

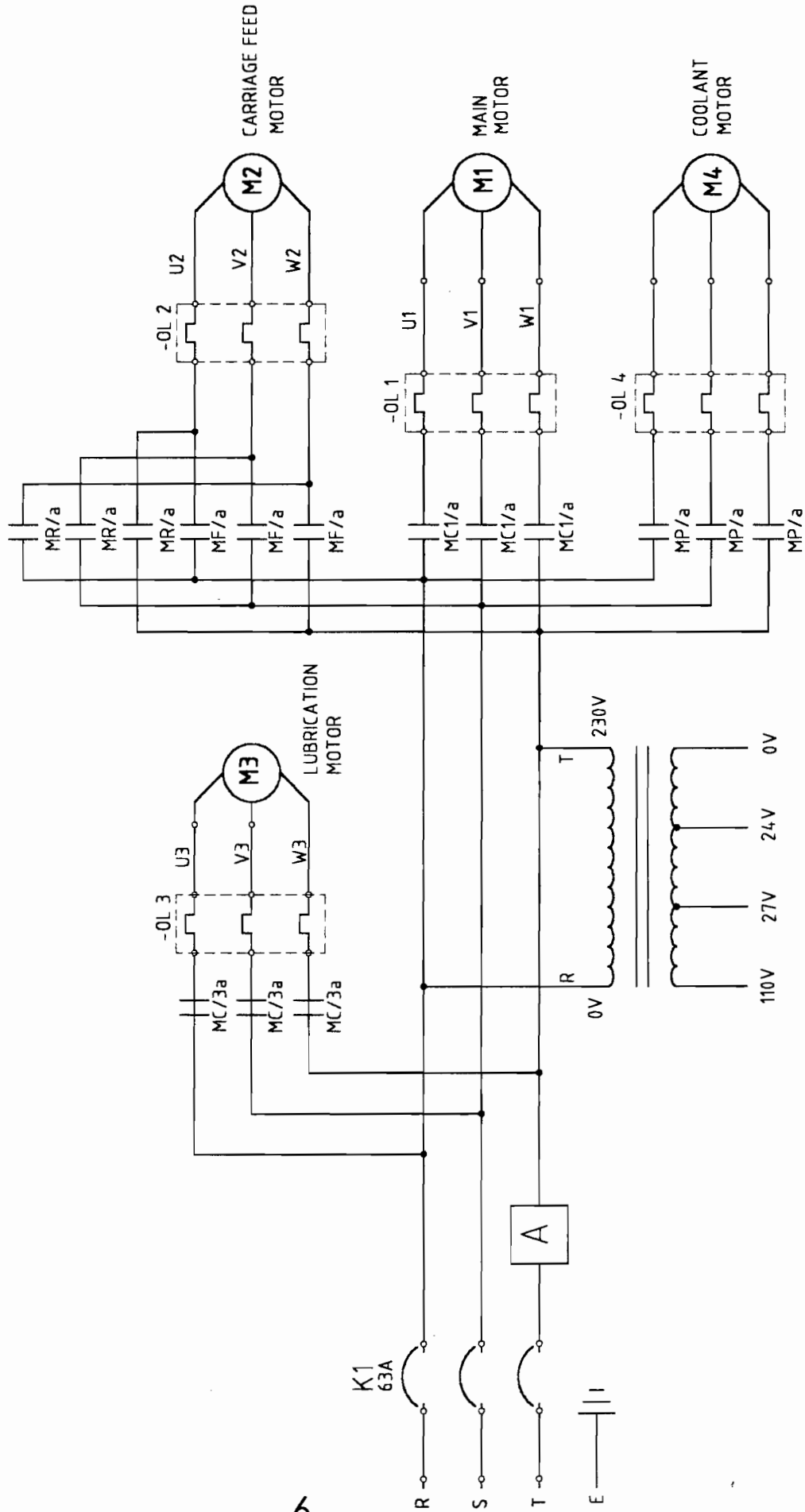
## **8. MECHANICAL PARTS LIST**

**When ordering parts please supplying the following information,**

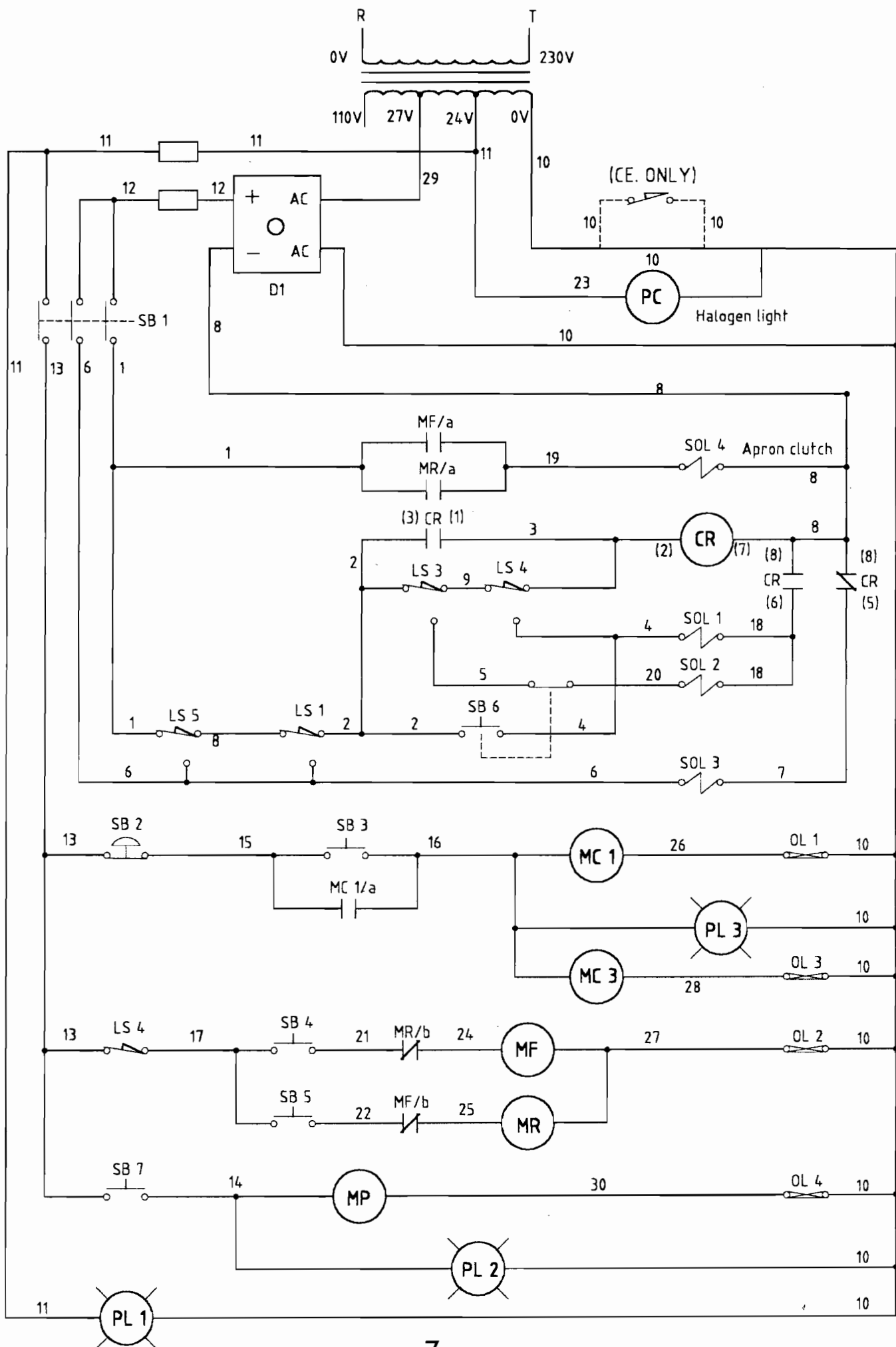
- 1. Model and serial number**
- 2. Year of production**
- 3. Item number and description**
- 4. Quantity**

# 4-3. Electrical Wiring Diagram

## 24"/29" MOTOR WIRING



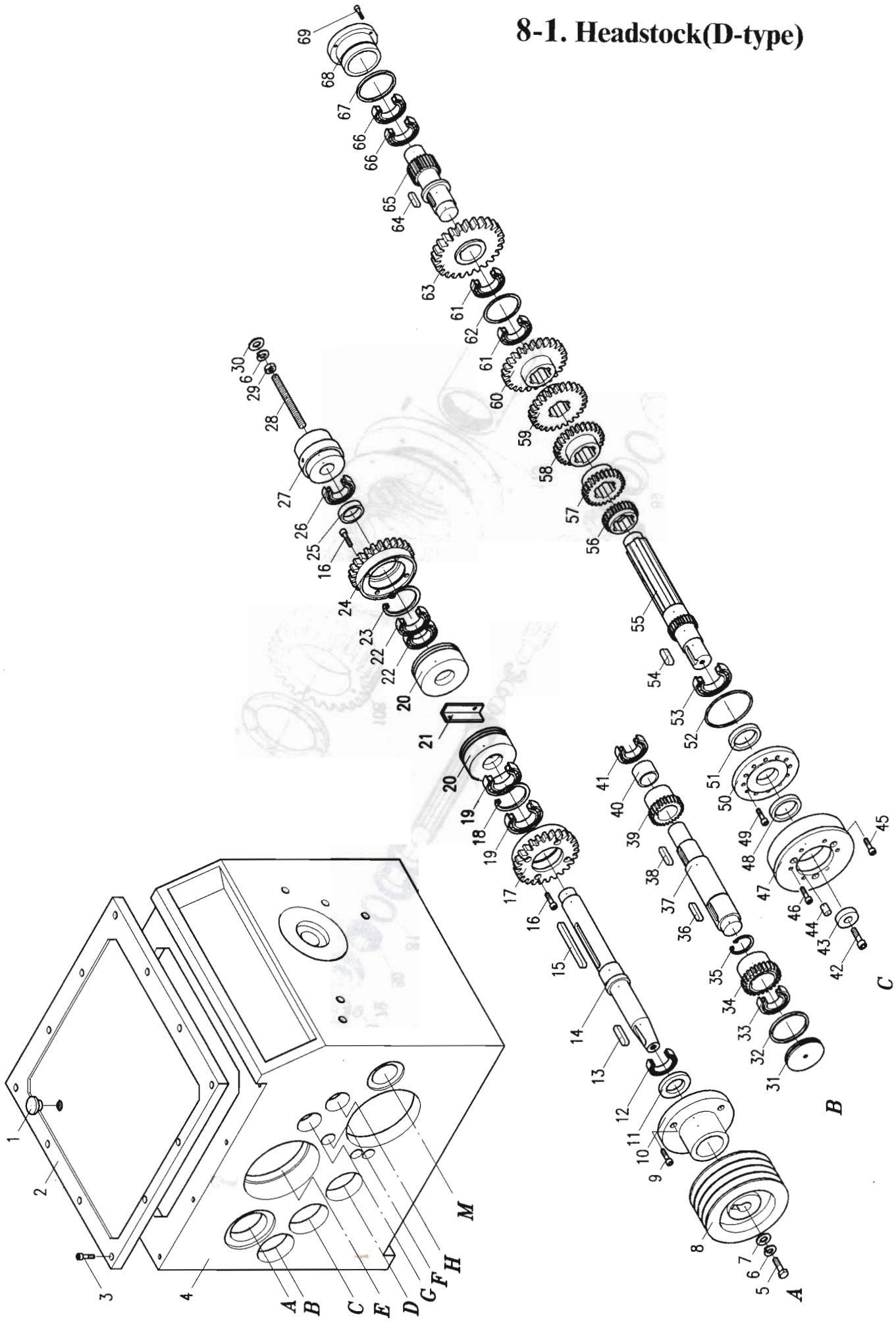
# 24"/29" CONTROL CIRCUIT



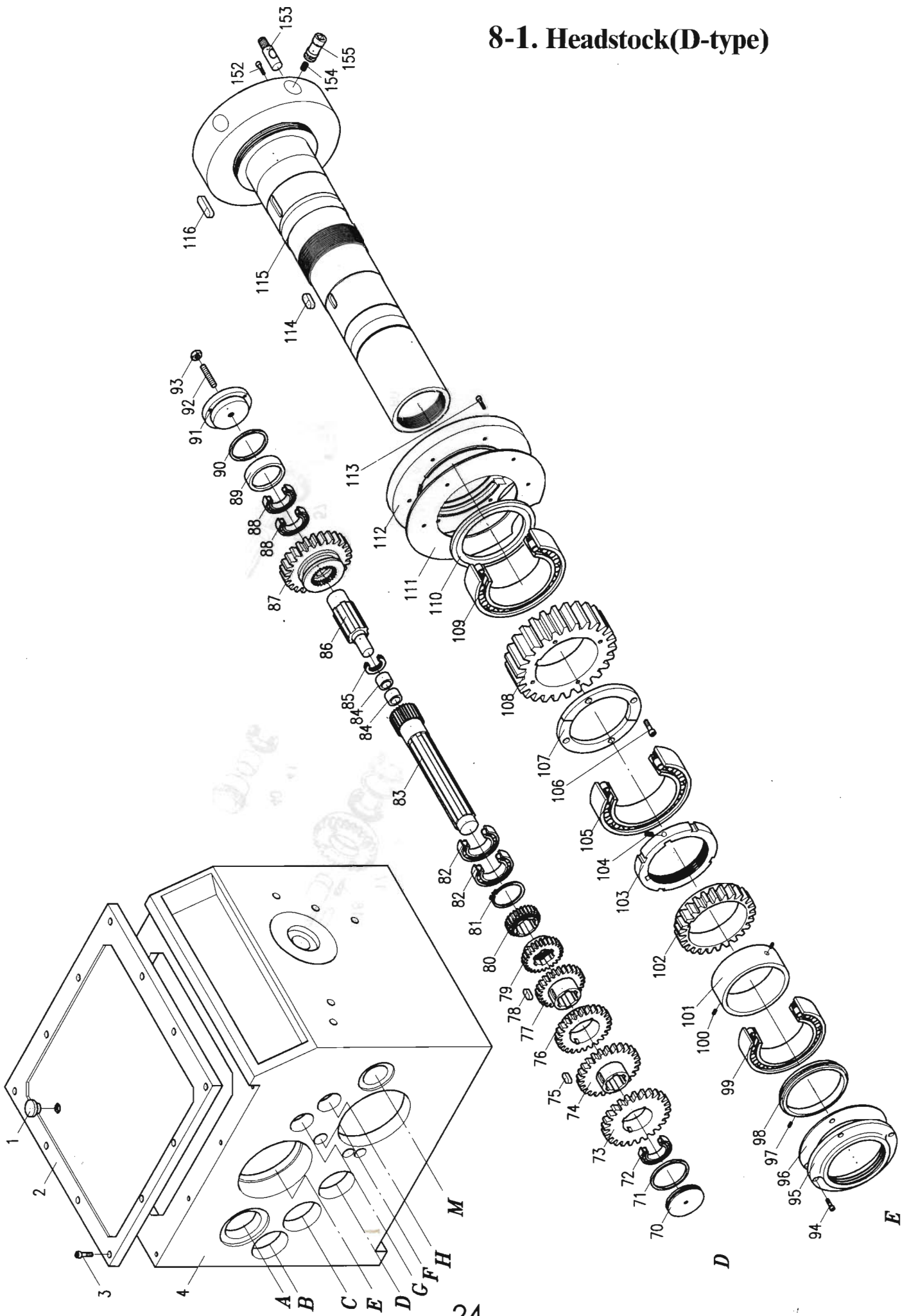
## Electrical Part Description

<b>M1: Main motor</b>	<b>PB2: Main motor stop switch</b>
<b>M2: Carriage feed motor</b>	<b>PB3: Emergency stop switch</b>
<b>M3: Lubrication pump motor</b>	<b>PB4: Carriage feed withdraw starter</b>
<b>M4: Coolant pump motor</b>	<b>PB5: Carriage feed forward starter jogging button</b>
<b>A: Ampere meter</b>	<b>FS: Fuse</b>
<b>MC1: Main motor magnetic switch</b>	<b>SOL1: Main motor forward clutch</b>
<b>MF/MR: Carriage feed for/rev magnetic Switch</b>	<b>SOL2: Main motor reverse clutch</b>
<b>MP3: Lube pump magnetic switch</b>	<b>SOL3: Spindle brake clutch</b>
<b>MPC: Coolant pump magnetic switch</b>	<b>S1: Coolant pump select switch</b>
<b>OL1: Main motor overload relay</b>	<b>LS1: Brake limit switch</b>
<b>OL2: Carriage motor overload relay</b>	<b>LS2: Spindle forward limit switch</b>
<b>OL3: Lube pump motor overload relay</b>	<b>LS3: Spindle reverse limit switch</b>
<b>OL4: Coolant motor overload relay</b>	<b>LS4: Carriage feed limit switch</b>
<b>TR: Voltage transformer</b>	<b>LS5: Carriage feed safety control switch</b>
<b>CR: Brake auxiliary relay</b>	<b>PL1: Power source indicator</b>
<b>PB1: Main motor starter</b>	<b>PL2: Pump motor indicator</b>
	<b>PL3: Main motor indicator</b>
	<b>REC: Rectifier</b>

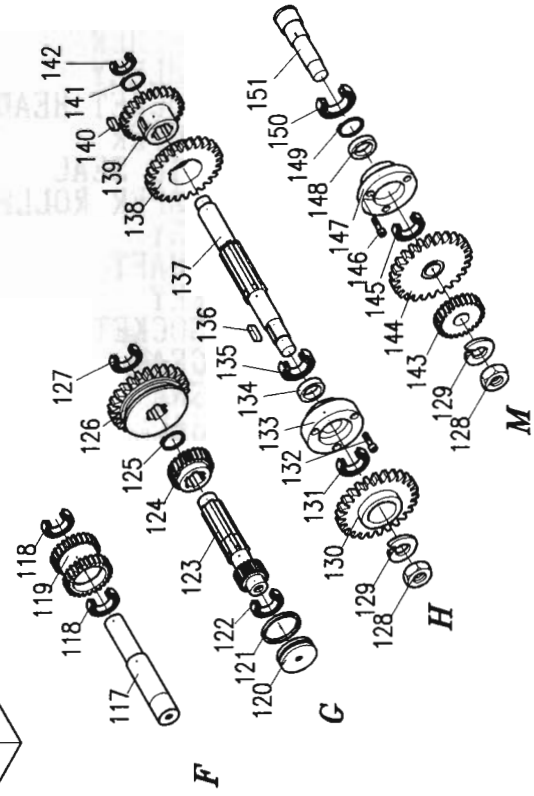
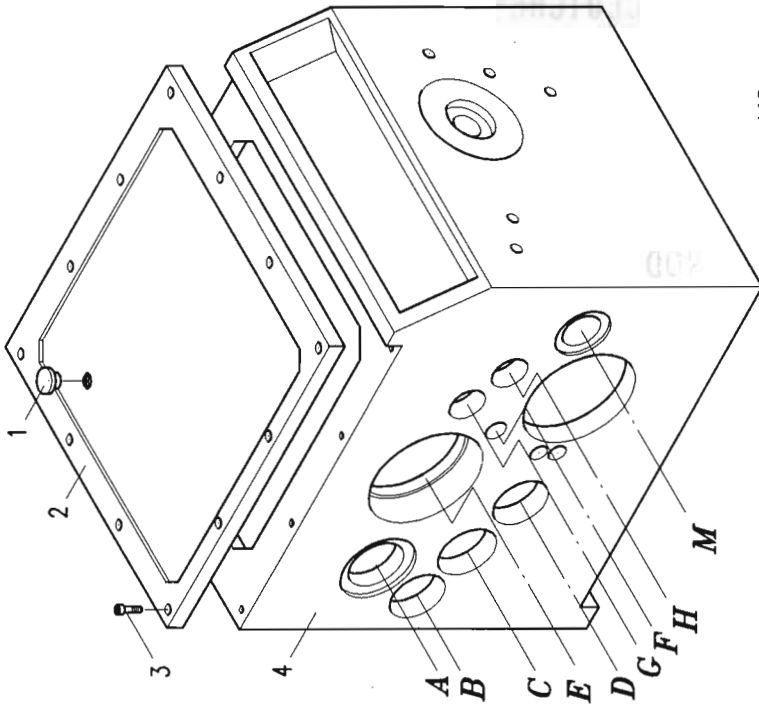
# 8-1. Headstock(D-type)



# 8-1. Headstock(D-type)



# 8-1. Headstock(D-type)



## 8-1. Headstock(D-type)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	5H-40800	PLUG	PLASTIC	1
2	9H-40020	COVER	FC15	1
3	SH-0830	SOCKET HEAD CAP SCREW	M8xP1.25x30L	12
4	9H-10010	HEADSTOCK BOX	FC25	1
5	SH-1235	SOCKET HEAD CAP SCREW	M12xP1.5x35L	1
6	SW-12	SPRING WASHER	Φ 12	2
7	9H-41130	WASHER	S20C	1
8	9H-40040	PULLEY	FC20	1
9	SH-0820	SOCKET HEAD CAP SCREW	M8xP1.25x20L	3
10	9H-40820	COVER	FC15	1
11	TC-406510	OIL SEAL	40x65x10	1
12	NJ-208	TAPER ROLLER BEARING	NJ-208	1
13	KY-121050	KEY	12x10x50	1
14	9H-40030	SHAFT	SCM4	1
15	KY-128120	KEY	12x8x120L	1
16	SH-0830	SOCKET HEAD CAP SCREW	M8xP1.25x30L	8
17	9H-41150	GEAR	SCM21 53T	1
18	CR-75	SNAP RING	#75	1
19	#6009	BALL BEARING	#6009	2
20	MWC-15	ELECTROMAGNETIC CLUTCHES	MWC-15	2
21	9H-41230	SEAT	SS41	1
22	#6208	BALL BEARING	#6208	2
23	CR-80	SNAP RING	#80	1
24	9H-40050	GEAR	SCM21 53T	1
25	9H-40060	SPACE COLLAR	S20C-D	1
26	#6307Z	BALL BEARING	#6307Z	1
27	9H-40890	OIL BASE	FC20	1
28	9H-40900	PUMP LOCKING ROD	S20C-D	1
29	N-16	NNT	M16	1
30	W-16	WASHER	Φ 16	1
31	9H-40070	COVER	FC15	1
32	G-80	O RING	#80	1
33	#6208	BALL BEARING	#6208	1
34	9H-40090	GEAR	SCM21 30T	1
35	CS-50	SNAP RING	#50	1
36	KY10845	KEY	10x8x45L	1
37	9H-40080	SHAFT	SCM21	1
38	KY10845	KEY	10x8x45L	1
39	9H-40100	GEAR	SCM21 26T	1
40	9H-40110	SPACE COLLAR	S20C-D	1
41	#6307	BALL BEARING	#6307	1
42	SH-1020	SOCKET HEAD CAP SCREW	M10xP1.5x20L	1
43	9H-40970	WASHER	S20C-D	1
44	9H-40870	DRIVING PIN	S45C	1
45	SH-0816	SOCKET HEAD CAP SCREW	M8xP1.25x16L	6
46	SH-0825	SOCKET HEAD CAP SCREW	M8xP1.25x25L	3
47	MDB-20T	BRAKE	MDB-20T	1
48	9H-41190	SPACE COLLAR	SS41	1
49	SH-0816	SOCKET HEAD CAP SCREW	M8xP1.25x16L	6
50	9H-40130	COVER	S20C	1
51	TC-456510	OIL SEAL	45x65x10	1
52	G-75	O RING	#75	1
53	#6209	BALL BEARING	#6209	1
54	KY-12835	KEY	12x8x35L	1
55	9H-40120	SHAFT	SCM21	1



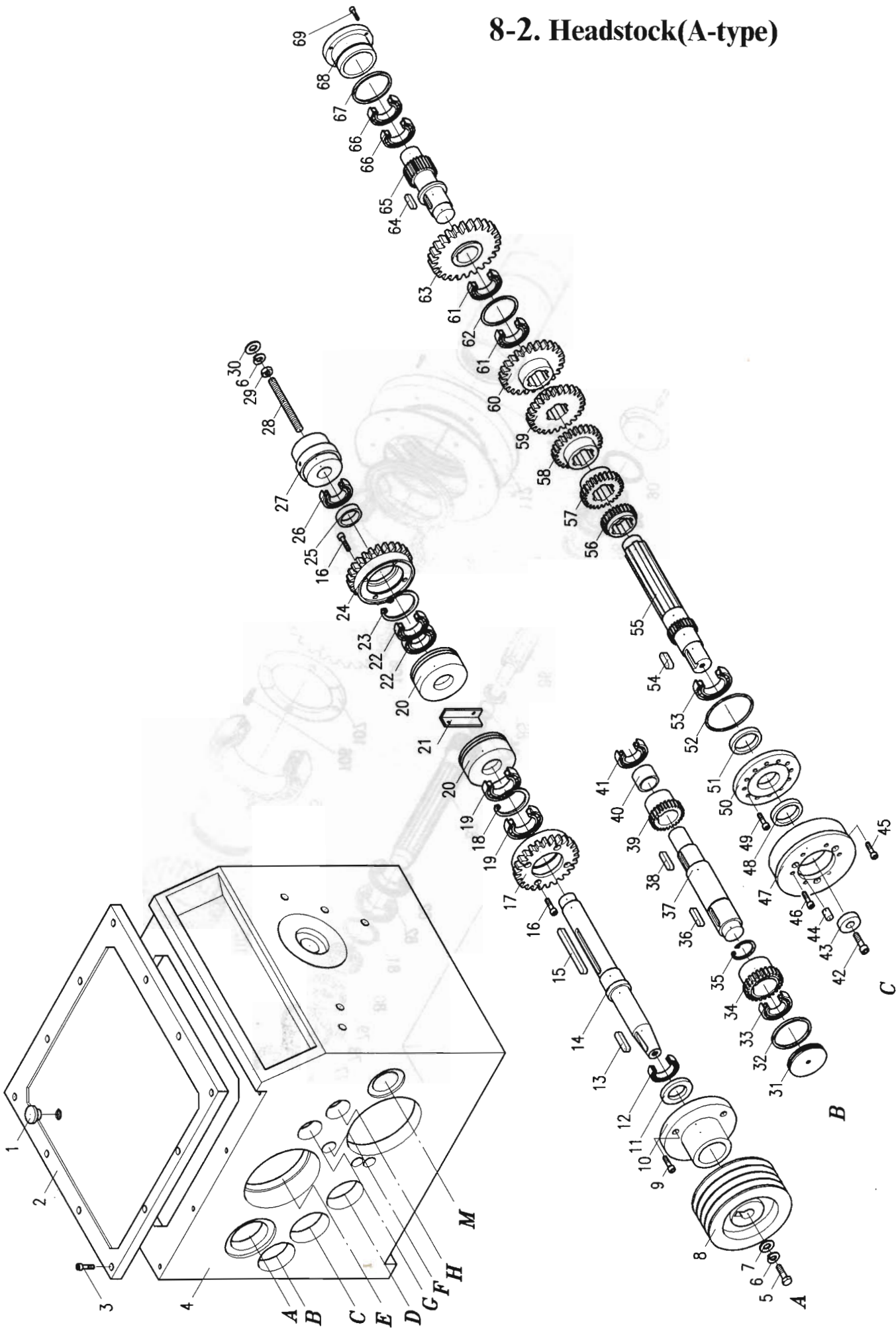
## 8-1. Headstock(D-type)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
56	9H-40140	GEAR	SCM21 27T	1
57	9H-40150	GEAR	SCM21 33T	1
58	9H-40160	GEAR	SCM21 40T	1
59	9H-40170	GEAR	SCM21 43T	1
60	9H-40180	GEAR	SCM21 53T	1
61	#6208	BALL BEARING	#6208	2
62	9H-40290	SPACE COLLAR	S20C	1
63	9H-40270	GEAR	SCM21 48T	1
64	KY-10835	KEY	10x8x35L	1
65	9H-40280	SHAFT	SCM21	1
66	#6208	BALL BEARING	#6208	2
67	G-75	O Ring	#75	1
68	9H-40300	COVER	FC15	1
69	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	3
70	9H-40070	COVER	FC15	1
71	G-75	O Ring	#75	1
72	#6208	BALL BEARING	#6208	1
73	9H-40210	GEAR	SCM21 59T	1
74	9H-40200	GEAR	SCM21 53T	1
75	KY-10825	KEY	10x8x25L	1
76	9H-40230	GEAR	SCM21 47T	1
77	9H-40220	GEAR	SCM21 40T	1
78	KY-10825	KEY	10x8x25L	1
79	9H-40240	GEAR	SCM21 33T	1
80	9H-40250	GEAR	SCM21 27T	1
81	CS-50	SNAP RING	#50	1
82	#6010	BALL BEARING	#6010	2
83	9H-40190	SHAFT	SCM21 17T	1
84	NK25x30x20	NEEDLE ROLLER BEARING	NK25x30x20	1
85	#51106	THRUST BEARING	#51106	1
86	9H-40340	SHAFT	SCM21	1
87	9H-40310	GEAR	SCM21 48T	1
88	#6208	BALL BEARING	#6208	2
89	9H-40330	SPACE COLLAR	FC15	1
90	G-80	O RING	#80	1
91	9H-40320	COVER	FC15	1
92	HS-1240	HEXAGON SOCKET SET SCREW	M12xP1.75x40L	1
93	N-12	NUT	M12	1
94	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	4
95	9H-40400	COVER	FC15	1
96	9H-40400P	PACKING	PACKING	1
97	HS-0506	HEXAGON SOCKET SET SCREW	M5xP0.8x6L	2
98	9H-41100	PRUENT OIL RING	S20C	1
99	NA4826	NEEDLE ROLLER BEARING	NA4826	1
100	HS-0806	HEXAGON SOCKET SET SCREW	M8xP1.25x6L	2
101	9H-40430	SPACE COLLAR	S20C	1
102	9H-40380	GEAR	SCM21 81T	1
103	9H-40390	NUT	S45C M135xP2.0	1
104	HS-1010	HEXAGON SOCKET SET SCREW	M10xP1.5x10L	2
105	48393/48320	TAPER ROLLER BEARING	48393/48320	1
106	SH-0812	SOCKET HEAD CAP SCREW	M8xP1.25x12L	4
107	9H-40370	SNAP RING	S20C	1
108	9H-40360	GEAR	SCM21 73T	1
109	48685/48620	TAPER ROLLER BEARING	48685/48620	1
110	9H-41080	PRUNED OIL RING	FC15	1

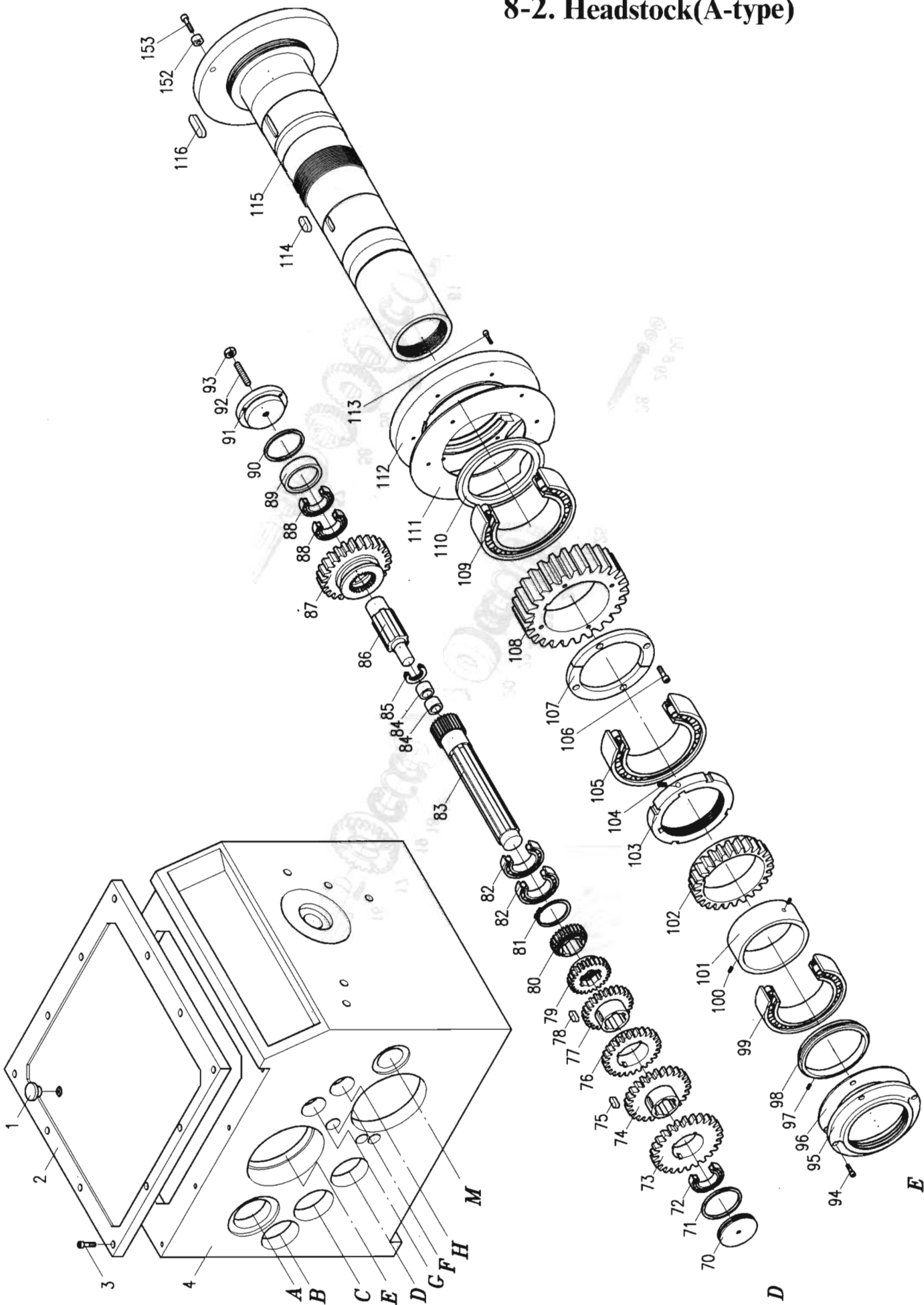
## 8-1. Headstock(D-type)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
111	9H-40420P	PACKING	PACKING	1
112	9H-40420D	COVER	FC15	1
113	SH-0625	SOCKET HEAD CAP SCREW	M6xP1.0x25L	6
114	KY-151035	KEY	15x10x35L	1
115	9H-30350D	SPINDLE	SCM4	1
116	KY-151055	KEY	15x10x55L	1
117	9H-40440	SHAFT	S45C	1
118	#6005	BALL BEARING	#6005	2
119	9H-40450	GEAR	SCM21 31T	1
120	9H-40490	COVER	FC15	1
121	G-52	O SEAL	#52	1
122	#6205Z	BALL BEARING	#6205Z	1
123	9H-40460	SHAFT	SCM21	1
124	9H-40470	GEAR	SCM21 28T	1
125	CS-30	SNAP RING	#30	1
126	9H-40480	GEAR	SCM21 54T	1
127	#6205	BALL BEARING	#6205	1
128	N-20	NUT	M20	1
129	SW-20	SPRING WASHER	Φ 20	1
130	9B-41310	GEAR	FC25	1
131	#6005Z	BALL BEARING	#6005Z	1
132	SH-0625	SOCKET HEAD CAP SCREW	M6xP1.0x25L	3
133	11H-40530	COVER	FC15	1
134	TC25358	OIL SEAL	25x35x8	1
135	#6205Z	BALL BEARING	#6205Z	1
136	KY-7725	KEY	7x7x25L	1
137	9H-40500	SHAFT	SCM21	1
138	9H-40520	GEAR	SCM21 51T	1
139	9H-40510	GEAR	SCM21 42T	1
140	KY-7720	KEY	7x7x20L	1
141	CS-30	SNAP RING	#30	1
142	#6304	BALL BEARING	#6304	1
143	9B-41310	GEAR	FC25	1
144	9B-40110	GEAR	FC25	1
145	#6205Z	BALL BEARING	#6205Z	1
146	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	3
147	10H-41010	COVER	FC20	1
148	TC25388	OIL SEAL	25x38x8	1
149	CS-30	SNAP RING	#30	1
150	#6006-2RS	BALL BEARING	#6006-2RS	1
151	10H-41020	SHAFT	S45C	1
152	9H-40860	HEXAGON SOCKET HEAD CAP SCREW	M10xP1.5x25L	6
153	9H-40850	CAM BOLT	S45C	6
154	9H-40870	SPRING	SWPA	6
155	9H-30840	CAM	SCM21	6

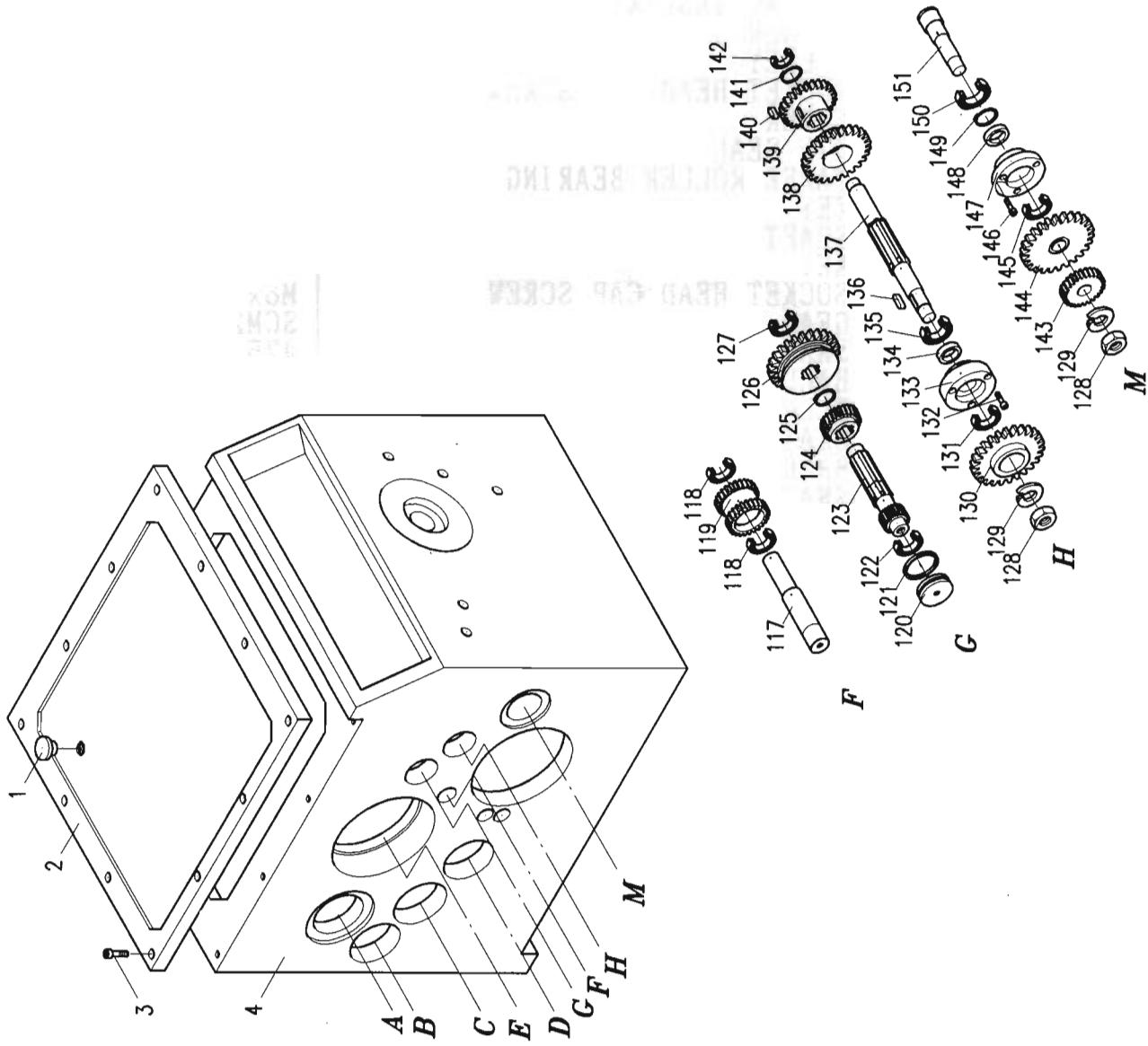
# 8-2. Headstock(A-type)



# 8-2. Headstock(A-type)



# 8-2. Headstock(A-type)



## 8-2. Headstock(A-type)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	5H-40800	PLUG	PLASTIC	1
2	9H-40020	COVER	FC15	1
3	SH-0830	SOCKET HEAD CAP SCREW	M8xP1.25x30L	12
4	9H-10010	HEADSTOCK BOX	FC25	1
5	SH-1235	SOCKET HEAD CAP SCREW	M12xP1.5x35L	1
6	SW-12	SPRING WASHER	φ 12	2
7	9H-41130	WASHER	S20C	1
8	9H-40040	PULLEY	FC20	1
9	SH-0820	SOCKET HEAD CAP SCREW	M8xP1.25x20L	3
10	9H-40820	COVER	FC15	1
11	TC-406510	OIL SEAL	40x65x10	1
12	NJ-208	TAPER ROLLER BEARING	NJ-208	1
13	KY-121050	KEY	12x10x50	1
14	9H-40030	SHAFT	SCM4	1
15	KY-128120	KEY	12x8x120L	1
16	SH-0830	SOCKET HEAD CAP SCREW	M8xP1.25x30L	8
17	9H-41150	GEAR	SCM21 53T	1
18	CR-75	SNAP RING	#75	1
19	#6009	BALL BEARING	#6009	2
20	MWC-15	ELECTROMACNETIC CLUTCHES	MWC-15	2
21	9H-41230	SEAT	SS41	1
22	#6208	BALL BEARING	#6208	2
23	CR-80	SNAP RING	#80	1
24	9H-40050	GEAR	SCM21 53T	1
25	9H-40060	SPACE COLLAR	S20C-D	1
26	#6307Z	BALL BEARING	#6307Z	1
27	9H-40890	OIL BASE	FC20	1
28	9H-40900	PUMP LOCKING ROD	S20C-D	1
29	N-16	NNT	M16	1
30	W-16	WASHER	φ 16	1
31	9H-40070	COVER	FC15	1
32	G-80	O RING	#80	1
33	#6208	BALL BEARING	#6208	1
34	9H-40090	GEAR	SCM21 30T	1
35	CS-50	SNAP RING	#50	1
36	KY10845	KEY	10x8x45L	1
37	9H-40080	SHAFT	SCM21	1
38	KY10845	KEY	10x8x45L	1
39	9H-40100	GEAR	SCM21 26T	1
40	9H-40110	SPACE COLLAR	S20C-D	1
41	#6307	BALL BEARING	#6307	1
42	SH-1020	SOCKET HEAD CAP SCREW	M10xP1.5x20L	1
43	9H-40970	WASHER	S20C-D	1
44	9H-40870	DRIVING PIN	S45C	1
45	SH-0816	SOCKET HEAD CAP SCREW	M8xP1.25x16L	6
46	SH-0825	SOCKET HEAD CAP SCREW	M8xP1.25x25L	3
47	MDB-20T	BRAKE	MDB-20T	1
48	9H-41190	SPACE COLLAR	SS41	1
49	SH-0816	SOCKET HEAD CAP SCREW	M8xP1.25x16L	6
50	9H-40130	COVER	S20C	1
51	TC-456510	OIL SEAL	45x65x10	1
52	G-75	O RING	#75	1
53	#6209	BALL BEARING	#6209	1
54	KY-12835	KEY	12x8x35L	1
55	9H-40120	SHAFT	SCM21	1

## 8-2. Headstock(A-type)

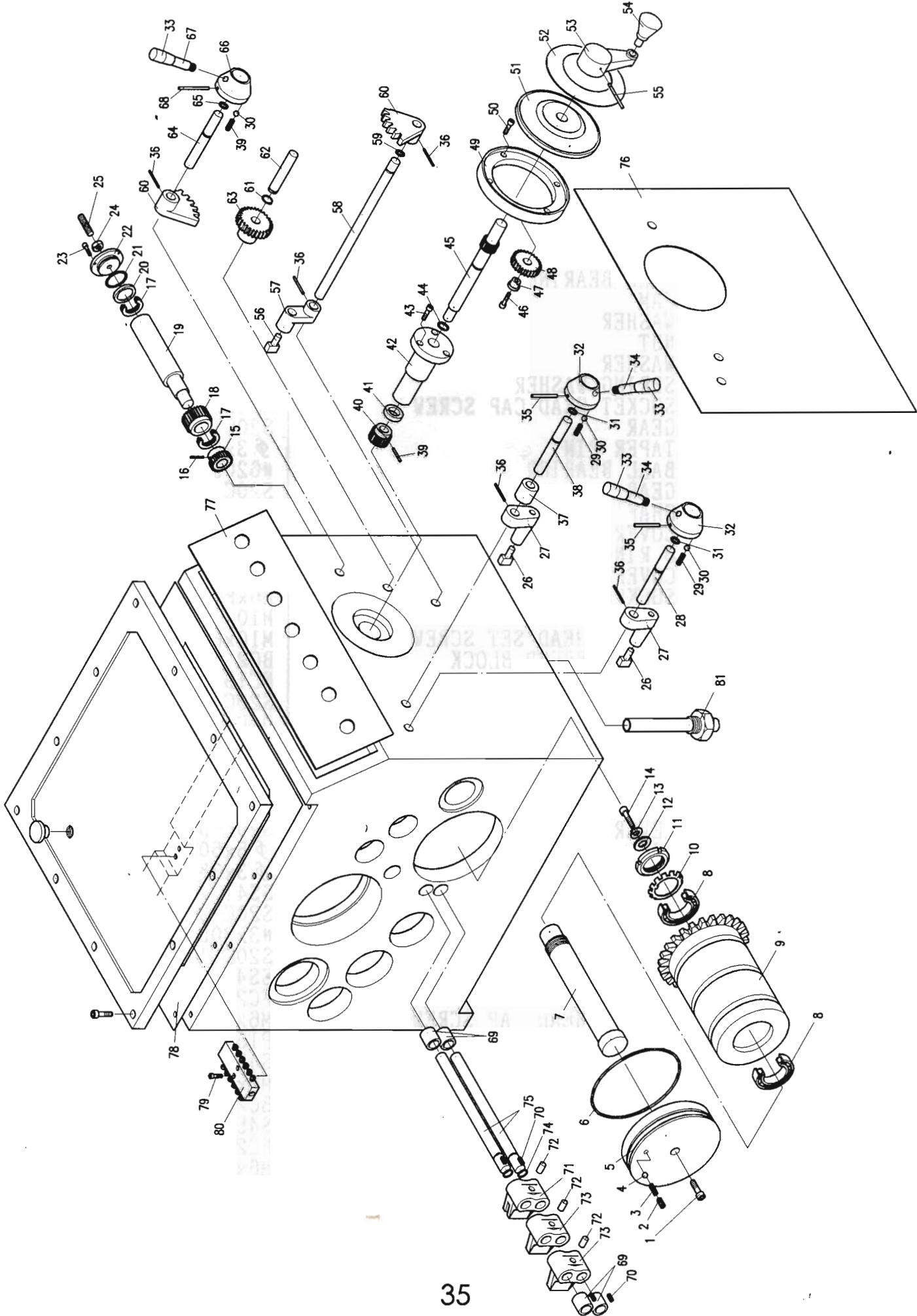
REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
56	9H-40140	GEAR	SCM21 27T	1
57	9H-40150	GEAR	SCM21 33T	1
58	9H-40160	GEAR	SCM21 40T	1
59	9H-40170	GEAR	SCM21 43T	1
60	9H-40180	GEAR	SCM21 53T	1
61	#6208	BALL BEARING	#6208	2
62	9H-40290	SPACE COLLAR	S20C	1
63	9H-40270	GEAR	SCM21 48T	1
64	KY-10835	KEY	10x8x35L	1
65	9H-40280	SHAFT	SCM21	1
66	#6208	BALL BEARING	#6208	2
67	G-75	O Ring	#75	1
68	9H-40300	COVER	FC15	1
69	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	3
70	9H-40070	COVER	FC15	1
71	G-75	O Ring	#75	1
72	#6208	BALL BEARING	#6208	1
73	9H-40210	GEAR	SCM21 59T	1
74	9H-40200	GEAR	SCM21 53T	1
75	KY-10825	KEY	10x8x25L	1
76	9H-40230	GEAR	SCM21 47T	1
77	9H-40220	GEAR	SCM21 40T	1
78	KY-10825	KEY	10x8x25L	1
79	9H-40240	GEAR	SCM21 33T	1
80	9H-40250	GEAR	SCM21 27T	1
81	CS-50	SNAP RING	#50	1
82	#6010	BALL BEARING	#6010	2
83	9H-40190	SHAFT	SCM21 17T	1
84	NK25x30x20	NEEDLE ROLLER BEARING	NK25x30x20	1
85	#51106	THRUST BEARING	#51106	1
86	9H-40340	SHAFT	SCM21	1
87	9H-40310	GEAR	SCM21 48T	1
88	#6208	BALL BEARING	#6208	2
89	9H-40330	SPACE COLLAR	FC15	1
90	G-80	O RING	#80	1
91	9H-40320	COVER	FC15	1
92	HS-1240	HEXAGON SOCKET SET SCREW	M12xP1.75x40L	1
93	N-12	NUT	M12	1
94	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	4
95	9H-40400	COVER	FC15	1
96	9H-40400P	PACKING	PACKING	1
97	HS-0506	HEXAGON SOCKET SET SCREW	M5xP0.8x6L	2
98	9H-41100	PRUENT OIL RING	S20C	1
99	NA4826	NEEDLE ROLLER BEARING	NA4826	1
100	HS-0806	HEXAGON SOCKET SET SCREW	M8xP1.25x6L	2
101	9H-40430	SPACE COLLAR	S20C	1
102	9H-40380	GEAR	SCM21 81T	1
103	9H-40390	NUT	S45C M135xP2.0	1
104	HS-1010	HEXAGON SOCKET SET SCREW	M10xP1.5x10L	2
105	48393/48320	TAPER ROLLER BEARING	48393/48320	1
106	SH-0812	SOCKET HEAD CAP SCREW	M8xP1.25x12L	4
107	9H-40370	SNAP RING	S20C	1
108	9H-40360	GEAR	SCM21 73T	1
109	48685/48620	TAPER ROLLER BEARING	48685/48620	1
110	9H-41080	PRUNED OIL RING	FC15	1

## 8-2. Headstock(A-type)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
111	9H-40420P	PACKING	PACKING	1
112	9H-40420A	COVER	FC15	1
113	SH-0625	SOCKET HEAD CAP SCREW	M6xP1.0x25L	6
114	KY-151035	KEY	15x10x35L	1
115	9H-30350A	SPINDLE	SCM4	1
116	KY-151055	KEY	15x10x55L	1
117	9H-40440	SHAFT	S45C	1
118	#6005	BALL BEARING	#6005	2
119	9H-40450	GEAR	SCM21 31T	1
120	9H-40490	COVER	FC15	1
121	G-52	O SEAL	#52	1
122	#6205Z	BALL BEARING	#6205Z	1
123	9H-40460	SHAFT	SCM21	1
124	9H-40470	GEAR	SCM21 28T	1
125	CS-30	SNAP RING	#30	1
126	9H-40480	GEAR	SCM21 54T	1
127	#6205	BALL BEARING	#6205	1
128	N-20	NUT	M20	1
129	SW-20	SPRING WASHER	φ 20	1
130	9B-41310	GEAR	FC25	1
131	#6005Z	BALL BEARING	#6005Z	1
132	SH-0625	SOCKET HEAD CAP SCREW	M6xP1.0x25L	3
133	11H-40530	COVER	FC15	1
134	TC25358	OIL SEAL	25x35x8	1
135	#6205Z	BALL BEARING	#6205Z	1
136	KY-7725	KEY	7x7x25L	1
137	9H-40500	SHAFT	SCM21	1
138	9H-40520	GEAR	SCM21 51T	1
139	9H-40510	GEAR	SCM21 42T	1
140	KY-7720	KEY	7x7x20L	1
141	CS-30	SNAP RING	#30	1
142	#6304	BALL BEARING	#6304	1
143	9B-41310	GEAR	FC25	1
144	9B-40110	GEAR	FC25	1
145	#6205Z	BALL BEARING	#6205Z	1
146	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	3
147	10H-41010	COVER	FC20	1
148	TC25388	OIL SEAL	25x38x8	1
149	CS-30	SNAP RING	#30	1
150	#6006-2RS	BALL BEARING	#6006-2RS	1
151	10H-41020	SHAFT	S45C	1
152	9H-41060	DRIVE KEY	SS41	1
153	HS-0820	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x20L	1



# 8-3. Headstock(Front Panel)



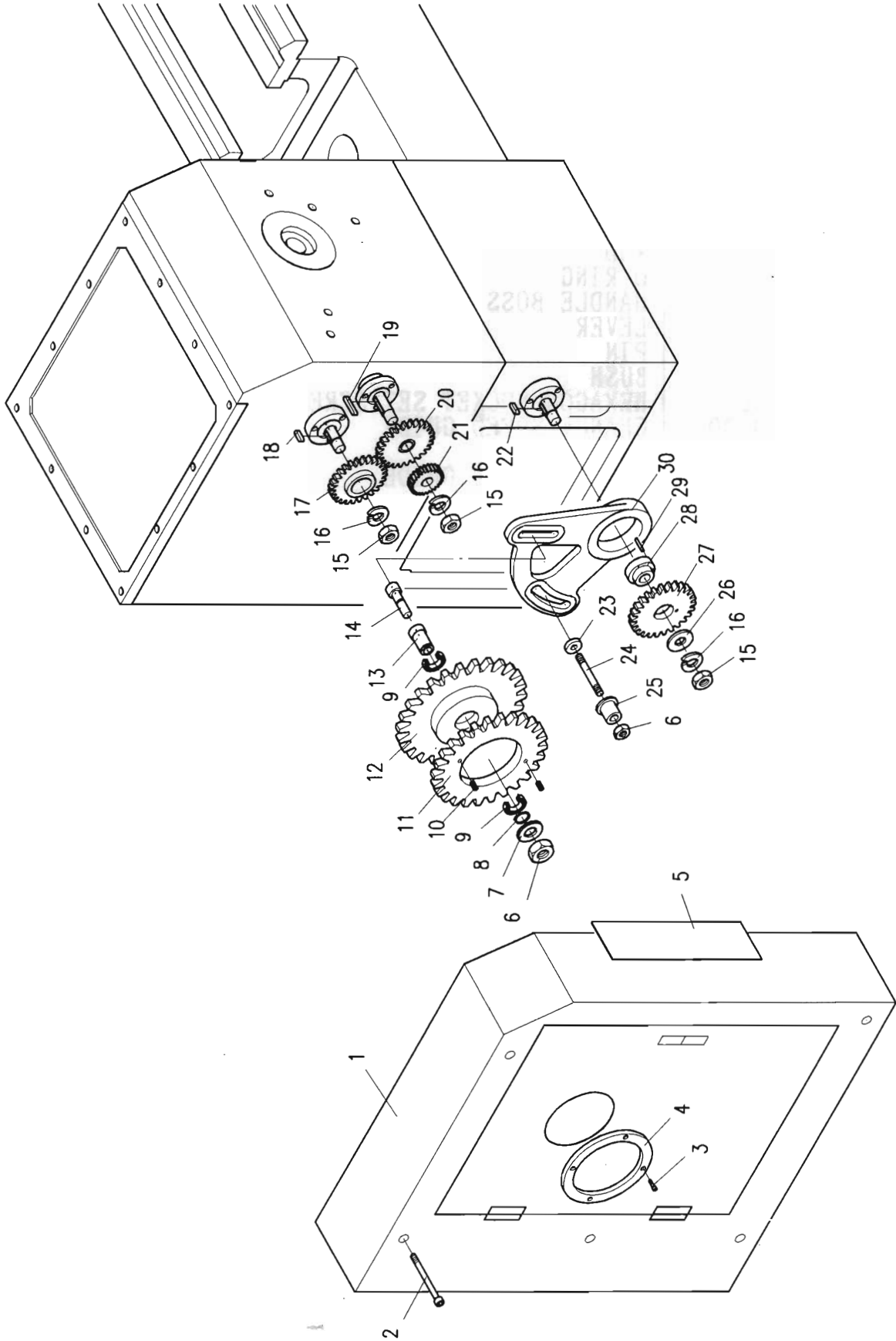
### 8-3. Headstock(Front Panel)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	SH-1025	SOCKET HEAD CAP SCREW	M10xP1.5x25L	1
2	SH-1210	SOCKET HEAD CAP SCREW	M12xP1.75x10L	1
3	O.D.3/8"	SPRING	O.D.3/8"WIRE 1	1
4	ϕ 3/8"	STEEL BALL	ϕ 3/8"	1
5	9H-40550	COVER	FC20	1
6	G-120	O RING	G120	1
7	9H-40780	SHAFT	S45C	1
8	#6208	BALL BEARING	#6208	2
9	9H-40760	CAM	FC25	1
10	AW08	WASHER	AW08	1
11	AN08	NUT	AN-081.5	1
12	9H41210	WASHER	SS41	1
13	SW-10	SPRING WASHER	ϕ 10	1
14	SH-1025	SOCKET HEAD CAP SCREW	M10xP1.5x25L	1
15	9H-40770	GEAR	S20C 20T	1
16	TP-0325	TAPER PIN	ϕ 3x25L	1
17	#6205	BALL BEARING	#6205	2
18	9H-40740	GEAR	S20C 20T	1
19	9H-41240	SHAFT	S20C-D	1
20	9H-41180	COVER	SS41	1
21	G-50	O RING	G50	1
22	9H-41170	COVER	FC15	1
23	SH-0610	SOCKET HEAD CAP SCREW	M6xP1.0x16L	3
24	N-10	NUT	M10	1
25	SS-1040	SOCKET HEAD SET SCREW	M10xP1.5x40L	1
26	9H-40570	CHANGE SPEED BLOCK	BC2	2
27	9H-40560	ROCKER ARM	FC15	2
28	9H-40540	ROD	S20C-D	1
29	O.D.1/4	SPRING	O.D.1/4 Wire 1	3
30	ϕ 1/4"	STEEL BALL	ϕ 1/4"	3
31	P-12	O RING	P12	2
32	9H-40910	HANDLE BOSS	S20C-D	2
33	7A-40580	PLASTIC KNOB	PLASTIC	3
34	9H-40930	LEVER	S20C-D	2
35	P-0550	PIN	ϕ 5x50L	2
36	TP-0338	TAPER PIN	ϕ 3x38L	4
37	9H-41120	WASHER	SS41	1
38	9H-40580	ROD	S20C-D	1
39	TP-0330	TAPER PIN	#3x30L	1
40	9H-40750	GEAR	S20C 15T	1
41	9H-41140	WASHER	SS41	1
42	9H-40720	BUSH	FC20	1
43	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	3
44	P-15	O RING	P15	1
45	9H-40730	GEAR SHAFT	S45C 12T	1
46	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	1
47	9H-40690	SHAFT	BC2	1
48	9H-40700	GEAR	S45C 24T	1
49	9H-40680	CHANGE SPEED BASE	FC25	1
50	SH-0618	SOCKET HEAD CAP SCREW	M6xP1.0x18L	4
51	9H-40670	CHANGE SPEED DISK	FC15	1
52	9P-40030	NAME PLATE	AL	1
53	9H-40660	ROCKER ARM	FC15	1
54	9H-40650	LEVER	S20C	1
55	TP-0450	TAPER PIN	#4x50L	1

### 8-3. Headstock(Front Panel)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
56	9H-40630	CHANGE SPEED BLOCK	BC2	1
57	9H-40620	ROCKER ARM	FC15	1
58	9H-40590	ROD	SS41	1
59	P-12	O RING	P12	1
60	9H-40600	QUADRANT GEAR	FC15	2
61	CS-16	SNAP RING	#16	1
62	9H-41110	SHAFT	S20C	1
63	9H-40990	GEAR	FC25	1
64	9H-40640	ROD	SS41	1
65	P-12	O RING	P12	1
66	9H-40950	HANDLE BOSS	S20C	1
67	9H-40930	LEVER	S20C-D	1
68	P-0460	PIN	∅ 4x60L	1
69	9H-41050	BUSH	S45C	4
70	HS-0606	HEXAGON SOCKET SET SCREW	M6xP1.0x6L	4
71	9H-40800	CHANGE SPEED GUIDE	BC2	1
72	9H-41160	SHAFT	SCM4	3
73	9H-40790	CHANGE SPEED GUIDE	BC2	2
74	P-12	O RING	P12	2
75	9H-41260	SHAFT	SS41	2
76	9P-30020	Name Plate	AL	1
77	9P-30010	Name Plate	AL	1
78	SH-0516	SOCKET HEAD CAP SCREW	M5xP0.8x16L	2
79	9H-41270	DISTRIBUTION OIL	AL	1
80	9H-41090	JOINT	SS41	1

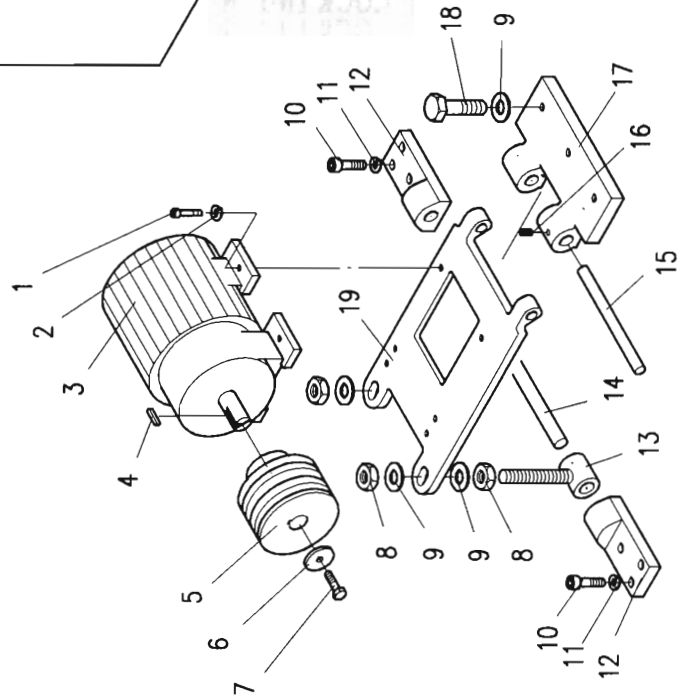
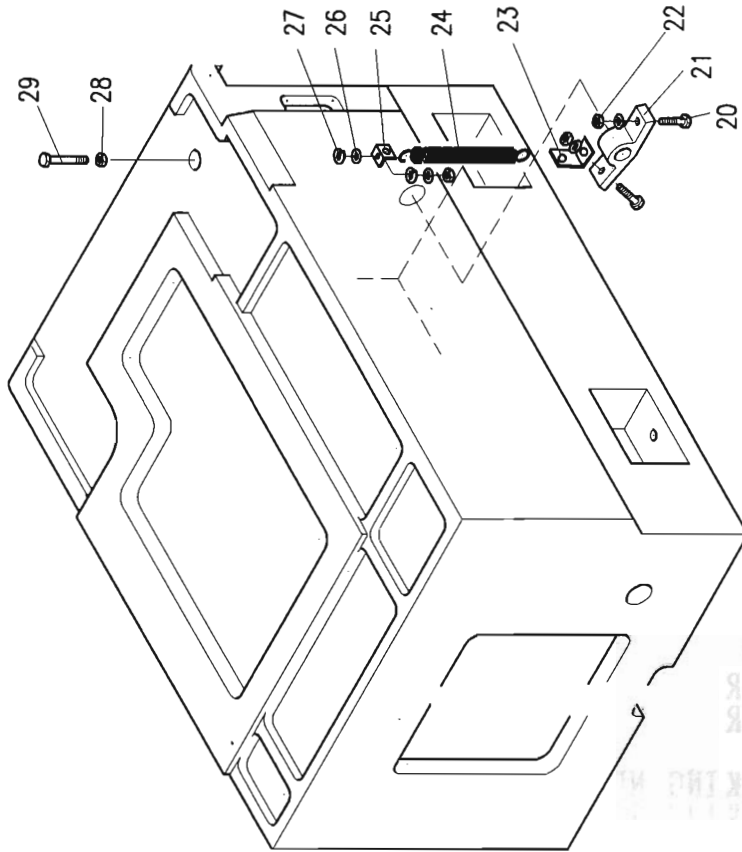
# 8-4. Change Gear



## 8-4. Change Gear

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	9B-40080	SLIDE COVER	SS41	1
2	SH-10190	HEXAGON SOCKET HEAD CAP SCREW	M10xP1.5x190L	5
3	SH-0512	HEXAGON SOCKET HEAD CAP SCREW	M5xP0.8x12L	4
4	9B-40670	COVER	FC15	1
5	9P-40080	NAME PLATE	AL	1
6	N-16	NUT	M16	2
7	∅ 16	SPRING WASHER	∅ 16	1
8	CS-45	SNAP RING	#45	1
9	#6005	BALL BEARING	#6005	2
10	SS-0810	HEXAGON SOCKET SET SCREW	M8xP1.25x10L	2
11	9B-40120	IDLE GEAR	120T	1
12	9B-40130	IDLE GEAR	127T	1
13	9B-40150	SHAFT	S20C	1
14	9B-40160	SHAFT	SS41	1
15	N-20	NUT	M20	1
16	∅ 20	SPRING WASHER	∅ 20	1
17	9B-41290	GEAR	FC25	1
18	K-7720	KEY	7x7x20L	1
19	K-7740	KEY	7x7x40L	1
20	9B-40110	GEAR	S45C	1
21	9B-41310	GEAR	S45C	1
22	K-7725	KEY	7x7x25L	1
23	9B-40200	LOCKING NUT	SS41	1
24	9B-40170	LOCKING SCREW	SS41	1
25	9B-40180	WASHER	S20C-D	1
26	9B-40680	WASHER	SS41	1
27	9B-40140	GEAR	S20C	1
28	9B-40190	SAFE PIN BASE	S45C	1
29	SP-0530	SAFE PIN	#5x30L	1
30	9B-40100	QUADRANT BRACKET	FC20	1

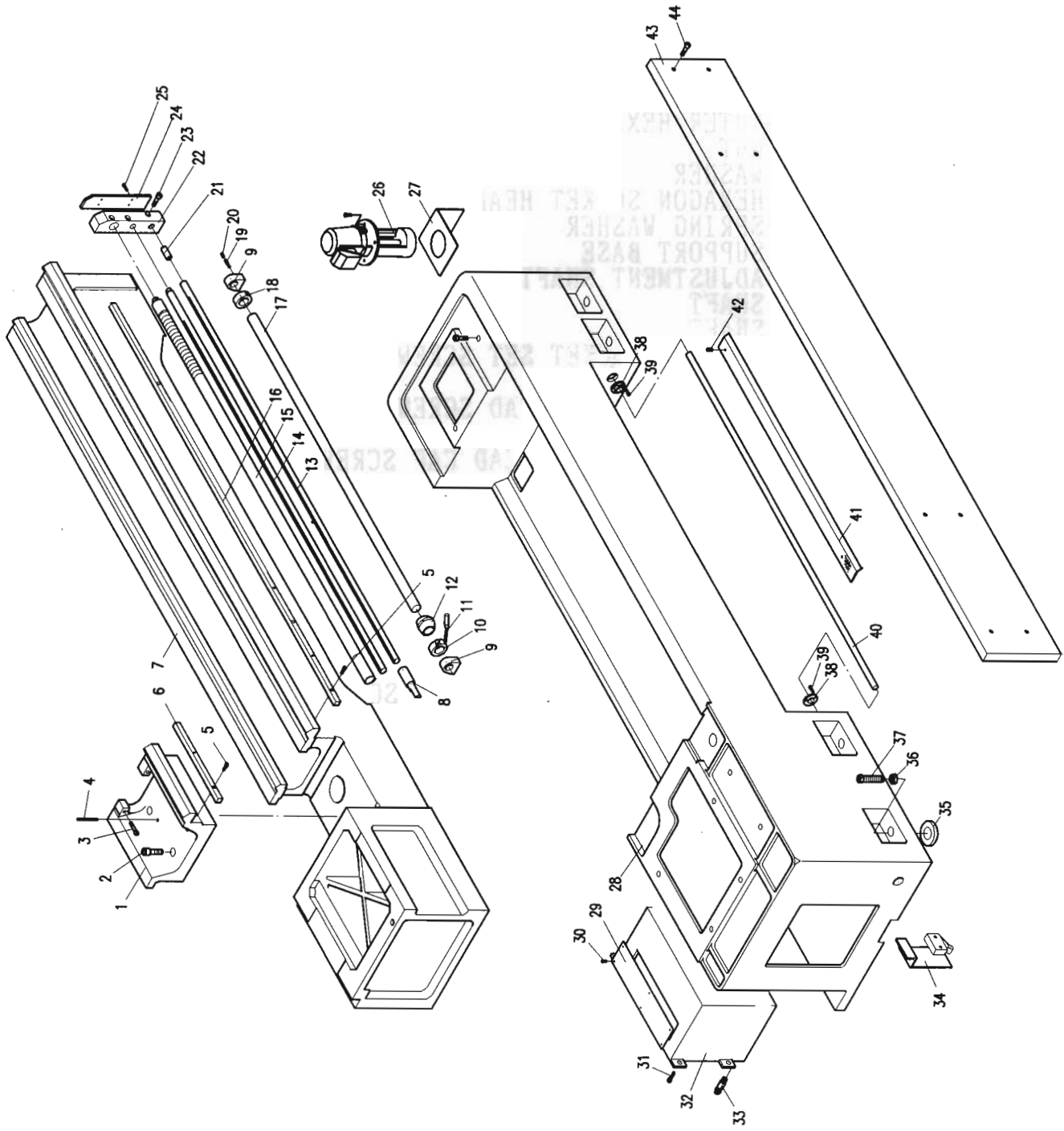
# 8-5. Brake Mechanism



## 8-5. Brake Mechanism

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	SH-1235	HEXAGON SOCKET HEAD CAP SCREW	M12xP1.75x35L	4
2	SW-12	SPRING WASHER	Φ 12	4
3	15HP	MOTOR	15HP	1
4	K-121280	KEY	12x12x80L	1
5	9B-40230	MOTOR PULLEY	FC15	1
6	9B-40240	WASHER	SS41	1
7	HH-0825	OUTER HEXAGON HEAD SCREW	M8xP1.25x25L	1
8	N-20	NUT	M20xP2.0	4
9	W-20	WASHER	M20	7
10	SH-1250	HEXAGON SOCKET HEAD CAP SCREW	M12xP1.75x50L	6
11	SW-12	SPRING WASHER	Φ 12	6
12	9B-40270	SUPPORT BASE	FC15	2
13	9B-40290	ADJUSTMENT SHAFT	S20C	2
14	9B-40280-1	SHAFT	SS41	1
15	9B-40280-2	SHAFT	SS41	1
16	SS-0816	HEXAGON SOCKET SET SCREW	M8xP1.25x16L	1
17	9B-40260	MOTOR BASE	FC15	1
18	HH-2050	OUTER HEXAGON HEAD SCREW	M20xP2.0x50L	3
19	9B-40250	BASE PLATE	FC20	1
20	HH-1080	HEXAGON SOCKET HEAD CAP SCREW	M10xP1.5x80L	2
21	9B-40720	ROCKER ARM	FC15	1
22	N-10	NUT	M10	2
23	9B-40710	ROD	SS41	1
24	O.D.-1"	TENSION SPRING	O.D.1", Wire Φ 1/8	1
25	9B-40710	ROD	SS41	1
26	W-10	WASHER	Φ 10	3
27	SW-10	SPRING WASHER	Φ 10	5
28	N-10	NUT	M10	2
29	HH-1080	HEXAGON SOCKET HEAD CAP SCREW	M10xP1.5x80L	1

# 8-6. Bed(60"~80" Machine)

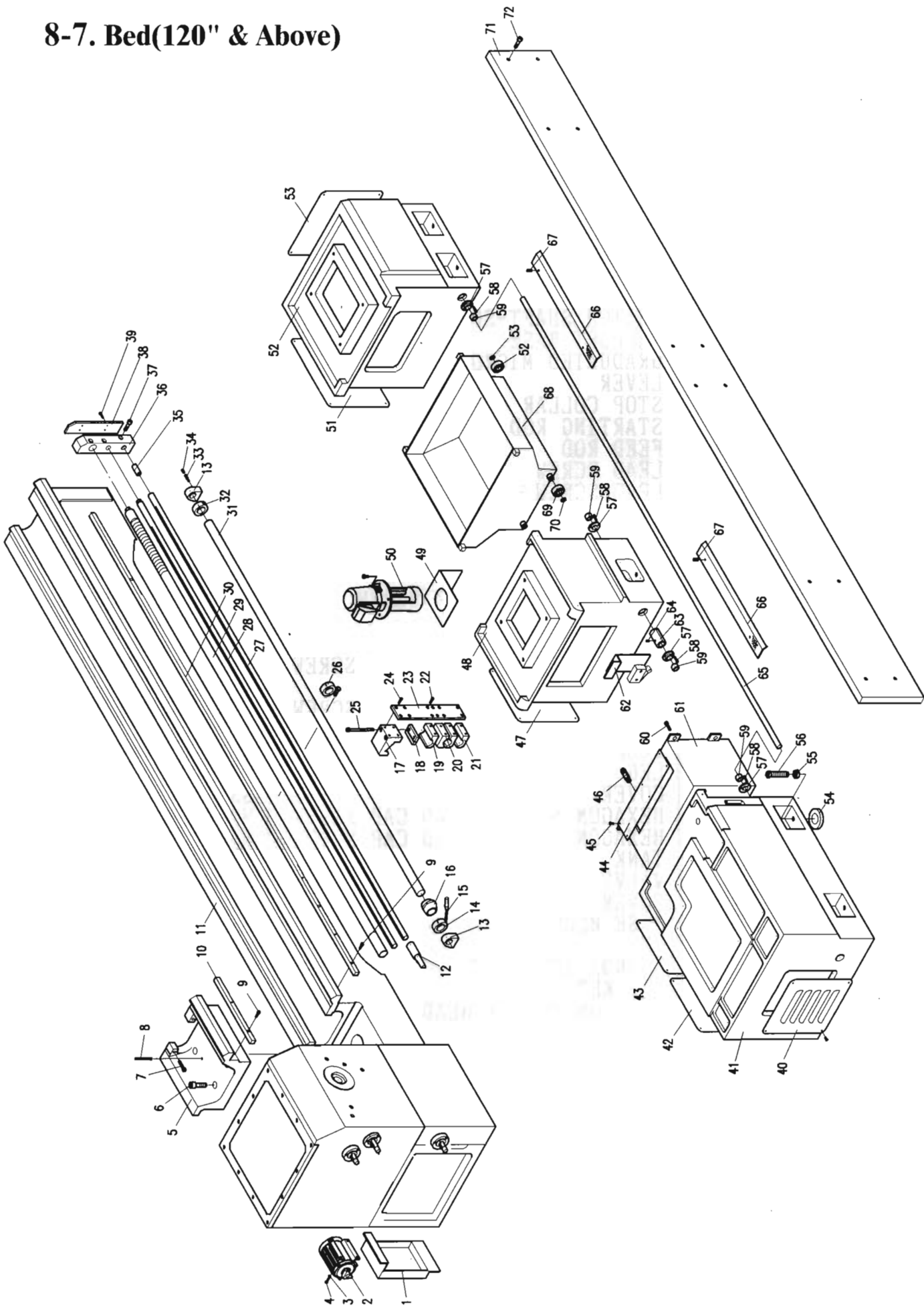




## 8-6. Bed(60"~80" Machine)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	9B-40210	GAP	FC25	1
2	SH-1280	HEXAGON SOCKET HEAD CAP SCREW	M12xP1.5x80L	4
3	SH-0845	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x45L	2
4	TP-0788	TAPE PIN	#7x88L	2
5	SH-0625	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x25L	8
6	9B-40360	RACK	S45C	1
7	9B-10010	BED	FC25	1
8	9B-40450	SWITCH SHAFT-SP	SS41	1
9	9B-40620	SUPPORT BASE	FC15	2
10	9B-41190	GRADUATED MICRO COLLAR	SS41	1
11	9B-40490	LEVER	S20C-D	1
12	9B-40340	STOP COLLAR	SS41	1
13	9B-40060	STARTING ROD	SS41	1
14	9B-40050	FEED ROD	S20C-D	1
15	9B-40040 I	LEAD SCREW	S20C-D	1
	9B-40040 M	LEAD SCREW	S20C-D	1
16	9B-40350	RACK	S45C	1
17	9B-40070	STOP ROD	S20C-D	1
18	9B-40340	STOP COLLAR	SS41	1
19	SP-M8x20	SPRING	M8x20L	4
20	SS-0810	HEXAGON SOCKET SET SCREW	M8xP1.25x10L	1
21	9B-40500	COLLAR	S20C-D	1
22	9B-40370	BRACKET	FC15	1
23	SH-1270	HEXAGON SOCKET HEAD CAP SCREW	M12xP1.5x70L	3
24	9B-40380	BRACKET COVER	FC15	1
25	SH-0612	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x12L	4
26	1/2"HP	COOLANT PUMP	1/2"	1
27	9B-40660	COOLANT PUMP BED	SS41	1
28	9B-30020	LEG	FC15	1
29		COVER	SS41	1
30	SH-0612	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x12L	4
31	SH-0616	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x16L	4
32	9B-30870	TANK	SS41	1
33	PT-1/4"	VALVE	PT1/4"	1
34	9B-41240	COVER	SS41	1
35	9B-40730	BASE BLOCK	FC15	10
36	N-25	NUT	SS41	10
37	M-25	FOUNDATION BOLT	SS41	10
38	9B-40770	BRACKET	FC15	4
39	SH-0820	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x20L	8
40	9B-40030	SHAFT	SS41	1
41	9B-40630	PEDAL	SPC	1
42	SS-1010	HEXAGON SOCKET SET SCREW	M10xP1.5x10L	4
43	9B-40590	COVER	SS41	1
44	SH-0835	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x30L	8

# 8-7. Bed(120" & Above)



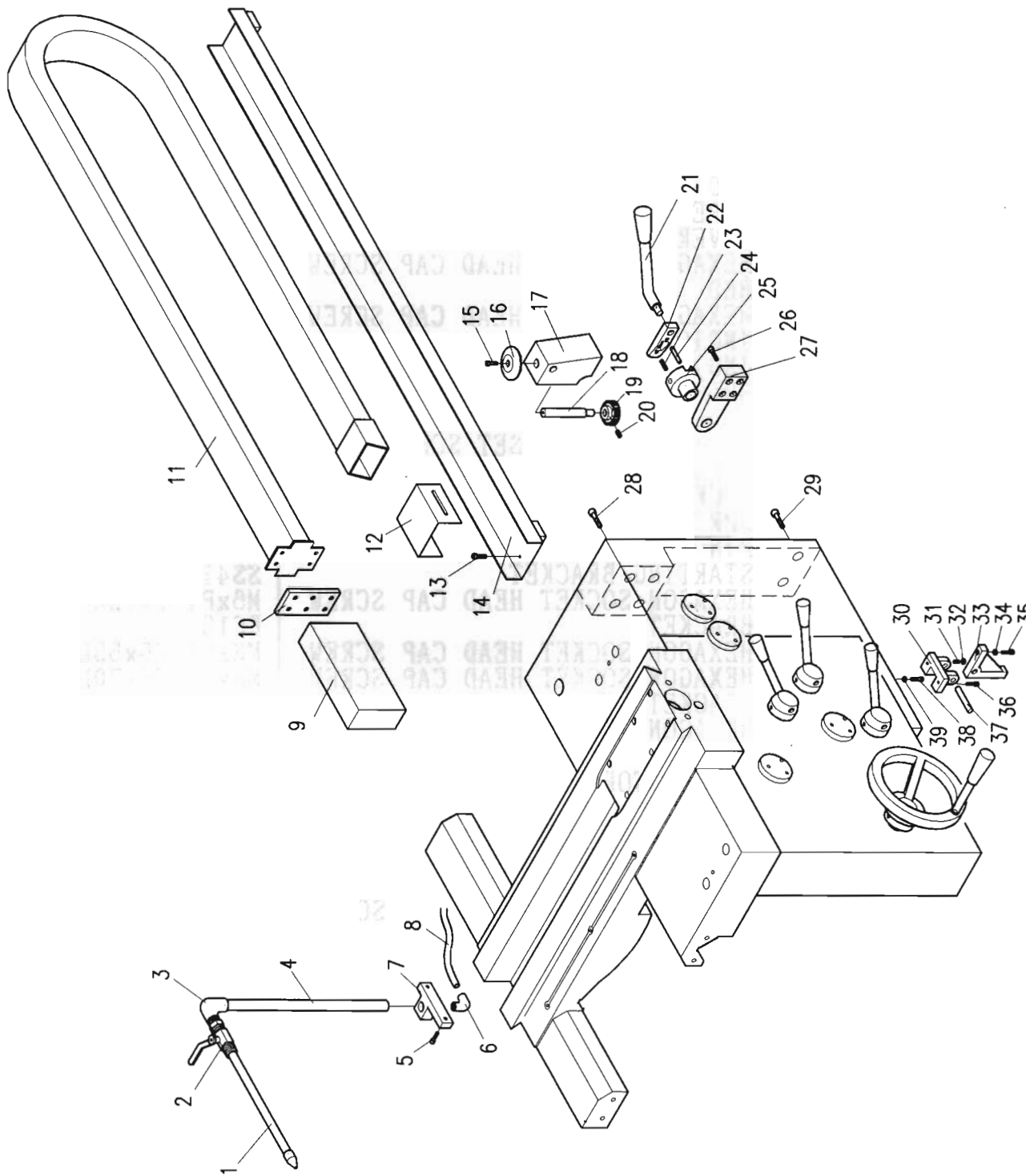
## 8-7. Bed(120" & Above)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	9B-40640	COVER	SS41	1
2		DIRECT DRIVE PUMP		1
3	W-6	WASHER	∅ 6	4
4	SH-0616	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x16L	4
5	9B-40210	GAP	FC25	1
6	SH-1280	HEXAGON SOCKET HEAD CAP SCREW	M12xP1.5x80L	4
7	SH-0845	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x45L	2
8	TP-0788	TAPE PIN	#7x88L	2
9	SH-0625	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x25L	8
10	9B-40360	RACK	S45C	1
11	9B-10010	BED	FC25	1
12	9B-40450	SWITCH SHAFT-SP	SS41	1
13	9B-40620	SUPPORT BASE	FC15	2
14	9B-41190	GRADUATED MICRO COLLAR	SS41	1
15	9B-40490	LEVER	S20C-D	1
16	9B-40340	STOP COLLAR	SS41	1
17	9B-31090	PULL ROD	FC20	1
18	9B-41080	COMPRESS PLATE	SS41	1
19	9B-41050	BRACKET	AL	1
20	9B-41060	BRACKET	AL	2
21	9B-41070	BRACKET	AL	1
22	SH-0616	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x16L	8
23	9B-31110	COVER	FC20	1
24	SH-0612	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x12L	4
25	SH-1080	HEXAGON SOCKET HEAD CAP SCREW	M10xP1.5x80L	2
26	9B-40340	POSITION COLLAR	SS41	1
27	9B-40060	STARTING ROD	SS41	1
28	9B-40050	FEED ROD	S20C-D	1
29	9B-40040	LEAD SCREW	S20C-D	1
30	9B-40350	RACK	S45C	1
31	9B-40070	STOP ROD	S20C-D	1
32	9B-40340	STOP COLLAR	SS41	1
33	SP-M8x20	SPRING	M8x20L	1
34	SS-0810	HEXAGON SOCKET SET SCREW	M8xP1.25x10L	1
35	9B-40500	COLLAR	S20C-D	1
36	9B-40370	BRACKET	FC15	1
37	SH-1270	HEXAGON SOCKET HEAD CAP SCREW	M12xP1.5x70L	3
38	9B-40380	BRACKET COVER	FC15	1
39	SH-0612	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x12L	4
40	9B-40550	COVER	SS41	1
41	9B-30020	FRONT LEG	FC15	1
42	9B-40540SP	COVER	SS41	1
43	9B-40540	COVER	SS41	1
44		COVER	SS41	1
45	SH-0612	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x12L	6
46	PT-1/4"	VALVE	PT1/4"	1
47	9B-40540	COVER	SS41	1
48	9B-30030	MIDDLE LEG	FC15	1
49	9B-40660	COOLANT PUMP BED	SS41	1
50	1/2"HP	COOLANT PUMP	1/2"	1
51	9B-40530	COVER	SS41	1
52	9B-30030	REAR LEG	FC15	1
53	9B-40530	COVER	SS41	1
54	9B-40730	BASE BLOCK	FC20	10
55	N-25	NUT	SS41	10

## 8-7. Bed(120" & Above)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
56	M-25	FOUNDATION BOLT	SS41	10
57	9B-40770	BRACKET	FC15	4
58	SH-0625	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x25L	8
59	9B-40400	BRAKT ARM	FC15	4
60	SH-0616	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x16L	4
61	9B-30870	TANK	SS41	1
62	9B-41240	COVER	SS41	1
63	9B-40240A	COLLAR	SS41	1
64	SS-0625	HEXAGON SOCKET SET SCREW	M6xP1.0x25L	8
65	9B-40030	SHAFT	SS41	1
66	9B-40630	PEDAL	SPC	2
67	SS-1010	HEXAGON SOCKET SET SCREW	M10xP1.5x10L	4
68	9B-40520	TANK	SS41	2
69	9B-40560	ROLLER	FC15	4
70	CS-20	SNAP RING	S20	4
71	9B-40590	COVER	SS41	1
72	SH-0835	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x30L	12

# 8-8. Accessories of Bed



## 7-8. Trouble Shooting Chart

8-8 TROUBLE SHOOTING CHART		
TROUBLE	PROBABLE CAUSE	CORRECTION
Vibration	<p>Loose leveling screws</p> <p>Torn or mismatched vee belts</p> <p>Work or chuck out of balance operating at high spindle speeds</p> <p>Motor out of balance</p>	<p>Set all screws so they bear evenly on leveling plates.</p> <p>Replace vee belts with matched set.</p> <p>Balance chuck or reduce spindle speed.</p> <p>Contact local representative of motor manufacturer.</p>
Chatter	<p>Tool bit improperly ground or not on center</p> <p>Tool overhang too great</p> <p>Using improper surface feed</p> <p>Feed rate too high or too low</p> <p>Gibs of cross slide or compound rest loose</p> <p>Spindle bearings worn</p>	<p>Reground tool bit or adjust tool holder so that area of contact between tool bit and work is decreased. Avoid extreme negative rake angle</p> <p>Keep point of tool bit as close as possible to tool holder.</p> <p>Reduce or increase spindle speed.</p> <p>Reduce or increase feed.</p> <p>Adjust gibs.</p> <p>Adjust spindle bearings.</p>
Chatter (cont'd)	<p>Work improperly supported</p> <p>Vibration</p> <p>Spindle bearing loose</p>	<p>Adjust tailstock center. Use steady rest or follow rest on long slender shafts. Minimize tailstock barrel extension.</p> <p>See "Vibration" trouble above.</p> <p>Adjust spindle bearings.</p>
Work not turned straight	<p>Headstock and tailstock centers not aligned</p> <p>Work improperly supported</p> <p>Bed not level</p> <p>Tool not on center when using taper attachment</p>	<p>Align tailstock center.</p> <p>Use steady rest or follow rest.</p> <p>Reduce overhang from chuck.</p> <p>Relevel bed, using precision level.</p> <p>Put tool on center.</p>
Work out of round	<p>Work loose between centers or centers are excessively worn-work centers out of round</p> <p>Loose headstock spindle bearings</p>	<p>Adjust tailstock center. Regrind centers.</p> <p>Lap work center.</p> <p>Adjust headstock spindle bearings</p>

## 8-8. Accessories of Bed

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	3/8"	NOZZLE	3/8"x24"	1
2	3/8"	VALVE	3/8"	1
3	3/8"x3/8"	ELBOW	3/8"x3/8"	1
4	3/8"x470L	PIPE	470L	1
5	SH-0616	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x16L	2
6	3/8"x3/8"	ELBOW	3/8"x3/8"	1
7	9B-41000	BED	FC25	1
8	3/8"x66"	HOSE	66"	1
9	9B-40800	BOX	SS41	1
10	9B-40790	BED	SS41	1
11	9B-40840	PIPE	SS41	1
12	9B-40820	COVER	SS41	1
13	SH-0616	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x16L	4
14	9B-40830	BED	S20C-D	1
15	SH-0508	HEXAGON SOCKET HEAD CAP SCREW	M5xP0.8x8L	1
16	7A-40320	INDICATE DISK	AL	1
17	9A-40800	INDICATE SET	FC15	1
18	9A-40810	SHAFT	SS41	1
19	9A-40490	GEAR	BC2	1
20	SS-0606	HEXAGON SOCKET SET SCREW	M6xP1.0x6L	1
21	9B-40580	HANDLE ROD	SS41	1
22	9A-40830	ROCKER ARM	SS41	1
23	O.D.-6	SPRING	O.D. 6	1
24	P-0430	PIN	∅ 4x30L	1
25	9A-40820	STARTING BRACKET	SS41	1
26	SH-0612	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x12L	4
27	5A-40510	BRACKET	FC15	1
28	SH-0855	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x55L	4
29	SH-0870	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x70L	2
30	7B-40090	BRACKET	FC15	1
31	SS-0516	HEXAGON SOCKET SET SCREW	M5xP0.8x16L	1
32	N-5	NUT	M5	1
33	9B-40220	TOUCH-STOPPER	FC15	1
34	N-8	NUT	M8	1
35	SH-0840	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x40L	1
36	SH-0512	HEXAGON SOCKET HEAD CAP SCREW	M5xP0.8x12L	2
37	7B-40100	SHAFT	SS41	1
38	SH-0516	HEXAGON SOCKET HEAD CAP SCREW	M5xP0.8x16L	1
39	N-5	NUT	M5	1





## 8-9. Gear Box

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	P-28	O RING	P28	2
2	7G-40140	SPACE COLLAR	S45C	2
3	#6003	BALL BEARING	#6003	1
4	9G-40120	SHAFT	S45C	1
5	KP-07790	KEY	7x7x90	1
6	9G-40130	GEAR	SCM-4 18T	1
7	9G-40140	GEAR	SCM-4 19T	1
8	9G-40150	GEAR	S45C 20T	1
9	9G-40160	GEAR	S45C 22T	1
10	9G-40170	GEAR	S45C 23T	1
11	9G-40180	GEAR	S45C 24T	1
12	9G-40190	GEAR	S45C 26T	1
13	9G-40200	GEAR	S45C 28T	1
14	9G-40210	GEAR	S45C 32T	1
15	#6003	BALL BEARING	#6003	1
16	N-20	NUT	M20xP2.5	1
17	W-20	WASHER	Φ 20	1
18	9B-40680	LOCKING BLOCK	S20C	1
19	9B-40700	SPRING PIN	Φ 5x30L	1
20	9B-40140	CHANGE GEAR	S20C 56T	1
21	9B-40190	BASE OF SAFE PIN	S45C	1
22	SH-0835	SOCKET HEAD CAP SCREW	M8xP1.25x35L	4
23	9G-40040	COVER	FC15	1
24	#6006-2RS	BALL BEARING	#6006-2RS	1
25	KP-07720	KEY	7x7x20L	1
26	9G-40030	SHAFT	S45C	1
27	9G-40050	GEAR	S45C 28Tx40T	1
28	CS-30	SNAP RING	C TYPE	1
29	#6005	BALL BEARING	#6005	1
30	9G-40060I	GEAR	S45C 21T	1
	9G-40060M	GEAR	S45C 21T	1
31	#6006	BALL BEARING	#6006	2
32	CS-30	SNAP RING	C TYPE	2
33	KP-07720	KEY	7x7x20L	1
34	9G-40220	SHAFT	SCM-4	1
35	KP-05540	KEY	5x5x40	1
36	KP-05522	KEY	5x5x22	1
37	9G-40230	GEAR	S45C	1
38	9G-40240	CLUTCH	S45C	1
39	9G-40250	GEAR	SCM-4	1
40	CS-26	SNAP RING	C TYPE	1
41	#6006	BALL BEARING	#6006	1
42	9G-40110	GEAR	S45C 24T	1
43	#6002	BALL BEARING	#6002	1
44	9G-40320I	GEAR	S45C	1
	9G-40320M	GEAR	S45C	1
45	9G-40330	GEAR	S45C 46T, 24T	1
46	9G-40340	LOCKING NUT	S20C	1
47	AW-06	LOCKING WASHER	#AW-06	1
48	#51106	THRUST BEARING	#51106	2
49	9G-40350	BUSH	S20C	2
50	#6006	BALL BEARING	#6006	1
51	9G-40360	COVER	FC15	1
52	SH-0516	SOCKET HEAD CAP SCREW	M5xP0.8x16L	3
53	KP-06622	KEY	6x6x22L	1

## 8-9. Gear Box

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
54	9G-40310	SHAFT	FC15	1
55	9G-40080	COVER	FC15	1
56	#6006	BALL BEARING	#6006	1
57	9G-40070	SHAFT	S45C	1
58	9G-40090	GEAR	S45C 30T×42T	1
59	CS-30	SNAP RING	C TYPE	1
60	9G-40100I	GEAR	S45C 25T	1
	9G-40100M	GEAR	S45C 25T	1
61	#6002	BALL BEARING	#6002	1
62	9G-40110	GEAR	S45C 24T	1
63	#6006	BALL BEARING	#6006	1
64	CS-30	SNAP RING	C TYPE	1
65	CR-55	SNAP RING	#55	1
66	#6006	BALL BEARING	#6006	2
67	9G-40270	GEAR	SCM21	1
68	9G-40280	ROCKER ARM	FC15	1
69	KP-05522	KEY	5×5×22	1
70	9G-40260	SHAFT	S45C	1
71	KP-05528	KEY	5×5×28	1
72	CS-30	SNAP RING	C TYPE	1
73	#6006	BALL BEARING	#6006	1
74	9G-40380I	GEAR	S45C	1
	9G-40380M	GEAR	S45C	1
75	#6002	BALL BEARING	#6002	1
76	9G-40390	GEAR	S45C	1
77	CS-30	SHAP RING	C TYPE	1
78	9G-40400	GEAR	S45C	1
79	9G-40410	SPACE COLLAR	S20C-D	1
80	#6006	BALL RING	#6006	1
81	9G-40420	COVER	FC15	1
82	SH-0516	SOCKET HEAD CAP SCREW	M5×P0.8×16L	3
83	KP-07720	KEY	7×7×20	1
84	9G-40370	SHAFT	S45C	1
85	CS-20	SNAP RING	C TYPE	1
86	9G-40730	SPACE COLLAR	SS41	1
87	HS-0816	HEXAGON SOCKET SET SCREW	M8×P1.25×16L	1
88	9G-20010	GEAR BOX	FC20	1



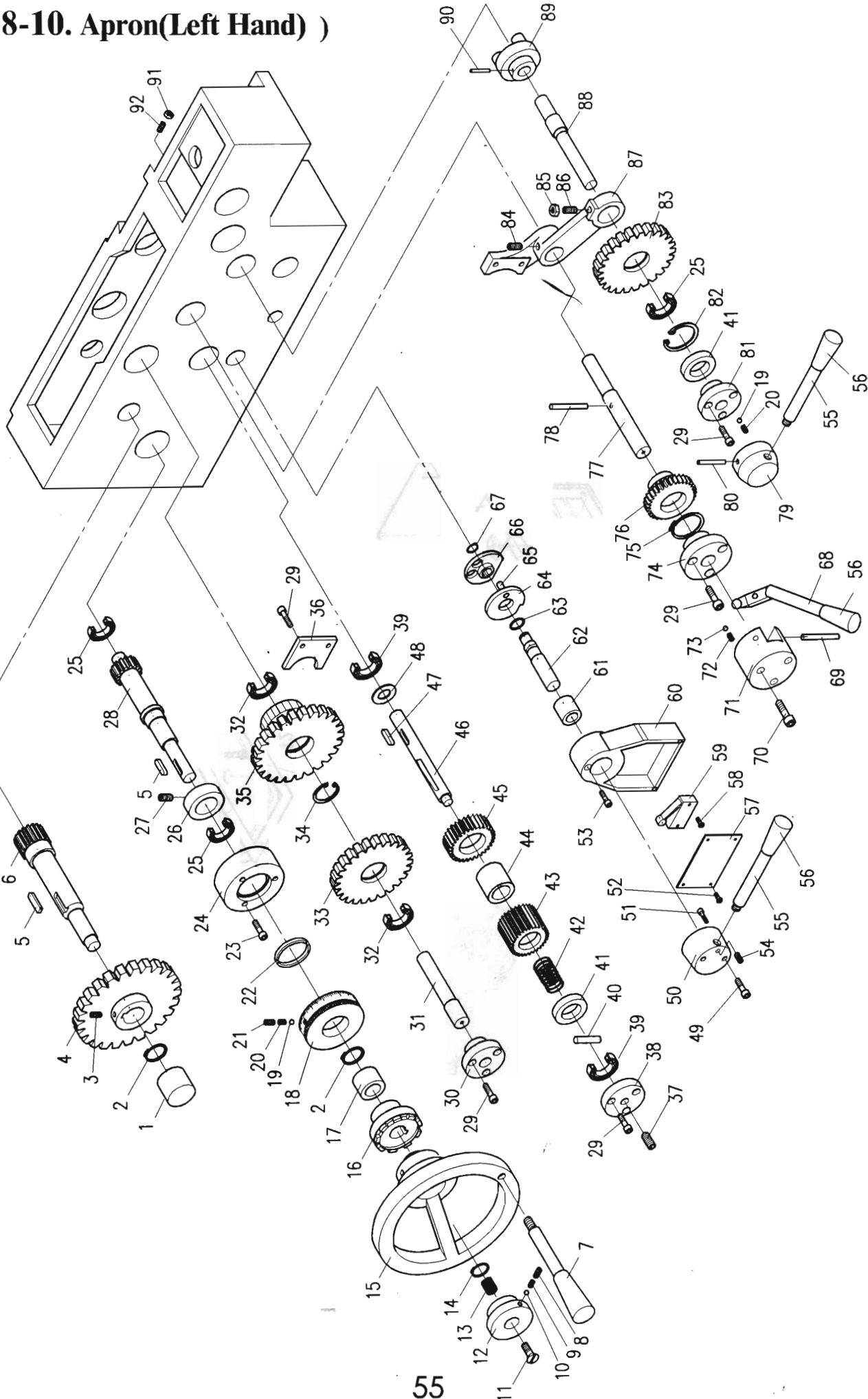
## 8-9. Gear Box

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	9G-40290	SHAFT	S45C	1
2	9G-40280	ROCKER ARM	FC25	1
3	#6000	BALL BEARING	#6000	2
4	9G-40300	GEAR	SCM-21	1
5	SS-0610	SET SCREW	M6xP1.0x10L	1
6	SH-0612	SOCKET HEAD CAP SCREW	M6xP1x12L	2
7	9G-40500	SHORT SHAFT	S20C	1
8	9G-40490	SLIDE PLATE	SS41	1
9	7G-40580	SLIDE WEDGE	SS41	1
10	SS-0510	SET SCREW	M5xP0.8x10L	4
11	7G-40570	RACK	SS41	1
12	9G-40460	SHAFT	S45C	1
13	P-12	O RING	P12	4
14	9G-40480	GUIDE PLATE	FC25	1
15	P-0412	SPRING PIN	∅ 4x12L	4
16	SH-0512	SOCKET HEAD CAP SCREW	M5xP0.8x12L	2
17	SH-0516	SOCKET HEAD CAP SCREW	M5xP0.8x16L	4
18	9G-40470	SETTING PLATE	FC25	1
19	SH-0808	SOCKET HEAD CAP SCREW	M8xP1.25x8L	1
20	9G-40450	ROCKER ARM	FC20	1
21	SS-0808	SET SCREW	M8xP1.25x8L	2
22	P-35	O RING	P-35	1
23	9G-40670	LEVER	S20C-D	1
24	9G-40440	BRACKET	FC15	1
25	SH-0630	SOCKET HEAD CAP SCREW	M6xP1.0x30L	2
26	SC-0801	SPRING	O.D. 5/16"	1
27	SB-05	STEEL BALL	∅ 5/16"	1
28	9G-40430	CHANGE SPEED DISK	SS41	1
29	TP-0440	TAPER PIN	4#40L	1
30	9G-40550	GUIDE BLOCK	BC2	2
31	9G-40590	GUIDE BLOCK	BC2	1
32	P-16	OIL RING	P-16	2
33	9G-40610	SHAFT	SS41	1
34	9G-40540	CHANGE SPEED BLOCK	BC2	5
35	9G-40530	CONNECT ROD	FC15	1
36	9G-40570	CONNECT ROD	FC15	1
37	9G-40580	CONNECT ROD	3601	1
38	9G-30020	COVER	FC20	1
39	9G-40520	SHAFT	S20C-D	3
40	9H-40930	LEVER	S20C-D	3
41	9G-40510	HANDLE BOSS	S20C	1
42	B-04	STEEL BALL	∅ 1/4"	4
43	SC-0601	SPRING	O.D. 6xWire1∅	4
44	9G-40980	HANDLE BOSS	S20C-D	2
45	9G-40650	COVER	SS41	2
46	9G-40620	SHAFT	SS41	1
47	9G-40600	GUIDE BLOCK	BC2	1
48	9G-40740	GUIDE BLOCK	BC2	1
49	SH-0406	SOCKET HEAD CAP SCREW	M4xP.07x6L	2
50	7A-40580	PLASTIC KNOB	PLASTIC	4
51	SS-0806	SET SCREW	M8xP1.25x6L	4
52	P-0420	SPRING PIN	∅ 4x20L	3
53	SS-0612	SET SCREW	M6xP1.0x12L	3
54	P-0530	SPRING PIN	∅ 5x30L	2
55	SH-0840	SOCKET HEAD CAP SCREW	M8xP1.25x40L	10

## 8-9. Gear Box

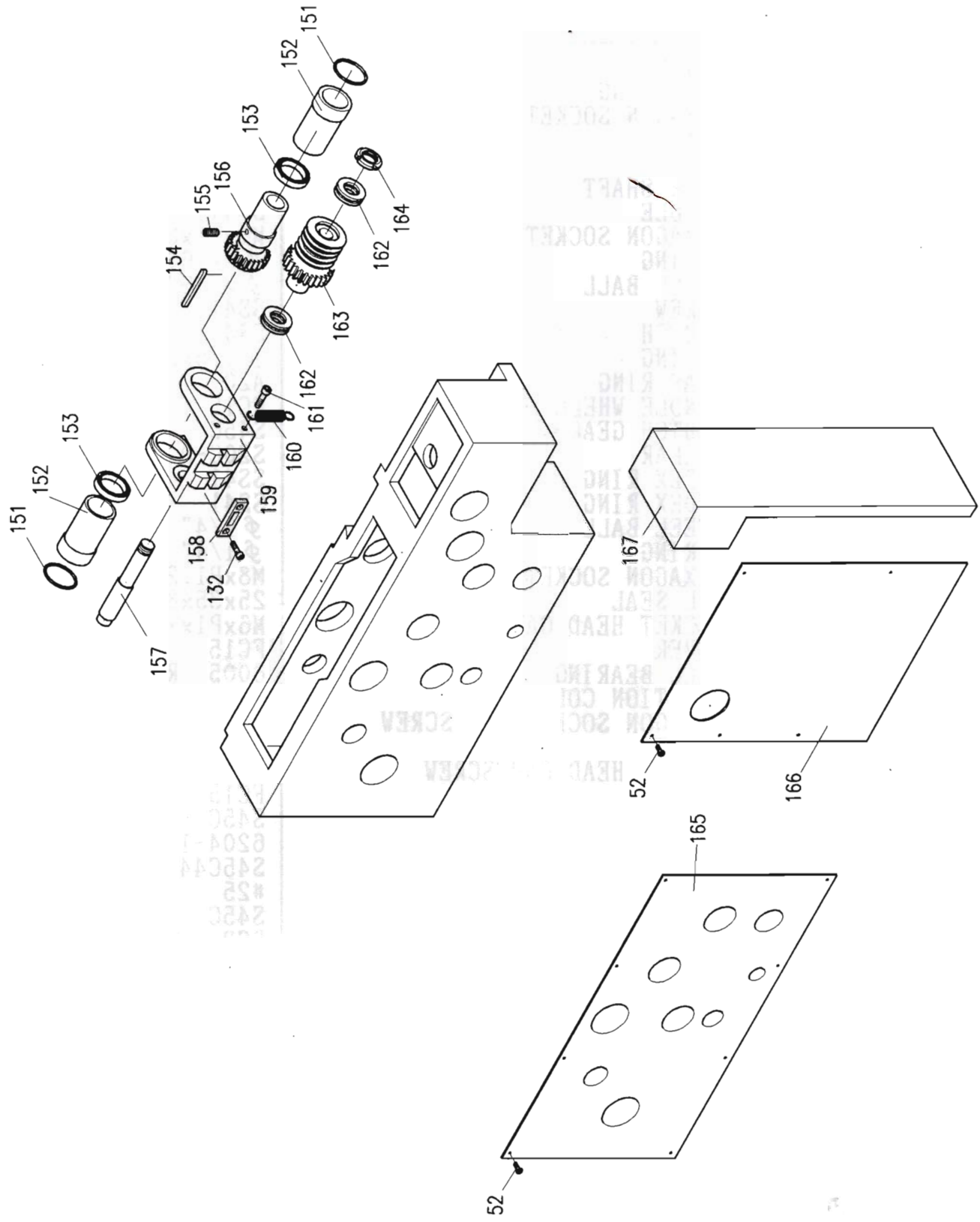
REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
56	P-0458	SPRING PIN	\$ 4x58L	1
57	P-0450	SPRING PIN	\$ 4x50L	2
58	P-0530	SPRING PIN	\$ 5x30L	2
59	\$ 5	O RING	\$ 5	1
60	9P-30040	NAME PLATE	AL	1
61	SS-0820	SET SCREW	M8xP1.25x20L	1
62	9G-20010	GEAR BOX	FC20	1

# 8-10. Apron(Left Hand )





# 8-10. Apron(Left Hand)





## 8-10. Apron(Left Hand)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	9A-40120	COVER	BC2	1
2	A-25	SNAP RING	#25	2
3	SS-0812	HEXAGON SOCKET SET SCREW	M8xP1.25x12L	1
4	9A-40100	GEAR	S45C	1
5	KY-7725	KEY	7x7x25L	2
6	9A-40090L	GEAR SHAFT	S45C	1
7	9A-40940	HANDLE	SS41	1
8	SS-0606	HEXAGON SOCKET SET SCRW	M6xP1x6L	1
9	SP-3/16"	SPRING	Φ 3/16"xWire#1	1
10	SB-3/16"	STEEL BALL	Φ 3/16"	1
11	9A-40080	SCREW	SS41	1
12	9A-40530	CLUTCH	SS41	1
13	SP-1.5x20	SPRING	Φ 1.5x20L	1
14	CS-20	SNAP RING	A20	1
15	9A-40070	HANDLE WHEEL	FC15	1
16	9A-40520	CLUTCH GEAR	S45C	1
17	9A-40510	COLLAR	S20C-D	1
18	9A-40060I	INDEX RING	SS41	1
	9A-40060M	INDEX RING	SS41	1
19	SB-1/4"	STEEL BALL	Φ 1/4"	2
20	SP-1/4"	SPRING	Φ 1/4"	2
21	SS-0808	HEXAGON SOCKET SET SCREW	M8xP1.25x8L	1
22	TC-25x35x8	OIL SEAL	25x35x8L	1
23	SH-0618	SOCKET HEAD CAP SCREW	M6xP1x18L	3
24	9A-40050L	COVER	FC15	1
25	#6005-1RS	BALL BEARING	6005-1RS	4
26	9A-40030-1	POSITION COLLAR	S45C	1
27	SS-0812	HEXAGON SOCKET SET SCREW	M8xP1.25x12L	1
28	9A-40040	SHAFT	S45C	1
29	SH-0612	SOCKET HEAD CAP SCREW	M6xP1x12L	35
30	9A-40610	COVER	FC15	3
31	9A-40130	SHAFT	S45C	1
32	#6204-1RS	BALL BEARING	6204-1RS	6
33	9A-40710L	GEAR	S45C44T	1
34	CS-25	SNAP RING	#25	3
35	9A-40140	GEAR	S45C	1
36	9A-40700	FORK	BC2	1
37	SS-0835	HEXAGON SOCKET SET SCREW	M8xP1.25x35	1
38	9A-40360	COVER	FC15	1
39	#6203-2RS	BALL BEARING	#6203-2RS	2
40	9A-40350	PIN	S20C	1
41	9A-40840	WASHER	SS41	2
42	9A-40500	SPRING	Φ 34.5xWire Φ 3	1
43	9A-40340	GEAR	S45C28T	1
44	9A-40400	CLUTCH GEAR	S45C	1
45	9A-40330	WORM GEAR	BC2	1
46	9A-40320	SHAFT	S45C	1
47	KY-5520	KEY	5x5x20L	1
48	9A-40900	WASHER	SS41	1
49	SH-0512	SOCKET HEAD CAP SCREW	M5xP0.8x12L	2
50	9A-40380	HANDLE BOSS	SS41	1
51	SH-0515	SOCKET HEAD CAP SCREW	M5xP0.8x15L	1
52	SH-0408	SCREW	M4xP0.7x8L	17
53	SH-0525	SCREW	M5xP0.8x25L	3
54	SS-0608	HEXAGON SOCKET SET SCREW	M6xP1.0x8L	1

## 8-10. Apron(Left Hand)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
55	9A-40910	HANDLE	SS41	2
56	7A-40580	PLASTIC KNOB	PLASTIC	3
57	9A-40760	COVER	SPC	1
58	SS-0420	SCREW	M4xP0.7x20L	2
59	V-15FC22-1B	MICRO SWITCH	V-15FC22-1B Mi	1
60	9A-40750	BRACKET	AL	1
61	9A-40730	COLLAR	S45C	1
62	9A-40370	SHAFT	S45C	1
63	P-12	O RING	P12	1
64	7A-40100L	LOCKING PLATE	S45C	1
65	7A-40110	PIN	S45C	1
66	7A-40090	MOVING PLATE	S45C	1
67	CS-10	SNAP RING	#10	2
68	9A-40170	HANDLE	SS41	1
69	P-0450	PIN	#4x50L	1
70	SH-0650	SOCKET HEAD CAP SCREW	M6xP1x50	3
71	9A-40160	HANDLE BOSS	SS41	1
72	SP-1/4	SPRING	Φ 1/4xWire Φ 1m	1
73	SB-1/4	STEEL BALL	Φ 1/4"	1
74	9A-40150	SHAFT HOUSING	BC2	1
75	9A-40680	GEAR	S45C	1
76	A-38	SNAP RING	#38	1
77	9A-40180	SHAFT	S45C	1
78	P-0438	PIN	#4x38L	1
79	9G-40510	HANDLE BOSS	SS41	1
80	P-0350	PIN	#3x50L	1
81	9A-40650	COVER	FC15	1
82	CR-47	SNAP RING	#47	1
83	9A-40660	GEAR	S45C	1
84	SS-0806	HEXAGON SOCKET SET SCREW	M8xP1.25x6L	1
85	N-8	NUT	M8xP1.25	1
86	SS-0815	HEXAGON SOCKET SET SCREW	M8xP1.25x15L	1
87	9A-40690L	ROCKER ARM	FC20	1
88	9A-40190	HALF NUT SHAFT	S45C	1
89	9A-40200	WORM ROD	S45C	1
90	TP-4"x40	TAPER PIN	4"x40L	1
91	N-6	NUT	M6xP1.0	2
92	SS-0612	HEXAGON SOCKET SET SCREW	M6xP1.0x12L	2
93	#6005-2RS	BALL BEARING	#6005-2RS	2
94	9A-40620	CLUTCH SHAFT	SCM4	1
95	KY-6650	KEY	6x6x50	2
96	CR-47	SNAP RING	#47	1
97	9A-40630	CLUTCH GEAR	SCM4 35T	1
98	9A-40640	WASHER	SS41	1
99	MWC-1.2	CLUTCH	MWC-1.2	1
100	9A-40590	SHAFT	S45C	1
101	9A-40580	GEAR	S45C35T	1
102	9A-40570	WORM GEAR	PBC2 20T	1
103	9A-40600	SPACE COLLAR	SS41	1
104	TC-25x35x8	OIL SEAL	25x35x8	2
105	9A-40560	COVER	FC15	1
106	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	1
107	KY-5515	KEY	5x5x15L	1
108	1/4HP	MOTOR	1/4HP	1
109	SS-0820	HEXAGON SOCKET SET SCRW	M8xP1.25x20L	4

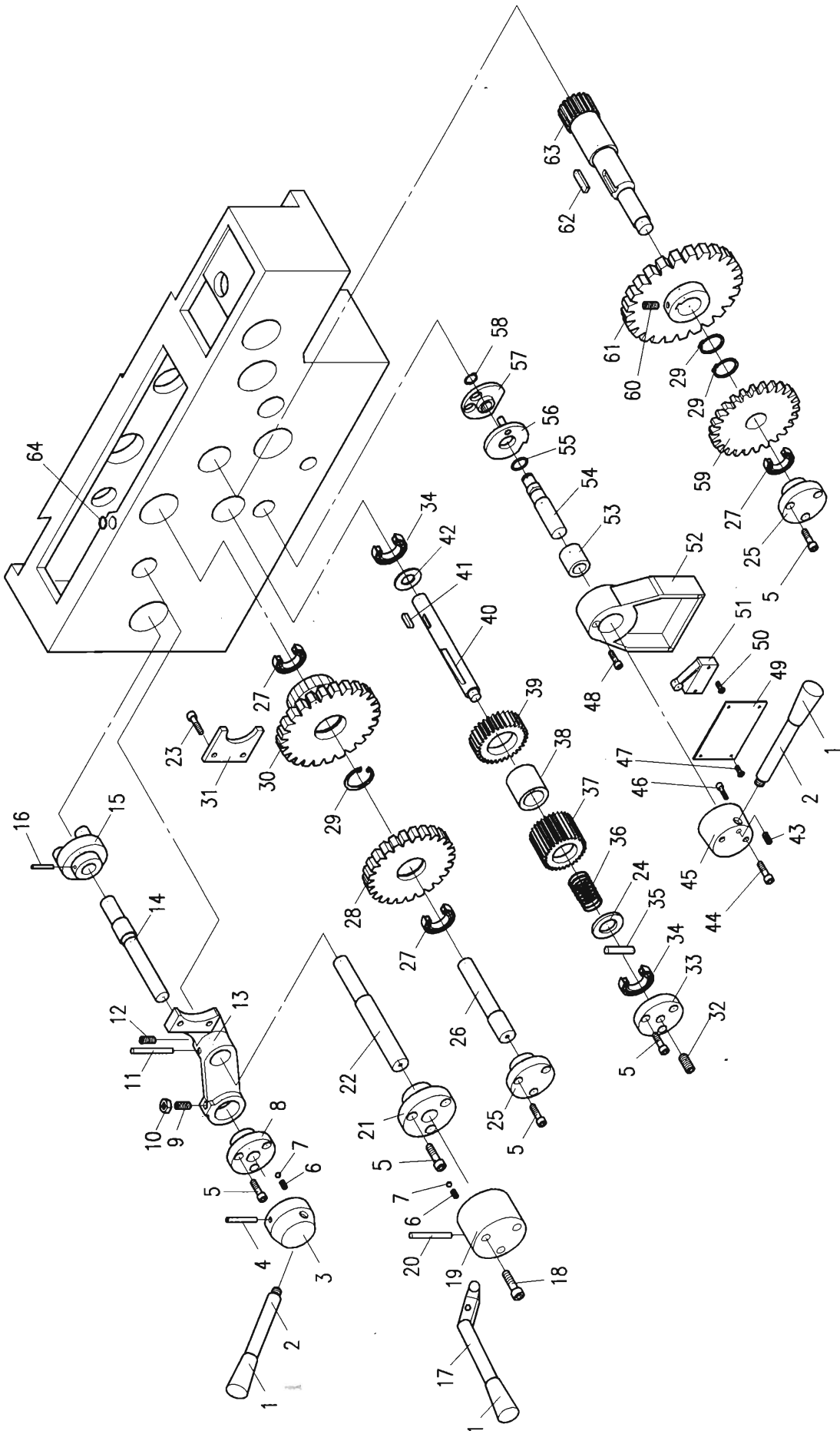
## 8-10. Apron(Left Hand)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
110	9A-40020P	PACKING	PACKING	1
111	SH-0520	SOCKET HEAD CAP SCREW	M5xP0.8x20L	1
112	9A-40410	PISTON	S45C	1
113	SP-1x30L	SPRING	Φ 1x30L	1
114	SB-1/4"	STEEL BALL	Φ 1/4"	1
115	PA-020	CYLINDER	BC2	1
116	PA-070	NUT	F45C	1
117	PA-040	VALVE	1/8"PT	1
118	SH-0512	SOCKET HEAD CAP SCREW	M5xP0.8x12L	1
119	5A-40450	LOCKING BLOCK	S45C	1
120	9A-40390L	ROCKER ARM	FC15	1
121	CS-10	SNAP RING	#10	1
122	PT-1/4"	SOCKET HEAD CAP SCREW	1/4PT	1
123	SP-5/16"	SPRING	Φ 5/16xWire#1	1
124	9A-40720	SHAFT	S45C	1
125	9A-40450L	ROD	S45C	1
126	9A-40020L	BOTTOM COVER	FC15	1
127	9A-40460L	STOP ROD BASE	FC25	1
128	TC-10x8x6	OIL SEAL	TC10x8x6	1
129	P-20	O RING	P20	1
130	9A-40420	OIL DISTRIBUTION SHAFT	S45C	1
131	P-11	O RING	P11	1
132	SH-0512	SOCKET HEAD CAP SCREW	M5xP0.8x12L	1
133	PT-1/8	VALVE	1/8"PT,PC4	3
134	9A-40430	OIL DISTRIBUTION BASE	FC15	1
135	SS-0612	HEXAGON SOCKET SET SCREW	M6xP1.0x12L	1
136	G-30	O RING	G30	1
137	CS-10	SNAP RING	E10	1
138	G-9	O RING	P9	1
139	9A-40550	COVER	FC15	1
140	#6004	BALL BEARING	#6004	1
141	9A-40540	WORM SHAFT	S45C	1
142	SH-0512	SOCKET HEAD CAP SCREW	M5xP0.8x12L	4
143	9A-40030	REAR COVER	FC15	1
144	9A-40030P	PACKING	PACKING	1
145	9A-10010L	APRON BOX	FC20	1
146	SS-0820	HEXAGON SOCKET SET SCREW	M8xP1.25x20L	2
147	9A-40220	HALF NUT BASE	FC20	1
148	9A-40210	GIB	FC15	1
149	9A-40230I	HALF NUT	BC2	1
	9A-40230M	HALF NUT	BC2	1
150	SS-0525	HEXAGON SOCKET SET SCREW	M5xP0.8x25L	4
151	P-38	O RING	P38	2
152	9A-40270	BUSH	BC2	2
153	TC-30x40x7	OIL SEAL	30x40x7	2
154	KY-7735	KEY	7x7x35L	1
155	SH-0508	SCREW	M5xP0.8x8L	1
156	9A-40260	GEAR	S45C26T	1
157	9A-40300	GEAR SHAFT	S45C	1
158	9A-40470	LOCKING PLATE	SS41	1
159	9A-40280L	WORM BASE	FC15	1
160	SP	SPRING	SPRING	1
161	SH-0612	SOCKET HEAD CAP SCREW	M6xP1.0x12L	1
162	#51104	THRUST BEARING	#51104	2
163	9A-40290	GEAR	S45C24T	1

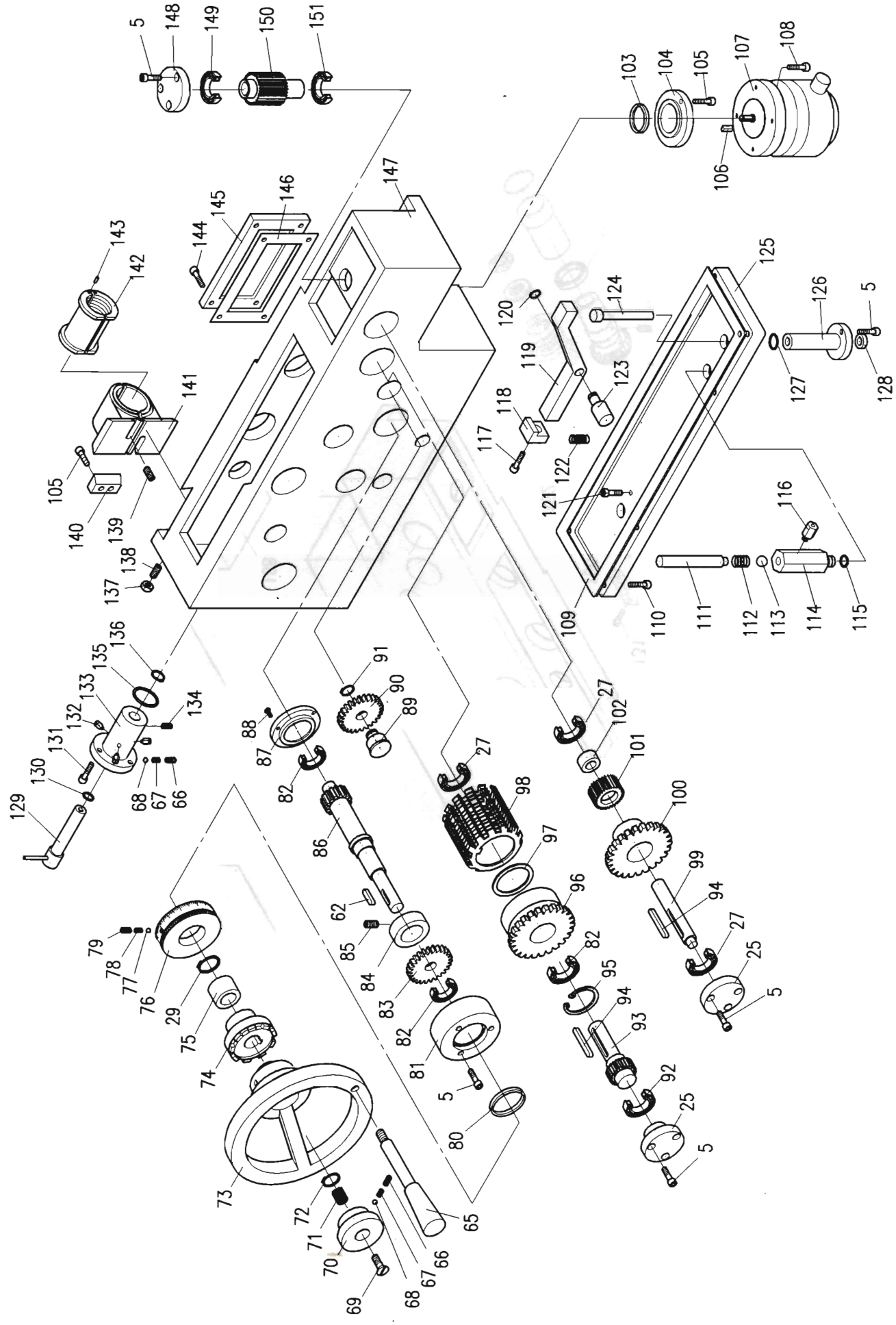
### 8-10. Apron(Left Hand)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
164	9A-40310	NUT	S20C	1
165	9P-40010	NAME PLATE	AL	1
166	9A-40740	COVER	SS41	1
167	9S-40640	COVER		1

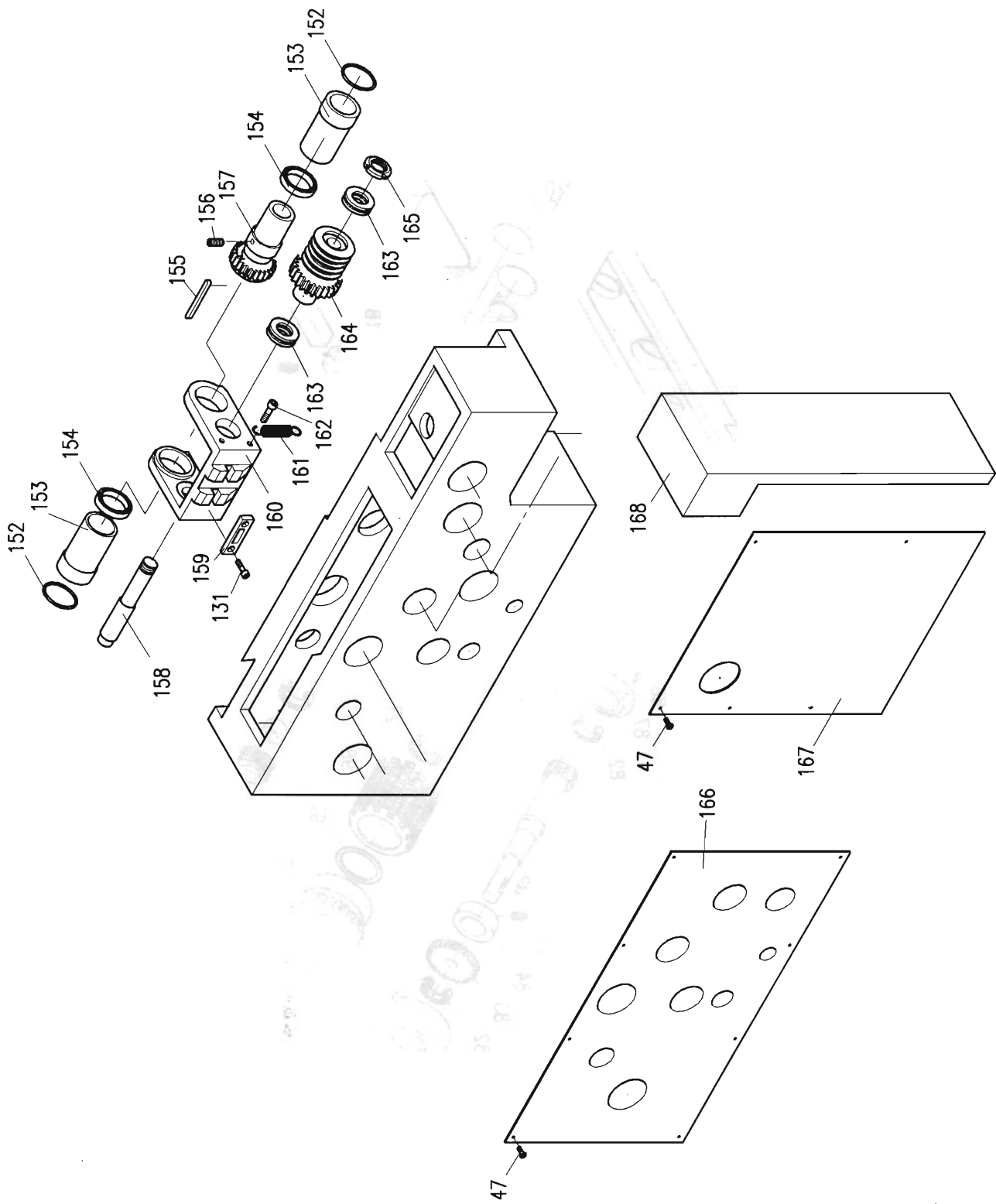
# 8-11. Apron(Right Hand)



# 1-11. Apron(Right Hand)



# 8-11. Apron(Right Hand)



## 8-11. Apron(Right Hand)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	7A-40580	PLASTIC KNOB	PLASTIC	3
2	9A-40910	HANDLE	SS41	2
3	9G-40510	HANDLE BOSS	SS41	1
4	P-0350	PIN	#3x50L	1
5	SH-0612	SOCKET HEAD CAP SCREW	M6xP1x12L	35
6	SP-1/4"	SPRING	Φ 1/4"	2
7	SB-1/4"	STEEL BALL	Φ 1/4"	2
8	9A-40650	COVER	FC15	1
9	SH-0815	SOCKET HEAD CAP SCREW	M8xP1.25x15L	1
10	N-8	NUT	M8xP1.25	1
11	P-0345	PIN	#3x45L	1
12	SS-0806	HEXAGON SOCKET SET SCREW	M8xP1.25x6L	1
13	9A-40690R	ROCKER ARM	FC20	1
14	9A-40190	HALF NUT ROD	S45C	1
15	9A-40200	ROD	S45C	1
16	TP-4"x40	TAPER PIN	#4"x40L	1
17	9A-40170	HANDLE	SS41	1
18	SH-0650	SOCKET HEAD CAP SCREW	M6xP1x50	3
19	9A-40160	HANDLE BOSS	SS41	1
20	P-0450	PIN	#4x50L	1
21	9A-40150	SHAFT HOUSING	BC2	1
22	9A-40180	ROD	S45C	1
23	SH-0612	SOCKET HEAD CAP SCREW	M6xP1x12L	2
24	9A-40840	WASHER	SS41	1
25	9A-40610	COVER	FC15	4
26	9A-40130	SHAFT	S45C	1
27	#6204 1RS	BALL BEARING	6204 1RS	6
28	9A-40710R	GEAR	S45C44T	1
29	CS-25	SNAP RING	#25	3
30	9A-40140	GEAR	S45C	1
31	9A-40700	FORK	BC2	1
32	SS-0835	HEXAGON SOCKET SET SCREW	M8xP1.25x35	1
33	9A-40360	COVER	FC15	1
34	#6203-2RS	BALL BEARING	#6203-2RS	2
35	9A-40350	PIN	S20C	1
36	9A-40500	SPRING	Φ 34.5xWire Φ 3	1
37	9A-40340	GEAR	S45C28T	1
38	9A-40400	CLUTCH GEAR	S45C	1
39	9A-40330	WORM GEAR	BC2	1
40	9A-40320	SHAFT	S45C	1
41	KY-050520	KEY	5x5x20L	1
42	9A-40900	WASHER	SS41	1
43	SS-0608	HEXAGON SOCKET SET SCREW	M6xP1.0x8L	1
44	SH-0512	SOCKET HEAD CAP SCREW	M5xP0.8x12L	1
45	9A-40380	HANDLE BOSS	SS41	1
46	SH-0515	SOCKET HEAD CAP SCREW	M5xP0.8x15L	1
47	SH-0408	SCREW	M4xP0.7x8L	9
48	SH-0525	SCREW	M5xP0.8x25L	3
49	9A-40760	COVER	SPC	1
50	SS-0420	SCREW	M4xP0.7x20L	2
51	V-15FC22-1B	MICRO SWITCH	V-15FC22-1B Mi	1
52	9A-40750	BRACKET	AL	1
53	9A-40730	COLLAR	S45C	1
54	9A-40370	SHAFT	S45C	1
55	P-12	O RING	P12	1



## 8-11. Apron(Right Hand)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
56	7A-40090	MOVING PLATE	S45C	1
57	7A-40100R	LOCKING PLATE	S45C	1
58	CS-10	SNAP RING	#10	2
59	9A-40850R	IDLE GEAR	S45C52T	1
60	SS-0812	HEXAGON SOCKET SET SCREW	M8xP1.25x12L	1
61	9A-40100	GEAR	S45C	1
62	KY-7725	KEY	7x7x25L	2
63	9A-40090R	GEAR SHAFT	S45C	1
64	P-9	O RING	P9	1
65	9A-40940	HANDLE	SS41	1
66	SS-0606	HEXAGON SOCKET SET SCRW	M6xP1x6L	1
67	SP3/16"	SPRING	Φ 3/16"xWire#1	1
68	SB3/16"	STEEL BALL	Φ 3/16"	1
69	9A-40080	SCREW	SS41	1
70	9A-40530	CLUTCH	SS41	1
71	SP-1.5x20	SPRING	Φ 1.5x20L	1
72	CS-20	SNAP RING	A20	1
73	9A-40070	HANDLE WHEEL	FC15	1
74	9A-40520	CLUTCH GEAR	S45C	1
75	9A-40510	COLLAR	S20C-D	1
76	9A-40060I	INDEX RING	SS41	1
	9A-40060M	INDEX RING	SS41	1
77	SB-1/4"	STEEL BALL	Φ 1/4"	1
78	SP-1/4"	SPRING	Φ 1/4"	1
79	SS-0808	HEXAGON SOCKET SET SCREW	M8-P1.25x8L	1
80	TC-253508	OIL SEAL	25x35x8L	1
81	9A-40050R	COVER	FC15	1
82	#6005 1RS	BALL BEARING	6005 1RS	4
83	9A-40860R	IDLE GEAR	S45C34T	1
84	9A-40030-1	POSITION COLLAR	S45C	1
85	SS-0812	HEXAGON SOCKET SET SCREW	M8xP1.25x12L	1
86	9A-40040	SHAFT	S45C	1
87	9A-40890R	COVER	FC15	1
88	SH-0412	SCREW	M4xP0.7x12L	3
89	9A-40880R	SHAFT	S45C	1
90	9A-40870R	IDLE GEAR	S45C	1
91	CS-15	SNAP RING	A15	1
92	#6005 1RS	BALL BEARING	6005 1RS	1
93	9A-40620	CLUTCH SHAFT	SCM4	1
94	KY-6650	KEY	6x6x50	1
95	CR-47	SNAP RING	#47	1
96	9A-40630	CLUTCH GEAR	SCM4 35T	1
97	9A-40640	WASHER	SS41	1
98	MWC-1.2	CLUTCH	MWC1.2	1
99	9A-40590	SHAFT	S45C	1
100	9A-40580	GEAR	S45C35T	1
101	9A-40570	WORM GEAR	PBC2 20T	1
102	9A-40600	SPACE COLLAR	SS41	1
103	TC-25x35x8	OIL SEAL	25x35x8	2
104	9A-40560	COVER	FC15	1
105	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	4
106	KY-5515	KEY	5x5x15L	1
107	1/4HP	MOTOR	1/4HP	1
108	SS-0820	HEXAGON SOCKET SET SCRW	M8xP1.25x20L	4
109	9A-40020P	PACKING	PACKING	1

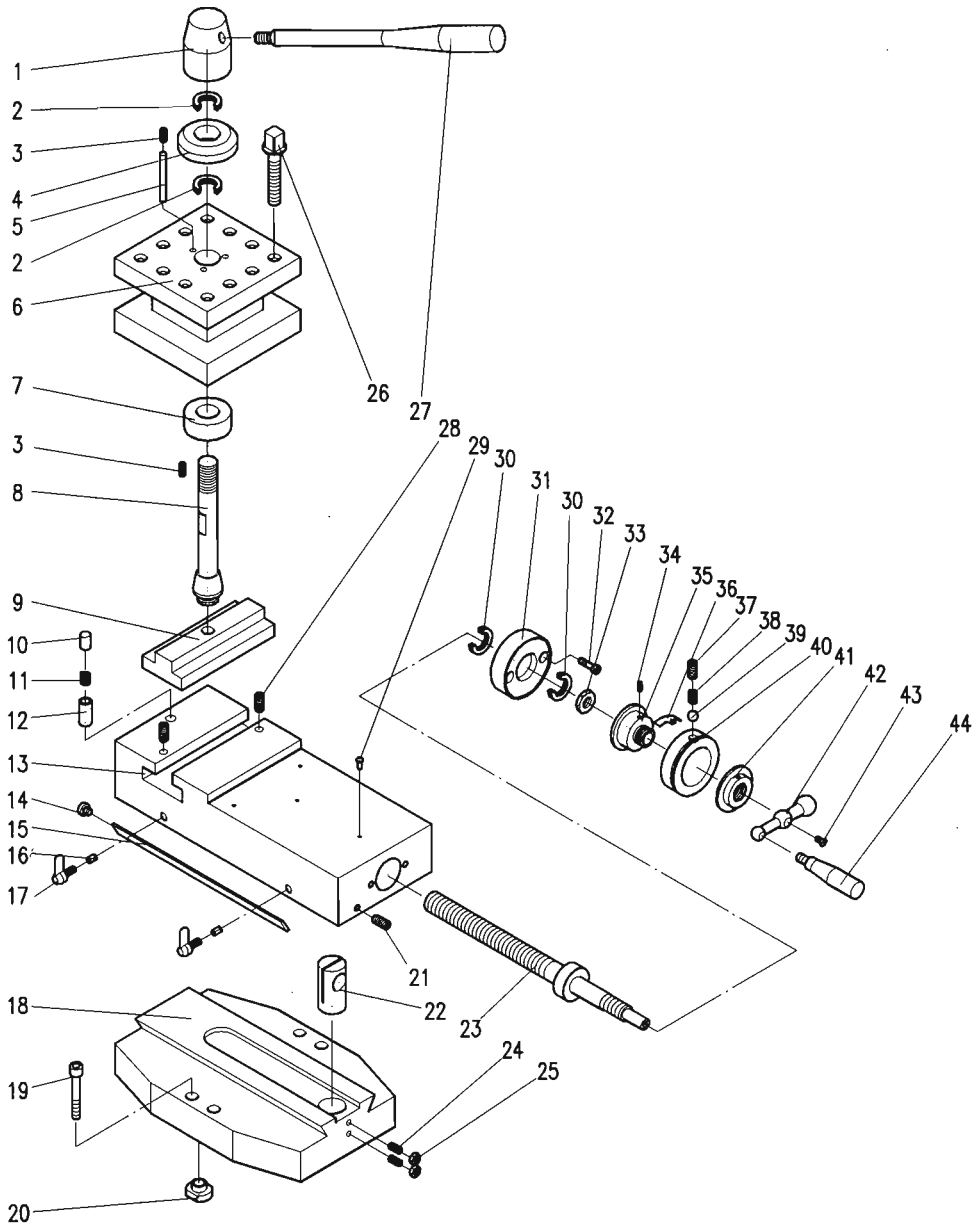
## 8-11. Apron(Right Hand)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
110	SH-0520	SOCKET HEAD CAP SCREW	M5xP0.8x20L	1
111	9A-40410	PISTON	S45C	1
112	SP $\phi$ 1x30L	SPRING	$\phi$ 1x30L	1
113	SB $\phi$ 1/4"	NUT	$\phi$ 1/4"	1
114	PA-020	CYLINDER	BC2	1
115	PA-070	NUT	F45C	1
116	PA-040	VALVE	VALVE	1
117	SH-0512	SOCKET HEAD CAP SCREW	M5xP0.8x12L	1
118	5A-40450	LOCKING PLATE	S45C	1
119	9A-40390R	ROCKET ARM	FC15	1
120	CS-10	SNAP RING	#10	1
121	PT-1/4	SOCKET HEAD CAP SCREW	PT-1/4	1
122	SP5/16"	SPRING	$\phi$ 5/16xWire#1	1
123	9A-40720	SHAFT	S45C	1
124	9A-40450R	ROD	S45C	1
125	9A-40020R	BOTTOM COVER	FC15	1
126	9A-40460R	STOP ROD BASE	FC25	1
127	TC-10x8x6	OIL SEAL	TC10x8x6	1
128	P-20	O RING	P20	1
129	9A-40420	OIL DISTRIBUTION SHAFT	S45C	1
130	P-11	O RING	P11	1
131	SH-0512	SOCKET HEAD CAP SCREW	M5xP0.8x12L	5
132	PT-1/8	VALVE	1/8PT,PC4	3
133	9A-40430	OIL DISTRIBUTION BASE	FC15	1
134	SS-0612	HEXAGON SOCKET SET SCREW	M6xP1.0x12L	1
135	G-30	O RING	G30	1
136	CS-10	SNAP RING	E10	1
137	N-6	NUT	M6xP1	3
138	SS-0628	HEXAGON SOCKET SET SCREW	M6xP1x28L	3
139	SS-0820	HEXAGON SOCKET SET SCREW	M8xP1.25x20L	2
140	9A-40210	GIB	FC15	1
141	9A-40220	HALF NUT BASE	FC20	1
142	9A-40230I	HALF NUT	BC2	1
	9A-40230M	HALF NUT	BC2	1
143	SS-0525	HEXAGON SOCKET SET SCREW	M5xP0.8x25L	4
144	SH-0510	SOCKET HEAD CAP SCREW	M5xP0.8x10L	4
145	9A-40030	REAR COVER	FC15	1
146	9A-40030P	PACKING	PACKING	1
147	9A-10010R	APRON BOX	FC20	1
148	9A-40550	COVER	FC15	1
149	#6004	BALL BEARING	#6004	1
150	9A-40540	WORM SHAFT	S45C	1
151	#6005-2RS	BALL BEARING	#6005-2RS	1
152	P-38	O RING	P38	2
153	9A-40270	BUSH	BC2	2
154	TC-30x40x7	OIL SEAL	30x40x7	2
155	KY-7735	KEY	7x7x35L	1
156	SH-0508	SCREW	M5xP0.8x8L	1
157	9A-40260	GEAR	S45C26T	1
158	9A-40300	GEAR SHAFT	S45C	1
159	9A-40470	LOCKING PLATE	SS41	1
160	9A-40280R	WORM BASE	FC15	1
161	SP	SPRING	SPRING	1
162	SH-0612	SOCKET HEAD CAP SCREW	M6xP1.0x12L	1
163	TB-51104	THRUST BEARING	#51104	2

## 8-11. Apron(Right Hand)

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
164	9A-40290	GEAR	S45C24T	1
165	9A-40310	NUT	S20C	1
166	9P-40010	NAME PLATE	AL	1
167	9A-40740	COVER	SS41	1
168	9S-40640	COVER		1

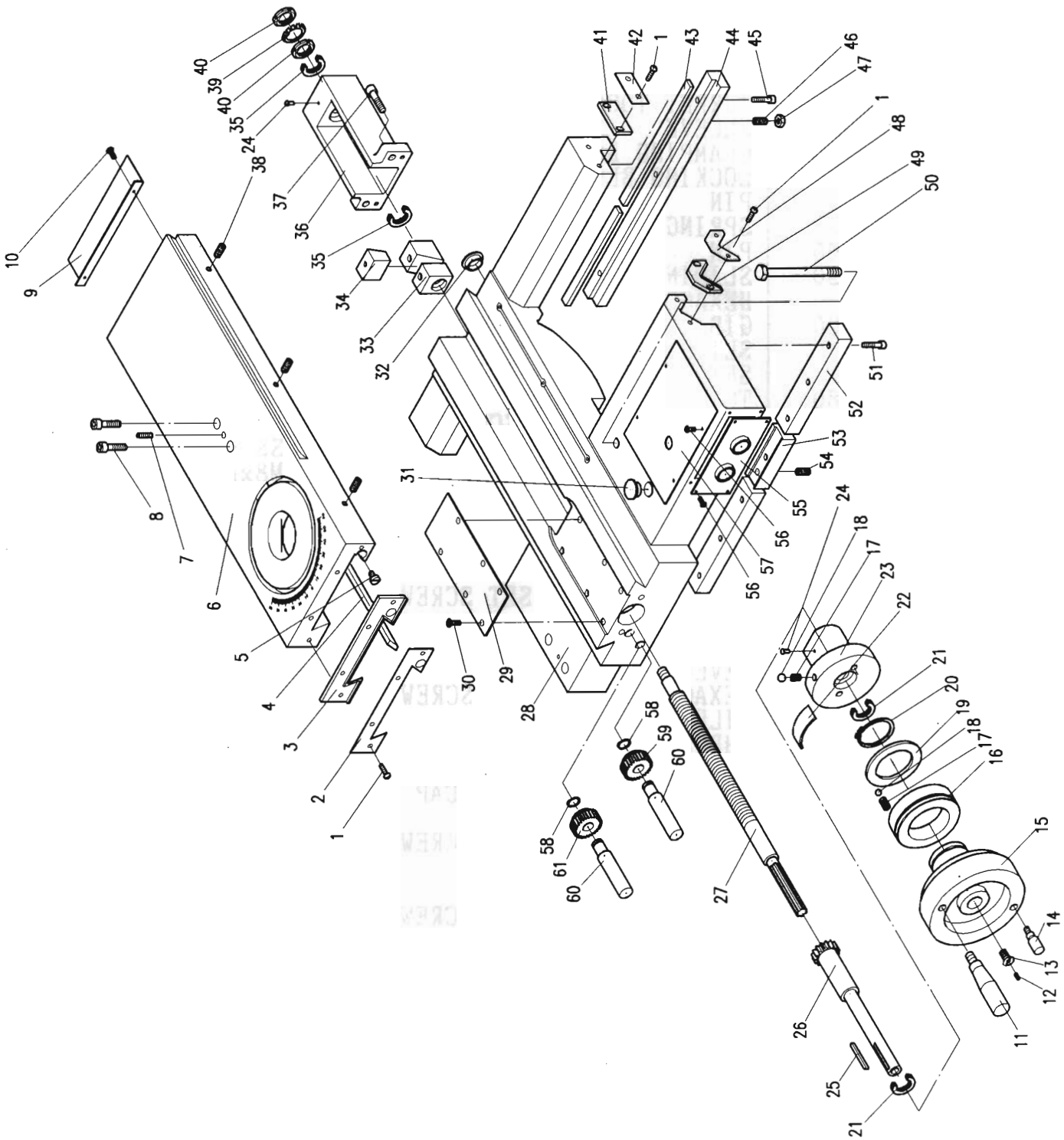
# -12. Carriage



## 8-12. Carriage

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	9S-40330	HANDLE BOSS	S20C-D	1
2	#51105	THRUST BEARING	51105	2
3	SS-0812	HEXAGON SOCKET SET SCREW	M8xP1.25x12L	6
4	9S-40320	WASHER	S20C-D	1
5	9S-40570	PIN	SS41	3
6	9S-40300	TURRET TOOL POST	S45C	1
7	9S-40550	SLEEVE	S45C	1
8	9S-40290	CLAMPING BOLT	S45C	1
9	9S-40560	LOCKING BLOCK	SS41	1
10	7S-40480	PIN	SS41	1
11	SP-5/16	SPRING	∅ 5/16	1
12	9S-40260	PIN	SCM21	1
13	9S-40190	SLIDING TABLE	FC20	1
14		HEXAGON SOCKET HEAD CAP SCREW	SS41	1
15	9S-40200	GIB	FC20	1
16	PUB2	SET BLOCK	PUB2	3
17		SET SCREW	S20C-D	3
18	9S-40180	TOOL SLIDE	FC25	1
19	SH-1028	SOCKET HEAD CAP SCREW	M10xP1.5x28L	4
20	9S-40270	NUT	SS41	4
21	SS-0840	HEXAGON SOCKET SET SCREW	M8xP1.25x40L	1
22	9S-40220I	LEADSCREW NUT	PUC 2	1
	9S-40220M	LEADSCREW NUT	PUC 2	1
23	9S-40210I	LEAD SCREW	S45C	1
	9S-40210M	LEAD SCREW	S45C	1
24	SS-0620	HEXAGON SOCKET SET SCREW	M6xP1.0x20L	2
25	N-6	NUT	M6xP1.0	2
26	9S-40270	LOCATING SCREW	SCM4	12
27	9S-40350	LEVER	SS41	1
28	SS-0810	HEXAGON SOCKET SET SCREW	M8xP1.25x10L	2
29	∅ 1/4"	OILER	∅ 1/4"	2
30	#51102	THRUST BEARING	51102	2
31	9S-40190	BRACKET	SS41	1
32	SH-0820	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x20L	2
33	7S-40580	NUT	S20C-D	1
34	SS-0616	HEXAGON SOCKET SET SCREW	M6xP1.0x16L	1
35	7S-40180	INDEX RING BASE	SS41	1
36	7P-40700	PLATE	AL	1
37	SS-0808	HEXAGON SOCKET SET SCREW	M8xP1.25x8L	1
38	∅ 6x15L	SPRING	∅ 6x∅ 0.8x15L	1
39	∅ 1/4"	STEEL BALL	∅ 1/4"	1
40	7S-40200	INDEX RING	SS41	1
41	7S-40720	NUT	SS41	1
42	7S-40700	LEVER	SS41	1
43	SH-0820	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x20L	1
44	7S-40780	HANDLE	SS41	1

# 8-13. Cross Slide & Saddle Assy'



## 8-13. Cross Slide & Saddle Assy'

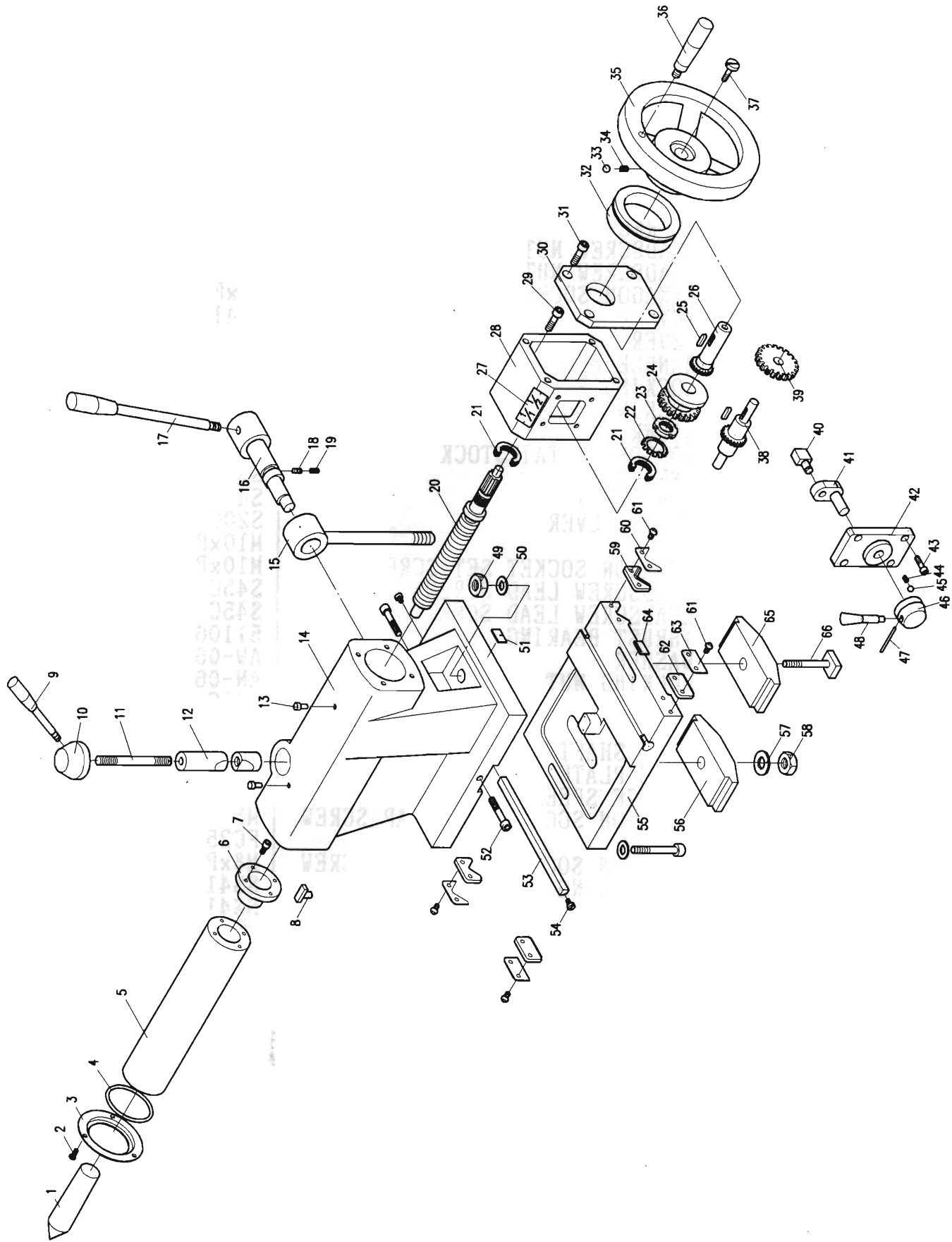
REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	SB-0512	HEX. SOCKET BUTTON HEAD SCREW	M5xP0.8x12L	16
2	9S-40380	WIPER COVER	STAINLESS STEEL	2
3	9S-40370	WIPER	PLASTIC	2
4	9S-40050	GIB	FC20	1
5	7S-40420	ADJUSTING SCREW	SS41	2
6	9S-30020	CROSS SLIDE	FC25	1
7	SS-1025	HEXAGON SOCKET SET SCREW	M10xP1.5x25L	1
8	SH-0830	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x30L	2
9	9S-40340	COVER	SS41	1
10	SH-0610	SCREW	M6xP1.0x10L	2
11	7A-40410	HANDLE	SS41	1
12	SS-0630	HEXAGON SOCKET SET SCREW	M6xP1.0x30L	1
13	7S-40120	SCREW	SS41	1
14	9S-40100	LEVER	SS41	1
15	9S-40080	HANDLE WHEEL	SS41	1
16	9S-40070I	INDEX RING	SS41	1
	9S-40070M	INDEX RING	SS41	1
17	ϕ 1/4"	SPRING	ϕ 1/4"	2
18	ϕ 1/4"	STEEL BALL	ϕ 1/4"	2
19	9S-40530	WASHER	SS41	1
20	A-50	SNAP RING	A50	1
21	#51104	THRUST BEARING	#51104	2
22	7S-40550	COVER	SS41	1
23	9S-40090	BRACKET	FC15	1
24	ϕ 1/4"	OILER	ϕ 1/4"	2
25	KY-5540	KEY	5x5x40L	1
26	9S-40030	SHAFT	S45C	1
27	9S-30040I	LEAD SCREW	S45C	1
	9S-30040M	LEAD SCREW	S45C	1
28	9S-30010	CARRIAGE	FC25	1
29	9S-40430	OIL COVER	SS41	1
30	SH-0408	SCREW	M4xP0.7x8L	6
31	ϕ 3/4"	PLUG	ϕ 3/4"	1
32	9S-40630	COVER	PLASTIC	1
33	9S-40110I	LEADSCREW NUT	PBC2	1
	9S-40110M	LEADSCREW NUT	PBC2	1
34	9S-40510	ADJUSTMENT BOLK	SS41	1
35	#51104	THRUST BEARING	51104	2
36	9S-40120	BRACKET	FC15	1
37	SH-0820	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x20L	2
38	SS-0830	HEXAGON SOCKET SET SCREW	M8xP1.25x30L	3
39	AW-04	WASHER	AW04	1
40	AN-04	NUT	AN04	2
41	9S-40410	WIPER	PLASTIC	2
42	9S-40420	WIPER COVER	STAINLESS STEEL	2
43	9S-40140	GIB	SS41	2
44	9S-40130	ADJUSTMENT GIB	FC20	1
45	SH-0835	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x35L	5
46	SS-0825	HEXAGON SOCKET HEAD SCREW	M8xP1.25x25L	5
47	N-8	NUT	M8	5
48	9S-40400	WIPER COVER	STAINLESS STEEL	2
49	9S-40390	WIPER	PLASTIC	2
50	M10x130L	HEXAGON BOLT HEXAGON BOLT	M10xP1.5x130L	1
51	SH-0820	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x20L	6
52	9S-40150	LOCK PLATE	FC15	2

## 8-13. Cross Slide & Saddle Assy'

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
53	9S-40360	LOCK PLATE	SS41	1
54	SS-0620	HEXAGON SOCKET SET SCREW	M6xP1.0x20L	1
55	9P-40010	NAME PLATE	AL	1
56	SB-0408	HEX. SOCKET BUTTON HEAD SCREW	M4xP0.7x8L	8
57	9S-40770	COVER	SS41	1
58	CS-12	SNAP RING	E12	2
59	9S-40160	GEAR	SCM21	1
60	9S-40170	SHAFT	S45C	2
61	9S-40650	GEAR	SCM21	1



# 8-14. Tailstock



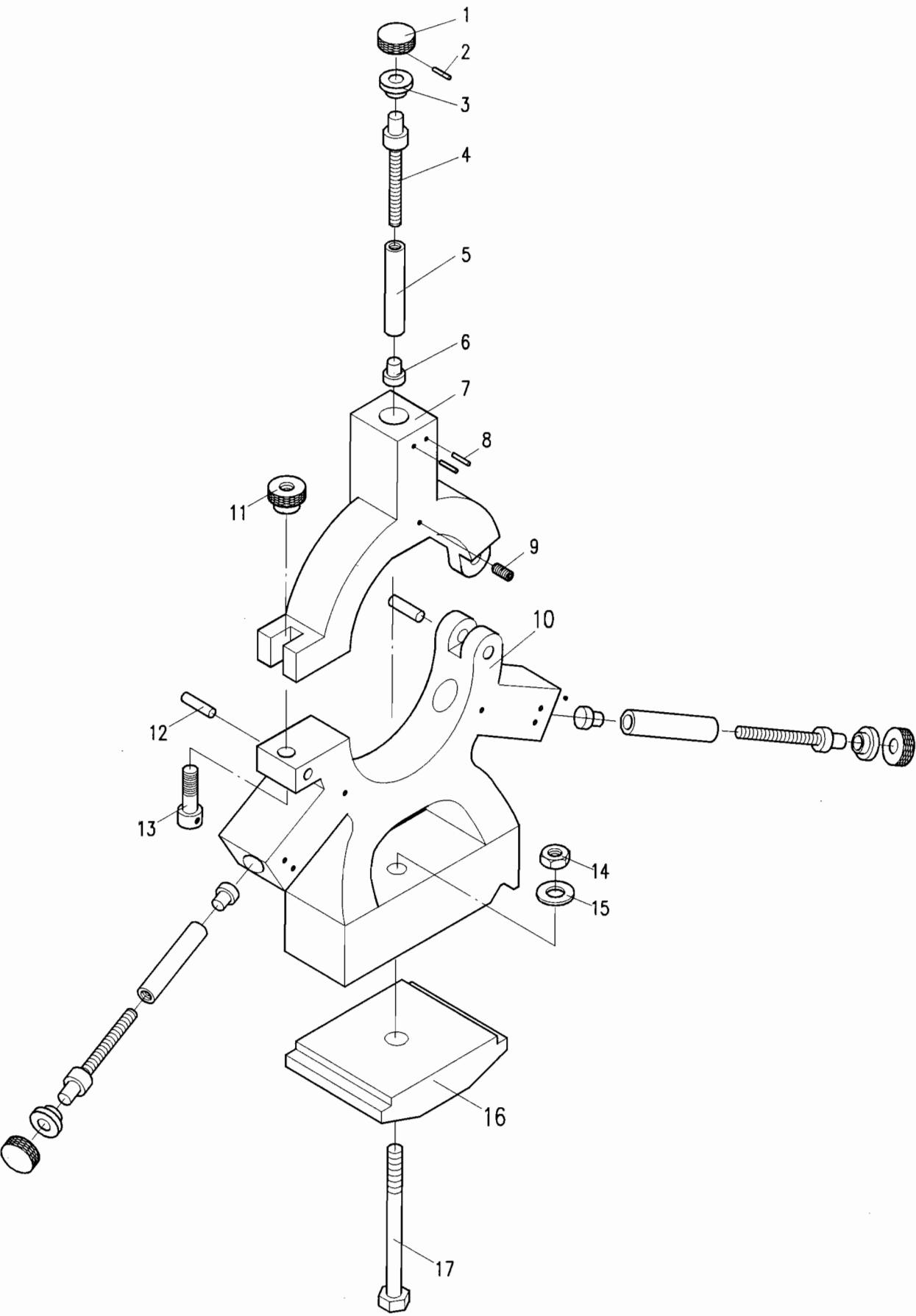
## 8-14. Tailstock

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	MT-5#	CENTER	MT 5#	1
2	CH-0510	CROSS RECESSED HEAD MACHINE SCREW	M5xP0.8x10L	3
3	9T-40170	COVER	FC15	1
4	P-75	"O" RING	P75	1
5	9T-40030	BARREL	S45C	1
6	9T-40050I	LEADSCREW NUT	SS41	1
	9T-40050M	LEADSCREW NUT	SS41	1
7	SH-0816	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x16L	4
8	9T-40110	KEY	SS41	1
9	9T-40280	LEVER	SS41	1
10	9T-40270	HANDLE BOSS	SS41	1
11	9T-40260	LOCKING SCREW	SS41	1
12	9T-40250	LOCKING ROD	BC2	1
13	OB-04	OILER	1/2"	2
14	9T-30010	BODY OF TAILSTOCK	FC15	1
15	9T-40200	EYE BOLT	SS41	1
16	9T-40190	CAM SHAFT	S45C	1
17	9T-40180	CLAMP LEVER	S20C-D	1
18	SS-1008	SCREW	M10xP1.0x8L	2
19	SS-1010	HEXAGON SOCKET SET SCREW	M10xP1.0x10L	1
20	9T-40040I	LEADSCREW LEAD SCREW	S45C	1
	9T-40040M	LEADSCREW LEAD SCREW	S45C	1
21	#51106	THRUST BEARING	51106	2
22	AW-06	WASHER	AW-06	1
23	AN-06	LOCKING NUT	AN-06	1
24	9T-40120	GEAR	S45C	1
25	KY-6625	KEY	6x6x25L	1
26	9T-40060	GEAR SHAFT	S45C	1
27	9P-40160	NAME PLATE	AL	1
28	9T-40160	CHANGE SPEED BOX	FC20	1
29	SH-0830	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x30L	4
30	9T-40100	COVER	FC25	1
31	SH-0830	HEXAGON SOCKET HEAD CAP SCREW	M8xP1.25x30L	4
32	9T-40090I	INDEX RING	SS41	1
	9T-40090M	INDEX RING	SS41	1
33	ϕ 1/4	BALL	ϕ 1/4	3
34	S-6x0.8x10	SPRING	6x0.8x10L	3
35	9T-30350	HANDLE WHEEL	FC15	1
36	9A-40940	HANDLE	SS41	1
37	9A-40080	SCREW	SS41	1
38	9T-40140	GEAR SHAFT	S45C	1
39	9T-40150	GEAR	S45C	1
40	9T-40240	CHANGE SPEED BLOCK	BC2	1
41	9T-40230	ROCKER ARM	FC15	1
42	9T-40220	COVER	FC20	1
43	SH-0612	HEXAGON SOCKET HEAD CAP SCREW	M6xP1.0x12L	4
44	ϕ 6x0.8	SPRING	O.D. ϕ 6 WIRE 0.8	1
45	ϕ 1/4"	STEEL BALL	ϕ 1/4"	1
46	9H-40910	HANDLE BOSS	S20C-D	1
47	P-0550	PIN	ϕ 5x50L	1
48	9H-40930	LEVER	S20C-D	1
49	N-16	NUT	M16	1
50	9T-40080	WASHER	ϕ 16	1
51	9P-40010	NAME PLATE	AL	1
52	SH-1050	HEXAGON SOCKET HEAD CAP SCREW	M10x1.5x50L	2

## 8-14. Tailstock

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
53	9T-40330	GIB	FC20	1
54	7T-40210	ADJUSTING SCREW	SS41	2
55	9T-30020	TAILSTOCK BASE	FC25	1
56	9T-40210	CLAMP PLATE	FC20	1
57	9T-40320	WASHER	SS41	1
58	N-16	NUT	M16	1
59	9T-40290	WIPER	RUBBER	2
60	9T-40300	WIPER COVER	STAINLESS STEEL	2
61	CH-0510	CROSS RECESSED HEAD MACHINE SCREW	M5xP0.8x10L	8
62	9S-40410	WIPER	RUBBER	2
63	9S-40420	WIPER COVER	STAINLESS STEEL	2
64	9P-40030	NAME PLATE	AL	1
65	9T-40340	LOCKING BLOCK	FC15	1
66	9T-40070	LOCKING ROD	SS41	1

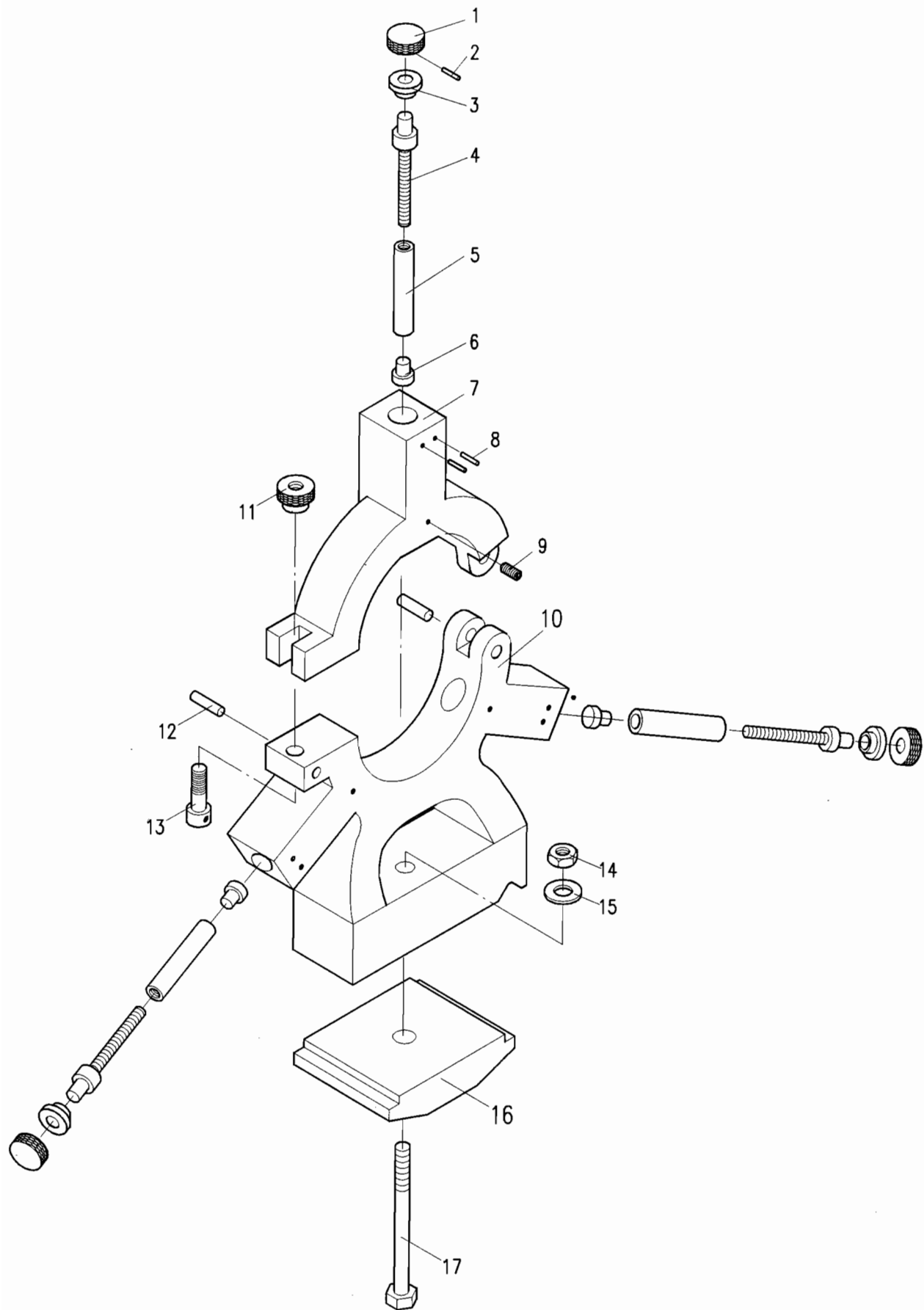
# 8-15. Steady Rest



## 8-14. Tailstock

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
53	9T-40330	GIB	FC20	1
54	7T-40210	ADJUSTING SCREW	SS41	2
55	9T-30020	TAILSTOCK BASE	FC25	1
56	9T-40210	CLAMP PLATE	FC20	1
57	9T-40320	WASHER	SS41	1
58	N-16	NUT	M16	1
59	9T-40290	WIPER	RUBBER	2
60	9T-40300	WIPER COVER	STAINLESS STEEL	2
61	CH-0510	CROSS RECESSED HEAD MACHINE SCREW	M5xP0.8x10L	8
62	9S-40410	WIPER	RUBBER	2
63	9S-40420	WIPER COVER	STAINLESS STEEL	2
64	9P-40030	NAME PLATE	AL	1
65	9T-40340	LOCKING BLOCK	FC15	1
66	9T-40070	LOCKING ROD	SS41	1

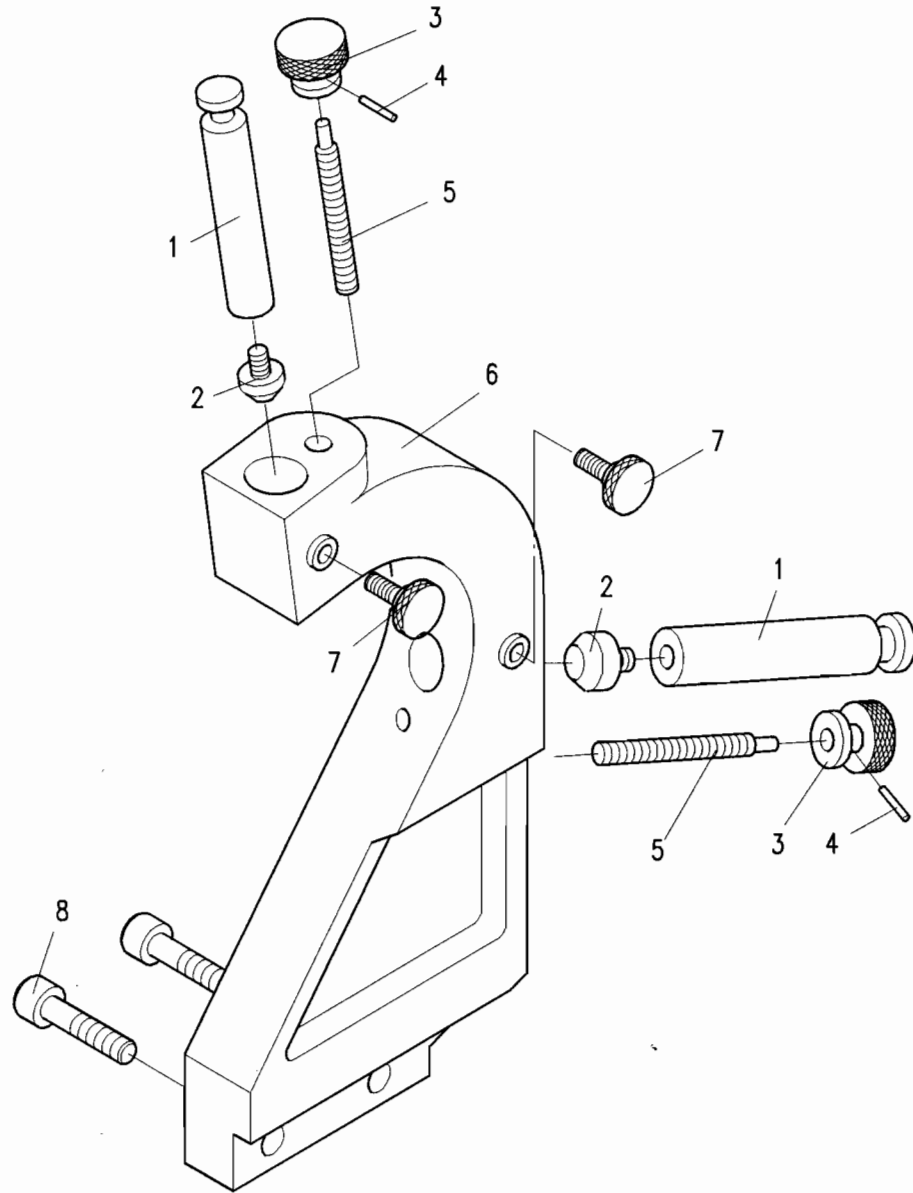
# 8-15. Steady Rest



## 8-15. Steady Rest

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	9C-40060	Adjustment wheel	S20C-D	3
2	P-4	Pin	#4	3
3	9C-40120	Cover	S20C-D	3
4	9C-40050	Adjustment screw	SS41	3
5	9C-40030	Shaft	S20C-D	3
6	9C-40040	Bush	BC2	3
7	9C-30020	Cover	FC15	1
8	P-4	Pin	#4	6
9	SS-1012	Set screw	M10xP1.5x12L	3
10	9C-30010	Body of steady rest	FC15	1
11	9C-40080	Nut	S20C-D	1
12	9C-40090	Connect rod	S20C-D	2
13	9C-40070	Locking screw	S20C-D	1
14	N-18	Nut	M18xP2.5	1
15	W-16	Washer	#16	1
16	9T-40210	Locking plate	FC15	1
17	SH-18115	Screw	M18xP2.5x115L	1

# 8-16. Follow Rest

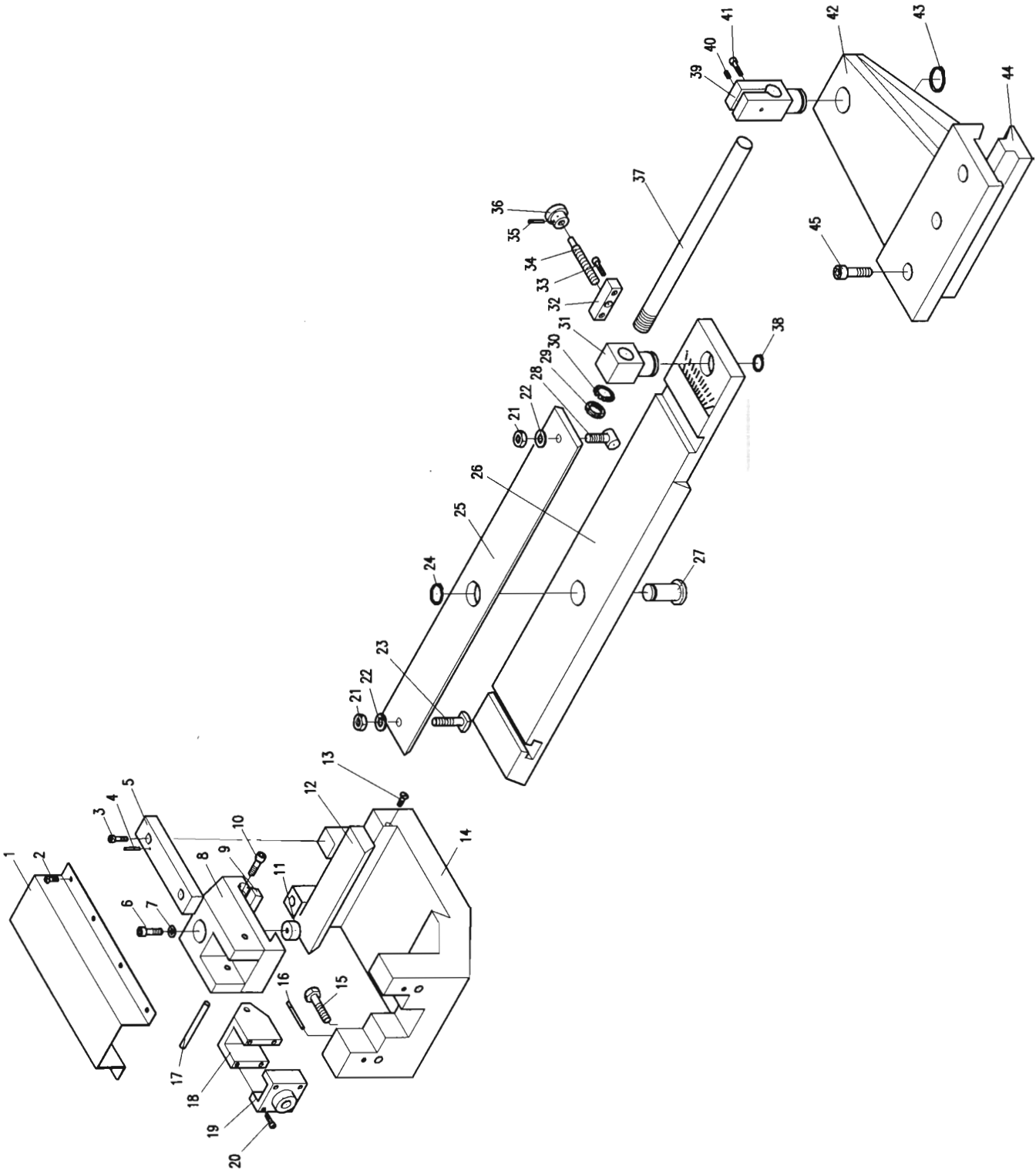




## 8-16. Follow Rest

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	SS-1020	SET SCREW	M10cP1.5x20L	2
2	9F-40010	BODY OF FELLOW REST	FC25	1
3	9F-40030	CLAW	BC2	2
4	9F-40020	CLAW SHAFT	S20C-D	2
5	9F-40040	ADJUSTMENT SCREW	S20C-D	2
6	∅ 3x20L	SPRING PIN	∅ 3x20L	2
7	9F-40050	HANDLE BOSS	SS41	2
8	SH-1240	SOCKET HEAD CAP SCREW	M12xP1.75x40L	2

# -17. Taper Turning Attachment



## 8-17. Taper Turning Attachment

REF NO.	PART NO.	PART NAME	SPECIFICATION	USED Q'TY
1	9TA-143(N)	COVER	S45CxSS41	1
2	MS-0610	MACHINE SCREW	M6xP1x10L	8
3	SH-0815	SOCKET HEAD CAP SCREW	M8xP1.25x15L	4
4	TP0320	TAPER PIN	#3x20L	4
5	9TA-253(N)	COMPRESS PLATE	FC25	2
6	SH-0610	SOCKET HEAD CAP SCREW	M6xPx10L	1
7	9TA-103(N)	WASHER	SS41	1
8	7S-410	ADJUSTMENT SCREW	SS41	1
	7S-420	ADJUSTMENT SCREW	SS41	1
9	9TA-133(N)	GIB	S20C	1
10	9TA-043(N)	SLIDING SADDLE	FC25	1
11	9TA-093(N)	SHAFT	S45C	1
12	9TA-123(N)	GIB	FC25	1
13	7S-500	ADJUSTMENT SCREW	SS41	2
14	9TA-013(N)	BODY OF TAPER ATTACHMENT	FC25	1
15	SH-1245	SOCKET HEAD CAP SCREW	M12xP1.75x45L	4
16	9TA-193(N)	PAPER PIN	#5x64L	2
17	9TA-113(N)	SHAFT	S45C	1
18	9TA-063(N)	CONNTING BLOCK	FC25	1
19	9TA-073(N)	SHAFT BUSH	FC25	1
20	SH-0616	SOCKET HEAD CAP SCREW	M6xP1.0x16L	4
21	M12	NUT	M12-P1.75	2
22	M-12	WASHER	M12	2
23	9TA-183(N)	BOLT	S45C	1
24	SR25	SNAP RING	A25	1
25	9TA-033(N)	GUIDE PLATE	FC25	1
26	9TA-023(N)	SLIDE PLATE	FC25	1
27	9TA-083(N)	SHAFT	S45C	1
28	9TA-173(N)	BOLT	S45C	1
29	AN-04	LOCK NUT	AN04	2
30	AW-04	LOCK WASHER	AW04	1
31	9TA-163(N)	SHAFT	S45C	1
32	9TA-203(N)	SIDE PLATE	SS41	1
33	SH-0620	SOCKET HEAD CAP SCREW	M6xP1x20L	2
34	9TA-213(N)	ADJUSTMENT SCREW	S45C	1
35	SP-320	SPING PIN	φ 3x204	1
36	9TA-190	HANDLE	S20C	1
37	9TA-153(N)	CONNECTING ROD	S20C-D	1
38	SR-20	SNAP RING	A20	1
39	9TA-223(N)	SHAFT	S45C	1
40	SS-0818	HEXAGON SOCKET SET SCREW	M8xP1.25x18L	1
41	SH-0825	SOCKET HEAD CAP SCREW	M8xP1.25x25L	1
42	9TA-223(N)	CLAMP BRACKET	FC20	1
43	SR-20	SNAP RING	A20	1
44	9TA-243(N)	COMPRESS PLATE	FC25	1
45	SH-1255	SOCKET HEAD CAP SCREW	M12xP1.75x55L	3