

DFG250-1
SINGLE SPEED
DIAMOND FLOOR
GRINDER
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





DFG250-1
Operating Manual

DFG 250 Single Speed Diamond Floor Grinder

OPERATING MANUAL

This manual covers to the best of our knowledge the operation and maintenance of the **DFG 250-1** diamond floor grinder. Before operation of the equipment the manual should be read and understood by the operator. The safety regulations must be followed at all times. 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 these instructions 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 and failure to inspect the machine for damage or other faults that may influence the operation prior to starting work.

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STARTING WORK

BEFORE STARTING WORK CHECK SET UP OF THE MACHINE AND GRINDING PLATE HAS BEEN COMPLETED.

1. Ensure the power supply is correct.
DFG 250 - this should be a 415v 16 amp supply from the mains or generated with a minimum supply of 10 kva on 50 cycles
2. DFG 250 - the plug on the machine is a 5 pin 415v 16 amp red plug
3. Loosen set screws securing front and rear dust skirt enclosures to allow free movement up and down.
4. Lower the machine on to the grinding plate by releasing foot pedal.
5. It is vital at this stage that the machine should be set to grind the floor along the same plane. Incorrect set up will result in uneven diamond wear, deep grinding marks, vibration and damage to the flexible coupling that support the heads.
6. Set the machine down on the floor to be prepared and check the level of the floor with a spirit level. Place the spirit level on the front side of the machine and adjust the rear wheel height using the black hand wheel until the level of the machine is the same as the level of the floor. Then lock the hand wheel.
7. Set the dust skirts to the correct height approx 0.5mm clear of the floor and tighten up screws.
8. Lift the floor grinder up using foot pedal ensuring the grinding head is clear of the floor and fit either a dust extraction hose or a water supply. Examine grinding plate for any damage and check allen screw bolts are tight. See page 2, Changing grinding plate for torque setting

The floor grinder is now ready to commence work.

9. Connect the machine to the power supply and turn the red isolator switch to the ON position. Red light will illuminate on the electric panel. Ensure foot pedal is locked into the raise position.
 10. Start motor up by pressing the green button on electric panel.
 11. Lower the machine on to the floor using foot pedal whilst moving the machine either forwards or backwards. Try to grind in a figure of eight pattern for best finish
- NEVER ALLOW THE MACHINE TO REMAIN STATIONARY WHILST THE GRINDING PLATE IS ROTATING AND IN CONTACT WITH THE SURFACE**
12. When lifting machine to cease grinding the head should be lifted off the floor slowly with the dust extraction still operating in order to allow the dust to clear from the work area
 13. If the operator has any difficulty whilst operating the machine press the red stop button located on electrical panel.



CHANGING GRINDING PLATE

1. Lift the DFG off the floor to its maximum height using foot pedal.
2. Disconnect from power supply.
3. Tilt the machine backwards on to its handles. The machine must be secured and supported.
4. Make sure the grinding plate is cool to the touch.
5. Use an Allen key to undo the countersunk screws securing the diamond plate to the flexible couplings.
6. Remove grinding plate and replace.
7. Ensure grinding plate is seated to coupling correctly prior to tightening counter sunk screws diagonally to a maximum torque of 75Nm
8. Lower the machine back to an upright position.
9. Reset dust skirt and level machine – See starting work page 1
10. Reconnect to the power supply

CHECK FOR CORRECT WEAR RATE AFTER QUARTER OF AN HOUR AND AGAIN AT HALF AN HOUR INTERVAL. - THIS WILL GIVE AN IDEA OF WEAR RATE

SEE ACCESSORIES SHEET FOR AVAILABLE PLATES – Pages 5-6

11. Adjust machine level as the plate reduces through wear.

WET GRINDING

When grinding wet a hose is connected to the water tap on the side of the machine where an adjustment handle for the water supply is mounted. The water is ejected forward under the grinding plate.

When grinding wet the machine should still not be allowed to stop moving whilst the plates are in contact with the surface.

WARNING: Do not allow water to make contact with electrical components

WEIGHT

It is recommended that the weight is removed at the commencement of grinding and ONLY ADDED if an increased pressure is needed on the surface.



MAINTENANCE

AFTER USE:

- Clean the machine to remove all build up of dust and surface residue. If using a hose pipe or pressure washer take care that water is not directed onto electrical components and switches.

(Note: Motors and switches are not waterproof)

- Ensure the height adjustment thread is cleaned and then lightly oiled. Periodically it should be removed and the female, threaded section cleaned out and oiled regularly to maintain a light, smooth height adjustment.

- The drive belts will give a long and trouble free operating life if basic procedures are followed. The drive belts are tensioned by sliding the motor along the adjusting slots. It is important that the drive belts are not over tensioned. Serious damage could be caused to the drive shaft, drive shaft bearings and drive motor if the belts are excessively tight.

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

- The flexible drive couplings that support the grinding heads should be checked on a weekly basis. The coupling should be firm without excessive movement

- Any excess vibration due to uneven head wear should result in the grinding head being changed to eliminate damage to couplings and bearing assembly support units.



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SAFETY

Only trained operatives should be allowed to work the **DFG250-1** floor grinder.

Note: It is possible that the noise level produced by the Diamond Floor Grinder could exceed 90dbA. Appropriate PPE must be worn and the equipment must be used in line with guidelines laid down by the Health & Safety Executive.

Never leave the DFG250 unattended whilst in use. Always stop the motor and lift the grinding head prior to leaving the machine.





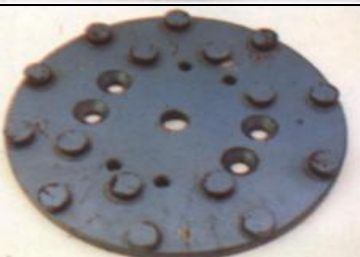
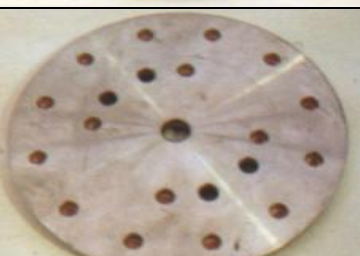
Always ensure that all power leads and hoses are disconnected before attempting to service the machine. Never tip the machine backwards until the grinding plate has stopped rotating and the machine has been isolated at main supply.

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 15. 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.

Note:

- 1) Never operate the DFG250-1 without belt guard fitted.**
- 2) Never operate the DFG250-1 outdoors in wet conditions as the electrical components are not waterproof.**

ACCESSORIES

	Part No	Description	Application
	6401	Economy grade 250mm 10 segment (blue)	Economical removal of most types of adhesives and surface contaminants. Excellent for using on rougher surfaces as a first grind. Can be used wet or dry.
	6402	Super Aggressive 250mm 10 segment (red)	Designed for the removal of S/L and epoxy coatings in a commercially viable way. Can be used for the majority of aggressive grinding applications and will give extended wear on heads. Can be used wet or dry.
	6403	Standard Grade 250mm 16 segment (blue)	Removal and grinding of most types of concrete floor in preparing for follow on coatings. General all purpose head for most grinding works. Can be used wet or dry.
	6404	High performance 250mm 20 segment (blue)	Fast removal and grinding of most types of plain and painted concrete floors. Will key floors for coatings, removal of high spots, lip edges etc. Suitable for first and second stage grinding to terrazzo and aggregated seamless floors. Can be used wet or dry.
	6405	Button head 250mm 16 segment (blue)	For the removal of the thicker adhesive on sand / cement screed whether open or closed. Will cope with large volume areas in a cost effective manner. To be used with softer elastomeric and thin film coatings.
	6408	Polymer diamond backing plate	Backing drive plate for the polymer diamond system. Takes 16 polymer button inserts.

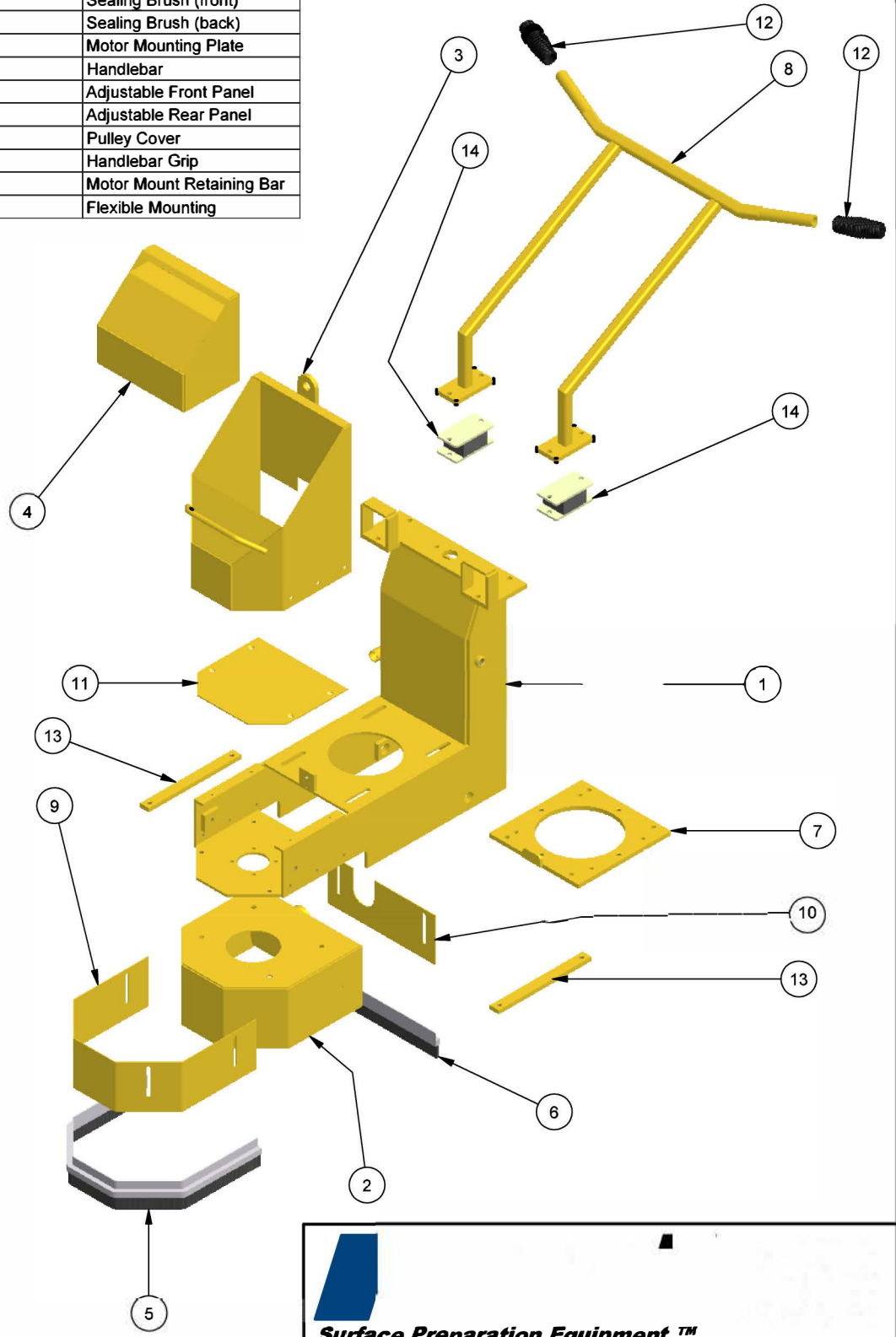
	<p>6420 6409 6410 6411 6412 6413 6414</p>	<p>GREEN ULTRA COARSE 16no BLACK EXTRA COARSE 16no BROWN COARSE 16no RED MEDIUM 16no YELLOW FINE 16no WHITE EXTRA FINE 16no BLUE ULTRA FINE 16no</p>	<p>Polymer diamond system to be used only on the DFG 500 twin speed (slow speed option) for second stage grinding and polishing of terrazzo, stone and marble etc. The buttons fit securely into the aluminium backing plate. Wet use only.</p>
	<p>6422 6423</p>	<p>COARSE STEEL POLYMER 16No MEDIUM STEEL POLYMER 16No</p>	<p>Steel polymer diamond system to be used on DFG 500 twin speed (slow speed option). For second stage grinding and finishing of cementitious, polyurethane and epoxy based terrazzo, terrazzo tiles and concrete flooring. Provides rapid action and long life. Wet use only.</p>
	<p>6403C</p>	<p>Fine grit 250mm 16 segment (purple)</p>	<p>Finishing and polishing of cementitious polyurathane, epoxy based terrazzo, terrazzo tiles and decorative aggregated concrete flooring. Can be used wet or dry.</p>
	<p>6415</p>	<p>Carborundum grinding and wire brush block holder drive plate.</p>	<p>Drive plate for the carborundum grinding blocks and wire brush blocks.</p>
	<p>6416 6417 6418</p>	<p>Carborundum grinding blocks Fine Medium Coarse</p>	<p>For economical polishing and grinding removal of high spots, over watered slabs, rain damaged slabs, lip edges etc.</p>
	<p>6419 6421</p>	<p>16 gauge round wire block Spring steel block</p>	<p>General scarfying, removal of rubber carpet backing, grease and oil build-up without damage to substrate.</p>




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Spare Parts Breakdown

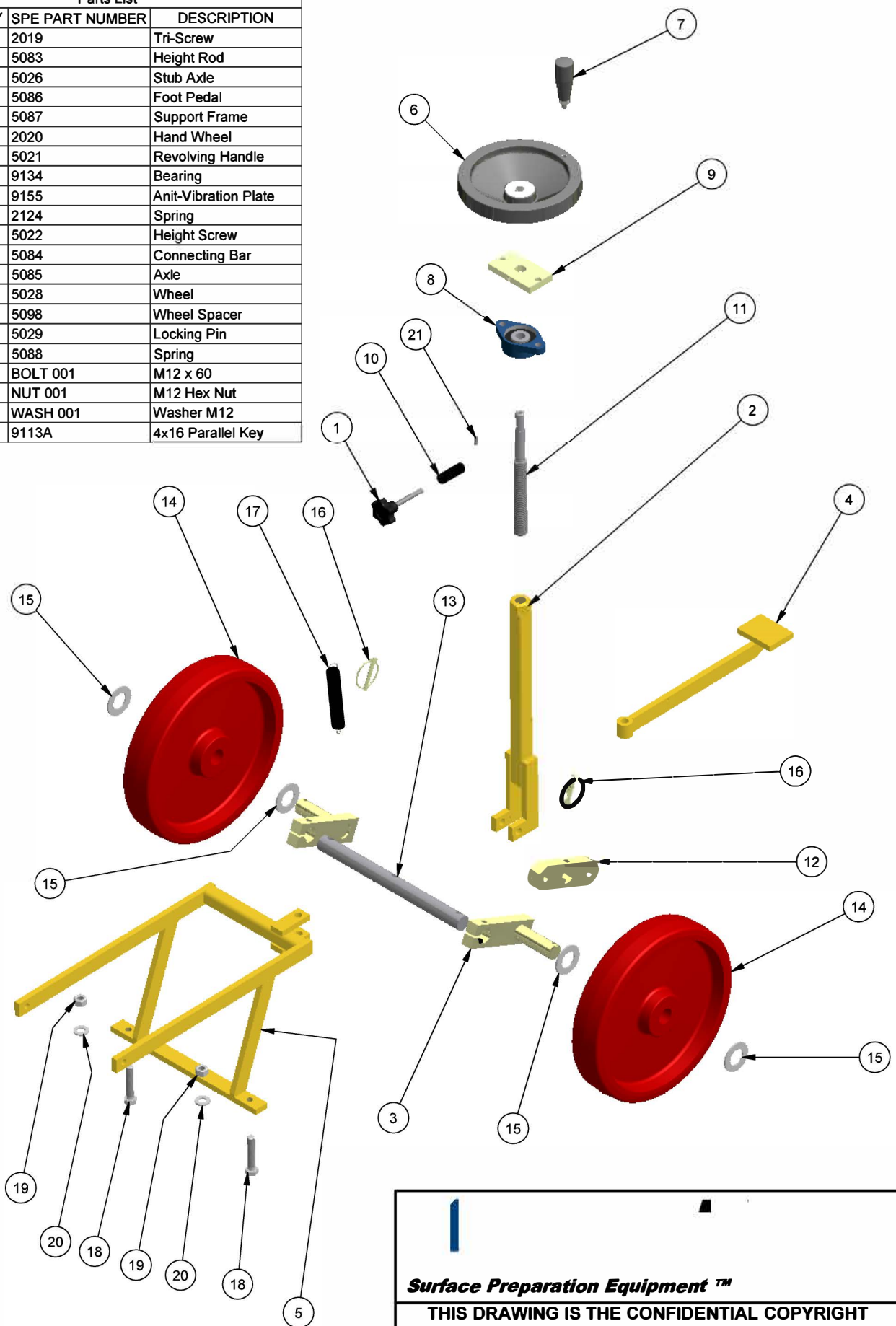
Parts List			
ITEM	QTY	SPE PART NUMBER	DESCRIPTION
1	1	5070	Main Chassis
2	1	5071	Front Chassis
3	1	5074	Weight box
4	1	5075	Weight
5	1	5076	Sealing Brush (front)
6	1	5077	Sealing Brush (back)
7	1	5078	Motor Mounting Plate
8	1	5080	Handlebar
9	1	5072	Adjustable Front Panel
10	1	5073	Adjustable Rear Panel
11	1	5079	Pulley Cover
12	2	9104	Handlebar Grip
13	2	5093	Motor Mount Retaining Bar
14	2	5017	Flexible Mounting




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 Surface Preparation Equipment™		
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Drawn	TITLE Body Components	
D.G.A.		
Checked	Drawing No.	MACHINE
P.A.	DFG-250_Bdy-01	DFG 250-1

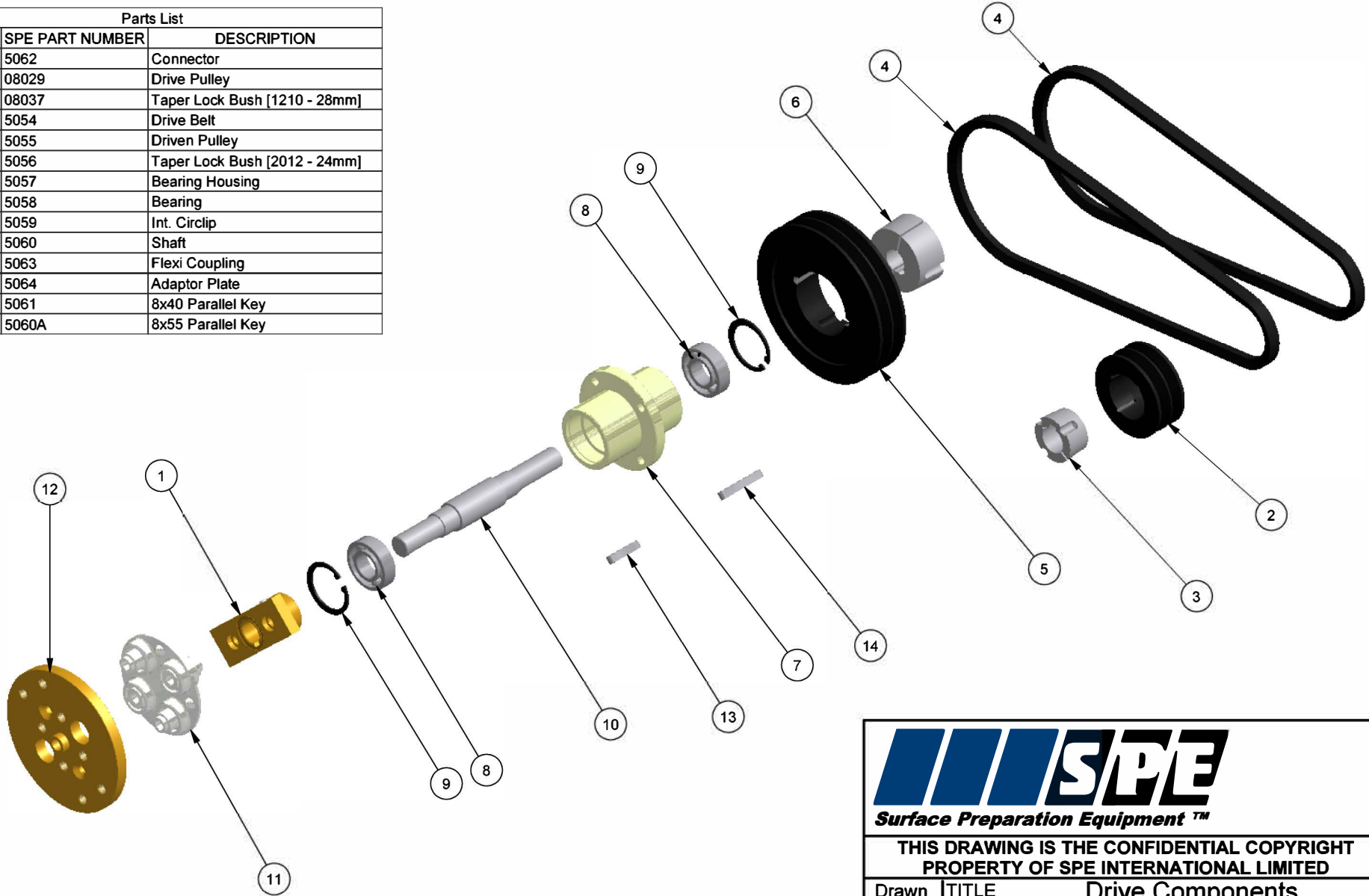
Parts List			
ITEM	QTY	SPE PART NUMBER	DESCRIPTION
1	1	2019	Tri-Screw
2	1	5083	Height Rod
3	2	5026	Stub Axle
4	1	5086	Foot Pedal
5	1	5087	Support Frame
6	1	2020	Hand Wheel
7	1	5021	Revolving Handle
8	1	9134	Bearing
9	1	9155	Anit-Vibration Plate
10	1	2124	Spring
11	1	5022	Height Screw
12	1	5084	Connecting Bar
13	1	5085	Axle
14	2	5028	Wheel
15	4	5098	Wheel Spacer
16	2	5029	Locking Pin
17	1	5088	Spring
18	2	BOLT 001	M12 x 60
19	2	NUT 001	M12 Hex Nut
20	2	WASH 001	Washer M12
21	1	9113A	4x16 Parallel Key



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Drawn	TITLE Height Adjusting Components	
D.G.A.		
Checked	Drawing No.	MACHINE
P.A.	DFG-250_Hgt-01	DFG 250-1

Parts List			
ITEM	QTY	SPE PART NUMBER	DESCRIPTION
1	1	5062	Connector
2	1	08029	Drive Pulley
3	1	08037	Taper Lock Bush [1210 - 28mm]
4	2	5054	Drive Belt
5	1	5055	Driven Pulley
6	1	5056	Taper Lock Bush [2012 - 24mm]
7	1	5057	Bearing Housing
8	2	5058	Bearing
9	2	5059	Int. Circlip
10	1	5060	Shaft
11	1	5063	Flexi Coupling
12	1	5064	Adaptor Plate
13	1	5061	8x40 Parallel Key
14	1	5060A	8x55 Parallel Key

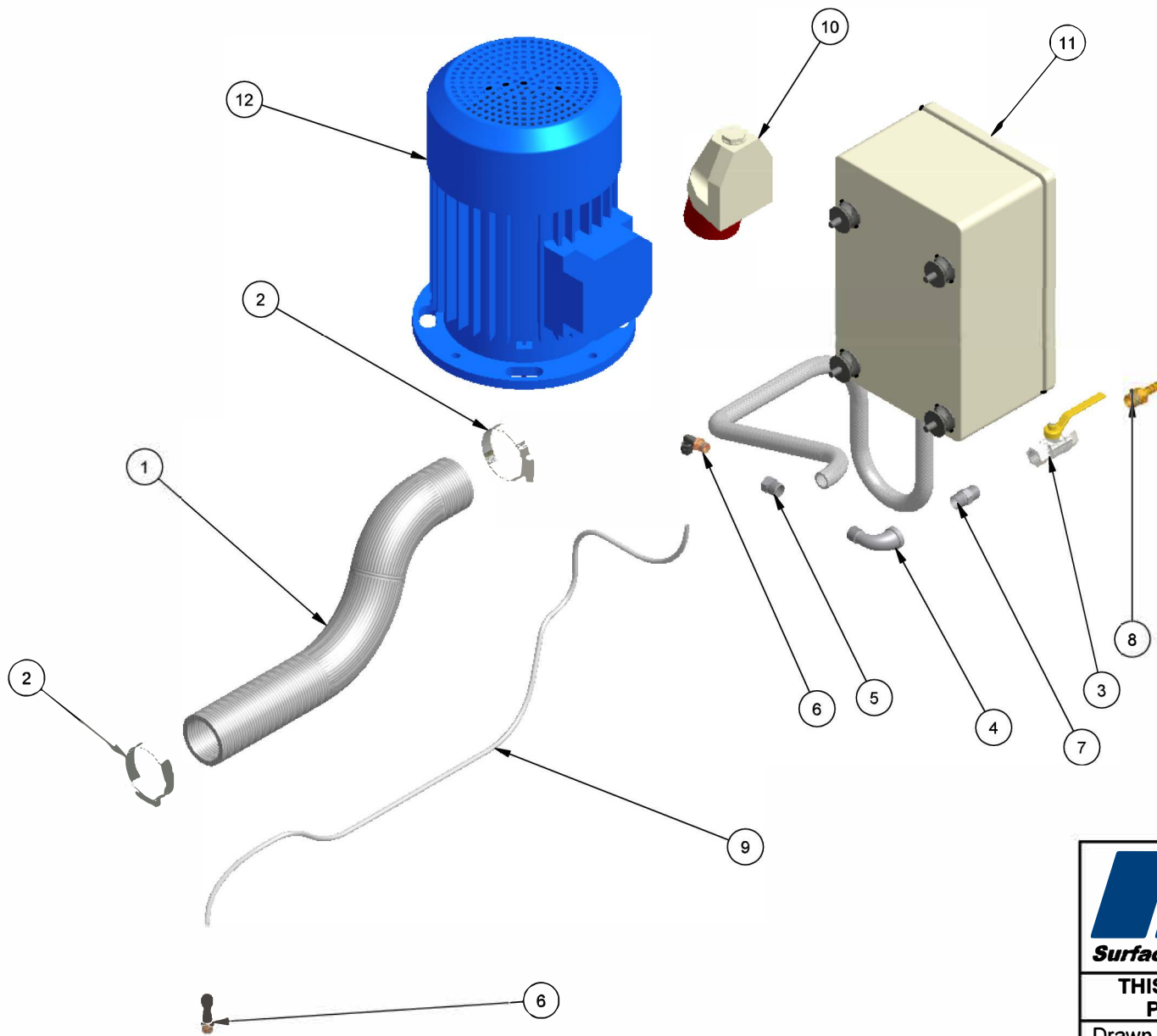


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Drawn	TITLE	Drive Components
D.G.A.		
Checked	Drawing No.	MACHINE
P.A.	DFG-250_Drv-01	DFG 250-1

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Parts List			
ITEM	QTY	SPE PART NUMBER	DESCRIPTION
1	1	5009	Vac Hose
2	2	HC-60	Hose Clip
3	1	5011	Ball Valve
4	1	ADAPT 054	M-F Elbow
5	1	ADAPT 056	Reducing Bush
6	2	10078	1/4" Connector
7	1	ADAPT 051	3/8" Hexagonal Nipple
8	1	5100	3/8" Hose Tail
9	1	5015	Semi Rigid Pipe
10	1	SP610	Appliance Plug
11	1	5082B	Electrical Panel
12	1	5051	Drive Motor

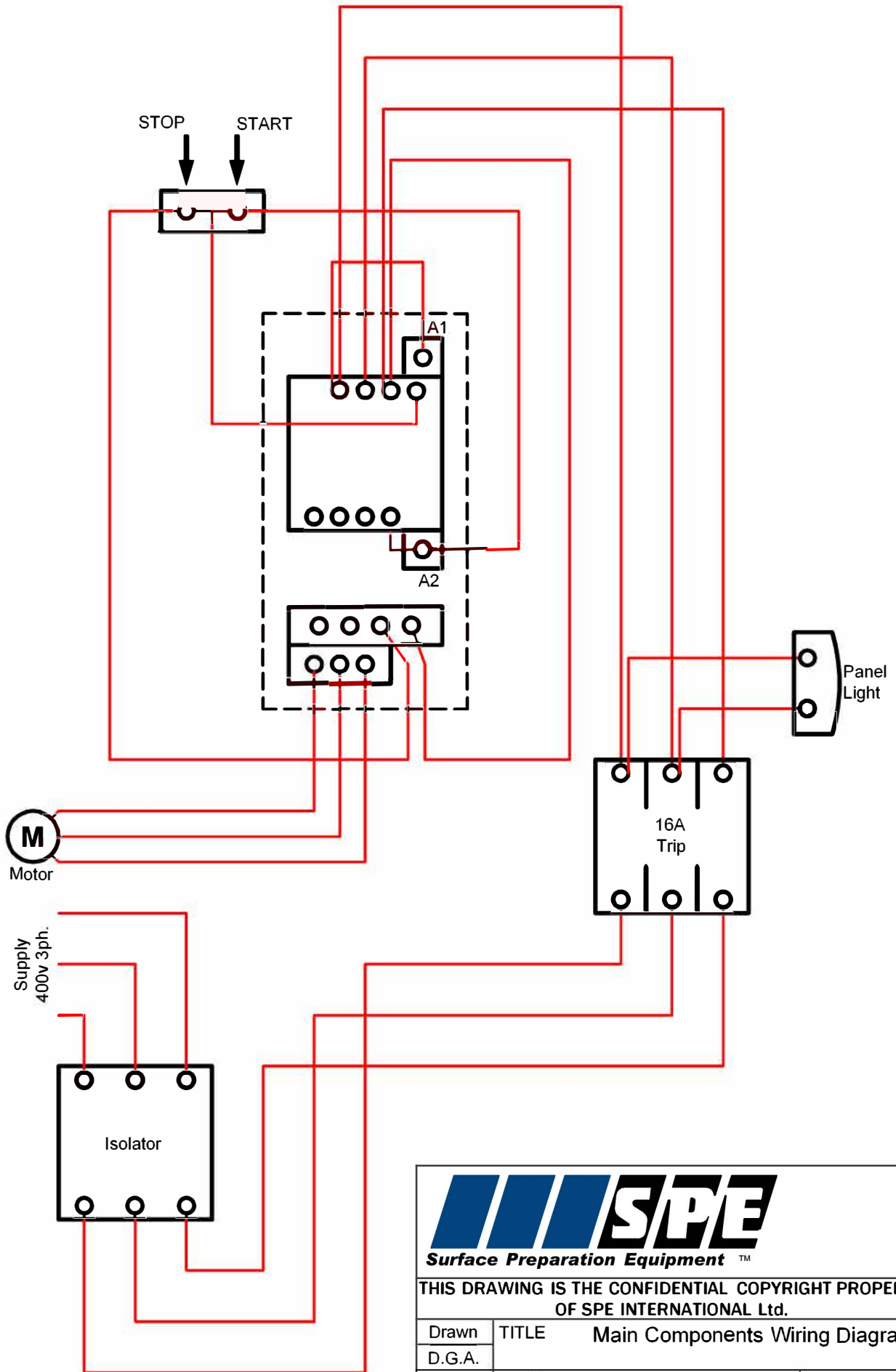


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Drawn	TITLE Elect., Vac. & Water Components	
D.G.A.		
Checked	Drawing No.	MACHINE
P.A.	DFG-250_EVW-01	DFG 250-1

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Drawn	TITLE Main Components Wiring Diagram	
D.G.A.		
Checked	Drawing No.	Machine
J.J.	DFG-250_Elec-01	DFG 250-1



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DFG250 SINGLE SPEED ELECTRICAL COMPONENTS

QTY	DESCRIPTION	SPE PART NO.
1	Panel	SP58015
1	Back Plate	SP55815
1	Contactora	SPLC1D18N7
1	Start Switch	SPZB4BZ101
1	Stop Switch	SPZB4BZ102
1	Start Button	SPZB4BA3
1	Stop Button	SPZB4BS44
1	Panel Lamp	SPZB4BV5
1	Lens	SPZB4BV04
1	Overload	SPLRD16
1	Trip	SP60HD316
1	Gland	9258/200
1	Brass Bush inc. Nut	608-222
4	Rubber Mount	9245/250
1	Isolator 40Amp	SPFWA4/3C
1	16A 5Pin Surface Mtd Plug	SP610



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SPECIFICATION SHEET

Type	DFG250 Electric
Part Number	DFG250-1
Power Output	5.5 kw
Voltage	380/415
Cycles	50hz
Head Speed r.p.m.	1400
Motor Speed r.p.m.	2800
Machine Dimensions (mm)	
Length	1120
Width	670
Height	1040
Weight (kg)	160
Ballast Weight (kg)	1x20

ELECTRICAL REQUIREMENTS

Machine	Volts	Plug size	Cable Size (mm)	Max Cable Length	Transformer	Generator
DFG250-1	380/415	16 Amp 5 Pin	2.5 – 4 core	75 metres	-	10 kva



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RECORD OF NOISE AND VIBRATION ASSESSMENT

Manufacturer:	SPE
Type:	Diamond Floor Grinder
Model No.	DFG250-1 Electric
Operation :	Concrete floor surface
Inserted Tool:	1 Diamond plate
Running Conditions:	1400 rpm
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	2.29	3.54	2.37	4.84

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	
51.1	73.7	88.3	92.0	95.1	97.3	90.9	80.3	100.9

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		
39.1	57.7	74.6	79.2	81	79.8	75.8	67.2	86.1	101.7





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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>	DFG250-1
<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>:</i>	

<i>Distributor:</i>



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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) **DFG250 Diamond Floor Grinder**

(Model/type) **DFG250-1**

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

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



CONDITIONS OF SALE

DFG250-1 Operating Manual

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.