

STORAGE, SEPARATION AND FILTRATION

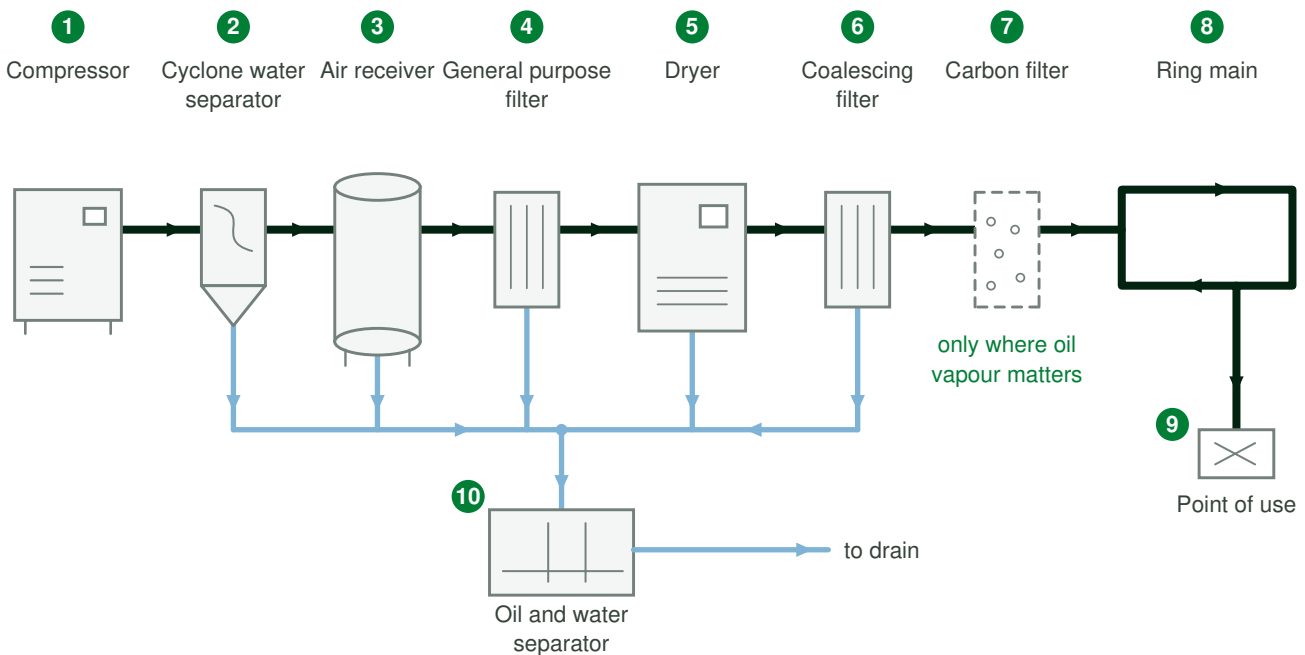
Air receivers · cyclone water separators ·
precision filters · condensate management —
0.3 to 6 m³ storage, 0.6 to 80 m³/min treated

**GREEN AIR
COMPRESSOR**



WHAT GOES WHERE

Almost every compressed air problem that gets blamed on the compressor is actually something downstream, fitted in the wrong order or left out. The air leaves the machine hot, wet, and carrying whatever the intake drew in. Four things fix that, and the order they go in is not a matter of preference.



Wet, dirty, unsteady on the left. Dry, clean, steady on the right. Each item is there because the one before it cannot do its job.



Order is not optional

Coarse before fine, carbon last. Put a fine coalescing element first and you will replace it on dirt the cheap filter should have caught.



Storage is the cheapest part

And the most often undersized. A receiver at half its right size makes a good compressor look like a bad one.



Every stage costs pressure

And pressure is energy, paid at the compressor, every hour the plant runs.



The water has to go somewhere legal

Condensate off a lubricated machine carries oil. Where it goes is regulated in every country we sell in.

HOW BIG THE RECEIVER SHOULD BE

The usual rule for a fixed speed machine is somewhere between six and ten litres of storage for every litre per second the compressor delivers. A machine giving 50 litres per second wants between 300 and 500 litres as a minimum, and more than that if the demand is peaky.

But the real test is starts per hour. Most motors in this class are happy with six to ten starts an hour and unhappy above about twenty. If your machine is cycling more than that, the receiver is too small, and adding one is cheaper than anything else you could do to the system.

A variable speed machine needs less storage for cycling, because it does not cycle. It still needs storage for peaks and for separation. The common mistake is assuming that a VSD means no receiver at all.

Worked example

Compressor delivers · **50 l/s**

Rule of thumb · **6 to 10 litres per l/s**

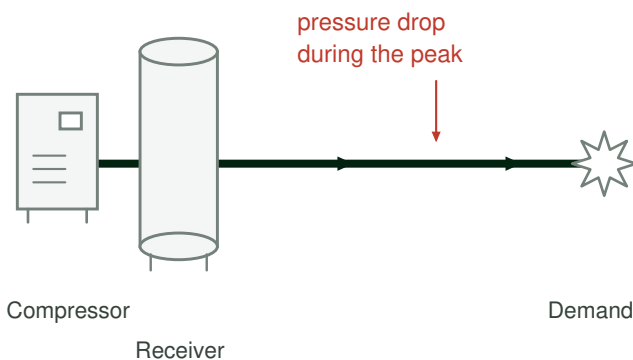
Minimum storage · **300 to 500 litres**

Nearest standard vessel · **GA-R-0.6 (600 litres)**

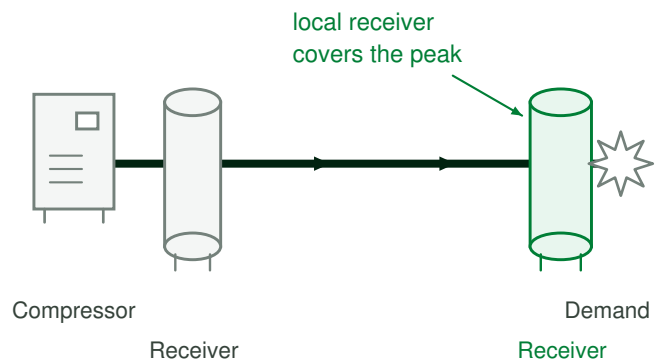
Peaky demand, or a compressor that starts more than ten times an hour, moves you up a size rather than down.

One receiver, or two

All the storage at the compressor



Storage split

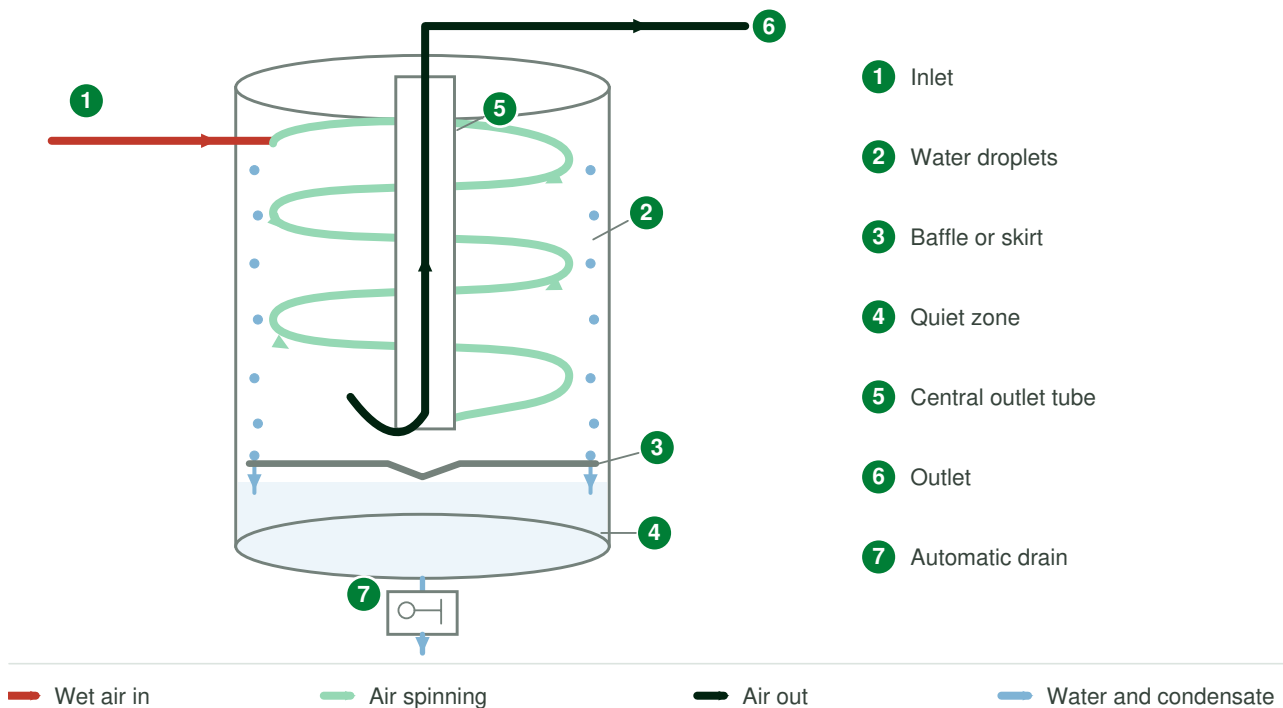


Where the demand has one large short peak — a blow off, a cleaning cycle, a burst of tools — a receiver close to that demand is worth more than the same volume back at the compressor. The pipe between them is the reason.

- Six to ten litres per litre per second, as a starting point
- Under ten starts an hour on a fixed speed machine
- Storage still needed on a variable speed machine
- A local receiver for a local peak
- Drain fitted and piped, always
- Safety valve and gauge as supplied

WHERE THE BULK WATER COMES OUT

Before anything clever happens to the air, the free water has to come out of it. A cyclone separator does that with no element, no power and almost no pressure drop, and it is the cheapest thing you can put in front of a dryer.



There is nothing in the flow path to block and nothing to replace. That is why it goes first: it takes the load off the filter element behind it, and element life is the running cost of the whole treatment line.

Fit the drain properly

A separator with a blocked or unpiped drain is a vessel full of water with air passing over the top of it. It will pass every visual inspection and do nothing at all.



FILTER TO THE CLASS YOU NEED

Start from contact. Air that drives a cylinder inside a machine needs particulate filtration and not much else. Air that blows a bottle before it is filled needs oil removal specified to a stated class. Air that someone breathes needs a different specification again, and that is not a filtration decision alone.

Then stage it. A general purpose filter ahead of a coalescing filter, and a carbon filter only where oil vapour actually matters. Putting a fine coalescing element first, with nothing protecting it, is the commonest reason elements are replaced early.

Then count the cost of the drop. Each element in the line takes pressure, and pressure is energy. Three filters in series at 0.15 bar each is 0.45 bar, which is about three per cent of your compressed air bill for as long as they are fitted. Sometimes that is exactly right. It should be a decision rather than an accident.

General purpose

Bulk liquid and coarse particles. Goes first, protects everything behind it, and costs the least to replace.

Coalescing

Brings oil aerosol down to hundredths of a milligram. Goes second, never first.

Activated carbon

Removes oil vapour and odour. Goes last, and only where vapour actually matters.

What pressure drop costs, as a share of the compressed air bill

One filter, 0.15 bar

about 1%

Two filters, 0.30 bar

about 2%

Three filters, 0.45 bar

about 3%

A neglected element at 0.60 bar

about 4%

Worked from about 0.7 per cent for every 0.1 bar of drop. It is paid at the compressor, every hour the plant runs.

Change them on the gauge, not the calendar

Every housing here has a differential pressure gauge. If yours has not, fit one — it is the cheapest instrument in the plant room, and it is the only thing that tells you an element has stopped flowing before your air bill does.



THE DRAIN IS WHERE THE MONEY LEAKS

A 30 kW compressor in a humid climate can produce over a hundred litres of condensate a day. It has to leave the system, and how it leaves decides two separate costs.

A timed drain opens on a clock. Set it short and it leaves water behind; set it long and it blows compressed air down the drain every time it opens, twenty four hours a day. On a large machine that is several per cent of everything the compressor makes, and it is invisible because it sounds exactly like a drain working properly.

A level sensing drain opens only when there is water to remove and closes before the air follows it. That is the whole idea, and it is why replacing timers usually pays for itself inside a year.

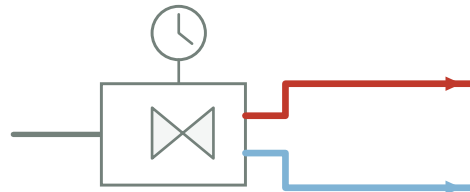
What leaves the site

The condensate off a lubricated machine carries oil, and discharging it is regulated in every country we trade in. An oil and water separator splits the two with a coalescing stage and an adsorption stage, bringing residual oil below 10 ppm before the water goes to drain. The oil is retained in the unit and disposed of properly.

Limits and the paperwork behind them differ from country to country. Tell us where the plant is and we will tell you the figure that applies to you rather than a general one.

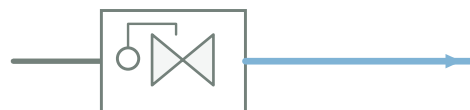


Timed drain



compressed air, paid for and thrown away

Level sensing drain



opens on water,
closes before the air

- Level sensing drains instead of timed drains
- No compressed air wasted at the drain
- Residual oil below 10 ppm before discharge
- Retained oil collected for proper disposal
- Volt-free alarm contact on drain failure
- Media changed on capacity, not on a calendar
- Interval sized to your actual oil carryover
- Retrofits to compressors already installed
- Drains tested on service, not assumed

TECHNICAL SPECIFICATIONS

Air receivers, carbon steel

Model	Volume		Pressure		Connection	Dimensions (dia × h)		Material
	m³	US gal	bar g	psi g		mm	in	
GA-R-0.3/8	0.3	79	8	116	RP 1½ / DN 50	550 × 1589	22 × 63	Q235-B
GA-R-0.3/10	0.3	79	10	145	RP 1½ / DN 50	550 × 1589	22 × 63	Q235-B
GA-R-0.3/13	0.3	79	13	189	RP 1½ / DN 50	550 × 1593	22 × 63	Q235-B
GA-R-0.6/8	0.6	159	8	116	RP 1½ / DN 50	700 × 1900	28 × 75	Q235-B
GA-R-0.6/10	0.6	159	10	145	RP 1½ / DN 50	700 × 1902	28 × 75	Q235-B
GA-R-0.6/13	0.6	159	13	189	RP 1½ / DN 50	650 × 2068	26 × 81	Q235-B
GA-R-1/8	1.0	264	8	116	RP 2 / DN 65	800 × 2205	31 × 87	Q235-B
GA-R-1/10	1.0	264	10	145	RP 2 / DN 65	800 × 2207	31 × 87	Q235-B
GA-R-1/13	1.0	264	13	189	RP 2 / DN 65	800 × 2205	31 × 87	Q345R
GA-R-1.5/8	1.5	396	8	116	RP 2 / DN 65	1000 × 2265	39 × 89	Q345R
GA-R-1.5/10	1.5	396	10	145	RP 2 / DN 65	1000 × 2265	39 × 89	Q345R
GA-R-1.5/13	1.5	396	13	189	RP 2 / DN 65	1000 × 2817	39 × 111	Q345R
GA-R-2/8	2.0	528	8	116	RP 2 / DN 80	1000 × 2780	39 × 109	Q345R
GA-R-2/10	2.0	528	10	145	RP 2 / DN 80	1000 × 2780	39 × 109	Q345R
GA-R-2/13	2.0	528	13	189	RP 2 / DN 80	1000 × 2782	39 × 110	Q345R
GA-R-2.5/8	2.5	660	8	116	DN 80	1000 × 3300	39 × 130	Q345R
GA-R-2.5/10	2.5	660	10	145	DN 80	1000 × 3300	39 × 130	Q345R
GA-R-2.5/13	2.5	660	13	189	DN 80	1000 × 3302	39 × 130	Q345R
GA-R-3/8	3.0	793	8	116	DN 80	1200 × 2880	47 × 113	Q345R
GA-R-3/10	3.0	793	10	145	DN 80	1200 × 2882	47 × 113	Q345R
GA-R-3/13	3.0	793	13	189	DN 80	1200 × 2372	47 × 93	Q345R
GA-R-4/8	4.0	1,057	8	116	DN 100	1400 × 3030	55 × 119	Q345R
GA-R-4/10	4.0	1,057	10	145	DN 100	1400 × 3032	55 × 119	Q345R
GA-R-4/13	4.0	1,057	13	189	DN 100	1400 × 3036	55 × 120	Q345R
GA-R-5/8	5.0	1,321	8	116	DN 100	1400 × 3630	55 × 143	Q345R
GA-R-5/10	5.0	1,321	10	145	DN 100	1400 × 3632	55 × 143	Q345R
GA-R-5/13	5.0	1,321	13	189	DN 100	1400 × 3636	55 × 143	Q345R
GA-R-6/8	6.0	1,585	8	116	DN 100	1400 × 4230	55 × 167	Q345R
GA-R-6/10	6.0	1,585	10	145	DN 100	1400 × 4232	55 × 167	Q345R
GA-R-6/13	6.0	1,585	13	189	DN 100	1400 × 4236	55 × 167	Q345R

Volume is the geometric volume of the vessel. Gallons are US gallons, converted from the metric figure and rounded. Dimensions are the shell diameter by the overall height including the feet. Every vessel is supplied with a safety valve, a pressure gauge and a drain connection. S30408 stainless vessels are built to order against the duty and are not listed above. Weights for the carbon steel range are available on request. Larger volumes on enquiry.

TECHNICAL SPECIFICATIONS

(continued)

Vacuum vessels, -1 bar g

Model	Volume		Connection	Dimensions (dia × h)		Weight		Material
	m³	US gal		mm	in	kg	lb	
GA-R-0.3/-1	0.3	79	RP 1½	550 × 1569	22 × 62	99	218	Q235-B
GA-R-0.5/-1	0.5	132	RP 1½	600 × 2035	24 × 80	167	368	Q235-B
GA-R-0.6/-1	0.6	159	RP 1½	700 × 1880	28 × 74	167	368	Q235-B
GA-R-1.0/-1	1.0	264	RP 1½	800 × 2180	31 × 86	263	580	Q235-B
GA-R-1.5/-1	1.5	396	RP 2	900 × 2502	35 × 99	367	809	Q235-B
GA-R-2.0/-1	2.0	528	RP 2	1000 × 2754	39 × 108	527	1,162	Q235-B
GA-R-2.5/-1	2.5	660	RP 2	1000 × 3254	39 × 128	643	1,418	Q235-B
GA-R-3.0/-1	3.0	793	DN 65	1200 × 2854	47 × 112	679	1,497	Q235-B
GA-R-4.0/-1	4.0	1,057	DN 65	1400 × 3006	55 × 118	913	2,013	Q345R
GA-R-5.0/-1	5.0	1,321	DN 65	1400 × 3606	55 × 142	1,076	2,372	Q345R
GA-R-6.0/-1	6.0	1,585	DN 65	1400 × 4206	55 × 166	1,240	2,734	Q345R

Designed for negative pressure rather than for positive pressure. A vacuum vessel must not be used as an air receiver, and an air receiver must not be used under vacuum.

Cyclone water separators

Model	Flow		Connection	Dimensions (dia × h)	
	m³/min	cfm		mm	in
GA-CS-01	0.6 – 2.0	21 – 71	¾ in	235 × 95	9.3 × 3.7
GA-CS-02	3.0 – 5.0	106 – 177	1 in	276 × 95	10.9 × 3.7
GA-CS-03	6.0 – 8.0	212 – 283	1½ in	302 × 125	11.9 × 4.9
GA-CS-05	9.0 – 15.0	318 – 530	1½ in	420 × 125	16.5 × 4.9
GA-CS-10	16.0 – 30.0	565 – 1,059	2 in	545 × 170	21.5 × 6.7
GA-CS-15	30.0 – 40.0	1,059 – 1,413	2½ in	640 × 205	25.2 × 8.1
GA-CS-20	40.0 – 50.0	1,413 – 1,766	3 in	792 × 205	31.2 × 8.1
GA-CS-30	50.0 – 60.0	1,766 – 2,119	4 in	840 × 208	33.1 × 8.2

Select on flow, never on the connection size. Supplied with an automatic drain. Pressure drop is negligible across the stated flow range.

Precision filters

Each size is built in three grades — general purpose, coalescing and activated carbon — on the same housing and the same connection. The code below is the housing; the grade is added to it on the order.

Model	Flow		Model	Flow		Model	Flow	
	m³/min	cfm		m³/min	cfm		m³/min	cfm
GA-F-18	1.8	64	GA-F-100	10.0	353	GA-F-280	28.0	989
GA-F-26	2.6	92	GA-F-140	14.0	494	GA-F-360	36.0	1,271
GA-F-38	3.8	134	GA-F-165	16.5	583	GA-F-540	54.0	1,907
GA-F-55	5.5	194	GA-F-180	18.0	636	GA-F-720	72.0	2,543
GA-F-69	6.9	244	GA-F-220	22.0	777	GA-F-900	80.0	2,825

Rated flow at 7 bar g. Every housing is supplied with a differential pressure gauge and a drain. Imperial figures are converted from the metric values and rounded. Elements for other manufacturers' housings are supplied on request.

Options

Stainless vessels, built to order	Element sets held for your installation
Local receiver for a remote peak	Drain alarm on a volt-free contact
Zero-loss level sensing drains	Discharge sampling
Oil and water separator sized to the plant	Retrofit to compressors already installed
Differential pressure gauge on every stage	Service on the same visit as the compressor



GREEN AIR COMPRESSOR

SEND US THE LAYOUT, NOT JUST THE COMPRESSOR SIZE

Storage, separation and filtration are sized against the whole installation — what the air touches, how far it travels, how peaky the demand is and how humid the plant room gets. A receiver quoted against a kilowatt rating alone is a guess. Tell us the compressor, the longest pipe run, what the air is used for at the far end and where the condensate currently goes, and you get a written recommendation back that names each item, gives its figures, puts them in order, and sets out delivery and installation. It costs nothing and carries no obligation.

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