BEF275-1

Operating Manual

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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BEF275-1 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. 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 engine oil level
- Check the air filter is clean

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. Start the engine. See manufacturers manual for further guidance

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.

5. Lock the hand wheel using the locking screw when the correct cutting depth is set.

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.

PETROL ENGINE

This manual should be read in conjunction with the Owners Manual of the petrol engine. The engine is designed to give safe and dependable service if operated according to the instructions. Read and understand the Owners Manual before operating the engine. Failure to do so could result in personal injury or equipment damage.

Note: Avoid tipping the BEF275 backwards, when fitted with the Honda GX340 engine, for longer than a minute. The engine oil can run into the cylinder head causing the piston to hydraulically seize. In the event of a hydraulic seizure never try to force the engine to turn over. Remove the spark plug and slowly turn the engine over by hand. Ensure the ignition and fuel are turned "off". If this method is unsuccessful then the engine should be returned to the manufacturer.

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.

MAINTENANCE

Prior to any maintenance or adjustment, stop the engine.
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 engine and switches.
Note: Engine 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, engine 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 engine 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.

Check the individual manufacturers service recommendations for full details on the engine.

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 engine oil daily
Change the engine air filter if not using vacuum unit

See engine manufacturers maintenance details before starting engine.

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

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 engine and set the height adjustment fully up before leaving the machine.

Always ensure that the engine switch is in the off position and disconnect the spark plug cap before attempting to service the machine. 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 operate a petrol engine BEF275 inside or in a poorly ventilated area. Carbon monoxide gas is emitted.

Never refill the petrol tank whilst inside a building.

Always stop the engine before refuelling.

Never refill the petrol tank when the engine is hot.

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, turn the red stop button on the engine or tip backwards.

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 17). 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.

SPECIFICATION SHEET

Specifications	
Type	BEF275 Petrol
Part Number	BEF275-1
Power Output	11hp
Voltage	-
Cycles	
Cutter Head Speed (rpm)	1530/1640
Machine Dimensions: (mm) Length Width Height Weight (kg)	 1220 511 900 145
Working width of cutters (mm)	275
Working distance from walls (mm)	65
Engine/Motor speed (rpm)	3000

RECORD OF NOISE AND VIBRATION ASSESSMENT

Manufacturer:	SPE
Type:	Scarifier
Model No.	BEF275-1 Petrol
Motor:	Honda GX340 11HP
Operation :	Concrete floor surface
Inserted Tool:	TCT cutters
Running Conditions:	2910 rpm
HAV Note:	Operc

HAND-ARM VIBRATION

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

Measurement Position	Acceleration (m/s^2) Vector Sum
Handle	5.3

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**	
69.2	87.6	93.1	97.1	102.2	100.3	96.9	89.9	**106.0**

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**		
54	71.2	76.3	85.3	89.7	87.7	83.1	75.9	**92.3**	**107.3**