compressed air balancing, compressed air consumption measurement
- Leckage air / leak rate determination
- Mobile compressed air measurement in front of single machines / plants
- Flow measurement of process gases like e.g. nitrogen, CO2, oxygen, argon, nitrous oxide
- Flow measurement at nitrogen generators



Flow measuring ranges VA 420 for compressed air (ISO 1217:1000 mbar, 20 °C)

Connection thread	Outer pipe dia. mm	Inner pipe dia. mm	Measuring range from	to	L mm	L1 mm	H mm	H1 mm	A mm
R 1/4“	13.7	8.9	0.8	90 l/min	194	137	174.7	165.7	15
R 1/2“	21.3	16.1	0.2	90 m³/h	300	210	176.4	165.7	20
R 3/4“	26.9	21.7	0.3	170 m³/h	475	275	179.2	165.7	20
R 1“	33.7	27.3	0.5	290 m³/h	475	275	182.6	165.7	25
R 1 1/4“	42.4	36.0	0.7	480 m³/h	475	275	186.9	165.7	25
R 1 1/2“	48.3	41.9	1.0	550 m³/h	475*	275	186.9	165.7	25
R 2“	60.3	53.1	2.0	900 m³/h	475*	275	195.9	165.7	30

*Attention: Shortened inlet section! Please observe the recommended minimum inlet section (length = 10 x inner diameter) on site

Description	Order No. Stainless steel 1.4404	Order No. Stainless steel 1.4301
VA 420 flow meter with integrated 1/4“ measuring section	0695 1420	0695 0420
VA 420 flow meter with integrated 1/2“ measuring section	0695 1421	0695 0421
VA 420 flow meter with integrated 3/4“ measuring section	0695 1422	0695 0422
VA 420 flow meter with integrated 1“ measuring section	0695 1423	0695 0423
VA 420 flow meter with integrated 1 1/4“ measuring section	0695 1426	0695 0426
VA 420 flow meter with integrated 1 1/2“ measuring section	0695 1424	0695 0424
VA 420 flow meter with integrated 2“ measuring section	0695 1425	0695 0425
Option High-pressure version PN 40		Z695 0411
Special measuring range VA 420 according to customer`s requirements		Z695 4006
Connection cables:		
Connection cable 5 m (power supply, analogue output)		0553 0104
Connection cable 10 m (power supply, analogue output)		0553 0105
Pulse cable for flow sensors with M12 plug, length 5 m		0553 0106
Pulse cable for flow sensors with M12 plug, length 10 m		0553 0107
Further accessories:		
Closing cap for meas. section VA 420 (Material: Aluminium)		0190 0001
Closing cap for meas. section VA 420 (Material: Stainless steel 1.4404)		0190 0002
CS Service Software for FA/VA 400 sensors incl. PC connection set, USB interface and interface adapter to the sensor		0554 2005
Mains unit in wall housing 100-240 V, 10 VA, 50-60 Hz/24 VDC, 0.35 A		0554 0108
Mains unit 100-240 VAC / 24 VDC, 0.35 A for VA/FA 400 Series, 2 m cable		0554 0107
5 point precision calibration with ISO certificate		3200 0001

Technical data VA 420

Parameters:	m³/h, l/min (1000 mbar, 20°C) in case of compressed air resp. Nm³/h, Nl/min (1013 mbar, 0°C) in case of gases
Adjustable via keypad:	m³/h, m³/min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min
Meas. principle:	calorimetric measurement
Sensor:	2 x silicium chip
Meas. medium:	air, gases
Gas types adjustable via software:	air, nitrogen, argon, nitrous oxide, CO2, oxygen
Meas. range:	see table at the left
Accuracy:	± 1.5% of m.v., ± 0.05% of f.s. On request: Special calibration via 5 point ISO calibration certificate
Operating temp.:	-30...80 °C
Operating press.:	up to 16 bar Optional up to PN 40
Analogue output:	4...20 mA for m³/h resp. l/min
Pulse output:	1 pulse per m³ resp. per liter galvanically separated
PC connection:	SDI interface
Power supply:	24 VDC smoothed ± 15 %
Burden:	< 500 Ω
Housing:	polycarbonate
Meas. section:	stainless steel, 1.4301 or 1.4404
Mounting thread meas. section:	R 1/4“, R 1/2“, R 3/4“, R 1“, R 1 1/4“, R 1 1/2“, R 2“ external thread

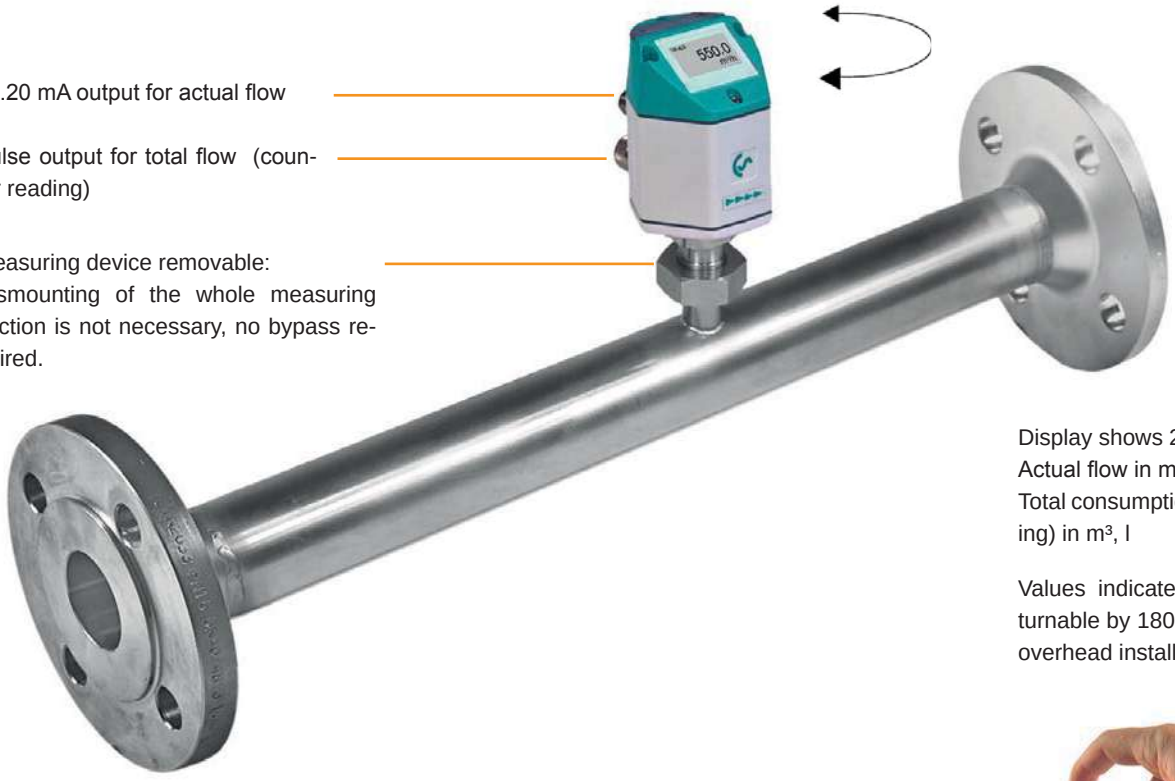
VA 420 - The advantages at a glance

Display twistable by 180°

4...20 mA output for actual flow

Pulse output for total flow (counter reading)

Measuring device removable: Dismounting of the whole measuring section is not necessary, no bypass required.



Display shows 2 values:
Actual flow in m³/h, l/min,...
Total consumption (counter reading) in m³, l

Values indicated in the display turnable by 180 °, e.g. in case of overhead installation

At the touch of a button:

- reset of counter reading
- selection of units

Easy installation into the existing pipeline due to integrated measuring section and weld neck flange
(according to EN 1092-1 PN 40)

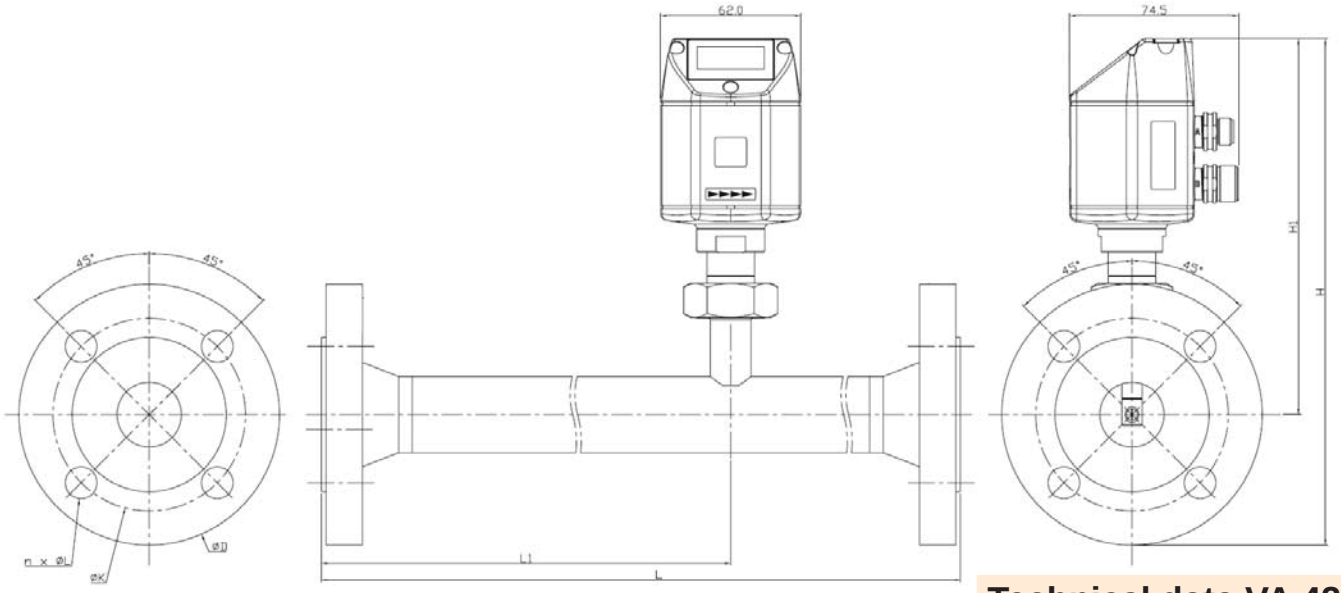
High measuring accuracy due to defined measuring section (inlet and outlet section)

Application-technological features of the flow meters VA 420:

- Easy and affordable installation
- Units freely selectable via keypad m³/h, m³/min, l/min, l/s, kg/h, kg/min, kg/s, cfm
- Compressed air counter up to 1,999,999,999 m³, Resettable to „zero“ via keypad
- Analogue output 4...20 mA, pulse output (galvanically separated)
- High measuring accuracy also in the lower measuring range (ideal for leakage measurement)
- Negligibly small loss of pressure
- Calorimetric measuring principle, no additional pressure and temperature measurement necessary, no mechanically moved parts
- Gas types adjustable via software (nitrogen, oxygen, CO2, nitrous oxide, argon)

Application range of VA 420:

- Compressed air balancing, compressed air consumption measurement
- Leckage air / leak rate determination
- Flow measurement of process gases like e.g. nitrogen, CO2, oxygen, argon, nitrous oxide
- Flow measurement at nitrogen generators



Flow measuring ranges VA 420 for compressed air (ISO 1217:1000 mbar, 20 °C)									Flange DIN EN 1092-1		
Measu-ring section	Outer pipe dia. mm	Inner pipe dia. mm	Measuring range from	to	L mm	L1 mm	H mm	H1 mm	ØD	ØK	n x ØL
DN 15	21.3	16.1	0.2	90 m³/h	300	210	213.2	165.7	95	65	4 x 14
DN 20	26.9	21.7	0.3	170 m³/h	475	275	218.2	165.7	105	75	4 x 14
DN 25	33.7	27.3	0.5	290 m³/h	475	275	223.2	165.7	115	85	4 x 14
DN 32	42.4	36.0	0.7	480 m³/h	475	275	235.7	165.7	140	100	4 x 18
DN 40	48.3	41.9	1.0	550 m³/h	475*	275	240.7	165.7	150	110	4 x 18
DN 50	60.3	53.1	2.0	900 m³/h	475*	275	248.2	165.7	165	125	4 x 18
*Attention: Shortened inlet section! Please observe the recommended minimum inlet section (length=10xinner diameter) on site											

Description	Order No.
VA 420 flow meter with integrated DN 15 measuring section with weld neck flange	0695 2421
VA 420 flow meter with integrated DN 20 measuring section with weld neck flange	0695 2422
VA 420 flow meter with integrated DN 25 measuring section with weld neck flange	0695 2423
VA 420 flow meter with integrated DN 32 measuring section with weld neck flange	0695 2426
VA 420 flow meter with integrated DN 40 measuring section with weld neck flange	0695 2424
VA 420 flow meter with integrated DN 50 measuring section with weld neck flange	0695 2425
Option High-pressure version PN 40	Z695 0411
Special measuring range VA 420 according to customer`s requirements	Z695 4006
Connection cables:	
Connection cable 5 m (power supply, analogue output)	0553 0104
Connection cable 10 m (power supply, analogue output)	0553 0105
Pulse cable for flow sensors with M12 plug, length 5 m	0553 0106
Pulse cable for flow sensors with M12 plug, length 10 m	0553 0107
Further accessories:	
Closing cap for meas. section VA 420 (Material: Aluminium)	0190 0001
Closing cap for meas. section VA 420 (Material: Stainless steel 1.4404)	0190 0002
CS Service Software for FA/VA 400 sensors incl. PC connection set, USB interface and interface adapter to the sensor	0554 2005
Mains unit in wall housing 100-240 V, 10 VA, 50-60 Hz/24 VDC, 0.35 A	0554 0108
Mains unit 100-240 VAC / 24 VDC, 0.35 A for VA/FA 400 Series, 2 m cable	0554 0107
5 point precision calibration with ISO certificate	3200 0001

Technical data VA 420

Parameters:	m³/h, l/min (1000 mbar, 20°C) in case of compressed air resp. Nm³/h, Nl/min (1013 mbar, 0°C) in case of gases
Adjustable via keypad:	m³/h, m³/min, l/min, l/s, ft/min, cfm, m/s, kg/h, kg/min
Meas. principle:	calorimetric measu-rement
Sensor:	2 x silicium chip
Meas. medium:	air, gases
Gas types adjustable via software:	air, nitrogen, argon, nitrous oxide, CO2, oxygen
Meas. range:	see table at the left
Accuracy:	± 1.5% of m.v., ± 0.05% of f.s. On request: Special calib-ration via 5 point ISO calibration certificate
Operating temp.:	-30...80 °C
Operating press.:	up to 16 bar Optional up to PN 40
Analogue output:	4...20 mA for m³/h resp. l/min
Pulse output:	1 pulse per m³ resp. per liter galvanically separated
PC connection:	SDI interface
Power supply:	24 VDC smoothed ± 15 %
Burden:	< 500 Ω
Housing:	polycarbonate
Meas. section:	stainless steel, 1.4301 or 1.4404
Flanges:	Weld neck flange according to DIN EN 1092-1, Groove-faced and tongue-faced on request

EWD

ATLAS COPCO QUALITY AIR SOLUTIONS

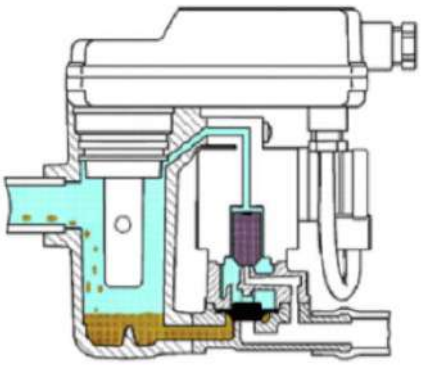
General Description

Atlas Copco's range of EWD electronically controlled condensate drains is synonymous with safe, dependable and economical condensate management.

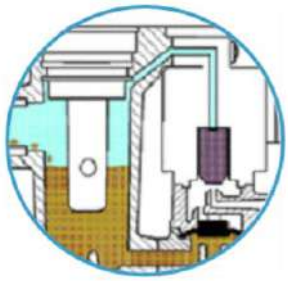
The intelligent drain function monitors condensate build-up with liquid level sensors and evacuates the condensate only when necessary, thereby avoiding compressed air waste and providing for considerable energy savings.

The EWD drain device offers security and confidence, enabling you to solve all condensate discharge problems even in heavily contaminated systems.

A wide range of EWD drains is available for oil-contaminated condensate and may be provided with additional hard coating for use with oil-free and aggressive condensate.



Working Principle



Condensate enters the drain and collects in sump. The diaphragm valve is closed due to the solenoid valve allowing pressure compensation through the pilot supply line. The pressurised space above the diaphragm is larger than that below it, ensuring and absolutely leak proof seal. As the condensate drains away, the level probe monitors the speed at which the level drops, calculating exactly when to shut the diaphragm, so that no air escapes. If there should be a blockage on the outlet or faulty diaphragm, the drain switched to “fault mode”. Both the flashing alarm light and the volt free contact are activated. The drain switches to a “timer mode” until the situation is solved.

Scope of Supply

- Led Display
- Alarm
- Electronics component
- Flexible pipe inlet
- Non wearing capacitive sensor
- IP 64 Nema 13 protection

Features & Benefits

Energy Savings

- Energy efficient
    - Absolutely no waste of compressed air

Reliable operation

- Proven durable design
    - No moving parts
    - Wide drain way passage

Easy set-up and use

- Operational ease
    - LED display and alarms work together to make daily operations as hands off as possible
    - Electronic control ensures reliable performance
    - Plug and play set up

CS INSTRUMENTS GmbH

INSTRUCTION MANUAL

VA 420 consumption counter with display, 4 ... 20 mA and pulse output (galvanically isolated)

Stationary

Flow and consumption measurement for compressed air and gases

V4-02-2010

CONTENTS

INTRODUCTION

Dear customer,

Thousands of customers buy our high standard products every year. There are a few good reasons for doing so:

- The cost-performance ratio - reliable quality at a fair price.
- We have the ideal solutions for your measuring tasks based on our expert experience gained over 20 years.
- Our high quality standard.
- Of course, our instruments carry the CE symbol required by the EU.
- We issue calibration certificates and hold seminars.

Our service guarantees fast help.

CE Measuring instrument conform to **DIN EN 61326-1 and DIN EN 61010-1**

Please read carefully before starting the device!

Warning: Do not exceed the pressure range of 16 bar!

Observe the measuring range of the sensor!

Always observe the direction of flow when positioning the sensor!

The screwed fixture must be pressure tight.

It is absolutely necessary to avoid condensation on the sensor element or water drops in the measuring air as they may cause faulty measuring results.

The manufacturer cannot be held liable for any damage which occurs as a result of non-observance or non-compliance with these instructions. Should the device be tampered with in any manner other than a procedure which is described and specified in the manual, the warranty is cancelled and the manufacturer is exempt from liability.

The device is destined exclusively for the described application.

We offer no guarantee for the suitability for any other purpose and are not liable for errors which may have slipped into this operation manual. We are also not liable for consequential damage resulting from the delivery, capability or use of this device.

We offer you to take back the instruments of the instruments family VA 420 which you would like to dispose of.

Adjustments and calibrations should only be carried out by qualified employees from the measurement and control technology branch.

The consumption sensor VA 420 works according to the calorimetric measuring procedure.

Flammable gases

If this consumption sensor is used for measurement of flammable gases (e. g. natural gas and so on) we expressly would like to point out that the sensor has no DVGW admission, however, it can be used for measurements in natural gas.
A DVGW admission is not mandatory.

The consumption sensor corresponds with the current state of technology and basically it can be used in any flammable and non-flammable gases.
If the sensor is used e.g. in the medium natural gas, the sensor will be adjusted for natural gas. The calibration protocol (inspection certificate) will be included in the scope of delivery.

The area outside the pipeline (ambient area of the sensor) must not be an explosive area.

The installation has to be carried out by authorized professionals.

VA 420 is a compact consumption counter for compressed air and gases.

Special features:

- Optimum accuracy due to compact design
- Integrated in- and outlet section
- Less flow due to measuring section
- Integrated display for Nm^3/h and Nm^3

Programming via Service Software SFA 300

- Analogue output 4...20 mA scalable
- Selection of gas type (air, nitrogen, argon, nitrous oxide, CO2, oxygen, natural gas)
- Read-out the service data

The following table shows the required inlet sections depending on the existing disturbance / flow disturbance.

Table of additionally required inlet sections

Flow obstruction **in front of** the measuring section	Minimum length inlet section (L1)	Minimum length outlet section (L2)
Slight curve (bend < 90°)	**12 x D**	**5 x D**
Reduction (pipe narrows towards the meas. section)	**15 x D**	**5 x D**
Expansion (pipe expands towards the meas. section)	**15 x D**	**5 x D**
90° bend or T-piece	**15 x D**	**5 x D**
2 bends á 90° on one level	**20 x D**	**5 x D**
2 bends á 90° 3-dimensional change of direction	**35 x D**	**5 x D**
Shut-off valve	**45 x D**	**5 x D**

The respective minimum values required are indicated here. If it is not possible to observe the stipulated equalising sections, considerable deviations in the measuring results must be expected.

Attention:
The measuring sections of VA 420 consumption counters with 1 1/2" and 2" measuring section have reduced inlet and outlet sections. Please take into consideration the recommended inlet and outlet sections. Dimensions please see page 7 and 8.

Parameters: flow and consumption
(Standard: DIN 1945, ISO 1217 at 20°C and 1000 mbar)

Selectable units for flow: m³/h (standard - factory setting),
m³/min, l/min, l/s, kg/s, kg/min, kg/h, cfm

Measuring principle: calorimetric measurement

Sensor: Pt45, Pt1000

Measuring medium: air, gases

Operating temperature: **-**30 ... 80°**C**

Operating pressure: up to 16 bar, special version PN 40 (40 bar)

Power supply: 12 to 30 VDC smoothed ± 15%

Power input: max. 80 mA at 24 VDC

Analogue output: 4...20 mA (see table below), max. burden < 500 Ohm

Order no. stainless steel 1.4404	Order no. stainless steel 1.4301	Description	**Analogue output**
0695.1420	0695.0420	VA 420 with integrated 1/4" meas. section	4… 20 mA = 0...90 l/min
0695.1421	0695.0421	VA 420 with integrated 1/2" meas. section	4… 20 mA = 0...90 m³/h
0695.1422	0695.0422	VA 420 with integrated 3/4" meas. section	4… 20 mA = 0...170 m³/h
0695.1423	0695.0423	VA 420 with integrated 1" meas. section	4… 20 mA = 0...290 m³/h
0695.1426	0695.0426	VA 420 with integrated 1 1/4" meas. section	4… 20 mA = 0...480 m³/h
0695.1424	0695.0424	VA 420 with integrated 1 1/2" meas. section	4… 20 mA = 0...550 m³/h
0695.1425	0695.0425	VA 420 with integrated 2" meas. section	4… 20 mA = 0…900 m³/h

Pulse output: 1 pulse per m³ resp. per l, pulse output potential-free
max. 30 VDC, 20 mA (pulse length see page 10)

Accuracy: ± 1.5 % m. v., ± 0.05 % f. s.

Display: Flow in m³/h, counter in m³
Other units selectable via display
Flow values max. 6 digits, counter max. 1,999,999,999 m³
then it drops back to 0

Display operation please see pages 12-15

Mounting thread: R 1/4", R1/2", R3/4", R1", R 1 1/4", R1 1/2", R 2”
DIN EN 10226 (ISO 7-1)

Material: Stainless steel 1.4301 / 1.4404
Version with flange DIN EN 1092-1: Stainless steel 1.4404

Flow measuring ranges

Pipe size	**Inner pipe Ø**	**Pipe size**	**VA 420**	Consumption
Inch	mm		Meas. ranges from … to	Standard setting
1/4“	8.5	DN 8	0,8 … 90 l/min	l
1/2“	16.1	DN 15	0,2 … 90 m³/h	m³
3/4“	21.7	DN 20	0,3 ... 170 m³/h	m³
1“	27.3	DN 25	0,5 ... 290 m³/h	m³
1 1/4“	36.8	DN 32	0,7 …480 m³/h	m³
1 1/2"	41.8	DN 40	1 … 550 m³/h	m³
2“	53.1	DN 50	2 ... 900 m³/h	m³

Reference DIN 1945/ ISO 1217: 1000mbar /20°C; Air

		1/4"	**1/2"**	**3/4"**	**1"**	**1 1/4"**	**1 1/2"**	**2"**
		Analogue–output 20mA	Analogue–output 20mA	Analogue–output 20mA	Analogue–output 20mA	Analogue–output 20mA	Analogue–output 20mA	Analogue–output 20mA
		l/min	[m³/h]	[m³/h]	[m³/h]	[m³/h]	[m³/h]	[m³/h]
Reference DIN1945/ ISO 1217: 20°C, 1000 mbar (Reference during calibration)								
Air		**90**	**90**	**170**	**290**	**480**	**550**	**900**
Adjustment to DIN 1343: 0°C, 1013,25 mbar								
Air		**80**	**80**	**155**	**265**	**440**	**505**	**825**
Argon	Ar	140	140	265	450	750	855	1400
Carbon dioxide	CO_2	85	85	165	285	470	540	890
Nitrogen	N_2	80	80	150	255	425	485	800
Oxygen	O_2	85	85	160	275	455	520	855
Nitrous oxide	N_2O	85	85	165	280	470	535	880
Natural gas	NG	50	50	100	170	280	325	530

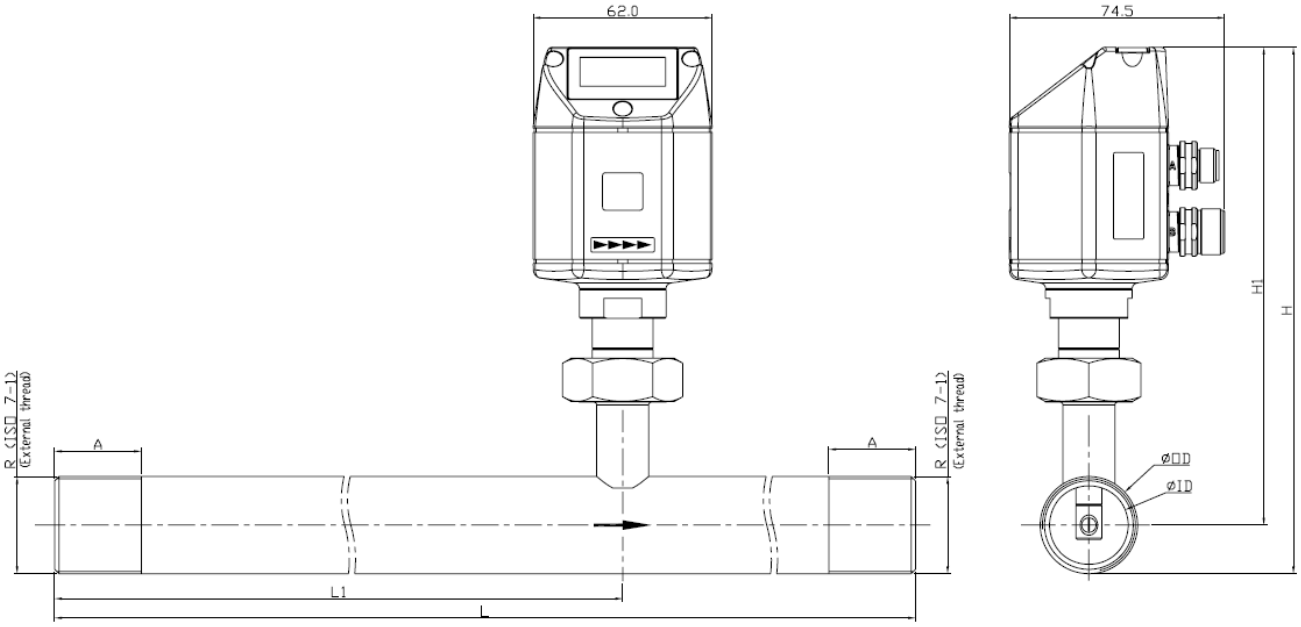
Other gases on request

Please note:

The consumption sensor corresponds with the current state of technology and basically it can be used in any flammable and non-flammable gases.

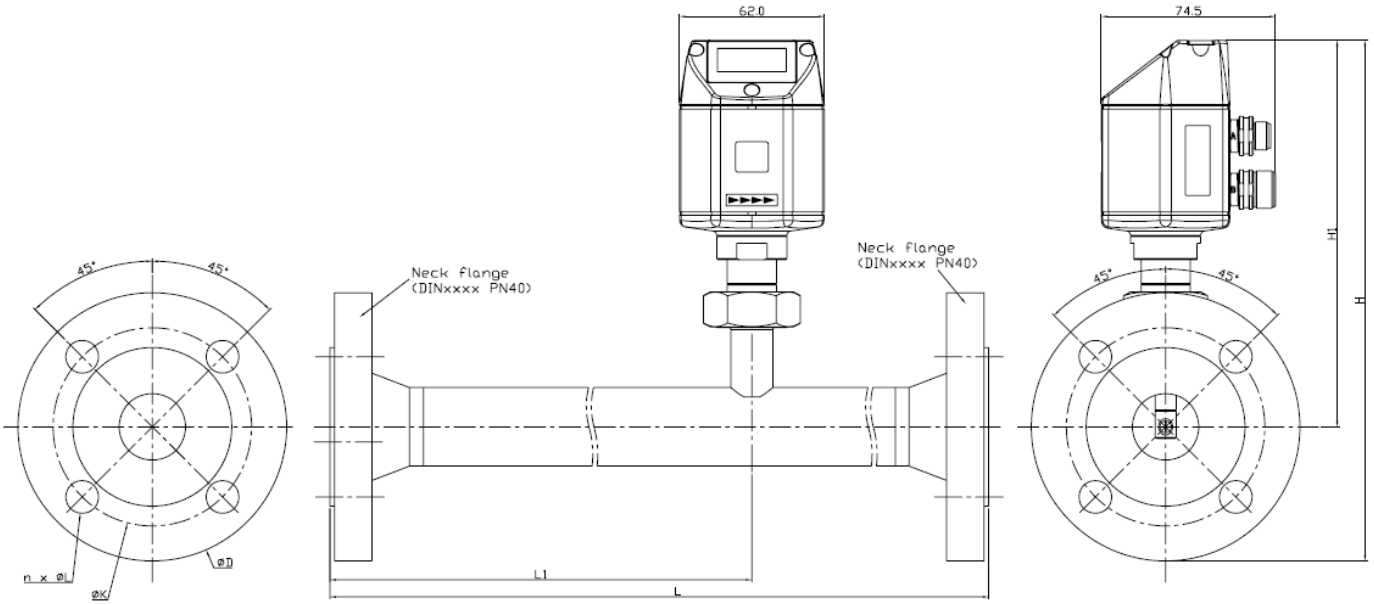
If this consumption sensor is used for measurement of flammable gases (e.g. natural gas and so on) we expressly would like to point out that the sensor has no DVGW admission, however, it can be used for measurements in natural gas. A DVGW admission is not mandatory.

The area outside the pipeline (ambient area of the sensor) must not be an explosive area.



	Pipe size	outer diam/ inner diam (mm)	L (mm)	L1 (mm)	H (mm)	H1 (mm)	R	A (mm)
VA 420 1/4"	DN 8	13.7 / 8.5	194	137	176.0	165.7	R 1/4"	15
VA 420 1/2“	DN 15	21.3 / 16.1	300	210	176.4	165.7	R 1/2“	20
VA 420 3/4“	DN 20	26.9 / 21.7	475	275	179.2	165.7	R 3/4“	20
VA 420 1“	DN 25	33.7 / 27.3	475	275	182.6	165.7	R 1“	25
VA 420 1 1/4"	DN 32	42.4 / 36.8	475	275	186.9	165.7	R 1 1/4"	25
VA 420 1 1/2“	DN 40	48.3 / 41.9	475	275	189.9	165.7	R 1 1/2“	25
VA 420 2“	DN 50	60.3 / 53.1	475	275	195.9	165.7	R 2“	30

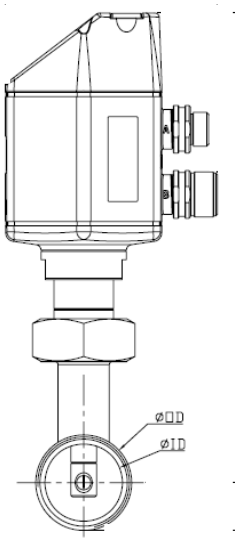
VA 420 Version with weld neck flange (material stainless steel 1.4404):



							Flange DIN EN 1092-1		
	Pipe size	**AD/ID (mm)**	**L (mm)**	**L1 (mm)**	**H (mm)**	**H1 (mm)**	**Ø D in mm**	**Ø K in mm**	**nxøL in mm**
VA 420 1/2“	DN 15	21.3 / 16.1	300	210	213.2	165.7	95	65	4 x 14
VA 420 3/4“	DN 20	26.9 / 21.7	475	275	218.2	165.7	105	75	4 x 14
VA 420 1“	DN 25	33.7 / 27.3	475	275	223.2	165.7	115	85	4 x 14
VA 420 1 1/4"	DN 32	42.4 / 36.8	475	275	235.7	165.7	140	100	4 x 18
VA 420 1 1/2“	DN 40	48.3 / 41.8	475	275	240.7	165.7	150	110	4 x 18
VA 420 2“	DN 50	60.3 / 53.1	475	275	248.2	165.7	165	125	4 x 18

Order no.	Description	**Analogue output**	
0695.2421	VA 420 with integrated 1/2" meas. section with weld neck flange	4… 20 mA =	0...90 m³/h
0695.2422	VA 420 with integrated 3/4" meas. section with weld neck flange	4… 20 mA =	0...170 m³/h
0695.2423	VA 420 with integrated 1" meas. section with weld neck flange	4… 20 mA =	0...290 m³/h
0695.2426	VA 420 with integrated 1 1/4" meas. section with weld neck flange	4… 20 mA =	0...480 m³/h
0695.2424	VA 420 with integrated 1 1/2" meas. section with weld neck flange	4… 20 mA =	0...550 m³/h
0695.2425	VA 420 with integrated 2" meas. section with weld neck flange	4… 20 mA =	0…900 m³/h

ELECTRICAL WIRINGS



- Connector plug A
- Connecting plug B

Attention: Not required connections NC must not be connected to a voltage and/or to protection earth. Cut and insulate cables.

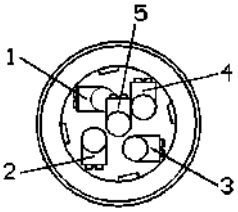
	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Connector plug A	NC (SDI)	-VB	+VB	I+ 4..20 mA	NC
Colours connection cables 0553 0104 (5 m) 0553.0105 (10 m)	brown	white	blue	black	grey
Connector plug B	NC (SDI)	NC	NC	Isolated pulse	Isolated pulse
Colours pulse cables 0553 0106 (5 m) 0553.0107 (10 m)	brown	white	blue	black	grey

Legend:

-VB	Negative supply voltage 0 V
+VB	Positive supply voltage 12...30 VDC smoothed
I +	Current signal 4...20 mA - actual flow

Pulse	Pulse for consumption
NC	Must not be connected to a voltage and/or to protection earth. Please cut and isolate cables.

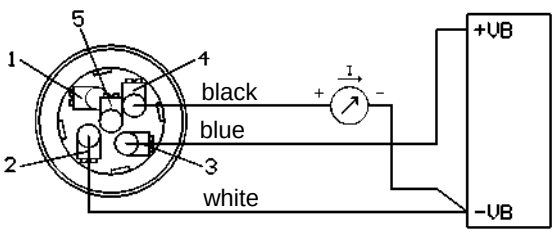
If no connection cable/ pulse cable is ordered the sensor will be supplied with a M12 connector plug. the user can connect the supply and signal cables as indicated in the connection diagram.
.



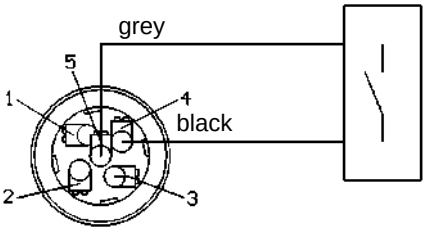
M12 Connector plug

View from back side (terminal side)

Connector plug A



Connector plug B

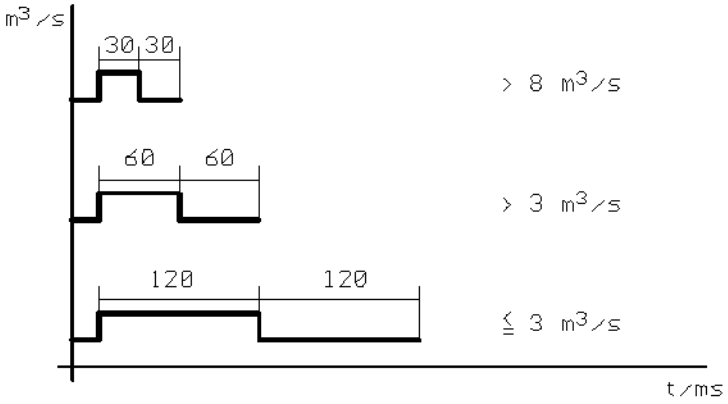


Pulse lengths are indicated consumption-relatedly.

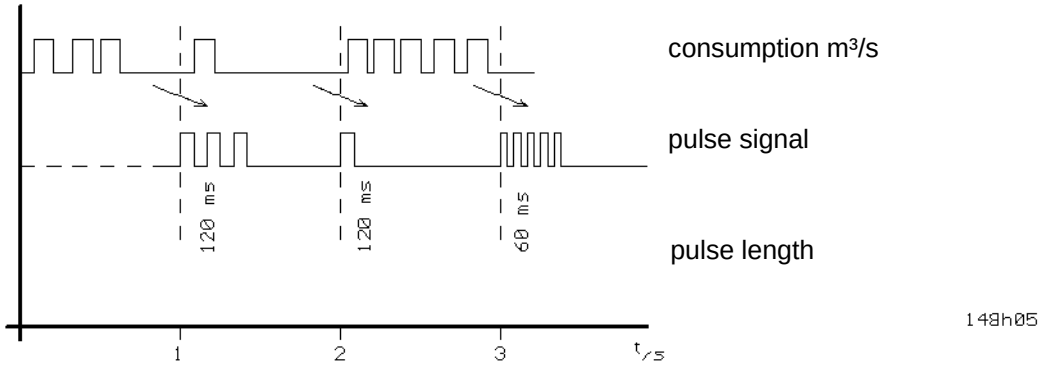
Pulses, one pulse per set consumption unit, are summed up within the sensor and indicated in one second intervals, please see below

Pulse : There is an isolated contact available. This is closed for the duration of the pulse . Max. switching capacity : 30 VDC, 20 mA (semi-conductor relay galvanically isolated by optocoupler).

Pulse lengths consumption-dependent



Internal pulse receiver:
The numbers of m³ per second are summed
up and indicated after one second. Pulse lengths consumption-independent
Pulse lengths depending on consumption



Pulse lengths and maximum flow rates

Pulse length [ms]	[m³/h]	[m³/min]	[l/min]	[cfm]	[kg/h]	[kg/min]	[kg/s]
120	10,800	180	180	180	10.800	180	3
60	21,600	360	360	360	21.600	360	6
30	39,600	660	660	660	39.600	660	11
10	129,600	2,160	2,160	2,160	129,600	2,160	36
Max. flow	**129,600**	**2,160**	**2,160**	**2,160**	**129,600**	**2,160**	**36**

Maximum number of pulses per second: 36.

Please note: If the maximum flow is exceeded there will be no more signals! In this case please change the units e.g. from l/min to m³/h. **!**

Maintenance

The sensor head should be checked regularly for dirt and cleaned if necessary. Should dirt, dust or oil accumulate on the sensor element, a deviation will occur in the measuring value. An annual check is recommended. Should the compressed air be heavily soiled this interval must be shortened.

Cleaning of the sensor head

The sensor head can be cleaned by carefully moving it to and fro in warm water with a small amount of washing-up liquid. Avoid physical intervention on the sensor (e. g. using a sponge or brush). If soiling cannot be removed, service and maintenance must be carried out by the manufacturer.

Re-calibration

If no customer specifications are given then we recommend to carry out calibration every 12 months. For this purpose the sensor must be sent to the manufacturer.

Spare parts and repair

For reasons of measuring accuracy spare parts are not available.
If parts are faulty they must be sent to the supplier for repair.

If the measuring device is used in important company installations we recommend to keep a spare measuring system ready.

Calibration certificates

Calibration certificates are issued by the manufacturer on request. This is a fee-paying service. Precision is tested with PTB (German National Metrology Institute) volume flow nozzles.

Display

VA 420 can display up to 3 measured values. This are volumetric flow/mass flow, velocity and total consumption. For better reading only one measured value is displayed. The measured values are toggled during normal operation mode every 3 seconds.

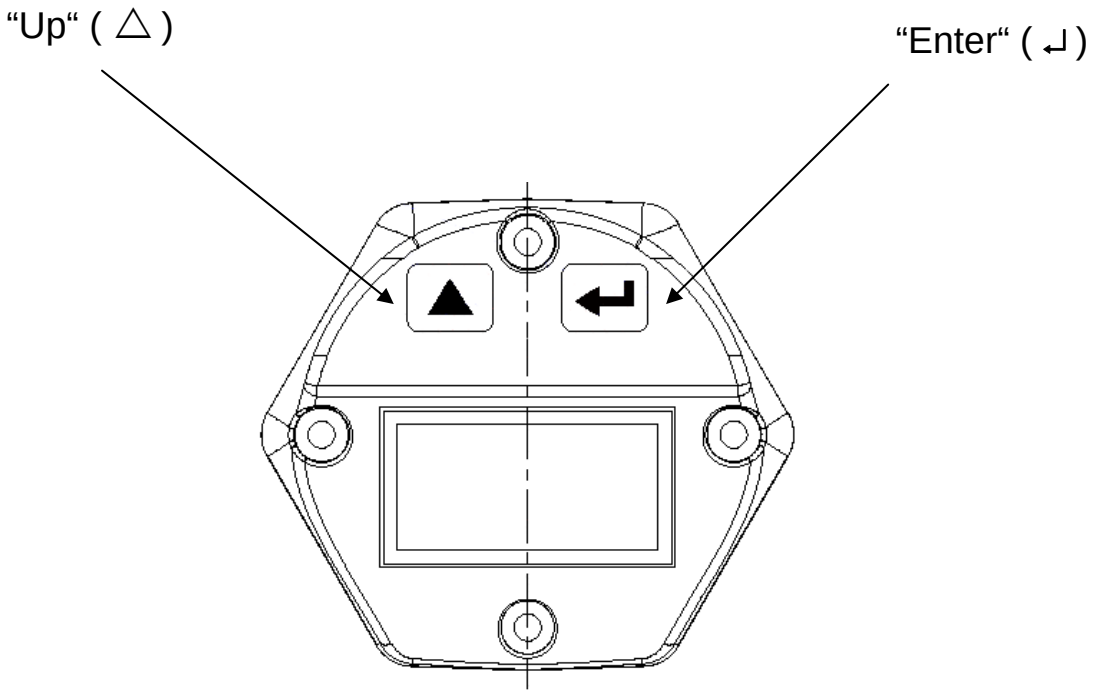
The following changes can be made :

- Unit volume flow (m³/min, m³/h, l/min, l/s, kg/s, kg/min, kg/h, cfm)
- Display of measured value (Volumenstrom, Geschwindigkeit, Gesamtverbrauch)
- Zero consumption
- Display contrast
- Display upside down

Settings ex works:

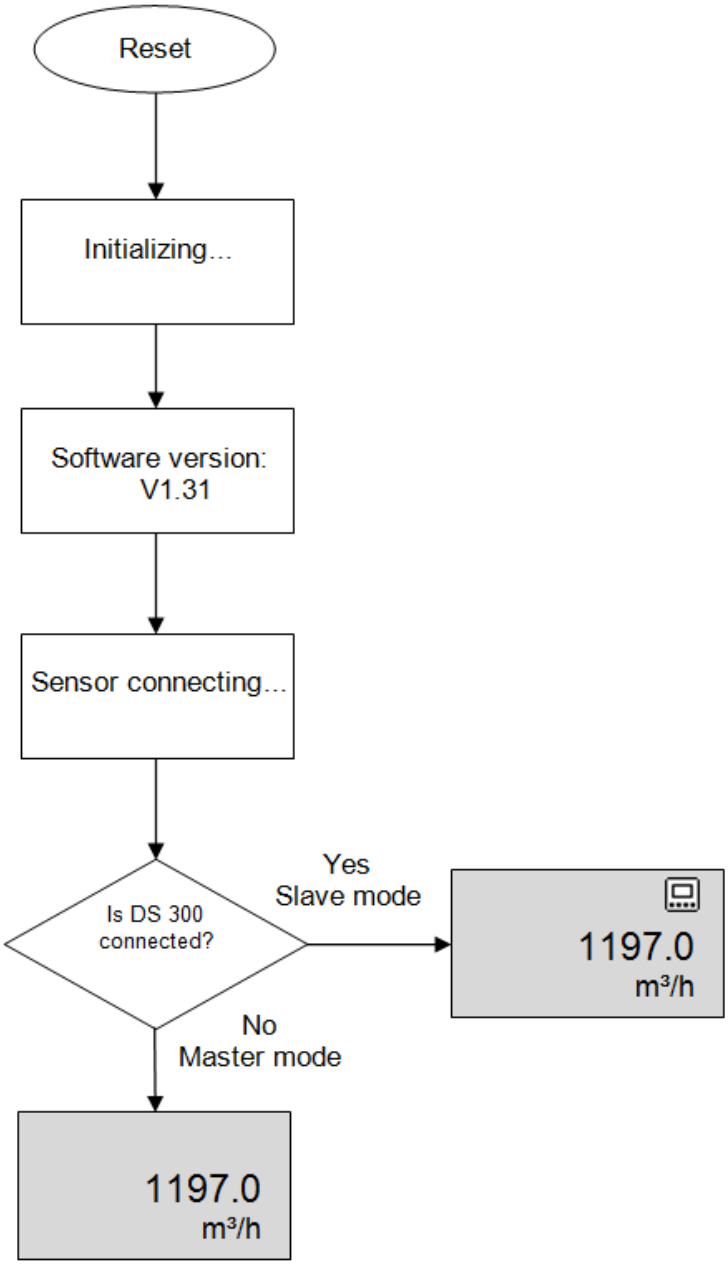
- Volume flow in m³/h
  (If the sensor is calibrated for reference DIN 1343, the unit is Nm³/h.
  This unit is only adjustable in the factory or with the CS Service Software.)
- Total consumption in m³

On the top of the VA 420 are the capacitive key buttons to operate the display menu.



Connection VA 420

After power on, the display will go through an initialisation procedure and will finally show the actual online values.



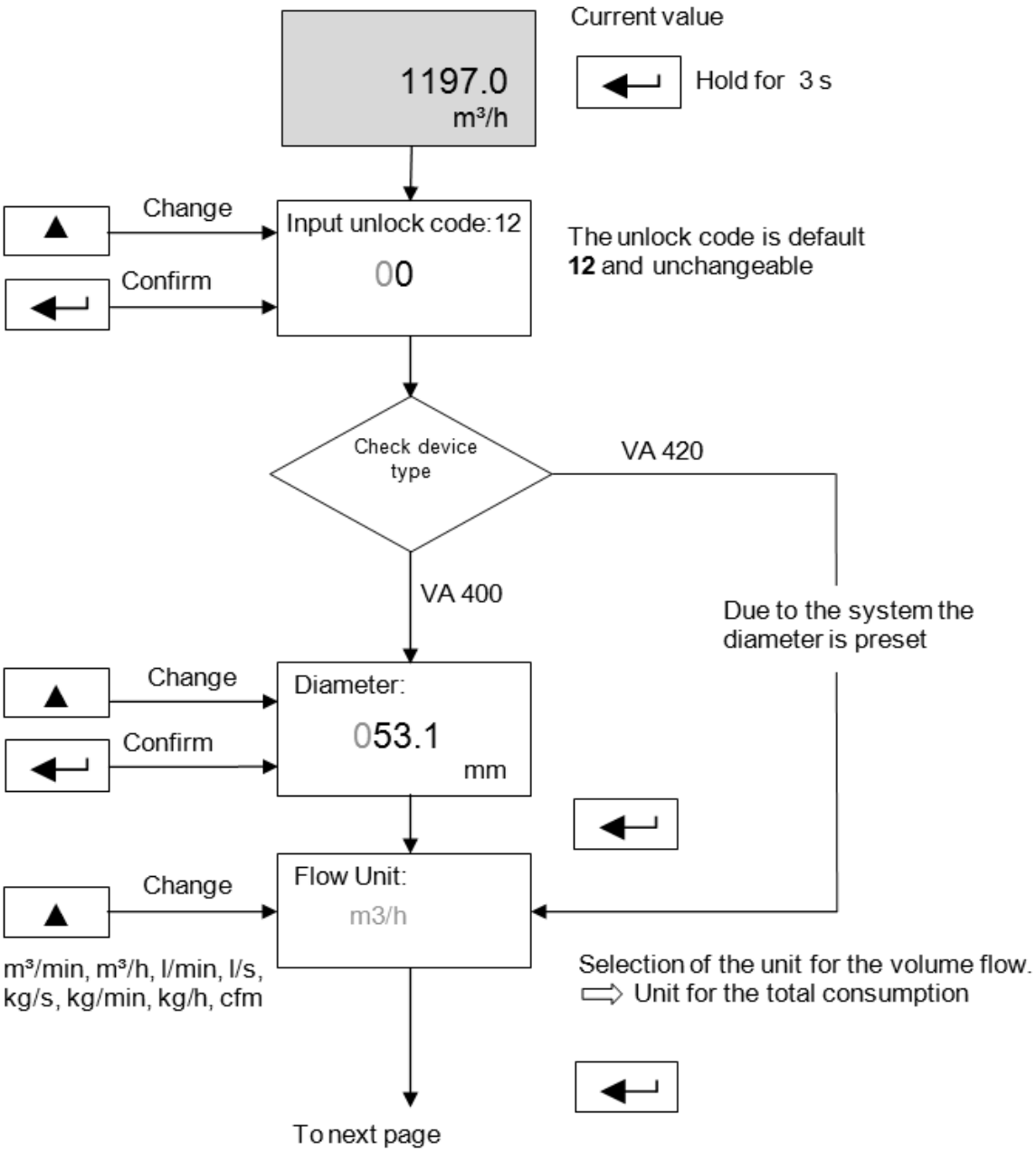
Slave mode
Changing the settings only with DS 300

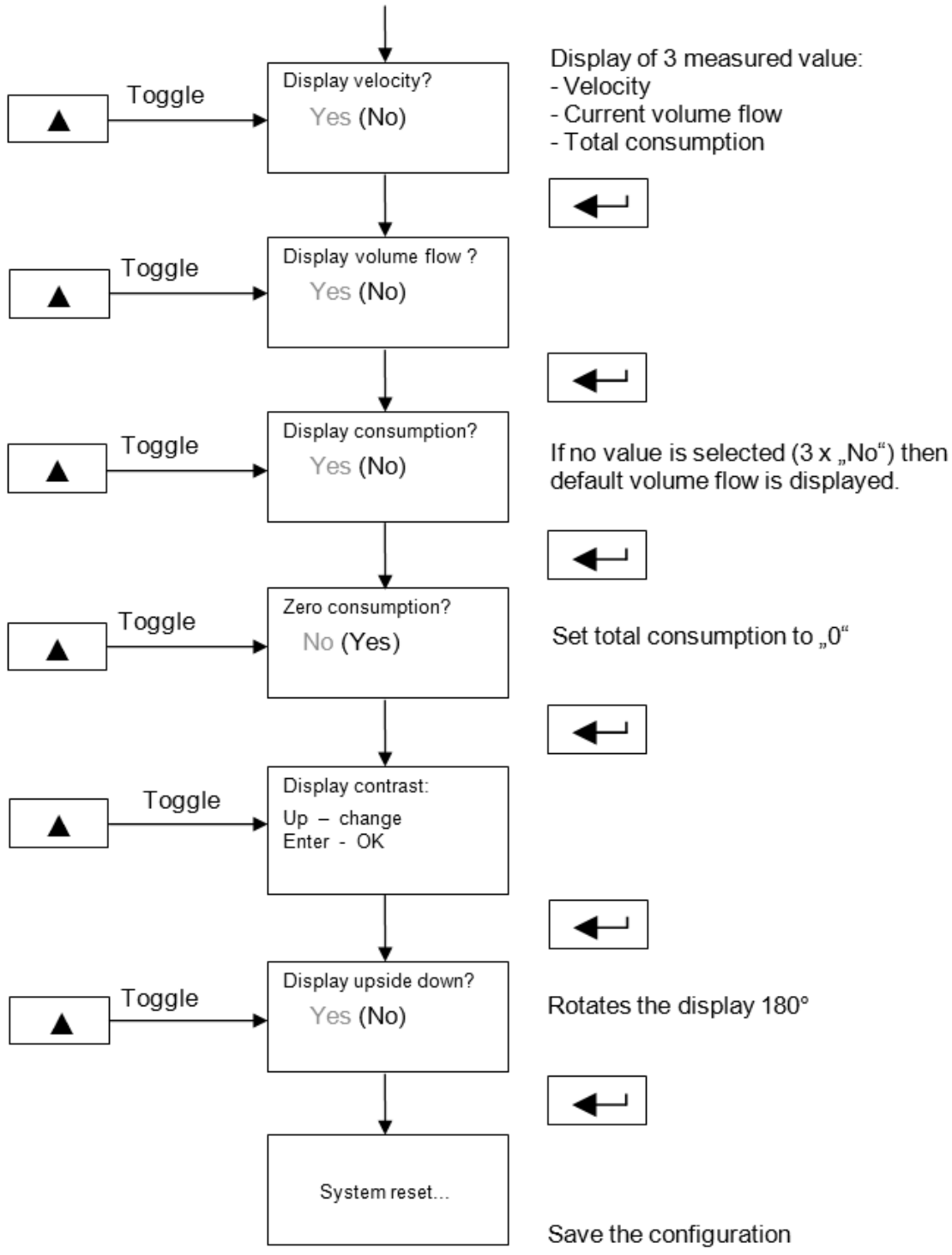
Master mode
Changing the settings with pushbuttons VA 420.

Configuration settings

In order to change the configuration, keep the „Enter“ button pressed for 3 seconds. After input of the unlock code the menu begins with the volume flow unit setting. The first unit will start blinking and can be changed with the „Up“ key. The selected unit has to be confirmed with the „Enter“ button.

Configuration menu





Menu

You can exit the configuration process by pressing and keeping the “Enter” key for 3sec or no key event for 20sec. The configuration before this picture will be save and effected late.

At CS Instruments
According to DIN ISO certification of the measuring instruments we recommend to calibrate and if applicable to adjust the instruments regularly from the manufacturer. The calibration intervals should comply with your internal specificaton. According to DIN ISO we recommend a calibration interval of one year for the instrument VA 420.

WARRANTY

If you have reason for complaint we will of course repair any faults free of charge if it can be proven that they are manufacturing faults. The fault should be reported immediately after it has been found and within the warranty time guaranteed by us. Excluded from this warranty is damage caused by improper use and non adherence to the instruction manual.

The warranty is also cancelled once the instrument has been opened - as far as this has not been mentioned in the instruction manual for maintenance purposes - or if the serial number in the instrument has been changed, damaged or removed.

The warranty time for the VA 420 is 12 months. If no other definitions are given the accessory parts have a warranty time of 6 months. Warranty services do not extend the warranty time.

If in addition to the warranty service necessary repairs, adjustments or similar are carried out the warranty services are free of charge but there is a charge for other services such as transport and packaging costs. Other claims, especially those for damage occurring outside the instrument, are not included unless responsibility is legally binding.

After sales service after the warranty time has elapsed
We are of course there for you even after the warranty time has elapsed. In case of malfunctions please send us the instrument with a short-form description of the fault. Please do not forget to indicate your telephone number so that we can call you in case of any questions.

Order no. Stainless steel 1.4301	***Order no. Stainless steel 1.4404***	***Order no. with weld neck flange Stainless steel 1.4404***	***Description***
0695.0420	0695.1420		VA 420 consumption counter with integrated 1/4" measuring section
0695.0421	0695.1421	0695.2421	VA 420 consumption counter with integrated 1/2" measuring section
0695.0422	0695.1422	0695.2422	VA 420 consumption counter with integrated 3/4" measuring section
0695.0423	0695.1423	0695.2423	VA 420 consumption counter with integrated 1" measuring section
0695.0426	0695:1426	0695.2426	VA 420 consumption counter with integrated 1 1/4" measuring section
0695.0424	0695.1424	0695.2424	VA 420 consumption counter with integrated 1 1/4" measuring section
0695.0425	0695.1425	0695.2425	VA 420 consumption counter with integrated 2" measuring section
0553.0104			Connection cable* for VA/FA Series 400, 5 m, with M12 plug
0553.0105			Connection cable* for VA/FA Series 400, 10 m, with M12 plug
0553.0106			Pulse cable for consumption sensor with M12 plug, length 5 m
0553.0107			Pulse cable for consumption sensor with M12 plug, length 10 m
0190.0001			Closing cap for measuring section VA 420 (Material: Aluminium)
0190.0002			Closing cap for measuring section VA 420 (Material: Stainless steel 1.4404)
3200.0001			5 point precision calibration with ISO certificate
0554.2005			CS Service Software for VA/FA 400 sensors including PC connection set, USB connection and interface adapter as well as CS Soft Professional software for recording the measured data
0554.0108			Mains unit in wall housing 100-240V 10VA 50/60 Hz / 24 VDC 0.35 A
0554.0107			AC adapter plug 100-240 VAC / 24 VDC, 0.35 A for VA/FA 400 Series, 2 m cable
On request			External wall display

* (voltage supply, analogue output)

CS Instruments GmbH

Declaration of Conformity

for

DIRECTIVE 2OO2/96/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27. January 2003
on waste electrical and electronic equipment (WEEE)

and

DIRECTIVE 2OO2/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27. January 2003
on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

of the down mentioned intruments from CS Instruments GmbH:

Pressure dew point meter	series **FA 4xx** and accessories
Flow and consumption meter	series **VA 4xx** and accessories
Pressure dew point meter	**DP 300** and accessories
Leak detector	**LD 300** and accessories
Multifunction measuring instrument	**DS 300** and accessories
Multi-channel display	**DS 300 mobile**

CS Instruments GmbH as the manufacturer herewith declares that the above instruments and accessories belongs to the category 9 (WEEE 2002/96/EC). Therefore the above instruments do not fall upward aforementioned directive RoHS 2002/95/EC and are not affected by the material restriction.
In accordance with directive WEEE 2002/96/EC the measuring instruments specified above are taken back from CS Instruments GmbH to the disposal.

CS Instruments GmbH
Zindelsteiner Str. 15
78052 VS-Tannheim

Tel. 07705 978 99-0
Fax 07705 978 99-20

Tannheim, 24. April 2008

Wolfgang Blessing, Geschäftsführer

CS Instruments GmbH

Declaration of Conformity

Consumption counter **VA 420**

CS Instruments GmbH as the manufacturer herewith declares that the above consumption counter complies with the following directives :

Electro-magnetic compliance	**2004/108/EG**
Low voltage directive	**2006/95/EG**

For assessing the instrument, the following standards have been referred to:

Electromagnetic compatibility

Emitted interference:	**EN 61326-1: 2006-10 + EN 61326-1/Ber.1: 2008-07**
Interference resistance:	**EN 61326-1: 2006-10 + EN 61326-1/Ber.1: 2008-07**

Low voltage derective

Reliability	**EN 61010-1: 2002-08 + EN 61010-1/Ber.1:2002-11 + EN 61010-1/Ber.2:2004-01**

Year of first marking with CE label: 09

The product is labeled with the indicated mark CE

CS Instruments GmbH
Zindelsteiner Str. 15
78052 VS-Tannheim

Phone: +49 (0)7705 978 99-0
Fax: +49 (0)7705 978 99-20

Tannheim, 19. May 2010

Wolfgang Blessing, Managing Director

Sales office SOUTH

Zindelsteiner Str. 15
D-78052 Villingen-Schwenningen

Phone +49 (0) 7705 97 89 9-0
Fax +49 (0) 7705 97 89 9-20

info@cs-instruments.com
www.cs-instruments.com

Sales office NORTH

Am Oxer 28c
D-24955 Harrislee

Phone +49 (0) 461 700 20 25
Fax +49 (0) 461 700 20 26

info@cs-instruments.com
www.cs-instruments.com

Data Sheet

1. General information

Elektronikon Mk5 main controller

Printed Matter Number	:	2946 1788 00
Applicable to	:	Mk5 controlled units
Preliminary Operations	:	-
Safety Instructions	:	General
Persons Required	:	1
Special Tools	:	-
Consumables	:	-

2. Document overview

This document describes the following:

SAFETY = THINK BEFORE YOU ACT

1. STOP
EVALUATE RISKS

3. THINK
SEEK PROPER SOLUTION

2. ACT
CARRY OUT SOLUTION

PERSONAL PROTECTION KEEPS YOU SAFE

LOCK OUT / TAG OUT
TAKE AWAY THE RISKS

4. Document Information and History

Edition	Date	Description	Author
00	03/12/2013	First Edition	CTS
01	13/09/2017	update	Wouter Cattoor

5. Environmental conditions

The controller is designed to work in following conditions:

- Minimum operating temperature: -10°C
- Maximum operating temperature: +60°C
- Maximum humidity: 90% RH, 95%RH no condensation
- Maximum altitude of 2000 m (if altitude is higher than 2000m a temperature derating of 5%/1000m is required)

The controller should be mounted in an IP54 enclosure which guarantees a pollution degree 2. (only non-conductive pollution, occasionally temporary condensation may be expected)

The controller shall be protected against direct sunlight. Direct sunlight may affect the visual appearance of the controller.

6. Mounting and installation

6.1. Mechanical mounting

1. Use a mounting plate of suitable stiffness, with following excisions:

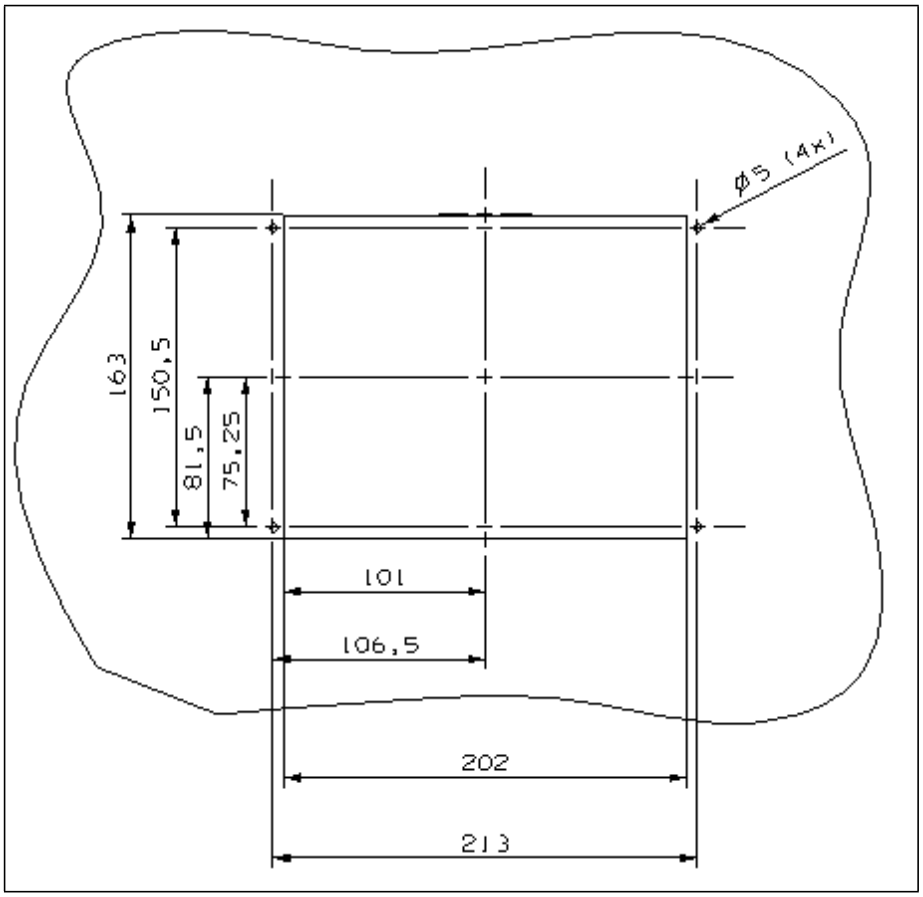


Figure 1: Excisions of the panel where the controller is designed to mount in.

2. Mount the controller vertically and upright.
3. Mount the seal in a correct manner, to guarantee the IP54 dust and water tightness.
4. Fix the controller with 4 screws (M4), tighten with a torque of 3Nm. Max.

   The screws should be of suitable length conform Figure 2.

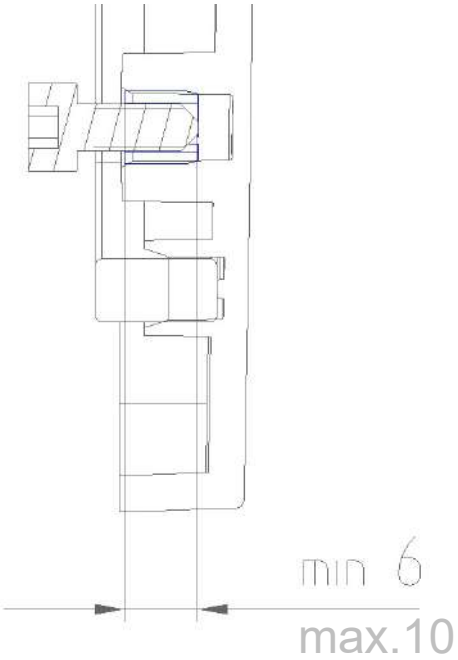


Figure 2: Screw length for mounting the controller in the panel.

5. Make sure that the control box in which the controller is mounted contains following label:

    **This enclosure contains electrical equipment**

   It may only be opened by key or special tool.
6. Make sure that the ventilation openings are free, with sufficient free area around the module to have ventilation, in order not reach the max operating temperature (see § 4)

6.2. Electrical installation

5.2.1 Supply requirements

- The device has **no** fuse in the 24VAC power supply line. A fuse **2A slow** has to be provided **externally**.
- The power supply conductor shall have a disconnecting device.
- The secondary circuits and earthing of the supplying transfo should be separated from the primary circuit by at least reinforced insulation.
- The supply voltage is 24V +40%, -30%, frequency of 50/60Hz, 16VA. A supply drop-out of maximum 40ms is permitted.

5.2.2 Earth terminations

Do not operate the machine with grounding wire disconnected!

Bonding between conduit connections is not automatic and must be provided as part of the installation!

1. Make a low resistance connection between the earth terminal of the controller and the chassis of the enclosure. This connection is a function earth connection, with a maximum wire length of 20cm.
2. Connect cables and shielding to the grounding termination with M4 eye-terminals or use FASTON type receptacle 6,3-1,5mm, as recommended.
   Otherwise, the connection shall be such that a low resistance connection shall be guaranteed.
3. Make sure that the screw to connect to the grounding connection terminals is an M4 screw, with a length suitable for connection and conform Figure 3.

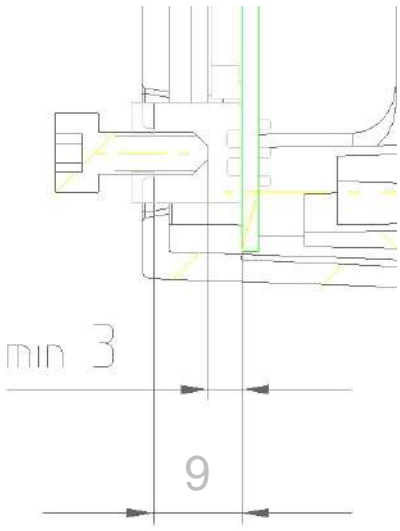


Figure 3: screw length for mounting shielding, PE's,… to the earth terminal connection.

5.2.3 FCC user information

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules.

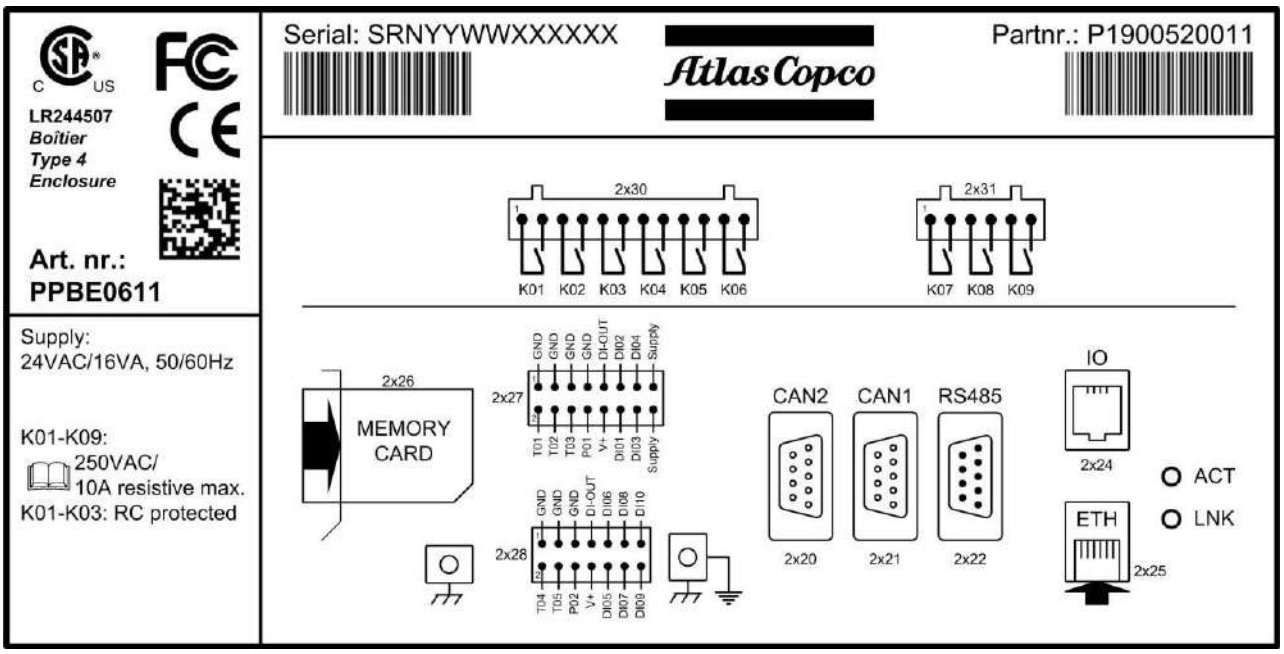


Figure 4: overview of connections to be made

7. Maintenance during service

7.1. Front panel

The front part of the controller can be cleaned with a wet soft cloth and mild soap only.

The front part of the controller is scratch sensitive. Other products are not allowed and may damage the surface!

8. Technical Data

8.1. CPU-Core

Parameter	Value
CPU	Analog Devices BF536
CPU-Bus configuration	16 Bit
Internal RAM	100 kByte
Flash EPROM	16 MByte
SDRAM	16 MByte
Backup RAM Functionality	5 kByte

8.2. Real Time Clock

Parameter	Value
Type	ST Thomson 41T00SM6
Counter	seconds, minutes, hours, day, months, years, century
Leap Year handling	automatic
Summertime handling	by software
Tolerance T_{amb}=25°C	typ. ±100 ppm
Aging first year	typ. ± 10 ppm
Tolerance T_{amb}=-10°C ….70°C	typ. ±100 ppm
Life Time Battery: Tamb=25°C only RTC supplied compressor always power off	min. 10 years

8.3. LCD-Display

Parameter	Value
Type	3.5” QVGA
LCD-Controller	BF536 internal
Technology	TFT
Backlight	LED
Backlight Lifetime	10k hours @ 25°c (brightness 50%)
Character Set	customer specific
Foil Material	PolyCarbonate
LED	4 (Gr,Y,R,Blue)
Keys	8

8.4. Digital Outputs 10A

Parameter	Value
Number of Outputs	9
Identifications	K01-K03 (RC protected) K04-K09
Type	relay (voltage free contacts)
Rated Voltage AC	250V
Rated Current	10 A
Peak Current	20 A
Switching Voltage AC	max. 400V
Switching Power	max. 2500VA
Pick-Up Time	typ. 15ms
Drop-Out Time	typ. 20ms
Switching Frequency (max. load)	max. 30 / minute
Contact Life (max. load)	8×10^4…....2.5×10^5 cycles
Mechanical Life (no load)	typ. 1×10^7 cycles

NOTE: Maximum DC load: 30V DC - 10A resistive Minimum current: 5mA

8.5. Digital Inputs

Parameter	Value
Number	10
Identification	DI01-DI10 DI-OUT (24VDC supply)
Input Voltage Low High	-3……. 5.0V DC 15…....26.0V DC
Input Current Low High	0….15mA 5….15mA
Isolated	no
Impedance	4800 Ohm
Supply by Controller	24.0V +/- 10%DC
Supply Current	max. 100 mA (dissipation for all DI together)
Supply Protection	short circuit protected to ground

8.6. Analog Inputs

7.6.1 Pt1000

Parameter	Value
Number	5
Identification	T01-T05 (return terminal: GND)
Temperature Range	-50ºC…...+300ºC
Resolution	<0.2ºC
Error	+/- 1°C (0-100°C range) +/- 2°C (full range) (2% accuracy under extreme EMC stress)
Current	typ. 2mA
Protection	short circuit protected to ground
Resolution A/D Converter	12 Bit
Sensor Type	2 wire
Isolated	No

7.6.2 Pressure

Parameter	Value
Number	2
Identification	P01 (5V supply: V+ ; GND)
Input Voltage	0.2….4.8V
Resolution	12 Bit
Error	max. +/- 6LSB
Input Resistance	typ. 100kΩ
Supply Current (each sensor)	max. 5mA
Supply for Pressure Sensor Vref	5V +/-5%
Reference for A/D- Converter	Supply for Sensor
Supply for Pressure Sensor	short circuit protected to ground
Sensor Type	2 wire single ended
Isolated	No

8.7. Ethernet

Parameter	Value
Controller	Integrated in CPU
Specification	IEEE 802.3
Baudrate	10/100 Mbit
Isolated	yes
Connector Type	RJ45

8.8. CAN-Bus (internal CAN)

Parameter	Value
Controller	Integrated in CPU
Type	Full CAN / BASIC CAN
Number of nodes	max.32
Specification	V2.0 Part B
Physical Layer	ISO11898
Baudrate	Programmable (max. 1 Mbaud)
Common Mode Rejection	-2.....+7V
Isolated	no
Connector Type	Sub-D 9 pole male

8.9. CAN-Bus (LAN)

Parameter	Value
Controller	MCP2515
Type	Full CAN / BASIC CAN
Number of nodes	max.32
Specification	V2.0 Part B
Physical Layer	ISO11898
Baudrate	Programmable (max.125 kbaud)
Common Mode Rejection	-2.....+7V
Isolated	no
Connector Type	Sub-D 9 pole male

8.10. RS-485

Parameter	Value
Controller	MCP2515
Type	Full CAN / BASIC CAN
Number of nodes	max.32
Specification	V2.0 Part B
Physical Layer	ISO11898
Baudrate	Programmable (max.125 kbaud)
Common Mode Rejection	-2.....+7V
Isolated	no

8.11. IO-bus

Parameter	Value
Controller	integrated in CPU
Type	RS-485 (proprietary)
Number of nodes	max.10
Configuration	half duplex
Baudrate	200 kbaud
Differential Output Voltage	min. 1.5V
Differential Input Voltage	min. 200mV
Common Mode Voltage	-7....+12V
Receiver Input Impedance	12kΩ
Cable length	max. 4m (unterminated)
Isolated	no
Connector Type	RJ11

8.12. General

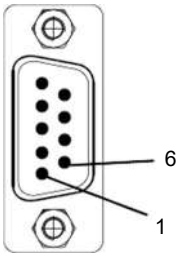
Parameter	Value
Supply Voltage	24VAC +40%/-30% 50/60Hz
Type of Protection	IP54 front IP21 back
Temperature Range Operating Storage	 -10°C…..+60°C -30°C…..+70°C
Permissible Humidity	Relative humidity 95% no condensation
Noise emission	EN 55022 class B: 1998 EN 50081-2: 1993
Noise immunity	EN 50082-2: 1995 EN 61000-6-2: 1999
Weight	950g
Dimension	240x190x80 mm
Housing	PCABS-V0
Mounting	cabinet door

9. Pin assignment

9.1. Pin Assignment CAN1 & CAN2 –Bus

Sub-D 9 pole male

2X20 & 2X21

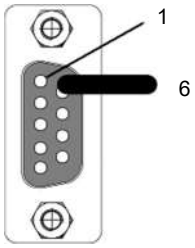


Pin	Function
1	Reserved
2	CAN_LOW
3	CAN_GND
4	Reserved
5	Reserved
6	CAN_GND
7	CAN_HIGH
8	Reserved
9	Reserved

9.2. Pin Assignment RS485

Sub-D 9 pole female

2X22

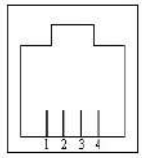


Pin	Function
1	GND
2	Reserved
3	TxD/RxD+
4	Reserved
5	Reserved
6	Reserved
7	Reserved
8	TxD/RxD-
9	Reserved

9.3. Pin Remote IO

RJ11

2X24



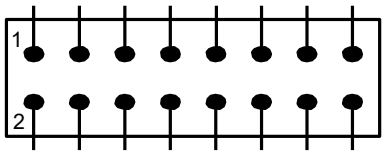
Pin	Function
1	GND
2	TxD/RxD+
3	TxD/RxD-
4	REM ID line

9.4. Pin Assignment power supply, analog en digital inputs

Male connector, straight, 16-way, pitch 3.5mm.

Model: Wago 713-116

2X27



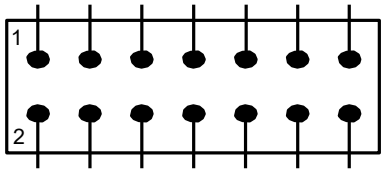
Pin	Function
1	**GND**
2	**T**emperature Input **01**
3	**GND**
4	**T**emperature Input **02**
5	**GND**
6	**T**emperature Input **03**
7	**GND**
8	**P**ressure Input **01**
9	**D**igital **I**nput **Supply**
10	**V+** 5V Supply for Pressure Sensor
11	**D**igital **I**nput **02**
12	**D**igital **I**nput **01**
13	**D**igital **I**nput **04**
14	**D**igital **I**nput **03**
15	**24VAC** Supply
16	**24VAC** Supply

9.5. Pin Assignment analog en digital inputs

Male connector, straight, 14-way, pitch 3.5mm.

Model: Wago 713-114

2X28



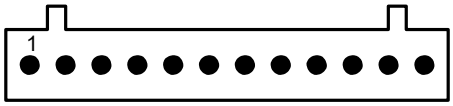
Pin	Function
1	**GND**
2	**T**emperature Input **04**
3	**GND**
4	**T**emperature Input **05**
5	**GND**
6	**P**ressure Input **02**
7	**D**igital **I**nput **Supply**
8	**V+** 5V Supply for Pressure Sensor
9	**D**igital **I**nput **06**
10	**D**igital **I**nput **05**
11	**D**igital **I**nput **08**
12	**D**igital **I**nput **07**
13	**D**igital **I**nput **10**
14	**D**igital **I**nput **09**

9.6. Pin Assignment Digital Output

Male connector, straight, 12-way, pitch 5mm.

Model: Wago 721-142/001-000

2X30



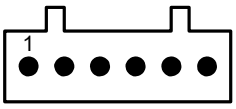
Pin	Function
1	**K01** Relay Output brake contact
2	**K01** Relay Output transfer contact
3	**K02** Relay Output brake contact
4	**K02** Relay Output transfer contact
5	**K03** Relay Output brake contact
6	**K03** Relay Output transfer contact
7	**K04** Relay Output brake contact
8	**K04** Relay Output transfer contact
9	**K05** Relay Output brake contact
10	**K05** Relay Output transfer contact
11	**K06** Relay Output brake contact
12	**K06** Relay Output transfer contact

9.7. Pin Assignment Digital Output

Male connector, straight, 6-way, pitch 5mm.

Model: Wago 721-136/001-000

2**X31**



Pin	Function
1	**K07** Relay Output brake contact
2	**K07** Relay Output transfer contact
3	**K08** Relay Output brake contact
4	**K08** Relay Output transfer contact
5	**K09** Relay Output brake contact
6	**K09** Relay Output transfer contact

RTM 3

OXYGEN-THERAPY

FLOWMETERS WITH
FLOATING BALL

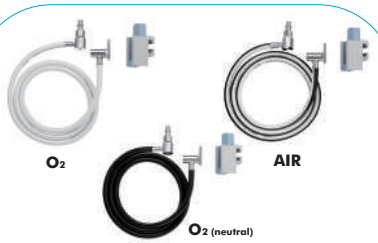
TECHNOLOGIE
MEDICALE

ENGLISH VERSION • 09/2015

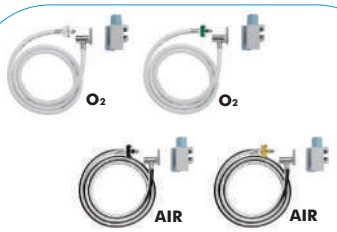
RAIL MOUNTING SYSTEMS

AFNOR rail mounting systems

BS rail mounting systems



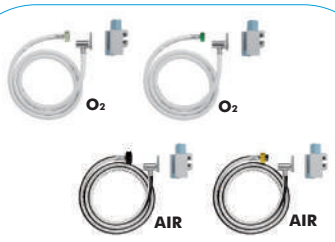
DIN rail mounting systems



US OHMEDA rail mounting systems

NORDIC rail mounting systems

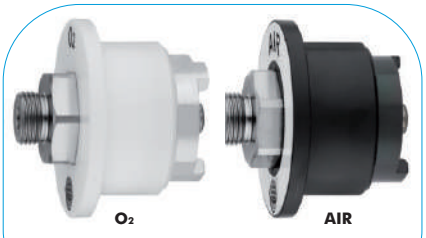
UNI rail mounting systems



DISS rail mounting systems

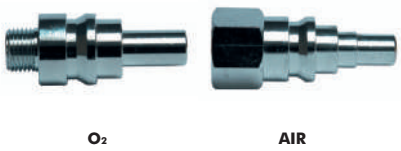
Others standards available upon request.

DIRECT PROBES



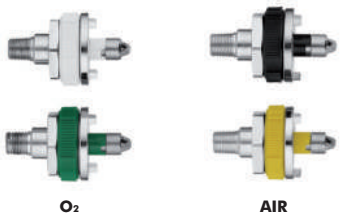
AFNOR direct probes

BS direct probes

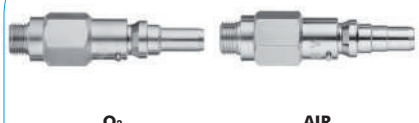


CZECH direct probes

DIN direct probes



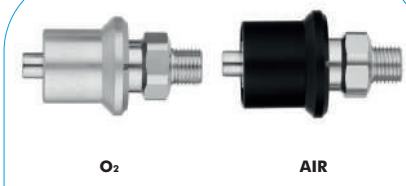
US OHMEDA direct probes



NORDIC direct probes

DISS direct probes

UNI direct probes



CARBUROS direct probes

Others standards available upon request.

RTM 3

The RTM3 flowmeter with floating ball is used to adjust and measure the flow of a gas that is to be delivered to patients through the respiratory tract. The RTM3 should be connected to a source of pressured gas on the wall either using a direct probe or a rail mounting system. It must be fitted at its outlet either with a humidifier/nebulizer or with an outlet tubing nipple.

Main technical features:

Medical device of glass IIa.

In compliance with the EN ISO 15002: 2008 standard.

Inlet pressure : 4.5 bar +/– 0.5 bar (O_2)
4.5 bar +/– 0.5 bar (Air)

- **Flowmeter with compensated pressure** ensuring perfect flowrate stability and accuracy. The scale working pressure is the same as the pressure of the network so that the scale is not affected by any counter-pressure.
- **New type of "cartridge" knob**, extremely reliable, easy-to-clean and ensuring an optimized adjustment. Perfect tighness of the knob thanks to its polyamide seat.

  The knob was tested under pressurized working conditions during more than 10,000 cycles (which corresponds to 5 openings / closings every day during more than 5 years) without showing any leakage after closing. ***This allows us to guarantee the closing of the knob during 5 years without any leakage***.
- **Monoblock scale cover made of polyamide** for a higher sturdiness and a greater safety. The inopportune unscrewing of the monoblock scale cover is not possible. Patients have no acces to te scale.
- **Expanded scale** providing higher reading accuracy for low flowrates (only for 05 l/min and 15 l/min RTM3 flowmeters).
- **Filter at the scale inlet** protecting the device against any gas network impurities and thus ensuring the protection of both the patient and the flowmeter.
- Body made of nickel-plated brass, very strong.
- Flowmeter MRI compatible.
- Normative information (gas name, CE marking, signs related to the use of the devise) are mentionned on a self-adhesive ring for a better reading and immediate identification of a TM device. The identification ring is protected against tarnishing and wear & tear thanks to the monoblock cover.
- **A unit serial number is engraved on the body of each flowmeter** ensuring its identification and traceability. 8 digits number indicating the manufacturing year and month as well as the unit serial number of the device.

Many versions available:

Available gases & flowrates:

- OXYGEN & MEDICAL AIR: **1.5l/min, 5l/min, 15l/min, 30l/min**
- CO_2: **12l/min**
- CARBOGEN: **15l/min**
- Inlets: 12x100F - 1/4G M - 1/8NPT F - 3/8"BSP F.
- Outlets: 12x125 M - 9/16" M - 1/2" BS F - 1/4G M.
- Available configurations: Single, Twin and DUO.
- Available connections to the wall outlet: Direct probe or Rail mounting system.
- Standards: AFNOR (French Standard) - BS (British Standard) DIN (German Standard) - US OHMEDA DIAMOND (American standard) - NORDIC (Scandinavian Standard) UNI (Italian Standard) - DISS (American Standard).
- Weight (without direct probe): 275 g.
- Dimensions (without direct probe):
  Height 145 mm x width 35 mm x depth 70 mm.

Use, cleaning and maintenance:

The RTM3 flowmeter must be connected vertically. Then just open the knob and adjust the position of the floating ball according to the required flowrate (reading in the middle of the ball).

Clean the outisde of the device with water and soap. Rinse and dry. If using disinfecting products please check their compatibility with plastics. Do not lay under water.

Device to be serviced every 1 to 3 years according to intensive use, if any.

Accessories:

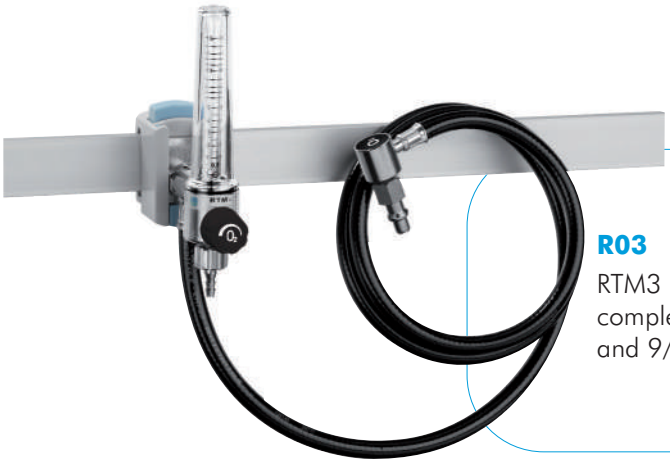
- Tubing nipple (1 part) or tubing nipple (2 parts) ❶
- Switch or Flow-Switch ❷
- Humidifier: CCO model (250 ml) or TMS model (500ml) ❸

R01

RTM3 O_2 15 l/min mounted with BS direct probe and 9/16" outlet tubing nipple

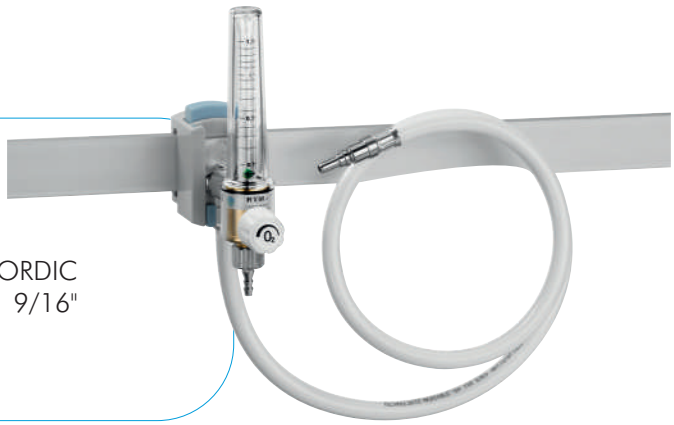
R02

RTM3 O_2 05 l/min mounted with DIN direct probe and 250 ml CCO humidifier



R03

RTM3 O_2 15 l/min mounted with DIN complete rail mounting system (neutral) and 9/16" outlet tubing nipple



R04

RTM3 O_2 1.5 l/min mounted with NORDIC complete rail mounting system and 9/16" outlet tubing nipple

R05

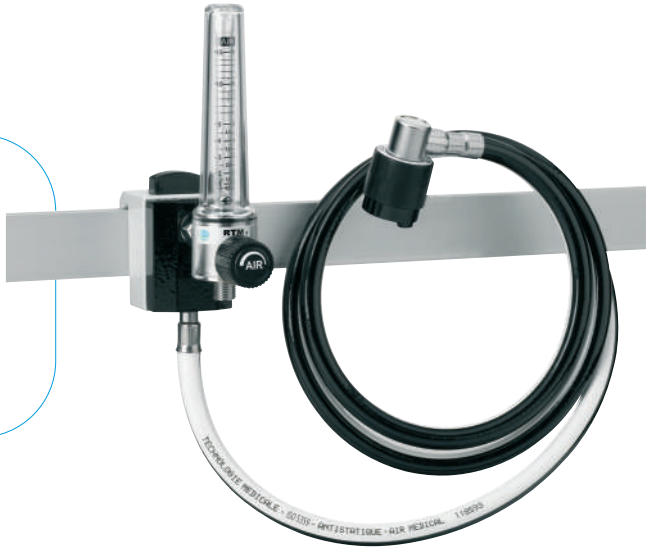
RTM3 O_2 15 l/min mounted with UNI direct probe and 500 ml TMS humidifier

R06

Twin RTM3 O_2 15-30 l/min mounted with AFNOR direct probe and 12 x 125 outlet tubing nipples

R07

RTM3 AIR 05 l/min mounted with BS direct probe and 1/2" BS outlet tubing nipple



R08

RTM3 AIR 15 l/min mounted with AFNOR complete rail mounting system (with metal clamp)

RTM3 DUO FLOWMETER

Patented model

Double outlet integrated in the body of the flowmeter:

- **One horizontal outlet tubing nipple;**
- **One vertical central threaded outlet to connect a humidifier (outlet thread 12x125 M and 9/16" M available).**

Thanks to this DUO system there is no need to screw and unscrew the outlet tubing nipple or the humidifier.

The saving of time is really appreciated compared to a standard flowmeter and the risk of losing the nipple is avoided.

The user can choose between 3 positions and can switch from one position to another without removing the nipple or the humidifier.

- **1st position:** the gas flow is delivered through the nipple.
- **2nd position:** the gas flow is cut off. Parking position.
- **3rd position:** the gas flow goes through the vertical central outlet to which you can connect either a CCO humidifier (250 ml) or a TMS humidifier (500 ml) or any other model (single-use humidifier, nebulizer).

Also available with a complete rail mounting system.

R09
RTM3 DUO O_2 15 l/min with AFNOR direct probe

To convert the standard RTM3 flowmeters into DUO flowmeters the solution is :

TM FLOW-SWITCH OR SWITCH

- **Flow-Switch: model with ring** (R10)
- **Switch: model with knob** (R11)

Both Flow-Switch and Switch can be screwed onto any standard flowmeter. They enable you to deliver a gas flow either through the outlet tubing nipple or through a humidifier.

Available with 12x125 or 9/16" threaded inlet and outlet.

R10

R11

AFNOR French Standard — RTM3 FLOWMETERS WITH FLOATING BALL

OXYGEN (O_2) / MEDICAL AIR	Flowrates l/min	Single 1.5	Single 05	Single 15	Single 30	Twin 15-15	DUO 15
Inlet thread: 12 x 100 F	Outlet thread: 12x125M	17579	14801	14803	14805	14811	14815
		X	14696	14683	14685	14691	14693
	Outlet thread: 9/16" M	17587	14851	14855	14859	14866	14873
		X	14709	14713	14717	14724	-
Inlet thread: 1/4G M	Outlet thread: 12x125M	17610	14800	14802	14804	14810	14814
		X	14680	14682	14684	14690	-
	Outlet thread: 9/16" M	17591	14849	14853	14857	14865	14871
		X	14707	14711	14715	14723	-
Mounted with AFNOR direct probe 	Outlet thread: 12x125M	17581	14030	14038	14046	14071	14078
		X	13883	13891	13899	13924	13928
	With nipple*: 12 x 125	17583	14032	14040	14048	14073	X
		X	13885	13893	13901	13926	X
	Outlet thread: 9/16" M	17588	14130	14134	14138	14150	14155
		X	13968	13972	13976	13988	-
	With nipple*: 9/16" M	17589	14131	14135	14139	14151	X
		X	13969	13973	13977	13989	X
Mounted with AFNOR complete rail mounting system (polycarbonate clamp) 	Outlet thread: 12x125M	17612	14026	14034	14042	14068	-
		X	13879	13887	13895	13921	-
	With nipple*: 12 x 125	17614	14028	14036	14044	14070	X
		X	13881	13889	13897	13923	X
	Outlet thread: 9/16" M	17592	14128	14132	14136	14148	-
		X	13966	13970	13974	13986	-
	With nipple*: 9/16" M	17593	14129	14133	14137	14149	X
		X	13967	13971	13975	13987	X

BS British Standard — RTM3 FLOWMETERS WITH FLOATING BALL

OXYGEN (O_2) / MEDICAL AIR	Flowrates l/min	Single 1.5	Single 05	Single 15	Single 30	Twin 15-15	DUO 15
Inlet thread: 1/4G M	Outlet thread: 9/16" M	17591	14849	14853	14857	14865	14871
		X	14707	14711	14715	14723	-
	Outlet thread: 1/2" BS F	17574	14752	14754	14756	14760	X
		X	14659	14661	14663	14667	X
Mounted with BS direct probe 	Outlet thread: 9/16" M	17594	14398	14404	14410	14424	14430
		X	14278	14284	14290	14304	-
	With nipple*: 9/16" M	17595	14399	14405	14411	14425	X
		X	14279	14285	14291	14305	X
Mounted with BS complete rail mounting system (polycarbonate clamp) 	Outlet thread: 9/16" M	17596	14400	14406	14412	14426	14431
		X	14280	14286	14292	14306	-
	With nipple*: 9/16" M	17597	14401	14407	14413	14427	X
		X	14281	14287	14293	14307	X

* Outlet tubing nipple in 2 parts, metal
- Available upon request only.
X Not available.
Please contact us for other flowmeter configurations.

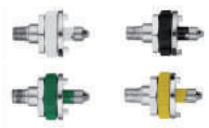
DIN
German Standard

RTM3 FLOWMETERS WITH FLOATING BALL

OXYGEN (O_2) / MEDICAL AIR		Flowrates l/min	Single 1.5	Single 05	Single 15	Single 30	Twin 15-15	DUO 15
Inlet thread: 1/4G M	DIN ISO	Outlet thread: 9/16" M	17591	14849	14853	14857	14865	14871
			X	14707	14711	14715	14723	-
	DIN NEUTRAL		-	-	17156	-	-	-
Mounted with DIN direct probe 	DIN ISO	Outlet thread: 9/16" M	17598	14566	14570	14574	14586	14592
			X	14494	14498	14502	14514	-
		With nipple*: 9/16"	17599	14567	14571	14575	14587	-
			X	14495	14499	14503	14515	X
	DIN NEUTRAL	Outlet thread: 9/16" M	-	18014	17154	-	17330	-
Mounted with DIN complete rail mounting system (polycarbonate clamp) 	DIN ISO	Outlet thread: 9/16" M	17600	14568	14572	14576	14588	14593
			X	14496	14500	14504	14516	-
		With nipple*: 9/16"	17601	14569	14573	14577	14589	X
			X	14497	14501	14505	14517	X
	DIN NEUTRAL	Outlet thread: 9/16" M	-	18013	18012	-	-	-
			X	-	-	-	-	-

US OHMEDA
American Standard

RTM3 FLOWMETERS WITH FLOATING BALL

OXYGEN (O_2) / MEDICAL AIR / ISO / MEDICAL AIR / ISO / MEDICAL AIR / US	Flowrates l/min	Single 1.5	Single 05	Single 15	Single 30	Twin 15-15	DUO 15
Inlet thread: 1/4G M	Outlet thread: 9/16" M	17591	14849	14853	14857	14865	14871
		X	14707	14711	14715	14723	-
Inlet thread: 1/8NPT F	Outlet thread: 9/16" M	17706	14850	14854	14858	17080	14872
		X	14726	14730	14734	-	-
Mounted with US OHMEDA direct probe 	Outlet thread: 9/16" M	-	14917	14921	14925	-	-
		-	17997	17999	-	-	-
		X	14893	14897	14901	-	-
		X	18001	18003	-	-	-
	With nipple*: 9/16" M	-	14918	14922	14926	-	X
		X	14894	14898	14902	-	X
Mounted with US OHMEDA complete rail mounting system (polycarbonate clamp) 	Outlet thread: 9/16" M	-	14915	14919	14923	-	-
		-	17996	17998	-	-	-
		X	14891	14895	14899	-	-
		X	18000	18002	-	-	-
	With nipple*: 9/16" M	-	14916	14920	14924	-	X
		X	14892	14896	14900	-	X

* Outlet tubing nipple in 2 parts, metal
- Available upon request only.
X Not available.
Please contact us for other flowmeter configurations.

NORDIC
Scandinavian Standard

RTM3 FLOWMETERS WITH FLOATING BALL

OXYGEN (O_2) / MEDICAL AIR	Flowrates l/min	Single 1.5	Single 05	Single 15	Single 30	Twin 15-15	DUO 15
Inlet thread: 1/4G M	Outlet thread: 9/16" M	17591	14849	14853	14857	14865	14871
		X	14707	14711	14715	14723	-
Inlet thread: 1/8NPT F	Outlet thread: 9/16" M	17607	14850	14854	14858	17080	14872
		X	14726	14730	14734	-	-
Mounted with NORDIC direct probe 	Outlet thread: 9/16" M	X	14638	14643	14648	-	-
		X	14611	14616	14621	-	-
	With nipple*: 9/16" M	17609	14639	14644	14649	-	X
		X	14612	14617	14622	-	X
Mounted with NORDIC complete rail mounting system (polycarbonate clamp) 	Outlet thread: 9/16" M	17602	14635	14640	14645	-	-
		X	14608	14613	14618	-	-
	With nipple*: 9/16" M	17603	14637	14642	14647	-	X
		X	14610	14615	14620	-	X

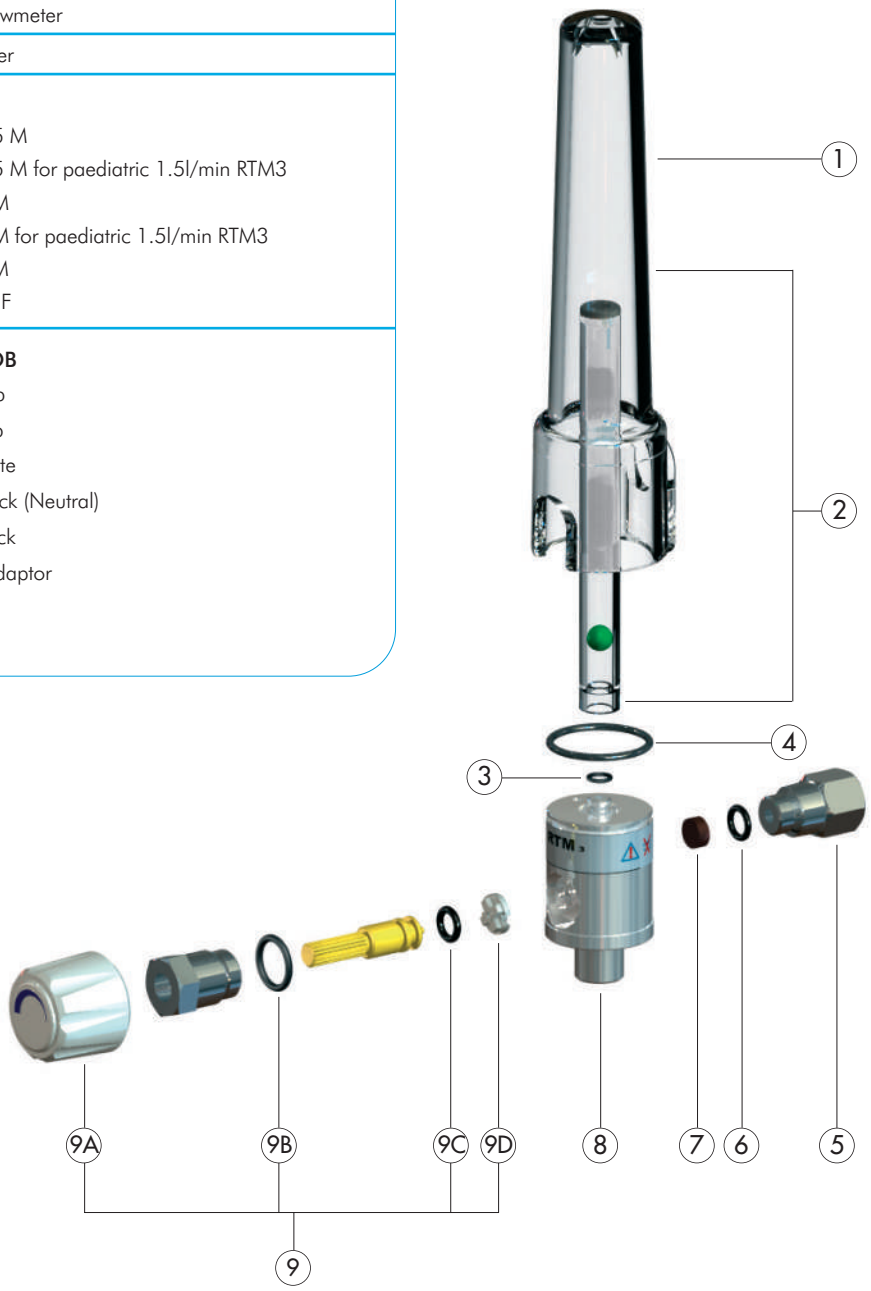
UNI
Italian Standard

RTM3 FLOWMETERS WITH FLOATING BALL

OXYGEN (O_2) / MEDICAL AIR	Flowrates l/min	Single 1.5	Single 05	Single 15	Single 30	Twin 15-15	DUO 15
Inlet thread: 1/4G M	Outlet thread: 1/4G M	X	14770	14772	14774	14778	-
		X	14668	14670	14672	-	-
	Outlet thread: 9/16" M	17591	14849	14853	14857	14865	14871
		X	14707	14711	14715	14723	-
Mounted with UNI direct probe 	Outlet thread: 1/4G M	X	14945	14949	14953	17428	17431
		X	14933	14937	14941	-	17432
	With nipple*: 1/4G M	X	14946	14950	14954	-	-
		X	14934	14938	14942	-	-
	Outlet thread: 9/16" M	18005	18004	18006	18007	18008	18009
		X	-	-	-	-	-
Mounted with UNI complete rail mounting system (polycarbonate clamp) 	Outlet thread: 1/4G M	X	14947	14951	14955	-	-
		X	14935	14939	14943	-	-
	With nipple*: 1/4G M	X	14948	14952	14956	-	-
		X	14936	14940	14944	-	-
	Outlet thread: 9/16" M	X	-	18010	-	-	-
		X	-	-	-	-	-

* Outlet tubing nipple in 2 parts, metal
- Available upon request only.
X Not available.
Please contact us for other flowmeter configurations.

	Reference		Description
1		18783	Monobloc scale cover in polyamide
2			**COMPLETE SCALE**
	O_2	17570	Complete scale 1.5 l/min (paediatric)
	O_2	16968	Complete scale 05 l/min 4.5 bar
	O_2	16969	Complete scale 15 l/min 4.5 bar
	O_2	16970	Complete scale 30 l/min 4.5 bar
	AIR	16965	Complete scale 05 l/min 4.5 bar
	AIR	16966	Complete scale 15 l/min 4.5 bar
	AIR	16967	Complete scale 30 l/min 4.5 bar
3		11131	Gasket for scale bottom
4		11408	Gasket for scale cover
5		11174	Inlet adaptator 12 x 100F
		11178	Inlet adaptator 1/4G M
		11176	Inlet adaptator 1/8NPT F
		16922	Inlet adaptator 3/8G BSP F
6		11578	Inlet gasket for flowmeter
7		11029	Inlet flowmeter filter
8			**BODY ONLY**
		11201	Body only 12x125 M
		17569	Body only 12x125 M for paediatric 1.5l/min RTM3
		11205	Body only 9/16" M
		17568	Body only 9/16" M for paediatric 1.5l/min RTM3
		11211	Body only 1/4G M
		11216	Body only 1/2"BS F
9			**COMPLETE KNOB**
		16954	O_2 complete knob
		16955	Air complete knob
9A		11198	O_2 knob only, white
		17086	O_2 knob only, black (Neutral)
		11189	Air knob only, black
9B		11684	Gasket for inlet adaptor
9C		11234	Knob axis gasket
9D		11184	Knob seat



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FLOWMETERS WITH FLOATING BALL

TECHNOLOGIE MEDICALE

101, rue Vaillant Couturier B.P. 46 F-93136 NOISY-LE-SEC CEDEX France
Tel: 33 (0)1 48 45 58 95 - Fax: 33 (0)1 49 42 90 21 - 33 (0)1 48 45 29 00 - info@technologiemedicale.com
www.technologiemedicale.com

09/2015 • Coordination : Serge Itzkowitch • Création : Acantic • Photographies : Frédéric Margaux.