ACER

OPERATION MANUAL

HIGH PRECISION

INVERTER DRIVE ENGINE LATHE

MODEL: **E-lathe 2140GH** **E-lathe 2160GH**

E-lathe 2180GH **E-lathe 21120GH**

E-lathe 25" series

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IMPORTANT

DO NOT OPERATE, PROGRAM OR REPAIR THE MACHINE UNTIL YOU HAVE READ THIS MANUAL DETAILLY!

DO NOT OPERATE, PROGRAM OR REPAIR THE MACHINE UNITL YOU HAVE READ THE APPROPRIATE MANUALS!

NOTE : A SAFETY MANUAL MUST REMAIN ATTACHED TO THE MACHINE AT ALL TIMES.

SAFETY OF OPERATION RULES

1. SECURE WORK. Use chuck to hold work piece when practical. It's safer than using your hand and it frees both hands to operate tool.
2. DON'T OVERREACH. Keep proper footing and balance at all times.
3. MAINTAIN TOOLS WITH CARE. Keep tools sharp and clean for the best and the safest performance. Follow instructions for lubricating and changing accessories.
4. DISCONNECT TOOLS before servicing, when changing accessories such as cutting tools.
5. REDUCE THE RISK OF UNINTENTIONAL STARTING. Make sure switch is in off position, before intended plugged in.
6. USE RECOMMENDED ACCESSORIES. Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk or injury to persons.
7. NEVER STAND ON TOOL. Serious injury could occur, if the tool is tipped or if the cutting tool is unintentionally contacted.
8. CHECK DAMAGE PARTS. Before further use or the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function, check for alignment of moving part binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
9. NEVER LEAVE TOOL RUNNING UNATTENDED TURN POWER OFF. Don't leave tool until it comes to a complete stop.
10. ALWAYS USE SAFETY GLASSES. Common eyeglasses only have impact resistant lenses, they are NOT safety glasses.
11. KEEP GUARDS IN PLACE and in working order.
12. REMOVE ADJUSTING KEYS AND WRENCHES. Form habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
13. KEEP WORK ARE A CLEAN. Cluttered areas will invite accidents.
14. DON'T USE IN DANGEROUS ENVIRONMENT. Don't use power tools in damp or wet location, or expose them to rain. Keep work area well lighted.
15. KEEP CHILDREN AWAY. All visitors should be kept safe distance from work area.
16. MAKE WORKSHOP CHILD PROOF with padlocks, master switches, or by removing starter keys.
17. DON'T FORCE TOOL USAGE. Don't force tool or attachment to do a job for which it was not designed.
18. USE THE RIGHT TOOL. It will do the job better and safer at the rate for which it was designed.
19. WEAR PROPER APPAREL. No loose clothing, gloves, neckties, rings bracelets, or other jewelry to get caught in moving parts. Non-slip footwear is recommended, wear protective hair covering to contain long hair.

20. Never use the high speed on spindle over one hour.
21. KEEP TURNING TOOLS TIGHT during operating.

SPECIFICATIONS

Specifications of machine

MODEL E-lathe	1840GH	1860GH	1880GH
General Capacity			
Center height	230 mm		
Max. swing over bed	460 mm		
Max. swing over gap	640 mm (opt.)		
Max. swing over cross slide	290 mm		
Distance Bedween centers	1000 mm	1500 mm	2000 mm
Main Spindle			
Spindle nose	D1-6		
Spindle bore	56 mm(2")		
Spindle speeds	Conventional type, 39~2800 RPM		
	Inverter type, (opt.) H: 3100~681 RPM M: 680~153 RPM L: 152~33 RPM		
Carriage			
Gross slide travel	280 mm		
Compound rest travel	120 mm		
Tailstock			
Tailstock spindle dia.	75 mm		
Tailstock spindle travel	170 mm		
Tailstock spindle taper	MT#5		
Bed			
Bed width	350 mm		
Threading			
Lead screw	4 TPI or 6 mm/pitch		
Metric pitch threads	0.5-7 mm/pitch (24 kinds)		
Inch threads	4-56 TPI (36 kinds)		
Module pitch threads	0.25-3.5 M (16 kinds)		
DP threads	8-112 P (36 kinds)		
Feeding Range			
Range of longitudinal feeds	0.06-0.88 mm/rev		
Range of cross feeds	0.03-0.44 mm/rev		
Motor			
Main spindle motor	7.5 HP / 10 HP (opt.)		
Coolant pump motor	1/8 HP		
N.W. Approx.	2000 kgs	2250 kgs	2500 kgs
G.W. Approx.	2200 kgs	25200 kgs	2830 kgs

Note : We have the right to modify the specifications or designs. If there are subjected to change, without prior notice.

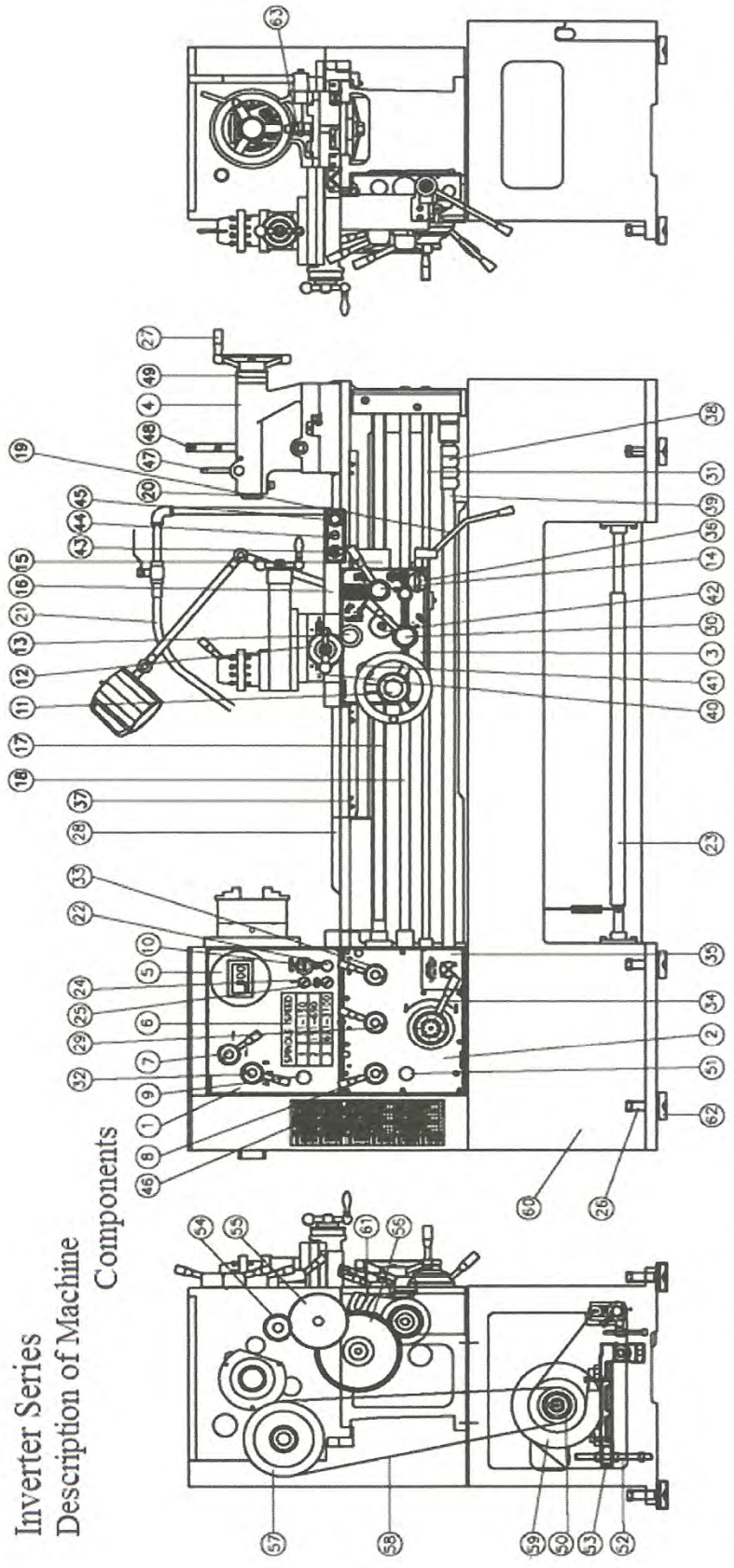
MODEL E-lathe	2140GH	2160GH	2180GH	21120GH
General Capacity				
Center height	270 mm			
Max. swing over bed	540 mm			
Max. swing over gap	720 mm (opt.)			
Max. swing over cross slide	360 mm			
Distance Bedween centers	1000 mm	1500 mm	2000 mm	3000 mm
Main Spindle				
Spindle nose	D1-8		A2-11	
Spindle bore	85 mm(3")		105 mm(4")	
Spindle speeds	Conventional type, 25~1545 RPM		Conventional type, 23~1293 RPM	
	Inverter type, (opt.) H: 2250~491 RPM M: 490~126 RPM L: 125~27 RPM		Inverter type, (opt.) H: 1500~331 RPM M: 330~93 RPM L: 92~20 RPM	
Carriage				
Gross slide travel	330 mm			
Compound rest travel	150 mm			
Tailstock				
Tailstock spindle dia.	75 mm			
Tailstock spindle travel	170 mm			
Tailstock spindle taper	MT#5			
Bed				
Bed width	350 mm			
Threading				
Lead screw	4 TPI or 6 mm/pitch			
Metric pitch threads	0.5-7 mm/pitch (24 kinds)			
Inch threads	4-56 TPI (36 kinds)			
Module pitch threads	0.25-3.5 M (16 kinds)			
DP threads	8-112 P (36 kinds)			
Feeding Range				
Range of longitudinal feeds	0.06-0.88 mm/rev (36 kinds)			
Range of cross feeds	0.03-0.44 mm/rev (36 kinds)			
Motor				
Main spindle motor	10 HP / 15 HP (opt.)			
Coolant pump motor	1/8 HP			
N.W. Approx.	2200 kgs	2350 kgs	2600 kgs	2600 kgs
G.W. Approx.	2400 kgs	2620 kgs	2930 kgs	3200 kgs

Note : We have the right to modify the specifications or designs. If there are subjected to change, without prior notice.

MODEL E-lathe	2540GH	2560GH	2580GH	25120GH
General Capacity				
Center height	315 mm			
Max. swing over bed	630 mm			
Max. swing over gap	810 mm (opt.)			
Max. swing over cross slide	450 mm			
Distance Bedween centers	1000 mm	1500 mm	2000 mm	3000 mm
Main Spindle				
Spindle nose	D1-8	A2-11	A2-11	
Spindle bore	85 mm(3")	105 mm(4") opt.	155 mm(6") opt.	
Spindle speeds	Conventional type, 25~1545 RPM	Conventional type, 23~1293 RPM	Conventional type, 15~840 RPM	
	Inverter type (opt.) H: 2250~491 RPM M: 490~126 RPM L: 125~27 RPM	Inverter type (opt.) H: 1500~331 RPM M: 330~93 RPM L: 92~20 RPM	Inverter type (opt.) H: 800~176 RPM M: 175~53 RPM L: 52~10 RPM	
Carriage				
Gross slide travel	330 mm			
Compound rest travel	150 mm			
Tailstock				
Tailstock spindle dia.	75 mm			
Tailstock spindle travel	170 mm			
Tailstock spindle taper	MT#5			
Bed				
Bed width	350 mm			
Threading				
Lead screw	4 TPI or 6 mm/pitch			
Metric pitch threads	0.5-7 mm/pitch (24 kinds)			
Inch threads	4-56 TPI (36 kinds)			
Module pitch threads	0.25-3.5 M (16 kinds)			
DP threads	8-112 P (36 kinds)			
Feeding Range				
Range of longitudinal feeds	0.06-0.88 mm/rev (36 kinds)			
Range of cross feeds	0.03-0.44 mm/rev (36 kinds)			
Motor				
Main spindle motor	10 HP / 15 HP (opt.)			
Coolant pump motor	1/8 HP			
N.W. Approx.	2250 kgs	2400 kgs	2650 kgs	2650 kgs
G.W. Approx.	2450 kgs	2670 kgs	2980 kgs	3250 kgs

Note : We have the right to modify the specifications or designs. If there are subjected to change, without prior notice.

DESCRIPTION OF MACHINE COMPONENTS



1. Headstock	11. Longitudinal handwheel	21. Coolant nozzle	31. Spindle lever location rod	41. Apron oil gauge	51. Gear box gauge	61. Bracket
2. Gear box	12. Crossfeed handwheel	22. Jog button	32. Spindle speed selection lever	42. Anti-slip mechanism	52. Adjustment screw	62. Leveling pads
3. Apron	13. Long/Cross feeding selection lever	23. Brake pedal	33. Feed selection lever	43. Speed turning knob	53. Motor posi. plate	63. Tailstock lock-
4. Tailstock	14. Half-nut engagement lever	24. Power on/off switch	34. Feed selection dial/lever	44. Speed selection switch	54. Idle (end) gear	ing nut
5. RPM meter	15. Thread chasing dial	25. Coolant on/off switch	35. Micro-limit switch	45. Emergency switch	55. Idle (end) gear large	
6. RPM speed chart	16. Saddle	26. Leveling screw	36. Apron lube pump handle	46. Feed selection chart	56. Double-stack idle gear	
7. Feed directional lever	17. Feed screw	27. Tailstock quill handwheel	37. Gear racks	47. Quill locking lever	57. Spindle pulley	
8. Feed selection lever	18. Leadscrew for threading	28. Gap	38. Multi-position stop collar	48. Tailstock posi. locking lever	58. V belts	
9. Oil gauge for headstock	19. Spindle rotation selection lever	29. Feed selection lever	39. Multi-position stop rod	49. Tailstock dial	59. Spindle motor	
10. Emergency switch	20. Quill for tailstock	30. Feed engagement lever	40. Cross-slide	50. Motor pulley	60. Machine base	

NOTES BEFORE OPERATION

UNPACKING

After unpacking the transporting wooden case which must inspected the machine carefully. If there are any shortages or damages on the package, please contact your local dealer immediately.

MOVING & LIFTING

Moving and lifting the machine by using a special hang fixture as shown on the figures and insert the special hang fixture in between the bedways of the machine. Raising and lowering the machine must be careful. Do not press the lead screw, spindle or other hand wheels etc. Be careful not to bump the machine against the floor! Before moving the machine, please check the following areas:

1. Locked & clamped the tailstock.
2. Locked the saddle lock.
3. Engaged half-nut with leadscrew.

Please use the following equipment to lift the machine.

1. An overhead crane which the safety loading weight is rated more than the machine weight itself, and a special hand fixture for machine lifting. (shown in figure 1)
2. Two safety straps with width of 80 mm, thickness of 6 mm and length of 4000mm. The safety loading weight of the straps is required same as the crane's. Wrap the straps under the ribs as shown, and then lift the machine in the slowest speed of the overhead crane. (shown in figure 2)

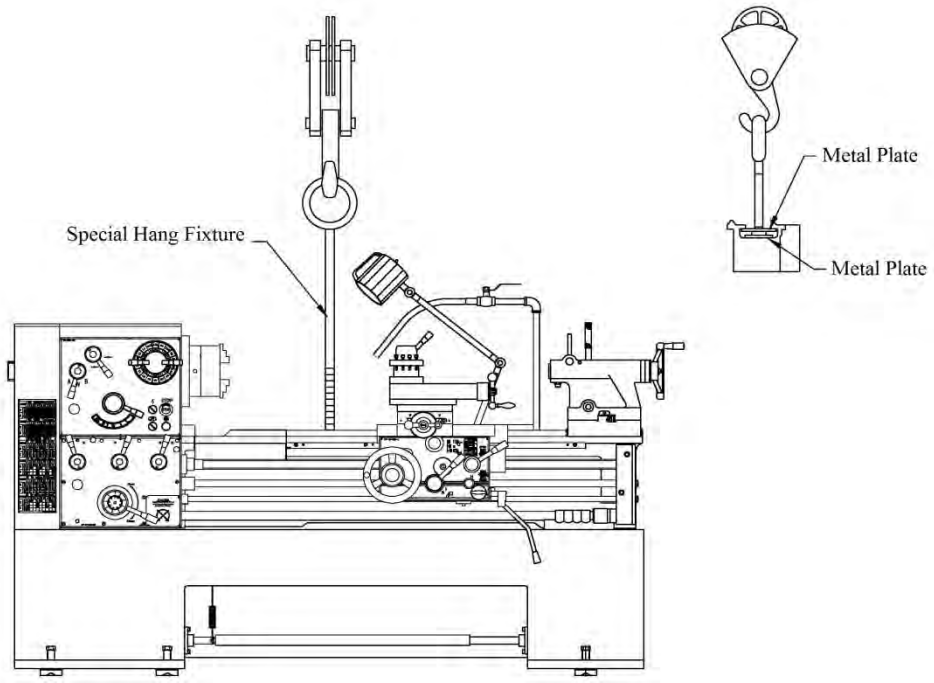


Figure 1

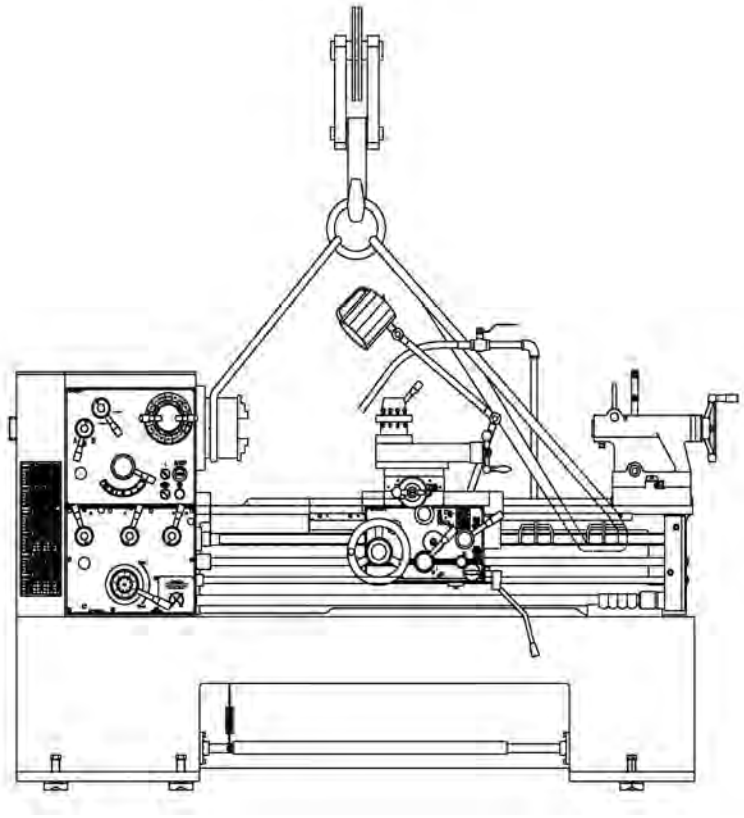


Figure 2

Note:

1. Machine must always be kept balanced during lifting.
2. Place protection material on any part of the machine that might be contacted by straps or metal plate.
3. Take the machine weight (refer to catalog) into consideration to determine the forklift or overhead crane's capacity.

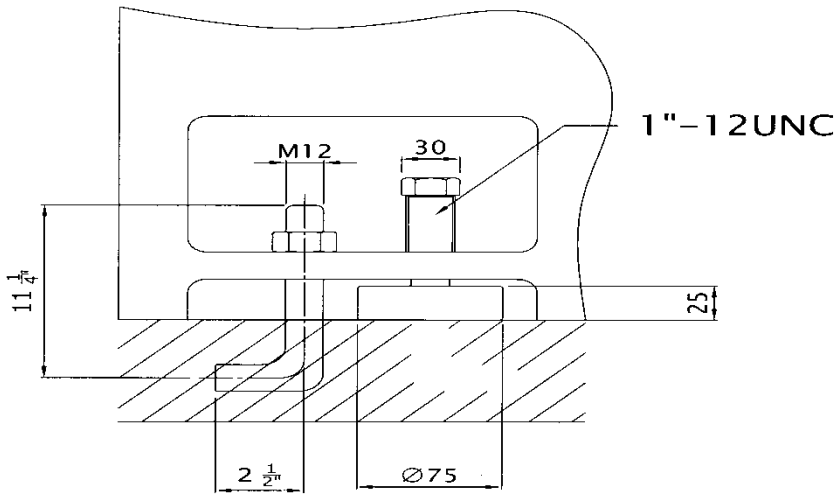
FOUNDATIONS

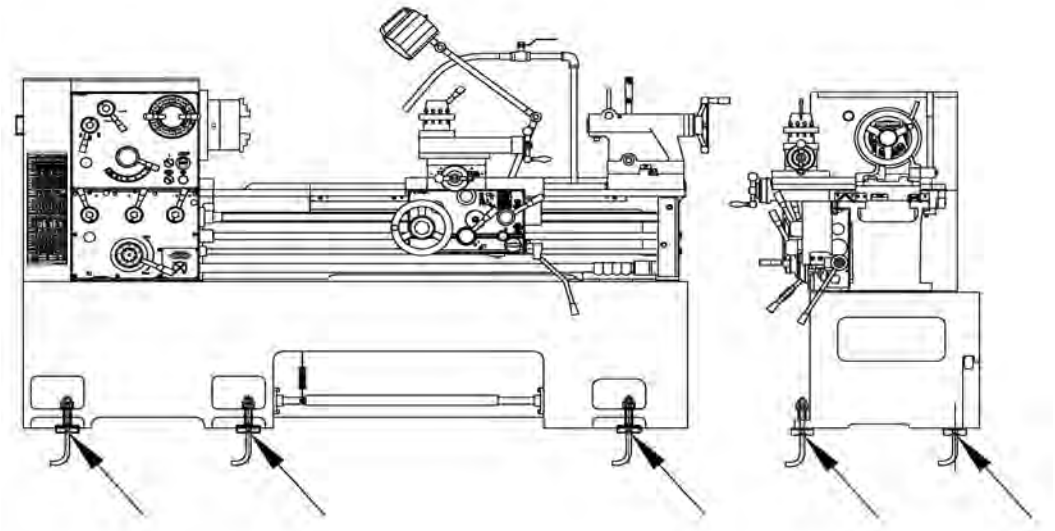
Due to the cutting speed and spindle speed are much higher than before, it is recommended to have a foundation done for the machine. The reasoning being an incomplete foundation will allow the machine to generate vibration and create an unstable condition. Since the foundation work should be done, an enough space and boundary are necessary for the machine to operate. It is recommended to install the machine at least 3 ft from the wall and from other machines.

LEVELING THE MACHINE

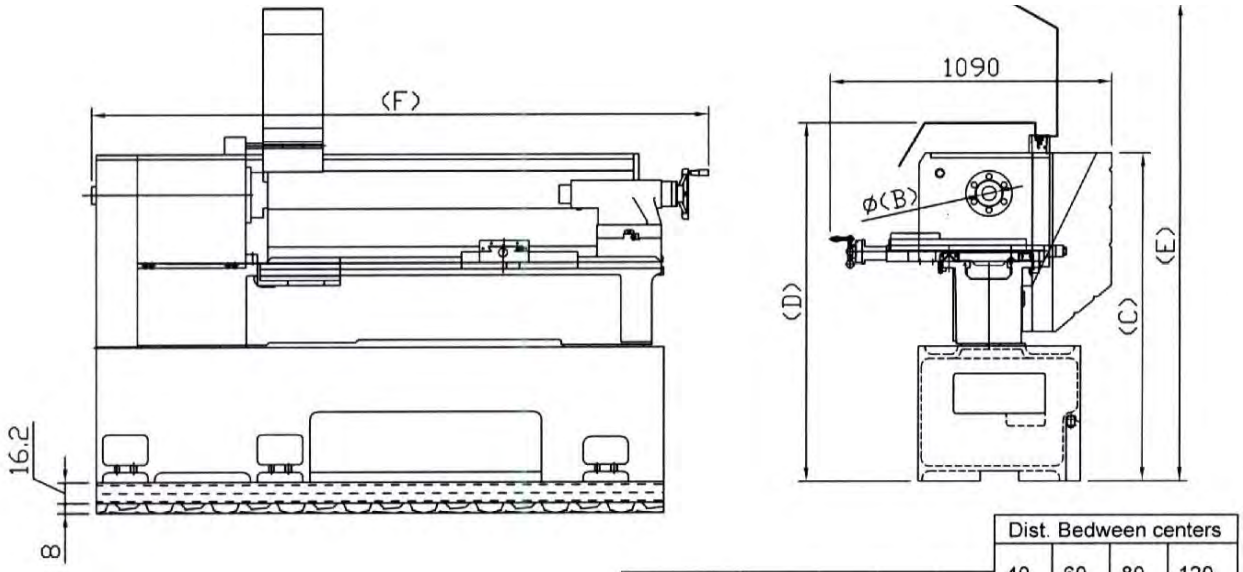
Anchor bolts and installation blocks must be fixed steadily into the cement. For alignment of the machine, please the square leveling gauge on the guide way of bed (The precision of the level should be 0.02mm/1000mm or more better) and measure the levelness of the bedways from left to right, so as to adjust the saddle, from both front and rear of the machines. Make sure the sensitivity range is within 0.04mm/1000mm.

After the leveling procedures are completed, fasten the foundation nuts. If the flatness has deviated by fastening nuts, then the machine must be re-level and re-measure, re-tightening the nuts again until no deviation is found!



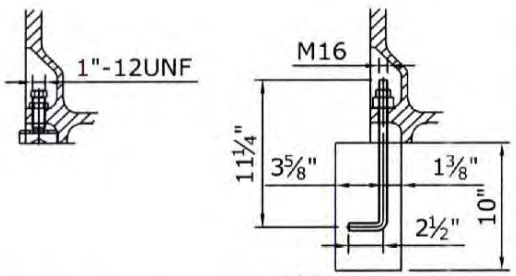


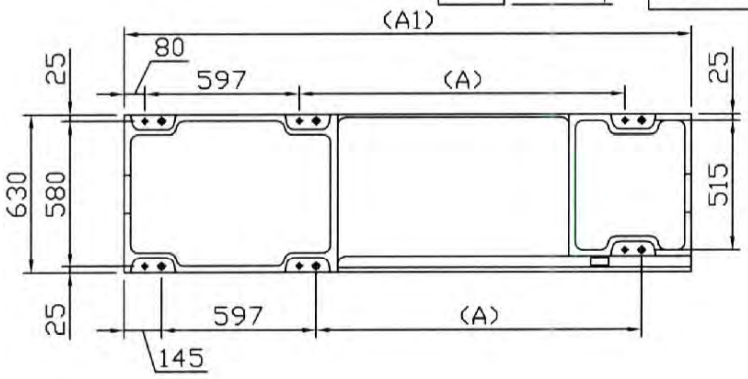
Foundation
map



MODEL	B	C	D	E	Dist. Bedween centers F 40	60	80	120
18 SERIES	2"(56)	1267	1387	1862	2385	2885	3385	
21 SERIES	3"(85)	1305	1425	1900	2390	2890	3390	4390
25 SERIES	3"(85)	1350	1470	1945	2390	2890	3390	4390
21 SERIES	4"(105)	1324	1444	1919	2390	2890	3390	4390
25 SERIES	4"(105)	1369	1489	1964	2390	2890	3390	4390
25 SERIES	6"(155)	1435	1555	2030	2400	2900	3400	4400

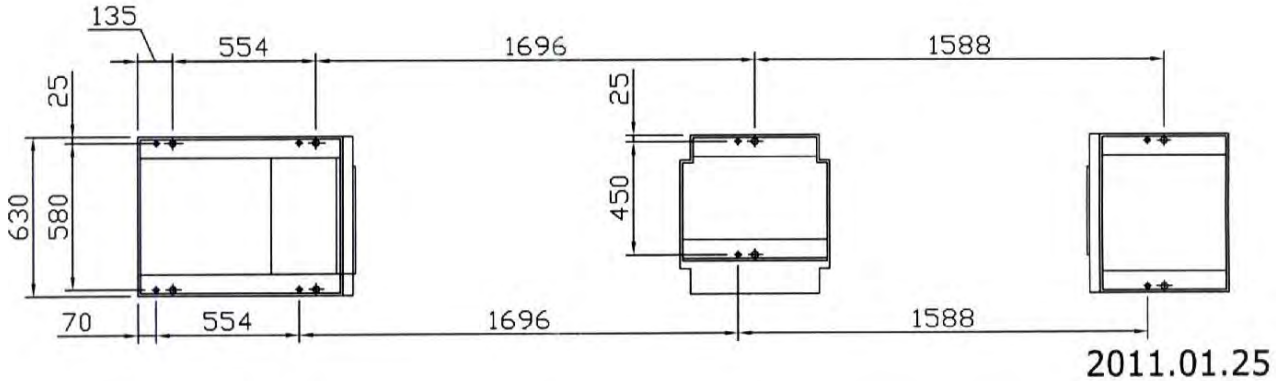
Unit : mm





MODEL	A	A1
1840/2140/2540	1255	2190
1860/2160/2560	1755	2690
1880/2180/2580	2255	3190

Unit : mm



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CLEAN UP

Anti-corrosive material was applied on the machine before transportation. To clean up the bedways, slideways, and lead screws etc., we can use dissolvable solvent to clean off the anti-corrosive material. Do not use lacquer, varnish or kerosene; apply lubricating oil to all the necessary areas. Please check all the handles and levers to see if they are functioning properly. If they are, please set all levers on the neutral position.

ELECTRICAL POWER CONNECTION

Electrical cabinet is provided at the rear top side of the headstock. In the cabinet, there is a separate sub-panel for all of the electrical components, transformers and fuses etc. We also provide the electrical connecting diagrams at the electrical component section.

CAUTIONS

After wiring, please check the spindle rotating direction by turning on the power switch or the jogging switch etc. If the spindle rotates in counterclockwise, it is the correct wiring. If it is not, we can interchange two of the connecting terminals (R.S.T.) to make it right, and we can turn the spindle on to double check the rotating direction again.

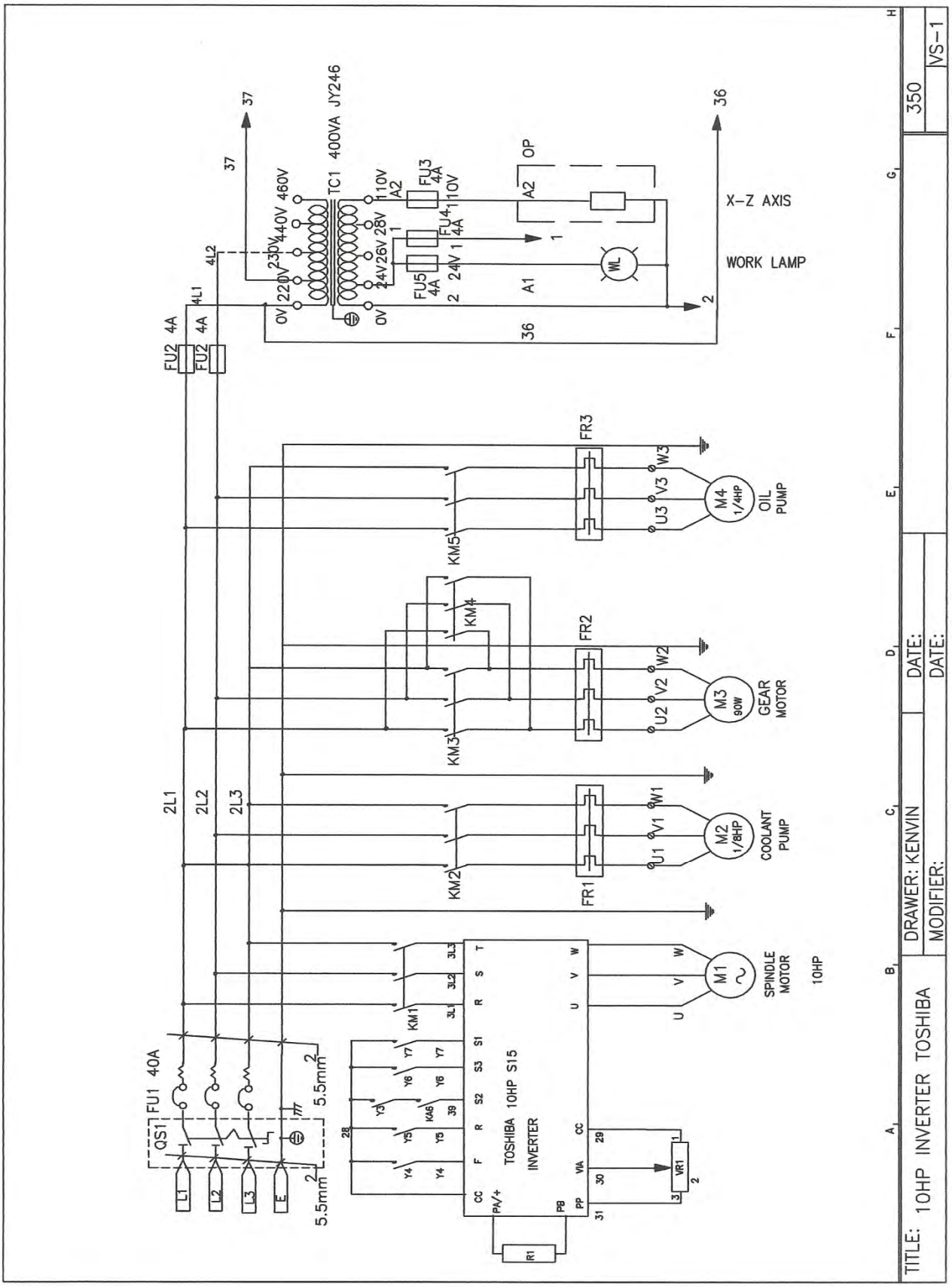
ELECTRICAL & CIRCUIT DIAGRAM

FOR MODEL : E-lathe 18” series

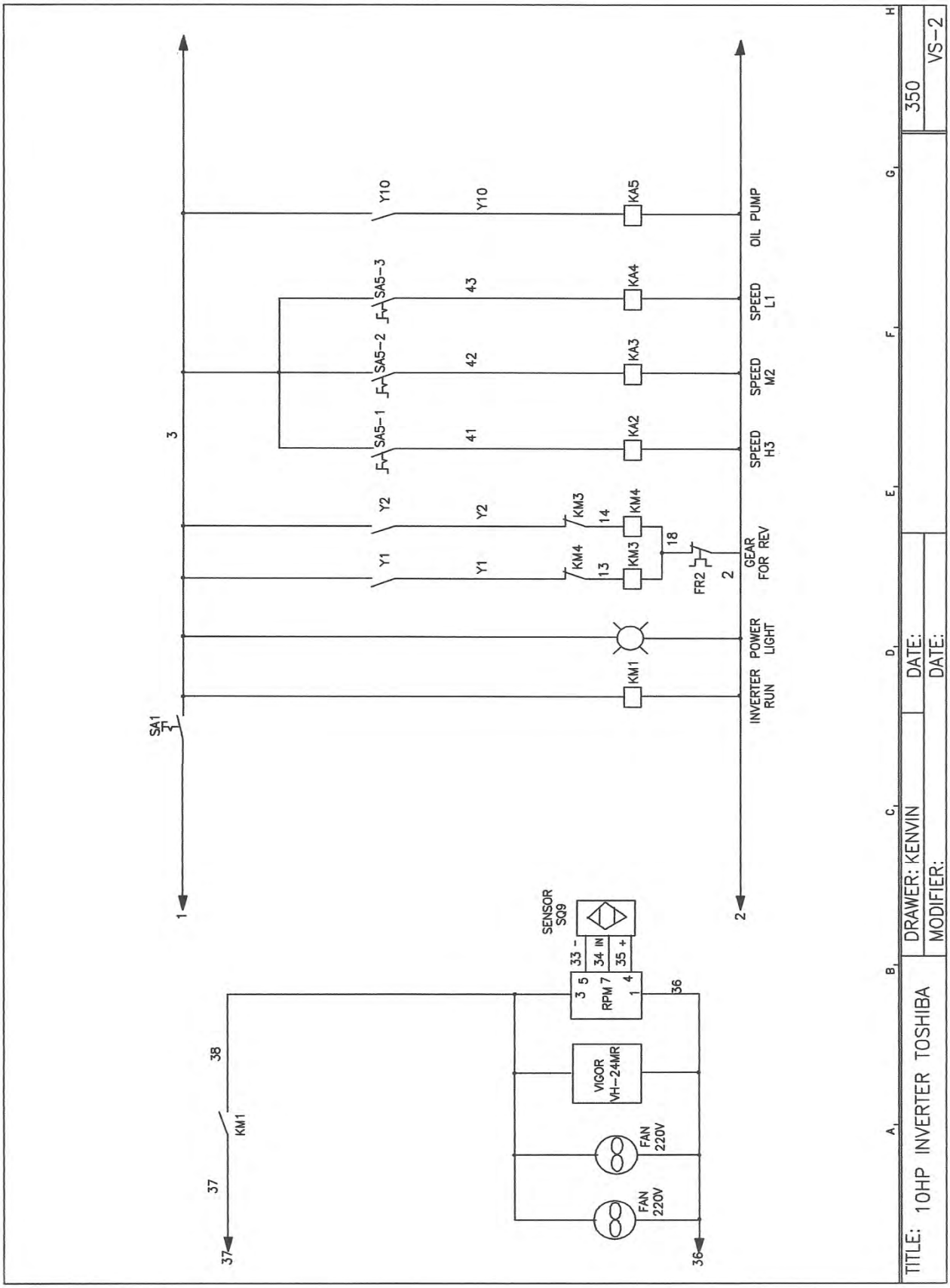
E-lathe 21”/25” series

E-lathe (SPEED CHANGE: 3 STEPS)

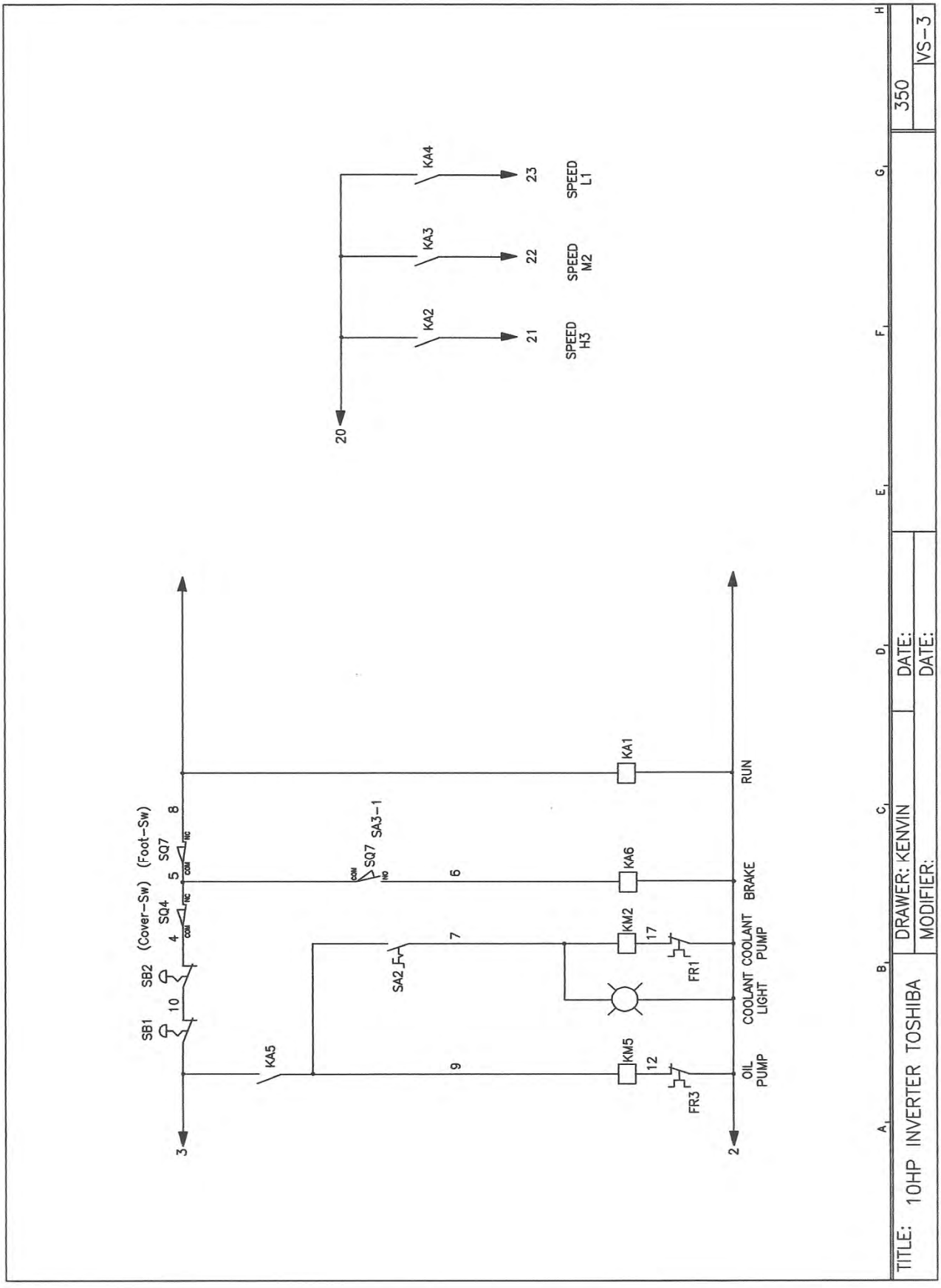
Electrical Diagram & Its Circuit



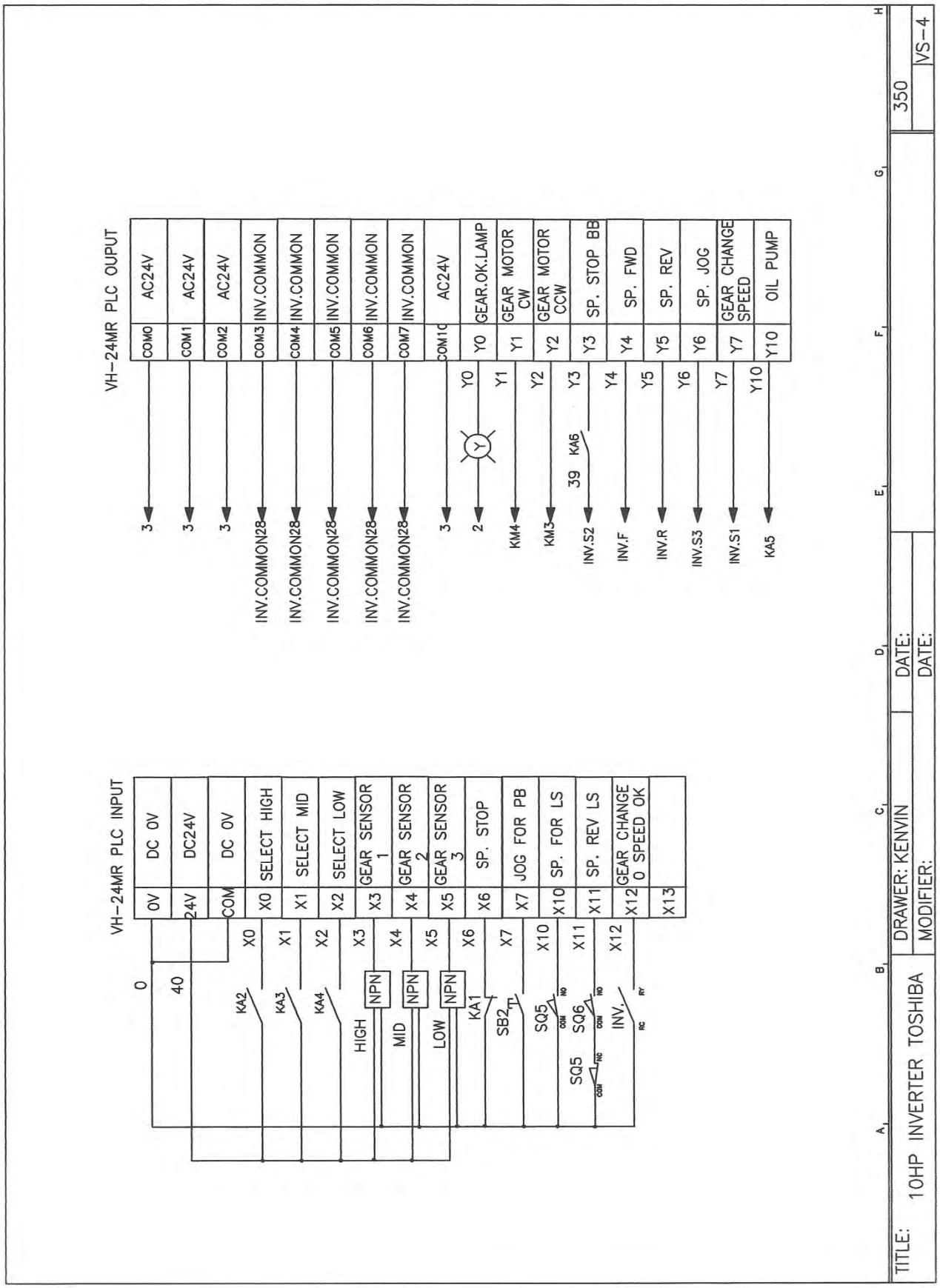
Electrical Diagram & Its Circuit



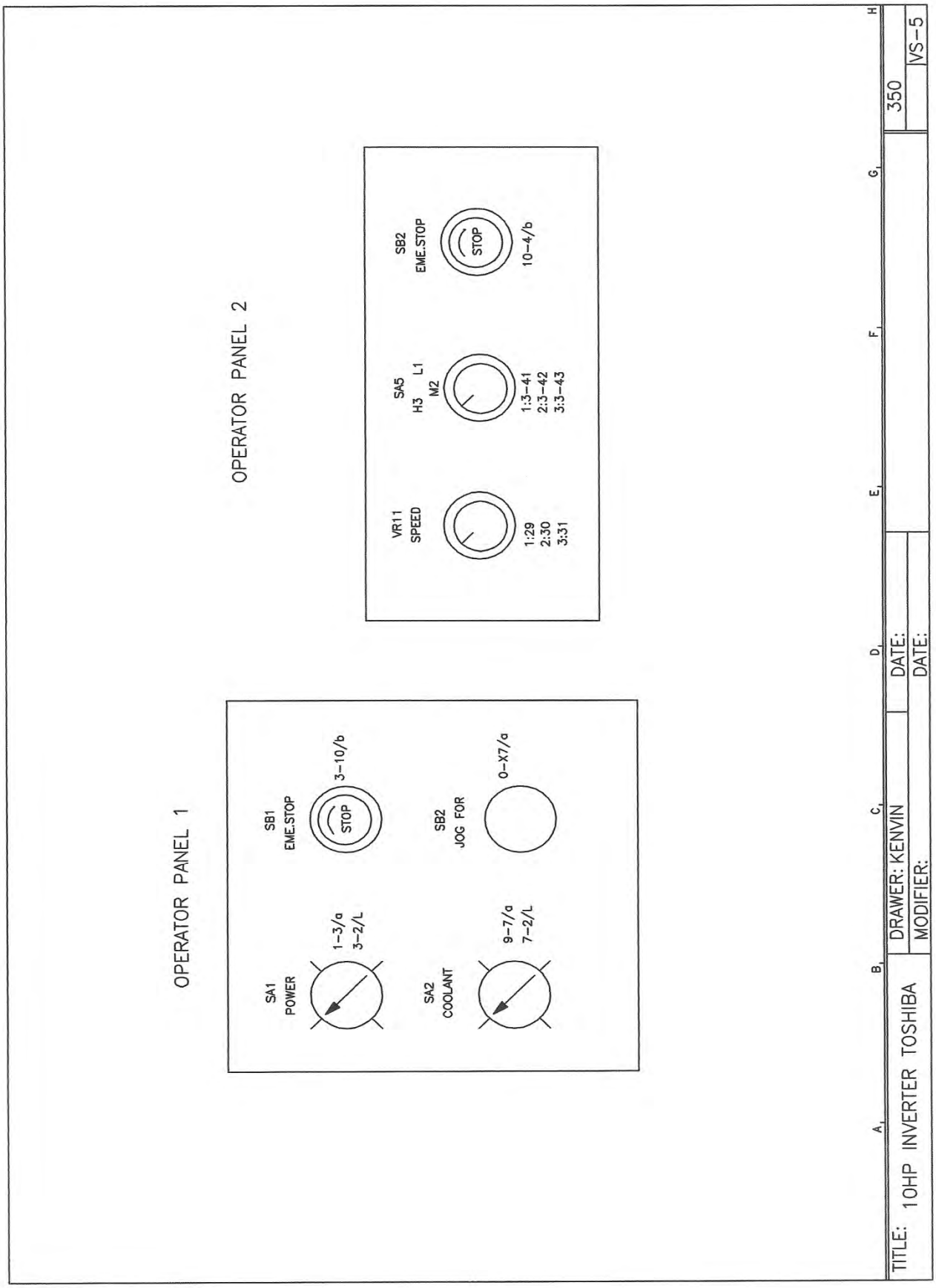
Electrical Diagram & Its Circuit



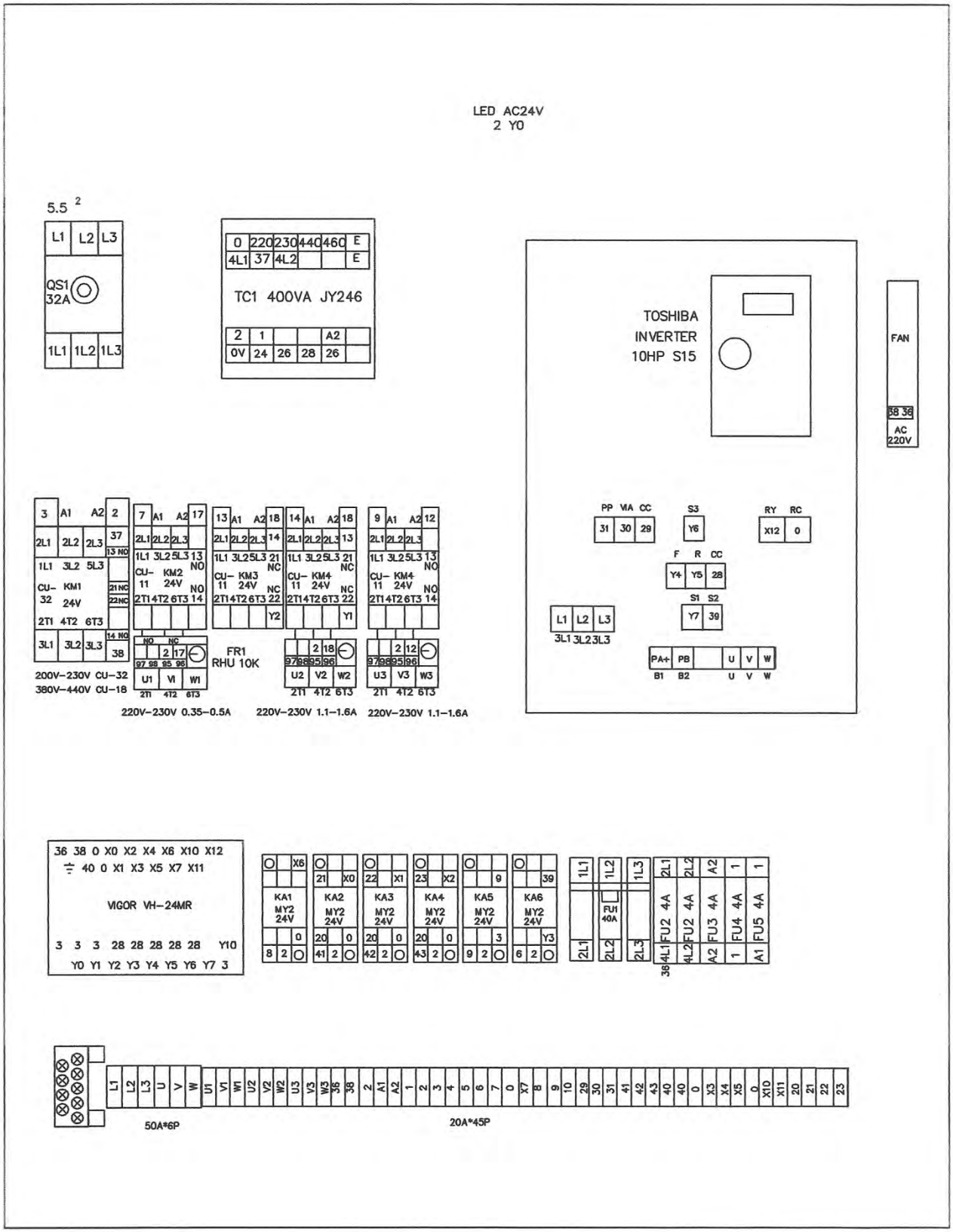
Electrical Diagram & Its Circuit



Control Panel Layout



Layout of Electrical Cabinet



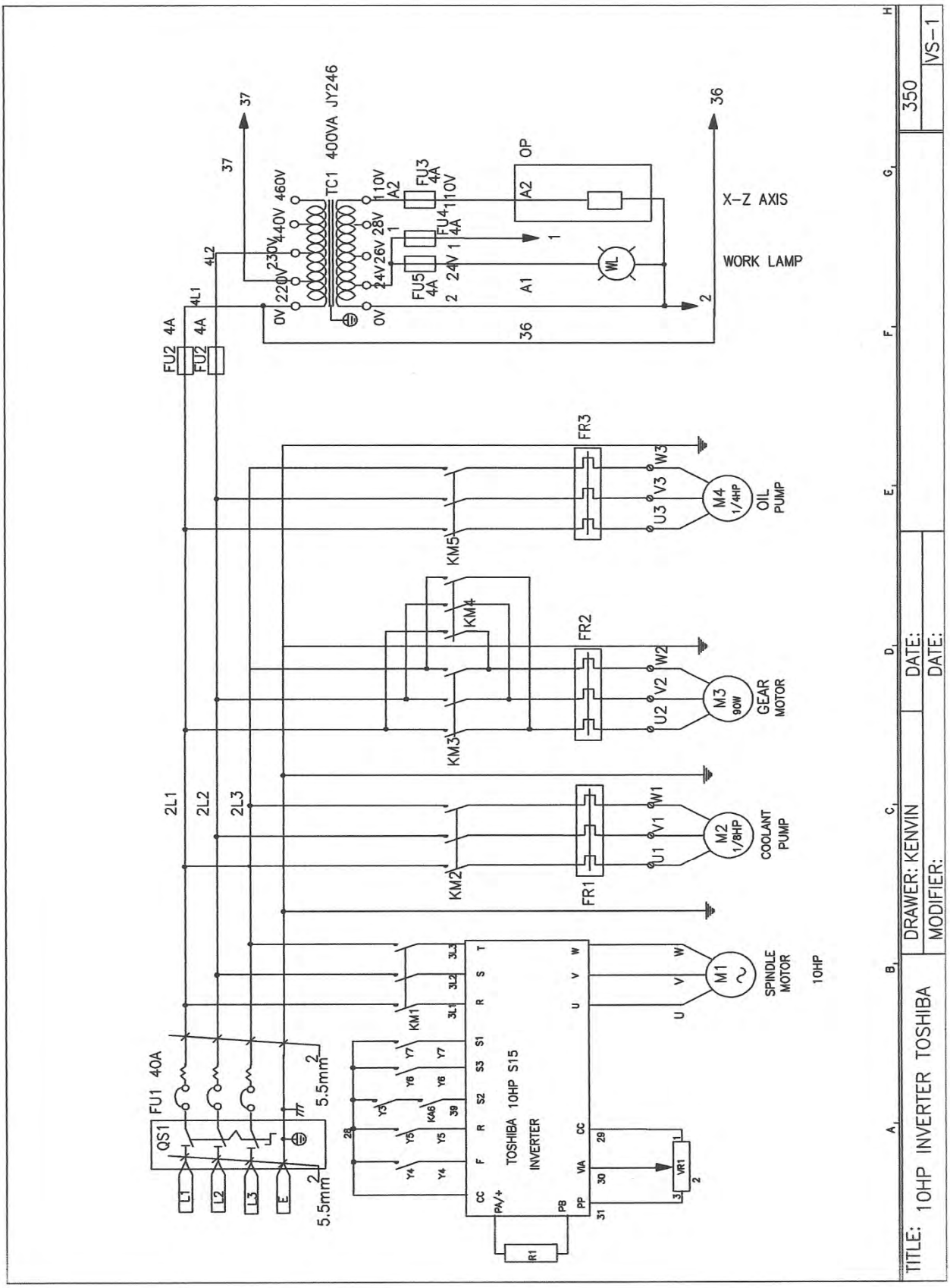
Electrical Component List

Model 21" series 230V 10HP INVERTER

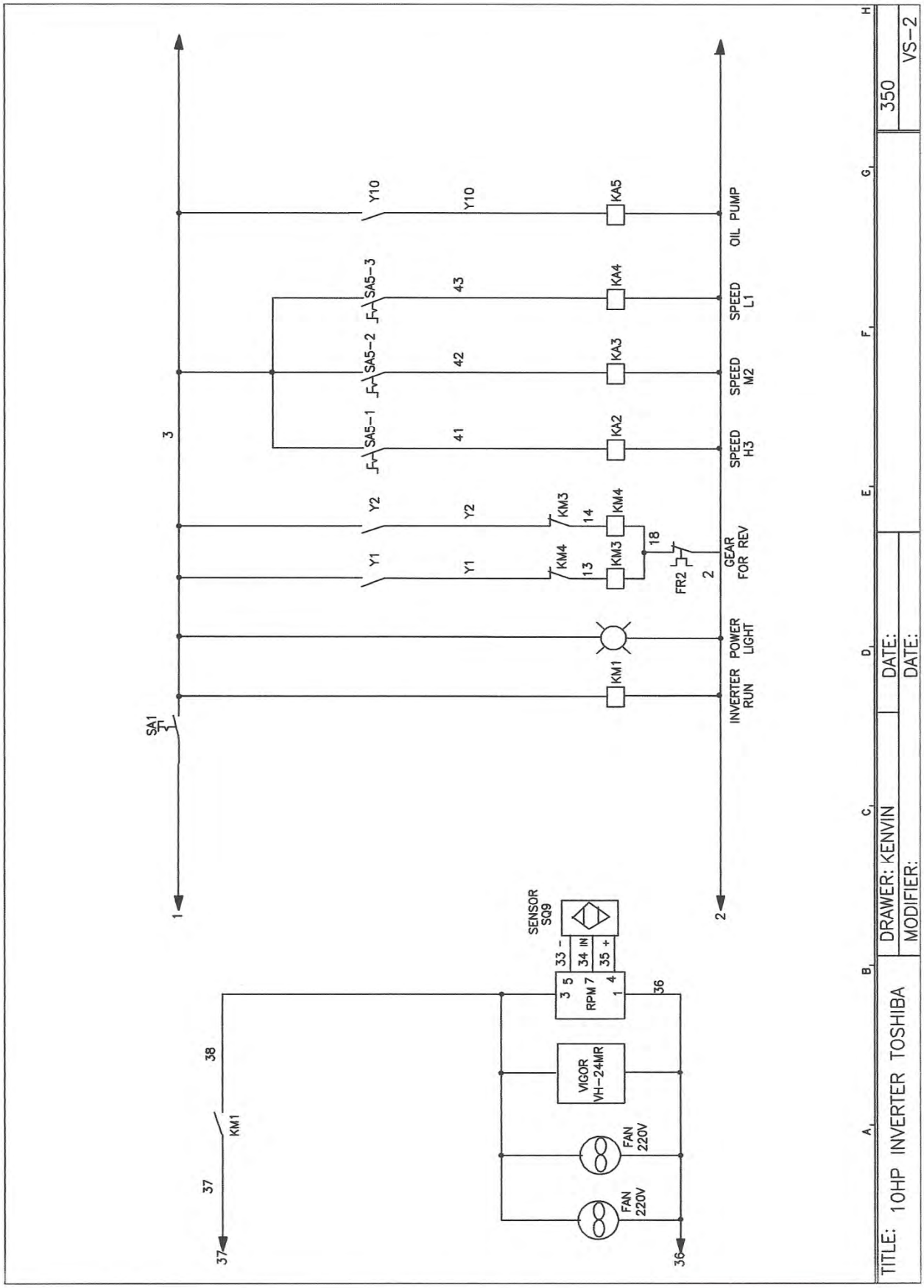
Item	Designation	Description and Function	Suppliers Reference	Technical data	Remarks
1	TC1	Transformer	JY246	400VA0V-460V	
2	QS1	Supply Disconnecting Switch	OT-32E3	690V/32A	CE/UL/CSA
3	FU1	NFB No Fuse Breaker	C-40	400V40A	CE
4	FU2	Fuse Blocks	RT18-32X	600V32A	CE
5	FU3	Fuse Blocks	RT18-32X	600V32A	CE
6	FU4	Fuse Blocks	RT18-32X	600V32A	CE
7	FU5	Fuse Blocks	RT18-32X	600V32A	CE
8	FU2	Fuse	10X38	4A	CE
9	FU3	Fuse	10X38	4A	CE
10	FU4	Fuse	10X38	4A	CE
11	FU5	Fuse	10X38	4A	CE
12	KM1	Power Magnetic Contacttor	CU32	Coil AC24V 220V 10HP	CE/UL/CSA
13	KM2	Coolant Magnetic Contacttor	CU11	Coil AC24V 220V 5HP	CE/UL/CSA
14	KM3	Gear Magnetic Contacttor	CU11	Coil AC24V 220V 5HP	CE/UL/CSA
15	KM4	Gear Magnetic Contacttor	CU11	Coil AC24V 220V 5HP	CE/UL/CSA
16	KM5	Oil Magnetic Contacttor	CU11	Coil AC24V 220V 5HP	CE/UL/CSA
17	KA1	Run Relay	MY2	Coil AC24V	CE/UL/CSA
18	KA2	Speed Hi Relay	MY2	Coil AC24V	CE/UL/CSA
19	KA3	Speed Ma Relay	MY2	Coil AC24V	CE/UL/CSA
20	KA4	Speed Lo Relay	MY2	Coil AC24V	CE/UL/CSA
21	KA5	Oil pump Relay	MY2	Coil AC24V	CE/UL/CSA
22	KA6	Brake Relay	MY2	Coil AC24V	CE/UL/CSA
23	FR1	Coolant Overload Relay	RHU10K	0.35-0.5A	CE/UL/CSA
24	FR2	Gear Overload Relay	RHU10K	1.1-1.6A	CE/UL/CSA
25	FR3	Oil Overload Relay	RHU10K	1.1-1.6A	CE/UL/CSA
26	X1	Terminal Blocks	TB50A*6P	600V/50A	CE/UL
27	X2	Terminal Blocks	TB20A*48P	600V/ 20A	CE/UL
28	SA1	Power Selection Switch	SL22-1/O	120V/6A/1a/24V(G)	CE/UL/CSA
29	SA2	Coolant Selection Switch	SL22-1/O	120V/6A/1a/24V(G)	CE/UL/CSA
30	SA3	Ripid Selection Switch	SL22-2/O 1-0-2	120V/6A/2a(B)	CE/UL/CSA
31	SB1	Emergency Stop	LEB22-1/C/O	120V/6A/1b(R)	CE/UL/CSA
32	SB2	Jogging Push Button Switch	LBF22-1/O	120V/6A/1a(G)	CE/UL/CSA
33	SB3	Emergency Stop	LEB22-1/C/O	120V/6A/1b(R)	CE/UL/CSA
34	SQ1	Hi Gear Sensor	TS12-02N-1	24VDC	CE
35	SQ2	Ma Gear Sensor	TS12-02N-1	24VDC	CE
36	SQ3	Lo Gear Sensor	TS12-02N-1	24VDC	CE
37	SQ4	End Cover Limit Switch	AM-1701	250V/15A	CE
38	SQ5	For Limit Switch	AM-1704	250V/15A	CE
39	SQ6	Rev Limit Switch	AM-1704	250V/15A	CE
31	SQ7	Brake Limit Switch	AM-1704	250V/15A	CE
32	SQ9	Speed Sensor	TL-E5NE1	24VDC	CE
33	PLC	Programable Logic Controlle	VH-24MR	100-250VAC	CE
34	10HP	Inverter	VFD055B43A	230V7.5KW	CE /UL
35	RPM	Spindle Rpm	RLF-40K	110V/220V	
36	M1	Spindle Motor	230V 10HP	230V 7.5KW	
37	M2	Coolant Motor	230V 1/8HP	230V 0.2KW	
38	M3	Gear Motor	230V 1/4HP	230V 0.093KW	
39	M4	Oil pump Motor	230V 1/4HP	230V 0.093KW	
40	El	Work Light	A-l81A	AC-24V/70W	

E-lathe (SPEED CHANGE : 3 STEPS) + Z-AXIS RAPID TRAVEL

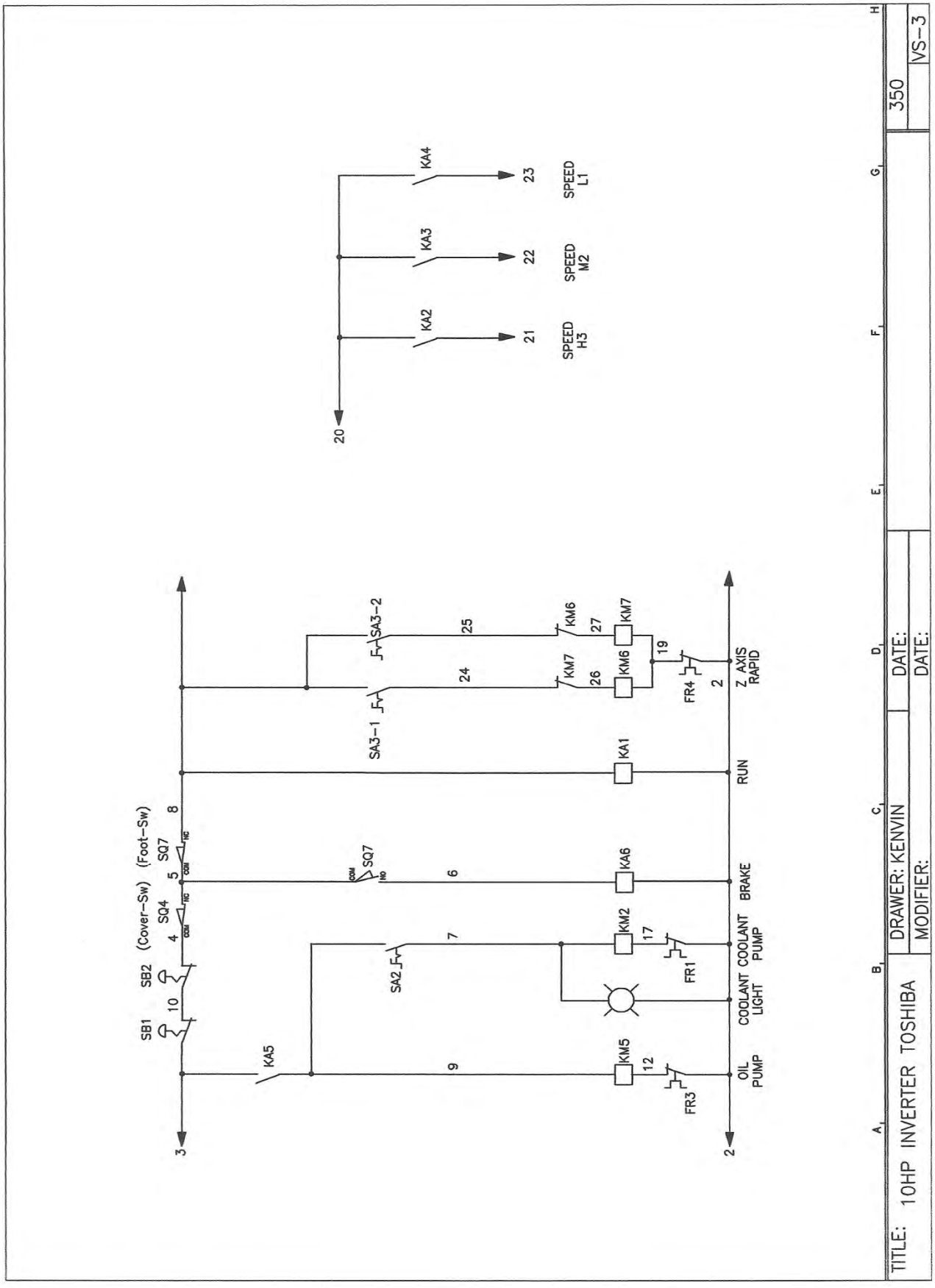
Electrical Diagram & Its Circuit



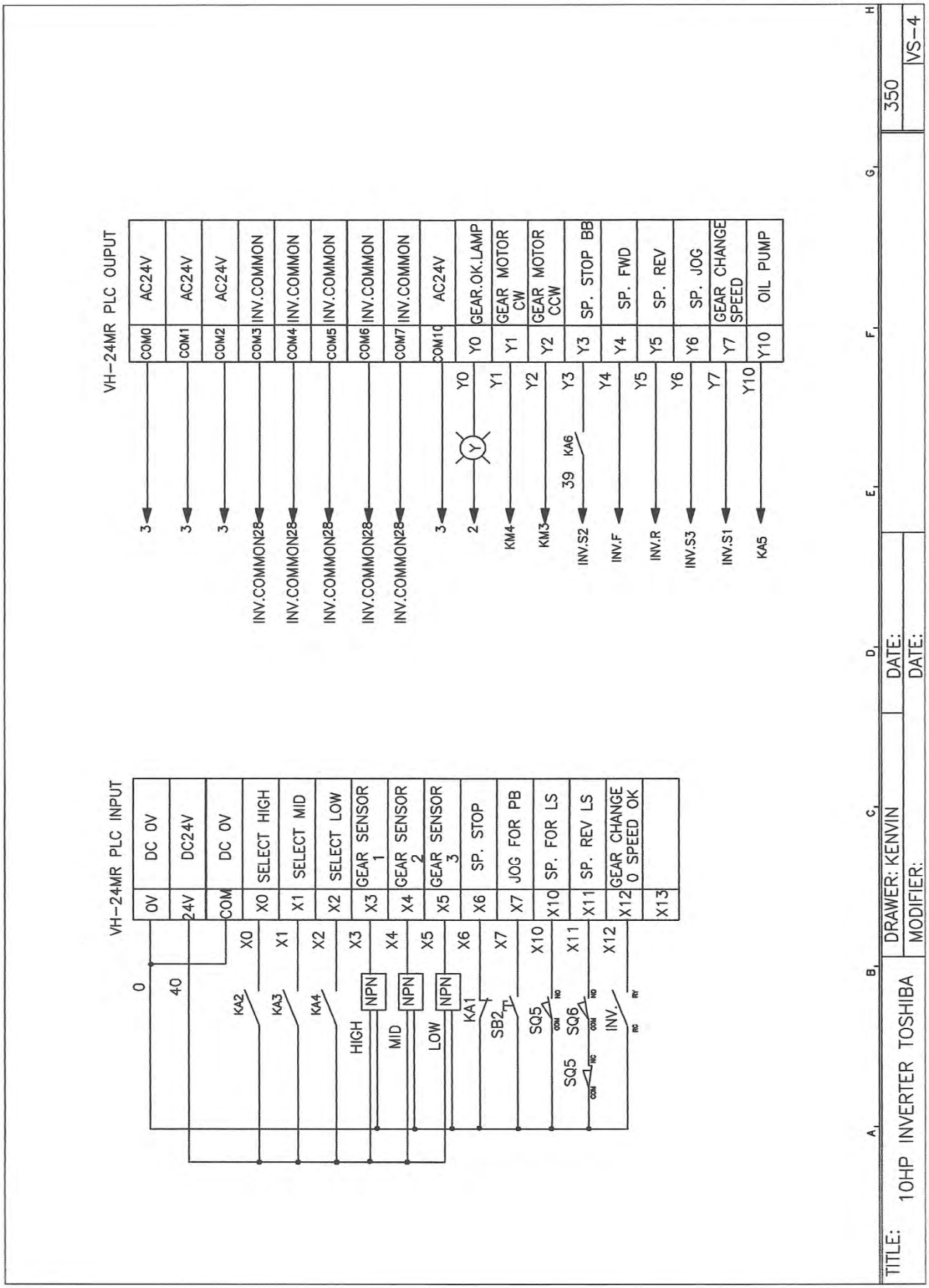
Electrical Diagram & Its Circuit



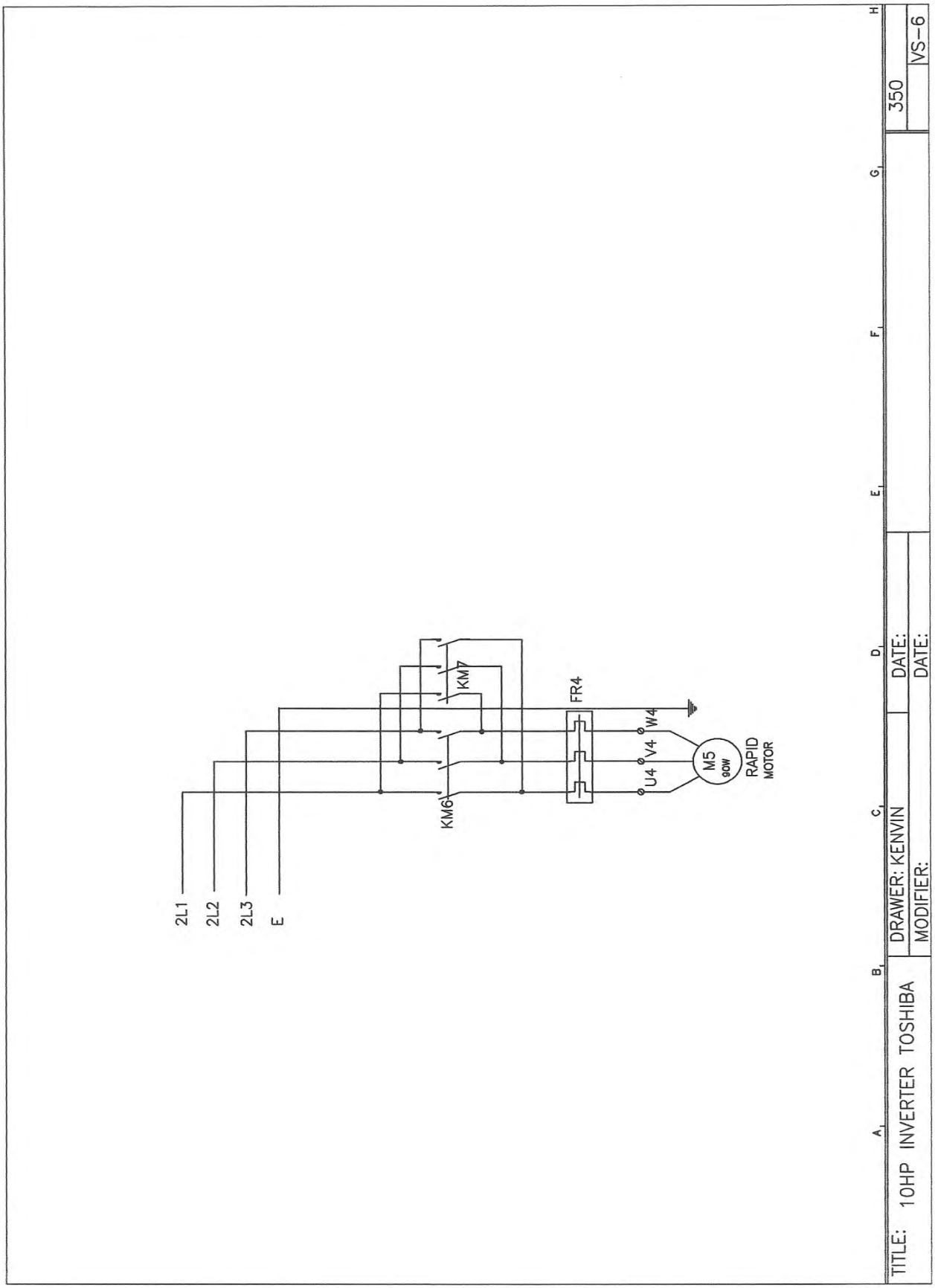
Electrical Diagram & Its Circuit



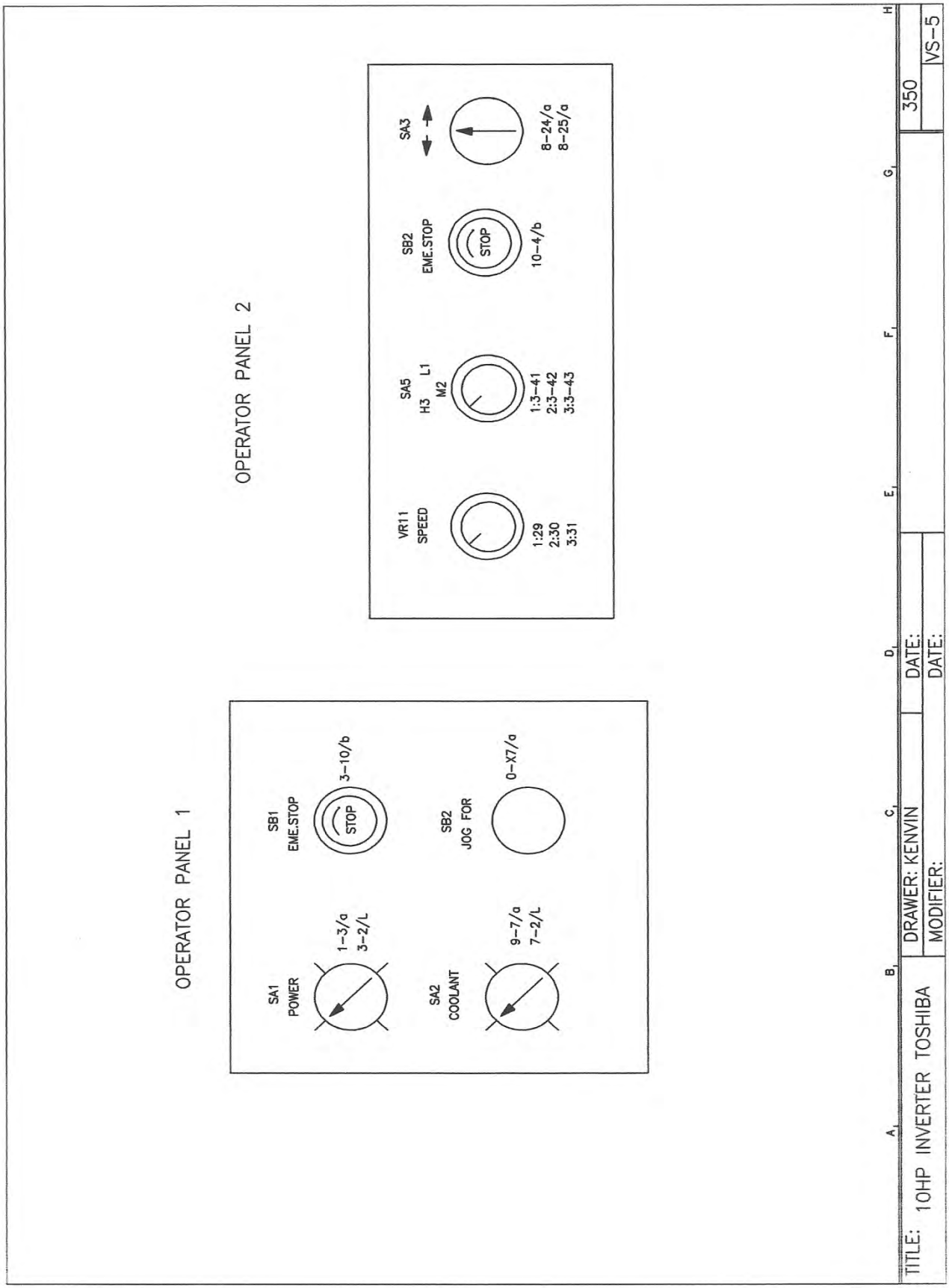
Electrical Diagram & Its Circuit



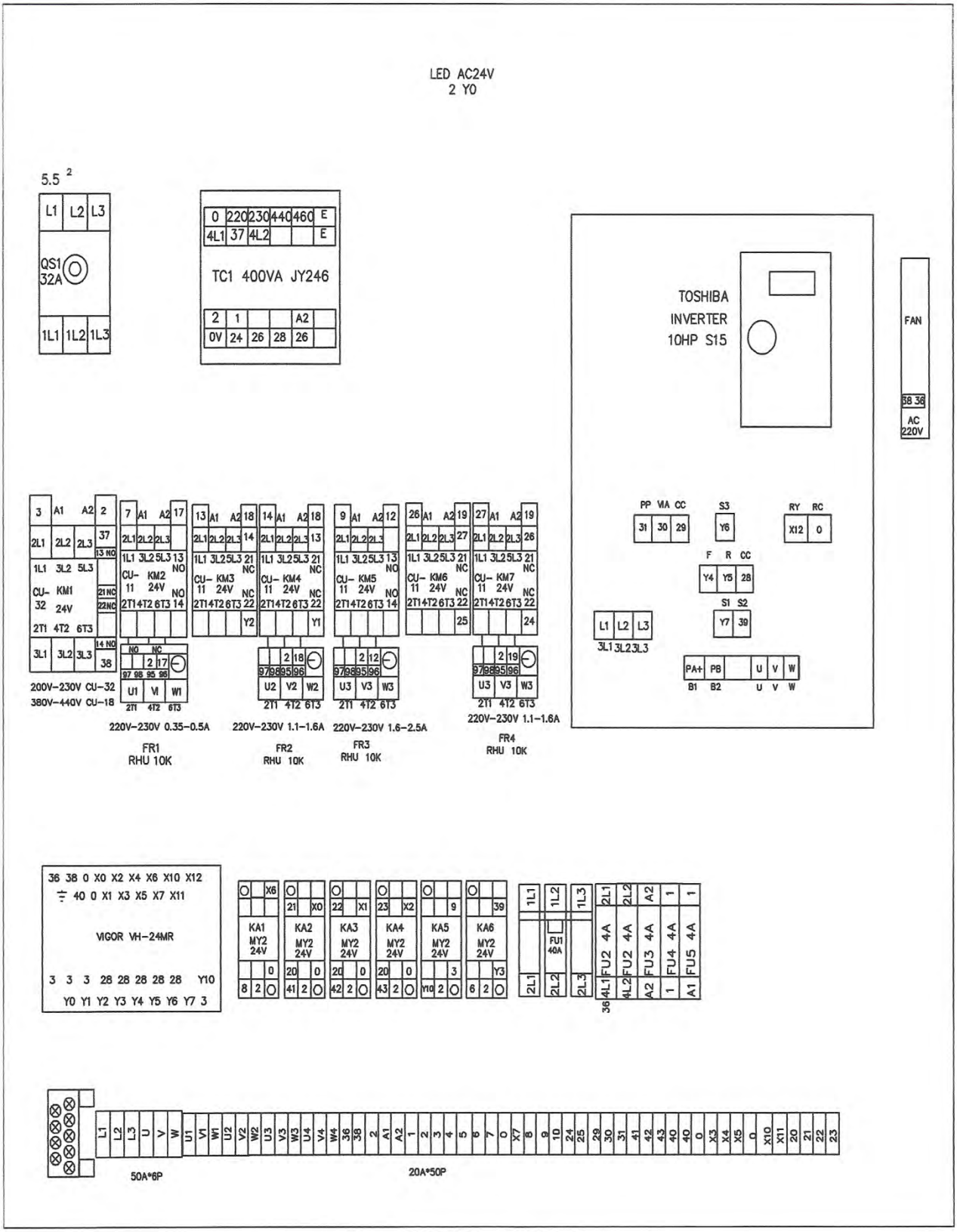
Electrical Diagram & Its Circuit



Control Panel Layout



Layout of Electrical Cabinet



Electrical Component List

		Model	21", 25" SERIES 230V 10HP INVERTER		
			Z AXIS WITH RIPID TRAVEL		
Item	Part#	Description and Function	Suppliers item#	Technical data	Remarks
1	TC1	Transformer	JY246	400VA0V-460V	
2	QS1	Supply Disconnecting Switch	OT-32E3	690V/32A	CE/UL/CSA
3	FU1	NFB No Fuse Breaker	C-40	400V40A	CE
4	FU2	Fuse Blocks	RT18-32X	600V32A	CE
5	FU3	Fuse Blocks	RT18-32X	600V32A	CE
6	FU4	Fuse Blocks	RT18-32X	600V32A	CE
7	FU5	Fuse Blocks	RT18-32X	600V32A	CE
8	FU2	Fuse	10X38	4A	CE
9	FU3	Fuse	10X38	4A	CE
10	FU4	Fuse	10X38	4A	CE
11	FU5	Fuse	10X38	4A	CE
12	KM1	Power Magnetic Contactor	CU32	Coil AC24V 220V 10HP	CE/UL/CSA
13	KM2	Coolant Magnetic Contactor	CU11	Coil AC24V 220V 5HP	CE/UL/CSA
14	KM3	Gear Magnetic Contactor	CU11	Coil AC24V 220V 5HP	CE/UL/CSA
15	KM4	Gear Magnetic Contactor	CU11	Coil AC24V 220V 5HP	CE/UL/CSA
16	KM5	Oil Magnetic Contactor	CU11	Coil AC24V 220V 5HP	CE/UL/CSA
17	KM6	Rapid Magnetic Contactor	CU11	Coil AC24V 220V 5HP	CE/UL/CSA
18	KM7	Rapid Magnetic Contactor	CU11	Coil AC24V 220V 5HP	CE/UL/CSA
19	KA1	Run Relay	MY2	Coil AC24V	CE/UL/CSA
20	KA2	Speed Hi Relay	MY2	Coil AC24V	CE/UL/CSA
21	KA3	Speed Mid Relay	MY2	Coil AC24V	CE/UL/CSA
22	KA4	Speed Low Relay	MY2	Coil AC24V	CE/UL/CSA
23	KA5	Oil Pump Relay	MY2	Coil AC24V	CE/UL/CSA
24	KA6	Brake Relay	MY2	Coil AC24V	CE/UL/CSA

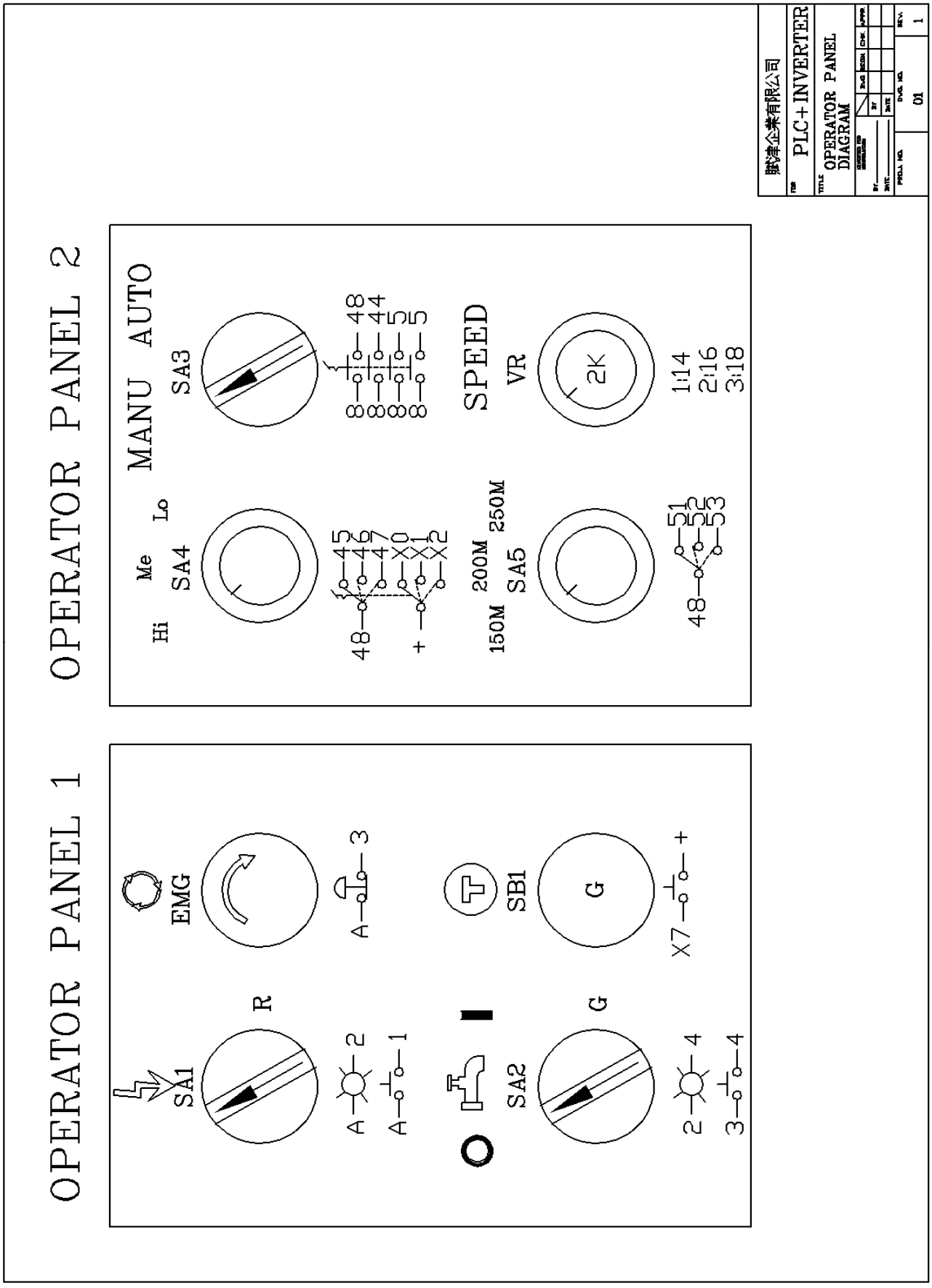
25	FR1	Coolant Overload Relay	RHU10K	0.35-0.5A	CE/UL/CSA
26	FR2	Gear Overload Relay	RHU10K	1.1-1.6A	CE/UL/CSA
27	FR3	Oil Overload Relay	RHU10K	1.6-2.5A	CE/UL/CSA
28	FR4	Rapid Overload Relay	RHU10K	1.6-2.5A	CE/UL/CSA
29	X1	Terminal Blocks	TB50A*6P	600V/50A	CE/UL
30	X2	Terminal Blocks	TB20A*48P	600V/ 20A	CE/UL
31	SA1	Power Selection Switch	SL22-1/O	120V/6A/1a/24V(G)	CE/UL/CSA
32	SA2	Coolant Selection Switch	SL22-1/O	120V/6A/1a/24V(G)	CE/UL/CSA
33	SA3	Rapid Selection Switch	SL22-2/O 1-0-2	120V/6A/2a(B)	CE/UL/CSA
34	SB1	Emergency Stop	LEB22-1/C/O	120V/6A/1b(R)	CE/UL/CSA
35	SB2	Jogging Push Button Switch	LBF22-1/O	120V/6A/1a(G)	CE/UL/CSA
36	SB3	Emergency Stop	LEB22-1/C/O	120V/6A/1b(R)	CE/UL/CSA
37	SQ1	Hi Gear Sensor	TS12-02N-1	24VDC	CE
38	SQ2	Mid Gear Sensor	TS12-02N-1	24VDC	CE
39	SQ3	Low Gear Sensor	TS12-02N-1	24VDC	CE
31	SQ4	End Cover Limit Switch	AM-1701	250V/15A	CE
32	SQ5	Forward Limit Switch	AM-1704	250V/15A	CE
33	SQ6	Reverse Limit Switch	AM-1704	250V/15A	CE
34	SQ7	Brake Limit Switch	AM-1704	250V/15A	CE
35	SQ9	Speed Sensor	TL-E5NE1	24VDC	CE
36	PLC	Programmable Logic Controller	VH-24MR	100-250VAC	CE
37	10HP	Inverter	VFD055B43A	230V7.5KW	CE /UL
38	RPM	Spindle RPM	RLF-40K	110V/220V	
39	M1	Spindle Motor	230V 10HP	230V 7.5KW	
40	M2	Coolant Motor	230V 1/8HP	230V 0.093KW	
41	M3	Gear Motor	230V 1/4HP	230V 0.2KW	
42	M4	Oil pump Motor	230V 1/4HP	230V 0.2KW	
43	El	Work Light	A-l81A	AC-24V/70W	

ELECTRICAL CIRCUIT DIAGRAM FOR CE REQUIREMENT

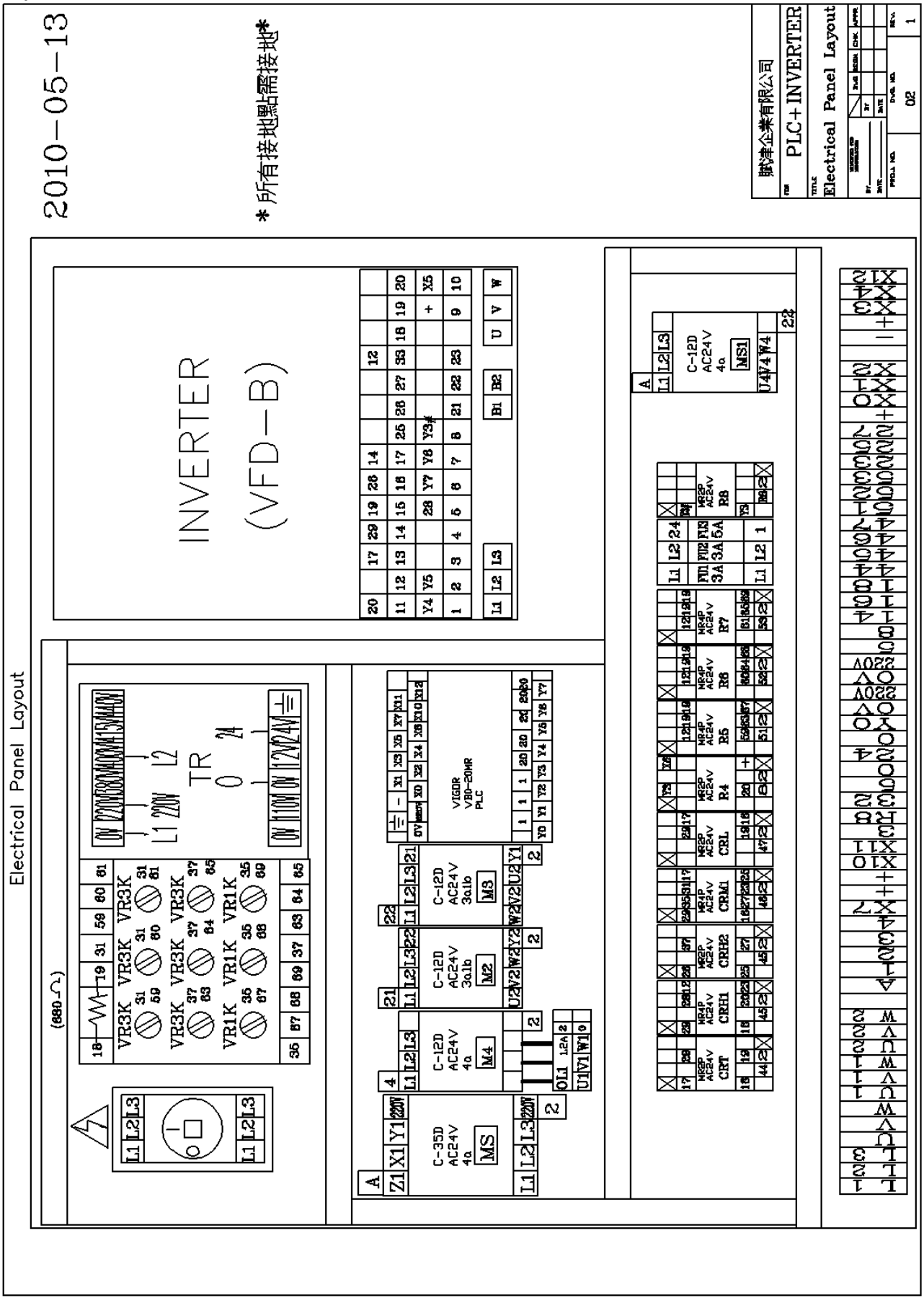
FOR MODEL : E-lathe 18” series

E-lathe 21”/25” series

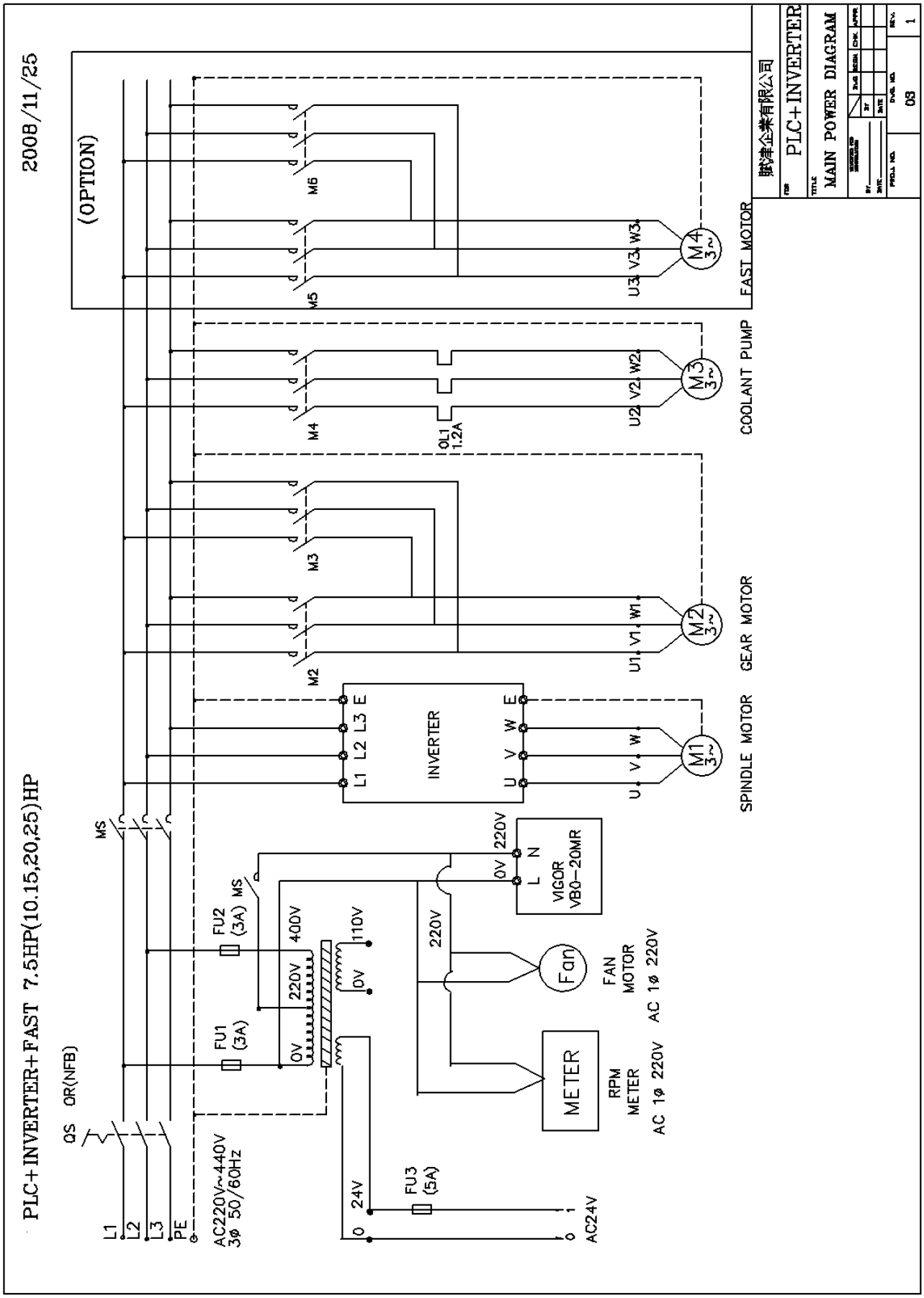
CE _Inverter Type Lathe (SPEED CHANGE: 3 STEP)
Control Panel Layout



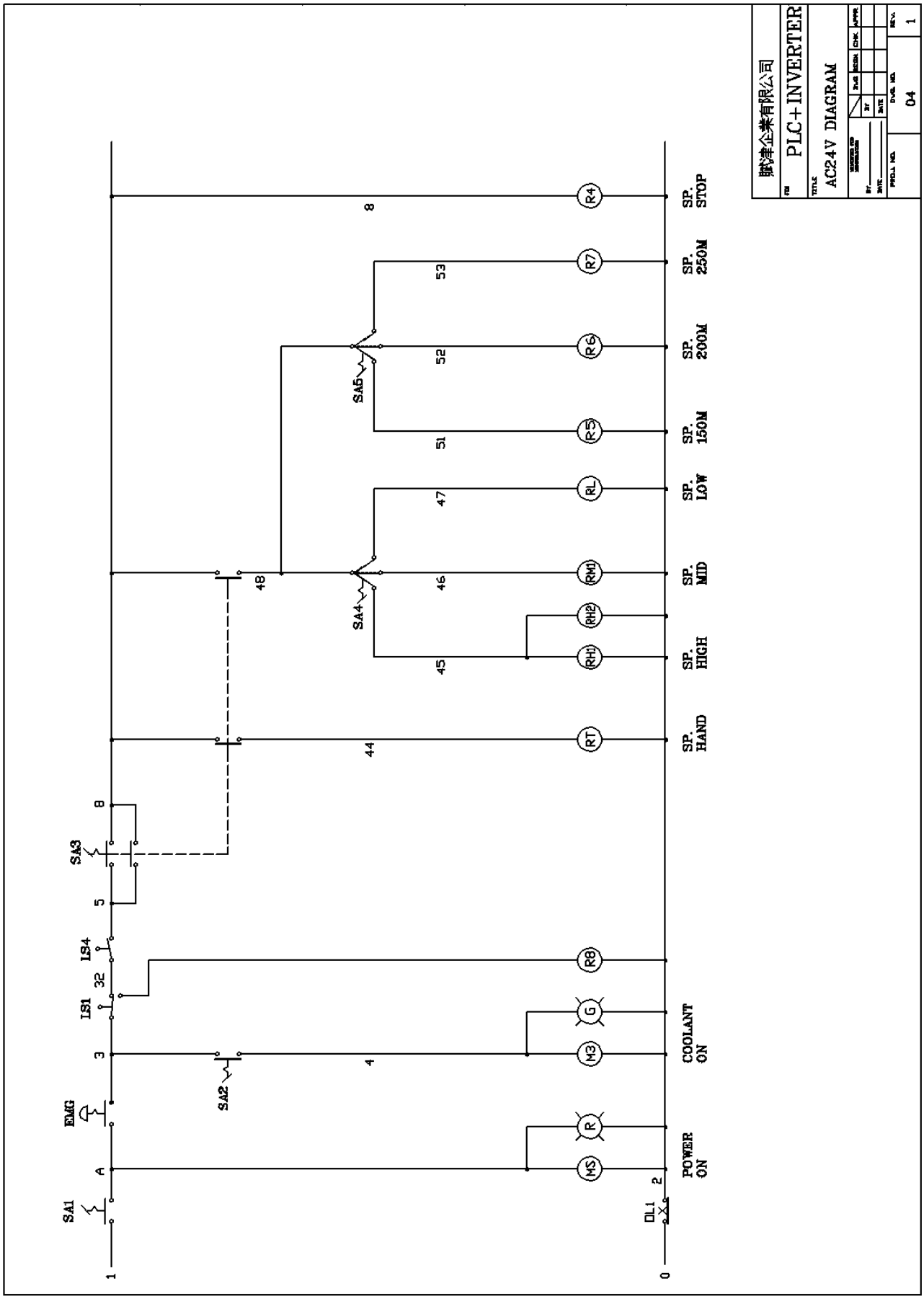
Layout of Electrical Cabinet



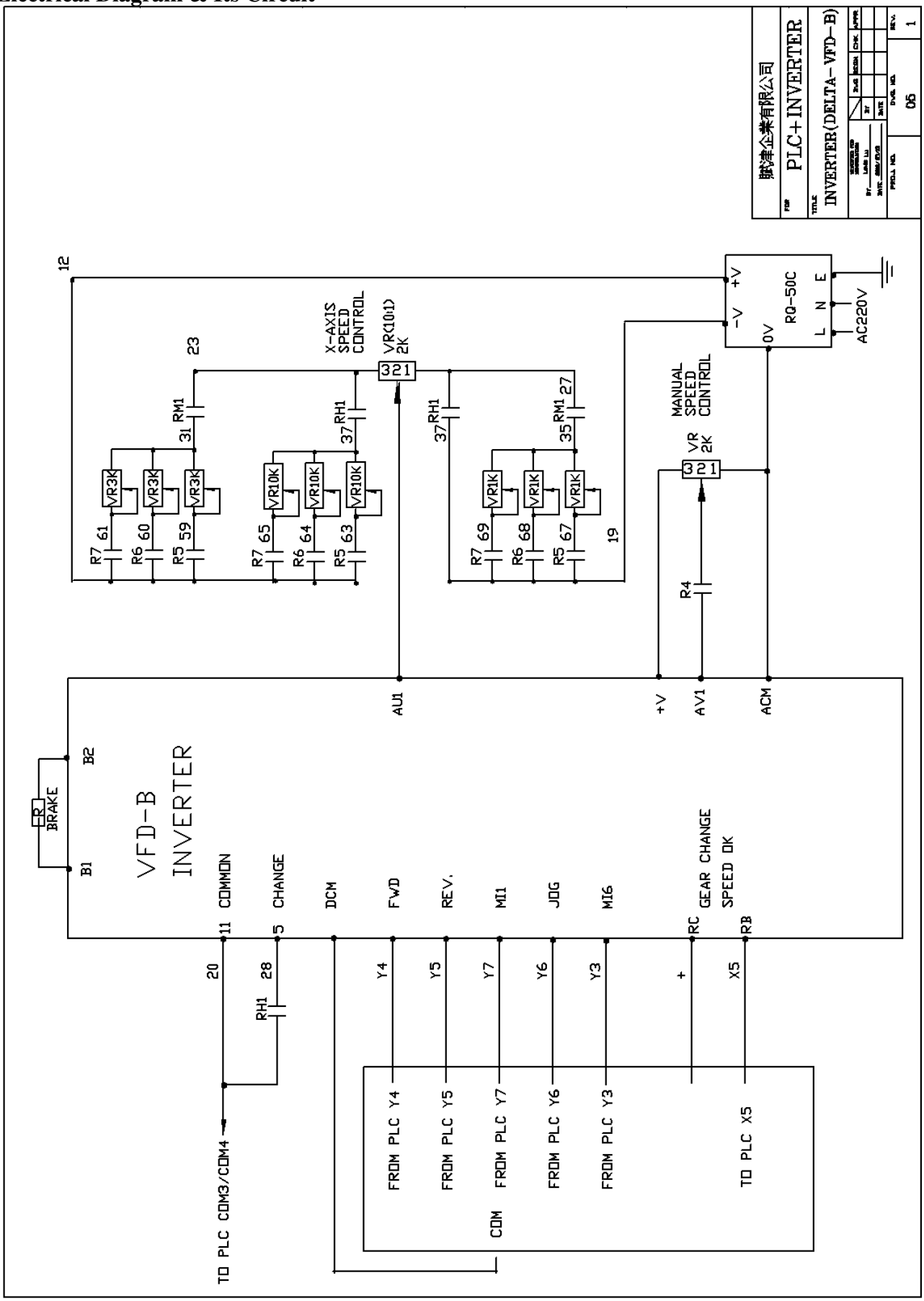
Electrical Diagram & Its Circuit



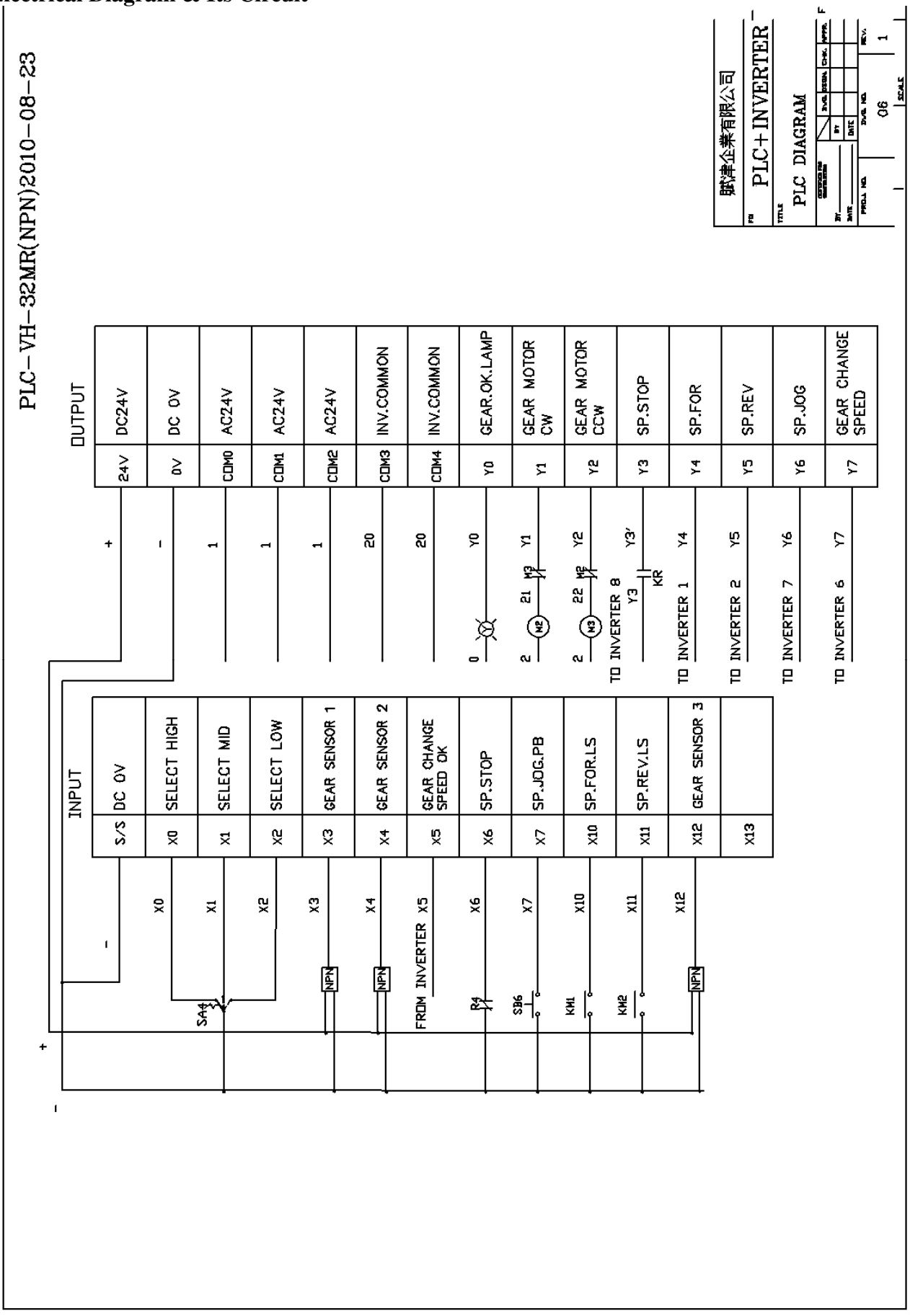
Electrical Diagram & Its Circuit



Electrical Diagram & Its Circuit



Electrical Diagram & Its Circuit

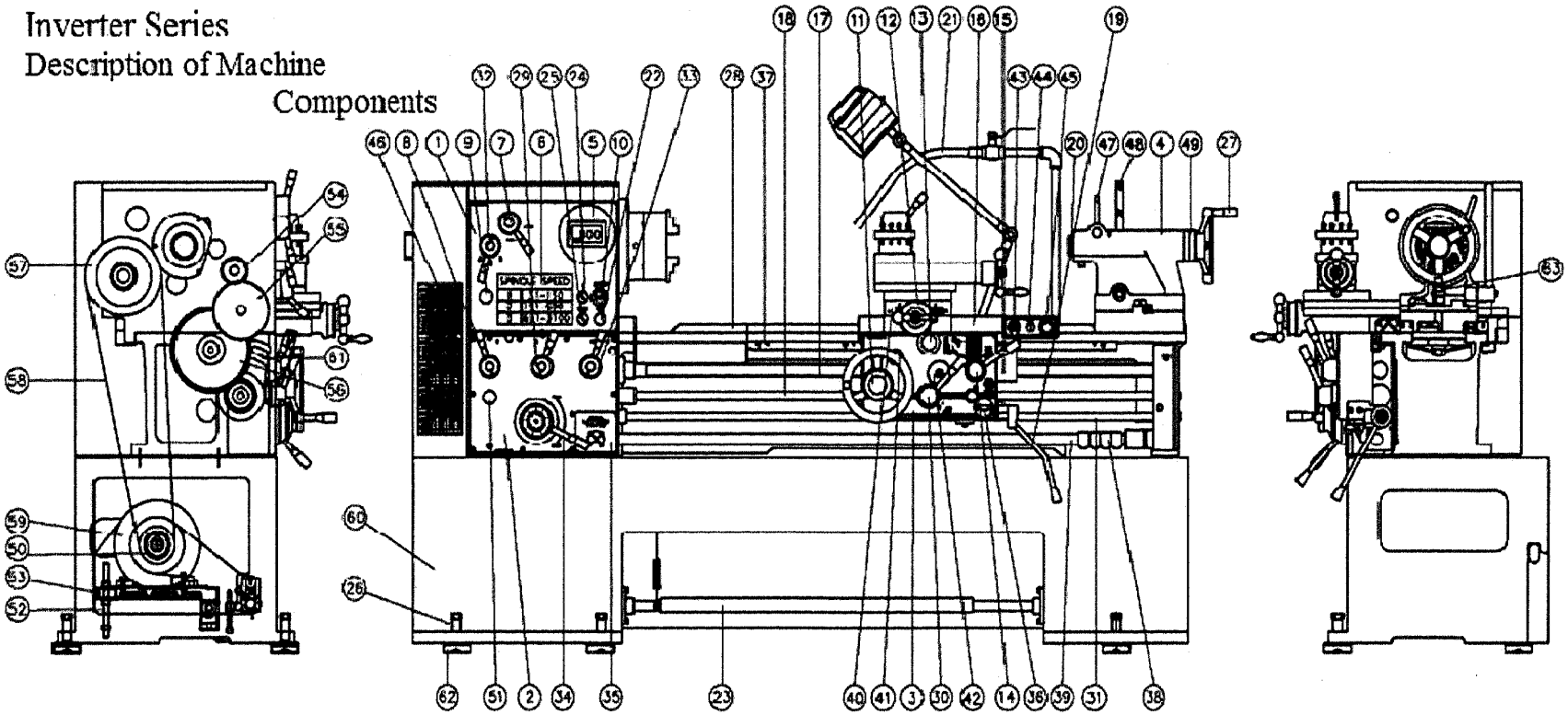


Electrical Component List

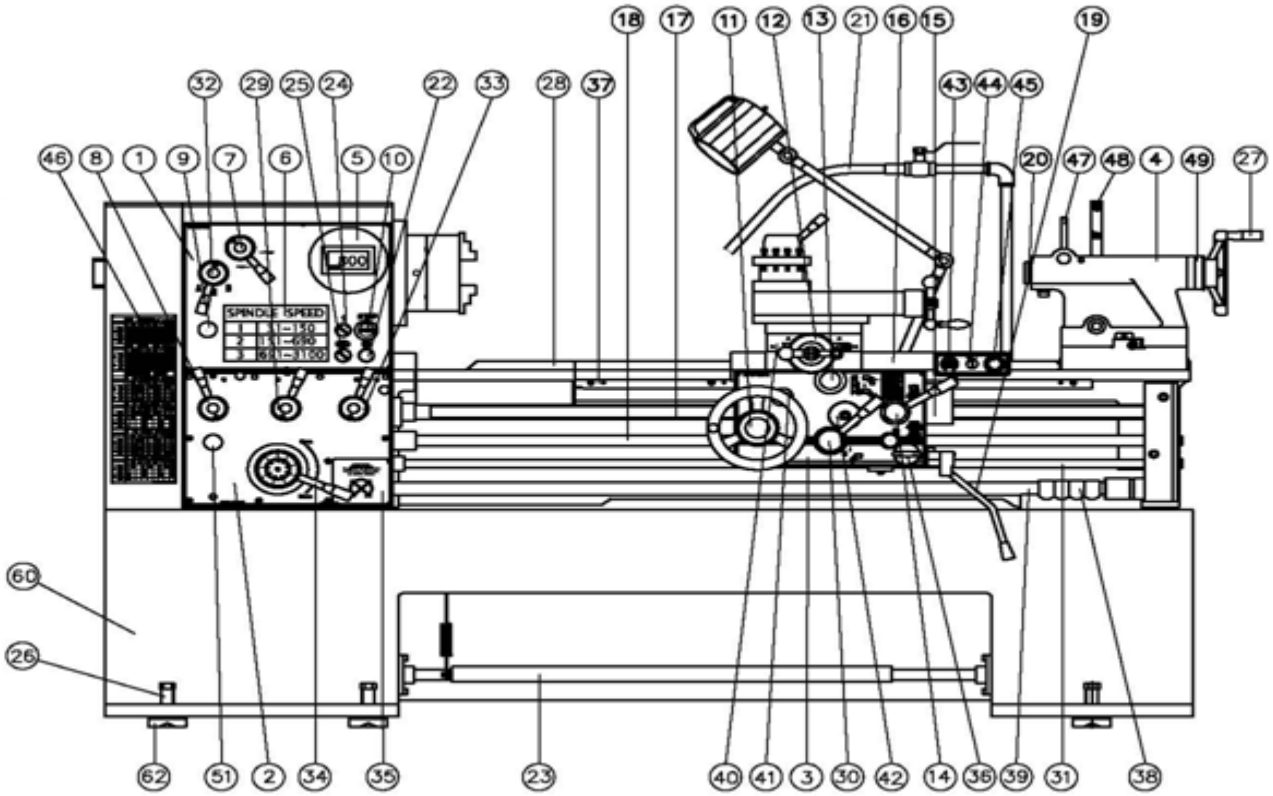
Manufacturer		SCHEDULE OF ELECTRICAL EQUIPMENT			Sheet		Manufacturer		SCHEDULE OF ELECTRICAL EQUIPMENT			Sheet	
Order					Drawn		Order					Drawn	
TYPE LATHE MACHINE: INV+PLC		See also list			Checked		TYPE LATHE MACHINE: INV+PLC		See also list			Checked	
Item	Description and function	Technical data	Quantity	Supplier	Suppliers reference		Item	Description and function	Technical data	Quantity	Supplier	Suppliers reference	
QS	Main Power(Door lock) Switch	AC 600V/50HZ 3P 25A	1	MACK	MK-325		QS	Main Power(Door lock) Switch	AC 600V/50HZ 3P 25A	1	MACK	MK-325	
FU1	AC FUSE	AC 600V	1	SHINING	FS-011		LS4	Safe-Cover	AC 125V 10A 250V 10A MAX.600V	1	MCNJEN	MJ-1701	
FU2	TO TRANSFORMER	30MM 5A	1	SHINING	FS-011								
FU3	AC Low Voltage to Transformer	AC 600v 30MM 5A	1	SHINING	FS-011		LS2	For-Limit.Switch	AC 125V 10A	1			
							LS3	Rev-Limit.Switch	250V 10A MAX.600V	1	MCNJEN	MJ-1704	
KM2	Contactors	3Pla Ri=AC660V Rt=25A	1		c-09001		LS1	Fast-Cut (Ls)		1			
KM3		AC3 220V 2.2KW	1	N.H.D	c-09001		CABLE-LOCK	Cable-Glands		1	AVG	M-18	
KM4		380V 4.0KW Coil AC 24V	1		c-09010								
FR (O.L)	Over-Load (Relays)	Ui=AC 600V 1th=10A 0.9~1.5A 1.2A	1	N.H.D	BTH-12		LINE	Control-Line	0.75mm² MAX.300V (30/0.18)-7A Ambient Temp (35°c~60°c)	1	TONG-WU		
CRH1			1										
CRM1	contactors-Realy	Coil=AC 24V AC 240V 5A DC 30V 5A	1	IDEC-IZUMI	RY4S-U		CABLE	PVC Cable-Wire	2.0mm²*4c(37/0.26)1ea 1.25mm²*4c(50/0.18)11a Ambient Temp (35°c~60°c) MAX 600V	1	TONG-WU		
R5			1				PF-3	Power-Fuse	AC 600V 50A	3	SHINING		
R6			1										
R7			1				VR	INVERTER Selector	3K	6			
CRT			1						1K	3			
CRH2	contactors-Realy	Coil=AC 24V AC 240V 5A DC 30V 6A	1	IDEC-IZUMI	RY4S-U		VR	SPEED Selector	2K	1			
CRL			1										
R4			1				SA4	HI-LOW Selector		1			
TR	Transformer	AC Hi=380V(220V) LO=24V		SUENN-LIANG	3P-TBS		SA5	MANU Speed Selector		1			
TB	Casset Terminal-Block	AC 600V MAX.20A AC 600V MAX.10A	3 16	SHINING	T3-036 T3-016								
SA1	Power Selector Switch	AC 250V 10A	1		MK/PNC-30Ø		R.P.M	MAIN-SPEED	AC 220/110V	1	CONCH	RF-40A	
SA2	Pump-Selector	MAX.600V	1	MACK	MK/PNC-30Ø		SENSOR	Speed-Sensor	DC10V~30V 150mA	1	CONCH	GL-1806NA	
SB1	Jogging-Botton		1		MK/ABF-30Ø		SENSOR	Gear-Sensor	DC10V~30V 150mA	1	FOTEK	PM12-02P	
EMG	Emergency-Stop		1		MK/PE-30Ø		PLC	Gear-Control	AC100V~AC240V	1	LIYAN	LYPLC EX24MR	
SA3	MANU-AUTO Selector Switch	AC 250V 10A MAX.600V	1		MK/AC-22Ø								

OPERATION

Inverter Series
Description of Machine
Components



1. Headstock
2. Gear box
3. Apron
4. Tailstock
5. RPM meter
6. RPM speed chart
7. Feed directional lever
8. Feed selection lever
9. Oil gauge for headstock
10. Emergency switch
11. Longitudinal handwheel
12. Crossfeed handwheel
13. Long/Cross feeding selection lever
14. Half-nut engagement lever
15. Thread chasing dial
16. Saddle
17. Feed screw
18. Leadscrew for threading
19. Spindle rotation selection lever
20. Quill for tailstock
21. Coolant nozzle
22. Jog button
23. Brake pedal
24. Power on/off switch
25. Coolant on/off switch
26. Leveling screw
27. Tailstock quill handwheel
28. Gap
29. Feed selection lever
30. Feed engagement lever
31. Spindle lever location rod
32. Spindle speed selection lever
33. Feed selection lever
34. Feed selection dial/lever
35. Micro-limit switch
36. Apron lube pump handle
37. Gear racks
38. Multi-position stop collar
39. Multi-position stop rod
40. Cross-slide
41. Apron oil gauge
42. Anti-slip mechanism
43. Speed turning knob
44. Speed selection switch
45. Emergency switch
46. Feed selection chart
47. Quill locking lever
48. Tailstock posi. locking lever
49. Tailstock dial
50. Motor pulley
51. Gear box gauge
52. Adjustment screw
53. Motor posi. plate
54. Idle (end) gear
55. Idle (end) gear large
56. Double-stack idle gear
57. Spindle pulley
58. V belts
59. Spindle motor
60. Machine base
61. Bracket
62. Leveling pads
63. Tailstock locking nut



SPINDLE SPEED SELECTION, STOP & RE-START (WITH INVERTER)

The inverter lathe has three speed ranges--high, medium and low.

To operate the lathe, first please turn on the power switch (24) and consider the cutting tool & work piece etc., characters, then move spindle speed selection lever (32) to the desired spindle speed to high, medium or low speed, after that, please move the spindle control lever (19) upward or downward to rotate the spindle in counter-clockwise or in clockwise direction. (Speed ranges are on Chart #2) and the spindle speed is indicated on spindle RPM meter (5) as to adjust spindle speed worker must turn the speed turning knob (43).

If worker wants to stop the spindle rotation, please step on the brake pedal (23) to stop the spindle. After spindle is stopped by pressing brake pedal in order to re-start the spindle rotation, worker must move the spindle control lever (19) again.

This machine uses an inverter to control the spindle speed. To go to the desired spindle speed and turn a work piece, worker shifts speed selection lever (32) to move spindle onto the correct speed range in high, medium or low speed. And then worker must crank the longitudinal traverse handwheel (11) and cross feed handwheel (12) to desired position separately, and finally fine tune the spindle speed with the speed turning knob (43). Next push in the long/cross feeding selection lever to engage in auto longitudinal feeding mechanism, and lastly worker must engage the feed

engagement lever (30) to activate auto longitudinal cutting.

CAUTIONS

· If worker wants to change the spindle speed, he must stop the spindle rotation. Otherwise, the gears of headstock will be damaged.

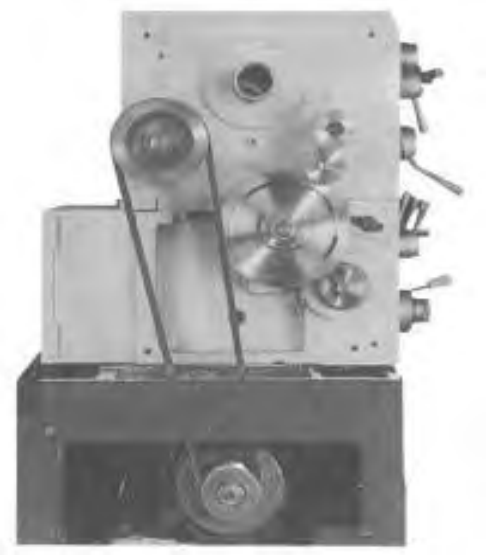
· If it is hard to set the spindle speed selection lever (32) on position when making speed changes, worker can push the jogging button (22) slightly and then trying to set the selection lever again.

HOW TO OPERATE THE JOGGING SWITCH

During operation, if worker wants to make speed change or adjusting the center for chucking work piece with four-jaw chuck easier, worker can use the jogging button (22) to assist on rotating the spindle momentarily.

GEAR CHANGE SYSTEM

The gear change system is located at the left side of the headstock as figure shown. (Please refer to threading chart as Chart #1)



SPEED RANGE (RPM) Spindle bore 56mm

H	3100~681
M	680~153
L	152~33

SPEED RANGE (RPM) Spindle bore 85mm

H	2250~491
M	490~126
L	125~27

SPEED RANGE (RPM) Spindle bore 105mm

H	1500~331
M	330~93
L	92~20

SPEED RANGE (RPM) Spindle bore 155mm

H	800~176
M	175~53
L	52~10

Chart #2

Caution: Do not attempt to change gears while the spindle is still running.

HOW TO OPERATE THE CARRIAGE & APRON

For longitudinal auto-feeding, please push in the long/cross feeding selection lever (13). But for auto cross feeding, please pull out the selection lever (13) to activate the mechanism.

MANUAL FEED

Carriage moves longitudinally by turn the longitudinal traverse hand wheel (11), meanwhile, set

the feed directional lever (7) the half-nut engagement lever (14) at neutral position and pull out the long/cross feeding selection lever (13). (One graduation of handwheel dial is corresponding to 0.002” and one revolution corresponds to 0.4” travel of carriage.)

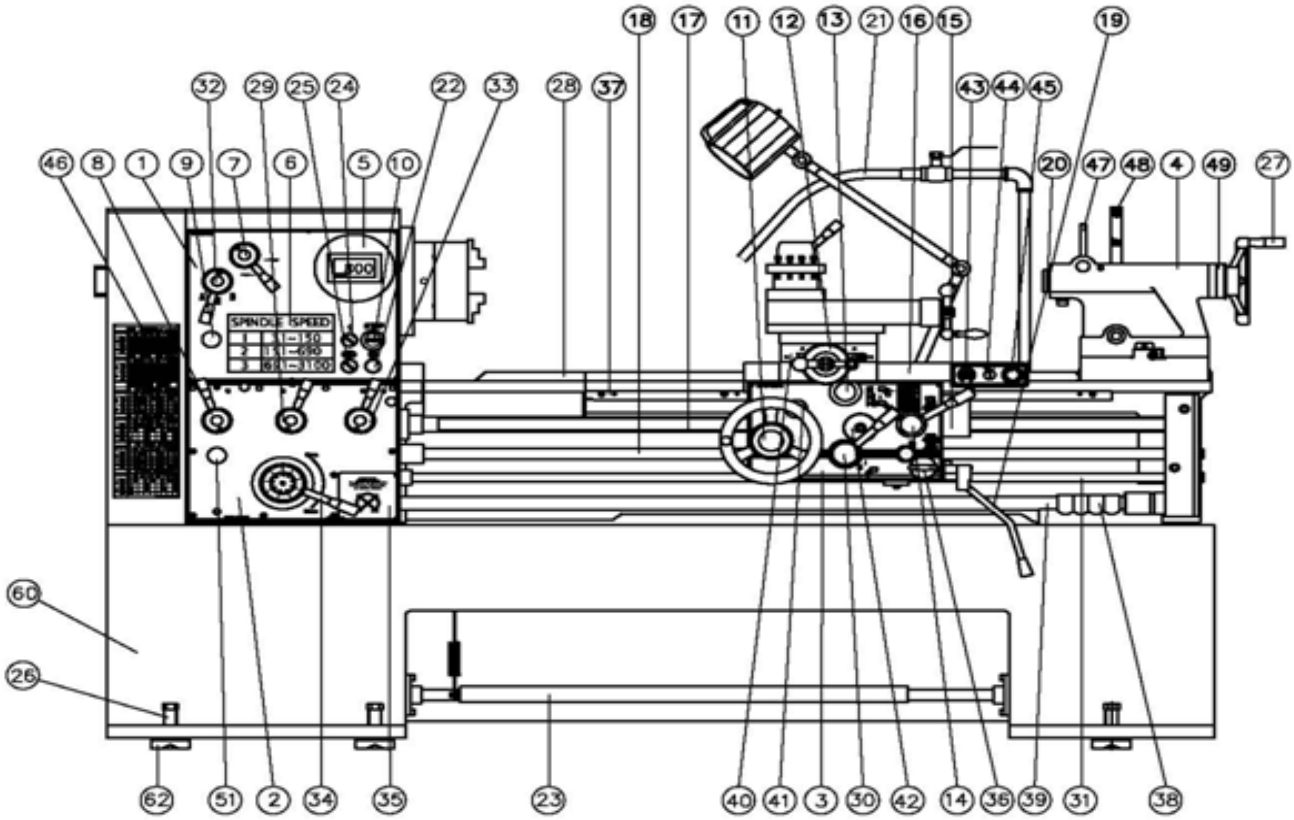
AUTO FEED

The auto feeding mechanism is operated as the following procedure:

1. Select the feed direction by moving feed directional lever (7).
2. Set gear change and shift levers (8) & (29) to desired feed rate.
3. Shift feed engagement lever (30) to feed direction.
4. Pull the half-nut engagement lever (14) up.
5. Pull or push the long/cross feeding selection lever to either longitudinal or cross feed position.
6. Shift the spindle control lever (19) to forward direction.
7. When the feed engagement lever (30) is shifted, then the auto feed mechanism will start. But when the feed engagement lever (30) is shifted to the neutral position and the auto-feeding mechanism will be stopped immediately.

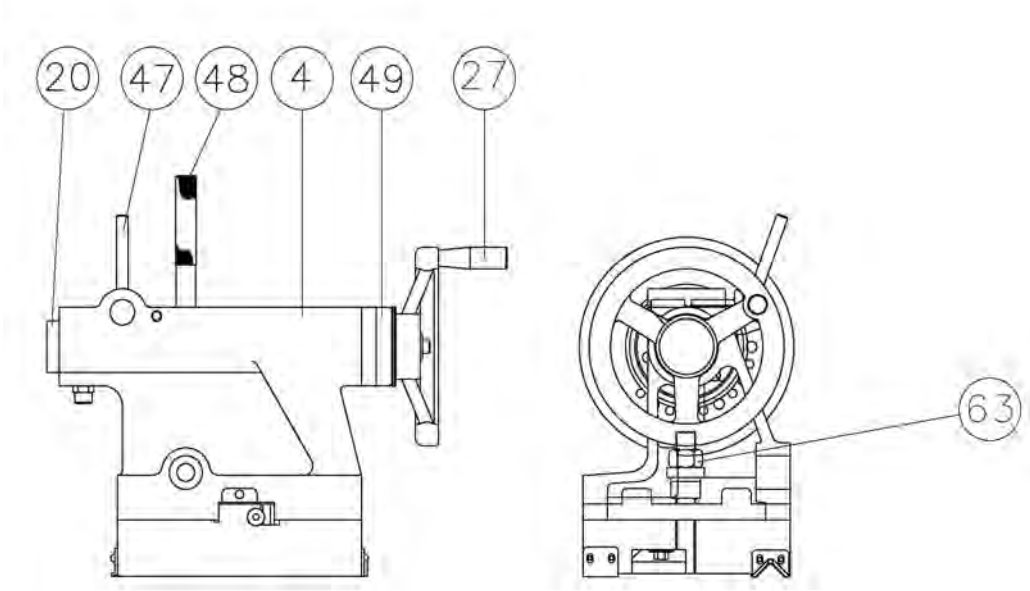
SWIVELING THE TOOL POST

If a worker wants to swivel the tool post, he must loosen four way tool post’s carriage locking screws before the action can be done.



LEVER		Ⓕ MM Feed speed								
		1	2	3	4	5	6	7	8	9
C	A	0.50	0.57	0.63	0.69	0.70	0.73	0.76	0.82	0.89
	B	0.25	0.28	0.31	0.34	0.35	0.36	0.38	0.41	0.44
D	A	0.12	0.14	0.15	0.17	0.17	0.18	0.19	0.20	0.22
	B	0.06	0.07	0.08	0.08	0.08	0.09	0.09	0.10	0.11

There is a dead center fixed in the sleeve of MT#5 and aligned with the center-line of the headstock. It is aligned to the dead center on the tailstock's quill. The dead center on the tailstock can be removed by rotating the hand wheel to the end of stroke. One graduation of the handwheel's dial is corresponding to 0.002", one revolution corresponds to 0.2" travel of tailstock's quill, and the total range of movement of the quill is 6" (150 mm).



In order to accommodate to the different length of the work piece, the tailstock can slide along the bedways by pushing or pulling it to the required position, and then locked in location by lifting the up quill locking lever (47) until it is tighten.

THREADING CHART

Chart #1

LEVER		W FOR CUTTING INCH THREAD								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
D	A	4	4½	4¾	5	5½	5¾	6	6½	7
	B	8	9	9½	10	11	11½	12	13	14
C	A	16	18	19	20	22	23	24	26	28
	B	32	36	38	40	44	46	48	52	56

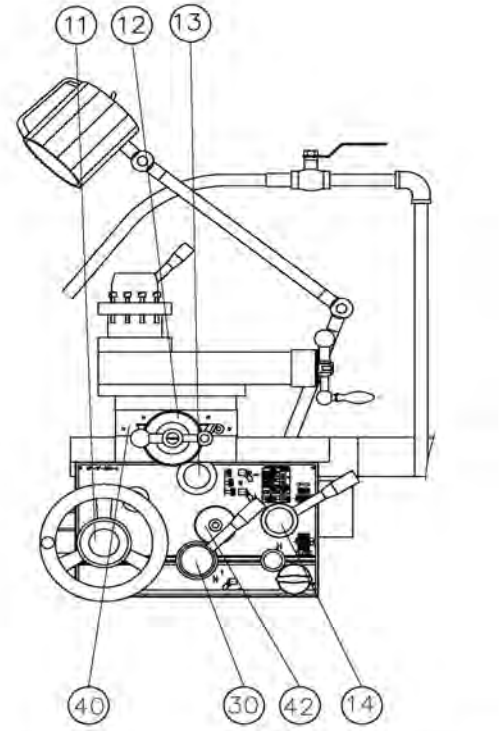
LEVER		M FOR CUTTING METRIC THREAD								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
C	A	4	4.5	4.75	5	5.5	5.75	6	6.5	7
	B	2	2.25		2.5	2.75		3	3.25	3.5
D	A	1			1.25			1.5		1.75
	B	0.5			0.625			0.75		0.875

LEVER		W FOR CUTTING D.P THREAD								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
D	A	8	9	9½	10	11	11½	12	13	14
	B	16	18	19	20	22	23	24	26	28
C	A	32	36	38	40	44	46	48	52	56
	B	64	72	76	80	88	92	96	104	112

LEVER		M FOR CUTTING MODULE THREAD								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
C	A	2	2.25		2.5	2.75		3	3.25	3.5
	B	1			1.25			1.5		1.75
D	A	0.5			0.625			0.75		0.875
	B	0.25								

HOW TO OPERATE THE LEADSCREW

When shifting the feed directional lever (7) to the right or left, it will put leadscrew in forward or reverse rotation respectively.



	MM(=)								
	1	2	3	4	5	6	7	8	9
ACME	0.50	0.57	0.63	0.69	0.70	0.73	0.76	0.82	0.89
BCME	0.25	0.28	0.31	0.34	0.35	0.36	0.38	0.41	0.44
ACME	0.12	0.14	0.15	0.17	0.17	0.18	0.19	0.20	0.22
BCME	0.06	0.07	0.08	0.08	0.08	0.09	0.09	0.10	0.11

METRIC / INCH THREAD SYSTEM:

The metric / inch tread cutting is operated as following procedures:

1. The gear change system is aligned for making metric / inch tread cutting.
2. Next, shift levers (8), (29), (33) to the desired position and shift feed selection dial to one of nine position, then engage the feed selection lever to lock it in position.
3. Please shift spindle control lever (19) downward or upward to the spindle forward rotation direction.
4. Push half-nut engagement lever down to start thread cutting.

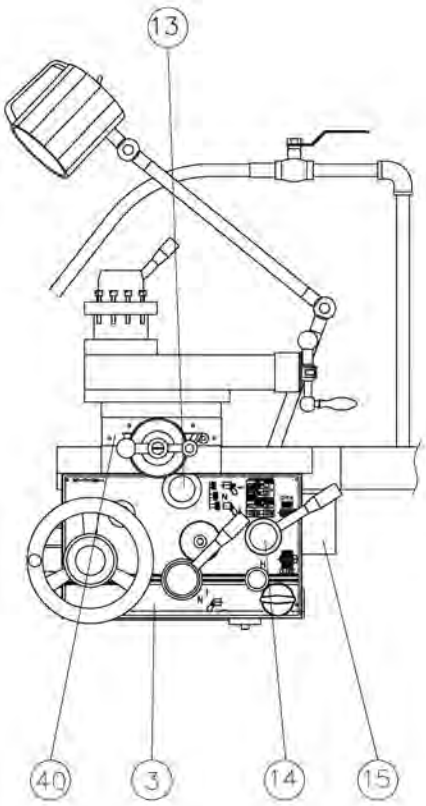
THREAD CUTTING CHART

The tread cutting chart is installed on the headstock panel which has nine columns. For making metric/inch thread cutting, the chart will make the action easy, since positions of the feed selection levers are indicated, and by following the chart, worker can engage the half-nut

engagement quickly and conveniently to cut the desired thread.

As for making repeated the metric thread, the half nut should be engaged with leadscrew completely without disengagement when repeating the cut (this is required when the leadscrew has 4 TPI).

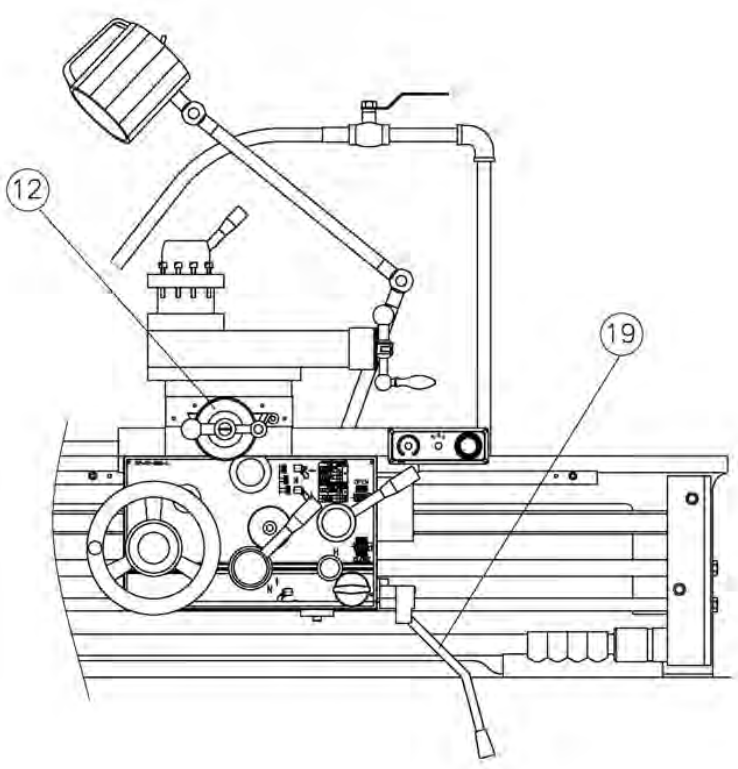
To let cutting tool return to starting position, the action is complete by disengage the half-nut engagement lever (14), crank longitudinal handwheel back to starting cutting position, increment the crossfeed, and then engage the half-nut engagement lever (14) again to start thread cutting. When making metric thread cutting using leadscrew of imperial system or vice versa, the half-nut engagement lever (14) has to remain engaged until to the end of thread cutting process.



OPERATION OF SPINDLE
(WITH INVERTER CONTROL)

SELECTING SPINDLE SPEED (LATHE WITH INVERTER CONTROL)

When the lathe is equipped with an inverter control, it provides three speed ranges:



a. Turn power ON/OFF switch (24) to "ON" position and the indication lamp lights on, it means the machine is under powered condition.

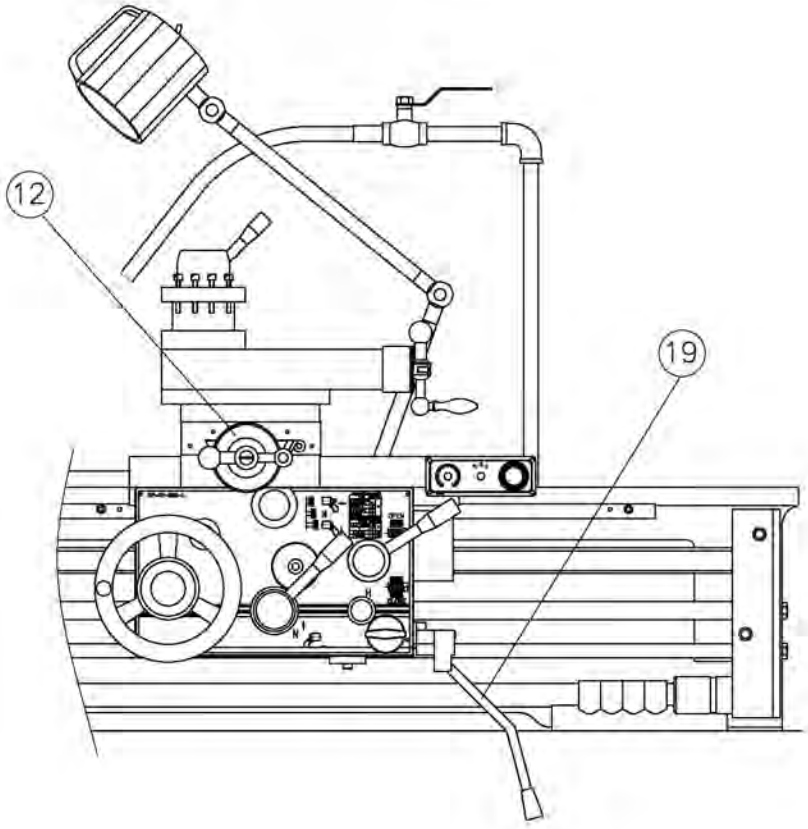
b. According to speed chart indication, set the speed selection switch (44) for selecting the "H, M, L" speed range. Then the spindle will automatically change to your speed setting.

c. Use the spindle control lever (19) to start motor running and control the spindle rotation that is running clockwise or counter-clockwise.

d. Use the speed turning knob (43) to set your desired turning speed. The digitally displayed spindle speed is indicated on the spindle speed display (5), located on the headstock.

STOP AND RE-START SPINDLE (LATHE WITH INVERTER CONTROL)

1. To stop the spindle rotation, press the emergency switch (45) or step on the brake pedal.
2. To restart the spindle rotation, pull up/push down the lever (19).



OPERATION INSTRUCTION FOR AUTOMATIC SPEED CHANGE

1. To perform automatic speed change, worker uses speed turning knob (43) and speed selection switch (44) to adjust speed range and fine turn the final speed.

2. To use “H” speed range, simply turn the speed selection knob to “H” position.

3. During speed change, the warning light on the electric cabinet will keep on flashing until speed change motion is complete.

4. When changing speed range, the spindle will start braking automatically, and then rotate slowly to allow speed range change smoothly.

5. Speed-range changing time requires about 7~8 seconds to complete the action.

6. Once speed-range change is finished, the spindle will automatically accelerate to the speed set by the speed turning knob (43).

7. Turn the speed turning knob to re-set your desired speed in the “H” speed range.

8. If a brake action is operated before changing speed, you must restart with the spindle control lever (19) to run spindle in clockwise or counter-clockwise rotation.

CALCULATING SPINDLE SPEED

The function of the speed turning knob (43) and speed selection switch (44) is used to adjust the spindle speed, which changes according to the length, material and diameter of a work piece.

For example:

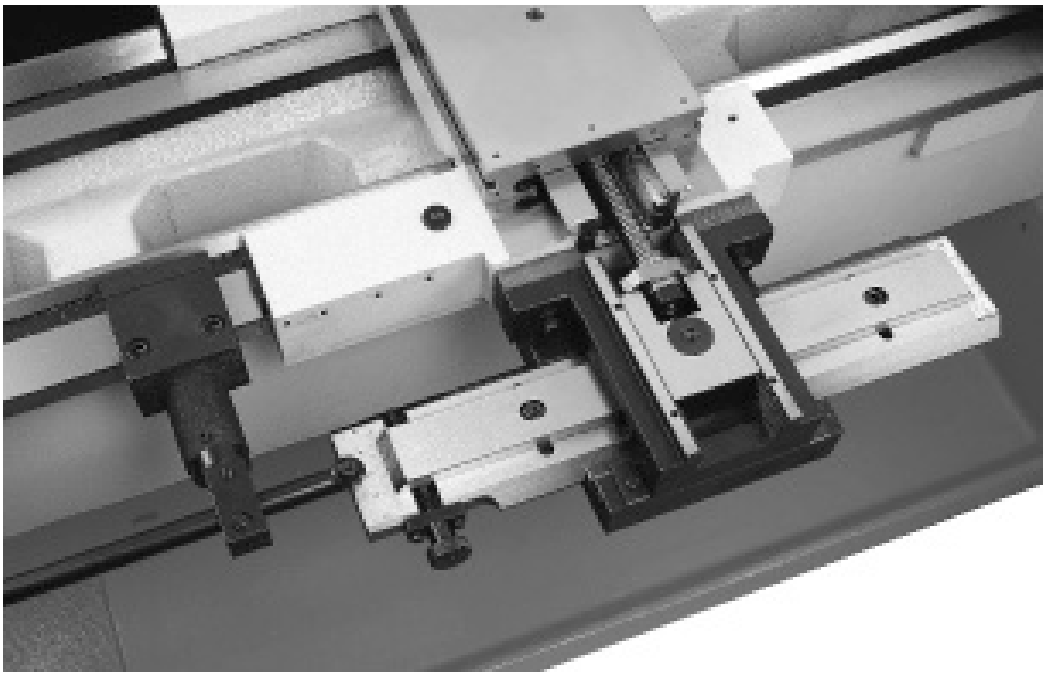
Work piece diameter: ø60mm
Work piece material: mild carbon steel (S45C)
Cutting length:150mm

1. The spindle speed is calculated as below:
   150 (M) x 1000mm ÷ (60mm x 3.1416) = 796 rpm

2. If cutting length is 200mm and other conditions are same, the spindle speed is calculated as below:
   200 (M) x 1000mm ÷ (60mm x 3.1416) = 1061 rpm

BENEFIT OF USING TAPER TURNING ATTACHMENT

1. When using taper turning attachment, the side position of the tailstock needs not to shift. This allows center of tailstock staying the same as the headstock, and will have an easier taper cut process.
2. Cutting ID taper hole is easily done with taper turning attachment. The processes of it are the same as cutting outer taper except the rotation of the screw is reversed.
3. If work piece needs a larger taper, worker needs to move tailstock side-ways to accommodate for the larger angle.



OPERATION OF TAPER TURNING ATTACHMENT

1. Please double check to see if the taper turning attachment is installed correctly before operation.
2. Adjusting the taper turning attachment to the center position the work piece.
3. Attachment holding bracket is secured with locating rod.
4. Install tool post with a round nose cutting tool, and make sure it is located at the center cut line.

   Note: If the cutting tool is slightly above or below the center cut line, the resulting taper angle will be different from the pre-set angle.

5. Chucking the work piece on the lathe. It is recommended to cut from the small taper side to the larger side.
6. Please make sure cross-slide and taper slide are moving smoothly and have no up down movement.
7. Crank longitudinal handwheel to check if its travel is enough to cut the work piece's required taper. If it is not enough, please adjust tool post, saddle or taper attachment to the proper position.
8. Lock taper slide to the angle desired.
9. Please move saddle to the small taper side, and make sure cutting tool is off from work piece at around 1" length.
10. Turn in the crossfeed handwheel until cutting tool is slightly touching the work piece.
11. Crank longitudinal handwheel to move saddle until cutting tool is cutting the work piece. At this point, worker may engage automatic cutting mechanism.
12. Cut work piece continuously until 1/3 length is achieved.
13. Stop cutting, and use dial indicator or caliper to measure taper angle. If higher angle accuracy is required, please use angle gauge to measure the angle cut.
14. If necessary, please adjust the taper slide again until the correct angle is found.
15. At this point, if no adjustment is needed, please continue to cut the work piece until the work piece is done.

LUBRICATION

LUBRICATION IN HEADSTOCK & GEARBOX:

These two items are oil bath lubricated; please always make sure the oil level is not lower than the minimum level of oil gauge.

LUBRICATION IN GEAR CHANGE SYSTEM:

Open the protecting cover (located on left hand side of the headstock) of gear change system and drip lubrication oil daily.

LUBRICATION IN CARRIAGE & TOOL POST:

Carriage slide is lubricated by pulling lube pump handle on the apron, and the tool post is lubricated with drip oiler before starting the machine daily.

LUBRICATION IN APRON:

The apron itself is served as an oil reservoir. Its rotating parts are dipped into the oil bath and the other parts are lubricated by oil splashing. Be sure the oil level on the oil gauge is at proper height when operating!

COOLANT FLUID FOR CUTTING:

The coolant pump must turn on when the machining is in process, and turn the coolant on/off switch (25) to on position.

LUBRICATION OIL:

1. HEADSTOCK & FEED GEARBOX

MOBIL	ESSO	SHELL
DTE HEAVY MEDIUM	TELLESSO 52	FELLUS 32

2. APRON, COMPOUND, TAILSTOCK, LEADSCREW, SLIDEWAYS AND CARRIAGE SCREW

MOBIL	ESSO	SHELL
VACTRA #2	FEHIS K-53	TONNA OIL 27

3. CHANGE GEARS

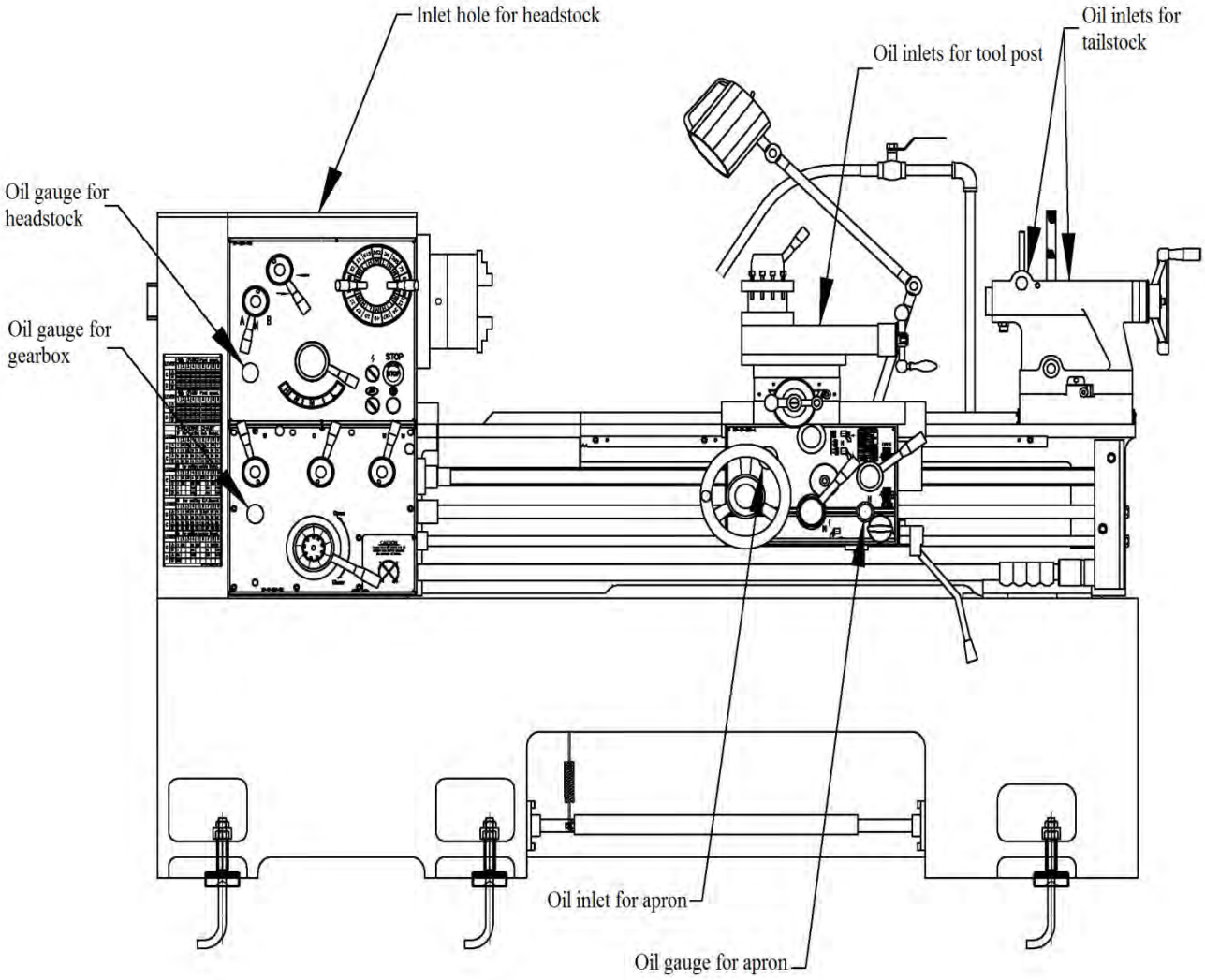
Grease

43

44

45

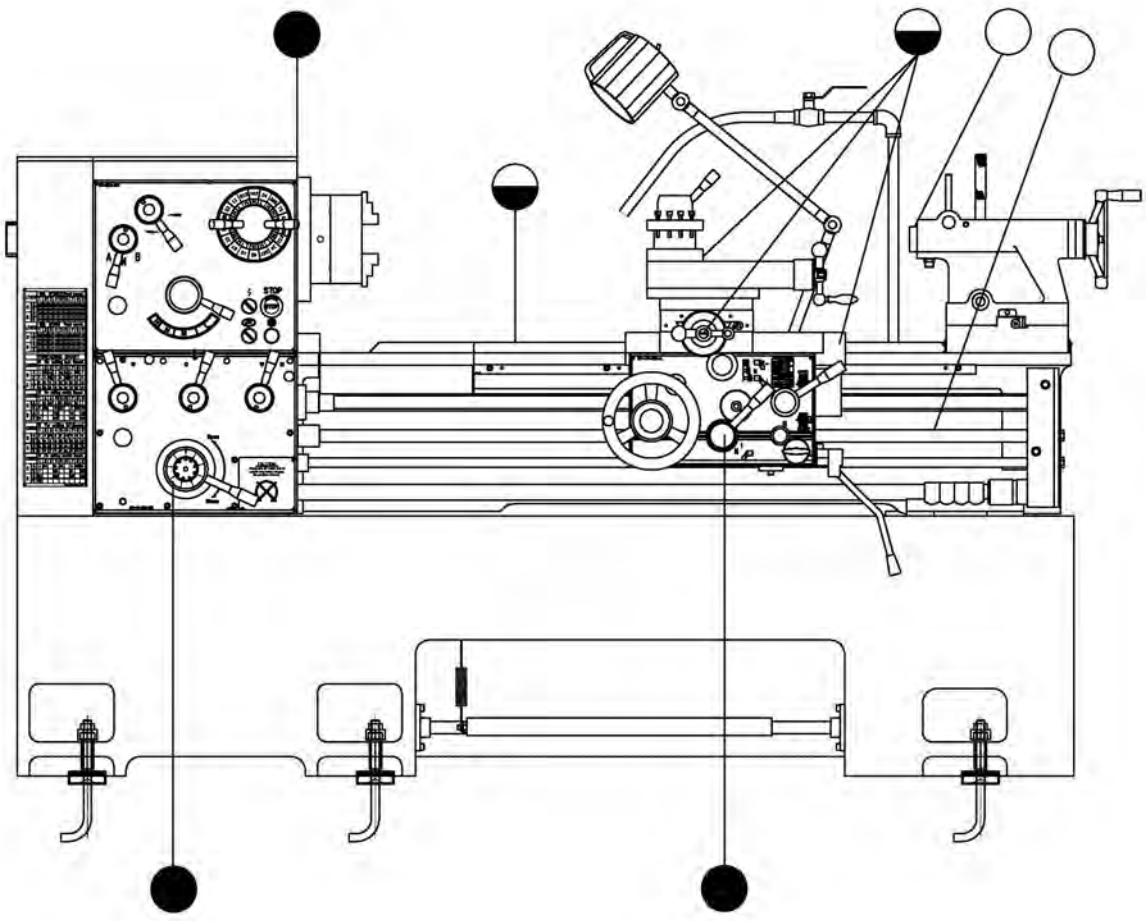
OIL INLET POINTS



LUBRICATION SCHEDULE

			
Lubrication Schedule	Everyday	When needed	Oil level must be above center line



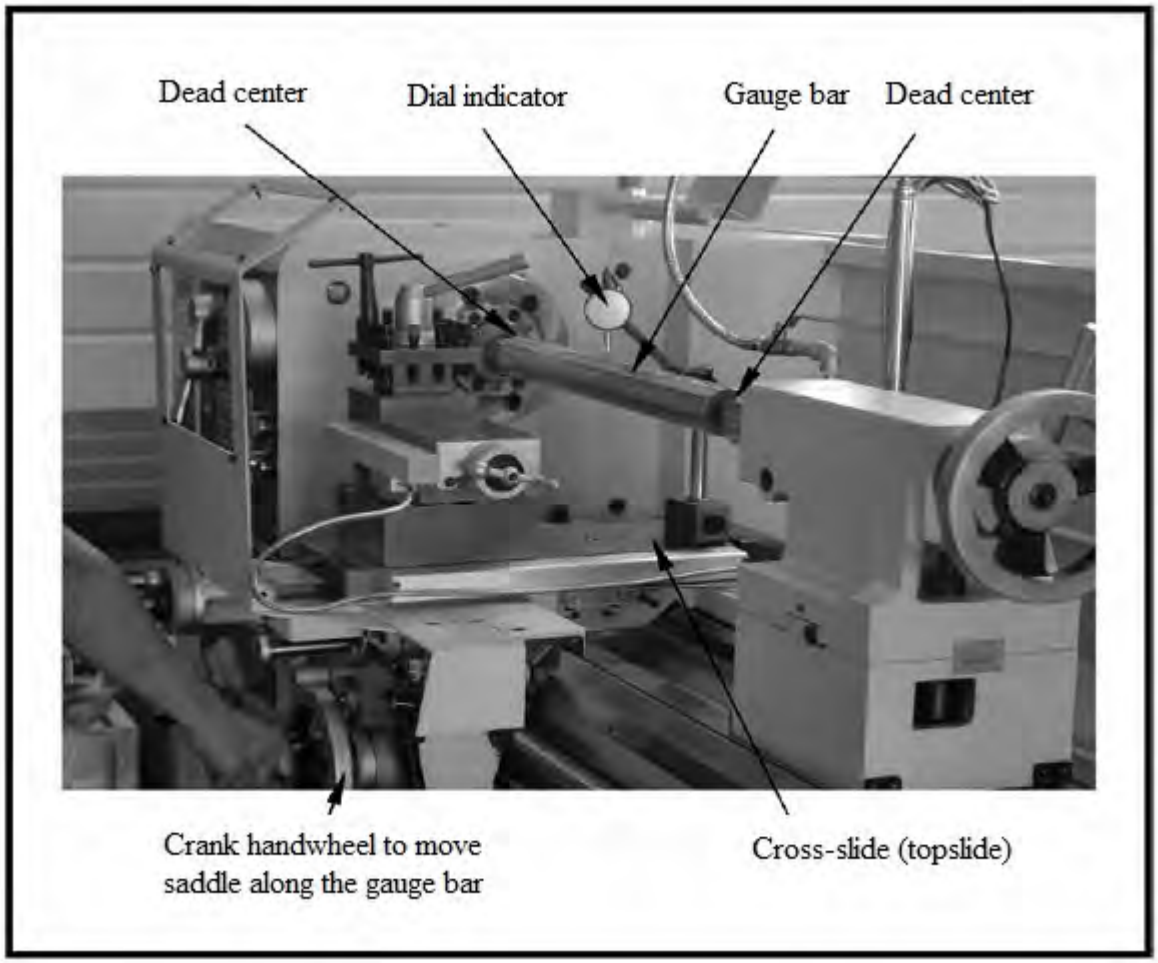
TROUBLE CAUSE & TROUBLE SHOOTING		
TROUBLE ITEM	CAUSE	REMEDY
Vibration	Loose leveling screws	Set all screws so they bear evenly on leveling plates.
	Torn or mismatched Vee belts	Replace vee belts with matched set, or adjust roll.
	Work of chuck out of balance operating at high spindle speed	Balance chuck or reduce spindle speed.
	Motor out of balance	Contact local representative or motor manufacturer.
Chatter	Tool bit improperly ground or not on center	Regrind tool bit or adjust too holder so that the area of the contact between tool bit and work is decrease. Avoid extreme negative rake angle.
	Tool overhand too much	Keep point of tool bit as close as possible to tool holder.
	Using improper surface feed rate.	Reduce or increase spindle speed.
	Feed rate too high or too low.	Reduce or increase feed rate.
	Gibs of cross-slide or compound rest is loose.	Adjust gibs.
	Spindle bearings worn.	Adjust spindle bearings.
	Work piece improperly supported.	Adjust tailstock center. Use steady rest or follow rest on long slender shafts. Minimize tailstock barrel extension.
	Vibration	See "Vibration" trouble shooting above.
	Spindle bearings loose.	Adjust spindle bearings.
Workpiece not turning round	Work loose between centers or centers are excessively worn--work centers out of round.	Adjust tailstock center. Regrind centers, Lap work centers.
	Loose headstock spindle bearings.	Adjust headstock spindle bearings.
Workpiece not turning straight	Headstock and tailstock centers are not aligned.	Align tailstock centers
	Workpiece is improperly supported.	Use steady rest or follow rest. Reduce overhang from chuck.
	Machine bed is not leveled.	Relevel bed by using precision level.
	Tool not on center when using taper turning attachment.	Align tool on centers.
Cross-slide or compound rest movement does not coincide with dial movement of respective axes.	Gib setting too right or too loose.	Adjust gibs.
	Workpiece is too long and slender.	Use steady rest or follow rest.

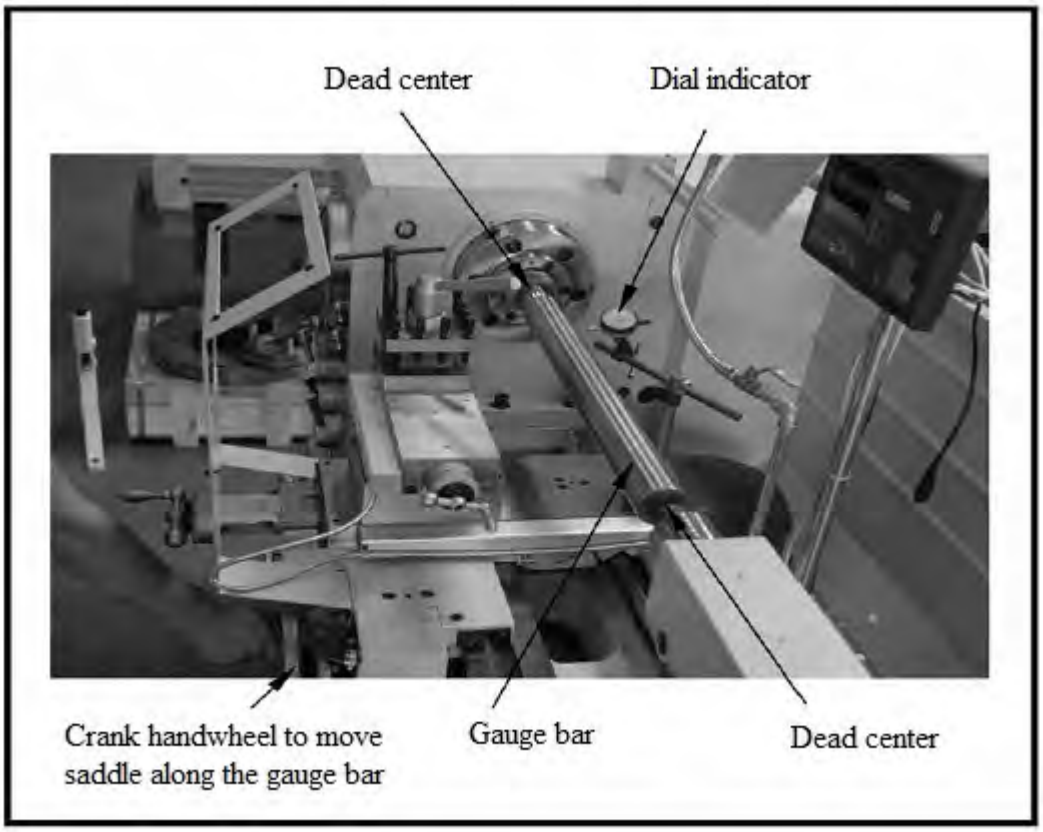
ADJUSTMENT OF MACHINE COMPONENTS

Spindle Headstock Adjustment

If the alignment of the spindle and tailstock is off, please following the procedure to re-align the components.

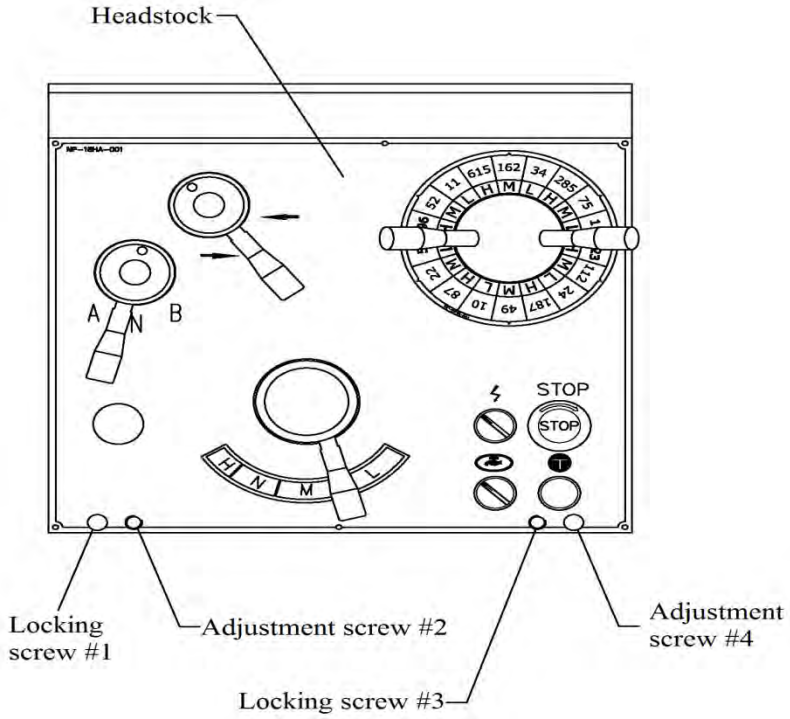
1. Prepare one gauge bar at 24” (600mm) in length and one dial indicator with base.
2. Please have the gauge bar firmly fixed between the dead centers of the headstock and tailstock.
3. Locate the dial indicator base on the top slide and have the dial indicating on the gauge bar.
4. Slightly move the top slide in and out to read the movement of the dial. Make sure the movement is about 15~20 graduations on the dial.
5. Then if needed, rotate the dial to zero position.
6. Crank longitudinal handle to move saddle left and right.
7. If there is mis-alignment, there will be reading from the dial, ie, movement on the dial.
8. If the alignment is OK, the dial will not move thru out the movement.





If headstock is mis-aligned, please adjust the screws on the headstock shown on the drawing below.

1. If headstock needs to adjust toward user, please release locking screw #1, then tightening in adjustment screw #2. Next is to relocking in locking screw #1.
2. If headstock needs to adjust away from user, please release locking screw #3, then tightening in adjustment screw #4. Next is to relocking in locking screw #3.

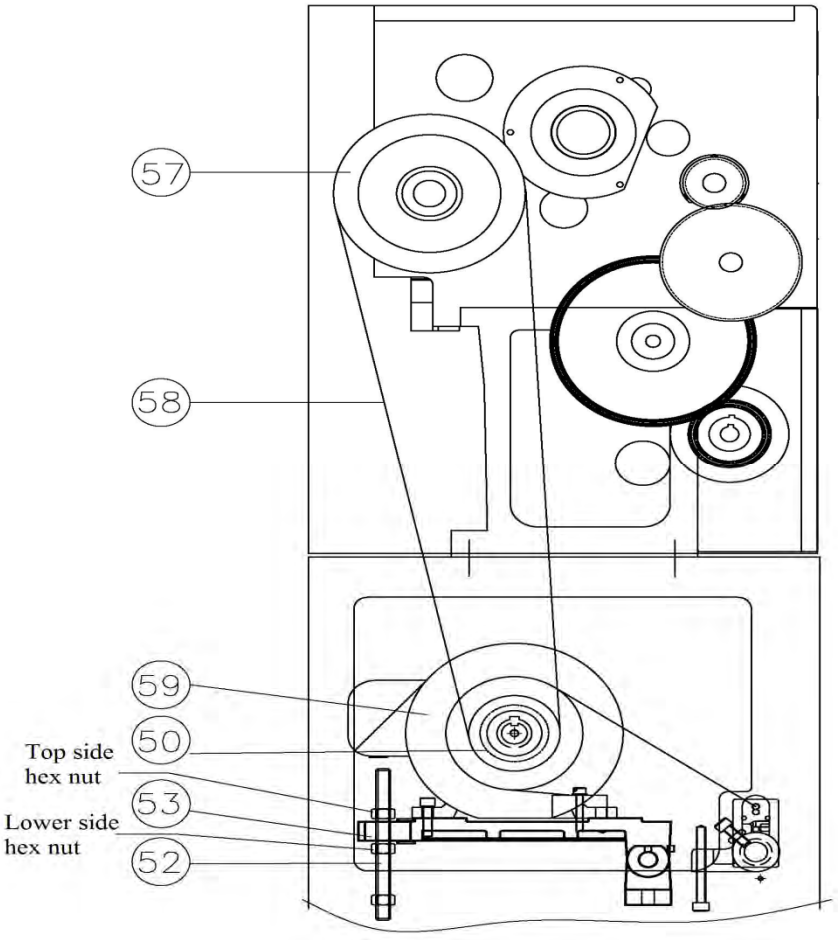


V-belt of Spindle

V-belts for the spindle must be checked periodically. If the belt tension is too loose, it will reduce the cutting performance of the lathe. If the belts are too tight, it will decrease the life-span of the spindle bearings, other components to wear out quicker.

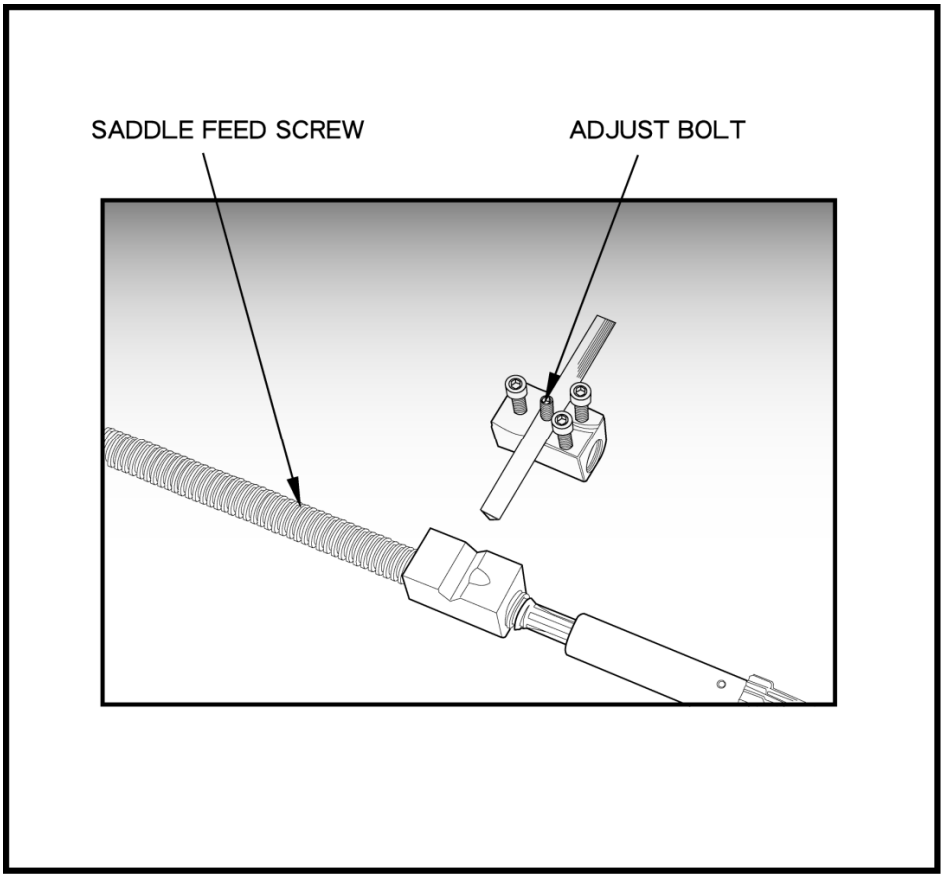
Adjustment for the V-belts

1. Turn of the machine's power.
2. Please open left side cover of the machine base.
3. If tightening the belts is needed, #58, please release lower side hex nut, screw down the top hex nut, and repeat the procedure until desired tension is achieved.
4. If loosing the belts is needed, please release top side hex nut, screw the lower side hex nut upward, and repeat the procedure until desired tension is achieved.
5. Top and down sides have total of four hex nuts. They are located on left and right side of the motor plate looking from the back of the headstock. When adjusting the hex nuts, please make sure both left and right side's hex nuts are loosen or tighten. Without doing this correctly, V-belts may wear out prematurely and create unnecessary vibration when working.



Adjustment of Crossfeed Leadscrew

After using the lathe for a few months, the crossfeed leadscrew will have some wear and creating some backlash between the nuts and the screw. In order to take out the backlash, please use an allen wrench to adjust the adjustment screw until a desired backlash movement is achieved.

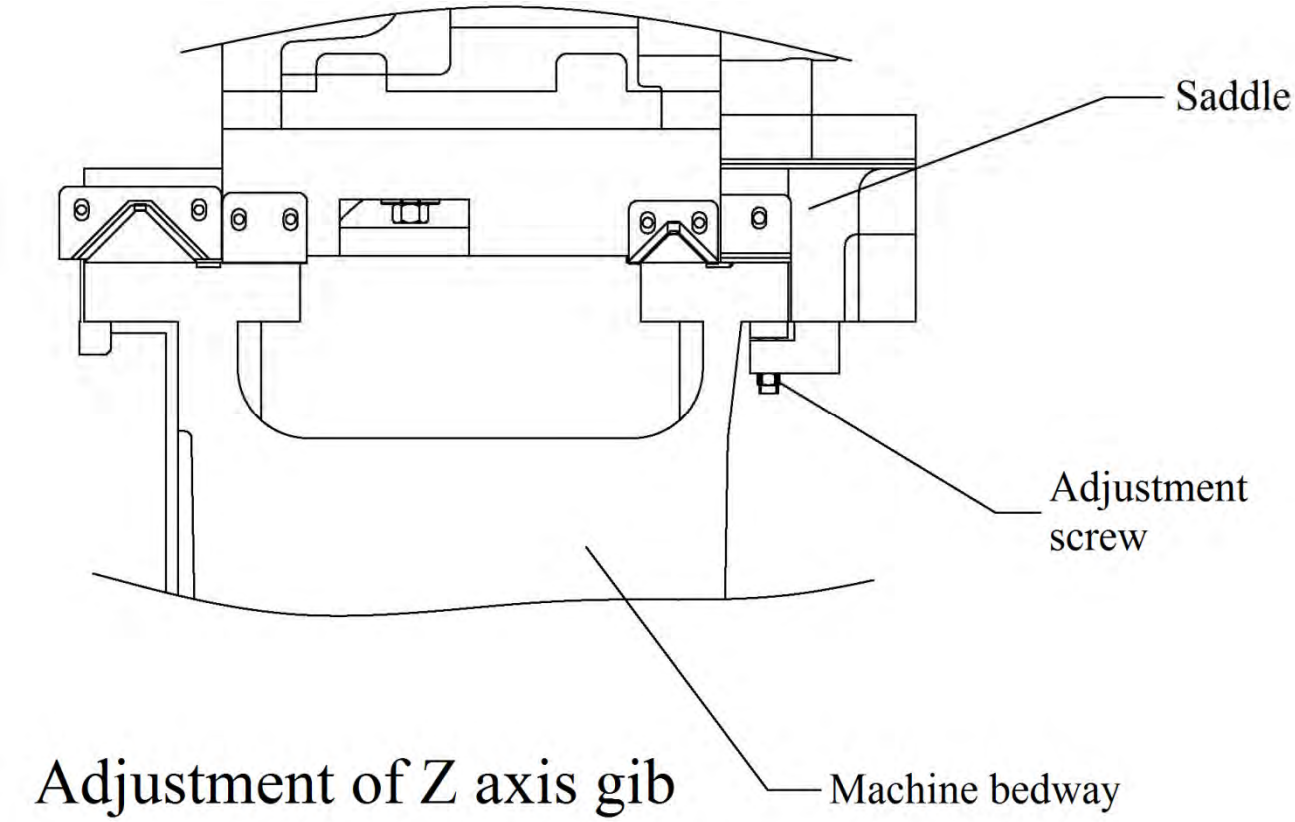


Adjustment of Saddle Gib

There is a gib located between saddle and bedways. If there is too much play between them, please adjust this gib.

The procedure for adjusting the gib is such,

1. Release the locking hex nuts.
2. Rotate the adjustment screws clockwise to tightening the gib.
3. After desired tightness is achieved, please retighten the hex nuts.



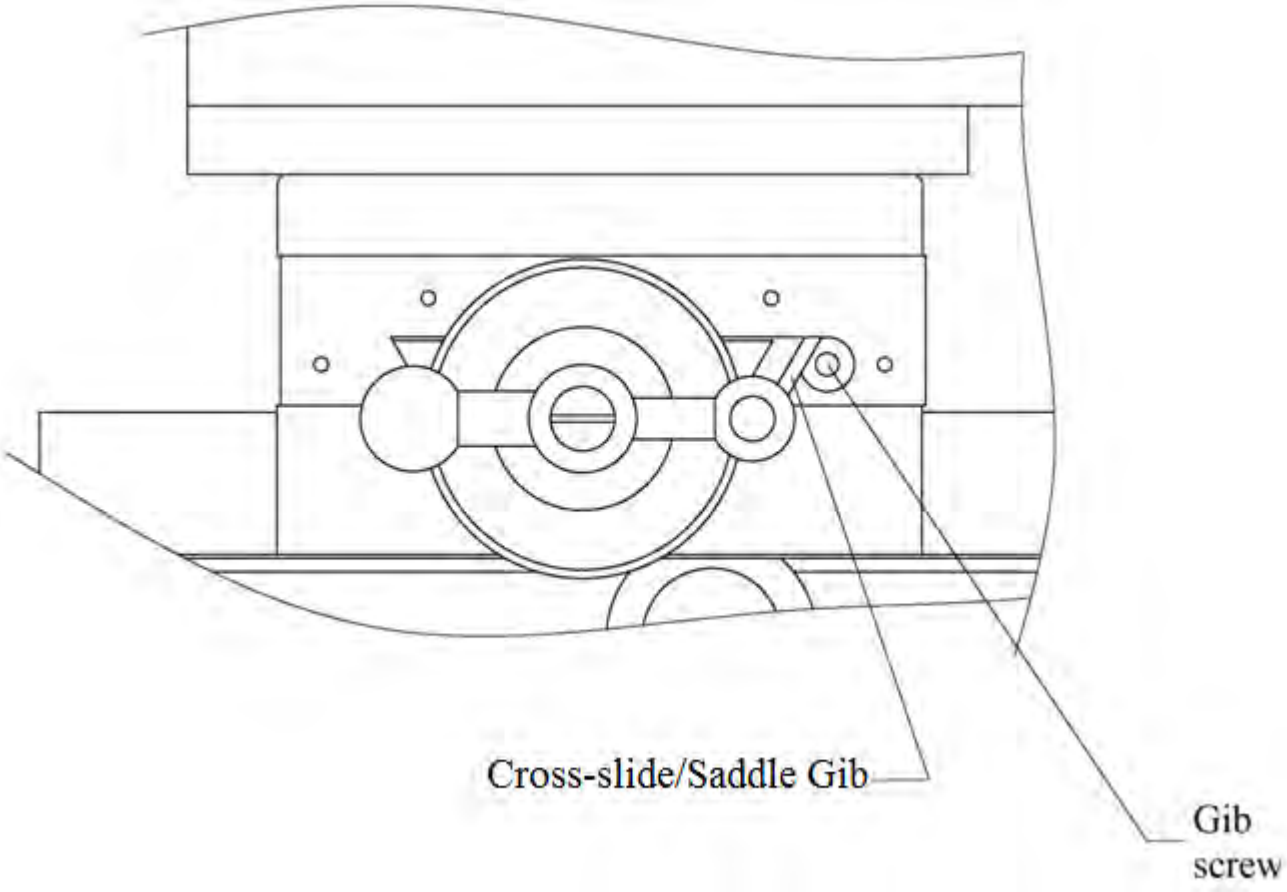
Adjustment of Z axis gib

Adjustment of the gib between Saddle and Cross-slide

There is a gib located between saddle and cross-slide. If there is too much play between them, please adjust this gib.

To adjust the play between the two components, please follow the procedure below.

1. Release the back end gib screw.
2. Screw in the gib screw from the front end. The gib will move in until the gib screw is not able to rotate.
3. After desired play or backlash is achieved, please tightening the back end gib screw again to firmly fix the position of the gib.



REPLACEABLE COMPONENTS ON THE MACHINE

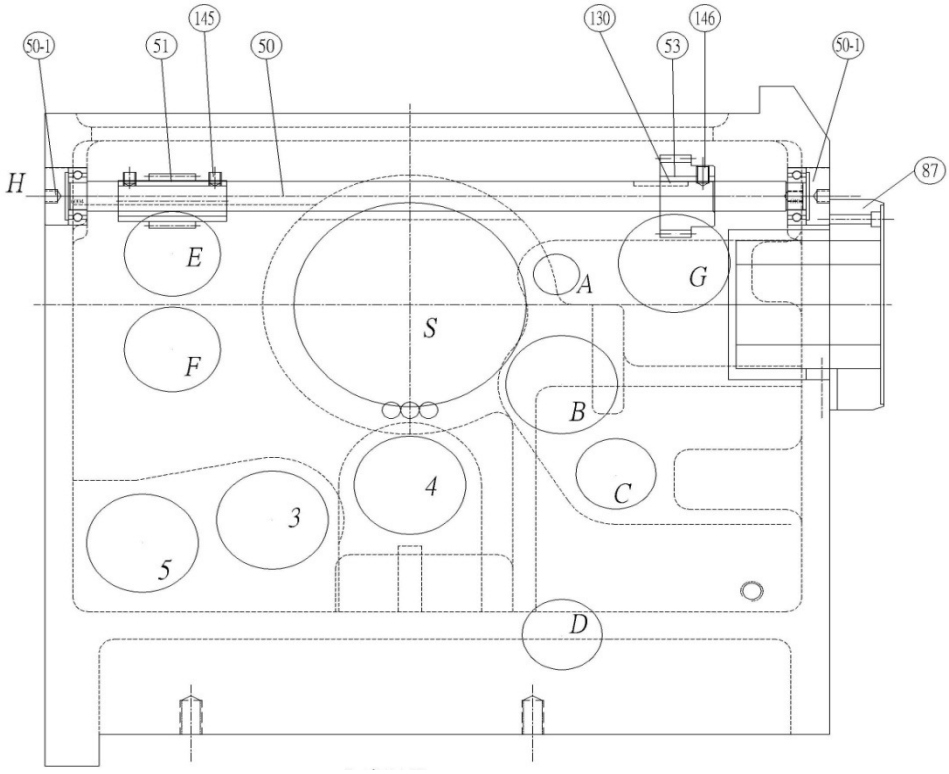
1. Brake shoe
2. V-belt
3. Leadscrews and their nuts
4. Lubrication oil
5. Way wipers
6. Coolant

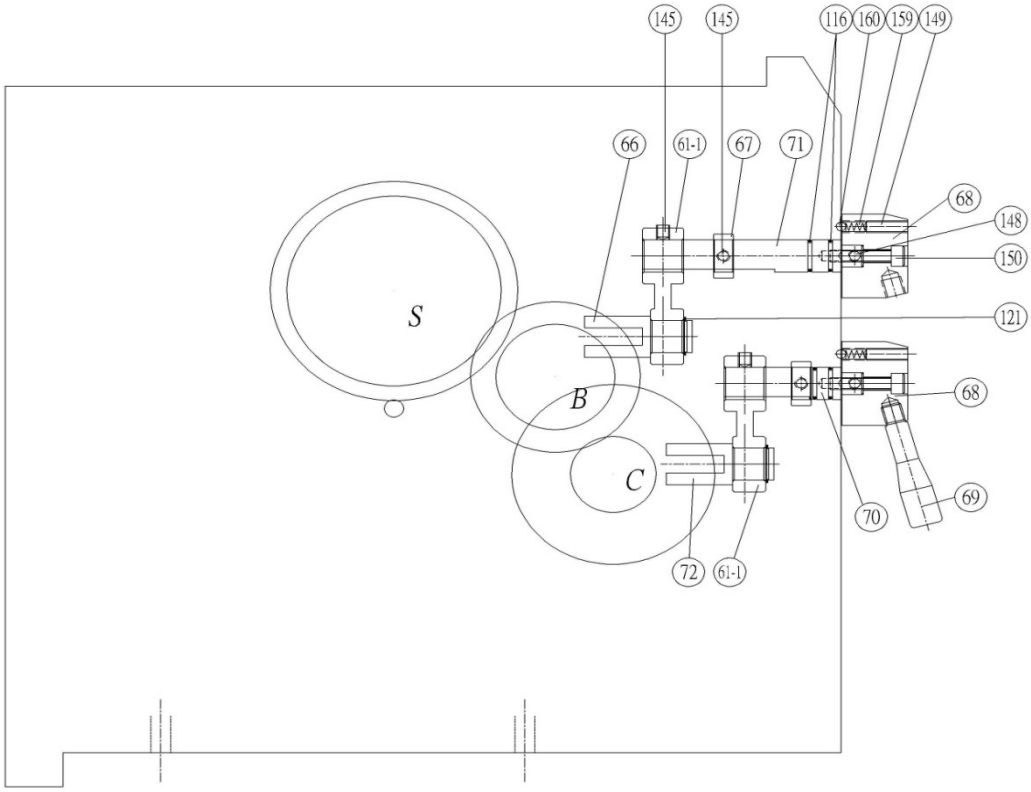
MECHANICAL DRAWINGS
&
PART BREAKDOWN LIST

Note: When ordering parts, please be prepared with,

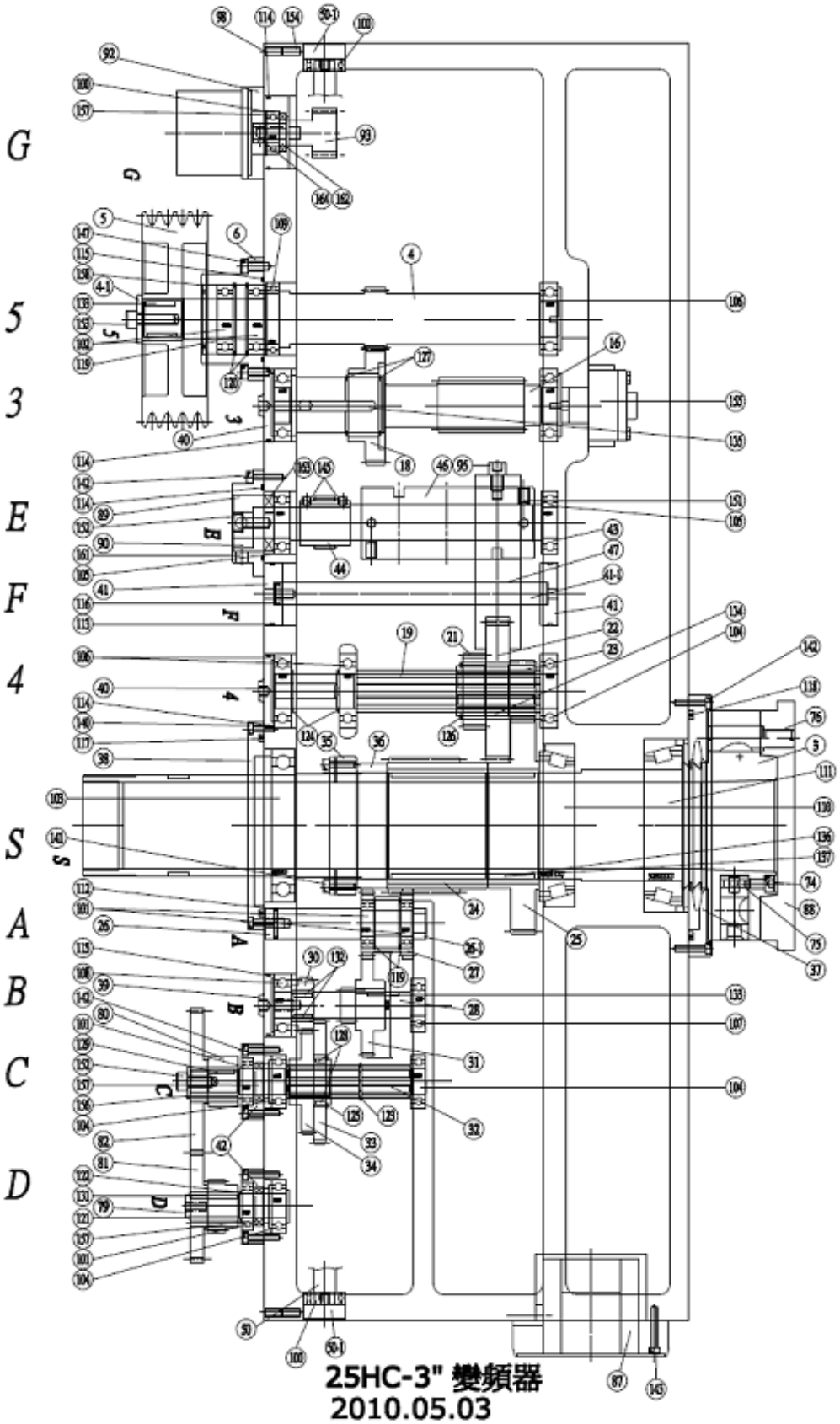
1. Machine model & serial number.
2. Item number.
3. Part number and description.
4. Year of Production.
5. Voltage & horsepower.
6. Quantity

INVERTER LATHE
HEADSTOCK _ 21/25 HC, SPINDLE BORE 85MM (3”)





PARTS LIST OF 21/25HC HEADSTOCK_ SPINDLE BORE 85MM (3”)



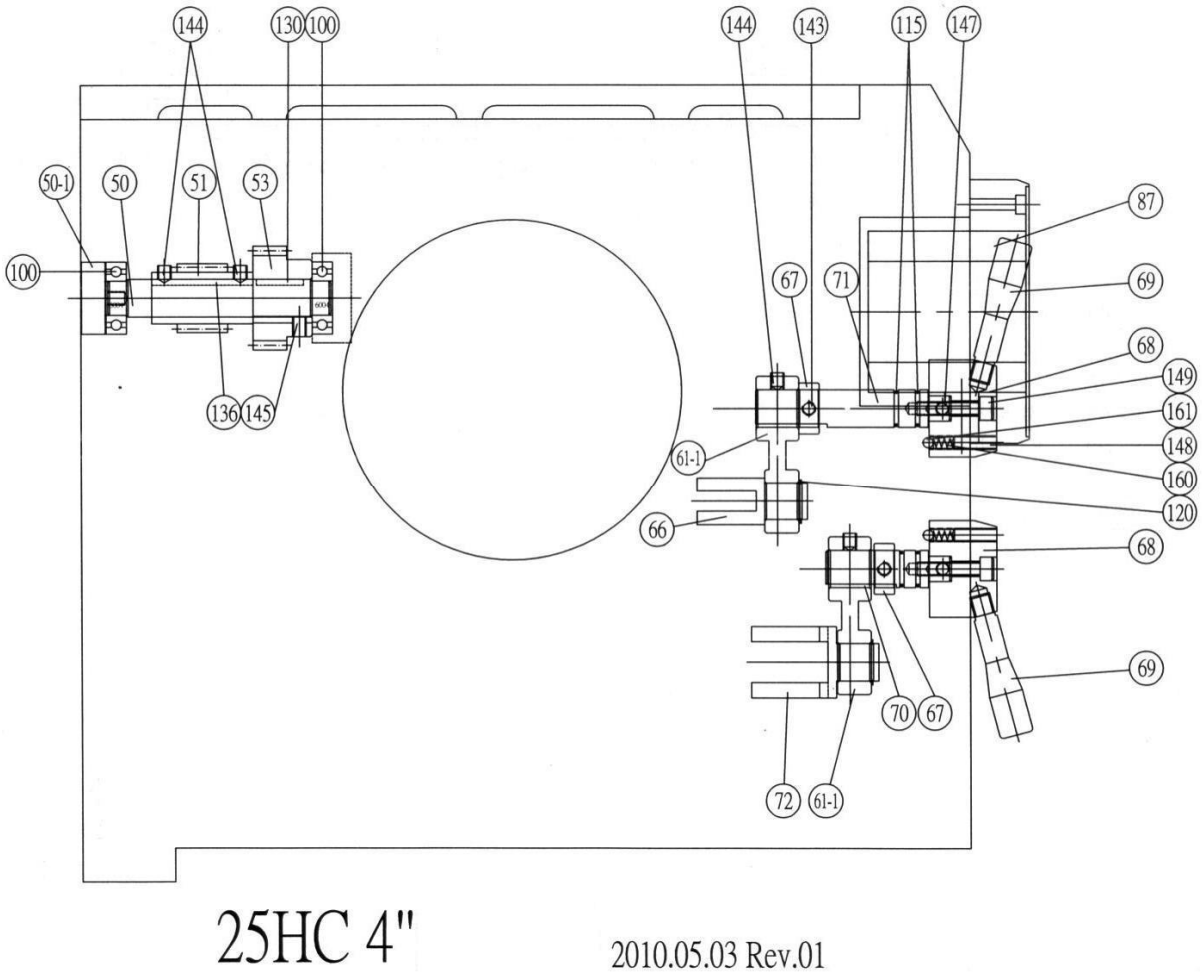
PARTS LIST OF 21/25HC HEADSTOCK_ SPINDLE BORE 85MM (3”) 2010.05.03				
ITEM	**PARTS NO.**	**DESCRIPTION**	**Q'TY**	**REMARK**
001	18HC-001000	HEADSTOCK	1	
002	25HA-002000	COVER	1	
003D	18HA-0030D0	SPINDLE	1	
004	18HB-0041A0	SHAFT	1	
004-1	18HB-004100	SPACER	1	
005	18HA-0052A0	V-PULLEY	1	
006	18HA-006A00	COVER	1	
016	18HA-016000	SHAFT	1	
018	18HA-018000	GEAR	1	
019	18HA-019000	SHAFT	1	
021	18HA-021000	GEAR	1	
022	18HA-022000	GEAR	1	
023	18HA-023000	GEAR	1	
024	18HA-024000	GEAR	1	
025	18HA-025000	GEAR	1	
026	18HA-026100	SHAFT	1	
027	18HA-027000	GEAR	1	
028	18HA-028000	SHAFT	1	
030	18HA-030000	GEAR	1	
031	18HA-031000	GEAR	1	
032	18HA-032000	SHAFT	1	
033	18HA-033000	GEAR	1	
034	18HA-034000	GEAR	1	
035	18HA-035000	LOCKING NUT	1	
036	18HA-036000	BUSHING	1	
037	18HA-037000	COVER	1	
038	18HA-038000	COVER	1	
039	18HA-039000	COVER	1	
040	18HA-040000	COVER	2	
041	18HA-041000	COVER	1	
041-1	18HA-041100	SHAFT	1	
042	18HA-042000	COVER	2	
043	18HB-017000	CAMSHAFT	1	
044	18HB-021000	GEAR	1	
046	18HB-022000	CAM	1	

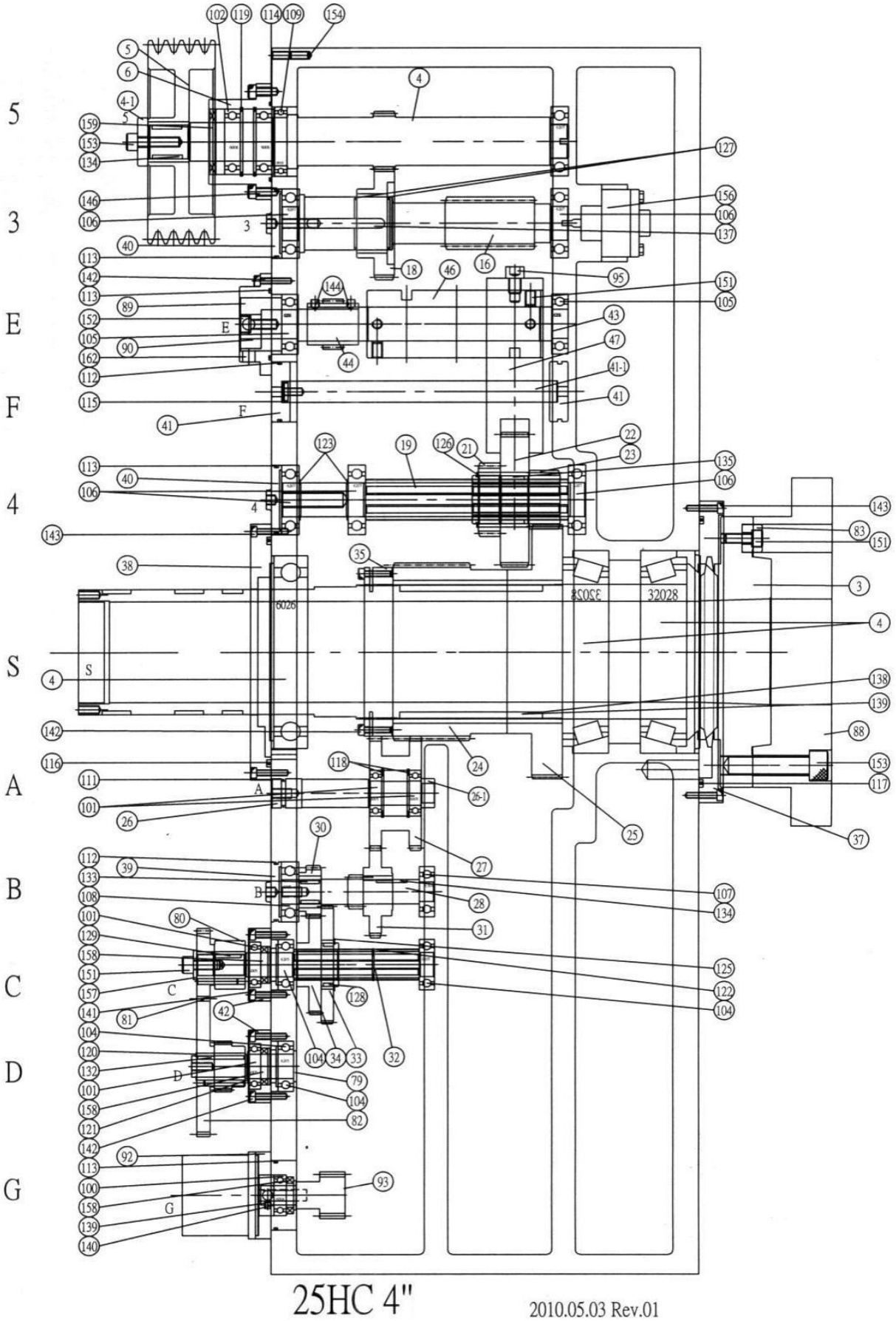
ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
047	18HB-023000	SPEED CHANGE FORK	1	
050	25HB-024000	SHAFT	1	
050-1	18HB-024100	STUFF	1	
051	18HB-025000	WORM GEAR	1	
053	18HB-026000	GEAR	1	
061-1	18HA-061100	HANDLE FOR SPEED CHANGE	2	
066	18HA-066000	SPEED CHANGE FORK	1	
067	18HA-067000	RING FOR SPEED CHANGE	2	
068	18HA-068000	LEVER BASE	2	
069	18HA-069000	HANDLE FOR SPEED CHANGE	2	
070	18HA-070000	SHAFT FOR SPEED CHANGE	1	
071	25HA-071000	SHAFT FOR SPEED CHANGE	1	
072	18HA-072000	SPEED CHANGE FORK	1	
074	18HA-074000	COUNTER SINK SCREW	6	
075	18HA-075000	CAM	6	
076	18HA-076000	SHORT COLUMN	6	
079	18HA-079000	SHAFT	1	
080	18HA-080000	BASE FOR SAFE BOLT	1	
081	18HA-081000	GEAR	2	
100		BEARING 6004ZZ	3	
101		BEARING 6005	2	
102		BEARING 6005ZZ	2	
103		BEARING 6008	2	
104		BEARING 6014Z	1	
105		BEARING 6205	3	
106		BEARING 6206	2	
107		BEARING 6207	6	
108		BEARING 6304	1	
109		BEARING 6305	1	
110		BEARING 6910	1	
111		BEARING 32016XJ	2	
112		O RING G25	1	
113		O RING G55	2	
114		O RING G65	4	
115		O RING G75	1	
116		O RING G120	1	

PARTS LIST OF 21/25HC HEADSTOCK_ SPINDLE BORE 85MM (3”) 2010.05.03				
ITEM	**PARTS NO.**	**DESCRIPTION**	**Q'TY**	**REMARK**
117		O RING P18	5	
118		O RING P170	1	
119		C LOCKER R47	2	
120		C LOCKER R68	2	
121		C LOCKER S20	1	
122		C LOCKER S22	3	
123		C LOCKER S25	1	
124		C LOCKER S32	1	
125		C LOCKER S35	2	
126		C LOCKER S55	2	
127		KEY 6*6*25	1	
128		KEY 6*6*36	1	
129		KEY 6*6*45	1	
130		KEY 8*7*18	2	
131		KEY 8*7*28	3	
132		KEY 10*8*25	2	
133		KEY 10*8*40	2	
134		KEY 10*8*80	2	
135		CAP SCREW M6*16	2	
136		CAP SCREW M6*20	5	
137		CAP SCREW M6*30	16	
138		CAP SCREW M6*35	3	
139		CAP SCREW M8*20	4	
140		CAP SCREW M8*30	2	
141		CAP SCREW M10*25	2	
142		CAP SCREW M10*40	1	
143		SET SCREW M6*6	1	
144		SET SCREW M8*8	8	
145		SET SCREW M8*10	1	
146		SET SCREW M8*18	4	
147		SET SCREW M8*20	3	
148		SET SCREW M8*40	2	
149		SET SCREW M10*10	4	
150		SET SCREW M10*16	2	
151		SET SCREW 1/4 PT	2	

PARTS LIST OF 21/25HC HEADSTOCK_ SPINDLE BORE 85MM (3”) 2010.05.03				
ITEM	**PARTS NO.**	**DESCRIPTION**	**Q'TY**	**REMARK**
152		OIL SEAL 20*38*7	1	
153		OIL SEAL 25*38*7	2	
154		OIL SEAL 40*68*7	1	
155		NUT M8	2	
156		SPRING WASHER M8	2	
157		SPACER M10	2	
158		Oil Pump	1	
159		SPRING ϕ 6	2	
160		BALL ϕ 6	2	
161		SENSOR	3	

HEADSTOCK _ 21/25 HC, SPINDLE BORE 105MM (4”)




25HC 4"
2010.05.03 Rev.01

PARTS LIST OF 21/25HC HEADSTOCK_ SPINDLE BORE 105MM (4”) 2010.05.03

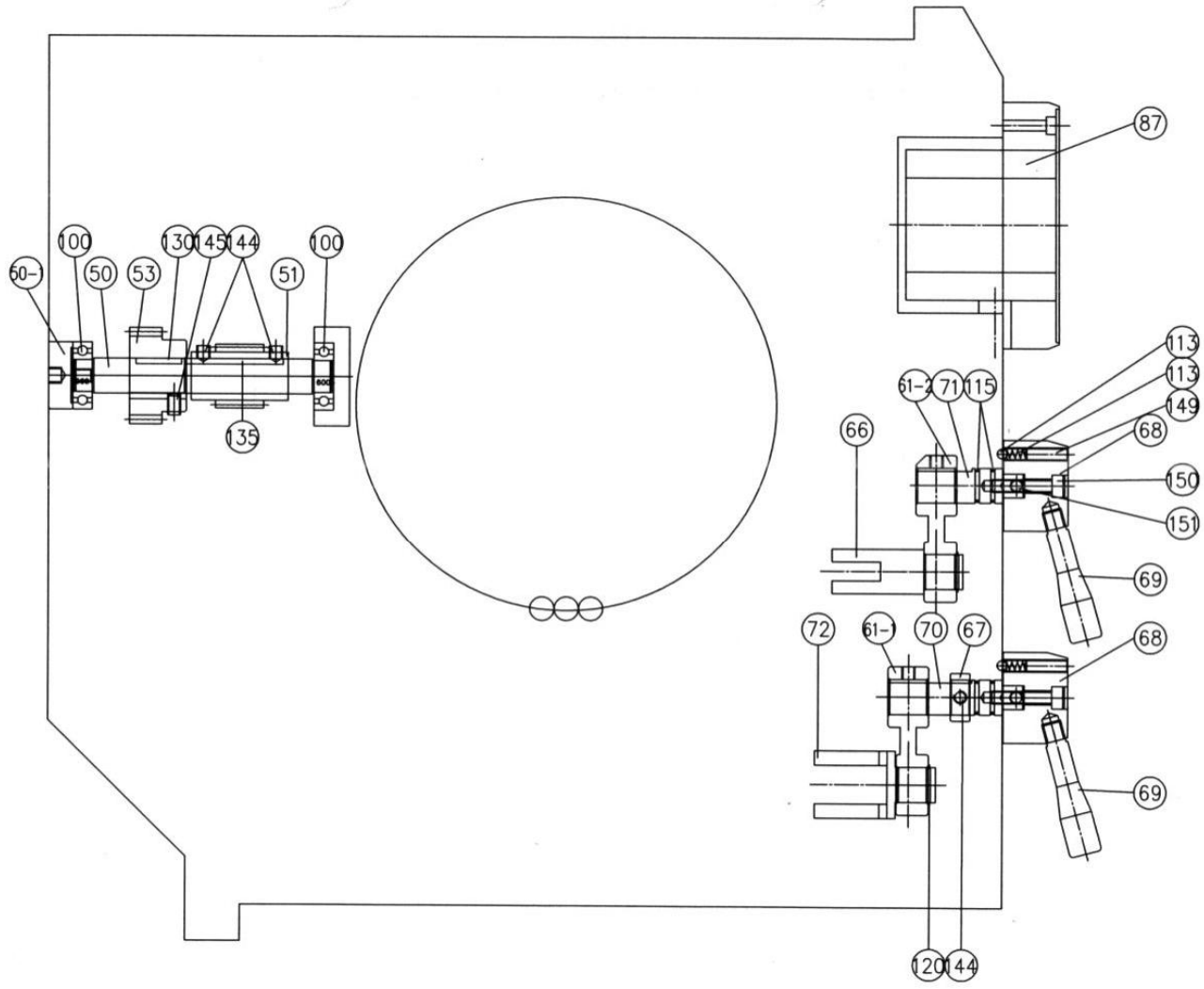
ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
001	21HC-401000	HEADSTOCK	1	FOR MA-21
001	25HC-401000	HEADSTOCK	1	FOR MA-25
002	25HA-002000	COVER	1	
003D	25HA-403000	SPINDLE	1	
004	18HB-004A10	SHAFT	1	
004-1	18HA-004100	SPACER	1	
005	18HA-0051A0	V-PULLEY	1	
006	18HA-006A00	COVER	1	
016	18HA-016000	SHAFT	1	
018	18HA-018000	GEAR	1	
019	25HA-419000	SHAFT	1	
021	25HA-421000	GEAR	1	
022	25HA-422000	GEAR	1	
023	25HA-423000	GEAR	1	
024	25HA-424000	GEAR	1	
025	25HA-425000	GEAR	1	
026	18HA-026000	SHAFT	1	
026-1	18HA-026100	SLEEVE	1	
027	25HA-427000	GEAR	1	
028	18HA-028000	SHAFT	1	
030	18HA-030000	GEAR	1	
031	25HA-431000	GEAR	1	
032	18HA-032000	SHAFT	1	
033	18HA-033000	GEAR	1	
034	18HA-034000	GEAR	1	
035	25HA-435000	LOCKING NUT	1	
036	25HA-436000	BUSHING	1	
037	25HA-437000	COVER	1	
038	25HA-438000	COVER	1	
039	18HA-039000	COVER	1	
040	18HA-040000	COVER	2	
041	18HA-041000	COVER	2	
041-1	18HA-041100	SHAFT	1	
042	18HA-042000	COVER	2	

PARTS LIST OF 21/25HC HEADSTOCK_ SPINDLE BORE 105MM (4”) 2010.05.03				
ITEM	**PARTS NO.**	**DESCRIPTION**	**Q'TY**	**REMARK**
043	18HB-017000	CAM SHAFT	1	
044	18HB-021000	GEAR	1	
046	25HB-422000	CAM	1	
047	25HB-423000	SPEED CHANGE FORK	1	
050	25HB-424000	SHAFT	1	
050-1	18HB-024100	STUFF	2	
051	18HB-025000	WORM GEAR	1	
053	18HB-026000	GEAR	1	
061-1	18HA-061100	HANDLE FOR SPEED CHANGE	2	
066	18HA-066000	SPEED CHANGE FORK	1	
067	18HA-067000	RING FOR SPEED CHANGE	2	
068	18HA-068000	LEVER BASE	2	
069	18HA-069000	HANDLE FOR SPEED CHANGE	4	
070	25HA-470000	SHAFT FOR SPEED CHANGE	1	
071	25HA-471000	SHAFT FOR SPEED CHANGE	1	
072	18HA-072000	SPEED CHANGE FORK	1	
079	18HA-079000	SHAFT	1	
080	18HA-080000	BASE FOR SAFE BOLT	1	
081	18HA-081000	GEAR	1	
082	25HA-082000	GEAR	1	
083	25HA-483000	FIXED BLOCK	1	
087	18HC-035000	BASE OF RATEMETER	1	
088		CONNECTING PLATE	1	
089	18HB-020000	BASE OF INSPECTION	1	
090	18HB-019000	BLOCK OF INSPECTION	1	
091	18HB-015000	COVER	1	
092	18HB-028001	MOTOR COVER	1	
093	18HB-027003	WORM SHAFT	1	
095	18HB-048000	SCREW	1	
096	18HA-085000	COVER	1	
100		BEARING 6004	3	
101		BEARING 6005	4	
102		BEARING 6008	2	
103		BEARING 6026	1	
104		BEARING 6205	3	

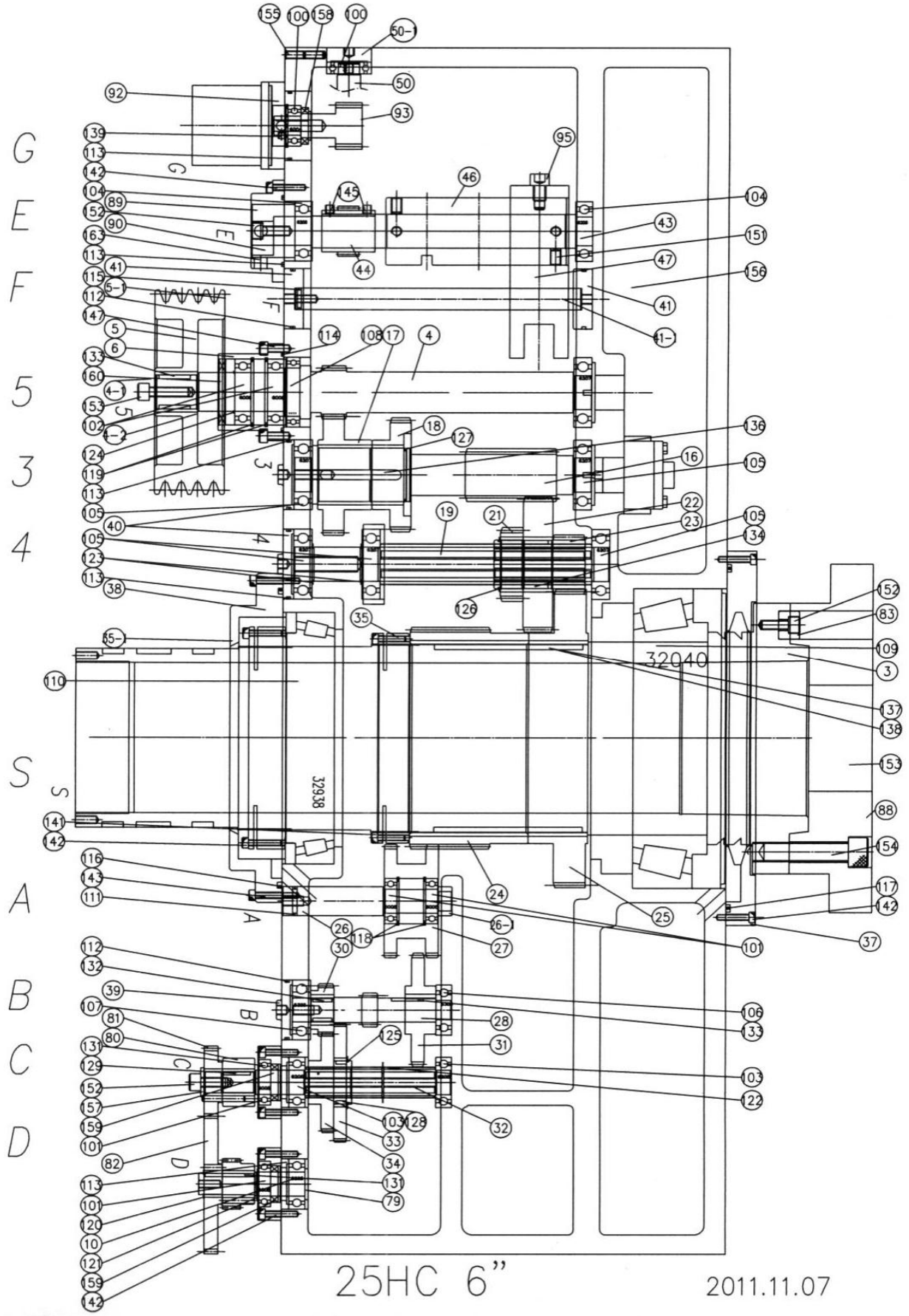
PARTS LIST OF 21/25HC HEADSTOCK_ SPINDLE BORE 105MM (4”) 2010.05.03				
ITEM	**PARTS NO.**	**DESCRIPTION**	**Q'TY**	**REMARK**
105		BEARING 6206	2	
106		BEARING 6207	6	
107		BEARING 6304	1	
108		BEARING 6305	1	
109		BEARING 6910	1	
110		TAPERED ROLLER BEARING 32028	2	
111		O RING G25	1	
112		O RING G55	2	
113		O RING G65	4	
114		O RING G75	1	
115		O RING P18	5	
116		O RING P220	1	
117		O RING P265	1	
118		C LOCKER R47	2	
119		C LOCKER R68	2	
120		C LOCKER S22	3	
121		C LOCKER S25	1	
122		C LOCKER S32	1	
123		C LOCKER S35	2	
125		C LOCKER S45	1	
126		C LOCKER S50	1	
127		C LOCKER S55	2	
128		KEY 6*6*10	2	
129		KEY 6*6*25	1	
130		KEY 6*6*28	1	
131		KEY 6*6*32	1	
132		KEY 6*6*45	1	
133		KEY 8*7*18	2	
134		KEY 8*7*28	3	
135		KEY 8*7*45	2	
136		KEY 8*7*56	1	
137		KEY 10*8*22	2	
138		KEY 18*11*60	2	
139		KEY 18*11*80	2	
140		C LOCKER S20	1	

PARTS LIST OF 21/25HC HEADSTOCK_ SPINDLE BORE 105MM (4”) 2010.05.03				
ITEM	**PARTS NO.**	**DESCRIPTION**	**Q'TY**	**REMARK**
141		SCREW M6*15	2	
142		SCREW M6*25	8	
143		SCREW M6*30	25	
144		SCREW M8*4	2	
145		SCREW M8*8	6	
146		SCREW M8*12	1	
147		SCREW M8*20	4	
148		SCREW M8*21.55	2	
149		SCREW M8*25	2	
150		SCREW M8*30	2	
151		SCREW M10*14	4	
152		SCREW M10*25	13	
153		SCREW M10*40	1	
154		SCREW M20*80	11	
155		SCREW M8*14	2	
140		C LOCKER S20	1	
156		Oil Pump	1	
157		SPACER ϕ 30*3	1	
158		OIL SEAL 38*25*7	3	
159		OIL SEAL 68*40*7	1	
160		SPRING	2	
161		BALL	2	
162		SENSOR	3	

HEADSTOCK _ 25 HC, SPINDLE BORE 155MM (6”)



25HC 6”


G
E
F
5
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S
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D
32040
32938
25HC 6”
2011.11.07

PARTS LIST OF 25HC HEADSTOCK_ SPINDLE BORE 155MM (6'') 2011.11.07

ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
001	25HC-601000	HEADSTOCK	1	
002	25HA-602000	COVER	1	
003	25HA-603000	SPINDLE	1	
004	25HC-604000	SHAFT	1	
004-1	18HB-004100	SPACER	1	
005	18HA-0051A0	V-PULLEY	1	
006	18HA-006000	COVER	1	
016	18HA-016000	SHAFT	1	
017	25HC-617000	GEAR	1	
018	18HA-018000	GEAR	1	
019	25HA-419000	SHAFT	1	
021	25HA-421000	GEAR	1	
022	25HA-422000	GEAR	1	
023	25HA-423000	GEAR	1	
024	25HA-624000	GEAR	1	
025	25HA-625000	GEAR	1	
026	18HA-026000	SHAFT	1	
026-1	18HA-026100	SLEEVE	1	
027	25HA-427000	GEAR	1	
028	18HA-028000	SHAFT	1	
030	18HA-030000	GEAR	1	
031	25HA-631000	GEAR	1	
032	18HA-032000	SHAFT	1	
033	18HA-033000	GEAR	1	
034	18HA-034000	GEAR	1	
035	25HA-635000	MASTER NUT - FRONT	1	
035-1	25HA-635100	MASTER NUT - REAR	1	
037	25HA-637000	COVER	1	
038	25HA-638000	COVER	1	
039	18HA-039000	COVER	1	
040	18HA-040000	COVER	2	
041	18HA-041000	COVER	2	
041-1	18HA-041100	SHAFT	1	
042	18HA-042000	COVER	2	

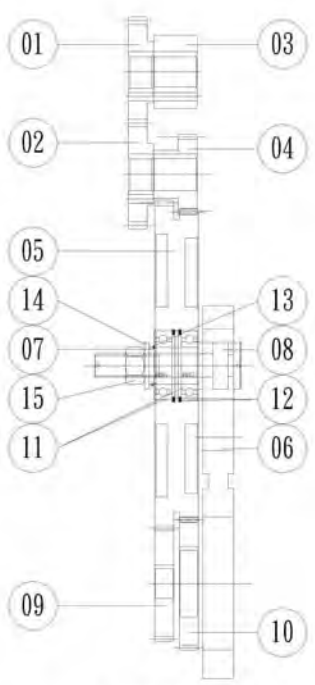
PARTS LIST OF 25HC HEADSTOCK_ SPINDLE BORE 155MM (6'') 2011.11.07				
ITEM	**PARTS NO.**	**DESCRIPTION**	**Q'TY**	**REMARK**
043	18HB-017000	CAM SHAFT	1	
044	18HB-021000	GEAR	1	
046	25HB-422000	CAM	1	
047	25HB-423000	SPEED CHANGE FORK	1	
050	25HB-624000	SHAFT	1	
050-1	18HB-024100	STUFF	2	
051	18HB-025000	WORM GEAR	1	
053	18HB-026000	GEAR	1	
061-1	18HA-061100	HANDLE FOR SPEED CHANGE	2	
066	25HA-666000	SPEED CHANGE FORK	1	
067	18HA-067000	RING FOR SPEED CHANGE	1	
068	18HA-068000	LEVER BASE	2	
069	18HA-069000	HANDLE FOR SPEED CHANGE	2	
070	18HA-070000	SHAFT FOR SPEED CHANGE	1	
071	25HA-671000	SHAFT FOR SPEED CHANGE	1	
072	18HA-072000	SPEED CHANGE FORK	1	
077	25HA-677000	SLEEVE	1	
079	18HA-079000	SHAFT	1	
080	18HA-080000	BASE FOR SAFE BOLT	1	
081	18HA-081000	GEAR	1	
082	25HA-082000	GEAR	1	
083	25HA-483000	FIXED BLOCK	1	
087	18HC-035000	BASE OF RATEMETER	1	
089	18HB-020000	BASE OF INSPECTION	1	
090	18HB-019000	BLOCK OF INSPECTION	1	
091	18HB-015000	COVER	1	
092	18HB-028001	MOTOR COVER	1	
093	18HB-027003	WORM SHAFT	1	
095	18HB-048000	SCREW	1	
096	18HB-085000	COVER	1	
		CONNECTING PLATE	1	
100		BEARING 6004	3	
101		BEARING 6005	2	
		BEARING 6005Z	2	
102		BEARING 6008	2	

PARTS LIST OF 25HC HEADSTOCK_ SPINDLE BORE 155MM (6'') 2011.11.07				
ITEM	**PARTS NO.**	**DESCRIPTION**	**Q'TY**	**REMARK**
103		BEARING 6205	3	
104		BEARING 6206	2	
105		BEARING 6207	6	
106		BEARING 6304	1	
107		BEARING 6305	1	
108		BEARING 6910	1	
109		TAPERED ROLLER BEARING 32040	1	
110		TAPERED ROLLER BEARING 32938	1	
111		O RING G25	1	
112		O RING G55	2	
113		O RING G65	4	
114		O RING G75	1	
115		O RING P18	5	
116		O RING P300	1	
117		O RING P340	1	
118		C LOCKER R47	2	
119		C LOCKER R68	2	
120		C LOCKER S22	3	
121		C LOCKER S25	1	
122		C LOCKER S32	1	
123		C LOCKER S35	2	
124		C LOCKER S40	1	
125		C LOCKER S45	1	
126		C LOCKER S50	2	
127		C LOCKER S55	1	
128		KEY 6*6*10	2	
129		KEY 6*6*25	1	
130		KEY 6*6*28	1	
131		KEY 6*6*45	1	
132		KEY 8*7*18	2	
133		KEY 8*7*28	3	
134		KEY 8*7*45	2	
135		KEY 8*7*56	1	
136		KEY 10*8*70	2	
137		KEY 14*9*60	2	

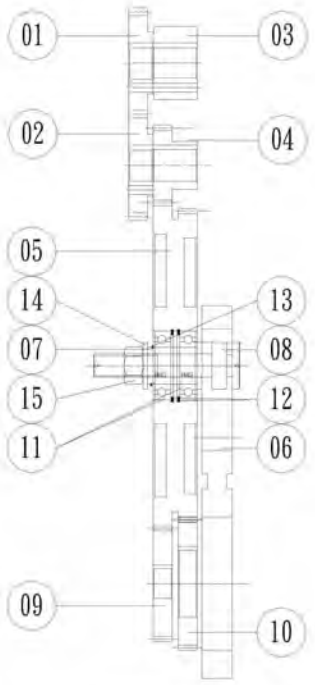
PARTS LIST OF 25HC HEADSTOCK_ SPINDLE BORE 155MM (6'') 2011.11.07				
ITEM	**PARTS NO.**	**DESCRIPTION**	**Q'TY**	**REMARK**
138		KEY 14*9*80	2	
139		SCREW M6*6	1	
141		SCREW M6*25	2	
142		SCREW M6*30	20	
143		SCREW M6*40	8	
144		SCREW M8*4	2	
145		SCREW M8*8	6	
146		SCREW M8*12	1	
147		SCREW M8*20	4	
148		SCREW M8*21.55	2	
149		SCREW M8*25	2	
150		SCREW M8*30	2	
151		SCREW M10*14	4	
152		SCREW M10*25	13	
153		SCREW M10*40	1	
154		SCREW M20*80	11	
155		SCREW M8*14	2	
156		Oil Pump	1	
157		SPACER ϕ 30*3	1	
158		OIL SEAL 38*22*7	1	
159		OIL SEAL 38*25*7	2	
160		OIL SEAL 68*40*7	1	
161		SPRING	2	
162		BALL	2	
163		SENSOR	3	

CHANGE GEAR (END GEAR)

SUITABLE FOR E-lathe 21/25 SERIES, SPINDLE BORE 85MM (3")



METRIC UNITS

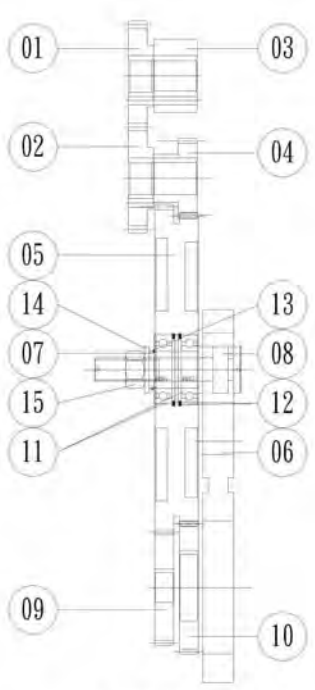


IMPERIAL UNITS

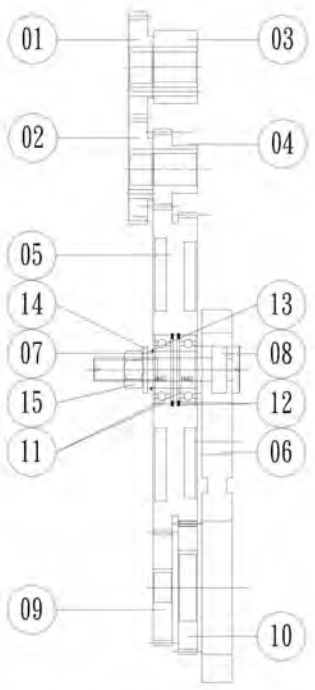
ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
01	25HA-081000	GEAR 42T, M2.5	1	
02	25HA-082000	GEAR 56T, M2.5	1	
03	18HA-080000	SAFE PIN BASE	1	
04	16B-031000	GEAR 28T, M1.75	1	
05	20B-033000	HAVING TWO LAYERS END GEAR 128T, M1.75 HAVING TWO LAYERS END GEAR 120T, M1.75	1	
06	20B-038A00	BRACKET	1	
07	20B-037000	SHAFT	1	
08	20B-036000	SHAFT	1	
09	20B-035000	END GEAR 42T, M1.75	1	
10	20B-034000	END GEAR 49T, M1.75	1	
11		BEARING 6005	2	
12		C LOCKER R47	2	
13		C LOCKER S25	1	
14		SPRING WASHER M16	1	
15		NUT M16	1	

CHANGE GEAR (END GEAR)

SUITABLE FOR E-lathe 21/25 SERIES, SPINDLE BORE 105MM (4")
SUITABLE FOR E-lathe 25 SERIES, SPINDLE BORE 155MM (6")



METRIC UNITS



IMPERIAL UNITS

ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
01	18HA-081000	GEAR 28T, M2.5	1	
02	25HA-082000	GEAR 56T, M2.5	1	
03	18HA-080000	SAFE PIN BASE	1	
04	16B-031000	GEAR 28T, M1.75	1	
05	20B-033000	HAVING TWO LAYERS END GEAR 128T, M1.75 HAVING TWO LAYERS END GEAR 120T, M1.75	1	
06	20B-038A00	BRACKET	1	
07	20B-037000	SHAFT	1	
08	20B-036000	SHAFT	1	
09	20B-035000	END GEAR 42T, M1.75	1	
10	20B-034000	END GEAR 49T, M1.75	1	
11		BEARING 6005	2	
12		C LOCKER R47	2	
13		C LOCKER S25	1	
14		SPRING WASHER M16	1	
15		NUT M16	1	

BED - 25B

2010-07-08
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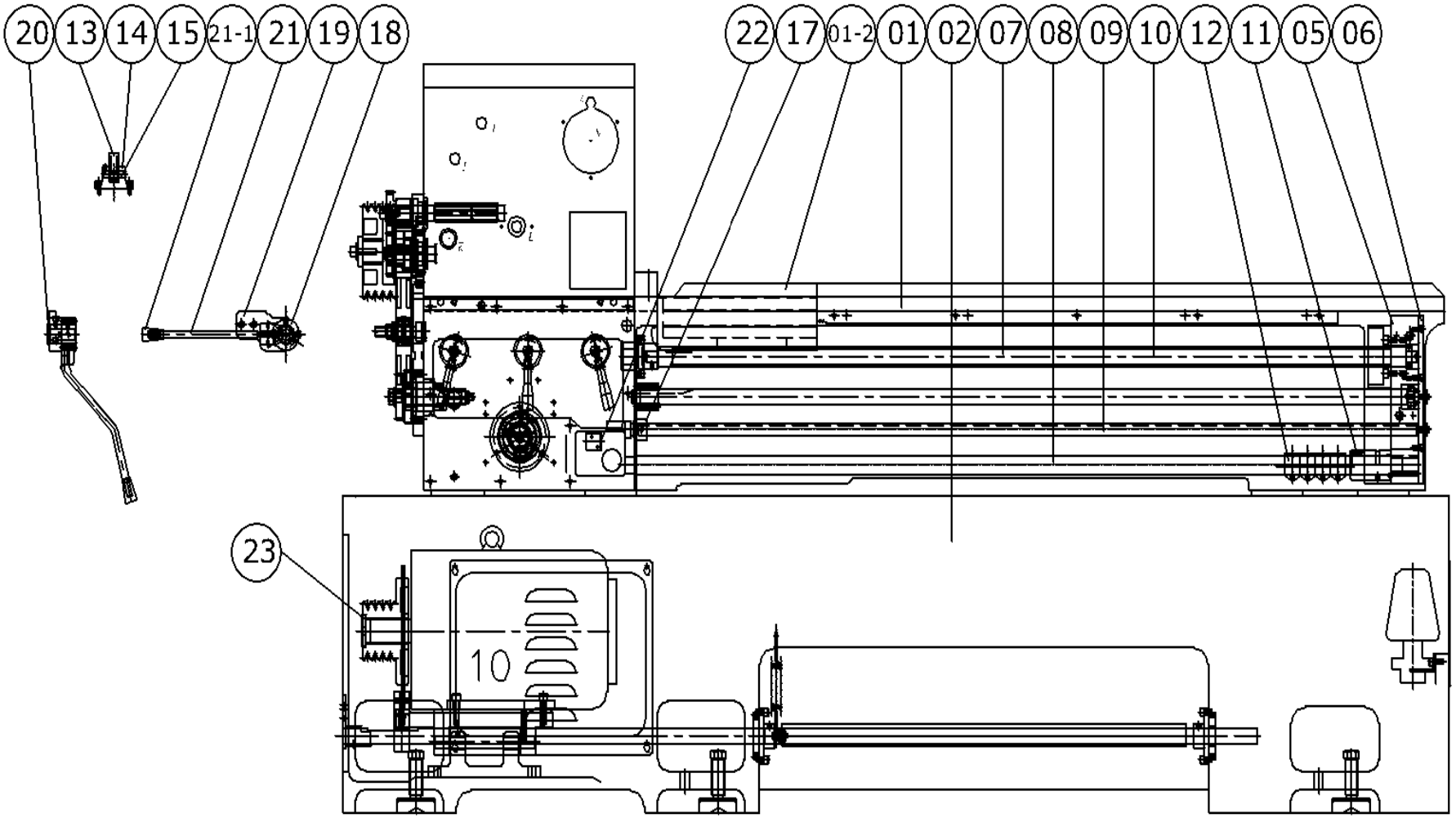

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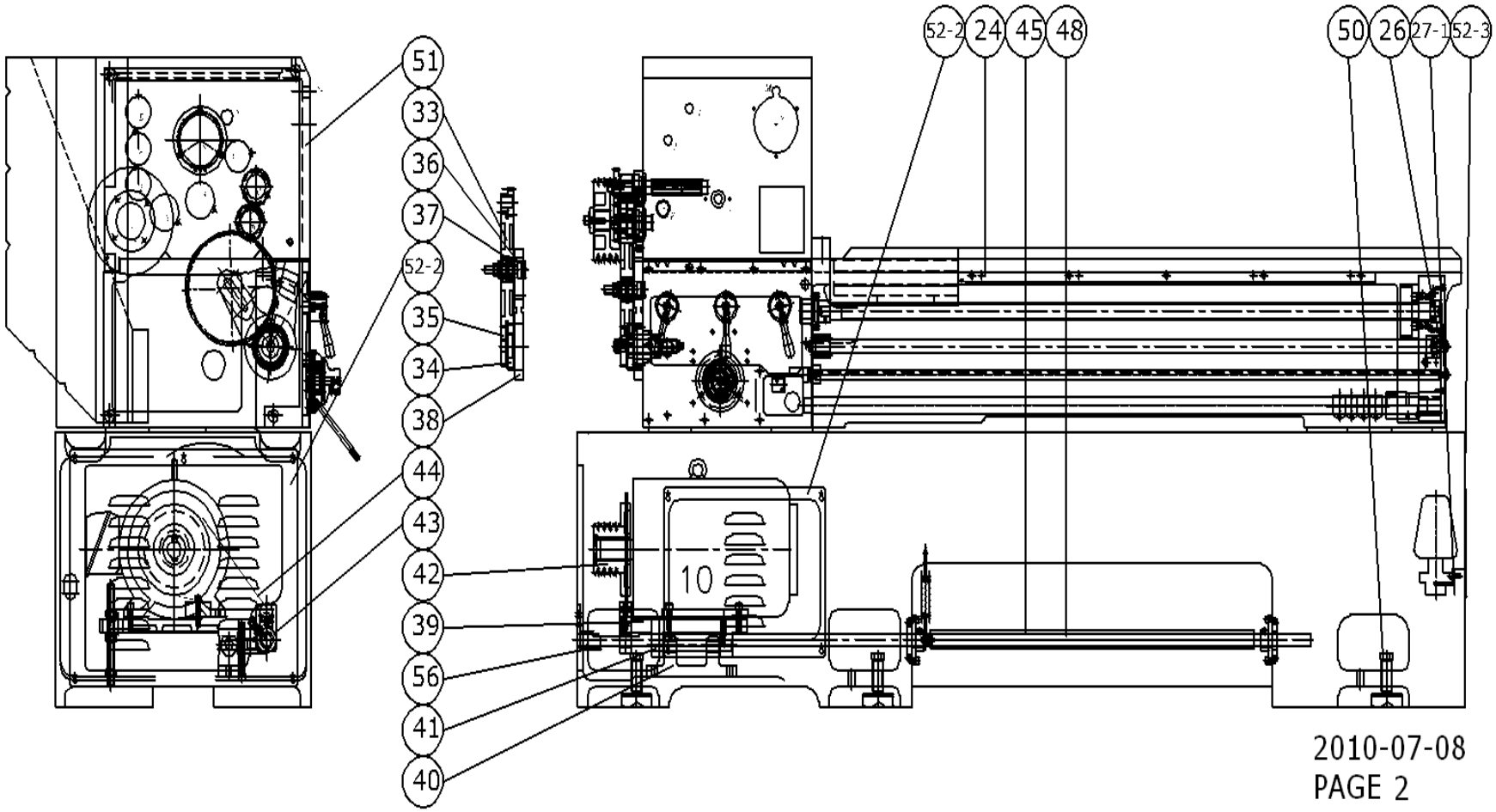

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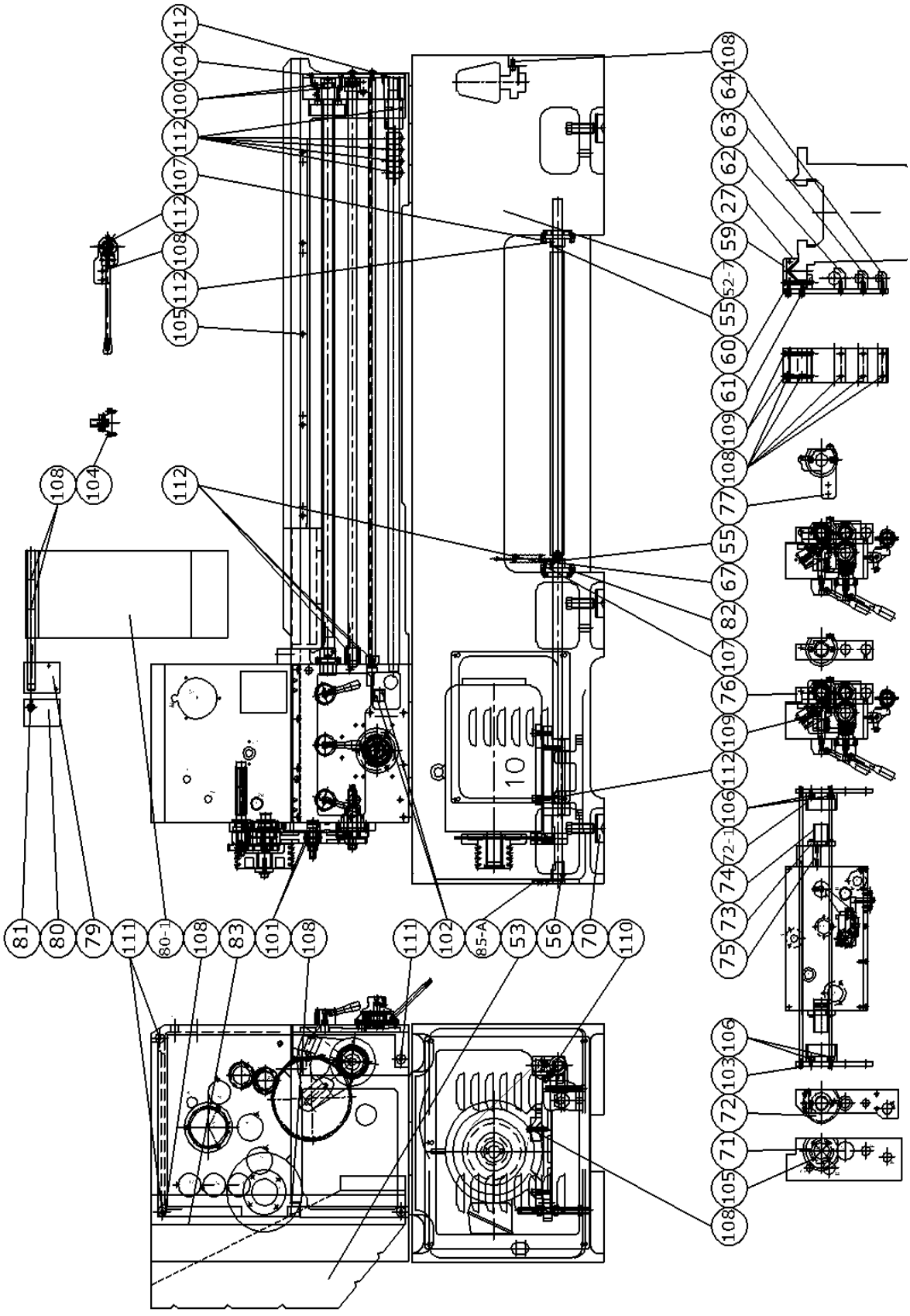
BED - 25B



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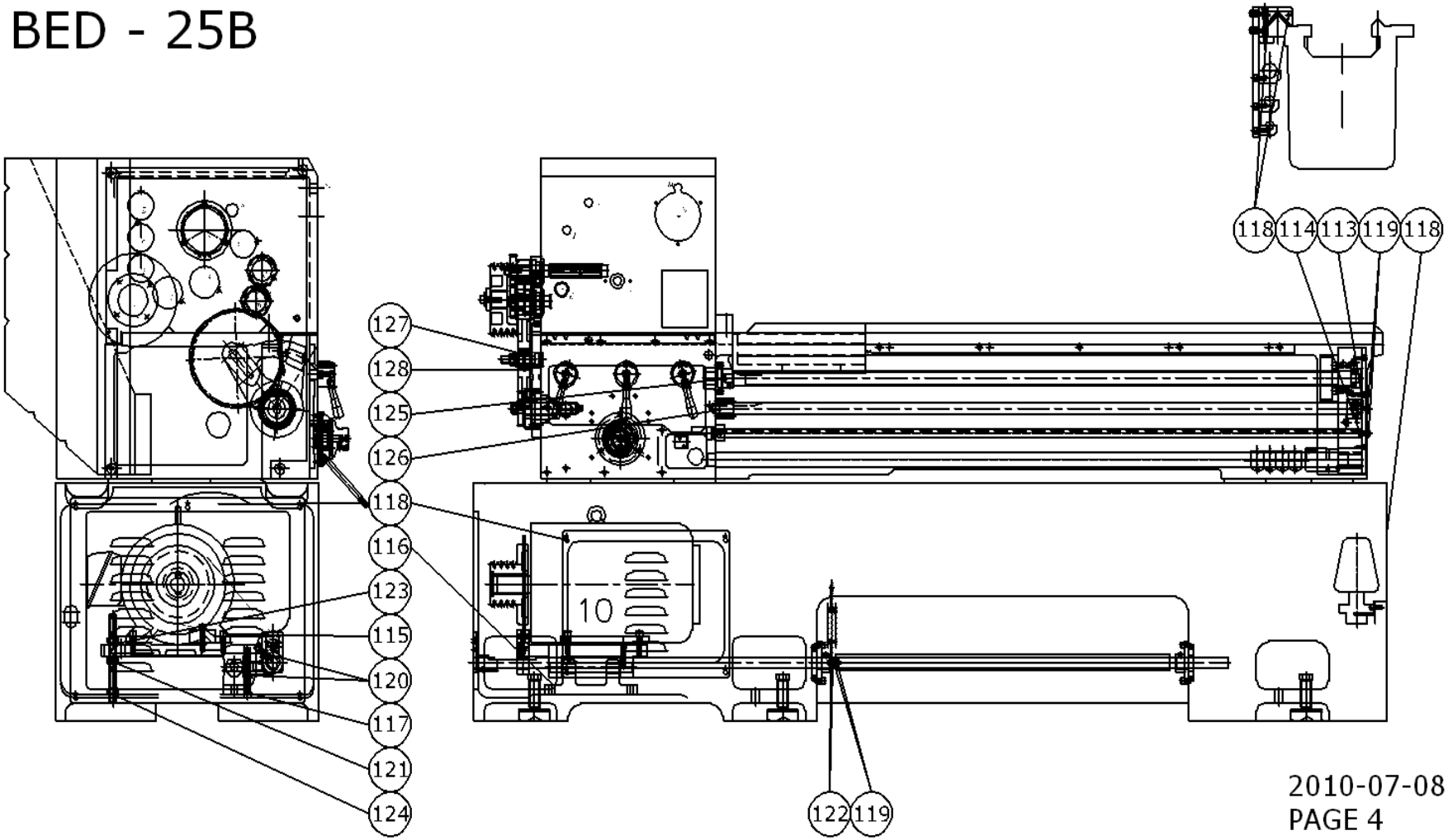

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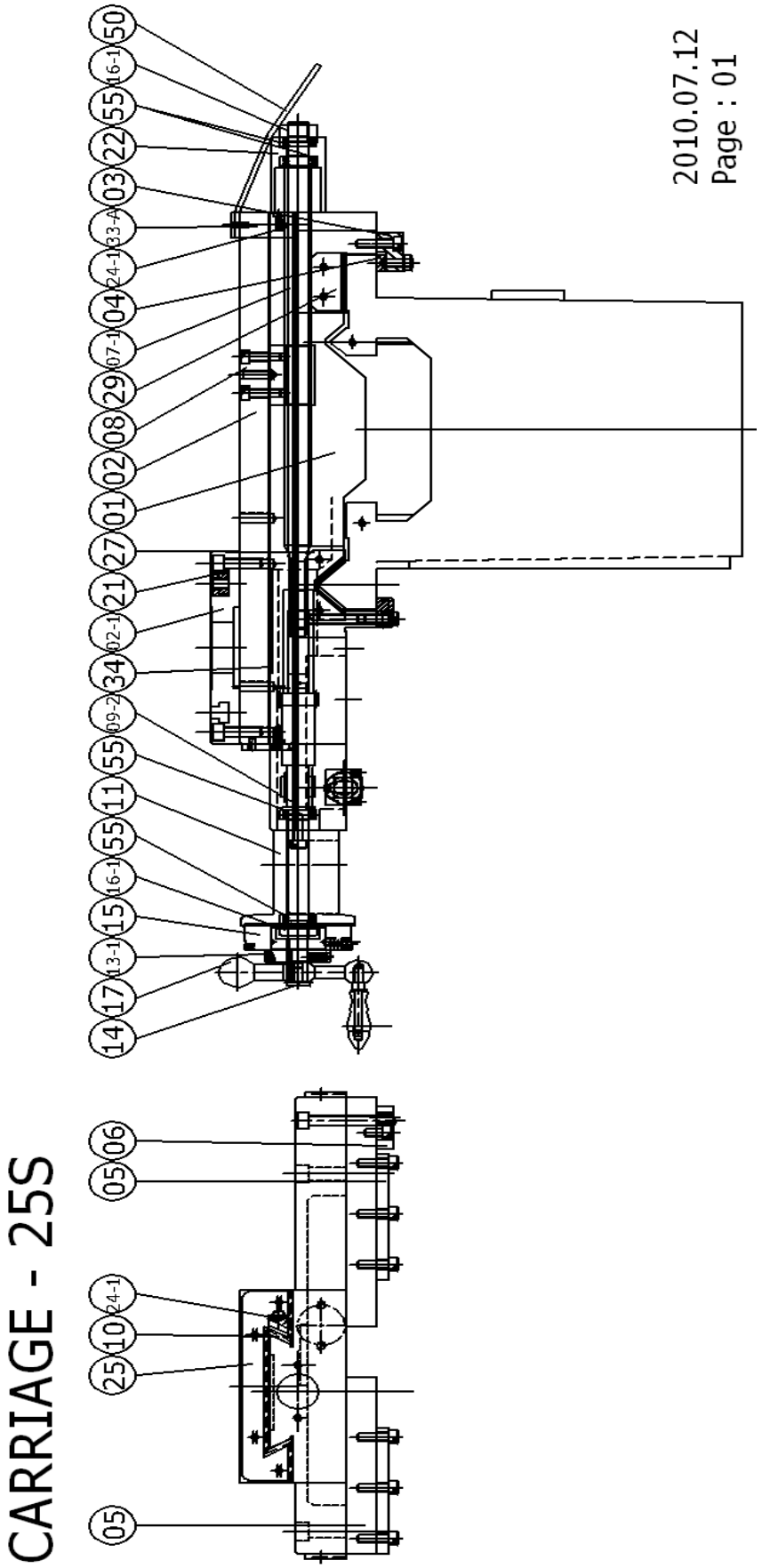
PART LIST OF BED – 21/25B

ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
001	25B-001	BED	1	40/60/80/120
001-2	25B-001-2	GAP	1	
002	25B-002	BED STAND	1	40/60/80/120
005	25B-005	BRACKET OF LEAD SCREW	1	
006	25B-006	COVER	1	
007	25B-007	LEAD SCREW	1	IN/MM
008	25B-008	LONGITUDINAL KICK-OUT DEVICE	1	
009	25B-009	SWITCH BAR	1	
010	25B-010	FEED BAR	1	
011	25B-011	ROTATING SHEATH	1	
012	25B-012	ECCENTRIC RING	4	
013	25B-013	VERTICAL ARM	1	
014	25B-014	PROP STAND	1	
015	25B-015	SHAFT	1	
017	25B-017	SWITCH SHORT SHAFT	1	
018	25B-018	BRACKET	1	
019	25B-019	BRACKET	1	
020	25B-020	SLEEVE	1	
021	25B-021	GRIP	1	
021-1	25B-021-1	KNOB	1	
022	25B-022	LIMIT SWITCH RACK	1	
023	25B-023	PAD	1	
024	25B-024	RACK	1	
026	25B-026	ADJUST SPACER	1	
027	25S-027	WIPER	2	
027-1	25B-027-1	PUMP BRACKET	1	
033	25B-033	CHANGE GEAR	1	
034	25B-034	GEAR	1	
035	25B-035	BEAR	1	
036	25B-036	SHAFT	1	
037	25B-037	SHAFT	1	
038	25B-038	FAN-SHAPED BRACKET	1	
039	25B-039	MOTOR BASE	1	
040	25B-040	SHAFT	1	
041	25B-041	BRACKET	1	

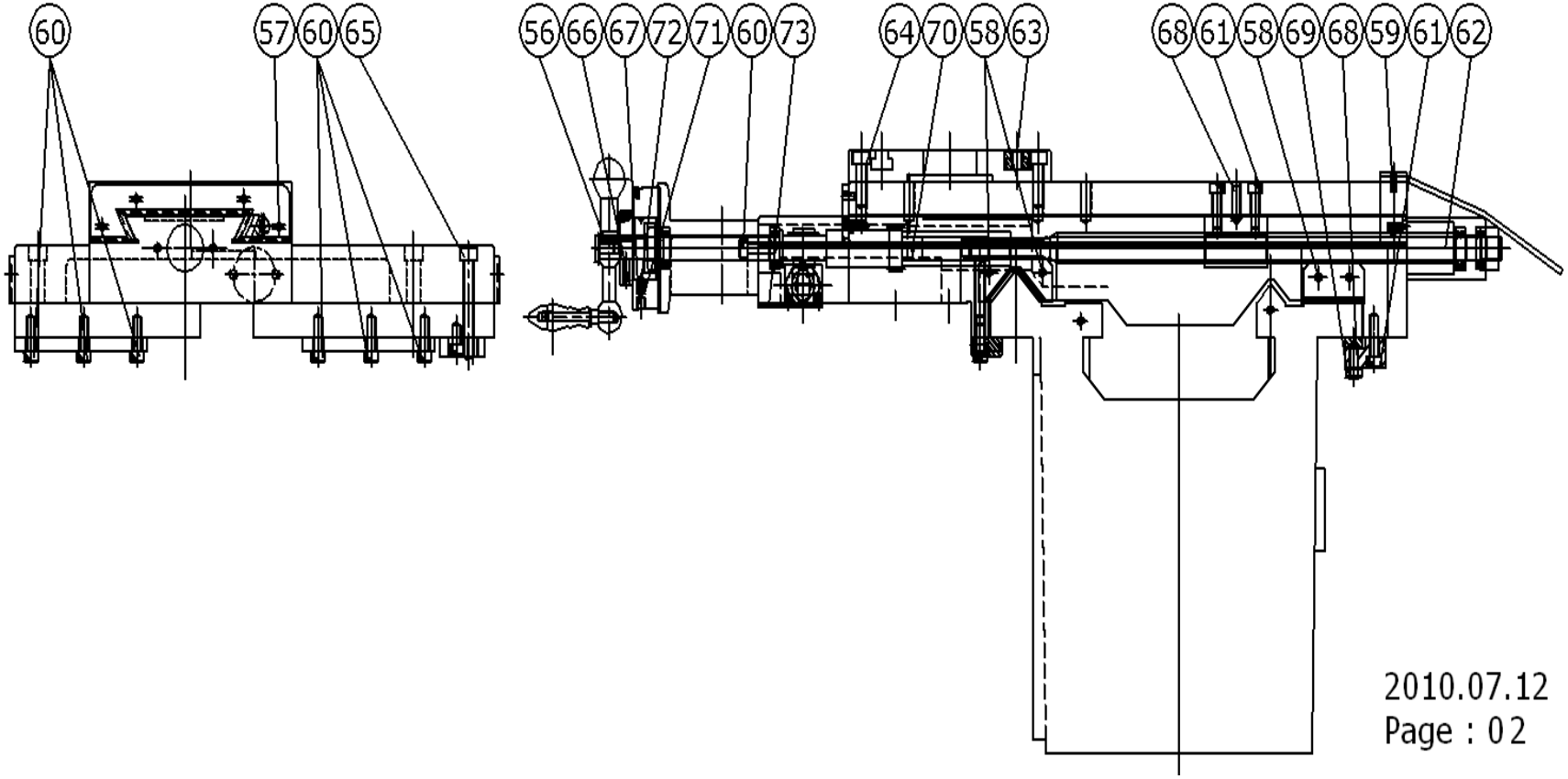
ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
042	25B-042	MOTOR PULLEY	1	
043	25B-043	BRAKE ARM	1	
044	25B-044	BRAKE BAND	1	
045	25B-045	BRAKE FOOTREST	1	
046	25B-046	ADJUST SCREW	2	
048	25B-048	BRAKE BAR	1	
050	25B-050	BASIC SCREW	6	
051	25B-051	COVER	1	
052-1	25B-052-1	SPEAR PLATE	1	
052-2	25B-052-2	SPEAR PLATE	1	
052-3	25B-052-3	SPEAR PLATE	1	
052-7	25B-052-7	FILTER SPEAR PLATE	1	
052-8	25B-052-8	SPEAR PLATE	1	
053	25B-053	SLASH GUARD	1	
054	25B-054	SUPPORT	1	
055	25B-055	BRAKE FIXED RING	2	
056	25B-056	RING	1	
059	25B-059	CHUNK	1	
060	25B-060	BOARD	1	
061	25B-061	BOARD	1	
062	25B-062	BRACKET	1	
063	25B-063	BRACKET	1	
064	25B-064	BRACKET	1	
067	25B-067	SPRING	1	
070	25B-070	PAD	1	
071	25B-071	GUARD SEAT	1	
072	25B-072	GUARD SEAT	1	
072-1	25B-072-1	GUARD SEAT	2	
073	25B-073	BOARD	2	
074	25B-074	RING	2	
075	25B-075	SLEEVE	1	
076	25B-076	BRACKET	1	
077	25B-077	BRACKET	1	
079	25B-079	PROP STAND SEAT	1	
080	25B-080	WIRING BAX	1	
080-1	25B-080-1	CHUCK GUARD	1	

ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
081	25B-081	SHAFT	1	
082	25B-082	RING	2	
083	25B-083	INTERVAL PLATE	1	INVERTER LATHE
85-A	25B-085-A	SEAT	1	
100		BEARING 6004	2	
101		BEARING 6005	2	
102		CAP SCREW M5*12	2	
103		CAP SCREW M5*16	4	
104		CAP SCREW M6*16	7	
105		CAP SCREW M6*30	9	
106		CAP SCREW M8*14	6	
107		CAP SCREW M8*16	6	
108		CAP SCREW M8*20	22	
109		CAP SCREW M8*75	3	
110		CAP SCREW M10*30	1	
111		CAP SCREW M10*170	4	
112		SET SCREW M8*8	13	
113		SET SCREW M8*20	1	
114		SET SCREW M8*25	1	
115		HEX FLANGESCREW M10*30	4	
116		HEX FLANGESCREW M10*35	2	
117		HEX FLANGESCREW M10*100	1	
118		BUTTON HEAD SOCKET CAP SCREW M5*12	17	
119		NUT M8	4	
120		NUT M10	2	
121		NUT M16	6	
122		SPACER M8	2	
123		SPACER M16	8	
124		SPRING SPACER M16	2	
125		ID TAPER PIN dia.5*45	1	
126		TAPER PIN dia.5*45	1	
127		C LOCKER S25	1	
128		C LOCKER R45	1	

PART LIST OF CARRIAGE – 21/25S



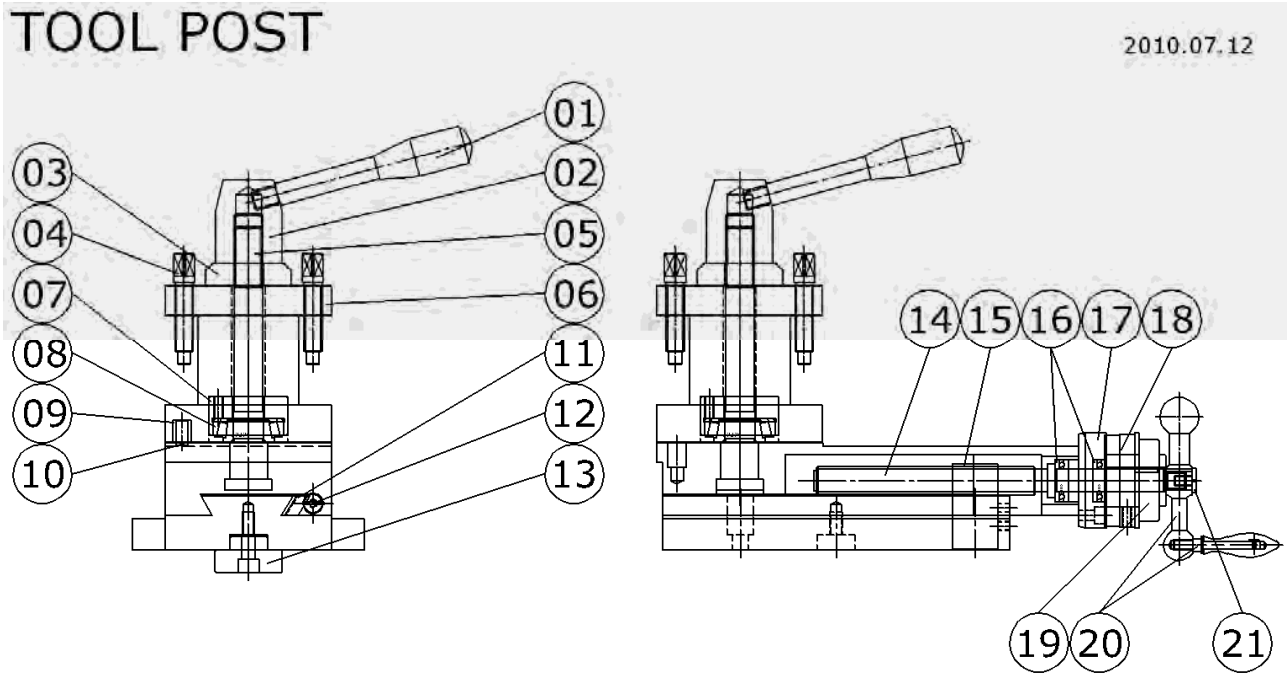
CARRIAGE - 25S



2010.07.12
Page : 02

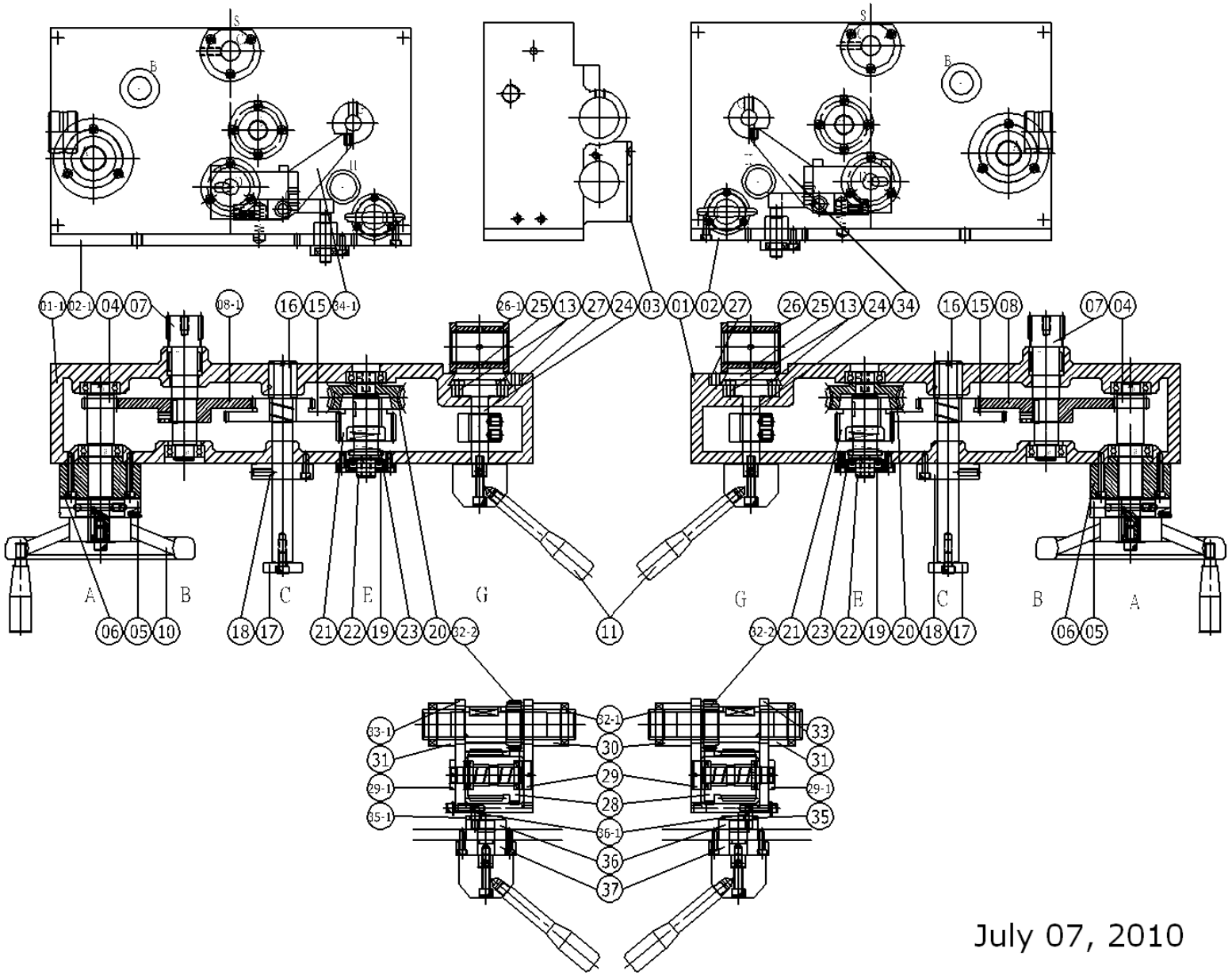
ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
001	25S-001	CARRIAGE	1	
002	25S-002	CROSS SLIDE	1	
002-1	25S-002-1	GRADUATION RING SEAT	1	
003	25S-003	PLATE	1	
004	25S-004	ADJUST BOARD - REAR	1	
005	25S-005	PLATE	1	
006	25S-006	LOCK PLATE	1	
007-1	25S-007	CARRIAGE LEADSCREW	1	mm/ inch
008	25S-008	NUT	1	mm/ inch
009-2	25S-009-2	FEED BAR SHAFT	1	
010	25S-010	GIB	1	
011	25S-011	BRACKET	1	
013-1	25S-013-1	GRADUATION RING SLEEVE	1	
014	25S-014	SCREW	1	
015	25S-015	GRADUATED COLLAR	1	mm/ inch
016-1	25S-016-1	HEX. NUT	2	
017	25S-017018B	SHAFT SET	1	
018	25S-021	TOOLPOST NUT	3	
024-1	25S-024-1	ADJUST SCREW	2	
025	25S-025	WIPER - FOR CROSS SLIDE	1	
027	25S-027	WIPER - FOR CARRIAGE	2	
029	25S-029	WIPER - FOR CARRIAGE	2	
033-A	25S-033-A	PLATE	1	
034	25S-034	COVER	1	
035	25S-035	SCREW SEAT	1	inverter lathe only
036	25S-036	GEAR	1	inverter lathe only
038	25S-038-1	TOOLPOST GUARD	1	opt.
038-A	25S-038-A	ACRYLIC	1	opt.
039	25S-039	ENCLOSURE	1	inverter lathe only
040	25S-040	RESISTANCE PROP STNAD	1	inverter lathe only
050	25S-050	SPLASH GURAD	1	
055		BEAR ING 51103	4	

ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
056		KEY 4*4*28	1	
057		BUTTON HEAD SOCKET CAP SCREW M5*10	4	
058		BUTTON HEAD SOCKET CAP SCREW M5*12	8	
059		BUTTON HEAD SOCKET CAP SCREW M6*14	5	
060		CAP SCREW M8*25	8	
061		CAP SCREW M8*30	8	
062		CAP SCREW M8*70	2	
063		CAP SCREW M8	3	tie in toolpost height
064		CAP SCREW M10	4	tie in toolpost height
065		CAP SCREW M70	1	
066		SET SCREW M6*20	1	
067		SET SCREW M8*10	1	
068		SET SCREW M8*25	6	
069		NUT M8	5	
070		PIN	1	
071		SPRING	1	
072		BALL	1	
073		SPACER	1	inverter lathe only
073		BEARING TA1725	1	inverter lathe only



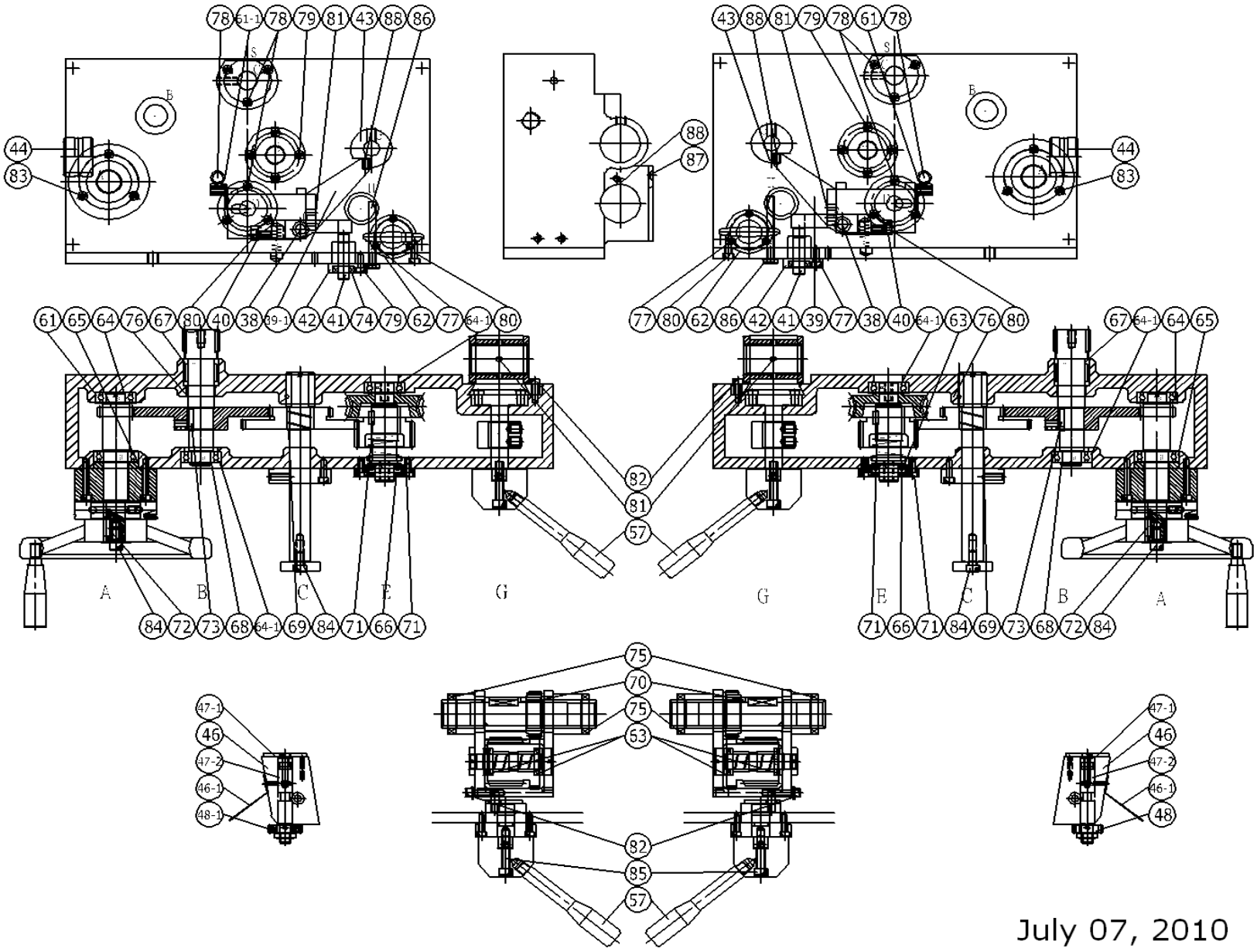
ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
001		HANDLE	1	
002		HANDLE BOSS	1	
003		WASHER	1	
004		LOCKING SCREW	12	
005		SHAFT	1	
006		TOOL POST	1	
007		BEARING SEAT	1	
008		BEARING 30204	1	
009		SLEEVE	1	
010		LOCATING PIN	1	
011		GIB	1	
012		LOCKING SCREW	2	
013		BLOCK	1	
014		LEADSCREW	1	
015		BLOCK	1	
016		BEARING 51102	2	
017		BRACKET	1	
018		GRADUATION RING	1	
019		HANDLE SEAT	1	
020		HANDLE SET	1	
021		LOCKING SCREW	1	

APRON - 25A



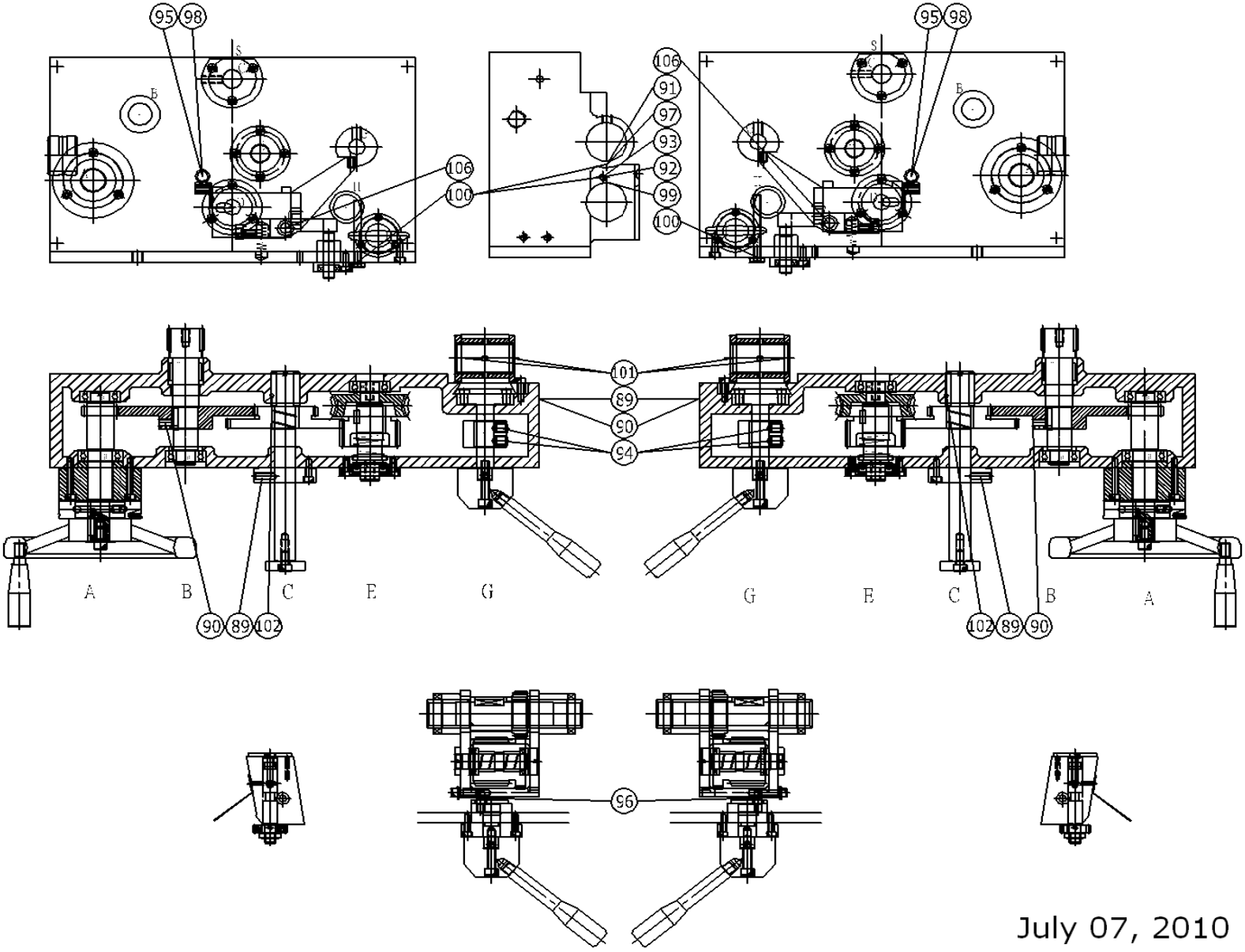
July 07, 2010

APRON - 25A



July 07, 2010

APRON - 25A



July 07, 2010

PART LIST OF APRON-21/25A

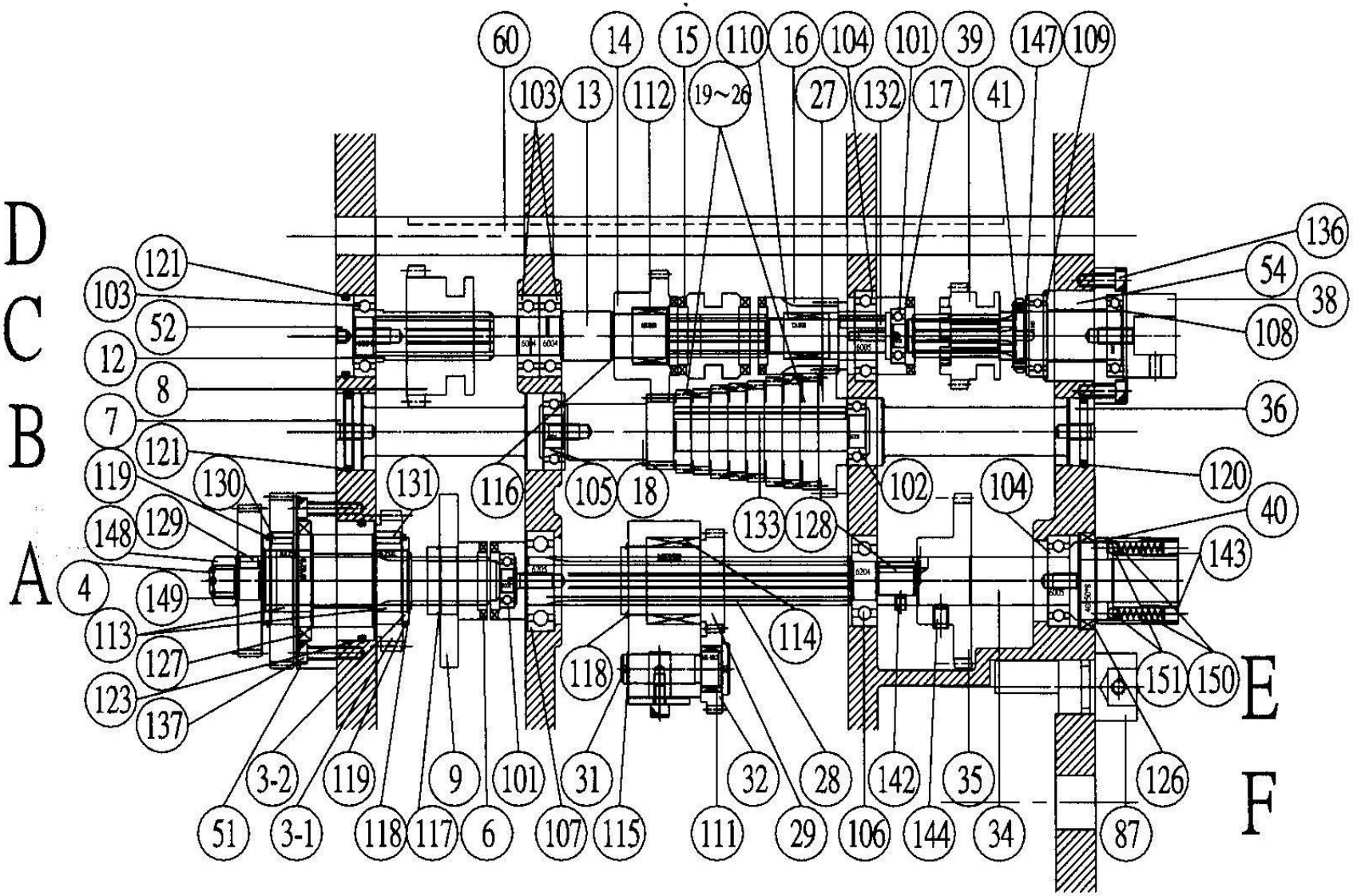
LIST OF 21/25A – APRON				
ITEM	**PARTS NO.**	**DESCRIPTION**	**Q'TY**	**REMARK**
001	25A-001	APRON BODY - RIGHT HAND	1	
001-1	25A-001	APRON BODY - LEFT HAND	1	
002	25A-002	BASE PLATE - RIGHT HAND	1	
002-1	25A-002	BASE PLATE - LEFT HAND	1	
003	25A-003	COVER	1	
004	25A-004	SHAFT	1	
005	25A-005	GRADUATED COLLAR	1	INCH / MM
006	25A-006	HOUSING	1	
007	25A-007	GEAR	1	
008	25A-008	GEAR	1	INCH / MM
010	25A-010	HANDWHEEL	1	
011	25A-011	HANDLE GRIP	1	
013	25A-013	ROTATING COLUMN	1	
015	25A-015	GEAR	1	
016	25A-016	SHAFT	1	
017	25A-017	SHAFT	1	
018	25A-018	COVER	1	
019	25A-019	COVER	1	
020	25A-020	WORM GEAR	1	
021	25A-021	GEAR	1	
022	25A-022	SHAFT	1	
023	25A-023	ADJUST PIN	1	
024	25A-024	CLOSE SHAFT	1	
025	25A-025	HALF-NUT SUPPORT	1	
026	25A-026	HALF-NUT	1	INCH / MM
027	25A-027	60° PIN	1	
028	25A-028	WORM GEAR	1	
029	25A-029	SHAFT	1	
029-1	25S-016	HEX. NUT	1	
030	25A-030	SLEEVE	1	
31	25A-031	SLEEVE	1	
032-1	25A-032	SHAFT	1	
032-2	25A-032-2	GEAR	1	

ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
033	25A-0330R0	WORM GEAR SUPPORT- RIGHT	1	
033-1	25A-0330L0	WORM GEAR SUPPORT- LEFT	1	
034	25A-0340R0	WORM GEAR SUPPORT- RIGHT	1	
034-1	25A-0340L0	WORM GEAR SUPPORT- LEFT	1	
035	25A-0350R0	CHANG SHAFT - RIGHT	1	
035-1	25A-0350L0	CHANG SHAFT - LEFT	1	
036	25A-036	TURN TABLE	1	
036-1	25A-036-1	BOLT	1	
037	25A-037	COVER	1	
038	25A-038	SHAFT	1	
039	25A-0390R0	ROCKING ARM - RIGHT	1	
039-1	25A-0390L0	ROCKING ARM - LEFT	1	
040	25A-040	POSITION CHUNK	1	
041	25A-041	SHAFT	1	
042	25A-042	COVER	1	
043	25A-043	COLLAR	1	
044	25A-044	RING	1	
046	25A-046	INDICATE SEAT	1	
047-1	25A-047-1	INDICATE DISH	1	
047-2	25A-047-2	INDICATE SHAFT	1	
048	25A-0480M3	INDICATE GEAR - MM	1	
048-1	25A-0480I0	INDICATE GEAR - INCH	1	
057	25A-057	HANDLE GRIP	1	
060	25A-060	FEED SPRING	1	
061	25A-0610R0	SPRING - RIGHT HAND	1	
061-1	25A-0610L0	SPRING - LEFT HAND	1	
062	25A-062	PUMP	1	
063		BEARING 51103	2	
064		BEARING 6004	1	
064-1		BEARING 6004ZZ	2	
065		BEARING 6005ZZ	1	
066		BEARING 51104	1	
067		BEARING TA-2830	1	
068		C-RING S20	1	
069		C-RING S22	1	
070		KEY 5*5*20	1	

ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
071		KEY 6*6*14	1	
072		KEY 6*6*20	1	
073		KEY 7*7*20	1	
074		OIL SEAL 12*22*7	1	
075		OIL SEAL 32*45*8	1	
076		O-RING P14	1	
077		CAP SCREW M5*10)	3	
078		CAP SCREW M5*20)	7	
079		CAP SCREW M6*10)	7	
080		CAP SCREW M6*16)	9	
081		CAP SCREW M6*20)	4	
082		CAP SCREW M6*25)	4	
083		CAP SCREW M6*45)	1	
084		CAP SCREW M8*14)	2	
085		CAP SCREW M8*30)	2	
086		HEX. FLANGE SCREW M8*70)	1	
087		ANS SCREW M6*16	5	
088		SET SCREW M6*6	2	
089		SET SCREW M8*8	2	
090		SET SCREW M8*16	3	
091		SET SCREW M8*20	2	
092		SET SCREW M8*40	1	
093		SET SCREW M8*50	1	
094		SET SCREW M10*16	2	
095		SPACER M5	1	
096		SPACER M6	1	
097		THICKNESS SPACER M6	1	
098		NUT M5	1	
099		NUT M6	1	
100		NUT M8	5	
101		SPRING PIN ψ4*20	4	
102		SPRING PIN ψ5*25	1	
103		STEEL BALL ψ6	1	
104		SPRING ψ6	1	
105		OIL IMMERSION LENS ψ29	1	
106		C-RING S12	1	

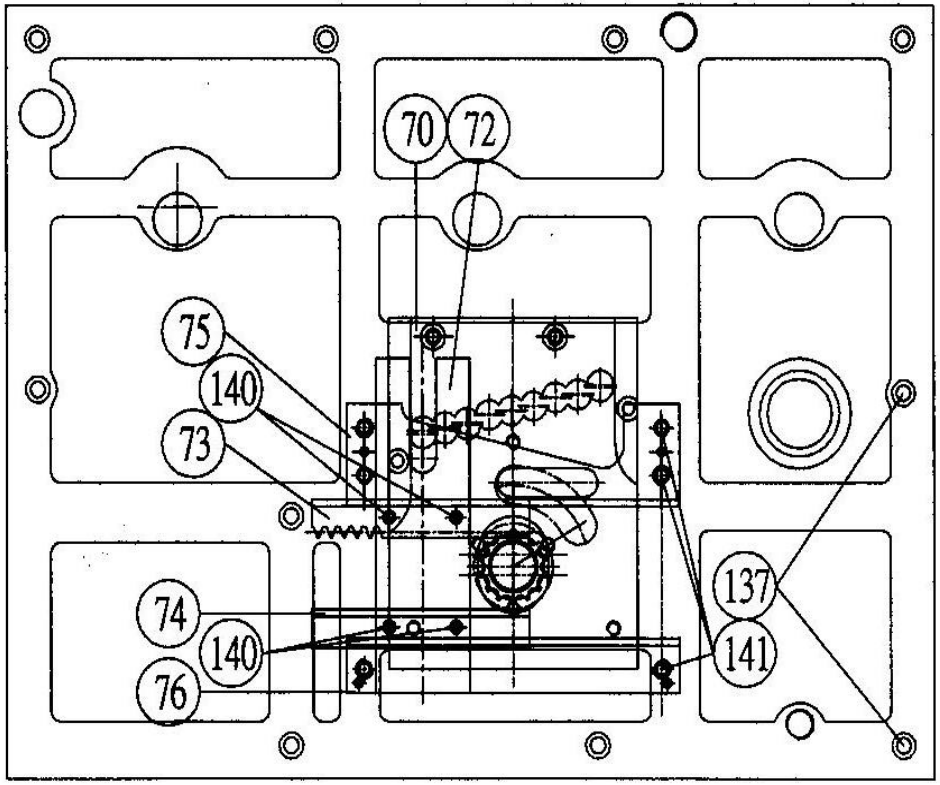
FEED BEAR BOX - 20 G

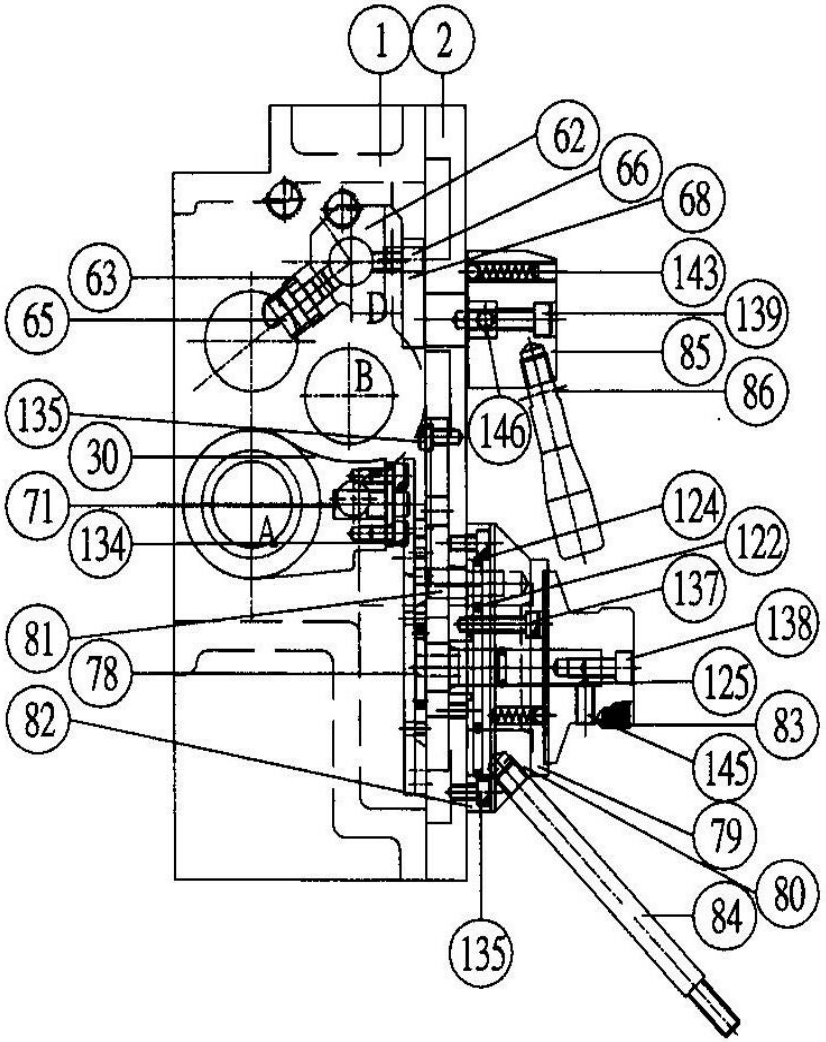
2009.12.03



FEED BEAR BOX - 20 G

2009.12.03





PART LIST OF 20G FEED GEAR BOX

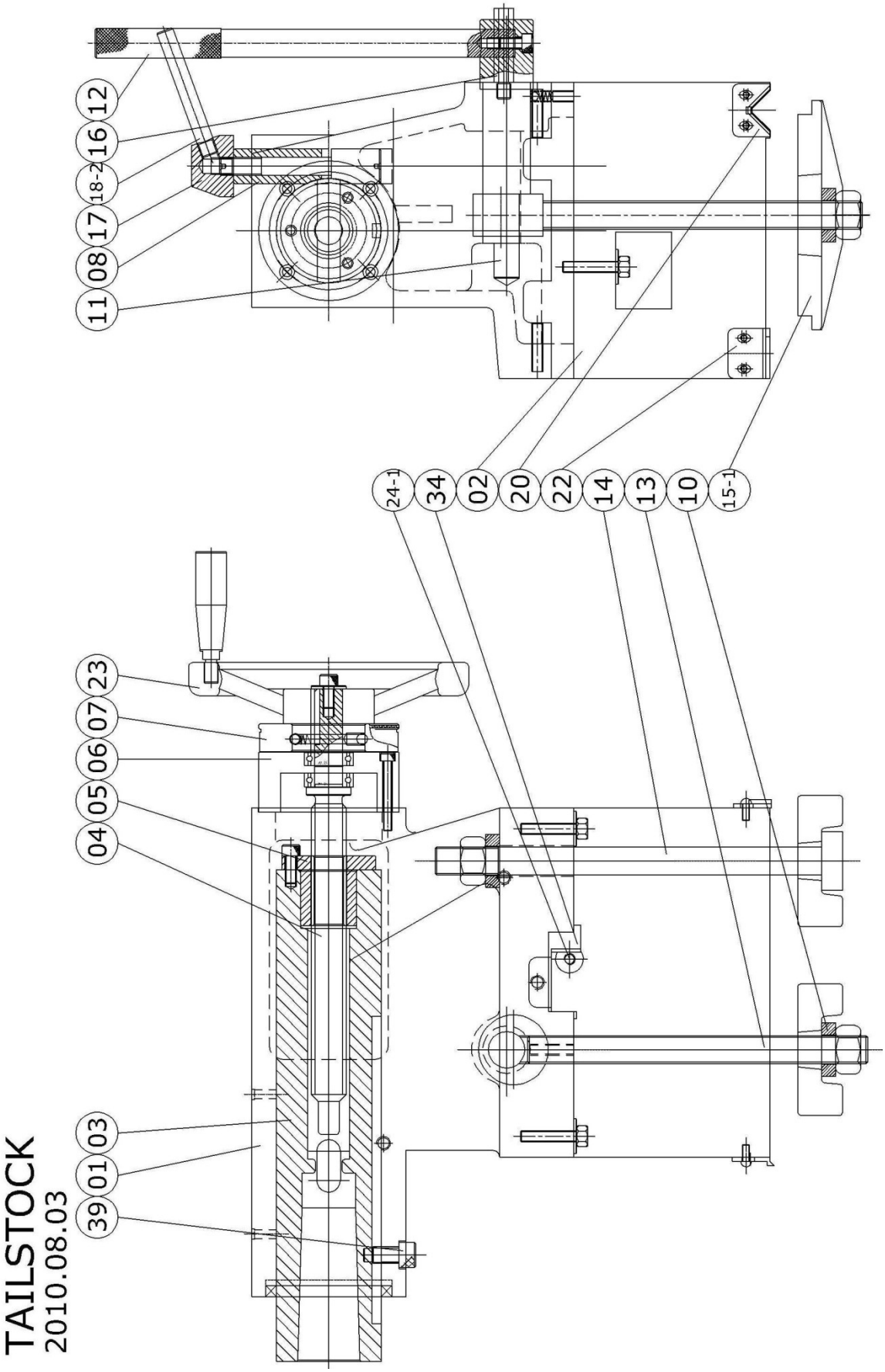
ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
01	20G-001000	GEAR BOX BODY	1	
02	20G-002000	FRONT COVER	1	
03-1	20G-003100	GEAR	1	
03-2	20G-003200	SLEEVE	1	
04	20G-004000	SHAFT	1	
06	20G-006000	CLUTCH	1	
07	20G-007000	SHAFT	1	(SECOND)
008	20G-008000	GEAR OF CLUTCH	1	
09	20G-009000	COLLAR	1	
12	20G-012000	GEAR	1	
13	20G-013000	SHAFT	1	(THIRD)
14	20G-014000	GEAR	1	
15	20G-015000	CLUTCH	1	
16	20G-016000	GEAR OF CLUTCH	1	
17	20G-017000	GEAR OF CLUTCH	1	
18	20G-018000	SHAFT	1	(FOUR)
19	20G-019000	GEAR	1	NINE STEP
20	20G-020000	GEAR	1	NINE STEP
21	20G-021000	GEAR	1	NINE STEP
22	20G-022000	GEAR	1	NINE STEP
23	20G-023000	GEAR	1	NINE STEP
24	20G-024000	GEAR	1	NINE STEP
25	20G-025000	GEAR	1	NINE STEP
26	25G-026000	GEAR	1	NINE STEP
27	20G-027000	GEAR	1	
28	20G-028000	SHAFT	1	
29	20G-029000	GEAR	1	
30	20G-030000	SHELF OF ROCKER ARM / HOUSING	1	
31	20G-031000	SHAFT	1	
32	20G-032000	GEAR	1	
34	20G-034000	SHIFT FORK	1	
35	20G-035000	FEED SHAFT	1	

ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
36	20G-036000	MIDDLE SHAFT	1	
38	20G-038000	LEAD SCREW SHAFT	1	
39	20G-039000	GEAR	1	
40	20G-040000	COUPLING SOCKET	1	
41	20G-041000	NUT	1	
51	20G-051000	COVER	1	
52	20G-052000	STUFF	1	
54	20G-054000	COVER	1	
60	20G-060000	SHAFT	1	
62	20G-062000	CHANGE SPEED SHIFT BLOCK	1	
63	20G-063000	CHANGE SPEED SHIFT BLOCK	2	
65	20G-065000	CHANGE SPEED SHIFT FORK	3	
66	20G-066000	CHANGE SPEED SHIFT FORK	3	
68	20G-068000	ROCKER	3	
70	20G-070000	SETTING PLATE	1	
71	20G-071000	SHIFT SHAFT	1	
72	20G-072000	SHIFT FORK	1	
73	20G-073000	SHIFT RACK	1	
74	20G-074000	SHIFT PIN	1	
75	20G-075000	SLIDE WEDGE	1	
76	20G-076000	SLIDE WEDGE	1	
78	20G-078000	TURNTABLE GEAR	1	
79	20G-079000	SHELF / HOUSING	1	
80	20G-080000	SHAFT BASE	1	
81	20G-081000	SHORT PILLAR	1	
82	20G-082000	COVER	1	
83	20G-083000	SPEED CHANGE DISC	1	
84	20G-084000	ROCKING LEVER	1	
85	18HA-068000	SPEED CHANGE LINK BASE	3	
86	18HA-069000	SPEED CHANGE SHAFT	3	
87	20B-017000	SHORT SHAFT	1	
88	20B-034000	GEAR	1	

ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
101		BEARING 6001	2	
102		BEARING 6003	1	
103		BEARING 6004	3	
104		BEARING 6005	2	
105		BEARING 6203	1	
106		BEARING 6204	1	
107		BEARING 6205	1	
108		BEARING 6905ZZ	1	
109		BEARING 51105	1	
110		BEARING TA1725	1	
111		BEARING HK1812	1	
112		BEARING HK2220	1	
113		BEARING HK2520	1	
114		BEARING TA3530	1	
115		C LOCKER S15	1	
116		C LOCKER S22	1	
117		C LOCKER S25	1	
118		C LOCKER S35	2	
119		C LOCKER S45	2	
120		O RING G30	1	
121		O RING G35	2	
122		O RING G45	1	
123		O RING G55	1	
124		O RING G85	1	
125		O RING P11	1	
126		OIL SEAL 40*55*8	1	
127		OIL SEAL 48*62*8	1	
128		KEY 5*5*20	1	

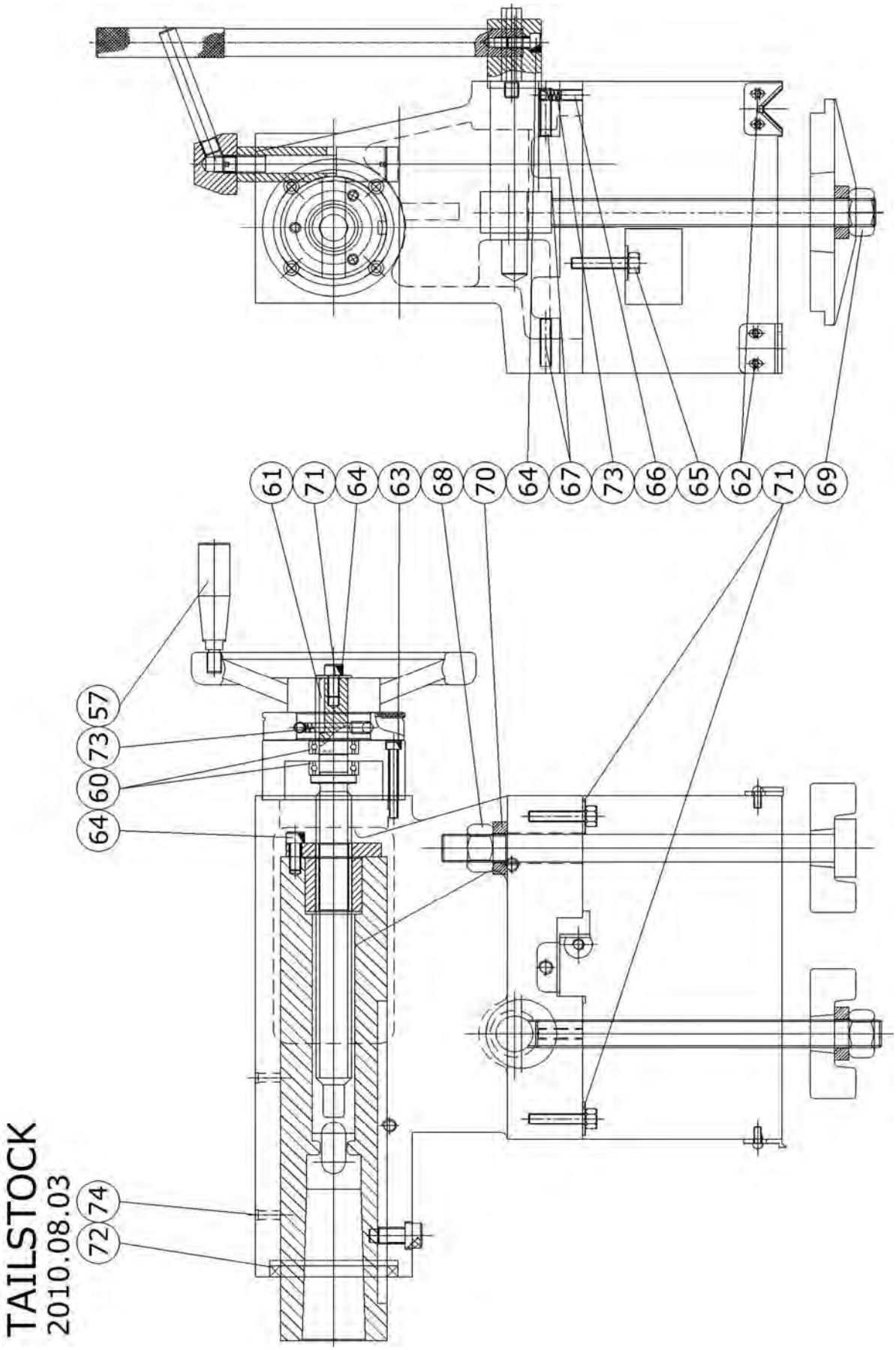
ITEM	PARTS NO.	DESCRIPTION	Q'TY	REMARK
129		KEY 6*6*10	1	
130		KEY 6*6*12	1	
131		KEY 6*6*14	1	
132		KEY 6*6*25	1	
133		KEY 6*6*95	1	
134		CAP SCREW M6*10	2	
135		CAP SCREW M6*12	5	
136		CAP SCREW M6*20	4	
137		CAP SCREW M6*30	16	
138		CAP SCREW M8*14	1	
139		CAP SCREW M8*30	3	
140		SEMICIRCLE SCREW M5*10	4	
141		SEMICIRCLE SCREW M6*20	6	
142		SETSCREW M6*6	1	
143		SETSCREW M8*8	5	
144		SETSCREW M8*10	1	
145		SETSCREW M8*16	1	
146		SETSCREW M8*20	3	
147		SPACER	1	
148		NUT M16	1	
149		SPRING SPACER M16	1	
150		SPRING DIA.6MM	6	
151		STEEL BALL DIA.6MM	6	

MANUAL TAILSTOCK _ 18/21/25T



PART LIST OF TAILSTOCK-18/21/25T

ITEM	PARTS NO.	DESCRIPTION	Q'TY	NOTE
001	25T-001000	TAILSTOCK BODY	1	H4 TURRET
002	18T-002000	BASE	1	
	21T-002000	BASE	1	
	25T-002000	BASE	1	
003	25T-003000	QUILL	1	
	25T-0040M0	SCREW	1	MM
004	25T-0040I0	SCREW	1	INCH
	25T-0040M0	SCREW	1	MM
005	25T-0050M0	NUT	1	MM
	25T-0050I0	NUT	1	INCH
006	25T-006000	BRACKET	1	
007	25T-0070M0	DIAL	1	MM
	25T-0070I0	DIAL	1	INCH
008	25T-008009B	NIPPING STUD	1	
010	25T-010000	WASHER	1	
011	25T-011000	ECCENTRIC LOCK STUD	1	
012	25T-012000	LOCKING LEVER	1	
013	18T-013000	CLAMPING BOLT	1	
	21T-013000	CLAMPING BOLT	1	
	25T-013000	CLAMPING BOLT	1	
014	18T-014000	CLAMPING BOLT	1	
	21T-014000	CLAMPING BOLT	1	
	25T-014000	CLAMPING BOLT	1	
015-1	25T-015100	HOLDING DOWN PLATE	2	
016	25T-016000	STOP PIN	1	
017	25T-017000	NIPPING NUT	1	
018-2	25T-018200	HANDLE	1	
020	25T-020000	WIPER	2	
022	25T-022000	WIPER	2	
023	25A-010000	HAND WHEEL	1	
024-1	25S-024100	ADJUSTMENT BOLTS	2	
034	25T-034000	GIB	1	
039	25T-039000	FIXING SCREW	1	


TAILSTOCK
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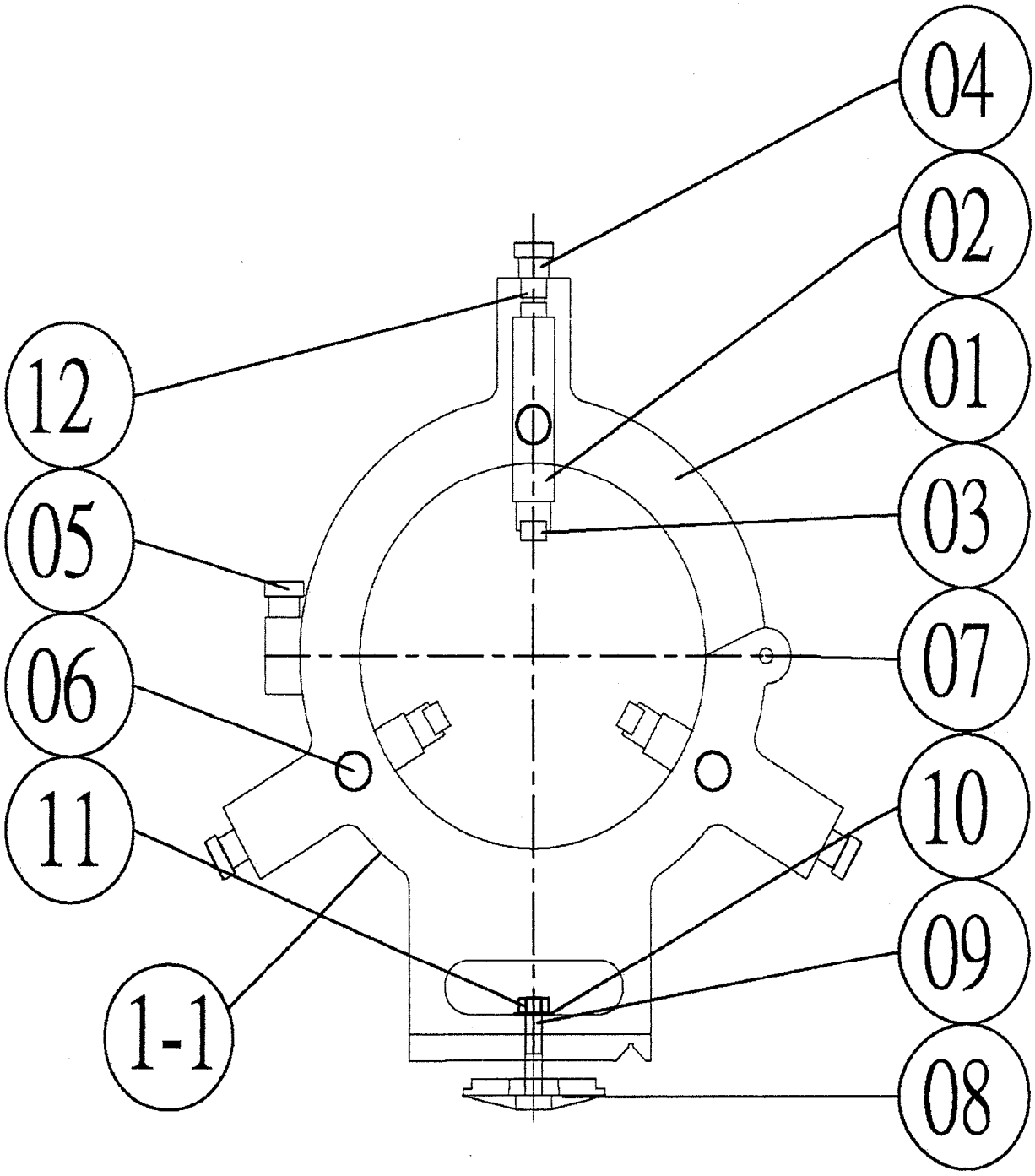
Parts list of 18/21/25 Manual Tailstock

ITEM	PARTS NO.	DESCRIPTION	Q'TY	NOTE
057	25T-057000	HANDLE	1	
060		BEARING 51104	2	
061		KEY 6*6*14	1	
062		SCREW M5*12	4	
063		SCREW M6*50	4	
064		SCREW M8*20	5	
065		SCREW M8*40	2	
066		SCREW M6*16	1	
067		SCREW M8*35	2	
068		NUT 3/8"	1	
069		NUT M20	1	
070		SPACER 20*37*4	1	
071		SPACER M8	3	
072		OIL SEAL 75*90*8	1	
073		STEEL BALL & SPRING	2	
074		OIL NIPPLE	2	

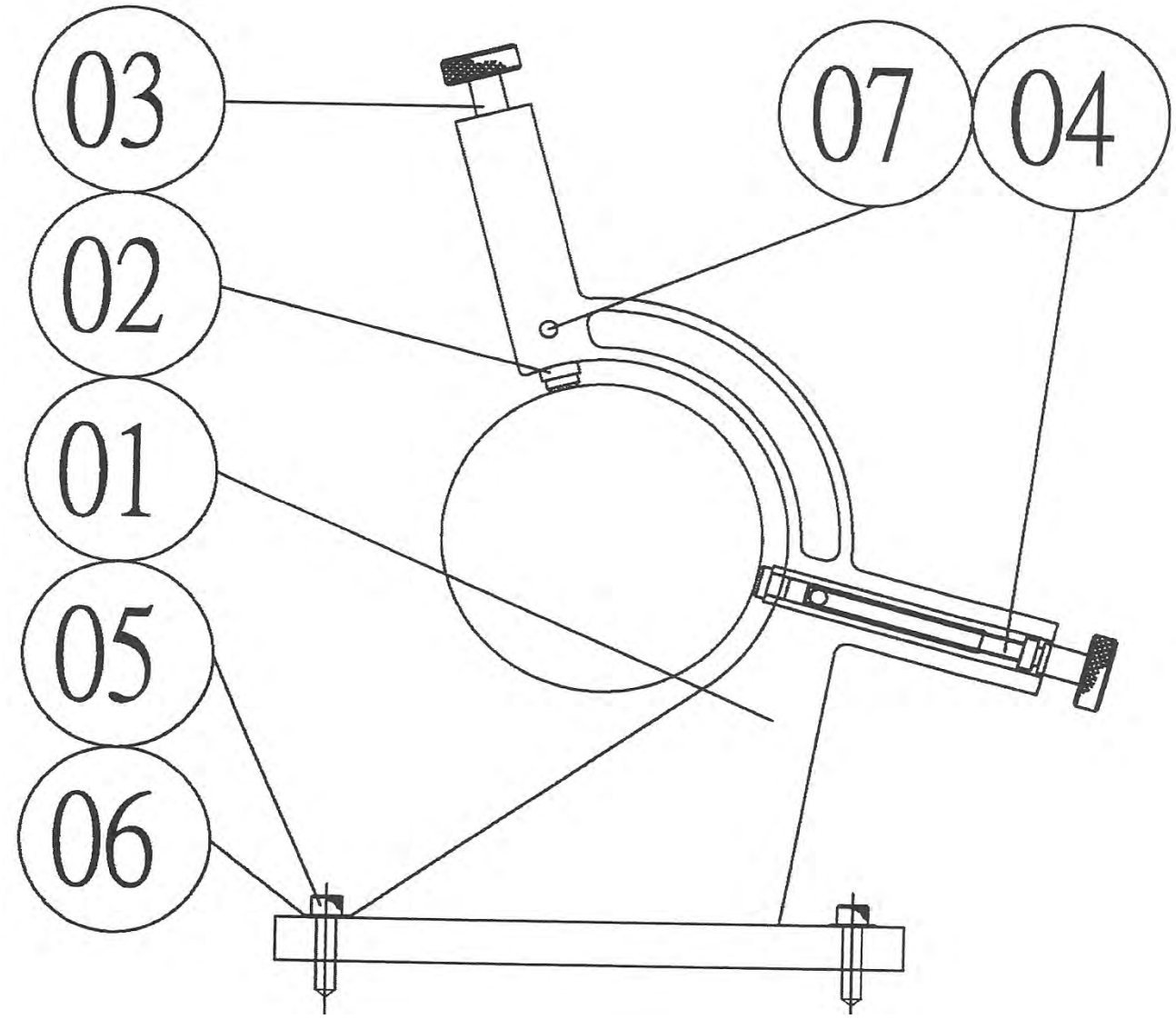
STEADY REST



Part List of STEADY REST-21” Series

ITEM	PARTS NO.	DESCRIPTION	Q’TY	NOTE
1	21SR-001	Steady rest housing-top	1	
2	21SR-002	Steady rest housing-lower	1	
3	21SR-003	Roller shaft	3	
4	21SR-004	Shaft roller	3	
5	21SR-005	Adjusting knob	3	
6	21SR-006	Housing tighten knob	1	
7	21SR-007	Shaft locating screw	3	
8	21SR-008	Housing connecting screw	1	
9	25T-015100	Locating plate	1	
10		Socket head cap screw	1	
11		Square washer	1	
12		Hex nut	1	
13	21SR-009	Adjusting shaft	1	
For 25” series lathe, please replace 21 with 25 when ordering replacement parts.				

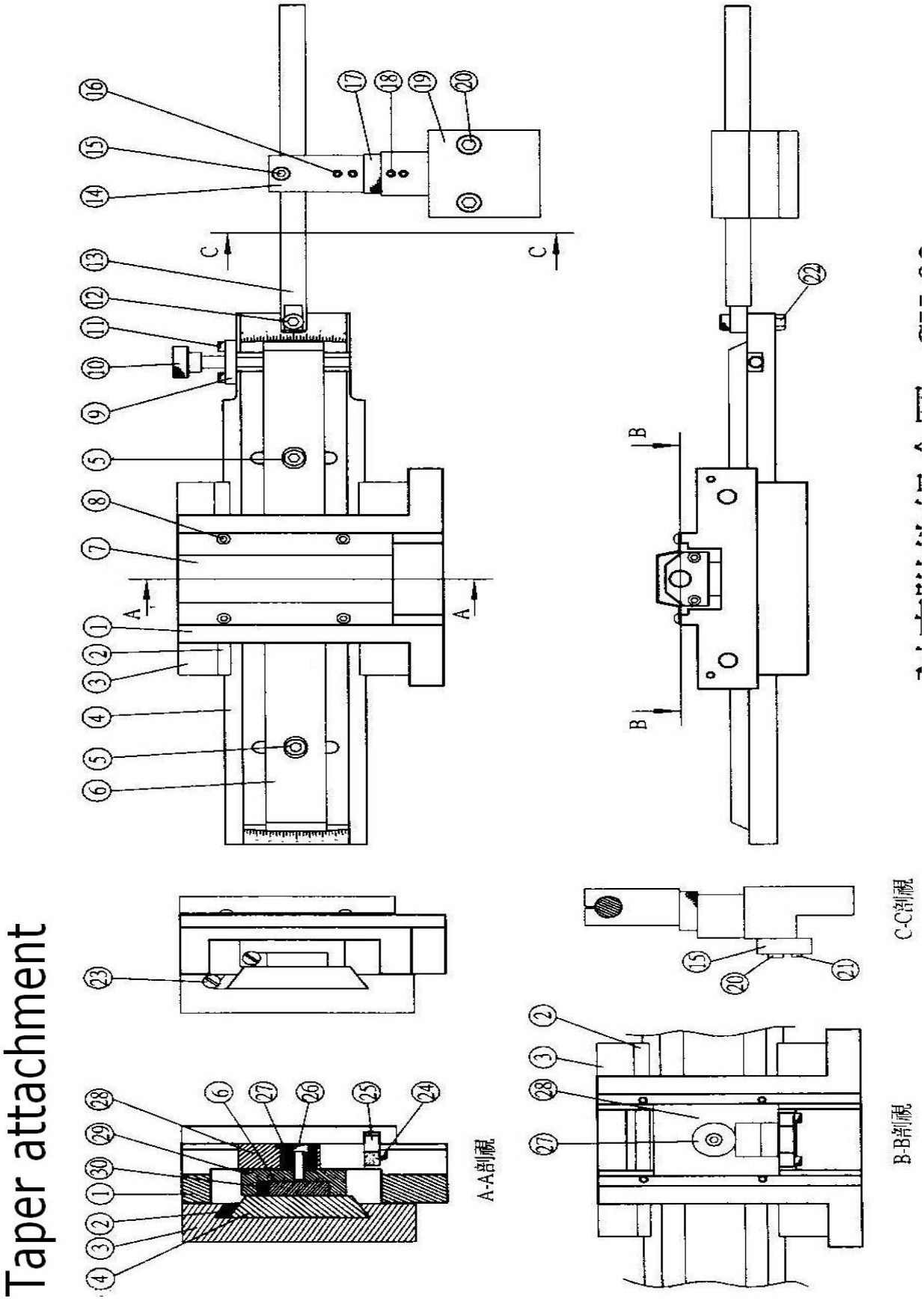
FOLLOW REST



Part List of FOLLOW REST- 21” Series

ITEM	PARTS NO.	DESCRIPTION	Q’TY	NOTE
1	21FR-001	Follow rest housing	1	
2	21FR-002	Shaft with brass tip	2	
3	21FR-003	Adjusting knob	2	
4	21FR-004	Shaft screw	2	
5		Socket head cap screw	2	
6		Washer	2	
7		Socket head cap screw	2	
For 25” series lathe, please replace 21 with 25 when ordering replacement parts.				

TAPER TURNING ATTACHMENT



Part List of TAPER TURNING ATTACHMENT- 21” Series

ITEM	PARTS NO.	DESCRIPTION	Q’TY	NOTE
1	21TA-001	Taper attachment body casting	1	
2	21TA-002	Gib-taper turning attachment	1	
3	21TA-003	Topslide casting	1	
4	21TA-004	Sliding body	1	
5	21TA-005	Socket head cap screw	2	
6	21TA-006	Rotating sliding plate	1	
7	21TA-007	Top cover	1	
8	21TA-008	Round head cap screw +	4	
9	21TA-009	Locating plate	1	
10	21TA-010	Screw with knob	1	
11	21TA-011	Socket head cap screw	2	
12	21TA-012	Socket head cap screw	1	
13	21TA-013	Connecting shaft	1	
14	21TA-014	Connecting bracket	1	
15	21TA-015	Socket head cap screw	1	
16	21TA-016	Socket cap set screw	2	
17	21TA-017	Dual side connecting shaft	1	
18	21TA-018	Socket cap set screw	2	
19	21TA-019	Shaft locating bracket	1	
20	21TA-020	Socket head cap screw	2	
21	21TA-021	Socket cap set screw	1	
22	21TA-022	Hex nut	2	
23	21TA-023	Gib screw-taper turning attachment	2	
24	21TA-024	Socket head cap screw	4	
25	21TA-025	Screw connecting bracket	1	
26	21TA-026	Socket head cap screw	1	
27	21TA-027	Sleeve	1	
28	21TA-028	Connecting plate	1	
29	21TA-029	Plate	1	
30	21TA-030	Gib	1	
For 25” series lathe, please replace 21 with 25 when ordering replacement parts.				