

The SHARP logo consists of the word "SHARP" in a bold, white, sans-serif font, centered within a solid blue rectangular background.

**HEAVY DUTY POWERFUL LATHE**

**OPERATION MANUAL & PARTS LIST**

**MODEL: 6080M, 60120M, 60160M, 60200M,  
60240M, 60280M, 60315M**

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# Specification 規格表

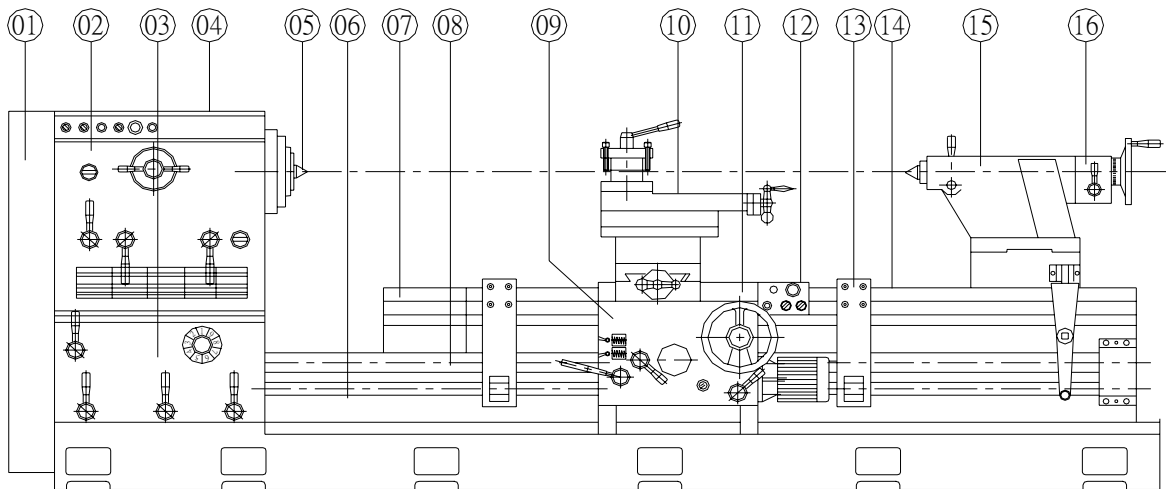
UNIT: mm / inch

ITEM		6080M	60120M	60160M	60200M
MODEL					
CAPACITY	Swing over bed	1600 (63")	1600 (63")	1600 (63")	1600 (63")
	Swing over cross slide	1190 (46.85")	1190 (46.85")	1190 (46.85")	1190 (46.85")
	Swing over gap	1880 (74.02")	1880 (74.02")	1880 (74.02")	1880 (74.02")
	Distance between centers	2000 (80")	3000 (120")	4000 (160")	5000 (200")
BED	Width of bed	810 (32")			
	Width of gap (spindle end face)	595 (23.43")			
	Length of bed	4390 (172.84")	5390 (212.21")	6390 (251.58")	7390 (290.95")
HEADSTOCK	Spindle bore diameter	152 (6.0") / OP: 230 (9") & 305 (12")			
	Spindle nose	A2-11 / OP: A2-15 for 6"/9" spindle bore, A2-20 for 9"/12"			
	Numbered of spindle speeds	16 speeds / OP: 12 steps for spindle bore 9" & 12"			
	Range of spindle speeds	4-420 r.p.m. / OP: 7~266r.p.m. for spindle bore 9" & 12"			
CARRIAGE	Width of carriage	880 (34.65")			
	Cross slide travel	700 (27.56")			
	(Compound rest travel)	400 (15.75")			
	Max. size cutting size	40x40 (1.57"x1.57")			
TAILSTOCK	Diameter of barrel	ø200 (7.88")			
	Travel of barrel	305 (12")			
	Taper of barrel	M.T.#6 (OP: MT#7)			
THREADS	Lead screw diameter & pitch	Dia.60mm, Pitch: 12mm/ Dia.2.36"X 2 T.P.I.			
	Range of metric pitches	1 -120mm (62 Nos)			
	Range of inch pitches	0.25-30T.P.I. (70Nos)			
	Diametrical pitches	1-120 D.P. (70Nos)			
	Range of module pitches	0.25 -30 M.P. (53Nos)			
FEEDS	Feed rod diameter	32 (1.26")			
	Range of longitudinal feeds	0.06-7.04 mm/rev (0.0024"-0.28" in/rev)			
	Range of cross feeds	0.03-3.52 mm/rev (0.0012"-0.14" in/rev)			
MOTOR	Main spindle motor	30 HP (OP: 40HP, 50HP)			
	Coolant pump motor	1/8HP (0.1kw)			
	Rapid motor	1HP (0.75w)			
Measurement	N.W. (approx) Kgs	11000	12100	13200	14300
	G.W. (approx) Kgs	12000	13200	14400	15600
	Machine size (LxWxH)	4740 x2170x1830	5740 x2170x1830	6740 x2170x1830	7740 x2170x1830
	Packing Dimension (LxWxH)	5100 x2270x2300	6100 x2270x2300	7100 x2270x2300	8100 x2270x2300

\*We reserve the right to modify and improve our products without notice.

## GENERAL LAYOUT

- 1.END GEAR TRAIN
- 2.HEADSTOCK
- 3.GEAR BOX
- 4.ELECTRIC CONTROL
- 5.CENTER
- 6.FEED ROD
- 7.GAP BLOCK
- 8.LEADSCREW
- 9.APRON
- 10.TOP-SLIDE
- 11.SADDLE AND CROSS-SLIDE
- 12.ELECTRIC CONTROL
- 13.SLIDEING PLATE
- 14.BED
- 15.TAILSTOCK



## **MACHINE OPERATION**

### Power Source Wiring

- Power connector at lower left part of the lathe.
- Power source switches with fuse must be set up in the lathe and electric circuit, The wire of the lathe must be ground connected too.
- After wire connection, then ,input the power source by power source button. To change the spindle in low speed ,check the spindle rotating direction by operating the start-lever in the right side of APRON. See the result whether it is normal or not , in this case ,the spindle rotates to the direction of operator, then the rotation is normal. As the spindle rotates to the opposite direction, you should replace any two of the three electric wires.

### Identification and preparation before operation

- Supply oil to all the necessary positions.
- Check all the levers and handles, whether or no in normal condition.
- Check the V-belt of headstock motor, whether or no in adequate tension state.
- Make clear the relative positions before operate the transmission mechanism, such as head stock, feed gear box, cross slide, etc. And automatic feeding, tread cutting.

## **MAINTENANCE**

### **Identification on Operation**

- Keep the machine in accurate state and long life under normal conditions of usage.
- It is important to check the oil level through oil windows all oil reservoirs and top up as necessary before starting the machine. Especially pay attention to hand oiling daily between saddle and slideway.
- Renew the lubrication oil in headstock after first 3 months usage, in order to reduce the noise be produced.
- Stop the machine immediately if the following are happened ,overheat in headstock, vibration, oil leakage or no oil , then repair it as soon as possible.
- Don't use hammer or other tool to knock the workpiece , in order to keep the accuracy of spindle .
- Be care not let the tool to hurt the slide ways.
- Don't to adjust or operate this machine arbitrary unless operator to it .
- It is great profit to the life and accuracy of this machine to maintain it periodically.

Clean the machine, remove the chips from machine and surrounding, apply oil on the sliding surfaces and turn off the power source after work per day.

## **UNPACKING AND UNLOADING**

Each machine is dispatched fully assembled except for attachment such as taper attachment etc.

Unloading the machine, packed in the wooden case, should be made by wiring cable from the sleepers.

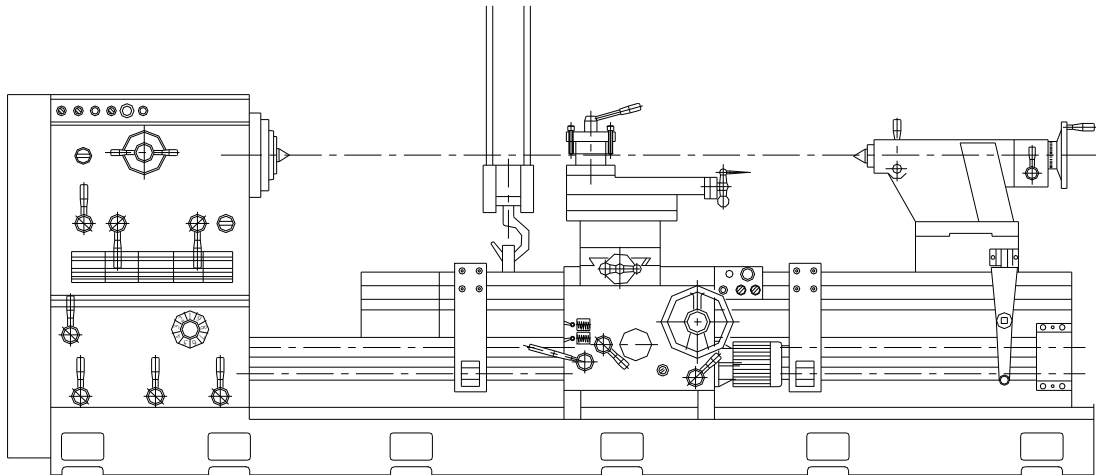
Lifting unpacked machine is made easily by the method shown in the following

Figure and according to the center of gravity of this laths.

Raising and lowering the lathe, should be done carefully, especially.

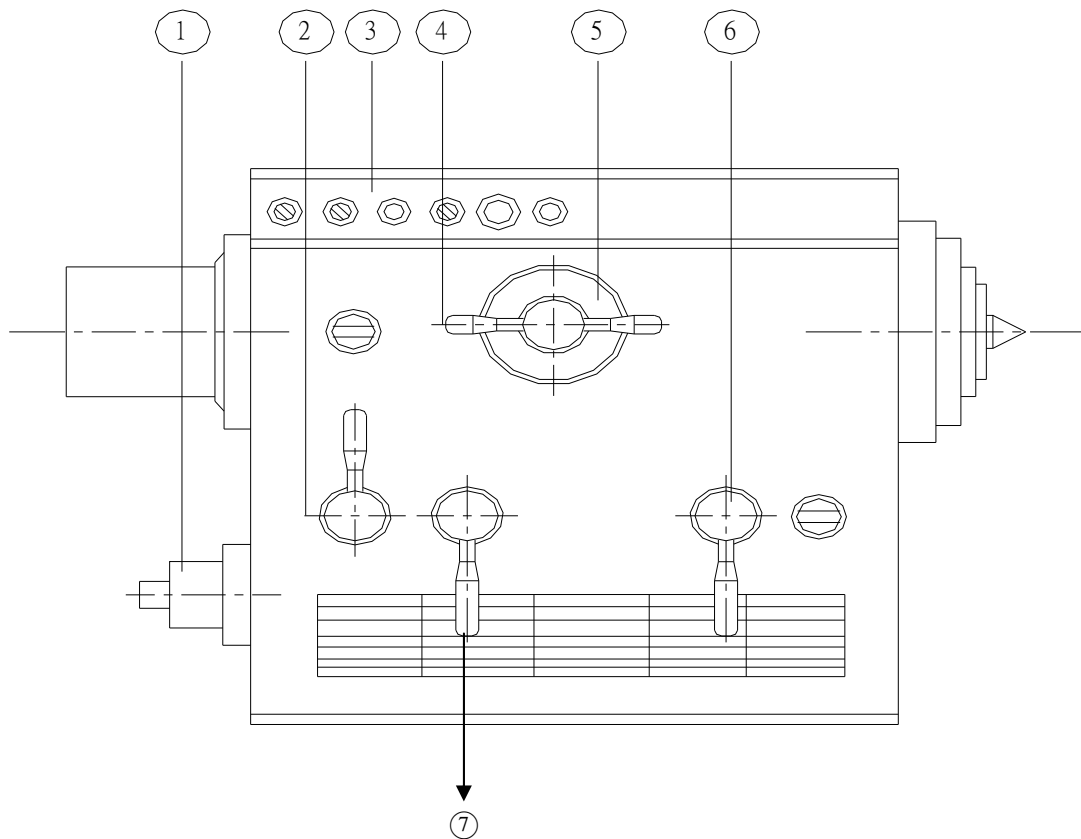
When you lower

The lathe, be careful not to bump it against the floor and give attention to the other men to attain the purpose of safety.



## **SPINDLE SPEED CONTROL**

The 16-step spindle speeds are obtained by selecting the proper lever position is shown on the speed name plate.  
Do not move speed-selector controls while the spindle is rotating.



1. END GEARS OUPUT
2. FOR/REV LEVER
3. ELECTRIC CONTROL
4. 16-STEP LEVER
5. SPEED NAME PLATE
6. HIGH/LOW LEVER
7. FEEDING SPEED CHANGE LEVER

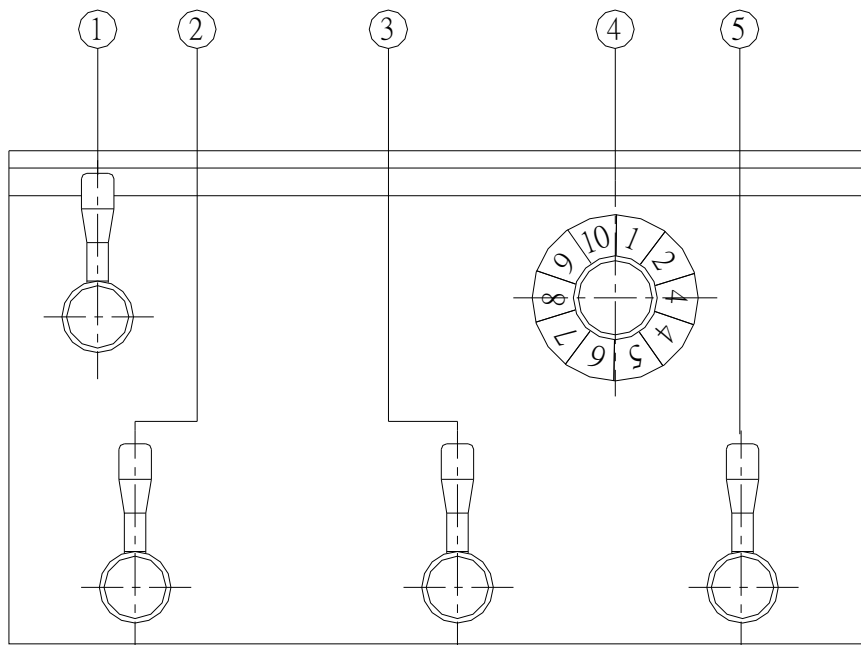


## **THEADS AND FEEDS**

### **(GEARBOX OPERATION)**



All the threads and feeds directly available from the gearbox are shown on the data plate fitted on the front of gearbox and the setting of control levers are shown in fig.



If you want threads DP/MP, please set No-5 change lever to “DP/MP”.and must set No-3 change lever to”IN” or “MM” (DP=IN,MP=MM)




1. A,B-STEP CHANGE LEVER
2. C,D,E-STEP CHANGE LEVER
3. IN,MM-STEP CHANGE LEVER
4. 10-STEP CHANGE LEVER
5. THREADS IN/MM OR DP/MP,AND FEEDS CHANGE LEVER

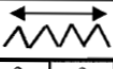

# THREAD CUTTING INDEX

		IN 										DP 									
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
I	AC	16	18	19	20	22	23	24	26	28	30	64	72	76	80	88	92	96	104	112	120
	AD	8	9	9½	10	11	11½	12	13	14	15	32	36	38	40	44	46	48	52	56	60
	AE	4	4½	4¾	5	5½	5¾	6	6½	7	7½	16	18	19	20	22	23	24	26	28	30
	BD	2	2¼	2⅝	2½	2¾	2⅞	3	3¼	3½	3¾	8	9	9½	10	11	11½	12	13	14	15
	BE	1	1⅛	1⅜	1½	1⅝	1⅞	1½	1⅝	1¾	1⅞	4	4½	4¾	5	5½	5¾	6	6½	7	7½
II	BD	½	⅙	⅓	⅜	⅓	⅓	⅓	⅓	⅓	⅓	2	2¼	2⅜	2½	2¾	2⅞	3	3¼	3½	3¾
	BE	¼	⅙	⅓	⅜	⅓	⅓	⅓	⅓	⅓	⅓	1	1⅛	1⅜	1½	1⅝	1⅞	1½	1⅝	1¾	1⅞

MM 										MP 									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
1	2.25	4.75	5	5.5	5.75	6	6.5	7	7.5	1	1.125	2.25	2.375	2.5	2.75	2.875	3	3.25	3.5
4	8	9	9.5	10	11	11.5	12	13	14	4	4.5	4.75	5	5.5	5.75	6	6.5	7	7.5
8	16	18	19	20	22	23	24	26	28	8	9	9.5	10	11	11.5	12	13	14	15
16	32	36	38	40	44	46	48	52	56	16	18	19	20	22	23	24	26	28	30
32	64	72	76	80	88	92	96	104	112	32	36	38	40	44	46	48	52	56	60

IN 									
1	2	3	4	5	6	7	8	9	10
0.11	0.10	0.095	0.09	0.082	0.078	0.075	0.07	0.065	0.06
0.22	0.20	0.19	0.18	0.164	0.156	0.15	0.14	0.13	0.12
0.44	0.40	0.38	0.36	0.328	0.312	0.30	0.28	0.26	0.24
0.88	0.80	0.76	0.72	0.656	0.624	0.6	0.56	0.52	0.48
1.76	1.60	1.52	1.44	1.312	1.248	1.2	1.12	1.04	0.96
3.52	3.20	3.04	2.88	2.624	2.496	2.4	2.24	2.08	1.92
7.04	6.40	6.08	5.76	5.248	4.992	4.8	4.48	4.16	3.84

## JUST FOR INFORMATION

MM/REV.		 : 1					 : 1/2				
		1	2	3	4	5	6	7	8	9	10
I	AC	0.110	0.100	0.095	0.090	0.082	0.078	0.075	0.070	0.065	0.060
	AD	0.220	0.200	0.190	0.180	0.164	0.156	0.150	0.140	0.130	0.120
	AE	0.440	0.400	0.380	0.360	0.328	0.312	0.300	0.280	0.260	0.240
	BC	0.440	0.400	0.380	0.360	0.328	0.312	0.300	0.280	0.260	0.240
	BD	0.880	0.800	0.760	0.720	0.656	0.624	0.600	0.560	0.520	0.480
	BE	1.760	1.600	1.520	1.440	1.312	1.248	1.200	1.120	1.040	0.960
II	AC	0.440	0.400	0.380	0.360	0.328	0.312	0.300	0.280	0.260	0.240
	AD	0.880	0.800	0.760	0.720	0.656	0.624	0.600	0.560	0.520	0.480
	AE	1.760	1.600	1.520	1.440	1.312	1.248	1.200	1.120	1.040	0.960
	BC	1.760	1.600	1.520	1.440	1.312	1.248	1.200	1.120	1.040	0.960
	BD	3.520	3.200	3.040	2.880	2.624	2.496	2.400	2.240	2.080	1.920
	BE	7.040	6.400	6.080	5.760	5.248	4.992	4.800	4.480	4.160	3.840

## FUNCTION OF GEAR BOX

·The main function of the gear box is to cutting thread and auto-feed.

## OPERATION OF THREAD CUTTING

·When the thread cutting is desired , operate all the speed change lever and set at proper positions according to the thread cutting index, then thread cutting can be operated to cut the required kind and pitch of thread.

Finally, rotate the feed change lever to “lead screw” position, then the operation of thread cutting can be proceeded.

## OPERATION OF AUTOMATIC FEED

When the operation of automatic feed should be operated, at first , operate all the speed change levers and set at the proper positions according to the feed speed of requirement (Refer to the thread cutting index chart, please .),and then operate the feed change lever to “feed” position, thereupon the operation of auto feed can be proceeded.

## LUBRICATION

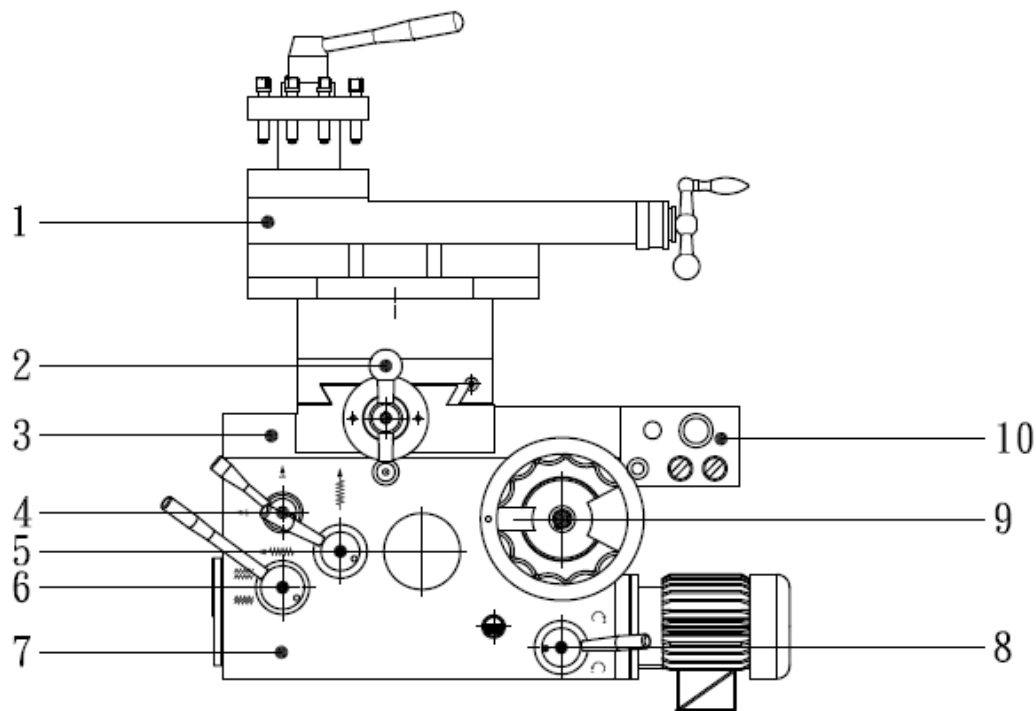
The gear box is lubricated by oil bath lubrication and splash lubrication. During the machine is running, the oil will be supplied to all bearings and gears by gears and driving shafts splashed. We can check the oil quantity through the oil window and fill oil into oil inlet should up to red line of oil window in gear box.

## THREAD INDICATOR

- Thread cutting indicator is installed on the left side of APRON, it is used for cutting inch thread.
- To cut threads of an even number per inch, close the half nut as any line on the dial passes datum mark.
- To cut threads of odd numbers per inch close the half nut as any one long number on the dial passes datum mark.
- Fractional threads of  $1/2$  or  $3/4$  T.P.I may be by closing the half nut at the same line on each pass of the tool.
- This dial indicator can't be used with an inch lead screw to cut metric threads, D. P ., module pitches. For that will cut the metric threads, the half nut of APRON must be kept closed ,can only be cut by the spindle reverse-For ward rotation lever in APRON and carriage return is driven by half nut and lead screw.

## SADDLE AND APRON CONTROL

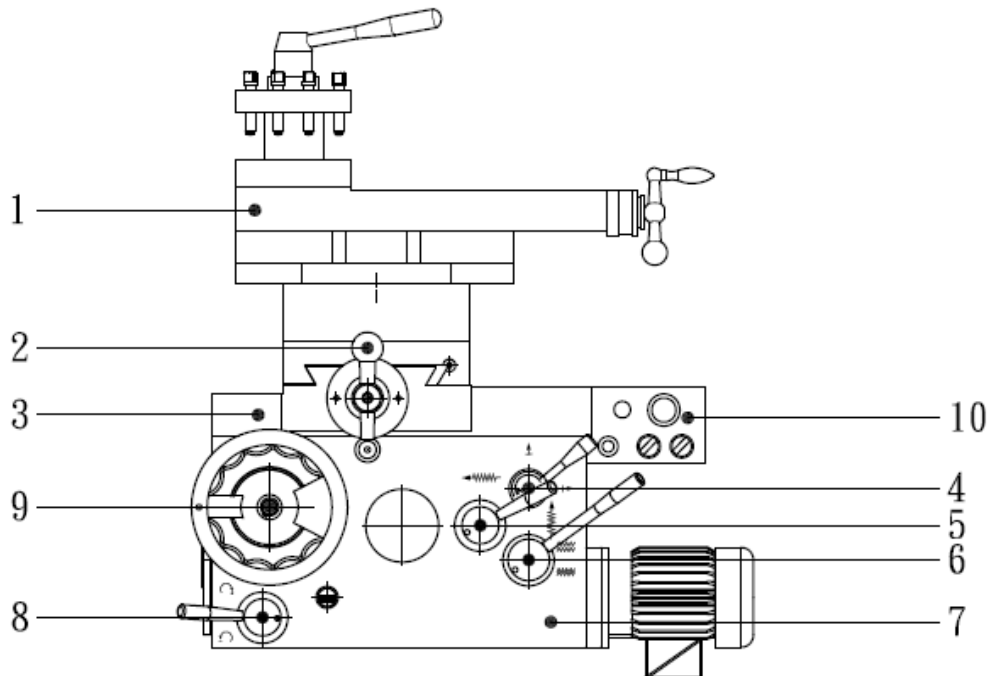
RIGHT HAND SIDE:



1. SQUARE TOOL HANDLE AND TOP-SLIDE
2. CROSS-SLIDE HANDWHEEL
3. SADDLE CASTING
4. THE LEVEL IS TO FIX THE TURNING DIRECTION –UP FOR SLIDING FEED AND DOWN FOR SURFACING FEED.
5. THE LEVEL IS MOVE UP FOR SLIDING FEED AND DOWN FOR SURFACING FEED.
6. THE LEVEL IS PRESSED DOWNWARD TO ENGAGE THE LEADSCREW-NUT FOR SCREW-CUTTING.
7. APRON CASTING.
8. THE LEVEL IS MOVE UP FOR AUTO-FEED AND DOWN FOR AUTO MOTOR-FEED.
9. LONGITUDINAL FEED OF HANDWHEEL.
10. ELECTRIC OPERATING CONTROL

## SADDLE AND APRON CONTROL

LEFT HAND SIDE:



1. SQUARE TOOL HANDLE AND TOP-SLIDE
2. CROSS-SLIDE HANDWHEEL
3. SADDLE CASTING
4. THE LEVEL IS TO FIX THE TURNING DIRECTION –UP FOR SLIDING FEED AND DOWN FOR SURFACING FEED.
5. THE LEVEL IS MOVE UP FOR SLIDING FEED AND DOWN FOR SURFACING FEED.
6. THE LEVEL IS PRESSED DOWNWARD TO ENGAGE THE LEADSCREW-NUT FOR SCREW-CUTTING.
7. APRON CASTING.
8. THE LEVEL IS MOVE UP FOR AUTO-FEED AND DOWN FOR AUTO MOTOR-FEED.
9. LONGITUDINAL FEED OF HANDWHEEL.
10. ELECTRIC OPERATING CONTROL

## CUTTING OF PLANE

- When the longitudinal feed will be moved large in the plane cutting. In order to avoid the carriage backward and unbalance of cutting plate, so that there is a lock bolt “D” on the carriage, and fasten it tightly can increase the stability of compound rest to obtain the plane cutting in accurate value.

## CUTTING OF TAPERED PLANE

- There are many graduated divisions on the slide plate of carriage. For the cutting tapered-plane, please loose the locking screw “B” first then rotate the compound rest according to the required angle. After the adjustment had finished, fasten the setting screw again, then the cutting of tapered plane can be proceeding.
- Owing to the friction of long time relative motion between saddle and cross slide, there will be wear produced. In order to eliminate the excess crevice, The Bevel-gib should be adjusted. Its adjusting method: Loose the set screw in the end of gib first, and fasten the adjusting screw A, then the gib will be pushed forward to proper position that the clearance between saddle and cross slide is adequate till then, fasten the setting screw again.

## GRADUATED COLLAR (MICROMETER COLLAR)

- There are the graduate collar on the longitudinal feed and cross feed handle. They are divided into 200 divisions; each division means 0.05mm, 10mm for one revolution. When the zero will be return, please loose setting screw first. After the adjustment had finished, fasten the setting screw again.

## LUBRICATION OF CARRIAGE

The oiling inlets are installed on the carriage and cross slide. Before the operating, in order to eliminate the wear, it must hand oiling usually.

Lubricate the sliding surface from the oil inlet on carriage by gun.

## TRANS MISSION OF THREAD CUTTING

Only as the automatic feed lever at the central position, the half nut control lever can be put to downward position, and half nut engage with the lead screw, then the carriage can be moved leftward or rightward to perform the thread cutting. To stop thread cutting by push up the half nut lever only to release the engagement to half-nut with lead screw.

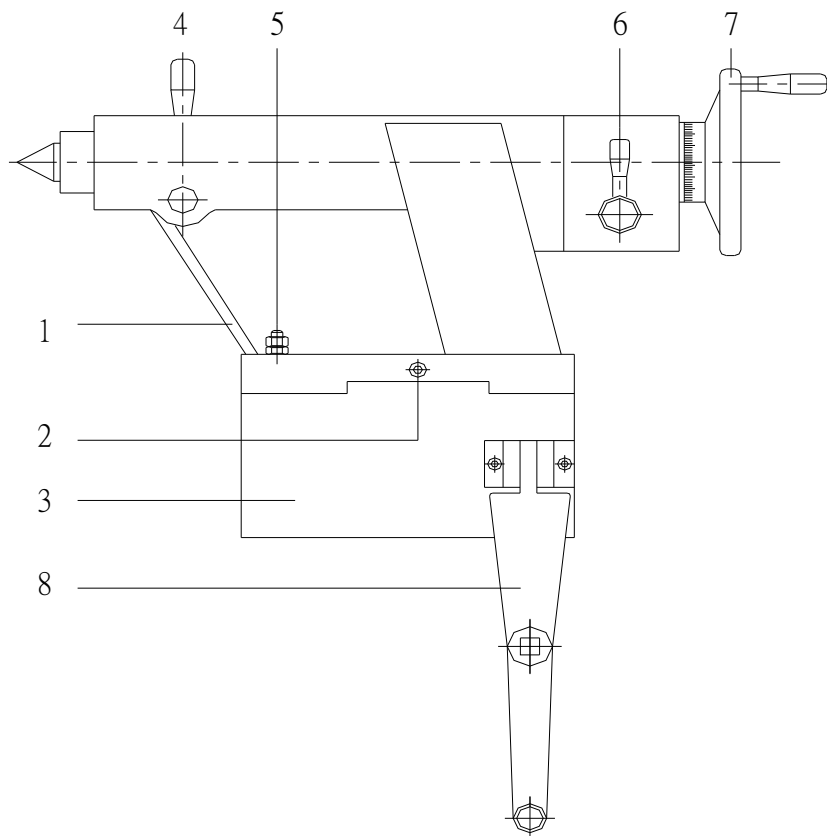
The safety bar installed in the apron to keep the thread cutting and autofeed from simultaneous operation to attain the purpose of safety.



## **TAILSTOCK OPERATION**

### **GENERAL DESCRIPTION OF TAIL STOCK**

The main structure of tailstock consist of tailstock body, base mounting, mandrel and change speed box. The mandrel of tailstock and the spindle of headstock ore in the same central line, The tailstock depend on the long or short of workpieces, or required position , can be clamped at anywhere arbitrarily along bed , then it cooperate with the spindle to spindle to proceed to cut work between two centers and to bore hole.



1. TAIL STOCK CASTING
2. ADJUST SCREW
3. BASE CASTING
4. SPINDLE LOCKING LEVER
5. BASE CLAMPING LEVER
6. HIGH-LOW SPEED CHANGE LEVER
7. SPINDLE FOR-BACKWARD HANDWHEEL
8. TAILSTOCK SLIDING BLOCK

## OPERATIONAL METHOD

·When the tailstock mandrel and spindle center are not in the same central line. Loose the adjusting screws “A” . Use the same method, adjust the tailstock central line to set up a deviation measure with the spindle and provide for the taper cutting between two centers.

## LUBRICATION OF TAILSTOCK

·Tailstock is lubricated by oil bath lubrication system and its mandrel center and slide parts must hand oiling from time to time.

**Operating instructions for electric tailstock:**



心軸鎖固  
螺栓

Quill locking  
bolts

心軸手動  
伸出/退回  
手輪

Quill Manual  
hand wheel-  
out / back

心軸電動  
伸出/退回  
開關

Quill electric  
switch - out  
/ back

尾座本體  
電動前進/  
後退開關

Tailstock body -  
electric forward  
/ reverse  
switch



手動潤滑  
油打油器

Manual  
control  
lubricant oiler

尾座防退  
把手

Tailstock  
anti-retreat  
handle

尾座鎖固  
螺栓組

Tailstock  
locking bolt  
set

尾座極限  
開關組

Tailstock  
limit switch

## Operating instructions for electric tailstock:

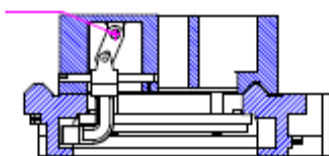
**First, this tailstock is driven by two sets of electric motors.**

1. Quill's extending / retract is driven by the electric gear motor, and can be operated manually.
2. The whole tailstock body is driven by electric motor for moving forward or reverse.
3. Please offer maintenance on this tailstock regularly, and use manual control lubricant oiler lubricate the tailstock timely (recommended before the operation).

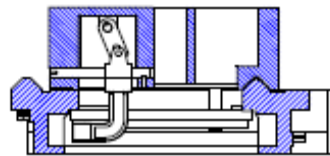
**Initial use;** please make sure the following 3 item before operating the tailstock.

- ① Please release the nut of tailstock locking bolt.
- ② make sure the anti-retreat handle is off status.
- ③ Inspect the tailstock anti-retreat block in the interior of tailstock base and make sure this anti-retreat block is under release condition, than operate the tailstock.

**Do not operation the tailstock before releasing** the quill locking bolt **and tailstock anti-retreat block and tailstock locking bolt.**



Anti-retreat condition



Release condition

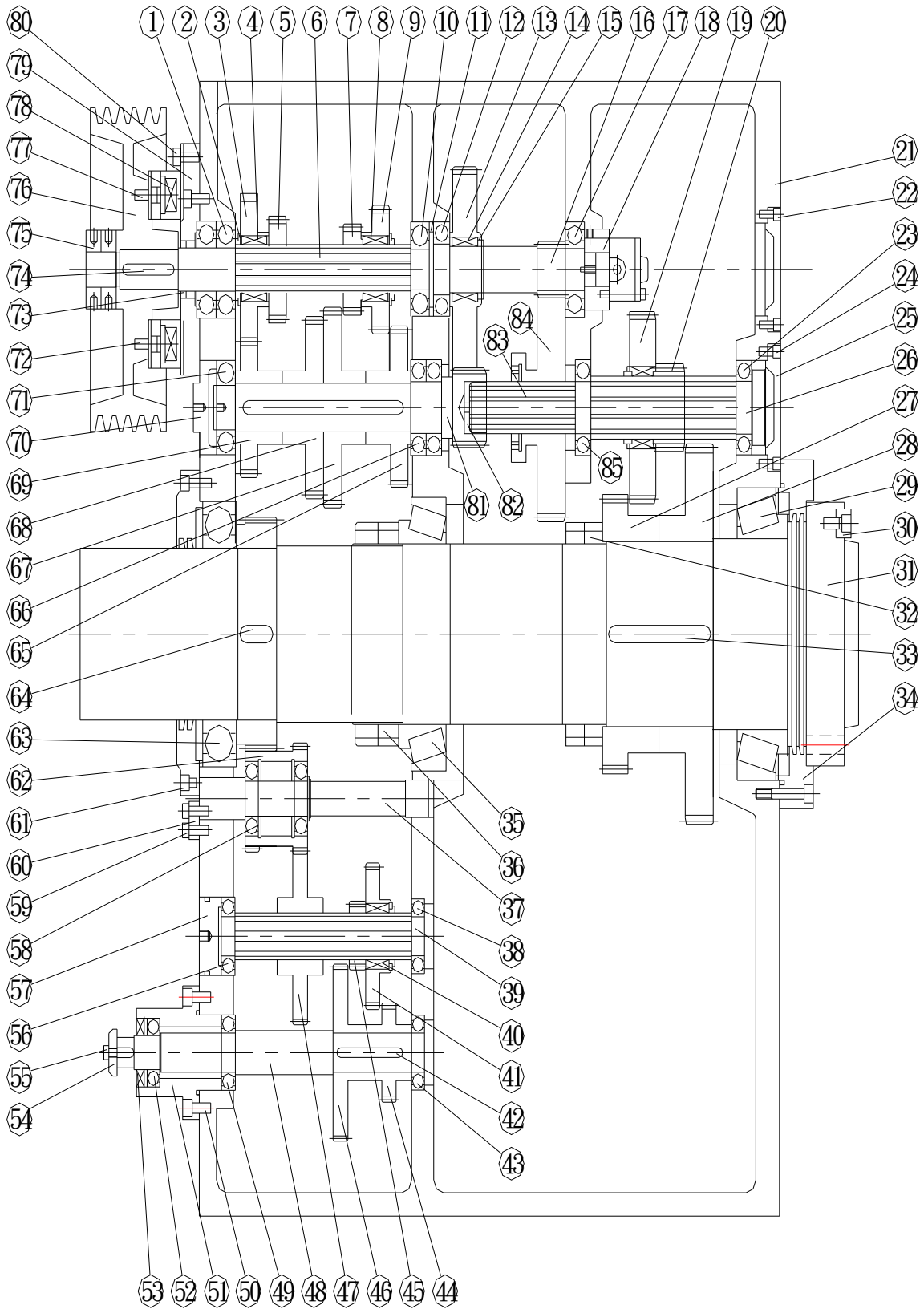
**Second, the basic operating instructions:**

1. After initial use, put the center into the quill, the operation Tailstock body-electric forward / reverse switch, forward to move tailstock to the appropriate location close to the work piece.
2. Lock tightly the tailstock locking bolt, fix tailstock.
3. Operating tailstock anti-retreat handle, let the tailstock anti-retreat block to be anti-retreat state.
4. Let the quill extending out can be electric or manual (hand wheel) operation. Adjust the quill and let the center withstand Work piece.
5. To prevent the spindle (quill) from the retreating condition caused from extrusion while processing, you can screw tightly the quill locking bolt.

6. After a period of processing operation is completed, when need to replace workpiece, only have to release quill locking bolt. **Spindle (quill) can be returned** by push quill electric switch or operate manual hand wheel **to a distance which can be fit the size of workpiece.**
7. After replacing workpiece, follow the procedure from step 4~ step 6 till the processing job is completed.
8. When the processing job is completed, tailstock must be moved back to the right side of bed.
9. Return the quill.
10. Release tailstock locking bolts.
11. Let the tailstock anti-retreat block to be release condition by operating tailstock anti-retreat handle.
12. Operating **Tailstock body- electric forward / reverse switch**, backward to the right side of proper position of bed.
13. There is a limit switch on the tailstock to protect the tailstock, which will not be back over the bed (will not detach from the bed).

**PARTS LIST**

**HEADSTOCK**



HEADSTOCK				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
0 1		BEARING	6309	2
0 2		SNAP RING	S65	1
0 3	HL- 2006	GEAR		1
0 4		KEY	10 x 8 x 35L	1
0 5	HL- 2005	GEAR		1
0 6	HL- 2004	SHAFT		1
0 7	HL- 2007	GEAR		1
0 8		KEY	10 x 8 x 35L	1
0 9	HL- 2008	GEAR		1
1 0		BEARING	6309	1
1 1	HL- 2009	COLLAR		1
1 2		BEARING	6211	1
1 3	HL- 2011	GEAR		1
1 4		KEY	10 x 8 x 35L	1
1 5		SNAP RING	S65	1
1 6	HL- 2010	HEAR SHAFT		1
1 7		BEARING	6309	1
1 8	HL- 2012	PUMP BASE		1
1 9	HL- 2026	GEAR		1
2 0	HL- 2025	GEAR		1
2 1	HL- 2001	BODY		1
2 2		SCREW	M8	3
2 3		BEARING	6211	1
2 4		SCREW	M8	3
2 5	HL- 2014	COVER		2
2 6	HL- 2023	SHAFT		1
HEADSTOCK				

REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
27	HL- 2030	GEAR		1
28	HL- 2029	GEAR		1
29		BEARING	32040x	1
30		DRIVING BOTTOM		1
31	HL- 2002	SHAFT		1
32	HL- 2031	NUT		2
33		KEY	18 x 12 x 140L	2
34	HL- 2034	COVER		1
35		BEARING	32038x	1
36	HL- 2032	NUT		2
37	HL- 2036	SHAFT		1
38		BEARING	6208	1
39	HL- 2039	SHAFT		1
40		KEY	10 x 8 x 30L	1
41	HL- 2042	GEAR		1
42		KEY	10 x 8 x 90L	1
43		BEARING	6208	1
44	HL- 2046	GEAR		1
45	HL- 2041	GEAR		1
46	HL- 2045	GEAR		1
47	HL- 2040	GEAR		1
48	HL- 2044	SHAFT		1
49		BEARING	6208	1
50		SCREW	M10	4
51	HL- 2047	COVER		1
52		BEARING	6207	1

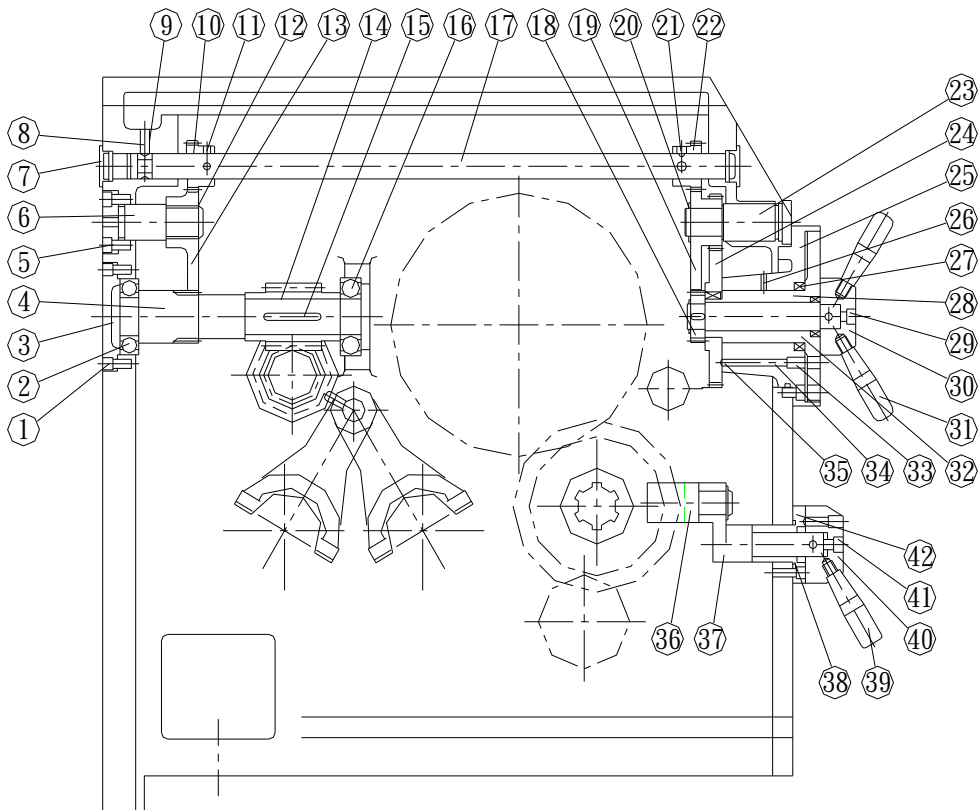
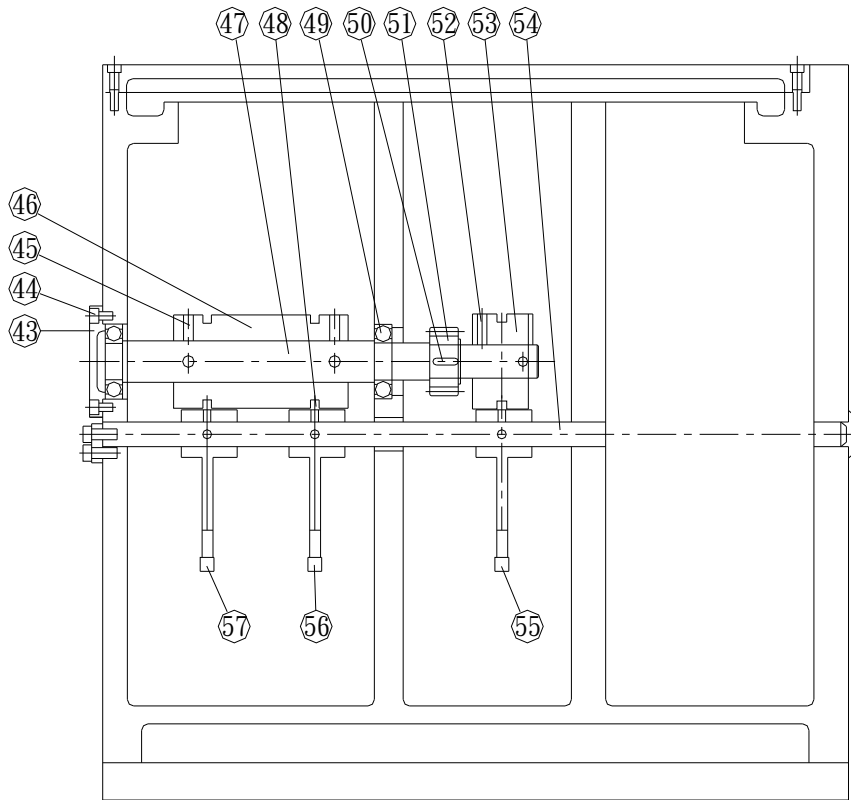


HEADSTOCK				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
53		OIL SEAL	TC357210	1
54	HL- 3064	WASHER		1
55		SCREW	M8	1
56		BEARING	6208	1
57	HL- 2043	COVER		1
58		BEARING	6208	2
59		SCREW	M10	2
60	HL- 2038	PRESS BLOCK		1
61	HL- 2035	COVER		1
62	HL- 2037	GEAR		1
63		BEARING	6036	2
64		KEY	18 x 12 x 45L	1
65	HL- 2021	GEAR		2
66		BEARING	6211	1
67	HL- 2020	GEAR		1
68	HL- 2019	GEAR		1
69	HL- 2018	GEAR		1
70	HL- 2027	COVER		1
71		BEARING	6309	1
72		SCREW	M10	3
73		OIL SEAL	TC45608	1
74		KEY	10 x 8 x 70L	2
75	HL- 2016	NUT		2
76	HL- 2015	BELT PULLEY		1
77		SCREW	M10	
78		CLUTCH	TMB20	1

## HEADSTOCK

REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
79	HL- 2013	COVER		1
80		SCREW	M10	4
81	HL- 2017	GEAR SHAFT		1
82	HL- 2022	BLOCK		1
83	HL- 2023	SHAFT		1
84	HL- 2024	GEAR		1
85		BEARING	6211	1

# HEADSTOCK

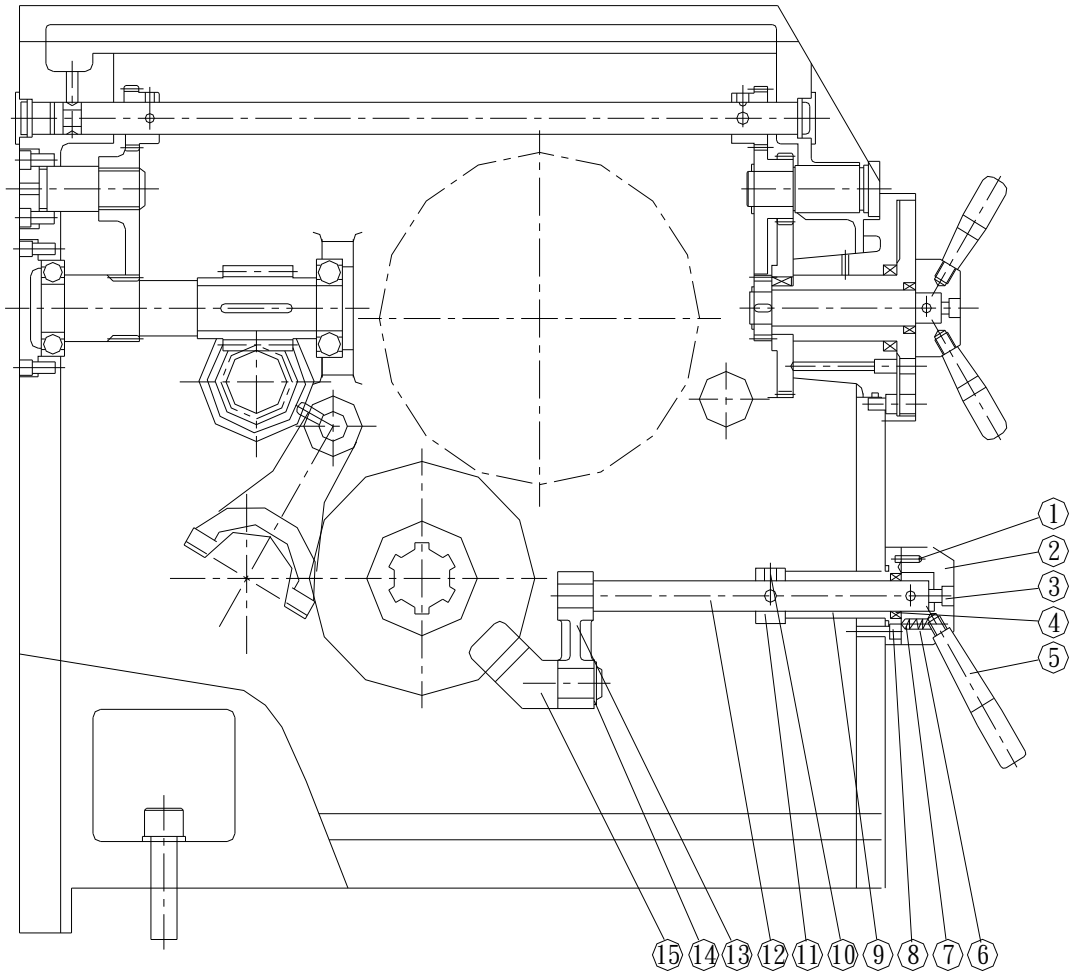


HEADSTOCK				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
01		SCREW	M8	3
02		BEARING	6208	1
03	HL- 2052	COVER		1
04	HL- 2063	GEAR SHAFT		1
05		SCREW	M8	3
06	HL- 2067	SHAFT		1
07		OIL COVER	ϕ 32	3
08		SET SCREW	M10	1
09	HL- 2071	COLLAR		1
10	HL- 2070	GEAR		1
11		SET SCREW	M10	2
12		SNAP RING	S30	1
13	HL- 2068	GEAR		1
14	HL- 2064	STICK		1
15		KEY	6 x 6 x 60L	1
16		BEARING	6307	1
17	HL- 2069	SHAFT		1
18	HL- 2062	GEAR		1
19	HL- 2066	GEAR		1
20		SNAP SCREW	S30	1
21		SET SCREW	M10	2
22	HL- 2070	GEAR		1
23	HL- 2065	SHAFT		1
24	HL- 2061	GEAR		1
25	HL- 2058	NAME PLATE COVER		1
26		OIL CAP	M6	1

HEADSTOCK				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
27		OIL SEAL	TC-357010	1
28	HL- 2059	NAME PLATE COVER		1
29		SCREW	M8	1
30	HL- 2057	STEM ARM		1
31	HL- 2056	HANDLE		2
32	HL- 2060	SHAFT		1
33		SCREW	M10	1
34		SPRING	M8	1
35		BALL		1
36	HL- 2076	FORK		2
37	HL- 2075	FORK ARM		2
38		SCREW	M8	4
39	HL- 2056	HANDLE		2
40	HL- 2073	STEM ARM		2
41		SCREW	M8	2
42	HL- 2074	BUSHING		2
43	HL- 2052	COVER		1
44		SCREW	M8	3
45		SET SCREW	M10	4
46	HL- 2049	CAM		1
47	HL- 2048	SHAFT		1
48	HL- 2055	PIN		3
49		BEARING	6208	1
50		KEY	6 x 6 x 25L	1
51	HL- 2051	GEAR		1
52		SCREW	M10	1



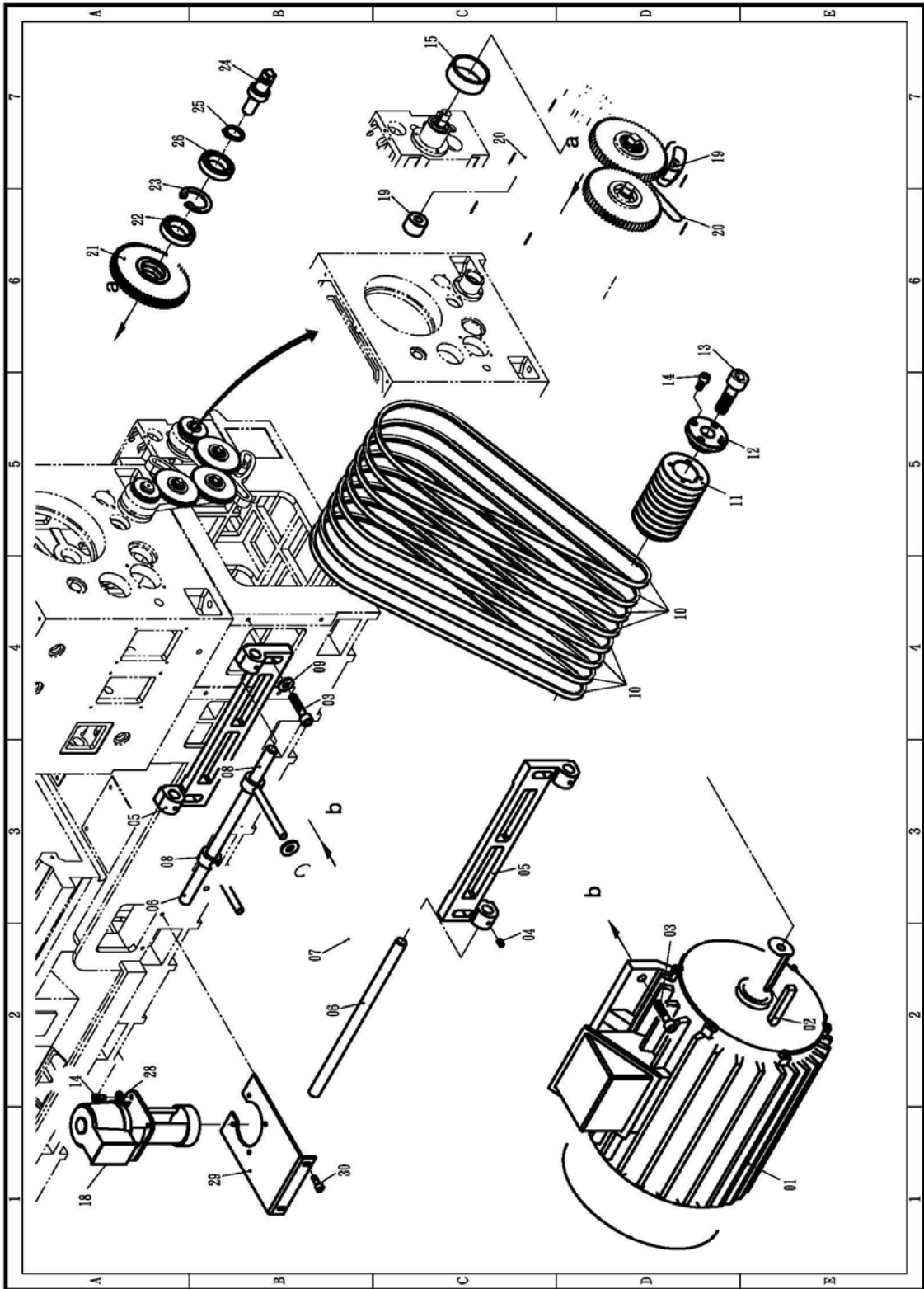
# HEADSTOCK



HEADSTOCK				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
0 1		PIN	Ø5	1
0 2	HL-2078	STEM ARM		1
0 3		SCREW	M8	1
0 4		OIL SEAL	TC-30428	1
0 5	HL- 2077	HANDLE		1
0 6		SPRING	M8	1
0 7		BALL	Ø8	1
0 8		SCREW	M8	2
0 9	HL-2079	BALL		1
10		SCREW	M10	2
11	HL-2081	SET RING		1
12	HL-2080	SHAFT		1
13	HL-2082	FORK ARM		1
14		SNAP RING	S25	1
15	HL-2083	FORK		1



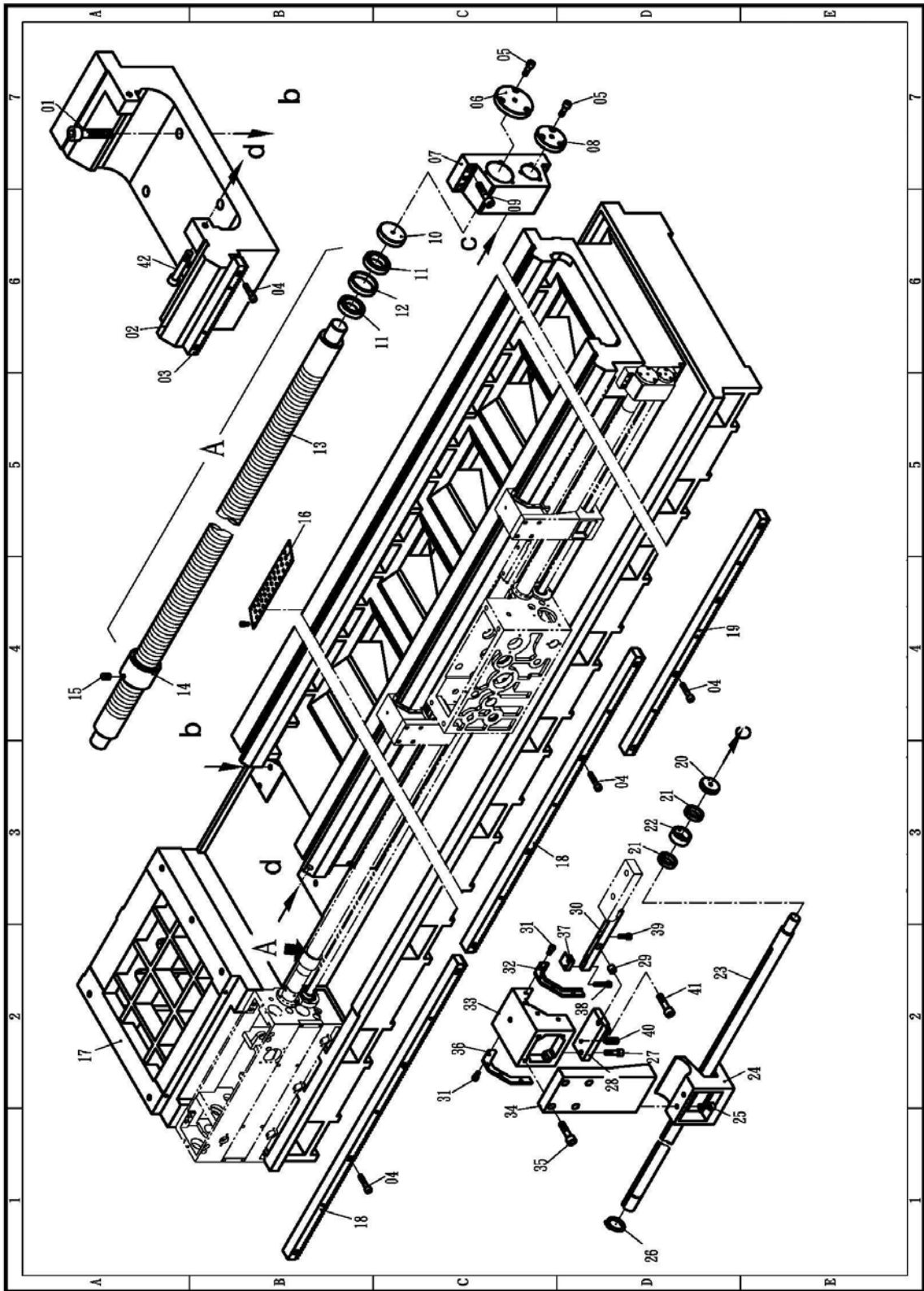
PART LIST (32" Bed) EX01



PART LIST (32" Bed) EX01

No.	Description	Part No. /Spec.	Q' ty	remark
01	Motor	20HP-4P	1	
		30HP-4P		
		50HP-4P		
02	Key	8x11x80	1	
03	Cap screw	M16x50	8	
04	Set screw	M10x15	4	
05	Support frame	BC0211	2	
06	shaft	BC0213	2	
07	Motor plate	BC0212	1	
08	bolt	BC0214	2	
09	Washer	M16	4	
10	V-belt	Spec.V/950	8	Circle 2413
11	Motor pulley	BC0215	1	
12	Cover	BC0216	1	
13	Cap screw	as motor Spec.	1	
14	Cap screw	M8x16	6	
15	Collar	BC0222	1	
16	Pump block	BC0221	1	
17				
18	Coolant pump	MC-8150	1	
19	Washer	HL-3063a	2	
20	bracket	HL-3058	2	
21	Gear	HL-3060	3	
22	Ball bearing	6006	6	
23	Circlip C-type	R55	3	
24	Shaft	HL-3061	3	
25	Circlip C-type	S30	3	
26	Washer	M20	2	
27	Nut	M20	2	
28	Washer	M8	4	
29	Pump holder	BC0221	1	
30	Cap screw	M8x18	2	
31				
32				
33				
34				
35				

PART LIST (Bed 32" ) EX02



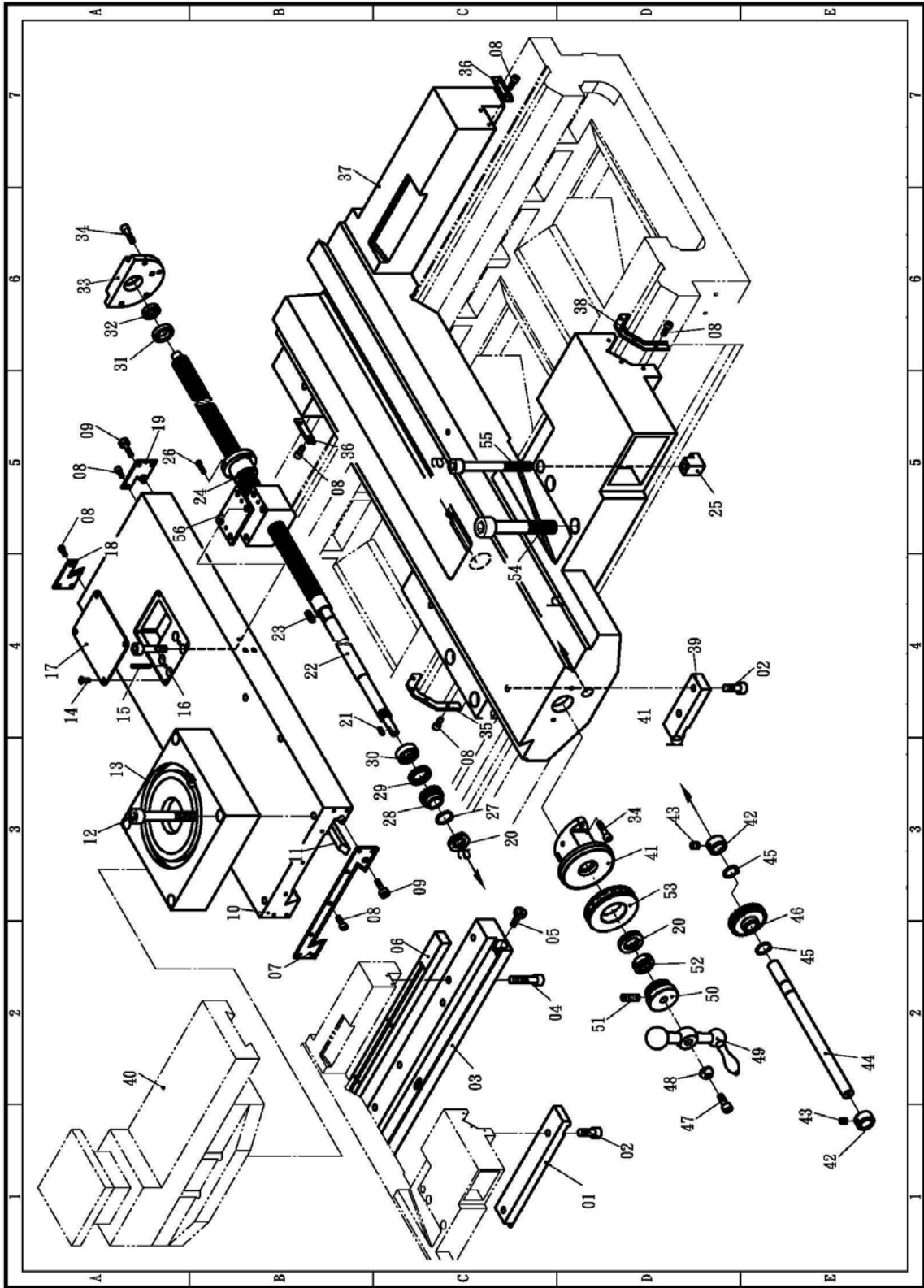
PART LIST ( Bed 32" ) EX02

No.	Description	Part No. /Spec.	Q'ty	remark
01	Cap screw	M16X75	4	
02	Gap bed	BC0206	1	
03	rack(length:300)	BC0207	1	
04	Cap screw	M8X35	22	
05	Cap screw	M8X20	6	
06	Cover for lead screw	HL-1011	1	
07	Bracket	HL-1008	1	
08	Cover for feed rod	HL-1014	1	
09	Cap screw	M10X40	4	
10	Spacer ring	HL-1010	1	
11	Ball bearing	6008	2	
12	Spacer ring	BC0204	1	
13	Leadscrew (inch)	BC0202	1	
14	Leadscrew bush	HL-1006	1	
15	Set screw	M6X10	1	
16	Filter plate	BC0217	3	
17	Bed -4 meter	BC0003	1	
18	Rack	HL-1004	4	
19	Rack (L:800)	BC0208	1	
20	Spacer ring	HL-1013	1	
21	Ball bearing	6005	2	
22	Spacer ring	BC0205	1	
23	Feed rod	BC0203	1	
24	Bracket	HL-1022	1	
25	Cap screw	M8X25	2	
26	Circlip C-type	S32	1	
27	Cap screw	M8X30	2	
28	Support plate(right)	HL-1023	1	
	Support plate(left)	HL-1024		
29	bushing	HL-1026	1	
30	Automatic Hook	HL-1025	1	
31	Cap screw	M6X12	16	
32	Wiper for saddle 1	HLA-5011	2	
33	Bracket	BC0209	2	
34	Upper bracket	BC0210	2	
35	Cap screw	M10X35	8	
36	Wiper for saddle 2	HLA-5012	2	

PART LIST (Bed 32" ) EX02

No.	Description	Part No. /Spec.	Q'ty	remark
37	Taper block (left)	BC0218	1	
	Taper block (right)	BC0219	1	
38	Cap screw	M6X30	4	
39	Cap screw	M6X20	2	
40	Spring	BC0220	2	
41	Cap screw	M8X35	4	
42	Cap screw	M12x70	2	
43	Cap screw	M5x8	12	
44				
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PART LIST-SADDLE (for Bed 32" ) EX03



PART LIST-SADDLE (Bed 32" ) EX03

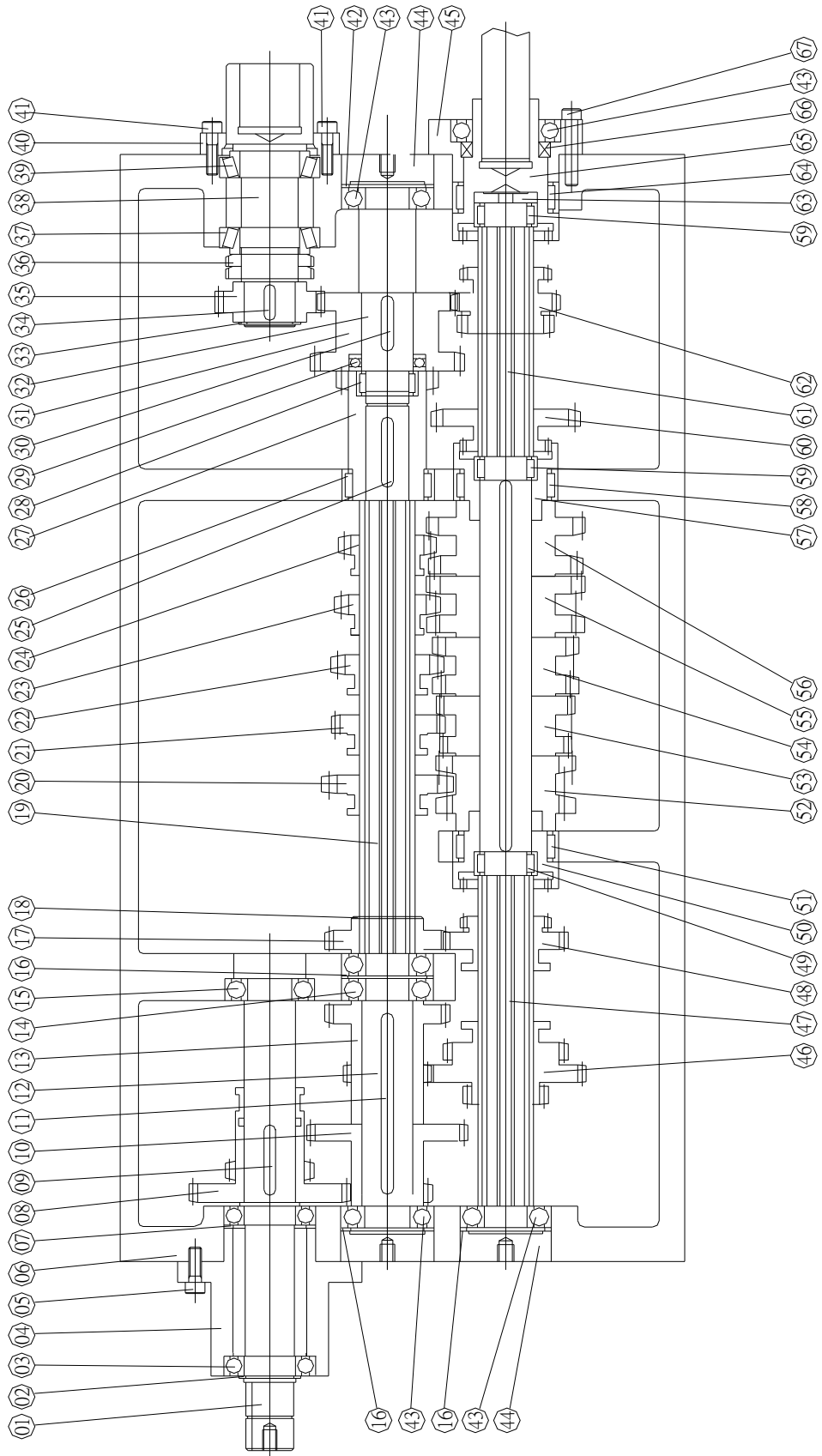
No.	Description	Part No. /Spec.	Q'ty	Remark
01	Front support plate(right)	BC0246	1	
02	Cap screw	M12x30	4	
03	Strip	RHL1-3021	1	
04	Cap screw	M12x55	7	
05	Screw	M10	2	
06	Strip	RHL1-3024	1	
07	Wiper for cross slide 1	BC0255	1	
08	Cap screw	M6x14	25	
09	Screw	M8	2	
10	Cross slide	BC0244	1	
11	Gib	BC0248	1	
12	Cap screw	M16x70	4	
13	Block of Indexing ring	BC0259	1	
14	Screw	M5x10	4	
15	Pin	6x50	2	
16	Cap screw	M12x50	4	
17	Cover	BC0252	1	
18	Wiper for cross slide 3	BC0257	1	
19	Wiper for cross slide 2	BC0256	1	
20	Thrust ball bearing	51105	2	
21	Key	4x4x16	1	
22	Screw	BC0242	1	
23	Key	6x6x25	1	
24	Nut	BC0253	1	
25	Locking block	BC0254	1	
26	Cap screw	M5x20	2	
27	Circlip C-type	S28	1	
28	Gear	HL-5009	1	
29	Oil seal	35x55x11	1	
30	Needle roller bearing	NA4907	1	
31	Ball bearing	6004	1	
32	Oil seal	TC20x32x8	1	
33	Bracket	HL-5013	1	
34	Cap screw	M8x30	6	
35	Wiper for saddle 2	BC0250	1	
36	Wiper for saddle 3	BC0247	2	
37	Saddle	BC0241	1	

PART LIST-SADDLE (Bed 32" ) EX03

No.	Description	Part No. /Spec.	Q'ty	Remark
38	Wiper for saddle 1	BC0249	1	
39	Front support plate(left)	BC0245	1	
40	Toolpost		1	
41	Bracket	HL-5007	1	
42	Locking collar	BC0258	2	
43	Set screw	M8x8	2	
44	Shaft	BC0243	1	
45	Circlip C-type	S25	2	
46	Gear	BC0251	1	
47	Cap screw	M8x20	1	
48	Washer	HG30110	1	
49	Handle	HL-5032	1	
50	Bushing	HL-5005	1	
51	Set screw	M10x28	1	
52	Nut	M25x1.5	1	
53	Indexing ring	HL-5006I	1	
54	Cap screw	M22x130	4	
55	Cap screw	M16x160	1	
56	Washer	BC0260	1	
57				
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# GEAR BOX

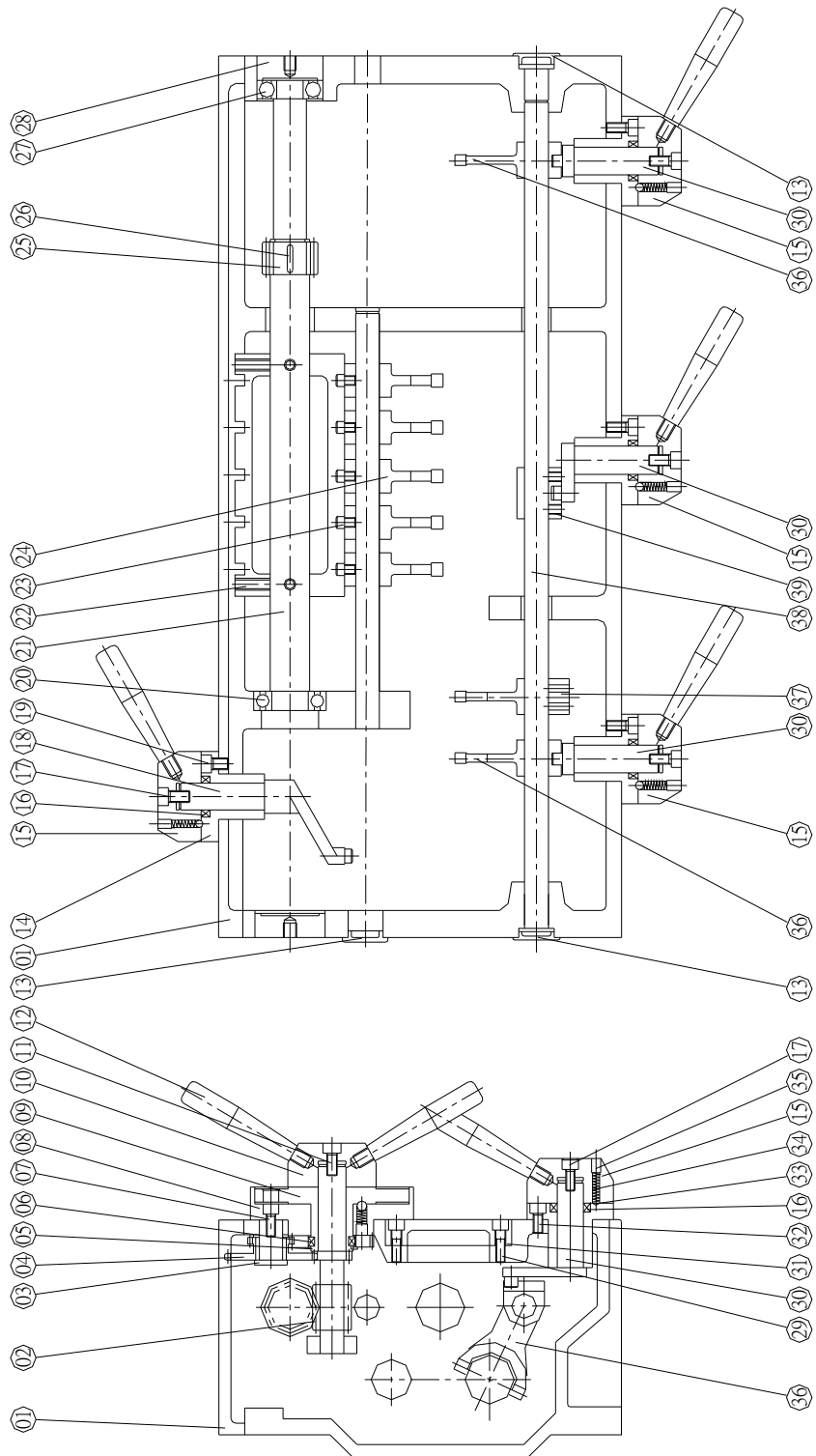


GEAR BOX				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
0 1	HL- 3005	SHAFT		1
0 2		SNAP RING	S25	1
0 3		BEARING	6007	2
0 4	HL- 3004	COVER		1
0 5		SCREW	M8	3
0 6	HL- 3001	GEAR BOX		1
0 7		SPRING WASHER	ø62	1
0 8	HL- 3006	GEAR		1
0 9		KEY	8 x 7 x 50L	1
1 0	HL- 3012	GAER		1
1 1		KEY	8 x 7 x 130L	1
1 2	HL- 3011	SHAFT		1
1 3	HL- 3013	GEAR		1
1 4		BEARING	#6206	2
1 5		BEARING	6206	2
1 6		SPRING WASHER	RTW56	1
1 7	HL- 3015	GEAR		1
1 8		SNAP RING	S38	1
1 9	HL- 3014	SHAFT		1
2 0	HL- 3016	GEAR		1
2 1	HL- 3017	GEAR		1
2 2	HL- 3018	GEAR		1
2 3	HL- 3019	GEAR		1
2 4	HL- 3020	GAER		1
2 5		KEY	8 x 7 x 50L	1
2 6		BEARING	RNA4908	1

GEAR BOX				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
27	HL- 3021	GEAR		1
28		BEARING	RNA4905	1
29		BEARING	RNA4905	1
30		KEY	8 x 7 x 40	1
31	HL- 3023	GEAR		1
32	HL- 3022	SHAFT		1
33		SNAP RING	S35	1
34		KEY	8 x 7 x 25	2
35	HL- 3009	GEAR		1
36		NUT	AN08	2
37		BEARING	#32008X	1
38	HL- 3008	SHAFT		1
39		BEARING	#32008X	1
40	HL- 5007	COVER		1
41		SCREW	M8	3
42		SPRING WASHER	ø68	1
43		BEARING	6206	3
44	HL- 3010	COVER		3
45	HL- 3039	COVER		1
46	HL- 3025	GAER		1
47	HL- 3024	SHAFT		1
48	HL- 3026	GEAR		1
49		BEARING	RNA4905	1
50	HL- 3028	GEAR		1
51		BEARING	RNA4910	1
52	HL- 3029	GEAR		1

GEAR BOX				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
5 3	HL- 3030	GEAR		1
5 4	HL- 3031	GEAR		1
5 5	HL- 3032	GEAR		1
5 6	HL- 3033	GEAR		1
5 7	HL- 3028	GEAR		1
5 8		BEARING	RNA4910	1
5 9		BEARING	RNA4905	2
6 0	HL-3035	GEAR		1
6 1	HL- 3034	SHAFT		1
6 2	HL- 3036	GEAR		1
6 3	HL- 3038	COLLAR		1
6 4		BEARING	RNA4910	1
6 5	HL- 3037	SHAFT		1
6 6		OIL SEAL	TC45608	1
6 7		SCREW	M8	3

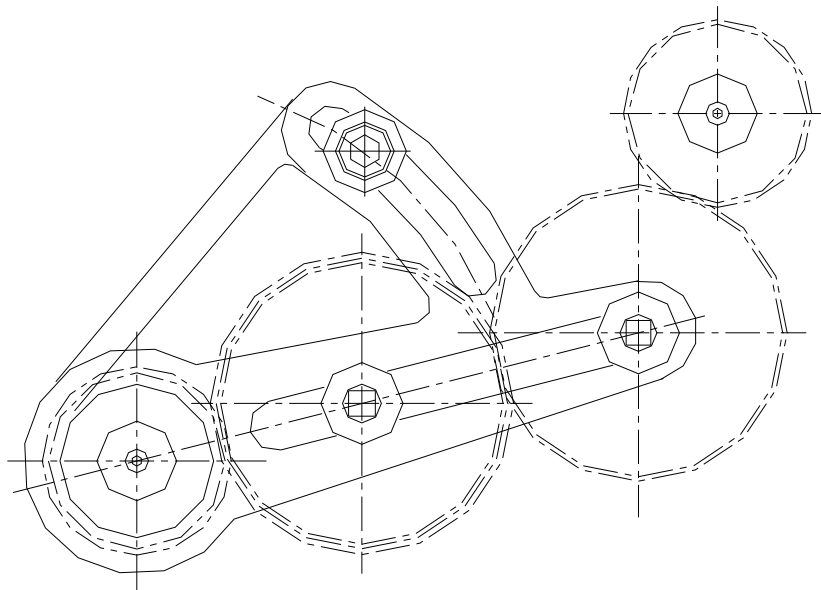
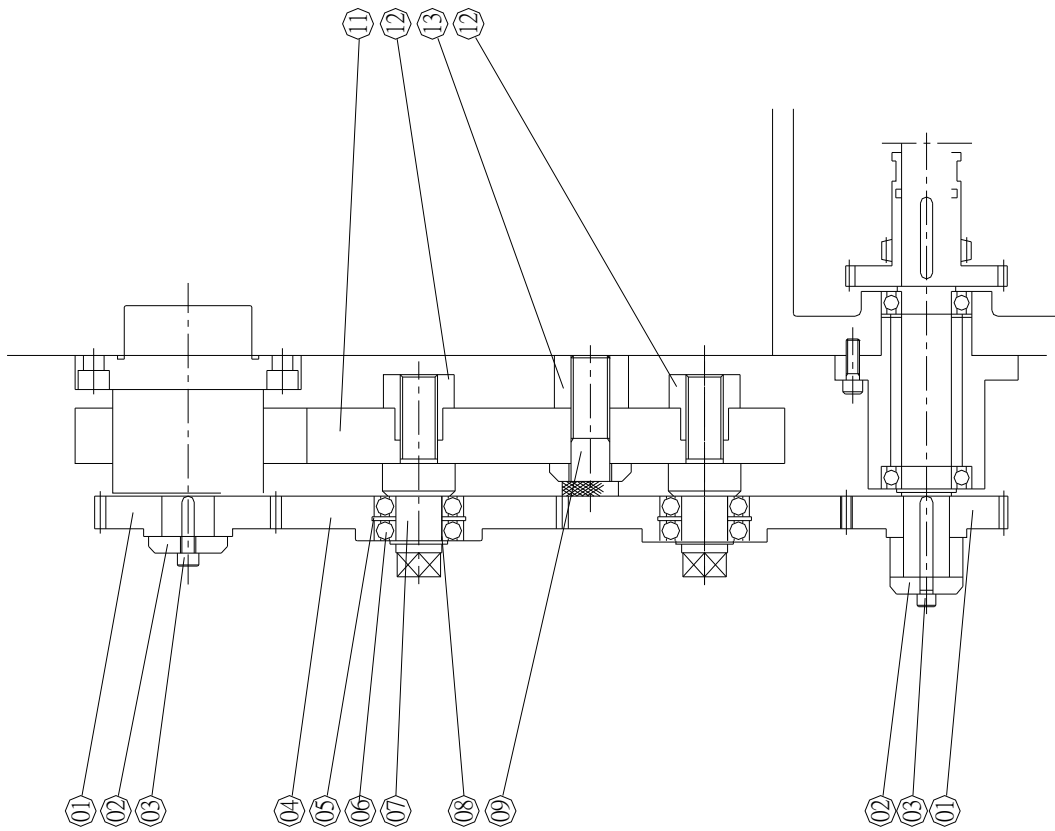
# GEAR BOX



GEAR BOX				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
0 1	HL- 3002	COVER		1
0 2	HL- 3055	SHAFT		1
0 3	HL- 3056	SHAFT		1
0 4	HL- 3057	GEAR		1
0 5		SNAP RING	S38	1
0 6		DEY	5 x 5 x 8L	1
0 7		SCRW	M8	4
0 8	HL- 3052	BUSHING		1
0 9	HL- 3053	NAME-PLATE COVER		1
1 0	HL- 2073	ROCKER ARM		4
1 1		SCREW	M8	1
1 2	HL- 2072	HANDLE		6
1 3		OIL COVER	ø32	3
1 4	HL- 3049	BUSHING		4
1 5	HL- 2073	ROCKER ARM		4
1 6		OIL SEAL	TC25357	4
1 7		SCREW	M8	4
1 8	HL- 3050	FORK ARM		1
1 9		SCRW	M8	8
2 0		BEARING	6206	1
2 1	HL- 3040	SHAFT		1
2 2		SET SCREW	M10	4
2 3	HL- 2055	PIN		5
2 4	HL- 3044	FORK		5
2 5	HL- 3042	GEAR		1
2 6		KEY	6 x 6 x 25L	1

GEAR BOX				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
27		BEARING	6305	1
28	HL- 3010	COVER		1
29		SCREW	M8	8
30	HL- 3051	FORK ARM		3
31	HL- 3003	COVER		1
32		SCREW	M8	2
33		BALL	M8	5
34		SPRING	M8	5
35		SCRW	M10	5
36	HL- 3047	FORK		2
37	HL- 3048	FORK		1
38	HL- 3045	SHAFT		1
39	HL- 3046	FORK		1

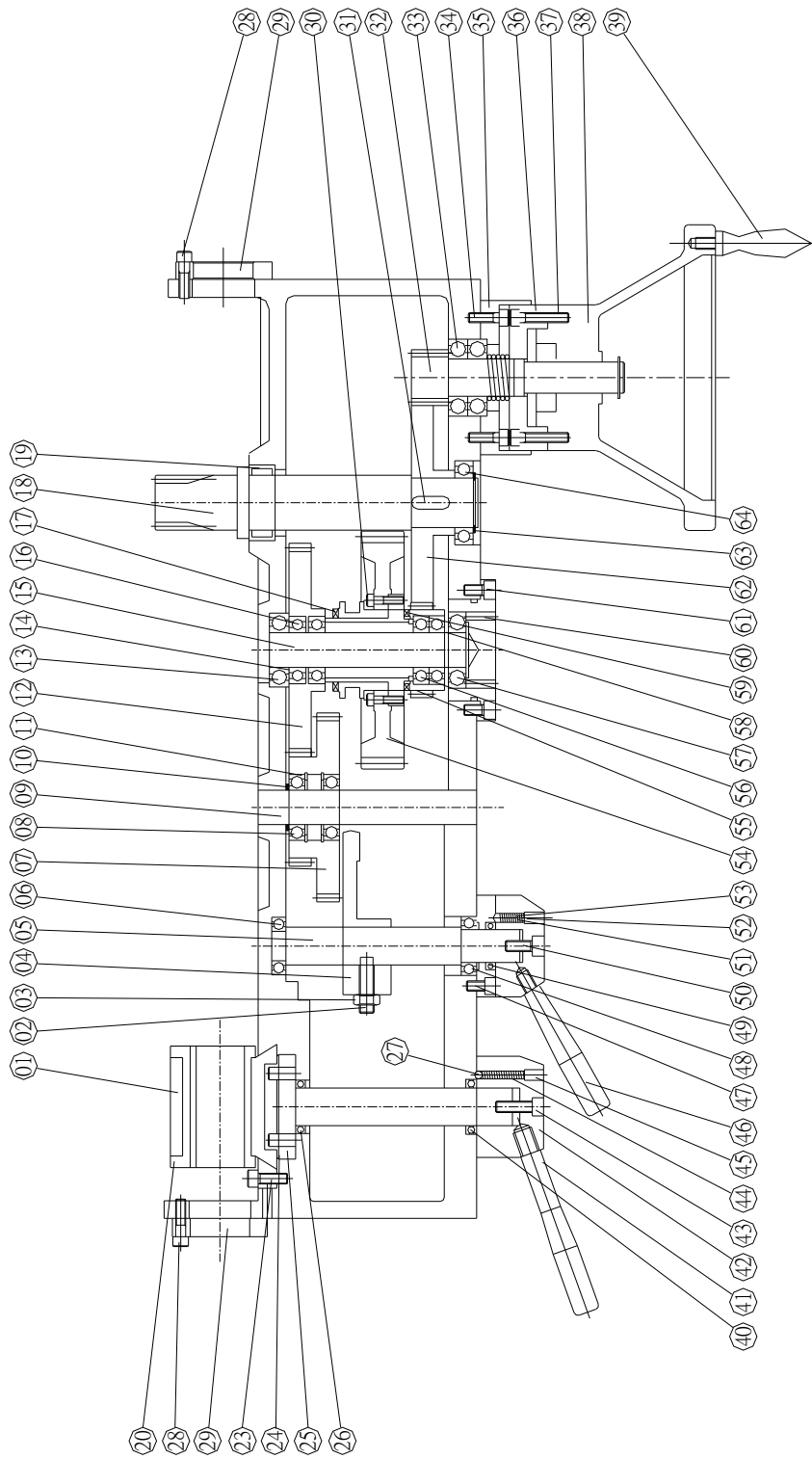
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# APRON

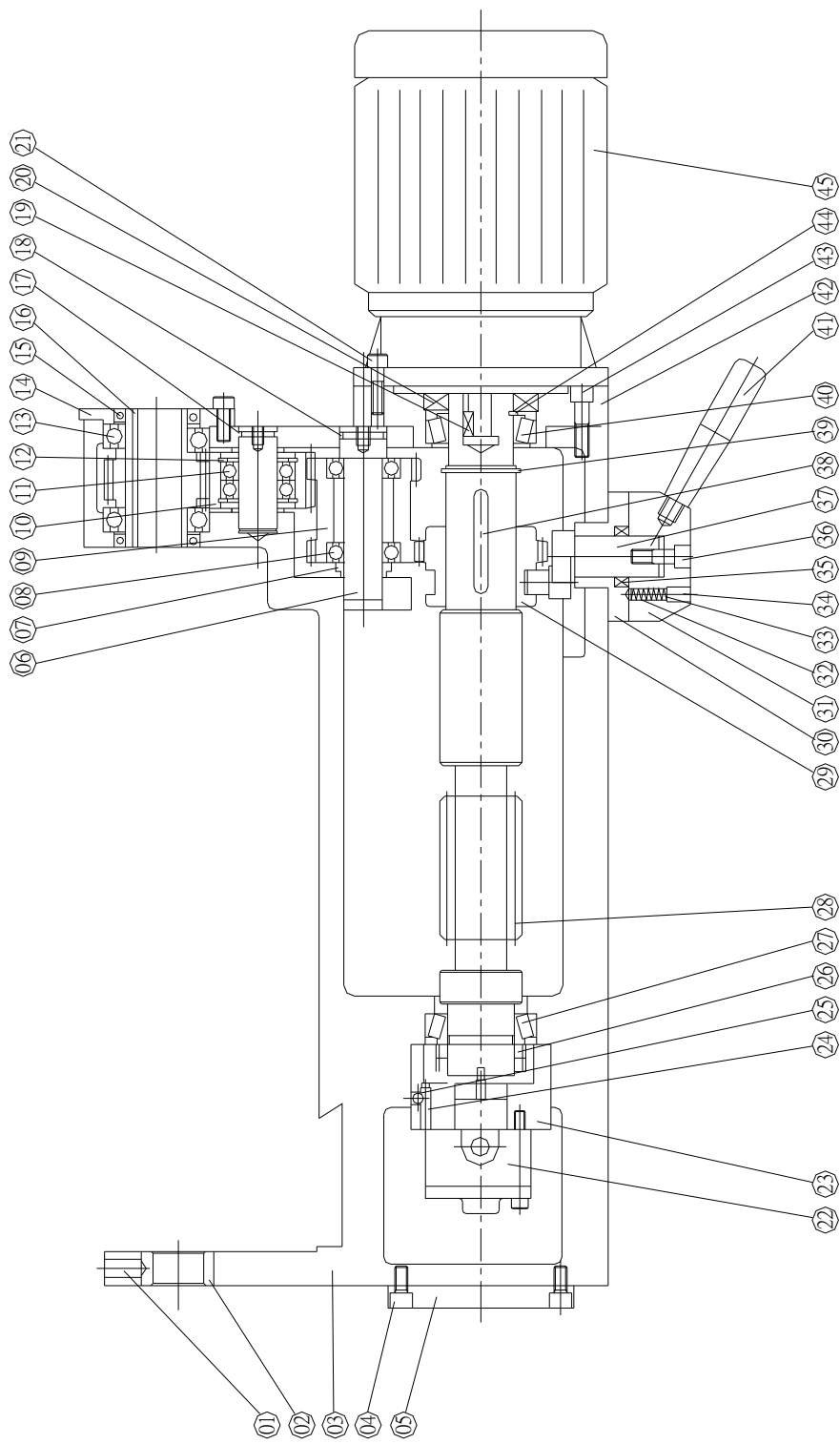


APRON				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
0 1	HL- 4043	NUT		1
0 2		SCREW	M12	1
0 3		NUT	M12	1
0 4	HL- 4038	FORK		1
0 5	HL- 4037	SHAFT		1
0 6		BEARING	6005	1
0 7	HL- 4012	GEAR		1
0 8		BEARING	6006	2
0 9	HL- 4011	SHAFT		1
1 0		SNAP RING	S30	2
1 1		SNAP RING	R55	2
1 2	HL- 4005	GEAR		1
1 3		BEARING	6206	1
1 4		SPRING WASHER	STW35	1
1 5	HL- 4004	SHAFT		1
1 6		BEARING	6006	2
1 7	HL- 4007	CLUTCH GEAR		1
1 8	HL- 4002	GEAR-SHAFT		1
1 9		BEARING	RNA4908	1
2 0	HL- 4033	NUT		1
2 1	HL- 4001	APRON		1
2 2		SCREW	M8	4
2 3	HL- 4035	PAPER		1
2 4		PIN	ø10	2
2 5	HL- 4032	SHAFT		1
2 6		OIL SEAL	TC30428	1

APRON				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
27		BALL	M8	1
28		SCREW	M8	2
29	HL- 4042	COVER		2
30		SCREW	M6	6
31		KEY	8 x 7 x 30	1
32	HL- 4026	GEAR		1
33		BEARING	6206	2
34		SCREW	M8	2
35	HL- 4027	COVER		1
36	HL- 4028	GRADUATION		1
37		SCREW	M8	3
38	HL- 4029	HANDLE WHEEL		1
39		HANDLE	ø25	1
40		OIL SEAL	TC30428	1
41	HL- 4030	HANDLE		1
42	HL- 4031	ROCKER ARM		1
43		SCREW	M8	1
44		SPRING	M8	1
45		SET SCREW	M10	1
46	HL- 2072	HANDLE		1
47		SCREW	M8	2
48		BEARING	6005	1
49		OIL SEAL	TC253507	1
50		SCREW	M8	1
51		SPRING	M8	1
52		SCREW	M10	1

APRON				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
5 3		STEEL BALL	ø8	1
5 4	HL- 4008	GEAR		1
5 5	HL- 4009	GEAR		1
5 6		BEARING	6006	2
5 7		BEARING	6206	1
5 8		SNAP RING	S30	1
5 9	HL- 4006	SPLING SHAFT	6206	1
6 0		SCREW	M6	4
6 1		SCREW	M8	3
6 2	HL- 4003	GEAR		1
6 3		SNAP RING	S40	1
6 4		BEARING	6008	1

# APRON

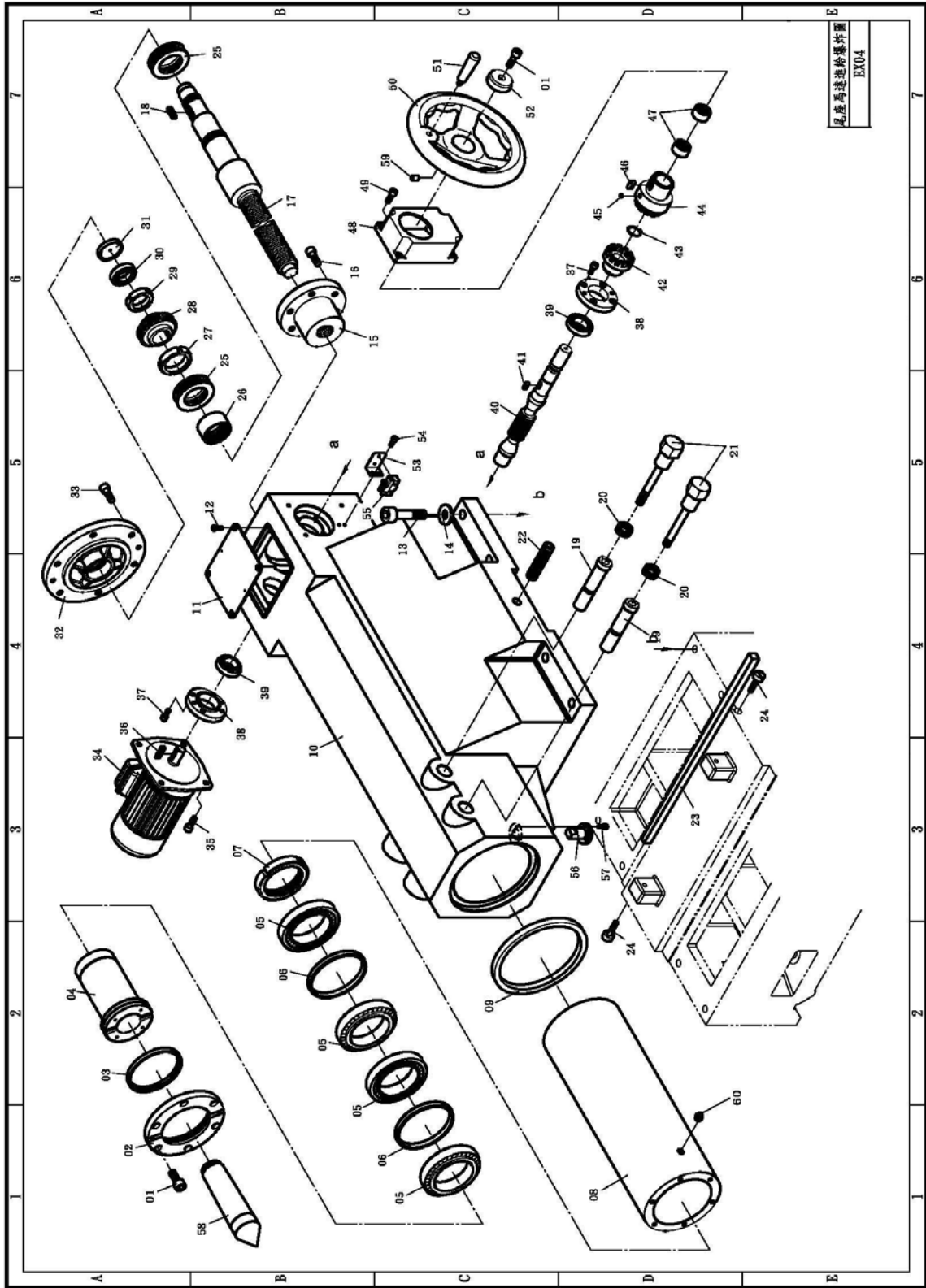


APRON				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
0 1		SCREW	M10	1
0 2	HL- 4015	BUSHING		1
0 3	HL- 4001	APRON		1
0 4		SCREW	M8	2
0 5	HL- 4025	COVER		1
0 6	HL- 4018	SHAFT-F		1
0 7	HL- 4020	COLLAR		1
0 8		BEARING	6005	2
0 9	HL- 4019	GEAR		1
1 0	HL- 4017	GEAR		1
1 1		BEARING	6005	2
1 2		SNAP RING	R47	2
1 3		BEARING	6008	2
1 4	HL- 4014	COVER		1
1 5		OIL SEAL	TC40558	2
1 6	HL- 4013	GEAR		1
1 7		O-RING	P21	1
1 8		O-RING	G25	1
1 9		KEY	5 x 5 x 15L	1
2 0		OIL SEAL	TC40708	1
2 1		SCREW	M8	4
2 2		PUMP	AM2	1
2 3	HL- 4023	PUMP		1
2 4		SET SCREW	M6	1
2 5		BALL	M8	1
2 6		NUT	AN08	2

APRON				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
27		TAPER ROLL	32008	1
28	HL- 4021	STICK		1
29	HL- 4022	GEAR		1
30	HL- 4040	BUSHING		1
31	HL- 2037	ROCKER ARM		1
32		BALL	M8	1
33		SPRING	M8	1
34		SCREW	M10	1
35		OIL SEAL	TC25357	1
36		SCREW	M8	1
37	HL- 4041	SHAFT		1
38		KEY	8 x 7 x 65L	1
39		SNAP RING	S42	1
40		TAPER ROLL	32008	1
41	HL- 2072	HANDLE		1
42	HL- 4024	COVER		1
43		SCREW	M8	4
44		SNAP RING	S40	1
45		MOTOR	1 / 8HP	1



# PART LIST-Motorized Tailstock EX04



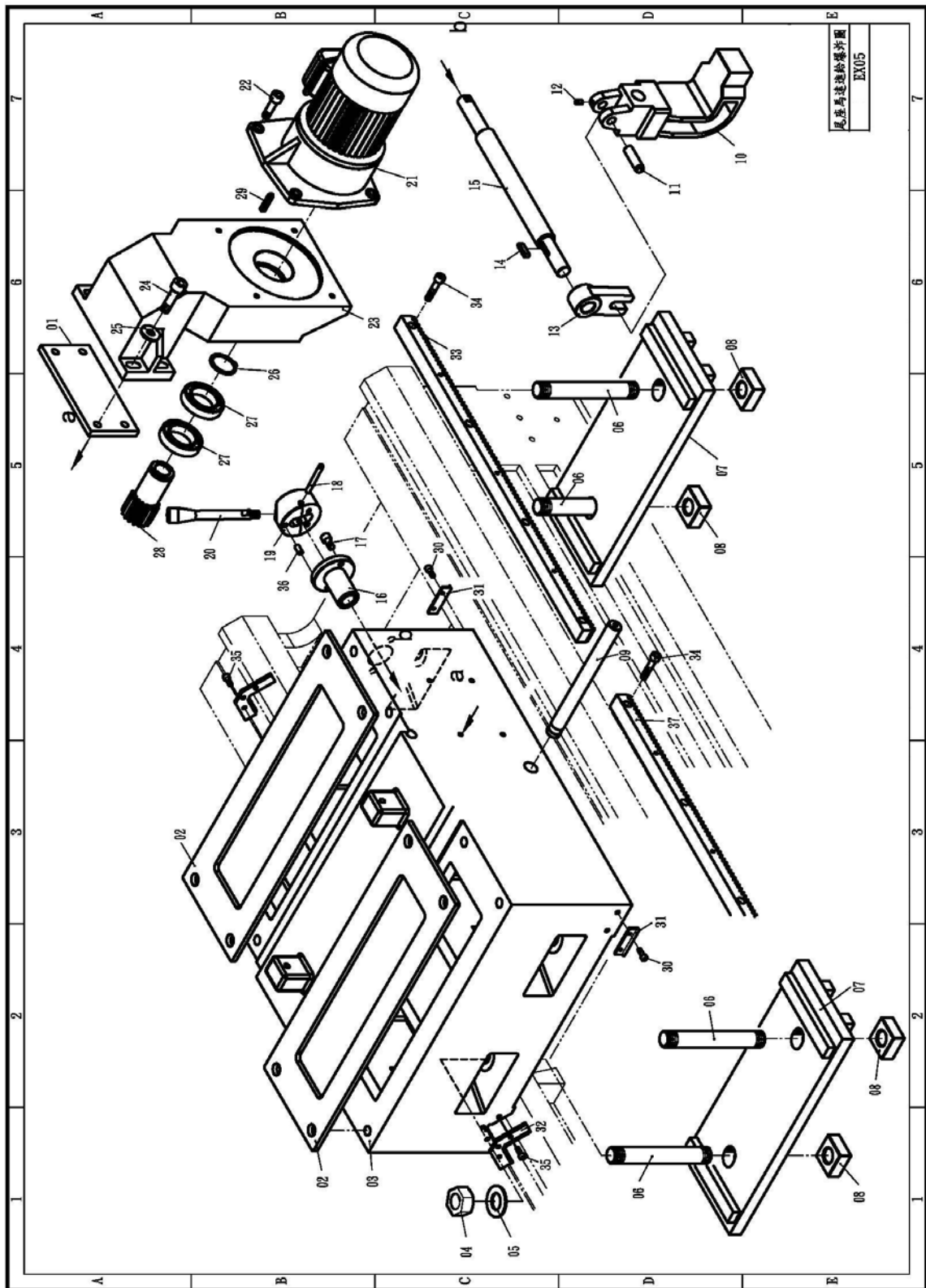
PART LIST-Motorized Tailstock EX04

No.	Description	Part No. /Spec.	Q'ty	Remark
01	Cap screw	M10x25	7	
02	Front cover	RHL1-7004	1	
03	Oil seal	120x140x13	1	
04	Rotating mandrel	RHL1-7005	1	
05	Taper roller bearing	32020X	4	
06	Spacer ring	RHL1-7006	2	
07	Locking nut	YSR M100x2	1	
08	Barrel	BC0227	1	
09	Oil seal	200x230x15	1	
10	Tailstock casting (motorized)	BC0223	1	
11	Upper cover	RHL1-7008	1	
12	Flat head screw	M6x16	4	
13	Cap screw	M20x85	8	
14	Washer	M20	8	
15	Screw nut	RHL1-7044	1	
16	Cap screw	M12x30	6	
17	Tailstock screw	BC0228	1	
18	Key	10x8x35	1	
19	Locking lever	RHL1-7011	2	
20	Spring	RHL1-7010	2	
21	Lock shaft	RHL1-7009	2	
22	Set screw	M12x85	1	
23	Gib	BC0237	1	
24	Gib Screw	M8	2	
25	Thrust ball bear	51212	2	
26	Needle roller bearing	RNA607235	1	
27	Locking nut	M60x2	1	
28	Tailstock worm	RHL1-7045	1	
29	Locking nut	M45x1.5	1	
30	Ball bearing	6007	1	
31	Washer	RHL1-7047	1	
32	Rear cover	RHL1-7055	1	
33	Cap screw	M12x25	6	
34	Motor	1/4HP	1	Rati:1:5
35	Cap screw	M10x28	4	
36	Key	7X7X36	1	

## PART LIST-Motorized Tailstock EX04

No.	Description	Part No. /Spec.	Q'ty	Remark
37	Cap screw	M8x18	8	
38	Cover of worm shaft	RHL1-7048	2	
39	Taper roller bearing	32007	2	
40	Worm shaft	RHL1-7046	1	
41	Key	7x7x20	1	
42	Clutch Gear 2 離合齒 2	RHL1-7049	1	
43	Circlip C-type	S30	1	
44	Clutch Gear 1 離合齒 1	RHL1-7050	1	
45	Steel ball	ø8	1	
46	Key	10x8x25	1	
47	Needle roller bearing	RNA304020	2	
48	Worm block	RHL1-7053	1	
49	Cap screw	M8x20	4	
50	Handwheel	RHL1-7052	1	
51	Handle	M12	1	
52	Worm pad	RHL1-7051	1	
53	Block for limit switch	RHL1-7054	1	
54	Cap screw	M6x12	2	
55	Limit switch		1	
56	Key	BC0240	1	
57	Cap screw	M6X20	3	
58	Center	MT6	1	
59	Set screw	M10X12	1	
60	Oil plug 油嘴	PT1/8	1	
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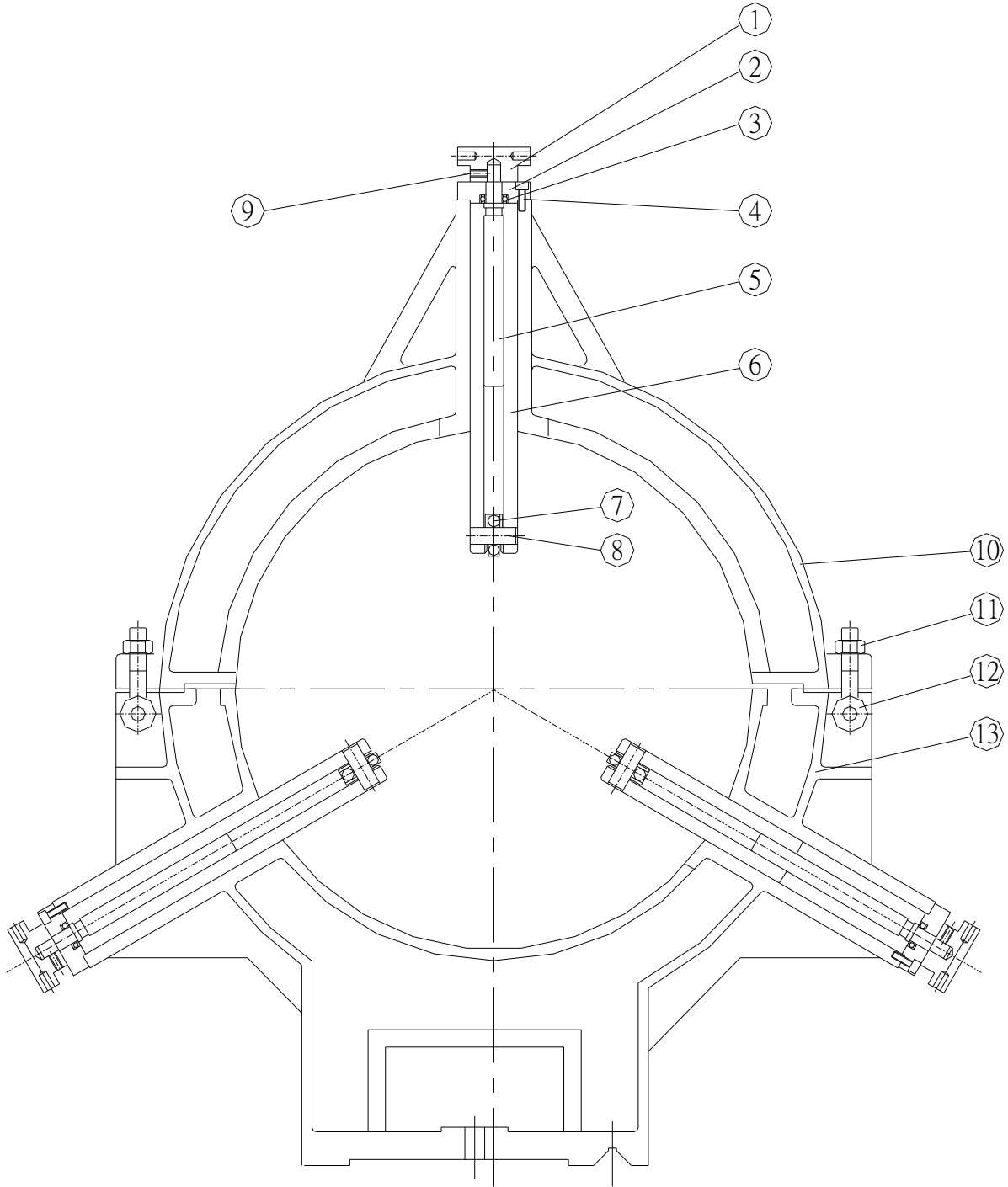
# EX05 Motorized Tailstock Controls (for bed 32")



## EX05 Motorized Tailstock Controls (for bed 32")

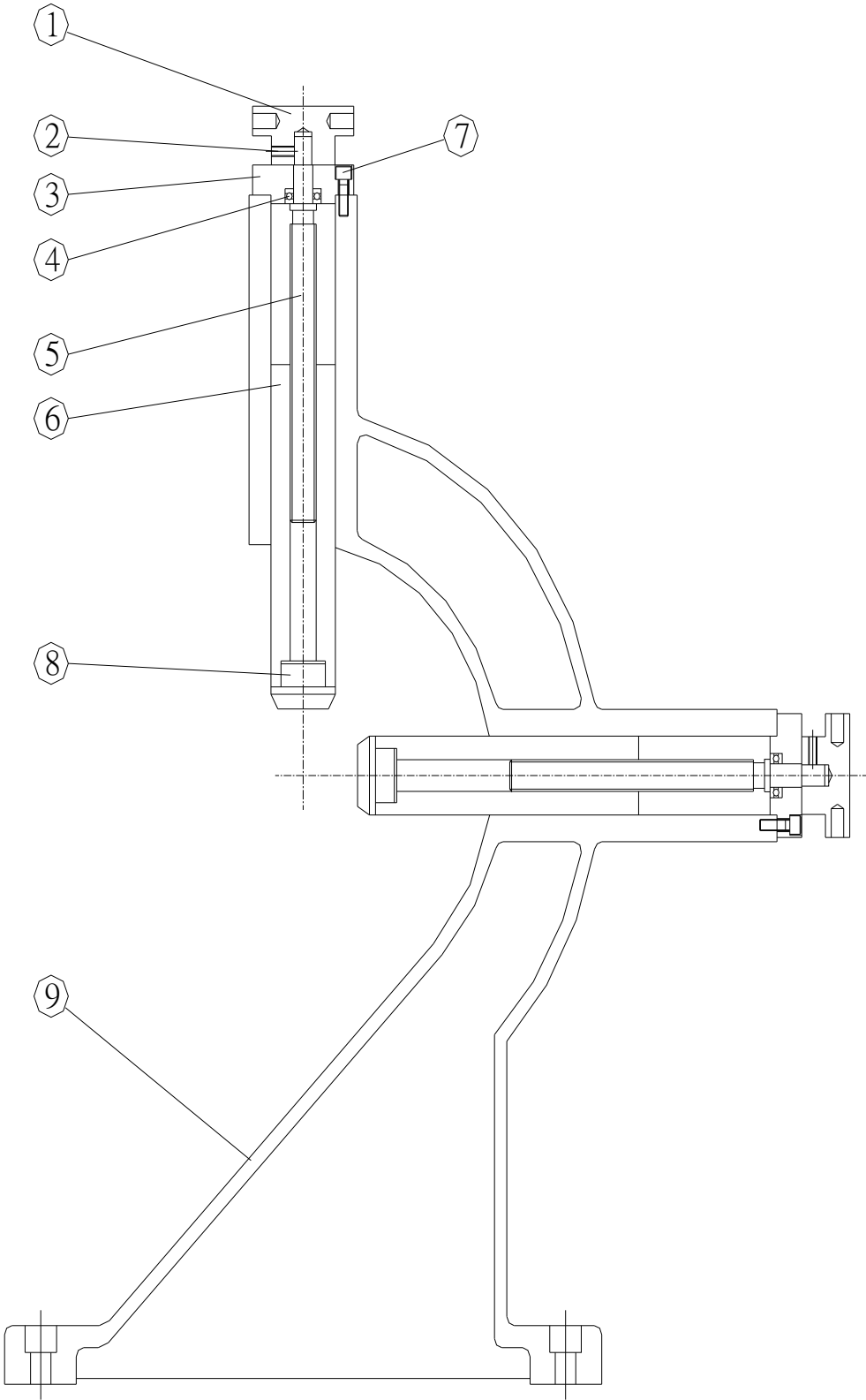
No.	Description	Part No. /Spec.	Q'ty	Remark
01	Pad	BC0227	1	
02	Plate for tailstock base	BC0226	2	
03	Tailstock base	BC0224	1	Swing: 1120
		BC0225	1	Swing: 1320
04	Nut	M30	4	
05	Washer	M30	4	
06	Clamping screw lever	RHL1-7017	4	
07	Clamping plate	BC0236	2	
08	Clamping nut	RHL1-7016	4	
09	anti-retreat shaft	BC0231	1	
10	Ant-retreat block	BC0234	1	
11	Pin	ø16X55	1	
12	Set screw	M6X10	1	
13	anti-retreat Swing plate	BC0233	1	
14	Key	7X7X30	1	
15	anti-retreat handle	BC0232	1	
16	Speed positioning block	BC0235	1	
17	Cap screw	M8X16	2	
18	Pin	ø8X80	1	
19	Base of shift lever	RHL1-7029	1	
20	Shift lever	238	1	
21	Motor	1/2HP	1	ratio:120
22	Cap screw	M10X30	4	
23	Block for drive motor	BC0229 (manual)	1	
24	Cap screw	M12X50	4	
25	Washer	M12	4	
26	Circlip C-type	S45	1	
27	Ball bearing	6009	2	
28	Gear	BC0230	1	
29	Key	7X7X40	1	
30	Cap screw	M6X14	4	
31	Wiper for tailstock base 1	BC0238	2	
32	Wiper for tailstock base 2	BC0239	2	
33	Rack	BC0208	1	
34	Cap screw	M8X35	16	
35	Cap screw	M6X16	6	
36	Spring pin	ø8X12	1	
37	Rack	HL-1004	3	

# STEADY REST



STEADY REST				
REF NO.	PART NO.	DESCRIPTION	PARTS NAME	Q'TY
0 1	HL- 8003	HANDLE		3
0 2	HL- 8004	COVER		3
0 3		BEARING	51103	3
0 4		SCREW	M8	9
0 5	HL- 8005	ADJUSTMENT SCREW		3
0 6	HL- 8006	SHAFT		3
0 7		BAERING		3
0 8	HL- 8007	SHAFT		3
0 9		SET SCREW	M8	3
1 0	HL- 8001	CASTING		1
1 1		NUT		2
1 2	HL- 8009	BOLT		2
1 3	HL- 8002	CASTING		1

FOLLOW REST

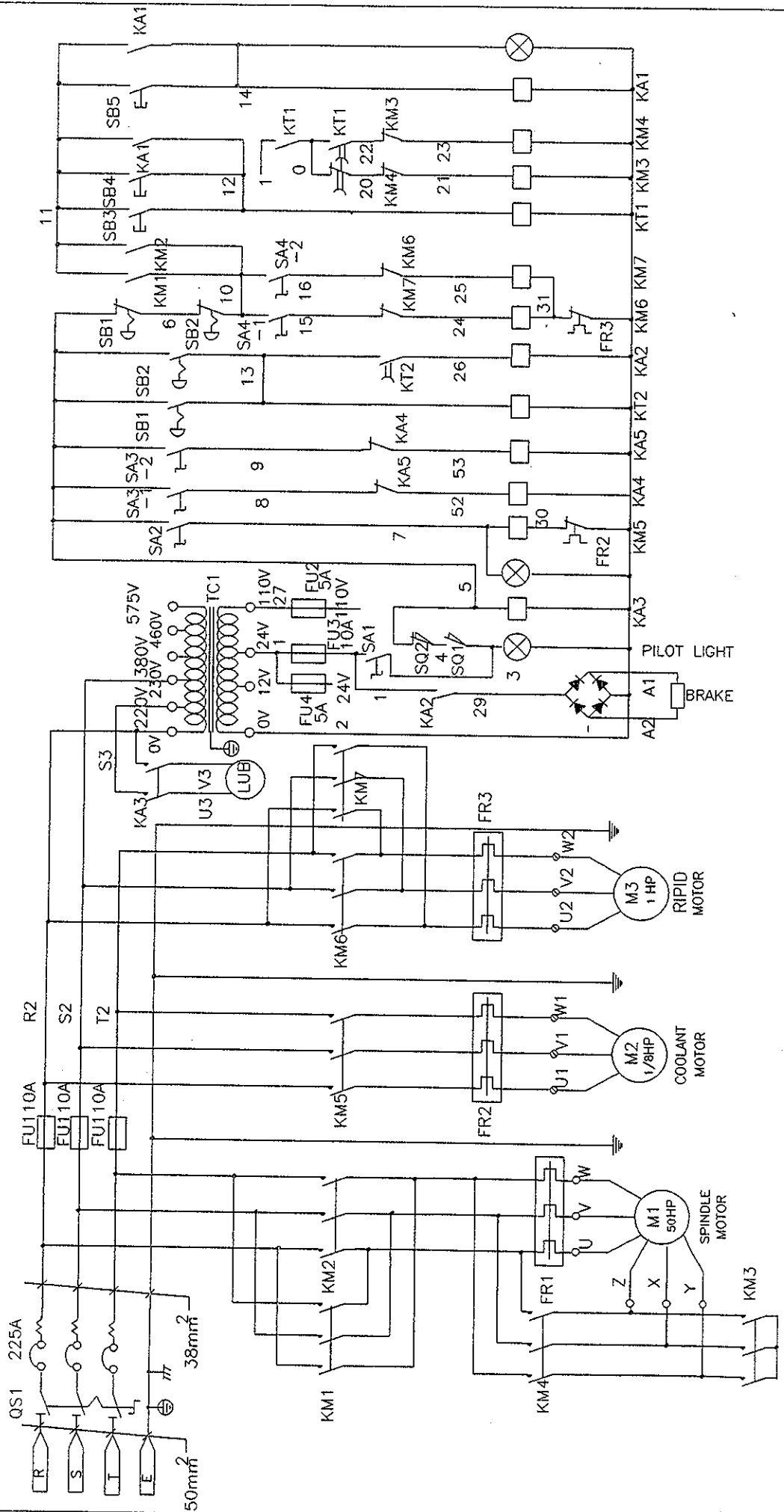






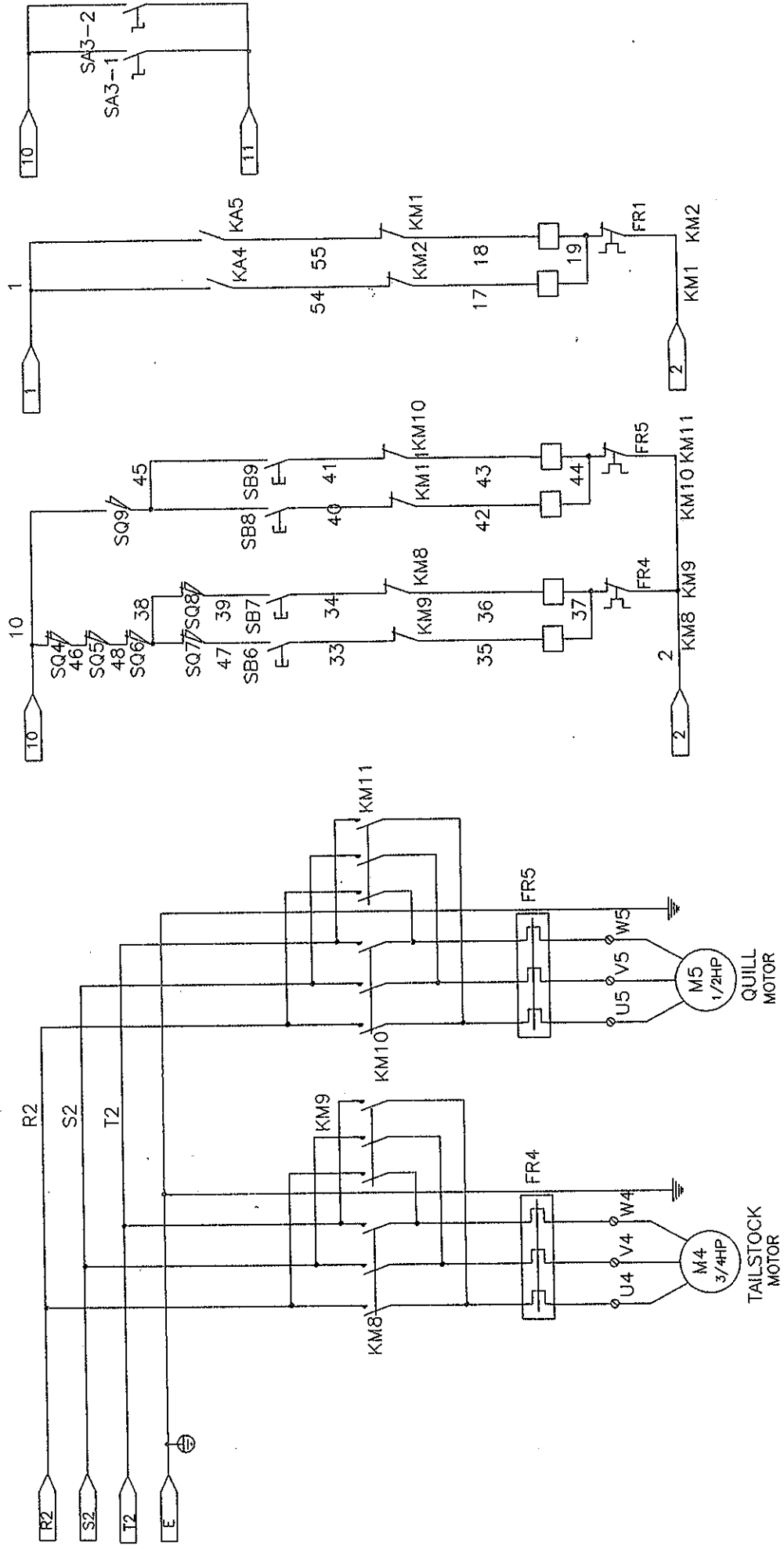


HL 美國24V控制電氣圖



TITLE: HL50HP	DATE:	HL
	MODIFIER:	A02
DRAWER: KEVEN	DATE:	
MODIFIER:	DATE:	

HL 美國24V控制電氣圖



A	B	C	D	E	F	G	H
TITLE: HL50HP		DRAWER: KEVEN		DATE:		HL	
MODIFIER:		DATE:		A03			