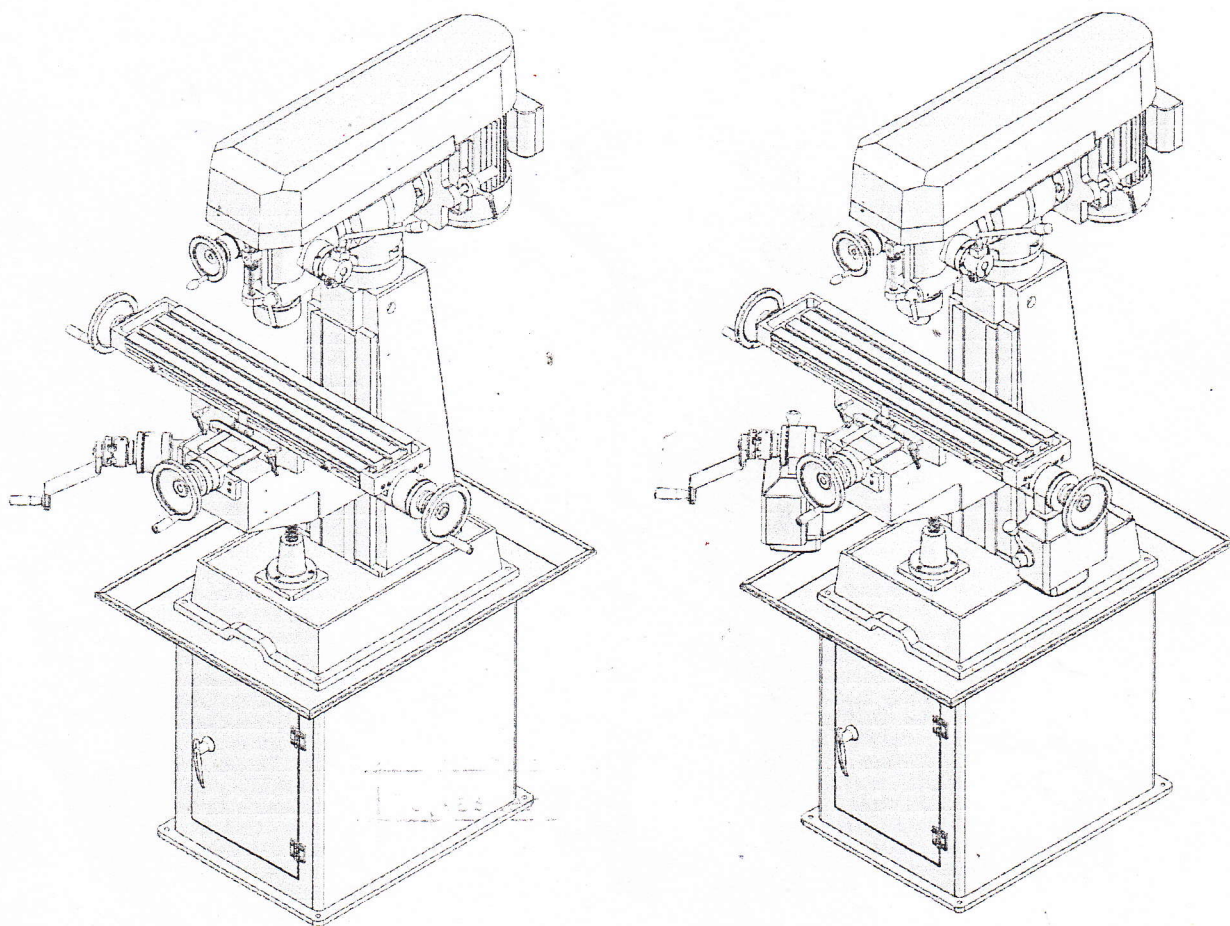


VERTICAL MILLING MACHINE

MODEL VMC Vario

SERVICE MANUAL



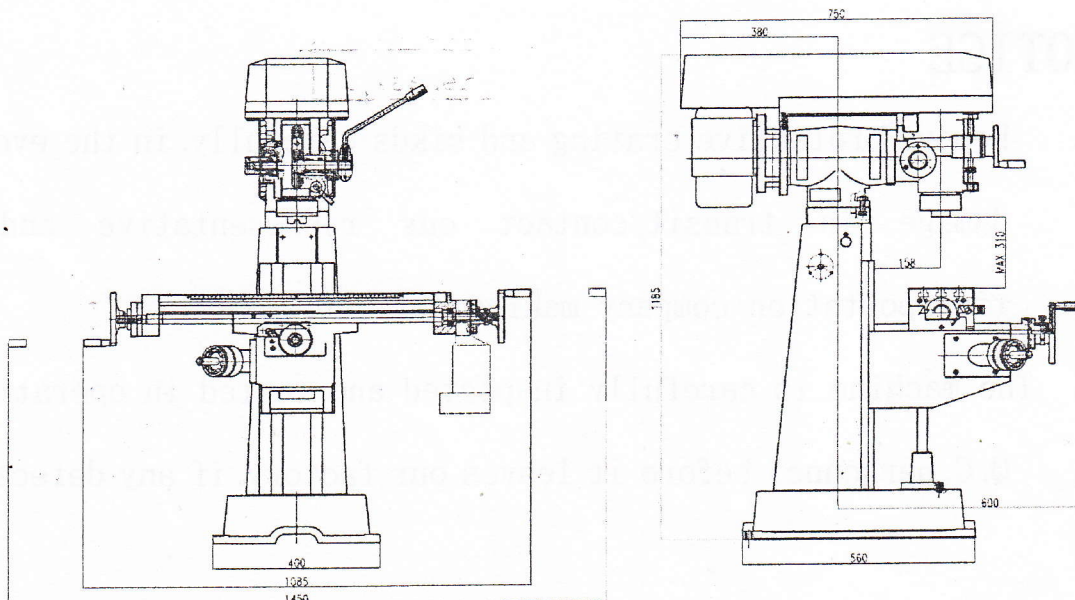
READ THIS MANUAL CAREFULLY

*It is essential to give the serial number of your machine in any order of repair
Parts to assure prompt and accurate service
Order repair parts by numbers, description and machine serial number*

VERTICAL MILLING MACHINE VMC Vario

Table size	660 × 156mm
Longitudinal travel	350mm
Cross travel	160mm
Vertical knee travel	280mm
Quill travel	80mm
Max.distance spindle to table	310mm
Spindle taper	R8 or MT3
Vertical head tilting angle(R&L)	± 45°
Ram swivelling angle	360°
Spindle speeds(2)	100-600/425-2500 rpm
Drive motor	1.5KW
Net weight(approx)	330KG
Shipping weight	375KG

REFERENCE DIMENSIONS:



FEATURES:

- 1、 Model is a compact vertical milling machine. It is easy to set up .the controls are designed for operator convenience with dual table hand wheel.
- 2、 It is very practical for technical schools, small parts productions, toolrooms, R&D work, maintenance shops and even hobby use.
- 3、 Themachine is idealy suited for many operations, including milling, compound angle milling, engraving, drilling and jid boring.
- 4、 All "ways" are hand scraped for perfect bearing and alignment. the table is ground for perfect square ness.
- 5、 Castings are high strength material. they are aged for several months, before normalizing and tempering, to minimize deformation.

NOTICE

- 1、 Remove protective crating and sikds carefully, in the event of damage in transit, contact our representative and the transportation company making delivery.
- 2、 The machine is carefully inspected and tested in operation by Q. C. personnel before it leaves our factory: if any defects are

found on delivery write us directly.

3. Read the catalogue and become familiar with the parts locations on the drawings as it will be easier to understand this operator's manual.

I INSTALLATION:

To set the machine on a solid concrete foundation, it's advisable to apply a little grout to touch up any unevenness in the concrete in order to get a solid foundation at all points.

When setting machine on a floor that has any surface irregularities, shims should be used to correct this condition to the greatest extent possible.

II PRE-LUBRICATION:

Thoroughly clean the machine with gasoline or kerosene, then lubricate all the slide ways with S.A.E.

#10 and gears with S.A.E. #30 lubricant. be sure the machine is lubricated properly before starting.

III LEVELLING MACHINES:

Set machines by levelling the work table lengthwise and crosswise with a precision levelling instrument (refer to the test readings in the attached test records).

IV INSPECTION:

Inspect the machine with the attached original testing records

for reference.

V SWITCH BOX:

Switch box is located on the left side of the column, on-off only.

VI ADJUSTMENT OF TABLE FEED TRAVEL:

Table longitudinal and cross feed can be set for any travel distance by adjusting stop set screws that are located in front of table and at the right side of knee.

VII ADJUSTMENT OF TABLE GIB:

The table is provided with a full length tapered gib in the saddle with an adjusting screw on each end. to take up gib tighten the two screws untill a slight drag is felt when moving the table by hand. if the table is not tight enough, loosen the adjusting screw on small end, and tighten up adjusting screw on big end. if feel is too tight, reverse the adjusting procedures.

VIII ADJUSTMENT OF SADDLE AND KNEE GIBS:

To tighten gibs the same method as described above is used

IX CLAMPING TABLE, SADDLE AND KNEE:

When milling with longitudinal table feed only, it is advisable to clamp the knee with the column and the saddle with the knee to add rigidity to these members and provide for heavier cuts with a minimum of vibration. the saddle locking lever is located on the left side of saddle to the operator, apply clamping

pressure properly, as this will hold saddle sufficiently rigid.

The table clamping levers are located in front of saddle and should always be clamped when longitudinal movement is not required.

The knee clamping lever is at the left side of knee, leave clamped at all times unless the knee is in operation.

X REMOVING TABLE:

Remove the table as follows: hand wheel, dial holder, bearing bracket, turn the lead screw all way, so that it can be removed. complete all the steps then the table can be disassembled easily.

XI REMOVING SADDLE:

Remove as follows: hand wheel, dial holder, bearing bracket, turn the leadscrew all the way, loosen set screw on the middle of saddle, take off the lead screw nut, and draw saddle gib out. the saddle can then be removed.

XII MOUNTING MOTOR AND SHIFTING BELTS FOR SPEEDS:

Motor is mounted on a plate hinged to the pulley housing. release the belt set unit by turning the handle at the side of motor, then shift belts to proper speed as desired, then tighten the belt set unit, a speed change chart is attached inside the pulley cover.

XIII QUILL LOCK AND VERTICAL FEED:

The handle at the right lower corner of the head is the quill lock. when vertical feed is not in use, set the handle to lock the quill and make the head more stable.

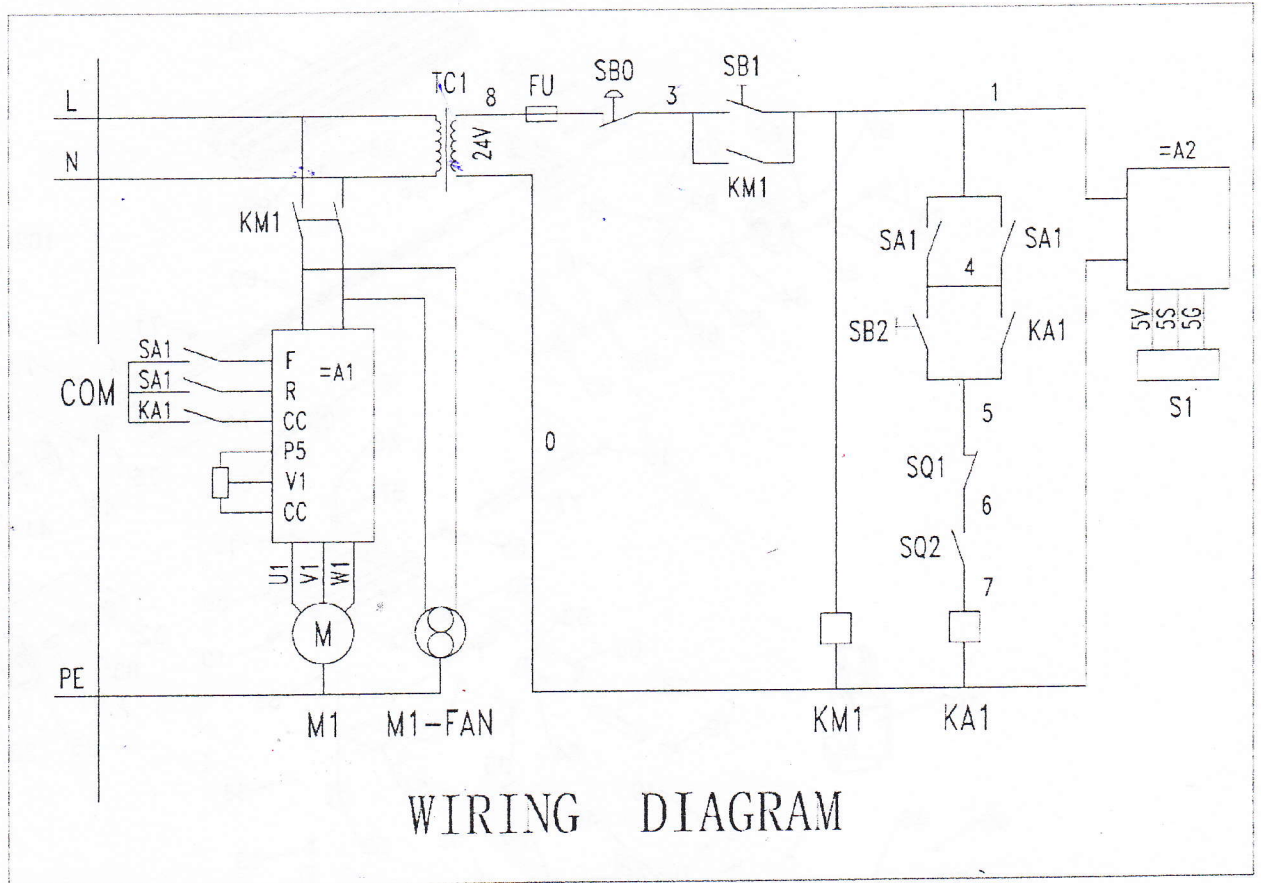
The micrometer depth stop is graduated in inches. by utilizing these simple graduations, it is possible to work very accurately to different depths. a lock nut under the micrometer nut assures that the micrometer nut is secured properly.

XVI QUILL CLUTCH OF VERTICAL MILLING HEAD:

The vertical feed is controlled by a hand wheel at the front of the head and a handle at the right hand of the head. when hand wheel is in use tighten the clutch lock nut by hand, or loosen it for handle operation, use hand wheel for fine feeds, handle for fast feeds.

XV VERTICAL HEAD AND TEE ADAPTER:

Vertical milling head can be tilted 90° on each side by loosening the four locking bolts on tee adapter. loosen two set bolts on the adapter, the vertical milling head can then be swivelled 120° ; tighten the set bolts after swiveling. the motor and milling head must tilt together for the motor and head are suspended on the same pulley housing.



E-Stop

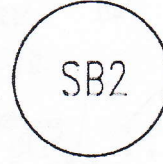
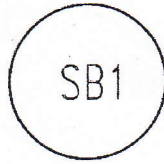
Power

Start

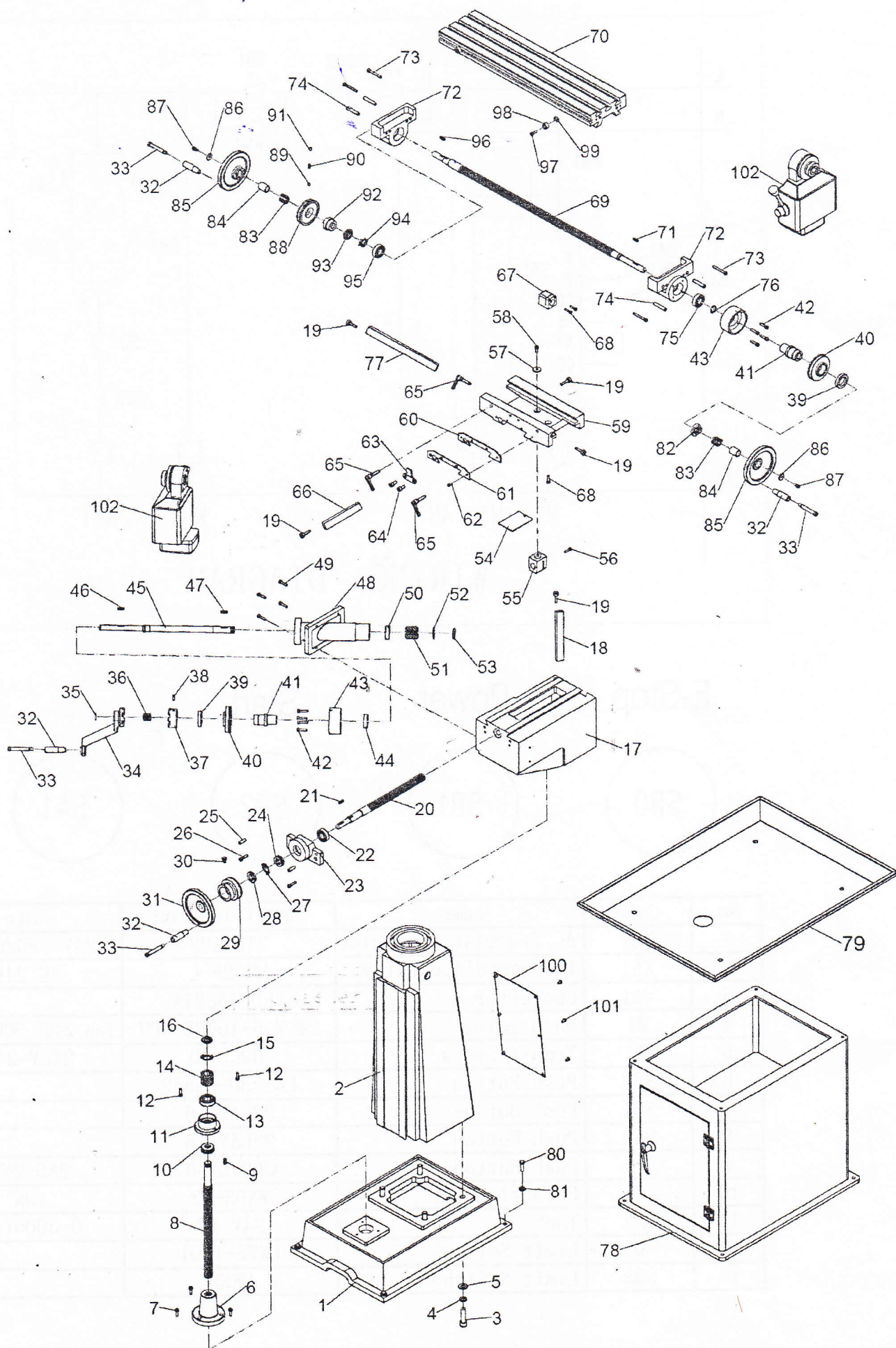
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R



No.	Code	Name	Specification	Note
1	KM1	AC. Magnetic Contactor	3TB4122	24V 50/60HZ
2	KA1	Intermediate relay	HH52P-L	AC 24V
3	=A1	Converter	VFD015E21A	
4	M1	Main motor	240V 5-100HZ 3PH	fan 240V 50HZ 1PH
5	TC	Transformers	JBK3-40	240V-24V
6	SB0	Push Button	LA125II-BS542	
7	SB1	Push Button	22LAY-16	
8	SB2	Push Button	22LAY-16	
9	SA1	Push Button	XB2BD234C	2NO+2NO
10	R	Potentiometer	WX03-13	10K
11	=A2	Tach	24V AC	0-3000rpm
12	SQ1	Limit Switch	LXW5-11Q1	
13	SQ2	Limit Switch	QKS8	



Main parts list

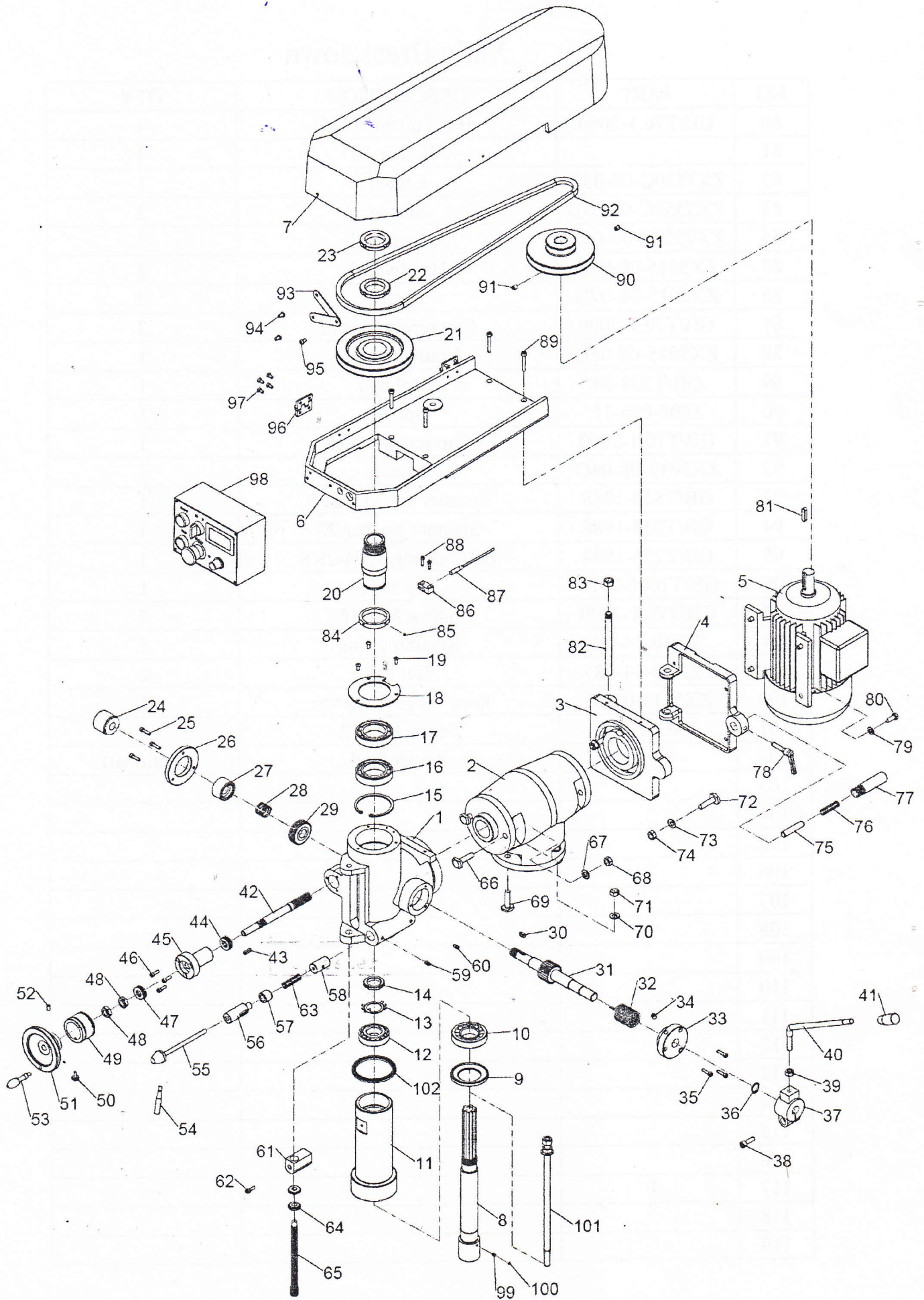
NO	PART	DESCRIPTION	QTY
1	ZX5015-01-01	Base	1
2	ZX5015-02-01	Column	1
3	GB/T70.1-2000	Hex bolt M14x50	4
4		Washer M14	4
5		Washer M14	4
6	ZX5015-03-02	Elevation lead screw set nut	1
7	GB/T70.1-2000	Cap screw M6x20	3
8	ZX5015-03-03	Elevation leadscrew	1
9	GB/T1096-2003	Key 6x20	1
10	GB/T310-1995	Ball bearing 51204	1
11	ZX5015-03-05	Elevation bearing base	1
12	GB/T70.1-2000	Hex bolt M6x20	2
13	GB/T276-1994	Ball bearing 6204-2RS	1
14	ZX45-02-03	Elevation gear	1
15	GB/T858-1988	Spanner washer 20	1
16	GB/T810-1988	Spanner nut M20x1.5	1
17	ZX5015-01-01	Elevation work table	1
18	ZX5015-03-12	Gib	1
19	ZX5015-03-13	Gib adjust screw	6
20	ZX5015-04-02	Cross leadscrew	1
21	GB/T1096-2003	Key 5x20	1
22	GB/T276-1994	Ball bearing 6004-2RS	1
23	ZX5015-04-04	Bearing bracket	1
24	GB/T276-1994	Ball bearing 51104	1
25	GB/T118-2000	Pin 8x25	2
26	GB/T70.1-2000	Hex bolt M6x16	2
27	GB/T858-1988	Spanner washer 20	1
28	GB/T810-1988	Spanner nut M20x1.5	1
29	ZX5015-05-06	Graduated dial	1
30	GB/T73-1985	Adjust screw M6x16	1
31	ZX5015-06-40	Hand wheel	1
32	ZX5015-06-41	Handle	4
33		Handle screw	4
34	ZX5015-03-10	Elevation crank	1
35	GB/T894.1-1986	Special retaining ring 17	1
36		Spring	1
37	ZX5015-03-10D.2	Elevation handle clutch	1
38	GB/T77-2000	Screw	1
39	ZX5015-08-02D	Adjust nut	2

Main Breakdown

NO	PART	DESCRIPTION	QTY
40	ZX45-01-06C	Graduated dial	2
41	ZX5015-08-01D	Bush	2
42	GB/T70.1-2000	Hex bolt M6x25	8
43	ZX5015-08-03D	Adapter sleeve	2
44	GB/T276-1994	Ball bearing 6004-2RS	1
45	ZX5015-03-07D	Elevation shaft	1
46	GB/T1096-2003	Key 5x20	1
47	GB/T1096-2003	Key 6x20	1
48	ZX5015-03-05D	Gear shaft sleeve	1
49	GB/T70.1-2000	Cap screw M8x20	4
50	GB/T276-1994	Ball bearing 6004-2RS	1
51	ZX45-02-03	Elevation gear	1
52	GB/T858-1988	Spanner washer 20	1
53	GB/T810-1988	Spanner nut M20x1.5	1
54		Splash guard	1
55	ZX5015-04-03	Cross leadscrew nut	1
56	GB/T70.1-2000	Hex bolt M5x25	1
57	ZX5015-03-15	Washer	1
58	GB/T70.1-2000	Hex bolt M6x20	1
59		Saddle	1
60		Splash guard	1
61		Splash guard	1
62	GB/T70.1-2000	Cap screw M5x12	4
63	ZX30-04-10	Fixed block	1
64	GB/T70.1-2000	Hex bolt M6x16	2
65		Adjust screw	3
66	ZX5015-04-09	Gib	1
67	ZX5015-05-03	Longitudinal leadscrew nut	1
68	GB/T70.1-2000	Hex bolt M5x25	2
69	ZX5015-05-02	Longitudinal leadscrew	1
70	ZX5015-05-01	Work table	1
71	GB/T1096-2003	Key 5x20	1
72	ZX5015-05-04	Longitudinal bearing bracket	2
73	GB/T70.1-2000	Hex bolt M6x50	4
74	GB/T118-2000	Pin 8x50	4
75	GB/T276-1994	Ball bearing 6204-2RS	1
76	GB/T894.1-1986	Special retaining ring 17	1
77	ZX5025-05-09	Gib	1
78		Cabinet base	1
79		Oil pan	1

Main Breakdown

NO	PART	DESCRIPTION	QTY
80	GB/T70.1-2000	Hex bolt M10x45	4
81		Washer 10	4
82	ZX7550C-08-03D	Clutch	1
83	ZX7550C-08-05B	Spring	2
84	ZX7550C-08-04B	Spacer bush	2
85	ZX5015-08-06D	Handwheel	2
86	ZX5015-08-07D	Washer	2
87	GB/T70.1-2000	Cap screw M6x12	2
88	ZX5015-08-05D	Graduated dial	1
89	GB/T308-84	Steel ball	1
90	JZ08-026-11	Spring	1
91	GB/T70.1-2000	Cap screw M6x8	1
92	ZX5015-08-04D	Clutch	2
93	GB/T810-1988	Spanner nut M20x1.5	1
94	GB/T858-1988	Spanner washer 20	1
95	GB/T276-1994	Ball bearing 6204-2RS	1
96	GB/T1096-2003	Key 5x16	1
97	GB/T70.1-2000	Screw M6x16	2
98	ZX30-04-09	Retaining ring	2
99	ZX30-04-08	Nut M6	2
100	ZX5015-07-03	Rear column cover	1
101	GB67-76	Screw M6x12	6
102		Power feed	(optional)
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Head parts list

NO	PART	DESCRIPTION	QTY
1	ZX5015-06-02	Spindle head	1
2	ZX5015-06-01	Rocker arm bridge	1
3	ZX5015-06-47	Motor bracket	1
4	ZX5025-06-09	Motor plate	1
5		Motor	1
6	ZX5015-06-42.2	Shield plate	1
7	ZX5015-06-42.1	Shield plate	1
8		Spindle	1
9	ZX30-05-28	Cover	1
10	GB/T297-1994	Bearing 30207	1
11	ZX5025-06-03	Spindle sleeve	1
12	GB/T297-1994	Bearing 30206	1
13	GB/T858-1988	Lock washer 30	1
14	ZX5025-06-04.1	Lock nut M30x1.5	1
15	GB/T893.1-1986	Retaining ring 75	1
16	GB/T276-1994	Ball bearing 6009	1
17	GB/T276-1994	Ball bearing 6009	1
18	ZX30-05-19	Spindle cover	1
19	GB67-76	Screw M5x12	3
20	ZX5025-06-05	Shaft	1
21	ZX5015-06-24	Pulley	1
22	ZX5015-06-38.1	Nut	1
23	ZX5015-06-38.2	Lock nut	1
24	ZX5015-06-21	Nut	1
25	GB/T70.1-2000	Hex bolt M5x16	3
26	ZX5015-06-22	Left cover	1
27	ZX5015-06-18	Clutch	1
28	ZX5015-06-15	Spring	1
29	ZX5025-06-17	Gear	1
30	GB/T1096-2003	Key 6x15	1
31	ZX5025-06-06	Gear shaft	1
32	ZX5015-06-27	Spring	1
33	ZX5015-06-16	Right cover	1
34	JB/T7940.4-1995	Oil cup	1
35	GB/T70.1-2000	Hex bolt M5x20	3
36	GB/T894.1-1986	Retaining ring 19	1
37	ZX5015-06-37.1	Hand base	1
38	GB/T70.1-2000	Hex bolt M8x25	1
39	GB/T6175-2000	Hex nut M10	1

Head parts list

NO	PART	DESCRIPTION	QTY
40	ZX5015-06-37.2	Handle	1
41	JB/T7271.5-1994	Hand set M10x50	1
42	ZX5025-06-19	Gear shaft	1
43	GB/T1096-2003	Key 4x20	1
44	GB/T301-1995	Ball bearing 51102	1
45	ZX5015-06-20	Shaft sleeve	1
46	GB/T70.1-2000	Screw M5X16	3
47	GB/T301-1995	Ball bearing 51102	1
48	GB/T6173-2000	Hex nut M14x1.5	2
49	ZX5015-06-36	Graduated dial	1
50	ZX5105-05-07	Adjust screw	1
51	ZX5015-06-39	Handwheel	1
52	GB/T70.1-2000	Screw M5x16	1
53		Handle	1
54	ZX5025-06-33	Lock handle	1
55		Lock screw	1
56	ZX5025-06-30	Lock set	1
57	ZX5015-06-32	Spacer bush	1
58	ZX5025-06-31	Lock set	1
59	GB/T70.1-2000	Screw M6X12	1
60	GB/T70.1-2000	Screw M6X12	1
61	ZX5015-06-29.2	Limit plate	1
62	GB/T70.1-2000	Screw M5x16	1
63	ZX5015-06-13	Spring	1
64	ZX5015-06-29.2	Limit nut	2
65	ZX5015-06-29.1	Leadscrew	1
66	ZX5015-06-07	T bolt M10x40	2
67	GB/T97.1-2002	Washer 10	2
68	GB/T889.1-2000	Hex nut M10	2
69	ZX5015-06-07	T bolt M10x40	3
70	GB/T97.1-2002	Washer 10	3
71	GB/T889.1-2000	Hex nut M10	3
72	ZX5015-06-07	T bolt M10x40	2
73	GB/T97.1-2002	Washer 10	2
74	GB/T889.1-2000	Hex nut M10	2
75	ZX5015-06-12	Pin	1
76	ZX5015-06-13	Spring	1
77	ZX5015-06-11	Bush	1
78	ZX5015-06-14-01	Screw	1
79	GB/T97.1-2002	Washer 8	4

Head parts list

NO	PART	DESCRIPTION	QTY
80	GB/T5782-2000	Hex bolt M8x20	4
81	GB/T1096-2003	Key 8X35	1
82	ZX5015-06-10	Small Spindle	1
83	GB/T6175-2000	Hex nut M12	1
84	ZX5015V-06-05.2	Spacer bush	1
85		Magnetic beads	4
86		The probe holder	1
87		Searching unit	1
88	GB/T70.1-2000	Screw M4X16	2
89	GB/T70.1-2000	Hex bolt M6x35	2
90	ZX5015V-06-26	Motor pulley	1
91	GB/T70.1-2000	Screw M8X10	2
92		GS: V13X1395	1
93		Connect plate	1
94	GB/T70.1-2000	Screw M6X12	2
95	GB/T70.1-2000	Screw M6X12	1
96		Connect plact 40x40	2
97	GB/T70.3-2000	Screw M5x12	8
98		Electrical cabinet	1
99	GB/T70.1-2000	Screw M5X6	1
100	GB/T70.1-2000	Screw M5X5	1
101	ZX5025-05-18	Pull rod 7/16"-20	1
102	ZX30-05-28	Cushion	1
103			1
104			1
105			1
106			1
107			1
108			1
109			1
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Head gear list

NO	PART	DESCRIPTION	QTY
30	GR700-200	Headgear 1	1
31	GR700-200	Headgear 2	1
32	GR700-200	Headgear 3	1
33	GR700-200	Headgear 4	1
34	GR700-200	Headgear 5	1
35	GR700-200	Headgear 6	1
36	GR700-200	Headgear 7	1
37	GR700-200	Headgear 8	1
38	GR700-200	Headgear 9	1
39	GR700-200	Headgear 10	1
40	GR700-200	Headgear 11	1
41	GR700-200	Headgear 12	1
42	GR700-200	Headgear 13	1
43	GR700-200	Headgear 14	1
44	GR700-200	Headgear 15	1
45	GR700-200	Headgear 16	1
46	GR700-200	Headgear 17	1
47	GR700-200	Headgear 18	1
48	GR700-200	Headgear 19	1
49	GR700-200	Headgear 20	1
50	GR700-200	Headgear 21	1
51	GR700-200	Headgear 22	1
52	GR700-200	Headgear 23	1
53	GR700-200	Headgear 24	1
54	GR700-200	Headgear 25	1
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68	GR700-200	Headgear 39	1
69	GR700-200	Headgear 40	1
70	GR700-200	Headgear 41	1
71	GR700-200	Headgear 42	1
72	GR700-200	Headgear 43	1
73	GR700-200	Headgear 44	1
74	GR700-200	Headgear 45	1
75	GR700-200	Headgear 46	1
76	GR700-200	Headgear 47	1
77	GR700-200	Headgear 48	1
78	GR700-200	Headgear 49	1
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80	GR700-200	Headgear 51	1
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83	GR700-200	Headgear 54	1
84	GR700-200	Headgear 55	1
85	GR700-200	Headgear 56	1
86	GR700-200	Headgear 57	1
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88	GR700-200	Headgear 59	1
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122	GR700-200	Headgear 93	1
123	GR700-200	Headgear 94	1
124	GR700-200	Headgear 95	1
125	GR700-200	Headgear 96	1
126	GR700-200	Headgear 97	1
127	GR700-200	Headgear 98	1
128	GR700-200	Headgear 99	1
129	GR700-200	Headgear 100	1

Certificate of Inspection
for
Geared Head Milling and Drilling Machine
Model VMC Vario

Dispatch No.:

The machine has been qualified and may be permitted to dispatch

Head of Inspection Depart_____ Date_____

Director_____ Date_____

PACKING LIST FOR

GEARED HEAD DRILLING & MILLING MACHINE VMC Vario

Series No : 1620054			Dimension :		
G/W :			N/W :		
No.	Name	Spec	Model	Quantity	Remark
1	Milling & drilling machine			1	
2	Draw bar	7/16"-20UNF		1	
3	Adapter	R8/MT3 MT3/2		1	
4	Taper shank for drilling chunck	R8/B16		1	
5	Drilling chuck	$\Phi 1 \sim \Phi 13$		1	
6	Arbor	R8		1	
7	T slot bolt	M12 \times 55		2	
8	Washer	12		2	
9	Nut	M12		2	
10	Tilted wedge			1	
11	Inner hexagonal spanner	3.4.5.6.		1	
12	Spanner	12-14 17-19		1	
13	Oil gun			1	
14	Instruction Manual			1	
15	Certificate of inspection			1	
16	Packing list			1	

Packing inspector ZZZ

Date 2016/04