MODEL BV25B
CUTTING MACHINE
OPERATION INSTRUCTION

Max: swing diameter of workpiece 250mm

Max: drilling diameter 16mm

CONTENTS

1. USE AND FUNCTION

Series Model BV25 Cutting Machine include Model BV25B-1 bench cutting machine. Model BV25B-2 base frame cutting machine. Model BV25B-3 bench type of multi-function machine and Node BV25B-4 base frame type of multi-function cutting machine. Model BV25B-3 and Model BV25B-4 are machines integrated with many functions of turning, drilling, milling, ect. They have many advantages such as reasonable structure, well performance, high precision accuracy, easy and flexible to operate, simple and easy to intall, easy to repair and maintain, ect.

The bench type of cutting machine can be installed on the rigid bed plate made of wood or iron. The base frame type of cutting machine have been installed on the base frame of very rigid steel plate. It has a tilting chip guard plate. That will help you to solve the problems of additionally buying a working table and the difficulties to clean out the chip. That will make you easy to keep the machine and the working site quite chean.

For turning operation, they have maneuver feeding mechanism for longitudinal cutting. Two kinds maneuver feed can be available for the turning of internal cylindrical surface and taper surface by using the change gear train or exchange the change gear. The thread common in use both in Metric and English system can be easily machined by means of the change gear of the said mechanism and by using the clasp nut. The spindle nose has a taper hole of Morse NO. 4 and the flange of spindle nose is installed with the connecting chuck. The tailstock sleeve has a taper hole of More NO. 2 which can be installed with the different kinds of tools required for operations such as reamer, drill jig, tap, jaw etc.

In turning operating the spindle is rotated by the belt of electrical motor installed at the back of machine bed to drive full gear spindle box. The spindle can run in 6 speeds with a range of 115-1620 r. p. m according to changing handle position for control spindle rotarting speed. With the help of switch, the motor can reverse move in 6 speed Therefore, the cutting machine has more complete turning functions with

well performance.

In the multi- function cutting machine with drilling and milling operation, the spindle box for drilling and milling work can rotate horizontally around the column for ±180°, with an inclination of ±90° on both the left and the right. And it can be lifted for 160mm. On the lifting achanism there is a device balancing the weight of a spindle box so that the lifting of the spindle is easy and flexible. The spindle sleeve can be made to feed 80mm by hand by using the gear rack. In dilling operation, the spindle has an automatic resilience device. The spindle nose has a taper hole of Morse NO. 3, and a long round hole for the storage of tools, which makes it easy to set up the drilling tod.

In milling operation, the cutter can be fixed to the sipndle by the Morse taper hole on spindle nose and the drawbar located inside the spindle box to meet the requirements for milling work. The machine is furnished with an additional working teble with a T- slot, on which the operators can easily fix the workpiece or the attachments to mill flat surface, oblique plane, and surface, step, keyseat, straight slot of all forms, etc. On a special order, the machine can be also supplied with flat nose plier, milling fixture (which is installed to hold Φ4 to Φ16mm straight shank of a milling cutter and the connecting shank of cutters), and the rotary index head of indexing plate type used vertically and horizontally to meet the requirements of users for milling gears and the other requirements for milling operation.

The rotation of the spindle for milling operation is directly driven by another 0.37kw electrical motor mounted on the spindle box. 4 kinds of speeds within a range of 400 to 1640 r. p.m are available with the help of the step pulley and the eccentric takeup mechanism.

The machine has the function for drilling and milling. It can drill the hole of maximum diameter for 10mm and carry out the milling cutter as well as it can carry out the operation of expanding, reaming, threading, etc.

The machine is suitable for the reparation of small scale machinery,

especially for the requirements of the family and scientific experiment room and teaching.

2. MAIN SPECIFICAIONS

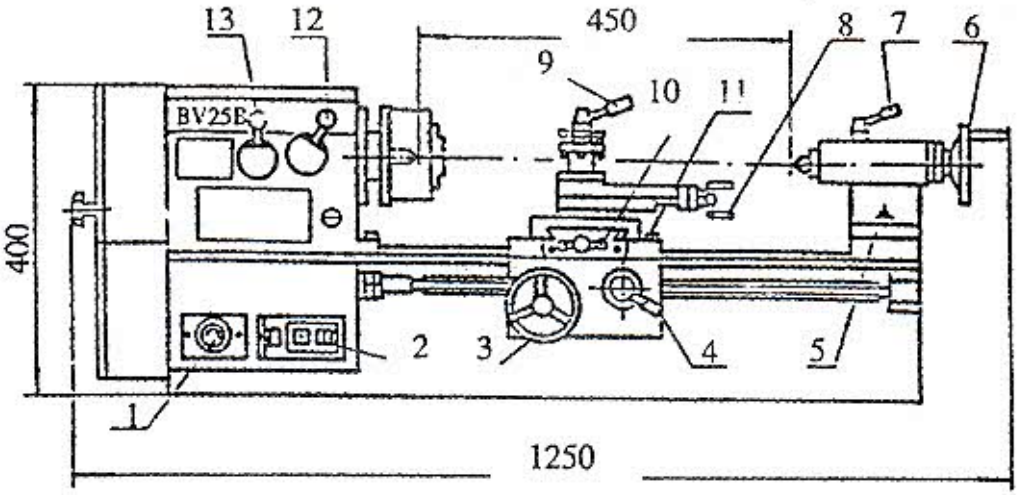
2.1 Main specifications for turning operation:

Heigh of spindle centers	125(mm)
Max. Swing diameter over bed	250
Max. workpiece diameter over carriage	130
Max. length of workpiece between cetres	450
Max. cutting length	420
Spindle bore	27
Taper of hole in spindle	Morse NO. 4
Number of spindle rotating speed	6 steps
Range of spindle speed (froward reverse)	115-1620 r.p.m
Number of metric screw thread	20 Kinds
Metric screw thread range	0.2-3.5
Number of inch screw thread	20 Kinds
inch screw thread range	8-56 t.p.i
Number of model screw thread	10 Kinds
Model screw thread range	0.2-1.25
Range of carriage/Number of longitudinal feed	0.05 0.1/2
Distance from spindle centre line to bottom surface ofsquare head	15
Max. Swivel angulity of tool slide	±45°
Travel of every screw division of cross slide	0.04
Travel of every screw division of tool slide	0.04
Max. longitudinal travel of tool slide	70
Max transverse travel of cross slide	115
Tape of hole in tailstock sleeve	Morse NO.2
Max travel of tailstock sleeve	70
Motor	0.37kw 220v 50Hz

2.2 Main specifications for drilling and milling operation

Max. drilling diameter	16

Max. diameter of vertical milling catter	20
Max diameter of vertical milling face	63
Distance from spindle axis to the surface column	165
Diameter of column	70
Max distance betwenn spindle and table surface	160
Max quill movement of spindle	80
Taper of hole in spindle nose	Morse NO. 3
Number of step of spindle and its range of speed	
	4 steps 400-1640 r.p.m
Max horizontal rotation of spindle box around column	±180°
Max inclination of spindle box (left and right)	±90°
Value of every hand feeding dial scale	1
Value of every hand microfeeding scale	0.05
Working surface of table(WXL)	215×150
Number of T-slot and its wide of working table	3steps 10
Motor	0.37kw 220v 50HZ
Outline dimension(L×W×H)	
Model BV25B-1	1250×540×400
Model BV25B-2	1250×550×1100
Model BV25B-3	1250×540×1110
Model BV25B-4	1250×550×1810



Fg. 1 – 1 OUTLINE DRAWING OF BV25B – 1 BENCH CUTTING MACHINE

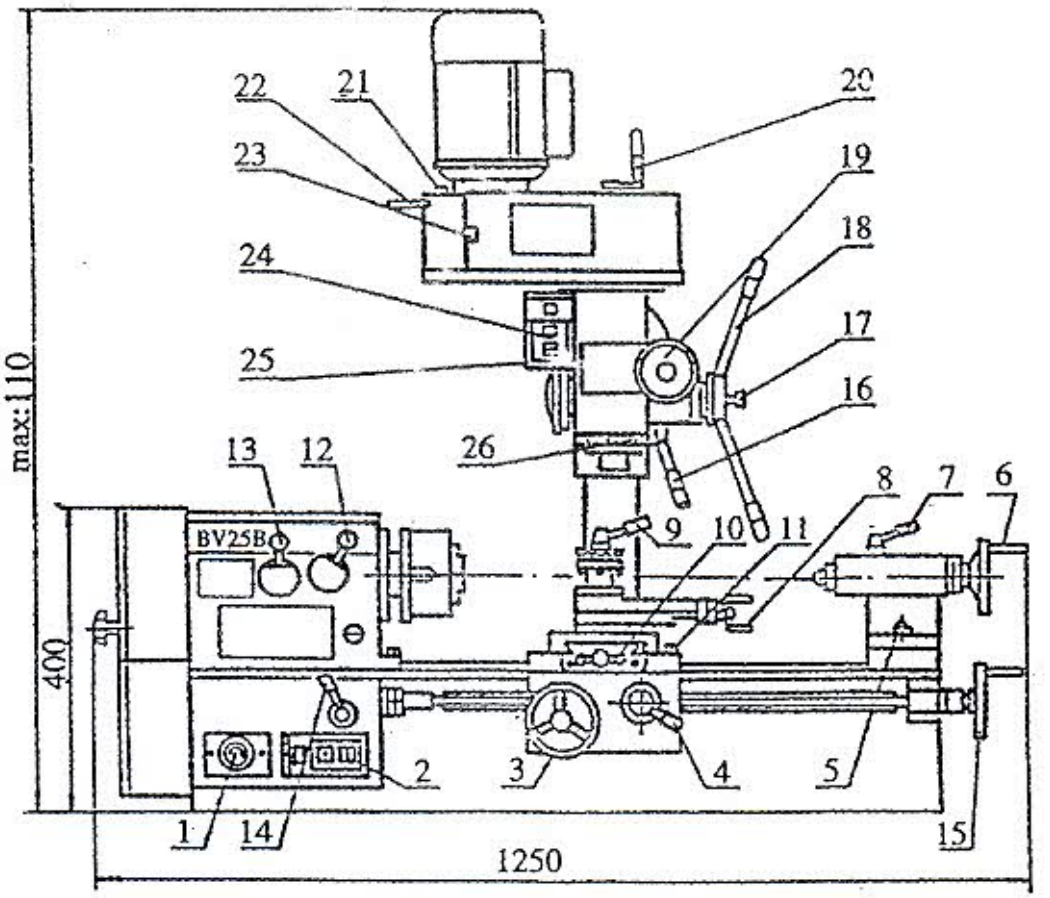


Fig. 1 – 3 OUTLINE DRAWING OF BV25B – 3 MULTI – FUNCTION CUTTING MACHINE

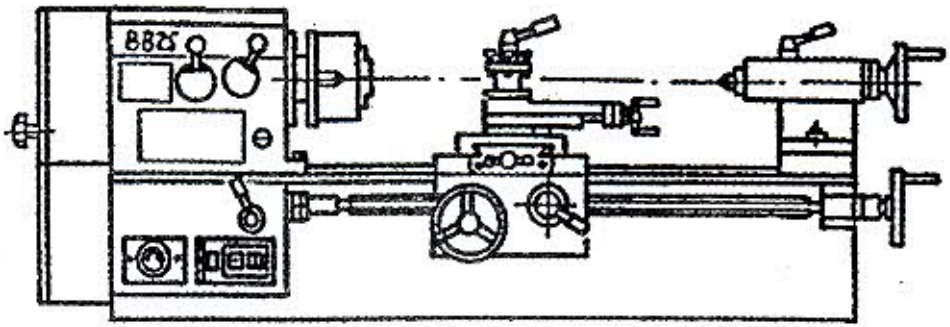


Fig. 1 – 5 BV25B – 1 CUTTING MACHINE (LONGITUDINAL LEADSCREW WITHHANDLE)

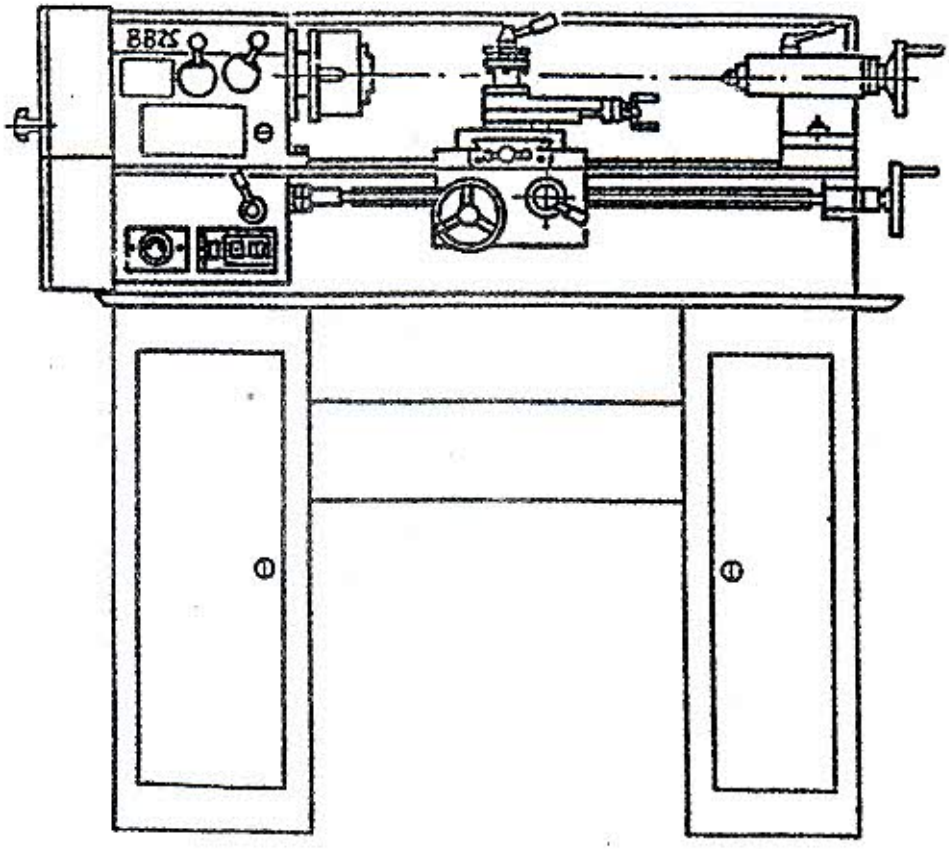


Fig. 1 – 2 OUTLINE DRAWING OF BV25B – 2 BASE FRAME CUTTING MACHINE

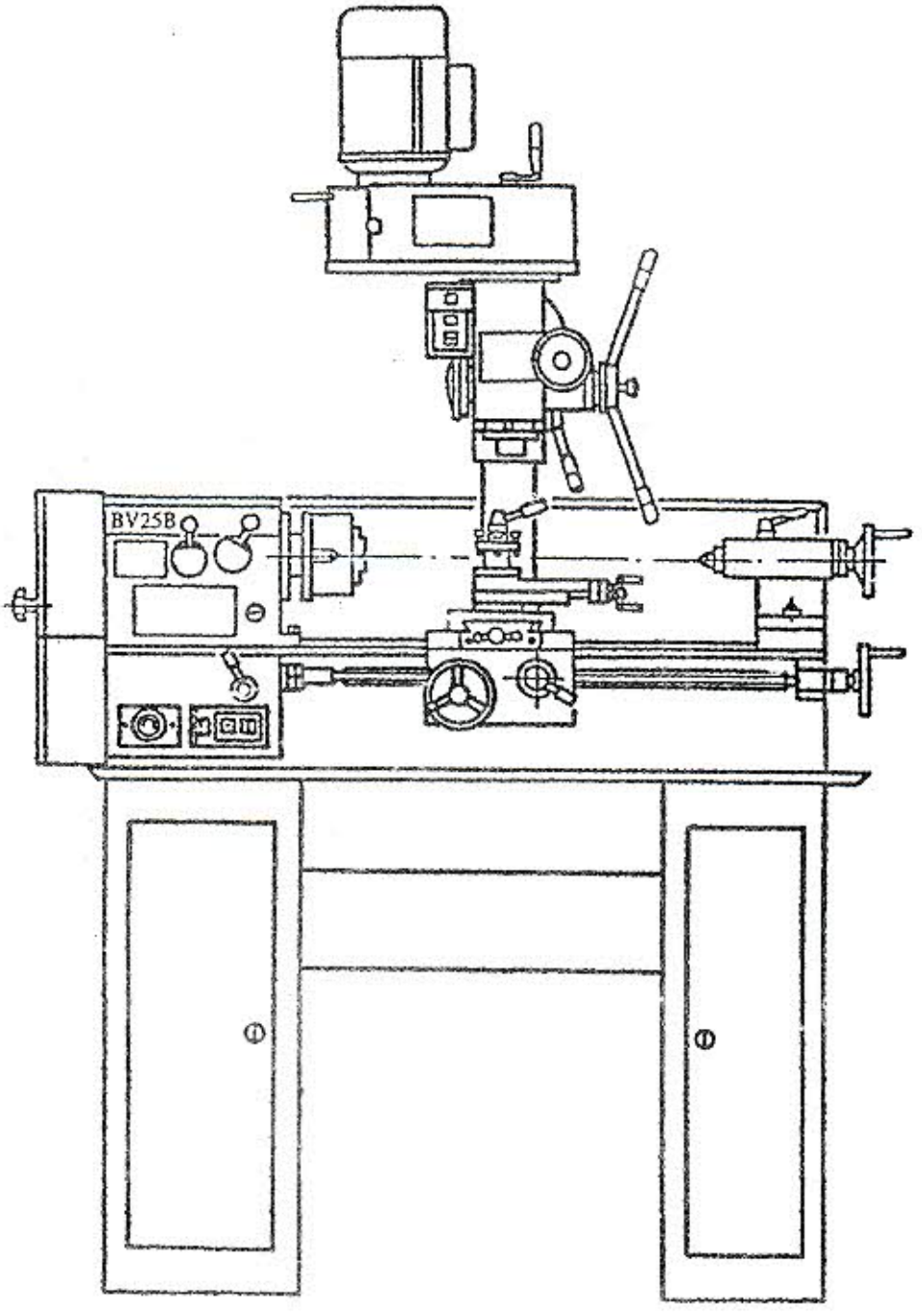


Fig1 – 4 OUTLINE DRAWING OF BV25B – 4 BASE FRAME

MULTI – FUNCTION CUTTING MACHINE

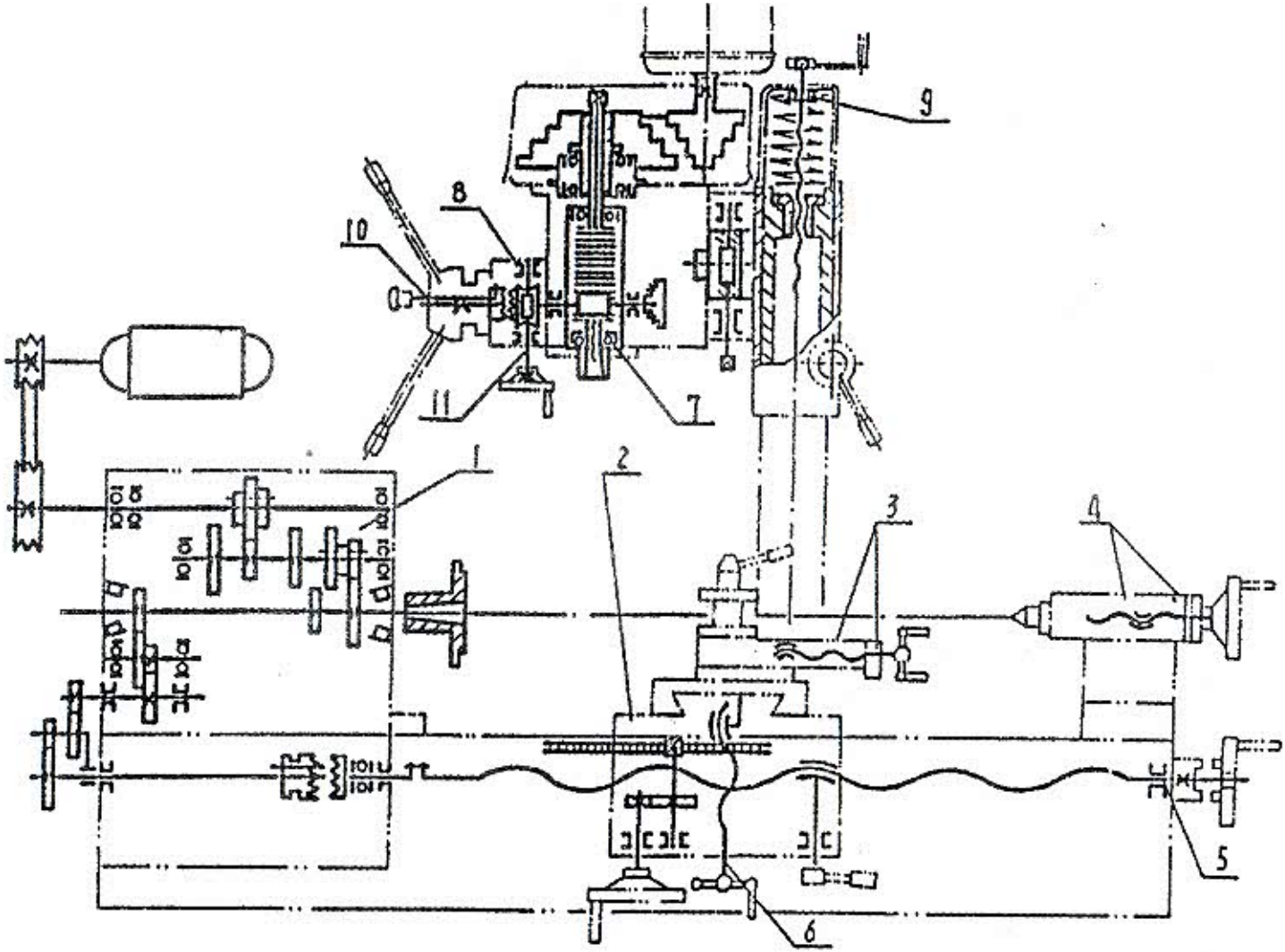


Fig7 DIAGRAMMATIC SRETCH OF LUBRICATION POSITION

The lubrication requirements of machine parts Table3

Ser. No.	Name of machine part	Lubricating position	Method	Number of machine oil	Period
1	spindle box for turning	gear bearing	spray	10 – 20	First, 10 days after the start up of the machine; second, 20 days after the start up, next, every60 days
2	saddle	longitudinal guide rail of saddle	oil gun	"	
3	Tool slide	ledscrew	"	"	
4	Tailstock	screw tailstock sleeve	"	"	Every morning and afternoon
5	leadscrey supportor	screw	"	"	"
6	Cross slide	"	"	"	"
7	Spindle for drilling and milling	bearing	"	"	Every time before use
8	Microfeed mechanism for milling	worm wheel worm	"	"	"
9	Lifting mechanism for drilling and milling	worm wheel	"	"	"
10	Microfeed mechanism for milling	screw	"	"	"
11	Angle worm screw for milling amd drilling	worm wheel shaft	"	"	"
12	Each time before work in all the visible sliding surface				

7. ELECTRICAL EQUIPMENT (See Fig. 8. 1 , Fig. 8. 2)

7. 1 This machine has been driven by two electrical motor used respectively for turning and drilling operation. The main switch is of NVR switchj which controls the forward motion, reverse motion, start and stop of the spindle.

The motor is o. 37kw, 220v, 50HZ 1400 r. p. m. We can supply the motor of 380v, 0. 55kw and 100v, 60HZ according to user' s optional demands. For connection of the switch of electrical motor to the power supply, please see the electric diagram. The machine electric has open stop and urency stop button.

7. 2 When making the installation and using the equipment, user must carfully check eack part of the equipment according to the technical safety requlation. User should connect the ground wire at the same time of connectiong to the power supply, and check the safety insulativity before use.

8. ROLLING BEARING (See Fig 2)

LIST OF BEARING TABLE4

NO. of Fig	Type	Item	Specificaltions	Pieces	location
1	D2007109	Single – row taper needle bearing	45 × 75 × 20	1	spindle box for turning
2	D2007108	Single – row taper needle bearing	40 × 68 × 19	1	"
3	102	Single – row radial ball bearing	15 × 32 × 9	5	"
4	7000102	Single – row radial ball bearing	30 × 32 × 8	2	"
5	8104	single direction trust ball bearing	20 × 35 × 10	1	feed box fox turning
6	E107	single – row radial ball bearing	35 × 62 × 14	2	spindle housing
7	D46106	single – row radial trust ball bearing	30 × 55 × 13	2	spindle for driling and milling
8	8102	sigle direction turst batt bearing	12 × 26 × 9	1	lifting screw

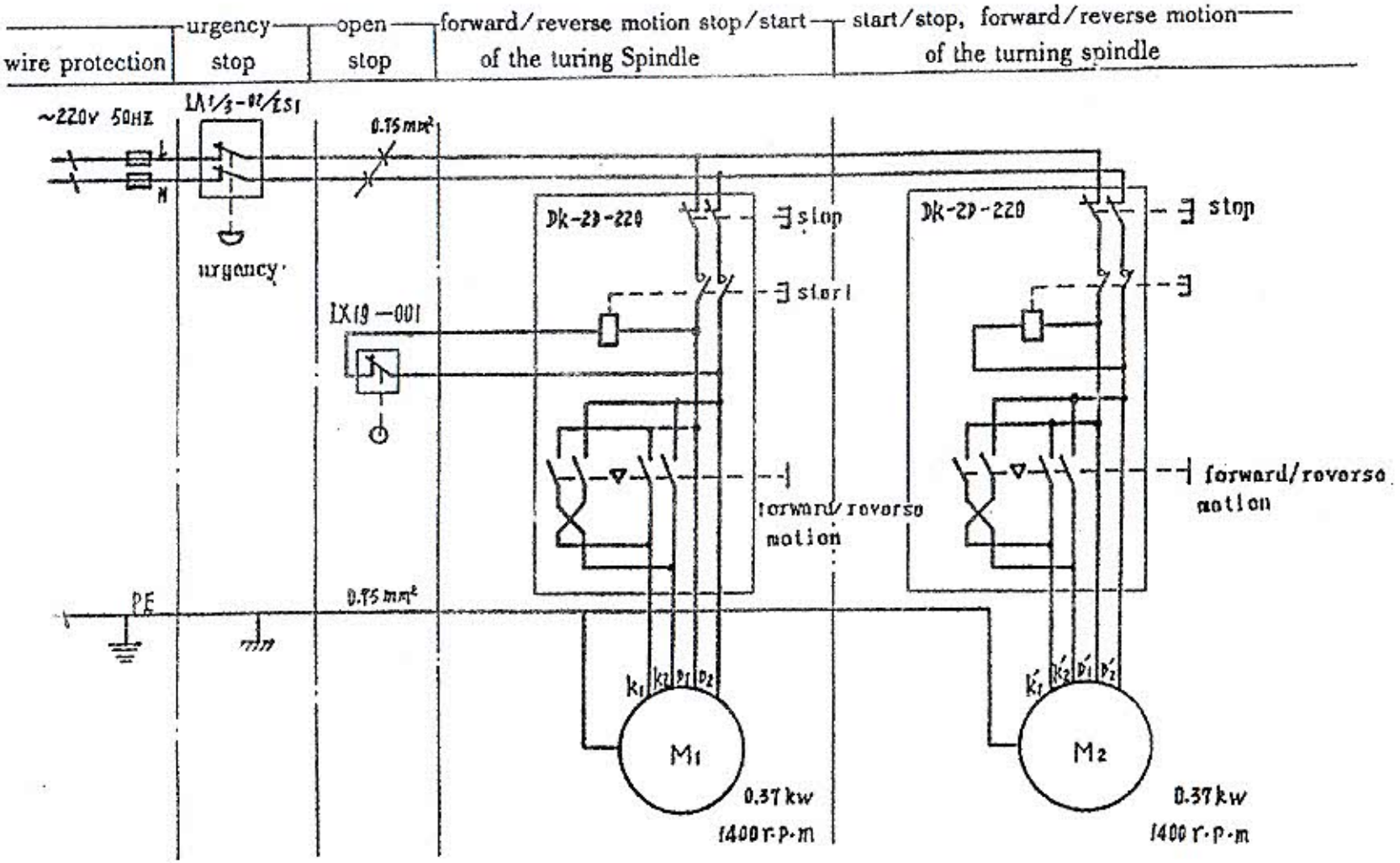


Fig8 - 1 SINGLE - PHASE ELECTRIC DIAGRAM

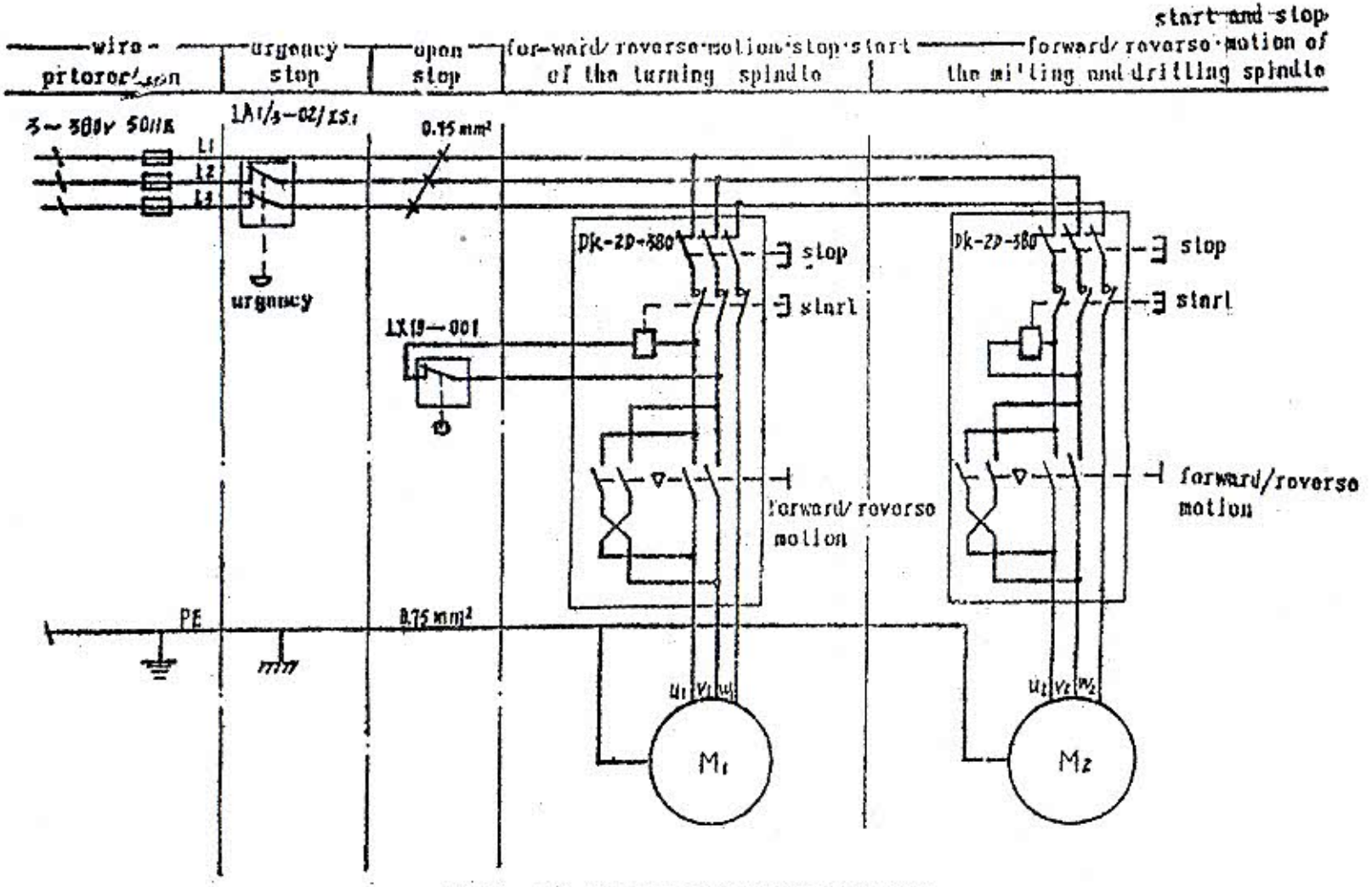


Fig 8 – 2 3 – PHASE ELECTRIC DIAGRAM

9. ATTACHMENT

9. 1 list of standard accessories (See Table 5)

Table 5

Ser No	Type	Item	Specifications	Pieces	Ramarks
1x	0	V – belt	630	1	
2	0	V – belt	710	2	
3		Three – jaw chuck	125	1	
4		Centre	Morse NO. 4	1	
5		Centre	Morse NO. 2	1	
6		T – slot working table		1	
7		Spanner for carriage	8	1	
8	GB70 – 85	Round head hexagon screw	M8 × 35	3	Connecting 3 – jaw chuck
9		Inner hex sapnner	6	1	
10		Single head spanner	10	1	
11		Single head spanner	14	1	
12		single head spaner	19	1	
13		Change gear	ml. z30	1	for threading metric screw pitehes1; 1. 25; 1. 5; 1. 75.
14			z35	1	
15			z45	?	
16			z50	1	
17			z60	1	
18			z65	2	
19			z70	1	
20			z120	1	
21			z127	1	
22			z40	1	for threding metrie screw, inch screw, moduel screw
23			z55	1	

Ser No	Type	Item	Specifications	Pieces	Remarks
24		changegear	z75	1	
25			z80	1	
26			z110	1	

* Only supplied for Model BV25B – 3, Model BV25B – 4

9. 2 OPTIONAL ACCESSORIES

Optional accessories supplied according to user's requests

Table 6

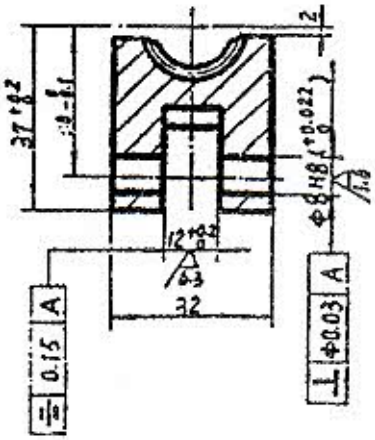
Ser No	Type	Item	Specifications	Pieces	Remarks
1		Four – jaw chuck	Φ125	1	
2		Drill jig with shank	Φ1 – 13	1	with Morse NO. 3 shank
3		Flat nose plier	width90	1	Its flat nose width 90
4		Rotary indexing head	with indexing plate	1Lest	
5		Milling jig	4, 5, 6, 8, 10, 12, 14, 16	"	
6		Centre rest		1Lest	
7		Follow rest		1lest	
8		Thread cutting dial		1Lest	
9		Face plate		1	

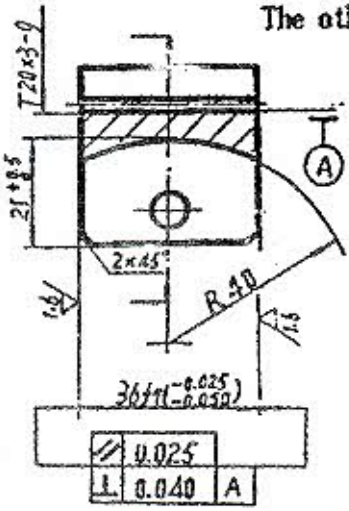
10. DAMAGEABLE PARTS(See Table 7)

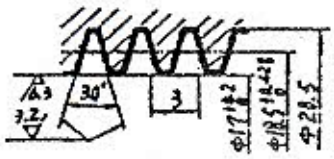
Table 7

Ser No	No of Fig	Item	Specificantion	Remarks
1	BB22A – 0303	Clasp nut	ZQSn6 – 6 – 3	see Fig
2	BB22A – 0406	Transverse Leadscrew nut	ZQSn6 – 6 – 3	see Fig
3	GB119 – 86	Safety pin	45	
4	Morse NO. 2	Tailstock pin	T10A	for centre C62
5	GB83 – 88	Square head fastening screw	35	fastened by pulling the tool rest
6	BB22A – 0734	Spline houing	65Si MnA	drilling and milling operation
7	BB22A – 0719	Pull rod	45	drilling and milling operation

The other 12.5

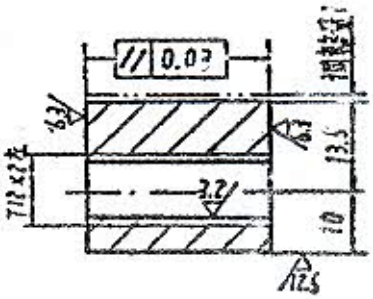


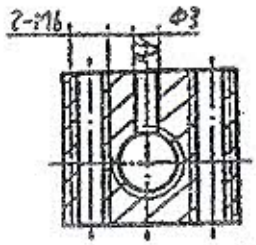


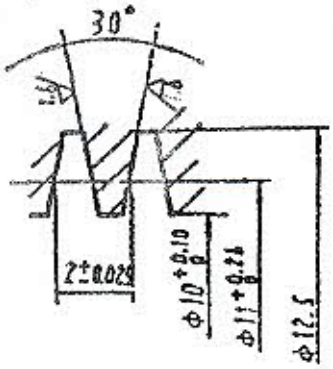


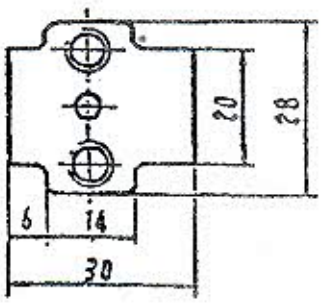
No. of Fig.	Item	Material	Pieces
0309	clasp nut	ZQSn6-6-3	

The other



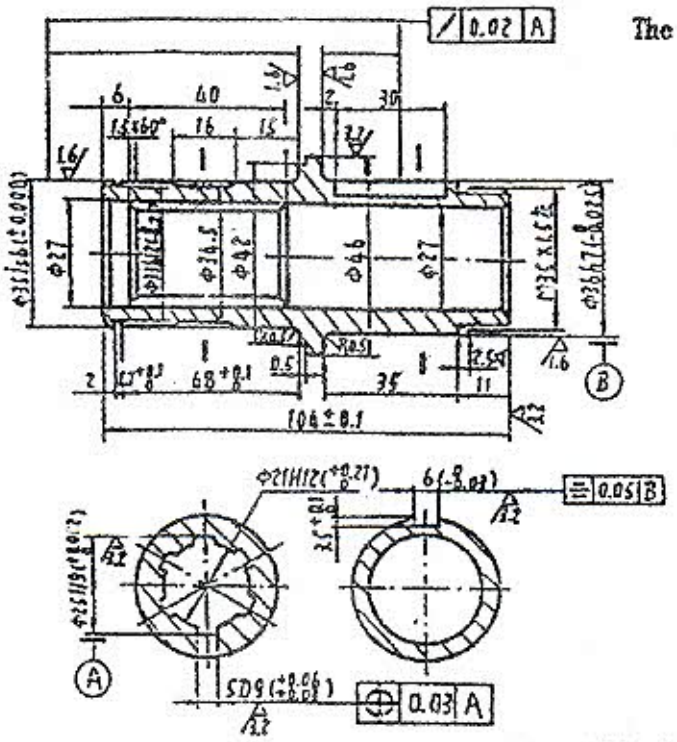






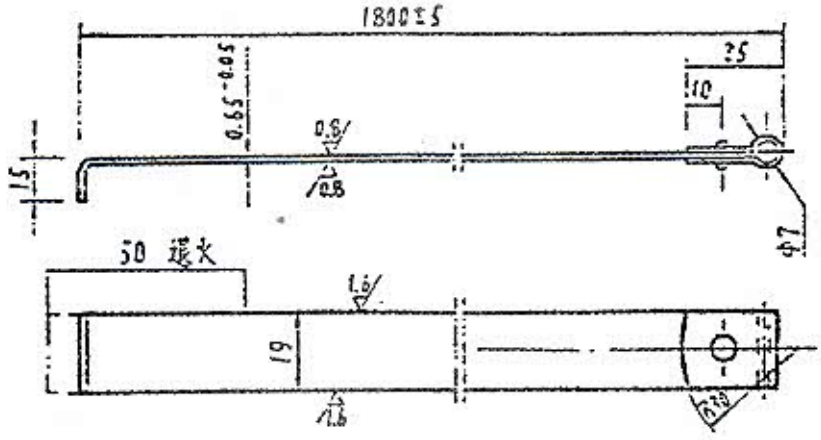
No. of Fig.	Item	Material	Pieces
0406	[illegible]	ZQSn6-6-3	

The other 6.3



No. of Fig.	Item	Material	Pieces
0719	Spline housing	steel No. 45	

The other 12.5



No. of Fig.	Item	Material	Pieces
0737	Spiral spring	65Si$_2$MnA	