



# SHOTBLAST ENGINEERING SERVICES GROUP

**B.B. Shotblast Engineering Services (Plant) Ltd**  
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*Manufacturers of:— All types of Compressed Air and Airless Blast Cleaning Equipment,  
Dust Extraction Plant, and Mechanical Handling Systems.*

Our Ref: CK/CVF

5th June, 1986.

U.S. Marine and Industrial Pump Repair,  
57, Bradford Road,  
Stanningley,  
Pudsey,  
Leeds,  
LS28 6AT.

## S P E C I F I C A T I O N

For: Compressed Air Blastroom, size 15'0" long x 10'0" wide x 8'0" high. Complete with Double Doors fitted in one end of the Room, Abrasive Recovery System, Dust Arrester, Electrical Control Panel and all Ancillary Equipment.

### DUTY

The cleaning of miscellaneous fabrications, castings forgings etc.

### ABRASIVE

Suggested Abrasive, G17 Chilled Iron Grit. Quantity required for initial commissioning, 2 tons approximately.

### GENERAL DESCRIPTION

The installation will consist of a main Blastroom 15'0" long x 10'0" wide x 8'0" high, with double doors in one end of the Room. The Blastroom is completely rubber lined and is fitted with a suitable lighting system.

Under the Room is fitted a low profile Recovery System.

Spent abrasive from the blasting operation inside the Room will pass through the floor plates, into the Screw Conveyors, which are fitted into each individual Hopper. The Screw Conveyors feed all spent abrasive from the longitudinal hoppers into the cross hopper, which in turn feeds abrasive and all materials removed during the blasting operation to the boot of the Belt and Bucket Elevator. This Elevator lifts all materials to the Airwash

Separator and Rotary Sieve where all fines and oversize are removed prior to the storage of the cleaned abrasive ready for re-circulation under automatic valved control back to the Blast Machine.

The Blast Machine is fitted with a Deadmans Handle control system and the abrasive feed from the storage hopper to the Blast Machine is controlled automatically.

To provide air currents for the separation and ventilation system, and at the same time to ensure clean working conditions inside and outside the Room, we include one of our latest 3,000 c.f.m. Fabric type Dust Arresters with automatic bag vibration gear. This unit will be situated alongside the Blastroom. The closer the Dust Arrester can be placed to the Blastroom, the smaller the amount of connecting Ductwork that will be required.

Our offer includes for all the necessary electric lighting, geared motors and an electrical control panel.

All individual parts of the equipment are described in the following sections in detail:-

BLASTROOM 15'0" long x 10'0" wide x 8'0" high.

The complete blasting enclosure is fabricated from 4mm thick mild steel plate panels and a framework of suitable rolled steel sections. The doors are situated in one end. The door frame is fabricated from steel sections.

The doors are fabricated from double skin construction utilising 2" square box sections to space the skins apart. Heavy duty hinges are fitted onto each individual door and a central locking system is utilised with locking bars inside and outside the Blastroom.

To meet the requirements of the Factory Acts, an access door is fitted in one of the sides of the Room sized 6'6" high x 2'3" wide.

#### RUBBER LINING

Both sides and the rear of the blasting enclosure are completely lined with 1/8" thick Shotblast quality rubber, suspended from hanger bars fitted along the top corner of the blastroom. The doors are also protected by 1/8" thick, Shotblast rubber, again suspended from carrier bars clamped in a mid position as well as the top of the Door.

#### LIGHTING

The Room is illuminated by four 500 Watt, Tungsten Halogen Lights. These lights are fitted in the corners and sides of the Room, and are carried on swivel brackets. They are of the fully enclosed type, flame proof and are protected by polycarbonate sheets which are fitted into carrier assemblies placed in front of each individual light. This is necessary to prevent the lights being struck by ricochet from the blasting operation.

The lights are positioned to give the best possible illumination of the Blastroom.

#### UNDERFLOOR RECOVERY SYSTEM

Our system consists of three longitudinal hoppers each 4'0" wide x 1'9" deep x 11'0" long. Each hopper is fabricated from 5mm thick mild steel plate and is complete with a 6" (150mm) diameter heavy duty closed bladed screw conveyor with tubular shaft.

Self-lubricated sealed bearing units, externally mounted, are fitted. These hoppers and screws are arranged to feed into a cross hopper, which in turn feeds the boot of the belt and bucket elevator. This hopper is 3'0" wide x 3'0" deep x 10'0" long, and is fabricated from 5mm thick mild steel plate. A further 9" (230mm) diameter closed bladed heavy duty screw conveyor is fitted into this hopper with its tubular shaft having externally mounted sealed bearings.

Drive for the main recovery system is by means of a 1 H.P. reduction geared motor, directly coupled to each individual screw conveyor.

The drive for the cross screw is from the belt and bucket elevator.

The hoppers are fitted with 1.5" deep heavy duty open mesh floor plates, with suitable supporting members where necessary.

#### ELEVATOR

This unit is of the enclosed belt and bucket type, being complete with heavy duty rubber and canvas belt, fitted with pressed steel buckets. Fabricated mild steel heavy duty head and boot pulleys with crowned face are utilised to ensure long life and constant belt tracking. The casing is fabricated from mild steel plate, utilising bolted and welded construction, all joints are sealed to ensure dust-free operation.

The shafts carrying the head and boot pulleys, run in self-lubricated ball bearing plummer blocks. Belt tensioning is accomplished by means of adjusting screws, fitted to sliding plates mounted at the elevator head.

Because modern Elevator Belts are of the High Technology type, to cut down stretch as much as possible, we now use as standard, the Jackson 'Gripwell' method of Belt Jointing. This as far as is possible, eliminates Belt failure during normal operating life.

Drive is by a standard reduction geared motor, mounted on a bracket, forming an integral part of the elevator head, fitted with chain drive and guard.

#### ABRASIVE AIR WASH SEPARATOR UNIT WITH ROTARY SIEVE

The air wash separator unit utilises air currents from the ventilating system, combined with a series of stratification plates and controlled suction damper to remove fines materials as they are passed through the air wash zone. Counter weighted

plate is utilised to give an even flow of material across the separation plates to ensure good and even airwashing. Fines and oversize material are then fed to ground level by way of a discharge pipe. The cleaned abrasive feeds by gravity into the storage hopper which forms the lower portion of the unit ready for re-circulation under automatic valved control. The unit is of bolted and welded construction, fabricated from mild steel plate and suitable rolled steel sections.

The rotary sieve is fitted into the top section of the Air Wash Unit. The sieve drum is mounted on a shaft carried on two externally fitted sealed bearings. Internal scroll and suitable blanking plates ensure even distribution of abrasive and fines onto the stratification plates.

Oversize materials extracted by the sieve are passed to ground level by a discharge pipe.

Drive for the unit is by means of a reduction geared motor, mounted on top of the separator housing. A suitable chain drive and guard are fitted. Access and inspection doors are provided for both the rotary sieve and air wash unit.

#### SINGLE CHAMBER 24" DIAMETER BLAST MACHINE

The blast machine supplied is 24" diameter, has a height of 53" and is capable of holding a charge of reusable ferrous abrasive of up to 1400 lbs/636Kgs.

The machine has automatic rubber to rubber sealing to ensure long wear life and high reliability, allied to a fast acting remote control system with a universal abrasive pinch valve capable of operating with most commercially available abrasives:-

Diameter - 24" - 610mm

Height - 53"(without sieve) - 1346mm.

Air inlet connection - 1.5"/38mm BSP male.

Remote control system type RC175.

Maximum operating pressure of machine - 115 p.s.i./8 Bar.

Also available if required is an automatic on/off grit valve, controlled from the deadman handle.

Our offer also includes Choke valve and deadmans handle.

3/8" bore Tungsten Carbide nozzle with aluminium jacket, complete with 50mm coarse thread nozzle and nozzle holder to facilitate easy and efficient replacement of nozzle holder gaskets.

Machine coupling to allow fastening of included blast hose via blast hose coupling for air tight connection with total safety as connections are locked and pinned prior to despatch.

The blast machine capacity is 1400 lbs./636 Kgs. of re-usable ferrous abrasives such as chilled iron or steel grit.

## DESCRIPTION

This unit is an air operated, portable machine suitable for remote control operation and incorporating a concave filling head with rubber sealing for fast and easy loading of abrasive. The conical base ensure easy internal inspection and with the large manhole, with proprietary manhole cover and gasket, this means the machine can easily be cleared out, reducing time and to enable any damp abrasive to be removed very quickly indeed.

The abrasive pinch valve is suitable for any abrasive giving complete versatility of blasting application. Design of replacement items and BSP fittings ensures inter-changeability with most other manufacturers equipment.

The machine is fitted with large diameter rubber wheels handle and lifting lugs, ensuring simple handling on site.

Each machine is manufactured around BS 1500, and is hydraulically pressure tested for a minimum period of one hour to 300 p.s.i./21 bar and is supplied with operating instructions, test certificate and a 6 month warranty.

The shotblast hose supplied as standard with this machine has a working pressure of 175 p.s.i. and a minimum burst pressure of 750 p.s.i.

The Tungsten Carbide nozzles supplied have a minimum wear life with chilled iron G12/17/24 abrasive, of at least 800 blasting hours and can be replaced within seconds. The machine is complete with nozzle holder and hose coupling and supplied as a complete set.

## OPERATOR'S EQUIPMENT

We include a complete set of Operator's equipment, consisting of protective helmet with spare window shields, Blasters Suit, set of protective gloves and a breathing air filter for the operator, which is mounted on the Machine.

## DUST EXTRACTION 3,000 c.f.m.

We include, as a separate price, our latest fabric type dust arrester, complete with suitable centrifugal type fan and motor.

The unit which is of a bolted and welded construction, is fabricated from mild steel plate and suitable rolled steel sections. The upper portion of the unit is formed into two sealed sections, one being the fabric compartment, the second being a primary low velocity settling chamber, allowing pre-separation. The lower portion of the unit forms the secondary settling chamber which collects and stores the extracted dust in a removable bin. Separating the secondary chamber and fabric compartments is the filter plate, which is fitted with a spigot onto which is secured the fabric filter elements. In the top compartment are a series of carrier bars onto which the fabric units are fastened with special quick release fastenings.

## FILTER ELEMENT VIBRATION (Mechanical)

On all Dust Extraction Plants a system of filter element vibration is carried out by a mechanical system, using an eccentric style vibration motor, which is processed timed to give filter element vibration to suit the type of application. Normally, this unit is timed-out to operate when the dust arrester is stopped for any break, such as lunch, or at the end of a shift. The vibration motor is mounted inside the dust arrester.

## DUCTING

We include connecting ductingwork from the machine to the Dust Arrester and a cowl on the fan discharge in our offer. The price quoted allows for not more than 1 metre of duct between the machine and Dust Arrester and all ancillary ducting to separator unit and any other ducting required on the machine. Straight lengths are from 16 M.S. Plate and bends from 14 SG M.S. Plate. We do not include ducting supports, or making good clients roof or walls which have to be broken to fit ducting.

Please note, the run of ducting must be approved by the Client to ensure that it does not interfere with building columns, piping or wiring existing within Clients factory.

Ducting is basically unnecessary in large quantities if the dust arrester can be positioned directly alongside the machine. This gives the most efficient possible operating conditions and is the most space saving lay-out.

The Blasting of Castings and other articles, according to the Health & Safety Act 1949 - Section 9, prohibits the discharge of cleaned air from a dust arrester into the working environment in a factory. The only simple interpretation of Section 9 is that discharge of fan outlet must be to the outside atmosphere. This interpretation has been approved by the Factory Inspectorate and Insurance Companies. If discharge of cleaned air is to the internal working environment, permission must be obtained from the local Factory Inspectorate.

## ELECTRICS

We include all the necessary electric motors of the 'T.E.F.C.' type and suitable control panel. Motors are normally of Newman Manufacture.

## CONTROL PANEL

This is fabricated from heavy gauge sheet steel fitted with a hinged door having suitable locking device. The door entry is fitted with dust tight seals, to I.P.55 protection.

The panel will include a full set of contactors, overloads and HRC fuses for all motors. Contactors provide an electrical endurance considerably beyond the requirements of I.E.C. 158-1 (1970). Also a mechanical endurance of at least ten million operations is ensured by the manufacturers.

All starters up to 10 H.P. (7.5 Kw) will be Direct on Line and all starters above, will be Star Delta Type. All internal panel wiring is complete and the panel is fitted with a mains on-load isolator switch to International standards BS 5419-1977, I.E.C. 408, VDE 0660 etc., which is approved by Bureau Veritas and Lloyds Register of Shipping.

Push buttons are all oil and water tight to I.P.54 and I.P.65 standards.

Our panels are designed for simplicity of operation and maintenance and to facilitate wiring on site, we include a numbered terminal block and coded wiring system.

In addition, to suit the individual application, where limit switches are fitted to any part of the blast machine, they are wired directly through the control panel to prevent starting of wheel units or ancillarys, without the machine being in the correct state of readiness, which of course, in many cases is pre-determined by operator control.

#### LIST OF ELECTRIC MOTORS

Elevator	-	1 @	2 H.P.
Recovery System	-	3 @	1 H.P.
Dust Arrester	-	1 @	7.5 H.P. -
D.A. Vibration System	-	1 @	.25 H.P.
Lights	-	4 @	500 Watts
Rotary Sieve	-	1 @	1 H.P.

#### ELECTRICAL WIRING

This can either be undertaken by the client or by S.E.S. If S.E.S. are carrying out this work, it is very clearly quoted as a separate price. If a separate price is not quoted, the wiring is positively not included in the contract.

We positively exclude the wiring from the isolator on our control panel to mains supply. This is the responsibility of the client.

#### PAINT FINISH

All external surfaces of the fabricated parts of the equipment, are prepared and painted with two coats of primer and one finish coat in blue, B.S. specification Number BT.286.

#### ERECTION AND COMMISSIONING

We include erection and commissioning. The supply of only one fitter is covered along with our service van, hand tools and electrical tools. We do not include cramage, which must be supplied by client.

Our price assumes that the foundation is correctly prepared in accordance with our drawings, that the site is cleared with adequate access facility and that there are no unforeseen hold-ups.

It must be clearly understood that any delays or hold-ups caused by lack of cramage, welding or burning equipment or site services will incur an additional charge for delay and waiting time.

#### EXCLUSIONS

We exclude from our offer, unless otherwise stated, all the following items:-

1. Off-loading of the Machine or any parts of the Machine at Clients Works. Client to be responsible for cramage and labour involved in off-loading. Client also responsible for cramage required during the erection and commissioning of all equipment constituting any part of the complete machine. Client also responsible for providing labour to drive or operate cranes unless responsibility is delegated by the Client to our personnel.
2. All foundation work such as the preparation of the pit and concreting of all areas for such items as conveyors and Dust Arresters. Client is responsible for supply of holding down Bolts, shims, pit covers, pit hand railing and any support members required for bridging any part of the pit.
3. All site services such as compressed air, water, electricity, welding equipment and any equipment connected with work on the foundations.
4. When erection and commissioning is undertaken by ourselves, we only include items covered by the section in our specification headed 'Erection and Commissioning'. We do not include for any special equipment of any kind, which may be required due to site conditions which are beyond our control.
5. Split responsibility. Where Client undertakes partial or complete erection of the machine or partial or complete electrical wiring of the machine, unless supervised by our personnel, we are not responsible for any damage caused to our equipment or any faulty workmanship which in turn involves damage to our equipment.
6. Electrical Wiring on Site is excluded unless specifically requested and covered by a paragraph in the Specification.
7. It is a condition of any contract placed with Shotblast Engineering Services Limited, that it is clearly understood that we only include components and parts as specified in our offer. In no circumstances do we include any items other than those detailed and specified. This particularly applies to situations where other equipment is to work in conjunction with our Machine, such as spray painting equipment, etc.

#### NOISE LEVELS

Due to the substantial, heavy construction of our machines, noise levels are kept to a minimum.



The greatest individual noise generation sources are Extraction Fans.

In the case of the dust arrester, a silencer can be supplied to bring the fan noise level down to a similar level. This also applies to blower fans.

Figures quoted assume a free field environment with no back-ground noise. Tests to be carried out using approved meter, in accordance with BS4999.

Whilst everything possible is done to reduce noise levels, it must be clearly understood that the very nature of the shotblasting application can generate additional noise. On most normal applications, noise levels generated by blasting are well below the noise levels of the motors and fans.

However, it is obvious that when certain components which are light in section and of certain specific shape, are being blasted, that a 'Bell' effect is created, thus creating additional noise levels at certain times. This situation cannot be catered for in the design of the machine and if such components were to be handled on a continuous basis, additional acoustic protection would be required.

Our Engineers are always ready to advise on the siting of individual machines. Particular attention must always be paid to the surrounding conditions, e.g. the type and position of a wall, or the position of other equipment adjacent to the Shotblast Machine.

In most applications, where blast cleaning equipment is used, noise levels created by other machinery, adjacent or in reasonable close proximity, are usually greater or at least equivalent to the blast machine.

#### HEALTH AND SAFETY AT WORK ACT 1974 Section 6

All our machines are designed to comply with the requirements of the Health and Safety at Work Act 1974, Section 6. However, it must be pointed out that regular maintenance of Blast Cleaning Machines and accompanying Dust Extraction Plant is of the utmost importance to ensure that the machinery continues to comply with all the requirements of the Factories Act 1961 and Associated Regulations, such as the Blasting (Castings and Other Articles) Special Regulations 1949. Rubber Curtains, door seals and all safety devices must be given regular routine inspection and any items requiring replacement should be dealt with immediately.

All mechanical functions and cycle control systems, must be checked and regularly serviced. All wear plates, wear curtains and seals of all kinds must be checked and replaced as necessary in accordance with our Operating and Maintenance Instructions, provided with the Machine.

All chain and belt drives, wire rope assemblies, counter balance weights etc. are fitted with suitable guards. If these guards are removed during maintenance procedures, they must be replaced. This is the responsibility of the user entirely, in Factory Premises.

Where Machines discharge onto conveyors, or into skips or bins we are only responsible for the equipment supplied by ourselves. Continuing guards or safety devices may be required at the point of component discharge or during feeding components to our Machine. Such guards or safety devices are the responsibility of the supplier of the parts in question or alternatively, of the Client if the Client has manufactured or provided any such parts.

Our responsibility for guarding and provision of safety devices, applies only to Machinery supplied by ourselves.

ABRASIVES

Concerning the supply of blasting media for this equipment, we recommend for all our machines the range of metallic abrasives, expertise and free service facilities associated with these products, available from:

Taydor Engineers Limited,  
Barracks Road,  
Sandy Lane Industrial Estate,  
Stourport on Severn,  
Worcs. DY13 9QF.

Tel: 029 93 3221/2/3.

From their comprehensive abrasive range:

High Tensile Cut Wire Pellets  
Cast Steel Shot  
Steel Grit  
Cast Iron Grit  
Stainless Cast Steel Shot  
Stainless Cut Wire Pellets  
Zinc Wire Pellets

The optimum abrasive selection will be made for your equipment and application.

If required, we can arrange to supply with this machine, the initial abrasive charge at a competitive price.

Signed..........

C. Keogh  
Sales Manager