

# **DFG400-5 & 5DP**

## **COMPACT FLOOR GRINDER**

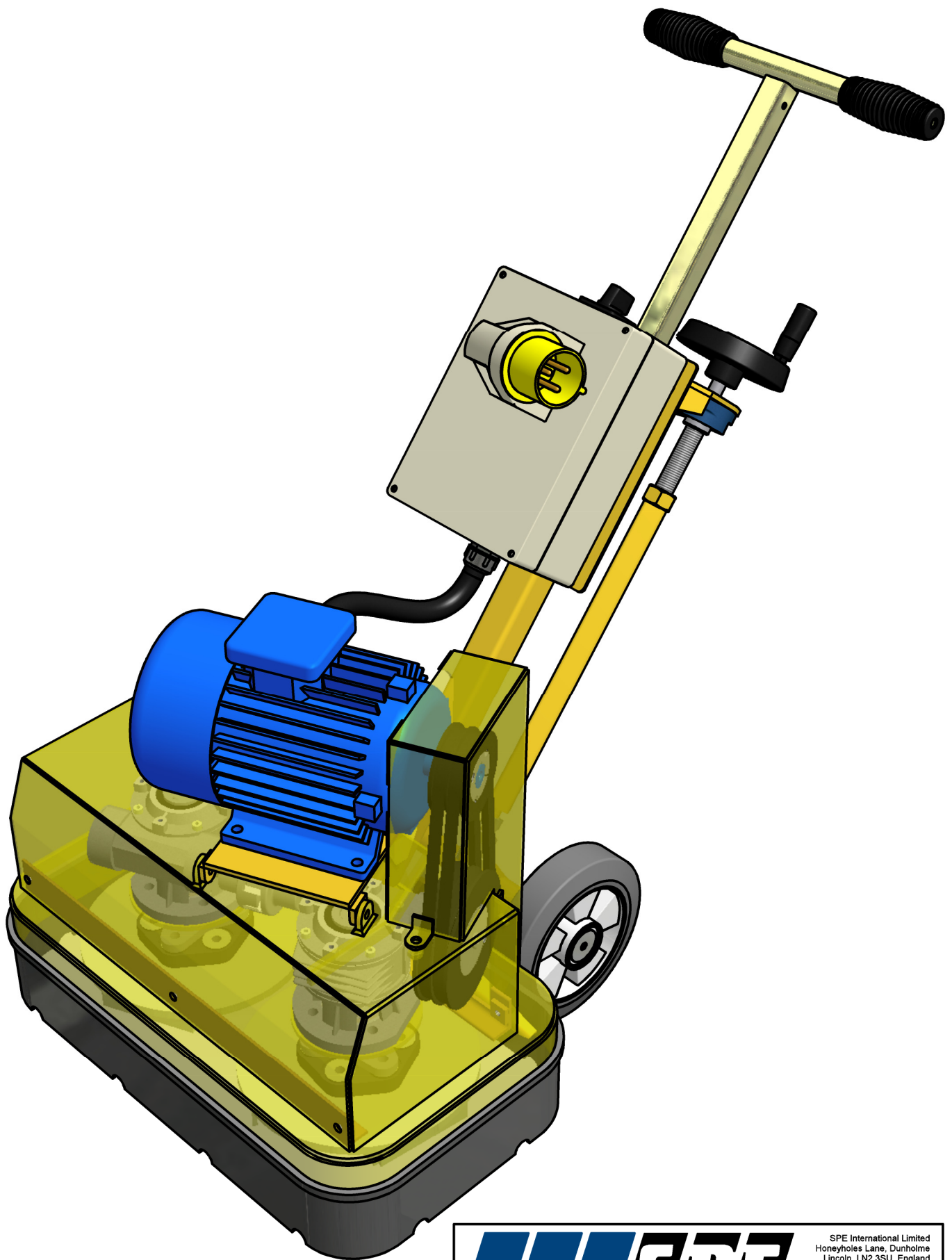
# Operating Manual

This manual is provided to persons purchasing an SPE machine and may not be reproduced in part or full without written permission of SPE International Ltd.

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





 <b>Surface Preparation Equipment™</b> <b>DFG 400-5 &amp; DFG 400-5DP</b>	<p>SPE International Limited Honeyholes Lane, Dunholme Lincoln, LN2 3SU, England Tel: +44 (0) 1673 860 709 or +44 (0) 1673 860 330 Fax: +44 (0) 1673 861 119 Web Site: <a href="http://www.spe-int.com">http://www.spe-int.com</a> E-mail: <a href="mailto:sales@spe-int.com">sales@spe-int.com</a></p>

# **DFG400**

## **COMPACT FLOOR GRINDER**

This manual covers to the best of our knowledge the operation and maintenance to the DFG400 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.

### **DFG400-5 & DFG400-5DP**

The difference between the two variations of machine is as follows:

**DFG400-5** This is supplied as standard, fitted with 2no drive plates (part no 6435L (L/H) and 6435R (R/H)) for use with carborundum grinding blocks, etc with the wedge retaining system.

**DFG400-5DP** This is supplied as standard fitted with 2no adaptor plates (part no 5064A) which will allow the use of diamond grinding plates, etc

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## STARTING WORK

Check the following prior to starting the equipment.

- Check all nuts and bolts for tightness
- Check the drive belt condition and tension
- Check the plugs and cables for damage

1. Before starting work, check that the set up of the machine and the grinding heads has been completed as described below to ensure even wear to the heads.
2. 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 head wear, vibration and damage to the flexible couplings that support the heads.
3. Raise the dust skirt by approximately 20mm and check that the grinding heads are in full contact with the floor surface.
4. With the machine set on the floor surface to be ground, check the level of the floor with a spirit level. Then place the spirit level on the side of the machine above the dust skirt. Adjust the rear wheel height using the hand wheel (part no 9135), until the level of the machine is the same as the floor level.
5. Push the dust extraction skirt down to the floor surface.
6. Connect the vacuum hose to the dust extraction port, if a dust control vacuum is being used. We recommend the SPE VAC316 3 motor vacuum for dust control.
7. Ensure that the power supply is correct for the machine (see page 2 for further details). Connect the machine to the power supply.
8. To start the machine  
 Lift the grinding heads slightly by tipping the machine onto its rear wheels.  
 Turn the switch (Part no 9254) on the electric panel, to the start position and hold for 2 - 3 seconds, then release the switch to the run '1' position.  
 Lower the machine onto the floor, moving the heads evenly across the surface to ensure a smooth ground finish.
9. To stop the machine, turn the switch on the panel to the off position.

***Never allow the machine to stop moving whilst grinding heads are in contact with the surface.***



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## **ELECTRICAL INSTRUCTIONS**

The points raised are based on many years practical experience not on text book theory. If you follow these guidelines your time on site will be productive rather than frustrating.

The DFG400 110v machine is supplied with a specifically commissioned electric motor and starter switch assembly. Each unit is fully tested and the safety overload relays have been calibrated and set according to the manufacturers specifications. In the event of the malfunction on a new machine the owner should first check that the power supply on site is suitable and adequate.

The motor ideally requires a 32 amp, 110v power supply.

To avoid voltage drop the cable must be a minimum of 4.0mm. The maximum length of cable must not exceed 30 metres.

The transformer must have a continuous rated output of at least 3kva. In practice this can mean that a 5kva transformer must be used. Manufacturers of transformers have different methods of rating their equipment.

The transformer and all cables should be fitted with 32 amp 110v plugs and sockets.

All cables should be fully uncoiled and never left wrapped around cable reels or tied in loops.

The 240v supply to the 110v transformer should be rated to at least 20 amp if supply problems are to be avoided.

If the power is to be generated, the DFG400 110v requires a minimum 10kva generator.

The motor is protected with a safety trip in the panel which will cut out the motor if it is overloaded. Should the trip be activated then you must wait for the motor to cool down isolate the power supply, open the panel and reset the trip.

If the motor repeatedly cuts out then it will be damaged. The possible causes are either an inadequate power supply, overloading of the machine, or an electrical fault.



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## **CHANGING THE GRINDING BLOCKS**

1. Disconnect from the power supply.
2. Tilt the machine backwards onto its handle. The machine must be secured and supported.
3. Drive out the wooden wedge securing the grinding block and remove the remains of the grinding block from the plate. Repeat this process for all the blocks.
4. Place a new block into the holder on the plate and hold whilst inserting a new wooden wedge into the inside edge of the block. Drive in the wooden wedge to secure the block firmly. Repeat this process for all the blocks.
5. Lower the machine back to the upright position.
6. Check machine level (see page 1) and carry out adjustments if necessary.
7. Reconnect to the power supply.

## **CHANGING THE GRINDING HEADS**

1. Disconnect from the power supply.
2. Tilt the machine backwards on to its handle. The machine must be secured and supported.
3. Make sure the grinding heads are cool to the touch.
4. Use an allen key to undo the countersunk screws securing the Grinding Heads to the adaptor plates.
5. Remove the grinding head and replace.
6. Ensure the grinding heads are seated to the adaptor plates correctly prior to tightening the countersunk screws diagonally.
7. Lower the machine back to the upright position.
8. Check machine level (see page 1) and carry out adjustments if necessary.
9. Reconnect to the power supply.

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



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## **MAINTENANCE**

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

### **AFTER USE:**

- Clean the machine to remove all build up of dust and surface residue. If using a hose pipe or pressure water 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 adjusting the motor mounting plate. It is important that the drive belts are not over tensioned. Serious damage could be caused to the gearboxes and/or 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.
- Any excess vibration due to uneven head wear should result in the heads being changed to eliminate damage to couplings.





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## **BASIC MAINTENANCE CHECKLIST**

### **DAILY:**

- Check all nuts and bolts for tightness.
- Check the condition of the grinding heads
- Check the belt tension and condition
- Check the plugs and cables

### **WEEKLY:**

- All of the above with the following.
- Grease all moving parts on the height adjustment mechanism
- Check the flexible drive couplings
- Check the support wheels and grease

### **MONTHLY:**

- All of the above with the following,
- Strip down fully the winding mechanism
- Clean all threads and re grease
- Check gearbox flexi-coupling
- Check gearbox oil seals



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## **SAFETY**

Only trained operatives should be allowed to work the DFG400 floor grinder.

All operatives should wear ear defenders, goggles and an effective dust mask. Note: It is possible that the noise level produced by the DFG400 could exceed 90dbA. Personal noise protection must be worn and the equipment must be used in line with guidelines laid down by the Health & Safety Executive.

Never leave the DFG400 unattended whilst in use. Always stop the motor prior to leaving the machine.

Always ensure that all power leads are disconnected before attempting to service the machine. The service of electrical components should be carried out by authorised personnel. Never tip the machine completely backwards until the grinding plates have stopped rotating, just raise slightly.

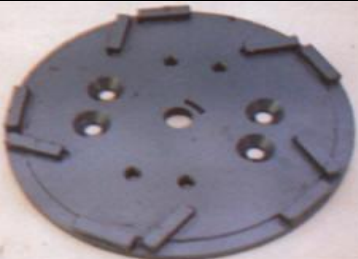





Vibration will occur at various levels dependent on the attachments and work being completed. However SPE have assessments conducted under test conditions detailed in the operating manual (see page 16). It is recommended that additional tests are taken on site to provide the operator with accurate information on using the equipment within the guidelines laid down by the Health & Safety Executive.

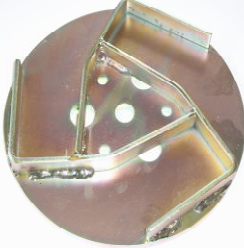

Never operate the machine without a dust extraction skirt or with the dust extraction skirt raised.

**NOTE:**

- 1. NEVER OPERATE THE COMPACT FLOOR GRINDER WITHOUT BELT GUARDS FITTED**
- 2. NEVER OPERATE THE COMPACT FLOOR GRINDER IN WET CONDITIONS AS ELECTRICAL COMPONENTS ARE NOT WATERPROOF**

## ACCESSORIES

	Part No	Description	Application
	<b>6401</b>	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.
	<b>6402</b>	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.
	<b>6403</b>	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.
	<b>6404</b>	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.
	<b>6405</b>	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.
	<b>6403C</b>	Fine grit 250mm 16 segment (purple)	Finishing and polishing of cementitious polyurethane, epoxy based terrazzo, terrazzo tiles and decorative aggregated concrete flooring.

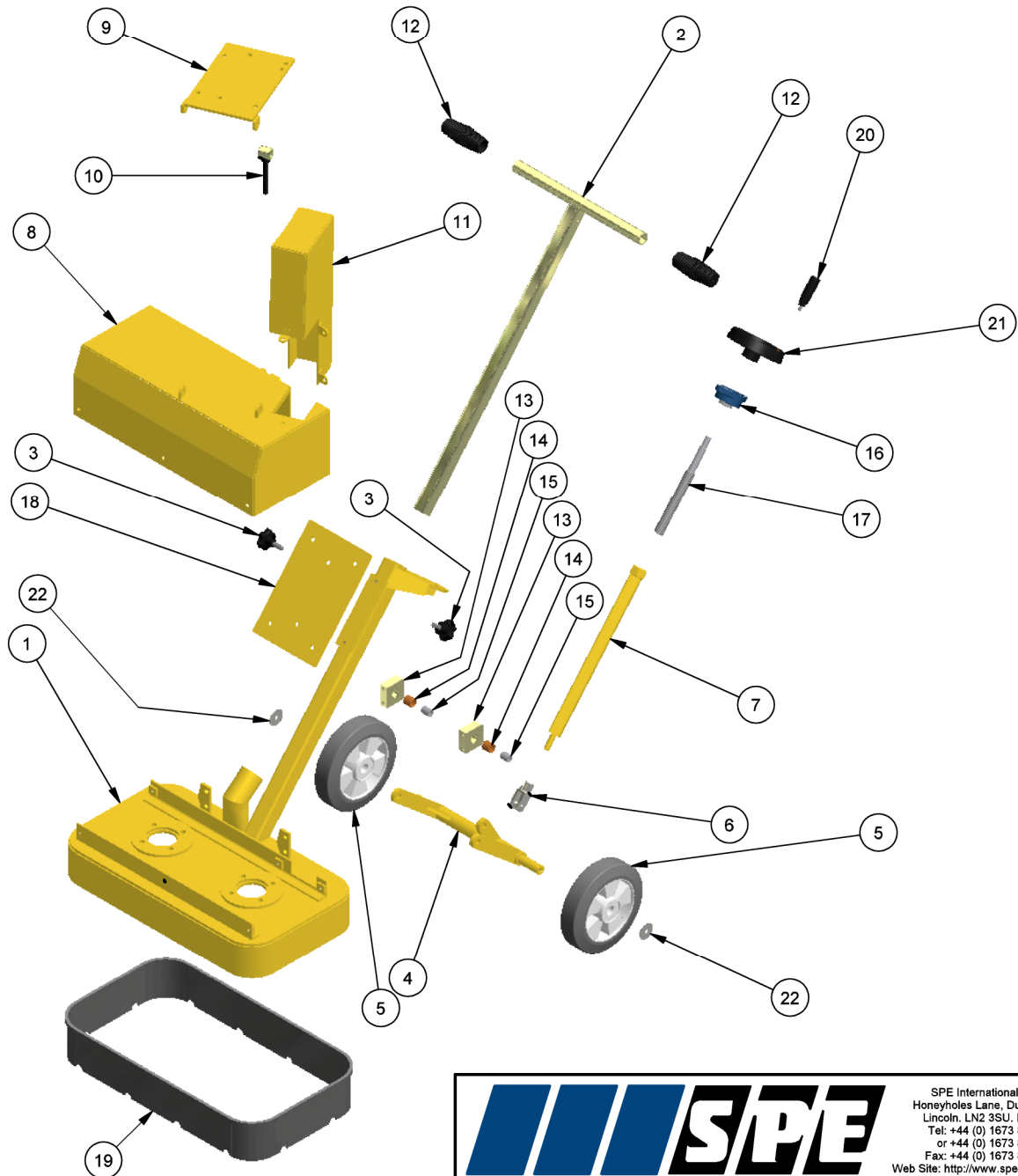
	<b>6435L</b>	Carborundum grinding block holder drive plate (L/H)	Drive plate for the carborundum grinding blocks
	<b>6435R</b>	Carborundum grinding block holder drive plate (R/H)	Drive plate for the carborundum grinding blocks
	<b>6416 6417 6418</b>	Carborundum grinding blocks Fine Medium Coarse	For economical polishing and grinding removal of high spots, over watered slabs, rain damaged slabs, lip edges etc.
	<b>6436</b>	Standard grade Diamond block.	Diamond grinding block to be used on DFG400. Removal of old coatings and grinding most types of concrete floor. Secured using wedge
	<b>P53534</b>	Wooden wedge	To secure grinding blocks into DFG400 floor grinder
	<b>5064A</b>	Adaptor plate	Drive adaptor plate for use of diamond plates, etc.



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# Spare Parts Breakdown

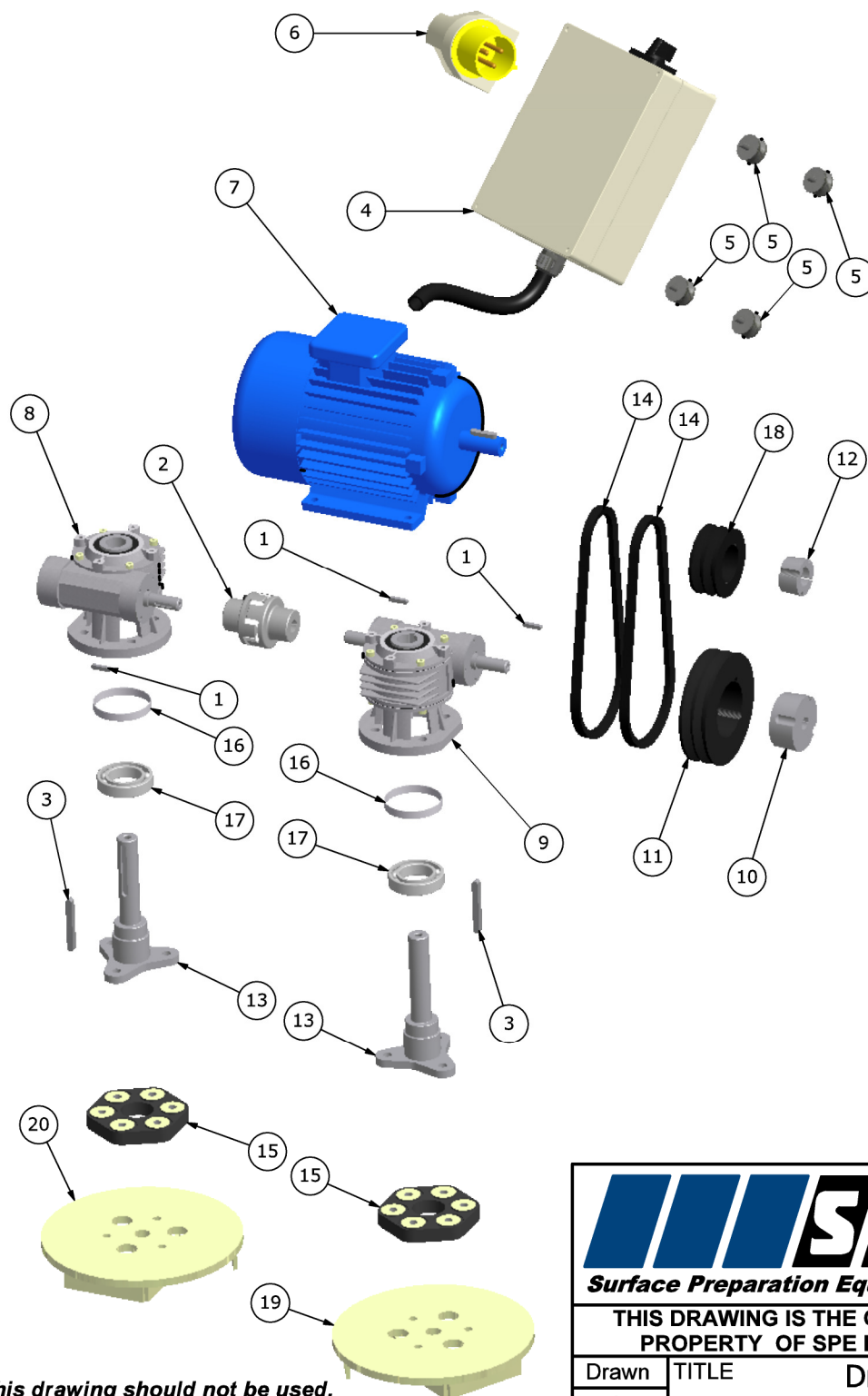
Parts List				Parts List			
ITEM	QTY	SPE PART NUMBER	DESCRIPTION	ITEM	QTY	SPE PART NUMBER	DESCRIPTION
1	1	5200	Chassis	12	2	9104	Handlebar Grip
2	1	C319	Handle	13	2	2011	Swing Arm Support
3	2	C321	Threaded Knob (M10)	14	2	2010	Oilite Bush
4	1	5204	Axle Assembly	15	2	2009	Pivot Sleeve
5	2	2013	Rear Wheel	16	1	9134	Flange Bearing
6	1	9122	Clevis Assembly	17	1	5240	Height Screw
7	1	5205	Height Tube	18	1	5215	Electric Panel Mounting Plate
8	1	5201	Gearbox Cover	19	1	5203	Dust Skirt (Urethane)
9	1	5217	Motor/Engine Mounting PLate	20	1	9136	Knob
10	1	7097	Mounting Plate Adjuster	21	1	9135	Hand Wheel
11	2	5202	Belt Guard	22	2	WASH001	M8x40 Repair Washer




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Drawn	TITLE	Body Components	
D.G.A.			
Checked	Drawing No.		
P.A.	DFG-400_Bdy-05	MACHINE	DFG 400-5 & 5DP

Parts List				Parts List			
ITEM	QTY	SPE PART NUMBER	DESCRIPTION	ITEM	QTY	SPE PART NUMBER	DESCRIPTION
1	3	5208	5x25 Parallel Key	11	1	5211A	Driven Pulley
2	1	5209A	G/Box Flexi Coupling	12	1	5219	Taper Lock Bush [1210 - 24mm]
3	2	7059A	8x70 Parallel Key	13	2	5210D	Flanged Drive Shaft
4	1	9143	Electrical Panel Assembly	14	2	5213	Drive Belt
5	4	9245	Flexible Mounts	15	2	5226	Flexi Coupling
6	1	SP630-304	Surface Mounted Plug	16	2	5236	Bearing Sleeve
7	1	9142	Electric Motor	17	2	5235	Bearing
8	1	5207C	Gearbox RH (single shaft)	18	1	08029	Drive Pulley
9	1	5206C	Gearbox LH (twin shaft)	19	1	6435L	L/H Block Holder Plate
10	1	5212C	Taper Lock Bush [2012- 16mm]	20	1	6435R	R/H Block Holder Plate

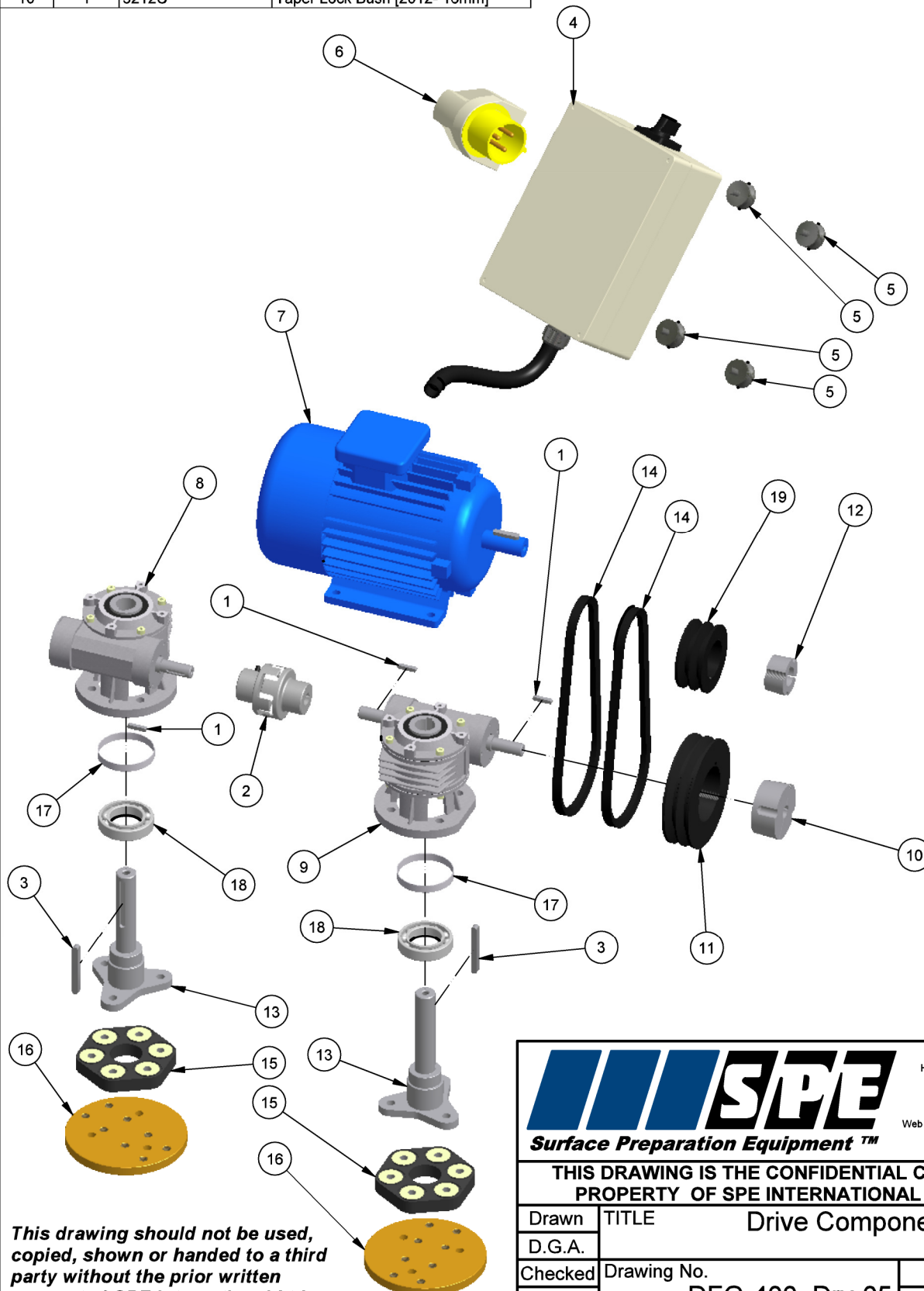


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Drawn	TITLE Drive Components		
D.G.A.			
Checked	Drawing No. DFG-400 Drv-15		MACHINE
R.C.			DFG 400-5



Parts List				Parts List			
ITEM	QTY	SPE PART NUMBER	DESCRIPTION	ITEM	QTY	SPE PART NUMBER	DESCRIPTION
1	3	5208	5x25 Parallel Key	11	1	5211A	Driven Pulley
2	1	5209A	G/Box Flexi Coupling	12	1	5219	Taper Lock Bush [1210 - 24mm]
3	2	7059A	8x70 Parallel Key	13	2	5210D	Flanged Drive Shaft
4	1	9143A	Electrical Panel Assembly	14	2	5213	Drive Belt
5	4	9245	Flexible Mounts	15	2	5226	Flexi Coupling
6	1	SP 630-304	Surface Mounted Plug	16	2	5064A	Adaptor Plate
7	1	9142	Electric Motor	17	2	5236	Bearing Sleeve
8	1	5207C	Gearbox RH (single shaft)	18	2	5235	Bearing
9	1	5206C	Gearbox LH (twin shaft)	19	1	08029	Drive Pulley
10	1	5212C	Taper Lock Bush [2012- 16mm]				

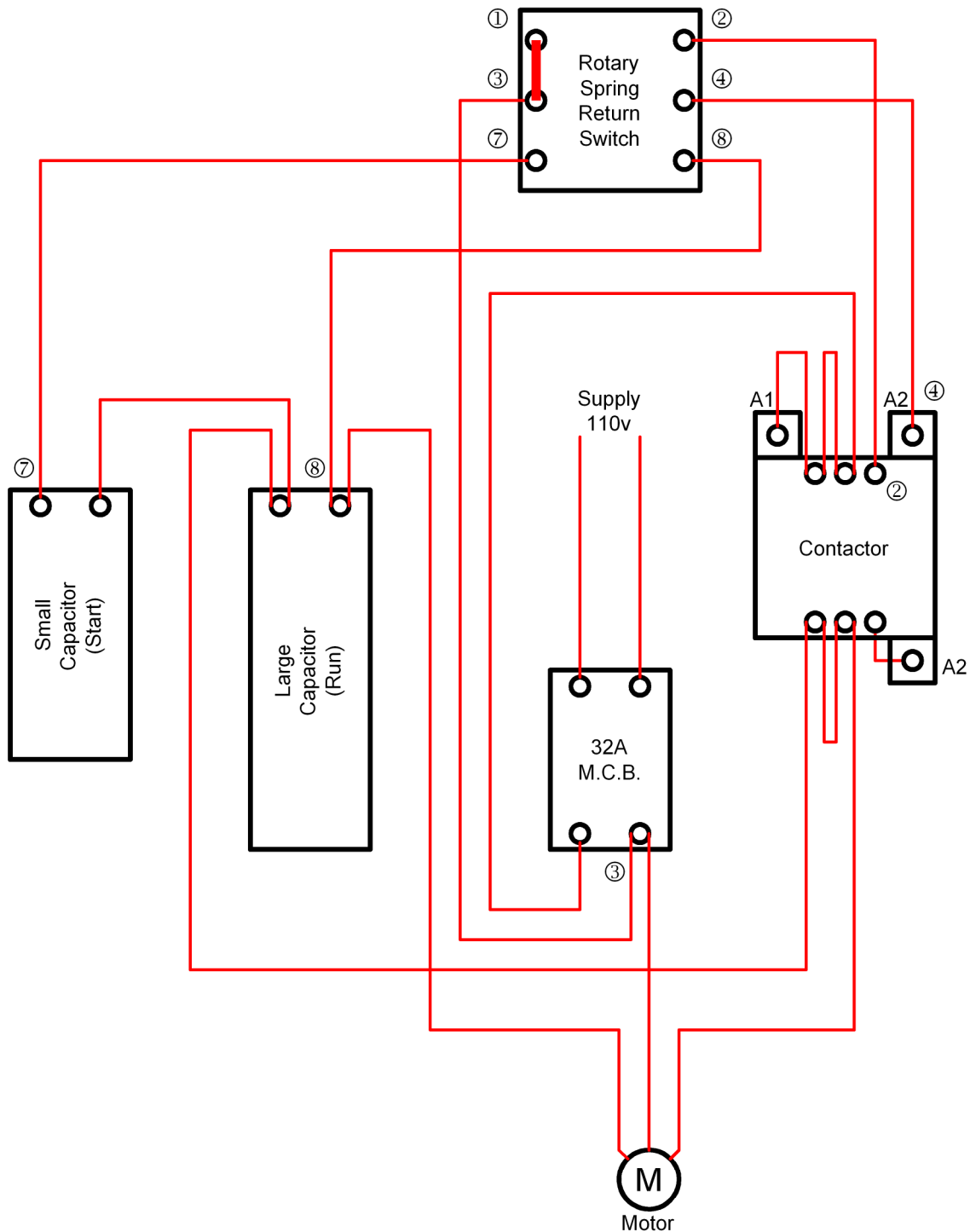


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Drawn	TITLE		Drive Components
D.G.A.			
Checked	Drawing No.	MACHINE	
P.A.	DFG-400_Drv-05	DFG 400-5DP	



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Drawn	TITLE		
D.G.A.	Wiring Diagram		
Checked	Drawing No.	DFG-400_Elec-05	Machine
J.J.			DFG 400-5



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## ELECTRICAL COMPONENTS

QTY	DESCRIPTION	SPE PART NO.
1	Panel box	SP2518-11
1	Hinge kit	SP190005
1	Back plate	9249
1	Rotary switch	9254
1	Contactor	9255
1	Contact breaker	9256
1	Plug retaining plate	9250
1	Start capacitor	156MF@240V
1	Run capacitor	70MF@450V
2	Conduit gland	9258
1	Conduit (MTR)	9259



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## SPECIFICATION SHEET

Specifications	
Type	Electric 1 Phase
Part Number	DFG400-5 DFG400-5DP
Power Output	2.2kw
Voltage	110v
Cycles	50hz
Head Speed r.p.m.	245
Engine motor speed r.p.m.	2800
Machine Dimensions (mm)	
Length	820
Width	560
Height	700
Weight (kg)	86
Ballast Weight (kg)	-

### Electrical Requirements

Volts	Plug Size	Cable Size (mm)	Norm Cable Length	Transformer	Generator
110v	32 Amp 3 Pin	4.0 - 3 Core	30 metres	5 kva	10 kva



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## RECORD OF NOISE AND VIBRATION ASSESSMENT

Manufacturer:	SPE
Type:	Compact Floor Grinder
Model No.	DFG400-5 Electric
Operation :	Concrete floor surface
Inserted Tool:	Carborundum blocks
HAV Note:	Operc

## HAND-ARM VIBRATION

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

Measurement Position	Acceleration ( $m/s^2$ )
	Vector Sum
Handle	1.2

## 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	
50.8	72.3	78.8	88.2	85.5	98.5	94.3	83.5	100.4

### 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		
34.4	58.4	62.7	76.2	73.6	82.5	75.8	63.9	83.8	101.3



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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>	<b>As despatch date</b>
<i>Model:</i>	<b>DFG400</b>
<i>Serial no:</i>	
<i>Customer name:</i>	
<i>Customer Address:</i>	

<i>Manufacturer:</i>	<b>SPE International Ltd</b>
	<b>Honeyholes Lane</b>
	<b>Dunholme</b>
	<b>Lincoln</b>
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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)                      DFG400 Compact Floor Grinder

(Model/type)                              DFG400

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. Jackson'.

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



## **CONDITIONS OF SALE**

### **DFG400-5 & 5DP COMPACT FLOOR GRINDER 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.