

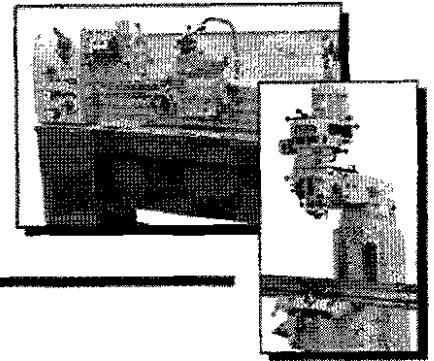


**MACHINERY DIVISION**

6465 18 MILE ROAD  
STERLING HEIGHTS, MI 48314

**PHONE:**  
(586) 731-3600 • 1-800-860-1740

**FAX:**  
(586) 731-7464 • 1-800-862-1740



## **MODEL VM-12-R8 MILLING MACHINE**

**THANK YOU FOR PURCHASING WITH KBC MACHINERY. ALL KBC MACHINES ARE BACKED BY OUR 1 YEAR PARTS REPLACEMENT WARRANTY. WHEN USED AS INTENDED, AND WITH PROPER MAINTENANCE THIS MACHINE WILL PROVIDE YOU WITH YEARS OF TROUBLE-FREE SERVICE. IF YOU NEED PARTS SIMPLY FILL OUT THE PARTS REQUEST FORM, AND FAX OR E-MAIL YOUR REQUEST. ALL OTHER QUESTIONS PLEASE CONTACT US @ :**

**KBC MACHINERY  
6465 18 MILE ROAD  
STERLING HEIGHTS, MI 48314  
PH (800) 860-1740  
FAX (800) 862-1740  
[MACHINERY@KBCTOOLS.COM](mailto:MACHINERY@KBCTOOLS.COM)  
[WWW.KBCTOOLSANDMACHINERY.COM](http://WWW.KBCTOOLSANDMACHINERY.COM)**



# PARTS REQUEST FORM

YOUR COMPANY NAME:

STATE/PROVINCE

YOUR NAME

PHONE # + EXT

FAX #

MACHINE INFO:

MAKE/MANUFACTURER

MODEL NUMBER

YEAR MADE

SERIAL#

PARTS REQUESTED:

PART#

DESCRIPTION

PLEASE INCLUDE COPY(S) OF THE PARTS DRAWING FROM THE  
MANUAL AND CIRCLE THE PARTS NEEDED

FAX PARTS REQUEST TO (800) 862-1740

E-MAIL PARTS REQUEST TO: [machinery@kbctools.com](mailto:machinery@kbctools.com)

THANKS; KBC MACHINERY - MICHIGAN

# VERTICAL MILLING MACHINE

MODEL:VM-12

## SERVICE MANUAL

*READ THIS MANUAL CAREFULLY*

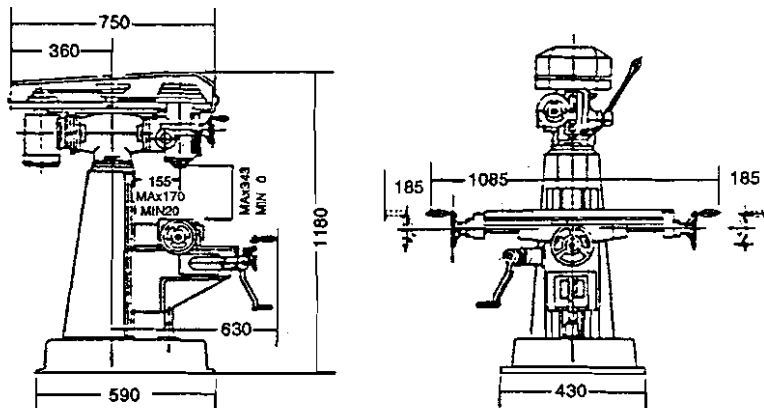
*It is essential to give the Serial Number of your machine in any order of repair parts to assure prompt and accurate service.*

*Order repair parts by numbers, description and machine serial number.*

# VETICAL MILLING MACHINE

Vertical spindle nose taper .....	M. T. 3 or R. 8
Vertical spindle travel .....	2-3/4" (70mm)
Vertical spindle speed (9 speeds) .....	200-2500 R. P. M.
Vertical spindle to table surface .....	6" (152mm) × 26" (660mm)
T-slots size (Number) .....	1/2" (3)
Maximum longitudinal travel .....	14-1/2" (370mm)
Maximum cross travel .....	6" (150mm)
Vertical travel .....	7-3/4" (195mm)
Lead screw .....	1" × 8TPI or T24 × 3
Vertical head tilting angle (R & L) .....	90°
Ram swivelling angle .....	360°
Motor .....	0.75KW 1PH or 3PH
Net weight (approx).....	262kg
Ship weight (approx) .....	354kg
Packing .....	45-1/2" × 41-1/2" × 53"

## 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 wheels.
2. It is very practical for technical schools, small parts production, toolrooms, R&D work, maintenance shops and even hobby use.
3. The machine is ideally suited for many operations, including: conventional milling, compound angle milling, engraving, drilling and jig boring.
4. All "ways" are hand scraped for perfect bearing and alignment. The table is ground for perfect squareness.
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 colmn, 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 until 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.

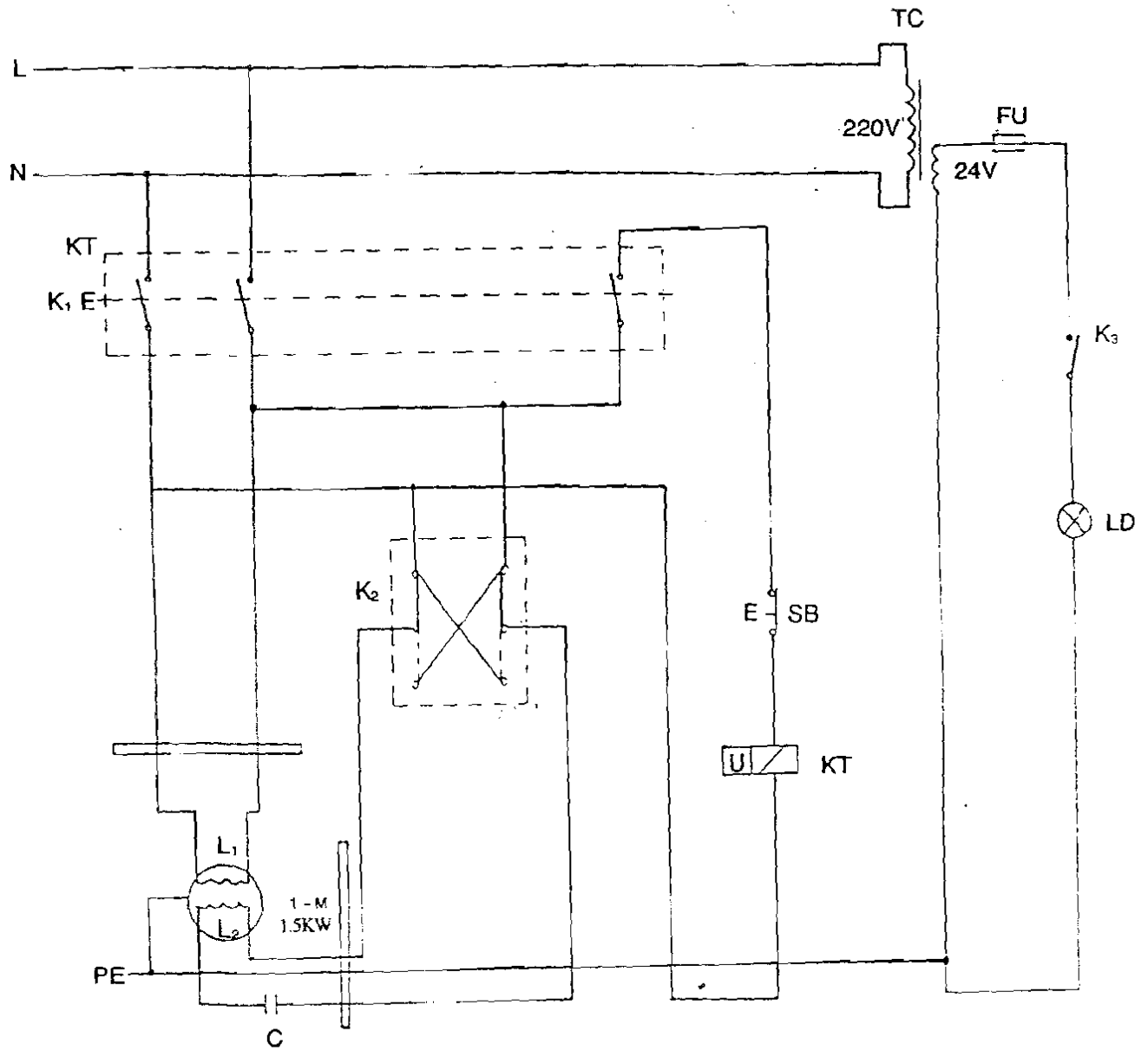
#### XIV QUILL CLUTCH OF VERTICAL MILLING HEAD :

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.

Power	Drive	Motor clockwise or counter clockwise rotation	Magnetic attraction switch k <sub>1</sub> and switch for machine stop	Transformer	Light and protect
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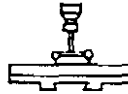
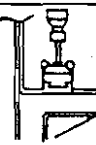
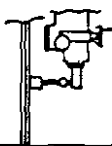


ELECTRICAL WIRING DIAGRAM

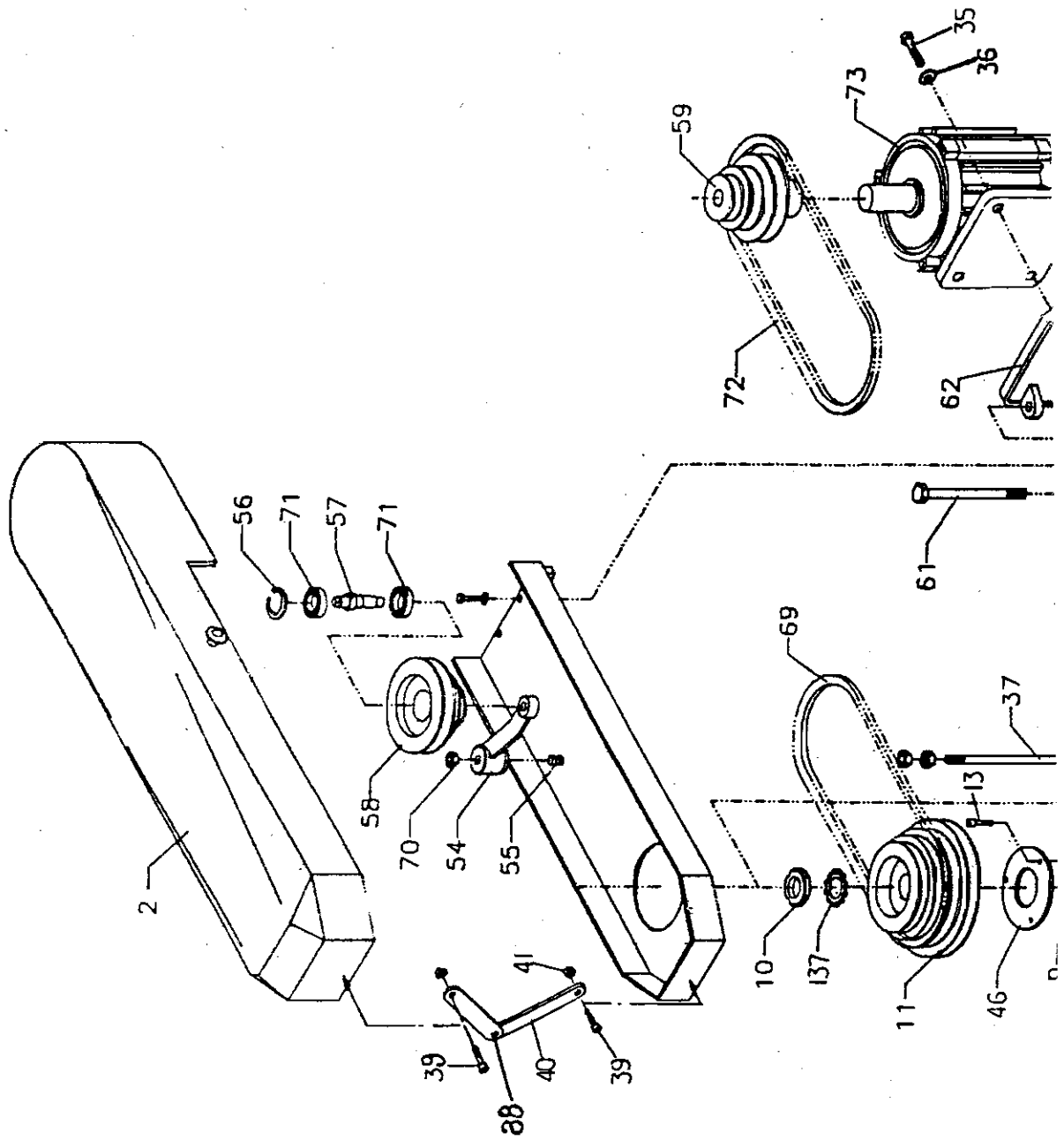
# FINAL INSPECTION RECORD

MODEL: \_\_\_\_\_

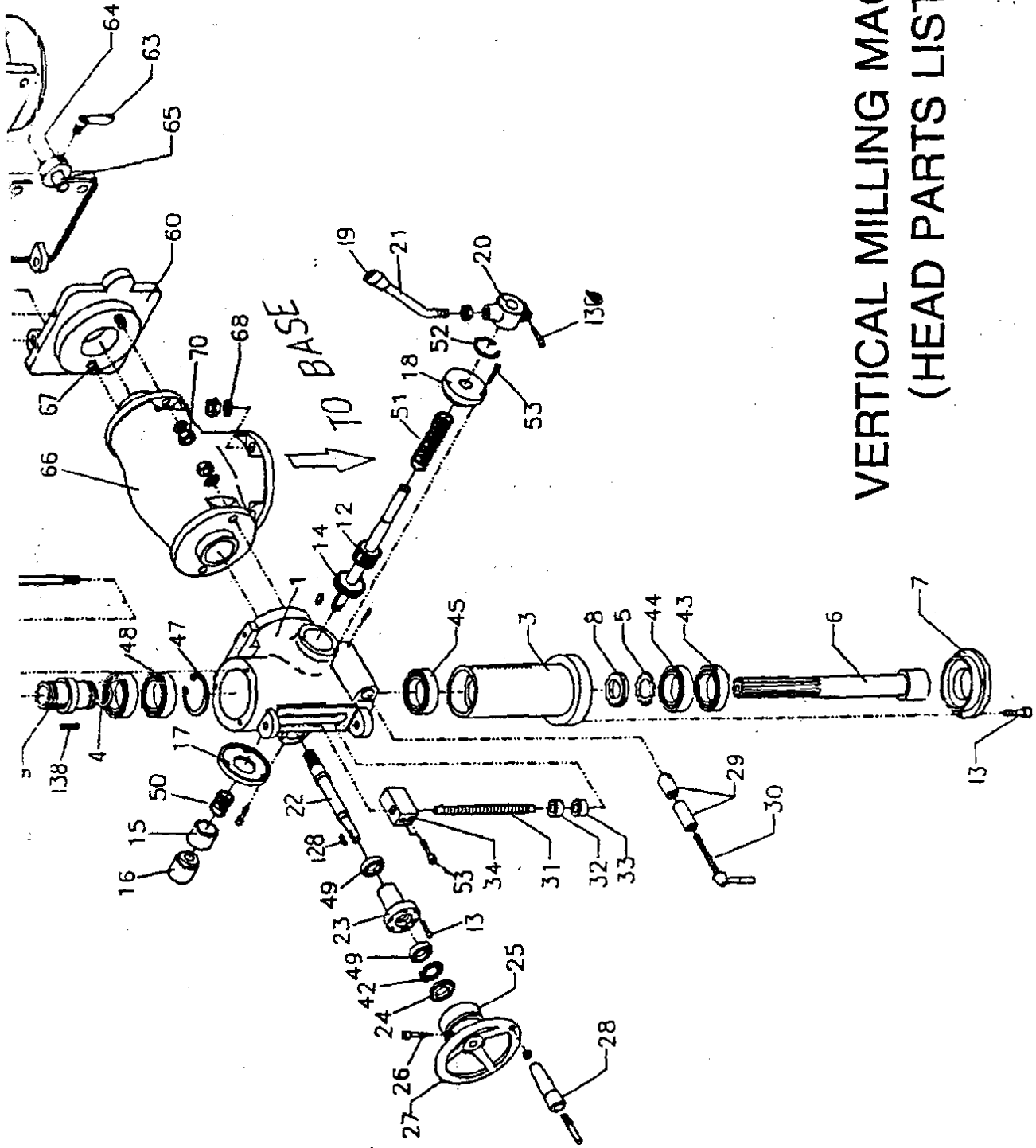
MFG. NO. \_\_\_\_\_

DATE: \_\_\_\_\_

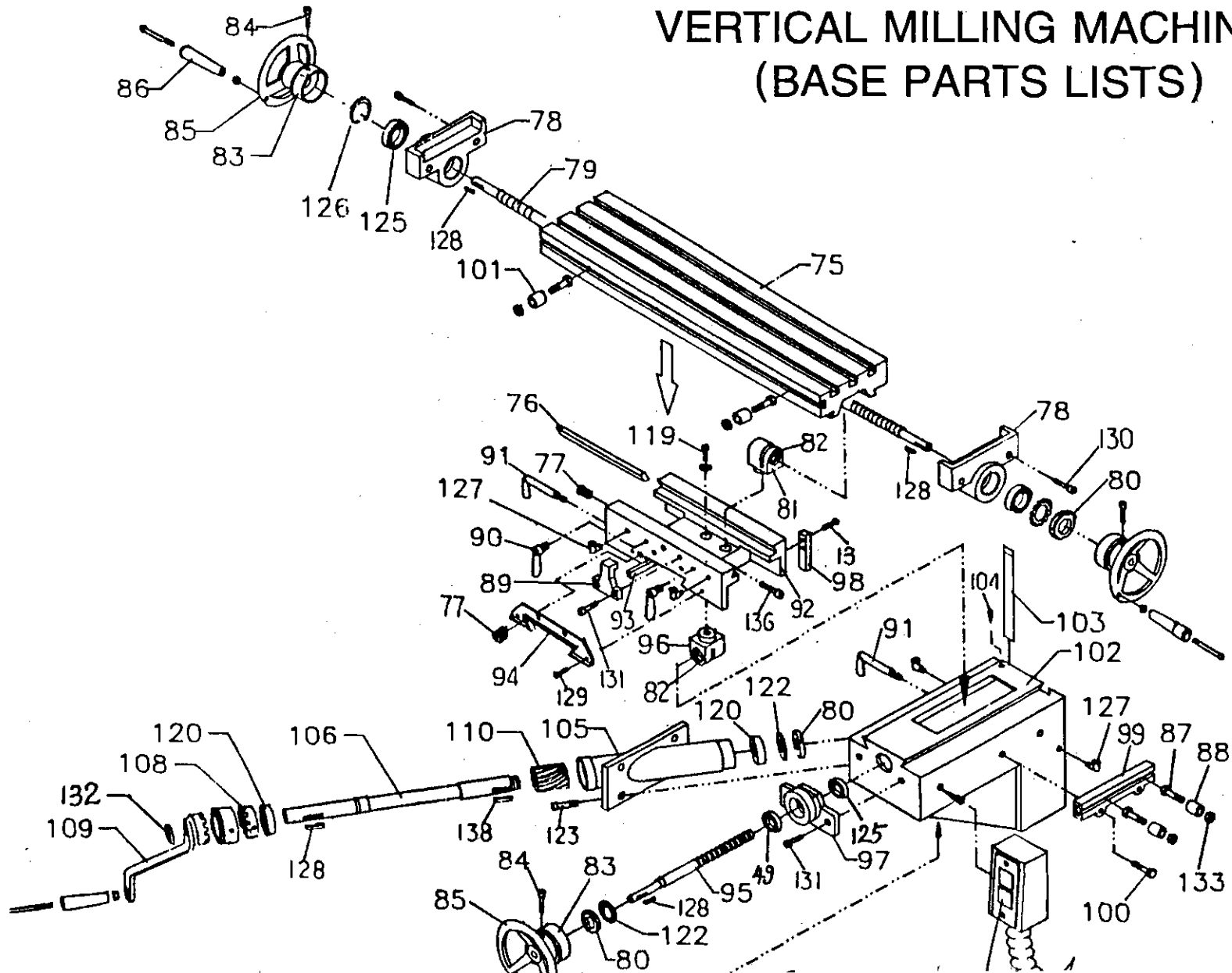
No.	Inspection Items	Illustrations	Tolerances	Measurements
1.	Straightness of upper surface of table		0.08	m.3
2.	Parallelism of table surface in cross movement		0.02/100	m.15
3.	Parallelism of table in longitudinal movement	In table longitudinal travel distance 	0.06	m.75
4.	Perpendicularity of table longitudinal and cross movement		0.04/300	m.3
5.	Squareness of movement of main spindle head to upper surface of table	Right and left direction 	0.05/100	m.3
		Forward and backward direction  No. lower at the front end of table	0.05/100	m.15
6.	Squareness of upper surface of table to center line of main spindle	Right and left direction 	0.05/300	m.2
		Forward and backward direction  No. lower at the front end of table	0.05/300	m.3
7.	Spindle taper hole run-out		a. 0.015 b. 0.02	m.1 m.15
8.	Linearity of verticed movement of knee	Right and left drection 	0.05/100	m.3
		Forward and backward drection 	0.05/100	m.3
Q C Superintendent			Q C Inspector	



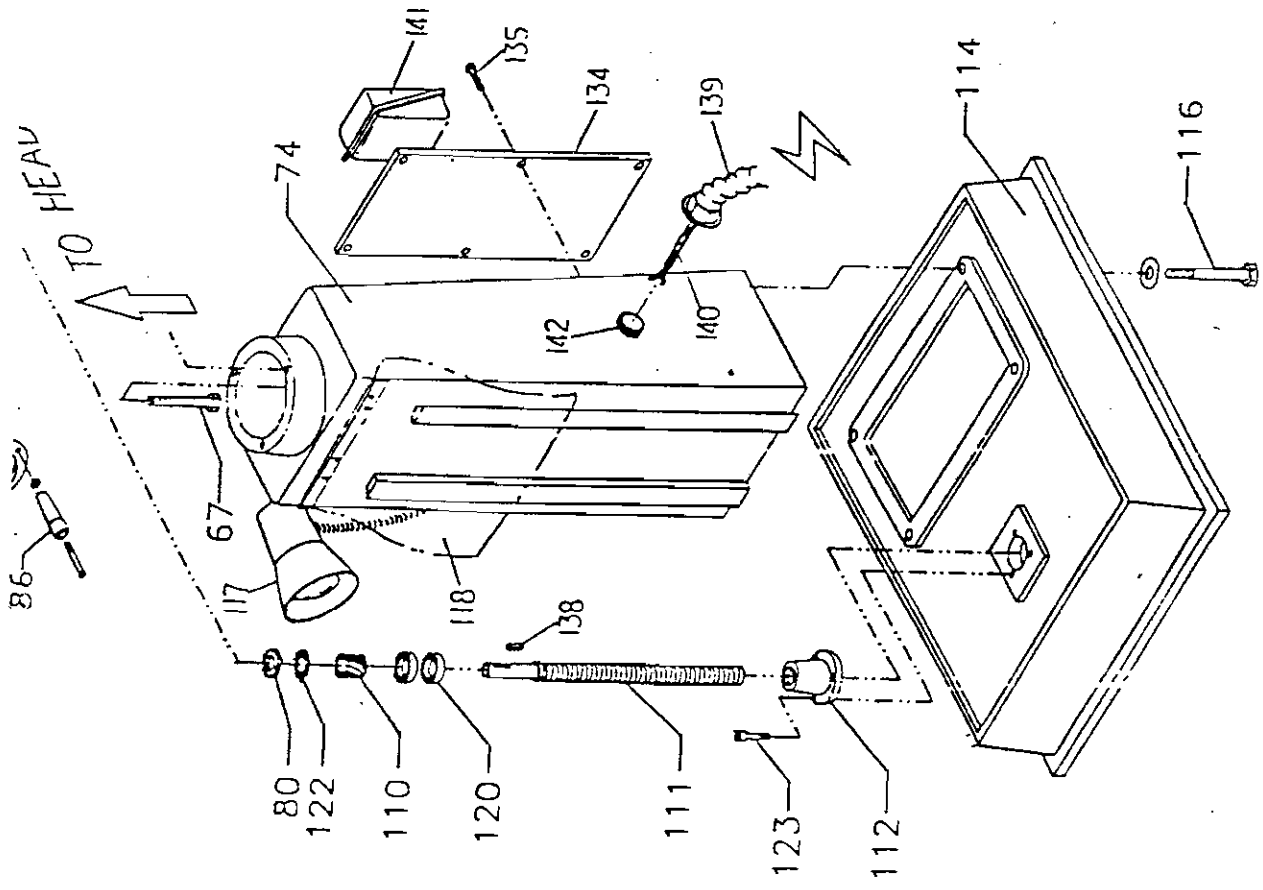
# VERTICAL MILLING MACHINES (HEAD PARTS LISTS)



# VERTICAL MILLING MACHINES (BASE PARTS LISTS)



L1157



## PART LIST

S/N P/N	DESCRIPTION	S/N P/N	DESCRIPTION
1	IYT-1001---Vertical milling head.	39	IYT-M5x10---Screw.
2	IYT-1095---Belt housing cover.	40	IYT-T1089---Rulley cover supporting arm.
3	IYT-1005---Quill.	41	IYT-M5---Nut.
4	IYT-S-45-1010---Snap ring.	42	IYT-1016---Washer for bearing.
5	IYT-1007---Spring washer.	43	IYT-7207-1003---Bearing.
6	IYT-1002---Vertical spindle.	44	IYT-6007zz-1003---Bearing.
7	IYT-----Cover.	45	IYT-6206z-1003---Bearing.
8	IYT-1008---Bearing adjusting nut.	46	IYT-1082---Bearing cover.
9	IYT-1009---Spindle sleeve.	47	IYT-R-75-1012---Snap ring.
10	IYT-1016---Pulley locking nut.	48	IYT-6009z-1011---Bearing.
11	IYT-1018---Spindle pulley.	49	IYT-1052---Thrust bearing.
12	IYT-1019---Quill pinion shaft.	50	IYT-1037---Spring.
13	IYT-1047-M5x10---Screw.	51	IYT-1020---Spring.
14	IYT-1036---Clutch worm gear.	52	IYT-E-19---Snap ring.
15	IYT-1039---Clutch.	53	IYT-M6x15-1038---Bolt.
16	IYT-1040---Clutch adjusting nut.	54	IYT-1076---Swivel arm.
17	IYT-1046---Clutch cover.	55	IYT-1075---Swivel stud.
18	IYT-1021---Pinion shaft seat.	56	IYT---R-35---Snap ring.
19	IYT-1032---Ball handles.	57	IYT-1079---Pulley pivot stud.
20	IYT-1028---Hand bar holder seat.	58	IYT-1080---Vee belt pulley.
21	IYT-1030---Handle bar.	59	IYT-1080---Vee belt pulley.
22	IYT-1051---Worm shaft.	60	IYT-1067---Motor mounting.
23	IYT-1053---Worm shaft sleeve.	61	IYT-1068---Motor suspending pivot.
24	IYT-1055---Nut for bearing.	62	IYT-1070---Motor mounting.
25	IYT-1056---Dial.	63	IYT-1072---Motor set unit handle.
26	IYT-1060---Dial positioning screw.	64	IYT-1071---Belt set unit.
27	IYT-1057---Hand wheel.	65	IYT-1071---Belt set unit.
28	IYT-1061---Handle.	66	IYT-1064---Vertical head adapter.
29	IYT-1048---Quill locking block.	67	IYT-1067-10Mx35---Screw.
30	IYT-1049---Quill locking bolt.	68	IYT-10M---Bolt washer.
31	IYT-1042---Quill stop micro screw.	69	IYT-A35-1102---Vee belt.
32	IYT-1044---Micrometer nut.	70	IYT-10M---Nut.
33	IYT-1045---Quill micro stop nut.	71	IYT-6003z-1081---Bearing.
34	IYT-1041---Quill stopper.	72	IYT-A32-1101---Vee belt.
35	IYT-8Mx20---Screw.	73	IYT-1HP4 POLE-1073---Motor.
36	IYT-----Bolt washer.	74	IYT-2006---Column.
37	IYT-1014---Draw bar.	75	IYT-2073---Table.
38	IYT-c5x15---Rivet.	76	IYT-2062---Table gib.



PACKING LIST FOR  
VERTICAL MILLING MACHINE VM-12

Series No:		Dimension:			
G/W:		N/W:			
No.	Name	Spec.	Model	Quantity	Remark
1	Vertical milling machine		VM-12	1	
2	End milling			1	
3	Arbor			1	
4	Gasket			1	
5	Boom			1	
6	Inner-hexagon spanner	4		1	
7	Inner-hexagon spanner	5		1	
8	Inner-hexagon spanner	6		1	
9	Two-head wrench	12 × 14		1	
10	Two-head wrench	17 × 19		1	
11	Two-head wrench	22 × 24		1	
12	Bolts of T-slot	M12 × 45		2	
13	Washer	12		2	
14	Hexagon nut	M12		2	
15	Screw	M5 × 12		2	
16	Screw	M10 × 25		1	
17	Oil gun			1	
18	Operation manual			1	

Packing inspector \_\_\_\_\_

Date \_\_\_\_\_