OPERATIONAL MANUAL
FOR
BENCH TYPE DRILLING AND MILLING MACHINE MODEL RD 20

MAX.DRILLING DIA.	20mm
MAX.THROAT	500mm
MAX.MILLING DIA.	63mm

Bench Type Drilling and Milling

Machine Model RD20

Caution!

1.When unpacking ,the attachments and document are not in accordance with packing list or other problem is happened,please contact us.

2.Before operation, the locations and functions of various controlling handles,buttons,switchs of the machine and other adjustment items must be familiar to operator,especially for electricl units.

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1.Usage and Performance

This machine is a smaller new type compound machine which provide variety of functions such as drilling ,milling procedures concentrate to one machine which is expecially suitable for drilling ,counter -drilling,sinking ,boring ,milling and tapping on smaller or medium metal or non-metal workpiece in case of not move the workpiece.

Beside a box type worktable attached to the machine ,also provide a cross working table which may be facilitated to perform coordinate holes work and other ordinary drilling and milling to extend the functions.

This machine is widely adaped for various smaller, or medium enterprises ,repaired stations.It also supplies schools hospitals ,research institutes as well as repair smaller electro-mechanical products . This machine also can satisfied your needs with accurate service.

2.Main construction and features

The machine consists of base ,column radial ram,spindle box and motor .Other provide with box type table and cross worktable.

The spindle may be obtained five steps of speed by a pair of five-steps pulley and a belt. The rigid spindle may be facilitated to mount various tools to perform milling and drilling procedures.

The spindle system also supplies brake unit by which fastens spindle sleeve as working. Other the spindle balance spring is provided for the spindle box moves along the radial ram way very lightly and reliable brake in desire positoin .The radial ram also can be risen or lowered along column and about which swivelled 360 °.

This machine is widely praised by users in case of having advanced structure,great variety, widely use ,good quality and facile reliable operation.

3.Main Techincal Specification

Max.drilling dia.(steel) 20mm

Max.milling dia. 63mm

Distance from spindle center to column surface Min. 200mm

Max. 500mm

Distance from spindle nos to working surface of base Min. 300mm

Max. 660mm

Spindle taper hole MT3

Spindle travel 90mm

Spindle speeds(5 steps) .....

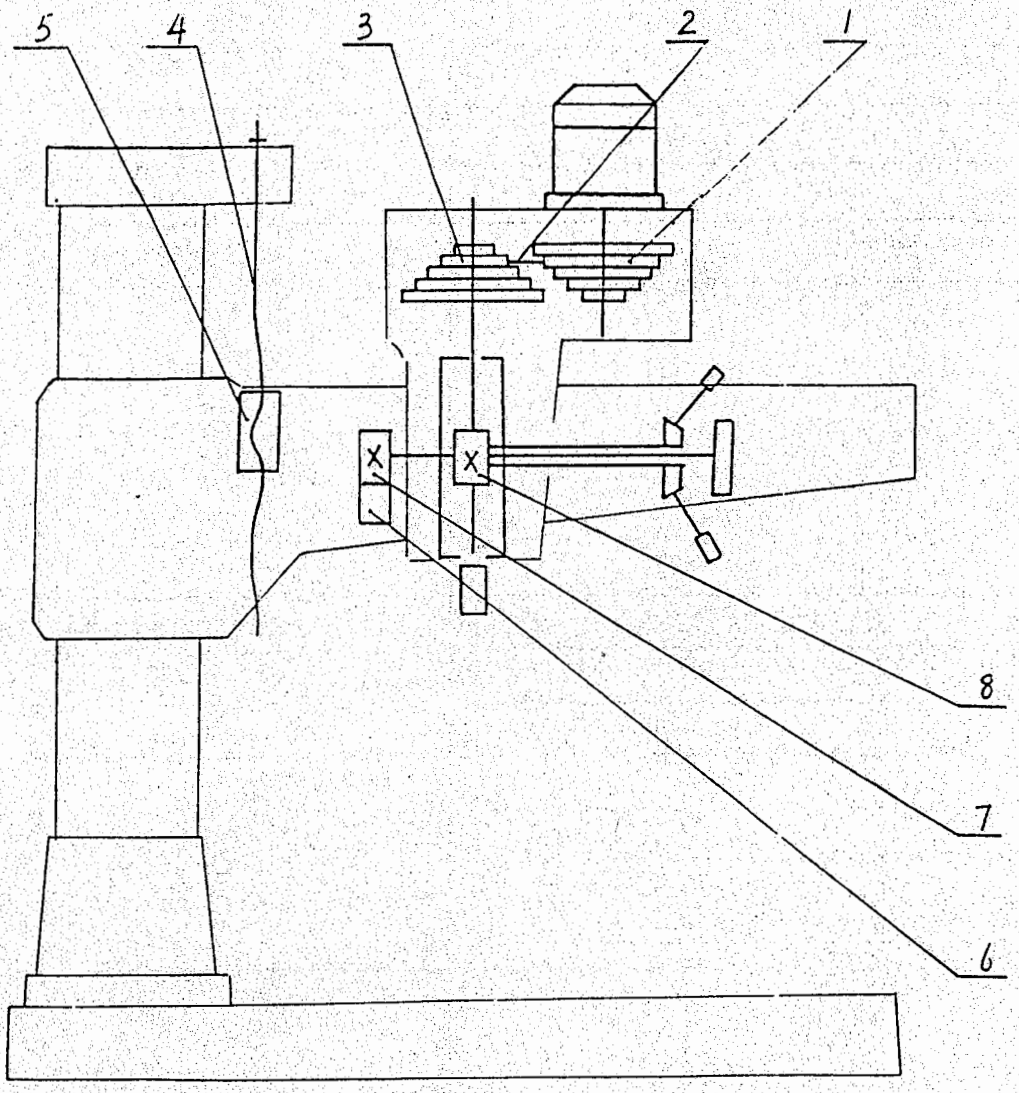
50Hz	210	380	710	1200	2000rpm
60Hz	255	460	850	1440	2400rpm

Motor ..... 380V or 220V

Machine outline dimension(Length. Width .Height) ..... 1130mm × 560mm × 1225mm

If customers have any special request such as order ,110V,230V,240V,400Vor415V , single or three phases two parts must execute by agreement.

4.Transmission Systems



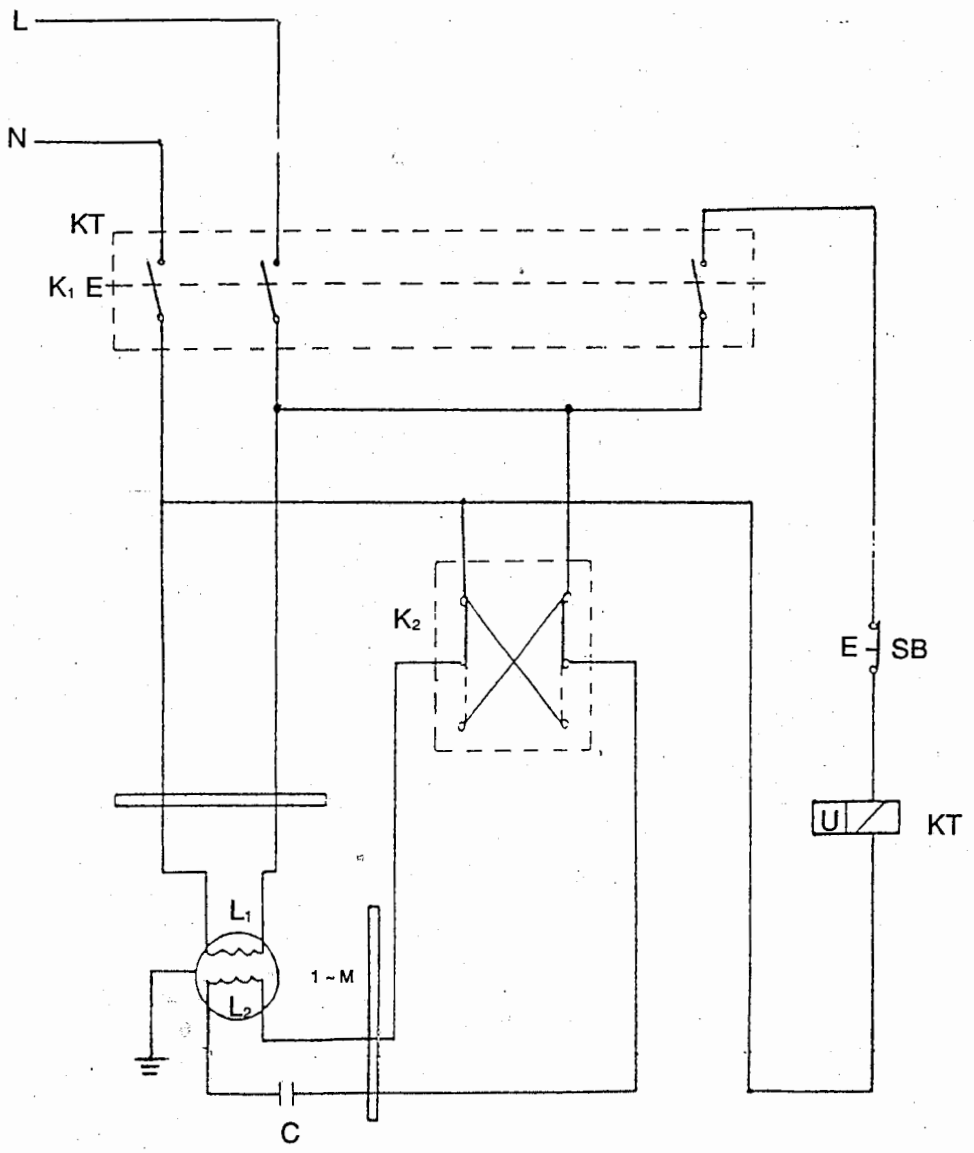
Machine Transmission System Drawing

Name of Parts

1	Steped pulley	5	Elevating nut
2	Belt	6	Gear rack
3	Steped pulley	7	Pinion
4	Lead screw	8	Handle socket (with gear)

5. Electric System

Power	Drive	Motor clockwise or counter clockwise rotation	Magnetic attraction switch k_1 and switch for machine stop



6.Lubrication

All ball bearing must periodically pour grease and wash them one time every year.

According to the machine working condition,the column all guide ways lead screws nuts surfaces lubricate with machine oil 40

If machine has long time not been used or during cloud or rain wheather all above friction surface and working surface of base ,worktable must plate anti-rust oil.

7 .Transprortation Lifting,installation and adijustment

This machine is of smaller bench type machine .Because of it's lighter weight and it would be swivelled about the column. So that it is necessary to ready a stronger and reliable base block.(which may be made from iron,angle steel,cement or wood)by which to hihgering machine and fasten it for easy operation and prevent from fall down.

The machine after having been unpacked should be lifting, the steel rope only be allowed to place on the box type worktable, base and the top of column but not permit to touch the radial ram, spindle box etc. Other all movable parts must be in case of locking.Caution!after unpacking don't loosen all movable parts until lifting machine in position.Then fasten it by anchor bolts to avoid it from fall down. Before adjusting machine the oil seal on the finished surfaces must be cleaned off with kerosene .Don't moved the table ,spindle box and other movable parts until all awys and finished surface have been cleaned and lubricated ,at last adjust and check the machine level.The machine level accuracy is not permitted over 0.06/1000.

After engage power source, first check spindle rotating direction, then make trial operation.

8 . Maintanence

8.1 When working make sure that over Max. cutting specification and work range are permitted , especially for overload cutting.

8.2 .Keep the machine well lubricated oiling or grese the machine as indicated in lubrication chart.

8.3. If any trouble of the machine is happened or unordinary sound is heard must stop machine instantly and remedy it.

8.4.Always wipe the guide ways ,leadscrew,spindle sleeve, gear rack etc. other all exposed surfaces keep clean and well lubrication.

8.5.When adjusting workpiece or set-up or remove tools never make shock on machine forcely. To do so will damage the parts and working accuarcy.

8.6.As not use the machine for a long time or in cloud or rainy day must clean it with cloth and plate anti-rust oil .

8.7.It is best that the backlash is of 0.02~0.03mm,which may be obtained by grinding and scrape clamp supprot between the spindle box and radial ram.The clamp support is rear the spindle box.

8.8 Make sure that keep column surface clean and well lubricanting. The felt in seal rings mounted on both ends of radial ram holes should be washed periodically(3~6month) in order to prevent the surfaces of column and radial ram holes to be scraped.

9. Operation of Machine

1.The spindle speed can be changed by adjusting V-belt's position at the pulleys.To chang speeds should take out the screw to open the belt cover,loose motor mount handle,push the motor towards spindle to loose belt and adjust it's position.Then tighten the belt,locking motor handle and replaced the belt cover and screw.

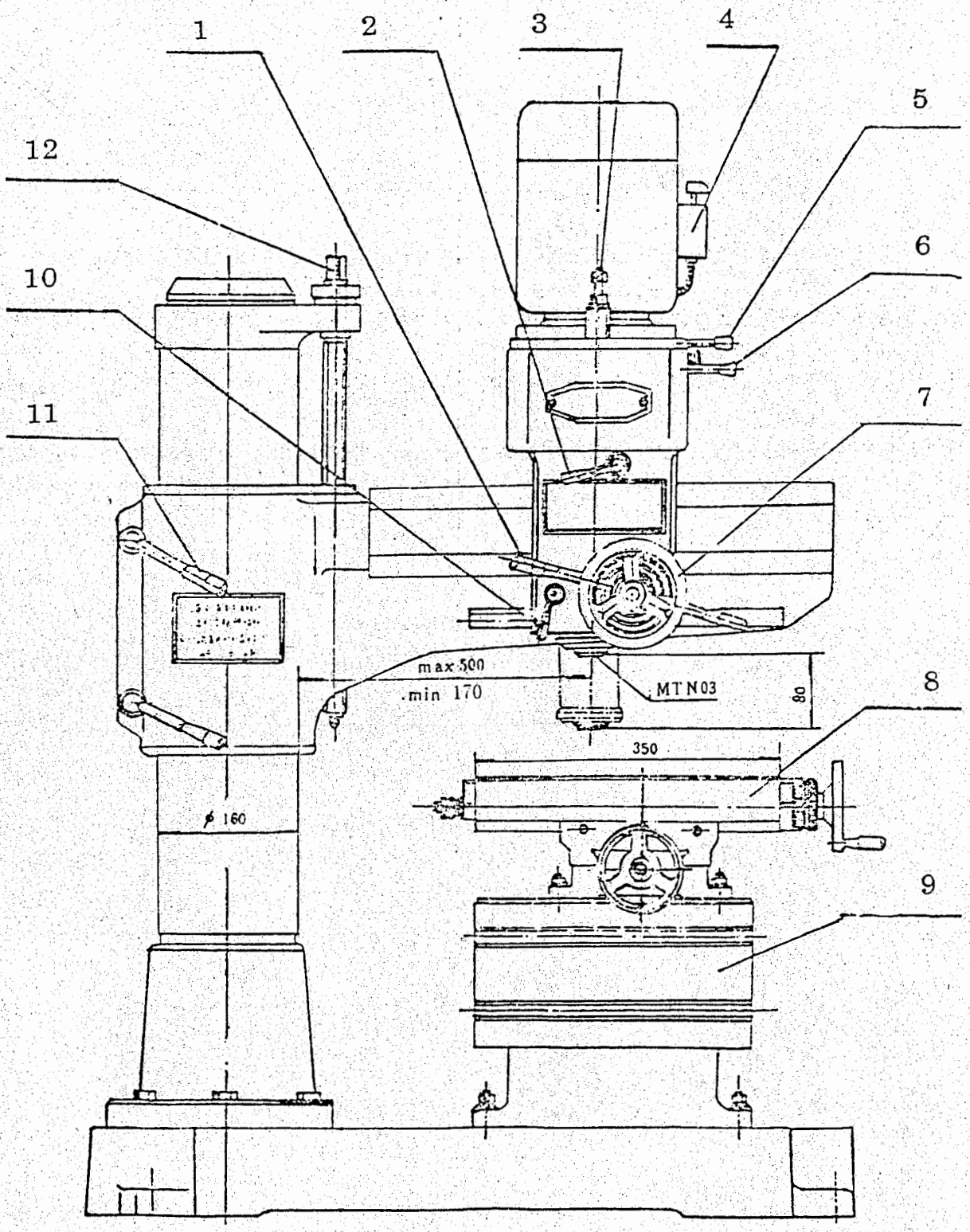
The motor's flang has three holes to adapt to the belt's length.

2.When milling, lock the arm, head and sleeve. The cutter should be tighten through the pulling bar to insure accuracy of working.

3.Small workpieces can be firmed on the boxtype table to drill.when drilling bigger workpieces should remove the boxtype table and fixed them on the base.

In other situation can move the arm to drill and don't firm the workpiece on the base.

10.Machine Operation Locations



Machine Operation Locations List

No.	Name of Parts
1	Spindle feed handle
2	Brake lever of spindle box
3	Pulling arbon
4	Drum switch
5	Handle for changing speeds
6	Handle for locking speeds
7	Handle for locking speeds
8	Cross table
9	Boxtype table
10	Radial ram locking lever
11	Spindle brake screw
12	Elevating lever of radial ram

11. Spare parts list

No.	Name	Spec.& Mark	Q'ty	Remark
1	Box type table	60019	1	
2	Cross table	60000	1	Special order
3	Return bush key	Taper key 3 S79-1	1	
4	Pulling rod	50106	1	
5	Taper adaptor	1/2,2/3 S76-1	1 each	
6	Taper shank of chuck	60112	1	
7	Elevating lever		1	
8	Bolts of T-slot		4	
9	Hexagon nuts		8	
10	Washer		8	
11	Smaller hex.bolts		4	For fasten base

CERTIFICATE OF INSPECTION

FOR

BENCH TYPE RADIAL DRILLING AND MILLING MACHINE MODEL RD20

Dispatch No.:

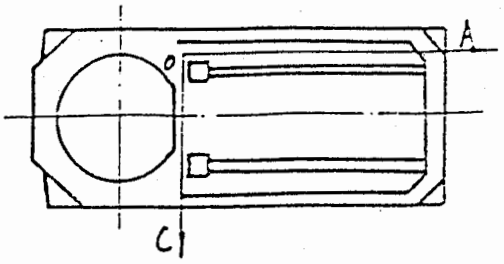
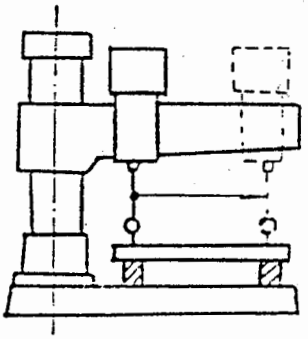
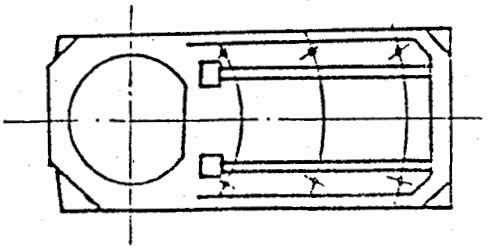
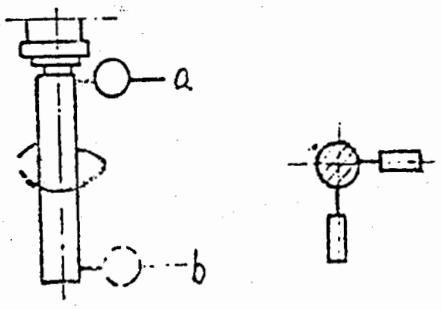
The machine has been qualified through inspection and may be permitted to dispatch.

Director :

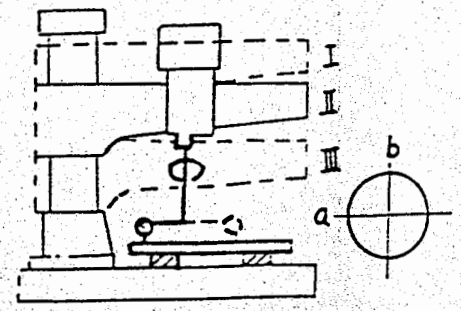
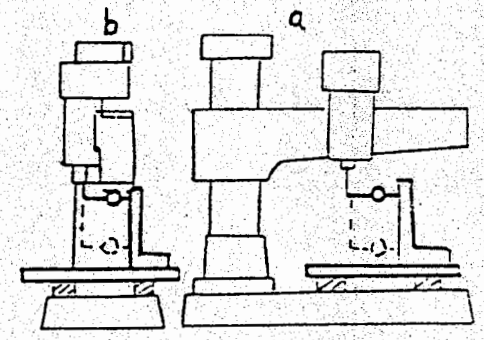
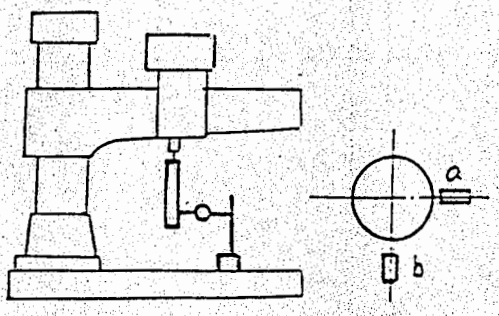
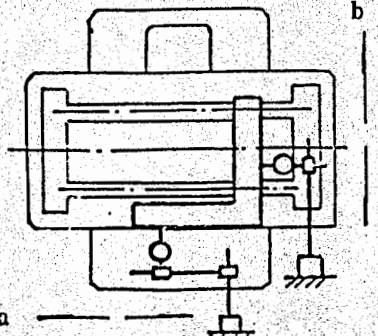
Head of inspection depart. :

Date :

ACCURACY TEST FOR BENCH TYPE RADIAL DRILLING AND MILLING MACHINE

No.	Checking Items	Tolerance	Error Tested
G1	The flatness of base working surface 	0.05/500 only allows flatness or cave	0,03/500
G2	Parallelism of spindle box movement to base working surface 	0.10 for any tested length 300	0,05
G3	Parallelism for radial arm swivel to the base wroking surface 	Allowance 0.08 for any 300 testing length	0,04
G4	Run-out of spindle hole center line 	a. Near spindle nose 0.02 b.At a distance of 100mm from spindle nose 0.03	0,01 0,02

ACCURACY TEST FOR BENCH TYPE RADIAL DRILLING AND MILLING MACHINE

No.	Checking Items	Tolerance	Error Tested
G5	Squareness of spindle rotating line to base working surface 	0.06/200	0.03/200
G6	Squareness of spindle sleeve vertical movement to base working surface 	a.0.04/80 b.0.02/80	0.02/80 0.01/80
G7	As clamping column and spindle box checking displacement of spindle axis 	a.0.06 b.0.10	0.03 0.01
G8	Squareness of worktable longitudinal movement to cross movement 	0.04/150	0.02/150

PACKING LIST
FOR BENCH TYPE DRILLING AND MILLING MACHINE RD20

No.	Name	Spec.	Model & Draw No.	Quantity	Remark
1	Bench type radial drilling and milling machine	20	RD20	1	
2	Return bush key	key 3		1	
3	Pulling bar			1	
4	Adaptor	2/3		each 1	
5	Taper shank for drilling chuck	MT3		1	
6	Bolts of T-slot	M12×45		2	
7	Hexagon nut	M12		2	
8	Washer	12		2	
9	Drill chuck	Φ1~13		1	
10	Inner-hexagon spanner		S8	1	
11	Operation			1	
12	Certificate of inspection			1	
13	Packing list			1	

Packing inspector:

Date: