

GUIDE TO BLAST CLEANING

This is intended as a very basic guide to the equipment required for operating a mobile abrasive blast cleaning business.

It is written as a result of numerous requests for information emailed to my eBay site and is intended simply as a guide for the total beginner. Thus , I have steered well clear of technicalities and techniques, and have only included just one essential chart.

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A blast cleaning set-up consists of just 6 main pieces of equipment, with associated accessories, and abrasives.



1) COMPRESSOR

You will require a diesel engined mobile compressor. They are rated on their air output cfm (cubic feet per minute)..... usually 140, 180, 260 & 350 cfm, and manufactured by the likes of Atlas Copco, Ingersoll Rand, Compair & Kaeser.

140 cfm : The lower end of the scale. These are small, lightweight, easy to tow with a small van, easy to source and miserly on fuel. But you are limited to cleaning just lightly soiled stone, brick, steel and wood, and the cleaning rate will be generally slow.

180 cfm : Firm favourite with one-man band businesses, my favourite size compressor, as again they are light, easy to tow, fuel efficient, and not too tiring to use all day. Formidable when used with 14A blast pot; I have always owned this combination and have been able to clean virtually every job I have encountered. Biggest problem is that they are quite rare and difficult to find, as they are too big for road repair gangs and too small for other industries.

260 cfm (as in photo above) : Very popular with small/medium size businesses and hire companies. Weighing in at around 1400kg , you need a decent size van to tow. Can be used with any size blast pot and is fairly common. Makes rapid work of large areas of stone, brick and rusty or painted steelwork..... Ideal for large buildings, allows use of long lengths of compressor and blast hose without losing too much power.

350 cfm : The biggest of the mainstream mobile compressors. For use where a seriously fast cleaning rate is required on heavily corroded steelwork.... ships, bridges, structures, heavy machinery, etc. Heavy on fuel and cumbersome to tow. A few days use can be very tiring just about every muscle in your body will know about it !

2) BLAST POT

Four sizes available : the 1 bag 10A, 3 bag 14A, 6 bag 20A and the 12 bag 24A. (Each bag 25kg). Each suitable for a variety of applications. Pots are supplied with manual controls (two on/off ball valves), **or** more commonly with a remote valve, controlled by the operator using a deadman handle at the end of the blast hose.



The **CW10A** (not in photo) holds just 25kg of abrasives, enough for 10 minutes of continuous blasting. Useful for small or limited access jobs, for snagging & touching up, fine detail restoration work, or in workshops for occasional blasting.

The **CW14A** holds approx. 75kg of abrasives, enough for 30 minutes of blasting. Easily the most popular size pot with jobbing one man businesses. Very manoeuvrable on building sites and easy to load in and out of van.

The **CW20A** holds 150 kg of abrasives, enough for a full hour of continuous blasting. Popular with firms involved with medium / large cleaning projects.

The **CW24A** holds 300kg of abrasives, sufficient for 2 hours blasting. Monster size pot for big projects where as little down time as possible and a rapid cleaning rate is required. In reality a full pot (allowing for inevitable stopping and starting) will last half a shift.

3) BLAST HELMET

Available in many guises, an essential safety requirement to basically allow you to see and breathe whilst blasting. We stock the excellent Scorpion and Nova helmets. The helmet must be used in conjunction with a

4) BREATHING AIR FILTER which is a free standing large charcoal filter pack designed to remove oil mist, moisture and odours from your compressed air supply.

5) BLAST HOSE

The 10A pot uses 1/2" i.d. blast hose, and the other pots are normally used with a ten or twenty metre length of 1 1/2" i.d. hose with a two metre long 1" i.d. whip hose at the end. The whip hose allows for greater flexibility and easier handling.

Blast hoses are made of very hard wearing materials. When used with small compressors and fine abrasives they can last a long time and so on to the

6) NOZZLE

Smallest item, but massively important in determining the final workface impact of your abrasive / air mix. There are three basic types available.....

Boron alloy : Entry level throwaway nozzles. Cheap and cheerful, don't last very long, and are designed for use in projects where management requires precise costing , or for the occasional use blaster.

Tunsten carbide/ silicon nitride : Very popular and versatile nozzles. Very hardwearing lining in a lightweight jacket , allows for excellent operator comfort and increased productivity. Good quality products will last a long time.

What size do I need ? The size of nozzle you require depends on the output cfm of your compressor and the surface you are cleaning. There is an optimum nozzle for each size of compressor to achieve full pressure (100 psi). There are however many occasions where you simply do not need full whack output.... 60 or 70 psi is often quite sufficient for cleaning stone, brick or wood. The chart below is self explanatory.....

NOZZLE SIZE	AIR (CFM) TO ACHIEVE 60 psi	AIR (CFM) TO ACHIEVE 80 psi	AIR (CFM) TO ACHIEVE 100 psi
1/4" (6.5mm)	54	68	81
5/16" (8mm)	89	113	137
3/8" (9.5mm)	126	161	196
7/16" (11mm)	170	217	254
1/2" (12.5mm)	224	280	338

100 psi : Required for corroded or painted iron & steelwork, & to remove millscale. To clean hardwoods, and painted stone & brickwork.

80 psi : Required to lightly etch steelwork, and to clean heavily soiled stone & brickwork.

60 psi : To clean lightly soiled stone & brickwork, softwoods, and to etch bright metals.

THIS IS A VERY GENERAL LIST... ALWAYS CARRY OUT TEST PANELS TO DETERMINE DESIRED PRESSURE AT NOZZLE.

OTHER ITEMS

You will require two compressor air hoses ... one ¾" i.d. to connect to the helmet filter and a 1" or 1 ½" i.d. hose for the blast pot. A 15 metre length of each is usually sufficient for most jobs, but it is prudent to carry an extra length of each.

You will also need a 20 metre length of ¼" i.d. helmet air line, again it's always worth having a spare coil.

ABRASIVES There is a multitude of different abrasives available, and this isn't the time or place to delve into it all. Suffice to say that we normally stock just two types, which are a Fine and a Medium grade recycled crushed glass, and they cope very efficiently with 95% of jobs.

Silica sand : is still very widely used because it is cheap and cleans most surfaces with great effect.

There is massive confusion as to whether silica sand, (A.K.A. kiln-dried and block paving sand) is illegal to use for blast cleaning. It is banned (wet or dry blasting) for cleaning so called 'articles', (ref : Factories act 1949 & 1961) which encompasses a wide variety of metal objects from small castings to ships . Amazingly, these objects **do not** include buildings and even bridges . However, normal Risk, Duty of Care and COSHH assessments prevail, and the safest and most effective media available for each particular job should be used..... in other words **use something else** , as you will almost definitely be breaking the law.

There is probably one scenario where you could use silica sand If you are a private individual, wet blasting soft substrates (brick, stone, timber) in the middle of nowhere with correctly maintained respiratory equipment, and no-one else on site , then a passing HSE officer will have nothing to complain about.

Common sense . However, if you are dry blasting a car chassis, or a wagon, in a yard or enclosed building, with silica sand, with other people in the vicinity , you have no Risk Assessment etc, you are unable to demonstrate sufficient dust control measures, and you are using poor equipment, then the HSE officer will stop proceedings and issue an Improvement Notice . They will give you fair time to comply. If you do not comply you could be looking at a massive fine.

NB. It is also totally illegal for an employer to ask an employee to use silica sand for blasting under any circumstances.

Domestic use : Blasting with silica sand at home, whether in a cabinet, round the back of a garage, or in a big open space, is also a big no no.

HOW MUCH CAN I EXPECT TO BLAST IN A DAY ?

Lots of variables of course, but if everything's running smoothly, the weather and access is good and there is nothing to mask or neighbours to worry about, then 250 to 350 metres of lightly soiled brickwork is achievable in a good day. As an example , the long elevation and gable end in the photo below , an area of approx. 200 sq.mtrs was cleaned in just under four hours with a 260 cfm compressor, 14A pot and approx. 700 kg of sand...



and finally.. look out for the cheap and nasty cloned products with their dodgy ISO 9002 ratings flooding the market from the Far East. Particularly blast helmets, blast nozzles with super thin linings, nylon CQP couplings that shatter after a week, very thin CQ couplings, and garbage blast hose.

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