

**BLASTMASTER<sup>®</sup>**



***16 Ways***  
***to improve your***  
***blast cleaning system***

 **BLAST ONE<sup>®</sup>**

## Contents

	Introduction .....	<b>3</b>
<b>1</b>	Install a MicroValve.....	<b>4</b>
<b>2</b>	Take off your old moisture trap.....	<b>5</b>
<b>3</b>	Use a Bull Hose to supply air to your pot.....	<b>6</b>
<b>4</b>	Check your nozzle pressure regularly .....	<b>7</b>
<b>5</b>	Blast with a low dust abrasive: Blast-One Garnet .....	<b>8</b>
<b>6</b>	Use a lightweight, comfortable helmet.....	<b>9</b>
<b>7</b>	Make sure your compressor is big enough.....	<b>10</b>
<b>8</b>	Fit a large bore flexible Whip Hose .....	<b>11</b>
<b>9</b>	Screw in a lightweight, long life Blast Nozzle .....	<b>12</b>
<b>10</b>	Dead Man controls – does yours act fast enough? .....	<b>13</b>
<b>11</b>	Let's look at your Blast Pot .....	<b>14</b>
<b>12</b>	Keep your cool with a Helmet aircooler .....	<b>15</b>
<b>13</b>	Wind up your pressure.....	<b>16</b>
<b>14</b>	Monitor and purify your breathing air.....	<b>17</b>
<b>15</b>	Use a communication system .....	<b>18</b>
<b>16</b>	Recycle your abrasive .....	<b>19</b>
	Technical Data .....	<b>20</b>
	Notes .....	<b>22</b>

## *Introduction*

This booklet has been written to assist you identify ways to make your life easier as a Blaster and much more efficient.

Some of the items explained here may seem common sense to you.

In fact, you may have used them for some years.

Unfortunately many Blasters haven't ever had any specialist training.

- **WHO trains the blaster? ...**  
**The old blaster.**
- **Who trained him?**  
**The blaster before him.**

Did any of them investigate new techniques? New equipment? New ways of working more efficiently?

No. (It's sad but true).

Fortunately this is now changing. By just using a few of the ideas in this booklet, you should be able to improve your production and efficiency. This means decreasing your costs, and dramatically improving your profits.

The majority of this booklet can be summarized in one sentence:

**Increase your nozzle pressure and decrease your abrasive consumption. This makes all the difference to your efficiency.**

**If you have any questions whatsoever, please call your nearest Blast-One Customer Service Representative. They are always happy to assist.**

# 1

## Install a MicroValve

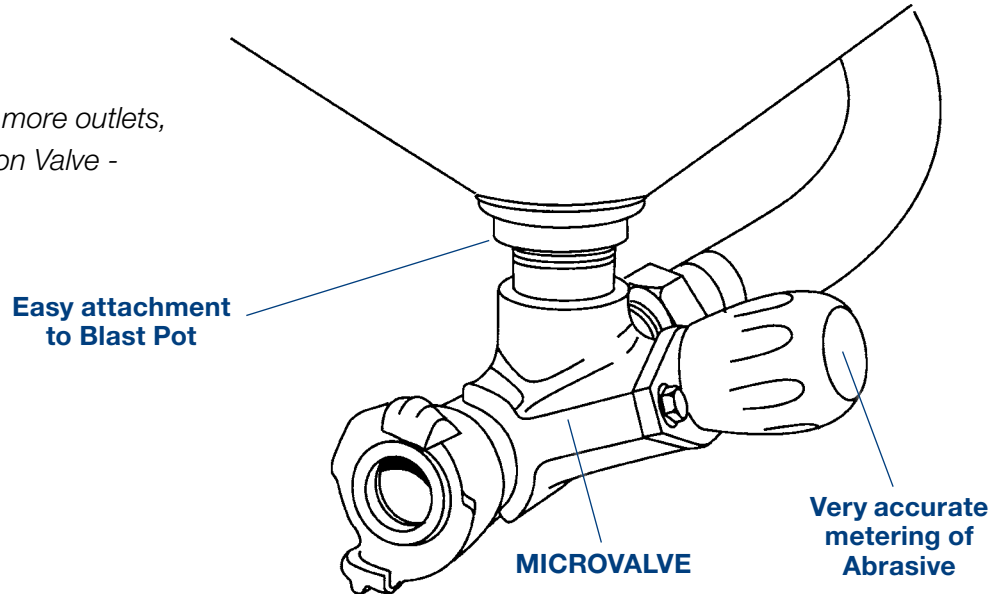
The abrasive metering valve on the bottom of your blast pot can make or break your profits. If you have it open too wide, you use too much abrasive and have to refill the pot sooner. Too much abrasive can also mean slower, dustier blasting. The problem is, it is very hard to accurately adjust metering valves to get the perfect mix of air and abrasive.

The MICROVALVE is a new valve from Blast-One which makes “fine tuning” your abrasive mix easy. Install one onto your blast pot instead of your old metering valve and you’ll immediately notice a big difference!

Very simply designed for operation, it only takes 2 bolts and 2 minutes to pull it down for maintenance.

**Many blasters have found their blast pot lasts up to 3 times longer between refills using the MicroValve, without any downturn in blasting speed!**

*(For blast pots with 2 or more outlets, upgrade to the Thompson Valve - not shown).*



### CAUTION

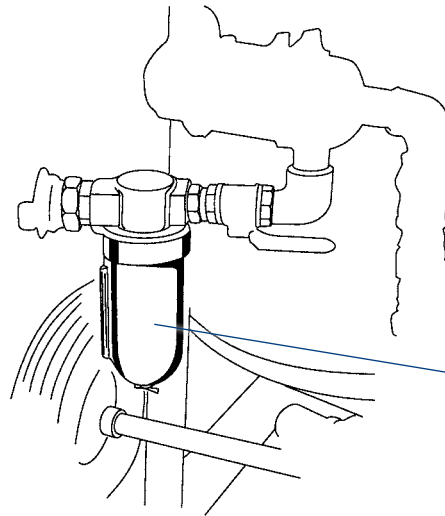
This valve is becoming so popular that cheap copy valves are appearing. Beware. They may be made of inferior metals and wear out fast. Insist on genuine Blast-One MicroValves.

## Take off your old moisture trap

2

Are you using a 3/8" (no. 6) nozzle or bigger?

Have you got one of these moisture traps (as shown above) on the side of your blast pot?  
Rip it off now if you want to improve production.



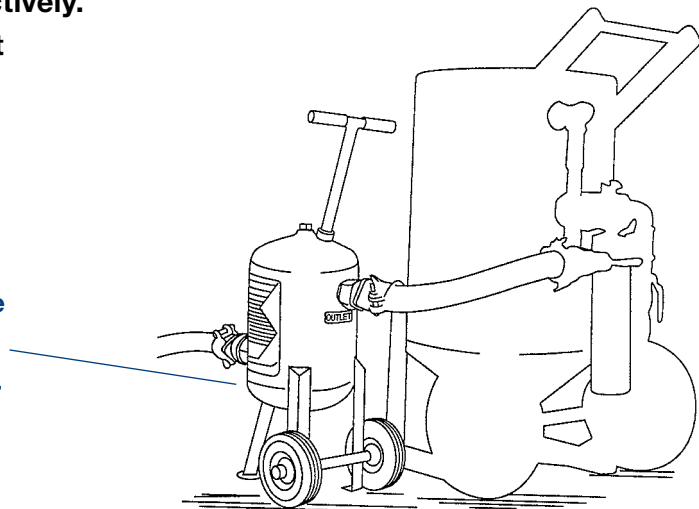
**Old style  
Moisture Trap  
(too restrictive for  
bigger nozzles)**

These Moisture Traps may work well when they are new. However, they have a fine filter element inside that very quickly becomes clogged with any dust, oil and foreign matter. And then they become a big cause of pressure drop! You may have 100psi coming in from the compressor, but going out of the little Moisture Trap may be only 90psi! This is a very common problem.

Instead, you should install a High Volume Moisture Separator, which operates without this pressure loss problem and removes more moisture. The MSH-800 (*shown below*), works by allowing the air to expand and drop out the water, then Stainless Steel Coalescing pads remove this moisture from the air.

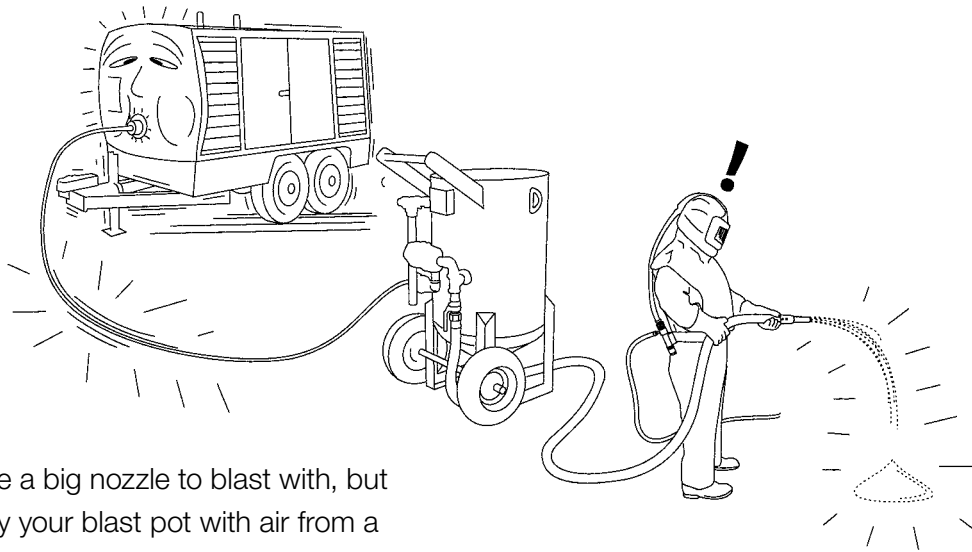
**Simply put, the MSH-800 works very effectively.  
It is built for rugged site use and it doesn't  
drink up your pressure.**

**MSH-800  
High Volume Moisture  
Separator Reduces  
Pressure Loss and  
Removes More Water**



# 3

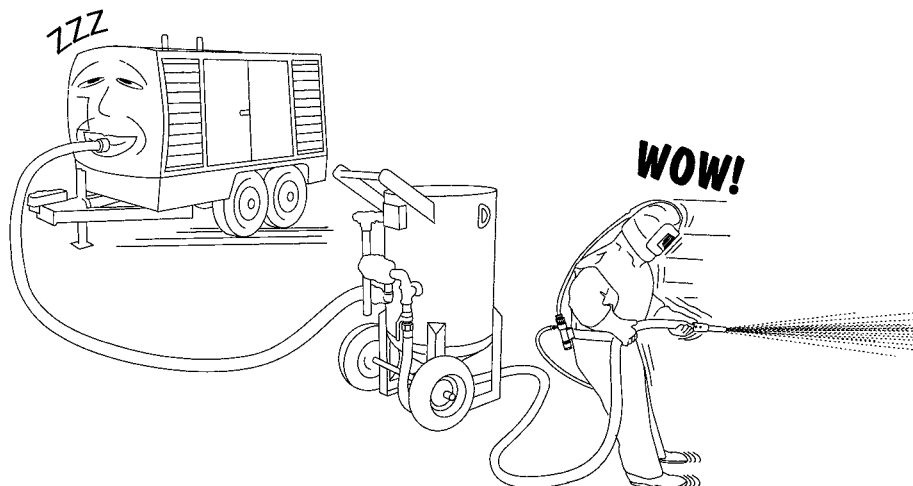
## Use a Bull Hose to supply air to your pot



Do you use a big nozzle to blast with, but only supply your blast pot with air from a jack hammer hose? Or you may have 2 jack hammer hoses? This is no good.

But, we do have good news! Overnight, you can double your blasting rate. Big nozzles need big hoses.

For any bigger than a 7/16" (no. 7) nozzle, you need a 2 inch (50mm) I.D. Bull Hose to supply air to your blast pot. Any smaller air delivery hose will simply be choking the air supply. And you lose valuable air pressure.

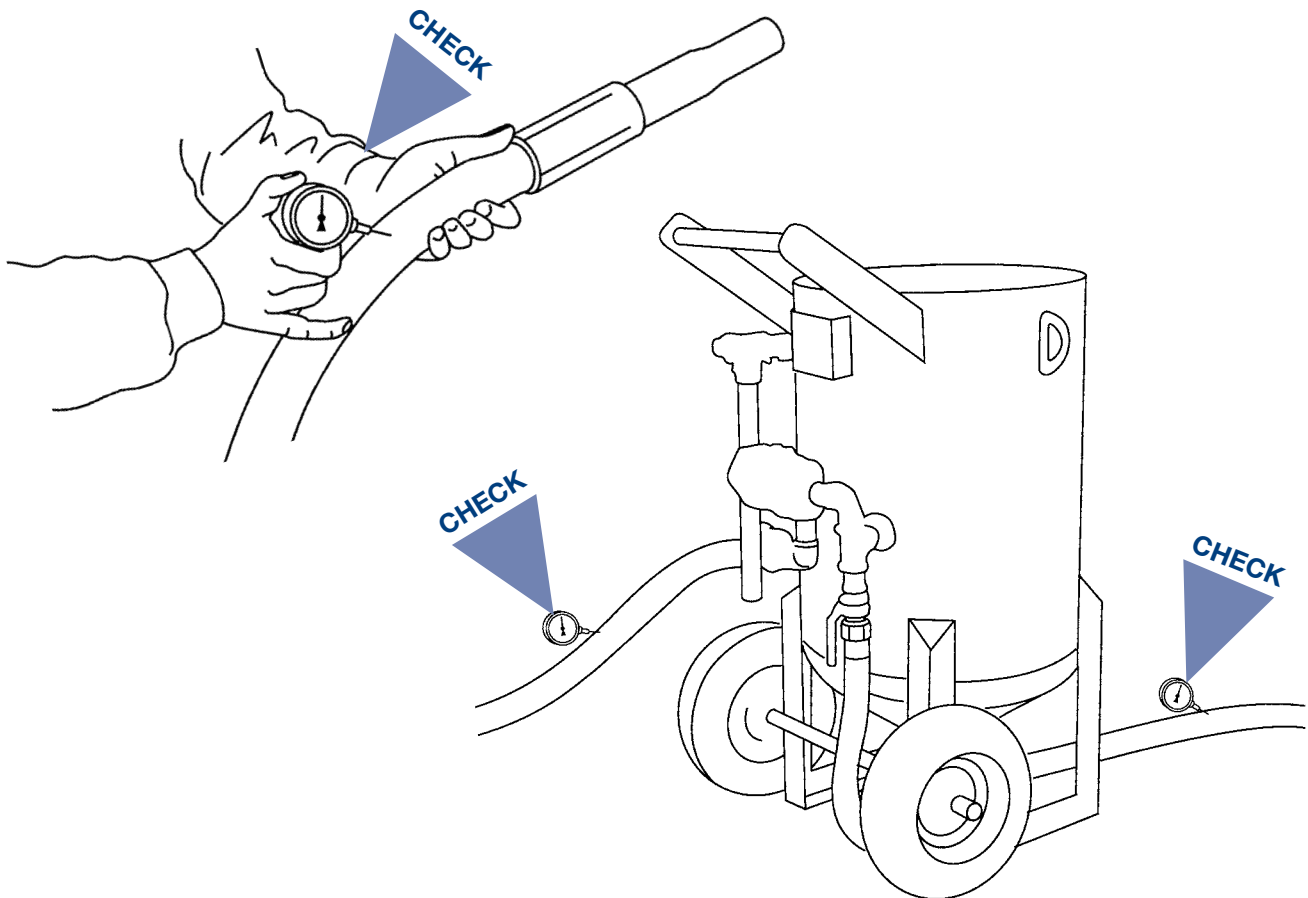


### IMPORTANT NOTE

Watch your hose fittings. It's no good fitting a nice big Bull Hose to the pot if you've still got hose fittings or pipe fittings that are smaller in bore than your hose size. A 2" Bull Hose should be connected to a 2" outlet on the compressor and use large bore fittings right through.

## Check your nozzle pressure regularly

4



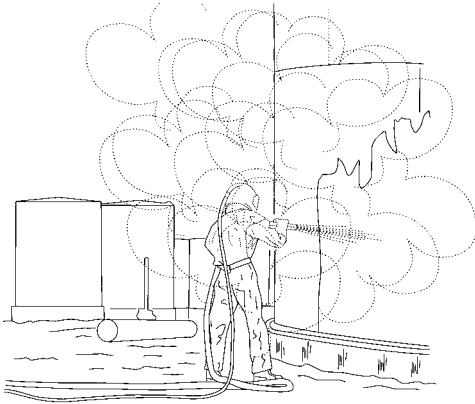
The nozzle pressure gage is unarguably the most important Testing Instrument in your whole kit! Did you know that if your nozzle pressure drops from 100psi to 90psi, you'll take 15% longer to blast anything? For every 1psi under 100psi you lose 1.5% of your production efficiency. Check your system right through with this pressure testing gage and find where the pressure losses are. Test the pressure at both ends of a long length of hose – you'll be amazed to see how much the pressure can drop!

We recommend getting two pressure test kits, to test both air pressure into your blast pot, versus the air pressure out in your blast hose, simultaneously. It can tell you a story.

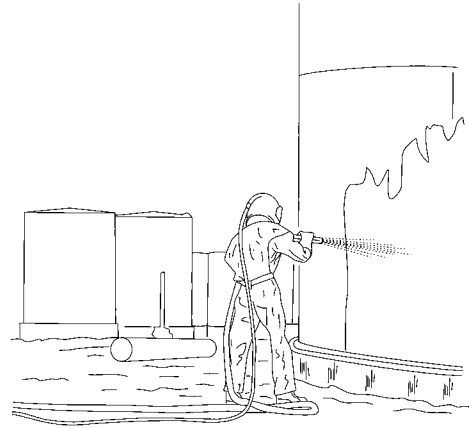
## Keep a gage in your tool kit

# 5

## Blast with a low dust abrasive: Blast-One Garnet



Dust cloud from blasting with conventional abrasives.



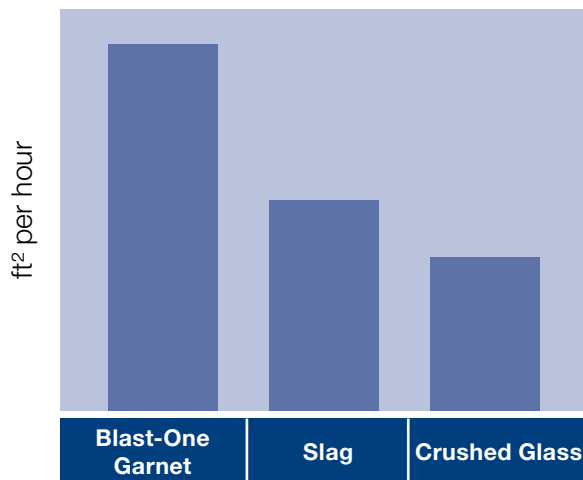
As Blast-One Garnet is so dense (heavy), and hard, it doesn't create dust clouds.

The largest cause of complaints about blasting is the DUST. It's amazing how much difference blasting with Blast-One Garnet makes. First of all, let's have a look at exactly what it is ...

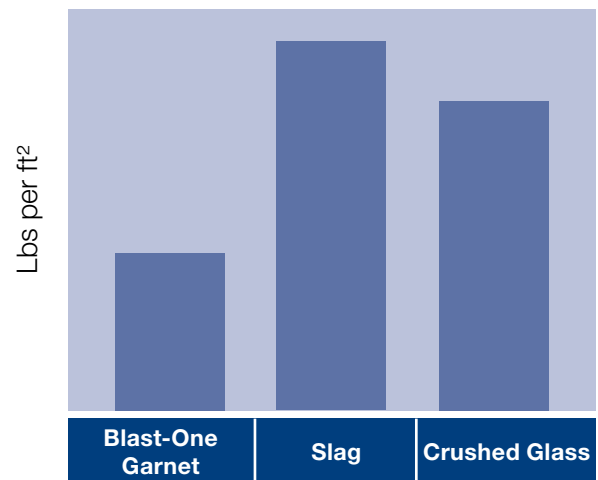
Blast-One Garnet is a silica free abrasive made up of small Garnet crystals. Each crystal is heavy, sharp and hard. When it slams into the steel at 500mph, it doesn't smash up and break into tiny pieces like other abrasives. This makes it very low dusting.

Each small crystal carries tremendous cleaning energy. You blast faster and cleaner than with grits twice or three times its size, using half as much abrasive!

**BLASTING SPEED ON MILLSCALE**



**CONSUMPTION OF ABRASIVE**



**Although Blast-One Garnet costs more to buy per ton, it normally COSTS LESS per square foot to blast.**



## Use a lightweight, comfortable helmet

6

An airfed Helmet is designed to protect your life. It should prevent you breathing any dust, protects your face from flying particles and offers some hard hat protection.

But, wearing a helmet on your head for hours, can really give you a head ache!

Leading Blasters are now using the extra comfortable NOVA 2000 helmet.

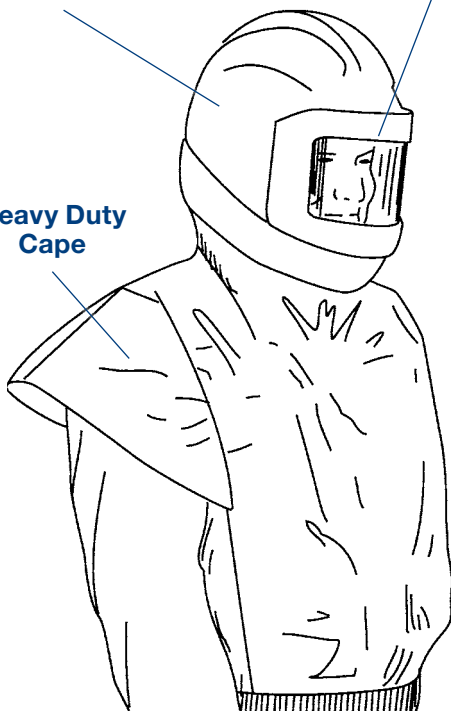
This helmet has excellent wide vision, combined with 20% less weight on the head and neck. By using pillow foam as head support (instead of the old 'hard hat' suspension), these are the most comfortable and quietest helmets ever used.

You'll find operators blast for longer and don't feel so worn out, when they wear NOVA Airfed Blast Helmets.

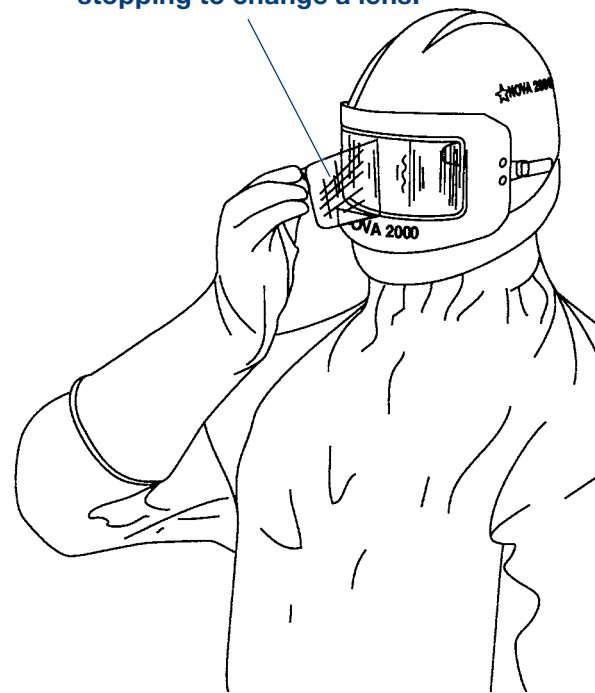
Pillow Foam  
Head Support

Wide Vision

Heavy Duty  
Cape



Operator can install 3 tear-off  
lenses at a time. No more  
stopping to change a lens.



## NOVA 2000 HELMETS – quieter, safer & lighter

**SAFETY NOTE:** Removal of the inner (thick) lens in blast helmets voids all safety standards.

# 7

## Make sure your compressor is big enough

### How much air do you need to run a blast machine?

#### AIR CONSUMPTION (CFM) PER BLAST NOZZLE USING GARNET ABRASIVE

Nozzle Size		Nozzle Pressure							
		50 psi	60 psi	70 psi	80 psi	90 psi	100 psi	120 psi*	140 psi*
No. 2	1/8"	14	17	19	21	24	<b>26</b>	30	34
No. 3	3/16"	32	37	42	47	52	<b>57</b>	67	77
No. 4	1/4"	57	66	75	84	93	<b>103</b>	119	136
No. 5	5/16"	89	103	117	131	145	<b>158</b>	186	214
No. 6	3/8"	129	149	169	189	209	<b>229</b>	269	309
No. 7	7/16"	176	203	230	258	285	<b>312</b>	367	422
No. 8	1/2"	229	265	300	336	371	<b>407</b>	478	549
No. 10	5/8"	356	412	468	524	580	<b>632</b>	744	856
No. 12	3/4"	516	596	676	756	836	<b>916</b>	1076	1236
<b>EFFICIENCY</b>		<b>47%</b>	<b>55%</b>	<b>64%</b>	<b>74%</b>	<b>86%</b>	<b>100%</b>	<b>130%</b>	<b>165%</b>

\* Ensure equipment is rated for these pressures

The table above shows the amount of air each nozzle size needs when the nozzle is new.

But what happens when the nozzle starts to wear a bit? You are going to need more and more air to maintain the same pressure at the nozzle. (i.e. after 2-3 weeks).

When you buy an air compressor for your blast package, you should allow sufficient volume for the nozzle (from the table above) plus 20 cfm for your Airfed helmet **PLUS a 50% reserve** to allow for nozzle wear.

(Example: A new No.7 nozzle needs 312cfm **PLUS** 20cfm for helmet **PLUS** 50% reserve of 155cfm: Minimum compressor size required = 490cfm).

**Many blasters have said – “I could blast a lot faster when my nozzle was new – but now I’ve lost pressure ...”**

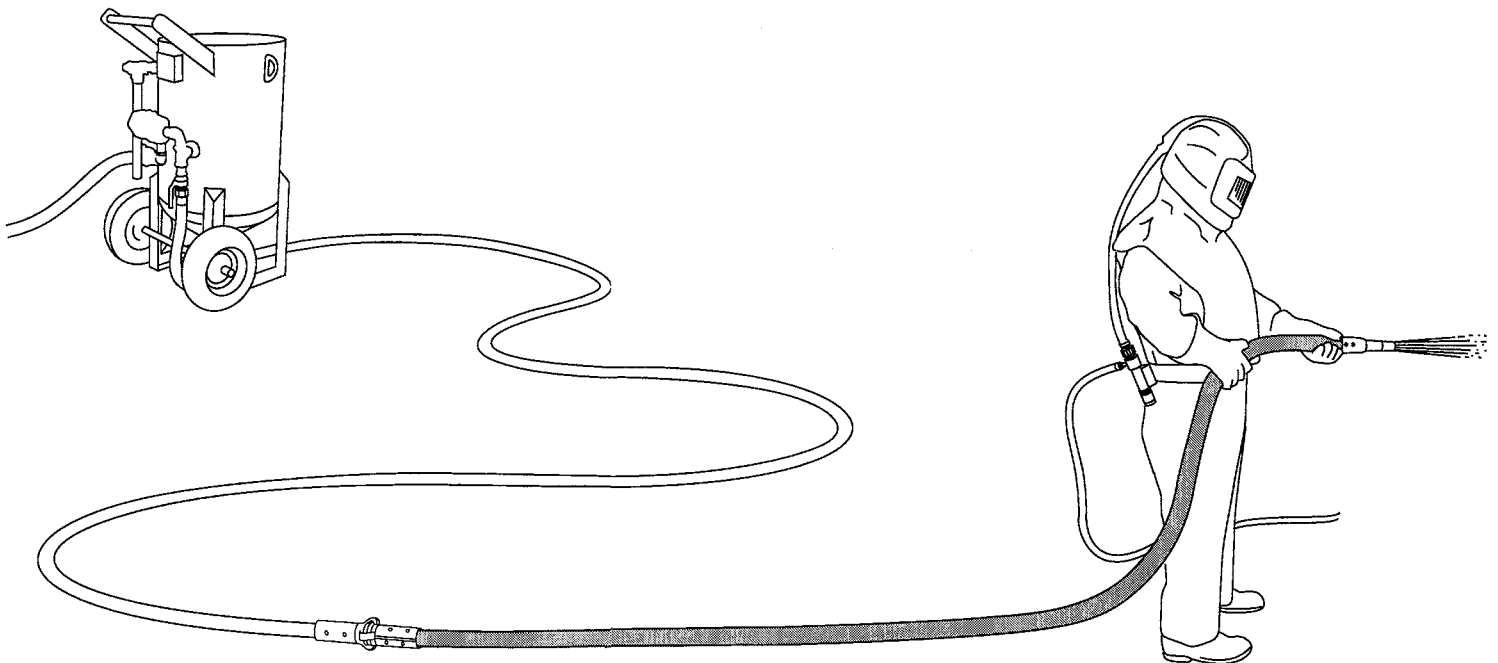
## Fit a large bore flexible Whip Hose

8

You need to be a mighty big man of muscle to continually hang onto some of those blast hoses these days.

By ensuring the Blast hose is 4 times the diameter of the nozzle sure helps keep the pressure up, but it becomes very hard to continually hold. We recommend you fit a 20ft (6m) SupaLife Whip hose between your blast hose and nozzle.

This special hose is made of high quality rubber to maintain life, but with thinner walls to make it lightweight and flexible. 'SupaLife' Whip hose has a large bore so you don't lose pressure to the nozzle. Your operator will find it easier to blast, much less tiring on the back and easier to get into tough spots.



**Don't use a smaller size blast hose as a whip hose.  
You'll just choke the system up.**

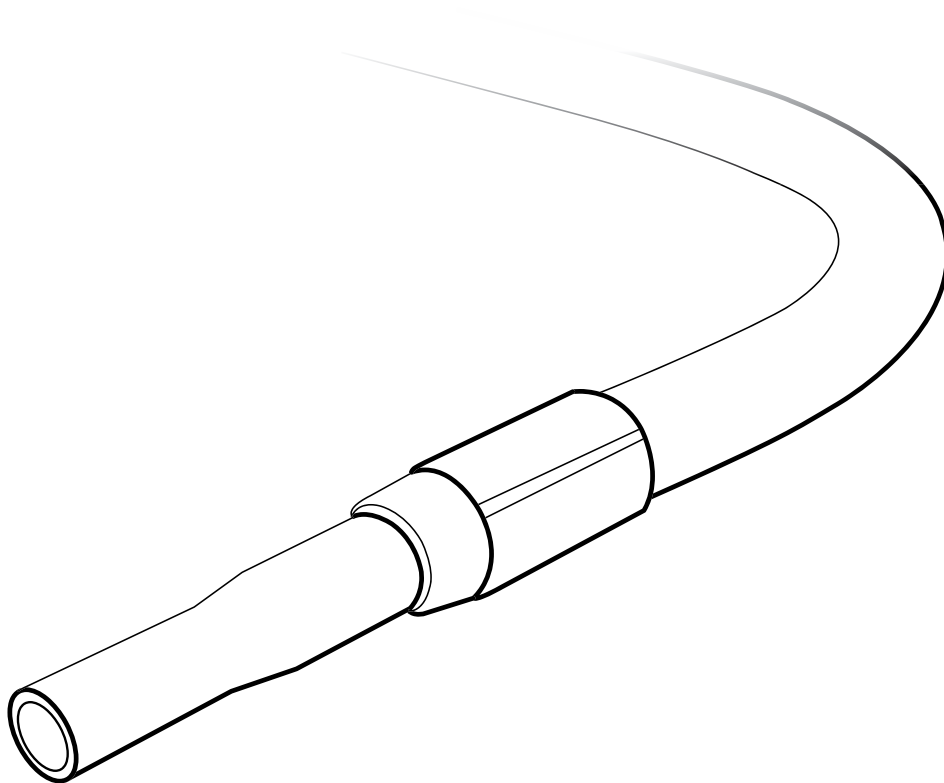
**9*****Screw in a lightweight,  
long life Blast Nozzle***

The Blast nozzle at the end of your hose has to do a lot of work. It takes air and abrasive and accelerates it to about 500mph.

For the last 20 or so years, we have used Tungsten Carbide long Venturi nozzles. These work fine and will normally last around 300 hours but they are heavy and tend to crack easily if dropped or hit against the steel. (Many blasters tend to think nozzles are hammers!)

The NEW Superhard ULTRA-TUFF nozzles are made from new technology Silicon Nitride and weigh only 45% of tungsten nozzles and will last for about 800 hours!

You'll notice a big difference hanging onto an ULTRA-TUFF nozzle.



## Dead Man controls... does yours act fast enough?

# 10

All Blast Machines **must** have remote controls (sometimes called deadman controls) which quickly stop the blasting when the control handle is released. (Many people have been injured in this Industry from poorly designed or even non-existent deadman systems.)

What have you got fitted onto your Blast pot? Does it start and stop very quickly when you want it to? On some systems the deadman DELAY time is around 15-20 seconds before the pot stops blasting out grit (That seems like about 15 minutes if you've got trouble.)

Safety is not the only advantage of a FAST remote control system.

- It saves you time waiting for shut-down and start-up
- It can save you a lot of abrasive
- It will save you over-blasting or blasting inappropriate areas

For FASTER and SAFER control, many blasters are now fitting:

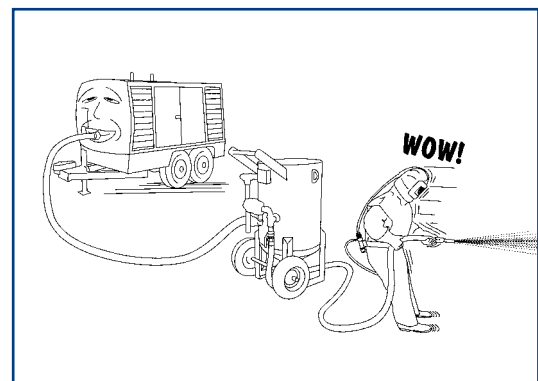
- a) **"COMBO VALVE"** for single outlet blasters for normal blasting operations. This is a revolutionary fast-depressurization remote control valve that is safer and trouble-free. It has a very large exhaust port which rapidly shuts down blasting when you release the deadman handle.
- b) **"THOMPSON VALVE SYSTEM"** for spot blasting operations or multiple outlet blasters. This system offers almost instantaneous on/off by immediately shutting off the abrasive and air flow, leaving the blast pot pressurized. **It saves a lot of time and money** (and by fitting your 'Thompson Valve' with the optional 'remote abrasive cut-off switch' installed at the nozzle, you can cut off the abrasive and blow down the workplace with air only at the simple flick of a switch, anytime)

The COMBO VALVE and the THOMPSON VALVE are both FAIL-SAFE valves, which automatically shut off if there is an air supply problem. Very important feature on a blast pot! If you are working over 100 feet away from your blast machine, you should seriously consider installing 12 volt electric remote controls to reduce the distance delay time.

**DESIGN A  
SYSTEM,  
NOT A RIG!**



**Blasting Rig**



**A Blast Cleaning System**

The heart of your Blasting system is your blast pot. You should carefully consider the following points, because a lot of blast pots that have been sold have been poorly engineered and can actually cost you more money to run. How a blast pot is manufactured can affect your profitability.

### Has it got Unrestricted Piping?

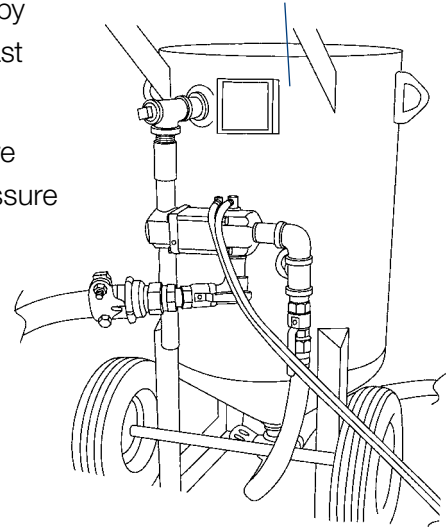
OK, so we now have air delivered into the pot with 2 inch Bull hose and the air abrasive mixture goes out in a 1-1/4 Blast hose. But what size pipe fittings have you got on your blast pot? Do you choke your air supply by trying to make it go through 3/4 or 1 inch fittings or pipes? A good blast pot has large bore pipe fittings with a minimum of elbows and bends.

Get a needle pressure gage and compare the air pressure just before the pot and then just after. You should have a maximum of 3psi pressure drop across the pot **(see page 4)**.

**Warning:** Some manufacturers' Blast pots come **new** with a 10 psi drop because of complicated pipe and valve configurations.

\*\* Remember, 1psi = 1.5% performance drop \*\*. This 10psi drop is immediately making your blasting efficiency drop by 15%! (eg: If you could blast at 300ft<sup>2</sup>/hr at 100psi, your production would drop to 250ft<sup>2</sup>/hr at 90psi.) Fit valves and pipework that do not restrict the air flow.

**Low Restriction  
Pot makes a  
FASTER BLASTER**

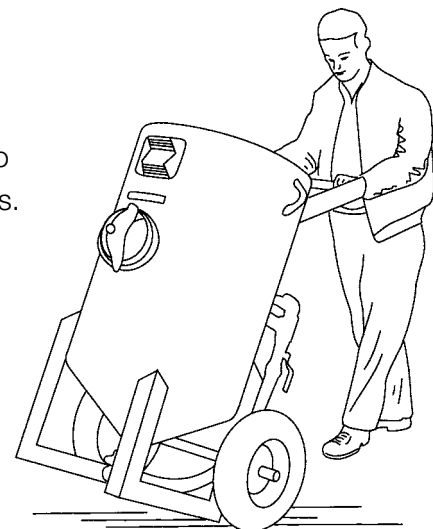


### Does it have an ergonomic design and comfortable loading height?

When you want to shift your blast pot around, you sure don't want to end up with it on top of you or end up in hospital with back problems.

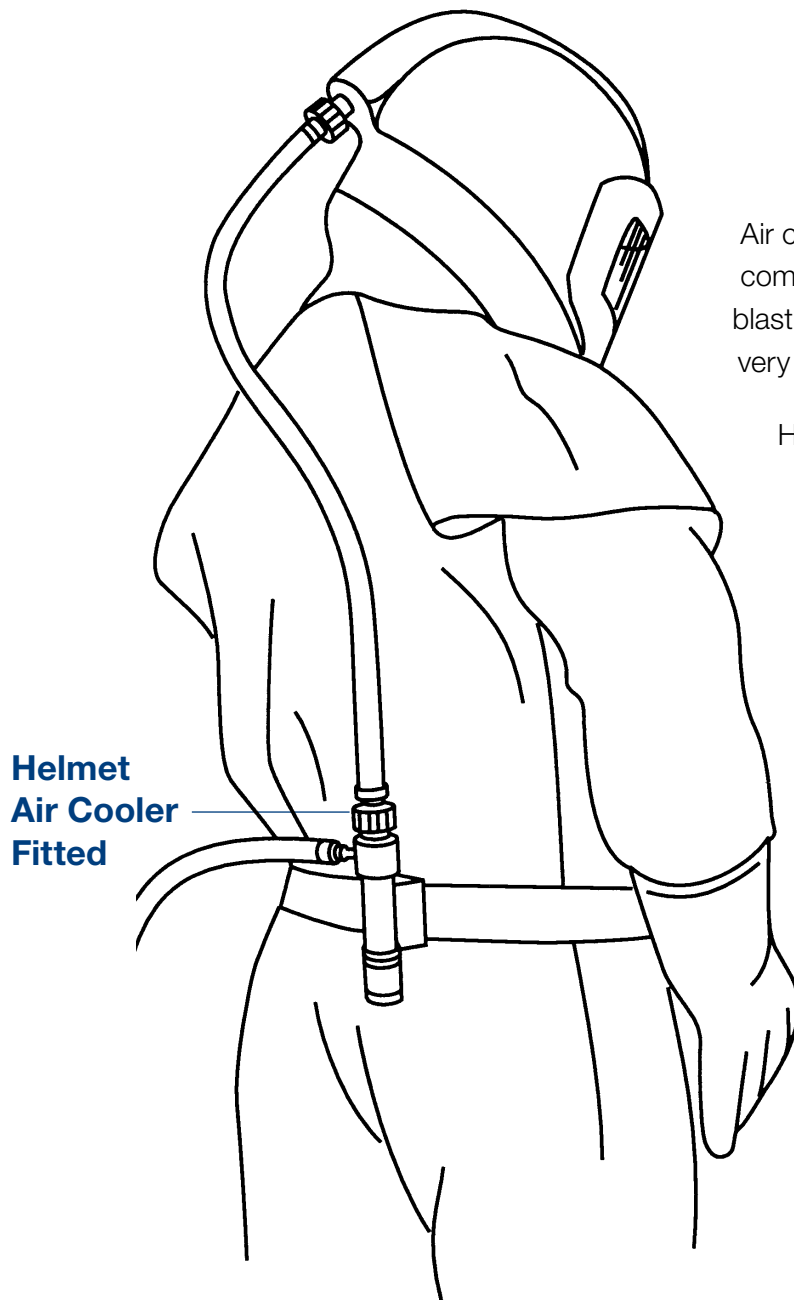
Well engineered pots are designed to balance on their wheels to aid movement. They also should be the right height to load comfortably.

In this leading design, the pot doesn't put any weight on its wheels when being used. The wheels only touch the ground when it is tilted slightly.



## Keep your cool with a Helmet aircooler

12



Air compressors dramatically heat the air upon compression. Nice warm air coming into your blast helmet on a chilly cold morning may be very comfortable.

However, during hot months, warm to hot breathing air in your blast helmet is very uncomfortable and greatly reduces your ability to work efficiently.

A Helmet Air Cooler (normally worn on the belt) can be placed in the airline immediately before the helmet, and is engineered to reduce the temperature of the incoming air by up to 50°F (30°C).


A small feature with big benefits.

# 13

## Wind up your pressure

What if you now take our standard time-tested level of 100 psi blasting and increase it to 125 psi? What will it do to our blasting speed? You may increase your efficiency by 38%!

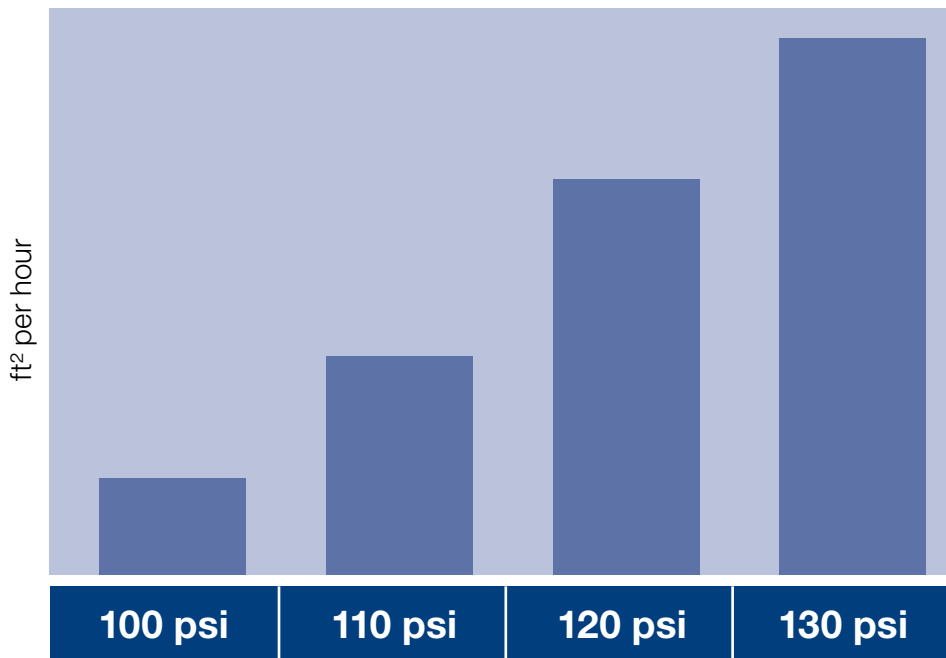
What does this 38% actually mean? It means that you can blast a lot more in 4 days than you used to do in 5 days! Or, it's like having a second blaster 2 days a week for free! It also means that you can make a lot more profit.



**RULE OF THUMB**

**1 psi =  
1.5% Blasting Efficiency**

**APPROXIMATE BLASTING SPEED AT ELEVATED PRESSURES**



### VERY IMPORTANT

Before increasing the pressure in your blasting system, ensure all equipment – compressor, blast pot, hoses and fittings are pressure rated to the working pressure required.

Operators may need additional training to move the nozzle faster and hold the hose in such a way to minimize back thrust effect.



## Monitor and purify your breathing air

14

Many Blasters use diesel air compressors to supply blasting and breathing air to the airfed helmet.

That same air compressor that is sucking air for breathing, is pumping out Carbon Monoxide in large volumes from the diesel engine exhaust.

If the Carbon Monoxide is sucked back into the air intake of the compressor, you can poison your blaster

*(You can also poison your blaster if the compressor overheats. Overheated compressor oil can produce carbon monoxide gas. Carbon monoxide is an odorless, deadly gas.)*

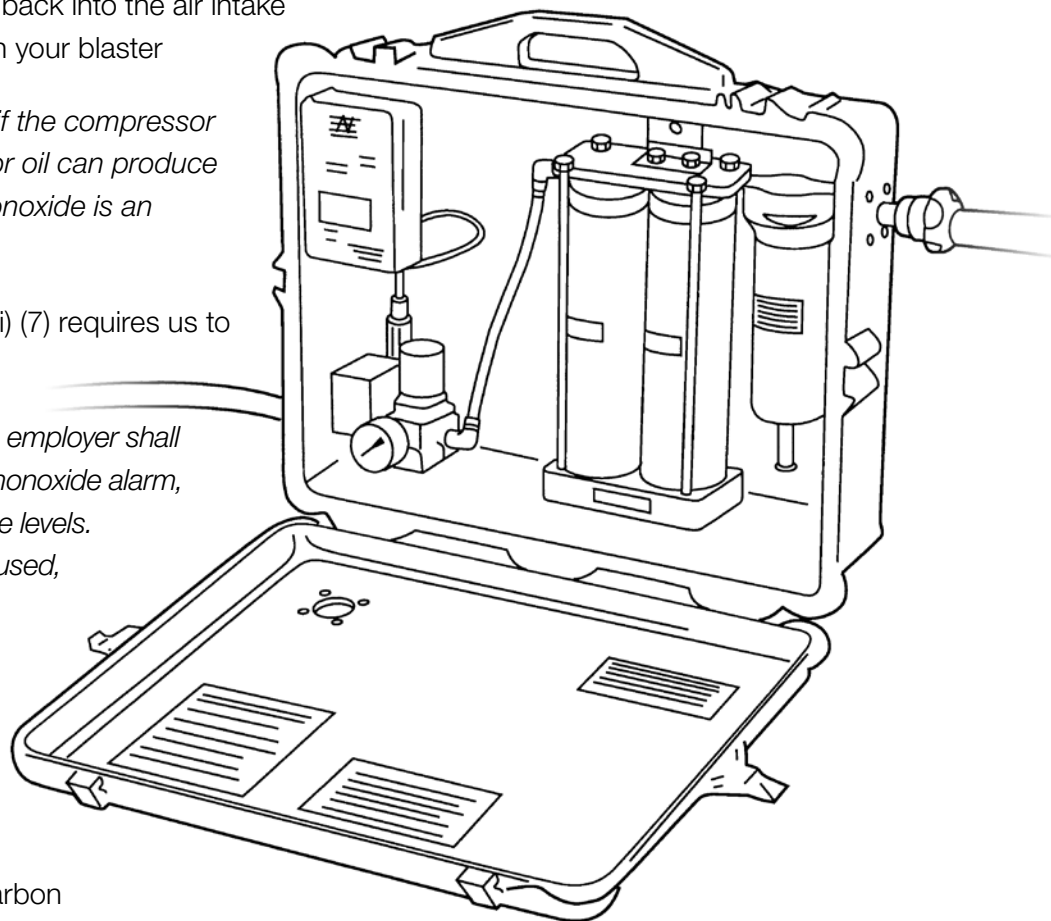
Now, OSHA's Standard 1910.134 (i) (7) requires us to do something about this...

*"For oil-lubricated compressors, the employer shall use a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10ppm."*

For safety's sake, we recommend the installation of a carbon monoxide alarm and purification system.

These systems will continuously monitor the breathing air for carbon monoxide while the purification system will remove oils, water, particles, tastes, odors and toxic gases from the breathing air.

Not only will it be safer for your blasters, it'll also keep OSHA very happy!



## Install a Carbon Monoxide Alarm & Purification System

# 15

## Use a communication system

How does your blasting operator communicate with you when he is blasting?

Many blasters carry a hammer in their pocket and hit it on the steel (or hit the nozzle on the steel!) to give you a message [i.e. 1 hit = more abrasive, 2 hits = less abrasive, 3 hits = turn machine off!!]

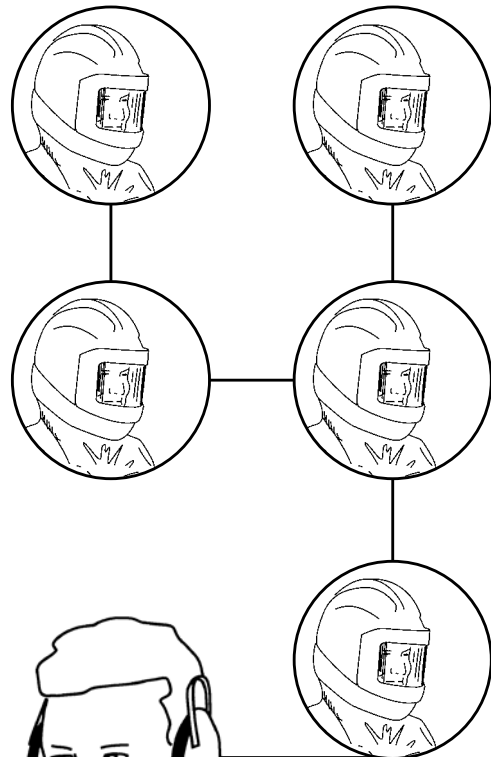
Not much has changed since Red Indian smoke signal days!

Smart blasters are fitting communication systems inside their helmets so they can speak with the pot tender or job foreman anytime.

Up to 6 operators can be connected into a system.

Now your operator will tell you “just a tiny bit more Garnet, Sam, and I reckon I’ll be finished this side in 10 minutes ...”

### **A much Safer System!**



What do you do with all that spent abrasive at the end of the day? Do you go and dump it and go to buy some more?

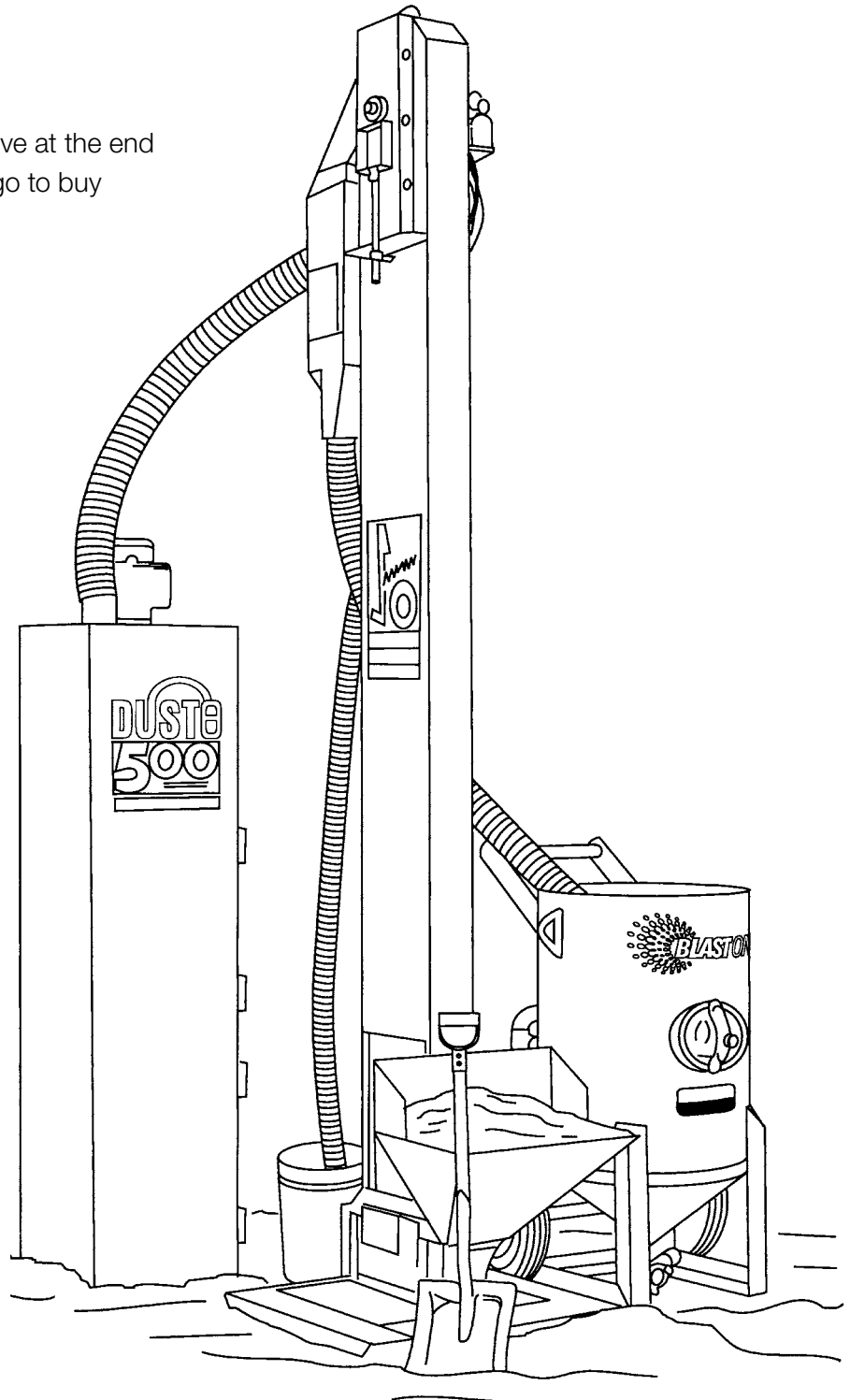
Why not try recycling? If you are using a recyclable abrasive such as Blast-One Garnet, you could save thousands of dollars each month.

To recycle your Blast-One Garnet, you must remove all rubbish, stones, paint flakes, dust and fine particles from it and you then have "like new garnet".

Special Recycling Machines have been developed which simply and efficiently recycle Blast-One Garnet. Put your dirty Blast-One Garnet in one side and cleaned Blast-One Garnet comes out the other!

High performance vacuum systems are also useful to remove spent Blast-One Garnet from tanks and confined spaces etc. and convey it to your recycling station.

**Save thousands of \$\$ each month!**



## Technical Data

### AIR CONSUMPTION (CFM) PER BLAST NOZZLE USING GARNET ABRASIVE

Nozzle Size		Nozzle Pressure							
		50 psi	60 psi	70 psi	80 psi	90 psi	100 psi	120 psi*	140 psi*
No. 2	1/8"	14	17	19	21	24	<b>26</b>	30	34
No. 3	3/16"	32	37	42	47	52	<b>57</b>	67	77
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\* Ensure equipment is rated for these pressures

### NOZZLE PRESSURE VS EFFICIENCY

Blast Nozzle Pressure	Approximate Abrasive Velocity	Approximate Efficiency Factor
<b>100 psi</b>	<b>422 mph</b>	<b>100%</b>
95 psi	400 mph	93%
90 psi	366 mph	86%
85 psi	331 mph	80%
80 psi	309 mph	74%
75 psi	281 mph	69%
70 psi	263 mph	64%

### HOSE SELECTION GUIDE FOR BLASTING AT 100 PSI NOZZLE PRESSURE

Nozzle Number	No. 4	No. 5	No. 6	No. 7	No. 8
<b>Nozzle Size</b>	1/4" (6mm)	5/16" (8mm)	3/8" (10mm)	7/16" (11mm)	1/2" (13mm)
<b>CFM at 100 psi</b>	<b>103</b>	<b>158</b>	<b>229</b>	<b>312</b>	<b>407</b>
<b>Air Hose ID - minimum</b>	25mm (1")	38mm (1 1/2")	38mm (1 1/2")	50mm (2")	50mm (2")
<b>Blast Hose ID - minimum</b>	20mm (3/4")	25mm (1")	32mm (1 1/4")	32mm (1 1/4")	38mm (1 1/2")

## Technical Data

### TYPICAL ID – OD RELATIONSHIP IN COMMON BLAST HOSE

Standard Hose				SupaLife Whip Hose			
ID		OD		ID		OD	
mm	inch	mm	inch	mm	inch	mm	inch
13	½"	33	1 ⅝"	13	½"	30	1 ⅜"
19	¾"	40	1 ½"	19	¾"	33	1 ⅝"
25	1	48	1 ⅞"	25	1	40	1 ½"
32	1 ¼"	55	1 ⅝"	32	1 ¼"	48	1 ⅞"
38	1 ½"	60	2 ⅜"	38	1 ½"	55	2 ⅝"

### ENGLISH USA UNITS/METRIC CONVERSION CHART

⅜"	5mm	1 ¼"	32mm
¼"	6mm	1 ⅝"	33mm
⅝"	8mm	1-½"	38mm
⅜"	10mm	1 ⅞"	40mm
⅞"	11mm	1 ¾"	44mm
½"	13mm	1 ⅞"	48mm
⅝"	16mm	2"	51mm
¾"	19mm	2 ⅝"	55mm
1"	25mm	2 ⅜"	60mm
1 ⅜"	30mm	2 ½"	64mm







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