

OTMT



COMBINATION LATHE

OTMT

**Before Operating Your Tools,
Please Read These Instructions Carefully**



ITEM NO. 87-115-935

MODEL NO. OT25531

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1.1 TURNING

Modle	HQ500	Hq800
Distance between centers	500 mm	800 mm
Swing over bed	420 mm	
Max.longitudinal travel	440 mm	740 mm
Max.cross travel	200 mm	
Spindle taper	M.T.4	
Travel of tailtock barrel	70mm	
Taper of tailstock barrel	M.T.3	
Spindle hole diameter	Ø28mm	
Spindle speed	160-1360r.p.m.(7steps)	
Longitudinal leadscrew pitch	6T.P.I. or 4mm	
Thread can be cutted	4-120T.P.I./0.2-6mm	
Range of automatic feeding (Longitudinal and cross)	0.002-0.014inch/0.05-0.35mm	

1.2 DRILLING & MILLING

Spindle taper	M.T.3
Spindle travel	110mm
Max. distance between spindle center to column	285mm
Max. distance between nose and table	306mm
Spindle speed	120-3000r.p.m. (16steps)
Table size	475mm×160mm
Drilling capacity	22mm
End milling capacity	28mm
Face milling capacity	80mm

1.3 OTHERS

Motor power	0.55KW	
Voltage/Frequency	As customer's requirement	
Net weight	245kg	280kg
Gross weight	275kg	325kg
Overall dimension (HQ500)	1460mm×580mm×965mm	
Packing size (Hq500)	1430mm×580mm×1100mm	
Overall dimension (HQ800)	1760mm×580mm×965mm	
Packing size (HQ800)	1130mm×580mm×1100mm	

2.APPLICATION

The machine has the function of turning, milling, drilling and thread cutting. Feed can be controlled automatically or manually, suitable for processing metal, wood and other materials. It is extensively used in job-shops, teaching, scientific research, occupation training, especially in house for household utensils.

3.CONSTRUCTION

The machine has the character of compact construction, easy operating and wide-range speed. The function of turning, drilling, and milling can be made in one machine. Work table feed can be controlled automatically or manually in longitudinal and cross direction. CE standard. It also can be controlled by personal computer when connecting with it.

4. ELECTRICAL SYSTEM

4.1 COMPOSITION

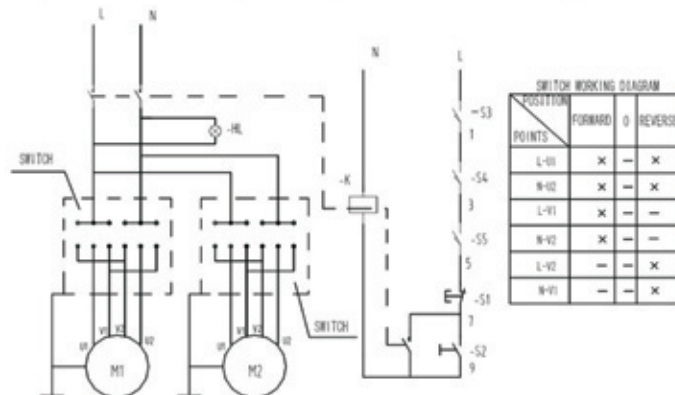
The system consists of alternating current contactor (-K), red emergency button (-S1), green (-S2), pilot (-HL), microswitch (-S3,-S4,-S5), shift switch, etc. the system has the protection of lose-voltage, and cutting off the current when cover is opened.

4.2 OPERATION

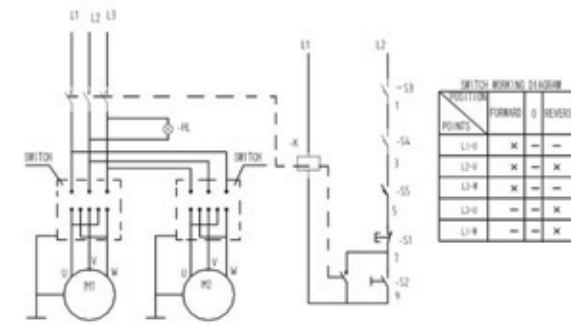
According to the manual, after finish all the preparations, close all the protection instrument, let the red button in original condition. Push the green button, now pilot light which show that alternating contactor has put through the main circuit and the machine enter into working condition. Push the red emergency button, the alternating contactor break down. Now whether the spindle motor or drilling-milling motors are all cut off. When working, if the protection instrument doors are opened the motor also are cut off.

4.3 CAUTION

- (1) A fuse as the following chart specifications must be connected between current and the machine.
- (2) The ground terminal of the machine must be grounding perfectly.
- (3) Before cutting of current of the machine, don't open electric protections, if some wrong with electric system, please ask for a repairman to help you.



SINGLE PHASE

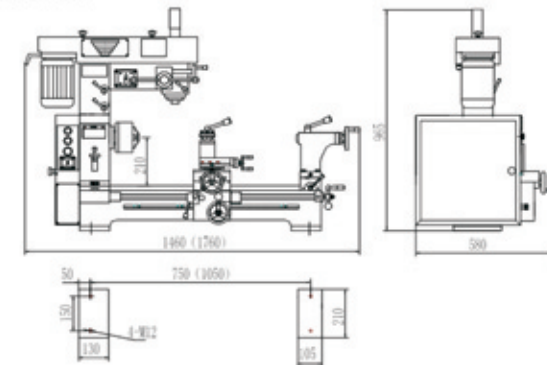


Three Phase

4.4 SPECIFICATION OF FUSE

VOLTAGE	SINGLE PHASE	THREE PHASE
110V	30A	
220V	20A	10A
380V		7.5A

5.GENERAL DIMENSION



Bed Fixing Hole Size
Overall size

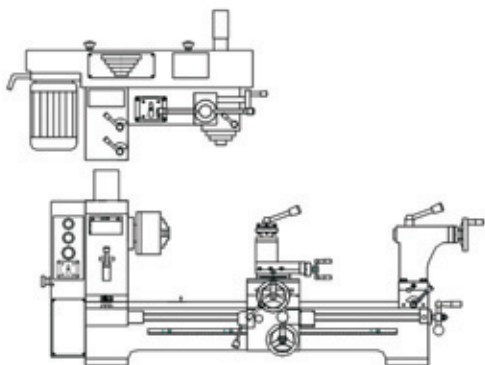
6.INSTALLATION

6.1 FOUNDATION

The base of the machine foundation must be solid without noticeable deflection and heavy enough to support the weight of the machine. The floor installation must be fairly level. If you use our stand, please place the stand in installation position, then make mark in installation hole position, then move the stand, cover the foundation bolts, place two adjustable iron spacer in the end of headstock and tailstock separately. In order to in crease the touched square, please stagger the front and back iron spacers. Hereafter, place the stand on the adjustable iron spacers and fix with foundation bolts. Lift the machine on the stand and fix to stand by using the nut and bolts. If possible, you could ask a professional worker to install.

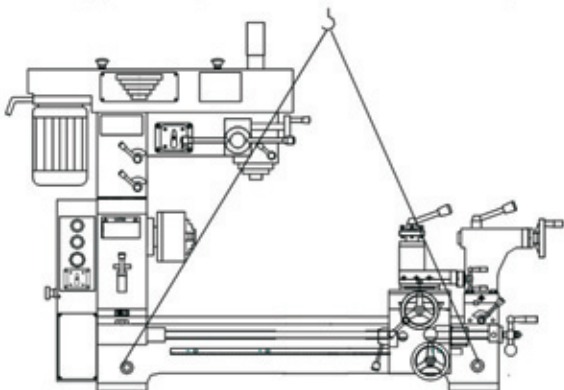
6.2 INSTALLATION OF DRILLING AND MILLING HEAD

Firstly, clean turning part and connected part of drilling-milling head and turning part. As the following figure, place the drilling-milling head on the turning part, then fit brake nut, lever, cork, etc



6.3 LIFTING

Before lifting the machine, place spacers on the machine in order to prevent its surfaces from being damaged. In order to avoid machine dealing and leaning, please lock the slide and tailstock. When lift the machine under the lifting rod with steel rope, please pay more attention to the machine gravity. Place the machine carefully on the base, adjust the machine leveling position, and finally fit the machine perfectly.



6.4 CLEANING

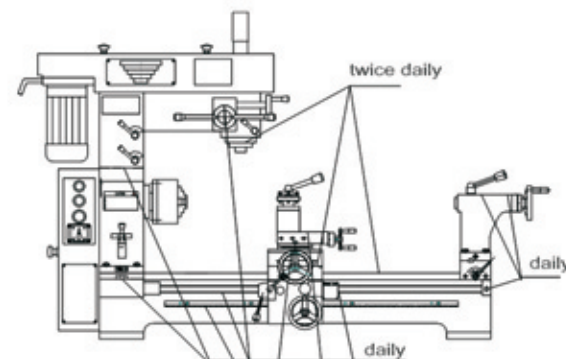
Before shipment, the machine un-painted surfaces are all coated with antirust oil. Before using, you can clean the antirust oil by cleanser and gasoline. After finishing cleaning, lubricate the slide way.

6.5 LEVELING

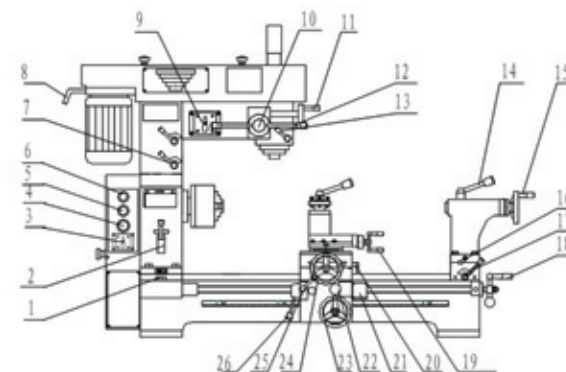
By a 6" precision machine spirit level, you can level the machine in longitudinal and cross direction. Then tighten the foundation bolts and nuts.

7. LUBRICATING CHART

The machine lubricating points should be lubricated according to the lubricating chart. Driving bearings should be lubricated with grease regularly, clean once each year. The gears in the headstock should be lubricated by No. 70 or HL-30 gear oil, oil level according to oil gauge. The oil in the headstock should be changed regularly, the first time after about half a month, the second time after 45 days, later once each half a year.



8. OPERATION EXPLANATION



- | | | |
|--|----------------------------------|-----------------------------------|
| (1) Lead screw clutch handle | (2) Change lever | (3) Shift switch |
| (4) Emergency switch | (5) Start switch | (6) Pilot |
| (7) Locking lever | (8) Belt tension lever | (9) Drilling-milling shift switch |
| (10) Micro feed clutch lever | (11) Micro feed handle | (12) Spindle locking lever |
| (13) Spindle feed lever | (14) Tailstock barrel lock lever | (15) Tailstock handwheel |
| (16) Reset screw | (17) Tailstock locking lever | (18) Longitudinal feed handle |
| (19) Toolpost feed handwheel | (20) Slide lock lever | (21) Threading dial |
| (22) Longitudinal-cross feed clutch handle | (23) Longitudinal feed handwheel | (24) Cross feed handwheel |
| (25) Saddle lock lever | (26) Half nut lever | |

8.1 CAUTION

- Before Familiar With The Control Parts And Their Functions, Please Don't Operate The Machine Completely.
- Check Lubricating Surfaces And Slides, Turning Spare Parts Referring To Lubricating Chart And Use Grease To Lubricate.
- After Working, You Should Cut Off Current.
- The Machine Is Not Armed With Light Equipment. You Should Supply Enough Light In Instrument Yourself, And Avoid Shadow Interruting In Order To Prevent The Danger From Happening Because Of Lack Lighting.
- Keep Clamping The Working Piece Firmly, Prevent It Flying Off. The Outstanding Part Of The Piece Should Not Be More 80mm. The Rate Of Length And Diameter For The Outstanding Part Should Be Not More Than 4.
- When Accident Happened During Operation, Please Cut Off Power At Once To Make The Machine Stop.
- Then Needing To Adjust Tool, The Machine Or Working Piece, You Must Cut Off Power.

8.2 MAIN SPINDLE DRIVING

- Before starting the machine, you should check the tension of belt. The belt should depress about 10mm under normal finger pressure. The tension of the belts can be adjusted by the lever (8).
- Main spindle running, stop, forward and reverse can be realized by shift switch (3). If needing to change main spindle running, please turn the shift switch to middle position, after a moment, then to the opposite side. Or, if turn the switch to another side directly, the direction of main spindle running don't change.
- Loose lock lever, change the belt position in tower pulley, then tighten belt. Now the main spindle can obtain 7 kinds of speed according to the following chart.

SPINDLE SPEEDS (○/min)								
A B C		MOTOR			MIDDLE		D E F	
A-F	A-E	A-D	B-F	C-F	B-E	C-D		
160	300	375	470	600	870	1360		

8.3 DRILLING-MILLING SPINDEL DRIVING

- At first, check the protection instrument if effective, then push start switch, pilot light, the machine is awaiting working. Now stop, forward and reverse of drilling-milling spindle can be made by operating the shift switch (9).
- Drilling-milling spindle feeding can be change by lever(13), If need micro feeding, pull out drilling-milling clutch lever(10), then operate lever(11) to micro feed.
- The speed of drilling-milling spindle can be made by lever(8):pushlever to backward, loose belt and change the belt position on the pulley, then push the lever to the front to tighten belt, finally lock lever(8).16 kind of speed can be obtained as the above chart.

THE DRILLING-MILLING UNIT SPEEDS (○/min)									
A B C		MOTOR				MIDDLE		D E F	
-A	-B	-A	-C	-A	-D	-B	-A		
E	E	D	E	C	E	D	B		
125	200	310	350	400	450	530	600		
-B	-C	-B	-D	-C	-D	-C	-D		
C	D	A	C	B	B	A	A		
660	900	1380	1450	1670	2140	2350	3000		

8.4 LONGITUDIANL FEED

- HAND FEEDING:** Turn the clutch handle (1) to the middle position, half-nut lever (26) in disengaged position, turn the hand wheel (23), now longitudinal hand feeding can be made.

b. AUTOMATIC FEEDING:

The half-nut lever (26) in engaged position, longitudinal-cross feed clutch handle (22) in inner position. Now cross auto-feeding can be made. By changing the handle (2) position and gear A,B,C,D, 12 kinds of automatic feed amount can be obtained as follows. (the left chart is for the inch leadscrew, and the right chart is for the metric leadscrew)

8.5 CROSS FEEDING

- Hand feeding can be made by operating the hand wheel (24) directly.
- Automatic feeding: half-nut lever (26) in engaged position. Pull out longitudinal-cross feed clutch handle (22), now cross automatic feeding can go. By changing the handle (2) position and gear A,B,C,D, 12 kinds of automatic feed amount can be obtained as above. (the left chart is for the inch leadscrew, and the right chart is for the metric leadscrew)

8.6 THRED CUTTING

- Main spindle in low speed, the lever (1) in left position, Refer to gear chart, adjust gear shift lever(2) properly, half-nut lever (26) in engaged position. Now can go to cut thread. Different thread pitch (inch, metric) cutting can go by changing the lever (2) and gear A,B,C,D.

b. CAUTION:

IN CUTTING THREAD COURSE, DON'T LEAVE handle (2) OFF RIGHT OR LEFT POSITION. WHEN A KIND OF THREAD NEED MANY TIMES. TURN THE HANDWHEEL (15) TO MAKE TOOL AWAY FROM WORKPICCE, OPERATE THE ELECTRICAL SWITCH TO MAKE MOTOR RUN IN THE OPPOSITE DIRECTION. AFTER FINISHING RETURNING TOOL CONTINUE TO CUT THREADS. DO SO MANY TIMES UP TO FINISHING CUTTING THRE ADS.DIRECTION. AFTER FINISHING RETURNING TOOL CONTINUE TO CUT THREADS. DO SO MANY TIMES UP TO FINISHING CUTTING THREADS.

A	D	mm					
		36	42	48	60	72	
127T	60	0.75	/	1	1.25	1.5	
120T	24	1.5	1.75	2	2.5	3	
24T		3	3.5	4	5	6	

A	D	mm											
		24	27	30	33	36	39	42	48	60			
72	72	4	4.5	5	/	6	/	7	8	10			
127T	72	8	9	10	11	12	13	14	16	20			
120T	24	16	18	20	22	24	26	28	32	40			
24T	24	/	/	/	/	18	/	/	24	30			
		/	/	54	60	66	72	78	84	96	120		

A	D	mm											
		24	27	30	33	36	39	42	48	60			
60	60	0.8	/	/	/	/	/	/	/	/			
120T	60	1.4	1.45	0.5	0.6	0.7	0.8	/	/	/			
24T	24	/	/	2.5	3	3.5	4	5	6				
		/	/	/	2.5	1.5	1.75	2	2.5	3			
		/	/	/	/	4.75	/	1	2.5	1.5			

A	D	mm											
		24	27	30	33	36	39	42	48	60			
72	72	4	4.5	5	/	6	/	7	8	10			
127T	72	8	9	10	11	12	13	14	16	20			
120T	24	16	18	20	22	24	26	28	32	40			
24T	24	/	/	/	/	18	/	/	24	30			
		/	/	54	60	66	72	78	84	96	120		

8.7 TAIL STOCK

The tail stock can slides along the bed ways freely and can be locked in any position by the lock lever(17). Tail stock barrel position can be adjusted by turning the tail stock hand wheel (15), locked by lock lever (14). Before shipment, it is sure that the tail stock center and spindle center are in the same line. If need to use the tail stock center to cut small taper, you should loose the screw, adjust the two reset screw (16) to make the deviation between spindle center and tail stock center. Now you can start the work.. After finishing proceeding, you should do as the above to move tail stock in original position. When use tail stock to do the external cutting and get a taper, please adjust the reset screw (16) as the above way. Now you can eliminate the taper.

8.8 THREADING DIAL

Threading dial performs the function of indicating the proper time to engage the half-nut so that the tool will enter the same groove of the thread on each successive cutting. Threading dial is marked with lines numbered 1.2.3.4.5.6, and a single line is marked on the housing of the threading dial (fixed line). The instruction plate (see the following figure) riveted on the threading dial shows the selection of matching the revolving lines with the fixed line.

When cutting thread, engage the half-nut at the proper numbers shown on the scale column of the threading dial plate. 1-6 on the scale means the half-nut can be engaged on any of the numbered lines 1.2.3.4.5.6. In the first cutting, if engage the half-nut when matching the numbered lines with fixed line, you can engage the half-nut for successive cutting only when matching the numbered lines with the fixed line. 1.4 mean the half-nut can be engaged on 1.4 for successive cutting. If the half-nut engage with the lead screw all the time while cutting the thread, need not to use the threading dial. In this case, after finishing each successive cutting, firstly back the tool and reverse the motor, then move the tool to the last start cutting position and make the next successive cutting.

INDICATOR TABLE

TPI	SCALE	TPI	SCALE	TPI	SCALE	TPI	SCALE
8	1,4	12	1-6	20	1,4	32	1,4
9	1-6	14	1,4	22	1,4	40	1,4
10	1,4	16	1,4	24	1-6		
11	1,4	18	1-6	28	1,4		

9. CHECK PROBLEMS AND TPAIRING

CAUTION
BEFORE CHECKING, PLEASE TURN OFF THE CURRENT.

9.1 Turn on the current, the spindle doesn't run.

- The voltage is not right and the main switch turned offplease adjust the input voltage and turn on the main switch.
- The fuse in electric box was broken please change a new one.
- Wire connector is losing please check and fix it again.

9.2 The motor is too heat or not powerful.

- Overloading or working time is too long please reduce it.
- The voltage is too lowadjust to correct volatage
- Poor quality of motor please change a new one.
- The fuse or wire connector is not good (easily make the motor short circuit please turn off the current and change a fuse.
- The belt is too tight please loose it to suitable position

9.3 Temperature of main spindle bearings is too high.

- No enough grease to lubricate please fill the oil according to oil gauge.
- The bearing assembly is too tight.....adjust spindle back nut properly .
- High speed turning for long time slightly reduce the cutting amount.

9.4 Shortage of motive force when the spindle is running.

- The belt is too loose or worn and tore please adjust the belt tension to correct position or change a new one .
- The motor is burnt please change a new one .
- The fuse has brokenplease change a new one .

9.5 Making small taper when external turning.

- It is not on the same line between the spindle center and the tail stock center please adjust the tail stock according to the operation manual.
- The moving line of carriage doesn't parallel to the spindle center.....please loose the lock screw of headstock and adjust the spindle center to requirement and lock.

9.6 During proceeding, the surface of work piece is very rough.

- The space of the spindle bearing is too big adjust it to correct position or change a new one.
- The space between the saddle and the gib is too big adjust them to correct position.
- The tool is not sharp please sharpen it.
- The work piece doesn't lock tightly please lock it tightly.
- The precision of spindle bearing is too bad to wear please change a new one.

10. MAINTENANCE

PLEASE OFTEN KEEP THE MACHINE IN GOOD CONDITION AND GOOD PRECISION. IT IS ADVISABLE THAT MAINTENANCE IS BETTER THAN REPAIR.

10.1 Daily maintenance

- Before using everyday, please pour the oil and lubricate all the moving parts.
- If the spindle temperature is too high or too noisy, please stop the machine and check it in order to keep its precision.
- When the machine is in trouble, please stop to repair it. If you don't do it well, please ask for the local repairman or supplier to help you.
- It is not allowable to work the machine with too many loads.
- Before leaving the workshop, please clean the working area, unload the work piece, turn off the power, be careful to clean the iron chipping and shavings and dust, pour into the lubricating oil or antirust oil according to the manual.

10.2 Weekly maintenance

- Clean and protect the screw.
- Check all sliding turning surfaces if lack of lubricating, if not, please pour into oil.

10.3 Monthly maintenance

- Adjust all the gib space of the saddle.
- Lubricate the worm gear, half nut bearings in order to prevent wearing.

11. STANDARD ACCESSORIES

Item no.	Item name	Specification	Quantity	Remarks
1	3-jaw chuck	130mm	1	Installed
2	Dead centers	M.T.3	1	
3	Wedge	M.T.4	1	
4	Tie rod		1	Installed
5	Tie rod washer		1	Installed
6	Tool post wrench		1	
7	Double end wrench	13×16mm	1	
8	Allen wrench	3mm	1	
		4mm	1	
		5mm	1	
		6mm	1	
9	"-"screw driver	100×6mm	1	
10	Duplex gears (m=1)	T=120/127	1	Metric, inch
		T=60/127	1	Inch
		T=60/120	1	Metric
11	Gear (m=1)	T=24	1	Metric, inch
		T=24	1	Metric, inch
		T=27	1	Metric, inch
		T=30	1	Metric, inch
		T=33	1	Metric, inch
		T=36	1	Metric, inch
		T=39	1	Metric, inch
		T=42	1	Metric, inch
		T=48	1	Metric, inch
		T=60	1	Metric, inch
		T=72	1	Metric, inch
		T=120	1	Installed
12	Drill chuck	B16/1.5-13	1	Installed
13	Drill stock		1	Installed

- The descriptions and specifications given in the manual are subject to alteration without notice.

12. OPTIONAL ACCESSORIES (ACCORDING TO THE SUPPLY CONTACT)

Item no.	Item name	Specification	Quantity	Remarks
1	Lathe tool		1	
2	Milling cutter holder		1	
3	Reversible thread tapping tools		1	
			1	
4	D.C. motor system		1	
5	Machine stand		1	
6	Protection for chuck		1	
7	Protection for lead screw		1	
8	Protection for tool post		1	
9	Protection for drilling and milling		1	
11	Follow rest		1	
12	Steady rest		1	