

INSTRUCTION MANUAL

AL-410 Centre Lathe (415V) 400 x 1000mm Turning Capacity



L569D

OPERATION MANUAL



SPECIFICATIONS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTIFICATION

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MACHINERYHOUSE

NOTE

This manual has been prepared for the owner and operators of this lathe. Its purpose, aside from machine operation, is to promote safety through the use of accepted correct operating and maintenance procedures. Completely read the safety and maintenance instructions before operating or servicing the machine. To obtain maximum life and efficiency from your lathe, and to aid in using the machine safely, read this manual.

Since we continually strive to incorporate latest developments in the construction of the lathe, it is quite possible at times, due to printing and shipping requirements, some data may not correspond to the lathe in the

LIMITED WARRANTY

We make every effort to assure that our products meet high quality and durability standards and warrants to the original retail consumer/purchaser of our products that each product be free from defects in materials and workmanship as follows: 1 YEAR LIMITED WARRANTY ON ALL PRODUCTS UNLESS SPECIFIED OTHERWISE. This Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence or accidents, normal wear and tear or alterations outside our facilities, or to a lack of maintenance.

We shall in no event be liable for death, injuries to persons or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, the product or part must be returned to for examination, postage prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, we will either replace the product, or refund the purchase price if we cannot readily and quickly provide a repair or replacement, if you are willing to accept a refund. We will return repaired product or replacement at our expense, but if it is determined there is no defect, or that the defect resulted from causes not within the scope of our warranty, then the user must bear the cost of storing and returning the product.

Attention:

All lathe operators must be constantly aware of the safety hazards that are associated with using the lathe and must know all safety precautions to avoid accidents and injuries. Some important safety precautions to follow when using the lathe are:

1. Correct dressing is important, remove rings and watches, roll sleeves above elbows.
2. Always stop the lathe before making adjustments.
3. Do not change spindle speeds until the lathe comes to a complete stop.
4. Handle sharp cutters, centers, and drill with care.
5. Remove chuck keys and wrenches before operating
6. Always wear protective eye protection.
7. Handle heavy chuck with care and protect the lathe ways with a block of wood when installing a chuck.
8. Know where the emergency stop is before operating the lathe
9. Use pliers or a brush to remove chips and swarf, never your hands.
10. Never lean on the lathe.
11. Never lay tools directly on the lathe ways. If a separate table is not available, use a wide board with a cleat on each side to lay on the ways.
12. Keep tools overhang as short as possible.
13. Never attempt to measure work while it is running
14. Never file lathe work unless the file has a handle.
15. File left-handed if possible
16. Protecting the lathe ways when grinding or filing.
17. Use two hands when sanding the work piece. Do not wrap sand paper or emery cloth around the work piece.

MACHINE APPEARANCE

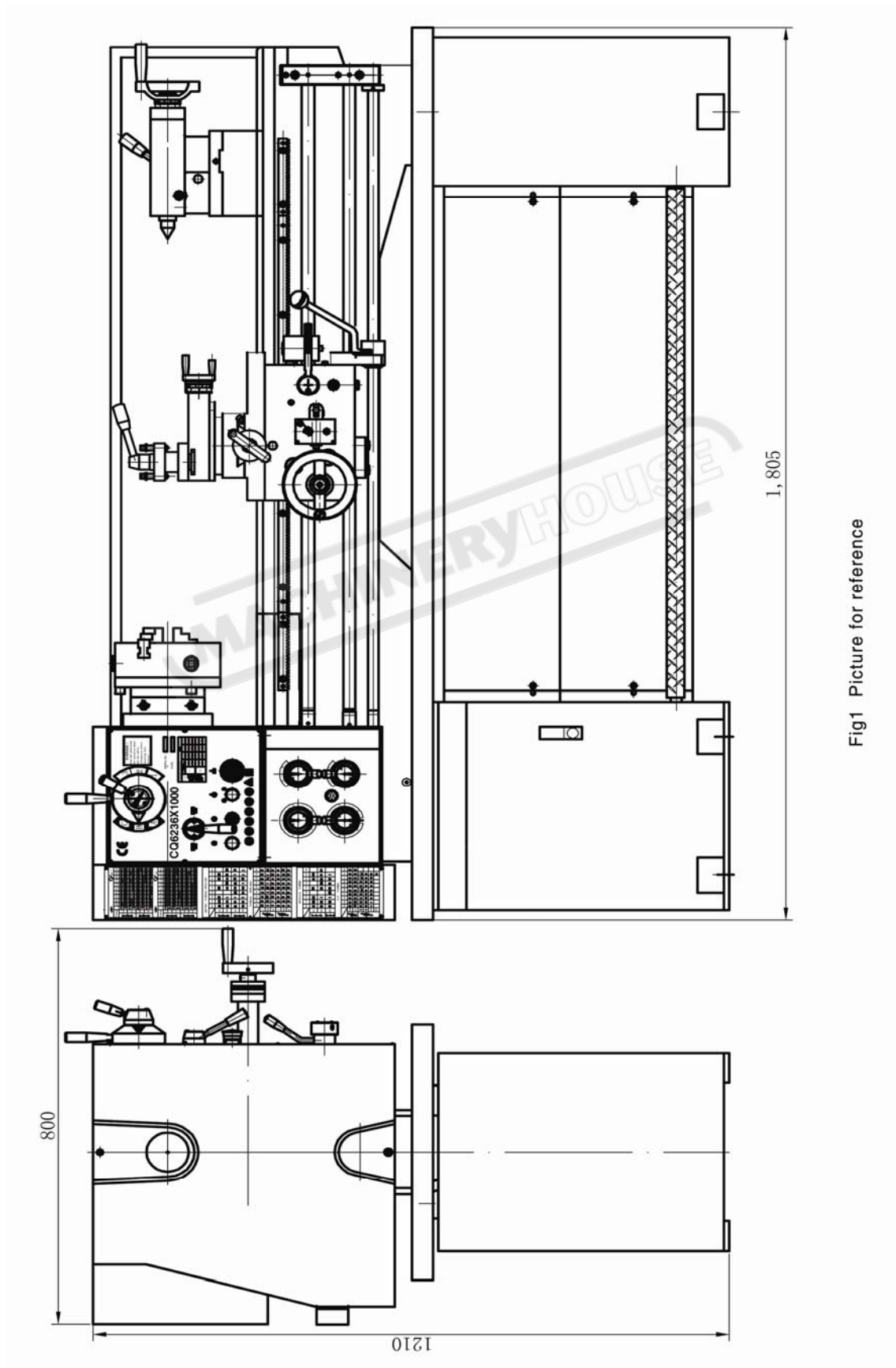


Fig1 Picture for reference

MAIN TECHNICAL SPECIFICATION

MODEL		CQ6236	CQ6240
CAPACITY	Max swing over bed	φ360mm	φ400 mm
	Max swing over gap	φ490mm	φ530 mm
	Max swing over tool post	φ206mm	φ240 mm
	Distance between centers	1000mm	1000mm
	Height center	180 mm	200 mm
	Width of bed	218 mm	218 mm
	Cutting tool max. section	20×20 mm	20×20 mm
HEADSTOCK	Spindle bore	φ52 mm	
	Spindle taper	M.T.NO.6	
	Spindle nose	D5. 1:4(GB5900.3-1997)	
	Spindle speed rang no.	9 or 18	
	Spindle speed rang	75-1400r.p.m or 65-1810r.p.m	
THREAD & FEED	Guide screw	T24 mm×3 mm	
	Guide screw of tool post	T16 mm×2 mm	
	Threads metric pitches	0.4—7 mm (32kinds)	
	Threads imperial pitches	60—4T.P.I (36kinds)	
	Modulus thread	0.4—3 mm (22kinds)	
	Diameter thread	44—16D.P (30kinds)	
	Longitudinal feeds	0.053—1.291 mm (40kinds)	
		0.002—0.051 inches (40kinds)	
	Cross feeds	0.011—0.276 mm (40kinds)	
		0.001—0.011 inches (40kinds)	
Guide screw of compound rest	T14 mm×2 mm		
Tool post feeding	0.02 mm (0.001inches)		
COMPOUND REST AND TOP SLIDE	Max turning Angle of tool post	±90°	±90°
	Top slide travel	76 mm	132mm
	Tool post travel	200 mm	235mm
TAILSTOCK	Dia. of tailstock sleeve	32 mm	
	Morse taper of tailstock sleeve	M.T.NO.4	
	Travel of tailstock sleeve	120 mm	
MOTOR	Power of main motor	2.2KW (50HZ)	

	Power of coolant pump	40w (50HZ)
WEIGHT & MEASURES	Machine size (L×W×H)	1900×800×1280
	Packing size (L×W×H)	2000×900×1430
	Net weight	700Kg
	Gross weight	820Kg

TRANSPORTATION

The machine is transported in a special wooden case (or with foot stands separately packed in carton), being fixed to the base of the case or slide by suitable bolts. Some of the accessories are mounted on the lathe well fixed and the other packed in a separate box or directly fixed on the case base.

The places where the ropes or chains have to be passed during handling of the packed machine are marked on the packing. Be aware of the heavy side while you are handling the machine with forklift.

UNPACKING

After the machine had been unpacked, check carefully its general condition, as well as the availability and condition of all the accessories, shown in the packing list.

HANDLING

Unpacked machine shall be handled only by the help of a suitable crane. Before passing the ropes over the specified places, pull out the tailstock and carriage and fix them in the rear hand position so that when lifting the machine you will obtain required balancing. When handling the machine never strike or hit it sharply because this may affect the machine accuracy—irrespective of whether there are or not may visible defects.

Since the paint on some part of the machine may be damaged during handling, place protective pads of fabrics or other suitable material on the respective places.

PREPARATION

Before mounting the machine on the predetermined place, clean it carefully from the protective oil. Respective machine surface shall be washed by the help of pure naphtha or benzine.

This protective oil shall not be removed by hard objects or solvent that may damage the metal surface or paint of the machine. Well-cleaned surfaces are dried by the help of dry threads and covered with pure machine oil. Remove the end gear cover. Clean all components of the end gear assembly and coat all gears with heavy, non-slinging grease.

MOUNTING, FOUNDATIONS AND LEVELLING

To obtain accurate, durable and trouble-free operation of the machine, mount it only on suitable, foundation and level it carefully. The foundation is prepared by concrete with a thickness from 200 to 300 mm according to the soil strengthness.

The unpacked machine is lifted by crane according to the specified method and after the anchor and leveling bolts are in place, lower the foundation so that the anchor bolts enter into the respective holes. The leveling plates (shims) are placed below the leveling bolts. The guide way horizontality is checked in longitudinal and transverse direction towards the machine axis by the help of level with an accuracy of $\pm 0.02/1000$ mm and $\pm 0.04/1000$ mm. After this initial machine leveling had been carried out, pour the holes for the anchor bolts and the space blew the machine legs with cement putty with ratio between the cement and sand 1:3

After the cement is setted well (3-4days), tighten the nuts of the anchor bolts carefully and evenly.

Check the machine leveling once again and if necessary—correct it by the help of the leveling bolts.

CONNECTION TO THE EL. SUPPLY SOURCE

Check whether the data on the el. panel scheme (voltage and frequency of the supply source) correspond to the available.

The controlling level should remain in the middle and also press down the switch to keep the machine power off.

Make sure the lathe is properly grounded.

PUTTING INTO OPERATION

Before starting the machine, clean it once again carefully and lubricate it accordingly

Check the V-Type belt, which located from motor to the low speed wheels, whether it's too tight or not. Too tight belt will spoil the bearings, also, if the V-Type belt is too lengthened, it will skid, so the belt must be adjusted

Starting is effected in the following order:

Check manually the movement of all mechanisms. It shall be smooth. Check also the operation of all the controls.

Fill the tank of the cooling system with the specified coolant (optional accessory to be ordered separated). Switch on the main el. motor.

After one-hour operation of the machine, check the oil level in the tanks and if necessary add the required quantity.

After two shifts operation of the machine, check the play of the V-belts.

TRANSMISSION SYSTEM&PARTS - - Fig4. Table 1 and Table renewal.

BEARING DISTRIBUTION AND LIST - -Fig5. Table 2

LUBRICATION SYSTEM - - - - - Fig6. Table 3

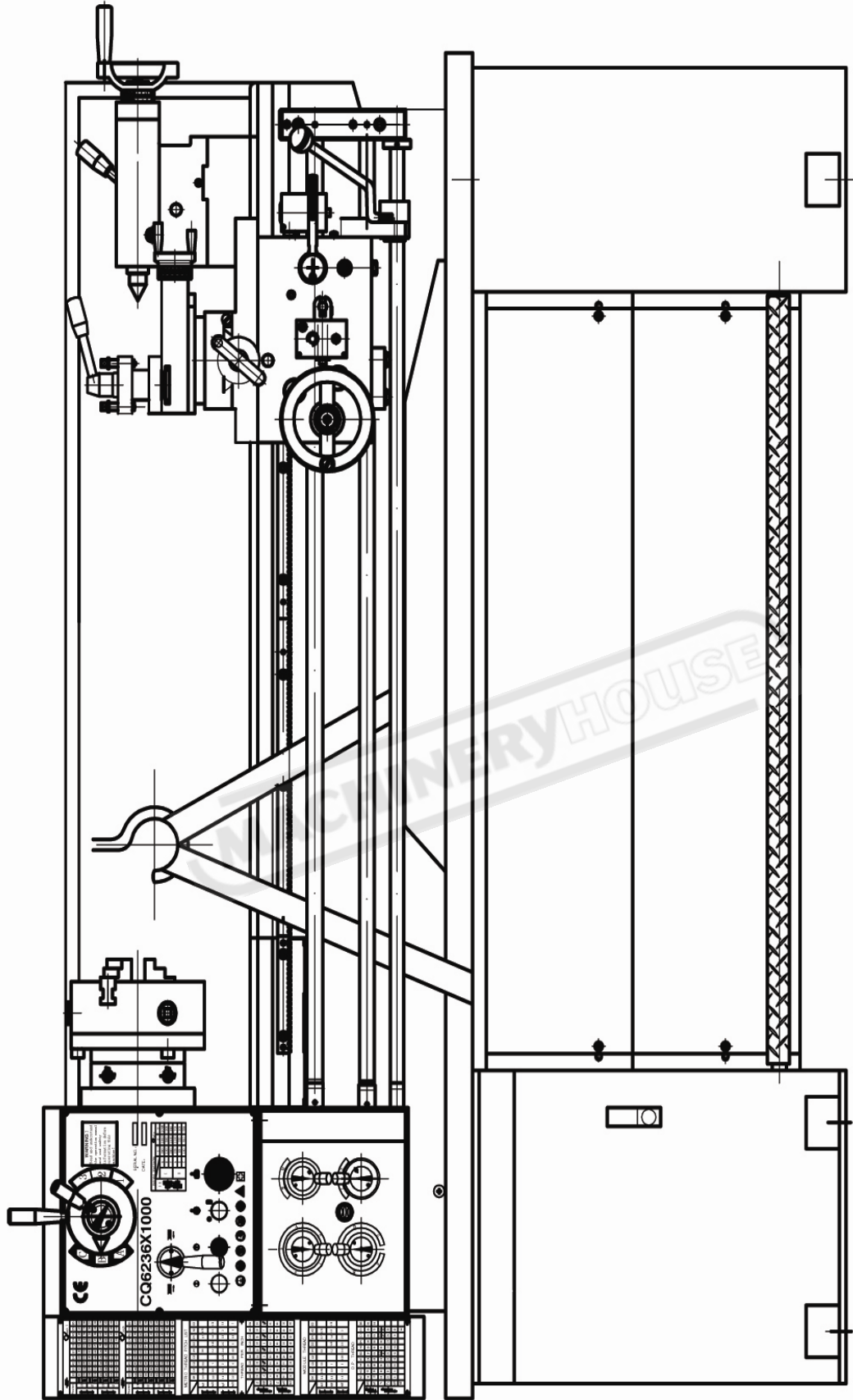


Fig2 Hoisting position

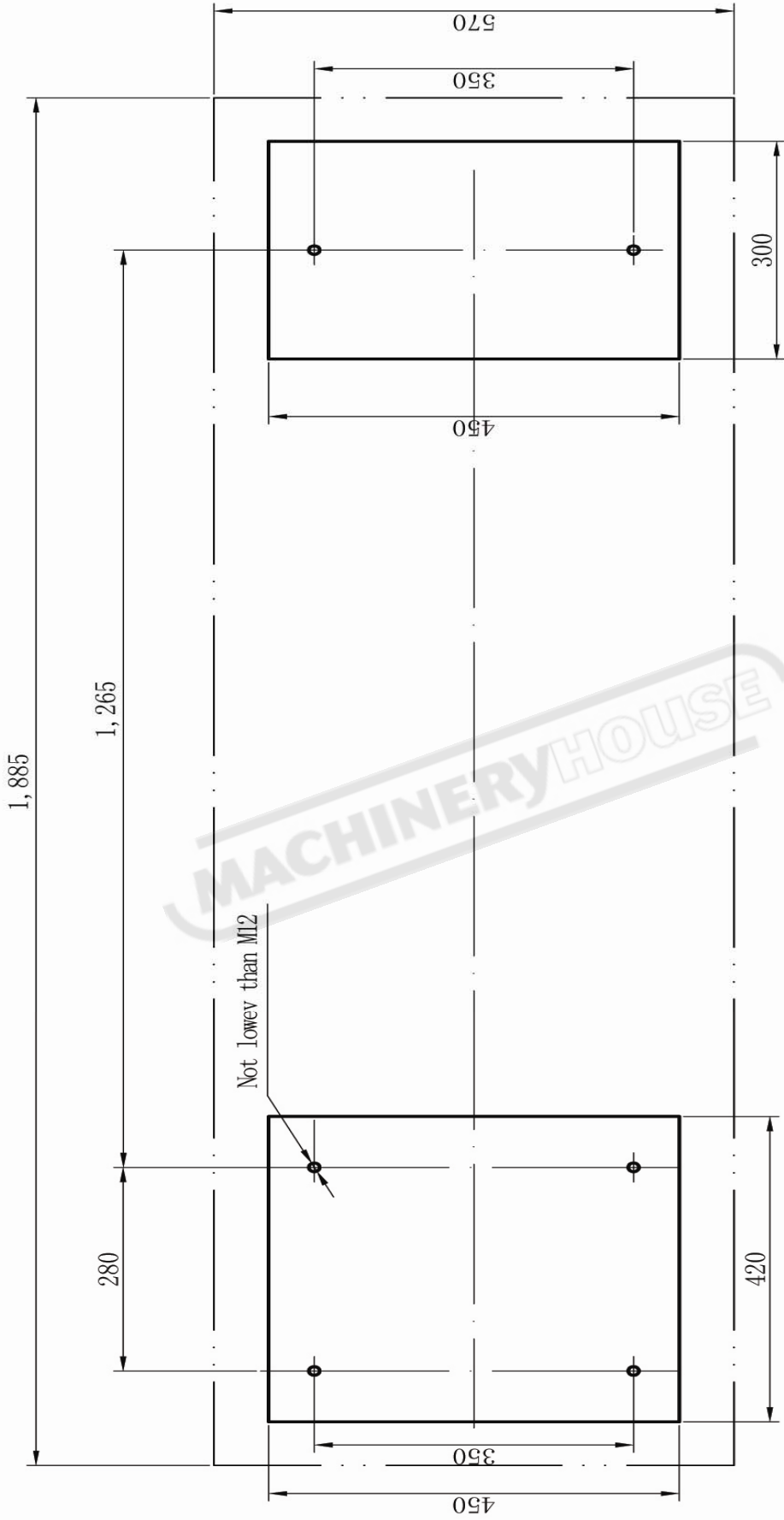


Fig3 Basic screws distribution

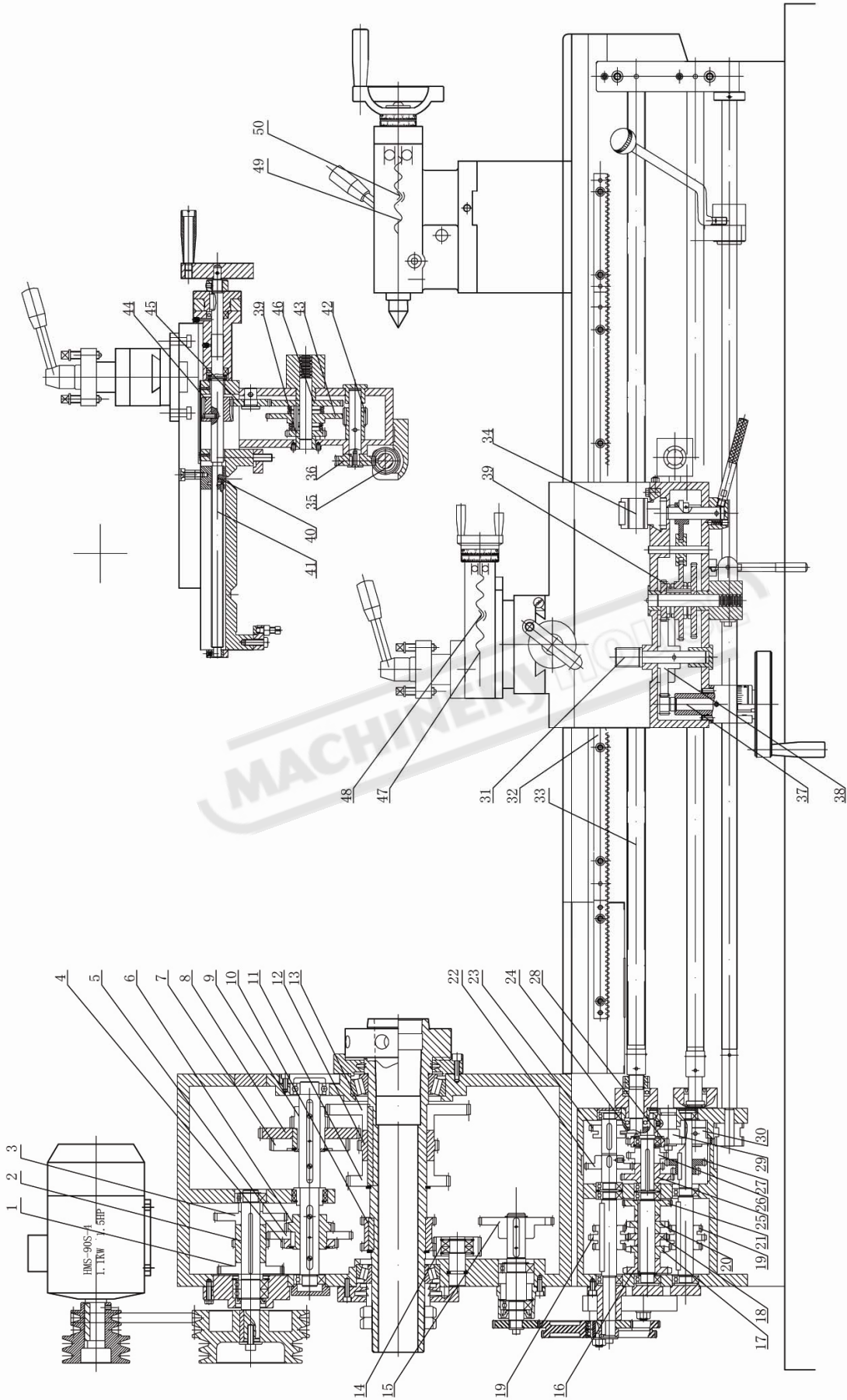


Fig4 Transmission system

TRANSMISSION SYSTEM & PARTS

TRANSMISSION SYSTEM (SEE FIG4)
TABLE 1

Part	NO.	NAME	Teeth no.	Modulus	Pressure Angle	Material	Note
Headstock	1	Gear	42	M2	20°	45	2013
	2	Gear	23	M2	20°	45	2018
	3	Gear	47	M2	20°	45	2019
	4	Gear	36	M2	20°	45	2021
	5	Gear	55	M2	20°	45	2020
	6	Gear	31	M2	20°	45	2022
	7	Gear	45	M2	20°	45	2016
	∞	Gear	58	M2	20°	45	2015
	9	Gear	21	M2	20°	45	2017
	10	Duplicate gear	48	M2	20°	45	2008
	11	Gear	59	M2	20°	45	2029
	12	Gear	46	M2	20°	45	2030
	13	Gear	83	M2	20°	45	2031
	14	Duplicate gear	30	M2	20°	45	2032
	Gear box	15	Gear	48	M2	20°	45
16		Gear	24	M2.25	20°	45	3029B
17		Gear	16	M2.75	20°	45	3031B
18		Gear	18	M2.75	20°	45	3032B
19		triple gear	18	M2.25	20°	45	3005B
				M2.75			
				M2.25			
20		Gear	20	M2.75	20°	45	3003B
21		Gear	28	M2.25	20°	45	3002B
22		Gear	27	M2.25	20°	45	3027C
23		Gear	21	M2.25	20°	45	3025B
24		Gear	21	M2.25	20°	45	3018C
25		Duplicate gear	30	M2.25	20°	45	3026C
			18				
26		Gear	22	M2.25	20°	45	3007C
27	Duplicate gear	15	M2.25	20°	45	3006C	
		22					
28	Gear	23	M2.25	20°	45	3009B	
29	Gear	17	M2.25	20°	45	3016C	

	30	Gear	15	M2.25	20°	45	3014C
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TRANSMISSION SYSTEM & PARTS

TRANSMISSION SYSTEM (SEE FIG4)

RENEWAL

TABLE

Part	NO	NAME	Teeth	Modulus	Pressure Angle	Material	Note
Carriage box and saddle	31	Gear	11	M2	20°	45	4028
	32	Rack gear		M2	20°	45	1009, 1010
	33	Guide screw	Single head	3mm or 8T.P.I		45	1005A
	34	Half nut	Single head	3mm or 8T.P.I		ZQSn6-6-3	4003A
	35	Worm	Single head	M2	20°	45	4008
	36	Worm gear	24	M2	20°	ZQSn6-6-3	4017
	37	shaft	12	M2	20°	45	4030
	38	Gear	50	M2	20°	45	4029
	39	Gear	25	M2	20°	45	4014
	40	Guide screw nut	Single head	2mm or 10 T.P.I		ZQSn6-6-3	5104A
	41	Guide screw	Single head	2mm or 10 T.P.I		45	5103A
	42	Gear	14	M2	20°	45	4019
	43	Gear	51	M2	20°	45	4013
	44	Gear	19	M2	20°	45	5127
	45	Gear	25	M2	20°	45	4010
	46	Gear	48	M2	20°	45	4012
	47	Guide screw	Single head	2mm or 10 T.P.I		45	5011A
	48	Screw nut	Single head	2mm or 10 T.P.I		ZQSn6-6-3	5012A
Tail stock	49	Guide screw of tailstock	Single head	2mm or 10 T.P.I		45	6006A
	50	screw nut of tailstock	Single head	2mm or 10 T.P.I		ZQSn6-6-3	6012A
Change gears	1	Gear	21	M1.25	20°	45	3093
	2	Gear	22	M1.25	20°	45	3076C
	3	Gear	24	M1.25	20°	45	2002C
	4	Gear	26	M1.25	20°	45	3075C
	5	Gear	28	M1.25	20°	45	3094
	6	Gear	38	M1.25	20°	45	3090C
	7	Gear	41	M1.25	20°	45	3095
	8	Gear	44	M1.25	20°	45	3077C
	9	Gear	47	M1.25	20°	45	3096
	10	Gear	48	M1.25	20°	45	3039C

11	Gear	52	M1.25	20°	45	3078C
12	Duplicate gear	120/127	M1.25	20°	45	3038C

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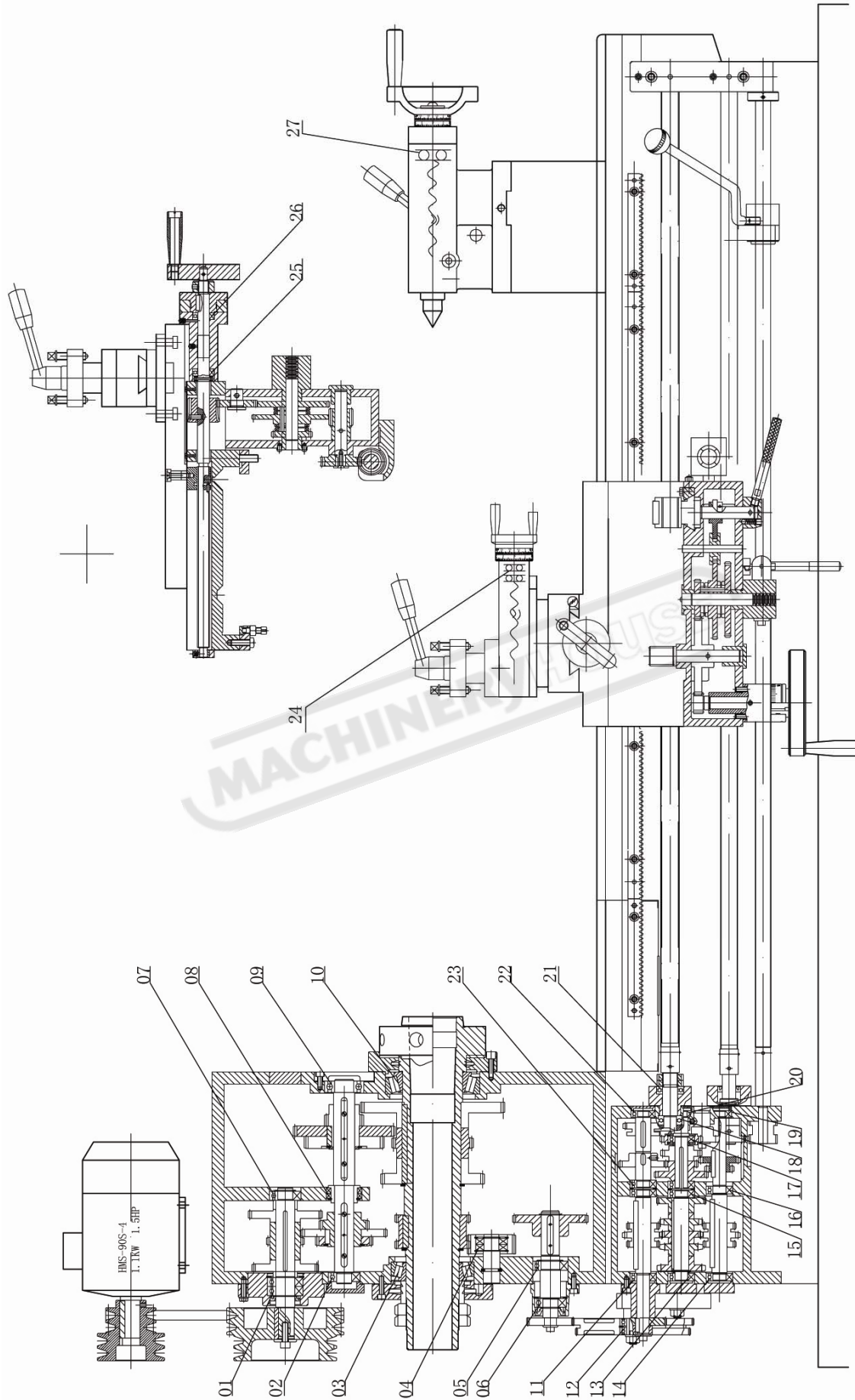


Fig5 Bearing distribution

BEARING DISTRIBUTION AND LIST

BEARING LIST (SEE FIG 5)

TABLE 2

NO.	Name	Note	Specification	Qty.	Parts
1	groove ball bearing	6005	25×47×12	2	headstock
2	groove ball bearing	6004	20×42×12	1	
3	conical roller bearing	32014P5	70×140×25	1	
4	groove ball bearing	16004	20×42×8	2	
5	groove ball bearing	6005	25×47×12	1	
6	groove ball bearing	6004	20×42×12	1	
7	groove ball bearing	6004	20×42×12	1	
8	groove ball bearing	61807	35×47×7	2	
9	groove ball bearing	6205	25×52×15	1	
10	conical roller bearing	32016P5	80×125×29	1	
11	groove ball bearing	6003	17×35×10	1	gear box
12	groove ball bearing	6003Z	17×35×10	2	
13	groove ball bearing	6003	17×35×10	1	
14	groove ball bearing	6003	17×35×11	1	
15	groove ball bearing	6003	17×35×12	2	
16	groove ball bearing	6003	17×35×13	1	
17	groove ball bearing	16003	17×35×8	1	
18	thrust ball bearing	51103	17×30×9	1	
19	groove ball bearing	6002	15×32×9	1	
20	groove ball bearing	6002	15×32×10	1	
21	thrust ball bearing	51104	20×35×10	1	
22	groove ball bearing	6002	15×32×9	1	
23	groove ball bearing	6003	17×35×11	1	
24	thrust ball bearing	51101	12×26×9	2	
25	thrust ball bearing	51102	15×28×9	1	
26	thrust ball bearing	51102	15×28×10	1	
27	thrust ball bearing	51101	12×26×9	1	tailstock

Table 3

NO.	LOCATION	HOW	HOW MUCH	HOW LONG TO FILL UP	OIL QUALITY
1	HEADSTOCK	Remove the screws of filler on left side up	L	Once first month, then every two month	NO.15 SV1229
2	GEAR BOX	Open top cover remove the screws of filler	L	Once a month	NO.22 L-AN GB443-1989
3	SADDLE	open oil plug	L	Once a day	NO.22 L-AN
4	CHANGE GEAR	open the cover	Approp	Once a day	NO.22 L-AN
5	BEDMAN'S	By oil gun	Approp	Twice a day	NO.22 L-AN
6	TOOL POST/ TOP SLIDE, GUIDE SCREW	By oil gun	Approp	Twice a day	NO.22 L-AN
7	LEADSCREW, FEED ROD, SWITCH ROD	By oil gun	Approp	Once a day	NO.22 L-AN
8	HALF NUT	By oil gun	Approp	Once a day	NO.22 L-AN
9	TAILSTOCK	By oil gun	Approp	Once a day	NO.22 L-AN
10	BRACKET	open oil plug	L	Twice a day	NO.22 L-AN

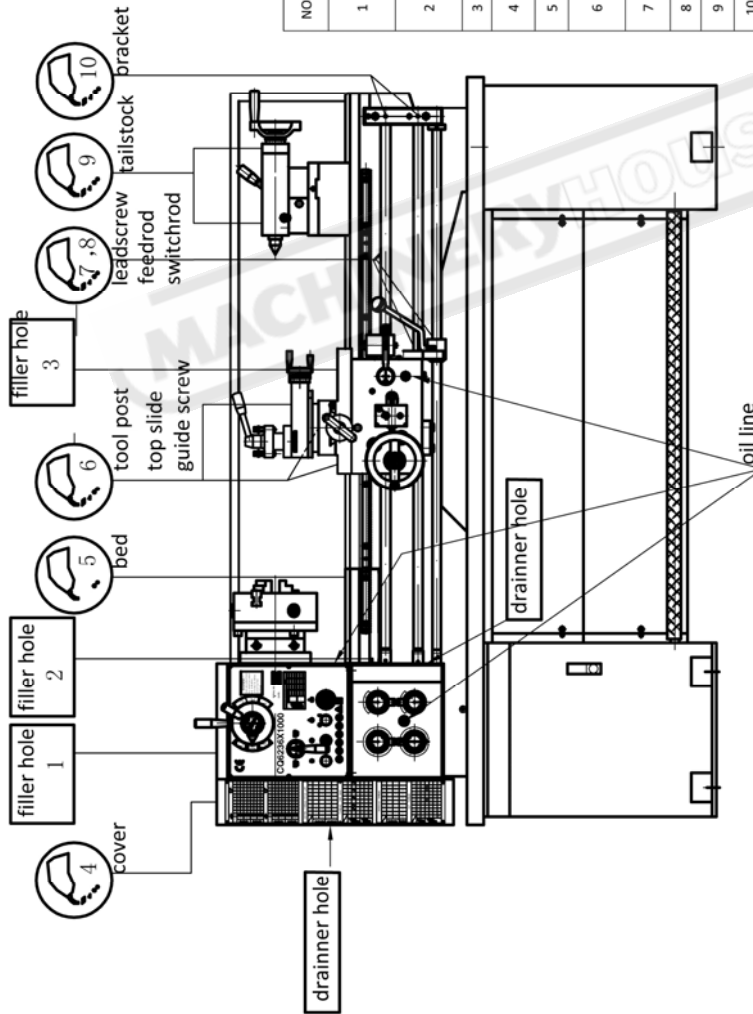


Fig 6 Lubrication

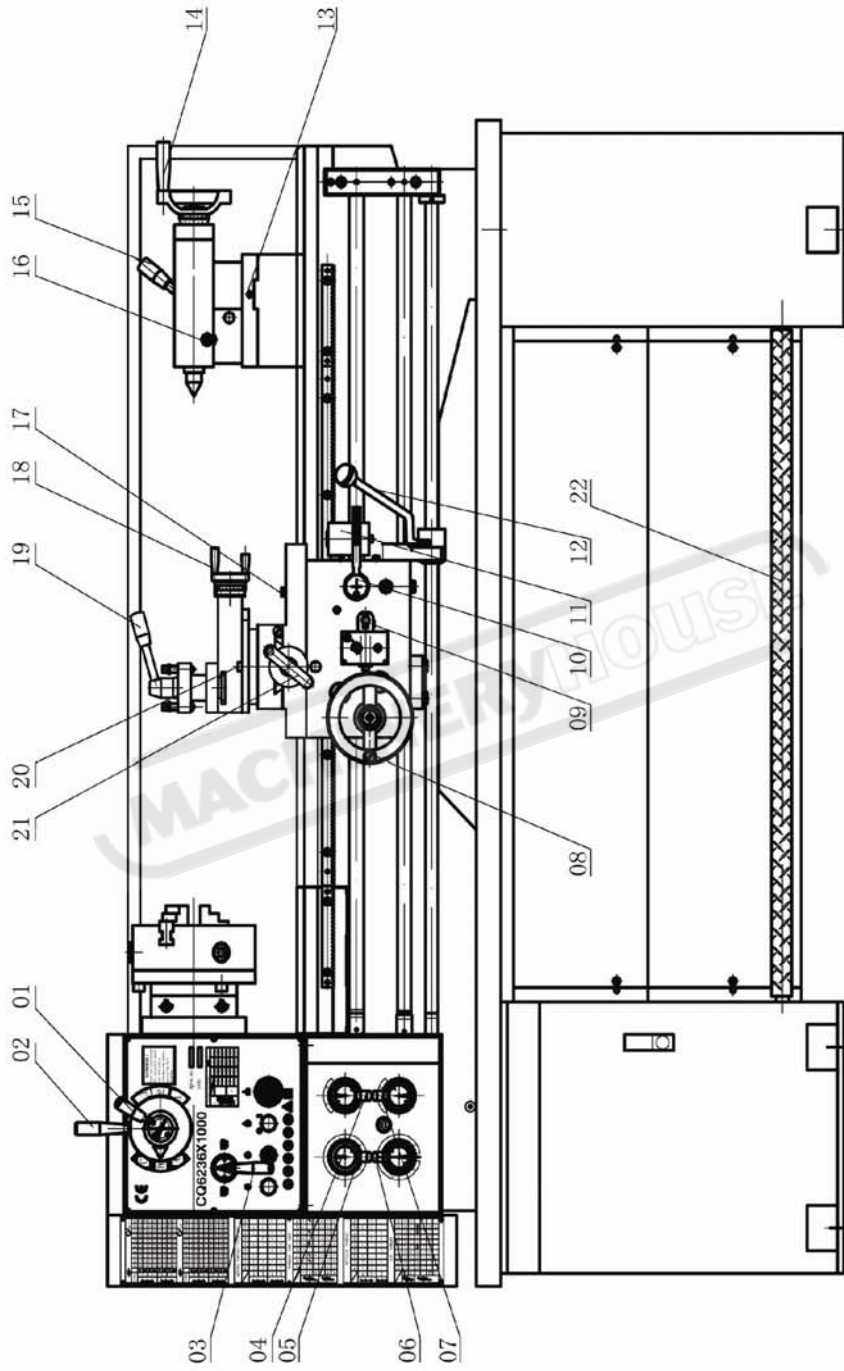


Fig 7 Handles

Handles and use

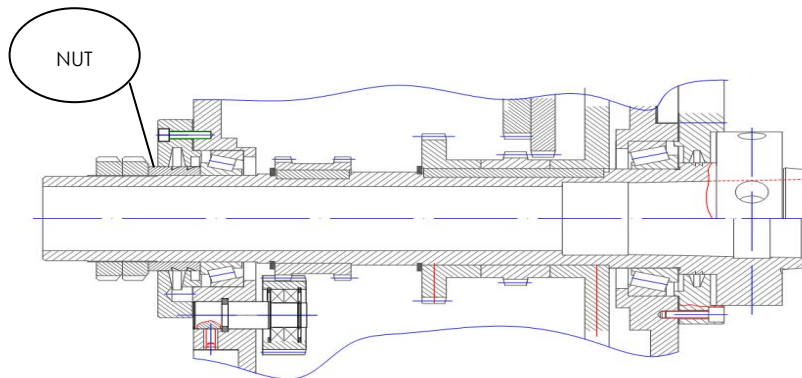
Table 5

NO.	INSTALLATION	NAME	FUNCTION
01	headstock	variable speed handle I	spindle speed
02		variable speed handle II	spindle speed
03		turn &reverse handles	change the move direction of the saddle
04	feed box	thread or feed handle	S-feeding M-threading
05		feeding and pitch handle	obtain appropriate feeding or pitch
06		feeding and pitch handle	
07		increases times optional handle	
08	carriage	carriage movement handle	
09		vertical and horizontal handles	control move direction or manual
10		handle of half nut	the combination or separation of the thread
11		thread chasing dial	the combination or separation of thread dial
12		start switch handle	turn or reverse turn or stop of the machine
13	tailstock	adjust screw of tailstock center	the coaxial tolerance of tailstock and spindle
14		handwheel of tailstock sleeve	move forward or backward of the tailstock sleeve
15		lock handle of the tailstock	tailstock movement
16		lock handle of the tailstock sleeve	tailstock sleeve clearance and movement
17	compound rest and saddle	lock nut of bed	lock the saddle
18		handwheel of top slide	make the top slide move forward or backward
19		lock nut of tool	control of the rotation of the tool
20		Lock nut of rotary tool	control of the rotation of the rotary tool

21		tool post handwheel	tool post move forward or backward
22	bed	foot brake switch	control the rotation of the lathe

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Adjustment



Adjustment of clearance of the spindle sees fig8

1. Spindle adopt high precision conical roller bearing, after period of time, bearing trace to wear, the gap increases, so adjustment is needed ,please follow below steps: Loosen the two nut at spindle back-end, tighten front nut, test the spindle by hand with micro tight, backward 1/4 circle, then tighten one back nut .
2. Clearance adjustments between the tool post and top slide: Turn the screw at the right hand to the right side, the gap becomes small, otherwise becomes big.
3. Gap adjustments to guide screw nut: See fig10, Turn screw 1 to eliminate the gap. The gap can't be too small or wear is intensified.
4. Amount or detach of chuck and face plate: sees fig11. The spindle connects chuck by D-Cam and pull pins. When mounting, put the three pull pins of the chuck into the three wholes on the spindle face end, then turn the three came with the aid of square head wrench, when turning the cams clockwise, the chuck will be locked, when turning the cams counter-clockwise to certain point, the chuck can be detached.

Electrical system

1. 380V -400V 50HZ,60HZ Electrical diagram see Fig 12 form8 Electrical components
2. 110V -220V 50HZ Electrical diagram see Fig 13 form9 Electrical components
3. **Check the power and frequency whether in accordance with the request of the machine**, add 25A fuse.
4. Switch Rod 12 located in the middle position, the machine stops.
5. Switch rod 12 lift upwards, the spindle turn counterclockwise; push it down, the spindle turn clockwise. If not, cut off power supply, exchange of any two power lines.
6. Lathe must be well grounded.
7. The circuit diagram is only for reference. Practical circuit diagram is covered at the back of the electrical box to facilitate the maintenance.

TROUBLE SHOOTING PART table 6

No.	Name	Material	Qty	Specification	Note
1	Horizontal feeding nut	ZQSn6-6-3	1	CQ6236-510 4	Fig14
2	Half nut	ZQSn6-6-3	1	CQ6236-400 3	Fig15

OPTIONAL ACCESSORIES see Form9 table7

No.	Name	Qty	Note
1	steady rest	1SET	
2	follow rest	1SET	
3	4 jaw chuck	1SET	
4	face plate	1SET	
5	coolant system	1SET	
6	chuck cover	1SET	Switch power
7	live center	M.T.NO.3	1SET
p8	footbrake system	1SET	

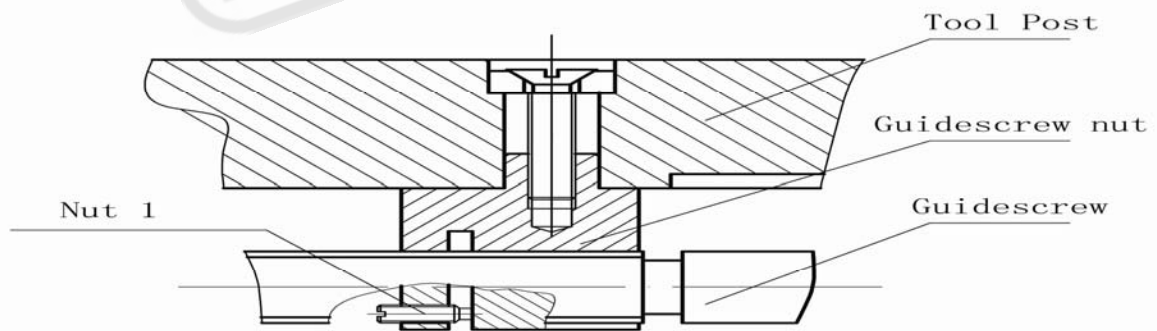


Fig 10 Adjust the gap of horizontal feeding nut

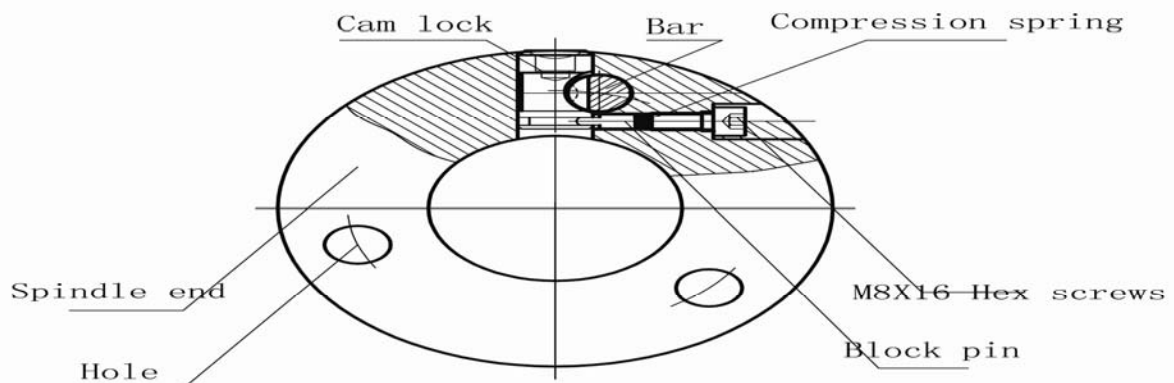


Fig 11 chuck or face plate lock structure

Electrical components list

Table 8

NO	CODE	NAME	MODEL	QTY
1	M1	main motor	Y90S-4 380V	1
2	M2	cooling motor	DB-12	1
3	KM1 KM2	contactor	LC1-D1209 24V	2
4	KM3	cooling relay	LC1-D1209 24V	1
5	KA	middle relay	32C4-40 24V	1
6	QM	circuit breaker	DZ47-63,3P	1
7	QF	circuit breaker	DZ47-63,1P	1
8	TC	transformer	JBK5-63	1
9	EL	work light	JBK9-2A orJL50D-1	1
10	HL	indicator	AD118.8/21-8GZ	1
11	SB ₁	emergency stop button	LA38 Ith 10A	1
12	SB ₂	point start button	L38-11/207	1
13	1SA,2SA	positive &negative switching	LXW5-11D1	2
14	3SA	switch power of cover	LXW5-M/L	1
15	4SA	switch power of chuck cover	LXW5-M/L	1
16	5SA	cooling control switch	LAY-11X/2	1
17	SF	power switch of footbrake	LXW5-11N1/L	1

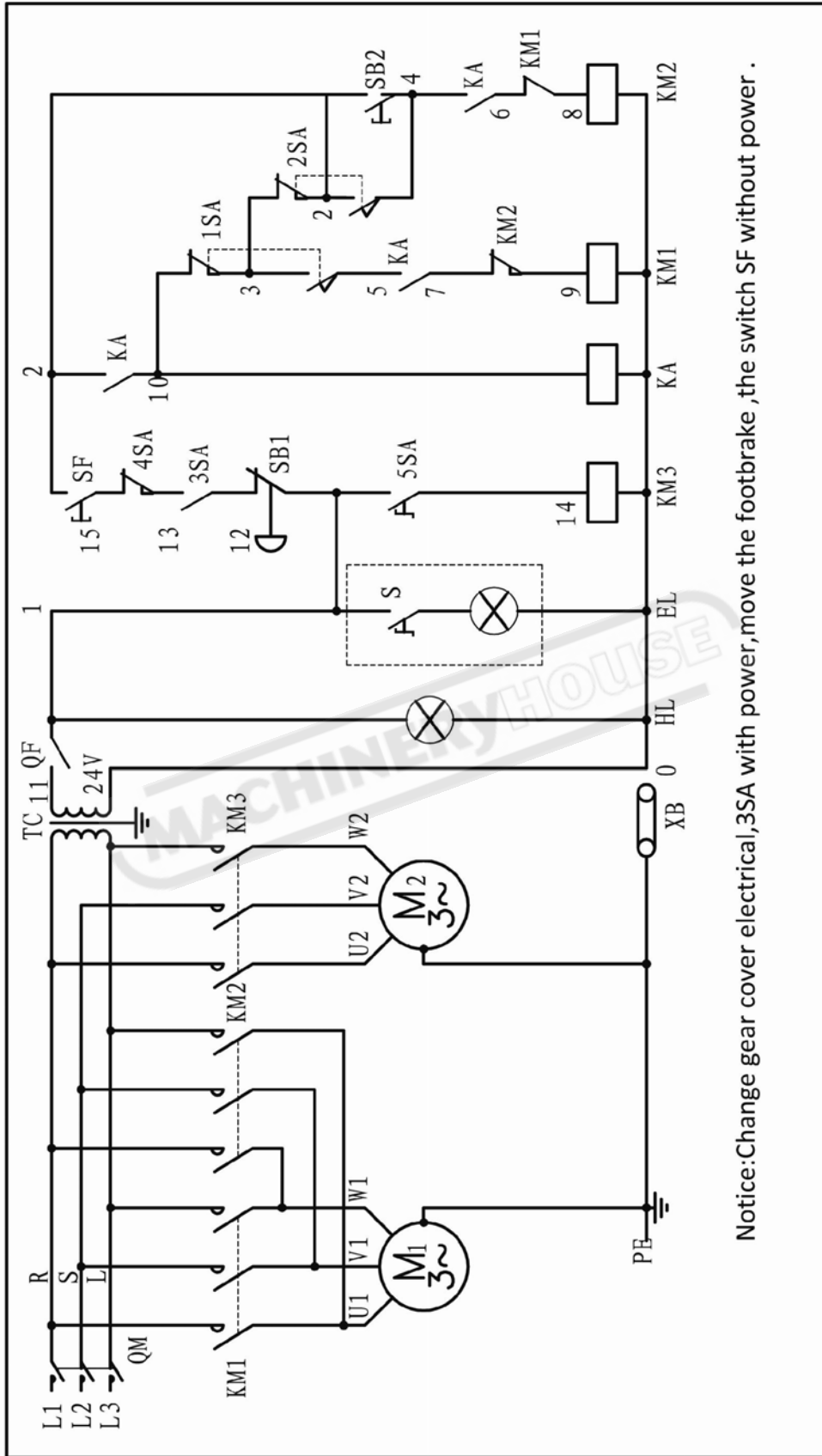
Electrical components list(Single phase)

Table9

1	M1	main motor	Y90L2-4 220V 1.5KW	1
2	FR	thermal relay	T16	1
3	FU	fuse	RT23-16 24V 2A	1
4	SB1	button	LA38 ITH 10A	1
5	SB2	button	LA38-11/207	1
6	SQ1	micro switch	LXW5-11D1	1
7	SQ2	micro switch	LXW5-11D1	1
8	HL	indicator	AD118.8/21-8GZ	1
9	T	control transformer	JBK5-63	1

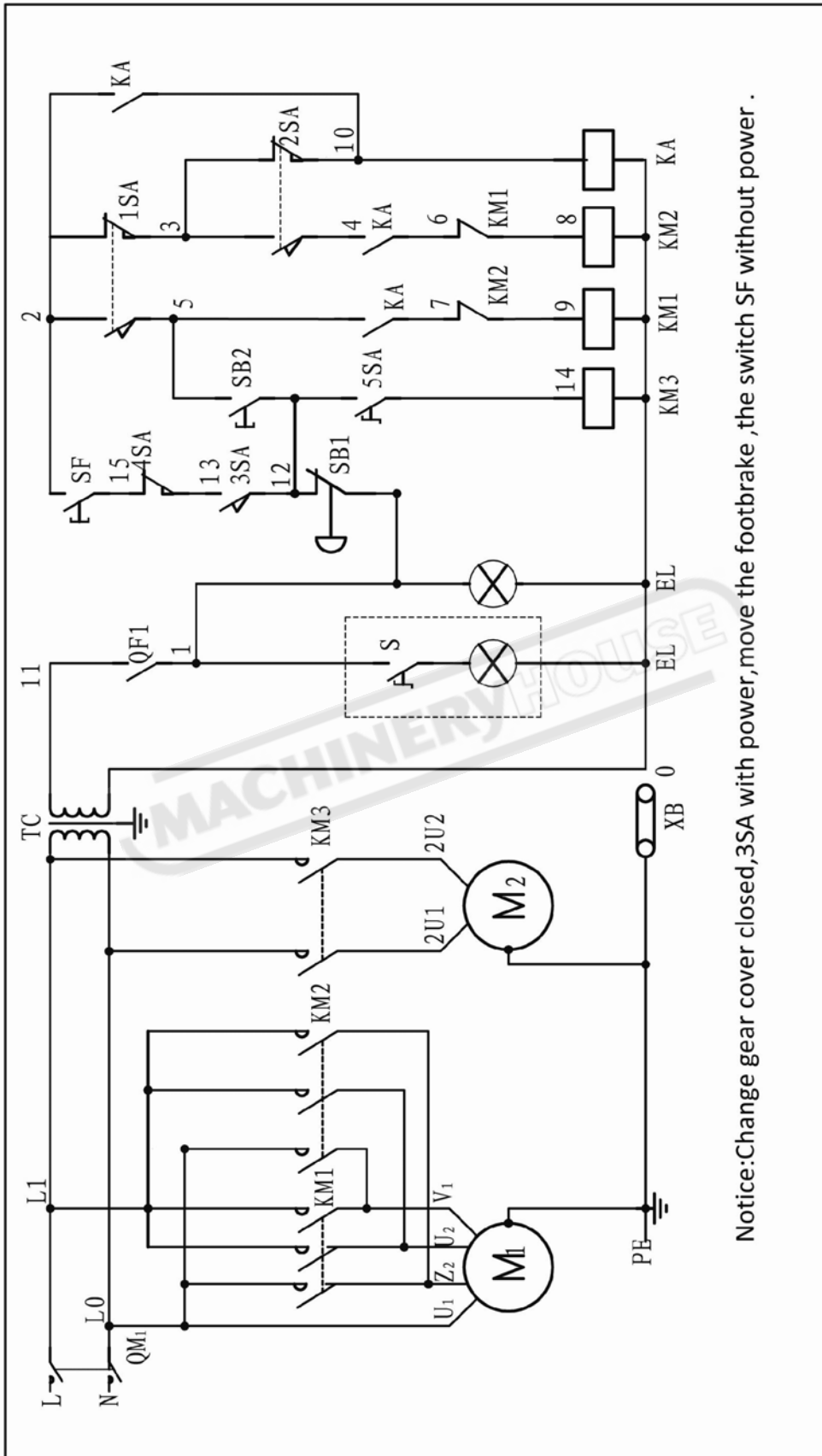
10	KA	middle relay	32C4-40 24V	1
11	KM1	Ac contactor	LC1-D1209 24V	1
12	KM2	Ac contactor	LC1-D1209 24V	1

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Notice:Change gear cover electrical,3SA with power,move the footbrake ,the switch SF without power .

Fig12 380V-440V 50hz,60hz wire diagram



Notice:Change gear cover closed,3SA with power,move the footbrake ,the switch SF without power .

Fig13 110V-220V 50hz electrical diagram (single phase)

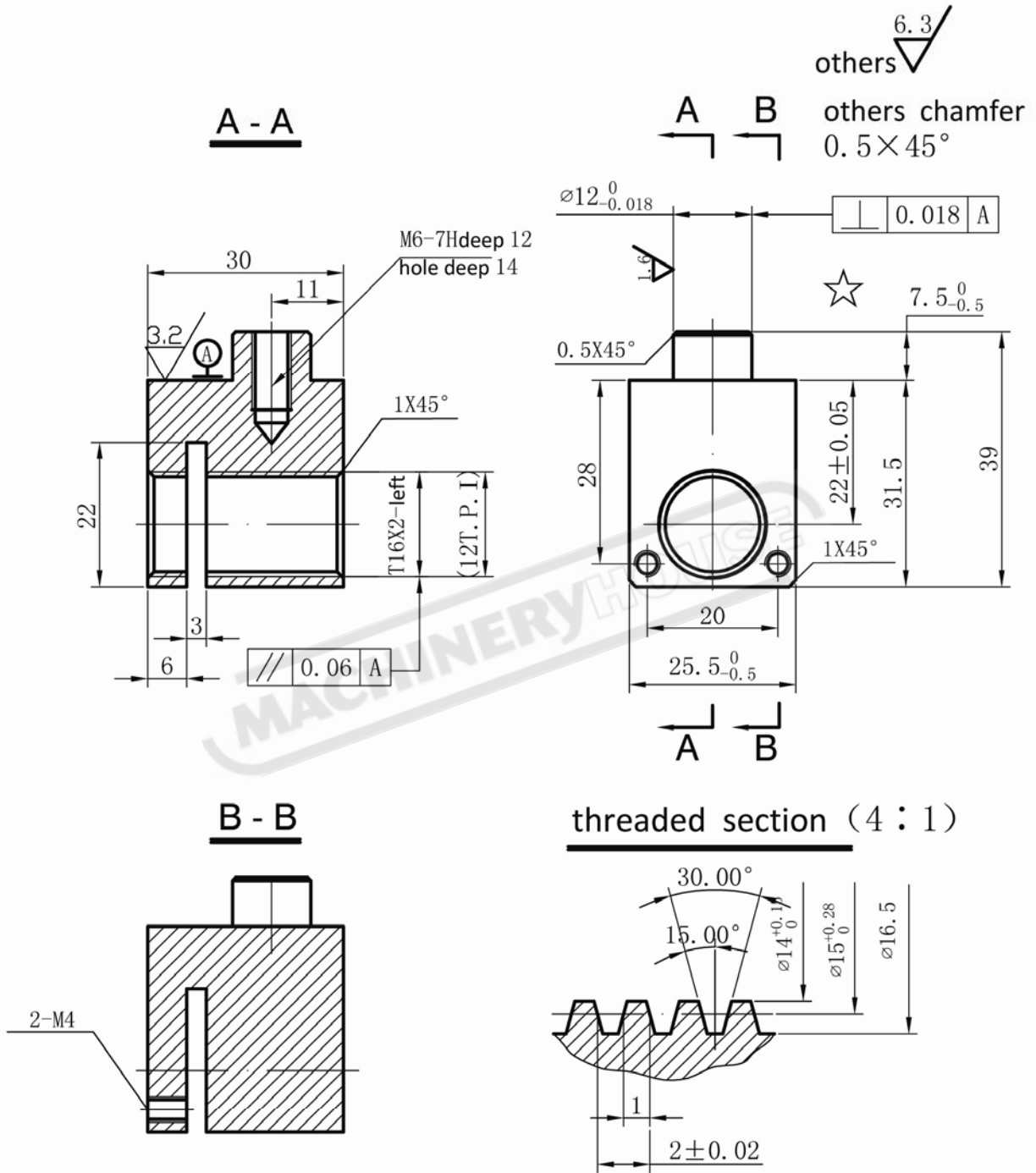
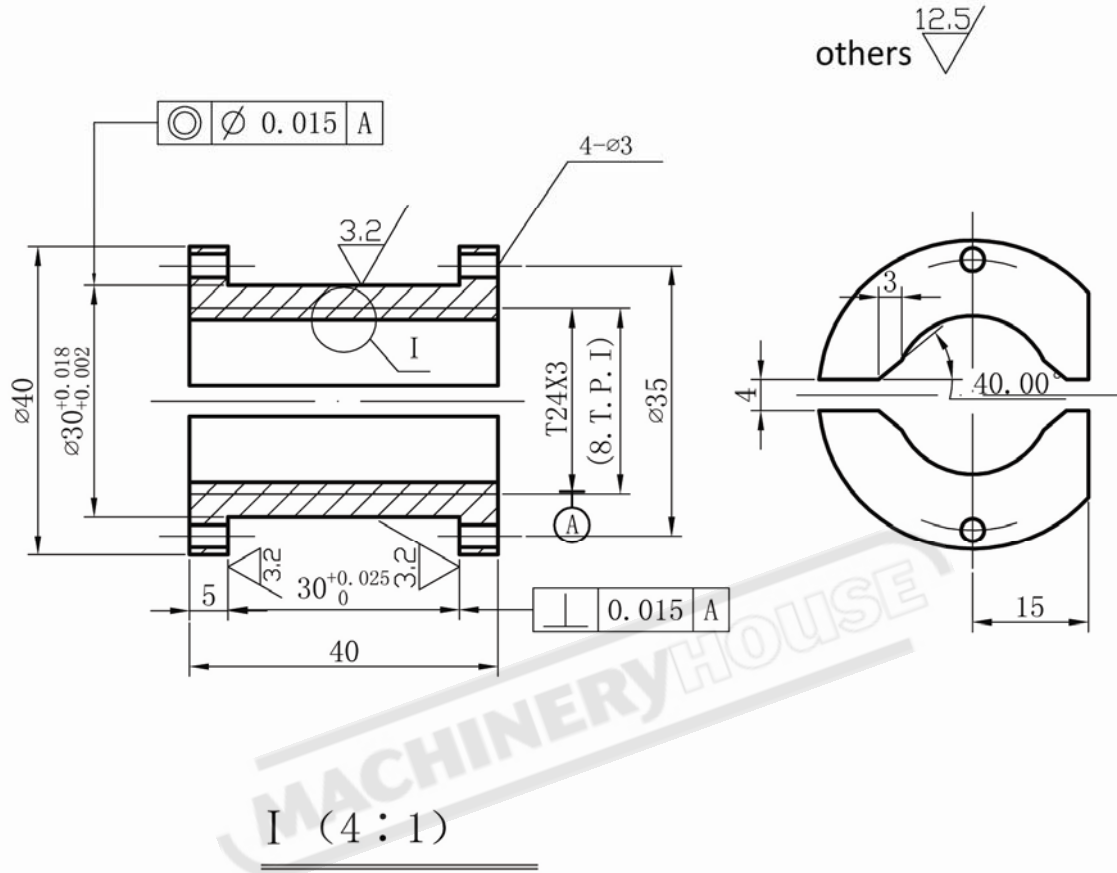


Fig14 Trouble shooting part--horizontal feeding nut



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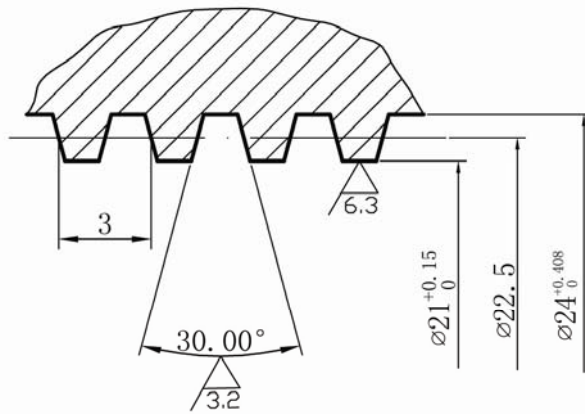


Fig15 Trouble shooting part--half nut



Be Subject to alteration without notice

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