

SPE9ES-1

Operating Manual

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This manual provides the basic information required and is only to be used as a guideline.
The SPE machines are manufactured and covered by SPE design registrations granted and pending.
SPE International Ltd reserves the right to alter the equipment design and specification as required without notice.

The SPE product range is subject to amendment and improvement as a result of on going research



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INTRODUCTION

The life of your SPE equipment and the delivery of the high performance built into it will depend on the care it receives throughout its life. It is the operators responsibility to ensure that the maintenance operations outlined in this manual are carried out regularly and daily checks for wear etc. are maintained with great discipline.

Where the terms 'right' or 'left' occur in this manual they refer to the respective sides of the equipment when viewed from the operator handle of the machine.

Your SPE 9ES equipment has been designed and built to produce reliable and economic output for many hours of service. However, no amount of engineering ingenuity or care during manufacture can alleviate the need for reasonable attention and avoidance of mis-use by the operator.

It is important to be thoroughly familiar with the points requiring periodical attention, as it is to know how to operate the unit. Regular maintenance will result in minimum operating costs.



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MACHINE DESCRIPTION

The **SPE9ES** has been developed for the preparation of concrete and steel surfaces.

The machine is electrically driven with its own integral system which operates the forward drive of the machine along the surface being prepared to allow a consistent operation.

The cleaning operation is performed by abrasive being thrown at high velocity against the surface to be cleaned. The throwing action is achieved through centrifugal force, where a wheel with paddle type blades attached radially is revolved at a continuous shaft speed of 5000 rpm when using mains power at 50 hz. Onto this wheel, abrasive is fed in such a manner that it travels along the radial length of the blades and is then thrown off in a high velocity stream at the surface to be cleaned. The energy put into the abrasive is sufficient to enable it to rebound from the work surface. This rebound (kinetic energy) is used to recover the abrasive for re-use. The machine is designed so that the blast wheel is throwing abrasive at an inclined angle relative to the work surface. This means that after striking the work surface, the abrasive rebounds at a similar angle into the reclaim duct which directs it back into the hopper for re-use. Assisting with this reclaim cycle, the air flow created by the dust collector enters the machine through a brush screen at the rear of the cabinet and flows across the work surface, up the reclaim duct, through the separator and into the dust collector then through the fan and into the atmosphere.

Abrasive is contained within the machine at the work surface levels by seals around the machine. There is a brush screen across the air intake at the rear and magnetic seals at each side. An alternative seal system is available for the preparation of steel surfaces.



IDENTIFICATION OF MAJOR COMPONENTS

The **SPE9ES** machine is assembled from several major components. It is essential that the operator becomes familiar with the names and functions of these components before attempting to carry out servicing procedures.

MAIN HOUSING

The main housing is the frame of the machine. Externally all other major components are attached to it and internally wear liners and all blast wheel components are fitted.

ABRASIVE STORAGE HOPPER

This contains the abrasive

SEPARATOR

Within this component the flow of abrasive and dust laden air is separated. It is constructed in such a way that as the air flow passes through the separator the speed/flow of the abrasive and dust is reduced, which results in the heaviest particles (the steel abrasive) falling out of the flow and into the storage hopper for re-use. The lighter dust and debris stays within the air flow and passes through the separator on the way to the dust collector.

ELECTRIC PANEL

This panel contains all the electrical components such as the stop/start button for the blast motor and the controls for the variable drive system, the amp meter and all electrical protection equipment.

ABRASIVE FEED CONTROL LEVER

This lever operates the butterfly valve in the feed spout between the abrasive storage hopper and the blast wheel. When the lever is down it is closed and when it is pulled upwards the butterfly valve is opened and the abrasive is allowed to travel onto the blast wheel in a progressive controlled fashion.

DRIVE WHEEL

There is one drive wheel located at the front of the machine.



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BASIC OPERATION

IMPORTANT INFORMATION

1. Do not push the machine unless the front drive wheel lock assembly is in a free wheel position
2. Do not attempt to start the blast motor without first operating the low load start lever/integral belt tensioner
3. Do not open the abrasive control valve when the blast motor and blast wheel are not turning at max RPM.
4. Do not exceed the maximum loading indicated on the amp meter (20 amps)
5. All equipment must be completely isolated from the electrical supply before carrying out any adjustments or maintenance
6. The machine should be kept dry at all times and must not be operated on wet surfaces

TO COMMENCE OPERATION

1. Remove the separator cover and place the abrasive into the storage hopper. Do not overfill, allow a clearance of approx 25mm. Replace the separator cover and secure with the over centre clips.
2. Connect the 9ES machine and vacuum to the electrical supply
3. Switch on the vacuum
4. Switch on the isolator on the 9ES machine
5. Move the belt tensioner located at the rear of the belt guard fully to the LEFT and hold. Press the green start button on the panel. After 5 seconds slowly release the belt tensioner lever to the right.
6. To move the machine forward firstly make sure that the front drive wheel lock assembly (part no 11202A) is in the locked position. Engage the forward/reverse switch on the panel to the required direction, then turn the drive wheel speed control knob clockwise to move the machine forward at a constant speed.
7. Pull open the abrasive control lever valve assembly until the required amp reading is reached on the amp meter. Maximum 20 amps
8. The machine will now be blasting the surface. The finish achieved can be varied by adjusting the abrasive control lever and the forward speed of the machine.
9. To stop the machine blasting. Close the abrasive control valve and move the forward/reverse switch to the neutral position..
10. To stop the blast motor. Press the red stop button on the panel. DO NOT operate the belt tensioner lever to stop machine.



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SAFETY

Only trained operatives should be allowed to operate the SPE9ES-1 Autoblast machine.

NOTE:

It is possible that the noise level produced by the 9ES Autoblast machine could exceed 90dbA. Appropriate PPE must be worn and the equipment must be used in line with guidelines laid down by the Health and Safety Executive.

Never tip machine backward whilst in use.

Always ensure that all power leads are disconnected before attempting to adjust or service the machine.

Do not use or store in wet conditions as electrical components are not waterproof.

Noise and vibration will occur at various levels dependant on the work being undertaken. SPE have assessments conducted under test conditions detailed in the operating manual (see page 19), however, it is recommended that additional tests are taken on site to provide the operator with accurate information on using the equipment within guidelines laid down by the Health and Safety Executive.

SERVICE INFORMATION

FIRSTLY ISOLATE ALL ELECTRICAL SUPPLIES TO THE EQUIPMENT

TO REPLACE THE BLAST WHEEL

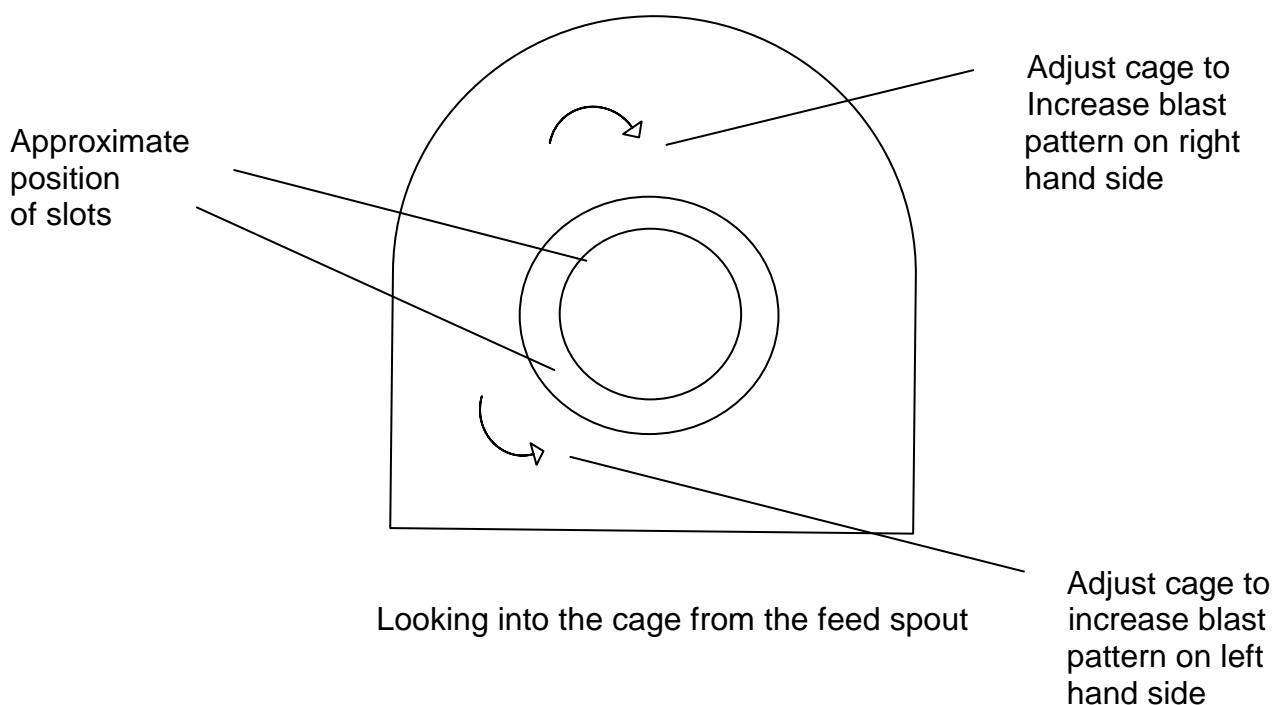
Remove the rear belt guard and belt. Remove the four set screws holding the rear wheel and shaft assembly to the main body. This gives access to the blast wheel. Take off the central cap head screw and remove the blast wheel. Clean the hub assembly and fit the new blast wheel. Refit and firmly tighten the centre screw. Replace all items in reverse order.

TO REPLACE THE CAGE

Unscrew the bolts holding the abrasive feed tube and remove the cage clamps. Withdraw the cage after taking note of the position of the two slots on the outer ring of the cage. Place in the new cage with the slots in the correct position. Replace the clamps and tube as previously removed. Minor adjustment to the cage position may be necessary to set the blast pattern correctly.

Right hand side of machine

Left hand side of machine



NOTE: Blast pattern viewed from rear-operator handle of machine



FAULT FINDING

Isolate the power supply before carrying out the following inspections:

DECREASED FLOW OF ABRASIVE

1. Check there is sufficient abrasive in the hopper
2. Empty the shot and check for obstructions on the screen in the hopper (usually paint flakes) or in the butterfly valve in the feed chute. To empty the abrasive, open the abrasive valve with the blast motor at a slow run or wind down speed.

MACHINE IS TRAILING/LEAVING EXCESSIVE AMOUNTS OF ABRASIVE BEHIND

1. Check the vacuum is working correctly and efficiently – Filter shaker on vacuum must be agitated every 10-15 minutes.
2. Check that one or both side seals are not stuck/jammed up when the manganese side seals are fitted – only when optional seals are fitted for steel preparation
3. Check under the machine and examine that, if urethane seals are fitted they are all in position and are not worn
4. Check the blastwheel, control cage and liners are not excessively worn
5. Check the cage is in the correct position and if not adjust accordingly
6. Check the drive belt is in good condition and not slipping

MACHINE DUMPS ALL ABRASIVE OR DUMPS OCCASIONALLY

1. Check all items 1 - 6 above
2. Check that the working surface is dry and is not contaminated with oil deposits, wet etc.
3. If the machine has dumped abrasive, and after the hopper has been refilled, make sure that no abrasive is still under the machine blast area on the floor when re-starting to blast or the machine will not reclaim.
4. If the machine occasionally dumps the abrasive when heavy blasting or exposing aggregate on concrete then slow the forward speed of the machine down and decrease the amount of abrasive being thrown down by the wheel to allow for the separation system to cope with the amount of debris being removed from the surface.

MACHINE SUFFERS REDUCTION IN BLASTING POWER

1. Check all the items above
2. If all are OK there must be a reduction in revs under load. Check the drive belt from the blast motor to the blast wheel

NO SUPPLY OF POWER TO MACHINE

1. If using a generator then check the panel fuses and the circuit breaker switch is in the working position
2. If using the mains then check the fuses on the electrical supply

MACHINE TRIPS OUT POWER SUPPLY

1. Check the extension lead being used is 4.0mm with a maximum length of 30mtrs.
2. If using site transformers, check that the SPE 9ES-1 and Dust collection vacuum have a minimum 5kva power supply each.

BLAST PATTERN IS HEAVY TO ONE SIDE

1. Control cage needs re-setting – See page 6



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Spare Parts Breakdown



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ELECTRICAL COMPONENTS

QTY	DESCRIPTION	SPE PART NO
1	Panel (Sarel)	SP58002
1	Isolator	SPVCCF2
1	PCB	11123
1	Speed Control Knob	11124
1	Transformer	11127
1	Fuse Holder	11125
1	Fuse (12x500)	11126
1	Overload	SPRF2523
1	Hour Run Meter	SPH7ET-N
1	Ammeter	11104A
1	Contactor	9255
1	Auxiliary Contactor	SPBFX1020
1	On/Off Push Button	SPLM2B7223
1	On/Off Contact (N.O.)	SPLM2TC10
1	On/Off Contact (N.C.)	SPLM2TC01
1	Contact Holder	SPLM2AU120
1	FWD/Reverse Switch	SP518-5336
1	Lens	SPLM2IL104
1	Lamp Socket	SPLM2EL400
1	Bulb	SPBA9S
1	Motor Starter	LMS254T
1	Motor Starter	LMS2525T
1	Fuse Holder (13A)	FUSE-HOLD
1	Fuse (13Amp)	FUSE-13A
3	Gland	SPCG/LNM20
1	Gland	SPAL10/M12
1	Gland	SPPAF510BL



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SPECIFICATION SHEET

Type	SPE9ES-1 Electric
Part number	SPE9ES-1
Power Output	3 h.p
Voltage	110v
Cycles	50/60
Cleaning width	230mm
Machine dimensions (mm)	
Length	960
Width	340
Height	840
Weight (kg)	89
Suggested Vacuum	Model VAC 316

ELECTRICAL REQUIREMENTS

Machine	Volts	Plug size	Cable Size (mm)	Norm Cable Length	Transformer	Generator
SPE 9ES-1	110	32 amp 3 pin	4.0 3 core	30 metres	5 Kva	8 Kva



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RECORD OF NOISE AND VIBRATION ASSESSMENT

Manufacturer: SPE
 Type: Blaster
 Model No. SPE9ES – Electric
 Operation : Free Running
 HAV Note: Acoustic Associates

HAND-ARM VIBRATION

Frequency Weighted Energy Equivalent Accelerations ($a_{h,w}$)

Measurement Position	Acceleration (m/s^2)			
	X axis	Y axis	Z axis	Vector Sum
Handle	0.43	0.50	0.84	1.06

NOISE LEVELS

Sound Power Level (L_{WA})

L_{WA} at Octave Band Centre Frequency (Hz)								Sound Power Level L_{WA}
63	125	250	500	1000	2000	4000	8000	
56.1	65.9	77.0	103.0	90.1	87.0	84.0	69.8	103.4

Operator's Ear

$L_{Aeq,T}$ at Octave Band Centre Frequency (Hz)								Overall Level ($L_{Aeq,T}$)	L_{Peak} dB(C)
63	125	250	500	1000	2000	4000	8000		
41.3	49.9	63.2	90	74.1	68.2	66.5	50.1	90.2	99.3





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WARRANTY

The standard warranty period of this equipment is **12 months** from the despatch date in accordance with the company Conditions of Sale (copy attached).

<i>Warranty start date:</i>	As despatch date
<i>Model:</i>	SPE9ES – 1
<i>Serial no:</i>	
<i>Customer name:</i>	
<i>Customer Address:</i>	

<i>Manufacturer:</i>	SPE International Ltd
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DECLARATION OF CONFORMITY

WE
SPE INTERNATIONAL LTD

OF
Honeyholes Lane
Dunholme
Lincoln
LN2 3SU

DECLARE that under our sole responsibility for the supply/manufacture of the product

(Description/name) **SPE9ES Autoblast Machine**

(Model/type) **SPE9ES - 1**

to which this declaration relates is in conformity with the following standards and other normative documents following the provisions of Directive 2006/42/EC.

A handwritten signature in blue ink, appearing to read 'B. Jacklin'.

.....
Brian Jacklin – Technical Manager
SPE INTERNATIONAL LTD



CONDITIONS OF SALE

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The quotation overleaf and any order placed following such quotation are subject to the following conditions of sale in which SPE International Limited is referred to as the "Company".

1. Validity of quotation

No order received from a customer by the Company shall constitute a contract until accepted in writing by the Company.

2. Prices

Prices quoted by the Company are firm for 30 days only or until previously withdrawn. Unless otherwise stated all prices are exclusive of any applicable Value Added Tax for which the customer shall be additionally liable to the Company.

3. Delivery

Delivery periods and dates are given in good faith but are not the subject of any warranty or condition and time shall not be of the essence of the contract in these respects. No liability will attach to the Company if delivery periods or dates are not met for any reason whatsoever.

4. Payment

Save as may otherwise be agreed in writing the customer shall pay the price in full on or before the estimated delivery date whereupon the Company shall raise a receipted invoice. Each invoice includes an Overdue Account Levy of 5% of the total invoice value inclusive of VAT. Subject to payment in full being made on or before the due date a sum equal to the Overdue Account Levy shall be credited to the customers account with the Company. Until such time as payment in full has been made the Company shall be under no obligation to allow or effect of any goods to the customer.

5. Warranty

The Company warrants that all goods supplied by it will correspond to their specifications and will be free from defects in materials or workmanship for a period of 12 months from the date of delivery. The Company's obligation in the event of a breach of this warranty is limited to the repair or replacement of any defective goods which shall be returned at the cost and expense of the customer to the Company. This warranty is given in lieu of all the other warranty or conditions expressed or implied (whether by statute or otherwise) and is subject to the following conditions:-

5.1 Claims must be notified in writing to the Company within seven days from the date of delivery or (where the defect is not apparent on reasonable inspection) as soon as practicable after discovery of the defect.

5.2 The Company shall be under no liability in respect of any defect in the goods arising from any drawing, design or specification supplied by the customer.

5.3 The Company shall be under no liability if the defect or failure in the reasonable opinion of the Company arises from wilful damage or misuse, negligence by the customer or any third party. Failure to follow the Company instructions, usage of non-recommended parts and materials, alteration or repair of the goods without the prior approval of the Company or non-recommended maintenance.

5.4 The Company shall be under no liability if the price for the goods has not been paid by the due date for payment.

5.5 The above warranty does not extend to:-

5.5.1 Parts, materials or equipment not manufactured by the company in respect of which the customer shall be entitled only to the benefit of any such warranty or guarantee as is given by the manufacturer to the Company.

5.5.2 Any component part of the goods or associated parts coming into contact with abrasive elements or dust within surface Preparation equipment.

5.5.3 Fair wear and tear of moving parts within the goods.

5.6 Except in the case of death or personal injury caused by the Company negligence, the Company shall not be liable for any consequential loss or damage (whether for loss of profit or otherwise) or other claims for consequential compensation.

6. Carriage

Packing, carriage and insurance charges in respect of delivery of the goods to the customer will be charged to the customer at cost to the company.

7. Damage in Transit

The company does not accept any liability for loss or damage to the goods while in transit to the customer.

8. Risk

The risk in the goods shall pass to the customer on delivery to the customer or (if earlier) when possession of the goods is taken by a carrier for delivery to the customer.

9. Force Majeure

The Company shall not be liable to the customer or be deemed to be in breach of any contract with the customer by reason of any delay in performing or any failure to perform any obligation of the Company obligation in relation to the goods if the delay or failure was due to force majeure or to any other cause beyond the Company's reasonable control.

10. Reservation of Title

The goods sold under these conditions shall remain the absolute property of the Company and legal title in the goods shall remain vested in the Company until payment in full of all amounts invoiced or due to the Company in respect of the goods. If the customer shall enter into liquidation have a winding up order made against it or have a Liquidator, receiver, administrator or administrator receiver shall be appointed over its assets, income or any part thereof before the property in the goods has passed in accordance with this condition the Company shall be entitled immediately after giving notice of its intention to repossess any goods to enter upon the premises of the customer with such transport as may be necessary and to repossess any goods to which it has title under this condition. No liquidator, receiver, administrator or administrative receiver of the customer shall have authority to sell goods to which the Company has title without the prior written consent of the Company.

11. Insolvency of Customer

If the customer being a body corporate, shall pass a resolution or suffer an order of the Court to be made for winding – up, or if a Receiver, Administrator or Administrative Receiver shall be appointed or, being an individual or partnership, shall suspend payment, propose or enter into any composition or arrangement with his or their creditors, or have a bankruptcy order made against him or them, then the Company shall have the right, without prejudice to any other contract with the customer, not to proceed further with the contract and shall be entitled to charge for work already carried out (whether completed or not) and for goods and materials already purchased for the customer such charge to be an immediate debt due from the customer.

12. Patent Rights, etc

The acceptance of a quotation includes the recognition by the customer of the Company under any patents, trademarks, registered designs or other intellectual property rights relating to the goods and the customer undertakes that patent numbers, trademarks or other trade markings on goods supplied shall not be obliterated, altered or defaced.

13. Applicable Law

These conditions shall be governed by and construed in accordance with English law and parties acknowledge and accept the exclusive jurisdiction of the English Courts.