

SATA® filter regulator systems
500 series



German Engineering

Spray Guns | Cup Systems | Breathing Protection | Air Filtration | Accessories



Clean compressed air for perfect finishes

SATA – Your experts for clean compressed and breathing air

Compressed air is one of the main sources of energy in paint shops. After being generated in the compressor, the air is fed into the compressed air circuit, whereby impurities such as tiny particles of compressor oil can be carried along right into the spray gun or breathing air. While such impurities are not particularly relevant for many industrial applications, they will inevitably cause coating flaws or pose a health risk in the paint application process. When working with waterborne paint systems, even the tiniest quantities of oil vapours can cause coating flaws, and consequently time-consuming, costly rework. Oil vapours or particles may also enter the respiratory system and cause health issues.

The SATA filter series 500 is available either as a one-stage sintered filter with water and oil separator, as a two-stage combination filter with sintered and fine filter, or as a three-stage filter unit with additional sintered activated charcoal filter. Every six months, all filter stages are maintained together in a procedure that takes just a few minutes without the need for tools, thanks to the bayonet lock and defined position of the filter cartridges, which are replaced simply by inserting them. Furthermore, a flow-optimised cyclone separator minimises pressure drop in the filter system and ensures a constant air flow of approx. 3,800 NI/min (with four connections).

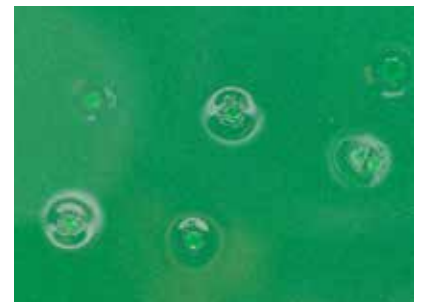
Among others, SATA compressed air filters prevent the following coating flaws:



Dust particle inclusions



Condensation/corrosion



Silicone craters

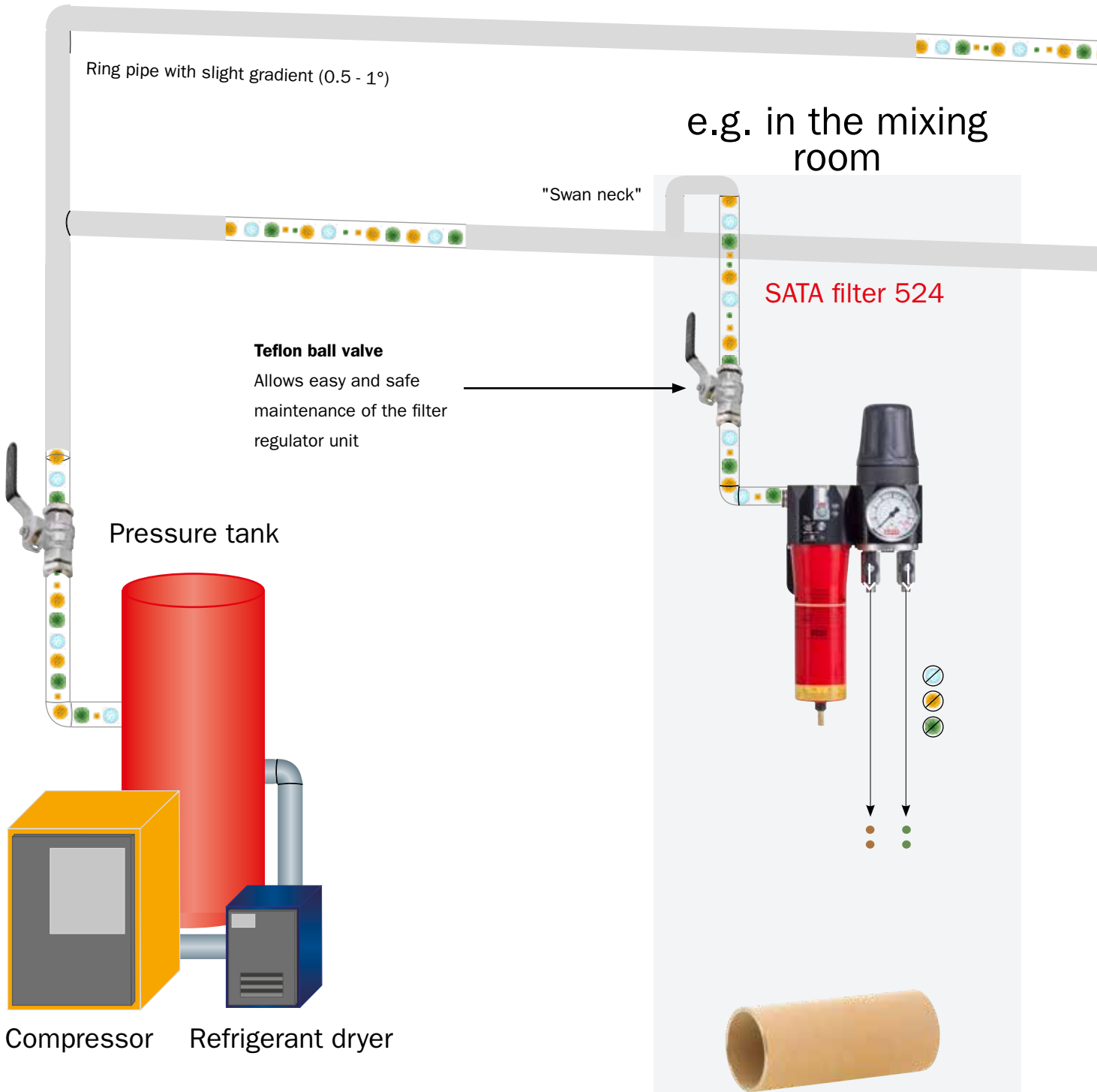


SATA filter 584

FOR MORE INFORMATION ON:

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- Flow-optimised cyclone separator (page 8 – 9)
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Technical layout of an air line circuit



Compressed air generated by the compressor can be contaminated with various substances:

- Oil droplets
- Oil vapours
- Condensate / water vapour
- Particles > 5 µm
- Particles > 0.01 µm

First filter stage: Oil/water separator with sintered filter

- The sintered filter separates particles > 5 µm.
- Exchange interval: every 6 months.
- Not sufficient for spraying or for breathing

e.g. in the spray booth

Spray booth

SATA filter 544



99.998 % technically particle-free air



Additional second filter stage: fine filter

- The fine filter separates particles > 0.01 µm;
Capacity of particle filtration: 99.998 %.
- Exchange interval: every 6 months.
- Compressed air not suitable for waterborne paints. However, breathing air quality in combination with belt-hung activated charcoal filter.

SATA filter 584



100 % technically particle-free air



Additional third filter stage: activated charcoal filter

- Activated charcoal adsorbes oil vapours from the compressed air.
- Exchange interval: every 6 months. (Every 3 months with previous and competition models.)
- Compressed air also suitable for waterborne paints and breathing air

SATA filter 500 series – Compressed air treatment system

A well functioning compressed air circuit also includes regularly maintained compressed air filter units. To warrant troublefree operation, a filter unit should be fitted either immediately in front of or directly inside the spray booth. While the SATA filter 544 will be sufficient for solvent-based paints, the SATA filter 584 is required when applying waterborne paints, as the activated charcoal stage eliminates the critical oil vapours that can cause coating flaws with waterborne materials.

A three-stage SATA filter 584 filter unit is also needed when using a compressed air-fed respirator (without "belt-hung" activated charcoal filter) to clean the air from harmful substances.



PRACTICE TIP

1. SATA filter 544 and 584 can also be fitted outside the spray booth and the compressed air pipe extended into the booth in order to regulate the spray pressure (ideal with SATA pressure reducer 520).
Advantage: when the need arises, perfectly treated spraying air can also be supplied to two paint booths at the same time. This eliminates the additional maintenance costs for a second filter unit.
2. SATA compressed air filters in the 500 series can be fitted with the air inlet on the left (standard delivery) or on the right. All that is needed is to fit the pressure gauge to the other side, then dismantle the cover unit and turn it by 180°.


PRODUCT BENEFITS


- Higher absorption of contaminations (compared to SATA filter 484) due to the new sintered activated charcoal filter
- Air flow with 4 connections approx. 3,800 NI/min (135 cfm)
- SATA filter timer to monitor the exchange intervals of all filter cartridges
- Synchronised maintenance: Filter maintenance only necessary every 6 months for all stages
- Maintenance-free bayonet lock with haptic and acoustic feedback
- Fine filter and activated charcoal filter cartridges fit perfectly by being simply inserted – without screw fittings or additional seals
- CCS colour coding of filter housing and filter cartridges for safe maintenance.
- Upgrade of a SATA filter 544 to a 584 possible through a simple connector system
- Maintenance-free sealing elements
- Line connection optionally left or right
- Flow-optimized cyclone separator with enhanced particle separation efficiency (approx. 10%) of particles > 5 µm

SATA filter 500 – modular filter series for highest demands


The combination units SATA filter 544 and 584 are defining the standard in paint booths - also for breathing air treatment.

SATA® filter 584® 3-stage combination filter	
	100 % technically particle-free air
	Filter fineness: Sintered filter: 5 µm Fine filter: 0.01 µm Activated charcoal filter: oil vapours
	Air flow at 6 bar: 3,800 NI/min
	Ambient temperature: 120 °C; with activated charcoal filter up to 60 °C
	Connection: Air inlet: G 1/2" female thread Air outlet: 1/4" male thread
	Recommended for: solvent-based paints waterborne paints breathing protection equipment
	Art.No. 109953


SATA® filter 544® 2-stage combination filter	
	99.998 % technically particle-free air
	Filter fineness: Sintered filter: 5 µm Fine filter: 0.01 µm
	Air flow at 6 bar: 3,800 NI/min
	Ambient temperature: 120 °C
	Connection: Air inlet: G 1/2" female thread Air outlet: 1/4" male thread
	Recommended for: solvent-based paints
Art.No. 1100990	

SATA® filter 524® Single-stage sintered filter	
	Filter fineness: Sintered filter: 5 µm
	Air flow at 6 bar: 3,800 NI/min
	Ambient temperature: 120 °C
	Connection: Air inlet: G 1/2" female thread Air outlet: 1/4" male thread
	Recommended for: Gun cleaning equipment prefilter in compressed air circuit
Art.No. 1101659	

SATA® Pressure reducer 520™ with pressure gauge

	Air flow at 6 bar: 3,800 NI/min
	Ambient temperature: 120 °C
	Connection: Air inlet: G 1/2" female thread Air outlet: G 1/2" female thread
	Art.No. 1101667

SATA® filter 564® | Single-stage activated charcoal filter

	Filter fineness: Activated charcoal: adsorbes oil vapours from the compressed air
	Air flow at 6 bar: 3,800 NI/min
	Ambient temperature: 60 °C
	Connection: Air inlet: G 1/2" female thread Air outlet: 1/4" male thread
	For SATA Filter 584 - recommended for: retrofitting kit
Art.No. 1101005	

for retrofitting
SATA filter 544

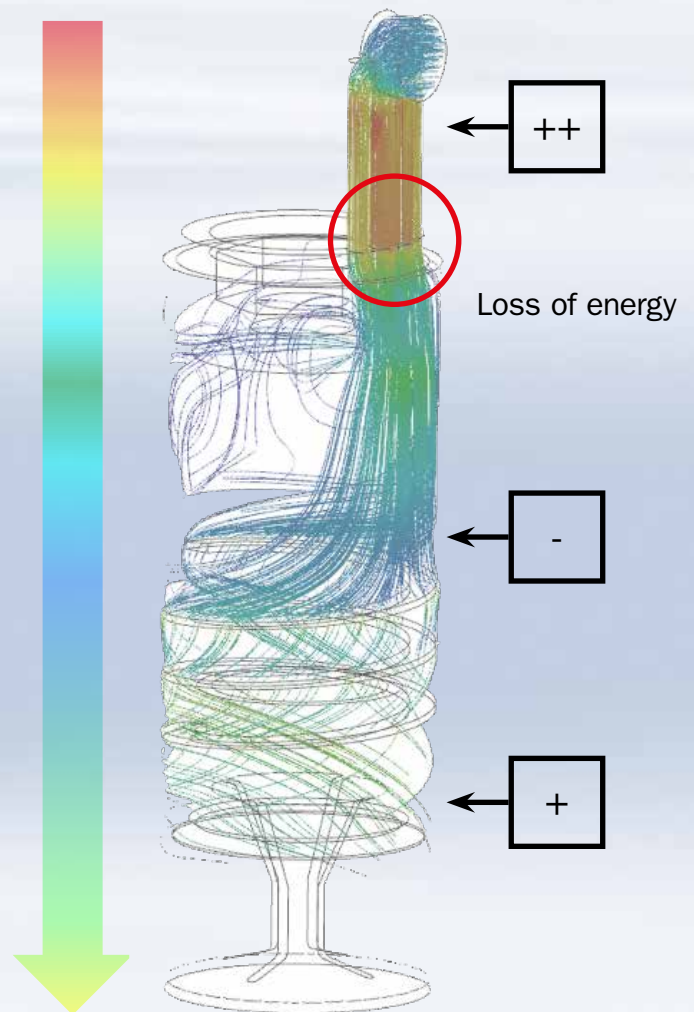
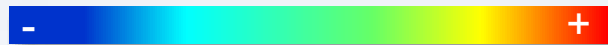
Flow-optimised Cyclone separator

SATA FILTER 484

With the previous generation of filter units, the incoming compressed air enters the cyclone separator at high speed (undefined position) and is slowed down abruptly when hitting the cyclone separator (leading to loss of energy) before being accelerated again, thus reducing the efficiency to separate harmful particles.

The oscillating air flow rate (fast – slow – fast) caused by the abrupt deceleration of the air flow leads to a pressure drop inside the filter stage and eventually in the whole system, preventing the best possible separation of unwanted particles.

Flow rate

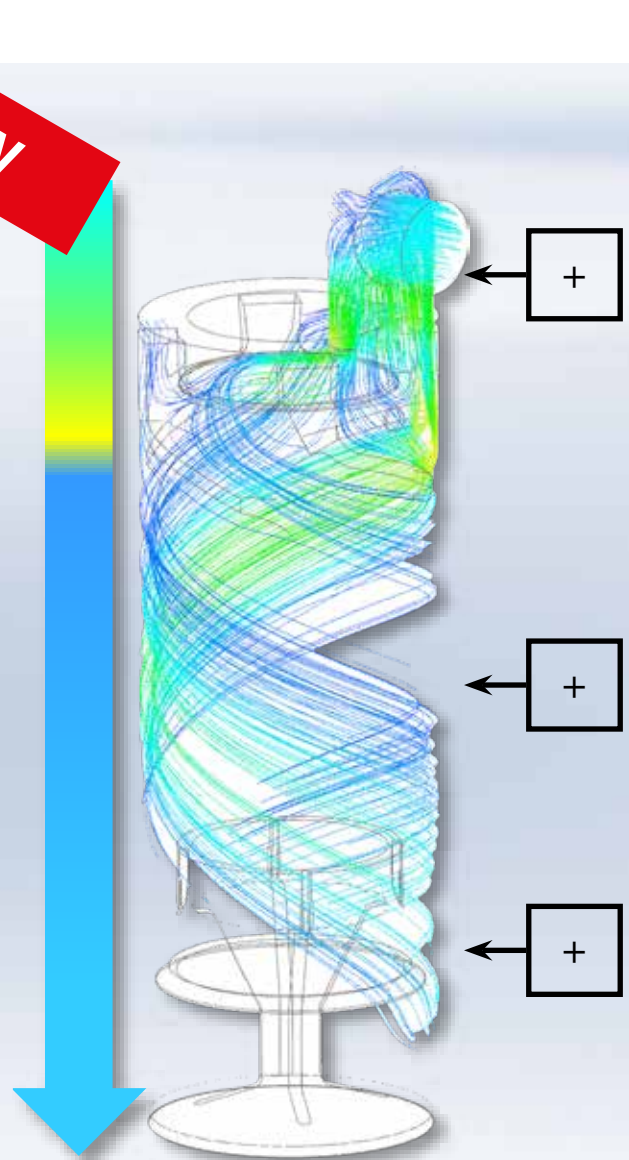


SATA FILTER 584

The flow-optimised cyclone separator (defined position), that ensures a constant and uniform air flow as well as an uninterrupted air rotation over a longer distance, minimises the pressure drop in the system resulting in a notably enhanced separation of particles.

NEW

Flow rate



Spare filters and accessories



Filter maintenance – ensuring premium air quality

In order to preserve its efficiency, the filter unit must be regularly maintained, thus avoiding coating flaws and other quality issues and eventually expensive rework.

SATA equips all filter units with the SATA filter timers to remind users to regularly change the filter cartridges.

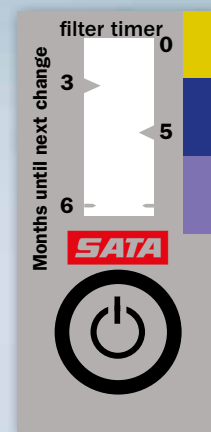
Handling the SATA filter timer is as easy as that:

1. When a new filter regulator unit is installed, each filter timer must be activated by pressing the button.
2. Once activated, the maintenance interval for the respective filters starts "running". The window gradually changes colour to red during the course of the interval (6 months), corresponding approximately to the saturation progress made during normal use.
3. The filter cartridges must be replaced once the window changes colour to red.

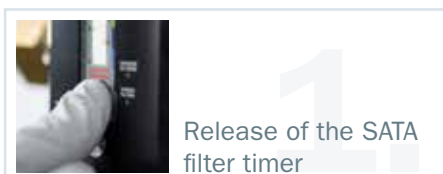
Note: shorter filter change intervals may be necessary when there is a particularly high level of harmful substances in the compressed air

All spare filter cartridges are also fitted with the correspond-

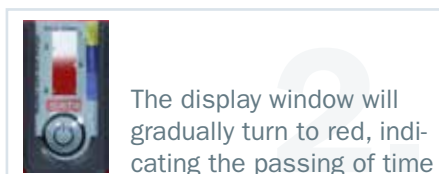
ing SATA filter timer which is inserted in the provided holder and activated every time after the filter has been maintained.



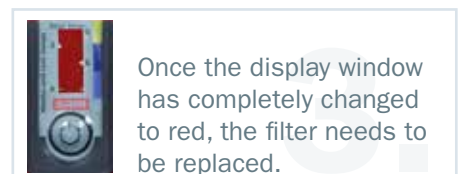
SATA filter timer with 6 month maintenance interval



1
Release of the SATA filter timer



2
The display window will gradually turn to red, indicating the passing of time



3
Once the display window has completely changed to red, the filter needs to be replaced.

Spare filters and accessories

SATA filter cartridges

First stage: sintered filter

- for SATA filter series 500, 400, 300, 200, 100
- the sintered filter eliminates particles $> 5 \mu\text{m}$
- Exchange interval: every 6 months

Art. No. 22160



Second stage: fine filter

- for SATA filter series 500
- the fine filter eliminates particles $> 0.01 \mu\text{m}$
- Exchange interval: every 6 months

Art. No. 1097999



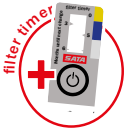
Third stage: activated charcoal filter

- for SATA filter series 500
- Activated charcoal separates oil vapours
- Exchange interval: every 6 months

Art. No. 1098004



All SATA filter cartridges are supplied with a SATA filter timer



Air quality control



SATA® air tester

For a quick and safe check of the compressed air concerning substances causing coating flaws.

Art. No. 156299



SATA® air check set

Compressed air testing device for perfect quality.

Art. No. 7096



SATA service indicator

for the spray booth
 Art. No. 1107350 (German/English)



SATA filter cover

for all SATA filters series 500
 Art. No. 1101500
 set of 4

SATA filter accessories



Outlet fitting
 for adding 2 ball valves for SATA filter series 500
 Art. No. 1101146



SATA quick coupling
 G 1/4" female thread
 Art. No. 13599



SATA High-Flow Coupling
 for upgrading the outlet manifold
 G 1/4" female thread
 Art. No. 1107269



SATA mini filter
 Dust, oil and condensate are removed from the spraying air directly at the spray gun.
 Art. No. 9878



High quality air hose to connect spray guns
 9 mm inner diameter, 10 m long, with quick coupling and nipple, antistatic, free of substances causing coating flaws, 20 bar pressure-resistant, high bursting safety.
 Art. No. 53090



Teflon ball valve
 1/2" male thread
 Art. No. 10934
 (see Practice Tip below)

PRACTICE TIP

SATA teflon ball valves are equipped with an inner diameter of 1/2" to ensure high air flow.



Nipples for the SATA quick coupling are corrosion-resistant; they are fitted with a Teflon seal and have a large inner diameter to avoid pressure losses. Art. No. 6981 (5x)



Tips and recommendations

The **compressed air** generated by the compressor is the (only) energy that atomises the paint material and transfers it to the object. The air **must be not only clean and dry, but also constantly available in adequate quantity.**

To fulfill these requirements, the following important aspects have to be taken into account:

- the total air consumption (NI/min)
- the compressor performance
- the construction and the length of the air line circuit
- the inner diameter of main and stub lines

Recommended minimum diameter of the main line for the air line circuit

Required air consumption NI/min	Minimum inner diameter of main line or circuit required based on a length of ...	
	up to 50 m	up to 150 m
50	3/4"	1"
1000	1"	1 1/4"
1500	1"	1 1/2"
2000	1 1/4"	2"
3000	1 1/2"	2"

Stub lines leading from the main line to the respective supply point should be equipped with a minimum inner diameter of 1/2".

Example of an air consumption calculation in a bodyshop

Work scenario	Device	Number	Air consumption NI/min (cfm)	
			Individual	Total
Blow gun	SATA blow gun	2	150 (5,3)	300 (10,6)
Spray gun for polyester putty	SATAjet 100 B P	1	245 (8,7)	245 (8,7)
Primer gun	SATAjet 100 B F HVLP	1	350 (12,4)	350 (12,4)
Top coat gun	SATAjet X 5500 HVLP	2	430 (15,2)	860 (30,4)
Spot Repair gun	SATAminijet 4400 B HVLP	1	120 (4,2)	120 (4,2)
Dry-blowing gun	SATA dry jet	2	270 (9,5)	540 (19,1)
Air fed breathing protection equipment	SATA air vision 5000	2	150 (5,3)	300 (10,6)
Spray gun cleaning	SATA multi clean 2	1	90 (3,2)	90 (3,2)
Sanding	Orbital sander	2	250 (8,8)	500 (17,7)
Total air consumption:			3.305 (116,7)	
Performance efficiency approx. 33.33% → air consumption:			1.100 (38,8)	
Rest of approx. 30% → required compressor power (minimum):			1.430 (50,5)	

The compressed air circuit is fitted between the compressor and spray gun, with components such as prefilters, ball valves, valves, hoses and couplings etc. They can play a crucial role in obtaining uniform, perfect spraying results, which can be flawed if even only one of these components is faulty.

The following overview helps prevent coating flaws:

Malfunction	Possible cause	Corrective action
Insufficient air volume / pressure drop / coarse surface structure	Insufficient inlet pressure at the filter unit	Increase inlet pressure to 4 – 6 bar (depending on the design and construction of the air-powered tools, it may have to be set even higher)
	Insufficient compressor performance	Calculate air consumption and increase the compressor power, if necessary
	Insufficient inner diameter of the air line circuit at one or several locations (e.g. due to a ball valve)	Check inner diameter of the air lines and hoses, and whether the filter elements are still sufficiently clean, otherwise replace. Use an air hose with a diameter of min. 9 mm, connection couplings and nipples with min 5.5 mm inner diameter
	Line installation instead of a closed air line circuit	Install an air line circuit, if possible
	Leakage in the air line circuit	Repair leakages
Coating flaws (e.g. silicone craters/ particles on painted surface)	Defective compressor causing contamination in the air line circuit, air hoses or filter units, resp.	Check if compressor works properly, repair or replace, if necessary; maintenance of filter units, replace air hoses
	Corrosion, e.g. at connection nipple, ball valve or coupling	Use corrosion-resistant connection nipples, clean components or replace, if necessary
	Contamination (e.g. green rust / corrosion) in compressed air circuit due to non-suitable air line material (e.g. copper / steel / heat sensitive plastic materials)	Only use plastic materials or metals (ideally stainless steel) which are suitable for air line systems
	Missing swan necks, no or defective condensate discharge valve at the lowest point of the air line circuit, no inclination of the main line, troughs	Use swan necks at supply points; install condensate discharge valve at lowest point of main line, avoid troughs

The air hose is the flexible extension of the air line. It has to meet the following requirements:

- Minimum 9 mm inner diameter
- Flexible, silicone-free, antistatic



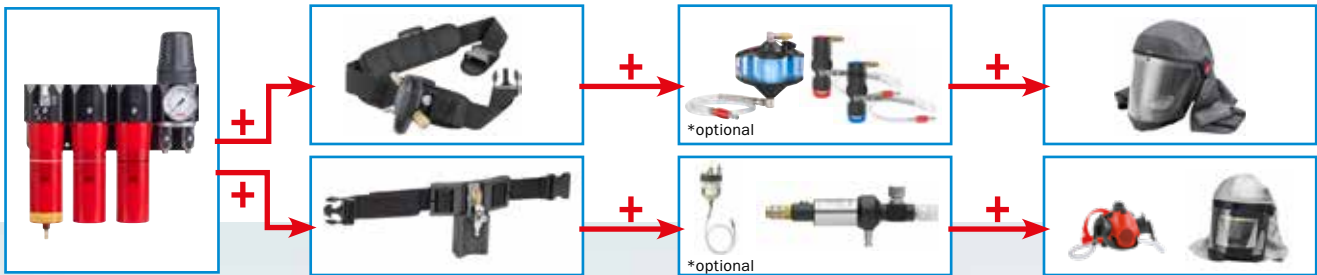
Recommendation: High flow coupling for easy connection and disconnection

Technical data air hose	
Operating temperature	-40 °C to +100 °C
Minimum burst pressure	60 bar/870 psi
Permanent operating pressure	20 bar/290 psi
Weight	approx. 210 g/m
Dimensions	Ø 9,5 x Ø 16,5 mm
Antistatic	R < 1MΩ
Norms	EN ISO 2398, A4/DIN EN 1953

SATA breathing protection for optimum health protection

Whether hoods or half masks, breathing protection equipment by SATA offers convincing attributes such as maximum protection and long service lives, as well as being comfortable to wear. This

means health protection and a high level of user acceptance. There is no risk from contaminated ambient air in self-contained systems.



Please remember to wear suitable protective clothing to protect hair and skin from harmful substances



SATA air vision 5000 (independent from ambient air)	
<ul style="list-style-type: none"> ■ Safe, self-contained working ■ Soft-stream flow-optimised air distribution in the hood ■ Low noise level – only 64 dB ■ Wide field of vision – approx. 297 cm² with a possible viewing angle of 220° ■ Optional: air warmer –or cooler (maintenance-free), air humidifier <p>Art. No. 137588</p>	

SATA air star C (independent from ambient air)	
<ul style="list-style-type: none"> ■ Safe, self-contained working ■ Free vision (protective goggles required) ■ No inhalation resistance ■ Excellent fit for any type of facial contours ■ Four-pointed straps for easy handling and safe seat <p>Art. No. 137588</p>	

SATA air star F (depending on ambient air)	
<ul style="list-style-type: none"> ■ Prefilter to extend the filter service life ■ Head fixation made of one piece ■ Special filter A2:P3 RD ■ Excellent fit for any type of facial contours <p>Art. No. 134353</p>	

For more information concerning breathing protection, please contact your SATA dealer.

Your SATA dealer



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