

BEF275-7

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



Honeyholes Lane, Dunholme, Lincoln LN2 3SU, England
Tel: +44 (0) 1673 860709 Fax: +44 (0) 1673 861119
Email: sales@spe-int.com



**BEF275-7
Operating Manual**

BEF275-7 OPERATING MANUAL

This manual covers to the best of our knowledge, the operation and maintenance of the BEF275 Multi-plane. Before operation of the equipment the manual must be read and understood by the operator. The safety regulations must be followed at all times. The service of electrical components should be carried out by authorised personnel. Failure to follow these instructions could result in damage to the machine and/or serious personal injury or death.

WARNING

Failure to follow this instruction may result in serious personal injury or death. SPE disclaims all responsibility for damage to persons or objects arising as a consequence of incorrect handling of the machine, failure to inspect the machine for damage or other faults that may influence the operation prior to starting work, or failure to follow the safety regulations listed or applicable to the job site.

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STARTING WORK

Check the following prior to starting the equipment

- Check the condition of the cutter drum assembly
- Check all nuts and bolts for tightness
- Check the drive belt condition and tension
- Check the drive pulleys are clean and undamaged
- Check the condition of plugs and cables

1. Before starting the machine, ensure the cutter drum assembly is clear of the ground.
2. Adjust the handlebars to a comfortable height and position.
3. Connect the dust control hose if a vacuum is being used.
4. Connect the machine to a suitable 3 phase 220v 32 amp power supply.

Before use, you need to check that the rotation of the machine is correct. To do this turn the isolator to the 'on' position and start the machine by pressing the green start button on the panel. Check the rotation via the electric motor cooling fan against the arrow on the machine. If the rotation is correct, the machine is ready for use. If the rotation is incorrect, the phases in the power supply will need reversing. Stop the machine by pressing the red stop button.

To reverse the phases turn the phase reversing switch to the opposite direction.

5. Start the machine and slowly rotate the hand wheel until the cutters make contact with the surface to be prepared. It is essential that the cutters are not lowered too far and too hard onto the surface as serious damage could be caused to the machine and the cutter drum assembly.
6. Lock the hand wheel using the locking screw when the correct cutting depth is set.



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GENERAL OPERATION

The cutters must be allowed to "float" on the cutter shafts without downward pressure. This floating action allows the cutters to perform as the designer intended i.e. as flails rather than as grinders or picks.

The machine should operate smoothly with a minimum of vibration. When the depth of cut is correctly set very little effort should be required to operate the machine backwards and forwards - the recommended method of operation.

Excessive downward pressure on the cutters may marginally improve the work rate/finish but the definite increase in wear rates on the cutter drum assembly and machine components is the negative result. Remember two light passes are quicker and more cost effective than one slow heavy pass. Tests have proven conclusively that a heavy downward pressure reduces the cutter and drum life by over 50%.

The BEF275 is normally operated in a forward direction, the operator varies the speed of travel to determine the final finish having already pre-set the depth control. It is recommended to operate the machine with a backwards and forwards action, while maintaining overall forward motion. Each pass should be overlapped to produce a uniform finish.

DUST CONTROL

To remove dust, connect an industrial dust collector or vacuum to the 50mm port at the rear of the machine. We recommend the SPE VAC316 for almost 100% dust control. In the absence of a dust control unit it is acceptable to spray water onto the surface or to feed water down the vacuum port. Cutter drum assembly life is increased by around 10% when operating the machine in this way.



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MAINTENANCE

Prior to any maintenance or adjustment stop the machine and disconnect the power supply.

After use: Clean the machine to remove all build up of dust and surface residues. If using a hose pipe or pressure washer take care that water is not directed onto the motor and switches.

Note: Motor and switches are not waterproof

Drum removal:

Remove the bolts on the side plate and then screw two of the bolts back into the two tapped holes in the side plate. Continue winding these bolts in and this will push the side plate off the dowel pins. Remove the side plate. Pull out the cutting drum - the drive shaft may come out with the drum assembly as this is only a push fit into the drive bush.

Fitting a new cutter drum is simply a reversal of the above procedure, a little care must be taken to align the drive shaft, cutter drum and support end drive bush.

EXCESSIVE FORCE IS NOT NEEDED TO REFIT THE CUTTER DRUM.

Cutter Drum Maintenance:

When changing the cutter drum always check that the flail shafts are not worn with pronounced grooves and also that the centres of cutters and spacers are not elongated and beginning to "mushroom". The drum assembly is hitting concrete with great force at over 1,600 times every minute! Expenditure on consumables must be expected and built into all job costing.

While changing the drum, the condition of the drive shaft and side plate bearings should be checked. If any roughness, side play or leakage of grease is detected, then new bearings should be fitted. Lightly oiling the drive shaft will prevent a build up of rust which could cause difficulty when changing the drum. At the same time check the belt tension and condition, also checking the pulley grooves are clean and undamaged.

The drive shaft is manufactured from high quality steel and then heat treated to produce the special properties required. The shaft is extremely strong and virtually unbreakable when used as intended. If, however, sideways pressure is exerted on the shaft while not supported at both ends then it can be damaged.

With the drum removed, check that the vacuum port is free from blockages and that the dust skirt is in good condition.

Remove all build up and deposits of material from the under side of the drum housing. On certain applications, e.g. the removal of damp self levelling compounds, it may be necessary to clean away deposits hourly! Failure to do so could result in overload of the drum assembly, motor and the drive belts.

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Height Adjustment Maintenance

Ensure the height screw thread is cleaned and then lightly oiled. Periodically it should be removed and the female, threaded section cleaned out and oiled. At the same time the self aligning bearing should be greased

The clevis pin should be oiled regularly to maintain a light, smooth height adjustment.

General Maintenance

Great care should be taken to ensure the belts have the correct tension and also the correct alignment. Serious damage could be caused to the drive shaft, drive shaft bearings and motor if the belts are excessively tight.

Note: Never operate the BEF275 without a belt guard

All components should be checked daily for tightness and the drive belts for correct tension.



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BASIC MAINTENANCE/CHECKLIST

DAILY: (or every 8hrs to 10hrs)

- Check the cutters
- Check the flail shafts
- Check all nuts and bolts for tightness
- Check the belt tension and condition
- Check the condition of plugs and cables

WEEKLY:

- All the above with following:-
- Grease all moving parts on the height adjustment mechanism
- Remove the side plate
- Check the drum
- Check the bearings
- Check the drive bushes
- Check the drive shaft
- Check the support wheels and grease.

MONTHLY:

- All the above with following:-
- Strip down fully the winding mechanism
- Clean all the threads and re-grease



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SAFETY

Only trained operatives should be allowed to work the BEF275.

All operatives should wear ear defenders, goggles and an effective dust mask.

Note; It is possible that the noise level produced by the BEF275 could exceed 90dbA. Personal noise protection must be worn.

To control dust, it is recommended that an SPE dust control unit is used in conjunction with the machine.

Never leave the BEF275 unattended while in use. Always stop the machine and set the height adjustment fully up before leaving the machine.


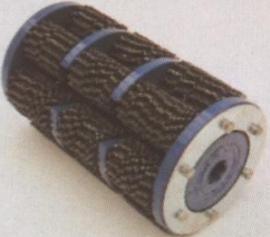


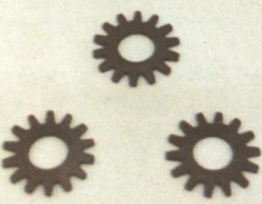
Always ensure that the power supply is disconnected before attempting to service the machine. Service of electrical components should be carried out by authorised personnel. Never remove the side plate or belt guard until the cutter drum has come to a complete standstill. Never tip the machine backwards until the cutters have come to rest.

Never release the machine from operators control during use. The cutting action of the drum will propel the machine forward at high speed. If the operator has any problem whilst operating the machine, press the red stop button on the panel or tip backwards.


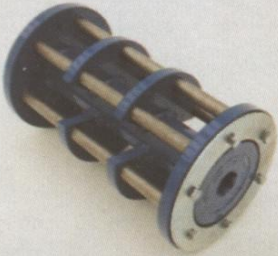
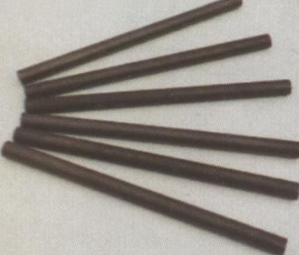
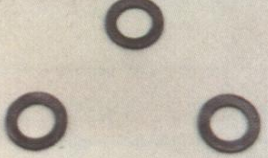
Never operate the machine outdoors in wet conditions as the electrical components are not waterproof.

Noise and vibration will occur at various levels dependant on the attachments and work being completed. 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 the guidelines laid down by the health and safety executive.

ACCESSORIES

Part No	Description	Application	
	27501	Heavy duty drum complete with T.C.T cutters and spacers.	For all concrete texturing, scabbling planing and grooving applications. Removal of bridge deck and car park membranes, heavy industrial contamination, epoxy coatings and road markings, reducing concrete. Use on heavy applications for longer life with higher output.
	27502	Heavy duty drum complete with beam flails.	For the removal of paint, laitence and coatings from floors. De-rusting and de-scaling ship decks. Also used for removing build up of grease, dirt and ice deposits. Keying of concrete when a fine textured surface is required
	27504	Heavy duty drum complete with milling cutters and spacers	For removal of thermoplastic road/runway markings. Very efficient and cost effective with none of the problems associated with burning off thermoplastics. Also for the removal of bituminous and rubber deposits.
	60600	T.C.T Cutter: 6 point hardened steel cutter with tungsten carbide inserts	For all concrete texturing, scabbling planing and grooving applications. Removal of bridge deck and car park membranes, heavy industrial contamination, epoxy coatings and road markings, reducing concrete. Use on heavy applications for longer life with higher output.
	60120	Beam cutter: Heat treated steel cutter	For the removal of paint, laitence and coatings from floors. De-rusting and de-scaling ship decks. Also used for removing build up of grease, dirt and ice deposits. Keying of concrete when a fine textured surface is required.

ACCESSORIES

	<p>60620</p>	<p>Milling Cutter: Tipped with Tungsten carbide.</p>	<p>For the removal of thermoplastic road/runway markings, rubber based deposits and cold plastic coatings from asphalt and concrete.</p>
	<p>27500</p>	<p>Heavy duty drum complete with flail shafts.</p>	<p>For use with various cutter configurations.</p>
	<p>27518</p>	<p>Heavy duty flail shaft.</p>	<p>Hardened cutter shaft.</p>
	<p>40240</p>	<p>Spacing washer.</p>	<p>Hardened spacing washer.</p>



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Spare Parts Breakdown



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ELECTRICAL COMPONENTS

QTY	DESCRIPTION	SPE PART NO
1	Panel c/w back plate	SP030317
1	Star/Delta assembly	09028
	Consisting of:	
2	Contactor	SPLC1D18M7
1	Contactor	SPLC1D12M7
1	Overload	SPLRD21
1	Interlock kit	SPLAD9R1V
1	Connector	SPLAD9P3
1	Delay timer	SPLADS2
1	Start switch	SPZB4BZ101
1	Stop switch	SPZB4BZ102
1	Start button	SPZB4BA3
1	Stop button	SPZB4BS44
1	Lens	SPZB4BV04
1	Panel Lamp	SPZB4BV4
1	Trip	SP60HD320
1	Isolator 40 amp	SPVCCF2
2	Conduit gland	9258
1	Conduit (mtr)	9259
1	Brass bush	SP608-222
1	Lock nut	SP608-812



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SPECIFICATION SHEET

Specifications	
Type	BEF275 Electric
Part Number	BEF275-7
Power Output	10hp
Voltage	220v 3phase
Cycles	50
Cutter Head Speed (rpm)	1640
Machine Dimensions: (mm)	
Length	1220
Width	511
Height	900
Weight (kg)	145
Working width of cutters (mm)	275
Working distance from walls (mm)	65
Engine/Motor speed (rpm)	2800

ELECTRICAL REQUIREMENTS

Machine	Volts	Plug size	Cable Size (mm)	Norm Cable Length
BEF275-7	220v 3phase	32 amp 5 pin	6.0 4 core	75 metres



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RECORD OF NOISE AND VIBRATION ASSESSMENT

Manufacturer:	SPE
Type:	Scarifier
Model No.	BEF275 Electric
Operation :	Concrete floor surface
Inserted Tool:	TCT cutters
Running Conditions:	2910 rpm

HAND-ARM VIBRATION

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

Measurement Position	Acceleration (m/s^2)
	Vector Sum
Handle	9.58

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	
56.5	76.4	84.4	88.2	92.8	93.2	91.9	88.9	98.6

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		
37.2	61.9	69	76.7	80.3	76.9	74.5	67.3	83.9	99.4



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WARRANTY

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

<i>Warranty start date:</i>	As despatch date
<i>Model:</i>	BEF275-7
<i>Serial no:</i>	
<i>Customer name:</i>	
<i>Customer Address:</i>	

<i>Manufacturer:</i>	SPE International Ltd
	Honeyholes Lane
	Dunholme
	Lincoln
	LN2 3SU
	England
<i>Telephone:</i>	+44 (0) 1673 860709
<i>Fax:</i>	+44 (0) 1673 861119
<i>Email:</i>	<u>sales@spe-int.com</u>
<i>Web site:</i>	<u>www.spe-int.com</u>



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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) **BEF275 Multiplane**

(Model/type) **BEF275-7**

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 black ink, appearing to read 'B. Jacklin', is positioned above the printed name.

.....
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.