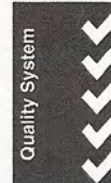




PRODUCT MANUAL

Brobo Waldown (Aust) Pty. Ltd.

A.C.N. 098 264 316
A.B.N. 42 098 264 316



**Quality
Endorsed
Company**

ISO 9001 Lic 10292
Standards Australia

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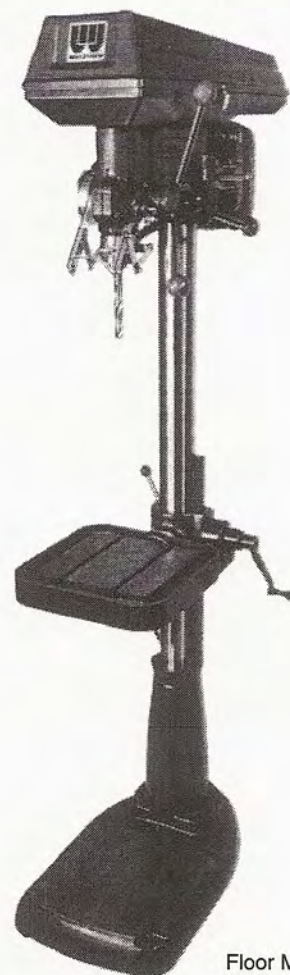
Precision Drilling Machines

8SN SERIES
13 mm drill capacity



Bench Model

2M/3M SERIES
22/32 mm drill capacity



Floor Model



YOUR BROBO WALDOWN DISTRIBUTOR IS:

- Precision Drilling Machines • Tapping Machines • Multi Head Drills
- Tool Grinders • Tool Post Grinders • Machine Vices
- Special Production Equipment • Accessories • Rivetting Machines
- Pedestal Grinders • Metal Cutting Saws • Linishers

OPERATING MANUAL FOR

BROBO WALDOWN PRECISION DRILLING MACHINES

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1.) SPECIFICATION / CAPACITY

MACHINE & MODEL	8SN and WORKMAX		SUPER 16		ELECTRONIC VARI-SPEED		RADIAL		2M	3M	2M	3M	HIGH SPEED DRILLING MACHINE
	Bench	Floor	Bench	Floor	Bench	Floor	Bench	Floor	Floor		Bench		Bench
Drilling Capacity	13 mm		16 mm		13 mm		13 mm		22 mm	32 mm	22 mm	32 mm	4 mm & 6 mm
Size of Table													
•Standard Square	241 x 275		241 x 279		241 x 275		-		-		-		-
•Optional Round	350		350		350		350		350		-		-
•Optional T-Slots	305 x 305		305 x 305		305 x 305		-		305 x 305		305 x 305		88.9 Centres
Spindle Travel	101		101		101		101		101		101		67
Column Diameter	63.5		63.5		63.5		74.6		74.6		74.6		63.5
Maximum Distance Spindle to Table	420	838	420	838	420	838	422	865	738	714	364	340	-
Maximum Distance Spindle to Base	548	1300	548	1300	548	1300	670	1416	1232	1208	548	530	200
Throat Depth	196		196		196		Min. 216	Max. 506 std. 670 std.	191		191		124
Motor kW	0.75		0.75		0.75		0.75		0.75		0.75		0.37
Spindle Speeds (Nominal)			Intermediate Drive Only										Straight Drive Only
Straight Drive	500, 1000, 2000, 4000				60 - 800 High Torque & 500 - 4500 High Speed		500, 1000 2000, 4000		480, 850, 1450, 2500		480, 850, 1450, 2500		SET A 3000 6000 9000 12000
Intermediate Drive	160, 350, 650, 700, 800, 2500, 3000, 5500		120, 220, 315, 455, 520, 740, 1060, 1500, 1650, 2320, 3340, 4700				160, 350, 650, 700, 800, 2500, 3000, 5500		150, 280, 320, 480, 570, 650, 1800, 2000, 3000		150, 280, 320, 480, 570, 650, 1800, 2000, 3000		SET B 15000 18000
Weight Unpacked	80 kg	116 kg	80 kg	116 kg	85 kg	121 kg	166 kg	201 kg	145 kg	145 kg	130 kg	130 kg	64 kg
Weight Packed	99 kg	135 kg	99 kg	135 kg	104 kg	140 kg	185 kg	220 kg	164 kg	164 kg	149 kg	149 kg	83 kg
Height Packed	1440 mm for floor model						1560 mm (floor)		1390 mm		985 mm		580 mm
Height Installed	1740 mm for floor model						1860 mm (floor)		1690 mm		985 mm		680 mm
Base Area (mm)	311 x 533	368 x 600	311 x 533	368 x 600	311 x 533	368 x 600	368 x 600		368 x 600		368 x 600		150 x 150

Due to the use of 60 Hz type motors the motor R.P.M. is now 1750.

This increased motor speed changes standard spindle speed range to the following :

8SN AND WORKMAX

SUPER 16

Straight Drive

600, 1200
2400, 4800

NOT AVAILABLE

Intermediate Drive

200,430,800
860,980,3080
3700, 6770,

185, 270
390, 550, 640
910, 1300,1850,2030
2860,4100,5800

2.) **SAFETY INSTRUCTIONS**

PLEASE ENSURE YOU READ THIS INFORMATION PRIOR TO USING THE MACHINE!

The noise level of the idling drilling machine has been measured to be below 85 dB (A). This complies with the **Australian Occupational Health and Safety (Noise) Regulations 1992**. Please note that higher peak noise levels may be encountered due to variables such as drill make/type/condition and size/type of material being drilled, as well as other intermittent noise sources such as components being placed or dropped onto the work table or floor. Under these circumstances management should make available to the operator(s) the appropriate hearing protection equipment as prescribed under the above mentioned act.

1. Only **TRAINED OPERATORS** should be **permitted** to operate this machine. Before the machine is used, carefully read the "**Machine Operating Manual**", especially the "**Safety Instructions**". Supervision must ensure both the operator and themselves understand the machine's correct method of operating before it is used by the operator.

1.1 HIGH VOLTAGE POWER - 415/240 VOLTS.

The power supply to this machine is of a high level and unauthorised interference and or inadequate maintenance could result in a situation which could put the operator at risk. A qualified electrical engineer should be assigned to maintain/repair the system.

2. **Always** wear eye protection when attending and operating drilling machines.
3. **Do not** operate this machine unless the chuck guard **and** belt guard are correctly positioned.
4. **Do not** touch drill bits or rotating spindle, and **do not** place hands and arms into or near to the drill when the machine is running.
5. **Fasten** the workpiece to the drill table, or use a machine vice.
6. **Do not** wear loose clothing, long sleeves, gloves, jewellery or any other item which may be caught, confine long hair in an appropriate hair net or cap.
7. If a coolant hose fails or there is excessive water splashed onto the electrical equipment, ensure that power to the machine is isolated, before attempting to repair.
8. **Disconnect** the electrical power when performing maintenance work on the machine or making adjustments other than those necessary for the normal operation of the machine.
9. **Keep** the working area of the table **clear** of tools and other loose objects, and keep the floor area clear of liquid spillage and excessive swarf.
10. **Do not** load or unload the machine while the drill is running.
11. Keep the drilling table clear of tools and other loose objects.
12. Excessive continual repetitive use of a drilling machine can lead to muscle fatigue/strain.
13. Rapid and excessive metal removal by drilling can lead to workpieces and drill bits becoming quite hot. In addition, the drill motor and quill can become hot if the machine is used for long periods, although this is quite normal.
14. **Do not** use extension leads.
15. **Do not extend** the height of the machine **past the maximum height** indicated, (installed height on page 1) as this will cause the column to extend out of the column support. This will damage to the machine and can cause injury to anyone in the area.
16. Ensure appropriate breathing equipment is used if cutting objects that produce toxic fumes and/or excessive dust. Also, note that some coolant solutions may cause allergic reactions to some people.

3.) INSTALLATION - MECHANICAL

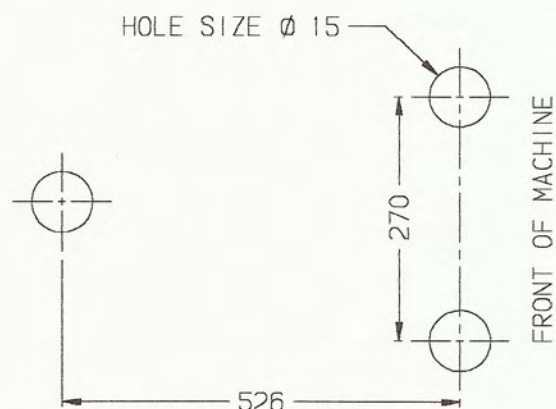
Ensure that the machine (whether bench or floor mounted) has adequate lighting and ventilation.

The floor model and pedestal drilling machine should be fastened to a firm floor (**preferably concrete**), by using loxins. The bench model drilling machine is recommended to be fastened to a solid bench top by bolts.

Hole pattern see figures below:

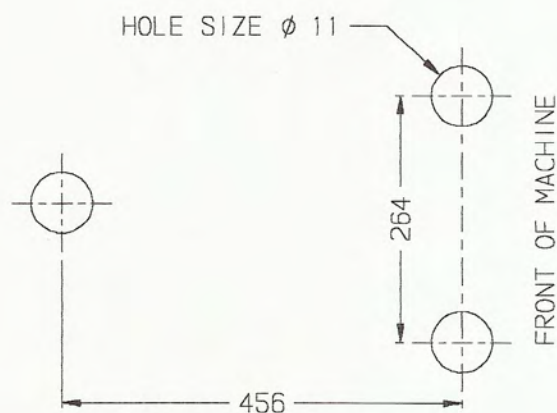
For Floor Model Drills

Model: 8SN
2M
3M
Radial
Varispeed



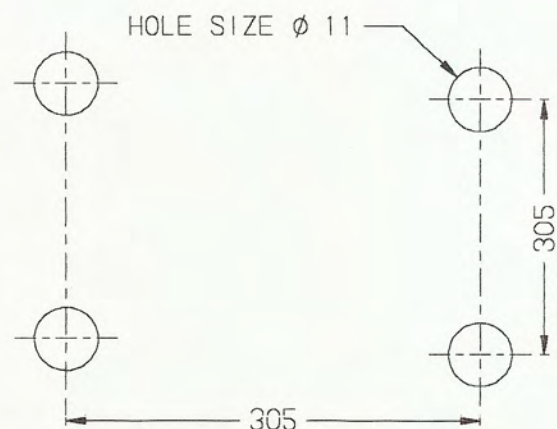
For Bench Model Drills

Model: 8SN
2M
3M
Varispeed



For Pedestal Drills

Model: 8SN



NOTE:

Do not extend the height of the machine **past the maximum height** indicated, (installed height on page 1) as this will cause the column to extend out of the column support. This will damage to the machine and can cause injury to anyone in the area.

4.) INSTALLATION - ELECTRICAL

- a). Single phase drilling machine requires no electrical installation, plug and lead **supplied**, **you only need to plug into 240V, 50 Hz main supply directly.**

DO NOT use extension leads!

- b). Three phase drilling machines should be fitted with a four core lead and plug (ie. Three phases and earth), direct to switch. ***(Refer Electrical Circuit Drawing on Page 5.)***
Check spindle rotation direction and change phases if required. The right direction is clockwise looking down on top of the motor pulley.

Ensure that all electrical leads and cables (including supply leads) are maintained in good condition, and replaced if cut, sliced or damaged in any way.

5.) PREPARATION FOR OPERATION

Clean off machine all protective coating material by using solvent. The solvent should be non-flammable and toxin free.

6.) MAINTENANCE

All model drills should be lubricated on each side of the head casting on the pinion bearing. A few drops of light machine oil applied daily and also on the top of the spline ***(except mechanical vari-speed)***.

2131020

DO NOT SCALE

COMMERCIAL STOCK SIZES
EXCEPTED AND UNLESS
OTHERWISE NOTED
TOLERANCES ON
DIMENSIONS ARE:

METRIC

Size To Mach. Cast#
6 mm ± 0.1 ± 0.5
30 mm ± 0.2 ± 1.0
100 mm ± 0.3 ± 1.5
300 mm ± 0.5 ± 2.0
1000 mm ± 0.6 ± 3.0
2000 mm ± 1.2 ± 5.0

* INCLUDES STRUCTURAL
STEEL WORK.

REMOVE ALL BURRS AND
SHARP EDGES BY 0.3 x 45°
UNLESS OTHERWISE STATED

SURFACE FINISH

Roughness Value

Met
Um

Grade
No.

ROUGH	50	N12
	25	N11
	12.5	N10
MED	6.3	N9
FINE	3.2	N8
S FINE	1.6	N7
POLISH	0.8	N6
	0.4	N5
LAP	0.2	N4
	0.1	N3
	0.05	N2
	0.025	N1

DRAWING PRACTICE TO
AS 1100 - PROJECTION
SYSTEM (UNLESS NOTED)

3RD



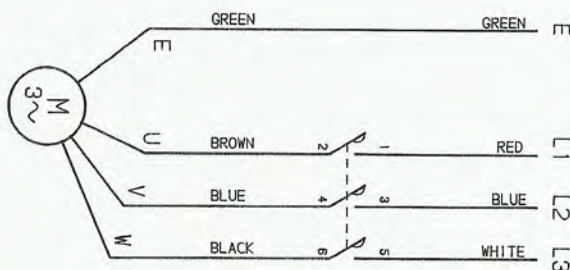
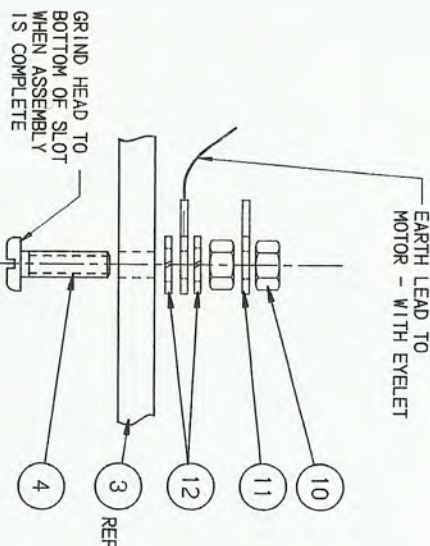
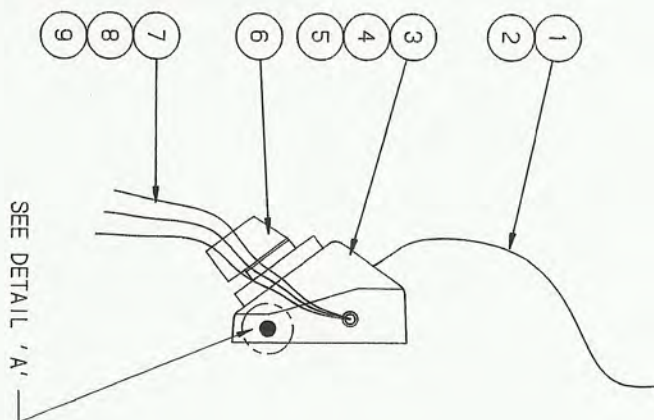
ANGLE

ANGULARITY TOLERANCE

< 0° 7'

CONCENTRICITY
0.1 mm

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NOTES:

- 1/ ITEM 1 CONSISTS OF 4 CORE 32/0.20 FLEX WITH 4 OFF H3115 EYELETS ON ONE END AND 1 OFF H3115 EYELET, 3 OFF BLP150 BOOT LACE PINS ON THE OTHER END.
- 2/ ITEMS 7,8,9 ARE TEST LEADS ONLY, AND ARE SUBJECT TO REMOVAL PRIOR TO PACKAGING/TRANSPORTING.
- 3/ ALL OTHER WIRES CONNECTING BETWEEN SWITCHGEAR AND COMPONENTS TO HAVE BLP150 BOOT LACE PINS.

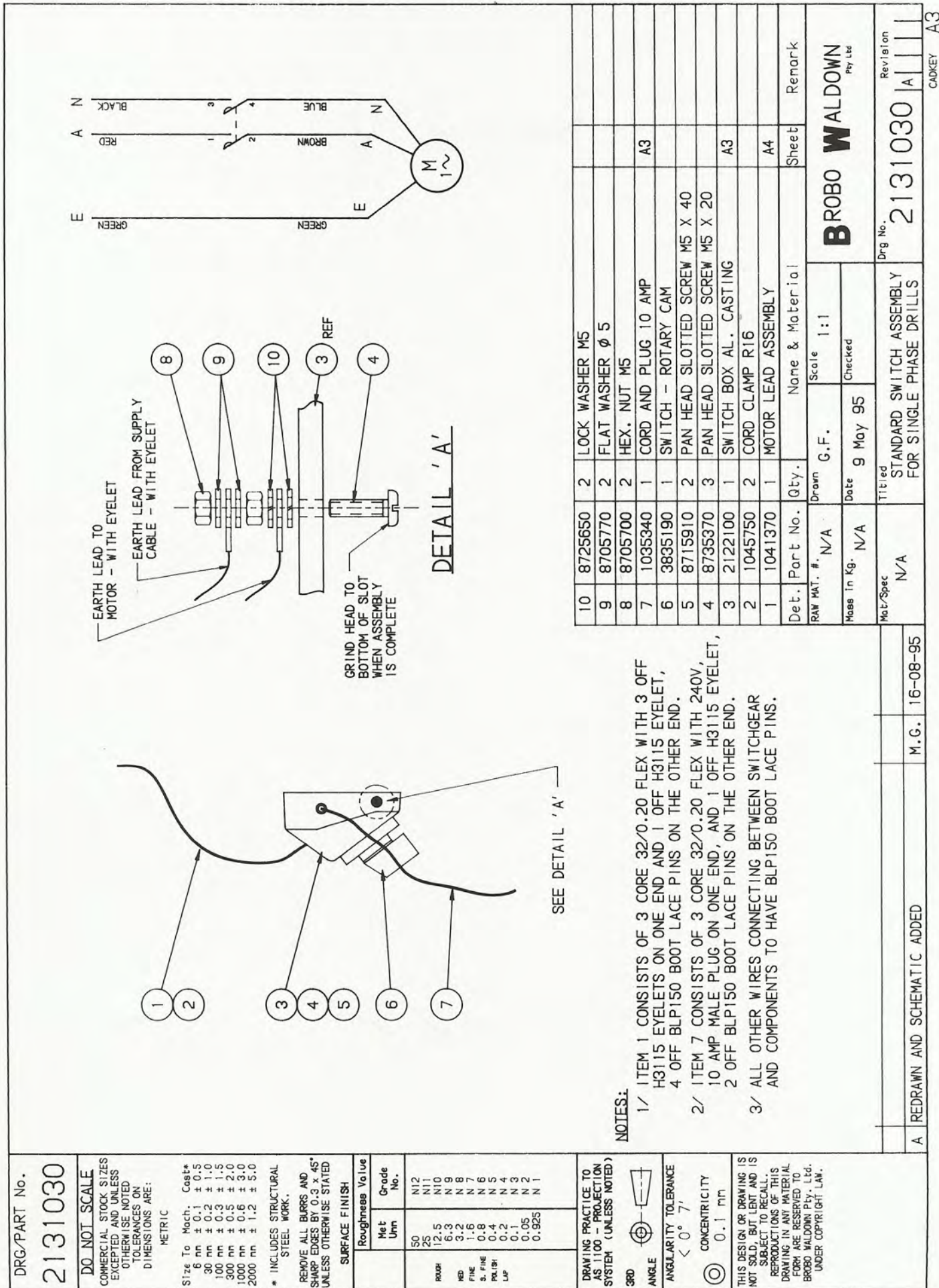
B	8725210 WAS 8735400, 8735390 DELETED	M.G.	15-08-02
A	REDRAWN AND SCHEMATIC ADDED	M.G.	21-08-95

12	8725650	2	LOCK WASHER M5		
11	8725210	1	EYELET Ø 5 MM - NON INSULATED		SUPPLIED LOOSE
10	8705700	2	HEX. NUT M5		
9	8745020	1	TEST LEAD - BLUE 24/0.20 X 250 LG		
8	8745010	1	TEST LEAD - WHITE 24/0.20 X 250 LG		
7	8745000	1	TEST LEAD - RED 24/0.20 X 250 LG		
6	3835190	1	SWITCH - ROTARY CAM		
5	8715910	2	PAN HEAD SLOTTED SCREW M5 X 40		
4	8735370	3	PAN HEAD SLOTTED SCREW M5 X 20		
3	2122100	1	SWITCH BOX AL. CASTING	A3	
2	1045750	3	CORD CLAMP R16		
1	1041380	1	MOTOR LEAD ASSEMBLY	A4	
Det.	Part No.	Qty.	Name & Material	Sheet	Remark
RAW MAT. #.	N/A	Drawn	G.F.	Scale	1:1
Mass In Kg.	N/A	Date	9 May 95	Checked	
Mat/Spec	N/A	Titled	STANDARD SWITCH ASSEMBLY FOR 3 PHASE DRILLS	Org No.	2131020
					Revision



BROBO WALDOWN
AUSTRALIA PTY LTD

8.) SWITCH & LEAD ASSEMBLY - 1 PH



COMMERCIAL STOCK SIZES
EXCEPTED AND UNLESS
OTHERWISE NOTED
TOLERANCES ON
DIMENSIONS ARE:

METRIC

Size To Mach. Cost*
6 mm ± 0.1 ± 0.5
30 mm ± 0.2 ± 1.0
100 mm ± 0.3 ± 1.5
300 mm ± 0.5 ± 2.0
1000 mm ± 0.6 ± 3.0
2000 mm ± 1.2 ± 5.0

* INCLUDES STRUCTURAL
STEEL WORK.

REMOVE ALL BURRS AND
SHARP EDGES BY 0.3 x 45°
UNLESS OTHERWISE STATED

SURFACE FINISH

Roughness Value

Met Umm	Grade No.
50	N12
25	N11
12.5	N10
6.3	N9
3.2	N8
1.6	N7
0.8	N6
0.4	N5
0.2	N4
0.1	N3
0.05	N2
0.025	N1

DRAWING PRACTICE TO
AS 1100 - PROJECTION
SYSTEM (UNLESS NOTED)

3RD



ANGLE

ANGULARITY TOLERANCE

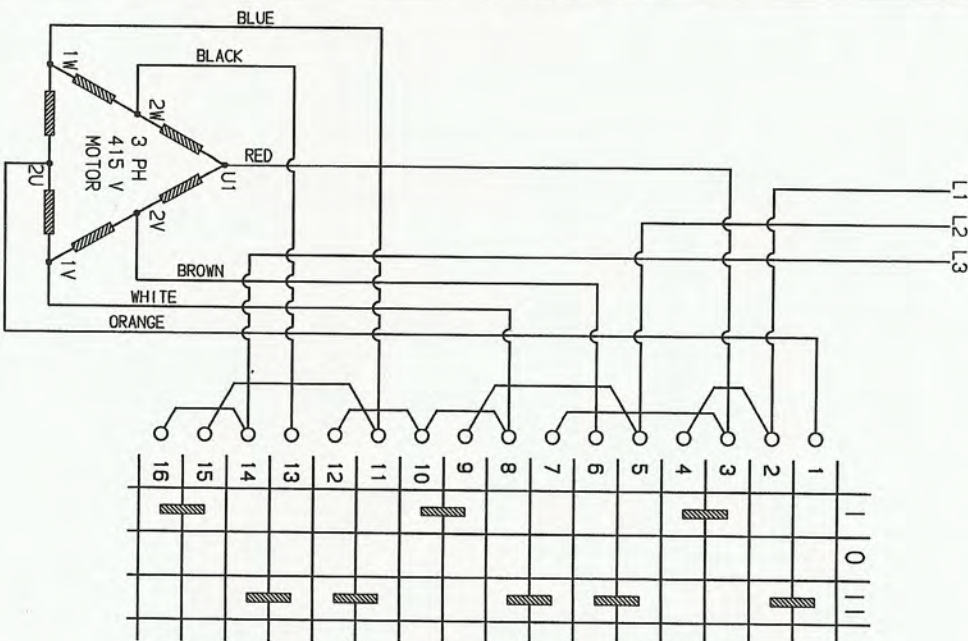
< 0° 7'

CONCENTRICITY

0.1 mm

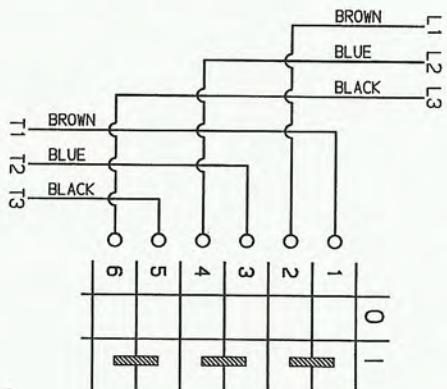
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415 V, 50 Hz, 3 PH (ALT: 220/440 V, 60Hz 3 PH)
SUPPLY



3 PH, DUAL SPEED

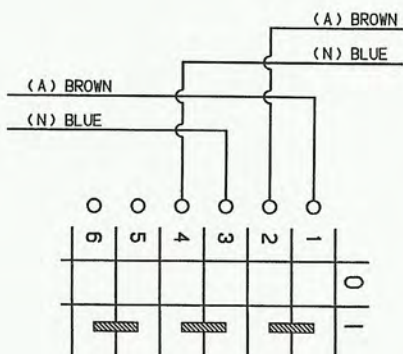
415 V, 50 Hz, 3 PH (ALT: 220/440 V, 60Hz 3 PH)
SUPPLY



TO MOTOR
415 V, 50 Hz, 3 PH

3 PH, ONE SPEED

240 V, 50 Hz, 1 PH (ALT: 220 V, 60Hz 1 PH)
SUPPLY



TO MOTOR
240 V, 50 Hz, 1 PH

1 PH

MOTOR CABLE MARKING	CMG MOTOR TERMINAL MARKING	TECO MOTOR TERMINAL MARKING
1 RED	1U	RED
2 WHITE	1V	YELLOW
3 BLUE	1W	BLUE
4 ORANGE	2U	WHITE
5 BROWN	2V	BLACK
6 BLACK	2W	ORANGE

A TECO TERMINAL MARKINGS ADDED

M.G. 13-08-03

Det.	Part No.	Qty.	Name & Material	Sheet	Remark
RAW MAT. #	N/A	Drown	M.G.	Scale 1:1	
Mass in Kg.	N/A	Date	28 Jun 95	Checked	
Mat/Spec	N/A	Titled	ELECTRICAL CIRCUIT FOR 1ph, 3ph & 3ph DUAL SPEED - KLOCKNER MOELLER	Dwg No.	961000-5
				Revision	A



BROBO WALDOWN
AUSTRALIA PTY LTD

10.) PARTS LIST EXTENSION SUPER 16 DRILL

Det.	Part No.	Qty.	Name & Material	Sheet	Remark
31	2131030	1	SWITCH ASSEMBLY 1 PHASE	A3	
30	2131020	1	SWITCH ASSEMBLY 3 PHASE	A3	
29	1051150	1	MOTOR & PLATE ASS'Y COMPL. 3 PH	A3	
28	1051290	1	ROUND TABLE UNIT	A3	OPTIONAL
27	8715730	2	DRIVE PIN No.2		
26	1055100	1	SERIAL NAME PLATE	A4	
25	1605030	1	SPEED CHART	A4	
24	1601060	1	BENCH TYPE BASE UNIT RACKLIFT ASS'Y	A4	
23	1031760	1	CHUCK GUARD ASSEMBLY	A4	
22	1045200	1	HANDLE KNOB (RED) M10 x Ø 1"		
21	1604040	1	HAND LEVER Ø 10 x 90 LG MS	A4	
20	1601020	1	HEAD ASSEMBLY	A1	
19	1051190	1	OVERALL BELTGUARD ASSEMBLY	A3	
18			VACANT		
17	8725150	2	PAN HD SCREW M6 x 8 LG		
16	1602010	1	HEAD PULLEY	A4	
15	1601070	1	FLOOR TYPE BASE UNIT RACKLIFT ASS'Y	A4	
14	1604020	1	BELT TENSION PLUNGER Ø 12 x 35 LG MS	A4	
13	1604010	1	BELT TENSION LINK FL. 5 x 32 x 50 LG	A4	
12	8715830	2	ROLLPIN Ø 3/16" x 5/8" LG		
11	8705450	1	SOC. SETSCREW M6 X 6 LG		
10	1604060	1	LEVER BLOCK Ø 33 x 20 LG	A4	
9	8715480	1	SOC. SETSCREW M8 x 12 LG		
8	1612020	1	MOTOR PULLEY ALU. CASTING	A4	
7	1605020	1	V-BELT (MOTOR) SPZ 800		
6	1051130	1	MOTOR & PLATE ASS'Y COMPL. 1 PH	A3	
5	8705050	2	SOC. HD CAPSCREW M6 x 12 LG		
4	1601010	1	INTERMEDIATE DRIVE ASS'Y COMPLETE	A3	
3	1605010	1	V-BELT (HEAD) SPZ 760		
2	1604100	1	GUARD CLAMPING PLATE 3 x 25 FL. x 90 LG	A4	
1	8715320	1	PAN HD SCREW M6 x 16 LG		

11.) PARTS LIST EXTENSION 8SN BENCH DRILL

30	1041070	1	BASE UNIT BENCH TYPE PLAIN ASSEMBLY	A2		
29	1051130	1	MOTOR & PLATE ASS'Y 9 SPEED, 1 PH	A3		
28	1051140	1	MOTOR & PLATE ASS'Y 4 SPEED, 1 PH	A3		
27	1051160	1	MOTOR & PLATE ASS'Y 4 SPEED, 3 PH	A3		
26	1035390	1	V-BELT A43		WITH DIRECT DRIVE	
25	1045380	1	MOTOR PULLEY 4 STEP Ø 19 MM BORE	A3		
24	1041290	1	ROUND TABLE UNIT	A2	OPTIONAL	
23	8715730	2	DRIVE PIN No. 2			
22	1604020	1	BELT TENSION PLUNGER Ø 12 x 35 BR MS	A4		
21	1604010	1	BELT TENSION LINK FL 5 x 13 X 50 MS	A4		
20	8715830	2	ROLLPIN Ø 3/16" x 5/8" LG			
19	8705450	1	SOC SETSCREW M6 x 6 LG			
18	1604060	1	LEVER BLOCK Ø 33 x 20 LG MS	A4		
17	1051150	1	MOTOR & MOTORPLATE ASS'Y 9 SPEED, 3 PH	A3		
16	1041080	1	BENCH TYPE BASE UNIT RACKLIFT ASS'Y	A2		
15	1031760	1	CHUCK GUARD ASSEMBLY	A4		
14	1045200	1	HANDLE KNOB (RED) M10 x Ø 1"			
13	1604040	1	HAND LEVER Ø 10 x 190 LG BR. MS	A4		
12	1051020	1	HEAD ASSEMBLY	A1		
11	1065100	1	SERIAL NAMEPLATE	A4		
10	1051190	1	OVERALL BELT GUARD ASSEMBLY	A3		
9	1604100	1	GUARD CLAMPING PLATE FL 3 x 25 x 90	A4		
8	8725730	2	O/S FLAT WASHER Ø 1/4"			
7	8705460	1	SOC HD CAPSCREW M6 x 8 LG			
6	1045270	1	MOTOR PULLEY 3 STEP Ø 19 MM BORE	A3		
5	2115160	1	V-BELT A27 (MOTOR)			
4	8705050	2	SOC HD CAPSCREW M6 x 12 LG			
3	1041410	1	INTERMEDIATE DRIVE ASSEMBLY COMPLETE	A3		
2	1045250	1	V-BELT A28 (HEAD)			
1	1045300	1	SPEEDCHART	A4		
Det.	Part No.	Qty.	Name & Material		Sheet	Remark
RAW MAT. #.	Drawn	S.RASH		Scale	1:1	
Moes In Kg.	Date	23-02-94		Checked		
Mol/Spec	AS LISTED		TITLED		8 SN BENCH DRILL 8 SPEED, 3 PH, 1 PH, RACKLIFT	
			Dwg No.		Revision	
			1050260		11111	

CADKEY A1

40	1042300	1	HEAD PULLEY 4 STEP	A3	
39	2131030	1	SWITCH ASSEMBLY 1 PH	A3	
38	2131020	1	SWITCH ASSEMBLY 3 PH	A3	
37	8725070	2	PAN HD SCREW M6 x 12 LG		
36	1141030	1	BASE UNIT FLOOR TYPE RACKLIFT 2M TABLE	A2	
35	1031430	1	BASE UNIT BENCH TYPE RACKLIFT 2M TABLE	A2	
34	1031460	1	BASE UNIT BENCH TYPE WITH 2M TABLE	A2	
33	1141040	1	BASE UNIT FLOOR TYPE PLAIN 2M TABLE	A2	
32	1141020	1	BASE UNIT FLOOR TYPE RACKLIFT ASSEMBLY	A2	
31	1141010	1	BASE UNIT FLOOR TYPE PLAIN ASSEMBLY	A2	

13.) PARTS LIST EXTENSION RADIAL DRILL

46	2404180	1	BELTGUARD MOUNTING BRACKET - RHS	A4	FOR DIRECT DRIVE	
45	2404170	1	BELTGUARD MOUNTING BRACKET - LHS	A4	FOR DIRECT DRIVE	
44	2404160	1	BELTGUARD MOUNTING BRACKET - RHS	A4	FOR INT DRIVE	
43	1035340	1	CORD & PLUG	A3	1 PH ONLY	
42	8705060	4	SOC. HD CAPSCREW M6 x 16 LG			
41	1045300	1	SPEED CHART (BSN)		(INT. DRIVE)	
40	2124380	1	LEAD, BLUE 32/0.20 x 250 LG		USE 8745000	
39	2112120	1	SWITCH - HOLE COVER PLATE	A4		
38	1035250	1	V-BELT A30		(INT. DRIVE)	
37	2441150	1	BASE UNIT BENCH MODEL LONG ARM	A1		
36	2441130	1	BASE UNIT BENCH MODEL SHORT ARM	A1		
35	2441230	1	BASE UBIT FLOOR MODEL LONG ARM	A1		
34	8715920	2	RIVET 'ADVEL' BF-01-0516			
33	2431080	1	OVERALL BELTGUARD ASS'Y (LONG)	A2		
32	2124360	1	LEAD, RED 32/0.20 x 250 LG		USE 8745020	
31	2124370	1	LEAD, WHITE 32/0.20 x 250 LG		USE 8745010	
30	8705460	1	SOC. HD SETSCREW M6 X 8			
29	2435060	1	V-BELT (WITH LONG ARM)		} WITH DIRECT DRIVE ONLY	
28	2435050	1	V-BELT (WITH SHORT ARM)			
27	2125200	1	MOTOR, 1 PH, D80 FRAME, 4 POLE, 0.75 kW			
26	9305600	1	CORDCLAMP R20			
25	8705790	4	WASHER FLAT ø 8			
24	8705560	4	HEX HD SCREW M8 x 20 LG			
23	2125180	1	MOTOR, 3 PH, D80 FRAME, 4 POLE, 0.75 kW			
22	1045380	1	MOTOR PULLEY 4 STOP	A3	WITH DIRECT DRIVE ONLY	
21	8715200	1	HEX LOCKNUT M6		} WITH INT.M. DRIVE ONLY	
20	8705540	1	ROUND HD SCREW M6 x 25 LG			
19	2434120	1	MOUNTING BRACKET CLAMP MEMBER	A4		
18	8705530	1	HEX HD SCREW M6 x 20 LG			
17	2404150	1	BELTGUARD MOUNTING BRACKET - LHS	A4	FOR INT DRIVE	
16	2435030	1	V-BELT A57 (WITH SHORT ARM)		} WITH INT.M. DIVE ONLY	
15	8725470	2	WASHER FLAT ø 10 OVERSIZE			
14	2435040	1	V-BELT A70 (WITH LONG ARM)			
13	8705170	1	SOC. HD SETSCREW M10 x 25 LG			
12	2441060	1	INTERMEDIATE DRIVE ASSEMBLY	A3		
11	1045270	1	MOTOR PULLEY	A3		
10	2431070	1	OVERALL BELTGUARD ASS'Y (SORT)	A4		
9	1065100	1	SERIAL NAME PLATE	A4		
8	2441140	1	BASE UNIT FLOOR MODEL SHORT ARM	A1		
7	1031760	1	CHUCK GUARD ASSEMBLY	A4		
6	8705480	2	SOC. SETSCREW M8 x 12 LG			
5	2441030	1	ELECTRICAL ASSEMBLY - COMMON FOR ALL	A4		
4	2451020	1	HEAD ASSEMBLY 2MT	A1		
3	8715300	2	ROUND HD SCREW M5 x 12 LG			
2	2442050	1	FRONT GUARD - CAST IRON	A3		
1	8725640	6	ROUND HD SCREW M5 x 25 LG			
Det.	Part No.	Qty.	Name & Material		Sheet	Remark
RAW MAT. #.	Drawn	S.RASH		Scale	BROBO WALDOWN Pty Ltd	
Made In Kg.	Date	21-02-94		Checked		
Mat/Spec	Titled			Org No.	Revision	
AS LISTED	RADIAL DRILL 2 MT FLOOR MODEL, 9 SPEED			2450760		

14.) PARTS LIST EXTENSION 2M - 3M DRILL

30					
29	8705950	1	ROLLPIN ϕ 5 x 16 LG		
28	8705800	1	WASHER FLAT ϕ 10		
27	8725500	1	SOC. HD SCREW M10 x 35 LG		
26	2121180	1	MOTOR PLATE, TOGGLE & HINGE ASSEMBLY	A2	
25	2125200	1	MOTOR 1 PH, 0.75 Kw, 1400 RPM		D 80 FRAME
24	2125180	1	MOTOR 3 PH, 0.75 Kw, 1400 RPM		D 80 FRAME
23	8705460	1	SOC. SETSCREW M6 x 8 LG		
22	1045270	1	MOTOR PULLEY 3 STEP ϕ 19 MM BORE	A3	INTMED. DRIVE
21	1045380	1	MOTOR PULLEY 4 STEP ϕ 19 MM BORE	A3	DIRECT DRIVE
20	2115270	1	V-BELT A47		DIRECT DRIVE ONLY
19	1045250	1	V-BELT (MOTOR) A28		
18	1041170	1	INTERMEDIATE DRIVE PULLEY ASSEMBLY	A4	
17	1034230	1	INTER. DRIVE PLUNGER BRASS ϕ 8 x 45 LG	A4	
16	1044210	1	INTER. LOCKING HANDLE MS ϕ 10 x 130 LG	A4	
15	1044190	1	INTERMEDIATE DRIVE BLOCK ϕ 63.5 x 60 LG	A3	
14	2115150	1	V-BELT (HEAD) A31 INTER DRIVE		
13	2121060	1	2M BASE UNIT & RACKLIFT ASS'Y	A2	
12	1031570	1	CHUCK GUARD ASSEMBLY	A4	
11	2121210	1	HEAD ASSEMBLY 3M DRILL	A1	
10	2121010	1	HEAD ASSEMBLY 2M DRILL	A1	
9	2131030	1	ELECTRICAL ASSEMBLY DRILL 1 PH	A3	
8	2131020	1	ELECTRICAL ASSEMBLY DRILL 3 PH	A3	
7	8715730	2	DRIVE PIN No. 2		
6	1065100	1	SERIAL NAME PLATE	A4	
5	1604100	1	GUARD CLAMPING PLATE	A4	
4	8715320	3	PAN HD. SCREW M6 x 16 LG		
3	1051190	1	OVERALL BELTGUARD FOR DRILL	A3	
2	8115090	1	LABEL - BROBO WALDOWN SMALL	A4	ASS'Y 2121220
1	2115140	1	SPEED CHART - DRILLS	A4	

Det.	Part No.	Qty.	Name & Material	Sheet	Remark
RAW MAT. #.	Drawn	S.RASH	Scale	1:2	BROBO WALDOWN Pty Ltd
Mass in Kg.	Date	21-02-94	Checked		
Mat/Spec	Titled		Drg No.		
AS LISTED	2M & 3M DRILL ASSEMBLY		2120010		Revision
		1 PH & 3 PH			

15.) **AMENDMENT - ELECTRONIC VARI-SPEED**

This vari-speed drill has been developed using the latest electronic drive, to allow infinitely adjustable drive speed within certain speed ranges.

The 1.0 hp (0.75 kW) electronically controlled DC drive unit/motor is fitted with two (2) speed ratios, which are selectable by using the two (2) step pullies.

For 8SN vari-speed:-

Low speed range (60 - 800 RPM),

High speed range (500 - 4700 RPM).

For 2M and 3M vari-speed:-

Low speed range (35 - 500 RPM),

High speed range (200 - 2900 RPM).

For spare parts, refer to standard 8SN or 2M/3M drill assemblies on previous pages for all components, except for those listed here:

Parts list for Electronic Vari-speed

1105160	DC motor
1105170	Motor controller
1105180	Horsepower resistor
1105190	Controller fuse
1101060	Motor and controller kit (includes above 4 part numbers)
1033350	Controller mounting plate
1052110	Motor mounting plate for 8SN vari-speed
1032370	Spindle pulley for 8SN vari-speed
1032380	Motor pulley for 8SN vari-speed
1034960	Speed chart/label for 8SN vari-speed
2122210	Motor mounting plate for 2M and 3M vari-speed
2124510	Spindle pulley for 2M and 3M vari-speed
2124500	Motor pulley for 2M and 3M vari-speed
2124520	Speed chart/label for 2M and 3M vari-speed



BROBO GROUP®

BROBO WALDOWN (AUST) PTY. LTD.

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PO BOX 4274 Dandenong Sth, 3164
Victoria, AUSTRALIA.

Tel: 61 3 9794 8751

Fax: 61 3 9794 8792

A.C.N. 098 264 316

A.B.N. 42 098 264 316

Quality
Endorsed
Company

ISO 9001 Lic. 10292
SAI GLOBAL



Email: info@brobo.com.au

Website: www.brobo.com.au

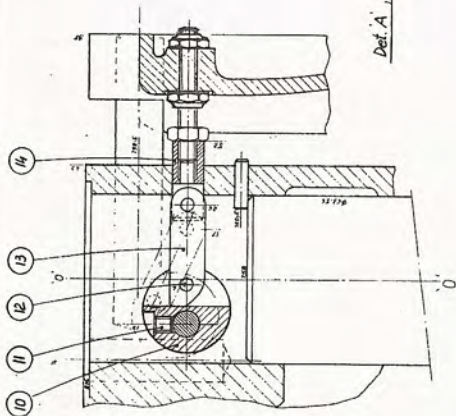
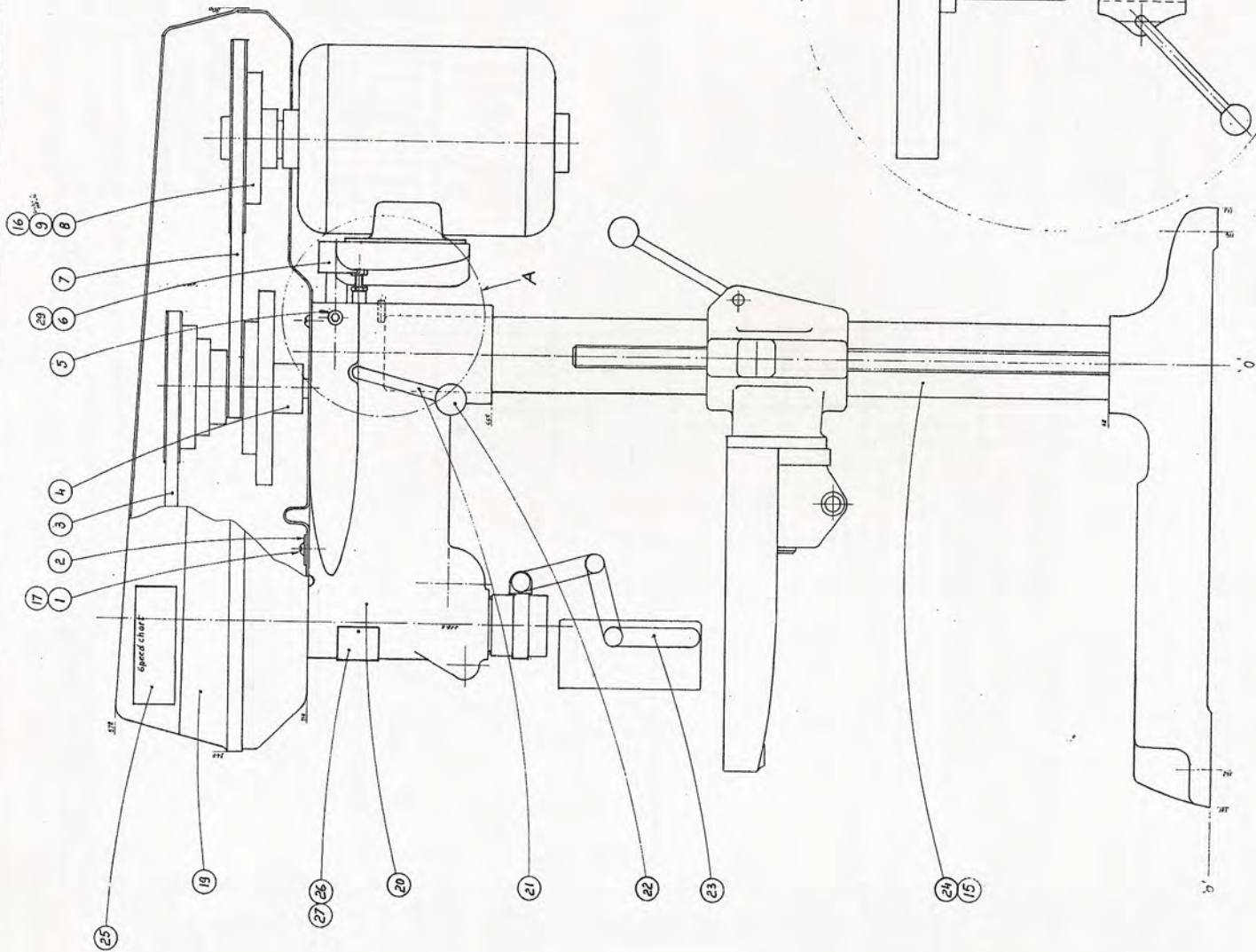
APPENDIX - RISK/HAZARD ASSESSMENT

Hazard Type	Hazard Identification	Hazard Assessment	Hazard Management Strategies (Recommended for the Purchasing / Buyer / User)
Mechanical	Cutting/Severing	Low/Med	<ul style="list-style-type: none">Keep machine correctly guarded and operational at all times.Keep hands clear of rotating drill bit.
	Entanglement	Low	<ul style="list-style-type: none">Do not wear loose jewellery, clothing or items that might get caught in the drill.Always keep the work area free of unnecessary objects or tools.
	Impact	Low	<ul style="list-style-type: none">Wear protective safety glasses when utilising the drilling machine.Strongly encouraged that steel-capped safety boots be worn during operation of drill machine.
Electrical	Electrocution	Low	<ul style="list-style-type: none">Remove the power supply when any maintenance and/or repairs are to be undertaken.Power source is to be isolated prior to opening electrical enclosures.
Noise	-	Low	<ul style="list-style-type: none">Under no load testing, the noise level measured is below 80db (A).If the noise level becomes too high during a drilling cycle, stop the process and inspect for problem, if any are present.
Substance	-	Low	<ul style="list-style-type: none">Keep the work area clean and regularly remove excess coolant, oils and other aggregate.
Hazardous Events	Unexpected Start Up	Low	<ul style="list-style-type: none">During a power failure, turn the machine off.If problem persists, please contact Brobo Group engineering department.
Additional Hazards	Operator Error	Low	<ul style="list-style-type: none">Ensure blades, clamps and materials are correctly secured.

MACHINE TYPE: _____

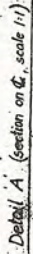
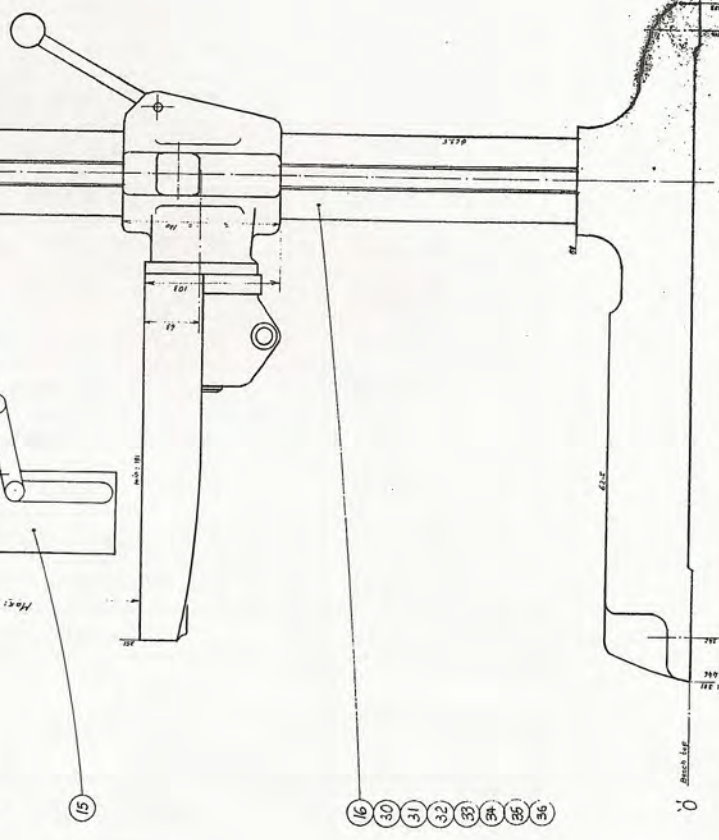
SERIAL NO.: _____

RECEIVING COMPANY: _____ (SAFETY OFFICER)

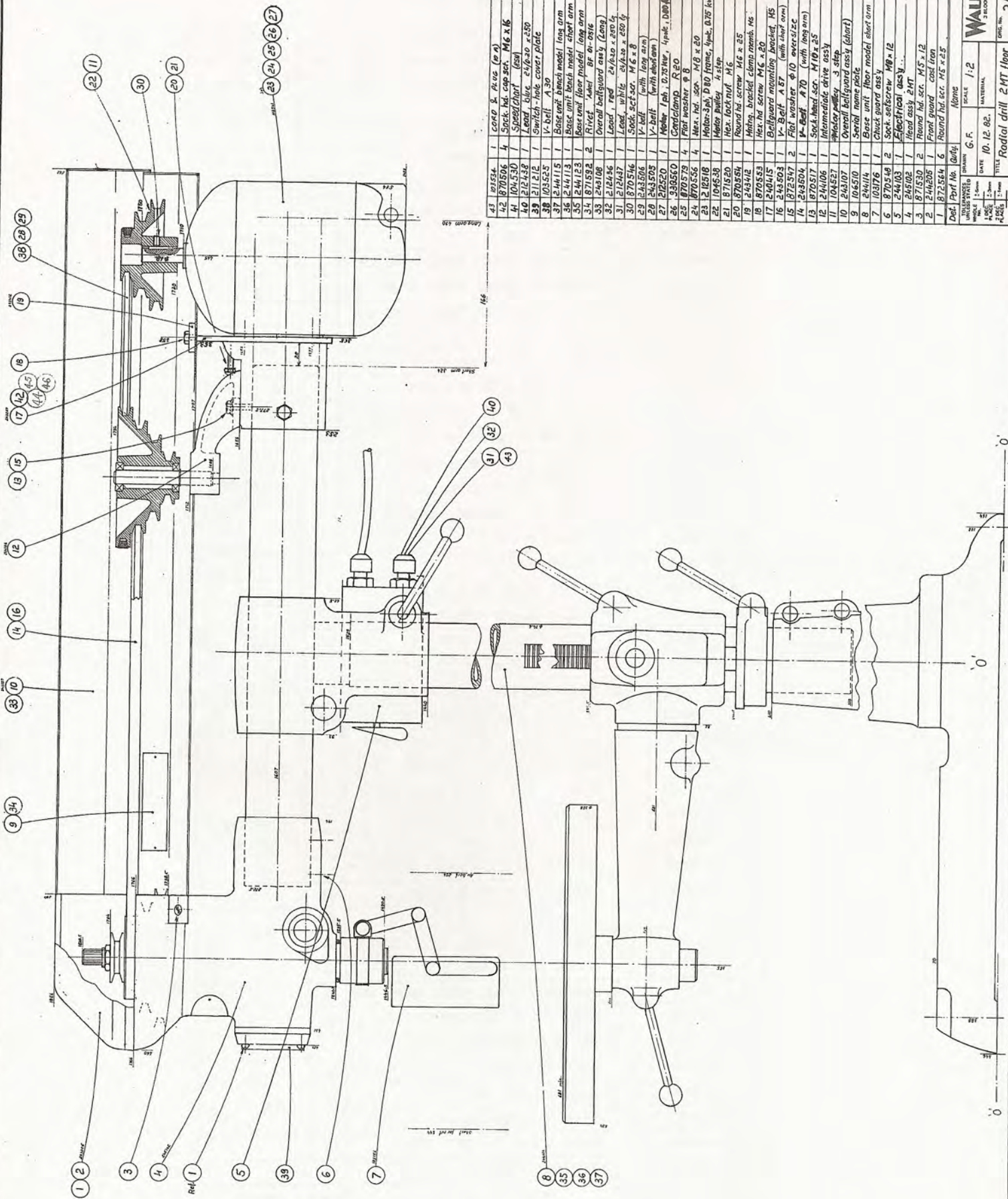


Det. A, section on A-A, scale 1:1

QTY	ITEM NO.	DESCRIPTION	UNIT	REMARKS
29	105115	Motor & plate assy, compl. 3ph	A3	Optional
28	105129	Round table unit	A3	
27	871573	Drive pin No. 2	A4	
26	105510	Serial nameplate	A4	
25	160503	Speed chart	A4	
24	160106	Bench type base unit racklift assy	A4	
23	103176	Chuck guard assy	A4	
22	104520	Handle knob (red) 1/10 x 1/4"	A4	
21	160404	Hand lever 1/10 x 1/80 Br MS	A4	
20	160102	Hand assy	A1	
19	105119	Overall bell guard assy	A3	
18	072518	Vacuum		
17	072518	Pan hd. ser. H 6 x 8		
16	160201	Head pulley	A4	
15	160107	Floor type base unit racklift assy	A4	
14	160402	Self tension plunger 1/16 x 1/8 x 1/4 MS	A4	
13	160401	Belt tension link 1/16 x 1/8 x 1/4 MS	A4	
12	871583	Roll pin 1/16 x 1/8 x 1/4	A4	
11	870545	Sock. setscr. M 6 x 6		
10	160406	Lever block 1/16 x 1/8 x 1/4 MS	A4	
9	871548	Sock. setscr. M 8 x 12		
8	161202	Motor pulley 1/16 x 1/8 x 1/4 MS	A4	
7	160502	V-Belt (red) SPZ 800	A4	
6	105113	Motor and plate assy, compl. 1ph	A3	
5	870505	Sock. hd. capscr. M 6 x 12		
4	160101	Intermediate drive assy, complete	A3	
3	160501	V-Belt (red) SPZ 760	A4	
2	160410	Guard clamping plate 3/16 x 1/4 x 1/4	A4	
1	871532	Pan hd. ser. M 6 x 16		
Det.	Part No.	Qty	None	Remark
1-2	1-2	1-2	1-2	WALDOW
DATE	16.7.82	DATE	16.7.82	WALDOW
TIME	12.30	TIME	12.30	WALDOW
BY	12.30	BY	12.30	WALDOW
1600				



Detail A (section on G, scale 1:1)



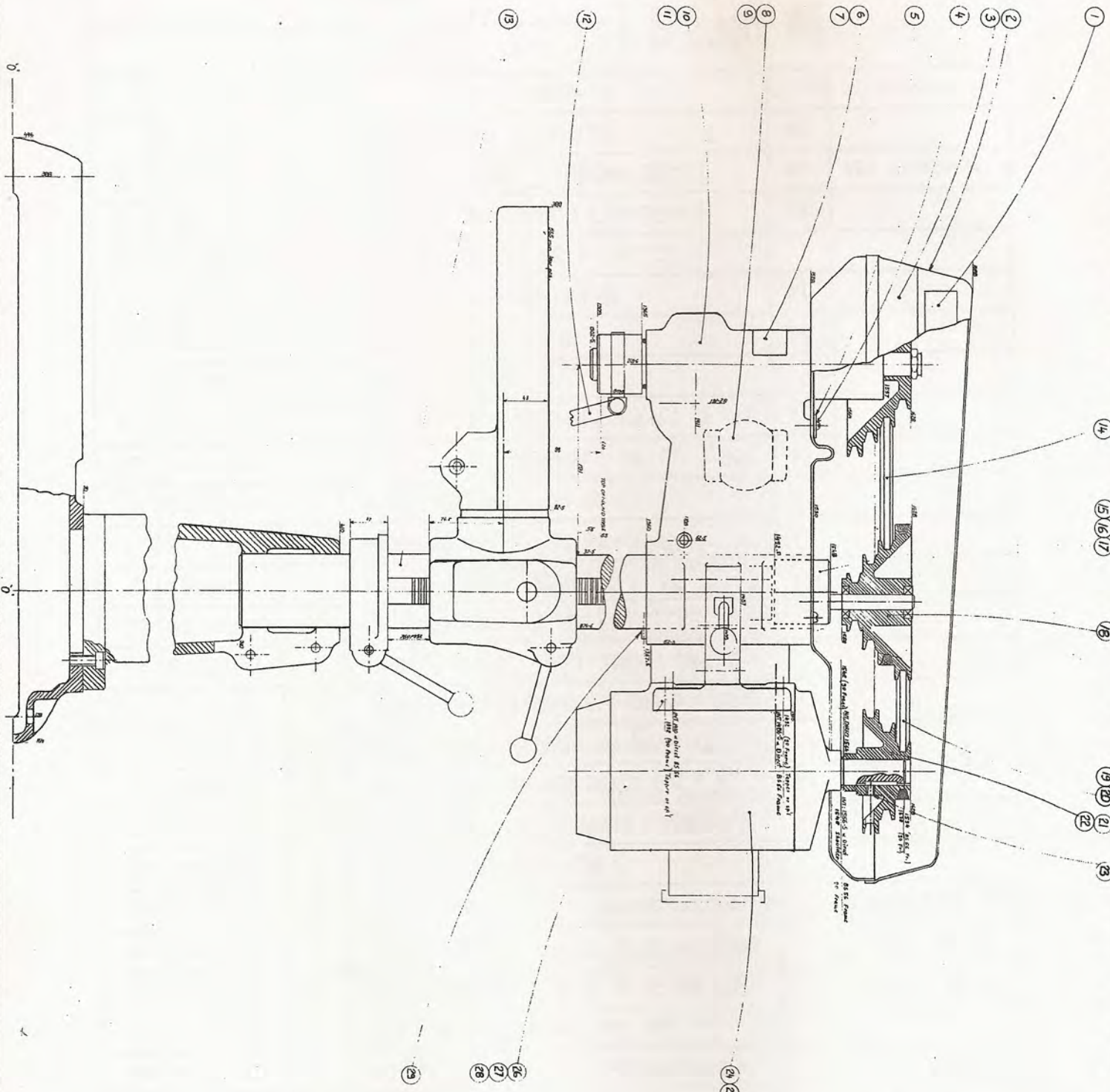
QTY	DESCRIPTION	UNIT	REMARKS
43	103534	1	COND. & PLUG (P. 8)
42	870506	4	Socket hd. cap. scr. M6 x 6
41	104530	1	Speed chart (see)
40	212438	1	Lead blue 5/16-20 x 3.50
39	211212	1	Switch-hole cover plate
38	103525	1	V-belt A30
37	1244115	1	Base unit back model long arm
36	244113	1	Base unit back model short arm
35	244123	1	Base unit floor model long arm
34	871592	2	Rivet 1/4" x 1/2" 8F or 8F16
33	243108	1	Overall ballguard assy (long)
32	212446	1	Lead, red 24/32 x 2.50 L
31	212447	1	Lead, white 24/32 x 2.50 L
30	870546	1	Socket set scr. M6 x 8
29	243506	1	V-belt (with long arm)
28	243505	1	V-belt (with short arm)
27	212520	1	Motor 1ph. 0.75HP, 1/2" x 1/2" D80
26	330550	1	Condenser R 20
25	870579	4	Flat washer 8
24	870556	4	Hex. nut 1/2" x 20
23	212518	1	Motor 3ph. D80 frame, 1/2" x 1/2" D80
22	104538	1	Motor pulley 1/2" x 1/2"
21	871520	1	Hex. lock nut M6
20	870584	1	Round hd. screw M6 x 25
19	243412	1	Minig. bracket clamp memb. NS
18	870553	1	Hex. hd. screw M6 x 20
17	240415	1	Ballguard mounting bracket NS
16	243503	1	V-belt A57 (with short arm)
15	872547	2	Flat washer 1/2" x 1/2" x 1/2"
14	243504	1	V-belt A70 (with long arm)
13	870517	1	Socket head scr. M10 x 25
12	244106	1	Intermediate drive assy
11	104527	1	Motor pulley 3 step
10	243107	1	Overall ballguard assy (short)
9	106510	1	Serial name plate
8	244114	1	Base unit floor model short arm
7	103176	1	Chuck guard assy
6	870549	2	Socket screw M8 x 12
5	244103	1	Electrical assy
4	245102	1	Lead assy 2MT
3	871530	2	Round hd. scr. M5 x 12
2	244205	1	Front guard cast iron
1	1872564	6	Round hd. scr. M5 x 2.5

DRAWN: G. F. DATE: 10-12-82
 CHECKED: J. E. DATE: 1-2-83
 TITLE: Radial drill 2MT floor model, 9 speed
 SCALE: 1:2
 MATERIAL: STEEL
 ANGLE: 1:1
 SHEET: 13 OF 13
 REVISION: 1
 WILSON ENGINEERING, INC.
 245076

DO NOT SCALE
COMMERCIAL STOCK
ALL DIMENSIONS
UNLESS OTHERWISE NOTED
DIMENSIONS ARE
IN INCHES

THIS DESIGN OR
SCALE, BUT NOT
THE DIMENSIONS,
IS SUBJECT TO
REVISION WITHOUT
NOTICE. THE
DESIGNER ASSUMES
ALL LIABILITY FOR
ANY MATERIAL
DEFECTS OR
CONSTRUCTION
DEFICIENCIES.
THE USER ASSUMES
ALL LIABILITY FOR
ANY DAMAGE TO
PROPERTY OR
PERSONS.

Grade	Material	Finish
1	303	16
2	304	16
3	316	16
4	321	16
5	304	16
6	304	16
7	304	16
8	304	16
9	304	16
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21	304	16
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23	304	16
24	304	16
25	304	16
26	304	16
27	304	16
28	304	16
29	304	16



Part No.	Part Name	Material	Quantity	Notes
25	ROTOR SHAFT	303	1	
26	ROTOR WHEEL	303	1	
27	ROTOR SHAFT	303	1	
28	ROTOR WHEEL	303	1	
29	ROTOR SHAFT	303	1	
30	ROTOR WHEEL	303	1	
31	ROTOR SHAFT	303	1	
32	ROTOR WHEEL	303	1	
33	ROTOR SHAFT	303	1	
34	ROTOR WHEEL	303	1	
35	ROTOR SHAFT	303	1	
36	ROTOR WHEEL	303	1	
37	ROTOR SHAFT	303	1	
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41	ROTOR SHAFT	303	1	
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43	ROTOR SHAFT	303	1	
44	ROTOR WHEEL	303	1	
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98	ROTOR WHEEL	303	1	
99	ROTOR SHAFT	303	1	
100	ROTOR WHEEL	303	1	

PROBO WALDOWN
212001